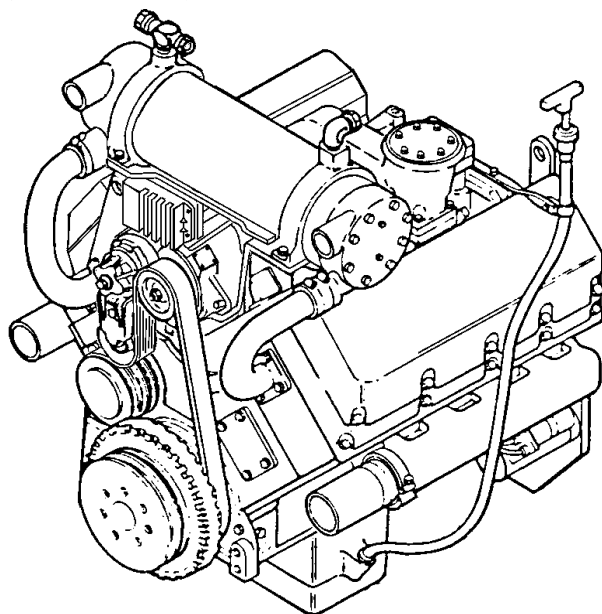


TM 5-2815-240-34&P*

TECHNICAL MANUAL

DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)



ENGINE, DIESEL, LIQUID COOLED V-TYPE, EIGHT CYLINDER, CUMMINS MODEL V903C W/CONTAINER (NSN 2815-01-399-6801)

*This manual supersedes TM 5-2815-240-34&P dated August 1989 and all related changes.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

This copy is a reprint which includes current pages from Changes 1, 2 and 3.

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APRIL 1991

Change 3

SUMMARY OF WARNINGS AND FIRST AID

For artificial respiration and first aid, see FM 21-11.

WARNING

This list summarizes critical WARNINGS in this manual. They are repeated here to emphasize their importance. Study these WARNINGS carefully; they can save your life and the lives of soldiers you work with.

- Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Severe injury or death may result. If injured, seek medical attention immediately.
- Drycleaning solvent is flammable and will not be used near open flames. A fire extinguisher will be kept nearby when solvent is used. Use only in well-ventilated areas. Failure to do this may result in damage to equipment or injury to personnel.
- Trichlorethane solvent vapors can be fatal. High concentration of vapors are anesthetic and dangerous to life. Eye irritation and dizziness are signs of inadequate ventilation and dangerous concentration. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin. Do not use in the presence of open flame or sparks.
- Compressed air can injure you and others. Do not aim compressed air hoses at anyone. Do not use more pressure than 30 psi (207 kPa). Always wear goggles.
- Parts may slip and cause eye injury or blindness. Always wear goggles when using power tools or working with parts under pressure.
- Chemicals used in this task can burn or poison you. Wear goggles, rubber gloves, and apron. Do task in well-ventilated room.
- Sharp edges can cut hands. Use rags or brush to lubricate.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.
- Ring gear will be hot enough to burn you on contact. Use heat-resistant gloves when you handle hot ring gear.
- Parts could fall and injure you. Use helper or lifting sling to move heavy parts.
- Engine may come loose from stand and injure you. Make sure screws are secure before removing sling.
- Plug is under tension by compressed spring. Protect eyes while removing/installing.
- Electrical shock can cause serious injuries. Do not remove or install starter motor unless vehicle MASTER switch is OFF.
- Exhaust manifold can cause serious burns. Do not remove starter motor unless manifold is cool.
- Wear gloves when removing engine oil cooler. There may be sharp edges causing injury to personnel.
- Keep hands, feet, and tools away from fan belt and alternator/water pump belts while adjusting alternator.
- Always support alternator core and shaft assembly during removal. Failure to comply may result in severe injury to person or damage to equipment.

CHANGE**NO. 3****DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)****ENGINE, DIESEL, LIQUID COOLED V-TYPE,
EIGHT CYLINDER, CUMMINS MODEL V903C W/CONTAINER****(NSN 2815-01-399-6801)**

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*Administrative Assistant to the
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CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 3 January 1997

**DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

**ENGINE, DIESEL, LIQUID COOLED V-TYPE,
EIGHT CYLINDER, CUMMINS MODEL V903C W/CONTAINER**

**W/60 AMPERE ALTERNATOR
(NSN 2815-01-351-6549)**

**W/200 AMPERE ALTERNATOR
(NSN 2815-01-399-6801)**

Current as of: *20 June 1996*

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Remove pages	Insert pages	Remove pages	Insert pages
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Figure 1 through Figure 4	Figure 1 through Figure 4	Blank DA 2028-2s	Blank DA 2028-2s
4-1 and Figure 5	4-1 through 4C-1 and Figure 5	Cover and a	Cover and a

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NO. 1

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Washington D.C., 4 November 1993

**DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

**ENGINE, DIESEL: LIQUID-COOLED V-TYPE,
EIGHT CYLINDER, CUMMINS MODEL V903C**

(NSN 2815-01-225-8385)

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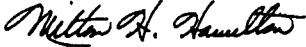
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LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text or illustration effected by the updates is indicated by a vertical line in the outer margin of the page. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and updated pages/work packages are:

Original ..0 ..17 APR 91
 Change ..1 ..04 NOV 93
 Change ..2 ..03 JAN 97
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**TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 30 AND
 TOTAL NUMBER OF PAGES IS 410 CONSISTING OF THE FOLLOWING:**

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**DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

**ENGINE, DIESEL, LIQUID COOLED V-TYPE,
EIGHT CYLINDER, CUMMINS MODEL V903C W/CONTAINER**

(NSN 2815-01-399-6801)

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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. 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://aeprs.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 ADPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax, or email 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 email address is amsta-ac-nml@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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This manual contains a table of contents, list of tasks, appendices, and alphabetical index.

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*This manual supersedes TM 5-2815-240-34&P dated August 1989 and all related changes.

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HOW TO USE THIS MANUAL

Before starting a task, read **HOW TO USE THIS MANUAL** and **CHAPTER 2, GENERAL ENGINE MAINTENANCE**.

WHAT'S IN THE MANUAL – FRONT TO BACK

SUMMARY OF WARNINGS AND FIRST AID lists the warnings and first aid information in this manual. These warnings contain additional information that could prevent injury or death of personnel. The maintenance task may have a shorter version of these warnings.

TABLE OF CONTENTS lists the chapters, sections, and appendices in this manual. It also lists the pages where chapters, sections, and appendices can be found.

CHAPTER 1 covers general information and gives a quick review of major engine components and features.

CHAPTER 2 indicates general maintenance instructions and location of engine repair parts and special tools. This chapter tells how to install the engine on the maintenance stand.

CHAPTER 3 contains maintenance tasks authorized to be performed by the Direct and General Support levels.

APPENDIX A lists references such as technical manuals and other publications to be used by personnel.

APPENDIX B contains repair parts and special tools list.

APPENDIX C lists expendable/durable supplies and materials used to maintain or repair the engine.

APPENDIX D lists the repair specifications for the cylinder head.

ALPHABETICAL INDEX lists major engine parts that would be repaired or replaced at the DS or GS level. Each entry in the index includes the task page number.

DA Form 2028-2 is used to report errors found in this manual.

USING YOUR MANUAL ON THE JOB

Like any tool, the best way to learn about this manual is to practice using it. Knowing how to use this manual will save both time and energy.

Where do you start?

Entry to a maintenance task in this manual may come from observation, troubleshooting, or the Army Oil Analysis Program (AOAP). The problem will help identify the item that needs repair or replacement.

How do you fix the problem? – A Quick Overview

1. Find the correct maintenance task in this manual. To do this, pick a key word from the item to be replaced or repaired. Look up this word in the ALPHABETICAL INDEX located at the back of this manual to locate the page number of the task.
2. Turn to the task and read it carefully before starting. Pay attention to warnings and cautions. Get the equipment, supplies, and any other personnel needed. If a task requires part replacement, refer to the Repair Parts and Special Tools List (RPSTL), Appendix B.
3. Start with step A in the task and do each step in order. In some referenced tasks, one or more steps may have been completed. If so, proceed to the next step. When the last step is done, the problem will be corrected.

Finding and Reading the Task

Example: Oil is leaking from under the engine camshaft cover. If the metal camshaft cover is not damaged, the gasket will need to be replaced. Find the task (CAMSHAFT COVER REMOVAL AND INSTALLATION) page number in the ALPHABETICAL INDEX at the back of this manual.

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Valves Adjustment	3-233
Valve Train Repair	3-236

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

SCOPE

Type of Manual:

Direct Support and General Support Maintenance.

Model Number and Equipment Name:

V903C Engine.

Purpose of Equipment:

Propulsion engine for M9 Armored Combat Earthmover (ACE).

MAINTENANCE FORMS, RECORDS, AND REPORTS

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

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

When the tactical situation requires that Army materiel be abandoned, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use, for procedures on destruction of the vehicle.

PREPARATION FOR STORAGE OR SHIPMENT

Refer to p. 3-2 for instructions on storage and shipment of the engine.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your engine 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. Put it on a SF 368 (Quality Deficiency Report). Mail it to:

Commander
U.S. Army Tank-automotive and Armaments Command
Attn: AMSTA-TR-E/MPA
Warren, MI 48397-5000

Section II. EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT DESCRIPTION

CHARACTERISTICS

- Provides primary power for the M9 Armored Combat Earthmover.

CAPABILITIES AND FEATURES

- V-8 engine has fuel injection and liquid cooling systems.
- Four-cycle operation uses compression ignition.
- Filtered-fuel system has fuel pump and governor.
- Engine working parts are pressure lubricated.
- Centrifugal pump circulates engine coolant.

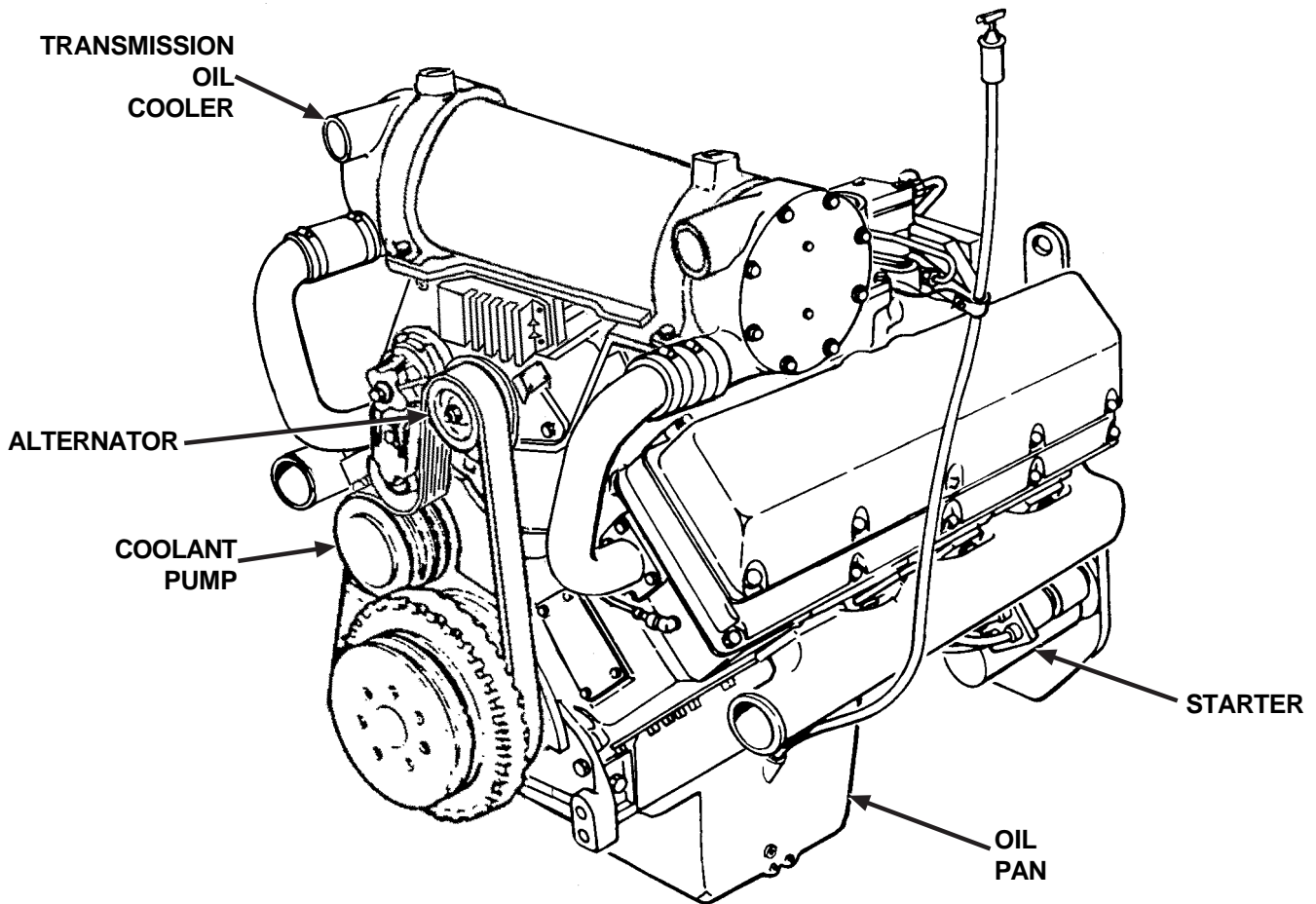
EQUIPMENT DATA

Manufacturer	Cummins Engine Co. Inc.
Model	V903C
Type	four-cycle, valve-in-head, compression ignition
Rotation	right hand (clockwise) facing vibration damper
Dimensions:	
Length	55-1/4 in. (140.3 cm)
Width	40 in. (101.6 cm)
Height	49 in. (124.5 cm)
Weight (dry)	2,450 lb (1,112 kg)
Horsepower (@ 2600 rpm)	295
Compression ratio (nominal)	15.5:1
Cylinder:	
Type	wet-type, replaceable sleeve
Number	8
Arrangement	V type
Firing order	1R, 5L, 4R, 8L, 6L, 3R, 7L, 2R
Bore	5-1/2 in. (14 cm)
Stroke	4-3/4 in. (12 cm)
Displacement	903 cubic in. (14.8 L)
Number of rings	3 (2 compression, 1 oil)

Crankshaft:
Type counterweight
Number of counterweights 4
Number of main bearings 5

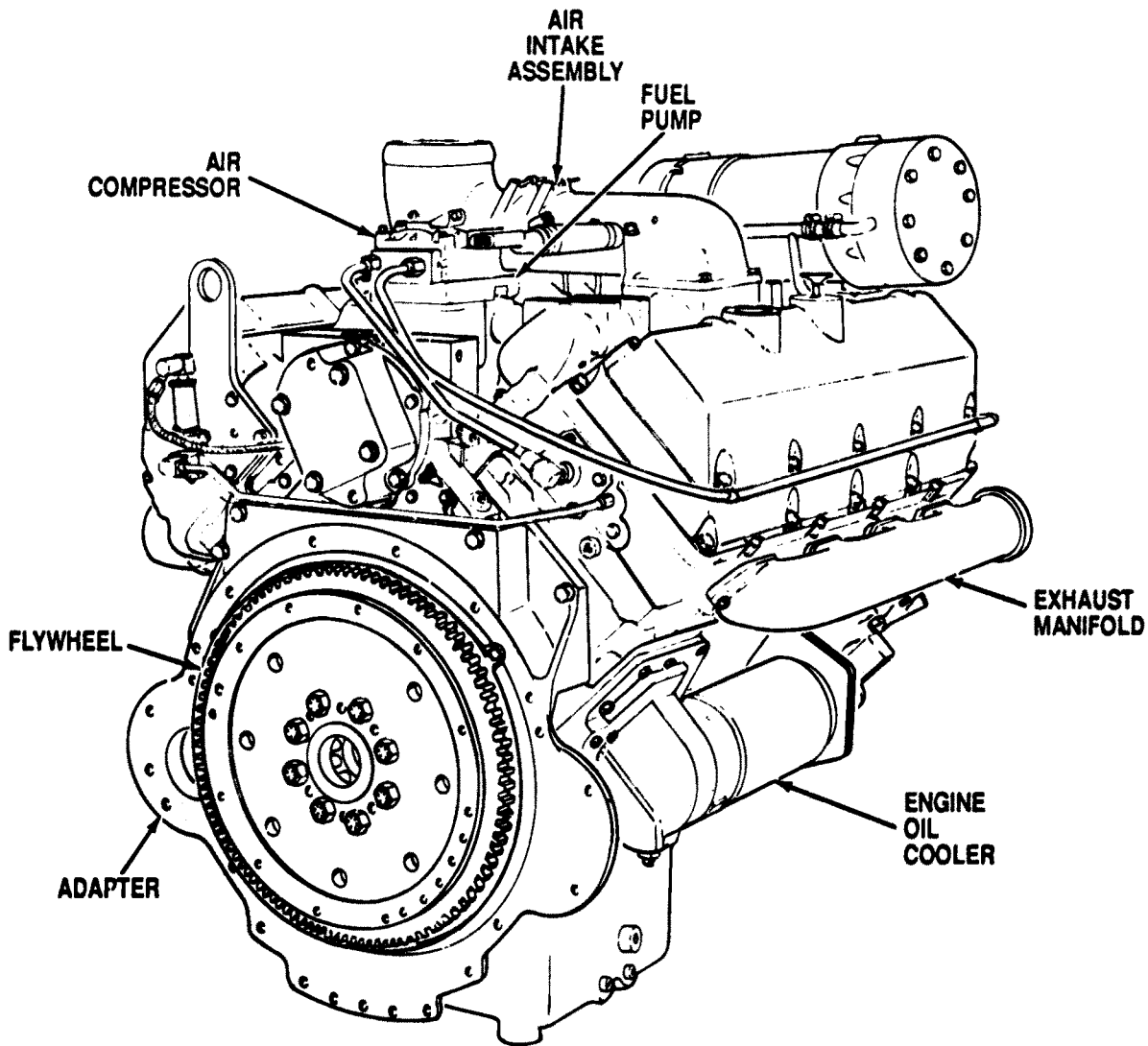
Starter:
Manufacturer Prestolite
Part Number 94134

LOCATION OF MAJOR COMPONENTS



Cummins Diesel Engine, Model V903C – Left Front View

LOCATION OF MAJOR COMPONENTS – Continued



Cummins Diesel Engine, Model V903C – Right Rear View