

SERVICE REPAIR

MANUAL

Hyster F005 (H3.50XL H4.00XL-5 H4.00XL-6 H4.50XL
H5.00XL) Forklift

HYSTER

PERIODIC MAINTENANCE

GENERAL

This section contains a MAINTENANCE SCHEDULE and the instructions for maintenance and inspection.

The MAINTENANCE SCHEDULE has time intervals for inspection, lubrication and maintenance for your lift truck. The recommendation for the time intervals are for eight hours of operation per day. The time intervals must be decreased from the recommendations in the MAINTENANCE SCHEDULE for the following conditions:

- a. If the lift truck is used more than eight hours per day.
- b. If the lift truck must work in dirty operating conditions.

Your dealer for Hyster lift trucks has the equipment and trained service personnel to do a complete program of inspection, lubrication, and maintenance. A regular program of inspection, lubrication, and maintenance will help your lift truck give more efficient performance and operate for a longer period of time.

Some users have service personnel and equipment to do the inspection, lubrication, and maintenance shown in the MAINTENANCE SCHEDULE. Service Manuals are available from your dealer for Hyster lift trucks to help users who do their own maintenance.

WARNING

Do not make repairs or adjustments unless you have both authorization and training. Repairs and adjustments that are not correct can make a dangerous operating condition.

Do not operate a lift truck that needs repairs. Report the need for repairs immediately. If repair is necessary, put a “DO NOT OPERATE” tag in the operator’s area. Remove the key from the key switch.

SERIAL NUMBER DATA

The serial number for the lift truck is found on the nameplate and also on the right-hand side of the frame near the counterweight.

HOW TO MOVE A DISABLED LIFT TRUCK

WARNING

Use extra caution when towing a lift truck if any of the following conditions exist:

- a. Brakes do not operate correctly.
- b. Steering does not operate correctly.
- c. Tires are damaged.
- d. Traction conditions are bad.
- e. The lift truck must be towed on a slope.

If the engine cannot run, there is no power available for the hydraulic steering system and the service brakes. This condition can make the lift truck difficult to steer and stop. If the lift truck uses power from the engine to help apply the brakes, the application of the brakes will be more difficult. Poor traction can cause the disabled lift truck or towing vehicle to slide. A slope will also make the lift truck more difficult to stop.

Never lift and move a disabled lift truck unless the disabled lift truck MUST be moved and cannot be towed. A lift truck used to move a disabled lift truck MUST have a capacity rating equal to or greater than the weight of the disabled lift truck. The capacity of the lift truck used to move a disabled lift truck must have a load center equal to half the width of the disabled lift truck. See the nameplate of the disabled lift truck for the approximate total weight. The forks must extend the full width of the disabled lift truck. Put the weight center of the disabled lift truck on load center of the forks. Be careful to not damage the under side of the lift truck.

How To Tow the Lift Truck

1. The towed lift truck must have an operator.
2. Tow the lift truck slowly.
3. Raise the carriage and forks approximately 30 cm (12 inches) from the surface. Install a chain to prevent the 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 low as possible.

5. Use a towing link made of steel that fastens to the tow pins in the counterweights of both lift trucks.

HOW TO PUT A LIFT TRUCK ON BLOCKS

WARNING

The lift truck must be put on blocks for some types of maintenance and repair. The removal of the following assemblies will cause large changes in the center of gravity: mast, drive axle, engine and transmission, and the counterweight. When the lift truck is put on blocks, put additional blocks in the following positions to maintain stability:

- a. Before removing the mast and drive axle, put blocks under the counterweight so that the lift truck can not fall backward.
- b. Before removing the counterweight, put blocks under the mast assembly so that the lift truck can not fall forward.

The surface must be solid, even, and level when the lift truck is put on blocks. Make sure that any blocks used to support the lift truck are solid, one piece units.

NOTE: Some lift trucks have lifting eyes. These lifting eyes can be used to raise the lift truck so that blocks can be installed.

How To Raise the Drive Tires (See FIGURE 1.)

1. Put blocks on each side (front and back) of the steering tires to prevent movement of the lift truck.
2. Put the mast in a vertical position. Put a block under each outer mast channel.
3. Tilt the mast fully forward until the drive tires are raised from the surface.
4. Put additional blocks under the frame behind the drive tires.
5. If the hydraulic system will not operate, use a hydraulic jack under the side of the frame near the front. Make sure that the jack has a capacity equal to at least half the weight of the lift truck. See the nameplate.

How To Raise the Steering Tires (See FIGURE 1.)

1. Apply the parking brake. Put blocks on both sides (front and back) of the drive tires to prevent movement of the lift truck.
2. Use a hydraulic jack to raise the steering tires. Make sure the jack has a capacity of at least $\frac{1}{3}$ of the total weight of the lift truck as shown on the nameplate.
3. Put the jack under the steering axle or frame to raise the lift truck. Put blocks under the frame to support the lift truck.

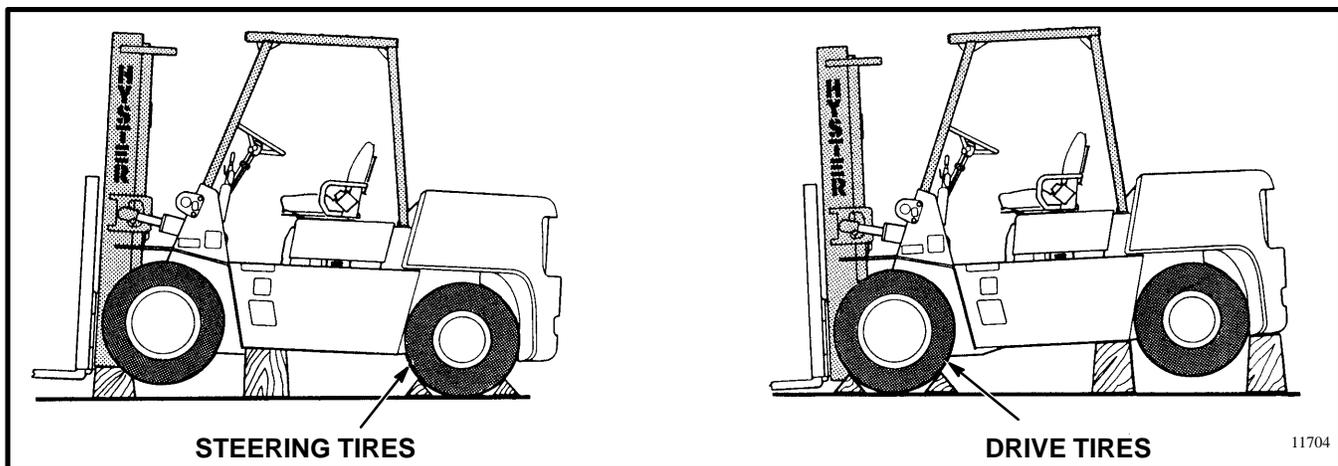


FIGURE 1. PUT A LIFT TRUCK ON BLOCKS

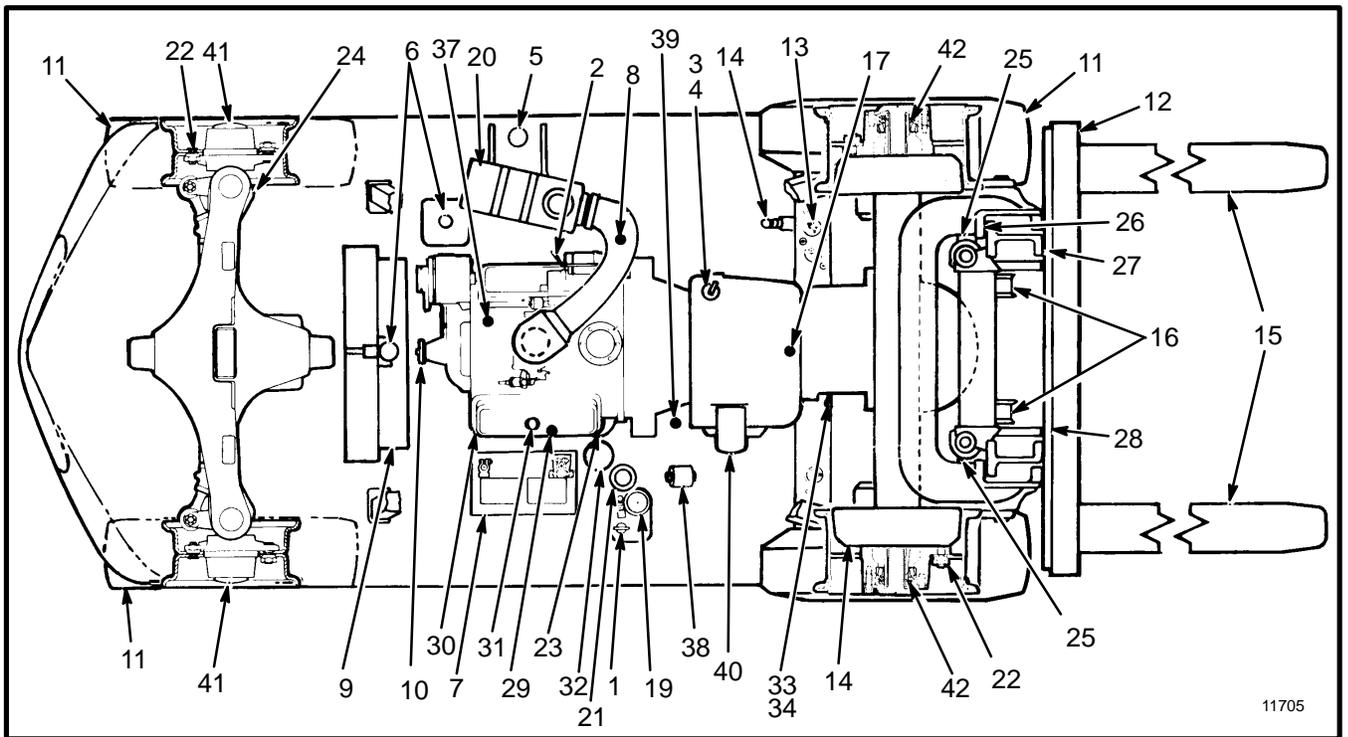


FIGURE 2. MAINTENANCE POINTS FOR THE H3.50-5.00XL (H70-110XL)

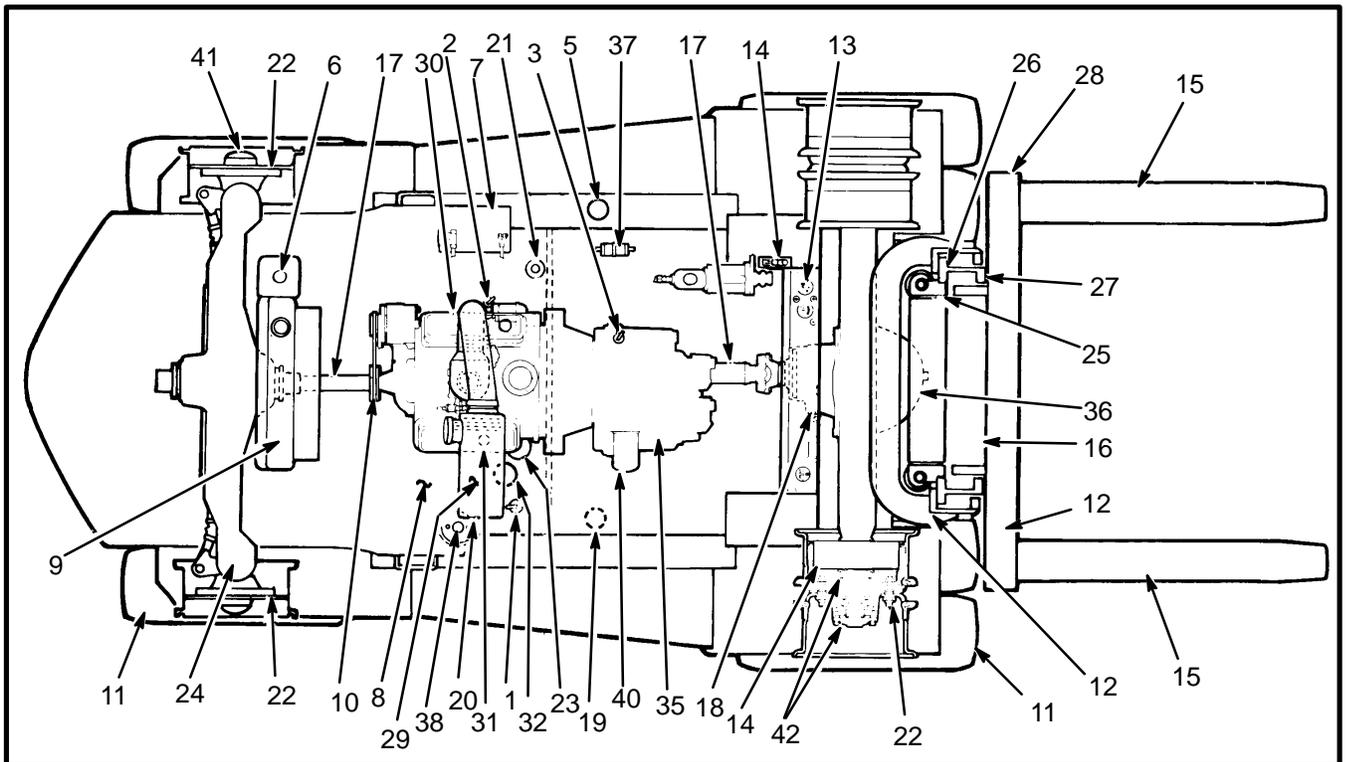


FIGURE 3. MAINTENANCE POINTS FOR THE H6.00-7.00XL (H135-155XL)

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manual**

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**Have any questions please write to me:
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MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8 hr/ Dai- ly	150 hr/ 1 Mo	350 hr/ 2 Mo	1000 hr/ 6 Mo	2000 hr/ 1 yr	PROCEDURE OR QUANTITY	SPECIFICATION
1	HYDRAULIC OIL H3.50–5.00XL (H70–110XL) H6.00–7.00XL (H135–155XL) Manual Transmission Powershift transmission	X X				C C	36.0 litre (38.0 qt) 51.1 litre (54.0 qt) 49.7 litre (52.5 qt)	–18°C (0°F) and Above SAE 10W API CC or CC/SE/SF/SG
2	ENGINE OIL GM V–6 DIESEL 1004–4 4.2482	X X		C C			4.7 litre (5.0 qt) 8.0 litre (8.5 qt) 8.5 litre (9.0 qt)	–18°C (0°F) and Above SAE 10W–30 API CC/SE/SF/SG –18°C (0°F) and Above SAE 10W–30 API CC/SE/SF/SG
3	POWERSHIFT TRANSMISSION OIL H3.50–5.00XL (H70–110XL) H6.00–7.00XL (H135–155XL)	X				C	17.0 litre (18 qt) 15.1 litre (16.0 qt)	Hydraulic and tractor transmission oil (see the Reference Table at the end of this section.)
4	OIL CLUTCH SYSTEM, OIL LEVEL H3.50–5.00XL (H70–110XL)	X				C	9.5 litre (10 qt)	Hydraulic and tractor transmission oil (see the Reference Table at the end of this section.)
5	FUEL TANK H3.50–5.00XL (H70–110XL) H6.00–7.00XL (H135–155XL)	X					60.5 litre (16 gal) 87 litre (23 gal)	85 Octane — Gasoline Diesel No. 2 LPG — HD–5
6	COOLING SYSTEM H3.50–5.00XL (H70–110XL) Gasoline and LPG Diesel H6.00–7.00XL (H135–155XL)	X				C	15.1 litre (16.0 qt) 17.0 litre (18.0 qt) 19.9 litre (21.0 qt)	50% Water with 50% Ethylene Glycol
7	BATTERY ELECTROLYTE	X					Check Level	See Parts Manual
8	FUEL FILTER, DIESEL	X			C		Drain Water	See Parts Manual
9	RADIATOR HOSES	X					Check Condition	
	SEAT BELT, HIP RESTRAINTS AND SEAT RAILS	X					Check Condition	
10	DRIVE BELTS	X					Check Condition Check Tension	
11	TIRES, TIRE PRESSURE	X					Check Condition See Nameplate	See Parts Manual
12	MAST, CARRIAGE, LIFT CHAINS	X		X			Check Condition and Operation	
	CHECK FOR LEAKS— FUEL, OIL, WATER	X					Check for Leaks	
	HOOD AND SEAT LATCHES	X					Check Condition	
13	HORN, GAUGES, LIGHTS, ALARMS	X					Check Operation	
	STEERING	X					Check Operation	

X=Check C=Change L=Lubricate

MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8 hr/ Dai- ly	150 hr/ 1 Mo	350 hr/ 2 Mo	1000 hr/ 6 Mo	2000 hr/ 1 yr	PROCEDURE OR QUANTITY	SPECIFICATION
14	SERVICE BRAKES AND PARKING BRAKE	X X				X	Check Operation Check Operation	
15	FORKS	X		X			Check Condition	
16	LIFT CHAINS	X	L	X			Check Condition Check Lubrication	Engine Oil or Hyster Part No. 171550
	SAFETY LABELS	X					Replace as Necessary	See Parts Manual
17	DRIVE SHAFTS H3.50-5.00XL (H70-110XL) Transmission H6.00-7.00XL (H135-155XL) Transmission Hydraulic Pump		L L L				2 Fittings 2 Fittings 2 Fittings	Multi-Purpose Grease ¹ Multi-Purpose Grease ¹ Multi-Purpose Grease ¹
18	THRUST SCREW FOR DIFFERENTIAL H6.00-7.00XL (H135-155XL)		X				Check Adjustment (First 150 hours)	
	DOOR HINGES (WITH CAB)		L				4 Fittings	Multi-Purpose Grease ¹
19	HYDRAULIC TANK BREATHER H3.50-5.00XL (H70-110XL)		X				1 Clean or Replace	See Parts Manual
20	AIR FILTER	X		X			Clean or Replace ²	See Parts Manual
21	BRAKE FLUID	X		X			0.2 litre (0.4 pt)	SAE J-1703
	CLUTCH, BRAKE, INCHING/BRAKE PEDALS			X			Adjust as Required	
	ENGINE SPEED IDLE SPEED GM V-6 Diesel GOVERNED SPEED All Engines			X			Adjust as Required	625 to 675 rpm 725 to 775 rpm 2400 to 2500 rpm
7	BATTERY			X			Clean	
22	WHEEL NUTS DRIVE AND STEER WHEELS			X			Check Torque	610-680 N.m (450-500 lbf ft)
23	ENGINE OIL FILTER			C			1 - See NOTE ³	See Parts Manual
24	STEERING AXLE SPINDLE BEARINGS			L			2 Fittings	Multi-Purpose Grease ¹
<p>X=Check C=Change L=Lubricate</p> <p>¹ Multi-purpose grease with 2 to 4% Molybdenum Disulfide.</p> <p>² Very dirty conditions will require daily clean and check.</p> <p>³ Change filters on NEW lift trucks at first 100 hours on hour meter.</p>								

MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8 hr/ Dai- ly	150 hr/ 1 Mo	350 hr/ 2 Mo	1000 hr/ 6 Mo	2000 hr/ 1 yr	PROCEDURE OR QUANTITY	SPECIFICATION
25	MAST							
26	PIVOTS			L			2 Fittings	Multi-Purpose Grease ¹
27	SLIDING SURFACES AND LOAD ROLLER SURFACES			L			As Required	Multi-Purpose Grease ¹
28	SIDE-SHIFT CARRIAGE FORK GUIDES			L			4 Fittings	Multi-Purpose Grease ¹
				L			As Required	Engine Oil
	PEDALS, LEVERS, LINKAGES, CABLES. HINGES, SEAT RAILS			L			As Required	Engine Oil
29	FINAL FUEL FILTER (DIESEL)				C		1	See Parts Manual
30	SPARK PLUGS				C		6 Gap, 0.9 mm (0.035 in)	See Parts Manual
31	PCV VALVE				X	C	Replace as Necessary	See Parts Manual
32	CRANKCASE BREATHER				C		1	See Parts Manual
	TIMING GM V-6 DIESEL, ALL ENGINES				X		Adjust as Required	0° BTDC @ 650 rpm 16° BTDC Static
	VALVE ADJUSTMENT GM V-6 DIESEL, ALL ENGINES INLET (Cold) EXHAUST (Cold)				X		Adjust as Required	Not Adjustable 0.20 mm (0.008 in) 0.45 mm (0.018 in)
33	MANUAL TRANSMISSION AND DRIVE AXLE OIL H3.50-5.00XL (H70-110XL)				X	C	14.7 litre (15.5 qt)	SAE 80W-90, 85W-140
34	SPEED REDUCER AND DRIVE AXLE OIL FOR POWERSHIFT TRANS. H3.50-5.00XL (H70-110XL)				X	C	7.6 litre (8.0 qt)	SAE 80W-90, 85W-140
35	MANUAL TRANSMISSION OIL H6.00-7.00XL (H135-155XL)				X	C	3.3 litre (3.5 qt)	SAE 80W-90, 85W-140
36	SPEED REDUCER AND DIFFERENTIAL H6.00-7.00XL (H135-155XL)				X	C	14.3 litre (15.0 qt)	SAE 80W-90, 85W-140
36	DIFFERENTIAL FOR POWERSHIFT TRANS. H6.00-7.00XL (H135-155XL)				X	C	12.1 litre (12.8 qt)	SAE 80W-90, 85W-140
37	FUEL FILTER GASOLINE LPG					C C	1 1	See Parts Manual See Parts Manual

X=Check C=Change L=Lubricate

¹ Multi-purpose grease with 2 to 4% Molybdenum Disulfide.

² Very dirty conditions will require daily clean and check.

³ Change filters on NEW lift trucks at first 100 hours on hour meter.

MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8 hr/ Dai- ly	150 hr/ 1 Mo	350 hr/ 2 Mo	1000 hr/ 6 Mo	2000 hr/ 1 yr	PROCEDURE OR QUANTITY	SPECIFICATION
38	HYDRAULIC SYSTEM OIL FILTER					C	1 See NOTE ³	See Parts Manual
39	OIL CLUTCH SYSTEM OIL FILTER					C	1 See NOTE ³	See Parts Manual
40	POWERSHIFT TRANS. OIL FILTER					C	1 See NOTE ³	See Parts Manual
41	STEER WHEEL BEARINGS					L	As Required	Multi-Purpose Grease ¹
42	DRIVE WHEEL BEARINGS					L	As Required	Multi-Purpose Grease ¹
<p>X=Check C=Change L=Lubricate</p> <p>¹ Multi-purpose grease with 2 to 4% Molybdenum Disulfide. ² Very dirty conditions will require daily clean and check. ³ Change filters on NEW lift trucks at first 100 hours on hour meter.</p>								

MAINTENANCE PROCEDURES EVERY 8 HOURS OR DAILY

WARNING

Do not operate a lift truck that needs repairs. Report the need for repairs immediately. If repair is necessary, put a “DO NOT OPERATE” tag in the operator’s area. Remove the key from the key switch.

HOW TO MAKE THE CHECKS WITH THE ENGINE STOPPED

Put the lift truck on a level surface. Lower the carriage and forks, stop the engine and apply the parking brake. Open the hood and check for leaks and conditions that are not normal. Clean any oil or fuel spills. Make sure that lint, dust, paper, and other materials are removed from the engine compartment.

Hydraulic System Oil (See FIGURE 4.)

WARNING

At operating temperature the hydraulic oil is **HOT**.

Do not permit the hot oil to touch the skin and cause a burn.

CAUTION

Do not permit dirt to enter the hydraulic system when the oil level is checked or the filter is changed.

Never operate the hydraulic pump without oil in the hydraulic system. The operation of the hydraulic pump without oil will damage the pump.

Check the hydraulic oil level when the oil is at operating temperature, the carriage is lowered and the engine is stopped. Add hydraulic oil only as needed. If more hydraulic oil is added than the “FULL” level, the hydraulic oil will leak from the breather during operation. The oil level indicated by the dipstick is most accurate when the oil temperature is 53 to 93°C (130 to 200°F).

Check the hydraulic system for leaks and damaged or loose components.

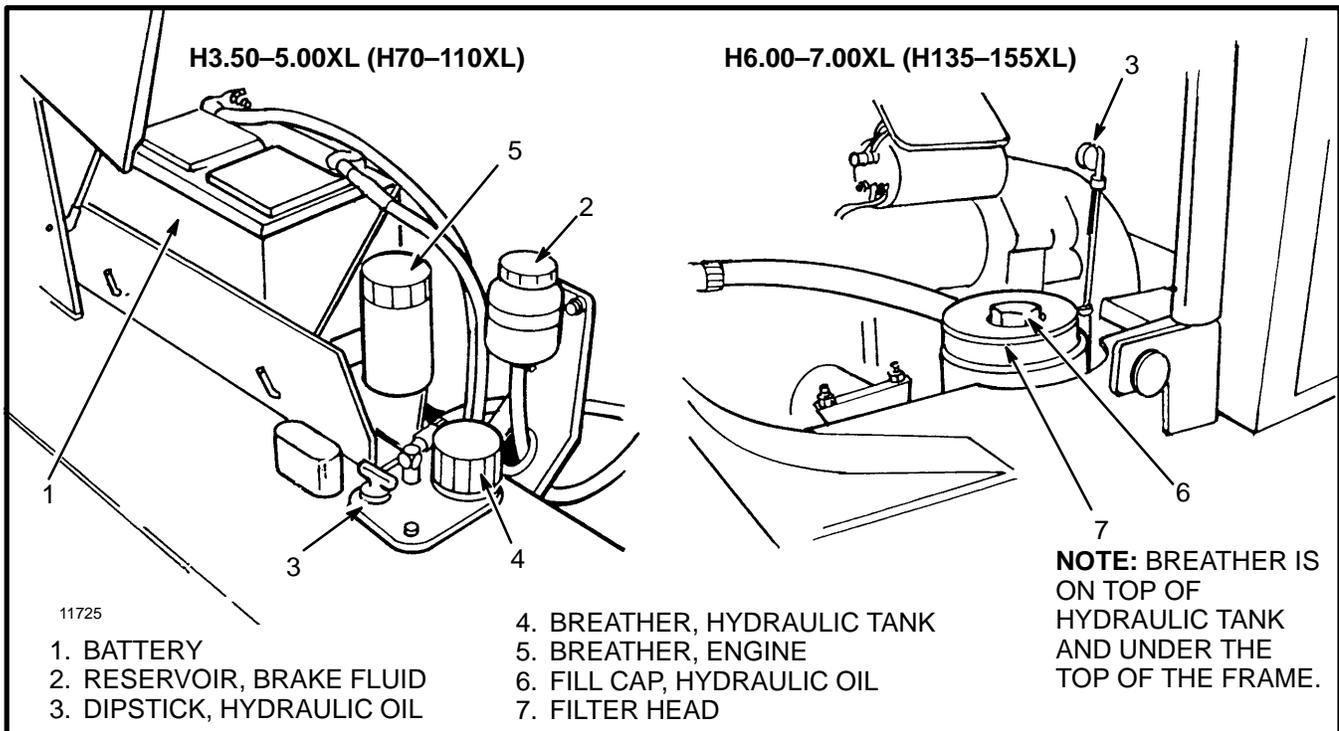


FIGURE 4. MAINTENANCE POINTS

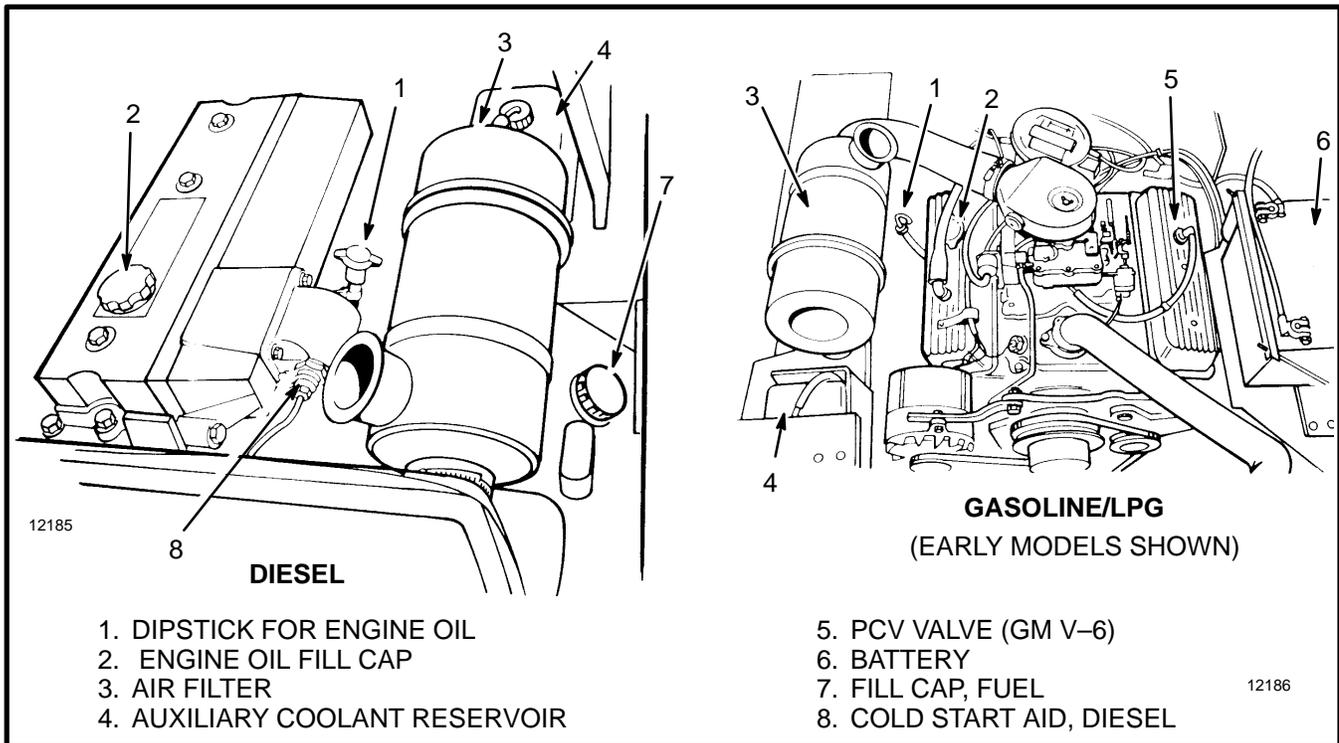


FIGURE 5. ENGINE MAINTENANCE POINTS

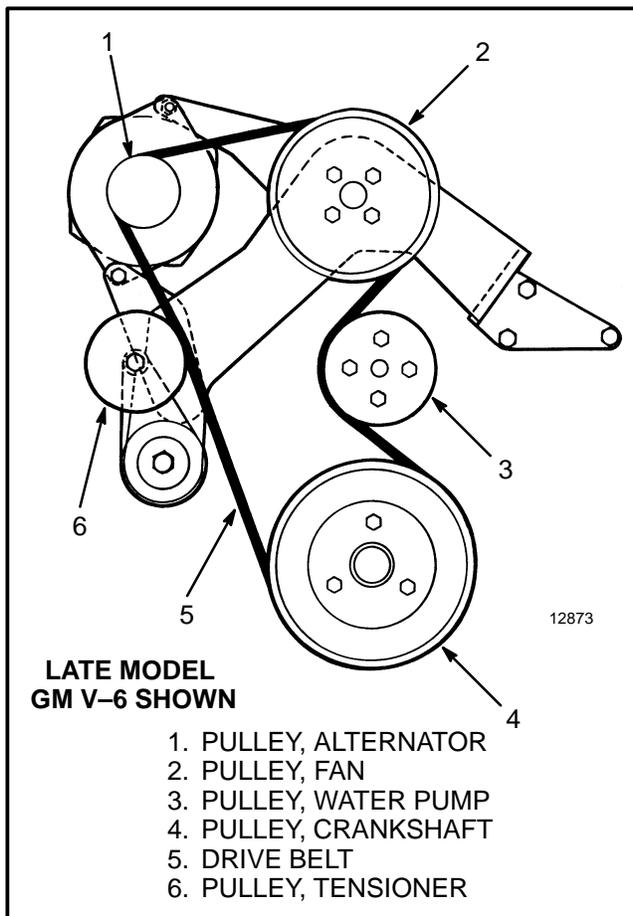


FIGURE 6. DRIVE BELT

Engine Oil (See FIGURE 5.)

After the engine has stopped, wait one minute before checking the oil level. Keep the oil at the correct level as indicated on the dipstick. Use the correct oil as shown in the MAINTENANCE SCHEDULE.

Drive Belts

Check the drive belts for wear and damage.

Cooling System (See FIGURE 7.)

⚠ 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.

Make sure the coolant level is between the “FULL” and the “ADD” mark on the auxiliary coolant reservoir. The coolant will expand as it is heated and the level in the auxiliary coolant reservoir will increase. Add coolant to the auxiliary reservoir if additional coolant is needed.

Check the radiator fins. Clean the radiator with compressed air or water as needed.

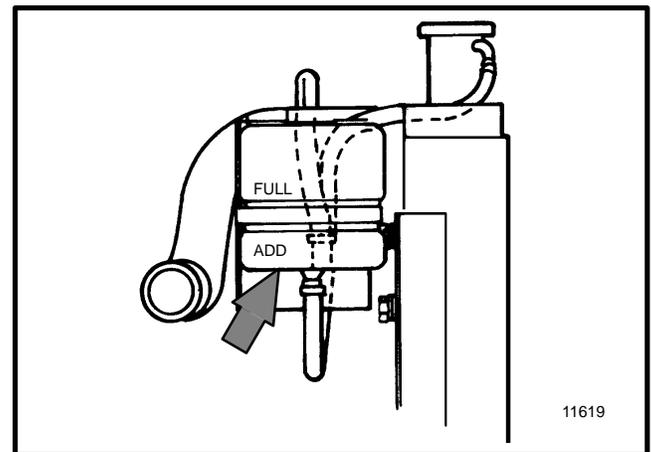


FIGURE 7. AUXILIARY COOLANT RESERVOIR

Air Filter (See FIGURE 5. And FIGURE 8.)

Clean or replace the air filter as necessary. Use compressed air to clean the filter element. Air pressure must be less than 210 kPa (30 psi). Apply the air from the inside to the outside of the element.

Inspect the filter element. Put a bright light inside and look for holes or other damage. If the element is damaged, replace it with a new element. Use a cloth with solvent to clean the inside of the canister when the filter element is cleaned or replaced.

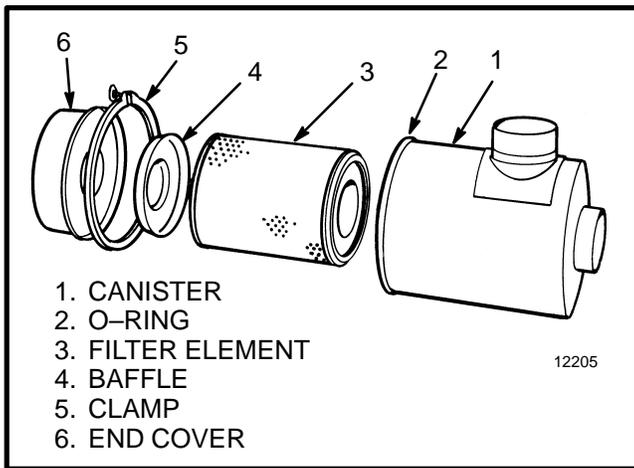


FIGURE 8. AIR FILTER

Fuel System

⚠ WARNING

All fuels are very flammable and can burn or cause an explosion. Do not use an open flame to check the fuel level or to check for leaks in the fuel system. If there is a leak in the fuel system, extra care must be used during the repair. Do not operate the lift truck until a leak is repaired.

Check the fuel system for leaks and the condition of parts. When fuel is added to the lift truck, see the section, **How To Add Fuel To The Lift Truck** procedures in the **OPERATING MANUAL**.

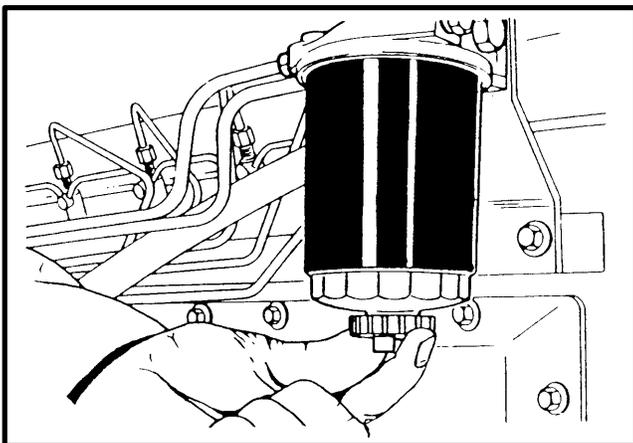


FIGURE 9. PRIMARY FUEL FILTER

Primary Fuel Filter, Diesel Engine

1. Drain the water from the primary fuel filter. See FIGURE 9. Open the valve on the bottom of the filter canister. Drain some fuel (and any water) into a cup until clean fuel flows from the filter.

2. Close the valve.

Battery (See FIGURE 4.)

⚠ WARNING

The acid in the electrolyte can cause injury. If the electrolyte is spilled, use water to flush the area. Use a solution of sodium bicarbonate (soda) to make the acid neutral. Acid in the eyes must be flushed with water immediately. Wear eye protection.

Batteries generate explosive fumes. Keep the vents in the caps clean. Keep sparks or open flame away from the battery area. Do not make sparks from the battery connections. Disconnect the battery ground cable when doing maintenance.

Keep the battery and cable terminals clean. Check the electrolyte level (unless maintenance-free). Keep the electrolyte level above the separators and plates. Use distilled water. Do not fill the battery more than to the bottom of the internal filler neck.

If the battery becomes discharged and requires a booster battery to start the engine, follow these procedures carefully when connecting the jumper cables:

- Always connect the positive jumper cable to the positive terminal of the discharged battery and the negative jumper cable to the negative terminal.
- Always connect the jumper cable that is the ground cable last.
- Always connect the jumper cables to the discharged battery before connecting them to the booster battery.

Tires and Wheels (See FIGURE 10.)

⚠ WARNING

Air pressure in the tires can cause tire and wheel parts to explode. The explosion of wheel parts can cause serious injury or death.

Completely deflate the tires before the tires are removed from the lift truck.

If the air pressure is less than 80% of the correct air pressure, the tire must be removed before air is added. Put the tire in a safety cage when adding air pressure to the tire. Follow the procedures described in "Add Air To The Tires".

When air is added to the tires, use a remote air chuck. The person adding air must stand away and to the side and not in front of the tire.

Keep the tires at the correct air pressure. (See the Nameplate.) Check the air pressure with a gauge when the tires are cold. If it is necessary to add air to a tire that is warm, check one of the other tires on the same axle and add air to the tire that has low pressure so that the air pressures are equal. The air pressure of the warm tires must always be equal to or greater than the specification for air pressure for cold tires.

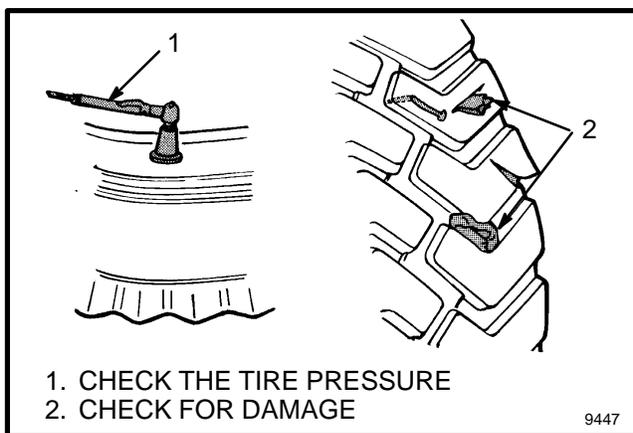


FIGURE 10. CHECK THE TIRES

Check the tires for damage. Check the tread and remove any objects that will cause damage. Check for bent or damaged rims. Check for loose or missing parts. Remove any wire, straps or other material wrapped around the axle.

Make sure the drive wheel nuts are tight. Tighten the wheel nuts in a cross pattern to the correct torque value shown in the MAINTENANCE SCHEDULE.

CAUTION

When the drive wheels have been installed check all wheel nuts after 2 to 5 hours of operation. Tighten the nuts in a cross pattern to the correct torque value shown in the MAINTENANCE SCHEDULE. When the nuts stay tight for eight hours, the interval for checking the torque can be extended to 350 hours.

Forks

The identification of a fork is how the fork is connected to the carriage. The **H3.50–5.00XL (H70–110XL)** series of lift trucks can have either a hook fork or a pin fork. The **H6.00–7.00XL (H135–155XL)** series of lift trucks normally have a pin fork. See FIGURE 13.

Forks, Adjustment

Hook forks are connected to the carriage by hooks and lock pins. See FIGURE 12. These lock pins are installed through the top fork hooks and fit into slots in the top carriage bar. Adjust the forks as far apart as possible for maximum support of the load. Hook forks will slide along the carriage bars to adjust for the load to be lifted. Raise the lock pin in each fork to slide the fork on the carriage bar. Make sure the lock pin is engaged in the carriage bar to lock the fork in position after the width adjustment is made.

Pin forks are fastened to the carriage with large fork pins. A lock pin for each fork fits into the top carriage bar and a slot in the fork. These lock pins hold the fork in position. See FIGURE 13. Adjust the forks as far apart as possible for maximum support of the load. Make sure the lock pin is engaged in the carriage bar and the fork. The fork must be locked into position after the adjustment is made.

Forks, Removal And Installation

WARNING

Do not try to move a fork without a lifting device. Each fork for these lift trucks can weigh (66 kg to 183 kg [145 to 402 lb] for a hook fork) and (128 to 226 kg [281 to 498 lb] for a pin fork).

A fork can be removed from the carriage for replacement of the fork or other maintenance.

Hook Fork (Removal). Slide a hook fork to the fork removal notch on the carriage. See FIGURE 12. Lower the fork onto blocks so that the bottom hook of the fork moves through the fork removal notch. See FIGURE 11. 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.

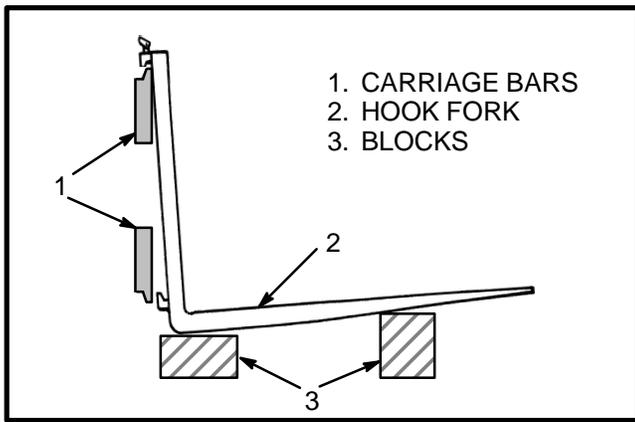


FIGURE 11. REMOVE A HOOK FORK

Hook Fork (Installation). 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.

Pin Fork (Removal). Lower the carriage and put blocks under a pin fork. When the weight of the forks have been removed from the fork pin, remove the load backrest extension. The load backrest extension holds the fork pin in the carriage. Slide the fork pin from its mount in the

carriage and through the eye of the fork. See FIGURE 13. Use a lifting device to lift the fork away from the carriage.

Pin Fork (Installation). Install the fork pin in the carriage. Align the eyes of the forks so that the forks will be installed on the fork pin. When the fork pin is installed in the carriage so that it holds the forks, install the load backrest extension. Engage the fork with the lock pin.

Inspection Of Forks, Mast, and Lift Chains
(See FIGURE 14. and FIGURE 15.)

⚠ WARNING

Never work under a raised carriage or forks. Lower the carriage or use blocks and chains on the mast weldments and carriage so that they can not move. Make sure the moving parts are attached to a part that does not move.

Do not try to correct the alignment of the fork tips by bending the forks or adding shims. Replace damaged forks.

Never repair damaged forks by heating or welding. Forks are made of special steel using special procedures. Replace damaged forks.

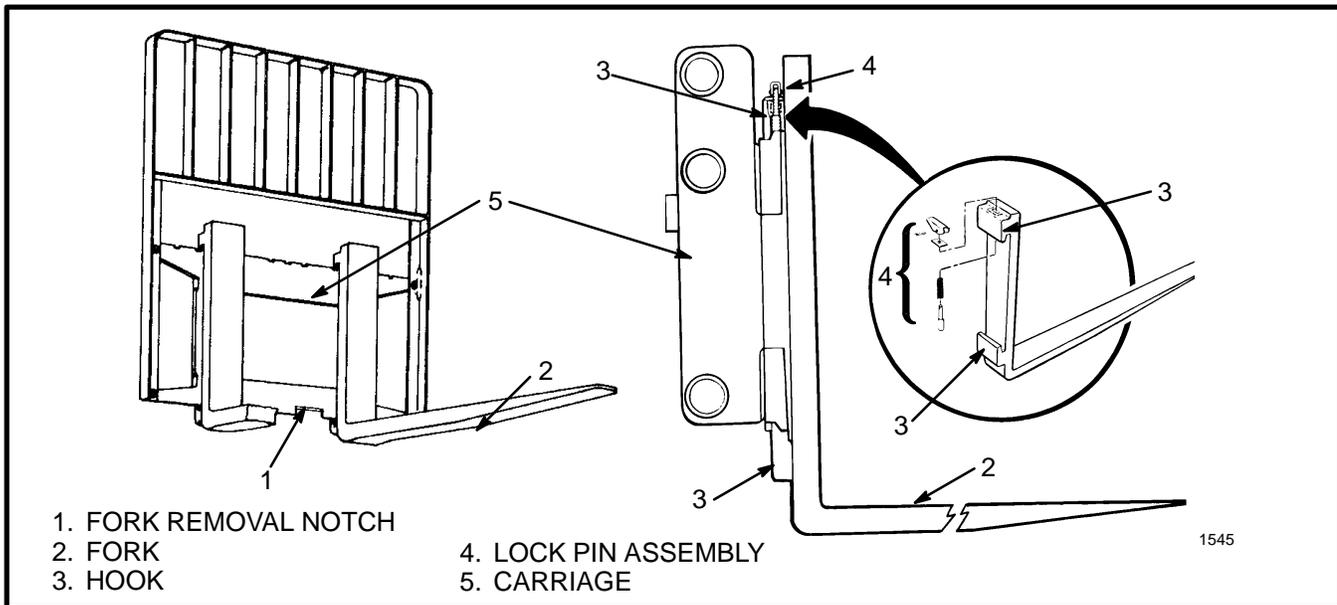


FIGURE 12. HOOK FORK

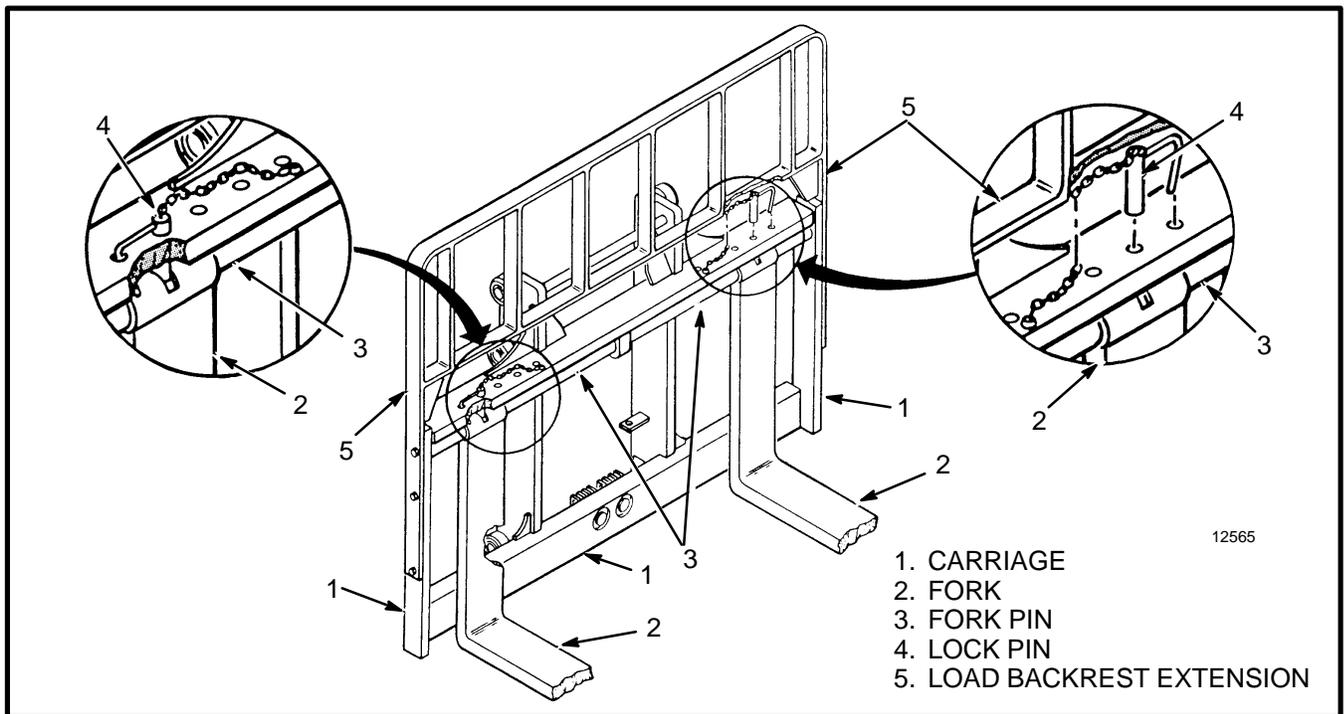


FIGURE 13. PIN FORKS

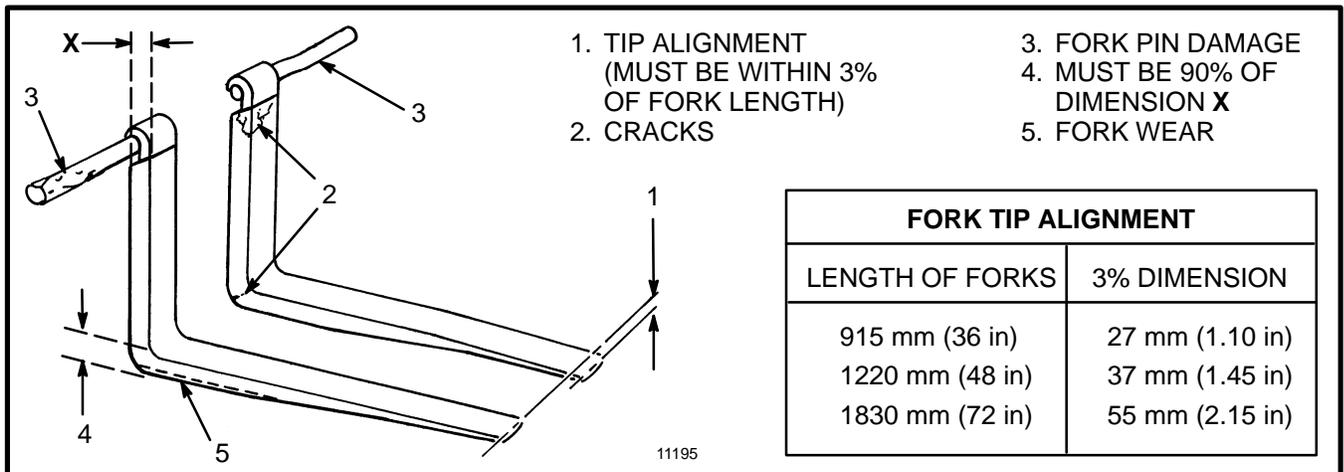


FIGURE 14. CHECK THE FORKS

1. Inspect the welds on the mast and carriage for cracks. Make sure that the capscrews and nuts are tight.
2. Inspect the channels for wear in the areas where the rollers travel. Inspect the rollers for wear or damage.
3. Inspect the load backrest extension for cracks and damage.
4. Inspect the forks for cracks and wear. Check that the fork tips are aligned within 13 mm (0.5 in) of each other. (See FIGURE 14.) Check that the bottom of the fork is not worn (Item 5).

5. Replace any damaged or broken parts that are used to keep the forks locked in position.
6. If the lift truck is equipped with a side-shift carriage or attachment, inspect the parts for cracks and wear. Make sure the parts that fasten the side-shift carriage or attachment to the carriage are in good condition.
7. Check that the lift chains are correctly lubricated. Use SAE 30 engine oil to lubricate the lift chains.
8. Inspect the lift chains for cracks or broken links and pins. (See FIGURE 15.)

9. Inspect the chain anchors and pins for cracks and damage.

10. Make sure the lift chains are adjusted so that they have equal tension. **Adjustment or replacement of the lift chains must be done by authorized personnel.** See Lift Chain Adjustments described in the GENERAL PROCEDURES later in this section.

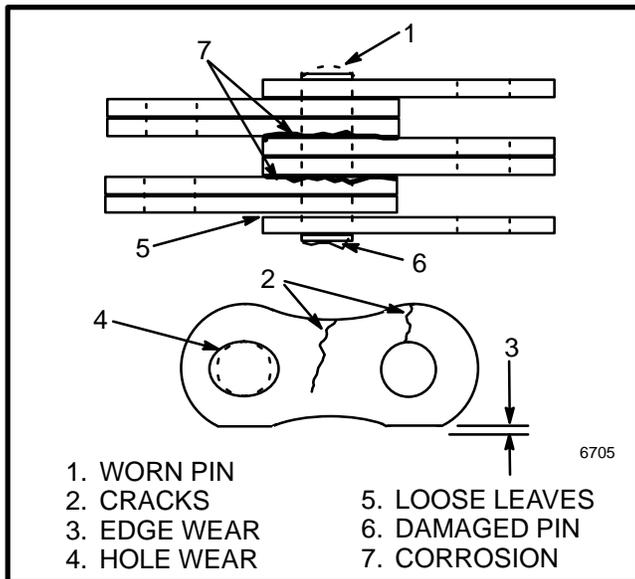


FIGURE 15. CHECK THE LIFT CHAINS

Operator Restraint System (See FIGURE 16.)

The seat belt, hip restraint brackets, seat and mount, hood, latches and floor plates are all part of the operator restraint system. Each item must be checked to make sure it is fastened correctly, functions correctly and is in good condition.

The seat belt must fasten correctly. Make sure the seat belt can be pulled from the retractor and retracts smoothly. The seat belt must not be damaged or worn.

Make sure the seat rails and latch striker are not loose. The seat rails must lock tightly in position, but move freely when unlocked. The seat rails must be correctly fastened to the mount surface. If the mount surface is the hood, the hood must be fastened to the floor plate with the latch. The floor plate must be fastened to the lift truck frame. Try to lift the hood to make sure it is fastened correctly and will not move. See FIGURE 16.

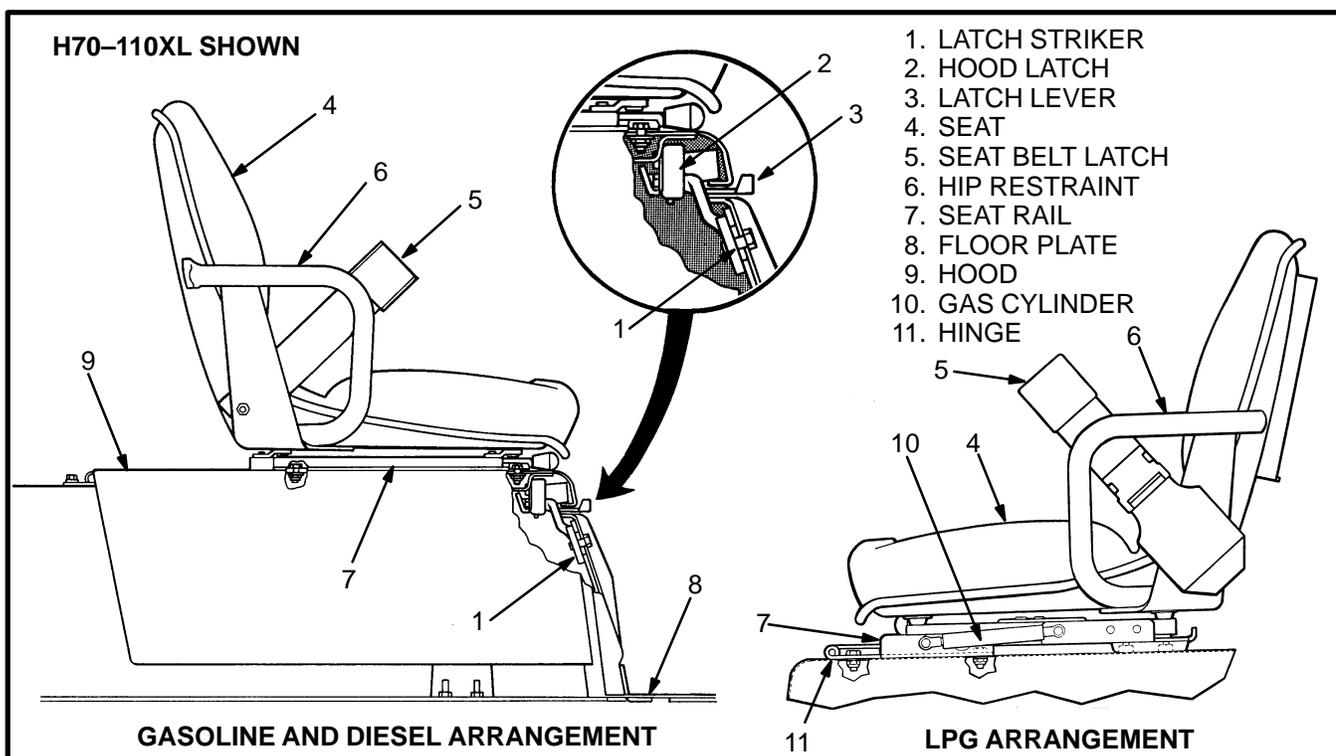


FIGURE 16. CHECK THE HOOD AND SEAT LATCHES

Safety Labels

WARNING

Safety labels are installed on the lift truck to give information about operation and possible hazards. It is important that all safety labels are installed on the lift truck and can be read.

Check that all safety labels are installed in the correct locations on the lift truck. See the **PARTS MANUAL** or the **FRAME** section of the **SERVICE MANUAL** for the correct location of the safety labels.

If new labels must be installed, use the following procedure:

WARNING

Cleaning solvents can be flammable and toxic, and can cause skin irritation. When using cleaning solvents, always follow the recommendations of the manufacturer.

- Make sure the surface is dry and has no oil or grease. Do not use solvent on new paint. Clean the surface of old paint with a cleaning solvent.
- Remove the paper from the back of the label. Do not touch the adhesive surface.
- Carefully hold the label in the correct position above the surface. The label cannot be moved after it touches the surface. Put the label on the surface. Make sure that all air is removed from under the label and the corners and edges are tight.

HOW TO MAKE THE CHECKS WITH THE ENGINE RUNNING

WARNING

FASTEN YOUR SEAT BELT! 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.

Make sure that the area around the lift truck is clear before starting the engine or making any checks of the op-

eration. Be careful when making the checks. If the lift truck is stationary during a check, apply the parking brake and put the transmission in **NEUTRAL**. Make the checks carefully.

Gauges, Lights, Horn, and Fuses

Start the engine. Check the gauges and lights for correct operation as described in the **OPERATING MANUAL**. Check the operation of the horn. If any of the lights or gauges do not operate correctly, check the fuses. The fuses are under the instrument panel on the left side of the cowl. See FIGURE 17.

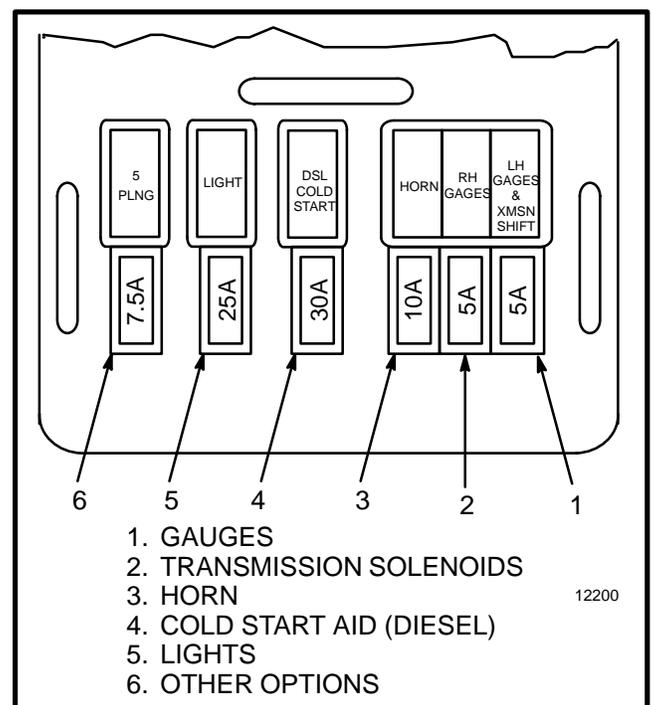


FIGURE 17. FUSES

Oil Level, Powershift Transmission (See FIGURE 18.)

Apply the parking brake. Check the oil level in the powershift transmission when the engine is running at idle speed. If the lift truck has a direction control lever, put the direction control lever in the **NEUTRAL (N)** position. Use the correct oil shown in the **MAINTENANCE SCHEDULE**. Keep the oil level at the "FULL" mark on the dipstick. The most accurate check of the oil level is when the transmission is at operating temperature.

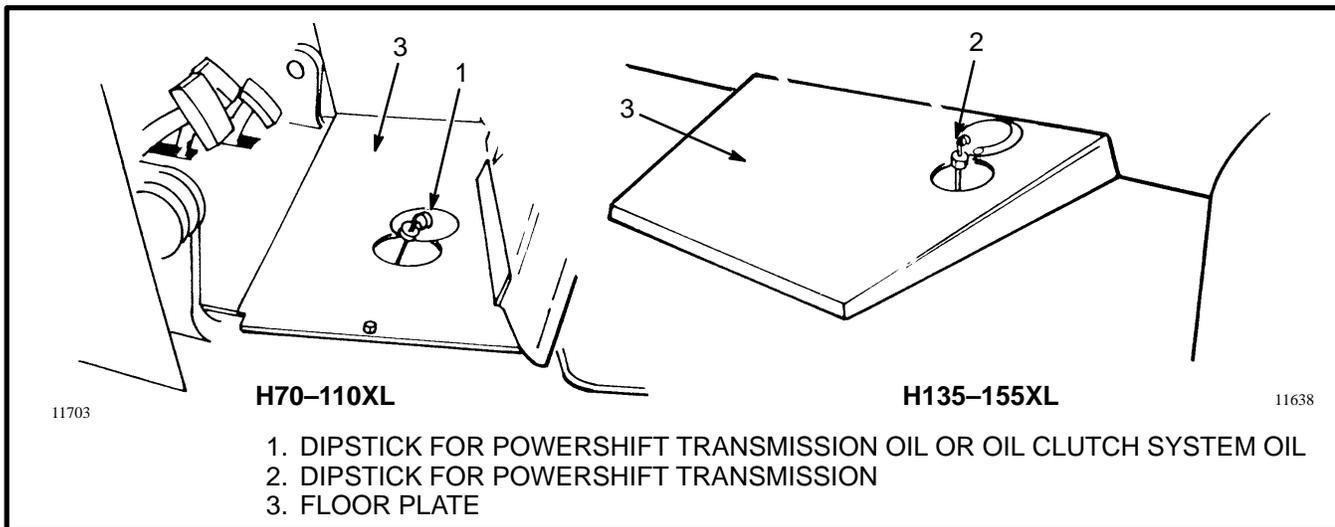


FIGURE 18. CHECK THE OIL FOR THE POWERSHIFT TRANSMISSION OR OIL CLUTCH SYSTEM

Oil Level, Oil Clutch System, H3.50-5.00XL (H70-110XL) (See FIGURE 18.)

NOTE: The oil clutch system for the H6.00-7.00XL (H135-155XL) lift trucks does not have a dipstick because the oil clutch uses oil from the hydraulic system.

Put the direction control lever in the **NEUTRAL (N)** position. Apply the parking brake. Check the oil level in the clutch housing when the engine is running at idle speed. The most accurate check of the oil level is when the oil is at operating temperature. Use the correct oil as shown in the **MAINTENANCE SCHEDULE**. Keep the oil at the “FULL” mark on the dipstick.

Control Levers and Pedals

Check that the control levers for the transmission, mast and attachment operate as described in the **OPERATING MANUAL**. Check that the pedals operate correctly as described in the **OPERATING MANUAL**.

Lift System Operation

⚠ WARNING

Lower the lift mechanism completely. Never allow any person under a raised carriage. Do not put any part of your body in or through the lift mechanism unless all parts of the mast are completely lowered and the engine is STOPPED.

Before making any repairs, use blocks and chains on the mast weldments and carriage so that they can not move. Make sure the moving parts are attached to a part that does not move.

Do not try to find hydraulic leaks by putting hands on pressurized hydraulic components. Hydraulic oil can be injected into the body by the pressure.

Do the following checks and inspections:

- a. Check for leaks in the hydraulic system. Check the condition of the hydraulic hoses and tubes.
- b. Slowly raise and lower the mast several times without a load. Raise the mast to its full extension height at least once. The mast components must raise and lower smoothly in the correct sequence.

NOTE: Some parts of the mast move at different speeds during raising and lowering.

- c. The inner weldments and the carriage must lower completely.
- d. Raise the mast one metre (three feet) with a capacity load. The inner weldments and the carriage must raise smoothly. Lower the mast. All moving components must lower smoothly.
- e. Lower the load to approximately 0.3 metre (one foot). Tilt the mast forward and backward. The mast must tilt smoothly and both tilt cylinders must stop evenly.
- f. Check that the controls for the attachment operate the functions of the attachment. (See the symbols by each of the controls.) Make sure all of the hydraulic lines are connected correctly and do not leak.

Inching/Brake Pedal

Push on the inching/brake pedal. The service brakes must be applied before the inching/brake pedal reaches the floor plate. Full application of the inching/brake pedal applies the service brakes and puts the transmission in **NEUTRAL**.

Lift trucks with a MONOTROL pedal: when the inching/brake pedal is fully applied, a switch in the starting circuit is closed so that the engine can be started.

Service Brakes

Check the operation of the service brakes. Push on the brake pedal. The brake pedal must stop firmly and must not move slowly down after the brakes are applied. The service brakes must apply equally to both drive wheels. The service brakes must not pull the lift truck to either side of the direction of travel when they are applied. The service brakes are automatically adjusted when the brakes are applied and the lift truck changes direction.

WARNING

Loss of fluid from the brake fluid reservoir indicates a leak. Repair the brake system before using the lift truck. Replace the brake fluid in the system if there is dirt, water or oil in the system.

The lift truck has a brake booster that receives power from the hydraulic system. The brake pedal

can be difficult to push when the engine is not running because the hydraulic system is not operating.

Parking Brake

Check the operation of the parking brake. The operator must adjust the parking brake so that the lift truck does not move if it is 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 metres in 10 metres (1.5 ft increase in 10 ft)].

Turn the adjustment knob on the end 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 finger to release the lock on the lever when the parking brake is released.

Lift trucks with a MONOTROL pedal: when the parking brake is applied, a switch in the starting circuit is closed so that the engine can be started. The switch also puts the transmission in **NEUTRAL**.

Steering System

WARNING

The lift truck has hydraulic power steering. The steering can be difficult if the engine is not running.

Make sure the steering system operates smoothly and gives good steering control.

EVERY 150 HOURS OR MONTHLY

NOTE: Do these procedures in addition to the 8 hour checks.

THRUST SCREW FOR THE DIFFERENTIAL, H6.00–7.00XL (H135–155XL) (See FIGURE 19.)

Check the adjustment of the thrust screw on new lift trucks after the first 150 hours of operation. Loosen the lock nut and turn the thrust screw into the housing until the screw touches the ring gear. Turn the thrust screw out of the housing $\frac{1}{2}$ turn and tighten the lock nut. Additional adjustment of the thrust screw is not normally necessary after this time.

LIFT CHAINS, LUBRICATION

Lubricate the lift chains with SAE 30 engine oil. The best procedure is to remove the chains from the lift truck and soak them in engine oil.

WARNING

Do not repair a worn or damaged lift chain. Replace a worn or damaged lift chain with a new chain. If a pair of lift chains is used in the mast, both lift chains must be replaced.

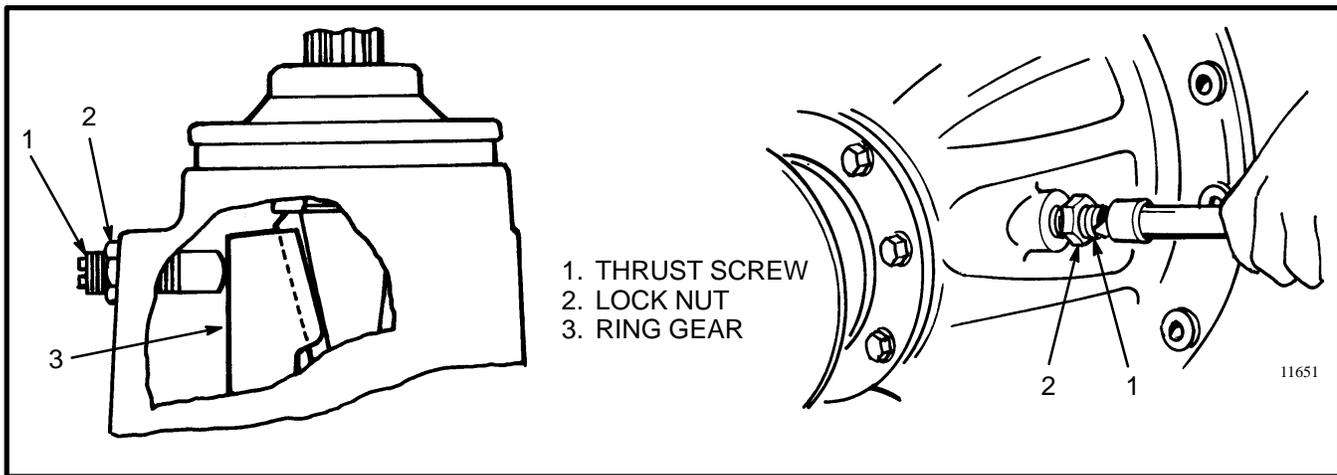


FIGURE 19. THRUST SCREW FOR THE DIFFERENTIAL

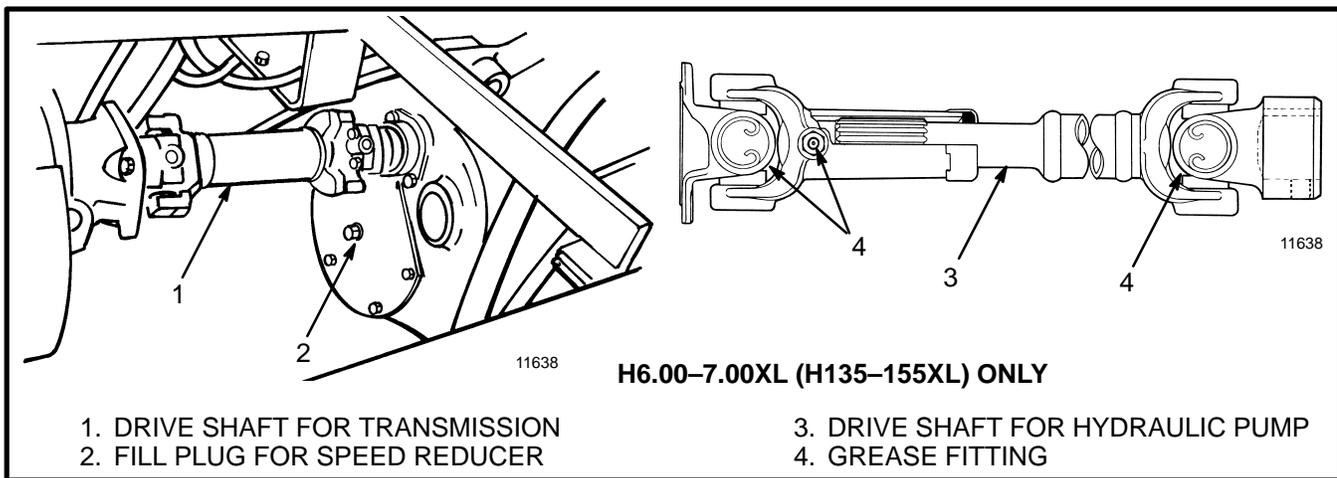


FIGURE 20. DRIVE SHAFTS

DRIVE SHAFTS (See FIGURE 20.)

Lubricate the two grease fittings on the transmission drive shaft with multi-purpose grease.

H6.00-7.00XL (H135-155XL) lift trucks. Lubricate the three grease fittings on the drive shaft for the hydraulic pump with multi-purpose grease. There is a grease fitting at each universal joint and one grease fitting for the sliding spline.

EVERY 350 HOURS OR TWO MONTHS

NOTE: Do these procedures in addition to the 150 hour checks.

ENGINE OIL AND FILTER

NOTE: Change the oil filter for the engine after the first 100 hours on new lift trucks.

⚠ WARNING

Long term exposure to used engine oil may cause skin irritation or cancer. Wash with detergent and water.

Disposal of lubricants and fluids must meet local environmental regulations.

⚠ CAUTION

Never run the engine without oil.

Change the oil filter at the same time engine oil is changed. Use the correct oil according to the specifications. Install a new filter. Apply clean oil to the gasket of

the new filter. Turn the filter until the gasket touches, then tighten $\frac{1}{2}$ to $\frac{3}{4}$ turn with your hand. Start the engine. Check the area around the oil filter for leaks.

DRIVE BELTS

Check the drive belts for wear and damage. When a pair of drive belts are used, they must be replaced as a pair. When a pair of drive belts are used, adjust the tension for the tightest belt.

Perkins Diesel Engine

See FIGURE 21. Loosen the bolt on the adjustment link (2) and the pivot fasteners (1) to adjust the tension of the drive belts. Push the alternator pulley against the drive belts to adjust the tension. Tighten the adjustment link and pivot fasteners.

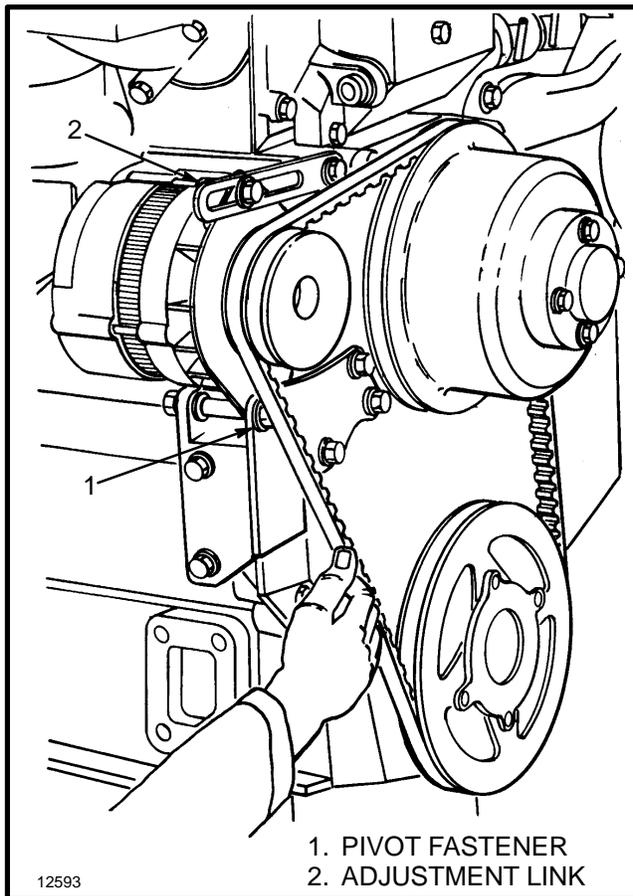


FIGURE 21. CHECK AND ADJUST DRIVE BELT TENSION (PERKINS DIESEL)

The drive belts are removed from the engine by loosening the tension and then removing them from the pulleys.

GM V-6 Engine (Early Models) (See FIGURE 22.)

Drive belt for the coolant pump and alternator.

Loosen the alternator support bracket to adjust the tension of the belt.

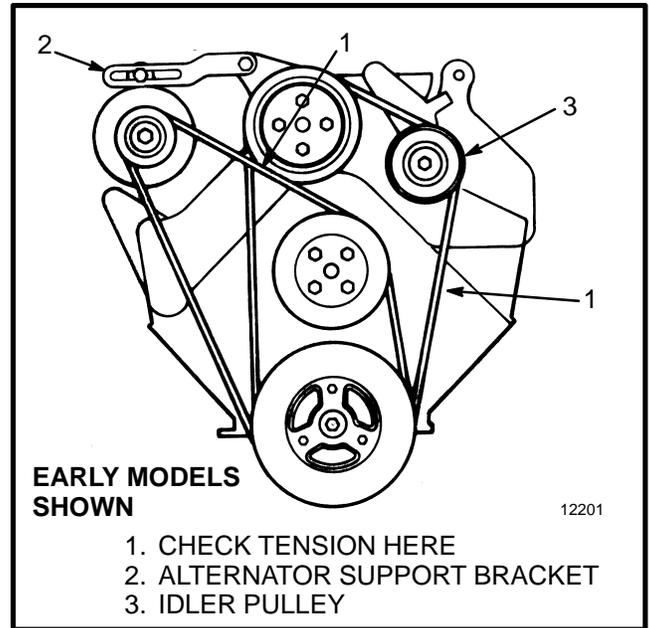


FIGURE 22. DRIVE BELTS (GM V-6)

Drive belt for the fan. Loosen the mount for the idler pulley to adjust the tension of the belt.

A gauge is available that will indicate the tension in the drive belt. Fit the gauge at the center of the longest length of the drive belt and measure the tension. See FIGURE 23. The correct tension is approximately 355 N (80 lbf)

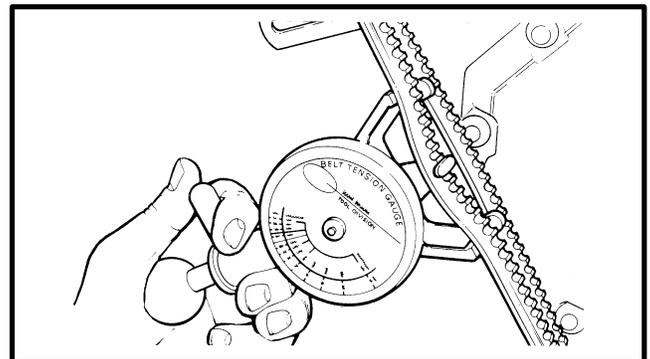


FIGURE 23. GAUGE TO CHECK DRIVE BELT TENSION

Many service people press on the drive belt with their thumb at the center of the longest length of the drive belt and check the deflection. When the thumb pressure is