

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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OPERATOR AND ORGANIZATIONAL  
MAINTENANCE MANUAL  
FOR  
CRANE, SHOVEL, TRUCK MOUNTED  
20 TON, 3/4 CU. YD., G.E.D., 6 x 6  
(HARNISCHFEGER MODEL M320T)  
FSN 3810-8614088

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TECHNICAL MANUAL

No. 5-3810-288-12

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DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 26 February 1970

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This manual supersedes that portion of TM 5-3810-288-15, 8 August 1969, that pertains to operator and organizational maintenance.

## PART ONE CRANE UPPER

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### CHAPTER 1 INTRODUCTION

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#### Section I. GENERAL

##### 1-1. Scope

a. These instructions are published for the use of the personnel to whom the Harnischfeger truck crane Model M320T is issued. They provide information on the operation, lubrication, and preventive maintenance services of the equipment, accessories, components, and attachments.

b. This manual is divided into two parts. Part One is primarily instructions for the operation of the upper (revolving frame portion) of the machine. Part Two is primarily for the operation of the lower (carrier portion) of the machine. Operators and maintenance personnel should read the instructions provided in both parts of this manual before operating or servicing the equipment.

c. Appendix A is a list of publications applicable to this manual. Appendix B is the Basic Issue Items authorized for use by the operator.

Appendix C is the Maintenance Allocation Chart.

d. Numbers in parentheses on illustrations

indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

##### 1-2. Forms and Records

a. DA Forms and records used for equipment maintenance will be only those prescribed by TM 38-750, Army Equipment Record Procedures.

b. Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U.S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Blvd. St. Louis, Mo. 63120.

#### Section II. DESCRIPTION AND DATA

##### 1-3. Description.

a. *General.* The Harnischfeger Model M320T truck crane is designed for universal operation, and may be converted for use as a crane (fig. 1-1 and 1-2), clamshell (fig. 1-3), dragline (fig. 1-4), piledriver (fig. 1-5), backhoe (fig. 1-6), or shovel (fig. 1-7). The frontend attachments are described, and detailed instructions for the operation of each attachment are given Chapter 2 of this manual. The military load class is E-29.

b. *Crane.* The crane includes a revolving frame, rotating machinery, gasoline engine, and an operator's cab. Lugs are provided at the front of the revolving frame, to which the frontend attachments are installed. A counter-weight is installed at the rear of the revolving frame. The carrier on which the crane is mounted is described in paragraph 5-3 of this manual.

c. *Crane attachment.* The crane boom is used with a hook block to lift, swing, and position heavy loads. It is used also in conjunction with the clamshell and dragline buckets, and the piledriver. The clamshell bucket (fig. 1-3) or dragline bucket (fig. 1-4) may be installed on the crane boom for excavating or moving loose material. Boom inserts are used to increase the boom length, or to extend the working range of the crane.

d. *Piledriver attachment.* The piledriver attachment (fig. 1-5) is used in conjunction with the crane boom and is used for driving piling into the ground in the construction of foundations, piers, and bases. The piledriver is attached to the crane boom point and is supported at the bottom by a catwalk.

e. *Backhoe attachment.* The backhoe attachment (fig. 1-6) is designed to work below the

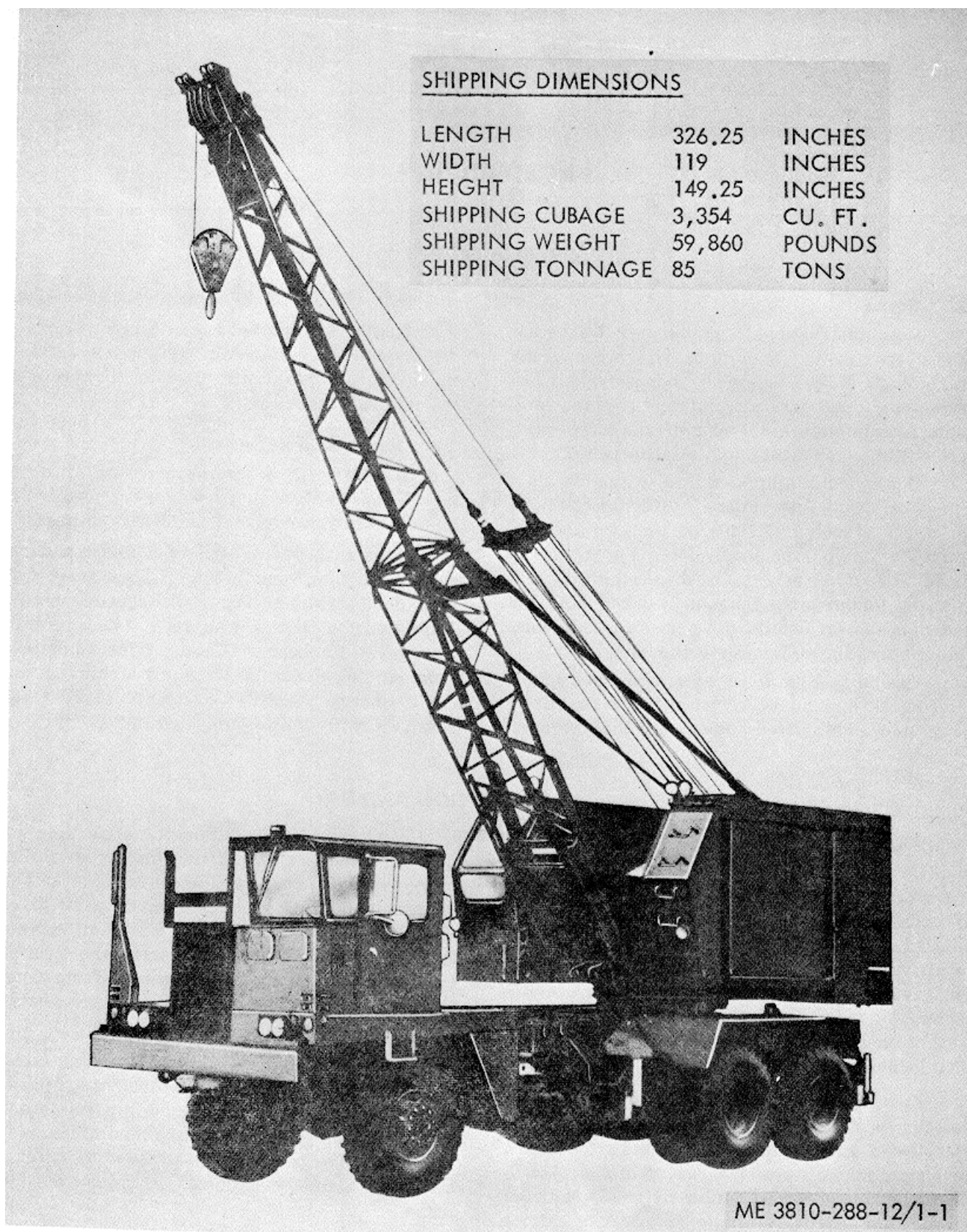
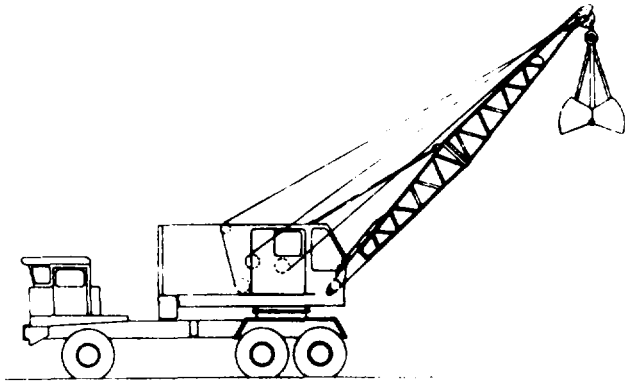


Figure 1-1. Truck crane, Model M320T, with crane attachment, front three-quarter view and shipping dimensions.

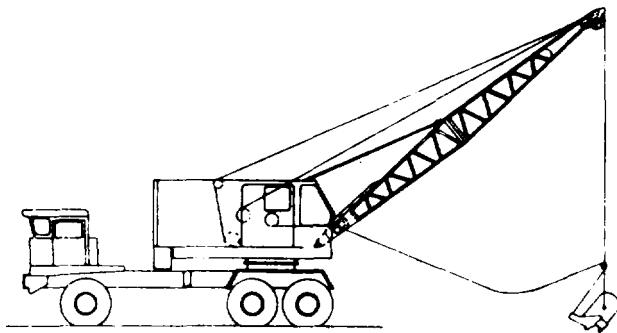


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*Figure 1-2. Truck crane, Model M320T, with crane attachment, rear three-quarter view.*



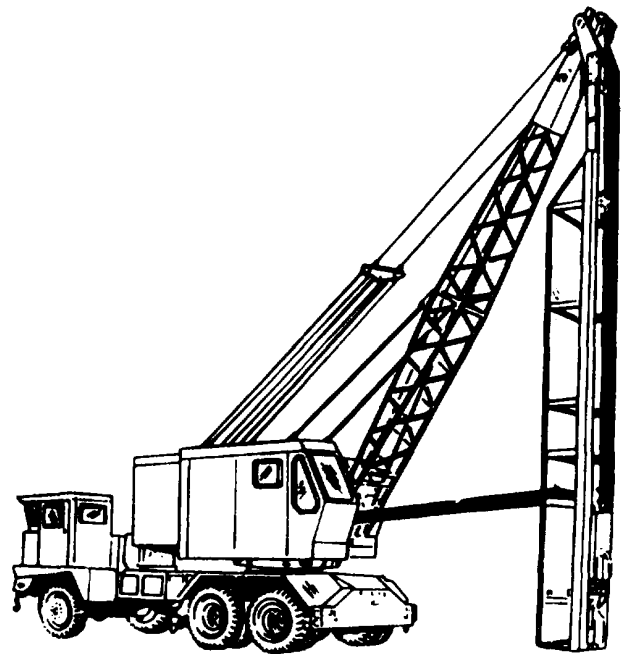
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*Figure 1-3. Chainshell attachment.**Figure 1-4. Dragline attachment*

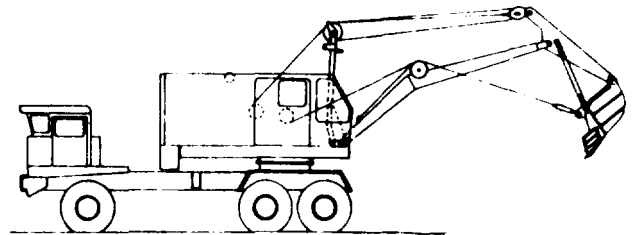
ground level by pulling the dipper toward the machine, and is used for digging trenches, ditches, and similar excavations.

*f. Shovel attachment.* The shovel attachment (fig. 1-7) is designed to work above ground level by lifting the dipper upward and outward, and is used for digging into the side of a hill or bank.

*g Engine.* Power for operating the truck crane and its various attachments is supplied by a cylinder, overhead valve, 4-cycle, Waukesha, Model 136-GKC, gasoline Engine (fig. 1-8), mounted at the rear of the revolving frame.



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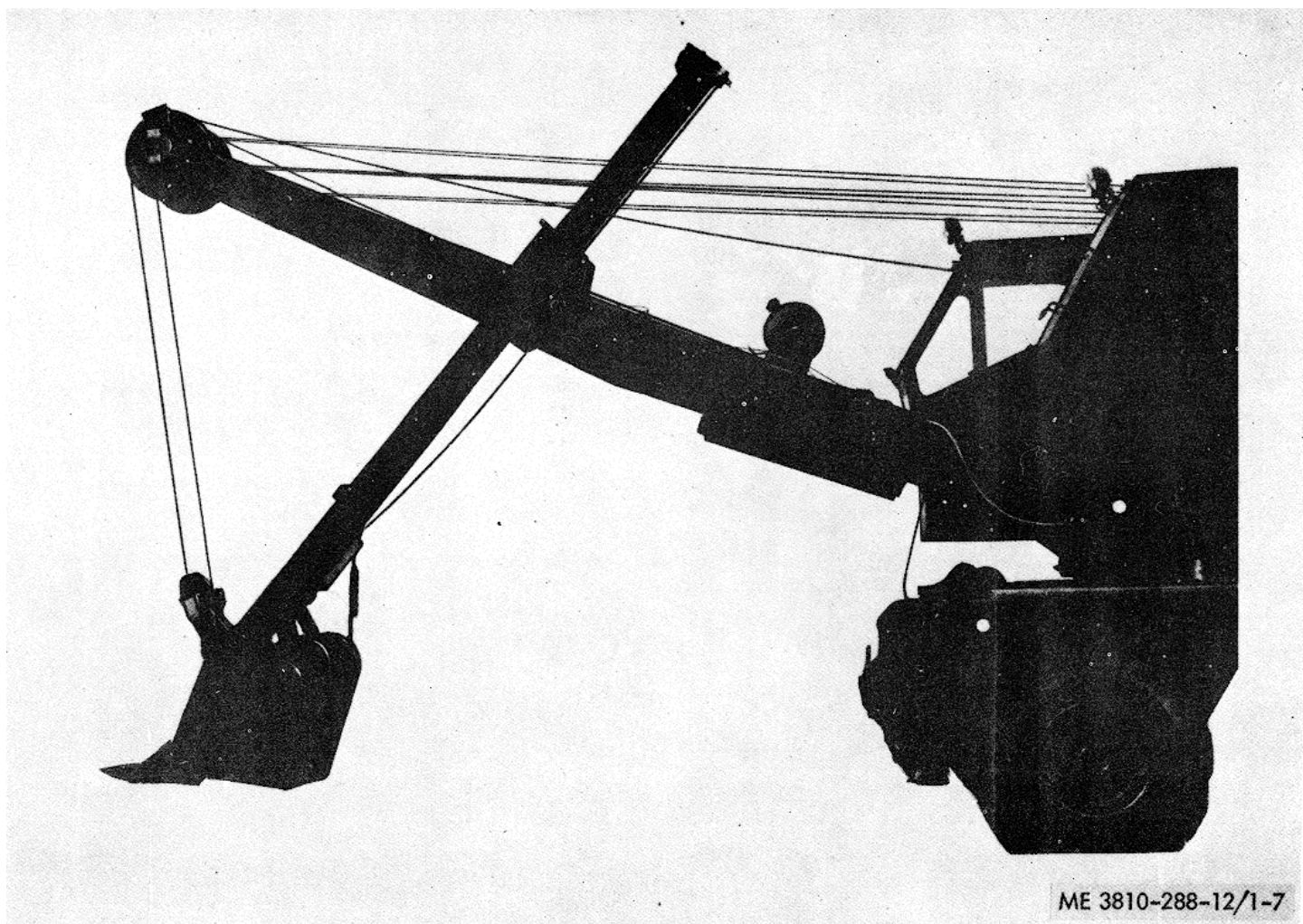
*Figure 1-5. Piledriver attachment.*

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*Figure 1-6. Backhoe attachment.*

#### **1-4. Identification and Tabulated Data**

*a. Identification.* Figure 1-9 shows the location of all major instruction and identification plates. Each such plate is numbered and illustrated as a portion of this illustration.



*Figure 1-7. Shovel attachment.*

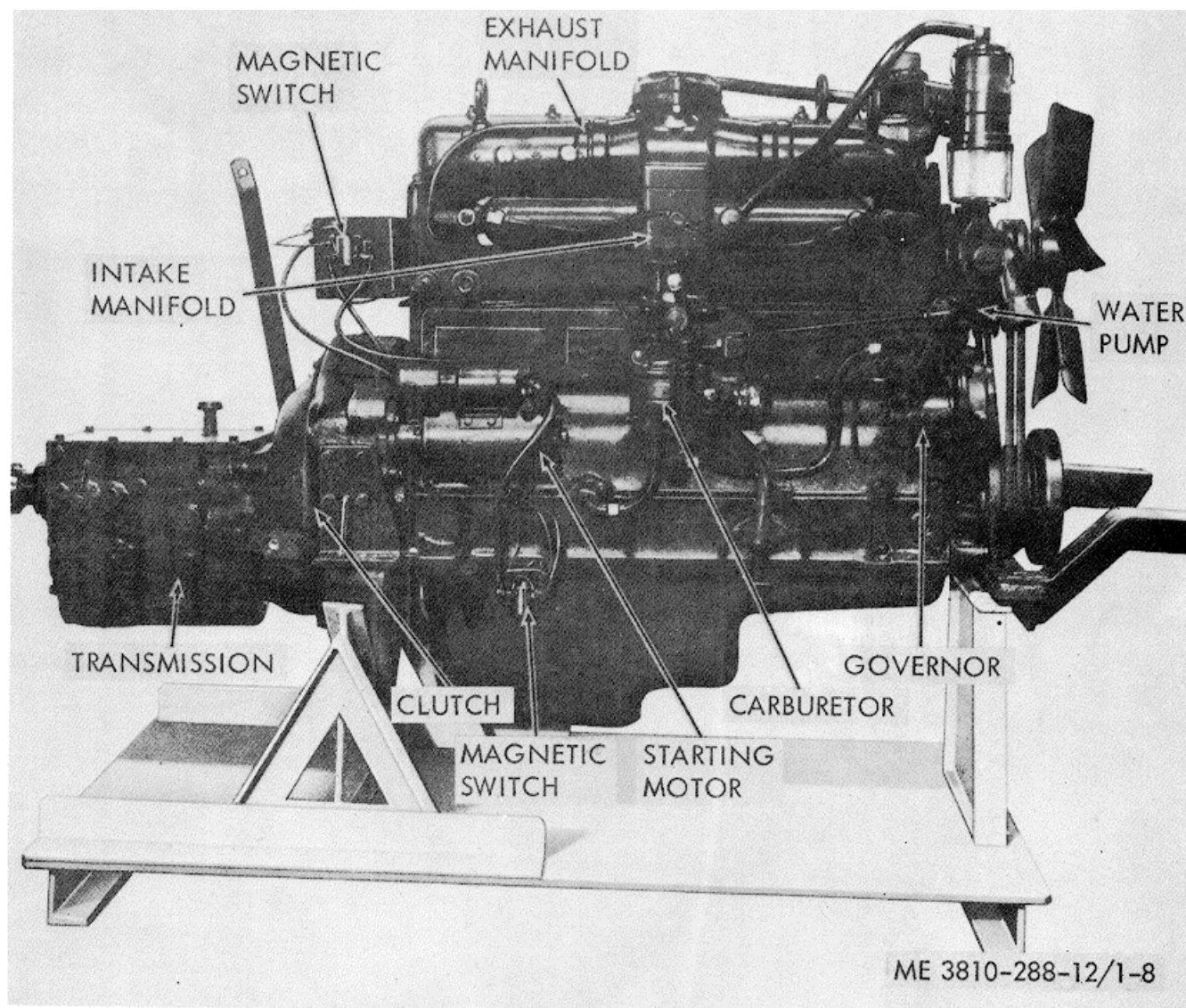
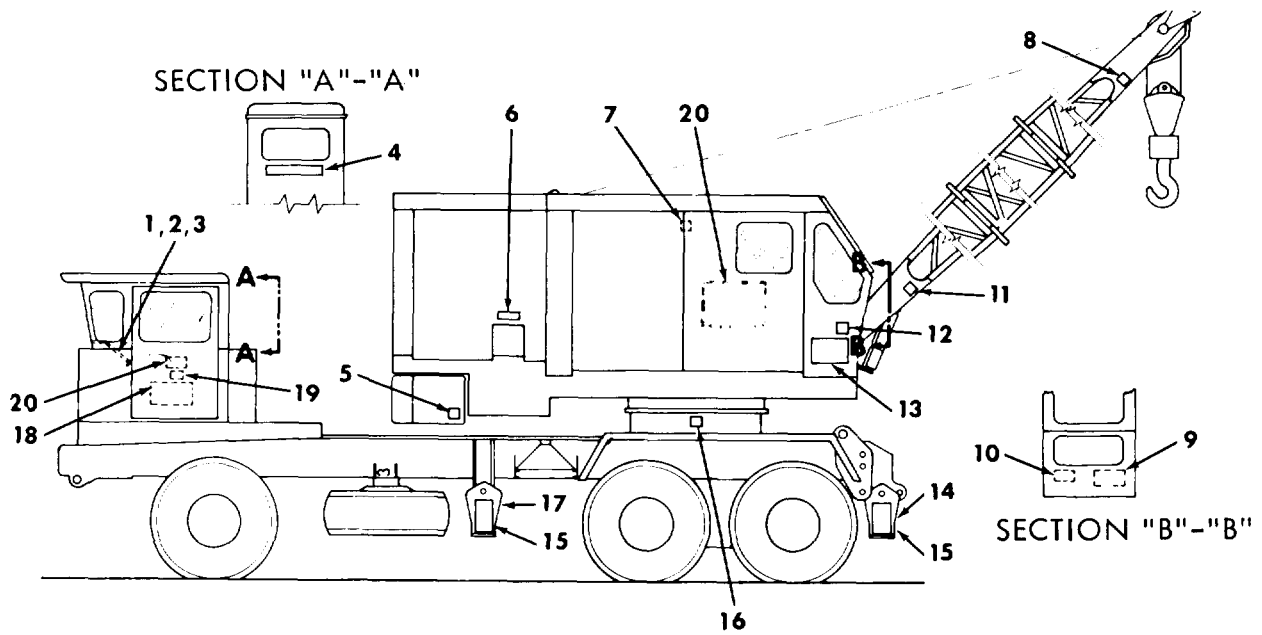


Figure 1-8. Crane engine, with transmission.



**TRANSMISSION SHIFT INSTRUCTIONS**

**UPSHIFT:** START WITH RANGE CONTROL BUTTON DOWN  
SHIFT LOW-2-3-4-5 THEN PULL BUTTON UP  
SHIFT 6-7-8-9

**DOWNSHIFT:** SHIFT 9-8-7-6 THEN PUSH BUTTON DOWN  
SHIFT 5-4-3-2

**CAUTION:** DO NOT DOWN SHIFT INTO LOWER RANGE  
AT SPEEDS ABOVE 20 M.P.H.  
DO NOT SHIFT INTO LOW OR REVERSE  
WHEN VEHICLE IS MOVING

322987

REF. 1

**GEAR SHIFT LEVER POSITIONS**

| MAIN TRANSMISSION |                 | TRANSFER CASE | FRONT AXLE |
|-------------------|-----------------|---------------|------------|
| 2 <sup>ND</sup>   | 4 <sup>TH</sup> | • LOW         | • OUT      |
| 6 <sup>TH</sup>   | 8 <sup>TH</sup> | ○ NEUTRAL     | • IN       |
| 3 <sup>RD</sup>   | 5 <sup>TH</sup> | • HIGH        |            |
| 7 <sup>TH</sup>   | 9 <sup>TH</sup> |               |            |
|                   | 1 <sup>ST</sup> |               |            |

CLARK 600 ED      TIMKEN T-226      322903

REF. 2

**PARK ABORT CONTROL**

**OPERATION**

1. RELEASE ALL BRAKES,
2. MINIMUM OPERATING AIR PRESSURE 75 P.S.I.,
3. PUSH CONTROL BUTTON DOWN FIRMLY AND RELEASE.

VALVE AUTOMATICALLY RESETS

REF. 3

**WARNING - SUPPORT BOOM BY CABLE WHEN TRAVELING**

COVER THIS PLATE WHEN PAINTING EQUIPMENT

REF. 4

CAP. 1.25 QT.  
HYDRAULIC FLUID,  
NONPETROLEUM BASE,  
AUTOMOTIVE GRADE,  
PER SPEC MIL-H-13910

REF. 7

COUNTERWEIGHT  
WEIGHT 5280 LBS

REF. 5

**FUEL TANK**

**CAPACITY 50 US GAL.**

GASOLINE, AUTOMOTIVE COMBAT,  
91 OCTANE, PER SPEC MIL-G-3056 TYPE II

REF. 6

**- PARKING INSTRUCTIONS -**

NORMAL SYSTEM PRESSURE - PLACE LEVER IN "PARK." WHEN LOW PRESSURE SIGNAL COMES ON DO NOT MOVE LEVER.

IF LOW PRESSURE SIGNAL IS ON BEFORE PARKING - PLACE LEVER IN "EMERGENCY."

TO RELEASE PARKING BRAKES OR RECHARGE SYSTEM - PLACE LEVER IN "EMERGENCY."

CHARGE TO 100 P.S.I. GAGE PRESSURE, THEN MOVE LEVER TO RELEASE.

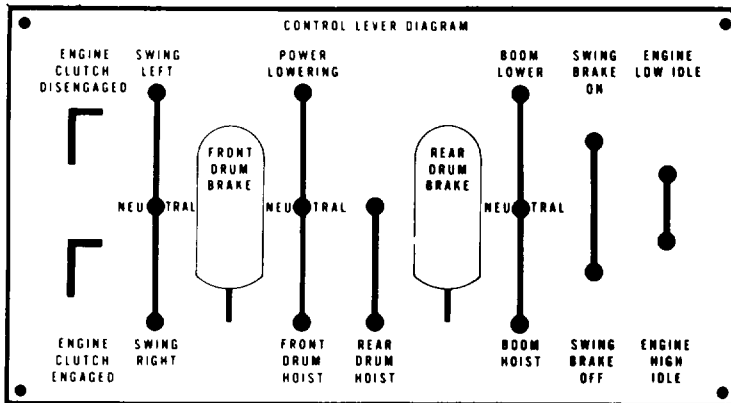
REF. 3

BOOM UPPER SECTION  
WITH BOOM POINT SHEAVES  
WEIGHT 1320 LBS

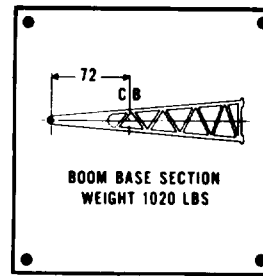
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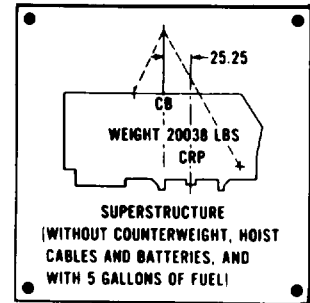
Figure 1-9. Identification and instruction plates (Sheet 1 of 4)



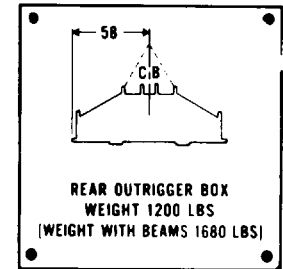
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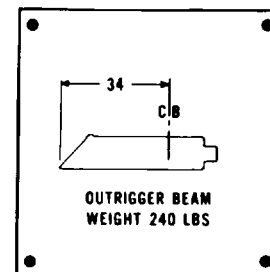
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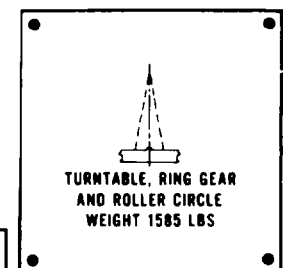
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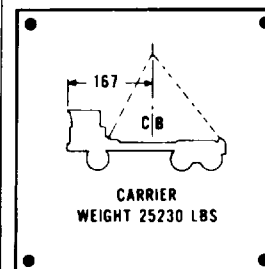
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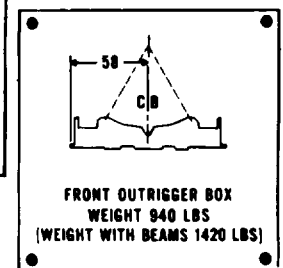
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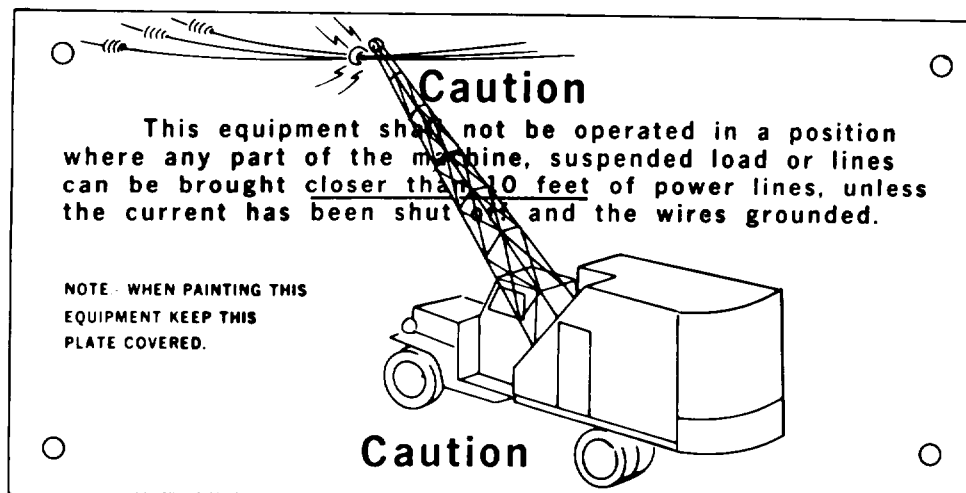
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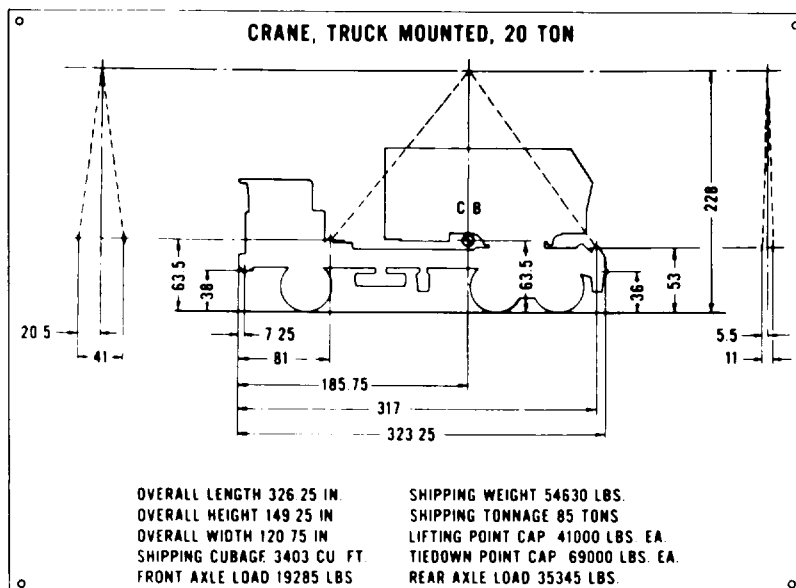
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REF. 19



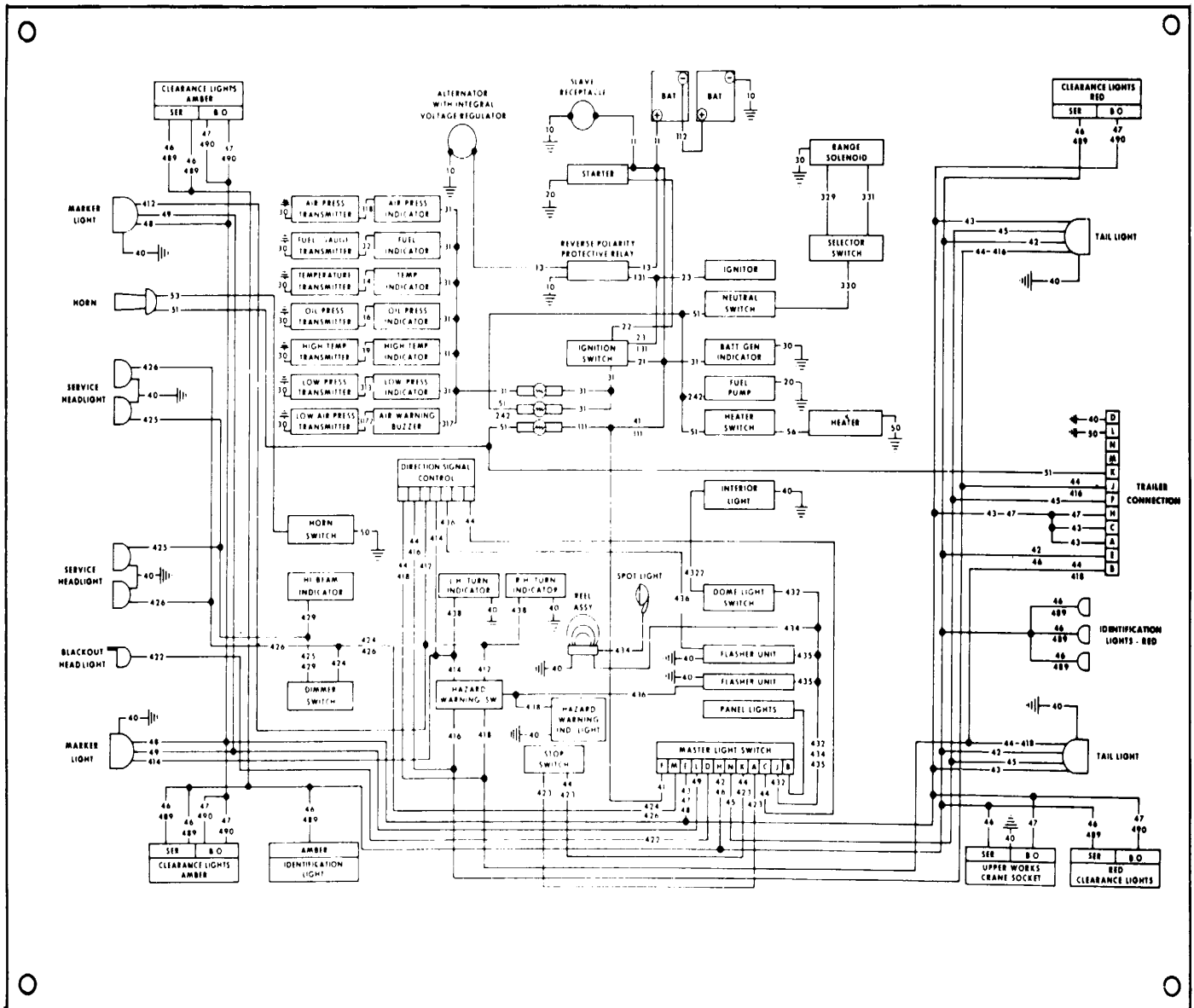
REF. 10



REF. 13

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Figure 1-9. Identification and instruction plates (Sheet 2 of 4).



REF. 18

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Figure 1-9. Identification and Instruction plates (Sheet 3 of 4)