

Instruction handbook 1D1/1D2

Language: GB



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Dear Owner of this Truck:

First of all, thank you for the trust placed in our truck. We are certain that you have made the right choice.

These Original Instruction's describe operating procedures, daily cares and simple maintenance for safe usage of your truck. We urge you to read this manual carefully before operating the truck to familiarize yourself with the safety instructions.

These instructions will not only reduce mechanical troubles of your truck, but may also save your life.

This manual should be kept on the truck at all times.

If you encounter any problems with your truck, contact an authorized dealer in your area and request a complete checkup. The dealership will ensure that your truck is serviced in accordance with the latest factory approved methods.

All information, specifications and illustrations in this manual are based on the latest data obtainable at the time of the publication. manufacturer reserves the right to make changes or improvements at any time without notice.

Throughout this manual we have used the symbol:

-  Followed by the word **WARNING**. This is used to indicate the presence of a hazard that could cause personal injury or other damage and must be followed precisely.
-  Followed by the word **CAUTION**. This is also used throughout the Original Instruction's to indicate the presence of a hazard that could cause possible injury to yourself or components and the procedures must be followed carefully.
-  Followed by the word **NOTE**. The information will help to prolong the service life of the truck. The message is not directly related to accident prevention.

MITSUBISHI LOGISNEXT EUROPE S.A.

CALLE SOTO GRANDE, S/N. 31110

NOAIN (NAVARRA) SPAIN

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It should be kept in mind that this Manual deals with both standard and optional equipment, and so you may come across issues that are not applicable to your model in particular.

Model	Serial Number	
P1D1A15L/18L (Q)(T)(H) Y1D1A15/18 (Q)(T)(H)	P1D1E7xxxxx → Y1D1E7xxxxx →	P1D1E7xxxxx Y1D1E7xxxxx
U1D2A20L/25L (Q)(T)(H) Y1D2A20/25 (Q)(T)(H)	U1D2E7xxxxx → Y1D2E7xxxxx →	U1D2E7xxxxx Y1D2E7xxxxx
UG1D2A30L/32L (Q)(T)(H) YG1D2A30/32 (Q)(T)(H)	UG1D2E7xxxxx → YG1D2E7xxxxx →	UG1D2E7xxxxx YG1D2E7xxxxx

DECLARATION OF CONFORMITY

MITSUBISHI LOGISNEXT EUROPE S.A., hereby certifies that the above mentioned forklifts, meet the following EC Directives and Harmonised Standards:

- Machinery Directive 2006/42/EC, ENISO3691-1:2015, EN16307-1:2013+A1:2015, EN1175-2:1998+A1:2010.
- EMC Directive 2014/30/EU, as implemented by the harmonized standard EN12895:2015.
- Noise emission Directive 2000/14/EC as measured by the conformity evaluation methods set out according Appendix V (Internal Control of Production) for outdoor use.

Sound power level:	Measured: 100 dB(A)	Guaranteed: 104 dB(A)	P1D1A15L/18L (Q)(T)(H)
Sound power level:	Measured: 101 dB(A)	Guaranteed: 105 dB(A)	U1D2A20L/25L (Q)(T)(H)
Sound power level:	Measured: 102 dB(A)	Guaranteed: 106 dB(A)	Y1D1A15/18, Y1D2A20/25, YG1D2A30/32 (Q)(T)(H)

TRUCK MODIFICATION

NOTE: Unauthorized forklift modification is not permitted.

No modifications or alterations to a powered industrial forklift, which may affect, for example, capacity, stability or safety requirements of the forklift shall be made without the prior written approval of the manufacturer, its authorized representative or a successor thereof. Contact an authorized dealer before making any modification or alteration to your industrial forklift that may affect, for example, braking, steering, visibility and the addition of removable attachments.

After receiving the approval of the manufacturer, its authorized representative or a successor thereof, the capacity plate, decals tags, operation and maintenance handbooks shall also be changed appropriately.

Only in the event that the manufacturer is no longer in business and there is no successor in the interest to the business, the user may arrange for a modification or alteration to a powered industrial forklift, provided however, that the user shall:

- Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s) expert in industrial forklifts for their safety;
- Maintain a permanent record of the design, test(s) and implementation of the modification or alteration;
- Approve and make appropriate changes to the capacity plate(s), decals, tags and instruction handbook;
- Affix a permanent and easily visible label to the forklift stating the manner in which the forklift has been modified or altered together with the date of the modification or alteration, and the name and address of the organization that performed the alterations.

LOAD CHART

SEE OPERATOR INSTRUCTION MANUAL				CE																	
MODEL VARIATION				KW																	
CHASSIS NO.																					
MAST		TIRE																			
ATTACHMENT																					
TRUCK WEIGHT WITHOUT BATT.		KG		VOLTAGE V																	
BATTERY WEIGHT MAX.		KG		MIN. KG																	
		<table border="1"> <thead> <tr> <th>B : MAX. LIFT HEIGHT</th> <th colspan="3">CAPACITY WITH MAST VERTICAL (KG)</th> </tr> </thead> <tbody> <tr> <td>mm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>mm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A : LOAD CENTER (mm)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				B : MAX. LIFT HEIGHT	CAPACITY WITH MAST VERTICAL (KG)			mm				mm				A : LOAD CENTER (mm)			
B : MAX. LIFT HEIGHT	CAPACITY WITH MAST VERTICAL (KG)																				
mm																					
mm																					
A : LOAD CENTER (mm)																					

180928_99070 4UB0D

LOAD CHART

For countries where forklifts with the CE marking must be used

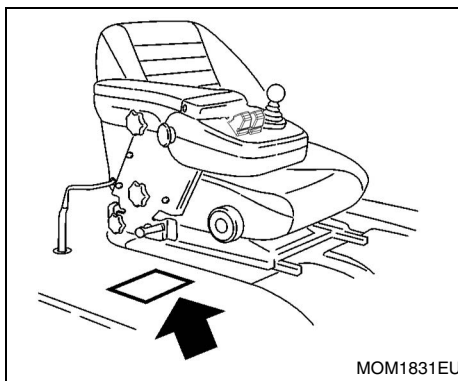
The load chart, attached to the top panel, indicates all necessary information regarding the type of attachments, lifting capacity, etc.



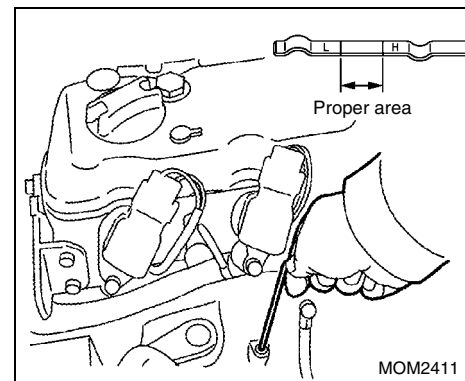
WARNING:

Do not exceed the rated capacity of the forklifts.

- Capacity with mast vertical.
- Load centre distance (A).
- Lift height for fork lift (B).



Refer to the "LOAD CHART LABEL" attached to the top panel.



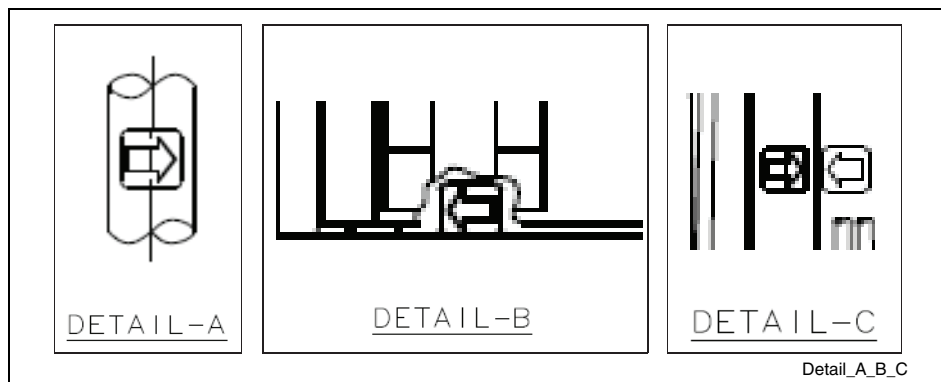
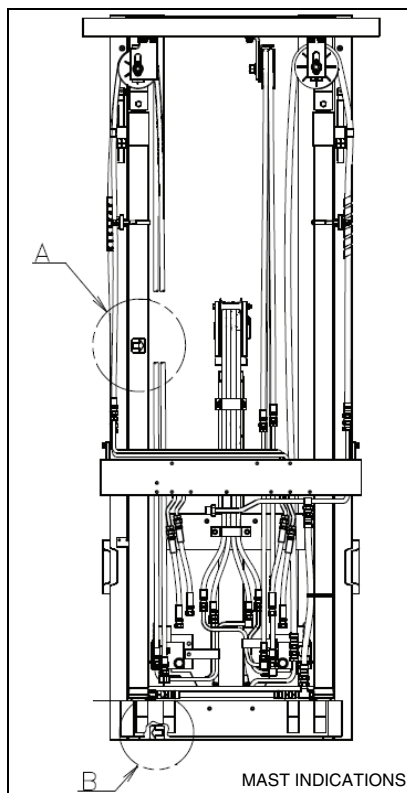
CHASSIS SERIAL NUMBER

P1D1 — XXXXXX
 Y1D1 — XXXXXX
 U1D2 — XXXXXX
 Y1D2 — XXXXXX
 UG1D2 — XXXXXX
 YG1D2 — XXXXXX



The number is stamped on the center of the frame.

MAST INDICATIONS



WARNING:

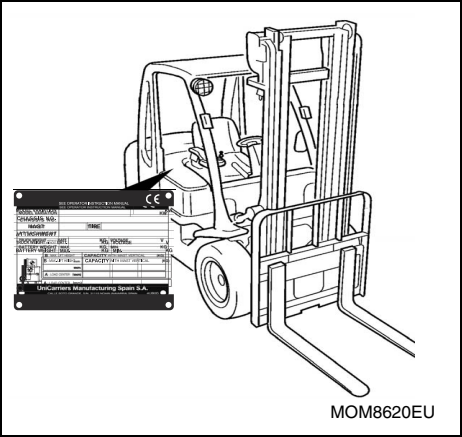
MAST INDICATIONS

When the mast indications as shown in details A & B align as shown in detail C the on the LOAD CHART indicated lift height is reached.

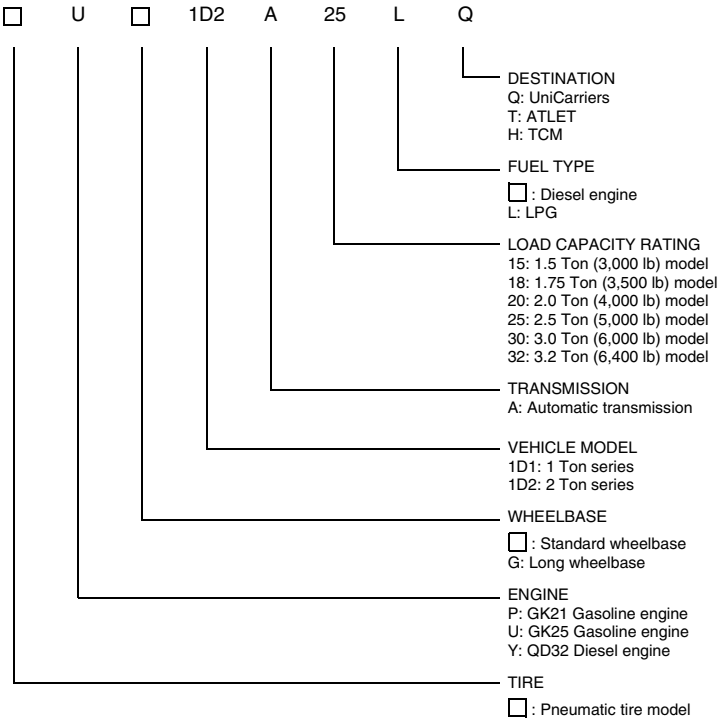
At this lift height the lifting capacity is reduced, for safety and health reasons it is mandatory to reduce the weight of the load as indicated on the LOAD CHART. Not reducing the weight of the load may result in the forklift tipping over and serious personal injuries.

MODEL VARIATION

The model variation of the truck is mentioned on the first row of truck identification plate attached to the top panel.

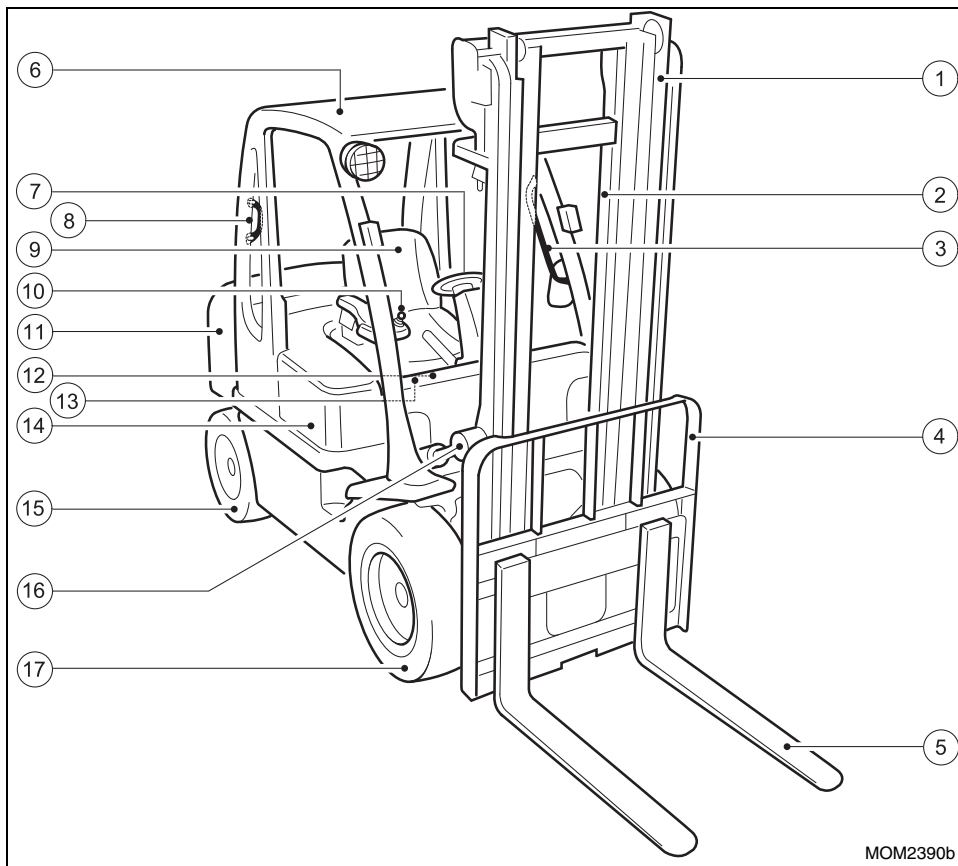


Explanation Model variation coding



NOTE: ☐ Means no indication.

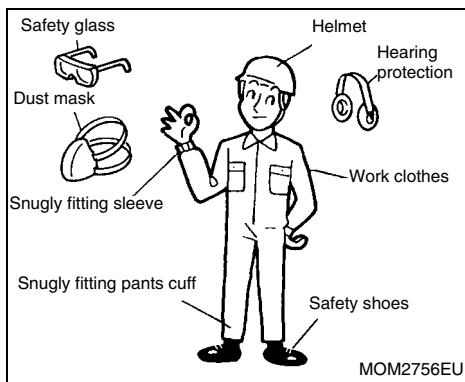
NAME OF COMPONENTS



- ① Mast
- ② Lift cylinder
- ③ Front grip
- ④ Backrest
- ⑤ Fork
- ⑥ Overhead guard
- ⑦ Steering wheel
- ⑧ Rear grip with horn button (option)
- ⑨ Operator's seat
- ⑩ Joystick lever
- ⑪ Counterweight
- ⑫ Document clamp
- ⑬ USB charger (option)
- ⑭ Top panel
- ⑮ Rear tire
- ⑯ Tilt cylinder
- ⑰ Front tire

MOM2390b

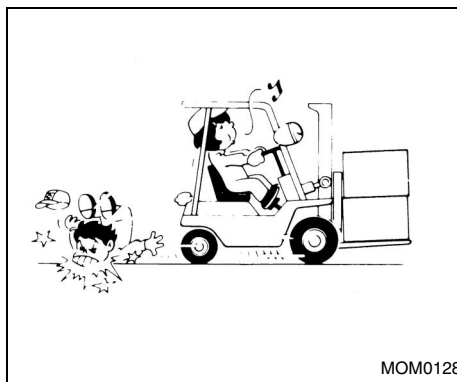
SAFETY RULES



PERSONAL PROTECTIVE EQUIPMENT FOR OPERATING FORKLIFT

! WARNING:

- For operation of the forklift, the protective equipment for the operator shall be dependent upon the conditions of use and the applicable provisions of the local laws and regulations.
- The working clothes worn by the operator shall be such that sleeves and cuffs fit snugly so as to prevent them from getting caught on forklift levers, etc., and safety glasses, earmuffs, dust mask and safety shoes should also be worn, as required by the work environment or employer.



Operator must be trained and authorized to drive the forklift and must understand safety techniques and rules for forklift operation.



Inspect the forklift before operating. Do not operate the forklift if it is in need of repair. If it is in need of repair, tag the forklift, remove the key and report the condition to the proper authority. Do not attempt repair unless you are trained and authorized to perform repairs.



Do not remove the overhead guard or backrest.



Make sure that the selector lever is set in neutral and the parking brake is applied before turning the ignition switch. Do not start or operate the forklift if you are not in the designated operator's position.



Do not allow anyone on any part of the forklift when moving or lifting.



Do not sit on the fork (when loaded or not) or get under the fork.



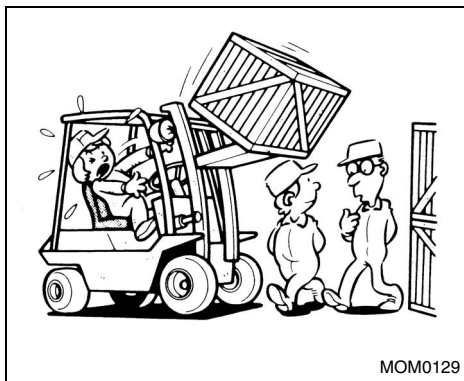
Before operation, make sure that the seat belt is secure and the top panel latch is in the locked position.



Before starting the engine, make sure that the seat belt is secure.

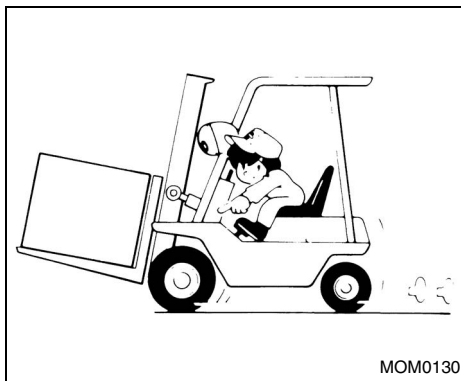


When depressing the accelerator pedal, be sure to visually confirm the position of the selector lever. When starting on slopes, be sure to apply the parking brake to hold the forklift and then start, even if the slopes are gentle. Avoid rapid acceleration (especially when carrying a high load).



! Keep hands, feet and other parts of your body inside the operator's compartment at all times.

! Do not allow anyone to stand or walk under the elevated portion of the forklift whether it is empty or loaded.



! Space forks as far apart as the load will permit.

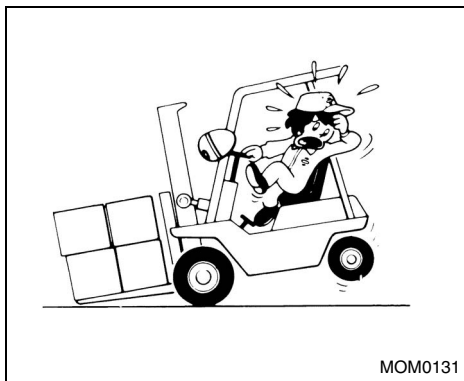
! Always carry loads low with the mast tilted to the backmost position, never forward. Do not elevate loads except during stacking.

! Maintain a careful lookout for people and obstructions, and watch the path of travel. Watch clearances, especially overhead and tail swing. When visibility is obstructed, use extreme caution. Yield the right of way to pedestrians.

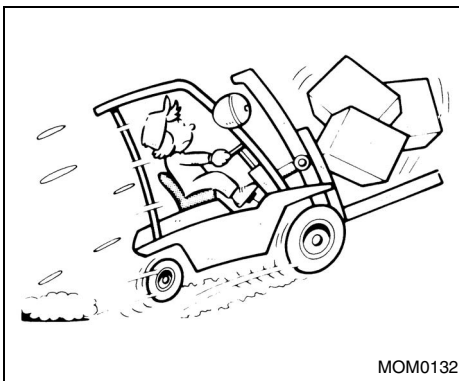
! If the load obstructs the front view, drive the forklift in reverse.



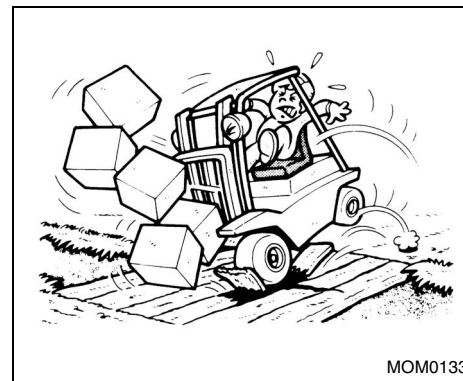
! Do not place a load higher than the backrest of the forklift. A load placed higher than the backrest may drop towards the operator and is very dangerous. If such a load must be handled, securely fasten the load using suitable ropes or hold-down bands.



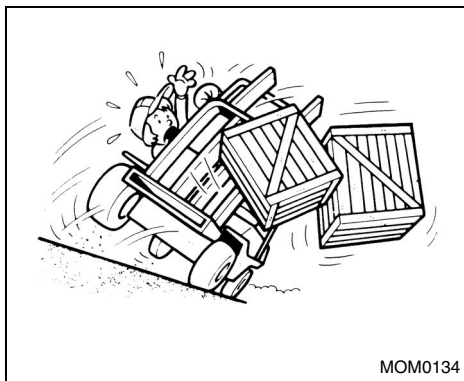
-  **Do not overload the forklift. Check the load chart for load weight and load center information. Always pick up loads as close to the center of the weight as possible to avoid off-center loading.**



-  **Avoid sudden starts, stops or turns. Slow down for turns and on uneven or slippery surfaces that could cause the forklift to overturn or slide.**
-  **Use special care when traveling without a load as the risk of lateral overturn may be greater than when traveling with a load.**
-  **Before entering forklifts or trailers, be certain that the brakes on the forklift or trailer are applied and the wheel chocks are in place or that the trailer is locked to the loading dock.**



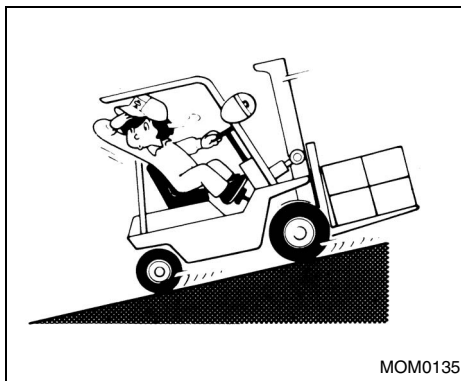
-  **Before driving over a dockboard or bridge plate, be certain that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate. Never exceed its rated capacity.**



 Use special care when operating on slopes. Travel slowly and do not angle across or turn.

 Do not handle unstable or loosely stacked loads. When handling long, high or wide loads, use special care to ensure stability and carefully watch the surrounding conditions.

 When approaching cross aisles, slow down and sound the horn if visibility is obstructed.



 When ascending or descending slopes, drive the forklift with the load facing upgrade.

 Do not handle unstable or loosely stacked loads. When handling long, high or wide loads, use special care to ensure stability and carefully watch the surrounding conditions.

 When approaching cross aisles, slow down, and sound horn if visibility is obstructed.

 Before leaving the forklift, be sure that forks or attachments are lowered, forward-reverse lever is in neutral, parking brake is applied and ignition key is turned off. Avoid parking forklift on a slope.

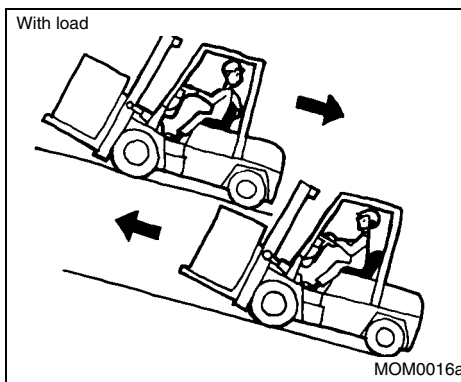
 Before leaving the forklift, be sure that forks or attachments are lowered, the selector lever is in neutral, the hand brake is applied and the ignition switch is turned off. Avoid parking the forklift on a slope.

TRAVELING ON GRADIENTS, GANGWAYS AND IN ELEVATORS



WARNING:

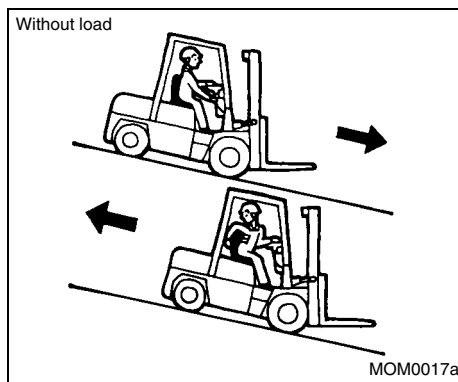
- When moving the forklift in elevators, check to make sure that the elevator is capable of withstanding the forklift weight or the forklift weight plus the load weight.
- Be sure to apply chocks under the tires to prevent the forklift from moving while it is parked in the elevator.
- Do not perform work in the elevator.



WARNING:

Use care when traveling on gradients.

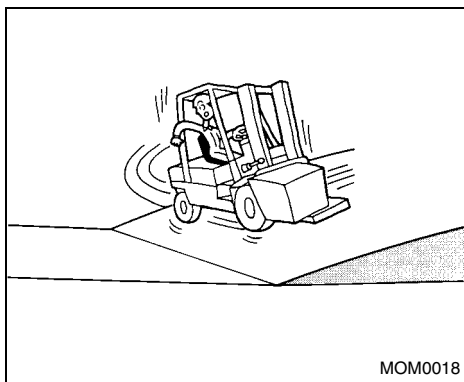
- When traveling on gradients with a load, always drive forward on upward slopes and in reverse on downward slopes.
- Drive slowly on slopes. Drive in the reverse direction on upward slopes when without a load, and drive forward on downward slopes.



- Use the brake pedal when driving downhill to sufficiently reduce the speed.



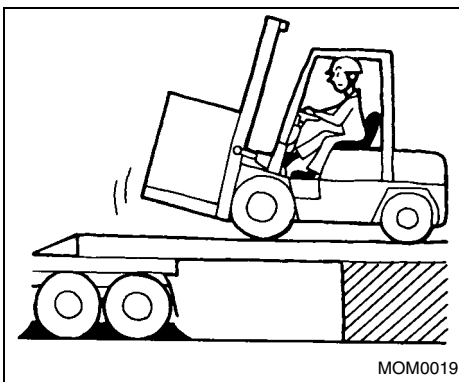
Use the brake pedal and engine brake together when driving downhill so as to maximize the effectiveness of the engine brake.



WARNING:

Do not traverse and turn around on slopes.

- Because driving on slopes causes the center of gravity to shift towards the lowest point, the forklift is likely become unbalanced.



WARNING:

Following are precautions relating to driving onto freight cars and trailers.

- Check freight cars and trailers to make sure that they will not move.
- The ramp for driving the forklift onto a freight car or trailer shall have sufficient strength to withstand the weight of the forklift and its load, as well as the forces exerted by the bouncing of the forklift.
- The ramp shall be anchored so that it does not shift.
- Use the utmost care when driving on and off a freight car or trailer.

TRANSPORTING FORKLIFT

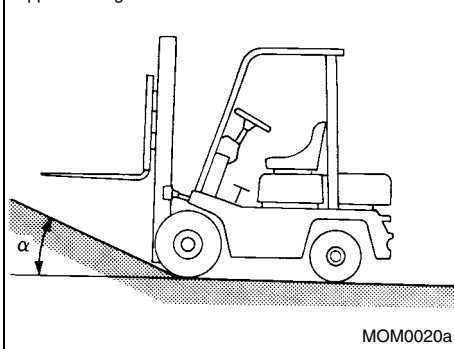


WARNING:

1. Tilt the mast back to the maximum without load. If the mast assembly is removed from the forklift only drive up a ramp with the counterweight first and off a ramp with the front of the forklift first. This to ensure the drive wheels have enough traction.
2. Check the approach and departure angles to make sure that the underside of the forklift does not come into contact with the load carrying platform or the ground.
3. When using a load bridge, make sure that the planks are capable of withstanding the deadweight of the forklift.
4. When winching the forklift onto a load carrying platform, be sure to attach the cable to the traction pin. Do not ride on the forklift while it is being winched.
5. Do not load or unload the truck when it's raining, unless the ramps are fitted with an anti-slip surface.
6. Be sure to use lashing points and firmly secure the forklift to the load carrying platform.
7. When hoisting the forklift, be sure to use the lifting points.
8. Turn off the ignition switch and remove the key.

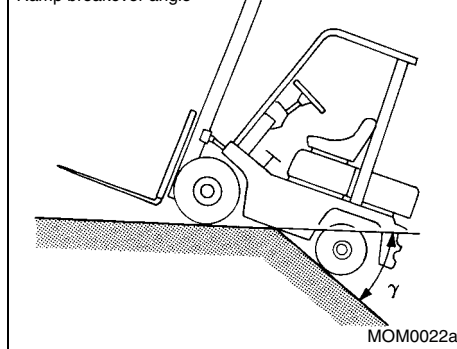
APPROACH ANGLE, DEPARTURE ANGLE AND GANGWAY

Approach angle



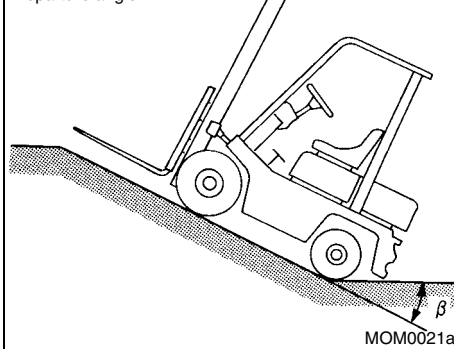
MOM0020a

Ramp breakover angle



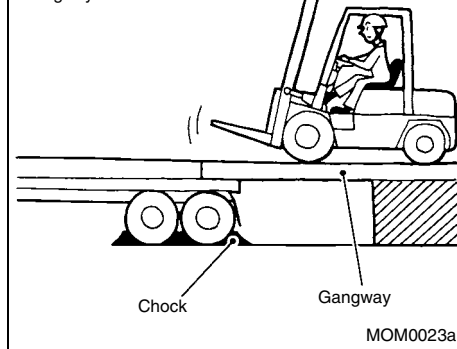
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Departure angle



MOM0021a

Gangway



MOM0023a

SPECIAL OPERATING CONDITIONS

When operating the forklift under severe climatic conditions such as high temperatures, high altitudes, in cold storages, and when handling explosives and combustibles, and in areas where the forklift is apt to cause radio interference, make sure that the forklift is manufactured and approved as conforming to the local specifications, laws and regulations.

POSITION OF LABELS



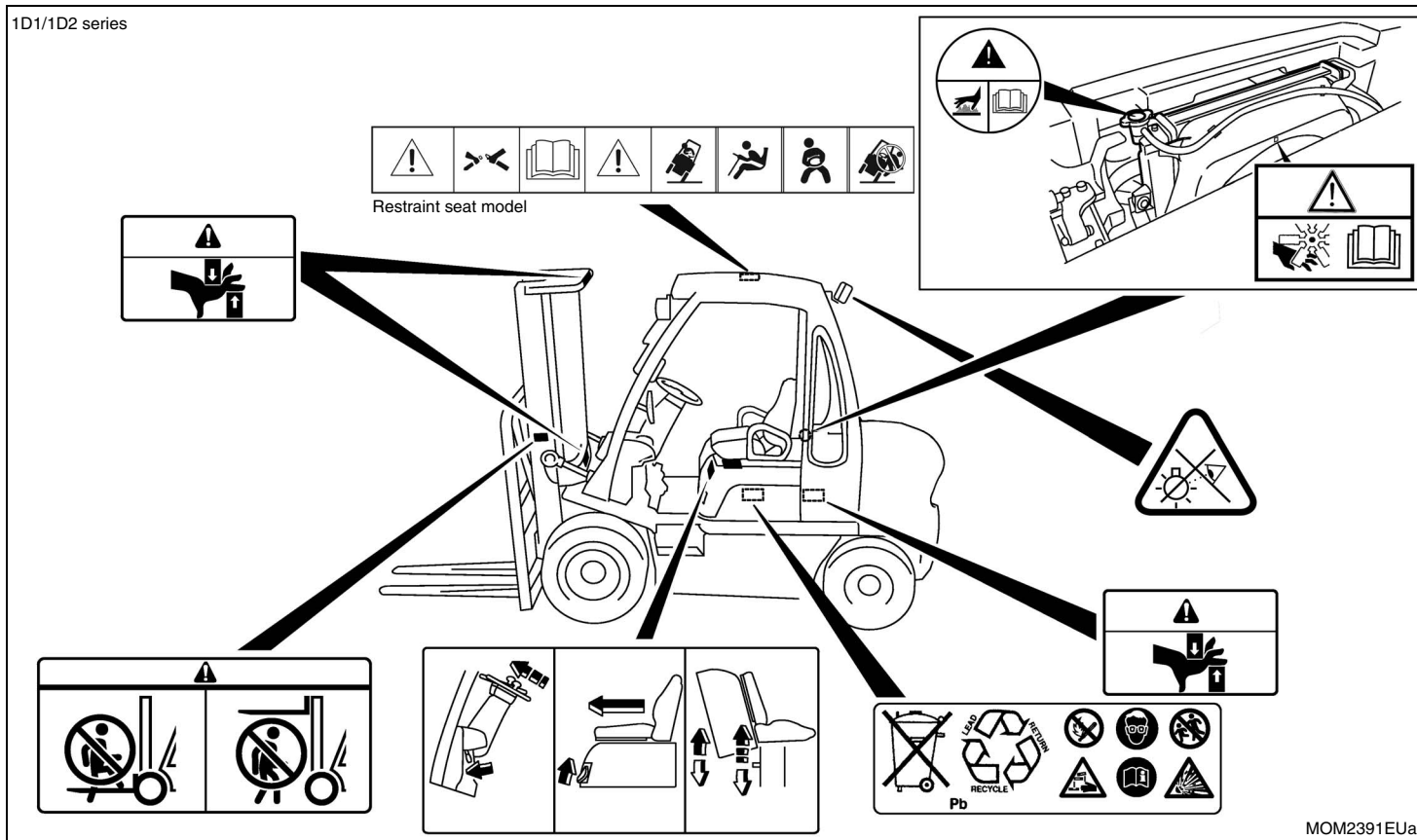
WARNING:

When warning and caution labels are damaged such that they cannot be read or have peeled off, they should be immediately replaced with new labels to ensure that they are constantly maintained in a legible condition. The warning and caution labels are available at an authorized dealer.

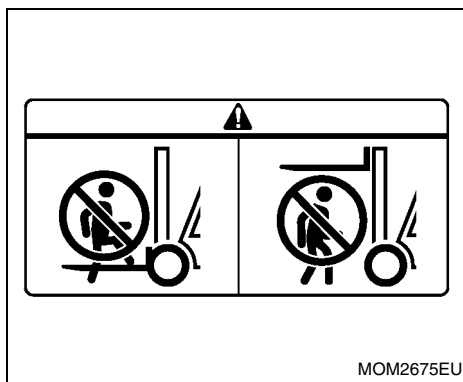
- The warning and caution labels are affixed to the designated locations of the forklift as shown in the figure on the following page. Before operating the forklift, be sure to take note of the details given in the labels so as to ensure proper and safe operation.

POSITION OF WARNING AND CAUTION LABELS

1D1/1D2 series



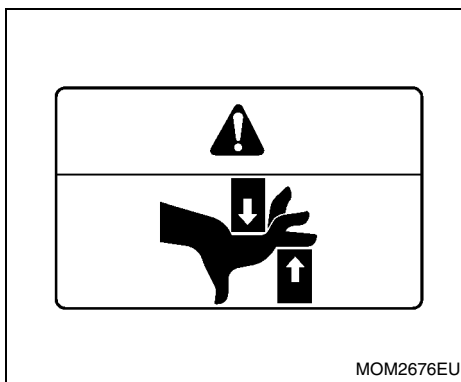
MOM2391EUa



WARNING:

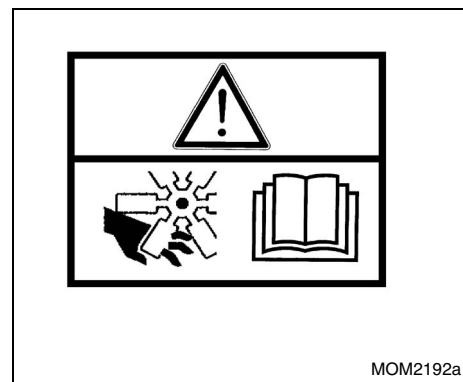
Do not stand on or below forks.

- Riding on the forks is strictly prohibited. Furthermore, do not stand immediately below the forks. Otherwise, serious accidents can occur if the forks should move abruptly and the load placed on the forks unexpectedly falls down. In the worst cases, these accidents can be fatal.



WARNING:

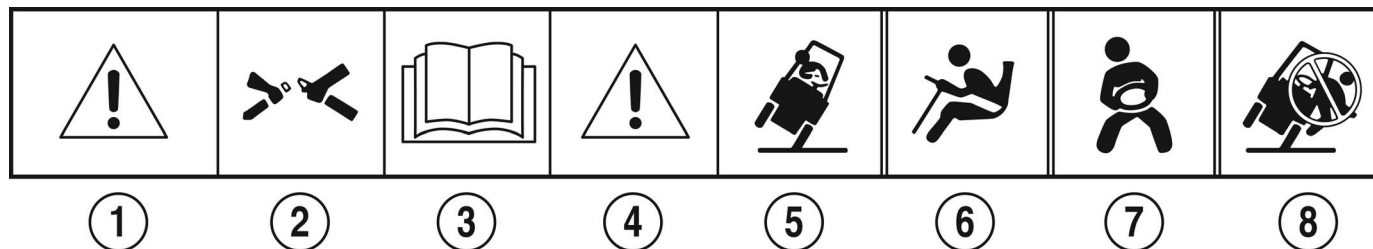
Be sure to keep your hands, feet and body away from the masts. Otherwise, parts of the body are liable to become caught between the moving and fixed sections of the masts and injury may occur.



WARNING:

Never touch the cooling fan while it is turning.

- Touching the cooling fan while it is turning may result in injury to your fingers, and in the worst case, may sever the fingers.



MOM2065EU

① **WARNING**

The following precautions should be closely observed to ensure safe operation of the forklift as well as to prevent personnel against injury.

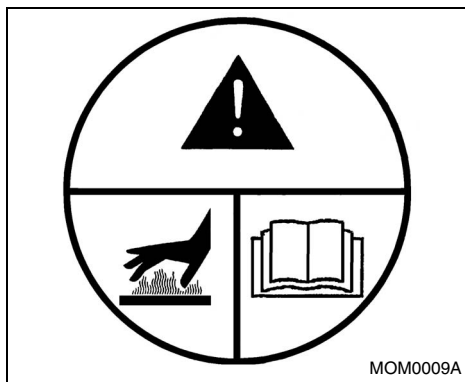
- ② Always make sure your seatbelt is securely fastened and stay seated while driving.
- ③ Read the manual carefully before operating the truck to familiarize yourself with the safety instructions.

④ **DANGER**

The operator should stay with the forklift if the forklift starts to tip or falls off a dock or ramp.

The operator should:

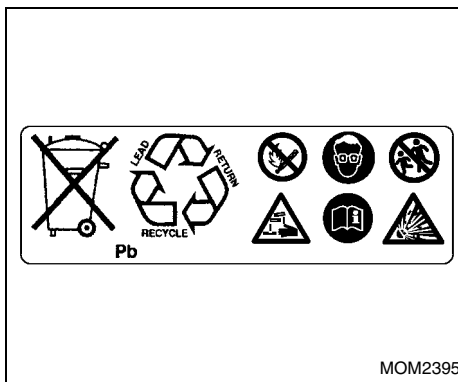
- ⑤ Lean away from the point of impact.
- ⑥ Hold on firmly to the steering wheel with both hands.
- ⑦ Brace your feet and hold yourself inside the operator compartment.
- ⑧ Do not jump clear of the forklift.



WARNING:

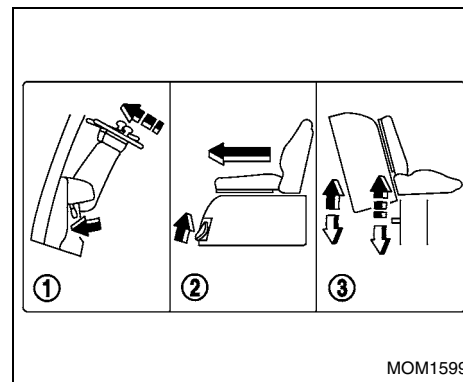
Never open the radiator cap when it is hot.

Touching the radiator cap while it is hot may result in injury to your hand.



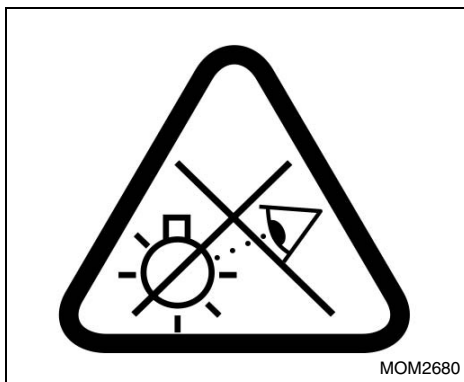
WARNING:

- Diluted sulfuric acid and lead are used in the battery.
- Used battery fluid and batteries shall be disposed of according to the applicable provisions of the local laws and regulations.
- Consult with an authorized dealer about the disposal of the used battery fluid and batteries.



WARNING:

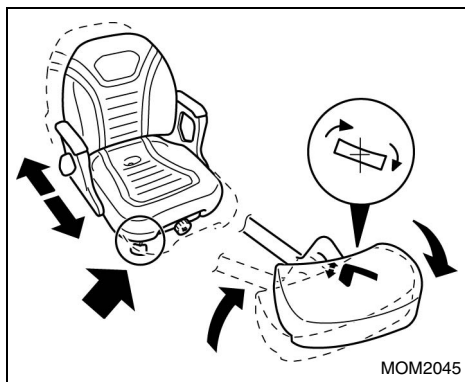
Do not open the top panel with the engine running. Do not place hands near the cooling fan because it rotates at a high speed and may cause injury. When opening the hood, be sure to turn off the engine. When starting the engine, check the hood to make sure that it is locked.



WARNING:

Due to the wavelength of blue light used, an eye injury may result, when looking into the light. The risk varies with the distance. The aversion response of a person exposed to the light source is usually sufficient to prevent eye injuries.

SEAT ADJUSTMENT



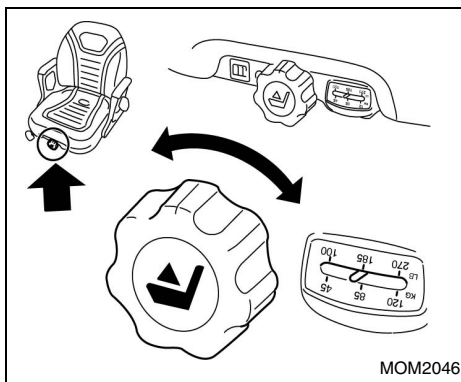
Forward and backwards control lever

Pull the lever upwards at the right hand corner of the seat, and slide the seat forward or rearward until the seat is at the desired position; then release the handle. The adjustment range is 130 mm.



WARNING:

- Before adjusting the seat, turn the key switch to the OFF position.
- Be sure to adjust the seat position while the forklift is stationary.



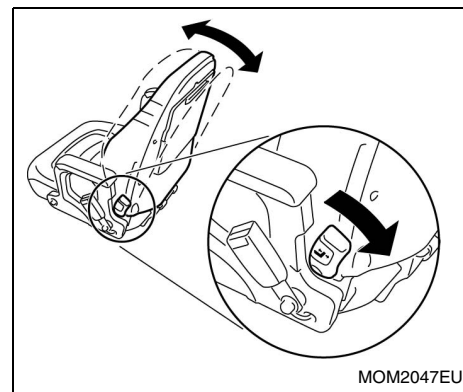
Suspension seat operator's weight adjustment

In order for the suspension to effectively reduce the vibration that is transmitted to the operator, it must be set correctly for the operator's weight. Rotate the weight adjustment knob on the front of the seat until the weight indicator shows the operator's weight, between 50 kg and 120 kg, this may be done before or while sitting on the seat.



WARNING:

Regarding the mechanical lever, fingers might be pinched in the small gap between the weight adjustment dial and the console box. Slide the seat fully backward before adjusting the seat to the operator's weight.



Seatback cushion fold

To fold the seatback cushion turn the seatback adjustment knob, located on the left hand side of the seatback cushion, (clockwise) and push the seatback cushion forward until it locks in place (approximately 60 degrees from vertical). To return the seatback cushion to its normal position, turn the seatback adjustment knob (clockwise) again and pull the cushion up until it locks in place.

Seatback cushion recline

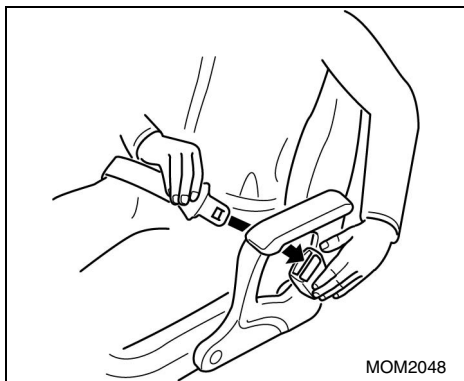
For improved comfort the seatback cushion angle can be adjusted from between 5.5 degrees to 12.5 degrees in 7 positions. Turn the seatback adjustment knob, located on the side of the back cushion, (clockwise) and lean back to the desired position, then release the knob.



WARNING:

- **Do not excessively tilt back the backrest, otherwise the seat belt may not demonstrate its performance in an emergency.**
- **When adjusting the angle of the backrest, gently do it while holding the backrest by hand. Hasty and rough adjustment may cause an injury, for instance the back of the seat may bump against the operator's face and body, or the operator's finger may get caught between the backrest and the grip.**

SEAT BELT



The seat belt includes an emergency locking retractor (ELR) which only locks up during an accident, allowing the operator to freely move around during normal operation. To attach seat belt, pull the seat belt strap from the retractor slowly and plug the end into the buckle on the opposite side.

For unfastening the seat belt, press the button on the buckle and pull the tongue out of it. While lightly holding the tongue, let the seat belt be rewound gently.



NOTE:

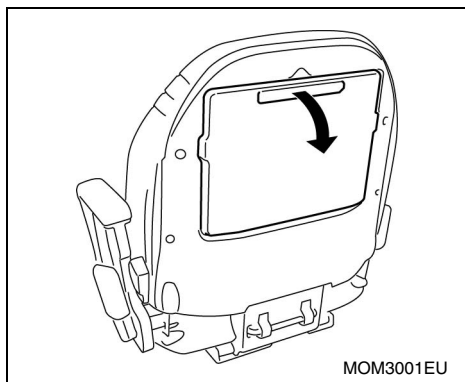
When unfastening the seat belt, be sure to hold the tongue because the tongue may be pulled rapidly together with the seat belt.



WARNING:

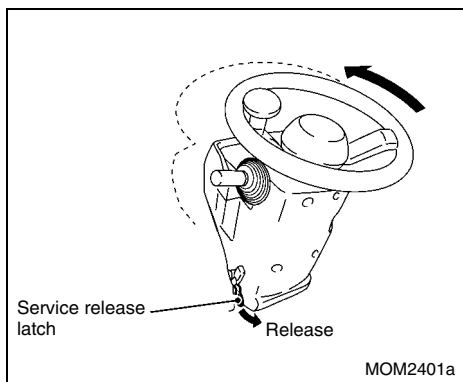
- **Tightly wrap the seat belt around the hipbone as low as possible. If the seat belt comes off the hipbone and it wraps around the abdomen, it may cause an injury because strong pressure is applied onto the abdomen.**
- **Do not fasten the seat belt as it is twisted. If it is twisted, it may cause an injury because the twisted belt cannot disperse an impact and a limited part is shocked intensively.**
- **Do not excessively tilt back the backrest, otherwise the seat belt may not demonstrate its performance.**
- **Do not put any foreign substance into the buckle or belt winder, otherwise its performance cannot be demonstrated because it cannot be fastened normally.**
- **If the seat belt is used by a pregnant woman or sick person, consult with the doctor beforehand because her/his abdomen is pressed by the seat belt.**

- **The seat belt that was once impacted, damaged or broken in part may not demonstrate its original performance. Replace it with a new one at the nearest dealer.**
- **For cleaning the seat belt, use a neutral detergent or lukewarm water. After cleaning, dry it completely before use. Be sure not to use an organic solvent such as benzine or gasoline, otherwise the seat belt deteriorates in its performance and may not function as designed.**



Operator's Manual compartment

The compartment door, located on the back of the seat, is retained with an elastic strap. To open it, pull the top of the door rearward using the molded in handle.



WARNING:

- Before starting the engine, make sure that the steering wheel is returned to the original locked position.
- Do not operate the forklift with the steering wheel in the service release position. Doing so could result in an accident.



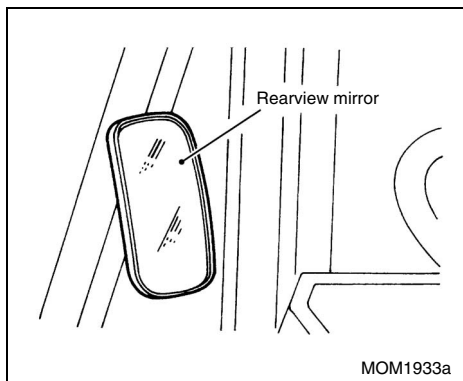
NOTE:

The steering wheel position adjusted by the tilt mechanism does not vary when it is tilted.

SERVICE RELEASE LATCH

Press the steering wheel forward while depressing the service release latch on the left side under the steering wheel, and the steering wheel tilts forward.

For returning the steering wheel to the original position, pull it toward the operator's seat to the limit. The service release latch returns to the original position and the steering wheel is locked automatically.



REARVIEW MIRROR

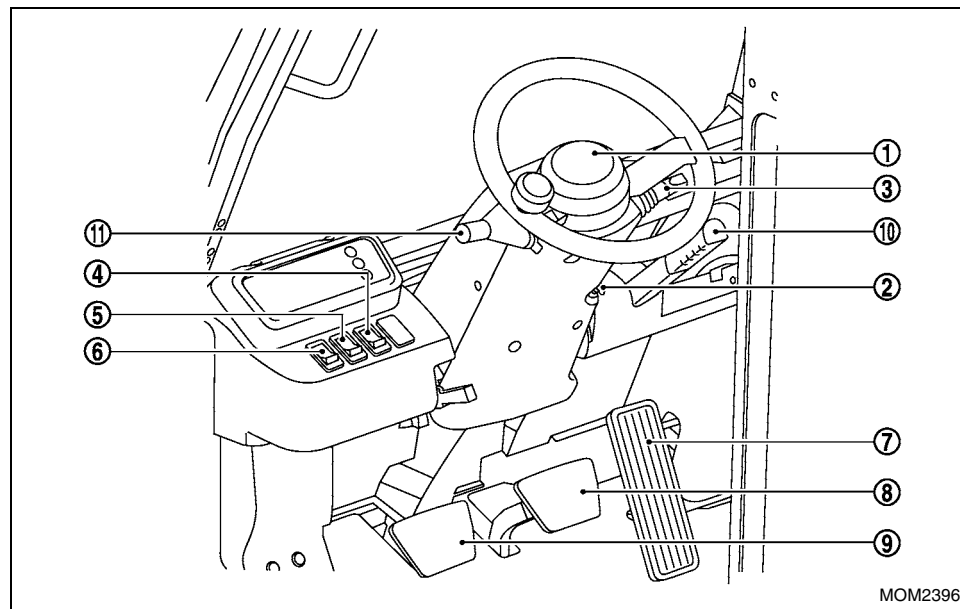
Adjust the right and left rearview mirrors respectively by hand so that both ensure the best view to the rear.



WARNING:

Never use only the rearview mirrors for operating the forklift in reverse due to limited visibility. Always turn and look in the direction of travel before proceeding.

SWITCHES AND CONTROLS



- ① Horn switch
- ② Ignition switch
- ③ Lighting switch and turn signal switch
- ④ Throttle sensitivity adjust switch
(LPG model, except for low noise
specification) (option)
- ⑤ Maximum speed change switch
(LPG model option)

- ⑥ Operation lamp switch
- ⑦ Accelerator pedal
- ⑧ Brake pedal
- ⑨ Inching brake pedal
- ⑩ Hand brake lever
- ⑪ Selector lever

i NOTE:

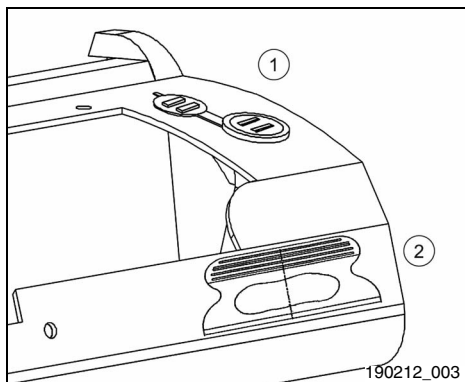
In forklifts with the optional joystick control, switch 3 is located at position 11, and switch 11 is located on the left side of the armrest.

i NOTE:

In forklifts with the optional reversing incl. rear operation light on. The rear operation light will automatically turn on when the R position is selected. Both for manual controlled hydraulics and the optional joystick control. This option is not road legal for safety reasons.

i NOTE:

In forklifts with the optional reversing incl. rear operation light on. Switch 6 is not equipped.

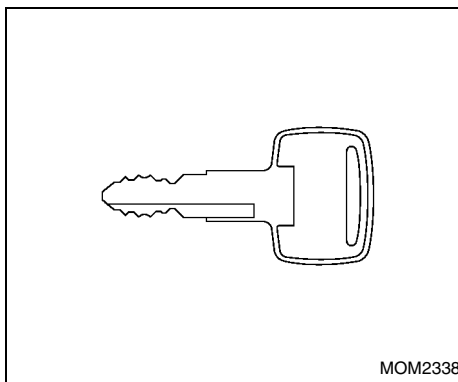


PAPER CLAMP & OPTIONAL USB CONNECTOR

The paper clamp ② is for clamping documents on the dashboard.

i NOTE:

The optional USB connector ① is for charging portable devices, such as smart phones, tablets and or scanning equipment. Make sure always to close the lid after usage, and not to use the USB connector in environments with moisture or rain for example.

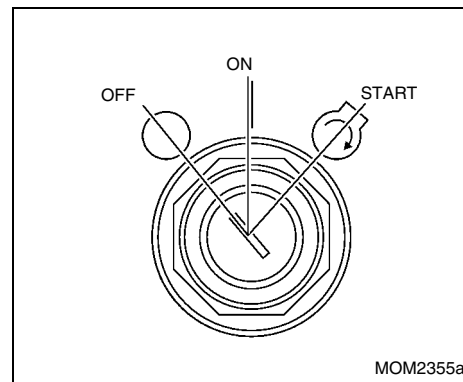


IGNITION KEY

Insert the ignition key in the ignition switch before starting the engine, and remove the ignition key from the ignition switch after stopping the engine.

i NOTE:

- **Two ignition keys are provided with every truck. Use one key for operation and store the other in a safe place as a spare.**
- **Be sure to take a note of the key number in case the key is lost. You need to specify the key number when placing an order for additional spare keys to an authorized dealer.**



IGNITION SWITCH

OFF position

The position that allows the ignition key to be inserted into or removed from the ignition switch. When the ignition switch is in this position, all electric circuits are open but the following can be turned on and off.

- Horn
- Lamps by operating the lighting switch
- Rear operating lights (option)
- Braking lamps by the application of the brake pedal.

ON position

The position in which the ignition switch is placed when the engine is running. When the ignition switch is in this position, all electric circuits are closed.

START position

To start the engine, turn the ignition switch to the ON position, then to START. When you take your hand off the ignition key after starting the engine, the key returns to this ON position automatically.



NOTE:

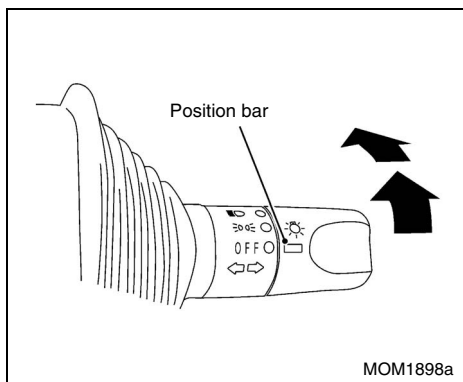
- If you leave the ignition switch in the ON position while the engine is stopped, the battery may run down, and this may make it impossible to start the engine. To avoid this situation, always return the ignition switch to the OFF position after stopping the engine.
- During operation, the ignition switch is in the ON position. Never turn it to the OFF or START position.
- Do not operate the starter for a long time when starting the engine.
- If the engine does not start even though you operate the starter repeatedly, return the ignition switch to the OFF position, wait for a short period of time until the battery is restored to a normal voltage level, and then try to start the engine again.

LPG engine forklift

Do not operate the starter for more than 10 consecutive seconds. If the engine does not start, wait for at least 10 seconds and then try to start it again.

Diesel engine forklift

Do not operate the starter for more than 30 consecutive seconds. If the engine does not start, wait for at least 10 seconds and then try to start it again, starting with preheating.



LIGHTING SWITCH

To turn on one of the lamps listed in the table, turn this switch to align the position bar (–) on the switch knob with the corresponding mark on the switch main unit.

Switch mark	Headlamp	Tail lamp
OFF	Off	Off
☸☸☸	Off	On
☸☸☸	On	On



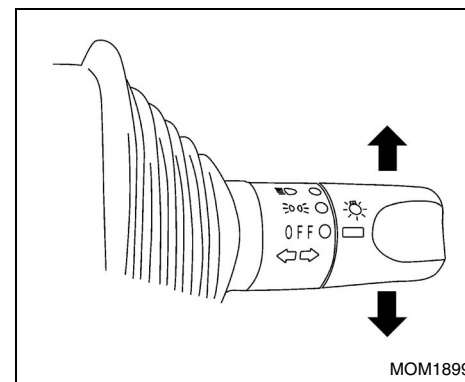
CAUTION:

Do not touch the headlamp lens when the headlamp is lit or immediately after the headlamp is turned off, because it is very hot.



NOTE:

- You can turn lamps on and off by turning the lighting switch, regardless of the position of the ignition switch.
- Do not forget to turn off all lamps when leaving the forklift, otherwise the battery may run down.



TURN SIGNAL SWITCH

Push the switch lever forward when turning left, and pull it backward when turning right. The appropriate turn signal will blink. Upon completion of the turn, be sure to return the lever to its original position.

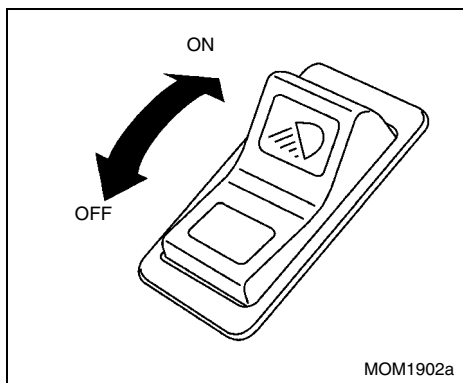
HORN SWITCH

Pushing the switch in the center of the steering wheel will sound the horn, regardless of the key position (if the truck is equipped with fingertip control the horn switch is also located on the left hand side of the armrest).



NOTE:

For forklifts with the optional joystick control, a horn switch is also located on the joystick control unit.



Back-up operation lamp switch (Option)

This switch is used to turn on and off the rear operating light that illuminate rearward for nighttime operation or operation in poorly illuminated areas.

Press the lamp symbol-marked side of this “seesaw” switch to turn on the lights, or press the opposite side to turn off the lights. The lamp in the switch lights up when the rear operating light is turned on.



WARNING:

Do not touch the lens of a rear operating light when the light is lit or immediately after it is turned off, because it is very hot.



NOTE:

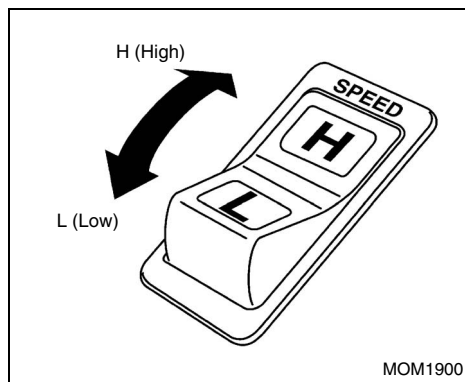
- The rear operating light can be turned on, regardless of the position of the ignition switch. So leaving them ON causes the battery to run down and sometimes makes it impossible to start the engine.
- The law prohibits the turning on of backward illumination lamps on public roads.

The rear operating light, if turned on, will obstruct the passage of other vehicles on public roads. To avoid this, always turn them off when driving on a public road.



NOTE:

In forklifts with the optional reversing incl. rear operation light on. This switch is not equipped.



MAXIMUM SPEED CHANGE SWITCH (LPG model option)

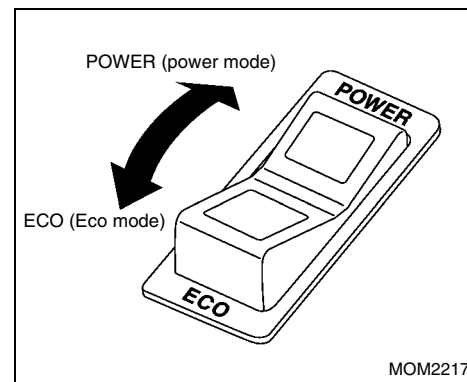
This switch is an optional setting switch for electronic control LPG vehicle. It allows you to switch the maximum speed between H (high speed mode) and L (low speed mode). Press the H (High) side of the switch if there is no need to limit the maximum speed to a low level, or press the L (Low) side to limit the maximum speed to a low level.

The lamp on the side you pressed illuminates, indicating the speed mode that is currently selected.



CAUTION:

- Do not change the maximum speed when the forklift is driven. Doing so could cause the load to shift.
- Only authorized dealers are allowed to change the running speed settings. So, if necessary, ask an authorized dealer to perform this change.



THROTTLE SENSITIVITY ADJUST SWITCH (option) (LPG model, except for low noise specification)

This switch is an optional setting switch for electronic control LPG vehicle. It allows you to switch the starting acceleration between POWER (power mode) and ECO (economy mode). Press the POWER side of the switch to accelerate the forklift at a normal rate, or press the ECO side to accelerate the forklift slowly.

The lamp on the side you depressed illuminates, indicating the power mode that is currently selected. You can switch from one mode to the other, as described in the table.

Switching operation	During driving	During a halt and ignition switch OFF
From POWER to ECO	Not possible	Possible
From ECO to POWER	Not possible	Possible



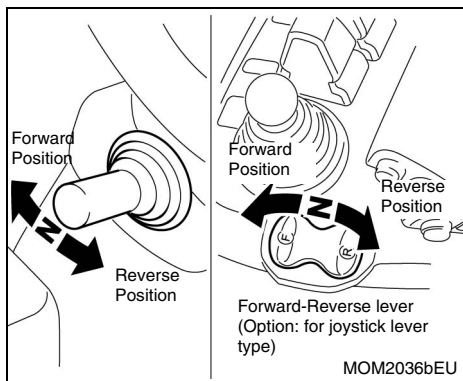
NOTE:

Switching from the ECO mode to the POWER mode can be done only when the accelerator is released.



CAUTION:

Turn the ignition switch off before changing the POWER/ECO SWITCH.



SELECTOR LEVER

This lever is used to change the running direction of the forklift (forward or reverse). Push the lever forward to drive forward, or pull the lever towards you to back up. The neutral position is at the midpoint.

The same operating method applies to the selector lever positioned on the right side of the forward-reverse lever (option).

i NOTE:

On forklifts equipped with a back-up buzzer, the buzzer will sound whenever the forward-reverse lever is moved to the reverse position, and "RETURN TO NEUTRAL "N"" is indicated.

i NOTE:

On forklifts equipped with the optional Blue Lamp this Blue Lamp will be activated when the forward-reverse lever is shifted into the reverse position, if the truck is also equipped with equipped with the option rear operating light activated by reverse this rear operating light will also be activated.

i NOTE:

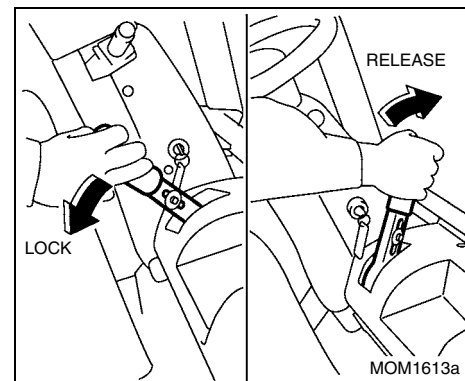
The engine cannot be started when the selector lever is in any position other than the neutral position.

TRANSMISSION INTERLOCK (OPTION)

When the selector lever is shifted from F(oward) to R(everse) or from R to F while truck speed is over 3 km/h, the transmission returns to Neutral automatically. After the truck speed is reduced below 3 km/h, the transmission will automatically engage to the selected F or R gear corresponding to the selector lever position.



PLEASE BE AWARE THAT CHANGING THE SELECTOR LEVER POSITION WHILE THE TRUCK IS MOVING, THE TRUCK WILL NOT STOP OR CHANGE THE DIRECTION UNTIL TRUCK SPEED IS LESS THAN 3 KM/H.



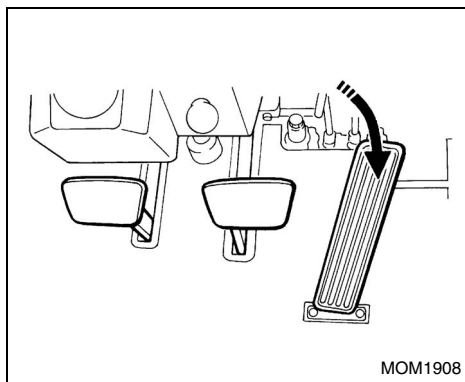
HAND BRAKE LEVER

To set the brake, pull the hand brake lever backward. To release the brake, push it forward. Before leaving the forklift, be sure to apply the hand brake securely.

As soon as the hand brake lever is locked, the parking brake warning lamp (P) in the combination meter cluster will illuminate.

HAND BRAKE WARNING BUZZER

When the key switch is turned OFF, a buzzer sounds if the hand brake is released. The buzzer stops when the hand brake is set.



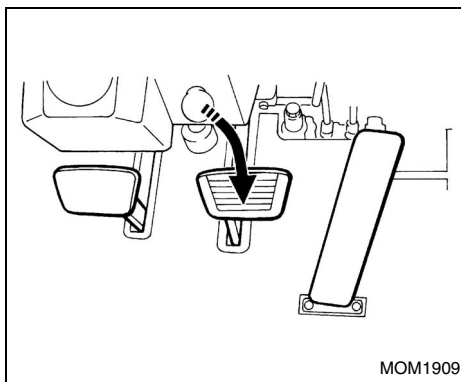
ACCELERATOR PEDAL

This pedal allows you to adjust the rotational speed of the engine. The engine speed changes according to the degree to which the accelerator pedal is depressed.



CAUTION:

Do not depress the accelerator pedal quickly. Depress it slowly to prevent a sudden or rapid start or a shift or falling of cargo.



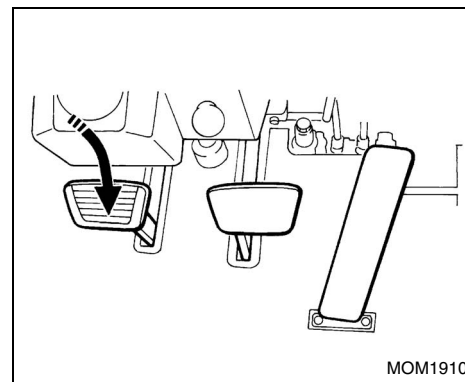
BRAKE PEDAL

This pedal allows you to bring the forklift to a stop or slow it down.



WARNING:

- Do not brake the forklift too hard. Doing so may cause the forklift to become unbalanced and could result in a serious accident.
- Adjust the braking effort according to the cargo weight.
- Do not leave your foot on the brake pedal while driving. Doing so may cause the brakes to fail because of overheating. Also, it hastens brake pad wear.



INCHING BRAKE PEDAL

The inching brake pedal allows you to finely adjust the forward and reverse running speed.

The clutch begins to slip when you slightly depress this pedal, and the clutch is completely disengaged and the brakes are applied when you depress the pedal further, in which case the inching brake pedal acts in the same way as a brake pedal.



WARNING:

- Do not leave your foot on the inching brake pedal when driving the forklift.
- Doing so may cause the clutch to slip and prevent engine braking from taking effect. Moreover, it could cause the brakes to fail because of overheating.
- Also, doing so may cause the hydraulic clutch in the transmission to slip and give off a large amount of heat, causing the clutch to overheat, wear down in a short time or seize up in the worst case.

LOAD CONTROL LEVERS

To control the loading mechanism for moving the fork up and down and tilting the mast forward and backward, there are two operating methods: 2-lever type or 1-lever type.

Before using the forklift, make sure which operating lever type is adopted in controlling the loading mechanism and thoroughly read the related instruction manual.

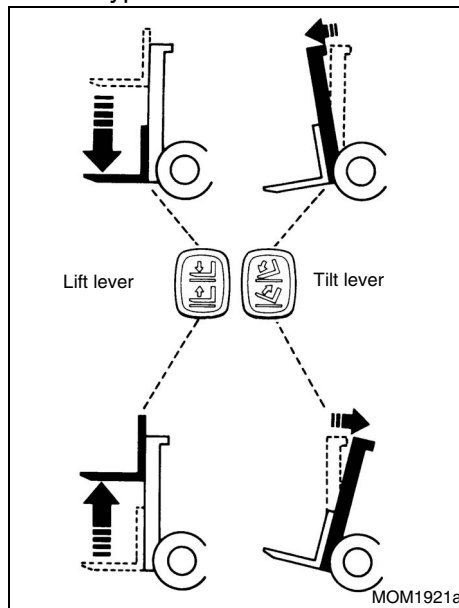


WARNING:

- Always sit in the operator's seat when operating the lever.
- Operating the control lever without properly sitting on the operator's seat causes the loading interlock warning lamp to blink and the loading mechanism to be inactive.
- Before operating the lever, make certain that the surrounding area is clear and it is safe to proceed.
- When the ignition switch is turned off the forks do not lower, even under its own weight.
- Always avoid any abrupt or sudden lever operation that may cause loads to shift or fall off fork or cause the forklift to become unbalanced and tip over.

MECHANICAL CONTROL LEVER TYPE

2-lever type



This method uses 2 levers: a lift lever for moving the fork up and down and a tilt lever for tilting the mast forward and backward:

● Lift lever:

Lift: Pull the lever to the operator side.

Lower: Push the lever forward.

● Tilt lever:

Forward: Push the lever forward.

Backward: Pull the lever to the operator side.



WARNING:

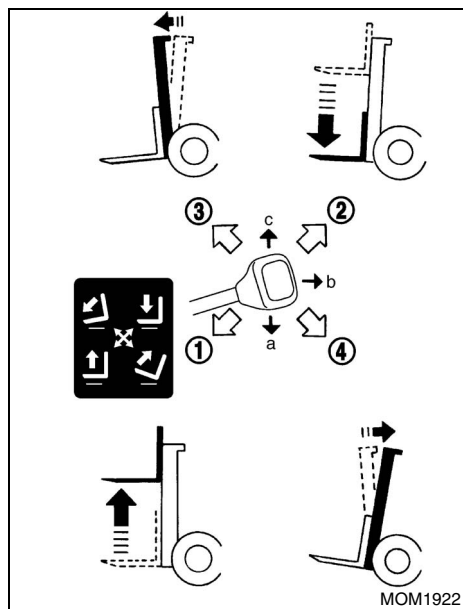
- Do not perform forward tilt while raising the forks, as this may cause loads to shift or fall, which could affect the stability of the forklift.
- Do not perform forward tilt while lifting loads in higher positions. This may cause loads to shift or fall, which could affect the stability of the forklift.



NOTE:

- Control of lifting speed:
Can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.
- Control of lowering speed:
Can be changed only by controlling the tilt angle of lever. Do not depress the accelerator pedal.
- Control of forward and backward tilting speeds:
For both forward and backward tilts, the speed can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.

1-lever type



This method performs up and down movements of the fork and forward and backward tilting of mast using 1 lever:

- ① Lift: Diagonally pull the lever to the left side of the operator.
- ② Lower: Push the lever in the right forward direction.

- ③ Forward: Push the lever in the left forward direction.

- ④ Backward: Diagonally pull the lever to the right side of the operator.

Simultaneous operations are also allowed by combining up and down movements and forward and backward tilts.

This may be done by moving the lever into the a, b or c position.

- a: Backward tilt while lifting:
Pull the lever to the center of the operator side.
- b: Backward tilt while lowering:
Turn over the lever to the right side of the center.
- c: Forward tilt while lowering:
Push the lever in the center forward direction.



WARNING:

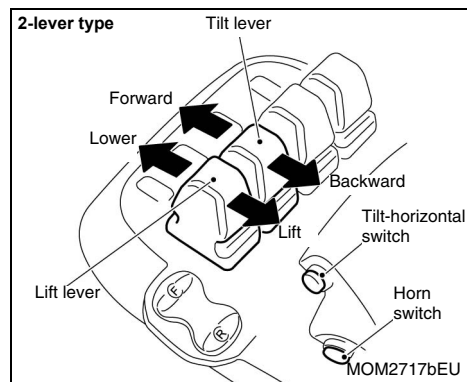
Do not perform forward tilt while raising the forks, because this may cause loads to shift or fall, which could affect the stability of the forklift.



NOTE:

- **Control of lifting, forward tilting and backward tilting speeds:**
Can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.
- **Control of lowering speed:**
Can be changed only by controlling the tilt angle of the lever. Do not depress the accelerator pedal.

TILT-HORIZONTAL SWITCH (OPTION)



When forward tilt is performed with the mast tilted backward, the forward tilt operation can automatically be stopped in the position where the fork is level.

Performing forward tilt while pressing the tilt-horizontal switch moves the mast as shown in the following list, depending on the loading condition and lifting height.

Loading condition	Forward tilt operation of mast
Without load	Automatically stops in the horizontal fork position.
With load	• No automatic forward stop to horizontal • No movement when turning on the tilt-horizontal switch

With load: Turning on the tilt-horizontal switch during operation will not automatically stop tilt in the horizontal direction (no movement).



NOTE:

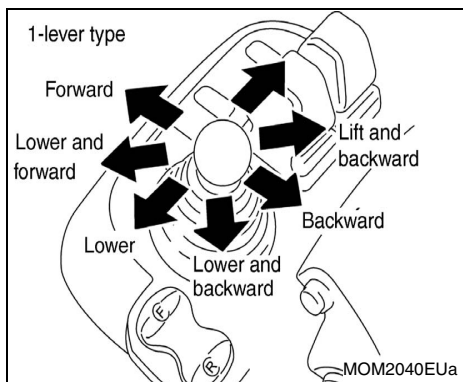
- In case of 2-lever method, the tilt-horizontal switch is attached to the tilt lever.
- The tilt-horizontal switch is kept on while pressed and turned off when released.
- Unless the tilt-horizontal switch is pressed, normal forward and backward tilt operations are performed.



CAUTION:

The horizontal fork position allowing automatic stops requires a position parallel to the road surface. Do not use this function if the road surface is not level.

JOYSTICK CONTROL LEVER TYPE (OPTION)



The joystick lever is an electrically controlled type. The cargo handling operation can be performed only when the ignition switch is turned on, the operator is seated and hydraulic pressure is available.



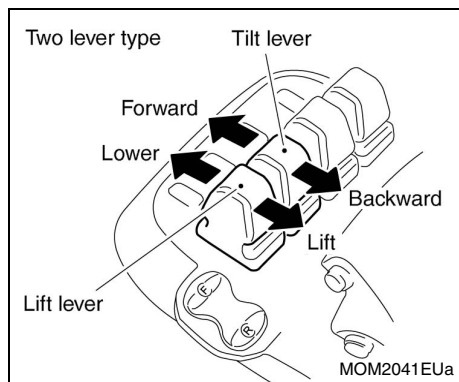
WARNING:

Do not perform forward tilt while raising the forks. Otherwise, dropped loads or an unbalanced forklift may cause the forklift to fall down.

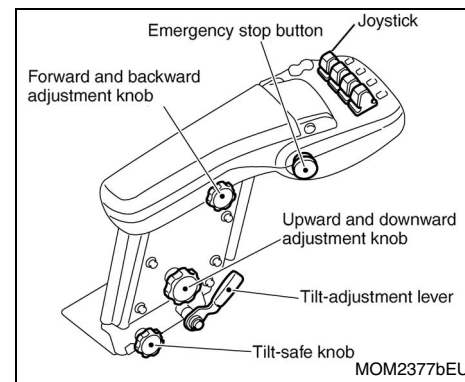


NOTE:

- Before the ignition switch is turned on, make sure that the joystick lever is set to the neutral position. If the lever is placed in any position other than the neutral position, cargo handling or fork operation cannot be performed.

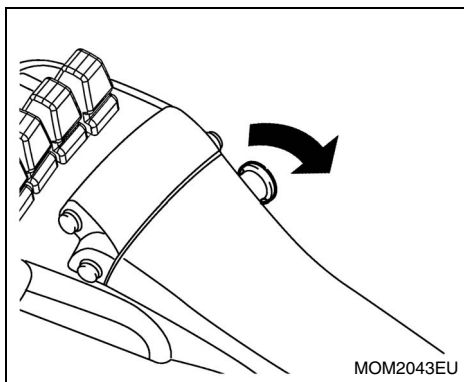


- When the ignition switch is turned off, the fork does not lower even under its own weight.
- The joystick lever is used to tilt the mast forward or backward and to lift or lower the forks. Cargo handling speed (lift, lower, forward and backward) can be adjusted by the distance that the lever is moved.
- For detailed joystick lever operation, refer to the illustration above.



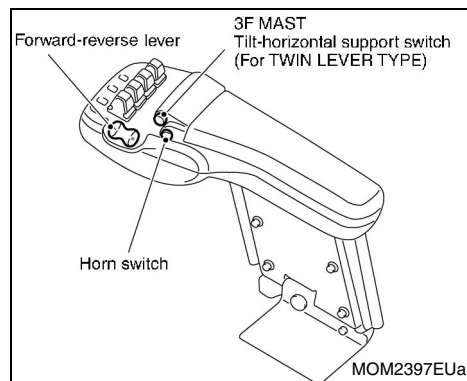
NOTE:

- **Control of lifting speed:**
Can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.
- **Control of lowering speed:**
Can be changed only by controlling the tilt angle of lever. Do not depress the accelerator pedal.
- **Control of forward and backward tilting speeds:**
For both forward and backward tilts, the speed can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.



If an erroneous cargo handling operation is noticed regardless of the joystick lever position, press the emergency stop button on the console box, stop cargo handling operations and have the forklift checked and repaired by an authorized dealer. (To release the emergency stop button, turn it in the direction indicated by the arrow on the button.)

TILT-HORIZONTAL SWITCH (OPTION)



When forward tilt is performed with the mast tilted backward, the forward tilt operation can automatically be stopped in the position where the fork is level.

Performing forward tilt while pressing the tilt-horizontal switch moves the mast as shown in the following list, depending on the loading condition and lifting height.

Loading condition	Forward tilt operation of mast
Without load	Automatically stops in the horizontal fork position.
With load	- No automatic forward stop to horizontal - No movement when turning on the tilt-horizontal switch

With load: Turning on the tilt-horizontal switch during operation will not automatically stop tilt in the horizontal direction (no movement).



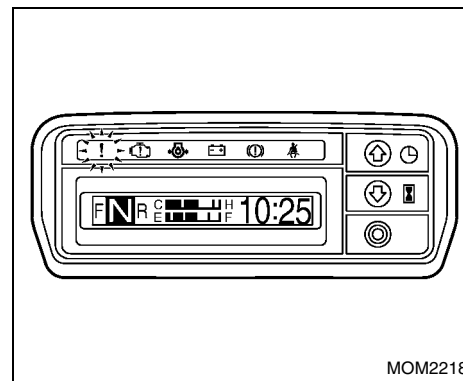
NOTE:

- In case of 2-lever method, the tilt-horizontal switch is attached to the tilt lever.
- The tilt-horizontal switch is kept on while pressed and turned off when released.
- Unless the tilt-horizontal switch is pressed, normal forward and backward tilt operations are performed.



CAUTION:

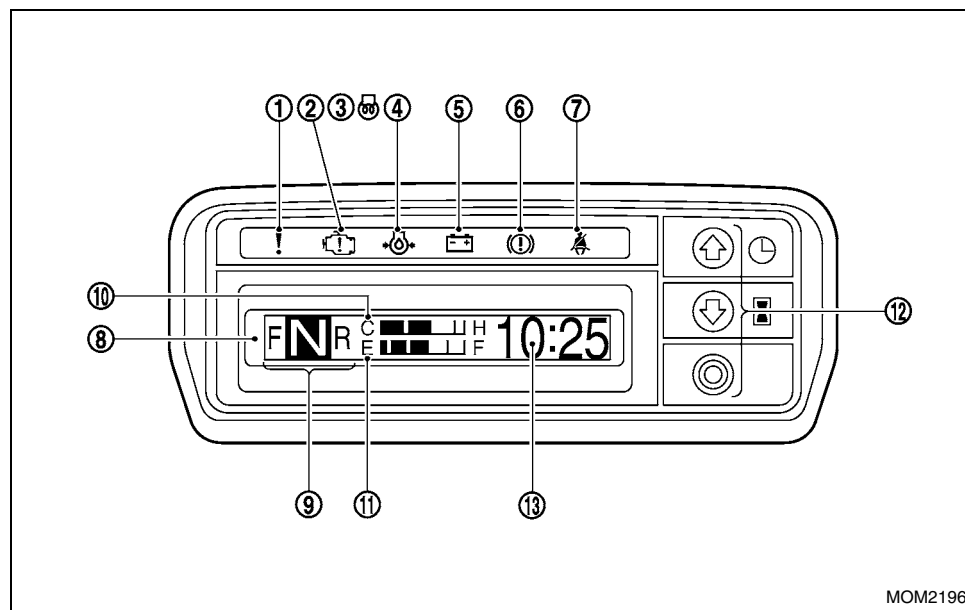
The horizontal fork position allowing automatic stops requires a position parallel to the road surface. Do not use this function if the road surface is not level.



WARNING:

The warning mark **!** and a malfunction message will appear on the meter when the joystick control system malfunctions. When this occurs, immediately stop cargo handling operations and have the forklift checked and repaired by an authorized dealer.

INSTRUMENTS AND CONTROLS



- ① Multipurpose warning lamp
- ② Engine check lamp
(LPG engine forklifts only)
- ③ Glow pilot lamp
(diesel engine forklifts only)
- ④ Oil pressure warning lamp
- ⑤ Charge warning lamp
- ⑥ Parking brake warning lamp
- ⑦ Seat belt warning lamp
- ⑧ Liquid Crystal Display (LCD)
- ⑨ Selector lever position (left side of LCD)
- ⑩ Water temp. gauge (top center of LCD)
- ⑪ Fuel gauge (bottom center of LCD)
- ⑫ Operation buttons
- ⑬ Time (right side of LCD)

i NOTE:

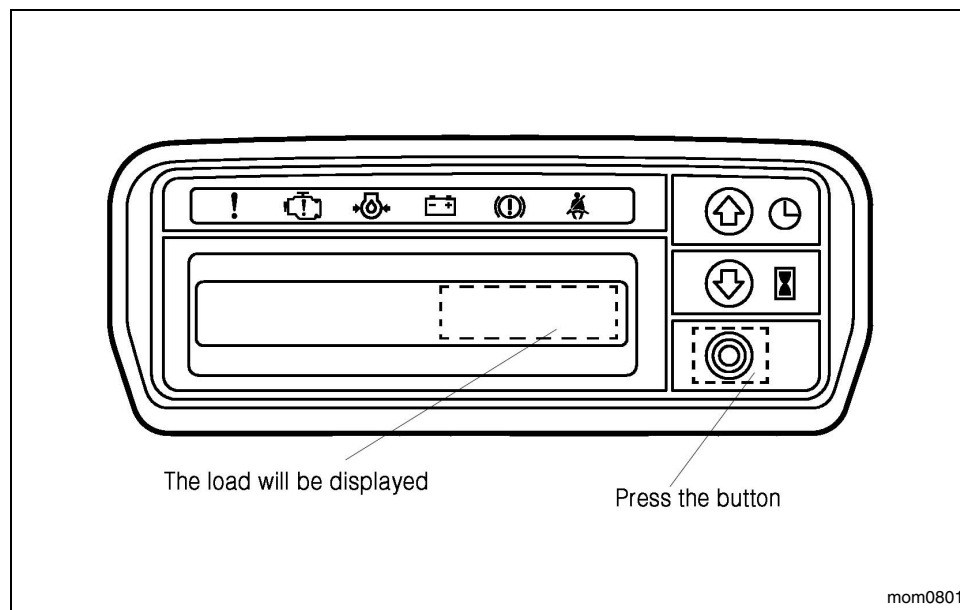
- In place of the time, the date or hour meter may be displayed.
- While driving, this display changes to the speedometer when the vehicle speed is 4.0 km/h (2.5 MPH) or higher.
- This display also indicates the inspection/service timing, malfunctions and warnings.



CAUTION:

The display time and date will be reset if the battery cable is disconnected or the battery is replaced. If the display has been reset, set the time and date again.

WEIGHT INDICATOR (OPTION)



Display range: 100 kg (220 lb) to maximum, increments of 10 kg (22 lb)

Minimum display unit: 100 kg (220 lb)

Tolerance: +/- 50 kg (110 lb)

NOTE:

If cargo weight is below 100 Kg (220 lb) the display will show only 0 kg (0 lb).

For displaying the cargo weight in the meter panel, press the  operating button.

Therefore in case of full free lift exceeds the full-free range the weight indicated is incorrect.

NOTE:

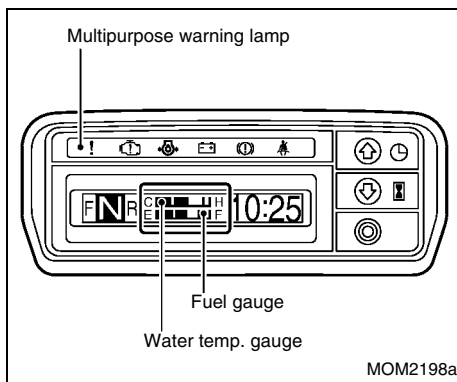
In this vehicle, the cargo weight is displayed by measuring the pressure from the lift cylinders. In case of full free mast type 2F, 3F or 3V, the measured pressure to calculate the weight is from the full-free cylinder(s).

METER ILLUMINATION

An illumination lamp is provided for meters to ensure visibility at night.

OPERATION BUTTONS

Use these buttons to change the display, make settings (time and date) and enter the password.



WATER TEMP. GAUGE

Indicates the current water temperature in levels 0 - 4. When level 2 is indicated, the coolant temperature is correct. When the indication reaches level 4, the display begins to blink, and the multipurpose warning lamp illuminates to inform the operator of the high water temperature.



CAUTION:

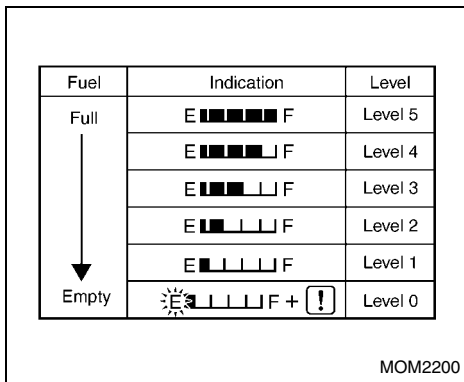
If level 4 is indicated, stop the forklift and allow the engine to cool while idling. After the engine has sufficiently cooled down, turn the engine off, and check the coolant level and fan belt deflection.

Temp.	Indication	Level
High	C   + 	Level 4
	C   H	Level 3
	C    H	Level 2
	C     H	Level 1
	C     H	Level 0
Low		

MOM2199

Note to the operator:

All ECCS forklifts have a creep home feature that will reduce engine RPMs if the coolant temperature remains near the "H" position. This indicates that the unit should be serviced by an authorized dealer.



- To check the remaining amount of LPG, use the fuel gauge on the LPG cylinder.

FUEL GAUGE

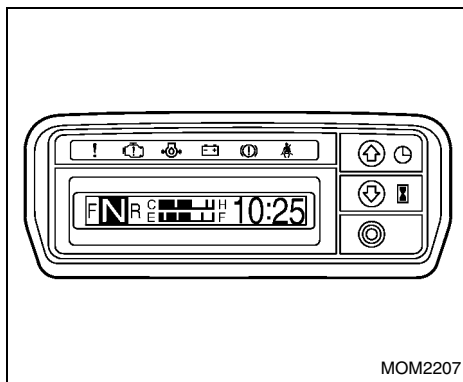
Indicates the current fuel level in levels 0 - 5. When level 5 is indicated, the fuel tank is full. When the indication reaches level 0, the display begins to blink, and the multipurpose warning lamp illuminates to inform the operator of the nearly empty fuel tank. The fuel tank is nearly empty. Add fuel immediately.



NOTE:

- If the forklift is an LPG fuel vehicle, the fuel meter will not work when the forklift is operated with LPG.
- When operating the forklift with LPG, check from time to time to be sure that the LPG level warning lamp is not lit and that the LPG level alarm is not on.

EXPLANATION OF WARNING LAMPS



Following is an explanation of the meaning and method of correction when a warning lamp illuminates.

! Multipurpose warning lamp

This warning illuminates when one of the LCD warning symbols illuminates. It also illuminates when the water temperature is high or the fuel level is low. If this lamp illuminates during operation, stop operation immediately, report to the person having management duties and take necessary measures.



Malfunction indicator lamp (LPG engine forklifts only)

This warning illuminates when there is malfunction with an engine sensor or air-fuel ratio control.



Glow plug indicator lamp (diesel engine forklifts only)

This warning illuminates when the ignition switch is turned on, and it turns off when glow plug preheating is completed.



CAUTION:

- If the lamp remains illuminated after the glow plugs are preheated, this indicates a malfunction in the glow system.
- Have the system checked at your nearest authorized dealer.



Oil pressure warning lamp

This warning illuminates when the oil pressure is low.



CAUTION:

If the lamp illuminates under ordinary operating conditions, stop the engine immediately and check the engine lubrication system.



Charge warning lamp

This warning illuminates when there is a malfunction with the charge system.



CAUTION:

If the lamp illuminates or flickers occasionally during normal operating conditions, the alternator and electrical system should be checked.



Parking brake warning lamp

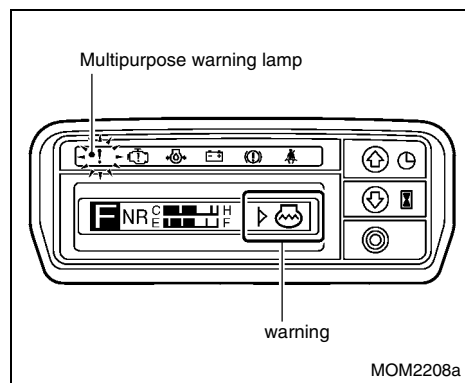
This warning illuminates when the parking brake lever has been pulled.



Seat belt warning lamp

This warning illuminates when the seat belt is not fastened.

LCD WARNING SYMBOLS



When a forklift warning occurs, a warning symbol and the multipurpose warning lamp illuminate. Following is an explanation of the meaning and method of correction when a warning symbol illuminates.

Mast interlock warning

This warning illuminates when the ignition switch is turned on and the operator is not seated on the seat. Loading operation is not possible at this time. Loading becomes possible when the operator is seated on the seat.

LPG level warning/LPG rack lock warning (LPG engine forklifts only)

This warning illuminates when the LPG level is low. Replace the LPG fuel cylinder before the fuel (LPG) runs out.

CAUTION:

The LPG tank is out of or nearly out of fuel. Have LPG fuel cylinder replaced immediately.

Torque converter fluid temp. warning

This warning illuminates when the transmission fluid temperature is high. If this warning symbol illuminates, move the vehicle to a safe location and allow it to idle in order to lower the fluid temperature. When the fluid temperature has returned to normal, the warning turns off.

NOTE:

- Check the level of automatic transmission fluid.
- If the warning lamp illuminates even though the transmission fluid is at a normal level, ask your nearest authorized dealer to perform an inspection.

Radiator level warning

This warning illuminates when the engine coolant level is low. Add coolant.

CAUTION:

Continuing to drive while the lamp is illuminated may lead to overheating of the engine.

Air cleaner warning

This warning illuminates when the air cleaner has become clogged. If this warning symbol illuminates, promptly clean or replace the air cleaner.

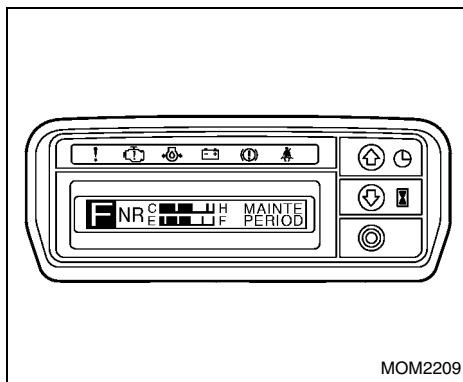
Fuel filter warning (diesel engine forklifts only)

This warning illuminates when the fuel filter has become full with water. If this warning symbol illuminates, promptly drain the water from the fuel filter.

CAUTION:

Continuing to drive while the lamp is illuminated may lead to a reduction in the engine output or engine damage.

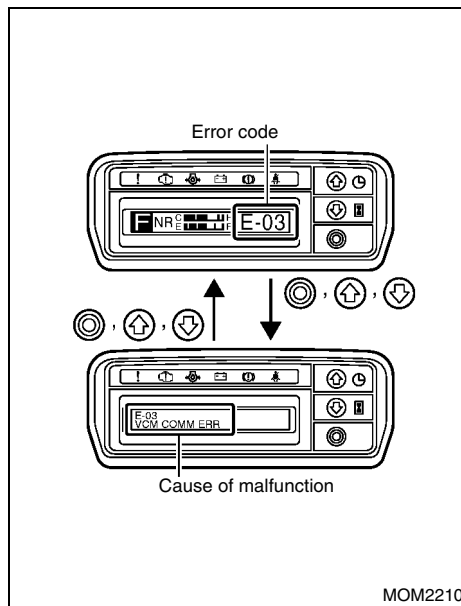
INSPECTION TIMING DISPLAY



When the time for regular inspection approaches, this warning illuminates for 15 seconds after the ignition switch is turned on. This does not affect driving.

When the display shown above appears, contact an authorized dealer. It is recommended that regular inspection is performed.

DISPLAYS WHEN MALFUNCTION OCCURS

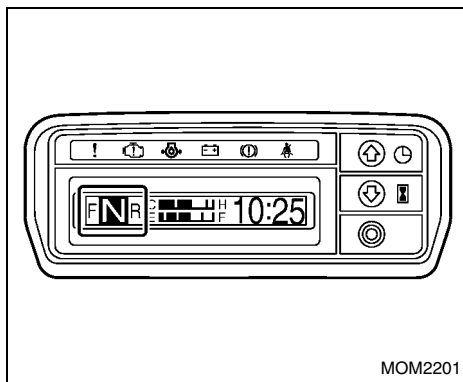


When a controller malfunction occurs, an error code is displayed.

Press a button while the error code is displayed in order to display the cause of the malfunction.

If the display above appears, contact an authorized dealer.

SELECTOR LEVER POSITION



When the selector lever is in the “F” position, the display appears as shown here.



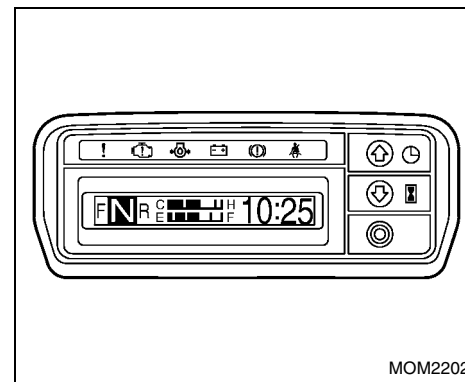
When the selector lever is in the “N” position, the display appears as shown here.



When the selector lever is in the “R” position, the display appears as shown here.



- When the selector lever is in the “F” or “R” position and the operator is not seated on the operator’s seat, the display blinks. Sit on the operator’s seat and shift the selector lever to Neutral (N), then shift it again to Forward (F) or Reverse (R) in order to drive.
- When there is an error in the selector lever signal, the display blinks. Contact an authorized dealer and request an inspection.



CLOCK



CAUTION:

The time and date will be reset if the battery cable is disconnected (for example, when the battery is replaced). Set the time and date again.

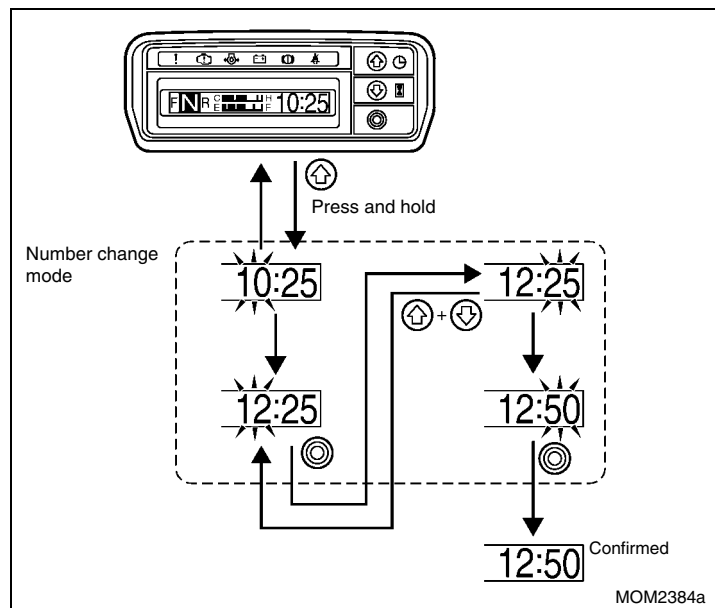
When the ignition switch is turned on, the start display appears, followed by the normal display (clock display).



NOTE:

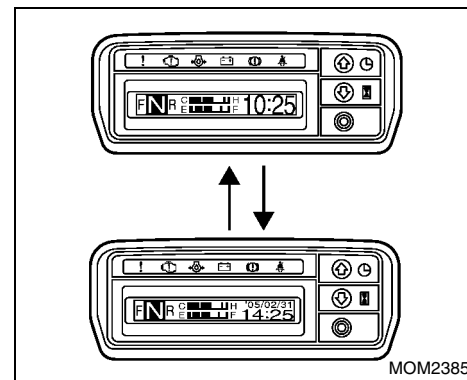
Press the buttons to change the display to the date or hour meter.

SETTING THE TIME



i NOTE:

- Press the button to change from hours → minutes → confirmed.
- Press both the and buttons at the same time to return to the previous display.
- Press the button to change the number up.
- Press the button to change the number down.



DATE

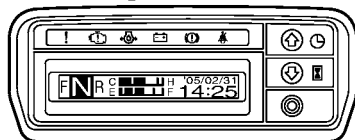
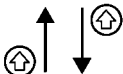
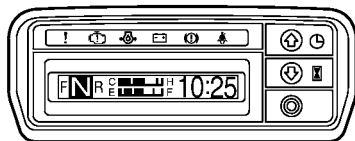


CAUTION:

The time and date will be reset if the battery cable is disconnected (for example, when the battery is replaced). Set the time and date again.

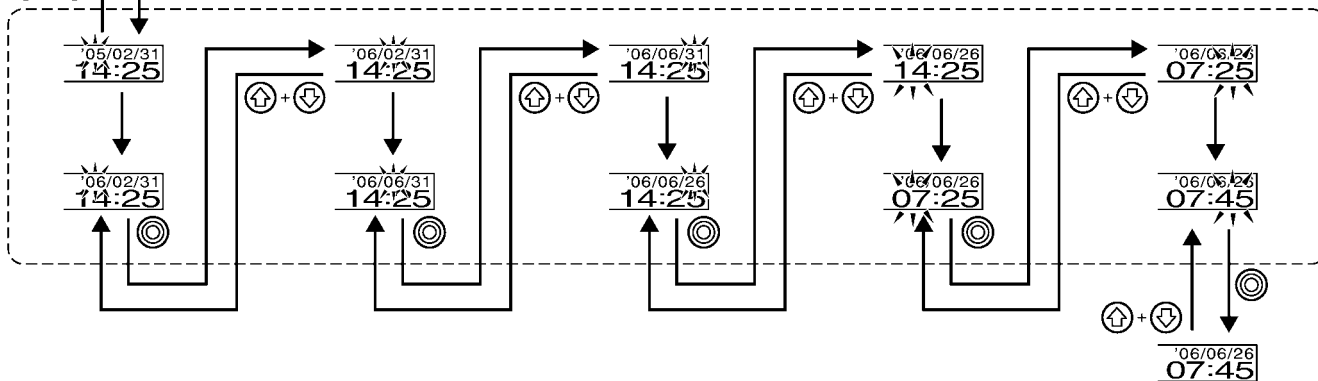
Press the button on the normal display (clock display) to change from the time display to the date display. Press again to return to the normal display.

SETTING THE DATE



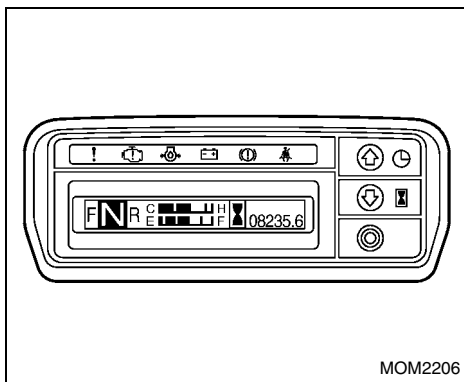
NOTE:

- Press the button to change the setting item from year → month → day → hour → minute → confirmed.
- Press both the and buttons at the same time to return to the previous setting item.
- Press the button to change the number up.
- Press the button to change the number down.



Setting completed

MOM2205



HOUR METER

The buttons can be used to change from the normal display (clock display) to the hour meter display.

The hour meter ordinarily displays the total ignition time that the ignition is on, however it is possible to change the display to the total engine operating time.

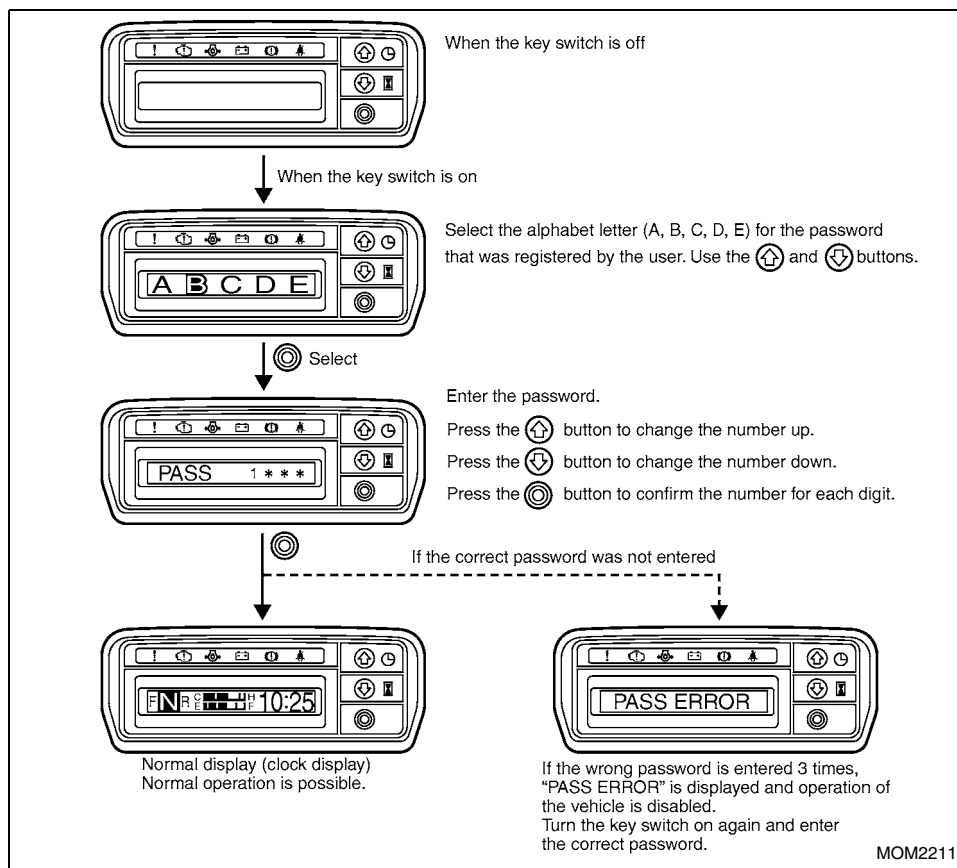
To change the hour meter totaling pattern, contact an authorized dealer.

DRIVER RECOGNITION MODE

Registering a password can restrict the drivers of the forklift.

You can register a password for up to 5 persons (A to E).

Contact an authorized dealer for information about the registration of the password.



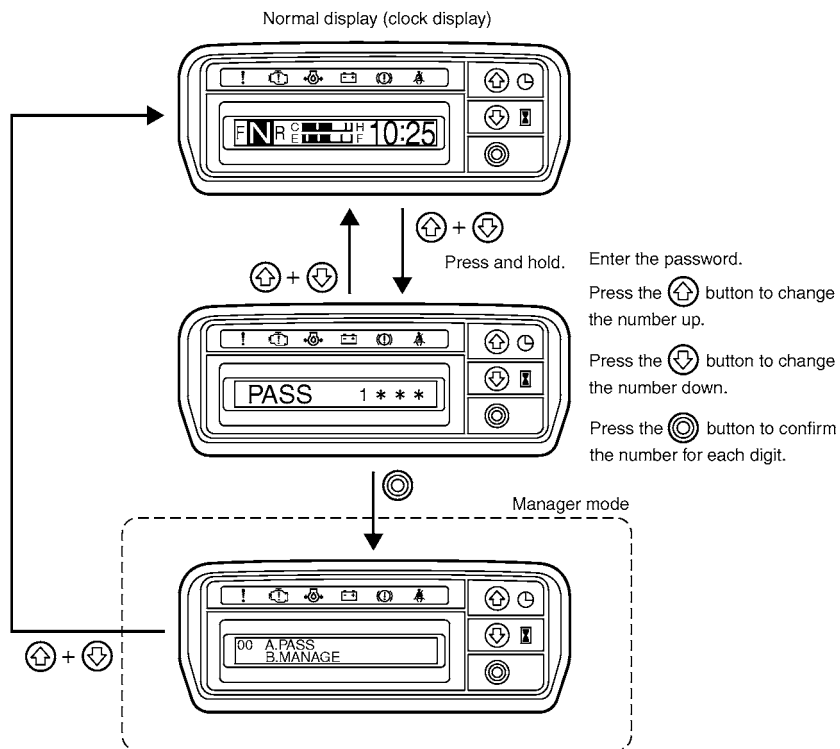
MOM2211

MANAGER MODE

Manager mode can be used by the manager to check and reset the operating time for each operator, and to change passwords.

- The manager must not disclose the password required to enter manager mode to the operators.

If the manager has forgotten the password, contact an authorized dealer.



MOM2212

The items that can be changed and viewed in manager mode are the following.

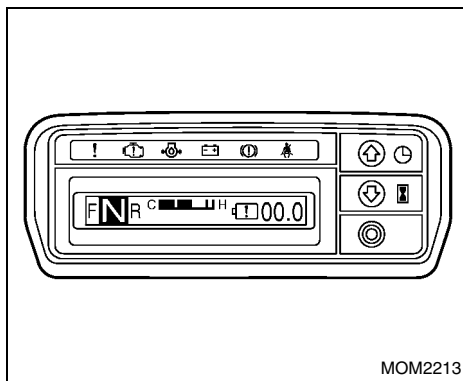
Indication	Explanation
PASS ENTRY	Enable/disable the operator password entry function.
ENTRY TIME	After an operator has entered the password, then it will not be necessary for the same operator to enter the password again for the amount of time set here.
PASS A	Change password "A" for the operator password entry function.
PASS B	Change password "B" for the operator password entry function.
PASS C	Change password "C" for the operator password entry function.
PASS D	Change password "D" for the operator password entry function.
PASS E	Change password "E" for the operator password entry function.
PASS MANAGER	Change the manager mode password.
A*****. C*****.	Display each of the vehicle operating times when passwords "A" - "D" are used for the operator password entry function.
B*****. D*****.	
E*****.	Display the vehicle operating time when password "E" is used for the operator password entry function.
MANAGE RESET	Reset the vehicle operating times when passwords "A" - "E" are used for the operator password entry function.



CAUTION:

For the methods used to view and change the above items, contact an authorized dealer.

LPG REMAINING TIME MANAGEMENT



With this function, the operator sets the time interval between LPG fuel cylinder replacements. Then, when this time reaches zero, this function illuminates the LPG level warning symbol and multipurpose warning lamp to warn the operator of the need to replace the LPG fuel cylinder. For the method used to change the LPG level warning pattern to the method above, contact an authorized dealer.

LPG remaining time management is recommended for the following types of situations.

- The timing for replacement of the LPG fuel cylinder is predetermined.

- The LPG level warning appears too early (or too late) on the forklift that is currently being used.



CAUTION:

- Set a time with a sufficient amount of lee-way.
- After replacing the LPG fuel cylinder, be sure to set the time setting again. Otherwise, the time setting continues after LPG fuel cylinder replacement, and this may result in the LPG level warning symbol turning on at an unintended time.

LPG remaining time setting

- When the time setting is set to [00.0], the meter panel shows the LPG level warning [!].
- When the time setting is reset, move to the setting display by pushing (↑), (↓) and (⊙) while the LPG level warning ([!]) is displayed. After resetting the setting time, the LPG level warning turns off.

Press the button to change the number up.
Press the button to change the number down.
Press the button to confirm the number for each digit.

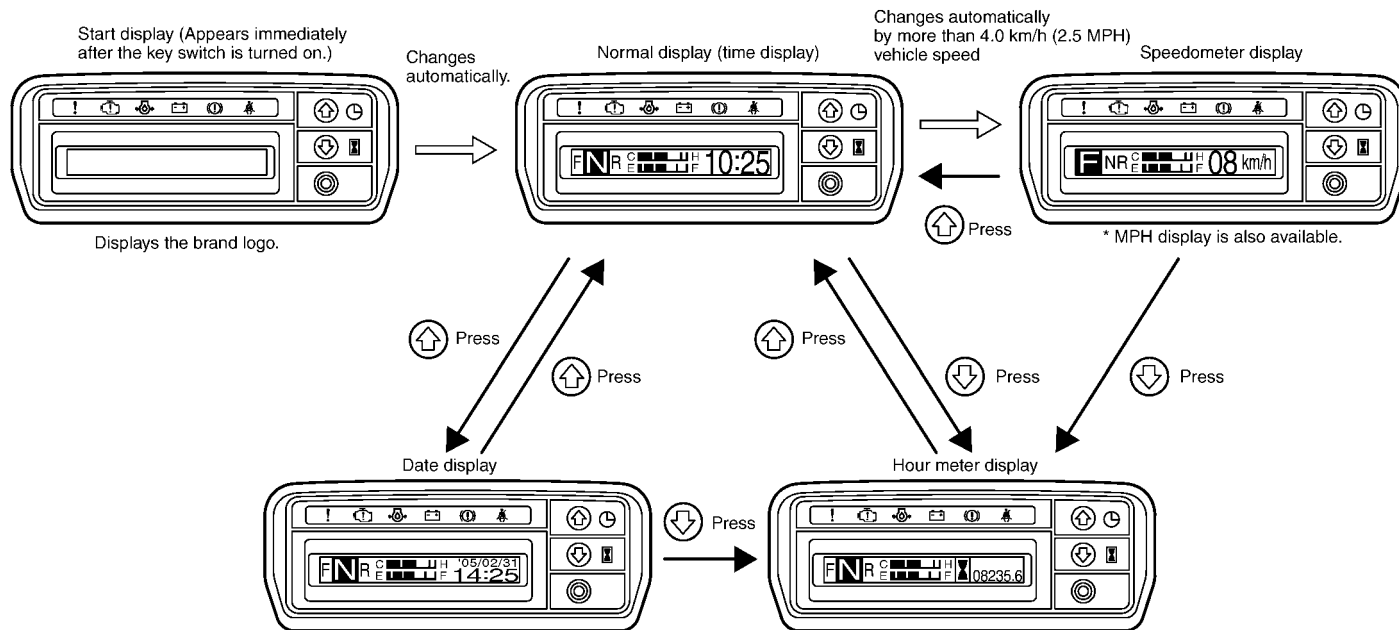
Setting completed

MOM2214

Example 2: Using the same 12.3 hours setting (previous setting) again



CHANGING METER DISPLAY



CAUTION

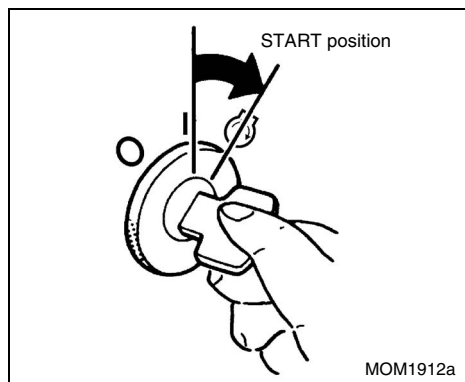
The display time and date will be reset if the battery cable is disconnected or the battery is replaced. If the display has been reset, set the time and date again.

NOTE: For the changes marked with an (*), contact the nearest dealer.

* Display of total engine operating time is also available.

MOM2354

STARTING AND OPERATING



LPG ENGINE STARTING



WARNING:

- Do not inhale exhaust gases. They contain colorless and odorless carbon monoxide. Carbon monoxide is a dangerous gas and can cause unconsciousness or death.
- Do not run the engine in closed spaces or poorly ventilated rooms such as a garage or refrigerator, etc.

Follow the procedure outlined below to start the engine.

When using LPG, slowly open the discharge valve on LPG cylinder (tank) to start the engine.

1. Set the parking brake lever and move the selector lever to the neutral position.
2. Depress the inching brake pedal as far as it can go.
3. Remove your foot from the accelerator pedal. Turn the ignition switch to the start position to start the engine.



NOTE:

- Do not operate the ignition switch for more than 10 seconds. If the engine fails to start within 10 seconds, release the ignition switch and wait for 10 seconds before attempting to start the engine again. This allows the battery time to recover.
- The engine is cold immediately after starting. Do not intermittently race the engine or run the engine at high speeds immediately after starting.
- Do not move the key to the START position when the engine is running. Damage to the starter motor will result.
- After operation, always close the LPG discharge valve on LPG cylinder (tank) after shutting the engine off (down).
- The engine speed becomes high immediately after starting. Exercise caution when moving the forklift or handling cargo.

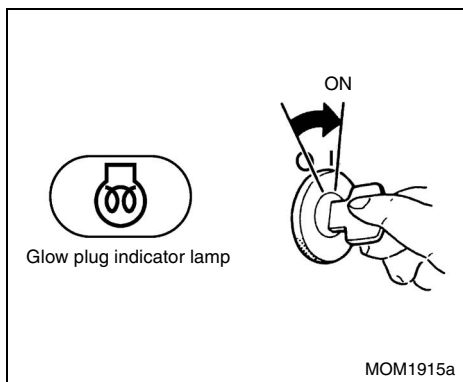


WARNING:

- Inspect the condition of the LPG hose connections and check for gas leaks from LPG hoses and pipes before starting the engine.
- In the event of LPG leakage or some other malfunction, close the discharge valve immediately. Have the LPG system checked at an authorized dealer.
- Do not operate (turn on or open) the LPG cylinder (tank) change (refill) valve. Opening the valve may cause LPG to leak into the atmosphere and could cause a dangerous fire hazard.

Carefully follow the procedures below when turning the engine off after LPG operation.

1. Let the engine idle until it stops.
2. Make sure that all of the remaining LPG (in the piping and other receptacles) has been used. After the engine stops, turn the ignition switch to the OFF position.
3. After completion of operation and before storing the vehicle for an extended period, completely close the (red) discharge valve. Check the engine for gas leakage. Refer to the chapter "precautions for using LPG model".



DIESEL ENGINE

Starting

1. Set the parking brake lever and move the selector lever to the neutral position.
2. Depress the inching brake pedal as far as it can go.
3. When the ignition key is set to the ON position, the glow plug indicator lamp on the instrument panel illuminates, indicating that engine preheating has started.

Keep the ignition key in the ON position until the glow plug indicator lamp turns off (indicates completion of preheating).

i NOTE:

Engine preheating is controlled automatically corresponding to the engine coolant temperature, atmospheric air temperature, etc., and the glow plug indicator lamp turns off when the engine is preheated to the specified temperature.

4. When the glow plug indicator lamp has turned off, turn the ignition key to the START position while fully depressing the accelerator pedal, until the engine starts.

i NOTE:

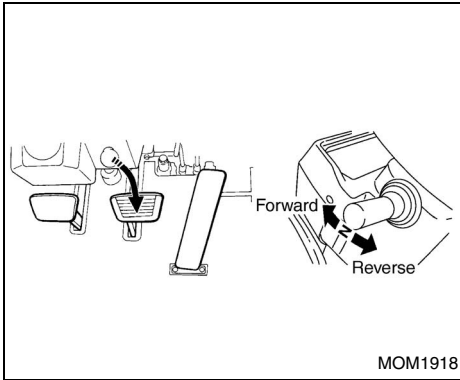
- Do not operate the starter for more than 30 consecutive seconds.
 - If the engine does not start even after operating the starter 3 times for approximately 5 seconds, turn the ignition key to the OFF position and then wait for about 30 seconds. Subsequently, try to start it again from the preheating process.
5. After the engine has started, release the accelerator pedal gradually and then perform warm-up of engine.

i NOTE:

- When restarting, return the ignition key to the OFF position once, and then turn it to the START position.
- Regardless of the atmospheric temperature, always perform warm-up for approximately 5 minutes. During warm-up, check for any malfunction of meters, warning lights or indicator lamps.
- Failure to properly warm up the engine can cause degradation and shortened life of engine.
- When it is not necessary to preheat the engine because of high engine coolant temperature immediately after it stops or for some other reasons, the engine can be started by turning the ignition switch to the START position before the glow plug indicator lamp turns off.
- If the glow plug indicator lamp is not illuminated, malfunction may exist. In this case, promptly contact your supervisor for measures or contact an authorized dealer to inspect the forklift.

Stopping

To stop the engine, turn the ignition key to the OFF position.



AUTOMATIC TRANSMISSION MODELS



CAUTION:

While the forklift is moving, do not change over the selector lever positions. Otherwise, the transmission may be damaged.

1. When starting the forklift from the stopped condition

When the selector lever is in the neutral position:

- The forklift does not move regardless of whether accelerator is depressed or not.

When the selector lever is in the F (forward) or R (reverse) position:

- The forklift starts moving slowly even when the accelerator pedal is NOT depressed.

2. While driving the forklift

When the selector lever is in the F or R position:

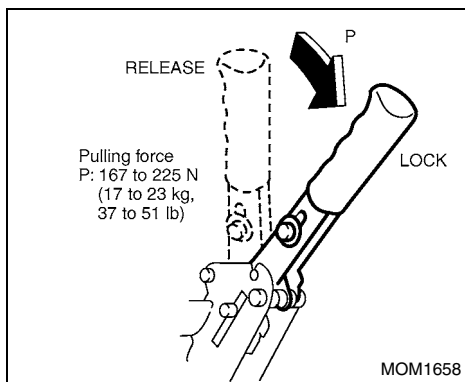
- The forklift continues accelerating by depressing the accelerator pedal.

3. Inhibitor function

When the selector lever is in the F (forward) or R (reverse) position, it is not possible to start the engine.

4. Precautions

- When depressing the accelerator pedal, be sure to visually confirm the position of the selector lever.
- When starting on slopes, be sure to apply the parking brake to hold the forklift and then start, even if the slopes are gentle.
- Avoid rapid acceleration (especially when carrying a high load).



HAND BRAKE LEVER

Make sure the hand brake works properly when pulled and then returns to its original position.

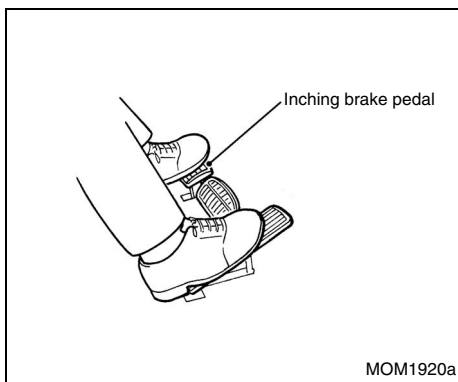
Pulling force at gripping position:

167 to 225 N
(17 to 23 kg, 37 to 51 lb)



WARNING:

Always depress the brake or inching pedal before releasing the parking brake to avoid movement of the forklift before selecting a direction.



INCHING BRAKE PEDAL

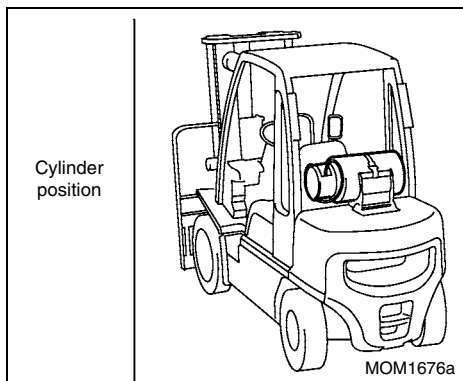
1. Fully depress the inching brake pedal.
2. Move the selector lever to the forward or reverse position.
3. Depress the accelerator pedal little by little. At the same time, gradually releasing the inching brake pedal moves the forklift bit by bit.



WARNING:

- **When the inching/brake pedal is fully depressed the service brake will be applied. However the inching/brake pedal should not be used as the method for stopping the forklift. In normal traveling operations, the inching/brake pedal should only be used during loading, or unloading, which requires short, controlled movement of the forklift.**
- **During deceleration on any grade, only use the brake pedal or an increase or decrease in speed by using the accelerator. Do not use or depress the inching pedal because this would put the transmission in the neutral mode.**

PRECAUTIONS FOR USING LPG MODEL



LPG MODEL



WARNING:

- **LPG IS HEAVIER THAN AIR.**

It will settle on your clothes and the surface around you, displacing oxygen necessary for breathing.

- Open flames can cause flash fires.



WARNING:

Check all connections for damage or leaks. If the forklift will not start after you change cylinders, have an authorized, qualified mechanic check it.

When changing LPG (liquified petroleum gas) cylinders, please follow these basic rules:

- Never allow open flames or other sources of ignition in the area.
- Wear protective equipment (i.e. safety glasses, gloves).
- Change only in well ventilated areas.
- Do not use or park near fire.
- Do not expose directly to the sun for extended periods of time.
- Inspect equipment pipe connections for gas leaks at mating sections.
- Only a person who is familiar with replacing LPG should replace the cylinder.
- LPG is heavier than air.



WARNING:

Internal combustion forklifts are not recommended for use in enclosed or confined spaces because of the possible build-up of carbon monoxide gases, which are colorless and odorless, and could cause unconsciousness and/or death.

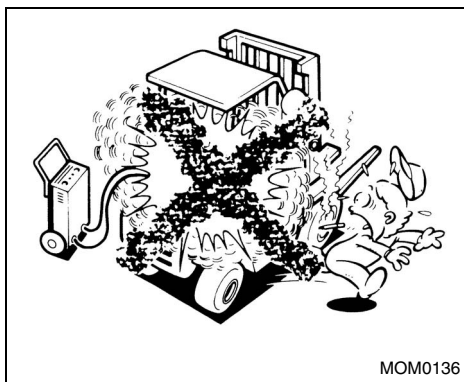


Fuel is highly flammable.

It must be handled with the utmost care, in accordance with the safe handling requirements of fuels and the applicable safety provisions of the local laws and regulations.

When filling the tank with fuel, make sure that the forklift is properly parked. Turn off the ignition switch and remove the key.

When fuel is spilled, wipe the area clean with a cloth. The cloth shall be disposed of in accordance with the requirements of safe handling of fuels, environmental requirements and the applicable provisions of the local laws and regulations.



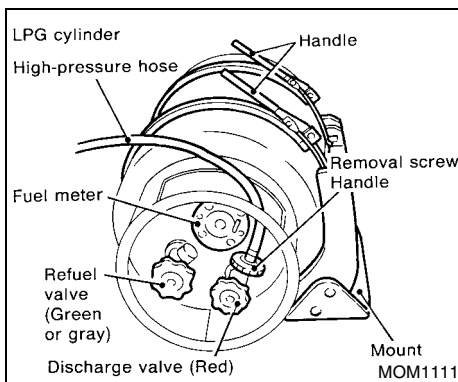
 **When filling the tank with fuel or recharging the battery, stop the engine and place the forklift only in a designated area with good ventilation. Keep away from arcs, sparks, flames or lit cigarettes.**

 **Do not inhale exhaust gases: they contain colorless and odorless carbon monoxide. Carbon monoxide is a dangerous gas and can cause unconsciousness or death.**

 **Do not run the engine in closed spaces or poorly ventilated rooms such as a garage or refrigerator, etc.**

CYLINDER SIZE

Cylinder size			
Vehicle classification		1.0 to 3.0 ton (2000 to 6000 lb)	
Cylinder	Capacity	36 ℓ (7-7/8 Imp gal)	
	Weight	15 kg (33 lb)	
	Diameter	320 mm (12.60 in)	
	Length	660 mm (25.98 in)	



LPG CYLINDER HANDLING INSTRUCTIONS

LPG cylinder replacement



WARNING:

- Replace the cylinder in a well ventilated area.
- While replacing the cylinder, never use or get close to fire.
- Use LPG cylinders with the capacity shown in the table on this page.

CYLINDER REPLACEMENT PROCEDURE WITH QUICK COUPLING

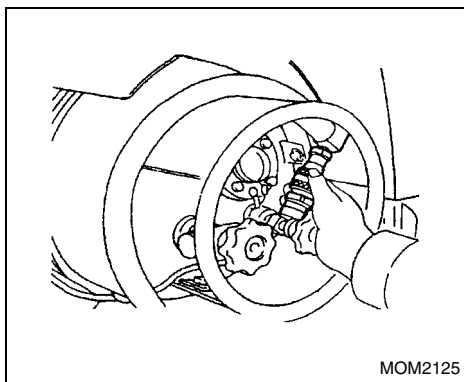
1. Turn the discharge valve (red) at the cylinder side to the right until the valve is completely closed.

Place the fuel-change switch in the LPG position. Wait until the engine stops naturally (fuel is exhausted). Turn the ignition switch to the OFF position.



WARNING:

- Do not operate the refuel valve (green or gray).
- It is very dangerous to open the refuel valve, because it causes LPG to leak out.



COUPLING CONNECTION PRECAUTIONS

Turn the quick coupling ring nut to the left (counterclockwise when viewed from the hose). Turn the quick coupling to the left (when viewed from the discharge valve) and pull the hose and coupling free of the assembly.

The symbol (S-O) is stamped on the ring nut. (S) indicates the tightening direction. (O) indicates the loosening direction.

NOTE:

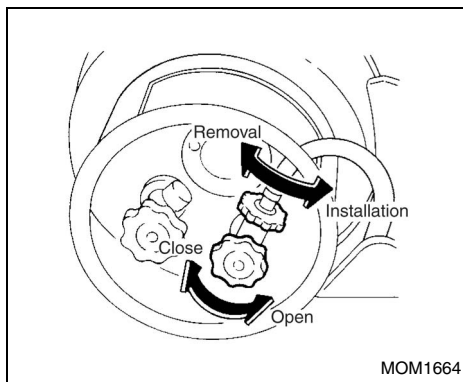
- Do not strike the coupling with a mallet or similar object during the removal procedure. Doing so can result in coupling distortion and other damage.

- Be sure to install the protective cap to the male assembly side cap ring after cylinder (container) removal.
- Inspect the male assembly side for dust or other foreign material. Clean the assembly if required. If the female side assembly O-ring is dry, apply a small amount of oil and grease to it so that it rotates smoothly.
- Take care not to damage the O-ring side facing the male assembly during the connection procedure.
- Connect the lock ball. Check that the ring nut has returned to the specified position. Turn the ring nut to the right to thread it into position.
After replacing with a new cylinder, proceed as follows:



WARNING:

- When disconnecting the high-pressure hose, do not stand where the remaining LPG may splash you, otherwise you may be seriously injured.
- Do not disconnect the high-pressure hose when the engine is running. This could cause discharge of LPG and potential serious injury.

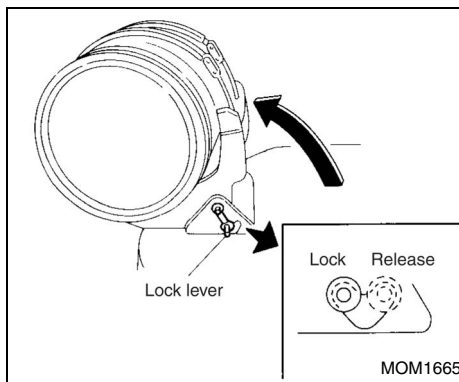


LPG cylinder replacement procedure Swing-back type LPG cylinder mount

1. Turn the discharge valve slowly at the cylinder side to the right (clockwise) to fully close the valve. Allow the engine to run until it stops naturally (fuel exhausted). Turn the key switch to the OFF position.

i NOTE:

Do not touch the refuel valve (green or gray) on the LPG cylinder.



2. Turn the high-pressure valve removal screw handle to the left (counterclockwise when looking directly at the front of the valve) and disconnect the high-pressure hose. Take care not to damage the packing around the tip of the hose.
3. Go to the other side of the vehicle.

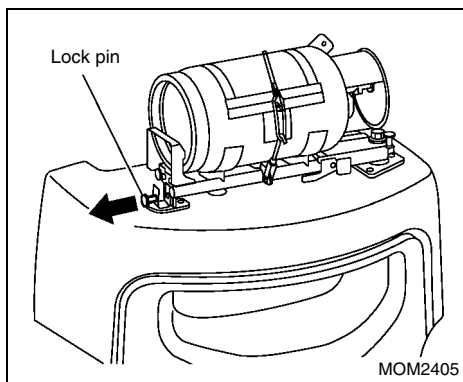
! WARNING:

Please wear gloves in order to prevent any propane vapor from contacting the skin.

4. Move the lock lever to the release position. Tilt the cylinder toward the rear of the vehicle.
5. Loosen the handle and release it to allow the cylinder to drop. Install the new cylinder in the reverse order of removal.

! WARNING:

- Make sure the high pressure hose is free from twists after installation.
- Make sure the lock lever is locked securely.



CHANGING LPG CYLINDER ON SWING DOWN LPG MOUNTING BRACKET (Option)

WARNING:

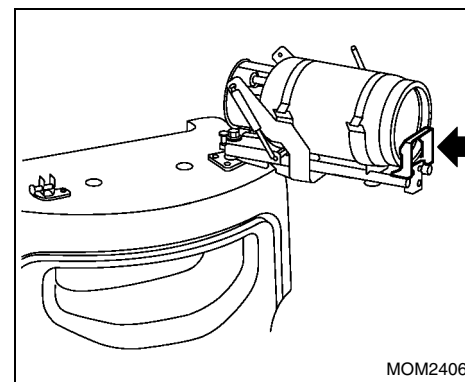
- Before handling the LPG cylinder, check that the cylinder holder swing lock pin and lowering lock pin are securely in the locked positions. Check that the swing lock pin is securely inserted into the base and that the lowering lock pin is securely inserted into the lock hole on the swing rack.
- Check that the LPG cylinder is securely clamped in place by the cylinder clamp bands.

Check that there is no looseness in the LPG cylinder or cylinder clamp bands.

- If each holder and the LPG cylinder are not securely fastened, the holder may move unexpectedly, or the LPG cylinder may fall, causing unexpected injury.

REMOVING LPG CYLINDER

1. Disconnect the high-pressure hose from the LPG cylinder.
2. Remove the swing lock pin in order to disengage the lock.

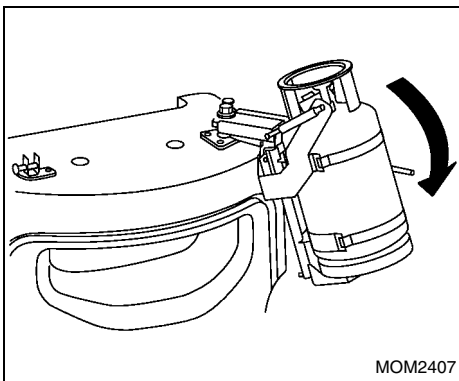


WARNING:

- When handling the LPG cylinder, be sure to grasp it at the top and bottom. If you grasp any other part of the cylinder, there is the danger that your hands may be caught between the cylinder and the holder.
- When swinging the LPG cylinder, be sure to support the cylinder until the swing is completed. If you release the cylinder before the swing is completed, it may move in the opposite direction, or it may swing rapidly, causing unexpected injury.
- When the lock pin is pulled out from the cylinder holder, the weight of the holder and the LPG cylinder cause the holder to drop naturally, possibly resulting in unexpected injury.

When removing the lowering lock pin, be sure to grasp the bottom of the LPG cylinder and keep it firmly supported in the upward direction while handling it.

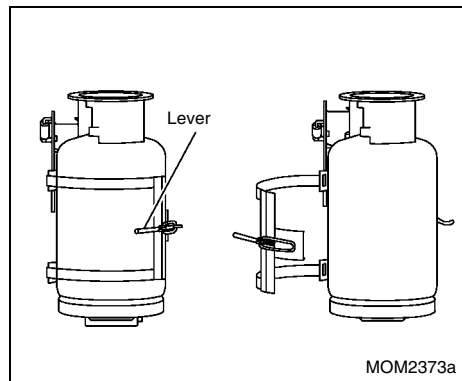
3. Grasp the bottom of the LPG cylinder and firmly support it in the upward direction while removing the lowering lock pin in order to disengage the lock.



WARNING:

When lowering the LPG cylinder, be sure to securely support the cylinder until it has been fully lowered. In the case of an empty cylinder, if the cylinder is not fully lowered, the cylinder holder may move in the opposite direction, causing unexpected injury.

4. While supporting the bottom of the LPG cylinder, slowly lower it towards the ground. Lower it securely all the way until the cylinder holder stops.



WARNING:

- **LPG cylinder weight (15 kg (33 lb) cylinder)**

Empty cylinder: 15 to 20 kg (33 to 44 lb)

Full cylinder: 35 to 40 kg (77 to 88 lb)

- **Do not place your feet directly below the LPG cylinder. The cylinder is heavy and there is the danger of injury if it falls.**

- **Grasp the cylinder securely with both hands and lift it up to remove it.**

5. While firmly supporting the LPG cylinder by pressing it into the cylinder holder, disengage the lock buckles on the cylinder clamp bands, and fully open the cylinder clamp bands and lock buckles to the left and right.

6. Securely grasp the top edge (handle) of the LPG cylinder, and use both hands to lift the cylinder up, remove it from the holder, and lower it to the ground.

INSTALLING LPG CYLINDER

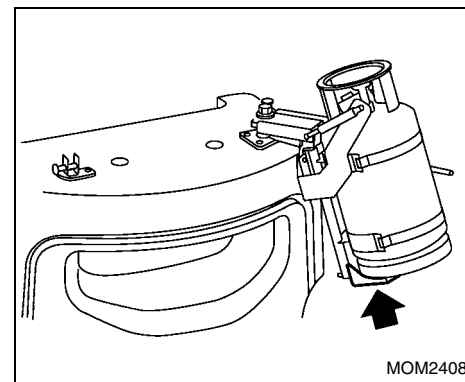
WARNING:

- **LPG cylinder weight (15 kg (33 lb) cylinder)**
Empty cylinder: 15 to 20 kg (33 to 44 lb)
Full cylinder: 35 to 40 kg (77 to 88 lb)
 - **Do not place your feet directly below the LPG cylinder. The cylinder is heavy, and there is the danger of injury if it falls. Grasp the cylinder securely with both hands, and lift it up and place it in the cylinder holder.**
 - **The LPG cylinder will not stay in the holder on its own. Continue to press it securely in the holder until the cylinder clamp bands have been fastened.**
1. Turn the LPG cylinder so that the side with the “this end up” arrow faces the rear of the vehicle, then install the LPG cylinder into the holder.

WARNING:

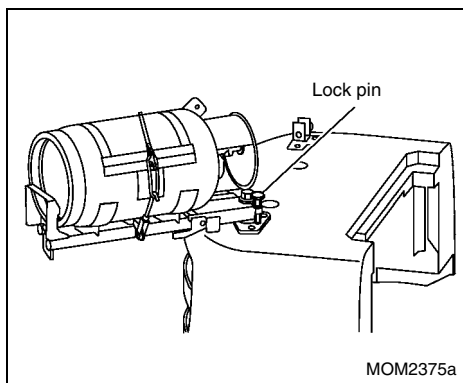
If the cylinder clamp bands are not locked securely, the LPG cylinder may fall, causing unexpected injury.

2. While firmly supporting the LPG cylinder by pressing it into the cylinder holder, lock the cylinder clamp bands.



WARNING:

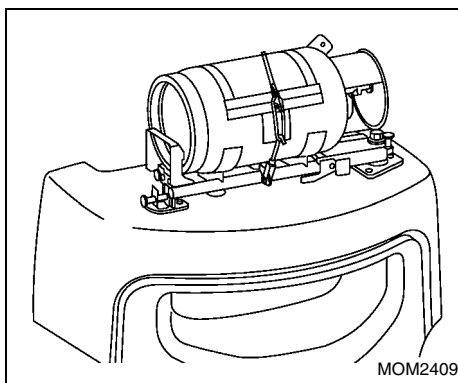
- **When handling the LPG cylinder, be sure to grasp it at the top and bottom. If you grasp any other part of the cylinder, there is the danger that your hands may be caught between the cylinder and the holder.**
 - **Continue to support the LPG cylinder in the upward direction until the cylinder holder is locked in the swing rack. If you stop supporting the cylinder, the cylinder holder may move in the opposite direction (drop), causing unexpected injury.**
3. While supporting the bottom of the LPG cylinder, press the LPG cylinder up until it is horizontal.



! WARNING:

If the lock pin is not locked securely, the cylinder holder may move in the opposite direction (drop), causing unexpected injury. Be sure that the cylinder holder is securely locked onto the swing rack.

4. While firmly supporting the LPG cylinder in the upward direction, insert the lowering lock pin in order to lock the cylinder holder onto the swing rack.



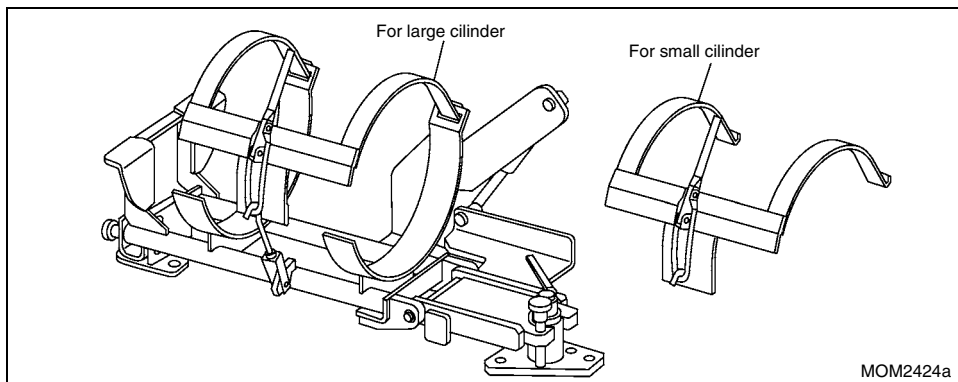
! WARNING:

- When handling the LPG cylinder, be sure to hold it at the top and bottom. If you hold any other part of the cylinder, there is the danger that your hands may be caught between the cylinder and the holder.
- If the lock pin is not locked securely, there is the danger that the LPG cylinder may move while the forklift is being driven, causing unexpected accidents. Be sure that the swing rack is securely locked onto the base.

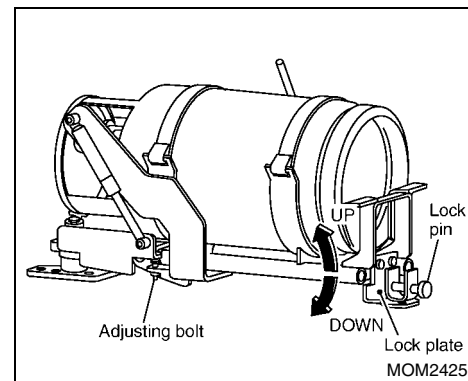
5. Insert the swing lock pin in order to lock the cylinder holder onto the base.
6. Connect the high-pressure hose.

! WARNING:

- After handling the LPG cylinder, check that the cylinder holder swing lock pin and lowering lock pin are securely in the locked positions. Check that the swing lock pin is securely inserted into the base and that the lowering lock pin is securely inserted into the lock hole on the swing rack.
- Check that the LPG cylinder is securely clamped in place by the cylinder clamp bands. Check that there is no looseness in the cylinder or cylinder clamp bands.
- If each holder and the LPG cylinder are not securely fastened, the holder may move unexpectedly, or the LPG cylinder may fall, causing unexpected injury.
- Connect the high-pressure hose so that it is not twisted.



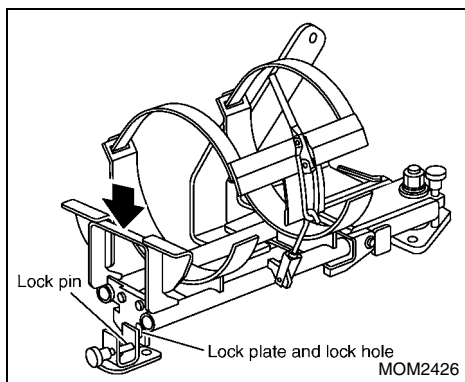
Choose the band according to each size of cylinder.



WARNING:

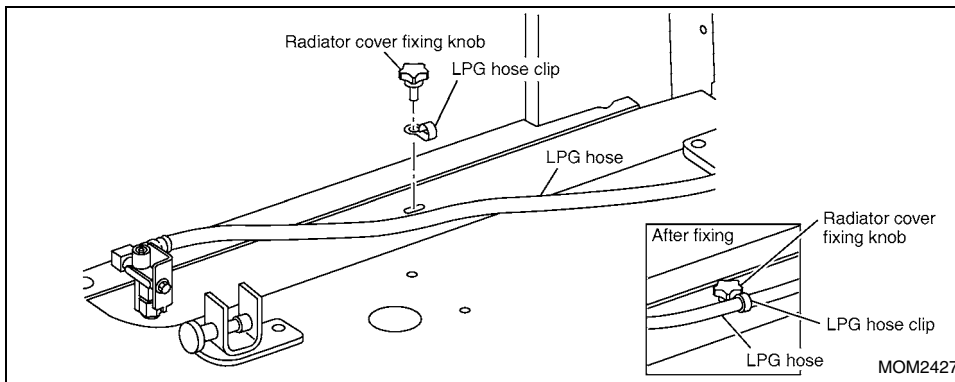
If the lock pin cannot be inserted into the hole on the lock plate with a full cylinder is installed on the rack, it is possible to adjust the height of the rack using the adjusting bolt as shown in the illustration.

- Tighten the bolt to raise the rack position
- Loosen the bolt to lower the rack position.



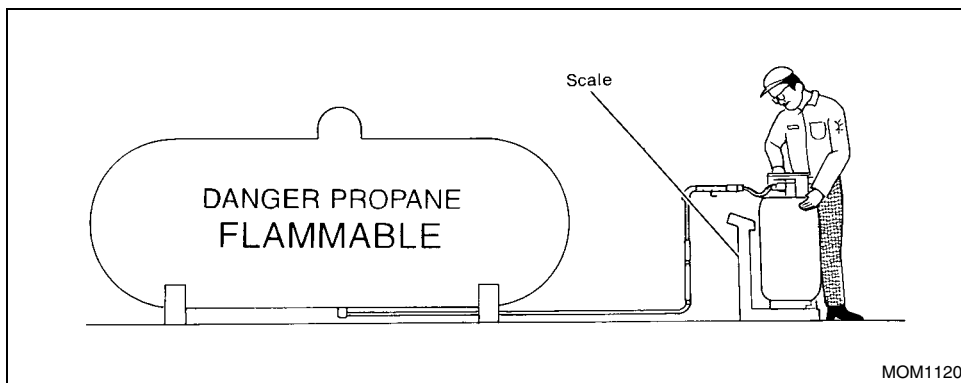
WARNING:

The lock pin can be adjusted for insertion into the lock plate hole with a full cylinder installed. If an empty cylinder is installed or there is no cylinder, the lock plate hole is out of position. In this case, push down the rack in the direction shown by the arrow until the lock pin can be inserted into the hole.



WARNING:

When installing the radiator cover, fix the LPG hose clip using a radiator cover fixing knob, and make sure to fix the LPG hose using the clip (only for the 1D1 swing rack equipped model).



REFILLING LPG CYLINDERS



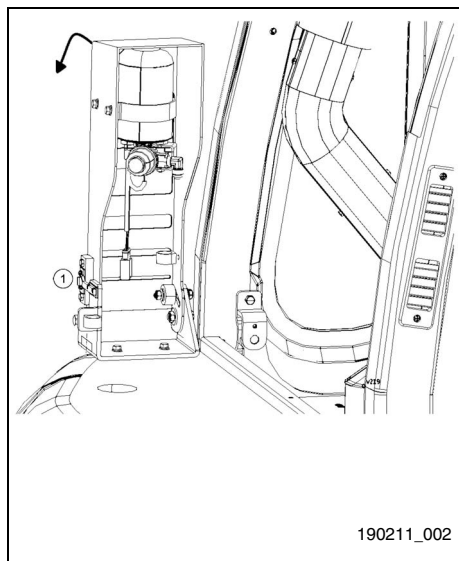
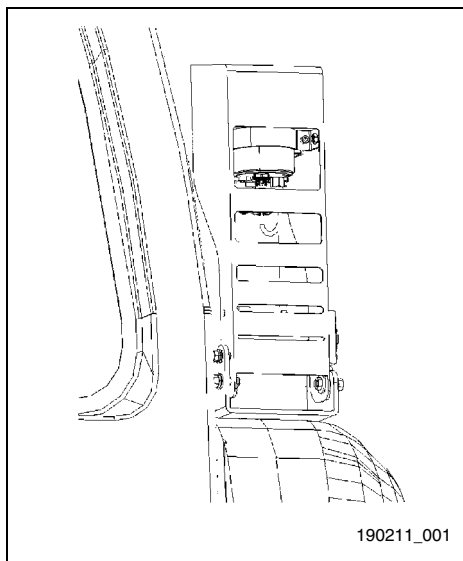
WARNING:

- Only a trained and authorized person should refill LPG tanks.
- Do not refill cylinders while mounted on a forklift.
- Make sure that you know and understand the proper procedure for filling an LPG cylinder.
- Know all local fire codes.
- If you have any questions about refilling LPG cylinders, please ask your supervisor.
- If problems with filling occur, call your LPG supplier.

The weight scale method to fill the cylinder is highly recommended to protect the environment and to reduce fire hazards. This method will reduce overfilling and the discharge of LPG into the environment.

- Store full and empty cylinders according to local fire codes.

When filling the LPG cylinder with LPG, always observe the local laws and regulations.



LPG reservoir tank (option for 1D2 only)



WARNING:

For tilting the LPG reservoir tank backwards unlock latch 1 and carefully tilt the bracket backwards (LH side of the forklift direction from behind).

The bracket needs to be tilted backwards when the rear window or bonnet needs to be opened, and or when the LPG bottle needs to be replaced.

The reservoir tank is filled automatically when a new LPG bottle is connected. When the LPG bottle is empty, the LPG level warning will blink (see page 140), and the reservoir tank will provide enough running time for replacing the bottle.

TRAVELING

While traveling, the mast should be tilted back and the forks lowered to approximately 200 mm (8 in) above the ground.



WARNING:

- When depressing the accelerator pedal, be sure to visually confirm the position of the selector lever.
- When starting on slopes, be sure to apply the parking brake to hold the forklift and then start, even if the slopes are gentle.
- Avoid rapid acceleration (especially when carrying a high load).

TURNING

The smaller the radius of a turn to be made, the lower the speed of the forklift should be. When making a sharp turn, always drive the forklift at a low speed.



WARNING:

- Because the movement of a forklift is different from that of a passenger vehicle, always reduce speed while making turns to ensure that the forks and counterweight will clear objects during the turn. Turning at a high speed could result in loss of control and a potential lateral tip-over.

- Do not make a turn with the fork lifted high or at a high speed. This could result in a loss of control and potential tip-over.

CLIMBING

For safety reasons, when driving a loaded forklift up a steep grade, it must be driven forward with the load in front; on a downgrade, backward, with the load behind.

On a truck equipped with an automatic transmission, standing starts and stopping on a slope can be accomplished by manipulating the accelerator and brake pedals as required.

For stopping, the brake pedal should be used at all times.

For traveling, depress the accelerator pedal. To make a standing start on a slope, the parking brake can be used instead of the brake pedal.

STOPPING AND PARKING

To stop the forklift, remove your foot from the accelerator pedal and depress the brake pedal.



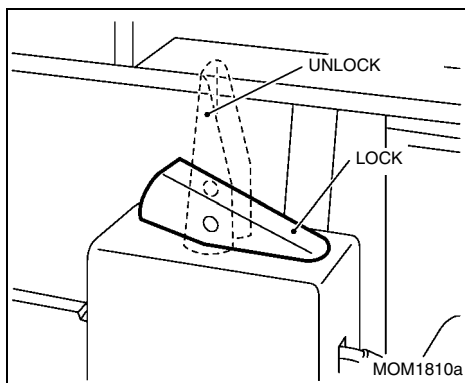
WARNING:

- Do not make sudden stops because the forklift may pitch forward and drop the load.
- When leaving the forklift, set the parking brake, adjust the mast to an upright position, lower the forks until they rest on the ground and turn off the ignition switch.



NOTE:

- If the operator leaves the operator's seat without pulling the parking brake lever, the warning buzzer alerts the operator.
- If the operator is more than 7.6 m (25 ft) from the forklift or moves out of sight of the forklift, the key should be removed.



WARNING:

Forks should be inspected daily for any damage, bending or other malfunctions. Report any conditions to your supervisor.

FORKS

The fork-to-fork distance can be properly adjusted by unlocking the lock pins on the forks. These pins are unlocked by pulling them up and turning them 90° in either direction. Forks must be equally located from the center of the forklift. After the correct fork-to-fork distance is obtained, secure the forks with the lock pins.



NOTE:

Various kinds of forks are available depending on the lifting capacity. Select the proper forks so that the specifications stamped on the side face of them will meet the lifting capacity of your forklift. Do not use forks with specifications that are below the lifting capacity of your forklift.

LOADING AND UNLOADING

LOADING

Adjust the distance between the forks so that they are at or near the same distance from the centerline of the forklift. The wider the interval between forks, the better the balance. Be sure to apply the fork latches after setting the forks. (Refer to "FORKS" on page 73.)

Approach slowly, straight toward the load, and stop just in front of it. Adjust the mast to the vertical position, matching the height of the forks to the position of the pallet. Advance slowly and completely insert forks beneath the load. Set the selector lever to the neutral position and apply the parking brake. Then raise the load. Confirm that the load is stable and tilt it backward. Release the parking brake and back up the forklift slowly.

TRANSPORTATION

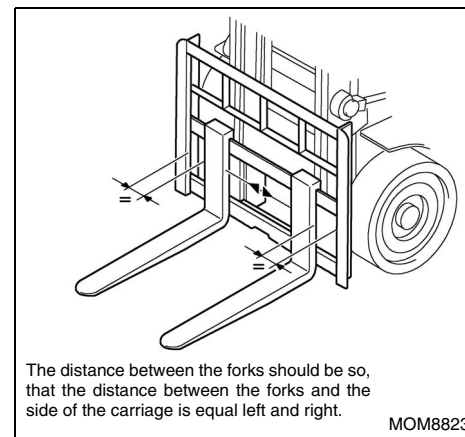
When transporting loads, the forklift should be driven carefully at a slow speed with the load kept low and tilted back. When the load is big enough to block forward visibility, drive the forklift backward. Follow the safety rules.

UNLOADING

Slowly approach the unloading site and stop facing straight ahead.

Move the selector lever into the neutral position and apply the parking brake. After adjusting the mast to the vertical position, raise the load a little above the stack on which it is to be placed. Release the parking brake and advance slowly into the proper position for stowing. Apply the parking brake and place the selector lever in the neutral position.

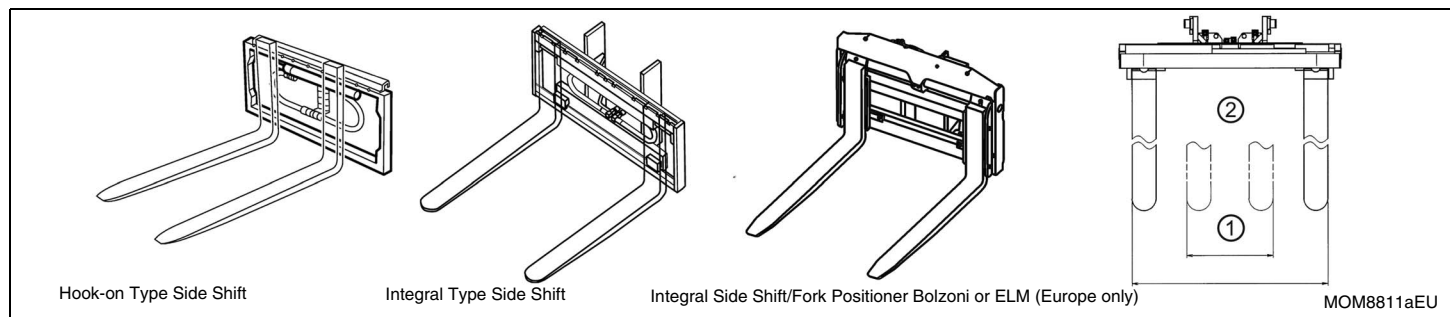
Slowly lower the forks to set down the load. After moving the selector lever to the reverse position, release the parking brake and back up the forklift until the forks separate completely from the load.



The distance between the forks should be so, that the distance between the forks and the side of the carriage is equal left and right.

MOM8823

SIDE SHIFT AND INTEGRAL SIDE SHIFT/FORK POSITIONER (OPTIONAL ATTACHMENT)



This section describes only the handling (safety, operations, inspection) of the side shift and integral side shift/fork positioner. Before using the side shift and integral side shift/fork positioner, be sure to read this section thoroughly and understand it. For handling (safety, operations, inspection) of the truck, refer to the applicable sections of this manual.

OVERVIEW OF SIDE SHIFT

Since the shift finger bar (on which the forks and the backrest are mounted) can be shifted to the right and the left only by operating the lever from the operator's seat, you can accurately insert the forks under pallets or stack loads correctly at targeted positions.

The following is the standard amount of side shift:

Model variation	Side shift distance mm (in)
1D1/1D2 (All)	Each to right/ left 100 (3.94)

OVERVIEW OF INTEGRAL SIDE SHIFT/FORK POSITIONER

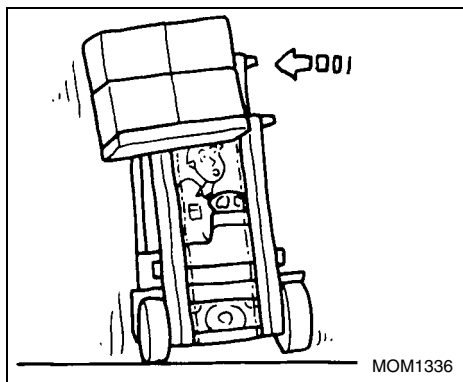
Fork positioners allow forklift operators to move the forks quickly and accurately to fit different pallet sizes only by operating the lever from the operator's seat.

The following is the standard opening range and side shift:

Model variation	Opening range Bolzoni mm (in)	Opening range ELM mm (in)
1D1	① 359 (14.13) ② 815 (32.09)	① 155 (6.10) ② 855 (33.66)
1D2 (2.0/2.5t)	① 359 (14.13) ② 914 (35.98)	① 115 (4.53) ② 965 (37.99)
1D2 (3.0/3.2t)	① 419 (16.50) ② 904 (35.59)	① 115 (4.53) ② 965 (37.99)

Model variation	Side shift distance mm (in)
1D1/1D2 (All)	Each to right/ left 100 (3.94)

IMPORTANT: The maximum fork length for the integrated fork positioner Bolzoni is 1500 mm.



WARNING:

Do not operate the side shift when the forks are not supported with supports such as a load table.

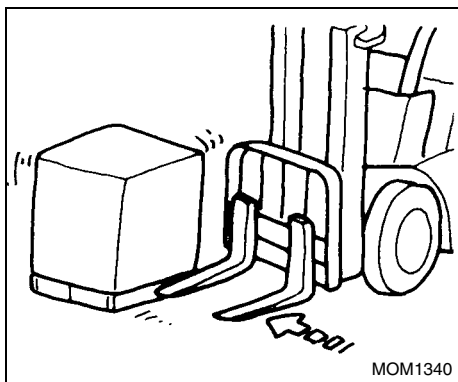
Never operate the side shift when the forks are loaded without any supports such as a load table just beneath it. This is dangerous because the forklift can overturn when it loses balance.



WARNING:

Do not make sudden and quick shifts with the forks loaded.

If you make sudden shifts with the forks loaded, there is a risk of a load collapse or an overturn. Be careful when you operate the forklift.



CAUTION:

Do not use the equipment to push or pull loads or pallets.

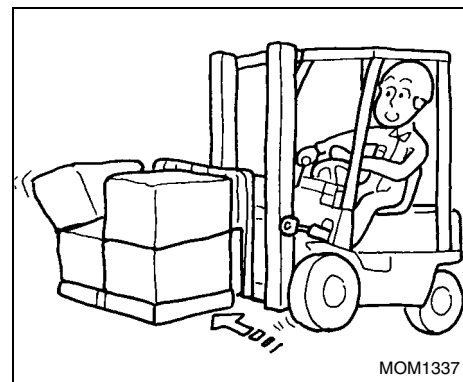
If you use the side shift and integral side shift/fork positioner to pull or push loads, the equipment can be overstrained, resulting in a malfunction. In addition, there are risks of damaging loads or injuring people. Never push or pull loads with the side shift and integral side shift/fork positioner.



CAUTION:

Do not shift when the forks are in contact with the floor or on a table.

If you do so, it can result in a malfunction of the equipment or a load collapse. Do not shift when the forks are in contact with the ground.



WARNING:

Do not travel with loads shifted.

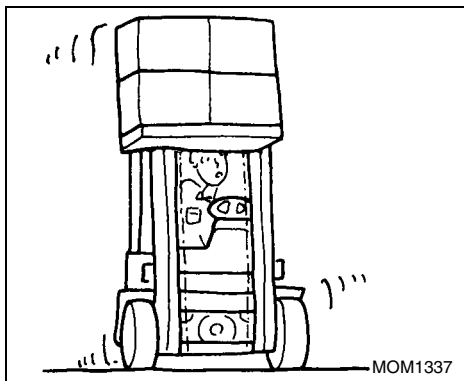
When loads are shifted, they are less laterally stable. If you travel without shifting loads to the neutral position, there is a risk of a load collapse or an overturn of the truck. Be sure to shift into the neutral position before traveling.



WARNING:

Do not shift while traveling with loads.

If you shift while traveling, dynamic balance will be lost, resulting in a load collapse or tipping over of the truck. Never shift while traveling.



CAUTION:

Do not lift or lower with loads shifted.

When loads are shifted, they are less laterally stable. Therefore, it is dangerous if you lift or lower the loads without shifting them into the neutral position, because the forklift will become unstable. Be sure to shift loads into the neutral position before lifting or lowering.



CAUTION:

Be sure to adjust the integral fork positioner BEFORE picking up the load.



CAUTION:

DO NOT operate the integral fork positioner with the forks loaded.



CAUTION:

DO NOT operate the integral fork positioner while traveling.



CAUTION:

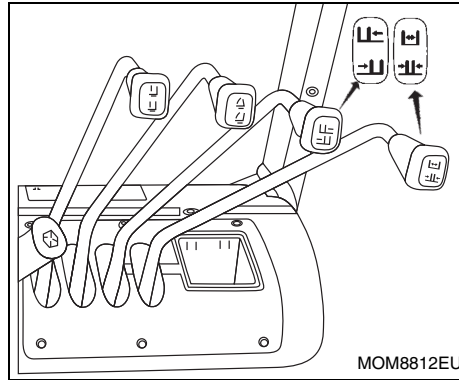
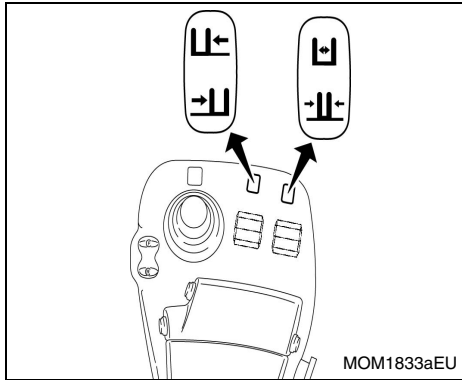
DO NOT use the integral fork positioner to push or pull loads or pallets.

ONLY use the integral fork positioner for its intended purpose.



CAUTION:

Not use the integral fork positioner as a clamp.



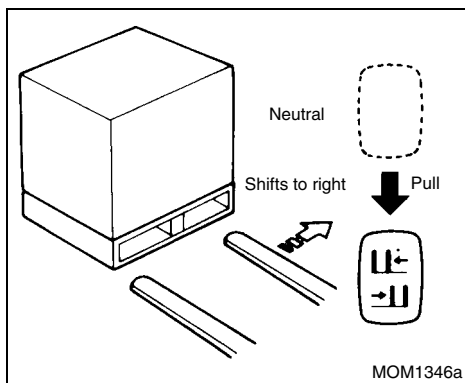
CONTROL LEVER OPERATION AND EQUIPMENT MOVEMENT

Control lever

A forklift attached with side shift and integral side shift/fork positioner has a control lever to operate the side shift and integral side shift/fork positioner, in addition to the control levers for standard specifications.

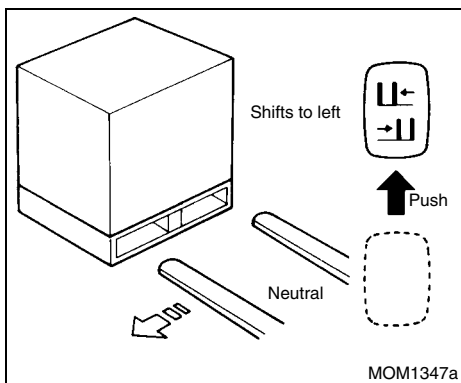
Instruction label

This label indicates to which direction the side shift and or integral fork positioner moves according to the direction you tilt the lever.



Operation of the control lever for the side shift

When you pull the lever toward the operator, the shift finger bar (with forks mounted) shifts (moves) to the right.



When you push the lever forward, the shift finger bar (with forks mounted) moves to the left.



CAUTION:

Do not move the levers suddenly and quickly. There is a risk of a load collapse.



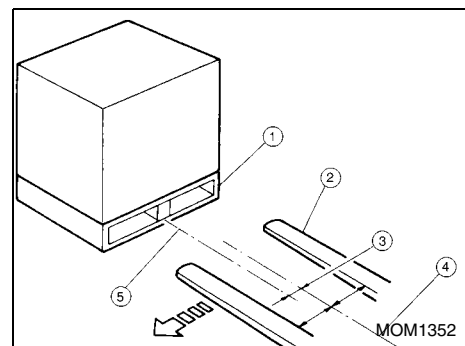
NOTE:

The shifting speed changes according to the level you pull/ push the lever.



CAUTION:

When you operate your side shift, make sure to raise the forks approximately 100 to 200 mm (3.94 to 7.87 in) from the ground before operation. If you shift with the forks while they are in contact with the ground, it is dangerous when the forks get caught.

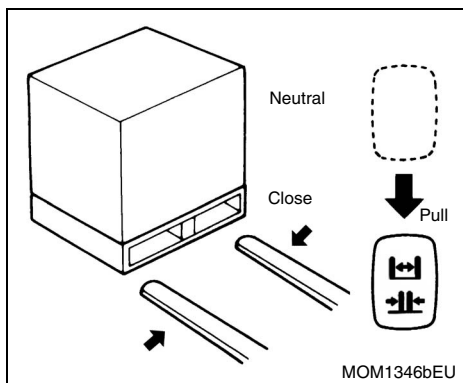


- ① Pallet
- ② Fork
- ③ Deviation
- ④ Center of forks
- ⑤ Center of pallet



CAUTION:

Be sure to center the weight of the load between the forks even if the truck and load centers are aligned.



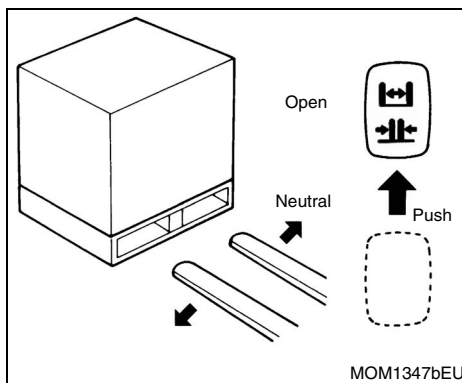
Operation of the control lever for the integral side shift/ fork positioner

When you pull the lever backwards, the forks will close.

When you push the lever forward, the forks will open.

i NOTE:

The opening or closing speed of the integral side shift/ fork positioner changes according to the level you pull/push the lever.



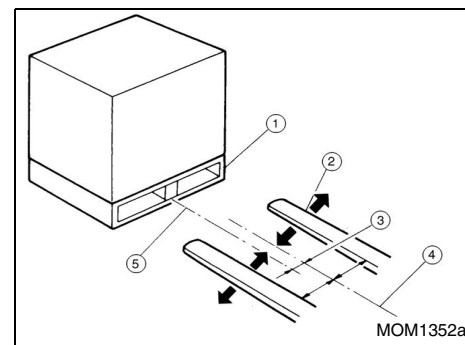
CAUTION:

When you operate your integral fork positioner, make sure to raise the forks approximately 100 to 200 mm (3.94 to 7.87 in) from the ground before operation. If you operate the integral fork positioner while the forks are in contact with the ground, it is dangerous when the forks get caught.



CAUTION:

Do not move the levers suddenly and quickly. There is a risk of a load collapse.



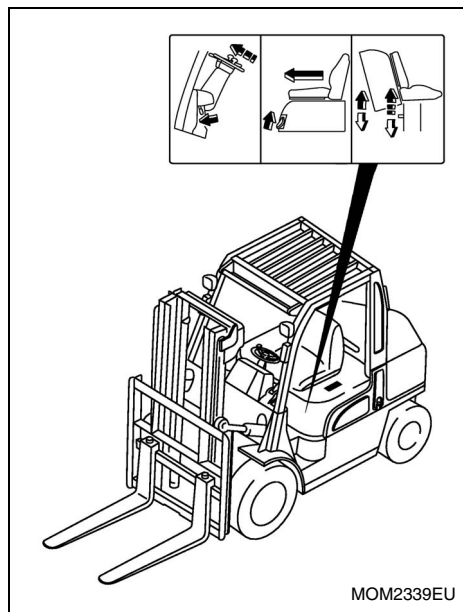
- ① Pallet
- ② Fork
- ③ Deviation
- ④ Center of forks
- ⑤ Center of pallet



CAUTION:

Be sure to center the weight of the load between the forks even if the truck and load centers are aligned.

TOP PANEL



TOP PANEL OPENING AND CLOSING



WARNING:

Do not open the top panel with the engine running. Do not place hands near the cooling fan because it rotates at a high speed and may cause injury. When opening the

hood, be sure to turn off the engine. When starting the engine, check the hood to make sure that it is locked.

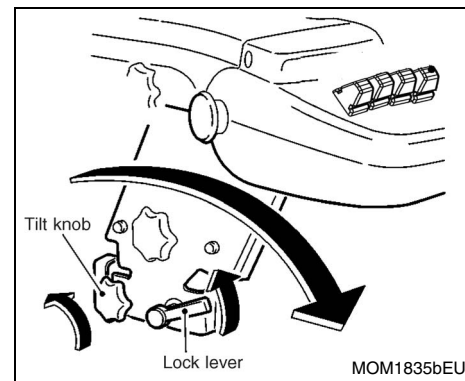


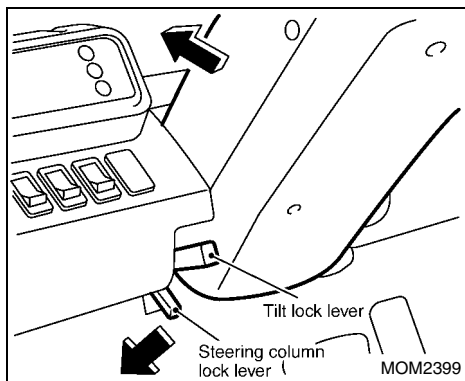
NOTE:

Make sure that the seat slider and reclining device are returned to their normal positions before releasing the top panel lock for all models except the LPG 1D1 model. On the LPG 1D1 model, move the seat all the way forward in advance.

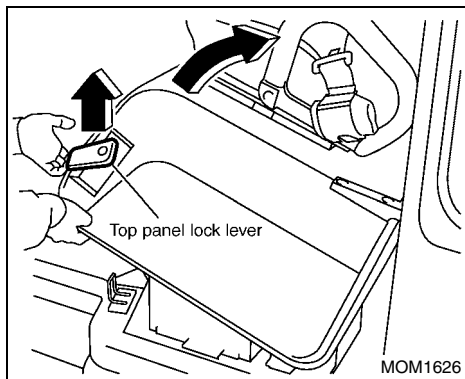
For models equipped with a cabin, refer to “TOP PANEL OPENING PROCEDURE” on page 146.

1. On LPG models, release the lock lever at the side of the LPG cylinder mount. Tilt the cylinder towards the rear depending on the type of LPG cylinder bracket. (Refer to “LPG cylinder replacement” on page 61.)
2. Release the lock lever and the tilt knob on the right side of the joystick lever unit, and tilt the joystick lever unit forward. (If equipped with joystick lever.)

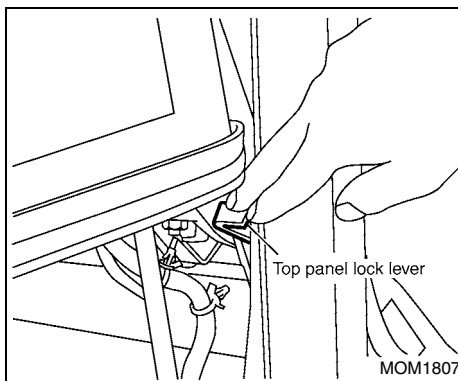




3. Release the steering column lock lever.
The steering column can be tilted forward.

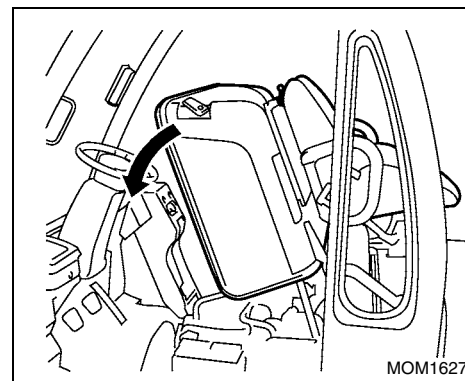


4. Release the top panel lock lever and then
open the top panel backward until it locks.



CLOSING PROCEDURE

Grasp the handle and push the top panel forward to close it while releasing the top panel lock lever.

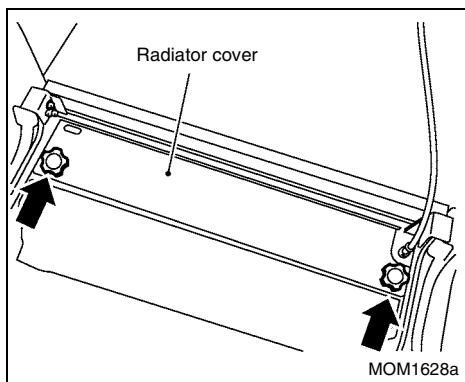


- Tilt the steering column backward and lock with the steering column lock lever.
- On LPG model, return the LPG bracket to the closed position.
- On trucks with fingertip, adjust the armrest and tighten the tilt knob and lock lever.



CAUTION:

- To avoid pinching your fingers, always grasp the handle when closing the top panel.
- After closing the top panel, make sure that the top panel, steering column lock lever and console box are locked securely.



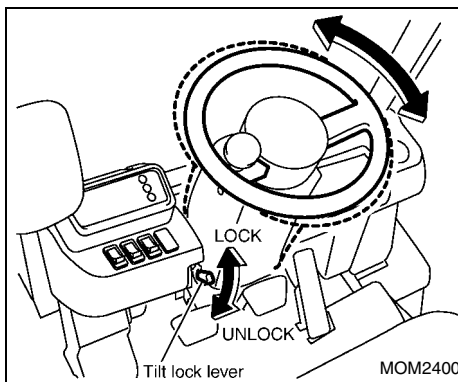
RADIATOR COVER

The radiator cover can be removed with the top panel closed.

The cooling water level is checked by removing the radiator cover.

i NOTE:

- Be absolutely sure to hand-tighten the bolts when reinstalling the radiator cover.
- Refer to “2. ENGINE COOLANT LEVEL” on page 93 for information on the cooling water level check procedure.



TILT STEERING WHEEL

The position of the steering wheel can be adjusted. To adjust, push down on the tilt lock lever located on the left side of the steering column, and move the wheel to the desired position. After selecting the wheel position, pull up the lever fully to lock.



WARNING:

- a. Before adjusting the steering wheel, turn the ignition key off.
- b. Be sure to adjust the steering wheel position while the forklift is stationary.
- c. After adjustment, move the steering wheel upward or downward to assure it is securely locked.

- d. Do not confuse the tilt steering wheel adjustment lever with the steering column lock lever during adjustment procedures.

PRECAUTIONS FOR COLD AND HOT WEATHER

In cold weather

- **Oil and grease**

Use engine oil and grease that are suitable for the ambient temperature. Refer to “OIL / LUBRICATION SPECIFICATIONS” on page 135.

- **Coolant**

When coolant might freeze at a low ambient temperature, drain out the coolant completely. In such cold weather, a recommended 50/50 mix of antifreeze solution only should be put into the cooling system.

Antifreeze:

[Example]

Antifreeze	
Coolant capacity	2.5 liters (2-1/4 Imp qt)
5.0 liters (4-3/8 Imp qt)	-35°C (-31°F)

COOLING SYSTEM BLEEDING INSTRUCTIONS



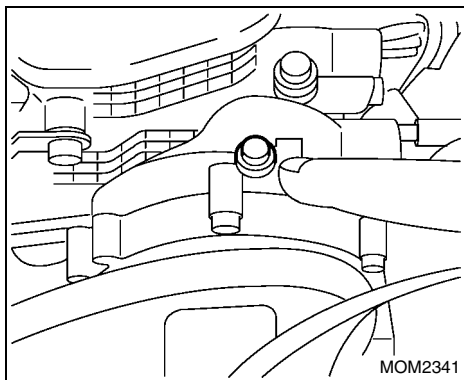
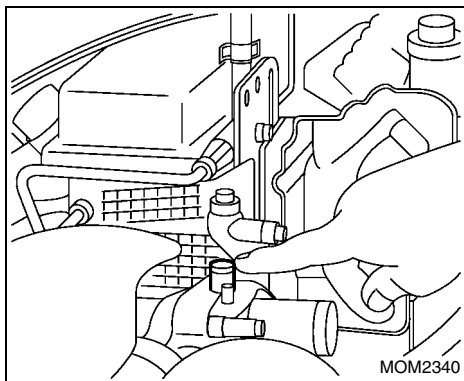
WARNING:

- **Never remove the radiator cap when the engine is hot. Serious burns could be caused by high-pressure fluid or steam escaping from the radiator.**
- **Always ensure that the coolant is cooled down sufficiently before removing the radiator cap. When opening the radiator cap, wrap the cap with a shop cloth and turn the cap slowly to release the internal pressure.**



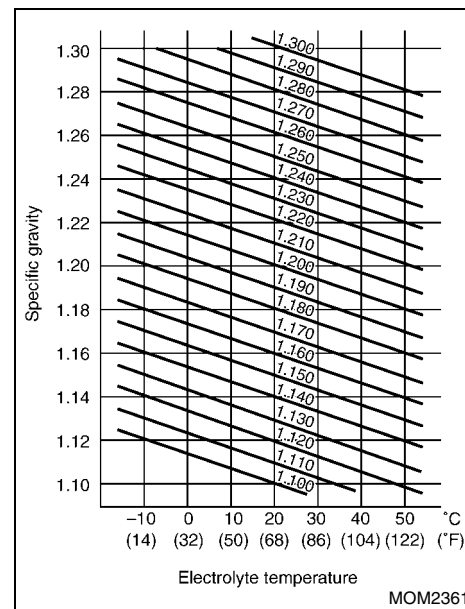
NOTE:

- **Use only Genuine Long-Life Coolant (LLC) with the proper mixture ratio for the working environment that the forklift will be used in.**
 - **Engine coolant must be disposed of properly. Check your local regulations.**
1. Remove the radiator cover and open the engine hood. Remove the radiator cap.
 2. Place an appropriate size container under the radiator. Open the drain cock of the radiator and extract the coolant.
 3. After draining all of the coolant, securely close the drain cock.
 4. Prepare coolant mixture referring to the antifreeze coolant capacity table.
 5. With the radiator cap removed, locate the engine coolant system bleeder screw. The bleeder screw location varies depending on the model of the engine. This screw will either be located in the thermostat housing or on the top of the water pump. Refer to the following illustrations for the location of the bleeder screw.



6. Completely remove the bleeder screw, and pay close attention to the sealing washer so that it does not fall off the screw as it is being removed.

7. Add the recommended engine coolant mixture into the radiator, when the engine coolant comes out of the bleeder hole with no air bubbles. Install the bleeder screw and tighten to 6.3 to 8.0 N·m (55.7 to 75.8 in lbs) of torque.
8. Also add coolant to the reservoir tank up to the full line.
9. With the radiator cap removed, start the engine and accelerate above idle RPM to purge the air out of the LP vaporizer. Continue to operate the engine until the thermostat opens and you can visually see the coolant moving in the radiator.
10. Top off the coolant (approximately 25 mm (1 in) from the top of the radiator) in the radiator after all air has been purged.
11. Securely attach the radiator cap.
12. Turn off the engine.
13. Close the engine hood and install the radiator cover.
14. Start the engine, check for leaks and ensure that the engine temperature stays within the operating range. If the unit starts to overheat, there is still air in the cooling system. Repeat steps 5 to 14.



● Battery

The battery should not be left in the discharged state. When battery performance becomes questionable, check the specific gravity of the electrolyte, terminals of battery and alternator.

The normal specific gravity is 1.260 as corrected at 20°C (68°F). It changes about 0.0007 for every 1°C (1.8°F). If the specific gravity of the electrolyte does not indicate the correct value, charge the battery soon.

PROCEDURE FOR JUMP STARTING ECCS ENGINE



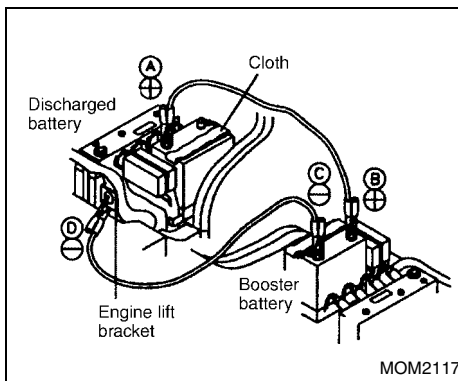
WARNING:

Always follow the instructions below. Failure to do so could result in damage to the charging system and cause personal injury.

1. If the booster battery is in another forklift, position the two forklifts to bring their batteries near each other.

Do not allow the two forklifts to touch.

2. Apply the parking brake. Shift the transmission into the N (Neutral) position. Switch off all unnecessary electrical systems (lights, etc.).
3. Remove the vent caps on the battery (if so equipped). Cover the battery with an old cloth to reduce explosion hazard.
4. Connect jumper cables in the sequence illustrated (A, B, C, D).



CAUTION:

- Always connect positive (+) to positive (+) and negative (-) to body ground (for example, strut mounting bolt, engine lift bracket, etc.) not to the battery.
 - Never use a booster battery or source of greater voltage, or it could damage engine electrical compounds.
 - Make sure that the jumper cables do not touch moving parts in the engine compartment and that the cable clamps do not contact any other metal.
5. Start the engine of the booster forklift and let it run for a few minutes.

6. Keep the engine speed of the booster forklift at about 2000 rpm, and start the engine of the forklift being jump started.



CAUTION:

Do not keep the starter motor engaged for more than 10 seconds. If the engine does not start right away, turn the key switch off and wait 3 to 4 seconds before trying again.

7. After starting the engine, carefully disconnect the negative cable and then the positive cable.
8. Replace the vent caps (if so equipped). Be sure to dispose of the cloth used to cover the vent holes as it may be contaminated with corrosive acid.
9. To start the engine with a booster battery, the following instructions and precautions must be followed.



WARNING:

- If done incorrectly, jump starting can lead to a battery explosion, resulting in severe injury or death. It could also damage your forklift. Explosive hydrogen gas is always present in the vicinity of the battery. Keep all sparks and flames away from the battery.

- Do not allow battery fluid to come into contact with eyes, skin, clothing or painted surfaces. Battery fluid is a corrosive sulfuric acid solution that can cause severe burns. If the fluid comes into contact with anything, immediately flush the contacted area with water. Immediately contact a doctor if the battery fluid comes in contact with your eyes, or if it is swallowed.
- Keep the battery out of the reach of children.
- The booster battery must be rated at 12 volts. Use of an improperly rated battery can damage the forklift.
- Whenever working on or near a battery, always wear suitable eye protectors (for example, goggles or industrial safety spectacles) and remove rings, metal bands or any other jewelry. Do not lean over the battery when jump starting.
- Do not attempt to jump start a frozen battery. It could explode and cause serious injury.
- With running engine, always keep hands and other objects away from the cooling fan.

IN HOT WEATHER

● Oil

Engine oil should be changed to summer type oil (recommended lubricants).

● Coolant

Because the engine is more likely to overheat in hot weather, the forklift should be parked in a shaded area. Overheating sometimes is caused by old, worn or cracked hoses, connections, loosened radiator cap, or old, worn or cracked fan belt. Carefully check the cooling system to maintain the best cooling effect.

● Battery

Because the battery electrolyte evaporates in hot weather, it is necessary to refill the battery with distilled water. (Refer to "4. BATTERY FLUID LEVEL" on page 95.)

DAILY CARE AND INSPECTION



WARNING:

Do not open the top panel with the engine-running. Do not place hands near the cooling fan because it rotates at a high speed and may cause injury. When opening the hood, be sure to turn off the engine. When starting the engine, check the hood to make sure that it is locked.

To keep your forklift in proper condition, ready for safe operation, be sure to perform the daily checks indicated below.

If you note any malfunction, notify your supervisor or an authorized dealer.



NOTE:

For more detailed information on daily care and inspection refer to the index for each item.

Do not operate the forklift if it is in need of repair.

1. Check the engine oil level.
2. Check the engine coolant level, and also check the engine cooling system for leakage.
3. Check the amount of brake fluid and check for leakage.
4. Check the battery fluid level in each cell.

5. Check the automatic transmission oil level and check for leakage.
6. Check the hydraulic oil level and check for oil line leaks.
7. Check the fuel line (hoses, pipings, connections) for leaks. Also check the fuel tank drain plug for leaks.
8. Check the water separator of the fuel filter. If necessary, drain water from the water separator.
9. Check the steering wheel play.
10. Check the tire pressure and check for looseness, wear or damage of wheel nuts and bolts.
 - Remove objects that are embedded in the tread.
 - Check for damage and friction of wheels and for bends and cracks in the rim.
11. Check the operation of the horn, headlamp, indicators and warning lights.
12. Check the operation of the hydraulic control valve.
13. Check the mast operation for the following items:
 - Smooth lifting and lowering
 - Smooth roller rotation
 - Wear or damage to chains
 - Lift bracket and forks for bend and damage
14. Check the safety start system operation.

15. Check the brake pedal operation.
16. Check the parking brake operation.
17. Check the backrest and overhead guard for proper installation and function.
18. Check the fork latches.
19. Check the forks for cracks, breaks, bend and wear.
20. Check seat and seat belt for function and damage.
21. Check the radiator core for clogging.
 - If there is dirt or dust on the radiator core, the engine may overheat. Clean the radiator core with compressed air or steam so as not to deform the core fins.
22. Check the color of the exhaust gas after the engine is warmed up.
 - “Colorless or light blue” exhaust gas represents complete combustion.
 - “Black” exhaust gas represents incomplete combustion and “White” exhaust gas shows burning of the engine coolant.



WARNING:

- **Exhaust gas contains harmful substances, therefore sufficient ventilation must be secured in case you have to start it in an enclosed area.**
- **This exhaust gas check must be conducted in an open area.**

DAILY CHECKS AND SIMPLE MAINTENANCE

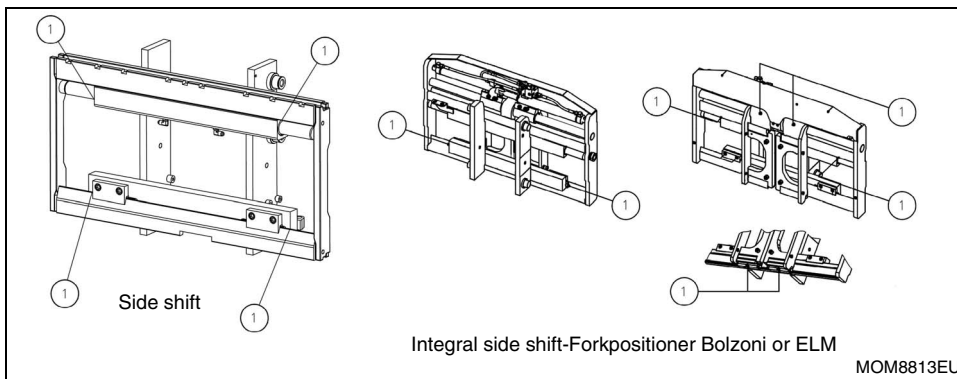


CAUTION:

If any abnormality is noted in the daily checks, notify the responsible person, and never resume operation before repair is completed. Contact your authorized dealer for repair.

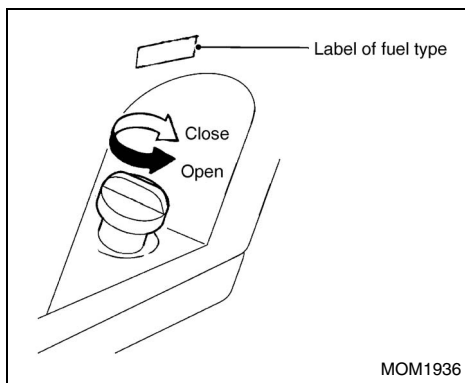
To assure safe operation and maintain the side shift and integral side shift/fork positioner in proper functional condition, be sure to perform the daily checks below in addition to the check items under “Daily care and inspection” previously in this manual.

1. Check all parts of the hydraulic piping and the cylinder of the side shift for oil leaks and looseness.
2. Check that the side shift and integral side shift/fork positioner is not damaged or deformed.
3. Check visually the jaw installation bolt on the finger bar for looseness.
4. Operate the side shift and integral side shift/fork positioner for several times to check that it operates smoothly without abnormal noise. Also check that the integrated fork positioner operates smoothly without rattling.



① Grease nipple

Apply chassis grease once a week (or every 250 hours) to the grease nipples in the sleeve of the shift finger bar. In case of severe usage greasing more often is necessary.



FUEL REFILLING (Diesel)



WARNING:

- Be sure to stop the engine before refilling with fuel.
- Make sure that there is no fire or flammable objects in the vicinity of the engine. Use only diesel fuel in the fuel tank of diesel engine equipped vehicles.

The fuel inlet is located on the body on the left rear side.

When refilling the fuel, check the indication label and do not use the wrong fuel by mistake. Turn the fuel cap counterclockwise to remove it.

If the fuel cap has the optional lock and key, insert the key into the keyhole on the fuel cap and turn the key clockwise for locking or turn it counterclockwise for unlocking.

After refilling, be sure to turn the fuel cap clockwise until it clicks twice or more.



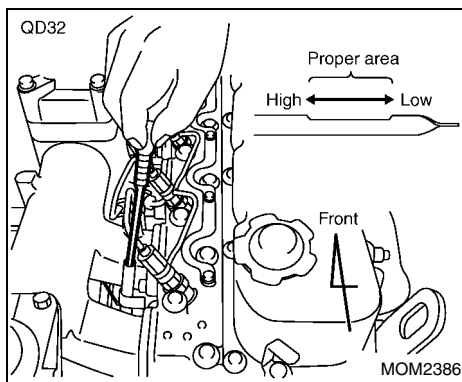
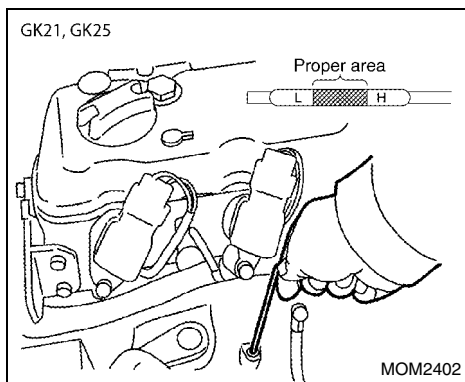
CAUTION:

- Do not use fuel that has been stored for a long time. Such fuel may adversely affect engine performance or shorten its service life, because of possible contaminants in the fuel.
- If the fuel spills out of the fuel inlet, wipe it off and completely clean the area by the inlet.

DIESEL ENGINE FORKLIFT

The diesel engine is designed to run only on diesel fuel with at least a minimum of 42 cetane rating.

- For LPG fueling, refer to "LPG MODEL".



1. ENGINE OIL LEVEL

To check the oil level, pull out the level gauge, wipe it clean and reinsert; remove it again to read the oil level.

The level should be in the proper area.

After checking the oil level, be sure to return the oil level gauge to the original position.

For QD32 engine, the level gauge is located on the left side of the engine.



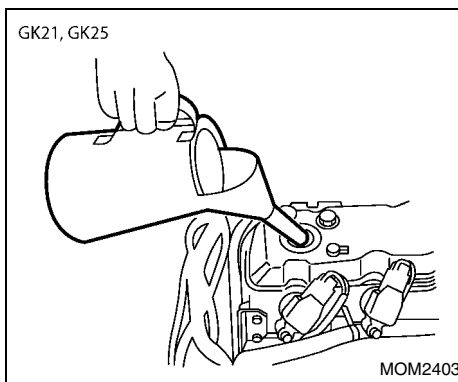
CAUTION:

Do not run the engine when the engine oil level is lower than the minimum indicator (Low) mark, as the engine could be damaged or seize up. If the engine oil level is lower than the minimum indicator (Low) mark, add engine oil through the oil inlet until the oil level reaches the specified amount.



NOTE:

When checking the engine oil, be sure to do it on a level surface before starting the engine and at least 5 minutes after the engine is stopped.



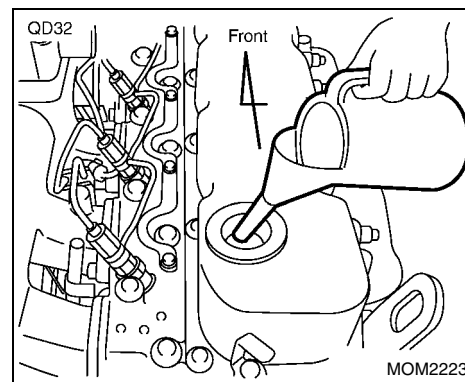
REFILLING ENGINE OIL

1. For refilling the engine oil tank with engine oil, remove the oil filler cap and slowly pour Genuine Motor Oil into the tank while checking the oil level with the oil level gauge until the oil reaches the specified oil level.

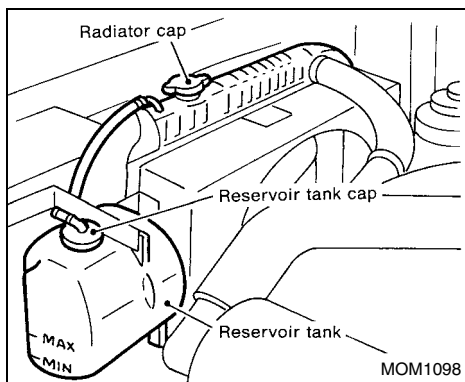


CAUTION:

- Carefully pour engine oil into the oil filler so as not to contaminate with dust and foreign substances. If the oil spills, immediately wipe it away.
- Make sure that the oil filler cap is tightened. If the oil filler cap is not properly tightened, engine problems may result.



2. 5 minutes after refilling the engine oil, check if the oil level is between the upper limit (H) and lower limit (L) indicator marks with the oil level gauge.
3. Restore the oil filler cap and oil level gauge to their respective original positions.



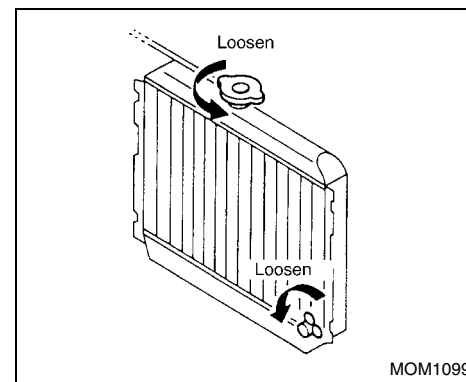
WARNING:

- **Never remove the radiator cap when the engine is hot. Serious burns could be caused by high-pressure fluid escaping from the radiator.**
- **Wrap a thick cloth around the cap and carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. When all hissing, steam and liquid stops, slowly turn the cap all the way off.**

2. ENGINE COOLANT LEVEL

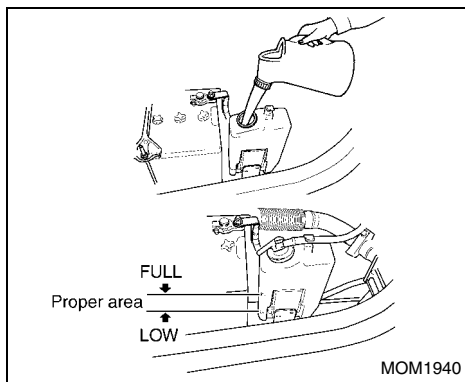
Visually check the amount of coolant in the reservoir tank when the engine is cold. If the coolant level is below the “MIN” level, remove the reservoir tank filler cap and add coolant until the “MAX” level is reached. If the reservoir tank is empty, check the coolant level in the radiator. If there is insufficient coolant in the radiator, pour coolant into the radiator up to the cap and also pour it into the reservoir tank up to the “MAX” level.

If it becomes necessary to repeatedly add coolant, your cooling system should be inspected by an authorized dealer.



CHANGING ENGINE COOLANT

1. Open the radiator cap and drain cock to drain the coolant. Then flush the cooling system.
2. Close the drain cock securely.
3. Fill the radiator with new coolant up to the filler opening. Fill the reservoir tank up to the “MAX” level. Then put on the radiator cap.
4. Run the engine to the normal operating temperature on dash meter panel.
5. Stop the engine, and after it completely cools down, refill the coolant up to the radiator filler opening. Fill the reservoir tank.



REFILLING ENGINE COOLANT

1. Refill the engine coolant in the reservoir tank.
2. Remove the reservoir tank filler cap.
3. If the reservoir tank is empty, refill the radiator and the reservoir tank with the coolant at the same time. For refilling the coolant in the radiator, remove the radiator cover first and then slowly turn the radiator cap while wrapping it with a cloth to remove it. After removing the radiator cap, fill the radiator with coolant.
4. After refilling the coolant, tighten the reservoir tank filler cap and radiator cap tightly.



WARNING:

To avoid being burnt, do not attempt to change the coolant when the engine is hot.



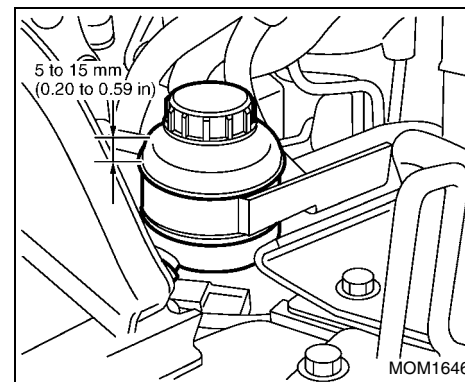
NOTE:

Refer to “Antifreeze” on page 84 for the proper mixing ratio of antifreeze solution to coolant.



CAUTION:

- The long-life coolant can degrade the coated surface. If it adheres to the coated surface, wash the coolant away with water.
- Be sure to use the long-life coolant specified for this truck. The cooling performance and anticorrosive treatment cannot be assured if another coolant is used.
- Do not refill the coolant above the “FULL” level of the reservoir tank. If it exceeds the “FULL” level, it may spill out as the engine is warmed up. Carefully refill the coolant so as not to contaminate it with foreign substances.



3. BRAKE FLUID LEVEL

Check if the brake fluid level in the brake fluid reservoir tank is within the proper range. If the level is lower than the “MIN” level, refill the reservoir tank with the brake fluid (Genuine Brake Fluid). At the same time, examine the outside and periphery of the reservoir tank for brake fluid leak or stain by visual check.



WARNING:

- Use DOT3 (F.M.V.S.S. No. 116) brake fluid only.
- If brake fluid leak or stain is detected, immediately report it to the administrator of the forklift for taking proper measures or contact an authorized dealer to inspect and repair it. Anyway, do not operate the forklift until it is completely repaired.
- If a brake fluid other than those specified for this truck or an aged brake fluid is used, it may cause deterioration in the performance and accident. Be sure not to use such the brake fluid.
- Be careful not to adhere the brake fluid to the coated surface, because the brake fluid vitiates the coated surface.
- When refilling the brake fluid reservoir tank with the brake fluid, be careful not to mix dust and foreign substances in the fluid.
- If brake fluid is excessively consumed, immediately report it to the forklift administrator for taking proper measures or contact an authorized dealer to inspect it.

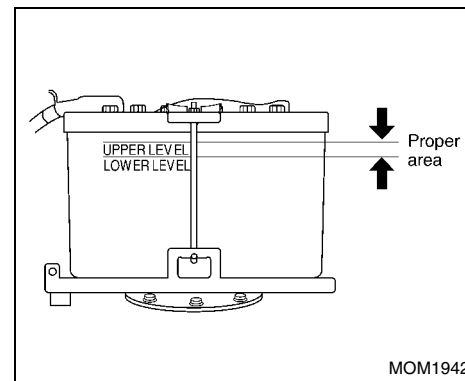
3. REFILLING BRAKE FLUID

Turn the brake reservoir tank cap counter-clockwise to remove it, and gently pour the brake fluid (Genuine Brake Fluid) into the tank until the fluid level reaches the "MAX" level.



WARNING:

- When refilling the brake fluid reservoir tank with the brake fluid, be careful not to mix dust and foreign substances in the fluid.
- If a brake fluid other than those specified for this truck or an aged brake fluid is used, it may cause deterioration in the performance and accident. Be sure not to use such the brake fluid.
- Be careful not to spill the brake fluid to the coated surface, because the brake fluid vitiates the coated surface. If the brake fluid adheres to the coated surface, immediately wipe it out so that no liquid remains on the coated surface.
- If the brake fluid is excessively consumed, immediately report it to the forklift administrator for taking proper measures or contact an authorized dealer to inspect it.



4. BATTERY FLUID LEVEL

Open the top panel, and then check the fluid level in each battery cell.

REFILLING BATTERY FLUID

If the electrolyte (battery fluid) is insufficient, remove the caps from the battery and carefully refill the respective battery cells with distilled water only until the fluid level reaches the "UPPER LEVEL" so as not to contaminate the fluid with dust and foreign substances.

At the same time, visually inspect the battery body for cracks or damage. If there is any damage, immediately replace the battery with a new one.

After refilling the battery with distilled water, tighten the respective caps tightly. If the battery fluid spills out, wash it away with water and wipe down the wet surface.



WARNING:

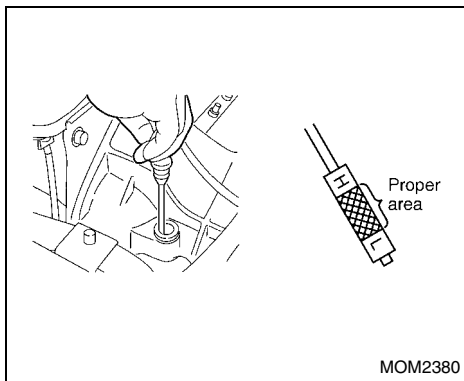
- Since the battery produces explosive hydrogen gas, handle it in a location where there are no sources of ignition or open flame.
- Do not allow a person who does not have knowledge of the battery and its handling manner inspect or maintain the battery.
- Because the battery fluid contains sulfuric acid, be sure to wear proper protective clothing (goggles, rubber gloves, etc.). Be careful not to get the fluid in eyes, on the skin or clothes, otherwise it may cause blindness, burns or damage to the clothes. If the battery fluid contacts part of the body, immediately wash it away with a large amount of cool water. If the fluid gets into eyes, immediately flush the eyes and consult a doctor as soon as possible. If the fluid is swallowed by mistake, immediately gargle repeatedly with a large amount of cool water, drink much water and consult a doctor as soon as possible.
- If battery fluid flows or leaks out of the battery, immediately neutralize it with an acid neutralizer (sodium bicarbonate, slaked lime, sodium carbonate, etc.) and then thoroughly wash it away with water, because it may cause corrosion of the floor or parts.

- Do not put anything metal, such as a tool on the battery. If metal contacts the terminal, it may cause not only a short circuit but a burn or explosion because the hydrogen gas produced by the battery may catch fire from the spark generated by the short circuit.
- Check the battery fluid level once a week to prevent the battery from running short of the electrolyte. If the battery is used with insufficient battery fluid, the battery may explode. When refilling the battery with the battery fluid, do not pour the fluid above the "UPPER LEVEL".
- If the battery is used when the battery fluid level is below the "LOWER LEVEL", it may shorten the service life of the battery and may cause explosion of the battery because insufficient battery fluid promotes deterioration in internal parts of the battery.
- Be careful not to wipe down the top of the battery with a dry cloth, not to cover the battery with a vinyl sheet or not to dust the battery, because this may generate static electricity and potentially cause the battery to explode.
- Do not touch the battery with a charged body, otherwise it may cause an explosion of the battery because of ignition from static electricity.



CAUTION:

The time and date will be reset if the battery cable is disconnected (for example, when the battery is replaced). Set the time and date again.



5. AUTOMATIC TRANSMISSION FLUID LEVEL

1. Stop the engine after idling for about 10 minutes.
2. Open the top panel and check if there is leakage of the automatic transmission fluid. Then, pull out the level gauge and wipe down the tip of the gauge with a clean cloth.
3. Insert the level gauge to the limit and gently pull it out again.
4. Make sure that the fluid on the tip of the level gauge is not extremely worn, discolored or contaminated by foreign substances, and also check if the fluid level is within the proper range.

5. If the fluid is insufficient, refill the automatic transmission with the specified fluid so that the level gauge reads the proper range.



CAUTION:

- **Do not operate the forklift with insufficient automatic transmission fluid, because the forklift may be disabled from running.**
- **If the transmission fluid is extremely worn, discolored or contains foreign substances, immediately report it to your supervisor or contact an authorized dealer to inspect it.**

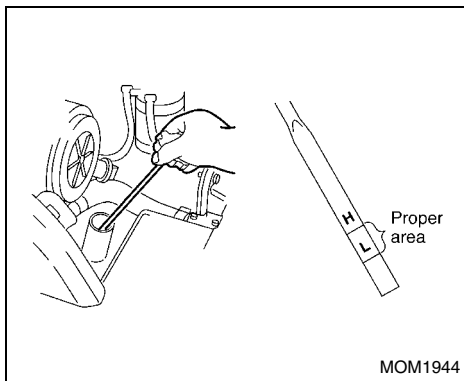
REFILLING AUTOMATIC TRANSMISSION FLUID

Automatic transmission fluid can be added through the level gauge hole. Checking the fluid level with the level gauge, pour the Genuine Matic Fluid (refer to "OIL / LUBRICATION SPECIFICATIONS" on page 135) into the level gauge hole until the fluid level is in the proper range.



CAUTION:

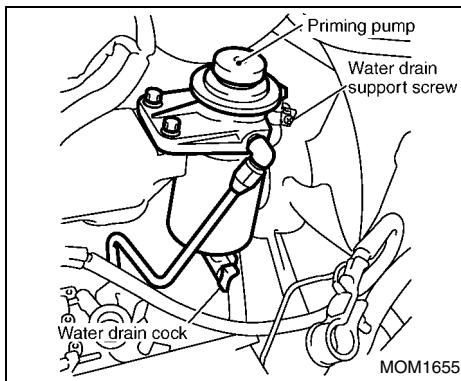
- **Do not use any automatic transmission fluid other than those specified for this truck. Otherwise, it may cause a malfunction in the torque converter. Be sure to refill the automatic transmission with the specified quantity of the Genuine Matic Fluid (refer to "OIL / LUBRICATION SPECIFICATIONS" on page 135).**
- **Be careful not to mix dust or foreign substance in the transmission fluid during refilling.**



6. HYDRAULIC OIL

Check the oil level in the hydraulic oil tank.

1. After visually checking for oil leakage, turn the hydraulic oil filler cap located on the right side of the operator's seat to remove it.
2. Wipe down the level gauge attached to the cap with a clean cloth. Insert the clean level gauge into the hydraulic oil filter (do not screw the level gauge in) and pull it out again.
3. If the oil level that can be checked on the level gauge is between the two indicator lines marked on the level gauge, the quantity of the hydraulic oil is normal.



8. WATER SEPARATOR

Draining water from water separator (diesel engine)

If the filter warning lamp illuminates while the engine is running, drain any water that is in the fuel filter. Proceed as follows:

1. Place a container under the fuel filter.
2. Loosen the water drain support screw and the water drain cock 4 to 5 turns to drain water.
3. After the water has been completely drained, tighten the water drain support screw and drain cock.

Air purge (diesel engine)

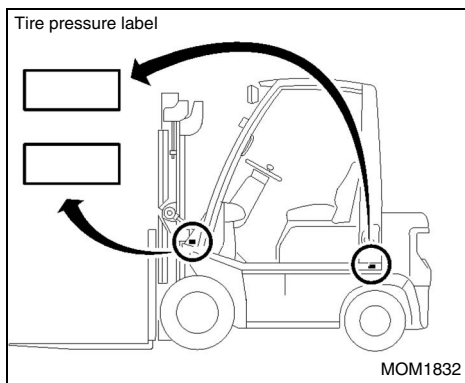
When refilling empty fuel tank and/or draining water from the water separator, purge the air out of the fuel system. Proceed as follows: Move the priming pump up and down until no further air-bleed comes out of the air purge screw.

7. CHECKING AREA AROUND FUEL TANK

When performing daily care before operating the forklift, also check the area around the fuel tank.

- Check for drops of fuel on the floor where the forklift is parked.
- Check for fuel leakage at the drain plug of the fuel tank (underside of the left frame).
- Check for fuel leakage where the fuel tank and fuel neck join (upper side of the left frame).
- Check for fuel leakage where the fuel gauge is mounted (upper side of the left frame).

If any of the above conditions are found, stop operating the forklift immediately and contact an authorized dealer.



9. WHEEL AND TIRE

Maintain the correct tire pressures by checking frequently with an accurate tire gauge.

Inflate tires to the correct pressure if necessary.

Tire pressure:

kg/cm² (kPa, bar, psi)

	1.5 ton, 1.75 ton		2.0 ton, 2.5 ton		3.0 ton, 3.2 ton	
	Tire size	Tire pressure	Tire size	Tire pressure	Tire size	Tire pressure
SIN	6.50-10-14PR	9.18 (900, 9.0, 131)	7.00-12-14PR	9.18 (900, 9.0, 131)	28 × 9-15-14PR	9.18 (900, 9.0, 131)
DBL	6.50-10-14PR	9.18 (900, 9.0, 131)	7.00-12-14PR	9.18 (900, 9.0, 131)	28 × 9-15-14PR	9.18 (900, 9.0, 131)
WIDE SIN			27 × 10-12-14PR	7.14 (700, 7.0, 102)		
RAD	6.50 R10	10.2 (1000, 10.0, 145)	7.00 R12	10.2 (1000, 10.0, 145)	28 × 9 R15	10.2 (1000, 10.0, 145)
STRG	J	5.00-8-8PR	6.00-9-10PR	9.18 (900, 9.0, 131)	6.50-10-14PR	9.18 (900, 9.0, 131)
	R	5.00 R8	6.00 R9	10.2 (1000, 10.0, 145)	6.50 R10	10.2 (1000, 10.0, 145)



NOTE:

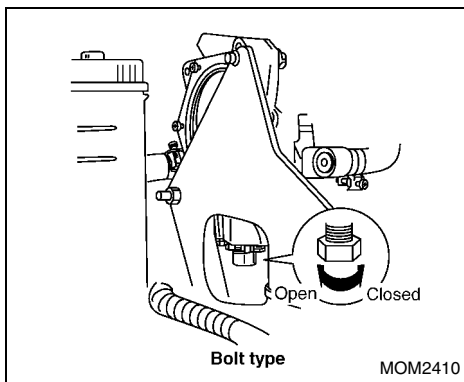
For radial tires special rims are required.

Please consult your dealer.



WARNING:

If the tire pressure is not correct, problems such as tires bursting or premature tire wear will result.



DRAINING OF TAR FROM THE VAPORIZER (LPG engine forklift)



CAUTION:

This should only be done by a trained & authorized person.

The vaporizer is an apparatus used during LPG operation to control and reduce fuel pressure within the LPG cylinder and regulate vaporization. The vaporization process produces tar (sticky liquid) which accumulates in the vaporizer.

When or if tar accumulation becomes excessive, emission levels and idling speed adjustment could be adversely affected. Tar must be

purged from the vaporizer at least once a month.

1. The tar purging procedure should be performed when the engine is at the operating temperature (warm).
2. Shut off (close) LPG cylinder tank, (red) discharge the valve and then idle.
3. Turn the ignition key to the OFF position.
4. Get off the forklift after pulling out the key to open the top panel. Refer to "Top panel" on page 81.
5. Put a cloth for collecting tar on the outlet.
6. For the plug (bolt) type, slowly remove the plug.
7. Tar will drip. When it stops, the procedure is complete.
8. Fix the purge plug (bolt). If tar is spilled on the body or surrounding areas, completely wipe it off with a cloth.
9. Close the top panel to complete the work.



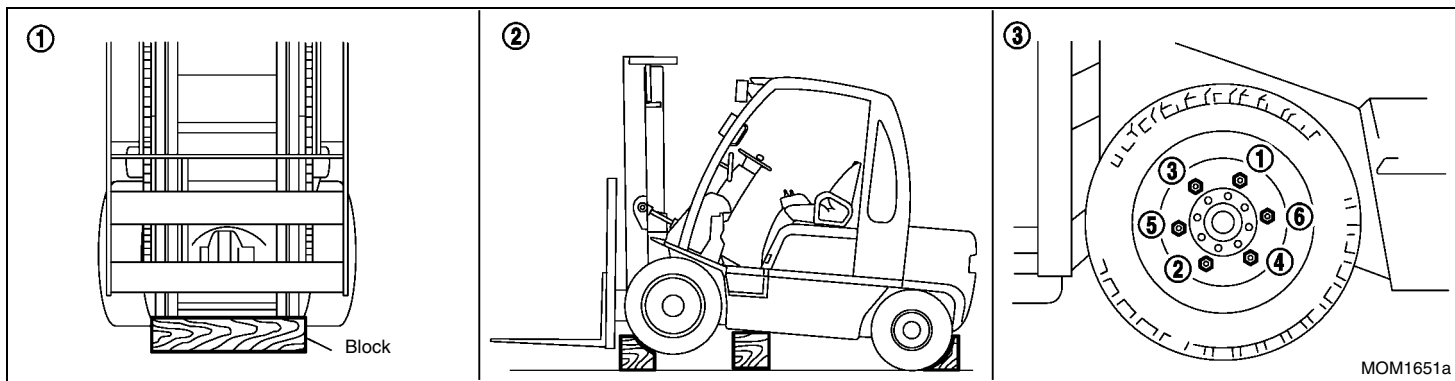
WARNING:

Do not touch the vaporizer or its surrounding parts at high temperature, as it may cause burns. Whenever operating the purge plug, always wear protective gloves.

Stopping

LPG engine vehicle:

To stop the engine, turn the ignition key to the OFF position.



TIRE REPLACEMENT

Front tire

1. Place the forklift on a level and solid surface.
2. Start the engine and raise the carriage about 100 mm (3.94 in).
3. Place chocks behind the rear wheels to prevent movement of the forklift.
4. Loosen the wheel nuts one or two turns each by turning them counterclockwise.
5. Tilt the mast fully backward, and place a block under each side of the outer mast.
6. Tilt the mast forward until the front tires are raised from the surface.



WARNING:

Do not remove wheel nuts until the front tires are raised from the ground.

7. Support the forklift by putting additional blocks under each side of the front-end frame as shown in the above illustration. Stop the engine.
8. Remove the wheel nuts and replace the front tire.



WARNING:

- a. **When removing the tire from the wheel rim, do not remove rim set bolts and nuts before releasing air.**

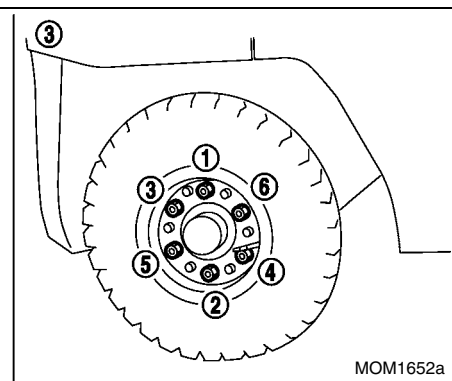
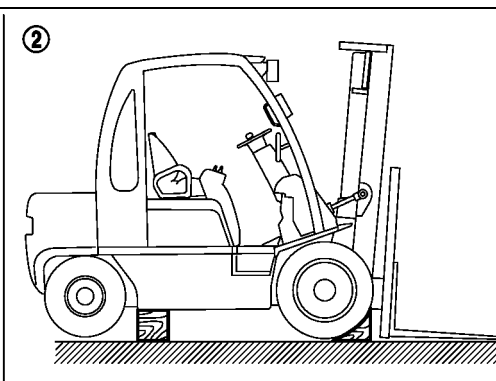
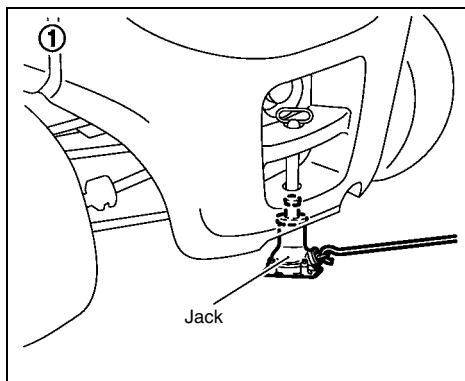
- b. **Make sure that the blocks used to support the forklift are solid and one-piece units.**

- c. **Never get under the forklift while it is supported only by the blocks.**

9. Reinstall the wheel nuts and temporarily tighten them in the sequence shown in the above illustration.
10. Start the engine and remove the blocks from the underside of the frame.
11. Lower the forklift slowly by tilting the mast fully backward. Remove the block from the underside of the mast, and remove the chocks.

MOM1651a

12. Tighten the wheel nuts to the specified torque in a crisscross fashion. Refer to the "Tightening torque" table on page 106.
13. Adjust the tire pressures to the value specified in the "Tire pressure" table on page 100.



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Rear tire

i NOTE:

To replace a tire, consult an authorized dealer.

Pneumatic tire

1. Place the forklift on a level and solid surface.
2. Apply the hand brake, and place chocks in front of the front tires to prevent movement of the forklift.
3. Place the jack under the cutout portion at the bottom of the counterweight, as shown in the above illustration.

Make sure that the jack has a capacity of at least 2/3 of the total weight of the forklift as shown on the model number plate.

4. Loosen the wheel nuts one or two turns each by turning them counterclockwise.

! WARNING:

Do not remove wheel nuts until the rear tires are raised from the ground.

5. Jack up the forklift slowly until the rear tires clear the ground, and support the forklift by putting blocks under each side of the rear end frame as shown in the above illustration.

6. Remove the wheel nuts and replace the rear tire.

! WARNING:

- a. **When removing the tire from the wheel rim, do not remove rim set bolts and nuts before releasing air.**
 - b. **Make sure that the blocks used to support the forklift are solid and one-piece units.**
 - c. **Never get under the forklift while it is supported only by the blocks.**
7. Reinstall the wheel nuts and temporarily tighten in the sequence shown in the above illustration.

8. Remove the blocks and lower the forklift slowly until the rear wheel touches the ground. Then remove the chocks and the jack.
9. Tighten the wheel nuts to the specified torque in a crisscross fashion. Refer to the "Tightening torque" table on page 106.
10. Adjust the tire pressure to the value specified in the "Tire pressure" table on page 100.

Tightening torque:

Unit: N·m (kg·m, ft·lb)

Model Item			1D1 series	1D2 series	
			1.5 t, 1.75 t	2.0 t, 2.5 t	3.0 t, 3.2 t
Pneumatic-tire model	Front	Single tire	167 to 226 (17 to 23, 123 to 166)	246 to 294 (25 to 29, 182 to 216)	441 to 588 (45 to 59, 326 to 433)
		Double tire	 167 to 226 (17 to 23, 123 to 166)*1	 246 to 294 (25 to 29, 182 to 216)*1	 540 to 686 (55 to 69, 399 to 505)*1
			167 to 226 (17 to 23, 123 to 166)*2	246 to 294 (25 to 29, 182 to 216)*2	589 to 735 (60 to 74, 435 to 542)*2
			79 to 98 (8.1 to 9.9, 59 to 72)*2	246 to 294 (25 to 29, 182 to 216)*3	—
	Rear		167 to 226 (17 to 23, 123 to 166)	167 to 226 (17 to 23, 123 to 166)	

B: Bolt

N: Nut

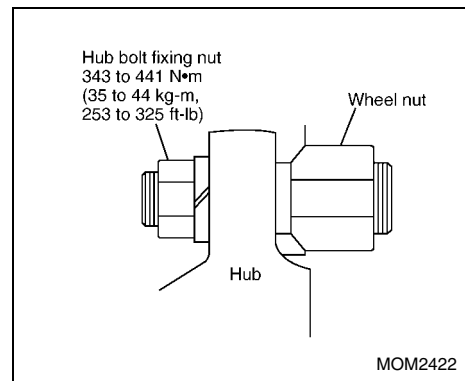
*1: Inner wheel

*2: Outer wheel nut

*3: Hub nut (Outer hub)

Remarks:

For 3.0 t model, hub bolt fixing nuts are needed to install hub bolts.



11. CHECKING HORN

Check the horn for proper operation.

11. CHECKING LIGHTS

- Make sure that lights illuminate when switches are turned on.
- Check meter panel warning light. Turn key switch to “On” check if all warning lights illuminate.

12. CHECKING “LIFT-TILT” CONTROL LEVER

Increase the engine speed and check the “LIFT-TILT” control lever for proper operation in the following manner.

Manipulate the joystick lever or the mechanical control lever to ensure that the forks are lifted, lowered, or tilted forward and backward properly.

Check the rollers for proper rotation.

13. CHECKING MAST AND FORKS

Check the mast and forks to ensure the following points.

- a) The forks are secured in their proper positions and have no crack or bending.
- Check the forks for cracks and bending.
- Check the mast for cracks and distortion.

- Check for oil leakage from cylinders and piping.

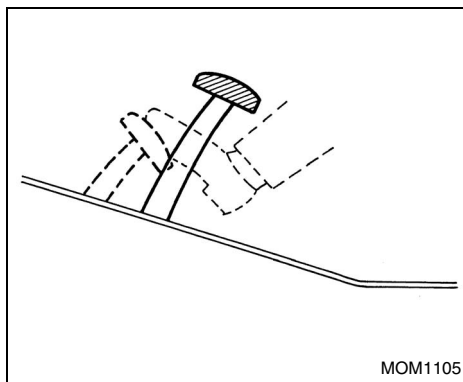
- Check the rollers for proper rotation.

- b) No oil leakage occurs at and around the lift and tilt cylinders.

- c) Checking the chain anchors and pins.

Checking Chains

- Check the lift chains for cracks or broken links and pins.
- Check the chain anchors and pins for cracks, wear and damage.

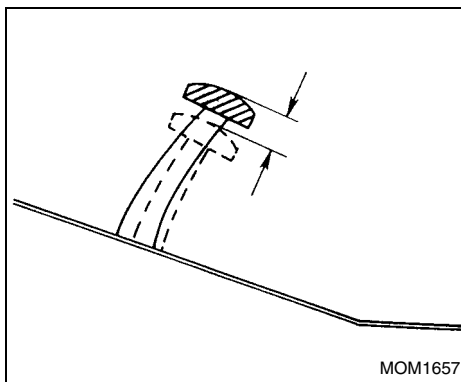


14. CHASSIS AND BODY

15. BRAKE PEDAL

When the engine is running and the brake pedal is fully depressed, the distance between the upper surface of the pedal pad and the floorboard should be adjusted to 80 mm (3.15 in) or more when the brake pedal force is 200 N (20.4 kg, 45 lb).

When this distance approaches the prescribed limit value, have the brake adjusted by an authorized dealer.

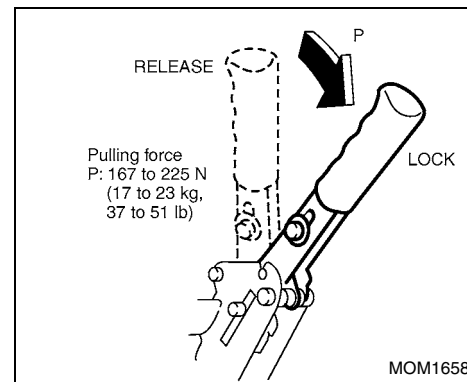


PEDAL FREE PLAY

The standard free play of the pedals is as follows:

Unit: mm (in)

Model	All models
Brake pedal	1 to 3 (0.04 to 0.12)

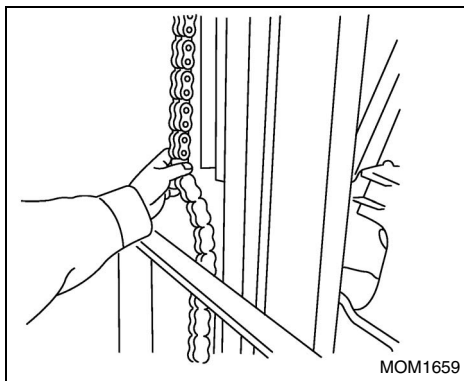


16. HAND BRAKE LEVER

Make sure that the hand brake works properly when pulled and then returns to its original position.

Pulling force at gripping position:

**167 to 225 N
(17 to 23 kg, 37 to 51 lb)**



13. Lift chain

Check lift chain tension periodically. Set the fork level at position of 20 to 30 mm (0.79 to 1.18 in) from the ground and depress the mid-point of the lift chain with the finger.

Deflection:

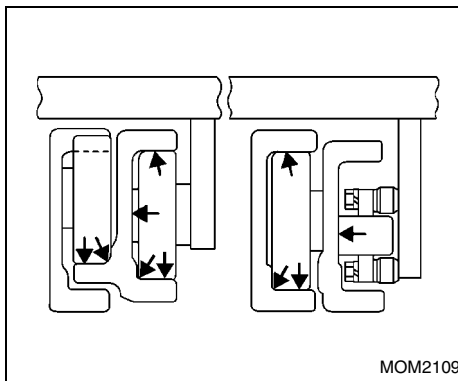
25 to 35 mm (0.98 to 1.38 in)

If the deflection is not within the specifications, have the chain adjusted by an authorized dealer or other competent service shop.



WARNING:

Never put your foot under the fork during checking.



Lubrication points

Lubricate the following points periodically in accordance with the Periodic Maintenance and Lubrication Schedule chart.

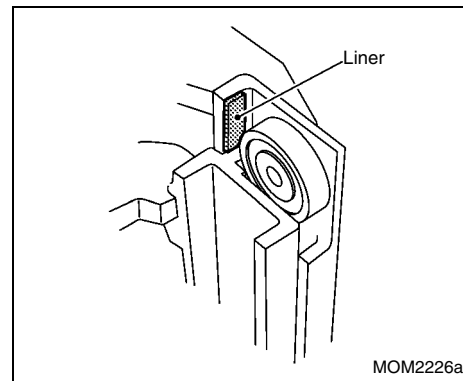
Mast

Apply a coat of grease to the thrust metals and liner.



NOTE:

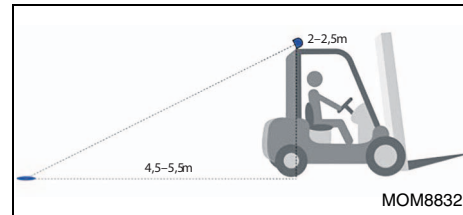
- The lubrication interval will vary with working conditions. During months in which working conditions are severe, it will be necessary to grease the parts frequently.

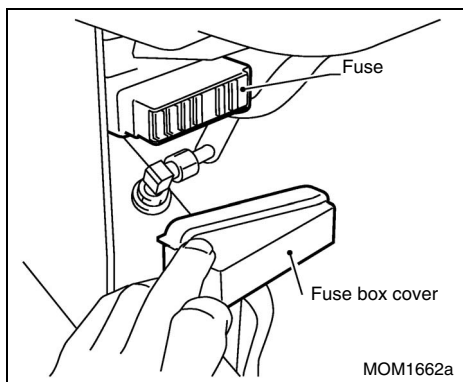


- When forklift is operated, apply a coat of grease to the contact surface of the lift roller and inner mast or outer mast.

CHECK THE ADJUSTMENT OF THE BLUE LIGHT (OPTION)

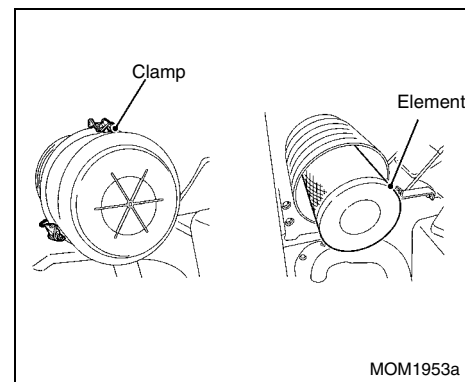
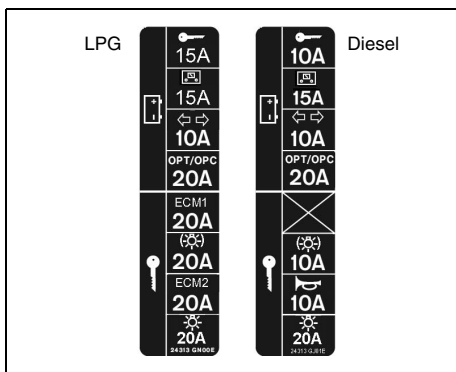
Check that the Blue Light is adjusted correctly, taking following measurements in account.





11. Fuses

The fuse box is installed to the left side of the instrument panel under the combination meter. Before replacing any faulty fuse, check and correct the cause of the problem. Use a fuse of the specified rating which is clearly shown on the fuse cover.



Air cleaner

1. Remove the three clamps securing the air cleaner case and take the element out carefully.
2. Clean the element by tapping it by hand or blow compressed air to it from the inside.
3. After cleaning, visually check the element and replace it if it is still dirty.



CAUTION:

When cleaning the air cleaner element, always wear a dust mask and dustproof glasses.



NOTE:

For cleaning, use compressed air with a pressure of 686 kPa (6.86 bar, 7 kg/cm², 100 psi) or less.

MAINTENANCE SCHEDULE

The first maintenance should be at 1 month or 200 hours (which ever comes first) after the truck is first put into use. See the (1) marked interval. Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.

Note:

Under dusty, dirty or heavy operations, more frequent maintenance is necessary. All items listed below must be maintained in order to meet and keep emission control systems operating at design level. Failure to maintain the systems could compromise the warranty.

I = Inspect. (Correct or replace if necessary.) **D** = Drain **R** = Replace **A** = Adjust **C** = Clean **T** = Retighten **L** = Lubricate/Grease

Inspection point			Intervals													How to check
			A (months)	1 ⁽¹⁾		6		12		18		24		30	...	
			B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	...	
Engine	Lubrication	Oil leakage & Level		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Oil		R	R	R	R	R	R	R	R	R	R	R	...	Replace
		Oil filter		R	R	R	R	R	R	R	R	R	R	R	...	Replace
	Cooling system	Coolant leakage & Level		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Coolant						I				R			...	Test anti freeze / Replace
		Cooling fan		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Hoses (Leakage / cracks / damage)		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Radiator (damage)		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Radiator core (clogged)		C	C	C	C	C	C	C	C	C	C	C	...	Clean

Inspection point				Intervals												How to check	
				A (months)	1 ⁽¹⁾		6		12		18		24		30		...
				B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Engine	Fuel system	General	Fuel leaks		I	I	I	I	I	I	I	I	I	I	...	Visual	
			Fuel piping for damage		I	I	I	I	I	I	I	I	I	I	I	...	Visual
		Diesel	Water separator		D	D	D	D	D	D	D	D	D	D	D	...	Drain
			Fuel filter						R				R			...	Replace
		LPG	Engine Idle		A		A		A		A		A		A	...	Measure / Adjust
			LPG cylinder mounting		I	I	I	I	I	I	I	I	I	I	I	...	Visual / Feel
			Tar in vaporizer		D	D	D	D	D	D	D	D	D	D	D	...	Drain
			LPG filter Injector housing				C		C		C		C		C	...	Clean
			Filter Element LPG Solenoid valve						R				R			...	Replace
			Vaporizer Diaphragm						R				R			...	Replace
			LPG pressure		A				A				A			...	Measure / Adjust
	Ignition system	LPG	Spark plugs								R					...	Replace
			Diesel	Glow plugs		I		I		I		I		I		I	...
	General	General		Air cleaner element						R				R			...
			PCV valve & Hose				I		I		I		I		I	...	Visual
			Valve clearance Intake & exhaust		A		A		A		A		A		A	...	Measure / Adjust
			Alternator Belt / Fan belt (Tension / cracks)		I	I	I	I	I	I	I	I	I	I	I	...	Visual / Check tention
			Engine mounting		I	I	I	I	I	I	I	I	I	I	I	...	Visual
Operation	Operation	Starting & Noise		I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Exhaust smoke		I	I	I	I	I	I	I	I	I	I	I	...	Visual	

Inspection point				Intervals												How to check	
				A (months)	1 ⁽¹⁾		6		12		18		24		30		...
				B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Electric			Startermotor											...	Test		
			Alternator											...	Test		
			Battery: Mounting, level & Specific gravity											...	Visual / Test		
			Harness & Connectors											...	Visual		
			Ground connection											...	Visual / Test		
			Fuses											...	Visual		
			Relays											...	Visual		
			Switches											...	Test		
			Lights (all)											...	Test		
			Horn / buzzer											...	Test		
			Gauge and Indicators											...	Test		
			Wipers											...	Visual / Test		

Inspection point			Intervals												How to check	
			A (months)	1 ⁽¹⁾		6		12		18		24		30		...
			B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Chassis & Body maintenance	Transmission	Transmission Oil level	I		I		I		I		I		I	...	Visual	
		Transmission leakage	I		I		I		I		I		I	...	Visual	
		Transmission oil			R		R		R		R		R	...	Replace	
		Stall test and oil pressure					I				I				Test / Measure	
		Oil cooler hoses (Leakage / damage)	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Universal joint	L		L		L		L		L		L	...	Grease	
		Differential Oil level	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Differential leakage	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Differential oil					R				R			...	Replace	
		Forward/Reverse function	I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Inching pedal-adjustment	I		I		I		I		I		I	...	Check	
		Inching valve adjustment	I		I		I		I		I		I	...	Check	
	Front axle	Cracks, distortion, etc.	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Mounting bolts	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Oil leakage	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Wheel play	I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Wheel bearing grease					R				R			...	Replace	
	Rear axle	Fore-aft play	I	I	I	I	I	I	I	I	I	I	I	...	Measure	
		Silent blocks	I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Wheel play	I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Tie-rod	L	L	L	L	L	L	L	L	L	L	L	...	Grease	
		Wheel bearing grease					R				R			...	Replace	
		Kingpin	L	L	L	L	L	L	L	L	L	L	L	...	Grease	

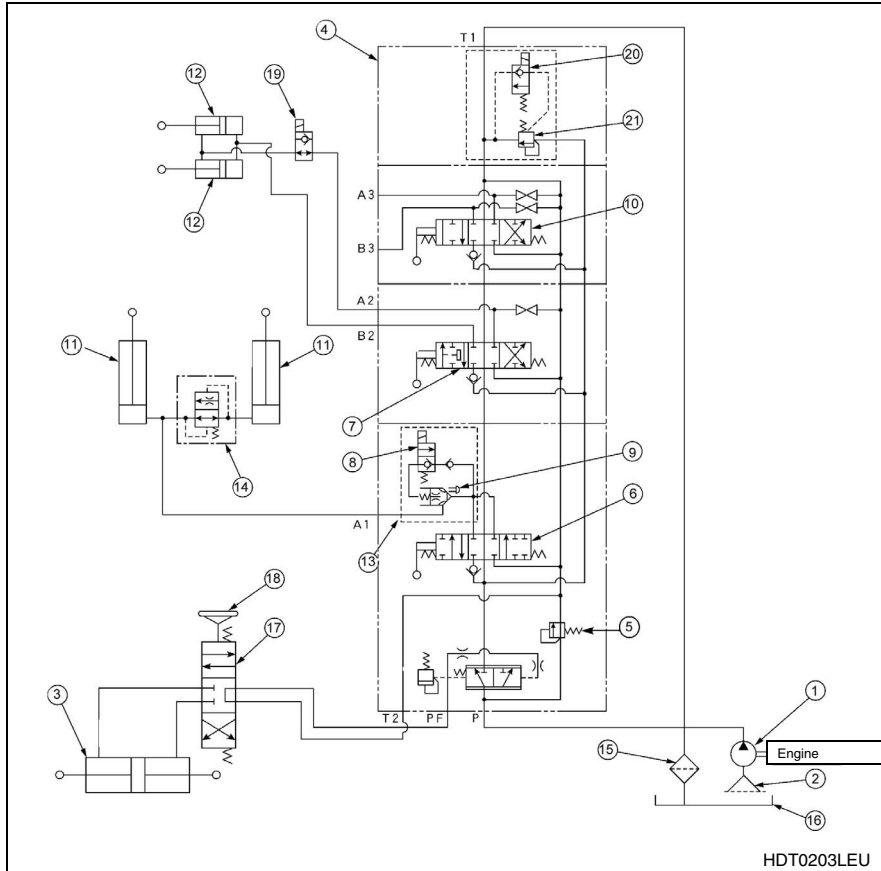
Inspection point				Intervals												How to check	
				A (months)	1 ⁽¹⁾		6		12		18		24		30		...
				B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Chassis & Body maintenance	Wheels	Wheel nuts		T	T	T	T	T	T	T	T	T	T	T	...	Visual / Torque	
		Rim, side rings and wheel disc damage		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Tire: pressure, wear, damage and foreign materials		I	I	I	I	I	I	I	I	I	I	I	...	Visual / Check	
	Steering system	Function of steering system		I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Mounting of column, orbitrol, cylinder & tubes & hoses		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Leakage (Valve, Cylinder & Orbitrol)		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Tubes and Hoses (leakage, mounting, cracks, damaging)		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Steering wheel (movement & play)		I	I	I	I	I	I	I	I	I	I	I	...	Test	
	Brake system	Function of brake system		I	I	I	I	I	I	I	I	I	I	I	...	Test	
		Brake fluid (Level & Condition)		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Brake fluid						R				R			...	Replace	
		Brake pedal adjustment		I		I		I		I		I		I	...	Check	
		Pedal rubbers		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Leakage		I	I	I	I	I	I	I	I	I	I	I	...	Visual	
		Brake lining wearing						I				I			...	Visual	
		Brake drum / lining cleaning						C				C			...	Clean	
		Brake tubes & hoses (mounting, cracks, damaging)		I	I	I	I	I	I	I	I	I	I		...	Visual	
		Hand brake function / effort		I	I	I	I	I	I	I	I	I	I		...	Test / Measure	

Inspection point				Intervals												How to check	
				A (months)	1 ⁽¹⁾		6		12		18		24		30		...
				B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Chassis & Body maintenance	Hydraulic system	Function of hydraulic system		I	I	I	I	I	I	I	I	I	I	...	Test		
		Hydraulic leakage		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Hydraulic oil level		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Hydraulic oil replacement						R				R		...	Replace		
		Micron oil filter		R				R				R		...	Replace		
		Suction filter						C				C		...	Clean		
		Control valve (Mounting)		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Movement & Connection of levers		I	I	I	I	I	I	I	I	I	I	...	Test		
		Hydraulic hoses (Cracks, damage, Fittings)		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Lift & Tilt cylinder mounting		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Tilt cylinder pin		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Check state of wiper seals all cylinders		I	I	I	I	I	I	I	I	I	I	...	Visual		

Inspection point				Intervals												How to check	
				A (months)	1 ⁽¹⁾		6		12		18		24		30		...
				B (hours)	200 ⁽¹⁾	500	1000	1500	2000	2500	3000	3500	4000	4500	5000		...
Chassis & Body maintenance	Mast	Function of mast		I	I	I	I	I	I	I	I	I	I	...	Test		
		Mast system (Damage / cracks/ wear)		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Clearance of each stage		I	I	I	I	I	I	I	I	I	I	...	Measure		
		Mast Rail		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Mast / carriage rollers		I	I	I	I	I	I	I	I	I	I	...	Visual / Test		
		Back up metals		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Thrust metals		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Lift chains wear / tension		I	I	I	I	I	I	I	I	I	I	...	Measure		
		Attachments mounting		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Attachments		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Lift chains		L	L	L	L	L	L	L	L	L	L	...	Lubricate		
		Hose pulley's		I	I	I	I	I	I	I	I	I	I	...	Visual / Test		
		Mast support		L	L	L	L	L	L	L	L	L	L	...	Grease		
		Forks (Wearing / Damage / Cracks)		I	I	I	I	I	I	I	I	I	I	...	Visual		
	General	Seat belt (function / damage)		I	I	I	I	I	I	I	I	I	I	...	Test / Visual		
		Load capacity plate (readable / correct)		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Warning labels (readable)		I	I	I	I	I	I	I	I	I	I	...	Visual		
		Overhead guard (damage / cracks)		I	I	I	I	I	I	I	I	I	I	...	Visual		
General		All bolt and nuts		I	I	I	I	I	I	I	I	I	I	...	Visual		

HYDRAULIC CIRCUIT DIAGRAM

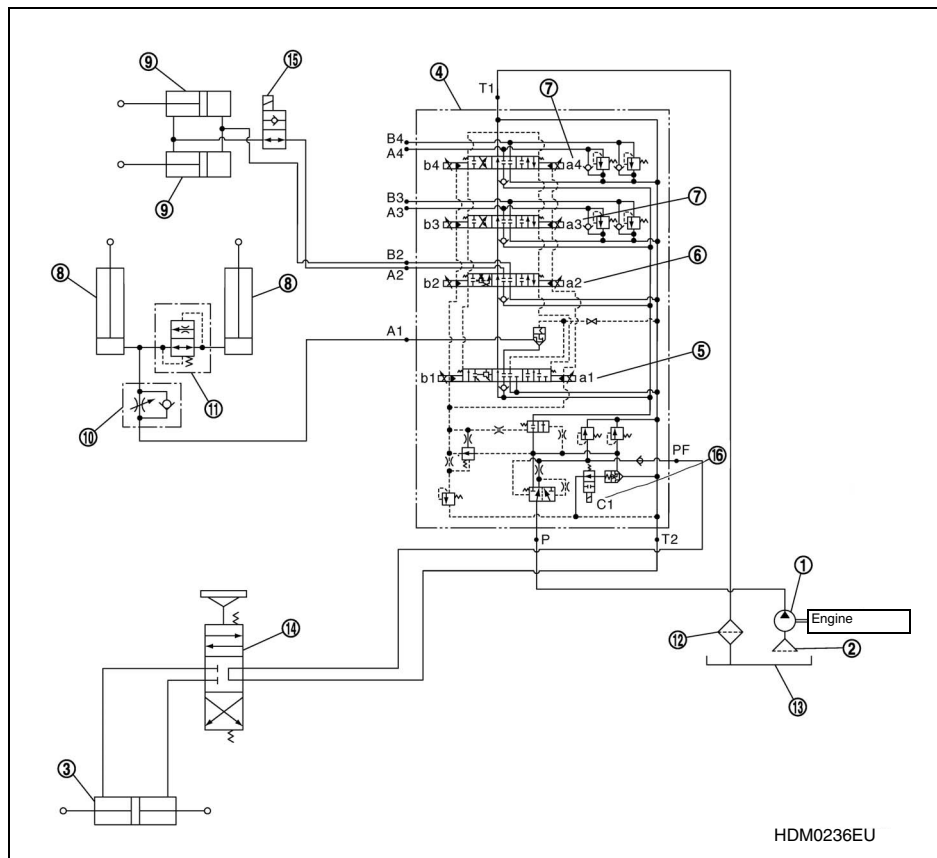
Mechanical control valve



- ① Hydraulic pressure pump
- ② Suction filter
- ③ Cylinder
- ④ Control valve
- ⑤ Main relief valve
- ⑥ Lift valve
- ⑦ Tilt valve
- ⑧ Lift lock solenoid valve
- ⑨ Lift lock valve
- ⑩ Attachment valve (OPT)
- ⑪ Lift cylinder
- ⑫ Tilt cylinder
- ⑬ Flow regulator valve
(Integrated in lift section, MC only)
- ⑭ Down safety valve
- ⑮ Micron filter
- ⑯ Hydraulic fluid tank
- ⑰ Valve
- ⑱ Steering wheel
- ⑲ Tilt leveling solenoid valve (OPT)
- ⑳ Unload solenoid valve
- ㉑ Unload valve

HYDRAULIC CIRCUIT DIAGRAM

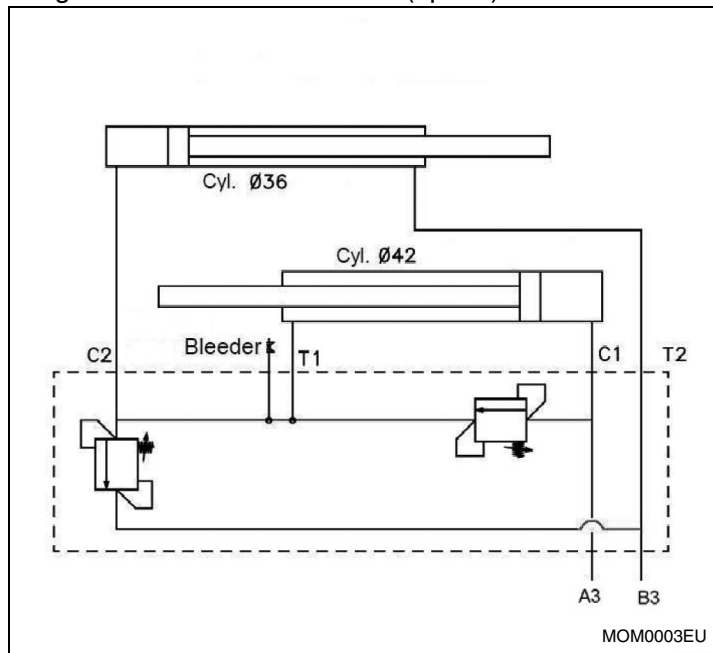
Joystick control valve



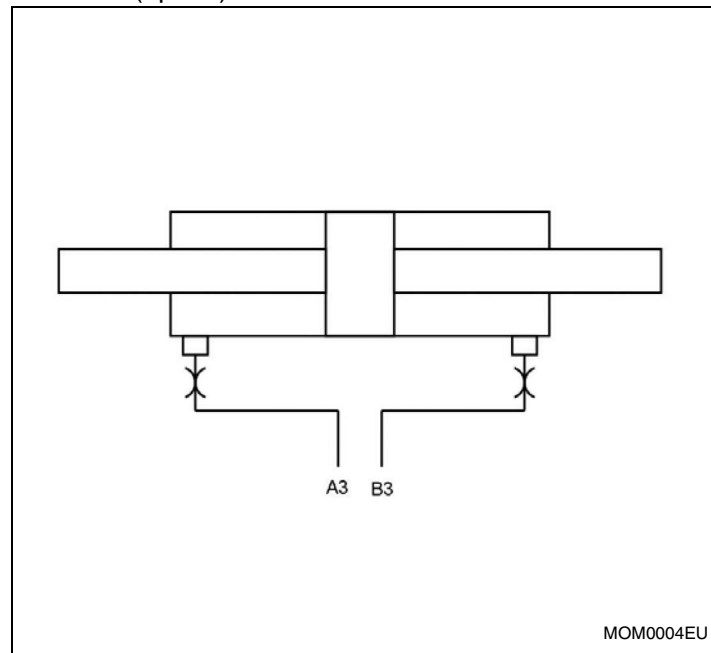
- ① Hydraulic pump
- ② Suction filter
- ③ Power steering cylinder
- ④ Control valve
- ⑤ Lift valve
- ⑥ Tilt valve
- ⑦ Attachment valve (Opt)
- ⑧ Lift cylinder
- ⑨ Tilt cylinder
- ⑩ Flow regulator valve
- ⑪ Down safety valve
- ⑫ Micron filter
- ⑬ Hydraulic fluid tank
- ⑭ Power steering valve
- ⑮ Tilt leveling solenoid valve (Opt)
- ⑯ C1 / Unload solenoid valve

HYDRAULIC CIRCUIT DIAGRAM

Integral Fork Positioner Bolzoni (option)

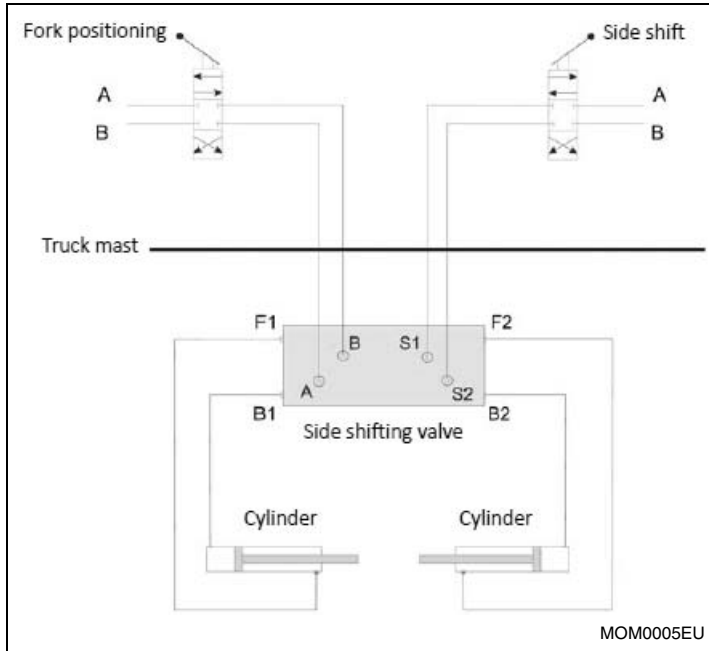


Side shift (option)

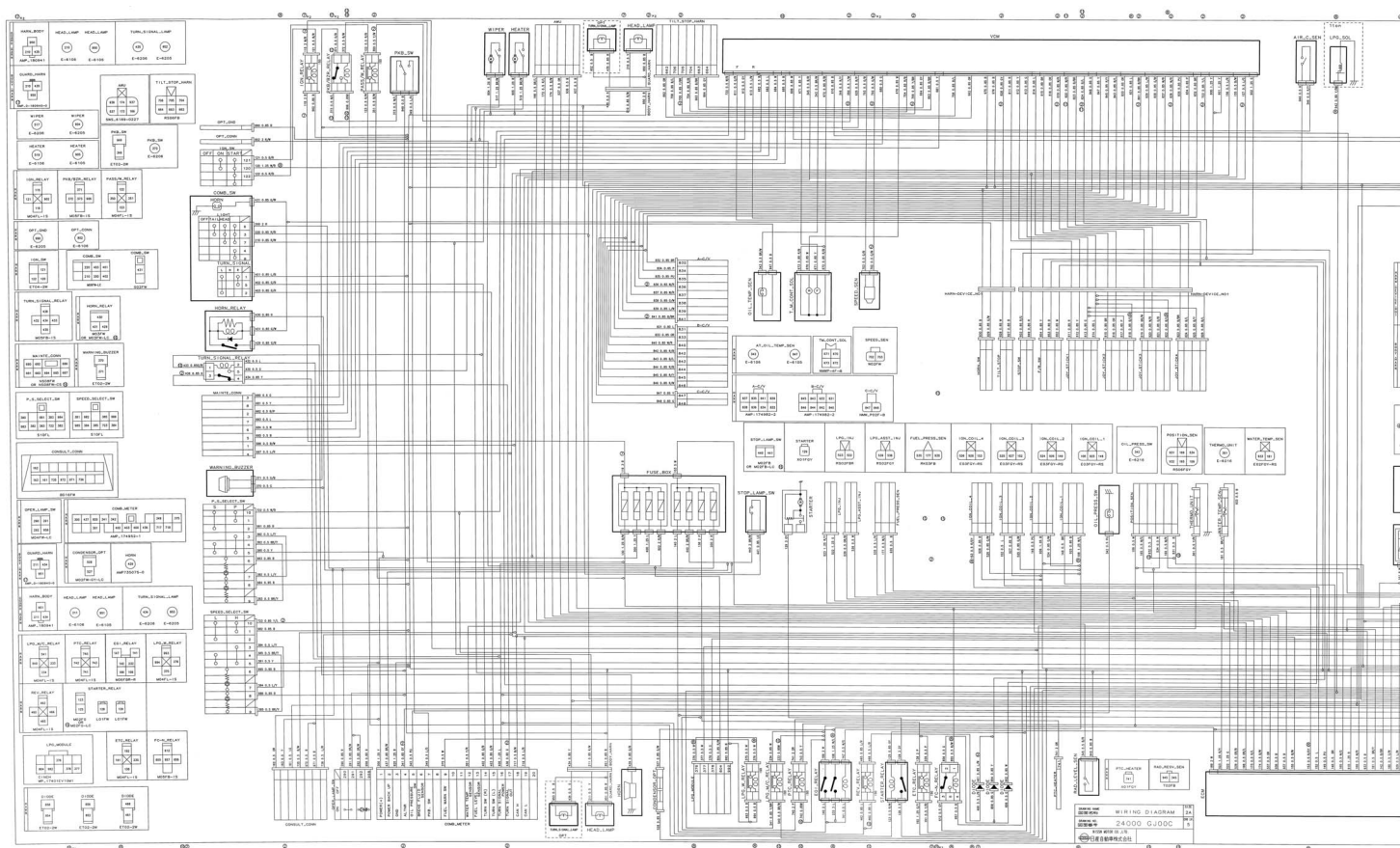


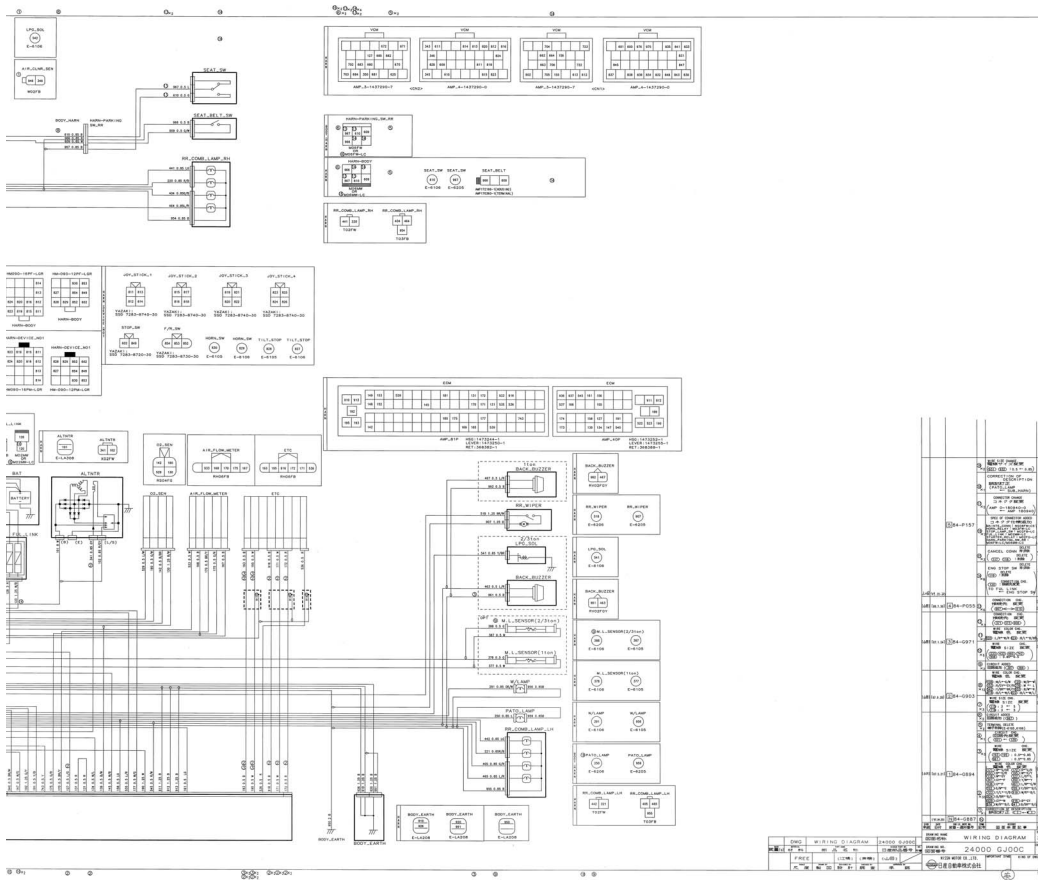
HYDRAULIC CIRCUIT DIAGRAM

Integral Fork Positioner ELM (option)

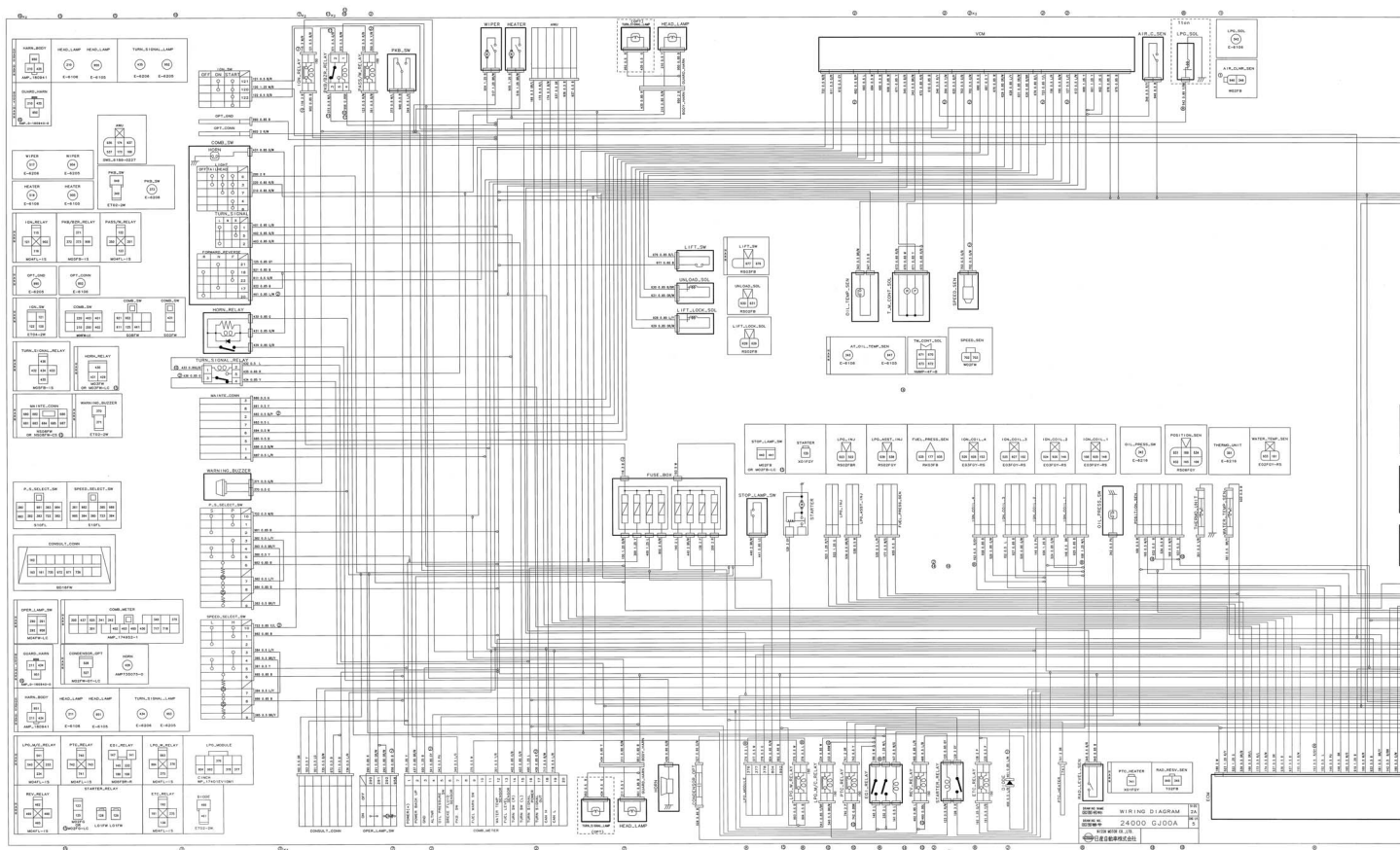


LPG ENGINE (ELECTRONICALLY CONTROLLED) MODEL, MECHANICAL CONTROL TYPE



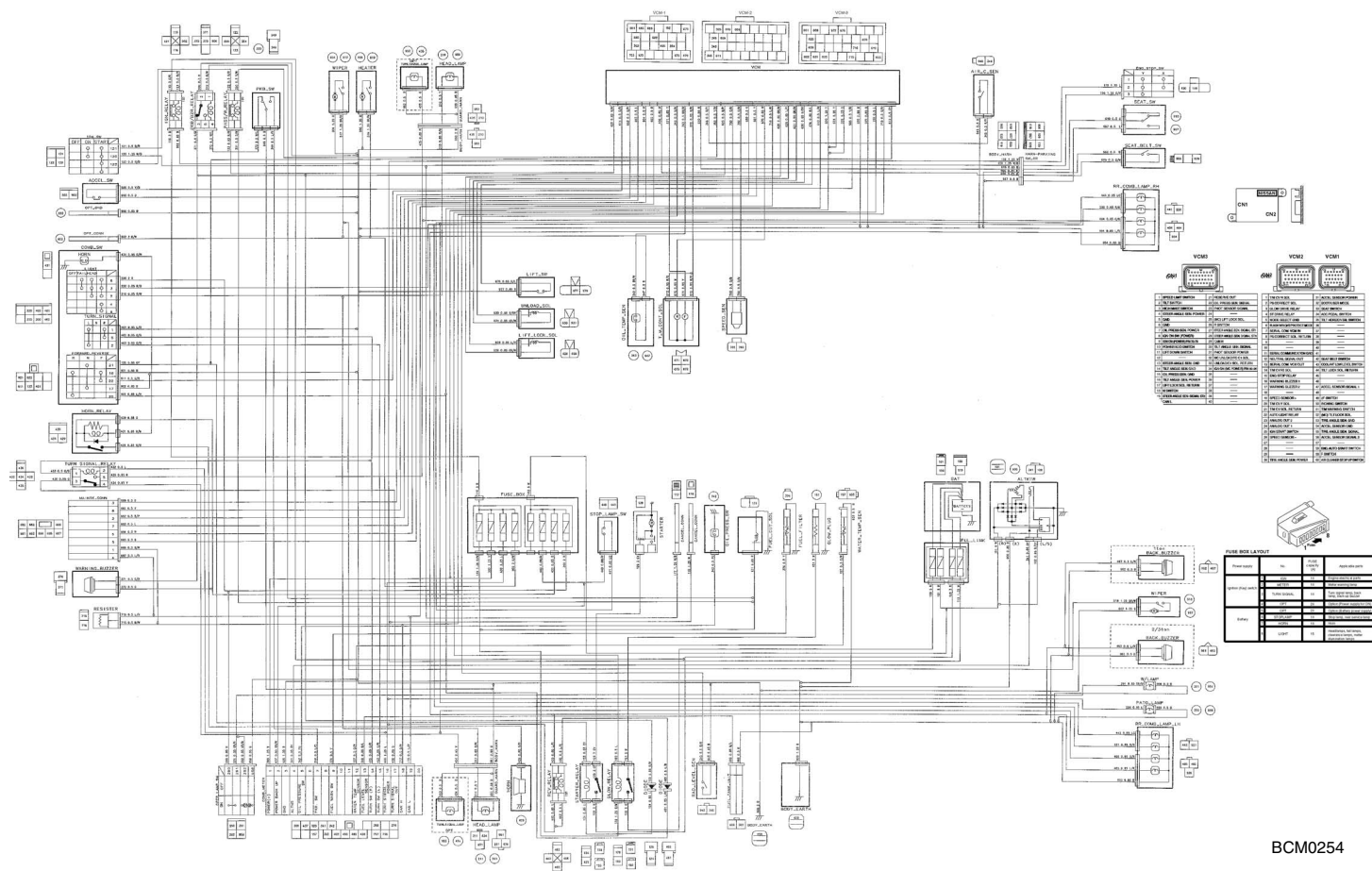


LPG ENGINE (ELECTRONICALLY CONTROLLED) MODEL, FINGERTIP CONTROL TYPE

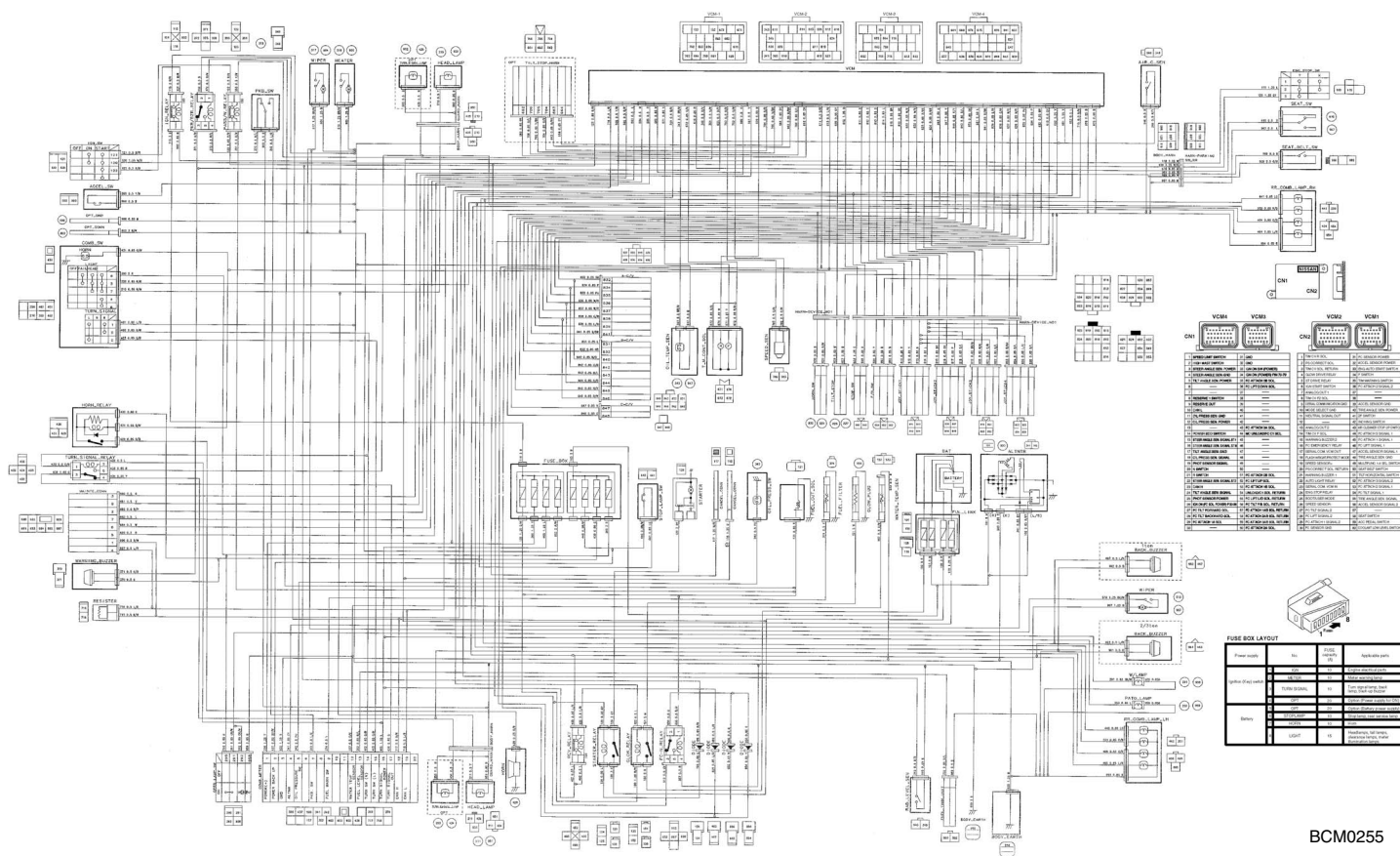




DIESEL ENGINE MODEL, MECHANICAL CONTROL TYPE

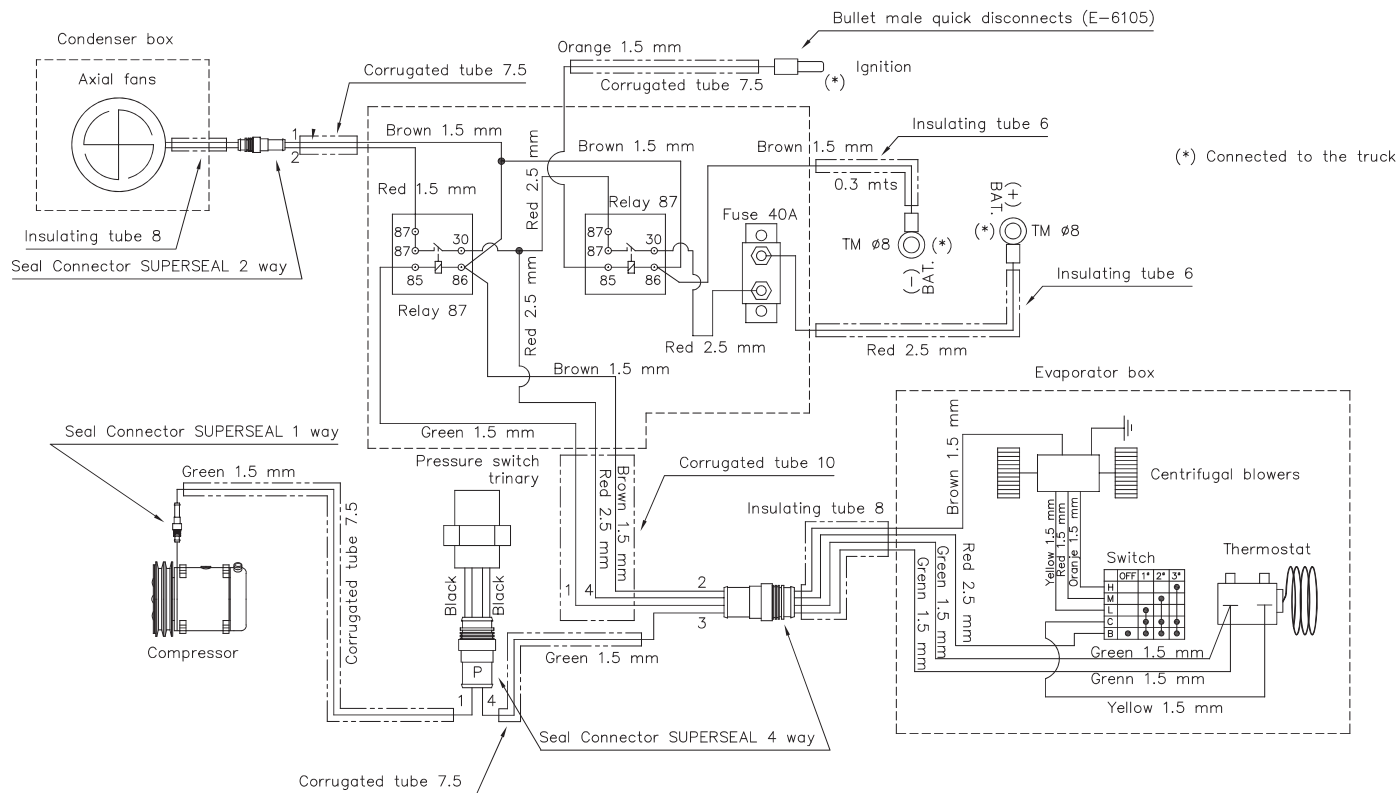


DIESEL ENGINE MODEL, FINGERTIP CONTROL TYPE

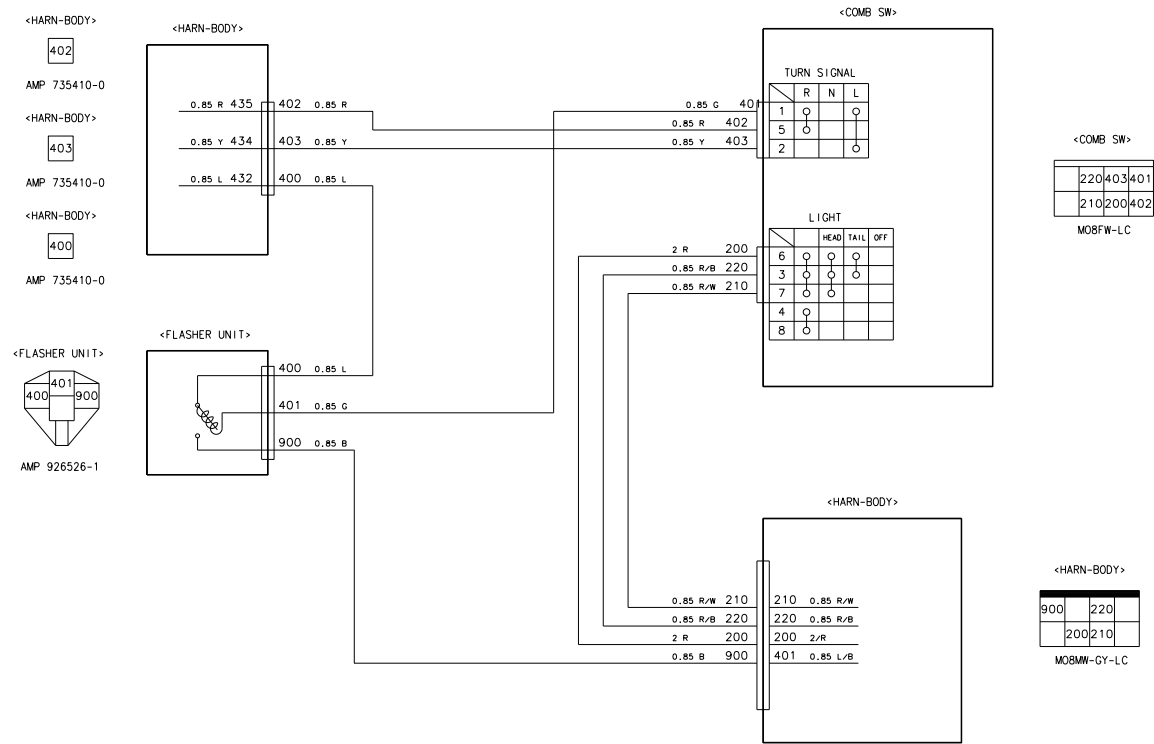


BCM0255

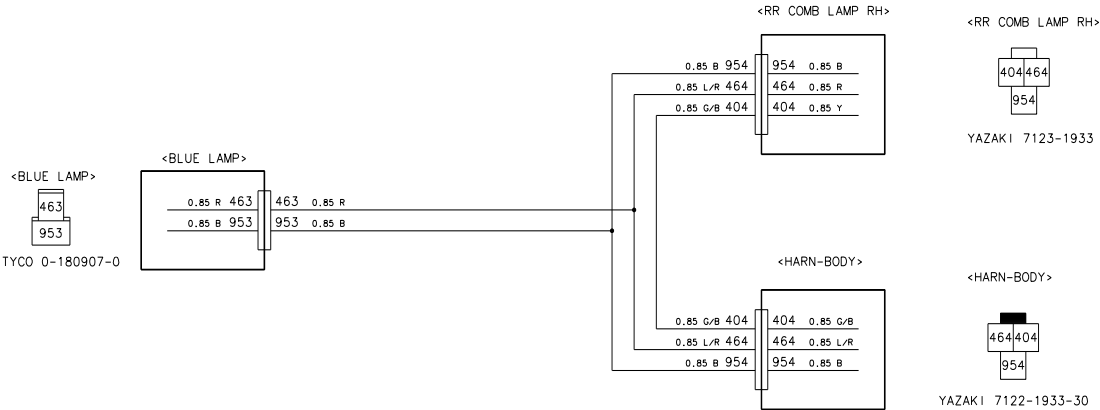
CLIMATIZER (ROSTI) 1D1/1D2 (OPTION)



LED LIGHT INDICATOR (OPTION)



BLUE LIGHT (OPTION)



SPECIFICATIONS

Main Truck Specifications

1D1 series

Item		Model	P1D1A15LQ Standard	Y1D1A15Q Standard	P1D1A18LQ Standard	Y1D1A18Q Standard
Load capacity		kg (lb)	1500 (3000)	1500 (3000)	1750 (3500)	1750 (3500)
Load center		mm (in)	500 (19.7)	500 (19.7)	500 (19.7)	500 (19.7)
Maximum fork height		mm (in)	3000 (118.1)	3000 (118.1)	3000 (118.1)	3000 (118.1)
Free lift		mm (in)	150 (5.9)	150 (5.9)	155 (6.1)	155 (6.1)
Tilt angle	Forward	degree	6	6	6	6
	Backward	degree	12	12	12	12
Overall length (without fork length)		mm (in)	3360 (132.3)	3360 (132.3)	3400 (133.9)	3400 (133.9)
Overall width		mm (in)	1080 (42.5)	1080 (42.5)	1080 (42.5)	1080 (42.5)
Overall height	Mast (lowered)	mm (in)	1995 (78.5)	1995 (78.5)	1995 (78.5)	1995 (78.5)
	Mast (extended) with backrest	mm (in)	3945 (155.3)	3945 (155.3)	3945 (155.3)	3945 (155.3)
	Overhead guard	mm (in)	2115 (83.3)	2115 (83.3)	2115 (83.3)	2115 (83.3)
Wheelbase		mm (in)	1415 (55.7)	1415 (55.7)	1415 (55.7)	1415 (55.7)
Front overhang		mm (in)	400 (15.7)	400 (15.7)	405 (15.9)	405 (15.9)
Front tread		mm (in)	890 (35.0)	890 (35.0)	890 (35.0)	890 (35.0)
Rear tread		mm (in)	900 (35.4)	900 (35.4)	900 (35.4)	900 (35.4)
Minimum turning radius	Outside	mm (in)	1970 (77.6)	1970 (77.6)	2000 (78.7)	2000 (78.7)
Fork length (standard)		mm (in)	1100 (43.3)	1100 (43.3)	1100 (43.3)	1100 (43.3)
Fork (width x thickness)		mm (in)	100 x 35 (3.9 x 1.4)	100 x 35 (3.9 x 1.4)	100 x 40 (3.9 x 1.6)	100 x 40 (3.9 x 1.6)
Ground clearance	Under mast	mm (in)	115 (4.5)	115 (4.5)	115 (4.5)	115 (4.5)
	Under frame	mm (in)	145 (5.7)	145 (5.7)	145 (5.7)	145 (5.7)

1D1 series

Model				P1D1A15LQ Standard	Y1D1A15Q Standard	P1D1A18LQ Standard	Y1D1A18Q Standard
Item							
Lifting speed	2W lifting	Full load	mm/sec (FPM)	580 (114.2)	590 (116.1)	580 (114.2)	590 (116.1)
		No load	mm/sec (FPM)	630 (124.0)	650 (128)	630 (124.0)	650 (128)
	2F lifting	Full load	mm/sec (FPM)	530 (104.3)	550 (108.3)	530 (104.3)	550 (108.3)
		No load	mm/sec (FPM)	590 (116.1)	600 (118.1)	590 (116.1)	600 (118.1)
	3F lifting	Full load	mm/sec (FPM)	570 (112.2)	550 (108.3)	570 (112.2)	550 (108.3)
		No load	mm/sec (FPM)	590 (116.1)	600 (118.1)	590 (116.1)	600 (118.1)
	3V lifting	Full load	mm/sec (FPM)	530 (104.3)	550 (108.3)	530 (104.3)	550 (108.3)
		No load	mm/sec (FPM)	550 (108.2)	590 (116.1)	550 (108.2)	590 (116.1)
Lowering speed	2W lifting	Full load	mm/sec (FPM)	520 (102.3)	520 (102.3)	520 (102.3)	520 (102.3)
		No load	mm/sec (FPM)	520 (102.3)	520 (102.3)	520 (102.3)	520 (102.3)
	2F lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)
		No load	mm/sec (FPM)	310 (61.0)	310 (61.0)	310 (61.0)	310 (61.0)
	3F lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)
		No load	mm/sec (FPM)	370 (72.8)	370 (72.8)	370 (72.8)	370 (72.8)
	3V lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)
		No load	mm/sec (FPM)	370 (72.8)	370 (72.8)	370 (72.8)	370 (72.8)
Travel speed	Forward	Full load	km/h (MPH)	18.5 (11.5)	18 (11)	18.5 (11.5)	18 (11)
		No load	km/h (MPH)	18.5 (11.5)	18 (11)	18.5 (11.5)	18 (11)
Drawbar pull	Full load (travel)		N (kg, lb)	15300 (1560, 3439)	16700 (1703, 3754)	15300 (1560, 3439)	16700 (1703, 3754)
	No load		N (kg, lb)	9100 (928, 2045)	9900 (1009, 2225)	9100 (928, 2045)	9900 (1009, 2225)
Gradeability	Full load (travel)		tanθ (%)	39	38	35	38
	No load		tanθ (%)	23	23	20	20
Truck weight (no load)			kg (lb)	2625 (5788)	2765 (6097)	2845 (6273)	2985 (6582)
ENGINE	Model			GK21	QD32	GK21	QD32
	Displacement		cm ³ (cu in)	2065 (126.01)	3153 (192.40)	2065 (126.01)	3153 (192.40)
	Rated output		kW (HP)/rpm	41.5 (56.4)/2700	36 (48)/2150	41.5 (56.4)/2700	36 (48)/2150
	Rated torque		N·m (ft-lb)/rpm	151 (111)/2400	162 (119)/1800	151 (111)/2400	162 (119)/1800

1D2 series

Item		Model	U1D2A20LQ Standard	Y1D2A20Q Standard	U1D2A25LQ Standard	Y1D2A25Q Standard
Load capacity		kg (lb)	2000 (4000)	2000 (4000)	2500 (5000)	2500 (5000)
Load center		mm (in)	500 (19.7)	500 (19.7)	500 (19.7)	500 (19.7)
Maximum fork height		mm (in)	3000 (118.1)	3000 (118.1)	3000 (118.1)	3000 (118.1)
Free lift		mm (in)	155 (6.1)	155 (6.1)	155 (6.1)	155 (6.1)
Tilt angle	Forward	degree	6	6	6	6
	Backward	degree	12	12	12	12
Overall length (without fork length)		mm (in)	3630 (142.9)	3630 (142.9)	3705 (145.9)	3705 (145.9)
Overall width		mm (in)	1155 (45.5)	1155 (45.5)	1155 (45.5)	1155 (45.5)
Overall height	Mast (lowered)	mm (in)	1995 (78.5)	1995 (78.5)	1995 (78.5)	1995 (78.5)
	Mast (extended) with backrest	mm (in)	4045 (159.3)	4045 (159.3)	4045 (159.3)	4045 (159.3)
	Overhead guard	mm (in)	2130 (83.9)	2130 (83.9)	2130 (83.9)	2130 (83.9)
Wheelbase		mm (in)	1650 (65.0)	1650 (65.0)	1650 (65.0)	1650 (65.0)
Front overhang		mm (in)	455 (17.9)	455 (17.9)	455 (17.9)	455 (17.9)
Front tread		mm (in)	965 (38.0)	965 (38.0)	965 (38.0)	965 (38.0)
Rear tread		mm (in)	975 (38.4)	975 (38.4)	975 (38.4)	975 (38.4)
Minimum turning radius	Outside	mm (in)	2190 (86.2)	2190 (86.2)	2250 (88.6)	2250 (88.6)
Fork length (standard)		mm (in)	1100 (43.3)	1100 (43.3)	1100 (43.3)	1100 (43.3)
Fork (width x thickness)		mm (in)	100 x 40 (3.9 x 1.6)	100 x 40 (3.9 x 1.6)	100 x 40 (3.9 x 1.6)	100 x 40 (3.9 x 1.6)
Ground clearance	Under mast	mm (in)	115 (4.5)	115 (4.5)	115 (4.5)	115 (4.5)
	Under frame	mm (in)	165 (6.5)	165 (6.5)	165 (6.5)	165 (6.5)

1D2 series

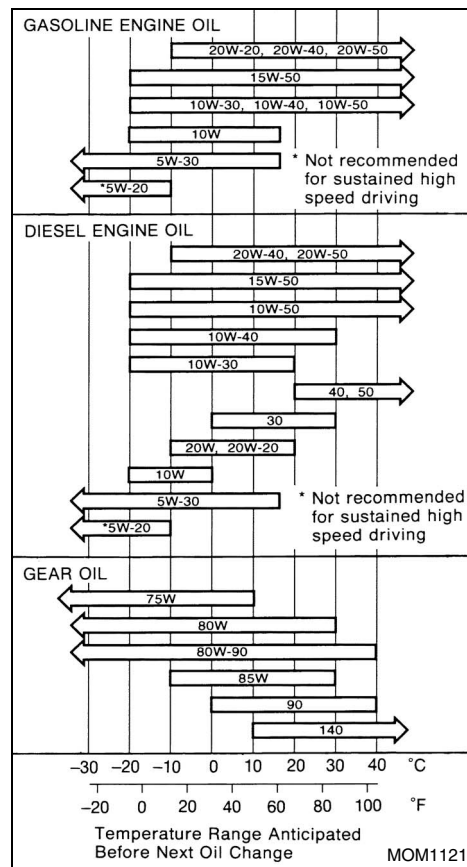
Model				U1D2A20LQ Standard	Y1D2A20Q Standard	U1D2A25LQ Standard	Y1D2A25Q Standard	
Item								
Lifting speed	2W lifting	Full load	mm/sec (FPM)	620 (122.0)	620 (122.0)	620 (122.0)	620 (122.0)	
		No load	mm/sec (FPM)	700 (137.8)	660 (129.9)	700 (137.8)	660 (129.9)	
	2F lifting	Full load	mm/sec (FPM)	620 (122.0)	610 (120.1)	620 (122.0)	610 (120.1)	
		No load	mm/sec (FPM)	670 (131.9)	660 (129.9)	670 (131.9)	660 (129.9)	
	3F lifting	Full load	mm/sec (FPM)	620 (122.0)	600 (118.1)	620 (122.0)	600 (118.1)	
		No load	mm/sec (FPM)	660 (129.9)	650 (127.9)	660 (129.9)	650 (127.9)	
	3V lifting	Full load	mm/sec (FPM)	580 (114.2)	560 (110.2)	580 (114.2)	560 (110.2)	
		No load	mm/sec (FPM)	650 (127.9)	610 (120.1)	650 (127.9)	610 (120.1)	
Lowering speed	2W lifting	Full load	mm/sec (FPM)	500 (98.4)	500 (98.4)	500 (98.4)	500 (98.4)	
		No load	mm/sec (FPM)	500 (98.4)	500 (98.4)	500 (98.4)	500 (98.4)	
	2F lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)	
		No load	mm/sec (FPM)	300 (59.0)	300 (59.0)	300 (59.0)	300 (59.0)	
	3F lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)	
		No load	mm/sec (FPM)	300 (59.0)	300 (59.0)	300 (59.0)	300 (59.0)	
	3V lifting	Full load	mm/sec (FPM)	480 (94.5)	480 (94.5)	480 (94.5)	480 (94.5)	
		No load	mm/sec (FPM)	300 (59.0)	300 (59.0)	300 (59.0)	300 (59.0)	
Travel speed	Forward	Full load	km/h (MPH)	19 (12)	18 (11)	19 (12)	19 (12)	
		No load	km/h (MPH)	19 (12)	18 (11)	19 (12)	19 (12)	
Drawbar pull	Full load (travel)		N (kg, lb)	18500 (1887, 4158)	17000 (1734, 3821)	18500 (1887, 4158)	16500 (1682, 3708)	
	No load		N (kg, lb)	14700 (1499, 3304)	15000 (1530, 3372)	14700 (1499, 3304)	15000 (1530, 3372)	
Gradeability	Full load (travel)		tanθ (%)	34	29	29	24	
	No load		tanθ (%)	26	26	22	22	
Truck weight (no load)			kg (lb)	3340 (7365)	3485 (7684)	3700 (8159)	3845 (8478)	
ENGINE	Model			GK25	QD32	GK25	QD32	
	Displacement			cm ³ (cu in)	2488 (151.82)	3153 (192.40)	2488 (151.82)	3153 (192.40)
	Rated output			kW (HP)/rpm	46.9 (63.8)/2700	36 (48)/2150	46.9 (63.8)/2700	36 (48)/2150
	Rated torque			N·m (ft-lb)/rpm	182 (134)/1600	162 (119)/1800	182 (134)/1600	162 (119)/1800

OIL / LUBRICATION SPECIFICATIONS

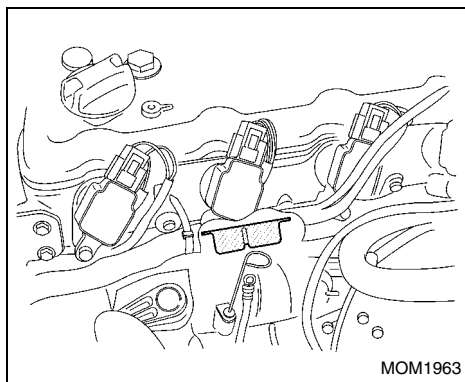
Oil / Lubrication Specifications		
Lubrication / Oil specifications	Motor oil Diesel engine	API CF
	Motor oil LPG engine	API SJ or SL
	Transmission oil	Dexron-2
	Differential oil	API-GL4 SAE90
	Brake fluid	DOT 4
	Hydraulic oil	ISO VG-32
	Coolant	LLC
	Grease	NWB-1 or NLGI-1
	Wheel bearing grease	NWB-2 or NLGI-2

When using other oil/grease specifications then informed, consult your supplier to be sure it meets the TCM specifications.

RECOMMENDED SAE VISCOSITY NUMBER

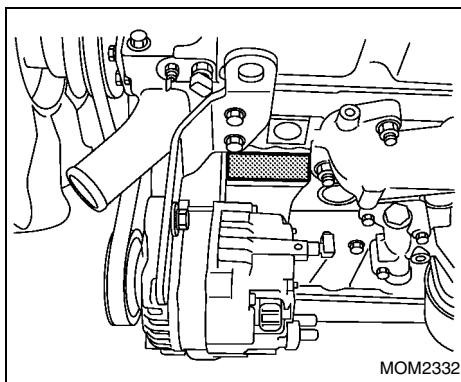


IDENTIFICATION NUMBERS



ENGINE SERIAL NUMBER

LPG engine (GK21, GK25 EGI type)



Diesel engine (QD32)

1D2 series

Item		Model	UG1D2A30LQ Standard	YG1D2A30Q Standard	UG1D2A32LQ Standard	YG1D2A32Q Standard
Load capacity		kg (lb)	3000 (6000)	3000 (6000)	3200 (6400)	3200 (6400)
Load center		mm (in)	500 (19.7)	500 (19.7)	500 (19.7)	500 (19.7)
Maximum fork height		mm (in)	3000 (118.1)	3000 (118.1)	3000 (118.1)	3000 (118.1)
Free lift		mm (in)	160 (6.3)	160 (6.3)	160 (6.3)	160 (6.3)
Tilt angle	Forward	degree	6	6	6	6
	Backward	degree	12	12	12	12
Overall length (without fork length)		mm (in)	3870 (152.4)	3870 (152.4)	3870 (152.4)	3870 (152.4)
Overall width		mm (in)	1230 (48.4)	1230 (48.4)	1230 (48.4)	1230 (48.4)
Overall height	Mast (lowered)	mm (in)	2025 (79.7)	2025 (79.7)	2025 (79.7)	2025 (79.7)
	Mast (extended) with backrest	mm (in)	4140 (163.0)	4140 (163.0)	4140 (163.0)	4140 (163.0)
	Overhead guard	mm (in)	2155 (84.8)	2155 (84.8)	2155 (84.8)	2155 (84.8)
Wheelbase		mm (in)	1760 (69.3)	1760 (69.3)	1760 (69.3)	1760 (69.3)
Front overhang		mm (in)	485 (19.1)	485 (19.1)	485 (19.1)	485 (19.1)
Front tread		mm (in)	1005 (39.6)	1005 (39.6)	1005 (39.6)	1005 (39.6)
Rear tread		mm (in)	980 (38.6)	980 (38.6)	980 (38.6)	980 (38.6)
Minimum turning radius	Outside	mm (in)	2390 (94.1)	2390 (94.1)	2390 (94.1)	2390 (94.1)
Fork length (standard)		mm (in)	1100 (43.3)	1100 (43.3)	1100 (43.3)	1100 (43.3)
Fork (width x thickness)		mm (in)	100 x 45 (3.9 x 1.8)	100 x 45 (3.9 x 1.8)	100 x 45 (3.9 x 1.8)	100 x 45 (3.9 x 1.8)
Ground clearance	Under mast	mm (in)	145 (5.7)	145 (5.7)	145 (5.7)	145 (5.7)
	Under frame	mm (in)	190 (7.5)	190 (7.5)	190 (7.5)	190 (7.5)

1D2 series

Model				UG1D2A30LQ Standard	YG1D2A30Q Standard	UG1D2A32LQ Standard	YG1D2A32Q Standard
Item							
Lifting speed	2W lifting	Full load	mm/sec (FPM)	520 (102.3)	510 (100.4)	470 (92.5)	490 (96.4)
		No load	mm/sec (FPM)	580 (114.2)	550 (108.2)	580 (114.2)	550 (108.2)
	2F lifting	Full load	mm/sec (FPM)	500 (98.4)	480 (94.5)	400 (78.7)	420 (82.6)
		No load	mm/sec (FPM)	520 (102.3)	510 (100.4)	520 (102.3)	510 (100.4)
	3F lifting	Full load	mm/sec (FPM)	500 (98.4)	480 (94.5)	430 (84.6)	450 (88.6)
		No load	mm/sec (FPM)	560 (110.2)	530 (104.3)	560 (110.2)	530 (104.3)
	3V lifting	Full load	mm/sec (FPM)	500 (98.4)	480 (94.5)	410 (80.7)	430 (84.6)
		No load	mm/sec (FPM)	560 (110.2)	520 (102.3)	560 (110.2)	520 (102.3)
Lowering speed	2W lifting	Full load	mm/sec (FPM)	500 (98.4)	500 (98.4)	500 (98.4)	500 (98.4)
		No load	mm/sec (FPM)	500 (98.4)	500 (98.4)	500 (98.4)	500 (98.4)
	2F lifting	Full load	mm/sec (FPM)	470 (92.5)	470 (92.5)	470 (92.5)	470 (92.5)
		No load	mm/sec (FPM)	320 (63.0)	320 (63.0)	320 (63.0)	320 (63.0)
	3F lifting	Full load	mm/sec (FPM)	470 (92.5)	470 (92.5)	470 (92.5)	470 (92.5)
		No load	mm/sec (FPM)	360 (70.8)	360 (70.8)	360 (70.8)	360 (70.8)
	3V lifting	Full load	mm/sec (FPM)	470 (92.5)	470 (92.5)	470 (92.5)	470 (92.5)
		No load	mm/sec (FPM)	360 (70.8)	360 (70.8)	360 (70.8)	360 (70.8)
Travel speed	Forward	Full load	km/h (MPH)	19 (12)	19 (12)	19 (12)	19 (12)
		No load	km/h (MPH)	19 (12)	19 (12)	19 (12)	19 (12)
Drawbar pull	Full load (travel)		N (kg, lb)	17400 (1774, 3911)	17100 (1744, 3844)	17400 (1774, 3911)	17100 (1744, 3844)
	No load		N (kg, lb)	17200 (1754, 3866)	17500 (1785, 3934)	16700 (1703, 3754)	17400 (1774, 3911)
Gradeability	Full load (travel)		tanθ (%)	23	22	22	22
	No load		tanθ (%)	23	23	21	22
Truck weight (no load)			kg (lb)	4220 (9305)	4365 (9625)	4390 (9680)	4535 (10000)
ENGINE	Model			GK25	QD32	GK25	QD32
	Displacement		cm ³ (cu in)	2488 (151.82)	3153 (192.40)	2488 (151.82)	3153 (192.40)
	Rated output		kW (HP)/rpm	46.9 (63.8)/2700	36 (48)/2150	46.9 (63.8)/2700	36 (48)/2150
	Rated torque		N·m (ft-lb)/rpm	182 (134)/1600	162 (119)/1800	182 (134)/1600	162 (119)/1800

NOISE LEVEL

The weighted sound pressure level at the operator's position, L_{PAZ} and the uncertainty value, K_{PZ} , according to EN12053 are as follows. The guaranteed sound power level, L_{WA} , according to directive 2000/14/EC is listed below.

Unit: dB (A)

Item \ Model	1D1 series		1D2 series	
	LPG	Diesel	LPG	Diesel
	Standard	Standard	Standard	Standard
L_{PAZ} as Measured	80	80	83	78
K_{PZ} Uncertainty Value	4	4	4	4
L_{WA} Guaranteed	104	106	105	106

VIBRATION LEVEL

The whole body vibration, $a_{w, z}$ according to EN13059.

Item \ Model	1D1 series	1D2 series
Vibration emission value	1.1 m/s ²	0.9 m/s ²
Uncertainty	0.4 m/s ²	0.4 m/s ²

Remarks: a is the main value.



NOTE:

Higher or lower noise emissions can occur during operation of the forklift, depending on the usage of the forklift. Influences from surroundings or other sources of noise emissions can also result in higher or lower noises.

CARBON DIOXIDE (CO2) EMISSION FOR GK25

The measurement results of CO2 emissions in g/kWh is shown in the bellow table.

Note that this CO2 measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type and shall not imply or express any guarantee of the performance of a particular engine.

Test cycle	Fuel type	CO2 emission [g/kWh]
NRSCF	Fuel A (30P)	907
NRSCF	Fuel B (85P)	897
NRTCF	Fuel A (30P)	910
NRTCF	Fuel B (85P)	899



NOTE:

NRSC: Non-road steady-state test cycle

NRTC: Non-road transient test cycle

FUEL & OIL CAPACITY

Model Item	1D1 series		1D2 series			
			2.0, 2.5 ton (4000, 5000 lb)		3.0, 3.2 ton (6000, 6400 lb)	
	ℓ	Imp	ℓ	Imp	ℓ	Imp
Fuel tank	49	10-3/4 gal	66	14-1/2 gal	72	15-7/8 gal
Fuel tank LPG reserve	N/A	N/A	0.5	0.11 gal	0.5	0.11 gal
Hydraulic oil tank	35.9	7-7/8 gal	46.4	10-1/4 gal	51.4	11-3/8 gal
Transmission oil	8.0	7 qt	9.0	7-7/8 qt	9.0	7-7/8 qt
Differential oil	3.2	2-7/8 qt	3.5	3-1/8 qt	5.5	4-7/8 qt

*1: Including differential oil

BULBS

Item		Wattage (W)
Rear combination lamp	Stop/Tail	21/5
	Turn signal	21
	Back-up	21
Front turn signal lamp		21

LED LIGHTS (OPTION)

Item	Lumen (Ln)
Headlamp	400
Rear combination lamp	0,4A 12V
Front turn signal lamp (incl. in headlamp)	N/A
OPE lamp	780

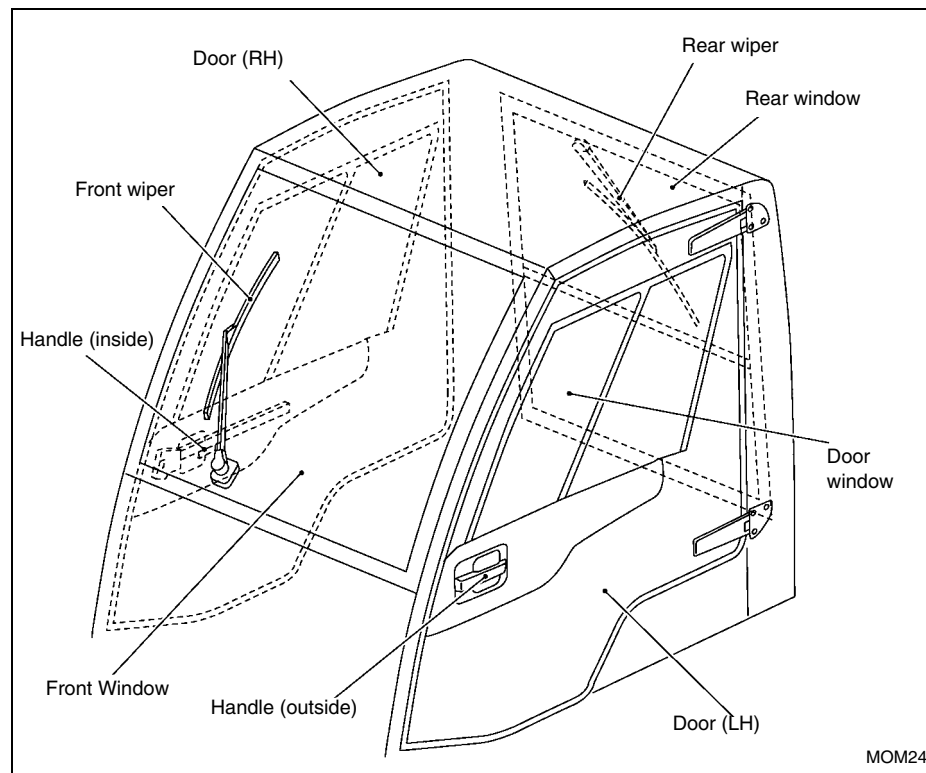
ENGINE

Model		GK21	GK25	QD32
Type		LPG		Diesel
Cylinder arrangement		4-cylinder, in-line		
Valve mechanism		Overhead valve type		
Bore x Stroke	mm (in)	89.0 x 83.0 (3.504 x 3.268)	89.0 x 100 (3.504 x 3.937)	99.2 x 102 (3.9 x 4.0)
Total displacement	cm ³ (cu in)	2065 (126.01)	2488 (151.82)	3153 (192.40)
Compression ratio		8.7	8.7	22
Firing order		1-3-4-2		

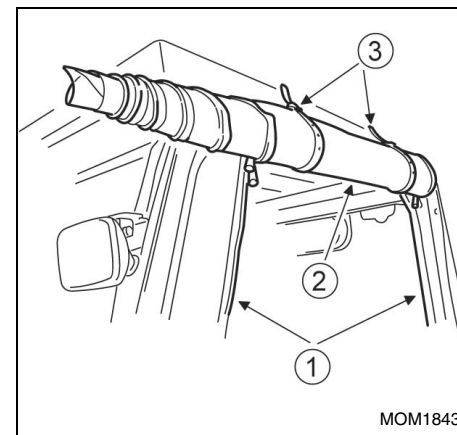
OIL & WATER CAPACITY

Model		GK21		GK25		QD32 (1D1)		QD32 (1D2)	
Item		ℓ	Imp qt	ℓ	Imp qt	ℓ	Imp qt	ℓ	Imp qt
Engine oil (with oil filter)		3.8	3-3/8	3.8	3-3/8	7.7	6-6/8	7.2	6-3/8

CABIN (OPTION)



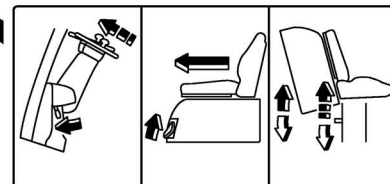
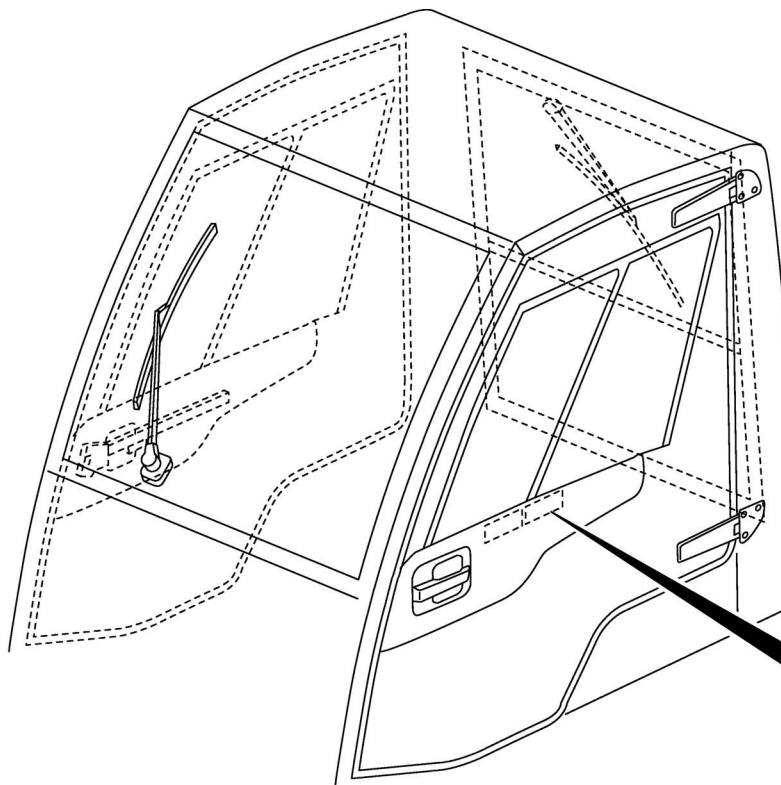
CABIN WITH CANVAS DOOR (OPTION)



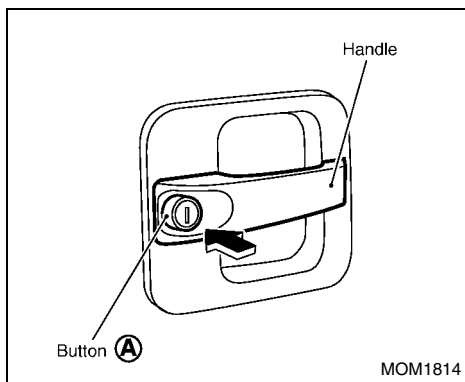
Setting up canvas door open (LH/RH)

- ① Unzip the canvas door.
- ② Roll up the canvas door.
- ③ Fasten the door with the belts.

POSITION OF WARNING AND CAUTION LABELS



MOM2415EU



DOOR OPENING/CLOSING BUTTON

Push the button to release the door lock and the door will open.

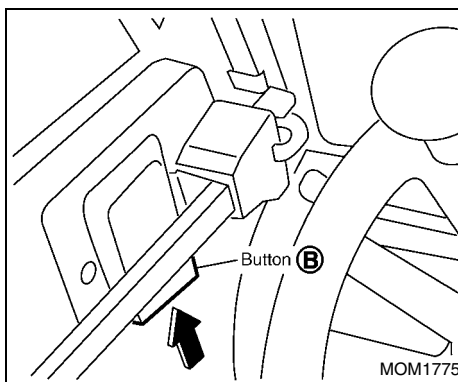
Button (A): Used to open the door from the outside to enter the forklift

Button (B): Used to open the door from inside the cabin when getting out

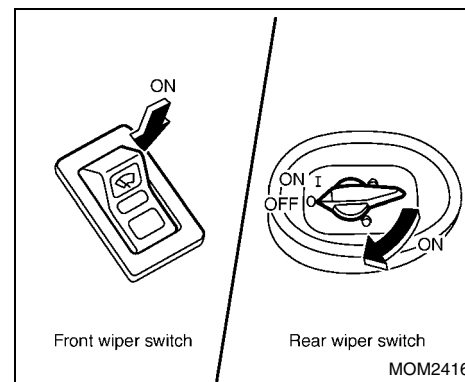


CAUTION:

Be careful not to pinch your fingers when closing the door.



Make sure that the door is securely locked after the door is closed.



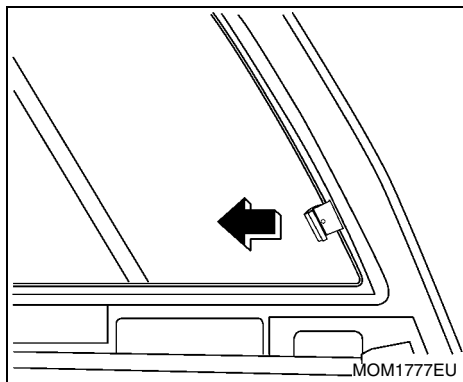
WIPER SWITCH

The wiper operates when the wiper switch is turned on with the key switch ON.



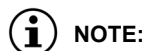
NOTE:

Be sure to turn the wiper switch off when not using the wiper.



DOOR WINDOW OPENING/ CLOSING LATCH

Open the window while pulling the latch (with the door lock released).



NOTE:

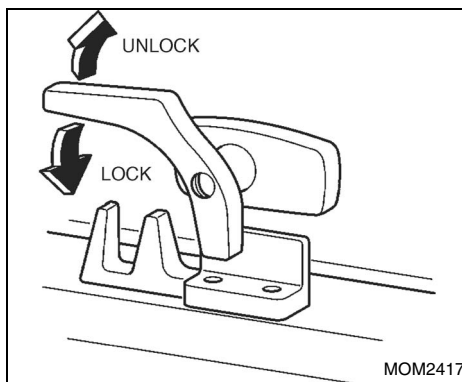
The window can be locked when it is fully closed or opened.

It cannot be locked when the window is between the fully closed and open positions.



CAUTION:

Be careful not to pinch your fingers while opening or closing the window.



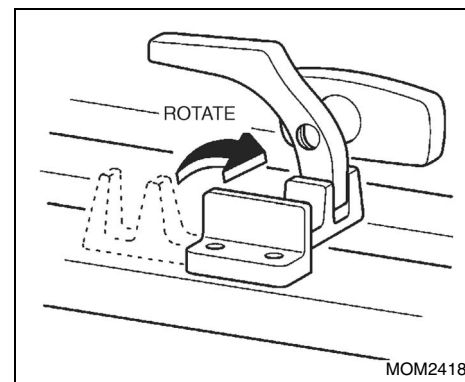
REAR WINDOW OPENING/ CLOSING LOCK

When opening the rear window, release the lock.



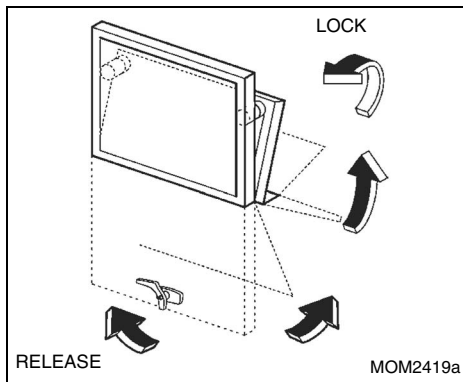
CAUTION:

Be careful not to pinch your fingers while opening or closing the rear window.



VENTILATION LOCK

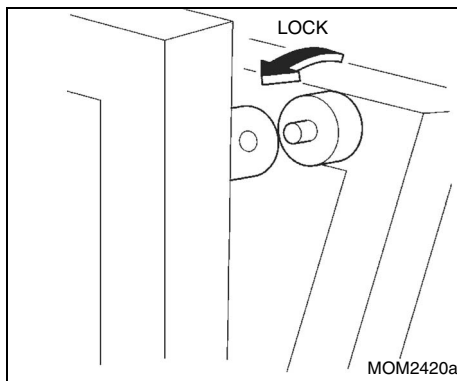
When moving to the ventilated position, the stopper can be used by rotating the support.



TOP PANEL OPENING PROCEDURE

On LPG models, turn the LPG cylinder over backward.

1. Open both doors.
2. Release the rear window lock and open the half rear window.



3. Close and lock the half rear windows and open the whole rear window.

- On models with the joystick, turn the console box over forward.
4. Move the seat all the way to the rear.
 5. Release the steering column lock lever. The steering column can then be tilted forward.
 6. Release the top panel lock and open the top panel backward.



CAUTION:

- Be careful not to pinch your fingers while closing the half rear window.

- Make sure that the lock for the half rear window is securely locked before opening the whole rear window.

CLOSING PROCEDURE

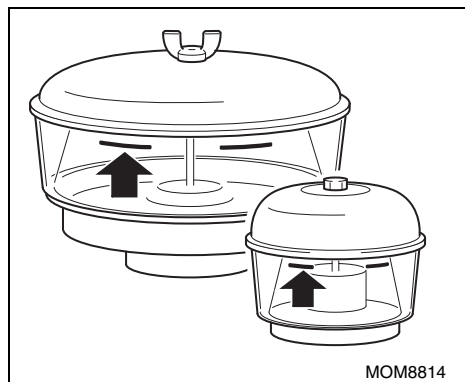
Close the top panel in the reverse order of the opening procedure. Note the following items.



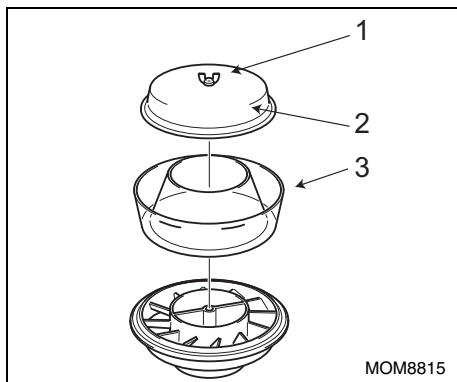
CAUTION:

- Be careful not to pinch your fingers while closing the top panel, rear window, door, etc.
- Make sure that the locks for the top panel, rear window, door, console box and steering column are securely locked.

CYCLONE AIR CLEANER (OPTION)



The servicing of the cyclone air cleaner should be carried out at the latest when the dirt reaches the level indicated by the arrow.

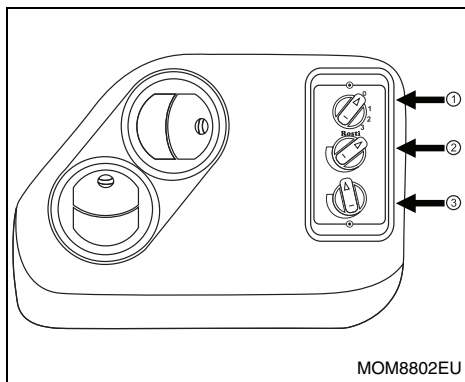


Remove top nut (1), cover (2) and dust cup (3), then empty.

No tools required.

Don't fill with oil.

CLIMATIZER (OPTION)



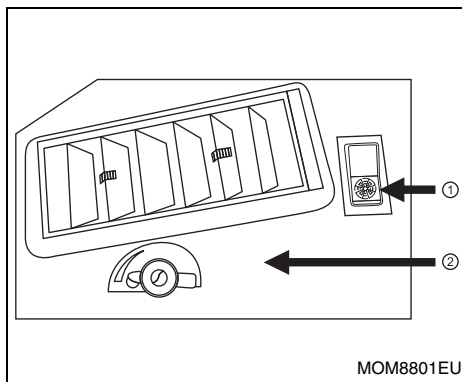
Operation of the climatizer

In order to increase the fan speed for the climatizer system turn knob (1) from 0 to 3 and do the reverse to decrease the fan speed.

To turn on the air conditioner: turn knob (2) clockwise (blue zone) in order to increase the cooling capacity.

To turn on the heater: turn knob (3) clockwise (red zone) to increase the heating capacity.

HEATER (OPTION)

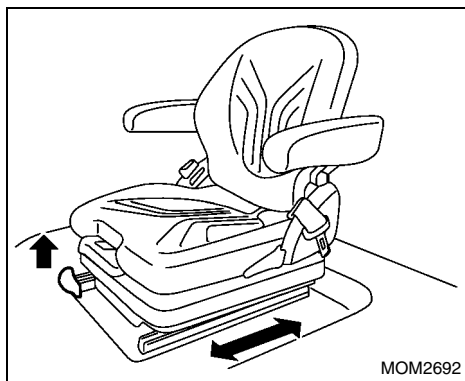


Operation of the heater

To switch on the blower fan push button (1).

To turn on the heater: turn knob (2) counter clockwise (red zone) to increase the heating capacity.

DELUXE TYPE SEAT (OPTION)



SEAT ADJUSTMENT

Forward and backwards control lever

The forward and backwards control lever is located at the front of the seat slider.

To adjust the seat position, pull the lever upward and hold it there while sliding the seat forward or backward to the desired position.

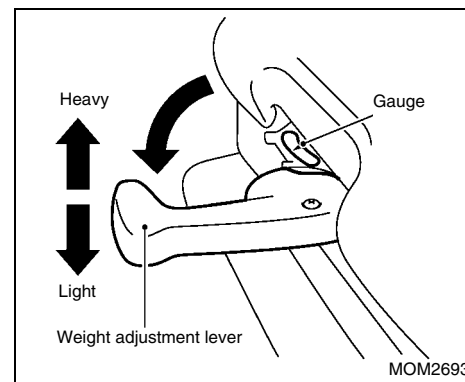
Release the lever to lock the seat.

Before operating the forklift, be sure the seat is locked securely.



WARNING:

- Before adjusting the seat, turn the key switch to the OFF position.
- Be sure to adjust the seat position while the forklift is stationary.



Operator's weight adjustment

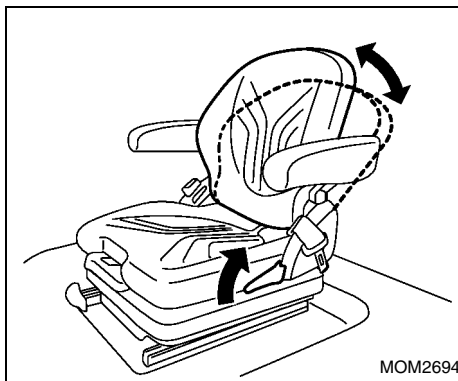
Perform the following procedure to adjust the seat cushion according to the operator's weight.

1. Sit on the operator's seat, and then pull out the weight adjustment lever.
2. When the gauge indicates to the right of the center, pull the weight adjustment lever up. When the gauge indicates to the left of the center, push the weight adjustment lever down.
3. Return the weight adjustment lever to the initial position after confirming that the position of the gauge is at the center.



WARNING:

Fingers might be pinched in the small gap between the weight adjustment lever and the top panel. Slide the seat fully backward before adjusting the seat to the operator's weight.



Backrest inclination adjustment

Adjust the backrest to the desired angle while pulling the lever located to the left of the seat. Release the lever to lock the backrest.



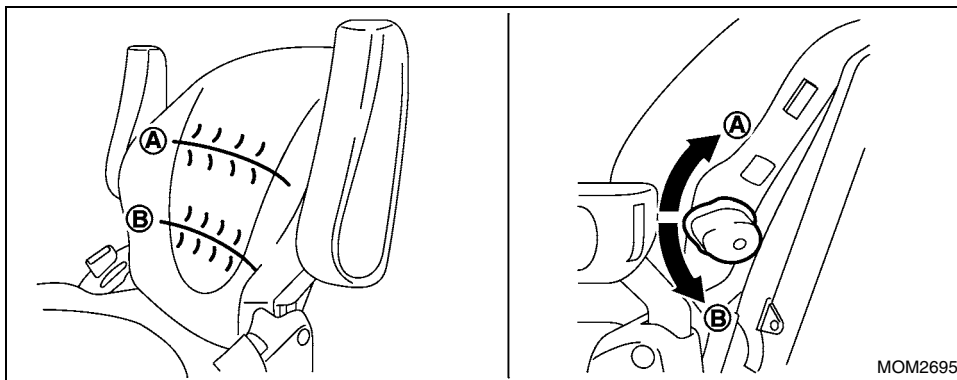
WARNING:

- Do not excessively tilt back the backrest, otherwise the seat belt may not demonstrate its performance in an emergency.
- When adjusting the angle of the backrest, gently do it while holding the backrest by hand. Hasty and rough adjustment may cause an injury, for instance the back of the seat may bump against the operator's face and body, or the operator's finger may get caught between the backrest and the grip.



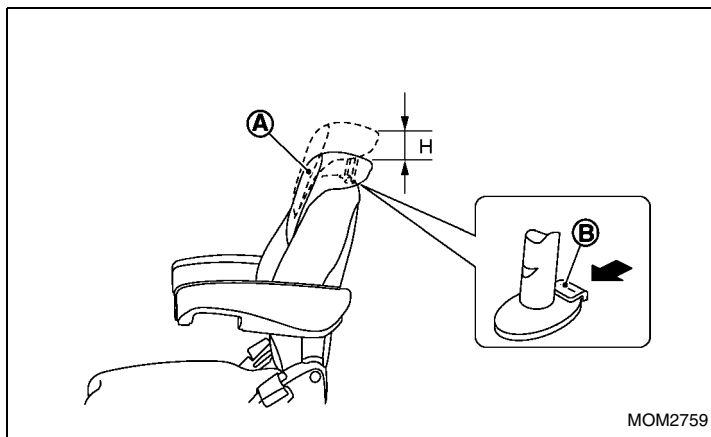
NOTE:

- The backrest can be tilted forward depending on the situation. The tilting manner is the same as tilting backward, but it cannot be fixed at an optional position.
- There are the seat pocket and magazine rack on the rear side of the backrest.



Lumbar support

- When the lever is turned upward, the upper lumbar area of the seatback ① swells.
- When the lever is turned downward, the lower lumbar area of the seatback ② swells.



Backrest extension adjustment

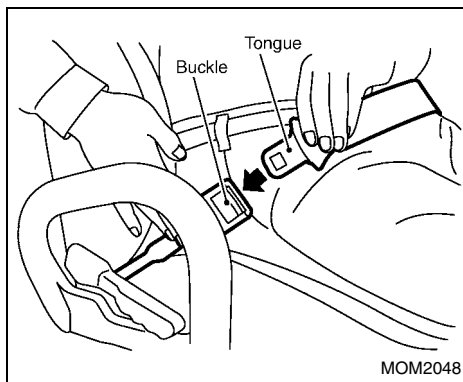
1. To raise the backrest, raise part (A) as indicated in the illustration.
2. To lower the backrest, while pushing button (B), lower the backrest.

NOTE:

Adjustment range (H): 170 mm (6.69 in) in 13 steps.

- To raise the backrest (A), make sure that the backrest (A) is properly aligned and not sticking out. While operating the forklift, there is a possibility that the backrest (A) might suddenly fall and cause personal injury.

SEAT BELT



1. Holding the tongue pull out the seat belt gently.
2. Wrap the lower part of the hipbone with the seat belt as tight as possible so as not to get loose.

i NOTE:

If the seat belt cannot be pulled out because it is locked, loosen it once and pull it out once more.

3. Being careful not to twist the seat belt, insert the tongue into the buckle until it "clicks".

For unfastening the seat belt, press the button on the buckle and pull the tongue out of it. While lightly holding the tongue, let the seat belt be rewound gently.

i NOTE:

When unfastening the seat belt, be sure to hold the tongue because the tongue may be pulled rapidly together with the seat belt.

! WARNING:

- Tightly wrap the seat belt around the hipbone as low as possible. If the seat belt comes off the hipbone and it wraps around the abdomen, it may cause an injury because strong pressure is applied onto the abdomen.
- Do not fasten the seat belt as it is twisted. If it is twisted, it may cause an injury because the twisted belt cannot disperse an impact and a limited part is shocked intensively.
- Do not adjust the seat belt to be loose such as slackening it intentionally by use of a clip. If the seat belt is fastened loosely, it cannot demonstrate its performance.

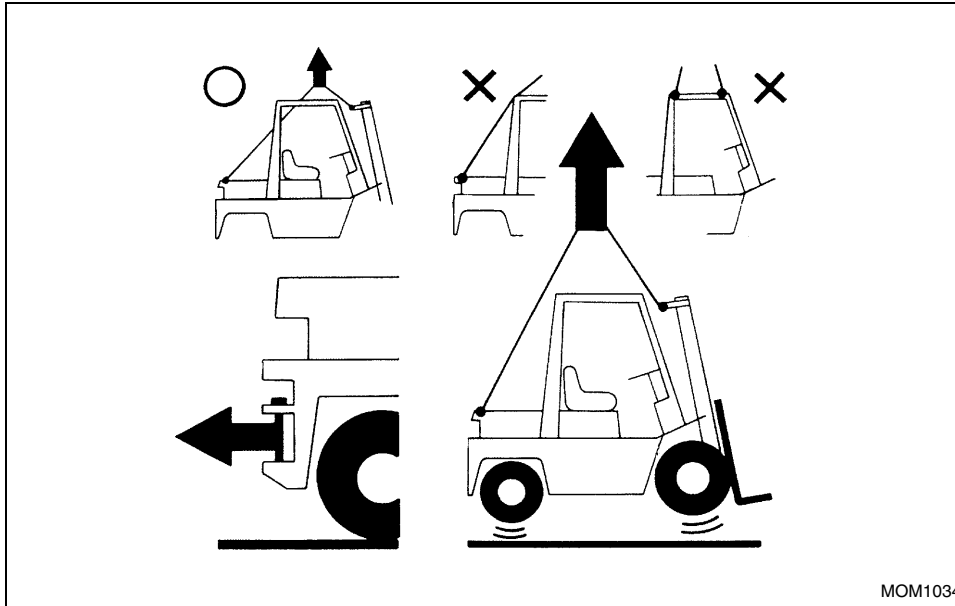
- Do not excessively tilt back the backrest, otherwise the seat belt may not demonstrate its performance.
- Do not put any foreign substance into the buckle or belt winder, otherwise its performance cannot be demonstrated because it cannot be fastened normally.
- If the seat belt is used by a pregnant woman or sick person, consult with the doctor beforehand because her/his abdomen is pressed by the seat belt.
- The seat belt that was once impacted, damaged or broken in part may not demonstrate its original performance. Replace it with a new one at the nearest dealer.
- For cleaning the seat belt, use a neutral detergent or lukewarm water. After cleaning, dry it completely before use. Be sure not to use an organic solvent such as benzine or gasoline, otherwise the seat belt deteriorates in its performance and may not function as designed.

TRANSPORTING FORKLIFT



WARNING:

1. Tilt the mast back to the maximum without load.
If the mast assembly is removed from the forklift only drive up a ramp with the counterweight first and off a ramp with the front of the forklift first.
This to ensure the drive wheels have enough traction.
2. Check the approach and departure angles to make sure that the underside of the forklift does not come into contact with the load carrying platform or the ground.
3. When using a load bridge, make sure that the planks are capable of withstanding the deadweight of the forklift.
4. When winching the forklift onto a load carrying platform, be sure to attach the cable to the traction pin. Do not ride on the forklift while it is being winched.
5. Do not load or unload the truck when it's raining, unless the ramps are fitted with an anti-slip surface.
6. Be sure to use lashing points and firmly secure the forklift to the load carrying platform.
7. When hoisting the forklift, be sure to use the lifting points.
8. Turn off the ignition switch and remove the key.



WARNING:

- Make sure that the wire ropes do not interfere with the overhead guard while lifting the forklift.
- Make sure that the wire ropes and lifting device are strong enough to support the forklift safely, because the forklift is extremely heavy.
- Do not use the cab frame (overhead guard) to lift up the forklift.
- Do not get under the forklift while lifting the forklift.

LIFTING UP FORKLIFT

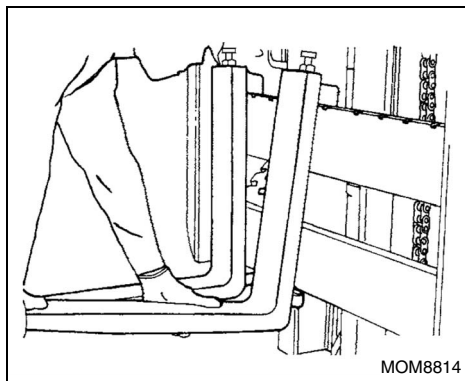


WARNING:

Only use this method as a last resort to move the forklift if the normal work application requires repeated lifting. Permanent lifting devices must be mounted on the forklift by an authorized dealer. Contact an authorized dealer for more details.

When lifting the entire forklift, secure wire ropes to the holes located on both sides of the outer mast cross beam and to the hook on the counterweight, and then utilize a lifting device.

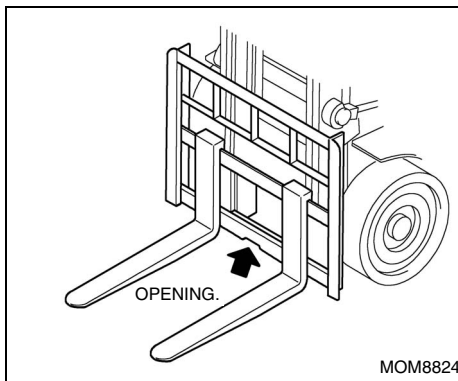
FORK REMOVAL



CAUTION:

Undermentioned operation may only be performed by trained, skilled and experienced personal.

1. Raise the mast vertically for about 200mm.
2. Pull up the lock pin at the top of one of the forks, and move the fork to the opening at the centre of the carriage.



3. Lift the tip of the fork till the jaw is clear from the carriage opening at the underside of the carriage, and slide one fork to the left side and the other to the right side.
4. Lower the carriage and slightly tilt the mast forward till the forks are on the ground.
5. When the forks are separated from the carriage, carefully back up the forklift.
6. Install in the reverse order of removal.

MAST ASSEMBLY



CAUTION:

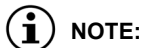
Undermentioned operation may only be performed by trained, skilled and experienced personal.

REMOVAL



CAUTION:

When removing the mast assembly, ensure the forks are removed beforehand. This is a precaution to ensure the safest possible maintenance procedure.



NOTE:

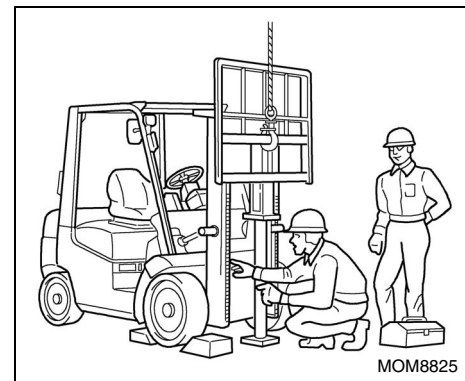
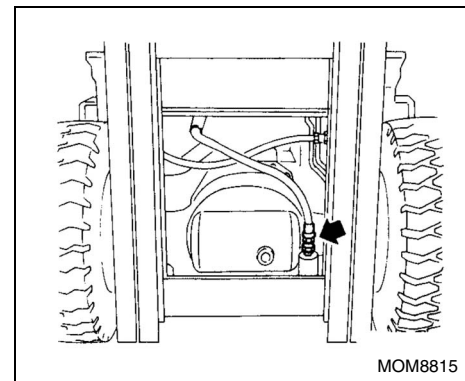
- If the carriage assembly needs to be disassembled, remove the carriage assembly together with the forks prior to removing the mast assembly.

In case a pit or lift is not available the front side of the forklift needs to be jacked up, this to be able to reach the mast support caps.

1. Before jacking up the truck, remove the loads from the truck.
2. When jacking up the truck, the operator must leave the truck.
Lift the truck a little off the ground surface and put supports (which are made to be

able to hold the weight of the truck) at both sides of the frame behind the front wheels, to prevent the truck from falling.

3. Before jacking up the truck, block the rear wheels to prevent them from rotating unexpectedly.



1. Remove the hydraulic hoses (lift hose, return hose, etc.) then plug their openings.



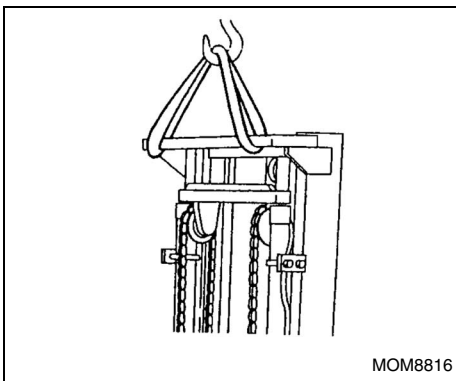
CAUTION:

Turn the ignition switch to the OFF position, and then move the control lever. This will relieve remaining oil pressure in the hydraulic lines.



NOTE:

When removing the lift hose together with the carriage assembly, relieve oil pressure in the hydraulic lines beforehand. Attach a lifting wire or nylon sling to the carriage, then suspend it in the air with a hoist to facilitate access to the mast assembly.



2. Attach a lifting wire or nylon sling to the upper beam of the mast, and then support the mast assembly using a hoist. Make sure to secure the carriage to the lower cross beams of all mast sections, with a strap or metal wiring. This to prevent accidental extension of the mast, and movement of the carriage. Keep the mast assembly fixed to the carriage until it's refitted to the forklift, also during transport procedure.

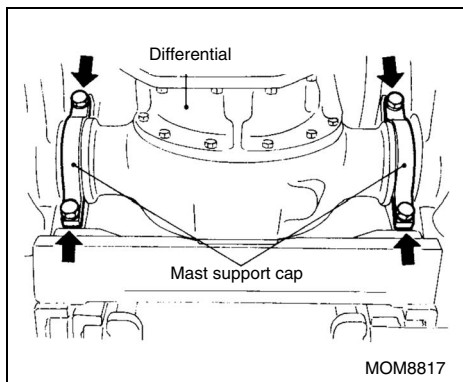


CAUTION:

Be sure to support mast assembly to prevent mast assembly from falling down.

Be aware that the mast weight can vary between 1075 KG and 2425 KG (consult your authorized dealer for the correct weight of your mast).

Make sure the hoists and the crane are capable to lift the weight.

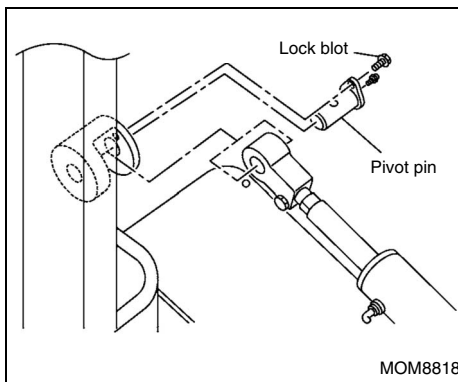


3. Remove the mast support cap bolts, and then remove the mast support cap from the front axle located behind the inner sides of the front tires.



CAUTION:

To prevent later confusion, temporarily re-install the mast support caps (upper, lower, left and right) to their corresponding locations on the mast assembly.



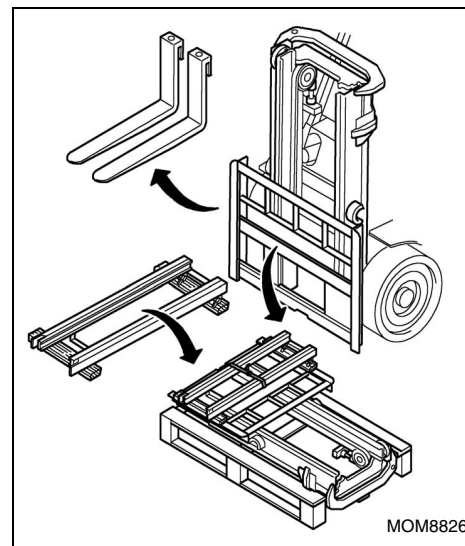
REMOVAL (CONT'D)

4. Remove the pivot pin lock bolts, and then remove the pivot pins securing the tilt cylinder to the mast assembly.
5. Start engine, and then fully tilt the tilt cylinder backward (cylinder compressed condition).



CAUTION:

Be sure to retract the tilt cylinder all the way, so as not to interfere with the tilt bracket that may be caused to damage tilt cylinder when installing the mast assembly.



6. Using a hoist, lift the mast assembly up and away from the forklift, and then lower it horizontally onto wooden blocks.



CAUTION:

- Be careful not to damage to brake pipes, etc. while lifting or moving the mast assembly away from the vehicle.
- When removing the mast assembly and carriage as a unit, securely fasten the tilt beam and carriage (finger bar) with a rope or wire. This prevents carriage movement when mast assembly is transferred to the ground.
- Always ensure the mast assembly rests on a flat and solid surface after it has been removed.

7. When the mast and carriage assembly are removed as a unit, remove the carriage assembly from the mast as follows:

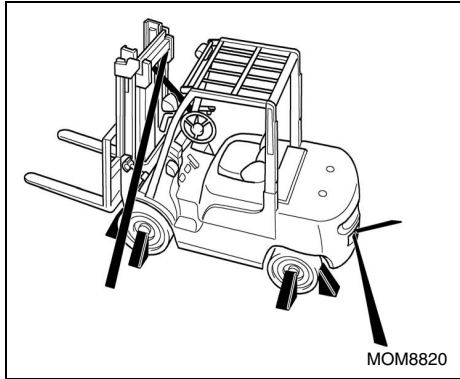
- Attach a lifting wire or nylon sling to the carriage and lift using a hoist.
- Disengage the lift chains at the lift joint link and adjusting bolt on the mast side, and then place the disengaged lift chains on the carriage.
- Slide the carriage down and extract it from the lower side of the inner mast.



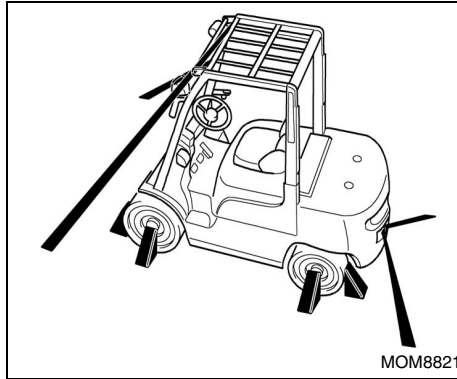
CAUTION:

Do not allow the mast assembly to snag or catch the lift chain when removing the carriage from the inner mast.

SECURING THE FORKLIFT FOR TRANSPORTATION



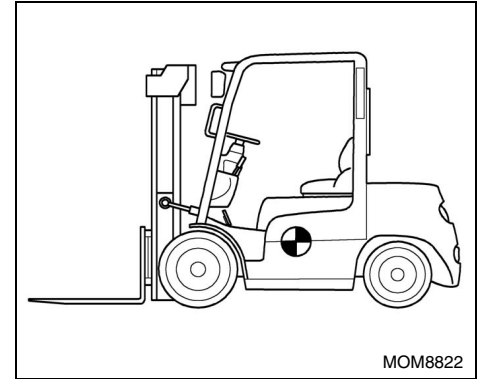
Secure the forklift properly using chocks and straps for transportation by truck or trailer. Only use a truck or trailer with a wooden flat-bed fitted with strap rings. Only allow specially trained personnel to load the forklift.



Carefully determine the correct sizes / ratings and appropriate safety measures before loading the forklift.

When strapping down trucks fitted with a mast, use the eye hooks mounted on the top cross-member of the mast and also the hitch pin. Refer to the top illustration (chocking and strapping down forklifts fitted with a mast) and the middle illustration (chocking and strapping down forklifts not fitted with a mast).

Strap down the forklift at the front via the roof when transporting forklifts not fitted with a mast. Refer to the middle illustration.



Refer to the bottom illustration for the approximate position for the center of gravity (CoG).

FUNCTION TESTS

The functional tests are performed to check whether the forklift functions correctly after it has been transported (over land or water), or after it has been taken out of storage.

The test covers the following items, but since exclusive tools and equipment are required for Items 1 and 2, request that an authorized dealer performs the test.

Items

1. Those that are indicated in daily care.

2. Dynamic tests

2-1) Mobility (traveling and maneuvering) test

Make sure that the forklift moves in the direction specified by the selector lever, and that the forklift operates correctly when the parking brake lever is locked or released. Also check to make sure that the steering feels normal and that it operates satisfactorily.

Elevate and lower test load.

2-2) Stacking test

Raise the test load to the maximum height of the mast and lower at the maximum speed, stopping the descent several times, to make sure that it stops smoothly.

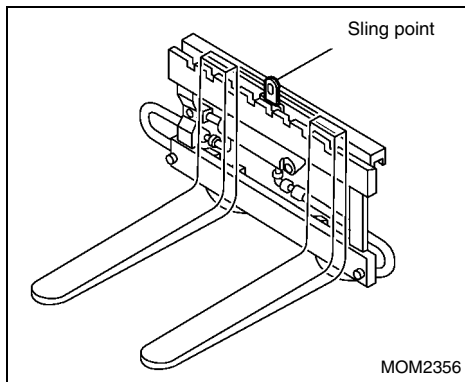
2-3) Lowering speed test

Check to make sure that the maximum lowering speed does not exceed 0.6 m/s (2.0 ft/s) (by measuring the speed).

3. Test for holding load

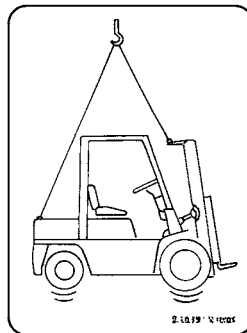
Check the rate at which the mast lowers naturally [100 mm (3.94 in)/10 min max].

Check the rate at which the tilt cylinder tilts forwards naturally (5 degrees/10 min max).

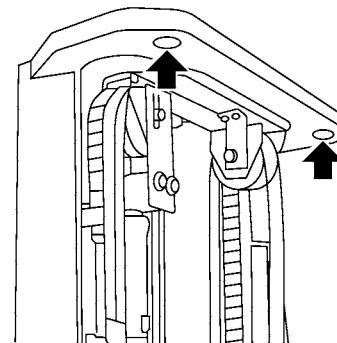


This illustration shows the sling point of the attachments which are possible to be installed and removed.

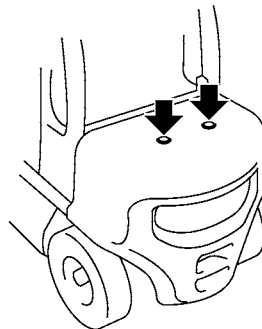
LIFTING POINT



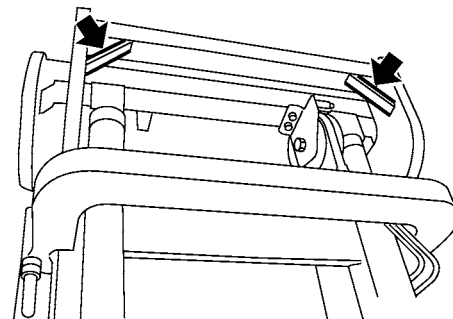
Mast side (2F/3F/3V MAST)



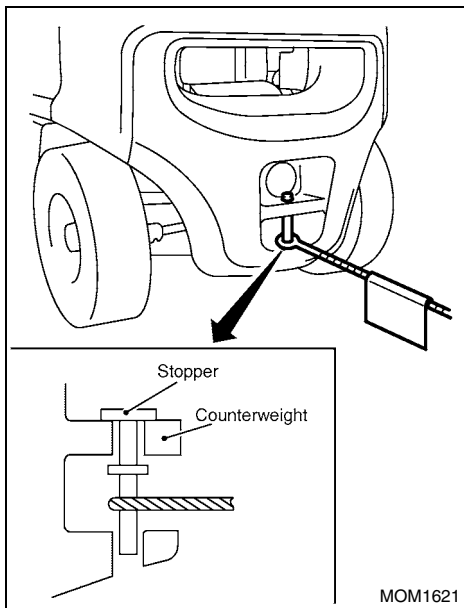
Truck body side



Mast side (2W MAST)



MOM2398a



TOWING BAR

Use the towing bar only when required to assist in pulling or dragging the forklift from a ditch or from being stuck.



WARNING:

Never use the towing bar for towing the forklift or other vehicles.

Be careful when using the towing bar.

- The towing bar is used to pull the forklift out of ditches with a tow truck. Avoid using the forklift to tow objects.
- Also use the towing bar to anchor the forklift when loaded on a carrier.
- Do not use the towing bar for towing objects (such as trolleys).
- Use wire cables that are not damaged and have sufficient strength to tow objects.
- Avoid jerky movements. Tow gently. Abrupt pulling is apt to cause the towing bar to shift and bend.
- Be careful when tying the towing bar with rope to prevent it from slipping off. When the towing bar slips off, immediately stop and check the conditions for safety. As soon as safe conditions are confirmed, set the towing bar properly, and resume the work.



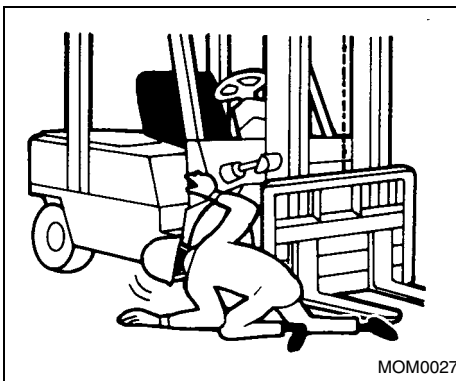
CAUTION:

- Always ensure that the traction bar is fully inserted until the stopper touches against the counterweight. This will reduce the possibility of the bar slipping.
- The traction bar is not a towing or drawing pin or coupling, and it should only be used for assistance in that type of operation.
- When using wire, cables or chains to pull or drag an object, ensure that all items are in good condition and are not damaged.
- Always gently draw towing cables or chains so as not to cause any shock, abrupt movements which could cause the traction bar to slip, bend or damage.
- If the traction bar or towing device slips, pulls out or becomes damaged, stop the towing operation and replace damaged parts or discontinue that type of operation.

PUTTING FORKLIFT IN STORAGE

Putting the forklift in storage involves storing the forklift at the end of each working day or storing the forklift over a long period of time.

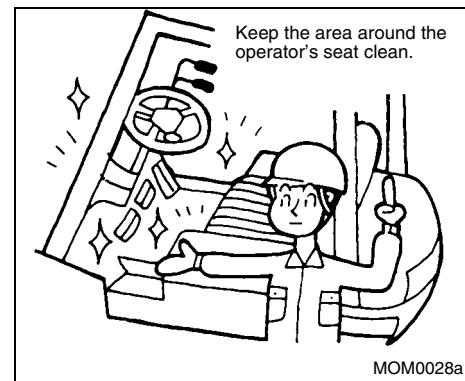
Be sure to observe the precautions for forklift storage.



DAILY STORAGE

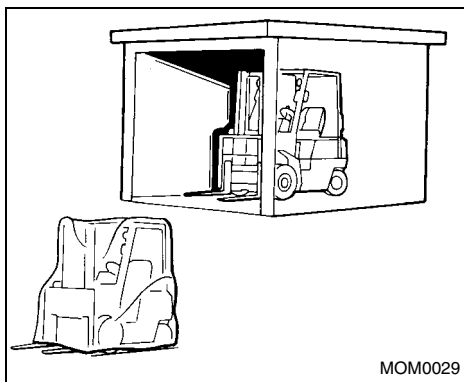
At the end of the working day, check the forklift. Always park it in the designated location. Put chocks under the tires to prevent the forklift from moving by itself. Check the forklift for water and oil leakages, and other malfunctions.

Keep the body and areas surrounding the driver seat clean. Make it a habit to always keep the forklift clean.



WARNING:

As soon as a malfunction is detected, notify the person responsible for maintenance and take the proper remedial actions or request an authorized dealer to perform repairs. Do not operate the forklift until the malfunction is corrected.



STORAGE OVER A LONG PERIOD OF TIME

When the operation of the forklift is completely suspended for a given period of time, take the following measures and store the forklift in a dry area.

Pre-storage servicing

1. Lubricate the forklift as per "Lubrication Schedule". Change the oil, and coat all exposed areas of hydraulic cylinders with corrosion resistant grease.
2. Completely remove cooling water or fill the radiator with antifreeze to prevent the engine from freezing.

3. In order to protect the inner walls of the cylinders against corrosion, remove the spark plugs from the LPG engine and injection nozzles from the diesel engine, and spray a small amount of oil into the cylinders. Then turn the motor over several times with the starter so that oil is distributed throughout the cylinders. Finally, replace the plugs or injection nozzles.
4. Remove the battery, charge it and store it indoors in low fire risk areas.
5. When storing LPG engine forklifts for a long period of time, idle the engine until all the LPG fuel is used up. Otherwise, the remaining LPG fuel will decompose and turn into a rubbery substance, making it very difficult to start the engine.

Servicing the forklift in storage

1. Periodically check the specific gravity and level of the battery fluid. Charge and replenish as necessary.
2. Check various sections of the forklift for stains or corrosion. Clean such areas and coat with a corrosion preventive agent.

i NOTE:

- When the forklift cannot be stored indoors, park it on level ground. Cover with a water-proof sheet or protective covering.
- When storing for a long period of time, be sure to consult an authorized dealer.

Post-storage servicing

1. Remove corrosion resistant grease coated on the exposed areas of the hydraulic cylinders.
2. Check lubrication of all sections of the forklift and cooling water level. If there are impurities or the level is low, change the coolant or top up to the prescribed level.
3. Check the battery fluid level and specific gravity. Be sure to completely charge the battery before putting it back on the forklift. When connecting the battery cables, make sure that the positive and negative terminals are connected correctly.
4. In order to lubricate the inner walls of the cylinders, remove the spark plugs from the LPG engine and the injection nozzles from the diesel engine, and spray a small amount of engine oil into the cylinders. Then turn the motor over several times with the starter to thoroughly distribute oil in the cylinders, and replace the plugs or injection nozzles.

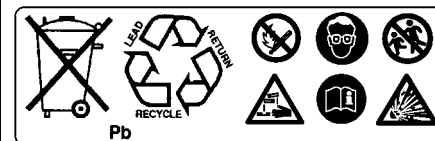
5. As soon as the engine is started, make sure that the oil pressure warning lamp turns off, and continue to warm up the engine so that the various sections of the engine are sufficiently worked in. Also check the instruments, indicating lamps and warning lamps to make sure that they are operating properly.
6. Follow "Function tests" on page 162.

DISPOSAL OF PARTS AND MATERIALS

WARNING:

WARNING:

Any irregularities arising from the use of parts other than those specified above shall not be covered under warranty.



MOM2346

WARNING:

- Used parts and materials such as engine oil, long-life coolant, paint, rags, battery fluid and batteries shall be disposed of according to the applicable provisions of the local laws and regulations.
- Also consult an authorized dealer.

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