
FOREWORD

Congratulations on your wise decision to be the proud owner of **Croner**, enabling you to drive extra mile. This vehicle is delivered to you with confidence. It was produced using the latest technology under strict quality control.

Please read through the Owner's manual before driving the vehicle for first time. This will make sure that you are familiar with the controls and maintenance procedures, and will assist you in operating the vehicle safely, providing room for efficient driving. However the safety devices installed in the vehicle and the information provided is not a substitute for careful driving. The driver or user is totally responsible for their own safety, and the safety of the vehicle and other road users, failing which **UD Trucks** cannot be held responsible for the failure of the driver to take proper care.

The use of Genuine **UD Parts** and lubricants are recommended to carry out all scheduled maintenance and repairs. Only authorised **UD Trucks** dealers to be used to carry out scheduled maintenance and repairs to reduce maintenance cost and prolong the life of the vehicle. This will ensure maximum uptime, safety and reliability during vehicle lifetime it is imperative that recommendations from **UD Trucks** are adhered to. **UD Trucks** recommends you to heed our advice about driving and care of your vehicle. For all your queries on service, maintenance, genuine parts, oils, fluids and procedures, contact your nearest authorised **UD Trucks** dealer.

All information, illustrations, operations, maintenance and data provided in this manual are based on the latest model available during the preparation and printing of this manual. As a part of continuous product optimisation, **UD Trucks** reserves the right to change, modify, remove or add features in the vehicles and manuals. Country specific are possible. The truck may not be equipped with all the functions described. This also applies to safety-related systems and functions. Some of the equipment described in this manual is optional and may not be included in your vehicle. Therefore the equipment in your truck may differ from that shown in the descriptions and illustrations. Therefore, you may find some information which does not apply to your truck model. Please check with the document provided during vehicle hand over for your vehicle details.

Follow the instructions in this manual about the proper operation of your vehicle to avoid truck damage. Damage to your truck that arises from contraventions against these instructions are not covered by **UD Truck** warranty. When purchasing this truck separate warranty manual is provided along with this manual which explains the warranty details of your vehicle. The Owner's manual and Warranty manual are an integral part of the vehicle. This forms a basic record of your vehicle and should be maintained and retained in a proper manner with the vehicle at all times.





In the event of the vehicle being sold, please make sure that this manual is kept in the vehicle for the new owner's reference.

Your truck is equipped with software systems which record - temporarily or permanently - various information about the operating state, events and faults of the truck, and can be used to assist in recognising and rectifying faults and defects, analyse or optimize vehicle functions. When your truck is serviced, technical information can be read from the event and/or fault data memory (e.g. repair services, service processes, warranties, quality assurance) by service network employees and/or by the manufacturer using special diagnostic testers. More detailed information is obtained from it, if required, additional functions that have been contractually agreed upon with the customer allow certain data to be conveyed by the truck as well. For vehicles with Telematics equipment (see Telematics gateway in Chapter 1) - depending on the configuration - additional stored data can also be read out via the telematics equipment and transferred to the manufacturer or its affiliates (hence being transferred out of the country of the customer to the extent permitted by domestic laws) as well as providing additional analysis.

When reading the manual

The Owner's manual uses the following levels of observation and warning texts.

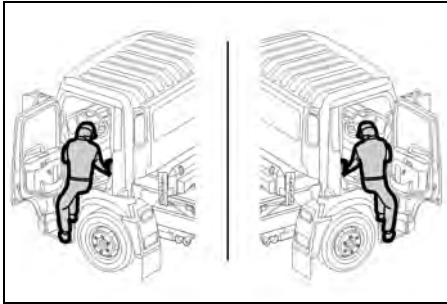
“**DANGER**”, “**WARNING**”, “**CAUTION**” and “**NOTE**”.

 DANGER	Indicates a potentially dangerous situation which, if not avoided, will lead to death or serious personal injury.
 WARNING	Indicates a potentially dangerous situation which, if not avoided, may lead to fatal injury, serious personal injury or damage to the product.
 CAUTION	Indicates a potentially dangerous situation which, if not avoided, may lead to minor or moderate personal injury or damage to the product.
NOTE	Indicates a situation, use or circumstance which should be emphasised.
	This symbol indicates a practice which is not recommended and should not be carried out.

The Owner's Manual contains information required to operate and maintain your truck at the highest possible standards. Follow the instructions and advice in this manual, if you have any questions, please consult your nearest authorised **UD Trucks** dealer. The specifications and illustrations in this manual are not binding and **UD Trucks** reserve the right to change them at any point in time without prior notification.

The safety instructions provided in this manual are only a few of a vast amount and are actually unlimited. Hence, it is the sole responsibility of the user to check all the possibilities on safety before handling or driving the vehicle, performing a maintenance operation or service procedure. However the safety information provided in this manual is not a substitute for careful driving and operation. The user is totally responsible for their own safety, the safety of the vehicle and other road users. **UD Trucks** cannot be held responsible in any manner.

This manual covers the feature for both LHD and RHD models. To enhance the understanding of the user, both LHD and RHD illustrations are shown under a single topic. The illustration on the left corresponds to the LHD vehicle and right corresponds to the RHD vehicle, until and otherwise mentioned.



LHD Vehicle

RHD Vehicle

Topics common to both LHD and RHD are shown in a single illustration.

The illustrations shown in this manual are not contractual and may not reflect an actual situation. If you of clarification, please consult your nearest authorised **UD Trucks** dealer.

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1. INTRODUCTION AND SAFETY

1.1 Introduction

This manual provides detailed explanations on working with **Croner** series vehicles as below:

Type	Engine	Transmission
RIGID 4 x 2	GH5E (Euro-3 and Euro-4)	SYNC. MAN. TRANS. 1000 NM, 6 SPEED
		6 SPEED ALLISON 2500 SERIES
	GH8E (Euro-3)	SYNC. MAN. TRANS. 1000 NM, 6 SPEED
		SYNC. MAN. TRANS. 1300 NM, 6 SPEED
		SYNC. MAN. TRANS. 1190 NM, 9 SPEED
		6 SPEED ALLISON 3000 SERIES
	GH8E (Euro-5)	6 SPEED ALLISON 3000 SERIES
RIGID 6 x 2	GH8E (Euro-3)	SYNC. MAN. TRANS. 1000 NM, 6 SPEED
		SYNC. MAN. TRANS. 1190 NM, 9 SPEED
		6 SPEED ALLISON 3000 SERIES
	GH8E (Euro-5)	6 SPEED ALLISON 3000 SERIES
Tractor 4 x 2	GH8E (Euro-3 and Euro-5)	6 SPEED ALLISON 3000 SERIES
		SYNC. MAN. TRANS. 1000 NM, 6 SPEED
		SYNC. MAN. TRANS. 1190 NM, 9 SPEED

Please read through and understand the Owner's manual before driving the truck for the first time.

1. INTRODUCTION AND SAFETY

Abbreviations

ABS	Anti-lock Braking System	MIL	Malfunction Indicator Lamp
AC	Air Conditioning	NA	Not Applicable
ACM	After treatment Control Module	NOx	NOx is a generic term for mono-nitrogen oxides NO and NO ₂ (Nitric oxide and Nitrogen Dioxide)
CC	Cruise Control	OBD	On Board Diagnostics
DRL	Daytime Running Light	PCB	Program Control Board
ECU	Electronic Control Unit	POC	Powertrain Operating Condition
EMEA	Europe, Middle East and Africa	PTO	Power Take-Off
EMS	Engine Management System	RES	Resume
EOL	End Of Line	RHD	Right Hand Drive
EBR-EPG	Exhaust Pressure Governor	RHS	Right Hand Side
EBR-CEB	Engine Compression and Exhaust Brake	RPM	Revolutions Per Minute
GAW	Gross Axle Weight	RSL	Road Speed Limit
GCC	Gulf Cooperation Council	SAF	Southern, Central and East Africa
GH5E	5 litre Engine	SEA	South East Asia
GH8E	8 litre Engine	SI	International System of Units
GVW	Gross Vehicle Weight	TGW	Telematics Gateway
HCV	Hand Control Valve		
HVAC	Heating, Ventilation and Air Conditioning		
IC	Instrument Cluster		
IECU	Integrated Electronic Control Unit		
ISO	International Organization for Standardization		
JIS	Japanese Industrial Standards		
LHD	Left Hand Drive		
LHS	Left Hand Side		

For safe operation

The operations and points which require caution when handling the vehicle for trouble-free operation are listed here. Read the information before using the vehicle.

NOTE

Pay attention to the decals/labels on the vehicle, which give information on safe operation.

DANGER

Never try to operate or work on this vehicle while under the influence of alcohol. Your reflexes/reactions can be affected by even a small amount of alcohol. Drinking and operating this vehicle can lead to an accident, causing serious personal injury or death.

Weights and measures

This manual uses SI units with their respective metric system equivalents in braces.

Fuel

CAUTION

Use fuel which fulfil the legal requirements and comply with national and international standards. Failure to use the correct grade of fuel could lead to engine damage and excessive exhaust emission.

CAUTION

Do not mix petrol (gasoline) or alcohol to the diesel fuel.

The composition of fuel plays a vital role in vehicle function, service life and emission. To achieve the specified levels in terms of power and fuel economy and to fulfil the emissions legislation, use fuel which meets all the legal requirements and national and

International standards. These standards are the minimum requirements for commercial fuels and are often prepared in consultation with the oil companies and the automotive industry. Examples are:

- **GB 19147-2013**
- **EN590 (with nationally adapted cold requirements)**
- **JIS KK 2204**

The fuels which meet these standards are recommended.

Water particles

Make sure that water does not enter the fuel tank and get mixed with the fuel. Any water entering the fuel system will corrode the fuel injection unit. Water promotes the growth of bacteria and mould in the tank, which could lead to filter blockages. In cold weather, water in the fuel can freeze and block the fuel supply.

Check the fuel tank cap and fuel level sensor mounting area to make sure that it is properly sealed.

1. INTRODUCTION AND SAFETY

Diesel boosters

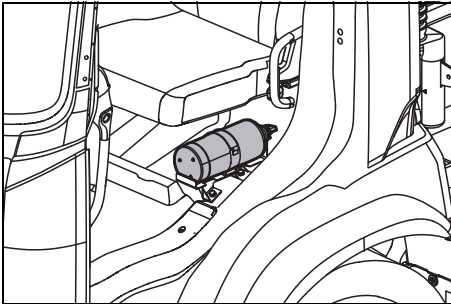
Many commercially available additives (called Diesel boosters) may promise increased fuel efficiency and improved lubrication. It is not recommended to use these additives.

UD Trucks does not accept any responsibility for warranty claims if these additives have been used. It is not **UD Trucks** policy to use, test or evaluate these additives.

CAUTION

Do not add any kind of diesel boosters to the fuel.

Fire extinguisher - if equipped



The fire extinguisher is located on the floor between the passenger seat and the door. The fire extinguisher must be refilled immediately after use, even if it is not been completely empty.

NOTE

Check the fire extinguisher periodically and make sure that the pressure gauge needle is in green range. The vehicle owner is responsible for maintaining the fire extinguisher. To ensure that it is always ready for use, the vehicle owner must follow the manufacturer's instructions printed on the fire extinguisher.

NOTE

The fire extinguisher should be refilled every three years, even if it is not used.

Warning triangle - if equipped



The warning triangle should be used to warn other drivers or road users of potential hazards in accident or breakdown situations. The warning triangle is stored behind the co-driver seat along with the tools.

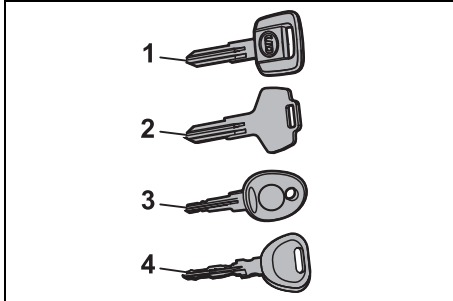
Reverse warning alarm - if equipped

The reverse warning alarm is activated when the vehicle reverse gear is engaged. It will produce the necessary sound when the vehicle is reversing.

Parking brake warning - if equipped

The Horn is activated if the door is opened when parking brake is disengaged.

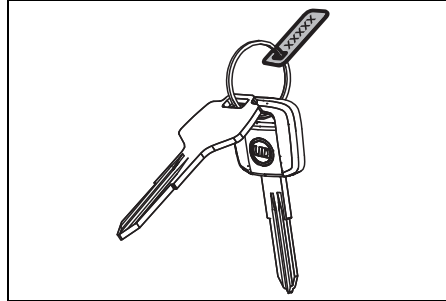
Keys



1. Ignition/Door key
2. Fuel tank key
3. Adblue tank key (Only for Euro 4 and Euro 5 vehicles)
4. Tool box key (if equipped)

Two set of keys are provided with the vehicle.

Number tag

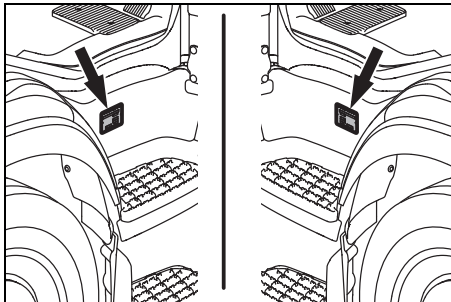


A number tag is supplied with the truck keys. Remove the number tag from the bunch of keys so that no unauthorised persons can see the number. Store the tag in a safe place for future reference.

1. INTRODUCTION AND SAFETY

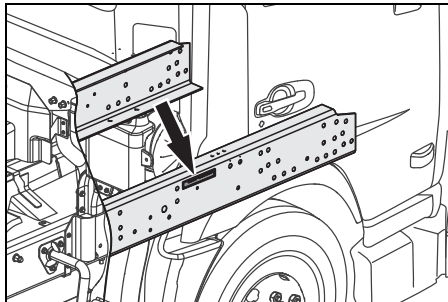
1.2 Vehicle identification

Vehicle identification plate



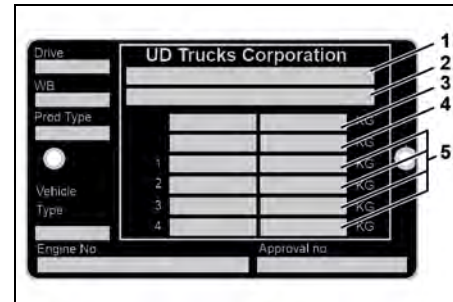
Vehicle identification plate is located above the foot step. For LHD it is on the LHS and for RHD it is on the RHS.

VIN Location



The VIN number is punched on the front of the chassis frame, on right hand side.

VIN Plate SEA and EMEA

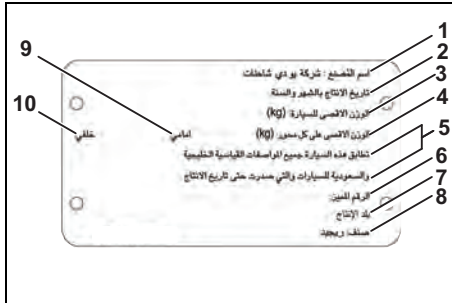


- 1: Type approval no. for SEA market and chassis no. for EMEA market
- 2: VIN number
- 3: Technically/legally permitted laden weight*
- 4: Technically/legally permitted laden weight of the combination*
- 5: Technically/legally permitted weight on each axle*

* Above details are possible to have on the VIN plate. Individual markets can opt to keep or remove as per their requirement

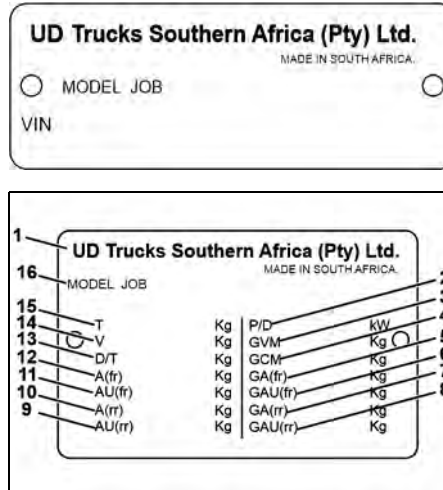
1. INTRODUCTION AND SAFETY

VIN Plate - GCC



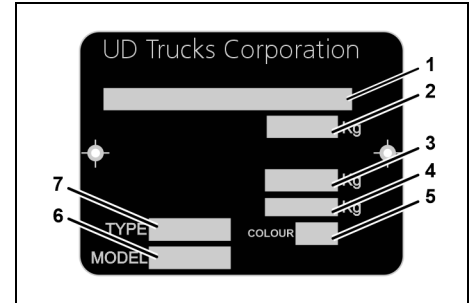
- 1: Name and Country of the manufacturer
- 2: Year and month of production
- 3: GVW (kg)
- 4: GAW (kg)
- 5: This vehicle confirms to all applicable Gulf/Saudi vehicle standards in effect up to the date of manufacture.
- 6: VIN
- 7: Country of production
- 8: Vehicle Category
- 9: Front
- 10: Rear

VIN and Data Plate - SAF



- 1: Name of manufacturer
- 2: Engine Net Power (kW)
- 3: GVM (kg)-Gross Vehicle Mass
- 4: GCM (kg)-Gross Combination Mass
- 5: GA (fr) (kg)-Gross Front Axle Mass
- 6: GAU(fr) (kg)-Gross Front Axle Unit Mass
- 7: GA (rr) (kg)-Gross Rear Axle Mass
- 8: GAU (rr) (kg)-Gross Rear Axle Unit Mass
- 9: AU(rr) (kg)-Rear Axle Unit Mass
- 10: A(rr) (kg)-Rear Axle Mass
- 11: AU(fr) (kg)-Front Axle Unit Mass
- 12: A(fr) (kg)-Front Axle Mass
- 13: D/T (kg)-Permissible Drawing Vehicle Mass
- 14: V (kg)-Permissible Max Vehicle Mass
- 15: T (kg)-Tare Mass of Vehicle
- 16: Model Job

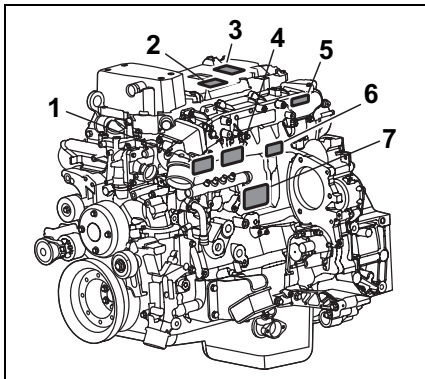
VIN Plate ISO



- 1: VIN number
- 2: Allowable GVW
- 3: Allowable front axle weight
- 4: Allowable rear axle weight
- 5: Colour number
- 6: Specification of vehicle type
- 7: Vehicle type

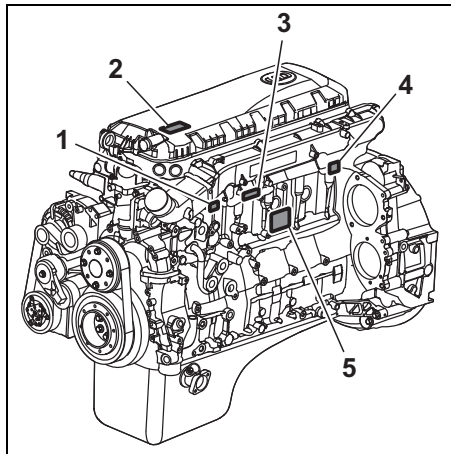
1. INTRODUCTION AND SAFETY

Engine identification - GH5E



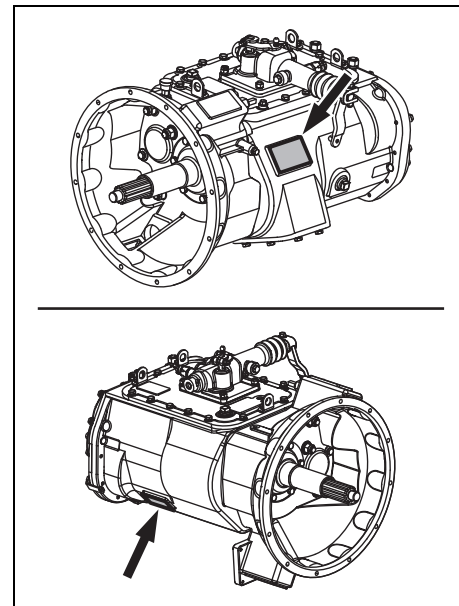
1. Engine designation and serial number
2. Engine and Chassis serial no.
3. Engine version, power and torque limitation
4. Assembly factory
5. Engine marking name plate
6. Machining completion date
7. Cylinder block casting data

Engine identification - GH8E



1. Engine serial number
2. Identity number
3. Assembly factory number
4. Machining completion date
5. Cylinder block casting data

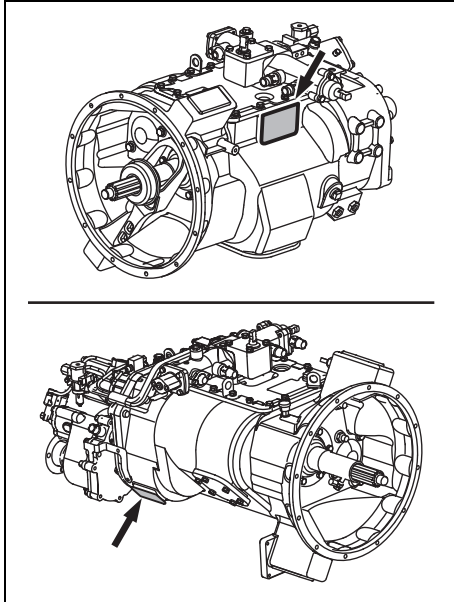
Gearbox identification plate - 6 Speed



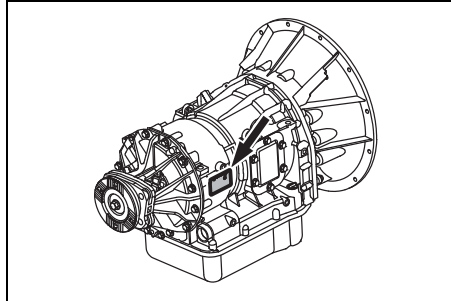
There are two identification plates in different location.

1. INTRODUCTION AND SAFETY

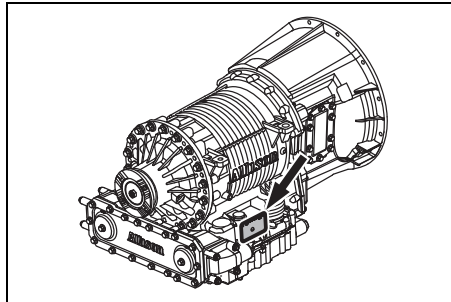
**Gearbox identification plate -
9 Speed**



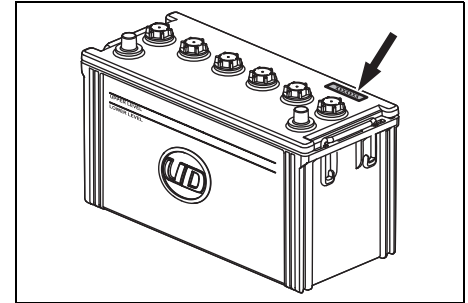
**Gearbox identification plate -
APS2500**



**Gearbox identification plate -
APS3000**



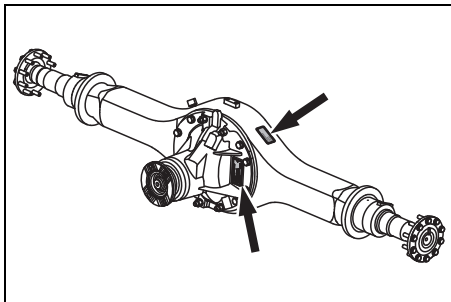
Battery identification plate



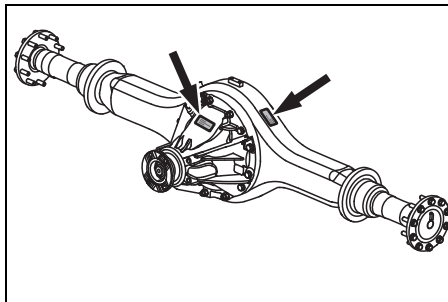
110 Ah

1. INTRODUCTION AND SAFETY

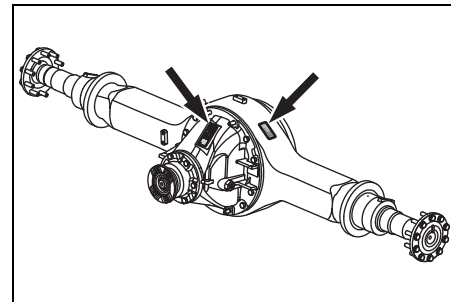
Rear axle identification plate



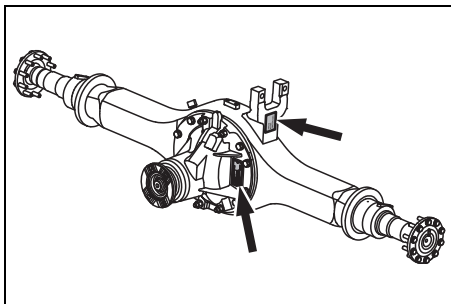
RSS0716 Leaf suspension



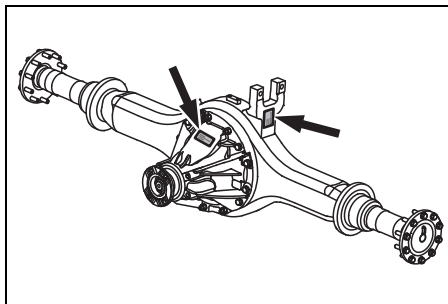
RSS0918 / RSS0918B Leaf suspension



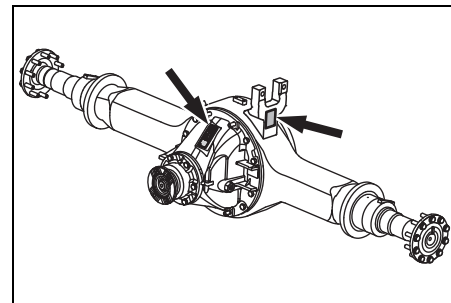
**RSS1132B / RSS1132D
Leaf suspension**



RSS0716 Air suspension



RSS0918 / RSS0918B Air suspension



**RSS1132B / RSS1132D
Air suspension**

1.3 Before driving

When opening the door

Before opening the doors, watch the traffic and ensure that it is safe and the door is free from obstructions.

Seat and steering wheel position

WARNING

Do not adjust the seat or the steering wheel while driving. Loss of vehicle control could lead to an accident.

Adjust the seat and steering wheel only when the vehicle is stationary.

Keeping the windscreen area clean

WARNING

Do not hang accessories or decorations from the windscreen or attach films to it. Doing so can block the driver's vision.

Keeping the dashboard area clean

WARNING

Do not drive with loose items placed on the instrument cluster or on the dashboard. These loose items tend to fall while driving, distract the driver's attention and could lead to accident.

Wearing and adjusting the seat belt

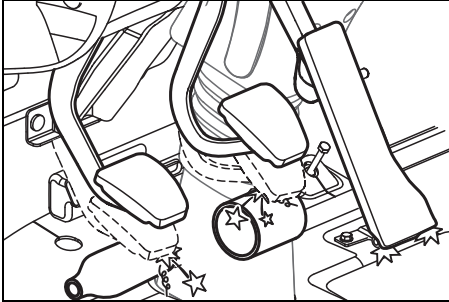
WARNING

Do not wear the seat belt inside out or twisted. Doing so may reduce its effectiveness.

The driver and the user should always wear a seat belt.

1. INTRODUCTION AND SAFETY

Keeping the cabin floor clean



WARNING

Do not place loose objects such as tools, cans and bottles etc. on the cabin floor. They could roll underneath the pedals and prevent the pedals from operating correctly and could cause an accident.

Do not carry dangerous goods

WARNING

Do not carry containers with explosives, flammable goods and other hazardous materials in the vehicle cab. This could cause serious fire hazards.

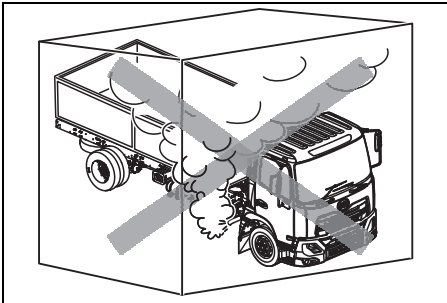
1.4 While driving

Before starting the engine

Before starting the engine, shift the gearshift lever to neutral and make sure that the parking brake is applied.

Avoid breathing exhaust fumes

If parked in a closed area, ensure proper ventilation before starting the engine.



WARNING

Do not start or run the engine if the vehicle is in closed shed or under poor ventilation.

Starting precautions

NOTE

Before driving the vehicle, make sure that the area around the vehicle is free of obstacles.

The mirrors fitted to the vehicle cannot give complete vision of the vehicle. We recommend that you check under and around the vehicle before moving off.

1. INTRODUCTION AND SAFETY

1.5 Vehicle speed limit

Speed limiter - if equipped



WARNING

Always drive the vehicle as per road speed limit regulation by the local authorities.

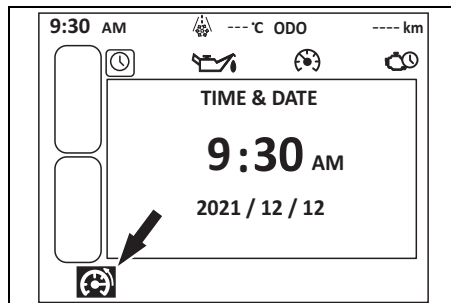
Vehicles equipped with a speed limiter cannot be accelerated beyond the set speed.

The vehicle may have the speed limiter ranges below:

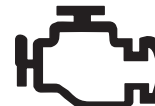
1. 80 km/h
 2. 90 km/h
 3. 100 km/h
 4. 110 km/h
3. Without speed limiter

Always drive the vehicle in compliance with the road speed limit regulation of the local authorities.

The user can also set the speed limit below the set value. For example if factory set value is 80 km/h, user can set below 80km/h say 60 km/h as a user speed. The RSL icon on the IC display will pop up indicating that the user speed limit is active.



Driver information display



WARNING

Do not ignore the warning lights which light up while driving. Contact the nearest authorised UD Trucks dealer and rectify any malfunction immediately.

Foot brake long-term use

Avoid using the foot brake continuously for an extended period of time. This will affect the braking performance and could damage the brake system.

Cruise control - if equipped

CAUTION

Do not use the cruise control on wet or snowy roads, when it is raining, on hilly terrain, in regions with heavy traffic or on slippery roads, turns and bends.

The cruise control option is used under favourable driving conditions to reduce fuel consumption and driver fatigue.

Using cruise control mode does not allow the driver to shift concentration away from the road. The driver or user is responsible for his own safety and safety of the vehicle and other road users.

Refer to “**Cruise control**” in chapter 3.

Auxiliary brake

CAUTION

Be careful when using the auxiliary brake on slippery roads, as this may cause wheels to lock.

Use the auxiliary brake when going down hills and when braking gently.

A vehicle speed retardation feature such as “Auxiliary brake,” is not intended to replace the service brake and this will not stop your vehicle. A vehicle speed retardation feature is only intended to retard the speed of your vehicle under certain conditions.

Parking brake lever operation

DANGER

Never exit your vehicle unless the parking brake is applied.

WARNING

Do not operate the parking brake lever while driving.

1. INTRODUCTION AND SAFETY

Do not switch OFF the ignition while driving



DANGER

Do not switch OFF the ignition while driving. Compressed air will not be supplied to the brakes when the engine is switched OFF. This will depreciate the braking performance. The steering assist mechanism will also not work, making it impossible to turn the steering wheel.

Do not use the bed while driving



DANGER

If the bed is used while driving, the person could be thrown around during a collision or emergency braking.

Air conditioner operation

Leaving the air conditioner set to **“recirculation mode”** for a long period of time will cause the windows to fog up and will impair visibility. Switch to **“fresh air mode”** and continue driving after the fog has cleared.

Use the air conditioning “recirculation mode” when driving in dusty conditions, tunnels etc.

1.6 Parking

When parking

Park the vehicle under shade with proper ventilation.



CAUTION

Do not park the vehicle under the tree or near dried leaves and debris. If the vehicle is parked under the tree, the bird droppings on the vehicle body can damage the paint and the dried leaves can catch fire if contacts the hot exhaust pipe.

1. INTRODUCTION AND SAFETY

1.7 When there is a problem

Flat tyre while driving

DANGER

Do not drive with a flat tyre.

When towing

WARNING

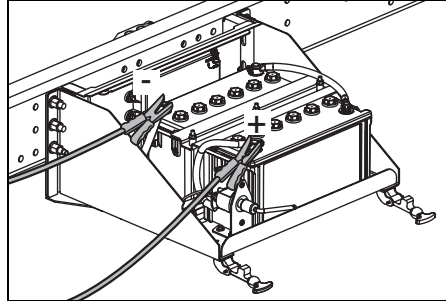
The brakes and steering system will not work when the engine is switched OFF. Only use tow truck to tow the vehicle.

CAUTION

If the vehicle needs to be towed, the propeller shaft should be disconnected to avoid damage.

Refer to “*Towing*” in chapter 10.

When using jumper cables



DANGER

Do not jump start the vehicle without proper knowledge. Contact the nearest authorised UD Trucks dealer for assistance.

Refer to “*Jump start*” in chapter 10.

When changing the wheel

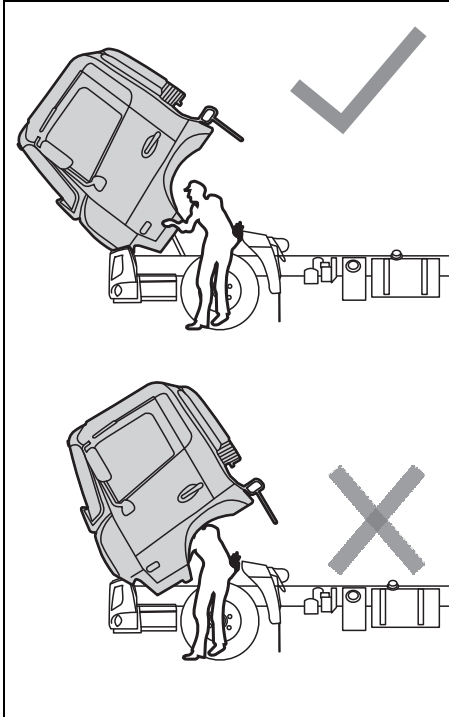
WARNING

While changing the wheel, place the jack on a stable or hard surface and lift the vehicle. Using the jack on a slope or soft surface causes the jack to tip over and the vehicle to drop.

Refer to “*Jack up*” in Chapter 8”

1.8 Tilting the cab

Safety



WARNING

Tilt the cab completely and secure it with the lock pin. Do not work underneath the cab while tilting it or when it is half tilted.

CAUTION

Do not step on the mudguard/fender.

For tilting the cab refer to “*Tilting the cab*” in Chapter 8.

1. INTRODUCTION AND SAFETY

1.9 Overheating

When the vehicle overheats

WARNING

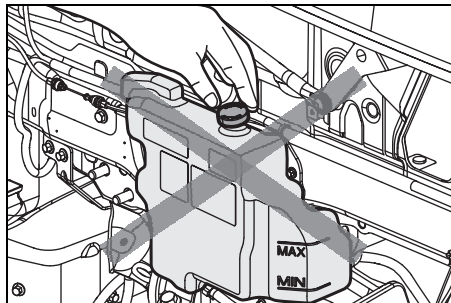
Do not fill coolant, when the engine is hot, to avoid burns from steam and hot coolant. Allow the engine to cool completely before filling the coolant.

CAUTION

Allow the engine to cool down while idling for 3 min before switching it OFF.

The engine must be allowed to run at idling speed before switching it OFF. This prevents heat stress in the engine and allows the hot components, such as the turbocharger to cool down gradually.

Handling the coolant reservoir cap



WARNING

Do not open the coolant reservoir cap when the engine is hot or immediately after driving. Opening the cap on a coolant reservoir could allow steam and water to blow out and burn you.

Oil inspection and changes

WARNING

Do not inspect or change the engine oil, gearbox oil or differential gear oil immediately after driving.

NOTE

Drain the oils when they are warm. The oils have a tendency to flow easily when they are warm.

1.10 Handling the fuel filter and fuel tank

When replacing the fuel filter

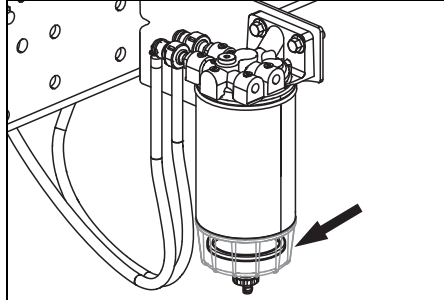
WARNING

Ensure that fuel filter is installed correctly and there are no fuel leaks from the filter. Fuel leak can cause a fire if not rectified.

Amount of fuel

Try to top up the fuel before the tank becomes empty. This prevents condensation in fuel tank and the vehicle from running out of fuel. Ensure proper care to keep water and dust away from tank when refuelling.

Draining water from the water separator

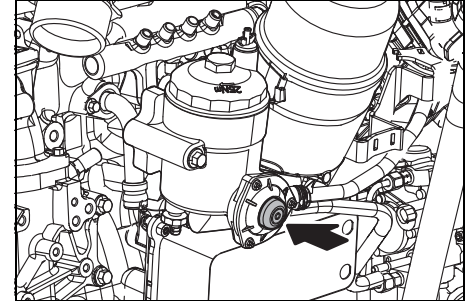


Drain the water, whenever the red ring is floating in the water separator mounted on the chassis.

CAUTION

Do not continue to drive the vehicle while the filter contains water. Stop the vehicle and drain the water.

Air bleeding the fuel system



CAUTION

If air gets into the fuel system, it will cause inconsistent fuel injection and possible engine malfunction. Ensure that the air is bled from system while changing the fuel filters or when the fuel lines are disconnected.

1. INTRODUCTION AND SAFETY

Refuelling at the self-service station



WARNING

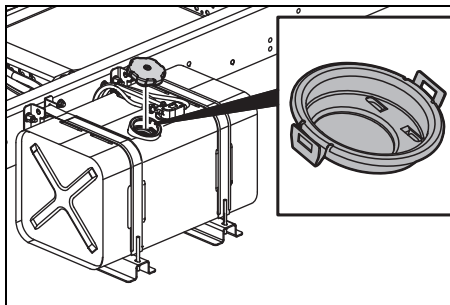
Do not smoke, light matches, use lighters or use mobile phones while refueling. Failure to comply could cause a fire.

When refueling at a self-service station, be sure to observe the following points to prevent accident involving fire caused by static electricity or fuel spillage.

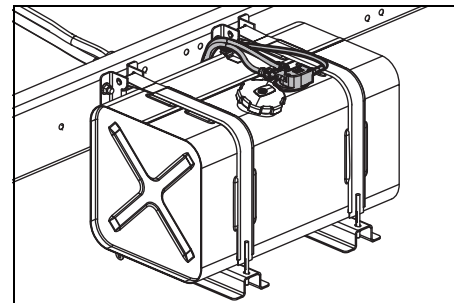
- Make sure that the engine is switched off. Before opening the fuel filler cap, be sure to touch a metal part to eliminate static electricity.
- Only one person should refuel.
- Securely insert the nozzle in to the filler port. The auto stop function will not operate if the nozzle is removed temporarily to top up the fuel.
- Make sure that the cap is locked properly after refueling.

- Please observe the precautions displayed at the self-service station, if you cannot refuel normally. Call the station attendant and follow their instructions.

Fuel tank is equipped with anti-spill device. Do not remove anti-spill device from the fuel tank.

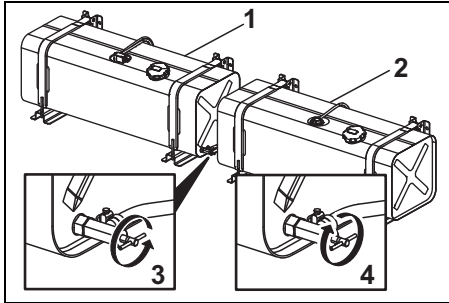


Fuel pipes



Ensure that there are no fuel leaks from the fuel tank or fuel pipes. If there is a fuel leak, contact nearest authorised **UD Trucks** dealer for assistance.

Dual tanks- if equipped



- 1. Master tank** **2. Slave Tank**
3. Shut off valve opening
4. Shut off valve closing

Fill both the tanks independently with valve closed. In case if the user needs to fill only 1 tank, then it is mandatory to fill master tank always.

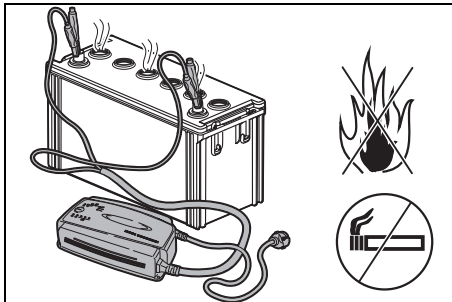
If the fuel quantity is very less in the master tank and if the user is planning to go an uphill then he needs to manually close the shut off the valve provided.

Else the fuel in the master tank will flow into the slave tank and air may enter into the system and the engine may stop.

1. INTRODUCTION AND SAFETY

1.11 Handling of the battery

When charging the battery



⚠ WARNING

Keep open flames and heat away from the battery while it is charging. The hydrogen gas generated during charging could ignite and cause an explosion.

Contact authorised **UD Trucks** dealer for battery charging.

Battery terminals

⚠ CAUTION

Loose or corroded battery terminals will make it difficult to start the engine, may cause sparks at the terminals and prevent the battery from charging during driving. This will reduce the battery life.

Secure battery cables with proper connection and apply petroleum jelly to the terminals.

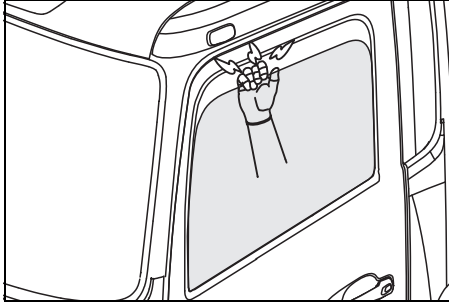
In cold climates

⚠ CAUTION

Leaving the battery in a discharged state will make it easier for the battery fluid to freeze and could damage the battery permanently. Regularly inspect the battery, keep it filled with battery fluid and charge it periodically.

1.12 Other precautions

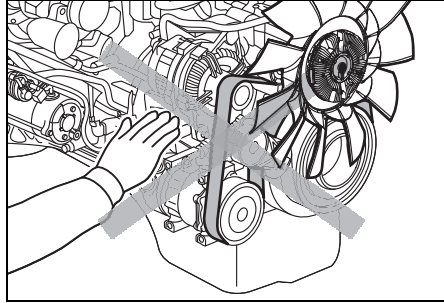
When closing the windows



WARNING

Make sure that no parts of the body are extended outside the window when closing the window. Failing to do so might result in injury.

Drive belt tension inspection



DANGER

Do not inspect the drive belt while the engine running.

Make sure that the engine is switched OFF while working near the engine or other rotating parts.

1. INTRODUCTION AND SAFETY

1.13 Modifying and replacing parts in pneumatic and electrical system

Do not modify



WARNING

Installing parts which are unsuitable for the vehicle's performance and function could lead to a malfunction or an accident.

Contact nearest authorised **UD Trucks** dealer for advice before installing any accessories.

Do not modify the pneumatic units



CAUTION

Do not add or modify the pneumatic units on the vehicle. Contact the nearest authorised **UD Trucks** dealer for advice before installing any accessories.

Electrical welding work



WARNING

Welding must be performed with great precision to obtain a proper joint. Observe safety precaution in order to avoid injuries and accidents.

When performing electrical welding, the electric current from the welding machine could flow back to the ground circuit and damage the electronic control unit. So be sure follow the below points:

1. Contact nearest authorised **UD Trucks** dealer for advice before performing the electrical welding.
2. Switch OFF the ignition.
3. Disconnect the battery negative (-) terminal.
4. Be sure to ground the welding unit close to the weld contact area.

5. When the work is complete, check that all units are functioning normally.

1. INTRODUCTION AND SAFETY

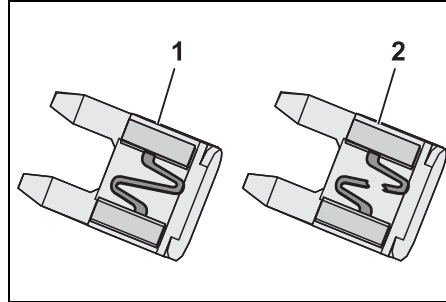
Do not perform wiring yourself

WARNING

Do not perform any unauthorised wiring or install electrical devices. Doing so could result in electrical component malfunction or cause the wiring to overheat which could cause a fire.

Contact nearest authorised UD Trucks dealer for advice.

Replacing fuses



1. Fuse OK

2. Blown fuse

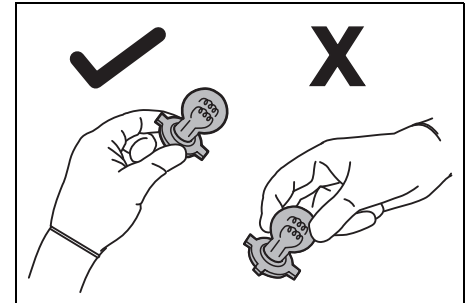
CAUTION

Never use a wire to replace a blown fuse. Replace the fuse with a new one according to the specified rating.

CAUTION

Do not use the fuse from another circuit as a temporary solution.

Replacement of lights



CAUTION

Do not touch the glass portion of the bulbs.

CAUTION

Use UD Genuine Parts when replacing bulbs. Using other unauthorised parts or bulbs other than those of the specified rating will result in a malfunction or damage to the device.

1. INTRODUCTION AND SAFETY

1.14 Washing the vehicle

When washing the vehicle

Use washing facilities which dispose of waste from the washing process in an environmentally compatible manner. Use environmental friendly cleaning agents as far as possible. When washing the vehicle's under body, do not direct the high pressure water jet on the steering shaft joint, front axle drag link or tie rod dust covers.

Use high-pressure washing with care.
Do not rinse:

- Universal joint cross
- Supporting bearings
- Slip joints
- Joints
- Seals
- Ventilation for gearbox, oil reservoirs, etc.
- Connectors
- Electrical components
- Air inlets

 CAUTION
While washing, ensure that the water does not seep into the electrical components such as starter motor, alternator, sensors, relays and electronic units.

1.15 OBD (On Board Diagnostics) - SCR technology

General

UD Trucks uses SCR technology (Selective Catalytic Reduction) catalytic emission control to fulfil the requirements of Euro 4, 5 and any other equivalent standards. The exhaust gases are monitored according to the legal requirements stipulated by the local regulatory authority or emission control board. Apart from the OBD requirements, the vehicles compliant with Euro 4 and Euro 5 should also have an additional monitoring system to detect the NOx (Nitrogen oxides) levels after exhaust treatment.

The NOx control system is to monitor the following conditions:

- Level of NOx in the exhaust.
- Level of AdBlue in the tank.
- Faults in the emission control system.

The following effects will occur if faults are detected in the exhaust after treatment:

- The monitoring system will inform the user through warning lamps and fault messages.
- “Non-erasable fault codes” are set.
- Possible derating of the engine (depending on type of fault)
- The information is also provided in the form of tell-tale and pop-up messages when the AdBlue level is low. The user can also look at the current AdBlue level on the display.

Conditions

The NOx control monitoring system is only active under the following conditions:

- Ambient temperature is between -7°C to + 40°C.
- The altitude above sea level is less than 1600 m.
- Coolant temperature is above 70°C.

In order to set (activate) a “non-erasable fault code”, a number of different basic conditions must be fulfilled. The conditions vary depending upon which fault is displayed. There are three different faults which generate a “non-erasable fault code”:

1. Empty AdBlue tank.
2. NOx level exceeding the certified level.
3. The NOx level cannot be monitored.

1. INTRODUCTION AND SAFETY

Non-erasable fault codes

Once the new fault code for NOx is reported (becomes active), it will be stored for 400 days and will not be erased, even if the fault is remedied and the fault code becomes inactive. Once a “non-erasable fault code” is generated, an estimation is made of the amount of time the engine was running while the current fault was active. In this way, information can be obtained about how long the engine has been running with a fault in the emission system.

Derating (Power reduction)

A new feature for NOx control monitoring process causes a power reduction of 40% when certain limits occur or a certain fault arises in the exhaust gas after-treatment system, before derating occurs, the control and warning lights will light up and the instrument will show derating. Derating will be activated once the vehicle has stopped for the first time (with the engine running) after the fault has occurred at the next traffic signal red

light, for example. As soon as the reason for the power reduction has ceased, the power reduction will be deactivated the next time the engine comes to idle.

Power reduction occurs during any of the following events:

- NOx level is exceeding the certified level.
- AdBlue tank empty.
- The system could not monitor the NOx level during 50 hours of engine operation.

The derating process is legal requirement.

Exhaust cleaning

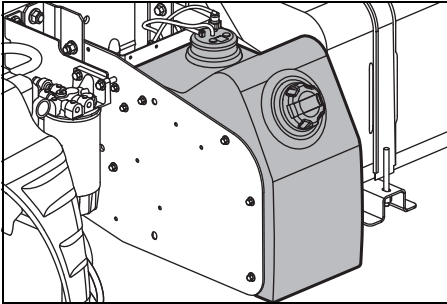
The engine is equipped with an exhaust gas cleaning system which cleans the exhaust gases using AdBlue. AdBlue is injected into the exhaust system between the turbo and silencer with a built-in SCR catalytic converter. The catalytic converter is used to reduce the emissions of nitrogen oxides and particulates in the exhaust gases.

Fuel

Sulphur-free fuel (<50 ppm) must be used in order to ensure that the emission requirements are fulfilled at a sustained level for Euro 4 vehicles.

Sulphur-free fuel (<10 ppm) must be used in order to ensure that the emission requirements are fulfilled at a sustained level for Euro 5 vehicles.

AdBlue (Urea solution)



The urea solution is sold under the AdBlue brand name. It is a colourless liquid consisting of urea and distilled water. It may have a slight odour of ammonia.

CAUTION

AdBlue which has been modified or replaced by another liquid which does not comply with ISO 22241-1, will not have the intended cleaning effect and can damage the SCR system, making the warranty void.

WARNING

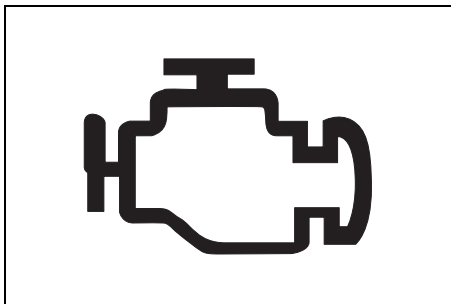
AdBlue is a safe liquid; It may cause slight irritation for some people. Avoid breathing the fumes, gas, vapour or spray. If spilt onto the body, clothes or ground, flush the area generously with water. For larger spills, first dilute with large amount of water and refer to the local regulations for disposal (due to Nitrogen content).
If AdBlue comes in contact with the eyes; wash immediately with fresh running water. If irritation continues seek medical attention.

1. INTRODUCTION AND SAFETY

1.16 Driving trucks with Euro 4, 5 (or equivalent) standard engines

OBD

The truck is equipped with an OBD system. An MIL (Malfunction Indicator Lamp) symbol lights up in the event of emission related faults. Stop the vehicle and check the reason for the lamp lighting up. Contact authorised **UD Trucks** dealer for assistance.

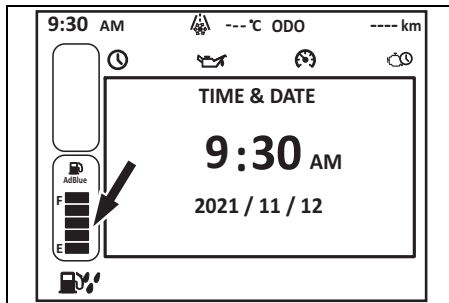


AdBlue level



WARNING

Driving without AdBlue in certain regions is a punishable offence. Do not drive your vehicle without AdBlue.



To check the amount of AdBlue in the tank, select the “Gauges” menu on the display and select “AdBlue”. It is an advantage to have this selected as a favourite menu, see the section Display. When the amount of AdBlue in the tank decreases (to approximately 10%), the information lamp will light up and a message “Low AdBlue level” will be displayed to driver, top up with AdBlue.

If the AdBlue level is less than 10% of the tank, CHECK tell-tale lights up and the engine output is reduced to 12% to 40%, further decrease in AdBlue level will force engine to run in idle.

Emission control monitoring system

When a fault occurs in the NOx monitoring system, a message appears on the display together with the yellow warning lamp (CHECK) and the MIL symbol. If the system detects that the fault persists, then the engine's output is reduced by 40% of maximum output. The engine output returns to normal when the system detects that the fault has been rectified.

Dosing system for emission control

If a fault occurs in the NOx dosing system, a message appears on the display together with the yellow warning lamp (CHECK).

1. INTRODUCTION AND SAFETY

1.17 Telematics gateway - if equipped

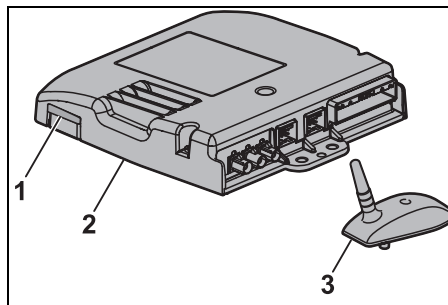
TGW is a fleet management system for truck owners.

Fleet/truck owner can sit at the comfort of his office/home and know the truck location, direction and speed in real time.

TGW has the below listed features which can be used to increase the productivity of the trucks and drivers:

1. Vehicle Track and trace
2. Fuel reports
 - Per truck
 - Per driver
3. Driver login/logout

TGW is located behind the Instrument panel. Telematics gateway is an on-board unit used for data logging and communication between the vehicle and truck server. The telematics gateway will transfer the information to support the vehicle related services. To enable the communication to the truck server, the TGW services must be activated.



The system consists of:

- 1 Sim card
- 2 Telematics gateway unit
- 3 Antennas (GSM and GPS)

GSM Communication

Telematics gateway has an integrated GSM module for the data communication to and from the vehicle. The control unit has a slot for a SIM-card. The GSM antenna is mounted on the truck roof (combined GSM/GPS-antenna).

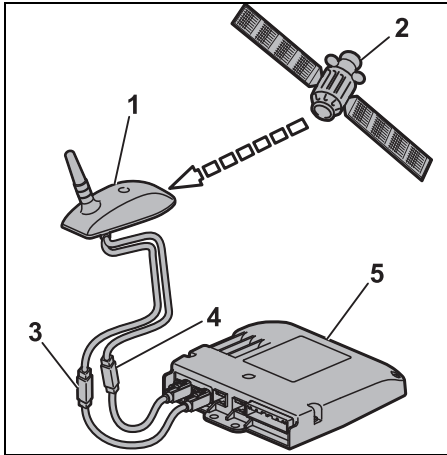


CAUTION

Do not place any metal objects over the antenna mounted on the truck roof.

Do not place any other transmitting antennas near the GPS/GSM antenna. Keep minimum of 30 cm distance .

GPS Satellite positioning

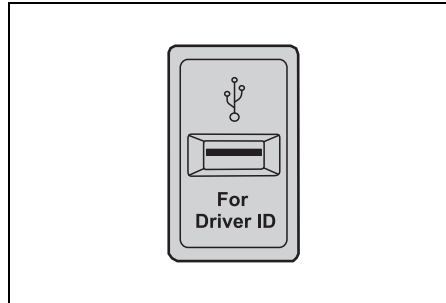


1. Antenna
2. Satellite
3. GPS connector
4. GSM connector
5. Telematics gateway unit

Telematics gateway can determine the geographic position of the vehicle through GPS-positioning system. The GPS unit calculates the position with the help of signals from at least three satellites. The accuracy of truck

location depends on the number of satellites that are in contact with the truck unit. The GPS antenna is mounted on the truck roof (combined GSM/GPS-antenna).

Telematics, dashboard



The USB interface will be available in the trucks having fleet management services. The USB interface is located on the dashboard, where the driver can plug in his USB key before he starts driving.

Electrical application

- The TGW can be installed in a number of different configurations; stand alone, in combination with Personal Digital Assistant/Personal Computer etc.

- To serve as a gateway for remote services (GSM/GPRS).
- Transfer vehicle data logged in other ECU's to back office portal.
- Vehicle data logging, e.g. fuel economy.
- Driver data logging.
- Geographical positioning of the vehicle (integrated).
- Event driven reporting and logging, i.e. tracking.
- Gateway to the vehicle for remote services such as, SW download, remote diagnostics, remote immobilisation, E-call etc.

The TGW also provides a SIM (Subscriber Identity Module) card reader and USB interface.

1. INTRODUCTION AND SAFETY

The vehicle electrical and electronic system

- GPS
- GSM
- Driver ID Interface - USB

Vehicle data readout

When a vehicle data read out request is sent to the vehicle by back office, it is received by TGW and sent via Controller Area Network (CAN) to EMS (Engine Management System) to respond with the requested data. EMS responds on CAN with vehicle data and TGW receives it and gateways it to the back office on a wireless network.

1.18 Open source software

Your **UD Trucks** vehicle contains various software programs. Some of those programs are open source software, which among other things means that you may have the right to gain access to the source code. This depends on the license terms for the respective software, as agreed between **UD Trucks** with its affiliated companies and the respective licensors.

For further information about **UD Trucks** use of open source software and about where you can get access to the relevant source code, as well as the applicable copyright notices and developer credits, license terms and legal disclaimers, please visit www.udtrucks.com/opensource.

1. INTRODUCTION AND SAFETY

1.19 Biodiesel

FAME (Fatty Acid Methyl Esters)

UD Trucks accepts max 10% FAME in diesel fuel (in accordance with EN590) to be used in Croner products without any specific service requirements. Fuel blends containing up to 10% biodiesel FAME can be used without any restraints in service recommendations.

 **CAUTION**

It is not permissible to add diesel boosters to the fuel.

 **CAUTION**

It is not permissible to run on 100% FAME.

UD Trucks accepts extended FAME use, up to 30% blend based on market in standard diesel fuel ready mixed from fuel supplier, to be used in the **UD Trucks** engines specified

below and under specific conditions and with certain limitations. For fuel blends with more than 10% biodiesel FAME, specific service requirements and rebuilds of fuel system must be applied.

Engine and vehicle scope

These recommendations are valid for trucks that fulfil the following conditions:

- GH5E with Euro III, V,
- GH8E with Euro III,V,

Engines listed above, are able to run with fuel blends containing up to 30% FAME under specific conditions:

- Oil quality VDS-3 or VDS-4/4.5 must be used
- Viscosity grade 15W/40
- Diesel fuel must comply with EN590
- FAME fuel must comply with EN14214
- The fuel must be ready-mixed from the fuel supplier.

 **CAUTION**

Other products which are not FAME and/or do not comply with these standards are NOT supported as engine fuels by UD Trucks, and no warranty will be accepted in case of damage.

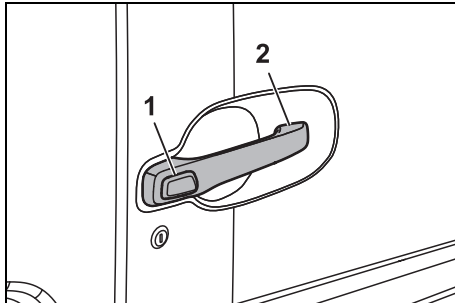
2. GETTING IN AND OUT OF THE CAB

2.1 Doors

Opening and closing the doors from outside

Opening the door

- Hold the handle firmly.
- Press the push button and simultaneously pull the handle, the door opens.



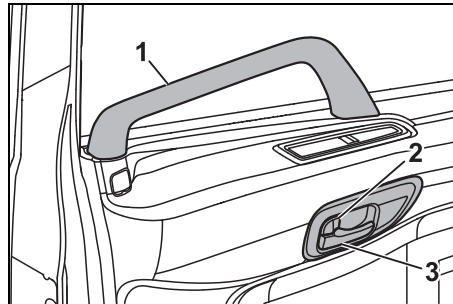
1. Push button
2. Handle

Closing the door

- Hold the handle and push gently. The door closes and also locks with a latch mechanism.

Opening the door from inside

- Unlock the knob if the knob is in locked position.
- Pull the handle inner and simultaneously push the door by holding the handle.



1. Handle
2. Lock knob
3. Handle inner

CAUTION

Check both sides of the vehicle and ensure that the path for opening the door is free of obstacle so that it is safe to open.

Closing the door from inside

- Hold the handle and pull it, till the door locks.
- Push the lock knob to lock the door.

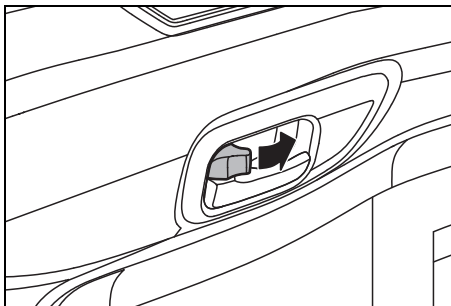
WARNING

Make sure that the doors are closed and locked before starting the vehicle.

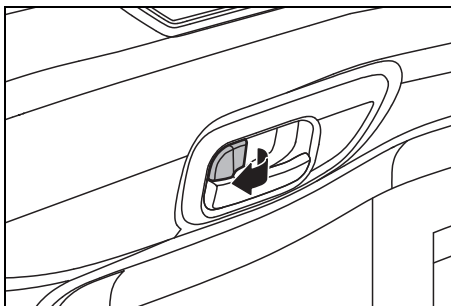
2. GETTING IN AND OUT OF THE CAB

Locking and unlocking the door

To lock the doors from inside, push the lock knob.



The door can be unlocked by pulling the lock knob.



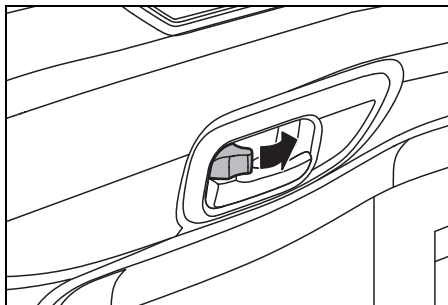
Centre lock - if equipped

NOTE

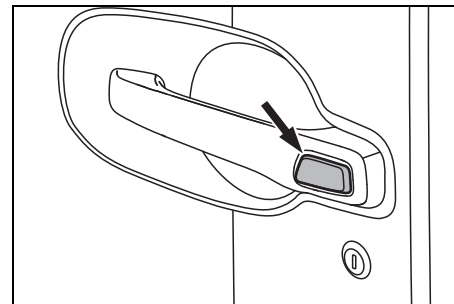
If the vehicle is equipped with the centre lock feature, by operating the driver side lock knob you can also lock or unlock the passenger door. When the key is used to lock or unlock the driver door, it also lock or unlock the passenger door.

Locking the door without a key

1. Push the lock knob to the lock position.



2. Press the push button and close the door.



NOTE

Ensure that the windows are closed before locking the door.

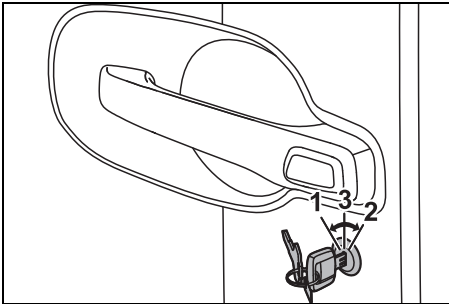
NOTE

Do not leave the keys inside the vehicle when locking the door from outside without keys.

2. GETTING IN AND OUT OF THE CAB

Locking and unlocking the door from outside

To unlock or lock the door from outside, insert the ignition key into the key hole and turn the key towards the unlock or lock position accordingly.



1. Lock position
2. Unlock position
3. Insertion position

Return the key to the insertion position to remove it.

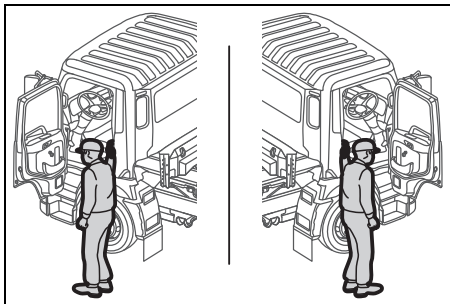
2. GETTING IN AND OUT OF THE CAB

2.2 When getting into the cab

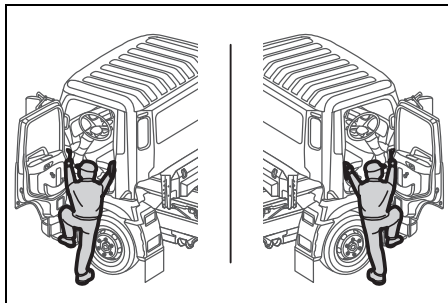
WARNING

- Be careful when getting in and out of the cab, to avoid slipping or falling.
- Maintain 3 point contact at all times with at least 2 feet and 1 hand or 2 hands and 1 foot firmly placed during all phases of getting in and out of the cab.

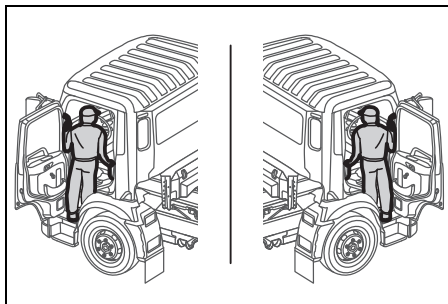
1. Open the door and hold the rear handle.



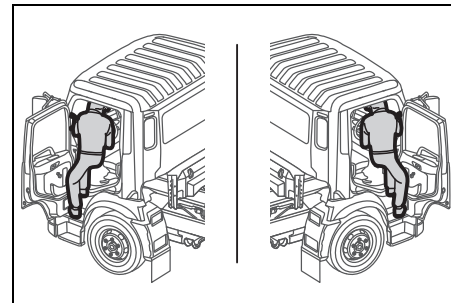
2. Hold the lower handles and climb the 1st step.



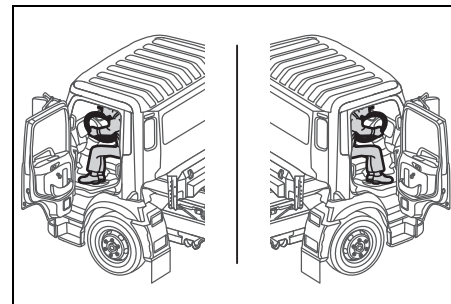
3. Hold the upper and rear handle, and climb the 2nd step.



4. Step onto the cab floor.



5. Position yourself comfortably in the driver's seat.



6. Close the door.

2. GETTING IN AND OUT OF THE CAB

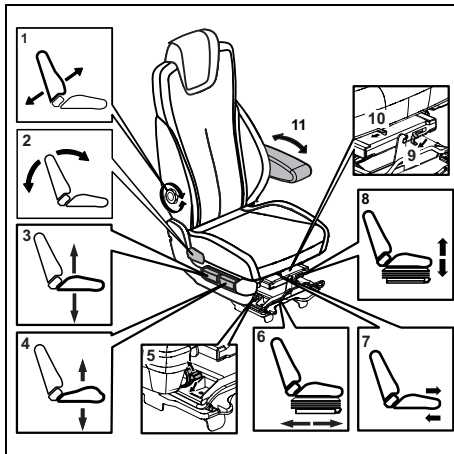
When getting out

When getting out, follow the reverse order of getting in.

2. GETTING IN AND OUT OF THE CAB

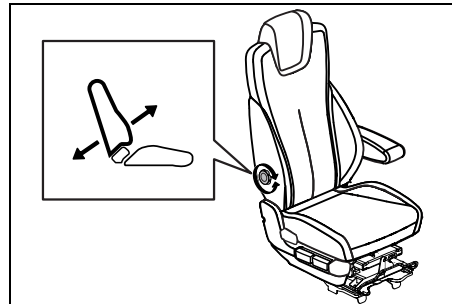
2.3 Seats

Driver seat - With Air suspension with lower anchorage on seat



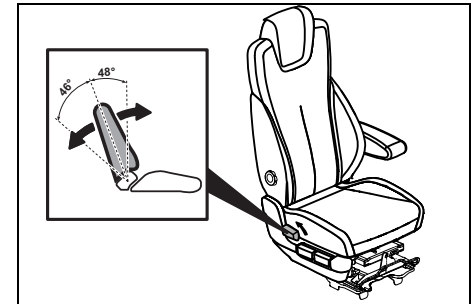
1. Lumber adjustment knob
2. Backrest adjustment
3. Rear lifter adjustment
4. Front lifter adjustment
5. Adjustable damper knob
6. Longitudinal seat adjustment
7. Seat cushion longitudinal adjustment
8. Automatic suspension adjuster (Air suspension)
9. Suspension lock lever
10. Seat cushion adjustment lever
11. Armrest adjustment

Lumber adjustment



Turn the knob on the right side of the seat to adjust the fit of the lower seat back. Using this is especially effective when driving long distances. The lumbar support moves maximum 40mm from its zero position.

Backrest adjustment



When the backrest recliner handle is lifted upwards, it unlocks the recliner and allows the user to adjust the backrest position. During the adjustment the handle must be held in the lifted state and once the desired backrest position is achieved the handle must be released to lock the backrest.

The locking range is 48° forward from the normal position and 46° back from the normal position.

2. GETTING IN AND OUT OF THE CAB

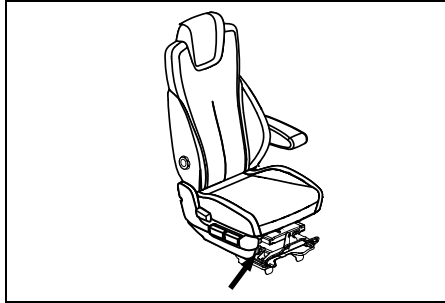
Front and rear lifter adjustment



When the front handle is lifted upwards, the front of the seat cushion can be raised or lowered. When a desired position is reached, release the handle for cushion to lock in place. Total upward travel from the lowest point is 46mm with 5 locking positions.

When the rear handle is lifted upwards, the back of the seat cushion can be raised or lowered. When a desired position is reached, release the handle for cushion to lock in place. Total upward travel from the lowest point is 46mm with 5 locking positions.

Adjustable damper knob



Suspension hardness can be changed by adjusting damper knob.

Longitudinal seat adjustment



When the slide rail handle is pulled upwards the tracks are unlocked, allowing the seat to be moved forwards and backwards. Once a desired position is achieved, release the handle to lock the seat in place. The sliding position can be adjusted over steps of 10mm each, allowing a total longitudinal adjustment of 160 mm.

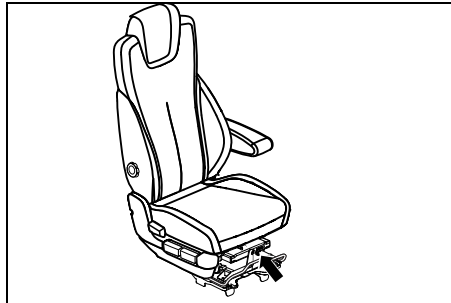
2. GETTING IN AND OUT OF THE CAB

Seat cushion longitudinal adjustment



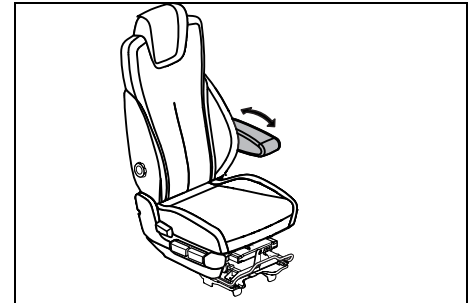
While pushing the slide lever to the right, adjust the seat cushion to the desired position. The seat cushion can be adjusted two positions forward from the standard position. Total travel is 40mm with increments of 20mm.

Automatic suspension adjuster



This seat automatically sets the initial vertical height based on driver weight. It is equipped with vertical suspension. Movement of vertical suspension varies depending on the weight of the driver and road condition. This vertical movement can be locked by pushing seat suspension lock lever towards right.

Armrest adjustment



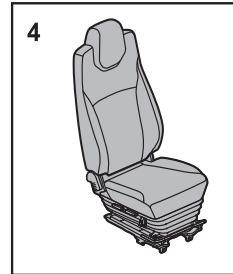
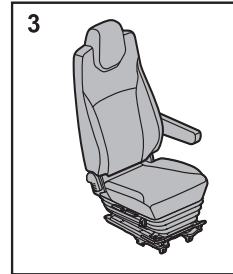
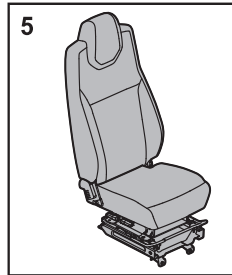
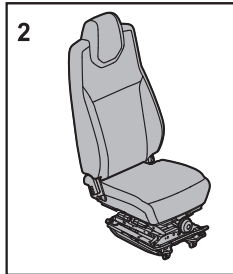
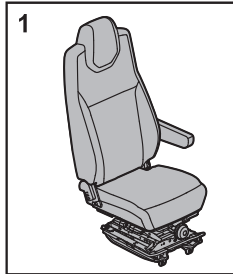
The armrest can be moved by hand to adjust its angle. First, lower it all the way to the bottom and then lift it up to the position that is comfortable for driving. To adjust to a lower position, fold it to the retract position, lower it fully, and readjust the position.

Armrest rotates maximum of 119° and it locks at the angle of 46° from its extreme down position.

2. GETTING IN AND OUT OF THE CAB

Driver seat - Mechanical, Air suspension with lower anchorage on BIW, Fixed seat

Note: Your vehicle can be fitted with any one of the following seats.



1. Mechanical adjustment driver seat - with armrest
2. Mechanical adjustment driver seat - without armrest
3. Air suspension driver seat - with armrest
4. Air suspension driver seat - without armrest
5. Fixed driver seat

2. GETTING IN AND OUT OF THE CAB

DANGER

Do not adjust the seat while driving.

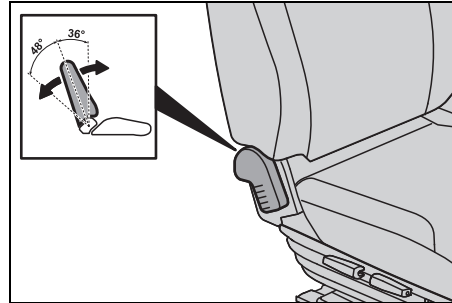
NOTE

Armrest usage is recommended only for longer/highway drives.

NOTE

Adjust the driver seat to a position where all the switches and pedals can be operated easily. Make sure that the seat latch engages and is locked firmly after adjustment.

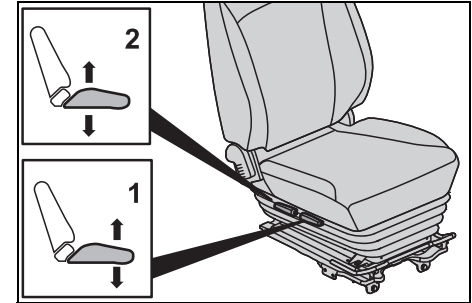
Backrest adjustment



When the backrest recliner handle is rotated upwards, it unlocks the recliner and allows the user to adjust the position of the backrest. During adjustment, the handle must be held while lifted and once the desired backrest position is achieved, the handle must be released to lock the backrest. The backrest locks in steps of 3°.

The locking range is 36° forward from the normal position and 48° back from the normal position.

Seat tilt and height adjustment



1. Front handle operation
2. Rear handle operation

When the front handle is lifted, the seat cushion can be raised or lowered. When a desired position is reached, release the handle to lock the cushion in place. Five locking positions are possible over 60 mm of the total lift.

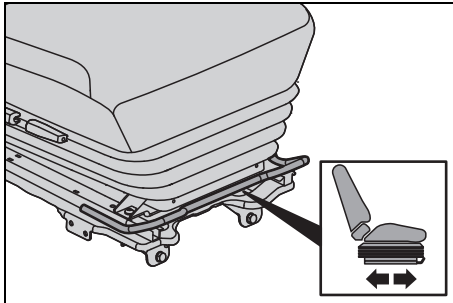
When the rear handle is lifted, the back of the seat cushion can be raised or lowered. When the desired position is reached, release the handle for the cushion to lock in place. Five locking positions are possible over 60 mm of the total lift.

2. GETTING IN AND OUT OF THE CAB

NOTE

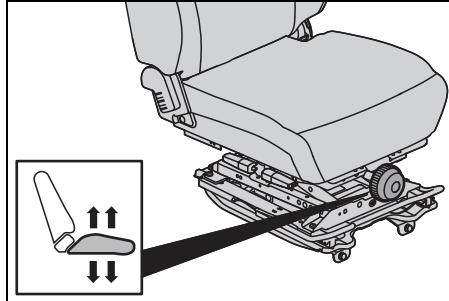
The height of the seat can be adjusted by operating both the front and rear handle simultaneously.

Longitudinal seat adjustment



When the slide rail handle is pulled upwards, the tracks are unlocked allowing the seat to be moved back and forward. Once the desired position has been reached, release the handle to lock the seat in place. The sliding position can be adjusted over 16 steps of 10mm each, allowing a total longitudinal adjustment of 160mm.

Suspension height adjustment - Mechanical adjustment driver seat



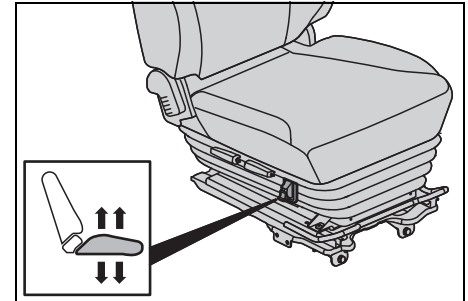
When the height adjuster is turned clockwise, it stiffens the mechanical spring and when it is turned anticlockwise, it softens the mechanical spring.

This allows the user to adjust the stiffness of the mechanical suspension for comfort. It also lets the user to raise or lower the suspension to adjust the height. The suspension can be adjusted for a range 50 kg to 130 kg of driver weight to a maximum height of 100mm.

NOTE

Driver must adjust the dial according to their own body weight to ensure that the suspension is in mid-position and have a good ride comfort and right suspension behaviour before starting the driving.

Suspension height adjustment - Air suspension driver seat



When the air suspension adjuster is lifted upwards, it inflates the air bellows and when it is pushed downwards, it deflates the air bellows.

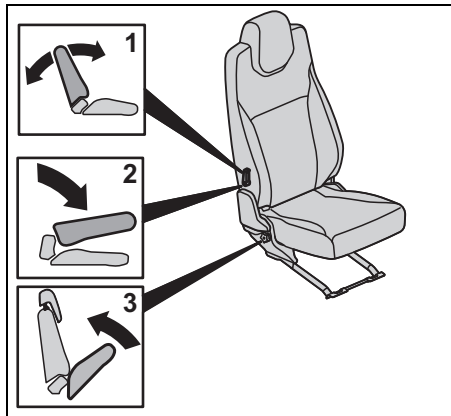
2. GETTING IN AND OUT OF THE CAB

This allows the user to adjust the amount of stiffness in the air suspension for comfort. It also lets the user raise or lower the suspension to adjust the height. The suspension can be adjusted up to a maximum height of 100mm.

NOTE

Driver must inflate the air in the suspension to ensure it is in mid-position and to have good ride comfort and right suspension behaviour before starting the driving.

Passenger seat -Type 1



1. Backrest adjustment
2. Backrest full fold down
3. Cushion flip

Backrest adjustment

When the backrest recliner handle is pulled upwards, it unlocks the recliner and allows the user to adjust the backrest position. During the adjustment, the handle must be lifted and once the desired backrest position has been reached the handle must be released to lock the backrest in position. The backrest locks in steps of 3°. The locking range is 54° back from vertical.

Fully folding down

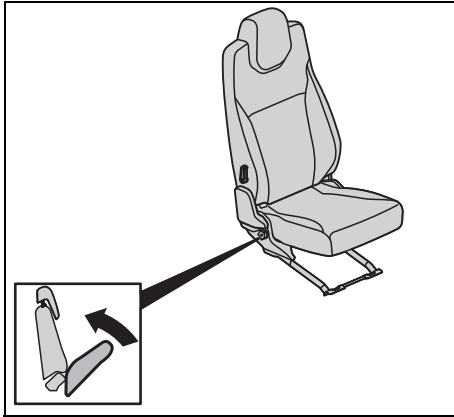
CAUTION

Do not sit or stand on the passenger seat in while it is folded.

Pull the recliner handle to unlock the backrest. While backrest is unlocked, it can be folded fully. The backrest can be returned to the upright by unlocking the recliner handle.

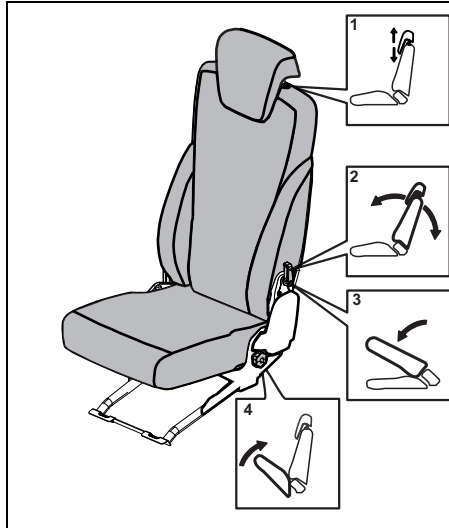
2. GETTING IN AND OUT OF THE CAB

Cushion flip



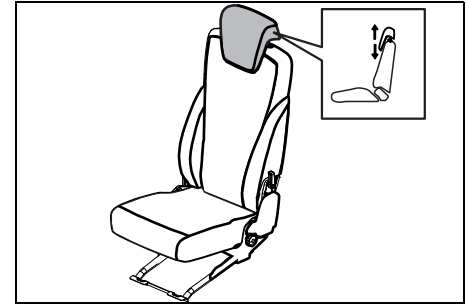
Lower cushion can be folded by turning the cushion flip knob.

Passenger seat - Type 2



1. Headrest adjustment
2. Backrest adjustment
3. Backrest full fold down
4. Cushion flip

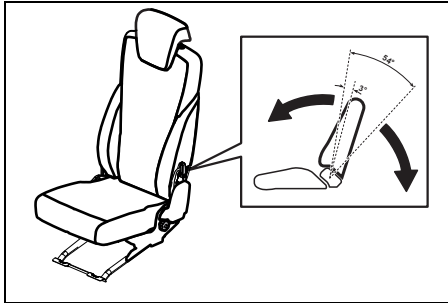
Headrest adjustment



The height of the headrest can be adjusted at 3 levels by moving the headrest by hand. Push the headrest lock release button to return the headrest to the standard position.

2. GETTING IN AND OUT OF THE CAB

Backrest fold down



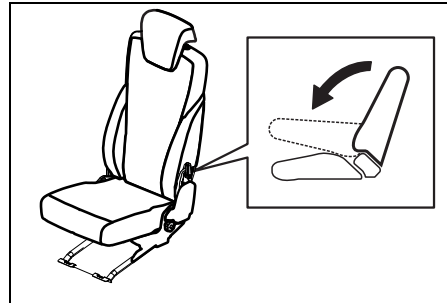
When the backrest recliner handle is pulled upwards, it unlocks the recliner and allows the user to adjust the backrest position. During the adjustment the handle must be held in the lifted state and once the desired backrest position is achieved the handle must be released to lock the backrest.

The backrest locks in steps of 3°. The locking range is 54°.

Backrest full fold down

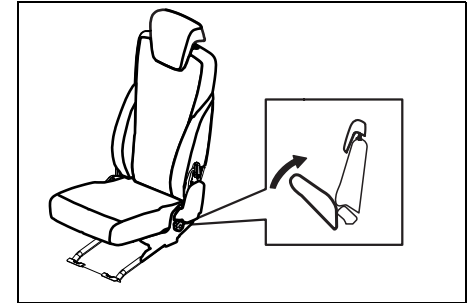
CAUTION

Do not sit or stand on the passenger seat in folded condition.



Pull up the recliner handle to unlock and adjust the backrest position. In unlocked condition the backrest can be folded fully. The backrest can be brought back to upright position by pushing handle down and simply lifting the backrest upwards until a locking sound is heard.

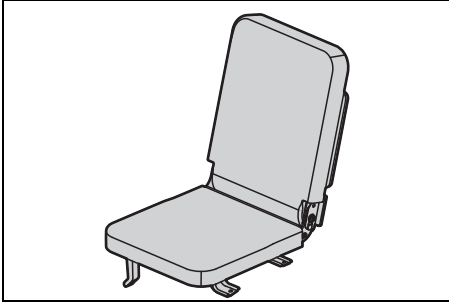
cushion flip



Lower cushion can be folded by turning the knob provided at the left side of the seat.

2. GETTING IN AND OUT OF THE CAB

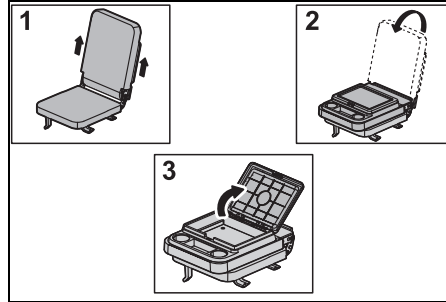
Centre seat



NOTE

Always keep the centre seat backrest in folded down condition, when not in use.

The centre seat can also be used to store items. In order to access the storage, follow the steps below:



1. Lift the backrest to unlock.
2. Fold down the backrest.
3. Open the cover.

2. GETTING IN AND OUT OF THE CAB

2.4 Seat belts

NOTE

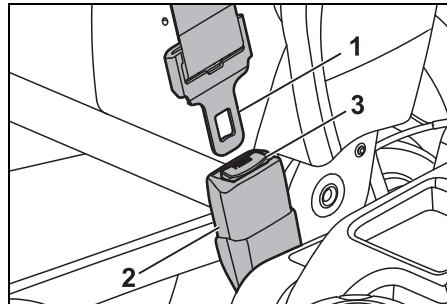
Always wear the seat belt while driving.

DANGER

Do not adjust the seat belt while driving. Adjusting the seat belt while driving can distract the driver attention.

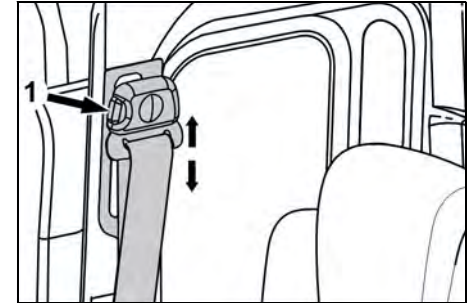
Driver and passenger seats

- Make sure that the seat belt is not twisted when wearing it. Adjust the seat belt to the user's comfort.
- To release the seat belt, press the red button at the end of the buckle. The belt will automatically wind up. Always hold the tongue while returning the belt to its retracted position.



1. Tongue
2. Buckle
3. Button

Shoulder strap



1. Height adjustment knob

Driver side shoulder strap height can be adjusted to five different positions. Press the height adjustment knob and move the shoulder strap up or down. Depending on height of the driver, adjust the height of the shoulder strap to avoid belt touching driver neck.

2. GETTING IN AND OUT OF THE CAB

Three-point seat belt with ELR (Emergency Locking Retractor) device

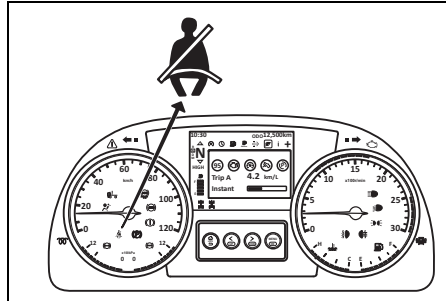
NOTE

- Seat belts with ELR device can be extended and retracted freely. The mechanism automatically holds the belt if it is pulled rapidly above a certain speed.
- Replace the seat belt if it is damaged or found to be defective at authorised UD trucks dealer.

Precautions for wearing seat belts

The warning light will light up to warn the driver, if the driver tries to drive without wearing the seat belt, when the ignition key is turned ON or START.

Seat belt warning light



With the seat belt reminder feature, the tell-tale will start blinking with a sound when driver has not fastened seat belt.

2. GETTING IN AND OUT OF THE CAB

2.5 Steering wheel adjust

Method of adjustment

⚠ DANGER

Do not adjust the steering wheel while driving.

The steering wheel has two types of adjustment

Forward and backward adjustment,
up and down adjustment.

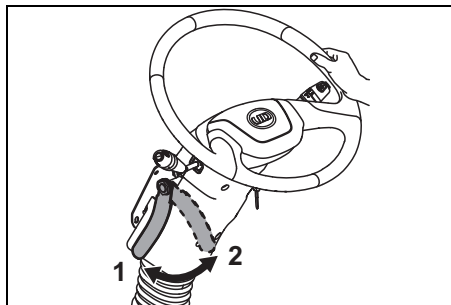
Follow the below steps to adjust the steering wheel position:

1. Adjust the seat position before adjusting the steering wheel position.

⚠ WARNING

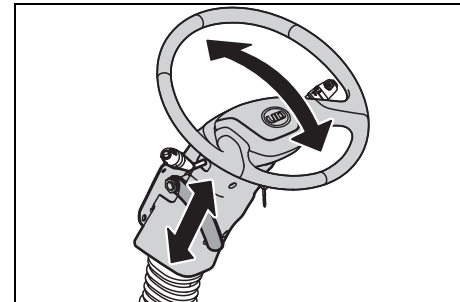
Always keep firm grip on the steering wheel during adjustment of steering wheel up or down. without firm grip the steering wheel may fall down and can cause injury to user.

2. Grip the steering wheel and pull the lock lever to release the lock.



1. Steering wheel locked
2. Steering wheel unlocked

3. The tilt adjustment allows the steering wheel to be moved up or down.



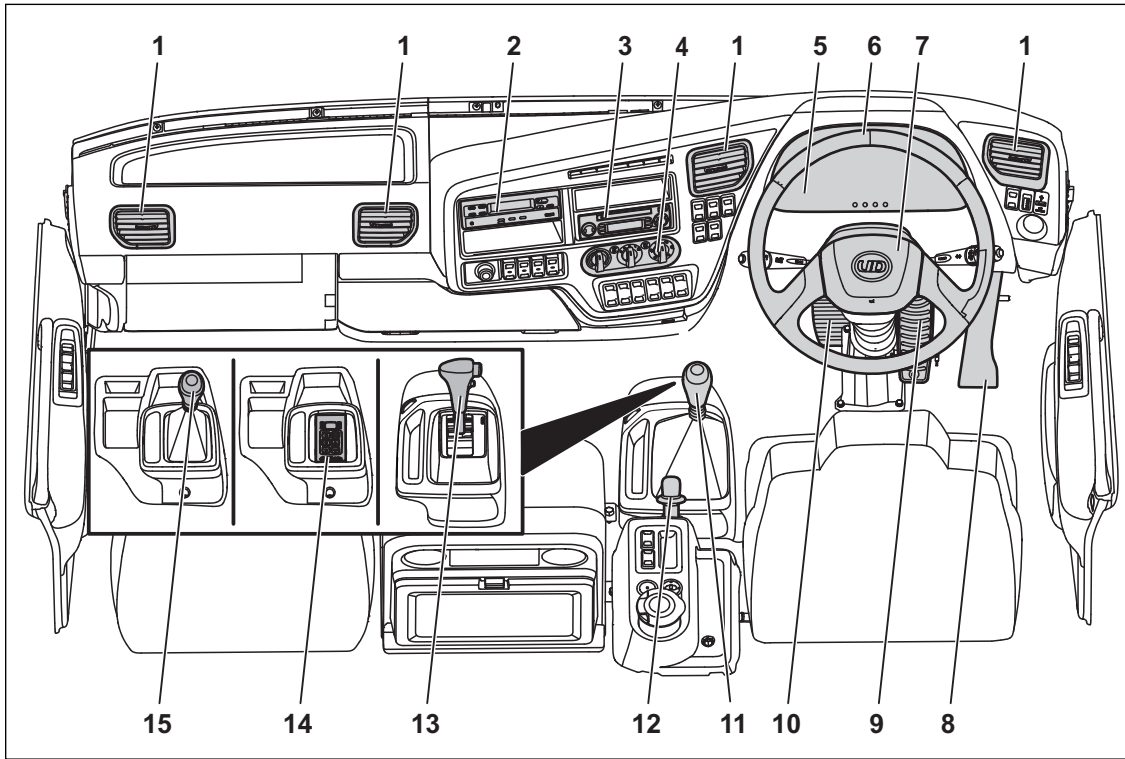
4. The telescopic adjustment allows the steering wheel to be moved back and forward.
5. After the steering wheel has been moved to a comfortable position, push the lock lever to lock the steering wheel.
6. Ensure the steering wheel is locked securely in this position.

3. EQUIPMENT DESCRIPTION AND OPERATION

3. EQUIPMENT DESCRIPTION AND OPERATION

3.1 Instruments

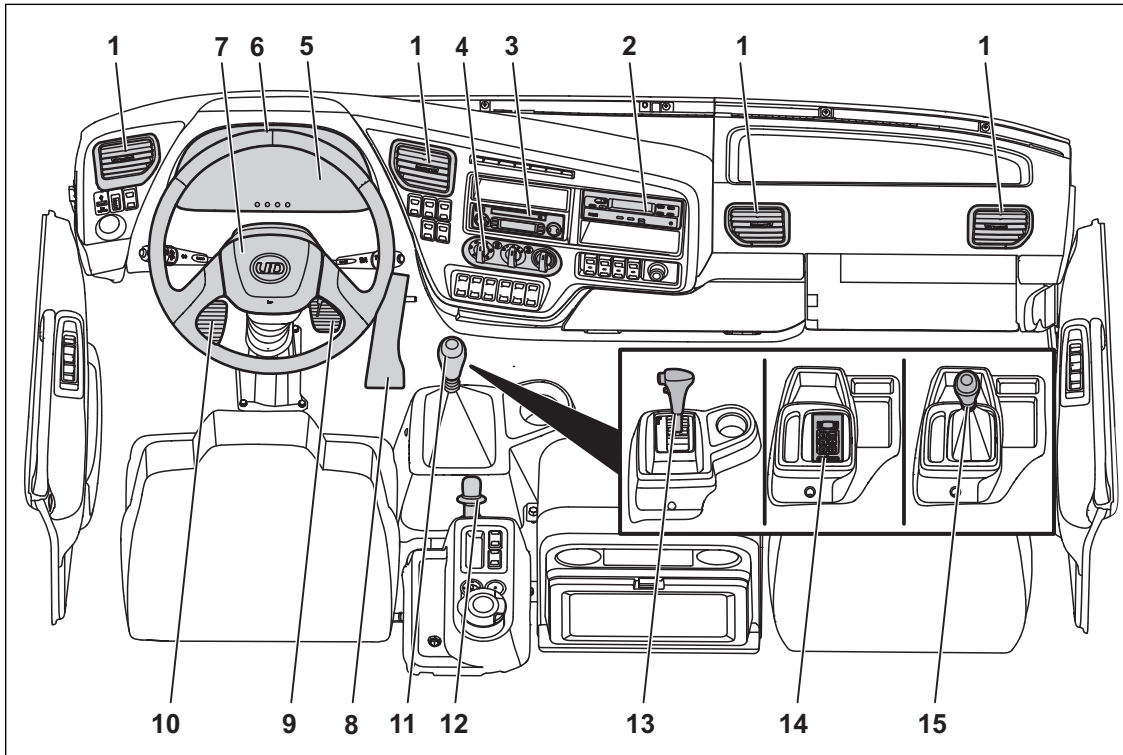
Instrument panel and controls - RHD



1. Air outlet
2. Tachograph (if equipped)
3. Radio
4. Control panel climate unit
5. Instrument cluster
6. Steering wheel
7. Horn pad
8. Accelerator pedal
9. Brake pedal
10. Clutch pedal
11. Gear shift lever 6 Speed
12. Parking brake
13. Range selector lever
(Allison 2500 Series)
14. Range selector switch
(Allison 3000 Series)
15. Gear shift lever 9-Speed

3. EQUIPMENT DESCRIPTION AND OPERATION

Instrument panel and controls - LHD



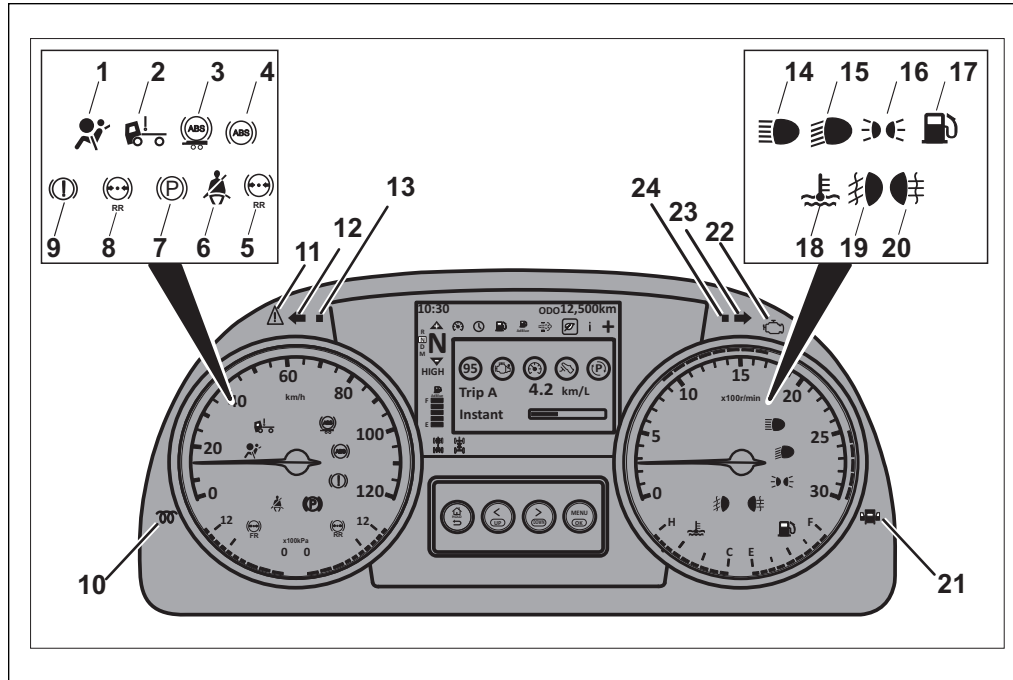
1. Air outlet
2. Tachograph (if equipped)
3. Radio
4. Control panel climate unit
5. Instrument cluster
6. Steering wheel
7. Horn pad
8. Accelerator pedal
9. Brake pedal
10. Clutch pedal
11. Gear shift lever 6 Speed
12. Parking brake
13. Range selector lever (Allison 2500 Series)
14. Range selector switch (Allison 3000 Series)
15. Gear shift lever 9-Speed

Before driving this vehicle, locate the instruments and controls, and become thoroughly familiar with their operation.

3. EQUIPMENT DESCRIPTION AND OPERATION

Instrument cluster (IC)

The IC provides the user with information via using gauges, tell-tales and a display.



1. SRS
2. Cab tilt
3. ABS fault on trailer
4. ABS fault on rigid
5. Air pressure, rear brake
6. Seatbelt reminder
7. Park
8. Air pressure, rear brake
9. Brake air pressure high/low
10. Engine pre-heat
11. Stop-Red color
Check-Yellow color
12. Left turn light indicator control
(This will blink along with 12)
13. Left turn light indicator trailer control
(This will blink along with 12)
14. High beam
15. Dipped beam
16. Position lamp
17. Fuel level
18. Engine coolant temp
19. Fog light front
20. Fog light rear
21. Door open warning light
22. OBD, (MIL)
23. Right turn light indicator control
(This will blink along with 23)
24. Right turn light indicator trailer control
(This will blink along with 23)

Note: Availability of gauges/tell-tales depends on the options chosen.

All the gauges and tell-tales may not be used on all vehicles.

3. EQUIPMENT DESCRIPTION AND OPERATION

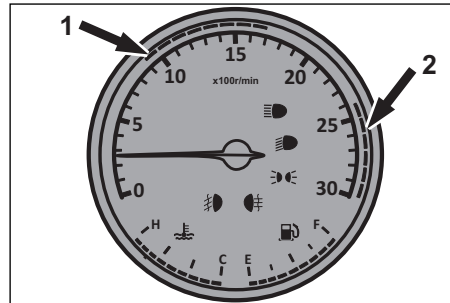
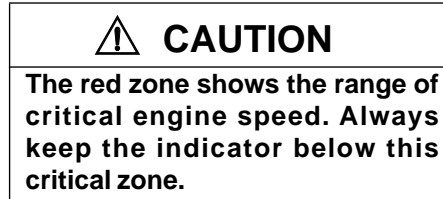
Gauges

The gauges used may be analogue or digital.

Analogue gauges in the Instrument Cluster:

- Tachometer
- Speedometer
- Coolant temperature gauge
- Fuel level gauge

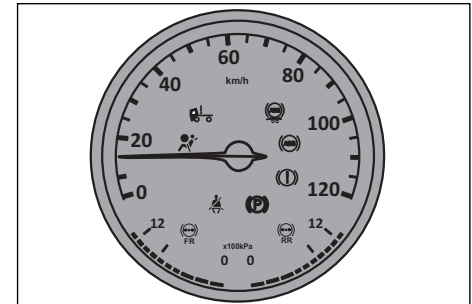
Tachometer



(1) Green Zone	900 - 1700 rpm
(2) Red Zone	2400 - 3000 rpm

The tachometer shows the engine speed in revolutions per minute. The green zone indicates economic driving. Always operate the vehicle in green zone except when using the auxiliary brake.

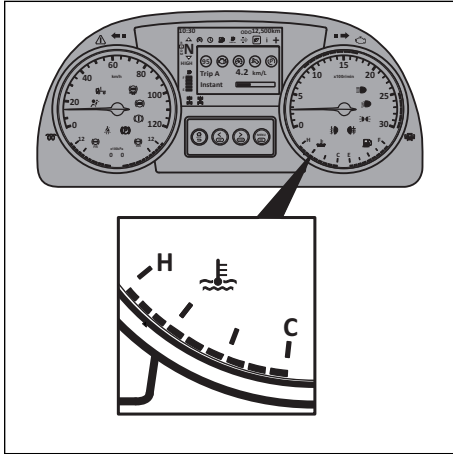
Speedometer



The speedometer shows the vehicle's speed in kilometre per hour. The speedometer range is from 0 – 120 km/h.

3. EQUIPMENT DESCRIPTION AND OPERATION

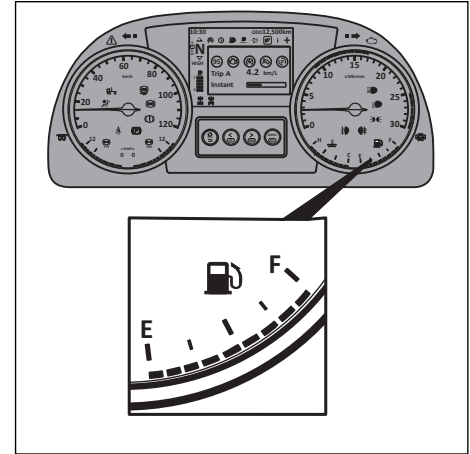
Coolant temperature gauge



The purpose of the engine coolant temperature gauge is to display the engine coolant temperature. The engine coolant temperature gauge has a warning lamp indicator (Positioned on right, where it is marked **H**) associated with it. It will light up when the coolant temperature is high.

When the coolant temperature is high STOP tell-tale lights up and engine will start deteriorating, immediately stop the vehicle and contact authorised **UD Trucks** dealer for assistance.

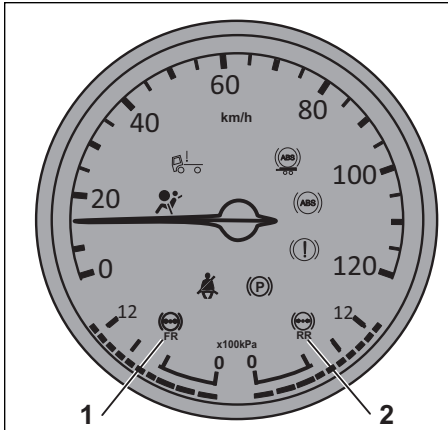
Fuel level gauge



The fuel level gauge shows the approximate amount of fuel in the tank. The fuel gauge displays the fuel level when the ignition key is ON. When the fuel level is less than 10% of the fuel tank, the low fuel tell-tale will light up.

3. EQUIPMENT DESCRIPTION AND OPERATION

Air pressure gauge



1. Air pressure, front brake

2. Air pressure, rear brake

(System pressure 770-930kPa)











This gauge shows the air pressure in the air reservoir.

LED count	Pressure (Bar)	LED count	Pressure (Bar)
1	0-2	6	7
2	2.5 - 4	7	7.5
3	4.5 - 5.5	8	8 -9.5
4	6	9	10-11.5
5	6.5	10	>12











3. EQUIPMENT DESCRIPTION AND OPERATION

3.2 Indicators













The following tell-tales are located on the instrument cluster

Sl. no.	Tell-tale Symbols	Description	Sl. no.	Tell-tale Symbols	Description
1		Engine Oil pressure	6		Gear range high
2		Battery charge	7		Gear range low
3		Door open	8		Engine coolant temp
4		Ad blue	9		Auxiliary brakes
5		Fuel level	10		Retarder failure

3. EQUIPMENT DESCRIPTION AND OPERATION

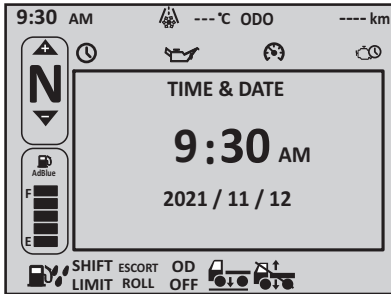
Sl. no.	Tell-tale Symbols	Description	Sl. no.	Tell-tale Symbols	Description
11		Trailer hand brake activation	17	OD OFF	O/D Mode status
12		Road speed limitation	18		Water in fuel
13		Transmission overheat/Malfunction	19		Fuel filter clogging
14		Brake pad wear indication	20		Air filter restriction
15		PTO	21		Transmission service reminder
16	SHIFT LIMIT	Transmission shift inhibit	22		Maintenance monitoring

3. EQUIPMENT DESCRIPTION AND OPERATION

Sl. no.	Tell-tale Symbols	Description	Sl. no.	Tell-tale Symbols	Description
23		Messages in queue	29		Yellow -Engine oil temperature moderate Red -Engine oil temperature critical
24		Regeneration ongoing	30		Engine oil level is low
25		Regeneration inhibit	31	 AdBlue	Ad blue level low (Color red)
26	 AdBlue	OBD Ad blue	32		Emission malfunction
27	 AdBlue	Ad blue quality low	33		Yellow-Gearbox oil moderate Red-Gearbox oil critical
28	 AdBlue	Ad blue level low (Color red)	34		Ferry level reached

3. EQUIPMENT DESCRIPTION AND OPERATION

Instrument, display



The display is located in the middle of the instrument cluster. The display can be used to see vehicle messages, control certain functions on the truck and see information about the truck, such as temperatures, levels and distances.

The layout of the display

If something occurs which demands the driver's attention, a vehicle message appears on the display. The display may show three types of messages: Information is indicated by a white tell-tale, warning is indicated by a yellow tell-tale and stop is indicated by a red tell-tale.

The messages which require immediate action will appear with a symbol. If a red tell-tale light up while the engine is running, an alarm is also activated. Several messages can be active at the same time. When a new message is activated, the new message appears instead of the old one if the new one has the same or high severity.

When the vehicle message is displayed, the user has to acknowledge it by pressing the "ESC" button.



Control and warning lamps

The instrument has warning and control lamps to indicate warning and status. There are two lamps on the display: a white information lamp (**i**), a yellow warning lamp (**CHECK**) and a red stop lamp (**STOP**) which lights up with another tell-tale or together with a message on the display. The indicators light up according to the severity of the faults.

The driver will also be alerted by a buzzer when the following indicators light up:

- Hazard indicator,
- Direction indicator,
- Downhill RSL,
- PTO (When parking brake released),
- Seat belt and
- Stop.

3. EQUIPMENT DESCRIPTION AND OPERATION

	Buzzer	Pop up	IC tell-tale	Message list
	-	Popup appears, until ESC button is pressed	Tell-tale lights up continuously	Vehicle message appears continuously
	Heard continuously until the ESC button is pressed	Stop tell-tale lights up while there is a fault.	Tell-tale lights up continuously	Vehicle message appears continuously


“**CHECK**” Check at next stop

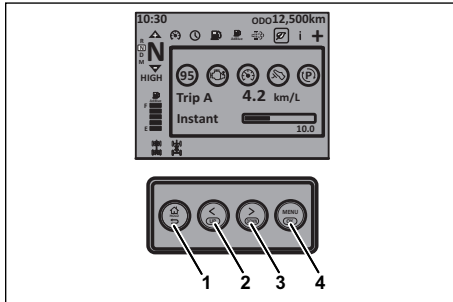
“**STOP**” Stop the vehicle immediately but please ensure you stop the vehicle in a safe place

3. EQUIPMENT DESCRIPTION AND OPERATION

3.3 Display menu

Display control interaction

 CAUTION
Do not update the parameters in the IC while the engine is running.



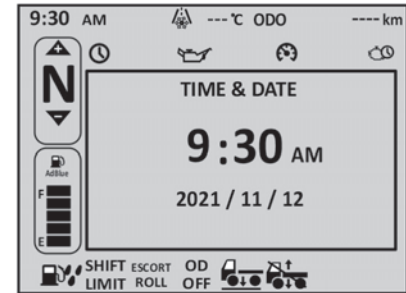
The display menu is controlled by two sorts of events.

Driver action events: The user can control the display with the push buttons listed below.

- Home button (1)
- Up button (2)
- Down button (3)
- Main Menu/OK button (4)

Software events: Internally generated events in the instrument cluster, for example fault message events and timers.

Default Screen

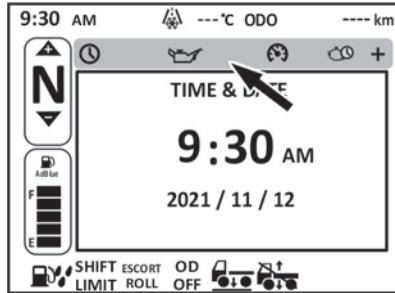


The default Screen or the display is in the middle of the instrument cluster. Display can be used to see vehicle messages, control certain functions on the truck and see information about the like temperatures, levels, etc.

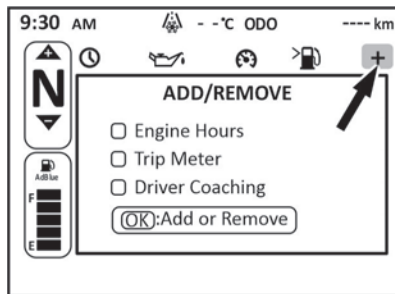
3. EQUIPMENT DESCRIPTION AND OPERATION

Favourite Menu

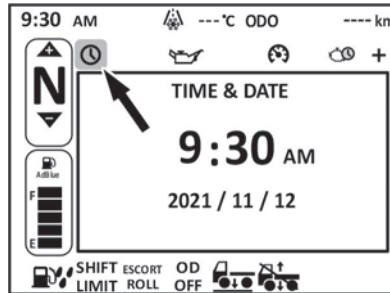
Favourite menu is displayed in the centre display screen. We can add and remove some of the menus from favourite menu.



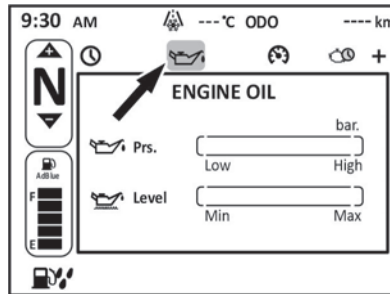
Some of the items can be removed and added to the favourite menu based on driver need using ADD/ REMOVE option.



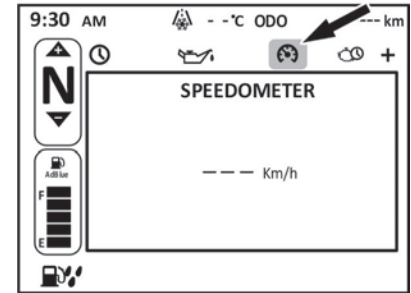
01.Time/Date



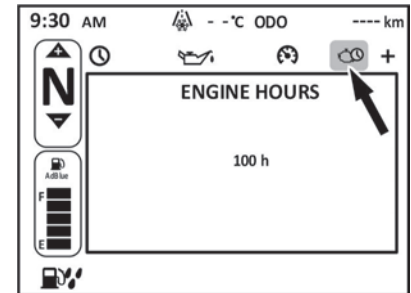
02.Engine Oil



03.Speedo Meter

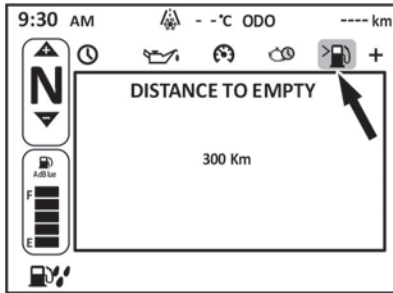


04.Engine Hours

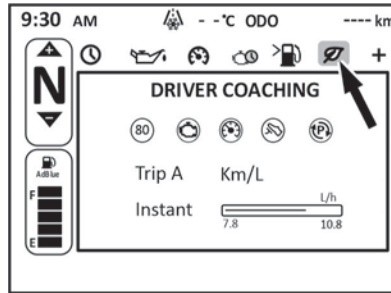


3. EQUIPMENT DESCRIPTION AND OPERATION

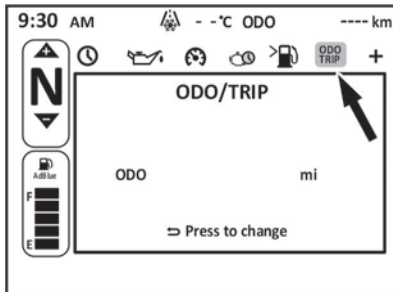
05.Distance to Empty



07.Driver coaching

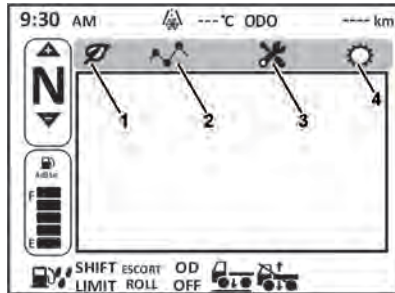


06.ODD/TRIP



3. EQUIPMENT DESCRIPTION AND OPERATION

Main menu



By pressing MENU button user can switch from favourite menu to main menu. There are four main menus available. User can toggle between all main menus using UP/ DOWN button.

- Driving Coaching menu (1)
- Monitoring menu (2)
- Maintenance (3)
- Settings (4)

3. EQUIPMENT DESCRIPTION AND OPERATION

1	Driver coaching	01.Engine & gear	01.Escot Eco		
			02.Escot M		
			03.Escot Eco OFF		
			04.Top Gear		
			05.Within Economy		
			06.Above Economy		
			07.Overrev		
			08.Engine load		
		02.Speed	01.Fleet overspeed		
			02.Cruise Control		
		03.Anticipation	01.Coasting		
			02.Brake Counter		
		04.Standstill	01.Idling		
		05.Deco Notification	01.Deco Notification (Enable/Disable)	Deco Notification Enabled/Disabled	
		06.Deco Illumination	01.Deco Illumination (Enable/Disable)	Deco Illumination Enabled/Disabled	
		07.Deco Notification Sound	01.Deco Notification (Enable/Disable)		
		08.Reset Driver Coaching	01.Reset Driver Coaching? (Yes/No)	Driver Coaching data reset successful	

3. EQUIPMENT DESCRIPTION AND OPERATION

2	Monitoring	01. Fuel Data	01. Instant Fuel	Instantaneous Fuel (--L/h)	
			02. Distance to empty	Distance to Empty (--km)	
			03. Leg Fuel	Leg Fuel (--L)	
			04. Average Fuel	Average Fuel (--L/100 Km or --km/L)	
			05. Reset Fuel Data	Reset Fuel Data..? (yes No)	Reset Fuel data reset Successful/Failed
		02. Fuel Coaching	01. MODE 1	MODE1 Selected Reset Fuel Data	Fuel coaching Data updated
			02. MODE 2	MODE2 Selected Reset Fuel Data	Fuel coaching Data updated
			03. MODE 2	MODE3 Selected Reset Fuel Data	Fuel coaching Data updated
		03. Trip Computer	01. Trip Distance	Trip Distance (Trip A-0.6km) (Trip B- 0.6km)	
			02. Trip Average Speed	Trip Distance (Trip A-20km/h) (Trip B-23km/h)	
			03 Reset trip A Data.	Reset trip A? (Yes No)	Trip A Data reset Successful
			04 Reset trip A Data.	Reset trip B? (Yes No)	Trip B Data reset Successful
		04. Vehicle Messages	01 STOP VEHICLE	Stop the vehicle	
			02 No Level Control Possible		

3. EQUIPMENT DESCRIPTION AND OPERATION

3	Maintenance	01. Diagnostics	01.Self Test	01.Telltale Test	
				02.Gauge Test	
				03.Display Test	
				04.Sounfd Test	
			02.Part Number	01.IECU	IECU Part Number HARDWARE PART No. XXXXXXXXXXXX SOFTWARE PART No. XXXXXXXXXXXX
				02.EMS	EMS Part Number HARDWARE PART No. XXXXXXXXXXXX SOFTWARE PART No. XXXXXXXXXXXX
				03.IC	IC Part Number HARDWARE PART No. XXXXXXXXXXXX SOFTWARE PART No. XXXXXXXXXXXX
		03.VIN Number	VIN Number xxxxxx		

3. EQUIPMENT DESCRIPTION AND OPERATION

3	Maintenance	01. Diagnostics	04. Vehicle Faults	01. Read Faults	01. IECU	TECU ECU FAULTS <U0CCC CC Inactive>	Occurrence Counter Last Event
					02. EMS	EMS FAULTS <C1006 38 Active>	Occurrence Counter Last Event
					03. IC	IC FAULTS <B1004 1E Inactive>	Occurrence Counter Last Event
				02. Clear Faults	01. IECU	All inactive faults are cleared	
					02. EMS	All inactive faults are cleared	
					03. IC	All inactive faults are cleared	
			05. Parameter Setting	01. IECU	IECU Parameters P1G51 P1G59	IECU Parameters 0	Set IECU Parameters 01 Range(0-3)
				01. IC	IC Parameters P1G58 P1G6M	IC Parameters Disable	

3. EQUIPMENT DESCRIPTION AND OPERATION

3	Maintenance	02. View Data	Engine hours warning 4674 h			
		03. Reset Data	Distance warning 00000000 km Distance Pre-warning 00000000 km	Engine hours warning 000000000.0 h Engine hours Pre warning 000000000.0 h	DateWarning 27/11/2021 Date PreWarning 27/10/2021	To Confirm Reset Data Press Enter Kay To Cancel Press Esc Key
		04. Since Last Service	Since last service <0.00 h> Vehicle Distance< 1.00 km> Calender Days<4970 Days>			

3. EQUIPMENT DESCRIPTION AND OPERATION

4	Settings	01. Time & Date	01.Set Time	SET TIME<00.00>		
			02.Set Date	SET DATE<11/11/2021>		
			03.Set Time Format	TIME FORMAT <12H/24H>		
			04.Set Date Format	Date Format YYYY/MM/DD DD/MM/YYYY MM/DD/YYYY		
		02. Language	01.English			
			02.Spanish			
			03.Bahasa			
			04.Thai			
			05.Arabic			
		03.Brightness				

3. EQUIPMENT DESCRIPTION AND OPERATION













4	Settings	04.Password	01.Workshop PW	Workshop PW 0000		
			02.Driver PW	Driver PW 0000		
		03.Change Password	01.Workshop PW	Workshop PW Enter Old Password 0000 Enter New password 0000		
			02.Driver PW	Driver PW Enter Old Password 0000 Enter New password 0000		
	04.Unit Setting	01.Fuel Consumption	Fuel Consumption <L/100Km> <Km/L>			
		02.Distance	Distance Km Mile			

3. EQUIPMENT DESCRIPTION AND OPERATION

4	Settings	05.Water in fuel	Activate Drain <YES> <NO>			
		06.RSL Setting	SET RSL 000 Range 0-120	Parameter Updated Turn Key OFF to ON		

3. EQUIPMENT DESCRIPTION AND OPERATION

Driver Coaching(1/3)

<p>1</p>     <p>DRIVER COACHING</p> <ul style="list-style-type: none"> 80  Engine & Gear 70  Speed 88  Anticipation 60  Standstill 	<p>2</p>     <p>DRIVER COACHING</p> <ul style="list-style-type: none"> Deco Notification Deco Illumination Deco Notification Sound Reset Driver Coaching 	<p>3</p> <p>Engine & Gear</p> <ul style="list-style-type: none"> 80 Escot Eco 70 Escot M 88 Escot Eco OFF 60 Top Gear 69 Within Economy 	<p>4</p> <p>Engine & Gear</p> <ul style="list-style-type: none"> 80 Top Gear 70 Within Economy 88 Above Economy 60 Overrev 69 Engine Load
<p>5</p> <p>Escot Eco</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>6</p> <p>Escot M</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>7</p> <p>Escot Eco OFF</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>8</p> <p>Top Gear</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>
<p>9</p> <p>Within Economy</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>10</p> <p>Above Economy</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>11</p> <p>Overrev</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>12</p> <p>Engine Load</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>
<p>1</p> <p>Speed</p> <ul style="list-style-type: none"> <input type="radio"/> Fleet Overspeed <input type="radio"/> Cruise Control 	<p>2</p> <p>Fleet Overspeed</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	<p>3</p> <p>Cruise Control</p> <div style="border: 1px solid black; width: 100%; height: 20px; margin-top: 20px;"></div>	

3. EQUIPMENT DESCRIPTION AND OPERATION

Driver Coaching(2/3)

<p>1</p> <p>Anticipation</p> <p><input type="radio"/> Coasting</p> <p><input type="radio"/> Brake counter</p>	<p>2</p> <p>Coasting</p> <p><input type="text"/></p>	<p>3</p> <p>Brake counter</p> <p><input type="text"/></p>	
<p>1</p> <p>Standstill</p> <p><input type="radio"/> Idling</p>	<p>2</p> <p>Idling</p> <p><input type="text"/></p>		
<p>1</p> <p>Deco Notification</p> <p><input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable</p>	<p>2</p> <p>Deco Notification Enabled</p>	<p>3</p> <p>Deco Notification</p> <p><input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable</p>	<p>4</p> <p>Deco Notification Disabled</p>
<p>1</p> <p>Deco Illumination</p> <p><input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable</p>	<p>2</p> <p>Deco Illumination Enabled</p>	<p>3</p> <p>Deco Illumination</p> <p><input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable</p>	<p>4</p> <p>Deco Illumination Disabled</p>

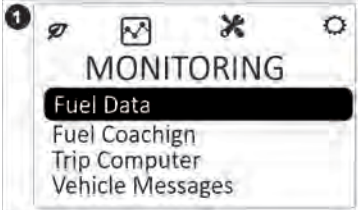
3. EQUIPMENT DESCRIPTION AND OPERATION

Driver Coaching(3/3)

1 Deco Notification Sound <input checked="" type="radio"/> Enable <input type="radio"/> Disable			
1 Reset Driver Coaching ? <input checked="" type="radio"/> Yes <input type="radio"/> No	2 Driver Coaching Data reset successful		

3. EQUIPMENT DESCRIPTION AND OPERATION

Monitoring(1/3)

<p>1</p>  <p>MONITORING</p> <p>Fuel Data</p> <p>Fuel Coachign</p> <p>Trip Computer</p> <p>Vehicle Messages</p>	<p>2</p> <p>Fuel Data</p> <p>Instant Fuel</p> <p>Distance to Empty</p> <p>Leg Fuel</p> <p>Average Fuel</p> <p>Reset Fuel Data</p>	<p>3</p> <p>Instantaneous Fuel</p> <p>-- L/h</p>	<p>4</p> <p>Distance to Empty</p> <p>-- km</p>
<p>5</p> <p>Leg Fuel</p> <p>-- L</p>	<p>6</p> <p>Average Fuel</p> <p>-- L/100km</p>	<p>7</p> <p>Reset Fuel Data ?</p> <p>Yes No</p>	<p>8</p> <p>Fuel data reset Successful</p>





3. EQUIPMENT DESCRIPTION AND OPERATION

Monitoring(2/3)

<p>1 Fuel Coaching</p> <p>Mode 1</p> <p>Mode 2</p> <p>Mode 3</p>	<p>2</p> <p>MODE1 Selected Reset Fuel Data</p>	<p>3</p> <p>Fuel Coaching Data Updated!</p>	
<p>1 Fuel Coaching</p> <p>Mode 1</p> <p>Mode 2</p> <p>Mode 3</p>	<p>2</p> <p>Mode 2 Enter Target Distance 10000 Km</p>	<p>3</p> <p>Fuel Coaching Data Updated!</p>	
<p>1 Fuel Coaching</p> <p>Mode 1</p> <p>Mode 2</p> <p>Mode 3</p>	<p>2</p> <p>Mode 3 Enter Target Days 30 Days</p>	<p>3</p> <p>Fuel Coaching Data Updated!</p>	

3. EQUIPMENT DESCRIPTION AND OPERATION

Monitoring(3/3)

<p>1</p> <p>Trip Computer</p> <p>Trip Distance</p> <p>Trip Average Speed Reset Trip A Data Reset Trip B Data</p>	<p>2</p> <p>Trip Distance</p> <p>Trip A -- mi Trip B -- mi</p>	<p>3</p> <p>Trip Average Speed</p> <p>Trip A -- mi/h Trip B -- mi/h</p>	<p>4</p> <p>Reset Trip A</p> <p>Yes <input type="button" value="No"/></p>
<p>5</p> <p>TRIP A data reset SUCCESSFUL</p>	<p>6</p> <p>Reset Trip B</p> <p>Yes <input type="button" value="No"/></p>	<p>7</p> <p>TRIP B data reset SUCCESSFUL</p>	
<p>1</p> <p>   </p> <p>MONITORING</p> <p>Fuel Data Fuel Coachign Trip Computer Vehicle Messages</p>	<p>2</p> <p>Vehicle Messages</p> <p>STOP VEHICLE</p> <p>No Level Control Possible Remote control switch Malf</p>	<p>3</p> <p>Stop the Vehicle</p>	

3. EQUIPMENT DESCRIPTION AND OPERATION

Maintenance(1/4)

<p>1 </p> <p>MAINTENANCE</p> <p>Diagnostics</p> <p>View Data Reset Data Since last service</p>	<p>2</p> <p>Diagnostics</p> <p>Self Test</p> <p>Part Number VIN Number Vehicle Faults Parameter Setting</p>	<p>3</p> <p>Self Test</p> <p>Telltale Test</p> <p>Gauge Test Display Test Sound Test</p>	
<p>1</p> <p>Diagnostics</p> <p>Self Test Part Number VIN Number Vehicle Faults Parameter Setting</p>	<p>2</p> <p>IECU</p> <p>EMS IC</p>	<p>3</p> <p>IECU Part number</p> <p>HARDWARE PART No. SOFTWARE PART No.</p>	<p>4</p> <p>IECU EMS IC</p>
<p>5</p> <p>EMS Part number</p> <p>HARDWARE PART No. SOFTWARE PART No.</p>	<p>6</p> <p>IECU EMS IC</p>	<p>7</p> <p>IC Part number</p> <p>HARDWARE PART No. SOFTWARE PART No.</p>	
<p>1</p> <p>Diagnostics</p> <p>Self Test Part Number VIN Number Vehicle Faults Parameter Setting</p>	<p>2</p> <p>VIN Number. XXXXXX</p>		

3. EQUIPMENT DESCRIPTION AND OPERATION

Maintenance(2/4)

<p>1</p> <p>Vehicle Faults</p> <p>Read Faults</p> <p>Clear Faults</p>	<p>2</p> <p>IECU</p> <p>EMS</p> <p>IC</p>	<p>3</p> <p>TECU ECU Faults</p> <p>U0CCC CC Inactive</p> <p>U0CCC CC Inactive</p> <p>U0CCC CC Inactive</p> <p>U0CCC CC Inactive</p> <p>U0CCC CC Inactive</p>	<p>4</p> <p>Occurrence Counter</p> <p>Last Event</p>
<p>5</p> <p>IECU</p> <p>EMS</p> <p>IC</p>	<p>6</p> <p>EMS Faults</p> <p>C1006 38 Active</p> <p>B1004 1E Inactive</p> <p>U1D32 5A Active</p> <p>C3D06 4E Inactive</p> <p>U3006 26 Active</p>	<p>7</p> <p>Occurrence Counter</p> <p>Last Event</p>	<p>8</p> <p>IECU</p> <p>EMS</p> <p>IC</p>
<p>9</p> <p>IC Faults</p> <p>B1004 1E Inactive</p> <p>C3D06 4E Inactive</p> <p>U3006 26 Active</p> <p>C1006 38 Active</p> <p>B1004 1E Inactive</p>	<p>10</p> <p>Occurrence Counter</p> <p>Last Event</p>		













3. EQUIPMENT DESCRIPTION AND OPERATION

Maintenance(3/4)

<p>1</p> <p>Vehicle Faults</p> <p>Read Faults</p> <p>Clear Faults</p>	<p>2</p> <p>Enter Workshop Password</p> <p>0000</p>	<p>3</p> <p>IECU</p> <p>EMS</p> <p>IC</p>	<p>4</p> <p>All inactive faults are cleared</p>
<p>5</p> <p>IECU</p> <p>EMS</p> <p>IC</p>	<p>6</p> <p>EMS ECU Faults</p> <p>All inactive faults are cleared</p>	<p>7</p> <p>IECU</p> <p>EMS</p> <p>IC</p>	<p>8</p> <p>IC ECU Faults</p> <p>All inactive faults are cleared</p>
<p>1</p> <p>Parameter Setting</p> <p>IECU</p> <p>IC</p>	<p>2</p> <p>IECU Parameters</p> <p>P1G57</p> <p>P1G59</p> <p>P1G6A</p> <p>P1G6B</p> <p>P1G6C</p>	<p>3</p> <p>IECU Parameters</p> <p>0</p>	<p>4</p> <p>Set IECU Parameter</p> <p>01</p> <p>Range</p> <p>0-3</p>
<p>5</p> <p>Parameter Update Successful</p>	<p>6</p> <p>Parameter Setting</p> <p>IECU</p> <p>IC</p>	<p>7</p> <p>IC Parameter</p> <p>P1G58</p> <p>P1G6M</p>	<p>8</p> <p>IC Parameter</p> <p>Disable</p>




3. EQUIPMENT DESCRIPTION AND OPERATION

Maintenance(4/4)

<p>1    </p> <p>MAINTENANCE</p> <p>Diagnostics View Data Reset Data Since last service</p>	<p>2</p> <p>Engine Hours Warning 674.5 h</p>		
<p>1    </p> <p>MAINTENANCE</p> <p>Diagnostics View Data Reset Data Since last service</p>	<p>2</p> <p>Distance Warning 0000000.0 Km Distance PreWarning 0000000.0 Km</p>	<p>3</p> <p>Engine Hours Warning 0000000.0 h Engine Hours PreWarning 0000000.0 h</p>	<p>4</p> <p>DateWarning 12/12/2021 DataPreWarning 12/12/2021</p>
<p>5</p> <p>To Confirm Reset Data Press Enter Key To Cancel Press Esc Key</p>	<p>6</p> <p>Maintenance Update Successful</p>		
<p>1    </p> <p>MAINTENANCE</p> <p>Diagnostics View Data Reset Data Since last service</p>	<p>2</p> <p>Since last service Engine Hours 0.00 h Vehicle Distance 1.00 Km Calendar Days 00500 Days</p>		


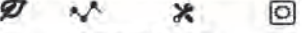
3. EQUIPMENT DESCRIPTION AND OPERATION

Settings(1/2)

<p>1</p>  <p>SETTINGS</p> <p>Time & Date Language Brightness Password</p>	<p>2</p>  <p>SETTINGS</p> <p>Password Unit Setting Water in Fuel RSL setting</p>	<p>3</p> <p>Time and Date</p> <p>Set Time Set Date Set Time Format Set Date Format</p>	<p>4</p> <p>SET TIME</p> <p>00:00</p>
<p>5</p> <p>SET DATE</p> <p>11/11/2021</p>	<p>6</p> <p>Time Format</p> <p><input checked="" type="radio"/> 12 H</p> <p><input type="radio"/> 24 H</p>	<p>7</p> <p>Date Format</p> <p><input checked="" type="radio"/> YYYY/MM/DD</p> <p><input type="radio"/> DD/MM/YYYY</p> <p><input type="radio"/> MM/DD/YYYY</p>	<p>8</p> <p>Language</p> <p><input checked="" type="radio"/> English</p> <p><input type="radio"/> Spanish</p> <p><input type="radio"/> Bahasa</p> <p><input type="radio"/> Thai</p> <p><input type="radio"/> Arabic</p>
<p>9</p> <p>BRIGHTNESS</p> 	<p>10</p> <p>Password</p> <p>Workshop PW Driver PW Change Password</p>	<p>11</p> <p>Workshop PW</p> <p>0000</p>	<p>12</p> <p>Driver PW</p> <p>0000</p>
<p>13</p> <p>Change Password</p> <p>Workshop PW Driver PW</p>	<p>14</p> <p>Workshop PW</p> <p>Enter Old Password 0000</p> <p>Enter New Password 0000</p>	<p>15</p> <p>Driver PW</p> <p>Enter Old Password 0000</p> <p>Enter New Password 0000</p>	

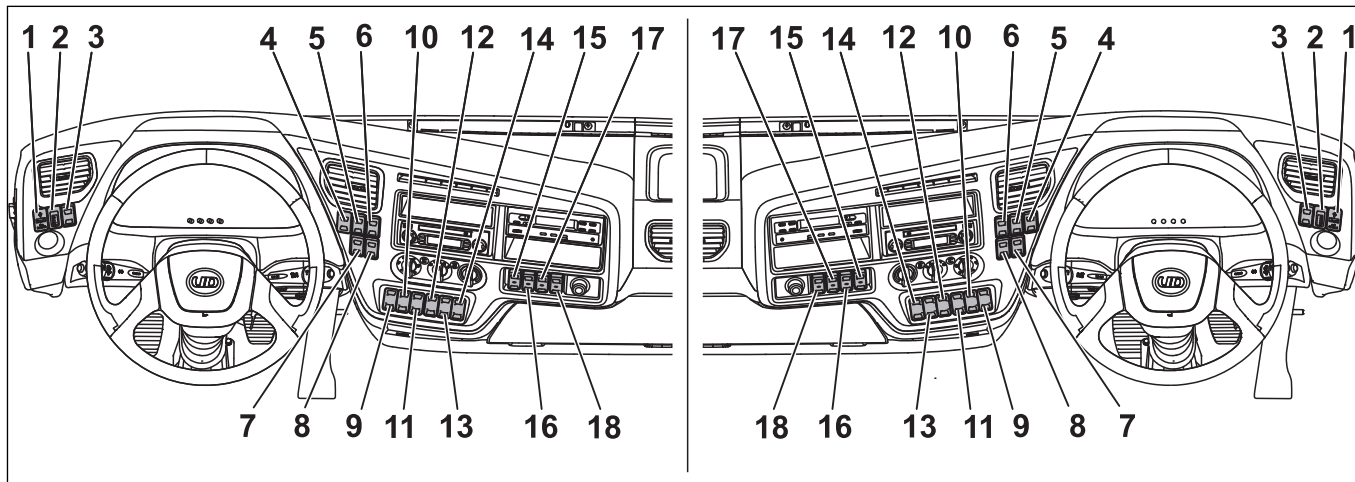
3. EQUIPMENT DESCRIPTION AND OPERATION

Settings(2/2)

<p>1</p> <p>Unit Setting</p> <p>Fuel Consumption Distance</p>	<p>2</p> <p>Fuel Consumption</p> <p><input checked="" type="radio"/> L/100Km <input type="radio"/> Km/L</p>	<p>3</p> <p>Fuel Consumption</p> <p><input checked="" type="radio"/> Km <input type="radio"/> Mile</p>	
<p>1</p>  <p>SETTINGS</p> <p>Password Unit Setting Water in Fuel RSL setting</p>	<p>2</p> <p>Activate Drain</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>		
<p>1</p>  <p>SETTINGS</p> <p>Password Unit Setting Water in Fuel RSL setting</p>	<p>2</p> <p>SET RSL</p> <p>000</p> <p>Range</p> <p>0-120</p>	<p>3</p> <p>Parameter Updated Turn Key OFF to ON</p>	

3. EQUIPMENT DESCRIPTION AND OPERATION

3.4 Switches



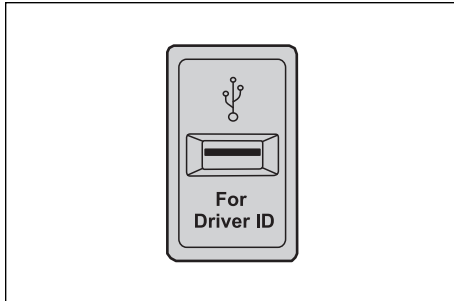
Switch position	Description
1	DRIVER ID for TGW
2	Head lamp leveller
3	Switch cover
4	Beacon light
5	Front fog lamp
6	Rear fog lamp
7	Dump Switch /Air suspension height control switch
8	Cab living room lamp
9	Bodybuilder -1

Switch position	Description
10	Bodybuilder - 2
11	Bodybuilder - 3
12	ECO OFF mode - Allison 2500
13	Switch cover
14	Bogie lift
15	PTO - Engine
16	PTO - Gearbox
17	Lift traction switch
18	Prohibit switch

The availability and position of switches may vary according to the features installed in the vehicle.

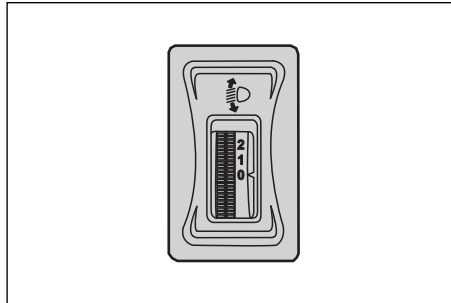
3. EQUIPMENT DESCRIPTION AND OPERATION

1. Driver ID for TGW - if equipped



The USB interface will be available in the trucks with fleet management services (TGW). The USB interface is located on the dashboard where the driver can plug in USB key before driving.

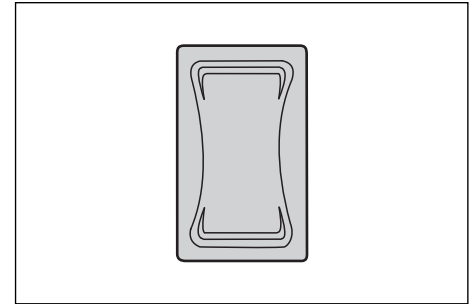
2. Head lamp leveller switch - if equipped



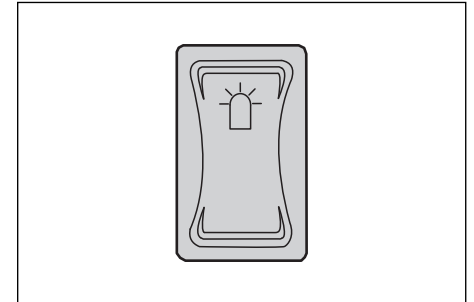
Head lamp is adjusted by rotating the switch knob. When the knob is rotated down, headlight moves down.

Switch position		
Product type	Unladen	Laden
4 X 2 R	0	2
4 X 2 T	0	2
6 X 2 TR	0	1

3. Switch cover

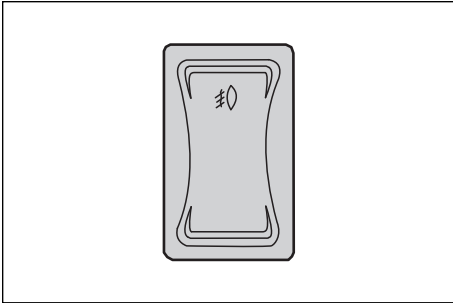


4. Beacon light switch - if equipped

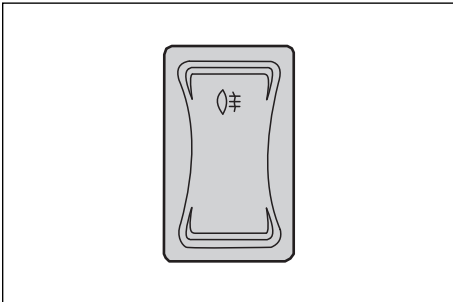


3. EQUIPMENT DESCRIPTION AND OPERATION

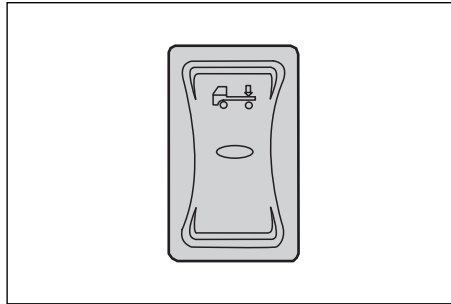
5. Front fog lamp switch - if equipped



6. Rear fog lamp switch - if equipped



7. Dump switch/Air suspension height control switch (Mechanically controlled) - if equipped.



Operation

Lowering the cargo bed:

- Stop the vehicle on a level ground.
- Apply the parking brake and turn the ignition key to ON or ACC position.
- Before operating the switch make sure that there is no person or object near/under the vehicle.

- After confirming the safety, push the air suspension dump switch, air is exhausted from the air bellows at the rear axle and the cargo bed is lowered.

Returning the cargo bed to normal driving height:

- Make sure that no person or object near the vehicle.
- After ensuring the safety around the vehicle, start the engine and ensure the system air pressure is maintained and then operate the dump switch. The cargo bed is returned to the normal driving height.

NOTE

The lowering feature is functional only when the parking brake is in applied condition.

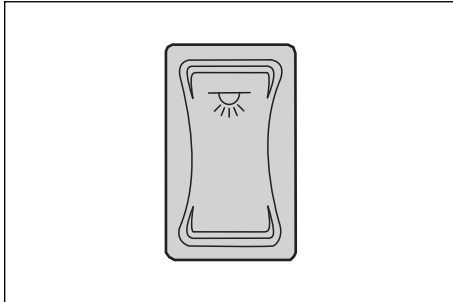
The air bellows can be adjusted with the dump switch either for full up or full down (40 - 45 mm).

3. EQUIPMENT DESCRIPTION AND OPERATION

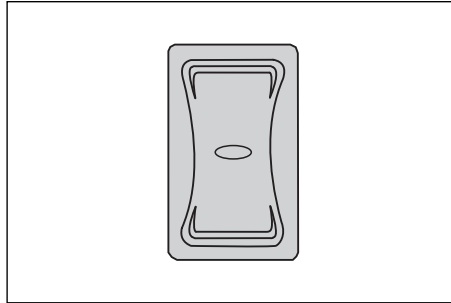
NOTE

If the dump switch is accidentally pressed during driving, the cargo bed will not be lowered for safety but a warning buzzer will sound. By pressing the dump switch again, the warning buzzer stops.

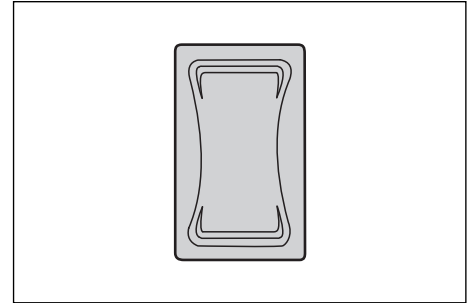
8. Cab living room light switch



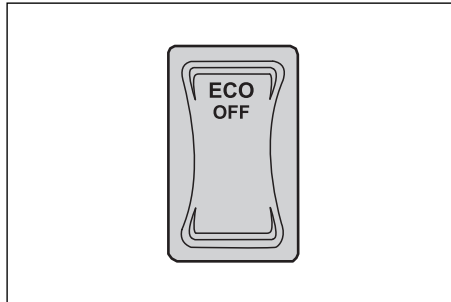
9. 10. 11. Bodybuilder switch



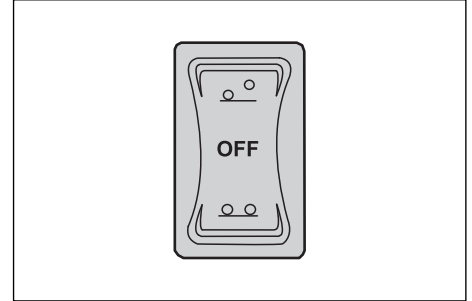
13. Switch cover



12. ECO OFF Mode switch - Allison 2500

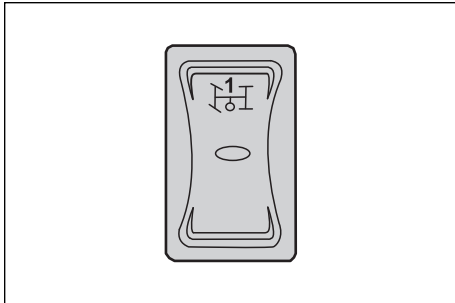


14. Bogie lift - if equipped
(Mechanically controlled)

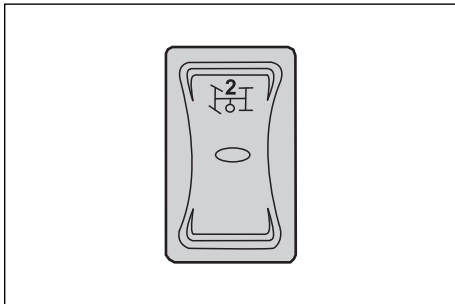


3. EQUIPMENT DESCRIPTION AND OPERATION

15. PTO Switch - Engine - if equipped

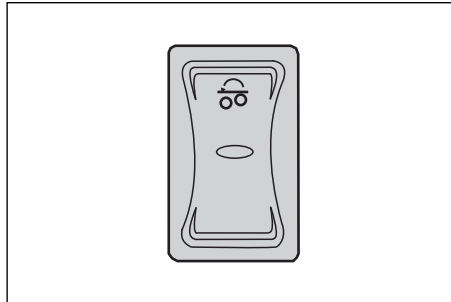


16. PTO switch - Gearbox - If equipped



Dim Light Illumination can be seen in this switch if vehicle is fitted with PTO preparation kit.

17. Lift traction switch - If equipped (Electronically controlled)



Vehicle with variant LIFT-BAS (with bogielift)

When the drive axle load is less than 6.5 tonnes, tag axle can be lifted with this switch. A switch in chassis can ground the lifted axle; while the axle is lowering, a buzzer is activated to warn the people in proximity.

When truck is being loaded with tag axle lifted condition if the load on drive axle exceeds allowable maximum limit(6.5T),tag axle automatically comes down.

When the load on the drive axle is

closer to the allowable maximum limit(6.5T) & the Vehicle is driven in tag axle lifted condition, during some manoeuvres if the drive axle load exceeds 6.5T(due to load transfers), lifted axle is lowered automatically and axle lift indication in IC display will go off and Buzzer is activated (Which is mounted closer to Chassis rear). Lift traction Switch in dashboard needs to be pressed again to lift the tag axle.

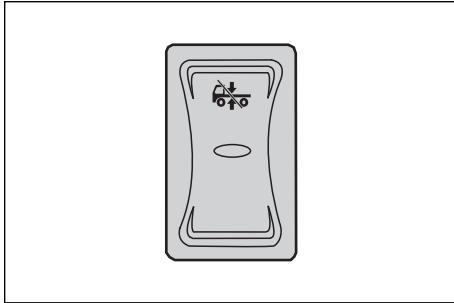
In the vehicle with variant ULIFT (without bogielift) if there is traction loss, traction can be increased by operating lift traction switch. By operating lift traction switch, some load is transferred to drive axle from tag axle within allowable maximum limit.

Vehicle with variant ULIFT (without bogielift)

if there is traction loss, traction can be increased by operating lift traction switch. By operating lift traction switch, some load is transferred to drive axle from tag axle within allowable maximum limit.

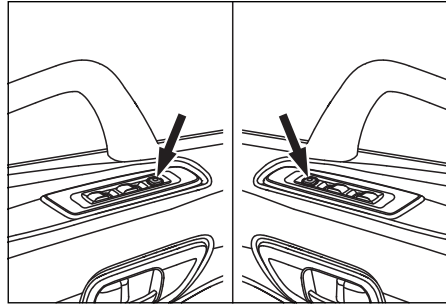
3. EQUIPMENT DESCRIPTION AND OPERATION

18. Prohibit switch - If equipped
(Electronically controlled)



When the switch is pressed, all ECS functionalities will be prohibited. This will be used in an application such as crane leg. Indication will be given in the display about the activation status.

Mirror heating switch - if equipped



The mirror heating switch is located on the control panel of the driver's door.

NOTE

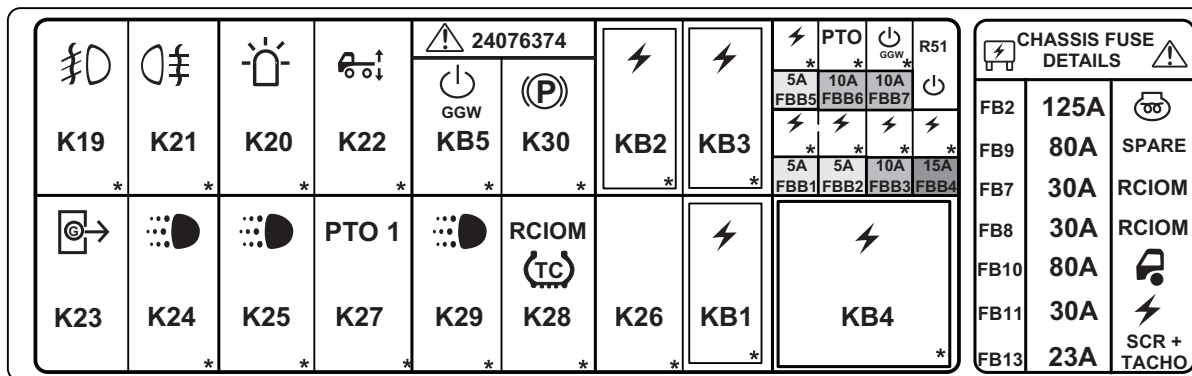
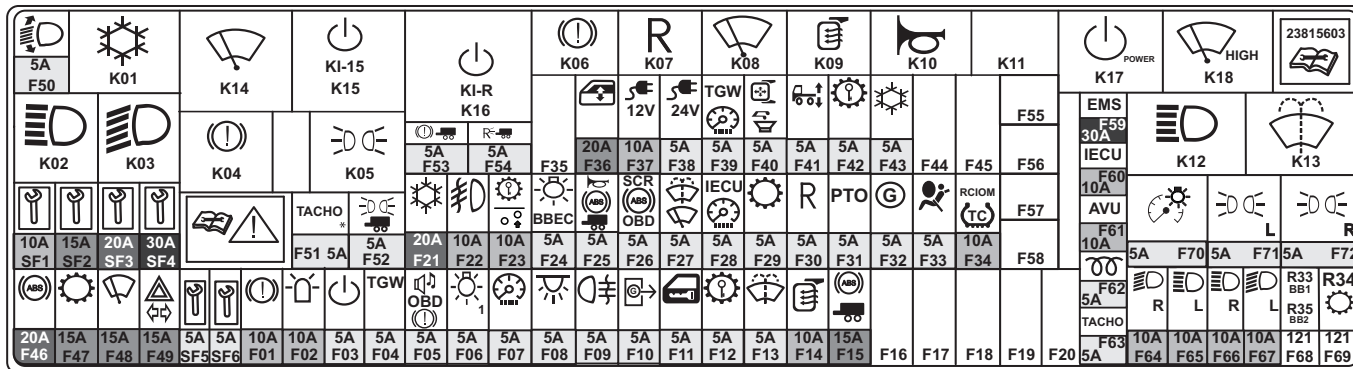
To activate mirror heating for short time, press the button for less than 2 sec. At lower temperatures, if fog or snow is too high, user can press the button for more than 2 sec to keep the mirror heating function active for longer time (approximate 1 hour).

NOTE

Make sure that the engine is running before activating mirror heating function.

3. EQUIPMENT DESCRIPTION AND OPERATION

Fuses and relays



The fuse and relay centre decal is located behind the dashboard on the passenger side of the cab

* optional feature

3. EQUIPMENT DESCRIPTION AND OPERATION

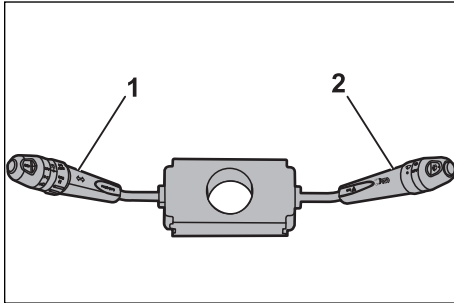
Fuse No.	Symbol	Function	Rating	Fuse No.	Symbol	Function	Rating
F01		Brake Lamp	10A	F30	R	Reverse Lamp	5A
F02	*	Beacon Lamp	10A	F31	PTO	PTO	5A
F03		Ignition Key	5A	F32		Alternator Ignition +ve	5A
F04	TGW	TGW	5A	F33		Airbag	5A
F05		Audio + OBD + Park Brake Lamp	5A	F34		RCIOM	10A
F06		Stalk Switch 1	5A	F35		Free	
F07		Instrument Cluster Battery +ve	5A	F36		Power Window Driver	20A
F08		Interior Lamps	5A	F37	*	12V Power Outlet	10A
F09	*	Rear Fog Lamp	5A	F38		24V Power Outlet	5A
F10		Alternator Controlled Line	5A	F39		Instrument Cluster + TGW	5A
F11	*	Central Door Lock	5A	F40		Exterior Mirror Adjustment + Audio	5A
F12	*	Shift Interlock	5A	F41	*	Air Suspension	5A
F13		Washer	5A	F42	*	Shift Interlock	5A
F14		Mirror Heating	10A	F43		HVAC-Compressor	5A
F15		Trailer ABS	15A	F44		Free	
F16		Free		F45		Free	
F17		Free		F46	*	ABS Supply	20A
F18		Free		F47	*	Automatic Transmission Battery +ve	15A
F19		Free		F48	*	Wiper	15A
F20		Free		F49		Flasher	15A
F21		Blower Motor	20A	F50		Head Lamp Leveller	5A
F22	*	Front Fog Lamp	10A	F51	TACHO *	Tachograph Preparation Kit	5A
F23		Shift Interlock/ Bogie lift	5A	F52		Trailer Position Lamp	5A
F24		Stalk Switch 2 + BBEC	5A	F53		Trailer Stop/Brake Light	5A
F25		Horn + Trailer ABS	5A	F54		Trailer Reverse Light	5A
F26		ABS + SCR + OBD	5A	F55		Free	
F27		Washer + Wiper	5A	F56		Free	
F28		Instrument Cluster + IECU	5A	F57, F58		Free	
F29	*	Automatic Transmission Battery +ve	5A	F59	EMS	Engine Monitoring System	30A

3. EQUIPMENT DESCRIPTION AND OPERATION

Fuse No.	Symbol	Function	Rating	Relay No.	Symbol	Function	Type
F60	IECU	IECU Supply	10A	K07		Reverse Lamp	Micro-NO
F61	AVU	Air Valve Unit	10A	K08		Wiper On Off Relay	Micro-NO/NC
F62	*	Pre-Heater	5A	K09		Mirror Heating	Micro-NO
F63	TACHO	Tachograph	5A	K10		Horn Relay	Micro-NO
F64	R	Dipped Beam RH	10A	K11.K26		Free	
F65	L	Main Beam LH	10A	K12		Flash To Pass Relay	Micro-NO
F66	R	Main Beam RH	10A	K13		Washer Relay	Micro-NO
F67	L	Dipped Beam LH	10A	K14		Wiper	Micro-NO
F68	R33 BB1	Resistor + Body Builder 1/ 2	121 ohm	K15	KI-1S	Ignition Supply Relay	Maxi-NO
F69	R34	Resistor + Automatic Transmission Battery +ve	121 ohm	K16	KI-R	Accessory Supply Relay	Maxi-NO
F70		Instrument Panel illumination	5A	K17	POWER	Power Relay	Mini-NO
F71	L	Position Lamp Left	5A	K18	HIGH	Wiper High Speed Relay	Mini-NO
F72	R	Position Lamp Right	5A	K19		Front Fog Lamp Relay	Micro-NO
FBB1	*	Body Builder Fuse 1	5A	K20		Beacon Lamp Relay	Micro-NO
FBB2	*	Body Builder Fuse 2	5A	K21		Rear Fog Lamp Relay	Micro-NO
FBB3	*	Body Builder Fuse 3	10A	K22		Air Suspension Relay	Micro-NO
FBB4	*	Body Builder Fuse 4	15A	KB5	GGW	Generic gateway	Micro-NO
FBB5	*	Body Builder Fuse 5	5A	K23		Alternator Controlled Line	Micro-NO
FBB6	PTO *	PTO	10A	K24		Day Lamp Relay 1	Micro-NO/NC
FBB7	GGW *	Generic gateway	10A	K25		Day Lamp Relay 2	Micro-NO/NC
R51		Resistor (GGW)	120 Ohm	K27	PTO 1	PTO Relay 1	Micro-NO
Relay No.	Symbol	Function	Type	K28		RCIOM	Micro-NO
K01		HVAC-Compressor	Micro-NO	K29		Day Lamp Relay 3	Micro-NO
K02		Main Beam Relay	Micro-NO	K30		Park Brake Lamp Relay	Micro-NO/NC
K03		Dipped Beam Relay	Micro-NO	KB1	*	Body Builder Relay 1	Micro-NO
K04		Park Brake Relay	Micro-NO	KB2	*	Body Builder Relay 2	Micro-NO
K05		Position Lamp Relay	Micro-NO	KB3	*	Body Builder Relay 3	Micro-NO
K06		Brake Lamp Relay	Micro-NO	KB4	*	Body Builder Relay 4	Mini-NO

3. EQUIPMENT DESCRIPTION AND OPERATION

3.5 Combination switch



- 1. Left hand side control
- 2. Right hand side control

The combination switch combines many switches and functions which can be controlled with ease. It is located below the steering wheel for easy access.

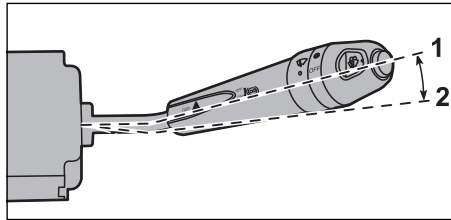
Left hand side control	Right hand side control
Light control	Auxiliary brake
Flash to pass	Washer/Wiper
Direction indicator	Hazard indicator
Cruise control	

The following shows types of combination switch

With cruise control and auxiliary brake,
Without cruise control and auxiliary brake,

Auxiliary brake

To activate the auxiliary brake, the combination switch is pushed down.

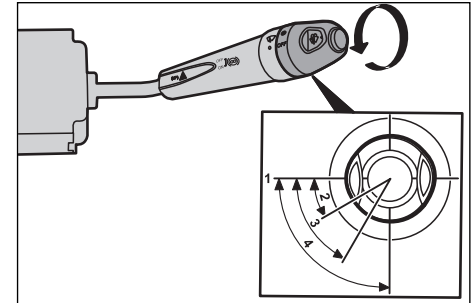


Auxiliary brake	Switch position
OFF	1
ON	2

NOTE

When auxiliary brake is not needed, return the stalk to position "1". This will save fuel and auxiliary brake lifetime.

Wiper function



- 1. OFF
- 2. Intermittent
- 3. Low speed
- 4. High speed

Wiper control is a rotating ring type switch and has four modes of operation. The wiper switch can be turned anticlockwise or towards driver to increase the speed of the wiper.

1. OFF mode: In this mode the wiper blade returns to its parked position and stops working.

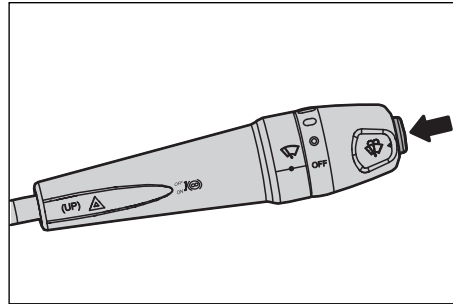
3. EQUIPMENT DESCRIPTION AND OPERATION

2. Intermittent mode: The wiper blades operate at a predetermined time delay between each sweep. This mode is used when the rain or snow conditions are very mild or in drizzle.

3. Low speed mode: The wiper blades operate constantly but slowly.

4. High speed mode: In this mode, the wiper blades operate constantly but fast. This mode is used during heavy rain and snow.

Washer function



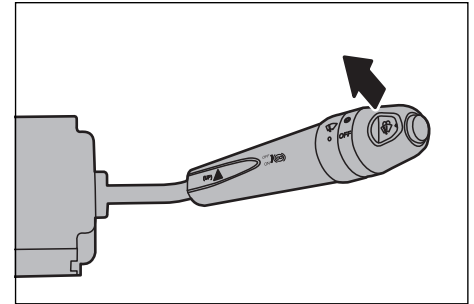
The washer control switch is a push switch which is located at the end of the stalk. The function is activated by pressing the button. Once the control button is pressed, the wiper and water spray (on windscreen) operate for a brief time.



CAUTION

Do not operate the wiper when the windscreen is dry.

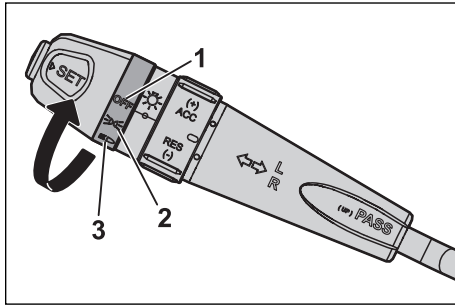
Hazard indicator



To switch on the hazard signals, pull the stalk towards the steering wheel from the neutral position.

3. EQUIPMENT DESCRIPTION AND OPERATION

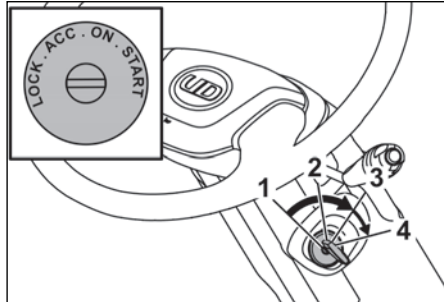
Light control



Light switch	Combination switch position
OFF	1
Parking light	2
Low beam	3
Low beam + High beam	3 and press down

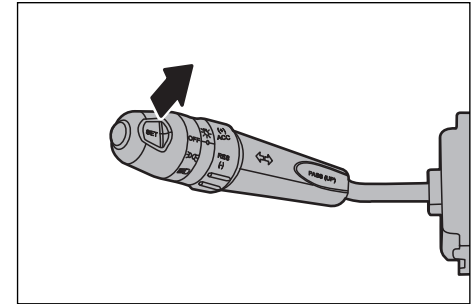
The light function (OFF, parking light, and head lamp) are controlled via a rotating ring type switch. Change from low beam to high beam by moving the combination switch lever down when the switch is in (3).

The DRL (if equipped) is activated when the ignition key is in the ON (3) and the parking brake is released.



1. LOCK
2. ACC
3. ON
4. START

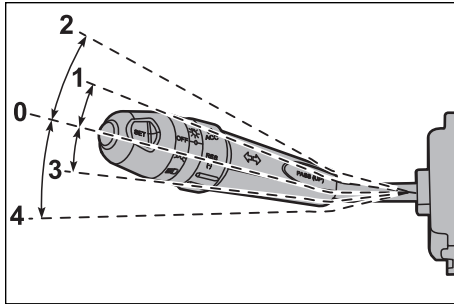
Flash to pass



The flasher (to pass) can be controlled by moving the combination switch lever towards the steering wheel. It includes a rest position and momentary active positions (self-return).

3. EQUIPMENT DESCRIPTION AND OPERATION

Direction indicator



Indicator	Combination switch position
Left	3 and 4
Right	1 and 2

The direction indicators are controlled by moving the combination switch lever back and forward (from neutral), parallel to the steering wheel. The turn indicator controller has two modes of operation: momentary lane change indicator and self-cancellation turn indicator.

Momentary lane change indicator: When the lever is moved to the first position (1 and 3), the direction indicator will flash once and the stalk will spring back to the neutral. If the driver holds the lever in the first position (1 and 3), the direction indicator will operate until it is released.

If the driver moves the lever to the end position (2 and 4) the indicator function remains active until it is switched OFF manually or by the auto cancellation mechanism.

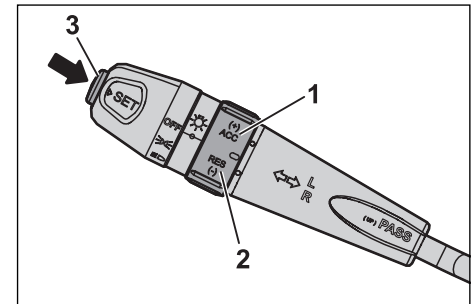
NOTE

Always make sure that the turn signal indicators are OFF after making a turn or lane change.

Cruise control - if equipped

DANGER

Do not use cruise control on hills, in slippery conditions, heavy traffic or during other unfavourable conditions otherwise you may lose control of the vehicle.



1. CC ACC/Set +
2. CC RES/Set -
3. CC SET momentary switch.

The cruise control switches are located on the combination switch lever.

3. EQUIPMENT DESCRIPTION AND OPERATION

Cruise control operation

NOTE

Make sure that auxiliary brake is not active before setting cruise control.

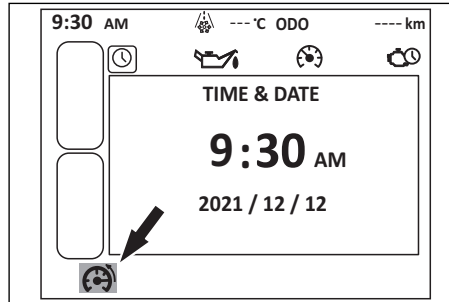
To activate and set desired speed:

1. Release the clutch and brake and then press the CC SET switch to activate cruise control.
2. If the cruise speed needs to be increased rotate the knob towards **ACC (+)**. The cruise speed will increase as long as the **ACC (+)** switch is pressed (but the speed will not increase above the maximum programmed speed). Release when the desired cruise speed has been reached.
3. If the cruise speed needs to be decreased, rotate the knob towards the **RES (-)** switch. The vehicle speed will decrease as along as the **RES (-)** switch is pressed (but the cruise speed will not decrease below the minimum programmed

speed). Release when the desired cruise speed has been reached.

NOTE

The cruise control can only be activated when the vehicle speed is above 30 km/h in forward direction.



The speed at which the cruise control is activated is known as cruise speed. The driver is informed of this status by the status icon “CC” in the instrument cluster.

Switching OFF the cruise control

The cruise control is deactivated when the brake or clutch pedal is pressed or auxiliary brake is activated or the cruise control momentary switch is pressed.

Acceleration

Momentary acceleration (E.g. when overtaking another vehicle) does not interrupt cruise control operation. After overtaking, release the accelerator and let the vehicle slow to cruise speed. The previously set cruise speed will then be maintained.

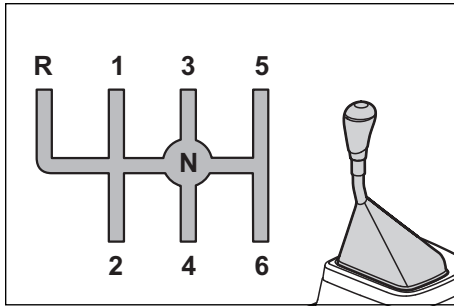
NOTE

Cruise control will be deactivated when the auxiliary brake is activated.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.6 Gearshift lever and Push button

6 Speed



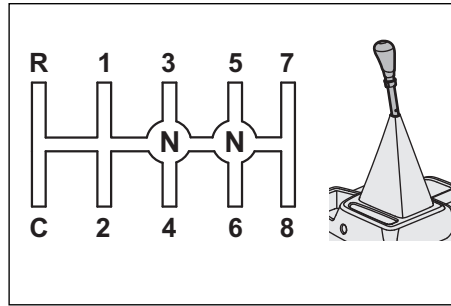
The 6 speed manual gearbox comprises six forward gears and one reverse gear.



CAUTION

Do not apply excessive force on the gearshift lever.

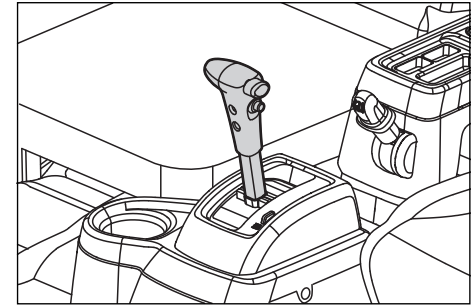
9 Speed



The 9 speed manual gearbox comprises of 8 forward gears, an additional crawler gear and one reverse gear.

The crawler gear is advised to be used when the vehicle is stuck in sand, marshes, pits etc. It can also be used when starting with a heavy load during climbing a hill.

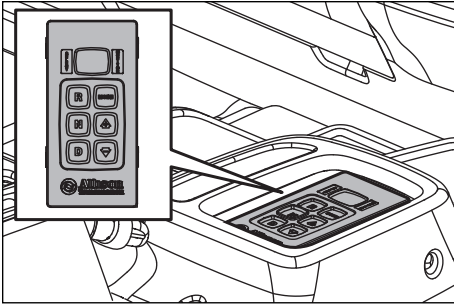
Selector lever - Allison 2500



Allison 2500 Series is a fully automatic transmission with selector lever have five (6) forward and one (1) reverse gear ranges.

3. EQUIPMENT DESCRIPTION AND OPERATION

Selector switch - Allison 3000



Allison 3000 Series is a fully automatic transmission with selector switch has six (6) forward and one (1) reverse gear ranges.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.7 PTO - if equipped

PTO (Power Take Off)

The truck can be equipped with two types of PTO, engine mounted PTO and gearbox mounted PTO. The engine mounted PTO is clutch independent and the gearbox mounted PTO is clutch dependent.

The PTO enables to derive mechanical energy from the truck to activate auxiliary functions, example pumps etc. A PTO can be activated and deactivated by the PTO switch on the dashboard, if the pre-set conditions are met.

NOTE

The PTO is disengaged when the engine is switched OFF. When the engine is switched ON, the PTO is still disengaged even though the switch is ON. Switch OFF the PTO switch and switch it ON, before engaging the PTO again.

NOTE

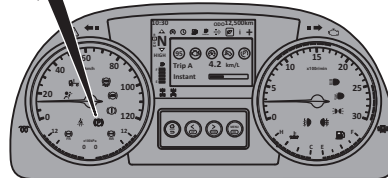
The PTO is also disengaged when the vehicle speed is above predefined limits w.r.t application.

Activating engine PTO

1. Apply the parking brake.

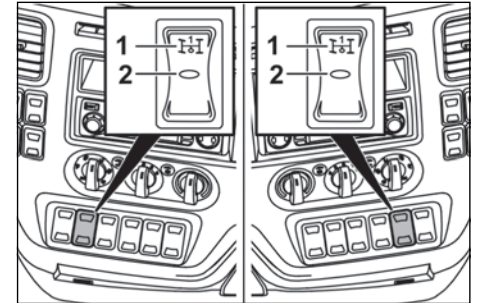
NOTE

Make sure that parking brake indicator has lit up in the IC.



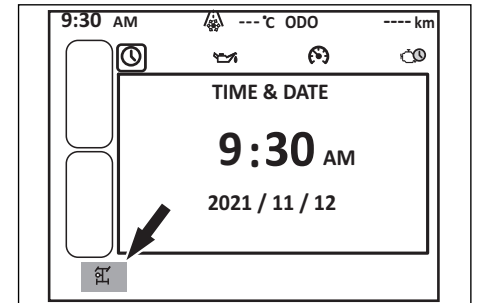
2. Start the engine.

3. Switch ON the engine PTO switch.



1. Engine PTO ON
2. Engine PTO OFF

4. The PTO icon will appear on the display.



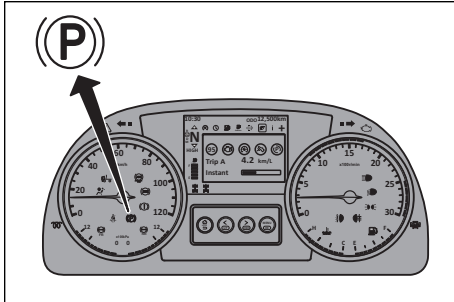
Deactivating the engine PTO

- Switch OFF the engine PTO switch.

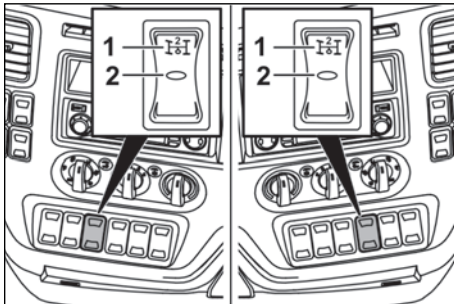
3. EQUIPMENT DESCRIPTION AND OPERATION

Activating Gearbox PTO - 6 speed

1. Apply the parking brake.



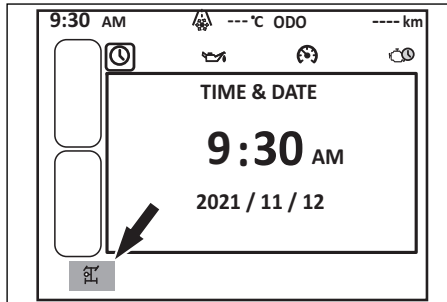
2. Start the engine.
3. Press the clutch pedal.
4. Switch ON the gearbox PTO switch.



1. Gearbox PTO ON
2. Gearbox PTO OFF

NOTE

Make sure that the display shows the PTO status icon and that the LED on the PTO switch has lit up.



5. Release the clutch pedal.

NOTE

Gearbox PTO is disengaged when the reverse gear is engaged.

Deactivate PTO - 6 speed

1. Press the clutch pedal.
2. Switch OFF the gearbox PTO switch.

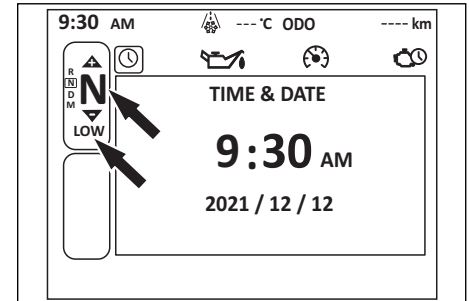
Gearbox PTO

9 Speed Gearbox PTO Operation

NOTE

Abrupt changing of range with shift could result in disengaged gear rotation. If the gear rotation is disengaged, return to neutral position and redo shift.

1. Apply the parking brake.
2. Press the clutch pedal and shift the gearshift lever to neutral low range.

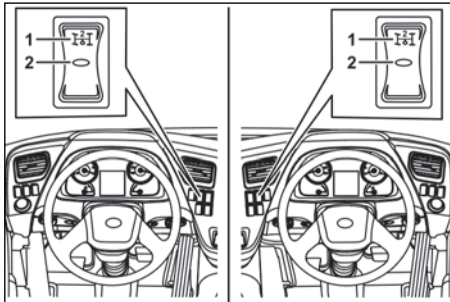


3. EQUIPMENT DESCRIPTION AND OPERATION

NOTE

Make sure that the parking brake is applied and gearshift lever is in low range. The parking brake indicator and low range indicator should be illuminated.

3. Follow the range selection operation instructions.
4. Press the clutch pedal down fully and engage the PTO by activating the switch on the dashboard.

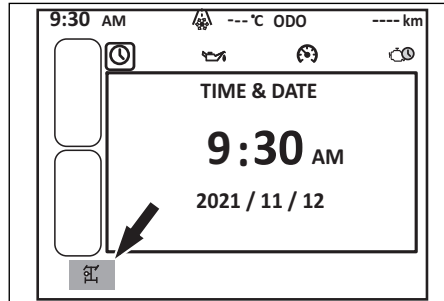


1. Gearbox PTO ON
2. Gearbox PTO OFF

NOTE

Make sure that gearshift lever low indicator goes OFF and PTO indicator lamp in PTO switch is illuminated.

5. Make sure that the display shows the PTO status icon.



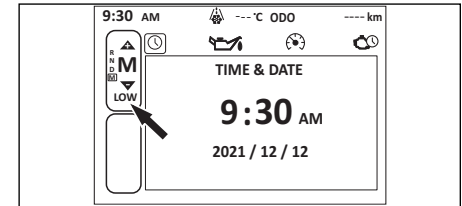
6. Engage the gearshift lever to any low range gear.
7. Release the clutch pedal.

NOTE

Gearbox PTO is disengaged if the reverse gear is engaged.

Vehicle standstill to Vehicle mobility while PTO is ON (9 Speed Gearbox)

1. Press the clutch pedal down fully and move the shift lever to 1st gear.
2. Release the Park Brake, assure park brake light in the Cluster goes OFF. Wait until the low range indicator is illuminated in the cluster and slowly release the clutch pedal to move the vehicle.



NOTE

Warning buzzer will sound when the PTO is ON and vehicle mobility is enabled.



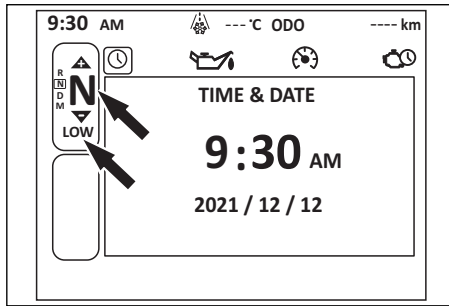
WARNING

NO gear shifting in Vehicle mobility while PTO is ON

3. EQUIPMENT DESCRIPTION AND OPERATION

Vehicle mobility to Vehicle standstill while PTO is ON(9 Speed Gearbox)

1. Press the clutch pedal down fully and apply the park brake.



NOTE

Make sure that the parking brake is applied and the parking brake indicator is illuminated and low range indicator should be OFF.

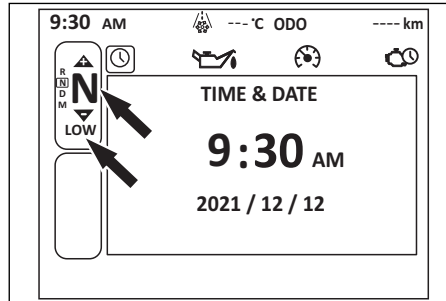
2. Engage to any low range gear and release clutch slowly to work with PTO in standstill.

Deactivate 9 Speed Gearbox PTO

1. Press the clutch pedal
2. Shift the gear shift lever to range low neutral.
3. Switch OFF the gearbox PTO switch.

NOTE

Make sure that the gearshift lever low indicator is illuminated and PTO indicator lamp in PTO switch is OFF.



4. Release the clutch pedal.

NOTE

Gearbox PTO is disengaged when the reverse gear is engaged.

Prohibited mode

! WARNING

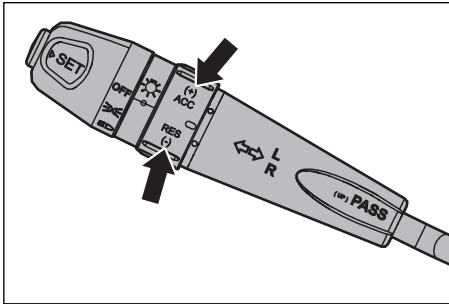
To prevent serious injury or death when operating the PTO, follow all precautions and instructions in the manual and labels pertaining to PTO use.

! WARNING

NO gear shifting in Vehicle mobility while PTO is ON.

3. EQUIPMENT DESCRIPTION AND OPERATION

Engine speed control using combination switch - vehicle with Cruise control



NOTE

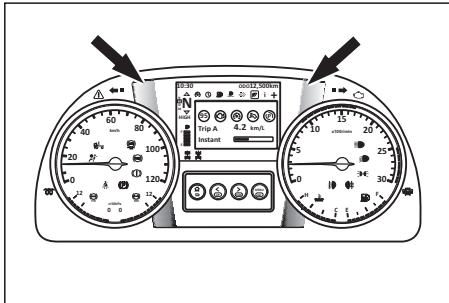
Engine speed can also be controlled by using combination switch.

ACC/SET+ and RES/SET- buttons can also be used to increase or decrease the engine speed. Hold on to ACC/SET+ to increase and hold on to RES/SET- to decrease the speed. Release the buttons to maintain the current engine speed.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.8 Fuel coaching system

The fuel coaching system helps the driver to run the engine at its most efficient engine speed. This is achieved by guiding the driver by illuminating green and blue light in the instrument cluster. The system will also help the driver to keep track of the driving behavior and the driver's performance over a defined period of time or trips logged, which the vehicle owner can extract later and analyses. The fuel coaching symbols are being activated once the vehicle reaches 30 km/h speed for long haul trucks and 10 km/h speed for construction trucks.



Sweet spot - fuel consumed in sweet spot

The engine ECU monitors the level of fuel consumed at the “Sweet Spot” and compares it with the total fuel consumed. The driver display displays the ratio between the fuel consumed at the sweet spot and the total fuel consumed over the buffer distance. This is referred to the “Sweet Spot”.

The engine is designed to allow the driver to stay within the sweet spot during most normal driving conditions. There may be situations where it is necessary to run the engine outside the sweet spot, especially with gearboxes which have large steps between the gears. However, this will effect on fuel consumption.

Fuel coaching Mode

Mode 1: To manually reset the current fuel coaching trip. ie trip started and stopped is recorded by the driver with the help of reset button on the cluster.

Mode 2: To program that a fuel coaching is reset after every X amount of kilometres. i.e. the trip started and stopped is recorded by at an interval of pre-set distance set by the owner for ex: every 2000 km.

Mode 3: To program that a fuel coaching is reset after every X amount of days. i.e. the trip started and stopped is recorded by at an interval of pre-set time, set by owner for ex: every day.

NOTE

Trips in the fuel coaching system are not to be confused with “Trip 1” and “Trip 2” information in the display, which are only about distance driven by the truck.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.9 Fifth wheel operation

The fifth wheel operation is applicable only for the truck tractor.

Instructions for the fifth wheel operation and maintenance are available in fifth wheel supplier manual when the vehicle is supplied from the factory. If the instructions for the fifth wheel use are missing, contact your authorised **UD Trucks** dealer to get a new copy.

Follow the general guidelines in these instructions until you receive the instructions for use from the supplier.

NOTE

Always refer instructions from the fifth wheel supplier supplied along with vehicle.

Inspection prior to coupling

Before starting the coupling procedure, inspect the base of the fifth wheel, the bearings, the lock, the wear ring and the hook. Also check that if any of the bolts bolting the fifth wheel to the chassis of the tractor vehicle are loose or missing.

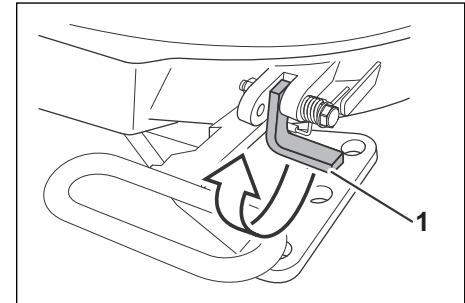
The trailer and the tractor must be resting on the same flat surface. The surface must not give away under the pressure of the load transmitted through the tyres and the lifting device.

Fifth wheel must be cleaned and lubricated.

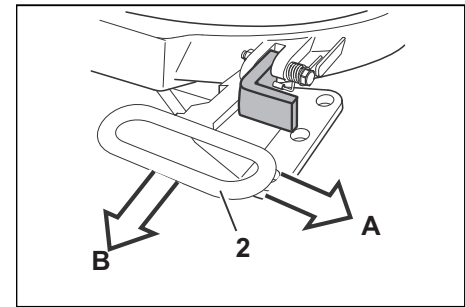
Tilt the ramps in downward condition.

Opening the fifth wheel coupling.

1. Lift the catch (1).

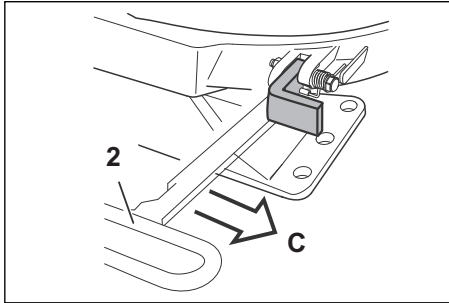


2. Swing the handle (2) towards the front into position A to release the lock. And Pull out the handle (2) as far as possible into position B.



3. EQUIPMENT DESCRIPTION AND OPERATION

3. With the handle (2) pulled out, swing it forwards into position C and engage it on the edge of the plate.



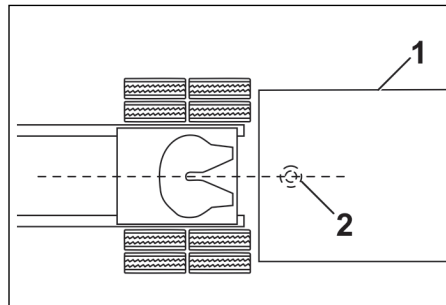
Coupling procedure



WARNING

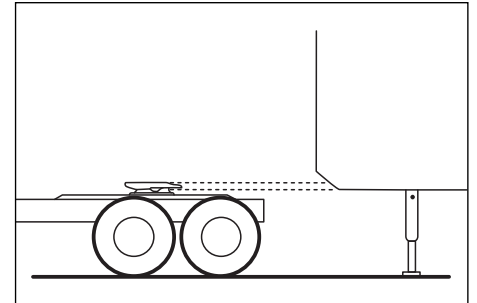
The trailer and the tractor must be resting on the same flat surface which must not give away under the pressure of the load transmitted through the tyres and the lifting device.

Align the king pin centre with fifth wheel centre.

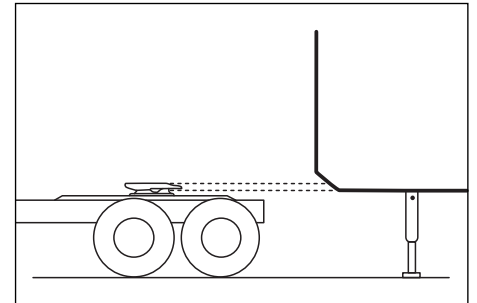


1. Trailer top
2. King pin position

1. Move the tractor close to the trailer.

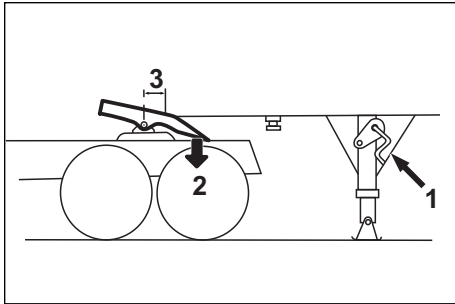


2. Chock the trailer wheels. Connect the brake lines and light cord. Support slack in lines to prevent interference.
3. Make sure that the trailer wear plate is slightly below the fifth wheel.



3. EQUIPMENT DESCRIPTION AND OPERATION

Trailer should contact fifth wheel 100-150 mm behind the fifth wheel bracket pin.




1. Use low gear to operate landing gear
2. Fifth wheel tilted position
3. 100-150 mm

4. Move the tractor vehicle slowly towards the trailer, keeping them aligned until coupled.

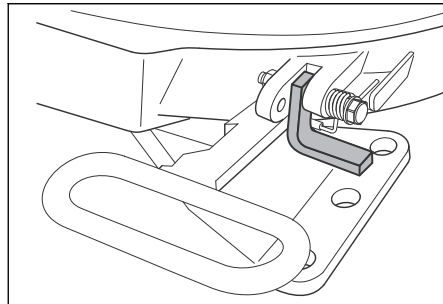
5. Apply the parking brake of the tractor vehicle

6. Check that the trailer platform is resting on the fifth wheel and that there is no clearance. If clearance is found, repeat the entire coupling procedure.

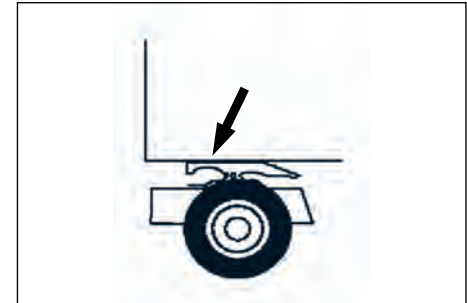
 **WARNING**

The coupling procedure is not complete without visual inspection. The driver has to check and verify that the fifth wheel is properly coupled to the king pin.

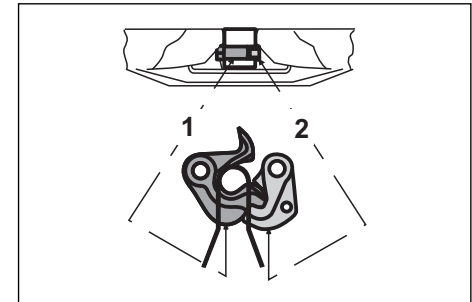
Handle secured with safety pin inserted in hole.



There should be no gap between the trailer and fifth wheel.



Lock should be engaged around the king pin and hook should be engaged behind lock.



1. Lock engaged around kingpin
2. Hook engaged behind lock

3. EQUIPMENT DESCRIPTION AND OPERATION

Visually inspect the air connections and ensure that they are working fine and free from compressed air leaks. If there are any compressed air leaks, find and seal it.

Make sure that the electric socket works perfectly by turning on the brake lights and the direction indicator lights and ensure that they meet legal requirements.

Make sure that the air pressure in the tractor vehicle is correct by reading the pressure gauge on the instrument cluster. The tractor vehicle will only be ready to move when the air pressure reaches the minimum established level.

Keep the brakes applied on the trailer, return the landing gear to previous position and make sure that the trailer brakes are working properly. Release the parking brake on the tractor vehicle and ensure that the fifth wheel remains engaged when the trailer is moved forward. If it does not remain engaged, repeat the complete coupling procedure.

Check the clearance between the locking mechanism and the king pin by moving the tractor vehicle forward and backward. If the clearance is excessive, consult nearest authorised **UD Trucks** dealer.



WARNING

Do not use fifth wheel which fails to operate properly.

3. EQUIPMENT DESCRIPTION AND OPERATION

De-coupling procedure

WARNING

The trailer and the tractor must be resting on the same flat surface which must not give away under the pressure of the load transmitted through the tyres and the lifting device.

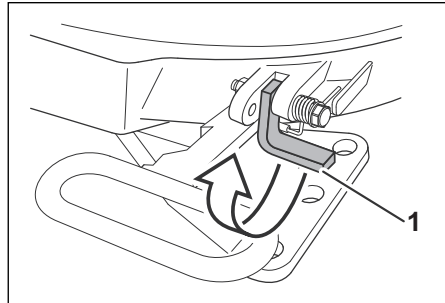
Ensure that the trailer does not pull the tractor vehicle.

Apply the trailer brake and the parking brake of the tractor vehicle. Chock the trailer wheels.

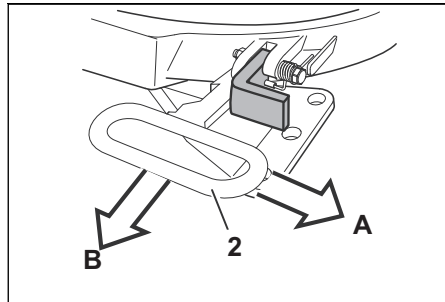
Lower the lifting device, take proper care not to raise the trailer platform on the fifth-wheel base.

Unlock the fifth wheel with release handle as follows:

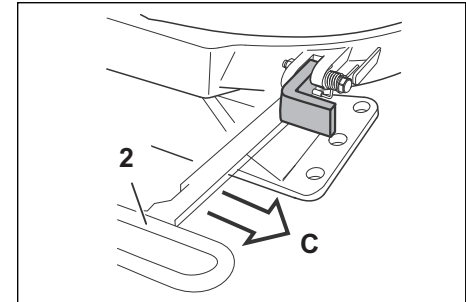
1. Lift the catch (1).



2. Swing the handle (2) towards the front into position A to release the lock. And Pull out the handle (2) as far as possible into position B.



3. With the handle (2) pulled out, swing it forwards into position C and engage it on the edge of the plate.



Disconnect the air hoses and the electric socket by returning them to their holders (using safety equipment which is suitable for this operation). Release the tractor brake and slowly drive away from trailer.

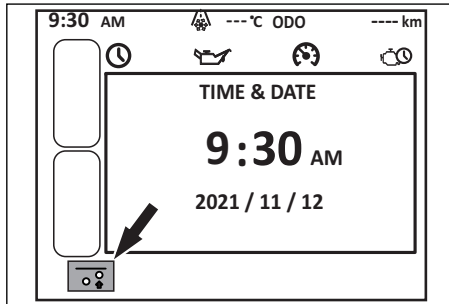
3. EQUIPMENT DESCRIPTION AND OPERATION

3.10 Bogie control - if equipped

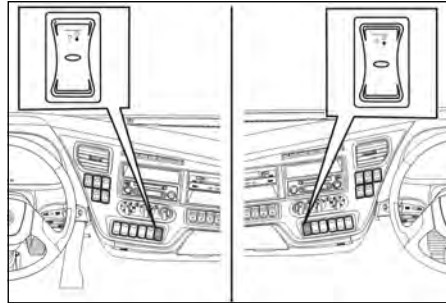
Bogie control

Bogie lift assembly makes it possible to lift the tag axle when the drive axle load is less than the permissible maximum laden drive axle weight or when the vehicle is in unladen condition by switching ON the bogie lift switch in the cab.

The display shows the control icon during bogie lift operation.



Different operating conditions can be set by using the bogie lift switch provided on the cabin dashboard.



Bogie lift switch-OFF

Tag axle wheels will always be in contact with ground irrespective of load on the drive axle.

Bogie lift switch-ON

Tag axle will automatically lifted up if the load on the drive axle is less than the allowable maximum limit and bogie lift symbol appears in the Instrument cluster. Otherwise tag axle wheels will be in contact with ground to share the additional load.

NOTE

when bogie lift switch is switched ON if bogie lift symbol not appears in the instrument cluster it is recommended to switch back to OFF condition.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.11 Air Suspension Height Control (Electronically controlled) - if equipped

Height control (Air-suspension models)

Height control allows the height (above the ground) of the cargo bed or coupler to be adjusted to make it easier to load and unload freight at freight terminals, etc.

Truck Terminal

The height of the cargo bed can be adjusted to match the platform height by lifting it up and down.

Loading/Unloading

A load can be easily moved to the rear side of the cargo bed by lowering down the rear end of the bed.

A load can be easily moved to the front side of the cargo bed by lifting up the rear end of the bed.

CAUTION

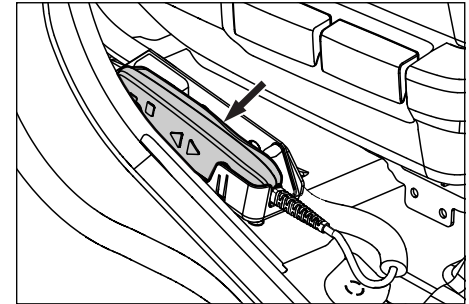
When the air suspension warning is displayed, it might not be possible to obtain a stable vehicle posture, so be very careful while driving and have the vehicle inspected and serviced at the nearest authorized UD Trucks dealer as soon as possible.

CAUTION

Riding in and out of the cargo bed with a forklift, etc. consumes much pressurized air, so the air pressure may become insufficient faster.

Remote controller (cargo bed or coupler vertical adjustment switch)

The controller is used to vertically adjust the cargo bed or coupler height and is provided on the right-hand side of the driver's seat inside the cab.

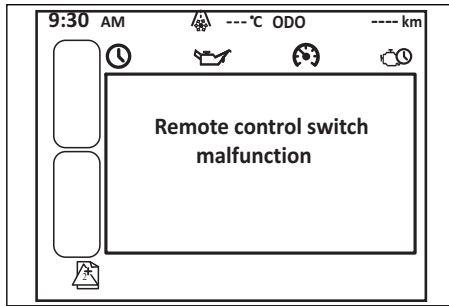


NOTE

- When stowing this away, face the cord toward the front of the vehicle and store it in the holder.
- Store the cord in the depressed area in the console at the bottom of the holder.

3. EQUIPMENT DESCRIPTION AND OPERATION

If a malfunction occurs in the remote controller, a warning information is displayed on the display along with “Check” tell-tale. When this warning is displayed, contact the nearest authorized **UD Trucks** dealer.



Air suspension warning

The air suspension warning will be displayed along with “Check” tell-tale to warn the driver when there is a problem with the air suspension system.



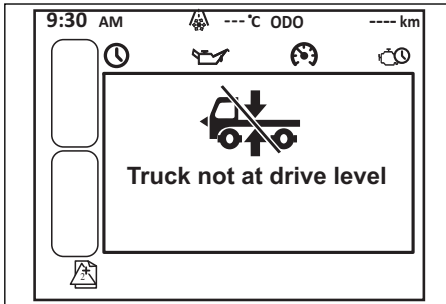
NOTE

If the “Air suspension warning” message or the indicator on the remote controller remains ON and does not disappear contact the nearest authorized UD Trucks dealer.

Precautions for using height control

- Perform height control on a level ground.
- Fill the air tanks with air before performing height control.
- Height control will be canceled when the vehicle speed exceeds 20 km/h and the truck bed will automatically be returned to the neutral position.
- When driving with height control in operation, a warning appears to warn that the height control is not in the neutral position when the vehicle speed exceeds 20 km/h. To cancel the warning, set the height control to the neutral position using the remote controller or lower the vehicle speed below 20 km/h.

3. EQUIPMENT DESCRIPTION AND OPERATION



- Make sure that the indicator lamp on the remote controller is not illuminating before beginning a normal drive.

CAUTION

- Perform cargo bed or coupler height adjustment with the vehicle stopped (with the ignition switch is in ON position).
- Before adjusting the coupler height, check around the vehicle to make sure that no people or obstacles are in the way to ensure everything is safe.
- Backing toward curbs or wheel stops that are 100 mm or higher could cause interference with the rear end of the rear suspension, so drive with the cargo bed or coupler height in the neutral (normal driving) position.
- Chock the tires when handling freight. The vehicle might move if this is not done.
- It might not be possible at times to operate height control when the parking brake is engaged. In such condition, chock the tires and release the parking brake before operating the height control.

Instructions for filling the air tanks

- Start the engine.
- Run the engine at high idling to fill the air tanks until the air pressure gauges reach the specified air pressure.

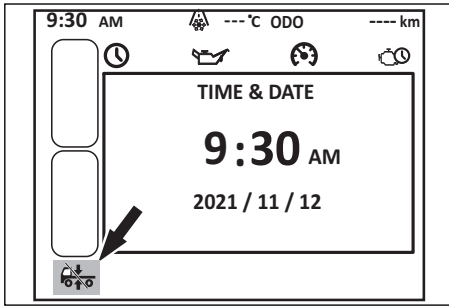
NOTE

Increasing the engine speed will shorten the filling time.

Height control operation instructions

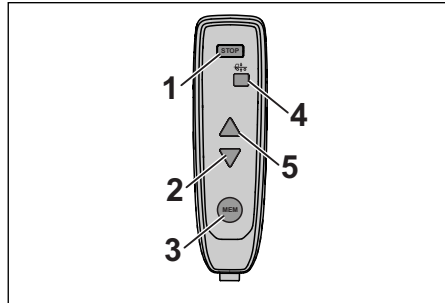
- When the ignition switch is in ON position, the indicator shown below appears on the display. In this state, the height control is inoperative.
- Pressing any button on the remote controller other than the stop button makes the height control operative and the indicator disappears.

3. EQUIPMENT DESCRIPTION AND OPERATION



- Fill the air tanks with air. The height control cannot be performed if the air pressure is below 700 kPa. (Refer to the previous item for information regarding the air filling method.)
- Shift the gearshift lever to neutral.
- Pull up the parking brake lever to the park position.
- The height control system turns on by pressing any button on the remote controller.
- The height control can be performed using the up and down buttons.

Remote controller



1. Stop button
2. Down button
3. Memory button
4. Neutral button
5. Up button

Stop button

To stop during automatic return, push the stop button. The cargo bed or coupler will stop at that height.

Down button

The cargo bed or coupler lowers while the Down button is pushed, until the lower limit is reached. You can stop at the desired height at any time by releasing the button. If the memory button is pressed while holding the Down button, the cargo bed or coupler continues lowering (Hold mode). To stop, press the stop button.

Memory button

- With this function one cargo bed or docking /Loading station height adjustment value can be stored and retrieved.
- To store the height, first move the cargo bed to desired height using UP and DOWN buttons then press and hold the memory button for more than 6 seconds.
- To retrieve the stored height press and hold the memory button for more than 2 seconds.

3. EQUIPMENT DESCRIPTION AND OPERATION

NOTE

- **Do not leave the remote controller on the dashboard or another place where it could be exposed to direct sunlight and become very hot. Doing so may deform it.**
- **The neutral button and memory button do not need to be held down during height adjustment.**

Neutral button

When the cargo bed or coupler is at a position other than the neutral height, push the neutral button once to automatically return the cargo bed or coupler to the neutral height.

NOTE

The cargo bed or coupler might not return to the neutral position if the air in the air tanks is insufficient. In this case, start the engine to fill the tanks with air before pushing the neutral button again.

Up button

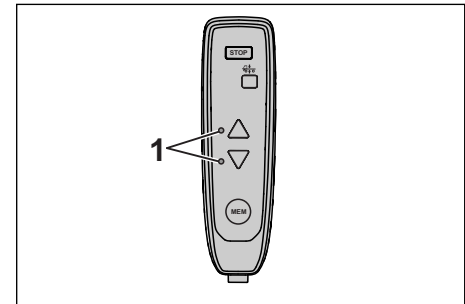
The cargo bed or coupler rises while the Up button is pushed, until the upper limit is reached. You can stop at the desired height at any time by releasing the button. If the memory button is pressed while holding the Up button, the cargo bed or coupler continues rising (Hold mode). To stop, press the stop button.

It is recommended to start and keep the engine at high idling speed to fill the air continuously as air pressure drops while rising the cargo bed to upper limit. Insufficient air pressure in the system may not allow the bed to reach the upper limit.

Cancelling height control

- Make sure that the ignition switch is in ON position, the gear shift lever is in neutral and the parking brake lever is in the park position.

- Push the neutral button of the remote controller to return the cargo bed/coupler height to the neutral position. When the cargo bed/coupler returns to the neutral position, confirm that the indicator on the remote controller has turned off.



1. Up and Down illuminates button

- To turn off the height control system, turn the ignition switch from ON to OFF position.

3. EQUIPMENT DESCRIPTION AND OPERATION

Ferry mode

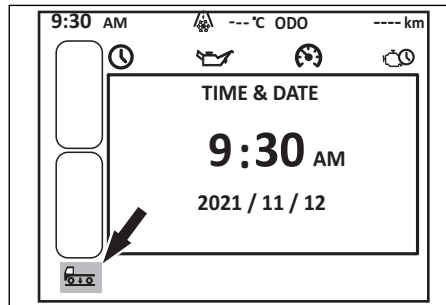
Precautions for use

- The ferry mode is to lower the vehicle height when transporting the vehicle on board a ferry by releasing all the air in the air suspensions. This reduces the possibility of damaging the freight while transporting in a ferry.
- Tie down the truck to the ferry after fully releasing the air of the air suspension.
- The ferry mode can be activated by the remote controller.

Operation procedure

- Apply the parking brake.
- Hold the down and memory button simultaneously for more than 5 seconds.
- Release both buttons.
- When the air in the suspension is completely released and no discharging sound is heard (vehicle height has become the lowest), set the ignition key in the OFF position.

- To cancel the ferry mode, with the ignition switch in ON position, press the neutral button/back to drive button on the remote controller.
- When the vehicle height is set to the ferry height, “Ferry function Icon” is displayed on the Instrument cluster display



Full Limp home

- Full limp home can be triggered either due to safety critical faults only on the ECSECU. In this mode there is no automatic control i.e. the ECS shall not compensate for any external disturbances on the chassis height or axle loads. Drive level function, lift functions and load functions shall be denied. In full limp home mode it shall be possible to manually control the chassis level using the RC.
- Faults that are severe triggers the total limp home. In this limp home mode all ECS functionality is deactivated. In particular this means that no actuator activity is allowed.

3. EQUIPMENT DESCRIPTION AND OPERATION

3.12 SRS Airbag system - if equipped

The SRS (Supplemental Restraint System) airbag system will become operable when the ignition switch is ON. For models equipped with the SRS airbag system, the ELR (Emergency Locking Retractor) seat belt with pretensioner is installed on the driver's seat. Using the ELR seat belt with pretensioner enhances the effectiveness of the SRS airbag system. Always wear the seat belt. If a frontal collision occurs causing a severe impact, the airbag instantly inflates to reduce the impact to the driver's head. At the same time, the seat belt pretensioner instantly retracts the seat belt to remove any additional slack in the seat belt resulting from the clothes worn by the occupant or the change of posture.

Seat belt Pretensioners

Seat belt pretensioners improves the restraining function of the seat belts. Pretensioners operate during a frontal collision. As a result of the belt being retracted by a certain amount before the driver or passenger moves forward the seat, the amount of forward movement is reduced. The combination use of airbags and seat belts with pretensioners results in maximum protection of the driver and passenger.

Precautions for the SRS airbag system

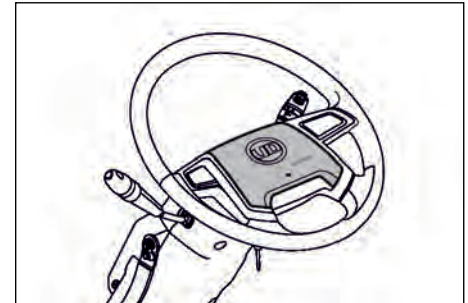
Always observe the points described below in order to maintain optimum performance of the SRS airbag system.

WARNING

When installing a vehicle accessory or when servicing the area around the driver's seat, the precautions detailed in this section must be observed. If they are not observed, the SRS airbag system may not activate properly or may inflate improperly. Furthermore, this may result in serious or fatal injuries.

When installing vehicle accessories

- Do not put a cover or a sticker on the SRS airbag housing.



3. EQUIPMENT DESCRIPTION AND OPERATION

- Radio waves that are emitted from a wireless device may adversely affect the control unit of the SRS airbag system. If installing a wireless device in your vehicle, contact the nearest authorized **UD Trucks** dealer.
- Do not modify the front area of the vehicle. This may change the impact to the sensor of the SRS airbag system and could result in a malfunction of the SRS airbag system. If you are intending a modification, consult the nearest authorized **UD Trucks** dealer.

Handling the components of the SRS airbag system

The SRS airbag housing located in the steering wheel pad must not be applied with excessive force, for example, hitting the steering wheel pad hard. This may result in a malfunction of the SRS airbag system, and in the worst case, may cause serious or fatal injuries.

When the SRS airbag system is deployed

Do not touch the components of the SRS airbag system immediately after airbag inflation. Several airbag system components will be hot and contact with them may cause severe burns.



WARNING

- **Always wear the seat belt. The airbag is not a substitute for the seat belt. Only using the airbag will not prevent the driver from flying out of the seat in the event of a collision.**
- **Always wear the seat belt properly while seated in the correct posture. If the seat belt is not worn properly, this may impair the effectiveness of the airbag system and could result in a serious injury.**
- **Do not replace the steering wheel with a non-genuine one. Also, do not affix a sticker on the horn pad. The SRS airbag system may not function properly.**
- **When repairing the areas around the steering wheel, instrument panel and pedals, or installing an audio device, contact the nearest authorized UD Trucks dealer in order to avoid adverse effect against the SRS airbag system.**

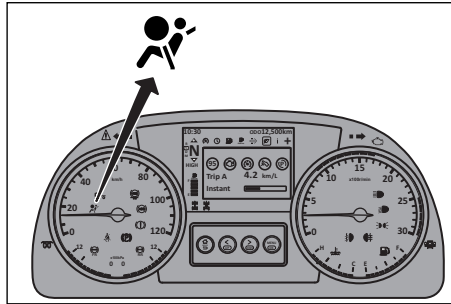
3. EQUIPMENT DESCRIPTION AND OPERATION

WARNING

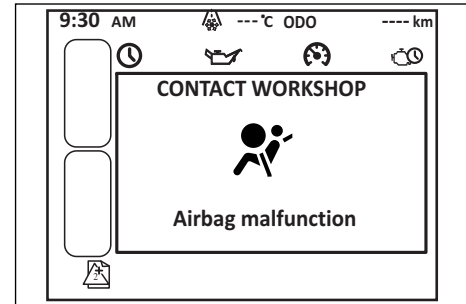
- Do not disconnect the SRS airbag connector.
- Do not perform circuit diagnosis for the SRS airbag system using an electronic tester, etc., and do not modify the SRS airbag system circuit. These may result in a malfunction of the SRS airbag system and could cause a serious accident.
- Do not place your hands or legs on the deployment area nor put your head or chest close to the deployment area of the airbag system. Do not drive gripping the steering wheel with the palm of your hand facing you. If the airbag inflates, this may result in a serious injury. Also, you may burn yourself.
- When discarding the vehicle, the airbags and the seat belt with pretensioner must be disposed of in accordance with the stipulated procedures. Contact the nearest authorized UD Trucks dealer.

Airbag warning indicator

When the ignition switch is set to ON or the engine is started, the airbag warning indicator illuminates and then goes off.



If the SRS airbag system is faulty, the airbag warning indicator illuminates and a warning is displayed on the display. If these warnings are displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer immediately.



When the airbag warning indicator appears, the SRS airbag system will not function properly.

WARNING

If the airbag warning indicator does not appear when the ignition switch is turned to the ON position or continuously appears while the ignition switch is in the ON and the engine is running, contact the nearest authorized UD Trucks dealer for service immediately.

3. EQUIPMENT DESCRIPTION AND OPERATION

Operation of the SRS airbag system

If a frontal collision occurs and its impact is severe enough to cause serious damage to the driver, the seat belt pretensioner retracts the belt in order to instantly remove any slack. At the same time, the airbag that is stored in the steering wheel immediately inflates.

The airbag immediately deflates after inflation.

**CAUTION**

The airbag module and pretensioner becomes hot when deployed. Do not touch them for at least 30 minutes.

NOTE

- **The SRS airbag system functions when a heavy impact, which may cause a serious damage to the driver, is applied to the front of the vehicle. In combination with the body restraining action of the seat belt, it mitigates the damage to the driver's head, face, or upper body.**
- **The SRS airbag system may not function on a light frontal impact. In addition, even when a heavy frontal impact is applied, it may not function if the driver wears the seat belt properly and there is little possibility of his/her suffering a serious injury.**
- **Even the deformation of vehicle front is severe; there may be the cases that the impact to the cabin is not so hard to function the SRS airbag system.**
- **Ensure to read "When the SRS airbag system functions/does not function."**

NOTE

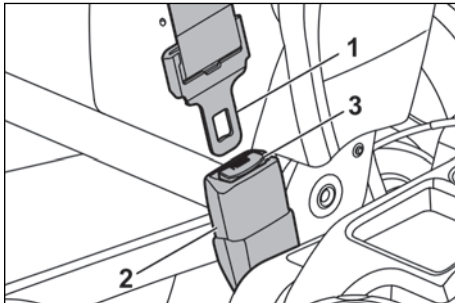
- **The SRS airbag inflates so quickly, the driver may receive a blow or be scratched by the airbag when it functions.**
- **The SRS airbag generates an explosive sound and white smoke when it functions, but it is not a fire. The white smoke is harmless but you should avoid inhaling too much. If the residue left by the function of the SRS airbag contacts your eyes or skin, wash it off with water quickly. It may cause irritation.**
- **Once functioned, the SRS airbag system would not function again. Be sure to replace a functioned SRS airbag with a new one at your nearest authorized UD Trucks dealer.**

3. EQUIPMENT DESCRIPTION AND OPERATION

How to wear and release the seat belt

The SRS airbag system is effective when used with the ELR seat belt with pretensioner. To wear and release the seat belt, follow the instructions.

- Avoid twisting the belt, and insert the tongue into the buckle until it locks in place. If the belt is twisted, the degree of safety provided by the seat belt will decrease.
- To release the seat belt, press the red button on the end of the buckle. The belt will automatically wind up. Always hold the tongue while returning the belt to its retracted position.



1. Tongue
2. Buckle
3. Button



WARNING

- Always wear the seat belts for safety. Drivers and passengers are required by law to wear seat belts.
- Never put on, take off, or adjust the seat belt while driving because it could lead to an accident.
- Adjust the shoulder strap so that it crosses over the shoulder and not the neck. Wear the waist belt over the pelvis. Do not place the waist belt over the stomach because it will be subjected to strong forces during a crash, etc.

When the SRS airbag system functions/does not function

Refer to the following examples.

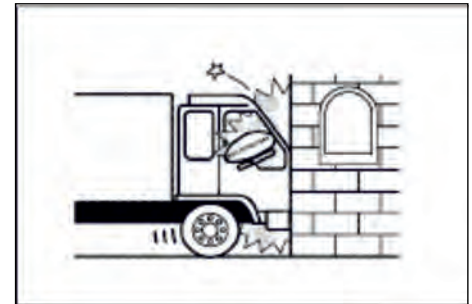
When the SRS airbag system functions

The SRS airbag system functions in the following cases if the impact is severe.

Frontal collision with another vehicle



Frontal collision against a hard wall



3. EQUIPMENT DESCRIPTION AND OPERATION

Depending on the degree of impact, the SRS airbag system may function if the lower side of the vehicle hits a projecting object such as a culvert, bollard, curb, etc. on a road while driving.

When the SRS airbag system does not always function

Depending on the degree of impact, the SRS airbag system may not function in the following cases.

Collision against a tree or an utility pole



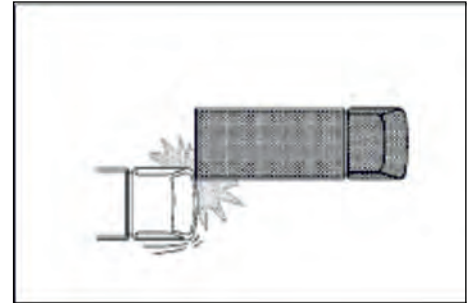
Falling into a large hole or a ditch



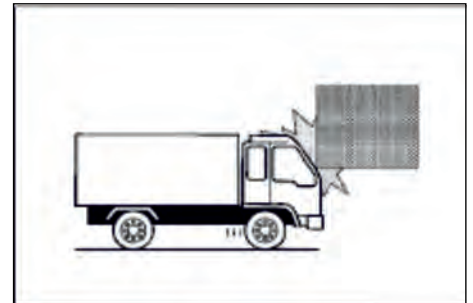
Diagonal collision



Offset collision with a small amount of overlap or at a slow collision speed



Collision under an overhead obstacle

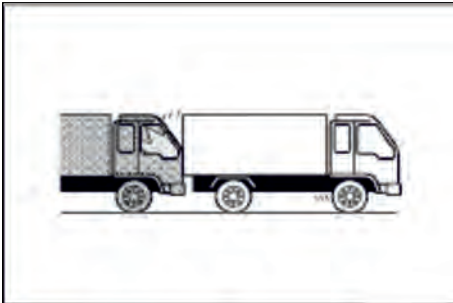


3. EQUIPMENT DESCRIPTION AND OPERATION

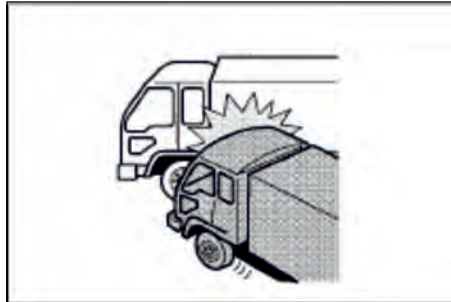
When the SRS airbag system does not function

The SRS airbag system does not function even in a frontal collision if the impact is not severe or in the following cases. Also, after the SRS airbag system functions once, it does not function again if the vehicle is subjected to another severe impact.

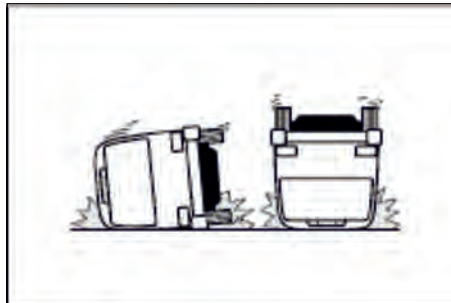
Hit by another vehicle from rear



Hit by another vehicle from side



Overturn or rollover

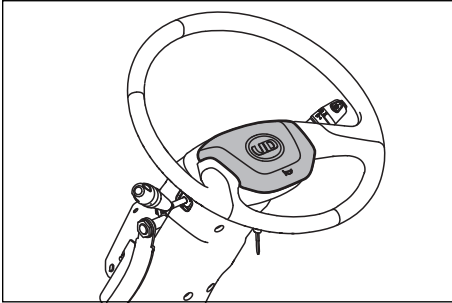


3. EQUIPMENT DESCRIPTION AND OPERATION

3.13 Others

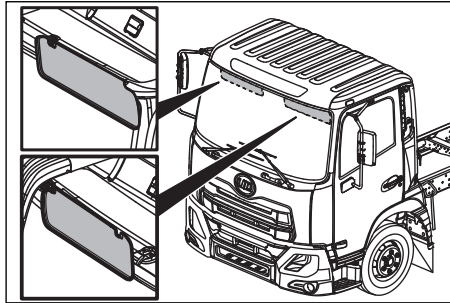
Horn

To sound the horn, push the centre pad area of the steering wheel.



Sun visor

Sun visors (Optional for co driver's side) are located on the interior just above the windscreen. The sun visors are fitted with hinged flaps which are adjustable to shield the driver's and co-driver's eyes from the sunlight.



Battery cut-off switch

 **WARNING**

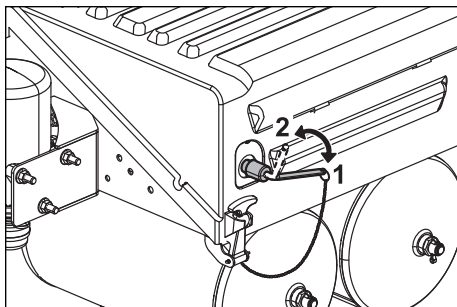
Do not turn OFF the battery power when the engine is running.

NOTE

While parking for longer duration, turn OFF the battery cut off switch and remove the switch handle. When the switch is OFF, the switch handle can be removed.

3. EQUIPMENT DESCRIPTION AND OPERATION

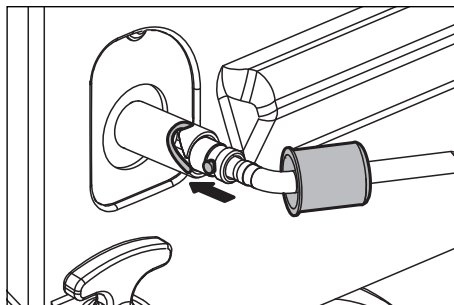
The battery cut-off switch is located on the battery box.



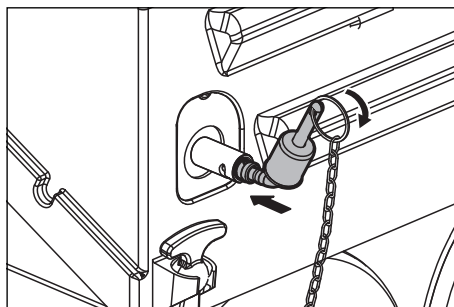
- 1. ON
- 2. OFF

Switch handle installation

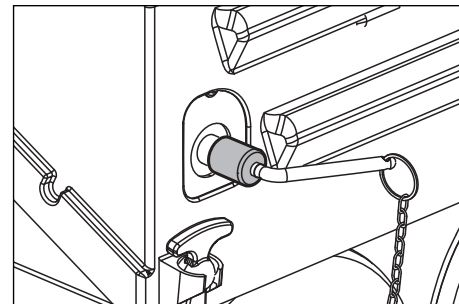
1. Pull the rubber bush out and insert the handle into the slot.



2. Press the handle horizontally and rotate clockwise simultaneously.



3. Secure the rubber bush back in place.



3. EQUIPMENT DESCRIPTION AND OPERATION

Engine protection

Engine protection controls the functions used to protect the engine from damage. When a critical condition arises (coolant temperature too high, low coolant level, etc.), the engine may be temporarily restricted.

The following are monitored:

- Engine coolant temperature
- Engine oil pressure
- Engine oil temperature
- Transmission oil temperature
- Engine over speed
- High starter temperature
- AdBlue level

When a monitored component/function approaches near the critical state, the driver is warned by warning lamp, text and/or buzzer. Other driver warnings will be suppressed.

The actions which can be taken by the system for engine protection are:

1. Yellow warning lamp turned ON
2. Red stop lamp turned ON
3. Reducing maximum torque

4. Reducing maximum engine speed
5. Reducing maximum road speed
6. Forcing the engine to idle after certain time
7. Shutting down the engine after a certain time (when vehicle is stopped).

Propeller shaft catcher- if equipped

Propeller shaft catcher is intended to hold the propeller shaft. If the propeller shaft breaks, catcher holds the propeller shaft, which would otherwise lead to serious accident.

3. EQUIPMENT DESCRIPTION AND OPERATION

Opening the front panel

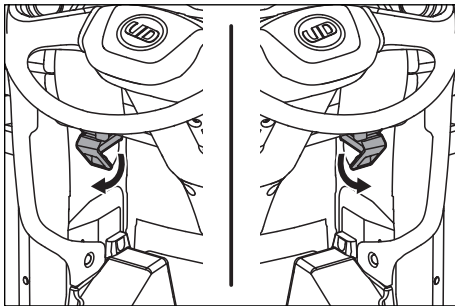
The following can be inspected by opening the front panel.

- Clutch fluid level
- Coolant level
- Washer fluid level
- Nylon filter for AC

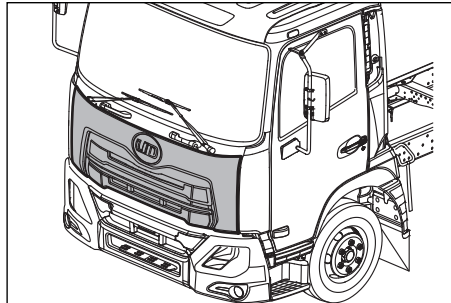
WARNING

Make sure the front panel is locked before driving. When inspecting inside the front panel, make sure that the wiper switch is OFF. If the wiper switch is ON, there may be risk of injury when carrying out the inspection.

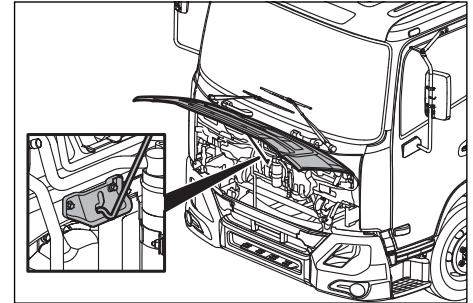
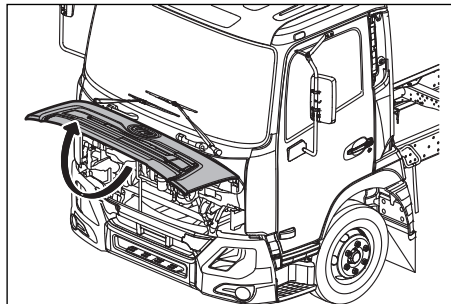
1. Pull the knob towards the driver seat to release the front panel lock.



2. Make sure the front panel is unlocked and is ready to open.

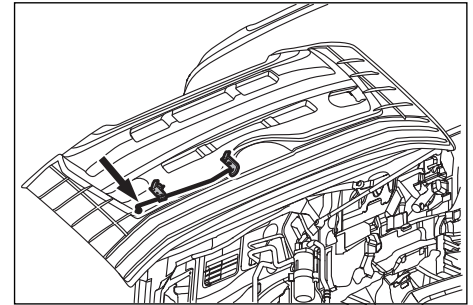


3. Open the front panel and secure it with the support rod.



NOTE

The support rod is placed behind the front panel.



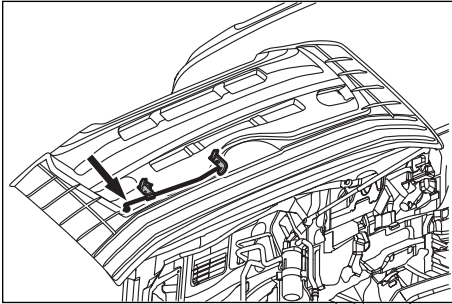
CAUTION

Do not store or place objects on the front panel when it is open.

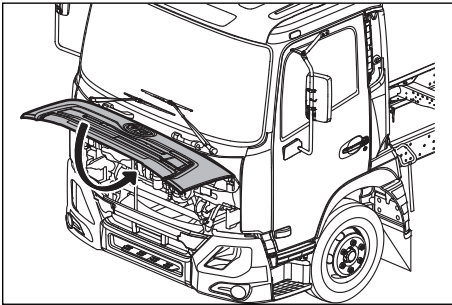
3. EQUIPMENT DESCRIPTION AND OPERATION

Closing the front panel

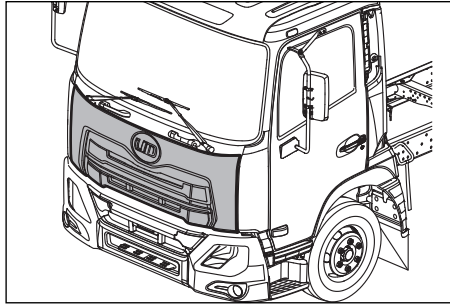
1. Hold the front panel with one hand, remove support rod and secure it in the retainer behind the front panel.



2. Push the front panel gently until it locks.



3. Make sure the front panel is locked.

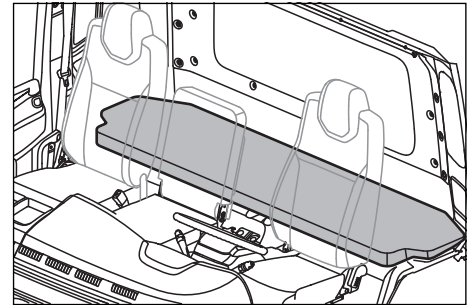


Resting compartment - if equipped

DANGER

Do not use the bed while the vehicle is moving. If the bed is used while driving, the person could be thrown around during a collision or emergency braking.

The resting compartment is intended for the driver to take a rest in the truck when the vehicle is stationary.

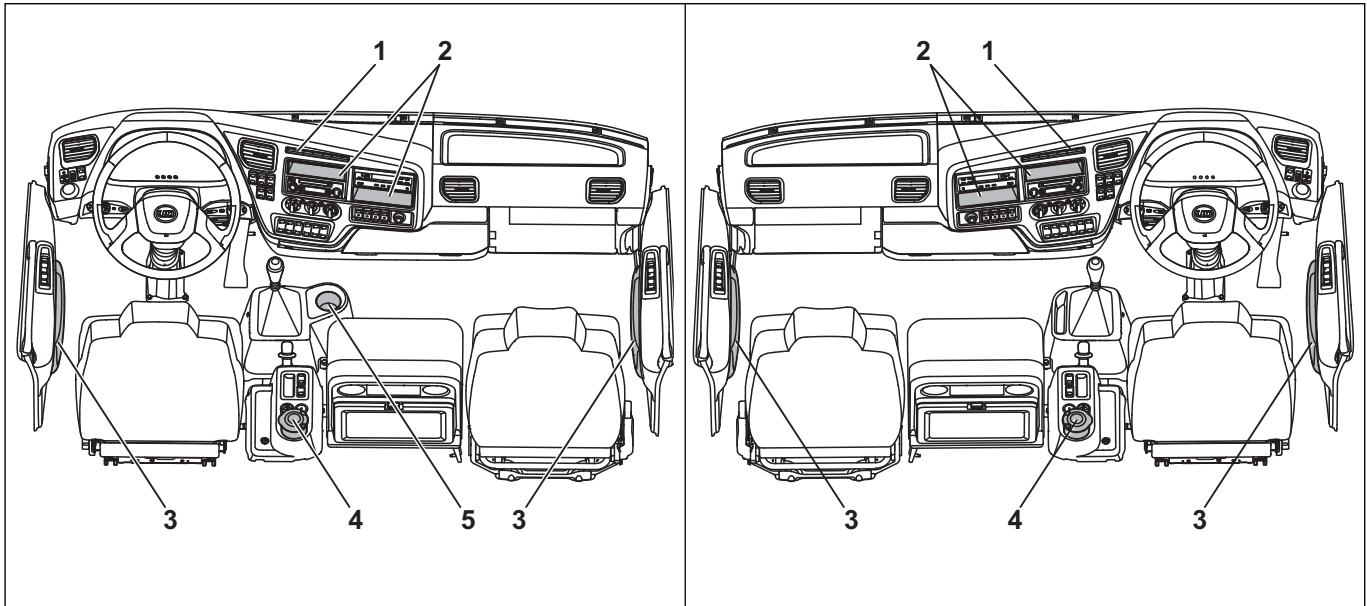


3. EQUIPMENT DESCRIPTION AND OPERATION

4. ACCESSORIES AND AUDIO

4.1 Accessories

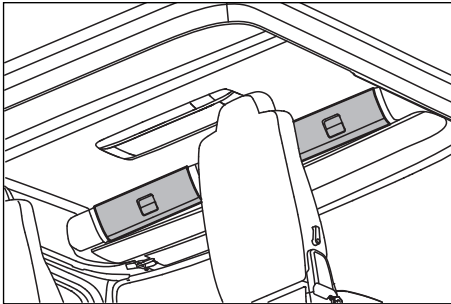
Storage compartment



1. Card holder
2. Storage compartment
3. Door pocket
4. Ash tray
5. Cup holder

4. ACCESSORIES AND AUDIO

Overhead storage - if equipped



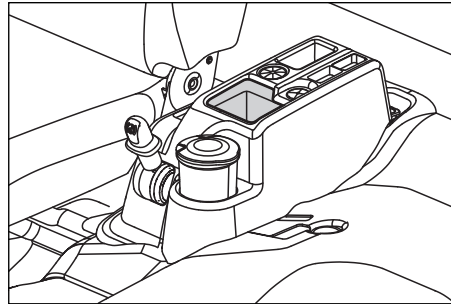
WARNING

Do not overload or store heavy objects in the overhead storage. Always keep the overhead storage closed while driving to prevent loose objects in the console to fall on the driver while driving.

NOTE

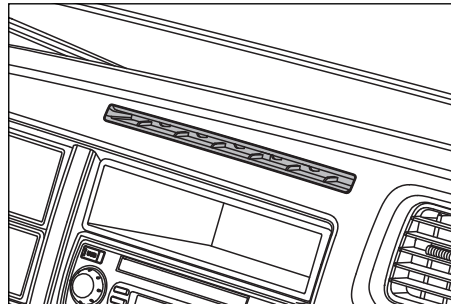
The overhead storage can be used to store things such as paper and books, etc. total weighing less than 3 kg.

Cup holder



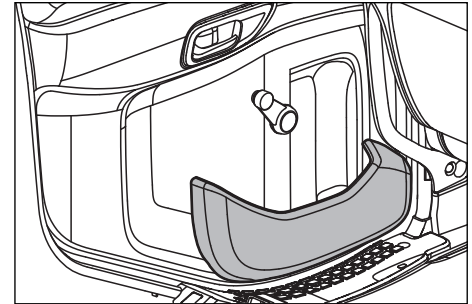
This is used to hold a bottle or a cup.

Card holder



This can be used to store toll tickets, telephone cards and highway cards.

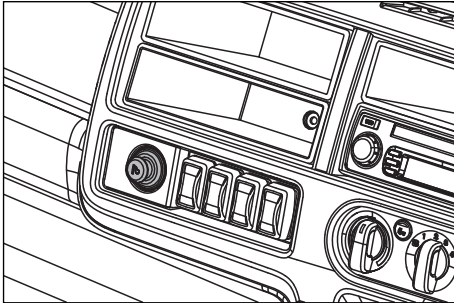
Door pocket



Door pockets are located in the right and left doors and can be used for storing road maps and magazines, etc. Do not store heavy objects in door pockets.

4. ACCESSORIES AND AUDIO

Power outlet 24 V or Cigarette lighter - if equipped



The power outlet/Cigarette lighter outlet provided on the dashboard will have electrical output 24 V.

NOTE

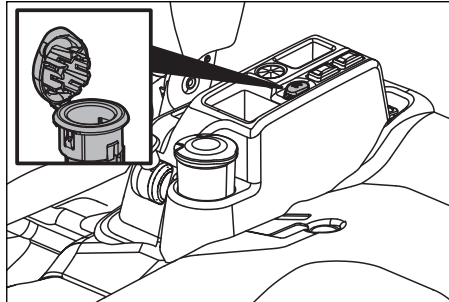
Always replace the cap on the power socket when not in use, otherwise the socket may be exposed to foreign materials.

WARNING

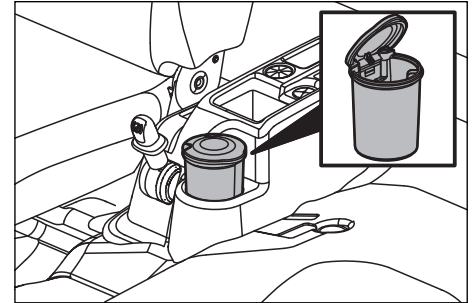
Do not overload the power outlet capacity. The power outlet capacity (24 V, 5 A or 24 V, 10A) is mentioned on the cap.

Power outlet 12 V

The power outlet provided on the HCV panel will have electrical output of 12 V.



Ash box



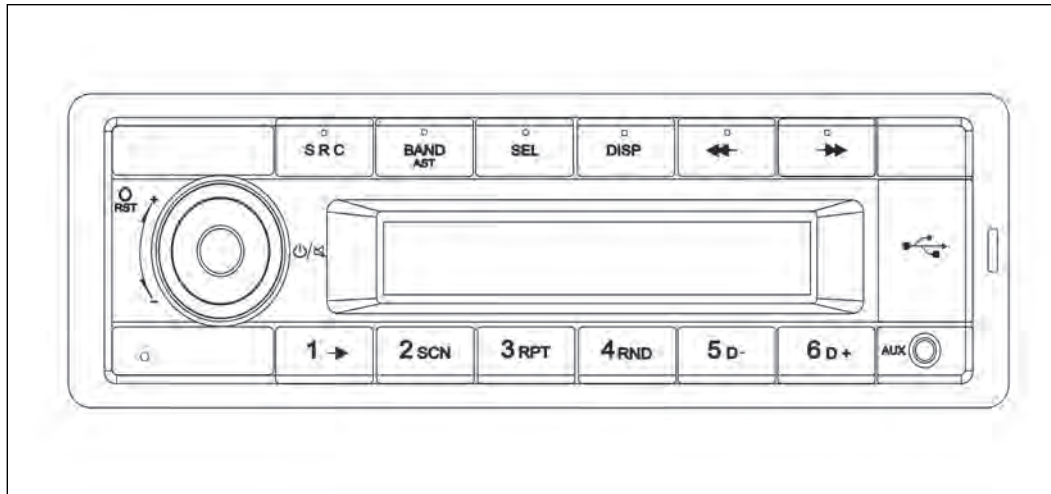
WARNING

- Do not put waste paper and empty cigarette cartons etc. in the ash tray.
- Clean the ash tray before driving.
- Make sure that the cigarette is extinguished and the ash tray lid is closed before leaving the vehicle.

Open the lid of the ash box to use it. Always close the lid after use. To clean the ash tray, pull it upwards.

4. ACCESSORIES AND AUDIO

4.2 Audio front panel - if equipped



Main KNOB

Press the Main Knob button to switch the Audio Unit ON

-Press the Main Knob once for MUTE

-Press and hold the Main Knob more than 2 seconds to power OFF

Rotate the Main Knob to adjust the volume

SOURCE(SRC)

01. Select one among the three available Audio sources by pressing the SRC button

-Radio

-USB (when USB inserted)

-AUX IN

When SRC is set to Radio mode (RADIO)

Tuning and storing stations

Press BAND button to select the desired Band. There are 6 bands available, FM1, FM2, FM3, MW1, MW2, LW. Each band can store 6 stations. So totally 36 stations can be stored. 18 AM and 18 FM.

These stations can be stored by auto-tuning or manual tuning.

01. Auto-Storing of Stations

Once the desired BAND type is selected, Press and hold the BAND button to search the stations available in the selected band and store these stations automatically in preset stations 1 to 6 based on Signal Strength. Once auto-storing is completed, the stored pre-set stations can be selected by pressing the appropriate button (1, 2, 3, 4, 5 & 6)

02. Manual Storing of Stations

Once the desired BAND type is selected, Press << button to search the station of low frequency or Press >> button to search the station of high frequency.

To store the searched station as one of the preset stations, press any of the required button (1, 2, 3, 4, 5 or 6) and hold it for more than 2 seconds to store the searched station as 1st, 2nd, 3rd, 4th, 5th or 6th station respectively.

NOTE

When you use Auto Storing, the new stations will replace any previously stored stations.

4. ACCESSORIES AND AUDIO

Set & Display System Clock

Press and hold the **DISP** button for more-than than 2 sec, system time gets displayed and hours digit is highlighted.

Press **SEL** button so that hours digit start blinking. Then using switch ◀◀ or ▶▶ set the hours and press the SEL button to confirm **HOUR**.Hour digit stops blinking, rotate the VOL knob to highlight the minutes digits and press the SEL button.

Minutes digits start blinking and repeat same steps performed during hour digit change to set the minutes.

Selecting Equalizer Type

Press SEL button to select one of the five equaliser types EQ OFF,POP,CLASSIC,ROCK,JAZZ by rotating the Volume knob.

When SRC is set to USB/AUX IN mode

To select & play MP3 songs

Press **DISP** button and select any one among available four option to Display.Folder Name, File Name, ID3 TAG , Clock.

Press 6D+ button, to select the next folder.

Press 5D- button, to select the previous folder.

Press << button to move to previous track . Press << button and hold it for more than 2 seconds for REWIND for the current track

Press >> button to move to next track. Press >> button and hold it for more than 2 seconds for FAST FORWARD for the current track

Press 4RND button to choose the track randomly. Press this button again to disable the random play.

Press 3RPT button to play the same song/track repeatedly. Press this button again to disable the repeat play.

Press 2SCN button to play the each of the MP3 songs from current folder for 10 seconds . Press 2SCN button again to continue playing with the specific song.

Press 1>|| button to toggle between PLAY & PAUSE.

On non-time display menu

Press and hold DISP button and select any one among the below six options using (◀◀/▶▶) button.

CLOCK, DX/LO, ST/MONO, 12H/24H, REGION, SCROLL(ON/OFF).

Once the option is selected, use volume knob to set the system under the selected option by rotating the volume knob.

Press SEL button and select any one among the below six options using (◀◀/▶▶) button

EX, BAS, TRE, BAL, FAD, LOUD.

Once the option is selected, use volume knob to set the system under the selected option by rotating the volume knob.

Selecting Equalizer Type

Press **SEL** button to select one of the five equaliser types EQ OFF, POP, CLASSIC, ROCK, JAZZ by rotating the Volume knob.

Frequency

BAND	RECEIVED FREQUENCY	AUTO SPACE	CHANNEL SPACE
USA			
FM	87.5-107.9MHz	200KHz	100KHz
AM	530-1710KHz	10KHz	10KHz
EUROPE			
FM	87.5-108.0MHz	100KHz	50KHz
MW	522-1620KHz	9KHz	9KHz
LW	144-288KHz	3KHz	3KHz
ASIA			
FM	87.5-108.0MHz	50KHz	50KHz
AM	522-1620KHz	9KHz	9KHz
N AFRICA			
FM	87.5-108.0MHz	100KHz	50KHz
MW	531-1620KHz	9KHz	9KHz
LW	153-252KHz	3KHz	3KHz
LATAM			
FM	87.5-107.9MHz	200KHz	200KHz
AM	530-1620KHz	10KHz	10KHz

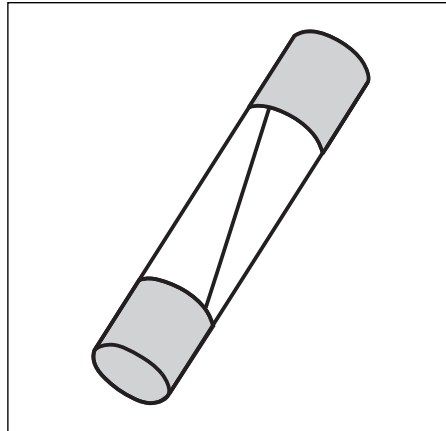
4. ACCESSORIES AND AUDIO

USB Function

Insert a USB device into the connector and the unit will begin to play automatically. To stop playback of USB device, push the SRC button to non USB mode and then remove the USB device.

1. USB flash memory 2 in 1 support.
2. FAT 12/FAT 32 format supported.
3. USB 1.1 support, USB 2.0 support (for 2.0, speed performance is as USB 1.1)
4. WMA files are supported.
5. Maximum number of MP3 files FAT 32 format supported is 65535 files. (Maximum number of MP3 files NTFS supported is 1000 files.)
6. Maximum USB capacity support is cap at 8 GB and best performance with songs not more than 500, and not exceeding 30 folders.
7. Not all USB devices are compatible with the unit.

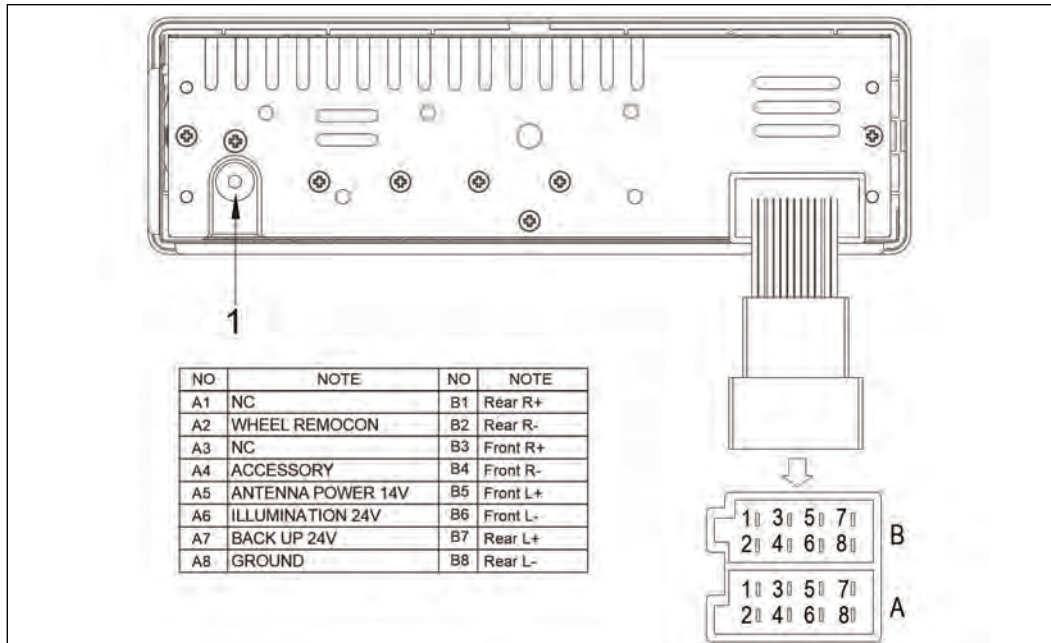
Fuse



Audio unit is equipped with a 10A fuse. When replacing the fuse, be sure to use one with an identical amperage rating. Using a fuse with a higher amperage rating may cause serious damage to the unit.

4. ACCESSORIES AND AUDIO

Electrical connection



4. ACCESSORIES AND AUDIO

4.3 Check before requesting service

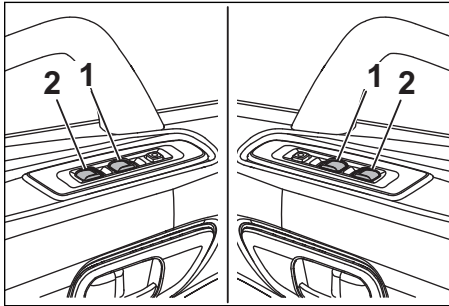
The following checklist can help you solve some problems which you may encounter when using the unit. Before consulting it, check the connections and follow the instructions in the user manual. Do not use the unit in abnormal condition, for example without sound, or with smoke or foul smell can cause fire or electric shock, immediately stop using it and call the store where you purchased it.

Problem	Possible cause	Solution
General		
The unit will not switch ON.	Car ignition is not on. Cable is not properly connected. Fuse is burnt.	Turn your car key in the ignition. Check cable connection. Replace fuse with a new fuse of the same capacity.
No sound	Volume is set at minimum or the mute function is on	Check the volume or switch the mute function off.
The unit or screen does not work normally.	The unit system is unstable.	Press the RESET button.
Mode TUNER		
Unable to receive stations.	The antenna is not connected properly.	Connect the antenna properly.
Poor quality reception of radio station.	The antenna is not fully extended or it is broken.	Fully extend the antenna and if broken, replace it with a new one.
Preset stations are lost.	The battery cable is not properly connected.	Connect the permanent live on the unit to the permanent live on the vehicle.
Mode USB		
Unable to insert USB device	The USB device has been inserted the wrong way round.	Insert it the other way around.
The USB device cannot be read.	NTFS format is not supported.	Check that the file system is in FAT or FAT32 format. Due to different formats, some models of storage devices or MP3 players may not be read.

5. AIRCONDITIONING

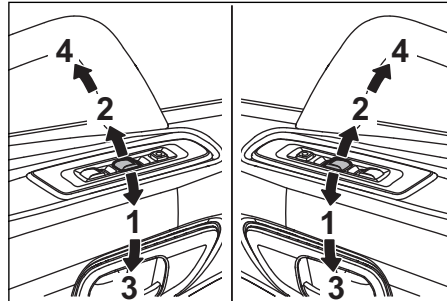
5.1 Ventilation

Opening and closing of window- Power window (If equipped)



Switches on driver side.

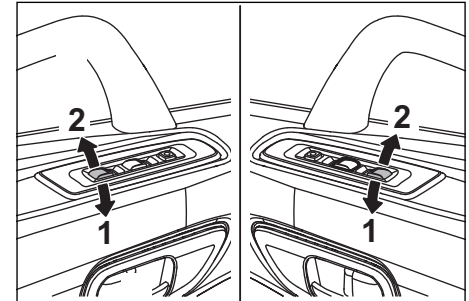
The power window switch module provided on the driver side consists of switches to open and close the windows for both the driver and passenger side. Pressing the switch (1) operates the driver side power window and (2) operates the passengers. Power window can be operated only when the ignition switch is in ON position.



Switches on driver side-Operation of driver side window.

The driver's side door window can be closed or opened to required position by pushing or pulling the switch lightly to position 1 and 2, The window stops in its current position when the switch is released.

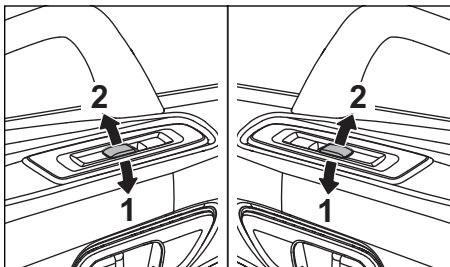
By pushing or pulling switch further to position 3 and 4 the window continues to move until fully closed or fully open position, even if the switch is released.



Switches on driver side-Operation of passenger side window.

The passenger side door window can be closed or opened to required position by pushing or pulling the switch lightly to position 1 and 2, The window stops in its current position when the switch is released.

5. AIRCONDITIONING



Switches on passenger side.

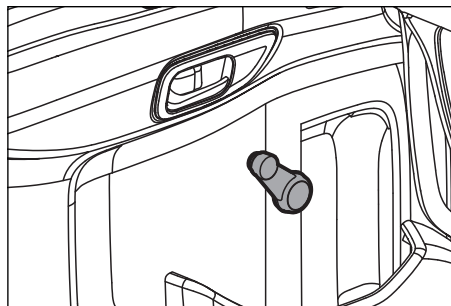
The passenger side power window switch is used to open or close the passenger side window by pushing or pulling the switch lightly to position 1 and 2. The window stops in its current position when the switch is released.



WARNING

Make sure that no body parts are extended outside the window while operating the switch. Failing to do so might result in injuries.

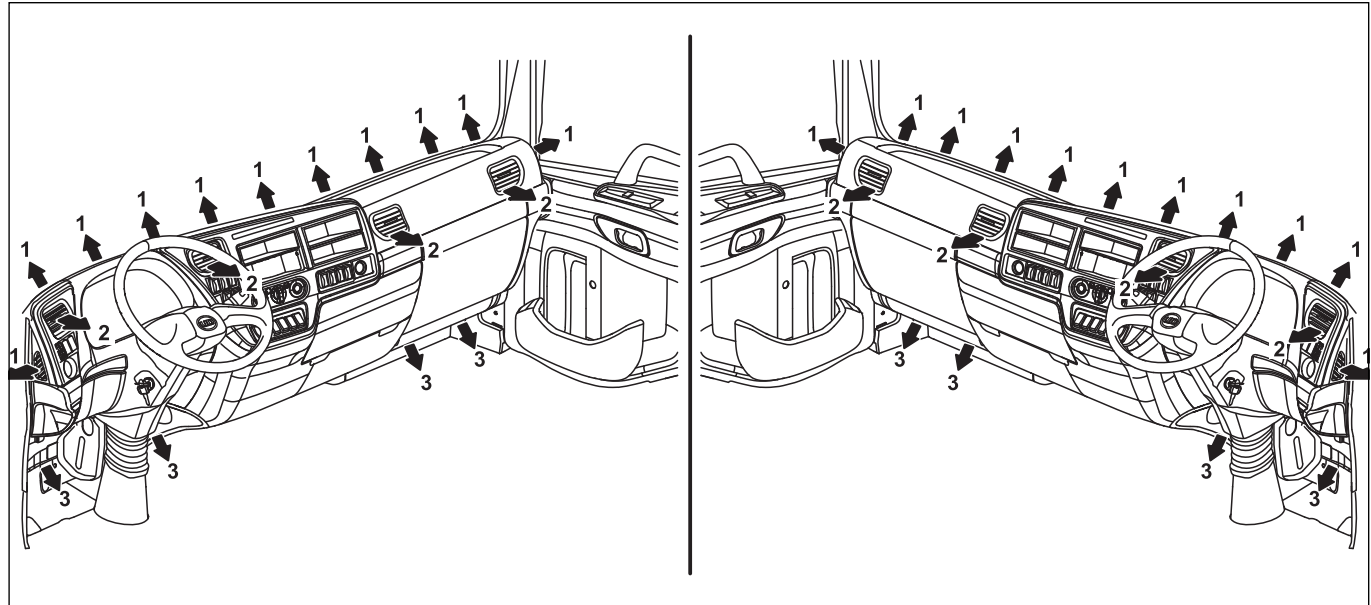
Opening and closing of window- Manual (If equipped)



The window opening/closing levers are provided inside of each door.

5.2 Air conditioner

Air vent



- 1. Air blown to windscreen
- 2. Air blown to vent outlets
- 3. Air blown to foot rest

CAUTION

Do not switch on the blower when the engine is OFF. Doing so could drain the battery.

5. AIRCONDITIONING

Manual Air-Conditioner



DANGER

Do not switch ON the air conditioning system and sleep or stay for a prolonged time in the vehicle with the windows closed when the vehicle is at stand still.



WARNING

Do not use air recirculation for a long period of time. Leaving the air conditioner set to “recirculation mode” for a long period of time will cause the windows to fog up and impair visibility. Switch to “Fresh air mode” and continue driving after the fog is cleared.

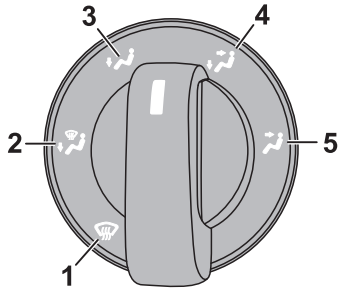
NOTE

When starting the AC after parking for long time, keep the windows open for 3-4 minutes to bring the inside temperature down to the outside temperature. This can help in getting the cabin cooled quickly.

The control panel for the Air-Conditioning system will have the following variants.

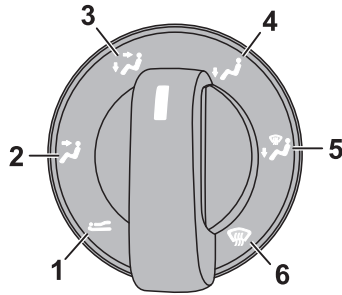
1. Manual controlled air conditioning-RHD
2. Manual controlled air conditioning-LHD
3. Manual controlled heater unit-RHD
4. Manual controlled heater unit-LHD
5. Manual controlled only air cooling-RHD
6. Manual controlled only air cooling-LHD
7. Manual controlled vent unit-RHD
8. Manual controlled vent unit-LHD

Mode knob position details - RHD



1. Defrost
2. Feet / Defrost
3. Feet
4. Feet / Vent
5. Vent

Mode knob position details - LHD



1. Bunk mode - Only for LHD vehicles
2. Vent
3. Feet / Vent
4. Feet
5. Feet / Defrost
6. Defrost

Defrost: Directs air distribution towards the windscreen and the window.

Feet/Defrost: Directs air distribution towards the windscreen, window and foot well.

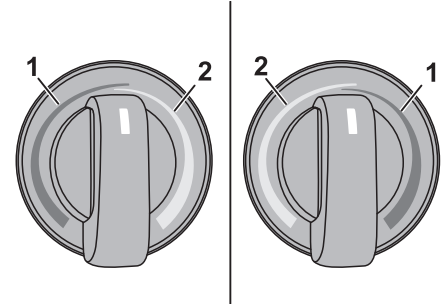
Feet: Directs air to the foot well

Feet/Vent: Directs air to the foot well and into the whole cab.

Vent: Directs air to the centre and side vents only.

Bunk mode: Directs air to the vent.

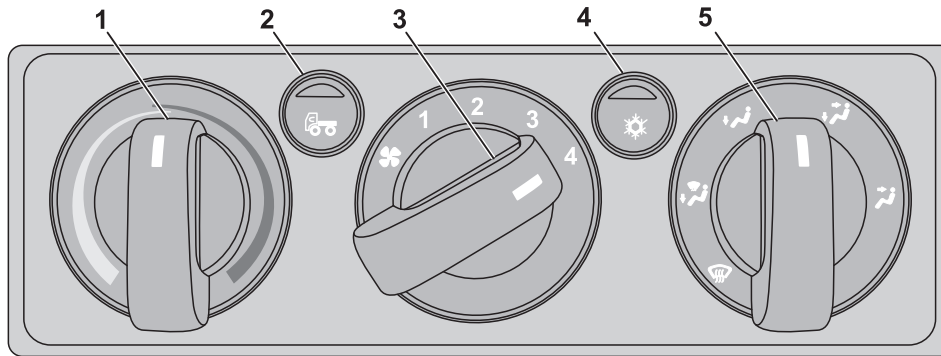
Temperature control knob



1. Red - heating
2. Blue - cooling

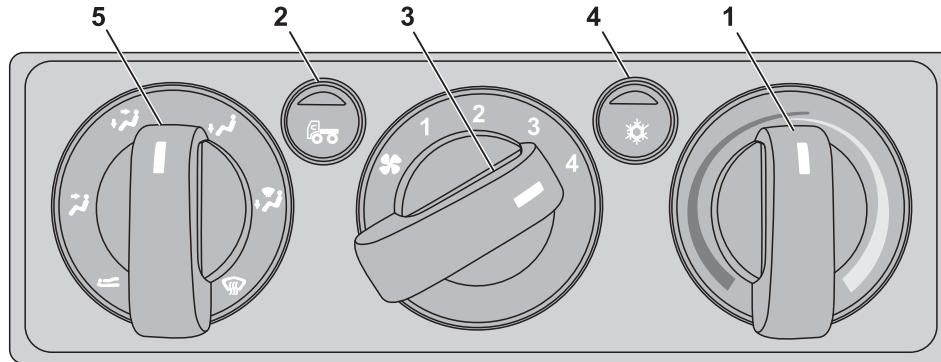
5. AIRCONDITIONING

Manual controlled air conditioning - RHD

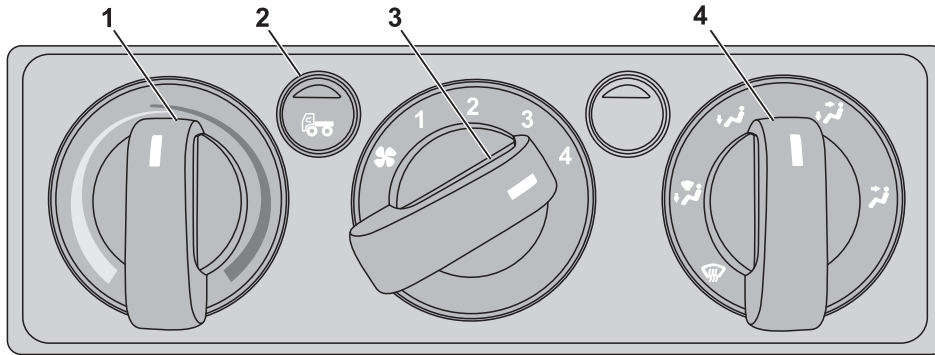


1. Temperature control knob
2. Fresh/recirculation switch
3. Blower knob
4. Cooler ON/OFF switch
5. Mode knob (for LHD, there is an additional bunk mode which is not operational)

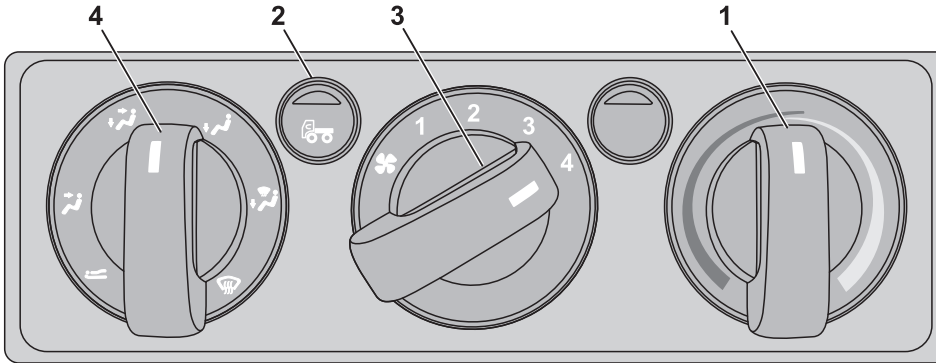
Manual controlled air conditioning - LHD



Manual controlled heater unit only - RHD



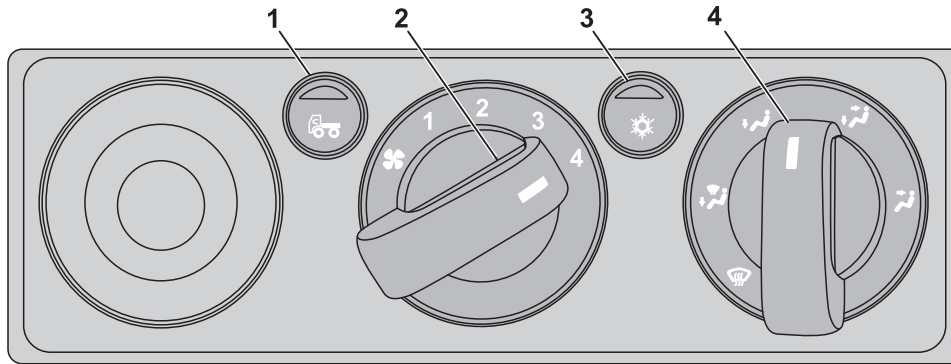
Manual controlled heater unit only - LHD



1. Temperature control knob
2. Fresh/recirculation switch
3. Blower knob
4. Mode knob (for LHD there is additional bunk mode which is not operational)

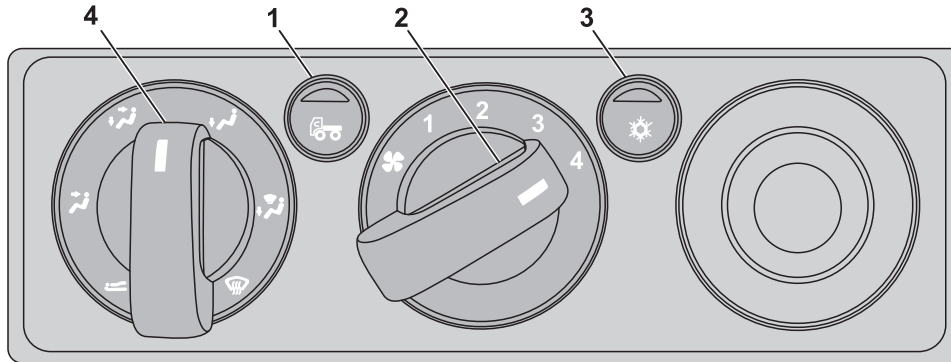
5. AIRCONDITIONING

Manual controlled air cooling unit only - RHD

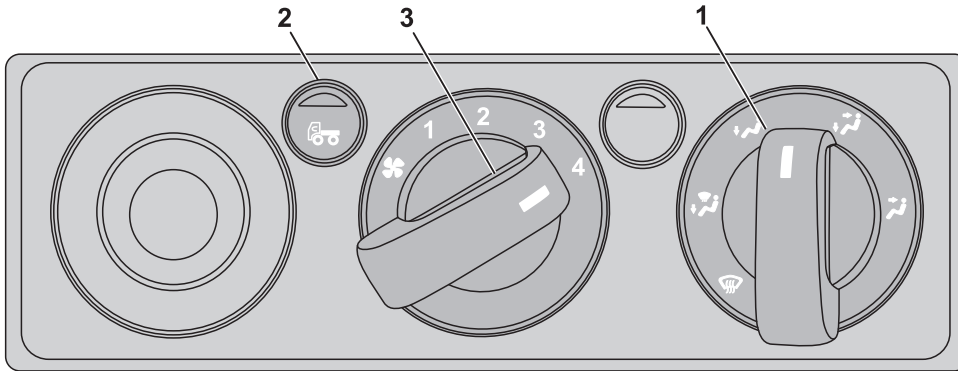


1. Fresh/recirculation switch
2. Blower knob
3. AC ON/OFF
4. Mode knob (for LHD there is additional bunk mode which is not operational)

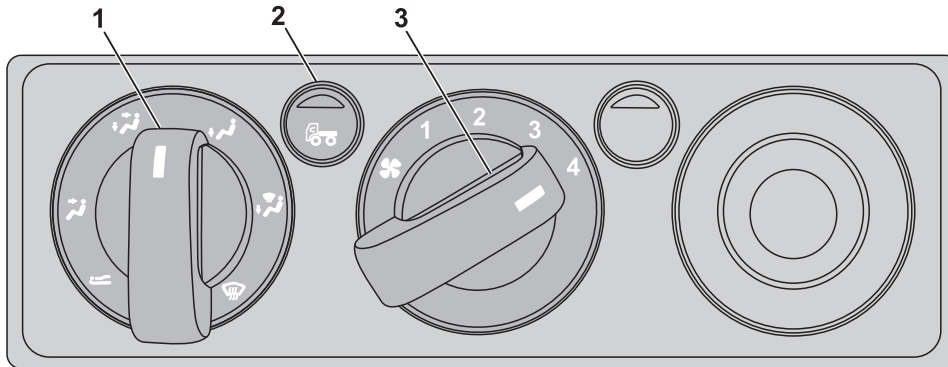
Manual controlled air cooling unit only - LHD



Manual controlled vent only - RHD



Manual controlled vent only - LHD



- 1. Mode knob
- 2. Fresh/recirculation switch
- 3. Blower knob

5. AIRCONDITIONING

If the AC system is not working properly, contact nearest authorised UD Trucks dealer.

NOTE

Use Freon HFC134a to help protect the environment. Only use the specified refrigerant to charge the cooling system.

CAUTION

Do not discharge refrigerant to the atmosphere. In order to discharge refrigerant in an environmental friendly manner, please contact your authorised UD Trucks dealer.

6. DAILY INSPECTION

6.1 Areas to inspect

- To prevent accidents and malfunctions it is important for the driver to be completely aware of the vehicle's condition on a day to day basis. For this reason, always carry out the daily (pre-driving) inspection before driving the vehicle.
- Carry out the inspection in the following order. The detailed inspection instructions are explained below.
- **The inspection points shown in bold and * are carried out according to the vehicle's mileage, driving conditions and other factors.**
- If malfunctions appear, have the vehicle inspected and repaired at authorised **UD Trucks** dealer.

6. DAILY INSPECTION

<p>1. Have the previous day's problems been repaired/rectified completely?</p>	
<p>2. Vehicle exterior</p>	<ul style="list-style-type: none"> • Is there any fluid on the ground? • Is there any damage to the body, windscreen and registration plates? • Is the air filter indicator shows red? • Is the engine oil filled to the proper level? * • Is the engine coolant filled to the proper level? * • Is the clutch fluid filled to the proper level? * • Is the windscreen washer fluid filled to the proper level? * • Left side door operation - grab handles - entry steps in good condition? • Check fuel tank and cap for damage and loose • Truck body (damage and whether the load secured both sides and rear) • Rear tyres - wear, damage, inflation (Stones between duals) • Check if any wheel nut is missing/loose • Are the wheel nuts are tightened to the specified torque for every 10000 km? * • Is the spare wheel inflated to proper pressure? • Are the rear lights dirty or damaged? • Is the AdBlue tank and cap damaged? • Has the water accumulated in water separator been drained? * • Is the steering servo oil filled to the proper level? * • Right side door operation - grab handles - entry steps in good condition? • Has water condensation been removed from the air reservoir? • Are the front lights dirty or damaged? • Has the front spring pin and shackle pin been greased every 15000 km? * • Has the rear spring pin and shackle pin been greased every 15000 km? • Has the fifth wheel been greased every 40000 km? * • Has the cab tilt operation been checked every week? * • Are there any loose or missing parts/components? * • Is the brake lining wear checked for every 10000 km? * • Is the battery fluid is in proper level (Weekly basis)? * • Has the battery top surface been cleaned (Weekly basis)? * • Has the vent holes on the battery caps been cleaned (Monthly basis)? *

6. DAILY INSPECTION

3. Get into the cab	<ul style="list-style-type: none">• Has the parking brake been released properly?• Is the window washer fluid spraying properly? *• Do the wipers wipe properly? *
4. Start the engine	<ul style="list-style-type: none">• Does the engine start well? Are there any abnormal sounds?• Does the engine run at idling speed and accelerate properly?• Does the air pressure on the pressure gauge rise well?• Does the air exhaust sound normal when the brake valve (pedal) is pressed and released?• Do the lights and indicators light up and flash properly?
5. Drive the vehicle	<ul style="list-style-type: none">• Do the brakes work well?

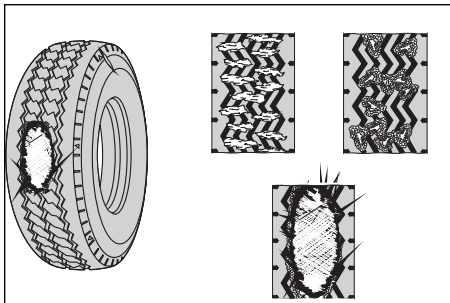
6. DAILY INSPECTION

6.2 Inspection instructions

Tyre inflation pressure, cracks, damage and abnormal wear

DANGER

Driving without the correct air pressure will result in abnormal tyre wear and burst tyres.



Inspect the tyres for cracks, damages, and abnormal tread wear. Check the tyres (including spare tyre) with a pressure gauge. Always remember to put on the valve cap after inspection.

Refer tyre manufacturers recommendation for the correct tyre pressure.

Tyre tread groove depth

WARNING

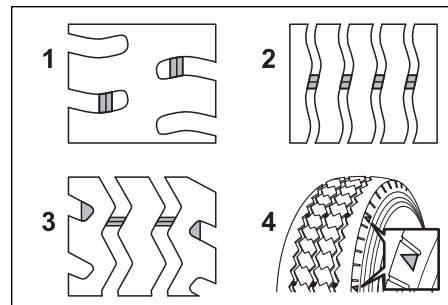
Do not drive with cracked, damaged or worn out tyres.

WARNING

Do not drive with tyres which have a tread groove depth less than the usage limit. Doing so could cause slipping and hydroplaning at high speeds.

Tyre tread groove depth usage limit

Driving condition	Limit value
When driving on general roads	1.6 mm
When driving on highways	3.2 mm



1. Lug pattern
2. Rib pattern
3. Rib/lug pattern
4. TWI (Tread Wear Indicator) mark on tyre

Inspect the tyre to make sure that it has enough tread. Replace the tyres with new ones when the tyres are worn out and the tread wear indicator is exposed.

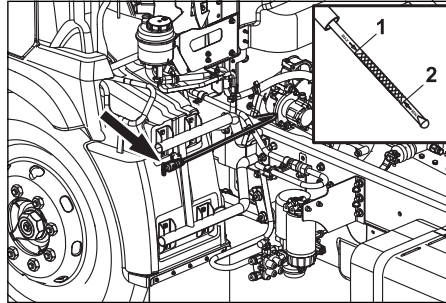
Wheel end assembly inspection

Inspect the vehicle when it is parked on level ground and the parking brake is applied. Walk around the vehicle and visually inspect each wheel end assembly for the following conditions:

- Loose or damaged wheel nuts.
- Loose, damaged or missing hubcaps.
- Oil leaks at front hub cap.
- Grease spill at rear hub.
- Lubricant on the hub, or inside the wheel area.

If any of the above conditions are found, the vehicle should be put out of service until the parts have been repaired or corrected by authorised **UD Trucks** dealer.

Engine oil level



1. MAX
2. MIN

Pull out the dipstick and wipe off the oil from the gauge surface. Re-insert the dipstick fully and remove. Check whether the oil level is between MAX and MIN.

Always maintain the oil level between the MAX and MIN mark on the dipstick.

If the oil level is below MIN, top up the engine oil as necessarily. Refer to “**Recommended lubricants and Capacity**” in Chapter 11.

To fill engine oil, Refer to “**Changing the engine oil**” in Chapter 8.

NOTE

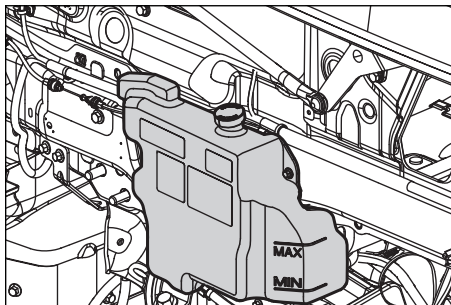
Always check the engine oil level when the engine is cold.

6. DAILY INSPECTION

Coolant level

WARNING

Do not open the coolant reservoir cap when the engine is running. Make sure that the engine has cooled down before checking the coolant level.



CAUTION

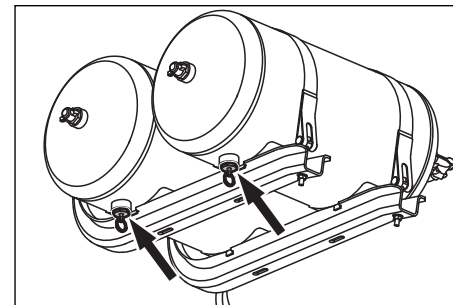
Do not top up reservoir with water.

Open the front panel to check the engine coolant level. Check the coolant level only when the engine is cool. Check the coolant level in the reservoir tank. The coolant level should be maintained between the MAX and MIN mark. If the coolant level is below the MIN mark, add UD Long Life Coolant up to the MAX mark.

CAUTION

Continuing to drive when the coolant level is low can cause engine overheating and could damage the engine.

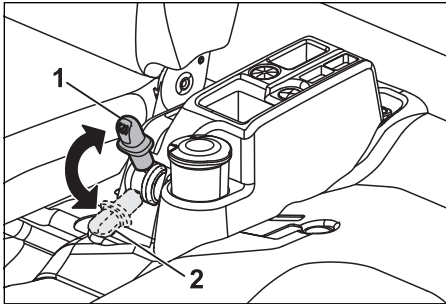
Draining water condensate from the air reservoir



Pull the spring loaded drain plug and drain the water. Make sure that the drain plug is closed completely after draining.

- If a large amount of water is drained out, there could be a problem with the air dryer, so have it inspected at authorised **UD Trucks** dealer immediately.

Parking brake lever tension



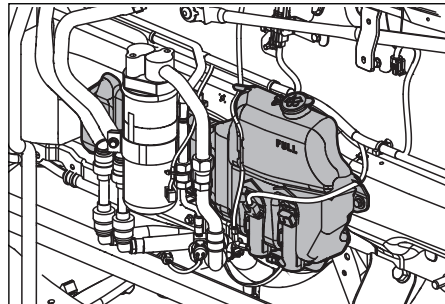
1. Parking brake applied
2. Parking brake released

- Pull the lever to park position and make sure that you can hear the sound of the air being exhausted.
- Make sure the lever is secured in the park position
- After releasing the parking brake, make sure the tell tale goes out before moving the vehicle.

Windscreen washer level and spray operation

WARNING

Do not use coolant as washer fluid since it could impair windscreen visibility.



NOTE

Always keep the washer tank filled with fluid to the specified level.

- Open the front panel.
- Check the fluid level.

- If it is low, open the reservoir cap and add washer fluid through the reservoir filler opening.

Check if the washer fluid sprays normally. If not, have it inspected and serviced at authorised **UD Trucks** dealer.

CAUTION

- **Do not replace the washer fluid with soapy water or any other fluids.**
- **Do not operate the wipers when the windscreen is dry.**
- **To avoid damaging to the wiper blades, do not use the wipers when the windscreen is frozen.**

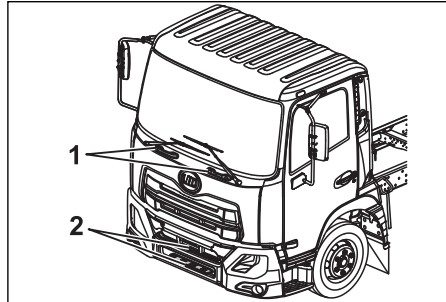
6. DAILY INSPECTION

Windscreen washer fluid

Always use **UD** windscreen washer fluid. The windscreen washer fluid is mixed with water when used. If the concentration is not adjusted to match the temperature and usage conditions, it could freeze and will not spray from the washer jets and will damage the motor. Under normal conditions, use 3.5 parts of water mixed with 1 part of **UD** washer fluid as a guideline. During winter, use 2 parts water mixed with 1 part washer fluid and, if the temperature drops to -20°C , use water and washer fluid in equal quantity. If the windscreen is masked due to oil and chemicals, use 1.5 parts water mixed with 1 part **UD** washer fluid.

Access to windscreen

With the windscreen wiper control OFF, use the grab handle and the steps to gain access to the windscreen.



1. Grab handle
2. Steps

WARNING

Make sure that the steps and grab handles are free of oil, lubricants and other liquids which cause slipping.

Makes sure that front panel is in locked position before accessing the wind screen.

Engine starting performance and abnormal sounds

Check if the engine starts quickly and runs smoothly.

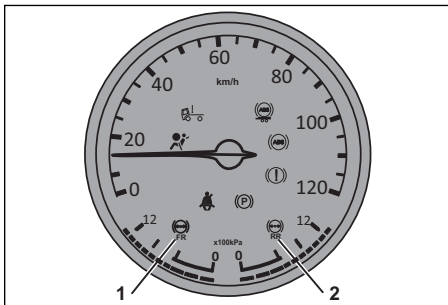
- Check for any abnormal sounds when the engine is started or when running at idle.

Engine performance when running at low speeds and when accelerating

When the engine warming up, check that the engine continues to run smoothly at idle and also check whether the tachometer is indicating the idle rpm in the specified range, Refer to “**Engine specification**” in Chapter 11.

- Gradually accelerate the engine and check that the accelerator pedal moves without sticking and the engine runs smoothly without knocking.

Air charging performance



- Air pressure, front brake
- Air pressure, rear brake

Check the air pressure of the front and rear brakes by monitoring the pressure gauge in the IC. It is normal if the time taken for the indicator to rise is similar to the value in the table.

If it does not rise normally, there could be a leak in the air system or other problems. Contact authorised **UD Trucks** dealer immediately.

NOTE

When the brake pressure (front or/and rear) is less than 6 Bars and vehicle speed is less than 20kmph, then the tell-tale (!) and the Icon (!) are seen in the instrument cluster.

When the vehicle speed crosses 20kmph and still the pressure is less than 6 bars, then the Red stop lamp, buzzer sound and pop up in the multi display will be initiated.

Standard time	Engine speed (Idling)	Air pressure
Less than 12 min	600 rpm	0 → 900kPa {0 → 9 bar}

Pneumatic system pressure	770-930 kPa {7.7 - 9.3 bar}
---------------------------	--------------------------------

NOTE

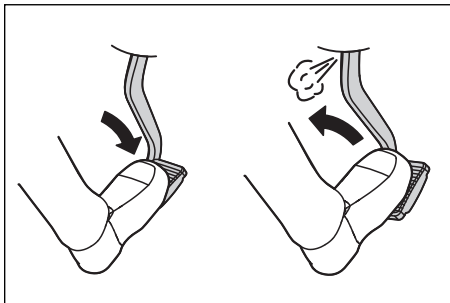
If the air reservoir is filled with a pressure of 0 kPa {0 bar}, the gauge indicator on the display will not move for a while after the engine has started. Also, the two indicators will not start moving at the same time. This is not a gauge malfunction. This happens because there is a pressure regulating valve between the air compressor and the brake air reservoir.

6. DAILY INSPECTION

Brake valve operation

WARNING

Always keep the area clean around the pedals. Empty cans and gravel can wedge into the pedal and interfere with brake operation.

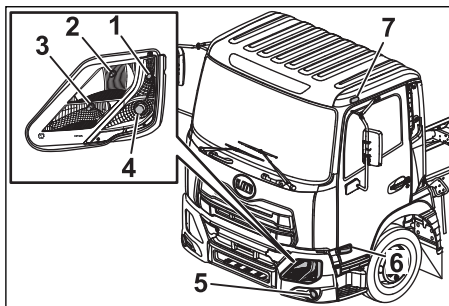


The brake valve operation is normal, when the brake pedal does not stick when pressed and the air exhaust sound can be heard when released. The brake pedal should return to its original position when released.

Light operation

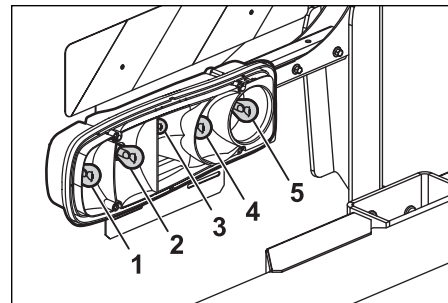
Turn ON each light switch and check that corresponding light lights up or flashes. The turn indicators are normal if they flash 60 to 120 times per minute. Check that the light lenses and reflectors are free of dirt and damage.

Front lights



1. Position lamp
2. Low beam
3. High beam (and DRL if equipped)
4. Turn indicator/Hazard lamp
5. Front fog lamp
6. Side direction indicator
7. Front end out line marker lamp (if equipped)

Rear lights



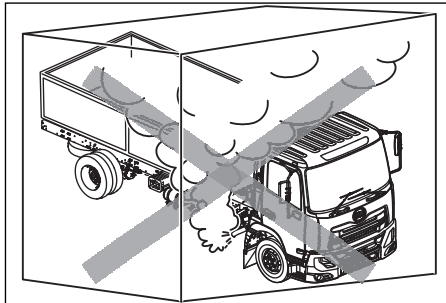
1. Turn indicator/Hazard lamp
2. Stop lamp
3. Rear position lamp
4. Back up lamp
5. Rear fog lamp

7. CORRECT DRIVING OPERATION

7.1 Correct driving operation

Before starting the engine

- Check the area around the vehicle to make sure that there are no people or obstacles in the vicinity.
- Adjust the driver's seat and steering wheel so that all the switches and pedals can be operated easily.
- Adjust the mirrors so that driver can see the front and rear side of the vehicle clearly.



⚠ WARNING

Do not run the engine or drive in poor ventilation.

Starting the engine

⚠ WARNING

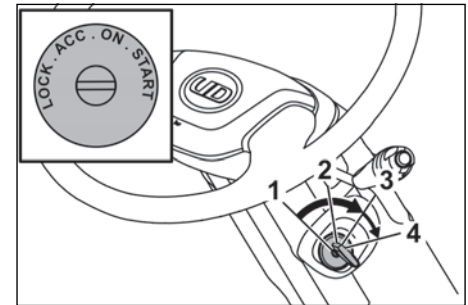
Make sure that you are seated comfortably in the driving seat with the seat belt fastened before starting the engine.

⚠ CAUTION

If the engine does not start, crank the engine at an interval of 30 seconds. If the engine fails to start after three cranks, contact authorised UD Trucks dealer for assistance.

1. Apply the parking brake.
2. Put the gearshift lever into neutral.
3. Make sure the auxiliary brake switch is OFF.

4. Turn the ignition switch to ON. Wait 3 seconds to initialise all the meters in instrument cluster before moving to "START".
5. Press the clutch and brake pedals fully and turn the ignition key to "START" to crank the engine.



1. LOCK
2. ACC
3. ON
4. START

7. CORRECT DRIVING OPERATION

LOCK: This is the position that turns off the power to the engine. It is also the position in which the key can be inserted and removed and in which the steering wheel can be locked. Turning the steering wheel after removing the key will automatically lock the steering wheel in the fixed position to prevent theft.

ACC (Accessories): This is the position used to stop the engine. It is also the position that is used to switch ON the accessories like radio, when parked, while the engine is stopped.

ON: This is the position used when the engine is running. Absolutely do not turn the key to any other position while driving. In addition, if the air temperature is low when starting the engine, it provides power to the intake air heater (optional) and air dryer heater.

START: This is the position used to start the engine. The key automatically returns to the ON position when released. Do not turn the key to the START position after the engine has started.



WARNING

Do not move the vehicle with the ignition key removed or with it in the LOCK position. The steering wheel could lock and prevent steering.



WARNING

Do not turn the ignition switch to any position other than the ON position while driving. If turned to the ACC position engine will stop, and if turned to the LOCK position, the steering wheel could lock and prevent steering.

Stopping the engine

NOTE

Run the engine at idle for 3 minutes before turning it OFF.

Turn the ignition switch from ON (3) position to the ACC (2) position, to turn OFF the engine.



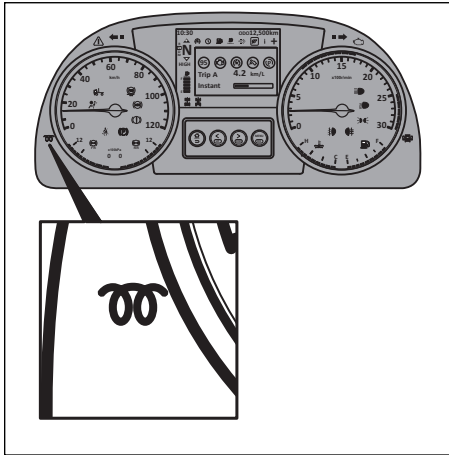
CAUTION

If the engine does not stop even though the ignition switch has been turned to ACC, move the vehicle to the nearest place which is free of traffic, switch ON the hazard lamp and contact the nearest authorised UD Trucks dealer for assistance.

7. CORRECT DRIVING OPERATION

Starting the engine in cold condition - if equipped with Engine Pre-heater

Turn the key to ON, and wait until the heater element symbol goes OFF and then crank the engine.



Unloading from an air suspension vehicle

If a large freight applying heavy load on the coupler is removed from an air suspension vehicle (for example, when a large container is lifted up with a crane), the height of the vehicle will increase rapidly and this may cause an accident.

Before removing large freight from the vehicle, lower the height of the coupler using the height control, and sufficiently reduce the air pressure in the air springs.

7. CORRECT DRIVING OPERATION

7.2 Operation precautions

Handling a new vehicle

The service life and performance of a truck depend largely on how it is handled during the initial running in period. To extend the service life and make sure the vehicle is operating at its maximum performance, pay attention to the following recommendations:

Start-off precautions

- Avoid starting off or stopping suddenly. Starting off suddenly not only causes the clutch to wear out fast but also causes premature abnormal wear to the tyre and brake linings.
- Avoid half clutching as much as possible. Half clutching is one of the major causes of clutch damage. Driving while resting the foot on the clutch pedal can easily result in half clutching. Make sure you do not place your foot on the clutch pedal while driving.

Precautions while driving



WARNING

Do not drive the vehicle with engine OFF.

- It is normal for the warning lights to be OFF while driving. If a warning light lights up or a warning buzzer can be heard, it means that there is a problem. Stop the vehicle in a safe place and contact authorised **UD Trucks** dealer for assistance.
- Decelerate before entering curves. Braking while turning the steering wheel will cause the wheels to lock and the tyres to slip. This will cause tyre wear and loss their grip on slippery roads (wet, icy, or snowy roads). Avoid doing this as much as possible.
- Make sure that you maintain enough distance between your vehicle and the vehicle next when

turning at crossroads. The rear tyres will turn with a smaller radius than the front tyres and could hit a nearby vehicle or pedestrians. Be careful while turning the vehicle using the outside rear view mirrors. If the visibility is poor, look through the window to make sure that the sides of the vehicle are safe. The outside rear view mirrors should be positioned properly to view area around the vehicle and make it easy and safe when turning.

7. CORRECT DRIVING OPERATION

When traveling downhill or shifting down

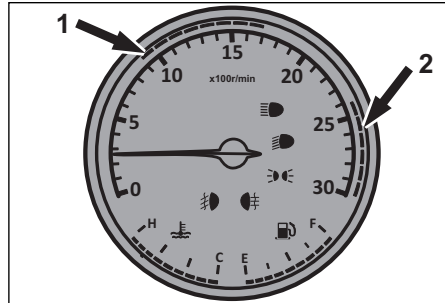
DANGER

Do not engage the auxiliary brake when the road is slippery (due to snow or water etc.) Failure to comply can cause the rear wheels to lock up and cause the vehicle to skid.

When traveling downhill, use the same gears which were used when traveling uphill but in combination with the auxiliary brake to ensure safety during driving. If the vehicle is still going fast, use the foot brake and maintain a safe speed at all times.

- Do not drive downhill with the gearshift lever in neutral.
- Ensure care to avoid engine overrun when driving downhill.
- The tachometer's red zone shows the overrun speed range. Make sure that the indicator does not enter the red zone.

Precaution on engine speed



(1) Green Zone	900 - 1700 rpm
(2) Red Zone	2400 - 3000 rpm

Always maintain the engine speed in green zone while driving. When the engine speed exceeds the allowable maximum speed, the warning message display will turn ON to warn the driver. In this case, reduce the engine speed.

NOTE

Engine braking is more effective between 1600 and 2400rpm

Downhill RSL

The Downhill RSL feature is a function to prevent power line resonances that potentially can occur when the truck is going downhill and protect the engine components from damages due to the excessive engine speed. The vehicle speed limit function stops the fuel injection if RSL speed is reached. The driver will also be alerted by a buzzer when the downhill RSL icon light up and the text "Reduce the vehicle speed" will be displayed.

Engine overrun

CAUTION

Do not exceed the maximum allowable speed. Driving beyond this range will overstresses the engine components and could cause the engine to malfunction.

Overrun is when the engine is running at a speed that exceeds the engine's maximum speed.

7. CORRECT DRIVING OPERATION

Brakes

WARNING

Avoid continuously using the foot brake for a long period of time. The brake drums or linings could overheat and the braking effect will be reduced.

CAUTION

When driving the vehicle after washing or while driving through deep puddles, the braking effect could be greatly reduced by water getting on to the brakes.

Always apply the brakes in combination with the auxiliary brakes. Using the auxiliary brakes will lengthen the life of the brake linings.

- Before going down steep roads or long downhill roads, check the brakes ahead of time to make sure that they are working cor-

rectly. Always use the auxiliary brake to maintain a safe speed at all times. Shifting down to avoid overrunning the engine will also increase the braking force of the auxiliary brake.

- If the driver feels that something is wrong with the brake while driving, immediately stop the vehicle in a safe location and contact nearest authorised **UD Trucks** dealer for assistance.

CAUTION

Do not brake sharply except in emergencies. Sharp braking causes the tyres, brake drums and brake linings to wear out prematurely and will reduce the life span of other parts.

WARNING

The performance of the brakes will deteriorate if the compressed air pressure in the brake system is below the operating pressure. Always check the air pressure gauge indicator and maintain the operating air pressure.

7. CORRECT DRIVING OPERATION

Precautions when driving vehicle with ABS - if equipped

WARNING

The ABS cannot prevent accidents resulting from poor judgment and carelessness when driving. The ABS aids effective braking to maintain vehicle control during braking, not sharp braking. The stopping distance will be longer on surfaces which are wet, slippery, snowy or with gravel or if tyre chains are used. Always maintain a safe distance from the vehicle in front. The driver or user is responsible for his own safety and the safety of the vehicle and other road users.

ABS (Anti-lock Braking System) is a system for preventing the wheels from locking while braking.

Observe the following safety precautions and always make an effort to drive safely.

- When the ignition switch is turned ON, confirm the **ABS** warning light is lit up and then turns OFF after about 3 seconds.
- When the **ABS** is in operation, an operating noise may be heard intermittently. This is not a malfunction.
- When driving on slippery roads, the braking distance will be longer than when driving normally on dry, paved roads even when the **ABS** is in operation. Vehicles fitted with **ABS** may also require longer braking distances on snow covered roads and gravel roads than the vehicles not fitted with **ABS**. Always drive at a safe speed and maintain sufficient distance from the vehicle in front taking into account the condition of the road and tyres.
- The **ABS** is designed to prevent the wheels from slipping when braking and will not operate when the wheels slip during acceleration or when turning. In addition, when driving on slippery roads,

such as on icy roads, the driver might lose control of the vehicle and have trouble steering it even when the **ABS** operates. Always drive at a safe speed and avoid braking sharply and steering abruptly as much as possible.

- Drive carefully by considering the road conditions, the distance from the vehicle in front and behind, and other factors.
- If you have any questions, please consult authorised **UD Trucks** dealer in advance.

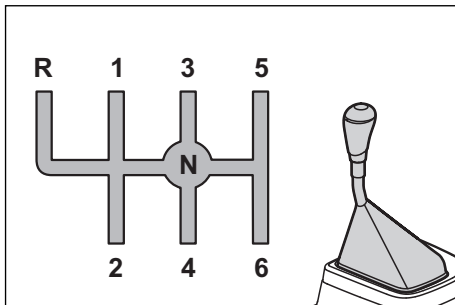
7. CORRECT DRIVING OPERATION

Gearshift lever operation

CAUTION

Do not apply excessive load to the gearshift lever.

When shifting gear, be sure to press the clutch pedal fully. Also make sure that the vehicle has stopped fully before shifting from forward to reverse or from reverse to forward.



Operating with automatic transmission

Your truck may be equipped with an optional automatic transmission. The automatic transmission has the flexibility of manual selecting and holding in lower driving ranges.

This permits the driving selection of the most suitable forward gear range to match varying road and load conditions. For more information refer section **“7.3 Operating with automatic transmission”** in this chapter

Precautions when using the Steering wheel

CAUTION

Do not apply force when the steering wheel is at full lock.

When turning the steering wheel, the power steering hydraulic pressure change could generate a sound resembling knocking against the hydraulic pipes. This is not a malfunction.

Inter-vehicular distance

WARNING

Please obey all local traffic rules and regulations.

There is a tendency to ignore the distance from the vehicle in front when following it. But, make sure sufficient distance is maintained between the vehicles to avoid any accidents.

7. CORRECT DRIVING OPERATION

When handling freight

NOTE

Secure and cover the load appropriately and according to the regulation.

WARNING

Do not overload the vehicle. Over-loading will damage steering and braking system.

Loading cargo

The various methods involved in loading cargo has a crucial effect on the driving performance of the vehicle. Load the cargo in a uniform manner, making sure the load is distributed evenly.

Driving methods for improving fuel efficiency

Drive at an economic speed

The best possible performance and fuel economy is obtained when the engine speed is kept within the “Economy” zone at all times. This is indicated by the green band on the tachometer.

Idling for long periods causes fuel wastage

Do not run the engine at idling speed for more than 3 minutes.

Sudden starting and quick accelerations affect the fuel economy

Be gentle with the accelerator, harsh acceleration increases the fuel consumption and tyre wear.

Coasting (rolling)

No fuel is being consumed when the accelerator pedal is released. When approaching a planned stop, turning or when slowing down, we recommend that you release the accelerator early and coast (roll) as much as possible.

Shifting up early and shifting down late

For the best fuel economy, select the highest gear and, when changing down let the engine speed drop to the lower part of the green band before shifting down.

Wavy driving

Repeated acceleration and deceleration increase the fuel consumption, drive at a constant, steady speed.

7. CORRECT DRIVING OPERATION

Reduce the start-off and stopping frequency

A large amount of fuel is required to move the vehicle from a standstill. For best fuel economy, we recommend that you limit stopping and starting.

Maintain the correct tyre pressure

If the tyre pressure is low, it will increase the rolling resistance and decrease the fuel economy. Maintain proper tyre pressure.

Do not drive with a clogged air filter

Driving with a clogged air filter increases the air intake resistance and decreases power and the fuel economy.

Driving at the sweet spot

Running engine at sweet spot is explained in the fuel coaching system. Refer to “**Fuel coaching system**” in Chapter 3.

Clutch operation instructions and precautions

Do not drive the vehicle when the clutch disc is worn out or when the clutch is having problems. Also, observe the following to prevent clutch damage:

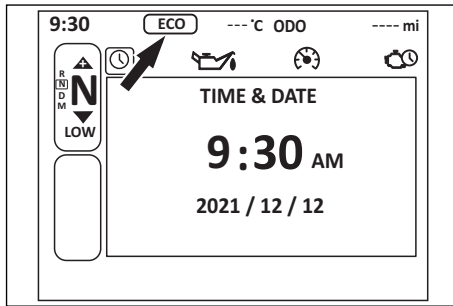
- Do not keep your foot on the clutch pedal while driving.
- When stopping on an uphill road, avoid partially engaging the clutch, to maintain the position of the vehicle.
- Avoid using the clutch except when necessary.
- Do not drive downhill with the clutch disengaged and the gear in neutral.

While reversing the vehicle, sometimes the reverse gear may not engage easily. Double de-clutching, will make it easier that is by shifting the gear to neutral and releasing the clutch and engaging it again to reverse.

7.3 Operating with automatic transmission

ECO

By default the vehicle will be in Eco Mode, if the driving condition needs more power, driver can switch OFF the Eco mode using the dashboard switch (only for Allison 2500).

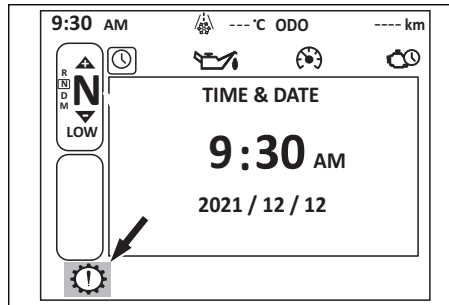


NOTE

Excessive use of ECO OFF mode increases the fuel consumption.

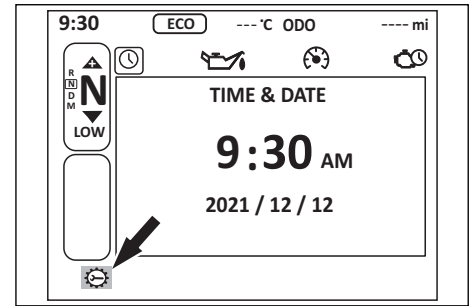
Automatic transmission warning

The warning icon illuminates when the transmission ECU detects a fault in the transmission operation. If icon displays park the vehicle in a safe place and contact authorised **UD Trucks** dealer for assistance.



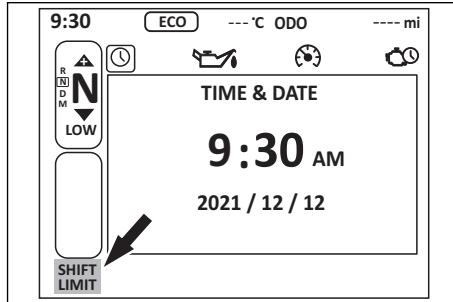
Automatic transmission maintenance

This icon comes when either transmission fluid or filters require replacement or general transmission servicing is required.



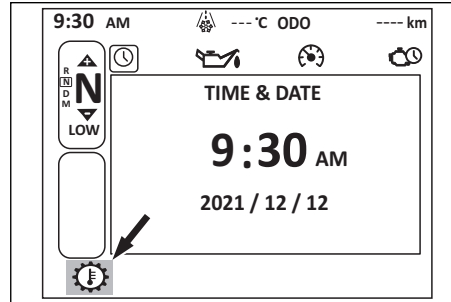
7. CORRECT DRIVING OPERATION

Shift limit



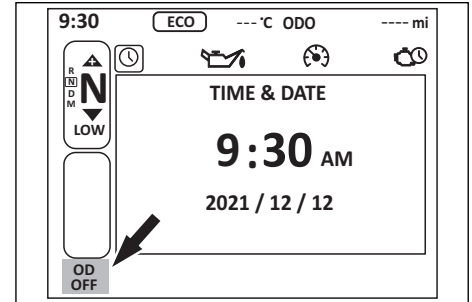
The transmission control system inhibits shifting to protect the transmission from some types of abusive operation and the status icon appears on the IC display. The purpose of this icon is to alert the operator that transmission operation is being inhibited and that range shifts being requested by the operator may not occur. Each time the engine is started, the status icon will illuminate, then turn OFF after two seconds. If the icon does not illuminate during ignition, or if the icon remains on after ignition, the transmission system should be checked immediately. Contact authorised **UD Trucks** dealer for assistance

Transmission temperature high



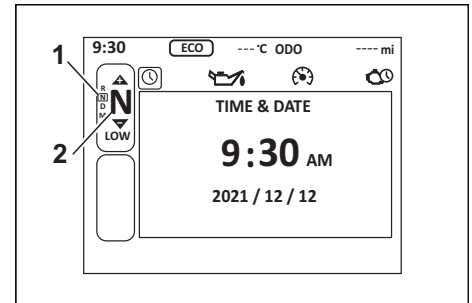
If the transmission fluid temperature rises above predefined limit the warning icon comes up in the display. Stop the vehicle and select N and then operate the engine at 1200 - 1500 rpm until the fluid temperature returns to normal and the icon display goes OFF.

Over drive indicator



IC will display Over drive (OD) status based on the OD selection.

Requested range and current gear

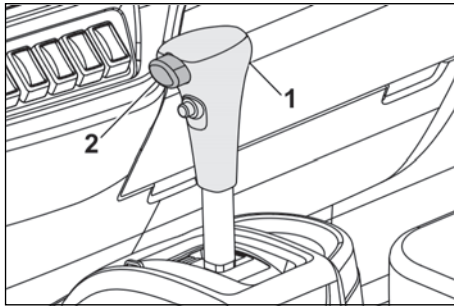


1. Requested range (Lever/Switch position)
2. Current range (Actual gear)

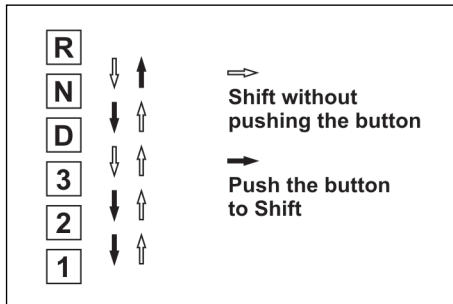
7. CORRECT DRIVING OPERATION

Allison 2500

The Allison automatic transmissions have 6 forward and 1 reverse gear ranges.



1. Selector lever
2. Shift release button



(R): Reverse position

This position used to move the vehicle backwards. You must stop the vehicle before shifting from a forward gear to reverse or from reverse to a forward gear.

This range cannot be shifted while driving (although the shift lever will move). At this time the SHIFT LIMIT warning light comes on. If this occurs stop the vehicle and shift to N (Neutral). Then press the brake pedal and shift to the desired driving range.

(N): Neutral position

This position is used when starting the engine, for warming up the engine and stopping the engine. The engine can only be started when the shift lever is in the N (Neutral) position.

When shifting from Neutral to a driving range, press the brake pedal while shifting. At this time the SHIFT LIMIT warning comes on. If this occurs, return the shift lever to the N (Neutral) position, then press the brake pedal and shift to the desired driving range.

Shift will not be done if the engine speed is above 1000 RPM.

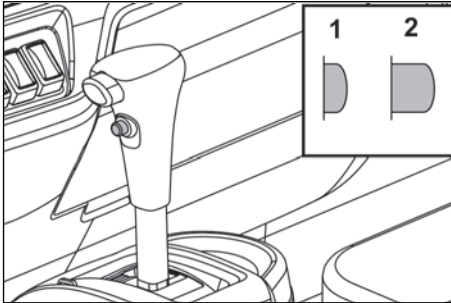
NOTE

When shifting from Neutral to any other range, approximately 1 second is required for the transmission clutch to connect. If the accelerator pedal is pressed during this time it causes excessive stress on the transmission. Wait until the clutch has connected and then gradually press the accelerator pedal.

7. CORRECT DRIVING OPERATION

(D): Driving position

This is the position used during normal driving. Gears will change from 1 - 6 when the overdrive (O/D) switch is ON, and from 1 - 4 when it is OFF.



1. ON
2. OFF

(3): Third range:

This position is used when engine braking is needed while the vehicle is descending a slope. Shifting between gears 1 and 3 is done automatically.

(2): Second range

This position is used when strong engine braking is needed. Shifting between gears 1-2 is done automatically.

(1): First range

This position can be used during rough road conditions, when freeing the vehicle from mud or deep snow, when driving at very slow speed through narrow spaces, when climbing or descending steep slopes or when the maximum amount of engine braking is needed. The transmission remains in 1st gear and does not shift.

WARNING

Do not allow the vehicle to coast in N (Neutral). If the vehicle coasts in N (Neutral) there is no engine braking and you could lose control. Coasting can also cause severe transmission damage.

WARNING

Without applying the service brake, parking brake:

- **Do not make shifts from R (Reverse) to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes unless an auxiliary system to apply the parking brake is installed.**
- **Do not make shifts from N (Neutral) to a forward range or from N (Neutral) to R (Reverse) to avoid sudden movement of vehicle.**
- **Do not make shift from forward range to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes, unless an auxiliary system to apply the parking brake is installed.**

NOTE

Always apply the service brakes when selecting R (Reverse).

7. CORRECT DRIVING OPERATION

WARNING

(D) Drive and other forward ranges may not be obtained due to an active inhibitor. The range selected may not be obtained, resulting in unexpected vehicle motion, to help avoid injury and/or property damage always apply service brakes when selecting D (Drive) or other forward ranges. Check for the Range inhibit on display.

WARNING

Do not make shifts from a forward range to N (Neutral) without applying the service brake. Selecting N (Neutral) does not apply vehicle brakes.

CAUTION

Do not idle in R (Reverse) or D (Drive) for more than five minutes. Extended idling in R (Reverse) or D (Drive) can cause transmission overheating and damage. Always select N (Neutral) whenever time at idle exceeds five minutes.

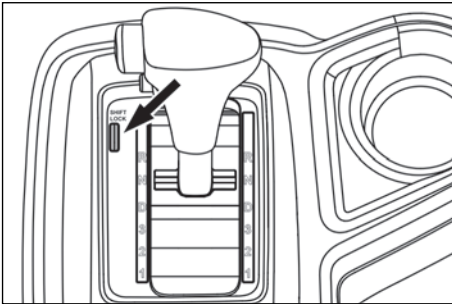
Shift lock system

When shifting the selector lever for the first time after turning the ignition key to the ON position, the selector lever cannot be shifted from N to another position if the brake pedal is not pressed. Moreover, when the shift lever is left engaged in the N position for about 5 minutes even after shifting the selector lever for the second time, it cannot be shifted from the N position. In this case, press the brake pedal and operate the selector lever.

- When the ignition key is in the ACC or LOCK position, the selector lever cannot be shifted from N to another position even if the brake pedal is pressed.
- When the selector lever is in any position other than the N position:
 - The key cannot be removed from the ignition key switch. Place the selector lever to the N position and then remove the key,
 - The ignition key cannot be turned from ACC to the LOCK position,
- When shifting the selector lever from N to another position, press the brake pedal first and then operate the lever. If the lever is operated first, it does not move so that the shift lock mechanism is not released.

7. CORRECT DRIVING OPERATION

- If the selector lever cannot be shifted from N to another position even when the brake pedal is depressed, press the shift lock release button. While pressing the button, the selector lever can be shifted.



NOTE

Contact your nearest authorised UD Trucks dealer for inspection, if this situation occurs.

Engine start

- Check that the parking brake has been pulled up.
- Check that the shift lever is in the N (Neutral) position and then start the engine. (The engine will not start if the lever is not in neutral position.) Check that the warning light turns OFF after the engine has started.

Starting to move the vehicle

- Press the brake pedal with your right foot. Select a gear range. To move the vehicle forward, select D (Drive), to move backwards select R (Reverse).
- The gear will not shift if the engine speed is high.
- Release the parking brake. Lift your foot off of the brake pedal.

- When traveling forward, acceleration begins from 1st gear. According to the engine load and speed, the transmission will automatically shift from 1st gear, to 2nd, to 3rd... up to the maximum gear for the selected range.

NOTE

The engine protection function may provide torque derating to prevent the engine from being damaged, which may also cause shift lock to occur.

Stopping and parking

- When stopping temporarily, leave the shift lever in the D (Drive) position. Be sure to keep the brake pedal depressed with the right foot. In this way, there is no need to return the shift lever to N (Neutral).
- When stopping for 5 minutes or longer, shift to the N (Neutral) position.

7. CORRECT DRIVING OPERATION

- When parking the vehicle, first stop the vehicle and then shift to N (Neutral). Then slowly release the brake pedal and check that the lock has been engaged. Then firmly set the parking brake.
- When traveling forward, acceleration begins from 1st gear. According to the engine load and speed, the transmission will automatically shift from 1st gear, to 2nd, to 3rd... up to the maximum gear for the selected range.
- Each time you park the vehicle or leave the operator's station with the engine running, do the following:
 1. Bring the vehicle to a complete stop using the service brake.
 2. Ensure that the engine is at low idle rpm.
 3. Put the transmission in N (Neutral).
 4. Apply the parking brake, and make sure it is properly engaged.

5. Engage the N (Neutral) range by slowly releasing the service brake.
6. If the operator's station will be unoccupied with the engine running, chock the wheels and take any other steps necessary to keep the vehicle from moving.

Accelerator control

The position of the accelerator pedal influences when automatic shifting occurs. When the pedal is fully pressed, the transmission will automatically upshift at high engine speeds. A partially pressed position of the pedal will cause the upshifts to occur at a lower engine speed.

WARNING

When pressing the accelerator pedal or when the engine speed is higher than the idling speed, do not shift the selector lever from N to the forward or reverse. It is very dangerous as the vehicle might jump suddenly forward or backward. The transmission might also be damaged.

Downshift or reverse inhibitor

The transmission hydraulic system will not permit a shift into any forward gear at a speed that will cause excessive engine over speed. Any lower forward range may be selected at any time, but the actual engagement of the gears in that range will not occur until road speed is reduced. Downshifting is progressive as road speed decreases. The inhibitor effect will cause downshifts to occur at slightly higher speeds than normal automatic downshifts. If the shift lever is accidentally moved to reverse while traveling forward, the transmission is designed not to shift into reverse gear until road speed is very low.

To avoid shift shock, always come to a full stop before shifting from forward to reverse or from reverse to forward.

7. CORRECT DRIVING OPERATION

Using the engine to slow the vehicle

To use the engine as a braking force, shift the selector to the next lower range. If the vehicle is exceeding the maximum speed for a lower gear, use the service brakes to slow the vehicle to an acceptable speed where the transmission may be downshifted safely.

WARNING

Do not use engine brake when driving on wet or slippery roads. Using engine brake on wet or slippery roads may cause loss of traction on drive wheels and the vehicle may go out of control.

Driving on ice or snow

If possible reduce your speed and select a lower range before you lose traction. Select the range that will not exceed the speed you expect to maintain. Accelerate or decelerate very gradually to prevent losing traction. It is very important that you reach the selected lower range before attempting to accelerate. This will avoid an unexpected downshift during acceleration.

Parking brake

There is no park position in the transmission shift pattern. Therefore, always put the selector in neutral and apply the parking brake to hold the vehicle when it is unattended.

Rocking out

If the vehicle is stuck in deep sand, snow, or mud, it may be possible to rock it out. Shift to D (Drive) and apply steady, light throttle (never full throttle). When the vehicle has rocked forward as far as it will go, apply and hold the vehicle service brakes. Allow the engine to return to idle; then select R (Reverse). Release the brakes and apply a steady, light throttle and allow the vehicle to rock in R (Reverse) as far as it will go. Again, apply and hold the service brakes and allow the engine to return to idle. This procedure may be repeated in D (Drive) and R (Reverse) if each directional shift continues to move the vehicle a greater distance. Never make N (Neutral)-to-D (Drive) or directional shift changes when the engine rpm is above idle.

WARNING

Do not make shifts from N (Neutral) to a forward range or R (Reverse) when the accelerator pedal is pressed. The vehicle will lurch forward or rearward and the transmission can be damaged. Avoid this condition by making shifts from N (Neutral) to a forward range or R (Reverse) only when the throttle is closed.

CAUTION

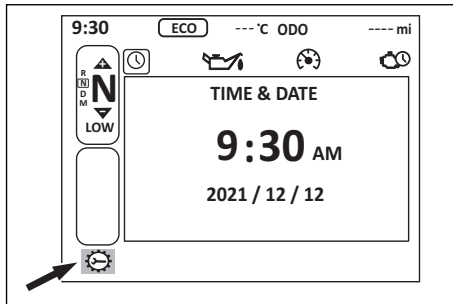
If the wheels are stuck and not turning, do not apply full power for more than 30 seconds in either D (Drive) or R (Reverse). Full power for more than 30 seconds under these conditions will cause the transmission to overheat. If the transmission overheats, shift to N (Neutral) and operate the engine at 1,200 to 1,500 rpm until it cools (2 to 3 minutes), and then after that, confirm that the warning light of automatic transmission fluid temperature went out.

7. CORRECT DRIVING OPERATION

Oil life monitor Allison 2500

Inspection:

When the transmission fluid level reaches approximately 2 percent (the parameter begins at 100 percent moving downward towards the lowest threshold), the Automatic transmission maintenance indicator will be illuminated.

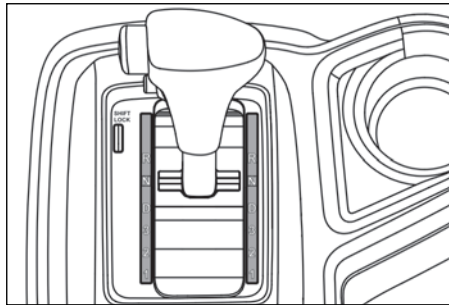


The Automatic transmission maintenance indicator will be lit steadily upon each initialization of the TCM (Transmission Control Module), and will remain on steady for approximately two minutes after the initial selection of a drive range, until service is performed and the indicator is reset.

Reset:

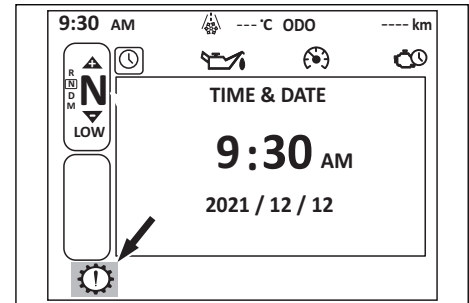
The Automatic transmission maintenance indicator can be reset by either of these methods,

With the ignition ON and the engine OFF, shift between N-D-N-D-N-R-N to reset the value, pausing no more than 3 seconds between consecutive shifts.



If the value displayed remains unchanged, then it is the reset may be restricted to Allison DOC® For PC-Service Tool only. Contact Authorised **UD Trucks** dealer for assistance.

Failure to perform maintenance and reset the ATM maintenance indicator within the next 100 hours of transmission operation will result in the illumination of the Automatic Transmission Warning Indicator any time; Refer “Automatic transmission Warning Indicator” from Chapter 7.

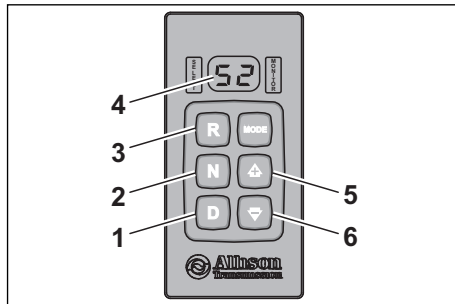
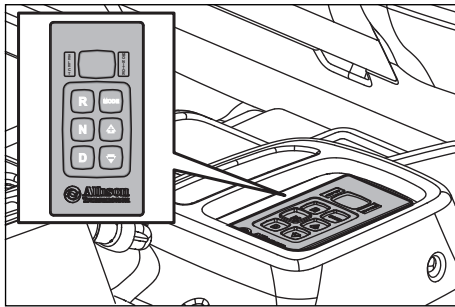


7. CORRECT DRIVING OPERATION

Allison 3000

The Allison automatic transmissions have 6 forward and 1 reverse gear ranges.

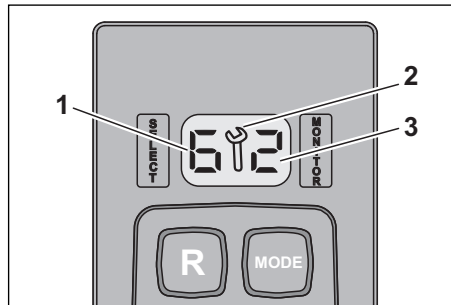
Selector switch



- 1. Forward
- 2. Neutral
- 3. Reverse
- 4. Digital display
- 5. Manual up shift
- 6. Manual down shift






The Range selector switch is used to shift the gear to the desired driving range from among 6 forward ranges and the reverse range. When the switch is pushed, the selected range is displayed on the left side of the digital display above the selector switch. With the Up and Down shift switch. By pressing Down shift switch 1 time while travelling forward, you can select the same gear as the range currently being used. By pressing Up shift switch 1 time while travelling forward, you can move the selection range 1 step higher.

The selected range is displayed on the left side of the digital display of the selector switch, and the range in operation on the right side.



- 1. Selection range
- 2. Service icon
- 3. Range in operation

Relationship between switch operation and digital display

	Digital display	
	Selection range	Range in operation
R	R	R
N	N	N
D	6	1 to 6
Once 	5	1 to 5
Twice 	4	1 to 4
3 Times 	3	1 to 3
4 Times 	2	1 to 2
5 Times 	1	1

7. CORRECT DRIVING OPERATION

(R): Reverse Position

This position is used when moving the vehicle backwards. The backup light comes on and the back buzzer sounds in the cabin.

(N): Neutral Position

This position is used when starting the engine, for warming up the engine, and when stopped.

(D): Driving Position

This is the position used during normal driving. Shifting between gears 1 - 6 is done automatically, according to engine load and speed.

(5): Fifth Range

This position is used when a small amount of engine braking is needed. Shifting between gears 1 - 5 is done automatically.

(4): Fourth Range

This position is used when engine braking is needed while the vehicle is descending a slope. Shifting between gears 1 - 4 is done automatically.

(3): Third Range

This position is used when strong engine braking is needed while the vehicle is descending a slope. Shifting between gears 1 - 3 is done automatically.

(2): Second Range

This position is used when strong engine braking is needed. Shifting between gears 1 - 2 is done automatically.

(1): First Range

This position can be used during rough road conditions, when freeing the vehicle from mud or deep snow, when driving at very slow speed through narrow spaces, when climbing or descending steep slopes, or when the maximum amount of engine braking force is required. The transmission remains in 1st gear and does not shift.

NOTE

If the gear shifts up and down repeatedly during the drive (i.e. shift hunting), set the gear to low.



WARNING

R (Reverse) may not be attained due to an active inhibitor. Always apply the service brakes when selecting R (Reverse) to prevent unexpected vehicle movement and because a service brake inhibit may be present. When R is flashing, it indicates the shift to R (Reverse) is inhibited.



WARNING

Do not allow the vehicle to coast in N (Neutral). If you let the vehicle coast in N (Neutral), there is no engine braking and you could lose control. Coasting can also cause severe transmission damage.

7. CORRECT DRIVING OPERATION

WARNING

Without applying the service brake, parking brake:

- Do not make shifts from R (Reverse) to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes unless an auxiliary system to apply the parking brake is installed.
- Do not make shifts from N (Neutral) to a forward range or from N (Neutral) to R (Reverse) to avoid sudden movement of vehicle.
- Do not make shift from forward range to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes, unless an auxiliary system to apply the parking brake is installed.

WARNING

D (Drive) and other forward ranges may not be obtained due to an active inhibitor. The range selected may not be obtained, resulting in unexpected vehicle motion. Always apply the service brakes when selecting D (Drive) or other forward ranges.

The transmission incorporates a hold feature to prohibit upshifting above the range selected during normal driving. For downhill operation, select a lower transmission range. If the engine-governed speed is exceeded in the held range, however, the transmission may upshift to the next higher range to prevent engine damage. To avoid loss of vehicle control, use the vehicle brakes to prevent exceeding engine governed speed in the held range.

WARNING

When going downhill if you use service brake or if you just downshift it is possible that you can lose control and cause injury and/or property damage. To avoid loss of control, use a combination of downshifting, braking, and other retarding devices.

Downshifting to a lower transmission range increases engine braking and helps you to maintain control. The transmission has a feature to prevent automatic upshifting above the lower range selected. However, during downhill operation, if engine governed speed is exceeded in the lower range, the transmission may upshift to the next higher range. This will reduce braking and could cause a loss of control. Apply the vehicle brakes or other retarding device to prevent exceeding engine governed speed in the lower range selected.

7. CORRECT DRIVING OPERATION

CAUTION

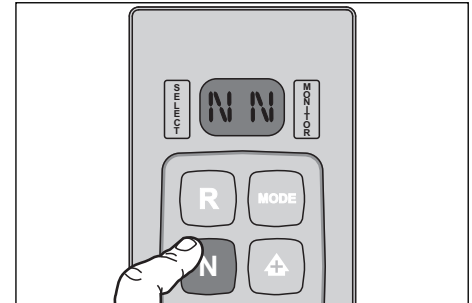
Do not idle in R (Reverse) or D (Drive) for more than 5 minutes. Doing so may cause transmission overheating and damage. Always use N (Neutral) if you need to idle over 5 minutes.

NOTE

You must first stop the vehicle before shifting from a forward gear to Reverse, or from Reverse to a forward gear. The maximum speed varies by range. Select an appropriate range depending on situations. When shifting to lower speed gears, the transmission is done within the range where an engine overrun is not caused. When the vehicle speed gets excessively high on a down slope, etc., the transmission may upshift to a higher range than the selected range due to activation of the safety device. In that case, use the service brake to drive at a safe speed.

Engine start

- Check that the parking brake is applied.
- Before starting the engine, make sure that “N N” is displayed on the digital display.
- The engine can only be started when “N N” is displayed on the digital display. If “N N” is not displayed, push the N switch to display “N N”.



Check before engine start

Always use the right foot to operate the accelerator pedal and the brake pedal in order to prevent pressing either by accident.

7. CORRECT DRIVING OPERATION

NOTE

After the engine is started, warm up the engine. When the fluid temperature is low during wintertime, only “N”, “R” and the lowest speed gear of “D” can be used.

When the engine can be started in any range other than “N”, there is something wrong. Contact the nearest authorised UD Trucks dealer.

Avoid attempting to start your vehicle by pushing or towing.

Starting to move the vehicle

- With the power mode switch, select “Eco” or “Eco OFF” mode.
- Keeping the brake pedal pressed with the right foot, push the switch and select the range. To move the vehicle forward, select D (Drive), to move backwards select R (Reverse).



- To start the vehicle on a level ground, select the “D” range.
- Release the parking brake. Gradually remove the foot from the brake pedal.
- When traveling forward, acceleration begins from 1st gear. According to the engine load and speed, the transmission will automatically shift from 1st gear, to 2nd, to 3rd... up to the maximum gear for the selected range.

NOTE

Shifting with the power mode switch can be done only during the engine running.

The engine protection function may provide torque derating to prevent the engine from being damaged, which may also cause shift shock to occur.

CAUTION

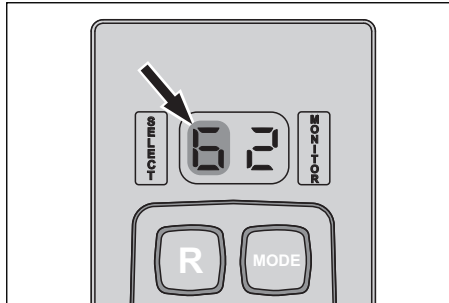
If the phenomenon in which upshifts and downshifts are repeated or shift hunting occurs while driving, shift to a lower speed gear range using the down shift switch.

When the accelerator pedal is gradually depressed to accelerate the vehicle or to maintain the constant speed when climbing slopes, kick down may occur, leading to an increase of the engine speed, but this is not a failure.

Before shifting the range from “N” to “D” or “R” or from “D” to “R”, allow the engine to idle. Before shifting the range to the position above the 1st gear, release the accelerator pedal.

SHIFT LIMIT warning message

The selector digital display, LH (selection range) character (can be “R”, “6”, “5”, “4”, “3”, “2” or “1”) flashes when there has been an error in operation or when the safety circuit has been activated. It indicates that the change from the current shift to another specified shift cannot be done.



Stopping and parking

- When stopping temporarily, leave the shift lever in the D (Drive) position. Be sure to keep the brake pedal depressed with the right foot. In this way, there is no need to return the selector switch to N (Neutral).

- When stopping for 5 minutes or longer, shift to the N (Neutral) position.
- When parking, first stop the vehicle and then shift to N (Neutral). Then slowly release the brake pedal and check that the lock has been engaged. Then firmly set the parking brake.
- Each time you park the vehicle or leave the operator's station with the engine running, do the following:
 1. Bring the vehicle to a complete stop using the service brake.
 2. Ensure that the engine is at low idle rpm.
 3. Put the transmission in N (Neutral).
 4. Apply the parking brake, if present, and make sure it is properly engaged.
 5. Slowly release the service brake.

7. CORRECT DRIVING OPERATION

6. If the operator's station will be unoccupied with the engine running, chock the wheels and take any other steps necessary to keep the vehicle from moving.

Accelerator pedal control

The position of the accelerator pedal influences the automatic shifting. When the pedal is fully pressed, the transmission will automatically upshift near the governed speed of the engine. A partially pressed position of the pedal will cause the upshifts to occur at a lower engine speed.

WARNING

When pressing the accelerator pedal or when the engine speed is higher than the idling speed, do not shift the selector switch from N to the forward or R range. It is very dangerous as the vehicle might jump suddenly forward or backward. The transmission might also be damaged.

Downshift or reverse inhibitor feature

The transmission hydraulic system will not permit a shift into any forward gear at a speed that will cause excessive engine over speed. Any lower forward range may be selected at any time, but the actual engagement of the gears in that range will not occur until road speed is reduced. Downshifting is progressive as road speed decreases. The inhibitor effect will cause downshifts to occur at slightly higher speeds than normal automatic downshifts. If the selector switch is accidentally pushed to reverse while traveling forward, the transmission is designed not to shift into reverse gear until road speed is very low. To avoid shift shock, always come to a full stop before shifting from forward to reverse or from reverse to forward.

Using the engine to slow the vehicle

To use the engine as a braking force, shift the selector to the next lower range. If the vehicle is exceeding the maximum speed for a lower gear, use the service brakes to slow the vehicle to an acceptable speed where the transmission may be downshifted safely.

Parking brake

There is no park position in the transmission shift pattern. Therefore, always put the selector in neutral and apply the parking brake to hold the vehicle when it is unattended.

Driving on ice or snow

Here is where all of your ability as a professional driver comes into focus regardless of what transmission you have. If possible, reduce your speed and select a lower range before you lose traction. Select the range that will not exceed the speed you expect to maintain. Accelerate or decelerate very gradually to prevent losing traction. It is very important to slow gradually when a

7. CORRECT DRIVING OPERATION

lower range is selected. It is important that you reach the lower range selected before attempting to accelerate. This will avoid an unexpected downshift during acceleration.

Rocking out

If the vehicle is stuck in deep sand, snow, or mud, it may be possible to rock it out. Shift to D (Drive) and apply steady, light throttle (never full throttle). When the vehicle has rocked forward as far as it will go, apply and hold the vehicle service brakes. Allow the engine to return to idle; then select R (Reverse). Release the brakes and apply a steady, light throttle and allow the vehicle to rock in R (Reverse) as far as it will go. Again, apply and hold the service brakes and allow the engine to return to idle. This procedure may be repeated in D (Drive) and R (Reverse) if each directional shift continues to move the vehicle a greater distance. Never make N (Neutral)-to-D (Drive) or directional shift changes when the engine rpm is above idle.

WARNING

If the wheels are stuck and not turning, do not apply full power for more than 30 seconds in either D (Drive) or R (Reverse). Full power for more than 30 seconds under these conditions will cause the transmission to overheat. If the transmission overheats, shift to N (Neutral) and operate the engine at 1,200 to 1,500 rpm until it cools (2 to 3 minutes), and then after that, confirm that the warning light of automatic transmission fluid temperature went out.

When descending slopes or downshifting

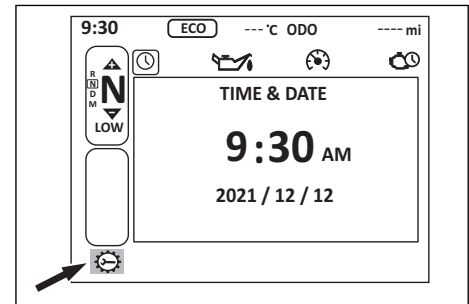
- When descending a slope, downshift to D-5-4-3-2-1 depending on the conditions of the slope and use engine braking. In addition, use exhaust braking in combination for safe driving.

- Be careful not to let the engine overrun while driving (especially when descending slopes).

Oil life monitor Allison 3000

Inspection:

When the transmission fluid level reaches approximately 2 percent (the parameter begins at 100 percent moving downward towards the lowest threshold), the Automatic transmission maintenance indicator will be illuminated. Refer “Automatic transmission maintenance” in Chapter 7.

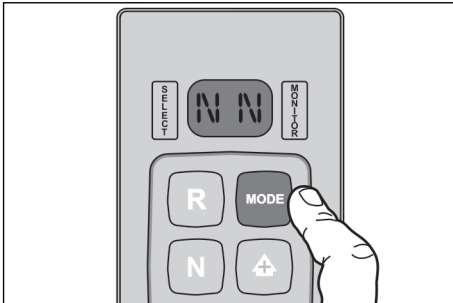


7. CORRECT DRIVING OPERATION

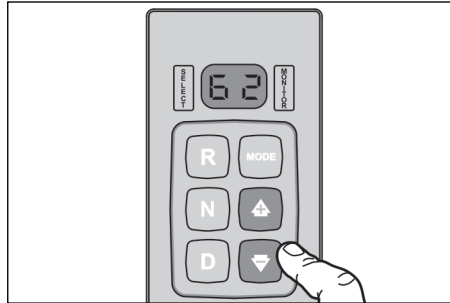
Automatic transmission maintenance indicator will be lit steadily upon each initialization of the TCM (Traction Control Module), and will remain on steady for approximately two minutes after the initial selection of a drive range, until service is performed and the indicator is reset.

Read:

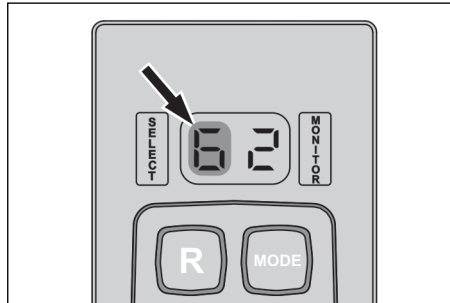
With the ignition ON and the engine OFF, push the DISPLAY MODE/DIAGNOSTIC (DMD) button twice on the lever selector



Then push the (Upshift) and (Downshift) arrows simultaneously twice on the keypad push button selector to enter OM mode.



The oil life left is displayed as a percentage between 0 and 99 in the shift selector display window.



Reset:

The Automatic transmission maintenance indicator can be reset by either of these methods,

From Selector

When the oil life left is displayed, press and hold the MODE button for 10 seconds.

With the ignition ON and the engine OFF, shift between N-D-N-D-N-R-N to reset the value, pausing no more than 3 seconds between consecutive shifts.

The wrench icon illuminates briefly following a reset to acknowledge the reset was successful.

If the value displayed remains unchanged, then it is the reset may be restricted to Allison DOC® For PC-Service Tool only.

7.4 Driving under special conditions

Driving when it is raining

- Avoid sudden braking when it is raining in order to prevent the wheels from skidding.
- Driving through water in puddles will decrease the braking performance.
- The brake performance will return to normal after the brakes are applied 2 or 3 times.
- When driving through fog, switch ON the fog lights and drive carefully.

Driving through snow

- When driving on snow covered or icy roads, attach tyre chains and drive at low speeds.
- Avoid sharp steering, and braking suddenly and make sure you drive with care.

Fitting tyre chain

WARNING

- **Check the tyre pressures after fitting with the tyre chains. The tyres may be damaged if they are not inflated to the proper air pressure.**
- **Always use tyre chains which are appropriate for the tyre size.**
- **When using double tyres, we recommend using triple chains because they are safer to use.**
- **If the tyre chains are not secured correctly, they may work loose or fall off while driving and interfere with other vehicle components. Make sure that the chains are secured correctly.**

7. CORRECT DRIVING OPERATION

NOTE

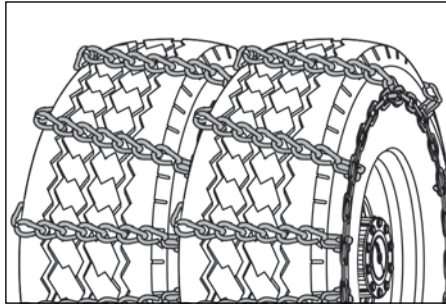
Do not attach tyre chains to the front wheels. Always attach suitable tyre chains to the rear wheels only.

NOTE

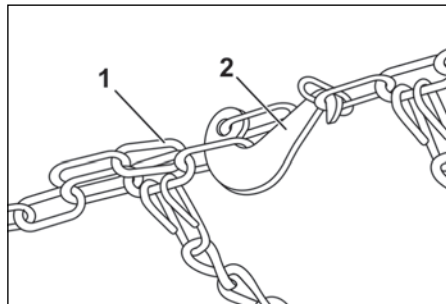
There are various types of tyre chains available in the market. Please consult the nearest authorised UD Trucks dealer for advice when purchasing tyre chains. The example explained in this manual is intended to give the user a general idea about tyre chains.

Attach the chains to the tyres when driving on snow-covered or on icy roads.

- Secure the chains to the tyres so that they are not loose. Check the chains for slackness after driving for 5 to 10 minutes. Always keep in mind that chains are fitted to the tyres.



- Attach the tyre chains so that the bends of the tyre chain connectors are facing away from the tyre with the chain bands attached securely. Tie down any excess chain with wire to keep it away from hitting the mudguard.



1. Chain

2. Connectors

Fuel tank

⚠ DANGER

Fuel leaks can cause a fire. If there is a fuel leak, contact the nearest authorised UD Trucks dealer for assistance.

⚠ WARNING

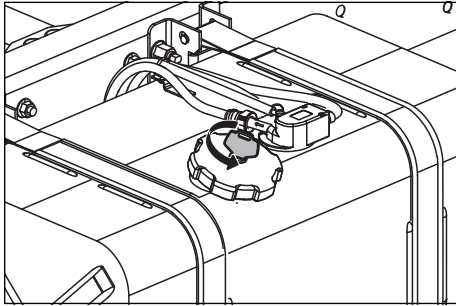
Always use good quality fuel.

- Always keep the fuel tank filled to the maximum level to avoid corrosion in the fuel system.
- Always tighten the fuel tank cap to prevent dust, water and snow entering the tank.
- Always tighten the fuel tank cap to prevent dust, water and snow entering the tank.

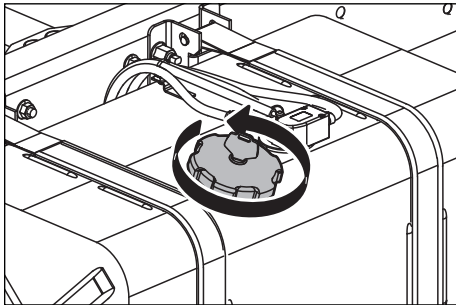
7. CORRECT DRIVING OPERATION

Fuel tank cap handling

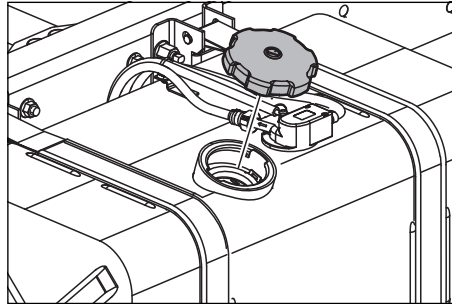
1. Insert the key in key hole and turn the key anticlockwise to unlock.



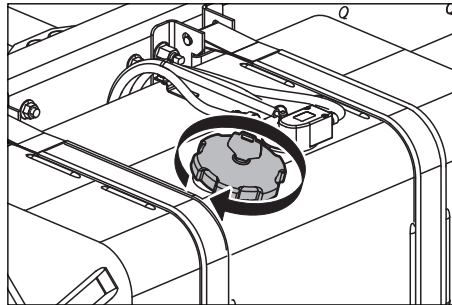
2. Turn the cap anticlockwise to open.



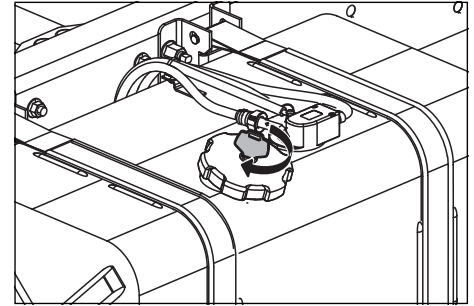
3. Lift open the cap.



4. For locking place the filler cap and turn clockwise to close.



5. Insert the key and turn clockwise to lock.



NOTE

Filler cap is free to rotate anticlockwise if it is locked.

7. CORRECT DRIVING OPERATION

When parking

When parking for a long time in cold areas, choose a place where the vehicle will not be snowed on. If an appropriate place is not available, park the vehicle so that the engine compartment is not exposed to the wind.

8. INSPECTION AND MAINTENANCE

8.1 Inspection and maintenance

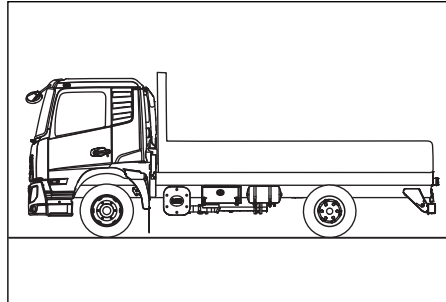
Regular inspection and maintenance can extend the service life of the vehicle and promote to safe and comfortable driving. Users or owners can carry out the inspection and maintenance tasks listed in this section to keep the vehicle in good condition. **UD Trucks** recommends that any maintenance or complicated jobs other than routine maintenance are carried out by the **UD Trucks** authorised service centres only.

Before carrying out inspections or routine checks, make sure that the following conditions are met:

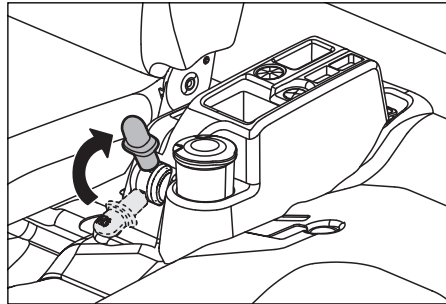
- Select a safe location.
- Maintain safe working conditions.
- Use appropriate tools.
- Park the vehicle in service position.
- Only use the jack (available in the truck, if provided) when changing the wheels.

Service position

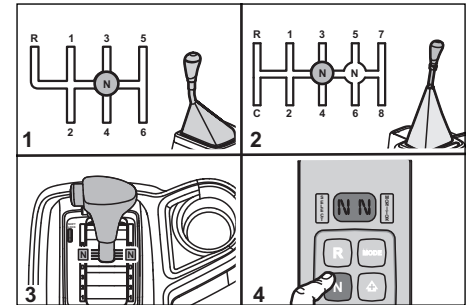
1. Stop the vehicle on a level surface.



2. Apply the parking brake.

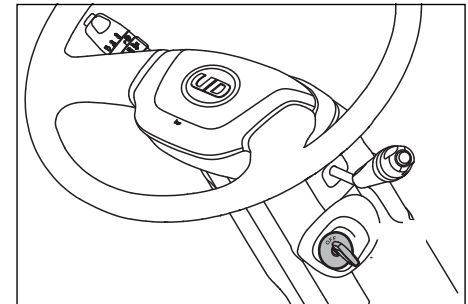


3. Move the gear to neutral.



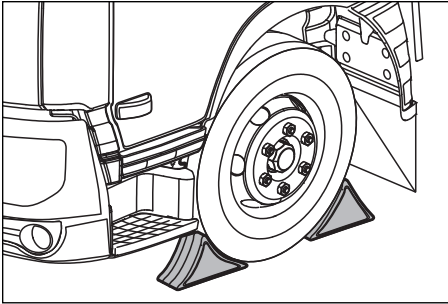
1. 6-Speed gearbox
2. 9-Speed gearbox
3. Allison 2500
4. Allison 3000

4. Turn OFF the ignition.

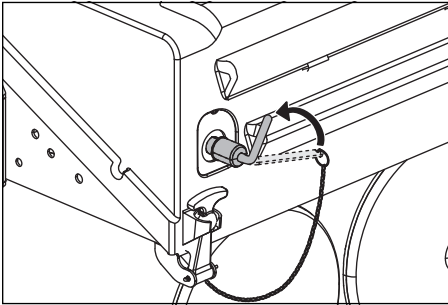


8. INSPECTION AND MAINTENANCE

5. Chock the wheels.



6. Turn OFF the main switch.



NOTE

The Horn is activated if the door is opened when parking brake is disengaged (Applicable only if this feature is equipped), then to avoid the horn continuously ON, the horn relay (as mentioned in the decals) shall be removed or the door shall be kept closed during service and maintenance.

Tilting the cab

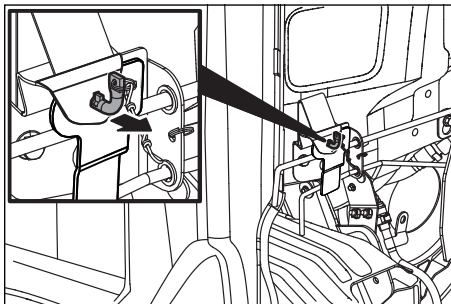
⚠ WARNING

- When tilting the cab, the vehicle must be parked on level ground.
- Make sure that there is sufficient space in front and above the cab when tilting it.
- Make sure that there are no loose, heavy objects in the cab which could fall forward and cause damage.
- Do not stand in front or behind the cab while tilting it.
- Make sure that the gearshift lever is in neutral before tilting the cab.
- The cab must be tilted completely and secured with a locking pin.

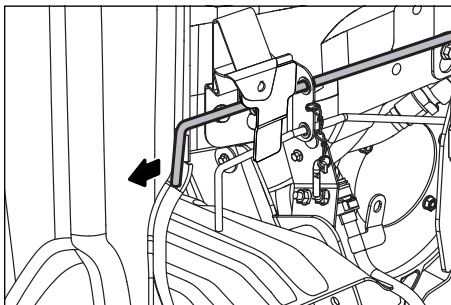
1. Park the vehicle in the service position. Refer to “**Service position**” in chapter 8
2. Make sure that there is sufficient space in front and above the cab.

8. INSPECTION AND MAINTENANCE

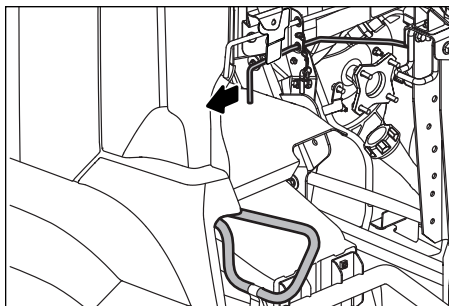
3. Make sure that the cab is free off loose and fragile objects.
4. Close the doors.
5. Remove the locking pin from the “tilt lock lever”.



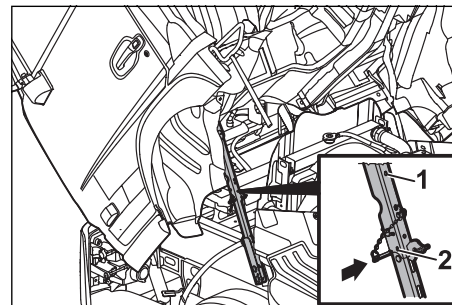
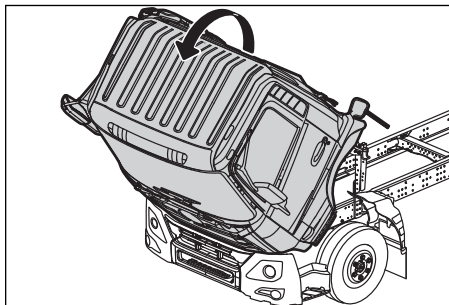
6. Pull the “tilt lock lever” out.



7. While holding the grip on the cab, pull-out the “sub hook lever”.



8. Tilt the cab all the way forward until the “tilt strut” is straight and secure it with the locking pin in the pin hole on the “tilt strut”.

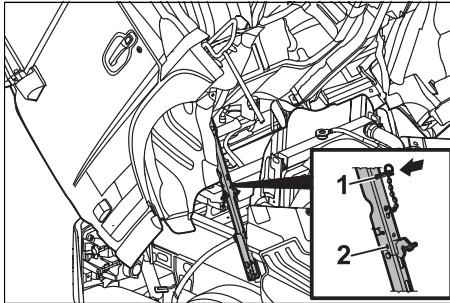


1. Storage hole 2. Pin hole

8. INSPECTION AND MAINTENANCE

Lowering the cab

1. Remove the locking pin from the pin hole and secure the pin in its storage hole on the “tilt strut”.

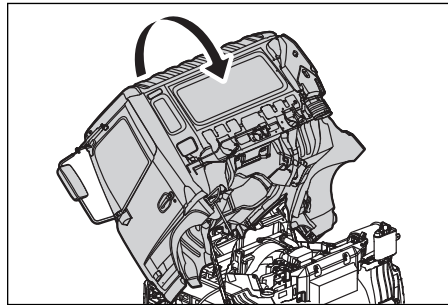
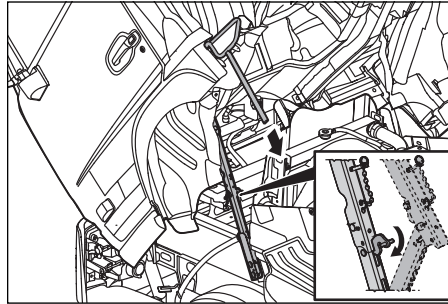


1. Storage hole 2. Pin hole

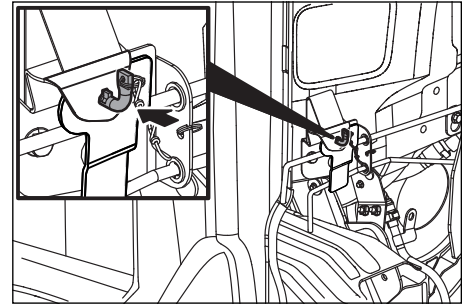
⚠ DANGER

Make sure that all parts of the body are kept away and are safe from the cab area before lowering the cab.

2. Pull the “tilt strut” handle slowly towards the back while holding grip on the cab. Lower the cab and push it down firmly until it locks.



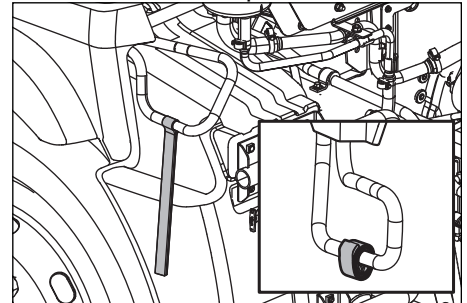
3. Once the cab is lowered, insert lock pin through the holes in the “tilt lock lever bracket” and “tilt lock lever”.



NOTE

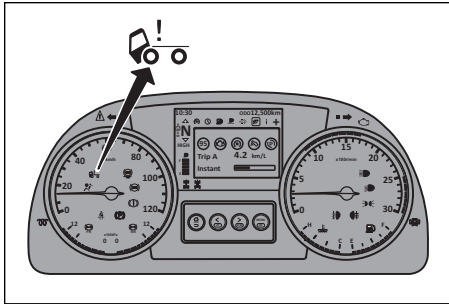
If the lock pin is difficult to insert repeat step 2 and 3.

4. Secure the strap.

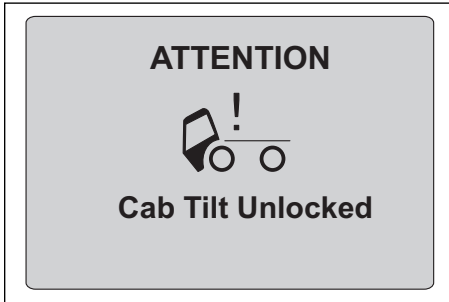


8. INSPECTION AND MAINTENANCE

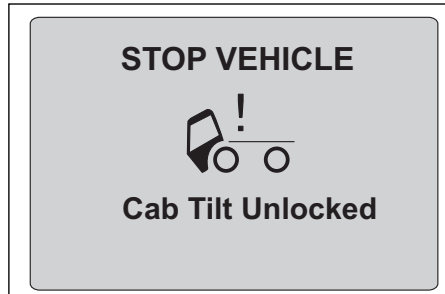
Cab unlock warning



Cab tilt tell-tale



When cab is unlocked and vehicle is not moving then driver is warned by cab tilt tell-tale and "ATTENTION" pop up message is displayed on the instrument cluster.



When cab is unlocked and vehicle is moving then driver is warned by buzzer sound, stop lamp, cab tilt tell-tale and "STOP VEHICLE" pop up message is displayed on the instrument cluster.

Driver can stop the buzzer sound and cancel the "STOP VEHICLE" pop up by pressing "ESC" button, but after every 30 sec "STOP VEHICLE" warning pops up until the cab is locked.

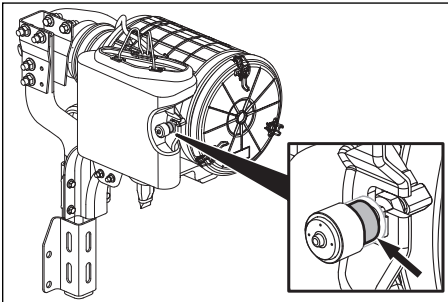
8. INSPECTION AND MAINTENANCE

8.2 Air cleaner

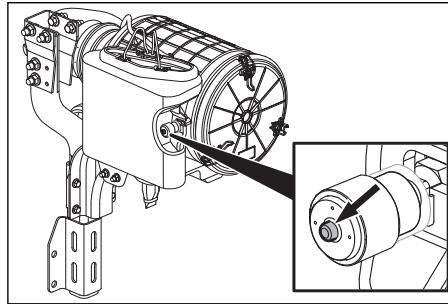
Inspection

The air cleaner is a maintenance free component so cleaning is not recommended.

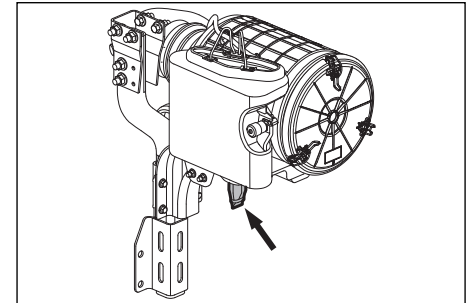
Replace the air filter whenever the air filter restriction indicator shows red or after one year.



After the air filter has been replaced, the restriction indicator must be reset by pressing the reset button.



Evacuator valve



The evacuator valve is an important part for the operation of the air cleaner. It is an integral part of the pre-cleaning stage of the air cleaner.

Visually inspect the valve for damage and blockage. Also squeeze the valve and make sure that the valve is flexible and not inverted.

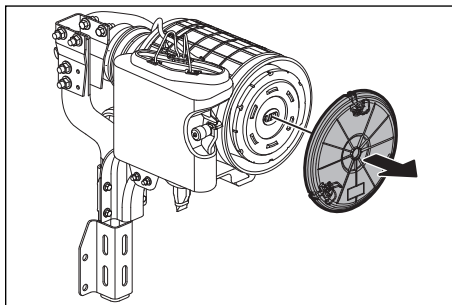
CAUTION

Do not attempt to clean the air cleaner filter.

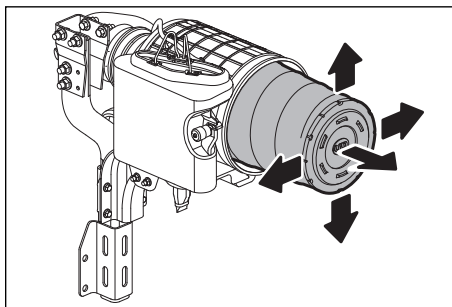
8. INSPECTION AND MAINTENANCE

Replacement procedure

1. To access the air cleaner, tilt the cab. Refer to **“Tilting the cab”** in Chapter 8.
2. Unlock the clips and remove the cover.



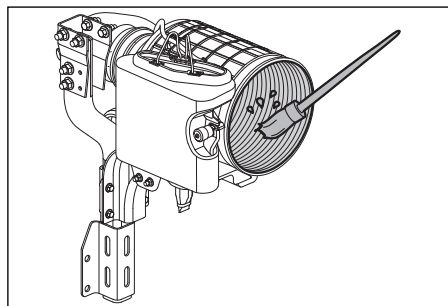
3. Remove the filter.



CAUTION

Take extra care while cleaning the air cleaner housing. Dust particles may enter the engine air inlet and can cause damage or premature wear to the pistons and liners.

4. Clean the cover and inside of the air cleaner housing with a clean a dry cloth/brush.



NOTE

When cleaning, make sure that the engine air inlet is blocked properly way to prevent dust particles from entering.

5. Clean the evacuator valve. Make sure that it is not broken or damaged.

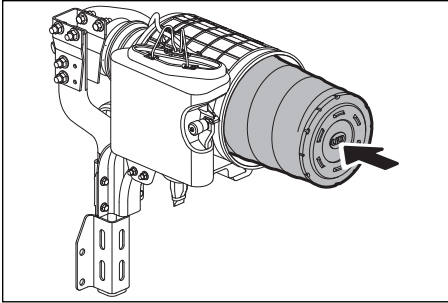
NOTE

If the evacuator valve is broken or missing, water and dirt can easily enter the air cleaner. Install a new evacuator valve.

6. Check the air cleaner inlet and outlet hose for breakage and loose clamps. If the hose is broken, replace it with a new part. If the clamps are loose, tighten them.

8. INSPECTION AND MAINTENANCE

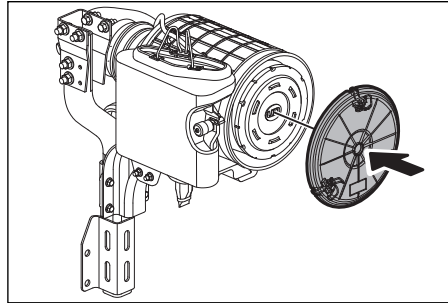
7. Install the filter.



NOTE

We recommend using the UD air cleaner filter. Do not use an inferior filter.

8. Install the air cleaner cover and secure it with the clips.



⚠ CAUTION

Installing the clips incorrectly can damage the filter packing surface and allow dust into the engine. This may cause premature wear to the pistons and liners.

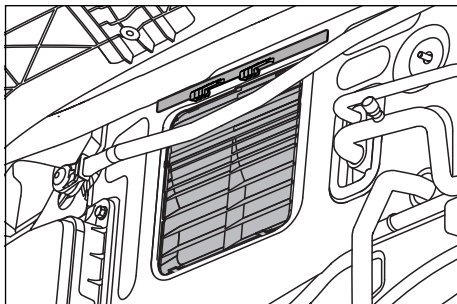
9. Lower the cab. Refer to “**Lowering the cab**” in Chapter 8.

Precautions when handling air cleaner

- Make sure that the cover and the element are installed correctly. If they are not correctly installed, dust may be sucked into the cylinder and cause malfunction.
- Do not touch the paper element of the air cleaner filters with your hands or any tools.

8. INSPECTION AND MAINTENANCE

Air-conditioning filter-nylon mesh

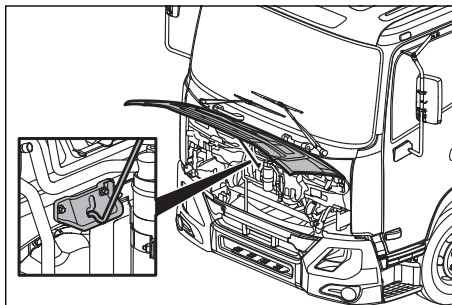


A nylon mesh is used to filter the incoming air. This nylon mesh is accessible behind the front panel.

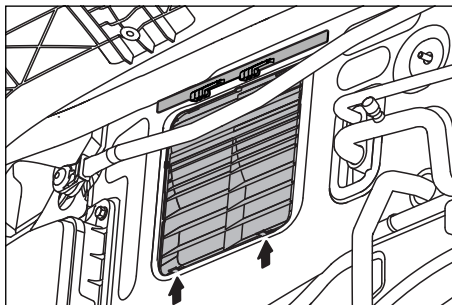
Cleaning

1. Park the vehicle in a service position. Refer to "**Service position**" in chapter 8.

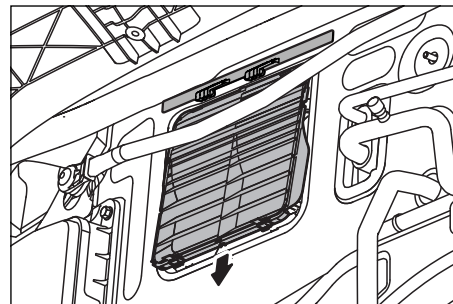
2. Open the front panel and secure it with the support rod.



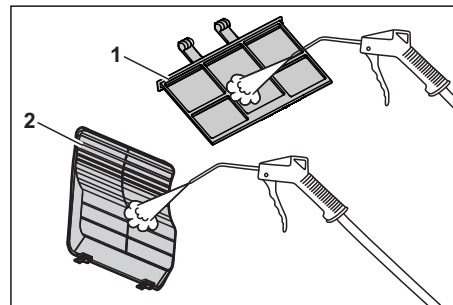
3. Unlock the clips of the front filter.



4. Remove the nylon meshes.



5. Clean the nylon meshes.

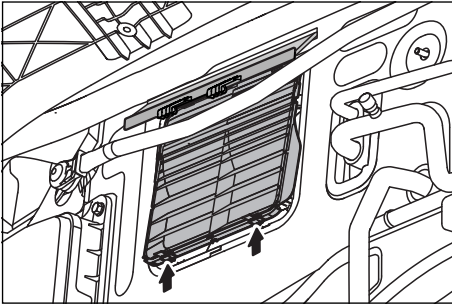


NOTE

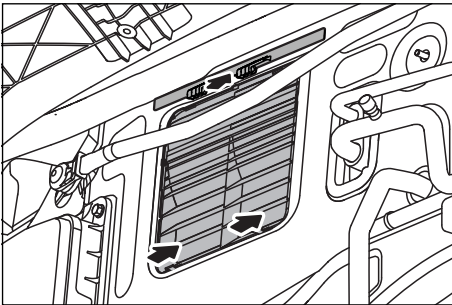
Clean the nylon mesh with low pressure air from behind in order to remove the dust on front side.

8. INSPECTION AND MAINTENANCE

6. Install the nylon meshes.



7. Push the nylon meshes until it is locked.

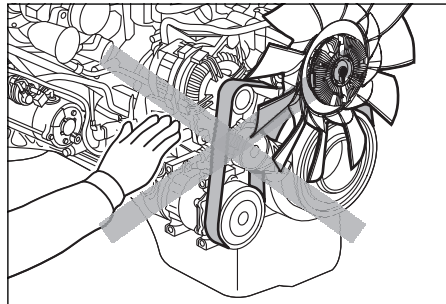


8. Close the front panel.

Air conditioner belt tension

DANGER

Do not check or adjust the drive belt unless engine is switched OFF and the gearshift lever is in neutral.



- Check that none of the grooves in the belt are missing.
- Check the belts for any signs of cracks and tears.
- There must not be any dirt or grease on the belts or the contact surfaces of the belt pulley.
- Check the automatic belt tensioner.

To inspect the belt tension

Push down the belt between the pulleys with a constant force. Check that the tension pulleys are moving at constant speed. Then release the belt and check that the tension pulleys are returned to their original position by the force of the spring.

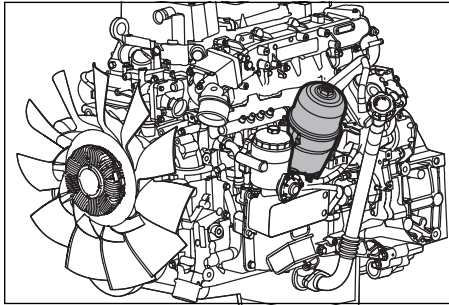
Replace the belt tensioner under any of the following circumstances:

- If the pulleys do not move when you push down the belt.
- If there are any abnormalities in the pulley motion.
- If the pulleys do not spring back when the belt is released.

8.3 Engine oil filter

Replacing the oil filter

The GH5E engine is fitted with an element-type oil filter.



⚠ CAUTION

A blocked cartridge could cause unfiltered or contaminated oil to be supplied to the engine components or reduce the oil flow rate. This could adversely affect the service life of the engine. The filter must be replaced at regular intervals.

⚠ CAUTION

We strongly recommend that you use genuine UD Parts. Using an inferior oil and filter could have a detrimental effect on engine operation and emission controls.

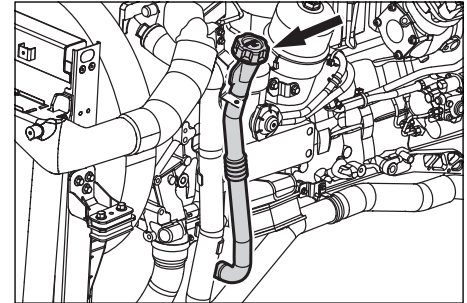
⚠ WARNING

The engine oil temperature can be hot enough to burn the skin even after running the engine for a short time. Top up the engine oil only when the engine is cold.

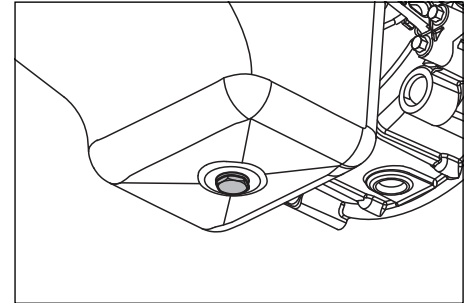
Replacing - GH5E filter

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8

2. Loosen the oil filler cap.



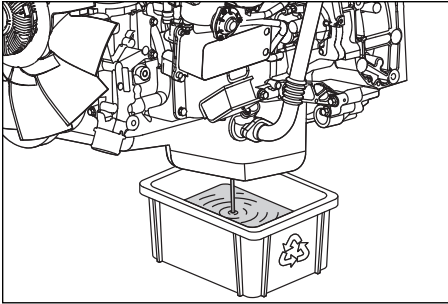
3. Clean the drain plug area.



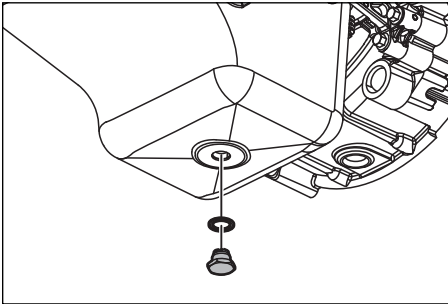
4. Place a suitable container under the engine sump.

8. INSPECTION AND MAINTENANCE

5. Remove the drain plug and drain the oil.

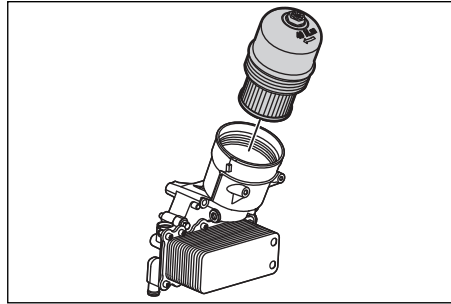


6. Replace the O-ring and tighten the drain plug.

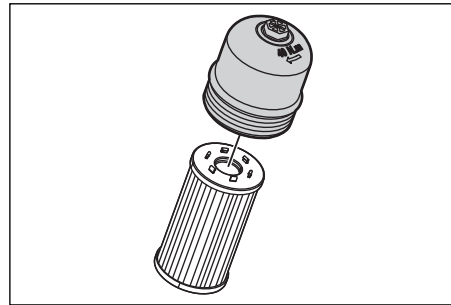


Tightening torque: **55 - 65 Nm (40.5 - 48 lb ft)**.

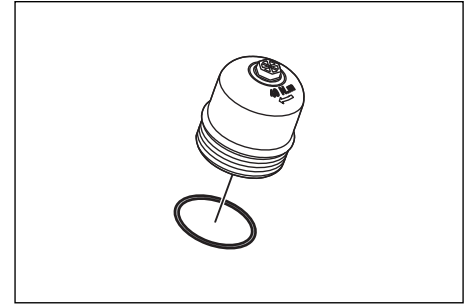
7. Remove the filter assembly.



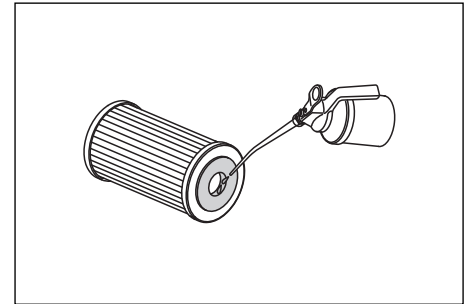
8. Disassemble the filter.



9. Remove the O-ring.

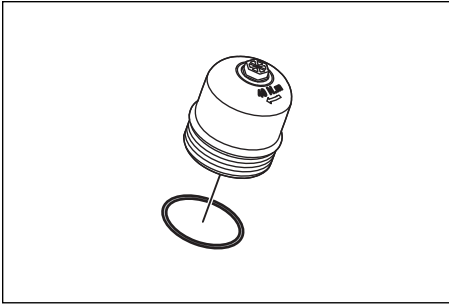


10. Lubricate the gasket on the new filter.

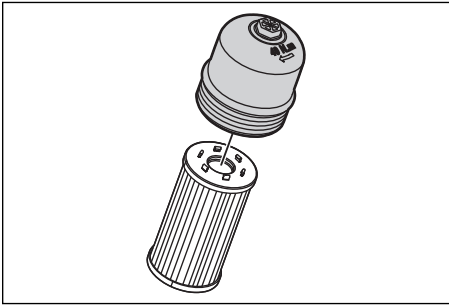


8. INSPECTION AND MAINTENANCE

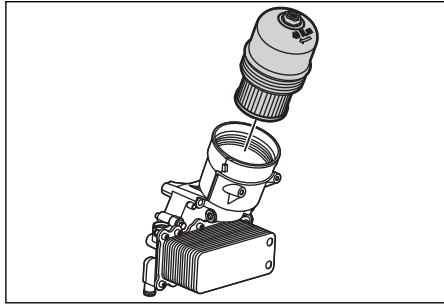
11. Lubricate the O-ring and assemble.



12. Assemble the filter.



13. Install the filter assembly.



Torque tighten to 40 ± 5 Nm (30 ± 4 lb ft)

8. INSPECTION AND MAINTENANCE

8.4 Oils

Engine oil recommendations

CAUTION

Do not add any oil additives. We recommend using genuine UD oil or equivalent lubricants. Other inferior oils and lubricants will cause serious consequential damage.

It is important to check and replace lubricants on a regular basis to prolong the life of the vehicle and make it safe and comfortable to drive.

This section summarises the checks and service work which can be carried out by users in terms of lubrication. The lubricants which are used are listed in the “**Service data**”.

UD lubricants are prepared to maximise the performance of the vehicle. Always regularly replenish and replace with **UD** lubricants.

NOTE

Check or replace whichever items come first of the maintenance schedule according to the time interval and distance driven.

Precautions when replenishing and changing the of oil

Incorrect service work may cause leakage of oil. Ask for the truck to be serviced at the nearest authorised **UD Trucks** dealer.

During inspections and servicing, heed the following points:

- Provide suitable oil drainage container.
- Carry out the work in a location where an oil disposal unit is available.
- Always dispose of waste oil according to the environmental directives.

Checking and changing the engine oil

WARNING

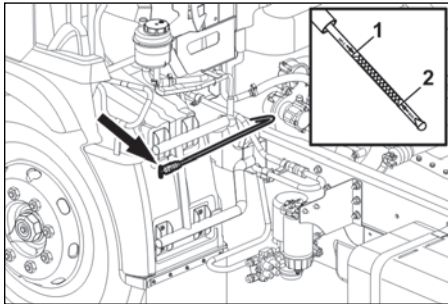
To avoid serious injury from the hot engine or oil check the oil level and only carry out maintenance once the engine has cooled down.

Check the engine oil level on daily basis when the engine is cool before driving the vehicle. Switch OFF the engine, wait for the engine to cool down and allow the oil to return to oil sump before checking it.

8. INSPECTION AND MAINTENANCE

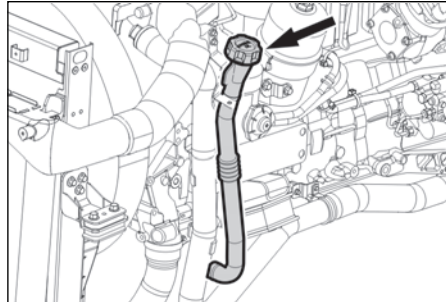
To check the engine oil level

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the dipstick located on the left hand side of the engine. Wipe it clean with a clean cloth and reinsert it. Remove the dipstick and check the oil level. Maintain the engine oil level between the MAX and MIN mark on the dipstick.



1. MAX
2. MIN

3. If the oil level is low, add oil through the oil filler port.



WARNING

Handle oil with care to avoid spilling it. Do not add oil when the engine or exhaust system is hot. Spilling oil on hot parts can cause a fire.

4. After adding oil, wait for at least 10 minutes and then recheck the oil level.
5. After checking it, reinsert the dipstick.

CAUTION

- Do not drive the vehicle when engine oil level is below the MIN mark on the engine oil dipstick. Insufficient engine oil can cause serious engine damage and engine failure.
- Make sure that dirt and debris do not enter the engine while adding oil through the oil filler port.

Changing the engine oil

Oil capacity

Refer to “*Capacities*” in Chapter 11

8. INSPECTION AND MAINTENANCE

Changing the engine oil

WARNING

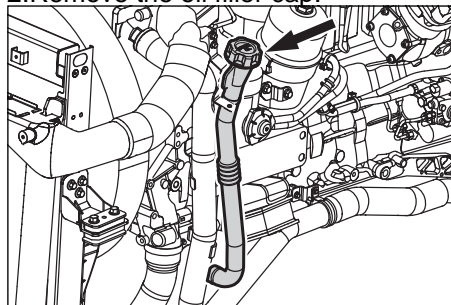
To avoid serious injury from the hot engine and engine oil, change the oil after the engine has cooled down.

WARNING

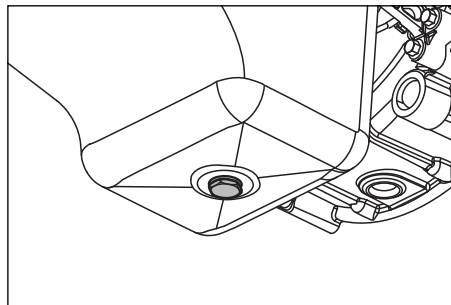
Avoid direct skin contact with the used oil. If the oil comes in to contact with the skin, wash the skin thoroughly with soap and water. If irritation persists, seek medical advice.

To change the engine oil

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the oil filler cap.



3. Place a container under the drain plug below the oil pan. Remove the plug and drain the oil completely into the container.



4. When the oil has been drained completely from the oil pan, replace the drain plug in the drain hole and tighten the drain plug. Use a new washer each time the drain plug is removed. Tightening torque:
54 - 59 Nm (5.5 - 6.0 kgfm)
5. Replace the oil filter.
6. Add oil through the oil filler port.
7. After refilling the engine oil, wait for at least 10 minutes, then check the oil level using the dipstick. If the engine oil level is low, add oil until the level on the dipstick is between MAX and MIN.
8. Start the engine and check for oil leaks.

8. INSPECTION AND MAINTENANCE

Changing the gearbox oil

CAUTION

Using non UD lubricants can cause serious consequential damage, which will not be covered by the warranty.

For oil capacity Refer to “**Capacities**” in Chapter 11

First oil change:

First change the oil after an interval of 4 weeks or no more than 5,000 km

Oil change procedure

DANGER

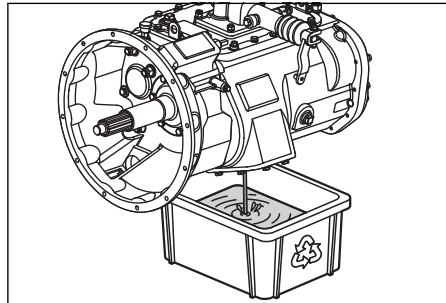
Do not change the gearbox oil when it is hot.

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the filler plug and level plugs.

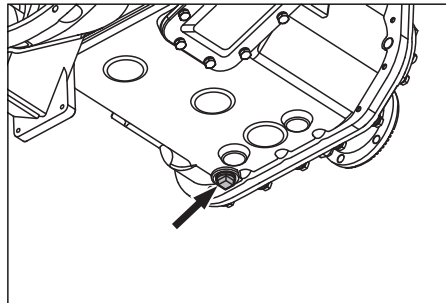
3. Place a container under the drain plug. Remove the drain plug and completely drain the oil.

NOTE

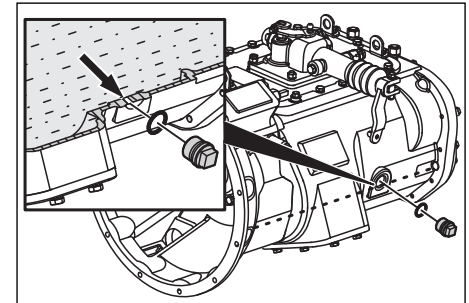
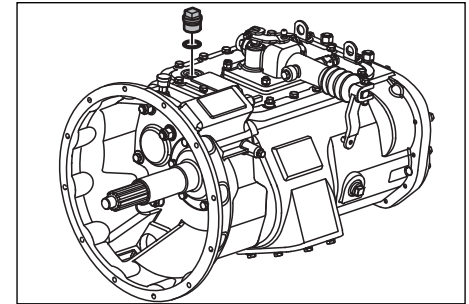
The drain plug contains a magnet. Remove any metal filings from the plug before installing it.



4. Reinsert the drain plug and tighten it.

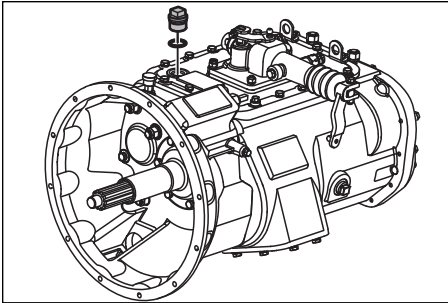


5. Refill the oil through the filler plug hole, until oil overflows out of the level plug hole.



8. INSPECTION AND MAINTENANCE

6. Reinsert the filler plug and level plug and tighten it.

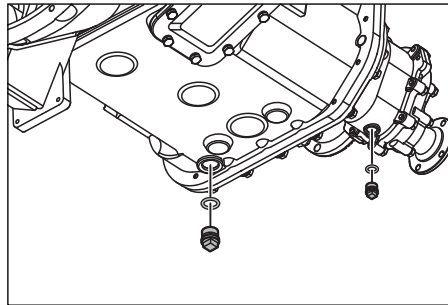


NOTE

Always use a funnel to fill the oil to avoid the dirt near the filler plug hole.

NOTE

For PTO (if equipped) oil change, drain the oil from the main gearbox and PTO as shown in the picture below.



Drain plug gearbox housing

Torque

Plug, metal: 60 ± 10 Nm

Plug, plastic: 27 ± 3 Nm

Drain plug PTO housing

Torque standard

⚠ CAUTION

Oil deteriorates as the temperature increases and this causes gearbox failure. On vehicles operating under rough conditions, oil tends to heat up faster and deteriorate quickly. More frequent oil changes may be necessary.

After the oil change, make sure that the oil is filled to the specified level (lower surface of the oil level plug). Insufficient or excess oil could lead to gearbox failure.

8. INSPECTION AND MAINTENANCE

To check the automatic transmission fluid level - Allison 2500

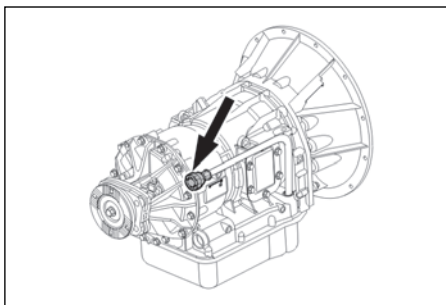
Check the fluid while the vehicle is on level ground and the parking brake applied.

1. Start the engine and run for at least one minute at 900 to 1,000 rpm to clear any air in the system.
2. Shift the transmission to Drive, Reverse, and then to Neutral to fill the clutch cavities and fluid passages.
3. Clean around the end of the filler tube before removing the dipstick.



CAUTION

Dirt or foreign matter must not be permitted to enter the fluid system. It can cause valves to stick, cause undue wear of transmission parts, or clog passages.



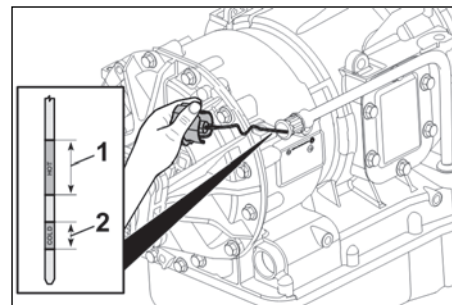
4. Check the fluid level by one of the following procedures and report any abnormal fluid level to your maintenance personnel.

COLD check

A cold fluid check may be made when engine coolant temperature gauge starts to move.

(Reference; approximately 30°C)

1. Run the engine for at least 1 minute to clear the fluid system of air.
2. With the engine running at idle, wipe the dipstick clean and check the fluid level.



1. HOT band
2. COLD band

Any level within the COLD band is satisfactory for operating the vehicle. If the level is not within the COLD band, add or drain fluid as necessary to bring the level to the middle of the COLD band.

HOT check



WARNING

Do not handle hot oil/filter without hand protection. Failure to do so may result in burn injury.

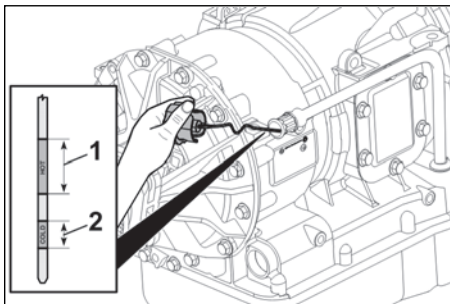
8. INSPECTION AND MAINTENANCE

1. Operate the transmission in a drive range for at least 30 minutes to get operating temperature. (Reference; 71 to 93°C)

NOTE

The fluid must be hot to ensure an accurate check. The fluid level rises as temperature increases.

2. Shift to (N) neutral and apply the parking brake. Let the engine run at idle speed.
3. Wipe the dipstick clean and check the fluid level.



1. HOT band
2. COLD band

The safe operating level is any level within the HOT band on the dipstick. If not within this range, add or drain fluid as necessary to bring the level to the middle of the HOT band.

Automatic transmission fluid and filter replacement - Allison 2500

WARNING

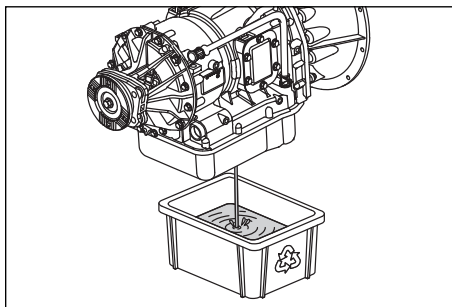
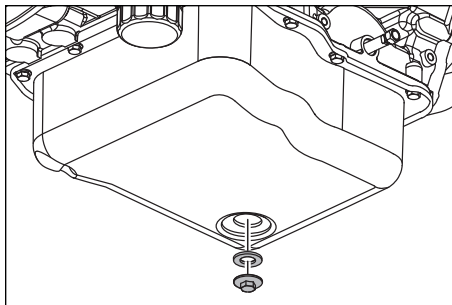
Do not handle hot oil/filter without hand protection. Failure to do so may result in burn injury.

NOTE

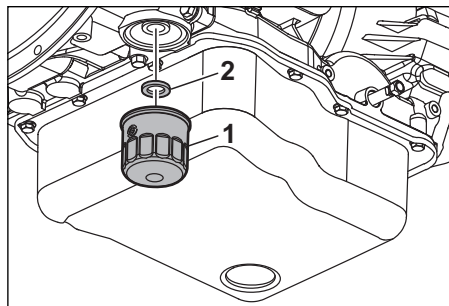
Drain the fluid when the transmission is at normal operating temperature 71 to 93°C. Hot fluid flows quicker and drains more completely.

8. INSPECTION AND MAINTENANCE

1. Remove the drain plug from the oil pan and allow the fluid to drain into a suitable container.



2. Using filter wrench remove the main filter by rotating it anticlockwise.



1. Filter 2. O-ring 3. Magnet

3. Remove the magnet from the filter attachment tube or from the top of the filter element.
4. Clean any metal debris from the magnet. Report any metal pieces larger than dust to your maintenance personnel.
5. Reinstall the magnet onto the filter attachment tube.
6. Lubricate the O-ring on the control main filter with transmission fluid.

7. Install, by hand, the control-main filter until the O-ring on the control main filter touches the converter housing.
8. Turn the filter ONE FULL TURN ONLY by hand, after O-ring contact.
9. Reinstall the drain plug and sealing washer. Tightening torque: 30 - 40 N·m {3.1 - 4.1 kgf·m}.
10. After refill, check the fluid level and add the proper fluid, if necessary.
11. For the fluid check procedure, refer to "To check the automatic transmission fluid level - Allison 2500" in this chapter.
12. Start the engine. Check the filter and seal for leaks.

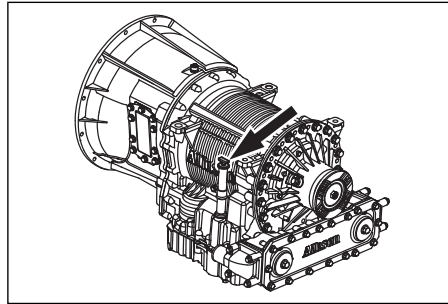
8. INSPECTION AND MAINTENANCE

To check the automatic transmission fluid level - Allison 3000

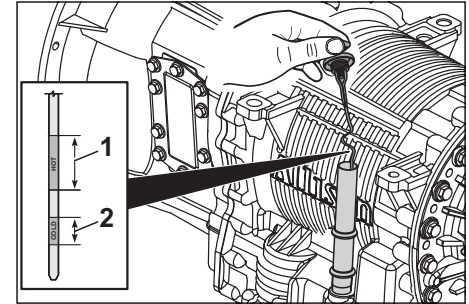
1. Park the vehicle on a level ground and apply parking brake.
2. Start the engine and run for at least one minute at 900 to 1,000 rpm to clear the system of air.
3. With the engine at idle press the brake pedal and shift the range to D (Drive) or R (Reverse) to fill the whole hydraulic circuit with fluid.
4. Shift the range to N (Neutral).
5. With the engine at idle and the range in the N (Neutral) position, inspect the fluid level.

COLD Check

1. Clean around the area near the dipstick.



2. Pull the fluid dipstick out of the filler tube, wipe fluid off the dipstick surface, and then insert the dipstick back in the original position.
3. Pull out the fluid dipstick again to inspect the fluid level. Check (at least twice) to make sure that the fluid level is within the COLD band range. If the fluid level is not within the range, refill or drain the fluid.

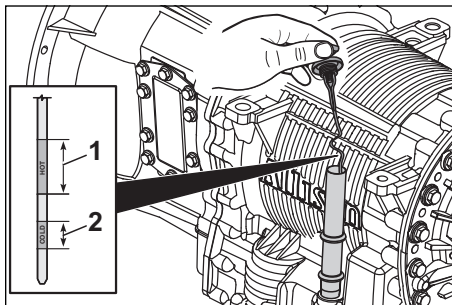


1. HOT band
2. COLD band

HOT Check

1. Drive the vehicle for about 10 to 15 minutes,
2. Park the vehicle on a level ground and apply parking brake.
3. Pull the fluid dipstick out of the filler tube, wipe fluid off the dipstick surface, and then insert the dipstick back in the original position.

8. INSPECTION AND MAINTENANCE



1. HOT band
2. COLD band

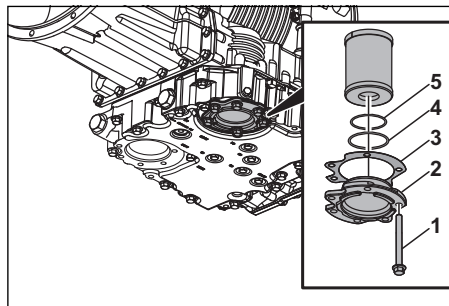
4. Pull out the fluid dipstick again to inspect the fluid level. Check (at least twice) to make sure that the fluid level is within the HOT band range.
5. If the fluid level is within the HOT band range, the inspection is completed. If the fluid level is not within the range, refill or drain the fluid.

Automatic transmission fluid change

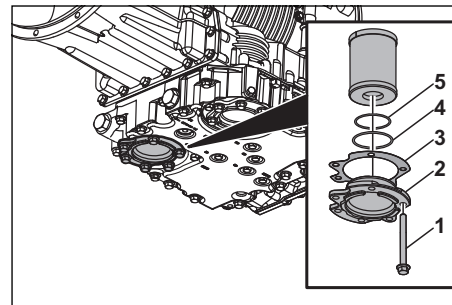
Have the automatic transmission fluid changed by an authorized **UD Trucks** dealer or other qualified service facility. Use only the transmission fluid listed in the "Recommended lubricants" on Chapter 11.

Automatic transmission fluid and filter replacement - Allison 3000

A disassembled type of filter is used and incorporated in the oil pan.



- Main Filter**
1. Bolt
 2. Cover
 3. Seal
 4. O-ring
 5. O-ring



Sub Filter

1. Bolt
 2. Cover
 3. Seal
 4. O-ring
 5. O-ring
6. Clean the periphery of the filter cover to prevent dust from entering at the time of removal of the filter.
 7. Remove the mounting bolts of cover and pull the cover and filter down.
 8. Replace the filter, O-ring and seal with new ones and install to the cover. When installing, apply a light coating of clean oil to the entire perimeter of O-ring and seal.
 9. Install the cover and filter combined in one unit into the transmission body. Tightening torque: 51 - 61 N·m {5.2 - 6.2 kgf·m}

8. INSPECTION AND MAINTENANCE

10. After replacement, be sure to refill fluid. After refilling, check the fluid level.

Changing the differential gear oil

CAUTION

Using non-authorized lubricants can cause serious consequential damage.

Initial oil change:

5,000 km or 4 weeks (Whichever comes first.)

WARNING

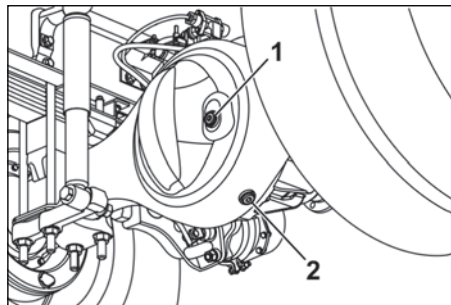
Check or change the differential gear oil after the rear axle has cooled down.

NOTE

Always use a funnel while filling with oil to prevent dirt from entering the axle. Clean the plug area before removing the oil filler plug.

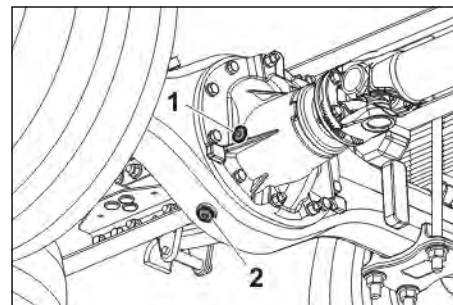
Oil change procedure

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Place a container under the drain plug.
3. Remove the drain plug and completely drain the oil.



RSS0918 and RSS1132B

1. Filler plug
2. Drain plug



RSS0716

1. Filler plug
2. Drain plug

4. Install the drain plug and tighten it. Remove the filler plug and pour oil into the case until oil overflows through the filler plug hole.

Tightening torque refer below:

	RSS0716	RSS0918	RSS113B
Filler Plug	68 ± 14 Nm {7 - 1.5 kgfm}	80 ± 20 Nm {8 - 2 kgfm}	
Drain plug	80 ± 20 Nm {8 - 2 kgfm}		

5. When refilling, take care to prevent dirt or dust from entering the filler plug hole.

8. INSPECTION AND MAINTENANCE

Topping up the power steering oil

WARNING

- Make sure the steering system is cool enough to check and change the oil.
- If the oil is too low or the oil is dirty, the power steering may not operate properly. Do not drive the vehicle when the oil is low. Replenish or change the oil.

CAUTION

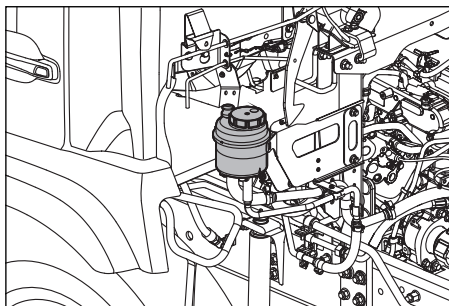
We strongly recommend that you use UD lubricants in order to avoid serious consequential damage.

Oil filter cartridge

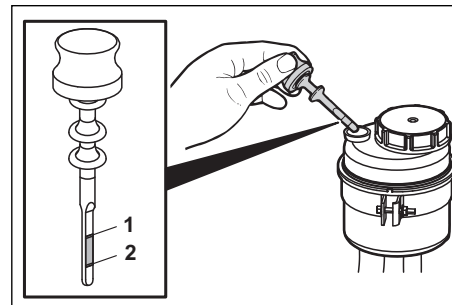
Replace the oil filter cartridge every time the power steering oil is changed.

Capacity

Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.



Check the oil level using the dipstick provided in the reservoir.



1. MAX
2. MIN

If the oil is below the MIN mark, open the reservoir cap and top up using the recommended oil to the MAX mark. Refer to “**Recommended lubricants**” in Chapter 11 for the power steering oil standard.

NOTE

- Always check the amount of power steering oil when the engine is not running.
- When oil is changed, replace the filters also.

8. INSPECTION AND MAINTENANCE

Checking and changing the clutch fluid

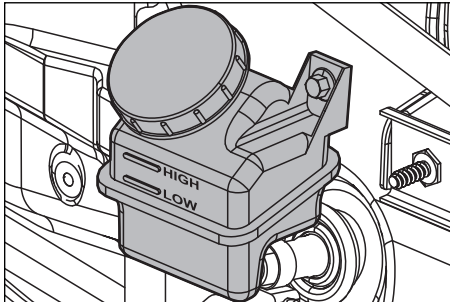
CAUTION

We strongly recommend use UD lubricants in order to avoid serious consequential damage.

Checking the clutch fluid level

DANGER

Check or change the clutch fluid after the engine has cooled down.



Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.

- Open the front panel and check the fluid level in the clutch reservoir.
- The fluid level is correct if it is between the HIGH and LOW marks on the reservoir. If it is below the LOW mark, open the reservoir cap and add UD clutch fluid until the level reaches the HIGH mark.
- Make sure that the reservoir cap is closed properly after topping up the fluid.

Precautions when handling clutch fluid

- Since the clutch fluid has a high tendency to absorb moisture, it must be handled carefully. When the clutch fluid is checked, topped up or stored, ensure that it is not exposed to moisture.
- Adding other mineral oils (diesel oil or gasoline, etc.) to the clutch fluid may swell the rubber of the clutch system, leading to a failure.
- Adhesion of the clutch fluid to the coating surface may cause the coating to peel. Take proper care when topping up the clutch fluid.



CAUTION

- If the clutch fluid level is low, you must check for any leaks in the clutch system. Have it inspected at the nearest authorised UD Trucks dealer.
- Remove dirt on and around the cap before removing the cap of the clutch fluid reservoir. When the cap is removed, avoid contact with dirt, dust, water or foreign material.
- Use a clean container to replenish the clutch fluid. Never use a dirty container which has paint or mineral oil in it.

Lubrication

NOTE

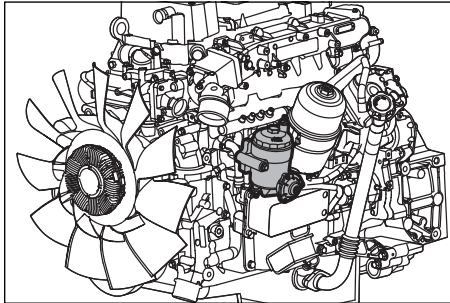
Lubrication is very important when it comes to servicing and maintaining the truck. Vehicle components such as the engine, gearbox and rear axles etc., must be lubricated with either oil or grease. Authorised UD Trucks dealer has more information on the complete range of lubricants.

8. INSPECTION AND MAINTENANCE

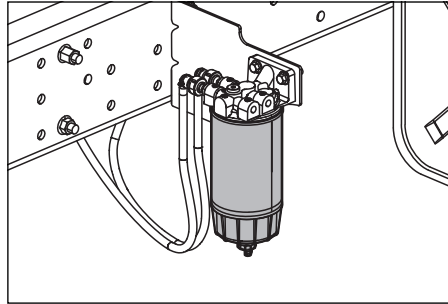
8.5 Fuel filter

Inspection and replacement

Fuel must be filtered before supplying it to the combustion chambers. Contaminated fuel can cause serious damage to the fuel system and other engine components. This leads to a reduction in vehicle performance and, ultimately, engine failure.



Fuel filter



Water separator

Replace the fuel filter when changing the engine oil and oil filter.

DANGER

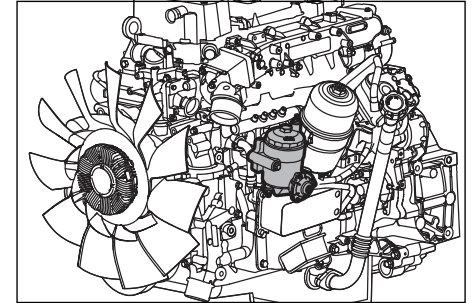
Fuel leakage is a hazard and may cause fire. The filter must be installed firmly in order to prevent leakage.

CAUTION

Do not let the fuel spill on to the electrical components. The fuel may damage them.

Replacement procedure

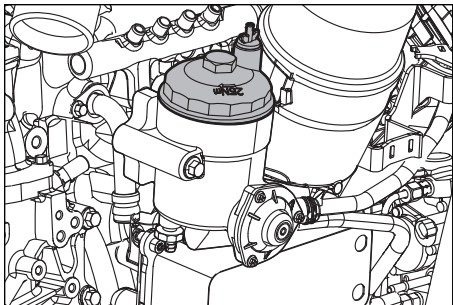
1. Park the vehicle in service position. Refer to “**Service position**” in chapter 8
2. Clean around the filter area.



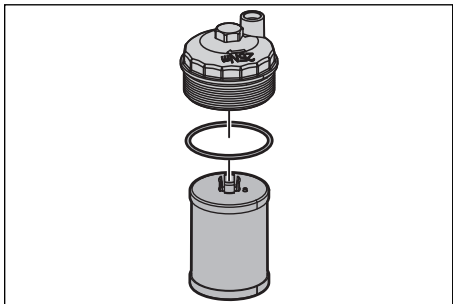
3. Place a suitable container under the filter to collect the fuel.
4. Loosen the fuel tank cap to release any pressure in the tank.

8. INSPECTION AND MAINTENANCE

5. Remove the filter assembly.

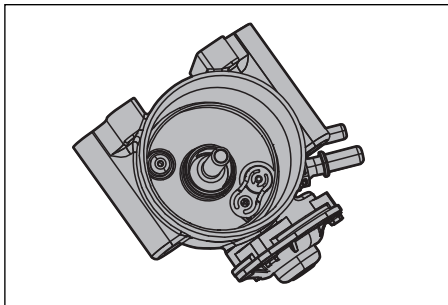


6. Disassemble the filter and O-ring.

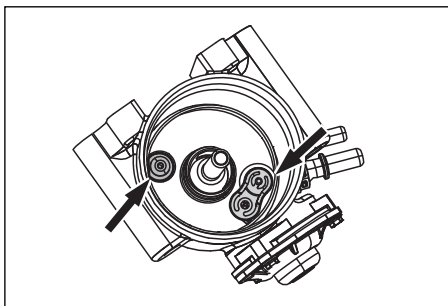


7. Dispose off the element in environment friendly manner.

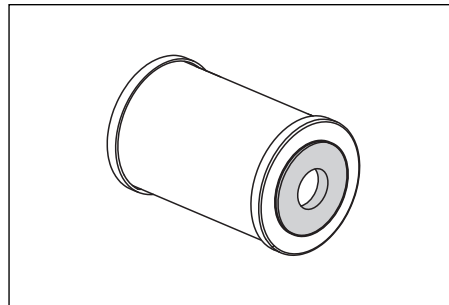
8. Clean the filter housing with diesel.



9. Check the flapper valve assembly and drain gasket for damage. Replace with new part if damaged.

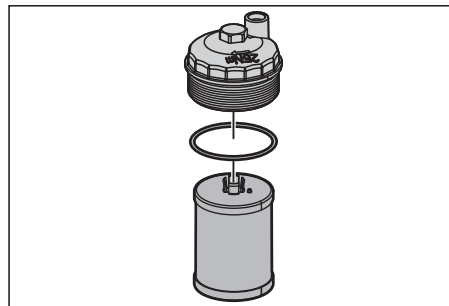


10. Lubricate the seal with Diesel.



11. Lubricate the O-ring with oil.

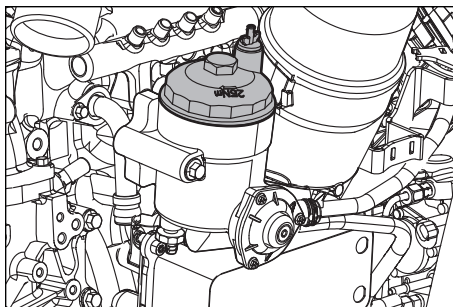
12. Assemble the filter and the O-ring.



8. INSPECTION AND MAINTENANCE

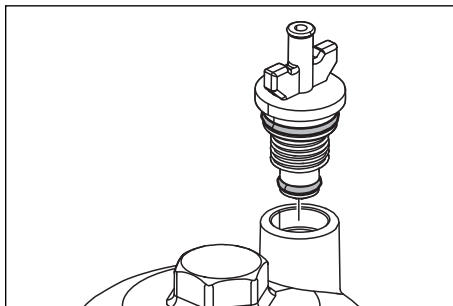
13. Install the filter assembly.

Tightening torque to 25 Nm (18 lb ft)



14. Remove the air vent cock and replace the O-rings. Lubricate the O-rings with oil.

Do not tighten the air vent cock. Just place back the vent cock such that fuel flows while priming.



15. Prime the fuel system. Refer to "**Fuel system priming**" in Chapter 8.

16. Start the engine and check for fuel leaks.

NOTE

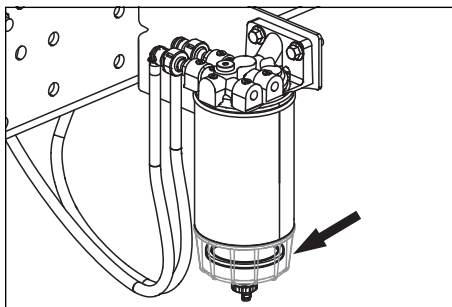
Do not increase the engine speed above the idle speed, if you do, any air pockets in the fuel line will be forced into the combustion chamber and cause the engine to shut down.

17. Run the engine at idle speed for 2-3 minutes.

8. INSPECTION AND MAINTENANCE

Draining water from the fuel filter

Drain the water whenever the red float ring is floating in the chassis mounted filter.



⚠ CAUTION

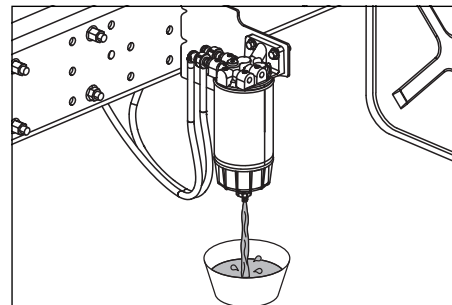
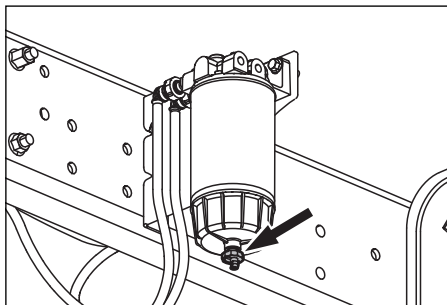
Do not continue driving the vehicle with the filter containing water. Stop the vehicle and drain the water.

Procedure for draining the water

NOTE

Always use a container to collect the fuel.

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Place a container under the water separator.
3. Loosen the drain plug by rotating the plug in the clockwise direction and drain the water into the container.



NOTE

Only drain the water, not the fuel.

4. Tighten the drain plug by rotating the plug in anti clockwise direction.
5. Prime the fuel system. refer to “**Priming the fuel system**” in Chapter 8.

8. INSPECTION AND MAINTENANCE

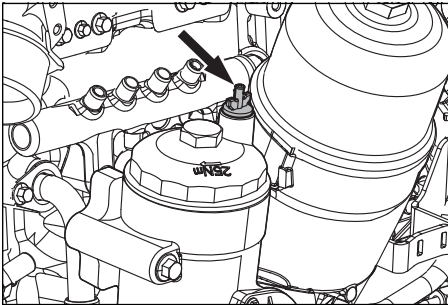
8.6 Priming the fuel system

Priming the fuel system

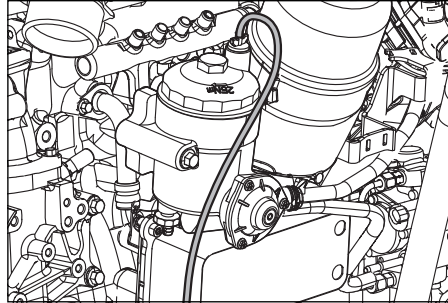
⚠ DANGER

Failure to immobilise the vehicle correctly will lead to fatal injury.

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Tilt the cab to access the fuel filter, Refer to “**Tilting the cab**” in Chapter 8.
3. Loosen the air vent cock.



4. Connect a small hose to the filter.

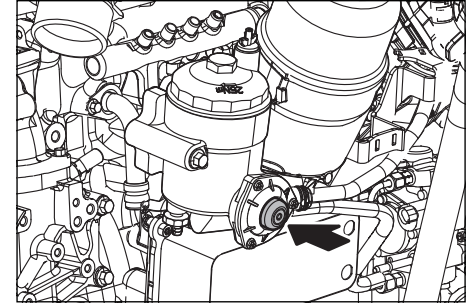


5. Place a suitable container under the filter.

NOTE

Priming option is available on main filter only.

6. Prime the system.



7. Prime the system until the fuel flows without air bubbles.
8. Remove vent hose and tighten the air vent lock.
9. Prime the system until it gets hard.

⚠ DANGER

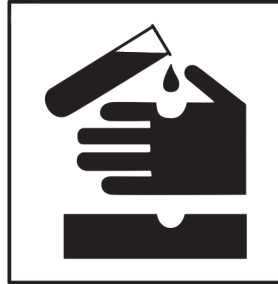
After starting the engine, check for fuel leakages from any of the components of the fuel system. If leaks are found, stop the engine and contact the nearest authorised UD Trucks dealer.

8.7 Battery

Battery maintenance

⚠ DANGER

Batteries produce hydrogen gas, which is highly flammable. The spark generated due to loose or incorrect cable connection is sufficient to explode the battery and can cause serious damage or injury. Batteries contain sulphuric acid, which can burn your skin. If the acid comes into contact with your skin or eyes, rinse with plenty of water and seek medical advice immediately.



Since batteries contain corrosive and toxic acid, **UD Trucks** do not recommend that the driver should handle the battery. Doing so may put the driver, third parties or the environment at risk. This procedure must therefore be carried out by a authorised **UD Trucks** dealer.

Some of the vehicle are fitted with maintenance free batteries, if you have any clarification please contact authorised **UD Trucks** dealer for assistance..

Battery cleaning

Clean the battery top surface and cap with a slightly wet cloth, use only distilled water to wet the cloth.

The vent cap tends to clog with dust which results in bulging of battery.so remove the vent cap from the battery and clean the vent hole periodically by inserting a small pin.

8. INSPECTION AND MAINTENANCE

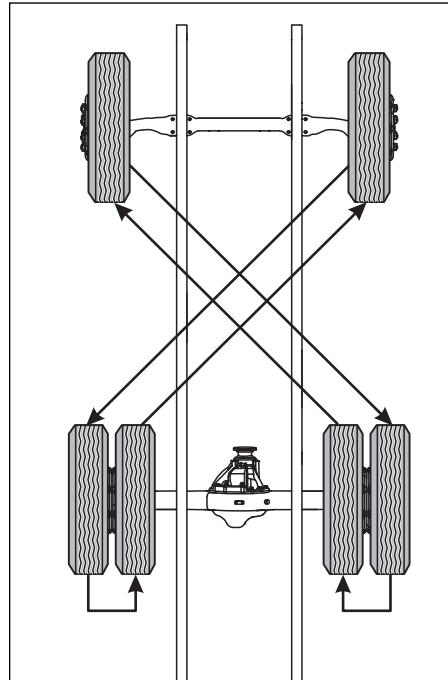
8.8 Tyres

Rotating the tyre position

The tyre wear depends on road conditions, the cargo and the way brakes and steering are used. If the spare tyre is not used for a long time, it may be deformed. To avoid uneven tyre wear and to extend the tyre life, we recommend rotating the tyres. Tyre rotation applies to both LHD and RHD.

Tyre rotation recommendation: refer to the relevant tyre manufacturer's service/owners manual. If there are no recommendations, change the tyres every 8000 to 10000 km.

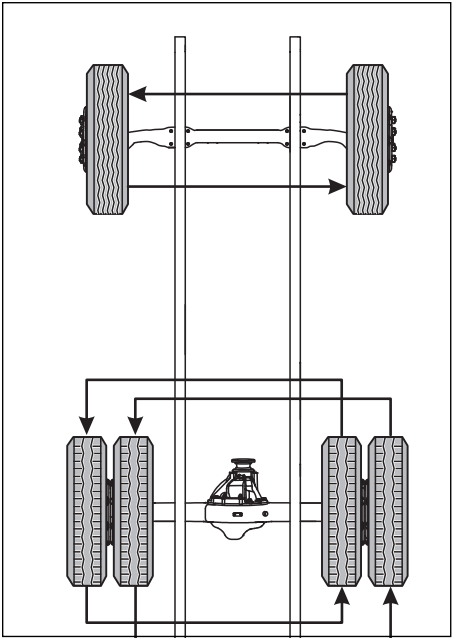
Tyre rotation for new tyres of same size and tread



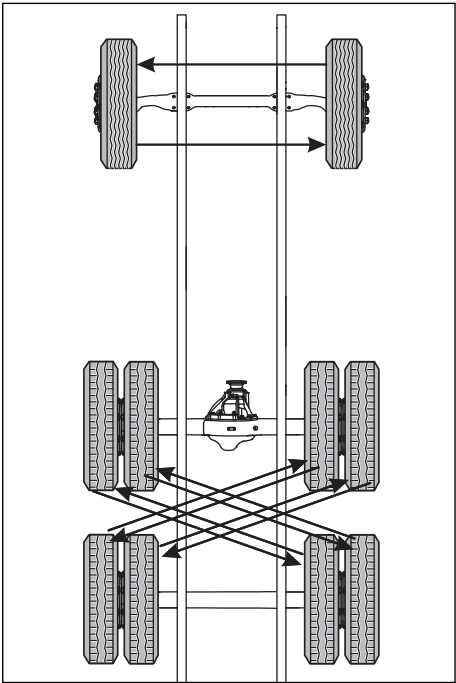
8. INSPECTION AND MAINTENANCE

Rotation pattern for vehicles equipped with steer (RIB) pattern on the front axle and drive (LUG) pattern on rear axles

For 4x2

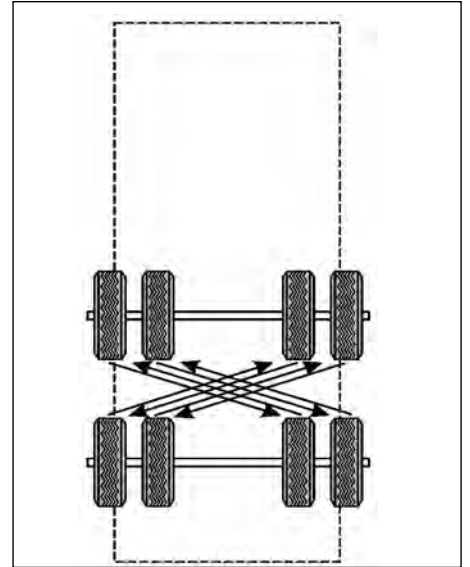
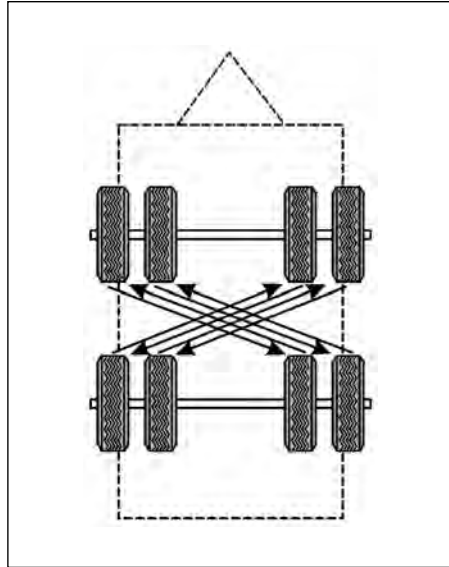
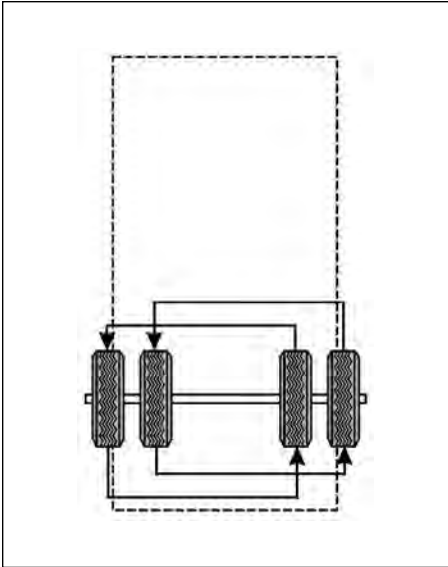


For 6x2

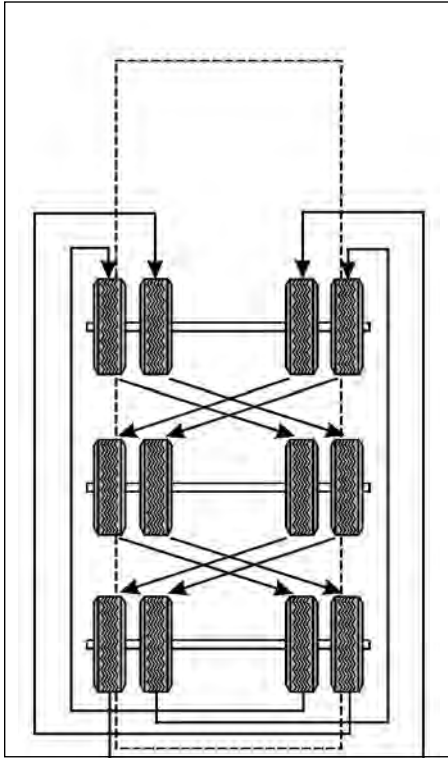


8. INSPECTION AND MAINTENANCE

Recommended tyre rotation for trailers - "wheel carriage".



8. INSPECTION AND MAINTENANCE



Precaution when rotating the tyre position

Do not install the tyres with different outer diameters beyond the specified range on multiple wheels (rear wheels).

Before installing the tyres, clean the wheel flat area with a wire brush.

- Check the disc wheels for cracks and damage. If cracks or damage is found, replace the disc immediately.
- When installing double tyres, make sure that the air valves of the inner tyre and the outer tyre are diagonally opposite.

Make sure that the tyre side is changed/rotated when changing the tyre position.

NOTE

If there is a marking on the tyre, indicating the direction of rotation (lug pattern) tyre should be changed and cant be rotated.

Specified range of differences in the outer diameter of multiple tyres

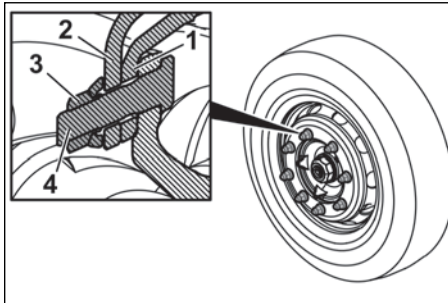
Within 12 mm

- Make sure that the tyres installed on the front have a good tread groove (are less worn) and the wheels are balanced.
- Make sure that the turning direction is towards the truck front.
- Remember to install the same size tyre on the same axle. If tyres with different sizes are used on the same axle, the vehicle may be pulled either to the left or to the right when braking and the steering wheel may turn. Do not install tyres of different sizes.
- Always replace new tyres in pairs and install them on the front wheels first.
- When new tyres are installed, carry out a initial break-in drive for 200 km or more at a speed of 60 km/h or less or for 300 km at a

8. INSPECTION AND MAINTENANCE

speed of 50 km/h or less. Check the air pressure after the vehicle has been driven for 200 km.

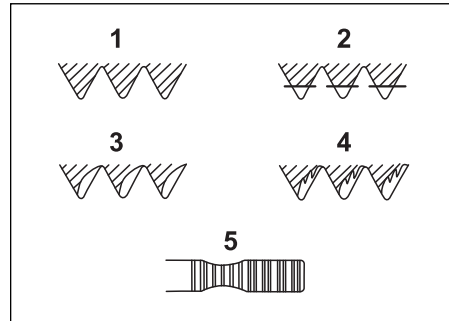
- Check for deformation on the screw portion of the bolts and wheel nuts. If excessive damage is found, replace the deformed bolts and nuts as a set. Replace all the bolts and wheel nuts as a precautionary measure because other bolts and wheel nuts may also get damaged.



1. Inner disc wheel
2. Outer disc wheel
3. Wheel nut
4. Bolt

Inspection - Wheel nut, hub bolt, and disc wheel

- When replacing a tyre, check the wheel nut, hub bolt, and the disc wheel for any damage. If damage is found, replace the part immediately.
- Check the bolts for cracks, damage, wear, thread wear, wasting, or galling. If any of these conditions are found, replace the bolt along with the wheel nut immediately.



1. Normal
2. Collapse
3. Wear
4. Galling
5. Extension

- If a hub bolt is broken, the whole set of hub bolts and the wheel nuts of the wheel should be replaced. Contact the nearest authorised **UD Trucks** dealer.

Check whether wheel nuts have worked loose

CAUTION

When the hub, disc wheel and wheel nuts are changed, make sure you retighten wheel nuts after driving about 50 to 100 km.

Tightening torque:

- Tighten the wheel nuts to the specified torque.

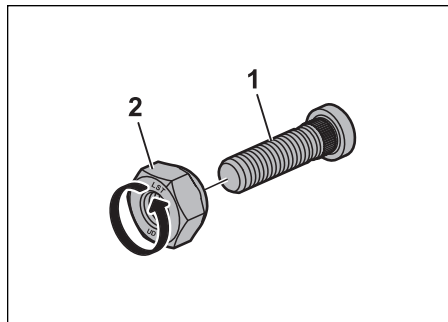
	6 Stud	8 Stud	10 Stud
JIS	405 ± 25 Nm	575 ± 25 Nm	-
ISO	-	-	670 ± 30 Nm

8. INSPECTION AND MAINTENANCE

NOTE

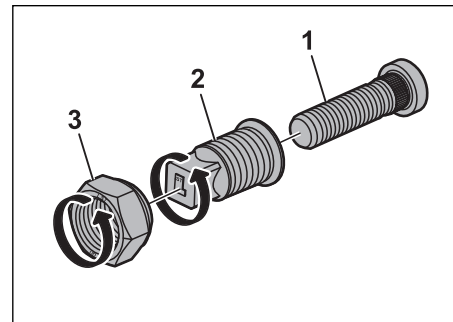
The JIS wheel nuts for the right side of the vehicle has a right hand thread type and the letter "R" is stamped on the hub bolt. The wheel nuts for left side of the vehicle vary between left hand thread and right hand threads. Please check the mark: "L" for left hand thread and "R" for right hand thread accordingly.

JIS front wheel nut assembly for LHS



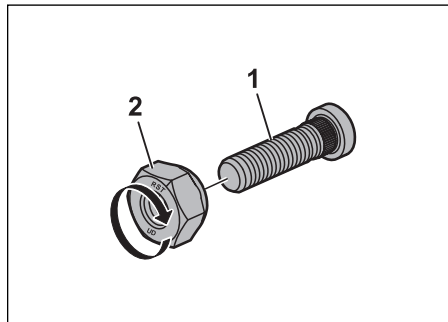
1. Stud 2. Nut
Tightening direction anticlockwise

JIS rear wheel nut assembly LHS



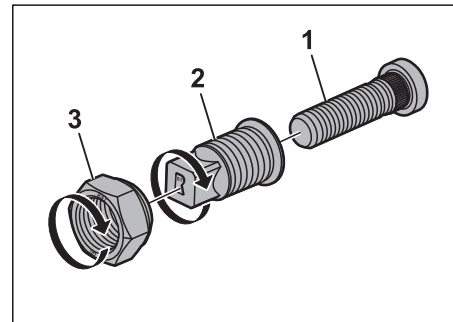
1. Stud 2. Nut 3. Stud
Tightening direction anticlockwise

JIS front wheel nut assembly RHS



1. Stud 2. Nut
Tightening direction clockwise

JIS rear wheel nut assembly RHS



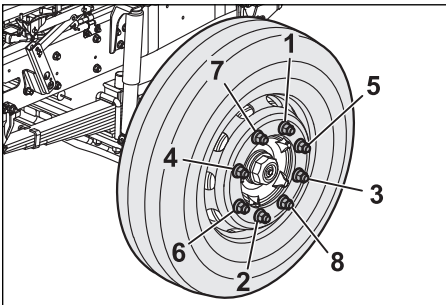
1. Stud 2. Nut 3. Nut
Tightening direction clockwise

8. INSPECTION AND MAINTENANCE

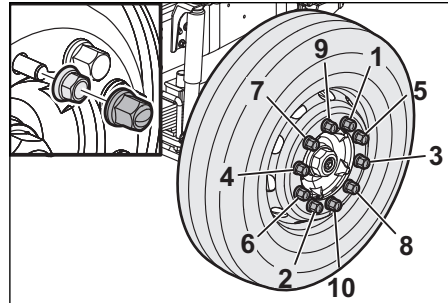
Removing wheel

- Park the vehicle in a service position. Refer to **“Service position”** in chapter 8.
- Loosen the nuts with a wheel nut spanner. Loosen the nuts until they can be turned by hand.
- For the jack point and jacking procedures, Refer to **“Using the jack”** in Chapter 8. Jack the vehicle until the tyre is lifted just above the ground.
- Remove the wheel nuts and then remove the wheel.

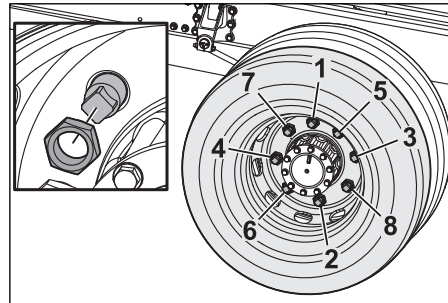
Front wheel - JIS Type



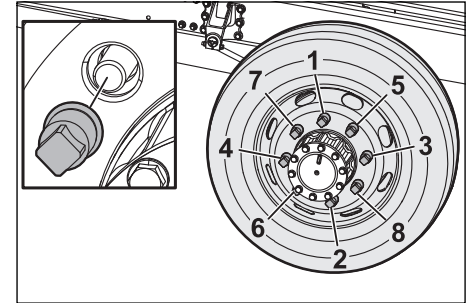
Front wheel - ISO Type



Rear wheel - JIS Type



Rear wheel outer



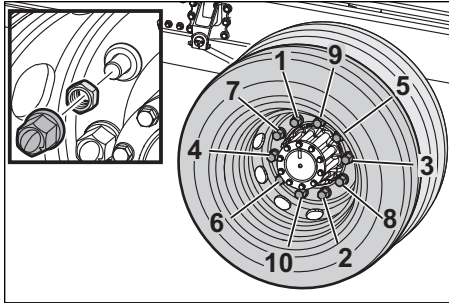
Rear wheel inner

NOTE

Images shown are for 8 studs wheel and procedure for 6 studs wheel removal remains same.

8. INSPECTION AND MAINTENANCE

Rear wheel - ISO Type



CAUTION

When using the jack, always loosen the wheel nuts in the same pattern as that described for tightening the wheel nuts. The wheel assembly is heavy so take care when removing it.

Wheel Installation

Using the tyre lever, attach the wheel disc by aligning its bolt holes with the hub bolts.

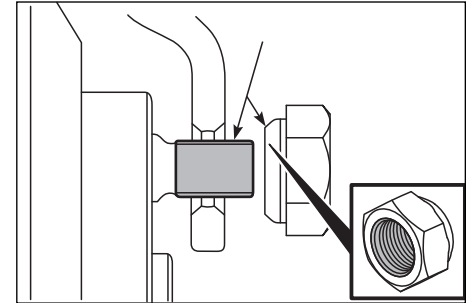
Apply a light coating of engine oil to the wheel nut thread (only for JIS type), threads of the inner nuts and hub bolts. Two drops of oil is sufficient if any excess oil drops should be cleaned.

CAUTION

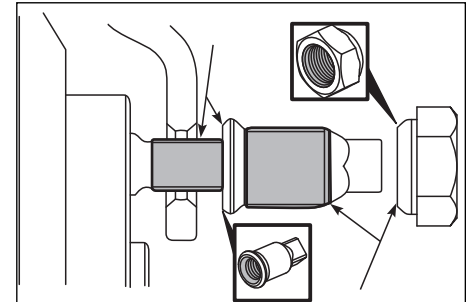
Do not lubricate the ISO type wheel nuts.

CAUTION

Do not lubricate the attaching surfaces. Lubricate only the thread portion.



Front wheel - JIS Type

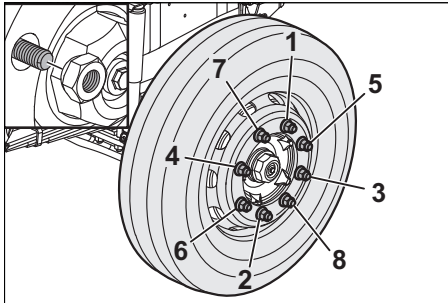


Rear wheel - JIS Type

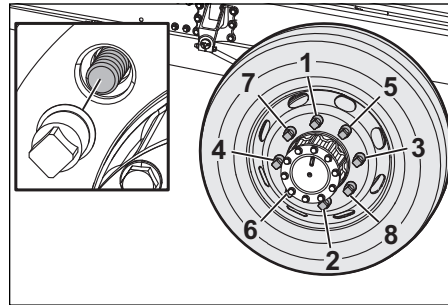
8. INSPECTION AND MAINTENANCE

Position the wheels so that the hub bolts are in the centre of the bolt hole and then pre-tighten the wheel nuts.

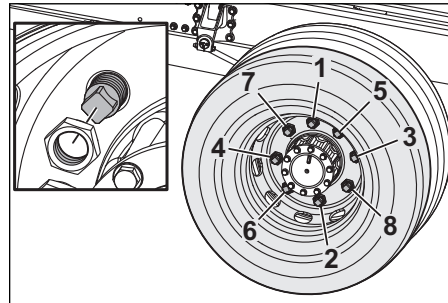
Loosen the jack and lower the tyres slowly. Start tightening the wheel nuts by 3 turns in a diagonal sequence and finally tighten them to the specified torque.



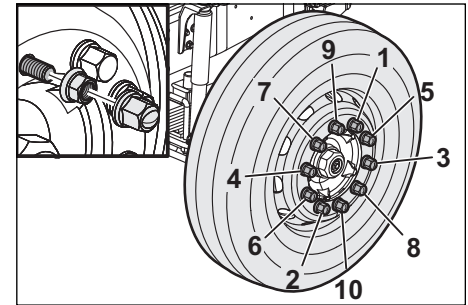
Front wheel - JIS Type



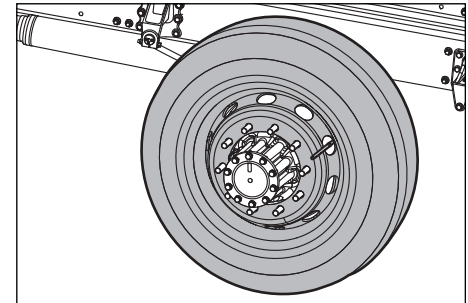
Rear inner wheel - JIS Type



Rear outer wheel - JIS Type



Front wheel - ISO Type



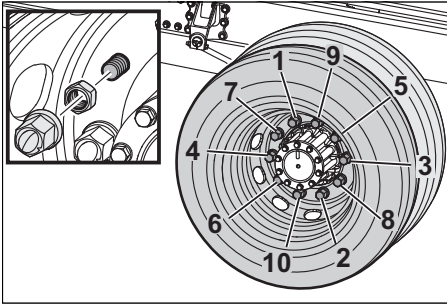
Rear inner wheel - ISO Type

Pre-tightening torque value: 300 ± 50 Nm

Final torque value: Refer to "Maintenance standard" in chapter 11

Check and tighten all the wheel nuts after the first 50 to 100 km each time after the tyres have been serviced.

8. INSPECTION AND MAINTENANCE



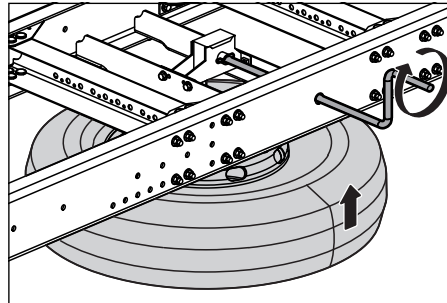
Rear outer wheel - ISO Type
Make sure that you install the wheel nut cap after torque tightening for ISO wheels.

NOTE

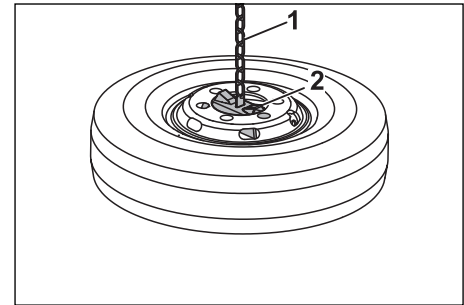
When the tyre or wheel is replaced, please ensure that the valve extension, if equipped on that tyre, is removed from the old tyre and assembled on the new one.

Spare wheel carrier - if equipped

To install and remove a spare wheel, insert the crank handle provided into the socket of the spare wheel carrier and turn the crank handle.



When the spare wheel is lifted, fit the carrier lifting plate with the disc wheel in the correct place. Be sure to install the spare wheel with the convex side of the disc wheel facing upward. If the wheel is lifted with twisted chain, the chain may work loose during driving. Make sure that the chain is not twisted. Turn the crank handle to the right (clockwise) for lifting.



1. Chain 2. Plate

NOTE

After mounting the tyre press the tyre strongly with hand to make sure that it is securely fixed.

The seating of tyre or disc maybe inaccurate if the bracket is deformed or the contact surface is not exactly flat. Even when it has tightened, it may work loose during driving. In that case, have the problem rectified at authorised **UD Trucks** dealer.

- After lifting, fix the wheel by tightening with the crank handle.

8. INSPECTION AND MAINTENANCE

Apply a force of more than **294 Nm {30 kgf}** at handle edge when tightening. An adult turning the handle with one hand at full force can be used as a guideline.

- After tightening, remove the crank handle without turning it in the reverse direction.
- To remove the wheel, turn the crank handle in the opposite direction until the chain loosens.

WARNING

- **Before installing a wheel, make sure that the convex side of the disc wheel is facing upwards points up. Installing the wheel in opposite direction will make it unstable.**
- **Ensure that the lifting plate is correctly fitted to the disc wheel. If the position is incorrect, the wheel may fall.**
- **After installing the spare tyre, move the tyre with your hand to make sure that it is secure. If the tyre is not secured properly, it may fall when driving. If the tyre falls, it will not only disrupt the driving line of vehicles behind, it may also cause an accident.**

Wheel end assembly

The front wheel bearing uses oil as a lubricant. Always use the **UD** lubricant, 0.3 Litre of GL-5 oil.

CAUTION

Failure to fill and maintain the correct level and quality of oil will lead to premature failure of the wheel bearing.

Wheel studs/bolts

Replace the studs which are adjacent (both sides) to the damaged stud. If two or more studs are damaged, replace all the studs in the hub. Broken studs are usually an indication of excessive or inadequate wheel nut torque.

DANGER

Mismatched fasteners or fasteners with incorrect threads can result in thread stripping and/or weakening of the assembly.

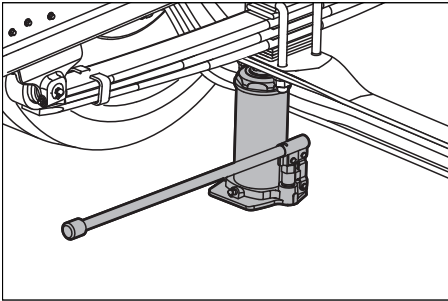
8. INSPECTION AND MAINTENANCE

8.9 Using the jack

Jacking points

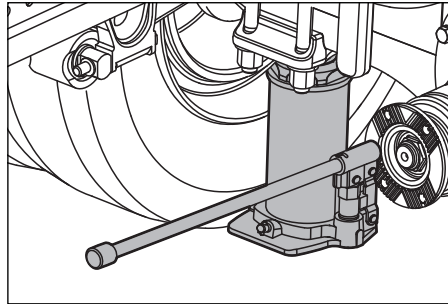
Front wheel

- Place the jack under the front axle as shown below.



Rear wheel

- Place the jack under the rear axle as shown below.



Jacking procedures

WARNING

- Do not start the engine while the vehicle is jacked up. The jack will dislocate due to engine vibration.
- Do not go underneath the vehicle when it is supported by a jack.
- Do not load or unload cargo when the vehicle is supported on a jack.
- Do not open the release valve suddenly when lowering the jack.

CAUTION

Do not use under run protection devices for jack up.

8. INSPECTION AND MAINTENANCE

CAUTION

- Do not allow passengers to stay in the cabin when the vehicle is supported by a jack.
- Clean the remove any lubricant spilled on the jack.
- When the vehicle is supported by a jack, make sure that the jack is securely engaged with the jacking point before lifting the vehicle.
- If the vehicle need to be supported on the jack for a long time, support the vehicle with a suitable support block for safety.

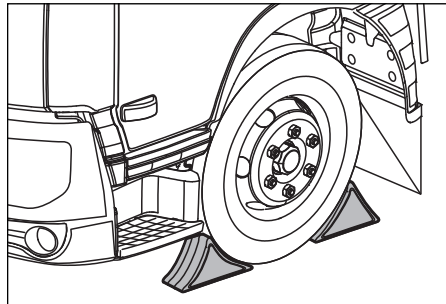
NOTE

- Use the jack which is specified for your vehicle.
- Use the jack when the ambient temperature is between -20°C to 70°C .

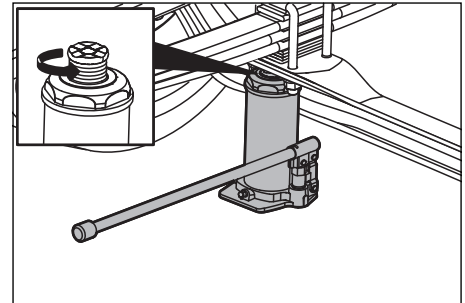
If vehicle is to be jacked up at the road side because of a flat tyre, select a safe location where traffic is not disrupt. Alert any vehicle behind by using the warning triangle, hazard lights or stop indicator.

Using the jack

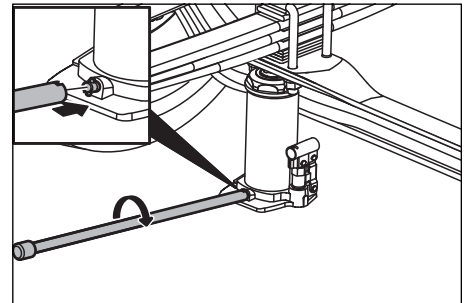
- To jack up the vehicle in order to replace the wheels, park the vehicle on flat and hard ground. Apply the parking brake. Place wheel chocks at the front and rear of the wheel which is diagonally opposite to the wheel being replaced.



- Place the jack under the jacking point and fix it securely by turning the auxiliary screw.

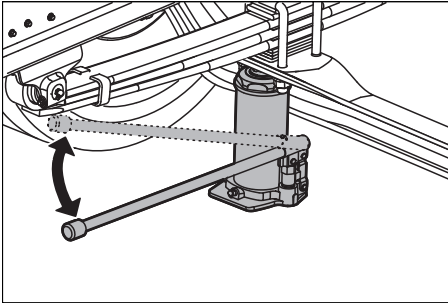


- Use the jack handle to close the jack release valve.

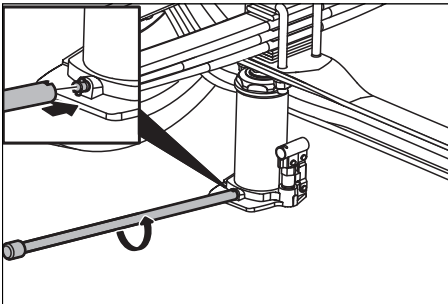


8. INSPECTION AND MAINTENANCE

- Insert the jack handle and use it to pump the jack (by moving it up and down) in order to jack up the wheel.

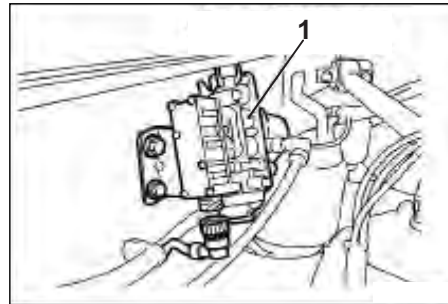


- To lower the jack, turn the release valve gradually to the left with the jack handle to lower the jack slowly.



Jack up of air suspension vehicle

- To jack up the air suspension vehicle, stop the engine and set the ignition switch to the OFF position.
- If the ignition switch is set to the ON position during jack up, the vehicle height increases or decreases suddenly. It is very dangerous.
- If it is necessary to set the ignition switch to the ON position during jack up, disconnect the harness connector connected to the air suspension solenoid valve (1) with the ignition switch in the OFF position to stop operation of the air suspension before jack up.



- After servicing, when connecting the harness connectors to the air suspension solenoid valves, make sure that the ignition switch is in the OFF position.

WARNING

To jack up the air suspension vehicle, lower the vehicle height with the height control or disconnect the air pipe and release air in the air spring before jack up.

Changing a tyre

CAUTION

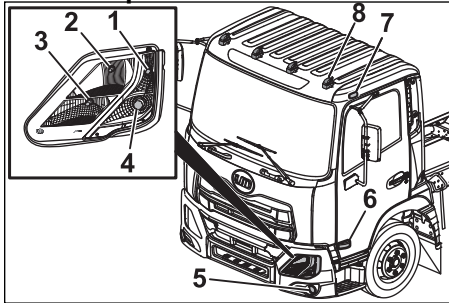
- Do not damage the hub bolts when removing or installing the wheels.
- If the tyre size or brand needs to be changed, contact authorised UD Trucks dealer.

NOTE

Switch OFF the ignition before changing the tyres if the vehicle has ABS.

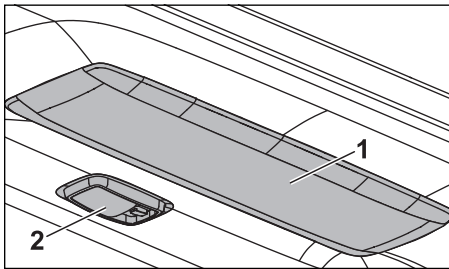
8.10 Lights and fuses

Front lamps



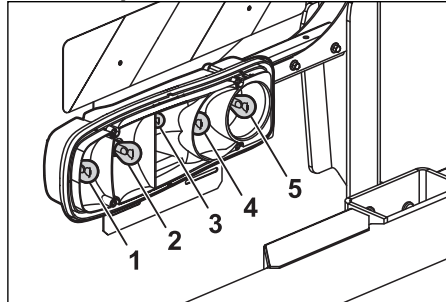
1. Position lamp
2. Low beam
3. High beam (and DRL if equipped)
4. Turn indicator/Hazard lamp
5. Front fog lamp
6. Side indicator
7. Front end outline marker lamp (if equipped)
8. Green roof marker lamp (if equipped)

Interior lamps



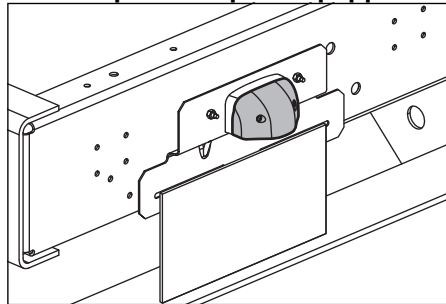
1. Cab living room lamp
2. Cab reading lamp

Rear lamps



1. Turn indicator/Hazard lamp
2. Stop lamp
3. Rear position lamp
4. Back up lamp
5. Rear fog lamp

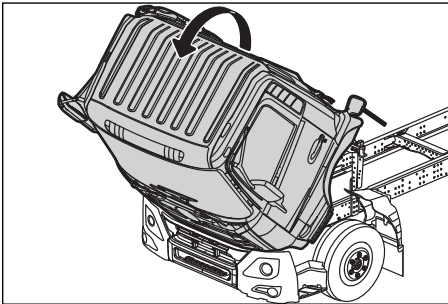
License plate lamp - if equipped



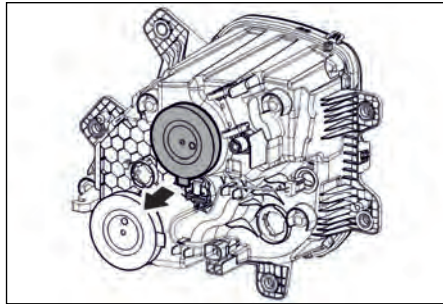
8. INSPECTION AND MAINTENANCE

Replacing the head light low beam bulb

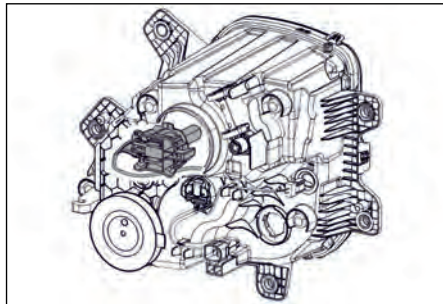
1. Park the vehicle in a service position.
Refer to **“Service position”** in chapter 8.
2. Tilt the cab. Refer to **“Tilting the cab”** in Chapter 8.



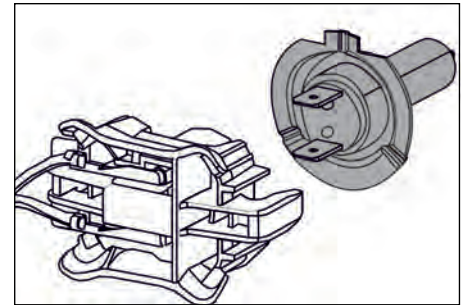
3. Open the cover.



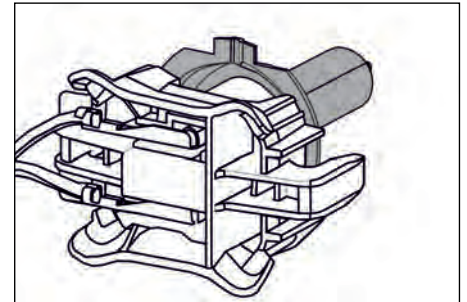
4. Pull out the socket.



5. Remove the bulb from the socket.

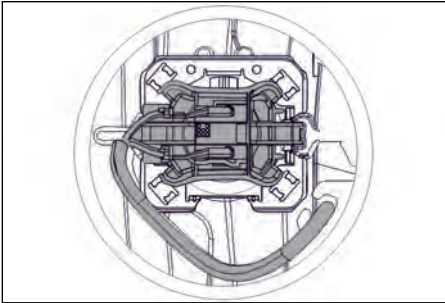


6. Install the new bulb to the socket.

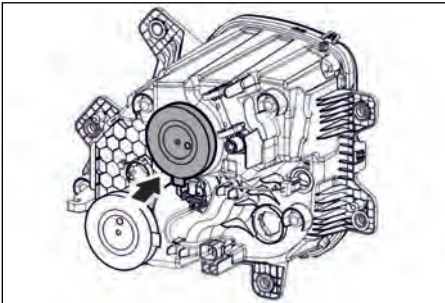


8. INSPECTION AND MAINTENANCE

7. Install the socket by pushing into the bulb holder.



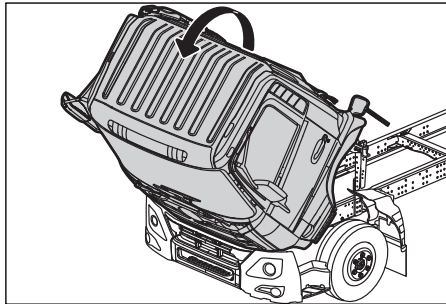
8. Install the cover.



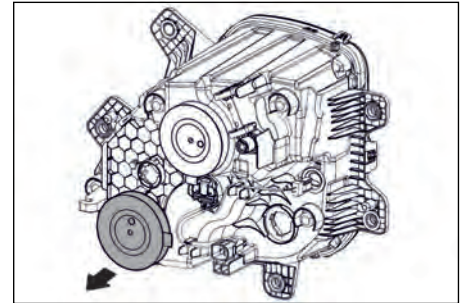
9. Lower the cab. Refer to "**Lowering the cab**" in Chapter 8.

Replacing the head light high beam bulb

1. Park the vehicle in a service position. Refer to "**Service position**" in chapter 8.
2. Tilt the cab. Refer to "**Tilting the cab**" in Chapter 8.



3. Open the cover.



4. Rotate the bulb anticlockwise direction.

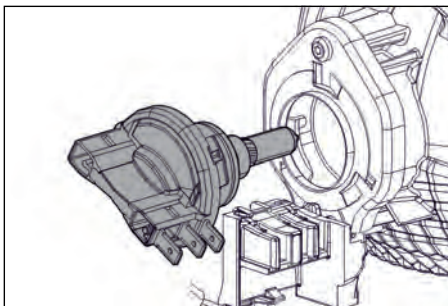


Note: Bulb and socket are single part

8. INSPECTION AND MAINTENANCE

5. Take out the bulb.

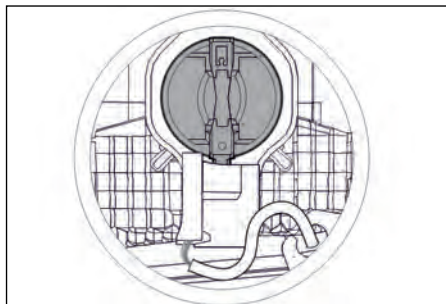
6. Insert the new bulb.



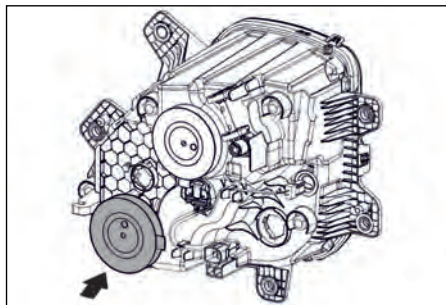
7. Rotate the bulb clockwise.



8. Make sure that bulb is fixed firmly.



9. Install the cover.

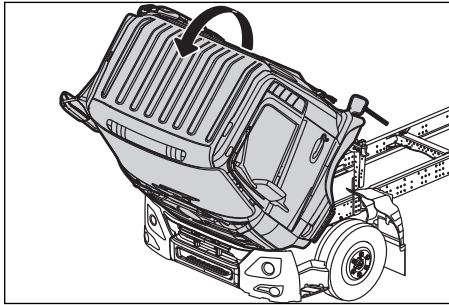


10. Lower the cab. Refer to “**Lowering the cab**” in Chapter 8

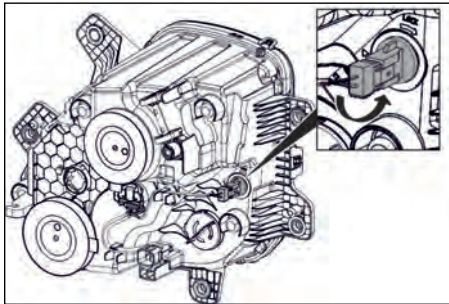
8. INSPECTION AND MAINTENANCE

Replacing the position lamp

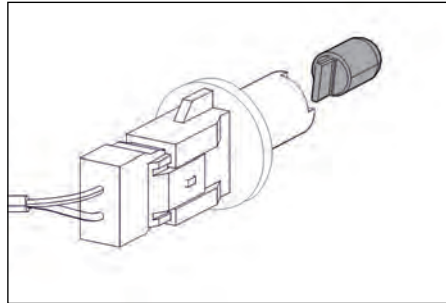
1. Park the vehicle in a service position.
Refer to **“Service position”** in chapter 8.
2. Tilt the cab. Refer to **“Tilting the cab”** in Chapter 8.



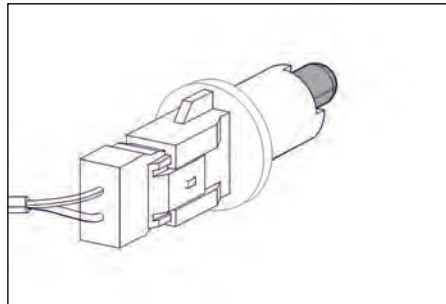
3. Rotate anticlockwise and take out the bulb assembly.



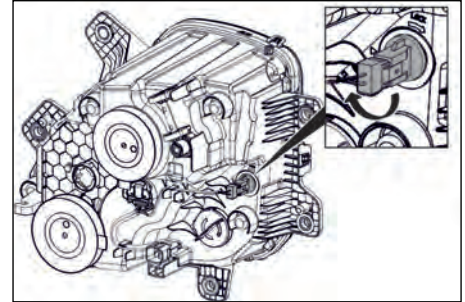
4. Remove the bulb.



5. Install the new bulb.



6. Insert and rotate the bulb assembly clockwise direction .

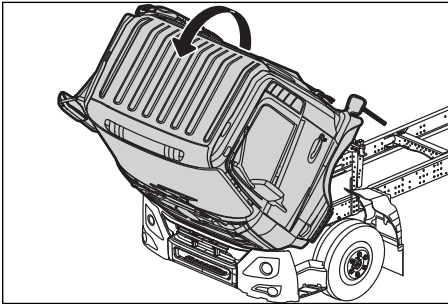


7. Lower the cab. Refer to **“Lowering the cab”** in Chapter 8.

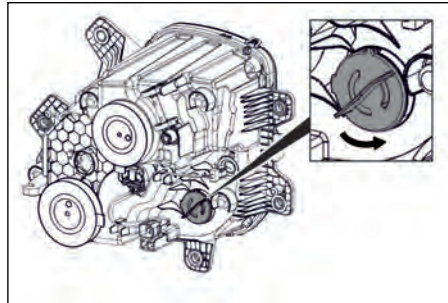
8. INSPECTION AND MAINTENANCE

Replacing the indicator lamp bulb

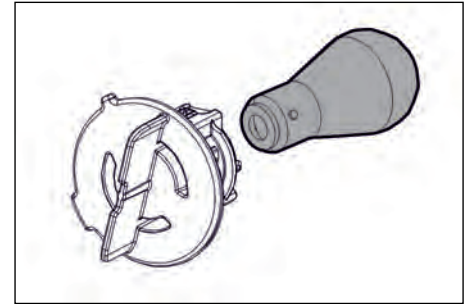
1. Park the vehicle in a service position.
Refer to **“Service position”** in chapter 8
2. Tilt the cab. Refer to **“Tilting the cab”** in Chapter 8.



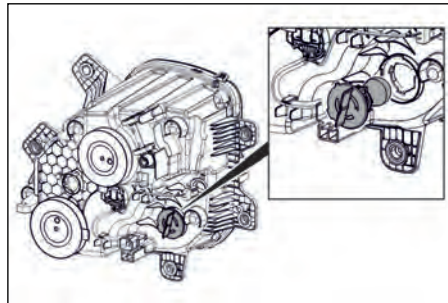
3. Rotate the socket in anti-clockwise direction.



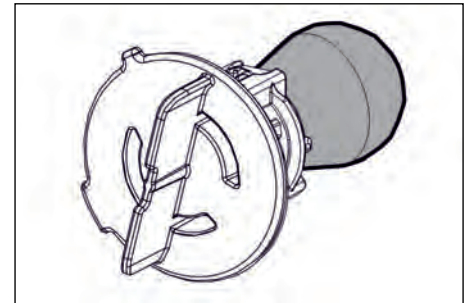
5. Remove the bulb.



4. Take out the socket.

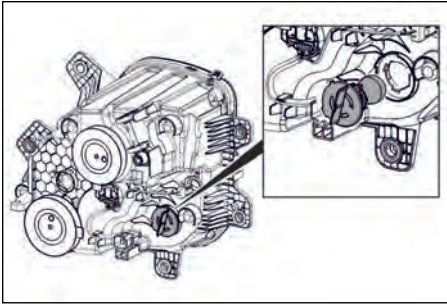


6. Install the new bulb to the socket.

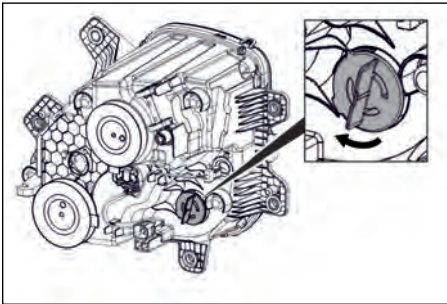


8. INSPECTION AND MAINTENANCE

7. Insert the bulb and the socket.



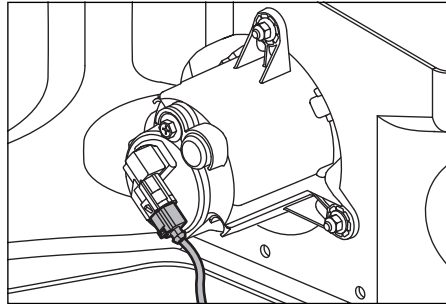
8. Rotate the socket 30 degree clockwise direction.



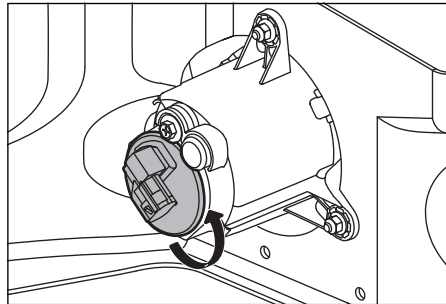
9. Lower the cab. Refer to “**Cab lowering**” in Chapter 8

Replacement of fog lamp - if equipped

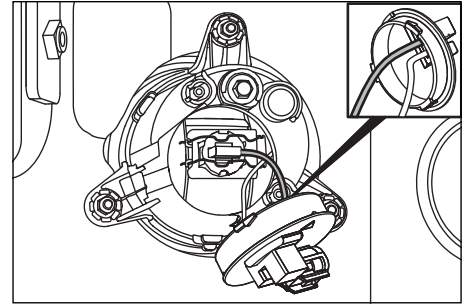
1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Disconnect the connector.



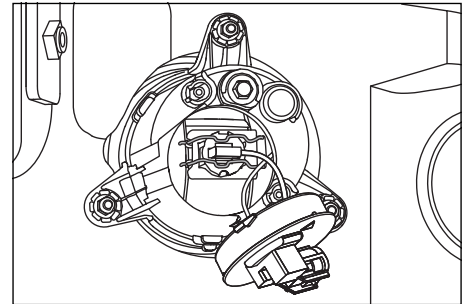
3. Unlock the cover.



4. Disconnect the cable.

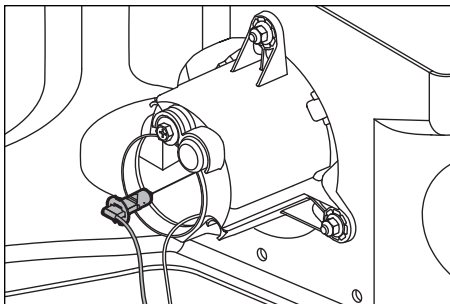


5. Unlock the clip.

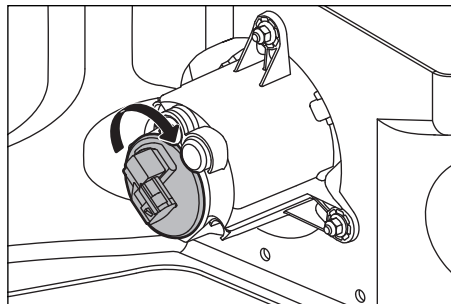


8. INSPECTION AND MAINTENANCE

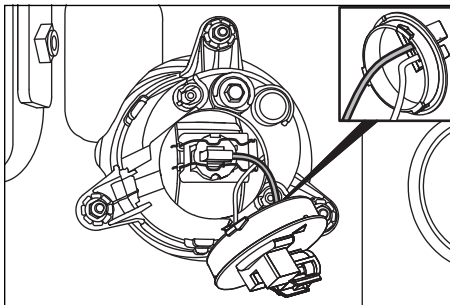
6. Replace the bulb.



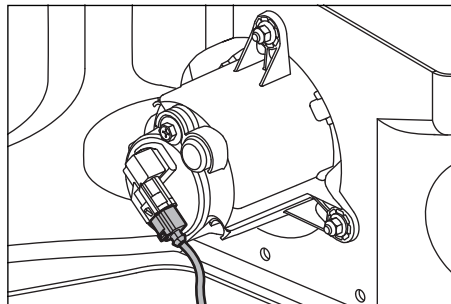
8. Secure the cover.



7. Connect the cable to the cover.

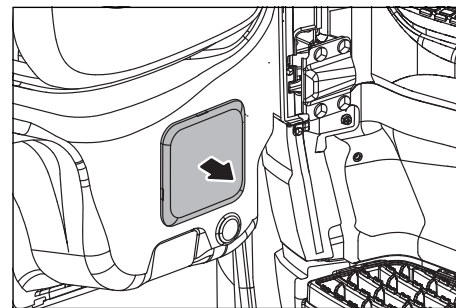


9. Connect the connector.

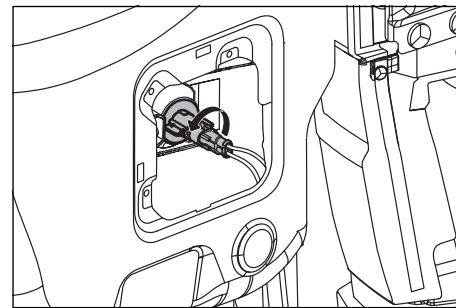


Replacing the side indicator lamp

1. Park the vehicle in a service position. Refer to **“Service position”** in chapter 8.
2. Open the door.
3. Remove the cover.

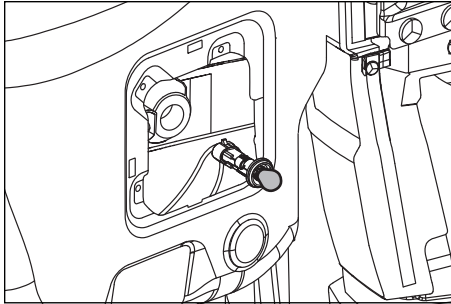


4. Unlock the bulb assembly and remove it.

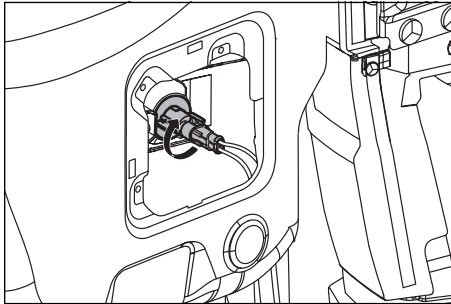


8. INSPECTION AND MAINTENANCE

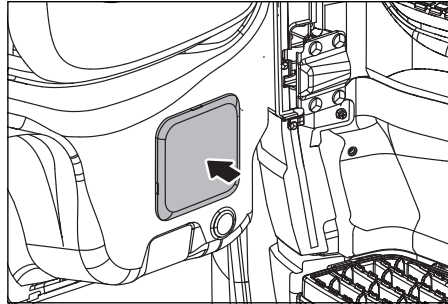
5. Replace the bulb.



6. Install the bulb assembly and lock it.

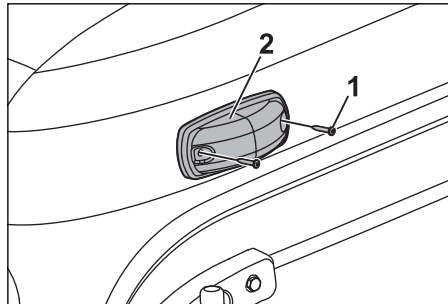


7. Install the cover.



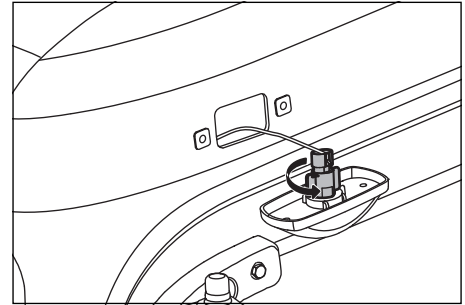
Replacing the front end outline marker lamp

1. Park the vehicle in a service position. Refer to **“Service position”** in chapter 8.
2. Remove the screws.

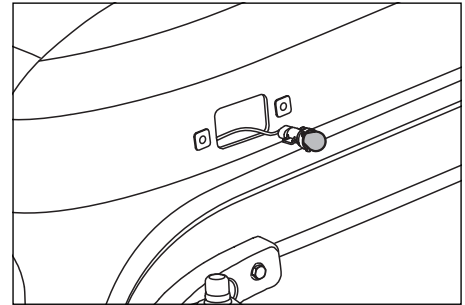


1. Screw 2. Bulb assembly

3. Remove the bulb assembly from the cover.

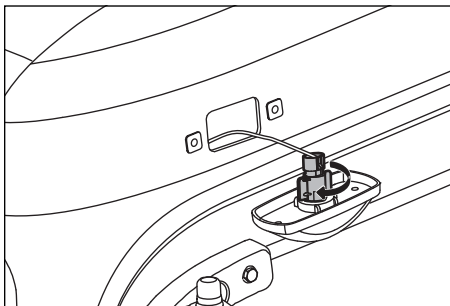


4. Replace the bulb.

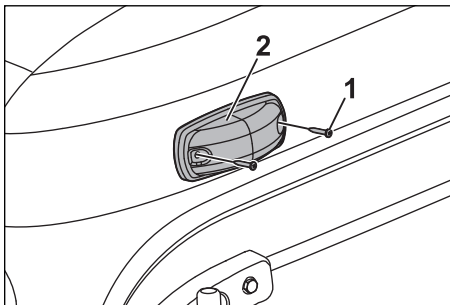


5. Install the bulb assembly and lock it.

8. INSPECTION AND MAINTENANCE



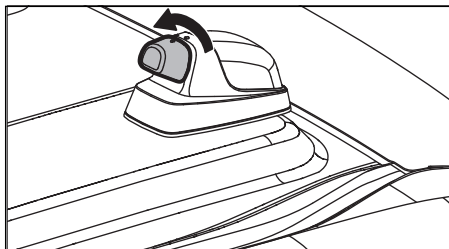
6. Install the screws and secure the bulb assembly.



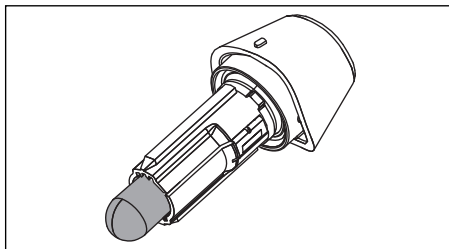
1. Screw
2. Bulb assembly

Front end outline marker lamp replacement

1. Apply parking brake.
2. Turn OFF the ignition switch.
3. Turn OFF the main switch.
4. Remove the holder by rotating it anticlockwise.



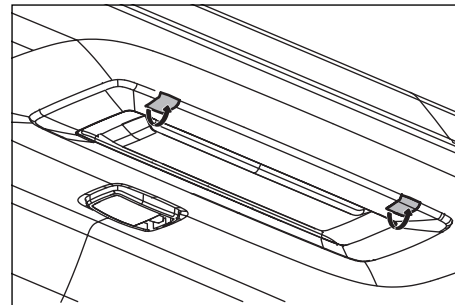
5. Unlock the bulb and remove.



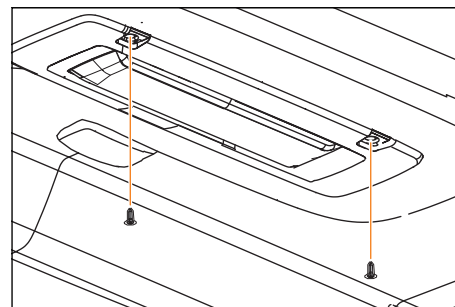
6. Replace with a new bulb and lock it.
7. Install the holder back in place.

Replacing the cab living room lamp - if equipped

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Open the locks.

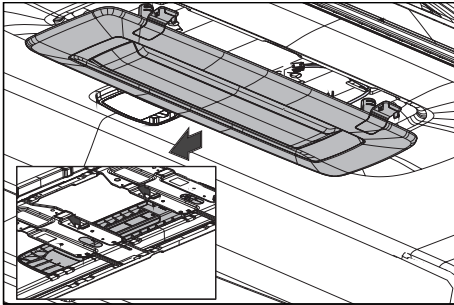


3. Remove the screws.

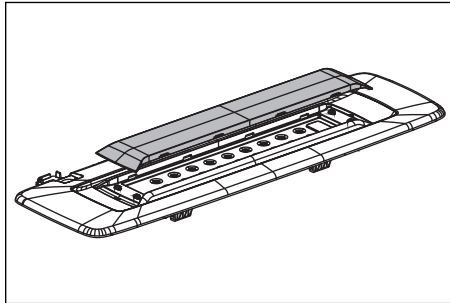


8. INSPECTION AND MAINTENANCE

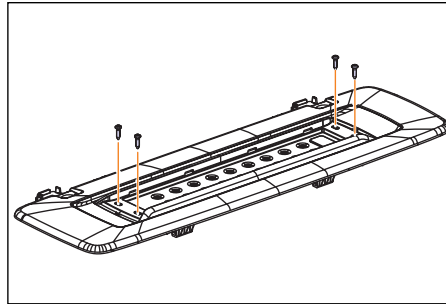
4. Remove the lamp assembly by moving it forward and disassemble the lamp connector.



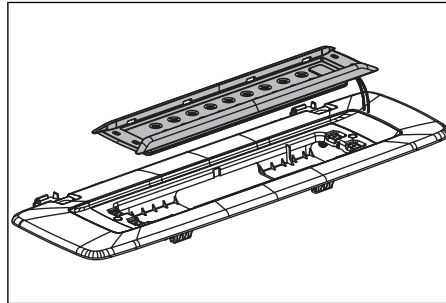
5. Remove the lens.



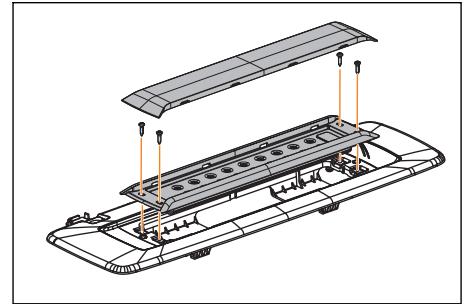
6. Remove the screws.



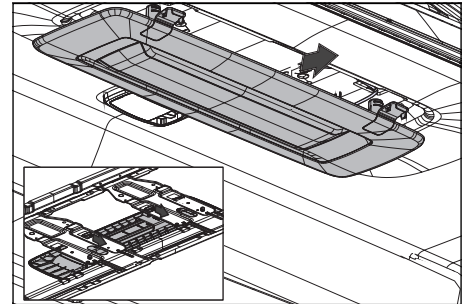
7. Remove the lamp housing.



8. Install the new lamp.

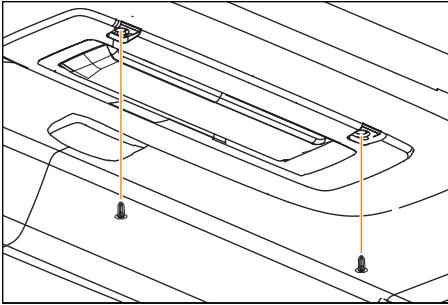


9. Fix the connector and position the lamp assembly with hooks.

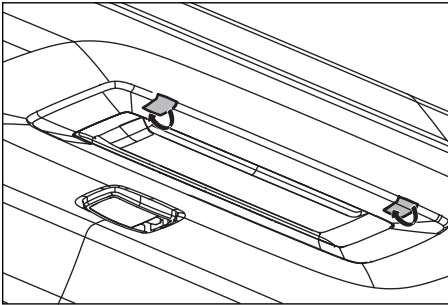


8. INSPECTION AND MAINTENANCE

10. Install the screws.

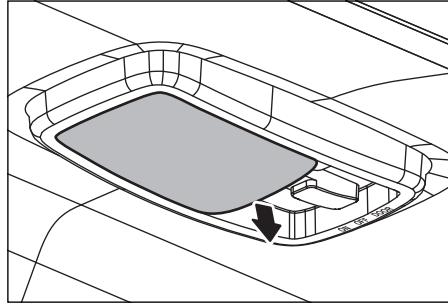


11. Close the locks.

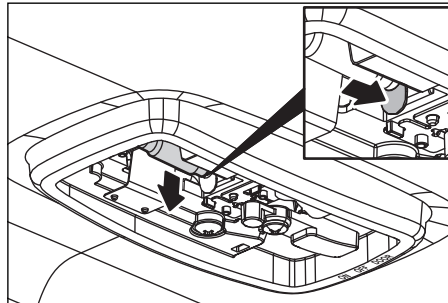


Replacing the cab reading lamp

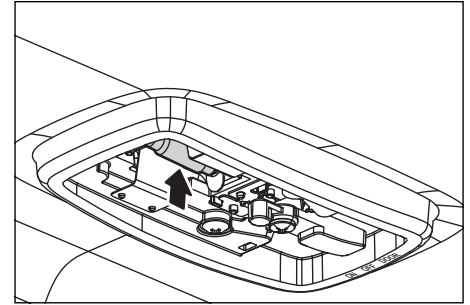
1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the cover.



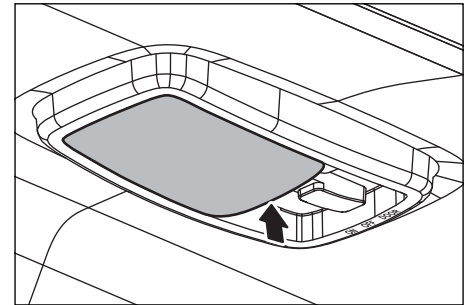
3. Remove the bulb by unlocking the clip.



4. Replace the bulb.



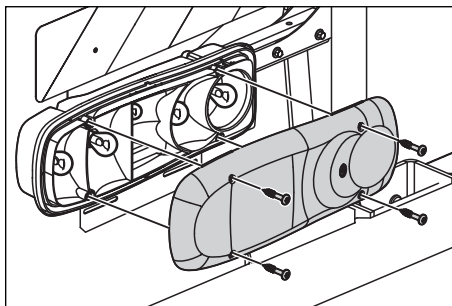
5. Install the cover.



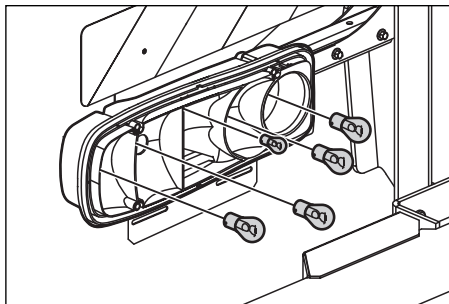
8. INSPECTION AND MAINTENANCE

Replacing the tail lamp bulbs

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the cover by removing the screws.



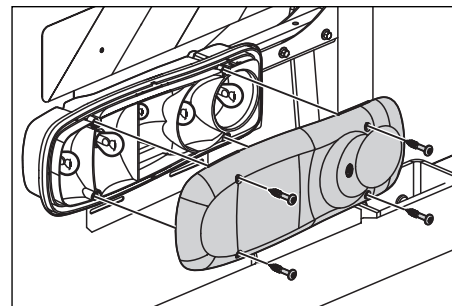
3. Replace the bulb.



NOTE

Position lamp has two positions, upper or lower. make sure that to install the bulb at the position from where it has been removed.

4. Install the cover and secure with screws.



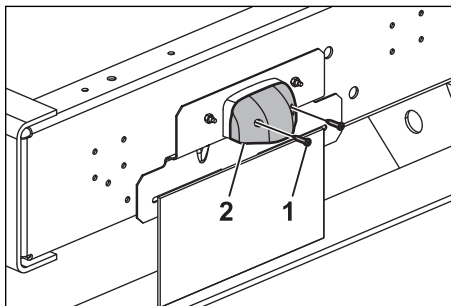
NOTE

Make sure that the sealing gasket is properly aligned and secured in the channel housing.

8. INSPECTION AND MAINTENANCE

Replacing the number plate lamp (If equipped)

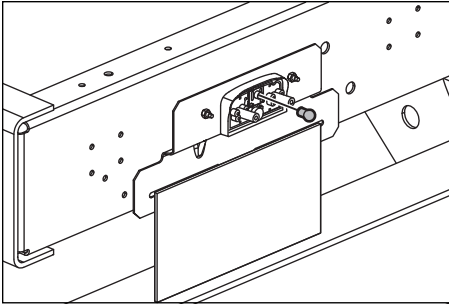
1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Remove the screws and cover.



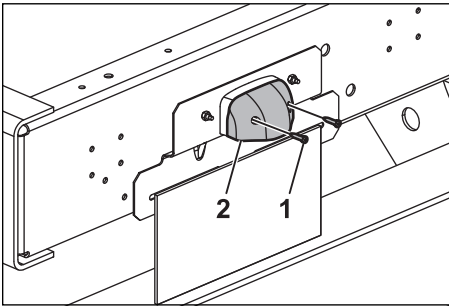
1. Screw
2. Cover

8. INSPECTION AND MAINTENANCE

3. Replace the bulb.



4. Install the cover and screws.

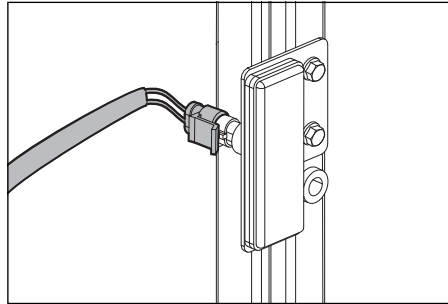


1. Screw
2. Cover

Replacing the side marker lamp

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.

2. Disconnect the connector.

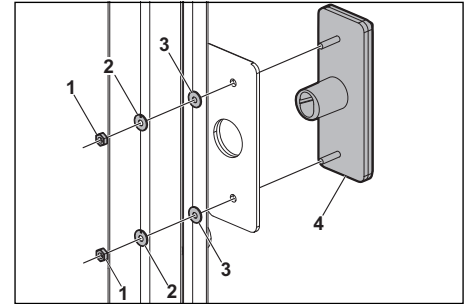


3. Remove the nuts (1).

4. Remove the spring washers (2).

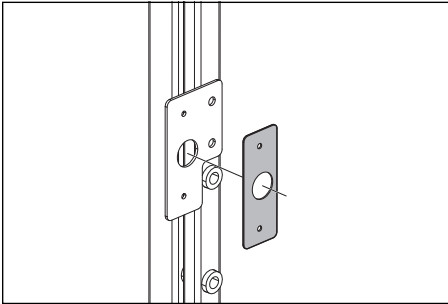
5. Remove the washers (3).

6. Remove the lamp (4).

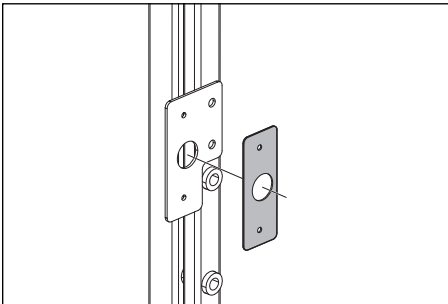


8. INSPECTION AND MAINTENANCE

7. Remove the gasket.



8. Install the new gasket.

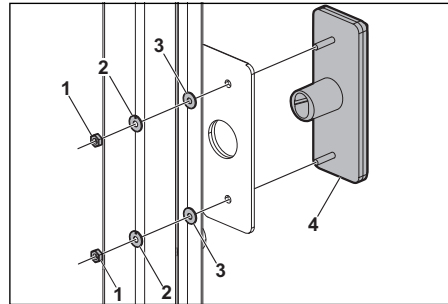


9. Install the lamp (4).

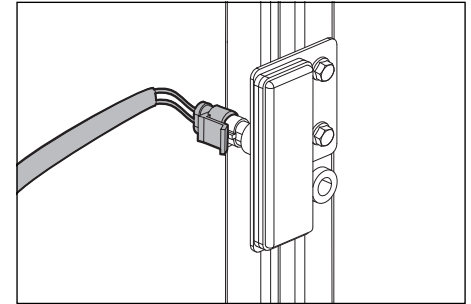
10. Install the washers (3).

11. Install the spring washers (2).

12. Install the nuts (1).



13. Connect the connector.



NOTE

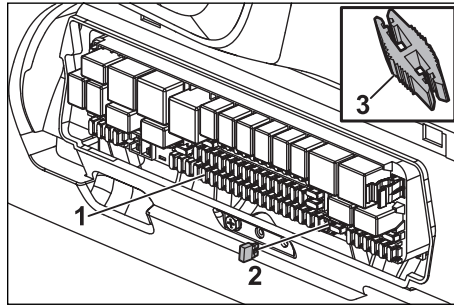
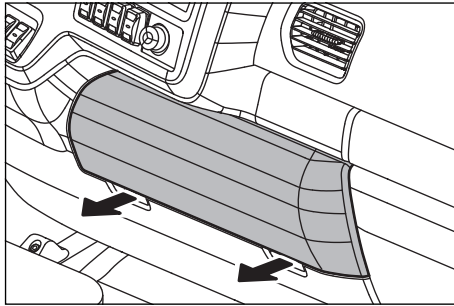
Make sure that the sealing gasket is properly aligned and secured in the channel housing.

8. INSPECTION AND MAINTENANCE

Replacing the fuses and relays

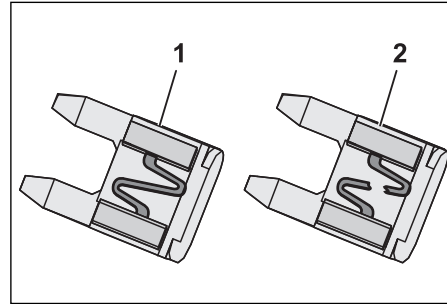
Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.

Pull the panel from bottom.



1. Fuse 2. Fuse 3. Fuse puller

Remove the fuse in question by checking the identification on the cover and check if the fuse is blown.



1. Fuse OK
2. Burned Fuse

Some fuses may not be used, depending on the vehicle specifications.

- Use the fuse puller to remove the blown fuse.
- Insert a new fuse with the same current rating as that specified for the circuit.

DANGER

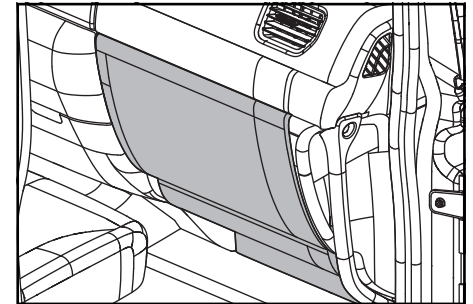
Make sure you use a fuse with the specified rating. A fuse with higher rating may overheat or cause a fire.

NOTE

If the replaced fuse fails again, the electrical system must be checked at the nearest authorised UD Trucks dealer.

Replacing the relay

Pull the panel next to the fuse panel to access the relays.



8. INSPECTION AND MAINTENANCE

8.11 Mirror

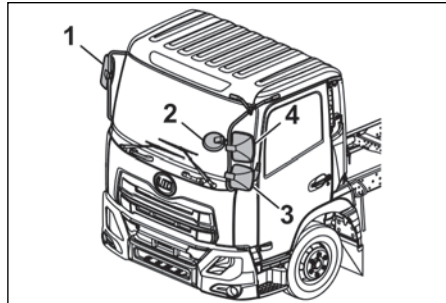
Image on mirror

- Make sure that the side and rear of the vehicle can be seen in the main mirror. The right side, left side and rear of the vehicle should be visible in the wide angle mirror. The immediate front side of the vehicle should be visible in the front under mirror. The immediate left side (the side around the front left wheel) should be visible in the close proximity mirror.
- Check that the images in the mirrors are good and mirrors are clean.

NOTE

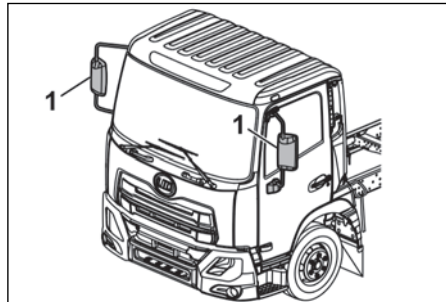
Make sure that the mirror arm is secured in the proper position before adjusting the mirror.

Mirror JPY (Japanese)



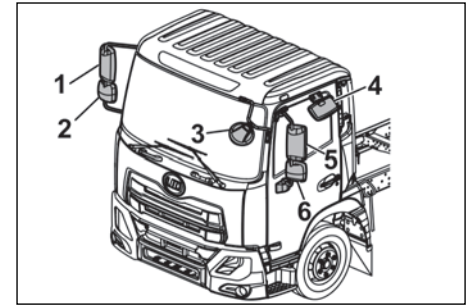
1. Main mirror driver side
2. Front under mirror
3. Kerb view mirror/ Side view mirror
4. Main mirror

Mirror GCC

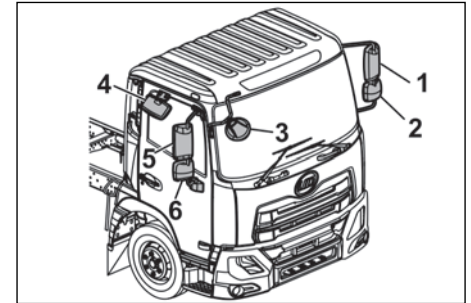


1. Main mirror

Mirror class 2 and 4 - RHD



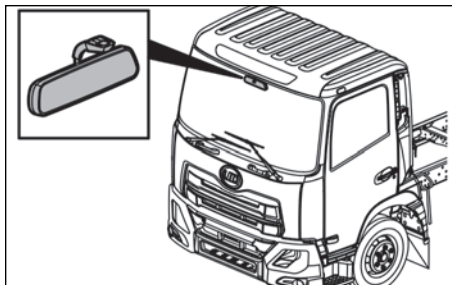
Mirror class 2 and 4 - LHD



1. Main mirror driver side
2. Wide angle mirror driver side
3. Front under mirror (Optional)
4. Close proximity mirror-passenger side
5. Main mirror passenger side
6. Wide angle mirror passenger side

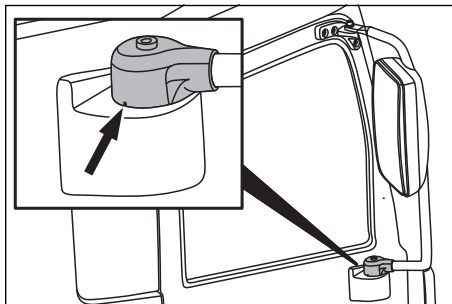
8. INSPECTION AND MAINTENANCE

Rear view mirror - if equipped



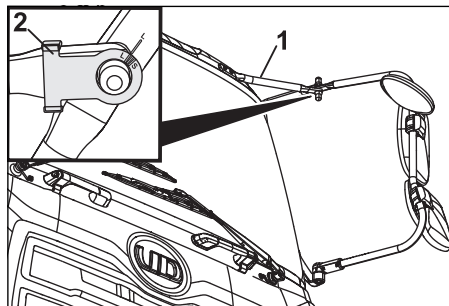
Mirror arm drive position Class 2 and 4 GCC

The left/right mirror arms have alignment marks for checking the driving position. Check them visually before driving.



Mirror arm drive position JPY Mirror

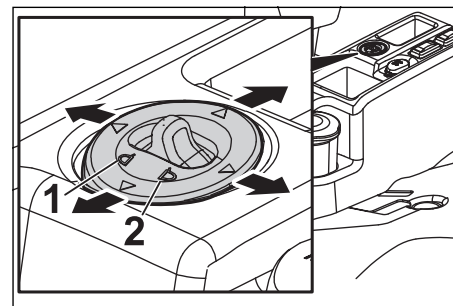
The main arm will be marked with letter L (Wide arm) or M (Medium arm) or S (Standard arm) based on the customer order and the stopper will be marked with all three L, M and S markings. Main arm should be aligned with the stopper for checking the driving position. Check them visually before driving.



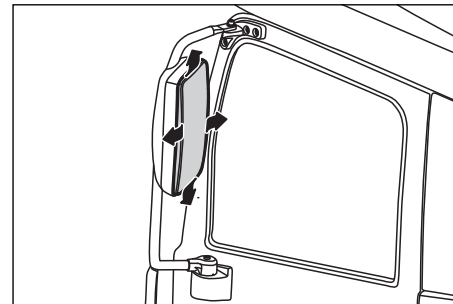
1. Main arm
2. Stopper

Mirror electrical adjustment - if equipped

Adjust the mirror with the switch provided on the centre console.



1. Driver side mirror control
2. Passenger side mirror control



8. INSPECTION AND MAINTENANCE

8.12 Coolant

CAUTION

Using an unauthorised coolant can result in severe consequential damage which will not be covered by the warranty.

To maintain the optimum performance and durability of your engine, only use **UD Trucks** authorised coolant. This prevents the engine coolant from freezing since it has a low freezing point and high boiling point. It also prevents corrosion and scale forming in the cooling system. Ask the nearest authorised **UD Trucks** dealer concerning replacement and cleaning.

Coolant leakage from the cooling units

Check the cooling units, such as the radiator, coolant reservoir and radiator hoses for leakage and also check the cab heater if equipped. Check the ground beneath the vehicle when parked for signs of leakage. Leaks can be initiated by the pressure applied to the cooling system (due to the pressure generated by the coolant pump or increase of coolant temperature).

CAUTION

Continuous use of a vehicle with insufficient coolant will damage the engine. If the coolant needs topping up frequently, have it checked at the nearest authorised UD Trucks dealer.

Changing the coolant

Contact the nearest authorised **UD Trucks** dealer when changing the coolant.

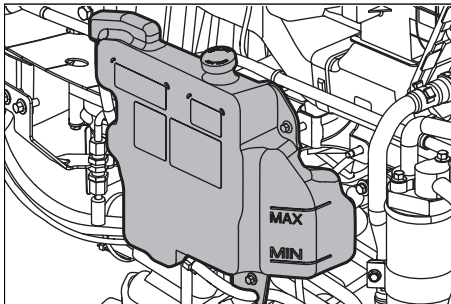
WARNING

- **Opening the coolant reservoir cap without proper care could allow steam or hot water to spray out and cause scalds.**
- **Make sure that the engine is completely cool before opening the coolant reservoir cap. The pressurised coolant may force steam/hot water out of the reservoir.**

8. INSPECTION AND MAINTENANCE

Replenishing the coolant

1. Stop the engine.
2. Open the front panel. Refer to “**Opening the front panel**” in chapter 3.
3. After the engine has completely cooled down, check the engine coolant level in the coolant reservoir. If the level is between the MIN and MAX mark, it is normal. If it is below the MIN, add coolant solution up to the MAX level.



4. Check and make sure that there are no leaks. If you find leaks, contact the nearest authorised **UD Trucks** dealer.

Checking and cleaning the radiator

To maintain the efficiency of the cooling system and keep the engine from overheating, always keep the front radiator core clean. Remove insects, dirt and other debris by directing compressed air at the rear surface of the radiator core.

CAUTION

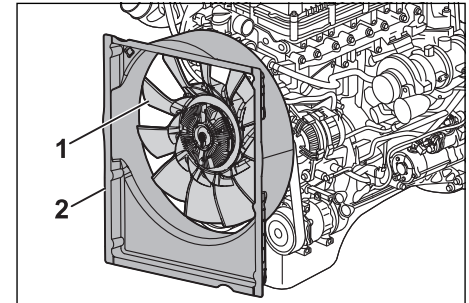
Do not direct compressed air to the front surface of the radiator (that is, with the air hose pointed toward the engine). Doing so will force insects, dirt and other debris into the radiator core and possibly cause engine overheating.

CAUTION

Do not expose the alternator to water when cleaning the intercooler. Take precautions when washing near the alternator.

Cooling fan and fan shroud

Check the cooling fan and fan shroud to make sure they are installed properly and free of cracks and damage. Replace or repair faulty or damaged parts at authorised **UD Trucks** dealer.

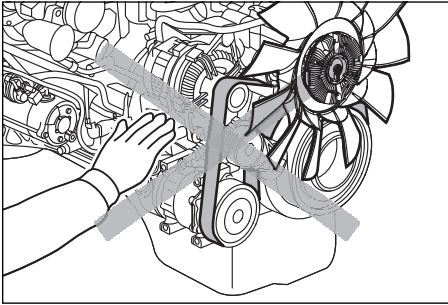


1. Cooling fan
2. Fan shroud

8. INSPECTION AND MAINTENANCE

⚠ DANGER

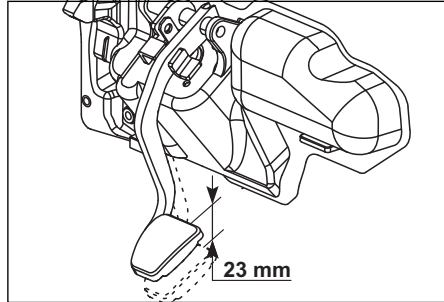
Keep your hand away from the fan when the engine is running.



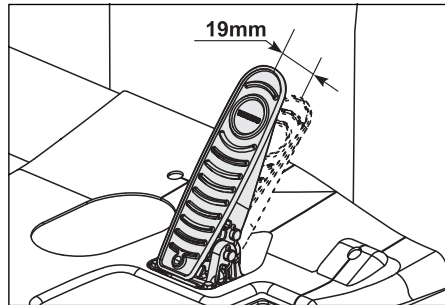
8.13 Brake

Brake pedal play and braking performance

- Inspection interval: **Daily**
- Press the pedal gently to check the play. The play is the distance, the pedal moves before feeling resistance. The play in the pedal does not usually change. Any reduction in play will cause the brakes to drag.
- Drive the vehicle slowly and check the braking performance. Insufficient braking or pulling to one side is dangerous, contact the nearest authorised **UD Trucks** dealer for assistance.



Left Hand Drive
Brake pedal play: 23 mm



Right Hand Drive
Brake pedal play: 19 mm

WARNING

Make sure that brake pedal area is free of foreign objects such as empty cans and gravel etc.

NOTE

Be aware of the traffic conditions when checking the brake performance.

8. INSPECTION AND MAINTENANCE

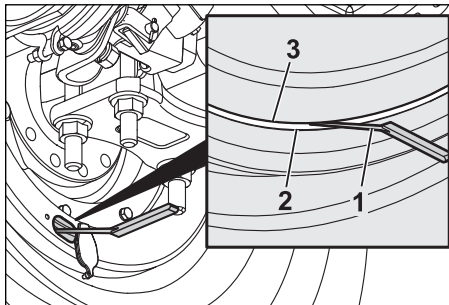
Checking the clearance between the brake drum and lining and checking for wear

Inspection interval: **Monthly**

More frequent inspection is required after driving in heavy traffic, hilly regions or driving large distances per month.

Stop the vehicle. Turn OFF the engine. Chock the wheels to prevent the vehicle from moving and then move the parking brake lever to the driving position.

Remove the rubber plug and insert a thickness gauge through the inspection hole. Check the clearance between the lining and the brake drum. There are two inspection holes on each wheel. Use each hole for checking the clearance.



1. Thickness gauge 2. Drum 3. Lining

Standard clearance value

0.4 to 0.8 mm at shoe centre

Since an automatic adjustment mechanism is provided, adjustment during operation is not required.

Check the brakes on each wheel in the same way.

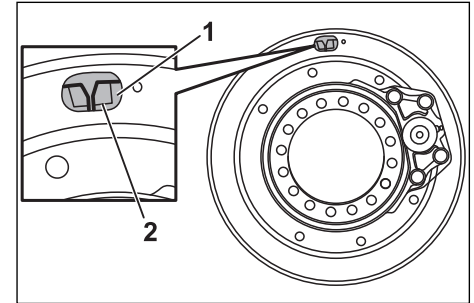
Checking for wear

Remove the rubber plug from the inspection hole and check the brake lining for wear. If the brake lining is worn to the stepped portion, replace it with a new one. Also use the inspection hole to check for damage such as cracks or abrasion on the edge of the brake lining. If damage is found, contact the nearest authorised **UD Trucks** dealer and have the vehicle inspected.



CAUTION

Do not check the clearance while the brake unit is hot.



1. Lining

2. Maximum wear position (Replace the brake lining, when the wear reaches this stepped position).

Check for noise or squealing sounds from the brakes when the vehicle is moving at slow speed while the brakes are applied. If you can hear the noises, the rivet securing the brake lining may be loose. Contact the nearest authorised **UD Trucks** dealer and have the vehicle inspected.

8. INSPECTION AND MAINTENANCE

NOTE

The Horn is activated if the door is opened when parking brake is disengaged (Applicable only if this feature is equipped), then to avoid the horn continuously ON, the horn relay (as mentioned in the decals) shall be removed or the door shall be kept closed during service and maintenance.

NOTE

While checking the clearance, after releasing the parking brake, the brakes will some time stick. We advise pressing the foot brake approximately 2 to 3 times before checking in order to free them.

NOTE

Be aware of the traffic conditions when test driving to check the brake performance.

CAUTION

Do not drive the vehicle beyond the operating limit of the brake lining. Using brake lining beyond the limit may cause the rivet heads to damage the drum. This may greatly affect the performance of braking system.

NOTE

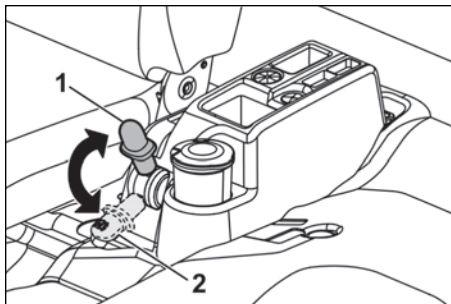
Be aware of the traffic conditions when test driving to check the brake performance.

Performance of the parking brake
Inspection interval: Every month

Stop the vehicle on a dry slope (not exceeding 18% slope), apply the parking brake and check if the vehicle can stay there. If the vehicle fails to stay, contact authorised **UD Trucks** dealer.

8. INSPECTION AND MAINTENANCE

Air actuated type



1. Park position
2. Drive position

Park position: Brake is applied.

Drive position: Brake is released.

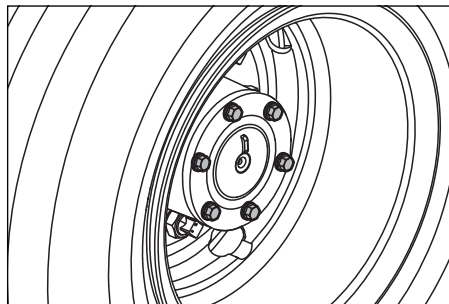
NOTE

Brakes are applied/released on both tractor and trailer in tractor-trailer combination

Checking the axle shaft bolt

Inspection interval: Every 3 months

Tighten the axle shaft bolt to the specified torque using a torque wrench.



Variant	Torque
RSS0716	147 ± 9 Nm
RSS0918 RSS1132B RSS0918B RSS1132D	157 ± 9 N m

Condition of reflector and license plate

- Check for dirt or damage on the reflector and license plate.
- Check if the license plate is correctly installed and the letters are clearly visible.

Treatment for emissions and external noise

Vehicle emissions and noise are specified in the safety standard (noise and emissions regulation). The regulation values must be complied with. This section describes the simple checks and servicing which can be carried out by the customer for emission control and noise control units. Regular inspections and correct operation can minimise any detrimental impact on the environment.

8. INSPECTION AND MAINTENANCE

NOTE

In Euro-4 and Euro-5 vehicles some white smoke is visible sometimes in the starting, this is normal.

Emission status

- Emission colour shows whether the combustion status is good or bad. Check the emission carefully on daily basis.
- **No colour or light blue:** Normal
- **Black:** Incomplete combustion of fuel
- **White:** Combustion of engine oil. When the temperature is low and the engine has not warmed up.

Air cleaner

If the air cleaner filter is clogged, it will produce black smoke from the exhaust. Check and replace the filter on a regular basis.

Inspecting the exhaust system

WARNING

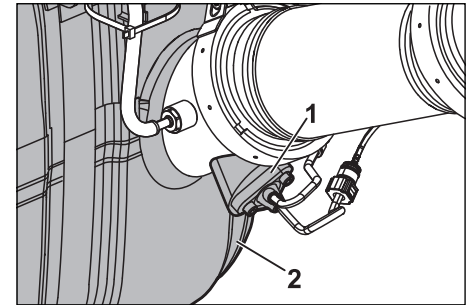
Do not touch the silencer with your bare hands, even after a short period of starting and stopping the engine. The silencer and exhaust pipe will be hot enough to cause burn.

Inspection period

Inspection interval: Every year.

Inspection procedures

Check for any damage to the main silencer unit, nozzle (dosing module only for Euro-4 and Euro-5), sensor and the wiring and hoses connected to those components.



1. Dosing module
2. Muffler

8. INSPECTION AND MAINTENANCE

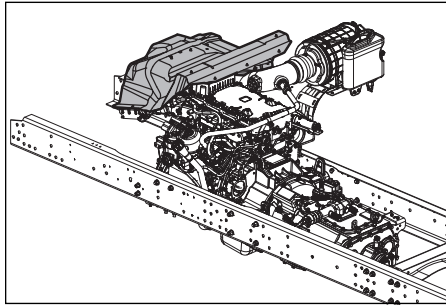
Treatment of parts related to noise emissions

Noise shield system

- A cover and the sound insulation material shown in the figure are installed to reduce the noise emissions and meet the regulation values specified in the “Noise regulations”. If it is removed for maintenance purposes, be sure to reinstall it in its original position.
- The cover and sound insulation materials are used to reduce the level of noise. Do not modify it or drive without it. Check it on a regular basis to make sure its effectiveness has not diminished due to damage or deformation.

NOTE

When using a high pressure washer, make sure you do not damage the sound insulation material.



Noise shield behind cab

Other

The failure of parts related to emissions not only causes the values stipulated in the safety standards to be exceeded, but also increases fuel consumption, and oil consumption and reduces power.

If a failure is found, ask for the truck to be serviced at the nearest authorised UD Trucks dealer.

Silencer and exhaust pipe

- Damage or corrosion to the silencer and exhaust pipe may decrease the effectiveness of the silencer. Check it on a regular basis and replace the parts if found to be faulty.

NOTE

When driving in areas which of high exposure to salt, such as areas near the sea or on roads where de-icing agent has been used, rust may form on the surface of the silencer. Continuing to drive the vehicle with rust will damage silencer function. After driving in areas where there is a lot of salt, always wash the surface of the silencer with water.

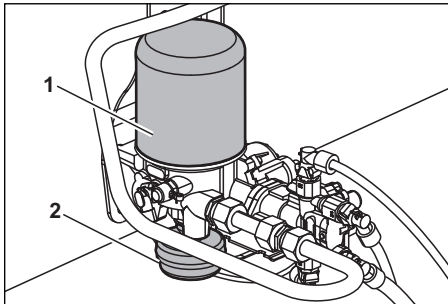
Air dryer

CAUTION

Failing to replace the air dryer at the recommended intervals will result in consequential damage to the pneumatic systems and components.

CAUTION

Do not step/stand on the cooling coil.



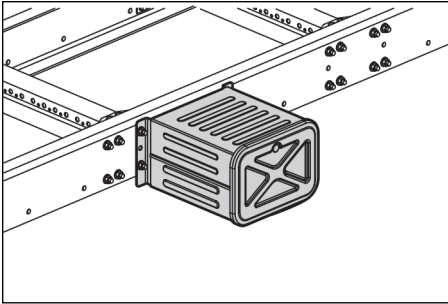
- 1. Air dryer
- 2. Silencer

Check if air is being exhausted from the air dryer silencer.

8. INSPECTION AND MAINTENANCE

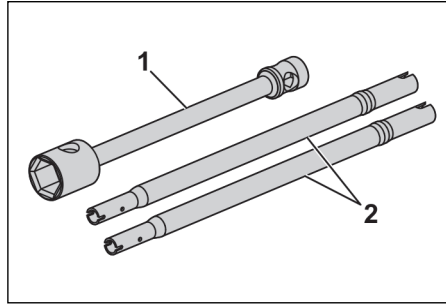
8.14 Tools

Storage box - if equipped



The storage box mounted on the chassis can be used for storing items. Can store up to 15 kg.

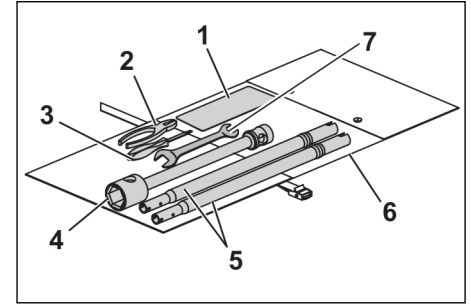
Basic tool kit - if equipped



1. Socket wrench
2. Extension bar

The tool kit provided is stored behind the passenger seat.

Complete tool kit - if equipped



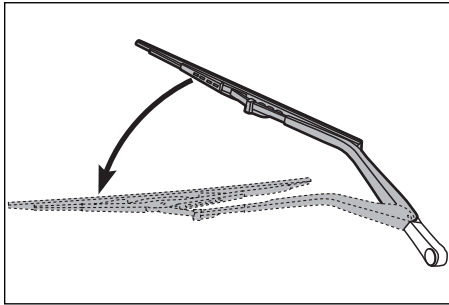
1. Decal
2. Pliers
3. Screwdriver
4. Socket wrench
5. Extension bar
6. Tool bag
7. Spanner

8. INSPECTION AND MAINTENANCE

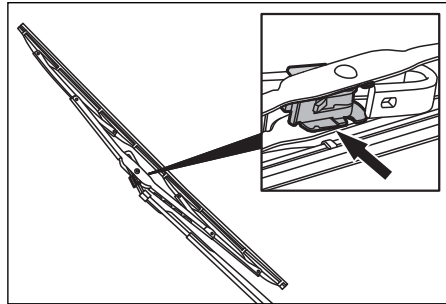
8.15 Wiper blade

Replacement procedure

1. Park the vehicle in a service position. Refer to “**Service position**” in chapter 8.
2. Chock the wheels.
3. Pull the wiper arm.



4. Press the lock and remove the wiper.



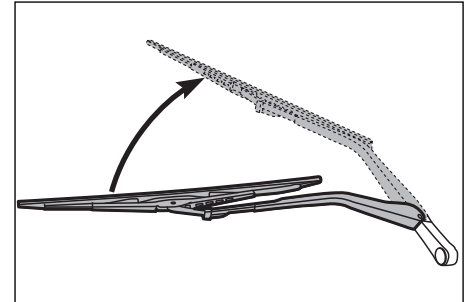
NOTE

Keep the wiper arm pulled out throughout while replacing it to prevent it from damaging the windscreen.

5. Replace the wiper blade and lock it.

NOTE

Make sure that the blades are locked in position.

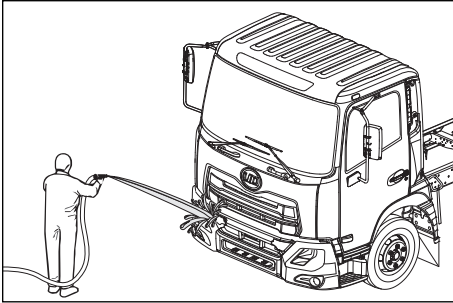


6. Place the wiper arm back on the windscreen.
7. Check the wiper blade to make sure it is working properly.

8. INSPECTION AND MAINTENANCE

8.16 Washing the vehicle

Precautions when washing the vehicle



When washing the vehicle, prevent the water from entering the electrical components. Ensure that the high pressure steam or water does not come in to contact with the electrical wirings, wiring connectors or electrical components located around the chassis and inside the cab.

- Before washing the vehicle, cover the opening of the engine air inlet in order to prevent water or foreign materials from entering the engine.

CAUTION

Prevent water from coming into contact with the electrical components, Failure to comply will lead to electrical components damage.

Precautions when washing around the silencer

When washing around the silencer, use the following procedures.

Removing mud or snow

You must only use a soft cloth or a washing brush, even if the silencer is extremely stained. Never use a shovel or the handle of a washing brush for this purpose. Doing so will damage the sensor, harness and connector.

High pressure washing

High pressure wash shall not be directed on electrical components ie. head lamps and lamp connectors, electrical connections of the components on the vehicle.

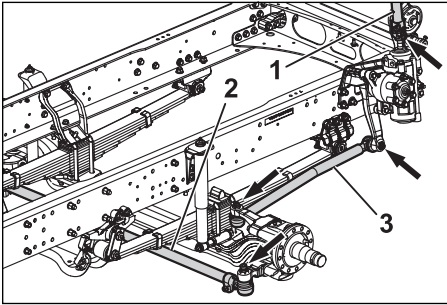
The nozzle of the high pressure hose shall be positioned at least 1.5 metres from the vehicle. For cleaning of the head lamp, the nozzle shall be directed only on the visible area of the lens surface from the exterior of the vehicle.

CAUTION

Non-adherence with the above cleaning instructions may result in water entry into the head lamp resulting in condensation and deterioration of the lamp performance. In such cases warranty shall be void.

Precautions when washing the underbody

When washing the underbody, do not direct the jet of water from a pressure washer on to the steering shaft joint, sector shaft joint or rubber boots of the drag link and tie rod.



- 1. Steering rod
- 2. Tie rod
- 3. Link rod

8. INSPECTION AND MAINTENANCE

8.17 Handling the exhaust (applicable to Euro IV, V or equivalent standard)

NOTE

Not applicable to Euro III or equivalent models.

Exhaust emission control system

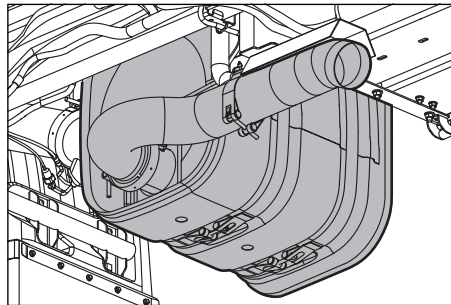
The after-treatment system which cleans the exhaust gas uses a urea water solution (AdBlue®) in the silencer to decompose the NOx in the exhaust gas into water and nitrogen and reduce NOx emissions.

Dosing system for emission control

If a fault occurs in the NOx dosing system, then a message appears on the display together with the yellow warning lamp (CHECK). The urea dosing system (supply module and dosing module) continues to operate for approximately 120 seconds after

the ignition is turned OFF. Therefore, wait for at least 120 seconds before disconnecting the battery cable or electrical system connectors when servicing the vehicle.

Handling the silencer



The silencer does not require any servicing. It should be replaced if there is any external damage. Replace it with UD Genuine Parts.

Do not kick or strike the silencer

⚠ CAUTION

Do not climb onto, stand on or strike the silencer. Failure to comply will damage the catalyst inside.

The silencer has the following characteristics

- The after-treatment system cleans and discharges the exhaust gas so the exhaust gas smells different to that of conventional Diesel vehicles.
- White vapour emerges from the exhaust pipe when the engine starts. Do not mistake this for a malfunction.

8. INSPECTION AND MAINTENANCE

Do not modify the tail pipe

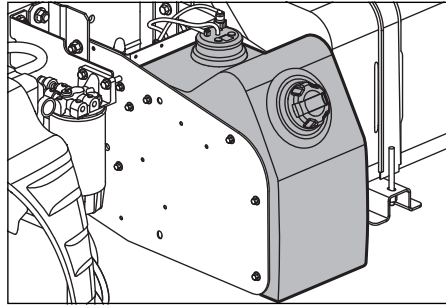
CAUTION

Do not modify the tail pipe, it will reduce the exhaust gas cleaning effect.

Precautions which must be taken when filling with AdBlue

CAUTION

AdBlue is not classified as dangerous, however it is very corrosive and can damage the electrical connectors and wiring. If AdBlue gets into the electrical connectors or wiring, they must be replaced. Cleaning electrical parts is not recommended.



- The filler cap is secured by means of a lock.
- Secure the cap on the filler after filling with solution.

Handling AdBlue

WARNING

AdBlue is non-flammable, but it should be moved to a safe location if there is a fire, because as intense heat may cause the sealed storage container to pressurise and rupture.

Only use the urea water solution (AdBlue) specified by UD Trucks which complies with ISO 22241-1.

- The specified urea water solution (AdBlue) is colourless (urea 32.5%, water 67.5%) and begins to freeze at -11°C . When the atmospheric air temperature is low and the vehicle has been exposed to cold temperatures for a long time, the indicator in the cab might not show the correct solution level.
- Use the special container recommended by the urea water solution (AdBlue) dealer to hold the urea water solution (AdBlue). Containers which have been used for other applications or dirty containers will not maintain the quality of the urea water solution (AdBlue). So make sure you do not use them.

8. INSPECTION AND MAINTENANCE

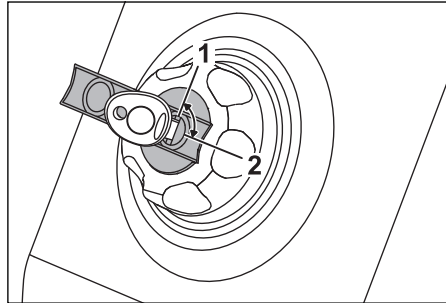
CAUTION

Do not drive the vehicle when the AdBlue tank is empty.

WARNING

Handle Adblue with proper care, avoid contact with the skin. If it is spilled on the body, wash it off with water immediately.

Handling filler cap



1. Unlock position
2. Lock position

Removing the filler cap

- When the cap is locked, the cap rotates freely and cannot be opened. Insert the AdBlue tank key and unlock it by turning the cap 90° to the left. Remove the key after unlocking. When the cap is not locked, the cap does not rotate freely, and can be opened.
- Turn the cap to the left to remove it and then fill the tank with urea water solution (AdBlue).

Attaching the cap

- Turn the cap to the right until it locks.
- Insert the AdBlue tank key and turn it 90° to the right to lock the cap. Remove the key while it is in this position.

NOTE

- **Turn the key until the cap is locked. The key will only lock the cap when it is in the lock position.**
- **To remove the key, turn it all the way to the lock or unlock position. Trying to remove the key in between these positions will damage the key and lock.**

In the event of a fire or leak

- Urea water solution (AdBlue) is non-flammable. Move it to safe location if there is a fire.
- If urea water solution (AdBlue) is spilled, wash it off with water. It can be disposed of by diluting it with a large amount of water and then pouring it into the drain. It must be treated as industrial waste in areas where there are nitrogen restrictions.

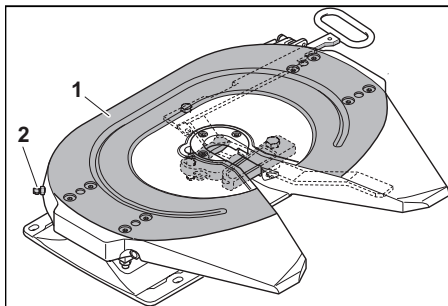
8. INSPECTION AND MAINTENANCE

8.18 Fifth wheel

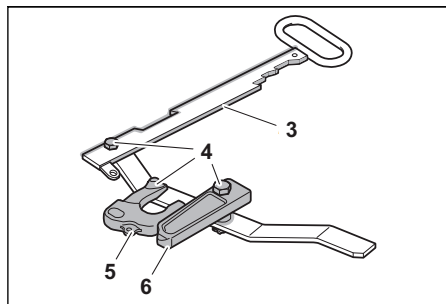
Inspection and lubrication

WARNING

It is recommended to carry all the maintenance to be performed by a authorised UD Trucks dealer. All maintenance must be performed when the tractor is uncoupled from the trailer.



- 1. Coupling plate
- 2. Grease nipple



- 3. Handle-Only on the sides
- 4. Articulated connections and lever guides
- 5. Lock jaw
- 6. Locking bar

Lubricate the areas are marked in gray in pictures.

- Generously lubricate the coupling plate top side (except W version - the top plate liners must not be greased).
- Lubricate the lock jaw and locking bar with the fifth wheel coupling closed.

8.19 Storing the vehicle

CAUTION

Only store the vehicle in a closed and ventilated garage free of rodents, floods or snow. The warranty does not cover vehicles affected by rodents, floods and earthquakes, etc.

If the vehicle has to be stored for a short or long time, it must be prepared for storage. We always advise storing the vehicle in an enclosed and well ventilated shed free of rodents, floods, sand or snow.

Preparing the vehicle for storage

- Road test the vehicle to identify any problems on the vehicle and rectify them.
- Clean the vehicle thoroughly.
- Check the oil and other fluid levels in the vehicle.

- Inflate the tyres to the pressures stipulated by the tyre manufacturer.
- Chock the wheels and release the parking brake.
- Disconnect the battery and apply petroleum jelly to the battery terminals.

WARNING

To disconnect the battery, remove the negative terminal first and then remove the positive terminal. When reconnecting it, connect the positive terminal before connecting the negative terminal.

- Move the windscreen wipers away from the windscreen.
- Apply lubricant and grease to all the points requiring it.

- Close all the openings in the vehicle such as the exhaust and air inlet etc. to protect them from air and dust.
- Clean and remove the rust from the body and paint any areas cleaned where necessary.

Maintenance of vehicle during storage:

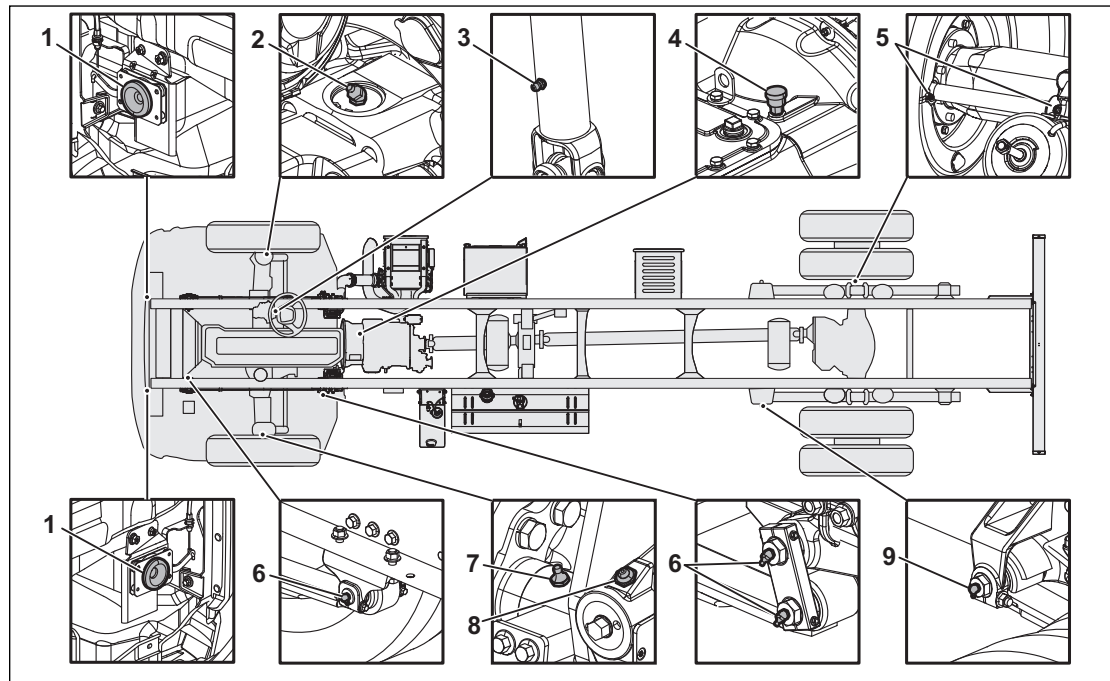
- Check the oil and fluid levels.
- Check the battery charge.
- Check the tyre pressure and inflate them if necessary.
- Clean the vehicle.
- Ensure that all the openings are closed.
- Check the fan belts etc.
- Connect the battery and run the vehicle at every 6 weeks. If any problem found, contact authorised **UD Trucks** dealer for assistance.

8. INSPECTION AND MAINTENANCE

8.20 Lubrication with grease

The vehicle should be lubricated with grease periodically. Use a cloth to wipe all dust and dirt from the grease nipples, and then apply the grease. After applying the grease wipe off any excess grease. For intervals for greasing lubrication refer to "Maintenance schedule" in Chapter 9

Note: Always use a grease gun for lubricating the grease nipple. Always replace the cap on grease nipples which have one.
For 4x2 RIGID.

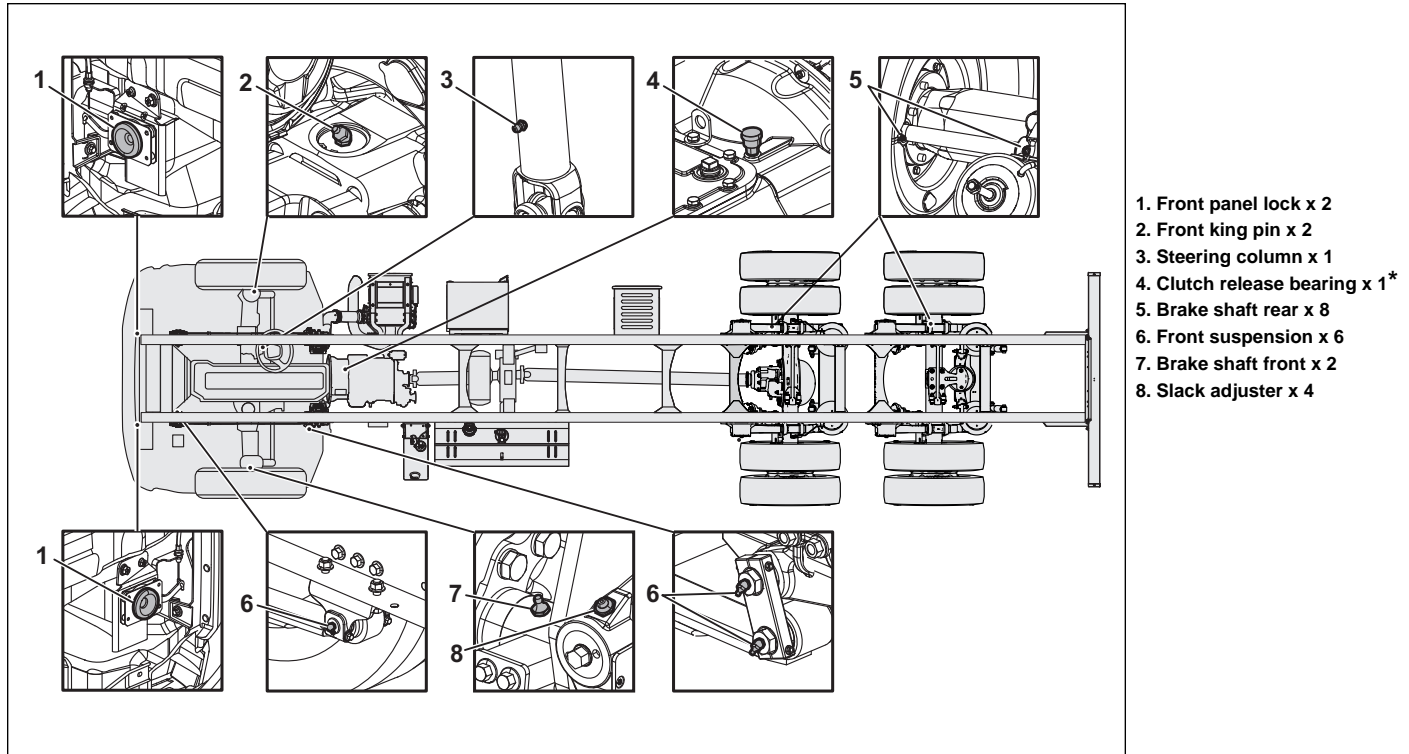


1. Front panel lock x 2
2. Front king pin x 2
3. Steering column x 1
4. Clutch release bearing x 4
5. Brake shaft rear x 4
6. Front suspension x 6
7. Brake shaft front x 2
8. Slack adjuster x 4
9. Rear suspension x 2*

*if applicable.

8. INSPECTION AND MAINTENANCE

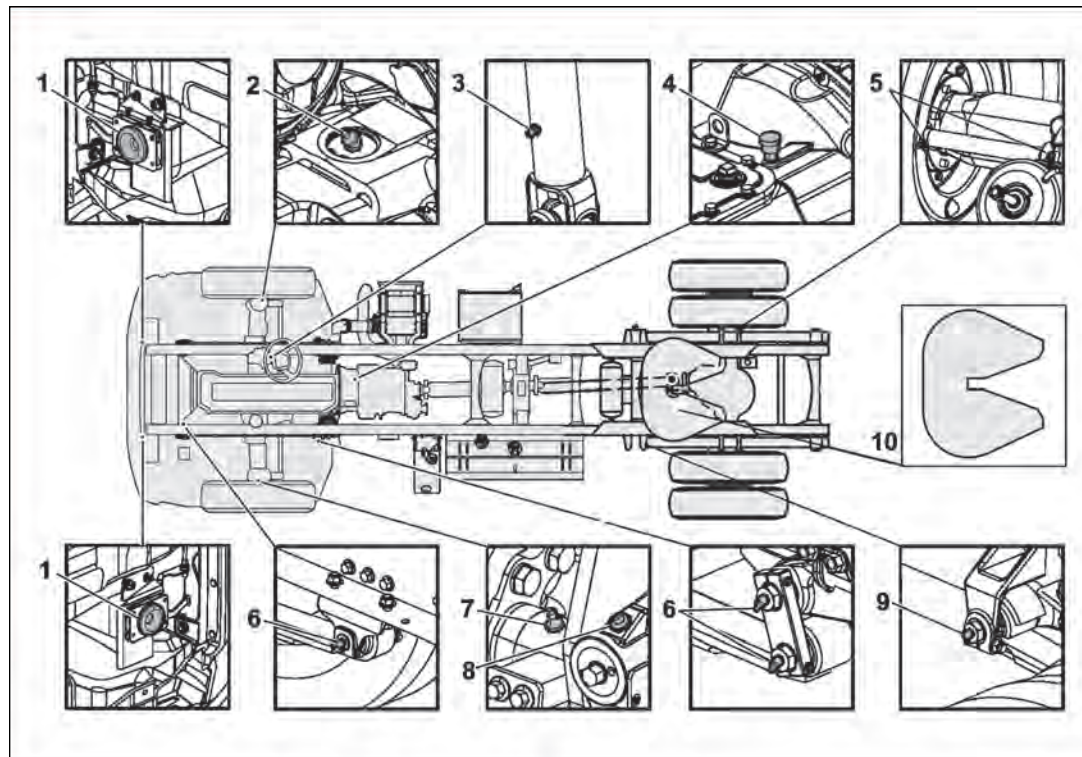
For 6x2 RIGID



*If applicable

8. INSPECTION AND MAINTENANCE

For 4x2 TRACTOR



1. Front panel lock x 2
2. Front king pin x 2
3. Steering column x 1
4. Clutch release bearing x 1*
5. Brake shaft rear x 4
6. Front suspension x 6
7. Brake shaft front x 2
8. Slack adjuster x 4
9. Rear suspension x 2*
10. Fifth wheel**

*If applicable

**Refer subsection "Inspection and lubrication" under main section "8.18 Fifth wheel".

9. MAINTENANCE SCHEDULE

9.1 Overview

It is the owner's responsibility to see that the vehicle receives proper care and maintenance.

A maintenance programme is provided with the truck when purchased. The programme is based on the vehicle type, driving conditions and oil grades etc. and is different for each truck. If the conditions which applied when the maintenance programme was developed have changed, then the maintenance programme must be changed.

More frequent servicing will be required under the following severe operating conditions:

- Driving in heavy dust conditions
- Driving long distances at high speed with vehicle fully loaded to its GVW
- Driving long distances at low speed
- Frequent stop and starting

UD Genuine Parts, should be used for any maintenance, service or repair work.

Please contact your authorised **UD Trucks** dealer for complete information on the lubrication points, oils and fluids, service intervals and service contract.

9. MAINTENANCE SCHEDULE

Torque tightening intervals

Contact your nearest authorised **UD Trucks** dealer for a complete list of torque tightening points and intervals.

Items		First	Torque tightening intervals											Remarks
	Kilometres x 1000	5	20	40	60	80	100	120	140	160	180	200	220	
	Months	1	3	6	9	12	15	18	21	24	27	30	33	
SUSPENSION FRONT														
U-bolt and nut		T	T	T	T	T	T	T	T	T	T	T	T	
SUSPENSION REAR														
U-bolt and nut		T	T	T	T	T	T	T	T	T	T	T	T	
Air suspension		T	T	T	T	T	T	T	T	T	T	T	T	
Air suspension cross member		T	T	T	T	T	T	T	T	T	T	T	T	
Wheel nut			T	T	T	T	T	T	T	T	T	T	T	

T: Torque

9. MAINTENANCE SCHEDULE

Grease lubrication

Contact your nearest authorised **UD Trucks** dealer for a complete list of lubrication points and intervals.

Items	Grease lubrication intervals												Remarks
	Kilometres x 1000	20	40	60	80	100	120	140	160	180	200	220	
	Months	3	6	9	12	15	18	21	24	27	30	33	
Steering column		G	G	G	G	G	G	G	G	G	G	G	
Front king pin		G	G	G	G	G	G	G	G	G	G	G	
Clutch release bearing		G	G	G	G	G	G	G	G	G	G	G	
Brake shaft rear		G	G	G	G	G	G	G	G	G	G	G	
Front suspension		G	G	G	G	G	G	G	G	G	G	G	
Brake shaft front		G	G	G	G	G	G	G	G	G	G	G	
Slack adjuster		G	G	G	G	G	G	G	G	G	G	G	
Rear suspension		G	G	G	G	G	G	G	G	G	G	G	
Front panel lock		G	G	G	G	G	G	G	G	G	G	G	
Fifth wheel			G		G		G		G		G		

G: Greasing

9. MAINTENANCE SCHEDULE

10. EMERGENCY PROCEDURES

10.1 When there is problem

Precautions in the event of a breakdown

- In the event of a breakdown, do not panic, pay attention to the vehicles behind, slow down gradually and stop the vehicle in a safe location free of traffic.
- It is dangerous to stop the vehicle in a tunnel. Stop the vehicle outside the tunnel.
- If the vehicle stops in the middle of the road and it is difficult to move it to a safe place, switch on the hazard lights and get down from the vehicle carefully and setup warning signs around the vehicle to warn the traffic.
- Place the warning signs around the vehicle to indicate the breakdown. If you do not do this, vehicles behind may collide into the rear of the vehicle. Make sure you set up the vehicle breakdown signs according to the instructions below.
 - Stop indicator.
 - Switch on the hazard light (emergency flashing light).
 - Place a red flag or red lights around the vehicle.
 - Place the warning sign in a location where it is visible for other vehicles.
- Check whether the fault can be repaired. Pay attention to the traffic while repairing the vehicle.
- If it cannot be repaired, contact the nearest authorised **UD Trucks** dealer.
- For repairs involving the use of a jack on the road, the vehicle may become dislocated from the jack due to wind pressure of other vehicles. Never get under the vehicle while repairing it. Always place the jack on firm ground.

10. EMERGENCY PROCEDURES

Releasing the parking brake manually

WARNING

- Do not release the parking brake manually when the vehicle stops on a slope.
- Do not release the parking brake manually except when moving the vehicle in an emergency or towing it with a tow vehicle.

NOTE

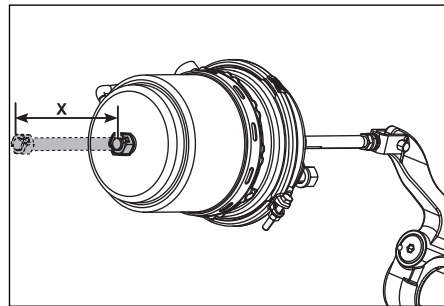
If the vehicle doesn't move even after releasing the parking brake manually, have it inspected by the nearest authorised UD Trucks dealer.

Procedure for manual release

1. Chock the wheels to prevent the vehicle from moving.
2. Rotate the release nut by turning it anti-clockwise (Do not use an impact wrench).
3. To make sure the compression spring is fully caged, the stud length (x) should be approximately

X	GVW
65	10.4 to 11 T
63	12.0 to 14 T
75	15.0 to 17 T
73	18.0 to 19 T
75	25.0 to 26 T*

*For 6x2



CAUTION

The release nut is secured on the release bolt with a knock pin. Do not remove the knock pin otherwise the parking brake cannot be released.

10. EMERGENCY PROCEDURES

Towing

WARNING

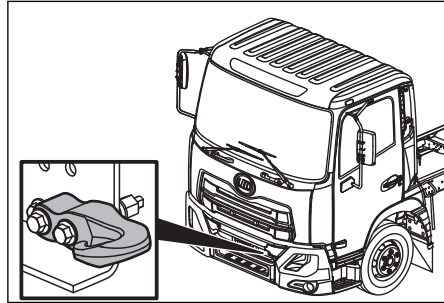
If the engine does not start, the steering and brake system will not work. You must only tow the vehicle with a towing vehicle

CAUTION

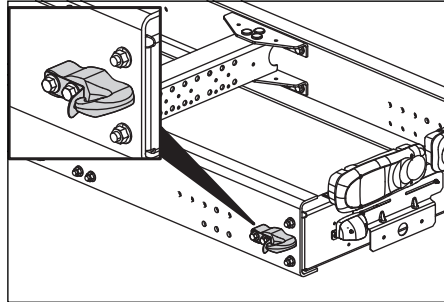
- When towing, make sure you disconnect the propeller shaft. Towing the vehicle with the propeller shaft connected will damage the gearbox.
- If the vehicle accidentally falls into ditch or trench, do not use the tow pin to pull the vehicle out. Contact authorised UD Trucks dealer for support.

Using a tow brace

Use a rigid towrope. Attach the rope to the front end hook of the vehicle being towed. Start and tow the vehicle gently.



Front tow brace



Rear tow brace

Rear towing brace is designed for emergency situation to pull the unladen vehicle out when stuck in pothole or mud.

WARNING

Pulling the other vehicle (Tow driving) using rear tow brace is prohibited.

10. EMERGENCY PROCEDURES

Precautions when towing

Do's

- Always use front tow brace to tow the vehicle.
- Always chock the wheels, before releasing parking brake.
- Disconnect the propeller shaft before towing.
- Always use a tow rope for towing the truck.
- If possible, tow the vehicle with the engine running.
- Comply with the local regulations while towing.

Don'ts

- Do not tow the vehicle using the under-run protection devices or rear tow brace.
- Do not use steel cable or chains for towing.
- Avoid towing the vehicle at an angle.

NOTE

The maximum pulling capacity of the towing hook is 2.5 ton, do not use the tow hook to pull more than its capacity. for safety reasons

If you have a flat tyre or tyre burst while you are driving

DANGER

Do not drive with a flat tyre. Replace the tyre immediately.

- Hold the steering wheel securely and press the brake slowly to gradually decrease the speed.
- Switch ON the hazard light to alert the vehicles behind and stop the vehicle in a safe location to change the tyre.
- For changing a tyre, Refer to **Chapter 8**.

NOTE

To park the vehicle, select a location which is legal, safe and will not interfere with traffic.

If there is a problem with the air suspension

 **CAUTION**

Do not drive the laden vehicle if there is problem with air suspension.

If there is problem with the air suspension, first unload the vehicle then drive the vehicle to the nearest workshop unladen.

NOTE

Check with the authorised UD Trucks dealer whether the vehicle can be driven to workshop and whether the air bellows can be adjusted with the dump switch for either full up or full down (40 - 45 mm). The dump switch can be activated only when parking brake is applied.

10. EMERGENCY PROCEDURES

10.2 Jump start

Precautions when jump starting the vehicle

⚠ DANGER

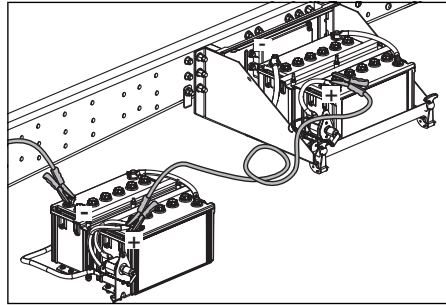
Never do a tow start to start the engine.

⚠ WARNING

- Do not place or bring any metal in contact with the positive (+) terminal of either vehicle.
- Check the jumper cable for wear and damage.
- Check the battery fluid level before connecting the jumper cable. Charging the battery when the battery fluid level is low, may damage the battery or cause it to heat up or explode. Charge the battery after the fluid has been topped up.

NOTE

If the battery is frozen or there is ice on the cell, do not start the vehicle with jumper cables.



When jump starting the engine using a jumper cable, sparks may occur when the jumper cable is connected. Make sure you follow the steps below:
Always use a heavy duty jumper cable for a large vehicle. Ask the nearest authorised **UD Trucks** dealer for the correct jumper cable.

- Switch OFF the engine of the vehicle which is supplying the power.
- Connect the positive end of the jumper cable (red) to the positive (+) terminal of the discharged battery and the other end to the positive (+) terminal of the good battery.
- Connect the negative end of another jumper cable (black) to the negative (-) terminal of the good battery and the other end to the body chassis of the vehicle with the discharged battery where the position is as far away from the battery as possible.
- After connecting the jumper cable, start the engine of the vehicle with the discharged battery. If it is difficult to start the engine in a cold region, start the

engine of the vehicle supplying the battery power and wait for several minutes before starting the engine of the vehicle with the discharged battery.

- After the engine has started, disconnect the jumper cables in the reverse order used for connection.
- Use heavy-duty jumper cables for large vehicles.
- Ensure that the total voltage of the auxiliary batteries is 24 V.
- If the auxiliary batteries are in another vehicle, switch off the engine of that vehicle and ensure that the two vehicles are not in contact with each other
- Pay attention to the order of connection when drawing power from a vehicle with a normal battery. The sparks generated during connection could cause a serious accident.

10. EMERGENCY PROCEDURES

11. SERVICE DATA

11.1 Maintenance standard

For more information on the items below, contact your authorised **UD Trucks** dealer.

Item		Maintenance standard	Remarks	
Chassis	Wheel alignment	Toe-in	1.8 ± 1 mm at axle unladen condition	FAL 4.2
			3.8 ± 1 mm at axle unladen condition	FAL 5.0
			4.2 ± 1 mm at axle unladen condition	FAL 6.5
		Camber	1° ± 0.5°	FAL 4.2, FAL 5.0
			0.7° ± 0.5°	FAL 6.5
		Caster	6° ± 0.5°	FAL 4.2, FAL 5.0
	4.5° ± 0.5°		FAL 6.5	
	Turning angle (inside X outside) wrt to Tyre size	8.25-16/8.25R16 235/75R 17.5	53° ± 1°	
		265/70R 19.5 8.25R 20	49° ± 1°	
		9.00R 20 9.00-20/10.00R22.5	47° ± 1°	
		10.00R20	47° ± 1°	
		11R20		
		11R22.5		
		295/80R22.5		
	Tyre pressure		Refer to tyre manufacturer's specification	
Tyre tread groove depth		Marking on wheel	As per supplier information	

11. SERVICE DATA

Wheel nuts torque		6 Stud	8 Stud	10 Stud
	Disc wheel ISO			670 ± 30 Nm
	JIS	405 ± 25 Nm	575 ± 25 Nm	

Suspension bolt torque	Front suspension	275 ± 45 Nm	
		540 ± 70 Nm	FAL 6.5
	Rear leaf suspension	540 ± 70 Nm	
	Rear air suspension	640 ± 100 Nm	
Air suspension cross member		540 ± 70 Nm	

Recommended lubricants

Lubricant		Grade/Standard	UD lubricants	Remarks
Engine oil		VDS-3	UD Engine Oil Mega Multi 3 SAE 15W-40 (for Asia), Diesel Engine Oil (for SAF and Near Middle East)	1
		VDS-4/4.5	UD Engine Oil Mega Multi 4 SAE 15W-40 (for Asia)	1
Gearbox oil	SMT (Synchronised Manual Transmission)	API GL-4	UD Gear Oil GL-4 80W-90 (for Asia), UD Gear Oil GL-4 (for Near Middle East) Rotra Hy-h gear oil 80W90 (for SAF)	1
	Allison	TES 295	Allison Approved TES 295® automatic transmission	2
		TES 389	Allison Approved TES 389® automatic transmission	2
Axle oil		API GL-5	UD Genuine Rear Axle Oil GL-5/85W-140 (for Asia), UD Axle Oil GL-5 /85W-140(for Near Middle East) Rotra MP gear oil 85W-140 (for SAF)	
Power steering fluid		ATF Dexron III	-	
Grease		Lithium based grease of consistency NLGI No. 2	-	
Clutch fluid		DOT- 4	-	

Engine coolant	VCS (Yellow liquid)	UD Long Life Coolant (for Asia)	3
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- 1) The right viscosity number of oils according to the climatic condition is referred to "Recommended SAE viscosity number", page 11-5 and 11-6
- 2) For oil refill contact authorised **UD Trucks** dealer.
- 3) 40% dilution for temperatures below -25°C

11. SERVICE DATA

Capacities (approximately)

Title	Engine	Total engine oil volume including approximate volume for oil filter (litres)	Oil volume between dipstick Max - Min (litres)	Remarks
Engine oil	GH5E	13.5	4	
	GH8E	20.5	7	

Title	Engine	Climate unit	Capacity (litres)	Remarks
Engine coolant	GH5E	CU-MCC4,ST1006 CU-MCC6,ST1006	22.5	Only a guideline as this varies depending on the vehicle installations and equipment
		CU-MCC5,ST1006 CU-MCC,ST1006	23.0	
		CU-MCC4, AL256 CU-MCC6, AL256	28.5	
		CU-MCC5, AL256 CU-MCC, AL256	29.0	
	GH8E	CU-MCC4,TRA-SMT CU-MCC6,TRA-SMT	26.5	
		CU-MCC5,TRA-SMT CU-MCC,TRA-SMT	27.0	
		CU-MCC4, AL306 CU-MCC6, AL306	39.3	
		CU-MCC5, AL306 CU-MCC, AL306	38.3	

CU-MCC4: Manual controlled climate unit air cooler only
 CU-MCC6: Manual controlled climate unit ventilation unit only

CU-MCC5: Manual controlled climate unit heater unit only
 CU-MCC: Manual controlled climate unit AC

Title	Variant	Capacity (litres)	Remarks
Power steering system fluid	FAA10	4	4x2,6x2

11. SERVICE DATA

Title		Variant (Model)	Gearbox Standard oil volume (litres)	Gear box with PTO oil volume (liters)	Remarks
Gearbox	6 Speed	ST1306 (F6S13T)	11.5	12.5	For oil refill contact authorised UD Trucks dealer. If PTO is fitted as an accessory check with PTO supplier for oil volume
		ST1006 (F6S10T)	11.5	12.5	
	9 Speed	ST1109	13	14	
		ST1199	13	14	
	Allison 2500	AL256	12	-	
	Allison 3000	AL306	19	-	

Title		Variant	Capacity (litres)
Axle	Single reduction	RSS0716	5
		RSS0918	6.9
		RSS0918B	14.7
		RSS1132B	14.7
		RSS1132C	17
		RSS1132D	18.5

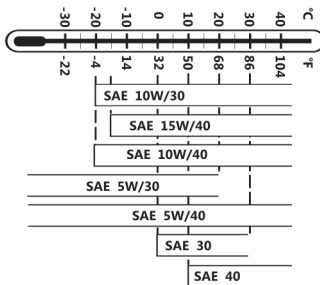
Note: Capacities shown are for reference only. When topping up, comply with the specified level for that vehicle.

11. SERVICE DATA

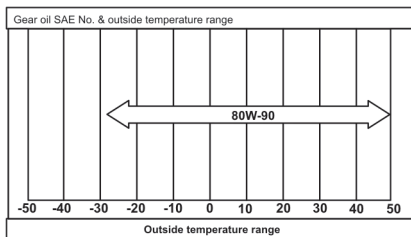
Recommended SAE viscosity number

Use oil with the correct viscosity value for the climatic condition of the area in which the vehicle is used.

Engine oil



Gearbox oil



Grease quality

The requirements for lubricating grease are as follows.

- High grade wheel-bearing grease should be used.
- The grease should be mineral-oil based.
- The grease should be lithium or lithium complex type.
- The grease should contain EP and anti-rust additives.
- The grease must have a consistency equivalent to NLGI no. 2.
- The grease should not contain any solid lubricants, such as graphite, copper or molybdenum sulphide.
- The grease must be intended for use in working temperatures of at least 80°C and must be able to withstand 120°C for short periods.

11. SERVICE DATA

Diesel fuel

Fuel composition plays an important role in engine function, service life and emission pattern. In order to achieve the specified power output and fuel economy and meet the emission requirements stipulated by the authorities, you must only use fuels which comply with legal requirements and national and international standards. These standards represent the minimum requirement for market fuels and they are usually developed in collaboration with the oil companies and automotive industry. Examples are

- GB 19147-2013
- EN590 (with nationally adapted cold requirements)
- JIS KK 2204

Most of the fuel sulphur in the fuel is converted into sulphur dioxide in the combustion process. This sulphur dioxide is later converted into sulphuric acid in the atmosphere and contributes to acid rain.

The particulate (PM) emissions increase with increasing sulphur content. Vehicles fitted with exhaust after-treatment systems (such as particulate filters and oxidation catalysts) are particularly sensitive to sulphur.

Maximum sulphur content for fulfilling the different emission levels

Euro III: max 350 ppm

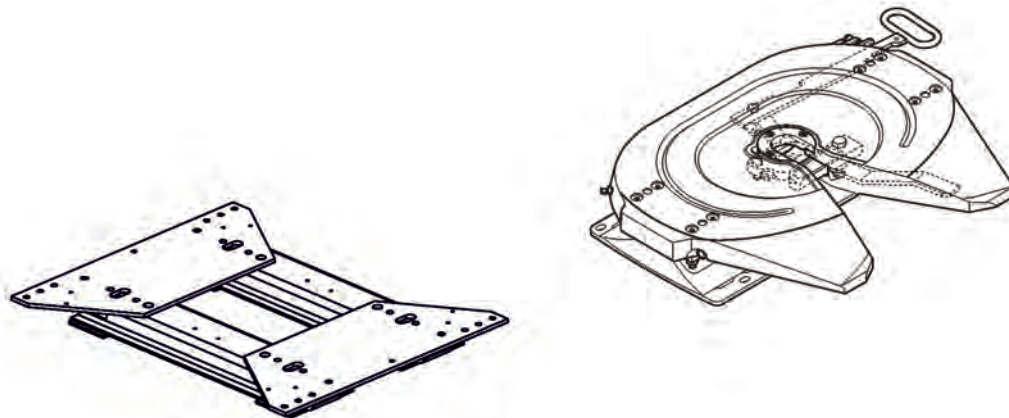
Euro IV: max 50 ppm

Euro V: max 10 ppm

To ensure that the emission requirements are consistently complied with in service on Euro IV vehicles, sulphur free fuels (<50 ppm) are recommended.

To ensure that the emission requirements are consistently complied with in service on Euro V vehicles, sulphur free fuels (<10 ppm) are recommended.

Fifth wheel



Variant	Fifth wheel Model No.	D-value	King pin size	Max vertical load	Fifth wheel height
KPSIZE50	FW20-185	150 kN	50 mm	20 tonne	185 mm

The D value is the theoretical reference value for the horizontal forces in the towing vehicle and the trailer and D value is used as the basis for horizontal loads in the dynamic tests.

11. SERVICE DATA

Engine specification GH5E

Designation	GH5E180 EU3	GH5E210 EU3 GH5E210 EU4	GH5E240 EU4
Power, net	180 hp (2200 rpm)	210 hp (2200 rpm)	240 hp (2200 rpm)
Torque, net	750 Nm (1200 - 1600 rpm)	825 Nm (1200 - 1600 rpm)	900 Nm (1300 - 1600 rpm)
No. of cylinders	4	4	4
Diameter of cylinder	110 mm	110 mm	110 mm
Stroke	135 mm	135 mm	135 mm
Piston displacement	5.1 l	5.1 l	5.1 l
Compression ratio	17.5:1	17.5:1	17.5:1
Firing sequence	1 - 3 - 4 - 2	1 - 3 - 4 - 2	1 - 3 - 4 - 2
Auxiliary brake	EBR-EPG	EBR-EPG	EBR-EPG
Engine speed at idle	700 rpm	700 rpm	700 rpm
Economic engine speed range	900 - 1600 rpm	900 - 1600 rpm	900 - 1600 rpm

Engine specification GH8E

Designation	GH8E250 EU3 GH8E250 EU4 GH8C250 EU5	GH8E280 EU3 GH8E280 EU4 GH8E280 EU5 GH8C280 EU5
Power, net	250 hp	280 hp
Torque, net	950 Nm (1100 - 1700 rpm) 950 Nm (1000 - 1800 rpm)	1050 Nm (1100 - 1700 rpm) 1050 Nm (1100 - 1800 rpm)
No. of cylinders	6	6
Diameter of cylinder	110 mm	110 mm
Stroke	135 mm	135 mm
Piston displacement	7.7 l	7.7 l
Compression ratio	17.5:1	17.5:1
Firing sequence	1 - 4-2-6-3-5	1 - 4-2-6-3-5
Auxiliary brake	EBR-EPG/EBR-CEB	EBR-EPG/EBR-CEB
Engine speed at idle	600 rpm	600 rpm
Economic engine speed range	900 - 1600 rpm	900 - 1600 rpm

11. SERVICE DATA

Electrical system - 24 Volts

Battery (Quantity 2 nos.)	
Parameter	Specification
Voltage	12.5 V
C20 capacity (for ref only)	110 Ah
CCA at -18°	600 CCA
Recommended testing specific gravity volume (20°C)	1.280 ± 0.005 g/cm ³
Filled weight	29.2 ± 1.6 kg
Weight without acid	20.1 kg
Electrolyte volume	9.1 kg
Acid density (20 °C)	Min: 1.245 g/cm ³ Max: 1.285 g/cm ³
Electrolyte level	Min: 168 mm Max: 173 mm
Vent plug tightening torque	Min: 6 kgf.cm Max: 8 kgf.cm

11. SERVICE DATA

Sl. No.	Description	Category	Specification
1	Bulb - Head light, High beam and DRL	H15	24V 60/20W
2	Bulb - Head light, Low beam	H7	24V 70W
3	Bulb - Head Light, Front position lamp	W5W	24V 5W
4	Bulb - Front fog lamp	H3	24V 70W
5	Bulb - Front turn indicator	PY21W	24V 21W
6	Bulb - Side indicator on door	P21W	24V 21W
7	Bulb - Front end out line marker lamp	W5W	24V 5W
8	Bulb - Rear turn indicator lamp	P21W	24V 21W
9	Bulb - Rear Stop lamp	P21W	24V 21W
10	Bulb - Rear position lamp	R10W	24V 10W
11	Bulb - Rear back up lamp	P21W	24V 21W
12	Bulb - Rear fog lamp	P21W	24V 21W
13	Cab living room lamp		24V 20W
14	Cab reading lamp	T11*41	24V 10W
15	Bulb - number plate lamp	R10W	24V 10W

Note: All replacing bulbs should be ECE certified, with a rating of 24V only.