

**SERVICE REPAIR**

**MANUAL**

Hyster F003 (H2.00J H2.50J H3.00JS Europe) Forklift

***HYSTER***

# INTRODUCTION

## GENERAL

This section has the instructions that are necessary for correct periodic maintenance. This section has two parts: Maintenance Schedule and Maintenance Procedures. The Maintenance Schedule has the maximum time intervals between maintenance checks. The Maintenance Procedures has the instructions for doing the maintenance checks.

includes periodic inspection and lubrication. The schedule uses the operating hours on the hour meter. The table for the Maintenance Schedule has two schedules; the hour schedule and the period schedule. If the lift truck is operated more than eight hours each day, the hour schedule must be used. If the lift truck is operated less than eight hours each day, the period schedule must be used. The item numbers in the column on the left of the Maintenance Schedule are used with Figure 1.

## MAINTENANCE SCHEDULE

The Maintenance Schedule is a program that

### CAUTION



The maintenance schedules are made according to the maximum service intervals. Service the lift truck more often when operating in bad conditions.

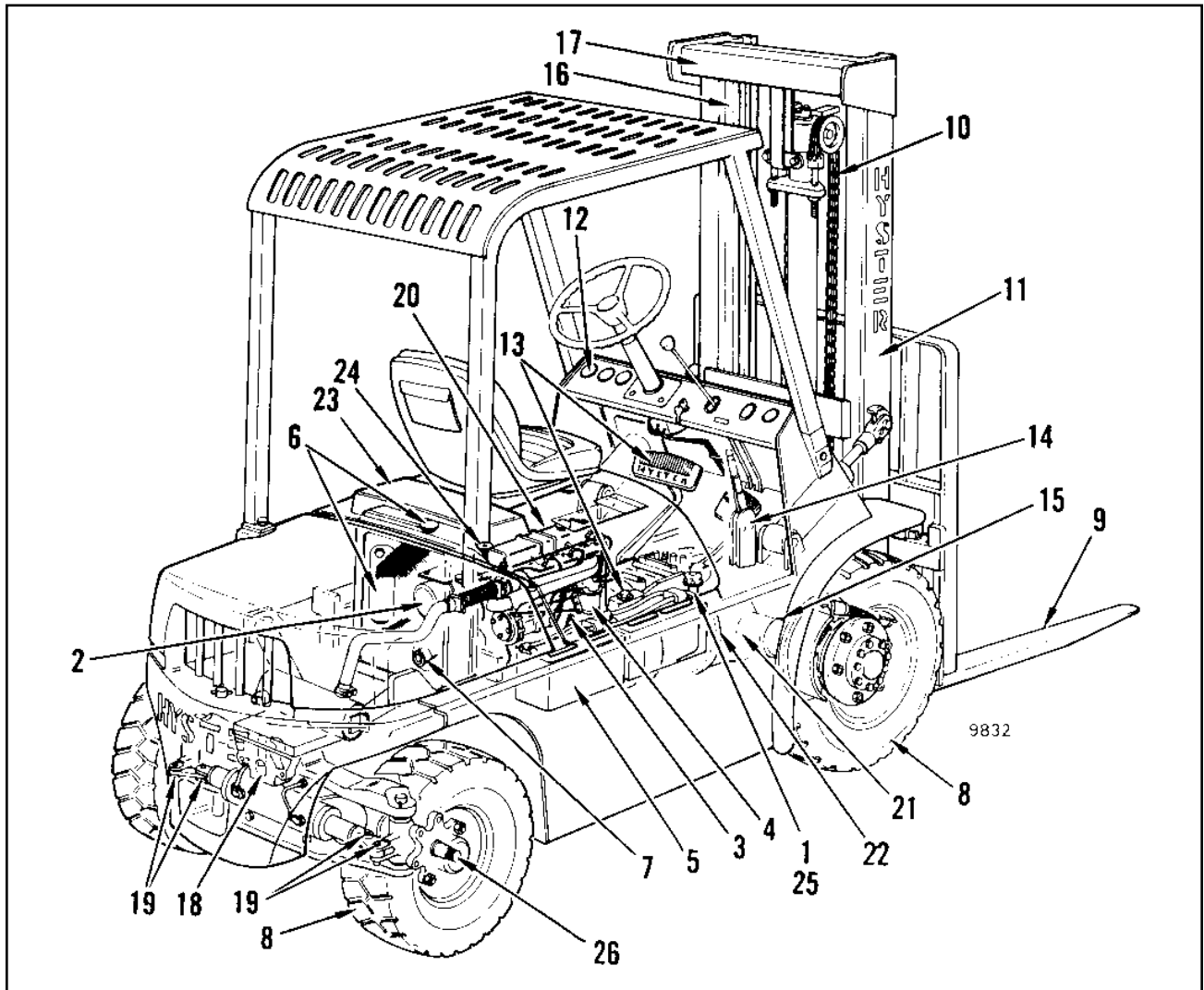


FIGURE 1. MAINTENANCE POINTS

# MAINTENANCE SCHEDULE

ITEM NO.	ITEM	8	350	1000	2000	QUANTITY <sup>2</sup>	TYPE
		Hr/ 1 Day	Hr/ 2 Mo.	Hr/ 6 Mo.	Hr/ 1 Year		
1	HYDRAULIC OIL	X			C	13 gal (49 litre) Powershift 12 gal (45 litre) Oil Clutch)	See Note <sup>3</sup>
2	AIR CLEANER	X				1	See Parts Manual
3	ENGINE OIL						0°F (-18°C) and Above SAE 10W-30 60°F (16°C) and Below SAE 5W-30 API SE or SF 0°F (-18°C) and Above SAE 10W-30 API CC/SE
	GM	X	C			4.5 qt (4.3 litre)	
	PERKINS	X	C			8 qt (7.6 litre)	
4	DIESEL FUEL FILTERS						
	PRIMARY	X	C				See Parts Manual
	FINAL	X		C			See Parts Manual
5	BATTERY	X					See Parts Manual
6	COOLING SYSTEM	X			C	12 qt (11 litre)	Water and Ethylene Glycol
7	DRIVE BELTS	X					See Part Manual
8	TIRES AND WHEELS	X				Check Pressure	
9	FORKS	X	X			Check for Damage	
10	LIFT CHAIN	X				Check for Wear	
11	UPRIGHT	X				Check Operation	
12	GAUGES AND LIGHTS	X				Check Operation	
13	SERVICE BRAKES	X				Check Operation	
14	PARKING BRAKE	X				Check Operation	
15	UPRIGHTS						
16	PIVOTS		L			As Needed	Multi-Purpose Grease <sup>1</sup>
17	SLIDING SURFACES		L			As Needed	Multi-Purpose Grease <sup>1</sup>
17	LATCHES		L			As Needed	Multi-Purpose Grease <sup>1</sup>
10	CHAINS		L			As Needed	SAE 30 Oil
18	STEERING AXLE PIVOT SHAFT		L			1 Fitting	Multi-Purpose Grease <sup>1</sup>
19	TIE ROD ENDS		L			4 Fittings	Multi-Purpose Grease <sup>1</sup>

X = Check    C = Change    L = Lubricate

ITEM NO.	ITEM	8	350	1000	2000	QUANTITY <sup>2</sup>	TYPE
		Hr/ 1 Day	Hr/ 2 Mo.	Hr/ 6 Mo.	Hr/ 1 Year		
	HINGES, CABLES LATCHES, LEVERS, ETC.		L			As Needed	Multi-Purpose Grease <sup>1</sup>
13	BRAKE FLUID		X			0.5 pt (0.2 litre)	SAE J-1703 Brake Fluid
20	ENGINE OIL FILTER GM PERKINS		C C			1 1	See Parts Manual See Parts Manual
	SPARK PLUGS IGNITION SYSTEM			C X		4 Check Timing	See Parts Manual
21	DIFFERENTIAL POWERSHIFT			X	C	14 lb (6.3 kg)	SAE 80W-90 EP
22	MANUAL TRANSMISSION (Includes Differential)			X	C	3.5 gal (13.2 litre)	SAE 80W-90 EP
23	GASOLINE FUEL FILTER				C	See Parts Manual	See Parts Manual
24	PCV VALVE			X	C	1	See Parts Manual
25	HYDRAULIC OIL FILTER				C	1	See Parts Manual
26	WHEEL BEARINGS				L	As Needed	Multi-Purpose Grease <sup>1</sup>

X = Check    C = Change    L = Lubricate

**NOTES:**

<sup>1</sup> Multi-Purpose Grease with 2-4% Molybdenum Disulfide

<sup>2</sup> Liquid quantities are in U.S. measurements

For Imperial quantities:

U.S. gallons to Imperial gallon - multiply by 0.83

U.S. quart to Imperial quart - multiply by 0.83

<sup>3</sup>Approved hydraulic oil per John Deere J20A Specifications -  
"Transmission and Hydraulic Oil, Anti-Chatter"

**HYSTER PART NUMBERS**

1 - qt.        336830  
2 - gal.      336831  
5 - gal.      336832  
55 - gal.     336833

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# MAINTENANCE PROCEDURES EVERY 8 HOURS OR DAILY

Put the lift truck on a level surface. Completely lower the carriage and forks. Stop the engine. Open the hood.

## CHECKS WITH THE ENGINE STOPPED

### General



**Inspect the lift truck every eight hours or daily prior to use.**

**Report damage or faulty operation immediately.**

**Do not operate the lift truck until repairs are made.**

**If repair is necessary, put a tag in the operator's area, DO NOT OPERATE.**

**Remove the key.**

Before starting the engine, make sure the lift truck is clean. Clean any oil or fuel spills. Check the engine compartment and clean any dust, paper, lint, oil or other materials.

### WARNING



**Do not use combustible agents or solvents for cleaning. Observe the manufacturer's cautions regarding ventilation, fire safety and toxicity.**

### Hydraulic System

Check the hydraulic system for leaks and damage or loose components, lines and fittings.

### CAUTION



**Never operate the engine without oil in the hydraulic system. A few revolutions without oil can damage the hydraulic pump.**

Check the hydraulic oil level with the carriage lowered and the engine OFF. Make sure the oil is at operating temperature. The dipstick has three marks (see Figure 2). Add oil only as required or oil will flow out of the breather.

### WARNING



**The operating temperature for the hydraulic oil is 130° to 200° F (54° to 93° C).**

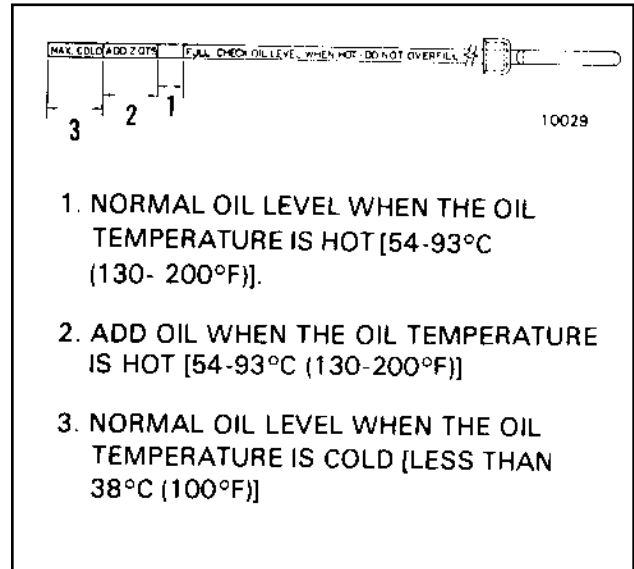


FIGURE 2. CHECKING THE HYDRAULIC SYSTEM

### Air Cleaner (Item 2)

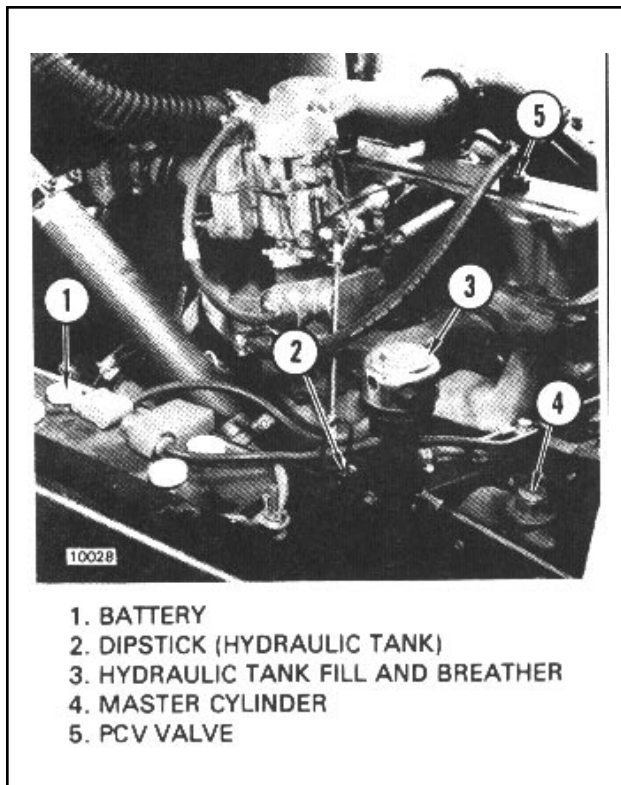
Clean or replace the air filter as necessary. To clean the air filter, tap the filter element until dirt is removed from the element. Do not use compressed air to clean the filter element. Clean the inside of the cannister when changing filters.

### Engine Oil (Item 3)

The oil in the crankcase must be kept between the Add and Full mark on the dipstick. Stop the engine before checking the oil level. Remove the dipstick; wipe it clean, then insert it all the way and again remove it to take the reading. Add oil as required, but do not overfill.

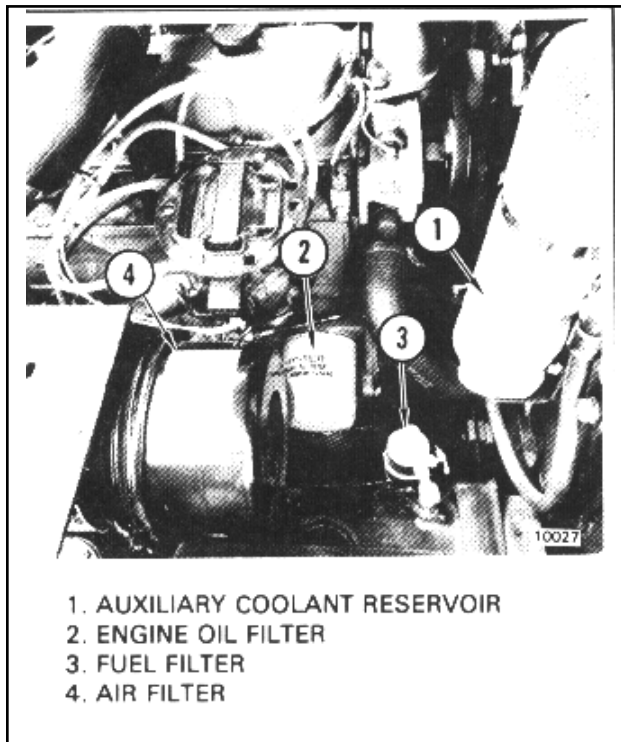
### Fuel Filter (Diesel) (Item 4)

Drain the water from the primary filter daily. Open the valve on the bottom of the filter and drain some fuel and any water into a cup. Close the valve.



1. BATTERY
2. DIPSTICK (HYDRAULIC TANK)
3. HYDRAULIC TANK FILL AND BREATHER
4. MASTER CYLINDER
5. PCV VALVE

FIGURE 3. MAINTENANCE POINTS



1. AUXILIARY COOLANT RESERVOIR
2. ENGINE OIL FILTER
3. FUEL FILTER
4. AIR FILTER

FIGURE 4. MAINTENANCE POINTS  
(GAS ENGINE)

## Battery (Item 5)

### WARNING



Disconnect the ground cable at the battery before performing any work on the electrical system.

Check the electrical system for broken or loose wires and terminals. Check the battery case for cracks. Keep the battery and cable terminals clean. Check them electrolyte level. Keep the electrolyte level above the plates. Use distilled water. Do not fill the battery past the bottom of the internal filler neck.

## Cooling System (Item 6)

Check the hoses for cracks or leaks. Make sure that all the clamps are tight. Keep the coolant level in the radiator to the full mark on the coolant recovery tank. Fill the radiator with a solution of anti-freeze (Ethylene-Glycol type) and water. Periodic adding of coolant must be done at the coolant recovery tank ONLY. Whenever the radiator is to be drained and refilled, fill through radiator until full, replace cap, then fill coolant recovery tank to Full mark.

### WARNING



Do not remove the cap from the radiator or coolant recovery tank when the engine is hot. Steam and boiling coolant can be released when the cap is removed causing severe burns.

### CAUTION



Never add cold water to an overheated engine. Cool the engine by allowing it to idle as coolant is added to the radiator. Continue this procedure until the gauge indicates a normal operating temperature.

## Drive Belts (Item 7)

Check the tension on the drive belt for the water pump and the alternator. Push with approximately a 11 kg (25 lb) force in the middle of the longest distance between pulleys. When the tension is correct, the fan belt will move to 13-17 mm (1/2 to 5/8 inch). Adjust the alternator support bracket to adjust the belt tension. Move the alternator to give the correct belt tension and tighten the capscrew (diesel). Adjust the idler pulley to give the correct tension of the fan belt (gas engine).

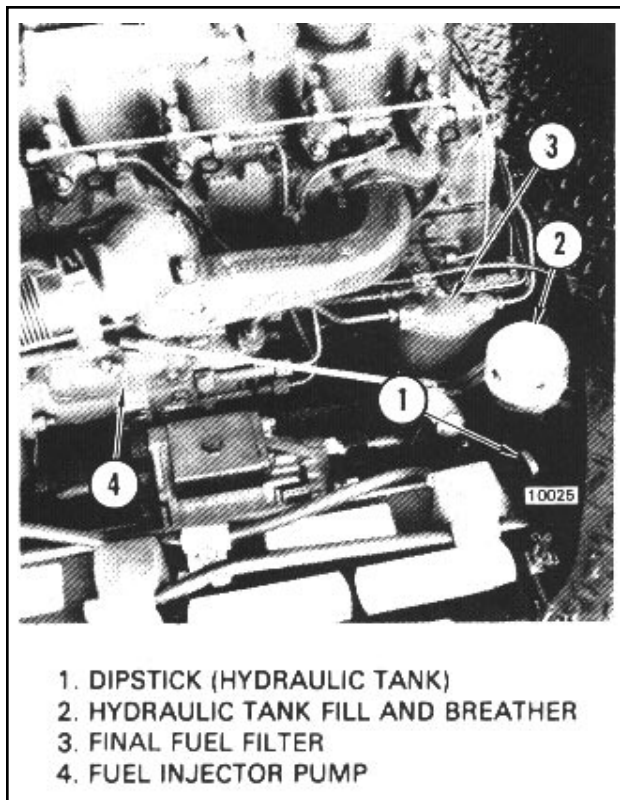


FIGURE 5. MAINTENANCE POINTS  
(DIESEL ENGINE)

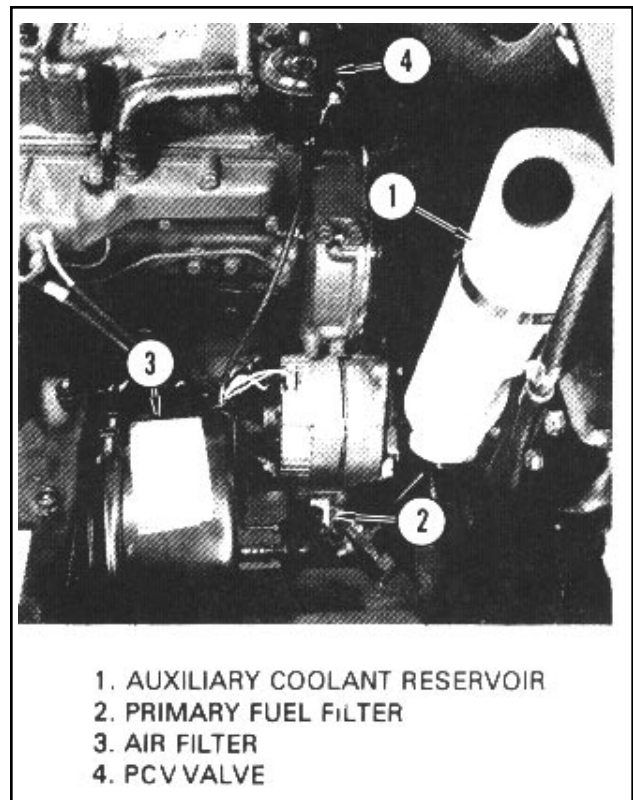
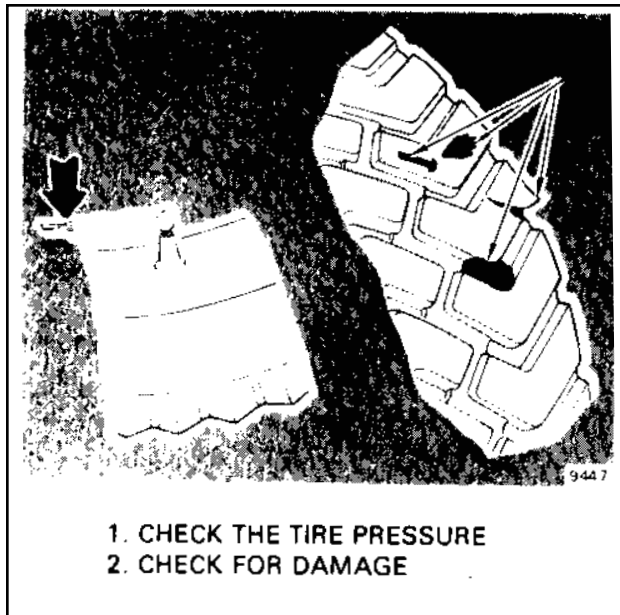


FIGURE 6. MAINTENANCE POINTS  
(DIESEL ENGINE)



1. CHECK THE TIRE PRESSURE
2. CHECK FOR DAMAGE

FIGURE 7. CHECK THE TIRES

### Tires and Wheels (Item 8)

#### WARNING

Air pressure in tires can cause tire and wheel parts to explode. This can cause serious injury or death.



Tires must be removed and inflated in a safety cage if the air pressure is less than 80% of the correct pressure. Follow procedures under CHANGING TIRES.

Deflate tires before removing them from the lift truck.

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 hardware. Remove any wire, strapping or other material that may be wrapped on the axle. Keep the tires at the correct air pressure. Use a gauge to check the air pressure when the tires are cold.



When adding air to tires, use equipment with a gauge or preset pressure regulator and a clip-on chuck. Make sure the hose is long enough to avoid being in the path of the wheel parts in case of an explosion.


**WARNING**  
 **Stay clear of the path of wheel parts in case of an explosion.**

If it is necessary to add air to a tire that is warm, check one of the other tires. Add air to the tire with low pressure so that the air pressures are equal. The tire pressure of warm tires must always be equal to or greater than tire pressure specified for cold tires.

Check that all of the wheel nuts are tight. When the wheels are removed and installed again, check the nuts for the correct torque as shown in MAINTENANCE every eight hours. When the nuts stay tight after an eight hour check, the interval for checking with a torque wrench can be extended to 350 hours.

### Lift Mechanism


**WARNING**  
**Lower lift mechanism completely. Never stand under a raised carriage.**

 **Do not put any part of the body in the lift mechanism unless all parts of the upright are completely lowered and the engine is OFF.**


**Always block or chain the upright weldments and carriage before inspecting the upright or attempting any repairs.**

### Forks (Item 9)

A. Check that the tips are aligned within 13 mm (0.5 inch) of each other (I).

**WARNING**  
 **Do not try to correct the alignment by bending the forks or adding shims. Replace bent or damaged forks.**

B. Check for cracks (2) in the heel of the forks and at the attachment points.

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

C. Check for cracks (2) or damage (4) in the fork hooks or pins. Replace as necessary.

D. Check each latch for proper operation. The latch should securely lock the fork to the carriage.

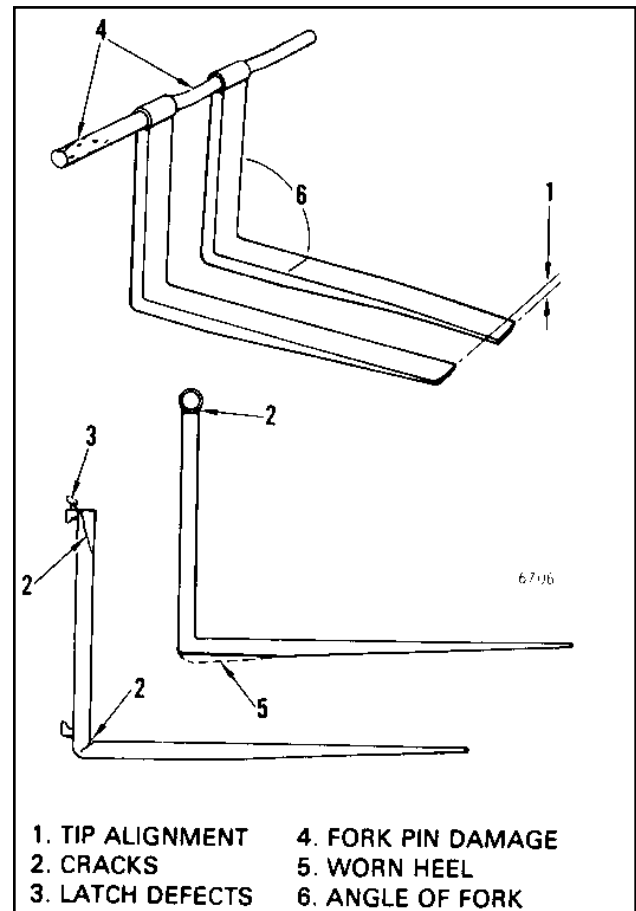



FIGURE 8. CHECK THE FORKS

### Lift Chain (Item 10)

A. Check the lift chain for the proper lubrication.

B. Inspect the lift chain for cracks or broken links and pins. Check for corrosion or worn holes in the links. When the pins or holes become worn, the chain becomes longer. If a section of chain is 3~q longer than the section of new chain, the chain is worn and must be replaced.

If a chain scale is available, check the lift chain as shown. If a chain scale is not available, measure 20 links of chain. Compare the length with the chart in Figure 9. Replace the chain if the length of 20 links of the worn section is more than the maximum wear limit.

**WARNING**  
 **If one chain has a defect, replace both chains. Do not try to repair a worn chain.**

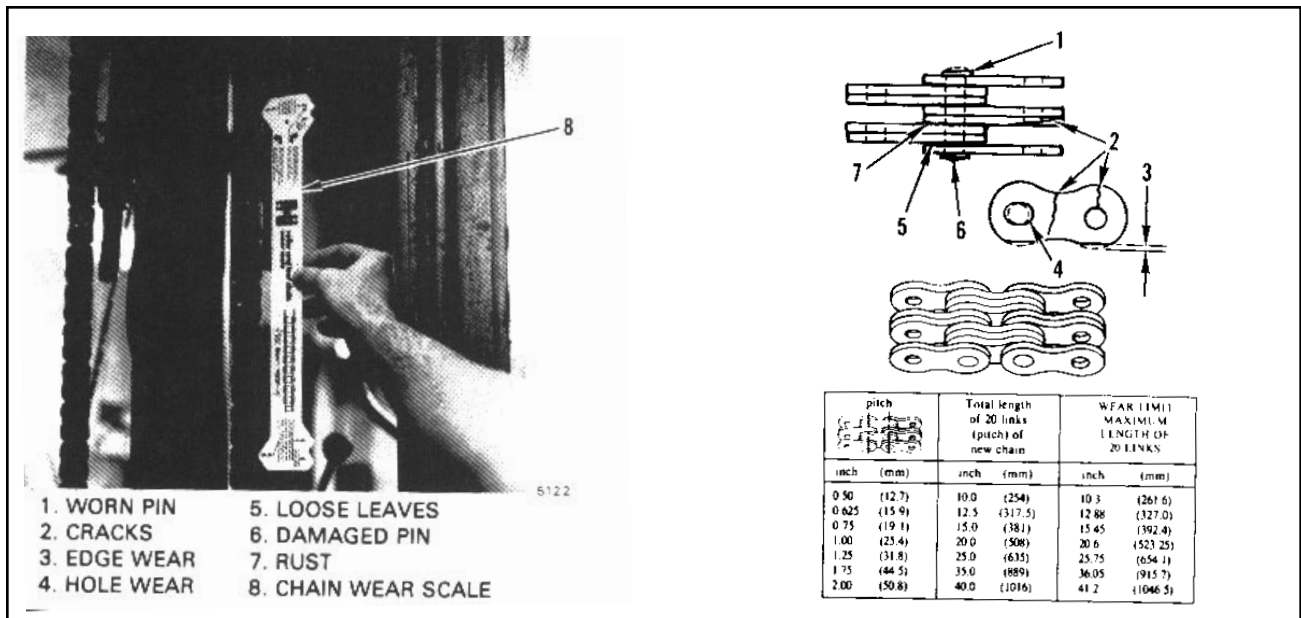


FIGURE 9. CHECKING THE CHAINS

C. Inspect the chain anchors for cracks or worn holes. Replace chain anchor pins that are damaged or worn. Replace broken or missing cotter pins.

D. Inspect chains for proper adjustment. Chains should be equally tight.

### Upright (Item 11)

A. Check the welds on the uprights for cracks. Make sure that all the nuts and bolts are tight.

B. Check the channels for wear or gouging in the areas of roller contact. Check the rollers for flat spots or damage.

C. Check the sliding surfaces on the crosshead for lubrication and wear.

D. Inspect upright latches (if equipped). Lubricate latches. Replace broken springs or other damaged parts.

### Carriage

A. Check the welds on the carriage for cracks. Make sure that all nuts and bolts are tight.

B. Check that the rollers and carriage move freely in the upright channels.

C. Check hydraulic attachments for leaks or damage.

### Load Backrest Extension

A. Check the welds for cracks

B. Make sure that all nuts and bolts are tight.

### Powershift Transmission

Check the transmission lines and fittings for leaks. Make sure that fittings and clamps are tight.

## CHECKS WITH THE ENGINE RUNNING

### WARNING



**Make sure the area around the lift truck is clear before starting the engine or making any checks. Proceed carefully.**

Check the interlock switches. The engine will start during the following conditions:

- Oil Clutch Transmission

The “FORWARD and REVERSE” lever must be in the “NEUTRAL” position.

- Powershift Transmission

The parking brake must be applied or the brake pedal must be pushed down.

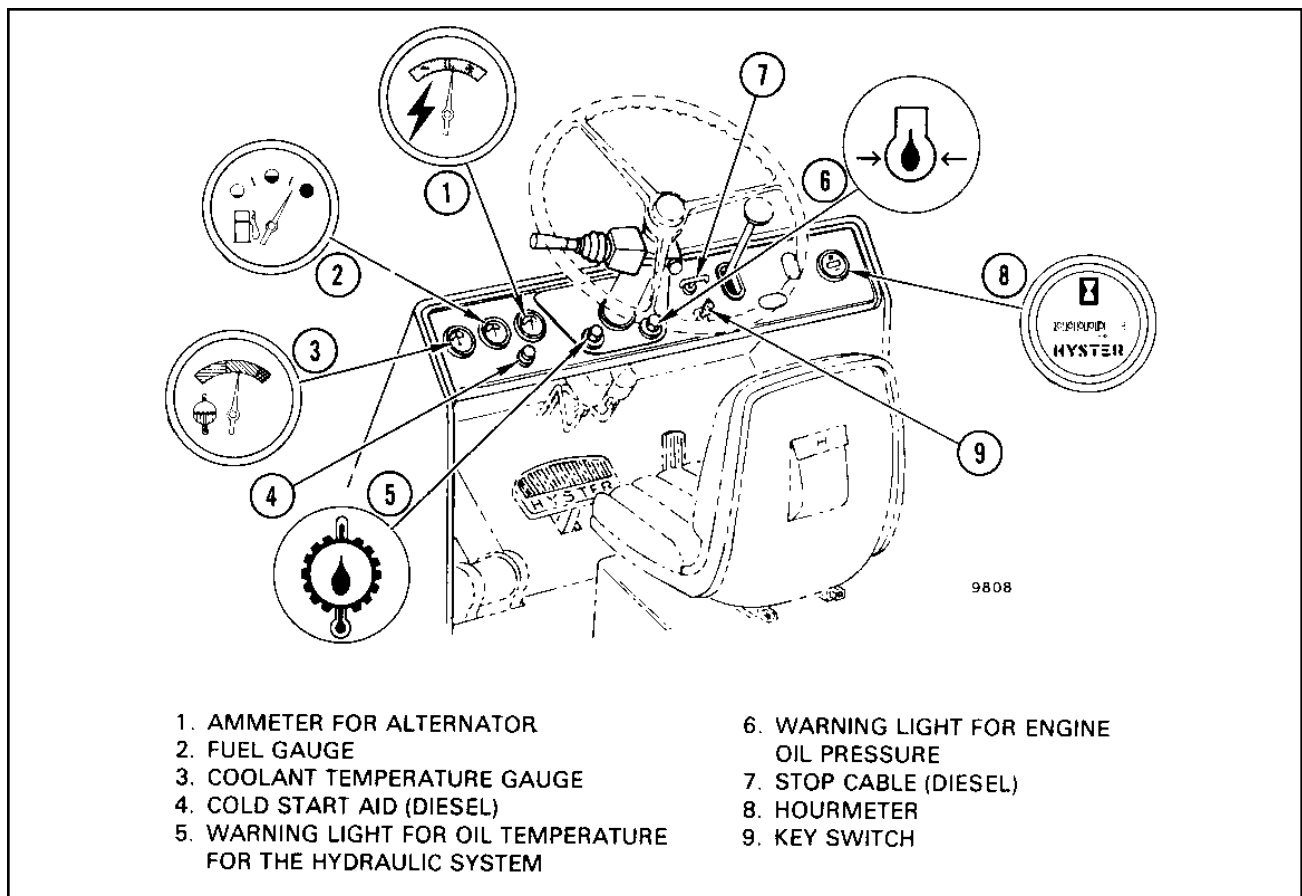


FIGURE 10. GAUGES AND WARNING LIGHTS

### Gauges and Lights (See Figure 10)

Start the engine. Check that the gauges and lights operate as described in Table 1. Check the horn.

### Powershift Transmission

Shift the transmission from FORWARD to REVERSE several times. The Monotrol pedal or direction control lever should work smoothly.

### Brakes (Items 13 and 14)

A. Depress the brake pedal completely. The brakes should be applied before the pedal reaches the floorplate. The brake pedal should stop firmly and not creep down when held. The brakes should apply equally.

### WARNING



Loss of fluid from the master cylinder indicates leakage. Repair before using. Keep the brake fluid clean. Replace all fluid in the system if there is dirt, water or oil in the system.

B. Check the operation of the parking brake. A firm pull should be necessary to apply and hold the lever. Park the lift truck on a grade and apply the parking brake. The parking brake should hold a loaded lift truck on a 15% grade. To adjust the parking brake, turn the knob on the end of the lever. When the lever is released, the brake shoes should not drag. Applying the parking brake allows the engine to be started and puts the powershift transmission in NEUTRAL.

### Steering System

The steering system components should operate smoothly when the steering wheel is turned.

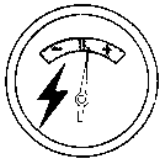

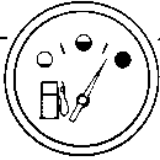





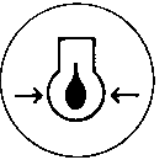


## CAUTION


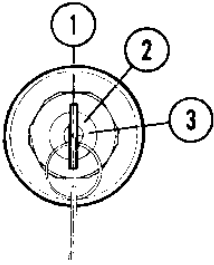


If any of the instruments do not operate as described in the following chart, report the problems immediately.

Do NOT operate the lift truck until the problems are corrected.

**TABLE 1. INSTRUMENT PANEL (See Figure 10)**

ITEM NO.	ITEM	FUNCTION
1	Ammeter 	Alternator operation is checked by a direct reading ammeter. The ammeter can show a slight discharge (-) at idle, but must indicate charging (+) when engine speed is increased.  <p style="text-align: center;"><b>CAUTION</b></p>  Do not operate the unit when the needle stays in the red zone (-).
2	Fuel Gauge 	The level of fuel in the tank (gasoline or diesel) is indicated by the fuel gauge.
3	Water Temperature Gauge 	The engine water temperature is indicated by a gauge. During normal operation, the needle will be in the center of the green zone of the gauge.  <p style="text-align: center;"><b>CAUTION</b></p>  Do not operate the unit when the gauge indicates overheating (needle in the red zone.)
4	Cold Start Switch 	The cold start switch is used on diesel powered trucks. Push on the knob to energize the cold start aid.
5	Transmission Oil Temperature Indicator 	High oil temperature for the powershift transmission is indicated by a red light. The warning light should be on anytime the key switch is on, but must go out when the engine is running.  <p style="text-align: center;"><b>CAUTION</b></p>  Do not operate the unit when the oil is overheated (light is on).
6	Engine Oil Pressure Indicator 	Low engine oil pressure is indicated by a red warning light. The warning light should be on anytime the key switch is ON, but must go out when the engine is running.  <p style="text-align: center;"><b>CAUTION</b></p>  Do not operate the unit if the lift is on, when engine is running.
7	Engine Stop Knob 	The engine stop knob is used on diesel powered trucks. Pulling the knob will stop the flow of fuel to the engine. Hold until the engine stops, then turn the key switch to OFF.

ITEM NO.	ITEM	FUNCTION
8	Hour Meter 	The Hour Meter registers the accumulated operating hours of the engine. Periodic Maintenance recommendations are based on these engine hours.
9	Key Switch 	The key switch is an interlock type with three positions. <b>No. 1 Position: OFF position.</b> Shuts off all power from the instrument panel and electrical circuits except the horn. <b>No. 2 Position: ON position.</b> Applies power to all electrical circuits except the starting circuits. This is the position that the key will be in during normal operation. <b>No. 3 Position: START position.</b> Applies power to the ignition circuit and starter motor to crank the engine. A spring returns the key to No. 2 ON position when the key is released.

### Hydraulic System (Item 1)

Check the hydraulic oil level with the carriage lowered and the engine OFF. Make sure the oil is at operating temperature. The dipstick has three marks (see Figure 11). Add oil only as required or oil will flow out of the breather.



#### WARNING

The operating temperature for the hydraulic oil is 130° to 200° F (54° to 93° C).

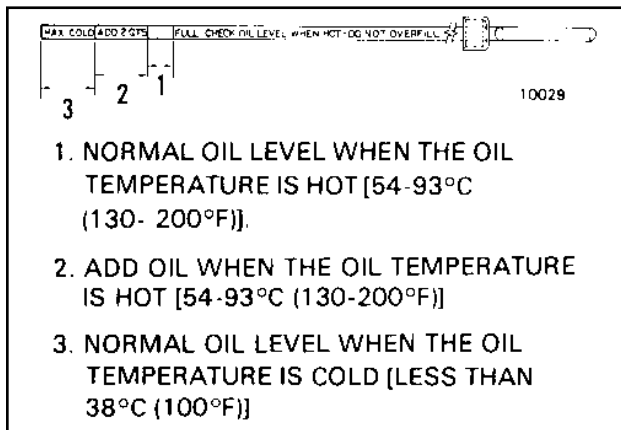


FIGURE 11. CHECKING THE HYDRAULIC SYSTEM

### Uprights (Item 11)

A. Slowly raise and lower the upright several times without a load. The upright should raise and lower in the correct sequence without jerking.

#### NOTE

**Some parts of the upright move at different speeds during raising and lowering. All components should move smoothly without jerking.**

B. All weldments and the carriage should lower completely. The lift cylinder should reach the end of its stroke before the stop for the inner channel is contacted. The lift chain(s) must be adjusted if the stop is contacted before the lift cylinder completely retracts.

C. Raise and lower the upright with a capacity load. The upright should raise and lower smoothly. If the load drifts downward when the lift/lower lever is in NEUTRAL, there may be a leak in the hydraulic system.

D. With the load lowered, tilt the upright backward and forward. The upright should tilt smoothly and both tilt cylinders should stop evenly. Excessive movement of the tilt cylinders when the tilt lever is in NEUTRAL may indicate a leak in the system.

### Attachments

Hydraulic attachments should operate smoothly. Check clamp attachment with a load raised slightly to make sure the clamping action is maintained. There should be no leakage.

# EVERY 350 HOURS OR TWO MONTHS

## NOTE

Do the 8 hour procedure plus the following:

## ENGINE OIL AND FILTER



### CAUTION

Never run the engine without oil.

Change the oil filter at the same time the engine oil is changed. Use the correct oil according to the specification. Install a new filter. Apply clean oil to the gasket of the new filter. Turn the filter until the gasket touches, then hand tighten 1/2 to 3/4 turn. Start the engine. Check the area around the filter for leakage.

## BRAKE FLUID (Item 13)

Remove the floor plates. Check the fluid level in the reservoir of the master cylinder. Add brake fluid as necessary. Fill to 8 mm (0.3 inch) of the rim. Use the brake fluid shown in the Maintenance Chart.



### WARNING

If the master cylinder is empty, there is a leak in the brake system. The defect must be repaired before operating the lift truck. See THE BRAKE SYSTEM and THE MASTER CYLINDER for repair

instructions.

### WARNING



Do not permit water, oil, or dirt to enter the brake fluid. Replace all the fluid in the brake system if there is oil, water or dirt in the fluid. If there is air in the system, see THE BRAKE SYSTEM for instructions to remove the air.

## HYDRAULIC TANK BREATHER

Clean and check the hydraulic tank breather. Replace the filter when it is dirty and will not permit the easy passage of air.

## FORKS

### WARNING



Never repair damaged forks by heating, welding or bending. Replace damaged forks.

A. Check the heel and attachment points of the forks with a penetrant or magnetic particle inspection.

B. Measure the thickness of the forks at a vertical section where there is no wear. This is dimension X. Now measure the thickness at the heel of the fork. If the thickness is not more than 90% of dimension X, replace the fork.

C. Check for greater than the maximum angle permitted at the load center of the fork.

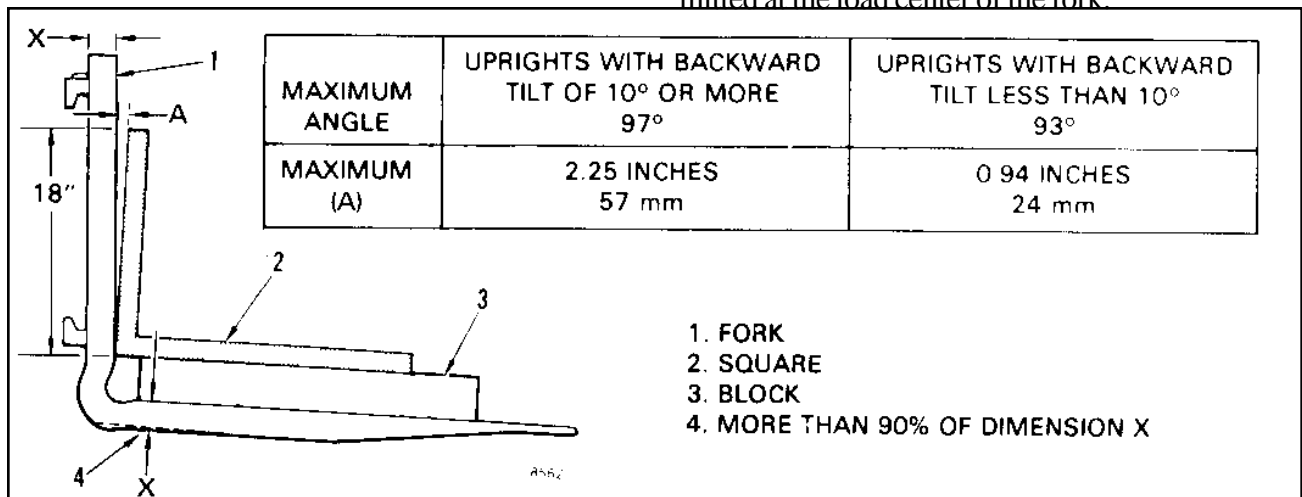


FIGURE 12. CHECKING THE ANGLE OF THE FORKS

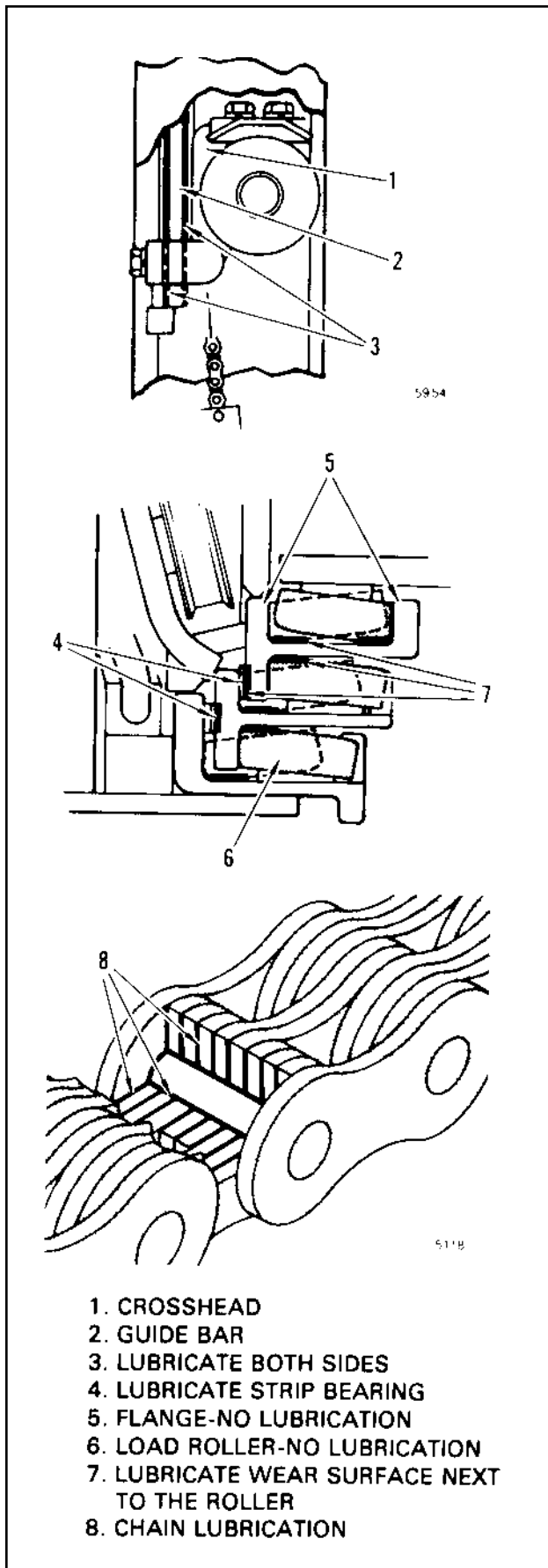


FIGURE 13. UPRIGHT LUBRICATION

## UPRIGHTS

### WARNING



Do not work under a raised carriage. Lower the carriage or use a safety chain to prevent the carriage from lowering when servicing the uprights and lifting chains.

A. Lubricate the sliding surfaces as shown in Figure 13. Apply lubricant only to the indicated surfaces. Do not lubricate the rolling surfaces of the load rollers. Lubricant on the load rollers can hold dirt and prevent the load rollers from turning. Flat areas will wear on the load rollers when they do not turn freely.

B. Lubricate the latches (free-lift uprights). Check for broken springs and damaged parts. Replace any parts that are damaged or missing.

C. Lubricate the two grease fittings for the upright pivots.

### NOTE

The load rollers and sheaves have sealed bearings which do not need additional lubrication.

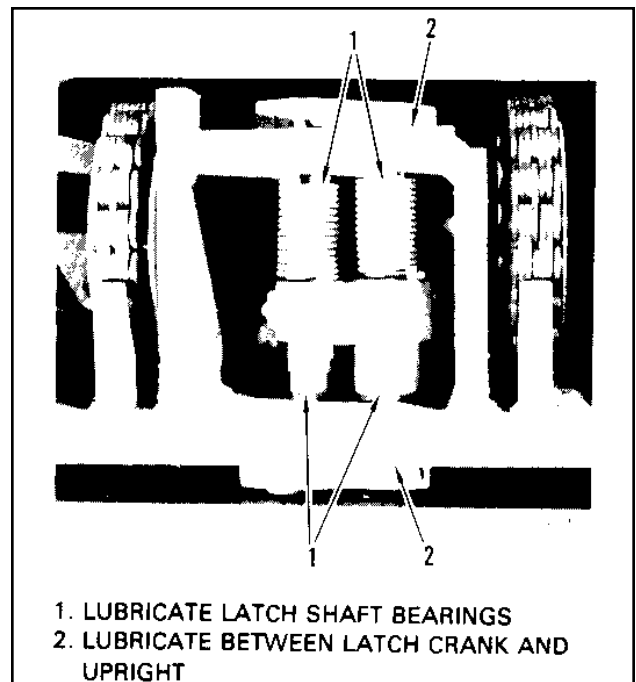


FIGURE 14. UPRIGHT LATCHES

## OTHER LUBRICATION POINTS

Lubricate the hood hinges, pins, linkages, cables, pedals, and levers as necessary. Use SAE 30 oil and multi-purpose grease as needed.

## EVERY 1000 HOURS OR SIX MONTHS

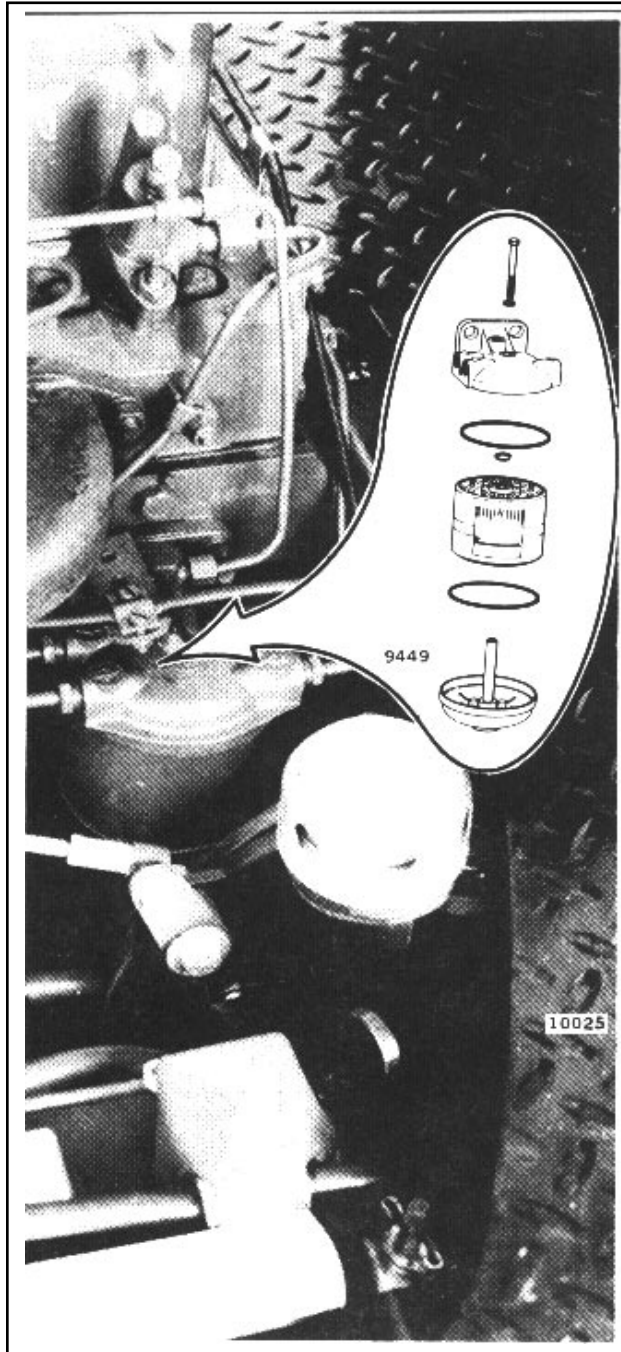


FIGURE 15. FINAL FILTER

### FINAL FUEL FILTER (DIESEL) (Item 4)

Change the fuel filter as needed. The frequency of changing the fuel filter is a result of fuel quality.

- A. Clean the area around the final fuel filter.
- B. Remove the bolt in the center of the top cover of the filter.
- C. Lower the bottom of the filter and remove the filter element. Discard the filter element.
- D. Clean the top and bottom covers. Install new gaskets. Install a new filter element and tighten the bolt.
- E. Remove the air from the fuel system as described in REMOVING AIR FROM THE FUEL SYSTEM.

### REMOVING AIR FROM THE DIESEL FUEL SYSTEM (See Figure 16)

Air must be removed from the diesel fuel system if the engine has run out of fuel or when a fuel line has been disconnected. Remove air from the fuel system as follows (See Figure 16):

#### CAUTION



Do not start the engine until air is removed from the fuel system.



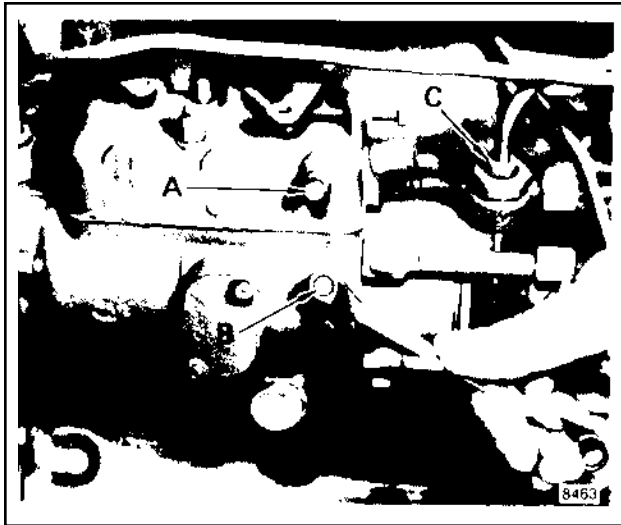


FIGURE 16. REMOVING AIR FORM THE DIESEL FUEL SYSTEM

- A. Loosen vent screw A at the fuel injector pump.
- B. Loosen vent screw B at the pump.
- C. Operate the lever under the fuel pump. When fuel that is without air bubbles comes from each screw, close the vent screws in the following sequence.
  - 1. Vent screw B
  - 2. Vent screw A
- D. Loosen the top nut C for the fuel tube at the fuel injector pump.
- E. Operate the lever under the fuel pump until fuel without bubbles comes out of the threads. Tighten the nut.

F. Loosen the nuts for the lines at two injectors.

G. Start the engine. Tighten the nuts to 20 N.m (15 foot pounds) when fuel, without air bubbles, comes from the threads.

## IGNITION SYSTEM (GAS ENGINE)

Replace the spark plugs and check the ignition timing. Adjust as necessary.

## PCV VALVE (GAS ENGINE) (Item 24)

Check the operation of the PCV system.

Make sure air will flow through the valve and air hose.

A bad PCV system will cause one or more of the following conditions:

- 1. Rough idle
- 2. Oil in the air cleaner duct
- 3. Oil leaks
- 4. Engine oil will become dirty more quickly than normal

## EVERY 2000 HOURS OR YEARLY

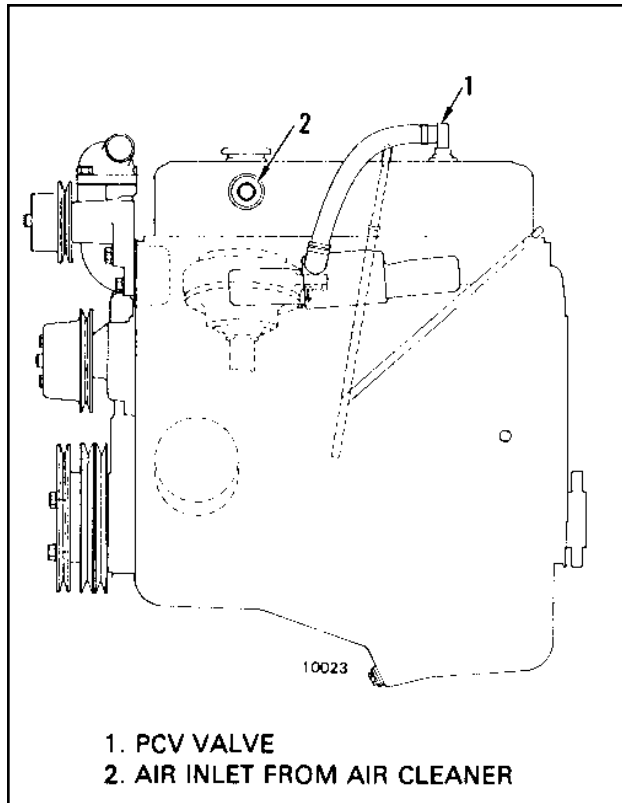


FIGURE 17. PCV VALVE

### PCV VALVE (GAS ENGINE) (Item 24)

Change the PCV valve. Make sure air will flow through the system. The PCV system will need service more frequently during the following conditions:

1. Operation of the lift truck in dusty conditions
2. Engine operates at idle for long periods
3. Engine operates at cool temperatures for short periods and does not reach operating temperature

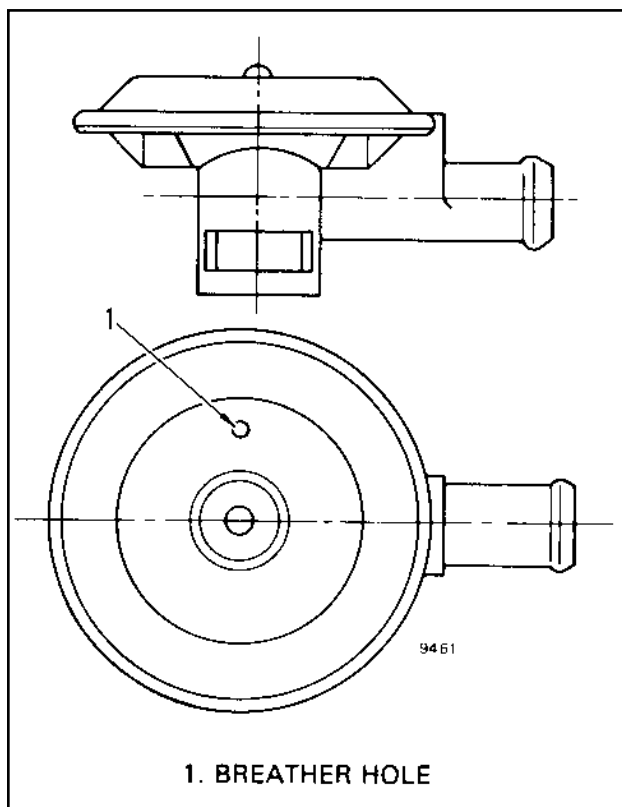


FIGURE 18. PCV VALVE (DIESEL ENGINE)

### PCV VALVE (DIESEL ENGINE) (Item 24)

Clean or change the PCV valve. Remove the PCV valve from the engine for cleaning. Seal the small breather hole (1) to prevent filling the cavity with solvent. Flush the valve passage with kerosene or diesel fuel. Check that the breather hole is clean.

## DIFFERENTIAL (Item 21 or 22)

Check the oil level for the oil clutch transmission and differential. Remove the plug for the oil level hole. The oil level must be even with the bottom of the hole. Add the correct oil through the hole if the level is low. Install and tighten the plug.

Check the oil level for the differential for lift trucks with powershift transmissions. Remove the plug for the oil level hole. The oil level must be even with the bottom of the hole. Add the correct oil through the hole if the level is low. Install and tighten the plug.

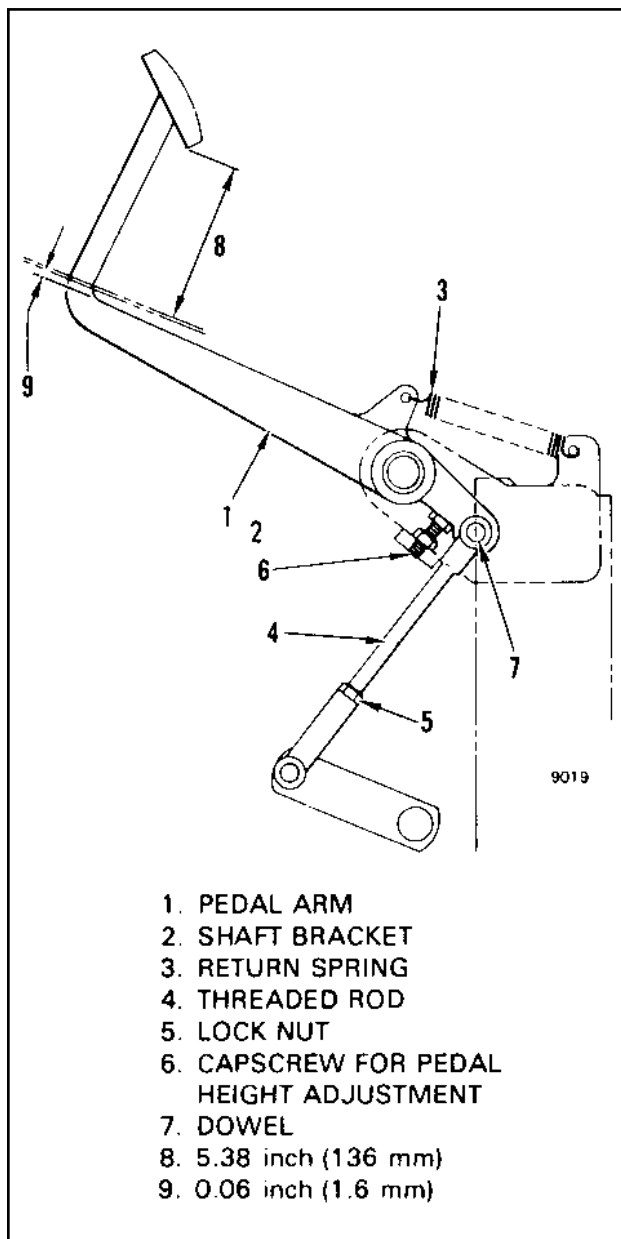


FIGURE 19. CLUTCH LINKAGE ADJUSTMENT

## ADJUSTING THE OIL CLUTCH PEDAL

The clutch pedal must be adjusted so that the pedal arm does not touch the bottom of the floor plate. See Figure 19. There must be 1.6 mm (0.0625 inch) clearance between the top of the pedal arm and the bottom of the floor plate. The distance from the top of the floor plate to the bottom of the pedal pad must be 136 mm (5.38 inch). To adjust the height of the pedal, loosen the lock nut that is on the capscrew on the shaft bracket. Turn the capscrew until the pedal height is correct. Tighten the lock nut.

When the clutch pedal height is correct, adjust the clutch release linkage. The pedal must move freely 13 mm (0.5 inch) from its stop to the point where the release bearing touches the pressure plate levers. Remove the pedal return spring. Move the pedal up and down and measure the travel between the points of resistance. Adjust the length of the threaded rod to change the amount of movement of the pedal. Loosen the lock nut on the rod. Remove the cotter pin from the dowel on the pedal arm. Pull the rod from the dowel. Turn the rod to change its length. Install the rod on the dowel and measure the pedal travel. Install a new cotter pin when the pedal travel is correct. Install the pedal return spring.

## HYDRAULIC SYSTEM (Item 1 and 25)

### Changing The Hydraulic Oil Filter

The hydraulic filter has two elements: A screen which can be cleaned and a paper element which must be replaced.

A. Remove the capscrews that hold the filter head to the tank. Remove the filter assembly from the tank. Remove the fitting from the filter head.

### WARNING



A spring pushes on the filter head and bowl. Be careful when removing the four screws.

B. Remove the 4 screws that hold the filter bowl to the head. See Figure 20.

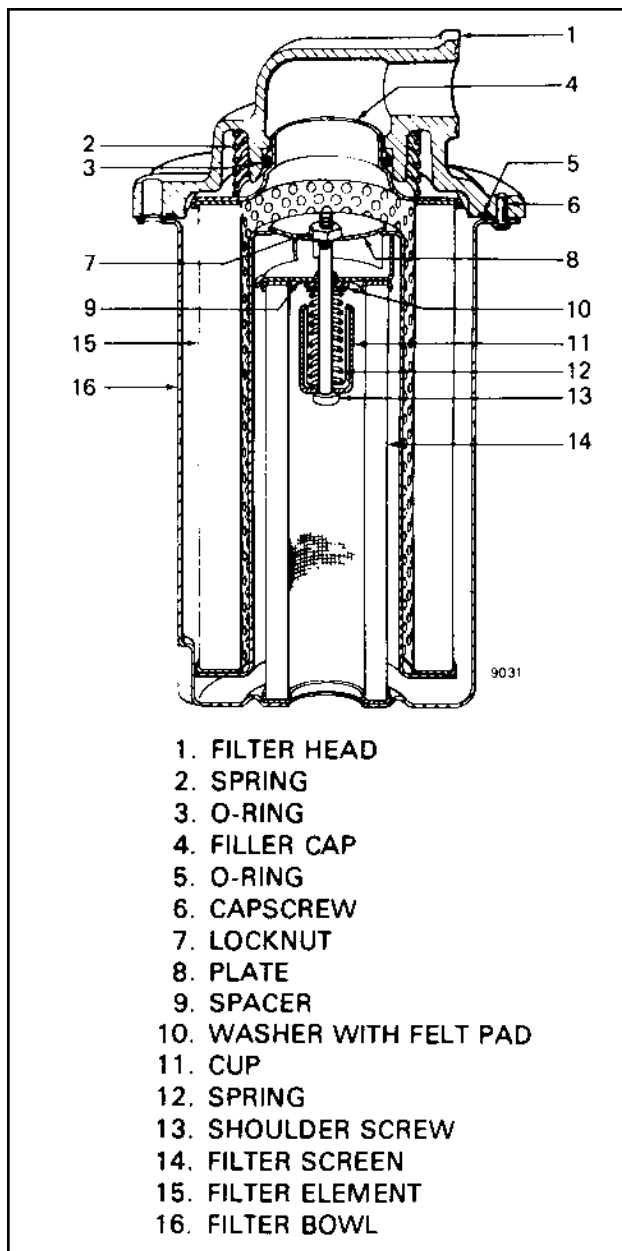


FIGURE 20. HYDRAULIC OIL FILTER

C. Remove the paper element. Remove the nut from the bolt in the center. Remove and clean the screen.

D. Install the screen and filter holder. Install the paper element. Use new gaskets and O-rings and install the filter bowl and cap. Push on the filter head and install the 4 screws.

E. Install a new gasket and install filter assembly in the tank. Tighten the capscrews.

## Changing The Hydraulic Oil

A. Put the lift truck on a level surface. Lower the lift cylinder. Put a drain pan under the lift truck. An additional drain pan is used to replace the first pan when the first is full. A container with a 49.2 litre ( 13 gallon) capacity is needed as a reservoir for the used oil.



### WARNING

The hydraulic oil can be hot. Be careful when draining the oil.

B. Put the pan under the drain plug of the hydraulic tank. Remove the drain plug.

C. When the oil has drained, install the drain plug. Fill the tank as described in CHECKING THE HYDRAULIC OIL.

## CHANGING THE GASOLINE FUEL FILTER

Replace the filter element for gasoline every 2000 hours. See Figure 3.

## CHANGING THE FUEL FILTER FOR LPG

Remove the filter from the filter unit as described in the LPG SYSTEM.

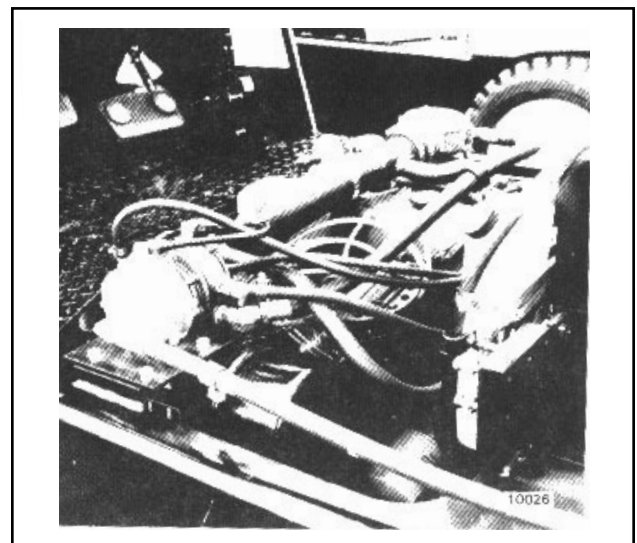


FIGURE 21. LPG SYSTEM

# WHEELS AND TIRES

## DRIVE TIRES

Two types of rims used on the Hyster lift trucks are shown in Figure 22. The procedures for disassembly and assembly of the tires on the rims are similar.

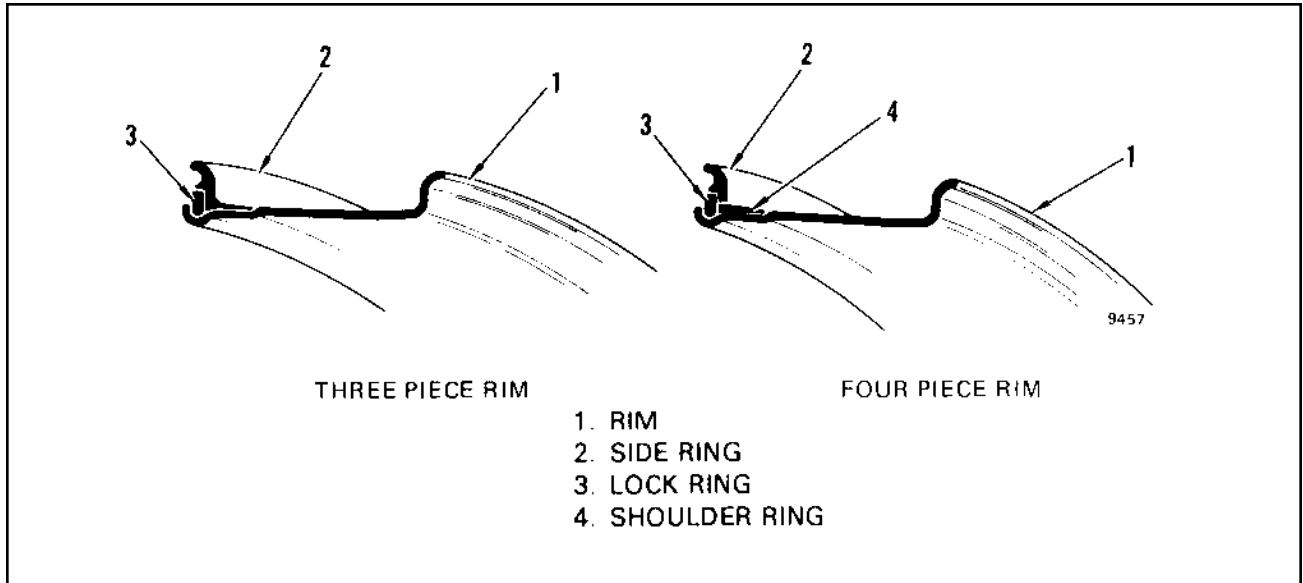


FIGURE 22. RIM ASSEMBLY