TECHNICAL MANUAL

ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING SUPPLEMENTAL OPERATING, MAINTENANCE AND REPAIR PARTS INSTRUCTIONS FOR

40 TON CRANE CRAWLER MOUNTED

HARNISHCFEGER CORPORATION MODEL 5060

NSN 3810-01-145-8288

HEADQUARTERS DEPARTMENT OF THE ARMY

13 AUGUST 1984

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Technical Manual

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DEPARTMENT OF THE ARMY
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FOR

40-TON CRANE
CRAWLER MOUNTED

HARNISCHFEGER CORPORATION
MODEL 5060

NSN 3810-01-145-8288

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual, direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

This technical manual is an authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 25-30, The Army Integrated Publishing and Printing Program. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

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INTRODUCTION

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SECTION I

INTRODUCTION

SCOPE

This manual provides maintenance personnel with information and instructions for servicing and repairing this machine. In order to become familiar with the various parts of the machine, it is urged that maintenance personnel study the instructions and illustrations in this manual and use it as a reference when performing repair or maintenance operations.

An Operator's Manual is provided with each machine to provide the essential information regarding day-to-day maintenance, adjustment, and lubrication of the machine.

NOTE

Sections I, II and III of the Operator's Manual have been duplicated as the first three sections of this manual to provide maintenance personnel with the tabulated data, controls, and operation, and lubrication information that may be necessary in the performance of repair or maintenance operations.

GENERAL INFORMATION

The information, specifications and illustrations in this publication are based on the information for U.S. built machines in effect at the time this manual was printed. Continuing improvement and advancement of product design may cause changes to your machine which may not be included in this publication. Each publication is reviewed and revised, as required, to update and include these changes in later editions.

Whenever a question arises regarding your machine, or this publication, please consult your Harnischfeger representative for the latest available information.

Part numbers are used occasionally in this manual to identify various parts and assemblies. The part numbers shown must not be used when ordering repair parts. Always obtain part numbers from the Repair Parts Manual for your machine serial number.

SAFETY

The Safe Operating Practices in the beginning of this manual are reproduced in a separate publication, Catalog 240, which is furnished with each machine. It is most important that operators and maintenance personnel read and be familiar with the information in Catalog 240 and this manual before operating or servicing this machine, both for personal protection and for the safety of other workmen and bystanders.

Additional copies of Catalog 240 are available, in reasonable quantities, to owners of Harnischfeger excavators and cranes at no cost. Submit such requests to the Harnischfeger Technical Publications Department.

SERIAL NUMBER LOCATION

Figure 1-1 illustrates the machine serial number which is located on the front right side of the revolving frame. Always indicate the machine serial number in all correspondence to properly identify the machine, and to ensure that the correct parts are obtained, when ordered.

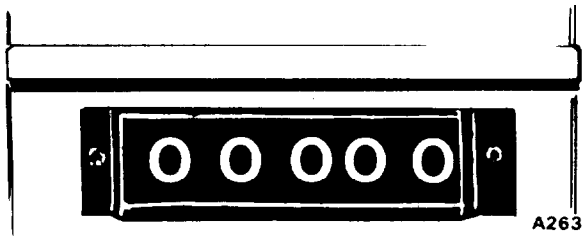

Figure 1-1. Machine Serial Number

WARRANTY

The word "acceptance" as used herein means the execution of the Acceptance Block and signing of a DD Form 250 by the authorized Government representative.

The word "supplies" as used herein means the end item and all parts and accessories thereof, furnished by the contractor, and any related services required under this contract. The word does not include technical data.

Notwithstanding inspection and acceptance by the Government of the supplies furnished under the contract or any provision of this contract concerning the conclusiveness thereof, the contractor hereby warrants that the supplies are free from defects in material, and workmanship and will conform with the specifications and all other requirements of this contract for a period of 15 months from date of acceptance, as shown on the Material Inspection and Receiving Report (DD Form 250), or 1500 hours of operation, whichever occurs first. Further, if the Government, prior to placing vehicles in service, elects to place quantities of such newly delivered vehicles in Government depot storage, the contractor agrees that the time period of the warranty will not begin to run for such stored vehicles until each vehicle is withdrawn from Government storage or

until six months from date of acceptance, whichever occurs first. The Government prior to placing each new vehicle in storage and again at time of its withdrawal, shall notify the contractor thereof and identify each vehicle at its time in and out of storage. Vehicles designated as Production Samples shall be treated as vehicles placed in storage for warranty purposes.

If a Safety Recall defect occurs during vehicle warranty period, the contractor agrees to extend the term of the warranty by a period of time equal to the time period required to make necessary safety defect corrections. Additionally, to the extent the contractor or his supplier(s) provide to commercial customers a greater warranty for the supplies furnished herein, the contractor hereby likewise provides such greater warranty to the Government. To the extent the terms of such greater warranty are inconsistent with or conflict with this warranty, the provisions of such greater warranty shall govern.

With respect to defective supplies, wherever located, the warranty shall include the furnishing, without cost to the Government, F.O.B. contractor's plant, branch or dealer facility, or F.O.B. original CONUS destination, or F.O.B. US Port of Embarkation, at the Government's option, new supplies to replace any that prove to be defective within the warranty period. On all Government Owned Vehicles and Foreign Military Sales (FMS) Vehicles destined for shipment outside CONUS, the contractor's liability regarding warranty is limited to furnishing replacement parts F.O.B. CONUS port of debarkation for those parts which prove to be defective in material or workmanship. The contractor shall designate a resident point of contact/agent in both West Germany and Korea to coordinate resolution of all warranty claims reported within those locations. The contractor's POC/agent will be responsive to claims filed, assisting in the resolution of all valid warranty claims reported, for the life of the contract and 15 months thereafter.

In addition, the Government shall have the option (a) to return the vehicles or parts thereof to the contractor's plant, branch or dealer facility for correction, or (b) to correct the supplies itself. When the Government elects to return the vehicles or parts to the contractor's plant, branch or dealer facility, the cost of labor involved in the correction of the defective supplies shall be borne by the contractor. When the vehicle or parts thereof are returned to the contractor for correction, the contractor shall bear all transportation costs to the contractor's plant and return. With respect to defective supplies located within the 50 states, when the Government elects to correct them itself, the cost of labor involved in the correction of defects shall be borne by the contractor and shall be computed at the contractor's then prevailing hourly rate for such services in that geographical area, based upon the number of labor hours appearing in the contractor's flat rate time schedule manual, or the Government's actual cost, whichever is less. With respect to defective supplies located outside the 50 states, when the Government elects to correct them itself, the cost of labor involved shall be borne by the contractor at the then prevailing hourly rate in the geographical area for such services based upon the number of labor hours appearing in the contractor's flat rate time schedule manual of the Government's actual cost, whichever is less. Additionally. the contractor shall be responsible for reasonable costs of disassembly/reassembly of items necessarily removed in connection with repair or replacement on vehicles wherever located

If the Government elects to have warranty repair or replacement performed by the contractor, the Government shall deliver the vehicle to contractor's local facility or dealershlp for warranty corrective repair or replacement. Receipt for such vehicle by the contractor's local facility or dealership will be deemed proper notification by the Government of any breach of the warranty provided by this provision. If the Government elects to effect warranty repairs or replacement itself, the contractor shall be notified in writing of any breach in the warranty within 30 days after discovery of the defect. Within 10 days after receipt of such notice, the contractor shall submit to the Contracting Officer a written recommendation as to the corrective action required to remedy the breach. In any event, the Contracting Officer may, upon the expiration of the 10 day period set forth above, proceed with correction or replacement as set forth in paragraph d, above, and the contractor shall, notwithstanding any disagreement regarding the existence of a breach of warranty, comply with any Contracting Officer directions related to such correction or replacement. After the notice of breach, but not later than 30 days after receipt of the contractor's recommendation for corrective action, the Contracting Officer will, in writing, notify the contractor of the parts used by the Government in repair or replacement and all other costs or expenses required for Government correction of warranty defect as set forth in the paragraph d above The contractor shall respond within 30 days after receipt of this notice, of his intention to furnish identified replacement parts and/or cost reimbursements to the Government. In the event it is later determined that the contractor did not breach the warranty in paragraph c, above, the contract price will be equitably adjusted pursuant to the terms of the "Changes" clause of the contract. Failure to agree to such an equitable adjustment or upon any determination to be made under this clause shall be a dispute concerning a question of fact within the meaning of the "Disputes" clause of this contract.

Any supplies or parts thereof corrected or furnished in replacement pursuant to this clause shall also be subject to all provisions of this clause to the same extent as supplies initially delivered

The Contractor shall prepare and furnish to the Government, data and reports applicable to any correction required under this clause (including revision and updating of all affected data called for under this contract) at no increase in the contract price.

The Contractor shall furnish with his proposal a listing of distributors, dealers, franchise outlets where warranty claims may be exercised.

The Contractor will take all actions necessary to assure that all current flat rate time schedule manuals concerning vehicles under contract are on file with the TACOM Maintenance Directorate (DRSTA-M), of if not on file, within 60

days after contract award and furnish same to said Maintenance Directorate.

A synopsis or simplified summary of the warranty coverage and its implementation will be impaired on a decalcomania approximately 3" x 4" and shall be mounted in view of the operator as near as possible to the center of the instrument panel of each vehicle. On those vehicles requiring concealed markings and registration numbers, said decalcomania shall be placed in a readable position on the engine side of the firewall.

The rights and remedies of the Government provided in this clause are in addition to and do not limit any rights afforded to the Government by any other clause in the contract.

DESCRIPTION

The engine serves as the power source for the upper work functions and the lower propel drive system. Power is transmitted through the clutch and torque converter into the worm shaft (see Figure 1-2). The worm shaft drives the boom hoist shaft which is coupled to the swing shafts and main drum shafts by a pair of chains. Consequently, the boom hoist shaft, main shaft and swing shaft turn at all times when the engine clutch is engaged. However, the drumshafts do not turn the drums or the swing gear until the proper clutch is engaged by the operator.

The engine drives a hydraulic control pump which provides hydraulic power to the control valves in the operator's cab. When the operator engages the controls in the operator's cab, the control valves direct fluid to their respective clutch, brake and pawl. Also the control pump supplies hydraulic oil to the crawler extension/retraction valves mounted on the carbody. These valves direct oil to the side frame extension cylinders.

This crane is a friction and hydraulic machine. All upper work functions are performed by friction clutches and brakes. Hydraulic cylinders are used to apply the clutches and planetary brakes. The drum, swing and boom hoist brakes are released by hydraulic cylinders working against the brakes' spring actuators.

A pump drive, mounted at the rear of the upper, is driven directly by the engine. Two variable displacement pumps are mounted on and driven by the pump drive.

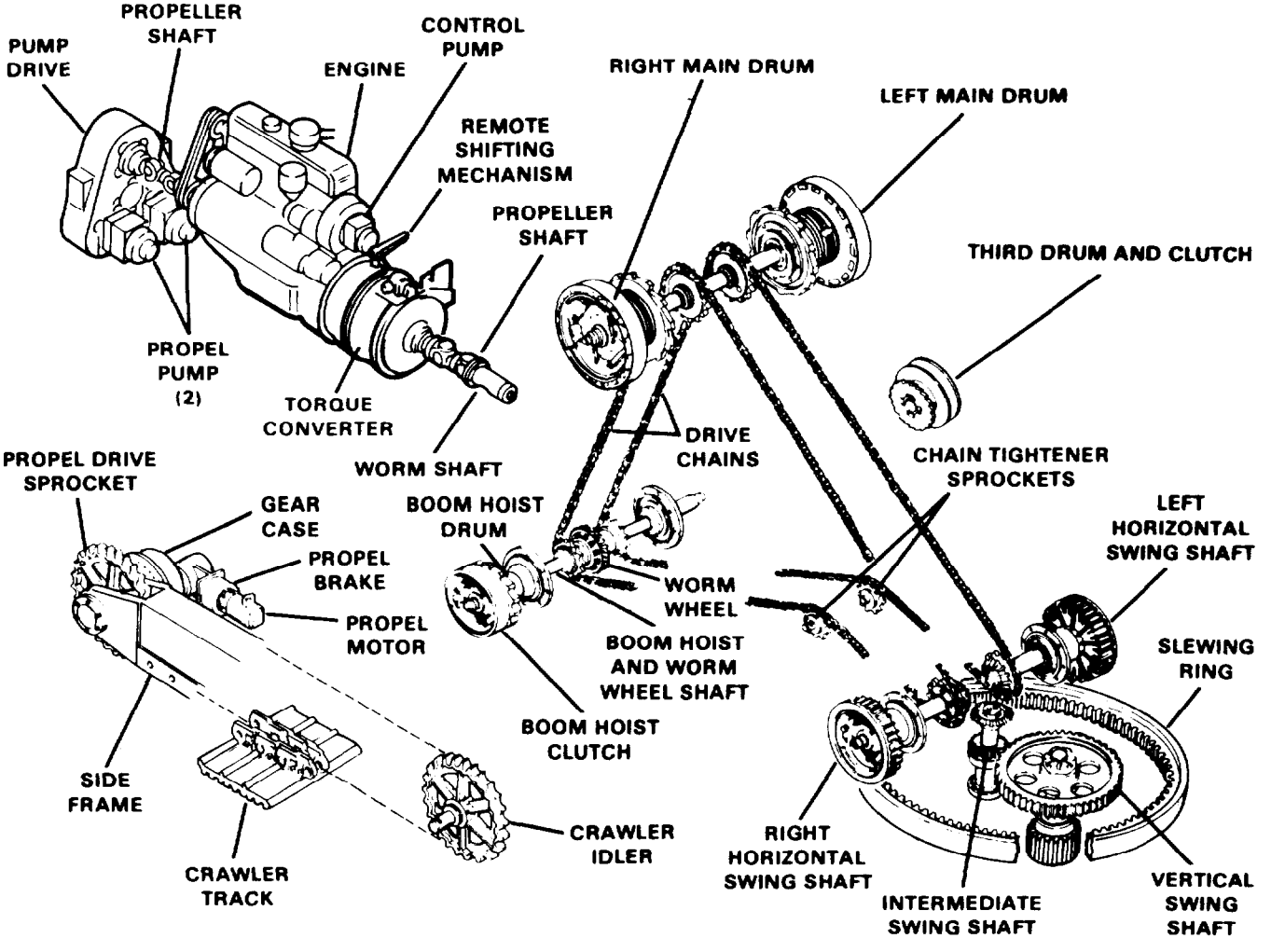

Figure 1-2. Mechanical Train Schematic

The two variable displacement pumps provide power to the crawler motors. Both crawler motors drive their respective sprocket to propel the machine. Crawler speed and direction (forward, reverse, left or right) are accomplished through the propel controller in the operator's cab.

TERMINOLOGY

Certain terms are frequently used in this manual. For better understanding, several are defined below and illustrated in Figure 1-3.

LOWER: The portion of the machine on which the upper is mounted.

CARBODY: The traveling base upon which the upper and side frames are mounted.

SIDE FRAME: A frame attached to the carbody which supports the crawler track and crawler motors.

UPPER: The upper is defined as the revolving portion of the crane. It is sometimes referred to as the superstructure.

REVOLVING FRAME: The revolving frame is the deck of the upper on which all upper machinery is mounted.

LOWER MACHINE FRONT: This is the end of the lower opposite the propel motors.

UPPER MACHINE FRONT: The front of the upper is the end having the boom.

LOWER MACHINE REAR: This is the end of the lower which has the propel motors mounted.

UPPER MACHINE REAR: The rear of the upper is the counterweight end.

RIGHT SIDE: The right side of the machine is to the operator's right when he is seated at his controls and is facing forward.

LEFT SIDE: The left side of the machine is to the operator's left when he is seated at his controls and is facing forward.

ATTACHMENT: An alternate designation for front end equipment. In the case of the lift crane, it includes the gantry, boom, backstops, and jib.

HOIST: The process of lifting the load.

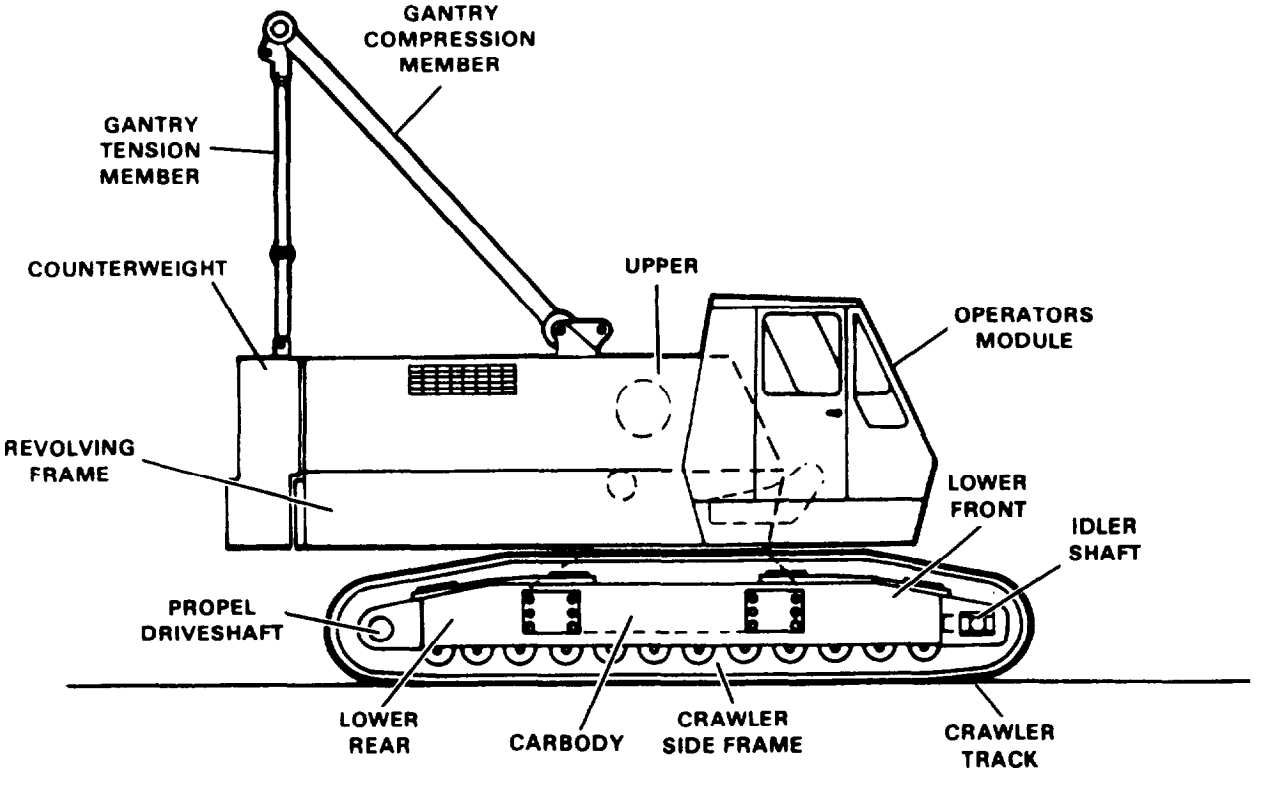

Figure 1-3. Crane Terminology