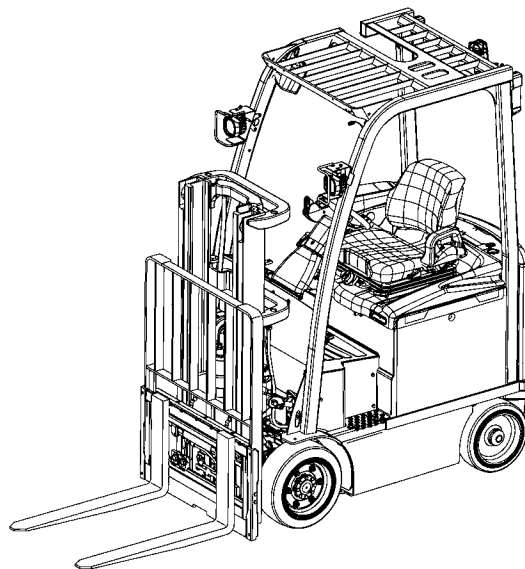


# **DIAGNOSTIC TROUBLESHOOTING MANUAL**

**ERC22-35VG (ERC045-070VG) [A968]; ERC16-20VA  
(ERC030-040VA) [A969]; ERP22-35VL (ERP045-070VL)  
[A976]; ERP16-20VF (ERP030-040VF) [A955];  
ERP40-50VM (ERP080-100VM) [A985]; ERP15-20VT  
(ERP030-040VT) [G807]; ERP13VC, ERP15VC (ERP25VC,  
ERP30VC) [B888]; ERC40-55VH, ERC50VHS  
(ERC80-120VH, ERC100VHS) [A938]**



# SAFETY PRECAUTIONS

## TROUBLESHOOTING PROCEDURES

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Yale® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- 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!**

**On the lift truck, the WARNING symbol and word are on orange background. The CAUTION symbol and word are on yellow background.**

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This section is for the following models:

ERC22-35VG (ERC045-070VG) [A968];  
 ERC16-20VA (ERC030-040VA) [A969];  
 ERP22-35VL (ERP045-070VL) [A976];  
 ERP16-20VF (ERP030-040VF) [A955];  
 ERP40-50VM (ERP080-100VM) [A985];  
 ERP15-20VT (ERP030-040VT) [G807];  
 ERP13VC, ERP15VC (ERP25VC, ERP30VC) [B888];  
 ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS)  
 [A938]

## How To Use This Troubleshooting Manual

### GENERAL INSTRUCTIONS AND SAFETY INFORMATION



#### WARNING

**DO NOT** add to or modify the lift truck. Any modification that affects the safe operation of the truck cannot be undertaken without written authorization of the Yale company.

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 rating capacity.



#### WARNING

The technician must be aware of, and follow, all general safety precautions that are published in the Operating Manual and that are posted as Safety Decals on and in the lift truck.

Before starting, the technician should be familiar with certain policies, requirements, and instructions used in the troubleshooting procedures. Using the troubleshooting procedures correctly helps the technician to perform the procedure safely and prevents damage to the machine and support equipment.

### HOW TO USE DIAGNOSTIC TROUBLESHOOTING MANUAL

#### Manual Layout:

**Sections:** The manual is divided into eight sections, each representing a major system, functional area, or specific operation on the lift truck.

- 9010 – Operational Diagnostic Procedures
- 9025 – Traction Motor
- 9030 – Electrical System

- 9035 – Drive Axle/Unit
- 9050 – Hydraulic Systems
- 9060 – Operator's Station
- 9070 – Front End (Mast) and Chassis
- 9080 – Supplementary Data

**Groups:** The sections of the manual are further subdivided into groups, where applicable, that identify specific functions, operating criteria, or maintenance tasks.

- 01 – Introduction to the Troubleshooting Manual
- 03 – General Maintenance/Diagnostic Data
- 05 – Operational Checkout
- 10 – Principles of Operation
- 20 – Diagnostic Trouble Codes
- 30 – Observed Symptoms
- 33 – Observed Symptoms – Gear Pump
- 43 – Test and Adjustments – Gear Pump
- 50 – Abbreviation and Acronyms
- 55 – Icons and Graphics
- 70 – Fault Mode Indicator Reference

For Diagnostic Trouble Code listings, see Electrical System, General Maintenance and Diagnostic Data, Diagnostic Trouble Codes, Page 9030-03-6.

**NOTE:** Not all groups will appear in all sections.

**Supplementary Data:** The supplementary data section of the manual includes information and data that apply to many sections or groups and is stored here for access by all users of the manual. This data includes, but is not limited to:

- Abbreviations and Acronyms
- Special Tools List
- Fault Mode Indication Reference Table
- Supplier Specification Data

### GENERAL INSTRUCTIONS

1. Become familiar with the content, layout, and access provisions of data in this manual. This will improve your efficiency and decrease the time required to resolve the problems.
2. Use all sections of the manual for relevant information on the subject system.
3. Once you begin a troubleshooting procedure, do not skip steps.
4. If you reach the end of a procedure without resolving the problem and you are not directed to another procedure contact Resident Service Engineering through the Contact Management System.
5. Do not limit yourself, remember to apply your own experience and knowledge to assist in resolving the problems, but do not compromise safety in doing so.

6. Most of the cross-reference data in the manual will be electronically linked for rapid and easy access. Use the links wherever the cursor highlights an item as a linkable option. As an example of this linking option:

Assume that during a procedure or test, it is necessary to refer to a different section of manual, in this case, the Light Circuit Check in the Operational Checkout part of this manual.

The instruction would read, "refer to, or see" followed by text identifying what the reference is (for hard-copy, paper manual use). When the cursor is placed over the text, it will then indicate that it is active, and left-clicking will direct the system to take you directly to that reference.

Try it using the process below:

See Operational Diagnostic Procedures, Operational Checkout, Page 9010-05-5.

When you have reviewed the reference document or manual, and need to return to the troubleshooting procedure, the "BACK" button will permit you to do this.

**Yale** 

# SECTION 9000

# FRONT MATTER

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## SERVICE MANUAL LOOKUP

The following service manuals are referenced throughout this manual. Be sure to have the correct service manual for your lift truck model.

### AC Motor Repair 0620YRM1385

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM) (A985)
- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

### AC Motor Repair 0620YRM1515

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

### Brake System 1800YRM1332

- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

### Brake System 1800YRM1359

- ERC22-35VG (ERC045-070VG) (A968)

### Brake System 1800YRM1438

- ERC16-20VA (ERC030-040VA) (A969)

### Brake System 1800YRM1518

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

### Capacities and Specifications 8000YRM1340

- ERP15-20VT (ERP030-040VL) (G807)

### Capacities And Specifications 8000YRM1374

- ERC22-35VG (ERC045-070VG) (A968)

### Capacities And Specifications 8000YRM1375

- ERP22-35VL (ERP045-070VL) (A976)

### Capacities and Specifications 8000YRM1376

- ERP16-20VF (ERP30-40VF) (A955)

### Capacities and Specifications 8000YRM1443

- ERC16-20VA (ERC030-040VA) (A969)

### Capacities and Specifications 8000YRM1527

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

### Capacities and Specifications 8000YRM1542

- ERP40-50VM (ERP080-100VM)(A985)

### Capacities and Specifications 8000YRM1578

- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

### Cylinder Repair (Mast S/N A270-72, A551, A555, A559, A626, A627, A751-52, B551, B555, B586-91, B749-54, C661-63, C665, D507-09, D515, D562-64, E509, E564) 2100YRM1382

- ERC22-35VG (ERC045-070VG) (A968)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)
- ERP40-50VM (ERP080-100VM) (A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

### Cylinder Repair (Mast S/N B551, B555, B559) 2100YRM1440

- ERC16-20VA (ERC030-040VA) (A969)

### Cylinder Repair (Mast S/N A270, A271, A272, C661, C662, C663) 2100YRM1521

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

### Diagrams 8000YRM1341

- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

### Diagrams 8000YRM1384

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM) (A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

**Diagrams** 8000YRM1528

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

**Drive Axle Repair** 1300YRM1575

- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

**Drive Axle, Speed Reducer, and Differential** 1300YRM1366

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)

**Electrical System** 2200YRM1337

- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

**Electrical System** 2200YRM1369

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM)(A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

**Electrical System** 2200YRM1524

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

**Frame** 0100YRM1329

- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

**Frame** 0100YRM1342

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM) (A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

**Frame** 0100YRM1514

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

**Hydraulic System** 1900YRM1333

- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

**Hydraulic System** 1900YRM1367

- ERC22-35VG (ERC045-070VG) (A968)
- ERC16-20VA (ERC030-040VA) (A969)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM) (A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)

**Hydraulic System** 1900YRM1519

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

**Hydraulic Cleanliness Procedures** 1900YRM1620

**ALL LIFT TRUCK MODELS**

**Industrial Battery** 2240YRM0001

**ALL LIFT TRUCK MODELS**

**Load Axle** 1300YRM1516

- ERP13-15VC (ERP25VC, ERP30VC) (B888)

**Main Control Valves** 2000YRM1334

- ERC22-35VG (ERC045-070VG) (A968)
- ERP22-35VL (ERP045-070VL) (A976)
- ERP40-50VM (ERP080-100VM) (A985)
- ERC40-55VH, ERC50VHS (ERC80-120VH, ERC100VHS) (A938)
- ERP15-20VT (ERP030-040VL) (G807)
- ERP16-20VF (ERP30-40VF) (A955)

**Main Control Valves** 2000YRM1439

- ERC16-20VA (ERC030-040VA) (A969)

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