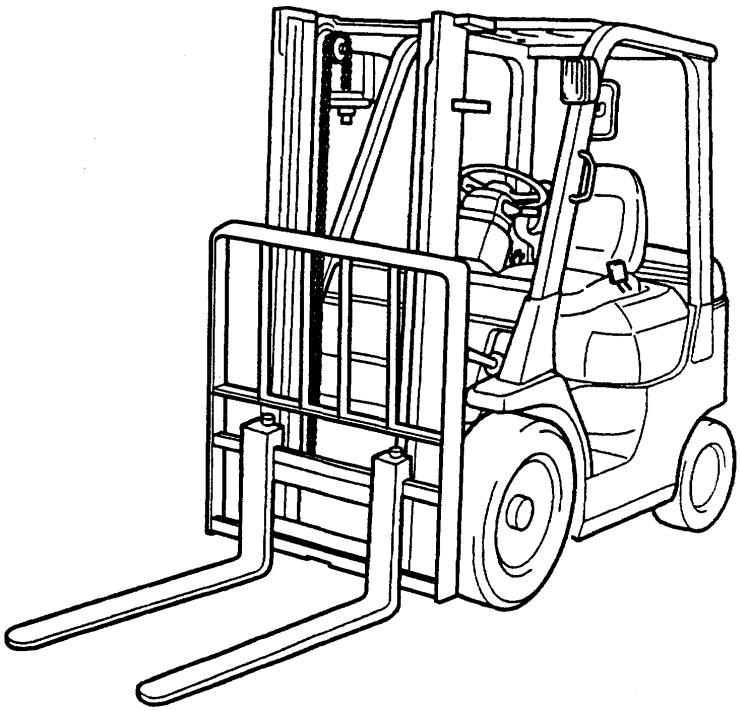
WARNING!
Do not use the truck before first reading through the OPERATOR'S MANUAL.

NOTE!
Keep for future reference.



Operator's Manual GB

CARGO GT 15, 18, 20, 25, 30
CARGO DT 15, 18, 20, 20P, 25, 25p, 30, 30P, 35
CARGO GT 35
CARGO DT 35

Valid from serial number:

Order number: 180424-040
Issued: 2000-10-18 ITS

BT Products AB
S-595 81 MJÖLBY SWEDEN

Valid only for serial number:

Note to Operators and Supervisors

This manual explains the proper operation and maintenance of BT industrial vehicles as well as daily lubrication and periodic inspection procedures.

Please read this manual thoroughly even though you may already be familiar with other BT industrial vehicles because it contains information which is exclusive to this series of vehicles. The manual has been produced based on a standard vehicle. However, if you have questions on other types, please contact your BT industrial vehicle dealer (BT dealer).

In addition to this manual, it is essential that you review the separate publication entitled “Operator’s Manual for Safety Operation” for forklift truck drivers. It contains important information about the safe operation of forklift trucks. BT reserves the right to make any changes or modifications of specifications in this manual without giving previous notice and without incurring any obligation.

Table of Contents

Before Initial Operation

- **Please read this manual thoroughly.** This will give you a complete understanding of BT industrial vehicles and permit you to operate them correctly and safely.
  Proper handling of new vehicles promotes performance and extends service life. Drive with special caution while becoming familiar with a new vehicle.
  In addition to the standard operating procedures, pay attention to the following safety items.
- **Please acquire thorough knowledge on BT industrial vehicle.** Read the operator's manual thoroughly prior to operating the vehicle. Get to know its operation and components. Learn about the safety devices and accessory equipment and their limits and precautions. Be sure to read the caution plate attached to the vehicle.
- **Please learn safe driving points and safety management.** Understand and maintain working area traffic rules. Ask the work area supervisor about any special working precautions.
- **Wear neat clothing for operation.** Improper clothing for vehicle operation may interfere smooth operation and cause an unexpected accident. Always wear proper clothing for easy operation.
- **Please keep away from live electric power lines.** Know the locations of inside and outside power lines and maintain sufficient distance.
- **Be sure to perform pre-operation check and periodic maintenance.** This will prevent sudden malfunctions, improve work efficiency, save money and insure safe working conditions.
- **Always warm up the engine before starting operation.**
- **Be sure to avoid forward tilt when the loaded fork is raised.** In the worst case, this will cause overturning due to poor stability resulting from forward shifting of the center of gravity.
- **Never attempt traveling with a loaded on the lifted fork beyond the specified height.** Traveling with a load on the fork lifted beyond the specified height may cause overturning due to upward shifting of the center of gravity. Keep the fork at 10-20cm (5.9-7.9in)above the ground when traveling.
- **Please avoid overloading or uneven loading.** Overloading or uneven loading is dangerous. If the center of gravity is nearer to the front side even though the load is below the maximum, limit the loading weight according to the load table.
- **If you hear and unusual noise or sense anything unusual, inspect and repair immediately.**

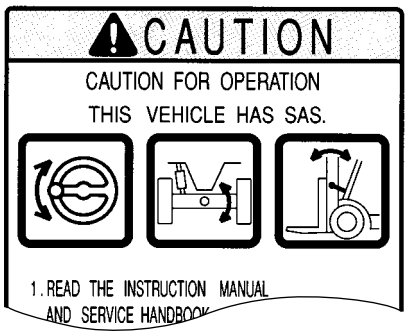
- **Be sure to observe the correct operating procedures and precautions for the handling of vehicles equipped with power steering and power brakes.**
- **If the engine stops during traveling, the operation will be affected.** Stop the vehicle in a safe place as described below. Steering operation becomes heavy because the power device for the power steering becomes ineffective. Operate the steering wheel more firmly than usual.
- **Please use only the recommended types of fuel and lubricants.** Low-grade fuel and lubricants will shorten service life.
- **Flammable and/or combustible materials can be damaged, and in some cases ignited, by a hot exhaust system or hot exhaust gases.**
  To minimize the possibility for such damage or fire, the operator must obey the following recommended practices:
- Do not operate lift truck over or near flammable and/or combustible materials, including dried grass and paper scraps.
- Park lift truck with rear end at least 12" away from lumber, veneer board, paper products and other similar materials to avoid discoloration, deformation or combustion of those materials.

Precautions to be taken when using SAS Models

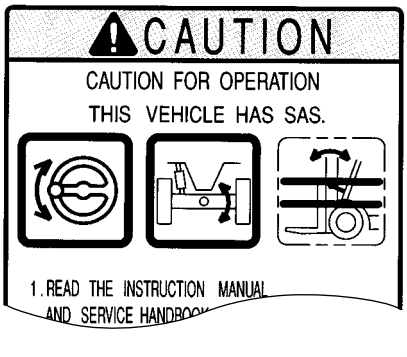
(SAS: System of Active Stability)

CAUTION!

• Whenever you may get on an SAS model, please check the caution plate, through which you may know what functional features are provided in the vehicle. Do not proceed to an operation of the vehicle before making certain that each of the features is operating properly.



• Example: These symbols indicate that the vehicle is not provided with such controls as active mast front tilt angle control.



• While driving the vehicle, be normally alert about a warning lamp and/or an alarm buzzer. Should an error code be indicated by a warning lamp or hour-meter, park the vehicle at a safe location and ask a BT dealer for an inspection.
• The SAS, which is electronically controlled, need be initialized after completion of a maintenance operation. Do not unnecessarily remove or modify any SAS features. Whenever an inspection may be necessary, make contact with a BT dealer.
• When washing the vehicle, carefully prevent water from splashing directly over the electronics (controller, sensor and switches) employed in the SAS.

Description of features available in SAS models

Active control rear stabilizer:

When the vehicle makes a turn on the spot, a centrifugal force will be generated in the lateral direction of the vehicle. In such event, this feature will operate so that rear wheels will be locked from swinging to support the vehicle on four wheels. Thus, the vehicular stability will be enhanced in both right and left directions.

CAUTION!

With the vehicle locked from swinging, the stability does surely increase. Nevertheless, it does not signify that the vehicle would never tipover.
Operate the vehicle always correctly.

Automatic fork leveling control

- With the vehicle not loaded, tilt the mast forward while pressing the tilt lever knob switch. This will cause the fork to automatically stop at its horizontal position (with the mast vertically positioned).
- After stopping the fork at its horizontal position with the tilt lever knob switch pressed, you may want to tilt the fork further. To do this, return the tilt lever to the neutral position once. Then, after releasing the tilt lever knob switch, operate the tilt lever.

When the tilt lever is operated from the backward to forward position with the knob switch depressed, the mast will perform as follows:

	No load	Loaded
High lift height	Stop with leveling forks (mast vertical)	Not tilting forward
Low lift height	Stop with leveling forks (mast vertical)	

CAUTION!

• With the mast tilted forward with a high load at a high lift, pressing the tilt lever knob switch will cause the mast to stop moving. Absolutely avoid such operation because this automatic fork leveling control, if operated while handling a load, involves the fear of causing the vehicle to tipover.

• In case of the vehicle with an attachment, do not allow the fork to be automatically positioned horizontally, with a high load at a high lift while the engine is running at a high speed. This will lead to a hazard.

• Some specialty models onto which a heavy attachment is mounted may not be equipped with the automatic fork leveling control. Confirm a BT dealer in advance.

Note:

- The mast will not move if it is tilted forward by pressing the tilt lever knob switch with a high load at a high lift (more than 2 m).
- As long as the mast is tilted forward from its vertical position, it will no longer tilt forward even if the tilt lever knob switch is pressed.
- While it is tilting backward, the fork will not stop at its horizontal position even if the tilt lever knob switch is pressed.

Active mast front tilt angle control

According to a lift and to a load, the angle at which the mast can be tilted forward is automatically controllable within a range of angles illustrated below:

	Light load (no load)	Intermediate load	Heavy load
High lift height	No restriction for front tilt angle	Angle restricted between 1° and forward tilt angle 5°	Forward tilt angle restricted to 1°
Low lift height	No restriction for front tilt angle		

CAUTION!

• If a load should be moved up while tilting the fork forward at a low lift, there is a fear that the vehicle may tipover when the fork stops at the position having a tilt angle beyond the specified angle range. Never handle any load, therefore, while tilting the mast, with the load moved up.

• With a high load at a high lift, never match the load (mast angle) by controlling the mast forward tilting angle, since it involves the fear that the vehicle may tip over.

• Even with a load positioned within the allowable angle range, never tilt the mast beyond its vertical position, or the vehicle may tipover, losing its stability forward and backward. Never tilt the mast forward, with a load moved up.

• Some specialty models onto which a heavy attachment is mounted may not be equipped with the mast forward tilt control. Confirm a BT dealer in advance.

• Once you have mounted or replaced any attachment on a fork lift model, ask a BT dealer for an inspection.

• If you use two or more removable attachments alternately, the heaviest one should be used to carry out matching (SAS setting). Ask a BT dealer for help in advance.

Note:

With the fork positioned at the top dead end, a high pressure (relief pressure) may remain in the lift cylinder. This high pressure causes the vehicle to judge that it has a high load even unless loaded. As a result, the mast will be hindered from tilting forward. In this case, move the fork a little downward from the top dead end (to release the pressure) and the mast may be tilted forward.

Active mast rear tilt speed control

- At a high lift, the mast has a backward tilt speed controlled (slowed down) irrespective of a load. If the high lift is changed over to the low lift while tilting the mast backward, the controlled speed will last.
- At a low lift, the mast can be tilted at the full speed irrespective of a load. If the mast is tilted backward at a low lift with the tilt knob switch pressed, the mast has a backward tilt speed controlled (slowed down) as long as the tilt lever knob switch is pressed.
- If the low lift is changed over to the high lift while tilting the mast backward, the controlled speed will last as long as the tilt lever knob switch is pressed. And the mast may be tilted backward at the full speed so long as the tilt lever knob switch is not pressed.

Key-lift interlock

With the engine killed (the ignition switch positioned at OFF), the fork will not move down even if the lift lever is so operated.

Active steering synchronizer

If the steering wheel knob is not angularly matched with tires, such an out-of-position will be automatically corrected while turning the steering wheel. Thus, the knob is kept at a constant position relative to tires.

If SAS feature should fail:

An SAS model is controlled with a controller, a sensor and various actuators. If any of them is found not to be operating normally, it tells you that:

- Steering wheel knob out-of-position may not be corrected.
- Such features as automatic fork leveling control, active mast front tilt angle control and active mast rear tilt speed control.
- Swing lock may not be unlocked.
  If any of the phenomena referred to above should take place,
- SAS warning lamp will blink.
- Error code will be displayed in hour meter.
- Buzzer will sound.
  Thus, the operator will be informed. In such event, move the vehicle to a safe location and ask a BT dealer for a repair.

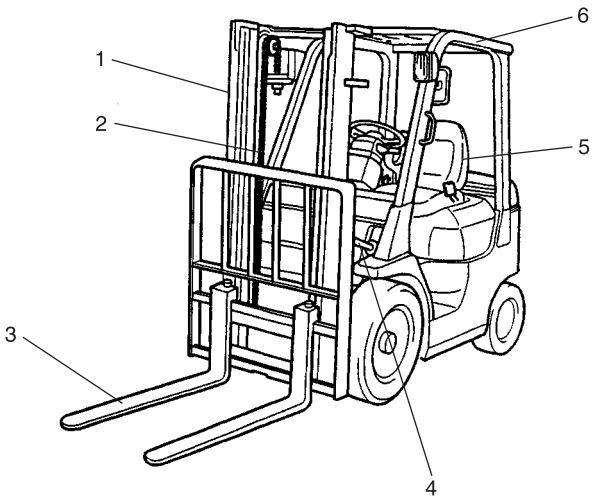
Action to be taken in emergency

If the mast (load-handling unit) should fail to operate, remove the SAS-ECU fuse inside the fuse box and you will be able to move the vehicle by operating it similarly to a non-SAS model. Move the vehicle to a safe location and ask a BT dealer for a repair.

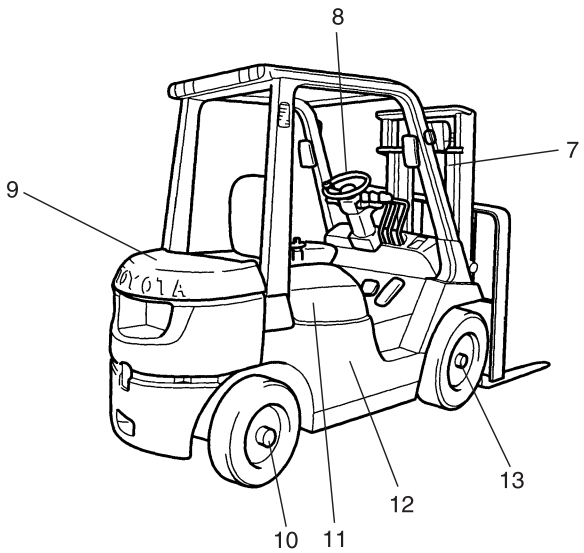
If any phenomenon different from normal operations (failure to run or the like), among others, should take place, ask a BT dealer for an inspection.

Note:
Once a torque converter model has had its control lever abnormal, it is impossible to manually operate the vehicle, which need be towed, accordingly.

Main Components



1. Mast
2. Chain
3. Fork
4. Tilt cylinder
5. Operator’s seat
6. Head guard

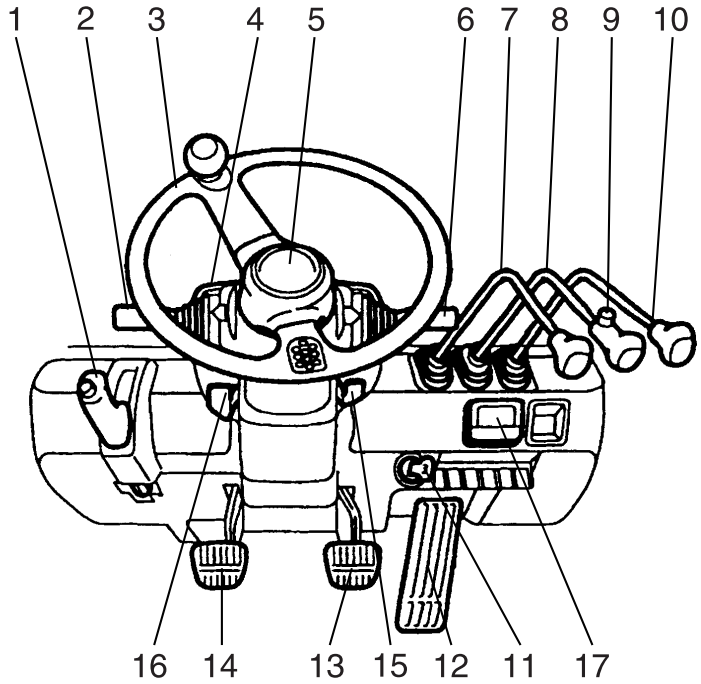


7. Lift cylinder
8. Steering wheel
9. Counter weight
10. Rear axle
11. Engine hood
12. Frame
13. Front axle

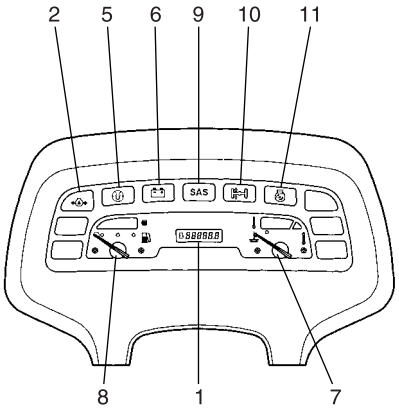
Driving Controls and Instrument Panel

Torque converter Models

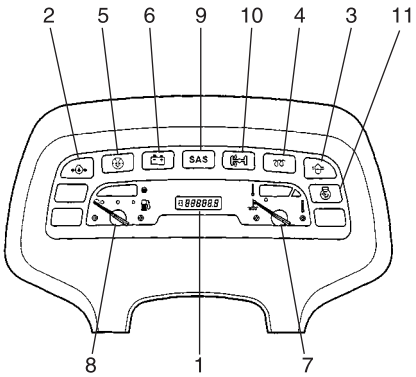
1. Parking brake lever
2. Control lever
3. Steering wheel
4. Integrated monitoring center
5. Horn button
6. Turn signal and light control switch
7. Lift lever
8. Tilt lever
9. Tilt lever knob switch (SAS models)
10. Attachment lever
11. Ignition switch
12. Accelerator pedal
13. Brake pedal
14. Inching and brake pedal
15. Tilt steering adjust lever
16. Engine hood lock release lever
17. DPF display (Option)



Instruments



Gasoline models



Disel models

Integrated monitoring center

Meter illumination lamp is provided for easy meter reading at night. It comes on when the light control switch is set to ON.

1. Hour meter used also to diagnose the SAS
2. Engine oil pressure warning lamp
3. Sedimenter warning lamp (Diesel models)
4. Glow Indicator lamp (1DZ-II engine models)
   Preheating indicator lamp
   (2Z engine models: Standard in designate area)
5. Air cleaner cleaning warning lamp
6. Charge warning lamp
7. Water temperature gauge
8. Fuel gauge
9. SAS warning lamp (SAS models)
10. Swing lock indicator lamp (SAS models)
11. Vehicular speed control warning lamp (Option)

Each warning lamp check method

- Please check if all warning lamps come on when the ignition switch is turned to ON.
- If any lamp does not come on, the lamp may be burnt out. Inspect the lamp.

Note:
Use the light control switch to check the meter-lighting lamp.

CAUTION!

• The glow indicator lamp (1DZ-II engine models) in on for 2 seconds when the engine coolant temperature exceeds 50°C.
• The preheating indicator lamp (2Z engine models) does not come on when the engine coolant temperature exceeds 2.5°C.

Hour meter also serving as an SAS diagnosis indicator (SAS models)

Only operates when the ignition switch is on.
It indicates the total number of vehicle operating hours.
The unit of the right most digit is 1/10 hour.
Please use this meter to grasp the timing for periodic maintenance and record the operating hours.

SAS models

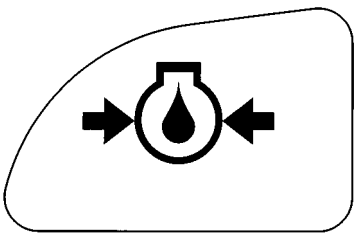
The hour-meter display will alternately indicate an error code and an hour-meter reading in the SAS.

CAUTION!

Should an error code be displayed, park the vehicle at a safe location and receive an inspection by a BT dealer.

Engine oil pressure warning lamp

Comes on to indicate low engine oil pressure while the engine is running.



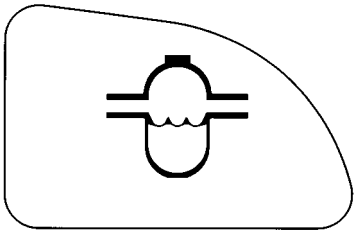
1. If normal, the lamp comes on when the ignitions switch is turned on and goes off when the engine starts.
2. If the lamp comes on while the engine is running, either the engine oil is insufficient or the lubrication system is faulty. Stop the operation immediately and ask a BT dealer for inspection and repair.

Note:
The “engine oil pressure warning lamp” does not indicate the oil level. Check the oil level using the oil level gauge before starting work.

Sedimenter warning lamp

(Diesel models)

The sedimenter is a device for separating water from the fuel.



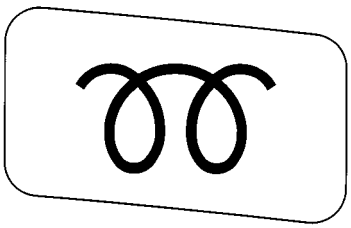
1. The warning lamp comes on to indicate water in the sedimenter exceeds the predetermined level while the engine is running.
2. If normal, the lamp comes on when the ignitions switch is turned on and goes off when the engine starts.
3. If the lamp comes on while the engine is running, drain water immediately. (See the self service section for the draining method.)

CAUTION!

Continued operation with the lamp on may cause seizure of the injection pump and pump damage.

Glow indicator lamp

(1DZ-II engine models)



Indicates heating of glow plugs.

1. When the ignition switch is turned on, the lamp comes on and glow plug heating begins.
   The lamp goes off automatically when glow plug heating is complete. The engine will start easily once the glow plugs are heated.

Note:

The glow indicator lamp is on for 2 seconds when the engine coolant temperature exceeds 50°C.

Preheating indicator lamp

(2Z engine models: standard in designated area)

Indicates preheating of the intake heater.

1. When the ignition switch is turned on, the lamp comes on and preheating starts. The lamp goes off automatically when preheating is complete. The engine will start easily.

Note:

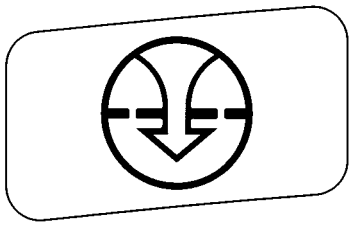
When the engine coolant temperature exceeds 2.5°C, this lamp does not come on because preheating is not carried out.

2. The length of preheating time is automatically controlled according to the engine coolant temperature. It gets somewhat longer when the engine coolant temperature is low or in a cold season.

CAUTION!

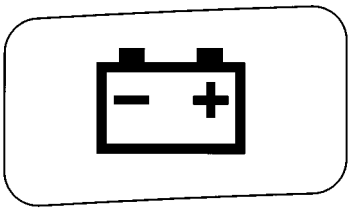
If the indicator lamp does not go off if it comes on during engine running, the preheating intake heater may be defective. Please ask a BT dealer for inspection and repair.

Air cleaner warning lamp



1. This lamp comes on when the air cleaner element gets clogged during engine running.
2. If normal, the lamp comes on when the ignition switch is turned on and goes off when the engine starts.
3. If the lamp comes on while the engine is running, stop the engine and clean the element and dust cup. For the cleaning method, refer to the Weekly Inspection Section.

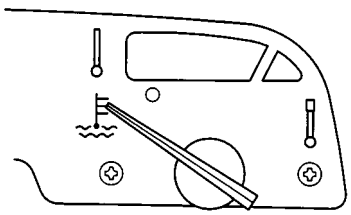
Charge warning lamp



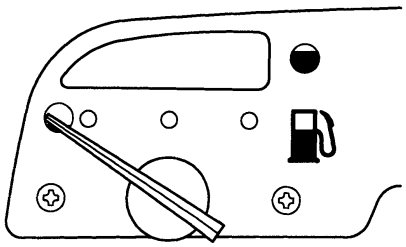
1. This lamp comes on to indicate an abnormality in the charging system while the engine is running.
2. If normal, the lamp comes on when the ignition switch is turned on and goes off when the engine starts.
3. If the lamp comes on while the engine is running, stop the operation immediately, inspect the fan belt for cuts or loosening, adjust it, and restart the engine.
   If lamp does not go off, the generation system may be faulty. Please ask a BT dealer immediately for inspection and repair.

Water temperature gauge

Indicates the temperature of the engine cooling water.



1. Operates when the ignition switch is on.
2. In normal state, the indicator is in the green zone at the center.
3. If the indicator is in the red zone, the engine may be overheated. Stop the vehicle in a safe place, idle the engine for a while, and stop the engine when the indication falls.
4. Temporary overheating may be caused by water leakage, insufficient engine coolant level, loosened fan belt or other abnormality in the coolant level, loosened fan belt or other abnormality in the cooling system.
   Inspect the cooling system.



Fuel gauge

(excluding LPG models)

Indicates the fuel level in the fuel tank in the range of ○ - ⛽ .

It takes some time for the indication to be stabilized after the fuel is supplied and the ignition switch is turned on.

CAUTION!

• If the road is not level, attention must be paid because the correct level may not be indicated.

• Add fuel early when the indicator approaches ○.

• In case of diesel in particular, be sure to refuel it before it runs out because once it causes the engines to stop running it becomes necessary to bleed air from the fuel supply system.

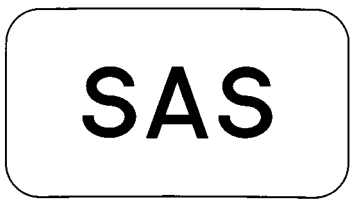
Reference

Remaining fuel at ○ point.

1.5~1.75 ton model	2~2.5 ton model	3 ton model	J 3.5 ton model
7 l 1.8 US gal	9 l 2.3 US gal	9 l 2.3 US gal	9 l 2.3 US gal

SAS warning lamp

(SAS models)

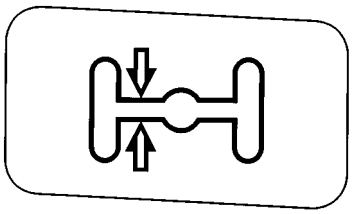


When the ignition switch is turned on, this lamp should come on. After the engine has started up, the SAS warning lamp should go out. Then, the SAS may be deemed operating normally. Should an SAS feature be abnormal, the buzzer will sound, thereby informing the operator of the abnormality.
If this warning lamp falls in any of the cases referred to below, the system may be deemed abnormal. Then, receive an inspection by a BT dealer.

- The SAS warning lamp does not come on even if the ignition switch is turned on.
- The SAS warning lamp may blink while the vehicle is running.

CAUTION!

Do not use the vehicle with the SAS left abnormal. If so, it may lead to a hazard. Once the warning lamp has begun to blink, discontinue the operation in progress and park the vehicle at a safe location. Then, ask a BT dealer for an inspection.



Swing lock indicator lamp

(SAS models)

When the ignition switch is turned on, this lamp should come on. After the engine has started up, the SAS warning lamp should go out. Then, the SAS swing lock cylinder may be deemed operating normally. This tells the operator that the vehicle is supported with four front and rear wheels, with swing lock cylinder locked by the SAS feature.
This lamp will go out when the swing lock cylinder is unlocked.

Speed control warning lamp

(Option)

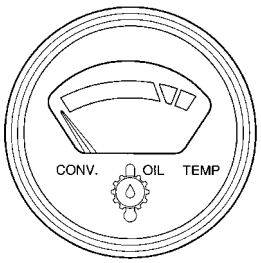
This lamp will come on, thereby informing the operator that the speed controller is abnormal.

CAUTION!

Once the warning lamp has come on during the operation, discontinue the operation in progress and park the vehicle at a safe location. Then, ask a BT dealer for an inspection.

Torque converter oil temperature gauge

(Option)

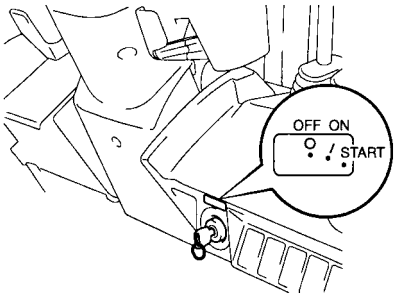


Indicates the torque converter oil temperature.

1. Operates when the ignition switch is on.
2. Indicates the green zone if the oil temperature is normal during operation.
3. If, during operation, the gauge indicates the red zone, please stop the operation, inspect the oil level, and add oil if insufficient. (See the torque converter oil inspection section for the methods for inspection and addition.)
4. If the gauge indicates the red zone white the torque converter oil level is proper, ask a BT dealer for inspection.

Switches and Levers

Ignition switch



The ignition key is inserted with the teeth facing upward.

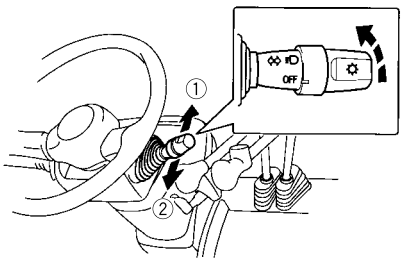
O[OFF] ...Engine stop position. Key insertion and withdrawal are performed in this position.
I [ON] ...Engine operation position. Located one position clockwise from O [OFF] position.
The intake heater is preheated before starting in the diesel model.

START ...Engine, start position. Located one position clockwise from the **I** [ON] position.
After engine start, release the key and it will return to the **I** [ON] position automatically.
In the torque converter model, the engine does not start unless the control lever is at the neutral position.

CAUTION!

- ***Do not leave the switch in the [ON] position when the engine is stopped. It may cause over-discharge of the battery.***
- ***Do not turn the switch to the START position while the engine is running.***
  This may damage the starter motor.
- ***For the sake of safety it is recommended to always start the engine of a vehicle with the transmission gear shift lever shifted in the neutral position.***
- ***Do not operate the starter motor for more than 30 seconds continuously. Return the switch to the [OFF] position and wait at least 30 seconds prior to attempting restart.***
- ***In case of the anti-restart ignition switch, be sure to shift the switch to the [OFF] position before attempt to start the engine again.***
- ***With the ignition switch OFF (engine killed), the fork will not move down even if the lift lever is so operated. Do not operate the lift lever before getting on the vehicle and starting up the engine. (key-off lift lock)***
- ***On an SAS model, throw its ignition switch to the ON position and the buzzer will sound. In 2 seconds, it will stop sounding.***

Integrated light and turn signal switch



1 Left turn
2 Right turn

This switch serves as both two-position light control and turn signal switch.

Light control switch

Irrespective of a key switch position, this switch allows you to turn on and off lighting.
This switch has two positions. With the switch at each position, the lamp comes on as shown below:

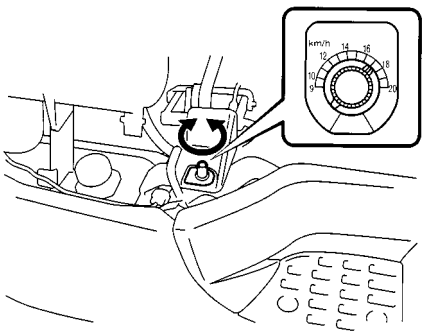
Lamp name	Step 1	Step 2
Head lamps	—	O
Side clearance lamps, tail lamps (Option)	O	O
Meter illumination lamp	O	O

CAUTION!

Do not keep lamps such as head lamps kept on for a long time when the engine is stopped.
It may cause overdischarge of the battery to make engine starting impossible.

Turn signal switch

Makes the turn signal lamps blink.



Left turn..... Push forward
Right turn..... Pull backward

The turn signal lever returns automatically to the original position after making a direction change.

Vehicular speed limiter

(Option)

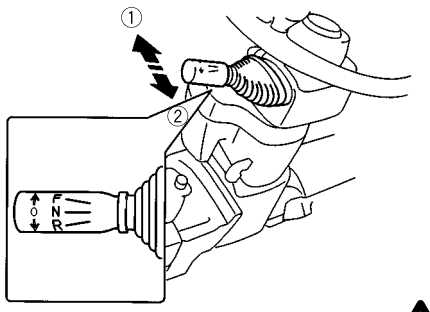
The highest vehicular speed may be set within a range of 9km/h to the maximum.

CAUTION!

Setting the highest vehicular speed beyond the range specified above will cause the speed controller warning lamp to come on for warning.

Control lever

(Torque converter models)



1 Forward
2 Reverse

Lever for shifting between forward and reverse.

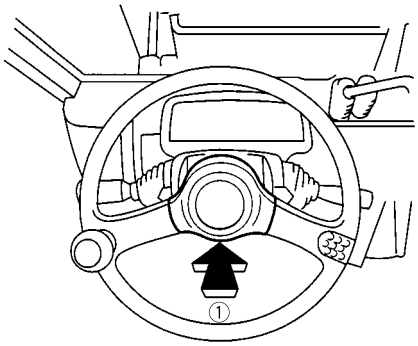
Forward..... Push forward
Reverse..... Pull backward

The neutral position is halfway between the forward and reverse position.

CAUTION!

The engine cannot be started unless the control lever is at the neutral position.
Stop the vehicle before shifting between forward and reverse.

Horn button

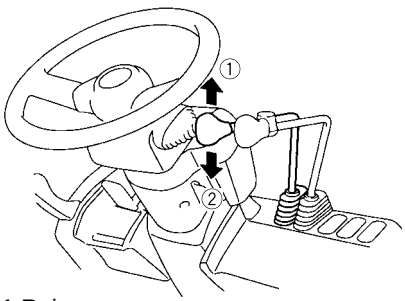


1 Push

- Press the button in the center of the steering wheel to sound the horn.
  The horn will sound even when the ignition switch off.

Lift lever

Raises and lowers the forks.



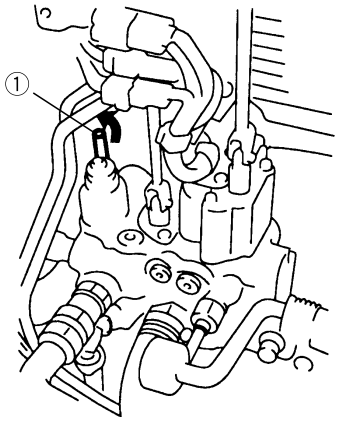
1 Raise
2 Lower

- **Raise**
  Pull backward
- **Lower**
  Push forward

The lifting speed can be adjusted by the degrees of accelerator pedal depression and lever operating stroke.

The lowering speed can be adjusted only by the degree of lever operating stroke.

Note: As long as the engine is killed, the fork does not move down even if so operated.



1 Manual move-down valve

Key-lift interlock

(SAS models)

As long as the engine has stopped, the vehicle is so designed that the lift will not move down even if so operated.

If the engine should fail to start up for any reason, the lift may be moved down by unfastening the manual move-down valve located on the top of the oil control valve.

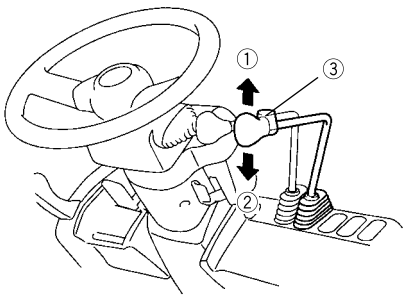
Note: Once the fork has been moved down with the manual move-down valve applied, do not fail to fasten the valve and recover its original condition.

Tilt lever

Tilts the mast forward and backward.

Forward..... Push forward
Backward..... Pull backward

The forward or backward tilting speed can be adjusted by the degrees of accelerator pedal depression and lever operating stroke.

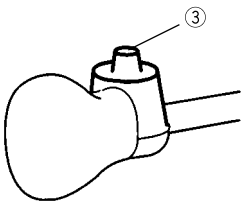


1 Forward tilting
2 Backward tilting
3 Tilt lever knob switch

Tilt lever knob switch

(SAS models)

With this switch pressed, change tilting from backward to forward and the fork will automatically stop at its horizontal position.
It is also possible to slow down the backward tilt speed at a low lift.

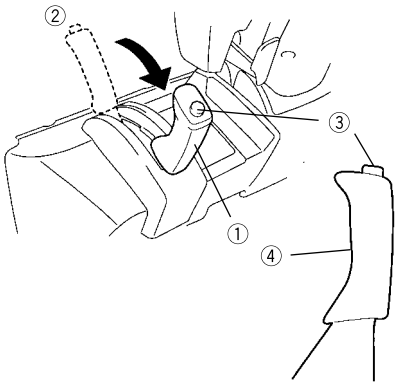


Automatic fork leveling control

With the fork positioned at the backward lift, use the lever to tilt the fork forward while pressing the tilt lever knob. Then, the mast can be automatically stopped, with the fork horizontally positioned. This feature will be conveniently usable to pull in and out the fork while stacking a load.

Motion upon change of tilt from backward to forward, with tilt lever knob switch pressed:

	Not loaded	Loaded
High lift	Fork stopped at its horizontal position (with mast vertically positioned)	Not tilting forward
Low lift	Fork stopped at its horizontal position (with mast vertically positioned)	



1 Lock
2 Release
3 Release Knob
4 Grip

Active mast rear tilt speed control

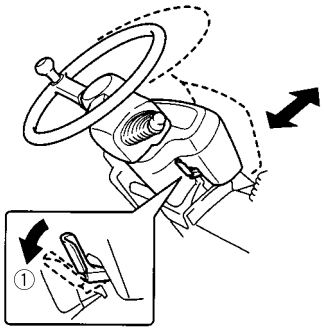
- Tilt the fork backward while pressing the tilt lever knob switch. As long as this switch remains pressed, the fork is slowed down while being tilted backward. Unless the switch is pressed, moreover, the backward tilting speed will be lower at a high lift.

Parking brake lever

When parking, grasp the grip of the lever and fully pull it toward you.
When releasing the brake push in the release knob check that the pawl moves away from the sector and then push back the lever.
While operation the parking brake lever, keep the brake pedal fully depressed.

WARNING!

• Never hold the lever at other than the grip because a finger may be pinched.
When releasing the parking brake by holding the lever for starting on a slope for example, hold the grip at above the protrusion.
• When parking on a slope, apply wheel chocks to the wheels.
• Traveling without releasing the brake will spoil the brake performance.



1 Lower

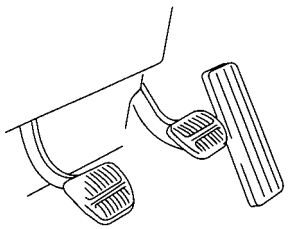
Tilt steering adjustment

1. The steering wheel position may be adjusted back and forth while the tilt steering adjust lever is kept lowered.
2. Raising the lever at the proper position fixes the steering wheel at that position.
3. After the adjustment, try to move the steering wheel back and forth to see that it is fixed.

CAUTION!

The steering wheel position must be adjusted before starting the vehicle.
Adjustment during traveling must be avoided.

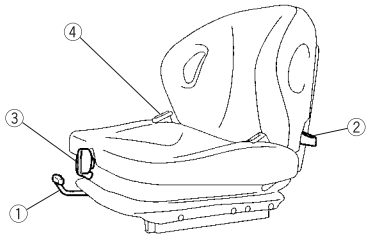
Pedals



From the right: accelerator pedal, brake pedal and inching pedal.

Note:
Accelerator pedal stays neutral even when control lever is shifted to forward-reverse, due to accelerator switch.
The vehicle will move only when accelerator pedal is depressed.

Body Components



Operator's seat

The operator's seat and seat belt are provided for your safety.

The seat can be moved back and forth for position adjustment while the adjust lever is pulled upward.

Suspension seat

The seat suspension mechanism provides a comfortable seating position according to the weight of the driver. The optimum driving position can be set using the knob and levers.

①Seat slide lever
Use this lever to adjust the seating position forward / backward.

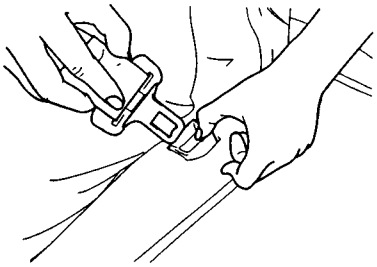
②Recliner adjust knob
Push the knob on the left to adjust the seat's angle of recline.

③Weight adjust knob
Turn the knob on the right of the seat clockwise to adjust for a heavier body weight.
Turn the knob counterclockwise to adjust for a lighter body weight. Adjustment can be made for body weights between 50 kg and 130 kg.

④ Seat belt

CAUTION!

After adjustment, lightly shake the seat forward and backward to confirm that the seat is firmly locked in position.



Seat belt

To fasten your seat belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle. Pull on the belt to make sure the buckle is securely latched.

The seat belt length automatically adjusts to your size.

Disconnecting method

- Push the release button and allow the belt to retract.

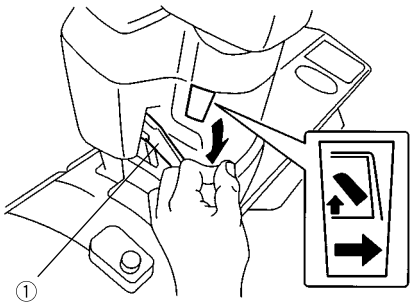
WARNING!

Buckle up. Your seat and seat belt can reduce the risk of serious injury or death in case of a truck tipover. You chances for avoiding serious injury or death in a tipover are better if you stay with the truck in the operator's compartment.

WARNING!

Always wear your seat belt when driving the truck. Trucks can be tipped over if operated improperly. To protect operators from the risk of serious injury or death in the event of a tipover, it is best to be held securely in the seat. The seat and seat belt will help to keep you safely within the truck and operator's compartment, in the event of a tipover, don't jump, grip the steering wheel, brace your feet, lean away from the direction of tipover, and stay with the truck.

Please always buckle up your seat belt when driving your truck.

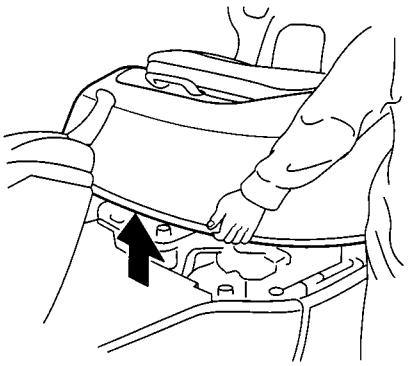


① Engine hood lock release lever

Engine hood

Opening

1. When the engine hood lock release lever on the lower left side of the parking brake lever is pulled backward, the steering column is tilted forward and the engine hood is unlocked.
2. Hold the engine hood using the clearance underneath, and raise it.
3. Fully open the engine hood and release it after checking sure locking of the hood stay.



① Push

Closing

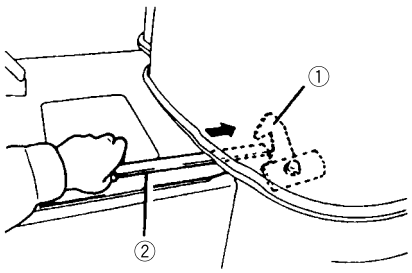
- Press the lock release button of the damper stay and close the engine hood. Holding the hood until it is locked to the position with a checking sound.
- Pull the steering wheel backward to return it to the original position.

CAUTION!

Operating the vehicle without firm locking of the engine hood is very dangerous. Be sure to check firm locking before operating the vehicle.

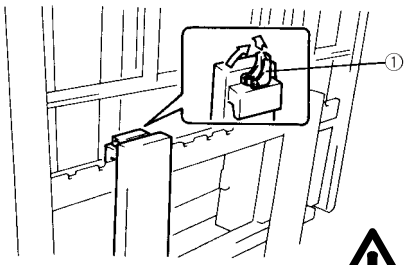
Opening in an emergency

If the engine hood lock release lever becomes inoperable to make it impossible to open the engine hood as described above, take the following procedure:



① Hook
②Plate

1. Lower the tilt steering adjust lever and tilt the steering column forward. (Refer to the illustration.)
2. Insert the plate into the gap between the engine hood and the toe-board. Push the hook and unlock.
3. Insert your hand to raise the engine hood.



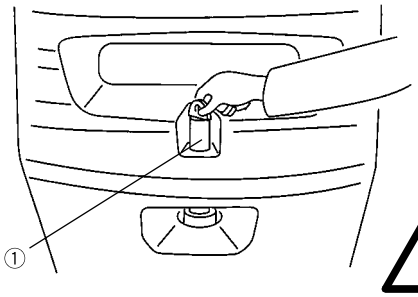
① Fork lever

Forks

- Lift each fork lever so that the forks can be shifted left and right. Adjust the forks in the position most appropriate for the load. When adjusting the forks, make sure that the center of gravity of the load corresponds to the center of the vehicle. After adjustment, return the lever to lock the forks in plate.

WARNING!

Make sure the forks are locked before carrying a load.



① Draw bar

Draw bar

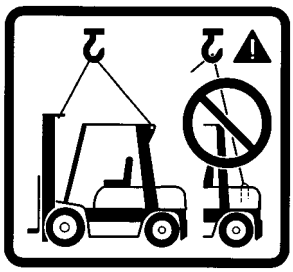
The draw bar is located at the back of the counterweight, and is used to pull the vehicle should its tires drop into a gutter or become stuck in mud.
It can also be used for loading the forklift onto a truck or another vehicle.

CAUTION!

The draw bar should not be used for towing the forklift or for towing another vehicle using the forklift.

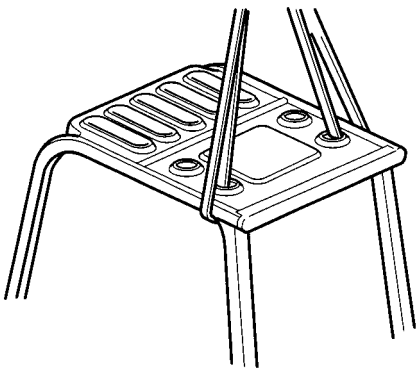
Vehicle hoisting method

When hoisting the vehicle, use the lifting holes near the top of the mast for the front side and the overhead guard for the rear position as shown in the illustration.



CAUTION!

• Use wire cable which is sufficiently strong.
• Never use the holes on the upper side of the counterweight to hoist the vehicle.



Handling the BT DPF-II System (Option)

The BT DPF System is a device which traps the minute particles of black smoke in diesel engine exhaust gas with a DPF (diesel particulate filter) and carries out correct maintenance (combustion and elimination) by microcomputer control depending on the trapped amount.

CAUTION!

• Do not proceed to a long-hours' continuous operation before regenerating the DPF.

• When the yellow trapping indicator lamp on the display is on, carry out maintenance soon.

• Once the "Green/Yellow" lamp has begun to blink on the trapping indicator display, with the alarm buzzer sounding, carry out a regeneration treatment immediately.

• Do not turn off the power during maintenance except in an emergency.

• If the display's alarm lamp goes on and the alarm buzzer rings to an abnormality during maintenance, have the device inspected by your BT dealer.

• Do not allow water to get into the DPF System when your vehicle is being washed.

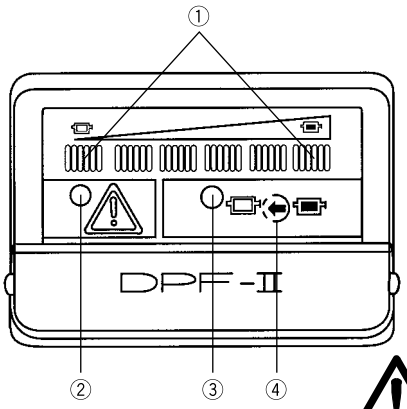
• The DPF System uses a high voltage (single phase AC200~240V), so be careful of electric shocks.

• The DPF System reaches high temperatures during operation so do not place objects that can easily catch fire, such as paper, etc., around it during maintenance.

• Use automobile light oil. If you use a crude fuel such as heavy oil, a pale smoke will be emitted and the running time and life span of the DPF System might be adversely affected.

• An engine that consumes a lot of engine oil will have an adverse affect on the DPF System, so have it serviced by your BT dealer.

• If white smoke (vapor, etc.) is emitted in some cases such as in acceleration just after starting the engine, there is nothing wrong with the engine system.



Display

(1) *Trapping indicator lamps*
According to a level of the trapped black smoke, the “Green” lamps will incrementally come on one by one and then the “Yellow” will come on sequentially.

(2) *Alarm indicator lamp*
This lamp comes on and the buzzer rings simultaneously to warm you when the amount of black smoke trapped exceeds the limit or when malfunction occurs in the DPF System.

CAUTION!
When the alarm indicator lamp comes on, request an inspection from your BT dealer.

(3) *Maintenance lamp:*
Indicate that DPF maintenance is underway.

(4) *Maintenance Switch:*
Starts maintenance.

Explanation of display

1. Turn on the ignition switch.

(1) All the display lamps come on, so check if any are off, and the buzzer rings.

(2) 1 second later, the display shows the amount of black smoke trapped.

2. Starting up the engine

CAUTION!
Do not start up the engine with the external power connector plugged in. If so, the buzzer will sound and the alarm indicator will blink.

DPF Trapping stage Breakdown			**Small**	**Large**	**Limit/Dangerous**
Trapping indicator lamps	Green 1-5	On	On	Flashing	Flashing
	Yellow		On	Flashing	Flashing
	Yellow			Flashing	Flashing
Alarm indicator lamp					On
Alarm buzzer		—	—	Intermittent “beep, beep,...”	Continuous “beep” (5 seconds)
Maintenance		Normal	Maintenance required	Maintenance required immediately	Replace DPF

3. During operation
   The amount of black smoke trapped is indicated by the trapping indicator lamp, the alarm indicator lamp and the buzzer, in that order.
4. If a malfunction occurs in the DPF System, the alarm indicator lamp comes on and the buzzer rings for 5 seconds.

CAUTION!

When the alarm indicator lamp comes on, stop operation and request an inspection from your BT dealer.

5. Operation completion
   Carry out DPF maintenance when a day's operation is over.

BT DPF-II System maintenance method (Option)

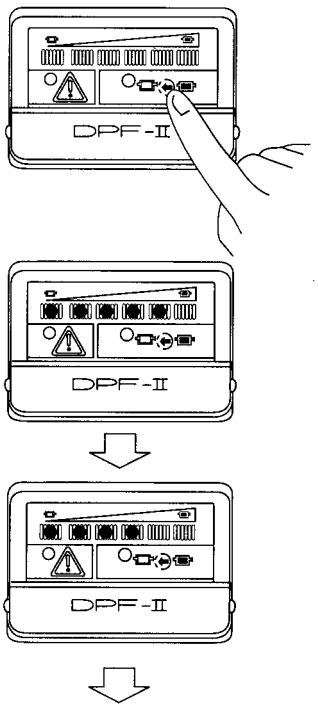
CAUTION ON MAINTENANCE!

• Use a single phase AC200~240V external power source, rated 10 A or more. Connect securely to a power source earth.
• Have any repairs to the external power supply plug done by an electrical specialist.
• Always fit an electromagnetic switch 'with earth leakage breaker) to the external current plug electrical source.
• Do not allow water into the DPF air cleaner when washing the vehicle, etc.
• When there is a power cutoff due to power failure etc., the system might sense a malfunction making the alarm indicator lamp come on. In this case, request an inspection from your BT dealer.
• Check that there are no objects that can easily catch fire around the DPF System before carrying out maintenance. Select a location for maintenance which is well ventilated (with a draught), away from the rain and not near any waste paper etc. that can easily catch fire.
• Do not handle the power plug with wet hands. A high voltage is used (single phase AC200~240V), so there is a danger of electric shock.
• Before starting DPF maintenance operation, make sure that a specified external power is supplied to the machine.
So long as the external power is not supplied, regeneration will fail to start, even if attempted.
• During maintenance operation, combustion smoke is emitted out of the tail pipe.

Maintenance operation procedure

1 Insert
2 Lock

1. Stop the vehicle, put the parking brake on and remove the engine switch.
2. Insert the plug into an external power supply connection socket and turn it in the locking direction.



3. Press the maintenance switch on the display the buzzer rings to start maintenance.

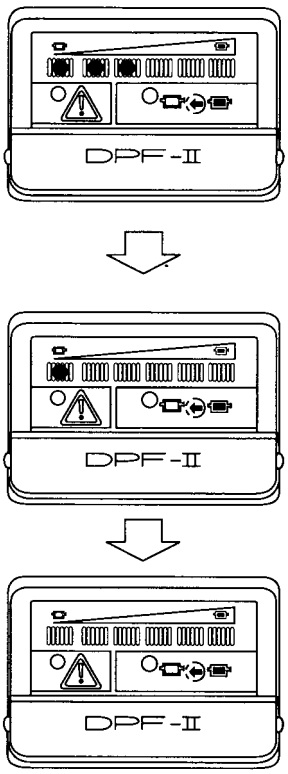
CAUTION!

• Remove your finger once the buzzer rings and the maintenance indicator lamp comes on. Pressing the switch for a long time stops maintenance operation procedure.
• With the engine switch ON, the power will not come on even if you press the maintenance switch.
• If the external power is supplied, with the engine switch ON, the buzzer will sound.
• Always use your fingertip to operate the switch panel on the display.
• If the maintenance indicator lamp should come on without the buzzer sounding, ask a BT dealer for an inspection.

4. When maintenance starts, the maintenance indicator lamp and the trapping indicator lamps (all six) come on.

Note:
The microcomputer (ECU) automatically carries out maintenance, so the operator does not have to attend to the vehicle.

5. The trapping indicator lamps go out in sequence from right to left (yellow / green) as maintenance proceeds (every 10 minutes).
6. Once maintenance is over, all the indicator lamps go out and maintenance automatically stops.



Note:
The time to complete maintenance is about 45 minutes, depending on the amount of trapping.

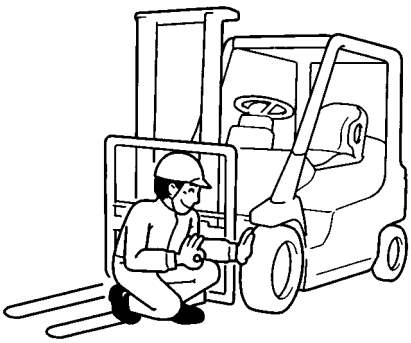
7. Be sure to remove the power plug.

1 Unlock
2 Remove

CAUTION!

Soot combustion interruption (Maintenance interruption). Plugging out the power cable during soot combustion will cause the buzzer to sound and the trapping indicator lamp will come on after one minute. In such a case, plug in the power cable immediately when the buzzer sounds. When interrupting soot combustion in progress is unavoidable, press the maintenance switch for about 5 seconds until the buzzer sounds. Then, the left green lamp and the maintenance lamp will come on. After about three minutes, when all the indicator lamps are off, the engine can be activated again. Plug out the power cable after the maintenance lamp is off. Do not interrupt soot combustion unless unavoidable as next soot combustion will be required earlier due to combustion remains.

Pre-Operation Check



Pre-operation check

Pre-operation checks and weekly inspections are the responsibility of the BT industrial vehicle user.

Be sure to perform a pre-operation check before beginning work to ensure safety.

Item	Inspection
Previously detected malfunctions	Correct
Exterior	Vehicle body, oil leakage, water leakage, loose parts, exterior damage
Wheels	Tire pressure, wear or damage, rims hub nuts
Lamps	Lamp condition, damaged lamps
Hydraulic oil	Oil level, contamination, consistency
Radiator	Coolant level, antifreeze requirement
Engine	Oil level, contamination, consistency, noise, exhaust
Clutch	Engagement, pedal, play
Brake pedal	Pedal play, braking effect
Brake fluid	Fluid level
Parking brake	Operating force, braking effect
Steering wheel	Looseness, play, vibration, veering
Horn	Sound
Instruments	Functioning
Load handling system	Parts, oil leakage, cracking, looseness Make certain that the SAS is functioning
Fuel	Amount

Walk around inspection

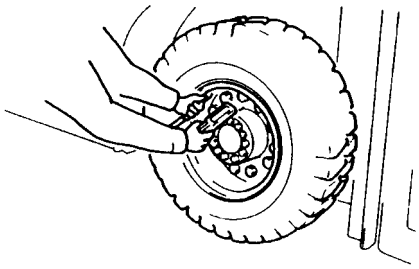
Vehicle uprightness

Does the vehicle lean to one side or the other?
If so, check for a tire puncture or a problem with the undercarriage.

Beneath the vehicle

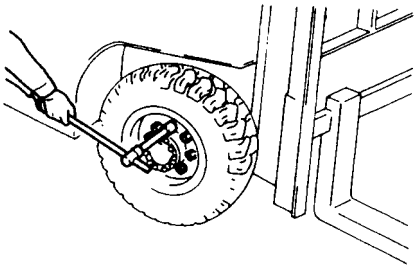
- Check for any oil or water leakage on the ground or floor where the vehicle was parked.
- Check for loose parts or damage. If any unusual condition is found, have the vehicle inspected at a BT dealer.

Tire inspection



Tire inflation pressure

1. Use a tire pressure gauge and measure the inflation pressure. Adjust it to the proper level.
   - See the service data section for the proper inflation pressure.
   - Do not raise the pressure beyond the proper level.
2. After the adjustment, check if air is not leaking from the valve.

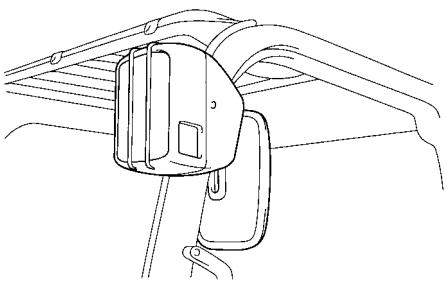


Damage, crack and wear of tires and rims

- Check the tires for damage and wear, and the rims for bending. If the tires are damaged, or there is a marked difference in the wearing of tires between the front and rear or between the left and right is perceived, or bent rims are found, ask a BT dealer for inspection.

Hub nut inspection

- Check the tightness of the hub nuts.
- Avoid uneven torque and tighten all of the nuts uniformly. Refer to service data for proper torque.

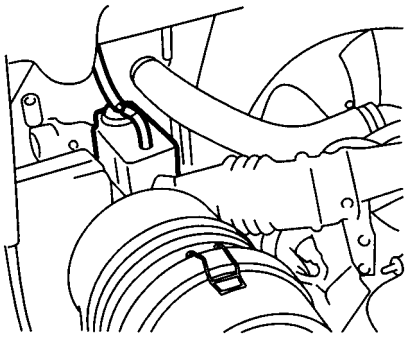


Lamp inspection (Rear view mirror and turn signal lamp)

Are the filaments intact? Is there any lens damage?

- Always keep the lenses clean to insure proper forward vision.

Engine compartment inspection



Engine coolant level check and supply

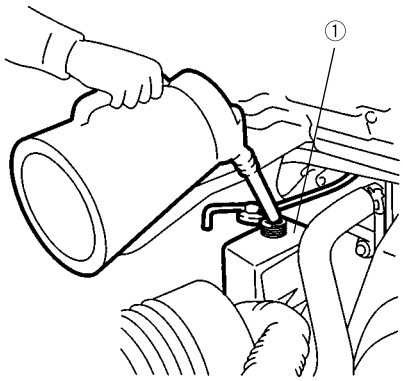
Level check and supply of engine coolant shall be performed while the coolant is cool.

1. With the engine off, open the engine hood and check the engine coolant level in the reservoir tank.

Note:
The reservoir tank equipped to the radiator automatically supplies the engine coolant when the coolant quantity in the radiator becomes insufficient.

2. The coolant level is proper if it is between the upper and lower limits. If the level is below the lower limit, supply coolant to the upper limit.
3. The concentration of the long life coolant (LLC) in the engine coolant must be 50%.

Note:
If no engine coolant remains in the reservoir tank, be sure to check the coolant level in the radiator, too.

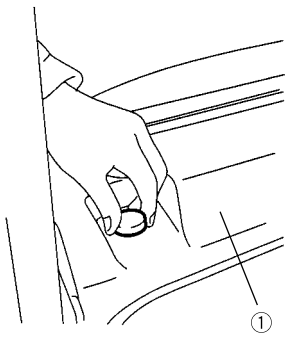


1 Reservoir tank

Checking the engine coolant level in radiator

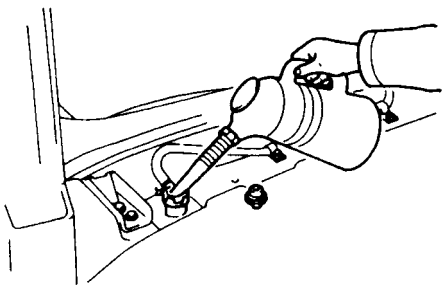
1. Remove the radiator cover.
2. Remove the cap and check the coolant level from the filler port.
3. If the engine coolant is not visible through the filler port, fill appropriately diluted coolant (LLC) to the port.

Note:
To close and tighten the radiator cap, match the pawl on the reverse side of the cap with the notch on the filler port and turn the cap fully clockwise while applying a downward force.

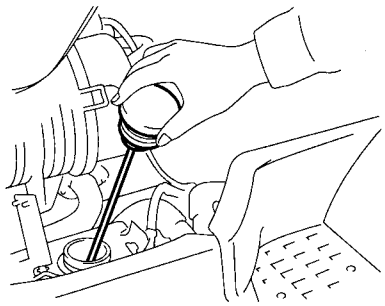


1 Radiator cover

WARNING!
When the engine is hot, it is very dangerous to remove the cap. Coolant level check must always be performed when the engine is cold.



Checking hydraulic oil level



Always stop the engine and lower the fork to the ground before checking the level of the hydraulic oil, while the vehicle is on level ground.

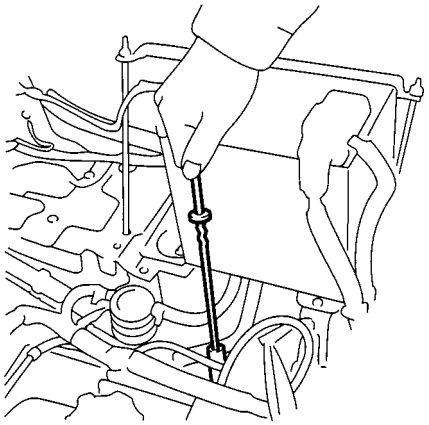
1. Open the engine hood and remove the oil cap.
2. Wipe the level gauge attached to the oil cap with clean cloth, and insert it again into the tank.

Note:
For checking the oil level, insert the oil cap completely.

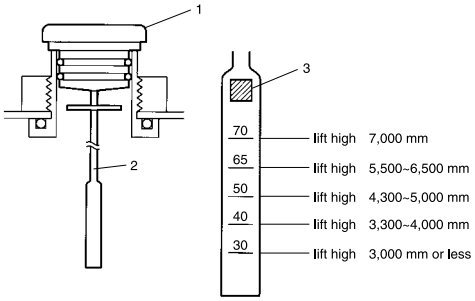
3. Extract the level gauge gently and check if the oil adhesion is up to the level line.

Note:
The full mark on the level gauge and the capacity vary with the model. Measure at the full mark on the side with the tonnage indication.
With the 2Z engine vehicles, the tonnage indication is on the “Z” side.
With vehicles other than the 2Z engine models, use 1, 2 or 3 tonnage indication.

4. If the oil level is insufficient, add oil. Spilled and splashed oil must be wiped off thoroughly.
   Adjust the oil level so that it will fall within a range of 0 thru +10mm from the lift-high mark on the gauge as illustrated on the left side.



Gauge Identifier	Applicable Model
1	GT 15, GT 18 series
2	GT 20, GT 25 series (except 2Z-engined vehicle)
Z (back 2)	DT 20, DT 25 series (2Z-engined vehicle)
3 and J35	GT 30 and GT 35 series (except for 2Z-engined vehicle)
Z (back 3 and J35)	DT 30 and DT 35 series (2Z-engined vehicles)



1. Oil cap
2. Level gauge
3. Gauge identifier

Engine oil inspection

1. Park the vehicle on a flat ground. If the vehicle is inclined, the indicated level may be incorrect.
2. The oil level must be checked before starting the engine or at least 3 minutes after the engine is stopped.
3. Extract the oil level gauge and wipe it with clean cloth. Insert it again and check if the oil level is between the F and L levels.
4. If the oil level is below the L line, add oil to the F line.

Adding engine oil

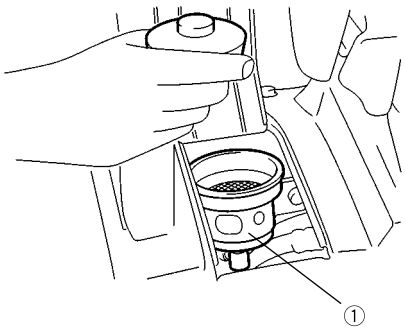
1. To supply oil, remove the filler cap and pour oil through the filler port. Never let the oil level exceed the F line.
2. The oil to be supplied must be appropriate for the season.
   SAE 40 Ambient temperature
   higher than 30°C (86°F)
3. SAE 30 Ambient temperature
   0°C to 30°C (32°F-86°F)
4. SAE 20 Ambient temperature
   -10°C to 0°C (14°F-32°F)

CAUTION!

Always use the same brand of oil if possible.

Leakage inspection

- Check the engine compartment for any oil or fuel leakage. Clean the radiator if it is clogged and check if there are any foreign objects, such as paper or other, onto the radiator grill.



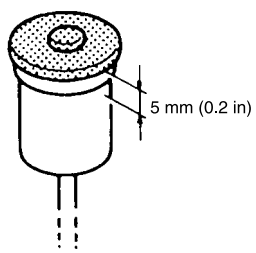
1 Reservoir tank

On board vehicle inspection

Brake fluid inspection

With the engine off, check the level of the brake fluid in the reservoir tank. The level should be within the range shown in the figure.

If the level is below the lower limit, add brake fluid up to the proper level. If the decrease in brake fluid is excessive, the brake system may be leaky. Ask a BT dealer for inspection as early as possible.



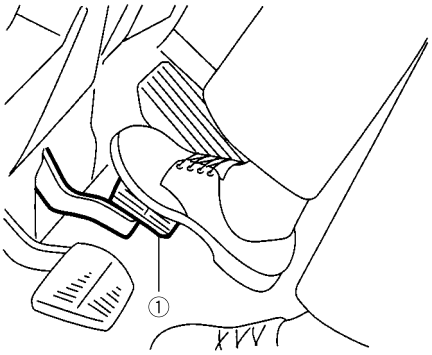
WARNING!

• Never use any oil other than brake fluid.

• Do not allow dirt to get into the reservoir tank. Even a small amount of dirt in the brake fluid can prevent proper braking. This is extremely dangerous.

• Check the small vent hole in the reservoir tank cap frequently to make sure that it is not clogged with dirt.

Brake pedal inspection

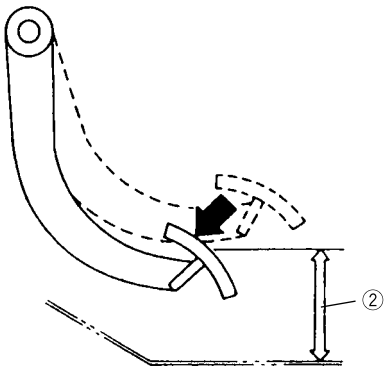


1. Depress the brake pedal fully, and check the floor clearance (clearance between the pedal and floor).

Note:
See the service data section for the floor clearance.

2. Make sure that the pedal does not go any further when it is kept depressed.
3. Also check that no abnormality is observed with pedal depression and return.
4. Manually depress the brake pedal to check the play until a resistance is felt.

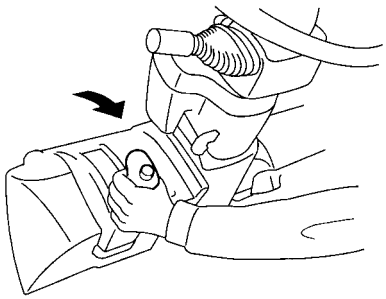
Note:
See the service data section for the value of brake pedal play.



1 Brake pedal
2 Brake pedal floor clearance

WARNING!
Ask a BT dealer for inspection if the play is excessive, pedal movement is abnormal or brake performance is improper.

Parking brake inspection



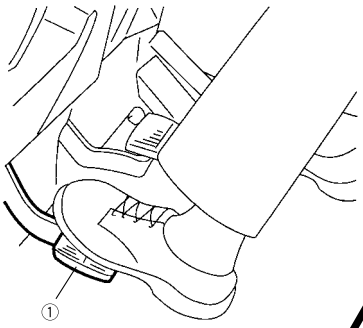
1. Check the operating force required for pulling the parking lever fully.

Note:
See the service data section for the operating force.

WARNING!
Ask a BT dealer for inspection if any abnormality is found.

Inching and brake pedal

(Torque converter models)



1 Inching and brake pedal

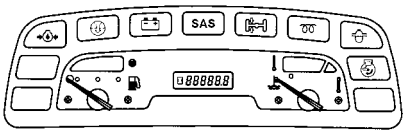
1. Manually depress the inching and brake pedal to check the play until a resistance is felt.

Note:
See the service data section for the value of inching and brake pedal play.

2. Depress the inching and brake pedal and check that there is no destruction or abnormal resistance.

CAUTION!
Ask a BT dealer for inspection when any abnormality is found.

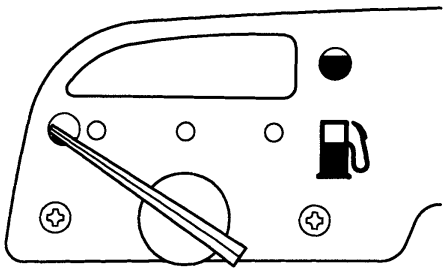
Instrument inspection



- Start the engine and see that they operate properly.

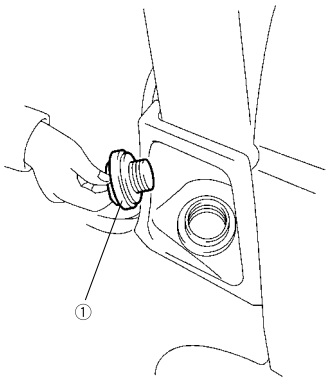
Fuel level check and supply

1. Observe the fuel meter to see if the fuel is sufficient.



Note:
After the end of daily operation, fill the tank with fuel to prevent the moisture in the air in the tank from mixing into the fuel.

2. When supplying fuel, stop the engine, remove the fuel tank cap by turning it counterclockwise, and pour fuel through the fuel filler neck.
3. After fueling, be sure to tighten the fuel tank cap.



1 Fuel tank

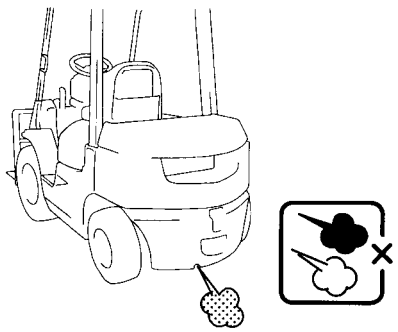
CAUTION!

• Always stop the engine and keep any fire source away before and during the fueling operation.
• Carefully prevent entrance of water and dirt into the tank during fueling.

Engine inspection

- Start the engine and warm it up sufficiently.

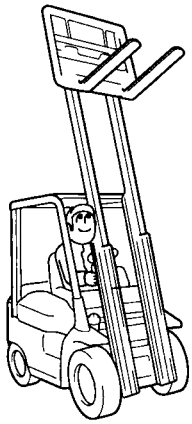
1. Check each meter and warning lamp to see there is no abnormality.
2. Check if the engine is generating abnormal sound or vibration.
3. Check the exhaust gas color to see it is normal.
   Colorless or light blue exhaust indicates complete combustion; black exhaust, incomplete combustion; and white exhaust, burning oil as a result of oil getting into the cylinders.



WARNING!

• The exhaust gas is harmful. If you must start the engine inside a building or enclosure, insure sufficient ventilation.
• The gasoline engine carburetor is equipped with the automatic choke that keeps the engine running at a relatively high speed a while. Do not be bothered, however, becomes the engine resumes a normal speed upon warming enough.

Load handling system



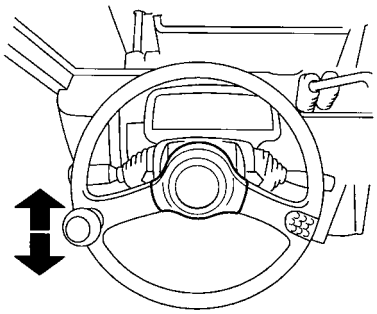
1. Check the fork installation state, for cracks and bending.
2. Check for mast distortion, chain tension and oil leakage from cylinders and piping.
3. Operate the lift and tilt levers to check their operating state. If anything unusual is found, have the vehicle inspected at a BT dealer.

Steering wheel inspection

Note:
Perform the inspection after starting the engine.

1. Check the steering wheel play with the rear wheel set in the straight traveling direction.

Note:
See the service data section for the standard play of steering wheel.



2. Turn the steering wheel in the circumferential direction and also move it up and down to check there is no looseness.
3. Push the horn button to check if the horn sounds normally.
4. If any abnormality is found, ask a BT dealer for inspection.

While moving slowly

Clutch disengagement and slipping

(Torque converter models)

- Press the inching pedal and check clutch engagement while moving.

CAUTION!
Insure that the control lever operates properly in each gear and then make above checks while moving slowly.

Brake effectiveness

- Inspect to see if there is anything unusual when the brake pedal is pressed or if the brakes only work on the side.
- Pull the parking brake and insure that the vehicle can be stopped and that a parked condition can be maintained.

CAUTION!
If anything feels even slightly unusual, stop vehicle operation immediately and have the vehicle inspected at a BT dealer.

Steering inspection

While moving the vehicle slowly in a safe location, turn the steering wheel to the left and right and check for any unusual movement.

Inspecting SAS system

- Check the SAS system to make certain that it is functioning properly.

1. Check and make certain that the buzzer will sound after throwing the ignition switch to the ON position, and that the buzzer will stop sounding in 2 seconds.
2. Check the mast to make certain that it can be properly tilted either forward or backward and moved up. Besides, make certain that the mast can automatically stop at its horizontal position.

CAUTION!

If you should feel something abnormal even slightly, or when the SAS warning lamp comes to blink, or once an error code has appeared on the hour-meter display, immediately stop operating the vehicle and receive an inspection by a BT dealer.

Before Garaging the Vehicle

- Remove dirt from all vehicle components and then perform the following.

1. Inspect for oil or water leakage.
2. Inspect each component for warping, scratches, dents or cracks.
3. Clean the air filter element and lubricate parts as required.
4. Raise the forks all the way up and down to lubricate the inside of the lift cylinder.

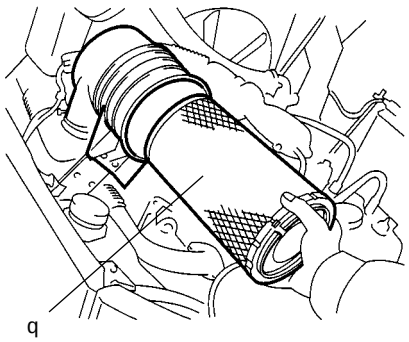
CAUTION!

Even a small malfunction can cause a serious accident. Do not operate the vehicle until repairs have been completed. If you sensed anything unusual during operation, notify the supervisor.

Weekly Maintenance

- Inspect the items below in addition to the pre-operation items. Have necessary adjustments or replacements performed at a BT dealer.
  Please inspect the vehicles thoroughly to insure safety and pleasant working conditions.

Weekly (40-hour) Inspection Items
Air cleaner - clean
Fan belt - inspect
Torque converter oil level - check
Battery electrolyte level - check
Bolts and nuts - retighten
Mast and steering linkage - grease
Chain Lubrication - engine oil



q Element

Air cleaner cleaning

The element can be taken out after removing the three catches fixing the element.

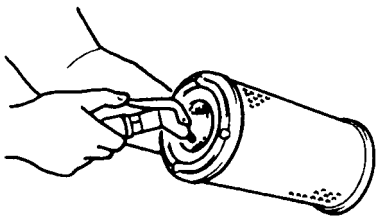
Element cleaning

1. Tap the element filter paper lightly without causing any damage or blow dust off with compressed air (7 kg/cm2 or less) from inside.
2. After element cleaning, remove any dust in the evacuator valve.

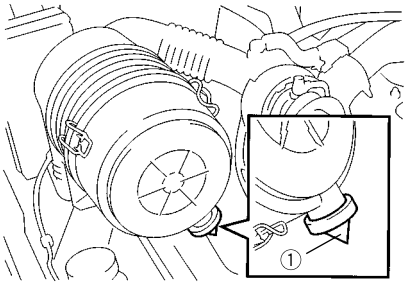
Note:

1. Always replace the element if the filter paper is torn or damaged.
2. Wash the element if heavily contaminated.

How to wash the element



1. Soak the element in water containing neutral detergent for approximately 30 minutes and then wash. Use care not to scratch the filter paper.
2. After washing, rinse the element with clean water (water pressure less than 2.8 kg/cm2).
3. Allow to dry naturally or use a dryer (cold air). Never use compressed air or flame.



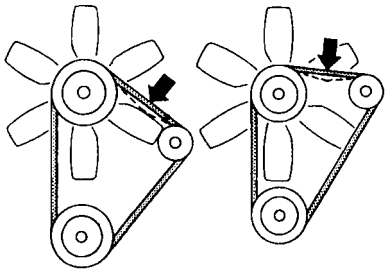
1 Evecuator valve

Note:

1. The element should be replaced after washing six times or after it is used for one year.
2. It is unnecessary to clean the inside element when cleaning the double cyclone air cleaner (Option).
   Only clean the outside element.
   It is essential to replace both outside and inside elements, in time of replacement.

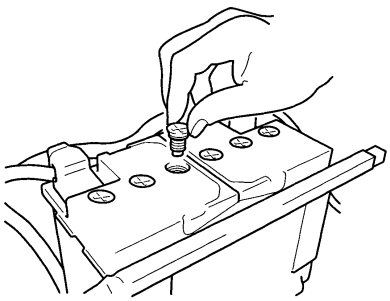
Fan belt inspection

- Inspect the fan belt for cracks, fraying and tension.
  If any abnormalities are found, have the belt replaced or adjusted at a BT dealer.
  Refer to service data for tension.



4Y Engine 1DZ-II, 2Z Engine

Battery electrolyte check

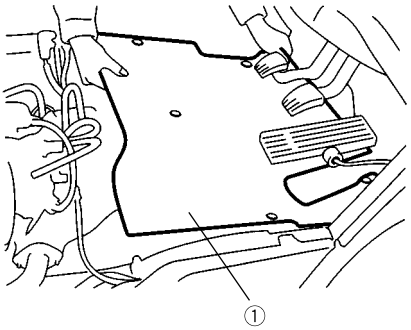


1. The battery electrolyte should be between the upper and lower levels (10 to 15 mm from the top of the plates).
2. If the electrolyte level is below the lower level, remove the cap and add distilled water to the upper level through the water inlet port.

CAUTION!

Be sure to use distilled water for battery electrolyte. Also, wear protective glasses when working on the battery.

Torque converter oil inspection

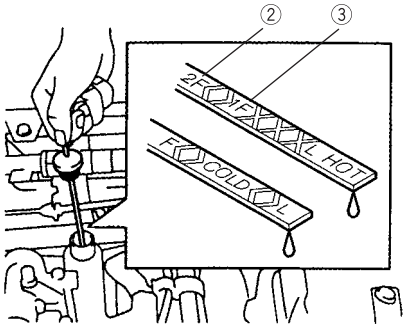


1. Perform oil check while the vehicle is on level ground with the control lever in the neutral position and the engine idling.

CAUTION!

Inspect with the parking brake lever is pulled and the forks are lowered to the ground.

2. Open the engine hood and remove the toe-board.
3. Extract the level gauge and wipe it with clean cloth.
4. Insert the level gauge back to the hole from which it is removed, and extract it again to check if the oil level is between the F and L lines on the level gauge.



1 Toe board
2 Position “2F” with torque converter at the 2nd speed
3 Position “1F” with the torque converter at the 1st speed

Note:
Check oil against COLD when it is not warm (if desire so before start operating the vehicle); check oil against HOT when it remains warm (if desire so after start operating).

5. If the level is near or below the L line, add oil to the F line.

Retightening of bolts and nuts

Retighten each bolt and nut on the chassis and load handling system.

Greasing mast and steering linkage

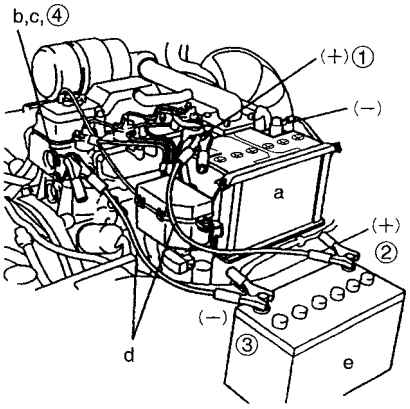
Grease in accordance with the lubrication table.

CAUTION!

Clean the grease fitting tips thoroughly prior to greasing. After greasing, wipe off excess grease.

When the battery is dead

When a booster cable is available, it is possible to start the engine using the battery of another vehicle.



a. Dead-battery vehicle
b. Engine hanger
c. To frame
d. Booster cable
e. Rescue battery

1. Connect the booster cable following the sequence of the illustration.
   Make sure of (+) and (-) terminals of the cable when connecting.

CAUTION!

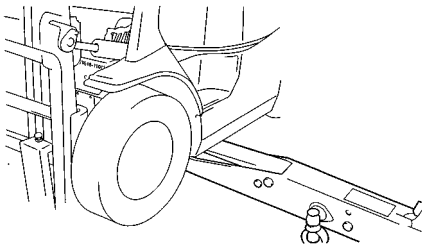
- ***Connection ①: The (+) terminal of dead battery.***
- ***Connection ④: Use a frame apart from the battery.***
- ***Do not directly connect batteries to avoid a danger of explosion (An inflammable gas generated from batteries may catch fire).***

Self Servicing

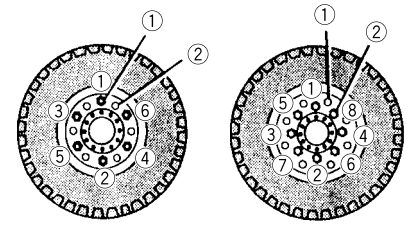
Changing tires

CAUTION!

• Use proper safety precautions when jacking the vehicle. Never get under the forks or frame.
• In the case of a wheel with a divided rim, do not loosen the rim bolts and nuts when loosening the hub nuts. When loosening the rim nuts or removing the rim bolts, be sure to completely remove the air before loosening.
• Refer to service data for hub nut tightening torque and tire air pressure.
• Tire air pressure is very high, so pay attention to rim deformation, cracks, etc. Never exceed proper air pressure.
• Do not replace any tire without turning on the ignition switch before jacking up the vehicle. Upon completion of the tire replacement, return the ignition switch to the OFF position (SAS models).



Front wheels

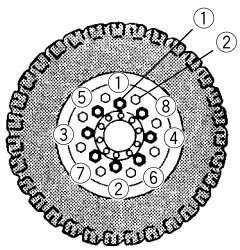


(1.5-1.75 ton models) (2-J3.5 ton models)

1 Hub nuts
2 Rim nuts
(Never loosen without removing the air)

1. Unload the vehicle and place it on level ground.
2. Set the parking brake and chock the wheels.
   Locate the jack-up point on the bottom surface of the frame in the rear of a front tire. Securely insert the jack there. Confirm that the jack is properly positioned.
3. Jack up to just prior to the wheels coming up off the ground and loosen the hub nuts.
4. Jack up until the wheels come off the ground.
   Completely remove the air pressure from the tire then remove the hub nuts and remove the wheel.
5. To reinstall the wheel after changing a tire, perform the steps for removing in reverse order.
   The hub nuts should be tightened evenly and in the sequence shown in the figure.
6. After replacing the wheel, check and adjust the tire air pressure.

Rear wheels



1 Hub nuts
2 Rim nuts
(Never loosen without removing the air)

1. Place the vehicle on level ground.
2. Set the parking brake and chock the wheels then insert the jack under the weight.

CAUTION!

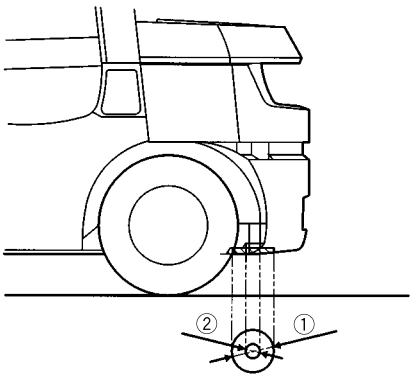
Never loosen the divided rim nuts. Should any of the nuts be found loose or otherwise abnormal, deflate the tires and then loosen the hub nuts to remove the tires.

Jack setting position

- Apply the jack to the jack point under the counter-weight.

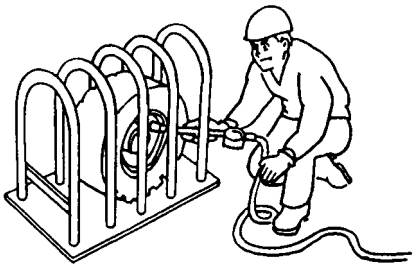
CAUTION!

Be sure to use a jack whose capacity is 5.0 ton or more.



1 Garage jack (unavailable in 1-ton models)
2 Pulsometric type jack

3. Jack up to just prior to the wheels coming up off the ground and loosen the hub nuts.
4. Jack up until the wheels come off the ground.
   Completely remove the air pressure from the tire then remove the hub nuts and remove the wheel.
5. To reinstall the wheel after changing a tire, perform the steps for removing in reverse order.
   The hub nuts should be tightened evenly and in the same sequence as for the front wheels.
6. After replacing the wheel, check and adjust the tire air pressure.



Adding antifreeze

If the vehicle is left in an area where the temperature is less than 0°C, the cooling water will freeze and may damage the radiator and/or cylinder block. In such cases, antifreeze coolant must be used.

When long-life coolant (LLC) is used, it must be changed once every two years.

Freezing temperature varies depending on the amount of antifreeze added.

Antifreeze mixture (%)				
Freeze protection temperature (°C)	-12	-15	-24	-35
Mixture (%)	25	30	40	50

CAUTION!

The antifreeze fluid is flammable, so be particularly careful to avoid flame.
Prior to adding antifreeze, inspect the radiator, water pump, piping and cylinder block for leaks.
The procedures for adding antifreeze are as follows.
1. Remove the radiator cap. Loosen the drain cock on the radiator and cylinder block and drain the cooling water.
2. Flush out the radiator and cylinder block by adding clean water through the radiator inlet.
3. After the water has drained out of the radiator and cylinder block, tighten the radiator and engine drain cocks.
4. Add the proper amount of antifreeze to the radiator inlet and fill up the remaining space with clean water.
5. When warm weather arrives and there is no longer any danger of freezing, drain the cooling water containing the antifreeze (except LLC, LLC is every 2 years in replacement). Flush out the radiator and engine block and fill with clean water.

1 Fuse box

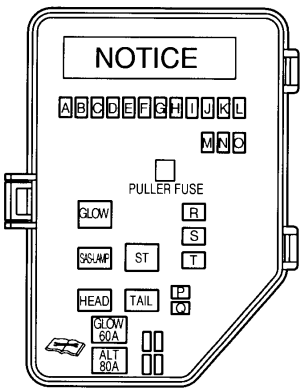
Fuse replacement

If a lamp does not come on or an electrical device does not function, the corresponding fuse may be blown.

Check the fuse for each device. The fuse box is located in the front left as seen from the opened engine hood.

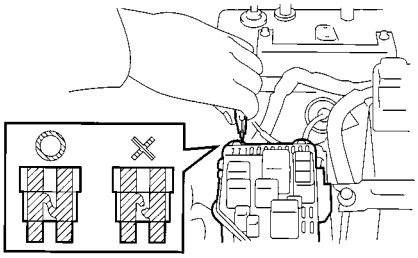
Note: See the table below for the device corresponding to each fuse.

Fuse assignment



A	15A	DPF1	K	7.5A	Horn
B	7.5A	DPF2	L	5A	ALT-S
C	7.5A	Starter	M	15A	Head
D	7.5A	Shift	N	7.5A	Charge
E	7.5A	SAS-ECU	O	7.5A	Tail
F	7.5A	Ignition	P	10A	Work-LP
G	7.5A	Turn	Q	7.5A	Stop
H	10A	Gauge	R	30A	HTR
I			S	40A	AMI
J			T	40A	Head

Including optional accessories



The fuse check and replacement procedures are as follows:

1. Set the ignition switch to the OFF position.
2. Remove the fuse box cover and take off the clip attached to the fuse box.
3. Apply the fuse clip to a fuse to remove the fuse.
4. The fuse is blown if its state is as shown at right in the left illustration. Replace it with a spare fuse.

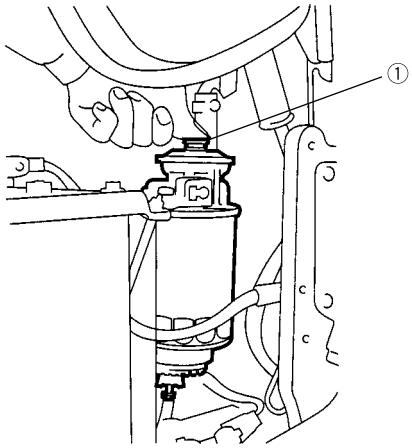
CAUTION!

• Use the fuse having the same capacity as that of the installed one.

• If the replaced fuse is blown again, ask a BT dealer for inspection.

• Ask a BT dealer to replace the GLOW or ALT fuse, if necessary.

Air purge of the fuel system



When fuel has been completely depleted or when maintenance has been performed on the fuel system, be sure to perform air purge in the following sequence.

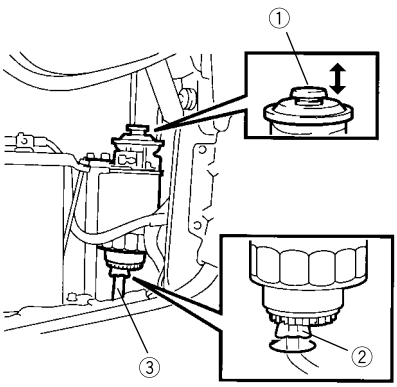
1. Open the engine hood.
2. Operate the priming pump up and down to perform air bleeding.

Draining the sedimenter

(Diesel engine models)

The sedimenter separates the water contained in the fuel. It is integrated with the fuel filter.

If the sedimenter warning lamp comes on, immediately drain water according to the following procedure because the accumulated water in the sedimenter is above the specified level:



1. Place a water receiving container under the open end of the drain hose under the fuel filter.
2. Turn around the drain cock a time or two to loose it and operate the priming pump up and down to drain the water in the sedimenter.
3. When light oil starts to flow out after the end of water draining, firmly tighten the drain cock.

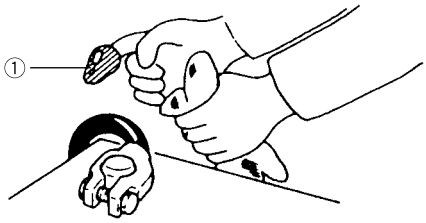
CAUTION!

Wipe the light oil cleanly from the adjacent area.

1 Priming pump
2 Drain plug
3 Drain hose

Maintaining the battery

Terminals



1 Grease

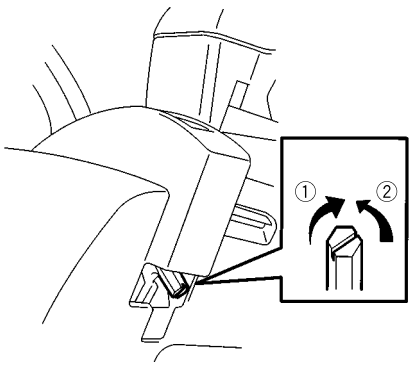
1. A loose or corroding terminal causes failure in connection: Eliminate white powder, if noticed on the terminal, by pouring warm water over it to disable and then grease the terminal.
2. Remove the terminal, if it is extremely corroded, from the battery to brush off the corrosion using a wire brush or sandpaper. Then connect the terminal tightly to the battery and grease the terminal.

Note: Remove the negative terminal (-) first, but replace the same, second.

CAUTION!

1. Stop the engine when attempt to work on the battery and terminals.
2. Be careful not permitting any foreign matter to come into the battery by means of putting the lids tightly in place.
3. Be careful not causing a short circuit on the battery nor nearing fire, such as smoking fire, because the battery-emitted gas is inflammable.
4. Be cautious enough not to contact the battery electrolyte. When it comes into contact with an eye or skin, wash it off immediately with plenty of water and then see a doctor.
5. Charge the battery with the lids off in a well-ventilated area.
6. When battery electrolyte is spilt, be certain to wash it off with water thoroughly the spot and adjoining area.

Adjustment of parking brake operating force



1 Hard
2 Soft
3 Knob

1. Attach a spring scale to the center of the grip of the parking brake lever and pull backward to measure the operating force.

Note: Please refer to Service Data for the desired range of force value.

2. Should the force value be short of or in excess of the desired range, then turn the knob to adjust accordingly.
   Be sure to unlock brake to release power when the adjustment is made.
   Turn clockwise to increase force.

Fuel Tank Check

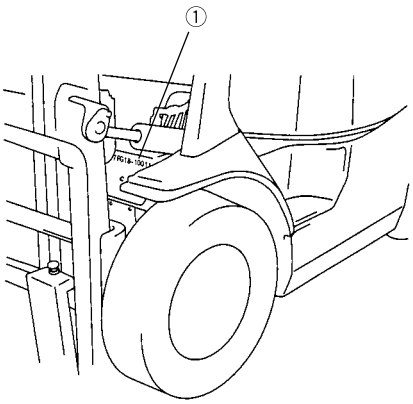
Check fuel tank, tank covering, fuel inlet, and drain plug against possible fuel leak. Follow the steps below.

1. Try to smell leak.
2. Look for leak.
3. Touch possible leak.

See the nearest BT dealer upon finding leak and have them repair tank immediately.

CAUTION!

Never perform do-it-yourself welding or other repair work for it might cause explosion or fire.



1 Frame serial number location

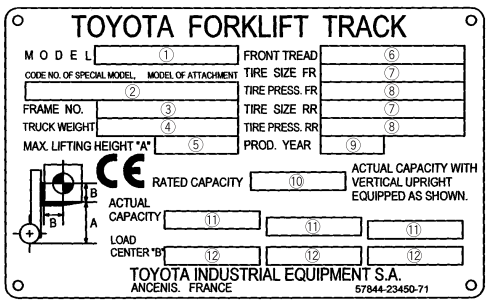
Frame Serial Number

Frame serial number location

The frame serial number is stamped on the front cross plate. Please refer to the frame serial number when making inquiries about your vehicle.

How to Read the Name Plate

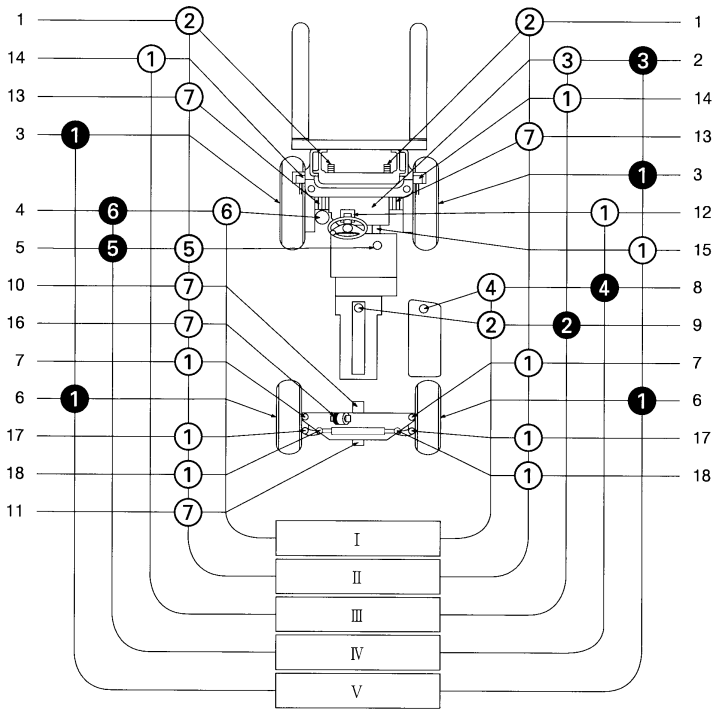
The load capacity is engraved on the name plate.
Make sure of the load center and capacity before starting the operation.



1. Vehicle type
2. Special vehicle type, Attachment type
3. Frame No.
4. Vehicle weight
5. Mast lifting height
6. Front tread
7. Tire size
8. Air pressure
9. The year of manufacture
10. Rated capacity
11. Actual capacity
12. Load center

Lubrication Chart

Torque converter models



1. Chain
2. Differential gear
3. Front wheel bearing
4. Brake master cylinder
5. Transmission case
6. Rear wheel bearing
7. Steering knuckle king pin
8. Oil tank
9. Engine crankshaft
10. Rear axle beam front pin
11. Rear axle beam rear pin
12. Tilt steering locking mechanism
13. Mast support bushing
14. Tilt cylinder front pin
15. Propeller shaft
16. Swing lock cylinder lower pin
17. Tie rod end pin
18. Rear axle cylinder end pin

I. Inspect every 8 hours (daily)
II. Inspect every 40 hours (weekly)
III. Inspect every 170 hours (monthly)
IV. Inspect every 1000 hours (6 monthly)
V. Inspect every 2000 hours (annually)

❍ Inspect and service
● Replace
① MP grease
② Engine oil
③ Hypoid gear oil
④ Hydraulic oil
⑤ Hypoid gear oil
⑥ Brake fluid
⑦ Molybdenum disulfide grease

Periodic Maintenance

Periodic inspection and maintenance are necessary to keep your BT industrial vehicle running smoothly. The designated number of hours in the inspection cycle are as follows:

Daily (pre-operation check)..... Every 8 hours

Weekly..... Every 40 hours

Monthly..... Every 170 hours

3-month..... Every 500 hours

6-month..... Every 1,000 hours

Annually..... Every 2,000 hours

If operation time exceeds 170 hours in a month use the number of hours as the guide for performing periodic inspection. Pre-operation checks and weekly inspections should preferably be performed by the user. Monthly, 3-month, 6-month and annual inspection should be performed by a BT dealer since high-level technology and special tools are required.

Refer to the periodic maintenance table to determine inspection and maintenance items and inspection cycles.

Use only genuine BT parts for replacement parts, and use the recommended types of lubricants.

Periodic Replacement Table

Replacement Period (Accumulated hours of operation or monthly periods of operation, whichever comes sooner)	**EVERY**		**1**	**3**	**6**	**12**	**Months**
	EVERY		**170**	**500**	**1000**	**2000**	**Hours**
Engine oil			●	←	←	←	
Engine oil filter			●*	●	←	←	
Cooling water (except LLC, LLC is every 2 years)				●	←	←	
Air cleaner element						●	
Fuel filter					●	←	
Torque converter oil					●	←	
Torque converter oil filter					●	←	
Manual transmission oil						●	
Differential gear oil						●	
Hydraulic oil					●	←	
Hydraulic oil filter			●*		●	←	
Wheel bearing grease						●	
Spark plugs					●	←	
Master cylinder, wheel cylinder cap and seals						●	
Brake fluid					●	←	
DPF inline filter (Option)					●	←	
Power steering hose	(Every 2 years)						
Power steering rubber parts	(Every 2 years)						
Hydraulic hose	(Every 2 years)						
Reserve tank hose	(Every 2 years)						
Fuel hose	(Every 2 years)						
Torque converter rubber hose	(Every 2 years)						
Chain	(Every 3 years)						
DPF muffler filter (Option)	(Every 3 years)						
DPF air cleaner (Option)	(Every 2 years)						
Swing lock cylinder (SAS models)	(Every 10,000 hours)						

* For new vehicles

Protect Your Investment with BT Genuine Parts

Why gamble with your valuable assets? When your forklift needs periodic maintenance - as every forklift does - you need BT Genuine Parts.

The same parts used on BT assembly lines - meeting the same tough BT standards for “PERFORMANCE”, “DURABILITY”, and “SAFETY”.

IF YOU USE A NON-GENUINE ENGINE OIL FILTER:
1. Clogging may result, which can lead to engine seizure.
2. The engine oil may become dirty faster, necessitating frequent oil changes.
3. It can pass dirty oil to the engine, causing engine wear.

BT GENUINE PARTS
Offer Excellent Dust-catching Performance on:

e.g. Air Element, Torque converter Oil Filter
Return Oil Filter, Engine Oil Filter
Fuel Filter

IF YOU USE A NON-GENUINE RADIATOR HOSE:
1. The hose may wear out extremely rapidly.
2. The hose may be susceptible to water leakage, necessitating frequent replacement.

BT GENUINE PARTS
Offer Supreme Durability on:

e.g. Clutch Disc
Radiator Hose
V Belt

IF YOU USE A NON-GENUINE BRAKE SHOE:
1. Braking performance may be excessive, insufficient, or erratic, which is dangerous.
2. The brakes may drag. wasting fuel or battery power.

BT GENUINE PARTS
Offer Added Safety on:

e.g. Lift Roller
Lift Chain
Tie-rod End
Brake Shoe

- **Call your BT authorized shop for after-sale service.**

With high quality BT genuine parts and superior service technology, BT help keep customers forklifts in the best condition for efficient work and higher productivity. We deliver satisfaction to the customers with BT genuine part.

Periodic Maintenance Table

Periodic maintenance
INSPECTION METHOD

I: Inspect and correct and replace as required **T:** Tighten
C: Clean **L:** Lubricate **M:** Measure and correct and adjust as required.

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
ENGINE **Basic components**						
1. Starting condition and unusual noise		I	←	←	←	
2. Rotating condition during idling		M	←	←	←	
3. Rotating condition during acceleration		M	←	←	←	
4. Exhaust condition		I	←	←	←	
5. Air cleaner element		C	←	←	←	
6. Valve clearance					M	
7. Compression					M	
8. Cylinder head bolt					T	
9. Muffler rubber mount					I	
Blow by gas reduction device						
10. Clogging and damage of PCV valve and piping		I	←	←	←	
Governor						
11. Maximum no-load stabilized ratation speed		M	←	←	←	
Lubrication system						
12. Oil leakage		I	←	←	←	
13. Oil level		I	←	←	←	
14. Clogging and fouling of oil filter		I	←	←	←	
Fuel system						
15. Fuel leakage		I	←	←	←	
16. Carburetor link mechanism operation		I	←	←	←	
17. Fouling and damage of fule filter element		I	←	←	←	
18. Injection timing				M	←	
19. Injection nozzle injection pressure and condition					M	
20. Draining of sedimenter				I	←	
Cooling system						
21. Radiator cooling water level and leakage		I	←	←	←	
22. Rubber hose deterioration		I	←	←	←	
23. Radiator cap condition		I	←	←	←	
24. Fan belt tension and damage		I	←	←	←	
25. Radiator rubber mount					I	

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
POWER TRANSMISSION SYSTEM **Differential**						
1. Oil leakage		I	←	←	←	
2. Oil level		I	←	←	←	
3. Loose bolts					T	
Torque converter and transmission						
4. Oil leakage		I	←	←	←	
5. Oil level		I	←	←	←	
6. Operating mechanism function and looseness		I	←	←	←	
7. Control valve and clutch function		I	←	←	←	
8. Inching valve function		I	←	←	←	
9. Stall test and oil pressure measurement				M	←	
Propeller schaft and axle schaft						
10. Loosening of joint			I	←	←	
11. Looseness at spline connection					I	
12. Looseness at universal joint					I	
13. Twisting and cracks of axle shaft					I	
RUNNING EQUIPMENT **Wheels**						
1. Tire air pressure		M	←	←	←	
2. Tire cuts, damage and uneven treads		I	←	←	←	
3. Loose rim and hub nuts		T	←	←	←	
4. Tread depth		M	←	←	←	
5. Metal fragments, stones or other foreign objects in tires		I	←	←	←	
6. Rim, side ring and disc wheel damage		I	←	←	←	
7. Front wheel bearing unusual noise and looseness		I	←	←	←	
8. Rear wheel bearing unusual noise and looseness		I	←	←	←	
Front axle						
9. Housing cracks and damage					I	
Rear axle						
10. Beam cracks, damage and deformation					I	
11. Axle beam forward and backward direction looseness		M*			M	
STEERING SYSTEM **Steering wheel**						
1. Play and looseness		I	←	←	←	
2. Operating condition		I	←	←	←	
Steering valve						
3. Oil leakage		I	←	←	←	
4. Mounting looseness		T	←	←	←	

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
Power steering						
5. Oil leakage		I	←	←	←	
6. Mounting and linkage looseness		I	←	←	←	
7. Power steering hose damage					I	
Knuckle						
8. King pin looseness		I	←	←	←	
9. Cracking and deformation					I	
BRAKING SYSTEM **Brake pedal**						
1. Play and reserve		M	←	←	←	
2. Braking effect		I	←	←	←	
Parking brake						
3. Operating force		I	←	←	←	
4. Braking effect		I	←	←	←	
5. Linkage and cable looseness and damage		I	←	←	←	
Brake pipe and hose						
6. Leakage, damage and mounting condition		I	←	←	←	
Brake oil						
7. Level		I	←	←	←	
Master cylinder or wheel cylinder						
8. Function, war, damage and mounting looseness					I	
Brake drum and brake shoe						
9. Clearance between drum and lining		M	←	←	←	
10. Shoe sliding portion and lining wear					I	
11. Drum wear and damage					I	
12. Shoe operating condition					I	
13. Anchor pin rusting					I	
14. Return spring wear, etc.					M	
15. Automatic adjusting function operation					I	
Backing plate						
16. Deformation cracking and damage					I	
17. Mounting looseness					T	
LOAD HANDLING SYSTEM **Forks**						
1. Fork and stopper pin condition		I	←	←	←	
2. Left and right fork uniformity		I	←	←	←	
3. Cracks in fork base and welded portion					I*[3]	

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
Mast and lift bracket						
4. Deformation, damage and cracks in welded portion		I	←	←	←	
5. Mast and lift bracket looseness		I	←	←	←	
6. Mast support bushing wear and damage					I	
7. Roller wear, damage and rotating condition		I	←	←	←	
8. Roller pin wear and damage					I	
9. Mast strip wear and damage		I	←	←	←	
Chain and chain wheel						
10. Chain tension, deformation and damage		I	←	←	←	
11. Chain lubrication		I	←	←	←	
12. Chain anchor bolt condition		I	←	←	←	
13. Chain wheel wear, damage and rotating condition		I	←	←	←	
Various attachments (Option)						
14. Abnormalities and mounting condition		I	←	←	←	
HYDRAULIC SYSTEM **Cylinder**						
1. Cylinder mounting looseness and damage		T	←	←	←	
2. Rod and rod screw and rod end deformation and damage		I	←	←	←	
3. Cylinder operation		I	←	←	←	
4. Natural drop and natural forward tilt		M	←	←	←	
5. Oil leakage and damage		I	←	←	←	
6. Pin and cylinder shaft support wear and damage		I	←	←	←	
7. Lifting speed		M	←	←	←	
8. Uneven movement		I	←	←	←	
Oil pump						
9. Oil leakage and unusual noise		I	←	←	←	
Hydraulic oil tank						
10. Oil level and contamination		I	←	←	←	
11. Tank and oil strainer				C	←	
12. Oil leakage		I	←	←	←	
Control lever						
13. Linkage looseness		I	←	←	←	
14. Operation		I	←	←	←	
Oil control valve						
15. Oil leakage		I	←	←	←	
16. Relief pressure measurement					M	
17. Relief valve and tilt lock valve function		I	←	←	←	

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
Oil pressure piping						
18. Oil leakage		I	←	←	←	
19. Deformation and damage		I	←	←	←	
20. Linkage looseness		T	←	←	←	
ELECTRICAL SYSTEM **Ignition system**						
1. Distributor cap cracking		I	←	←	←	
2. Spark plug burning and gap		I	←	←	←	
3. Distributor side terminal burning		I	←	←	←	
4. Distributor cap center piece wear and damage		I	←	←	←	
5. Plug cord internal disconnection					I	
6. Ignition timing				M	←	
Starter						
7. Pinion gear meshing		I	←	←	←	
Charger						
8. Charging effect		I	←	←	←	
Battery						
9. Battery electrolyte level		I	←	←	←	
10. Specific gravity				M	←	
Electrical wiring						
11. Wiring harness damage		I	←	←	←	
12. Fuses		I	←	←	←	
Preheater						
13. Glow plug heat coil breakage				I	←	
14. Open circuit in intake heater				I	←	
Engine stopping system						
15. Diesel engine key stop device function		I	←	←	←	
DPF (Option)						
16. Filter				I	←	
17. Inline filter (for back pressure sensor)			I	←	←	
SAFETY DEVICES, etc **Head guard**						
1. Welded portion cracking		I	←	←	←	
2. Deformation and damage		I	←	←	←	
Back rest						
3. Mounting looseness		T	←	←	←	
4. Deformation, cracking and damage		I	←	←	←	
Lighting system						
5. Operation and mounting condition		I	←	←	←	
Horn						
6. Operation and mounting condition		I	←	←	←	

Inspection Period (Accomplish based on operating hours or month, whichever is soonest)	**EVERY**	**1**	**3**	**6**	**12**	**Months**
	EVERY	**170**	**500**	**1000**	**2000**	**Hours**
Direction indicators (Option)						
7. Operation and mounting condition		I	←	←	←	
Instrument						
8. Operation		I	←	←	←	
Back-up buzzer (Option)						
9. Operation and mounting condition		I	←	←	←	
SAS (SAS model)						
10. Operation		I	←	←	←	
11. Looseness at and/or damage to sensor fittings		I	←	←	←	
12. Damage to, deformation of and/or oil leakage at functional parts and loosening mounting		I	←	←	←	
13. Looseness at and/or damage to wire harnesses		I	←	←	←	
14. Performance of lock cylinder and/or accumulator					I	
15. Rust and/or corrosion in load-handling sensor					I	
Seat						
16. Mounting looseness and damage		I	←	←	←	
17. Damage to and/or operation of seat belts		I	←	←	←	
Body						
18. Frame, cross member, etc. damage and cracking					I	
19. Bolt looseness					T	
Rear-view mirror (Option)						
20. Dirt, damage		I	←	←	←	
21. Rear reflection status		I	←	←	←	
Others						
22. Lubrication		L	←	←	←	

***** **For new vehicle**
***1** **Soap**
***2** **Leakage detector**
***3** **Fissure and crack detector**

Service Data

Adjustment value table

Item	Models			1.5~1.75 ton	2~2.5 ton		3 ton	J3.5 ton
Fan belt tension (10 kg (22lb.) pressure applied)	mm (in)				8**~13 (0.31~0.51)**			
Spark plug gap	mm (in)		4Y		0.7**~0.8 (0.028~0.031)**			
Spark plug type			4Y		W9EX-U			
Ignition timing (BTDC)	deg/rpm		4Y		7/750			
Ignition sequence			4Y		1-3-4-2			
Fuel injection timing (BTDC)	deg		1DZ-II•2Z		0 (Static)			
Fule injection sequence			1DZ-II•2Z		1-3-4-2			
Valve clearance (When warm)	mm (in)	IN.	4Y		0 (Self adjusting) 0.20 (0.008)			
			1DZ-II•2Z					
		EX.	4Y		0 (Self adjusting) 0.36 (0.014)			
			1DZ-II•2Z					
Idling speed	rpm		4Y		750^{+50-0}			
			1DZ-II•2Z		750±25			
No load maximum speed	rpm		4Y	2600±50	←		2800±50	←
			1DZ-II	2600±50	2800±50		2800±50	—
			2Z	—	2400±50		2400±50	2400±50
Engine compression	kPa/rpm (kg/cm^2/rpm) [psi/rpm]	Standard value	4Y		1226 (12.5) [178] / 250			
			1DZ-II		2850 (29.0) [412] / 260			
			2Z		3230 (33) [469] / 260			
		Limit	4Y		883 (9.0) [128] / 250			
			1DZ-II		1960 (20) [284] / 260			
			2Z		1960 (20) [284] / 260			
Tire air pressure	kg/cm^2 (psi)	Front wheels		700 (7.0) [100]	←		←	850 (8.5) [121]
		Rear wheels		800 (8.0) [114]	700 (7.0) [100]		775 (7.75) [110]	900 (9.0) [128]
Steering wheel play (When idling)	mm (in)				20**~50 (0.79~1.97)**			
Oil control valve set pressure	kPa (kg/cm^2) [psi]		Lift	17162 (175) [2490]	18142 (185) [2630]		←	←
			Tilt	11770 (120) [1710]	14710 (150) [2130]		←	15690 (160) [2280]
Brake pedal play	mm (in)				3**~7 (0.12~0.26)**			
Brake pedal floor clearance	mm (in)				90 (3.54) or more			
Inching and brake pedal play	mm (in)				3**~5 (0.12~0.20)**			
Parking brake operation force	N (kgf) [lbf]			147**~196 (15~20)** [33**~44**]	←		←	196**~**245 (20**~25)** [44**~55**]
Sound pressure level (LPA) in compliance with EN 12053	dB (A)		4Y	78	←		←	←
			1DZ-II•2Z	81	←		←	←
Sound power level (LWA) in compliance with EN 12053	dB (A)		4Y	93	←		←	←
			1DZ-II•2Z	97	←		←	←
Vibration in compliance with EN 13059	m/s^2			1.5	←		←	←

Item	Models					1.5~1.75 ton	2~2.5 ton		3 ton	J3.5 ton
Hub nut tightening torque	N·m (kgf-m) [ft-lbf]	Front wheels	Divided rim			108~**196** **(11~20)** [80~**145**]	176~**392** **(18~40)** [130~**289**]		—	—
			Side ring rim	Single		108~**196** **(11~20)** [80~**145**]	←		294~**588** **(30~60)** [217~**434**]	←
				Double	Inner	176~**392** **(18~40)** [130~**289**]	←		294~**588** **(30~60)** [217~**434**]	←
					Outer	176~**392** **(18~40)** [130~**289**]	←		294~**588** **(30~60)** [217~**434**]	←
		Rear wheels	Divided rim			88~**157** **(9~16)** [65~**116**]	118~**196** **(12~20)** [87~**145**]		—	—
			Side ring rim			88~**157** **(9~16)** [65~**116**]	176~**392** **(18~40)** [130~**289**]		118~**196** **(12~20)** [87~**145**]	←
Divided rim set bolt tightening torque	N·m (kgf-m) [ft-lbf]	Rear wheels				29~**44** **(3~4.5)** [22~**32**]	49~**69** **(5~7)** [36~**51**]		←	—
Battery electrolyte specific gravity 20° C	(°F)								1.28 (68)	

Lubricant capacities and types

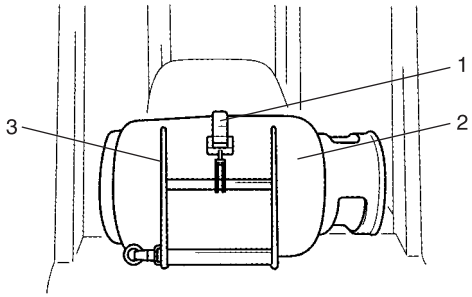
Item	Models			1.5~1.75 ton	2~2.5 ton		3 ton	J3.5 ton	Type
Engine oil	ℓ (US. gal)	Gasoline	4Y	4.0 (1.06)	←		←	←	API SH, SJ
		Diesel	1DZ-II	7.9 (2.09)	←		←	—	API CE, CF
			2Z	—	9.0 (2.38)		9.0 (2.38)	9.0 (2.38)	
Torque converter	ℓ (US. gal)			9.0 (2.38)	←		←	←	ATF GM Dexron II
Differential gear	ℓ (US. gal)			6.3 (1.66)	7.1 (1.87)		7.7 (2.03)	←	API GL 4 Hypoid gear oil
									API GL 5 Hypoid gear oil
Fuel tank	ℓ (US. gal)			45 (11.9)	65 (17.2)		65 (17.2)	←	
Wheel bearings, chassis, tilt steering and mast and grease fittings							Appropriate amount		MP Grease
Brake line	ℓ (US. gal)			0.2 (0.05)	←		←	←	SAE J-1703 DOT-3
Engine cooling system (excluding reserve tank)	ℓ (US. gal)	4Y		7.4 (1.95)	9.3 (2.46)		9.6 (2.51)	9.6 (2.51)	LLC
		1DZ-II		5.9 (1.56)	8.3 (2.19)		8.2 (2.16)	—	
		2Z		—	9.0 (2.37)		8.8 (2.32)	8.8 (2.32)	
Radiator reserve tank (at FULL mark level)	ℓ (US. gal)					0.6 (0.16)			
Hydraulic oil	ℓ (US. gal)	Gasoline	4Y	27 (7.1)	34 (9.0)		36 (9.5)	36 (9.5)	ISO VG 32
		Diesel	1DZ-II	27 (7.1)	34 (9.0)		36 (9.5)	—	
			2Z	—	39 (10.3)		41 (10.8)	41 (10.8)	

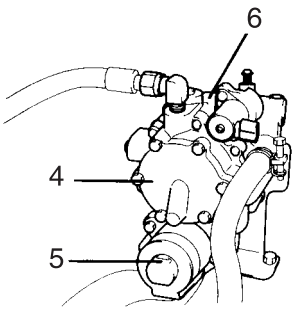
* L.L.C. = Long Life Coolant (Appropriately diluted with fresh water)
The hydraulic oil level pertains to the V-mast with a lift of 3,000mm.

LPG Device (Option)

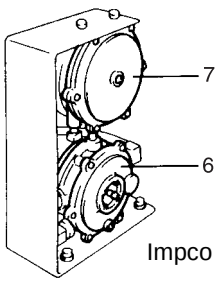
Names of LPG Device Components

1. Tank clamp
2. LPG tank
3. Tank bracket
4. Filter
5. Solenoid valve
6. Regulator
7. Filter & solenoid valve
8. LPG switch

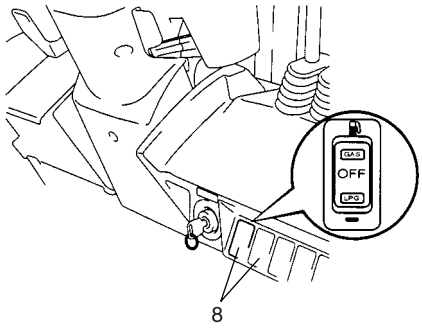




Aisan brand

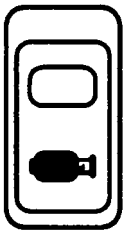


Impco brand



Switches

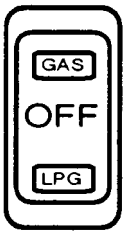
Fuel Switch



LPG switch (LPG models)

This is a switch to turn on and off the LPG fuel feeder.
With the engine switch ON, turn on the LPG fuel feeder and this lamp will come on. With the LPG fuel feeder OFF, the lamp gone out and no fuel is fed.

Fuel switch (gasoline/LPG models)



This is a switch to turn on and off the LPG or gasoline fuel feeder.

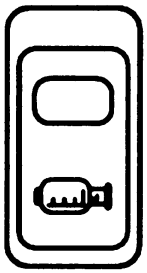
OFF.....horizontal position
Engine cannot be started up since no fuel is fed.

LPG.....low position
LPG fuel is fed while lamp comes on.

GAS.....upper position
Gasoline fuel is fed while lamp comes on.

Note: With the engine switch OFF, no fuel will be fed even if the fuel switch is positioned at LPG or GAS.

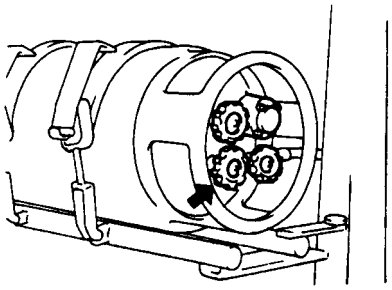
LPG low fuel warning light (France spec: OPT)



Once LPG has decreased to a certain level, this lamp will come on, thereby informing the operator.

Note: Once the lamp has come on, replenish the fuel.

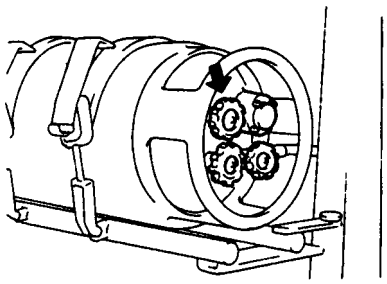
LPG Tank and Related Parts



Outflow Valve

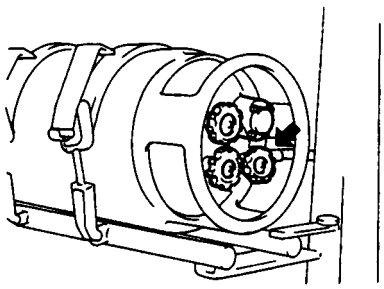
This valve controls the flow of LPG fuel from the LPG tank to the regulator.

To open the valve.....turn it counterclockwise.
To shut the valve.....turn it clockwise.



Inflow Valve

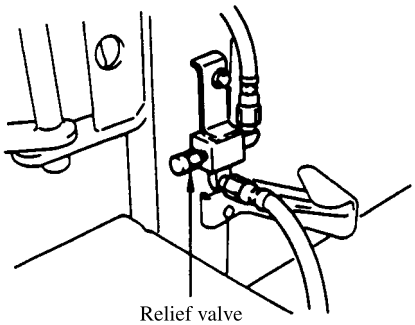
LPG is filled in the tank through this valve. The tank must be filled by an LPG filling station attendant. Be sure that this valve is shut tightly at all times during use.



Pipe Valve

When the fuel hose needs to be disconnected for tank replacement, etc., close this valve to prevent the liquid from running out of the hose. This valve is normally left open.

To open the valve.....turn it counterclockwise.
To shut the valve.....turn it clockwise.



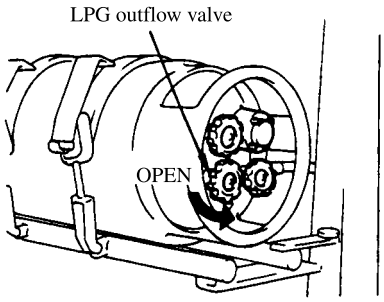
Relief Valve (Australian market type)

This valve prevents explosion that might be caused when the LPG pressure rises above a normal level or when the hose becomes deteriorated.

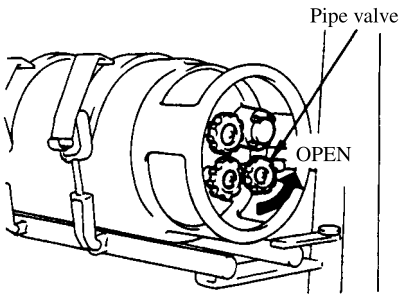
Operating LPG-Powered Forklifts

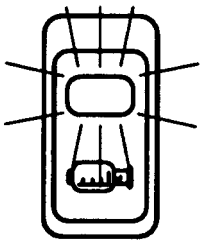
Starting the Engine (LPG Models)

1. Turn the outflow valve of the tank counterclockwise to open it.



2. Be sure that the pipe valve is open.





3. Turn on the LPG switch and make certain that it comes on. It must be left in that position for starting the engine and during use of the forklift.
4. Without depressing the accelerator pedal, set the engine switch to the START position to turn the starter on. If it should be difficult to start up the engine, press the fuel injection switch for 2 or 3 seconds. Then, restart the engine.

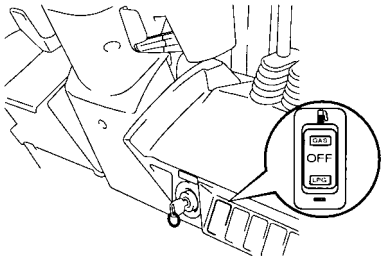
CAUTION!

Never depress the accelerator pedal repeatedly or hold it down completely during starting. The engine will not start easily.

5. Wait for an initial ignition of the engine, and depress the accelerator pedal lightly. Wait for the engine to start running, and set the engine switch to the "**I**" (ON) position.
6. Let the engine idle for 5 to 6 minutes.

CAUTION!

Never depress the accelerator pedal completely. It will send an extra amount of LPG and its heat of vaporization may freeze the regulator and damage the engine.



Starting the Engine

(Gasoline/LPG Models)

If the ambient temperature is sufficiently high, start the engine the same way as you would start the engine of LPG models. If the temperature is very low and starting the engine is difficult with LPG fuel, set the fuel switch to the GAS position and start the engine. Change the fuel setting to the LPG position after the engine becomes hot (stop the engine first).

1. Set the fuel switch to the GAS position.
2. Start and warm up the engine as you would start and warm up an ordinary gasoline engine. See the other Operator's Manual for engine starting procedures.
3. Set the fuel switch to the OFF position and let the engine stop naturally.
4. Set the fuel switch to the LPG position and start the engine again as you would start the engine of LPG models.

CAUTION!

Never change the fuel switch setting from GAS to LPG positions while the engine is running. It will increase the engine rpm sharply and cause a serious damage to the engine.

To prolong the Engine Life

Refrain from handling and driving the vehicle roughly especially when it is new.

Parking

1. Parking for a short time.
   (1) Turn the fuel switch to the OFF (go-out) position.
   (2) Let the engine stop naturally so that any LPG fuel in the piping leaves the system. Turn the engine switch to the "O" (OFF) position and remove the key.
2. Parking for a long time.
   (1) Turn the LPG tank outflow valve clockwise to shut the fuel supply.
   (2) Let the engine stop naturally so that any LPG fuel in the piping leaves the system. Turn the fuel switch and the engine switch to the "O" (OFF) position and remove the key.

Changing the LPG Tank

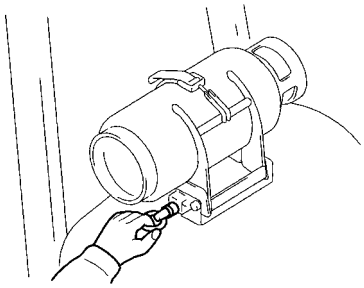
CAUTION!

Under no circumstances what so ever may the LPG tank replacement be performed near a lighted cigarette, lighted match, gas stove burner, electric heater, motor or any other electric appliance that emits sparks, flame or any type of fire (referred to collectively as "fire" below).

WARNING!

To avoid serious injury from fire or explosion, you must follow these rules:

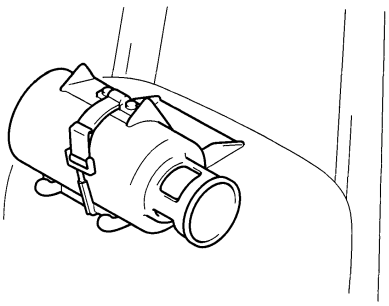
- ***Switch ignition and lights off.***
- ***Change tanks only in well ventilated, approved areas.***
- ***No fire or flames allowed.***
- ***Check all connections for damage or missing parts.***
- ***Check for leaks.***
- ***Do not restart until all smell of gas is gone.***
- ***If truck will not restart, get a mechanic to inspect it.***
- ***Filling tanks requires special procedures. Make sure someone explains them all to you.***



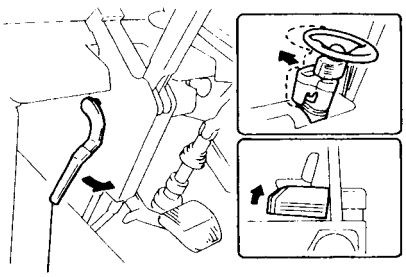
ENGINE HOOD

Opening

1. Pull the set pin at the bottom left portion of the tank bracket.



2. Bring the clamped tank with the bracket down toward the rear side of the vehicle.
3. Move the seat to the front position.

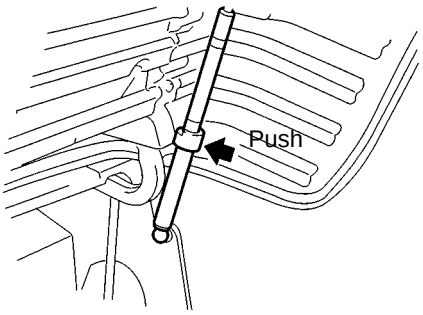


Lock release lever

4. When the engine hood lock release lever on the lower left side of the parking brake lever is pulled backward, the steering column is tilted forward and the engine hood is unlocked.
5. Hold the engine hood using the clearance underneath, and raise it.
6. Fully open the engine hood and release it after cheking sure locking for the hood stay.

WARNING!

Operating the truck without locking the engine hood can result in serious injury or death if the truck overturns.



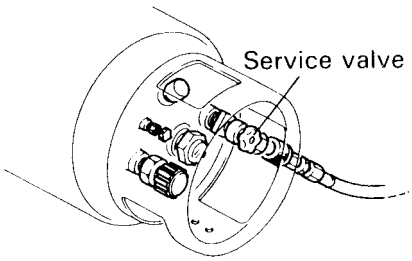
Closing

1. Push the damper stay unlock button and close the engine hood. Hold the hood until it is locked to the postion with a clicking sound.
2. Pull the steering wheel backward to return it to the original position.
3. Return the tank bracket toward the front side of the vehicle, and see that the set pin is locked.

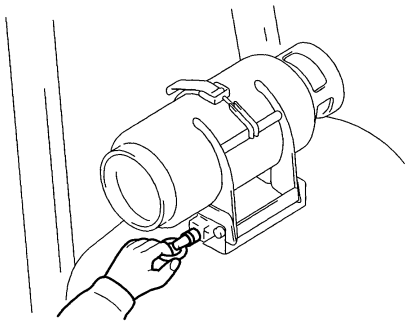
Removing the tank

WARNING!

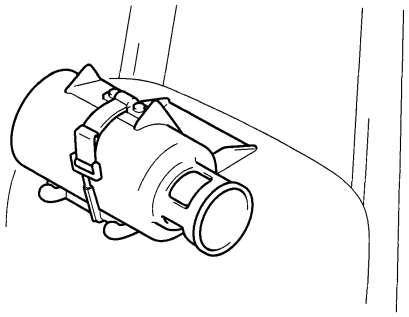
Only qualified mechanics are allowed to replace the tank.

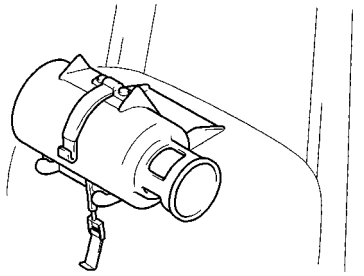


1. With the engine running, close the service valve and wait until the engine stops before turning off the ignition switch.
2. Disconnect the piping from the LPG tank (turn the screw counterclockwise).
3. Pull the set pin at the bottom left portion of the tank bracket.

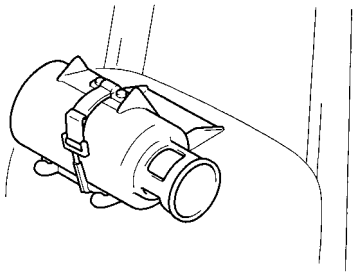


4. Bring the clamped tank with the bracket down toward the rear side of the vehicle.



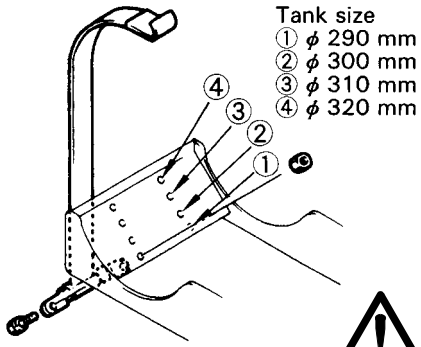


5. Pull the tank clamp toward you to release the band locks.
6. Push the bands aways from you and remove the tank.



Installing the tank

1. Hook the clamps on the bands and raise the clamps.



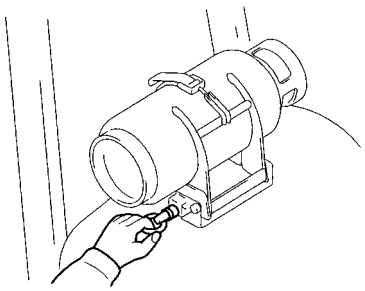
2. Return the tank bracket toward the front side of the vehicle and see that the set pin is locked.

Note: Adjust the band position according to the tank size.

3. Install the piping securely on the service valve.
4. Brush on the pipe joint. Open the service valve and check for bubbles indicating.
5. Do not try to start engine until all gas smell is gone.

WARNING!

If any gas leakage is found, immediately report to the supervisor for repair by a qualified mechanic or your BT dealer. Tag truck "out of service".



CAUTION!

Always wipe soapy water off after the inspection.

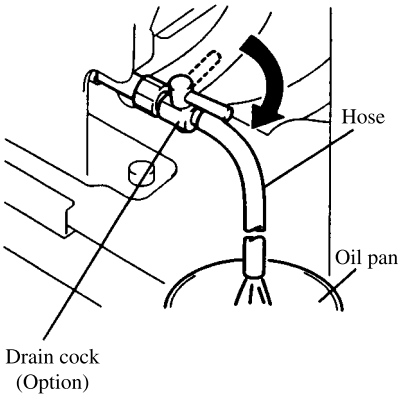
Important Information about Properties of LPG

- LPG normally contains a substance that gives it a noticeable odor in concentration of 1/200 or more in air.
  If a large amount of the LPG is leaking from the tank of the system, it can be detected by the smell. LPG does not contain carbon monoxide and is not poisonous although it is explosive.
- LPG is a highly pressurized gas and leaks very easily.
  The vapor has a volume 250 times that of the liquefied gas and is twice as dense as air. Therefore, it collects in low places.
- LPG increases in pressure as the temperature increases.

Safety Precautions about Operating LPG-Powered Forklifts

- LPG is inflammable. A tiny spark can cause a fatal explosion if it is handled carelessly. It is very crucial that the following precautions are observed most strictly to avoid hazards.
- All LPG-powered forklifts must be operated and maintained (including the LPG tank renewal) by designated persons only.
- Never stop or park an LPG-powered forklift near fire.
- Whenever possible, do not stop or park an LPG-powered forklift in direct sunlight. Covering it with a sheet is highly recommendable. And make sure the vehicle is well ventilated.
- Do not operate an LPG-powered forklift in the presence of fire.
- When operating or inspecting an LPG-powered forklift, post a large “FIRE HAZARD” sign and make sure that persons using fire do not approach the vehicle.
- Remove the ignition key from an LPG-powered forklift before parking or storing it so that no unauthorized person can operate it.
- Use only soap water or neutral detergent to check the vehicle for gas leaks. Do not use any other fluid.
- If the gas leak inspection must be performed at night with the help of a flashlight, turn the flashlight on far away from the vehicle and walk toward it. The flashlight might cause a spark when it is turned on and cause an accident.
- If a gas leak is detected, immediately put out any fire, ventilate the area and keep the area in a strictly fire free condition. Then call a qualified BT dealer or service garage.
- Store LPG tanks in a strictly free area having a gas detector at all times.
- Have LPG tanks refilled only by an LPG gas filling station attendant.
- Use LPG of an appropriate chemical composition according to the climate. In hot climate, use LPG with a relatively high butane content; in cold climate, use LPG with a relatively high propane content.

Servicing the Regulator



Removing Tar from the Regulator

Tar tends to collect in the regulator and it must be removed regularly on a weekly basis when the day's work is finished. Let the engine cool down, and remove tar as started below.

1. Set the fuel switch to the "O" (OFF) position and open the engine hood.
2. Connect a hose to the drain cock located under the regulator.
3. Put an oil pan under the drain cock.
   Open the drain cock and let tar drop into the oil pan.
4. After all tar is removed from the regulator, close the drain cock and disconnect the hose.

CAUTION!

If tar is adhering to the vehicle, it must be wiped off completely with a cloth.

Inspecting and Servicing LPG-Powered Forklifts

Inspect and service LPG-powered forklifts as you would conventional forklifts. In addition, inspect and service them as written below.

- Inspection before Starting Operation.
- LPG gas leak check.

CAUTION!

Never perform LPG gas leak checks near fire. Make certain that there is no source of fire in the area throughout the gas leak check.

WARNING!

To avoid serious injury from fire or explosion, you must follow these rules;
• Switch ignition and lights off.
• Check for leaks only in well ventilated, approved areas.
• No smoking, fire or flames allowed.
• Brush soapy water on all joints, bubbles will show leaks.
• Never use any other liquids, or any open flame for leak checks.
• Do not try to start engine until all gas smell is gone.
• If any gas leakage is found, immediately report it to the supervisor for repair by a qualified mechanic or your BT dealer. The truck is not allowed to be operated.

1. Turn the LPG tank outflow valve counterclockwise to open it.
2. The pipe valve must be open also.
3. Set the engine switch to the "**I**" (ON) position.
4. Turn the fuel switch "**I**" (ON) and "O" (OFF) repeatedly for several times, and leave it in the "O" (OFF) position finally.
5. Wet the hose and the LPG tank and regulator connections with soap water or neutral detergent. Lock for gas leak.
6. Press the fuel test bar fitted to the regulator a few times toward the outside of the vehicle.
7. Wet the hose and the regulator and carburetor connections with soap water or neutral detergent. Lock for gas leak.

- After the gas leak check is completed, wipe off the soap water or neutral detergent from the wet parts.
- If a gas leak is detected, immediately put out any fire, ventilate the area and keep the area in a strictly firefree condition. Then call a qualified BT dealer or service garage.

■ **Monthly Inspection and Maintenance**

Item
Gas leak from pipes and joints (connections)
Damage to pipes and joints (connections)
Regulator adjustment
Crack, damage to and gas leak from the tank
Loose or damaged tank bracket
Damage to electrical wiring, loose terminals
Rotation of liquid drain valve
Gas leak from the regulator body

■ **Quarterly Inspection and Maintenance**

Carburetor and adaptor
Regulator function (to be disassembled and repaired every year)
Solenoid valve
Filter

Lubricant and Coolant

Engine oil

- Use SAE 30 motor oil (SAE 20 in cold weather). Replace the oil once a month.

Cooling water

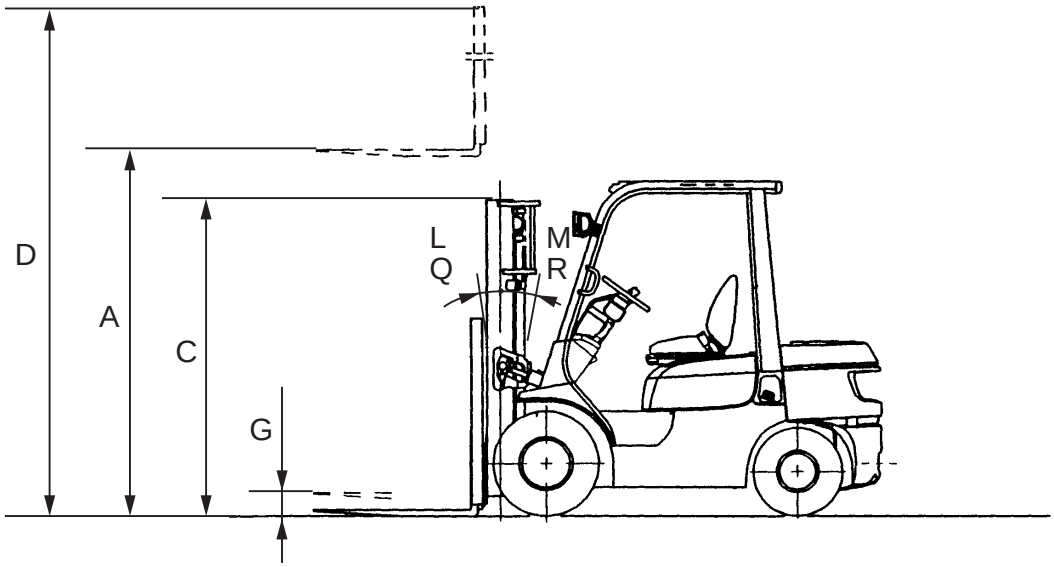
- Use a mixture of equal parts of water and a long-life coolant. Change the cooling water every two years.

Engine Specifications

Item		Engine	4Y	
			a	b
Gasoline/LPG models	Max. power	PS/rpm	48/2400	52/2600
	Max. torque	kg/rpm	15/1600	←
	Ignition timing	BTDC°/rpm	7°/750	←
	Idling speed	rpm	750	←
	Max. no-load rpm	rpm	2600	2800
LPG models	Max. power	PS/rpm	50/2400	54/2600
	Max. torque	kg/rpm	16/1800	←
	Ignition timing	BTDC°/rpm	7°/800	←
	Idling speed	rpm	750	←
	Max. no-load rpm	rpm	2600	2600 (2~2.5 ton)
				2800 (3~J3.5 ton)

a: 4Y engine-powered, 1.5~1.8 ton class pneumatic tire vehicles
b: 4Y engine-powered, 2.0~J3.5 ton class pneumatic tire vehicles

Mast Specifications and Rated Capacities



T Mast type	**B** Overall Height		**G** Free Lift		**J** Single Tire			**O** Dual Tire		
A Maximum Fork Height	**C** Lowered	**D** Extended	**H** Without Load Backrest	**I** With Standard Load Backrest	**K** Tilt Range		**N** Load Capacity at 500 mm LC	**P** Tilt Range		**S** Load Capacity at 500 mm LC
		E Without Load Backrest / **F** With Standard Load Backrest			**L** FWD	**M** BWD		**Q** FWD	**R** BWD	

V
Wide visible Mast

FV
Wide Visible Full-Free Lift Two Stage Mast

FSV
Wide Visible Full-Free Lift Three Stage Mast

deg
deg

NOTE
NOTE: Height of standard load backrest is 1220 mm (48 in)

GT 15, DT 15

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	1995 (78.5)	3605 (141.9)	4220 (166.1)	150 (5.9)	150 (5.9)	6	10	1500 (3000)	7	9	1500 (3000)
	3300 (130)	2145 (84.4)	3905 (153.7)	4520 (178.0)	150 (5.9)	150 (5.9)	6	10	1500 (3000)	7	9	1500 (3000)
	3500 (138)	2245 (88.4)	4105 (161.6)	4720 (185.8)	150 (5.9)	150 (5.9)	6	10	1500 (3000)	7	9	1500 (3000)
	3700 (145)	2405 (94.7)	4305 (169.5)	4920 (193.7)	150 (5.9)	150 (5.9)	6	10	1500 (3000)	7	9	1500 (3000)
	4000 (157.5)	2595 (102.2)	4605 (181.3)	5220 (205.5)	150 (5.9)	150 (5.9)	6	10	1500 (3000)	7	9	1500 (3000)
	4500 (177)	2845 (112)	5105 (201)	5720 (225.2)	150 (5.9)	150 (5.9)	6	6	1450 (3000)	7	9	1450 (3000)
	5000 (197)	3095 (121.9)	5605 (220.7)	6220 (244.9)	150 (5.9)	150 (5.9)	6	6	1300 (2800)	7	5	1350 (3000)
FV	3000 (118)	1995 (78.5)	3560 (140.2)	4220 (166.1)	1410 (55.5)	780 (30.7)	6	10	1500 (3000)	7	9	1500 (3000)
	3300 (130)	2145 (84.4)	3860 (152)	4520 (178.0)	1560 (61.4)	930 (36.6)	6	10	1500 (3000)	7	9	1500 (3000)
	3500 (138)	2245 (88.4)	4060 (159.8)	4720 (185.8)	1660 (65.4)	1030 (40.6)	6	10	1500 (3000)	7	9	1500 (3000)
	3700 (145)	2405 (94.7)	4260 (167.7)	4920 (193.7)	1820 (71.6)	1190 (46.9)	6	10	1500 (3000)	7	9	1500 (3000)
	4000 (157.5)	2595 (102.2)	4560 (179.5)	5220 (205.5)	2010 (79.1)	1380 (54.3)	6	10	1500 (3000)	7	9	1500 (3000)
FSV	3700 (145)	1795 (70.7)	4235 (166.7)	4920 (193.7)	1260 (49.6)	580 (22.8)	6	6	1400 (2850)	7	5	1400 (2850)
	4000 (157.5)	1895 (74.4)	4535 (178.5)	5220 (205.5)	1360 (53.5)	680 (26.8)	6	6	1400 (2850)	7	5	1400 (2850)
	4300 (169)	1995 (78.5)	4835 (190.4)	5520 (217.3)	1460 (57.5)	780 (30.7)	6	6	1400 (2800)	7	5	1400 (2800)
	4700 (185)	2145 (84.4)	5235 (206.1)	5920 (233.1)	1610 (63.4)	930 (36.6)	6	6	1350 (2750)	7	5	1350 (2750)
	5000 (197)	2245 (88.4)	5535 (217.9)	6220 (244.9)	1710 (67.3)	1030 (40.6)	6	6	1250 (2650)	7	5	1300 (2700)
	5500 (216.5)	2405 (94.7)	6035 (237.6)	6720 (264.6)	1870 (73.6)	1190 (46.9)	6	6	950 (2050)	7	5	1250 (2600)
	6000 (236)	2595 (102.2)	6535 (257.3)	7220 (284.3)	2060 (81.1)	1380 (54.3)	6	6	700 (1600)	7	5	1100 (2400)

GT 18, DT 18

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	1995 (78.5)	3605 (141.9)	4220 (166.1)	150 (5.9)	150 (5.9)	6	10	1750 (3500)	7	9	1750 (3500)
	3300 (130)	2145 (84.4)	3905 (153.7)	4520 (178.0)	150 (5.9)	150 (5.9)	6	10	1750 (3500)	7	9	1750 (3500)
	3500 (138)	2245 (88.4)	4105 (161.6)	4720 (185.8)	150 (5.9)	150 (5.9)	6	10	1750 (3500)	7	9	1750 (3500)
	3700 (145)	2405 (94.7)	4305 (169.5)	4920 (193.7)	150 (5.9)	150 (5.9)	6	10	1750 (3500)	7	9	1750 (3500)
	4000 (157.5)	2595 (102.2)	4605 (181.3)	5220 (205.5)	150 (5.9)	150 (5.9)	6	10	1650 (3400)	7	9	1650 (3400)
	4500 (177)	2845 (112)	5105 (201)	5720 (225.2)	150 (5.9)	150 (5.9)	6	6	1600 (3250)	7	9	1600 (3250)
	5000 (197)	3095 (121.9)	5605 (220.7)	6220 (244.9)	150 (5.9)	150 (5.9)	6	6	1550 (3150)	7	5	1550 (3150)
FV	3000 (118)	1995 (78.5)	3560 (140.2)	4220 (166.1)	1410 (55.5)	780 (30.7)	6	10	1750 (3500)	7	9	1750 (3500)
	3300 (130)	2145 (84.4)	3860 (152)	4520 (178.0)	1560 (61.4)	930 (36.6)	6	10	1750 (3500)	7	9	1750 (3500)
	3500 (138)	2245 (88.4)	4060 (159.8)	4720 (185.8)	1660 (65.4)	1030 (40.6)	6	10	1750 (3500)	7	9	1750 (3500)
	3700 (145)	2405 (94.7)	4260 (167.7)	4920 (193.7)	1820 (71.7)	1190 (46.9)	6	10	1750 (3500)	7	9	1750 (3500)
	4000 (157.5)	2595 (102.2)	4560 (179.5)	5220 (205.5)	2010 (79.1)	1380 (54.3)	6	10	1650 (3400)	7	9	1650 (3400)
FSV	3700 (145)	1795 (70.7)	4235 (166.7)	4920 (193.7)	1260 (49.6)	580 (22.8)	6	6	1600 (3250)	7	5	1600 (3250)
	4000 (157.5)	1895 (74.4)	4535 (178.5)	5220 (205.5)	1360 (53.5)	680 (26.8)	6	6	1600 (3200)	7	5	1600 (3200)
	4300 (169)	1995 (78.5)	4835 (190.4)	5520 (217.3)	1460 (57.5)	780 (30.7)	6	6	1550 (3150)	7	5	1550 (3150)
	4700 (185)	2145 (84.4)	5235 (206.1)	5920 (233.1)	1610 (63.4)	930 (36.6)	6	6	1500 (3050)	7	5	1500 (3050)
	5000 (197)	2245 (88.4)	5535 (217.9)	6220 (244.9)	1710 (67.3)	1030 (40.6)	6	6	1450 (3000)	7	5	1450 (3000)
	5500 (216.5)	2405 (94.7)	6035 (237.6)	6720 (264.6)	1870 (73.6)	1190 (46.9)	6	6	1100 (2500)	7	5	1400 (2900)
	6000 (236)	2595 (102.2)	6535 (257.3)	7220 (284.3)	2060 (81.1)	1380 (54.3)	6	6	850 (1750)	7	5	1200 (2400)

GT 20, DT 20P, DT 20

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	1995 (78.5)	3650 (143.7)	4220 (166.1)	150 (5.9)	150 (5.9)	6	10	2000 (4000)	6	10	2000 (4000)
	3300 (130)	2145 (84.4)	3950 (155.5)	4520 (178.0)	150 (5.9)	150 (5.9)	6	10	2000 (4000)	6	10	2000 (4000)
	3500 (138)	2245 (88.4)	4150 (163.4)	4720 (185.8)	150 (5.9)	150 (5.9)	6	10	2000 (4000)	6	10	2000 (4000)
	3700 (145)	2405 (94.7)	4350 (171.3)	4920 (193.7)	150 (5.9)	150 (5.9)	6	10	2000 (4000)	6	10	2000 (4000)
	4000 (157.5)	2595 (102.2)	4650 (183.1)	5220 (205.5)	150 (5.9)	150 (5.9)	6	10	2000 (4000)	6	10	2000 (4000)
	4500 (177)	2845 (112)	5150 (202.8)	5720 (225.2)	150 (5.9)	150 (5.9)	6	6	1950 (4000)	6	10	1950 (4000)
	5000 (197)	3095 (121.9)	5650 (222.4)	6220 (244.9)	150 (5.9)	150 (5.9)	6	6	1850 (3900)	6	6	1900 (3900)
FV	3000 (118)	1995 (78.5)	3590 (141.3)	4220 (166.1)	1440 (55.1)	775 (30.5)	6	10	2000 (4000)	6	10	2000 (4000)
	3300 (130)	2145 (84.4)	3890 (153.1)	4520 (178.0)	1550 (61)	925 (36.4)	6	10	2000 (4000)	6	10	2000 (4000)
	3500 (138)	2245 (88.4)	4090 (161)	4720 (185.8)	1650 (65)	1025 (40.4)	6	10	2000 (4000)	6	10	2000 (4000)
	3700 (145)	2405 (94.7)	4390 (172.8)	4920 (193.7)	1810 (71.3)	1185 (46.7)	6	10	2000 (4000)	6	10	2000 (4000)
	4000 (157.5)	2595 (102.2)	4590 (180.7)	5220 (205.5)	2000 (78.4)	1375 (54.1)	6	10	2000 (4000)	6	10	2000 (4000)
FSV	3700 (145)	1795 (70.7)	4250 (167.3)	4920 (193.7)	1225 (48.2)	575 (22.6)	6	6	2000 (4000)	6	6	2000 (4000)
	4000 (157.5)	1895 (74.4)	4550 (179.1)	5220 (205.5)	1325 (52.2)	675 (26.6)	6	6	1950 (4000)	6	6	1950 (4000)
	4300 (169)	1995 (78.5)	4850 (190.9)	5520 (217.3)	1425 (56.1)	775 (30.5)	6	6	1900 (3900)	6	6	1950 (3950)
	4700 (185)	2145 (84.4)	5250 (206.7)	5920 (233.1)	1575 (62)	925 (36.4)	6	6	1850 (3800)	6	6	1900 (3900)
	5000 (197)	2245 (88.4)	5550 (218.5)	6220 (244.9)	1675 (65.9)	1025 (40.4)	6	6	1450 (3200)	6	6	1850 (3850)
	5500 (216.5)	2405 (94.7)	6050 (238.2)	6720 (264.6)	1835 (72.2)	1185 (46.7)	6	6	1200 (2650)	6	6	1800 (3750)
	6000 (236)	2595 (102.2)	6550 (257.9)	7220 (284.3)	2025 (79.7)	1375 (54.1)	6	6	850 (1950)	6	6	1600 (3300)
	6500 (256)	2845 (112)	7050 (277.6)	7220 (303.9)	2275 (89.6)	1625 (64)	—	—	—	6	6	1550 (3200)

GT 25, DT 25P, DT 25

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	1995 (78.5)	3650 (143.7)	4220 (166.1)	150 (6.1)	150 (6.1)	6	10	2500 (5000)	6	10	2500 (5000)
	3300 (130)	2145 (84.4)	3950 (155.5)	4520 (178.0)	150 (6.1)	150 (6.1)	6	10	2500 (5000)	6	10	2500 (5000)
	3500 (138)	2245 (88.4)	4150 (163.4)	4720 (185.8)	150 (6.1)	150 (6.1)	6	10	2500 (5000)	6	10	2500 (5000)
	3700 (145)	2405 (94.7)	4350 (171.3)	4920 (193.7)	150 (6.1)	150 (6.1)	6	10	2500 (5000)	6	10	2500 (5000)
	4000 (157.5)	2595 (102.2)	4650 (183.1)	5220 (205.5)	150 (6.1)	150 (6.1)	6	10	2500 (5000)	6	10	2500 (5000)
	4500 (177)	2845 (112)	5150 (202.8)	5720 (225.2)	150 (6.1)	150 (6.1)	6	6	2150 (4700)	6	10	2450 (5000)
	5000 (197)	3095 (121.9)	5650 (222.4)	6220 (244.9)	150 (6.1)	150 (6.1)	6	6	1700 (3600)	6	6	2400 (4850)
FV	3000 (118)	1995 (78.5)	3950 (141.3)	4220 (166.1)	1400 (55.1)	775 (30.5)	6	10	2500 (5000)	6	10	2500 (5000)
	3300 (130)	2145 (84.4)	3890 (153.1)	4520 (178.0)	1550 (61)	925 (36.4)	6	10	2500 (5000)	6	10	2500 (5000)
	3500 (138)	2245 (88.4)	4090 (161)	4720 (185.8)	1650 (65)	1025 (40.4)	6	10	2500 (5000)	6	10	2500 (5000)
	3700 (145)	2405 (94.7)	4390 (172.8)	4920 (193.7)	1810 (71.3)	1185 (46.7)	6	10	2500 (5000)	6	10	2500 (5000)
	4000 (157.5)	2595 (102.2)	4590 (180.7)	5220 (205.5)	2000 (78.7)	1375 (54.1)	6	10	2500 (5000)	6	10	2500 (5000)
FSV	3700 (145)	1795 (70.7)	4250 (167.3)	4920 (193.7)	1225 (48.2)	575 (22.6)	6	6	2500 (5000)	6	6	2500 (5000)
	4000 (157.5)	1895 (74.4)	4550 (179.1)	5220 (205.5)	1325 (52.2)	675 (26.6)	6	6	2500 (5000)	6	6	2500 (5000)
	4300 (169)	1995 (78.5)	4850 (190.9)	5520 (217.3)	1425 (56.1)	775 (30.5)	6	6	2300 (4800)	6	6	2500 (5000)
	4700 (185)	2145 (84.4)	5250 (206.7)	5920 (233.1)	1575 (62)	925 (36.4)	6	6	2000 (4300)	6	6	2450 (4950)
	5000 (197)	2245 (88.4)	5550 (218.5)	6220 (244.9)	1675 (65.9)	1025 (40.4)	6	6	1500 (3300)	6	6	2400 (4850)
	5500 (216.5)	2405 (94.7)	6050 (238.2)	6720 (264.6)	1835 (72.2)	1185 (46.7)	6	6	1250 (2850)	6	6	2050 (4500)
	6000 (236)	2595 (102.2)	6550 (257.9)	7220 (284.3)	2025 (79.7)	1375 (54.1)	6	6	900 (2000)	6	6	1700 (3500)
	6500 (256)	2845 (112)	7050 (277.6)	7220 (303.9)	2275 (89.6)	1625 (64)	—	—	—	6	6	1550 (3200)

GT 30, DT 30P, DT 30

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	2020 (79.5)	3710 (146.1)	4220 (166.1)	135 (5.3)	135 (5.3)	6	10	3000 (6000)	6	10	3000 (6000)
	3300 (130)	2170 (85.4)	4010 (157.9)	4520 (178.0)	135 (5.3)	135 (5.3)	6	10	3000 (6000)	6	10	3000 (6000)
	3500 (138)	2270 (89.5)	4210 (165.7)	4720 (185.8)	135 (5.3)	135 (5.3)	6	10	3000 (6000)	6	10	3000 (6000)
	3700 (145)	2430 (95.7)	4410 (173.6)	4920 (193.7)	135 (5.3)	135 (5.3)	6	10	3000 (6000)	6	10	3000 (6000)
	4000 (157.5)	2620 (103.1)	4710 (185.4)	5220 (205.5)	135 (5.3)	135 (5.3)	6	10	3000 (6000)	6	10	3000 (6000)
	4500 (177)	2870 (113)	5210 (205.1)	5720 (225.2)	135 (5.3)	135 (5.3)	6	6	3000 (6000)	6	10	3000 (6000)
	5000 (197)	3120 (122.8)	5710 (224.8)	6220 (244.9)	135 (5.3)	135 (5.3)	6	6	2600 (5600)	6	6	3000 (5600)
FV	3000 (118)	2020 (79.5)	3605 (141.9)	4220 (166.1)	1400 (55.1)	800 (31.5)	6	10	3000 (6000)	6	10	3000 (6000)
	3300 (130)	2170 (85.4)	3905 (153.7)	4520 (178.0)	1550 (61)	950 (37.4)	6	10	3000 (6000)	6	10	3000 (6000)
	3500 (138)	2270 (89.5)	4105 (161.6)	4720 (185.8)	1650 (65)	1050 (41.3)	6	10	3000 (6000)	6	10	3000 (6000)
	3700 (145)	2430 (95.7)	4305 (169.5)	4920 (193.7)	1810 (71.3)	1210 (47.6)	6	10	3000 (6000)	6	10	3000 (6000)
	4000 (157.5)	2620 (103.1)	4605 (181.3)	5220 (205.5)	2000 (78.7)	1400 (55.1)	6	10	3000 (6000)	6	10	3000 (6000)
FSV	3700 (145)	1920 (75.6)	4305 (169.5)	4920 (193.7)	1305 (51.4)	700 (27.6)	6	6	3000 (6000)	6	6	3000 (6000)
	4000 (157.5)	2020 (79.5)	4605 (181.3)	5220 (205.5)	1405 (55.3)	800 (31.5)	6	6	3000 (6000)	6	6	3000 (6000)
	4300 (169)	2170 (85.4)	4905 (193.1)	5520 (217.3)	1555 (61.2)	950 (37.4)	6	6	3000 (6000)	6	6	3000 (6000)
	4700 (185)	2270 (89.5)	5305 (208.9)	5920 (233.1)	1655 (65.2)	1050 (41.3)	6	6	3000 (6000)	6	6	3000 (6000)
	5000 (197)	2430 (95.7)	5605 (220.7)	6220 (244.9)	1815 (71.5)	1210 (47.6)	6	6	2600 (5400)	6	6	2950 (6000)
	5500 (216.5)	2620 (103.1)	6105 (240.4)	6720 (264.6)	2005 (78.9)	1400 (55.1)	6	6	1900 (4100)	6	6	2650 (5600)
	6000 (236)	2870 (113)	6605 (260.1)	7220 (284.3)	2255 (88.8)	1650 (65)	6	6	1500 (3050)	6	6	2050 (4300)
	6500 (256)	3120 (122.8)	7105 (279.7)	7220 (303.9)	2505 (98.6)	1900 (74.8)	—	—	—	6	6	1600 (3500)
	7000 (275.5)	3370 (132.7)	7605 (299.4)	8220 (323.6)	2755 (108.5)	2150 (84.6)	—	—	—	6	6	1200 (2600)

GT 35, DT 35

T	A	B			G		J			O		
		C	D		H	I	K		N	P		S
			E	F			L	M		Q	R	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	deg	deg	kg (lb)	deg	deg	kg (lb)
V	3000 (118)	2125 (83.7)	3865 (152.2)	4220 (166.1)	135 (5.3)	135	6	10	3500 (7000)	6	10	3500 (7000)
	3300 (130)	2305 (90.7)	4165 (164)	4520 (178.0)	135 (5.3)	135	6	10	3500 (7000)	6	10	3500 (7000)
	3500 (138)	2405 (94.7)	4365 (171.9)	4720 (185.8)	135 (5.3)	135	6	10	3500 (7000)	6	10	3500 (7000)
	3700 (145)	2505 (98.6)	4565 (179.7)	4920 (193.7)	135 (5.3)	135	6	10	3500 (7000)	6	10	3500 (7000)
	4000 (157.5)	2755 (108.5)	4865 (191.5)	5220 (205.5)	135 (5.3)	135	6	10	3500 (7000)	6	10	3500 (7000)
	4500 (177)	3005 (118.3)	5365 (211.2)	5720 (225.2)	135 (5.3)	135	6	6	3500 (7000)	6	10	3500 (7000)
	5000 (197)	3255 (128.1)	5865 (230.9)	6220 (244.9)	135 (5.3)	135	6	6	3300 (6750)	6	6	3400 (6950)
FV	3000 (118)	2125 (83.7)	3730 (146.9)	4220 (166.1)	1395 (54.9)	905 (35.4)	6	10	3500 (7000)	6	10	3500 (7000)
	3300 (130)	2305 (90.7)	4030 (158.7)	4520 (178.0)	1575 (62)	1085 (42.7)	6	10	3500 (7000)	6	10	3500 (7000)
	3500 (138)	2405 (94.7)	4230 (166.5)	4720 (185.8)	1675 (65.9)	1185 (46.7)	6	10	3500 (7000)	6	10	3500 (7000)
	3700 (145)	2505 (98.6)	4430 (174.4)	4920 (193.7)	1775 (69.9)	1285 (50.6)	6	10	3500 (7000)	6	10	3500 (7000)
	4000 (157.5)	2755 (108.5)	4730 (186.2)	5220 (205.5)	2025 (79.7)	1535 (60.4)	6	10	3500 (7000)	6	10	3500 (7000)
FSV	3700 (145)	2035 (80.1)	4430 (174.4)	4920 (193.7)	1305 (51.4)	815 (32.1)	6	6	3500 (7000)	6	6	3500 (7000)
	4000 (157.5)	2185 (86)	4730 (186.2)	5220 (205.5)	1455 (57.3)	965 (38)	6	6	3500 (7000)	6	6	3500 (7000)
	4300 (169)	2235 (88)	5030 (198)	5520 (217.3)	1505 (59.3)	1015	6	6	3500 (7000)	6	6	3500 (7000)
	4700 (185)	2445 (96.3)	5430 (213.8)	5920 (233.1)	1715 (67.5)	1225 (48.2)	6	6	3400 (6950)	6	6	3400 (6950)
	5000 (197)	2635 (103.7)	5730 (225.6)	6220 (244.9)	1905 (75)	1415 (55.7)	6	6	3300 (6750)	6	6	3300 (6750)
	5500 (216.5)	2885 (113.6)	6230 (245.3)	6720 (264.6)	2155 (84.8)	1665 (65.6)	6	6	2700 (5550)	6	6	3200 (6550)
	6000 (236)	3135 (123.4)	6730 (265)	7220 (284.3)	2405 (94.7)	1915 (75.4)	6	6	2000 (4150)	6	6	2400 (4950)
	6500 (256)	3385 (133.3)	7230 (284.6)	7220 (303.9)	2655 (104.5)	2165 (85.2)	—	—	—	6	6	1650 (3540)
	7000 (275.5)	3635 (143.1)	7730 (304.3)	8220 (323.6)	2905 (114.4)	2415 (95.1)	—	—	—	6	6	900 (1900)

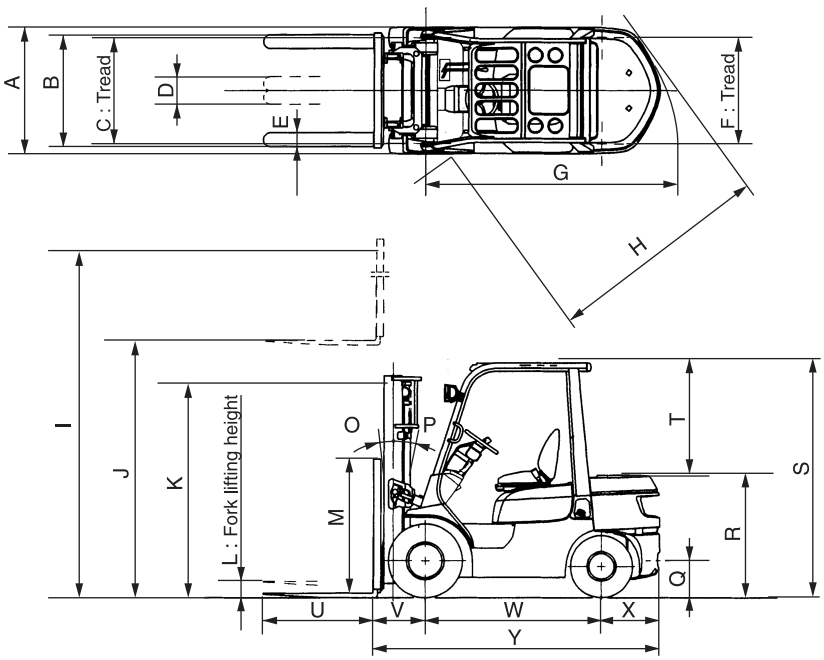
Wheel and Tire

Model	Tire Arrangement		Pneumatic Tire				
			Tire Size	Rim Size (Type)		CONTI-NENTAL IC 40	BRIDGE-STONE
1.5 ton	Front	Single	6.50-10-10PR (I)	10x5.00F	O	●	❍
		Dual	6.00-9-10PR (I)	9x4.00E	O	●	●
	Rear		5.00-8-8PR (I)	8x3.00D	N	●	❍
				8x3.00D	O	●	●
1.75 ton	Front	Single	6.50-10-10PR (I)	10x5.00F	O		❍
		Dual	6.50-10-14PR (I)	10x5.00F	O	●	
	Rear		5.00-8-8PR (I)	8x3.00D	N	●	❍
				8x3.00D	O	●	●
2~2.5 ton	Front	Single	7.00-12-12PR (I)	12x5.00S	O		❍
			7.00-12-14PR (I)	12x5.00S	O	●	
		Dual	7.00-12-12PR (I)	12x5.00S	O		●
			7.00-12-14PR (I)	12x5.00S	O	●	
	Rear		6.00-9-10PR (I)	9x4.00E	N	●	❍
			6.00-9-10PR (I)	9x4.00E	O	●	●
3 ton	Front	Single	28x9-15-12PR (I)	15x7.00T	O		❍
			28x9-15-14PR (I)	15x7.00T	O	●	
		Dual	28x8-15-12PR (I)	15x7.00T	O		●
	Rear		6.50-10-10PR (I)	10x5.00F	O		❍
			6.50-10-12PR (I)	10x5.00F	O	●	
J3.5 ton	Front	Single	2.50-15-16PR (I)	15x7.00T	O	●	❍
		Dual	28x8-15-12PR (I)	15x7.00T	O		●
	Rear		6.50-10-12PR (I)	10x5.00F	O		❍
			6.50-10-14PR (I)	10x5.00F	O	●	

Model	Tire Arrangement		Pneumatic-Shaped Cushion Tire					
			Tire Size	Rim Size (Type)		BERGOUGNAN CONFORT-E	BRIDGESTONE	AICHI
1.5 ton	Front	Single	6.50-10	10x5.00F	O	●		
		Dual	6.00-9	9x4.00E	O	●		
	Rear		5.00-8	8x3.00D	N	●		
				8x3.00D	O	●		
1.75 ton	Front	Single	6.50-10	10x5.00F	O	●		
		Dual	6.00-9	9x4.00E	O	●		
	Rear		5.00-8	8x3.00D	N	●		
				8x3.00D	O	●		
2~2.5 ton	Front	Single	7.00-12	12x5.00S	O	●		
		Dual	7.00-12	12x5.00S	O	●		
	Rear		6.00-9	9x4.00E 9x4.00E	N O	● ●		
3 ton	Front	Single	28x9-15	15x7.00T	O	●		
		Dual	7.00-15	15x6.00S	O			●
	Rear		6.50-10	10x5.00F	O	●		
J3.5 ton	Front	Single	2.50-15	15x7.00T	O	●		
		Dual	7.00-15	15x6.00S	O			●
	Rear		6.50-10	10x5.00F	O	●		

❍: Standard ●: Available

Vehicle Dimensions



	GT 15 DT 15	GT 18 DT 18	GT 20 DT 20	GT 25 DT 25	GT 30 DT 30	GT 35 DT 35
A	1070 (42.1)	←	1150 (45.2)	←	1240 (48.8)	1290 (50.8)
B	900 (35.4)	←	990 (39.0)	←	1040 (40.9)	1060 (41.7)
C	890 (35.0)	←	960 (37.8)	←	1010 (39.8)	1040 (40.9)
D	180 (7.1)	←	225 (8.9)	←	←	275 (10.8)
E	80 (3.2)	←	100 (3.9)	←	←	125 (4.9)
F	895 (35.2)	←	965 (38.0)	←	←	←
G	1960 (77.2)	1980 (78.0)	2170 (85.4)	2240 (88.2)	2400 (94.5)	2500 (98.4)
H	1835 (72.2)	1845 (72.6)	1965 (77.4)	1990 (78.3)	2085 (82.1)	2130 (83.9)
I	4420 (166.1)	←	←	←	←	←
J	3000 (118)	←	←	←	←	←
K	1995 (78.5)	←	←	←	2020 (79.5)	2125 (83.7)
L	150 (5.9)	←	←	←	135 (5.3)	←

	GT 15 DT 15	GT 18 DT 18	GT 20 DT 20	GT 25 DT 25	GT 30 DT 30	GT 35 DT 35
M	1220 (48)	←	←	←	←	←
N	40 (1.6)	←	←	←	45 (1.8)	←
O	6°	←	←	←	←	←
P	10°	←	←	←	←	←
Q	280 (11.0)	←	310 (12.2)	←	335 (13.2)	←
R	1060 (41.7)	←	1095 (43.1)	←	1135 (44.7)	←
S	2080 (81.9)	←	2110 (83.1)	←	2170 (85.4)	2180 (85.8)
T	1095 (43.1)	←	←	←	←	←
U	1000 (39.4)	←	←	←	←	←
V	410 (16.1)	←	470 (18.5)	←	485 (19.1)	495 (19.5)
W	1410 (55.5)	←	1600 (63.0)	←	1700 (66.9)	←
X	430 (16.9)	460 (18.1)	475 (18.7)	530 (20.9)	560 (22.0)	615 (24.2)
Y	2250 (88.6)	2280 (89.8)	2545 (100.2)	2600 (102.4)	2745 (108.1)	2810 (110.6)

Recommended Lubricants

(Note) LLC=Long Life Coolant

	Engine gasoline (API SH, SJ)	Diesel (API CE, CF)	Transmission Steering Gear (API GL-4)	Differential (API GL-4, GL-5 Hypoid Gear Oil)	Torque Converter (ATF GM Dexron® II Type	Torque Converter (ATF Type F)	Wheel Bearing Chassis	Brakes (SAE-J-1703 DOT-3)	Hydraulic System Power Steering (ISO VG32)	Mast Group	Cooling System
AGIP	SINT 2000 F1 Supermotoroil Motor Oil HD	Superdiesel Multigrade-Diesel Sigma S Diesel Gamma	Rotra HY 80W/90	Rotra HY 80W/90 Rotra HY 80W/90	GM Dexron® II type fluid		AGIP Gease 30	AGIP Brake Fluid Super HD	AGIP OSO 32	AGIP GR SM	AGIP Antifreeze (LLC)
BP	BP Visco 2000 BP Super Viscostatic BP Energol HD	BP Vanellus M BP Vanellus C-3	BP Gear Oil EP	BP Gear Oil EP BP Hypogear EP	GM Dexron® II type fluid	BP Autoran G	BP Energrease L-2	BP Disc Brake Fluid BP Brake Fluid	BP Energol HLP 32	BP Energrease L21M	BP Antifreeze (LLC) BP Isocool (LLC)
CALTEX	Cx Motor Oil Supreme Five Star Motor Oil RPM DELO 400 Oil RPM DELO 200 Oil	RPM DELO 400 Oil RPM DELO 300 Oil RPM DELO 200 Oil RPM DELO 100 Oil	Universal Thuban	Universal Thuban Multipurpose Thuban EP	GM Dexron® II type fluid	Texamatic Type F	Marfak All Purpose 2 RPM Multimotive Gease 2 Marfak Multipurpose 2	Heavy Duty Brake Fluid	Rando Oil HD32 Rando Oil 32	Molytex-Grease EP2	AF Engine Coolant
CASTROL	Castrol GTX Castrol/Deusol RX super Castrol Multiplant Castrol/Deusol CRX	Castrol Turbomax Castrol Dynamax Castrol/ Deusol RX Super Castrol Mulitplant Castrol/ Deusol CRD Castrol/ Ceusol CRB	Castrol EP Castrol Hypoy Castrol Multiplant	Castrol EP Castrol Hypoy Castrol Multiplant Castrol EPX Castrol Hypoy B/C Castrol Multitrax Castrol Syntrax	Castrol Transmax M Castrol TQ Dexron II	Castrol Transmax M Castrol TOF	Castrol LM Castrol LMX	Castrol Disc Brake Fluid Castrol Brake Fluid Heavy Duty Castrol Girling Universal	Castrol Multiplant Castrol Hyspin AWS 32	Castrol MS3 Grease	Castrol Antifreeze Castrol Long Life Coolant
VEEDOL	Veedol Super S Veedol Diesel Star Veedol Integrate	Veedol Turbomax Veedol Dynastar Veedol Diesel Star Veedol Integrage Veedol Diesel HDC Veedol Diesel HDB	Veedol Multigear Veedol Integrate	Veedol Multigear Veedol Integrate Veedol Multigear B Veedol Multigear C	Veedol ATF Dexron II	Veedol ATF Type F	Veedol Alithek MP2	Veedol Disc Brake Fluid Veedol Brake Fluid Heavy Duty	Veedol Integrale Veedol Aubum AW32		Veedol Antifreeze Veedol Long Life Coolant
CHEVRON	Chevron Custom Chevron Special Chevron Delo 400 Chevron Delo 200 Oil	Chevron Delo 400 Chevron Delo 300 Chevron Delo 200 Chevron Delo 100	Chevron Universal Gear lubricant	Chevron Universal Gear lubricant	GM Dexron® II type fluid	Chevron Automatic Transmission Fluid Chevron ATF Special	Chevron Multimotive Grease 2		Chevron AW Hydraulic Oil 32 Chevron GST Oil 32	Chevron Moly Grease 2	
ELF	ELF Prestigrade ELF Anti-Usure ELF Prestis	ELF performance 28 ELF performance 30 Performance HP	Tranself EP	Tranself Type B	GM Dexron® II type fluid	Elfmatic G2	ELF Multi ELF TUZ	Frelub HDS	Olna 32	ELF Multi MoSz	Glacelf
ESSO	Esso Extra Uniflo	Essolube HDX Essolube D-3	Esso Gear Oil GP	Esso Gear Oil GP Esso Gear Oil GX	GM Dexron® II type fluid	Glide	Esso Multipurpose Grease H	Esso Brake Fluid	Teressd 32	Beacon Q2	Esso Longlife Coolant Esso Antifreeze
MOBIL	Mobil 1 Mobil Super Mobil Special	Delvac Super Delvac Special Delvac 1200 Delvac 1300	Mobilube GX	Mobilube GX Mobilube HD	GM Dexron® II type fluid	ATF 220	Mobilgrease MP Mobilgrease 77 Mobilgrease 532, 523 Mobilgreased MS		DTE Light DTE 24	Mobilgrease Special	Mobil Permazone
SHELL	SHELL Super SHELL Super Plus SHELL X-100 Five & Ice	Myrina Rimula Rotella	Spirax EP	Spirax EP Spirax HD	GM Dexron® II type fluid	SHELL Donax TF	SHELL Retinax A	SHELL Donax B SHELL Donax BX	Tellus 32	SHELL Retinax AM	SHELL LLC
SUN	Sunoco Special Sunoco Dunalube Sunlube	Sunfleet Dieselube Sunfleet MIL-B	Sunoco MP GL-5 Sunfleet XL Gear Lube	Sunoco MP GL-5	GM Dexron® II type fluid	Sunoco Trans Fluid-Food	Sunfleet HP Grease	Sunoco Brake Fluid	Sunvis 816 WR	Sunfleet XL Grease	Sunoco Multi-Season Antifreeze

Recommended Lubricants

	Engine gasoline (API SH, SJ)	Diesel (API CE, CF)	Transmission Steering Gear (API GL-4)	Differential (API GL-4, GL-5 Hypoid Gear Oil)	Torque Converter (ATF GM Dexron® II Type	Torque Converter (ATF Type F)	Wheel Bearing Chassis	Brakes (SAE-J-1703 DOT-3)	Hydraulic System Power Steering (ISO VG32)	Mast Group	Cooling System
TEXACO	Havoline Supreme Havoline Super Premium Motor Oil Ursaatex Ursa Super Plus	Ursa Super Plus Ursa Oil Super 3 Ursa Oil Extra Duty Ursatex	Multigear Lubricant EP	Multigear Lubricant EP	GM Dexron® II type fluid	Texamatic Fluid Type F	Marfak All Purpose Marfak Multipurpose 2		Rando Oil HD32 Regal Oil ReO32	Moytex EP 2	Startex AF and Summer Coolant
TOTAL	TOTAL GTS PLUS TOTAL Altigrade GT TOTAL Rubia H	TOTAL Rubia H TOTAL Rubia S TOTAL Rubia X TOTAL Rubia TM	TOTAL EP	TOTAL Transmission TM	TOTAL Dexron®	Total ATF 33	TOTAL Multis 2 TOTAL Multis EP2	TOTAL HBF	TOTAL Azolla ZS32	TOTAL MUltis MS 2	TOTAL Antifreeze TOTAL Coolant
VALVOLINE	XLD All-Climate HD	HD Super HPO All-Fleet (S-3)	Hydro-Lube X-18MD Multi Purpose Gear Oil	X-18MD Multi Purpose Gear Oil HP Gear Lube	GM Dexron® II type fluid	ATF Type FA	Mulri-Lube Lithium EP Grease	Brake Fluid	Hydraulic Oil	Special Moly EP Grease	Pamanent Antifreeze Coolant