SERVICE REPAIR

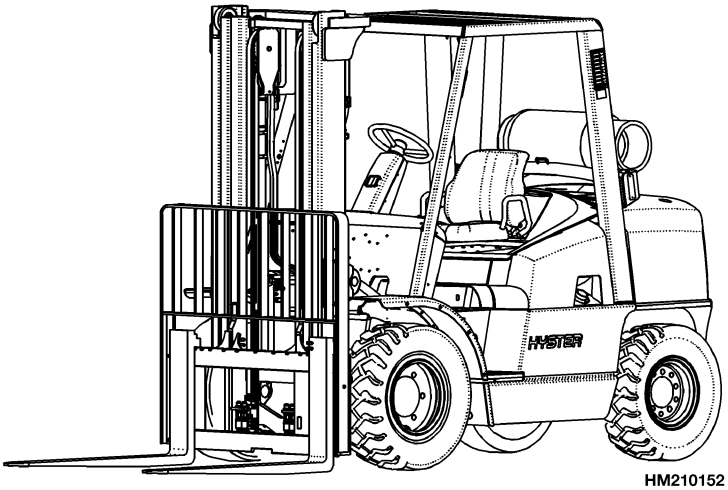
Hyster K005 (H70-120XM) Forklift

MANUAL

HYSTER

FRAME

H3.50-5.50XM (H70-120XM) [K005, L005]



HM210152

HYSTER

PART NO. 1467898

100 SRM 726

SAFETY PRECAUTIONS
MAINTENANCE AND REPAIR

- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **HYSTER APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:

WARNING

Indicates a condition that can cause immediate death or injury!

CAUTION

Indicates a condition that can cause property damage!

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H3.50-5.50XM (H70-120XM) [K005, L005]

General

This section has the description and repair procedures for the frame and connected parts. Included in this section are the frame, counterweight, hood, hydraulic and fuel tanks, radiator, exhaust system, and cab assembly. Also included are the instructions for removal and installation of the engine.

Description

The frame is a one-piece weldment and has mounts for the counterweight, overhead guard, operator's module, engine and transmission, axles, and other parts. The hydraulic tank and fuel tank are part of the frame.

Counterweight Repair

REMOVE

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 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 the lift truck cannot fall backward.

b. Before removing the counterweight, put blocks under the mast assembly so 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.

WARNING

Make sure that the lifting device used has the correct lift capacity for the counterweight being removed. See Table 1.

1. If installed, remove the overhead exhaust pipe from the counterweight. See Figure 1.
2. Remove cover between counterweight and hood. Remove tow pin.

Table 1. Weight of Counterweights

Lift Truck	Weight	
	(kg)	(lb)
H3.50XM (H70XM)	1787 to 1843	3931 to 4055
H4.00XM (H80XM)	2068 to 2132	4550 to 4690
H4.00XM (H90XM)	2245 to 2315	4939 to 5093
H4.50XM (H100XM)	2610 to 2690	5742 to 5918
H5.00XM (H110XM)	2906 to 2994	6393 to 6587
H5.50XM (H120XM)	3102 to 3198	6824 to 7036

3. Install two eyebolts into the counterweight lifting holes and attach a lifting device to the eyebolts.

CAUTION

When lifting the counterweight from the lift truck, be careful not to bend the exhaust pipe.

4. Remove two capscrews, washers, and lockwashers. Remove counterweight from lift truck.

Thanks very much for your reading,

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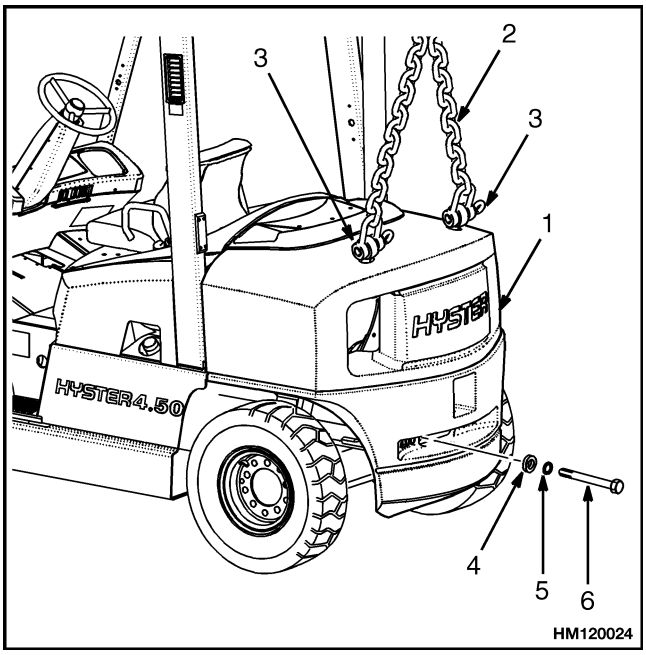


1. COUNTERWEIGHT
2. LIFTING DEVICE
3. LIFTING EYE
4. WASHER
5. LOCKWASHER
6. MOUNTING BOLT

Figure 1. Counterweight

INSTALL

1. Install counterweight in place on the lift truck. See Figure 1. Install two lockwashers, washers, and capscrews. Tighten capscrews to 555 N•m (409 lbf ft).
2. Remove eyebolts from counterweight lifting holes.
3. Install tow pin. Install cover between hood and counterweight.
4. If removed, install the overhead exhaust pipe in the counterweight. Tighten the capscrews to 38 N•m (28 lbf ft).

Hood Repair

REMOVE

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, transmission, and 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 the lift truck cannot fall backward.
b. Before removing the counterweight, put blocks under the mast assembly so 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.

1. Raise the hood and disconnect the two gas-assist cylinders at the hood. Disconnect the park brake alert wiring harness.
2. Remove the pins that hold the hood hinges to the operator's module crossmember. Remove the hood.

INSTALL

1. Install the hood in position on the lift truck. Install the pins that hold the hood hinges to the operator's module crossmember.
2. Connect the two gas-assist cylinders to the hood. Connect the park brake alert wiring harness.

WARNING

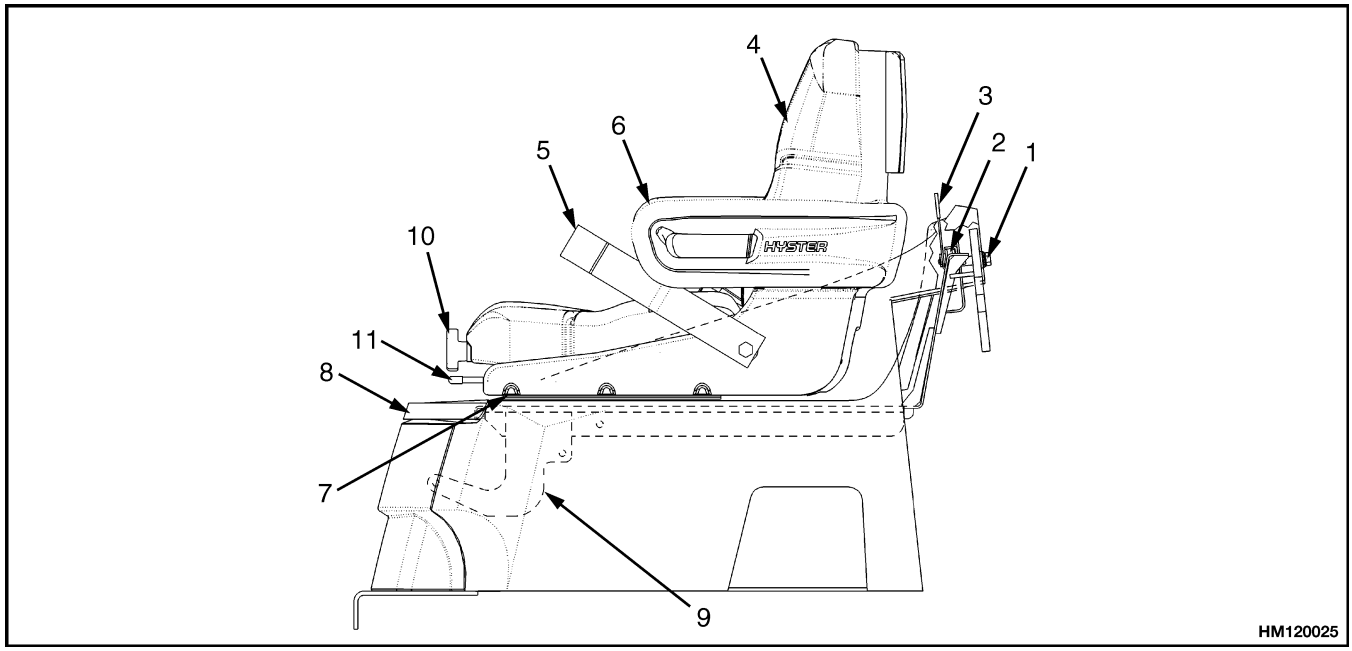
The hood, hood latch, and hood striker must be correctly adjusted for the correct operation of the operator restraint system.

3. Adjust the hood latch (see Figure 2) as follows:

a. Center the latch striker in the slot located in the rear crossmember. Check that the latch striker is in the center of the jaws of the hood latch and tighten.

b. Loosen the capscrews for the hood latch just enough to let the latch move. Position the latch. Tighten the capscrews for the latch.

c. Check the operation of the hood latch. Have an operator sit in the seat. Make sure that the hood is fully closed (two clicks). Also, check that the hood touches the rubber bumpers. If necessary, repeat Step b.



1. LATCH STRIKER
2. HOOD LATCH
3. LATCH LEVER
4. SEAT
5. SEAT BELT LATCH
6. HIP RESTRAINT
7. SEAT RAIL
8. HOOD
9. HINGE
10. OPERATOR WEIGHT ADJUSTMENT
11. FORWARD/BACKWARD ADJUSTMENT

Figure 2. Hood and Seat Latches Check

Overhead Guard Repair

REMOVE

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 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 cannot fall backward.

b. 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.

WARNING

Do not operate the lift truck without the overhead guard correctly fastened to the lift truck.

Do not make changes to the overhead guard by welding. Changes that are made by welding, or by drilling holes that are too big in the wrong location, can reduce the strength of the overhead guard. See the instructions for Changes to the Overhead Guard in the Periodic Maintenance section included with this lift truck.

Connect a lifting device to the top of the overhead guard. Remove the capscrews that hold the overhead guard to the frame. Remove the capscrews that hold the overhead guard to the cowl and module. Lift the overhead guard from the lift truck.

INSPECT

Inspect the condition of the mount isolators located at the rear legs of the overhead guard for any damage. Replace if damaged.

INSTALL

1. Connect a lifting device to the top of the overhead guard. Put the overhead guard in position on the lift truck.

2. Install the capscrews at the rear of the overhead guard. Tighten the capscrews to 90 N•m (67 lbf ft). Install the capscrews that hold the overhead guard to the cowl. Tighten the capscrews to 90 N•m (67 lbf ft).

LED BACKUP AND BRAKE LIGHTS, REPLACE

NOTE: Newer models of lift trucks are equipped with LED (Light Emitting Diode) backup and brake tail lights. These light assemblies are non-repairable and must be replaced as a complete unit. See the **Parts Manual** for replacement LED lights.

Remove

1. Disconnect negative terminal of battery and, remove the key.

2. Disconnect the LED light from the chassis light harness.

3. Remove LED light assembly and harness from mounting bracket. See Figure 3.

4. If the LED mounting bracket must be removed from the overhead guard leg, remove the plug, screw and bracket from the overhead guard leg.

Install

1. If the mounting bracket was removed, install it onto the overhead guard leg. Insert the plug and screw to attach mounting bracket to overhead guard leg. See Figure 3.

2. Install the LED light assembly and harness on the mounting bracket.

3. Connect the LED light to the chassis light harness.

4. Connect the negative terminal of battery and close the hood.

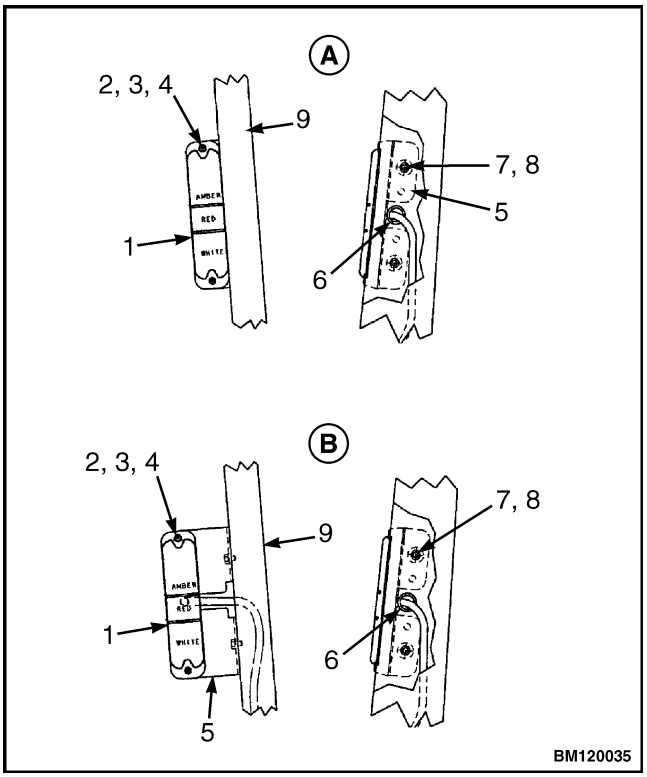


Figure 3. LED Backup and Brake Lights Assembly

Legend for Figure 3

A. LED ASSEMBLY WITH STANDARD EXHAUST
B. LED ASSEMBLY WITH OVERHEAD EXHAUST

1. LED LIGHT
2. SCREW
3. WASHER
4. LOCKNUT
5. MOUNTING BRACKET
6. GROMMET
7. PLUG
8. SCREW
9. OVERHEAD GUARD LEG

Operator Restraint System Repair

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 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 the lift truck cannot fall backward.
b. Before removing the counterweight, put blocks under the mast assembly so 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.

The seat belt, hip restraint brackets, seat and mounting, hood, and latches are all part of the operator restraint system. Each item must be checked to make sure it is attached securely, functions correctly, and is in good condition. See Figure 2.

The seat belt must fasten securely. Make sure the seat belt extends and retracts smoothly and is not frayed or torn. If the seat belt is damaged or does not operate properly, it must be replaced.

Make sure the seat rails and latch striker are not loose. The seat rails must lock securely in position, but move freely when unlocked. The seat rails must be securely attached to the mounting surface. The hood must be fully closed. Lift on the hood to make sure it is closed and will not move.

Adjust the hood, hood latch, and latch striker when any of the parts of the operator restraint system are installed or replaced. See the Hood Repair procedures.

Radiator Repair

REMOVE

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 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 the lift truck cannot fall backward.

b. Before removing the counterweight, put blocks under the mast assembly so 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.

1. Remove the cover between the hood and counterweight. See Figure 4.

WARNING

Disposal of coolant must be in accordance with local regulations.

NOTE: To aid in the draining of coolant from the radiator, remove the radiator cap.

2. Drain the coolant from the radiator.
3. Disconnect the upper and lower coolant hoses from the radiator.
4. Disconnect the hydraulic hoses from the radiator and install plugs in the hoses.
5. On the GM-powered lift truck, remove the clamp and hose from the bottom of the radiator.
6. Remove the top radiator support plate.
7. Disconnect the coolant recovery reservoir hose from the radiator.
8. Remove the coolant recovery reservoir from the overhead guard leg.
9. Remove the upper and lower fan shroud halves from the radiator.
10. Remove the radiator from the lower radiator mounting plate.

INSTALL

1. Install the rubber isolators on the lower radiator locating studs. See Figure 4.
2. Install the radiator on the lower radiator mounting plate.
3. Install the upper and lower fan shroud halves on the radiator.
4. Install the coolant recovery reservoir on the overhead guard leg.
5. Connect the coolant recovery reservoir hose to the radiator.
6. Install the rubber isolators on the upper radiator locating studs.
7. Install the top radiator support plate. Tighten the outer screws to 66 N•m (49 lbf ft). Tighten the inner screws to 38 N•m (28 lbf ft).
8. On the GM-powered lift truck, install the hose and clamp on the bottom of the radiator.
9. Connect the upper and lower coolant hoses to the radiator.
10. Connect the hydraulic hoses to the radiator.

CAUTION

To prevent possible damage to the engine, make sure the engine is running at idle speed while performing Step 11.

11. Add coolant to the system until the entire cooling system is full.
12. Install the cover between the hood and counterweight.

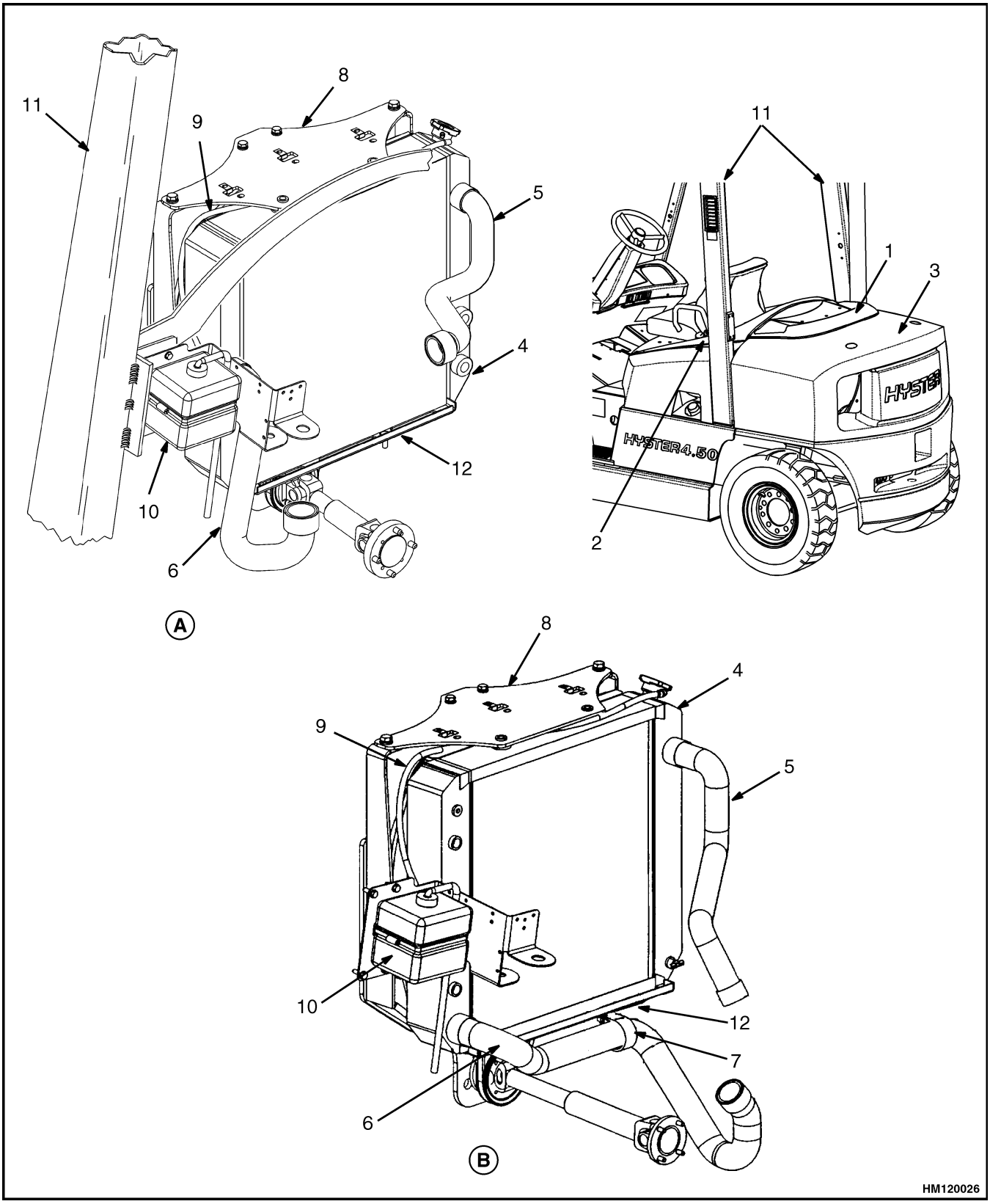


Figure 4. Radiator

Legend for Figure 4

A. PERKINS DIESEL 1004.42

1. COVER
2. HOOD
3. COUNTERWEIGHT
4. RADIATOR
5. HOSE
6. HOSE

B. GM 4.3L V-6

7. CLAMP
8. RADIATOR SUPPORT PLATE
9. COOLANT RECOVERY RESERVOIR HOSE
10. COOLANT RECOVERY RESERVOIR
11. OVERHEAD GUARD LEG
12. LOWER RADIATOR MOUNTING PLATE

Exhaust System Repair

MUFFLER

Remove

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 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 the lift truck cannot fall backward.

b. Before removing the counterweight, put blocks under the mast assembly so 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.

1. Remove the overhead exhaust pipe from the counterweight. See Figure 5 or Figure 6.
2. Remove the counterweight. See Counterweight Repair, Remove in this SRM.
3. Remove the lower exhaust pipe from the muffler and disconnect the upper exhaust pipe from the muffler.
4. Remove the muffler from the mounting bracket.

Install

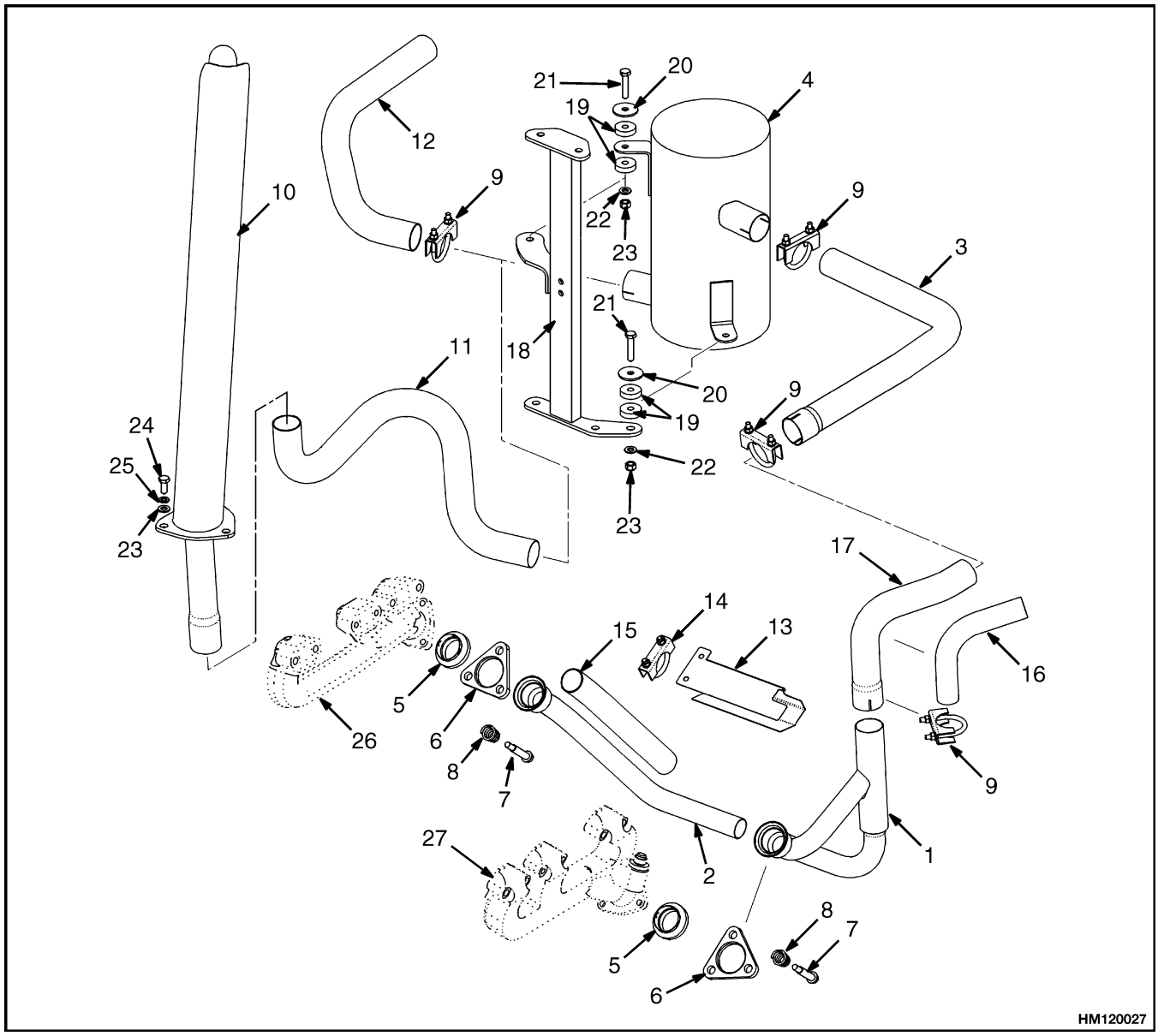
1. Install the muffler on the mounting bracket. Tighten bolts until all clearance has been removed; then tighten one additional turn. See Figure 5 or Figure 6.
2. Connect the upper exhaust pipe to the muffler and install the lower exhaust pipe on the muffler.
3. Install the counterweight on the lift truck. See Counterweight Repair, Install in this SRM.
4. Install the overhead exhaust pipe in the counterweight. Tighten the capscrews to 38 N•m (28 lbf ft).

LPG/GAS ENGINE EXHAUST PIPE - LIFT TRUCKS WITHOUT LOW EMISSIONS

Remove

NOTE: If the lift truck does not have an overhead exhaust, perform Step 2 and Step 4 through Step 8. If the lift truck has an overhead exhaust, perform Step 1 through Step 3 and Step 5 through Step 8.

1. Remove the overhead exhaust pipe from the counterweight. See Figure 5 and Figure 6.
2. Remove the counterweight. See Counterweight Repair, Remove in this SRM.
3. Remove the lower exhaust pipe from the right side of the muffler and disconnect the upper exhaust pipe from the left side of the muffler.
4. Remove the counterweight exhaust pipe from the right side of the muffler and disconnect the upper exhaust pipe from the left side of the muffler.



1. LEFT ENGINE EXHAUST PIPE
2. RIGHT ENGINE EXHAUST PIPE
3. UPPER EXHAUST PIPE
4. MUFFLER
5. SEAL
6. FLANGE
7. HEX HEAD BOLT
8. SPRING
9. CLAMP
10. OVERHEAD EXHAUST
11. LOWER EXHAUST PIPE
12. COUNTERWEIGHT EXHAUST PIPE
13. HEAT SHIELD
14. CLAMP
15. HEAT SHIELD SLEEVE
16. HEAT SHIELD SLEEVE
17. INTERMEDIATE UPPER EXHAUST PIPE
18. MUFFLER MOUNTING BRACKET
19. ISOLATOR
20. WASHER
21. HEX HEAD BOLT
22. WASHER
23. NUT
24. HEX HEAD BOLT
25. LOCKWASHER
26. RIGHT-SIDE EXHAUST MANIFOLD
27. LEFT-SIDE EXHAUST MANIFOLD

Figure 5. LPG/GAS Exhaust System (Without Low Emissions) Early Model Lift Trucks

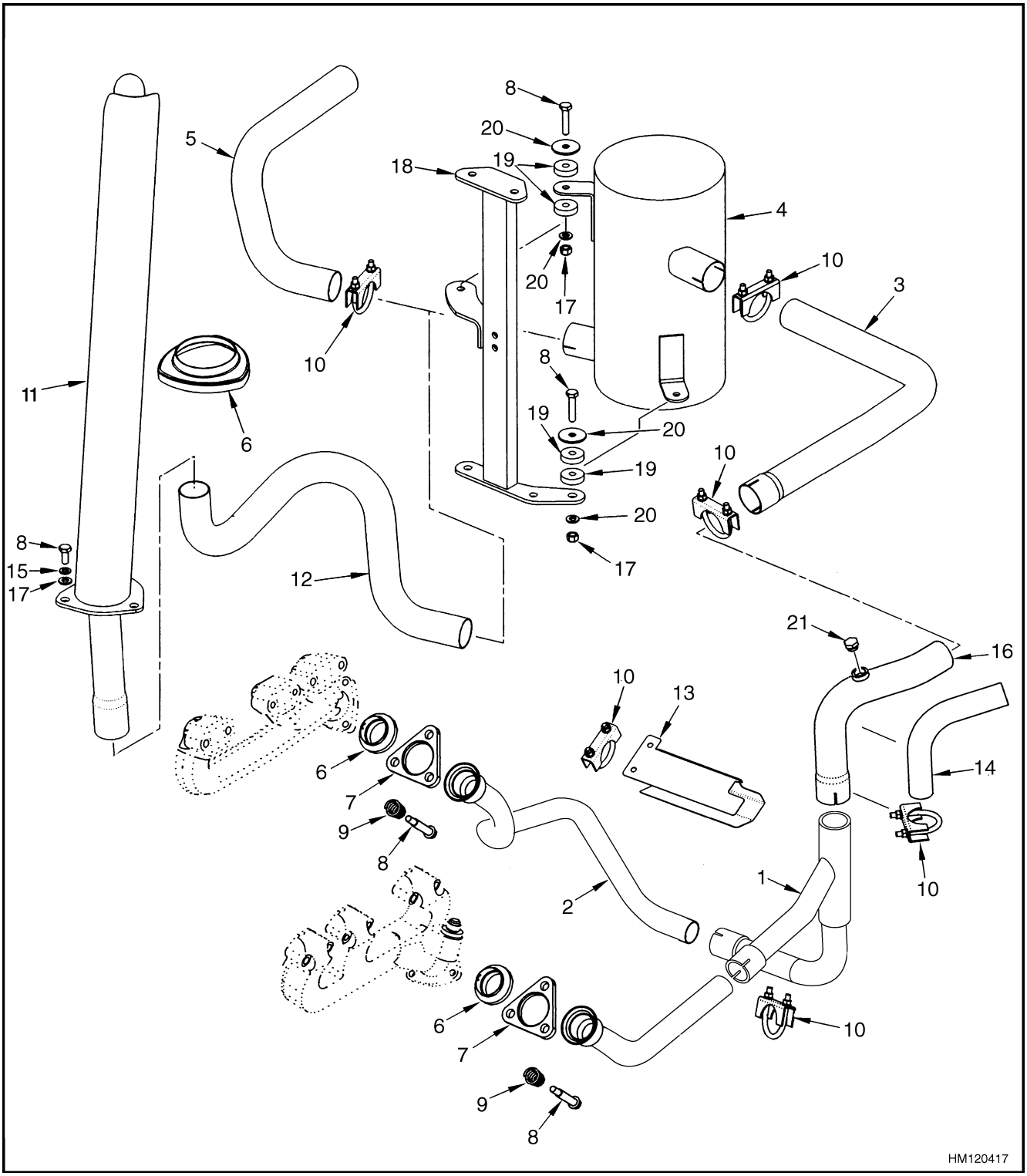


Figure 6. LPG/GAS Exhaust System (Without Low Emissions) Later Model Lift Trucks

Legend for Figure 6

1. LEFT ENGINE EXHAUST PIPE
2. RIGHT ENGINE EXHAUST PIPE
3. UPPER EXHAUST PIPE
4. MUFFLER
5. COUNTERWEIGHT EXHAUST PIPE
6. SEAL
7. FLANGE
8. HEX HEAD BOLT
9. SPRING
10. CLAMP
11. OVERHEAD EXHAUST PIPE
12. LOWER EXHAUST PIPE
13. HEAT SHIELD
14. HEAT SHIELD SLEEVE
15. LOCKWASHER
16. INTERMEDIATE UPPER EXHAUST PIPE
17. NUT
18. MUFFLER MOUNTING BRACKET
19. ISOLATOR
20. WASHER
21. PLUG

5. Disconnect upper exhaust pipe from the intermediate upper exhaust pipe and disconnect the intermediate upper exhaust pipe from the left-side engine exhaust pipe.

6. On early model lift trucks only, remove the metal heat shield from the left and right engine exhaust pipes.

7. Disconnect the left and right engine exhaust pipes from each other.

8. Remove the left and right engine exhaust pipes from the engine exhaust manifolds.

Install

NOTE: If the lift truck does not have an overhead exhaust perform Step 1 through Step 5, and Step 7. If the lift truck has an overhead exhaust perform Step 1 through Step 4 and Step 6 through Step 8.

1. Install the left and right engine exhaust pipes on the engine exhaust manifolds. See Figure 5.

2. Connect the left and right engine exhaust pipes to each other.

3. On early model lift trucks only, install the metal heat shield on the left and right engine exhaust pipes.

4. Connect the intermediate upper exhaust pipe to the left-side engine exhaust pipe and connect the upper exhaust pipe to the intermediate upper exhaust pipe.

5. Connect the upper exhaust pipe to the left side of the muffler and install the counterweight exhaust pipe on the right side of the muffler.

6. Connect the upper exhaust pipe to the left side of the muffler and connect the lower exhaust pipe to the right side of the muffler.

7. Install the counterweight. See Counterweight Repair, Install in this SRM.

8. Install the overhead exhaust pipe in the counterweight. Tighten the capscrews to 38 N•m (28 lbf ft).

EPA COMPLIANT LPG/GAS ENGINE EXHAUST SYSTEM

Remove

NOTE: If the lift truck does not have an overhead exhaust, perform Step 2 and Step 4 through Step 8. If the lift truck has an overhead exhaust, perform Step 1 through Step 3 and Step 5 through Step 8.

1. Remove the overhead exhaust pipe from the counterweight. See Figure 7.

2. Remove the counterweight. See Counterweight Repair, Remove in this SRM.

3. Remove the lower exhaust pipe from the right side of the muffler and the upper exhaust pipe from the left side of the muffler.

4. Remove the counterweight exhaust pipe from the right side of the muffler and the upper exhaust pipe from the left side of the muffler.

5. Disconnect upper exhaust pipe from the left and right-side engine exhaust pipes.

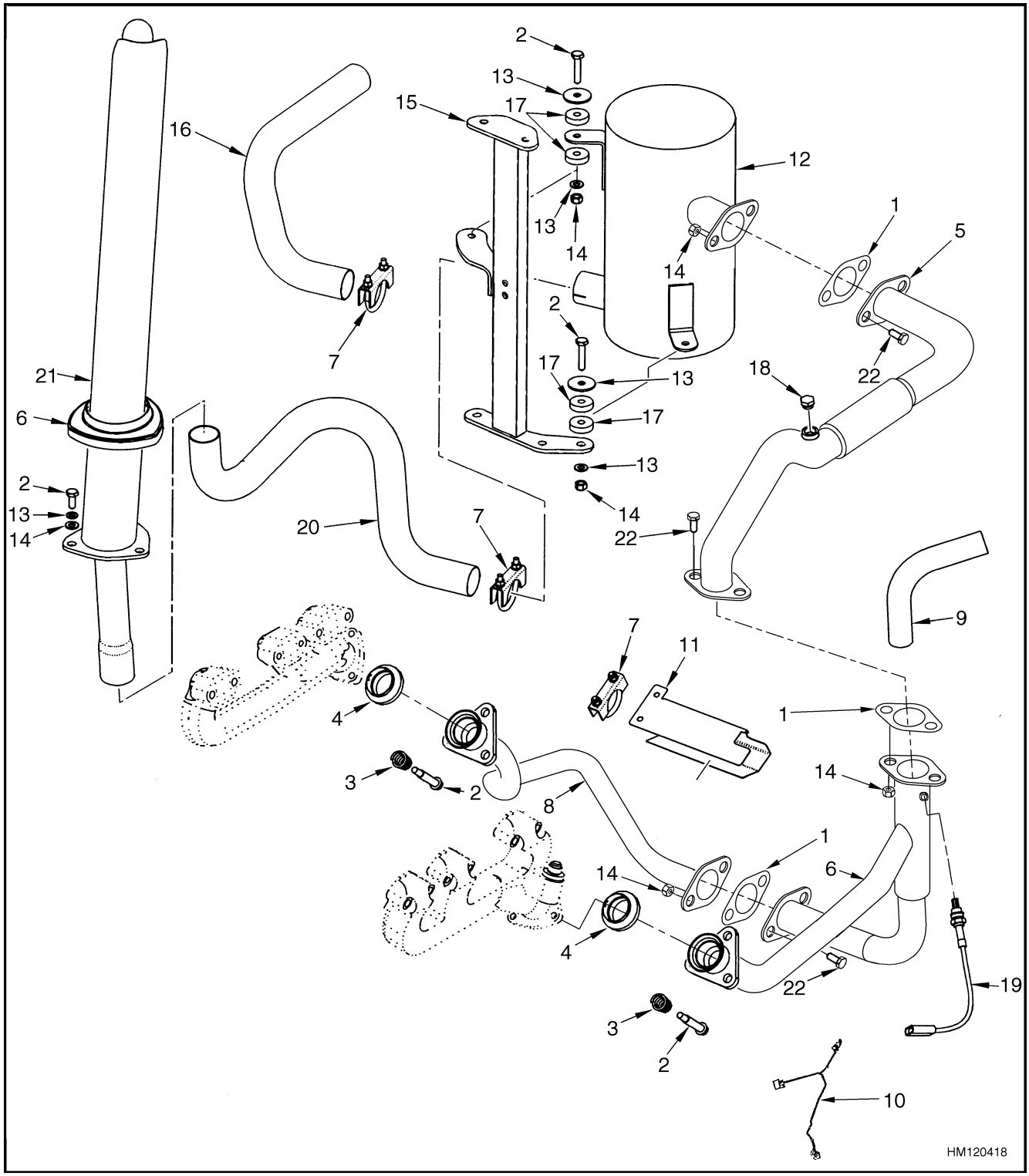


Figure 7. EPA Compliant LPG/GAS Exhaust System

Legend for Figure 7

1. GASKET
2. HEX HEAD BOLT
3. SPRING
4. SEAL
5. UPPER EXHAUST PIPE
6. LEFT ENGINE EXHAUST PIPE
7. CLAMP
8. RIGHT ENGINE EXHAUST PIPE
9. HEAT SHIELD SLEEVE
10. WIRE HARNESS (CLOSED LOOP)
11. HEAT SHIELD
12. MUFFLER
13. WASHER
14. NUT
15. MUFFLER MOUNTING BRACKET
16. COUNTERWEIGHT EXHAUST PIPE
17. ISOLATOR
18. PLUG
19. OXYGEN SENSOR
20. LOWER EXHAUST PIPE
21. OVERHEAD EXHAUST PIPE
22. CAPSCREW

6. Remove the metal heat shield from the left and right engine exhaust pipes.

7. Disconnect the electrical connector from the oxygen sensor. Remove oxygen sensor from the engine exhaust pipes. Inspect oxygen sensor and if it is damaged or broken, replace with new sensor.

8. Remove the left and right engine exhaust pipes from the engine exhaust manifolds. See Figure 7.

Install

NOTE: If the lift truck does not have an overhead exhaust, perform Step 1 through Step 5 and Step 7. If the lift truck has an overhead exhaust, perform Step 1 through Step 4 and Step 6 through Step 8.

1. Install the left and right engine exhaust pipes to the engine exhaust manifolds. See Figure 7.

2. Before installing the oxygen sensor, apply a small amount of antiseize compound. Install the oxygen sensor to the engine exhaust pipes. Tighten sensor to 39 N•m (29 lbf ft). Connect the electrical connector to the oxygen sensor.

3. Install the metal heat shield to the engine exhaust pipes.

4. Connect upper exhaust pipe to the left and right-side engine exhaust pipes.

5. Connect the upper exhaust pipe to the left side of the muffler and install the counterweight exhaust pipe on the right side of the muffler.

6. Connect the lower exhaust pipe from the right side of the muffler and the upper exhaust pipe from the left side of the muffler.

7. Install the counterweight. See Counterweight Repair, Install in this SRM.

8. Install the overhead exhaust pipe in the counterweight. Tighten the capscrews to 38 N•m (28 lbf ft).

DIESEL ENGINE EXHAUST PIPE

Remove

NOTE: If the lift truck does not have an overhead exhaust, perform Step 2 and Step 4 through Step 7. If the lift truck has an overhead exhaust, perform Step 1 through Step 3 and Step 5 through Step 7.

1. Remove the overhead exhaust pipe from the counterweight. See Figure 8.

2. Remove the counterweight. See Counterweight Repair, Remove in this SRM.

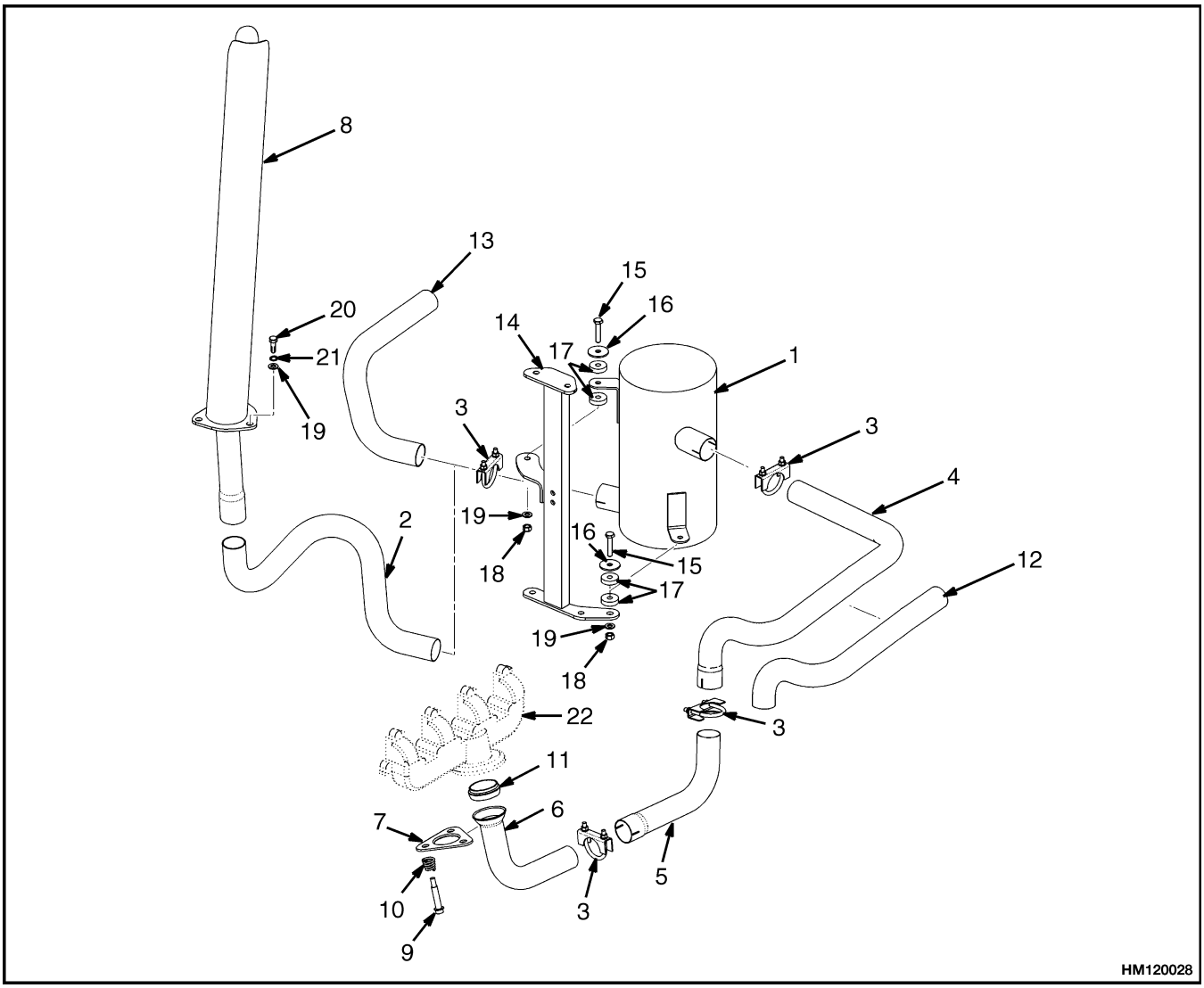
3. Remove the lower exhaust pipe from the right side of the muffler and disconnect the upper exhaust pipe from the left side of the muffler.

4. Remove the counterweight exhaust pipe from the right side of the muffler and disconnect the upper exhaust pipe from the left side of the muffler.

5. Remove the heat shield from the upper exhaust pipe and intermediate upper exhaust pipe. Remove the upper exhaust pipe from the intermediate exhaust pipe.

6. Remove the intermediate exhaust pipe from the engine exhaust pipe.

7. Remove the engine exhaust pipe from the exhaust manifold.



1. MUFFLER
2. LOWER EXHAUST PIPE
3. CLAMP
4. UPPER EXHAUST PIPE
5. INTERMEDIATE EXHAUST PIPE
6. ENGINE EXHAUST PIPE
7. ADAPTER
8. OVERHEAD EXHAUST PIPE
9. HEX HEAD BOLT
10. SPRING
11. SEAL
12. HEAT SHIELD SLEEVE
13. COUNTERWEIGHT EXHAUST PIPE
14. BRACKET
15. HEX HEAD BOLT
16. WASHER
17. ISOLATOR
18. NUT
19. WASHER
20. HEX HEAD BOLT
21. WASHER
22. ENGINE EXHAUST MANIFOLD

Figure 8. Diesel Exhaust System

Install

NOTE: If the lift truck does not have an overhead exhaust, perform Step 1 through Step 4 and Step 6. If the lift truck has an overhead exhaust, perform Step 1 through Step 4 and Step 6 and Step 7.

1. Install the engine exhaust pipe on the exhaust manifold. See Figure 8.
2. Connect the intermediate exhaust pipe to the engine exhaust pipe.
3. Connect the upper exhaust pipe to the intermediate exhaust pipe. Install the heat shield on the upper exhaust pipe and intermediate exhaust pipe.
4. Connect the upper exhaust pipe to the left side of the muffler and install the counterweight exhaust pipe on the right side of the muffler.
5. Connect the upper exhaust pipe to the left side of the muffler. Connect the lower exhaust pipe to the right side of the muffler.
6. Install the counterweight. See Counterweight Repair, Install in this SRM.
7. If removed, install the overhead exhaust pipe on the counterweight. Tighten the capscrews to 38 N•m (28 lbf ft).

Engine Repair

REMOVE

1. Remove the overhead guard. Remove the floor plates.
2. Disconnect the cables at the battery. Remove the battery and the battery tray.
3. Disconnect the fuel lines at the engine. Disconnect the throttle linkage at the engine. Disconnect the wires and wiring harnesses at the engine.
4. Disconnect the hydraulic line between the main control valve and the hydraulic oil tank.
5. Remove the engine only as described in the following steps:
   - **a.** Remove the brake pedal assembly as follows (see Figure 9): Disconnect the wires at the brake switch. Disconnect the brake lines at the brake booster/master cylinder and put plugs and caps on the openings. Disconnect the inching link at the transmission. Remove the spring from the inching link. Remove the return spring from the inching pedal. Remove the four capscrews at the top of the pedal bracket. Remove the pedal assembly from the lift truck.
   - **b.** Disconnect the wiring harness and throttle cable for the accelerator or MONOTROL® pedal. Remove the pedal assembly from the frame.
   - **c.** Remove the capscrews for the universal joints from the hydraulic pump drive line at the crankshaft and move the drive line out of the way.
   - **d.** Disconnect the engine wiring harness from the main wiring harness.
   - **e.** Disconnect the exhaust pipe from the muffler. Remove the air filter housing from the frame.
   - **f.** Connect a lifting device to the engine. Make sure the lifting device has a capacity of at least 450 kg (992 lb).
   - **g.** Support the transmission by placing a jackstand under the transmission housing.
   - **h.** Remove the engine mount capscrews and washers at the fan end of the engine.

NOTE: The bolts being removed in Step i are a one-time usage type of bolt and must be discarded when removed.

   - **i.** Bar the engine over at the crankshaft and remove and discard the torque converter flex plate bolts. When all of the bolts have been removed, move the engine forward just enough to break the engine loose from the transmission.