

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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ORGANIZATIONAL MAINTENANCE MANUAL

TRUCK, LIFT, FORK, ELECTRIC

SOLID RUBBER TIRES

4000 POUND CAPACITY

ARMY MODEL MHE-196

BAKER MODEL FTD-040-EE

FSN 3930-709-6342 (100-IN. LIFT)

FSN 3930-709-6341 (130-IN. LIFT)

FSN 3930-709-6358 (144-IN. LIFT)

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HEADQUARTERS, DEPARTMENT OF THE ARMY  
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TECHNICAL MANUAL

No. 10-3930-257-20



HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 23 April 1965

**Organizational Maintenance Manual**  
**TRUCK, LIFT, FORK, ELECTRIC**  
**SOLID RUBBER TIRES**  
**4,000-POUND CAPACITY**  
**BAKER MODEL FTD-040-EE, ARMY MODEL MHE-196**  
**FSN 3930-709-6342 (100 INCH LIFT)**  
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# CHAPTER 1 INTRODUCTION

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## Section I. GENERAL

### 1. Scope

These instructions are published for the use of personnel responsible for the organizational maintenance of Truck, Lift, Fork, Electric, Solid Rubber-Tired Wheels, 4,000-Pound Capacity Baker Model FTD-040-EE, Army Model MHE-196, Federal Stock No. 3930-709-6342 (100 inch lift), Federal Stock No. 3930-709-6341 (130 inch lift), and Federal Stock No. 3930-709-6358 (144 inch lift).

### 2. Appendixes

Appendix I is a list of current references. Appendix II contains the maintenance allocation chart. The repair parts and special tools list authorized for use at organizational level is published in TM 103930-257-20P.

### 3. Maintenance Forms, Records, and Reports

The maintenance forms, records, and reports to be used in the organizational maintenance of this truck are listed and described in TM 38-750.

### 4. Reporting of Equipment Manual Improvements

The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed using pencil, pen, or typewriter and forwarded direct to Commanding General, U.S. Army Mobility Equipment Center, ATTN: SMOME-MMP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120

### 5. Orientation

Throughout this manual, the terms *right*, *left*, *front*, and *rear* indicate directions from the viewpoint of the operator sitting in the seat of the truck.

## Section II. DESCRIPTION AND DATA

### 6. Description

a. *General.* Refer to TM 10-3930-257-10 for a more general description of the truck.

b. *Truck.* Power for travel, lifting and steering is by a 36 volt battery. The travel system includes a motor, motor controls, and a power axle assembly to provide four speeds forward and reverse. The truck may be equipped with any one of three lift heights. Lifting mechanisms are similar except for certain dimensions for each lift height. The lifting mechanism consists of an electric motor, pump, controls, reservoir, lift and tilt cylinders, mast assembly, and forks. Hydraulic service brakes, and both hand and automatic parking brakes are used. If motor is reversed while

accelerator is depressed, circuit to travel motor is broken. If motor is reversed while traveling in first or in second speed, vehicle will slow down, stop and then reverse.

c. *Power Axle and Motor Assembly.* The power axle and motor assembly consists of travel motor, coupling, power axle with differential, axle shafts, final drive gears, and wheels. Power is transmitted directly from travel motor through a bevel gear and pinion in the axle, through the axle drive shafts, final drive gear, and wheels.

d. *Control System.* The travel motor power and vehicle speed and direction are regulated

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by a system which includes a contactor, accelerating switch, directional switch, and resistor providing four speeds forward or reverse. A manually operated directional lever on the directional switch operates the accelerating switch with a circuit made and broken by the contactor. A foot accelerator operates through the accelerating switch to select, in sequence, any one of four speeds. Resistors are used in the travel motor armature circuit to control speed of truck.

e. *Steering System.* The steering system includes a recirculating ball type power steering gear mounted at the front of truck, connecting linkage, steering bellcrank, tie rods, and steering knuckles mounted on trailing axle.

f. *Brake System.* The brake system consists of a mechanical parking brake and a hydraulic foot brake. The mechanical brake operates on a drum on the travel motor armature shaft. This brake is applied either by a handle on the steering column, or automatically through spring action as the driver rises from the seat. The hydraulic brake is a conventional automotive system effective only on the front (drive) wheels.

g. *Mast Assembly.* The mast assembly consists of four main assemblies as follows:

- (1) *Outer upright assembly.* The outer upright assembly is a welded one piece assembly that is mounted on the frame assembly and encloses hoist cylinder and inner upright assembly.
- (2) *Inner upright assembly.* The inner upright assembly is a welded one piece assembly that is mounted within outer upright assembly. The hoist cylinder, mounted in the base of outer upright assembly is secured through the top of inner upright assembly. The inner upright assembly is raised or lowered by action of the hoist cylinder.
- (3) *Crosshead assembly.* The crosshead assembly is mounted over the hoist cylinder. Chains are attached to the lift carriage assembly, roll over the crosshead assembly and are secured to the hoist cylinder. As the cylinder rises,

the crosshead assembly rises, tightening the chains, and raising the lift carriage assembly.

- (4) *Lift carriage assembly.* The lift carriage assembly rides on four rollers within the inner upright assembly, which in turn slides up and down inside of the outer upright channels. Two forks are mounted on the front of the lift carriage assembly for handling of loads.

h. *Lift Hydraulic System.* The hydraulic system consists of a reservoir, pump, control valve, hoist and tilt cylinder, and hydraulic hoses. The hoist cylinder raises the lift carriage and forks by hydraulic pressure supplied by the pump, and lowers them by gravity.

i. *Lift Cylinder.* A compound lift is used on this vehicle. The lift carriage rises to the top of the outer upright before the inner upright together with the lift carriage move upward in the second stage. This is achieved by a dual hydraulic hoist cylinder assembly with two pistons working in sequence.

j. *Tilt Cylinders.* The tilt cylinders are double-acting, the uprights are tilted in and out by hydraulic pressure.

k. *Electrical System.* The electrical system is a two-wire, no-ground type. The battery is connected into the circuit by means of a removable connector. The charging connection is also made through this connector. The weight of the operator in driver's seat closes circuit to the accelerating switch by an interlock switch. Travel control is through the accelerating switch, with circuit made and broken by contactor. The direction of travel is selected by the directional switch lever on the steering gear post. Resistors in the motor armature circuit control speed of truck. The stop and taillight is enclosed in a guard on the rear of truck. The headlight, mounted on the right side of the hoist upright, is controlled by a toggle switch on the instrument housing.

l. *Battery.* The 36-volt battery may be the lead-acid type or nickel-iron-alkaline type. It will weigh approximately 2,300 pounds. It is

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located in the battery compartment and connected into the electrical circuit of the truck by a battery connector. The battery compartment dimensions are 32 15/16 inches long by 39 1/2 inches wide by 25 inches high.

*m. Accelerating Switch.* The accelerating switch used for controlling truck speed is a pedal operated pilot device to control magnetic contactors which in turn, control the motor of the truck. It provides four individual speeds and has time delay acceleration and plugging control. The accelerating switch is located under the operator's floor plate.

*n. Directional Switch.* The directional switch selects forward or reverse operation of the travel motor. This switch is a three-position, manually-operated, two-circuit pilot device. The direction switch is located on the steering gear post.

*o. Contactors.* The magnetic contactors make and break the circuits in response to related manual and automatic controls. These contactors are mounted in the electrical equipment box, inside the cowl.

*p. Travel Motor.* The travel motor, under the operator's floor plate, is a series wound, direct-current electric motor. Connected to the power axle, it drives truck forward or backward.

*q. Hydraulic Pump Motor.* The pump motor for the upright hydraulic system is controlled by a switch which closes pump motor contactor. The switch is operated by either lift or tilt controls, starting motor when lever is moved about one-quarter of its travel toward lift or tilt positions. The switch is opened when lever is returned to neutral position. The pump motor is a series wound, direct-current motor and operates hydraulic pump.

*r. Steering Pump Motor.* The steering pump motor is controlled by a switch which closes circuit when operator is in driver's seat. It is in continuous operation while operator is seated.

*s. Resistors.* The fixed, tapped resistor which controls truck speed, is located in an enclosed box on the left side of truck. The travel motor controls select as much resistance as required by connecting sections of the resistor in series with the travel motor armature circuit.

*t. Hourmeter.* The hourmeter is the only instrument used on this truck. This meter automatically records number of hours truck has been in operation.

## 7. Tabulated Data

### *a. Electrical System.*

Type..... Type EE, spark enclosed, two-wire, ungrounded.

Voltage ..... 36 volts dc

Battery ..... Government furnished equipment

Battery compartment dimensions ..... 32 15/16 in. long, 39 1/2 in. wide, 25 in. high

Traveling motor:

No load draw..... 90 amps

Full load draw ..... 110 amps

Hydraulic pump motor:

No load draw..... 115 amps

Full load draw ..... 225 amps

Power steering pump motor:

No load draw..... 18 amps

Full load draw ..... 25 amps

### *b. Manufacturer's Identification.*

Nomenclature..... Truck, lift, fork, electric

Manufacturer..... Baker Industrial Trucks, Division of Otis Elevator Company.

Capacity..... 4,000 lbs

Model..... FTD-040-EE

Contract numbers..... DSA 019092-MP302, and DSA-4-020841-MP302.

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