

TECHNICAL MANUAL

DS AND GS MAINTENANCE MANUAL

**TRUCK, FORK LIFT, 4000 LB CAPACITY,
144 IN. LIFT, GASOLINE ENGINE DRIVEN**

(BAKER MODEL FJF-040)

(ARMY MODEL MHE211)

FSN 3930-935-7963

HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY 1971

TABLE OF CONTENTS

Section	Page	Section	Page
I	INTRODUCTION AND GENERAL DESCRIPTION1-1	4-70.	Engine Mounted Accessories, Disassembly4-20
1-1.	Introduction1-1	4-71.	Hydraulic Pump4-20
1-3.	General Description.....1-1	4-72.	Ignition Distributor4-20
1-7.	Detailed Description1-3	4-75.	Carburetor.....4-20
1-37.	Electrical System Components1-9	4-77.	Disassembly of Throttle Body4-25
II	TABLE OF SPECIFICATIONS2-1	4-78.	Disassembly of Fuel Bowl Body4-25
2-1.	General2-1	4-79.	Starter.....4-25
2-2.	Deleted	4-80.	Alternator4-25.1
2-3.	Engine2-3	4-85.	Cylinder Head.....4-26
2-4.	Fuel System.....2-5	4-88.	Valves and Related Components Removal4-26
2-5.	Transmission2-5	4-89.	Timing Gear Cover Assembly4-28
2-6.	Drive Axle2-6	4-92.	Oil Pan Removal4-29
2-7.	Steering Axle2-6	4-93.	Oil Pump4-29
2-8.	Power Steering.....2-6	4-96.	Pistons and Connecting Rods4-30
2-9.	Hydraulic System2-6	4-99.	Camshaft Removal4-31
2-10.	Electric System2-6	4-100.	Flywheel Ring Gear and Flywheel Housing4-31
III	SPECIAL OVERHAUL TOOLS AND EQUIPMENT3-1	4-103.	Crankshaft Removal4-31
3-1.	Special Tools3-1	4-104.	Exhaust System Removal4-33
3-3.	Test Equipment3-1	4-105.	Deleted
IV	REMOVAL AND DISASSEMBLY4-1	4-108.	Steering Control System.....4-33
4-1.	General4-1	4-109.	Steering Column4-33
4-4.	Deleted	4-112.	Power Steering Gear4-33
4-7.	Deleted	4-115.	Drag Link.....4-39
4-10.	Deleted	4-118.	Steering Axle.....4-39
4-13.	Sheet Metal4-2	V	CLEANING5-1
4-21.	Uprights, Carriage, and Fork Assembly 4-2	5-1.	Cleaning Materials5-1
4-24.	Hydraulic System4-4	5-4.	Cleaning Precautions5-1
4-26.	Hoist Cylinder Assembly4-4	5-7.	General Instructions5-1
4-29.	Tilt Cylinder Assembly4-4	VI	REPAIR AND REASSEMBLY6-1
4-32.	Control Valve4-4	6-1.	Scope of Section6-1
4-35.	Hydraulic Oil Pump.....4-9	6-3.	General Instructions6-2
4-38.	Hydraulic Tank4-10	6-8.	Painting6-2
4-41.	Deleted	6-14.	Engine Repair and Assembly6-3
4-44.	Chassis Mounted Electrical Units4-10	6-15.	Crankshaft Repair6-3
4-47.	Chassis Mounted Hydraulic Brake System4-12	6-16.	Crankshaft Installation.....6-3
4-50.	Drive Axle4-12	6-22.	Piston Ring Installation6-4
4-53.	Wheel Brake Removal and Disassembly4-12	6-31.	Valve Installation.....6-7
4-55.	Transmission and Torque Converter ..4-16	6-34.	Oil Pump Assembly6-7
4-58.	Transmission Direction Clutch Assembly4-17	6-37.	Crank shaft Oil Seal Installation.....6-8
4-61.	Transmission Control Valve4-17	6-38.	Cylinder Head Installation.....6-9
4-64.	Engine With Accessories4-20	6-45.	Ignition Distributor Assembly6-11
4-66.	Engine Removal4-20	6-46.	Ignition Installation6-11
4-67.	Engine Mounted Accessories, Removal4-20	6-47.	Starter Assembly6-11
		6-50.	Assembly of Carburetor Fuel Bowl Body6-12

TABLE OF CONTENTS (Cont'd)

Section	Page	Section	Page
6-51. Assembly of Carburetor Throttle Body	6-12	6-87. Rack-Piston, Worm Assembly and Gear Housing Disassembly	6-21
6-52. Transmission Repair and Assembly	6-13	6-88. Rack-Piston, Worm Assembly and Gear Housing Inspection	6-21
6-53. Control Valve Assembly	6-13	6-89. Rack-Piston, Worm Assembly and Gear Housing Assembly	6-22
6-56. Forward and Reverse Clutch Assembly	6-13	6-90. Rack-Piston, Worm Assembly and Gear Housing Installation	6-23
6-58. Transmission Assembly	6-13	6-93. Master Cylinder Assembly	6-23
6-59. Transmission Installation	6-14	6-96. Wheel Brake Assembly	6-24
6-60. Drive Axle Repair and Assembly	6-14	6-99. Deleted	
6-62. Differential Adjustments	6-15	6-102. Hydraulic System Assembly	6-25
6-64. Reduction Gear Axle End Assembly	6-17	6-104. Uprights, Carriage and Fork Assembly	6-26
6-65. Steering Gear Repair and Assembly	6-17	6-107. Tilt Cylinder Assembly	6-26
6-67. Adjuster Plug Assembly Removal	6-17	6-109. Hydraulic Control Valve Assembly	6-27
6-68. Adjuster Plug Disassembly	6-18	6-111. Hydraulic Oil Pump Assembly	6-28
6-69. Adjuster Plug Assembly	6-18	6-114. Deleted	
6-70. Adjuster Plug Installation	6-18	6-115. Hydraulic Tank Assembly	6-29
6-72. Steering Gear Valve Removal	6-19	6-117. Exhaust System	6-29
6-73. Steering Gear Valve Disassembly	6-19		
6-74. Steering Gear Valve Inspection	6-19		
6-75. Steering Gear Valve Assembly	6-19		
6-76. Steering Gear Valve - Installation	6-20		
6-77. Sector Gearshaft and Side Cover Removal	6-20		
6-78. Sector Gearshaft and Side Cover Disassembly	6-20		
6-79. Sector Gearshaft and Side Cover Inspection	6-20		
6-80. Sector Gearshaft and Side Cover Assembly	6-20		
6-81. Sector Gearshaft and Side Cover Installation	6-21		
6-82. Housing End Plug Removal	6-21		
6-83. Housing End Plug Installation	6-21		
6-84. Rack-Piston End Plug Removal	6-21		
6-85. Rack-Piston End Plug Installation	6-21		
6-86. Rack-Piston, Worm Assembly and Gear Housing Assembly Removal	6-21		
		VII INSPECTION, TESTING, AND TABLE OF LIMITS	7-1
		7-1. Scope of Section	7-1
		7-4. General Inspection Procedures	7-1
		7-17. Engine Component Inspections and Tests	7-1
		7-36. Distributor Timing	7-13
		7-37. Engine Assembly Inspections	7-13
		7-45. Drive Line and Control Component Inspections and Tests	7-14
		7-54. Hydraulic System Components	7-16
		7-65. Reassembly of Major Components	7-17
		7-79. Start Up and Breaking in Newly Overhauled Engine	7-20
		7-85. Operational Tests and Adjustments	7-20

LIST OF ILLUSTRATIONS

Number	Page	Number	Page
i. FJF-040 Fork Lift Truck	iv	1-7. Transmission, Showing Pressure Passages	1-8
1-1. Deleted		1-8. Transmission Hydraulic Diagram	1-9
1-2. Fs-24e Engine, Front and Rear Views	1-2	1-9. Drive Axle, Exploded View	1-10
1-3. Charging System Basic Schematic	1-3	1-10. Uprights, Carriage and Fork	1-11
1-4. Hydraulic System Diagram	1-4	1-11. Electrical Schematic	1-12
1-5. Steering System Arrangement	1-5	1-12. Instrument Panel	1-13
1-6. Power Steering Gear Operating	1-7		

LIST OF ILLUSTRATIONS (Cont'd)

Number	Page	Number	Page
3-1. Test Equipment	3-2	4-30. DELETED	
4-1. Fork Lift Truck Components	4-1	4-31. Power Steering Arrangement	4-36
4-2. Hydraulic System Including Tilt Cylinders	4-3	4-32. Power Steering Gear Assembly, Exploded View	4-37
4-3. Upright, Carriage and Fork Assembly, Exploded View	4-5	4-33. Rear Steering Axle Assembly, Exploded View....	4-38
4-4. Mast Lift Hydraulic Cylinder Assembly, Exploded View	4-6	5-1. Cleaning Agents	5-1
4-5. Mast Tilt Hydraulic Cylinder Assembly, Exploded View	4-7	6-1. Table of Inspection and Repair Data	6-1
4-6. Hydraulic Hoist and Tilt Control Valve, Exploded View	4-8	6-2. Checking Piston to Cylinder Fit	6-4
4-7. Hydraulic Pump Assembly, Exploded View	4-9	6-3. Pressing Out Old Piston Pin Bearing With New Bearing	6-4
4-8. DELETED		6-4. Driving Out Valve Guides	6-5
4-9. Electrical System Complete, Exploded View	4-11	6-5. Removing Valve Seat Insert With Puller	6-6
4-10. Hydraulic Brake Master Cylinder and Pedal Assembly, Exploded View	4-13	6-6. Using Dial Indicator To Check Flywheel Runout	6-8
4-11. Drive Train Less Engine, Partially Exploded View	4-14	6-7. Six Cylinder Head Screw Tightening Sequence ...	6-9
4-12. Front Drive Axle Complete, Exploded View.	4-15	6-8. Fan Drive Pulley Assembly	6-10
4-13. Axle Portion Hydraulic Brake Assembly, Exploded View	4-16	6-9. Drive Axle Ring and Pinion Gear Tooth Contact Patterns	6-16
4-14. Mechanical Transmission Complete, Exploded View	4-18	6-10. Steering Gear Adjuster Plug Locknut Wrench Details	6-17
4-15. Transmission Direction Drive Clutch Assembly, Exploded View	4-19	6-11. Steering Gear Thrust Bearing Retainer Installer Tool Details	6-18
4-16. Transmission Control Valve Assembly, Exploded View	4-19	6-12. Steering Gear Rack-Piston Arbor Tool Details	6-22
4-17. Engine Assembly Removal Disconnect Points	4-21	6-13. Steering Gear Piston Ring Compressor Tool Details	6-24
4-18. Gasoline Engine Assembly Complete With Accessories	4-22	7-1. Table of Limits and Fits and Points of Measurements (Sheet 1 of 4).....	7-2
4-19. Ignition Distributor and Spark Plugs, Exploded View	4-23	7-1. Table of Limits and Fits and Points of Measurements (Sheet 2 of 4)	7-3
4-20. Carburetor Assembly, Exploded View	4-24	7-1. Table of Limits and Fits and Points of Measurements (Sheet 3 of 4)	7-4
4-20.1 Alternator Exploded View.....	4-25.1	7-1. Table of Limits and Fits and Points of Measurements (Sheet 4 of 4)	7-5
4-21. Engine Electrical Starting Motor.....	4-26	7-2. Table of Torque Values	7-6
4-22. Engine Cylinder Block, Head and Oil Pan Group, Exploded View	4-27	7-3. Nondestructive Inspection Data (Sheet 1 of 2)	7-7
4-23. Engine Valve Train and Camshaft Group, Exploded View	4-28	7-3. Nondestructive Inspection Data (Sheet 2 of 2)	7-8
4-24. Removing and Replacing Valve Retainer Locks	4-28	7-4. Engine Water Pump, Exploded View	7-10
4-25. Timing Gear Cover and Governor Shaft Group, Exploded View	4-29	7-5. Starter No-Load Current and Speed Test Setup	7-11
4-26. Engine Oil Pump Assembly, Exploded View	4-30	7-6. Starter Stall Current and Torque Test Setup	7-12
4-27. Removing Cylinder Top Ridge With a Ridge Reamer	4-31	7-7. Typical Hydraulic Tilt Cylinder Test Setup.....	7-16
4-28. Engine Crankshaft and Piston Group, Exploded View	4-32	7-8. Transmission Directional Control Lever, Exploded View	7-19
4-29. Fuel, Exhaust and Engine Coolant Systems, Exploded View	4-34	7-9. Table of Engine Dynamometer Run-In Procedures	7-21
		7-10. Table of Transmission Test Pressures	7-21
		7-11. Table of Steering System Operational Tests (Sheet 1 of 2)	7-22
		7-11. Table of Steering System Operational Tests (Sheet 2 of 2)	7-23

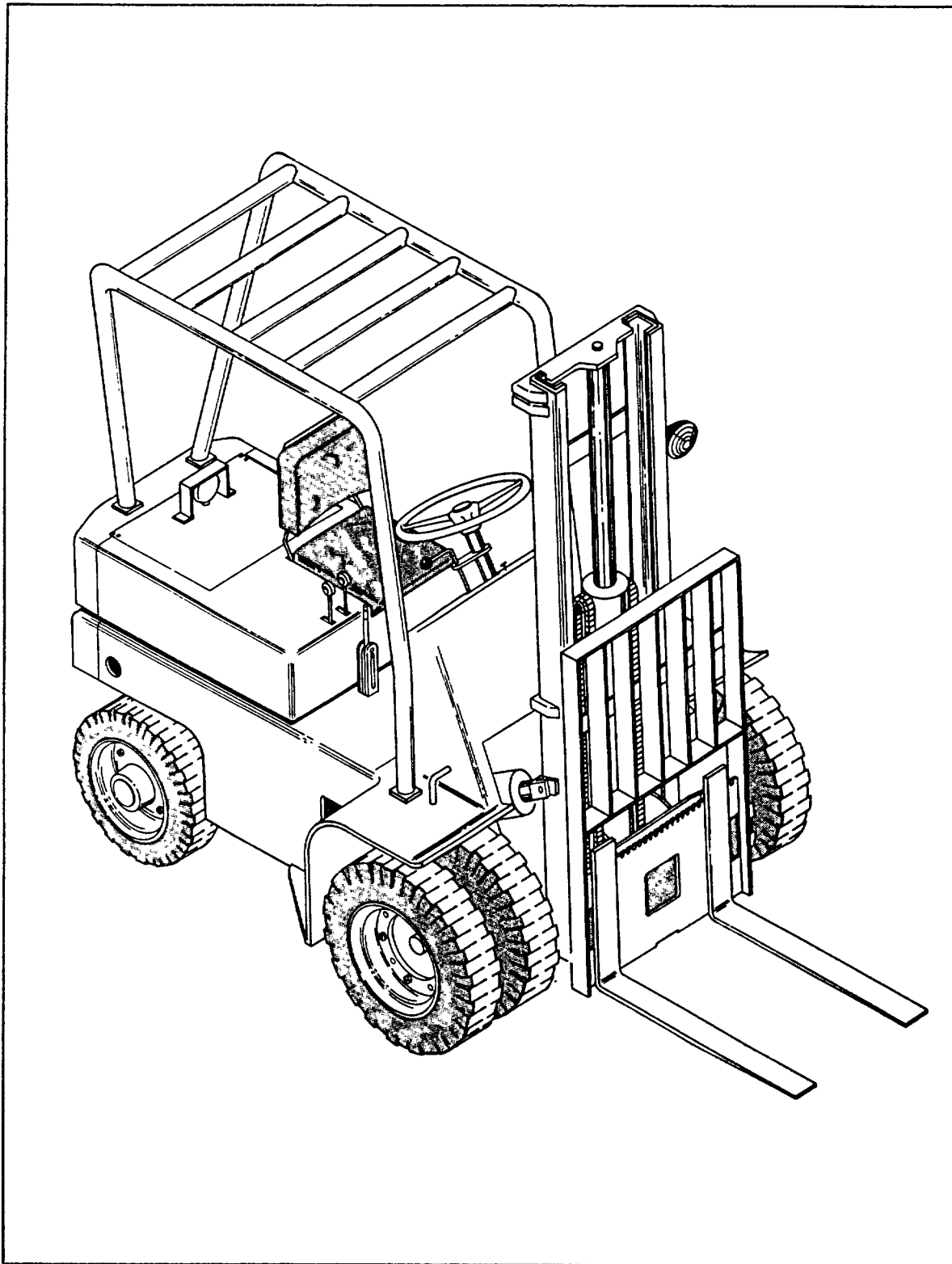


Figure i. FJF-040 Fork Lift Truck

SECTION I

INTRODUCTION AND GENERAL DESCRIPTION

1-1. INTRODUCTION.

1. Scope. This manual contains instructions for the use of direct support and general support personnel maintaining the forklift truck as allocated by the Maintenance Allocation Chart. It provides information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel, or supplies normally available at organizational maintenance.

2. Demolition and Administrative Storage.

a. For information on the administrative storage of this equipment, refer to TM 70-90-1.

b. For information on the demolition of this equipment, refer to TM 750-244-3.

3. Maintenance 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.

1-2. REPORTING OF ERRORS.

Report 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 DA Publications) and forwarded direct to: Commanding General, U. S. Army Mobility Equipment Command, ATTX: AMSME-MPP, 4300 Goodfellow Blvd., St. Louis, Missouri 63120

1-3. GENERAL DESCRIPTION.

1-4. The Model FJF-040 fork lift truck is a front loading unit rated to handle loads to 4000 pounds at 24 inch load centers. Pneumatic tires permit satisfactory operation of the truck off paved surfaces.

1-5. Handling of loads is accomplished by engaging the two 40 inch fork prongs with the load. The forks are mounted on a hydraulically operated mast assembly which can raise the load to a height of twelve feet for stacking of commodities handled. The mast is tillable ten degrees rearward to cradle the load when traveling, to three degrees forward to facilitate disengaging the load when depositing it. Travel speed of the trucks is limited to about 12 miles per hour loaded, or 14 miles per hour empty, by an engine speed governor. Steering is power assisted. Arrangement of the controls conforms to general industrial truck standards, permitting ready use by operators with previous fork lift experience.

Figure 1-1. Deleted.

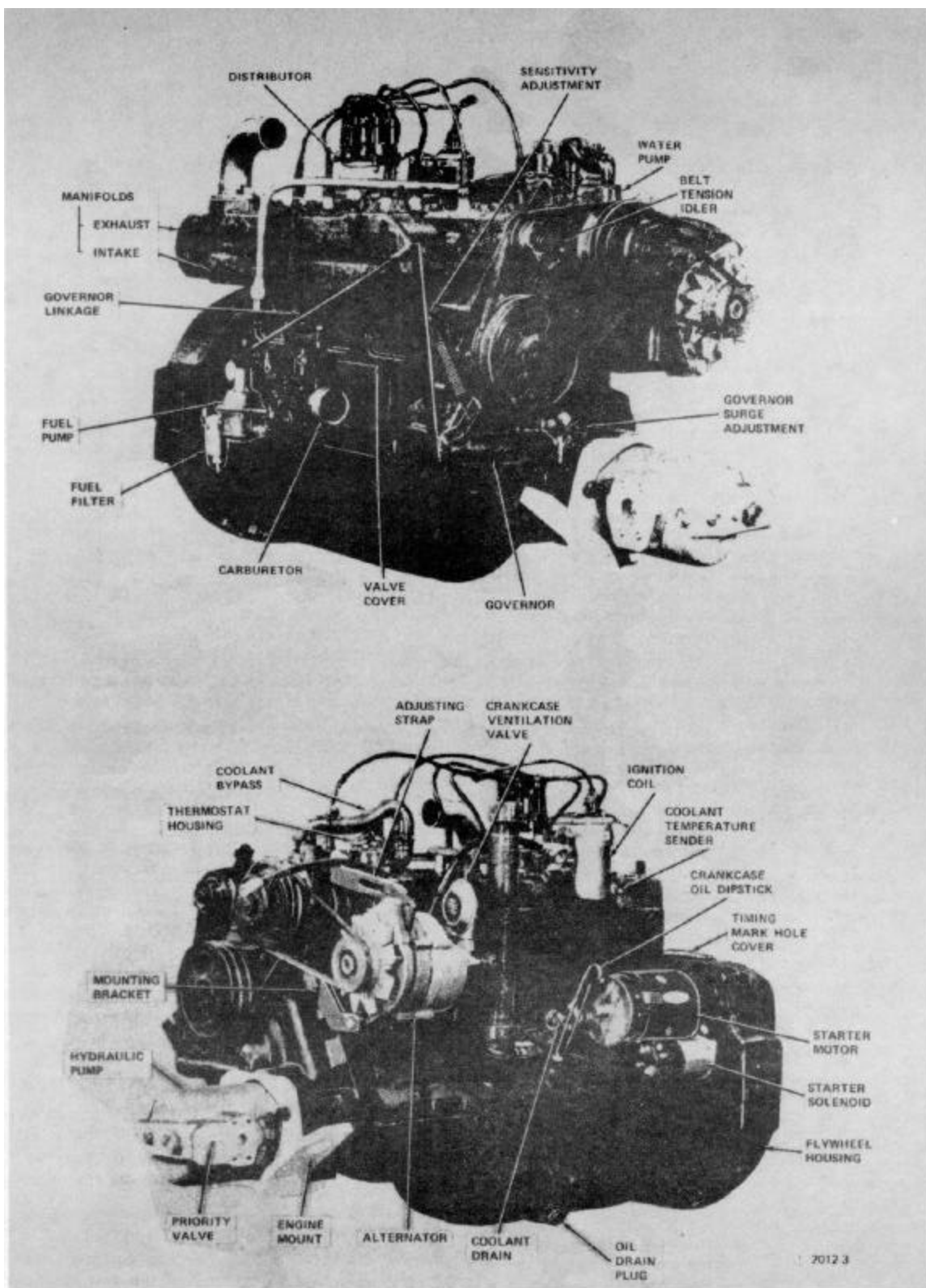


Figure 1-2. FS-244 Engine, Front and Rear Views