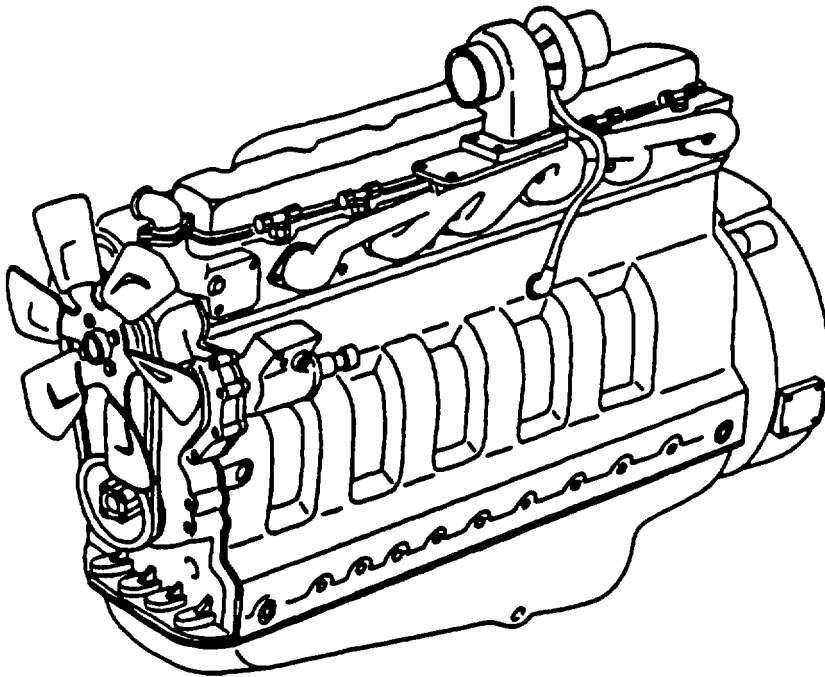


TECHNICAL MANUAL
UNIT, DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE INSTRUCTIONS

DIESEL ENGINE
MODEL 6059T
6 CYLINDER 5.9 LITER
NSN: 2815-01-350-2209



This copy is a reprint which includes current pages from Change 1.

HEADQUARTERS, DEPARTMENTS OF THE ARMY, AIR FORCE
AND HEADQUARTERS, U.S. MARINE CORPS
15 SEPTEMBER 1993

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HEADQUARTERS
DEPARTMENTS OF THE ARMY, AIR FORCE
AND HEADQUARTERS, U.S. MARINE CORPS
WASHINGTON, D.C., 15 September 1993

Unit, Direct Support and General Support
Maintenance Instructions

**DIESEL ENGINE
MODEL 4059T
6 CYLINDER 5.9 LITER
NSN: 2815-01-350-2209**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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TABLE OF CONTENTS

	PAGE
CHAPTER 1 INTRODUCTION	1-1
Section I. General Information	1-1
Section II. Equipment Description and Data	1-1
Section III. Preparation for Use	1-4
CHAPTER 2 OPERATION.....	2-1
Section I. PRINCIPLES OF OPERATION	2-1
Section II. OPERATING INSTRUCTIONS	2-1
CHAPTER 3 MAINTENANCE	3-1
Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).....	3-1

TABLE OF CONTENTS - continued

		PAGE
Section II.	Troubleshooting	3-2
Section III.	General Maintenance	3-15
Section IV.	Cooling System Maintenance	3-21
Section V.	Electrical System Maintenance	3-27
Section VI.	Intake and Exhaust System Maintenance	3-51
Section VII.	Lubrication System Maintenance	3-61
Section VIII.	Fuel System Maintenance	3-76
Section IX.	Cylinder Head Assembly Maintenance	3-139
Section X.	Flywheel and Housing Assembly Maintenance	3-159
Section XI.	Crankshaft Pulley and Timing Gear Cover Assembly Maintenance	3-164
Section XII.	Camshaft Assembly Maintenance	3-168
Section XIII.	Idle Gears and Front Plate Assembly Maintenance	3-174
Section XIV.	Crankshaft and Main Bearings Maintenance	3-180
Section XV.	Pistons, Connecting Rods, Cylinder Liners, and Engine Block Maintenance	3-190
APPENDIX A	REFERENCES	A-1
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1
APPENDIX C	EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	C-1
APPENDIX D	FABRICATION OF TOOLS	D-1
APPENDIX E	MAINTENANCE PROCEDURES AND AUTHORIZED LEVEL OF MAINTENANCE	E-1
INDEX		Index-1

LIST OF ILLUSTRATIONS

FIGURE		PAGE
1-1.	Engine Components	1-3
3-1.	Connecting Test Gage to Intake Manifold	3-19
3-2.	Thermostat and Housing	3-22
3-3.	Engine Oil Cooler Hoses	3-24
3-4.	Water Pump Assembly	3-25
3-5.	Battery Charging Alternator and Mounting Brackets	3-28
3-6.	Battery Charging Alternator Assembly	3-30
3-7.	Stator and Rear Housing Separation	3-30
3-8.	Testing Brush Assembly	3-31
3-9.	Testing Diode-Trio	3-31
3-10.	Testing Rectifier Bridge	3-32
3-11.	Testing Stator Windings	3-33
3-12.	Testing Rotor	3-33
3-13.	Battery Charging Alternator Test Circuit	3-34
3-14.	Starter Bench Test Setup	3-36
3-15.	Starter Assembly	3-37
3-16.	Disconnecting Lead Wire (Typical)	3-38
3-17.	Removing Through Bolts (Typical)	3-38
3-18.	Removing Starter End Frame and Yoke Assembly (Typical)	3-39
3-19.	Removing Brushes	3-40
3-20.	Removing Armature	3-40
3-21.	Removing Housing (Typical)	3-41
3-22.	Removing Overrunning Clutch (Typical)	3-41
3-23.	Removing Steel Ball	3-42
3-24.	Removing Pinion, Retainer, and Rollers (Typical)	3-42
3-25.	Removing Washer and Spring	3-43
3-26.	Checking Commutator Run-Out	3-43
3-27.	Measuring Commutator OD	3-44
3-28.	Measuring Segment Mica Depth	3-44
3-29.	Inspecting and Replacing Bearings	3-45
3-30.	Measuring Brush Length	3-45
3-31.	Checking Overrunning Clutch	3-46
3-32.	Starter Solenoid Test Circuit	3-46
3-33.	Growler Test	3-47
3-34.	Testing for Grounded Windings	3-47
3-35.	Checking for Open Circuit Windings	3-47
3-36.	Checking Brush Holder	3-48
3-37.	Checking Field Coils	3-48
3-38.	Checking for Open Field Coil	3-49

LIST OF ILLUSTRATIONS - Continued

FIGURE		PAGE
3-39.	Installing Brushes	3-49
3-40.	Installing Cover On Yoke.....	3-50
3-41.	Installing Yoke.....	3-50
3-42.	Turbocharger.....	3-52
3-43.	Turbocharger Inspection Points	3-53
3-44.	Exhaust Manifold.....	3-58
3-45.	Intake Manifold.....	3-60
3-46.	Oil Filter and Cooler	3-62
3-47.	Removing Oil Filter Nipple	3-63
3-48.	Installing Oil Filter Nipple	3-64
3-49.	Driving Oil Filter Nipple	3-64
3-50.	Oil Pressure Regulating Valve and Oil Filler Assembly.....	3-66
3-51.	Dipstick	3-68
3-52.	Oil Pan	3-69
3-53.	Oil Pump Assembly.....	3-71
3-54.	Measuring Oil Pump Axial Clearance	3-72
3-55.	Measuring Oil Pump Radial Clearance	3-72
3-56.	Oil Pressure Test Setup.....	3-74
3-57.	Oil Bypass Valve Installation	3-74
3-58.	Fuel Filter and Fuel Supply Pump	3-78
3-59.	Fuel Lines and Injection Pump Installation.....	3-83
3-60.	Flywheel Locking Tool.....	3-85
3-61.	Checking Timing Marks.....	3-85
3-62.	Fuel Injection Pump Gear Access (Cover Removed.....	3-86
3-63.	Separating Gear and Shaft.....	3-86
3-64.	Fuel Injection Pump Assembly	3-89
3-65.	Disassembly of Shut-Off Lever.....	3-90
3-66.	Disassembly of Throttle Shaft Assembly.....	3-90
3-67.	Speed Droop Governor	3-91
3-68.	Disengaging Governor Linkage (Typical).....	3-92
3-69.	Removing Metering Valve	3-92
3-70.	Removing Vent Wire Screw	3-93
3-71.	Removing Transfer Pump Screw.....	3-93
3-72.	Removing Transfer Pump End Cap.....	3-94
3-73.	Fuel Injection Pump Hydraulic Head Assembly.....	3-95
3-74.	Transfer Pump Regulator Components.....	3-96
3-75.	Removing Transfer Pump Blades.....	3-96
3-76.	Removing End Cap Seal.....	3-97
3-77.	Removing Head Locating Screw.....	3-97

LIST OF ILLUSTRATIONS - Continued

FIGURE		PAGE
3-78.	Removing Advance Screw Hole Plug	3-98
3-79.	Removing Spring Side Advance Plug	3-98
3-80.	Disassembling Governor	3-99
3-81.	Removing Shaft Retaining Nut	3-99
3-82.	Removing Governor Arm	3-100
3-83.	Removing Rotor Retainers	3-100
3-84.	Removing Cam Ring (Typical).....	3-101
3-85.	Removing Delivery Valve	3-101
3-86.	Removing Leaf Spring (Typical)	3-102
3-87.	Removing Rollers (Typical)	3-102
3-88.	Removing Pumping Plungers (Typical).....	3-103
3-89.	Delivery Valve Replacement	3-108
3-90.	Installing Rollers and Shoes (Typical).....	3-109
3-91.	Measuring Roller-To-Roller Dimension	3-110
3-92.	Installing Seals and Bearing	3-112
3-93.	Installing Protection Tube	3-113
3-94.	Installing Governor Arm.....	3-113
3-95.	Installing Weights	3-114
3-96.	Installing Thrust Washer and Sleeve	3-114
3-97.	Inserting Hydraulic Head (Typical).....	3-115
3-98.	Installing Metering Valve	3-116
3-99.	Installing Governor Linkage	3-116
3-100.	Alignment of Spacer	3-117
3-101.	Alignment of Shutoff Arm	3-118
3-102.	Installing Throttle Shaft Assembly (Typical).....	3-118
3-103.	Checking Clearance at Linkage Hook	3-120
3-104.	Installing Shutoff Cam	3-121
3-105.	Installing End Cap	3-122
3-106.	Installing Retaining Plate	3-122
3-107.	Installing Locking Head Bolts.....	3-123
3-108.	Installing Pilot Tube Seal.....	3-123
3-109.	Fuel Injection Pump Installation.....	3-129
3-110.	Checking Timing Marks.....	3-129
3-111.	Checking Injection Pump Gear Timing	3-130
3-112.	Fuel Injection Nozzle	3-133
3-113.	Fuel Injection Nozzle Seals	3-136
3-114.	Valve Cover	3-139
3-115.	Adjusting Valve Clearance	3-140
3-116.	Checking Valve Clearance	3-141

LIST OF ILLUSTRATIONS - Continued

FIGURE		PAGE
3-117.	Installing Timing Pin	3-141
3-118.	Rocker Arm Assembly	3-143
3-119.	Cylinder Head Assembly	3-147
3-120.	Valve Face Angle	3-150
3-121.	Measuring Cylinder Head Thickness	3-151
3-122.	Valve Seat Bore Specifications	3-155
3-123.	Measuring Cylinder Liner Height	3-156
3-124.	Cylinder Head Capscrew Tightening Sequence	3-157
3-125.	Flywheel and Housing Assembly	3-161
3-126.	Crankshaft Pulley	3-164
3-127.	Timing Gear Cover	3-166
3-128.	Camshaft	3-169
3-129.	Measuring Camshaft End Play	3-170
3-130.	Measuring Thrust Plate Clearance	3-171
3-131.	Measuring Camshaft Journals	3-171
3-132.	Measuring Camshaft Lobe Height	3-172
3-133.	Aligning Timing Mark and Camshaft Gear	3-173
3-134.	Idle Gears	3-175
3-135.	Spring Pin Protrusion	3-176
3-136.	Front Plate	3-177
3-137.	Crankshaft and Main Bearings	3-182
3-138.	Critical Areas of Crankshaft Load Stress	3-184
3-139.	Measuring Main Thrust Journal and Thrust Bearing Width	3-185
3-140.	Fastening Cylinder Liners	3-190
3-141.	Removing Carbon From Cylinder Liner	3-191
3-142.	Marking Cylinder Liners	3-192
3-143.	Pistons, Connecting Rods, and Cylinder Liners	3-193
3-144.	Use of Cylinder Liner Puller	3-194
3-145.	Cylinder Liner O-Rings and Packing	3-194
3-146.	Engine Block	3-196
3-147.	Piston Inspection	3-197
3-148.	Checking Piston Ring Groove Clearance	3-197
3-149.	Checking Piston Pin Clearance	3-198
3-150.	Inspecting Cylinder Liner Pitting	3-199
3-151.	Inspecting Cylinder Liner for Cracks	3-199
3-152.	Measuring Piston Skirt	3-200
3-153.	Measuring Piston to Liner Clearance	3-201
3-154.	Checking Piston Pin Bushing	3-203
3-155.	Inspecting piston Cooling Nozzles	3-204

LIST OF ILLUSTRATIONS - Continued

FIGURE		PAGE
3-156.	Inspecting Cylinder Block	3-205
3-157.	Measuring Main Bearing Bore Diameter	3-206
3-158.	Measuring Cam Follower Bore Diameter	3-206
3-159.	Measuring Camshaft Bore Diameter	3-207
3-160.	Measuring Cylinder Block Top Deck Flatness	3-207
3-161.	Location of Cylinder Liner Shim	3-209
3-162.	Deglazed 45 Degree Cross Hatch Pattern	3-209
3-163.	Assembled Piston, Pin, and Connecting Rod	3-210
3-164.	Compression Ring Identification Marks	3-211
3-165.	Location of Cylinder Liner Packings	3-212
3-166.	Location of Cylinder Liner Square Packing	3-213
3-167.	Staggered Piston Ring Gaps	3-214
3-168.	Installing Connecting Rod Bearing	3-215
3-169.	Installing Connecting Rod Cap Bearing	3-215
3-170.	Installing Connecting Rod Cap	3-215
3-171.	Tightening Connecting Rod Caps	3-216
3-172.	Measuring Piston Protrusion	3-217
D-1.	Fuel Injection Pump Holding Fixture	D-1
D-2.	Fuel Injection Pump Timing Mark Template	D-2
D-3.	Cylinder Liner Holding Fixture	D-3

LIST OF TABLES

TABLE		PAGE
1-1.	Table of Specifications	1-4
3-1.	Preventive Maintenance Checks and Services (PMCS)	3-1
3-2.	Troubleshooting	3-3
3-3.	Turbocharger Inspection Chart	3-54
3-4.	Fuel Injection Pump Specifications	3-126
3-5.	Pump Checks	3-128

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

1-1.1. Type of Manual. This manual contains unit, direct support, and general support maintenance instructions for the Model 6059T Diesel Engine, hereafter referred to as engine. Also included are descriptions of major systems/components and their functions in relation to other systems/components.

1-1.2. Purpose of Equipment. The engine provides a driving force for generators or other equipment requiring this size (HP rating) and compatibility.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

1-2.1. 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, Army Maintenance Management System (TAMMS). Air Force personnel will use AFR 66-1, Air Force Maintenance Management Policy, for maintenance reporting and TO-0-35D54 for unsatisfactory equipment reporting.

1-2.2. Reporting of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 414-55/SECNAVINST 4355.18/AFR 400-54/MCO 4430.3J.

1-2.3. Transportation Discrepancy Report (TDR) (SF 361). Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

1-3.1. Army. If your Military Standard 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 or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, U. S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Boulevard, St. Louis, Missouri 63120-1798. We will send you a reply.

1-3.2. Air Force. Air Force personnel are encouraged to submit EIR's in accordance with AFR 900-4.

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

Refer to 750-244-3 for procedures to destroy equipment to prevent enemy use.

1-5. PREPARATION FOR STORAGE OR SHIPMENT.

Refer to TB 740-97-2 for procedures to place the equipment into storage.

1-6. WARRANTY.

The engine is warranted for a specific period of time. Refer to Warranty Technical Bulletin for the end item. The warranty starts on the date found in block 23, DA Form 2408-9, in the equipment log book. Report all defects in material or workmanship to your supervisor, who will take appropriate action.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. GENERAL.

The diesel engine (FIGURE 1-1) is four cylinder, four cycle, fuel injected, turbocharged, and liquid cooled. The firing order is 1-5-3-6-2-4. The number one cylinder is toward the fan end of the engine. The serial number is found on right side of the cylinder block in the vicinity of the starter. Rotation of engine is counterclockwise as viewed from flywheel.

NOTE

All locations referenced herein are given facing the flywheel end (rear) of the engine.

1-8. DETAILED DESCRIPTION.

1-8.1. Turbocharger. A turbocharger, operated by exhaust gases, compresses intake air and routes it to the combustion chamber.

1-8.2. Camshaft. The camshaft is driven by an intermediate gear in the timing gear train which meshes with the crankshaft gear. Camshaft rotates in honed machined bores in cylinder block; no bushings are used. The camshaft lobes determine the time and rate of opening of each valve and actuates the fuel supply pump.

1-8.3. Intake and Exhaust Valves. Intake and exhaust valves are operated by cam followers, push rods, and rocker arm assembly. Valve seat inserts in cylinder head are used for intake and exhaust valves.

1-8.4. Crankshaft. The crankshaft is a one-piece, heat treated, steel forging which operates in replaceable two-piece front and center main bearings and five-piece rear main bearing. The rear thrust bearing has a five-piece set to support crankshaft thrust and to limit end play.

1-8.5. Cylinder Liners and Pistons. Cylinder liners are "wet" (surrounded by coolant) and are individually replaceable. O-rings are used to seal the connection between cylinder block and liners. Pistons are made of cast high-grade aluminum alloy with internal ribbing. The skirt is cam ground to allow for expansion when heated during operation. The piston crown has a cut-out swivel cup with a truncated cone in the center. Two compression rings and one oil control ring are used. The top compression ring is a keystone type ring. All piston rings are located above the piston pin. The hardened piston pins are fully-floating and held in position by means of retainer rings. Spray jets (piston cooling orifices) in cylinder block direct pressurized oil to lubricate piston pins and cool pistons. Connecting rods are of forged steel and have replaceable bushing and bearing inserts.

1-8.6. Cooling System. The cooling system consists of a radiator, water pump, cooling fan, two thermostats, and connecting hoses. The fan is mounted on shaft of water pump and both are belt driven from the crankshaft pulley. The thermostats control engine temperature and are installed in top of engine. The function of the cooling system is to maintain a specific operating temperature of 175 to 185°F (79 to 85°C) for the engine.

1-8.7. Lubrication System. The lubrication system consists of oil pan (sump), a gear type pump, full flow spin-on oil filter with built-in bypass valve, oil cooler with built-in bypass valve, pressure regulating valve, bypass valve, and the internal passages.

1-8.8. Fuel System. The function of the fuel system is to inject a metered quantity of clean atomized fuel into the engine cylinders at a precise time near the end of the compression stroke of each piston. The fuel system consists of the fuel tank, fuel filter/water separator, fuel supply pump, fuel injection pump, and the fuel injectors. The fuel tank is not mounted on the engine. The fuel supply pump is mounted to the block and is driven by the camshaft. The fuel injection pump is mounted on the front plate and is driven by an intermediate gear in the timing gear train meshing with crankshaft gear.

1-8.9. Electrical System. The electrical system is 24 VDC operation and consists of a battery charging alternator, starter, externally mounted batteries, and other items as required. The battery charging alternator is mounted on front of engine and is belt driven. When engine is operating, the battery charging alternator supplies 24 VDC to recharge the batteries and maintain them at a full state of charge. The starter is mounted on the flywheel housing and when energized, engages the ring gear of the flywheel to rotate the engine.