TECHNICAL MANUAL
ORGANIZATIONAL MAINTENANCE MANUAL
MOTOR-GENERATOR PU-542A/A
(NSN 6125-00-888-3056)

HEADQUARTERS, DEPARTMENT OF THE ARMY

NOVEMBER 1978

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

High voltages and current exist in this equipment. Serious injury or DEATH may result from contact with the input or output connections. Deenergize the equipment before connecting or disconnecting the load to be powered. All maintenance and maintenance facilities must conform to TB 385-4, Safety Precautions for Maintenance of Electrical/Electronic Equipment. The fumes of TRICHLOROETHANE are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane is nonflammable but heat converts the fumes to a highly toxic phosgene gas, the inhalation of which could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves, and aprons which the solvent cannot penetrate.

DON'T TAKE CHANCES!

TECHNICAL MANUAL

No. 11-6125-246-20-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 16 November 1978

ORGANIZATIONAL MAINTENANCE MANUAL
MOTOR-GENERATOR PU-542A/A
(NSN 6125-00-888-3056)

REPORTING OF ERRORS

You can improve this manual by recommending improvements using DA Form 2028-2 located in the back of this manual. Simply tear out the self-addressed form, fill it out as shown on the sample, fold it where shown, and drop it in the mail. If there are no blank DA Form 2028-2 in the back of your manual, use the standard DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case a reply will be furnished direct to you.

***This manual supersedes TM 11-6125-24620-1, 22 March 1968.**

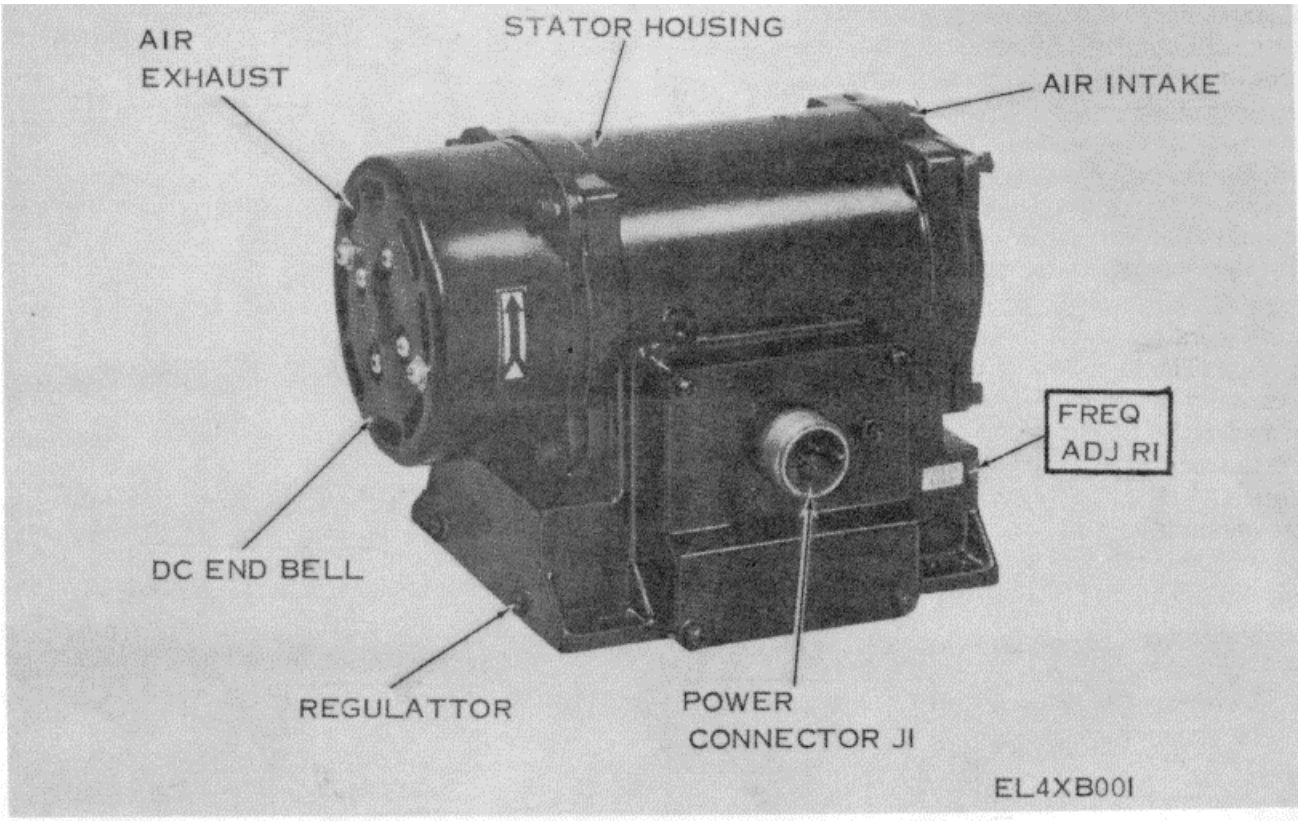

Figure 1-1. Motor-Generator PU-542A/A

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Motor-Generator PU-542A/A (fig. 1-1). Instructions are provided for operation and organizational maintenance which includes cleaning, inspection of the equipment, and replacement of parts available to organizational level.

b. Maintenance of Army aircraft is transitioning to three categories of maintenance. These maintenance categories are aviation unit maintenance (AVUM); aviation intermediate maintenance (AVIM); and depot maintenance. AVUM and AVIM will replace organizational, direct support, and general support maintenance. In the interim, as maintenance units are reorganized into three categories of maintenance activities, this publication will be used by AVIM direct and general support personnel for the maintenance of Motor-Generator PU-545/A. The maintenance allocation chart (TM 11-6125-240-12) is configured to the five-category maintenance concept; however it can be used under the three-category maintenance concept where the code O represents AVUM; the codes F and H represent AVIM; and D represents depot maintenance. Those organizations not yet assigned complete AVIM responsibilities should be cautious when using this publication. Whatever maintenance is performed must consider available skills, tools, test equipment, and time required to perform the maintenance.

1-2. Indexes of Publications

a DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment 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.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-4. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with best storage practices.

1-5. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-6. Reporting Equipment Improvement Recommendations (EIR)

EIR's will be prepared using standard form (SF) 368 (Quality Deficiency Report). Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

Section II. DESCRIPTION AND DATA

1-7. Purpose and Use

a. Purpose. Motor-Generator PU-542A/A (inverter) is a motor-driven inverter which converts the 28 volts direct current (dc) from the aircraft power supply to 115 volts, 400 cycles per second (cps) alternating current (ac). The output of the inverter can be connected for either three-phase or single-phase operation, but not both at the same time (para 21-lb).

b. Use. The inverter is used to supply alternating current to those items of the aircraft configuration which require ac power for operation.

1-8. Technical Characteristics

Voltage input	28 volts dc.
Current input (maximum)	10.5 amperes (full load).
Voltage output, single or three phase	115 volts ac.
Power output:	
Three-phase	100 volt-amperes.
Single-phase	60 volt-amperes.
Frequency output	400 cycles per second.
Power factor	0.95 lag to unity.
Operating speed	12,000 revolutions per minute.
Altitude range	0 to 50,000 feet.
Ambient temperature	

range -55° to +85° C.
Weight 7.6 pounds.

1-9. Items Comprising An Operable Equipment

The inverter in itself comprises an operable equipment.

1-10. Description

(fig. 1-1)

The inverter is a self-contained unit consisting of a static frequency regulator, and a rotating section located in a stator housing.

a Frequency Regulator.

(1) The regulator is housed in a rectangular metal box that is permanently attached to the base of the stator housing of the inverter. The regulator cover can be removed for internal inspection of the regulator by removing the four screws. The dc power input is connected to the inverter through the electrical receptacle (pin B) and the ac output is taken from this receptacle (pins A and C).

(2) An external groundpath must be provided in the installation between the load and the inverter. For single-phase operation, the load must be connected between pin C and external ground; for three-phase operation, the connections A to ground, C to ground, and A to C are used. If operating three-phase, single-phase loads must not be used or extreme unbalance will result.

b. Rotating Section. The rotating section of the inverter (fig. 1-1) is contained in a heavy metal frame which is the stator housing. The inverter mounting base is a fixed part of the bottom of the stator housing, and has four holes for attaching the inverter to the aircraft mounting. A dc end cover and a fan cover, one on each end of the inverter, are removable for inspection of rotating parts. Both covers are slotted to provide an airflow through the rotating section for cooling. The airflow intake is through the fan cover, and the airflow exhaust is through the dc end cover. Four electrical brush holders are installed on the dc end.

c. Additional Equipment Required. A 28-volt dc power source is required to supply input power to the inverter.

1-11. Unpacking

a. Packaging Data. When packed for shipment the inverter is wrapped in a cardboard liner, pierced to receive the feet on the base of the inverter and wedging the inverter within the outer corrugated cardboard carton. The inverter consists of a single unit that is 5.0 inches high, 6.88 inches deep, and 5.26 inches wide, and weighs 7.6 pounds. When factory-packed, the carton size is 618 by 61/s by 9 inches.

b. Removing Contents. After opening the cardboard carton, lift out the corrugated cardboard wrapper with the inverter and fold down the sides of the wrapper so that the inverter may be lifted clear. Make sure the wrapper is folded flat off the inverter feet.

1-12. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3b).

b. See that the equipment is complete as listed on the packing slip. If a packing list is not available, check the equipment against the basic issue items list (app B). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part that does not affect the proper functioning of the equipment should not prevent the use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order. If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and the appropriate notations concerning the modification have been entered in the equipment manual.

NOTE

Current MWO's are listed in DA Pam 310-7.

1-13. Installation Instructions

The output and input power of the inverter is routed At through the circuits of the aircraft in which the inverter is installed. Refer to the applicable aircraft technical manual for the desired mode of operation, the physical location within the aircraft, and to the procedures in a and b below for the proper output connections at the ac power connector. A typical installation procedure is provided below.

WARNING

Never connect or disconnect the inverter while dc power is present at the connector.

a. Installation

(1) Make sure that the portion of the aircraft mounting that corresponds to the inverter mounting base is free from oil and grease to be sure of good electrical grounding.

(2) Position the inverter on the aircraft mounting line up the holes in the inverter mounting base with the holes in the aircraft mounting.

(3) Secure the inverter to the aircraft mounting with the four sets of mounting hardware.

(4) Connect the power cable to the ac power connector of the inverter.

b. Removal To remove the inverter for maintenance or repair, reverse the procedures in a above.

CHAPTER 2
OPERATING INSTRUCTIONS

2-1. General

a, The inverter must be energized before use, and deenergized after use; no other operation is required. The inverter contains no on-off switch; it is energized automatically when the aircraft 28 volts de is applied, and is deenergized when the 28 volts dc is removed. No warmup is required before use. The output and input power is routed through other circuits of the aircraft in which the inverter is installed. Refer to the applicable aircraft technical manual for the proper switching sequence for operating the inverter and to b below for the proper output connections.

b. The following is a list of the output connections required at ac power connector J1 (fig. 1-1) for the various outputs of the inverter.

Ac volts	Power connector J1 (output)
115, single phase	C-ground A-not connected
115, three phase	A-ground C-ground

2-2. Starting and Stopping Procedures

a, Starting. Turn on the necessary aircraft switches to apply the 28 volts de to energize the inverter; the motor should start.

CAUTION

After starting the inverter, visually check for smoke or any other sign of malfunction. If any malfunction is noted, immediately remove the 28 volts dc power from the inverter (b below).

b. Stopping. Turn off the necessary aircraft switches to remove the 28 volts de from the inverter.

2-3. Preflight Operational Check

a General. The operational check (b below) supplements the inspection procedures in the aircraft operator's condensed checklist. The operator's inspection consists of checking the inverter for serviceability by performing an operational check. The checks listed should be accomplished before the flight. The pilot or copilot should report any malfunction or failure noted during the flight, or any discrepancy noted in the preflight check. Refer to TM 38-750 for reporting deficiencies or malfunctions.

b. Operational Check. The following preflight check should be made during engine warmup as an extension of the ground tests in the applicable aircraft operator's condensed checklist. The checks should be performed in the order given.

NOTE

Use an external power source for making functional check to prevent drain on aircraft batteries. (Refer to the applicable aircraft technical manual.)

(1) Turn the main power switch in the aircraft to the on position. See that the inverter starts and that the aircraft dc voltmeter reads about 28 volts.

(2) Turn on all aircraft equipment which operates from the ac supplied by the inverter to apply full load on the inverter. Check to see that the frequency holds between 395 and 405 cps, and the ac voltage holds between 110 and 116 volts.

(3) Turn off all aircraft equipment and see that the ac frequency holds in the 395to 405-cps range.

(4) Failure to meet these limits indicates abnormal operation; refer to the troubleshooting chart (para 3-10).

(5) After satisfactory completion of the performance test turn off the aircraft master switch and disconnect the external power source from the aircraft circuitry.

(6) If no ac panel meters are installed in the aircraft, check to see that the inverter is running by listening to the motor. Turn on any aircraft equipment that operates from the ac supplied by the inverter and check to see that the equipment is operating. (Refer to the applicable aircraft technical manual.) Turn off the necessary aircraft switches to stop the inverter.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

3-1. Tools and Test Equipment

Tools and test equipment required for organizational maintenance of the inverter are listed in section III, appendix B of this manual.

3-2. Paints and Finishes]

When the inverter requires repainting, refinishing, or touchup painting refer to Federal Standard No. 595A for a matching color. SB 11-573 lists the tools and miscellaneous supplies required for painting.

3-3. Touchup Painting Instructions

a Refer to TB 43-0108 for instructions on painting and preserving Electronics Command equipment. In touchup painting a perfect match with the exact shade of the original paint may not be possible. The prevention of corrosion and deterioration is the most important consideration in touchup painting; appearance is secondary. This should not be construed to mean that the appearance of the equipment is unimportant. Touchup painting should be accomplished neatly, and in a good professional manner. Field inspection personnel will make allowance for slight color mismatch where minor touchup has been done, but not for neglect or poor quality of work.

b. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion.

3-4. Lubrication

No lubrication is required at organizational category.

3-5. Preventive Maintenance Checks and Services

a To be sure that the inverter is always ready for operation, it must be inspected systematically so that defects may be discovered before they result in serious damage or failure. The necessary preventive maintenance checks and services (PMCS) are listed and described in tables 3-1 and 3-2. The item numbers indicate the sequence of the minimum inspection requirements. Defects discovered during operation of the unit will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment. Record all deficiencies together with the corrective action taken in accordance with TM 38-750.

b. Perform the maintenance functions in table 3-1 once each intermediate interval. An intermediate interval is defined as approximately 75 flying hours. The intermediate PMCS on the inverter should be performed concurrently with the intermediate PMCS scheduled on the aircraft in which the equipment is installed. Adjustments of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have intermediate maintenance performed on it at least once every 30 days. Equipment in limited storage (requires service before operation) does not require intermediate maintenance.

c. Perform the maintenance functions in table 3-2 once each periodic interval in addition to the intermediate PMCS in table 3-1. Periodic preventive maintenance will be scheduled in accordance with the requirements of TM 38-750. The periodic preventive maintenance inspection should be scheduled concurrently with the periodic maintenance service schedule of the aircraft in which the inverter is installed to reduce out-of-service time. Refer to the applicable aircraft technical manual for the hours between service periods.

Table 3-1. Intermediate PMCS

Total time required: 0.3

Sequence No.	ITEM TO BE INSPECTED PROCEDURE	Work Time (T/H)
1	EXTERNAL WIRING: Inspect external wires and cable for damaged insulation of jacketing.	0.1
2	AIR VENTS: Check the airflow intake and exhaust vents for obstructions.	
3	EXTERIOR SURFACES: Remove dirt and moisture, and inspect for rust, corrosion, and chipped paint.	0.1
4	MOUNTING: Check for cleanliness, stability, and loose or missing hardware.	
5	CONNECTIONS: Check connections at terminal board and ac power connector and see that they are clean, intact, and secure.	0.1
6	OPERATION. During operation be alert for signs of malfunction such as excessive vibration, overheating, or variations in out put voltage and frequency. Refer to the operational check in paragraph 2-7.	

Table 3-2. Periodic PMCS

Total time required: 0.5

Sequence No.	ITEM TO BE INSPECTED PROCEDURE	Work Time (T/H)
1	PUBLICATIONS: Check to see that all publications pertinent to this equipment are on hand, complete, and usable. Check DA Pam 310-4 for recent changes to publications.	0.1
2	MODIFICATIONS: Check DA Pam 310-7 to see that all URGENT MWO's have been applied, and that all NORMAL MWO's have been scheduled.	0.1
3	INSTALLATION: Check to see that the inverter is properly secured with safety wire attached.	
4	SLIPRINGS: Remove the ac end cover and inspect the sliprings for excessive wear and pitting.	0.1
5	AC CONTACT BRUSHES: When accessible, remove the ac contact brushes as in paragraph 3-8 and inspect for wear, cracks, chips, and broken flexible wire. Check brush holders and springs for cleanliness and proper tension. Refer inverter to direct support maintenance for replacement.	0.1

3-6. Cleaning

All exterior surfaces of the inverter should be free of dirt, grease, and fungus. Perform the following procedures as specified in the preventive maintenance checks and services table 3-1.

a. Remove moisture and loose dirt with a clean soft cloth.

WARNING

The fumes of TRICHLOROETHANE are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; Trichloroethane is nonflammable but heat converts the fumes to a highly toxic phosgene gas, the inhalation of which could result in serious injury or death.

Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves, and aprons which the solvent cannot penetrate.

b. Remove grease, fungus, and ground-in dirt from the exterior surfaces with a clean cloth dampened (not wet) with trichloroethane. Wipe dry with a clean, dry, lint-free cloth.

c. Remove dust or dirt from ac power connector and associated plug with a soft-bristle brush.

3-7. Troubleshooting

The troubleshooting procedures in table 3-3 are based upon symptoms noted while the inverter is in operation. Any malfunction observed that is not included in the table should be referred to higher category maintenance.

Table 3-3. Troubleshooting

Malfunction	Possible cause	Corrective action
Inverter vibrates	a. Loose or missing hardware. b. Inverter improperly seated	a. Tighten or replace hardware. b. See that mounting surface is clean and free of foreigh objects. If trouble is not corrected higher category maintenance is required.
Inverter fails to start	a. Loose or blown fuses or open circuit breaker in dc line. b. Short circuit in de line c DC brushes not making contact with commutator. d Dc input circuit open. e. Armature jammed.	a. Check and replace or reset as required. b. Check aircraft line fuses or circuit breakers. If blown, inspect wiring between fuses or circuit breakers and inverter. Repair wiring as necessary. c Refer inverter to higher category maintenance. d Check wiring and connection to the inverter for an open circuit. Repair or replace as necessary. Refer inverter to higher category maintenance.
Inverter runs but fails to deliver proper voltage or frequency.	a. Ac circuit open.	a. Connect an AN/UPM-93 to the test point jacks on the front of the regulator (fig. 1-1, 1-2, or 1-3), and start the inverter. If indication is between 109 and 121 vac, 890 and 410 Hz, check exterior wiring

Table 3-3. Troubleshooting (Cont)

Malfunction	Possible cause	Corrective action
		and connections for an open circuit, and repair. If indication is not specified, refer inverter to higher category maintenance.
	b. Slipring brushes not making contact with slipring	b. Remove ac electrical end caps and check for broken brushes or springs. Refer inverter to higher category maintenance.
	c Regulator failure.	c Refer inverter to higher category maintenance.
Ac output voltage is low	Dc input voltage is low.	Check dc voltage at power supply and correct.
Ac output voltage is high	a. Dc input voltage is higher than 30V.	a Check dc voltage at power supply and correct.
	b. Regulator failure.	b. Refer inverter to higher category maintenance.
Speed (frequency) is too high or too low.	Misadjustment of frequency adjustment	Readjust FREQ ADJ (pars 3-10).
Output voltage unstable	a Lose connections	a Check and tighten connections as necessary. If trouble persists refer to higher category maintenance
	b. Poor commutation or poor brush contact at sliprings.	b. Check and refer to higher category maintenance -
Speed (frequency) is too high or too low	Misadjustment of increase adjustment resistor	Readjust FREQ ADJ (para 3-10).
Output voltage unstable.	a Loose connections	a Check and tighten connections as necessary. If trouble persists refer to higher category maintenance.
	b. Poor commutation or poor brush contact at	b. Check and refer to higher category maintenance.

3-8. Maintenance

Periodic inspection of the ac contact brushes is the only maintenance performed at the organizational level. This inspection may be performed in the aircraft if the inverter can be reached easily. Otherwise, remove the inverter as described in paragraph 1-10.

3-9. Removal and Replacement of Inverter

a. Removal

(1) Disconnect the power cable from the power connector (J1) on the inverter (fig. 1-1).

(2) Loosen and remove the four sets of mounting hardware that hold the inverter mounting base to the aircraft mounting.

(3) Lift out the inverter.

b. Replacement

(1) Make sure that the portion of the aircraft mounting that corresponds to the inverter mounting base (fig. 1-1) is free from oil and grease to insure good electrical grounding.

(2) Position the inverter on the aircraft mounting; make sure that the four holes in the inverter mounting base line up with the holes in the aircraft mounting.

(3) Secure the inverter to the aircraft mounting with the four sets of mounting hardware.

(4) Connect the power cable to the connector (J1) of the inverter.

3-10. Adjustments

An inverter which has been operating properly will not normally require adjustment; a sudden loss of proper frequency often indicates failure of the equipment more than a need for readjustment. For newly installed inverters or when adjustment is found necessary, proceed as follows:

a. Turn on the necessary aircraft switches to start the inverter and allow it to run until the temperature stabilizes. (If the aircraft does not include an ac frequency meter, it will be necessary to connect a Test Set, Electrical Power AN/UPM-93 either at the inverter output or at an adjacent ac load.)

b. Turn on all equipment energized by the inverter for maximum loading. Use a screwdriver to rotate the shaft of FREQ ADJ R1 as necessary until the output frequency indicated is 395 to 405 cps (400 cps preferred). Turn off all ac-energized equipment and observe that frequency holds within limits. Turn the necessary aircraft switches to stop the inverter.

c. If the above procedure fails to bring the output frequency within the given limits or if the inverter fails to hold control of frequency, replace the complete inverter and refer the unit removed to the next higher category of maintenance.

APPENDIX A
REFERENCES

The following publications contain information applicable to the operation and maintenance of Motor-Generator PU-542A/A.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	US Army Equipment Index of Modification Work Orders.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 43-0118	Field Instructions for. Painting and Preserving Electronics Command Equipment including Camouflage Pattern Painting of Electrical Equipment Shelters.
TB 385-4	Safety Precautions for Maintenance of Electrical/Electronic Equipment.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105 and AN/URM-105C including Multimeter ME-77/U and ME-77C/U.
TM 11-6625-303-12	Operator and Organizational Maintenance: Electrical Power Test Sets AN/UPM-93A, AN/UPM-93B, AN/UPM-93C, and AN/UPM-100.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Material to Prevent Enemy Use (Electronics Command).

APPENDIX E
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

E-1. General

This appendix provides a summary of the maintenance operations for Motor-Generator PU-542A/A. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

E-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d Adjust To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align To adjust specified variable elements of an item to bring about optimum or desired performance.

f Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

E-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Army aircraft field maintenance

levels are transitioning to Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM). Subcolumns of column 4 are as follows:

C--Operator/Crew
O--Organizational (AVUM)
F--Direct Support (AVIM
H--General Support (AVIM)
D--Depot

e. Column 5, Tools and Equipment Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

E-4. Tool and Test Equipment Requirements (Sect. III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

E-5. Remarks (Sect. IV

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is E-3)

Section II. MAINTENANCE ALLOCATION CHART FOR MOTOR-GENERATOR PU-542A/A

(1) Group number	(2) Component/assembly	(3) Maint. function	(4)(NOTE) Maint. category C	O	F	H	D	(5) Tool/ equipment	(6) Remarks
00	MOTOR-GENERATOR PU-542A/A	Inspect		0.3					
		Service		0.1				1	1
		Test		0.1				1,2,3	2
		Adjust		0.1				1,2	3
		Replace		0.5				1	
		Repair			1.0			3-8	
		Test			0.2			3-10	
		Replace		1.0		4-			
		Repair				1.5		3-12	
		Inspect		0.2				4	
		Replace		1.0				4 ,7,8	4
		Service		0.5				4	5
		Adjust				0.3		4,7,8	6
		Replace				2.0		4,17-21	7
		Test				1.5		3-16	8
		Overhaul					8	3-32	

NOTE:
O represents AVUM
F/H represents AVIM

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR MOTOR-GENERATOR PU-542A/A

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	0	Tool Kit, Electronic Equipment TK-101/O	5180-00-064-5178	
2	0	Multimeter, AN/UIRmlO1( )	6625-00-581-2036	
3	0,F,H,D	Test Set, Electrical Power AN/UPM-93	6625-00-581-2097	
4	F,H,D	Tool Kit, Electronic Equipment TIK-100/0	5180-00-605-0079	
5	F,H,D	Multimeter AN/USM-223/U (RS TS-352B/U)	6625-00-999-7465	
6	F,H,D	Multimeter ME-26( )	6625-00-913-9781	
7	F,H,D	Test Set, Motor-Generator AN/GS065	4920-00-348-5793	
8	F,H	Power Supply, PP-4606/G or equal	6130-00-504-0326	
9	H,D	Bridge Resistance, ZM-IB/U	6625-00-500-0937	
10	H,D	Test Set, Capacitor ZM-3( )/U	6625-00-229-1060	
11	H,D	Test Set, Transistor TS-1836( )/U	6625-00-893-2628	
12	H,D	Motor-Generator PU-52A/A	6125-00-888-3056	
13	H,D	Ohmmeter ZM_21A/U	6625-00-581-2466	
14	H,D	Oscilloscope AN/USM281A	6625-00-228-2201	
15	H,D	Test Set, Armature TS-965( )/U	6625-00-828-5810	
16	H,D	Test Set, Insulation Breakdown AN/GSM	6625-00-542-1331	
17	H,D	Pliers, Retaining	5120-00-288-9717	
18	H,D	Wrench, Torque	5120-00-541-3002	
19	H,D	Arbor Press, Greenerd Model #3 or equal		
20	H,D	Bearing Pusher, base and top		
21	H,D	Bearing Retainer Puller Assembly		
22	D	Balancing Machine, GISHO1LD Type 1S		
23	D	Dial Indicator, LUFTIN Model 2-B25-5 (dial calibrated to read 0.001 inch)		
24	D	Phase Sequency Indicator, ASSOCIATED RESEARCH INC. (model 44 (400 Hz) or equal)		
25	D	Modular Precisonaire Column, SHEFFIELD 9" model		
26	D	Circuit Breaker, 180 amps	5925-00-257-7072	
27	D	Diamond-Tipped or Carboloy-Tipped cutting tool		
28	D	Power Supply, SORENSON Model DCR40-500A or equal		
29	D	Oven		
30	D	Paint Booth		
31	D	Spring Scale	6670-00-291-8721	
32	D	Ultrasonic Cleaner	6670-00-291-8721	

Section IV. REMARKS
MOTOR-GENERATOR PU-542A/A

Reference Code	Remarks
1	Exterior
2	Output voltage & frequency
3	Output frequency
4	Brushes, including run-in
5	Remove interior brush carbon and dust
6	Brush neutral
7	Bearings
8	Comprehensive tests

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General United States Army
Chief of Staff

Official

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-36, Organizational maintenance requirements for PU-542/A

* U.S. GOVERNMENT PRINTING OFFICE : 1983 0 - 381-302 (3654)

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER	SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ▸ ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 019899-000