

# INTRODUCTION

## GENERAL

This section has a description and the service procedures for the parts of the frame. These parts include the counterweight, overhead guard, hydraulic tank, and access panels. The location for labels is also shown.

## DESCRIPTION (SEE FIGURE 1)

The frame is a single weldment with mounts for the counterweight, overhead guard, mast and load wheels,

and the transaxles. The hydraulic tank is part of the frame. The battery cover opens on hinges to give access to the battery compartment. An access panel on the top of the counterweight gives access to the electronic controller. The floor plates must be removed for access to the traction motors on the transaxles.

The weight of the battery is a major 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. Plates may be added under the battery as required on some of models.

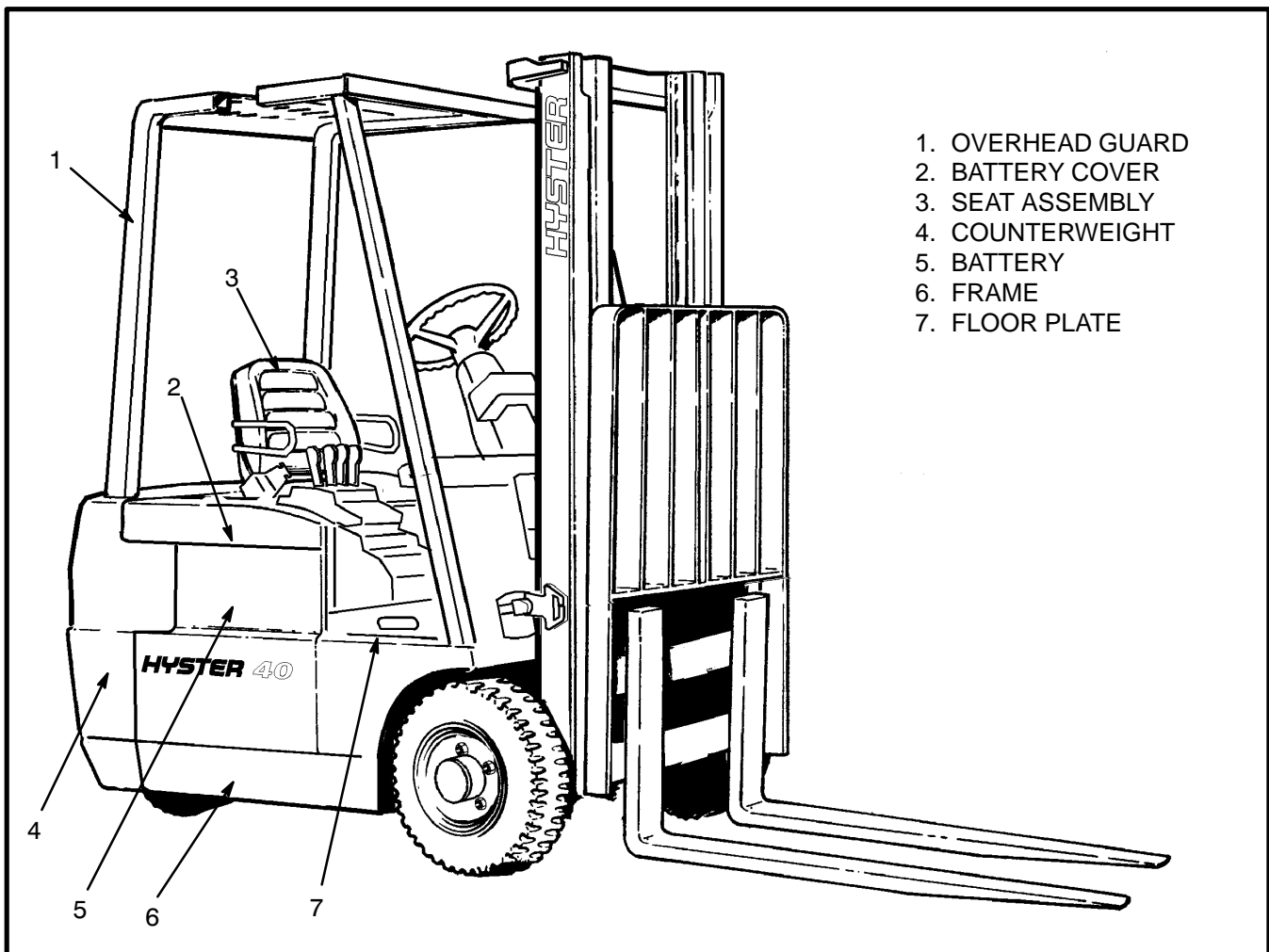


FIGURE 1 – PARTS OF THE TRUCK

The hydraulic pump and motor, steering pump and motor, drive motors and transaxles and the hydraulic tank are under the floor plates in the operator compartment. The floor plates are held in position by tabs and can be removed to give access to hydraulic components. The hydraulic control valve is fastened to

the front of the battery compartment. Three covers protect the control valve and control linkage. The covers are fastened in position by machine screws. The top covers are locked in place and must be released and swung open before attempting to open the battery cover.

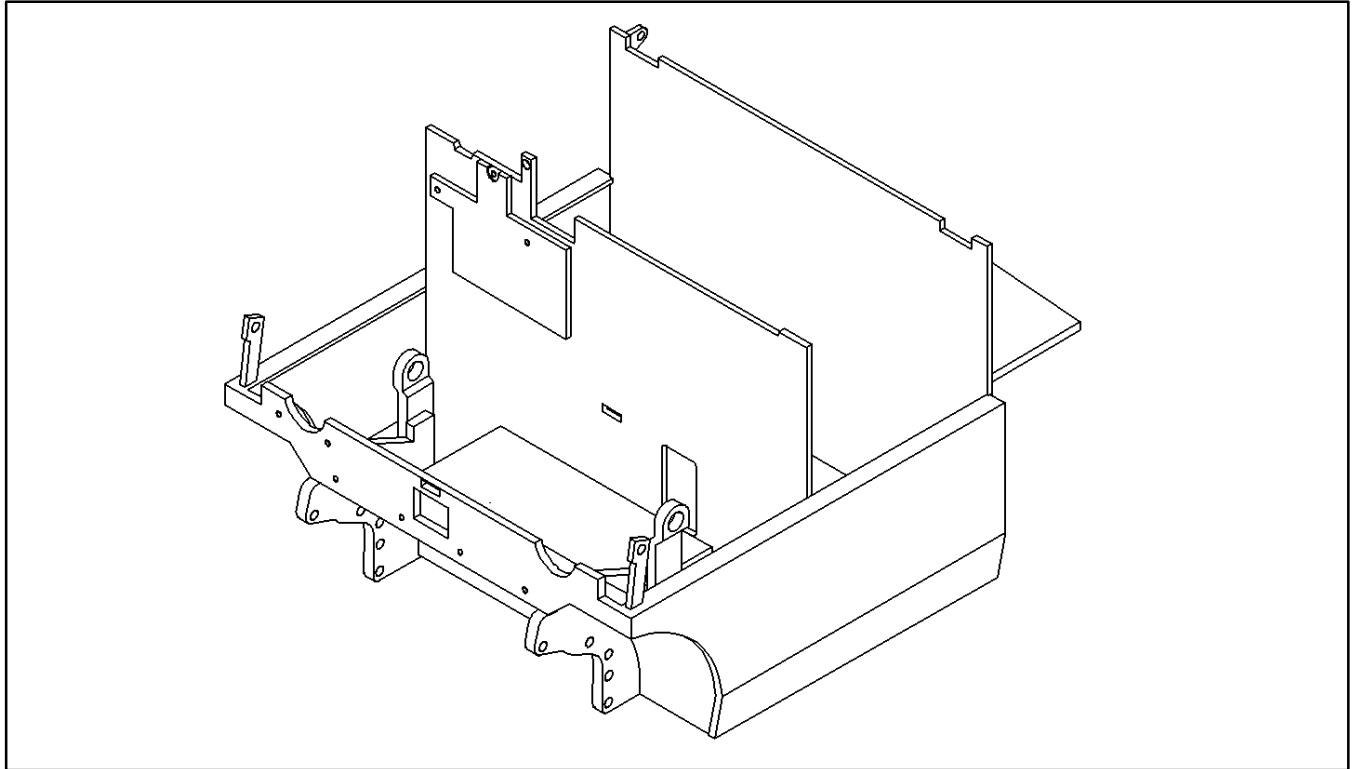


FIGURE 2 – FRAME

## REPAIRS

### OVERHEAD GUARD (SEE FIGURE 3)

#### **WARNING**

The overhead guard is part of the operator protection system. Do not operate the lift truck without the overhead guard correctly fastened to the lift truck.

#### Removal

1. Remove the two capscrews, washers and nuts that hold the rear supports of the overhead guard to the counterweight.
2. Remove the four capscrews, washers and nuts that hold the two front supports of the overhead guard to the cowl.

#### **WARNING**

The capacitor in the SCR controller can hold an electrical charge after the battery is disconnected. To prevent electrical shock and injury, discharge the capacitor before inspecting or repairing any component in the rear compartment. Wear safety glasses. Make certain the battery has been disconnected. Use a screwdriver or jumper wire to discharge capacitors C1. Block the drive wheels.

3. Open the rear compartment cover. Discharge the capacitor. Disconnect both electrical plugs that connect the rear lights to the harness. The plugs must be removed through the mounting bracket for the rear supports, which are a part of the counterweight, as the overhead guard is being removed from the lift truck.

(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)

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much.**

## WARNING

The overhead guard is heavy. Make sure the sling, chain, eyebolts, and crane or lifting device has the capacity to lift the overhead guard. The overhead guard weighs up to 94 kg (206 lbs) for all J30, 35 or-40 XMT lift trucks.

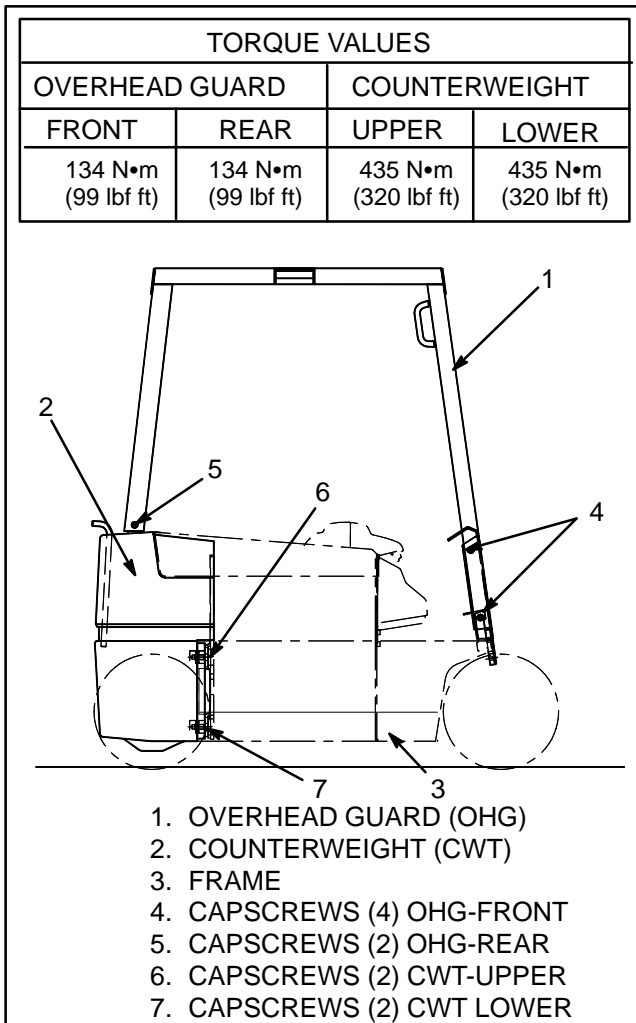


FIGURE 3 – OVERHEAD GUARD MOUNTING

4. Use a lifting device or have another person give assistance to lift the overhead guard from the lift truck. Carefully remove the wiring as the overhead guard is being removed.

### Installation

1. Use a lifting device or have another person give assistance to lift the overhead guard on the lift truck. Make certain that the plugs for the rear wiring are threaded through the overhead guard mounting brackets that are part of the counterweight.

2. Install and tighten the six capscrews, washers and nuts that hold the overhead guard to the lift truck. Tighten the capscrews to 134 N•m (99 lbf ft).

### HOOD AND SEAT ASSEMBLY (SEE FIGURE 5)

The hood is a cover for the battery and is a battery restraint. The function of the battery restraint, when the hood is correctly locked to the frame, is to hold the battery in the battery compartment if an accident causes the lift truck to tip over. A sliding latch mechanism on the front of the hood locks the hood to the frame for lift truck operation. (See FIGURE 4). The sliding latch unlocks the hood from the frame so that the hood can be raised to the open position for access to the battery. The latch mechanism can only be accessed after releasing the hydraulic valve covers and swinging the top hydraulic valve covers and the linkage up out of the way.

The latch mechanism must operate correctly before the lift truck can be operated. The latch must not be worn and must fully engage the frame. The hood must be locked in the closed position when the lift truck is operated. If the latch mechanism does not lock the hood in the closed position, the hydraulic linkage and covers will not close and the lift truck hydraulic system will not operate.

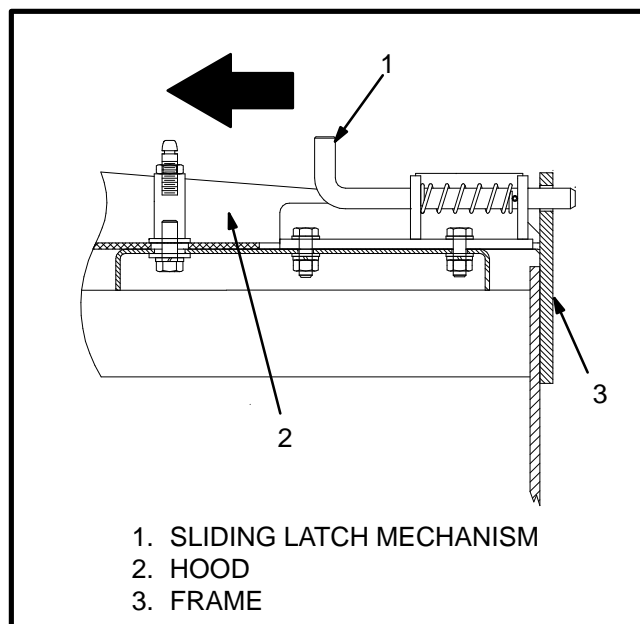


FIGURE 4 – LATCH MECHANISM

The latch at the front of the hood fastens the hood to the frame and two hinges at the back of the hood fasten to the hood to brackets attached to the counterweight. A double dampened gas controlled strut holds the hood in

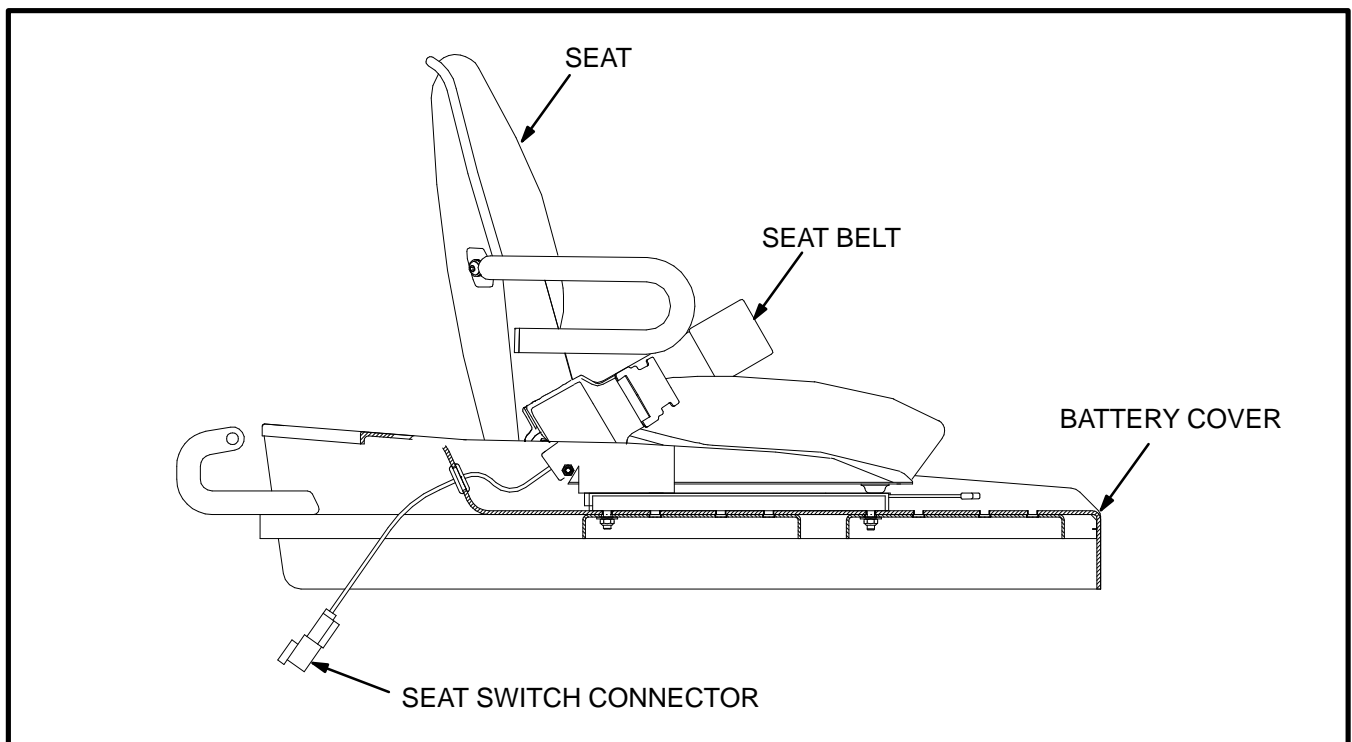


FIGURE 5 – BATTERY COVER AND SEAT ASSEMBLY

the open position. A handle to disconnect the battery is fastened to the hood at the right side of the seat assembly. This handle is an emergency disconnect that permits the operator to quickly disconnect the battery while on the seat of the lift truck.

The hood, seat belt, hip restraint brackets, seat and seat mount are all parts of the operator restraint system. Checks and adjustments for the operator restraint system are described in the **OPERATING MANUAL, Part No. 897522**, and the section **PERIODIC MAINTENANCE, 8000 SRM 528**.

The seat assembly slides on seat rails that are fastened to the hood by four capscrews. A lever at the left front side of the base controls the adjustment of the seat to the forward and backward positions.

An optional seat can be installed that has a back cushion which tilts backward 5 to 20 degrees. A handle on the right side of the seat back controls the angle of tilt.

All seats have a seat switch installed in the bottom cushion that senses pressure. When the operator is not on the seat, the seat switch opens and stops the operation of the lift truck.

To raise the hood and seat assembly, move the seat as far to the rear as possible. Release the latch and move the steering column to the most forward position. Release and raise the hydraulic linkage and covers. Pull back on the latching mechanism to release and raise the hood.

### Removal

1. Disconnect the battery connector. Remove the rear compartment cover.
2. Disconnect the electrical connector to the seat switch. NOTE: The seat assembly does not have to be removed from the hood to remove the hood from the lift truck. To remove the seat, remove the four capscrews that fasten the seat base to the hood. Lift the seat assembly from the hood. If the seat is not being removed, raise the hood.
3. Disconnect the double dampened gas controlled strut by removing the locking clip retaining the truck to the frame. Move the hood to the closed position.
4. Remove the two capscrews and washers retaining the right hand hood bracket to the counterweight. Make certain not to loose the shims.
5. Have another person give assistance and move the hood toward the left hand side of the lift truck to remove the hood from the hinge pin of the left hand bracket.

## Installation

1. With the aid of an assistant, install the hood on the left hand hinge pin. Put the hood in the closed position.
2. Install the hood on the right hand hood bracket pin. Align and start the capscrews into the counterweight. Install the shims removed at assembly. Tighten the capscrews to 86 N•m (62 lbf ft). The minimum clearance between the hood and the front plate of the frame is 3.5 mm (0.14 in). If necessary, add or remove shims to obtain the proper clearance. If the seat assembly has been removed, install the seat assembly on the hood.
3. Raise the hood. Align and install the gas filled strut. Install the locking clip to retain the strut to the frame. Connect the electrical connector for the seat switch.
4. Close the hood. Make certain that the locking mechanism to retain the hood is properly engaged. Close the hydraulic linkage and covers.
5. Install the rear compartment cover. Connect the battery connector.

## COUNTERWEIGHT (SEE FIGURE 6)

### **WARNING**

**Do not operate the lift truck if the capscrews for the counterweight are not installed. When the capscrews are removed, the counterweight can fall from the lift truck.**

## Removal

1. Remove the battery. See the section, **PERIODIC MAINTENANCE, 8000 SRM 528** for removal of the battery.
2. Remove the overhead guard as described in the Overhead Guard.
3. Remove the battery platform.

A battery platform is used to support the battery on the lift truck frame. The battery platform used in each lift truck also serves as a counterweight and, on some models may exceed 272 kg (599 lbs). Make certain to replace the same battery platform, or one of equal weight, if the platform must be removed.

MODELS	WHEEL BASE	VOLTS	PLATFORM WEIGHT kg (lb)
J30XMT	46.0	36	882 to 1217 (400 to 552)
J30XMT	46.0	48	1138 to 1506 (516 to 683)
J35XMT	54.5	36	212 (96)
J35XMT	54.5	48	212 to 370 (96 to 168)
J40XMT	54.5	36	212 to 946 (96 to 429)
J40XMT	54.5	48	646 to 1098 (293 to 498)

Table 1 – Battery Platform Weights

To remove the battery platform, raise the battery cover, and remove the battery. Remove the battery spacer and the acid tray positioned on top of the battery platform. Remove the two capscrews, washers and nuts retaining the platform to the frame. Use a lifting device to lift the platform out of the lift truck.

### **WARNING**

**The counterweight is very heavy. Make sure the sling, chain, eyebolts, and crane or lifting device has the capacity to lift the counterweight. The counterweight weighs up to 706 kg (1554 lbs) for all J30, 35 or-40 XMT lift trucks.**

3. Install eyebolts through the holes where the overhead guard fastens to the counterweight. Install nuts on the eyebolts. Attach a chain or sling to the eyebolts. Use a crane or other lifting device to hold the weight of the counterweight. Make sure the sling, chain, eyebolts, and crane or lifting device has the capacity to lift the counterweight. The counterweight weighs up to 706 kg (1554 lbs) for all J030, J035 or J040 XMT lift trucks.
4. Access to the four capscrews that hold the counterweight to the frame is from inside the battery compartment. Two of the capscrews are located at the bottom of the counterweight, while the other two are located approximately in the center of the counterweight. The nuts are cast in the counterweight. Remove the four M20 x 2.5 x 60 capscrews and hardened flat washers that hold the counterweight to the frame. Use the crane to lift the counterweight away from the frame.

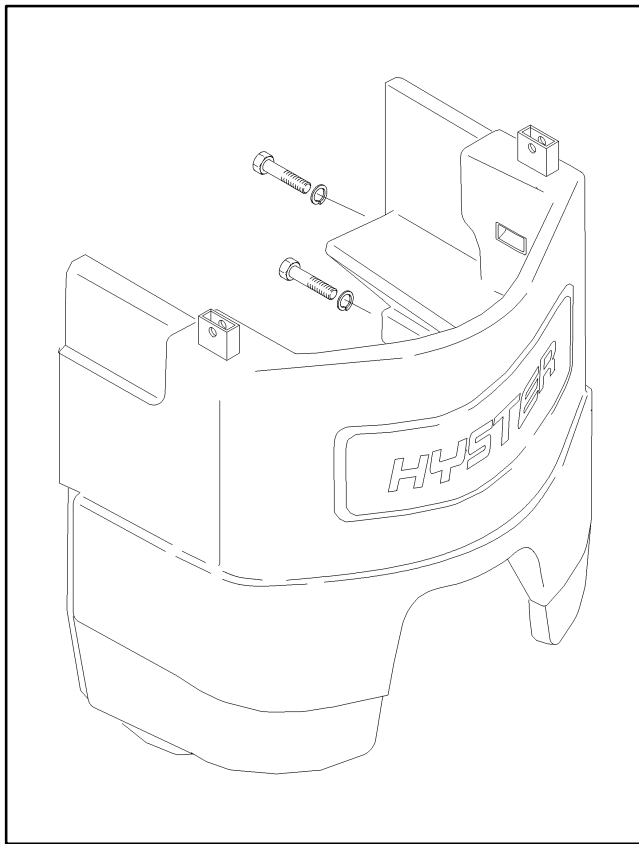


FIGURE 6 – COUNTERWEIGHT

### Installation

#### **⚠️ WARNING**

The counterweight is very heavy. Make sure the sling, chain, eyebolts, and crane or lifting device has the capacity to lift the counterweight.

1. Use a crane to lift the counterweight into position. The lift points for the counterweight are at the center of gravity of the counterweight. Some assistance will be required to align the counterweight and the frame.
2. Install the four M20 x 2.5 x 60 cap screws and hardened flat washers that hold the counterweight to the frame. Tighten the cap screws to 435 N•m (320 lbf ft).
3. Disconnect the sling or chain. Remove the eyebolts from the counterweight.
4. Install the battery platform and the acid tray in the battery compartment.
4. Install the overhead guard as described in the Overhead Guard. Install the hood and seat assembly.
5. Install the battery.

## HYDRAULIC TANK

### Inspection

Make a visual inspection of all sides of the tank. Inspect the welds for cracks and leakage. Check for wet areas, accumulation of dirt, and loose or missing paint caused by leakage. Areas of the tank that are not easily seen can be checked with an inspection mirror and a light that is approved for locations with flammable vapors.

### Repairs, Small Leaks

Use the following procedure to repair small leaks:

1. 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.

2. Apply Hyster 251099 (Loctite® 290) to the leak. Follow the instructions of the manufacturer.

### Repairs, Large Leaks

1. Use one of the procedures described under **Cleaning** to clean and prepare the tank for repairs.
2. Contact your dealer for Hyster lift trucks for welding instructions.
3. Use acceptable welding practices to repair the tank. See the American National Standard *Safety In Welding And Cutting* ANSI Z 49.1 – 1973.

### Cleaning

#### **⚠️ WARNING**

Special procedures must be followed when large leaks or other repairs need welding or cutting. 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 eye and face protection. 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 at the nozzle 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. Connect a ground wire to the tank to prevent static electricity.

### Steam Method Of Cleaning

Use the following procedure to clean the tank with steam:

- 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 gallon) 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 with the solution. 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 from 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 through 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 above the lower flammable limit, repeat the cleaning procedures.

### Additional Preparations For Repair

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.



## **SAFETY LABELS (SEE FIGURE 7)**

### **WARNING**

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

**DO NOT add to or modify the lift truck. Any change to the lift truck, the tires or its equipment can change the lifting capacity. The lift truck must be rated as equipped and the nameplate must show the new capacity rating. Contact your dealer for Hyster lift trucks for a replacement nameplate.**

### **WARNING**

**Cleaning solvents can be flammable and toxic, and can cause skin irritation. When using cleaning**

**solvents, always follow the recommendations of the manufacturer.**

If an adhesive plate or label must be replaced, use the following procedure to install a new label or plate:

- a. Clean area with an oil-free cleaner to remove all oil, grease and foreign matter. Wipe until completely dry.
- b. Carefully remove only the paper backing from adhesive. Do not touch adhesive surface with hands or remove front mask from label or plate face.
- c. Exposed adhesive face must be free from all foreign matter before positioning label or plate on surface.
- d. Press label or plate down firmly making sure that all corners are stuck down tight. Make sure that all air is removed from under the label or plate and the corners and edges are tight. Do not attempt to move the label or plate once it has been stuck down.

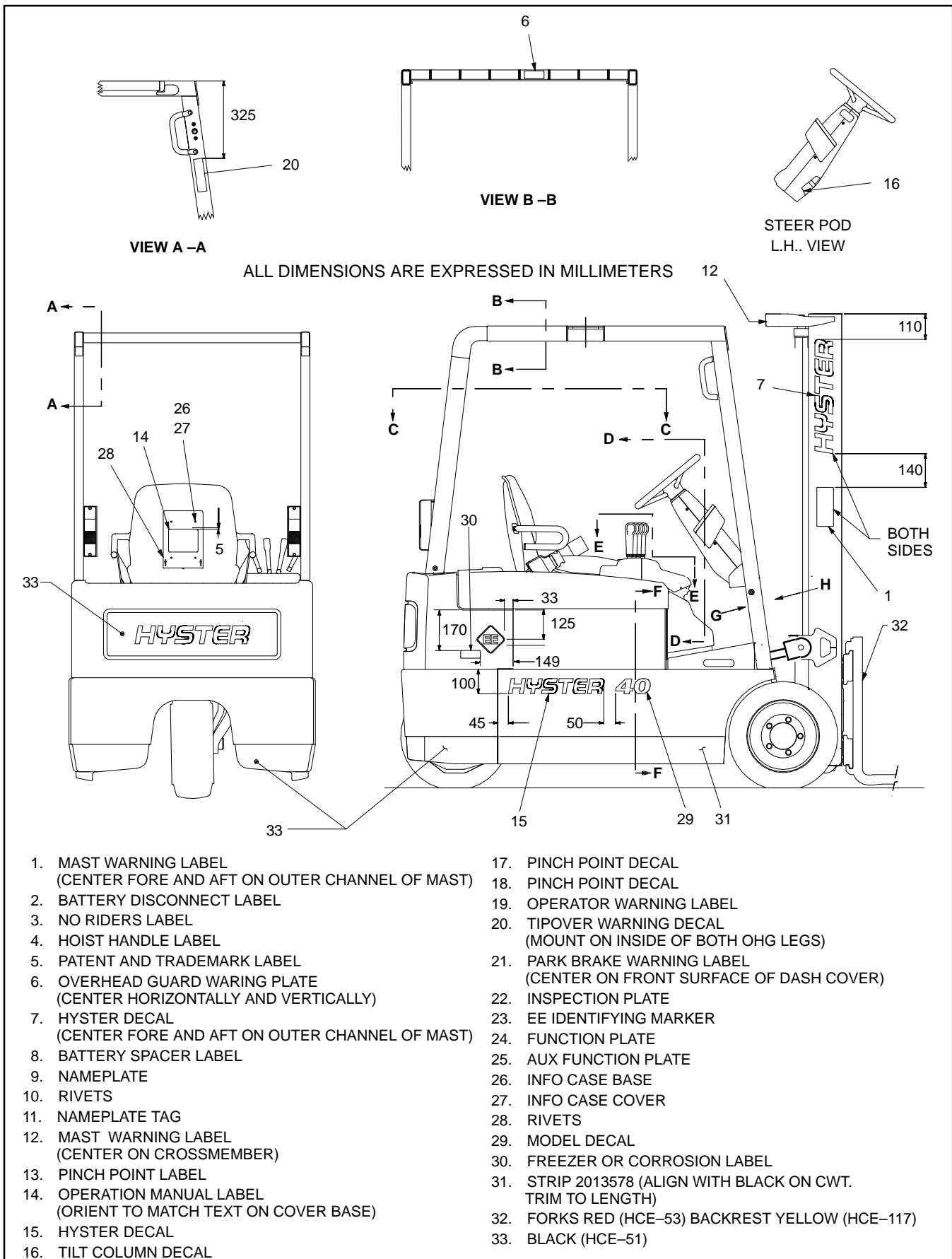


FIGURE 7 – Page 1 of 2 LABEL LOCATIONS

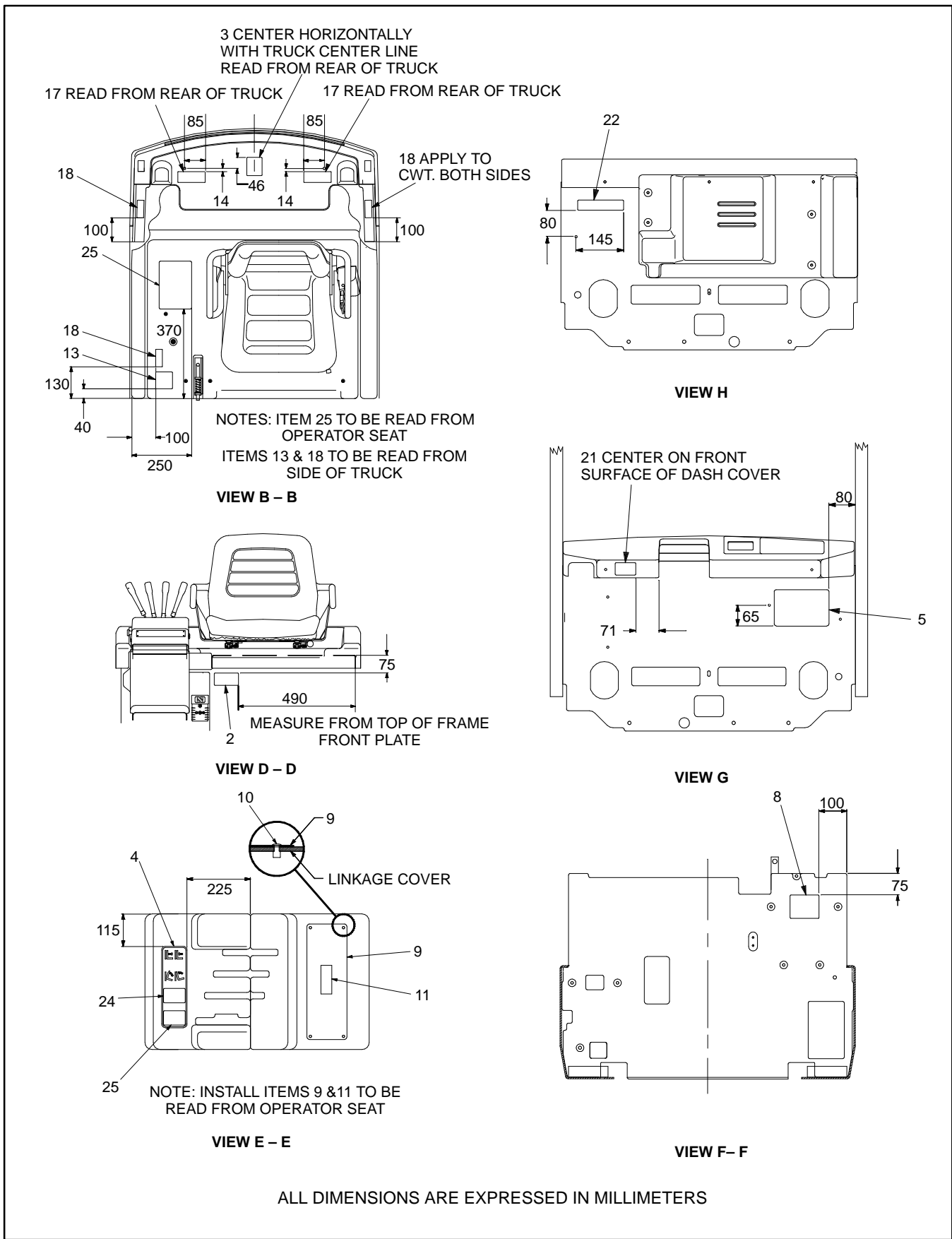


FIGURE 7 – Page 2 of 2 LABEL LOCATIONS


J30XMT TRUCK CAPACITY 3,000 lb (1600 kg) – WHEEL BASE 1169 mm (46 inches)								
MAXIMUM BATTERY COMPARTMENT SIZE			VOLTAGE	BATTERY SIZE			BATTERY WEIGHT	BATTERY SPACERS
WIDTH	LENGTH	HEIGHT		WIDTH MIN/MAX	LENGTH MIN/MAX	HEIGHT MAX	MIN/MAX	DIVISION
39 in 990 mm	16.7 in 425 mm	23.1 in 587 mm	36/48 STD	38.2/38.8 in 970/985 mm	14.7/16.4 in 373/415 mm	22.8 in 580 mm	1300/1650 lb 590/750 kg	2302559
		26.1 in 665 mm	36/48 OPT			25.8 in 655 mm	1800/2100 lb 820/955 kg	2302529
J35XMT TRUCK CAPACITY 3,500 lb (1800 kg) – WHEEL BASE 1385 mm (54.5 inches)								
MAXIMUM BATTERY COMPARTMENT SIZE			VOLTAGE	BATTERY SIZE			BATTERY WEIGHT	BATTERY SPACERS
WIDTH	LENGTH	HEIGHT		WIDTH MIN/MAX	LENGTH MIN/MAX	HEIGHT MAX	MIN/MAX	DIVISION
39 in 990 mm	25.2 in 640 mm	23.1 in 663 mm	36/48 STD	38.4/38.8 in 975/985 mm	23.5/24.9 in 597/630 mm	22.8 in 580 mm	2100/2600 lb 955/1180 kg	2303679
		26.1 in 663 mm	36/48 OPT			25.8 in 655 mm	2150/2650 lb 975/1205 kg	2310812
J40XMT TRUCK CAPACITY 4,000 lb (2000 kg) – WHEEL BASE 1385 mm (54.5 inches)								
MAXIMUM BATTERY COMPARTMENT SIZE			VOLTAGE	BATTERY SIZE			BATTERY WEIGHT	BATTERY SPACERS
WIDTH	LENGTH	HEIGHT		WIDTH MIN/MAX	LENGTH MIN/MAX	HEIGHT MAX	MIN/MAX	DIVISION
39 in 990 mm	25.2 in 640 mm	23.1 in 587 mm	36/48 STD	38.4/38.8 in 975/985 mm	23.5/24.9 in 597/630 mm	22.8 in 580 mm	2100/2600 lb 955/1180 kg	2309940
		26.1 in 665 mm	36/48 OPT			25.8 in 655 mm	2400/2900 lb 1090/1320 kg	23010812
 <b>WARNING:</b> The battery must fit the battery compartment so that the battery restraint system will operate correctly. Use the spacers designed by the Hyster Company to prevent the battery from moving more than 13 mm (0.5 in) in any horizontal direction.								
<b>NOTE:</b> *The optional battery compartment size is achieved by removing a 76.2 mm (3.0 in) counterweight platform from the standard compartment.								

TABLE 2 – BATTERY SIZE SPECIFICATIONS – TYPE: LEAD-ACID BATTERY

**1/16/95 – Fred**

The table and art following this has not been included in the latest printing of this section. The information will be required for the Hyster-Europe models.

**1/27/95 – Fred**

Completed decal info and making changes to text. Waiting for new counterweight drawing to be done by Herman. Also require info on whether there will be added weight in the battery compartment.

**3/22/95 – Fred**

Added overall for European models, corrected callouts, have been advised that the battery charts will change because of a short wheelbase being added European product line. Still require art for European product line.

**4/12/95 – Fred**

Copied complete SRM to establish a new SRM for the D160 models.

**4/13/95 – Fred**

Removed all art that had been added for European models.

**6/14/95 – Changed all XM reference callouts to XMT.**