4. OPERATOR MAINTENANCE AND CARE

1. DAILY SAFETY INSPECTION

Before using a lift truck, it is the operator's responsibility to check its condition and be sure it is safe to operate.

Check for damage and maintenance problems; have repairs made before you operate the truck. Unusual noises or problems must be reported immediately to your supervisor or other designated authority.

Do not make repairs yourself unless you are trained in lift truck repair procedures and authorized by your employer. Have a qualified mechanic make repairs using genuine HYUNDAI or HYUNDAI approved parts.

▲ Do not operate a truck if it is in need of repair. If it is in an unsafe condition, remove the key and report the condition to the proper authority. If the truck becomes unsafe in any way while you are operating it, stop operating the truck, report the problem immediately, and have it corrected.

Lift trucks should be inspected every eight hours, or at the start of each shift. In general, the daily inspection should include the visual and functional checks described on the followings.

▲ Leaking hydraulic oil may be hot or under pressure. When inspecting a lift truck, wear safety glasses and do not check for leaks with bare hands.

1) VISUAL CHECKS

First, perform a visual inspection of the truck and its major components;

- (1) Walk around your lift truck and take note of obvious damage that may have been caused by operation during the last shift.
- (2) Check that all capacity, safety, and warning plates or decals are attached and legible.
- (3) Check before and after starting engine for leaking fuel, engine coolant, transmission fluid, etc.
- (4) Check for hydraulic oil leaks and loose fittings.

▲ Do not use bare hands to check. Oil may be hot or under pressure.

- (5) Be sure that the driver's overhead guard, load back rest and all other safety devices are in place, securely fastened and undamaged. Inspect for damaged or missing parts, corrosion, cracks, breaks etc.
- (6) Check all of the critical components that handle or carry the load.
- (7) Look the mast and lift chains over. Check for obvious wear and maintenance problems such as damaged or missing parts, leaks, slack or broken chains, rust, corrosion, bent parts, cracks, etc.
- (8) Carefully inspect the load forks for cracks, breaks, bending, twists, and wear. Be sure that the forks are correctly installed and locked in their proper position.
- (9) Inspect the wheels and tires for safe mounting, wear condition, and air pressure.
- (10) Check the hydraulic sump oil level, engine oil level, and fuel level.

2) FUNCTIONAL CHECKS

Check the operation of the truck as follows.

- * Before performing these checks, familiarize yourself with the starting, operating, and shutdown procedures in Section 5 of this manual. Also, know the safety rules given in Section 1 of this manual.
- (1) Test warning devices, horn, light, and other safety equipment and accessories.
- (2) Start the engine and be sure all controls and systems operate freely and return to neutral properly. Check the:
- ① Gauges, meters, and indicator lights
- ② Service brakes, inching pedal, and parking brakes
- ③ Hydraulic controls: lift, tilt, and auxiliary (If installed)
- ④ Accelerator pedal
- (5) Gear selector lever
- 6 Steering system
- Lift mechanism and any attachments.

When the functional check are completed, follow the **standard shutdown procedures** given in Section 5, **Starting and operating procedures.**

3) CONCLUDING THE INSPECTION

A Do not operate a lift truck that has a maintenance problem or is not safe to operate.

- (1) Instead, remove the key from the starting switch and put an **Out of service tag** on the truck.
- (2) If all of the daily inspection checks were normal or satisfactory, the truck can be operated.



2. SUGGESTION FOR NEW TRUCK

- 1) It takes about 100 operation hours to enhance its designed performance.
- 2) Operate according to below three steps and avoid excessive operation for the initial 100 hours.

Service meter	Load
Until 10 hours	About 60%
Until 100 hours	About 80%
After 100 hours	100%

- * Excessive operation may deteriorate the potential performance of truck and shorten lifetime of the truck.
- 3) Be careful during the initial 100 hours operation.
- (1) Check daily for the level and leakage of coolant, engine oil, hydraulic oil and fuel.
- (2) Check regularly the lubrication and fill. Grease daily all lubrication points.
- (3) Tighten bolts.
- (4) Warm up the truck fully before operation.
- (5) Check the gauges during operation.
- (6) Check if the truck is operating normally during operation.
- 4) Replace following after initial operation hours.

Checking items	
Engine oil	50
Engine oil filter element	50
Axle gear oil	
Transmission oil	100
Transmission oil filter	100
Brake cooling oil	



3. FUEL SAFETY PRACTICES

REFUELING DIESEL TRUCKS



▲ Stop the engine when refueling. All lights and flames shall be kept at a safe distance while refueling.



A Make sure that the fuel oil cans are kept cleaned and attached safety indication or letters on the can.



A Wipe off the spilt fuel oil immediately.



4. ENGINE OIL SERVICE INTERVAL AND MANAGEMENT

It is the operator's responsibility to check its condition and be sure it is safe to operate. Please check engine oil condition periodically.

A Daily check

 \cdot Engine oil should be checked once a day before operation.

A Periodic check

- · Service should be done whichever comes first from operating hours or usage period.
- \cdot Be sure to use prescribed engie oil.

Service item	Action	Service interval	
Engine oil and oil filter F	Poplaga	General condition	Harsh condition
	періасе	Every 500 hours or 1year	Every 250 hours or 6 months

* This oil service interval can be different by engine models.

Harsh condition is as follows.

- 1. Repeated short operation (repeated cold operation)
- 2. Frequent driving in sandy or dusty places
- 3. When using excessive engine idle
- 4. Frequent driving on uphill and downhill roads
- 5. Frequent driving with rapid acceleration/deceleration or continuous high-load
- 6. When operating in salt, corrosion or low temerature conditions

* Problems with poor engine oil management

A Excessive or little engine oil filling

Engine oil quantity (lower)	 Damage on E/G moving parts with poor lubrication due to premature E/G oil deterioration Crankshaft, camshaft, conrod bearing, piston scuffing, etc. Damage on moving parts due to aeration in E/G oil, etc 	Oil level gauge	
Engine oil quantity (over)	 Damage on after-treatment unit due to excessive blow-by gas Dieseling due to excessive blow-by gas Damage (melting) on piston due to E/G oil flow into combustion chamber Injector tip burnout and E/G hestiation due to abnormal 	unchecked after filling E/G oil	

* This service interval is for R-engine model.

< Problem picutres >



< Crankshaft pin seizure >







< Connecting rod bearing seizure >



< Connecting rod broken >

A Engine oil contamination (neglecting daily and periodic check)

	Excessive wear and seizure of turbocharger shaft bearings due to		
Gelled	delayed oil supply to turbocharger		
	 ② Excessive wear and seizure of crankshaft main bearing ③ Excessive oil consumption due to piston scuffing and cylinder block 		
Viscosity (high)	4 Excessive wear and seizure of connecting rod bearings	performed	
	⑤ Excessive wear and seizure of cam shaft bearings	Watar inflow	
	6 Engine power reduction and hesitation due to poor autolash	etc	
	O Excessive chain noise due to poor timing chain tensioner		
	\circledast Wear and burnout due to lack of lubrication of timing chain lever, guide		

< Problem picutres >



< Contaminated and gelled engine oil >



< Excessive wear of moving parts >