DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL

CRANE-SHOVEL, BASIC UNIT, TRUCK MOUNTED: 20 TON 3/4 CU. YD., GASOLINE ENGINE, 6x6 (AMERICAN HOIST AND DERRICK MODELS) MODEL 2360 (NON-WINTERIZED) FSN 3810-989-0505 MODEL W2360 (WINTERIZED) FSN 3810-989-0506

This copy is a reprint which includes current pages from Changes 1,2,4 and 5.

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1964

TECHNICAL MANUAL
No. 5-3810-227-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *10 December 1964*

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual is published for the use of the personnel to whom the American Hoist and Derrick Company Model 2360 (non-winterized) and Model W2360 (winterized) Crane-Shovel are issued. Chapters 1 through 3 provide information on the operation, preventive maintenance services, and organizational maintenance of the equipment, accessories, components, and attachments. Chapter 4 provides information for direct and general support and depot maintenance. Also included are descriptions of main units and their functions in relationship to other components.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the maintenance allocation chart. Appendix III contains the list of basic issue items and maintenance and operating supplies authorized the operator of this equipment. The Organizational Maintenance Repair Parts and Special Tools are listed in TM 5-3810-227-20P. The Direct and General Support and Depot Maintenance Repair Parts and Special Tools

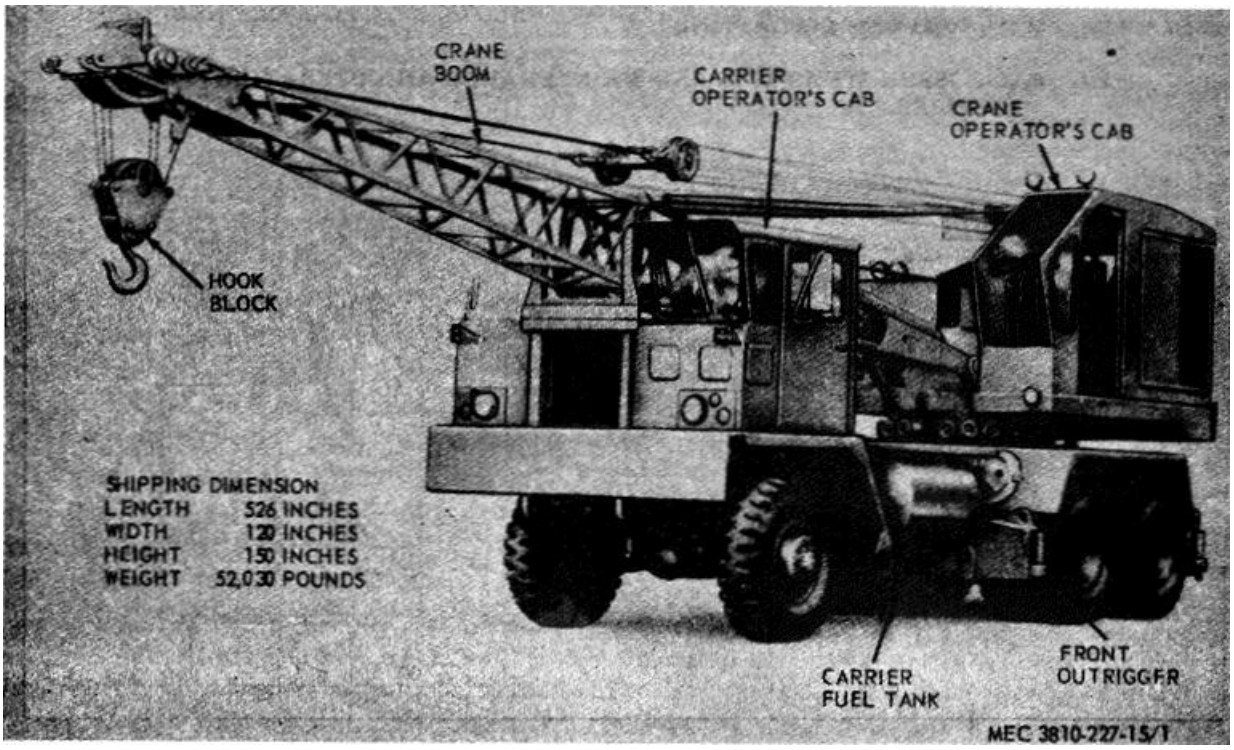

Figure 1. Crane-shovel, left, three-quarter front view and shipping dimensions.

are listed in TM 5-3810-227-35P. The levels of maintenance in all cases are governed by the maintenance allocation chart.

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

d. 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 in triplicate using pencil, pen, typewriter. The original and one copy will be forwarded direct to: Commanding Officer, U.S. Army Mobility Equipment Center, ATTN: SMOME-MMP, Post Office Drawer 58, St. Louis, Mo. 63166.

e. Report all equipment improvement recommendations as prescribed by TM 38-750.

2. Record and Report Forms

a. DA Form 2258 (Depreservation Guide of Engineer Equipment).

b. For other record and report forms applicable to the operator, crew, organizational, direct and general support, and depot maintenance, refer to TM 38-750.

Note

Applicable forms, excluding Standard Form 46 which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. Description

a. Crane-Shovel. The American Hoist and Derrick Company Model 2360 non-winterized and Model W2360 winterized Crane-Shovel (figs. 1 and 2) is a gasoline engine-driven, 3/4-cubic yard machine, truck mounted, and is designed for use with a crane boom. This crane-shovel is powered by a Continental Model BS-415, 6-cylinder, internal-combustion, gasoline engine. The crane, upon which are mounted the engine, upper machinery, and gantry, revolves around the center pin on rollers. In this manual, the terms left and right are used with respect to the operator's seat. "Front" is the end of the crane to which the boom is installed. "Rear" is the end of the crane which contains the engine and the counterweight. The crane cab is equipped with a heater. Winterized unit has an additional gasoline-fired heater that heats the engine and its components.

b. Carrier. The carrier is a heavy-duty, 6x6 American Hoist and Derrick Company Unit, and is powered by a Continental Model SS-749, six-cylinder, overhead-valve, internal-combustion engine. The carrier is equipped with power steering, air-brakes, five speed transmission, two-speed transfer case, and six-wheel drive. The carrier is equipped with two outriggers on each side to improve stability. The engine and the cab are mounted side-by-side on the front of the carrier. On winterized units there are two heaters. The engine heater provides heat to the engine and its components, and the cab heater provides heat to the cab and the battery box defrosters.

4. Identification and Tabulated Data

The crane-shovel and carrier have twenty-six identification data and/or instruction plates.

a. Identification.

(1) *Corps of Engineers carrier identification plates.* This plate is located to the left side of the carrier main frame behind the operator's cab. It contains the nomenclature for the carrier, make, model, and serial number, and also the make, model, and serial number of the engine.

(2) *Transmission and transfer case shifting warning plate.* This plate is located to the right, on the inside of the carrier cab. It contains precautionary measures for proper operation.

(3) *Transportation data instruction plate*. The transportation plate is mounted on the left side of the carrier main frame. It gives data on the length, height, width, and weight of the crane-shovel and carrier. It also shows

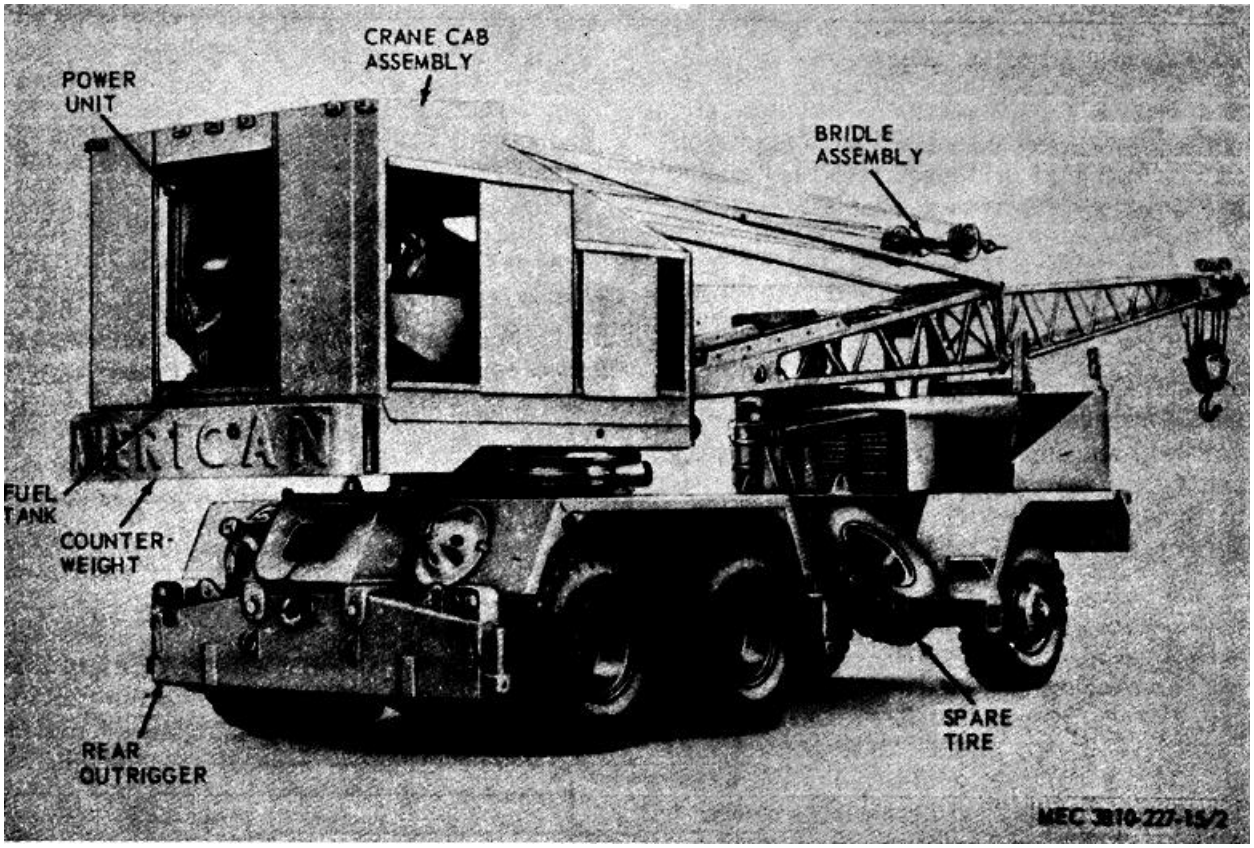

Figure 2. Crane-shovel, right, three-quarter rear view.

the proper position of the crane-shovel lifting slings.

(4) *Corps of Engineers crane identification plate*. The Corps of Engineers identification plate is located on the front of the revolving superstructure frame of the crane. It gives the crane nomenclature, Federal stock number, manufacturer, model, serial number, date of manufacture, contract number, and U.S.A. registration number. It also gives the make, model, and serial number of the crane engine.

(5) *Crane control lever instruction plate*. The crane control lever instruction plate is located inside the cab to the right of the operator's controls. It gives instruction on the use of levers, pedals, and other controls.

(6) *Crane lifting capacities, boom angle and height instruction plate*. The crane lifting capacities instruction plate is located in the operator's cab next to the instrument panel. It gives the data on the length of boom and radius, with and without outriggers and the distance in feet from center of rotation.

(7) *Power line caution plate*. The power line caution plate is located in the operator's cab to the right of the operator's controls of the crane. It cautions operator to keep boom away from power lines.

(8) *Brake caution plate. The brake caution plate is located to* the right, inside the operator's cab of the carrier. It gives instruction on the use of the brakes.

(9) *Corps of Engineers boom extension identification plate*. The Corps of Engineers identification plate is located on the left side of the boom extension assembly. It gives the nomenclature,

Federal Stock Number, contract number, date of manufacture, and the size and type of unit with which the boom extension may be-used.

(10) *Corps of Engineers 30 foot boom identification plate.* The Corps of Engineers identification plate is located on the left side of the boom near the lower end. It gives the nomenclature, Federal stock number, contract number, date of manufacture.

(11) *Boom caution plate.* The boom caution plate is located on the outside of the back of the carrier operator's cab. It gives instructions on supporting the boom with cables when traveling.

(12) *Transmission and transfer case shift plate.* The transfer shift plate is mounted on the dash of the carrier cab. It shows shifting position of the transfer case shift lever.

(13) *Front axle instruction plate.* The front axle instruction plate is located on instrument panel. It shows position of the declutch control.

(14) *Boom hoist jaw clutch* instruction plate. The boom hoist jaw clutch instruction plate is located in the crane operator's cab, behind and to the right of the operator's seat. It shows shifting position of the jaw clutch lever.

(15) *Engine clutch instruction plate.* The engine clutch instruction plate is located in the crane operator's cab behind, and to the right of, the operator's seat. It shows shifting position of the engine clutch lever.

(16) *Boom hoist ratchet (safety pawl) instruction plate*. The boom hoist ratchet (safety pawl) instruction plate is located in the crane operator's cab to the right of the operator's seat. It shows shifting position of the safety pawl (boom hoist ratchet) control lever.

(17) *Carrier data plate.* The carrier plate is located to the left side of the carrier main frame behind the operator's cab. It shows nominal carrier weight and dimensions for locating the center of gravity.

(18) *Crane (upper works) data plate.* The crane (upper works) data plate is located on the left side at the front of the revolving superstructure from of the crane. It shows nominal crane weight and dimensions for locating the center of gravity.

(19) *Counterweight data plate*. The counter-weight data plate is located on the back of the counterweight at the rear of the crane. It shows nominal weight and dimensions for locating the center of gravity.

(20) *Inner boom data plate.* The inner boom data plate is located on the left side of the boom near the lower end. It shows nominal weight and dimensions for locating the center of gravity.

(21) *Outer boom data plate.* The outer boom data plate is located on the left side of the outer boom near the sheave point. It shows nominal weight of the outer boom and dimensions for locating the center of gravity.

(22) *Boom extension data plate.* The boom extension data plate is located on the left side of the boom extension near the midpoint. It shows nominal weight of the boom extension and dimensions for locating the center of gravity.

(23) *Rear outrigger beam data plate.* There are two rear outrigger beam data plates. One located on the outer end of each beam. They show nominal weight and dimensions for locating the center of gravity.

(24) *Forward outrigger beam data plate.* There are two forward outrigger beam data plates. One located on the outer end of each beam. They show nominal weight and dimensions for locating the center of gravity.

(25) *Rear outrigger box data plate.* The rear outrigger box data plate is located at the left on the back side of the out-

rigger box. It shows nominal weight and dimensions for locating the center of gravity.

(26) *Forward outrigger box data plate*. The forward outrigger box data plate is located at the left on the front, or forward, side of the outrigger box. It shows nominal weight and dimensions for locating the center of gravity.

5. Differences in Models

This manual covers the American Hoist and Derrick Company Model 2360 non-winterized and Model W2360 Winterized Crane-Shovel mounted on the carrier.

6. Tabulated Data

a. Carrier.

(1) *General.*

Manufacturer	American Hoist and Derrick Co.
Designed use	Carrier for crane

(2) *Engine.*

Manufacturer	Continental
Model number	SS 749
Type	Gasoline
Number of Cylinders	6
Firing Order	1-5-3-6-2-4
Spark plug gap (Standard plug)	0.025 in. (inches)
Spark plug gap (Resistor plug)	0.035 in. (inches)
Governed speed	2800 rpm (revolutions per minute)
Horsepower	232 hp. (horsepower) at 2800 rpm
Cycle	4
Cooling	Liquid
Fan belt deflection	1/4 to 3/4 in.
Bore	5-3/8 in. (inches)
Stroke	5 1/2 in.
Total displacement	749 cu. in. (cubic inch)
Rotation at flywheel end	Counterclockwise
Clutch adjustment	Adjust to contact

(3) *Starting motor.*

Make	Delco-Remy
Model number	1113143
Volts	24

(4) *Battery-charging generator.*

Make	Delco-Remy
Model	1117478
Volts	24

(5) *Generator regulator.*

Make	Delco-Remy
Model	1118558
Volts	24

(6) *Distributor.*

Make	Delco-Remy
Model	1111656
Volts	24

(7) *Air cleaner.*

Make	Donaldson
Model	KAXOO-0379
Type	Oil Bath

(8) *Lubrication oil filter.*

Make	AC Spark Plug Division
Model	6664398
Cartridge	60361

(9) *Battery.*

Make	Gould
Type	Dry charge (MS35000-3)
Volts	12

(10) *Personnel heater.*

Manufacturer	Perfection
Model	Ord No. 8682958
Volts	24
Type of Control	Manual

(11) *Capacities.*

Engine crankcase	22 qt (quarts)
Engine oil filters (2)	2 qt ea (each)
Engine air cleaner	4 qt
Fuel tank	100 gal (gallons)
Radiator	46 qt
Transmission	12 qt (8 qt front, 4 qt rear)
Transfer case	2 1/2 qt
Front axle	7 qt
Rear axle (2)	12 qt ea

b. Crane.

(1) *General.*

Manufacturer	American Hoist and Derrick Co.
Designed use	Crane and shovel

(2) *Engine.*

Manufacturer	Continental Motors Corp.
Model Number	BS 415
Type	Gasoline
Serial numbers	20-001 through 20-500
Number of Cylinders	6
Firing order	1-5-3-6-2-4
Spark plug gap (Standard plug)	0.025 in.
Spark plug gap (Resistor plug	0.035 in.
Governed speed	1800 rpm
Horsepower	78 at 1,800 rpm
Cooling	Liquid cooled
Fan belt deflection	1/2 to 3/4 in.
Bore	4 1/4 inches
Stroke	4 7/8 inches
Clutch Adjustment	Adjust to contact

(3) *Starting motor.*

Make	Delco-Remy
Model	1113116
Volts	4

(4) *Battery-charging generator*.

Make ..... Autolite
Model GKG-480 1-ST
Volts 24

(5) *Generator regulator*.

Make ..... Autolite
Model VBU-4001-U-UT
Volts 24

(6) *Distributor*.

Make ..... Delco-Remy
Model 1111675
Volts 24

(7) *Air cleaner*.

Make ..... Donaldson
Model KAXOO-0377
Type ..... Oil Bath

(8) *Lubrication oil filter*.

Make ..... Fram
Model F31PL
Cartridge U501L-404

(9) *Battery*.

Make ..... Gould
Type ..... Dry Charge (MS 35000-3)
Volts 12

(10) *Capacities*.

Engine Crankcase ..... 12 qt
Oil Filters (2) ..... 1 qt ea
Air Cleaner ..... 2 qt
Fuel tank ..... 50 gal
Radiator ..... 28 qt
Main drive chain case ..... 2 qt
Hydraulic control cylinders ..... 2 qt ea
Air compressor (winterized unit only) ..... 1/4 qt

(11) *Personnel heater*.

Make ..... Perfection
Model ..... Ord. No. 8682953
Volts 24

c. Adjustments.

(1) *Carrier valve-adjustment*.

Tappet clearance:
Intake ..... 0.020 in.
Exhaust ..... 0.024 in.

(2) *Crane valve adjustment*.

Tappet clearance:
Intake ..... 0.017 in.
Exhaust ..... 0.022 In.

(3) *Distributor point adjustment*.

Points (Carrier and crane engine) ..... 0.020 in.

(4) *Spark plug adjustment*.

Carrier engine (Standard plug) ..... 0.025 in.
Carrier engine (Resistor plug) ..... 0.085 in.
Crane engine (Standard plug) ..... 0.025 in.
Crane engine (Resistor plug) ..... 0.085 in.

(5) *Generator regulator adjustment*.

(a) Mechanical adjustments.

Cutout relay air gap ..... 0.048 in.
Contact points ..... 0.035 in.
Voltage regulator airgap ..... 0.084 in.

(b) Electrical adjustments.

Cutout relay closing voltage ..... 26 volts
Voltage regulator opening voltage ..... 29.2 volts
Current regulator maximum amperage
40 amp (amperes)

d. Nut and Bolt Torque Data. The nut and bolt torque wrench tension is a general guide to indicate foot-pounds of torque to be applied to various sizes of common hardware.

Diameter in inches	*Foot-pounds*
3/8	60-70
7/16	75-85
1/2	95-105
9/16	125-135
5/8	150-160
11/16	195-200
3/4	210-230
13/16	230-250
7/8	245-275
1	285-315
1 1/8	325-350

e. Wiring Diagrams. See figure 3.

f. Dimensions.

Overall length (carrier with counterweight to rear) ..... 299.5 in.
Overall width (carrier) ..... 120 in.
Overall height (carrier) ..... 150 in.
Carrier frame height (top of frame to ground) ..... 57 3/4 in.
Carrier wheel base ..... 184 in.
Carrier turning radius ..... 450 in.
Crane-shovel overall length (less boom) ..... 342 in.
Crane-shovel overall length (w/30 ft. boom) .. 526 in.
Shipping cubage (carrier and crane with counterweight to rear) ..... 3562.5 cubic feet
Shipping cubage (30 ft boom) ..... 285 cubic feet
Shipping cubage (10 ft, boom insert) .... 90 cubic feet
Total crane-shovel gross weight ..... 52,030 pounds

g. Cable Specification.

Crane boom, standard 30 foot:
Boom hoist cable ..... 1/2 in. dia. (diameter), 6x9 right regular lay, 240 ft lg (long)
Primary hoist cable ..... 1/2 in. dia., 6x19 right regular lay, 360 ft lg
Secondary hoist cable ..... 1/2 in., dia, 6x19 left regular lay, 360 ft lg

Note.

For each additional 10 feet of boom, add 10 feet to hoist and drag cable lengths. Add pendant cables as required for various lengths of extensions.