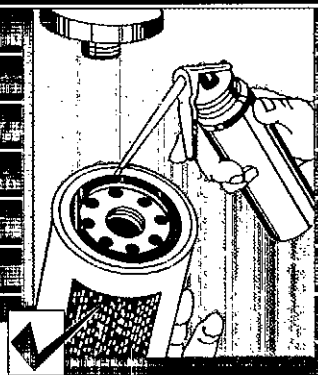
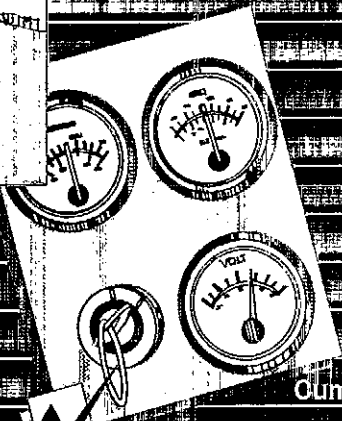
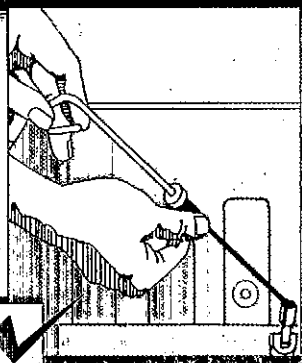
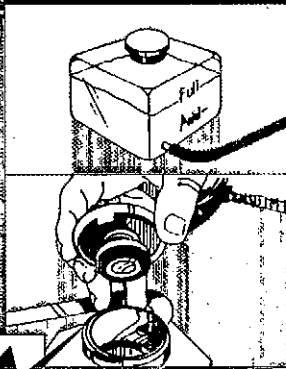




Operation and Maintenance Manual Automotive, Recreational Vehicle, Bus, and Industrial B3.9 and B5.9 Series Engines

U.S.A., Canada, Australia, New Zealand, and Puerto Rico



Cummins Customer Assistance Center

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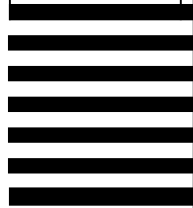


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Cummins Customized Parts Catalog

Cummins is pleased to announce the availability of a parts catalog compiled specifically for you. Unlike the generic versions of parts catalogs that support general high volume parts content: Cummins Customized catalogs contains only the new factory parts that were used to build your engine.

The catalog cover, as well as the content, is customized with you in mind. You can use it in your shop, at your worksite, or as a coffee table book in your RV or boat. The cover contains your name, company name, address, and telephone number. Your name and engine model identification even appears on the catalog spine. Everybody will know that Cummins created a catalog specifically for you.

This new catalog was designed to provide you with the exact information you need to order parts for your engine. This will be valuable for customers that do not have easy access to the Cummins Electronic Parts Catalog or the Cummins Parts Microfilm System.

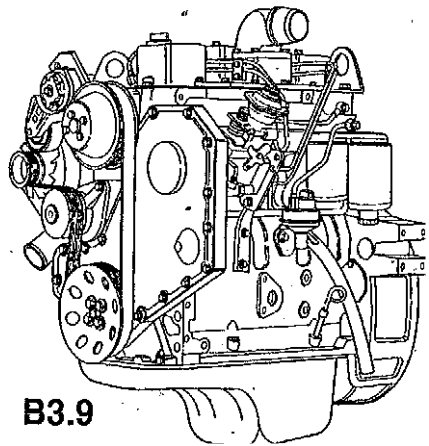
Additional Features of the Customized Catalog include:

- Engine Configuration Data
- Table of Contents
- Separate Option and Parts Indexes
- Service Kits (when applicable)
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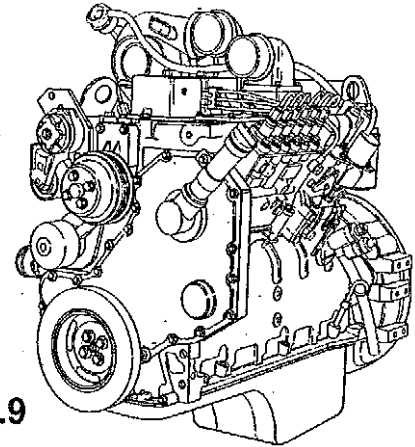


Operation and Maintenance Manual Automotive, Recreational Vehicle, Bus, and Industrial 53.9 and 55.9 Series Engines

U.S.A., Canada, Australia, New Zealand, and Puerto Rico



B3.9



B5.9

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Foreword

This manual contains information for the correct operation and maintenance of your Cummins engine. It also includes important safety information, engine and systems specifications, troubleshooting guidelines, and the names of Cummins and its major component manufacturers.

Read and follow all safety instructions. Refer to the WARNING in the General Safety Instructions in Section I - Introduction.

Keep this manual with the equipment. If the equipment is traded or sold, give the manual to the new owner.

The information, specifications, and recommended maintenance guidelines in this manual are based on information in effect at the time of printing. Cummins Engine Company, Inc. reserves the right to make changes at any time without obligation. If you find differences between your engine and the information in this manual, contact your local Cummins Authorized Representative or call 1-800-DIESEL S (1-800-343-7357) toll free in the U.S. and Canada.

The latest technology and the highest quality components were used to produce this engine. When replacement parts are needed, use only genuine Cummins or ReCon® exchange parts. These parts will be identified by the following logos:



Note: Warranty information is located in Section W. Make sure you are familiar with the warranty or warranties applicable to your engine.

Table of Contents

	Section
Introduction	i
Engine Identification	E
Operating Instructions	1
Maintenance Guidelines	2
Maintenance Procedures at Daily Interval	3
Maintenance Procedures at 10,000 Kilometers [6000 Miles], 250 Hours, or 3 Months	4
Maintenance Procedures at 19,000 Kilometers [12,000 Miles], 500 Hours, or 6 Months	5
Maintenance Procedures at 38,000 Kilometers [24,000 Miles], 1000 Hours, or 1 Year	6
Maintenance Procedures at 77,000 Kilometers [48,000 Miles], 2000 Hours, or 2 Years	7
Adjustment, Repair, and Replacement	A
System Diagrams	D

	Section
Service Literature	L
Component Manufacturers	M
Service Assistance	S
Troubleshooting Symptoms	TS
Maintenance Specifications	V
Warranty	W
Index'	X

Important Reference Numbers

Part Name	Part Number	Part Number
Engine Model		
Engine Serial Number (ESN)		
Control Parts List (CPL)		
Fuel Pump Part Number		
Electronic Control Module (ECM)		
Filter Part Numbers:		
● Air Cleaner Element		
● Lubrication Oil Filter		
● Fuel		
● Fuel-Water Separator		
● Coolant		
● Remote Gas		

Part Name	Part Number	Part Number
Governor Control Module (GCM) (if applicable)		
Belt Part Numbers:		
•		
■		
.		
Clutch or Marine Gear (if applicable):		
• Model		
• Serial Number		
• Part Number		
• Oil Type		
• Sea Water Pump		
- Model		
- Part Number		

Section i Introduction

Section Contents

	Page
About the Manual	i-2
General Information	i-2
Acronyms and Abbreviations.....	1-8
General Information	1-8
General Safety Instructions.....	i-6
Important Safety Notice	1-6
How to Use the Manual.....	i-3
General Information	1-3
Illustrations	1-5
General Information	1-5
Symbols	1-4
General Information	1-4
To the Owner and Operator	i-1
General Information	i-1

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To the Owner and Operator

General Information

Preventive maintenance is the easiest and least expensive type of maintenance. Follow the maintenance schedule recommendations outlined in Maintenance Guidelines (Section 2).

Keep records of regularly scheduled maintenance.

Use the correct fuel, oil, and coolant in your engine as specified in Maintenance Specifications (Section V).

Cummins Engine Company, Inc. uses the latest technology and the highest quality components to produce its engines. Cummins recommends using **only** genuine Cummins parts and ReCon® exchange parts.

Personnel at Cummins Authorized Repair Locations have been trained to provide expert service and parts support. If you have a problem that can not be resolved by a Cummins Authorized Repair Location, **follow** the steps outlined in the Service Assistance (Section S).

About the Manual

General Information

This manual contains information needed to operate and maintain your engine correctly as recommended by Cummins Engine Company, Inc. Additional service literature can be ordered from your local Cummins Distributor. For problems with literature orders, contact (800) DIESELS (343-7357) in the U.S.A. or Cummins International.

This manual does **not** cover vehicle or equipment maintenance procedures. Consult the vehicle or original equipment manufacturer (OEM) for maintenance recommendations.

Metric and U.S. customary values are listed in this manual. The metric value is listed first followed by the U.S. customary value.

Numerous illustrations and symbols are used to clarify the meaning of the text. Refer to Symbols (Section i) for a listing of symbols and their definitions.

Each section is headed by a Contents to aid in locating information quickly.

How to Use the Manual

General Information

This manual is organized according to intervals at which maintenance on your engine is to be performed. A maintenance chart (table) that gives required intervals and checks to be made is located in Section 2. Locate the interval at which you are performing maintenance; then follow the steps given in that Section for all the procedures to be performed. In addition, the procedures completed under previous maintenance intervals must also be performed.

Keep a record of all the checks and inspections made. A record form for recording the date or hours at which maintenance checks were performed is located in Section 2.

Refer to Section TS for a guide to troubleshooting your engine. Follow the directions given in that section to locate and correct engine problems.

Refer to Section V for specifications recommended by Cummins Engine Company, Inc. for your engine. Specifications and torque values for each engine system are given in that section.

Symbols

General Information

The following symbols have been used in this manual to help communicate the intent of the instructions. When one of the symbols appears, it conveys the meaning defined below:



WARNING - Serious personal injury or extensive property damage can result if the warning instructions are not followed.



CAUTION - Minor personal injury can result or a part, an assembly, or the engine can be damaged if the caution instructions are not followed.



Indicates a **REMOVAL** or **DISASSEMBLY** step.



Indicates an **INSTALLATION** or **ASSEMBLY** step.



INSPECTION is required.



CLEAN the part or assembly.



PERFORM a mechanical or time **MEASUREMENT**.



LUBRICATE the part or assembly.



indicates that a **WRENCH** or **TOOL SIZE** will be given.



TIGHTEN to a specific torque.



PERFORM an **electrical MEASUREMENT**.



Refer to **another location in this manual** or another publication for additional information.



The component weighs **23 kg [50 lb] or more**. To avoid personal injury, use a hoist or **get assistance** to lift the component.

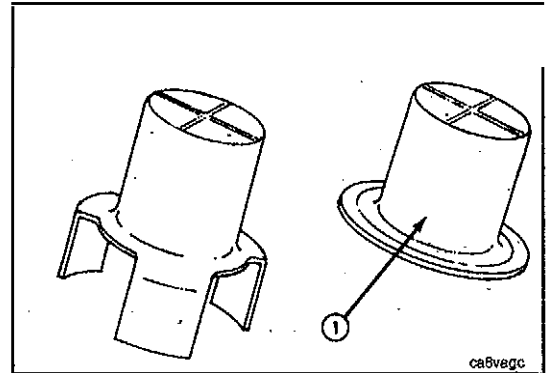
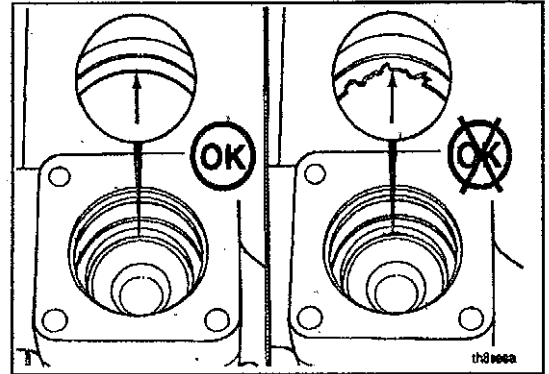
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Illustrations

General Information

Some of the illustrations throughout this manual are generic and will not look exactly like the engine or parts used in your application. The illustrations can contain symbols to indicate an action required and an acceptable or not acceptable condition.

The illustrations are intended to show repair or replacement procedures. The procedure will be the same for all applications, although the illustration can differ.



General Safety Instructions

Important Safety Notice

▲ WARNING ▲

Improper practices or carelessness can cause burns, cuts, mutilation, asphyxiation or other bodily injury or death.

Read and understand all of the safety precautions and warnings before performing any repair. This list contains the general safety precautions that must be followed to provide personal safety. Special safety precautions are included in the procedures when they apply.

- Make sure the work area surrounding the product is dry, well lit, ventilated, free from clutter, loose tools, parts, ignition sources and hazardous substances. Be aware of hazardous conditions that can exist.
- Always wear protective glasses and protective shoes when working.
- Rotating parts can cause cuts, mutilation or strangulation.
- Do **not wear** loose-fitting or torn clothing. Remove all jewelry when working.
- Disconnect the battery (negative[-] cable first) and discharge any capacitors before beginning any repair work. Disconnect the air starting motor if equipped to prevent accidental engine starting. Put a "Do Not Operate" tag in the operator's compartment or on the controls.
- Use **ONLY** the proper engine barring techniques for manually rotating the engine. Do **not** attempt to **rotate** the crankshaft by pulling or prying on the fan. This practice can cause serious personal injury, property damage, or damage to the fan blade(s) causing premature fan failure.
- If an engine has been operating and the coolant is hot, allow the engine to **cool** before you slowly loosen the filler cap and relieve the pressure from the cooling system.
- Do **not** work on anything that is supported **ONLY** by lifting jacks or a hoist. Always **use** blocks or proper stands to support the product before performing any service work.
- Relieve all pressure in the air, oil, fuel and the cooling systems before any lines, fittings, or related items are removed or disconnected. Be alert for possible pressure when disconnecting any device from a system that utilizes pressure. Do **not** check for pressure leaks with your hand. High pressure oil or fuel can cause personal

- injury.
- To prevent suffocation and frostbite, wear protective clothing. Do not use liquid refrigerant (for lines in a well-ventilated area. To protect the environment, do not use refrigerant in any way that is not intended. Do not use refrigerant and filled using equipment that prevents the release of refrigerant gas (fluorocarbons) into the atmosphere. Federal law requires use of approved recycling refrigerant.
 - To avoid personal injury, use proper lifting techniques when lifting components that weigh 23 kg [50 lb] or more. Make sure all lifting devices such as chains, hooks, or slings are in good condition and are of the correct capacity. Make sure hooks are positioned correctly. Always use a spreader bar when necessary. The lifting hooks must not be overloaded.
 - Corrosion inhibitor, a component of SCA and lubricating oil, contains alkali. Do not get this substance in your eyes. Avoid skin contact. Do not swallow it. In case of contact, immediately wash skin with soap and water. In case of eye contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. CALL A PHYSICIAN. KEEP OUT OF REACH OF CHILDREN.
 - Volatile flammable liquids (VFL) and Ketone (K) are flammable materials and should be handled with caution. Follow the manufacturer's instructions to provide complete safety when using these materials. KEEP OUT OF REACH OF CHILDREN.
 - To avoid burns, be alert for hot parts or products that have just been turned off, and hot fluids in lines, tubes, and fittings.
 - Always use tools that are in good condition. Make sure you understand the instructions before performing any service work. Use the correct size and type of tools. Do not use tools that are damaged or worn.
 - Always use the same fastener part number (or equivalent) when replacing a fastener. Do not use a fastener of lesser quality if replacements are necessary.
 - Do not perform any repair when fatigued or after consuming alcohol or drugs that can impair your ability to work safely.
 - Some state and federal agencies in the United States of America have determined that used engine oil can be harmful to the environment and can cause reproductive toxicity. Avoid inhalation of vapors, ingestion, and prolonged contact with used engine oil.
 - Coolant is toxic. If not reused, dispose of in accordance with local environmental regulations.

Acronyms and Abbreviations

General Information

AFC	Air Fuel Control
API	American Petroleum Institute
ASA	Air Signal Attenuator
ASTM	American Society of Testing and Materials
°C	Celsius
CARB	California Air Resources Board
C.I.D.	Cubic Inch Displacement
CNG	Compressed Natural Gas
CPL	Control Parts List
cSt	Centistokes
ECM	Electronic Control Module
ECS	Emission Control System
EPA	Environmental Protection Agency
EPS	Engine Position Sensor
°F	Fahrenheit
GVW	Gross Vehicle Weight
Hg	Mercury
hp	Horsepower
H₂O	Water
ICM	Ignition Control Module
km/l	Kilometers per Liter

kPa	Kilopascal
LNG	Liquid Natural Gas
LTA	Low Temperature Aftercooling
MIP	Mixer Inlet Pressure
MPa	Megapascal
mph	Miles Per Hour
mpq	Miles Per Quart
N•m	Newton-meter
NG	Natural Gas
OEM	Original Equipment Manufacturer
ppm	Parts Per Million
psi	Pounds Per Square Inch
PTO	Power Takeoff
rpm	Revolutions Per Minute
SAE	Society of Automotive Engineers
SCA	Supplemental Coolant Additive
STC	Step Timing Control
VS	Variable Speed
VSS	Vehicle Speed Sensor

Section E - Engine Identification

Section Contents

	Page
Engine Diagrams	E-27
Engine Views	E-27
Engine Identification	E-1
Cummins Engine Nomenclature	E-3
Engine Dataplate	E-1
Fuel Injection Pump Dataplate	E-4
Bosch®	E-4
CAV	E-5
Stanadyne	E-5
Specifications	E-7
Air Intake System	E-19
Batteries (Specific Gravity)	E-26
Cooling System	E-17
Electrical System	E-23
Exhaust System	E-21
Fuel System	E-11
General Specifications	E-7
Lubricating Oil System	E-14