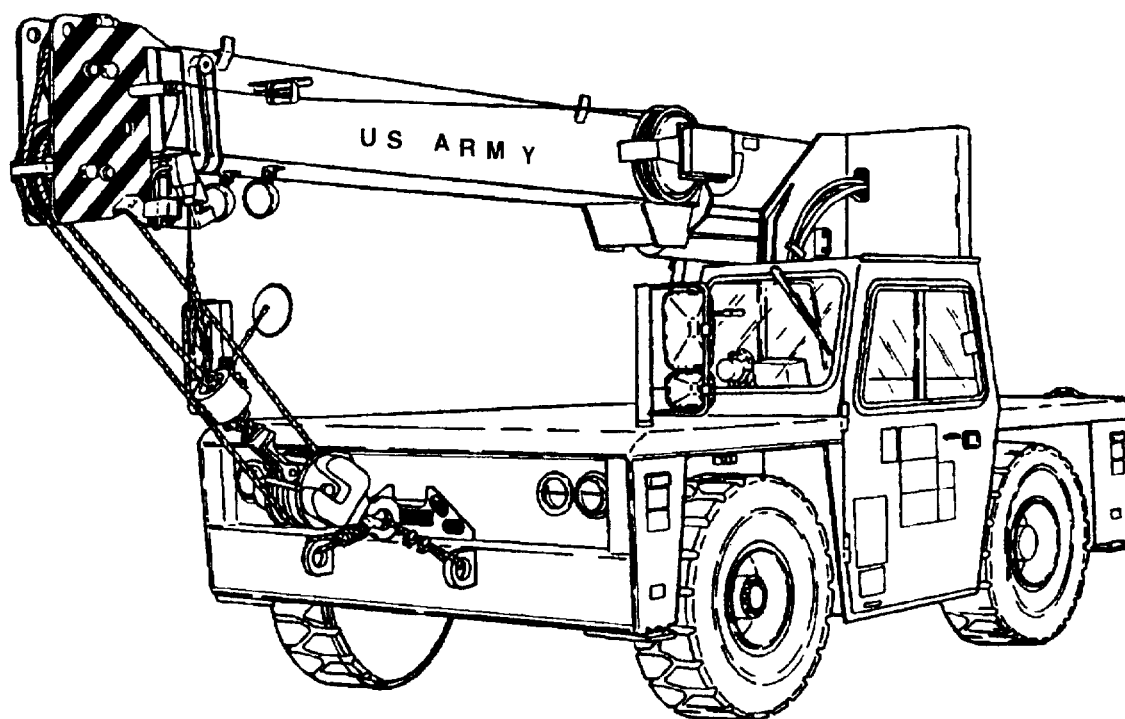


TECHNICAL MANUAL

Unit, Direct Support
and
General Support Maintenance Manual
for
WAREHOUSE CRANE
10,000 LB. CAPACITY, M469
WHEELED, DIESEL POWERED
NSN 3950-01-412-5345
(Grove Model AP 308T)



Approved for public release: Distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1997

Technical Manual

No. 10-3950-672-24-1

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DEPARTMENT OF THE ARMY
Washington, DC, 15 June 1997Unit, Direct Support Maintenance Manual
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REPORTING OF ERRORS

You can 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, US Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-OPIT, Warren MI 48397-5000. A reply will be furnished to you. You may also provide DA Form 2028-2 information to TACOM via datafax or e.mail. TACOM's datafax number for AMSTA-IM-OPIT is: (810) 574-6323 and e.mail address is: tacom-tech-pubs@cc.tacom.army.mil

This manual is an authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 25-30, Military Publications. This technical manual does, however, contain valuable information that is essential to the operation and maintenance of the equipment.

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HOW TO USE THIS MANUAL

This manual is designed to help you operate and maintain the equipment. All task descriptions will take you step-by-step through the procedure. Don't take shortcuts. Before you begin any task, you should read through the complete procedure, make sure you know what needs to be done, then go back and follow the steps as written.

Pay particular attention to **WARNINGS** and **CAUTIONS**, as they contain information that will prevent injury to personnel or damage to equipment.

Use the alphabetical index at the back of the manual to find a topic not listed in the table of contents.

WARRANTY

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, MADE BY EITHER THE DISTRIBUTOR OR THE MANUFACTURER ON NEW GROVE EQUIPMENT, EXCEPT THE MANUFACTURER'S WARRANTY AGAINST DEFECTS, MATERIAL AND WORKMANSHIP SET OUT BELOW:

NEW EQUIPMENT WARRANTY

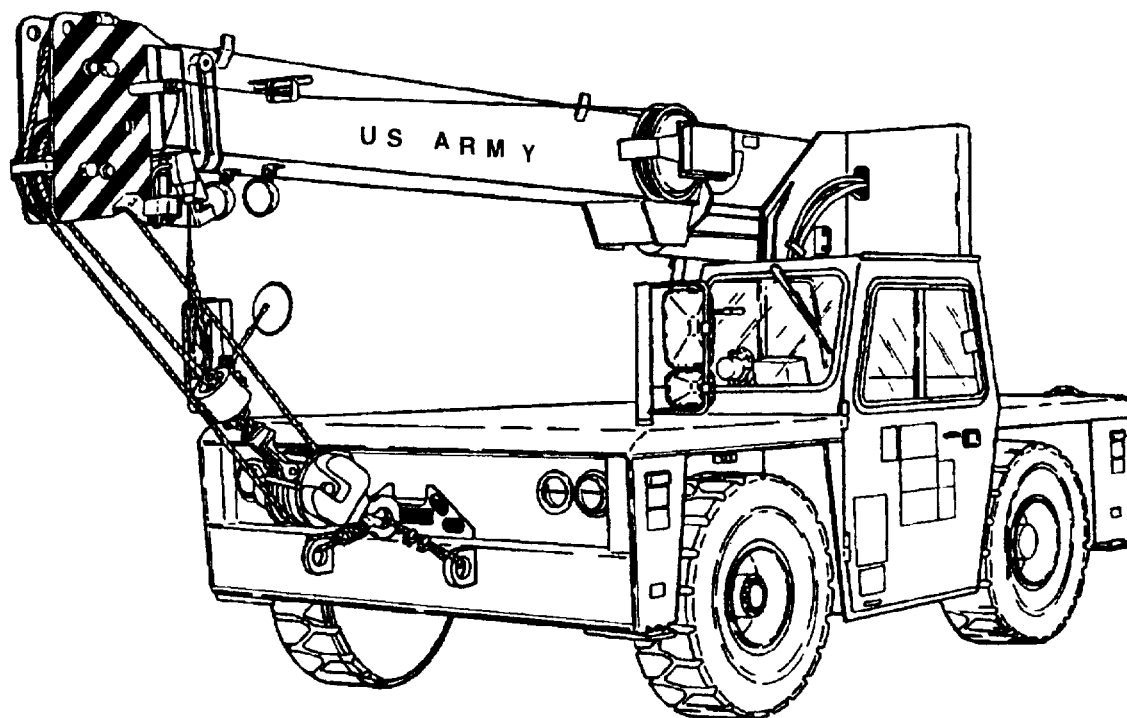
"The Manufacturer warrants each new product made by the Manufacturer to be free from defects in material and workmanship, its obligation and liability under this warranty being limited to replacing free of charge at its factory, any part proving defective under normal use and service for a period of fifteen (15) months CONUS or eighteen (18) months OCONUS beginning with Government acceptance of the crane. This warranty is in lieu of all other warranties, express or implied and the obligation and liability of the Manufacturer under this warranty shall not include any transportation or other charges or the cost of installation or any liability for direct, indirect, or consequential damages or delay resulting from the defect. Any operation beyond rated capacity or the improper use or application of the product or the substitution upon it of parts not approved by the Manufacturer shall void this warranty. This warranty covers only the products of Grove Manufacturing Company. The products of other Manufacturers are covered only by such warranties as are made by their Manufacturers."

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NOTE

The Cummins diesel engine is covered by a separate warranty as described in TM 10-3950-672-24-2.

There is a decal in the cab of the crane, near the main control panel, which has the warranty expiration date.



Warehouse Crane, M469

CHAPTER 1

INTRODUCTION

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Section 1. General Information

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1-1. SCOPE

This manual gives procedures for maintenance of the 10K Warehouse Crane M469. The manual contains maintenance procedures to be performed by organizational, direct support, and general support level personnel.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS**a. Reports of Maintenance and Unsatisfactory Equipment**

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update.

b. Reporting of Item and Packaging Discrepancies

Fill out and forward SF 364 [Report of Discrepancy (ROD)] as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST4355.18/AFR 400-54/MCO 4430.3J.

c. Transportation Discrepancy Report (TDR) (SF 361)

Fill out and forward SF 361 Transportation Discrepancy Report (TDR) (SF361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-1 8/MCO P4610.19D/DLAR 4500.15.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army materiel to prevent enemy use shall be in accordance with TM 750-244-3.

1-4. ADMINISTRATIVE STORAGE

Equipment issued to and by the Army activities will have preventive maintenance in accordance with Preventive Maintenance Checks and Services (PMCS) performed before being placed into storage. When removing the equipment from administrative storage, the PMCS checks should be performed to ensure operational readiness.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, U.S. Army Tank-automotive and Armaments Command, Attn. AMSTA-IM-JM, Warren, MI 48397-5000. We'll send you a reply.

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GENERAL MAINTENANCE

MAINTENANCE

These general suggestions should be helpful in following the instructions in this manual. In analyzing a system malfunction, use a systematic procedure to locate and correct the problem.

1. Determine the problem.
2. List possible causes.
3. Devise checks.
4. Conduct checks in a logical order to determine the cause.
5. Consider the remaining service life of components against the cost of parts and labor necessary to replace them.
6. Make the necessary repair.
7. Recheck to ensure that nothing has been overlooked.
8. Functionally test the failed part in its system.

NOTE

Your safety and that of others is always the number one consideration when working around machines. Safety is a matter of thoroughly understanding the job to be done and the application of good common sense. It is not just a matter of do's and don'ts. Stay clear of all moving parts.

CLEANLINESS.

An important item in preserving the long life of the machine is keeping dirt out of working parts. Enclosed compartments, seals, and filters have been provided to keep the supply of air, fuel, and lubricants clean. It is important that these enclosures be maintained.

Whenever hydraulic, fuel, lubricating oil lines, or air lines are disconnected, clean the adjacent area as well as the point of disconnect. As soon as the disconnection is made, cap, plug or tape each line or opening to prevent entry of foreign material. The same

recommendations for cleaning and covering apply when access covers or inspection plates are removed.

Clean and inspect all parts. Be sure all passages and holes are open. Cover all parts to keep them clean. Be sure parts are clean when they are installed. Leave new parts in their containers until ready for assembly.

Clean the rust preventive compound from all machined surfaces of new parts before installing them.

REMOVAL AND INSTALLATION.

When performing maintenance, do not attempt to manually lift heavy parts when hoisting equipment should be used. Never locate or leave heavy parts in an unstable position. When raising a portion of a crane or a complete crane, ensure the crane is blocked securely and the weight is supported by blocks rather than by lifting equipment.

When using hoisting equipment, follow the hoist manufacturers recommendations and use lifting devices that will allow you to achieve the proper balance of the assemblies being lifted and to ensure safe handling.

Unless otherwise specified, all removals requiring hoisting equipment should be accomplished using an adjustable lifting attachment. All supporting members (chains and cables) should be parallel to each other and as near perpendicular as possible to the top of the object being lifted.

CAUTION

THE CAPACITY OF AN EYEBOLT DIMINISHES AS THE ANGLE BETWEEN THE SUPPORTING MEMBERS AND THE OBJECT BECOMES LESS THAN 90 DEGREES. EYEBOLTS AND BRACKETS SHOULD NEVER BE BENT AND SHOULD ONLY HAVE STRESS IN TENSION.

Some removals require the use of lifting fixtures to obtain proper balance. The weights of some components are given in their respective sections of the manual.