TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING DIRECT SUPPORT, AND GENERAL SUPPORT REPAIR PARTS LIST AND DEPOT MAINTENANCE ALLOWANCES)

FOR

ENGINE, DIESEL, WITH ACCESSORIES
CUMMINS MODEL V8-300
(2815-910-8217)

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

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***This manual supersedes TM 9-2015-213-34, 13 April 1966 including all changes.**

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CHAPTER 1
INTRODUCTION

Section I. General

1-1. Scope

a. This technical manual contains instruction for direct and general support maintenance of the Cummins Diesel Engine, Model V8-300, (fig. 1-1 and 1-2). It contains descriptions of, and procedures for, disassembly, inspection, repair, rebuild, and assembly of the engine.

b. Appendix A contains a list of current refer ences, including supply manuals, forms, technical manuals, and other available publications applicable to the engine.

c. Appendix B lists repair parts, special tools, and test equipment required for the performance of direct and general support maintenance of the engine.

1-2. Forms and Records

Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

1-3. Reporting of Equipment Publication Improvement

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded direct to the Commanding General, U.S. Army Tank-Automotive Command Attention: ASMTA-4, Warren, MI 48090.

Section II. Description and Data

1-4. Description

a. General.

(1) In this manual the following terms will be used to identify the location for engine parts and assemblies:

(a) Front-fan end of engine.

(b) Rear-flywheel end of engine.

(c) Right and Left-are identified as viewed from the rear.

(2) The model V8-300 diesel engine is as eight cylinder, V-type, Valve-in-head, water cooled, compression-ignition engine, using the four stroke cycle principle of operation. The four strokes consist of intake, compression, power and exhaust. Intake and exhaust valves, and fuel injectors, are operated from a single camshaft. The intake stroke of the cycle brings filtered, heated air to the cylinders. The compression stroke compresses the air (17:1 compression ratio) to 500-600 p.s.i, and raises the cylinder temperature to approximately 1000 degrees Fahrenheit. During the top of the compression stroke and start of the power stroke, a metered charge of diesel fuel is injected into the cylinders. The high temperature within the cylinders ignites the diesel fuel resulting in the power stroke. The fourth stroke of the cycle exhausts the burned gases from the cylinders. Proper engine operation depends upon the high compression of the intake air and the timed injection of the correct measure of diesel fuel into the cylinder.

b. Engine Assembly. The model V8-300 engine (fig. 1-1 and 1-2) is a diesel eight cylinder V-type, valve in head, water cooled, compression ignition engine. The engine is rated 300 horsepower at 3000 rpm and will operate on diesel fuel.

c. Engine Systems.

(1) Fuel System. The system consists of a filter, fuel pump with governor, fuel passages, and injectors (one for each cylinder). The system is designed so that the volume of liquid flow is proportionate to the fluid pressure, the time allowed to flow, and the size of the orifice fuel flows through. The pump draws fuel from the vehicle supply tank and delivers it to each injector. A governor controls the flow of fuel from the gear pump, as well as the idle and maximum engine speed.

(2) *Lubrication System.* All working parts of the engine are pressure lubricated. Oil is supplied by a dual-type gear driven lubricating pump located below the crankshaft and driven by the crankshaft gear. On completion of the lubrication cycle, oil is accumulated in the oil pan sump by gravity and is drawn from this sump by the oil

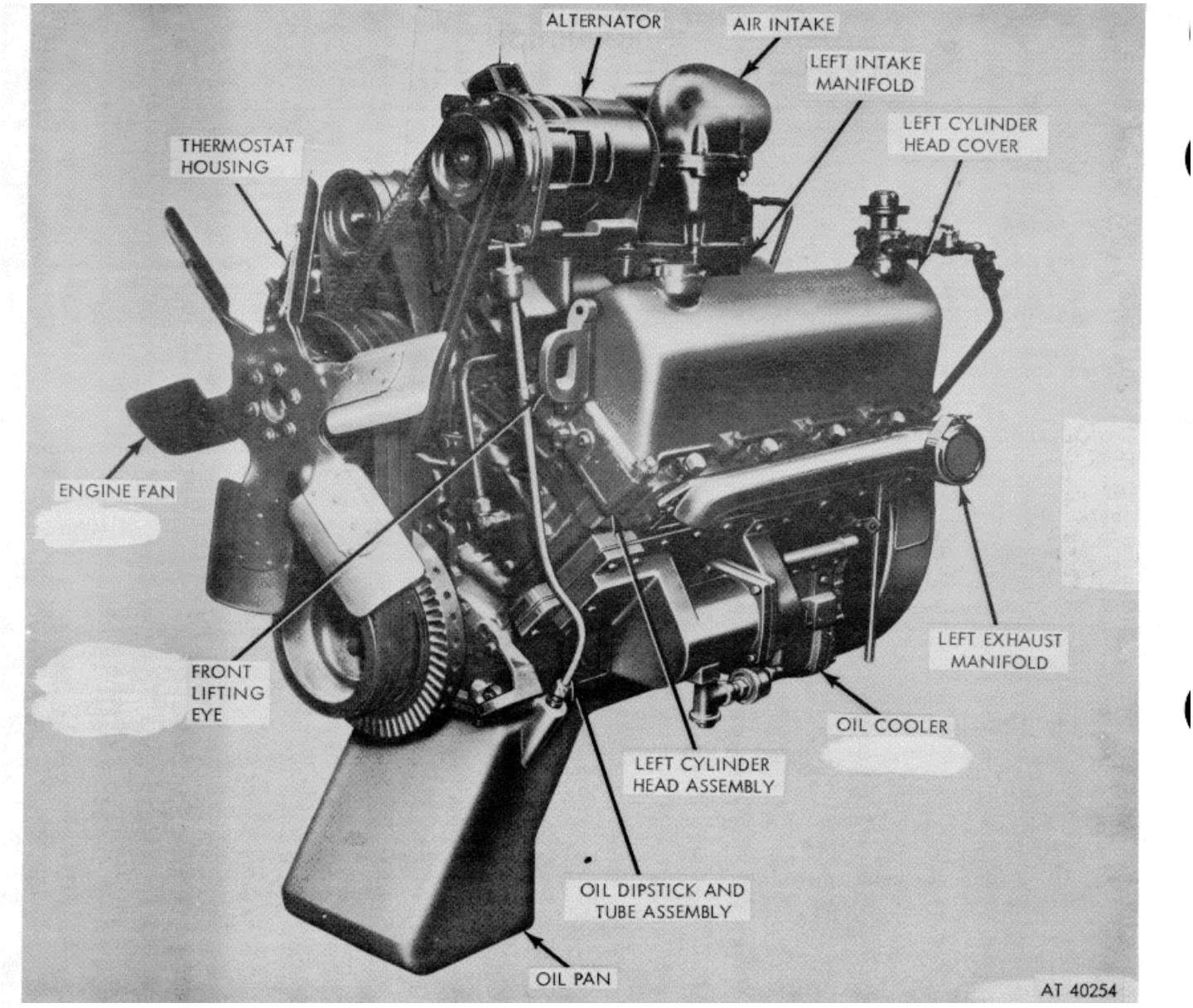

Figure 1-1. Model V8-300 engine assembly--3/4 left front view.

pump. Oil is delivered to all working parts of the engine through drillings in the block, cylinder head, crankshaft, and rocker levers. Lubricating oil is forced through the crankshaft to lubricate the main and connecting rod bearings. Lubricating oil pressure is controlled by a regulator which is an integral part of the oil pump assembly. The air compressor receives pressure lubrication from the engine oil supply. The oil flow cycle is as follows.

(a) Oil is drawn to oil pump through suction tube, in oil pan. It is then pumped through a passage in rear of block through right bank water header cover to front of the block.

(b) The oil flow crosses in front of block to left bank through oil filter and into cooler. From cooler, oil flows to left bank oil drilling at rear of engine. The oil pump by-pass dumps oil directly into pan.

(c) From left bank oil drilling, at rear of engine, oil flows to no. 4 cam bushing and no. 4 main bearing which in turn supplies no. 3 and 7 connecting rods.

(d) Right bank rocker arms are oiled intermittently through no. 5 cam bushing.

(e) From left bank oil drilling, oil flows to left bank tappets, to no. 2 and 3 cam bushings, and no. 2 and 3 main bearings. No. 3 main bear-