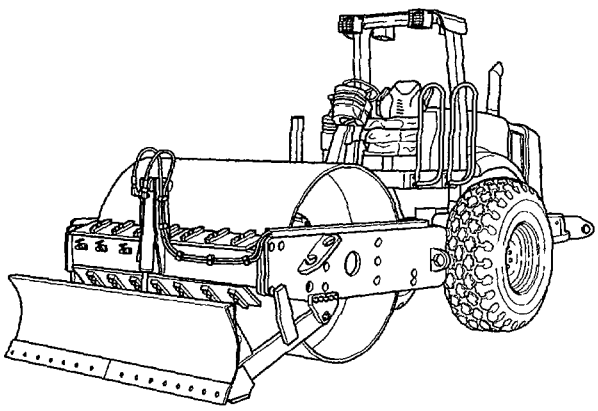
TECHNICAL MANUAL

UNIT, DIRECT SUPPORT

AND GENERAL SUPPORT

MAINTENANCE MANUAL



ROLLER, VIBRATORY,
SELF-PROPELLED,
Type II

CATERPILLAR MODEL CS-563D

NSN 3895-01-456-2735 (Type II)

Contract No. DAAE07-98-C-S007

Approved for public release;
distribution is unlimited.

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21 SEPTEMBER 1999

HEADQUARTERS, DEPARTMENT OF THE ARMY

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

No. 5-3895-383-24

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UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR

ROLLER, VIBRATORY, SELF-PROPELLED,
Type II

CATERPILLAR MODEL CS-563D
NSN 3895-01-456-2735 (Type II)

Contract No. DAAE07-98-C-S007

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter, DA Form 2028, or DA Form 2028-2 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. The e-mail address is: amsta-ac-nml@ria.arm.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

This manual is designed to help maintain the Caterpillar Model CS-563D, NSN 3895-01-456-2735, Type II Self-propelled Vibratory Roller. This roller is a commercially available unit and is altered slightly for military use. This is a Commercial Off-The-Shelf (COTS) manual with supplemental data to support military-specific maintenance. Listed below are some of the special features that are included to help locate and use the needed information:

Chapter One contains the Unit level Preventive Maintenance Checks and Services (PMCS).

Chapter Two contains maintenance instructions specific to the military model.

Chapters Three through Sixteen are the Commercial Off-The-Shelf manual from the manufacturer.

Appendix A lists any references used in this manual.

Appendix B contains the Maintenance Allocation Chart (MAC).

Appendix C contains the Schematics.

An alphabetical index is provided to help locate main items in the text.

FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:

Read through this manual and become familiar with the contents.

Read entire procedure before attempting to perform any maintenance task.

Read all WARNINGS and CAUTIONS before performing any procedure.

Any information in Chapters One and Two overrides any conflicting information contained in Chapters Three through Eighteen.

When the "Operation & Maintenance Manual" is referenced, the required information can be found in Chapter 1 or TM 5-3895-383-10.

GENERAL INFORMATION

1-1. SCOPE

a. ***Type of Manual.*** Maintenance Manual.

b. ***Model Number and Equipment Name.*** Caterpillar Model CS-563D, Roller, Vibratory, Self-propelled, NSN 3895-01-456-2735.

c. ***Purpose of Equipment.*** The Self-propelled Vibratory Roller, from here on referred to as the Roller, is a self-propelled roller designed to compact soil and gravel bases for parking lots, runways, streets, roads, and highways.

1-2. MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS)(Maintenance Management UPDATE).

1-3. CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with the Roller be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

This vehicle has been painted with a Chemical Agent Resistant Coating (CARC). Maintain the coating in accordance with TM 43-0139 and TB 43-0242. Use black paint MIL-P-14105 on exhaust components. If a corrosion problem is identified, it can be reported using Standard Form 368, Product Quality Deficiency Report. Use of keywords such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem. Submit the form to the address specified in DA PAM 738-750.

1-4. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE

Command decision, according to the tactical situation, will determine when the destruction of the Roller will be accomplished. A destruction plan will be prepared by the using organization unless one has been prepared by a higher authority. For general destruction procedures for this equipment, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-automotive and Armaments Command).

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Roller 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 SF368 (Product Quality Deficiency Report). Mail it to us at:

Commander,
US Army Tank-automotive and Armaments Command
ATTN: AMSTA-AC-NML
Rock Island, IL 61299-7630

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-AC-NML is:

DSN 793-0726
or commercial (309) 782-0726

The e-mail address is: amsta-ac-nml@ria.army.mil

The Army Electronic Product Support: http://aeps.ria.army.mil

1-6. PREPARATION FOR STORAGE AND SHIPMENT

Transportability information can be found in TM 5-3895-382-10.

CHAPTER 1

SERVICE UPON RECEIPT & UNIT PMCS

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NOTES:

- Discard all locking-type fasteners (i.e. lock washers, lock nuts, locking tab washers, etc.) when removed. Replace all locking-type fasteners with new ones.
- Additional information may be found in:
  - Chapter 3, Important Safety Information
  - Chapter 4, Torque Specifications
  - The engine compartment has been modified with the addition of hood guide plates. For correct hardware based on machine PIN, see TM 5-3895-383-24P, page 156. These plates also serve as a guide to assist hood closure.

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Section I. SERVICE UPON RECEIPT

1-1. CHECKING UNPACKED EQUIPMENT

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

b. Check the equipment against the packing slip to see if the shipment was complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750 or AR-750-1 as applicable.

1-2. PROCESSING UNPACKED EQUIPMENT

a. Refer to MAC (Appendix B) for list of tools and test equipment.

b. Dispose of waste products in accordance with local regulations.

1-3. CABLE DIAGRAMS

Refer to Appendix C for all hydraulic and electrical schematics.

1-4. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

Perform all Operator PMCS procedures (TM 5-3895-383-10). Start Roller and test all controls and switches. Troubleshoot any malfunctions or failures.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION INSTRUCTIONS

1-5. PMCS INTRODUCTION

PMCS means systematic caring for, inspecting, and servicing equipment to keep it in good condition and to prevent breakdowns. To be sure the Roller is ready for operation at all times, the Roller must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Use a DA Form 2404 (Equipment Inspection and Maintenance Worksheet), or DA Form 5988E, to record any deficiencies. DO NOT record faults that you fix.

1-6. PMCS PROCEDURES

a. PMCS, Table 1-1, lists inspections and care required to keep your Roller in good operating condition. This table is set up so you can do intervals of PMCS while walking around the Roller.

b. The "INTERVAL" column of Table 1-1 tells you when to do a certain check or service.

c. The "PROCEDURE" column of Table 1-1 tells you how to do required checks and services. Carefully follow these instructions.

d. The "NOT FULLY MISSION CAPABLE IF: " column of Table 1-1 tells you when your Roller is non-mission capable and why the Roller cannot be used.

e. When the Roller does not perform as required, refer to Troubleshooting.

f. When something looks wrong and you can't fix it, write it on your DA Form 2404. IMMEDIATELY report it to your supervisor. When you do your PMCS, you will always need a rag or two. The following checks are common to the entire Roller.

WARNING

- **Drycleaning Solvent (P-D-680, Type III) is TOXIC and flammable. We protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and, do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for drycleaning solvent type III is 200°F (93°C). Failure to do so may result in injury or death to personnel.**

- **If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.**

g. *Keep It Clean*. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use drycleaning solvent (P-D-680, Type III) on all metal surfaces. Use soap and water when you clean rubber or plastic material.

(1) *Rust and Corrosion*. Check Roller body and frame for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of oil. Report it to your supervisor.

(2) *Bolts, Nuts, and Screws*. Check all attaching hardware for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor.

(3) *Welds*. Look for loose or chipped paint, rust, or gaps where parts a welded together. If you find a bad weld, report it to your supervisor.

(4) *Electric Wires and Connectors*. Look for cracked, frayed, or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors. Report any damaged wires to your supervisor.

(5) *Hoses and Fluid Lines*. Look for chafing, wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor.

h. When you check for "operating condition", look at the component to see if it's serviceable.

1-7. CLEANING AGENTS

WARNING

- **DO NOT use diesel fuel, gasoline, or benzene (benzol) for cleaning.**
- **DO NOT SMOKE when using cleaning solvent. NEVER USE IT NEAR AN OPEN FLAME. Be sure there is a fire extinguisher nearby and use cleaning solvent only in well-ventilated places.**
- **USE CAUTION when using cleaning solvents. Cleaning solvents evaporate quickly and can irritate exposed skin if solvents contact skin. In cold weather, contact of exposed skin with cleaning solvents can cause frostbite. Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for type III is 200°F (93°C). Failure to do so may result in injury or death to personnel.**
- **If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.**
- **When cleaning grease buildup or rusty places, use a cleaning solvent. Then apply a thin coat of light oil to affected areas.**

1-8. SHORTENED MAINTENANCE INTERVALS

Local conditions of extreme heat, dust, cold, or wetness dictate shorter service intervals.

1-9. ADDITIONAL MAINTENANCE INSPECTIONS

Additional maintenance inspections are required for the following reasons:

a. Prolonged storage. Rollers which have been stored for a period of three months or more should be inspected.

b. Initial preparation upon receipt.

c. Preparation for storage.

1-10. LEAKAGE CLASSIFICATION AND DEFINITION

It is necessary for you to know how fluid leakage affects the status of the Roller. The following are types/ classes of leakage an operator needs to know to be able to determine the status of the Roller. Learn these leakage definitions and remember-when in doubt, notify your supervisor.

CAUTION

- **Equipment operation is allowable with minor leakages (Class I or II) except for fuel leakage. Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.**
- **When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.**
- **Any fuel or class III leaks should be reported immediately to your supervisor.**

a. CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

b. CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

c. CLASS III - Leakage of fluid great enough to form drops that fall from item being checked/inspected.

1-11. PMCS COLUMN ENTRY EXPLANATION

a. ***Item No. Column*.** The checks and services are numbered in interval order. Use the numbers in the "TM ITEM NO." column of DA Form 2404 when recording faults that you don't immediately fix.

b. ***Interval Column.*** This column indicates when the lubrication, check, or service should be performed. The following lubrication interval symbols are used.

Q - quarterly	A - annually	H - hours (operated)
S - semiannually	B - biennially	

c. ***Location, Item to be Checked or Serviced Column.*** The underlined items listed in this column are divided into groups indicating the portion of the equipment of which they are a part, i.e. brakes, fuel, and engine. Under these groupings a few common words are used to identify the specific item being checked.

d. ***Procedures Column.*** This column contains procedures required to perform the checks and services.

e. ***Not Fully Mission Capable If: Column*.** This column contains the criteria that causes the equipment to be classified as NOT FULLY MISSION CAPABLE because of inability to perform its primary mission. An entry in this column will:

(1) Identify conditions that make the equipment not ready/available for readiness reporting purposes.

(2) Deny use of the equipment until corrective maintenance has been performed.

1-12. GENERAL LUBRICATION INSTRUCTIONS

WARNING

Do not start or move Roller when anyone is under Roller. Severe injury or death to personnel could result.

NOTE

These instructions are mandatory.

a. ***Intervals*****.** Intervals (on-condition or hard tine) and the related man-hour times are based on normal operation. The manhour time specified is the time needed to do all the services prescribed for a particular interval. Individual hard time intervals shall be applied during the warranty period and in the event AOAP laboratory support is not available. On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hard time interval if lubricants are contaminated or if operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The calendar interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Intervals shown in this lubrication section are based on calendar and hourly times or calendar times and mileage. An example of a calendar and hourly lubrication is: M/60 HR, in which M stands for monthly and 60 HR stands for 60 hours of vehicle operation. The lubrication is to be performed at whichever interval occurs first for the Roller.

b. ***Determination of Operating Hours*****.** The reading on the hourmeter is the basis of all lubrication intervals that are based on hours of operation.

c. ***AOAP Sampling*****.** Engine oil must be sampled at 50 hours of operation or 90 days, whichever occurs first, for Active Army Units. Reserve and National Guard activities will use 50 hours or 180 days, whichever occurs first, as the prescribed interval. Hydraulic oil will be sampled once a year. Sampling will be performed as prescribed by DA Pam 738-750.

WARNING

- **Drycleaning Solvent (P-D-680, Type III) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and, do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for drycleaning solvent type III is 200°F (93°C). Failure to do so may result in injury or death to personnel.**

- **If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.**

d. ***Warranty hard time Statement*****.** For equipment under manufacturers' warranty, hard time oil service intervals shall be followed for the duration of the warranty. Intervals shall be shortened when lubricants are known to be contaminated or when operation is under adverse conditions (such as longer-than-usual operating hours, extended idling periods, and extreme dust).

e. ***Clean Fittings Before Lubricating*****.** Clean parts with drycleaning solvent (P-D-680, Type III) or equivalent. Dry before lubricating.

f. ***Lubrication After Fording.*** If fording occurs, lubricate all grease fittings (TM 5-3895-383-10) and oil can points outside and underneath Roller.

g. ***Lubrication After High-Pressure Washing.*** After washing, lubricate all grease fittings and oil can points outside and underneath the Roller.

h. ***Level of Maintenance.*** Operator can lubricate points authorized for Unit Maintenance when authorized by Unit Maintenance.

i. ***Localized Views.*** A reference to the appropriate localized view is given after lubrication entries.

j. ***Oil Filter Statement***. Oil filters shall be changed as applicable when:

(1) They are known to be contaminated or clogged.

(2) At prescribed hard time intervals during warranty period and when AOAP laboratory support is not available.

1-13. PMCS TABLE

Refer to Table 1-1 for PMCS procedures for the Roller.