

OPERATING MANUAL

H2.0-3.5UT / H40-H70UT (A3C1)

**Internal Combustion Counterbalanced
Forklift Truck**

DO NOT REMOVE THIS MANUAL FROM THIS UNIT

LIFT TRUCK MODEL _____

SERIAL NUMBER _____

ENGINE MODEL _____

SERIAL NUMBER _____

TRANSMISSION TYPE _____

SERIAL NUMBER _____

MAST LIFT HEIGHT _____

GROUP NUMBER _____

CARRIAGE TYPE _____



GROUP NUMBER _____

DRIVE TIRE SIZE _____

STEERING TIRE SIZE _____

SPECIAL EQUIPMENT OR ATTACHMENTS

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Foreword

To OWNERS, USERS, and OPERATORS:

The **safe and efficient operation of a lift truck** requires skill and alertness on the part of the operator. To develop the skill required, the operator must:

- Receive training in the proper operation of THIS lift truck.
- Understand any potential hazards that may exist in the work place where the lift truck is intended to be used.
- Understand the capabilities and limitations of the lift truck.
- Become familiar with the construction of the lift truck and see that it is maintained in good condition.
- Read and properly understand the warnings, instructions, and operating procedures in this manual.

In addition, a qualified person, experienced in lift truck operation, must guide a new operator through several driving and load handling operations before the new operator attempts to operate the lift truck alone.

It is the responsibility of the employer to make sure that the operator can see, hear, and has the physical and mental ability to operate the equipment safely.

NOTE: A comprehensive operator training program is available from **Hyster** Company. For further details, contact your dealer for **Hyster** lift trucks.

This **Operating Manual** is the original instruction and contains information necessary for the operation and maintenance of a basic lift truck. Optional equipment is sometimes installed that can change some operating characteristics described in this manual. Make sure the necessary instructions are available and understood before operating the lift truck.

Some of the components and systems described in this **Operating Manual** will **NOT** be installed on your unit. If you have a question about any item described, contact your dealer for **Hyster** lift trucks.

The following additional information is provided as specified in Machinery Directive 98/37 EC and/or 2006/42/EC:

- **Dimensional Details:** Certain information is shown on the truck Nameplate. For additional dimensional details on this or any other specific truck, consult your dealer.
- **Noise Levels:** In accordance with standards EN 12053 and EN ISO 4871, the equivalent sound pressure level (L_{paz}) at the operator position is in the range of 84.0 dB(A). This may vary depending on truck options.
- **Human Vibration (Whole Body and Hand-Arm Vibration).**

Note: The whole-body vibration level is measured according to standard EN 13059 which contains specific test criteria (load, speed, roadway surface, etc.). Work-site vibration levels may vary depending on actual operating and surface conditions.

Whole-body vibration:

- Measured whole-body vibration at the operator position, based upon standard production truck with full-suspension or comfort-suspension seat is listed below.

- Declared whole-body vibration emission value is in accordance with EN 12096.
- Full-suspension seat measured vibration emission value $a_{w,z} = 1.2 \text{ m/s}^2$
- Uncertainty, $K = 0.36 \text{ m/s}^2$
- Values determined according to EN 13059
Hand-arm vibration:
 - Hand-arm vibration emission value = $< 2.5 \text{ m/s}^2$
- **Hazardous Atmosphere:** Before any truck within the European Community can be operated in a Potentially Explosive Atmosphere, it is necessary that the truck is suitably converted for the application. Conversions should only be carried out by a **Hyster** approved supplier. Confirmation of the conversion can be made by referring to the truck Declaration of Conformity which will confirm compliance with European Directive 94/9/ce. If you are in doubt, please contact your **Hyster** dealer for assistance.

CAUTION

Disposal of lubricants and fluids must meet local environmental regulations.

- **Manufacturer: Hyster** Europe, Centennial House, Frimley Business Park, Frimley, Surrey GU16 7SG, United Kingdom
- **The EC Conformity:** Each lift truck ships with a unique EC Declaration of Conformity certificate. See the end of this section for a sample EC Declaration of Conformity certificate which complies with Machinery Directive 2006/42/EC.

NOTE: Some products have options for equipment that are subject to Radio Equipment Directive 2014/53/EU. Where applicable, product/option meets the requirements outlined in this Directive.

NOTE: Hyster lift trucks are not intended for use on public roads.

NOTE: The following symbols and words indicate safety information in this manual.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the WARNING symbol is on orange background. The CAUTION symbol is on yellow background.

Atmospheric Conditions

This range of fork lift trucks is designed to work in the following atmospheric conditions:

Average ambient temperature for continuous duty:	+25°C
Maximum ambient temperature, short term (up to 1 hr):	+40°C
Lowest ambient temperature for trucks intended for use in normal indoor conditions:	+5°C
Lowest ambient temperature for trucks intended for use in normal outdoor conditions:	-20°C
Altitude:	Up to 2000m
Relative humidity:	From 30% to 95% (non-condensing)

Lifting



When transporting the truck, should lifting be required, please use the points indicated on the truck by the hook symbols.

Truck Modification

Unauthorized truck modification is not permitted. To obtain authorization contact your **Hyster** dealer.

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

1. Arrange for the modification or alteration to be designed, tested, and implemented by an engineer(s) expert in industry trucks and their safety;
2. Maintain a permanent record of the design, test(s), and implementation of the modification or alteration;

3. Approve and make appropriate changes to the capacity plate(s), decals, tags and instruction handbook;
4. Affix a permanent and readily visible label to the truck stating the manner in which the truck has been modified or altered together with the date of modification or alteration, and the name and address of the organization that accomplished the tasks.

Introduction

This operation manual explains how to use a 2.0T-3.5T forklift truck correctly. It will instruct you how to perform maintenance in order to ensure good working order and maximize the truck's potential. All operators, service technicians, and supervisors should read this manual thoroughly before working with the forklift.

Product specifications in this manual may vary from your actual truck.

Please contact your sales agent or dealer if you have any questions or comments regarding this manual.

Table 1. Models and Configuration

Series	Engine	Transmission
H2.0UT & H2.5UT (H40UT & H50UT)	YANMAR 2.6 DSL (4TNE92)	Powershift 1 Speed Transmission
	YANMAR 3.0L DSL (4TNV94L-Z)	Powershift 1 Speed Transmission
	XINCHAI 2.67L DSL (490BPG)	Powershift 1 Speed Transmission
	MAZDA 2.0L DSL (S4S-455)	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L LPG Non Cert (K21)	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L Gasoline Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L Bi-Fuel Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L LPG Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L Gasoline Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L Bi-Fuel Non Cert	Powershift 1 Speed Transmission
	PSI 2.4L LPG Cert	Powershift 1 Speed Transmission
	PSI 2.4L Bi-Fuel Cert	Powershift 1 Speed Transmission
	KUBOTA 2.4L DSL (V2403) Cert	Powershift 1 Speed Transmission
	LS 2.5L DSL L4CRTV4 Cert	Powershift 1 Speed Transmission
	HYUNDAI 2.4L LPG HMC2.4(L4KB) Non Cert	Powershift 1 Speed Transmission
HYUNDAI 2.4L Bi-Fuel HMC2.4(L4KB) Non Cert	Powershift 1 Speed Transmission	

Table 1. Models and Configuration (Continued)

Series	Engine	Transmission
H3.0UT & H3.5UT (H60UT & H70UT)	XINCHAI 2.67L DSL (490BPG)	Powershift 1 Speed Transmission
	MITSUBISHI DSL (S4S-455)	Powershift 1 Speed Transmission
	YANMAR 3.0L DSL (4TNV94L)	Powershift 1 Speed Transmission
	YANMAR 3.0L DSL (4TNV94L-Z)	Powershift 1 Speed Transmission
	YANMAR 3.3L DSL (4TNE98)	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L LPG Non Cert (K21)	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L Gasoline Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.1L Bi-Fuel Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L LPG Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L Gasoline Non Cert	Powershift 1 Speed Transmission
	NISSAN (GCT) 2.5L Bi-Fuel Non Cert	Powershift 1 Speed Transmission
	PSI 2.4L LPG Cert	Powershift 1 Speed Transmission
	PSI 2.4L Bi-Fuel Cert	Powershift 1 Speed Transmission
	KUBOTA 2.4L DSL (V2403) Cert	Powershift 1 Speed Transmission
	LS 2.5L DSL L4CRTV4 Cert	Powershift 1 Speed Transmission
	HYUNDAI 2.4L LPG HMC2.4(L4KB) Non Cert	Powershift 1 Speed Transmission
HYUNDAI 2.4L Bi-Fuel HMC2.4(L4KB) Non Cert	Powershift 1 Speed Transmission	

NOTE: Cert = EPA Certified, Non Cert = Non EPA Certified.



EC DECLARATION OF CONFORMITY

WE

HYSTER EUROPE
CENTENNIAL HOUSE
BUILDING 4.5
FRIMLEY BUSINESS PARK
FRIMLEY, SURREY GU16 7SG
UNITED KINGDOM

DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE MACHINE

CATEGORY: FORKLIFT IC ENGINE POWERED

TYPE

SERIAL NUMBER(S)

YEAR OF CONSTRUCTION

IS IN CONFORMITY WITH THE MACHINERY DIRECTIVE 2006/42/EC.

OTHER APPLICABLE DIRECTIVES:

2014/30/EU - EMC EMISSIONS

COMPLIANCE WITH THIS DIRECTIVE IS ESTABLISHED BY MEETING THE
TECHNICAL REQUIREMENTS OF STANDARD EN 12895:2015+A1:2019

2000/14/EC - SOUND POWER FOR IC ENGINED FORKLIFT AS AMMENDED
BY 2005/88/EC.

TYPICAL VALUE

dB

GUARANTEED VALUE,

dB

CONFORMITY ASSESSMENT PROCEDURE: INTERNAL CONTROL OF PRODUCTION AND
RESULTS OBTAINED BY FOLLOWING TEST PROCEDURE TEP 36.1, IN LINE WITH THE
REQUIREMENTS OF DIRECTIVE 2000/14/EC

TECHNICAL FILE CONTROLLED BY THE ENGINEERING MANAGER, HYSTER-YALE UK
LIMITED/NEDERLAND B.V., CRAIGAVON, NORTHERN IRELAND/NIJMEGEN, THE
NETHERLANDS.

NAME

POSITION

PLANT MANAGER

(BLOCK LETTERS)

SIGNATURE

DATE

Engine emissions must comply with regional legislation.

Note that some products have options for equipment that are subject to Radio
Equipment Directive 2014/53/EU. Where applicable, product/option meets the
requirements outlined in this Directive.



UK DECLARATION OF CONFORMITY

WE

HYSTER EUROPE
CENTENNIAL HOUSE
FRIMLEY BUSINESS PARK
FRIMLEY, SURRY GU16 7SG
UNITED KINGDOM

DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE MACHINE

CATEGORY: FORKLIFT IC ENGINE POWERED

TYPE

SERIAL NUMBER(S)

YEAR OF CONSTRUCTION

IS IN CONFORMITY WITH THE SUPPLY OF MACHINERY (SAFETY) REGULATIONS 2008.

OTHER APPLICABLE REGULATIONS:
EMC REGULATIONS 2016

COMPLIANCE WITH THIS REGULATION IS ESTABLISHED BY MEETING THE
TECHNICAL REQUIREMENTS OF STANDARD EN 12895:2015+A1:2019

NOISE EMISSION IN THE ENVIRONMENT BY EQUIPMENT FOR USE OUTDOORS
REGULATIONS 2001

TYPICAL VALUE dB
GUARANTEED VALUE, dB

IS IN CONFORMITY WITH THE REQUIREMENTS OF OUTDOORS REGULATIONS 2001
TECHNICAL FILE CONTROLLED BY:

NAME
POSITION

PLANT MANAGER
(BLOCK LETTERS)

SIGNATURE
DATE

Contents

Foreword	1	Glass Detergent Tank	51
TO OWNERS, USERS, AND OPERATORS:	1	Light Switch Panel	52
ATMOSPHERIC CONDITIONS	4	Air Conditioner	53
LIFTING	5	LOAD BACKREST	54
TRUCK MODIFICATION	5	SEAT ADJUSTMENT	55
INTRODUCTION	5	OPERATOR PRESENCE SYSTEM	55
Warning	13	SEAT BELT	56
Operating Devices and Operating Methods	16	OVERHEAD GUARD	56
OPERATING DEVICES AND OPERATING		HOOD	56
METHODS	16	RADIATOR CAP AND COOLANT RESERVOIR	57
Instruction to Instrument Panel	20	FORK POSITION LOCK	57
OPERATOR CONTROLS	25	BRAKE FLUID RESERVOIR	58
DIESEL PARTICULATE FILTER (DPF)	33	HYDRAULIC FLUID RESERVOIR CAP	58
DPF with Kubota diesel engine	34	Operating Instructions	59
DPF States and Transition	35	USE OF NEW TRUCK	59
DPF Ash Monitoring	40	RELATIONSHIP BETWEEN LOAD AND FORKLIFT	
DPF with LS engine	41	TRUCK STABILITY	59
DOC & DPF (CCRT)	41	LOAD CENTER AND LOAD CURVE	61
PCD	46	STABILITY AND CENTER OF GRAVITY	61
CABIN	48	CAPACITY (WEIGHT AND LOAD CENTER)	63
Enter the Cabin	48	TRANSPORTING AND LOADING-UNLOADING OF	
Exit the Cabin	49	FORKLIFT TRUCK	65
Open and Close the Cabin Window	49	INSPECTION BEFORE OPERATION	66
Overhead light	50	Checks With the Engine Stopped	66

Mounting and Dismounting	67	MECHANICAL TRANSMISSION FORKLIFT TRUCK	92
Safety Step and Safety Grip	67	PERIODIC MAINTENANCE	95
Starting Procedure	68	FORKS	96
Operating Techniques	70	Forks, Remove	96
LIFT TRUCK INTERLOCKS	70	Forks, Inspect	98
STARTING FORKLIFT TRUCK	71	Forks, Install	101
RUNNING	72	PERIODIC MAINTENANCE TABLES	102
LOADING	77	Hoisting, Handling, and Towing of Forklift Truck ...	151
STACKING	78	HOISTING FORKLIFT	151
UNLOADING	79	HANDLING	151
STORAGE	80	TOWING	152
Periodic Maintenance	83	Miscellaneous	154
PERIODIC MAINTENANCE REQUIREMENTS	83	DRAWING OF LUBRICATION SYSTEM	154
PERIODIC MAINTENANCE ITEMS	83	LABELS	157
HYDRAULIC TRANSMISSION FORKLIFT TRUCK ...	90	Maintenance Register	161

 **WARNING**

- Only drivers who have been trained and have an operator's license may drive the truck.
- Prior to driving the truck, inspect each control and warning device. If you discover damage or a defect, then do not operate the truck until it has been repaired.
- When handling a load, do not exceed the specified load capacity plate. The forks must be fully inserted under the load so that it is evenly positioned across the forks. Do not lift a load with only one fork.
- Starting, steering, driving, braking and stopping should be performed smoothly. Decrease speed when turning on wet or slippery surfaces.
- When traveling with a load, keep the load as low as possible and the mast tilted backwards.
- When driving on a slope, drive cautiously. When driving on a slope with a load, drive forward up the slope, and drive in reverse when descending the slope. Avoid turning on a slope. Do not engage in loading or unloading operations while the forklift truck is being driven on a slope.
- While driving, pay attention to pedestrians, obstacles, and potholes on road surfaces, and pay attention to the clearance above the forklift truck and load.
- No one may stand on the forks; the truck must not carry passengers.
- No standing or walking under the forks.
- The forklift truck and attachments shall not be operated from anywhere but the operator's seat.
- Do not move unsecured or loosely piled loads. Be cautious when moving larger loads.
- In the case of high-lift forklifts that lift higher than 3 meters, pay attention to the possibility that the load above may fall. Take protective measures when necessary.

 **WARNING**

- When operating a high-lift forklift truck, tilt the mast back as far as possible for transport. Tilt forward and back within the minimum range for loading and unloading operations.
- Be careful and drive slowly when driving on a loading dock or other potentially hazardous areas.
- When adding fuel, the driver must not be on the forklift truck, and the engine must be turned off. Do not ignite a flame when inspecting the battery or the fuel tank level.
- When a forklift truck equipped with attachments is being operated, it should always be operated as though loaded.
- Prior to exiting the forklift, lower the forks to the ground, and put the direction control into neutral. Engage the parking brake. Turn off the engine. When parking on a slope, engage the parking brake. Place wheel chock to chock wheels.
- If a fault, such as hydraulic oil leaking, battery electrolyte leaking, etc. occurs, slowly drive to level ground and stop the truck, lower forks to ground, put direction control in neutral, engage park brake, and turn off engine. Contact authorized repair technician. Do not operate truck unless it has been properly repaired by trained technician.
- Solid, level surfaces, asphalt, or concrete road surfaces are the recommended operating surfaces for forklift trucks. When snow, ice, water, or other foreign matter has accumulated on the surface, do not operate until after the accumulated snow, ice, water, or other foreign matter has been completely removed.
- If the forklift breaks down, first move the forklift to a place where traffic will not be obstructed. If the breakdown was caused by the braking system or a steering system failure, then transport it using an appropriate transport forklift. If there was another cause, then use an appropriate towing forklift.

 **WARNING**

- After removing the hood, the radiator cover plate, the overhead guard, the mast backrest, etc., do not operate the forklift.
- The forklift working site shall be adequately lit. While working at night, turn on the headlights. In addition, a sufficient light source should be allocated for the work.
- Do not operate the lift truck if you are not well-rested, are distracted, or are under the influence of drugs or alcohol.
- Contact the dealer for **Hyster** forklift truck for forklift truck modifications.

 **WARNING**

This lift truck may be equipped with devices that can emit non-ionising radiation, such as radio transmitters or RFID card readers. Users may be exposed to radio frequency radiation. Users with implanted medical devices should consult their medical professional before using lift trucks equipped with devices that can emit such radiation.

Operating Devices and Operating Methods

Operating Devices and Operating Methods

See Figure 1.

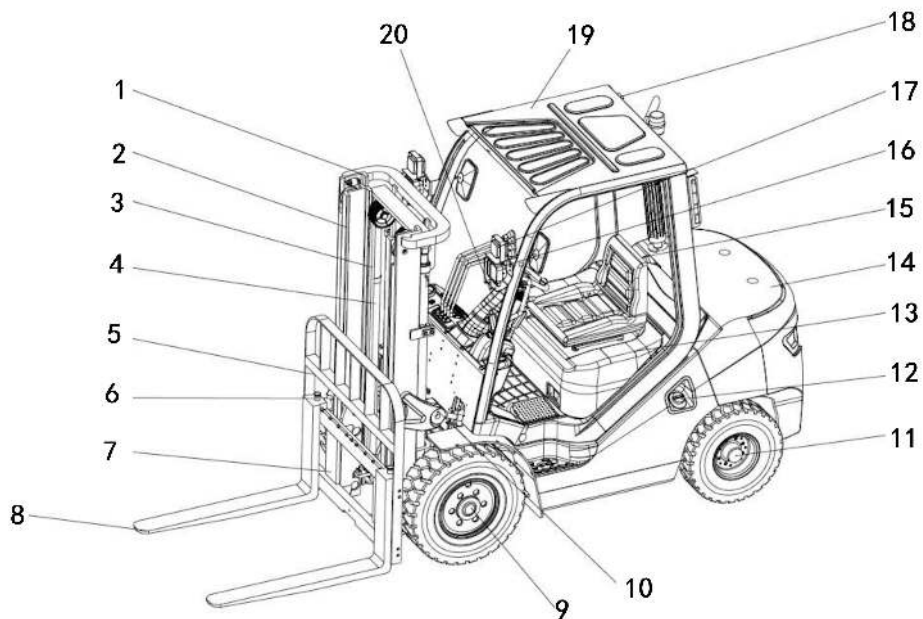


Figure 1. Main Parts

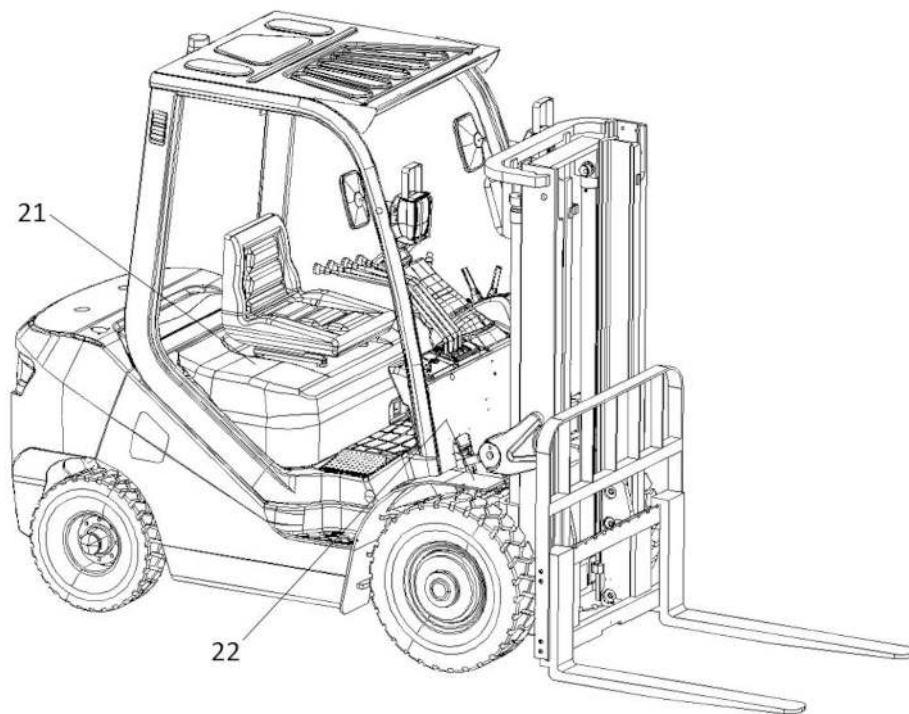


Figure 1. Main Parts

Legend for Figure 1

1. OUTER MAST
2. INNER MAST
3. LIFT CHAIN
4. LIFT CYLINDER
5. LOAD BACKREST
6. FORK LOCK PIN
7. FORK CARRIAGE
8. FORK
9. DRIVE AXLE
10. TILT CYLINDER
11. STEER AXLE
12. FUEL TANK CAP
13. HOOD
14. COUNTERWEIGHT
15. SEAT
16. FRONT HEADLIGHT
17. FRONT COMBINATION LIGHT
18. REAR COMBINATION LIGHT
19. OVERHEAD GUARD
20. STEERING WHEEL
21. NAMEPLATE POSITION FOR FORKLIFT TRUCK WORK CAPACITIES
22. VEHICLE IDENTIFICATION NUMBER (VIN) OF FORKLIFT

Instruction to Instrument Panel

The instrument is used to indicate the working conditions of various critical systems of the forklift so that operators can quickly determine system failure prior to maintenance.

NOTE: The hour meter and optional weight meter share a digital display zone. When it is powered on, it displays the hour counter. Press any key and displays the weight value and "kg". At the same time, the hour meter funnel chart is off.

Dashboard Display for Forklift Trucks with LS, HYUNDAI or KUBOTA Engines

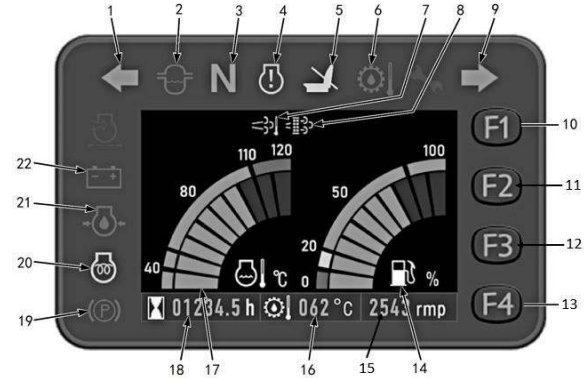


Figure 2. Display

- 1. Left Turn Indicator:** Turn left light, the forklift's left turn signal works.
- 2. Oil-Water Separator Indicator Light (Diesel Truck):** The water in the oil-water separator is too high and manual drainage is required.

3. **Neutral Gear Indicator:** The direction lights will illuminate when the operator selects direction of travel. When the transmission is put in **NEUTRAL**, the **N** illuminates and stays light until transmission is not in **NEUTRAL** position.
4. **Engine Fault Indicator Light:** Engine fault or malfunction.
5. **Seat Belt Indicator Light:** Seat belt not fastened and operator not in seat.
6. **Transmission Oil Temperature Indicator:** Displays transmission oil temperature.
7. **Active Regeneration Indicator Light:** Displays active regeneration status.
8. **Regeneration Needed/Request Indicator light:** Displays parked regeneration status.
9. **Right Turn Indicator Light:** Turn right light, the forklift's right turn signal works.
10. **Menu**
11. **Up/+**
12. **Down/-**
13. **Enter**
14. **Fuel Level Indicator:** Displays the amount of remaining fuel in the tank.
15. **Engine speed**
16. **Transmission Oil Temperature Malfunction Indicator:** Red light will be **ON** when transmission oil temperature is too high.
17. **Hour Meter Indicator:** Displays the forklift running time when truck is operating . Switch to display the weight of the goods after you press any key.
18. **Engine Coolant Temperature Indicator Light:** Displays engine coolant temperature.
19. **Parking Indicator Light:** Parking indicator will illuminate when the parking brake is applied. Release the parking handle (hand brake handle). The parking indicator will go off.
20. **Glow Indicator Light (Diesel Truck):** The light comes on when the ignition switch is set to **ON**. After the indicator light goes out, turn the switch to the start position.

21. Oil Pressure Alert Indicator Light (Diesel Truck):

This light indicates the pressure of the engine oil. The light comes on when the ignition switch is set to **ON**. The light goes out after the engine starts and the accelerator pedal is pressed.

- 22. Battery Charge Indicator Light:** This lamp indicates the battery charge condition. The lamp comes on when the ignition switch is set to **ON**. The lamp goes out after the engine starts and the accelerator pedal is pressed.

CAUTION

If the indicator continues to stay light or comes on during operation, the charging rate is low and should be checked immediately.

- 23. Active Regeneration Indicator Light (Kubota):** Displays active regeneration status.

Parameter Settings

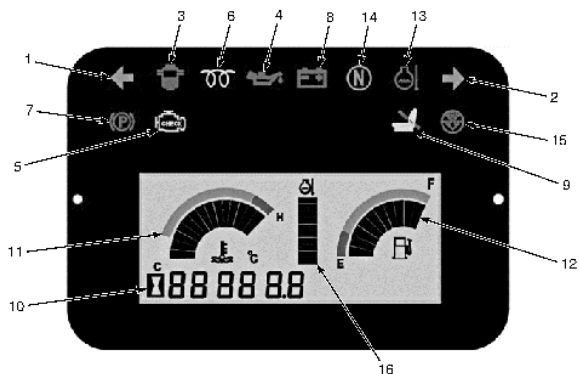


Figure 3. Parameter Settings

1. Fuel consumption
2. Transmission oil temperature
3. Impurity (soot) level meter
4. Charging voltage
5. Coolant temperature
6. Engine speed

7. Oil pressure
8. Fuel amount

Dashboard Display for Forklift Trucks with NISSAN, YANMAR, MITSUBISHI, PSI AND XINCHAI Engines



DO9801/0

Figure 4. Display

1. **Steering Signal Indicator Light:** Turn left light, the forklift's left turn signal works.
2. **Steering Signal Indicator Light:** Turn right light, the forklift's right turn signal works.

Operating Devices and Operating Methods

3. **Oil-Water Separator Indicator Light (Diesel Truck):** When the key switch is in the start position, the light is on. When the engine starts, the light is off.
4. **Oil Pressure Alert Indicator Light :** This light indicates the pressure of the engine oil. The light comes on when the ignition switch is set to ON. The light goes out after the engine starts and the accelerator pedal is pressed.
5. **Engine Fault Indicator Light :** Engine fault or malfunction.
6. **Glow Indicator Light (Diesel Truck) :** The light comes on when the ignition switch is set to ON. After the indicator light goes out, turn the switch to the start position.
7. **Parking Indicator Light :** Parking indicator will illuminate when the parking brake is applied. Release the parking handle (hand brake handle). The parking indicator will go off.

- 8. Battery Charge Indicator Light :** This lamp indicates the battery charge condition. The lamp comes on when the ignition switch is set to ON. The lamp goes out after the engine starts and the accelerator pedal is pressed.



CAUTION

If the light continues to stay lit or comes on during operation, the charging rate is low and should be checked immediately.

- 9. Seat Belt Indicator Light:** Seat belt not fastened and operator not in seat.
- 10. Hour Meter Indicator Light:** Displays the forklift running time when truck is operating . Switch to display the weight of the goods after you press any key.
- 11. Engine Coolant Temperature Indicator:** Displays engine coolant temperature.

- 12. Fuel Level Indicator Light:** Displays the amount of remaining fuel in the tank.
- 13. Transmission Oil Temperature Malfunction Indicator Light:** Red light will be **ON** when transmission oil temperature is too high.
- 14. Forward, Neutral, and Reverse Indicator Light:** The direction lights will illuminate when the operator selects direction of travel. When the transmission is put in **NEUTRAL**, the **N** illuminates and stays lit until transmission is not in **NEUTRAL**.
- 15. Air Filter Indicator Light:** When illuminated, service the air filter.
- 16. Transmission Oil Temperature Indicator Light:** Displays transmission oil temperature.

Operator Controls

WARNING

If any of the controls, instruments, levers, or pedals do not operate as described in the following tables, report the problem immediately. **DO NOT** operate the vehicle until the problem is corrected.

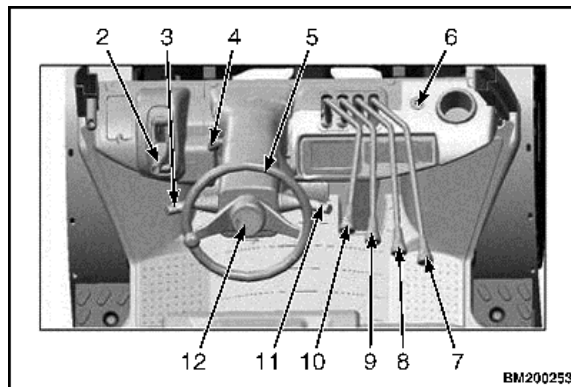
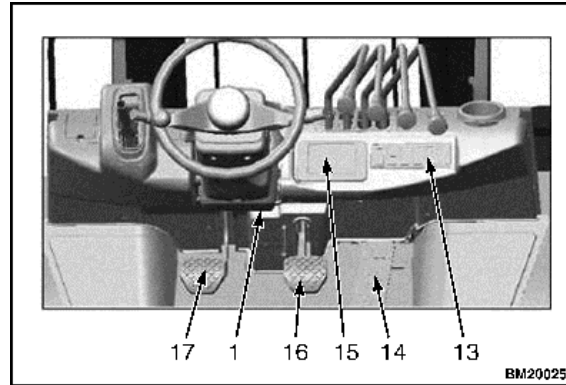


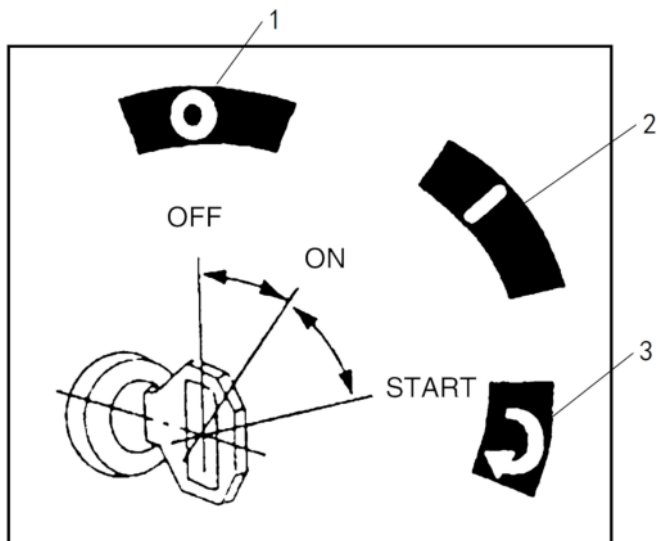
Figure 5. Controls and Switches (Sheet 1 of 2)



- | | |
|-----------------------------|--------------------------|
| 1. KEY SWITCH | 10. LIFT LEVER |
| 2. PARK BRAKE LEVER | 11. COMBINED LIGHT LEVER |
| 3. FORWARD-BACKWARD LEVER | 12. HORN BUTTON |
| 4. STEERING COLUMN ADJUSTER | 13. LIGHT SWITCH PANEL |
| 5. STEERING WHEEL | 14. ACCELERATOR PEDAL |
| 6. USB CONNECTOR | 15. COMBINED DISPLAY |
| 7. AUXILIARY FUNCTION LEVER | 16. BRAKE PEDAL |
| 8. SIDE SHIFT LEVER | 17. INCHING PEDAL |
| 9. TILT LEVER | |

Figure 5. Controls and Switches (Sheet 2 of 2)

1. Key Switch



Switch Position	Function
1	OFF
2	ON
3	START

OFF

This is the position at which the key may be inserted or removed.

Gasoline and diesel engines will stop when the key is turned to this position.

ON

The electric circuit is closed with the key in Pos. 2 (ON). After the engine starts, the key remains in this position.

START

When the key is turned to Pos. 3 (START), the starter motor is engaged. Switch returns to Pos. 2 (ON) automatically after starting.

Diesel Engines

Turn the key to Pos. 2 (ON). The indicator light will come on momentarily. After the indicator light goes out, turn the key to Pos. 3 (START).

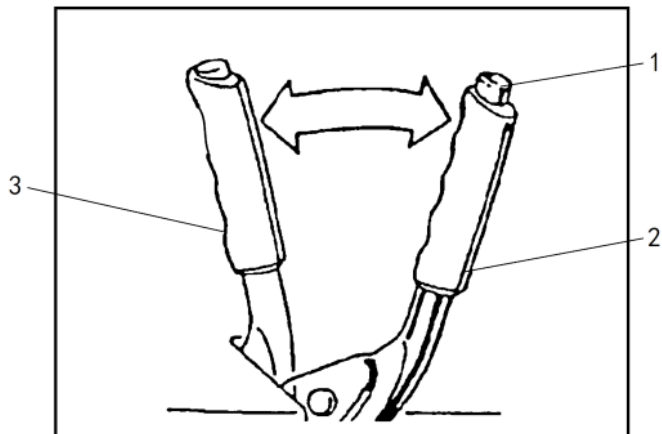


CAUTION

- **Do not leave the key in the ON position when the engine is off. Doing so will discharge the battery.**

- **Do not turn the key to the START position when engine is running. Doing so may damage the starter motor.**
- **Do not keep the key in the START position for more than 5 seconds at a time. Wait about 2 minutes between attempts to start.**

2. Parking Brake Lever



1	Button
2	Lever Backward to Lock
3	Lever Forward to Release

Pull lever backward to set the parking brake. Depress button and push lever forward to release the parking brake. Always set parking brake before leaving the truck.

3. Forward-Backward Lever

The forward-reverse lever of the truck is installed with electronic reversing and is set on the left of the steering column.

- F - Forward
- N - Neutral
- After Allocation - Backward

CAUTION

Do not forget to place the forward-reverse in the neutral position before starting the engine.

4. Steering Column Tilting Angle Adjustment

The tilting angle of the steering wheel is adjustable to suit individual operators. The steering column is unlocked by pushing down the lever at the left side of steering column. Adjust the angle to suit the driver and pull up the lever to lock.

5. Steering Wheel

The steering wheel is operated in the conventional manner. When the wheel is turned right, the truck will turn to the right. When the wheel is turned left, the truck will turn to the left. The steer wheels are located at the rear of the truck. These cause the rear of truck to swing out when a turn is made.

6. USB Connector

The USB Connector provides a DC-5V power supply to user. It has a maximum current of 2.1A. It is used to provide power to third-party USB devices.

7. Auxiliary Function Lever

8. Side Shift Control Lever

Used for left shifting and right shifting of the side shift bracket.

- Push forward to move to the left.
- Pull backward to move to the right.

Side shifting speed depends on the tilting angle of the handle and accelerator control.

9. Tilt Lever

- Move lever backward to tilt mast backward.
- Move lever forward to tilt mast forward.

Control tilt speed with tilt lever and accelerator pedal.



CAUTION

The tilt lock mechanism in the hydraulic control valve will not allow the mast to tilt forward while the engine is being shut down, even if the tilt lever is pushed forward.

10. Lift Lever

For lifting or lowering the forks.

- Lift forks by pulling lever backward.
- Lower forks by pushing lever forward.

Control lifting/lowering speed with accelerator pedal.

11. Combined Light Lever

a. Steering Light lever

Use this lever which is at the right side of the steering column to indicate the turning direction of the truck.

- Forward - Left Turn
- N - Neutral
- Backward - Right Turn

The turn signal lever does not automatically return to the neutral position unlike general passenger cars. It must be returned to the neutral position manually.

b. Front Head Lamp

Rotate the switch at the end of the lever to turn on or turn off the Head Lamp.

12. Horn Button

Press the rubber button at the center of the steering wheel to sound horn.

13. Light Switch Panel

This Switch Panel integrates with ON - OFF switches of different functions. It includes but limited to below function switches, see also **Light Switch Panel**.

a. Dual Fuel Toggle Switch

(1) From LPG to Gas:

- With the truck off, change the dual fuel toggle switch from **LPG** position to **GAS** position to begin running on **GAS**. Start truck.
- If the engine stops, check that the dual fuel toggle switch is set to **GAS** position and restart the engine.

(2) From Gas to LPG:

- With the truck off, place the dual fuel toggle switch from **GAS** to **LPG** to run on **LPG**. Start truck.
- If the engine stops, check the shutoff valve at the end of the vent cylinder. Check that the dual fuel toggle switch is in **LPG** position and restart the engine.

b. Light Switch

This light switches can be pressed at two ends to turn on or turn off the lights.

Stage	Rear Head Lamp	Alarming Lamp
0		
1	X	X

(X) Means Connected.

CAUTION

Use gasoline to drive several miles at least every two weeks to avoid gasoline deterioration.

It is recommended to start the engine using GAS when operating in cold environments. Once the engine has reached operating temperature, it can be run using either fuel.

When using LPG, you should pay attention to the following points:

- Before driving, check cylinder and pipe for leakage. Use a sealant on all LPG connections having NPT threads.
- After LPG is working, before shutting down the engine:
- Before storing for a long time, completely close the cylinder shutoff valve and check if the engine leaks.
- If there is a leakage, fault, or other abnormal condition during moving, completely shut off the shutoff valve and have LPG system serviced.

14. Accelerator Pedal

- Depress the accelerator pedal to increase speed.
- Release the accelerator pedal to decrease speed.

WARNING

This truck is provided with power steering, so heavy hand-wheel operation is caused when the engine comes to a stall. To put the power steering in operation again, restart the engine without delay.

15. Combined Display

The Combined Display shows parameters and information driver needs to know under different working conditions. See

16. Brake Pedal

- Depress the pedal partially to slow vehicle.
- Depress the pedal fully to bring the vehicle to a stop.
- Release the pedal to resume vehicle operation.

CAUTION

Avoid sudden braking which can lead to vehicle roll-over or falling cargo, causing accidents.

17. Inching Pedal

Depress the pedal partially to decrease hydraulic oil pressure. Use inching pedal for Forklift loading and unloading, and when slow speed is required. When a pedal is depressed fully, forklift will slow to a stop.

CAUTION

Do not use the inching pedal too much, as it will cause transmission oil temperature to rise and the clutch to slip.

Diesel Particulate Filter (DPF)

Lift truck models in this manual may be equipped with the Kubota V2403-CR-TE5B diesel engine or LS L4CRV-T6 diesel engine. The lift trucks equipped with either engine will also be equipped with an operator's display for DPF. See Operating Devices and Operating Methods.

CAUTION

- **DO NOT stand by or touch tail pipe for the tail pipe temperature is high during DPF regeneration.**
- **Protect DPF from smoke and dust overload. Execute regeneration in an open environment, free of combustible materials, liquids, and gasses.**
- **Ensure that hand brake is pulled on, the gear is put in neutral position, and there is no acceleration pedal signal with enough diesel oil before active regeneration.**

If any malfunction appears during the process, please refer to **Diagnostic Trouble Code (DTC) Reference** for information.

DPF with Kubota diesel engine



1

2

BO990284

1. Auto/active regeneration inhibit on/off button
2. Parked regeneration initiate button

DPF States and Transition

Table 2. Operator interface indicator





DPF Level		 BO000241	 BO000242	 BO000240
	Inhibit switch	Exhaust gas temperature High indicator	Regeneration needed/ requested Indicator	MIL indicator
Level 0 : Passive regeneration only				
(Regeneration not needed) (Regeneration not needed)	ON OFF	OFF OFF	OFF OFF	OFF OFF
Level 1 : Active regeneration				
(Active regeneration needed) (Active regeneration occurring)	ON OFF	OFF Solid lighting	Solid lighting Solid lighting	OFF OFF

Table 2. Operator interface indicator (Continued)

Level 2 : Active or parked regeneration				
(Active regeneration needed/Parked regeneration needed)	ON	OFF	Blinking light	OFF
(Active regeneration occurring/Parked regeneration occurring)	OFF	Solid lighting	Solid lighting	OFF
Level 3 : De-rating power				
(Parked regeneration needed)	ON	OFF	Blinking light	ON
(Parked regeneration occurring)	OFF	Solid lighting	Solid lighting	ON

Table 2. Operator interface indicator (Continued)

Level 4 : De-rating power				
(Parked regeneration needed by service tool)	ON	OFF	Blinking light	ON
(Parked regeneration occurring by service tool)	OFF	Solid lighting	Solid lighting	ON
Level 5 : Engine stop				
(DPF service required/ Active & Parked regeneration disabled)	ON	OFF	Blinking light	ON
(DPF service required/ Active & Parked regeneration disabled)	OFF	OFF	Blinking light	ON

NOTE: Make sure the fuel tank has adequate fuel before performing a regeneration process which normally needs about 30 minutes to complete regeneration.

Level 0,1:

No need for parking active regeneration. Operator unable to initiate parking active regeneration. (Parking active regeneration switch is not activated)

Normal state (passive regeneration) transits into automatic active regeneration state.

Level 2:

If DPF does not return to a certain level after 7200 seconds, parked active regeneration is required. Machine cannot be operated during parking active regeneration.

Automatic active regeneration state transits into parked active regeneration state when the following conditions are met:

- Safety conditions are satisfied.
- Acceleration pedal is 0%.
- Neutral position switch is ON.
- Parking switch is ON.
- Parked regeneration initiate button is pushed.

Level 3:

NOTE: Level 3 is the last opportunity for operator to initiate the DPF regeneration process before a service technician will be required. To protect the DPF, the engine power output is reduced.

At Parked active regeneration state, acceleration pedal control changes from **Normal** to **Auto**, and that:

- If water temp is less than 50 degC, **water temp low timer** counts.
- **Parked re-gen elapsed timer** counts.
- If DPF inlet temp or DPF outlet temp is larger than 500 degC, **exhaust temp high timer 1** counts.
- If DPF inlet temp or DPF outlet temp is larger than 580 degC, **exhaust temp high timer 2** counts.
- Post injection control is activated.
- Idling speed UP control is activated.
- Intake throttle control is activated.

Parked active regeneration state will be successfully completed and will clear active code and return unit to Regeneration Level 0, only when **exhaust temp high timer 1** is larger than 1200 seconds or **exhaust temp high timer 2** is larger than 600 seconds, and following conditions are not met. Or it will transit to parked active regeneration interrupted state:

- Acceleration pedal is larger than 5%.
- Neutral position switch is OFF.
- Parking switch is OFF.
- Parked re-gen switch is pushed.
- **Water temp low timer** is larger than 1500 seconds.
- **Parked re-gen elapsed timer** is larger than 2700 seconds.
- DTC occurred, except for DTC P3006, P3024 and P3025.

NOTE: If any DTC occurred, automatic active regeneration is inhibited except for some DTCs.

If parked active regeneration is successfully completed, it transmits into normal state and acceleration pedal control changes from **Auto** to **Normal**, and:

- **water temp low timer** is clear.
- **parked re-gen elapsed timer** is clear.
- **exhaust temp high timer 1** is clear.
- **exhaust temp high timer 2** is clear.

Level 4:

At Parked active regeneration interrupt state, parked active regeneration is possible only by service tool, and engine power output is de-rated and engine restart is possible, and:

- **water temp low timer** is clear.
- **parked re-gen elapsed timer** is clear.
- **exhaust temp high timer 1** is not clear.
- **exhaust temp high timer 2** is not clear.

Level 5:

At Parked active regeneration disabled state, parked active regeneration is not possible even by service tool. Engine power output is significantly reduced, and DPF has to be dismantled and cleaned.

DPF Ash Monitoring

DPF ash load percent can be used as DPF cleaning alarm.

There are 4 level DPF cleaning indexes based on DPF ash accumulation amount that is estimated by DPF regeneration conditions, i.e. 100%, 75%, 50% and 0%.

DPF cleaning index level	Remarks
0%	Ash accumulation time is less than 3000 hours.
100%	Ash accumulation time is more than 6000 hours.

NOTE: DPF cleaning index 100% means that **DPF CLEANING** is required.

You can use service tool to reset DPF ash accumulation time and estimation amount.

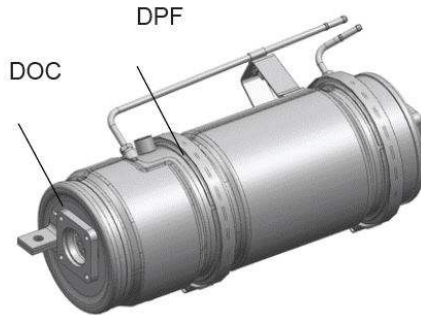
If the machine installs DPF cleaning alarm system to alert user for DPF cleaning requirements, DPF cleaning interval can be set to a maximum of 6000 hours, depending on engine operating hours.

Clean DPF in case of an alarm or every 6000 operating hours whichever comes earlier.

If the machine have not installed DPF cleaning alarm system, clean the DPF every 3000 operating hours.

DPF with LS engine

DOC & DPF (CCRT)



The Diesel Oxidation Catalyst (DOC) and the Diesel Particulate Filter (DPF) is to reduce PM and hydrocarbons, carbon monoxide and other toxic gases from engine. This system converts exhaust emissions to harmless carbon dioxide and water. The DPF also traps Particular Matter (PM).

To meet Stage V and Tier 4 emission regulations, the CCRT (Catalyzed continuous regenerating trap) integrated with DOC and DPF combination is installed on your engine.

It is very important to read this operator's manual and understand the safe operation of your vehicle.

Table 3. Operator interface indicator





Indicators	Figures	Possible Cause	Symptom & Actions	Remarks
DPF regeneration indicator	Continuous ON	When the regeneration is processing.	Normal state	 BO000242 ON + BO000241 ON
	BLINK (1 second)	When the soot's rate is over 120%.	Press and hold the upper side of the DPF switch over three second for regeneration.	 BO000242 BLINK (1 second)
	BLINK (0.5 second) + Engineer error warning indicator (3)	When the soot's rate is over 150%.	Engine power reduction. HAVE TO contact your authorized local dealer for check.	 BO000242 BLINK (0.5 second) + BO000240 ON

Table 3. Operator interface indicator (Continued)

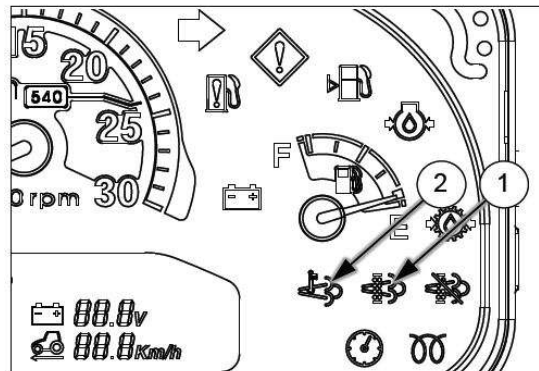
DPF inhibited regeneration indicator	Continuous ON	When the Inhibited regeneration mode is working.	DPF regeneration is delayed or stopped.	 ON
--------------------------------------	---------------	--	---	---

Generation State:

At automatic active regeneration state, the operator does not have to take any actions, the system is activated automatically by the engine control unit.

- The regeneration will be activated by ECU:
- And when soot's rate reaches 100% or more.
- And when the engine is warmed up enough.
- When the DPF switch is not pressed to the Inhibited regeneration state.

NOTE: Regeneration will be lasted for approximately 15 to 25 minutes.



- During the regeneration state, the DPF regeneration indicator (1) and when the exhaust gas temperature from DPF is over 550 °C DPF temperature indicator (2) will be turned on.

- In case of turning off the engine while the regeneration is processing, the regeneration is to resume again when restarting the engine.

CAUTION

If engine is turned off during the regeneration, soot will not be completely burned and may increase fuel consumption. KEY-OFF during regeneration mode is not recommendable because too short operation won't finish regeneration mode, So, we recommend to users to operate until all indicator lights are turned off without Key switch OFF and keep slightly high engine speed the idle.

WARNING

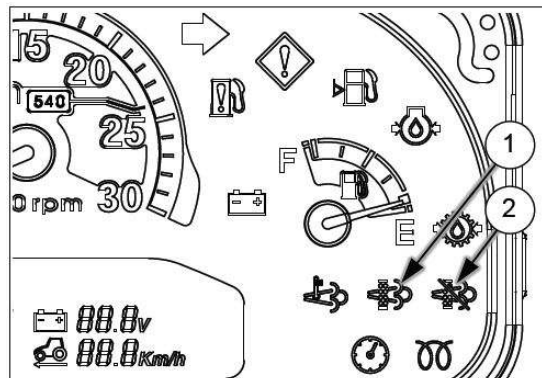
► Fire hazard!

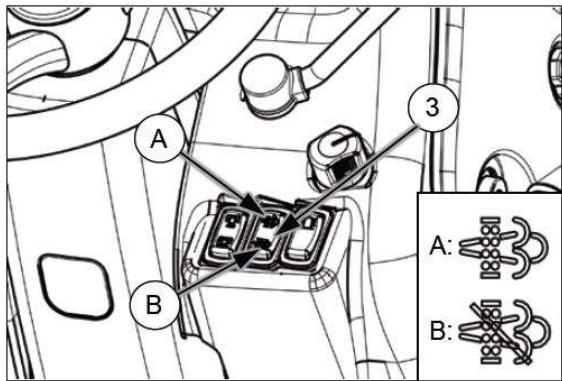
During the Diesel Particulate Filter (DPF) regeneration process, the exhaust stack and fixed hood area becomes extremely hot. Park the machine outside and away from combustibile or highly flammable material. Failure to comply could result in death or serious injury.

Inhibited regeneration State:

When regeneration needs to be delayed or stopped because of an operation condition that may risk a fire hazard due to high exhaust temperatures during regeneration. Use DPF inhibited regeneration indicator (2) .

NOTE: Even if the DPF regeneration indicator (1) is ON during the regeneration process, the inhibited regeneration mode can be set.





1. To set the inhibited regeneration:

- a. Press down the lower side (B) of the DPF switch (3). And then DPF inhibited regeneration indicator (2) will be turned on.



CAUTION

When vehicle arrives at a safe regeneration location, press again the lower side (B) of the DPF switch to exit the inhibited regeneration mode.

If not, excessive soot in the DPF may overload the emission system and result in a reduction of engine power.

2. To exit the Inhibited regeneration mode (to go to the regeneration mode):

- a. Press down the lower side (B) of the DPF switch (3) again for only exiting the inhibited regeneration mode.
- b. Press and hold the upper side (A) of the DPF switch (3) for over one second to exit the Inhibited regeneration mode and to execute the regeneration mode with parking brake.
- c. When inhibited regeneration mode has been exited, the DPF inhibited regeneration indicator (4) will be turned off.

NOTE: If the vehicle is shut off during the inhibited mode, when restarting the vehicle, the regeneration system will return to the regeneration mode.

PCD

Particulate Control Diagnostic system(PCD) means a system on-board the engine that has the capability of detecting a particulate control malfunction, and identifying the cause of particulate control malfunctions by means of information stored in computer memory and/or communicating that information off-board.

Table 4. PCD Related DTC and CAN Message

Signal Name	DTC	Parameters	Remarks
PCD 1	Removal of DPF system	Exhaust temperature sensors T0, T1, and T2 and differential pressure sensor are fault (open circuit).	The PCD system shall detect the complete removal of the particulate after-treatment system, including the removal of any sensors used to monitor, activate, deactivate or modulate its operation.

Table 4. PCD Related DTC and CAN Message (Continued)

Signal Name	DTC	Parameters	Remarks
PCD 2	Malfunction of DPF system	Low output of differential pressure sensor continues to be abnormal over a certain period of time.	The PCD system shall detect the complete removal of the substrate of the particulate after-treatment system. In this case, the particulate after-treatment system housing and sensors used to monitor, activate, deactivate or modulate its operation still exist.
PCD 3	Failures of PCD system Differential pressure sensor 1: High	DPF differential pressure sensor voltage is 4.7V or more.	Failures of the PCD system shall be monitored because they may be attributed to tampering.

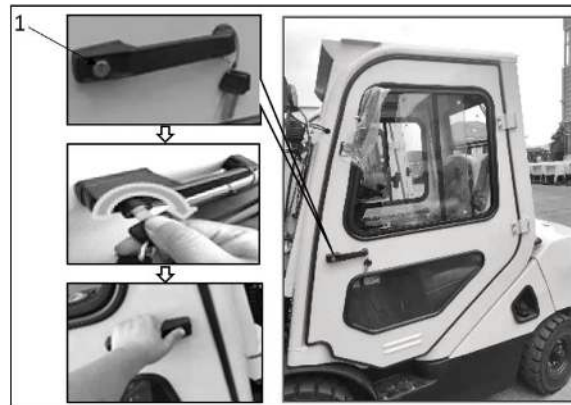
Cabin



- | | |
|------------------------------|--|
| 1. FRONT WINDSHIELD ASSEMBLY | 6. REAR WINDSHIELD WIPER |
| 2. FRONT WINDSHIELD WIPER | 7. OVERHEAD AIR CONDITIONER FAN HEATER |
| 3. RIGHT DOOR ASSEMBLY | 8. FAN HEATER |
| 4. LEFT DOOR ASSEMBLY | 9. GLASS DETERGENT |
| 5. REAR WINDSHIELD ASSEMBLY | |

Figure 6. Cabin Layout

Enter the Cabin



1. LOCK CYLINDER

Figure 7. Enter the Cabin

1. Insert the keys in the lock and turn right.
2. Press against the Lock Cylinder to open the door.

Exit the Cabin



Figure 8. Exit the Cabin

1. Press against the knob to open the door.

Open and Close the Cabin Window



Figure 9. The Side Windows

1. Use the toggle switch on the side window to lock or unlock the window.



Figure 10. The Rear Window

1. Press the left and right buttons (above detailed figure shows the left button only) at the same time to open or close the rear window. Beware of the dropping speed of rear window.

Overhead light



1. OVERHEAD LIGHT SWITCH

Figure 11. Inner overhead light

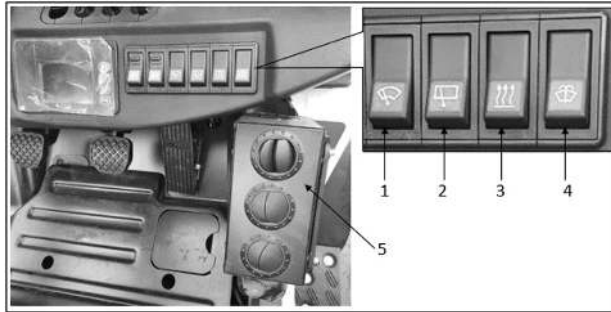
1. Press the light switch on the inner roof to turn on or turn off the light.

Glass Detergent Tank



1. Open the tank cap.
2. Add the fluid detergent into the tank as needed.
3. Close the tank cap and make sure the cap is properly closed.

Light Switch Panel



1. SWITCH FOR REAR WINDSHIELD WIPER
2. SWITCH FOR FRONT WINDOW WIPER
3. SWITCH FOR FAN HEATER
4. SWITCH FOR SPRAY OF GLASS DETERGENT
5. OUTLETS OF FAN HEATER

NOTE: THE ABOVE LIGHT SWITCH PANEL IS JUST A SAMPLE, THIS PANEL CAN INTEGRATE OTHER SWITCHES OF DIFFERENT FUNCTIONS AS REQUIRED.

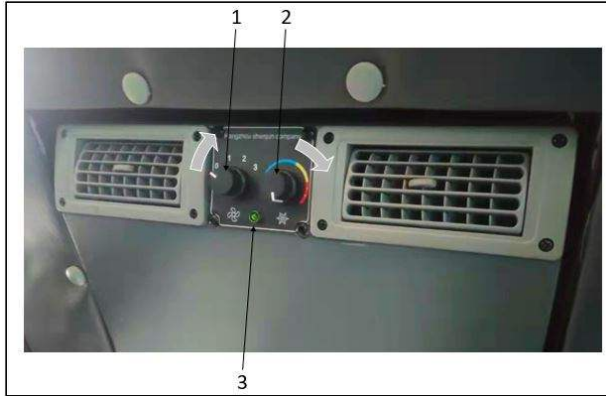
Figure 12. Light Switch Panel

The starting sequence for Fan Heater:

1. Make sure the lift truck engine is running at idle.
2. Switch on the Fan Heater.
3. Adjust the outlets position as needed.

NOTE: Switch off the Fan Heater before powering off the lift truck.

Air Conditioner



1. FAN SWITCH
2. TEMPERATURE CONTROL SWITCH
3. POWER INDICATOR

Figure 13. Air Conditioner

The Fan Switch is in the front overhead of the cab, it has 4 positions.

- Position 0: Fan is off.
- Position 1 - Position 3: Fan is on. The wind goes stronger from Position 1 to Position 3.

If there's no power connected, the Power Indicator will not turn green.

It is suggested that with the Fan Switch on, the pointer of Temperature Control Switch normally be in blue zone, the air conditioner intermittently has cold air blowing out.

If the pointer is turned to the yellow zone, the air conditioner also blows out cold air intermittently.

With the Fan Switch on, when the Pointer is turned to red zone, the air conditioner continuously has cold air blowing out. Be aware that since the air conditioner is easy to frost inside, it's suggested not to keep the Pointer at red zone for a long time.

NOTE: When using the truck in dusty and dirty environments, over time the temperature sensor may become dirty and less sensitive.

Load Backrest

The load backrest improves stabilization when loading goods. **DO NOT** use forklift truck without the load backrest.

WARNING

The backrest installed on the carriage has the function of lateral fork stop and must not be removed.

On carriages where there is no backrest, the lateral fork stops are made of two metal plates (one for each side of the carriage) whose part number is available in parts manual, fixed with two bolts. See Figure 14. Before operating the lift truck, make sure that the backrest or the lateral fork stop plates are always present and the bolts are properly tightened. Under no circumstances should the truck be used without these stops.

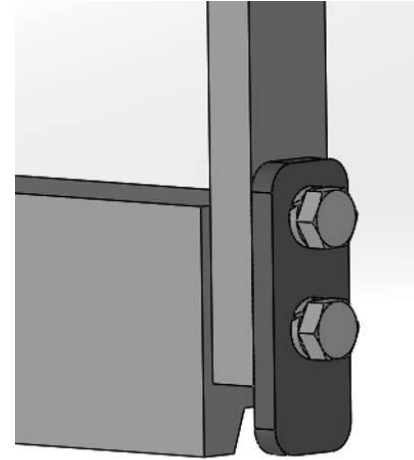


Figure 14. Lateral Fork Stop

Seat Adjustment

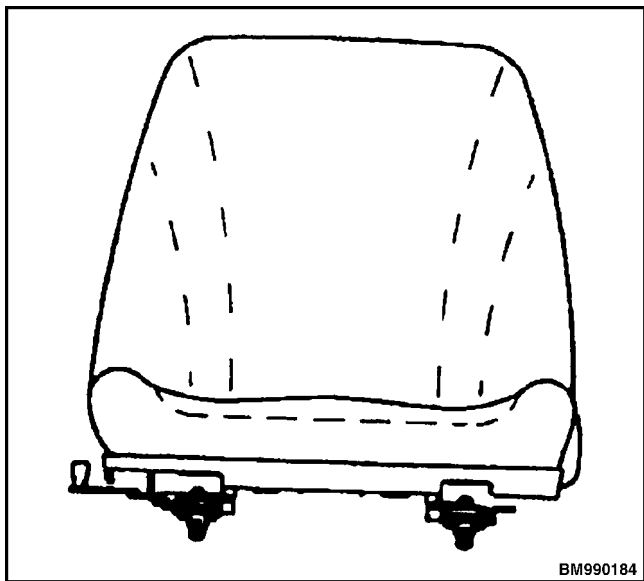


Figure 15. Seat and Seat Adjusting Lever

Adjust operator's seat to desired position, ensuring it provides easy access to all hand and foot controls. Unlock seat by moving the adjusting lever to the right. Before operating truck, make sure that seat is securely locked.

⚠ WARNING

- Place key in OFF position before adjusting the seat.
- DO NOT attempt to adjust the seat while truck is moving.

Operator Presence System

⚠ WARNING

Always make sure the parking brake is fully applied before leaving the lift truck. If the operator leaves the lift truck without applying the parking brake, a seat activated switch will shift the transmission into neutral. If the truck is left on a grade, without the parking brake fully applied, the lift truck will free wheel down the grade, possibly causing injury or property damage.

These lift trucks are equipped with an Operator Presence System (OPS). The OPS feature has an electrical sensor in the seat which senses the presence of the operator. This allows the engine in internal combustion engines trucks to be engaged only when the operator is in the seat. The OPS is designed with a slight delay in the seat sensor to allow the operator to reposition himself without disengaging the transmission. When the seat sensor disengages the transmission (neutral position), the operator must select neutral, then re-select a direction to re-engage the traction (travel mode).

A switch in the operator's seat will automatically shift the transmission to neutral within 3 seconds when the operator leaves the seat of the lift truck with the engine running and without applying the parking brake.

Seat Belt

The seat belt provides an additional means to help the operator keep the head and torso substantially within the confines of the truck frame and overhead guard if a tipover occurs. This restraint system is intended to reduce the risk of the head and torso being trapped between the lift truck and the ground, but it cannot protect the operator against all possible injury in a tipover. The hip restraint will help the

operator resist side movement. It is not a substitute for the seat belt. Always fasten the seat belt.

This lift truck is equipped with one of the two seat belt configurations.

- Seat belt with no operation interlock.
- Seat belt with operation interlock. Seat belt must be fastened for lift truck to start or to travel.

Overhead Guard

The OVERHEAD Guard is intended to offer reasonable protection to the operator from falling objects, but cannot protect against every possible impact. Therefore, it must not be considered a substitute for good judgement and care when handling loads. Do not remove the overhead guard.

Hood

The hood can be fully opened to provide easy access when performing maintenance. The hood can be easily lifted with the aid of a hood damper. To lock the hood, push down on the front of hood until it latches.

CAUTION

Before opening the hood, the hood release should be pulled out.

WARNING

While performing maintenance under the hood, the engine must be off to avoid injury to hands or other body parts. The engine can be running in order to troubleshoot some problems. However, **DO NOT** place body under hood while engine is running.

Radiator Cap and Coolant Reservoir

The reservoir is located inside the hood.

The radiator is located under the radiator cover at the rear of the hood.

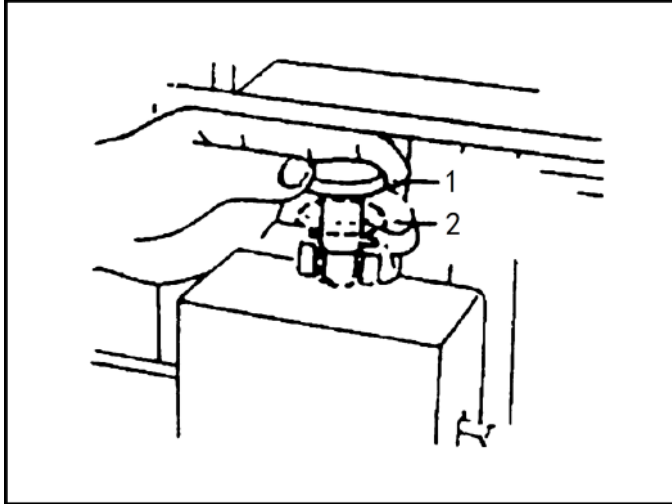
WARNING

- **DO NOT** remove the radiator cap from the radiator when the engine is hot. When the radiator cap is removed, the pressure is released from the system. If the system is hot, the steam and boiling coolant can cause burns.

- **WEAR GLOVES** when removing the radiator cap. You may get burnt on your hand if hot coolant splashes on it.
- Ethyl glycol antifreeze is harmful to a person. If swallowed, seek medical advice immediately.
- Keep antifreeze away from children.

Fork Position Lock

Used when adjusting the spacing of the forks. Pull the fork positioning pin and rotate 90°. Adjust the fork to the position desired for the material that is to be loaded. Rotate 90° the other way until the pin engages.



1	Open	2	Lock
---	------	---	------

WARNING

- The forks should be set symmetrically to machine centerline, and fork stoppers should always be set.
- The lower beams of the carriage have a cut out section to load or unload forks.

Brake Fluid Reservoir

The brake fluid reservoir is provided at the left of the cab.

Hydraulic Fluid Reservoir Cap

The hydraulic fluid reservoir cap is located on the right side of the hood. Fill hydraulic fluid through this filler port. The cap is provided with a dipstick. After filling hydraulic fluid, lock the cap.

Operating Instructions

NOTE: Some notices for correct driving operation are introduced here, in order for your truck to maintain good performance, safe use, and frequent operation.

Use of New Truck

The service life of your truck depends on use at the time when the truck is new. In the early stage of 200-h operation, please pay high attention to the following items:

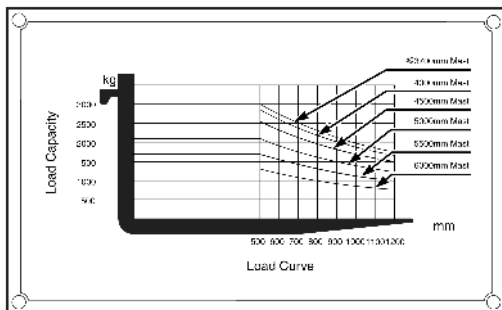
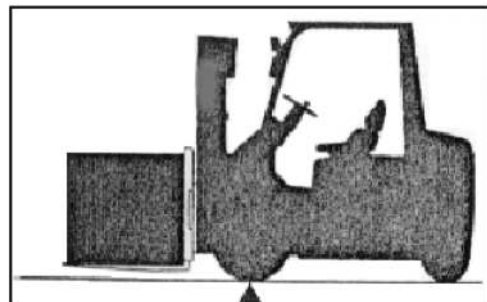
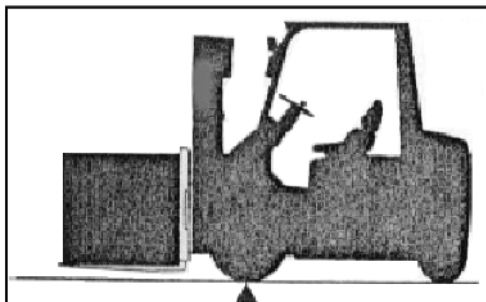
- Follow Periodic Maintenance Schedule.
- Avoid harsh operation, and avoid unreasonable use.
- Add lubricating oil and lubricating grease. Follow Periodic Maintenance Schedule.
- Do not smoke or allow any flame near the truck, especially truck with LPG fuel.

Relationship between Load and Forklift Truck Stability

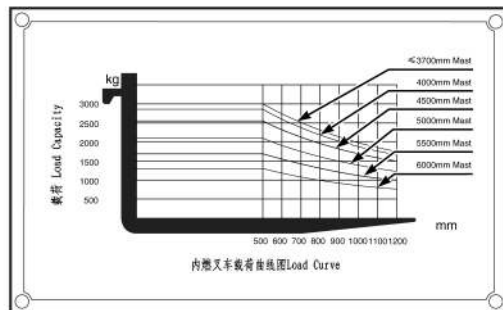
Within the load curve, the forklift truck takes the center of front wheel as pivot point, to maintain the mutual balance for the load on truck body and fork. Pay attention to the load amount and the load center, to maintain the truck stability.

WARNING

If it goes beyond the load curve, danger exists for the rear wheel to be raised and under this situation, as the forklift truck may possibly turn over, leading to severe accident. As indicated in the figure, the same result exists with cargo closed to fork tip and increase in cargo weight, while under such circumstances, the loading capacity shall be reduced along with.



BO990106



内燃叉车载荷曲线图Load Curve

Load Center and Load Curve

Load center is the distance from the front end face of fork to the cargo center of gravity. The above mentioned load curve diagram has indicated the relationship between the truck load center and the allowable load quantity (load allowable for use). The data plate is attached on the truck, and it shall be replaced with a new one, if damaged or lost.

⚠ WARNING

If the truck is equipped with attachments, such as side moving device, bucket, or rotating fork, its load allowable for use that is lower than the corresponding standard trucks (without any attachment) is attributed to the following reasons:

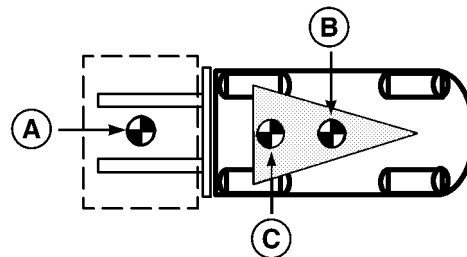
- Load for weight of equivalent attachments is reduced.
- The load allowable for use is reduced in the same principle, as the length of attachments has moved the load center to move forward.
- The installation of attachments has moved the load center to move forward, called “Loss of Load Center”.

- Avoid exceeding the load allowable according to the load curve pasted on truck or attachments.

Stability and Center of Gravity

The center of gravity (CG) of any object is the single point about which the object is balanced in all directions.

Every object has a CG. When the lift truck picks up a load, the truck and load have a new combined CG.



A. CG LOAD

B. CG TRUCK

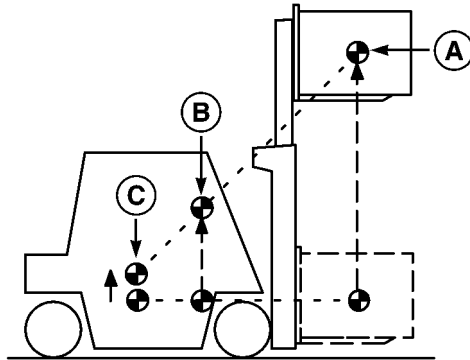
C. COMBINED CG

The stability of the lift truck is determined by the location of its CG, or if the truck is loaded, the combined CG.

Operating Instructions

HYSTER

The lift truck has moving parts and therefore has a CG that moves. The CG moves forward and back as the mast is tilted forward and back. The CG moves up and down as the mast moves up and down.

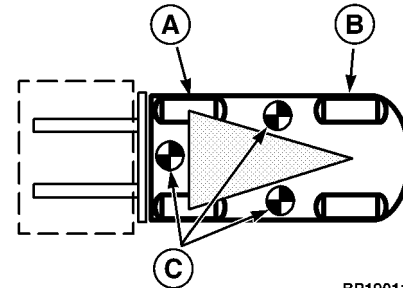


A. CG LOAD B. COMBINED CG C. CG TRUCK

The center of gravity, and therefore the stability of the loaded lift truck, is affected by a number of factors such as size, weight, shape, and position of the load; the height to which the load is raised; the amount of forward and backward tilt; tyre pressure and the dynamic forces created when the truck is moving. These dynamic forces are caused by things like acceleration, braking, turning, and

operating on uneven surfaces or on an incline. These factors must be considered when traveling with an unloaded truck, as well, because **an unloaded truck will tip over to the side easier** than a loaded truck with its load in the lower position.

In order for the lift truck to be stable (not tip over forward or to the side), the CG must stay within the area of the lift truck represented by a triangle drawn between the drive axle and the pivot of the steering axle.



BP190110

A. DRIVE AXLE B. STEERING AXLE C. TRUCK WILL TIP OVER

If the CG moves forward of the drive axle, the lift truck will tip forward. If the CG moves outside of the line represented by the lines drawn between the drive wheels and the steering axle pivot, the lift truck will tip to that side.

Capacity (Weight and Load Center)

The capacity of the lift truck is shown on the Nameplate. The capacity is listed in terms of weight and load center. The weight is specified in kilograms and pounds. The load center is specified in millimeters and inches. The capacity is the maximum load that the lift truck can handle, with the mast vertical, for the load condition shown on the Nameplate.

LIFT TRUCK MODEL:

Serial No.

Build Date Nominal Power kW

Attachment

Truck Weight kg

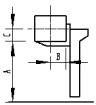
Forward/Back Tilt Degrees

Tyre Front Rear

Size

Pressure

Tread Width mm mm



Load Height Dim. A	MAXIMUM CAPACITY Mast Vertical	Load Center Dim. B Dim. C		MAXIMUM CAPACITY Mast Fwd Tilted	Load Center Dim. B Dim. C	
mm	kg	mm	mm	kg	mm	mm
mm	kg	mm	mm	kg	mm	mm

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BO990168

LIFT TRUCK MODEL:

Serial No.

Build Date Nominal Power kW

Attachment

Truck Weight kg

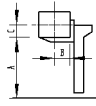
Forward/Back Tilt Degrees

Tyre Front Rear

Size

Pressure

Tread Width mm mm



Load Height Dim. A	MAXIMUM CAPACITY Mast Vertical	Load Center Dim. B Dim. C		MAXIMUM CAPACITY Mast Fwd Tilted	Load Center Dim. B Dim. C	
mm	kg	mm	mm	kg	mm	mm
mm	kg	mm	mm	kg	mm	mm

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No. 1 Jinxin Road, Fuyang, Zhejiang, China

BO990169

内燃平衡重式叉车

许可证编号: TS2510387-2027 特种设备代码:

型号	产品系列	标准载荷中心距	mm
产品编号	自重	额定起重量	kg
车架号	制造日期	发动机额定功率	kw
防倾等级	/	载荷中心距	mm
		最大起升高度	mm
		最大起升高度起重量	kg

装有属具时, 最大起升高度起重量参见属具标牌或载荷曲线标牌

制造商: 海斯特美科斯叉车(浙江)有限公司 制造地址: 中国·杭州·富阳
 监制: 上海海斯特叉车制造有限公司

Figure 16. Capacity

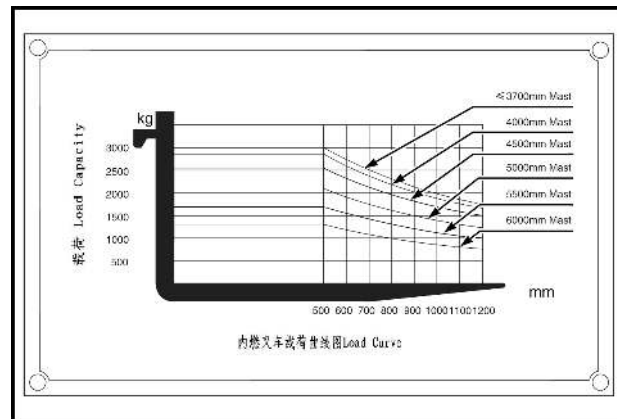
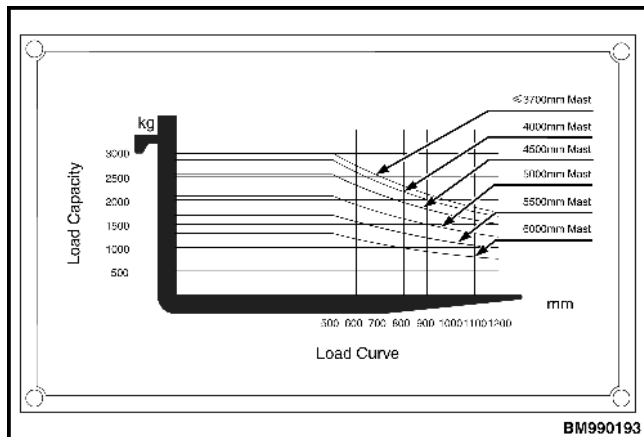


Figure 17. Load Center

The load center of a load is determined by the location of its center of gravity. The load center is measured from the front face of the forks, or the load face of an attachment, to the center of gravity of the load. Both the vertical and horizontal load centers are specified on the Nameplate.

Loads should be transported while centered on the center-line of the lift truck. The operator must know whether or not a load is within the maximum capacity of the lift truck before the load is handled.

Transporting and Loading-Unloading of Forklift Truck

1. Transporting Forklift Truck

When cargo truck is used for transporting, apply the parking brake, use wheel chocks properly, and tie down straps rated for the weight of the lift truck. This will ensure the lift truck does not shift or move while in transport.

2. Loading-Unloading of Forklift Truck

- Use ramps typical of enough length, width, and strength.
- The parking brake of the cargo truck should be set and wheels chocked.
- The ramps should be placed at the width of the lift truck. Ensure the ramp surface is free of foreign materials.

- The ramps should be the same to ensure a stable operation of vehicle when forklift truck is loaded-unloaded.
- Do not change direction or perform any traverse movement on the ramps.

3. Lifting of Forklift Truck

- Forklift truck shall be lifted by personnel who have been specially trained.
- The properly weight rated lifting straps should be used to hook up the designated lifting position on forklift truck.
- Designated lifting positions are also available for the detachable parts and components on forklift truck.

Inspection Before Operation

Report damage or faulty operation immediately. Do not operate a lift truck that needs repair. A lift truck will only do its job when it is in proper working order. If repairs are required, install a tag in the operator's area stating "DO NOT OPERATE" and remove the key from the key switch if truck is equipped with key switch option.

Checks With the Engine Stopped

Before using the lift truck, make the following checks:

- Condition of forks, carriage, chains, header hoses, mast, attachment, and overhead guard.
- Condition of engine, intake, exhaust, cooling system, fuel system, transmission, hydraulic system and drivetrain to verify that there's no leak and the engine is fully assembled and not in the process of being serviced.
- Steering, brakes, and hydraulics are in proper condition and vehicle is safe to operate.
- Condition of wheels and tires.
- Seat belt fastens correctly.
- Seat is correctly fastened to its mounts. Hood is correctly latched.
- All the indicator lights in the dashboard are operating.
- Condition of the engine compartment. Ensure all surfaces are free of oils, lubricants, fuel, and organic dusts or fibers (paper, wood, cotton, agricultural grass/grain, etc). Remove all foreign materials to ensure the engine is free to turn without obstruction.
- Coolant level in the cooling system and condition of the drive belts.
- Condition of the radiator and screen. Clean if necessary, and make sure of no leakage.
- Fuel level in the fuel tank or LPG cylinder.
- Oil level in the engine.
- Oil level in the hydraulic tank.
- Hoses for split, kinks and proper connection.

- Check the Electric System for the wiring connection, electric instruments, components and valves, electrical box including relays and fuses, to determine that none are loose, cracked, or missing. Check if the state of battery is charging sufficient and the battery voltage is greater than 11.5 volts.
- Wires for cracking, hardness, proper routing, pinches, cuts, and carbon tracking.
- Loose or missing hardware.
- Check transmission oil level.

WARNING

Before do any inspection, it is a must to wear PPE. It is very dangerous to work in a closed area. The poisonous exhaust gas may cause serious damage to the human body. If you should work in this area, make sure to ventilate well and put on the protective mask.

Place feet carefully. Always face the lift truck when climbing on or off. Use added care when surfaces are slippery. Keep hands free of any obstacles such as food, beverages, or tools.

Mounting and Dismounting

WARNING

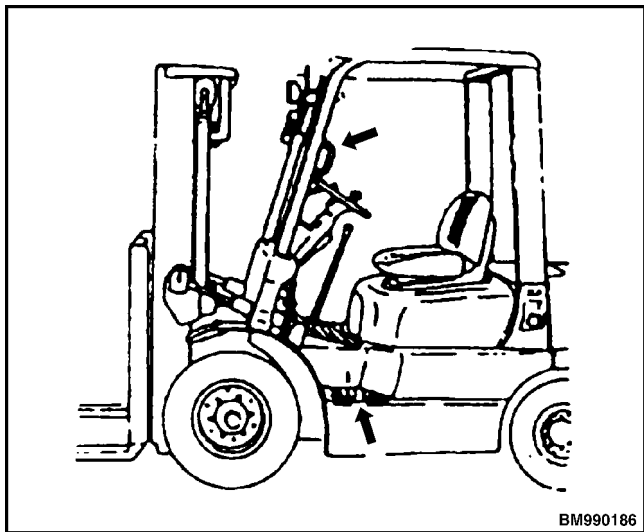
To avoid serious injury when entering or exiting the lift truck, ALWAYS USE 3 POINTS OF CONTACT. Maintain contact simultaneously with two hands and one foot or with two feet and one hand while climbing on or off the lift truck.

Place feet carefully. Always face the lift truck when climbing on or off. Use added care when surfaces are slippery. Keep hands free of any obstacles such as food, beverages, or tools.

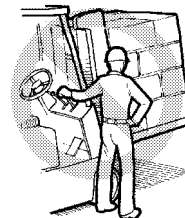
Safety Step and Safety Grip

Safety steps are provided on both sides of the truck body.

The safety grip is located on the front left pillar of the overhead guard. Use both the safety step and safety grip when mounting and dismounting the truck.



Starting Procedure



BO190112

DO NOT start or operate the lift truck, including any of its functions or attachments, from any place other than the designated operator's position.

WARNING

LPG is very flammable. An odor of LPG fuel can indicate a leak in the fuel system. DO NOT start the engine until the fuel leak is repaired and the atmosphere is free of LPG.

NOTE: Lift trucks have a "Clear Flood Mode" programmed into the ECU. When accelerator is depressed more than 80% during cranking, the ECU will not allow any fuel into the engine. This allows the engine to clear any excess fuel out of the intake manifold and cylinders.

1. If the lift truck uses LPG fuel, open fuel valve on LPG tanks.
2. Make sure that parking brake is applied.
3. Put direction control lever for transmission in **NEUTRAL** position.
4. Make sure lift truck hood is closed.
5. Turn key to the **ON** position. If lift truck is equipped with a diesel engine and engine is cold, the cold start indicator light will illuminate and the cold start circuit will be energized.
6. On lift trucks equipped with a LPG engine, turn the key to the **START** position to engage the starter.

On lift trucks equipped with a diesel engine, if cold start delay is required, the cold start indicator will be illuminated and a countdown time of ten seconds is displayed. When countdown reaches 0, turn the key to the **START** position to engage the starter.



WARNING

FASTEN SEAT BELT IF LIFT TRUCK TIPS OVER:

- **DO NOT Jump – Stay On Truck**
- **Hold Firmly To Steering Wheel – Brace Feet – Lean Forward And Away From Impact**

The seat belt is installed to help the operator stay on the truck if the lift truck tips over. IT CAN ONLY HELP IF IT IS FASTENED.

The operator must be aware that the lift truck can tip over. There is a great risk that the operator or someone else can be killed or injured if trapped or hit by the truck as it tips over. The risk of injury can be reduced if the operator stays on the truck. **If the truck tips over, do not jump off!**

Operating Techniques



BO190114

WARNING

Before operating the lift truck, FASTEN YOUR SEAT BELT.

There are a number of operations, if not performed carefully, that can cause the lift truck to tip. If you have not read the **WARNING page in the front of this Operating Manual, do so NOW. As you study the following information about how to properly operate a lift truck, remember the **WARNINGS**.**

NOTE: When the Emergency Locking Retractor (ELR) seat belt is properly buckled across the operator, the belt will permit slight operator repositioning without activating the locking mechanism. If the truck tips, travels off a dock, or comes to a sudden stop, the locking mechanism will be activated and hold the operator's lower torso in the seat.

Lift Truck Interlocks

Certain operator actions, if not performed correctly while operating the lift truck, will cause traction and the hydraulic functions to become disabled.

DRIVE INTERLOCKS: Traction is enabled when the operator is in the seat (occupancy sensor), seat belt should be fastened, a direction of travel is selected, engine is running, and the parking brake is released. If any of the above actions are not performed while operating the lift truck, traction will be disabled. To reactivate traction, the operator must return to the seat. Once the needed actions are completed, traction will be enabled and the operator can continue to load and unload material.

HYDRAULIC INTERLOCKS: The hydraulic functions are enabled when the operator is in the seat (occupancy sensor), seat belt should be fastened, and the engine is running. If any of the above actions are not performed while operating the lift truck, the hydraulic functions will be disabled. The LCD screen on the display panel will provide an icon. Seat Belt Indicator light will be on. To reactivate hydraulics, the operator must return to the seat and fasten seat belt. Once the needed actions are completed, the

hydraulic function will be enabled and the operator can continue to load and unload material.

Starting Forklift Truck

1. Before Starting Forklift Truck

Prior to truck operation, the lift truck should be inspected as to whether or not all the control devices and warning devices are under normal operation. If there is any damage or failure which has not yet been corrected, the lift truck should not be operated. Refer to **Inspection Before Operation**

NOTE: It is not necessary to "pump" the accel pedal, or to hold to the floor before starting. This may cause a failure to start.

Inspect the safety conditions around the truck.

- Check the surroundings around the vehicle.
- Ensure that the gear shift lever and multi-way valve handle are placed in **NEUTRAL** and the parking brake lever is fully engaged.
 - a. Start Gasoline/LPG Engine
- Cooling

Depress the accelerator pedal 2-3 times. Return the preheating start switch to **START** position and start the engine. Release the switch key after starting the engine.

b. Heat engine

Depress $\frac{1}{2}$ way and hold the accelerator pedal. Return the preheating start switch to **START** position and start the engine. Release the switch key after starting the engine.

c. Start Diesel Engine

Turn the preheating start switch to **ON** position until the preheating indicator goes off. Turn the preheating start switch to **START** position. If it is hard to start the engine, check whether the fuel level is too low, the condition of air mixing in fuel system or whether preheating wire is broken.

d. Start Diesel Engine In Cold Weather

- Push the throttle lever to the low idle position.
- Start the engine after the cold start aid indicator is turned off according to the time table.
- After starting engine, carry out warming up for about 5~10 minutes at low idle rpm.

- Use the engine oil for winter in cold weather. For specified lubricant to use, refer to the following, **Capacities and Specifications - H2.0, H2.5UT, H3.0UT, H3.5UT (H40UT, H50UT, H60UT, H70UT) [A3C1]**.
- Use the diesel for winter when it is very cold weather. It is much easier to start engine.

Coolant Temp.	Preheat time (s)
60 °C (140 °F)	0
40 °C (104 °F)	0
30 °C (86 °F)	0
20 °C (68 °F)	8
10 °C (50 °F)	15
0 °C (32 °F)	18
-10 °C (14 °F)	25
-20 °C (-4 °F)	30
-30 °C (-13 °F)	40

2. After Starting Engine

- Preheating the engine (about 5 minutes)
- Check the engine – rotation (sounds or gears)

After the engine is preheated completely, completely operate the handle of multiple unit valve for 2-3 times to check its working condition.

- Check the sounds of fire (or misfire).
- Check air exhaust condition (density).
- Make sure that all indicator lights go off.

3. When Operating Engine

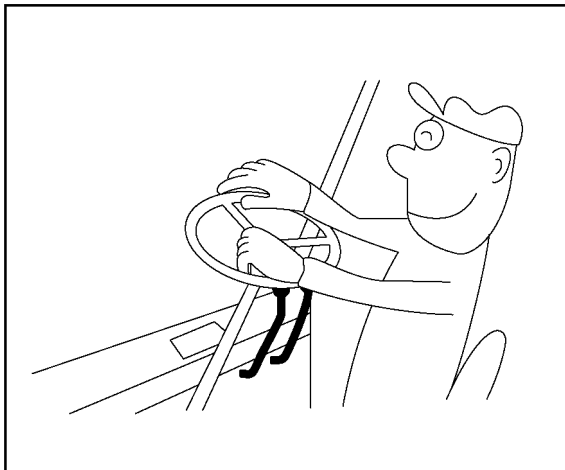
- Do not leave the engine running at idle speed for long. The fuel consumption is increased and the carbon is deposited internally of the engine.
- The engine load should be increased gradually after approximately one minute from start-up.
- DO NOT operate heavy loaded work and do not increase the engine rpm to high speed suddenly. It shortens the life of engine.

Running

1. Operator's Position

While sitting in the seat and wearing the safety belt, ensure your back and waist are as close to the seat back as possible.

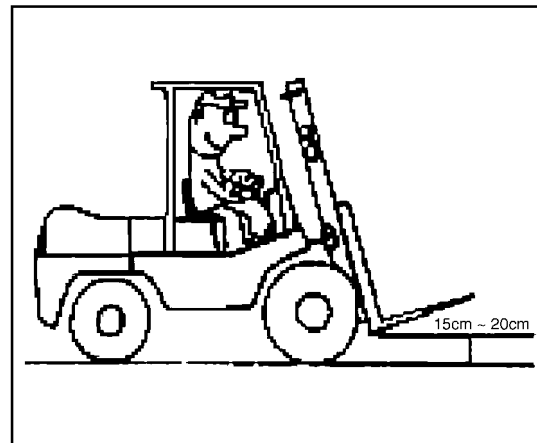
Hold the handgrip of steering wheel using left hand, and the right hand is gently put up on the steering wheel and get ready for loading-unloading operation.



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2. Basic Running Conditions

Ensure the bottom surface of the fork is off the ground by 15-20 cm (6-8 in.), and the mast tilts back in place.



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Look around the forklift truck. Signal prior to start of truck. Inspect surroundings for safety.

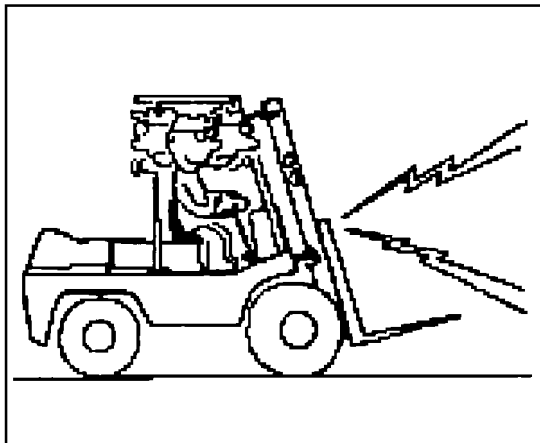
WARNING

Some lift trucks have mirrors for viewing along the side to observe their tail swing area. These mirrors are an aid to the driver, but are NOT driving mirrors and must NOT be used as such when operating in reverse.

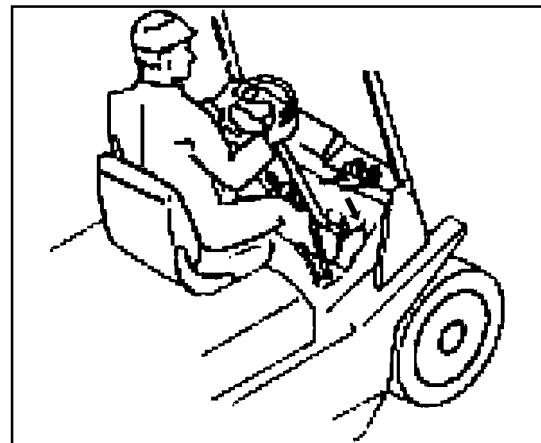
Operating Instructions

HYSTER

Always look in the direction of travel to avoid damage to something or injury to someone.



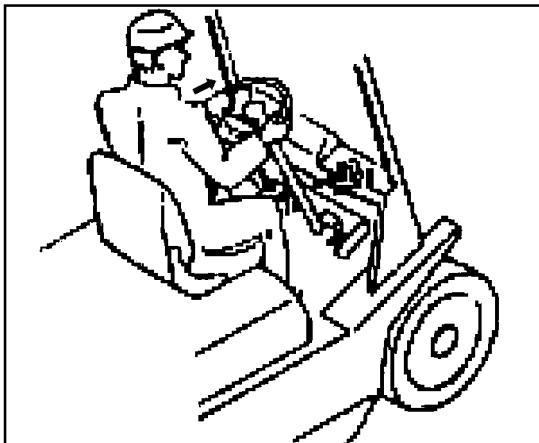
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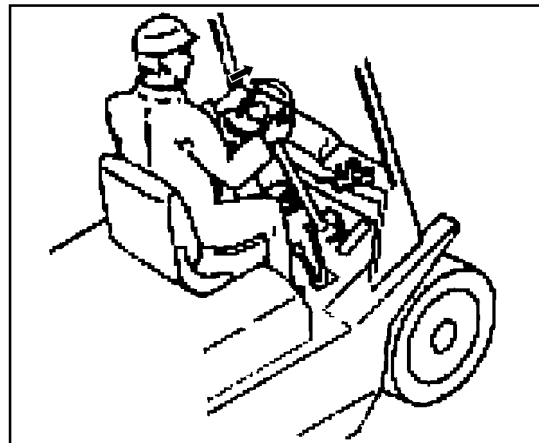
BO990111

3. Hydraulic Transmission Forklift Truck

- a. Depress the brake pedal and operate forward – backward gear shift knob,
- b. Release the parking brake handle.



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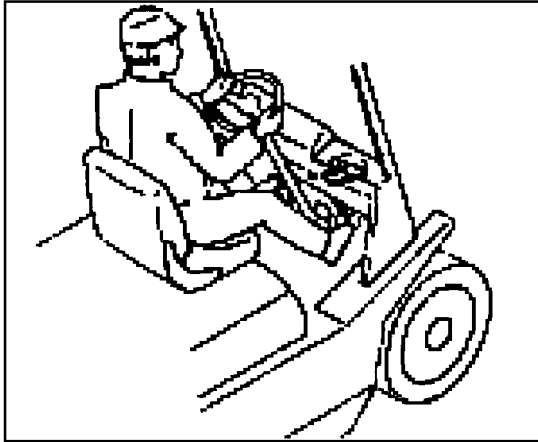


BO990113

c. Release the brake pedal and depress the accelerator pedal. The vehicle is operational.

(1) Gear shift.

Releasing the brake enables the truck to start at a higher gear when unloaded, while it is necessary to start the vehicle at low gear under loading condition.



BO990114

4. Hydraulic Transmission Forklift Truck

a. Deceleration.

(1) Come to a complete stop before changing the travel direction of the vehicle (Forward-Reverse).

⚠ WARNING

The truck must be decelerated (Slowed):

- At crossroads.

- In crowded places pedestrian walkways).
- On rough grounds and other rugged surfaces.
- Approaching cargo or obstacle.

⚠ WARNING

Parking

- Truck to be parked on a level ground – It is the best to park the truck in a spacious place, and if it has to be parked on a slope, park the truck horizontally on the slope, and stop the wheels using wedge blocks, to prevent accidental downslide.
- Truck shall be parked in a designated area or a place where traffic is not hindered, and labels or signal lights may be set around the truck, if required.
- Truck shall be parked on a firm and hard ground, and it is to be avoided to park the truck on a loose and soft muddy land or a rather slippery pavement.
- In the case when lifting system is damaged, and the fork fails to drop on ground, hang a warning flag on the end of the fork, and park the truck in a place where traffic is not hindered.

NOTE: Parking: Park the truck in the place where traffic is not hindered, and:

- Pull up the handle for parking brake.
- Drop the fork to ground.
- Turn the key switch to **OFF** position, and press the emergency power disconnecting switch.
- Remove the key and keep it properly.

5. Hydraulic Transmission Forklift Truck

Lift foot from the accelerator pedal, and depress the brake pedal if necessary.

a. Steering.

Different from normal vehicles, the steering wheels of forklift trucks are mounted in the rear, which allows the rear to rotate outwards during steering. Slow down (decelerate) the truck, and steer the direction in which the truck is to turn (right/Left). The steering wheel will rotate somewhat beforehand compared with the truck of front-wheel turning.

b. Stopped or parking.

Decelerate, depress the brake pedal for truck to stop, and place the in **NEUTRAL (N)**. Apply parking brake.

c. Towing Truck for Service

NOTE: If failure occurs with forklift truck during operation, the truck will be towed away for repair, to avoid hindering the operation of other vehicles and personnel.

Loading

1. The spacing of fork should be spread as far as possible stability.
2. The forklift truck and the cargo should be aligned, when forks insert into pallet or directly into cargo.
3. The forks must be inserted into the pallet evenly.
4. Ensure the forks are fully inserted.
5. Cargo Lifting:
 - a. Lift cargo off ground by 5-10 cm (2-4 in.), and ensure cargo is stable and secure.
 - b. Tilt the mast backward. Lift the cargo off the ground by 15-20 cm (6-8 in.), and then begin transporting.

- (1) Large cargo should be transported in reverse except when climbing a slope.
- (2) **DO NOT** transport cargo by forks alone.
- (3) **DO NOT** drag cargo with forks.

Stacking

NOTE: Inspect the following before operation of forklift truck:

- Ensure that there is no loose or damaged cargo in stacking area.
- Ensure that there are no objects or cargo stacks that may hinder safety in the stacking area.

Stacking should be performed according to the Following procedure:

1. Operate truck at a decelerated speed when the stacking area is approached.
2. Park the truck in front of the stacking area.
3. Ensure it is safe around the stacking area.

4. Adjust the position of forklift truck as needed. Place forklift truck in position where the cargo is to be placed in the stacking area.

5. Ensure the mast is vertical to the ground, and the forks exceed the height of stacked cargo.

6. Inspect the stacking position and slowly move forward to park the truck at a proper stacking position.

7. Ensure that cargo is above the cargo stacking position. Slowly lower the forks, and ensure that cargo has been properly placed.

8. When cargo is not completely placed/stacked on rack or bearer:

a. Lower the cargo until the forks no longer bear the weight.

b. Run the forklift truck backwards by 1/4 length of the forks.

c. Lift the forks by 5-10 cm (2-4 in.). Move the truck forward and place the cargo in a proper stacking position.

9. When cargo is stacked, inspect the operating area behind the forklift truck. If area is safe, run the truck backward to avoid bumping forks and pallet into each other.

10. Ensure that the front part of forks has left the cargo or pallet, and lower the forks to proper operating height.

Unloading

Unloading should be performed using the following procedures:

1. Ensure to operate at a decelerated speed when the truck approaches the cargo to be transported.

2. Park the truck in front of the cargo (30 cm (12 in.) distance between cargo and fork tip).

3. Adjust the position of forklift truck in front of the cargo.

4. Ensure that cargo will not overload the truck.

5. Ensure the mast is vertical to the ground.

6. Ensure the fork position is placed where the cargo is stable. Move the forklift truck forward, until the fork is completely inserted into pallet.

7. When forks will not completely insert into pallet:

a. Insert 3/4 of the forks and raise one side of the pallet 5-10 cm (2-4 in.).

b. When possible, insert the forks completely into the pallet.

8. After forks are inserted into pallet, raise the pallet 5-10 cm (2-4 in.).

9. Ensure the operating area is clear and move the forklift truck until the cargo can be lowered to operating height..

10. Lower the cargo off ground by 15-20 cm (6-8 in.).

11. Tilt mast backwards to ensure the stability of cargo.

12. Transport the cargo to the destination.

Storage

WARNING

When the truck is in need of repairs for operational or safety issues, this should be reported immediately. The truck should be removed from daily operations until repairs are completed.

1. Before Storage:

The forklift truck should be thoroughly cleaned and inspected according to the following procedure:

- a. Remove the oil and grease attached on the truck body using a cloth and clear water, as per requirement.
- b. When truck body is cleaned, inspect the overall condition of the truck. It is especially required to inspect whether or not the vehicle body is damaged, whether or not tires are worn or embedded with foreign objects.
- c. Fill the oil tank with the specified oil.
- d. Inspect for oil leaks.
- e. Add lubricating grease as per requirement.
- f. Inspect for loose wheel nuts and wear on cylinder rods.

g. Inspect the rotation for roller of mast is smooth.

h. Lift the mast cylinders to highest point and fill cylinder up with oil.

i. In the winter or cold season, the long-acting antifreeze does not need to be released if filled with water. Drain before storage.

2. Routine Storage

The following service and inspections should be performed after Routine Storage is completed.

- a. Park the forklift truck in the designated place using wedge blocks for wheels.
- b. Place the gear-shift handle to the **NEUTRAL** position, and pull up the parking brake handle.
- c. Turn the key switch to **OFF** position, operate the control rod for multi-way valve for a number of times, and release the remaining pressure in the cylinder and the hydraulic liner.
- d. Remove the key and have it placed and kept in a safe place.

3. Long Term Storage

The following service and inspections should be performed after Routine Storage is completed.

a. Park the truck high ground in consideration of the rainy season.

b. Run the engine and perform basic engine checks.

Apply a load in excess of 50% of the rated load to the engine, and operate it for more than 10 minutes. Make sure that no abnormal noise or vibration is produced.

c. Remove the battery from the forklift truck. Whether the forklift truck is parked outdoors or indoors, the battery should be placed in a dry, shady, and cool place. If the battery is placed in a wet and hot area, ensure to charge once every month.

d. Coat the exposed parts such as cylinder piston rods and the shafts that may possibly be rusted, with antirust oil.

e. Cover the parts and components liable to be affected with inclimate weather.

f. The truck should be operated at least once a week. The oil and grease on piston rods and shafts should be removed. The power supply should be turned **ON** to allow the truck to operate forward and backward. The hydraulic control should be operated for a number of times.

g. Avoid parking the forklift truck on loose and soft pavements in summer.

4. Operation of Forklift Truck after Long Term Storage:

- a. Remove the antirust oil from the exposed parts.
- b. Remove the foreign substances and water in hydraulic oil tank.
- c. Check battery electrolyte level and specific gravity.
- d. Charge the battery, mount it on the forklift truck, and connect with the lead wire of battery.
- e. Drain sediment from the fuel system (fuel filter and fuel tank).

f. Change engine oil and oil filter element.

g. Change air cleaner element.

h. Add coolant to the required level.

Check antifreeze protection and level.

i. Check and adjust fan belt tension.

j. Carefully inspect everything except from above before starting.

k. Preheat forklift.

Periodic Maintenance

A daily inspection of the forklift truck may avoid truck failure and inability to reach its due service life. The number of hours listed in this section and Regular Maintenance Timetable, based on 8-hour work a day and 200-hours a month.

Detailed records should be kept after inspection, and the records should be retained for 3 years.

- Only trained, qualified personnel can maintain and repair forklift truck.
- Daily and monthly inspections and maintenance may be accomplished by operators.

Periodic Maintenance Requirements

1. Ensure only authentic parts and components are used.
2. Ensure only authentic or designated oils and greases are used.
3. Clean up the oil filler port and grease nipple using brush or cleaning cloth prior to oil or grease addition.
4. The truck should be parked on a level ground for inspection of oil level and oil addition.

5. Preventive Maintenance and service should be regularly performed, and attention should be paid not to injure yourself.

6. When inspecting or repairing suspended forks or attachments, the proper support brace should be used to support the forks or the attachment, to prevent downslide of fork and inner mast.

7. It should be reported to the managerial personnel if any damage or failure is found. It is prohibited to use this forklift truck before it is repaired.

Periodic Maintenance Items

1. Inspection for Hydraulic System

- a. Inspect whether or not oil leaks exist within the joints of hydraulic drive system, including the pipelines.

2. Inspection for Transmission Case Oil

- a. Inspect whether or not oil leaks exist within the case.

Inspect the oil level as required in the case to ensure sufficient lubrication of gears.

3. Inspection for Fuel Circuit



CAUTION

Liquid LPG is drawn off of the bottom side of an LPG tank or cylinder and is a liquid until it has passed through the regulator/vaporizer, at which point it is vaporized to a gas. If you connect vapor LPG to a liquid LPG fuel system, you may starve the engine for fuel, causing it to produce low power and excessive emissions.

Vapor LPG is drawn off of the top side of an LPG tank or cylinder and is a gas from the tank/cylinder through to the engine intake. If you connect liquid LPG to a vapor LPG fuel system the fuel will not vaporize properly, causing the engine to run rich, produce low power and excessive emissions.

- a. Check for the fuel type in order to maintain emission compliance and engine warranty. Refer to **Specification** in **Service Manual** for fuel type.
- b. Check fuel level in the fuel tank/cylinder to ensure the level meets required quantity. Do not operate the engine with low fuel in the fuel tank.

Check whether there are impurities in the fuel tank. The air and particles will be inflow with the fuel, which will cause engine shutdown and damage to the fuel system.



WARNING

Do not smoke when refueling. Gasoline and LPG are highly combustible fuels, and can be explosive if leaked and contained in a confined area. Keep cigarettes and all other flame sources away from these areas.

If you can hear or smell a fuel leak, shut off the fuel supply at the source immediately and fix the leak or have it serviced. Check the entire fuel supply line from the cylinder/tank to the engine for leaks with a soapy water bubble mixture anytime a cylinder/tank is changed or the fuel supply line is worked on.

Inspect whether or not fuel leaks exist in the fuel system, including but not limited to fuel pipelines and fuel tank.



WARNING

If a fuel leak is discovered before operations, do not start the truck. Repair before operation.

4. Inspection for Engine Oil Level

Engine oil level gauge is located on the left side of the engine. Remove the oil level gauge and insert it again after cleaning to check whether the oil level is located between two scale lines.

5. Inspection for Intake/Exhaust Circuit

Check and clean regularly the intake/exhaust circuit. Do maintenance as the Periodical Maintenance, while check and clean more often especially in dusty environments than the specified period.

6. Inspection for Tire Air Pressure (Pneumatic Tire)

a. Inspect the condition of the tires. Low air pressure may reduce the service life of tire, and increase electricity consumption. Different air pressures for left and right tires or damage to tire may cause different steering conditions.

b. The data plate attached on the side of the hood of the forklift truck has indicated the tire standard air pressures.

Capacity	H2-2.5UT	H3-3.5UT
Tire Pressure		
Front Tire/KPa	860	970
Rear Tire/KPa	860	700

c. Screw off valve cap counterclockwise, and use a tire gauge to measure air pressure of tire. Adjust the pressure to specified value if required, and screw on the lid cap after it is confirmed that there is no air leakage.

d. Inspect whether or not damage exists with the surface/sidewall of tire. Also, inspect the rim for damage.

e. The proper tire air pressure is required in order for trucks to transport heavy loads. Any damage to rim or air pressure variation may cause an accident.

WARNING

- **After tires and rims have been assembled, all the bolts and nuts shall be tightened to the specified torques. This must occur before air is added to the tires. Tire pressure must not exceed the specified pressure.**

- **When an air compressor is used, the pressure should be properly adjusted. As the maximum output of pressure for an air compressor is very high, it may cause severe accident if it is improperly adjusted.**

7. Inspection of Wheel Hub Nut Torque

- a. Inspect whether or not the hub nut torque is correct.
 - b. All the wheel hub nuts shall be tightened to 470-550 N•m (346-405 lbf ft).
- When wheel hub nut is removed, never remove a separate wheel hub nut by mistake.
 - It is very dangerous for wheel hub nut to be torqued improperly. In case, the wheel may come off, leading to turnover of the truck.

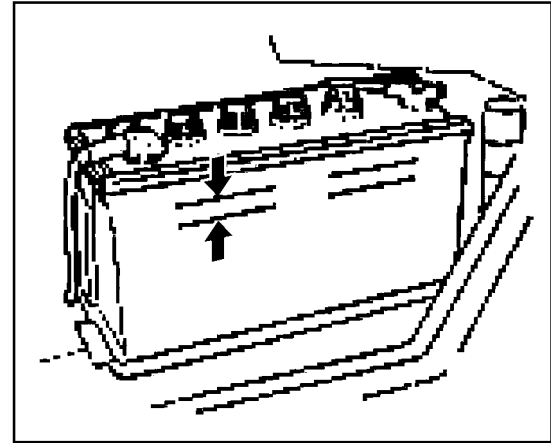
8. Inspection of Overhead Guard

The overhead guard plays a protective function, and it should be ensured that it is firmly mounted and all the structural components are secure and not damaged.

9. Inspection of Brake Fluid Level

Inspect the level of brake fluid reservoir. The fluid level should be between the two scale marks. Ensure dust or water do not enter into the fluid reservoir during addition.

10. Inspection of Battery Electrolyte



BO990115

 **CAUTION**

Avoid getting battery electrolyte in your eyes or on your skin or clothes. If electrolyte gets in your eyes, flush with clean water immediately and get medical help. If electrolyte gets on your skin, wash immediately with soap and water and get medical help if you feel pain or burning. Remove and wash any clothing that is exposed to electrolyte.

Never remove any electrical cables while the battery is connected in the circuit.

Be careful to not short-circuit or cross battery positive and negative.

Never 'flash' any connection to check the current flow.

When charging the battery, only do a slow charge (5 A or less), and ensure there is good ventilation.

11. Inspection for Quantity of Battery Electrolyte

There are scale lines for upper and lower liquid levels on the battery. The liquid level should be located between the 2 lines.

 **WARNING**

Open fire around the fluid filling hole of battery may generate hydrogen and cause explosion.

12. Inspection for Coolant Circuit

Check regularly that the engine coolant temperature does not reach the threshold. If the temperature exceeds the threshold, reduce gradually a load of the engine and check the coolant circuit.

- The tension of cooling fan belt.
- The thermostat.
- The condition of the radiator(to be cleaned if necessary).

 **WARNING**

DO NOT remove the radiator cap from the radiator when the engine is hot. When the radiator cap is removed, the pressure is released from the system. If the system is hot, the steam and boiling coolant can cause burns. **DO NOT** remove the cover for the radiator when the engine is running.

To open the radiator cap, stop the engine and wait until the cooling system components are cool down.

Periodic Maintenance

HYSTER

Loosen the radiator cap slowly in order to relieve the pressure.

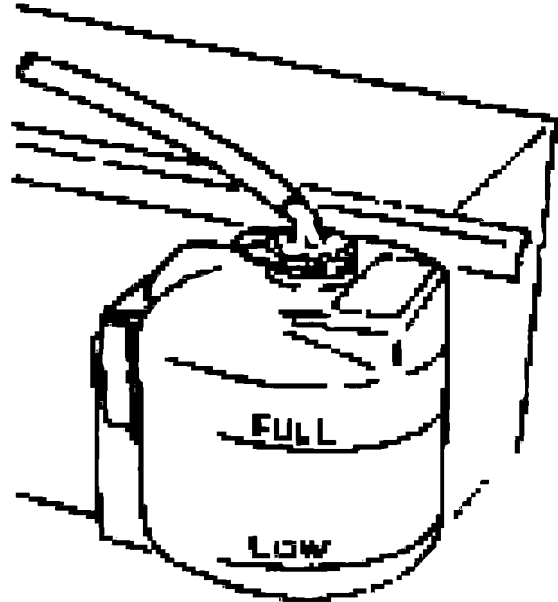
Wear the protection globes or cover the radiator cap with a rag before opening the radiator cap.

CAUTION

The dust and dirt, other debris, and damaged fins can cause that cooling efficiency of the radiator is reduced and the engine can be overheated.

Clean the radiator only after stopping engine. If cleaning with water, take care not to spray water to the electric and electronic parts. If possible, **DO NOT USE WATER.**

Inspect regularly for the liquid level of the coolant tank. The liquid level should be between the lower and upper scale marks. Add coolant if necessary.



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13. Engine Oil Level Inspection

Engine oil level gauge is located on the left side of the engine. Remove the oil level gauge and insert it again after cleaning to check whether the oil level is located between two scale lines.

14. Fan Belt Tension Level Inspection

Inspect the tension of the fan belt and whether it is damaged by pressing the middle part of the belt between the water pump and generator.

WARNING

The engine must be turned OFF when checking the tension of the fan belt.

15. Inspection of Rear Combination Light

Inspect whether or not damage exists with the rear combination light (tail light, parking light, and reverse light).

16. Level of Hydraulic Oil Inspection

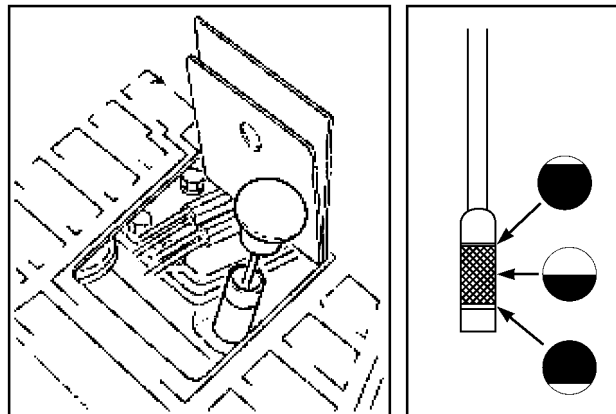
Inspect the hydraulic oil level using the dipstick. Remove the dipstick and wipe it off. Re-insert it and then pull it out to see whether or not the oil level is located between the high and low two scale lines.

NOTE: Power supply shall be turned **OFF**. The forks should be dropped to the ground and the forklift truck should be parked on a level surface when oil level is inspected.

17. Pipeline of Cylinder Inspection

Visually inspect whether or not oil leaks exists with hydraulic lifting and tilting cylinders.

18. Power Shift Gearbox Oil Level Inspection



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Hydraulic Transmission Forklift Truck

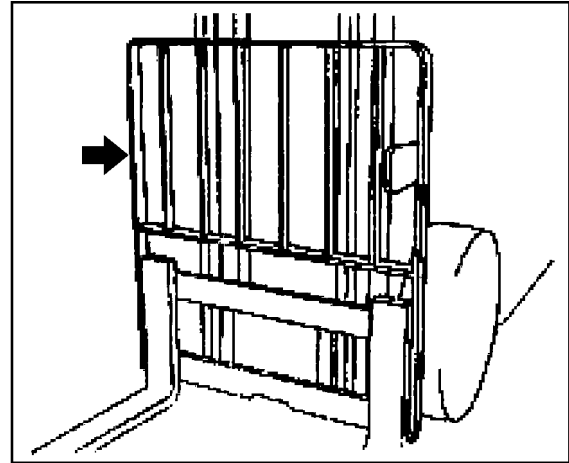
Open the inspection cap and remove the filler cap. Check the oil level gauge to ensure that the oil level is at the proper level. If necessary, add proper hydraulic oil.

1. Inspection of Backrest

Inspect whether or not the mounted bolts for backrest are secure. They should be tightened when required.

2. Fork and Fork Positioning Pin Inspection

Inspect the mounting condition of positioning pin and whether or not the forks are distorted or cracked.



B0990118

3. Front Headlight and Front Combination Light Inspection

Inspect whether or not the lamp screens are clean or damaged.

4. Seat Adjustment

Ensure that the seat is at a proper position. To adjust, pull the adjusting handle rightward. Ensure the seat position where it is easy for foot and hand operations. After adjustment, ensure that it is reliably locked up.

5. Inspection of Reverse Handle

Inspect whether or not reversing handle is operational.

6. Inspection of Multi-way Valve Operating Handle

Inspect whether or not operating handles (Lifting, Tilting, and Attachments) are operational.

7. Inspection for Operation of Parking Brake

Ensure that the parking brake is safe and reliable, after the parking brake handle is activated.

Preparation prior to Start

Before turning **ON** the power supply, ensure that the gear-shift handle is located in **NEUTRAL**, and parking brake is activated.

8. Instruments

Hourmeter, trouble meter and running speedometer enable operators to understand the condition of truck during operation.

9. Inspection of fuel volume

The fuel gauge is installed on the instrument panel. Check whether the fuel volume can satisfy the requirements of a day's working use.

10. Lamplights

Turn on the light switch, and confirm that corresponding lights are all under normal conditions.

11. Inspection of Turn Signal

Operate the turn signal handle to ensure the normal work of turn signal.

12. Inspection for Operation of Horn Pushbutton

Press the horn pushbutton to ensure whether or not the horn sounds.

Mechanical Transmission Forklift Truck

1. Idle Stroke of Brake Pedal Inspection

Press the brake pedal and inching pedal (only applies to hydraulic transmission forklift truck) to ensure the actions of all pedals are operational and the pedals can reset without interference.

2. Mast Operation Inspection

Press the horn and operate the lifting and tilting handle to ensure the lifting and lowering of the fork arm is normal and the tilting of the mast is stable. Ensure the cylinder piston can operate to the end of travel. The working condition and sound of overflow valve is normal. Pay attention to the sound of system operation.

3. Inspection of Tensioning Degree for Lifting Chain

Inspect the tensioning condition of lifting chain and whether or not damage exists.

When tensioning condition is inspected, the forks should be lifted by about 5 cm (2 in.) and the middle part of the chain is pushed and pressed by using thumb. Ensure whether or not the tensioning conditions of left and right chains are

consistent, while the locking nut (A) for the fixed pin is loosened and the adjusting nut (B) is screwed and adjusted to adjust the chains.

NOTE: Use mechanical oil (such as hydraulic oil) for lubrication of lifting chains, and avoid using lubricating grease.

4. Steering Wheel Free Stroke Inspection

Inspect the rotation as well as the axial loosening condition of steering wheel. The normal free stroke is 50-100 mm (2-4 in.), and axial loosening is not allowed.

5. Inspection of Air Exhaust

Inspect the air exhaust condition after the engine has reached operating temperature..

Inspect whether there are abnormal sounds or variations in engine and driving system.

No color or light blue	normal: complete combustion
Black	abnormal: incomplete combustion
White	abnormal: burn oil

NOTE: Because the engine exhaust air is harmful and may cause danger of poisoning when starting in a closed space. Ensure there is sufficient oxygen. Regularly inspect the volume of exhaust air emission. Inspection of air exhaust should be vented outdoors and be careful to avoid fire. Be careful of the leakage of oil or other fuel materials. Do not leave waste cloth or paper on the engine body and place the fire-extinguishing equipment in proper position.

Running at low speed – (in a safe place)

Ensure to recheck the volume of exhaust air and comply with the requirements of specified government rules and regulations after the engine is repaired or adjusted.

6. Inspection of Inching Pedal

- a. Slightly press the inching pedal to check the deceleration condition of the vehicle.

7. Inspection of Brake

Operate the truck at a slow speed and depress the brake pedal to examine the braking effect. The brake light turns on after the brake pedal is pushed down.

8. Inspection of Steering

Turn the steering wheel when truck is running at a slow speed and observe whether or not the left and right steering forces are consistent, and whether or not other abnormal effects exist.

9. Inspection of Parking Brake

WARNING

If the park brake switches are not adjusted correctly, the engine can be started with the park brake released. The purpose of the left-hand mounted switch is to prevent the started motor from being energized when the parking brake is not applied. The right-hand mounted switch de-energizes the forward/reverse solenoids to put the transmission in neutral when the park brake is set.

Check the operation of the parking brake. The operator must adjust the parking brake so the lift truck does not move if parked on an incline. The parking brake, when in good condition and correctly adjusted, will hold a lift truck with a capacity load on a 15% grade, a slope that increases 1.5 m in 10 m (1.5 ft in 10 ft).

Turn the adjustment knob at the bottom of the lever to adjust the parking brake. Do not tighten the adjustment so that the brake is applied when the lever is released. The lever for the parking brake has a lock. Use your thumb or finger to release the lock on the lever when the parking brake is locked.

10. Inspection of Reverse Light and Reverse Buzzer

The reverse light turns on and the reverse buzzer sounds when direction control handle is placed in **REVERSE** gear.

Periodic Maintenance

1. When the Indicator of Oil-Water Separator Lights up:

- a. Turn **OFF** the engine, rotate (A) section for 4 to 5 circles to loosen water drainage screw plug. Keep pressing pump (B) until water completely flows out of the oil-water separator.
- b. Tighten the water drainage screw plug and press the pump (B) for several times to check whether the screw plug has leakage.
- c. Ensure the indicator light goes off after starting the engine.

2. Air Exhaust of Fuel System (only for certified engine)

- a. Turn **OFF** the engine and loosen the exhaust plug (C) on injection pump. Press the pump to exhaust air until the fuel flows out of the screw plug.
- b. Tighten the exhaust plug to ensure that no fuel leaks.

3. Replacement of Fuse

Fuses are able to protect electrical systems and to prevent over-high current. If it occurs that some part fails to work,

possibly the corresponding fuse is already burned out. It must be replaced with a fuse wire of the same capacity.

4. Replacement or Repair of Tire

a. Front Wheel

- (1) Park the truck on a firm and hard pavement and turn **OFF** the engine.
- (2) Pull up the parking brake handle and block wheels using a wedge block. Place the jack under the truck body.
- (3) Jack up the truck and keep the tire on the ground. Loosen the nuts for wheel hub, but don't remove the tire.
- (4) Continue jacking up the truck until the tire is off the ground. Take off the nuts and remove the tire.
- (5) The installation of the tire is opposite to the disassembly sequence. The wheel hub nuts should be tightened up in a diagonal order.

Inspect the tire air pressure after it has been assembled.

b. Rear Wheel

The procedure is the same as the repair and replacement methods for the front wheel, except that the jack should be placed under the counter weight.

Forks

The identification of a fork describes how the fork is connected to the carriage. These lift trucks have hook forks.

Forks, Remove



WARNING

DO NOT try to move a fork without a lifting device. Each hook fork for these lift trucks can weigh 45 to 115 kg (99 to 253 lb).

NOTE: Forks are to be replaced only in sets and not individually.

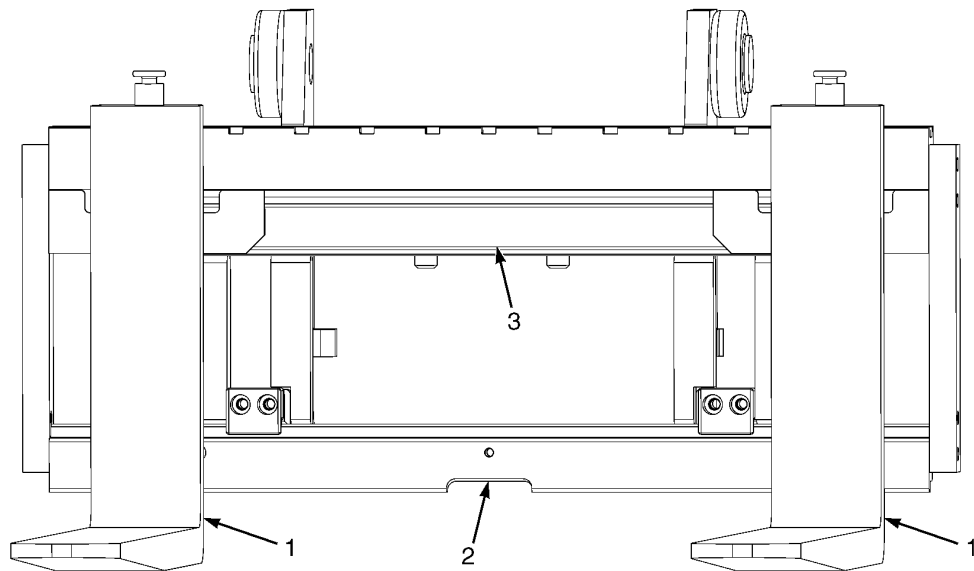
NOTE: If lift truck is equipped with a fork positioner attachment, perform **Step 1** and **Step 2**. If lift truck is not equipped with a fork positioner attachment, go to **Step 2**.

1. Lower carriage and remove four capscrews from inner fork carriers. Remove inner fork carriers from integral side-shift carriage. See **Figure 18**.

2. A fork can be removed from the carriage for replacement of the fork or other maintenance. Slide a hook fork to the fork removal notch on the carriage. See **Figure 19**.

Lower the fork onto blocks so that the bottom hook of the fork moves through the fork removal notch. See **Figure 19**.

Lower the carriage further so that the top hook of the fork is disengaged from the top carriage bar. Move the carriage away from the fork, or use a lifting device to move the fork away from the carriage.



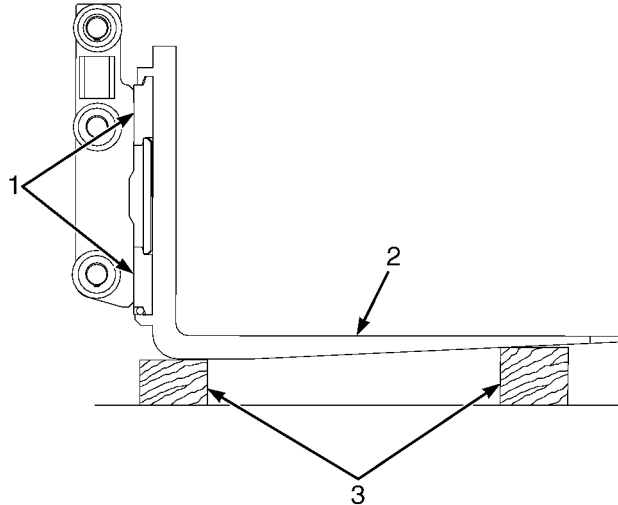
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1. FORK

2. FORK REMOVAL NOTCH

3. INNER SLIDE FRAME

Figure 18. Carriage and Forks



- 1. CARRIAGE BARS
- 2. HOOK FORK
- 3. BLOCKS

BO190824

Figure 19. Remove a Hook Fork

Forks, Inspect

⚠ WARNING

DO NOT try to correct for tip alignment by bending the forks or adding shims. Replace bent forks.

Never repair damaged forks by heating or welding. Forks are made of special steel using special procedures. Replace damaged fork. Forks are to be replaced only in sets and not individually.

1. Inspect the forks for cracks and wear. Check that the fork tips are aligned as shown in **Figure 20** . Check that the bottom of the fork is not worn (Item 4 in **Figure 20**).

⚠ CAUTION

Remove fork latch pins if adding a fork positioner attachment. Damage to forks and other carriage components can occur if fork latch pins are not removed prior to using attachment.

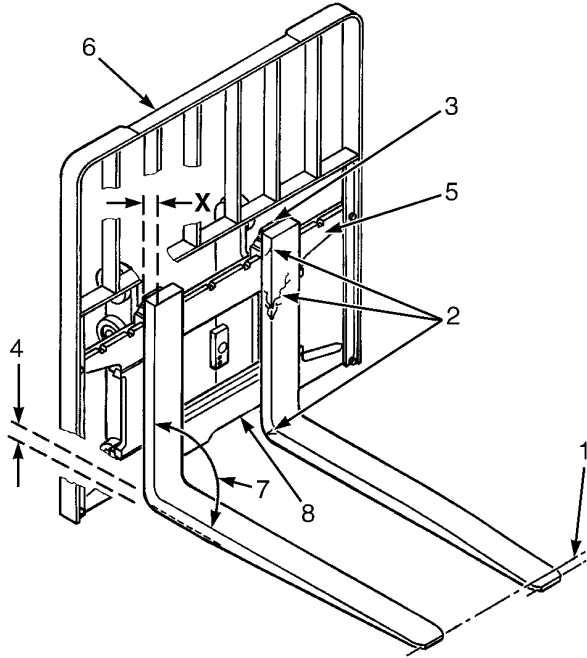
2. Replace any damaged or broken parts that are used to keep the forks locked in position.

3. Inspect fork wear. Ensure heel wear is not more than 10% of original thickness. If fork wear is more than 10%, fork must be replaced or rerated. Perform fork wear inspection using a BOL256N1 caliper ruler as follows. See **Figure 20**.

- a.** Determine normal thickness of "N" of fork using scale or ruler portion of caliper ruler. Measurement has to be done on fork shank using caliper ruler.
- b.** Position caliper at end of heel internal radius (item 4, **Figure 20**) with opening corresponding to measured

thickness of fork shank in **Step a** above. (e.g. for N 1.75 use N 1.75 opening). This is typically the section of fork where wear is greatest. Note that opening distance has been reduced by 10% from nominal thickness.

c. If fork enters opening, it is mandatory to replace it. **DANGER OF BREAKING.** Furthermore, a 10% reduction in fork blade thickness results in 20% reduction in operating capacity.

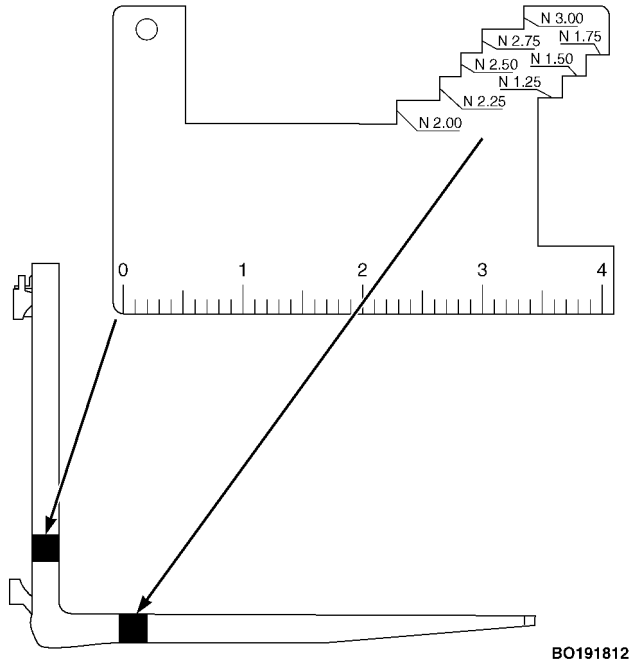


Fork Tip Alignment	
Length of Forks	3% Dimension
914 mm (36 in)	27 mm (1.08 in)
1016 mm (40 in)	30 mm (1.2 in)
1067 mm (42 in)	32 mm (1.26 in)
1207 mm (47.5 in)	36 mm (1.42 in)
1219 mm (48 in)	37 mm (1.46 in)
1372 mm (54 in)	41 mm (1.61 in)
1524 mm (60 in)	45 mm (1.81 in)
1829 mm (72 in)	55 mm (2.17 in)

1. TIP ALIGNMENT (MUST BE WITHIN 3% OF FORK LENGTH)
2. CRACKS
3. LATCH DAMAGE
4. HEEL OF FORK (MUST BE 90% OF DIMENSION "X")
5. CARRIAGE
6. LOAD BACKREST EXTENSION
7. MAXIMUM ANGLE 93°
8. FORK REMOVAL NOTCH

BO190157

Figure 20. Forks Check



BO191812

Figure 21. Fork Wear

Forks, Install

1. Move the fork and carriage so that the top hook on the fork can engage the upper carriage bar. Raise the carriage to move the lower hook through the fork removal notch. Slide the fork on the carriage so that both upper and lower hooks engage the carriage. Engage the lock pin with a notch in the upper carriage bar.
2. If lift truck is equipped with a fork positioner attachment, install fork carriers using four capscrews. Tighten capscrews to 35 N•m (25 lbf ft).

Periodic Maintenance Tables

This timetable is set based on the standard working time and operating conditions. Perform the maintenance at regular intervals (C = Check or Adjust or Clean up, R = Replace, L=Lubricate, CIL=Check Indicator Light during operation). See **Table 5** through **Table 13**.

Table 5. Engine

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Engine	Visually inspecting engine running condition		C	C	C	C	C	C		
	Sound of engine		C	C	C	C	C	C		
	Exhaust color		C	C	C	C	C	C		
	Oxygen Sensor	CIL					C	C		
	Direct Electronic Pressure Regulator (DEPR) of Engine		C	C	C	C	C	C	Check and Replace as necessary.	
	Intake valve of Engine			C	C	C	C	C	Clean Carbon buildup.	
	Vaporizer regulator of Engine (for LPG and Dual fuel engine only)				C	C	C	C	C	Clean Carbon buildup.

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Engine (Continued)	Air filter element		C	C	C	R	R	R	See Note 5, Note 6 and Note 11 in Table 14.	
	Engine filter			R Replace at first run of 50 hours	R	R	R	R		
	Engine oil		C Replace at first run of 50 hours	R	R	R	R	R		See Service Manual Capacities and Specifications.

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Engine (Continued)	Check for combustible materials or dust for Crankcase		C	C	C	C	C	C	See Note 5 in Table 14.	
	Throttle valve	Thick Feeler Gauge				C	C	C		
	Cylinder compression pressure	Pressure Gauge				C	C	C		
	Drive Belt					C	C	C	Check for Wear and Damage. Adjust as necessary.	

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Engine (Continued)	Timing Belt of engine							R See Note 5 in Table 1 4		
	Lock-off stops fuel flow when engine is off				C	C	C	C		
	Inspecting all fuel fittings and hoses for cracks, ageing, connection and deposit buildup. Clean or replace as necessary				C	C	C	C		
	Isolation mounts on engine control module for cracks and wear, replace as necessary.				C	C	C	C		

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Crankshaft Ventilation Device	PCV working conditions including any locked or damaged condition of valve and pipe					C	C	C	Place as necessary. See Note 13 in Table 14.	
	Camshaft Belt, Balance Shaft Belt, Idler, and Tensioner Pulley			C 50 Hours for First Time	C	C	C	R Replace when reach to 6000 hrs	Check for Wear and Damage. Adjust as necessary.	
Speed Governor or Injection Pump	Inspecting the maximum rotational speed at no load	Tachometer					C	C	4 Injectors	Check and Replace if required.

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Lubrication System	Whether or not oil leak with engine		C	C	C	C	C	C	See Note 1 in Table 14.	
	Inspecting oil volume and cleanliness		C	C	C	C	C	C		
Fuel System	Visually inspecting whether or not oil leak with oil pipe, oil pump, and oil tank		C	C	C	C	C	C		
	Fuel Tank for fuel volume	CIL	C	C	C	C	C	C		See Service Manual Capacities and Specifications.

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Fuel System (Continued)	Inspecting whether or not fuel filter is blocked				C	C	C	C		
	Fuel filter (Gas or Dual Fuel)					R	R	R		
	Fuel filter (Diesel)				R	R	R	R		
	Inspecting nozzle, and adjusting pressure condition (diesel engine)	Inject test machine				C	C	C		
	Inspecting loosening condition for the fittings and hoses, and connecting mechanism and cleanliness of carburetor					C	C	C	C	

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Fuel System (Continued)	Ignition moment (diesel engine)	Time Meter			C	C	C	C		
	Jet moment (diesel engine)						C	C		
	Water discharge for fuel tank			C	C	C	C	C		
	Cleaning fuel tank			C	C	C	C	C		
	Inspect valve working condition, and wear, cracks, deterioration, and seals						C	C	C	

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Fuel System (Continued)	Inspect air/fuel valve mixer assembly for cracks, loose hoses, and fittings. Repair or replace as necessary.				C	C	C	C		
	Check for vacuum leaks in the intake system including manifold adapter and mixer to throttle adapter						C	C		
	EGR Cooler, Injector tips					C	C	C		
	Turbocharger, CCRT, ECU, EGR systems, Sensors, ACV						C	C		

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Cooling System	Coolant volume		C	C	C	C	R	R Every 4000 hrs for PSI engines only	See Note 12 in Table 14.	
	Leaking condition		C	C	C	C	C	C	Check for the leaks and see Note 1 in Table 14.	

Table 5. Engine (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Cooling System (Continued)	Rubber hoses and fittings for leaks, cracks, swelling, or deterioration				C	C	C	C	Check condition.	
	Performance and installation condition of radiator cover			C	C	C	C	C	Check condition.	
	Working condition		C & CIL	C	C	C	C	C		
	Inspecting tensioning force and damage condition for belt of fan		C	C 50 Hours for First Time	C	C	C	C		

Table 6. Power Transmission

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Hydraulic Transmission Case	Leaking condition		C	C	C	C	C	C		
	Inspecting oil volume and replacing oil			C First replacement	C	R	R	R		See Service Manual Capacities and Specifications.
	Operating and loosening condition of gear-shift lever			C	C	C	C	C		
	Performance of control valve and hydraulic clutch		C	C	C	C	C	C		
	Performance of inching valve		C	C	C	C	C	C		

Table 6. Power Transmission (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Hydraulic Transmission Case (Continued)	Idle stroke and movement condition of inching pedal		C	C	C	C	C	C		
	Replacing pre-filter element					C	C	C	Check and clean the element as oil replacement. Replace if necessary.	
	Replacing fine filter			R First replacement		R	R	R		

Table 6. Power Transmission (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Front Axle	Leaking inspecting		C	C	C	C	C	C		
	Replacing oil					R	R	R		
	Loosening condition of mounting bolt	Detection Hammer		C	C	C	C	C		

Table 7. Wheel

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Tire	Charged pressure	Tire Gauge	C	C	C	C	C	C		
	Crack or damage		C	C	C	C	C	C		
	Ground touchdown wearing condition			C	C	C	C	C		
	Abnormal wear condition	Depth Gauge	C	C	C	C	C	C		
	Whether or not nail, stone, or other foreign substance present on tire			C	C	C	C	C		

Table 7. Wheel (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Tire Installation	Whether or not nuts are loosened to be inspected	Detection Hammer	C	C	C	C	C	C		
	Damage condition to be inspected		C	C	C	C	C	C		
Wheel Rim Wheel Spoke	Damage condition of wheel rim, rim spoke, and Disc wheel		C	C	C	C	C	C		
Axle Bearing	Loosening and noise to be inspected			C	C	C	C	C		
	To be wiped up and refilled with lubricating oil					R	R	R		

Table 7. Wheel (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Axle	Distortion, crack, and damage condition of axle body to be inspected			C	C	C	C	C		

Table 8. Steering System

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Steering Wheel	Clearance to be inspected		C	C	C	C	C	C		
	Axial loosening to be inspected		C	C	C	C	C	C		
	Radial Loosening to be inspected		C	C	C	C	C	C		
	Operating condition to be inspected		C	C	C	C	C	C		
Steering Gear	Whether or not mounting bolts are loosened to be inspected		C	C	C	C	C	C		
Steering Knuckle of Rear Axle	Whether or not the king pin is loosened or damaged to be inspected			C	C	C	C	C		

Table 8. Steering System (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Steering Knuckle of Rear Axle (Continued)	Bend, distortion, crack, or damage condition to be inspected			C	C	C	C	C		
	Tie Rod Ends				L	L	L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)

Table 8. Steering System (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Steering Knuckle of Rear Axle (Continued)	King Pins				L	L	L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Spindle Bearings					L	L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)

Table 8. Steering System (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Steering Knuckle of Rear Axle (Continued)	Wheel bearings						L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Installation condition to be inspected	Detection Hammer		C	C	C	C	C		

Table 8. Steering System (Continued)

Item	Inspecting Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Steering Cylinder	Operating condition to be inspected		C	C	C	C	C	C		
	Whether or not leaks exists to be inspected		C	C	C	C	C	C		
	Whether or not loosening exists during installation to be inspected		C	C	C	C	C	C		

Table 9. Brake System

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Brake Pedal	Idle stroke		C	C	C	C	C	C		
	Pedal stroke	Diving Ruler	C	C	C	C	C	C		
	Operating condition		C	C	C	C	C	C		
	Whether or not air present in brake line		C	C	C	C	C	C		
Parking Brake Control	Whether or not brake is safe and reliable and brake stroke is enough		C	C	C	C	C	C		
	Control performance		C	C	C	C	C	C		

Table 9. Brake System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Rod, and Guy Cable, etc.	Control performance		C	C	C	C	C	C		
	Lubrication				L	L	L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Whether or not connection is loosened		C	C	C	C	C	C		
Lines	Damage, leakage, and cracks			C	C	C	C	C		
	Connecting and clamping parts, or loosening condition			C	C	C	C	C		

Table 9. Brake System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Brake Master Cylinder and Wheel Cylinder	Leakage condition			C	C	C	C	C		
	Oil level to be inspected for oil replacement		C	C	C	R	R	R		
	Cylinder Rod End Pin				L	L	L	L		NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Brake Fluid		CIL		C	R	R	R	0.25 liter (0.26 qt) ~ 0.3 liter (0.32 qt)	DOT4 Synthetic Brake Fluid

Table 9. Brake System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Brake Master Cylinder and Wheel Cylinder (Continued)	Master cylinder and wheel cylinder action condition						C	C		
	Wear or damage condition of master cylinder and wheel cylinder						C	C		
	Master cylinder and wheel cylinder leakage and damage condition						R	R		
Brake Drum and Brake Shoe	Whether or not mounting parts of brake drum are loosened	Detection Hammer		C	C	C	C	C		

Table 9. Brake System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Brake Drum and Brake Shoe (Continued)	Wearing condition of friction plate	Vernier Calipers					C	C		
	Condition of brake show action						C	C		
	Whether or not fixed pin is rusted						C	C		
	Damage condition of return spring	Diving ruler					C	C		
	Whether or not operating time interval of automatic regulating device is proper to be inspected						C	C		
	Wear and injury condition of brake drum						C	C		

Table 9. Brake System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Brake Bottom Plate	Whether or not bottom plate is distorted						C	C		
	Whether or not cracked						C	C		
	Whether or not loosening exists during installation						C	C		

Table 10. Lifting System

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Fork	Damage, distortion, and wear condition of forks		C	C	C	C	C	C		
	Damage and wear condition of positioning pin				C	C	C	C		
	Crack and wear condition of welded parts for hook at rootage of forks			C	C	C	C	C		

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Mast Fork Carriage	Whether or not welded place on inside mast/ outside mast and cross beam is cracked or damaged			C	C	C	C	C	Check condition.	
	Whether or not welded place of tilting cylinder bracket and mast is under poor connecting condition, cracks, or damaged			C	C	C	C	C	Check condition.	
	Whether or not welding of inside/outside mast is under poor connecting condition, cracked or damaged			C	C	C	C	C	Check condition.	

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Mast Fork Carriage (Continued)	Whether or not welding of forks is under poor connecting condition, cracked or damaged		C	C	C&L	C&L	C&L	C&L	Check condition. Lubricate as necessary.	NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Whether or not roller is loosened			C	C	C	C	C	Check condition.	
	Wear and damage condition of bearing brush for mast						C	C	Check condition.	
	Whether or not bolts for support cover of mast is loosened			C	C	C	C	C	Check condition.	

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Mast Fork Carriage (Continued)	Whether or not bolts for bottom of lifting cylinder, bolts for head of piston rod, u-bolts, and bolts for guide rail of walking beam are loosened			C	C	C	C	C	Check condition.	
	Crack and damage condition of roller and roller shaft			C	C	C	C	C	Check condition.	
	Mast Integral Sideshift Carriage (Upper/Lower Bearings)				L	C&L	R	R	Lubricate as required.	NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Mast Fork Carriage (Continued)	Mast Integral Sideshift Carriage (Lower Mounting Hooks)					C	C	C	Check for wear and clearance. See Note 5 in Table 14.	NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)
	Lubrication, Mast Pivots, sliding surfaces and load roller surfaces, Sideshift carriage, Tilt Cylinder Ends		C	C	L	L	L	L	Lubricate as required. See Note 10 in Table 14.	NLGI Grade 2 Multipurpose Grease (2-4% Molybdenum Disulfide)

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Chain and Sprocket	Tensioning condition, whether or not distorted, damaged, or rusting of chain to be inspected		C	C	C	C	C	C		
	Oil to be added to chain				L	L	L	L	Check lubrication. Lubricate as required.	SAE 10W-30 Engine Oil
	Riveted pin and loosening condition			C	C	C	C	C		
	Sprocket distortion and damage condition			C	C	C	C	C		
	Whether or not chain sprocket bearing is loosened			C	C	C	C	C		

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Attachments	Whether or not condition is normal to be inspected			C	C	C	C	C		
Lifting Cylinder	Whether or not piston rod, piston rod thread, and connection are loosened, as well as distortion and damage condition	Detection Hammer	C	C	C	C	C	C		
	Operating condition		C	C	C	C	C	C		
	Leakage condition		C	C	C	C	C	C		
	Wear and damage condition of pin and cylinder steel-backed bearing			C	C	C	C	C		

Table 10. Lifting System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Hydraulic Pump	Whether or not oil leak or noise exists with hydraulic pump		C	C	C	C	C	C		
	Wearing condition of driving gear for hydraulic pump			C	C	C	C	C		

Table 11. Hydraulic System

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Hydraulic Oil Tank	Oil quantity to be inspected, or oil to be replaced		C	C	C	C	R	R		
	Suction oil filter element to be cleaned up					C	R	R		
	Hydraulic Tank Breather (Located below the air filter box)				C	C	R	R	Replace as required. See Note 15 in Table 14.	See Parts Manual.
	Foreign substance to be removed					C	C	C		
Return Oil Filter	Return oil filter to be replaced					C	R	R	See Note 15 in Table 14.	See Parts Manual.

Table 11. Hydraulic System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Control Valve Rod	Whether or not connection is loosened		C	C	C	C	C	C		
	Operating condition		C	C	C	C	C	C		
Multi-way Valve	Oil leakage		C	C	C	C	C	C		
	Operating condition of safety valve and tilting auto-locking valve			C	C	C	C	C		
	Safety valve pressure to be measured	Oil Pressure Gauge				C	C	C		

Table 11. Hydraulic System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Line Joint	Leakage, loosening, crack, distortion, or damage condition		C	C	C	C	R	R	Check condition and replace the line as required.	

Table 12. Electrical System

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Ignition Device (Gasoline /LPG Engine)	Whether or not distributor cap is cracked				C	C	C	C		
	Whether or not spark plug is burned out. Replace as necessary.					R Severe Duty	R Normal Duty	R	4 Spark Plugs.	See Parts Manual.
	Adjusting the clearance of spark plug	Feeler Gauge			C	C	C	C		
	Cleaning the clearance of spark plug				C	C	C	C		
	Mounting condition of cover and HP wire						C	C		
	Whether or not distributor is burned out						C	C		
	Wear and injury condition of center part for distributor						C	C		

Table 12. Electrical System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Ignition Device (Gasoline /LPG Engine) (Continued)	Filling lubricating oil to rotating shaft				C	C	C	C		
	HP wire breakage condition						C	C		
Start Motor	Pinion meshing condition				C	C	C	C		

Table 12. Electrical System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Battery	Electrolyte volume and cleaning			C	C	C	C	C		
	Battery health	Through the observation hole for electrolyte status			C	C	C	C		
	Inspection battery for damage and corroded cables						C	C		

Table 12. Electrical System (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Electric Wire and Lamp	Wire harness injury and loosening condition			C	C	C	C	C		
	Loosening condition of connection for electric circuit				C	C	C	C		
	Indicator lamps and warning lamps		C	C	C	C	C	C		

Table 13. Seat, Frame, and Oil

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Seat	Whether or not bolts are damaged or loosened to be inspected		C	C	C	C	C	C		
	Seat Belt, Hip Restraints, Seat Rails		C	C	C	C	C	C	Check Condition and Operation.	
Frame	Whether or not truck frame and crossbeam are damaged or cracked						C	C		
	Whether or not rivets or bolts are loosened	Detection Hammer	C	C	C	C	C	C	Check Condition and Operation.	

Table 13. Seat, Frame, and Oil (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Frame (continued)	Repaired place to be inspected, if required		C	C	C	C	C	C		
	Comprehensive inspection						C	C		
	Safety labels		C	C	C	C	C	C	Replace as necessary.	
	Horn, Lights, Alarms		C	C	C	C	C	C	Check Operation.	
	Others		C	C	C	C	C	C	Check Condition and Lubrication. Lubricate as required.	

Table 13. Seat, Frame, and Oil (Continued)

Item	Inspection Item	Tool	Daily (8 Hours)	250hrs or every 3 months	500hrs or every 6 months	1000hrs or every 1 year	2000hrs or every 1 year	4000hrs or every 2 years	Procedure or Quantity	Specification
Lubricating Grease to be Added or Oil to be Replaced	Lubricating condition of underpan to be inspected after cleaning	Grease Gun	C	C	C	C	C	C		
	Oil in tank to be inspected						C	C		

Table 14. Notes for Maintenance

Note 1: Check fuel system for leaks prior to any service or maintenance activity.
Note 2: Heavy-duty or high-temperature operations require more frequent checks.
Note 3: Heavy-duty or contaminated applications will require more frequent hydraulic oil change than the time interval of 2000 hours at normal operation.
Note 4: Change engine oil and filter as specified. Change transmission oil filter as specified.
Note 5: Recommended service intervals are based on a normal application in a clean environment. Applications involving contaminated environments such as high levels of airborne debris (dust and wasted paper); chemical or abrasive compounds; poor ground conditions; intensive usage at high performance levels; or other abnormal conditions will require more frequent servicing. At your request, your dealer will advise you of the appropriate service intervals based on an application survey.
Note 6: In dirty or dusty environments, replace the air filter at 1000 hours or as needed.
Note 7: Check fuel injectors at 2000 hours or 1 years, repalce as needed.
Note 8: Multipurpose grease with 2 to 4% Molybdenum Disulfide.
Note 9: Lubricate mast every three months if unit has less than 1000 hours.
Note 10: Lubricate at first sign of visible surface rust.
Note 11: Do not open the air filter canister except to change the air filter element.
Note 12: Use specified antifreeze for each Engine. Check the coolant level daily and replace the coolant for 4000hrs or every 2 years for PSI engines, and 2000hrs or every 1 years for other engines. See Service Manual Capacities and Specifications .

Table 14. Notes for Maintenance (Continued)

Note 13: Hydraulic oil sampling and analysis is a recommended practice. For lift trucks operating in heavy duty applications or highly contaminated environments, take oil samples every 500 hours. Normal Operating conditions may allow for less frequent oil sampling. Oil sampling should be done just prior to all oil and filter changes.

Note 14: Change differential/drive axle oil at 1000 hours or 1 year.

Note 15: Turn lift truck engine OFF prior to performing maintenance or checks in engine compartment.

- When oil is different from that specified for this truck, its replacement cycle cannot be the same as that specified in this Manual. In this situation, the time for replacement should be shortened by 1/2 or 1/4 compared with the time specified in this Manual.
- Though high-viscosity oil has a wide operating temperature range, frequent replacement is still required. The additive will slowly deteriorate, viscosity will be lowered, and it will damage the hydraulic system severely at the time of high temperature.

Hoisting, Handling, and Towing of Forklift Truck

Hoisting Forklift

Tighten the cable on the two end holes of the outer mast beam and on the holes of the counterweight, then hoist the forklift using lifting device. Refer to the decal for exact hoisting locations



WARNING

- **Do not wrap the cable around the overhead guard when lifting.**
- **The cable and lifting device should be strong and heavy enough to sustain the forklift.**
- **Do not hoist the forklift through the driver cabin (Overhead Guard).**

- **Do not stand or go anywhere under the hoisting forklift.**

Handling

Forklift is normally used in loading/unloading cargos and short distance transport. It is not suitable means for long distance transport. When the forklift truck need to be moved to a long distance, vessels, trains and heavy trucks with 5 Tons and above rated capacity must be prepared to do the transport. To avoid displacement, the tires of the forklift must be supported with wedges and the forklift body must be firmly fastened.

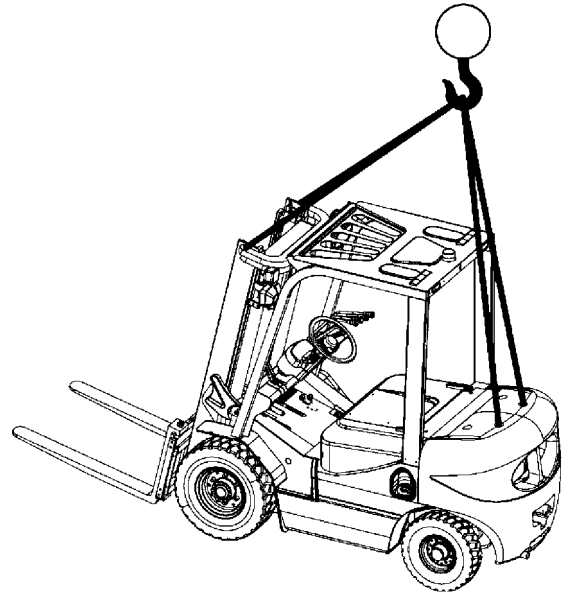
Towing

The tow pin under the counterweight is set for traction of the forklift. Tie the cable around the pin and reinstall the pin to start towing.

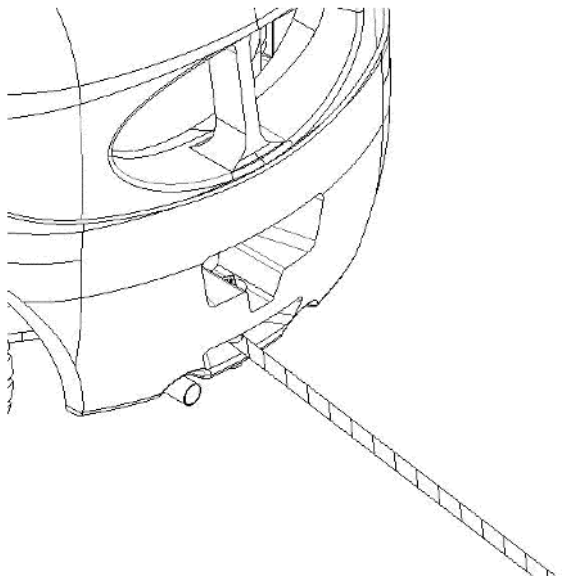
Method of traction after forklift being damaged: release the park brake and set the gear to neutral. Pay attention to the ambient traffic and hang a seeable Being Towed mark on the truck.

WARNING

- Do not apply traction to forklifts that have problems with steering system or damaged brake system.
- Do follow the traffic rules when applying traction of the forklift trucks.
- Do not tie the cable to locations unadvised.
- Do not place or apply abrupt force on the cable.



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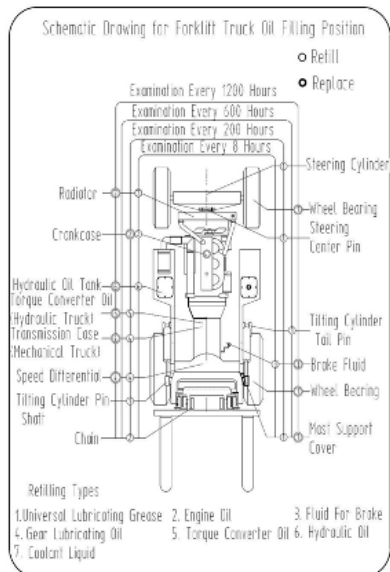


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1. The towed lift truck must have an operator.
2. Tow the lift truck slowly.
3. Using a lift truck or a lifting device that can be attached to the mast (i.e., come-a-long), raise the carriage and forks approximately 30 cm (12 in.) from surface, Install a chain around a mast crossmember and the carriage, to prevent carriage and mast channels from moving.
4. If another lift truck is used to tow the disabled lift truck, that lift truck must have an equal or larger capacity than the disabled lift truck. Install approximately $\frac{1}{2}$ of a capacity load on the forks of the lift truck that is being used to tow the disabled lift truck. This $\frac{1}{2}$ capacity load will increase the traction of the lift truck. Keep the load as slow as possible.

Miscellaneous

Drawing of Lubrication System



BC980277

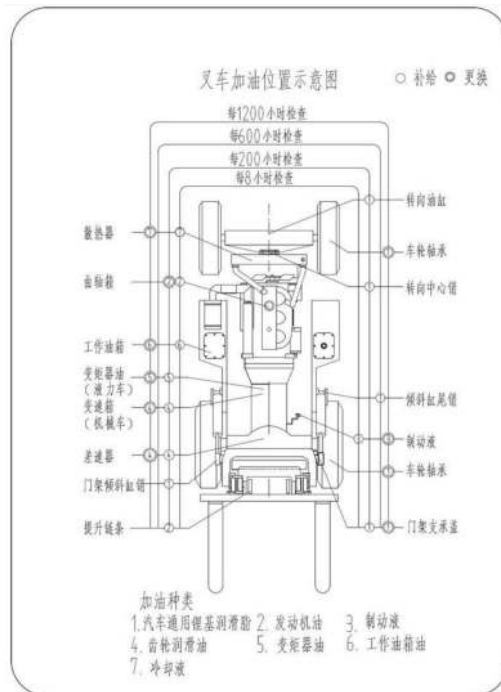


Table 15. Oils Used for Forklift

Name	Original Oil Product	Brand, Code, and Temperature of Use				
Gasoline		92# or 95#				
Diesel Oil		Brand of Light Diesel Oil	0#	-10#	-200#	-300#
		Application Temperature	≥4 °C (≥39 °F)	≥-5 °C (≥23 °F)	≥-14 °C (≥7 °F)	≥-29 °C (≥-20 °F)
Gasoline Engine Oil	Kunlun	Viscosity Grade	5W/30	10W/40	10W/30	15W/40
		Application Temperature	-30~+30 °C (-22~+86 °F)	-25~+40 °C (-13~+104 °F)	-25~+30 °C (-13~+86 °F)	-20~+40 °C (-4~+104 °F)
Diesel Engine Oil	Kunlun	Viscosity Grade	5W/30	10W/30	15W/40	20W/50
		Application Temperature	-30~+30 °C (-22~+86 °F)	-25~+30 °C (-13~+86 °F)	-20~+40 °C (-4~+104 °F)	-15~+50 °C (5~+122 °F)
Hydraulic Oil	Kunlun	Viscosity Grade	L-HM32 Antiwear Hydraulic Oil		L-HV32 Low Temperature Antiwear Hydraulic Oil	
		Application Temperature	≥-5 °C (≥23 °F)			≥-20 °C (≥-4 °F) (in Open Air in Cold Regions)
Torque Converter Oil	Kunlun	6# Torque Converter Oil				

Table 15. Oils Used for Forklift (Continued)

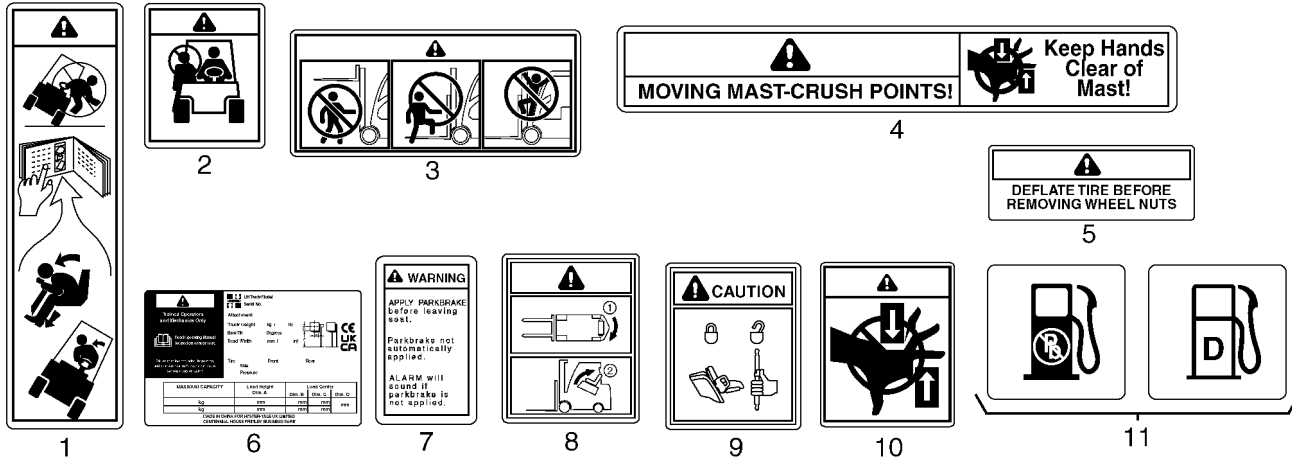
Name	Original Oil Product	Brand, Code, and Temperature of Use				
Brake Fluid	Qiushi	DOT3 Synthetic Brake Fluid (GB12981-2003 HZY-3)				
Lubricating Grease	Kunlun	3# General Lithium Base Lubricating Grease (-20~+120 °C (-4~+248 °F))				
Heavy-Duty Truck Gear Oil	Kunlun	Viscosity Grade	GL-5 85W/90		GL-5 80W/90	
		Application Temperature	-15~+49 °C (5~+120 °F)		-25~+49 °C (-13~+120 °F)	
Antifreeze Fluid	Kunlun	Code	FD-1	FD-2	FD-2A	FD-3
		Application Temperature	≥-25 °C (≥-13 °F)	≥-35 °C (≥-31 °F)	≥-45 °C (≥-49 °F)	≥-50 °C (≥-58 °F)

- It is recommended to use Kunlun brand oil products.
- Choose proper engine oil grade according to the recommendation in engine manual.
- Oil products of different brands cannot be blended in use.

Labels

NOTE: Label in the manual may not be an exact representation of the label on your truck.

Safety labels are installed on your lift truck to give information about possible hazards. It is important that all safety labels are installed on the lift truck and can be read. **Contact your Hyster dealer to immediately replace any labels that have fallen off or are no longer legible.**



<p>WARNING</p> <p>FAILURE TO FOLLOW THESE PRECAUTIONS CAN CAUSE SERIOUS INJURY OR DEATH. AUTHORIZED, TRAINED OPERATORS ONLY.</p>	<p>KNOW THE EQUIPMENT</p> <ul style="list-style-type: none"> ALWAYS use 2 points of contact when getting on or off the truck. KNOW operating, propulsion and reference instructions and warnings in MANUAL. DO NOT operate at tilting back unless trained and authorized. INSPECT truck before use. Do not operate if truck needs repair. Tag truck and remove key before truck leaves yard. USE attachments for intended purpose only. MAKES SURE truck is not spaced with overloaded guard and load behind obstacles of the load. 	<p>LOOK WHERE YOU ARE GOING</p> <ul style="list-style-type: none"> IF YOU CAN'T SEE, DON'T GO! ALWAYS be aware of load stability forward vision. ALWAYS slow down area is clear before turning. ALWAYS be aware of all attachments or when vision is blocked. WATCH pedestrians, especially overruns. <p>KNOW YOUR LOADS</p> <ul style="list-style-type: none"> HANDLER ONLY stable loads within specified weight and load center. See plate on the truck. DO NOT handle loads higher than load backrest. SPACE hole to be kept as load tilts and center load between forks. Keep also space load backrest. 	<p>USE COMMON SENSE</p> <ul style="list-style-type: none"> NEVER transport people on any part of the truck. DRIVE traffic rules. Yield right-of-way to pedestrians. BE in complete control at all times. ALWAYS use OMI control or raise the mechanism or load. OPERATE truck only from operator's seat. DO NOT arm, leg, and hand inside operator's compartment. DO NOT move truck if anyone is between back and stationary object. DO NOT use truck to lift people unless there is no other practical option. Then use only as specified, attach spreader doors, hollow mast sections in manual. BEFORE DISCONNECTING, neutralize mast control, lower carriage set brakes. WHEEL PATTERNS are area of power, lower, load view, stack wheels on incline. 	<p>KNOW THE AREA</p> <ul style="list-style-type: none"> NEVER enter a boiler or rebraid cut unless the release are blocked. CHOCK floor strength. DO NOT load or change battery only DO NOT operate in rain. DO NOT start if fuel is leaking. KEEP eyes open when charging battery. DISCONNECT battery during servicing. CHUCK disconnected with speedily and security. 	<p>PROTECT YOURSELF! FASTEN YOUR SEATBELT!</p> <ul style="list-style-type: none"> AVOID bumps, holes, loose restraints and slippery areas. AVOID sudden movements. Operate at control speed only. NEVER turn on or angle before an incline. Travel slowly. TRAIL on incline will load uphill or unloaded with mast downhill. Full front, back and overhead lift or lowered mast travel vertical or tilted at slight back. Use minimum lift when stacking stacked loads. AT 70% full carriage or use as precursor and load back. SLOW DOWN before turning-especially without load. BELOW TO follow these instructions can cause the truck to tip over. DO NOT sit on the back seat. HOLD steering wheel firmly. UPRACE your feet. LEAN FORWARD and AWAY from point of impact.
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Figure 22. Labels (Sheet 1 of 2)

Legend for Figure 22

1. TIPOVER WARNING
2. NO RIDERS
3. MAST WARNING LABEL
4. MAST WARNING LABEL
5. SPLIT WHEEL WARNING
6. NAMEPLATE (EXAMPLE IMAGE)
7. PARKING BRAKE
8. HOOD OPENING CAUTION
9. LOCKING GAS SPRING
10. PINCH POINT WARNING
11. FUEL LABELS
12. WARNING OPERATION
13. OVERHEAD GUARD LABEL
14. BORON-FREE LABEL
15. HYDRAULIC OIL LABEL
16. ANTIFREEZE WARNING
17. PATENT LABEL
18. REPLACE OPERATOR LABEL
19. AIR FILTER
20. ETHER WARNING LABEL
21. WARRANTY LABEL
22. NOTICE TO USER
23. NO ENTRY
24. NO EXIT

Maintenance Register

Date	Item of Maintenance	Maintenance Personnel

NOTES

NO MATTER HOW YOU SAY IT . . .

La Sécurité Ça Se Paye
La Seguridad Compensa
Betriebssicherheit Macht Sich Bezahlt
Passaa Oll Huolellinen
Veiligheid Voor Alles
Säkerhet Först
Essere Sicuro Paga
Seguranca Paga
Sikkerhet Først
Pinter Be Awas

सावधान और जिन्दा रहौ ।

في التأيي السلامة

安全第一



**SAFETY
PAYS!**

OPERATING MANUAL

H2.0-3.5UT / H40-H70UT (A3C1)

**Internal Combustion Counterbalanced
Forklift Truck**

DO NOT REMOVE THIS MANUAL FROM THIS UNIT