

**NISSAN FORKLIFT CORPORATION**  
**(SAMPLE) Operator's Daily Checklist and Safety Inspection**  
**I.T.A. Class 4 & 5**

**IMPORTANT: Check each item listed at the start of each shift/work period. Notify your supervisor and/or Maintenance Department if there are any problems with the forklift. DO NOT OPERATE A FORKLIFT WITH ANY MALFUNCTION.**

**FORKLIFT DETAILS:**

☐ Gas

☐ LPG

☐ DIESEL

Serial/Unit Number:

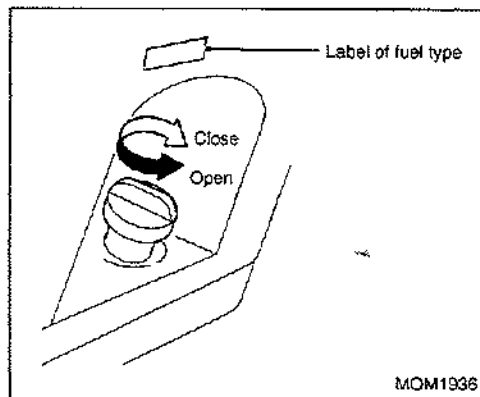
Hours:

Review and check the following list. Provide any additional information as necessary. Check each item either as Good (OK) or No Good (NG). IMPORTANT In the case of NG identify by item # and explain in comments section.

#	OK	NG	Visual Check Items	#	OK	NG	Operational Check Items
01			Forks: altered, bent, worn, stops, pin/fatch-locks	17			Horn: Properly attached, operation, correct loudness.
02			Load Backrest: bent, damaged, loose, missing	18			Service Brakes: function OK, linkage, loose-binding, grabbing
03			Tires-Wheels: wear, damaged, lug nuts tight or missing	19			Parking Brake: function OK, linkage, proper adjustment
04			Engine Oil: level, dirty, leaking	20			Seat Brake (if equipped): proper operation, correct adjustment
05			Hydraulic Oil: level, dirty, leaking	21			Mast: proper lift-lower function, wear or damage to mast rails lift-chain
06			Radiator: fluid level, condition of hoses, condition of core, leaks	22			Tilt: loose-binding, excessive drift, chatters, leaks
07			Fuel Tanks: level, condition of lines-hoses-connectors, leaks	23			Carriage and Attachment(s): operation, mounting, leaks, looseness
08			Battery: connections-clamps, state of charge, electrolyte level leaks	24			Control Levers: operation, proper and free return to neutral position
09			Covers, Panels, Sheet-Metal: damaged, insecure, missing	25			Directional Controls: loose/binding, find neutral position OK
10			Overhead Guard: bent-deformed, cracked, loose, missing	26			Engine: Runs rough, smokes, leaks, noisy operation
11			Warning Labels-Decals, Operator's Manual: unreadable, incomplete, missing	27			Steering: loose/binding, leaks, drifts, oil leaks
12			Operator Restraint System: insecure, damaged, incomplete, improper operation	28			Warning Lights (if equipped): Secure, operational
13			Data-ID Plate, Capacity Plate: incorrect, damaged, unreadable, missing	29			Back-Up Alarm: Mounting, operational, correct loudness
14			Gauges-Instruments: inoperable, unreadable, damaged, missing	30			Head-Tail, Working Lights: Mounting, operational
15			Brake System: loose-damaged linkage, reservoir fluid level, leaks				
16			Head-Tail, Working-Warning Lights: loose mounting, damaged, missing				

Additional explanation(s) of NG problems indicated above: \_\_\_\_\_

Operator's Name: \_\_\_\_\_ Supervisor's Approval/OK: \_\_\_\_\_ Date of Inspection/Check: \_\_\_\_\_



## FUEL RECOMMENDATION



### WARNING:

- Be sure to stop the engine before refilling with fuel.
- Make sure that there are no open flames or sparks in the vicinity of the engine. Use only unleaded fuel in the fuel tank of gasoline engine equipped vehicles. 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.

## GASOLINE TO BE USED

- Except Germany: Regular (unleaded)
- For Germany: Normal gasoline leaded DIN 51 600 or normal unleaded DIN 51 607.



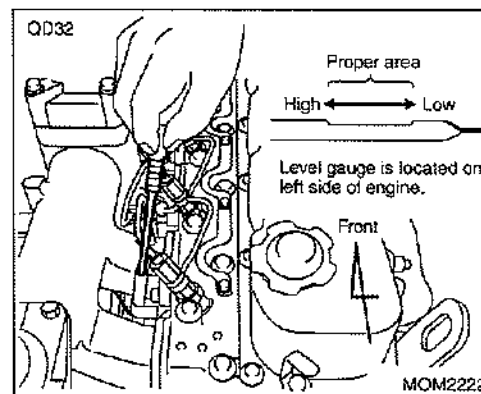
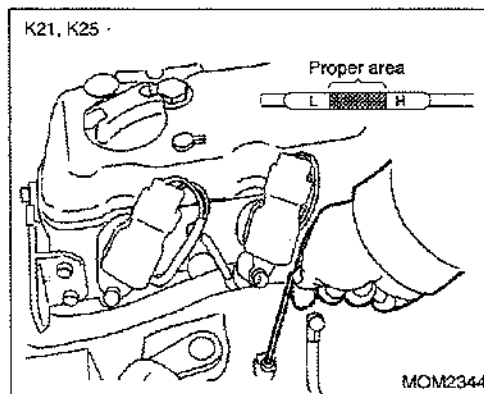
### CAUTION:

- Be careful not to allow water or debris to enter the fuel tank during refilling, as it may cause damage to the ECCS fuel system components.
- 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 page 111.



### 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.

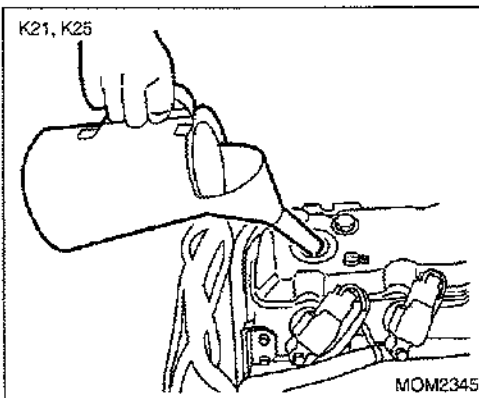
After checking the oil level, be sure to return the oil level gauge to the original position.

**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.



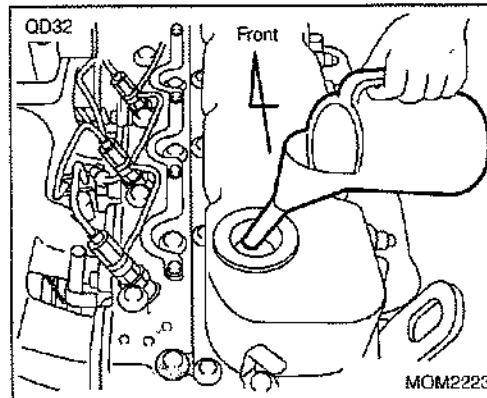
## REFILLING ENGINE OIL

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



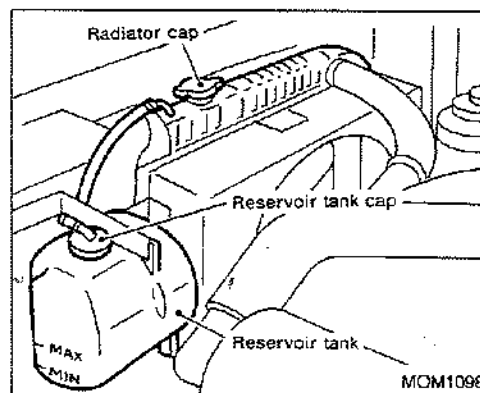
### CAUTION:

- 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.

Revised: November 2010

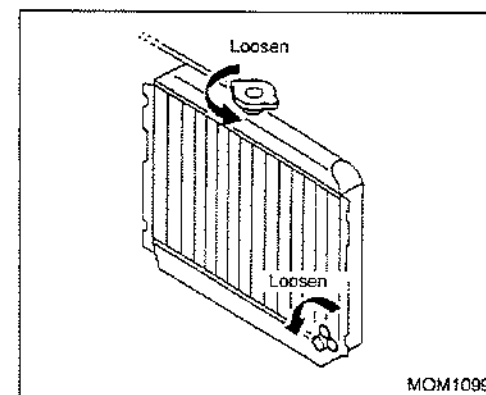


### ENGINE COOLANT LEVEL

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 your Local Authorized Dealer.

- 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.

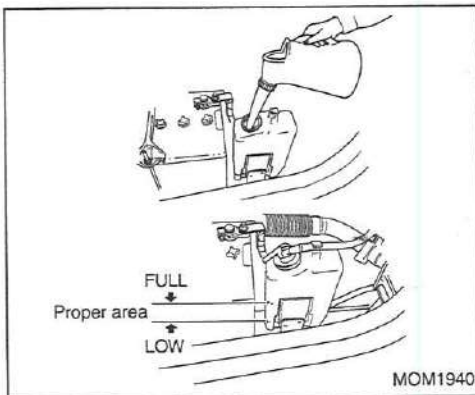


### CHANGING ENGINE COOLANT

1. Open the radiator cap and drain cock to drain the coolant. Then flush the cooling system.

**CAUTION:**  
Always follow local, state regulation for the proper storage & disposal of coolant.

2. Close the drain cock securely.
3. Fill the radiator with new coolant (mix 50/50) 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.

Revised: January 2011



### WARNING:

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

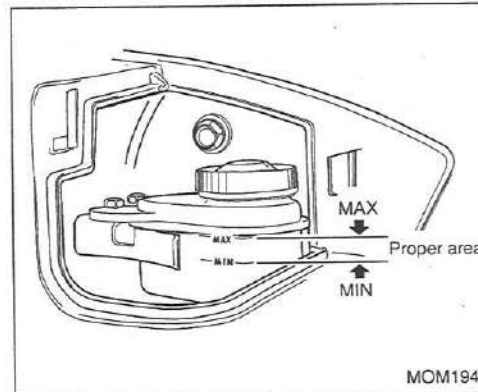
### NOTE:

Refer to page 74 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 by NISSAN FORKLIFT CO., LTD. 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.



## BRAKE FLUID LEVEL

Check if the brake fluid level in the brake fluid reservoir tank inside the lid on the left side of the instrument panel is within the proper range. If the level is lower than the "MIN" level, refill the reservoir tank with Nissan Forklift recommended Brake Fluid.

At the same time, visually check the outside and periphery of the reservoir tank for brake fluid leakage or staining.



### WARNING:


- Use DOT3 (F.M.V.S.S. No. 116) brake fluid only.
- If brake fluid leakage or staining is detected, immediately report it to your supervisor or contact your Local Authorized Dealer to inspect and repair

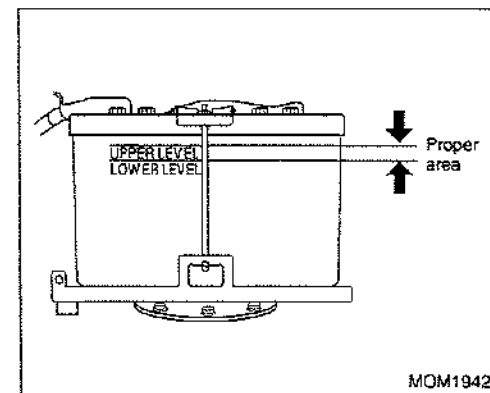
it. Do not operate the forklift until it is completely repaired.

- If a brake fluid other than that specified by NISSAN FORKLIFT CO., LTD. or old brake fluid is used, it may cause deterioration in the performance of the brakes and could potentially lead to an accident. Use only the specified brake fluid.
- Be careful not to allow the brake fluid to remain in contact with the coated surface, because the brake fluid can degrade 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 excessive amounts of the brake fluid are used, immediately report it to your supervisor or contact your Local Authorized Dealer to inspect it.

## REFILLING BRAKE FLUID

Turn the brake reservoir tank cap counterclockwise to remove it, and slowly pour the brake fluid (Nissan Forklift recommended Brake Fluid) into the tank until the fluid level reaches the "MAX" level.

-  **WARNING:**
- When refilling the brake fluid reservoir tank with brake fluid, be careful not to mix dust and foreign substances in the fluid.
  - If brake fluid other than that specified by NISSAN FORKLIFT CO., LTD. or old brake fluid is used, it may cause deterioration in the performance of the brakes and could potentially lead to an accident. Use only the specified brake fluid.
  - Be careful not to allow the brake fluid to remain in contact with the coated surface, because the brake fluid can degrade the coated surface. If the brake fluid adheres to the coated surface, immediately wipe it off and clean the area so that no liquid remains on the coated surface.
  - If excessive amounts of brake fluid are used, immediately report it to your supervisor or contact your Local Authorized Dealer to inspect it.



## BATTERY FLUID LEVEL

### FOR NON-MAINTENANCE FREE BATTERIES

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 personal protective equipment (PPE) (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.



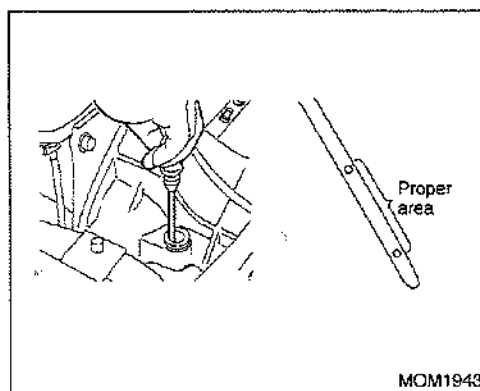
#### **CAUTION:**

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.



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### 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 adhered to 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 your Local Authorized Dealer to inspect it.

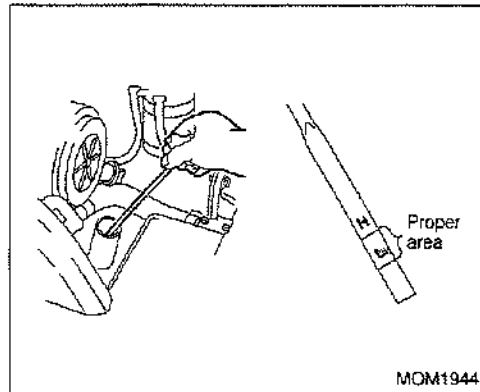
### REFILLING AUTOMATIC TRANSMISSION FLUID

Automatic transmission fluid can be added through the level gauge hole. Checking the fluid level with the level gauge, pour the Nissan Forklift recommended Automatic Fluid (Refer to Page 96) 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 by NISSAN FORKLIFT CO., LTD. Using non specified fluids may cause a malfunction in the torque converter. Be sure to refill the automatic transmission with the specified quantity of the Nissan Forklift recommended Automatic Fluid (Refer to Page 96). Be careful not to mix dust or foreign substance in the transmission fluid during refilling.



#### NOTE:

For correctly checking the hydraulic oil level, park the forklift on level ground and stand the mast vertically with the fork lowered to the limit (contacting ground).

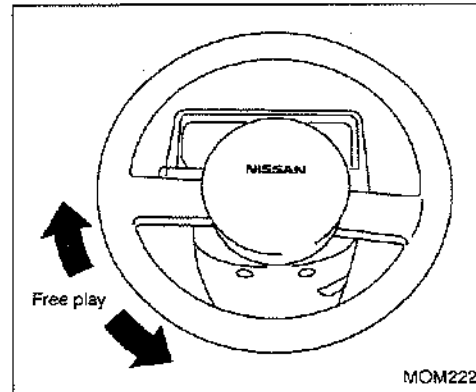
#### REFILLING HYDRAULIC OIL

Remove the hydraulic oil filler cap. While checking the hydraulic oil level with the level gauge, pour the specified hydraulic oil (Nissan Forklift recommended Hydraulic Oil) into the oil filler until the oil level is in the proper area.



#### CAUTION:

- Do not use any hydraulic oil other than those specified by NISSAN FORKLIFT CO., LTD. as it may cause not only deterioration in the performance of the forklift but could cause mast drift resulting in a possible accident.
- Carefully add the hydraulic oil so as not to mix dust and foreign substances in the oil.



#### HYDRAULIC OIL

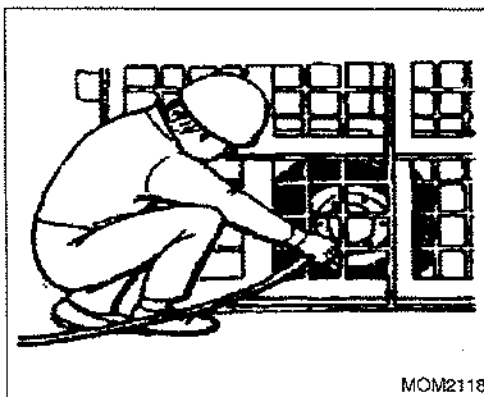
Check the oil level in the hydraulic oil tank.

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.

#### STEERING WHEEL

Turn the steering wheel to the right and left. A play in the circumference of less than 1.18 in (30 mm) at idling is normal.

If there is excessive play or looseness, have the steering wheel adjusted by your Local Authorized Dealer.



MOM2118

## WHEEL AND TIRE



### WARNING

- OSHA safety procedures must always be followed. Refer to OSHA 1910.177.
- Always use the correct procedures when servicing or replacing pneumatic tires on multi-piece rim sets.
- Failure to use the proper procedures can cause explosive separation of tire and rim set, and death or serious injury could result.
- When inflating or deflating tires, a suitable safety cage or barrier shall be used.
- Only properly trained personnel should replace pneumatic tires on multi-piece rim sets.

## TIRE PRESSURE (Pneumatic and compact pneumatic models):

### NOTE:

The pneumatic type cushion tire without inner tube (so-called tubeless tire or non-puncture tire) is supplied. This type of tire does not need to have a tire pressure check performed.

U.S. manufactured models only

Unit: psi (kgf/cm<sup>2</sup>, kPa)

Vehicle	Front tire (drive)	Tire pressure
1.5 ton, 1.8 ton, 2.0 ton	6.50-10/10PR	102 (7.0, 700)
2.0 ton, 2.5 ton, 2.75 ton	7.00-12/12PR	102 (7.0, 700)
2.8 ton, 3.0 ton	28x9-15/12PR	102 (7.0, 700)
3.5 ton	250-15/16PR	102 (7.0, 700)
A1F1 1.5 ton, 1.8 ton	6.00-9/12PR	145 (10.0, 1000)
A1F2	21x8-9/14PR	128 (9.0, 900)
Vehicle	Rear tire (steer)	Tire pressure
1.5 ton, 1.85 ton, 2.0 ton	5.00-8/8PR	102 (7.0, 700)
2.0 ton, 2.5 ton, 2.75 ton	6.00-9/10PR	102 (7.0, 700)
2.8 ton, 3.0 ton	6.50-10/10PR	102 (7.0, 700)
3.5 ton	6.50-10/12PR	128 (9.0, 900)
A1F1 1.5 ton, 1.8 ton	5.00-8/8PR	102 (7.0, 700)
A1F2	18x7-8/14PR	128 (9.0, 900)



### WARNING

- Tires used on Nissan Forklifts manufactured in Japan, Spain and the U.S. are different. Do not mix different sizes or tire types, as this could affect stability.
- If the tire pressure is not correct it can affect the stability of the forklift, potentially resulting in a tip-over, and it can also cause bursting or premature wear or explosive separation of the multi-piece rim set.
- When checking the tire pressure, do not face the tire side to avoid a danger because the tire pressure is very high.
- This could also result in death or serious injury.

# CUSHION MODELS STANDARD TIRE SIZES

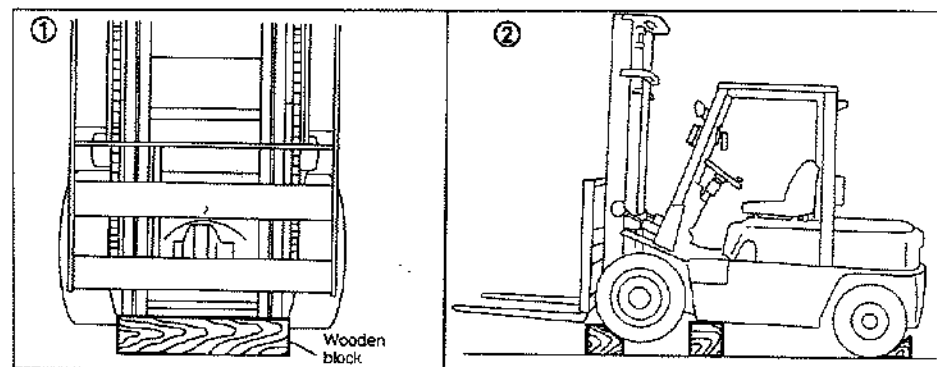
Vehicle	Type	Tire size	Tire load capacity
1.5 ton, 1.25 ton, 2.0 ton	Front (Drive)	18-6-12.12	Standard
	Rear (Steer)	14-6-10	*HiLoad
2.0 ton, 2.5 ton	Front (Drive)	21-7-15	Standard
	Rear (Steer)	16.25-6-11.25	Standard
2.8 ton, 3.0 ton, 3.3 ton	Front (Drive)	21-8-15	Standard
	Rear (Steer)	16.25-6-11.25	*HiLoad
3.0 ton	Front (Drive)	22-8-16	Standard
	Rear (Steer)	18-6-12.12	*HiLoad
3.5 ton, 3.6 ton	Front (Drive)	22-9-16	Standard
	Rear (Steer)	18-6-12.12	*HiLoad



## WARNING

\*Only use the OEM recommended HiLoad steer tire as listed in the parts catalog.  
 This will reduce the possibility of premature wear to the tire, wheel hub and/or steer linkage.  
 This may affect the overall stability both while traveling and during load handling, which could  
 cause a tip-over or loss of load condition.

## MAINTENANCE



### TIRE REPLACEMENT



#### WARNING:

- Do not get under or ride on the forklift when it is jacked up. Doing so could result in serious injury or death.
- Use a jack with a capacity of 3.0 tons or more.



#### CAUTION:

- Always park the forklift on a flat, level and solid surface.
- Unload cargo from the forklift.
- Do not start or stop the engine or operate control levers from any position other than the operator's seat.



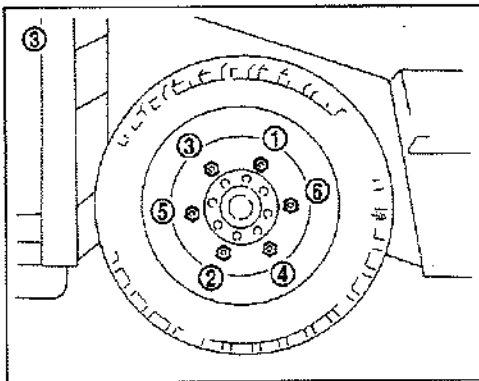
#### CAUTION:

- Keep the parking brake lever fully applied.
- Make sure that the selector lever is in the neutral position.
- Use hardwood or plastic blocks that do not slip easily and are strong enough to withstand the forklift weight. Do not use broken or cracked blocks or metal blocks that slip easily.
- Use wooden blocks of the following size. Height: Allows the block to tightly fit between the backward tilted mast and the road surface.



#### CAUTION:

- Width: 1.97 to 3.94 in (50 to 100 mm) larger than the longitudinal length of the mast rail.
- Length: 0.79 to 1.57 in (20 to 40 mm) larger than the width of the outside mast.
- To prevent the forklift from leaning, do not place wooden blocks of different heights under the right and left masts.



#### NOTE:

There are two types of wheel nut wrenches: a large one for the front wheels and a small one for the rear wheels.

#### Front tire

1. Place the forklift on a level and solid surface.
2. Start the engine and raise the carriage about 9.84 in (250 mm).
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 wooden 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 operate the control lever quickly. Doing so may cause the mast on wooden blocks on the ground to become unstable.
  - Stop jacking up the forklift when the tires are clear of the ground. Jacking up the forklift excessively high could cause it to tip over.
  - If the front wheels are lifted for a long time by means of the mast, the mast may incline backward by itself. To prevent this, be sure to insert a wooden block that goes from side to side of the frame.
  - Do not remove wheel nuts until the front tires are raised from the ground.
7. Support the forklift by putting additional wooden blocks under each side of the front-end frame as shown on page 91. Stop the engine.
  8. Remove the wheel nuts and replace the front tire.



#### WARNING:

- When removing the tire from the wheel rim, do not remove rim set bolts and nuts before releasing air.
  - Never get under the forklift while it is supported only by the wooden blocks.
9. Reinstall the wheel nuts and temporarily tighten them in the sequence shown on page 92.



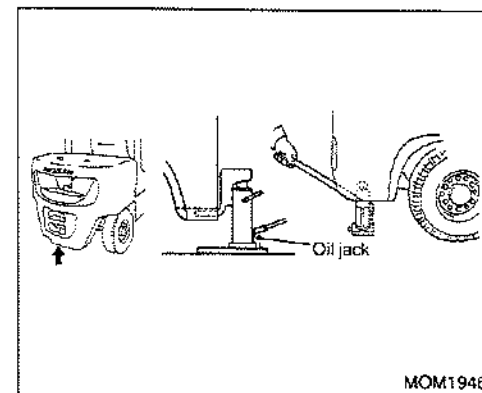
#### CAUTION:

Each wheel nut has a conical bearing surface and each hole in the rim is counter-sunk so that they can fit with each other. After attaching all wheel nuts, make sure that each nut tightly fits with the counter-sunk hole. If wheel nuts are attached in the wrong direction, they may loosen easily and may cause bolts to break and the wheel to come off.

10. Start the engine and remove the wooden blocks from the underside of the frame.
11. Lower the forklift slowly by tilting the mast fully backward. Remove the wooden block from under the mast, and remove the chocks.
12. Tighten the wheel nuts to the specified torque in a crisscross fashion. Refer to the "Tightening torque" table on page 95.

13. Adjust the tire pressures to the value specified in the "Tire pressure" table on page 89.

14. After replacing a tire, drive the forklift a short distance and check the tightening torque of each wheel nut again.

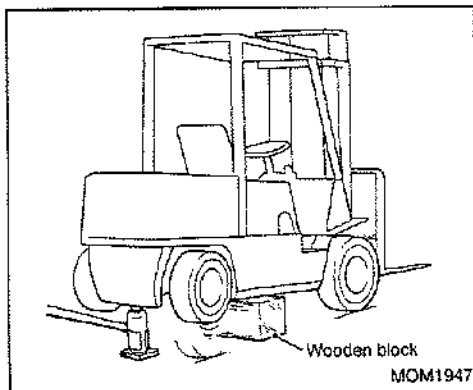


Rear tire

#### NOTE:

To replace a tire, contact your Local Authorized Dealer.

1. Place the forklift on a level and solid surface.
2. Apply the parking brake, and place chocks behind 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.



#### WARNING

- Never get under or ride on the forklift when it is jacked up. Doing so could result in serious injury or death.
- Use a jack with a capacity of 3.0 tons or more.

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.

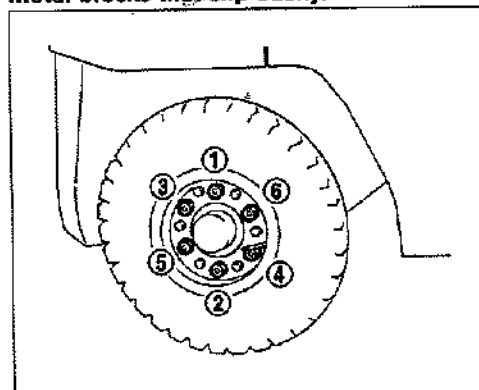
5. Jack up the forklift slowly until the rear tires clear the ground, and support the forklift by putting wooden blocks under each side of the rear end frame as shown in the illustration.



#### WARNING

- Stop jacking up the forklift when the tires are slightly raised from the ground. Jacking up the forklift excessively high could cause it to tip over.
- Use hardwood or approved jack stands of 3.0 tons or more that do not slip easily and are strong enough to withstand the forklift weight.

Do not use broken or cracked blocks or metal blocks that slip easily.



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



#### WARNING

- When removing the tire from the wheel rim, do not remove rim set bolts and nuts before releasing air.
  - Never get under the forklift while it is supported only by the wooden blocks.
7. Reinstall the wheel nuts and temporarily tighten them in the sequence shown in the above illustration.
  8. Remove the wooden 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 95.
  10. Adjust the tire pressure to the value specified in the "Tire pressure" table on page 89.
  11. After replacing a tire, drive the forklift a short distance and check the tightening torque of each wheel nut again.



# Tightening torque

Unit: ft-lb (N-m)

Model			1F1 series		1F2 series			A1F1	A1F2
			1.0 ton, 1.5 ton, 1.75 ton, 2.0 ton	2.0 ton, 2.5 ton	2.75 ton, 3.0 ton	3.5 ton	1.5 ton, 1.75 ton	2.5 ton	
Pneumatic- tire model	Front (Drive)	Single tire		123 to 166 (167 to 226)	181 to 217 (245 to 294)	325 to 434 (441 to 588)	325 to 434 (441 to 588)	123 to 166 (167 to 226)	145 to 181 (196 to 245)
		Double tire	Standard	123 to 166 (167 to 226)*4	(B)398 to 506 (539 to 686)*1	(N)398 to 506 (539 to 686)*1	(N)398 to 506 (539 to 686)*1		
				123 to 165 (167 to 226)*5	434 to 542 (588 to 735)*2	434 to 543 (588 to 735)*2	434 to 542 (588 to 735)*2		
			Special	(B)123 to 166 (167 to 226)*1	(B)398 to 506 (539 to 686)*1	(N)398 to 506 (539 to 686)*1	(N)398 to 506 (539 to 686)*1		
				58 to 72 (78.4 to 98)*3	434 to 542 (588 to 735)*2	434 to 542 (588 to 735)*2	434 to 542 (588 to 735)*2		
				123 to 166 (167 to 226)*2	—	—	—		
				Rear (Steer)		123 to 166 (167 to 226)	123 to 166 (167 to 226)		

(B): Bolt

(N): Nut

\*1: Inner wheel

\*2: Outer wheel nut

\*3: Hub nut (Outer hub)

\*4: Wheel nut

\*5: Wheel composite nut

Unit: ft-lb (N-m)

Cushion Tire Model		C1F1	C1F2	C61F2
	Front (Drive)	123 to 166 (167 to 226)	145 to 181 (197 to 245)	181 to 217 (245 to 294)
	Rear (Steer)	Hub is maintained by wheel bearing nut & rolling torque as noted in Service Manual.		

## DRAIN PLUG: FOR FUEL TANK CLEANING

Remove the drain plug before washing the inside of the fuel tank. To do this, turn the drain plug counterclockwise.

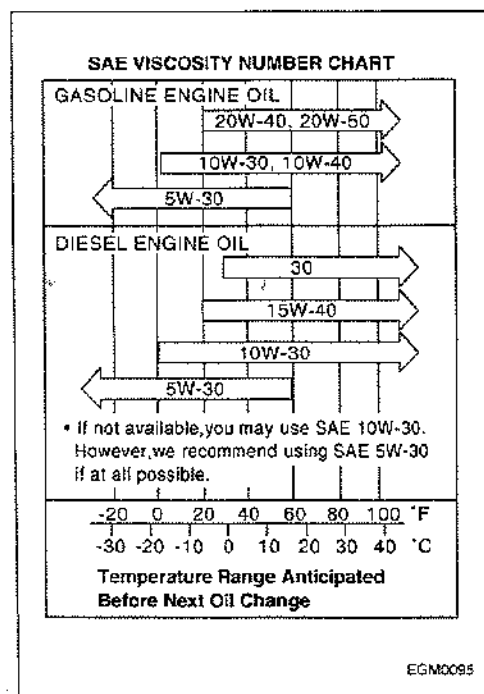
- When removing the drain plug, be careful not to lose the packing. Before installing the drain plug, be sure to install the packing.

### Tightening torque:

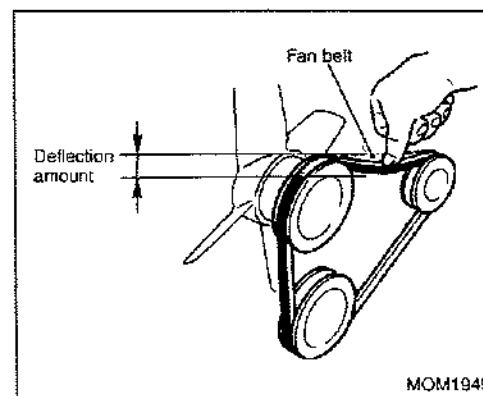
**18 to 28 ft-lb (25 to 39 N·m)**

## RECOMMENDED LUBRICANTS

Item		Specifications	Remarks
Engine oil	Gasoline	API SJ or SL	Refer to RECOMMENDED SAE VISCOSITY NUMBER Refer to Page 97.
	Diesel	API CF	
Gear oil	Transmission (manual)	API GL-4 or 5	Lithium soap base
	Differential	API GL-4 or 5	
Grease	Chassis	N.L.G.I. 1	Lithium soap base
	Wheel bearing	N.L.G.I. 2	
	Mast and chain guide bar	N.L.G.I. 2	
Power steering oil		Hydraulic oil I.S.O. VG32	—
Hydraulic oil		Hydraulic oil I.S.O. VG32	Wear-proof oil
Automatic transmission fluid		Type DEXTRON or M2C-33E or F	—
Brake fluid		DOT3 (F.M.V.S.S. No. 116)	F.M.V.S.S.: Federal Motor Vehicle Safety Standard
Antifreeze		—	Permanent antifreeze (Ethylene glycol base)



RECOMMENDED SAE VISCOSITY NUMBER



## ENGINE

### Fan belt

Check the belt deflection by applying moderate thumb pressure at a point midway between the pulleys. If necessary, adjust the belt deflection.

#### Fan belt deflection:

**K21, K25**

**0.43 to 0.51 in (11 to 13 mm)**

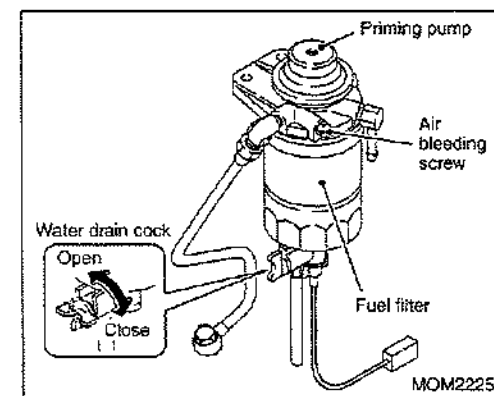
**QD32**

**0.43 to 0.51 in (11 to 13 mm)**



#### WARNING:

- Be sure that the engine is not running and the parking brake is applied securely.
- Keep hands clean.



## FUEL FILTER

### Draining water from water separator (QD32 diesel engine forklift)

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

1. Open the top panel. Refer to "Top panel" on page 69.
2. Place a container under the fuel filter.
3. Put the saucer under the water drain cock, and then loosen the water drain cock 4 to 5 turns to drain the water.
4. After the water has been completely drained, tighten the drain cock.

**WARNING:**

- Never allow open flames, smoking or other sources of ignition in the area of fuel filter.
- Every part remains very hot immediately after the engine has stopped. Wear protective gloves and perform the operation carefully so as not to touch heated parts around the water drain cock.

**CAUTION:**

- Fuel may also spout out along with water drained. If fuel splashes over parts, wipe it off completely.
- If operation is continued for a long time while the sediment chamber (fuel filter) level warning lamp is lit, the fuel injection pump might seize up.

Air purge (diesel engine forklift)

**NOTE:**

Air purge operation for diesel engine (QD32) vehicle is unnecessary.

When refilling an empty fuel tank and/or draining water from the water separator, purge the air out of the fuel system. Proceed as follows:

1. Loosen the air purge screw at the upper part of the fuel filter.

2. Move the priming pump up and down until no further air-bleed comes out of the air purge screw.

3. Tighten the air purge screw.

**WARNING:**

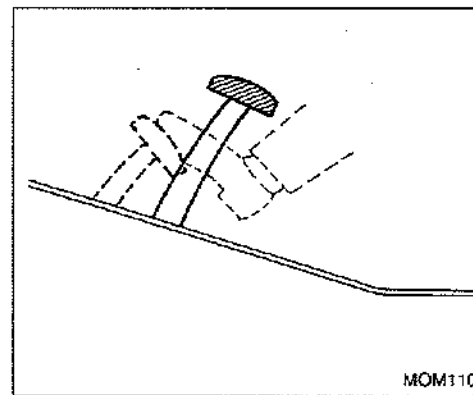
Do not smoke or hold a flame near the operation area.

**CAUTION:**

- Do not remove the screw completely, otherwise a large amount of fuel may spout out.
- Fuel may spout out from the air purge screw hole during air purge. Be sure to block the hole with a cotton cloth or a similar item to prevent fuel from splashing over surrounding parts.
- If fuel spills during replenishment, be sure to wipe it off.

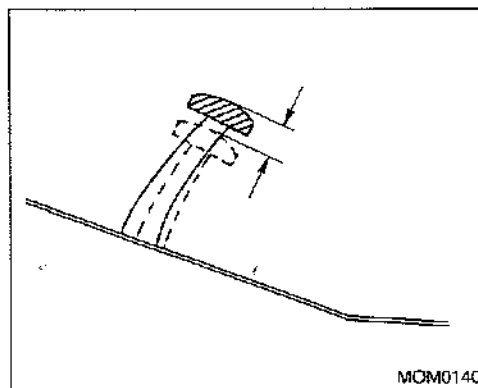
**NOTE:**

After draining water from the fuel filter, perform air purge operation.

**CHASSIS AND BODY****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 floorboard should be 2.36 in (60 mm) or more.

When this distance approaches the prescribed limit value, have the brake adjusted by your Local Authorized Dealer.

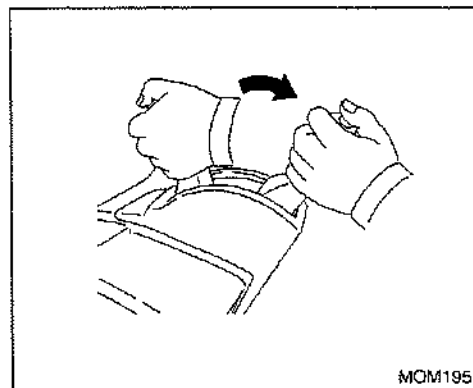


### Pedal free play

The standard free play of the pedal is as follows:

Unit: in (mm)

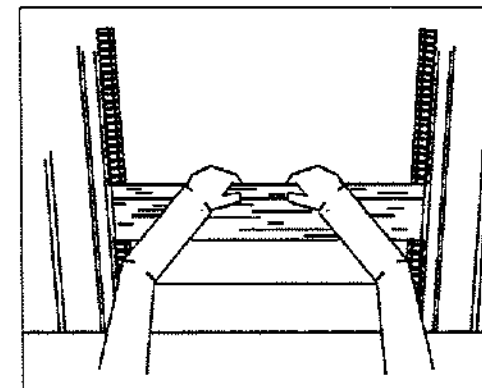
Model	All models
Brake pedal	0.04 to 0.12 (1 to 3)



### Parking brake lever

Make sure that the parking brake works properly when pulled and then returns to its original (release) position.

**Pulling force at gripping position:**  
55 to 66 lb (245 to 294 N)



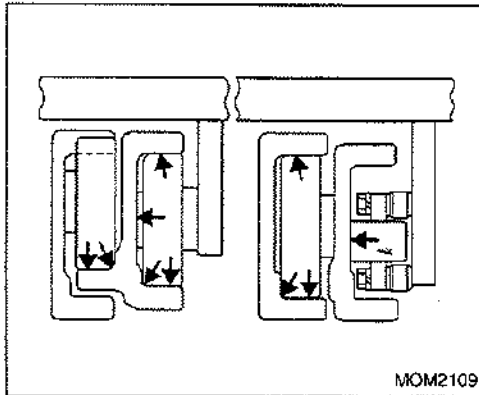
### Lift chain

Check the lift chain tension periodically. Set the fork level at a position 0.79 to 1.18 in (20 to 30 mm) from the ground and push the midpoint of the lift chain with a finger.

**Deflection:**  
0.98 to 1.38 in (25 to 35 mm)

If there is a difference between the right and left chain deflection, or if the deflection is not within the specified range, have the chain adjusted by your Local Authorized Dealer.

**WARNING:**  
Never put your foot under the fork during checking.



### Lubrication points

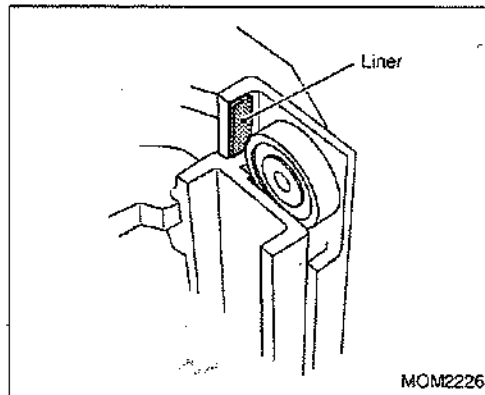
Lubricate the following points periodically in accordance with the Periodic Maintenance and Lubrication Schedule chart.

### Mast

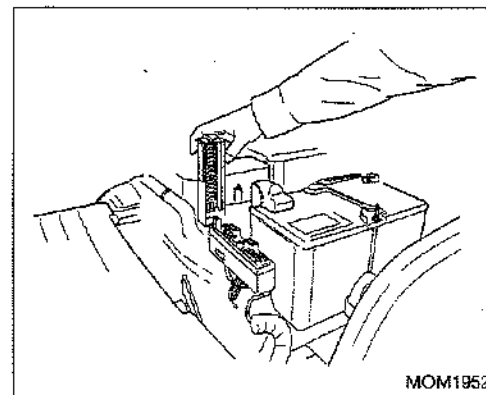
Apply a coat of grease to the thrust metals and liner.

#### 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.

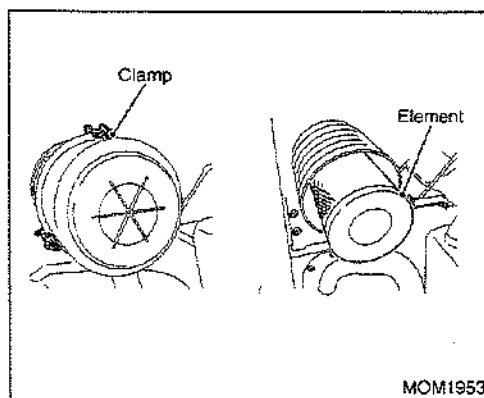


- When forklift is operated, apply a coat of grease to the contact surface of the lift roller and inner mast or outer mast.



### Fuses

The fuse box is installed in front of the battery under the top panel. Remove the fuse box cover and visually check if the fuse is blown. If the fuse is burned out, replace it.



#### 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 very low pressure 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. OSHA requires that air nozzles be used to reduce pressure to no more than 30 psi (2.1 kgf/cm<sup>2</sup>, 206 kPa).

# PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE FOR EMISSION CONTROL SYSTEM MAINTENANCE

**Engine Family Name: 7NSXB02.147C, 7NSXB02.548C Engine Model: K21, K25**

Before delivery of your new forklift, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance. The following tables list the servicing required to keep your forklift operating at peak mechanical condition, and should be attended to as indicated below, preferably by your Local Authorized Dealer.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL															
Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.	Months	1	2	3	4	5	6	7	8	9	10	11	12	.....	18		
	Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	.....	36		
ENGINE COMPARTMENT MAINTENANCE (EXCEPT LPG FUEL SYSTEM)																	
1. Intake & exhaust valve clearance (operating temp.)	A	A	A	A	A	A	A	A	A	A	A	A	A	.....	A		
2. Drive belt tension		I	I	I	I	I	I	I	I	I	I	I	I	.....	I		
3. Engine oil	(1)	R	R		R		R		R		R		R	.....	R		
4. Oil filter	(1)	R	R		R		R		R		R		R	.....	R		
5. Engine coolant (L.L.C.)													R	.....			
6. Air cleaner element	(1)	C	C	C	C	C	R	C	C	C	C	C	R	.....	R		
7. Spark plugs	(1)	I	I	I	I	I	I	I	I	I	I	I	I	.....	R		
8. PCV valve	(1)			I			I			I			I	.....	I		

**NOTE:** (1) More frequent maintenance is necessary under dusty or other dirty operating conditions.

**Abbreviations:** I = Inspect. Correct or replace if necessary. R = Replace A = Adjust C = Clean D = Drain

All items listed above must be maintained in order to meet and keep emission control systems operating at design levels. Failure to maintain the systems could compromise the warranty.

**For reference:** Normal operating conditions and time is based on a clean and dry environment and 1,200 hours or less in one year.



## CAUTION:

**For Units in the US:**

- Do not tamper with, destroy, remove or alter EPA/CARB label or valve (rocker) cover in any way. Doing so could violate EPA/CARB regulations and possibly void the warranty on your Nissan Forklift.
- Valve (rocker) cover may be removed for maintenance checks but the original cover must be installed as soon as maintenance checks are completed.
- You must notify your Local Authorized Dealer if either the Valve (Rocker) cover or label is damaged and needs to be replaced.

Revised: January 2011



**MAINTENANCE OPERATION**

Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.

Months

1 2 3 4 5 6 7 8 9 10 11 12 ..... 18

Hundreds of hours

2 4 6 8 10 12 14 16 18 20 22 24 ..... 36

**MAINTENANCE INTERVAL****ENGINE COMPARTMENT MAINTENANCE (LPG FUEL SYSTEM)**

1. Piping or pipe connector portion for gas leakage	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
2. Tar in vaporizer	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
3. Filter for LPG			C			C			C			R		C	

**NOTE: (1) More frequent maintenance is necessary under dusty or other dirty operating conditions.**

**Abbreviations:** I = Inspect. Correct or replace if necessary. R = Replace A = Adjust C = Clean D = Drain

All items listed above must be maintained in order to meet and keep emission control systems operating at design levels. Failure to maintain the systems could compromise the warranty.

**For reference:** Normal operating conditions and time is based on a clean and dry environment and 1,200 hours or less in one year.

# PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE FOR EMISSION CONTROL SYSTEM MAINTENANCE

## Engine Model: QD32

Before delivery of your new forklift, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance. The following tables list the servicing required to keep your forklift operating at peak mechanical condition, and should be attended to as indicated below, preferably by your Local Authorized Dealer.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL															
Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.	Months	1	2	3	4	5	6	7	8	9	10	11	12	.....	18		
	Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	.....	36		
ENGINE COMPARTMENT MAINTENANCE (EXCEPT LPG FUEL SYSTEM)																	
1. Intake & exhaust valve clearance (operating temp.)		A		A			A			A			A	.....	A		
2. Drive belt tension		I	I	I	I	I	I	I	I	I	I	I	I	.....	I		
3. Engine oil	(1)	R	R	R	R	R	R	R	R	R	R	R	R	.....	R		
4. Oil filter	(1)	R	R	R	R	R	R	R	R	R	R	R	R	.....	R		
5. Engine coolant (L.L.C.)													R	.....			
6. Water separator		D		D			D			D			R	.....	D		
7. Air cleaner element	(1)	I	I	R	I	I	R	I	I	R	I	I	R	.....	R		
8. Engine idle rpm	(1)	A	A	A	A	A	A	A	A	A	A	A	A	.....	A		
9. Nozzle	(2)						I						I	.....	I		

**NOTE: (1) More frequent maintenance is necessary under dusty or other dirty operating conditions.**

**(2) If engine power decreases, black exhaust smoke is emitted or engine noise increases before the maintenance period comes, check and, if necessary, adjust the fuel injection nozzle starting pressure and the fuel spray pattern.**

**Abbreviations:** I = Inspect. Correct or replace if necessary. R = Replace A = Adjust C = Clean D = Drain

All items listed above must be maintained in order to meet and keep emission control systems operating at design levels. Failure to maintain the systems could compromise the warranty.

**For reference:** Normal operating conditions and time is based on a clean and dry environment and 1,200 hours or less in one year.

## MAINTENANCE SCHEDULE

### CHASSIS AND BODY MAINTENANCE

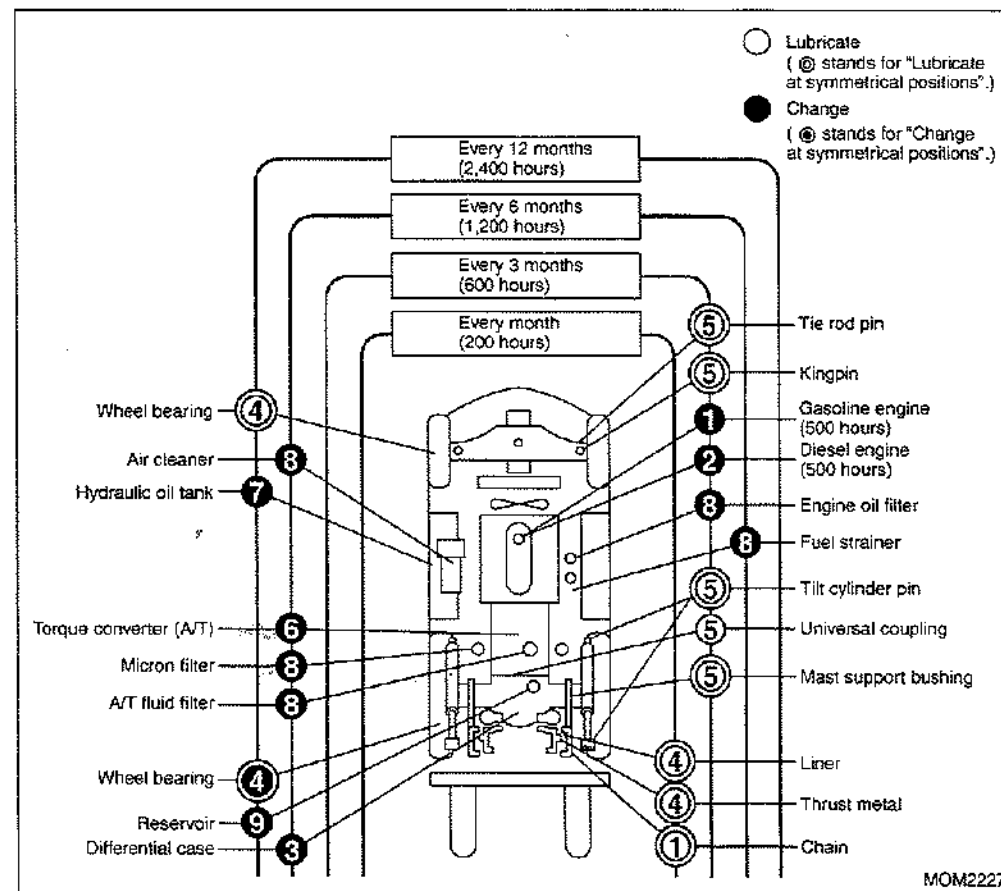
- The inspection/service items listed below are described in this chapter.
- The symbols in the timing column have the following meanings:
  - : Inspection/service in accordance with the occupational safety and health regulations
  - : Inspection/service recommended by Nissan Forklift
- The inspection/service timings shown below are based on the assumption that the forklift is operated for 200 hours in a month. When determining the inspection/service timing, take into account the actual working conditions of the forklift.

Inspection/service item	Working hours	Timing	
		Self-imposed inspection	
		Monthly	Annual
		200	2,400
1. Inspection of battery fluid level		○	●
2. Inspection of specific gravity of battery fluid		○	○
3. Inspection of automatic transmission fluid level		○	●
4. Inspection of A/T line pressure		6 months (every 1,200 working hours)	
5. Inspection of stall speed		If necessary	
6. Inspection of differential gear oil level (including inspection of manual transmission oil level)		If necessary	
7. Replacement of differential gear oil		6 months (every 1,200 working hours)	
8. Application of wheel bearing grease		12 months (every 2,400 working hours)	
9. Inspection of wheel bearing for looseness (inspection/adjustment of preload)		●	●
10. Adjustment of steering axle		If necessary	
11. Inspection of tire air pressure		●	●
12. Inspection of tire for wear		●	●
13. Inspection of wheel nut		●	●
14. Inspection of brake fluid level		●	●
15. Replacement of brake fluid		12 months (every 2,400 working hours)	
16. Inspection/adjustment of brake pedal		●	●

Inspection/service item		Timing	
		Self-imposed inspection	
		Monthly	Annual
	Working hours	200	2,400
17. Inspection/adjustment of inching brake pedal		○	●
18. Inspection of brake lining for wear			●
19. Adjustment of shoe clearance			●
20. Inspection/adjustment of hand brake operation effort			●
21. Inspection of steering wheel for play and looseness		●	●
22. Inspection of steering wheel operation effort		●	●
23. Inspection of steering system fluid pressure		If necessary	
24. Inspection of hydraulic fluid level		●	●
25. Replacement of hydraulic fluid		12 months (every 2,400 working hours)	
26. Replacement of micron filter		6 months (every 1,200 working hours)	
27. Cleaning of suction filter		12 months (every 2,400 working hours)	
28. Inspection of hydraulic pressure		If necessary	
29. Inspection of fork		●	●
30. Inspection of carriage height		If necessary	
31. Inspection/adjustment of lift chain tension		●	●
32. Inspection of carriage roller		If necessary	
33. Inspection/adjustment of mast roller		If necessary	
34. Adjustment of mast roller clearance		If necessary	
35. Inspection of mast operation		●	●
36. Inspection of cylinder operation		●	●
37. Inspection of cylinder		●	●
38. Applying grease		Refer to the lubrication schedule chart.	
39. Inspection/replacement of fuses		If necessary	
40. Bulb replacement		If necessary	

## LUBRICATION CHART

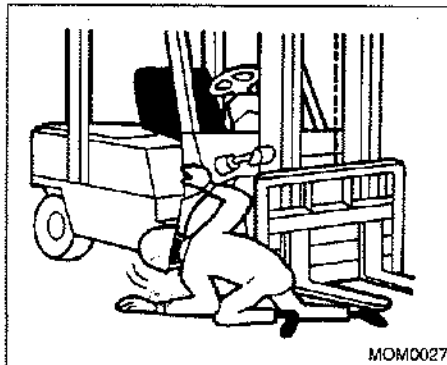
Item	Suitable oil	
	Below 60°F (16°C)	Above 60°F (16°C)
① Gasoline engine oil	Refer to page 97	Refer to page 97
② Diesel engine oil	Refer to page 97	Refer to page 97
③ Gear oil	SAE No. 90	SAE No. 140
④ W.B. grease	N.L.G.I. No. 2	
⑤ Chassis grease	N.L.G.I. No. 1	
⑥ A/T fluid	Dexron or M2C-33E-F	
⑦ Hyd. oil	I.S.O. VG32	
⑧ Replace or clean element		
⑨ Brake fluid	FMVSS DOT 3	



## 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.

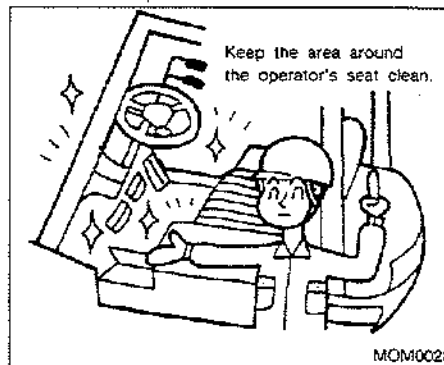
Be sure to observe the precautions for forklift storage.



### DAILY STORAGE

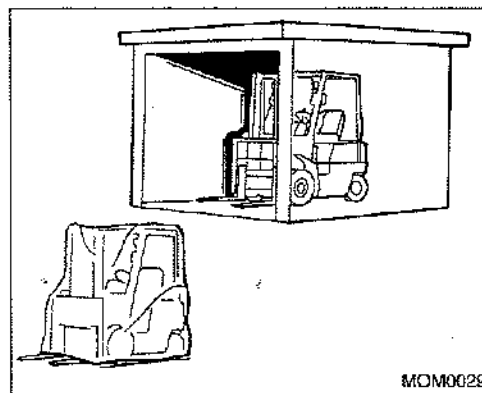
At the end of the working day, check the forklift. Always park it in the designated location. Put chocks under the tires to prevent the forklift from moving by itself. Check the forklift for water and oil leakages, and other malfunctions.

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 your Local Authorized Dealer to perform repairs. Do not operate the forklift until the malfunction is corrected.



MDM0029

## 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 gasoline engines and injection nozzles from diesel engines, 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 gasoline-engine forklifts [including dual fuel (LPG) forklifts] for a long period of time, idle the engine until all the gasoline is used up. Otherwise, the remaining gasoline 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.

### NOTE:

- When the forklift cannot be stored indoors, park it on level ground. Cover with a waterproof sheet or protective covering.
- When storing for a long period of time, be sure to consult your Local 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 gasoline engines and the injection nozzles from diesel engines, 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.


## DAILY CHECKS

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 67.

 **WARNING**  
Perform the daily checks as per "Daily Care" on page 78, and the applicable provisions of local laws and regulations.

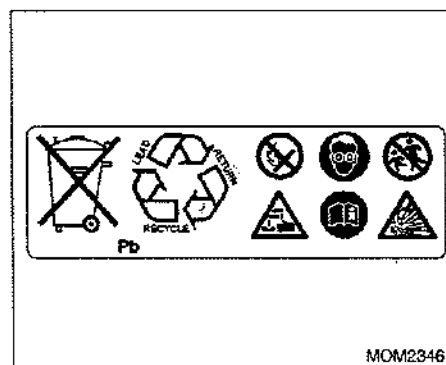
## NISSAN FORKLIFT GENUINE PARTS

 **CAUTION**  
When replacing NISSAN FORKLIFT parts (including lubricants), be sure to use Nissan Forklift genuine parts or the equivalents guaranteed by NISSAN FORKLIFT CO., LTD.

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



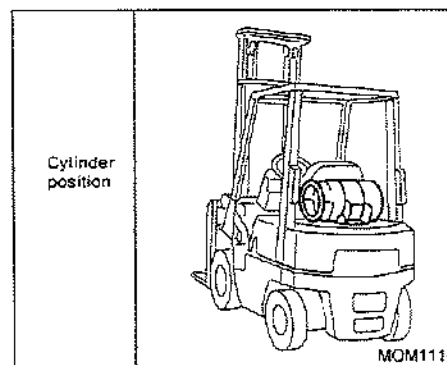
## DISPOSAL OF PARTS AND MATERIALS



### 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 with your Local Authorized Dealer.

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

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

- Never allow open flames or other sources of ignition in the area.
- Wear personal protective equipment (PPE) (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.

### Recommended LPG Fuel Type:

Nissan Forklift recommends the use of the HD5 LPG. Use of any other grade may cause the following: Increased emissions, increased maintenance, and decreased performance.

Nissan Forklift does not recommend any fuel system additives or cleaners.



## CYLINDER SIZE

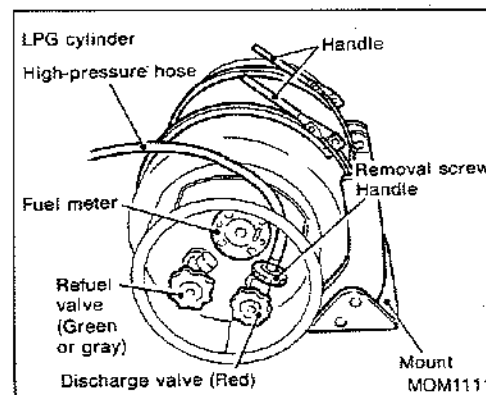
(1) Except US models

Cylinder size	Vehicle classification	Cylinder			
		Capacity	Weight	Diameter	Length
	2,000 to 4,000 lb (1.0 to 3.0 ton)	9-1/2 US gal, 7-7/8 Imp gal (36 ℓ)	33 lb (15 kg)	12.60 in (320 mm)	25.98 in (660 mm)

(2) US models (\*)

Cylinder size	Vehicle classification	Weight filled	Weight empty	Diameter	Length
	1 ton 1F1/C1F1	33 lb	33 lb	12"	27 1/4"
	2 to 3 ton 1F2 Standard	38 lb	33 lb	12"	27 1/4"
Optional	1F2 2 ton only	70 lb	43 lb	12"	33 5/16"

\*: Aluminum cylinder only, steel cylinder sizes may vary.



## LPG CYLINDER HANDLING INSTRUCTIONS (all except U.S. produced LPG cylinder unit)

### LPG cylinder replacement

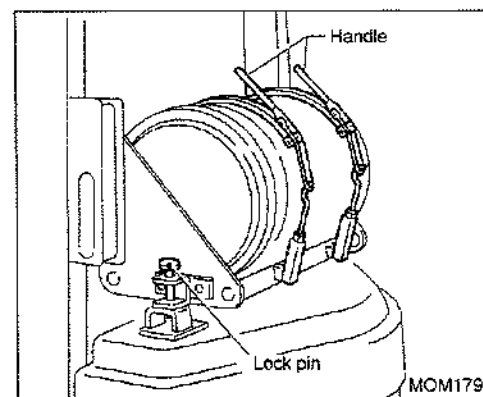
- WARNING**
- Replace the cylinder in a well ventilated area.
  - Never replace LPG cylinder near open flame, sparks or other ignition source.
  - Use LPG cylinders with the capacity shown in the table at left.

The cylinder is installed on the forklift with the discharge valve on the left side when viewed from the rear of the forklift. The high-pressure hose is connected to the discharge valve with a threaded screw type connector or a quick-coupling device. The LPG cylinder replacement procedure with the thread screw type device is described on pages 112 to 117 (these pages are for outside the US & Canada).

#### SWING-OPEN TYPE LPG CYLINDER MOUNT (option)

During forklift service procedures requiring opening of the top panel, the LPG cylinder mount must first be moved to prevent it from interfering with the operator's seat. The optional swing-open type cylinder mount provides easy and convenient cylinder mount movement. Follow the procedure outlined below to replace the LPG cylinder on swing-open type cylinder mount equipped vehicles.

1. The cylinder discharge valve is located on the right side when viewed from the rear of the forklift (swing-back mount equipped forklifts have the discharge valve on the left side). The disconnection procedure for the high-pressure hose and the LPG cylinder is the same for both the swing-back type mount and the swing-open type mount. Perform steps 1 and 2 as described under the item for the swing-back mount.



2. Loosen the handle and release it to allow the cylinder to drop.

**WARNING:**  
Do not attempt to replace the LPG cylinder with the mount in the open position. Replace the LPG cylinder only with the mount locked to the top of the counterweight.

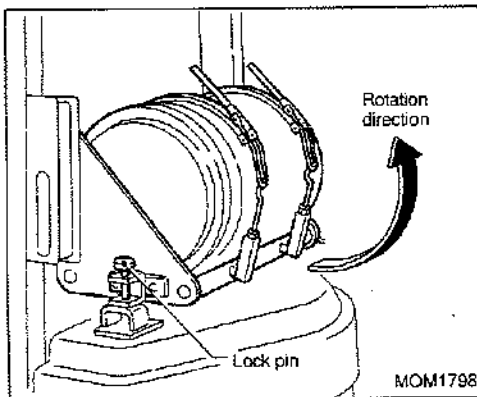
#### NOTE:

The cylinder is heavy. Hold the cylinder firmly during the replacement procedure.

Follow the removal procedure in the reverse order to install the new LPG cylinder.

**WARNING:**  
Connect the high-pressure hose to the cylinder taking care not to twist the hose.

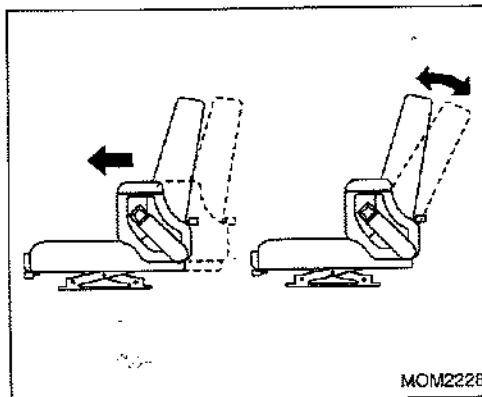
Make sure that the lock handle is in the locked position at the completion of the replacement procedure.



## OPENING LPG CYLINDER EQUIPPED FORKLIFT'S TOP PANEL

### Swing-open type:

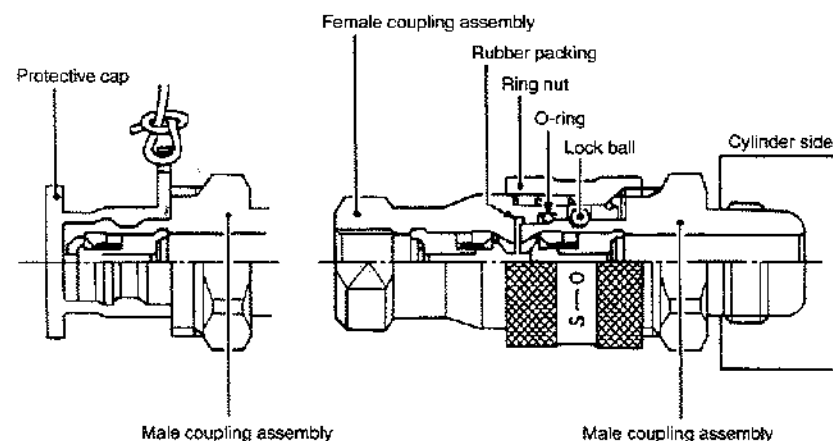
1. Lift the lock pin at the side of the LPG cylinder mount. Rotate the cylinder approximately 90 degrees toward the rear of the mount.
2. Open the top panel. Refer to "Top panel" on page 69.



### Swing-back type, slide type:

1. Release the lock lever for the LPG cylinder mount and tip the LPG cylinder backward (swing-back type) or pull out (slide type).
2. Slide the operator's seat to the frontmost position, fully incline the backrest forward and open the top panel. Refer to "Top panel" on page 69.

Quick coupling part nomenclature



## CYLINDER REPLACEMENT PROCEDURE WITH QUICK COUPLING

For Nissan Forklifts manufactured outside the U.S.:

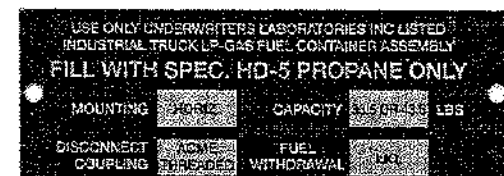
1. Turn the discharge valve (red) at the cylinder side to the right until the valve is completely closed.

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.

## Recommended LPG Fuel Type:

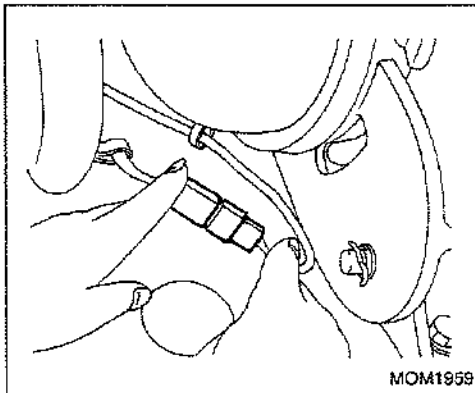
Nissan Forklift recommends the use of the HD5 LPG. Use of any other grade may cause the following: Increased emissions, increased maintenance, and decreased performance.

Nissan Forklift does not recommend any fuel system additives or cleaners.

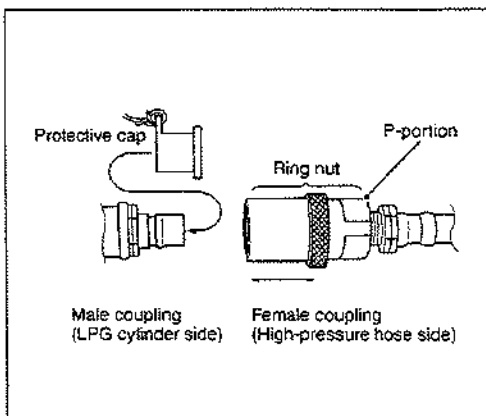


## WARNING:

- Do not strike the coupling with a mallet or similar object during the removal procedure. Doing so can result in coupling distortion, other damage and a fire hazard.
- Be sure to install the protective cap to the male assembly side cap ring after cylinder (container) removal.
- 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.



1. Disengage the connector of the LPG fuel meter (for NISSAN FORKLIFT manufactured outside the U.S.).



2. Hold part P of the female coupling on the high-pressure hose side with one hand and push it toward the shut-off valve, while sliding the locking part of the coupling toward the high-pressure hose with the other hand.

The male coupling on the LPG cylinder side and the female coupling repel each other and are detached with a snap by force of the springs in them. The couplings snap when they are disengaged.

3. Hold the female coupling and pull it out straight.

4. Put the supplied protective cap on the male coupling.

- When connecting the high-pressure hose to the LPG cylinder, remove the protective cap from the male coupling.

- Align the female coupling with the male coupling, and push the female coupling against the shut-off valve with the part P held with a hand. The locking part of the female coupling then automatically slides towards the high-pressure hose.

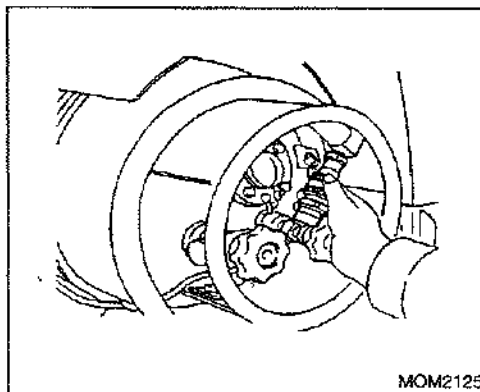
- When you further push the coupling against the valve, the locking part automatically slides and engages with the male coupling with a snap. (The couplings snap when they are engaged and locked to each other.) The connection of the high-pressure hose to the LPG cylinder is now complete.

- Slowly open the discharge valve to the full-open position. (Do not open the discharge valve quickly, because this may activate the pressure check valve so that the gas cannot flow properly.)

Place soapy water over the high-pressure hose connection to make sure that no gas leaks occur.

- After making sure that there are no gas leaks, turn the ignition switch to start the engine. If the engine does not start, the pressure check valve may activate to hamper the gas flow. In that case, turn the ignition switch to the OFF position, close the discharge valve, slowly open it and repeat step 1 above.

- If any malfunctions such as gas leaks are noted, close the discharge valve and have the LP gas system checked at your Local Authorized Dealer.



#### FOR AREAS OUTSIDE NORTH AMERICA

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.



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

- Be sure to install the protective cap to the male assembly side cap ring after cylinder (container) removal.

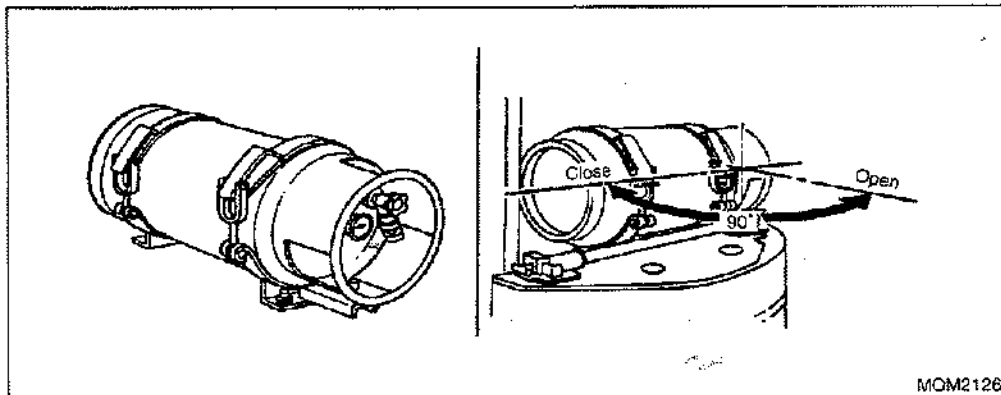
#### COUPLING CONNECTION PRECAUTIONS

- 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:



- 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.



Stationary type

Swing-open type

## CHANGING LPG CYLINDER

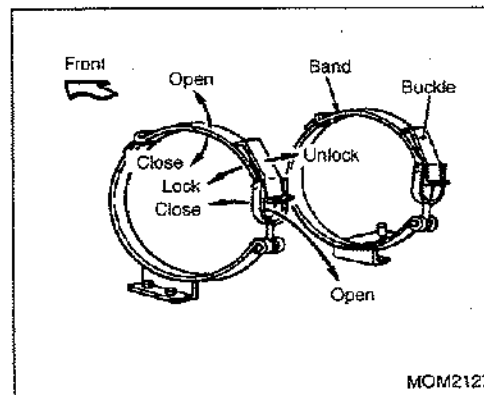
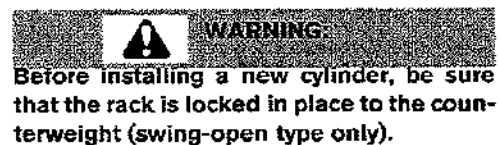
(U.S. manufactured models)

There are two types of LPG cylinder holders, as described below.

- (1) The stationary type is secured to the upper surface of the counterweight (1F2 and G1F2 series forklifts).
- (2) The other type is a swing-open type. It is opened 90° in the right rear direction (all except 1F2 and G1F2 series forklifts).

### NOTE:

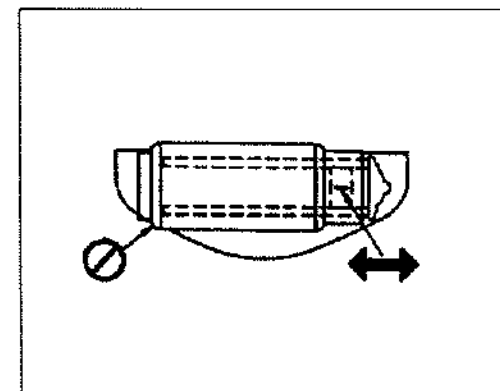
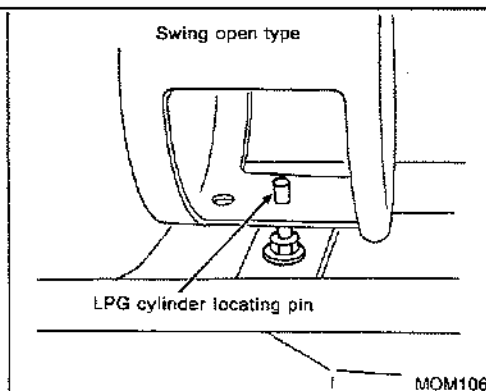
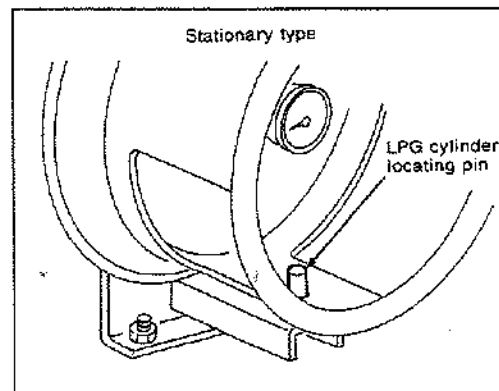
**The LPG cylinder removal and installation procedures are the same for both the stationary type and the swing-open type.**



## REMOVING LPG CYLINDER

1. Turn OFF (close) the cylinder valve while the engine is running.
2. When the engine stops, turn the ignition switch to the OFF position.
3. Slowly unthread the hose fitting.
4. Pull the buckle to unfasten it, and then put the tank clamp band over in the forward direction.
5. Remove the LPG cylinder from the holder.





## INSTALLING CYLINDER

1. Check the LPG hose and tubing for damage, and check areas for possible leakage. Notify your supervisor of any leaks.
2. Check the condition of the O-ring. Refer to page 117.
3. Lift the full cylinder into position.
4. Place the clamp band onto the LPG cylinder, and then lock with the buckle.

you have a firm grip on tank before lifting into holder.

- Make sure that the cylinder is in the correct locating pin, so it will be positioned correctly and not slip from holder.
- Make sure that the LPG cylinder is securely held in place by means of the handle and the high-pressure hose is free from twisting. This reduces stress on hose and tank fitting, and will keep tank in position and not damage hose.

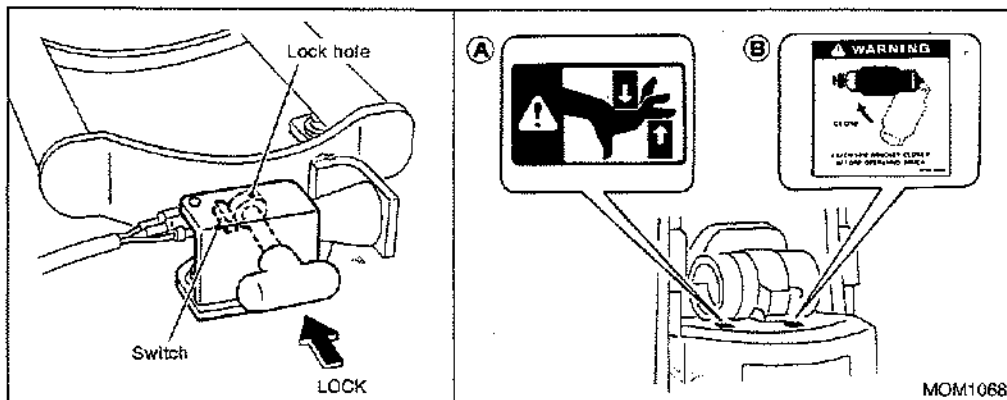
- Fuel tank locating pin must be properly positioned to eliminate fuel tank overhang.



### WARNING

- A full cylinder will be much heavier than the empty cylinder just removed, ensure

- Do not operate the forklift with the LPG fuel tank overhanging the frame of forklift. Damage to tank, serious injury or death may occur.



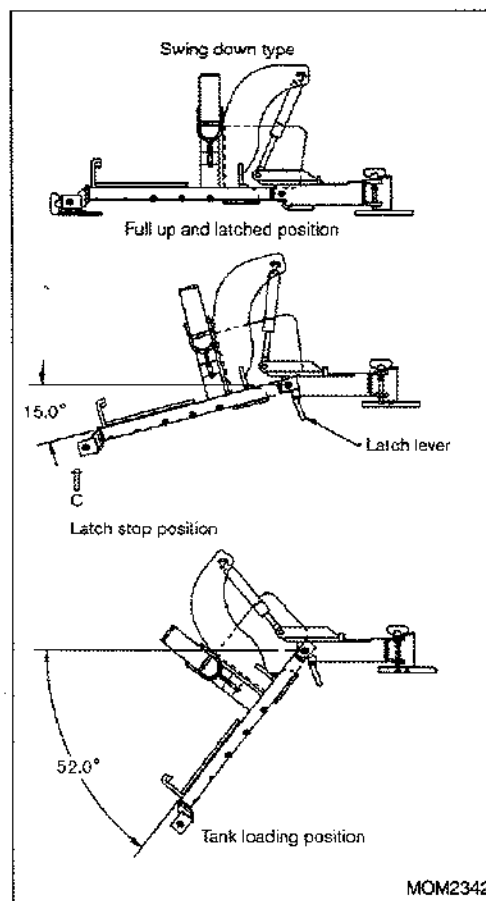
MOM1068

5. Connect the hose after the cylinder is locked into the normal operating position.
6. Turn on the valve and recheck for leaks.
7. Return safety equipment to storage.
8. While seated in the operator's seat, turn the ignition switch to the ON position.
9. Check if the cylinder bracket lock indicator light on the dash is off. (Refer to page 35.)

If the light is on, turn the key off and check that the swing mount is secured and locked.

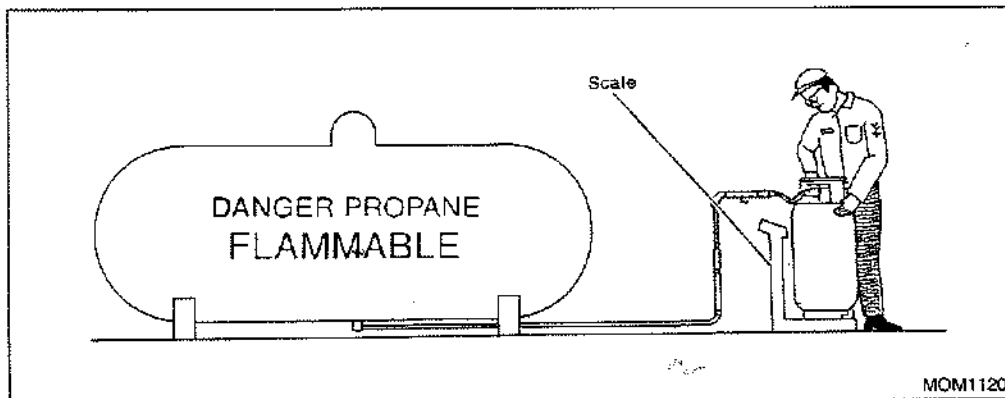
10. Check if the switch is damaged.

**WARNING:**  
Only authorized NISSAN FORKLIFT dealers should make repairs and/or adjustments to the switch, latch or bracket.



#### Operating procedure:

- A. To fully close the bracket, press down on the end of the bracket with the left hand, hold the latch lever up with the right hand, and release the bracket.
- B. The bracket must be in the full up position before rotating to the lock position on the forklift.
- C. A minimum force is required to lift the bracket to the full up position. Excessive force may cause damage if the latch lever is not released.



## 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.

## PERIODIC MAINTENANCE SCHEDULE

Before delivery of your new forklift, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance.

The following tables list the servicing required to keep your forklift operating at peak mechanical condition while meeting EPA & CARB Emission requirements, and should be attended to as indicated, preferably by your Local Authorized Dealer.

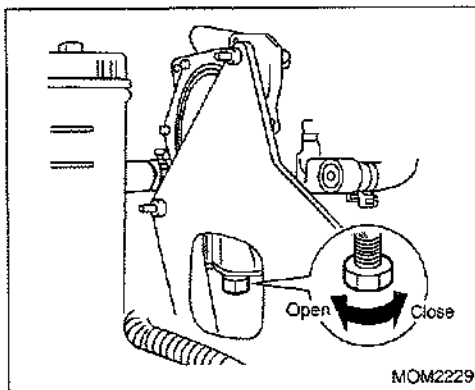
MAINTENANCE OPERATION		MAINTENANCE INTERVAL											
Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.	Months	1	2	3	4	5	6	7	8	9	10	11	12
	Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24
LPG FUEL SYSTEM													
1. Piping or pipe connector portion for gas leakage		I	I	I	I	I	I	I	I	I	I	I	I
2. Tar in vaporizer		D	D	D	D	D	D	D	D	D	D	D	D
3. Piping or pipe connector portion for damage		I	I	I	I	I	I	I	I	I	I	I	I
4. Mounting bracket of LPG cylinder for looseness or damage		I	I	I	I	I	I	I	I	I	I	I	I
5. Piping or pipe connector portion for gas leakage (1)													I
6. LPG Fuel Filters				C			C			C			R

**NOTE: (1) When the LPG cylinder is replaced, inspect pipe connectors for gas leakage with soapy water.**

**Abbreviations:** I = Inspect. Correct or replace if necessary. D = Drain C = Clean R = Replace

Also refer to Maintenance Schedule on page 105.

**NOTE: Nissan Forklift recommends a complete tear down, inspection, and resealing of the vaporizer before 6,000 hours of service. This maintenance is necessary for units that are not running the recommended HD5 grade LPG, or using an unknown fuel quality.**



### DRAINING OF TAR FROM THE VAPORIZER (LPG - gasoline dual fuel 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 69.
5. Put a cloth for collecting tar on the outlet.
6. For the valve cock type, open the purge valve cock. For the plug (bolt) type, slowly remove the plug.
7. Tar will drip. When it stops, the procedure is complete.
8. Close the purge valve cock or fix the purge plug (bolt). If tar adheres to 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 valve cock or plug, always wear protective gloves.

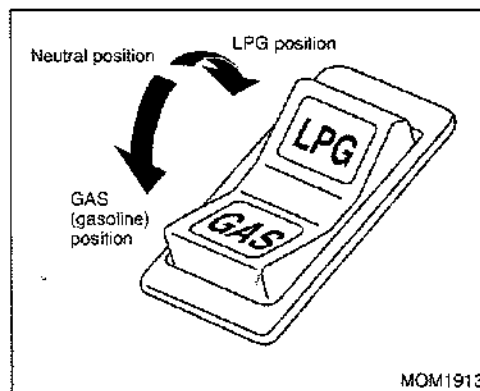
#### NOTE:

- If you removed the battery to gain access to the drain, it is necessary to do an "Idle Air Volume Relearn" see pages EC-49 and EC-50 in the Chassis Service Manual.
- Nissan Forklift recommends a complete tear down, inspection, and resealing of the vaporizer before 6,000 hours of service. This maintenance is necessary for units that are not running the recommended HD5 grade LPG, or using an unknown fuel quality.

#### Stopping

Gasoline engine vehicle:

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



### LPG - GASOLINE DUAL FUEL FORKLIFT

**WARNING:**  
Carefully follow the procedures below when turning the engine off after LPG operation:

1. Completely close the discharge valve (red).
2. Press the fuel-change switch to set the neutral position.
3. Let the engine idle until it stops.
4. Make sure that all of the remaining LPG (in the piping and other receptacles) has been used. After the engine stops, turn the ignition key to the OFF position.

- If the forklift is not used for several hours after the operation, park the forklift with the fuel-change switch set to the GAS position. This helps the engine start more easily the next time.
- After completion of operation and before storing the forklift for an extended period, completely close the discharge valve (red). Check the engine for gas leakage. Refer to "LPG cylinder replacement" on page 112.
- In the event of LPG leakage, an accident or some other malfunction, immediately and completely close the discharge valve (red). Have your LPG system checked at your Local Authorized Dealer.

NISSAN	
MODEL VARIATION	VEHICLE NO.
CHASSIS NO.	
MAKE	TYPE
ATTACHMENT	
TRUCK WEIGHT	K G
CAPACITY	
WITH MAST VERTICAL	MAX. LIFT HEIGHT
RATED CAPACITY	K G
LOW CENTER	500 700 900 mm
NISSAN MOTOR CO., LTD.	

MOM1966

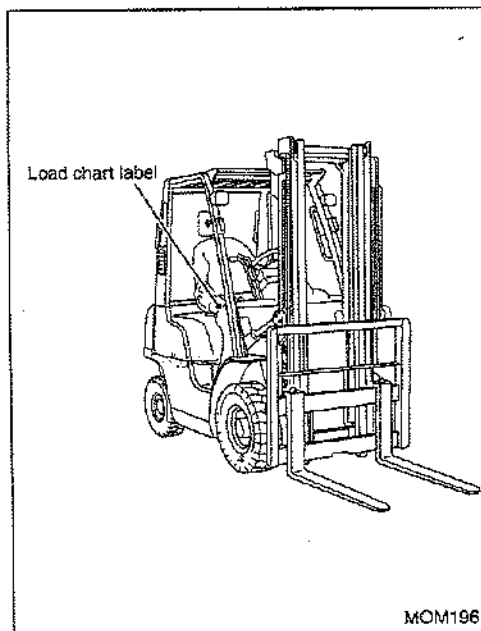
### LOAD CHART

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

**WARNING:**  
Do not exceed the rated capacity of the forklift.

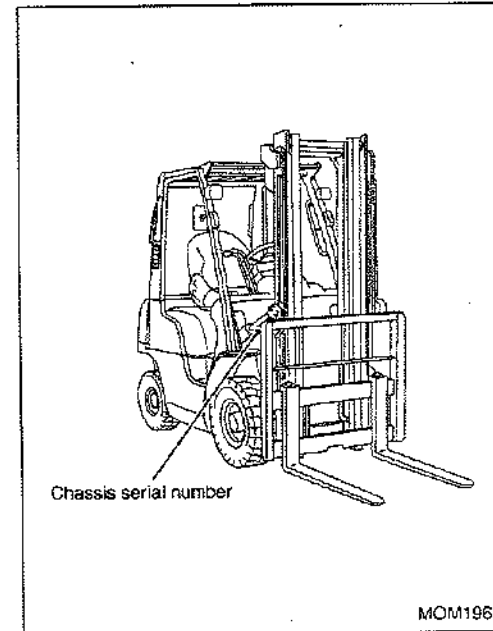
MADE IN THE U.S.A. <b>NISSAN</b> <b>CE</b>	
MODEL VARIATION	KW
CHASSIS NO.	
MAST	TIRE
ATTACHMENT	
TRUCK WEIGHT	KG
CAPACITY WITH MUST VERTICAL	
MAX. LIFT HEIGHT	mm
<b>RATED CAPACITY</b>	KG
LOAD CENTER	mm
NISSAN MOTOR CO.,LTD. 99070 ~	
MOM2230	

For countries where a forklift with the CE marking must be used.



#### LOAD CHART LABEL

The load chart label is attached to the right side of the front panel.

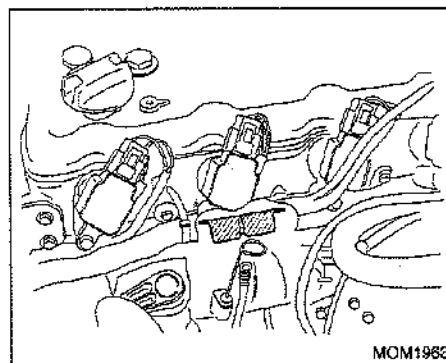


#### CHASSIS SERIAL NUMBER

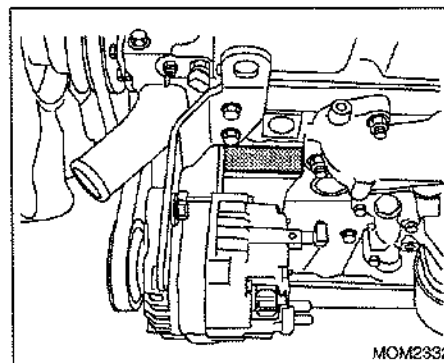
The chassis serial number is stamped on the front panel.



## IDENTIFICATION NUMBERS



GASOLINE ENGINE (K21, K25)



DIESEL ENGINE (QD32)

# SPECIFICATIONS

## Main Truck Specifications

1F1 series

Model			1.5 ton (3000 lb)	1.75 ton (3500 lb)	2.0 ton (4000 lb)
Item					
Load capacity		lb (kg)	3000 (1500)	3500 (1750)	4000 (2000)
Load center		in (mm)	24 (500)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)	130 (3300)
Free lift		in (mm)	6.2 (158)	6.2 (158)	6.2 (158)
Tilt angle	Forward	degree	5	5	5
	Backward	degree	12	12	12
Overall length (without fork length)		in (mm)	89.0 (2260)	90.2 (2290)	91.3 (2320)
Overall width	Single tire	in (mm)	41.9 (1065)	41.9 (1065)	41.9 (1065)
	Double tire	in (mm)	58.3 (1480)	58.3 (1480)	58.3 (1480)
Overall height	Mast (lowered)	in (mm)	84.5 (2145)	84.5 (2145)	84.5 (2145)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	83.3 (2115)	83.3 (2115)	83.3 (2115)
Wheelbase		in (mm)	55.1 (1400)	55.1 (1400)	55.1 (1400)
Front overhang		in (mm)	15.7 (400)	15.7 (400)	15.7 (400)
Rear overhang		in (mm)	18.1 (460)	19.3 (490)	20.5 (520)
Front tread	Single tire	in (mm)	35.0 (890)	35.0 (890)	35.0 (890)
	Double tire	in (mm)	43.1 (1095)	43.1 (1095)	43.1 (1095)
Rear tread		in (mm)	35.4 (900)	35.4 (900)	35.4 (900)
Minimum turning radius		in (mm)	76.2 (1935)	77.6 (1970)	79.1 (2010)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)	42.1 (1070)
Fork (width x thickness)		in (mm)	4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)
Ground clearance	Under mast	in (mm)	4.5 (115)	4.5 (115)	4.5 (115)
	Under power unit	in (mm)	5.3 (135)	5.3 (135)	5.3 (135)
	Under frame	in (mm)	5.9 (150)	5.9 (150)	5.9 (150)

# 1F1 series

Model				1.5 ton (3000 lb)	1.75 ton (3500 lb)	2.0 ton (4000 lb)
Item						
Lifting speed	2W lifting	Full load	FPM (mm/sec)	122.0 (520)	122.0 (520)	122.0 (520)
		No load	FPM (mm/sec)	127.9 (650)	127.9 (650)	127.9 (650)
	2F lifting	Full load	FPM (mm/sec)	108.2 (550)	108.2 (550)	108.2 (550)
		No load	FPM (mm/sec)	116.1 (590)	116.1 (590)	116.1 (590)
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)
		No load	FPM (mm/sec)	127.7 (650)	127.7 (650)	127.7 (650)
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)
		No load	FPM (mm/sec)	116.1 (590)	116.1 (590)	116.1 (590)
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	61.0 (310)	61.0 (310)	61.0 (310)
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	80.1 (405)	80.1 (405)	80.1 (405)
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	72.8 (370)	72.8 (370)	72.8 (370)
Travel speed	Forward	Full load	MPH (km/h)	11.5 (18.5)	11.5 (18.5)	11.5 (18.5)
		No load	MPH (km/h)	11.5 (18.5)	11.5 (18.5)	11.5 (18.5)
Drawbar pull	Full load (travel)	N		16450	16450	16450
		lb (kg)		3705 (1680)	3705 (1680)	3705 (1680)
	No load	N		11000	11750	13050
		lb (kg)		2470 (1120)	2646 (1200)	2932 (1330)
Gradeability	Full load (travel)	tanθ (%)		38	45	41
	No load	tanθ (%)		28	24	21
Truck weight (no load)	Single tire	lb (kg)		5810 (2635)	6175 (2800)	6505 (2950)
	Double tire	lb (kg)		6045 (2740)	6405 (2905)	2740 (3055)
ENGINE	Model			K21	K21	K21
	Displacement		cu in (cm <sup>3</sup> )	126 (2065)	126 (2065)	126 (2065)
	Rated output	SAE gross	HP (kW)/rpm	55 (41)/2700	55 (41)/2700	55 (41)/2700
	Rated torque	SAE gross	ft-lb (N-m)/rpm	111 (151)/1600	111 (151)/1600	111 (151)/1600

Item		Model	2.0 ton (4000 lb)	2.0 ton (4000 lb)	2.0 ton (4000 lb)
Load capacity	lb (kg)		4000 (2000)	4000 (2000)	4000 (2000)
Load center	in (mm)		24 (500)	24 (500)	24 (500)
Maximum fork height	in (mm)		130 (3300)	130 (3300)	130 (3300)
Free lift	in (mm)		6.1 (154)	6.1 (154)	6.1 (154)
Tilt angle	Forward	degree	6	6	6
	Backward	degree	12	12	12
Overall length (without fork length)	in (mm)		97.2 (2470)	97.2 (2470)	99.4 (2525)
Overall width	Single tire	in (mm)	45.3 (1150)	45.3 (1150)	45.3 (1150)
	Double tire	in (mm)	64.6 (1640)	64.6 (1640)	64.6 (1640)
Overall height	Mast (lowered)	in (mm)	84.4 (2145)	84.4 (2145)	84.4 (2145)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	83.5 (2120)	83.5 (2120)	83.5 (2120)
Wheelbase	in (mm)		63.0 (1600)	63.0 (1600)	63.0 (1600)
Front overhang	in (mm)		17.9 (455)	17.9 (455)	17.9 (455)
Rear overhang	in (mm)		16.3 (415)	16.3 (415)	18.5 (470)
Front tread	Single tire	in (mm)	37.8 (960)	37.8 (960)	37.8 (960)
	Double tire	in (mm)	47.4 (1205)	47.4 (1205)	47.4 (1205)
Rear tread	in (mm)		38.4 (975)	38.4 (975)	38.4 (975)
Minimum turning radius	Outside	in (mm)	83.5 (2120)	83.5 (2120)	83.5 (2120)
Fork length (standard)	in (mm)		42.1 (1070)	42.1 (1070)	42.1 (1070)
Fork (width x thickness)	in (mm)		4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)
Ground clearance	Under mast	in (mm)	4.5 (115)	4.5 (115)	4.5 (115)
	Under power unit	in (mm)	5.3 (135)	5.3 (135)	5.3 (135)
	Under frame	in (mm)	6.1 (155)	6.1 (155)	6.1 (155)

# 1F2 series

Model				2.0 ton (4000 lb)	2.0 ton (4000 lb)	2.0 ton (4000 lb)	
Item							
Lifting speed	2W lifting	Full load	FPM (mm/sec)	118.1 (500)	129.9 (560)	127.9 (560)	
		No load	FPM (mm/sec)	127.9 (550)	137.8 (700)	137.8 (700)	
	2F lifting	Full load	FPM (mm/sec)	110.2 (560)	122.0 (520)	120.0 (510)	
		No load	FPM (mm/sec)	122.0 (520)	131.9 (570)	129.9 (560)	
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	120.0 (510)	118.1 (500)	
		No load	FPM (mm/sec)	126.0 (540)	135.4 (595)	135.4 (595)	
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)	120.0 (510)	118.1 (500)	
		No load	FPM (mm/sec)	120.0 (510)	129.9 (560)	129.9 (560)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	59.0 (300)	59.0 (300)	59.0 (300)	
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	68.1 (345)	68.1 (345)	68.1 (345)	
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	64.9 (330)	64.9 (330)	64.9 (330)	
Travel speed	Forward	Full load	MPH (km/h)	11.8 (19)	11.8 (19)	11.8 (19)	
		No load	MPH (km/h)	11.8 (19)	11.8 (19)	11.8 (19)	
Drawbar pull	Full load (travel)		N	17050	18400	20000	
			lb (kg)	3836 (1740)	4145 (1880)	4497 (2040)	
	No load		N	15300	15300	16050	
			lb (kg)	3439 (1560)	3439 (1560)	3616 (1640)	
Gradeability	Full load (travel)		tanθ (%)	37	45	41	
	No load		tanθ (%)	28	28	28	
Truck weight (no load)	Single tire		lb (kg)	7145 (3240)	7145 (3240)	7400 (3355)	
	Double tire		lb (kg)	7355 (3335)	7355 (3335)	7610 (3450)	
ENGINE	Model			K21	K25	QD32	
	Displacement			cu in (cm <sup>3</sup> )	126 (2065)	152 (2488)	192 (3153)
	Rated output		SAE gross	HP (kW)/rpm	55 (41)/2700	63 (47)/2700	55 (41)/2000
	Rated torque		SAE gross	ft-lb (N-m)/rpm	111 (151)/1600	139 (188)/1600	144 (195)/2000

## 1F2 series

Model			2.5 ton (5000 lb)	2.5 ton (5000 lb)	2.5 ton (5000 lb)
Item					
Load capacity	lb (kg)		5000 (2500)	5000 (2500)	5000 (2500)
Load center	in (mm)		24 (500)	24 (500)	24 (500)
Maximum fork height	in (mm)		130 (3300)	130 (3300)	130 (3300)
Free lift	in (mm)		6.1 (154)	6.1 (154)	6.1 (154)
Tilt angle	Forward	degree	5	6	6
	Backward	degree	12	12	12
Overall length (without fork length)	in (mm)		99.4 (2525)	99.4 (2525)	99.4 (2525)
Overall width	Single tire	in (mm)	45.3 (1150)	45.3 (1150)	45.3 (1150)
	Double tire	in (mm)	64.6 (1640)	64.6 (1640)	64.6 (1640)
Overall height	Mast (lowered)	in (mm)	84.4 (2145)	84.4 (2145)	84.4 (2145)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	83.5 (2120)	83.5 (2120)	83.5 (2120)
Wheelbase	in (mm)		63.0 (1600)	63.0 (1600)	63.0 (1600)
Front overhang	in (mm)		17.9 (455)	17.9 (455)	17.9 (455)
Rear overhang	in (mm)		18.5 (470)	18.5 (470)	18.5 (470)
Front tread	Single tire	in (mm)	37.8 (960)	37.8 (960)	37.8 (960)
	Double tire	in (mm)	47.4 (1205)	47.4 (1205)	47.4 (1205)
Rear tread	in (mm)		38.4 (975)	38.4 (975)	38.4 (975)
Minimum turning radius	Outside	in (mm)	85.8 (2180)	85.8 (2180)	85.8 (2180)
Fork length (standard)	in (mm)		42.1 (1070)	42.1 (1070)	42.1 (1070)
Fork (width x thickness)	in (mm)		4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)	4 x 1.5 (100 x 40)
Ground clearance	Under mast	in (mm)	4.5 (115)	4.5 (115)	4.5 (115)
	Under power unit	in (mm)	5.3 (135)	5.3 (135)	5.3 (135)
	Under frame	in (mm)	6.1 (156)	6.1 (156)	6.1 (156)

# 1F2 series

Item				Model	2.5 ton (5000 lb)	2.5 ton (5000 lb)	2.5 ton (5000 lb)
Lifting speed	2W lifting	Full load	FPM (mm/sec)		118.1 (800)	129.9 (660)	127.9 (650)
		No load	FPM (mm/sec)		127.9 (850)	137.8 (700)	137.8 (700)
	2F lifting	Full load	FPM (mm/sec)		110.2 (560)	122.0 (620)	120.0 (610)
		No load	FPM (mm/sec)		122.0 (620)	131.9 (670)	129.9 (660)
	3F lifting	Full load	FPM (mm/sec)		110.2 (560)	120.0 (610)	118.1 (600)
		No load	FPM (mm/sec)		126.0 (640)	136.4 (685)	134.3 (680)
	3V lifting	Full load	FPM (mm/sec)		110.2 (560)	120.0 (610)	118.1 (600)
		No load	FPM (mm/sec)		120.0 (610)	129.9 (660)	127.9 (650)
Lowering speed	2W lifting	Full load	FPM (mm/sec)		98.4 (500)	98.4 (500)	98.4 (500)
		No load	FPM (mm/sec)		98.4 (500)	98.4 (500)	98.4 (500)
	2F lifting	Full load	FPM (mm/sec)		94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)		59.0 (300)	59.0 (300)	59.0 (300)
	3F lifting	Full load	FPM (mm/sec)		94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)		68.1 (345)	68.1 (345)	68.1 (345)
	3V lifting	Full load	FPM (mm/sec)		94.5 (480)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)		64.9 (330)	64.9 (330)	64.9 (330)
Travel speed	Forward	Full load	MPH (km/h)		11.8 (19)	11.8 (19)	11.8 (19)
		No load	MPH (km/h)		11.8 (19)	11.8 (19)	11.8 (19)
Drawbar pull	Full load (travel)	N			17050	18400	20000
		lb (kg)			3836 (1740)	4145 (1880)	4497 (2040)
	No load	N			15300	15300	17150
		lb (kg)			3439 (1560)	3439 (1560)	3858 (1750)
Gradeability	Full load (travel)	tanθ (%)			33	38	35
		tanθ (%)			24	24	24
Truck weight (no load)	Single tire		lb (kg)		7925 (3595)	7925 (3595)	8180 (3710)
	Double tire		lb (kg)		8140 (3690)	8140 (3690)	8395 (3805)
ENGINE	Model				K21	K25	OD32
	Displacement			cu in (cm <sup>3</sup> )	126 (2065)	152 (2488)	192 (3153)
	Rated output			SAE gross HP (kW)/rpm	55 (41)/2700	63 (47)/2700	55 (41)/2000
	Rated torque			SAE gross ft-lb (N-m)/rpm	111 (151)/1600	139 (188)/1600	144 (195)/2000

Model			2.75 ton (5500 lb)	3.0 ton (6000 lb)	3.0 ton (6000 lb)	3.5 ton (7000 lb)	3.5 ton (7000 lb)
Item							
Load capacity		lb (kg)	5500 (2750)	6000 (3000)	6000 (3000)	7000 (3500)	7000 (3500)
Load center		in (mm)	24 (500)	24 (500)	24 (500)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)	130 (3300)	130 (3300)	130 (3300)
Free lift		in (mm)	6.1 (154)	6.1 (154)	6.1 (154)	6.1 (154)	6.1 (154)
Tilt angle	Forward	degree	6	6	6	6	6
	Backward	degree	12	12	12	12	12
Overall length (without fork length)		in (mm)	103.4 (2625)	105.7 (2685)	105.7 (2685)	108.5 (2755)	108.5 (2755)
Overall width	Single tire	in (mm)	49.2 (1250)	49.2 (1250)	49.2 (1250)	50.4 (1280)	50.4 (1280)
	Double tire	in (mm)	65.6 (1665)	65.6 (1665)	65.6 (1665)	67.7 (1720)	67.7 (1720)
Overall height	Mast (lowered)	in (mm)	85.6 (2175)	85.6 (2175)	85.6 (2175)	91.1 (2315)	91.1 (2315)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.4 (4558)	179.4 (4558)	179.4 (4558)	179.4 (4558)
	Overhead guard	in (mm)	84.6 (2150)	84.6 (2150)	84.6 (2150)	84.8 (2155)	84.8 (2155)
Wheelbase		in (mm)	63.8 (1620)	66.9 (1700)	66.9 (1700)	66.9 (1700)	66.9 (1700)
Front overhang		in (mm)	19.1 (485)	19.1 (485)	19.1 (485)	19.3 (490)	19.3 (490)
Rear overhang		in (mm)	20.5 (520)	19.7 (500)	19.7 (500)	22.2 (565)	22.2 (565)
Front tread	Single tire	in (mm)	40.6 (1030)	40.6 (1030)	40.6 (1030)	41.7 (1060)	41.7 (1060)
	Double tire	in (mm)	47.6 (1210)	47.6 (1210)	47.6 (1210)	48.4 (1230)	48.4 (1230)
Rear tread		in (mm)	38.6 (980)	38.6 (980)	38.6 (980)	38.6 (980)	38.6 (980)
Minimum turning radius		Outside	in (mm)	90.6 (2300)	90.6 (2300)	94.1 (2390)	94.1 (2390)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)	42.1 (1070)	42.1 (1070)	42.1 (1070)
Fork (width x thickness)		in (mm)	4.8 x 2.0 (122 x 50)	4.8 x 2.0 (122 x 50)	4.8 x 2.0 (122 x 50)	4.8 x 2.0 (122 x 50)	4.8 x 2.0 (122 x 50)
Ground clearance	Under mast	in (mm)	5.7 (145)	5.7 (145)	5.7 (145)	5.9 (150)	5.9 (150)
	Under power unit	in (mm)	6.5 (165)	6.5 (165)	6.5 (165)	6.7 (170)	6.7 (170)
	Under frame	in (mm)	7.3 (185)	7.3 (185)	7.3 (185)	7.5 (190)	7.5 (190)



# 1F2 series

Model				2.75 ton (5500 lb)	3.0 ton (6000 lb)	3.0 ton (6000 lb)	3.5 ton (7000 lb)	3.5 ton (7000 lb)	
Item									
Lifting speed	2W lifting	Full load	FPM (mm/sec)	104.3 (530)	104.3 (530)	106.3 (540)	88.6 (450)	86.6 (440)	
		No load	FPM (mm/sec)	114.1 (580)	114.1 (580)	114.1 (580)	92.5 (470)	94.5 (480)	
	2F lifting	Full load	FPM (mm/sec)	102.3 (520)	102.3 (520)	104.3 (530)	82.7 (420)	80.7 (410)	
		No load	FPM (mm/sec)	112.2 (570)	112.2 (570)	112.2 (570)	86.6 (440)	88.6 (450)	
	3F lifting	Full load	FPM (mm/sec)	100.4 (510)	100.4 (510)	102.3 (520)	82.7 (420)	80.7 (410)	
		No load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)	86.6 (440)	88.6 (450)	
	3V lifting	Full load	FPM (mm/sec)	100.4 (510)	100.4 (510)	102.3 (520)	82.7 (420)	80.7 (410)	
		No load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)	86.6 (440)	88.6 (450)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	82.7 (420)	82.7 (420)	
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	70.8 (360)	70.8 (360)	
	2F lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	75.8 (390)	75.8 (390)	
		No load	FPM (mm/sec)	63.0 (320)	63.0 (320)	63.0 (320)	59.0 (300)	59.0 (300)	
	3F lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	75.8 (390)	75.8 (390)	
		No load	FPM (mm/sec)	70.8 (360)	70.8 (360)	70.8 (360)	59.0 (300)	59.0 (300)	
	3V lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	75.8 (390)	75.8 (390)	
		No load	FPM (mm/sec)	70.8 (360)	70.8 (360)	70.8 (360)	59.0 (300)	59.0 (300)	
Travel speed	Forward	Full load	MPH (km/h)	11.8 (19)	11.8 (19)	11.5 (18.5)	11.5 (18.5)	11.5 (18.5)	
		No load	MPH (km/h)	11.8 (19)	11.8 (19)	11.5 (18.5)	11.5 (18.5)	11.5 (18.5)	
Drawbar pull	Full load (travel)	N		18600	18600	19200	18000	18050	
		lb (kg)		4189 (1900)	4189 (1900)	4321 (1960)	4034 (1830)	4056 (1840)	
	No load	N		18050	18500	17150	17650	16350	
		lb (kg)		4057 (1840)	4166 (1890)	3858 (1750)	3958 (1800)	3682 (1670)	
Gradeability	Full load (travel)		tanθ (%)	37	31	26	26	23	
	No load		tanθ (%)	25	24	25	22	22	
Truck weight (no load)	Single tire		lb (kg)	8625 (4000)	9265 (4200)	9520 (4315)	10120 (4590)	10375 (4705)	
	Double tire		lb (kg)	9065 (4110)	9500 (4310)	9755 (4425)	10400 (4715)	10655 (4835)	
ENGINE	Model			K25	K25	QD32	K25	QD32	
	Displacement			cu in (cm <sup>3</sup> )	152 (2488)	152 (2488)	192 (3153)	192 (3153)	
	Rated output		SAE gross	HP (kW)/rpm	63 (47)/2700	63 (47)/2700	55 (41)/2000	63 (47)/2700	55 (41)/2000
	Rated torque		SAE gross	ft-lb (N-m)/rpm	139 (188)/1600	139 (188)/1600	144 (195)/2000	139 (188)/1600	144 (195)/2000

## C1F1 series

Item		Model	1.5 ton (3000 lb)	1.75 ton (3500 lb)	2.0 ton (4000 lb)
Load capacity	lb (kg)		3000 (1500)	3500 (1750)	4000 (2000)
Load center	in (mm)		24 (500)	24 (500)	24 (500)
Maximum fork height	in (mm)		130 (3300)	130 (3300)	130 (3300)
Free lift	in (mm)		4 (102)	4 (102)	4 (102)
Till angle	Forward	degree	5	5	5
	Backward	degree	10	10	10
Overall length (without fork length)	in (mm)		81.9 (2080)	83.1 (2110)	84.4 (2145)
Overall width	Single tire	in (mm)	38.2 (970)	38.2 (970)	38.2 (970)
Overall height	Mast (lowered)	in (mm)	82.9 (2105)	82.9 (2105)	82.9 (2105)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	81.1 (2060)	81.1 (2060)	81.1 (2060)
Wheelbase	in (mm)		46.9 (1190)	47.0 (1180)	46.9 (1190)
Front overhang	in (mm)		15.4 (390)	15.4 (390)	15.4 (390)
Rear overhang	in (mm)		19.7 (500)	20.9 (530)	22.2 (565)
Front tread	Single tire	in (mm)	32.3 (820)	32.3 (820)	32.3 (820)
Rear tread	in (mm)		32.3 (820)	32.3 (820)	32.3 (820)
Minimum turning radius	Outside	in (mm)	68.3 (1735)	69.5 (1765)	70.9 (1800)
Fork length (standard)	in (mm)		42.1 (1070)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	3.0 (75)	3.0 (75)	3.0 (75)
	Under power unit	in (mm)	2.6 (65)	2.6 (65)	2.6 (65)
	Under frame	in (mm)	4.3 (110)	4.3 (110)	4.3 (110)

# C1F1 series

Item				Model	1.5 ton (3000 lb)	1.75 ton (3500 lb)	2.0 ton (4000 lb)
Lifting speed	2W lifting	Full load	FPM (mm/sec)	122.0 (620)	122.0 (620)	122.0 (620)	
		No load	FPM (mm/sec)	127.9 (650)	127.9 (650)	127.9 (650)	
	2F lifting	Full load	FPM (mm/sec)	108.2 (550)	108.2 (550)	108.2 (550)	
		No load	FPM (mm/sec)	112.2 (570)	116.1 (590)	116.1 (590)	
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)	
		No load	FPM (mm/sec)	127.7 (650)	127.7 (650)	127.7 (650)	
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	110.2 (560)	
		No load	FPM (mm/sec)	116.1 (590)	116.1 (590)	116.1 (590)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	61.0 (310)	61.0 (310)	
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	67.1 (340)	67.1 (340)	67.1 (340)	
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	61.0 (310)	61.0 (310)	
Travel speed	Forward	Full load	MPH (km/h)	10.9 (17.5)	10.9 (17.5)	10.9 (17.5)	
		No load	MPH (km/h)	10.9 (17.5)	10.9 (17.5)	10.9 (17.5)	
Drawbar pull	Full load (travel)		lb (kg)	3417 (1550)	3417 (1550)	3417 (1550)	
	No load		lb (kg)	1543 (700)	1543 (700)	1543 (700)	
Gradeability	Full load (travel)		tanθ (%)	38	38	38	
	No load		tanθ (%)	20	18	16	
Truck weight (no load)			lb (kg)	5980 (2710)	6420 (2910)	6830 (3100)	
ENGINE	Model			K21	K21	K21	
	Displacement			cu in (cm <sup>3</sup> )	126 (2065)	126 (2065)	
	Rated output		SAE gross HP (kW)/rpm	55 (41)/2700	55 (41)/2700	55 (41)/2700	
	Rated torque		SAE gross ft-lb (N-m)/rpm	111 (151)/1600	111 (151)/1600	111 (151)/1600	

## C1F2 series

Item		Model	2.0 ton (4000 lb)	
Load capacity		lb (kg)	4000 (2000)	4000 (2000)
Load center		in (mm)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)
Free lift		in (mm)	4.2 (106)	4.2 (106)
Tilt angle	Forward	degree	5	5
	Backward	degree	10	10
Overall length (without fork length)		in (mm)	89.0 (2260)	89.0 (2260)
Overall width		Single tire	42.1 (1070)	42.1 (1070)
Overall height	Mast (lowered)	in (mm)	83.1 (2110)	83.1 (2110)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	82.1 (2085)	82.1 (2085)
Wheelbase		in (mm)	55.1 (1400)	55.1 (1400)
Front overhang		in (mm)	16.1 (410)	16.1 (410)
Rear overhang		in (mm)	17.7 (450)	17.7 (450)
Front tread	Single tire	in (mm)	35.0 (890)	35.0 (890)
	Wide tread	in (mm)	36.0 (915)	36.0 (915)
Rear tread		in (mm)	35.0 (890)	35.0 (890)
Minimum turning radius		Outside	76.0 (1930)	76.0 (1930)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	3.1 (80)	3.1 (80)
	Under power unit	in (mm)	4.1 (105)	4.1 (105)
	Under frame	in (mm)	5.5 (140)	5.5 (140)

# C1F2 series

Item				Model		2.0 ton (4000 lb)	
Lifting speed	2W lifting	Full load	FPM (mm/sec)	122.0 (620)		129.9 (660)	
		No load	FPM (mm/sec)	127.9 (650)		137.8 (700)	
	2F lifting	Full load	FPM (mm/sec)	108.2 (550)		122.0 (620)	
		No load	FPM (mm/sec)	116.1 (590)		131.9 (670)	
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)		120.0 (610)	
		No load	FPM (mm/sec)	121.9 (620)		136.4 (695)	
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)		120.0 (610)	
		No load	FPM (mm/sec)	116.1 (590)		129.9 (660)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)		98.4 (500)	
		No load	FPM (mm/sec)	98.4 (500)		98.4 (500)	
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)		94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)		59.0 (300)	
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)		94.5 (480)	
		No load	FPM (mm/sec)	68.9 (350)		68.9 (350)	
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)		94.5 (480)	
		No load	FPM (mm/sec)	64.9 (330)		64.9 (330)	
Travel speed	Forward	Full load	MPH (km/h)	10.6 (17)		10.6 (17)	
		No load	MPH (km/h)	10.6 (17)		10.6 (17)	
Drawbar pull	Full load (travel)		lb (kg)	3638 (1650)		4189 (1900)	
	No load		lb (kg)	1870 (850)		1874 (850)	
Gradeability	Full load (travel)		tanθ (%)	33		39	
	No load		tanθ (%)	21		21	
Truck weight (no load)			lb (kg)	7130 (3235)		7130 (3235)	
ENGINE	Model			K21		K26	
	Displacement		cu in (cm³)	126 (2066)		152 (2488)	
	Rated output	SAE gross	HP (kW)/rpm	55 (41)/2700		63 (47)/2700	
	Rated torque	SAE gross	ft-lb (N-m)/rpm	111 (151)/1600		139 (188)/1600	

## CTF2 series

Item		Model	2.5 ton (5000 lb)	
Load capacity		lb (kg)	5000 (2500)	5000 (2500)
Load center		in (mm)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)
Free lift		in (mm)	4.2 (106)	4.2 (106)
Tilt angle	Forward	degree	5	5
	Backward	degree	10	10
Overall length (without fork length)		in (mm)	91.3 (2320)	91.3 (2320)
Overall width		Single tire	42.1 (1070)	42.1 (1070)
Overall height	Mast (lowered)	in (mm)	83.1 (2110)	83.1 (2110)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	82.1 (2085)	82.1 (2085)
Wheelbase		in (mm)	55.1 (1400)	55.1 (1400)
Front overhang		in (mm)	16.1 (410)	16.1 (410)
Rear overhang		in (mm)	20.1 (510)	20.1 (510)
Front tread	Single tire	in (mm)	35.0 (890)	35.0 (890)
	Wide tread	in (mm)	36.0 (915)	36.0 (915)
Rear tread		in (mm)	35.0 (890)	35.0 (890)
Minimum turning radius		Outside	78.3 (1990)	78.3 (1990)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	3.1 (80)	3.1 (80)
	Under power unit	in (mm)	4.1 (105)	4.1 (105)
	Under frame	in (mm)	5.5 (140)	5.5 (140)

# C1F2 series

Model				2.5 ton (5000 lb)	
Item					
Lifting speed	2W lifting	Full load	FPM (mm/sec)	118.1 (800)	129.9 (660)
		No load	FPM (mm/sec)	127.9 (650)	137.8 (700)
	2F lifting	Full load	FPM (mm/sec)	110.2 (560)	122.0 (620)
		No load	FPM (mm/sec)	122.0 (620)	131.9 (670)
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	120.0 (610)
		No load	FPM (mm/sec)	126.0 (640)	136.8 (695)
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)	120.0 (610)
		No load	FPM (mm/sec)	120.0 (610)	129.9 (660)
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	59.0 (300)	59.0 (300)
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	68.1 (345)	68.1 (345)
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)
		No load	FPM (mm/sec)	64.9 (330)	64.9 (330)
Travel speed	Forward	Full load	MPH (km/h)	10.8 (17)	10.6 (17)
		No load	MPH (km/h)	10.6 (17)	10.6 (17)
Drawbar pull	Full load (travel)		lb (kg)	3638 (1650)	4189 (1900)
	No load		lb (kg)	1764 (800)	1764 (800)
Gradeability	Full load (travel)		tanθ (%)	28	33
	No load		tanθ (%)	15	15
Truck weight (no load)			lb (kg)	7940(3600)	7940 (3600)
ENGINE	Model			K21	K25
	Displacement		cu in (cm <sup>3</sup> )	126 (2065)	152 (2488)
	Rated output	SAE gross	HP (kW)/rpm	55 (41)/2700	63 (47)/2700
	Rated torque	SAE gross	ft-lb (N·m)/rpm	111 (151)/1600	139 (188)/1600

## CTF2 series

Item		Model	2.75 ton (5500 lb)		3.0 ton (6000 lb)	3.25 ton (6500 lb)
Load capacity		lb (kg)	5500 (2750)	5500 (2750)	6000 (3000)	6500 (3250)
Load center		in (mm)	24 (500)	24 (500)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)	130 (3300)	122 (3100)
Free lift		in (mm)	6.7 (170)	6.7 (170)	7.1 (180)	7.1 (180)
Tilt angle	Forward	degree	5	5	5	5
	Backward	degree	10	10	10	10
Overall length (without fork length)		in (mm)	93.9 (2385)	93.9 (2385)	95.3 (2420)	96.3 (2445)
Overall width	Single tire	in (mm)	43.1 (1095)	43.1 (1095)	43.1 (1095)	43.9 (1115)
Overall height	Mast (lowered)	in (mm)	82.7 (2100)	82.7 (2100)	82.7 (2100)	82.7 (2100)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)	179.3 (4555)	178.5 (4535)
	Overhead guard	in (mm)	82.1 (2085)	82.1 (2085)	82.1 (2085)	82.1 (2085)
Wheelbase		in (mm)	55.1 (1400)	55.1 (1400)	55.1 (1400)	55.1 (1400)
Front overhang		in (mm)	17.3 (440)	17.3 (440)	17.7 (450)	17.7 (450)
Rear overhang		in (mm)	21.5 (545)	21.5 (545)	22.4 (570)	23.4 (595)
Front tread	Single tire	in (mm)	35.8 (910)	35.8 (910)	35.8 (910)	35.9 (910)
	Wide tread	in (mm)	37.0 (940)	37.0 (940)	37.0 (940)	37.0 (940)
Rear tread		in (mm)	35.0 (890)	35.0 (890)	35.0 (890)	35.0 (890)
Minimum turning radius	Outside	in (mm)	79.5 (2020)	79.5 (2020)	80.7 (2050)	81.5 (2070)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	2.8 (70)	2.8 (70)	2.8 (70)	2.8 (70)
	Under power unit	in (mm)	3.5 (90)	3.5 (90)	3.5 (90)	3.5 (90)
	Under frame	in (mm)	5.5 (140)	5.5 (140)	5.5 (140)	5.5 (140)



C1F2 series

Model				2.75 ton (5500 lb)		3.0 ton (6000 lb)	3.25 ton (6500 lb)	
Item								
Lifting speed	2H lifting	Full load	FPM (mm/sec)	94.5 (480)	104.3 (530)	104.3 (530)	88.6 (450)	
		No load	FPM (mm/sec)	102.4 (520)	110.2 (560)	110.2 (560)	92.5 (470)	
	2F lifting	Full load	FPM (mm/sec)	92.5 (470)	102.4 (520)	102.4 (520)	82.7 (420)	
		No load	FPM (mm/sec)	100.4 (510)	112.2 (570)	112.2 (570)	86.6 (440)	
	3F lifting	Full load	FPM (mm/sec)	90.6 (460)	100.4 (510)	100.4 (510)	82.7 (420)	
		No load	FPM (mm/sec)	98.4 (500)	110.2 (560)	110.2 (560)	86.6 (440)	
	3V lifting	Full load	FPM (mm/sec)	90.6 (460)	100.4 (510)	100.4 (510)	82.7 (420)	
		No load	FPM (mm/sec)	98.4 (500)	110.2 (560)	110.2 (560)	86.6 (440)	
Lowering speed	2H lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	82.7 (420)	
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	98.4 (500)	70.9 (360)	
	2F lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	76.8 (390)	
		No load	FPM (mm/sec)	63.0 (320)	63.0 (320)	63.0 (320)	59.1 (300)	
	3F lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	76.8 (390)	
		No load	FPM (mm/sec)	70.9 (360)	70.9 (360)	70.9 (360)	59.1 (300)	
	3V lifting	Full load	FPM (mm/sec)	92.5 (470)	92.5 (470)	92.5 (470)	76.8 (390)	
		No load	FPM (mm/sec)	70.9 (360)	70.9 (360)	70.9 (360)	59.1 (300)	
Travel speed	Forward	Full load	MPH (km/h)	10.6 (17)	10.6 (17)	10.6 (17)	10.6 (17)	
		No load	MPH (km/h)	10.6 (17)	10.6 (17)	10.6 (17)	10.6 (17)	
Drawbar pull	Full load (travel)		lb (kg)	3638 (1650)	4189 (1900)	4189 (1900)	4189 (1900)	
	No load		lb (kg)	1653 (750)	1653 (750)	1764 (800)	1764 (800)	
Gradeability	Full load (travel)		tanθ (%)	27	32	28	24	
	No load		tanθ (%)	16	16	16	16	
Truck weight (no load)			lb (kg)	8860 (4015)	8860 (4015)	9350 (4240)	9825 (4455)	
ENGINE	Model			K21	K25	K25	K25	
	Displacement			cu in (cm <sup>3</sup> )	126 (2065)	152 (2488)	152 (2488)	152 (2488)
	Rated output		SAE gross	HP (kW)/rpm	55 (41)/2700	63 (47)/2700	63 (47)/2700	63 (47)/2700
	Rated torque		SAE gross	ft-lb (N-m)/rpm	111 (151)/1600	139 (188)/1600	139 (188)/1600	139 (188)/1600

Item		Model	3.0 ton (6000 lb)	3.5 ton (7000 lb)	3.6 ton (8000 lb)
Load capacity		lb (kg)	6000 (3000)	7000 (3500)	8000 (3600)
Load center		in (mm)	24 (500)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	122 (3100)	122 (3100)
Free lift		in (mm)	7.1 (180)	7.1 (180)	7.1 (180)
Tilt angle	Forward	degree	5	5	5
	Backward	degree	10	10	10
Overall length (without fork length)		in (mm)	96.5 (2450)	98.2 (2495)	100 (2540)
Overall width		in (mm)	43.9 (1115)	45.9 (1165)	45.9 (1165)
Overall height	Mast (lowered)	in (mm)	83.1 (2110)	83.1 (2110)	83.1 (2110)
	Mast (extended) with backrest	in (mm)	175.0 (4445)	178.7 (4540)	178.7 (4540)
	Overhead guard	in (mm)	82.3 (2090)	82.3 (2090)	82.3 (2090)
Wheelbase		in (mm)	59.1 (1500)	59.1 (1500)	59.1 (1500)
Front overhang		in (mm)	17.1 (435)	17.9 (455)	17.9 (455)
Rear overhang		in (mm)	20.1 (510)	21.3 (540)	23.0 (585)
Front tread	Single tire	in (mm)	35.8 (910)	37.0 (940)	37.0 (940)
	Wide tread	in (mm)	37.0 (940)	40.7 (1035)	40.7 (1035)
Rear tread		in (mm)	36.6 (930)	38.6 (980)	36.6 (930)
Minimum turning radius		in (mm)	80.9 (2055)	82.5 (2095)	83.9 (2130)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	3.1 (80)	3.1 (80)	3.1 (80)
	Under power unit	in (mm)	3.7 (95)	3.7 (95)	3.7 (95)
	Under frame	in (mm)	5.7 (145)	5.7 (145)	5.7 (145)

# C1F2 series

Item				Model	3.0 ton (6000 lb)	3.5 ton (7000 lb)	3.8 ton (8000 lb)
Lifting speed	2H lifting	Full load	FPM (mm/sec)	104.3 (530)	88.6 (450)	88.6 (450)	
		No load	FPM (mm/sec)	110.2 (560)	92.5 (470)	92.5 (470)	
	2F lifting	Full load	FPM (mm/sec)	102.4 (520)	82.7 (420)	82.7 (420)	
		No load	FPM (mm/sec)	112.2 (570)	86.6 (440)	86.6 (440)	
	3F lifting	Full load	FPM (mm/sec)	100.4 (510)	82.7 (420)	82.7 (420)	
		No load	FPM (mm/sec)	110.2 (560)	86.6 (440)	86.6 (440)	
	3V lifting	Full load	FPM (mm/sec)	100.4 (510)	82.7 (420)	82.7 (420)	
		No load	FPM (mm/sec)	110.2 (560)	86.6 (440)	86.6 (440)	
Lowering speed	2H lifting	Full load	FPM (mm/sec)	98.4 (500)	82.7 (420)	82.7 (420)	
		No load	FPM (mm/sec)	98.4 (500)	70.9 (360)	70.9 (360)	
	2F lifting	Full load	FPM (mm/sec)	92.5 (470)	76.8 (390)	76.8 (390)	
		No load	FPM (mm/sec)	63.0 (320)	59.1 (300)	59.1 (300)	
	3F lifting	Full load	FPM (mm/sec)	92.5 (470)	76.8 (390)	76.8 (390)	
		No load	FPM (mm/sec)	70.9 (360)	59.1 (300)	59.1 (300)	
	3V lifting	Full load	FPM (mm/sec)	92.5 (470)	76.8 (390)	76.8 (390)	
		No load	FPM (mm/sec)	70.9 (360)	59.1 (300)	59.1 (300)	
Travel speed	Forward	Full load	MPH (km/h)	1st: 6.2 (10), 2nd: 11.5 (18.5)	1st: 6.2 (10), 2nd: 11.5 (18.5)	1st: 6.2 (10), 2nd: 11.5 (18.5)	
		No load	MPH (km/h)	1st: 6.2 (10), 2nd: 11.5 (18.5)	1st: 6.2 (10), 2nd: 11.5 (18.5)	1st: 6.2 (10), 2nd: 11.5 (18.5)	
Drawbar pull	Full load (travel)		lb (kg)	3009 (1365)	6228 (2825)	6228 (2825)	
	No load		lb (kg)	2535 (1150)	2425 (1100)	2425 (1100)	
Gradeability	Full load (travel)		tanθ (%)	44	38	34	
	No load		tanθ (%)	18	18	15	
Truck weight (no load)			lb (kg)	9610 (4360)	10460 (4740)	11150 (5055)	
ENGINE	Model			K25	K25	K25	
	Displacement		cu in (cm <sup>3</sup> )	152 (2488)	152 (2488)	152 (2488)	
	Rated output		SAE gross HP (kW)/rpm	63 (47)/2700	63 (47)/2700	63 (47)/2700	
	Rated torque		SAE gross ft-lb (N-m)/rpm	139 (188)/1600	139 (188)/1600	139 (188)/1600	

Item		Model	1.5 ton (3000 lb)	1.75 ton (3500 lb)
Load capacity		lb (kg)	3000 (1500)	3500 (1750)
Load center		in (mm)	24 (500)	24 (500)
Maximum fork height		in (mm)	130 (3300)	130 (3300)
Free lift		in (mm)	6.2 (158)	6.2 (158)
Tilt angle	Forward	degree	5	5
	Backward	degree	10	10
Overall length (without fork length)		in (mm)	83.9 (2130)	88.2 (2160)
Overall width		Single tire in (mm)	40.7 (1035)	40.7 (1035)
Overall height	Mast (lowered)	in (mm)	84.3 (2140)	84.3 (2140)
	Mast (extended) with backrest	in (mm)	179.3 (4555)	179.3 (4555)
	Overhead guard	in (mm)	83.0 (2108)	82.7 (2100)
Wheelbase		in (mm)	50.8 (1290)	50.8 (1290)
Front overhang		in (mm)	15.4 (390)	15.4 (390)
Rear overhang		in (mm)	17.7 (450)	18.9 (480)
Front tread	Single tire	in (mm)	34.3 (870)	34.3 (870)
Rear tread		in (mm)	34.8 (885)	34.8 (885)
Minimum turning radius	Outside	in (mm)	72.6 (1845)	73.8 (1875)
Fork length (standard)		in (mm)	42.1 (1070)	42.1 (1070)
Ground clearance	Under mast	in (mm)	4.3 (110)	4.3 (110)
	Under power unit	in (mm)	3.7 (95)	3.7 (95)
	Under frame	in (mm)	5.5 (140)	5.5 (140)

# A1F1 series

Item				Model	1.5 ton (3000 lb)	1.75 ton (3500 lb)
Lifting speed	2W lifting	Full load	FPM (mm/sec)	122.0 (620)	122.0 (620)	
		No load	FPM (mm/sec)	127.9 (650)	127.9 (650)	
	2F lifting	Full load	FPM (mm/sec)	108.2 (550)	108.2 (550)	
		No load	FPM (mm/sec)	116.1 (590)	116.1 (590)	
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	
		No load	FPM (mm/sec)	127.7 (650)	127.7 (650)	
	3V lifting <sup>2</sup>	Full load	FPM (mm/sec)	110.2 (560)	110.2 (560)	
		No load	FPM (mm/sec)	116.1 (590)	116.1 (590)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	98.4 (500)	
		No load	FPM (mm/sec)	98.4 (500)	98.4 (500)	
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	61.0 (310)	
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	67.1 (340)	67.1 (340)	
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	61.0 (310)	
Travel speed	Forward	Full load	MPH (km/h)	10.6 (17)	10.6 (17)	
		No load	MPH (km/h)	10.6 (17)	10.6 (17)	
Drawbar pull	Full load (travel)		lb (kg)	3748 (1700)	3748 (1700)	
	No load		lb (kg)	1984 (900)	1984 (900)	
Gradeability	Full load (travel)		tanθ (%)	34	40	
	No load		tanθ (%)	28	26	
Truck weight (no load)			lb (kg)	5860 (2660)	6245 (2835)	
ENGINE	Model			K21	K2	
	Displacement		cu in (cm <sup>3</sup> )	126.0 (2065)	126.0 (2065)	
	Rated output		SAE gross HP (kW)/rpm	55 (41)/2700	55 (41)/2700	
	Rated torque		SAE gross ft-lb (N-m)/rpm	111 (151)/1600	111 (151)/1600	

Item		Model	2.5 ton (5000 lb)
Load capacity		lb (kg)	5000 (2500)
Load center		in (mm)	24 (500)
Maximum fork height		in (mm)	130 (3300)
Free lift		in (mm)	4.2 (106)
Tilt angle	Forward	degree	5
	Backward	degree	10
Overall length (without fork length)		in (mm)	92.9 (2360)
Overall width	Single tire	in (mm)	46.3 (1175)
Overall height	Mast (lowered)	in (mm)	82.8 (2100)
	Mast (extended) with backrest	in (mm)	179.3 (4555)
	Overhead guard	in (mm)	82.3 (2090)
Wheelbase		in (mm)	59.1 (1500)
Front overhang		in (mm)	16.1 (410)
Rear overhang		in (mm)	17.7 (450)
Front tread	Single tire	in (mm)	88.4 (975)
Rear tread		in (mm)	36.6 (930)
Minimum turning radius	Outside	in (mm)	80.7 (2050)
Fork length (standard)		in (mm)	42.1 (1070)
Ground clearance	Under mast	in (mm)	3.0 (75)
	Under power unit	in (mm)	3.7 (95)
	Under frame	in (mm)	5.1 (130)

# A1F2 series

Item				Model	2.5 ton (5000 lb)
Lifting speed	2W lifting	Full load	FPM (mm/sec)	122.0 (620)	
		No load	FPM (mm/sec)	127.9 (650)	
	2F lifting	Full load	FPM (mm/sec)	108.2 (550)	
		No load	FPM (mm/sec)	116.1 (590)	
	3F lifting	Full load	FPM (mm/sec)	110.2 (560)	
		No load	FPM (mm/sec)	122.0 (620)	
	3V lifting	Full load	FPM (mm/sec)	110.2 (560)	
		No load	FPM (mm/sec)	116.1 (590)	
Lowering speed	2W lifting	Full load	FPM (mm/sec)	98.4 (500)	
		No load	FPM (mm/sec)	98.4 (500)	
	2F lifting	Full load	FPM (mm/sec)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	
	3F lifting	Full load	FPM (mm/sec)	94.5 (480)	
		No load	FPM (mm/sec)	64.1 (325)	
	3V lifting	Full load	FPM (mm/sec)	94.5 (480)	
		No load	FPM (mm/sec)	61.0 (310)	
Travel speed	Forward	Full load	MPH (km/h)	10.6 (17)	
		No load	MPH (km/h)	10.6 (17)	
Drawbar pull	Full load (travel)		lb (kg)	3748 (1700)	
	No load		lb (kg)	2183 (990)	
Gradeability	Full load (travel)		tanθ (%)	28	
	No load		tanθ (%)	21	
Truck weight (no load)			lb (kg)	7910 (3585)	
ENGINE	Model			K21	
	Displacement		cu in (cm <sup>3</sup> )	126.0 (2065)	
	Rated output	SAE gross	HP (kW)/rpm	55 (41)/2700	
	Rated torque	SAE gross	ft-lb (N-m)/rpm	111 (151)/1600	

## aisle width

- The right angle stacking aisle shown as "As" in the following tables is front-rear length of the load (permissible load) plus 7.87 in (200 mm).
- The right angle intersecting aisle is shown as "Ai" in the following tables on standard models (under no load conditions).

### C1F1/C1F2

Item \ Model		C1F1				C1F2				CG1F2		
		1.5 ton	1.75 ton	2.0 ton	2.0 ton	2.5 ton	2.75 ton	3.0 ton	3.25 ton	3.0 ton	3.5 ton	3.6 ton
Right angle stacking aisle (As)	in (mm)	93.1 (2110)	84.3 (2140)	87.6 (2225)	91.5 (2325)	93.7 (2380)	98 (2490)	99.2 (2520)	100.4 (2550)	99.8 (2535)	102 (2590)	103.5 (2630)
Right angle intersecting aisle (Ai)	in (mm)	63.8 (1620)	64.6 (1640)	67.7 (1720)	70.1 (1780)	71.3 (1810)	74.2 (1885)	74 (1880)	75.2 (1910)	75.8 (1925)	76.6 (1945)	77.2 (1960)



## NOISE LEVEL

The values are the A-weighted sound pressure level at the operator's position,  $L_{PAZ}$  and the uncertainty value,  $K_{pZ}$  according to EN12053:2001.

Item \ Model	C1F1, C1F2
$L_{PAZ}$	Does not exceed 82 dB (A)
$K_{pZ}$	4 dB (A)

C1F1, C1F2

The whole body vibration  $\overline{a_{w,z}}$  according to EN13059:2002

Vibration emission value: 2.0  $m/s^2$

Uncertainty: 0.8  $m/s^2$

# FUEL & OIL CAPACITY

Model  Item			1F1 series compact vehicle			1F1 series			1F2 series compact vehicle			1F2 series						
												4,000, 5,000 lb (2.0, 2.5 ton)			5,500, 6,000, 7,000 lb (2.75, 3.0, 3.5 ton)			
			US	Imp	ℓ	US	Imp	ℓ	US	Imp	ℓ	US	Imp	ℓ	US	Imp	ℓ	
Fuel tank	Pneumatic-tire model US manufactured		11-1/8 gal	9-1/4 gal	42.0	12-5/8 gal	10-1/2 gal	47.6	15-3/8 gal	12-3/4 gal	58.0	17-5/8 gal	14-5/8 gal	66.7	19 gal	15-7/8 gal	72.1	
Fuel	Cushion/tire model		—	—	—	10-1/2 gal	8-3/4 gal	39.7	—	—	—	11-7/8 gal	9-7/8 gal	44.7	13-7/8 gal	11-1/2 gal	52.4	
Hydraulic	Cushion/tire model		—	—	—	6-7/8 gal	5-3/4 gal	26	—	—	—	10 gal	8-3/8 gal	38	11-7/8 gal	9-7/8 gal	45	
Hydraulic oil tank	Pneumatic-tire model US manufactured		7-1/2 gal	6-1/4 gal	28.2	7-7/8 gal	6-5/8 gal	30	10-3/8 gal	8-5/8 gal	39.2	11-3/4 gal	9-7/8 gal	44.6	13 gal	10-3/4 gal	49.1	
Transmission oil	Pneumatic- tire model	1-speed	9-1/2 qt	7-7/8 qt	9.0	11 qt	9-1/8 qt	10.4	9-1/2 qt	7-7/8 qt	9.0	11 qt	9-1/8 qt	10.4	11 qt	9-1/8 qt	10.4	
		Cushion tire model	1-speed	—	—	—	8-1/2 qt	7 qt	8.0	—	—	—	8-1/2 qt	9-1/8 qt	8.0	10-5/8 qt	8-3/4 qt	10.0
			2-speed	—	—	—	—	—	—	—	—	—	10-5/8 qt	8-3/4 qt	10.0	10-5/8 qt	8-3/4 qt	10.0
Differential oil	Pneumatic-tire model		3-1/8 qt	2-1/2 qt	2.9	3-1/8 qt	2-5/8 qt	3.0	3-1/8 qt	2-1/2 qt	2.9	3-1/8 qt	2-5/8 qt	3.0	5-1/4 qt	4-3/8 qt	5.0	

\*1: Including differential oil

## BULBS

Item		Wattage (W)
Headlight		55
Rear combination light	Stop/Tail	21/5
	Turn signal	21
	Back-up	21
Front turn signal light		23

# ENGINE

Model		K21	K25	QD32
Item		Gasoline LPG Dual Fuel		Diesel
Type		Gasoline LPG Dual Fuel		Diesel
Cylinder arrangement		4-cylinder, in-line		
Valve mechanism		Overhead valve type		
Bore x Stroke	in (mm)	3504 x 3268 (89.0 x 83.0)	3504 x 3937 (89.0 x 100)	3906 x 4016 (99.2 x 102)
Total displacement	cu in (cm <sup>3</sup> )	126.01 (2065)	151.82 (2488)	3153
Compression ratio		8.7	8.7	22
Firing order		1-3-4-2	1-3-4-2	1-3-4-2
Rated output	HP (kW)/rpm	55 (41)/2700	63 (47)/2700	55 (41)/2000
Rated torque	ft-lb (N·m)/rpm	111 (151)/1600	139 (188)/1600	144 (195)/2000

# OIL & WATER CAPACITY

Item \ Model	K21			K25			QD32		
	US qt	Imp qt	ℓ	US qt	Imp qt	ℓ	US qt	Imp qt	ℓ
Engine oil (with oil filter)	4	3-3/8	3.8	4	3-3/8	3.8	7-5/8	6-3/8	7.2
Coolant	9-1/4	7-5/8	8.7	8-3/8	7	7.9	10-3/4	9	10.2

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# Nissan Forklift Corporation, North America

## CALIFORNIA AND U.S. FEDERAL EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board and US Environmental Protection Agency.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by Nissan Forklift Corporation, North America ("NFC,NA").

### YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board ("ARB") and US Environmental Protection Agency ("EPA") are pleased to explain the emission control system warranty on your 2011 engine. New off-road large spark-ignition (LSI) engines must be designed, built and equipped to meet Nationwide stringent anti-smog standards.

NFC,NA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor, regulator or fuel-injection system, ignition system, engine computer unit (ECM), catalytic converter and air induction system. Also included may be sensors, hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized NFC,NA Dealer will repair your LSI engine at no cost to you including diagnosis, parts and labor.

### MANUFACTURER'S WARRANTY COVERAGE

The 2011 off-road large spark-ignition engines are warranted for the time periods as listed below. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized NFC,NA Dealer.

### OWNER'S WARRANTY RESPONSIBILITIES

As the off-road LSI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. NFC,NA recommends that you retain receipts covering maintenance on your off-road engine, but NFC,NA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road large spark-ignition engine owner, you should however be aware that NFC,NA may deny you warranty coverage if your off-road large spark-ignition engine or a part thereof has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on gasoline or LPG fuel. Use of any other fuel may result in your engine no longer operating in compliance with the emissions requirements.

You are responsible for initiating the warranty process. The ARB and US EPA suggests that you present your off-road large spark-ignition engine to an Authorized NFC,NA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

### OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

If you have any questions regarding your warranty rights and responsibilities, you should contact NFC,NA's Customer Quality Department at 815-559-0051.

### EMISSION CONTROL WARRANTY COVERAGES

The warranty coverages stated below are in months and hours from the date of the first use by the original purchaser from an Authorized NFC,NA Dealer, whichever occurs first. NFC,NA warrants the following emission-related parts.

#### Emission Control Warranty:

36 months or 2,500 hours (General Parts)

- Oxygen sensor
- PCV valve
- Water temperature sensor
- Gasoline injector
- LPG injector
- LPG pressure sensor
- LPG solenoid
- Mass air flow sensor
- Throttle chamber
- Ignition coil
- Crankshaft position sensor
- Camshaft position sensor
- Spark plugs
- Exhaust tube from manifold to catalytic converter
- Gasoline fuel hose
- Gasoline fuel cap
- Absolute pressure sensor

#### Emission Control Warranty:

36 months or 4,000 hours

(Power Train Parts)

- Intake manifold
- Exhaust manifold

#### Long-Term Emission Control Warranty:

60 months or 3,500 hours (General Parts)

- ECM
- Catalytic converter
- Vaporizer

### EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

1. Repair or replacement required as a result of: accident, misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to Nissan Forklift's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by NFC,NA.
2. Normal replacement of service items
3. Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

Nissan Forklift Corporation, North America 240 N. Prospect Street, Marengo, IL 60152

2011 K21-K25/WARRANTYSTATEMENT (12/10)



## NISSAN DIESEL ENGINE EMISSION CONTROL SYSTEMS WARRANTY STATEMENT

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by Nissan Forklift Corporation, North America ("NFC,NA").

### WHAT IS COVERED

NFC,NA warrants to the ultimate purchaser and each subsequent purchaser that the diesel engine installed in your Nissan Forklift industrial truck is designed, built, and equipped so as to conform at the time of sale with the emission regulation of the U.S. EPA applicable at the time of manufacture.

This warranty covers the following emission related parts and components:

- Fuel Injection System
- PCV Valve
- Intake Manifold
- Exhaust Manifold
- Miscellaneous hoses, clamps, connectors and sealing devices used in the above system.

Exceptions to this warranty are listed below under the caption "WHAT IS NOT COVERED".

### WARRANTY PERIOD

The engine covered by this warranty is free from defects in materials and workmanship which cause such emission related parts to fail to conform with applicable emission regulations of the U.S. EPA for a period of 3,000 hours of operation or five years of use, whichever first occurs. This warranty begins on the date the Nissan Forklift industrial truck is delivered to the ultimate purchaser or the date that it is first put into service, whichever is earlier.

### WHAT IS NOT COVERED

This warranty does not cover:

1. Failures caused by the following:
  - Failure to perform or properly perform required emission control maintenance as described in your Owner's Manual, and/or Service Manual.
  - Misuse, accident, or modification.

### WHAT IS NOT COVERED (cont'd)

- Improper adjustment or installation of parts during the performance of maintenance services.
  - Tampering with or disconnecting any parts affecting emissions.
  - Use of fuel not recommended for the engine or contaminated fuel.
2. Damage resulting from acts of God or other events beyond the control of NFC,NA.
  3. Normal maintenance, service and parts replacement of expendable maintenance items such as filters, hoses, lubricants, thermostats and coolant as described in the Owner's Manual, and/or Service Manual.
  4. Use of parts not equivalent in quality or design to parts supplied by NFC,NA.
  5. Incidental or consequential damages such as loss of use of the Nissan Forklift, lodging bills, machinery rentals, other travel costs, inconvenience or commercial loss.
  6. Any Nissan Forklift industrial truck on which the operating hour meter has been disconnected or altered or the operating hours therein has been altered so that the actual operating hours cannot readily be determined.
  7. Any Nissan Forklift industrial truck sold or operated outside the United States.

### WHAT YOU MUST DO

1. Properly operate your Nissan Forklift industrial truck and engine and perform the required maintenance and care as outlined in your Owner's Manual, and/or Service Manual. Damage to your non-road engine caused by improper operation or failure to perform required maintenance is not covered by warranty. NFC,NA recommends that you keep receipts and maintenance records in case questions arise concerning maintenance. A warranty claim will not be denied solely because the owner has no record that the required maintenance has been performed, however, NFC,NA may deny warranty coverage if the owner(s) failure to perform required maintenance results in a failure of a warranted part.
2. To obtain warranty service, contact an authorized Nissan Forklift Dealer during regular business hours at your expense. In case of an emergency, and/or where authorized factory service is not available, contact NFC,NA's Customer Quality Department at 815-568-0061.

### WHAT NFC,NA WILL DO

Warranty repairs will be made at no charge for parts and/or labor. Any replacement parts will consist of new or remanufactured parts, at NFC,NA's discretion.

Nissan Forklift Corporation, North America 240 N. Prospect Street, Marengo, IL 60152

DIESEL EPA/WARRANTY STATEMENT 45 (12/10)

# Nissan Forklift Corporation, North America

## CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by Nissan Forklift Corporation, North America ("NFC,NA").

### YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board is pleased to explain the emission control system warranty on your 2000 and later model year engine. In California, new off-road compression-ignition (CI) engines must be designed, built and equipped to meet the State's stringent anti-smog standards. NFC,NA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized NFC,NA Dealer will repair your off-road CI engine at no cost to you including diagnosis, parts and labor.

### MANUFACTURER'S WARRANTY COVERAGE

The 2000 and later model year off-road CI engines are warranted for five years or 3,000 hours, whichever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized NFC,NA Dealer.

### OWNER'S WARRANTY RESPONSIBILITIES

As the off-road CI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. NFC,NA recommends that you retain receipts covering maintenance on your off-road CI engine, but NFC,NA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road CI engine owner, you should however be aware that NFC,NA may deny you warranty coverage if your off-road CI engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

### OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

You are responsible for initiating the warranty process. The ARB suggests that you present your off-road CI engine to an Authorized NFC,NA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact NFC,NA's Customer Quality Department at 815-568-0061.

### EMISSION CONTROL WARRANTY- 5 YEARS or 3,000 HOURS

For the first 3,000 operating hours or for a period of five years from the date of the first use by the original purchaser from an Authorized NFC,NA Dealer, whichever occurs first, NFC,NA warrants the following emission-related parts.

- Fuel Injection System
- Intake Manifold
- Exhaust Manifold
- Miscellaneous hoses, clamps, connectors and sealing devices used in the above system

### EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

1. Repair or replacement required as a result of: accident; misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to Nissan Forklift's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by NFC,NA.
2. Normal replacement of service items.
3. Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

Nissan Forklift Corporation, North America 240 N. Prospect Street, Marengo, IL 60152

CARB DIESEL WARRANTY STATEMENT 45 (12/10)