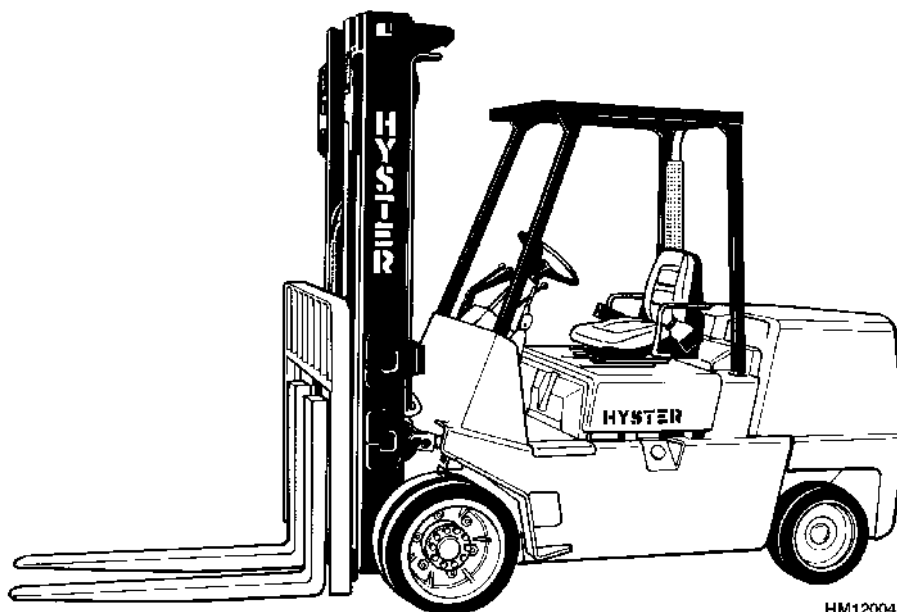


PERIODIC MAINTENANCE

S3.50-5.50XL (S70-120XL) [D004];
S6.00-7.00XL (S135-155XL) [B024, C024]



HM120045

HYSTER

Excavator Service Repair Manual

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Hyster D004 (S70XL, S80XL, S100XL, S110XL, S120XL, S120XLS [S3.50XL, S4.00XL, S4.50XL, S5.00XL, S5.50XL, S5.50XLS]) Forklift Service Repair Factory Manual in the technological know-how of archaeology. The man or woman sorts of excavation are regarded simply as digs to people who participate in, with this being an over literal description of the technique used. An excavation issues itself with a particular archaeological web page or associated collection of web sites, and can be carried on over a amount of years, thinking about that the paintings can normally instances typically be of a seasonal nature. **Hyster D004 (S70XL, S80XL, S100XL, S110XL, S120XL, S120XLS [S3.50XL, S4.00XL, S4.50XL, S5.00XL, S5.50XL, S5.50XLS]) Forklift Service Repair Factory Manual**

Inside of the enterprise of excavation, many lots greater strategies can be utilized, with each unmarried dig acquiring its very own precise traits which could necessitate variations of technique. Methods and different sensible problems do not permit archaeologists to carryout excavations each time and anyplace they choose, as many regarded web sites have additionally been intentionally left on my own and non excavated.

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This section is for the following models:

S3.50-5.50XL (S70-120XL) [D004];
S6.00-7.00XL (S135-155XL) [B024, C024]

General



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.



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.

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 8 hours of operation per day. The time intervals must be decreased from the recommendations in the Maintenance Schedule for the following conditions:

- If the lift truck is used more than 8 hours per day.
- 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.

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 DISABLED LIFT TRUCK

How to Tow Lift Truck



WARNING

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

- Brakes do not operate correctly.
- Steering does not operate correctly.
- Tires are damaged.
- Traction conditions are bad.
- 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.

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 in.) 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 1/2 of a capacity load on the

forks of the lift truck that is being used to tow the disabled lift truck. This 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 LIFT TRUCK ON BLOCKS

How to Raise Drive Tires



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:

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

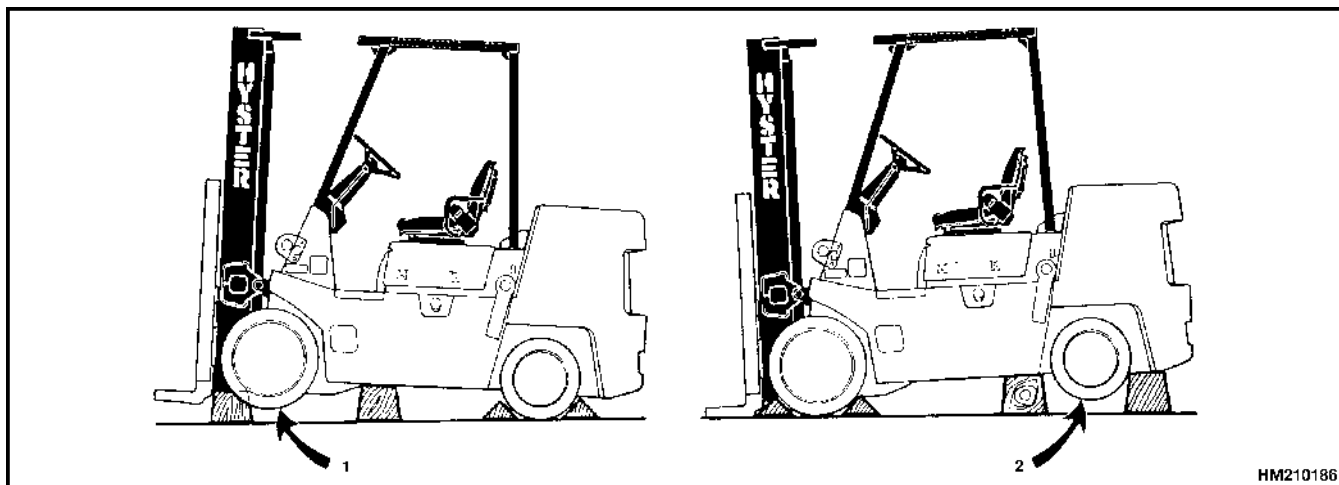
The surface must be solid, even, and level when the lift truck is put on blocks. Make sure that any blocks used to support the lift truck are solid, one-piece units.

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

1. Put blocks on each side (front and back) of the steering tires to prevent movement of the lift truck. See Figure 1.
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 Steering Tires

1. Apply the parking brake. Put blocks on both sides (front and back) of the drive tires to prevent movement of the lift truck. See Figure 1.
2. Use a hydraulic jack to raise the steering tires. Make sure the jack has a capacity of at least 2/3 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.

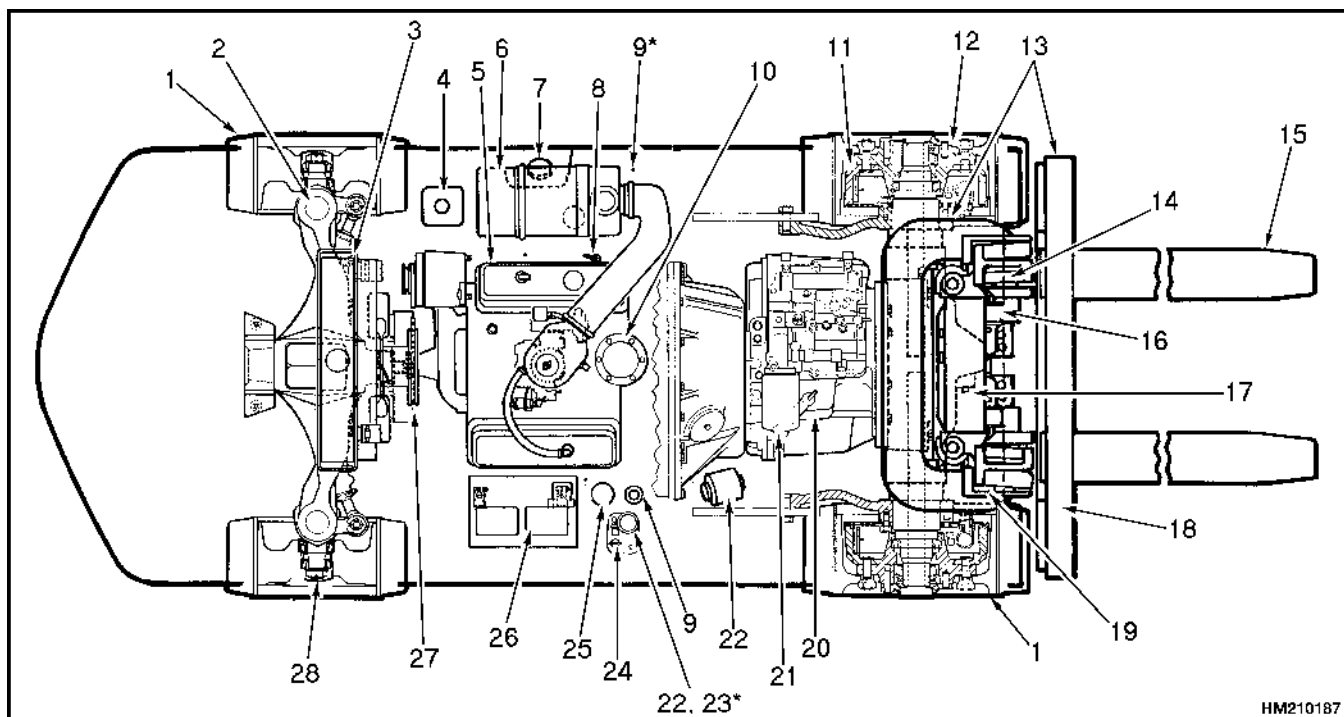


1. DRIVE TIRES

2. STEERING TIRES

Figure 1. How to Put Lift Truck on Blocks

Maintenance Schedule



NOTE: GM V-6 ENGINE SHOWN.

*S6.00-7.00XL (S135-155XL) ONLY

Figure 2. Maintenance Points

Table 1. Maintenance Schedule

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
1	Tires, Tire Pressure	X						Check Condition	See Nameplate
2	Steering Axle Spindles			L				2 Fittings	Multipurpose Grease See NOTE 1
3	Coolant Hoses	X						Check Condition	See Parts Manual
4	Cooling System	X					C	15.1 liter (16.0 qt)	50% Water and 50% Ethylene Glycol Boron-Free Antifreeze
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
4	Cooling System Clean Debris from Radiator Core			X				Clean as Needed	
4	Cooling System GM V6 EPA Compliant En- gine	X				C		15.1 liter (16.0 qt)	50% Water and 50% Ethylene Glycol Boron-Free Antifreeze
5	Valve Adjustment GM V-6					X			Not Adjustable
	Valve Adjustment Diesel, All Units Inlet Valves (Cold)					X		Adjust as Required	0.20 mm (0.008 in.)
	Valve Adjustment Diesel, All Units Exhaust Valves (Cold)					X		Adjust as Required	0.45 mm (0.018 in.)
6	Air Filter			X				Clean or Replace See NOTE 2	See Parts Manual
6	Air Filter GM V6 EPA Compliant En- gine		X					Clean or Replace See NOTE 2	See Parts Manual
6	Air Filter Element GM V6 EPA Compliant En- gine						C	See NOTE 3	
7	Fuel Tank S3.50-5.50XL (S70-120XL)	X						66.2 liter (17.5 gal)	Gasoline [86 Octane (minimum)] Diesel No. 2 LPG - HD-5

X=Check C=Change L=Lubricate

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
7	Fuel Tank S6.00-7.00XL (S135-155XL, XL ₂ , and S155XLS)	X						66.2 liter (17.5 gal)	Gasoline [86 Octane (minimum)] Diesel No. 2 LPG - HD-5
8	Engine Oil GM V-6	X	C					See NOTE 5 4.7 liter (5.0 qt)	−18 to 40°C (0 to 104°F) SAE 10W-30 API SL ILSAC GF-3 SAE 2362
	Engine Oil (Diesel) Perkins 1004-42 Perkins 1104C-44(RE)	X			C			See NOTE 5 8.0 liter (8.5 qt)	−15 to 40°C (5 to 104°F) SAE 10W-30 −10 to 50°C (14 to 122°F) SAE 15W-40 API CG4/CH4 ACEA E3/E5 MIL-PRF-2104G
	Seat Belts and Seat Rails	X						Check Condition	
	Hood Latch, Seat	X						Check Condition	
	Safety Labels	X						Replace as Necessary	See Parts Manual
	Check for Leaks - Fuel, Oil, Water	X						Check for Leaks See NOTE 4	
	Horn, Gauges, Lights, Alarms	X						Check Operation	
9	Brake Fluid			X				0.2 liter (0.4 pt)	SAE J-1703
10	Timing GM V-6					X		Adjust as Required	0° BTDC @ 650 rpm
	Timing Diesel, All Units					X		Adjust as Required	16° BTDC Static
	Engine Idle Speed GM V-6			X				Adjust as Required	625 to 675 rpm
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
	Engine Governed Speed GM V-6			X				Adjust as Required	2400 to 2500 rpm
	Engine Idle Speed Diesel			X				Adjust as Required	725 to 775 rpm
	Engine Governed Speed Diesel			X				Adjust as Required	2400 to 2500 rpm
11	Service Brakes	X					X	Check Operation	
11	Parking Brake	X				L		Check Operation Check Condition	Engine Oil
	Steering and Steering Wheel Position Latch	X						Check Operation	
	Clutch, Brake, and Inching/ Brake Pedals			X		L		Adjust as Required	Hyster Part Number 328388
12	Wheel Nuts Drive Wheels			X				Check Torque	610 to 680 N•m (450 to 500 lbf ft)
13	Mast, Carriage, and Attachments	X		X				Check Condition and Operation	
13	Mast, Sideshift Carriage Rollers	X	L					4 Fittings	Multipurpose Grease See NOTE 1
14	Mast Sliding Sur- faces and Load Roller Sur- faces		L					As Required	Multipurpose Grease See NOTE 1
18	Mast Fork Guides		L					As Required	Multipurpose Grease See NOTE 1
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
19	Mast Pivots		L					2 Fittings	Multipurpose Grease See NOTE 1
15	Forks	X		X				Check Condition	
16	Lift Chains	X	L	X				Check Condition and Lubrication	Engine Oil
	Pedals, Levers, Linkages, Cables, Hinges, Seat Rails					L		As Required	Engine Oil
17	Speed Reducer and Differential Oil, Single-Speed Powershift S3.50-5.50XL (S70-120XL)					X	C	5.7 liter (6.0 qt) See NOTE 6	SAE 80W-90 SAE 85W-140
17	Speed Reducer and Differential Oil, Two-Speed Powershift S6.00-7.00XL (S135-155XL, XL ₂ , and S155XLS)					X	C	14.2 liter (15.0 qt) See NOTE 6	SAE 80W-90 SAE 85W-140
17	Manual Transmission, Differential Oil S3.50-5.50XL (S70-120XL) (B024)					X	C	14.2 liter (15.0 qt)See NOTE 6	SAE 80W-90 SAE 85W-140
20	Powershift Transmission Oil (Single-Speed) S3.50-5.50XL (S70-120XL)	X					C	15.1 liter (16 qt) See NOTE 5	Hyster Part Number 336831 Change oil filter when transmission oil is changed.
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
20	Powershift Transmission Oil (Two-Speed) S6.00-7.00XL (S135-155XL, XL ₂ , and S155XLS)	X					C	15.1 liter (16 qt) See NOTE 5	Hyster Part Number 336831 Change oil filter when transmission oil is changed.
21	Oil Clutch System, Oil Level S3.50-5.50XL (S70-120XL) (B024)	X					C	9.4 liter (10 qt)	Hyster Part Number 336831 Change oil filter when clutch oil is changed.
	Transmission and Clutch	X						Check Operation	
22	Oil Filter, Hydraulic System						C	1 See NOTE 5	See Parts Manual
23	Hydraulic Tank Breather			X				Clean or Replace	See Parts Manual
24	Hydraulic System S3.50-5.50XL (S70-120XL)	X					C	37.0 liter (9.7 gal)	−18°C (0°F) and above SAE 10W API CC or CC/SE/SF/SG MIL-L-46152
24	Hydraulic System S6.00-7.00XL (S135-155XL, XL ₂ , and S155XLS)	X					C	42.0 liter (11.0 gal)	−18°C (0°F) and above SAE 10W API CC or CC/SE/SF/SG MIL-L-46152
25	Crankcase Breather GM V-6		X			C		1 See NOTE 7	See Parts Manual
	Crankcase Breather Perkins 1004-42 and 1104C-44(RE) Diesel				X	C		1 See NOTE 7	See Parts Manual
	Primary Fuel Filter, Diesel	X				C		Drain Water	See Parts Manual
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
26	Battery Electrolyte, Battery Case and Cables	X		X				Check Level, Clean	See Parts Manual
27	Drive Belts	X		X				Check Condition	See Parts Manual
28	Wheel Nuts Steer Wheels			X				Check Torque	610 to 680 N•m (450 to 500 lbf ft)
	Drive Shaft and Universal Joints S6.00-7.00XL (S135-155XL, XL ₂ , and S155XLS)		L					2 Fittings	Multipurpose Grease See NOTE 1
	Engine Oil Filter GM V-6		C					See NOTE 5	See Parts Manual
	Engine Oil Filter Diesel Perkins 1004-42 Perkins 1104C- 44(RE)				C			See NOTE 5	See Parts Manual
	Final Fuel Filter, Diesel					C		1	See Parts Manual
	Spark Plugs					C		Check Plug Wires 6 Plugs	See NOTE 8
	PCV Valve GM V-6				X		C	1	See Parts Manual
	Fuel Filter Gasoline						C	1	See Parts Manual
	Fuel Filter LPG						C	1	See Parts Manual
	Fuel Filter, LPG GM V6 EPA Compliant En- gine					C		1	See Parts Manual
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
	Inspect Engine Electrical System, Connectors, and FCVS Connection					X			
	Inspect Engine Vacuum, Fuel Lines, and Fittings						X		
	Inspect Lock Off for Leaks, and Ensure Lock Off Closing						X		
	Test LPG/GAS Regulator Pressure						X		
	Inspect Low Pressure Regulator for Oil Build Up and Leaks						X	Drain Oil if Necessary	
	Check Air Induction System for Leaks						X		
	Check Manifold for Vacuum Leaks						X		
	Check Throttle Shaft for Sticking						X		
	Check Injectors and Rails for Leaks						X		
	Inspect Exhaust Manifold, and Exhaust Piping for Leaks						X		
	Inspect Catalyst Inlet and Outlet						X		
X=Check C=Change L=Lubricate									

Table 1. Maintenance Schedule (Continued)

Item No.	Item	8 hr/ Daily	250 hr/ 6 wks	350 hr/ 2 mo	500 hr/ 3 mo	1000 hr/ 6 mo	2000 hr/ 1 yr	Procedure or Quantity	Specification
	Oxygen Sensor Connector GM V6 EPA Compliant En- gine						X	Check Indicator Light	
NOTE 1: Multipurpose Grease with 2 to 4% Molybdenum Disulfide.									
NOTE 2: Very dirty conditions require daily clean and check.									
NOTE 3: In dirty or dusty environments, replace at 1,000 hours.									
NOTE 4: Check fuel system for leaks prior to any service or maintenance activity.									
NOTE 5: Change filter on new lift trucks at the first 100 hours on the hourmeter.									
NOTE 6: Check the thrust screw adjustment on the differential after the first 150 hours of operation. Adjustments after first 150 hours are normally not needed.									
NOTE 7: Check the crankcase breather after every engine oil change.									
NOTE 8: See Capacities and Specifications 8000 SRM 454.									
X=Check C=Change L=Lubricate									

Safety Procedures When Working Near Mast

The following procedures must be used when inspecting or working near the mast. Additional precautions and procedures can be required when repairing or removing the mast. See the correct Service Manual section for the specific mast being repaired.



WARNING

Mast parts are heavy and can move. Distances between parts are small. Serious injury or death can result if part of the body is hit by parts of the mast or the carriage.

- **Never put any part of the body into or under the mast or carriage unless all parts are completely lowered or a safety chain is installed. Also make sure that the power is off and the key is removed. Put a DO NOT OPERATE tag in the operator's compartment.**
- **Be careful of the forks. When the mast is raised, the forks can be at a height to cause an injury.**
- **DO NOT climb on the mast or lift truck at any time. Use a ladder or personnel lift to work on the mast.**

- **DO NOT use blocks to support the mast weldments nor to restrain their movement.**
- **Mast repairs require disassembly and removal of parts and can require removal of the mast or carriage. Follow the repair procedures in the correct Service Manual section for the mast.**

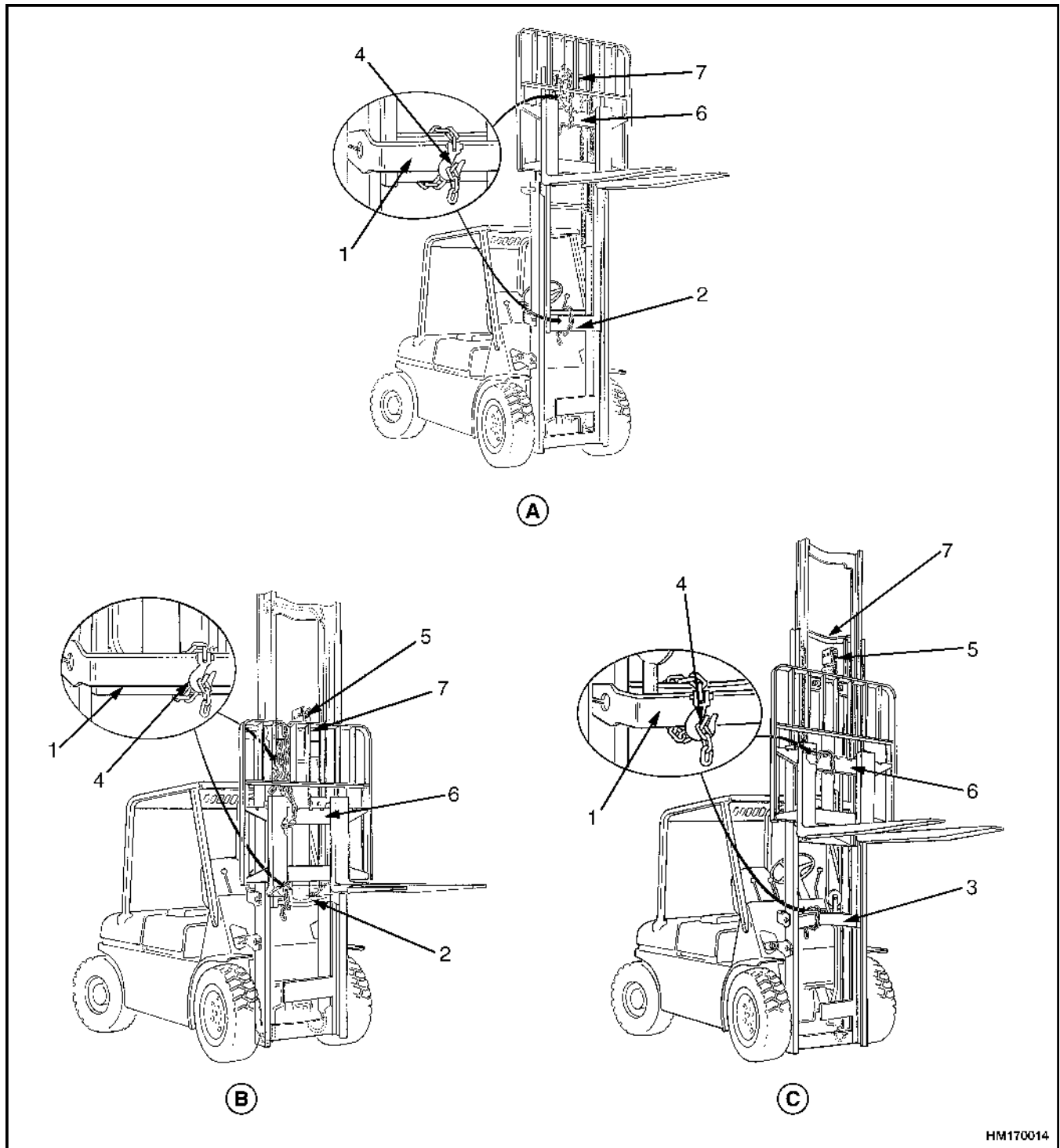
WHEN WORKING NEAR THE MAST ALWAYS:

1. Lower the mast and carriage completely. Push the lift/lower control lever forward and make sure there is no movement in the mast. Make sure that all parts of the mast that move are fully lowered.

OR

2. If parts of the mast must be in the raised position, install a safety chain to restrain the moving parts of the mast. Connect moving parts to a part that does not move. Follow these procedures:
 - a. Put the mast in a vertical position.

- b. Raise the mast to align the bottom cross-member of the weldment that moves in the outer weldment with a crossmember on the outer weldment. On the two-stage and free-lift mast, the moving part is the inner weldment. On the three-stage mast, it is the intermediate weldment. See Figure 3.
 - c. Use a 3/8-in. minimum safety chain with a hook to fasten the crossmembers together so that the movable member cannot lower. Put the hook on the back side of the mast. Make sure the hook is completely engaged with a link in the chain. Make sure the safety chain does not touch lift chains or chain sheaves, tubes, hoses, fittings, or other parts on the mast.
 - d. Lower the mast until there is tension in the safety chain and the free-lift cylinder (free-lift and three-stage masts only) is completely retracted. If running, stop the engine. Apply the parking brake. Install a **DO NOT REMOVE** tag on the safety chain(s).
 - e. Install another safety chain (3/8-in. minimum) between the top or bottom crossmember of the carriage and a crossmember on the outer weldment.
3. Apply the parking brake. After lowering or restraining the mast, shut off the power and remove the key. Put a **DO NOT OPERATE** tag in the operator's compartment.



HM170014

A. TWO-STAGE LFL MAST

- 1. OUTER WELDMENT
- 2. INNER WELDMENT
- 3. INTERMEDIATE WELDMENT

B. TWO-STAGE FFL MAST

- 4. HOOK
- 5. FREE-LIFT CYLINDER
- 6. CROSSMEMBER

C. THREE-STAGE FFL MAST

- 7. CROSSMEMBER

Figure 3. Two-Stage LFL, Two-Stage FFL, and Three-Stage FFL Masts

Excavator Service Repair Manual

At first, excavation requires the eliminating any topsoil this is found with the aid of using an excavator machine. What is dug up can be reviewed with the aid of using a metallic detector for stray unearths however except the excavation web page has persevered to be untouched for a prolonged duration of time, there's a tiny layer of present day fabric at the floor this is of constrained archaeological interest.

In farm areas, any form of archaeological attributes need to be apparent underneath the floor. With city areas, they'll be thick layers of human deposits and simplest the uppermost may be seen to the bare eye. With both case, the first actual project is drawing a scaled web page plan which could display the rims of the excavation. This approach may be composed the usage of tape measures, or as it is greater not unusualplace those days, an digital general station. A grid is normally set up, to divide the web page.

Excavation is moreover beneficial for digging out homes and ditches. When clearing dust out for roads or sub divisions, excavation is what looks after matters. Even aleven though there are some means, the time period excavation is used each time that the earth or dust is disturbed. Heavy equipment is likewise very not unusualplace with excavation, consisting of excavator machines or backhoes. Excavating crews run the system and dig up soil and rocks for regardless of the cause can be. Excavator machines are the maximum normally used equipment, as they could flow some of dust in a touch little bit of time.

Anytime you're collaborating in excavation, you need to continually use clever practices and be safe. If you intend to get down right into a hollow or trench, you need to continually use a trench box. Even aleven though the hollow won't be that deep, excavation web sites can regularly give way and at that point - matters are very risky and probably even deadly. For digging up uncommon artifacts or installing homes or roads, excavation is a few aspect that has been round for years and years. There can be lots to discover with excavation, as you will want to discover the satisfactory manner to run an excavator machine, shoot grade, and simply a way to nicely dig holes and ditches in order that they might not give way.

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