

## A MESSAGE TO HD HYUNDAI LIFT TRUCK OPERATORS

Lift trucks are specialized trucks with unique operating characteristics, designed to perform a specific job. Their function and operation are not like a car or ordinary truck. They require specific instructions and rules for safe operation and maintenance.

Safe operation of lift trucks is of primary importance to HD HYUNDAI.

Our experience with lift truck accidents has shown that when accidents happen and people are killed or injured, the causes are:

- ☐ Operator not properly trained
- ☐ Operator not experienced with lift truck operation
- ☐ Basic safety rules not followed
- ☐ Lift truck not maintained in safe operating condition

For these reasons, HD HYUNDAI wants you to know about the safe operation and correct maintenance of your lift truck.

This manual shows and tells you about safety inspections and the important general safety rules and hazards of lift truck operation. It describes the special components and features of the truck and explains their function. The correct operating procedures are shown and explained. Illustrations and important safety messages are included for clear understanding. A section on maintenance and lubrication is included for the lift truck mechanic.

The operator's manual is not a training manual. It is a guide to help trained and authorized safety operate their lift truck by emphasizing and illustrating the correct procedures. However, it cannot cover every possible situation that may result in an accident. You must watch for hazards in your work areas and avoid or correct them. It is important that you know and understand the information in this manual and that you know and follow your company safety rules!

Be sure that your equipment is maintained in a safe condition. Do not operate a damaged or malfunctioning truck. Practice safe operation every time you use your lift truck. Let's join together to set high standards in safety. Remember, before you start operating this lift truck, be sure you understand all driving procedures. It is your responsibility, and it is important to you and your family, to operate your lift truck safely and efficiently.

- △ **Be aware that the Federal Occupational Safety and Health Act (OSHA) and state laws require that operators be completely trained in the safe operation of lift trucks; It is also an (OSHA) requirement that operators be completely trained in the safe operation of lift trucks; It is also an (OSHA) requirement that a truck inspection be performed before every shift. If you need training in operating or inspecting your lift truck, ask your supervisor.**

HD HYUNDAI lift trucks are built to take hard work, but not abuse. They are built to be dependable, but they are only as safe and efficient as the operator and the persons responsible for maintaining them. Do not make any repairs to this truck unless you have been trained in safe lift truck repair procedures and are authorized by your employer.

This manual describes procedures for operation, handling, lubrication, maintenance, checking and adjustment. It will help the operator realize peak performance through effective, economical and safe truck operation.

## INTRODUCTION

HD HYUNDAI welcomes you to the growing group of professionals who own, operate and maintain HD HYUNDAI lift trucks. We take pride in the long tradition of quality products and superior value the HD HYUNDAI name represents. This manual familiarizes you with safety, operating, and maintenance information about your new lift truck. It has been specially prepared to help you use and maintain your HD HYUNDAI lift truck in a safe and correct manner.

Your HD HYUNDAI lift truck has been designed and built to be as safe and efficient as today's technology can make it. As manufactured, for some models, it meets all the applicable mandatory requirements of ANSI B56.1-1988 Safety Standard for Powered Industrial Trucks. Some trucks are also furnished with equipment to help you operate safely; for example, load back rest, parking brake and horn are standard equipment.

Safe, productive operation of a lift truck requires both skill and knowledge on the part of the operator. The operator must know, understand, and practice the safety rules and safe driving and load handling techniques described in this manual. To develop the skill required, the operator must become familiar with the construction and features of the lift truck and how they function, the operator must understand its capabilities and limitations, and see that it is kept in a safe condition.

### Routine Servicing and Maintenance

Regular maintenance and care of your lift truck is not only important for economy and utilization reasons; it is essential for your safety. A faulty lift truck is a potential source of danger to the operator, and to other personnel working near it. As with all quality equipment, keep your lift truck in good operating condition by using quality standard parts, and following the recommended schedule of maintenance.

### Operator Daily Inspection - Safety and Operating Checks

A lift truck should always be examined by the operator, before driving, to be sure it is safe to operate. The importance of this procedure is emphasized in this manual with a brief illustrated review and later with more detailed instructions. HD HYUNDAI dealers can supply copies of a helpful Drivers Daily Checklists. It is an OSHA requirement.

### Planned Maintenance

In addition to the daily operator inspection, HD HYUNDAI recommends that a planned maintenance and safety inspection program (PM) be performed by a trained and authorized mechanic on a regular basis. The PM will provide an opportunity to make a thorough inspection of the safety and operating condition of your lift truck. Necessary adjustments and repairs can be done during the PM, which will increase the life of components and reduce unscheduled downtime and increase safety. The PM can be scheduled to meet your particular application and lift truck usage.

The procedures for a periodic planned maintenance program that covers inspections, operational checks, cleaning, lubrication, and minor adjustments are outlined in this manual. Your HD HYUNDAI dealer is prepared to help you with a Planned Maintenance Program by trained service personnel who know your lift truck and can keep it operating safely and efficiently.

### Service Manual

In-depth service information for trained service personnel is found in Service Manual.

## HOW TO USE THIS MANUAL

This manual is a digest of essential information about the safe operation, the features and functions and explains how to maintain your lift truck. This manual is organized into eight major parts:

Section 1. Safety hints, reviews and illustrates accepted practices for safe operation of a lift truck.

Section 2. Operating Hazards, conditions that could cause damage to the truck or injury to the operator or other personnel.

Section 3. Know Your Truck, describes the major operating components, systems, controls, and other features of your truck and tells how they function.

Section 4. Operator Maintenance and Care, presents details on how to perform the operator's daily safety inspection and refuel the lift truck.

Section 5. Starting and Operating Procedures, discusses specific instructions on the safe, efficient operation of your lift truck.

Section 6. Emergency Starting and Towing, gives instructions for towing your truck in an emergency and for using battery jumper cables to start your truck in an emergency.

Section 7. Planned Maintenance and Lubrication, describes the PM (Planned Maintenance) program.

Section 8. Specifications, provides reference information and data on features, components, and maintenance materials.

※ **The descriptions and specifications included in this manual were in effect at the time of printing. HD HYUNDAI reserves the right to make improvements and changes in specifications or design, without notice and without incurring obligation. Please check with your authorized HD HYUNDAI dealer for information on possible updates or revisions.**

The examples, illustrations, and explanations in this manual should help you improve your skill and knowledge as a professional lift truck operator and take full advantage of the capabilities and safety features of your new lift truck.

The first section of the manual is devoted to a review, with illustrations and brief messages, of general safety rules and the major operating hazards you can encounter while operating a lift truck. Next, you will find descriptions of the components of your specific lift truck model and how the instruments, gauges, and controls operate. Then, you will find a discussion of safe and efficient operating procedures, followed by instructions on how to tow a disabled lift truck. The later sections of the manual are devoted to maintenance and truck specifications.

Take time to carefully read the Know Your Truck section. By acquiring a good basic understanding of your truck's features, and how they function, you are better prepared to operate it both efficiently and safely.

In Planned Maintenance, you will find essential information for correct servicing and periodic maintenance of your truck, including charts with recommended maintenance intervals and component capacities. Carefully follow these instructions and procedures.

Each major section has its own table of contents, so that you can find the various topics more easily.

We urge you to first carefully read the manual from cover to cover. Take time to read and understand the information on general safety rules and operating hazards. Understand how all gauges, indicator lights, and controls function. Please contact your authorized HD HYUNDAI dealer for the answers to any questions you may have about your lift truck's features, operation, or manuals.

Operate your lift truck safely; careful driving is responsibilities of operator and administrator.

Driving defensively and thinking about the safety of people who are working nearby. Know your truck's capabilities and limitations. Follow all instructions in this manual, including all symbols (▲ △ ※) and messages to avoid damage to your lift truck or the possibility of any harm to yourself or others.

This manual is intended to be a permanently attached part of your lift truck. Keep it on the truck as a ready reference for anyone who may drive or service it. If the truck you operate is not equipped with a manual, ask your supervisor to obtain one and have it attached to the truck.

And, remember, your HD HYUNDAI dealer is pleased to answer any questions about the operation and maintenance of your lift truck and will provide you with additional information should you require it

Any modification without permission is forbidden.

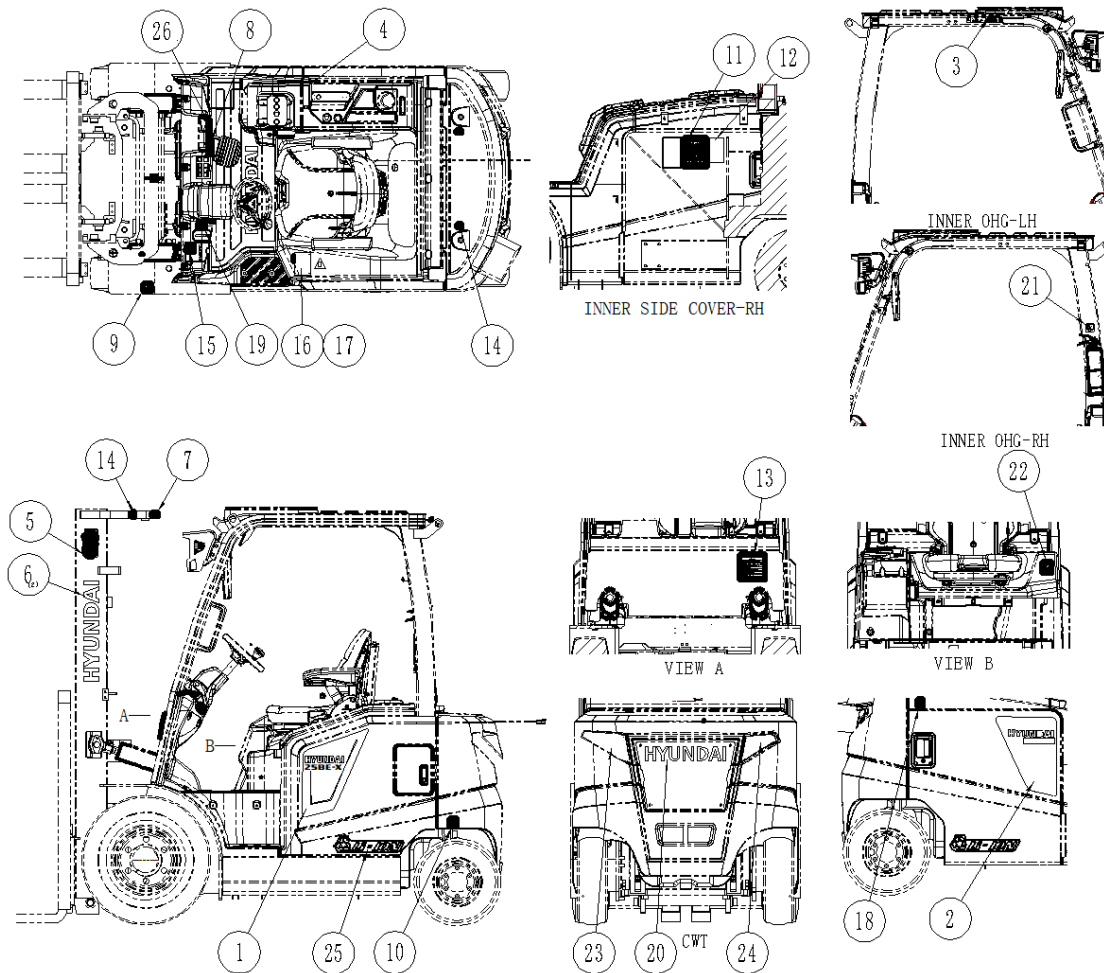
**▲ Truck modification by user, which can introduce hazards or risk not considered by manufacturers, will invalidate the existing truck risk assessments.**

**Truck modification outside Europe is subject to regional requirements (see ISO/TS3691-8).**

## SAFETY LABELS

### 1. LOCATION

Always keep these labels clean. If they are lost or damaged, attach them again or replace them with new labels.



1	MODEL NAME	10	TIRE	19	PARKING BRAKE
2	MODEL NAME	11	MAINTENANCE EXPORT	20	HYUNDAI LOGO
3	WARNING OHG	12	BAT. HANDLING	21	FIREEXTINGUISHER
4	EMERGENCY BUTTON	13	SAFETY(DC03)	22	SEAT WARNING
5	MAST WARNING	14	HOOK	23	CWT
6	HYUNDAI LOGO	15	BRAKE DRY	24	CWT RH
7	HAND CAUTION	16	NAMEPLATE	25	LI ION
8	START CAUTION	17	RIVET	26	SOLID TIRE(EXPORT)
9	TIRE	18	HYDRAULIC OIL		

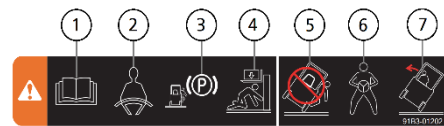
## 2. DESCRIPTION

There are several specific warning labels on this truck. Please become familiarized with all warning labels. Replace any safety label that is damaged, or missing.

### 1) SAFETY WARNING (item 3)

This warning label is positioned on the inside of the upper left side of overhead guard.

- ① Refer to operator's manual in detail.
- ② Always buckle up the seat belt for safety operation.
- ③ When the operator gets off the truck, always press the parking brake switch so that the truck can keep with stopping condition.
- ④ The people should not pass through under forks and other attachments which are lifted or being lifted.
- ⑤ Do not jump down from the truck. It can be caused that the operator has severe injury or death in the event of a tip over.
- ⑥ Outstretch the legs as widely as possible and grasp firmly the steering handle.
- ⑦ Lean the body to the opposite direction in order to avoid severe injury or death when the truck is tipped over.

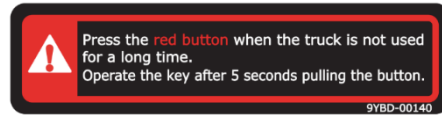


▲ Safety and warning decals are placed in conspicuous locations on the truck to remind you of essential procedures or to prevent you from making an error that could damage the truck or possibly cause personal injury, you should know, understand, and follow these instructions. Safety and warning decals should be replaced immediately if missing or defaced (Damaged or illegible). Refer to page 5 of this manual for the location of all decals.

▲ The purpose of the decals is to remind the operator that staying in the seat provides the best chance of avoiding injury in the event of a truck-tipping or driving off a dock mishap. Lift trucks can be tipped over if operated improperly. Experience with lift truck accidents has shown that the driver cannot react quickly enough to jump clear of the truck and overhead guard as the truck tips. To protect operators from severe injury or death in the event of a tip over, it is best to be held securely in the seat. So, please, always buckle up when driving your lift truck.

2) EMERGENCY BUTTON (item 4)

This warning label is positioned on the right side of the hood.



▲ Press the red button (emergency button) in case of emergency.

※ Press the red button (emergency button) when the truck is not used for a long time.

※ Operate the key after 5 seconds pulling the button.

3) MAST WARNING (item 5)

This warning label is positioned on the both side of the mast.

▲ Never stand or work under forks at any circumstances without supporting with block.

▲ In case of working under the forks, it is essential to support the carriage with blocks.



4) HAND CAUTION (item 7)

This label is positioned on the center side of the mast cross plate.

▲ It warns of the danger of injury from movement between rails, chains, sheaves, fork carriage, and other parts of the mast assembly. Do not climb on or reach into the mast. Personal injury will result if any part of your body is put between moving parts of the mast.

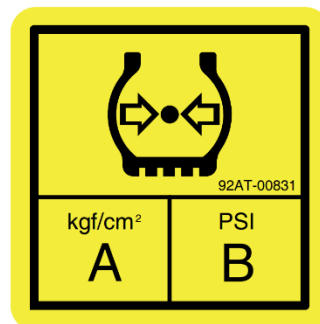


5) TIRE (item9,10)

These labels are positioned on the front top side of the left and right fender and the both rear side of the main frame.

※ Tire pressure must be checked in accordance with the planned maintenance chart.

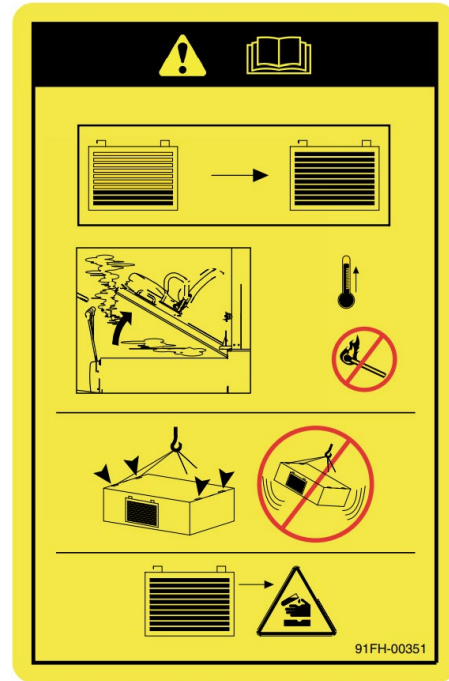
※ Refer to page 97 for the regulated tire air pressure (A and B).



6) BAT. HANDLING (item 12)

The decal for the battery handling is positioned on the right side inside of the cover.

- ▲ Please see Page 104 of safe battery exchange.
- ※ Open the battery cover while charging the battery. Heat and inflammable hydrogen gas are generated during battery charging. Never place fire near the battery.
- ※ When raising the battery, hang ropes in two or four of the hooks, and prevent impact on the battery.
- ※ The battery electrolyte is mild sulfuric acid solution (H<sub>2</sub>SO<sub>4</sub>). Pay special attention to protect clothes or machine parts from contact with the solution.



7) PARKING WARNING (item 19)

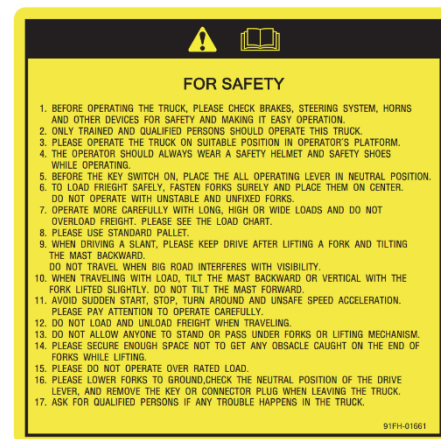
This warning and caution plate are located on the right side of the dashboard. Warnings before leaving the operator seat.

- ① Be sure to lower the attachment to the ground.
- ② Apply the parking brake.



8) SAFETY INSTRUCTION (item 13)

This warning label is positioned on the outer right side of the dashboard.





9) HOOK (item 14)

This warning label is positioned on the both top side of mast and the both side of the counterweight.

- ⚠ Please see Page 33 of the manual for safe hauling procedures.



10) BRAKE DRY (item 15)

This label is positioned on the left side of the dashboard.

- ⚠ Use DOT 3 only for brake oil.



11) HYDRUALIC OIL (item 18)

This warning label is positioned on the bottom left side of the driver seat.

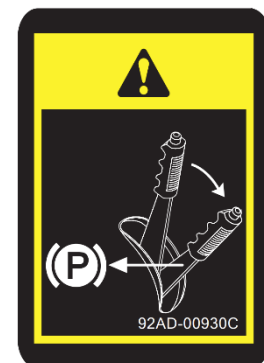
- ⚠ Fill only the hydraulic oil.
- ⚠ Do not fill the diesel oil.



12) PRKING BRAKE (item 19)

This warning decal is positioned near the parking brake lever.

- ※ When parting, fully pull the lever up.



13) FIRE EXTINGUISHER (item 21)

This warning label is positioned on the rear left side of the stay.

- ※ Read and understand the instructions adhered decal on the fire extinguisher.



14) SEAT WARNING (item 22)

The label is positioned on the left/front of the hood.

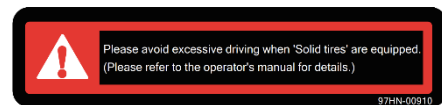
- △ **Make sure have moved the seat before opening the hood.**



15) SOLID TIRE (item 26)

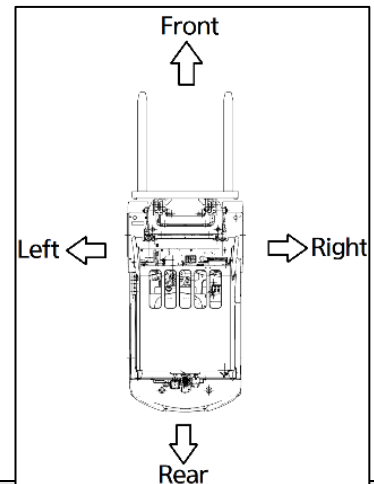
This decal is positioned on the right side of the dashboard.

- △ **Do not travel at excessively high speed with the solid tires are installed.**
- ※ **Do not drive on the road for automobiles.**
- ※ **Please see Page 43 for further information.**



## 1. DIRECTION

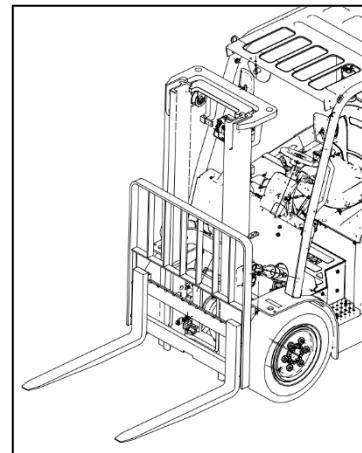
The directions of this truck indicate forward, backward, right and left when truck is in the traveling direction.



## 2. SERIAL NUMBER

Inform following when you order parts or the truck is out of order.

It's shown on front of the left side of frame.



## 3. SYMBOLS

- ▲ Important safety hint
- △ It indicates matters which can cause the great loss on the truck or the surroundings.
- ※ It indicates the useful information for operator.

## 4. VIBRATION AND NOISE

The vibration level on the whole truck body is measured in accordance with EN13059 standards that contains in-depth testing criteria (e.g., load, speed, and road surface conditions). Vibration level at work-place may vary dependent upon actual work and surface conditions.

- Vibration on whole body is measured at standard production truck mounted with whole suspension sheets in position of operator.
- The truck body vibration was measured in accordance with EN13059.
  - 16/20 BE-X:  $<0.62 \text{ m/s}^2$
  - Uncertainty,  $K=0.2 \text{ m/s}^2$

Noise is measured according to EN 12053:2001+A1:2008.

Model	At the operator' position: measure with sound pressure level dB(A)
16BE-X	64
20BE-X	64

## 5. STRENGTH OF CHAIN

Static test coefficient for lifting attachment is 1.33.

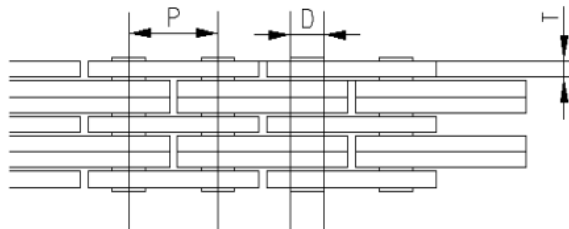
The chain used in this equipment is type BL-644, and the parameters are as follows.

P: pitch-row (=19.05 mm)

D: diameter (=7.94 mm)

T: chain connecting plate thickness (=3.2 mm)

F: Maximum cracking strength (=13000 kgf)



1. Total load applied to the chain (W)

$$W = (\text{scale load} + \text{Weight of case} + \text{Weight of fork} + \text{Weight of chain})/2$$

$$W = (3500 + 135.3 + 97.6 + 12) / 2 = 1872.45\text{kgf}$$

2. Chain breaking safety rate

$$\text{SF} = \text{Maximum cracking strength(F)} / \text{Total load applied to the chain (W)} = 6.94$$

## 6. OPERATING TEMPERATURE

- Ambient temperature: operating at  $-20^{\circ} \text{C}$  to  $40^{\circ} \text{C}$
- Continuous work inside low temperature( $-20^{\circ} \text{C}$ ) storage should not exceed 20 minutes. It is allowed to resume work in low temperature storage after standing by or operating outside low temperature storage longer than work time inside the low temperature storage.