

ARMY TECHNICAL MANUAL	TM 5-6115-612-34
MARINE CORPS TECHNICAL MANUAL	TM 6115-34/8
AIR FORCE TECHNICAL ORDER	TO 35C2-3-471-2
NAVY PUBLICATION	AG-320B0-MME-000

TECHNICAL MANUAL

INTERMEDIATE (FIELD), (DIRECT AND GENERAL
SUPPORT) AND DEPOT MAINTENANCE MANUAL

GENERATOR SET, AVIATION, GAS TURBINE ENGINE DRIVEN,
INTEGRAL TRAILER MOUNTED, 10KW, 28 VOLTS

<u>DOD MODEL</u>	<u>CLASS</u>	<u>MODE</u>	<u>NSN</u>
MEP 362A	PRECISE	DC	6115-01-161-3992

This manual supersedes TM 5-6115-612-34/TM 6115-34/8/TO 35C2-3-471-2 and AG-320B0-MME-000, 28 July 1986.

Approved for public release; distribution is unlimited.

PUBLISHED UNDER THE AUTHORITY OF THE DEPARTMENTS OF THE ARMY,
AIR FORCE, NAVY AND HEADQUARTERS U.S. MARINE CORPS
25 JULY 1988

TECHNICAL MANUAL
NO. 5-6115-612-34

HEADQUARTERS, DEPARTMENTS OF
THE ARMY AND THE NAVY
WASHINGTON, D.C., 25 JULY 1988

INTERMEDIATE (FIELD), (DIRECT AND GENERAL SUPPORT)
AND DEPOT MAINTENANCE MANUAL

GENERATOR SET, AVIATION, GAS TURBINE ENGINE DRIVEN,
INTEGRAL TRAILER MOUNTED, 10KW, 28 VOLTS

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 20282 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. You may also submit your recommended changes by Email directly to <mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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

TABLE OF CONTENTS

NOTE

An alphabetical index is located at the back of this manual.

	PAGE
CHAPTER 1	INTRODUCTION..... 1-1
Section I	GENERAL 1-1
1-1	Scope 1-1
1-2	Limited Application 1-1
1-3	Maintenance Forms and Records 1-1
1-4	Reporting of Errors 1-1
1-5	Levels of Maintenance Accomplishment..... 1-1
Section II	DESCRIPTION AND DATA 1-2
1-6	Description 1-2
1-7	Tabulated Data..... 1-2
CHAPTER 2	GENERAL MAINTENANCE..... 2-1
Section I	REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT, DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT 2-1
2-1	Repair Parts 2-1
2-2	Tools and Equipment 2-1
Section II	TROUBLESHOOTING 2-40
2-3	General..... 2-40
Section III	GENERAL MAINTENANCE..... 2-55
2-4	General Maintenance for Direct Support, General Support, and Depot..... 2-55

Section IV	REMOVAL AND INSTALLATION OF MAJOR COMPONENTS	2-57
2-5	General.....	2-57
2-4	General Removal and Installation	2-57
2-7	Engine and Gearbox Removal and Installation	2-60
2-8	Control Panel Removal and Installation	2-68
CHAPTER 3	MAINTENANCE OF FRAME AND HOUSING	3-1
3-1	General.....	3-1
3-2	Cable Support	3-1
3-3	Access Doors and Covers.....	3-1
3-4	Control Fender Assembly.....	3-1
3-5	Exhaust Fender Assembly	3-3
3-6	Fuel Housing	3-4
3-7	Inlet Air Housing	3-6
3-8	Bleed Air Line	3-7
3-9	Air Filter Assembly	3-4
3-10	Engine Housing	3-10
3-11	Engine Support Panel	3-12
3-12	Chassis Frame Assembly	3-14
CHAPTER 4	MAINTENANCE OF DC ELECTRICAL AND CONTROL SYSTEM,.....	4-1
4-1	Purpose and Function of DC Electrical and Control System.....	4-1
4-2	General Electronic Control Module	4-2
4-3	Starter Assembly	4-13
CHAPTER 5	MAINTENANCE OF ELECTRICAL POWER GENERATION SYSTEM,	5-1
5-1	General.....	5-1
5-2	Generator Assembly Maintenance	5-2
CHAPTER 6	MAINTENANCE OF FUEL SYSTEM	6-1
6-1	Purpose and Function of Fuel System	6-1
6-2	Engine Fuel Tank	6-1
6-3	Electric High Pressure Fuel Pump	6-4
6-4	Solenoid Valve.....	6-10
6-5	Fuel Injection Nozzles	6-15
CHAPTER 7	MAINTENANCE OF LUBRICATION SYSTEM	7-1
7-1	Purpose and Function of Lubrication Assembly.....	7-1
7-2	Oil Pressure Relief Valve	7-1
7-3	Oil Cooler	7-5
7-4	Oil Pump.....	7-7
CHAPTER 8	MAINTENANCE OF ENGINE	8-1
8-1	General.....	8-1
8-2	Combustion Chamber Case Assembly	8-5
8-3	Maintenance of Turbine Assembly	8-17
8-4	Overhaul of Turbine Assembly	8-19
8-5	Overhaul of Gee-box Assembly	8-41

CHAPTER 9	MAINTENANCE OF ENGINE EXHAUST	9-1
9-1	General.....	9-1
9-2	Exhaust Duct Assembly	9-1
9-3	Exhaust Rim Clenching Clamp	9-3
9-4	Exhaust Nozzle.....	9-6
CHAPTER 10	MAINTENANCE OF LUBRICATION SYSTEM	10-1
10-1	Purpose and Function of Engine and Generator Controls and Instruments	10-1
10-2	Engine Electronic Control Module (EECM)	10-8
10-3	Control Panel Assembly	10-25
CHAPTER 11	MAINTENANCE OF LOAD CONNECTION	11-1
11-1	Generator	11-1
11-2	Power Cable.....	11-1
CHAPTER 12	MAINTENANCE OF RUNNING GEAR	12-1
12-1	Purpose and Function of Running Gear.....	12-1
12-2	Torsion Axle Assembly.....	12-1
12-3	Swivel Caster Assembly.....	12-3
CHAPTER 13	INTRODUCTION.....	13-1
Section I	GENERAL REQUIREMENTS	13-1
13-1	General.....	13-1
Section II	INSPECTION	13-1
13-2	General.....	13-1
13-3	Frame and Housing Inspection	13-1
13-4	Engine Inspection.....	13-1
13-5	Generator Inspection.....	13-1
13-6	Electrical Accessories Inspection	13-1
Section III	OPERATIONAL TEST	13-2
13-7	General.....	13-2
13-8	Engine Operational Test.....	13-2
13-9	Generator Set Operational Test	13-13
CHAPTER 14	REPAIR COATING INSTRUCTION.....	14-1
Section I	INTRODUCTION.....	14-1
14-1	Scope	14-1
Section II	COATING INSTRUCTIONS.....	14-1
14-2	Flame Spray Coating Low-Alloy Steel.....	14-1
14-3	Plasma Spray Coating-Nickel Aluminum Composite	14-2
14-4	Flame Spray Coating-Nickel Aluminum Composite	14-3
14-5	Plasma Spray Coating-Molybdenum.....	14-5
14-6	Flame Spray Coating-Aluminum Alloy (4043)	14-6
14-7	Flame Spray Coating-Aluminum Bronze, Silicone Resin Impregnated.....	14-8
APPENDIX A	References	A-1
A-1	Scope	A-1
A-2	General.....	A-1

APPENDIX B	Expendable Supplies and Materials List	B-1
Section I	INTRODUCTION	B-1
B-1	Scope	B-1
B-2	Explanation of Columns	B-1
Section II	EXPENDABLE SUPPLIES AND MATERIALS LIST	B-2
INDEX	Index-	

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1	Aviation Generator Set, Front 3/4 View	1-3
1-2	Aviation Generator Set, Rear View	1-4
2-1	Turnlock Fastener.	2-56
2-2	Generator Replacement	2-58
2-3	Engine and Gearbox Replacement	2-63
2-4	Control Panel Replacement.	2-69
3-1	Air Filter Replacement	3-9
3-2	Engine Support Assembly Replacement.	3-13
3-3	Chassis Frame Assembly Replacement	3-15
3-4	Ground Stud Replacement.	3-17
4-1	GECM TestSetup	4-3
4-2	Circuit Card Replacement	4-7
4-3	GECM Component Replacement	4-9
4-4	GECM Resistor and Relay Replacement.	4-12
4-5	StarterTestSetup.	4-14
4-6	Starter Disassembly	4-16
5-1	Generator and Filter Box	5-1
5-2	Generator Conduction - Rotor and Stator Alinement.	5-2
5-3	GECM Connector.	5-3
5-4	FilterBox Assembly.	5-5
5-5	10KW Generator Assembly	5-10
5-6	Measuring for Spring Washer Axial Distance	5-15
5-7	Stator to Diode Wire Routing.	5-17
6-1	Fuel System Block Diagram.	6-2
6-2	Engine Fuel Tank.	6-3
6-3	Electrical Fuel Pump (High Pressure) and Solenoid Valve.	6-5
6-4	Electrical Fuel Pump (High Pressure) Test Setup.	6-6
6-5	Electrical Fuel Pump (High Pressure) Electric Motor Disassembly.	6-7
6-6	Replacing Broken Brush Guide	6-9
6-7	Solenoid ValveTestSetup.	6-11
6-8	Solenoid Valve Disassembly	6-13
6-9	Silicone Sealer Application	6-14
6-10	Fuel Injection Nozzle Test Setup	6-16
6-11	Fuel Injection Nozzle Spray Patterns	6-17
7-1	Lubrication System.	7-2
7-2	Lubrication System Components.	7-3
7-3	Oil Pressure Relief Valve Installation	7-4

LIST OF ILLUSTRATIONS (Continued)

Figure	Title	Page
7-4	Oil Cooler Replacement	7-6
7-5	Oil Pump Installation	7-8
8-1	Combustion Chamber Case Assembly Removal	8-9
8-2	Removing Combustion Chamber Case Using Fabricated Tool FT-21519	8-10
8-3	Combustor Housing Disassembly	8-14
8-4	Combustor Housing Disassembly - Fuel Injection Nozzle Removal	8-15
8-5	Turbine Assembly Removal	8-18
8-6	Turbine Assembly Disassembly	8-20
8-7	Compressor Inlet Housing BoltPattern	8-21
8-8	Using Turbine Wheel Assembly Fixture, Fabricated Tool FT-21616	8-22
8-9	Removing/installing Speed Pickup Nut Using Fabricated Tool FT-23168	8-23
8-10	Removing/installing Bearing Retainer Nut Using Fabricated Tools FT-24198 and FT-21583	8-25
8-11	Removing/installing Retainer Nut Using Fabricated Tools FT-21570 and FT-21571	8-31
8-12	Obtaining Reading for Turbine Shaft Stretch Using Fabricated Tools FT-21540 and FT-21565	8-32
8-13	Rotating Group Assembly Balancing - Measurement Points	8-33
8-14	Measuring Compressor Impeller Vane Clearance Using Fabricated Tool FT-21360	8-35
8-15	Diffuser Shim Set installation -Measurement Points	8-38
8-16	Obtaining Reading for Turbine Wheel Shaft Stretch for Final Assembly Using Fabricated Tools FT-21565 and FT-21539	8-39
8-17	Gearbox Removal	8-42
8-18	Preparing Gearbox Assembly for Disassembly Using Fabricated Tool F-21343	8-45
8-19	Gearbox Accessory Removal	8-46
8-20	Gearbox Disassembly	8-48
8-21	Securing Generator Shouldered Shaft and Removing Nut Using Fabricated Tools FT-21322 and FT-21369	8-50
8-22	Removing Bearing and Output Spur Gear Using Fabricated Tools FT-21589 and FT-21325	8-51
8-23	Angular Bearing installation	8-55
8-24	Installing Generator Shouldered Shaft Using Fabricated Tools FT-21590 and FT-21324	8-57
8-25	Using Oil Implimentation Test Stand, Fabricated Tool FT-21600	8-59
9-1	Engine Exhaust System	9-2
9-2	Exhaust System Components Replacement	9-4
10-1	EECM Test Setup	10-10
10-1.1	Sample Multivolt Power Supply...	10-10.1
10-2	EECM Circuit Card Replacement	10-16
10-3	Transistor Replacement	10-18

LIST OF ILLUSTRATIONS (Continued)

Figure	Title	Page
10-4	EECM Connector Replacement	10-20
10-5	EECM Connectors (Back) Wire Connections.	10-21
10-6	Terminal Board/Multiple Ground Terminal Replacement	10-22
10-7	Contactor/Diode Replacement	10-24
12-1	Torsion Axle Replacement	12-2
12-2	Swivel Caster Repair.	12-4
13-1	Test Equipment Installation.	13-4
13-2	Envelope of Voltage Transient for 28 Volts (Nominal) DC System .	13-8
13-3	Exhaust Gas Temperature Limits	13-9
13-4	Oil Sump Temperature Limits.	13-10
13-5	Fuel Flow Limits.	13-11
13-6	Control Panel.	13-17
F0-1	Engine Electronic Control Module (EECM) Schematic	FP-1
F0-2	Engine Electronic Control Module (EECM) Wire List	FP-3
F0-3	EECM Switch Board Schematic	FP-5
F0-4	EECM MPU Board Schematic.	FP-7
F0-5	EECM Power Supply Board Schematic	FP-9
F0-6	Generator to Generator Electronic Control Module (GECM) Wiring	FP-11
F0-7	Branched Engine Electronic Control Module (EECM to Engine MiringHarness.	FP-13
F0-8	Branched Generator Electronic Control Module (GECM) to Control Panel and Engine Electronic Control Module (EECM) Wiring Harness	FP-15
F0-9	Engine and Generator Controls and Instruments Detailed Block Diagram	FP-17
F0-10	Generator Electronic Control Module Printed Wiring Assembly . .	FP-21
F0-11	Generator Electronic Module Assembly Wiring Diagram . . , . .	FP-29
F0-12	Generator Electronic Control Module Schematic	FP-31

LIST OF TABLES

Number	Title	Page
1-1	Repair and Replacement Standards	1-7
2-1	Special Tools.	2-2
2-2	Inspection and Test Equipment.	2-2
2-3	Fabricated Tools and Equipment	2-4
2-4	Troubleshooting.	2-40
4-1	GECMTest Equipment	4-3
5-1	GECM Connector Resistance Test	5-3
8-1	General Defect Definitions	8-2
8-2	Engine Disassembly Fixture	8-6
8-3	Nondestructive Test Inspection Data.	8-12
10-1	EECMTest Equipment	10-9
13-1	Engine-Generator Operational Tests (Uninstalled)	13-5
13-2	Normal Operating Conditions.	13-12
13-3	Test Cell Operating Limits	13-12
13-4	Engine-Generator Operational Tests (Installed)	13-14

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. **SCOPE.** This manual contains instructions for use in maintaining the 10kW, 28Vdc, Aviation Generator Set, MEP 362A. The type I (tactical), class 1 (precise), and mode IV (dc output) set is used in applications where precise power is required. The maintenance procedures described herein are within the scope of the intermediate and depot maintenance personnel as allocated by the Maintenance Allocation Chart (MAC). The procedures specified in this manual shall be followed if in conflict with the contents of any referenced document.

1-2. **LIMITED APPLICABILITY.** Some portions of this publication are not applicable to all services. These portions are prefixed to indicate the services to which they pertain: (A) for Army, (F) for Air Force, (N) for Navy, and (MC) for Marine Corps. Portions not prefixed are applicable to all services.

1-3. MAINTENANCE FORMS AND RECORDS.

a. (A) Maintenance forms and records used by Army personnel are prescribed by DA PAM 738-750.

b. (F) Maintenance forms and records used by Air Force personnel are prescribed in AFM-66-1 and the applicable 00-20 Series Technical Orders.

c. (N) Navy users should refer to their service peculiar directives to determine applicable maintenance forms and records to be used.

d. (MC) Maintenance forms and records used by Marine Corps personnel are prescribed by TM 4700-15/1.

1-4. **REPORTING OF ERRORS.** Report of errors, omissions, and recommendations for improvement of this publication by the individual user is encouraged. Reports should be submitted as follows:

a. (A) Army - DA form 2028 -2 located in back of this manual direct to: Commander, US Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798.

b. (F) Air Force--AFTO form 22 directly to: Commander, Sacramento Air Logistics Center, ATTN: MMEDT, McClellan Air Force Base, CA 95652, in accordance with T0-00-5-I.

c. (N) Navy--by letter directly to: Commanding Officer, US Navy Ships Parts Control Center, ATTN: Code 783, Mechanicsburg, PA 17055.

d. (MC) Marine Corps--by NAVMC form 10772 directly to: Commandant, Headquarters, US Marine Corps, ATTN: Code LMA-1, WASH DC 20380. (Narrative manuals only.)

e. (MC) Marine Corps--by NAVMC form 10772 directly to: Commanding General, ILS ME/O DIV (Code 837), Marine Corps Logistical Base, Albany, GA 31704.

1-5. LEVELS OF MAINTENANCE ACCOMPLISHMENT.

a. (A, MC) Army and Marine Corps users shall refer to the Maintenance Allocation Chart (MAC.) for tasks and levels of maintenance to be performed.