INTRODUCTION

This section has a description and the service procedures for the parts of the frame. These parts include the counterweight assembly, overhead guard, hydraulic tank, access panels, and label positions.

The frame is a single weldment. The frame has mounts for the counterweight, overhead guard, masts, steering axle, and drive axle assembly. The hydraulic tank is part of the frame. The top and side panels open on hinges to give access to the battery compartment. Access panels on the side of the frame protect the electronic controller and the hydraulic pump motor from dirt and water.

There are three series of frames for the electric Sit-Drive® lift trucks. The frames are similar in design, but are different sizes for each series.

The frames for the E20–30BS and E20–30BH are the same size and have a 711 mm (28 in) battery compartment. The mounts for the drive axle and steering axle are different because of the tires. The E20–30BS lift trucks have cushion tires and the E20–30BH lift trucks have pneumatic tires.

The E30–50B, E60BS lift trucks have frames made in three different lengths. There are three lengths of battery compartments 711 mm (28 in), 787mm (31 in), 863 mm (34 in). Except for the length, the remainder of the frame parts are the same.

The E60–120B lift trucks are made with two lengths of frames. The E60–80B series has a battery compartment of 1032 mm (40.6 in) in battery compartment of 1719 mm (47 in).

The hydraulic pump and the main control valve are in the hydraulic tank. A panel in the side of the frame can be removed for access to the assemblies in the hydraulic tank.

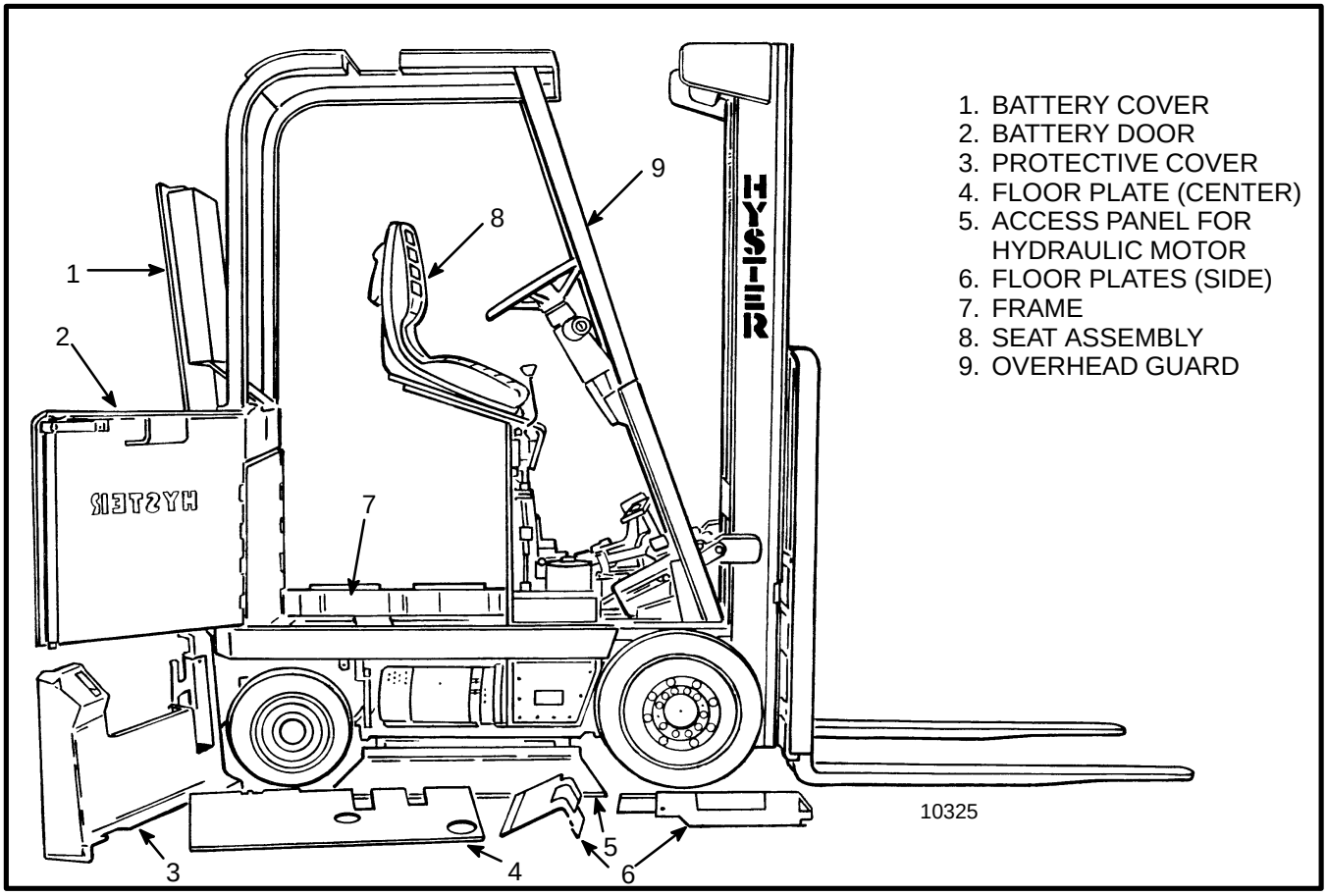


FIGURE 1. PARTS OF THE FRAME

The weight of the battery is the main part of the counterweight system on an electric lift truck. Each model of lift truck has a cast–iron counterweight with a weight necessary for the indicated capacity. A slot in the overhead guard permits removal of the battery without removing the overhead guard.

DISASSEMBLY AND ASSEMBLY

⚠ WARNING

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

Removal

1. Remove the battery as described in the section **PERIODIC MAINTENANCE (8000 SRM 201)**.

2. Access to the capscrews that hold the overhead guard to the counterweight is from the battery compartment. Remove the two 12 point capscrews.

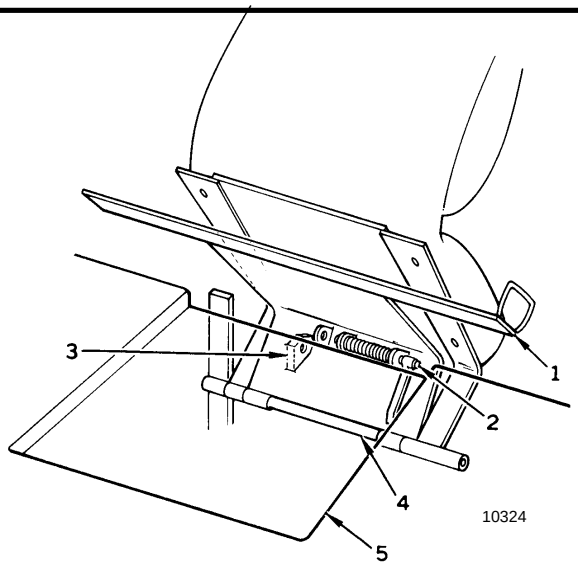
3. Remove the two capscrews that hold each support of the overhead guard to the cowl.

4. Use a lifting device or another person to help lift the overhead guard from the lift truck.

Installation

Put the overhead guard on the lift truck. Install and tighten the six capscrews and washers that hold the overhead guard to the lift truck. Install the battery.

The seat assembly has several functions. A steel plate under the seat plate fastens to the frame and prevents the battery from coming into the operator area in case of accident. A seat brake is optional equipment and is connected to the seat assembly. When the operator is not in the seat, the seat brake is automatically applied. The parking brake is also connected to the seat assembly. If the lift truck has a seat brake, both the parking brake and the seat brake control the same brake assembly. The parking brake assembly is found on the shaft of the traction motor. For more information, see the section **THE PARKING BRAKE (1800 SRM 205)**. The seat can be removed from the seat plate by removing four bolts. The seat plate is removed by removing the hinge pin that holds the seat assembly to the frame.



1. BATTERY RESTRAINT
2. LATCH FOR BATTERY RESTRAINT
3. ANCHOR FOR LATCH (WELDED TO THE FRAME)
4. HINGE
5. HOOD

FIGURE 2. BATTERY RESTRAINT

⚠ WARNING

PUTTING THE LIFT TRUCK ON BLOCKS 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: battery, mast, drive axle and traction motor, and the counterweight. When the lift truck is put on blocks, put additional blocks in the following positions:

1. **If the battery and the drive axle are removed, put blocks under the counterweight.**
2. **If the battery and counterweight are removed, put blocks under the mast assembly.**

The counterweight normally does not have to be removed for repairs. The counterweight is fastened to the frame with three capscrews. The weights for the counterweights are shown in TABLE 1.

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

TABLE 1

MODEL	BATTERY COMPARTMENT SIZE	WEIGHT OF COUNTERWEIGHT
E20B	713 mm (28 in)	218–240 kg (480–530 lb)
E25B	713 mm (28 in)	313–336 kg (690–740 lb)
E30BS	713 mm (28 in)	536–581 kg (1180–1280 lb)
E20BH	713 mm (28 in)	234–256 kg (515–565 lb)
E25BH	713 mm (28 in)	313–336 kg (690–740 lb)
E30BH	713 mm (28 in)	540–586 kg (1190–1290 lb)
E30–40B	713 and 789 mm (28 and 31 in)	318–363 kg (700–800 lb)
E40B	865 mm (34 in) (Not U.S.)	318–363 kg (700–800 lb)
E50B	865 mm (34 in) (Not U.S.)	431–476 kg (950–1050 lb)
E50B	865 mm (34 in) (U.S.)	568–613 kg (1250–1350 lb)
E40B	713 mm (28 in) (All)	568–613 kg (1250–1350 lb)
E50B	789 mm (31 in) (All)	681–7266 kg (1500–1600 lb)
E60BS	865 mm (34 in) (All)	1180–1226 kg (2600–2700 lb)
E60B	1041 mm (41 in)	227–272 kg (500–600 lb)
E70B	1041 mm (41 in)	427–472 kg (940–1040 lb)
E80B	1041 mm (41 in)	779–824 kg (1715–1815 lb)
E100B	1194 mm (47 in)	779–824 kg (1715–1815 lb)
E120B	1194 mm (47 in)	779–824 kg (1715–1815 lb)

Removal

1. Remove the battery. See the section **PERIODIC MAINTENANCE (8000 SRM 201)**.

2. Remove the overhead guard as described in the Overhead Guard, Removal in this section.

3. Install lifting eyebolts in the holes that hold the overhead guard to the counterweight. Attach a chain or sling to the eyebolts. Use a crane or lifting device to hold the weight of the counterweight.

4. From inside the battery compartment, remove the three capscrews that old the counterweight to the frame. Use the crane to lift the counterweight away from the frame.

Installation

1. Use a crane to lift the counterweight into position. Install the three capscrews that hold the counterweight to the frame. Tighten the capscrews to 190 Nm (140 lbf ft).

2. Disconnect the sling or chain. Remove the eyebolts from the counterweight.

3. Install the overhead guard as described in the Overhead Guard, Installation in this section.

4. Install the battery.

The hydraulic tank is part of the frame weldment. An access panel in the side of the hydraulic tank gives access to the hydraulic tank, hydraulic pump and main control valve. Most leaks occur where two surfaces are joined. The access panel or hydraulic pump are examples. A gasket is used between the access panel and the hydraulic tank. Repairs for leaks in the tank weldment can require special procedures described in the next paragraphs.

Small Leaks

Small leaks can be sealed as follows:

a. Use steam to clean the area around the leak. Remove all paint and dirt around the leak.

⚠ WARNING

Do not use tools that can make sparks, heat or static electricity. The vapors in the tank can cause an explosion.

b. Apply Loctite® 290 to the leak. Follow the instructions of the manufacturer.

Large Leaks

⚠ WARNING

Special procedures be followed when large leaks or other repairs need welding or cutting. Special procedures must be followed. All work must be done by authorized personnel. If the tank is cleaned inside of a building, make sure there is enough ventilation. See the following manuals for additional information:

- **"Safe Practices For Welding And Cutting Containers That Have Held Combustibles" by the American Welding Society, A6.0–65.**
- **"Safety In Welding And Cutting", American National Standard ANSI Z 49.1 – 1973.**

When cleaning the tank, do not use solutions that make dangerous gases at normal temperatures or when heated. Wear a device for the protection of the eyes. Protect the body from burns.

When cleaning with steam, use a hose with a minimum diameter of 19 mm (0.75 inch). Control the pressure of the steam by a valve installed in front of the hose. If a metal nozzle is used, it must be made of a material that does not make sparks. Make an electrical connection between the nozzle and the tank. To prevent static electricity, connect a ground wire to the tank.

Steam Method Of Cleaning

Clean the tank as follows:

a. Remove all the parts from the tank. Install the drain plug.

b. Fill the tank 1/4 full with a solution of water and sodium bicarbonate or sodium carbonate. Mix 0.5 kg (1 lb) per 4 litres (1 gal) of water.

c. Mix the solution in the tank using air pressure. Make sure all the surfaces on the inside of the tank are flushed. Drain the tank.

d. Put steam into the tank until the tank does not have odors and the metal is hot. Steam vapors must come out of all the openings.

e. Flush the inside of the tank with boiling water. Make sure all the loose material is removed from the inside of the tank.

f. Make an inspection of the inside of the tank. If it is not clean repeat steps d and e and make another inspection. When making inspections, use a light that is approved for locations with flammable vapors.

g. Put plugs in all the openings in the tank. Wait 15 minutes, then remove the inlet and outlet plugs. Test a sample of the vapor with a special indicator for gas vapors. If the amount of flammable vapors is above the lower flammable limit, repeat the cleaning procedures.

Chemical Solution Method of Cleaning

If the tank cannot be cleaned with steam, use the following procedure:

a. Mix a solution of water and trisodium phosphate or a cleaning compound with an alkali base. Follow the instructions given by the manufacturer.

b. Fill the tank with the cleaning solution. Use compressed air to mix the solution in the tank.

c. Drain the tank. Flush the inside of the tank with hot (boiling water. Make sure all the cleaning compound is removed.

d. Make an inspection of the inside of the tank. If the tank is not clean, repeat steps a to c. Make another inspection of the tank. When making inspections, use a light that is approved for locations with flammable vapors.

e. Check the tank for flammable vapors using special indicator for gas vapors. If the amount of flammable vapors is not below the lower flammable limit, repeat the cleaning procedures.

Other Methods

If nitrogen gas or carbon dioxide gas is available, prepare the tank for welding using these gases. See the

manual “Safe Practices For Welding and Cutting Containers That Have Held Combustibles” by the American Welding Society, A6.0–65. If these gases are not available, another method using water can be used as follows:

a. Fill the tank with water to just below the point where the work will be done. Make sure the space above the level of the water has a vent.

b. Use acceptable welding practices to repair the tank. See the American National Standard “Safety In Welding And Cutting” ANSI Z 49.1 – 1973.

If the labels or information plates are missing or have damage, they must be replaced.

⚠ WARNING

Labels that have WARNINGS or CAUTIONS must be replaced if they are damaged.

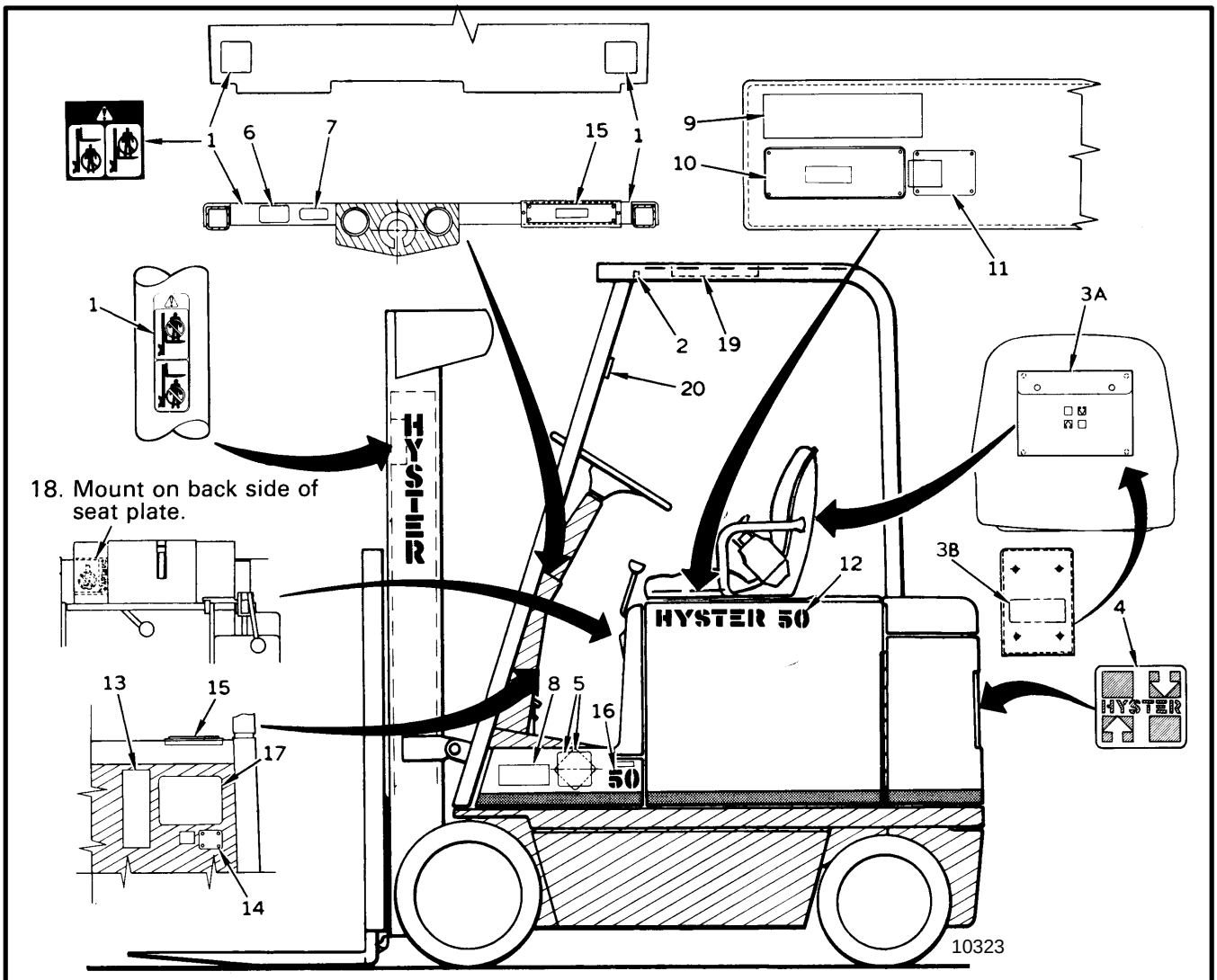
If a mast of a different size or an accessory carriage is installed, the capacity rating can change. Changes in the size or number of drive tires will change the capacity rating. See a HYSTER Dealer for a replacement nameplate. The nameplate information is a safety item and must be correct.

NOTE: The nameplate is installed using rivets. The old rivets must be removed before installing new nameplate.

1. 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 using a cleaning solvent.

2. Remove the paper from the back of the label. Do not touch the adhesive surface.

3. 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 all air is removed from under the label and the corners and edges are tight.



1. MAST SAFETY LABEL (NOT VISTA MAST), 1800 mm (71 in) FROM TOP OF LOWERED FORKS. ON SHORTER CYLINDERS, APPLY LABEL AT HIGHEST POINT.
1. MAST SAFETY LABEL (EACH SIDE OF COWL FOR VISTA MASTS)
2. IMPACT PLATE (INSIDE)
3. A. EARLY MODELS – INFORMATION CASE (FASTEN SO THAT SCREWS OR RIVETS DO NOT SHOW)
   B. LATER MODELS – LABEL, REPLACE OPERATING MANUAL (NOT REQUIRED FOR ENGLISH SPEAKING COUNTRIES)
4. REAR LABEL
5. FIRE SAFETY LABEL
6. HAND BRAKE WARNING
7. BDI ADJUSTMENT
8. DEALER LOGO
9. RULES LABEL FOR LIFT TRUCK OPERATION* (E20–60BS)
10. NAMEPLATE (INFORMATION MUST BE COMPLETE)*
11. UL APPROVAL PLATE (U.S. AND CANADA)*
12. MODEL LABEL*
13. RULES LABEL FOR LIFT TRUCK OPERATION** (E20–60BS)
14. UL APPROVAL PLATE (U.S. AND CANADA)**
15. NAMEPLATE (INFORMATION MUST BE COMPLETE)**
16. MODEL LABEL**
17. PATENT PLATE
18. WARNING LABEL
19. RULES LABEL FOR LIFT TRUCK OPERATION (E60–120B)
20. TIPOVER WARNING – BOTH SIDES

*LIFT TRUCKS WITH BATTERY HOODS
**LIFT TRUCKS WITHOUT BATTERY HOODS

FIGURE 3. LABEL POSITIONS