

# ERP10-12-15RCF (A888) SERVICE MANUAL CONTENTS

SECTION	PART NUMBER	YRM NUMBER	REV DATE
FRAME.....	524175461	0100 YRM 0793	09/02
DC MOTOR MAINTENANCE.....	524158039	0620 YRM 0294	03/08
MASTER DRIVE UNIT (ZF).....	524175462	0630 YRM 0794	09/02
MASTER DRIVE UNIT (KORDEL).....	524175463	0630 YRM 0795	09/02
STEERING SYSTEM.....	524166836	1600 YRM 0485	07/03
STEERING SYSTEM.....	524175464	1600 YRM 0796	09/02
STEERING CONTROL UNIT.....	524175465	1600 YRM 0797	09/02
BRAKE SYSTEM.....	524175466	1800 YRM 0803	09/02
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TILT CYLINDERS.....	524150790	2100 YRM 0103	03/07
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SEVCON SC2126 MOTOR CONTROLLER.....	524175470	2200 YRM 0806	09/02
SEVCON TRACTION AND PUMP CONTROLLERS.....	524156985	2200 YRM 1014	11/01
INDUSTRIAL BATTERY.....	524158040	2240 YRM 0001	09/14
MAST-DESCRIPTION.....	524175471	4000 YRM 0222	09/02
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CAPACITIES AND SPECIFICATIONS.....	524175474	8000 YRM 0804	09/02
DIAGRAMS.....	524175475	8000 YRM 0805	02/09

Service information for Cummins diesel engines can be ordered through the Hyster Literature Distribution Center.

**PART NO. 524175460 (09/14)**

# 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 **YALE 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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This section is for the following models:

ERP10-12-15RCF [A888]

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## General

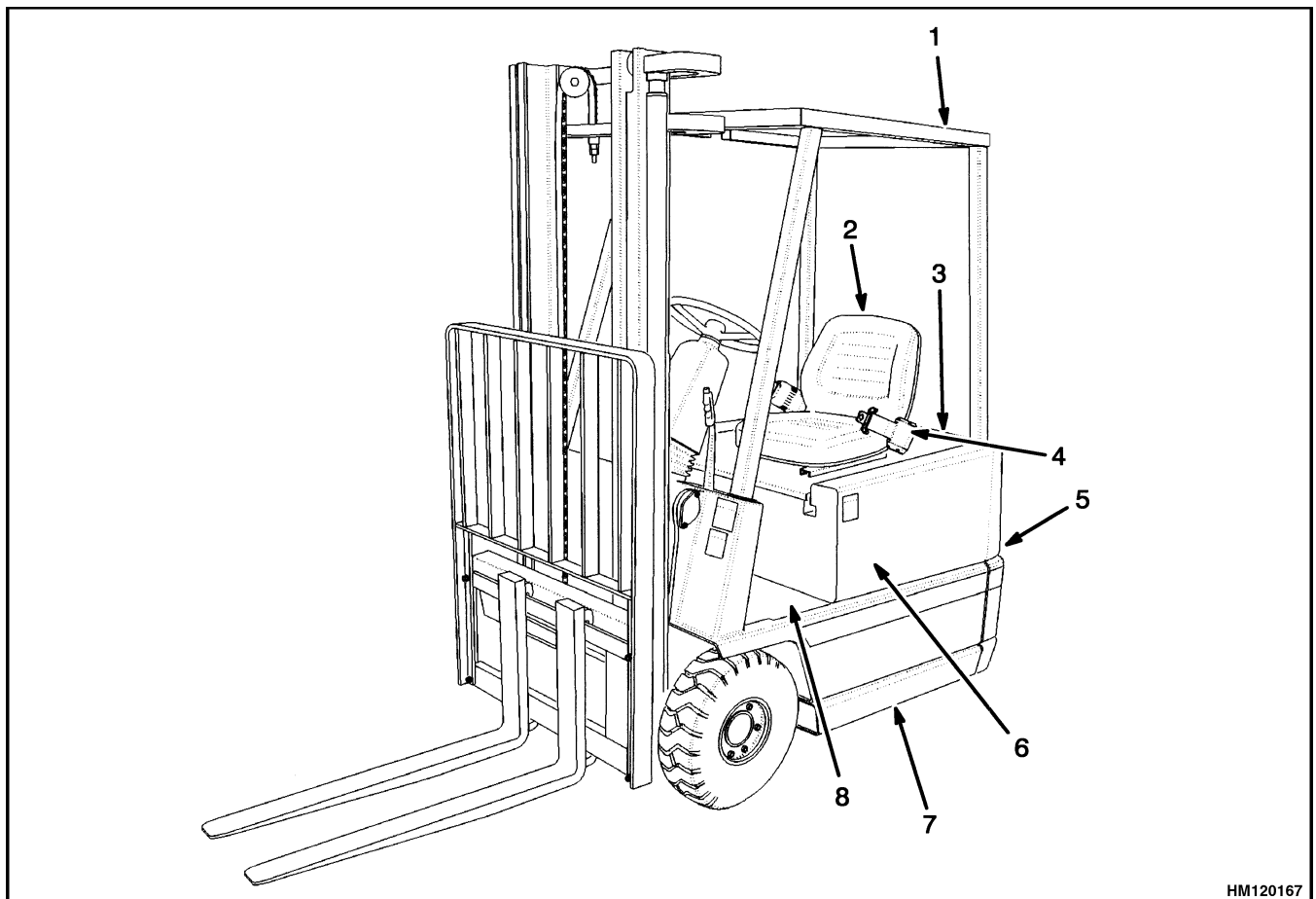
This section has a description and the service procedures for the parts of the frame. These parts include the counterweight assembly, overhead guard, hydraulic tank, access panels, and positions for decals.

## Description

The frame is a single weldment with mounts for the counterweight, overhead guard, mast and load wheels, and the master drive unit. See Figure 1 and Figure 3. The hydraulic tank is part of the frame. The hood panel is composed of two parts, a front and rear panel, that can be opened or removed for access to the battery compartment, electronic controller, and the traction motor on the master drive unit. Access panels on each side of the lift truck are removed by lifting them from the

frame. These panels give further access and protection to the battery.

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.



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1. OVERHEAD GUARD
2. SEAT ASSEMBLY
3. HOOD
4. OPERATOR RESTRAINT

5. COUNTERWEIGHT
6. LEFT SIDE PANEL (SHOWN)
7. FRAME
8. FLOOR PLATE

**Figure 1. Frame Parts**

The hydraulic pump motor and the hydraulic tank are under the floor plate in the operator compartment. This floor plate is held in position by tabs and can be removed to give access to hydraulic components. The

control valve is fastened to the front of the battery compartment. A cover protects the control valve and control linkage. The cover is fastened in position by machine screws.

## Overhead Guard Repair

### REMOVE



### 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.

1. Remove the battery as described in the section **Periodic Maintenance** 8000 YRM 798.
2. Remove the two capscrews that hold the rear supports of the overhead guard to the counterweight. Slots on either side of the counterweight permit access to the nuts and washers.
3. Remove the two capscrews that hold the two front supports of the overhead guard to the cowl.

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

### INSTALL

1. Use a lifting device or have another person give assistance to lift the overhead guard onto the lift truck.
2. Install and tighten the four capscrews, washers, and nuts that hold the overhead guard to the lift truck. Tighten the capscrews to 66 N•m (48 lbf ft).
3. Install the battery as described in the section **Periodic Maintenance** 8000 YRM 798.

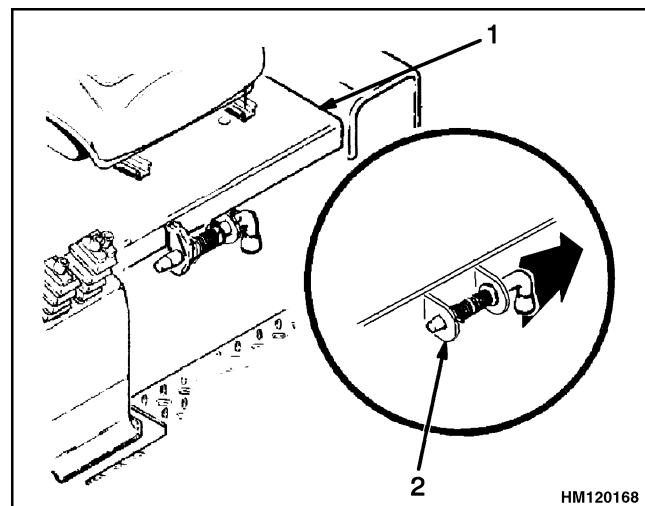
## Hood and Seat Assembly Repair

The hood panels are a cover for the battery, electronic controller, and traction motor, and are a battery restraint. The function of the battery restraint, when the hood panels are 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 hood panel locks the front panel to the frame for lift truck operation. See Figure 2. The sliding latch unlocks the front hood panel from the frame so that the hood can be raised to the open position for access to the battery.

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 front hood panel 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, do not operate the lift truck.

The rear hood panel can be removed by removing the two capscrews that hold the panel in place on the two brackets. See Figure 3. A handle to disconnect the battery is located to the right of the operator seat and toward the back of the front hood panel. 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 must be opened to reconnect the battery.



1. HOOD

2. LATCH

**Figure 2. Battery Restraint Latch**



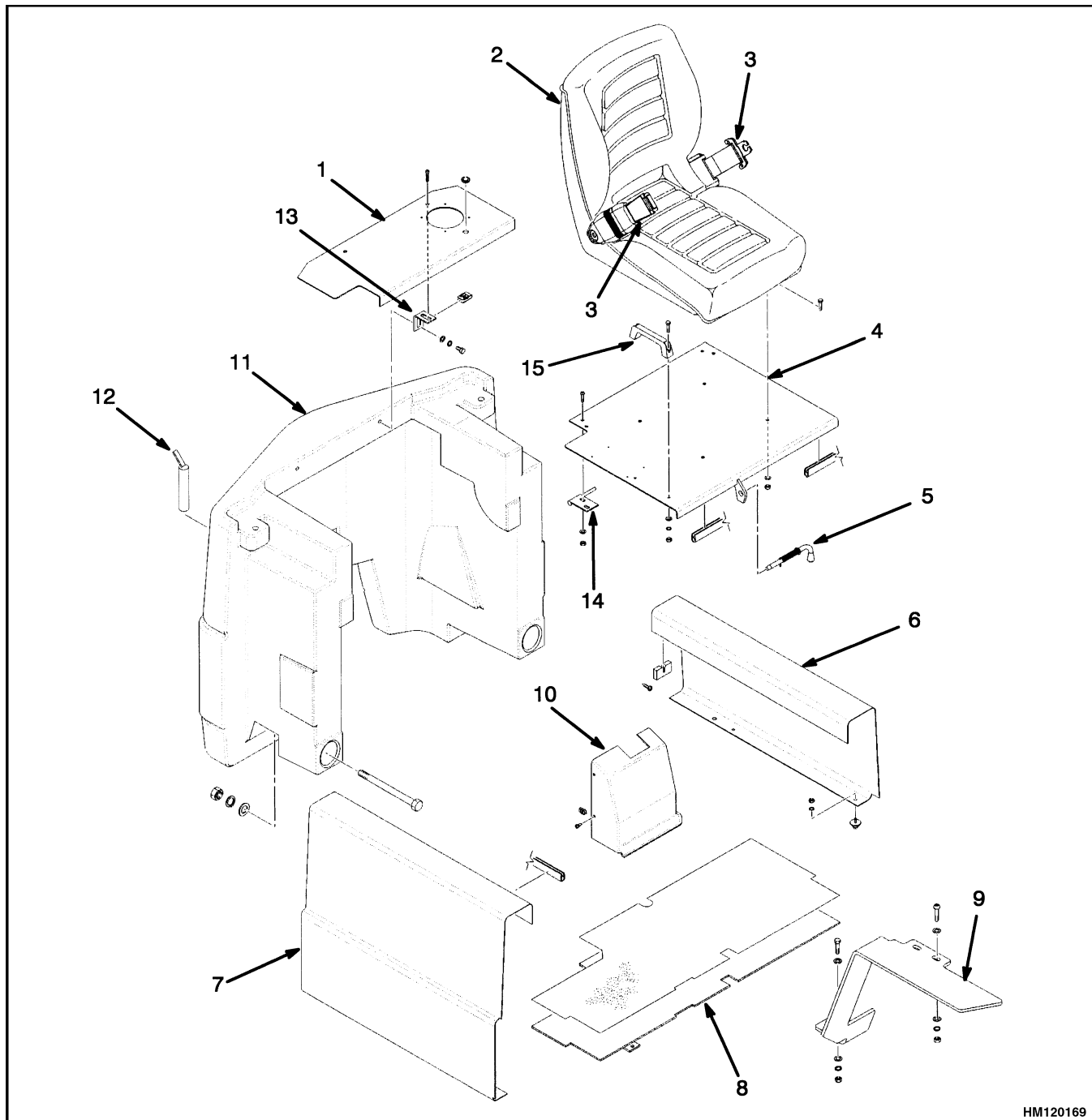
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|--|---|
| <ul style="list-style-type: none"> <li>1. REAR HOOD PANEL</li> <li>2. SEAT</li> <li>3. OPERATOR RESTRAINT</li> <li>4. FRONT HOOD PANEL</li> <li>5. LATCH</li> <li>6. LEFT ACCESS PANEL</li> <li>7. RIGHT ACCESS PANEL</li> <li>8. FLOOR PLATE</li> </ul> | <ul style="list-style-type: none"> <li>9. FENDER - (RIGHT SHOWN)</li> <li>10. VALVE COVER</li> <li>11. COUNTERWEIGHT</li> <li>12. PIN</li> <li>13. REAR HOOD PANEL BRACKET (1 OF 2 SHOWN)</li> <li>14. FRONT HOOD PANEL HINGE (1 OF 2 SHOWN)</li> <li>15. FRONT HOOD PANEL LIFT HANDLE</li> </ul> |
|--|---|

**Figure 3. Hood and Seat Assembly**

The hood, seat belt, 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** and the section **Periodic Maintenance** 8000 YRM 798.

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.

The optional semi-suspension seat assembly includes an adjustable back support. A knob handle on the lower right side of the seat allows the operator to tilt and adjust the back support portion of the seat to a maximum angle of 3 degrees forward and 12 degrees backward. A weight adjustment control lever is on the right side of the seat, on the back support portion. The seat can be adjusted to support a weight range of 60 to 120 kg (132 to 264 lb).

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.

## REMOVE

1. Disconnect the battery connector. See Figure 3.
2. Disconnect the electrical connector to the seat switch. Remove the four capscrews that fasten the

seat base to the hood. Lift the seat assembly from the hood.

3. Remove the capscrews that fasten the front hood panel to the hinges on the frame. Lift the panel from the lift truck.
4. Remove the capscrews that fasten the rear hood panel to the brackets on the counterweight. Lift the panel from the lift truck.

## INSTALL

1. Install the rear hood panel by aligning the two holes on the panel to the holes on the brackets which are located on the counterweight. See Figure 3. Insert and tighten the two capscrews that join the rear hood panel to the counterweight.
2. Place the front hood panel onto the lift truck. Be sure the holes on the panel line up with the holes on the hinges found on the frame. Insert and tighten the capscrews to secure the front hood panel to the truck frame.
3. Place the seat on the front hood panel and align the holes. Set the four capscrews into the holes and tighten as needed. Connect the electrical connector to the seat switch.
4. Connect the battery connector.

## Counterweight Repair

### REMOVE



#### 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.**

1. Remove the battery. See the section **Periodic Maintenance** 8000 YRM 798 for removal of the battery.
2. Remove the overhead guard as described in Overhead Guard Repair.
3. Remove the rear hood cover and battery connector mounting plate assembly.



#### WARNING

**The counterweight is very heavy. Make sure the sling, chain, eyebolts, and crane or lifting device has the capacity to lift the counterweight. See Table 1.**

4. Install eyebolts in the holes where the overhead guard fastens to the counterweight. See Figure 4. 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. See Table 1.

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