OPERATION & MAINTENANCE MANUAL

MAX50/MBX50 SERIES LIFT TRUCKS

MAX50 Gasoline & LPG	**G15/18/20(A)(S)HT-20**	**S/N 675001A~** EPA 2007 TIER II COMPLIANT
MBX50 Gasoline & LPG	**G20/25/28/30/32(S)(H)T-16** **G35AHT-16**	**S/N 210001A~** EPA 2007 TIER II COMPLIANT
MBX50 Diesel	**D20/25/28/30/32T-16** **D35AT-16**	**S/N 210001A~** EPA 2004 TIER II COMPLIANT

MAX50
MBX50

HAMECH

WARNING

Read and observe all warnings on this unit before operating it.
DO NOT operate this equipment unless all factory-installed guards and shields are properly secured in place.

PF17181 REVISED: MARCH 2008

This manual provides rules and guidelines which will help you use this lift truck safely and effectively. Always be sure to read and understand this manual thoroughly before operating and performing maintenance.

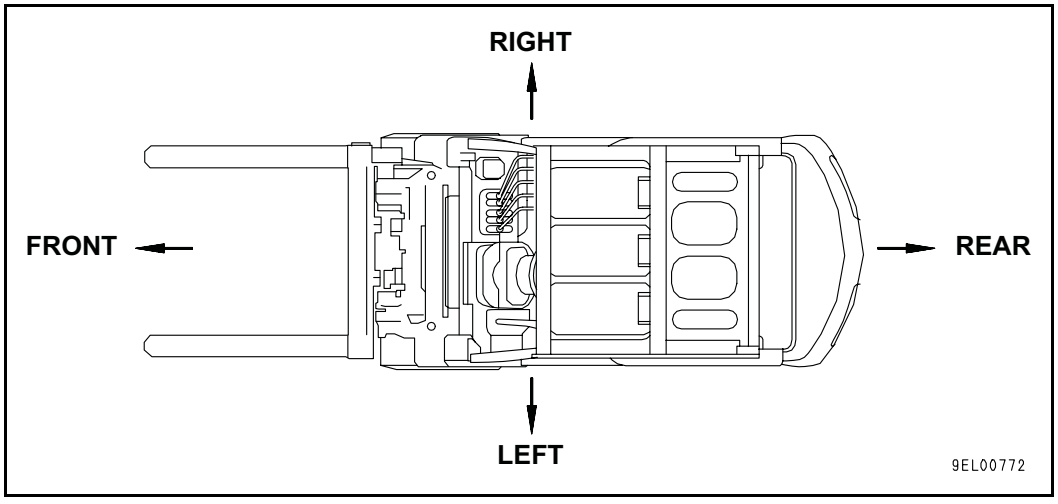
Some actions involved in operation and maintenance of the lift truck can cause a serious accident if they are not done in the manner described in this manual.

⚠ WARNING

- **Improper operation and maintenance of this lift truck can be hazardous and could result in serious injury or death.**
- **Operators and maintenance personnel should read this manual thoroughly before beginning operation or maintenance.**
- **Keep this manual handy and have all personnel read it periodically.**
- **Do not use this lift truck unless you are sure that you understand the contents completely.**
- **If this manual has been lost or has become dirty or worn and cannot be read, request a replacement manual from your Hamech Lift Truck dealer.**
- **Hamech Lift Truck delivers lift trucks that comply with (to the best of our knowledge at the time of delivery) all applicable regulations and standards of the country to which they have been shipped. If this lift truck has been purchased in another country or purchased from someone in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult your Hamech Lift Truck dealer before operating the lift truck.**
- **Continuing improvements in the design of this lift truck may not be reflected in this manual. Consult Hamech Lift Truck or your Hamech Lift Truck dealer for the latest available information on your lift truck or for questions regarding information in this manual.**
- **Information on safety is given in "SAFETY INFORMATION" on page 1-2 as well as in Chapter 2, "SAFETY."**

DIRECTION OF TRUCK

This manual uses the directions left, right, front and rear as they are seen from the operator's seat.



4.3.2 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.

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board is pleased to explain the emission control system warranty on your 2008 engine. In California, new off-road large spark-ignition (LSI) engines must be designed, built and equipped to meet the state's stringent anti-smog standards.

Crown Equipment Corporation (“Crown”) 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 Crown Dealer will repair your LSI engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2008 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 Crown 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 Operation and Maintenance Manual.

Crown recommends that you retain receipts covering maintenance on your off-road engine, but Crown 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 Crown 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 California's emissions requirements.

You are responsible for initiating the warranty process. The ARB suggests that you present your off-road large spark-ignition engine to an Authorized Crown 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 Crown's Aftermarket Support Department at 1-419-629-2220.

EMISSION CONTROL WARRANTY - 36 MONTHS or 2,500 HOURS FOR GENERAL PARTS

For the first 2,500 operating hours or for a period of thirty-six months from the date of the first use by the original purchaser from an Authorized Crown Dealer, whichever occurs first, Crown warrants the following emission-related parts.

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

WARNING

FOLLOW THE INSTRUCTIONS IN THE OPERATION AND MAINTENANCE MANUAL AS WELL AS ON THE SAFETY LABELS

- Read the instructions in this manual and the safety labels attached to various parts of the lift truck, and make sure that you understand and follow them. If you do not understand or do not follow the instructions, this will lead to improper operation which may result in personal injury or damage.
- Be sure that you understand the proper method of using the lift truck and the procedure for carrying out an inspection, and ensure that they are carried out safely.
- Read this manual and safety labels again from time to time. If the Operation and Maintenance Manual or safety labels have been lost or have become dirty and cannot be read, obtain replacements from your Hamech Lift Truck dealer and attach the safety labels in the specified positions.
- See “SAFETY LABELS” on page 2-28.

WARNING

MAKE SAFETY PLANS BEFOREHAND

- Before operation, establish an operating plan and hold a meeting to discuss operating safety.
- In confined areas, position a signal person and carry out operations in accordance with his/her instructions.

WARNING

FOLLOW THE SAFETY RULES IN PLACE

- Do not operate the lift truck if you are fatigued, or when you have been drinking or have taken any medication which can make you sleepy.
- When carrying out operation, inspection, or maintenance of the lift truck, always follow all work shop rules, safety regulations and precautions.
- During operation, always pay attention to safety and be careful of pedestrians and other surrounding conditions.

WARNING

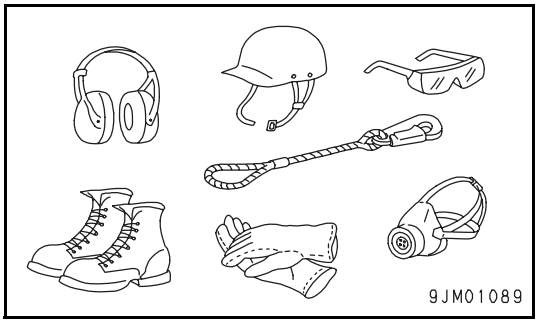
ENSURE SAFETY AT THE WORKING AREA

- Always work on level surfaces and wipe up all oil or grease from the ground.
- When working on quays, platforms, or docks, or other places where there is danger of falling, set up blocks to prevent the lift truck from going over the edge.
- Put warning signs up in dangerous places to warn the operator not to approach.
- Mark the travel areas clearly and maintain the road surface in good condition.
- Put up signs to prevent unauthorized lift trucks from entering areas where lift trucks are being operated.
- Ensure that there is adequate lighting to enable safe operations to be performed.

WARNING

WEAR SAFETY CLOTHES WHILE IN OPERATION

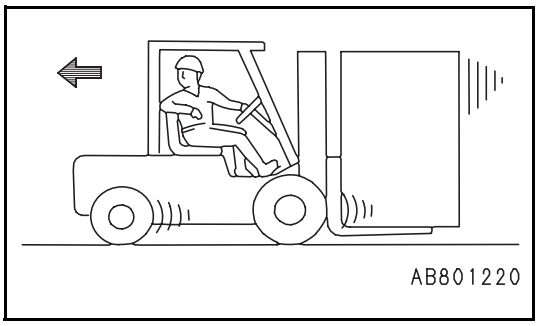
- Avoid loose clothing, jewelry, and loose long hair, which can catch on controls or in moving parts and cause serious injury or death.
- Always wear a hard hat and safety boots.
- Depending on the working conditions, wear other safety equipment in addition to the hard hat and safety boots.



WARNING

WHEN CARRYING A HIGH LOAD, USE A SIGNAL PERSON OR DRIVE BACKWARDS

- If the view to the front is obstructed by the load, turn to the rear and drive the lift truck in reverse.
- When driving in reverse with a high load, use a signal person to ensure the safety of the load and the safety in the surrounding area.



WARNING

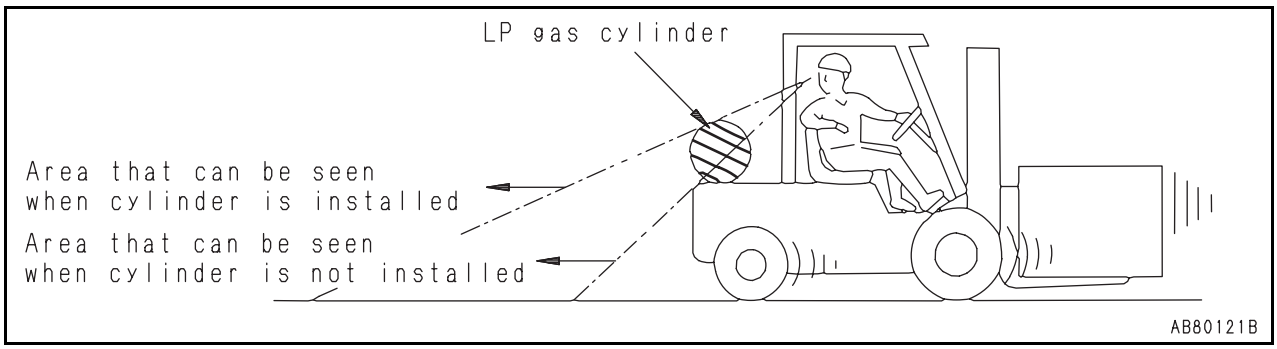
APPLY THE BRAKES CORRECTLY WHILE RUNNING

- Do not stop the engine while the truck is in motion. When the engine is not running, the operating efforts for power steering and power brakes (if present) increase. Thus it is dangerous to stop the engine while running.
- If the inching pedal is depressed, the braking effect of the engine will be lost.
- Do not use the brakes unnecessarily or too frequently. If your lift truck is a TORQFLOW transmission type and you rest your foot on the inching pedal during operations, the multiple clutch plates of the transmission will overheat, deforming the clutch plates and causing them to malfunction, in the worst case.

WARNING

PAY SPECIAL ATTENTION TO THE REAR VIEW WITH AN LPG CYLINDER-INSTALLED (GASOLINE ENGINE) LIFT TRUCK

- The installed LP gas cylinder partially blocks the rear view and poses a danger of hitting people, piled commodities, or contact with nearby objects. Therefore, install backup warning devices (backup alarm buzzer, rotating warning lamp, etc.) or backup safety checking devices such as a rear view mirror in order to warn people nearby and check for safe conditions in the area of the truck. See “OPTIONAL EQUIPMENT” on page 2-34.
- When installing optional warning devices, call your Hamech Lift Truck dealer for details.



WARNING

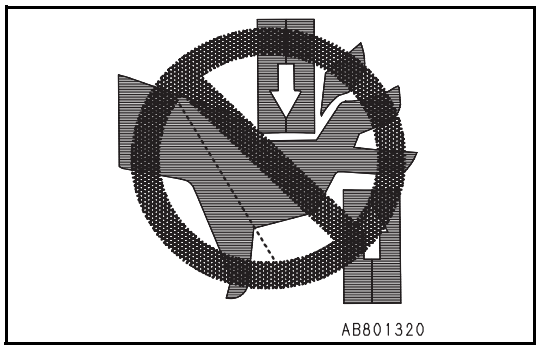
REQUIRED BRAKING DISTANCE DIFFERS DEPENDING ON THE ROAD CONDITIONS

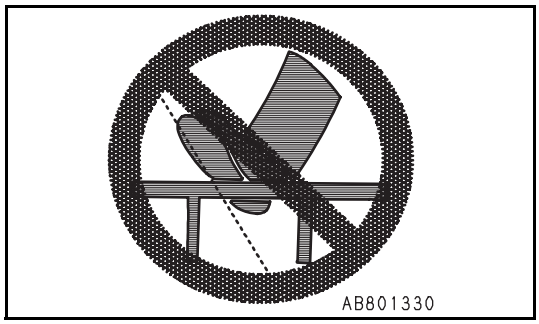
- When traveling downhill, it requires a longer distance for the lift truck to stop than when traveling on level ground.
- When traveling downhill, reduce the speed and make sure that you have ample room at the bottom of the slope to stop.
- Traveling on wet surfaces requires a longer distance to stop than when traveling on normal road surfaces. Always leave ample room to stop.

WARNING

AVOID THE DANGER OF GETTING CAUGHT UP OR FALLING OFF

- Never put your hands or feet into the mast structure. There is danger that you will get caught in moving parts and be seriously injured.
- Do not use the mast as a ladder.
  If you slip, there is danger that you will fall.

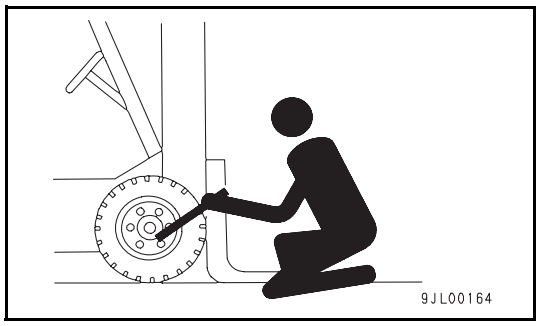




WARNING

INSPECTION AND INFLATION OF TIRES

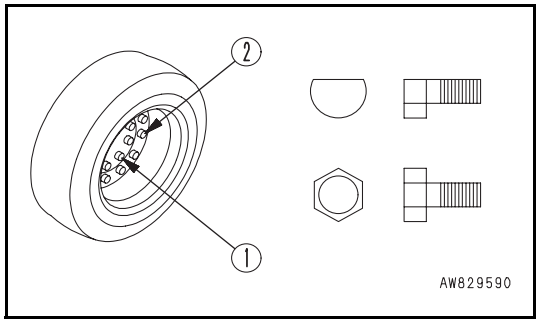
- If the tire inflation pressure is low, it will affect truck stability. However, do not inflate the tires before checking the rims for damage. If a rim is damaged or cracked when a tire is inflated, there is danger that the rim will break under the high pressure of the tire, resulting in personal injury or death.
- For safety, when checking tire pressure, place your body in front of the tread face of the tire. Do not check from the side face of the tire.
- Always have tire inflation work carried out by properly qualified personnel.
- The tire inflation pressure on a forklift truck is several times higher than the pressure on an automobile, so exercise caution when handling tires.
- When the tires are being inflated, there is danger that dirt or dust may be thrown up by the compressed air and enter your eyes, so always wear safety glasses.



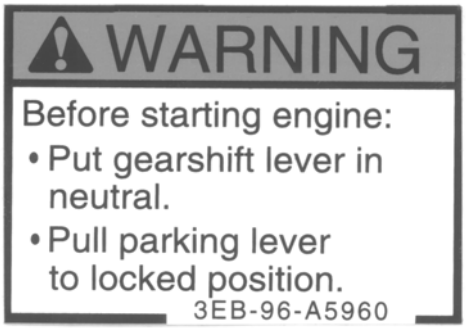
WARNING

HANDLING OF TIRES

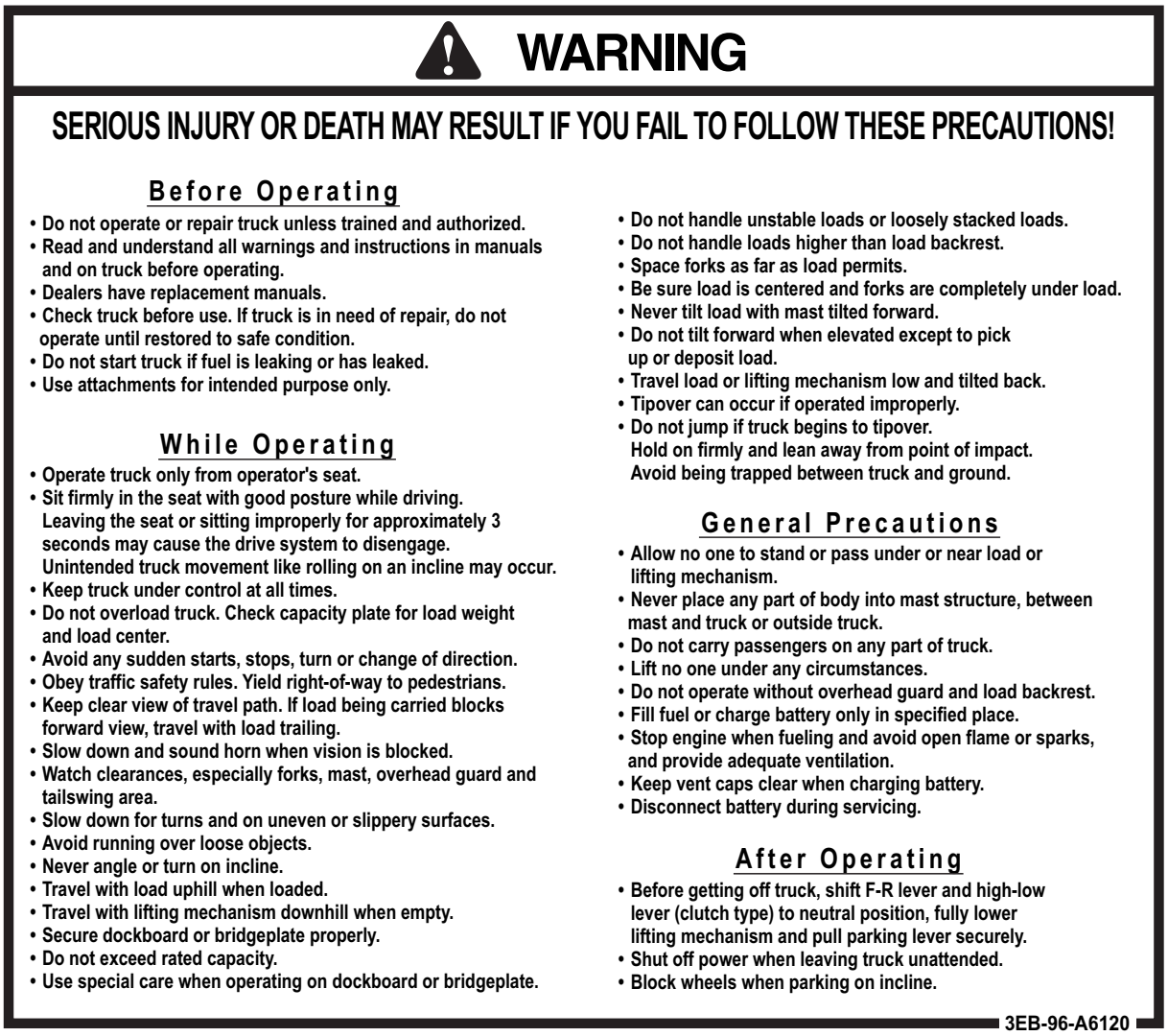
- Disassembly and assembly of tires should be carried out by a qualified tire dealer.
- The tire inflation pressure is extremely high, so caution is needed when handling tires.
- When removing a tire, do so only after the internal air is released. Loosen hub nut (1) to remove the tire from the chassis. Never loosen rim nuts (2) if installed because it is very dangerous to do so.
- After replacing the tires, make a trial run to make sure that there are no loose hub nuts. If the tightening torque is not sufficient, further tighten the hub nuts to the specified torque.
  For the correct tightening torque, refer to “SERVICE DATA” on page 4-11.



8. Caution before operating machine.

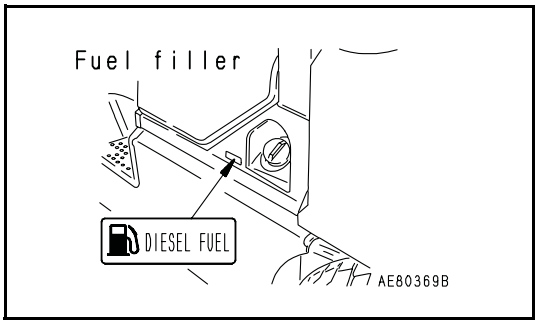


9. Warning for operation.



15.4 MBX50 – DIESEL ENGINE

MODELS D20/25/28/30/32T-16 & D35AT-16



CAUTION

Always use genuine Hamech Lift Truck oil and grease. Oil and grease are available from your Hamech Lift Truck dealer.
Never use fuel mixed with kerosene as it can damage the fuel injection system.
Never use the wrong type of brake fluid.

Location	Type of Fluid	Ambient Temperature -22 -4 14 32 50 68 86 104°F -30 -20 -10 0 10 20 30 40°C	Capactities
Engine oil pan	Engine oil (SAE10W-30CH) (SAE30W-30CH)		(including filter) 1.98 U.S. gal. / 7.5 L
TORQFLOW transmission case	DEXRON automatic transmission fluid		2.54 U.S. gal. / 9.6 L
Differential case	Gear oil (SAE80W) Gear oil (SAE90W)		**1 - 1.75 ton:** 1.19 U.S. gal. / 4.5 L **2 - 3.5 ton:** 1.59 U.S. gal. / 6.0 L **3 ton std:** 1.53 U.S. gal. / 5.8 L
Hydraulic tank	Hydraulic oil ISO #32		**1 - 1.75 ton:** 10.57 U.S. gal. / 40.0 L **2 - 3.5 ton:** 14.53 U.S. gal. / 55.0 L
Fuel tank	Diesel (ASTM D975 No. 2) Diesel (ASTM D975 No. 1)		**1 - 1.75 ton:** 10.57 U.S. gal. / 40.0 L **2 - 3.5 ton:** 15.32 U.S. gal. / 58.0 L
Brake Reservoir	Brake fluid (DOT 3) (SAE7OR-3)		5.07 oz. / 0.15 L
Greasing points	Lithium grease (NLGI No. 2)		—
Cooling system	Non-amine long-life type		2.43 U.S. gal. / 9.2 L

18.3 MBX50 GASOLINE ENGINE LIFT TRUCK – CUSHION TIRE

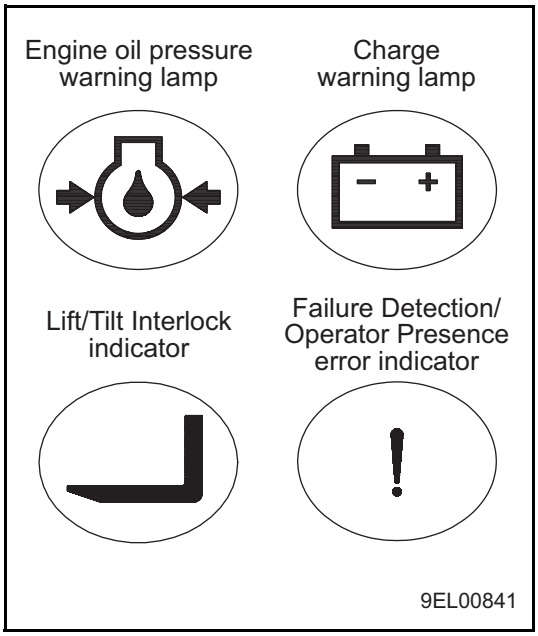
Component		Inspection item		Unit	G20/25ST-16	G28SHT-16
Engine	Engine	Engine model		—	K21	K25
		Idling engine speed		rpm	750 - 900	
		Max. engine speed		rpm	2900 - 3100	2720 - 2920
		Compression		PSI (kgf/cm^2)/rpm	178 (12.5)/250	185 (13.0)/250
	Cooling system	Fan belt deflection		in. (mm)	0.43 - 0.51 (11 - 13) [finger pressure: 98 N (10 kgf)]	
	Fuel system	Injection timing		deg-BTDC	—	—
		Injection order		—	—	—
		Injection pressure		PSI (kgf/cm^2)	—	—
	Intake, exhaust system	Valve clearance	Intake	in. (mm)	0.015 (0.38) [Warm]	
			Exhaust	in. (mm)	0.015 (0.38) [Warm]	
	Electric system	Distributor point gap		in. (mm)	—	—
		Spark plug gap		in. (mm)	0.031 - 0.035 (0.8 - 0.9)	
		Spark plug type		—	FR2A-D	
		Ignition timing		deg-BTDC/rpm	2/850	0/850
		Firing order		—	1-3-4-2	
Wheels	Hub (lug) nuts	Tightening torque	Front wheels	ft/lbs. (kgfm)	22 - 37 (30 - 50)	
			Rear wheels	ft/lbs. (kgfm)	N/A	N/A
Steering, Braking System	Steering wheel	Play		in. (mm)	0.4 - 1.2 (10 - 30)	
	Inching pedal	Play		in. (mm)	0 - 0.16 (0 - 4)	
		Interconnected travel		in. (mm)	1.38 - 1.61 (35 - 41)	
	Brake pedal	Play		in. (mm)	0 - 0.16 (0 - 4)	
		Pedal height when pedal is depressed		in. (mm)	2.4 - 3.2 (62 - 82)	
	Brake	Parking brake operating force		lbf (kgf)	33 - 44 (15 - 20)*	
		Tightening torque for back plate mounting bolts		ft/lbs. (kgfm)	13.2 - 14.8 (18 - 20)	
Loading Equip.	Forks	Fork thickness (at base)		in. (mm)	1.58-inch fork: Min. 36 (1.42) 1.75-inch fork: Min. 40 (1.58)	
	Chain	Length over 17 links		in. (mm)	2 - 2.5 ton lift truck: Max. 13.0 (330)	
	Hydraulic system	Relief pressure		PSI (kgf/cm^2)	2,630 (185)	

* When a lift truck is equipped with power brakes, this value is 25 - 30 kgf(55 - 66 lbf).

19.3 CHECKS USING GAUGES AND WARNING LAMPS

19.3.1 INDICATORS FOR OIL PRESSURE, BATTERY CHARGE, LIFT/TILT INTERLOCK AND FAILURE DETECTION

These lamps light up when the engine starting switch key is turned to the ON position and goes off after the engine startup. After start up they function normally.

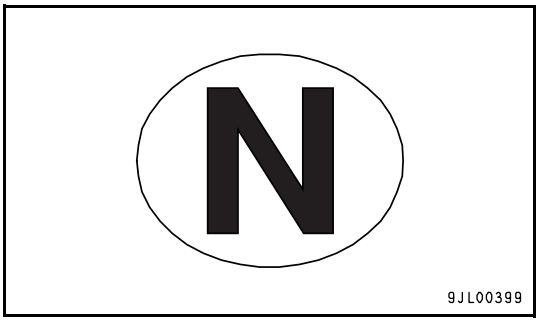


19.3.2 NEUTRAL INDICATOR LAMP

The lamp is in normal condition if it lights steady when the forward-reverse lever is in neutral and the engine starting switch is turned to the ON position.

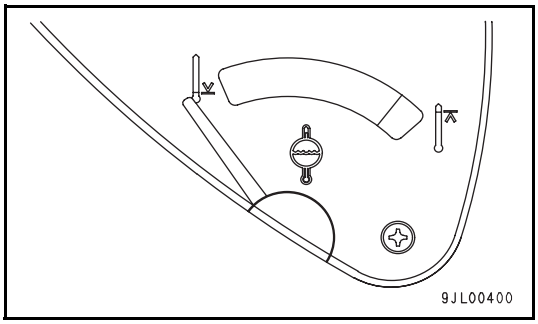
The neutral lamp is in a normal condition if it goes off when the forward-reverse lever is moved to either the F or R positions.

When the lamp blinks, indicating either neutral safety or Travel Interlock, travel is locked out. See “NEUTRAL / TRAVEL INTERLOCK INDICATOR LAMP” on page 3-9.



19.3.3 WATER TEMPERATURE GAUGE

The indicator should be in the white range to indicate normal operating temperature.

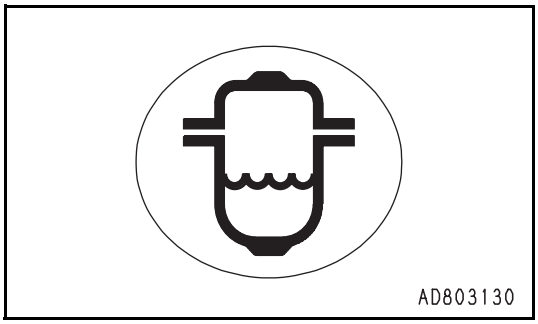


19.3.4 SEDIMENTER WARNING LAMP

(DIESEL ENGINE LIFT TRUCK)

The lamp is in a normal condition if it lights up when the starting switch is turned ON and goes off after the engine startup.

If the lamp remains lighted even after engine startup, drain any water from the sedimenter. (For draining water, refer to “DIESEL ENGINE” on page 4-31.)



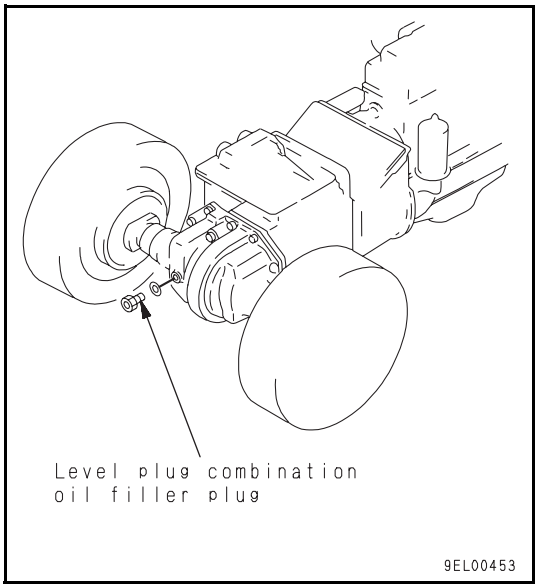
21.6 CHANGE OIL IN DIFFERENTIAL CASE

WARNING

Immediately after operations, the oil is at high temperature. Wait for the temperature to go down before starting this operation.

21.6.1 CHECK OIL LEVEL

Remove the oil filler plug that doubles as an oil level check plug and check the hydraulic oil level. When oil comes up as high as the lower line in the plug hole, then the amount of the oil is sufficient. If it does not, refill with additional oil



21.6.2 CHANGE OIL

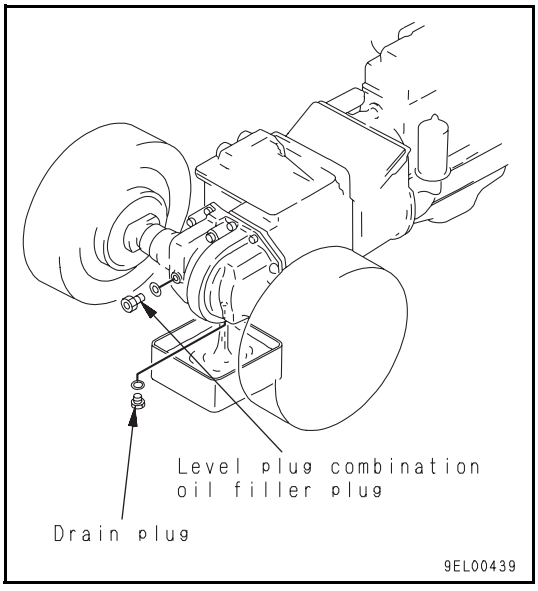
1. Remove the oil filler plug that doubles as an oil level check plug and drain plug, and then drain the hydraulic oil.
2. After draining the oil, tighten the drain plug and add the specified amount of oil through the oil filler.
3. After filling with oil, check the oil level.
   For the right amount of replacement engine oil, refer to the “LUBRICANT LIST” on page 4-2.

NOTICE

For the gear oil, be sure to use genuine Hamech gear oil.

Remark

On the TORQFLOW transmission lift truck, each case has its own special oil, so it is necessary to check and change the oil in the TORQFLOW transmission case in addition to checking and changing the oil in the differential case.



TECHNICAL DATA

WARNING

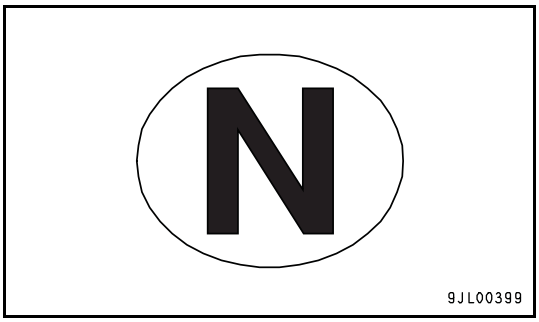
READ AND FOLLOW ALL SAFETY PRECAUTIONS. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.

The following is an explanation of the devices employed to operate the lift truck as illustrated on page 3-3.

25.2 EXPLANATION OF METER PANEL COMPONENTS

NEUTRAL / TRAVEL INTERLOCK INDICATOR LAMP

(OPERATOR PRESENCE SYSTEM)



This lift truck is equipped with Operator Presence System, which features neutral safety, Travel Interlock safety, and Lift/Tilt Interlock safety. When the neutral indicator blinks, it means that either the neutral safety or Travel Interlock feature has been activated.

Neutral safety ensures that the operator starts the lift truck in neutral, while Travel Interlock ensures that the operator sits with good posture during operations.

When functioning normally, the neutral lamp:

- lights up briefly when the starting switch is turned ON.
- lights steady on when the forward-reverse lever is put into neutral.

When the lamp blinks, either neutral safety or Travel Interlock is indicated.

Neutral Indicator operation

Normal starting operation: When the operator turns the starter switch on with the forward-reverse lever in the neutral position, the neutral indicator lamp turns on steady. After the engine starts and the operator puts the lift truck into forward or reverse, the neutral lamp turns off.

Improper starting operation (neutral safety activation): When the operator attempts to start the lift truck in forward or reverse, the neutral lamp starts blinking and the engine will not start.

To clear the indicator and resume travel:

1. Put the forward-reverse lever into neutral (neutral lamp steady on). The lift truck is now ready for travel.
2. Start the engine and put the lift truck into forward or reverse (neutral lamp off).

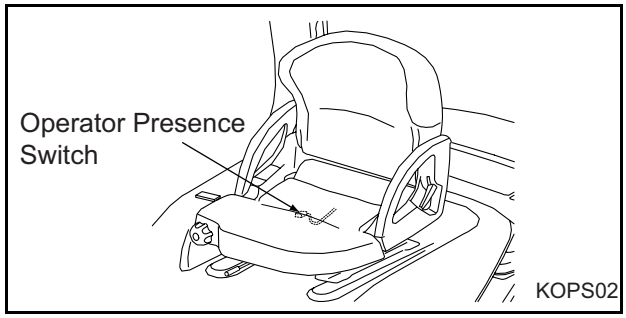
Travel Interlock Indicator operation

When the engine is running: During operations, when the operator sits improperly or leaves the operator's seat for three seconds or more, Travel Interlock disables the transmission of engine power, the lamp starts blinking, and travel stops. The engine continues to run. **To clear the indicator and resume travel:**

- Sit in the operator's seat using good posture.
- Return the forward-reverse lever to the neutral position (neutral lamp steady on).
- The lift truck is now ready for travel. Put the lift truck into forward or reverse (neutral lamp off). It is not necessary to recycle the starter switch, as the engine will continue to run after Travel Interlock activates.

LOCATION OF OPERATOR PRESENCE SWITCH

This switch, built into the seat, activates the Operator Presence System when it detects that the operator is not properly seated in the operator's seat. When the Operator Presence System is engaged, normal travel and lift operations are disabled by Travel Interlock and Lift/Tilt Interlock, respectively, and the corresponding indicators blink on the meter panel.



For more information about the Operator Presence System, see:

- "OPERATOR PRESENCE SYSTEM" on page 3-10
- "TROUBLESHOOTING THE OPERATOR PRESENCE SYSTEM" on page 3-11
- "LIFT/TILT INTERLOCK INDICATOR LAMP" on page 3-12

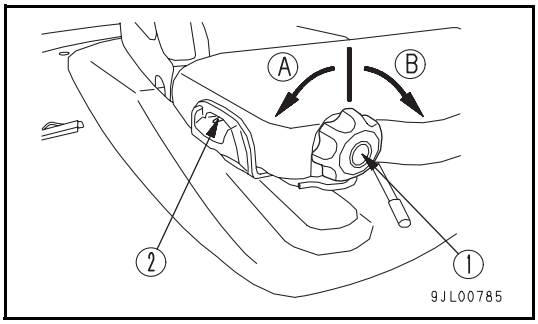
27.2.2 METHOD OF ADJUSTING SUSPENSION

(Suspension seat only)

Turn adjusting knob **(1)** located on the front right side of the operator's seat to select suspension best suited to your weight.

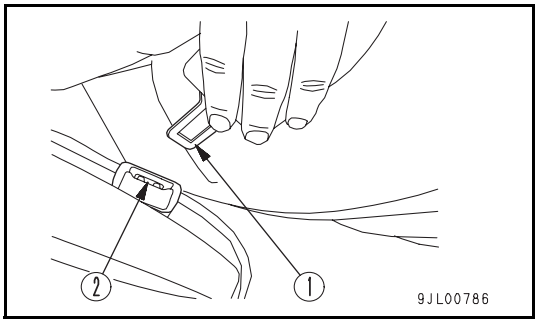
Needle **(2)** indicating set weight swings to a heavier side if you turn the knob to **(B)**, and swings to a lighter side if you turn the knob to **(A)**.

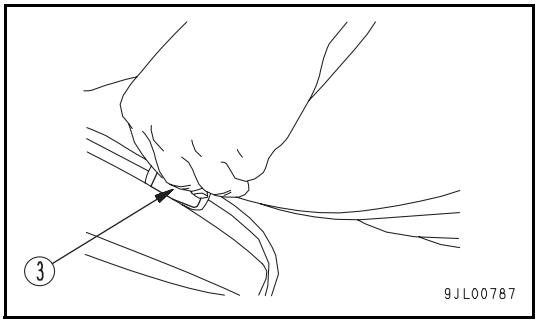
(Weight adjustment range: 50 to 120 kg (110-265 lbs))



27.2.3 METHOD OF ATTACHING AND RELEASING SEAT BELT

1. Pull tongue **(1)** out of the safety seat belt holder located on the right side of the operator's seat and push it into buckle **(2)** until it is clicked into place. (The safety seat belt is locked in this condition.) The safety seat belt has a mechanism that senses a shock and locks itself at the holder. For this characteristic, it may be locked while the belt is tucked in the holder, though quite rarely. If this happens, hold buckle **(1)** with both hands firmly, give the belt a strong pull to loosen the belt and then pull the belt out slowly.
2. To release the safety seat belt, hold tongue **(1)** with the left hand and press red button **(3)** on buckle **(2)** with the right hand.
3. Then the belt is tucked into the holder automatically. While the belt is being tucked in, hold tongue **(1)** so that the belt is tucked in slowly. Avoid twisting the belt.



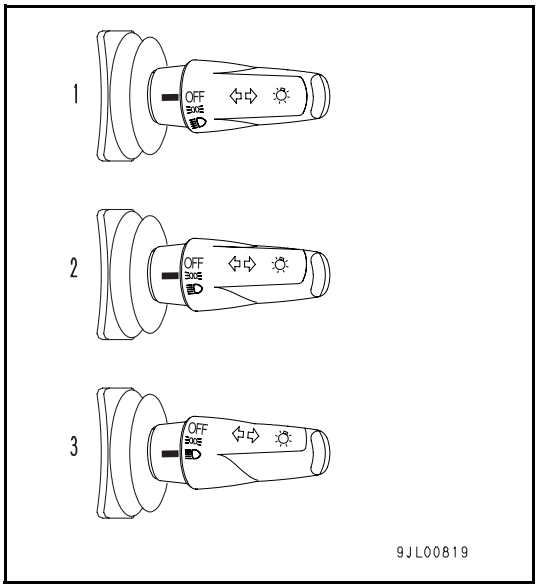


27.11 COMBINATION SWITCH OPERATION

27.11.1 LIGHTING SWITCH

This is a switch used to turn on the front lamps.

Position 1 (OFF): Parking lamp (side clearance lamp) and front lamps are OFF
Position 2: Parking lamp (side clearance lamp) lights up
Position 3: Parking lamp (side clearance lamp) stays lighted up, and front lamp lights up

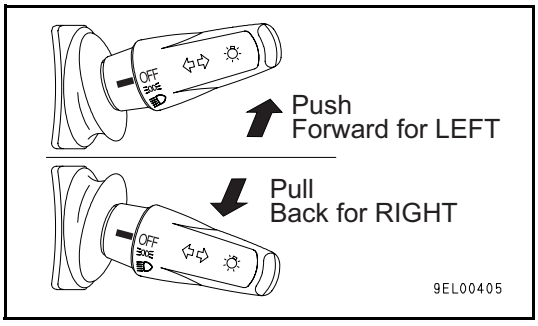


27.11.2 TURN SIGNAL SWITCH

This is a switch used to flash the turning signal lamps.

Left turn (L): Push lever forward
Right turn (R): Pull lever backward

This lever has an auto-return mechanism, so it will return to the middle when the steering wheel is turned back.



32.2 MAX50 - PNEUMATIC TIRE LIFT TRUCKS (OUTDOOR)

Manufacturer's Designation			Unit	G15HT-20	G18HT-20	G20AHT-20
• GENERAL						
Power Type				Gasoline	Gasoline	Gasoline
Operation Type				Sit-Down	Sit-Down	Sit-Down
Capacity@24 in. (600 mm) load center *			kg (lbs)	1360 (3,000)	1580 (3,500)	1810 (4,000)
Load distance from center axle (2-stage)			mm (in)	390 (15.4)	390 (15.4)	390 (15.4)
Wheelbase			mm (in)	1,400 (55.1)	1,400 (55.1)	1,400 (55.1)
• WEIGHT						
Service weight (includes 2-stage std. mast & forks)			kg (lbs)	2695 (5,940)	2875 (6,340)	3105 (6,850)
Axle Loading	Loaded	Front	kg (lbs)	3525 (7,770)	3840 (8,470)	4235 (9,340)
		Rear	kg (lbs)	530 (1,170)	615 (1,355)	680 (1,499)
	Unloaded	Front	kg (lbs)	1190 (2,620)	1140 (2,510)	1130 (2,490)
		Rear	kg (lbs)	1505 (3,320)	1735 (3,820)	1975 (4,350)
• TIRE						
Tire type				Pneumatic	Pneumatic	Pneumatic
Tire size, front				6.50-10-10PR (I)	6.50-10-10PR (I)	6.50-10
Tire size, rear				5.00-8-8PR (I)	5.00-8-8PR (I)	5.00-8
Number of wheel, front / rear			x= driven	2x/2	2x/2	2x/2
Tread (center of tires)	Front		mm (in)	890 (35.0)	890 (35.0)	890 (35.0)
	Rear		mm (in)	895 (35.2)	895 (35.2)	895 (35.2)
• DIMENSIONS						
Tilting angle, 2-stage (FV) masts, forward / backward			deg.	6/8	6/8	6/8
Tilting angle, 3-stage (TFV) masts, forward / backward			deg.	6/5	6/5	6/5
Mast height, lowered (2-stage std. mast)			mm (in)	2170 (85.5)	2170 (85.5)	2170 (85.5)
Mast height, extended (2-stage std. mast) †			mm (in)	4470 (176.0)	4470 (176.0)	4470 (176.0)
Maximum fork height (2-stage std. mast) **			mm (in)	3250 (128.0)	3250 (128.0)	3250 (128.0))
Free lift height (2-stage std. mast)			mm (in)	140 (5.5)	140 (5.5)	140 (5.5)
Height overhead guard			mm (in)	2070 (81.5)	2070 (81.5)	2070 (81.5)
Length, with Standard Forks			mm (in)	3295 (129.7)	3335 (131.3)	3370 (132.7)
Length to fork face (2-stage mast)			mm (in)	2225 (87.6)	2265 (89.2)	2300 (90.6)
Overall width, at drive tires (single)			mm (in)	1,070 (42.1)	1,070 (42.1)	1,070 (42.1)
Forks, thickness x width x length			mm (in)	40x100x1070 (1.6x4.0x42.1)	40x100x1070 (1.6x4.0x42.1)	40x100x1070 (1.6x4.0x42.1)
Carriage width / ITA Class			mm (in)	1040 (41.0)/II	1040 (41.0)/II	1040 (41.0)/II
Ground clearance, under mast			mm (in)	120 (4.7)	120 (4.7)	120 (4.7)
Ground clearance, center of wheelbase			mm (in)	130 (5.1)	130 (5.1)	130 (5.1)
Right angle stacking aisle (2-stage mast without load length & clearance) ††			mm (in)	2345 (92.4)	2380 (93.7)	2410 (94.9)
Turning radius, outside			mm (in)	1955 (77.0)	1990 (78.3)	2020 (79.5)
• PERFORMANCE						
Travel speed, forward, loaded / unloaded			km/h (mph)	19.0 (11.8)/ 20.0(12.4)	19.0 (11.8)/ 20.0(12.4)	19.0 (11.8)/ 20.0(12.4)