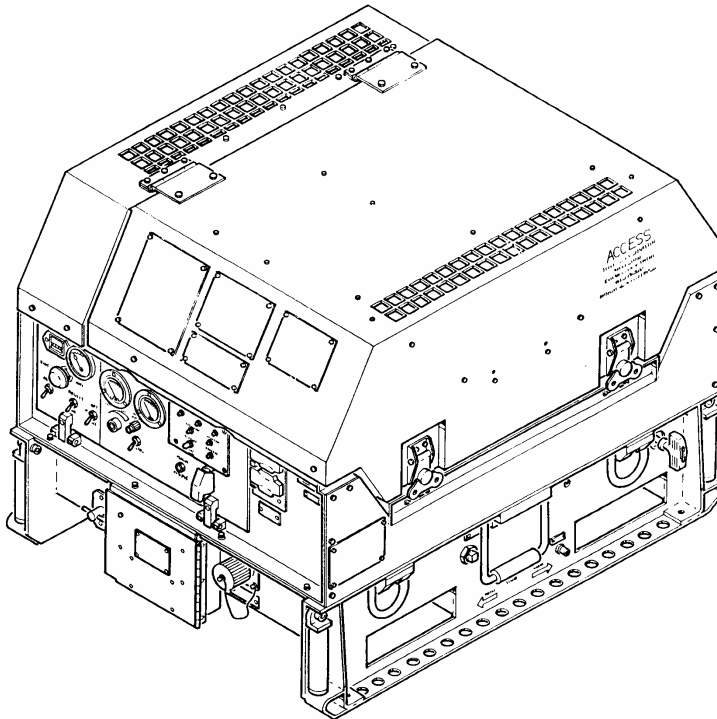


**OPERATOR, UNIT, AND DIRECT SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**



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**3kW TACTICAL QUIET GENERATOR SET
MEP-831A (60 Hz) (NSN: 6115-01-285-3012) (EIC: VG6)
MEP-832A (400 Hz) (NSN: 6115-01-287-2431) (EIC: VN7)**

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited. DESTRUCTION NOTICE: Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

*This manual supersedes TM 9-6115-639-13 dated 1 November 2000 thru TM 9-6115-639-13, Change 1 dated 15 September 2002; and TM 9-6115-639-23P dated 15 October 2002.

**DEPARTMENTS OF THE ARMY AND THE AIR FORCE
AND HEADQUARTERS, MARINE CORPS**

**15 AUGUST 2005
PCN 182 101550 00**

WARNING SUMMARY

The following safety precautions are for personnel to understand and apply during many phases of operating and maintaining the 3kW Tactical Quiet Generator (TQG). Disregarding these warnings and precautionary information can result in serious injury or death.

Warning statements considered essential to the protection of personnel have been strategically placed throughout this manual prior to operation or maintenance procedures. Before starting any task, be sure to review and understand all warnings in the text for that task.

This manual describes physical and chemical processes that may require the use of chemicals, solvents, paints, or other commercially available material. Users of this manual should obtain the material safety data sheets (Occupational Safety and Health Act (OSHA) Form 20 or equivalent) from the manufacturer or suppliers of materials to be used. Users must be completely familiar with manufacturer/supplier information and adhere to their procedures, recommendations, warnings, and cautions for safe use, handling, storage, and disposal of these materials.

WARNING

Do not replace components or make adjustments with the voltage supply turned on. Dangerous potentials may exist under certain conditions when the power control is off. Avoid casualties by always removing power and by discharging and grounding a circuit before touching it. Failure to observe this warning could result in severe personal injury or death.

WARNING

High voltage is produced when generator set is being operated. Use care when working around an open control panel when generator set is on. Improper operation of generator set or failure to follow this warning could result in severe personal injury or death by electrocution.

WARNING

Do not stand or store heavy objects on generator set.

WARNING

Never attempt to start generator set unless it is properly grounded. Equipment must be grounded in accordance with the procedures in para. 2-6.1. Failure to observe this warning could result in serious personal injury or death by electrocution.

WARNING

DC voltages are present at generator set electrical components even with generator set shut down. Avoid shorting any positive terminal with ground or negative. If no DC voltage is required, always disconnect DC power source to generator set before working on it. Failure to observe this warning could result in severe personal injury or death by electrocution.

WARNING

Never attempt to connect or disconnect load cables while generator set is running. Failure to observe this warning could result in severe personal injury or death by electrocution.

WARNING

Never service or perform maintenance on generator set while engine is running. Always shut down generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.

WARNING

Never work alone when reaching into generator set to service or adjust it. Be sure to work with someone who could provide aid in case of an emergency. Failure to observe this warning could result in severe personal injury or death.

WARNING

Shut down generator set at first sign of failure. Continued operation could result in injury to personnel and will cause damage to equipment. If generator set is shut down by activation of a safety device, do not operate again until the cause of the shut down has been determined and eliminated. Failure to observe this warning could result in severe personal injury or death.

WARNING

If damaged or defective components are discovered, repair must be performed before operations can begin. Perform required repairs and adjustments before proceeding. Do not operate generator set with damaged components. Personal injury could occur if damaged parts are left unfixed. Failure to observe this warning could result in severe personal injury or death.

WARNING

Exhaust discharge contains deadly gases including carbon monoxide. Do not operate generator set in an enclosed area unless exhaust discharge is properly vented outside. Position generator set as far away from personnel, shelters, and occupied vehicles as possible. Failure to observe this warning could result in severe personal injury or death due to carbon monoxide poisoning.

WARNING

Fuel used in this generator set is flammable and toxic to skin, eyes, and respiratory tract. Avoid repeated or prolonged contact. Handle only in a well-ventilated area. Keep away from sparks, open flames, or other sources of ignition. Do not splash fuel on hot components. Do not fuel generator set while it is operating. Do not overfill tank. Ensure generator set is properly grounded before fueling. Failure to observe this warning could result in personal injury and equipment damage due to potential fuel ignition and possible explosion. Ensure approved gloves and face shield are worn during handling. Failure to observe this warning could result in severe personal injury or death.

WARNING

Liquids under pressure are generated as a result of operating this generator set. High-pressure leaks could cause severe personal injury or death. Failure to observe this warning could result in severe personal injury or death.

WARNING

Compressed air is dangerous and could cause serious bodily harm, if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or to prevent unbroken skin of the operator or other personnel. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 pounds per square inch gauge (psig). Use it only with effective chip-guarding and personnel protective equipment (industrial safety glasses and full face shield). DO NOT use compressed air to dry parts when solvent cleaners have been used. Failure to observe this warning could result in severe personal injury or death.

WARNING

Do not use TRICHLOROTRIFLUOROETHANE, TRICHLOROETHANE, and similar chemical solvents for ordinary cleaning of equipment. These substances threaten public health and the environment by destroying ozone in the Earth's upper atmosphere. Use suitable non-hazardous cleaning materials (see Appendix F) such as a clean cloth, water, and mild detergent or an approved substitute solvent, such as isopropyl alcohol. Failure to observe this warning could result in severe personal injury or death.

WARNING

Handle solvents as combustible liquids. Do not use near heat, sparks, or flame. Use solvents in well-ventilated areas only. Avoid prolonged breathing of vapor. Avoid bodily contact. Use chemical (solvent-resistant) gloves and chemical splash goggles when using solvent materials. Solvents may be reactive with acids and oxidizers; do not mix or cross-apply with other cleaners or chemicals. An organic vapor respirator with dust and mist filter is recommended when solvent is applied as a spray. Keep containers closed between applications. Provide mechanical ventilation if used in confined spaces. Store cleaning materials in a well-ventilated area away from food or drink. To avoid the possibility of spontaneous combustion, place solvent-saturated waste rags in a sealed metal container after use. Coordinate the use of this material with your supporting Industrial Hygiene and Safety Offices. Ensure you read and understand the Material Safety Data Sheet (MSDS) for the solvent before use. Failure to observe this warning could result in severe personal injury or death.

WARNING

Adhesives used in maintaining this generator set (see Appendix F) are flammable and toxic. Vapors may ignite explosively. Avoid breathing in vapors. Provide adequate ventilation to prevent vapor concentrations in excess of permissible exposure levels. Keep away from heat, sparks, and open flame. Do not smoke. Extinguish all flames and turn off non-explosion-proof electrical equipment during use until vapors are dissipated. Close containers tightly. Failure to observe this warning could result in severe personal injury or death.

WARNING

To prevent injury to personnel and damage to equipment, use caution when lifting or moving generator set. Six people are required for manual lifting. Use lifting rings for lifting device and forklift openings for forklift only. Do not lift generator set over personnel. Failure to observe this warning could result in severe personal injury or death.

WARNING

Avoid contacting metal items with bare skin in extreme cold weather. Failure to observe this warning could result in severe personal injury or death.

WARNING

Metal jewelry could conduct electricity. Loose, dangling articles and clothing could be caught in moving parts. Remove jewelry and loose, dangling articles and clothing before working on generator set. Failure to observe this warning could result in severe personal injury or death.

WARNING

Chemical Agent Resistive Coating (CARC) paint dust is a health hazard. Wear protective eyewear, a mask, and gloves when sanding CARC-painted surfaces. Failure to observe this warning could result in severe personal injury or death.

WARNING

If battery is not installed, battery cable ends must be isolated from each other, and positive end must be isolated from ground. Failure to isolate battery cable ends could result in severe electrical discharge. When not connected to battery, connect battery cable ends to plastic storage stud. Failure to observe this warning could result in severe personal injury or death.

WARNING

With access cover open, noise level of generator set when operating could cause hearing damage. Hearing protection must be worn when working near generator set while it is running. Failure to observe this warning could result in severe personal injury or death.

WARNING

To prevent injury to personnel and damage to equipment, use caution when lifting or moving generator set. Use lifting rings for lifting device and forklift pockets for forklift only. Do not lift generator set over personnel. Failure to observe this warning could result in severe personal injury or death.

WARNING

Class III oil leaks should be reported IMMEDIATELY to your supervisor. Fuel leaks of any kind require immediate system shutdown. Failure to observe this warning could result in severe personal injury or death.

WARNING

Make sure personnel are familiar with generator set before operating. Follow proper procedures. Failure to observe this warning could result in damage to equipment and could also result in severe personal injury or death.

WARNING

Battery acid can cause burns to unprotected skin. Failure to observe this warning could result in severe personal injury or death.

WARNING

Batteries give off flammable gas. Do not smoke or use open flame when performing maintenance. Flames and explosion could result in severe personal injury or death. Failure to observe this warning could result in severe injury or personal death.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe injury or personal death.

WARNING

When disconnecting battery cables, always remove negative cable first and positive cable last. Connect cable ends to enclosure ground lugs to prevent contact. Failure to observe this warning could result in severe personal injury or death.

WARNING

When connecting battery cables, always connect positive cable first and negative cable last. Failure to observe this warning could result in severe personal injury or death.

WARNING

The generator set is heavy. Provide lifting hoist capable of lifting 100 lbs. Do not lift generator set over personnel. Enlist the help of an aide to prevent damage to equipment. Failure to observe this warning could result in severe personal injury or death.

WARNING

The rotor assembly is held in the stator by magnets. The rotor will snap into place in stator when installed. Use care to prevent injury to fingers. Failure to observe this warning could result in severe personal injury or death.

LIST OF EFFECTIVE PAGES

Insert latest change pages. Destroy superseded data.

Below are the dates of issue For original and changed pages:

Original 0 15 August 2005

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TECHNICAL MANUAL

NO. 9-6115-639-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 AUGUST 2005

**OPERATOR, UNIT, AND DIRECT SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
3kW TACTICAL QUIET GENERATOR SET
MEP-831A (60 Hz) (NSN: 6115-01-285-3012) (EIC: VG6)
MEP-832A (400 Hz) (NSN: 6115-01-287-2431) (EIC: VN7)**

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 the procedures, please let us know. We would prefer that you submit your recommended changes electronically, either by e-mail (AMSEL-LC-LEO-PUBS-CHG@mail1.monmouth.army.mil) or online (<http://edm.monmouth.army.mil/pubs/2028.html>). Alternatively, you may mail or fax your letter, DA Form 2028, or DA Form 2028-2 located in back of this manual to: Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-E-ED, Fort Monmouth, NJ 07703-5006. The fax number is 732-532-3421, DSN 992-3421. For Air Force, use AFTO Form 22 in accordance with TO 00-5-1 and mail directly to Commander, WR-ALC/LEET, Robins AFB, GA 31098. You may also e-mail your form to <http://wralc.tilta.afto@robins.af.mil>. For the Marine Corps, submit notice of discrepancies or suggested changes on a NAVMC 10722. The NAVMC may be submitted via the Internet using website <https://pubs.ala.usmc.mil/front.htm>, scrolling down to the NAVMC 10772 Tracking Program, and following instructions provided. The NAVMC may also be submitted by electronic mail to mbmatcommarlogbases@logcom.usmc.mil or by mailing a paper copy NAVMC 10772 in an envelope addressed to Commander, Marine Corps Systems Command, Attention: Assistant Commander Acquisition and Logistics (LOG/TP), 814 Radford Blvd., Suite 20343, Albany, GA 31704-0343.

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HOW TO USE THIS MANUAL

1. DESCRIPTION OF THE MANUAL

- a. **Chapter Organization.** This manual has five chapters, covering introductory information, principles of operation, Operator maintenance instructions, Unit maintenance instructions, and Direct Support maintenance instructions. Each chapter is divided into sections. These sections contain the cleaning, inspection, troubleshooting, and repair tasks appropriate for the specific maintenance level. Each chapter contains a table of contents containing the tasks within that chapter. See the Table of Contents (page i) for the chapters and sections of this manual.
- b. **Paragraph and Task Numbering.** All paragraphs and maintenance tasks are numbered. This helps you find what you need when you need it. Use the Table of Contents (page i) or alphabetical index (at the back of the manual) to find the paragraph or task you need.
- c. **Appendices.** The appendices in this manual contain both general maintenance information and specific data for this generator set. Appendix A is a list of reference manuals and materials. Appendix B is the Maintenance Allocation Chart (MAC). Appendix C is the Repair Parts and Special Tools List (RPSTL). Appendix D lists Components of End Item (COEI) and Basic Issue Items (BII). Appendix E is an Additional Authorization List (AAL). Appendix F is an Expendable and Durable Items List. Appendix G is an Illustrated List of Manufactured Items. Appendix H contains Torque Limits. Appendix I contains Mandatory Replacement Parts information. Appendix J contains Warranty Information. Appendix K is a List of On-Board Spares. Appendix L contains Special Packaging Instructions. See the Table of Contents (page i) for a complete list of the appendices used in this manual.

2. HOW TO FIX A GENERATOR SET MALFUNCTION

- a. **Determining the Cause.** Figuring out the cause of the malfunction, or troubleshooting, is the first step in fixing the generator set and returning it to operation. Follow the steps below to determine the root of your problem:
 - (1) Turn to the Table of Contents section in this manual (page i).
 - (2) Locate Troubleshooting for your maintenance level, and turn to the page indicated.
 - (3) In the Troubleshooting section, find the troubleshooting symptom for the component affected by the malfunction. See the Symptom Index for help.

NOTE

If the specific symptom is not addressed, the maintenance required is most likely more detailed than authorized for your level. Notify personnel at a higher maintenance level.

- (4) Begin troubleshooting. Carefully work your way down through the troubleshooting table. Try to determine what the problem is.
- (5) Once the trouble has been determined, go to the maintenance task called out. Remedy the malfunction, test the generator set, and return it to service.

b. **Preparing for a Task**

NOTE

You must familiarize yourself with the entire maintenance procedure before starting any maintenance task. Ensure all parts, materials, and tools are handy. Read through all steps before beginning.

- (1) PAY ATTENTION TO WARNINGS, CAUTIONS, AND NOTES.
 - (2) Maintenance tasks are arranged in a logical disassembly/assembly sequence and address only the component or assembly to be replaced. Locator illustrations are included for removal and replacement. These illustrations show you the area of the generator set on which to work.
 - (3) All mandatory replacement parts are listed, including gaskets, packings, cotter pins, and lockwashers. They are listed by Repair Parts and Special Tools List (RPSTL) name. The Expendable and Durable Items List (see Appendix F) and support materials are listed, including solvents, rags, grease, and safety wire.
 - (4) Each maintenance task lists tools, tool kits, or shop sets needed to do the task. If tools from a repairman's kit are needed, the kit is listed. Tools not in a kit or set are listed by name, type, and size. Special tools and test equipment, if necessary, are listed by part number.
 - (5) Related technical manuals (TMs) needed to accomplish the task are listed. The steps tell when these TMs are needed.
 - (6) Read the entire task carefully before starting. DO NOT START A TASK UNTIL:
 - ✓ You know which replacement parts, tools, and supplies are needed.
 - ✓ You have the things you need.
 - ✓ You understand what to do.
- c. **How to Do the Task.** Before starting, read the entire task and familiarize yourself with the entire procedure. Below are standard maintenance practices. Instructions about these practices will not normally be included in the task steps. Task steps will tell you when standard maintenance practices do not apply.

- (1) Electrical wiring must be tagged before it is disconnected.
- (2) Used packings, retainers, gaskets, cotter pins, lockwashers, and safety wire shall be discarded. Do not reuse. New parts shall be installed.
- (3) Packings shall be coated with lubricant before installation, in accordance with task instructions.
- (4) Disassembly procedures list all steps required to support total authorized repair of a component. You may not need to disassemble a part as far as described in the task. Follow the steps to disassemble as far as required to replace worn or damaged parts.
- (5) Before components or the disassembled parts of a component are inspected, they must be cleaned as required.
- (6) Components must be inspected for serviceable condition before installation.

- (7) When a nut is tightened or loosened on a bolt, the bolt head must be held with a wrench.
- (8) A special torque will be cited when the words TORQUE TO are used in the task. Standard torques are used at all other times. See Torque Limits, Appendix H, for information.
- (9) When tightening hardware, observe compliance with the drag torque as required. *Drag torque* is defined as the torque required to begin turning the nut. To determine drag torque, thread nut onto bolt until at least two threads protrude. The nut must not contact the mating part.
- (10) After maintenance, inspect for foreign objects.

NOTE

This manual contains the new two-level Maintenance Allocation Chart (MAC) broken into Field and Sustainment Maintenance. The procedures within the manual are still divided by maintenance level (Operator, Unit and Direct Support for Field). If you cannot find a generator set malfunction in the troubleshooting section for your maintenance level, or cannot find the appropriate corrective actions in the maintenance section, notify personnel at a higher maintenance level.

3. REPAIR PARTS AND SPECIAL TOOLS LIST

See Appendix C for the Repair Parts and Special Tools List (RPSTL). The RPSTL contains exploded-view illustrations and parts lists keyed to the illustrations. It lists part number, part name, and quantity used in each application. Use the RPSTL to identify and order replacement parts.

CHAPTER 1

INTRODUCTION

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Section I. GENERAL INFORMATION

1-1 SCOPE

- a. This manual provides instructions on operating, troubleshooting, and maintaining the 3kW Tactical Quiet Generator Set, MEP-831A (60Hz), NSN: 6115-01-285-3012, and MEP-832A (400Hz), NSN: 6115-01-287-2431. Information is provided on principles of operation, controls and indicators, Preventive Maintenance Checks and Services (PMCS), lubrication, operation, troubleshooting, and maintenance. See Figure 1-1 for a full-view illustration of the generator set, showing features pertinent to set operation and maintenance.
- b. See TM 9-2815-257-24 for detailed information regarding operation and maintenance of the Diesel Engine Assembly, Model Number L70AE-DEGFR, NSN: 2815-01-465-5993, manufactured by Yanmar Diesel Engine Company, Ltd.

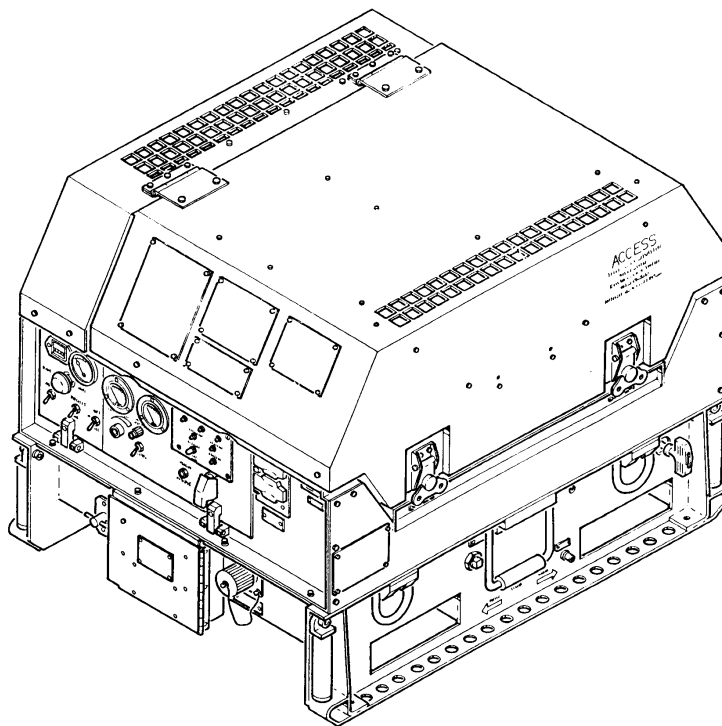


Figure 1-1. 3kW Tactical Quiet Generator Set

1-2 CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

See the latest issue of DA Pam 25-30 to determine whether there are new additions, changes, or additional publications pertaining to the equipment.

1-3 MAINTENANCE FORMS, RECORDS, AND REPORTS

- a. **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, as contained in the current maintenance management update (The Army Maintenance Management System (TAMMS)). Fill out and forward to the TAMMS clerk DD Form 5988-E, an automated form in

the Unit Level Logistics System (ULLS), Equipment Maintenance and Inspection Worksheet. If you cannot access ULLS, fill out and forward to the TAMMS clerk DA Form 2404. Air Force personnel will use AFR 66-1 for maintenance reporting and TO 00-35D-54 for unsatisfactory equipment reporting. Marine Corps units using the Asset Tracking Logistics and Supply System (ATLASS) will maintain forms and records information in accordance with applicable ATLASS requirements. All other Marine Corps units will maintain forms and records associated with operating and maintaining ground equipment, as prescribed by TM 4700-15.

- b. **Reporting of Item and Packaging Discrepancies.** Army, Air Force, and Marine Corps users will fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2, DLAR 4140.55, SECNAVINST 4355.18A, AFJ 23-215. For shipping discrepancies, Marine Corps users will fill out and forward to the Source of Supply (SOS) SF 364, as prescribed in UM 4400-123, UM 4400-124, and SECNAVINST 4355.18. As prescribed in UM 4400-123, UM 4400-124, and SCENAVINST 4355.18, for packing discrepancies Marine Corps users will fill out and forward to the applicable control point identified in the SECNAVINST SF 364.
- c. **Transportation Discrepancy Report (TDR) (SF 361).** Army users will fill out and forward SF 361, Transportation Discrepancy Report (TDR), as prescribed in AR 55-38, NAVSUPINST 4610.33C, AFR 75-18, MCO P4610.19D, and DLAR 4500.15. Marine Corps users will fill out and forward SF 361, as prescribed in DoD 4500.9-R, Defense Transportation Regulation, Part II, Cargo Movement.

1-4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

- a. **Army.** If your engine assembly needs improvement, let us know. Send us an EIR. You are the only one who can tell us what you do not like about your equipment. Put it on an SF 368 (Product Quality Deficiency Report (QDR)) and mail it to the address below:

Commander
U.S. Army Communications and
Electronics Command (CECOM)
ATTN: AMSEL-LC-LEO-E-ED
Fort Monmouth, NJ 07703-5006

We will send you a reply.

- b. **Air Force.** Air Force personnel should submit TO 00-35D-54 to the address below:

Commander
WRALC/LGMTC
375 Perry Street
Robins AFB, GA 31098-1865

- c. **Marine Corps.** Marine Corps units will submit all fit, form, or function deficiencies in accordance with standard Product Quality Deficiency Report (PQDR) procedures contained in TM 4700-15/1 and MCO 4855.10. Submit your PQDR to Navy PDREP automated systems by going to <http://www.nslcptsmh.navsea.navy.mil/pdrep/pdrep.htm>, requesting access, and then filling out the PQDR. For additional assistance, use this e:mail address: mbmatcompqdrs@logcom.usmc.mil. Only deployed units may mail PQDRs to the address below:

Marine Corps LogCom Command Element
Attn: Quality Assurance Office (L15)
814 Radford Boulevard, Suite 20330
Albany, GA 31704-0330

A reply will be furnished to you.

1-5 CORROSION PREVENTION AND CONTROL

- a. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. Be sure you report any corrosion problems with the engine assembly so that the problem can be corrected and improvements can be made.
- b. Although corrosion is typically associated with rusting of metals, it may also include deterioration of other materials, such as rubber or plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.
- c. If a corrosion problem is identified, report it using SF-368, Product Quality Deficiency Report. Use of keywords such as *corrosion*, *rust*, *deterioration*, or *cracking* will ensure that the information is identified as a CPC problem.
- d. Submit SF-368 to the address specified in DA Pam 738-750. Air Force personnel will use TO 35-1-3.

1-6 DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For destruction of Army materiel to prevent enemy use, see TM 750-244-3.

1-7 PREPARATION FOR STORAGE AND SHIPMENT

Requirements for packaging, preservation, and administrative storage are in Chapter 4, section VII. See also Appendix L for special packaging instructions and TB 740-97-2, Preservation of USAMECOM Mechanical Equipment for Shipment and Storage.

1-8 WARRANTY INFORMATION

Components for the 3kW TQG are warranted in accordance with the component manufacturer s latent defect commercial warranty. The warranty starts on the date found in block 23, DA Form 2408-9, in the log book. Report all defects in material and workmanship to your supervisor, who will take appropriate action. See Appendix J for information on manufacturer s component warranties and conditions.

1-9 NOMENCLATURE CROSS-REFERENCE LIST

Shortened nomenclature is used in this manual to make procedures easier for you to read. Table 1-1 is a cross-reference between the shortened nomenclature and the official nomenclature.

Table 1-1. Nomenclature Cross-Reference

Common Name	Official Nomenclature
Generator Set	3kW Tactical Quiet Generator Set, MEP-831A/MEP-832A

1-10 LIST OF ABBREVIATIONS AND ACRONYMS

Below are the abbreviations and acronyms used in this manual:

- A2 Fault Indicator Module
- A5 Governor Control
- AAL Additional Authorization List
- AC Alternating Current
- AFB Air Force Base

AFR	Air Force Regulation
AFTO	Air Force Task Order
ALC	Air Logistics Center
AOAP	Army Oil Analysis Program
App	Appendix
AR	Army Regulation
ATLASS	Asset Tracking Logistics and Supply System
BII	Basic Issue Items
BT	Battery/Battery Terminal
C	Centigrade
CAGEC	Commercial and Government Entity Code
CARC	Chemical Agent Resistive Coating
CB1	DC CIRCUIT BREAKER
CB3	GFCI (60Hz only)
CECOM	Communications and Electronics Command
cm	Centimeter
CN	Change Notice
COEI	Components of End Item
CPC	Corrosion Prevention and Control
CTA	Consolidated Table of Allowance
DA	Department of the Army
dBA	Decibels referred to 1 kilowatt
DC	Direct Current
DLAR	Defense Logistics Agency Regulation
DS	Direct Support
DS2	Decontaminating Solution 2
DS6	AC CIRCUIT INTERRUPTER Indicator
DSN	Defense Switched Network
ECP	Engineering Change Proposal
EIC	End Item Code/Equipment Item Code
EIR	Equipment Improvement Recommendation
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
F	Fahrenheit
FL	FUEL LEVEL Switch
FM	Field Manual
FO	Foldout
ft	Foot
GFCI	Ground Fault Circuit Interrupter
GND	Ground
Hg	Mercury
HP	Horsepower
HT	Engine Temperature Switch
Hz	Hertz
J1	Convenience Receptacle
IPB	Illustrated Parts Breakdown
JTA	Joint Table(s) of Allowance
kg	Kilogram
kW	Kilowatt
L1	AC output terminal 1 (load)
L2	AC output terminal 2 (load)
LOEP	List of Effective Pages
LOG/TP	Logistics/Technical Publication
M1	VOLTAGE Meter
M2	LOAD Meter
M3	HOURS Meter
M5	FUEL LEVEL Meter

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

MAC	Maintenance Allocation Chart
MCO	Marine Corps Order
MCPDS	Marine Corps Publication Data System
MEP	Mobile Electric Power
MIL	Military
MIL-HDBK	Military Handbook
ml	Milliliter
MST	Maintenance Support Team
MT5	Fuel Level Sender
MTOE	Modified Table of Organization and Equipment
N	Neutral
NATO	North Atlantic Treaty Organization
NAVMC	Navy Marine Corps
NAVSUPINST	Naval Supplementary Instruction
NBC	Nuclear, Biological, and Chemical
NSN	National Stock Number
OEA	Office of Energy Assurance
OP	Oil Pressure/Low Oil Pressure Switch
OSHA	Occupational Safety and Health Act
P/N	Part Number
Pam	Pamphlet
PMCS	Preventive Maintenance Checks and Services
P/O	Part of
PQDR	Product Quality Deficiency Report
psi	Pounds per Square Inch
QC	Quality Control
QDR	Quality Deficiency Report
QTY	Quantity
R1	VOLTAGE ADJUST Potentiometer
ROD	Report of Discrepancy
RPM	Revolutions per Minute
RPSTL	Repair Parts and Special Tools List
RTV	Room Temperature Vulcanizing
S1	START/RUN/STOP Switch
S17	AUX FUEL Switch
S18	PREHEAT Switch
S19	EMERGENCY STOP button
S20	Temperature Switch
S21	Temperature Switch
S5	CIRCUIT INTERRUPTER Switch
S7	BATTLE SHORT Switch
SAE	Society of Automotive Engineers
SDR	Supply Discrepancy Report
SE	Support Equipment
SF	Standard Form
SECNAVINST	Secretary of the Navy Instruction
SMR	Source, Maintenance, and Reliability
SOS	Source of Supply
SPAWAR	Space and Naval Warfare Center
SR1	NATO Slave Receptacle
SRA	Specialized Repair Activity
STB	Supertropical Bleach
TAMMS	The Army Maintenance Management System
TB	Technical Bulletin/Terminal Board
TDA	Table of Distribution and Allowances
TDR	Transportation Discrepancy Report
TM	Technical Manual

TMDE	Test, Measurement, and Diagnostic Equipment
TO	Task Order (Air Force)
TOE	Table of Organization and Equipment
TQG	Tactical Quiet Generator
UM	Unit of Measure, Unit Manual
U.S./US	United States
USAMECOM	U.S. Army
UUT	Unit Under Test
V	Volt
VAC	Volts Alternating Current
VDC	Volts Direct Current

1-11 QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this technical manual. If quality or material requirements are not stated in this technical manual, the material must meet the requirements of the drawings, standards, specifications, or approved Engineering Change Proposals (ECPs) applicable to the subject equipment.

1-12 SAFETY, CARE, AND HANDLING

The following general precautions and safety regulations will be prepared: Electrostatic Discharge (ESD) control standards for the protection of electrical and electronic parts, assemblies, and equipment will be prepared. ESD classes will be identified. (See MIL-STD-1686 and MIL-HDBK-263, which contains ESD control procedures and material necessary to protect these items.

1-13 ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have Preventive Maintenance Checks and Services (PMCS) performed before storing. When removing the equipment from administrative storage, perform PMCS to ensure operational readiness.

Section II. EQUIPMENT DESCRIPTION

1-14 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

- a. **Characteristics.** The 3kW generator set has the following characteristics:
- 3kW, 60Hz (MEP-831A)/400Hz (MEP-832A), Tactical Quiet Generator (TQG)
 - Skid-mounted with forklift provisions
 - Six lifting handles, four tie-down rings
 - Hinged enclosure, allowing quick access for preventive and scheduled maintenance
 - Thermostatically controlled, two-fan enclosure cooling system
 - 24VDC cranking system
 - Single-cylinder, air-cooled, direct-injection, four-stroke-cycle diesel engine
 - Permanent Magnet Alternator (PMA) with frequency converter (A8)
 - Four-gallon fuel tank (allowing 8 hours of continuous operation at full load)
- b. **Capabilities and Features.** The 3kW generator set has the following capabilities and features:
- 3000 to 3600 RPM operating speed
 - 3.0kW, 1 phase, 2 wire, 120VAC or 1 phase, 3 wire, 120/240VAC
 - Rated engine power of 6.7 HP at 3600 RPM
 - Equipped with a 24VDC NATO slave receptacle
 - Equipped with a 2-plug 120VAC convenience receptacle with Ground Fault Circuit Interrupter (GFCI) for the 120VAC convenience receptacle (MEP-831A, 60Hz only)
 - Audio noise rating less than 72 dBA at 23 feet from enclosure; less than 85 dBA at operator s position
 - Weight: dry = 304.0 pounds (maximum) (MEP-831A), 302.0 pounds (maximum) (MEP-832A); wet (fuel tank full) = 334.0 pounds (maximum)
 - Dimensions: 34.8 x 27.8 x 26.5 inches

1-15 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Figure 1-2)

The 3kW Tactical Quiet Generator Set, MEP-831A (60Hz), NSN: 6115-01-285-3012, and MEP-832A (400Hz), NSN: 6115-01-287-2431, hereafter referred to as *generator set*, is a portable unit capable of being mounted on a trailer for transportation. The generator set is designed to provide a quiet source of AC power under temperature ranges from -25 to +120° F (-32 to +49° C), at any level of relative humidity, and at altitudes of up to 8000 feet (2440 meters) above sea level.

The generator set consists of the following components: a frame and housing assembly (1, Figure 1-2); a one-cylinder diesel engine (2); a Permanent Magnet Alternator (PMA) (3); a control box assembly (18); an output/load panel (16); a welded skid base (17); primary and auxiliary fuel systems; an enclosure cooling and ventilation system; an engine exhaust system (20); a 24VDC battery; and associated wiring harnesses, electrical connectors, and fuel and oil hoses.

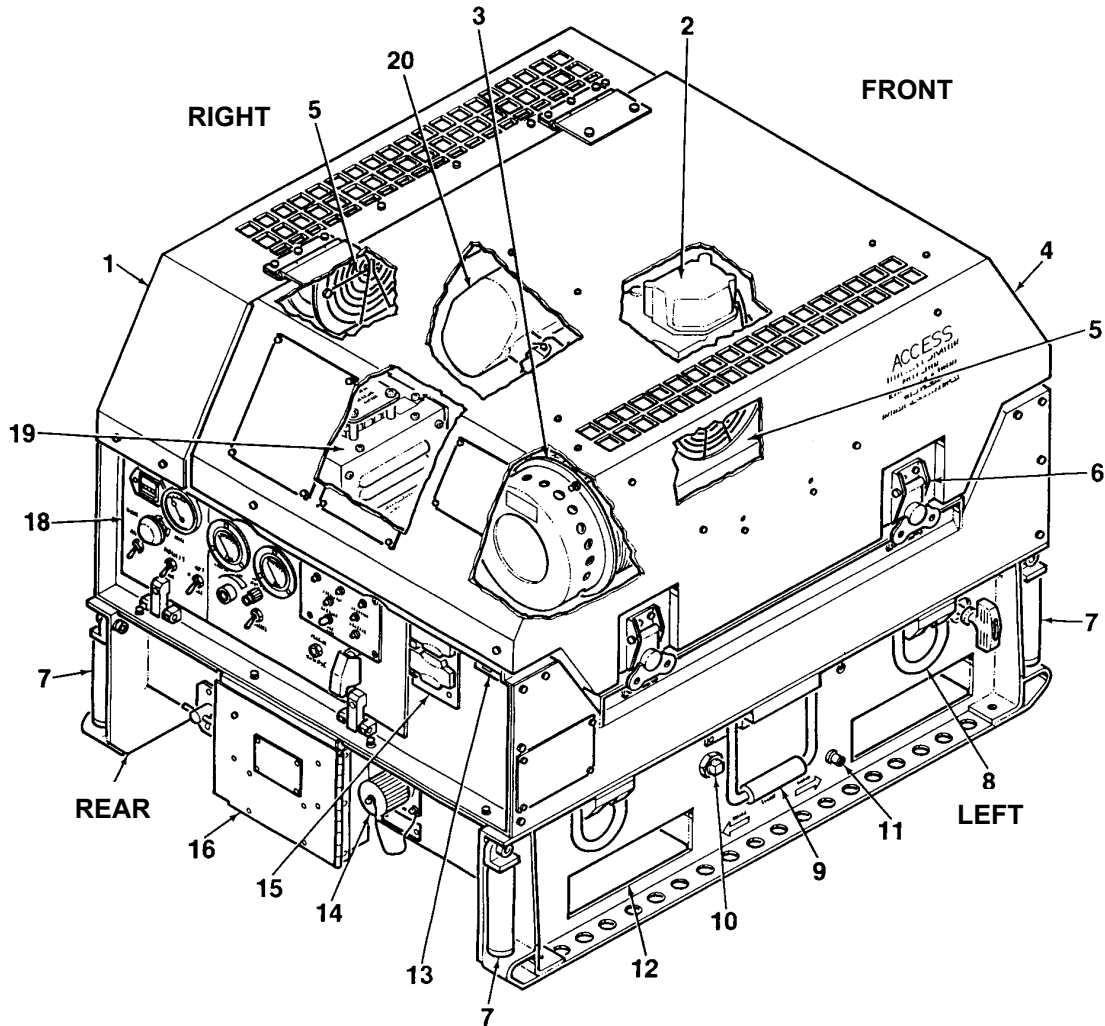
- a. **Frame and Housing Assembly.** The frame and housing assembly (1) contains a control box assembly (18), a cooling air system, and an exhaust assembly (20). It protects the engine, generator, and other internal components from damage. It incorporates fire-retardant, acoustical insulation to reduce noise levels and acts as a shield to reduce electromagnetic pulse effects on generator set components.

A welded skid base (17) provides the main structural support for the generator set. The engine/generator assembly is mounted to the skid base with vibration isolators that isolate engine-generated vibrations from the rest of the generator set. The generator set's plastic fuel tank is contained within the skid base, as is the 24VDC battery.

The skid base contains four swing-out lifting handles (7), two standard lifting handles (9), four tie-down rings (8), and two forklift openings (12). An oil drain plug (10) and fuel drain plug (11) protrude through openings on the skid base. A 24VDC NATO Slave Receptacle (14) and output terminal connections, behind the cover (16), are mounted to the skid base at the rear of the generator set.

A hinged main access cover (4) allows easy access for inspecting and maintaining the generator set. Two latches (6) lock the cover in place when it is closed. Air ducts in the main access cover and enclosure housing allow hot exhaust air to be ventilated.

- b. **Cooling System.** Air intake openings and engine intake ducts on the main access cover allow for engine cooling, using external air. Two thermostatically controlled fans (5), one mounted in the main access cover and one mounted in the back panel, activate during high temperature conditions to drive hot exhaust air through openings in the cover.
- c. **Battery.** A 24VDC battery, mounted in the frame and housing assembly, provides cranking power for the engine as well as DC power for the control system. The battery's location in the frame and housing assembly permits easy servicing. Openings in the main access cover vent escaping battery gases to the atmosphere, preventing gas build-up inside the cover.
- d. **Exhaust System.** The generator set exhaust system (20) consists of a muffler and exhaust piping. Engine exhaust vents out of the generator set through an opening in the top of the main access cover. Insulating material on exhaust system components protects maintenance personnel against potential burn hazards and reduces heat transfer into the enclosure assembly.
- e. **Control Box Assembly.** The control box assembly (18) is mounted to the frame and housing assembly (1) at the rear of the generator set. It contains instruments, controls, and indicators required to operate the generator set. It also contains a control panel; a Ground Fault Circuit Interrupter (GFCI), 60Hz only (13); and a convenience receptacle, 60Hz only (15). Internal components include the governor control module, control logic relays and diodes, voltage surge arrestors, diagnostic test points, and associated wiring harnesses and electrical connectors.



- | | | |
|--------------------------------------|---------------------------|--|
| 1. Frame and Housing Assembly | 8. Tie-Down Ring | 15. Convenience Receptacle (60Hz only) |
| 2. Diesel Engine Assembly | 9. Lifting Handle | 16. Output/Load Terminal Cover |
| 3. Permanent Magnet Alternator (PMA) | 10. Oil Drain Plug | 17. Welded Skid Base |
| 4. Main Access Cover | 11. Fuel Drain Plug | 18. Control Box Assembly |
| 5. Cooling Fan | 12. Forklift Opening | 19. Frequency Converter (A8) |
| 6. Cover Latch | 13. GFCI (60Hz only) | 20. Exhaust System |
| 7. Lifting Handle | 14. NATO Slave Receptacle | |

Figure 1-2. Location of Generator Set Components

The control panel portion of the control box assembly (18) is hinged to allow access for testing and maintenance. It has the following instruments and switches: an HOURS meter, a FUEL LEVEL meter, a VOLTAGE meter, a LOAD meter, a START/RUN/STOP switch, an EMERGENCY STOP button, an AUX FUEL switch, a PREHEAT switch, a VOLTAGE ADJUST potentiometer, a CIRCUIT INTERRUPTER switch, a DC CIRCUIT BREAKER switch, a BATTLE SHORT switch, and a fault indicator module. The fault indicator module has lights that indicate the following generator set

conditions: ENGINE HIGH TEMP, LOW OIL PRESSURE, NO FUEL, OVERVOLTAGE, OVERLOAD SHORT CIRCUIT, and BATTLE SHORT ON. See paragraph 2-1, Operator Controls and Indicators, for a complete explanation of each instrument and switch.

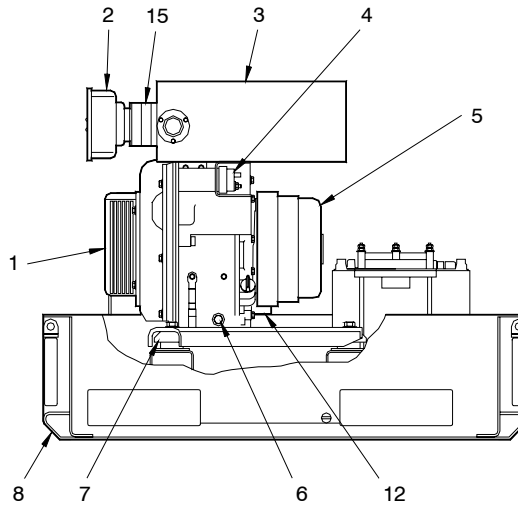
- f. **Receptacle, Filter, and Terminals.** The output terminal board and ground terminal are located on the generator set skid base, just below the control box assembly (18). A hinged cover (16) allows access to the three output terminals and single ground terminal. An insulated wrench (load wrench), used for connecting wires to the terminals, is secured to the hinged main access cover. A filter mounted to the front of the output terminals prevents Electromagnetic Interference (EMI). The generator set s 24VDC NATO Slave Receptacle (14) is mounted to the skid base (17), to the right of the output terminal board.
- g. **Diesel Engine/Generator Assembly.** The engine/generator assembly (Figure 1-3) consists of a single-cylinder diesel engine (14); a Permanent Magnet Alternator (PMA) (5); and associated electrical, fuel, and oil components. The engine/generator assembly is mounted to the skid base (8) with vibration mounts (7) to prevent engine vibration from affecting the operation of other generator set components. A fuel drain plug (9) and oil drain plug (10) allow maintenance personnel to drain engine fluids.
- h. **Diesel Engine.** The generator set is equipped with a single-cylinder, air-cooled, direct-injection, four-stroke-cycle diesel engine (14). The engine is designed to operate between 3000 and 3600 RPM, with an output of 6.7 HP at 3600 RPM. See TM 9-2815-257-24.

The engine has self-contained oil lubrication and fuel systems. A mechanical governor actuator (13) is set for 3750 RPM, maximum, and is controlled by an electrical governor for variable speed operation. The engine is equipped with an air filter (2), a muffler (3), a 24VDC starter motor (4), a manifold heater (15), an engine high-temperature switch (6), an engine oil low-pressure switch (12), and an oil fill cap and gauge (11). A rope-pull recoil starter system (1) allows for manual starting of the engine.

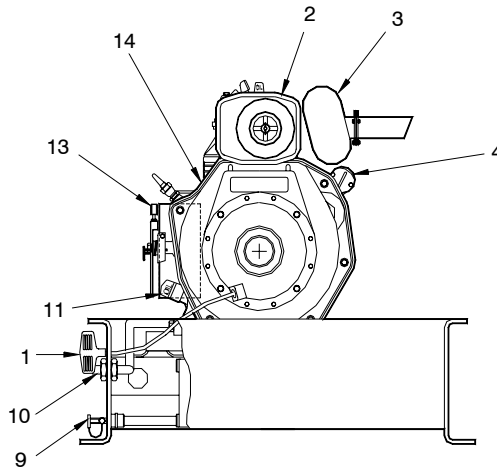
Engine cooling is provided by a flywheel fan, which forces air over the cylinder fins and engine components. The fan is completely guarded to prevent inadvertent contact during operation.

- i. **Permanent Magnet Alternator (PMA).** The PMA (5) consists of four 3-phase isolated AC output windings. Voltage output is proportional to engine speed (approximately 190VAC at 3kW, 3450 RPM). The rotating portion of the PMA is mounted directly to the engine, on the engine crankshaft extension, without a bearing. The PMA stator is directly mounted to the engine and uses Class H insulation.

LEFT SIDE VIEW



REAR VIEW



- | | | |
|--------------------------------------|-----------------------|-------------------------|
| 1. Recoil System | 6. Temperature Switch | 11. Oil Fill Cap/Gauge |
| 2. Air Filter | 7. Vibration Mount | 12. Oil Pressure Switch |
| 3. Muffler | 8. Skid Base | 13. Governor Actuator |
| 4. Starter Motor | 9. Fuel Drain Plug | 14. Diesel Engine |
| 5. Permanent Magnet Alternator (PMA) | 10. Oil Drain Plug | 15. Manifold Heater |

Figure 1-3. Diesel Engine/Generator Assembly

- j. **Frequency Converter (A8).** The generator frequency converter (A8) (19, Figure 1-2) is located in the skid base, between the control box and generator. It consists of rectifiers, a frequency converter (A8), and associated electronics, and it provides the regulated 120VAC, 2-wire, or 120/240VAC, 3-wire (single-phase only), output. Voltage regulation is maintained within one percent, throughout specified voltage ranges, from no load to rated load. An output control signal from the converter is connected to the governor control unit to vary engine speed, depending on load condition. This enables the generator set to operate at lower engine speeds for light-load conditions while maintaining the required output voltage.
- k. **Fuel System Assembly.** The generator set is equipped with a 4-gallon fuel tank (1, Figure 1-4) that provides enough fuel to operate the unit for 8 hours at full load. The tank is mounted on the skid base. The tank's filler assembly consists of a filler neck (2), a fuel strainer (3), and a vented fill

cap (4). The tank contains a fuel pick-up connection (5), a fuel return connection (6), a fuel drain connection (7), a sending unit (8), and a fuel level switch (9).

An electric fuel pump (10) feeds fuel from the tank (1), through a combination fuel filter/water separator (11), into the engine's fuel injection pump (12). The electric fuel pump (10) provides automatic fuel system priming and bleeding. An electronic governor actuator is linked, via a rod, to the fuel injection pump and is used for engine shutdown control.

An auxiliary fuel tank (13) allows the generator set to operate using an auxiliary fuel source. A fuel tank strainer assembly (14) is provided between the auxiliary fuel input connection (15) and the fuel pump. The fuel pump is controlled by the level switch, which allows fuel transfer from the auxiliary fuel source to the generator set fuel tank (1). Auxiliary fuel operations are controlled by the AUX FUEL switch (located on the generator set control panel). See paragraph 2-1, Operator Controls and Indicators, for a complete explanation of each instrument and switch.

1-16 DIFFERENCES BETWEEN MODELS

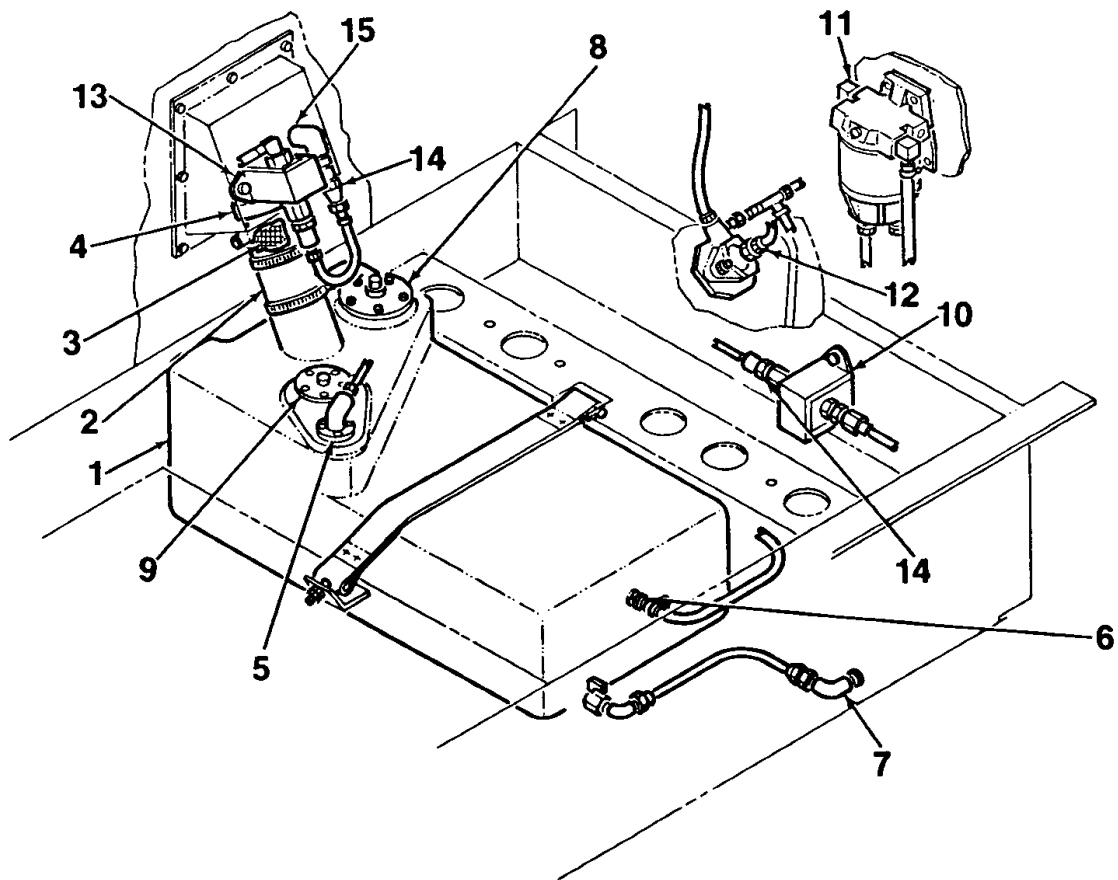
Generator set model MEP-831A operates at a frequency of 60Hz, and MEP-832A operates at 400Hz. MEP-831A is equipped with both a Ground Fault Circuit Interrupter (GFCI) (13, Figure 1-2) and a convenience receptacle (15); however, MEP-832A does not have these components.

1-17 EQUIPMENT DATA

See Table 1-2, Equipment Data, for a summary of specific capabilities, limitations, and critical data for operating and maintaining the generator set.

1-18 IDENTIFICATION AND INSTRUCTION PLATES

Figure 1-5 illustrates all data, instruction, and warning plates found on the generator set.



- | | | |
|-----------------------|------------------------|-------------------------------------|
| 1. Fuel Tank | 6. Return Connection | 11. Fuel Filter/Water Separator |
| 2. Filler Neck | 7. Drain Connection | 12. Fuel Injection Pump |
| 3. Fuel Strainer | 8. Sending Unit | 13. Auxiliary Fuel Tank |
| 4. Fill Cap | 9. Fuel Level Switch | 14. Fuel Tank Strainer Assembly |
| 5. Pick-Up Connection | 10. Electric Fuel Pump | 15. Auxiliary Fuel Input Connection |

Figure 1-4. Generator Set Fuel System

Table 1-2. Equipment Data

WEIGHTS AND DIMENSIONS

Weight (dry)	304.0 pounds (138.0 kg) maximum (MEP-831A)
Weight (dry)	302.0 pounds (138.0 kg) maximum (MEP-832A)
Weight (wet) (full fuel tank)	334.0 pounds (151.6 kg) maximum
Length	34.8 inches (88.4 cm)
Width	27.8 inches (70.6 cm)
Height	26.5 inches (67.3 cm)

GENERAL SPECIFICATIONS

Output power source	120VAC convenience receptacle (60Hz only)
Alternate starting aid	24VDC slave receptacle
Battery	24VDC, lead-acid type
Frequency rating:	
MEP-831A	60Hz
MEP-832A	400Hz
Rated voltage:	
1 phase, 2 wire	120VAC
1 phase, 3 wire	120/240VAC
Voltage adjustment range	114 to 126V for the 120V connection 228 to 252V for the 240V connection
Current output	31 Amps for 120V 16 Amps for 120/240
Audio noise rating	72 dBA (max) at 23 feet (7 meters) from perimeter of set, 47.25 inches (1.2 meters) above ground 85 dBA (max) at operator s position

FUEL REQUIREMENTS

Diesel fuel:	
A-A-52557, Type 1-D	-25°F to +20°F (-31°C to -7°C)
A-A-52557, Type 2-D	+20°F to +120°F (-7°C to +49°C)
Turbine fuel:	
MIL-T-83133, JP-8	-25°F to +120°F (-31°C to +49°C)
Fuel tank capacity	4.0 gallons (15.1 liters)
Auxiliary fuel system	continual replenishment
Fuel consumption rate	0.5 gallon per hour at rated load

TRANSPORTATION

Manual transport	Up to 6 personnel required (handles provided)
Truck, rail, air, and trailer transport	4 tie-down rings provided
Inclined transport angle	25° (max) any direction

Table 1-2. Equipment Data (Continued)

PERFORMANCE CHARACTERISTICS

Generator Set

Operating temperature range:

-25° to +120°F (-32° to +49°C)

Kilowatt capacity at altitude/temperature:

1000 ft (718.1 mm Hg) at 107°F (41.7°C) 3.0 kW

4000 ft (656.3 mm Hg) at 95°F (35.0°C) 2.7 kW

8000 ft (564.9 mm Hg) at 95°F (35.0°C) 2.3 kW

Output terminals:

Alternating current L1

Alternating current L2

Neutral N

Ground GND

Diesel Engine

Manufacturer Yanmar Diesel Engine Co., Ltd.

Model L70AE-D/DE

Weight (dry) 86.0 pounds (39.0 kg)

Length 15.08 inches (38.3 cm)

Width 16.58 inches (42.1 cm)

Height 17.72 inches (45.0 cm)

Horsepower 6.7 horsepower (at operating speed)

Operating RPM 3000 to 3600 RPM

Maximum RPM 3800 RPM

No load RPM 3000 to 3050 RPM

(governor controlled)

Rated load RPM 3400 to 3600 RPM

(governor controlled)

Engine cooling system Forced air cooling

Oil requirements:

MIL-L-46167, OEA -25°F to +40°F (-31°C to +5°C)

MIL-L-2104, OE/HDO-15/40 +5°F to +120°F (-15°C to +49°C)

MIL-L-2104, OE/HDO-10 -15°F to +40°F (-26°C to +5°C)

MIL-L-2104, OE/HDO-30 +15°F to +90°F (-9°C to +32°C)

MIL-L-2104, OE/HDO-40 +30°F to +120°F (-1°C to +49°C)

Oil capacity:

Engine 1.2 quarts (1.1 liters)

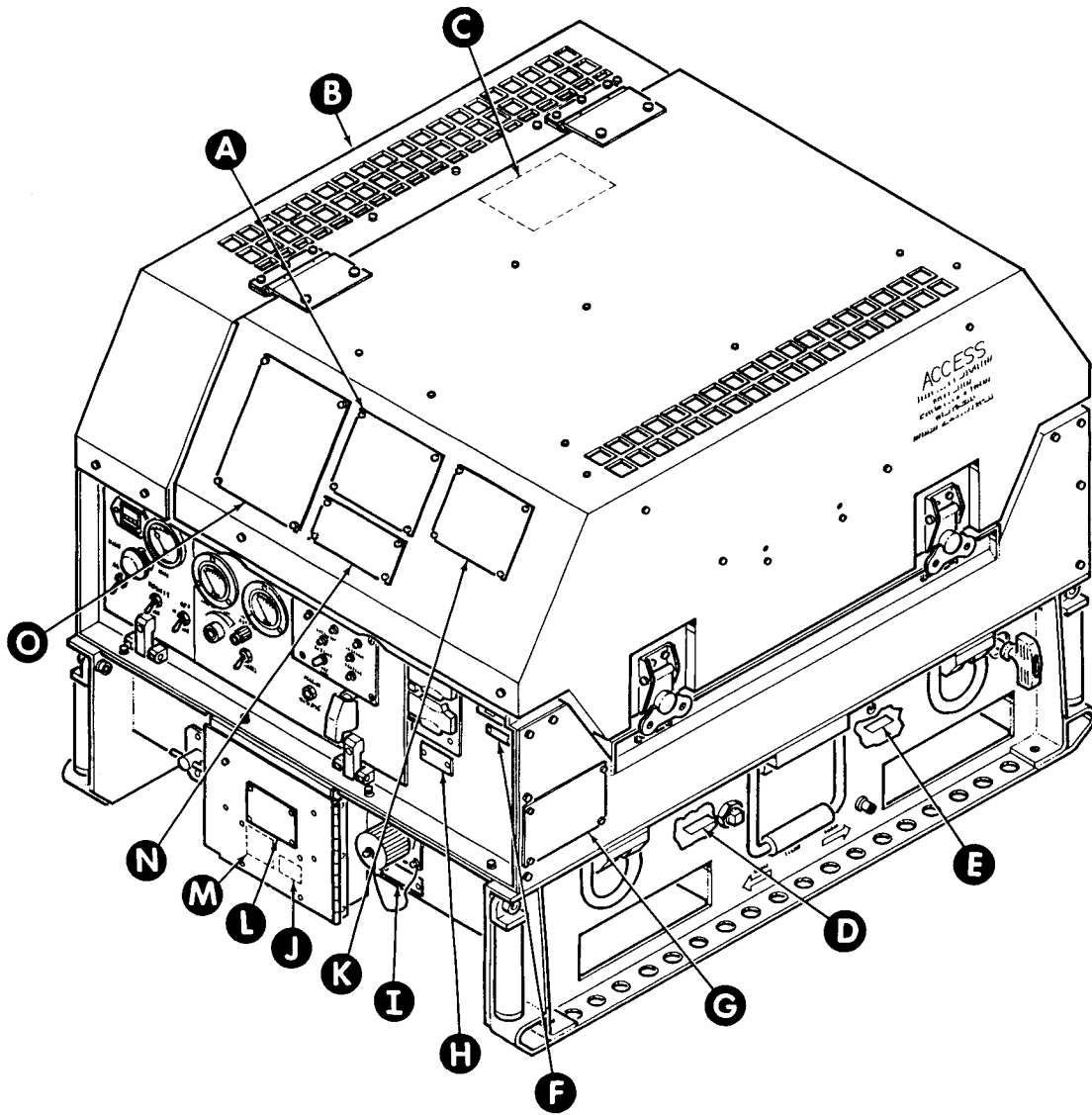
Oil consumption rate 0.04 ounce (1.18 ml) per hour at rated load

Compression ratio 19.5

Bore x stroke 3.07 x 2.44 inches (78 x 62 ml)

Cylinder 1

Displacement 18.1 in³ (296 cm³)



- | | | |
|-----------------|-----------------------|------------------------|
| A ID Plate | F GFCI | K Kilowatt Capacity |
| B Fuel Capacity | G Battery Connections | L High-voltage Caution |
| C Oil Capacity | H Voltage | M Terminal Voltage |
| D Fuel Drain | I Slave Receptacle | N Grounding Caution |
| E Oil Drain | J GND | O Operation |

**Figure 1-5. Generator Set Data, Instruction, and Warning Plates
 (Sheet 1 of 7)**

A

U.S. DEPARTMENT OF DEFENSE NATO STANDARD OTAN			
GENERATOR SET DIESEL ENGINE 3KW 60HZ			
MODEL	MEP-831A	NSN	6115-01-285-3012
SER NO.	FZA	REG NO.	
TM	TM9-6115-639-13&P	NAVFAC	-
TO	35C2-3-386-51W/IPB	TM	10155A-OI/1
VOLTS	120V 1PH, 120/240V 1PH		
AMPS	31/16	PF	0.8
DRY WT	304 LB	LG	34.8 IN
		W	27.8 IN
		HGT	26.5 IN
DATE MFD		CONTR NO.	DAAK01-96-C-0085
WARRANTY		DATE INSP	
MFD BY	FERMONT	INSP STAMP	

B

U.S. DEPARTMENT OF DEFENSE NATO STANDARD OTAN			
GENERATOR SET DIESEL ENGINE 3KW 400HZ			
MODEL	MEP-832A	NSN	6115-01-287-2431
SER NO.	FZA	REG NO.	
TM	TM9-6115-639-13&P	NAVFAC	-
TO	35C2-3-386-51W/IPB	TM	10155A-OI/1
VOLTS	120V 1PH, 120/240V 1PH		
AMPS	31/16	PF	0.8
DRY WT	302 LB	LG	34.8 IN
		W	27.8 IN
		HGT	26.5 IN
DATE MFD		CONTR NO.	DAAK01-96-C-0085
WARRANTY		DATE INSP	
MFD BY	FERMONT	INSP STAMP	

Figure 1-5. Generator Set Data, Instruction, and Warning Plates (Sheet 2 of 7)

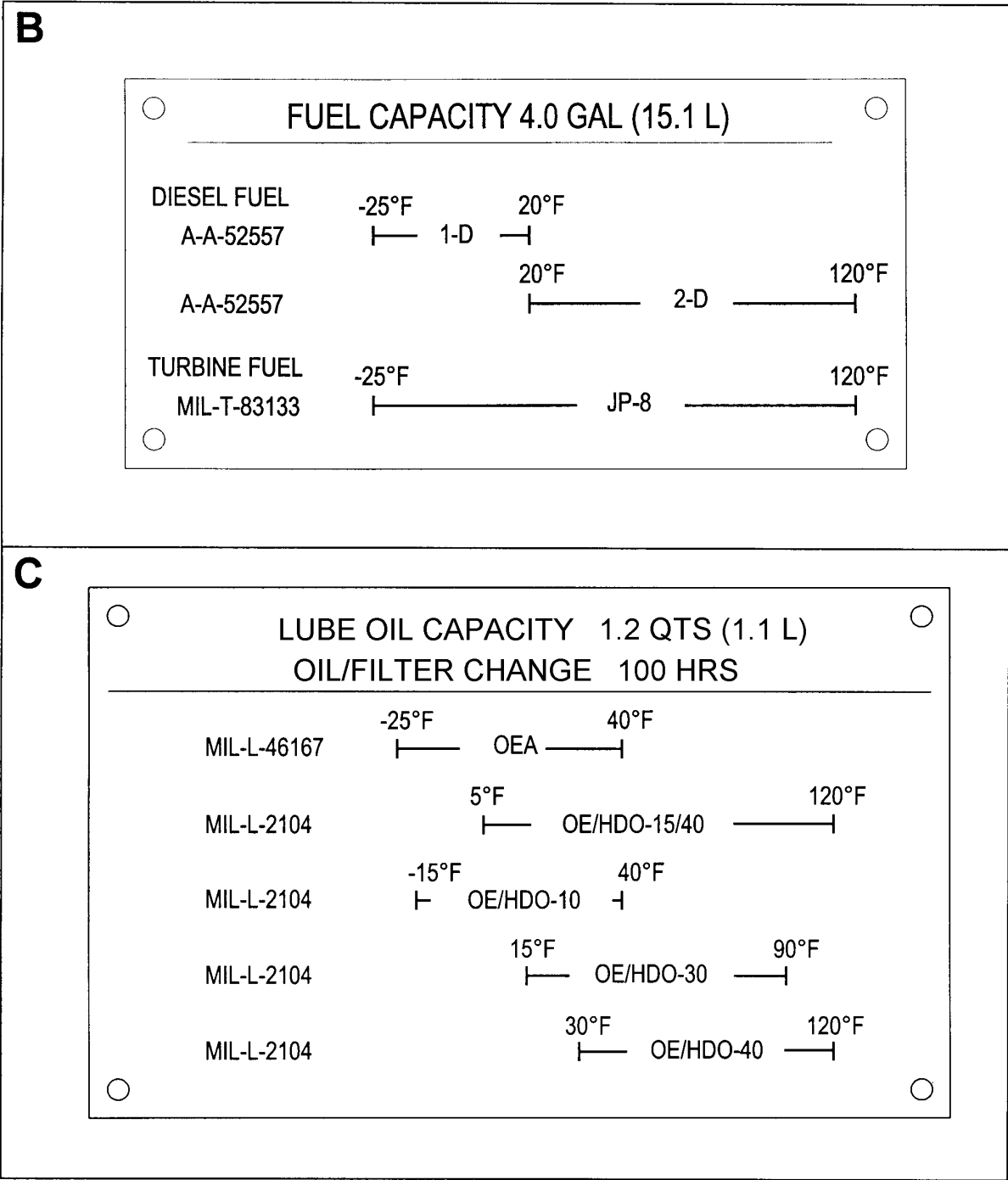
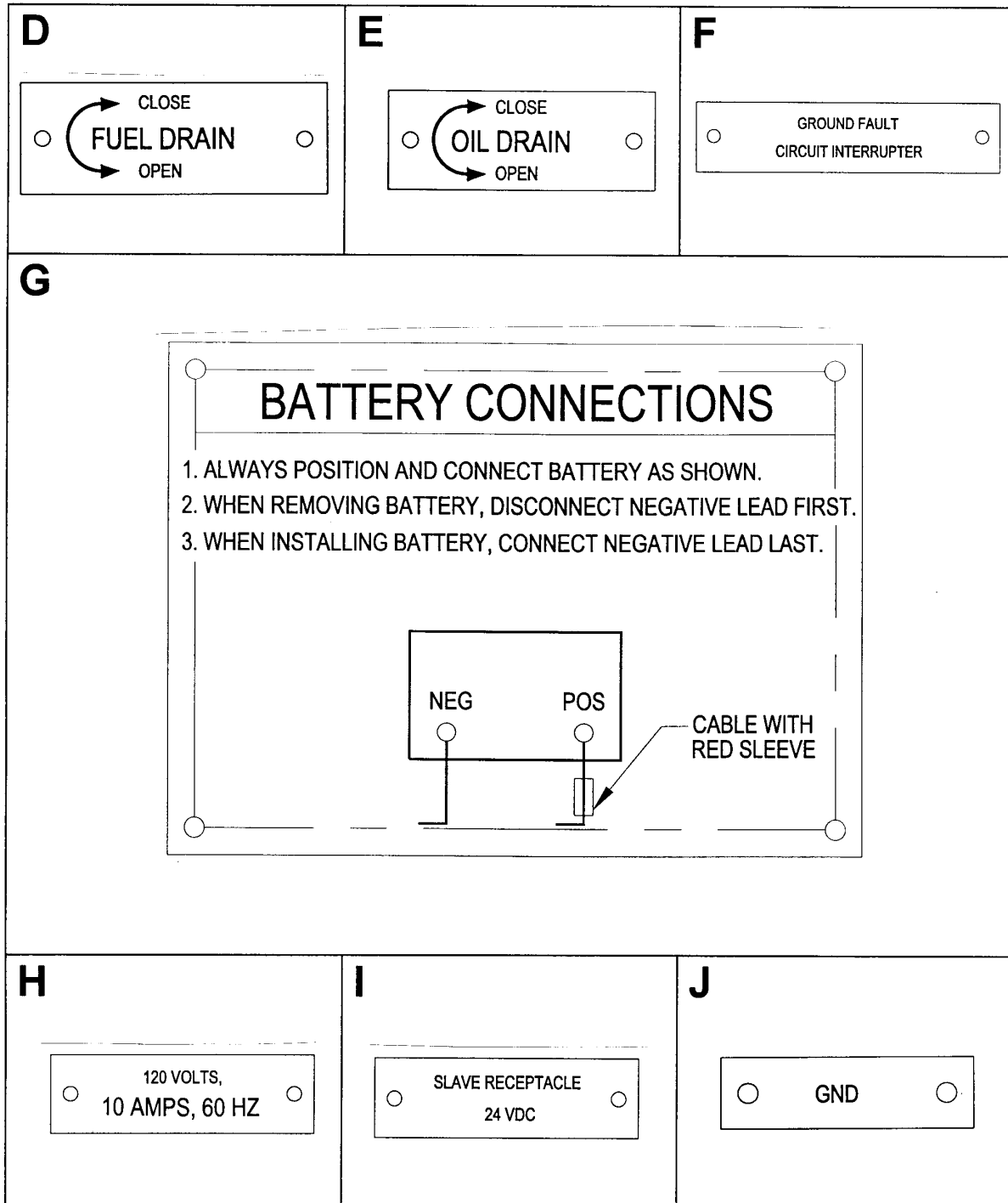


Figure 1-5. Generator Set Data, Instruction, and Warning Plates
 (Sheet 3 of 7)



*Figure 1-5. Generator Set Data, Instruction, and Warning Plates
 (Sheet 4 of 7)*

K

KILOWATT CAPACITY		
KW	ALTITUDE	TEMP
3.0	1000 FEET (718.1 MM HG)	107°F (41.7°C)
2.7	4000 FEET (656.3 MM HG)	95° F (35°C)
2.3	8000 FEET (564.9 MM HG)	95°F (35°C)
HERTZ RATING		400
RATED VOLTAGES, CURRENT AND PHASES		120 V, 31 AMPS, 1 PH, 2 WIRE 120/240 V, 16 AMPS, 1 PH, 3 WIRE
VOLTAGE ADJUSTMENT RANGES		114/126 V - 120 VOLT CONNECTION 228/252 V - 120/240 VOLT CONNECTION
POWER FACTOR		0.8
TYPE 1,	MODE II	SIZE 3

KILOWATT CAPACITY		
KW	ALTITUDE	TEMP
3.0	1000 FEET (718.1 MM HG)	107°F (41.7°C)
2.7	4000 FEET (656.3 MM HG)	95°F (35°C)
2.3	8000 FEET (564.9 MM HG)	95°F (35°C)
HERTZ RATING		60
RATED VOLTAGES, CURRENT AND PHASES		120 V, 31 AMPS, 1 PH, 2 WIRE 120/240 V, 16 AMPS, 1 PH, 3 WIRE
VOLTAGE ADJUSTMENT RANGES		114/126 V - 120 VOLT CONNECTION 228/252 V - 120/240 VOLT CONNECTION
POWER FACTOR		0.8
TYPE 1,	MODE III	SIZE 3

Figure 1-5. Generator Set Data, Instruction, and Warning Plates (Sheet 5 of 7)

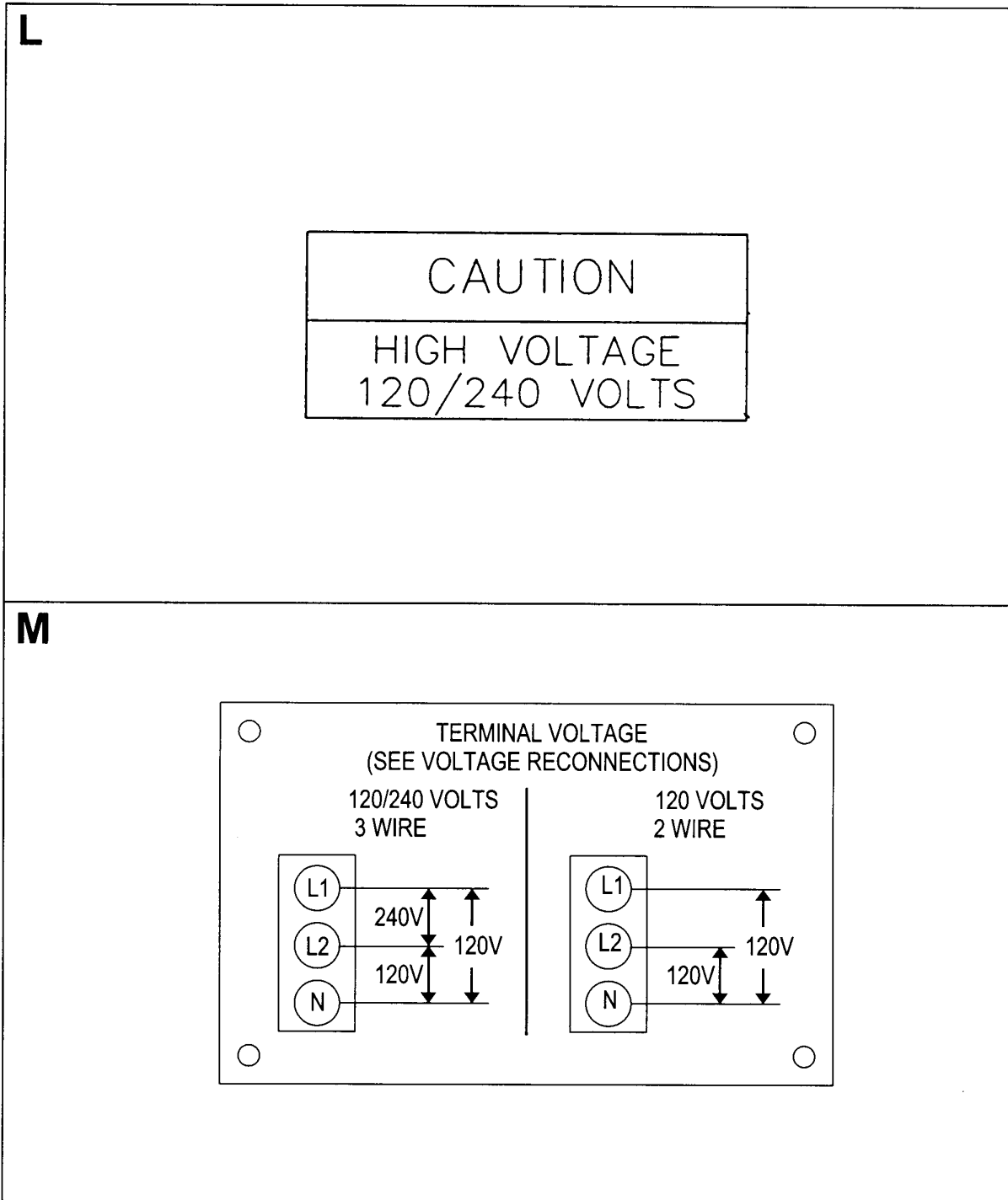
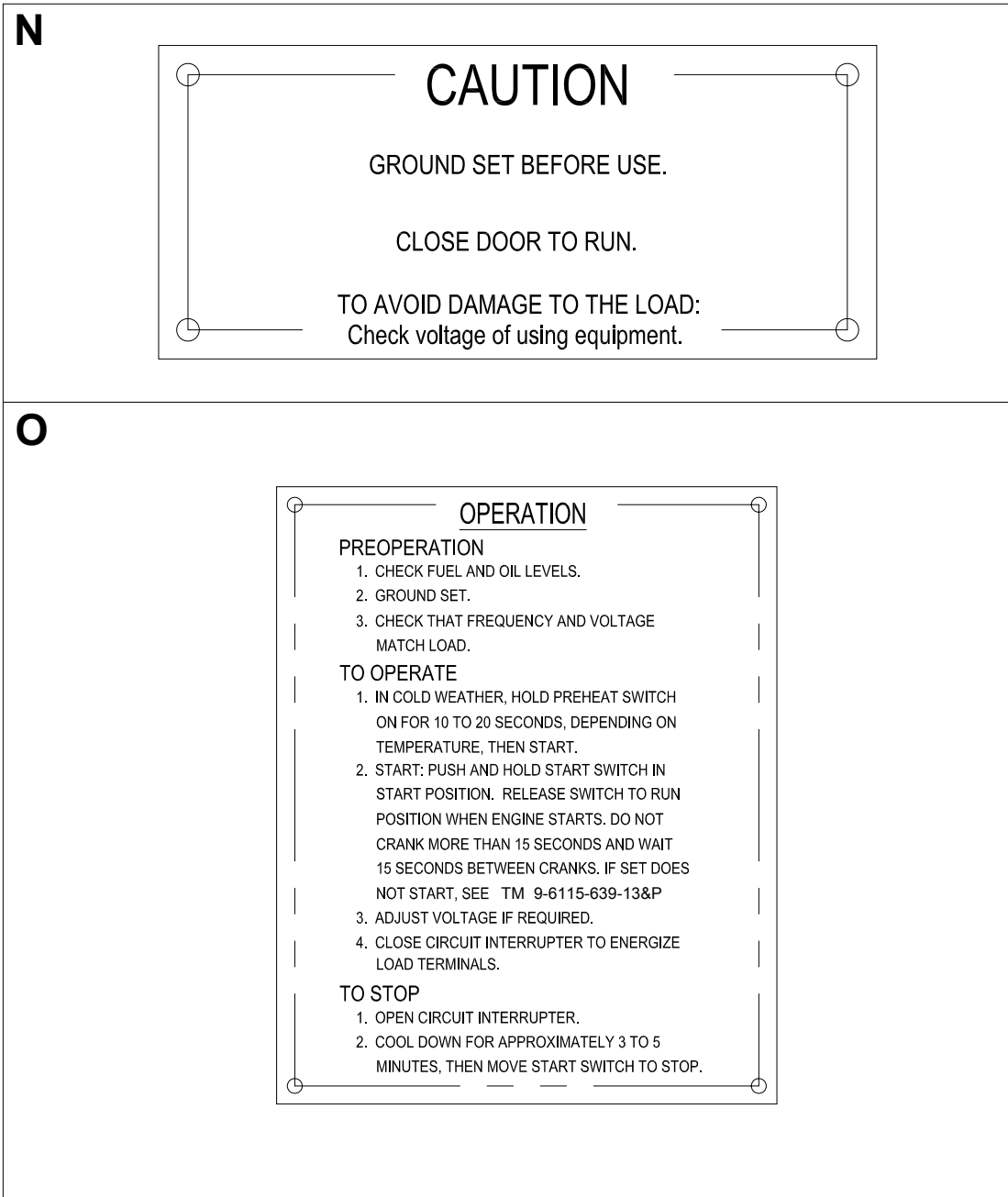


Figure 1-5. Generator Set Data, Instruction, and Warning Plates
(Sheet 6 of 7)



**Figure 1-5. Generator Set Data, Instruction, and Warning Plates
(Sheet 7 of 7)**

Section III. THEORY OF OPERATION

1-19 THEORY OF OPERATION

The theory behind the operation of the generator set is described in the following paragraphs. Each component depends on the other for efficient operation of the generator set. The information contained herein will assist Operator, Unit, and Direct Support maintenance personnel in understanding how the generator set functions. This knowledge will help isolate components that have failed.

1-20 ELECTRICAL SYSTEM

The generator set has two electrical systems: direct current (DC) and alternating current (AC) (Figure FO-1). The DC system provides generator control circuitry, relay logic, and engine cranking. The AC system produces voltage for output application. Five test points (on terminal board TB3) (see FO-2) provide malfunction isolation for critical components of the generator set.

1-21 DIRECT CURRENT SYSTEM (Figure FO-1)

- a. The DC system (Figure FO-1) is powered by a 24VDC battery (BT1). The battery is charged by the battery charging regulator (A9) when the engine is running. Engine cranking is initiated by placing the START/RUN/STOP switch (SI), located on the control panel, in the START position. This signals the engine start contactor (K2) to actuate the engine start solenoid (L4) and energize the starter motor (BI).
- b. With the START/RUN/STOP switch (SI) in the START or RUN position, the engine fuel transfer pump (E2) is energized, allowing fuel to be injected into the engine. Placing the START/RUN/STOP switch in the RUN position de-energizes the starter motor (BI). Placing the START/RUN/STOP switch in the STOP position opens the circuit to the engine fuel transfer pump (E2) and the governor control (A5), stopping fuel flow to the engine. DC voltage is removed from the AC circuit interrupter coil, causing the contactor to open.
- c. Pressing the EMERGENCY STOP button (S19), located on the control panel, opens the AC circuit interrupter (K1) and disconnects power to the governor control (A5). This causes the generator set to shut down.
- d. The generator set is equipped with an engine preheat system to help in cold-weather operation, below +20°F (-6.6°C). Prior to starting the engine the preheat mode may be actuated by placing the PREHEAT switch (S18), located on the control panel, in the ON position. This signals the engine preheat contactor (K13) to energize the air heaters (H1 and H2). The air heater heats intake air, which, in turn, assists in igniting fuel when injected into the engine combustion chamber.
- e. Should engine oil temperature exceed normal operating temperature (+265°F), a heat-sensitive temperature switch (HT) closes the circuit to energize the fault lockout relay (K12) and shut down the engine. The ENGINE HIGH TEMP indicator on the malfunction indicator module (A2) illuminates. The fault lockout relay (K12) locks out power to the engine until the FAULT RESET/LAMP TEST button on A2 is depressed. This safety mechanism prevents the operator from using the generator set until the malfunction has been corrected.
- f. Should engine oil pressure drop below 15 psi, a low oil pressure switch (OP) closes the circuit to energize the fault lockout relay (K12) and shut down the engine. The LOW OIL PRESS indicator on the malfunction indicator module (A2) illuminates. The FAULT RESET/LAMP TEST switch must be depressed to reset the fault lockout relay.
- g. Relay K8, located in the frequency converter (A8), is energized if a short circuit or overload condition exists. The overload condition may be either a current overload or a real power (kW) overload. The AC circuit interrupter (K1) opens, disconnecting power from the load. The OVERLOAD SHORT CIRCUIT indicator on the malfunction indicator module (A2) illuminates.

Once the malfunction has been corrected, the malfunction indicator can be reset by depressing the FAULT RESET/LAMP TEST button. The AC circuit interrupter (K1) can be closed.

- h. Relay K6, located in the frequency converter (A8), is energized if a short circuit condition exists. The fault lockout relay (K12) energizes, stopping the engine. The system is reset by placing the START/RUN/STOP switch in the STOP position.
- i. Relay K3, located in the frequency converter (A8), is energized if an overvoltage condition exists. The fault lockout relay (K12) is energized, stopping the engine. The AC circuit interrupter (K1) opens, disconnecting power from the load. The OVER VOLTAGE indicator on the malfunction indicator module (A2) illuminates. The fault lockout relay (K12) locks out power to the engine until the FAULT RESET/LAMP TEST button on A2 is depressed.
- j. The engine is supplied with a conventional mechanical governor. The maximum no load, mechanically governed speed is factory set to 3800 RPM. An electric governing system overrides the mechanical governor, regulating no-load speed to 3000 to 3050 RPM and rated-load speed to 3400 to 3450 RPM. During manual starting, the electric governor actuator is locked in position close to the full fuel position, and the mechanical governor takes over.
- k. In an emergency situation, the BATTLE SHORT switch (S7) can be activated to allow generator set operation under certain fault conditions. Placing the switch (located on the control panel) in the ON position bypasses all faults except the overload short circuit condition. The BATTLE SHORT indicator on the malfunction indicator module (A2) illuminates. The generator set continues to operate under high temperature, low oil pressure, low fuel, overvoltage, or overload short circuit condition. The appropriate indicator light on A2 illuminates, and the engine cannot be started with the BATTLE SHORT switch in the ON position.
- l. In generator set model MEP-832A (400Hz), two thermostatically controlled DC ventilation fans (B2 and B3) are mounted in the generator set. One is mounted on the inside portion of the main access cover, and the second is mounted inside the generator set by the right-side panel. These fans provide internal cooling of the generator set under high temperature operating conditions. The fan temperature switches (S20 and S21) (see FO-1, Sheet 2) are set to turn ON fan B2 when internal air temperature reaches 85°F (29°C) and fan B3 when internal air temperature reaches 110°F (43°C).

1-22 ALTERNATING CURRENT SYSTEM (Figure FO-1)

- a. The power for the AC electrical system (Figure FO-1) is provided by the Permanent Magnet Alternator (PMA) (G1). The frequency converter (A8) converts this AC power electronically to 120/240V, 60Hz or 400Hz power.

NOTE

The frequency converter (A8) is not waterproof.
Water in the A8 can cause it to short out, thereby
creating a catastrophic failure.

- b. In generator set model MEP-831A (60Hz), a duplex convenience receptacle (J1) provides power for common 120VAC appliance or tool loads. A Ground Fault Circuit Interrupter (CB3) protects both the convenience receptacle circuitry and the connected appliance, should a ground fault occur.
- c. Once the generator set reaches normal operating voltage (114 to 126V for 120V connection, 228 to 252V for 240V connection), the CIRCUIT INTERRUPTER switch (S5), located on the control panel, is placed in the CLOSED position. The AC circuit interrupter (K1) closes, applying frequency converter (A8) output voltage to the output terminal board (TB2, terminals L1, L2, and N). Placing the CIRCUIT INTERRUPTER switch (S5) in the OPEN position opens the AC circuit interrupter, removing frequency converter (A8) output voltage from the output terminals.

- d. Voltage adjustment is accomplished using the VOLTAGE ADJUST potentiometer (R1), located on the control panel. Output from the frequency converter (A8) is displayed on a LOAD meter (M2) and a VOLTAGE meter (M1). Both meters are located on the control panel.
- e. In generator set model MEP-831A (60Hz), two thermostatically controlled AC ventilation fans (B2 and B3) are mounted in the generator set main access cover. These fans provide internal cooling of the generator set under high temperature operating conditions. The fan temperature switches (S20 and S21) are set to turn on fan B2 when internal air temperature reaches 85°F (29°C) and fan B3 when internal air temperature reaches 110°F (43°C).

1-23 GENERATOR (Figure FO-1)

- a. The AC generator (G1) (see Figure FO-1) is a direct-coupled Permanent Magnet Alternator (PMA). The rotor and fan are dynamically balanced at all speeds up to 125 percent rated speed to minimize vibration. The windings and coils in the stator assembly use Class H insulating material. Temperature rise of the windings is limited to a change of 221°F (105°C) (maximum).
- b. The generator produces voltage by rotating permanent magnets in the rotor past a stator winding. The magnetized poles of the rotor have alternate north and south polarity. The magnetic flux lines leave each north pole of the rotor, pass through the stator, and return to the adjacent south poles of the rotating field.

NOTE

The frequency converter (A8) converts generator output to a 120/240V, 60Hz or 400Hz output, regardless of engine speed. The electric governor varies the engine speed in proportion to the kW load on the generator set.

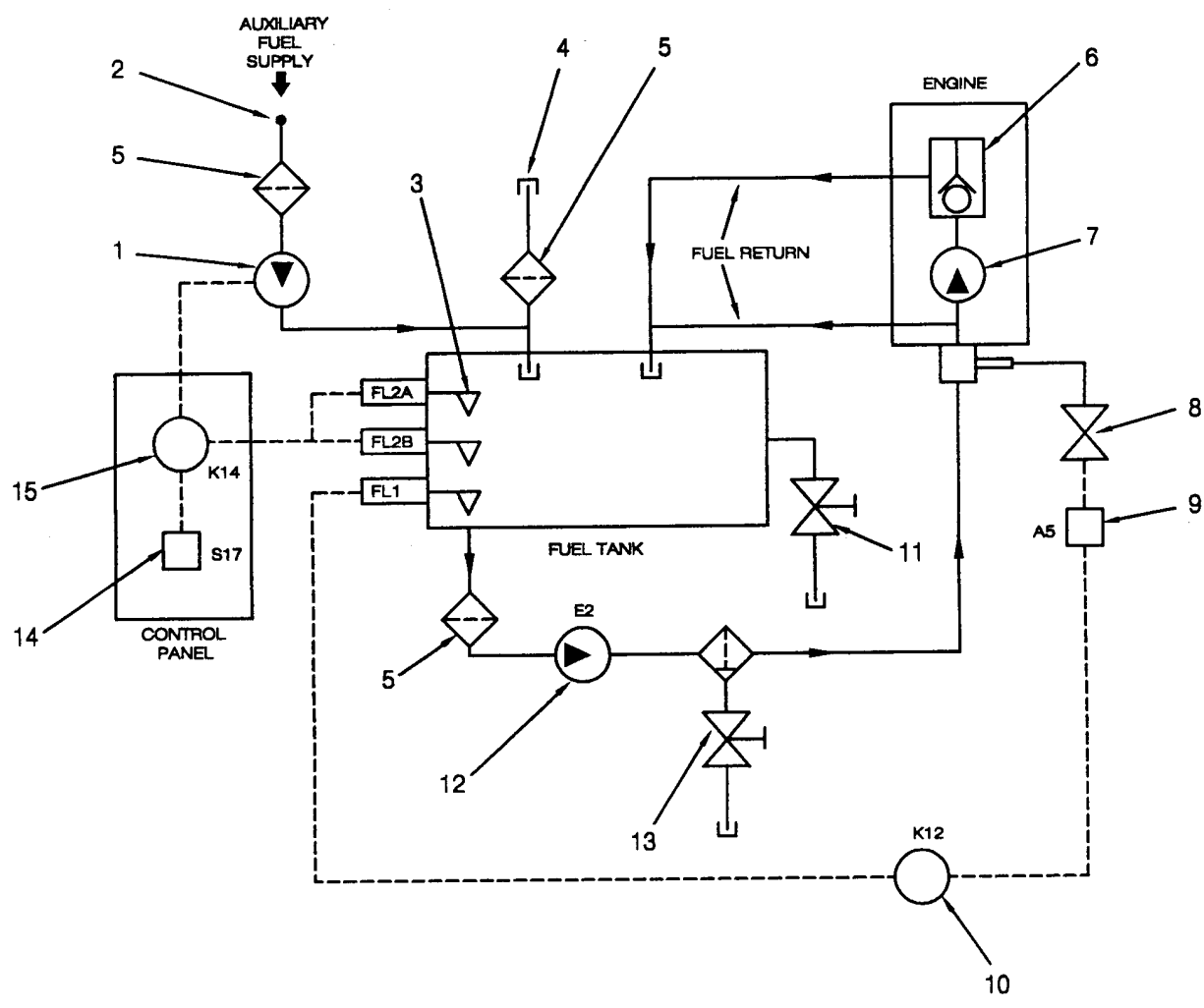
- c. As the rotor turns, voltage is induced in the stator windings. The stator voltage output is connected to the static frequency converter (A8). Voltage output can be varied using the VOLTAGE ADJUST rheostat (R1). Frequency output is not adjustable.

1-24 FUEL SYSTEM (Figure 1-6)

- a. The generator set fuel system (Figure 1-6) consists of a 4.0 gallon (15.1 liter) fuel supply tank, fuel transfer pumps, fuel filter/water separator, auxiliary fuel intake system, and engine fuel components. The fuel tank is sized to contain enough fuel to operate the generator set for 8 hours at full load using any of the specified fuels (see Table 2-1). The tank is connected to a fuel fill pocket, which contains a vented fill cap (4), a fuel filler neck, and a fuel strainer (5). A tank drain valve (11) is located at the base of the tank.
- b. The engine fuel supply line passes fuel from the fuel tank, through a fuel filter/water separator (13), a primary fuel transfer pump (12), and a fuel injection pump (7), into the fuel injector (6). The fuel filter/water separator removes micro-particles and separates water from the fuel flow. Water collects in the filter/water separator bowl where it can be drained.
- c. The generator set fuel system is equipped with two fuel transfer pumps: primary (12) and auxiliary (1). The primary fuel transfer pump (12) feeds fuel from the fuel tank to the engine injection system. When the START/RUN/STOP switch (S1) (see Figure FO-1) is placed in the START or RUN position, the primary fuel transfer pump is energized. Fuel flows to the fuel injection pump (7, Figure 1-6). The pump provides the pressurized fuel to operate the fuel injector (6).
- d. For generator set operation from an auxiliary fuel source, the auxiliary fuel hose is connected to the set at the auxiliary fuel connection (2). The AUX FUEL switch (14, located on the control panel) is placed in the ON position. A three-position float switch (3) monitors tank fuel level and controls

auxiliary fuel system components. If fuel is below the float switch (FL2B), the auxiliary fuel transfer relay (15) energizes and activates the auxiliary fuel pump (1). The auxiliary fuel pump begins operation and draws fuel from the auxiliary source until the fuel level in the tank rises above the float switch (FL2A). Once the fuel level rises above the float switch (FL2A), the switch opens and de-energizes the auxiliary fuel transfer relay (15). The level monitoring/servicing cycle continues until the AUX FUEL switch (14) is placed in the OFF position.

- e. If at any time during operation the tank fuel level drops below the float switch (FL1), the fault lockout relay (10) opens and de-energizes the governor control (9) and governor actuator (8), cutting off fuel to the engine. This prevents the fuel system from running dry, causing loss of prime in the fuel injection pump (7). The NO FUEL indicator on the fault isolation module illuminates, and the generator set immediately shuts down. Once the fault lockout relay (10) has been actuated, the engine does not run until the FAULT RESET button on the malfunction indicator module has been depressed.
- f. If the fuel level drops below the float switch (FL2B) and an auxiliary fuel source is not available, the generator set continues to operate for 3 to 4 hours before the float switch (FL1) is actuated and shutdown occurs.



- | | | |
|------------------------------|-------------------------|-----------------------------------|
| 1. Auxiliary Fuel Pump | 6. Fuel Injector | 11. Tank Drain Valve |
| 2. Auxiliary Fuel Connection | 7. Injection Pump | 12. Primary Fuel Transfer Pump |
| 3. Float Switch | 8. Governor Actuator | 13. Fuel Filter/Water Separator |
| 4. Fill Cap | 9. Governor Control | 14. AUX FUEL Switch |
| 5. Fuel Strainer | 10. Fault Lockout Relay | 15. Auxiliary Fuel Transfer Relay |

Figure 1-6. Fuel System Schematic

CHAPTER 2

OPERATING INSTRUCTIONS

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Section I. DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

2-1 OPERATOR CONTROLS AND INDICATORS

Prior to placing the generator set into operation, personnel must be familiar with the location and function of all switches, controls, and indicators, as described below and identified in Figure 2-1. See generator set electrical schematic, Figure FO-1, for reference designations.

- 1 HOURS Meter (M3)**
Indicates hours of generator set operation.
 - OFF position returns generator set to normal operating mode, allowing faults to halt generator set operation.
- 2 FUEL LEVEL Meter (M5)**
Indicates amount of fuel remaining in generator set fuel tank.
- 3 VOLTAGE Meter (M1)**
Indicates generator set output voltage.
- 4 LOAD Meter (M2)**
Indicates generator load in kilowatts.
- 5 DC CIRCUIT BREAKER Switch (CB1)**
Trips to stop generator set operation in case of electrical surge in DC control system. Push to reset breaker.
- 6 Fault Indicator Module (A2)**
Contains lights that indicate generator set operating conditions. Includes the following indicator lights:
 - ENGINE HIGH TEMP fault (red)
 - LOW OIL PRESSURE fault (red)
 - NO FUEL fault (red)
 - OVERVOLTAGE fault (red)
 - OVERLOAD SHORT CIRCUIT fault (red)
 - BATTLE SHORT ON operation (yellow)

Dual-purpose FAULT RESET/PUSH TEST push-button switch allows operator to test indicator lights before operation and reset fault isolation module after fault has been remedied.
- 7 BATTLE SHORT Switch (S7)**
Two-position switch that allows generator set operation under certain fault conditions.
 - ON position bypasses all faults except short circuit conditions.
 - BATTLE SHORT indicator on fault indicator module (A2) (see item 6) will light when switch is in ON position.
- 8 Convenience Receptacle (J1) (60Hz only)**
Single-phase duplex receptacle that allows 120VAC appliance or tool connection.
- 9 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) (CB3) (60Hz only)**
Provides automatic circuit interruption and circuit protection for the convenience receptacle (J1).
- 10 NATO SLAVE RECEPTACLE (SR1)**
Allows for 24VDC auxiliary power connection for starting generator set.
- 11 GND Terminal**
Generator set ground terminal.
- 12 L1, L2, N Terminals**
Generator set alternating current (L1, L2) and neutral (N) terminals.
- 13 CIRCUIT INTERRUPTER Switch (S5)**
Two-position switch that applies generator voltage to the output terminal board.
 - CLOSED position signals AC circuit interrupter (K1) to close, applying voltage to the terminal board.
 - OPEN position opens AC circuit interrupter (K1), terminating current to the load.
- 14 AC CIRCUIT INTERRUPTER Indicator (DS6)**
Lights when CIRCUIT INTERRUPTER switch (S5) is in CLOSED position, indicating load is being applied to terminal board.
- 15 VOLTAGE ADJUST Potentiometer (R1)**
Allows operator to adjust generator set output voltage.

- 16 START/RUN/STOP Switch (S1)**
Three-position switch that controls generator set operation.
- START position is spring-loaded and activates engine starter (B1). Must be held in position.
 - RUN position cuts electrical power to starter and energizes all circuits required for normal operation.
 - STOP position opens circuit to engine fuel transfer pump (E2) and governor control (A5). Fuel flow to engine stops and generator set shuts down.
- 17 PREHEAT Switch (S18)**
Two-position switch that controls engine preheat system.
- ON position sends a signal to engine preheat contactor (K13) to energize engine air heater. Used during cold weather operation.
 - OFF position de-energizes engine air heater, halting engine preheat operations.
- 18 AUX FUEL Switch (S17)**
A two-position switch, located on control panel assembly, that allows generator set to operate using an auxiliary fuel source.
- ON position allows a three-position fuel level switch (FL), mounted in the generator set fuel tank, to regulate auxiliary fuel flow into the fuel tank. See item 25 for details.
 - OFF position de-energizes auxiliary fuel circuit, preventing auxiliary fuel pump (E1) from operating.
- 19 EMERGENCY STOP button (S19)**
A push-button switch that opens AC circuit interrupter (K1) and disconnects power to governor control (A5), which causes generator set to shut down. For emergencies only.
- 20 Engine Start Handle**
Allows for manual start of generator set engine. Activates engine s recoil starter assembly.
- 21 Fuel Drain Plug**
Allows personnel to drain generator set fuel tank. Connected to a fuel drain line.
- 22 Engine Oil Drain Plug**
Allows personnel to drain engine oil sump. Connected to an oil drain line.
- 23 Temperature Switch (S21)**
Monitors temperature inside generator set enclosure. Activates ventilation fan (B3) when temperature reaches 110°F (43°C).
- 24 Temperature Switch (S20)**
Monitors temperature inside generator set enclosure. Activates ventilation fan (B2) when temperature reaches 85°F (29°C).
- 25 Fuel Level Switch (FL)**
Three-position float switch that monitors fuel level in generator set fuel tank. Controls auxiliary fuel transfer relay (K14) when AUX FUEL switch (see item 18) is in ON position.
- When fuel level is below switch (FL2B), auxiliary fuel transfer relay (K14) energizes and activates auxiliary fuel pump (E1) to begin fuel pumping.
- When fuel level rises above switch (FL2A), transfer relay opens, deactivating pump.
- If fuel drops below switch (FL1), fault lockout relay (K12) opens and de-energizes governor control (A5) (see item 28), cutting off fuel to engine. The NO FUEL indicator on fault indicator module (A2) will light (see item 6).
- 26 Fuel Level Sender (MT5)**
Sends generator set fuel tank level data to FUEL LEVEL meter (M5) (see item 2).
- 27 Low Oil Pressure Switch (OP)**
Monitors engine oil pressure. If oil pressure drops below 15 psi, switch closes circuit to energize fault lockout relay (K12) and shut down engine.
- The LOW OIL PRESSURE indicator on fault indicator module (A2) will light (see item 6).
- 28 Governor Control (A5)**
Controls engine s mechanical governor to adjust engine speed.
- 29 Engine Temperature Switch (HT)**
Monitors engine temperature. If engine temperature rises above 265°F (129°C), switch closes circuit to energize fault lockout relay (K12) and shut down engine. The ENGINE HIGH TEMP indicator on fault indicator module (A2) will light (see item 6).

- 30 Engine Oil Fill Cap and Gauge**
Allows for engine oil servicing. Gauge in cap measures crankcase oil level.
- 31 Fuel Fill Cap**
Allows for generator set fuel servicing, using a fill tank or fuel nozzle. Includes a mesh fuel strainer.
- 32 Auxiliary Fuel Cap**
Allows for connection of an auxiliary fuel line.
- 33 Voltage Selection Switch**
Allows selection of 120VAC or 120/240 VAC on MEP-831A sets. Located on top of Frequency Converter (A8).

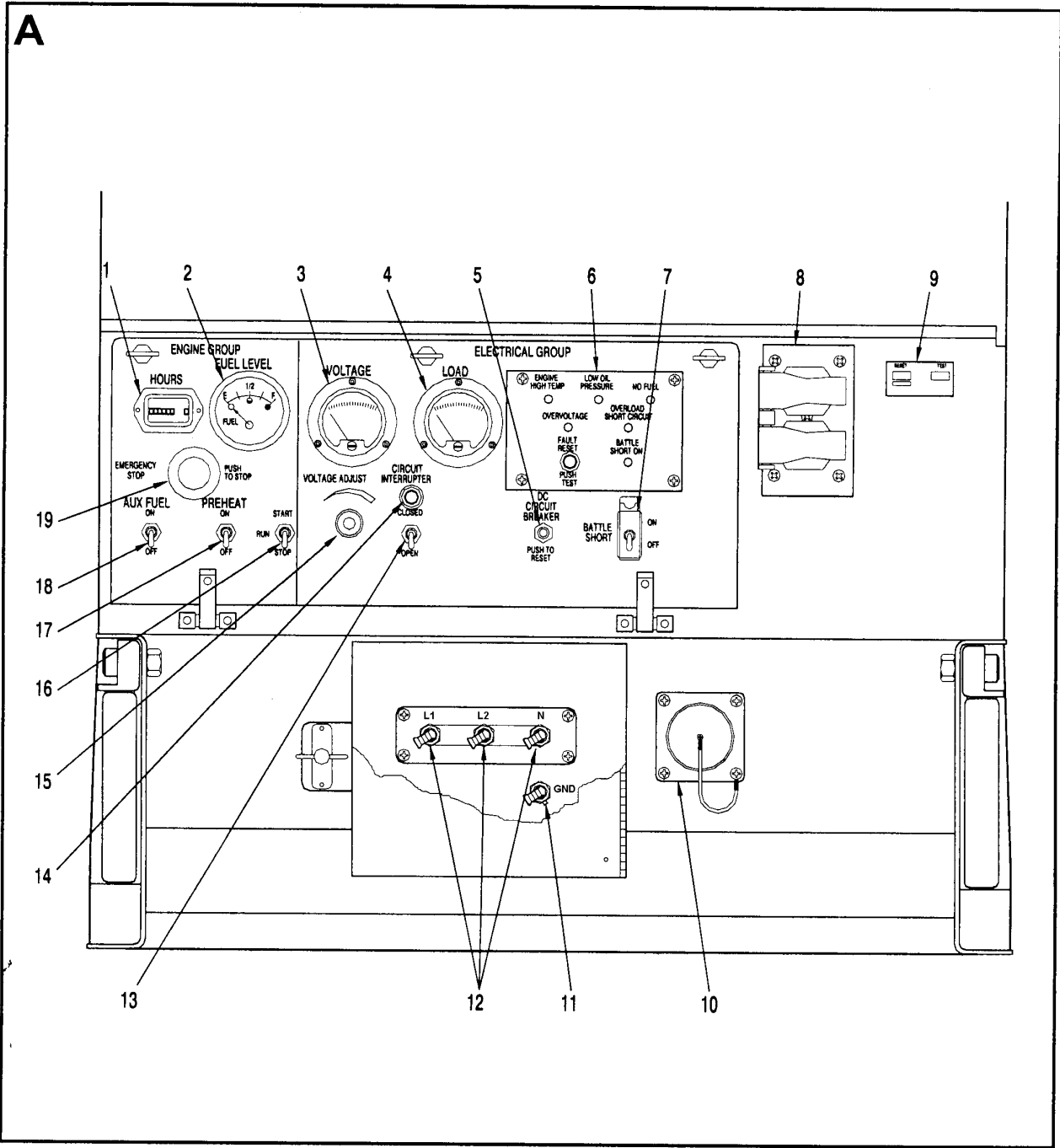


Figure 2-1. Generator Set Controls and Indicators (Sheet 1 of 4)

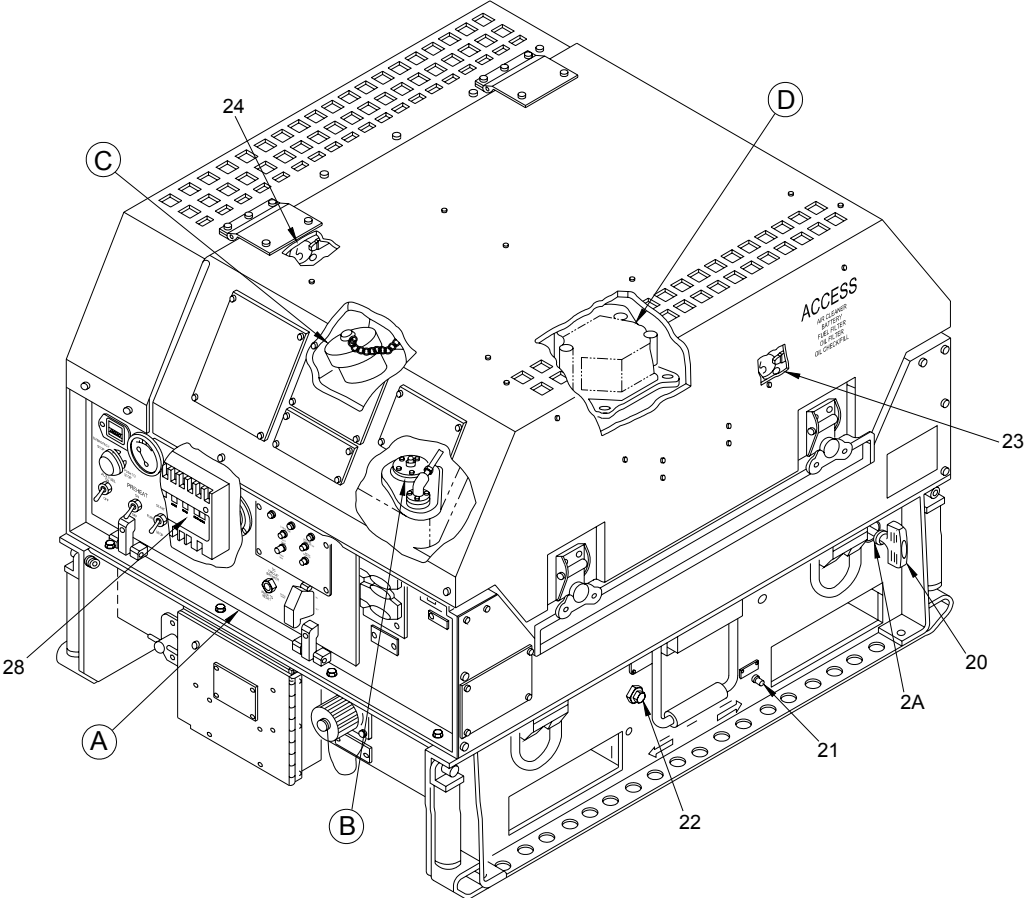


Figure 2-1. Generator Set Controls and Indicators (Sheet 2 of 4)

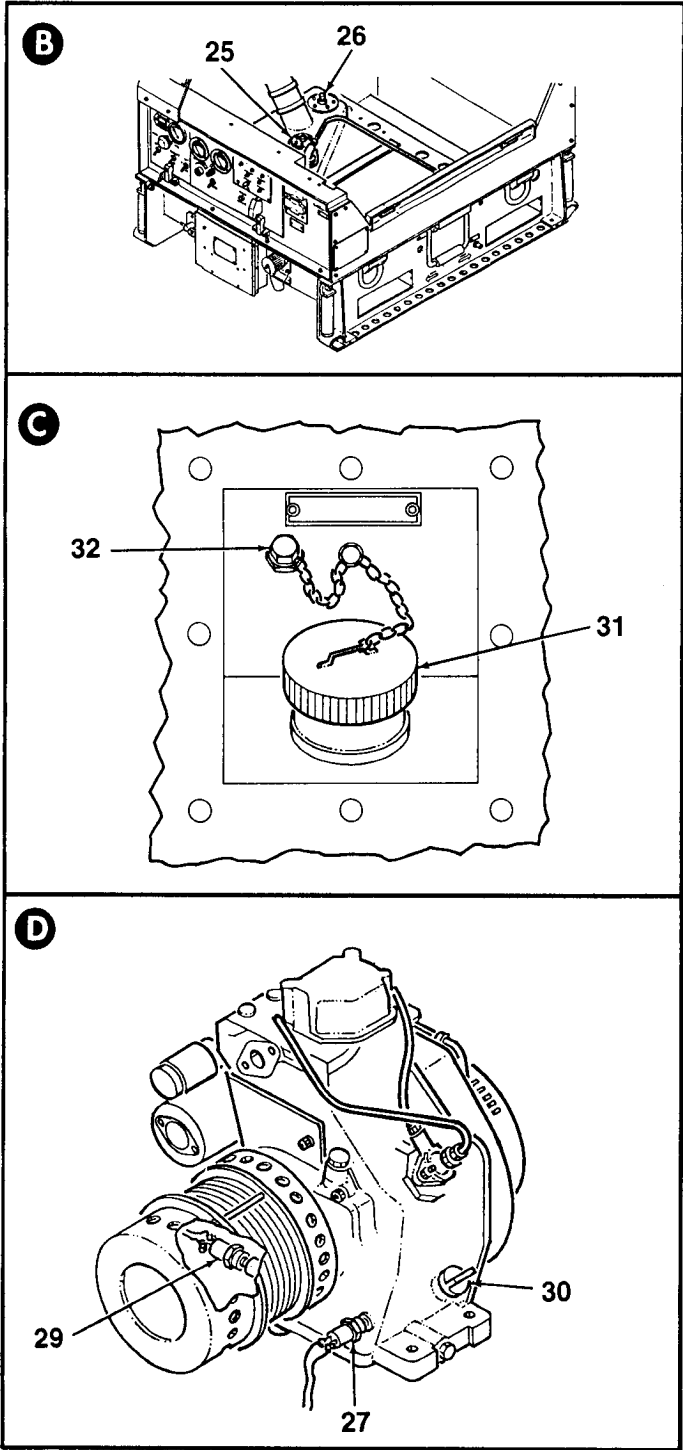


Figure 2-1. Generator Set Controls and Indicators (Sheet 3 of 4)

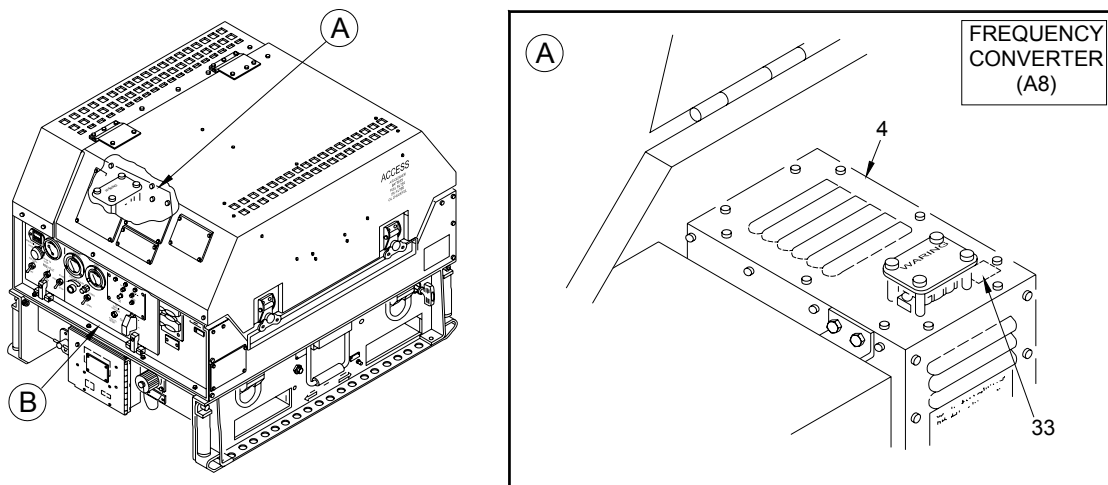


Figure 2-1. Generator Set Controls and Indicators (Sheet 4 of 4)

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2 GENERAL

Operator Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing of equipment to keep it in good condition and to prevent breakdowns. As generator set operator, your mission is to ensure that the generator set is ready for operation at all times. It must be inspected so that defects can be discovered and corrected before they result in damage or failure.

- a. Be sure to perform your PMCS as indicated. Always perform your PMCS in the same order, so it gets to be a habit. Once you have had some practice, you will quickly spot anything wrong.
- b. Perform your BEFORE PMCS before you operate the generator set. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- c. Perform your DURING PMCS while you operate the generator set. Monitor the generator set and its related components while it is actually being operated. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- d. Perform your AFTER PMCS right after operating the generator set. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- e. Perform your WEEKLY PMCS once a week.
- f. If your equipment does not perform as required, see Chapter 3, Troubleshooting Procedures, for possible problems. Use DA Form 2404 or DD Form 5982E, Equipment Inspection and Maintenance Worksheet, to record any faults you discover before, during, or after operation.
- g. Be prepared to assist Unit maintenance when they lubricate the generator set. Perform any other services when required by Unit maintenance.

2-3 PMCS PROCEDURES

Your Preventive Maintenance Checks and Services (PMCS), Table 2-1, lists inspections and care required to keep your generator set in good operating condition. It is set up so you can make your BEFORE OPERATION checks as you walk around the generator set.

- a. **Item No. Column.** The Item No. column lists each check or service in chronological order.
- b. **Interval Column.** The Interval column tells you when to do a certain check or service. Intervals are based on operating hours, unless otherwise noted.
- c. **Location:Item to Check/Service Column.** The Location:Item to Check/Service column directs maintenance personnel to the general area on the generator set where the check or service is to be performed.
- d. **Procedure Column.** The Procedure column tells you how to do required checks and services. Tolerances, adjustment limits, and instrument readings are included as applicable. When replacement or repair of a component is required, the procedures column will direct you to the appropriate task.

NOTE

The terms *ready/available* and *mission capable* refer to the same status: Equipment is on hand and ready to perform its combat missions. (See DA Pam 738-750).

- e. **Not Fully Mission Capable If Column.** The Not Fully Mission Capable If column tells you when your generator set is not operational and why the generator set cannot be used.
- f. If the generator set does not perform as required, see Chapter 3, Troubleshooting Procedures.
- g. If anything looks wrong and you cannot fix it, write it on your DA Form 2404 or DD Form 5988E. IMMEDIATELY report it to your supervisor.
- h. When you perform PMCS, always keep a rag or two handy. Following are checks common to the entire generator set:
 - (1) Keep It Clean. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use approved cleaning solvents (see Appendix F) on all metal surfaces. Use soap and water when you clean rubber or plastic material.
 - (2) Rust and Corrosion. Check components for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of oil. Report it to your supervisor.
 - (3) Bolts, Nuts, and Screws. Check bolts, nuts, and screws for obvious looseness or to see if they are missing, bent, or broken. You cannot inspect them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor.
 - (4) Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.
 - (5) Electric Wires and Connectors. Look for cracked, frayed, or broken insulation. Look for bare wires, and loose or broken connectors. Tighten loose connectors. Report any damaged wires to your supervisor.
 - (6) Hoses and Fluid Lines. Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor.
- i. When you check for operating condition, you look at the component to see if it is serviceable.

2-4 CLEANING AGENTS

WARNING

Compressed air is dangerous and can cause serious bodily harm, if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or to prevent unbroken skin of the operator or other personnel. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 pounds per square inch gauge (psig). Use it only with effective chip-guarding and personnel protective equipment (industrial safety glasses and full face shield). DO NOT use compressed air to dry parts when solvent cleaners have been used. Failure to observe this warning could result in severe personal injury or death.

WARNING

Do not use TRICHLOROTRIFLUOROETHANE, TRICHLOROETHANE, and similar chemical solvents for ordinary cleaning of equipment. These substances threaten public health and the environment by destroying ozone in the Earth's upper atmosphere. Use suitable non-hazardous cleaning materials (see Appendix F) such as a clean cloth, water, and mild detergent or an approved substitute solvent, such as isopropyl alcohol. Failure to observe this warning could result in severe personal injury or death.

WARNING

Handle solvents as combustible liquids. Do not use near heat, sparks, or flame. Use solvents in well-ventilated areas only. Avoid prolonged breathing of vapor. Avoid bodily contact. Use chemical (solvent-resistant) gloves and chemical splash goggles when using solvent materials. Solvents may be reactive with acids and oxidizers; do not mix or cross-apply with other cleaners or chemicals. An organic vapor respirator with dust and mist filter is recommended when solvent is applied as a spray. Keep containers closed between applications. Provide mechanical ventilation if used in confined spaces. Store cleaning materials in a well-ventilated area away from food or drink. To avoid the possibility of spontaneous combustion, place solvent-saturated waste rags in a sealed metal container after use. Coordinate the use of this material with your supporting Industrial Hygiene and Safety Offices. Ensure you read and understand the Material Safety Data Sheet (MSDS) for the solvent before use. Failure to observe this warning could result in severe personal injury or death.

CAUTION

When cleaning inside generator set, engine must be COLD (same temperature as outside air). DO NOT point water stream directly at any electrical connection. DO NOT use high-pressure water supply system. Damage to engine, electrical system, and other components may result.

NOTE

Use only those authorized cleaning solvents or agents listed in Appendix F, Expendable and Durable Items List.

2-4.1 POWERWASHING

CAUTION

After powerwashing generator set, allow it to dry out thoroughly. DO NOT START GENERATOR SET UNLESS IT HAS COMPLETELY DRIED AFTER WASHING.

- a. When using a powerwasher to clean the exterior generator set enclosure, always cover all air ducts and exhaust ports, using waterproof material to prevent damage to components. Cover control box, output panel components, and Frequency Converter (A8). Make sure end of powerwashing wand is no closer than three feet from generator set. Failure to follow these directions may result in damage to generator set. Use water pressure and volume similar to a

standard household water supply (50 psi maximum, 3 gallons per minute). After cleaning, allow generator set to air dry. Do not use compressed air to dry unit. Do not run engine to decrease drying time.

- b. Remove all waterproof material from ducts and other components before starting generator set.

NOTE

Keep cleaning solvents, gasoline, and lubricants away from rubber or soft plastic parts. They will deteriorate material.

- c. When cleaning grease buildup or rusty places, use an approved cleaning solvent (see Appendix F). Then apply a thin coat of light oil to affected area.

2-5 LEAKAGE DEFINITIONS FOR OPERATOR PMCS

You need to know how fluid leakage affects the generator set. Following are types/classes of leakage an operator needs to know to be able to determine the status of the generator set. Learn these leakage definitions. Remember, when in doubt, notify your supervisor.

WARNING

Class III oil leaks should be reported IMMEDIATELY to your supervisor. Fuel leaks of any kind require immediate system shutdown. Failure to observe this warning could result in severe personal injury or death.

CAUTION

Equipment operation is allowable with Class I or Class II oil leakage. Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor. When operating with Class I or II oil leaks, continue to check fluid levels as required in your PMCS.

- a. **CLASS I** Seepage of fluid, as indicated by wetness or discoloration, not great enough to form drops.
- b. **CLASS II** Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked or inspected.
- c. **CLASS III** Leakage of fluid great enough to form drops that fall from item being checked or inspected.

Table 2-1. Operator PMCS for MEP-831A/MEP-832A

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
1	Before	Overall generator set	a. Inspect for cracks, dents, and corrosion in accordance with para. 3-5. b. Inspect for loose or missing hardware.	Significant cracks in any generator set component.
2	Before	Generator set main access cover	a. Inspect main access cover for security of attachment in accordance with para. 3-5. b. Inspect air intake and exhaust ducts for obstructions and blockages. Clear obstructions and check for damage. c. Check all main access cover gaskets to ensure they fit properly (snugly but not too tightly) and are not torn.	Main access cover is not secure. Latches do not lock, allowing main access cover to rattle excessively. Intake or exhaust is blocked or damaged.
3	Before	Control box and output panel	a. Inspect for secure attachment. Check that hinged panel is closed and locked. b. Inspect switches, meters, indicators, and terminals. Conduct fault lamp test by depressing FAULT RESET/PUSH TEST switch. See para. 3-6. c. Inspect electrical wires for damage, corrosion, or electrical short. Check for bent, broken, or missing pins.	Any switch is not operable or any meter is damaged. Fault indicator is defective or lamp does not light. Wires or connectors are damaged.
4	Before	Convenience receptacle (60Hz only)	Inspect convenience receptacle for damage. Check for signs of electrical short or corrosion.	Receptacle damaged, shorted, or corroded.

Table 2-1. Operator PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
5	Before	NATO slave receptacle	Inspect NATO slave receptacle for damage. Check for signs of electrical short or corrosion.	Receptacle damaged, shorted, or corroded.
6	Before	Output panel	<p>a. Inspect output panel door for security. Check locking latch operates properly.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <p>Never attempt to start generator set unless it is properly grounded. Equipment must be grounded in accordance with the procedures in para. 2-6.1. Failure to observe this warning could result in serious injury or death by electrocution.</p> <p>b. Check load and ground terminals for security of attachment. Inspect for signs of electrical short or corrosion.</p> <p>c. Check ground rod cable for proper installation. Check for correct connection.</p>	<p>Terminals are loose, damaged, disconnected, shorted, or corroded.</p> <p>Set is not grounded properly.</p>
7	Before	Exhaust system	<p>a. Inspect exhaust system for cracks, holes, or dents. Ensure secure attachment.</p> <p>b. Inspect muffler for damage.</p>	Exhaust system is damaged to the extent it will affect operation or safety of personnel.
8	Before	Fuel fill ports	<p>a. Inspect fill neck strainer for damage. Remove obstructions or blockage.</p> <p>b. Inspect vented fuel cap and auxiliary fuel connection for damage or leakage. Check that caps are securely attached.</p>	<p>Strainer is damaged.</p> <p>Fuel cap is damaged to the point where fuel leakage is likely.</p>
9	Before	Fuel tank and hoses	Inspect generator set and engine fuel system components for damage or leaks, in accordance with para. 3-7.	Fuel leaks of any kind are present. Fuel line is cut or damaged.

Table 2-1. Operator PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
10	Before	Fuel filter/water separator	Inspect and drain filter/separator in accordance with para. 3-8.	Water and fuel are mixed. Separator is damaged or leaking.
11	Before	Skid base	<p>a. Inspect oil and fuel drain ports for damage. Ensure drain plugs are securely attached.</p> <p>b. Inspect lifting handles and tie-down rings for damage. Check to see they are securely attached.</p> <p>c. Inspect engine vibration mounts for cracks, wear, or deterioration.</p>	<p>Drain ports are damaged to the extent they will leak.</p> <p>Lifting handles do not operate or are loose.</p> <p>Vibration mounts are damaged or worn.</p>
12	Before	Battery	<p>a. Open main access cover. Inspect battery cables for corrosion, evidence of electrical short, and damage. Check for cuts, tears, or exposed wires.</p> <p>b. Inspect battery terminals and battery posts for corrosion and damage. Check for security of attachment and that battery terminal quick release feature is functional.</p> <p>c. Inspect battery for cracks, corrosion, or evidence of leakage.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Recharge battery at 90 days and ensure battery is fully charged prior to electrical starting. See para. 4-19 for battery recharging procedures.</p>	NOTE: If a battery does not provide power to the electrical starter motor, the generator is still mission-capable. See para 2-16 for manual starting.
13	Before	Frequency Converter (A8)	Open main access cover. Inspect Frequency Converter (A8) and area around it for signs of water. If water is present, thoroughly dry out Frequency Converter (A8) before starting generator.	Water is in Frequency Converter (A8).

Table 2-1. Operator PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
14	Before	Engine oil	a. Open main access cover. Remove oil fill cap and inspect oil level. If servicing is required, refer to Unit-level maintenance. b. Inspect areas around oil filter and oil drain hose for leaks, damage, and loose or missing parts. c. Inspect for contamination.	Class III oil leaks, damage, or loose or missing parts are present. See leakage class definitions (para. 2-5). Oil shows signs of contamination.
15	Before	Engine air filter	Inspect air filter for clogs (see para 3-9).	Filter is clogged.
16	Before	Engine alternator compartment	Inspect electrical wires for damage, corrosion, or electrical short. Check for bent, broken, or missing terminals.	Damaged wires, or broken or missing terminals.
17	During	VOLTAGE and LOAD meters (control panel)	Monitor output levels during generator set operation. Adjust output, as required, using VOLTAGE ADJUST potentiometer. See paras 4-26.10 and 4-26.4.	Adjustments cannot be made.
18	During	FUEL LEVEL Meter (located on control panel)	a. Monitor fuel level while generator is running. <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> WARNING </div> <p style="text-align: center;">Never service or perform maintenance on generator set while engine is running. Always shut down the generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.</p> b. Replenish fuel as follows: Shut down generator set. Remove fuel fill cap and fill with diesel fuel. Replace fuel fill cap.	Fuel level is empty or level meter is inoperable.

Table 2-1. Operator PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
19	During (After 8 hours of constant use)	Engine oil	<div style="border: 1px solid black; text-align: center; padding: 5px; margin-bottom: 10px;">WARNING</div> <p>Never service or perform maintenance on generator set while engine is running. Always shut down generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.</p> <p>a. Shut down generator set. Open main access cover.</p> <p>b. Remove engine oil fill cap and check oil level. Service, as required, in accordance with para. 3-1.</p>	Oil level is at or below minimum oil level mark on dipstick.
20	During (After 8 hours of constant use)	Fuel filter/water separator	<div style="border: 1px solid black; text-align: center; padding: 5px; margin-bottom: 10px;">WARNING</div> <p>Never service or perform maintenance on generator set while engine is running. Always shut down generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.</p> <p>a. Shut down generator set. Open main access cover.</p> <p>b. If water is present, drain water from fuel filter/water separator by turning valve.</p>	Water and fuel are mixed. Separator is damaged or leaking.
21	After	Fuel lines	Open main access cover. Inspect all fuel lines for cuts, tears, loose connections, or evidence of leakage.	Fuel leaks of any kind are present. Lines are cut, torn, loose, or damaged.

Table 2-1. Operator PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval	Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
22	After	Overall generator set	a. Inspect for cracks, dents, and corrosion, in accordance with para 3-5. b. Inspect for loose hardware.	Cracks allow water to enter Frequency Converter (A8) or dents adversely affect operation of generator set.
23	After	Data plates	Check for legibility	
24	After	Engine	a. Inspect engine fuel piping for damage, kinks, or evidence of leakage. b. Inspect hoses for evidence of wear, cracking, or deterioration. Check connections for tightness.	Fuel leaks of any kind are present. Pipes or hose are damaged

Section III. OPERATION UNDER USUAL CONDITIONS

2-6 ASSEMBLY AND PREPARATION FOR USE

WARNING

To prevent injury to personnel and damage to equipment, use caution when lifting or moving generator set. Use lifting rings for lifting device and forklift openings for forklift only. Do not lift generator set over personnel. Failure to observe this warning could result in personal injury or equipment damage.

WARNING

If damaged or defective components are discovered, repair must be performed before operations can begin. Perform required repairs and adjustments before proceeding. Do not operate the generator set with damaged components. Personal injury can occur if damaged parts are left unfixed. Failure to observe this warning could result in severe personal injury or death.

NOTE

Prior to placing generator set into service, operating personnel must be familiar with the location and function of all switches, controls, and indicators. See para 2-1, Operator Controls and Indicators, and Figure 2-1 before continuing with the following procedures.

- (1) Using a 500-pound capacity hoist or similar lifting device, remove generator set from its shipping container. Place on a suitable work surface.
- (2) Remove packing material from generator set.
- (3) Inspect generator set for damage incurred during shipping. If equipment has been damaged, report damage in accordance with DA Pam 738-750.
- (4) Check generator set against packing slip to ensure shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.
- (5) Check all tags and forms accompanying generator set for special instructions. Do not remove any forms or tags until generator set is installed and ready for operation. When generator set is installed, remove forms and tags and forward to Quality Control (QC) section office.

WARNING

Never attempt to start generator set if it is not properly grounded. Equipment must be grounded in accordance with paragraph 2-6.1. Failure to observe this warning could result in serious personal injury or death by electrocution.

2-6.1 GROUNDING THE GENERATOR SET

WARNING

Metal jewelry could conduct electricity. Loose, dangling articles and clothing could be caught in moving parts. Remove jewelry and loose, dangling articles and clothing before working on generator set. Failure to observe this warning could result in severe personal injury or death.

- a. Connect ground rod and cable as follows:
 - (1) Open output load terminal cover. Insert ground cable (1, Figure 2-2) through slot on generator set GND output terminal (2). Using load terminal wrench, tighten terminal nut.
 - (2) Connect coupling (3) to ground rod (4), and screw driving stud (5) into coupling. Make sure driving stud seats on ground rod.

NOTE

For ease of removal, install ground rod at a 45° angle.

- (3) Drive ground rod (4) into ground on a 45° angle until coupling (3) is just above ground surface.
- (4) Remove driving stud (5) and install another section of ground rod (4). Install another coupling (3) and driving stud (5).
- (5) Drive ground rod (4) down until new coupling (3) is just above ground surface.
- (6) Repeat steps (4) and (5), above, until ground rod has been driven 8 feet or deeper, providing an effective ground.
- (7) Connect clamp (6) and ground cable (1) to ground rod (4). Tighten clamp screw securely to prevent movement.

2-6.2 BATTERY

- a. Install battery. If required, see chapter 4, Unit-level maintenance. Ensure battery cables are properly connected.

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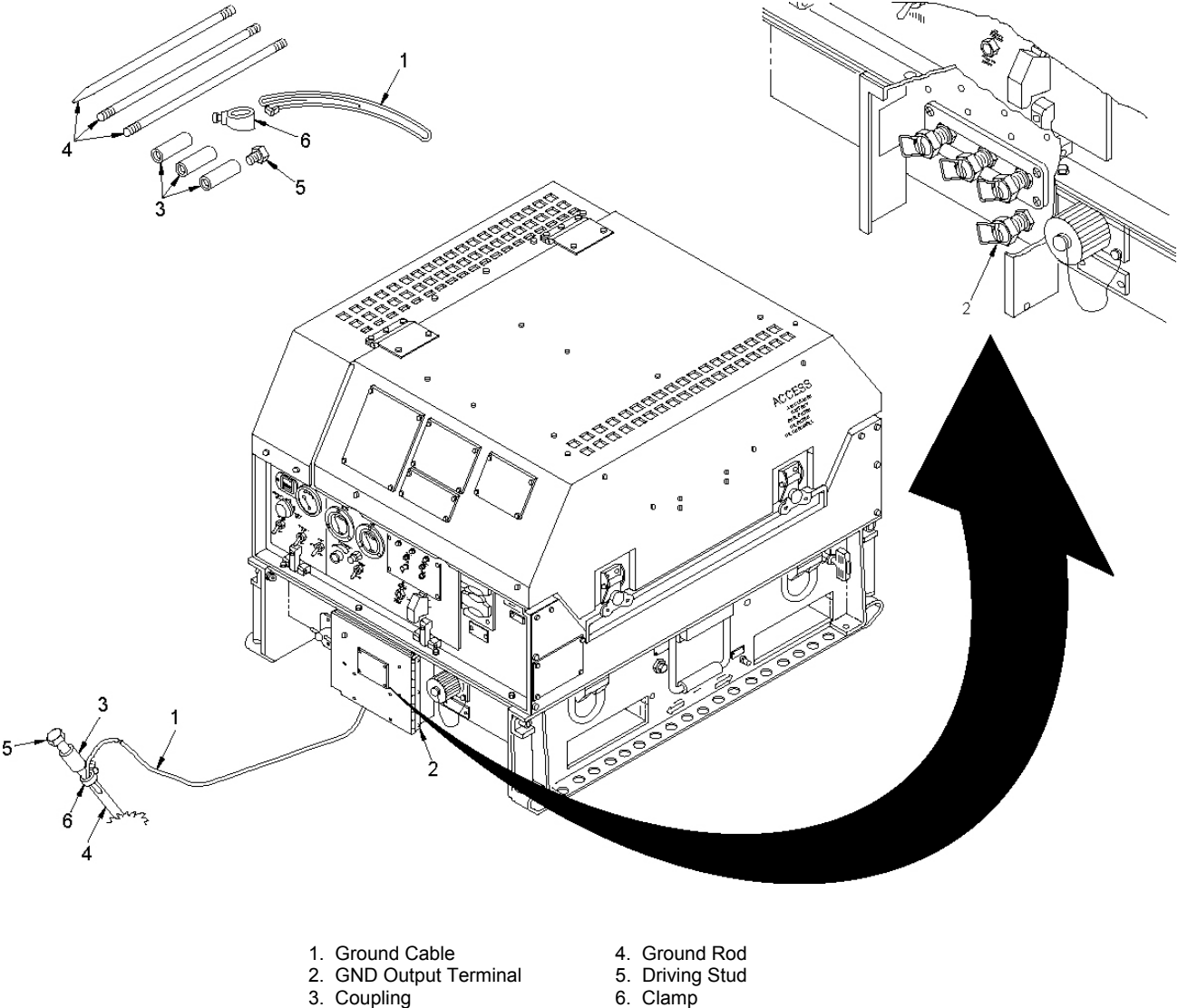


Figure 2-2. Ground Rod and Cable Installation

WARNING

If battery is not installed, battery cable ends must be isolated from each other, and positive end must be isolated from ground. Failure to isolate battery cable ends could result in severe electrical discharge. When not connected to battery, connect battery cable ends to plastic storage stud. Failure to observe this warning could result in severe personal injury or death.

- b. If auxiliary power is required, connect auxiliary power cable to NATO SLAVE RECEPTACLE (6, Figure 2-3).

NOTE

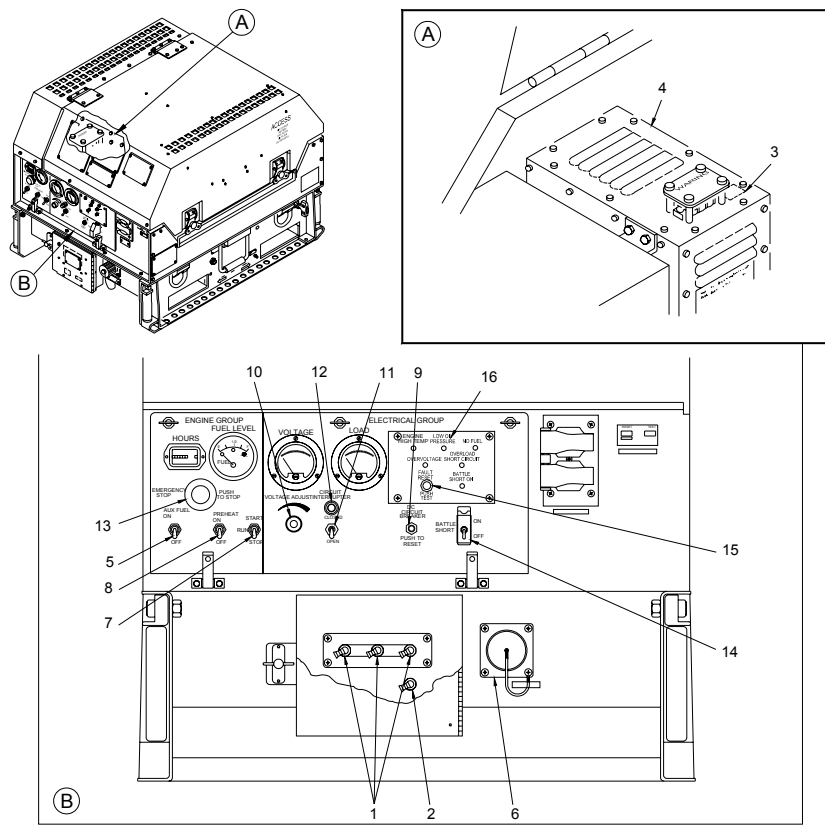
If auxiliary fuel source is used, perform procedure outlined in step d, below.

- c. Fill fuel tank, as described in the steps below:

WARNING

Fuel used in this generator set is flammable and toxic to skin, eyes, and respiratory tract. Avoid repeated or prolonged contact. Handle only in a well-ventilated area. Keep away from sparks, open flames, or other sources of ignition. Do not splash fuel on hot components. Do not fuel generator set while it is operating. Do not overfill the tank. Ensure generator set is properly grounded before fueling. Ensure approved gloves and face shield are worn during handling. Failure to observe this warning could result in personal injury and equipment damage due to potential fuel ignition and possible explosion.

- (1) Remove fuel fill cap (31, Figure 2-1) from fuel tank.
 - (2) If generator set is to be refueled by a gas vehicle, fuel vehicle, or fuel-distribution vehicle, then connect a static ground line (provided with the fueling source) between generator set ground stud and fueling source.
 - (3) Fill fuel tank with up to 4 gallons of diesel fuel.
 - (4) Remove static ground line and install fuel fill cap (31).
- d. If auxiliary fuel source is to be used, connect as follows:
 - (1) Remove auxiliary fuel cap (32, Figure 2-1) from auxiliary fuel connection.
 - (2) Connect auxiliary fuel line to auxiliary fuel connection. Ensure diesel fuel is used.



- | | | |
|--|-----------------------------------|----------------------------------|
| 1. Load Terminals | 7. START/RUN/STOP Switch | 13. EMERGENCY STOP button |
| 2. Ground Terminal | 8. PREHEAT Switch | 14. BATTLE SHORT Switch |
| 3. Voltage Selector Switch Access Door | 9. DC CIRCUIT BREAKER | 15. FAULT RESET/PUSH TEST Switch |
| 4. Frequency Converter (A8) | 10. VOLTAGE ADJUST potentiometer | 16. LOW OIL PRESSURE Indicator |
| 5. AUX FUEL Switch | 11. CIRCUIT INTERRUPTER Switch | |
| 6. NATO SLAVE RECEPTACLE | 12. CIRCUIT INTERRUPTER Indicator | |

Figure 2-3. Operating Procedures

2-6.3 FUEL

- a. If required, drain preservative oil from engine crankcase, in accordance with para 3-1.
- b. Fill engine crankcase with oil, in accordance with para 3-1.

2-7 INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF-TEST

- a. **Initial Adjustments.** No initial adjustments are required for operation of the generator set.
- b. **Daily Checks.** Perform all operator PMCS, in accordance with Section II of this chapter.
- c. **Self-Test.** To check the operational readiness of generator set protection devices and indicators, perform the following procedures:

WARNING

DC voltages are present at generator set electrical components even with the generator set shut down. Avoid shorting any positive terminal with ground or negative. If no DC voltage is required, always disconnect DC power source to the generator set before working on it. Failure to observe this warning could result in severe personal injury or death by electrocution.

WARNING

Never service or perform maintenance on generator set while engine is running. Always shut down generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.

- (1) Ensure DC CIRCUIT BREAKER (9, Figure 2-3) is pushed in.
- (2) Ensure EMERGENCY STOP button (13) is pulled out.
- (3) Place START/RUN/STOP switch (7) in RUN position. Low oil pressure light should illuminate.
- (4) Depress FAULT RESET/PUSH TEST button (15) on fault indicator module and CIRCUIT INTERRUPTER indicator (12) on control panel to check indicators. All indicator lights must illuminate. If CIRCUIT INTERRUPTER indicator does not illuminate, replace bulb. If any malfunction light does not illuminate, refer malfunction to Unit-level maintenance.
- (5) Place START/RUN/STOP switch (7) in STOP position.
- (6) Repeat steps (1) through (3), above, to verify malfunction was corrected.

2-8 OPERATING PROCEDURES

WARNING

Make sure personnel are familiar with generator set before operating. Follow proper procedures. Failure to observe this warning could result in injury to personnel and damage to equipment.

WARNING

Exhaust discharge contains deadly gases, including carbon monoxide. Do not operate generator set in enclosed area unless exhaust discharge is properly vented outside. Position generator set as far away from personnel, shelters, and occupied vehicles as possible. Failure to observe this warning could result in severe personal injury or death due to carbon monoxide poisoning.

WARNING

Shut down generator set at first sign of failure. Continued operation could result in injury to personnel and will cause damage to equipment. If generator set is shut down by activation of a safety device, do not operate again until cause of shut down has been determined and eliminated. Failure to observe this warning could result in severe personal injury or death.

WARNING

With main access cover open, the noise level of the generator set when operating could cause hearing damage. Hearing protection must be worn when working near the generator set while it is running. Failure to observe this warning could result in severe personal injury or death.

WARNING

Never attempt to start generator set unless it is properly grounded. Equipment must be grounded in accordance with the procedures in para. 2-6.1 Failure to observe this warning could result in serious injury or death by electrocution.

WARNING

Metal jewelry could conduct electricity. Remove all metal jewelry before working on generator set or components. Failure to observe this warning could result in severe personal injury or death from electric shock.

WARNING

Jewelry and other loose, dangling articles and clothing could be caught in moving parts. Remove jewelry and loose, dangling articles and clothing before working on generator set. Failure to observe this warning could result in severe personal injury or death.

- a. Open output terminal cover to access load and ground terminals (1, 2, Figure 2-3). Connect load cables in accordance with TERMINAL VOLTAGE nameplate mounted on inside of cover (120/240 volts, 3-wire or 120 volts, 2-wire). Close terminal cover and lock.

CAUTION

Ensure Voltage Selector Switch setting matches load-cable voltage connections. Mismatch will cause damage to equipment.

- b. Set Voltage Selector Switch to match load cable voltage connections as follows:
 - (1) Unlock generator set main access cover latches and lift cover to open.
 - (2) Locate Voltage Selector Switch access door (3) on top of Frequency Converter (A8) (4). Open access door and place Voltage Selector Switch in desired position (120/240 volts, 3-wire or 120 volts, 2-wire). Close and lock door.

NOTE

Voltage Selector Switch access door (3) must be closed securely or generator set will not produce power.

- (3) Close generator set main access cover and lock using latches.
- c. If auxiliary fuel source is connected, place the AUX FUEL switch (5) in ON position.
- d. If auxiliary power is required, connect auxiliary power cable to NATO SLAVE RECEPTACLE (6).

WARNING

If battery is not installed, battery cable ends must be isolated from each other, and positive end must be isolated from ground. Failure to isolate battery cable ends could result in severe electrical discharge. Failure to observe this warning could result in severe personal injury or death.

- e. If temperature is below +5°F (-15°C), see para 2-14.

CAUTION

Crank engine no longer than 15 seconds each time. Damage to starter motor can occur. Wait 15 seconds before attempting to crank again. If engine does not run after third attempt, see Operator Troubleshooting, Table 3-2.

- f. Ensure DC CIRCUIT BREAKER (9) is pushed in. Ensure EMERGENCY STOP button (13) is pulled out. Place START/RUN/STOP switch (7) in RUN position. Ensure LOW OIL PRESSURE indicator (16) is illuminated. Place START/RUN/STOP switch (7) in START position to crank engine. Switch is spring-loaded and must be held in place. Release switch to RUN position once engine starts and AC voltage is indicated, but no longer than 5 seconds after engine starts.
- g. Adjust generator set voltage, as required, using VOLTAGE ADJUST potentiometer (10).
- h. Place CIRCUIT INTERRUPTER switch (11) in CLOSED position. The CIRCUIT INTERRUPTER indicator (12) will illuminate when load is connected.

2-9 GENERATOR SET SHUT DOWN

- a. Place CIRCUIT INTERRUPTER switch (11, Figure 2-3) in OPEN position. The CIRCUIT INTERRUPTER indicator light (12) will go out when load is disconnected. Allow unit to run in this condition for approximately 3-5 minutes to cool down engine.
- b. Place START/RUN/STOP switch (7) in STOP position to shut down generator set.
- c. Pull out DC CIRCUIT BREAKER (9).

2-10 EMERGENCY SHUT DOWN

To stop generator set under emergency conditions, push EMERGENCY STOP button (13, Figure 2-3). Place START/RUN/ STOP switch (7) in STOP position. The EMERGENCY STOP button is maintained in the STOP position and must be pulled out prior to restarting the generator set.

2-11 OPERATION OF AUXILIARY EQUIPMENT

See para 2-6.3, Fuel, for operation.

2-12 OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES

See Figure 1-5 for operating instruction plates, information plates, data plates, warning plates, and caution plates found on the generator set.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-13 BATTLE SHORT OPERATION

CAUTION

Generator battle short mode is for emergency operation only. Prolonged use under this mode could damage the generator set or pose potential shock hazard to personnel. Failure to observe this caution could cause severe damage to generator set.

- a. If the generator set is malfunctioning, it can still operate. The BATTLE SHORT switch (14, Figure 2-3) allows the generator set to override anticipated system fault shutdowns to maintain operation. The overload short circuit fault cannot be overridden.
- b. To operate the generator set in battle short mode, place BATTLE SHORT switch (14) in ON position while generator set is running.

2-14 OPERATION IN UNUSUAL WEATHER

- a. The generator set is designed to operate within a temperature range of -25° to +120°F (-32° to +49°C). The set should not be operated in temperatures outside this range.
- b. If temperature is below +5°F (-15°C), activate engine preheat system as follows:
 - (1) Ensure DC CIRCUIT BREAKER (9, Figure 2-3) is pushed in. Ensure EMERGENCY STOP button (13) is pulled out. Place START/RUN/STOP switch (7) in RUN position.
 - (2) Place PREHEAT switch (8) in ON position. Hold for 30 seconds if temperature is below +5°F (-15°C).
 - (3) Continue to hold PREHEAT switch (8) in ON position while cranking engine (step (4)). Release PREHEAT switch once engine has started and has reached operating speed.
 - (4) If operating in very dusty or hot conditions, perform PMCS more frequently (see Table 4-2, Unit-level PMCS).
 - (5) In dusty and dry environments, change air filter and oil sooner than is recommended in lubrication instructions.

CAUTION

Crank engine no longer than 15 seconds each time. Damage to starter motor can occur. Wait 15 seconds before attempting to crank again. If engine does not run after third attempt, see Operator Troubleshooting, Table 3-2.

- (6) Place START/RUN/STOP switch (7) in START position to crank engine. Switch is spring-loaded and must be held in place. Release switch to RUN position once engine starts.
- c. Altitude also plays a role in the performance of the generator set. See the KILOWATT CAPACITY plate (Figure 1-5) for generator set load derating.

- d. The generator set performs in heavy rain or snow; however, the gaskets on the cover assembly must be checked to ensure they are properly installed and functioning. To allow cooling and combustion air to flow freely, clear any snow from around generator set. The cooling air for the Frequency Converter (A8) enters the generator set from the bottom. Make sure air can flow under the generator set.

2-15 NUCLEAR, BIOLOGICAL, AND CHEMICAL DECONTAMINATION PROCEDURES

The generator set can be operated by personnel wearing Nuclear, Biological, or Chemical (NBC) protective clothing, without special tools or support equipment. See FM 3-5, NBC Decontamination, for information on decontamination procedures. Below are specific procedures for the generator set:

- a. Control-panel-indicator sealing gaskets, gaskets at output terminal door, control-panel gaskets, rubber tubing in the engine compartment, the muffler thermal blanket, coverings for electrical conduits, and fuel drain tubing will absorb and retain chemical agents. Replacement of these items is the recommended method of decontamination.
- b. Lubricants, fuel, or battery fluid may be present on the external surfaces of the generator set or components due to leaks or normal operation. These fluids will absorb NBC agents. The preferred method of decontamination is removal of these fluids, using conventional decontamination methods in accordance with FM 3-5.
- c. Continued decontamination of external generator set surfaces with Supertropical Bleach (STB) and Decontaminating Solution Number 2 (DS2) will degrade clear plastic indicator coverings to a point where reading indicators will be impossible. This problem will become more evident for soldiers wearing protective masks. The use of STB or DS2 decontaminants in these areas should be minimized. Indicators should be decontaminated with warm, soapy water.
- d. External surfaces of the control-panel assembly marked with painted or stamped lettering will not withstand repeated decontamination using STB or DS2 without degradation of the lettering. The recommended method of decontamination for these areas is warm, soapy water.
- e. Below are the areas that will entrap contaminants, making efficient decontamination extremely difficult:
 - the space behind knobs and switches on the control panel
 - exposed heads on screws
 - hinged areas of access doors
 - spaces behind externally mounted equipment specification data plates
 - areas around external oil drain and fuel drain valves
 - fuel caps
 - the output load terminal access door
 - the NATO slave receptacle
 - areas around tie-down and lifting rings
 - external screens covering ventilation areas.

Replacement of these items, if available, is the preferred method of decontamination. While stressing the importance of thoroughness and the probability of some degree of continuing contact and vapor hazard, conventional decontamination methods should be used on the areas listed above.

- f. In an NBC contamination environment, the generator set should be operated with main access cover closed to reduce the effects of contamination.

- g. The use of overhead shelters or chemical protective covers is recommended as an additional means of protection against contamination, in accordance with FM 3-5. If using covers, care should be taken to provide adequate space for airflow and exhaust.
- h. See FM 3-3 and 3-4 for additional Army NBC information. All other services will use their applicable directives.

2-16 MANUAL STARTING

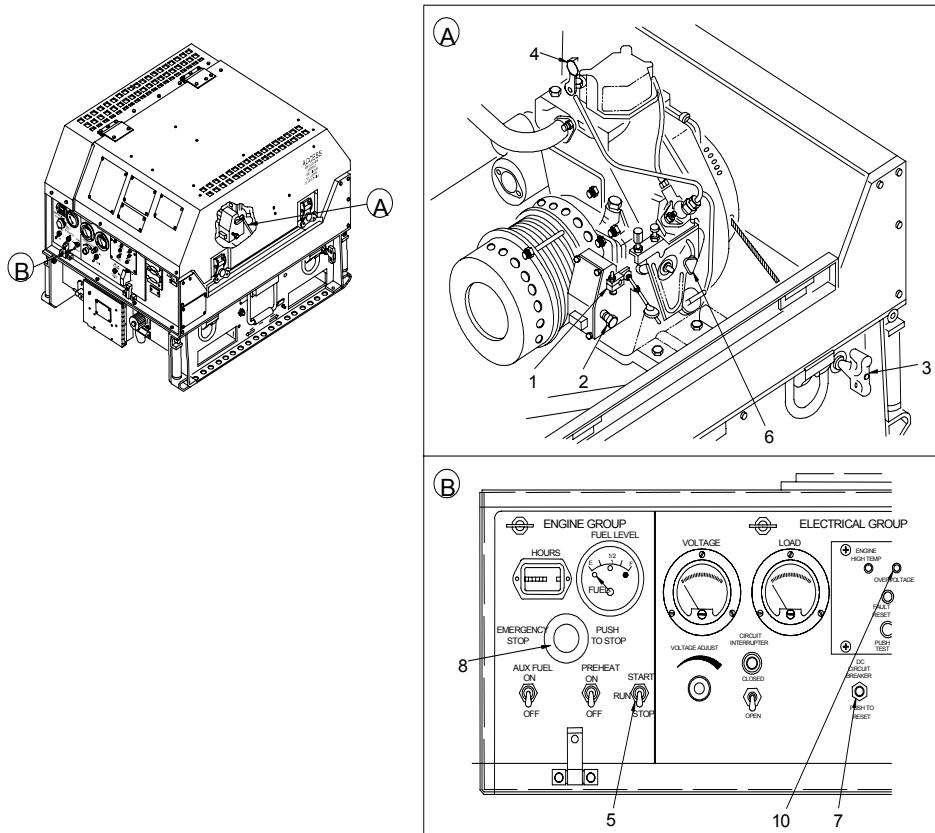
NOTE

Remove auxiliary fuel line before manually starting generator set. Make sure recoil starter rope is not close to any of the fuel lines.

- a. Push in DC CIRCUIT BREAKER (7, Figure 2-4).
- b. Pull out EMERGENCY STOP button (8).
- c. Place START/RUN/STOP switch (5) in RUN position.
- d. Open generator set main access cover.
- e. Lift actuator lever (1) to maximum fuel position and push in lock pin (2) on side of governor actuator (9). Release actuator lever (1). Engine speed will temporarily be controlled by the engine's mechanical governor.
- f. Pull out recoil starter handle (3) to the point where you feel strong resistance. Then return handle to starting position.
- g. Pull decompression lever (4) down. The lever will return automatically.
- h. With both hands briskly pull out recoil starter handle (3). Pull hard and fast, all the way out. Engine will start.
- i. After engine starts, reset low oil pressure fault, if necessary, by pressing fault reset button.
- j. Once engine has started, lift actuator lever (1) to maximum fuel position (allowing lock pin to come out). Slowly lower lever, allowing electronic governor to take over.

NOTE

If generator set has an operational battery installed, it will be necessary to reset the LOW OIL PRESSURE (10) fault on the malfunction indicator module before releasing the lock pin. If fault is not reset, generator set will shutdown.



- | | | |
|----------------------------|--------------------------|--------------------------|
| 1. Governor Actuator Lever | 4. Decompression Lever | 7. DC CIRCUIT BREAKER |
| 2. Lock Pin | 5. START/RUN/STOP Switch | 8. EMERGENCY STOP button |
| 3. Recoil Starter Handle | 6. Speed Control Knob | 9. Actuator Governor |

Figure 2-4. Manual Engine Starting

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

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Section I. OPERATOR LUBRICATION INSTRUCTIONS

3-1 LUBRICATION INSTRUCTIONS

NOTE

In dusty and dry environments, change oil and air filter ahead of schedule to reduce generator set problems.

- a. These lubrication instructions are for Operator-level personnel. Lube intervals (on-condition or hard time) are based on normal operation. Lube more during constant use and less during inactive periods. Use correct grade of lubricant for seasonal temperature expected.

CAUTION

Always wipe clean all oil filler components before starting your lube service. Use correct type or grade of oil. Overfilling will cause spillage and harm engine components.

- b. For equipment under manufacturer s warranty, hard-time oil service intervals must be followed. Intervals must be shortened if lubricants are known to be contaminated or if operation is under adverse conditions (such as longer-than-usual operating hours, extended idling periods, or extreme dust).
- c. Remove engine oil fill cap (1, Figure 3-1) from engine block (2). Remove O-ring (3).
- d. Inspect oil fill cap (1) for obvious damage. Check to see oil level gauge (4) is securely attached to cap. Inspect for corrosion.
- e. Inspect O-ring (3) for cuts, tears, or permanent set. Replace O-ring if it does not properly seal.
- f. Using a clean rag, inspect area around oil fill port for evidence of leakage. Clean area of dirt and accumulated grime.
- g. Apply a light coat of lubricating oil to O-ring (3) and install into oil fill port.
- h. Insert engine oil fill cap (1) into engine block (2), but do not screw in.
- i. Remove oil fill cap (1) from engine block (2) and read oil level. If not between hash marks add oil. Engine oil should be no higher than the 2nd thread below the top of the fill port in the engine block (2).
- j. Insert engine oil fill cap (1) into engine block (2) and tighten.

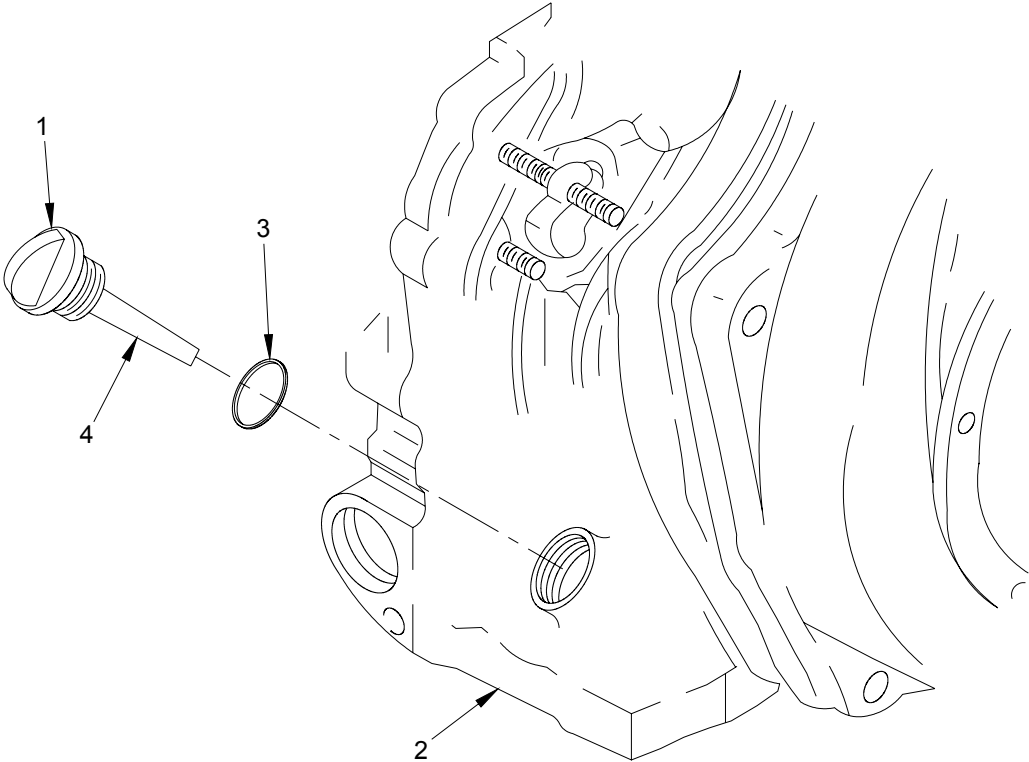


Figure 3-1. Oil Fill Cap

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

3-2 GENERAL

This section contains Operator troubleshooting procedures for the generator set. Each malfunction or problem symptom is addressed, followed by a series of inspections or tests necessary to determine the probable cause and corrective action.

3-3 TROUBLESHOOTING

- a. This chapter does not list all possible malfunctions that may occur, nor does it list all tests or inspections that may be performed or all corrective actions for each malfunction. Only those checks and tests authorized for the Operator level are covered. If a malfunction is not listed, or is not remedied by corrective actions, notify Unit-level maintenance personnel.
- b. If a malfunction or failure occurs during operation or performance check, see Table 3-1, Operator Symptom Index, for the problem and applicable troubleshooting procedure. Then go to Table 3-2, Operator-Level Troubleshooting, for test/inspection procedures and corrective actions.

Table 3-1. Operator Symptom Index

Problem	Troubleshooting Procedure
Engine fails to crank	1
Engine cranks but fails to start	2
Engine starts and stops	3
Generator set fails to build up to rated voltage	4
Generator set fails to supply power to the load	5
ENGINE HIGH TEMP indicator illuminates	6
LOW OIL PRESSURE indicator illuminates during operation	7
NO FUEL indicator illuminates	8
Generator set causes radio interference	9
Engine emits white smoke	10
Engine emits black smoke	11
Engine fails to start in cold weather	12
No power at convenience receptacle	13
Engine fails to stop when EMERGENCY STOP button is pressed or when START/RUN/STOP switch is in STOP position	14

The following warnings apply to Table 3-2, Operator-Level Troubleshooting:

WARNING

High voltage is produced when generator set is being operated. Use care when working around an open control panel when generator set is on. Improper operation of generator set or failure to follow this warning could result in severe personal injury or death by electrocution.

WARNING

Never attempt to start generator set unless it is properly grounded. Equipment must be grounded in accordance with the procedures in para. 2-6.1. Failure to observe this warning could result in serious injury or death by electrocution.

WARNING

DC voltages are present at generator set electrical components even with generator set shut down. Avoid shorting any positive terminal with ground or negative. If no DC voltage is required, always disconnect DC power source to generator set before working on it. Failure to observe this warning could result in severe personal injury or death by electrocution.

WARNING

Never attempt to connect or disconnect load cables while generator set is running. Failure to observe this warning could result in severe personal injury or death by electrocution.

WARNING

Never work alone when reaching into generator set to service or adjust it. Be sure to work with someone who could provide aid in case of an emergency. Failure to observe this warning could result in severe personal injury or death.

WARNING

Shut down generator set at first sign of failure. Continued operation could result in injury to personnel and will cause damage to equipment. If generator set is shut down by activation of a safety device, do not operate again until cause of shut down has been determined and eliminated. Failure to observe this warning could result in severe personal injury or death.

WARNING

Fuel used in this generator set is flammable and toxic to skin, eyes, and the respiratory tract. Avoid repeated or prolonged contact. Handle only in a well-ventilated area. Keep away from sparks, open flames, or other sources of ignition. Do not splash fuel on hot components. Do not fuel generator set while it is operating. Do not overfill the tank. Ensure generator set is properly grounded before fueling. Failure to observe this warning could result in personal injury and equipment damage due to potential fuel ignition and possible explosion. Ensure approved gloves and face shield are worn during handling. Failure to observe this warning could result in severe personal injury or death.

WARNING

Avoid contacting metal items with bare skin in extreme cold weather. Failure to observe this warning could result in severe personal injury or death.

WARNING

Metal jewelry could conduct electricity. Loose, dangling articles and clothing could be caught in moving parts. Remove jewelry and loose, dangling articles and clothing before working on generator set. Failure to observe this warning could result in severe personal injury or death.

WARNING

With access cover open, noise level of generator set when operating could cause hearing damage. Hearing protection must be worn when working near generator set while it is running. Failure to observe this warning could result in severe personal injury or death.

WARNING

Make sure personnel are familiar with generator set before operating. Follow proper procedures. Failure to observe this warning could result in damage to equipment and could also result in severe personal injury or death.

Table 3-2. Operator-Level Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. ENGINE FAILS TO CRANK	a. Check that EMERGENCY STOP button is not engaged.	Pull out switch to disengage.
	b. Check that START/RUN/STOP switch is in START position.	Place switch in START position.
	c. Check if DC CIRCUIT BREAKER is tripped.	Reset by depressing pushbutton.
	d. Check malfunction indicator module for system fault light.	See applicable troubleshooting procedure for fault condition.
	e. Check battery wires for proper/secure connection.	Tighten connections.
	f. Performing steps a-e, above, does not yield results.	Refer trouble to Unit-level maintenance.
2. ENGINE CRANKS BUT FAILS TO START	a. Check if PREHEAT switch was activated for cold weather operation.	Place switch in proper position.
	b. Check that mechanical governor speed control knob is in START position and tightened.	Adjust speed control knob and tighten (see item 6, Figure 2-4).
	c. With START/RUN/STOP switch in RUN position, ensure governor actuator lever (see item 1, Figure 2-4) is releasing from magnet.	If governor actuator lever does not release, refer trouble to Unit-level maintenance.
	d. Check fuel tank level (see para. 3-7).	Service fuel tank as required. Press FAULT RESET pushbutton to reset fault indicator module.
	e. If operating on AUX FUEL, check that AUX FUEL switch is in ON position.	Place switch in ON position. Press FAULT RESET pushbutton to reset fault indicator module.
	f. Inspect for crimped or pinched fuel lines.	Straighten flexible fuel lines. Refer to Unit-level maintenance if fuel line is damaged.
	g. Check for water in fuel filter/water separator (see para. 3-8).	Drain water from fuel filter/water separator by turning valve.
	h. Performing steps a-g, above, does not yield results.	Refer trouble to Unit-level maintenance.

Table 3-2. Operator-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. ENGINE STARTS AND STOPS	a. Check that electrical connections are properly tightened. b. Inspect for crimped, pinched, or leaking fuel lines. c. Check for water in fuel filter/water separator (see para. 3-8). d. Performing steps a-c, above, does not yield results.	Tighten connections. Straighten flexible fuel lines. Refer to Unit-level maintenance if fuel line is damaged. Drain water from fuel filter/water separator by turning valve. Refer trouble to Unit-level maintenance.
4. GENERATOR SET FAILS TO BUILD UP TO RATED VOLTAGE	a. Check that VOLTAGE ADJUST rheostat is properly set. b. Check that Voltage Selector Switch access door is fully closed and secured (see para. 2-8). c. Performing steps a-c, above, does not yield results.	Adjust rheostat to achieve rated voltage. Close and secure access door. Refer trouble to Unit-level maintenance.
5. GENERATOR SET FAILS TO SUPPLY POWER TO THE LOAD	a. Check that CIRCUIT INTERRUPTER switch is not in OPEN position. b. Check that Ground Fault Circuit Interrupter (GFCI) is not tripped. c. Check that load hook-up is correct. d. Performing steps a-c, above, does not yield results.	Move switch to CLOSED position (Fig 2-1, 13). Reset GFCI by depressing button (Fig2-1, 9). Match generator voltage output (Voltage Selector Switch position) with load requirement (see para. 2-8). Set wiring in accordance with TERMINAL VOLTAGE data plate (Figure 1-5, Sheet 6 of 7). Refer trouble to Unit-level maintenance.

Table 3-2. Operator-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
6. ENGINE HIGH TEMP INDICATOR ILLUMINATES	a. Check air inlet ducts for clogging or obstructions.	Clear restrictions and blockages. Press FAULT RESET pushbutton to reset fault indicator module.
	b. Check air inlet grill on recoil starter for clogging or obstructions.	Clear restrictions and blockages. Press FAULT RESET pushbutton to reset fault indicator module.
	c. Check air filter for clogging.	Remove filter and inspect (para. 3-9). Replace filter as required.
	d. Check if generator set is overloaded.	Reduce load. Press FAULT RESET pushbutton to reset fault indicator module.
	e. Performing steps a-d, above, does not yield results.	Refer trouble to Unit-level maintenance.
7. LOW OIL PRESSURE INDICATOR ILLUMINATES DURING OPERATION	a. Check engine oil level.	Service as required (para. 3-1). Press FAULT RESET pushbutton to reset fault indicator module.
	b. Performing step a, above, does not yield results.	Refer trouble to Unit-level maintenance.
8. NO FUEL INDICATOR ILLUMINATES	a. Check fuel tank level (see para. 3-7).	Service fuel tank as required. Press FAULT RESET pushbutton to reset fault indicator module.
	b. If operating on AUX FUEL, check that AUX FUEL switch is in ON position.	Place switch in ON position. Press FAULT RESET pushbutton to reset fault indicator module.
	c. Performing steps a-b, above, does not yield results.	Refer trouble to Unit-level maintenance.

Table 3-2. Operator-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
9. GENERATOR SET CAUSES RADIO INTERFERENCE	a. Check that output terminals and cables are connected tightly. b. Check that ground wire is connected tightly. c. Check that ground rod is properly installed and operational. d. Performing steps a-c, above, does not yield results.	Tighten connections using load wrench. Tighten connection using load wrench. Replace ground rod. Refer trouble to Unit-level maintenance.
10. ENGINE EMITS WHITE SMOKE	a. Check engine oil level to see if it is too high. b. Check for water in fuel filter/water separator (see para. 3-8). c. Performing steps a-b, above, does not yield results.	Refer trouble to Unit-level maintenance to drain and service engine oil. Drain water from fuel filter/water separator by turning valve. Refer trouble to Unit-level maintenance.
11. ENGINE EMITS BLACK SMOKE	a. Check air filter for clogging or dirt. b. Check to see if engine has run for prolonged periods at idle speed (no load). c. Performing steps a-b, above, does not yield results.	Remove filter and inspect (see para. 3-9). Replace filter as required. Operate engine at rated load only. Refer trouble to Unit-level maintenance.
12. ENGINE FAILS TO START IN COLD WEATHER	a. Check that PREHEAT switch is in ON position. b. Check that proper fuel is being used for cold weather operation. c. Check for crimped or pinched fuel lines. Check for clogs or frozen water in fuel lines and filter separator. d. Performing steps a-c, above, does not yield results.	Place switch in ON position. Use proper fuel as noted on FUEL CAPACITY data plate (Figure 1-5, Sheet 3 of 7). Straighten flexible fuel lines. Refer to Unit-level maintenance if fuel line or filter separator is frozen or damaged. Refer trouble to Unit-level maintenance.

Table 3-2. Operator-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
13. NO POWER AT CONVENIENCE RECEPTACLE	a. Check that Ground Fault Circuit Interrupter (GFCI) is not tripped. b. Check that 10 Amp circuit breaker (located on back of GFCI) is not tripped. c. Performing steps a-b, above, does not yield results.	Reset GFCI by depressing button. Reset circuit breaker if tripped Refer trouble to Unit-level maintenance.
14. ENGINE FAILS TO STOP WHEN EMERGENCY STOP BUTTON IS PRESSED OR WHEN START/RUN/STOP SWITCH IS IN STOP POSITION.	Verify actuator level is touching magnet.	Manually move actuator lever to magnet. Notify Unit-level maintenance.

Section III. OPERATOR MAINTENANCE INSTRUCTIONS

3-4 GENERAL

This section contains information on generator set maintenance tasks that are the responsibility of the Operator. If a procedure is not located in this chapter, the operator is not authorized to perform it.

WARNING

Never service or perform maintenance on generator set while engine is running. Always shut down generator set before servicing. Allow engine to cool before handling components. Failure to observe this warning could result in severe personal injury or death.

3-5 MAIN ACCESS COVER

- a. Inspect main access cover for missing or loose components, cracks, dents, or other damage.
- b. Check main access cover latches to ensure they are properly secured. Check that latches can be easily opened, that they are not stuck. Ensure latches lock main access cover securely.
- c. Open main access cover. Check that supports hold main access cover in place. Inspect main access cover insulating material for damage and to see if it is securely attached. Close main access cover, and lock using latches.
- d. If damage is found, notify Unit-level maintenance for repair.

3-6 CONTROL BOX AND OUTPUT PANEL ASSEMBLIES

- a. Inspect control panel switches for ease of operation. Ensure switches spring back to position.
- b. Clean HOURS meter, FUEL LEVEL meter, and VOLTAGE meter with a clean dry cloth. Inspect them for broken glass or improper indication.
- c. With START/RUN/STOP switch in RUN position, conduct fault module indicator self-test by depressing FAULT RESET/PUSH TEST pushbutton. All indicator lights should illuminate.
- d. Open control panel. Check rear of controls and indicators for obvious damage and evidence of electrical short. Inspect sealing gasket for cuts, and tears. Ensure gaskets are securely attached. Close control panel.
- e. Inspect convenience receptacle cover and ensure it is securely attached. Inspect NATO slave receptacle for damage. Make sure receptacle cover is securely attached.
- f. Inspect load and ground terminals for cracks, missing surge arrestors, or other obvious damage.
- g. If damage is found, notify Unit-level maintenance for repair.

3-7 FUEL SYSTEM

- a. Open main access cover and inspect inside of enclosure assembly for evidence of fuel leakage. Inspect fuel tank for signs of damage. Check that tank is securely attached to skid base.
- b. Inspect fuel hoses for cuts, tears, or evidence of deterioration. Check that hoses are securely fastened to fittings.
- c. Close main access cover and lock, using latches.
- d. Inspect fuel tank fill cap and auxiliary fuel connection cap to ensure they are securely attached.
- e. Visually inspect inside of filler neck for sufficient fuel in tank.
- f. Remove fuel-tank fill cap from filler neck. Remove fuel strainer and inspect for collected contaminants. Clean strainer and replace. Replace fuel-tank fill cap and tighten.
- g. If damage is found, notify Unit-level maintenance for repair.

3-8 FUEL FILTER/WATER SEPARATOR

- a. Open main access cover to gain access to fuel filter/water separator.
- b. Inspect fuel filter/water separator drain valve for damage or evidence of leakage. If leak or damage is found, notify Unit-level maintenance for repair.
- c. Inspect fuel filter/water separator bowl for water. Drain water by turning valve. After water is drained, close valve. Close main access cover and lock, using latches.

3-9 AIR FILTER

- a. Unlock main access cover to gain access to air filter.
- b. Remove cover (1, Figure 3-2) from air filter housing (2) by removing wing nut (3) and washer (4). Remove filter (5) from housing (2).
- c. Inspect air filter for dirt, clogging, or obstruction. Replace as required. Check air filter rubber gasket to ensure it is secure.
- d. Install new filter (5) into housing (2). Replace cover (1) onto housing, using wing nut (3) and washer (4).
- e. Close main access cover and lock in place, using latches.

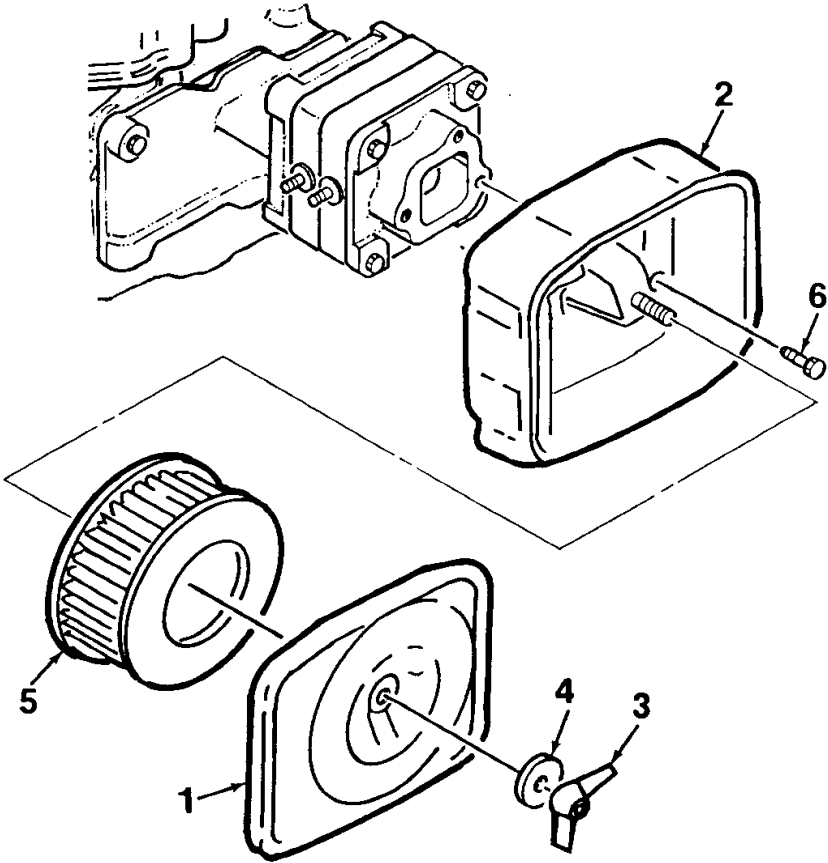


Figure 3-2. Air Filter Replacement

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

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Section I. UNIT LUBRICATION INSTRUCTIONS

4-1 GENERAL

NOTE

In dusty and dry environments, change oil and air filter ahead of schedule to reduce generator set problems.

- a. These lubrication instructions are for Unit level maintenance personnel. Lube intervals (on-condition or hard time) are based on normal operation. Lube more during constant use and less during inactive periods. Use correct grade of lubricant for seasonal temperature expected. See Table 4-1.

CAUTION

Always wipe clean all oil filler components before starting your lube service. Use correct type or grade of oil. Overfilling will cause spillage and harm engine components.

- b. Change engine oil filter, as applicable, when
- ✓ It is known to be contaminated or clogged.
 - ✓ The prescribed hard-time services interval has arrived.
- c. This generator set is not enrolled in the Army Oil Analysis Program (AOAP). Hard-time service intervals apply.
- d. For equipment under manufacturer s warranty, hard-time oil service intervals must be followed. Intervals must be shortened if lubricants are known to be contaminated or if operation is under adverse conditions such as longer-than-usual operating hours, extended idling periods, or extreme dust. CHANGE OIL AT 50-HOUR INTERVALS IN EXTREMELY DUSTY ENVIRONMENTS.

Table 4-1. Lubricant Table for Generator Set MEP-831A/MEP-832A

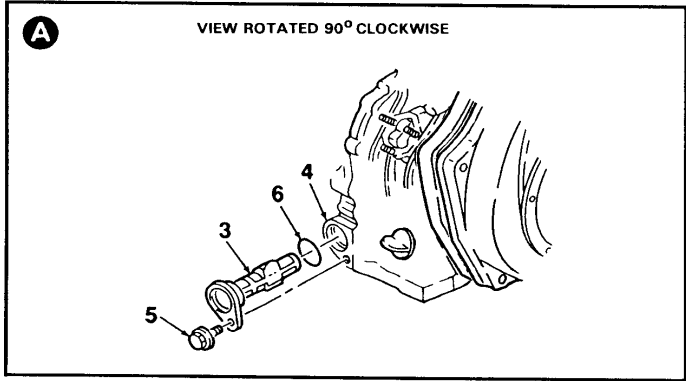
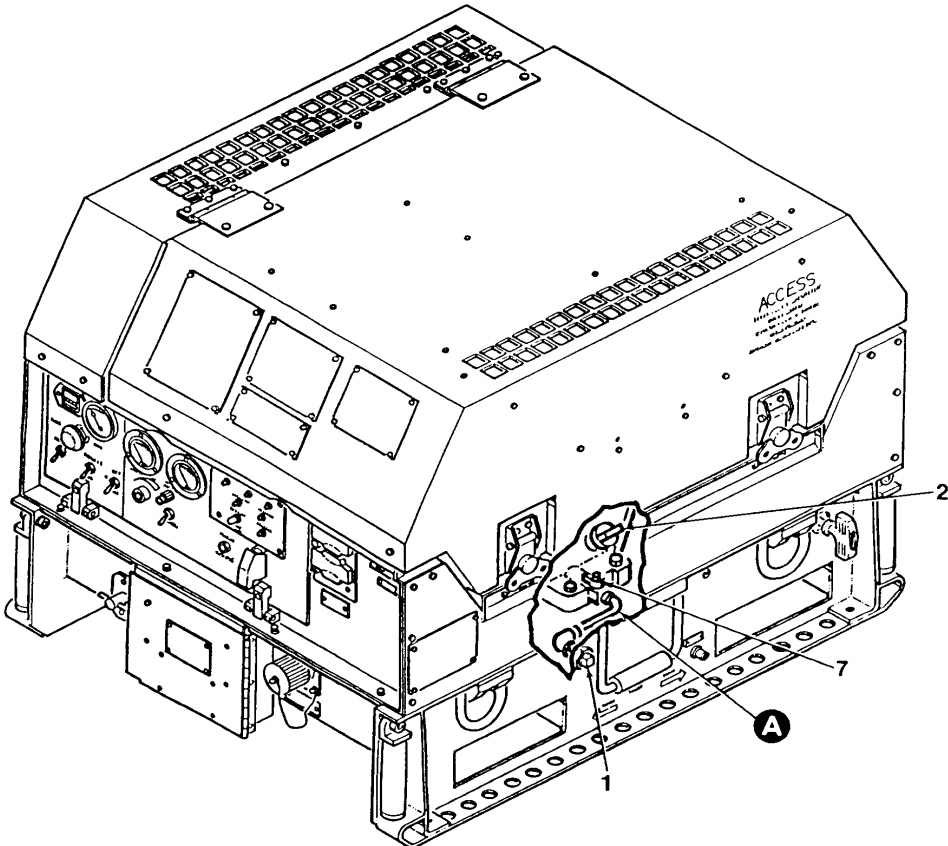
LUBRICATION MIL SYMBOL SPECIFICATION	TEMPERATURE RANGE	SYSTEM CAPACITY	INTERVAL (HOURS)	MAN- HOURS
MIL-L-46167, OEA	-25°F to +40°F (-31°C to +5°C)	1.2 qts. (1.1 liters)	100	0.25
MIL-L-2104, OE/HDO-15/40	+5°F to +120°F (-15°C to +49°C)	1.2 qts. (1.1 liters)	100	0.25
MIL-L-2104, OE/HDO-10	-15°F to +40°F (-26°C to +5°C)	1.2 qts. (1.1 liters)	100	0.25
MIL-L-2104, OE/HDO-30	+15°F to +90°F (-9°C to +32°C)	1.2 qts. (1.1 liters)	100	0.25
MIL-L-2104, OE/HDO-40	+30°F to +120°F (-1°C to +49°C)	1.2 qts. (1.1 liters)	100	0.25

- e. Drain and service engine oil and filter as follows:
- (1) Unlock main access cover latches and lift cover to open.
 - (2) Place oil catch pan under oil drain plug (1, Figure 4-1).
 - (3) Remove engine oil fill cap (2) to vent engine crankcase while draining.
 - (4) Remove oil drain plug (1). Move oil drain valve (7) to OPEN position and drain oil from crankcase.
 - (5) Once oil is drained, replace drain plug (1) and move valve (7) to CLOSE position. Remove oil catch pan. Dispose of oil in accordance with local ordinance.
 - (6) Remove oil filter (3) from crankcase cover (4) by removing bolt (5). Remove and discard O-ring (6).
 - (7) Inspect oil filter (3) for obvious damage. Check filter's mesh material for damage. Clean out clogging dirt and residue. Replace, as required, and dispose of in accordance with local ordinance.
 - (8) Using a clean rag, inspect area around oil filter port for evidence of leakage. Clean area of dirt and accumulated grime.
 - (9) Apply a light coat of lubricating oil to new O-ring (6) and place on oil filter.

CAUTION

Do not overtighten bolt (5).
Damage to filter will occur.

- (10) Slide oil filter (3) into crankcase cover (4) and secure using bolt (5).
- (11) Fill engine with required oil until level reaches threaded opening of oil fill cap (2) (up to 1.2 quarts (1.1 liters)). See Table 4-1 for recommended oils. There should be at least two threads visible in the oil fill opening of the engine block when the engine is full of oil.
- (12) Replace oil fill cap (2) and tighten.
- (13) Close main access cover and secure, using latches.



- 1. Oil Drain Plug
- 2. Oil Fill Cap
- 3. Oil Filter
- 4. Crankcase Cover
- 5. Bolt
- 6. O-Ring
- 7. Oil Drain Valve

Figure 4-1. Engine Oil Servicing

Section II. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4-2 COMMON TOOLS AND EQUIPMENT

- a. For authorized common tools and equipment, see the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.
- b. Tool Kit, General Mechanics; Automotive, Supply Catalog SC5180-90-CL-N26, is the primary supply source for tools used in maintenance of the generator set.

4-3 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

See Appendix C, Repair Parts and Special Tools List (RPSTL), for complete data on special tools and equipment required for generator set maintenance. See Appendix B, Maintenance Allocation Chart (MAC), for special tools and equipment used at the Unit maintenance level.

4-4 REPAIR PARTS

- a. The two-level maintenance concept requires on-board spares to accompany deployment operations. See Appendix K for a list of on-board spares required for Unit level maintenance of the generator set.
- b. See Appendix C for the Repair Parts and Special Tools List (RPSTL).

Section III. SERVICE UPON RECEIPT OF EQUIPMENT

4-5 GENERAL

See para 2-6 for instructions on unpacking, assembling, and servicing generator set components.

Section IV. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-6 GENERAL

Unit Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing of equipment to keep it in good condition. It prevents breakdowns and ensures the generator set is ready for operation at all times. The generator set must be inspected so that defects can be discovered and corrected before they result in damage or failure. This section lists PMCS authorized for Unit maintenance level.

- a. Be sure to perform your PMCS in the same order, so it gets to be a habit. Once you have had some practice, you will quickly spot anything wrong.
- b. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- c. Perform PMCS tasks at the intervals noted in Table 4-2. Do not skip PMCS intervals.
- d. Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults you discover, unless you can fix them. You DO NOT need to record faults that you fix.

4-7 PMCS PROCEDURES

Your PMCS (see Table 4-2) lists inspections and care required to keep your generator set in good operating condition. It is set up so you can make your BEFORE OPERATION checks as you walk around the generator set.

- a. **Item No. Column.** This column lists each check or service in chronological order.
- b. **Interval Column.** This column tells you when to do a certain check or service. Intervals are based on operating hours, unless otherwise noted.
- c. **Location:Item to Check/Service Column.** This column directs maintenance personnel to the general area on the generator set where the check or service is to be performed.
- d. **Procedure Column.** This column tells you how to do required checks and services. Tolerances, adjustment limits, and instrument readings are included as applicable. When replacement or repair of a component is required, the procedures column will direct you to the appropriate task.

NOTE

The terms *ready/available* and *mission capable* refer to same status: Equipment is on hand and ready to perform its combat missions.
(See DA Pam 738-750).

- e. **Not Fully Mission Capable If Column.** This column tells you when your generator set is not mission capable and why the engine assembly cannot be used.
- f. If the generator set does not perform as required, see Section V, Unit Level Troubleshooting Procedures.

- g. If anything looks wrong and you cannot fix it, write it on your DA Form 2404. IMMEDIATELY report it to your supervisor.
- h. When you perform PMCS, always keep a rag or two handy. Following are checks common to the entire generator set:
 - (1) Keep It Clean. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use approved cleaning solvent (see Appendix F) on all metal surfaces. Use soap and water when you clean rubber or plastic material.
 - (2) Rust and Corrosion. Check components for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of oil. Report it to your supervisor.
 - (3) Bolts, Nuts, and Screws. Check them for obvious looseness or missing, bent, or broken condition. You cannot check them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor. Pay particular attention to the muffler mounting bolts, which can work loose due to vibration.
 - (4) Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.
 - (5) Electric Wires and Connectors. Look for cracked, frayed, or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors. Report any damaged wires to your supervisor.
 - (6) Hoses and Fluid Lines. Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor.

4-8 CLEANING AGENTS

WARNING

Compressed air is dangerous and can cause serious bodily harm, if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or to prevent unbroken skin of the operator or other personnel. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 pounds per square inch gauge (psig). Use it then only with effective chip-guarding and personnel protective equipment (industrial safety glasses and full face shield). DO NOT use compressed air to dry parts when solvent cleaners have been used. Failure to observe this warning could result in severe personal injury or death.

WARNING

Do not use TRICHLOROTRIFLUOROETHANE, TRICHLOROETHANE, and similar chemical solvents for ordinary cleaning of equipment. These substances threaten public health and the environment by destroying ozone in the Earth's upper atmosphere. Use suitable non-hazardous cleaning materials (see Appendix F) such as a clean cloth, water, and mild detergent or an approved substitute solvent, such as isopropyl alcohol. Failure to observe this warning could result in severe personal injury or death.

WARNING

Handle solvents as combustible liquids. Do not use near heat, sparks, or flame. Use solvents in well-ventilated areas only. Avoid prolonged breathing of vapor. Avoid bodily contact. Use chemical (solvent-resistant) gloves and chemical splash goggles when using solvent materials. Solvents may be reactive with acids and oxidizers; do not mix or cross-apply with other cleaners or chemicals. An organic vapor respirator with dust and mist filter is recommended when solvent is applied as a spray. Keep containers closed between applications. Provide mechanical ventilation if used in confined spaces. Store cleaning materials in a well-ventilated area away from food or drink. To avoid the possibility of spontaneous combustion, place solvent-saturated waste rags in a sealed metal container after use. Coordinate the use of this material with your supporting Industrial Hygiene and Safety Offices. Ensure you read and understand the Material Safety Data Sheet (MSDS) for the solvent before use. Failure to observe this warning could result in severe personal injury or death.

CAUTION

When cleaning inside of generator set, engine must be COLD (same temperature as outside air). DO NOT point water stream directly at any electrical connection. DO NOT use high-pressure water supply system. Damage to engine, electrical system, and other components may result.

NOTE

Use only those authorized cleaning solvents or agents listed in Appendix F, Expendable and Durable Items List.

4-8.1 POWERWASHING

CAUTION

After powerwashing generator set, allow it to dry out thoroughly. **DO NOT START GENERATOR SET UNLESS IT HAS COMPLETELY DRIED AFTER WASHING.**

- a. When using a powerwasher to clean the exterior generator set enclosure, always cover all air ducts and exhaust ports, using waterproof material to prevent damage to components. Cover control box, output panel components, and Frequency Converter (A8). Make sure end of powerwashing wand is no closer than three feet from generator set. Failure to follow these directions may result in damage to generator set. Use water pressure and volume similar to a standard household water supply (50 psi maximum, 3 gallons per minute). After cleaning, allow generator set to air dry. Do not use compressed air to dry unit. Do not run engine to decrease drying time.
- b. Remove all waterproof material from ducts and other components before starting generator set.

NOTE

Keep cleaning solvents, gasoline, and lubricants away from rubber or soft plastic parts. They will deteriorate material.

- c. When cleaning grease buildup or rusty places, use an approved cleaning solvent (see Appendix F). Then apply a thin coat of light oil to affected area.

Table 4-2. Unit PMCS for MEP-831A/MEP-832A

Item No.	Interval		Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
	Hours	Calendar			
1	100	Semi-annually	Engine lubricating oil system	<p>NOTE Change oil and filter after 20 hours of engine operation. Follow 100-hour intervals thereafter, unless in dusty and sandy conditions.</p> <p>See Lubrication Instructions (para. 4-1).</p>	Engine oil has not been changed or filter has not been cleaned.
2	100	Weekly	Engine air filter	<p>a. Open main access cover to gain access to engine air filter case.</p> <p>b. Remove air filter (para. 3-9).</p> <p>c. Inspect air filter for dirt, clogging, or obstruction. Replace as required. Check air filter rubber gasket to ensure it is secure.</p> <p>d. Replace air filter (para. 3-9). Replace cover on housing, using wingnut and washer.</p> <p>e. Close main access cover and lock, using latches.</p>	Air filter is clogged, dirty, or damaged.
3	100	Monthly	Battery electrolyte level	Check battery electrolyte and gravity level (wet cell battery only). Service as required (para 4-19).	Battery electrolyte level is low.
4		1-2 Months	Battery, maintenance-free	Charge battery and verify condition monthly.	Battery is not serviceable.
5	300	Weekly if not being used; daily if it is being used	Fuel filter/water separator	<p>Visually inspect, and drain water.</p> <p>Remove and replace fuel filter/water separator element (para. 4-39).</p>	If filter system is missing.
6	300	Weekly	Electrical system	Inspect receptacle, terminal lugs, and wires for damage, corrosion, or evidence of electrical short. Check for bent, broken, or missing terminal lugs. Clean deposits from receptacle and terminal lugs.	Terminal lugs are damaged, missing, or broken.

Table 4-2. Unit PMCS for MEP-831A/MEP-832A (Continued)

Item No.	Interval		Location: Item to Check/Service	Procedure	Not Fully Mission Capable If:
	Hours	Calendar			
7	500	Semi-annually	Frequency Converter (A8)	<p>a. Check area around Frequency Converter (A8) for water. Test gaskets for water sealage.</p> <p>b. See para. 4-42 to replace gaskets.</p>	Gaskets are loose or not sealing properly.
8	500	Semi-annually	Engine air filter	Remove and replace engine air filter (para. 3-9).	Engine air filter has not been replaced.
9	500	Annually	Engine fuel injection pump	<p>a. Inspect fuel injection pump for damage and evidence of leakage. Check area around pump sealing gasket for leaks.</p> <p>b. See TM 9-2815-257-24 for pump and gasket replacement.</p>	Fuel injection pump is damaged or leaking, or pump sealing gasket is leaking.
10	Initially @20, then every 200		Engine valves	Adjust engine valve clearance in accordance with TM 9-2815-257-24.	Engine valves are not properly adjusted.
11	1000		Engine fuel injector nozzle	Remove and replace fuel injector nozzle in accordance with TM 9-2815-257-24.	Fuel injector nozzle has not been replaced.
12		Weekly	Muffler	<p>a. Check mounting bolts to ensure they are tight. If loose, tighten. If thread damage, replace.</p> <p>b. Check for corrosion, rust, cracks, etc.</p>	Mounting bolts are working loose, exhaust leaks, holes are in muffler, or muffler blanket is torn.
13	500		Main access cover gaskets	Check gaskets to ensure they fit properly. Check for cracks and if they are frayed, torn, or missing.	Gaskets are cracked, frayed, torn, or missing.

Section V. UNIT LEVEL TROUBLESHOOTING PROCEDURES

4-9 GENERAL

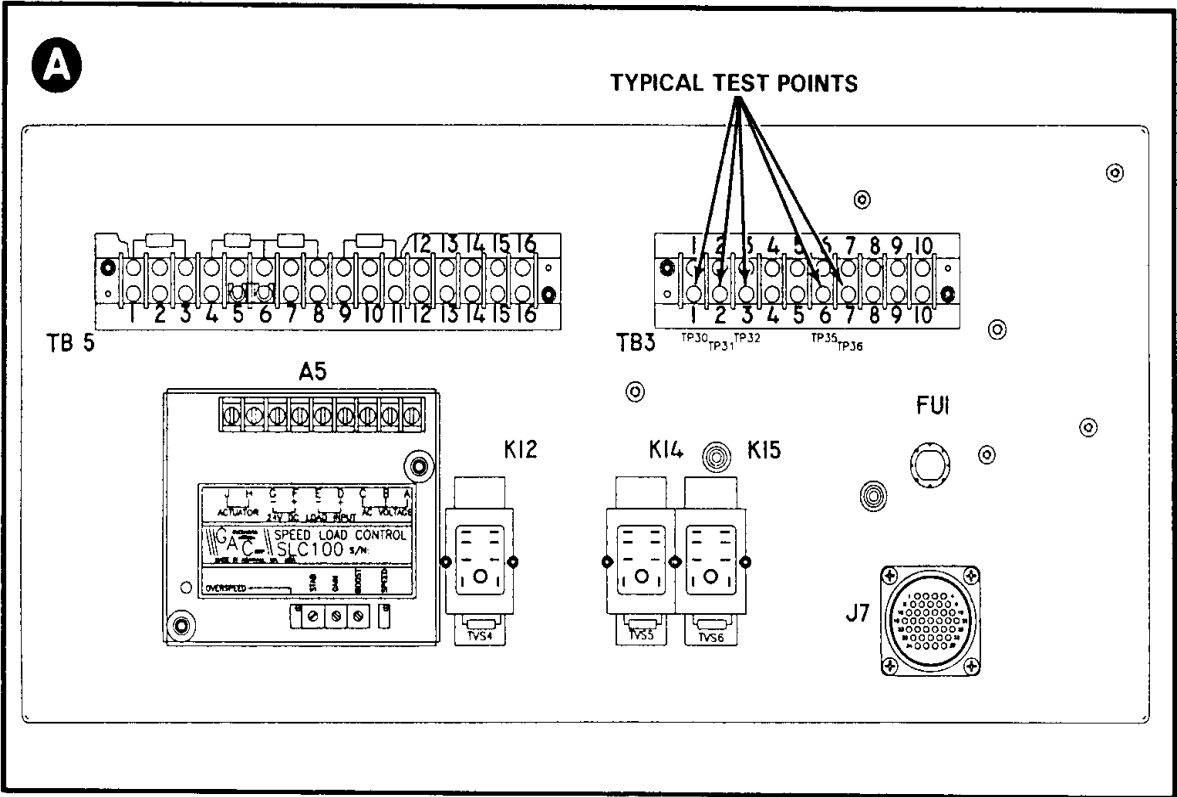
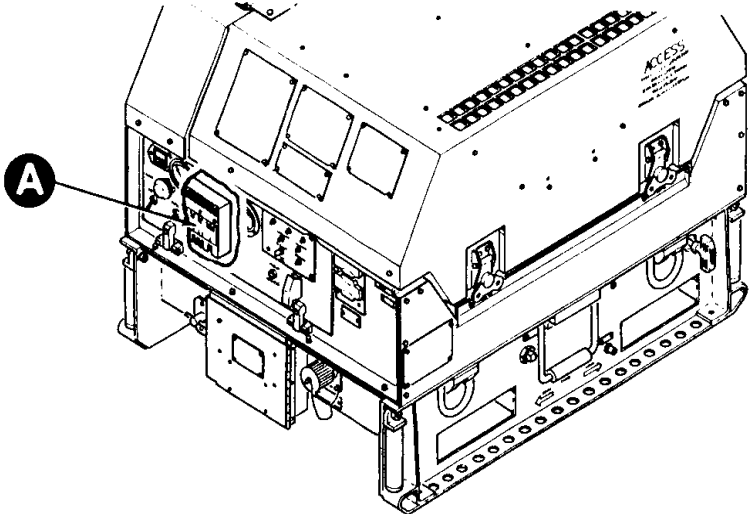
This section contains Unit level troubleshooting procedures and tests for the generator set. Each malfunction or trouble symptom is addressed, followed by a series of inspections or tests necessary to determine the probable cause and corrective action.

4-10 TROUBLESHOOTING

- a. This chapter does not list all possible malfunctions that may occur, all tests or inspections that may be performed, or all corrective actions for each malfunction. Only those checks and tests authorized for the Unit level are covered. If a malfunction is not listed, or is not remedied by corrective actions, notify personnel at a higher maintenance level.
- b. Prior to using the troubleshooting table, be sure you have performed all normal operational checks. See the system electrical schematic (Figure FO-1), system wiring diagram (Figure FO-2), generator set wiring harness diagrams (Figures FO-3 and FO-4), control panel wiring harness diagrams (Figures FO-5 and FO-6), and diagnostic test points (Figure 4-2) for assistance in troubleshooting electrical components. Conduct continuity checks on suspect wiring and harnesses as required, using these schematics and diagrams.
- c. These troubleshooting procedures assume that electrical wires are undamaged and wiring harnesses are operable. Conduct continuity checks on suspect wiring and harnesses, as required, prior to performing troubleshooting procedures in Table 4-4. See Table 4-3, Unit Symptom Index, for determining applicable troubleshooting procedure located in Table 4-4.

Table 4-3. Unit Symptom Index

Problem	Troubleshooting Procedure
Engine fails to crank	1
Engine cranks but fails to start	2
Engine cranks slowly	3
Engine starts and stops	4
Engine fails to start in cold weather	5
Engine fails to stop when EMERGENCY STOP button is pressed	6
Engine starts, no generator voltage reading	7
Generator set fails to supply power to the load	8
No reading on kilowatt (LOAD) meter (M2) when load is applied	9
While generator is running, no power at convenience receptacle	10
Generator set causes radio interference	11
Circuit interrupter fails to close	12
Circuit interrupter fails to remain closed when CIRCUIT INTERRUPTER switch is released	13
Auxiliary fuel system fails to energize when generator fuel tank is low on fuel	14
BATTLE SHORT indicator fails to illuminate when BATTLE SHORT switch in ON	15
Fan (B2) fails to operate at high temperature	16
Fan (B3) fails to operate at high temperature	17
Engine emits white smoke	18
Engine emits black smoke	19
Malfunction indicators fail to illuminate when PUSH TEST switch is pressed	20
ENGINE HIGH TEMP indicator illuminates	21
LOW OIL PRESSURE indicator illuminates	22
NO FUEL indicator illuminates	23
Engine fails to develop full power	24
Abnormal engine noise/excessive vibration	25
Generator fails to generate sufficient voltage/output fluctuates	26
Generator noisy when running	27



MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. ENGINE FAILS TO CRANK	a. Check battery for loose connections, corrosion, or damaged cable.	Clean battery terminals and tighten connections.
	b. Check battery voltage as follows: (1) Pull out EMERGENCY STOP button and push in DC Circuit Breaker. (2) Place START/RUN/STOP switch in START position. (3) Connect positive (+) probe of multimeter to terminal board TB3, test point TP30. (4) Connect negative (-) probe to TB3, test point TP31. (5) Reading should be 20 to 32 VDC.	If not present, service battery (para. 4-19). Replace, as required.
	c. Check Circuit Breaker, (CB1) as follows: (1) Push Circuit Breaker (CB1) in. (2) Check voltage from LOAD terminal on CB1 to TP31. Voltage should read 20-32 VDC.	If voltage is not present, replace CB1.
	d. Check EMERGENCY STOP button as follows: (1) Press in circuit breaker (CB1). (2) Pull out EMERGENCY STOP button. (3) Connect positive (+) probe of multimeter to S19-A2. (4) Connect negative (-) probe to terminal board TB3, test point TP31. (5) Multimeter should read 20 to 32 VDC.	If voltage is not present, remove and replace EMERGENCY STOP button (para. 4-26.7).
	e. Check START/RUN/STOP switch as follows: (1) Pull out EMERGENCY STOP button. (2) Connect positive (+) probe of multimeter to terminal board TB5, pin 11. (3) Connect negative (-) probe to TB3, test point TP31. (4) Place START/RUN/STOP switch in START position. (5) Reading should be 20 to 32 VDC.	If voltage is not present, remove and replace START/RUN/STOP switch (para. 4-26.6).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	f. Check diode (CR1) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to terminal board TB5, pin 9. (2) Connect negative (-) probe to TB3, test point TP31. (3) Place START/RUN/STOP switch in START position. (4) Reading should be 20 to 32 VDC. 	If voltage is not present, remove and replace diode (para. 4-26.12).
	g. Check relay (K15) as follows: <ol style="list-style-type: none"> (1) Place START/RUN/STOP switch in STOP position. (2) Remove relay K15 and ohm out pins 1 and 9. (3) Reading should be zero ohms at relay K15, pins 1 and 9. 	If not zero ohms, remove and replace relay (para. 4-26.11).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	h. Check Battle Short Switch, S7. (1) Verify Battle Short Switch, S7 is not in closed position. (2) Check for continuity between pins 1 and 2 of S7. There should be zero ohms resistance.	If there is no continuity, replace S7
	i. Check engine start contactor (K2): (1) Disconnect wires connected to X1 and X2 of K2 relay. (2) Remove diodes from X1 and X2. (3) Connect multimeter probes to terminals X1 and X2 of K2 relay. (4) Resistance should be approximately 55 ohms.	If multimeter indicates infinity or 0 ohms, replace K2 (para. 4-21).
	j. Check engine solenoid (L4): (1) Connect positive (+) probe of multimeter to K2-A2. (2) Connect negative (-) probe of multimeter to TP31. (3) Continuity should be approximately 1.4 ohms.	If continuity does not read 1.4 ohms, remove and replace engine starter motor in accordance with TM 9-2815-257-24.
	Refer trouble to Direct Support level maintenance.	
2. ENGINE CRANKS BUT FAILS TO START	a. Check for clogged fuel filter/water separator element.	If clogged, remove and replace fuel filter/water separator element (para. 4-39).
	b. Check that fuel pump assembly is operating when START/RUN/STOP switch is placed in RUN position (audible sound).	See fuel pump test procedures (para. 4-37 for primary fuel pump, para. 4-38 for auxiliary fuel pump).
	c. Using multimeter verify voltage reads 20-32 VDC at Battery Terminals.	

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	d. Check diode (CR2) as follows: <ol style="list-style-type: none"> (1) Open control panel and connect positive (+) probe of multimeter to terminal board TB3, test point TP32. (2) Connect negative (-) probe to TB3, test point TP31. (3) Place START/RUN/STOP switch in RUN position. (4) Multimeter should read 20 to 32 VDC. 	If voltage is not present, remove and replace diode (para. 4-26.12).
	e. Check fault lockout relay (K12) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to A5-F. (2) Connect negative (-) probe to terminal board TB3, test point TP31. (3) Place START/RUN/STOP switch in START position. (4) Multimeter should read 20 to 32 VDC. 	If voltage is not present, remove and replace fault relay (para. 4-26.11).
	f. Check governor control (A5) as follows: <ol style="list-style-type: none"> (1) Disconnect J10/P10 at actuator. (2) Connect positive (+) probe of multimeter to A5-H. (3) Connect negative (-) probe to A5-J. (4) Place START/RUN/STOP switch in START position. (5) Multimeter should read 20 to 32 VDC. 	If voltage is not present, remove and replace governor control module (A5) (para. 4-13).
	g. Test governor actuator (A6). <ol style="list-style-type: none"> (1) Visually inspect Actuator to ensure that actuator plate (Fig 4-10, 19) is flush against magnet of actuator. (2) Unplug J10 and measure resistance of actuator. Resistance should be a minimum 10 ohms. 	If not flush, adjust per paragraph 4.14 If actuator coil is open or resistance is less than 10 ohms replace actuator (paragraph 4-14).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	h. Refer to TM 9-2815-257-24 Trouble Shooting Procedures.	
3. LOW BATTERY VOLTAGE	a. Inspect and test regulator fuse (FU1).	Remove and replace defective fuse (para. 4-26.12).
	b. Check generator (G1) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to FU1-2. (2) Connect negative (-) probe to terminal board TB4-9. (3) Start generator set. (4) Reading should be 36 VAC minimum. 	If reading is not 36 VAC minimum, refer to Direct Support level maintenance for replacement of permanent magnet alternator (PMA) (para. 5-8).
	c. Check battery charging regulator (A9) as follows: <ol style="list-style-type: none"> (1) Disconnect battery cable from negative (-) battery terminal. (2) Manually start the set. (3) Insert multimeter test probes into J6 connector. Locate red and black wires in back of J6. Reading should be a minimum 24 VDC. 	If 24 VDC is not measured, remove and replace battery charging regulator (para. 4-18). Refer trouble to Direct Support level maintenance.

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. ENGINE STARTS AND STOPS	a. Check fuel lines for obstructions, kinks, or clogging. Inspect for leaks. Possible air in fuel system. Check for loose or damaged connections.	Remove and replace damaged or defective fuel lines. Tighten connections. Remove and replace damaged components as required.
	b. Check for clogged fuel filter/water separator element.	Remove and replace fuel filter/water separator element (para. 4-39). Refer trouble to Direct Support level maintenance. See Table 5-1.
5. ENGINE FAILS TO START IN COLD WEATHER	a. Remove one wire from each heater and check for continuity of air heaters (H1) and (H2).	Remove and replace air heater in accordance with TM 9-2815-257-24.
	b. Check PREHEAT switch (S18) as follows: (1) Connect positive (+) probe of multimeter to switch (S18-1). (2) Connect negative (-) probe to terminal board TB3, test point (TP31). (3) Place PREHEAT switch in ON position. (4) Reading should be 20 to 32 VDC.	If not present, remove and replace PREHEAT switch (para. 4-26.6).
	c. Check engine preheat relay (K13) as follows: (1) Connect positive (+) probe of multimeter to relay K13-A2. (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place PREHEAT switch in ON position. (4) Reading should be 20 to 32 VDC.	If voltage is not present, remove and replace preheat relay (para. 4-26.11). Refer trouble to Direct Support level maintenance.

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
6. ENGINE FAILS TO STOP WHEN START/RUN/STOP SWITCH IS PLACED IN STOP POSITION OR EMERGENCY STOP BUTTON IS PRESSED	NOTE	
	If engine fails to stop when EMERGENCY STOP button is pressed or if engine START/RUN/STOP switch is shut off, push actuator lever to OFF position and perform the troubleshooting steps in malfunction 6.	
	a. Check EMERGENCY STOP button (S19) as follows: <ul style="list-style-type: none"> (1) Pull out EMERGENCY STOP button. (2) Connect positive (+) probe of multimeter to S19, terminal A2. (3) Connect negative (-) probe to terminal board (TB3), test point (TP31). (4) Place START/RUN/STOP switch in RUN position. Voltage should read 20-32 VDC. (5) Press EMERGENCY STOP button. (6) Reading should go from 24 to 0 VDC. 	If reading does not drop to 0 VDC, replace EMERGENCY STOP button (para. 4-26.7).
	b. Perform ADJUST procedure of Governor Actuator Assembly Maintenance, Para 4-14.	If generator set does not shut down properly, go to next troubleshooting step.
	c. Perform TEST procedure of Governor Actuator Assembly Maintenance, Para 4-14.	If actuator resistance is too low, or there is no continuity, replace actuator.
	d. Perform TEST procedure of Governor Control Module Maintenance, Para 4-13.	If Governor Control Module does not pass test, replace.
	e. If engine still does not shut off, notify next-higher level maintenance.	

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. ENGINE STARTS, NO VOLTAGE READING	a. Check that Frequency Converter (A8) voltage reconnection cover is closed.	Close and latch cover to activate Frequency Converter (A8).
	b. Measure voltage at Frequency Converter (A8) output terminal as follows: (1) Set voltage select switch to 120V/240V. (2) Start generator set. (3) Connect multimeter to terminals L1 and N. (4) Check voltage reading, which should be 120 VAC. (5) Connect multimeter to terminals L2 and N. (6) Check voltage reading, which should be 120 VAC. (7) Connect multimeter to terminals L1 and L2. (8) Check voltage reading, which should be 240 VAC if in 120/240 V connection configuration or 0 VAC if in 120 V connection configuration.	If voltages are correct, perform step c. If voltages are not correct, perform step e.
	c. Check for voltage at VOLTAGE Meter. (1) Measure voltage at VOLTAGE meter.	If voltage is present, remove and replace VOLTAGE meter (para. 4-26.3). If voltage is not present, perform step d.
	d. Check wiring harness. (1) Check continuity between A8 terminal L1 and voltage meter terminal 1, wire #101L18.	If continuity is present, refer to next-higher level maintenance. If continuity is not present, repair wiring harness.
	e. Ensure connectors P15, P16, and P17 are properly installed on Frequency Converter (A8). Check for broken wires and loose crimps.	
	f. Measure PMA output steps 1-4 (para 4-16).	If voltage is not present, PMA is defective. Refer to next-higher level maintenance. If voltage is present, replace Frequency Converter (A8).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
GENERATOR SET FAILS TO SUPPLY POWER TO THE LOAD	NOTE	
	Start generator set and perform steps a-f., below	
	a. Close AC Circuit Interrupter. Using a multimeter, check generator set output voltage at output terminals L1, L2, and N (12, Figure 2-1).	If voltage is present, check cables between load and generator set.
	b. Check for proper output voltage readings at Frequency Converter (A8) terminals L1, L2, and N. Reading should be 120/240 VAC +/- 6.	If voltages are incorrect, see Troubleshooting, step 7, Engine Starts, No Voltage Reading.
	c. Check load contactor relay (K1) as follows: (1) Start generator set. (2) Check for voltage between K1, Terminals A1 and B1 and ground. Voltage should be 120 VAC +/- 6. (3) Close AC Circuit Interrupter. (4) Check for voltage between K1, Terminals A2 & B2 and ground. Voltage should be 120VAC +/- 6. (5) Measure voltage between K1, Terminal 2, wire 31B18 and ground, TP31. Voltage should be 24VDC.	If there is no voltage check wiring between A8 & K1. If there is voltage, check wires between K1, A2 & B2 and Output Terminals. If there is not voltage go to (5) If any voltage is not present, remove and replace relay K1 (para. 4-26.11).
d. Check S5. (1) Hold S5 in closed position and measure continuity between terminals 2 and 5 and terminals 5 and 4. There should be continuity. (2) Hold S5 in open position and measure continuity between terminals 4 and 5. There should not be any continuity.	If there is no continuity, replace switch. If there is continuity, replace S5. If there is not continuity, replace K1.	

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
8. NO READING ON KILOWATT (LOAD) METER (M2) WHEN LOAD IS APPLIED	Disconnect P17 from A8 and perform the following tests: a. Set multimeter to read resistance. Multimeter should read 100 ohms at LOAD meter terminals on back of meter. b. If 100 ohms is present at LOAD meter, check wiring between LOAD meter and P17.	If reading is less than 100 ohms, remove and replace LOAD meter (para. 4-26.4). Remove and replace damaged wiring, as required.
9. WHILE GENERATOR IS RUNNING, NO POWER AT CONVENIENCE RECEPTACLE	a. Check that CB3 on back of GFCI (inside set) is not tripped. (1) Turn off load (2) Check that CB# on back of GFCI is not tripped. (3) Reconnect load, start generator set, and turn on load. (4) Observe CB3. If CB3 trips, determine load and convenience receptacle. Load should be less than 10 amps. b. Check Ground Fault Circuit Interrupter (GFCI) (1) .Start generator set and press RESET button on GFCI. (2) Measure voltage at convenience receptacle by placing positive probe of multimeter into smaller rectangular output socket of receptacle and negative probe of multimeter into larger rectangular output socket of receptacle. Voltage should be 120 VAC +/- 6. (3) Press TEST button. Voltage should drop to zero. c. Check GFCI CB3 at TB4 as follows: (1) Start generator set. (2) Connect positive (+) probe of multimeter to terminal board TB4, pin 1. (3) Connect negative (-) probe to terminal board TB4, pin 3. (4) Multimeter should read 120 ± 2 VAC.	Reset CB3 switch. If load is greater than 10 amps, reduce load. Move load to generator set load terminals. . If no voltage is present go to step c. If voltage is present, replace GFCI. If voltage is present, remove and replace GFCI (para. 4-27.1).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
10. GENERATOR SET CAUSES RADIO INTERFERENCE	a. Check for proper generator set grounding.	Ground generator set.
	b. Inspect EMI filter for signs of damage.	Remove and replace EMI filter (para. 4-27.2). After replacing EMI filter, if radio interference continues, replace Frequency Converter (A8) (para 4-22). Refer to next-higher level maintenance.
	c. Defective Frequency Converter (A8).	Remove and replace Frequency Converter (A8) (para. 4-22).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
11. CIRCUIT INTERRUPTER FAILS TO CLOSE	<p style="text-align: center;">NOTE</p> <p>K8 relay is inside frequency converter (A8). Do not open A8 to access. See FO-1, Sheet 1.</p> <p>a. Check relay K8 (part of Frequency Converter (A8)) as follows:</p> <ol style="list-style-type: none"> (1) Start generator set. (2) Place BATTLE SHORT switch in ON position. Listen for RPMs to rise in generator set. This indicates K8 relay is operating. (3) Push CIRCUIT INTERRUPTER switch. If green, circuit interrupter is closed. <p style="text-align: center;">NOTE</p> <p>Before removing Frequency Converter (A8), perform test in b, below, to determine if relay K12 is operating.</p>	<p>If CIRCUIT INTERRUPTER switch is not green, remove and replace Frequency Converter (A8) (para. 4-22).</p>
	<p>b. Check fault lockout relay (K12) as follows:</p> <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to K12-12. (2) Connect negative (-) probe to K12-4. (3) Place START/RUN/STOP switch in STOP position. (4) Multimeter should read 0 ohms. 	<p>If multimeter does not read 0 ohms, remove and replace relay (para. 4-26.11).</p>

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	c. Check CIRCUIT INTERRUPTER switch (S5) as follows: (1) Connect positive (+) probe of multimeter to S5-2. (2) Connect negative (-) probe to S5-5. (3) Place START/RUN/STOP switch in STOP position. (4) Hold CIRCUIT INTERRUPTER switch in CLOSED position. (5) Multimeter reading should be 0 ohms.	If multimeter does not read 0 ohms, remove and replace CIRCUIT INTERRUPTER switch (para. 4-26.9).
	d. Check coil resistance of K1 between K1 X1 and X2. Resistance should be approximately 55 ohms.	If infinity or 0 ohms, replace relay K1 (para. 4-26.11).
	e. Check relays (K1 and K15) as follows: (1) Start generator set. (2) Connect positive (+) probe of multimeter to S5-2. (3) Connect negative (-) probe of multimeter to terminal board (TB3), test point (TP31). (4) Hold CIRCUIT INTERRUPTER switch in CLOSED position. (5) Multimeter reading should be 0 VDC.	If voltage is 0 VDC, remove and replace relay K1 (para. 4-27.11). If voltage is 20 to 32 VDC, remove and replace relay K15 (para. 4-26.11).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>12. CIRCUIT INTERRUPTER FAILS TO REMAIN CLOSED WHEN CIRCUIT INTERRUPTER SWITCH IS RELEASED</p>	<p>a. Check CIRCUIT INTERRUPTER switch (S5) as follows:</p> <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to S5-2. (2) Connect negative (-) probe to S5-5. (3) Place START/RUN/STOP switch in STOP position. (4) Hold CIRCUIT INTERRUPTER switch in CLOSED position. (5) Multimeter reading should be 0 ohms. <p>b. Check relays (K1) as follows:</p> <ol style="list-style-type: none"> (1) Start generator set. (2) Connect positive (+) probe of multimeter to S5-2. (3) Connect negative (-) probe of multimeter to terminal board (TB3), test point (TP31). (4) Hold CIRCUIT INTERRUPTER switch in CLOSED position. (5) Multimeter reading should be 0 ohms. 	<p>If reading is not 0 ohms, remove and replace CIRCUIT INTERRUPTER switch (para. 4-26.9).</p> <p>If voltage is 0 VCD, remove and replace relay K1 microswitch on old style relay, and complete relay on new style relay (para 4-26.11).</p>
<p>13. AUXILIARY FUEL SYSTEM FAILS TO ENERGIZE WHEN GENERATOR FUEL TANK IS LOW ON FUEL</p>	<p>a. Check AUX FUEL switch (S17) as follows:</p> <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to terminal board (TB5), pin 1. (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/STOP switch in RUN position. (4) Place AUX FUEL switch in ON position. (5) Multimeter should read 20 to 32 VDC. 	<p>If 20 to 32 VDC is not present, remove and replace AUX FUEL switch (para. 4-26.6).</p>

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	b. Check diode (CR3) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to terminal board (TB5), pin 3. (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/STOP switch in RUN position. (4) Place AUX FUEL switch in ON position. (5) Multimeter should read 20 to 32 VDC. 	If 20 to 32 VDC is not present, remove and replace diode (para. 4-26.12).
	c. Check fuel level switch (FL2) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to TB 5-14a. (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/STOP switch in RUN position. (4) Place AUX FUEL switch in ON position. (5) Multimeter should read 20 to 32 VDC. NOTE: Fuel level must actually be low to obtain 20 to 32 VDC. 	If fuel level is low and 20 to 32 VDC is not present, remove and replace fuel level switch (para. 4-35).
	d. Check auxiliary fuel transfer relay (K14) as follows: <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to fuel transfer relay (K14-9). (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/STOP switch in RUN position. (4) Place AUX FUEL switch in ON position. (5) Multimeter should read 20 to 32 VDC. 	If 20 to 32 VDC is not present, remove and replace relay (para. 4-26.11).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	e. Test auxiliary fuel pump as follows: <ol style="list-style-type: none"> (1) Disconnect J12 from P12 at primary fuel pump. (2) Disconnect J9 from P9 at auxiliary fuel pump. (3) Feed P12 behind engine and connect J9 to P12 at auxiliary fuel pump. (4) Place START/RUN/STOP switch in RUN position. (5) Listen for click sound at fuel pump. 	If no click sound, remove and replace auxiliary fuel pump (para 4-38).
14. BATTLE SHORT INDICATOR FAILS TO ILLUMINATE WHEN BATTLE SHORT SWITCH IS ON	(1) Press FAULT RESET/PUSH TEST.	If indicator does not illuminate, replace fault indicator module (para. 4-26.5.)
	a. Check BATTLE SHORT switch (S7) as follows: <ol style="list-style-type: none"> (2) Connect positive (+) probe of multimeter to switch (S7-3). (wire #12A20). (3) Connect negative (-) probe to terminal board (TB3), test point (TP31). (4) Place START/RUN/STOP switch in RUN position. (5) Place S7 in ON position. b. Reading should be zero VDC.	If not zero VDC, remove and replace BATTLE SHORT switch (para. 4-26.6).

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
15. FAN (B2) FAILS TO OPERATE AT HIGH TEMPERATURE	a. Check temperature switch (S20) as follows (60Hz model, MEP-831A): <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to switch at S20-2. <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Terminal S20-2 connects to fan.</p> <ol style="list-style-type: none"> (2) Connect negative (-) probe to terminal board (TB3), test point (TP35). (3) Start generator set. Internal generator set temperature must be above 85°F. (4) Reading should be 120 ± 6 VAC. 	<p>If voltage is not present, remove and replace temperature switch (para. 4-31).</p> <p>If voltage is present, replace fan B2.</p>
	b. Check temperature switch (S20) as follows (400 Hz model, MEP-832A): <ol style="list-style-type: none"> (1) Connect positive (+) probe of multimeter to switch at S20-2. <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Terminal S20-2 connects to fan.</p> <ol style="list-style-type: none"> (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/ STOP switch in RUN position. Internal generator set temperature must be above 85°F. (4) Reading should be 20 to 32 VDC. 	<p>If voltage is not present, remove and replace temperature switch (para. 4-31). Remove and replace fan (para. 4-30).</p> <p>If voltage is present, replace fan B2.</p>

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>16. FAN (B3) FAILS TO OPERATE AT HIGH TEMPERATURE</p>	<p>a. Check temperature switch (S21) as follows (60Hz model, MEP-831A):</p> <p>(1) Connect positive (+) probe of multimeter to switch at S21-2.</p> <p style="text-align: center;">NOTE</p> <p>Terminal S21-2 connects to fan.</p> <p>(2) Connect negative (-) probe to terminal board (TB3), test point (TP35).</p> <p>(3) Start generator set. Internal generator set temperature must be above 110°F.</p> <p>(4) Reading should be 120 ± 6 VAC.</p>	<p>If voltage is not present, remove and replace temperature switch (para. 4-31).</p> <p>If voltage is present, replace fan B3.</p>
	<p>b. Check temperature switch (S21) as follows (400Hz model, MEP-832A):</p> <p>(1) Connect positive (+) probe of multimeter to switch S21-2.</p> <p style="text-align: center;">NOTE</p> <p>Terminal S21-2 connects to fan.</p> <p>(2) Connect negative (-) probe to terminal board (TB3), test point (TP31).</p> <p>(3) Place START/RUN/STOP switch in RUN position. Internal generator set temperature must be above 110°F.</p> <p>(4) Reading should be 20 to 32 VDC.</p>	<p>If voltage is not present, remove and replace temperature switch (para. 4-31).</p> <p>If voltage is present, replace fan B2.</p>

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
17. ENGINE EMITS WHITE SMOKE	a. Check for clogged fuel filter/water separator element.	If clogged, remove and replace fuel filter/water separator element (para. 4-39).
	b. Refer to TM 9-2815-257-24.	
18. ENGINE EMITS BLACK SMOKE	Black smoke is emitted from exhaust pipe.	Troubleshoot in accordance with TM 9-2815-257-24.
19. MALFUNCTION INDICATORS FAIL TO ILLUMINATE WHEN PUSH TEST SWITCH IS PRESSED	Check for 20 to 32 DC voltage at fault indicator module A2 at pin 1 on J4 and TB3 TP31.	If voltage is not present, remove and replace fault indicator module (para. 4-26.5).
21. ENGINE HIGH TEMP INDICATOR ILLUMINATES	a. Check engine cylinder fins for accumulated dirt and grime. Check for blockages.	Remove blockages. Clean dirty fins in accordance with TM 9-2815-257-24.
	b. Check for operation of fans.	Troubleshoot fans.
22. LOW OIL PRESSURE INDICATOR ILLUMINATES	a. Check for engine oil level and leaks.	See TM 9-2815-257-24.
	b. Check engine oil pressure switch (OP) as follows: (1) Disconnect two wires from oil pressure switch. (2) Check for continuity between switch terminals. (3) With generator set shut down, switch should be closed. (4) With generator set running, switch should be open. (5) Check to see if switch operates properly.	Remove and replace engine oil pressure switch (OP) in accordance with TM 9-2815-257-24.

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	c. Check to see if engine oil filter is clogged or defective.	Remove and replace engine oil filter in accordance with TM 9-2815-257-24.
23. NO FUEL INDICATOR ILLUMINATES	a. Conduct visual check to verify that fuel is in tank.	Service fuel as required.
	b. Check fuel level switch (FL1) as follows: (1) Connect positive (+) probe of multimeter to P4-10. (2) Connect negative (-) probe to terminal board (TB3), test point (TP31). (3) Place START/RUN/STOP switch in RUN position. (4) Multimeter reading should be 20 to 32 VDC.	If voltage is not present, remove and replace fuel-level switch (para. 4-35).
24. ENGINE FAILS TO DEVELOP FULL POWER	a. Test fuel injector nozzle.	See TM 9-2815-257-24. Replace fuel injector nozzle if bad.
	b. Test governor control module (A5).	See para 4-13. Replace governor control module if bad.
	c. Test governor actuator (A6).	See para 4-14. Replace governor actuator (A6) if bad.
25. ABNORMAL ENGINE NOISE/EXCESSIVE VIBRATION	a. Check engine valve adjustment.	Adjust valves as required. See TM 9-2815-257-24.
	b. Check tightness of muffler nuts on exhaust manifold and bracket mounting bolts under muffler.	Tighten muffler nuts and bracket mounting bolts as required.
	c. Check for water in fuel.	Drain fuel filter/water separator and clean fuel tank.

Table 4-4. Unit-Level Troubleshooting (Continued)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
26. GENERATOR FAILS TO GENERATE SUFFICIENT VOLTAGE/OUTPUT FLUCTUATES	a. Test governor control module (A5).	Replace governor control module (A5) as required. See para 4-13.
	b. Test governor actuator (A6).	Replace governor actuator (A6) as required. See para 4-14.
	c. Check for output of Permanent Magnet Alternator (PMA).	Repair/replace PMA as required.
27. GENERATOR NOISY WHEN RUNNING	a. Check engine valve adjustment.	Adjust valves as required. See TM 9-2815-257-24.
	b. Check tightness of muffler nuts on exhaust manifold and bracket mounting bolts under muffler.	Tighten muffler nuts and bracket mounting bolts as required.
	c. Check for loose nuts, bolts, brackets, and hardware.	Tighten loose nuts, bolts, brackets, and hardware as required.

Section VI. UNIT LEVEL MAINTENANCE INSTRUCTIONS

4-11 GENERATOR SET MAINTENANCE

This task covers a. inspect and b. service.

INITIAL SETUP

Equipment Condition:

Generator set shut down (para. 2-9)

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

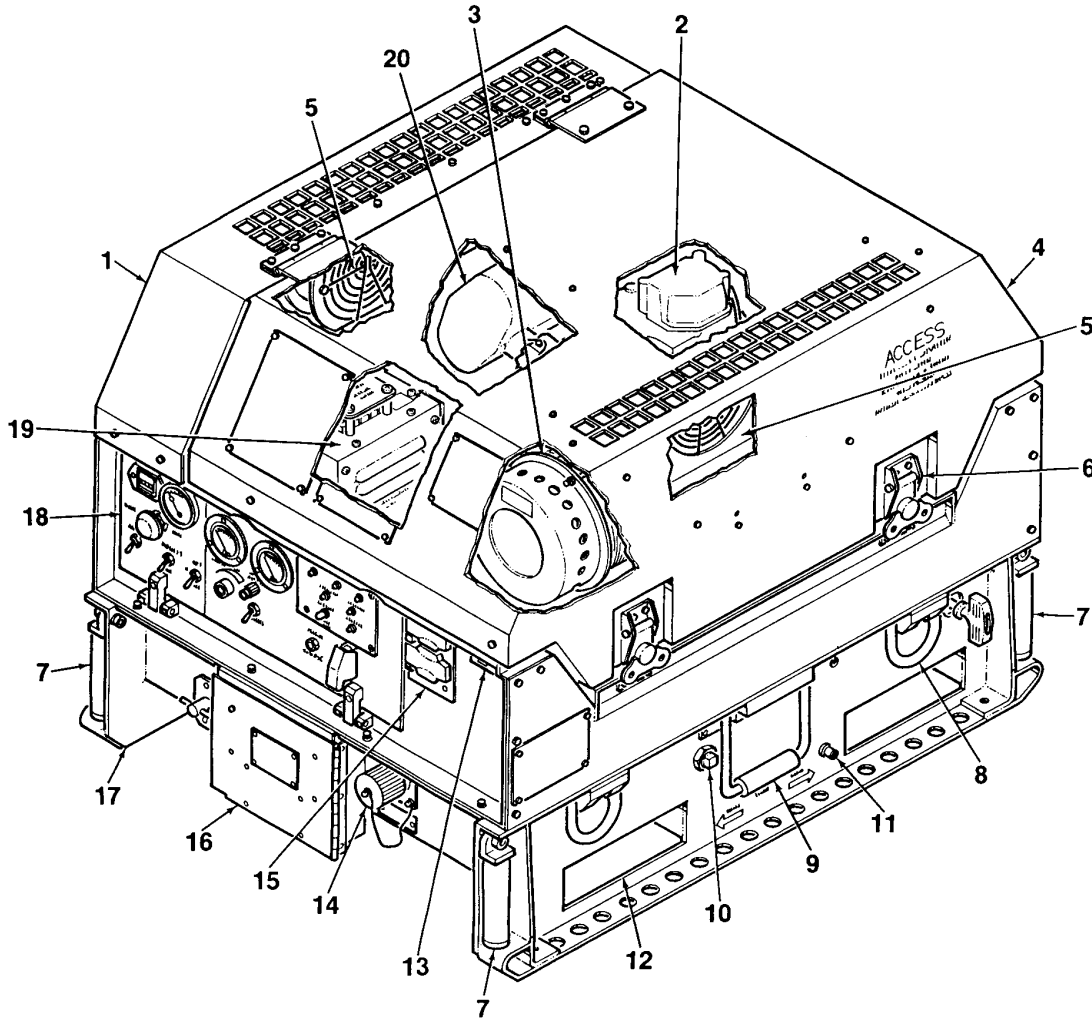
Paint, CARC, Green (Appendix F, Item 10)
Paint, CARC, Black (Appendix F, Item 11)

INSPECT

1. Inspect generator set main access cover and housing for dents, cracks, warping, or other damage. Check all covers, ducts, and panels for damage and ensure they are securely attached (Figure 4-3).
2. Inspect painted surfaces for chips, scratches, bare metal, roughness, or corrosion.
3. Inspect main access cover and panel latches for proper operation. Latches should operate smoothly, free of binding.
4. Open main access cover and inspect insulation material for damage. Ensure insulation is securely attached to component.
5. Inspect generator set lifting handles (7, 9, Figure 4-3) and tie-down rings (8). Ensure they are securely attached.

SERVICE

Service in accordance with established preventive and scheduled maintenance procedures and limits.



- | | | |
|--------------------------------------|---------------------------|--|
| 1. Enclosure Assembly | 8. Tie-Down Ring | 15. Convenience Receptacle (60Hz only) |
| 2. Diesel Engine | 9. Lifting Handle | 16. Output/Load Terminal Cover |
| 3. Permanent Magnet Alternator (PMA) | 10. Oil Drain Plug | 17. Skid Base |
| 4. Enclosure Cover | 11. Fuel Drain Plug | 18. Control Panel |
| 5. Cooling Fan | 12. Forklift Opening | 19. Frequency Converter (A8) |
| 6. Cover Latch | 13. GFCI (60Hz only) | 20. Exhaust System |
| 7. Lifting Handle | 14. NATO Slave Receptacle | |

Figure 4-3. Generator Set

4-12 ENGINE ASSEMBLY, DIESEL MAINTENANCE

This task covers a. inspect and b. service.

INITIAL SETUP

Equipment Condition:

Generator set shut down (para. 2-9)

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

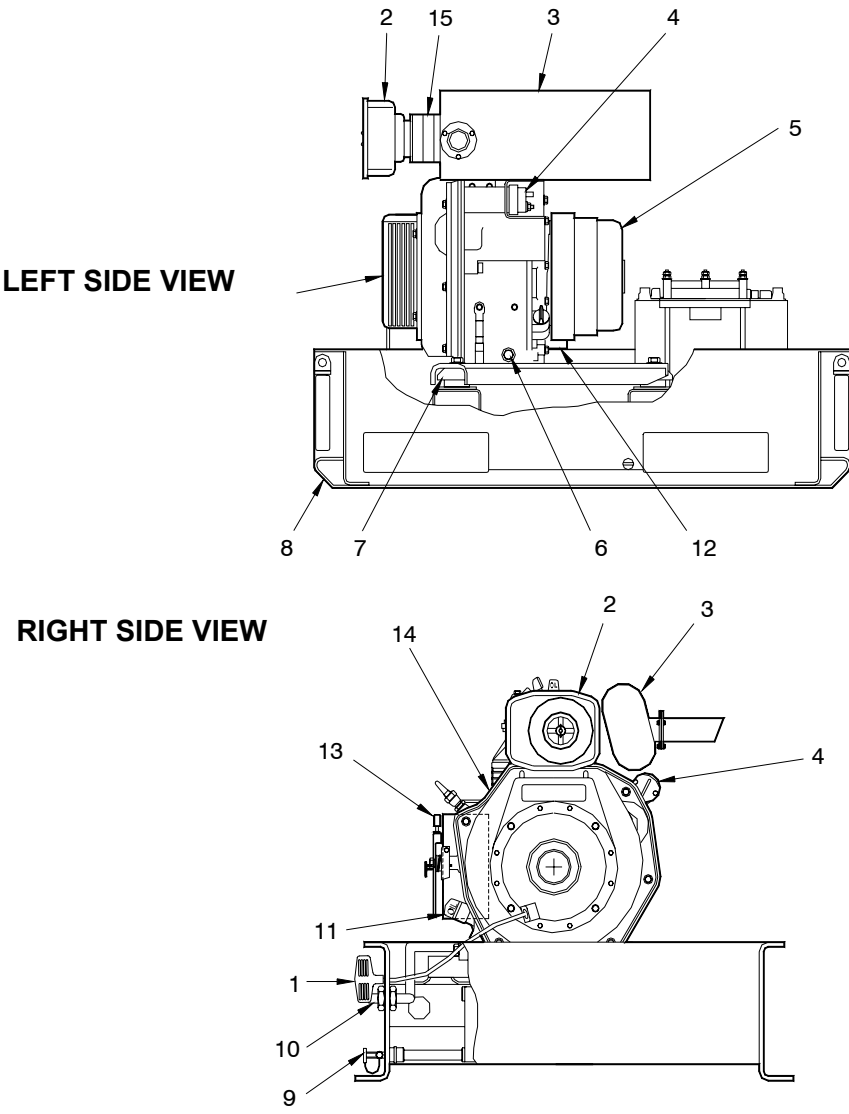
As required

INSPECT

1. Inspect engine (Figure 4-4) for obvious damage. Clean, as required, to view all components carefully. Look for signs of fluid leakage. Check all sealing areas and surfaces.
2. Inspect engine fuel and oil lines for cracks, cuts, abrasions, evidence of leakage, and obvious damage. Check fluid fittings and connectors, and ensure they are securely attached.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage. Ensure all connectors and terminal lugs are securely attached.
4. Conduct a detailed inspection of suspect components in accordance with appropriate maintenance paragraph.
5. Replace any component damaged to the extent it will affect safe operation of generator set.

SERVICE

Service in accordance with established preventive and scheduled maintenance procedures established in TM 9-2815-257-24.



- | | | |
|------------------|-----------------------|-------------------------|
| 1. Recoil System | 6. Temperature Switch | 11. Oil Fill Cap/Gauge |
| 2. Air Filter | 7. Vibration Mount | 12. Oil Pressure Switch |
| 3. Muffler | 8. Skid Base | 13. Governor Actuator |
| 4. Starter Motor | 9. Fuel Drain Plug | 14. Diesel Engine |
| 5. Generator | 10. Oil Drain Plug | 15. Manifold Heater |

Figure 4-4. Engine Assembly

4-13 GOVERNOR CONTROL MODULE MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Turn quarter-turn fasteners (1, Figure 4-5) to unlock, and swing open control panel
2. Locate and inspect governor control module for corrosion, evidence of electrical short, and obvious damage.
3. Locate and inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

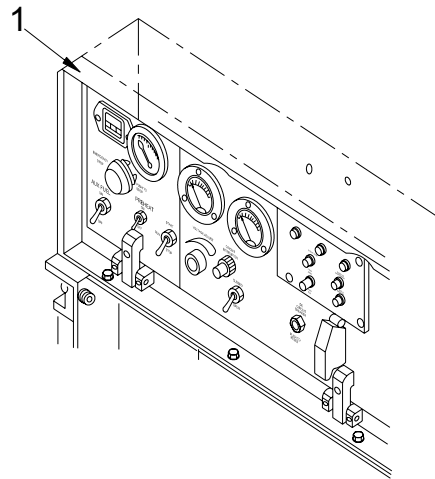


Figure 4-5. Control Panel

TEST

1. Install governor control module (Figure 4-6) in generator set and perform governor actuator adjustment in accordance with para 4-14.
2. Start generator set and operate at no load. Open control panel to allow access to governor control module. Voltage between terminals F and G should be 24 VDC. Voltage between terminals J and H should be 5.3 VDC. Voltage between terminals D and E should be 0 VDC. Voltage between terminals A and B, B and C, and C and A should be 178 +/- 2 VAC.
3. Close circuit interrupter and apply full load to generator set. Voltage between terminals F and G should be 24 VDC. Voltage between terminals J and H should be 11 VDC. Voltage between terminals D and E should be 0 VDC. Voltage between terminals A and B, B and C, and C and A should be 193 +/- 2 VAC.
4. Open circuit interrupter and shut down generator set (para 2-9).

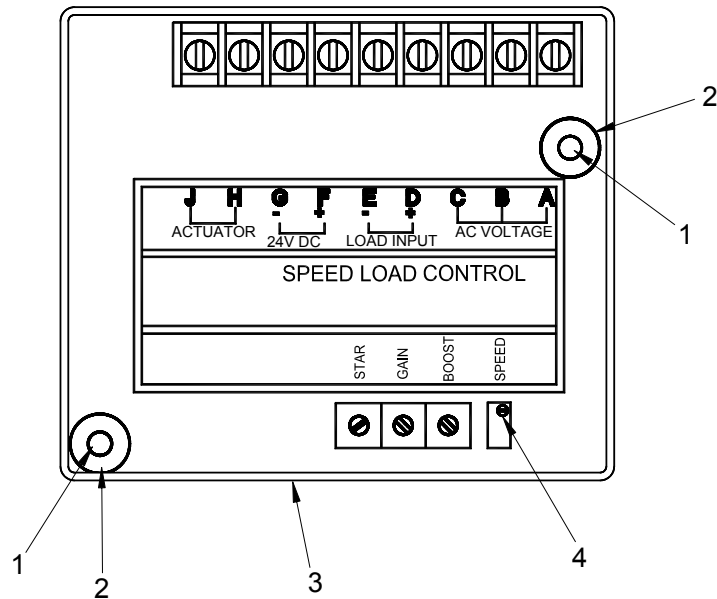


Figure 4-6. Governor Control Module

REMOVE

1. Tag and disconnect electrical wiring from governor control module (3).
2. Remove governor control module (3) from inside wall of control box by removing screw (1) and captive washer assemblies (2).

REPLACE

1. Install governor control module (3, Figure 4-6) to inside wall of control box. Secure using screws (1) and captive washer assemblies (2).
2. Connect electrical wiring to governor control module (3).
3. Close control panel and lock in place using quarter-turn fasteners.

4-14 GOVERNOR ACTUATOR ASSEMBLY MAINTENANCE

This task covers a. inspect, b. test, c. adjust, d. remove, and e. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Open main access cover.
2. Inspect governor actuator assembly (11, Figure 4-7) for obvious damage. Inspect for corrosion and evidence of electrical short. Inspect linkage components for obvious damage or defects.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connector plug (12) is securely attached.

TEST

Measure resistance at J10. Resistance should be a minimum of 10 ohms.

ADJUST

1. Loosen locknut (5, Figure 4-8) on bottom of actuator linkage rod (3). Adjust spherical nut (4) so one thread shows on bottom of spherical nut (4). Tighten lock nut (5) against spherical nut (4).
2. Make sure governor actuator lever (2) reaches its stop just prior to engine fuel lever (6) reaching its stop. Adjust length by loosening locknut (7) on top of actuator linkage rod (3). Turn actuator linkage rod in or out of ball joint (1). Tighten locknut (7).

NOTE

If governor actuator linkage adjustment (steps 1 and 2, above) results in satisfactory operation, steps 3 through 13 (below) are not required. Perform these procedures only if further adjustment is necessary.

3. Open control box panel to gain access to governor control module (Figure 4-9).
4. Connect multimeter between control module terminals A and B.
5. Start generator set and run in no load condition. Adjust governor control module SPEED pot (4) to obtain a PMA frequency of 254Hz (3050 RPM) or a voltage of 178 +/- 2 VAC. Clockwise rotation of SPEED pot increases frequency and voltage. Counterclockwise rotation of SPEED pot decreases frequency and voltage.

CAUTION

DO NOT loosen or adjust governor actuator lever (2, Figure 4-8). Magnet position is factory set.

6. With engine running, check gap between lever plate (A, Figure 4-7) and governor actuator lever (2, Figure 4-8).
7. Gap should be 5/16 inch. Adjust gap by loosening locknut (23, Figure 4-10) and screwing actuator linkage rod (22) in or out of ball joint (3).
8. Check gap and tighten locknut (23). Turn STABILITY rod (22) and GAIN rod to full counterclockwise position.
9. Rotate control module STABILITY rod (1, Figure 4-9) clockwise until engine becomes unstable, then counterclockwise until it stabilizes, and then a little further counterclockwise.
10. Rotate control module GAIN rod (2) clockwise until engine becomes unstable, then counterclockwise until it stabilizes, and then a little further counterclockwise. Close load contactor and apply full rated load.
11. Adjust control module BOOST pot (3) to obtain a PMA frequency of 288Hz (3450 RPM) or a voltage of 193 +/-2 VAC. Clockwise rotation of BOOST rod decreases frequency and voltage. Counterclockwise rotation of BOOST rod increases frequency and voltage.
12. Check no load to rated load operation by opening and closing CIRCUIT INTERRUPTER switch and observing actuator lever and plate (19, Figure 4-10). If governor actuator lever (2) makes contact with plate during ON/OFF load operation, reduce gain slightly by rotating GAIN rod (2, Figure 4-9) clockwise.

NOTE

When applying rated load, engine speed should increase without a large initial drop in engine speed. When removing load, engine speed should decrease without a large initial surge in speed.

13. At no load, lift governor actuator lever (17, Figure 4-10) and lock in manual start position. PMA frequency should be 317Hz (3800 RPM) or voltage should be 219 +/-2 VAC.
14. Shut down generator set and disconnect multimeter. Close and lock control panel.

REMOVE

1. Unlock main access cover latches and lift cover to open.
2. Disconnect electrical plug (1, Figure 4-7) from governor actuator assembly (2, Figure 4-10).
3. Disconnect ball joint (3) on engine linkage from lever (4) on governor actuator assembly by removing screw (5), washer (6), and locknut (7).
4. Remove governor actuator assembly (2) by removing screws (8), lockwashers (9), and washers (10).
5. Remove lever (17) from lever (4) by removing screw (11), washer (12), and nut (13).

6. Release lever (4) from governor actuator assembly (2) by loosening screw (14), washer (15), and nut (16).
7. Remove screw (18), plate (19), washer (20), and nut (21) from lever (17).
8. Remove ball joint (3) from actuator linkage rod (22). Remove nuts (23, 26, 27) and spherical washer (24).
9. Remove link bracket (25) from engine, only if replacement is required.

REPLACE

1. Replace nuts (23, 26, 27, Figure 4-10), spherical washer (24), and ball joint (3) onto linkage rod (22). Attach link bracket (25) to engine.
2. Replace screw (18), plate (19), washer (20), and nut (21). Screw onto lever (17).
3. Install levers (4) to governor actuator assembly (2). Secure by tightening screw (14), washer (15), and nut (16).
4. Install lever (17) to lever (4). Secure using screw (11), washer (12), and nut (13).
5. Replace governor actuator assembly (2) using two screws (8), lockwashers (9), and washers (10).
6. Adjust actuator/governor linkage, as required, in accordance with ADJUST procedures, above.
7. Connect ball joint (3) on engine linkage with lever (4) using screw (5), washer (6), and locknut (7). Ensure linkage and actuator lever are in same plane (vertical when viewed from control box end of generator set).
8. Connect electrical plug (1) to actuator (2).
9. Close main access cover and lock in place using latches.

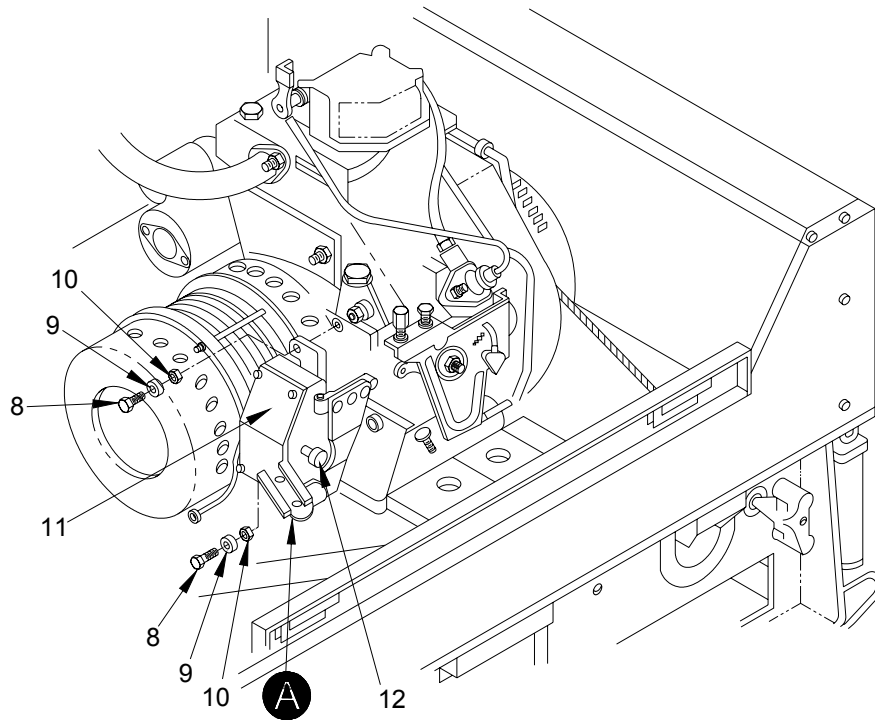


Figure 4-7. Governor Actuator Assembly

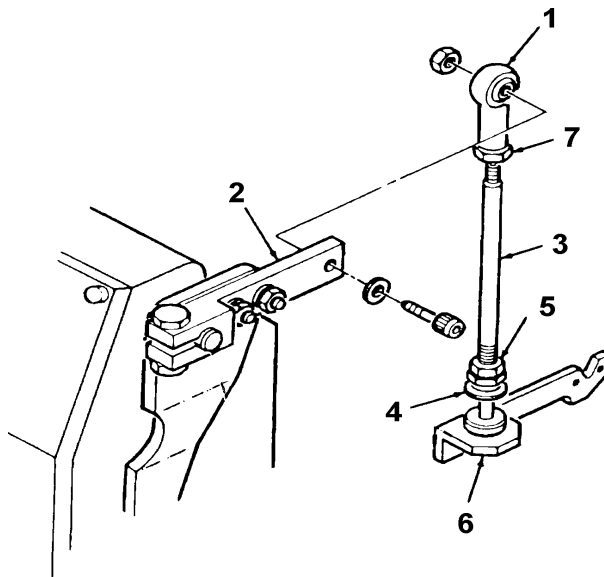


Figure 4-8. Governor Adjustment

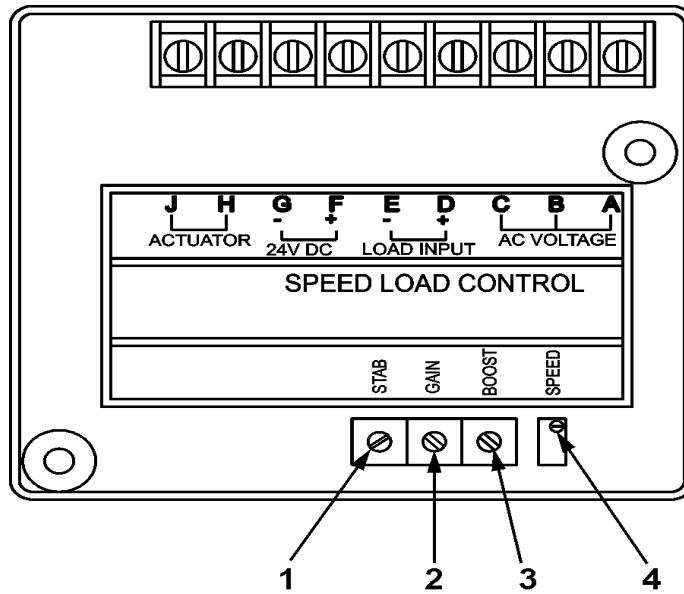


Figure 4-9. Governor Control Module

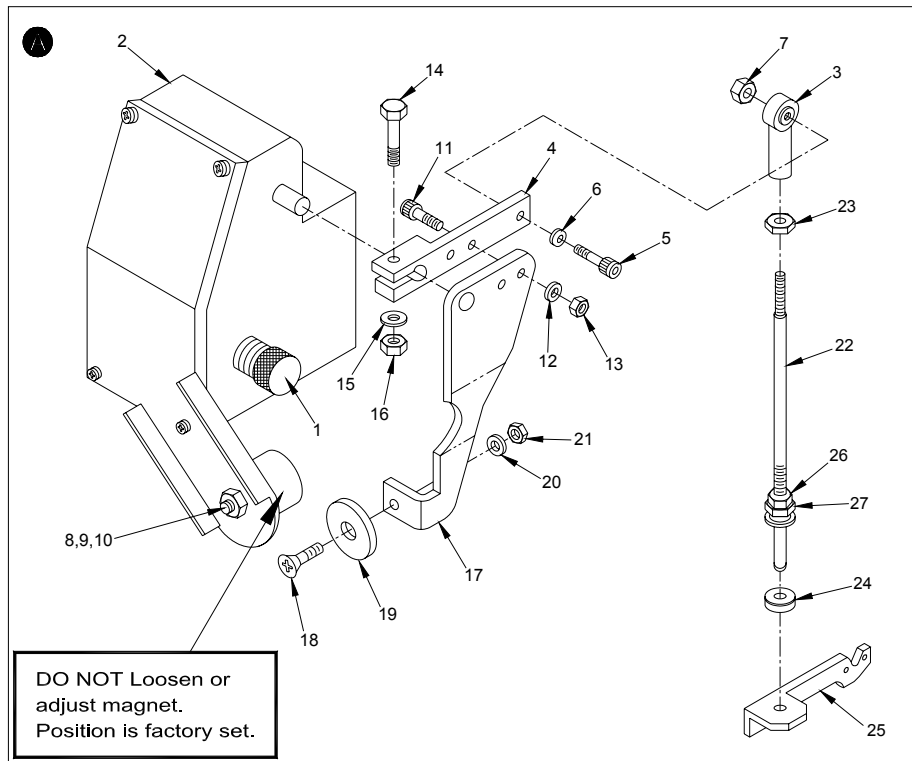


Figure 4-10. Governor Actuator

4-15 ENGINE WIRING HARNESS MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle (para. 4-45)

INSPECT

1. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage (See FO-3).
2. Inspect connectors and terminal lugs. Ensure they are securely attached and free from corrosion and that there aren t any broken connector ends.

REMOVE

1. Unlock main access cover latches and lift cover to open. Disconnect generator set wiring harness plug (P7) from control box harness connector J7 (1, Figure 4-11), located on rear of control box assembly.
2. Unlock and open control panel (2) by turning quarter-turn fasteners (3).
3. Tag and disconnect control box harness wires from control box components. See FO-3, 60Hz Control Box Wiring Harness, and FO-4, 400Hz Control Box Wiring Harness.
4. Release harness connector J7 (1) from inside wall of control box by removing four screws with captive washers (5).
5. Remove clamp (6) by removing screw and captive washer assembly (7) and washer (8). Screw (7) secures panel cable to control box wall.
6. Remove clamp (9) from rear of control panel (2) by removing nut (10) and lockwasher (11).
7. Remove control box wiring harness (4) from control box.

REPLACE

1. Install control box harness connector J7 (1, Figure 4-11) to inside wall of control box. Secure using four screws with captive washers (5).
2. Connect control box harness wires to control box components. See FO-3, 60Hz Control Box Wiring Harness, and FO-4, 400Hz Control Box Wiring Harness.

3. Install clamp (6) using screw and captive washer assembly (7) and washer (8).
4. Install clamp (9) using nut (10) and lockwasher (11). Close control panel (2) and lock in place using quarter-turn fasteners (3).
5. Connect generator set wiring harness plug (P7) to control box harness connector J7 (1).
6. Close main access cover and lock in place using latches.

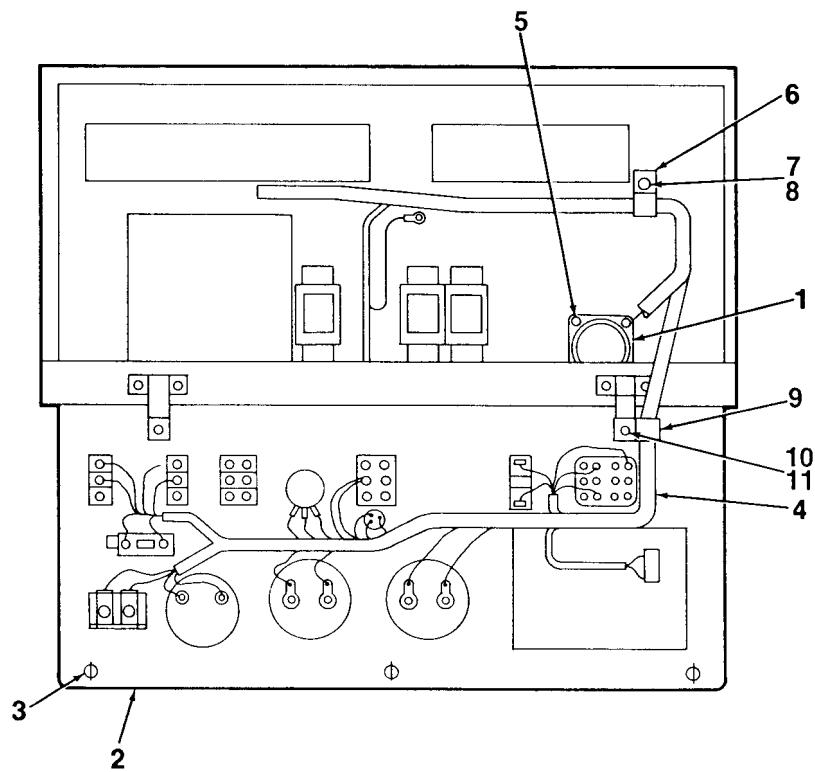


Figure 4-11. Engine Wiring Harness

4-16 PERMANENT MAGNET ALTERNATOR (PMA) MAINTENANCE

This task covers a. inspect and b. test.

INITIAL SETUP

Equipment Condition:

Generator set shut down (para. 2-9)

Tools:

Tool Kit, General Mechanics Automotive Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Parts/Materials:

As required

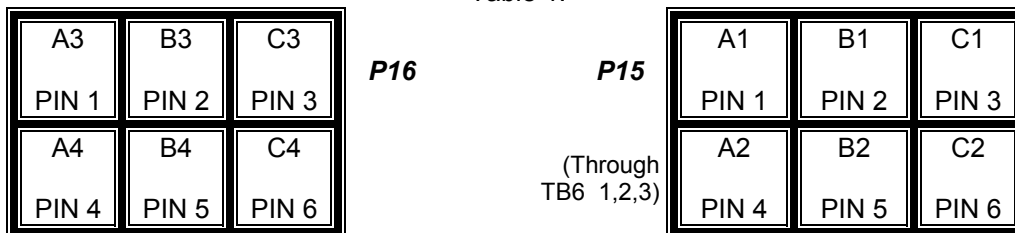
INSPECT

1. Inspect Permanent Magnet Alternator (PMA) components for damage. To view all components, clean as required.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage. Ensure all connectors and terminal lugs are securely attached.
3. Inspect all components (Figure 4-12) for corrosion. Check attaching parts for crossed, stripped, or damaged threads.
4. Inspect edge gasket (2) for damage. Inspect label (1) for legibility.

TEST

1. Remove J15 and J16 from the inverter, with an Ohmmeter, on a low range (less than 400 ohms) ensure that there is less than 1.2 ohms between the same numbered windings. Also ensure that the three pins on each side of the plug are the same numbered winding as indicated in TABLE 1.

Table 1.



2. Now select an ohmmeter range of high resistance (higher than 1 megohm), and ensure that there is no connection between any different numbered windings. (A1 winding does not connect to any 2 winding or 3 winding or 4 winding, then the A2 winding does not connect to any 3 winding or 4 winding, then the A3 winding does not connect to any 4 winding.) There should be no steady reading under 200000 ohms.

3. Open the Voltage Selector Switch door on top of the Inverter. This is a safety function to disable the Inverter output. Start the set in accordance with the operating instructions.
4. Connect a voltmeter to A1 and C1 (pins 1 and 3) of P15. Set it to read over 200 VOLTS AC.
5. Measure the voltages of all windings in J15 and J16. They should all be balanced to within 2 volts of each other.
6. Measure the battery charging winding output. (TB4 terminal 9 and FU1 terminal 2) You should read approximately 28 and 40 VOLTS AC.
7. Shut the unit down and install J15 and J16 on the Inverter.
8. Start the unit and let it run for 1 to 2 minutes. (Leave the Selector Switch door OPEN!) This checks the input side of the Inverter.
9. Shut the unit down and place the Voltage Selector Switch to desired connection and close the Selector Switch Door.

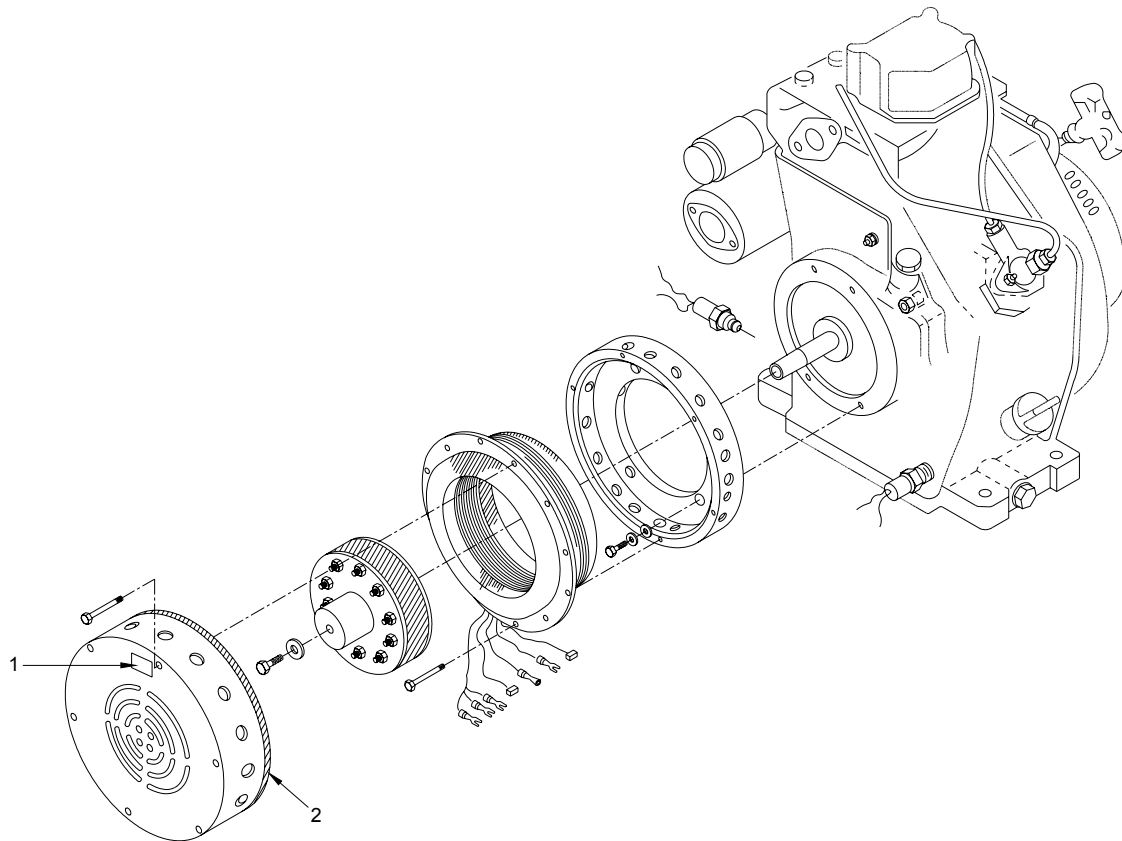


Figure 4-12. Permanent Magnet Alternator (PMA)

4-17 ELECTRICAL SYSTEM ASSEMBLY MAINTENANCE

This task covers a. inspect and b. test.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage (See FO-2).
2. Inspect connectors and terminal lugs. Ensure they are securely attached and free from corrosion and that there are no broken connector ends.

TEST

Test is limited to ensuring all wiring is securely attached and gauges, meters, etc., operate in normal condition.

4-18 BATTERY CHARGING REGULATOR MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Open main access cover.
2. Inspect battery-charging regulator for corrosion, evidence of electrical short, and obvious damage (Figure 4-13).
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

REMOVE

1. At control panel (6) turn quarter-turn fasteners to unlock and open control panel.
2. Unlock main access cover latches and lift cover to open.
3. Disconnect electrical plug (5) from battery charging regulator (1).
4. Remove battery-charging regulator (1) from top of control box (6) by removing screws (2), washers (3), and locknuts (4).

REPLACE

1. Install battery-charging regulator (1) to top of control box (6). Secure using screws (2), washers (3), and locknuts (4).
2. Connect electrical plug (5) to battery charging regulator (1).
3. Close main access cover and lock in place using latches.
4. Close control panel (6) and lock in place using quarter-turn fasteners.

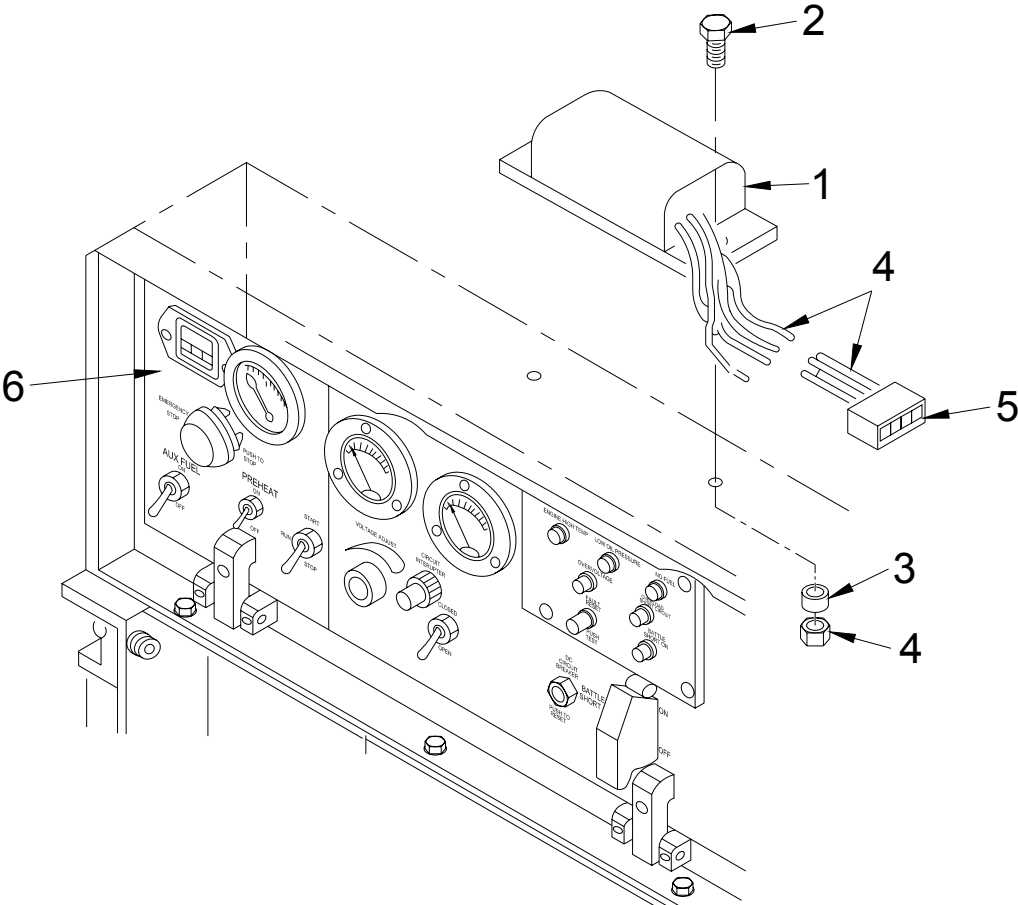


Figure 4-13. Battery Charging Regulator

4-19 BATTERY MAINTENANCE

This task covers a. inspect, b. test, c. service, d. remove, and e. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Water, Distilled (Appendix F, Item 20)
Tester, Battery Electrolyte Solution
(Appendix B, Section III, Item 4)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

WARNING

Battery acid can cause burns to unprotected skin. Failure to observe this warning could result in severe personal injury or death.

WARNING

Batteries give off flammable gas. Do not smoke or use open flame when performing maintenance. Flames and explosion could result in severe personal injury or death. Failure to observe this warning could result in severe personal injury or death.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe personal injury or death.

INSPECT

1. Open main access cover.
2. Inspect battery cables (1, Figure 4-14) for corrosion, evidence of electrical short, and obvious damage. Check for cuts, tears, or exposed wires.
3. Inspect for damaged battery case and for cracks, corrosion, or evidence of leakage. Inspect battery posts for corrosion.

4. Inspect for damaged and loose connections on terminal cables, and damaged or missing battery caps.

TEST

1. Ensure proper charge using electrolyte solution tester. Specific gravity reading should be between 1.2767 and 1.2853.
2. Replace caps on battery.

SERVICE

NOTE

The generator set is designed to accept and operate with either a standard wet cell battery or a sealed maintenance-free battery. If a standard wet cell battery is used, check the electrolyte level and service as follows:

1. Disconnect battery (7, Figure 4-14).
2. See para. 4-20 for detailed inspection, cleaning, and repair of battery cables (1, Figure 4-14).
3. Remove corrosion from cable terminals (1) and battery posts (2) using wire terminal brush.
4. Remove caps from battery (7) and check electrolyte level of cells. Electrolyte level should be at bottom of each cap cylinder.
5. Add distilled water to each battery cell as required.
6. Replace battery caps.
7. Charge battery (7) using battery charger (see procedure below).
8. If necessary contact next-higher level of maintenance to clean or replace batteries or battery terminals.

Procedure for Charging Electrolyte Battery

- a. Use a constant voltage charger with a rating of at least 15 Amps. The electrolyte battery has a rated capacity of 13.6 Amp-hours, so the battery charger should have a current rating greater than or equal to the battery's rated amp-hour capacity.

NOTE

The constant voltage charger should have a rating no less than the battery's amp-hour rating.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe personal injury or death.

- b. Follow all the safety instructions provided with battery charger, and wear safety goggles to protect your eyes from battery acid.

NOTE

Connect battery to charger and follow charging instructions.

- c. How long to fully charge battery depends on its state of charge. A fully discharged battery requires 4 hours to recharge.
- d. If state of discharge is unknown, charge battery until current stabilizes. Then continue to charge battery for another hour.

NOTE

If battery cannot be charged using the above procedure, use the procedure below.

Procedure for Conditioning Charge of Electrolyte Battery

To condition charge you need a constant current (CI) charger with at least twice the potential (50V) of the battery being charged. The electrolyte battery is a 24V battery, so the charge requires an output voltage of at least 50V.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe personal injury or death.

Follow all safety instructions provided with battery charger, and wear safety goggles to protect your eyes from battery acid.

1. Set conditioning charger to 50V and 1.3 Amps.

NOTE

Connect battery to charger and follow charging instructions.

2. Charge battery for 18 to 24 hours.
3. Battery voltage should increase to 30+ V at end of conditioning charge. This is normal.
4. If battery voltage does not measure 30+ V, then replace battery.

REMOVE

WARNING

Battery acid can cause burns to unprotected skin. Failure to observe this warning could result in severe personal injury or death

WARNING

Batteries give off flammable gas. Do not smoke or use open flame when performing maintenance. Flames and explosion could result in severe personal injury or death. Failure to observe this warning could result in severe injury or personal death.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe personal injury or death.

WARNING

When disconnecting battery cables, always remove negative cable first and positive cable last. Connect cable ends to enclosure ground lugs to prevent contact. Failure to observe this warning could result in severe personal injury or death.

1. Unlock main access cover latches and lift cover to open.
2. Disconnect negative battery cable (1, Figure 4-14) from negative (-) battery post (2). Connect cable end to enclosure ground lug.

3. Disconnect positive battery cable (1) from positive (+) battery post (2). Connect cable end to enclosure ground lug.
4. Remove battery tie-down (3) from hold-down rods (4) by removing nuts (5) and washers (6).
5. Carefully remove battery (7) from battery tray (8). Remove battery tray.

REPLACE

WARNING

Battery acid can cause burns to unprotected skin. Failure to observe this warning could result in severe personal injury or death

WARNING

Batteries give off flammable gas. Do not smoke or use open flame when performing maintenance. Flames and explosion could result in severe personal injury or death. Failure to observe this warning could result in severe injury or personal death.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe injury or personal death.

WARNING

When disconnecting battery cables, always remove negative cable first and positive cable last. Connect cable ends to enclosure ground lugs to prevent contact. Failure to observe this warning could result in severe personal injury or death.

1. Replace battery tray (8, Figure 4-14) and battery (7).
2. Replace battery tie-down (3) and secure to hold-down rods (4) using nuts (5) and washers (6).

WARNING

When connecting battery cables, always connect positive cable first and negative cable last. Failure to observe this warning could result in personal injury.

3. Connect positive battery cable (1) to positive (+) battery post (2).
4. Connect negative battery cable (1) to negative (-) battery post (2).
5. Close main access cover and lock in place using latches.

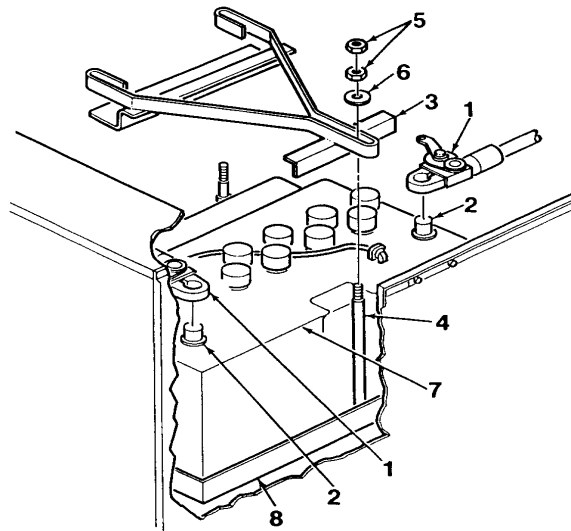


Figure 4-14. Battery System

4-20 BATTERY CABLES MAINTENANCE

This task covers a. inspect, b. remove, c. service, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Wire Brush
Battery Lube

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect battery cables (1, Figure 4-15) for corrosion, evidence of electrical short, and obvious damage. Check for cuts, tears, or exposed wires.
2. Inspect battery posts (2) and crimp lugs (6) for corrosion or damage. Check to see they are securely fastened. Inspect insulation sleeving for deterioration.
3. Inspect battery (7, Figure 4-14) for cracks, corrosion, or evidence of leakage. Inspect battery posts (2, Figure 4-15) for corrosion. Using a wire brush remove corrosion from cable terminals and battery posts (2).

REMOVE

1. Unlock main access cover latches and lift cover to open.

WARNING

Batteries give off flammable gas. Do not smoke or use open flame when performing maintenance. Flames and explosion could result in severe personal injury or death. Failure to observe this warning could result in severe personal injury or death.

WARNING

Do not allow battery acid to contact skin or clothing. Contact of skin with battery acid liquid or inhalation of battery acid mist can cause severe burns, respiratory tract infection, and chronic bronchitis. If any battery acid liquid or mist contacts skin or eyes, immediately flush affected areas thoroughly with water. If vapors are inhaled, go to fresh air. Seek medical help immediately. Failure to observe this warning could result in severe personal injury or death.

WARNING

When disconnecting battery cables, always remove negative cable first and positive cable last. Failure to observe this warning could result in severe personal injury or death.

2. Disconnect negative battery cable (6, Figure 4-15) from negative (-) battery post (7). Disconnect opposite end of cable from engine ground lug by removing screw (9), lockwasher (10), and washer (11). Leave electrical cable (8) in place on ground lug.
3. Disconnect positive battery cable (1) from positive (+) battery post (2). Disconnect opposite end of cable from starter s positive terminal (3) by removing nut (4) and washer (5).

SERVICE

1. Once battery cables are disconnected, clean them. Using a wire brush or a tool specifically designed for cleaning battery lug terminals, thoroughly clean cables to remove corrosion.
2. Clean battery (+) and (-) terminals so they are free of corrosion.

NOTE

Prior to replacing battery cables, coat them with general-purpose grease to prevent buildup of corrosion.

REPLACE

1. Ensure battery is secure in battery tray. Tighten hold-down rods, as required.

WARNING

When connecting battery cables, always connect positive cable first and negative cable last. Failure to observe this warning could result in severe personal injury or death.

2. Connect positive battery cable (1) to starter s positive terminal (3) using nut (4) and washer (5). Connect opposite end of cable to positive (+) battery post (2).
3. Connect negative battery cable (6) and cable (8) to engine ground lug using screw (9), lockwasher (10), and washer (11). Connect opposite end of cable (6) to negative (-) battery post (7).
4. Close main access cover and lock in place using latches.

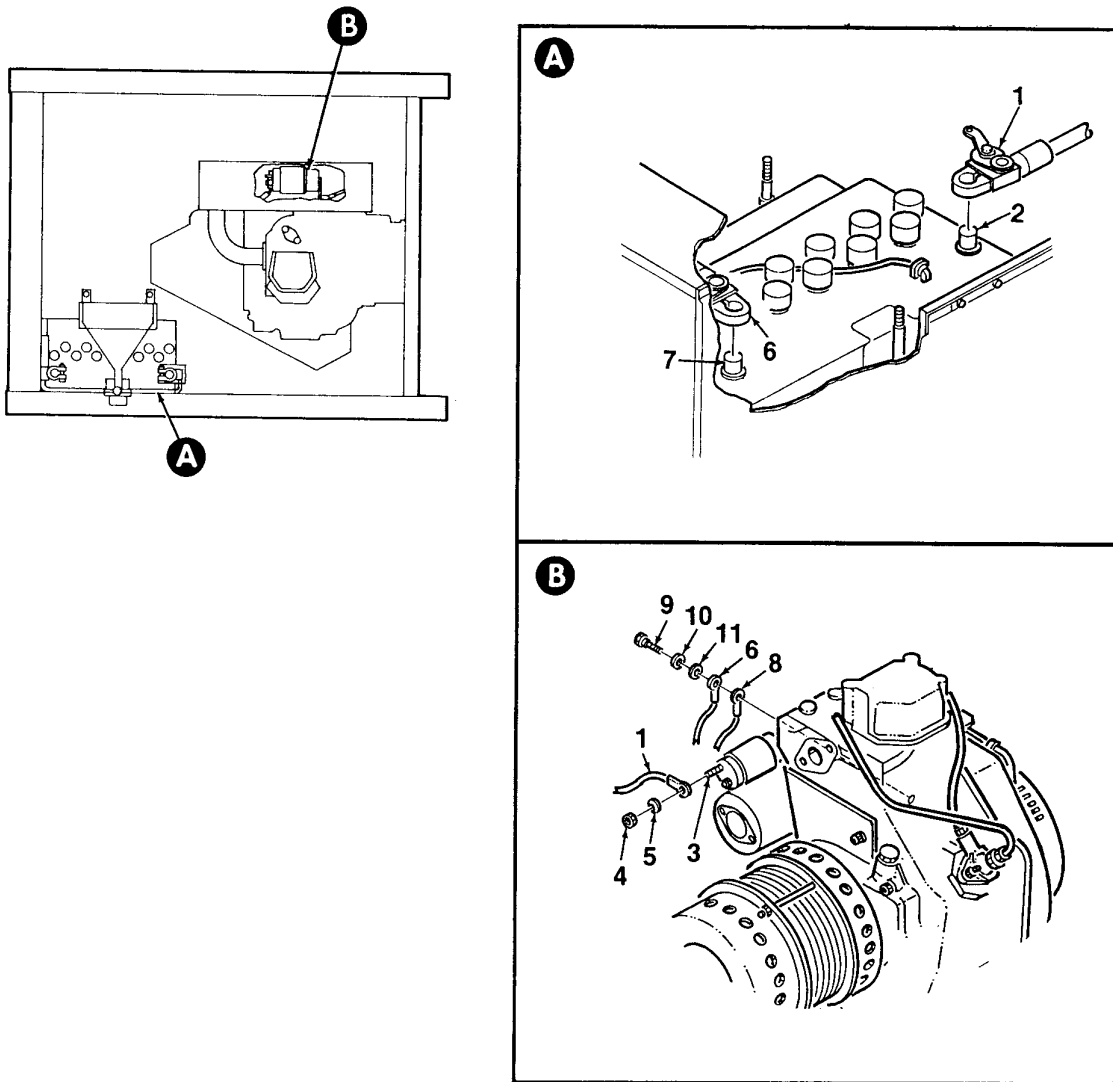


Figure 4-15. Battery Cable Assembly

4-21 CONTACTOR ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

NOTE

There are two different contactor configurations. If you remove and replace the old contactor with the new contactor, follow the Configuration A procedures shown below, making sure you keep the old bracket and top cover. If you install a new contactor, follow the Configuration B procedures shown below.

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect contactor (4, Figure 4-16) for corrosion, evidence of electrical short, and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Configuration A: Remove protective plate (1) from bracket (9) by removing screws (2) and lockwashers (3).
Configuration B: Remove protective plate (1) by removing screws (2) and lockwashers (3).
2. Tag and disconnect electrical wiring from AC circuit interrupter contactor K1 (4).
3. Configuration A: Remove contactor K1 (4) and bracket (9) from back of control box by removing screw and captive washer assemblies (5) and washers (6).
Configuration B: Remove contactor K1 (4) from back of control box by removing screw and captive washer assemblies (5) and washers (6).
4. Configuration A: Remove microswitch (8) from contactor K1 (4) by removing screw and captive washer assemblies (7).

REPLACE

1. Configuration A: Replace microswitch (8) onto AC circuit interrupter contactor K1 (4) using screw and captive washer assemblies (7).
2. Configuration A: Install contactor K1 (4) and bracket (9) to back of control box. Secure using screw and captive washer assemblies (5) and washers (6).

Configuration B: Install contactor K1 (4) to back of control box. Secure using screw and captive washer assemblies (5) and washers (6).

3. Connect electrical wiring to contactor K1 (4).
4. Configuration A: Replace protective plate (1) onto bracket (9) using screws (2) and lockwashers (3).

Configuration B: Replace protective plate (1) onto contactor K1 (4) using screws (2) and lockwashers (3)

5. Close main access cover and lock in place using latches.

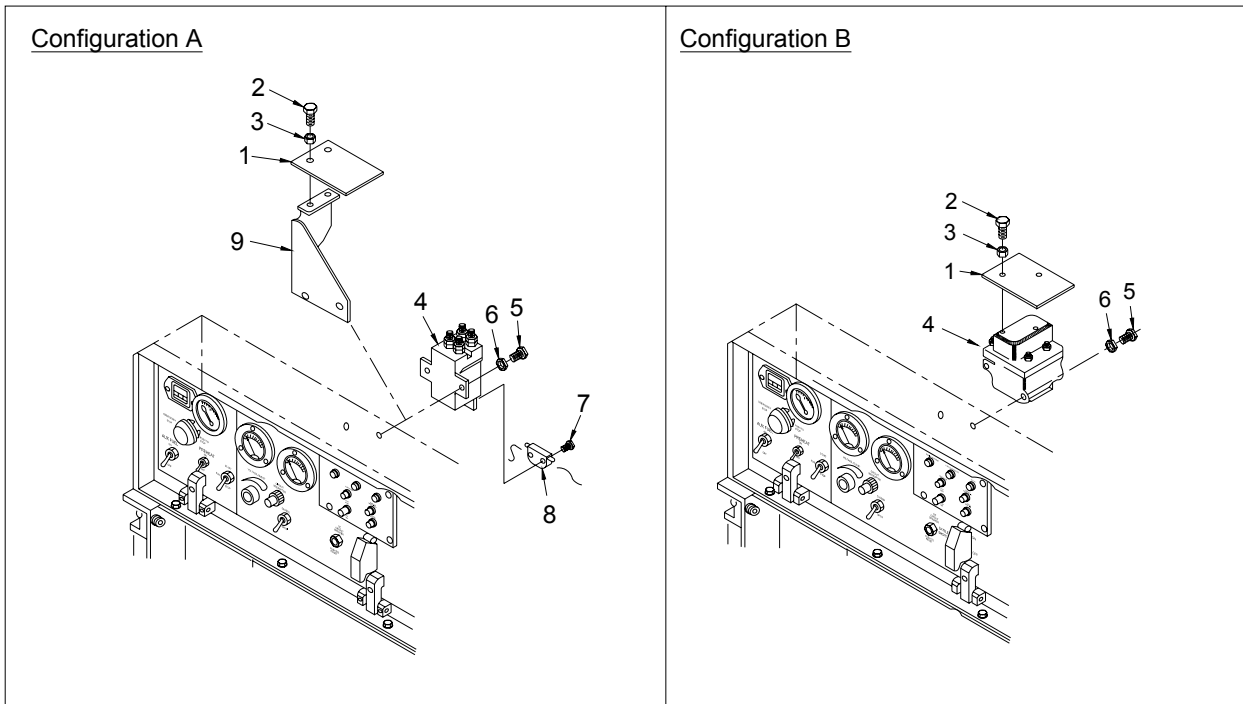


Figure 4-16. Contactor Assembly

4-22 FREQUENCY CONVERTER (A8) MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Equipment Condition:

Generator set shut down (para. 2-9)
AC circuit interrupter contactor removed
(para. 4-21)

Parts/Materials:

As required

CAUTION

After powerwashing generator set, allow it to dry out thoroughly. DO NOT START GENERATOR SET UNLESS IT HAS COMPLETELY DRIED AFTER WASHING.

INSPECT

1. Open main access cover.
2. Inspect Frequency Converter (A8) (5, Figure 4-17) for obvious damage. Inspect for corrosion and evidence of electrical short. Check air ducts for clogs or obstructions. Clear obstructions.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

TEST

1. Test output of Permanent Magnet Alternator (PMA) at P15 and P16 in accordance with TEST section in para 4-16.
2. Measure voltage at Frequency Converter (A8) output terminal as follows:
 - a. Set VOLTAGE SELECTION switch (on top of A8) to 120V/240V.
 - b. Start generator set.
 - c. Connect multimeter to load terminal L1-N.
 - d. Check voltage reading. Reading should be 120 VAC.
 - e. Connect multimeter to load terminal L2-N.
 - f. Check voltage reading. Reading should be 120 VAC.
 - g. Connect multimeter to terminal L1-L2.
 - h. Check voltage reading. Reading should be 240 VAC if in 120/120V connection configuration or 0 VAC if in 120V connection configuration.

- i. Reconnect J15 and J16 (see FO-1) to Frequency Converter (A8). Start generator set. Let it run for 1 minute. Leave SELECTOR switch door open. This checks the input side of the Frequency Converter (A8).
- j. Shut down generator set and set VOLTAGE SELECTOR switch to 120/240. Close VOLTAGE SELECTOR switch door.
- k. Start generator set. Adjust voltage reading on set meter to 240V.
- l. Measure voltage output at Frequency Converter (A8) output terminals.
- m. Fine-tune voltage adjustment so reading between load terminals L1 and L2 is between 240 and 241 VAC. L1-N and L2-N should be balanced at 120 VAC within .7 VAC of each other.

REMOVE

1. Tag and disconnect three electrical connectors from Frequency Converter (A8) (5). Remove two wire clamps (24) by removing screws (25).
2. Remove wire cover plate (1) from Frequency Converter (A8) (5) by removing four screw and captive washer assemblies (2). Tag and disconnect electrical wires (4) by loosening screws (3). Reinstall screws and cover plate to prevent loss.
3. To prevent damage, tag and disconnect electrical harness connector J7 from rear of control box.
4. Remove two screws holding K1 relay and bracket in place to allow easy access to Frequency Converter (A8) for removal.
5. Detach Frequency Converter (A8) (5) from bracket (9) by removing two screws (10), lockwashers (11), and washers (12).
6. Release Frequency Converter (A8) (5) from rear wall of enclosure (13) by removing six screws (14), lockwashers (15), and washers (16).
7. Remove bracket (17) from skid base by removing four screws (18), lockwashers (19), and washers (20).
8. Remove bracket (17) from Frequency Converter (A8) (5) by removing two screws (21), lockwashers (22), and washers (23).
9. Carefully lift Frequency Converter (A8) (5) up and out of generator set enclosure.

REPLACE

1. Replace bracket (17) onto Frequency Converter (A8) (5) using two screws (21), lockwashers (22), and washers (23). Carefully replace Frequency Converter (A8) (5) into generator set.
2. Secure bracket to skid base using four screws (18), lockwashers (19), and washers (20).
3. Install Frequency Converter (A8) (5) to rear wall of enclosure (13). Secure using six screws (14), lockwashers (15), and washers (16).

4. Attach Frequency Converter (A8) (5) to bracket (9) using two screws (10), lockwashers (11), and washers (12).
5. Secure control box to bracket (9) using two screws (6), lockwashers (7), and washers (8).
6. Connect electrical harness connector J7 to rear of control box. Connect three electrical connectors to Frequency Converter (A8) (5).
7. Connect electrical wires (4) using screws (3). Replace cover plate (1) using four screw and captive washer assemblies (2).
8. Secure two wire clamps (24) to Frequency Converter (A8) (5) using screws (25).
9. Replace AC circuit interrupter contactors (para. 4-21).
10. Close main access cover and lock in place using latches.

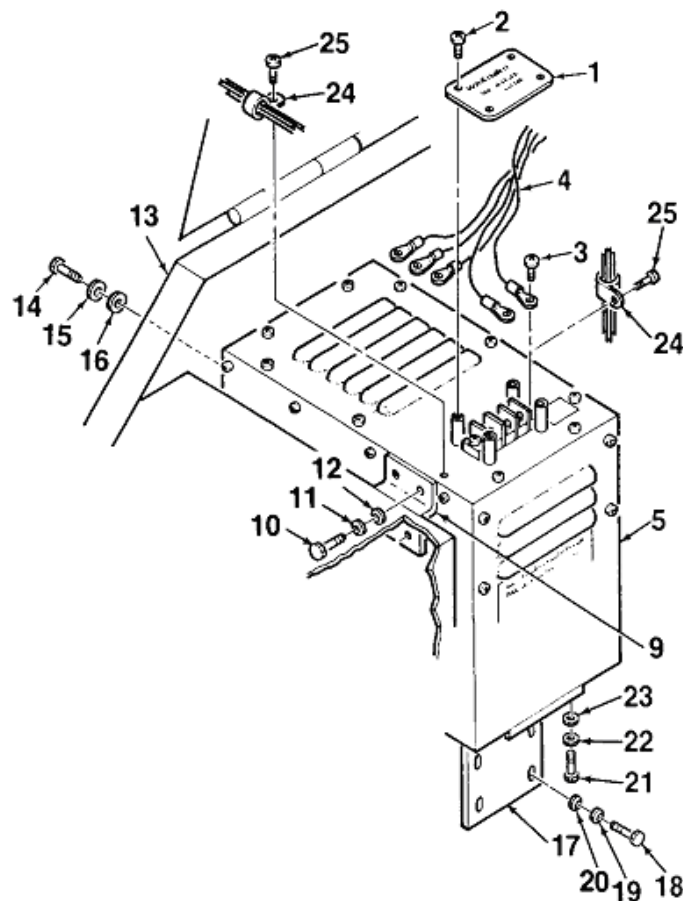


Figure 4-17. Frequency Converter (A8) Assembly

4-23 RELAYS, ELECTROMAGNETIC MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect DC magnetic contactors (7, Figure 4-18) for obvious damage. Inspect for corrosion and evidence of electrical short.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

REMOVE

1. Unlock main access cover latches and lift cover to open.
2. Remove two DC magnetic contactors (7) from wall of enclosure (8) by removing screws (9), washers (10), and locknuts (11).
3. Tag and disconnect electrical wires (1, 2) from DC magnetic contactors (7) by removing nuts (3, 5) and washers (4, 6). Remove voltage suppressors (12).

REPLACE

1. Connect electrical wires (1, 2) and voltage suppressors (12) to DC magnetic contactors (7) using nuts (3, 5) and washers (4, 6).
2. Install two DC magnetic contactors (7) to rear wall of enclosure (8). Secure using screws (9), washers (10), and locknuts (11).
3. Close main access cover and lock in place using latches.

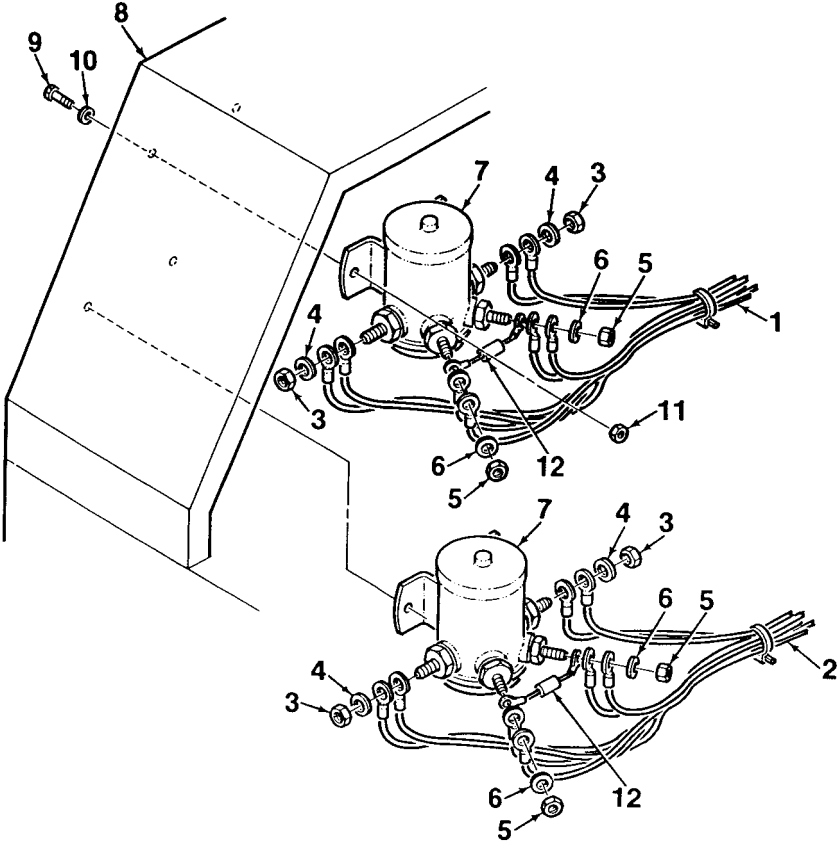


Figure 4-18. Relays, Electromagnetic

4-24 CONTROL BOX ASSEMBLY MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)
Multimeter
(Appendix B, Section III, Item 5)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9).
Battery cables disconnected (para. 4-20).
NATO Slave Receptacle cable disconnected
(para. 4-45).
Battery charging regulator removed
(para 4-18).

INSPECT

1. Inspect controls and indicators for corrosion and obvious damage (Figure 4-19). Inspect meters for broken glass.
2. Turn quarter-turn fasteners to unlock and open control panel.
3. Inspect external relays and terminal boards for evidence of electrical short. Check for loose wires and connectors. Inspect for electrical burn marks, corrosion, and damage.
4. Inspect connector J7 (37) for damaged pin receptacles. Check for corrosion. Ensure connector is securely attached to rear of control panel.
5. Inspect control panel gaskets for cuts, tears, deterioration, or other damage. Inspect gasket on rear of housing where left-side panel mounts. Ensure gaskets are securely attached. Replace as required.

TEST

Using multimeter perform continuity test between J7 and P7.

REMOVE

1. Remove rear panel (1) by removing screws (2), lockwashers (3), and washers (4).
2. Remove left-side panel (5) by removing screws (6), washers (7), and locknuts (8).
3. Remove screws (9), screws (12), washers (10), and locknuts (11).
4. Remove screws (13), washers (14), locknuts (15), and spacer (16) from left-side cover-support mounting bracket (17). Fold support up to gain clearance for control box.
5. Remove convenience receptacle (para. 4-27).

6. Remove Ground Fault Circuit Interrupter (GFCI) (para. 4-27.1).
7. Disconnect and tag wires from terminal boards (TB4) and (TB6), contactor (K1), and fuse (FU1) located on rear of control box (24). Disconnect J7 connector.
8. Remove screws (18), washers (19), and locknuts (20) from right-side panel (21).
9. Remove screws (22), washers (23), and locknuts (20) from control box (24).
10. Remove screws (25), lockwashers (26), and washers (27) from bracket (28).
11. Remove screws (29), washers (30), locknuts (31), and load wrench (32).
12. Remove screw (33), washer (34), and locknut (35).
13. Slide control box (24) out of enclosure. Remove shim (36).

REPLACE

NOTE

Replace control box attaching parts.
Tighten once control box is properly aligned
and all components are attached.

1. Replace control box (24, Figure 4-17) and shim (36) into enclosure.
2. Replace screw (33), washer (34), and locknut (35).
3. Replace screws (29), washers (30), locknuts (31), and load wrench (32).
4. Replace screws (25), lockwashers (26), and washers (27) onto bracket (28).
5. Replace screws (22), washers (23), and locknuts (20).
6. Replace screws (18), washers (19), and locknuts (20) into right side panel (21).
7. Connect electrical wires to terminal boards TB4 (38) and TB6 (39), contactor(K1), and fuse (FU1) located on rear of control box (24). Connect connector J7 (37).
8. Replace GFCI (para. 4-27.1).
9. Replace convenience receptacle (para. 4-27).
10. Replace screws (13), washers (14), locknuts (15), and spacer (16) on left-side cover-support mounting bracket (17).
11. Replace left-side panel (5) using screws (6), washers (7), and locknuts (8). Replace screws (9), screws (12), washers (10), and locknuts.
12. Replace rear panel (1) using screws (2), washers (3), and lockwashers (4).

13. Replace battery-charging regulator (para. 4-18).
14. Close main access cover.

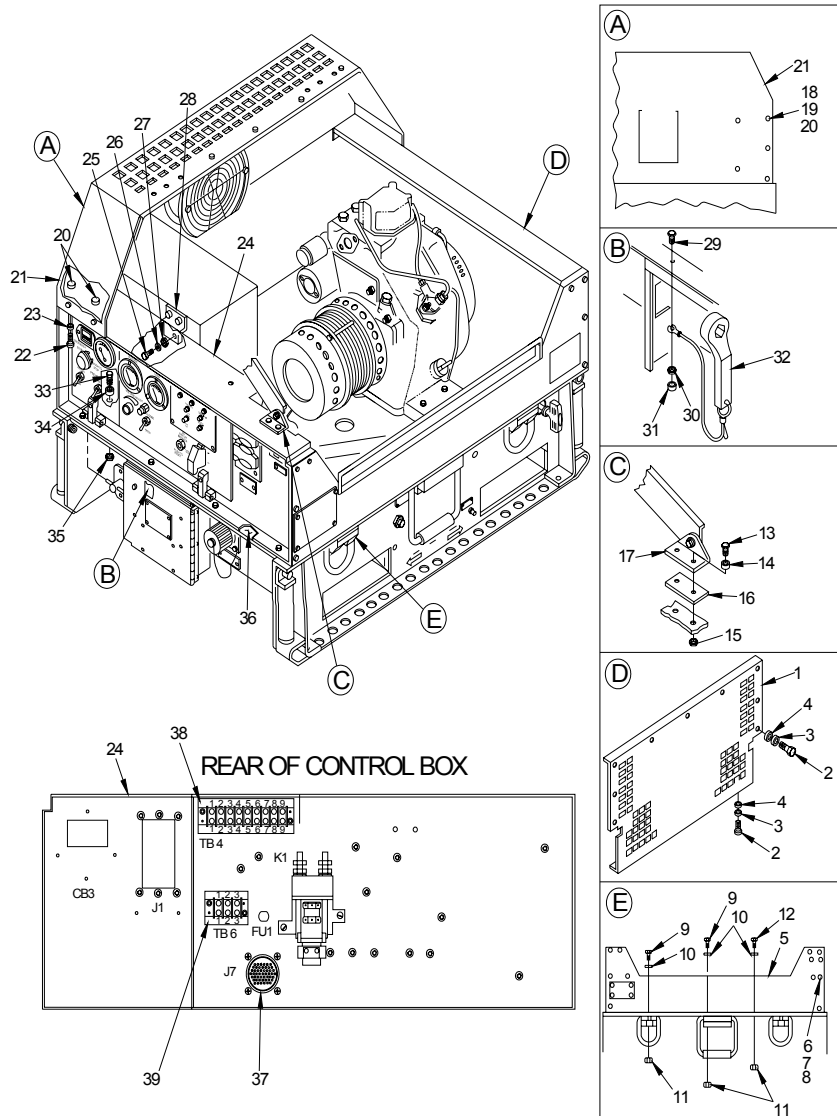


Figure 4-19. Control Box Assembly

4-25 CONTROL PANEL ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Equipment Condition:

Generator set shut down (para. 2-9).
Battery cables disconnected (para. 4-20).
NATO Slave Receptacle cable disconnected
(para. 4-45).

Parts/Materials:

As required

INSPECT

1. Inspect controls and indicators for corrosion and obvious damage. Inspect meters for broken glass (Figures 4-20 to 4-31).
2. Inspect for evidence of electrical short, electrical burn marks, corrosion, and damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached. Check for bent, broken, or missing pins.
4. Inspect control panel gaskets for cuts, tears, deterioration, or other damage. Inspect gasket on rear housing where left-side panel mounts. Ensure gasket is securely attached. Replace as required.

REMOVE

NOTE

It is not necessary to remove the control panel to remove control panel components. See specific tasks to remove control panel components.

1. Turn quarter-turn fasteners (1, Figure 4-20) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of control panel components.
3. Release cable lanyard (3) from control panel (1) by removing attaching screw (4), washer (5), and locknut (6).
4. Remove control panel hinges (7) and hinge spacers (8) from control box by removing four nuts (9).
5. Remove hinges (7) from control panel (2) by removing two nuts (9).

REPLACE

1. Attach two hinges (7) to control panel (2) using two nuts (9).

2. Replace hinge spacers (8) onto hinges (7). Install hinges to control box and secure using four nuts (9).
3. Connect cable lanyard (3) to control panel (2) using attaching screw (4), washer (5), and locknut (6).
4. Connect electrical wires to rear of control panel components.
5. Close control panel (2) and lock in place using quarter-turn fasteners (1).

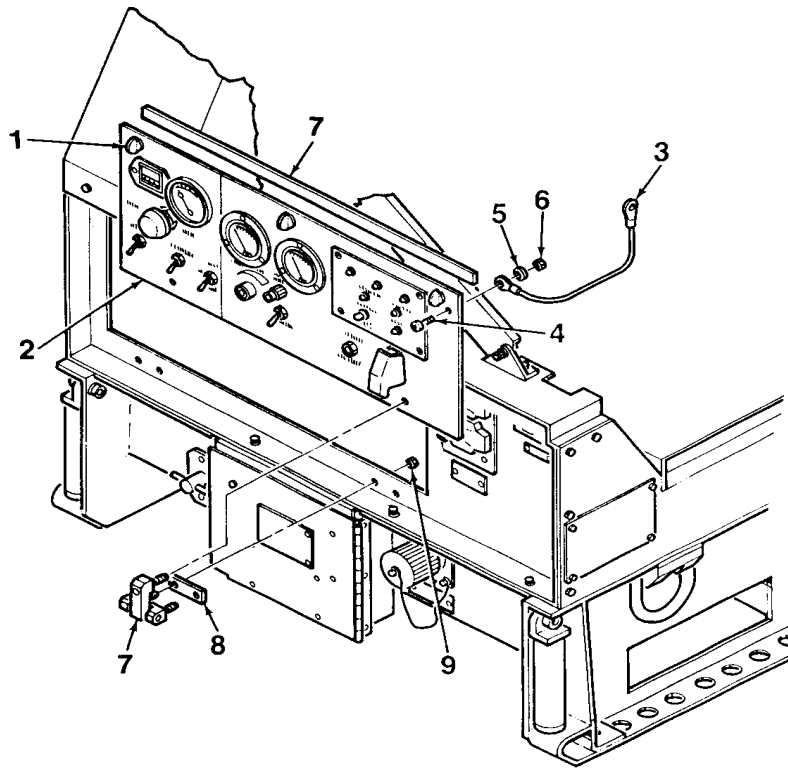


Figure 4-20. Control Panel Assembly

4-26 PANEL, METERS, GAUGES, AND SWITCHES MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)
Battery charging regulator removed (para. 4-18)

INSPECT

1. In addition to scheduled inspections, panel meters, gauges, and switches and their components must be inspected. Inspection results must be documented on the Equipment Inspection and Maintenance Worksheet, DA Form 2404, and/or DD Form 5988-E, in accordance with DA Pam 738-750. Be sure to describe damage in detail.

WARNING

Do not replace components or make adjustments with the voltage supply turned on. Dangerous potentials may exist under certain conditions when the power control is off. Avoid casualties by always removing power and by discharging and grounding a circuit before touching it. Failure to observe this warning could result in severe personal injury or death.

2. Inspect grounding system to see that ground rods make secure contact with the earth; wet area around each ground rod, if necessary.
3. Inspect ground binding. Ensure good electrical contact is made at ground rod.
4. Check for loose, damaged, corroded, or missing mounting hardware. Ensure all electronic mounted components are securely attached.
5. inspect complete assembly for dirt, grease, rust, fungus, and corrosion.

REMOVE

Remove is limited to removal of the following components:

- HOURS meter, see paragraph 4-26.1
- FUEL-LEVEL gauge, see paragraph 4-26.2
- VOLTAGE meter, see paragraph 4-26.3
- LOAD meter, see paragraph 4-26.4
- Fault Indicator module, see paragraph 4-26.5
- Operator switches, see paragraph 4-26.6
- EMERGENCY STOP button, see paragraph 4-26.7

- DC CIRCUIT BREAKER switch, see paragraph 4-26.8
- CIRCUIT INTERRUPTER indicator light, see paragraph 4-26.9
- VOLTAGE ADJUST rheostat, see paragraph 4-26.10
- Relays, see paragraph 4-26.11
- Fuses, diodes, and terminal block, see paragraph 4-26.12

REPLACE

Replace is limited to replacement of the following components:

- HOURS meter, see paragraph 4-26.1
- FUEL-LEVEL gauge, see paragraph 4-26.2
- VOLTAGE meter, see paragraph 4-26.3
- LOAD meter, see paragraph 4-26.4
- Fault Indicator module, see paragraph 4-26.5
- Operator switches, see paragraph 4-26.6
- EMERGENCY STOP button, see paragraph 4-26.7
- DC CIRCUIT BREAKER switch, see paragraph 4-26.8
- CIRCUIT INTERRUPTER indicator light, see paragraph 4-26.9
- VOLTAGE ADJUST rheostat, see paragraph 4-26.10
- Relays, see paragraph 4-26.11
- Fuses, diodes, and terminal block, see paragraph 4-26.12

4-26.1 HOURS METER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9).
Battery cables disconnected (para 4-20).
NATO Slave Receptacle cable disconnected
(para 4-45).
Battery charging regulator removed
(para 4-18).

INSPECT

1. Inspect HOURS meter (3, Figure 4-21) for corrosion and obvious damage. Inspect for broken glass
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners (1) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of HOURS meter (3).
3. Remove HOURS meter (3) from control panel (2) by removing screws (4), lockwashers (5), and nuts (6).

REPLACE

1. Install HOURS meter (3) to control panel (2). Secure using two screws (4), lockwashers (5), and nuts (6).
2. Connect electrical wiring to rear of HOURS meter (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

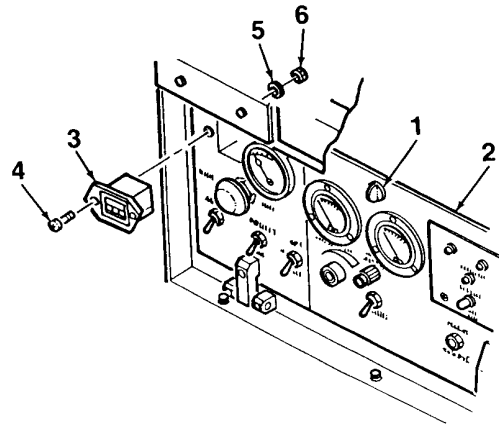


Figure 4-21. HOURS Meter

4-26.2 FUEL-LEVEL GAUGE METER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)
Battery charging regulator removed (para. 4-18)

INSPECT

1. Inspect FUEL LEVEL gauge (3, Figure 4-22) for corrosion and obvious damage. Inspect for broken glass.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners (1) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of FUEL LEVEL gauge (3).
3. Remove FUEL LEVEL gauge (3) from control panel (2) by removing nuts (4), lockwashers (5), and bracket (6).

REPLACE

1. Replace FUEL LEVEL gauge (3) onto control panel (2) using nuts (4), lockwashers (5), and bracket (6).
2. Connect electrical wiring to rear of FUEL LEVEL gauge (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

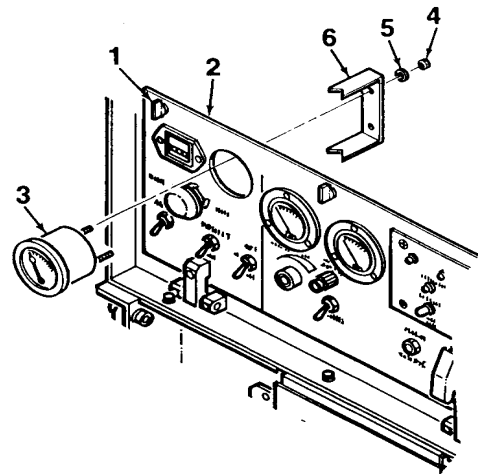


Figure 4-22. FUEL LEVEL Gauge

4-26.3 VOLTAGE METER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)
Battery charging regulator removed
(para. 4-18)

INSPECT

1. Inspect VOLTAGE meter (3, Figure 4-23) for corrosion and obvious damage. Inspect for broken glass.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners (1) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of VOLTAGE meter (3).
3. Remove VOLTAGE meter (3) from control panel (2) by removing screws (4), lockwashers (5), and nuts (6).

REPLACE

1. Install VOLTAGE meter (3) to control panel (2). Secure using screws (4), lockwashers (5), and nuts (6).
2. Connect electrical wiring to rear of VOLTAGE meter (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

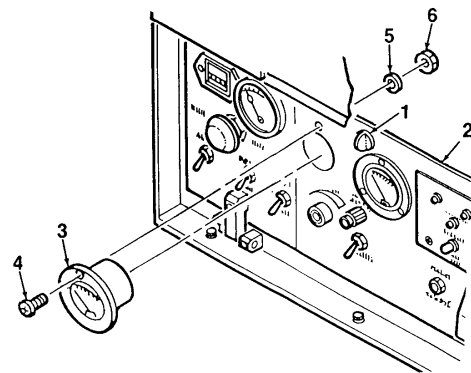


Figure 4-23. VOLTAGE Meter

4-26.4 LOAD METER MAINTENANCE

This task covers a. inspect and b. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)
Battery charging regulator removed
(para. 4-18)

INSPECT

1. Inspect LOAD meter (3, Figure 4-24) for corrosion and obvious damage. Inspect for broken glass.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners (1) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from the rear of LOAD meter (3).
3. Remove LOAD meter (3) from control panel (2) by removing screws (4), lockwashers (5), and nuts (6).

REPLACE

1. Install LOAD meter (3) to control panel (2). Secure using screws (4), lockwashers (5), and nuts (6).
2. Connect electrical wiring to rear of LOAD meter (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

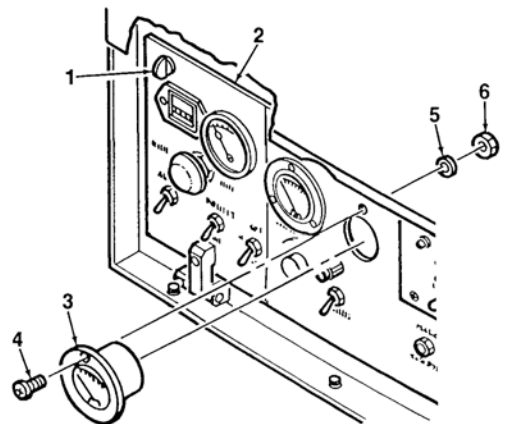


Figure 4-24. LOAD Meter

4-26.5 FAULT INDICATOR MODULE MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
 (Appendix B, Section III, Item 2)
 Multimeter
 (Appendix B, Section III, Item 5)

Parts/Materials:

As required

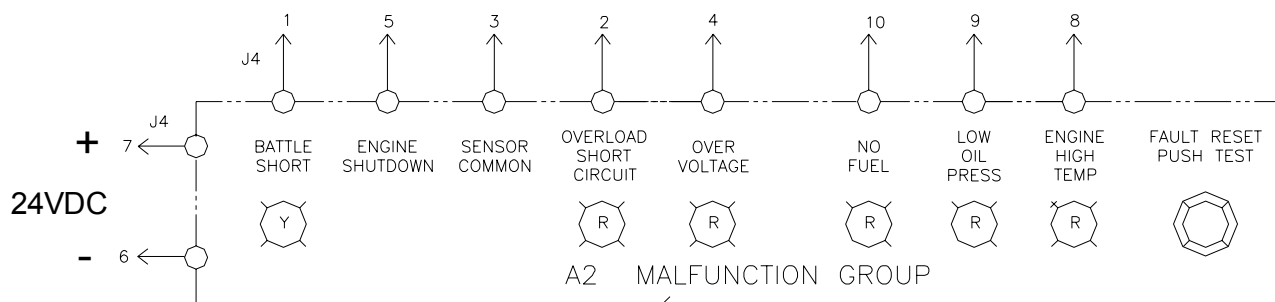
Equipment Condition:

Generator set shut down (para. 2-9)
 Battery cables disconnected (para. 4-20)
 Cable disconnected for NATO Slave Receptacle
 (para. 4-45)
 Battery charging regulator removed
 (para. 4-18)

INSPECT

1. Inspect fault indicator module (3, Figure 4-25) for corrosion and obvious damage. Inspect for broken indicator lights.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

TEST



1. Apply 24VDC to pins 7(+) and 6(-) of fault indicator module.
2. Press FAULT RESET button on fault indicator module. All indicators should illuminate.
3. Connect jumper between pins 1 and 6 of fault indicator module. BATTLE SHORT indicator should illuminate. Remove jumper. Press RESET button on fault indicator module to turn off indicator.
4. Connect jumper between pins 7 and 10 of fault indicator module. NO FUEL indicator should illuminate. Voltage between pins 7(+) and 5(-) should read 24VDC. Remove jumper. Press RESET button on fault indicator module to turn off indicator.

5. Connect jumper between pins 7 and 9 of fault indicator module. LOW OIL PRESSURE indicator should illuminate. Voltage between pins 7(+) and 5(-) should read 24VDC. Remove jumper. Press RESET button on fault indicator module to turn off indicator.
6. Connect jumper between pins 7 and 8 of fault indicator module. ENGINE HIGH TEMP indicator should illuminate. Voltage between pins 7(+) and 5(-) should read 24VDC. Remove jumper. Press RESET button on Fault Indicator Module to turn off indicator.
7. Connect jumper between pins 7 and 4 of fault indicator module. OVERVOLTAGE indicator should illuminate. Voltage between pins 7(+) and 5(-) should read 24VDC. Remove jumper. Press RESET button on Fault Indicator Module to turn off indicator.
8. Connect jumper between pins 7 and 2 of fault indicator module. OVERLOAD SHORT CIRCUIT indicator should illuminate. Remove jumper. Press RESET button on Fault Indicator Module to turn off indicator.
9. Disconnect 24VDC connected to pins 7 and 6.

REMOVE

1. Turn quarter-turn fasteners (1, Figure 4-25) to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of fault indicator module (3).
3. Remove fault indicator module (3) from control panel (2) by removing screws (4), washers (5), and locknuts (6).

REPLACE

1. Install fault indicator module (3) to control panel (2). Secure using screws (4), washers (5), and locknuts (6).
2. Connect electrical wiring to rear of fault indicator module (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

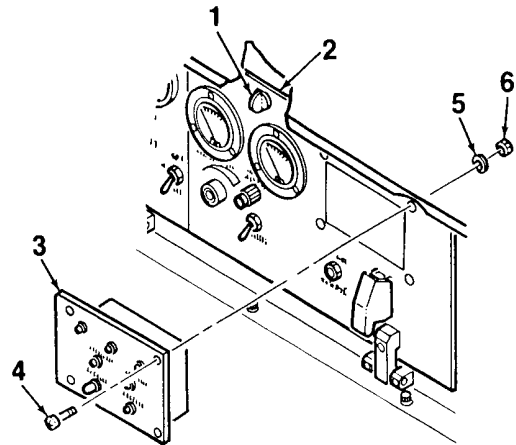


Figure 4-25. Fault Indicator Module

4-26.6 OPERATOR SWITCHES MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect switches (3, 6, 9, 12, 15, Figure 4-26) for obvious damage. Check for corrosion or evidence of electrical short.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of operator switches (3, 6, 9, 12, 15), as required.
3. Remove AUX FUEL switch (3) from control panel (2) by removing attaching nut (4) and lockwasher (5).
4. Remove PREHEAT switch (6) from control panel (2) by removing attaching nut (7) and lockwasher (8).
5. Remove START/RUN/STOP switch (9) from control panel (2) by removing attaching nut (10) and lockwasher (11).
6. Remove CIRCUIT INTERRUPTER switch (12) from control panel (2) by removing attaching nut (13) and lockwasher (14).
7. Remove BATTLE SHORT switch (15) and switch guard (16) from control panel (2) by removing attaching nut (17) and lockwasher (18).

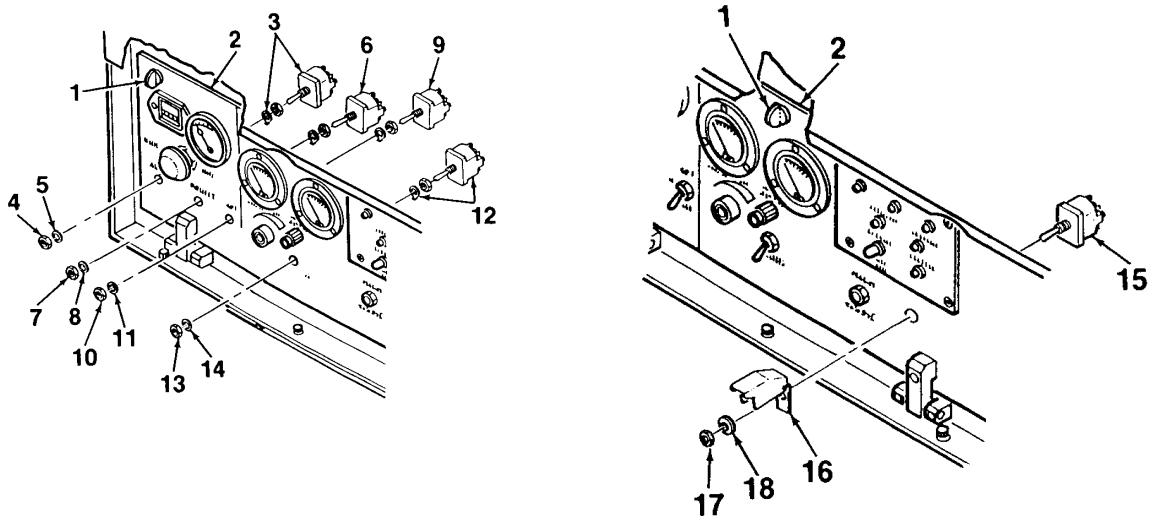


Figure 4-26. Operator Switches

REPLACE

1. Replace AUX FUEL switch (3) onto control panel (2) using attaching nut (4) and lockwasher (5).
2. Replace PREHEAT switch (6) onto control panel (2) using attaching nut (7) and lockwasher (8).
3. Replace START/RUN/STOP switch (9) onto control panel (2) using attaching nut (10) and lockwasher (11).
4. Replace CIRCUIT INTERRUPTER switch (12) onto control panel (2) using attaching nut (13) and lockwasher (14).
5. Remove BATTLE SHORT switch (15) and switch guard (16) from control panel (2) by removing attaching nut (17) and lockwasher (18).
6. Connect electrical wiring to rear of switches (3, 6, 9, 12, 15).
7. Close control panel (2) and lock in place using quarter-turn fasteners (1).

4-26.7 EMERGENCY STOP BUTTON MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl W/O Power
(Appendix B, Section III, Item 3)
Crimping Tool
(Appendix B, Section III, P/O Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para.4-45)

INSPECT

1. Inspect EMERGENCY STOP button (3, Figure 4-27) for corrosion and obvious damage. Inspect electrical connectors for damage and evidence of short.
2. Depress switch shaft to check for proper operation. Switch must depress and reset smoothly.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of EMERGENCY STOP button (3).
3. Remove yellow locking tab (4) from side of EMERGENCY STOP button (3). Rotate lever (5) on EMERGENCY STOP button to unlock position, and remove EMERGENCY STOP button from rear of control panel (2).

NOTE

Observe orientation of push button (6)
before removing to aid in assembly.

4. Remove push button (6) from control panel (2) by removing locknut (7) and gasket (8).

REPLACE

1. Replace push button (6) on control panel (2) using locknut (7) and gasket (8).
2. Replace EMERGENCY STOP button (3) on rear of control panel (2). Rotate lever (5) to lock EMERGENCY STOP button in place. Replace locking tab (4).
3. Connect electrical wiring to rear of EMERGENCY STOP button (3).
4. Close control panel (2) and lock in place using quarter-turn fasteners (1).

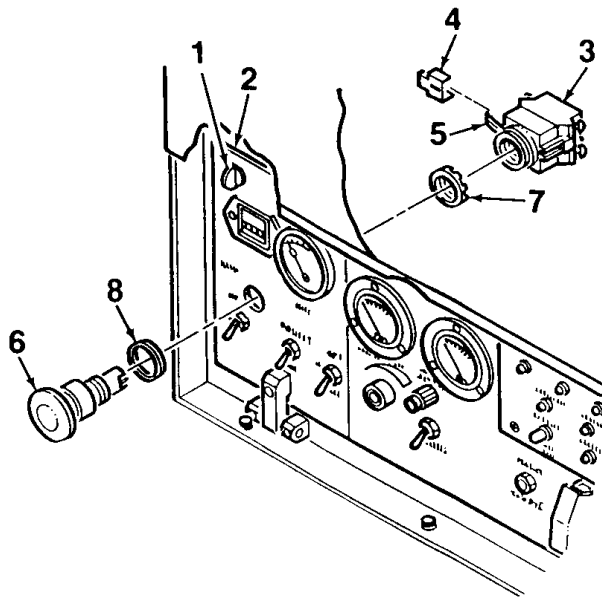


Figure 4-27. EMERGENCY STOP Button

4-26.8 DC CIRCUIT BREAKER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect DC CIRCUIT BREAKER switch (3, Figure 4-28) for corrosion and obvious damage.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners to unlock and open control panel (2).
2. Tag and disconnect electrical wiring from rear of DC CIRCUIT BREAKER switch (3).
3. Remove DC CIRCUIT BREAKER switch (3) from control panel (2) by removing attaching nut (4) and lockwasher (5).

REPLACE

1. Install DC CIRCUIT BREAKER switch (3) to rear of control panel (2). Secure using nut (4) and lockwasher (5).
2. Connect electrical wiring to rear of DC CIRCUIT BREAKER switch (3).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).

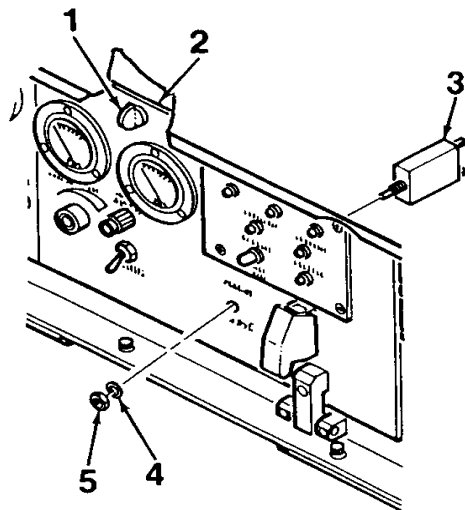


Figure 4-28. DC CIRCUIT BREAKER

4-26.9 CIRCUIT INTERRUPTER INDICATOR LIGHT MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Soldering Iron (Appendix B, Section III, P/O Item 3)
Heat Gun (Appendix B, Section III, P/O Item 3)

Parts/Materials:

Solder, Tin Alloy (Appendix F, Item 12)
Tubing, Heat Shrink (Appendix F, Item 13)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect CIRCUIT INTERRUPTER indicator light (5, Figure 4-29) for corrosion and obvious damage.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners to unlock control panel (2).
2. Replace CIRCUIT INTERRUPTER indicator light bulb (3) by removing cap (4) from CIRCUIT INTERRUPTER indicator light (5). Unscrew bulb (3) from light (5).

CAUTION

Remove bulb (3) from indicator light
(5) prior to soldering.

3. Peel back heat shrink tubing to expose electrical wires on rear of indicator light (5). Using a soldering iron, detach electrical wires from rear of indicator light.
4. Remove CIRCUIT INTERRUPTER indicator light (5) from control panel (2) by removing attaching nut (6) and lockwasher (1).

REPLACE

1. Replace CIRCUIT INTERRUPTER indicator light (5) onto control panel (2) using attaching nut (6) and lockwasher (1).

2.

CAUTION

Remove bulb (3) from indicator light (5) prior to soldering.

3. Connect electrical wiring to rear of indicator light (5) and secure using soldering iron. Using a heat gun, adhere heat shrink tubing to wire connectors.
4. Screw CIRCUIT INTERRUPTER indicator light bulb (3) into indicator light (5). Replace cap (4).
5. Close control panel (2) and lock in place using quarter-turn fasteners (7).

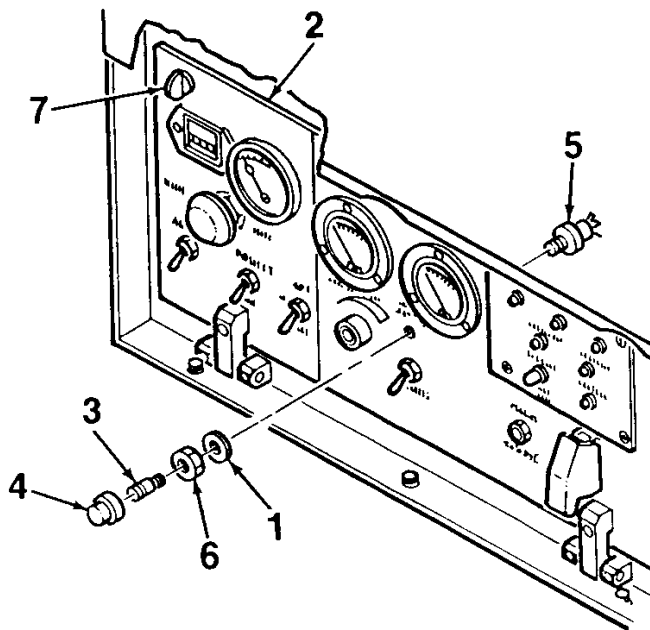


Figure 4-29. CIRCUIT INTERRUPTER Indicator Light

4-26.10 VOLTAGE ADJUST RHEOSTAT MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Soldering Iron (Appendix B, Section III, P/O Item 3)
Heat Gun (Appendix B, Section III, P/O Item 3)

Parts/Materials:

Solder, Tin Alloy (Appendix F, Item 12)
Tubing, Heat Shrink (Appendix F, Item 13)

Equipment Condition:

Generator set shut down
(para. 2-9)
Battery cables disconnected
(para. 4-20)
Cable disconnected for NATO Slave
Receptacle (para. 4-45)

INSPECT

1. Inspect VOLTAGE ADJUST rheostat (3, Figure 4-30) for corrosion and obvious damage. Rotate VOLTAGE ADJUST rheostat shaft to ensure smooth operation.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Remove knob (4) from shaft of VOLTAGE ADJUST rheostat (3) by loosening setscrews (5).
2. Turn quarter-turn fasteners (1) to unlock and open control panel (2).
3. Remove VOLTAGE ADJUST rheostat (3) from control panel (2) by removing attaching nut (6) and lockwasher (7).
4. Peel back heat shrink tubing to expose electrical wires on rear of VOLTAGE ADJUST rheostat (3). Using a soldering iron, detach electrical wires from rear of rheostat.

REPLACE

1. Connect electrical wiring to rear of VOLTAGE ADJUST rheostat (3) and secure using soldering iron. Cover connection with heat shrink tubing and secure using heat gun.
2. Install VOLTAGE ADJUST rheostat (3) to rear of control panel (2). Replace using lockwasher (7) and nut (6).
3. Close control panel (2) and lock in place using quarter-turn fasteners (1).
4. Secure knob (4) to shaft of VOLTAGE ADJUST rheostat (3) by tightening setscrews (5).

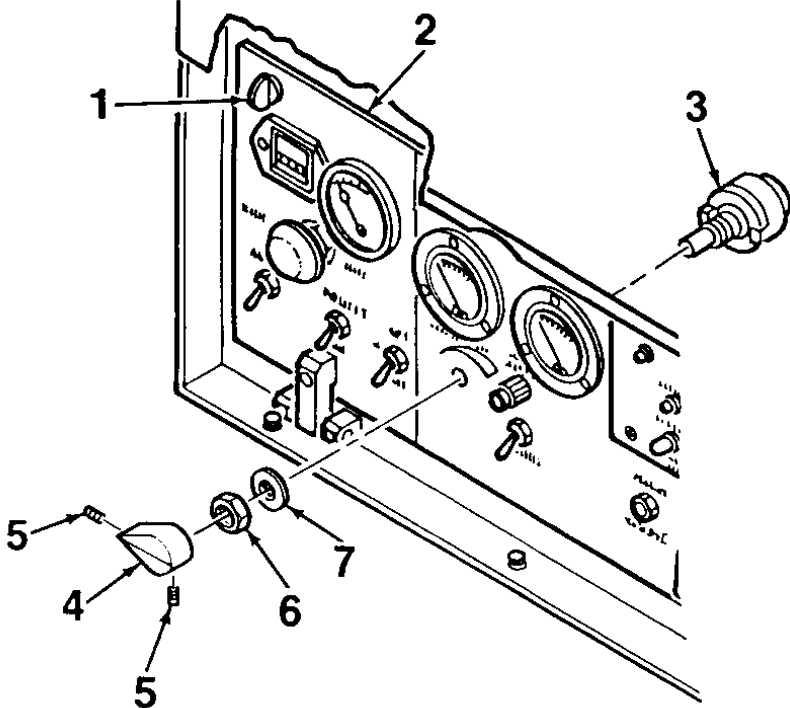


Figure 4-30. VOLTAGE ADJUST Rheostat

4-26.11 RELAY MAINTENANCE

This task covers a. inspect, remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect relays (3, Figure 4-31) for corrosion, evidence of electrical short, and obvious damage. Ensure terminal lugs are intact and secure.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

REMOVE

1. Turn quarter-turn fasteners to unlock and open control panel.
2. Remove hold-down springs (4) to release relays (3) from relay sockets (1).
3. Tag and disconnect electrical wiring from fault lockout relay (K12), auxiliary fuel transfer relay (K14), and starter cutout relay (K15).

NOTE

Note orientation of diode on relay socket (1) before removing socket. Socket must be oriented the same way when installed to function properly.

4. Remove relay sockets (1) from rear wall of control box by removing screws (2).

REPLACE

1. Install relay sockets (1) to rear wall of control box. Secure using screws (2) and nuts (3).
2. Connect electrical wiring to relays (K12), (K14), and (K15).
3. Insert relays (3) into relay sockets (1). Secure using hold-down springs (4).
4. Close control panel and lock in place using quarter-turn fasteners.

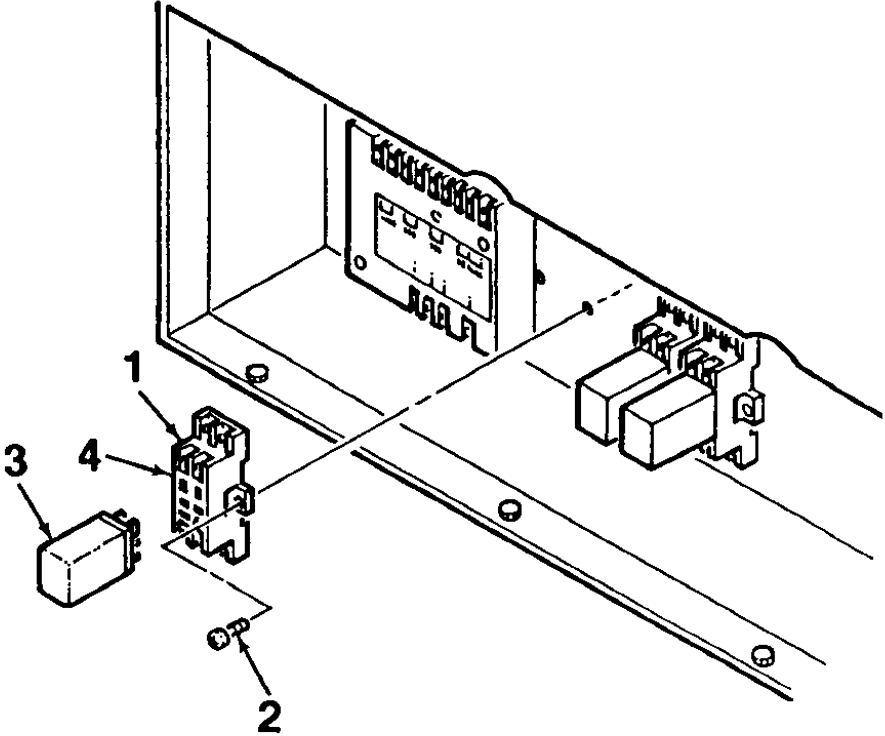


Figure 4-31. Control Box Relays

4-26.12 FUSE, DIODE, AND TERMINAL BLOCK MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Multimeter
(Appendix B, Section III, Item 5)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected
(para. 4-20)
Cable disconnected for NATO Slave
Receptacle (para. 4-45)

INSPECT

1. Inspect terminal blocks (1, Figure 4-32) and diodes (6) for corrosion, evidence of electrical short, and obvious damage. Ensure terminal connectors are intact and secure.
2. Inspect four diodes on terminal block (TB5) for obvious damage. Check security of attachment.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are secure.

TEST

1. Connect positive (+) probes of multimeter across one diode (6).
2. Measure resistance of diode with positive (+) probe applied to terminal of diode (6) and negative (-) probe applied to other terminal of diode. Record ohms reading. Reverse the polarity of the probes and apply across the diode. Record ohms reading. For the diode to be in operable condition, one reading should be low and the other reading should be high. If not, the diode has failed.
3. Repeat test on remaining diodes, recording values in ohms.
4. If a diode is not working, remove it and replace with a new diode.

REMOVE

1. To remove fuse (15), turn quarter-turn fasteners to unlock and open control panel. Unscrew cap (16) from fuse holder (17) and remove fuse.
2. Tag and disconnect electrical wiring from terminal blocks TB5 (1) and TB3 (2).
3. Remove terminal blocks TB5 (1) and TB3 (2) from inside wall of control box by removing screw and captive washer assemblies (5).
4. Remove five diodes (6).

5. To remove terminal blocks TB4 (3) and TB6 (4), unlock main access cover latches, and open cover.
6. Remove clear plastic covers (7, 8) from terminal blocks TB4 (3) and TB6 (4) by removing screws (9) and lockwashers (10).
7. Tag and disconnect electrical wiring from terminal blocks TB4 (3) and TB6 (4).
8. Remove terminal blocks TB4 (3) and TB6 (4) from rear of control box by removing standoffs (11) and lockwashers (12). Remove identification plates (13, 14).
9. Remove fuse holder (17) from control box by removing nut (18).

REPLACE

1. Replace fuse holder (17) on control box using nut (18). Replace fuse (15) and cap (16).
2. Install terminal blocks TB4 (3) and TB6 (4) and identification plates (13,14) to rear of control box. Secure using standoffs (11) and lockwashers (12).
3. Connect electrical wiring to terminal blocks TB4 (3) and TB6 (4). Replace clear plastic covers (7, 8) using screws (9) and lockwashers (10).
4. Close main access cover and lock in place using latches.
5. Replace diodes (6) onto terminal block TB5 (1).
6. Install terminal blocks TB5 (1) and TB3 (2) to inside wall of control box. Secure using screw and captive washer assemblies (5).
7. Connect electrical wiring to terminal blocks TB5 (1) and TB3 (2).
8. Close control panel and lock in place using quarter-turn fasteners.

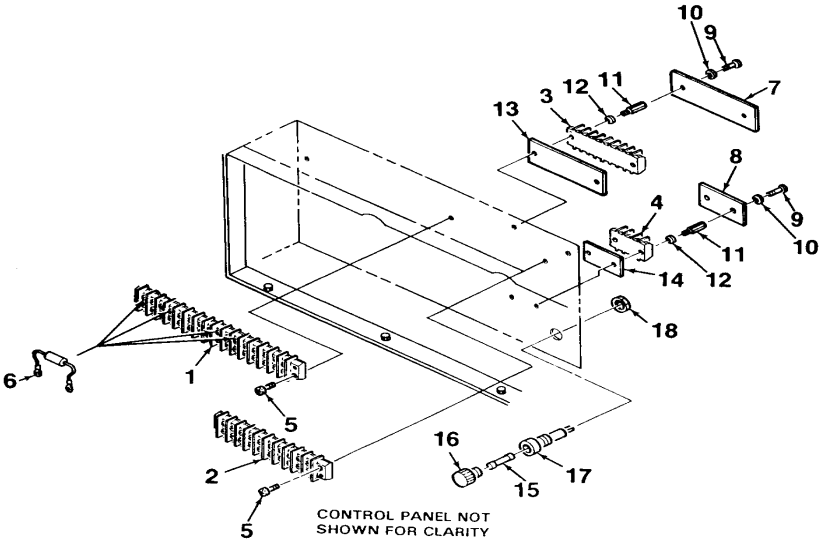


Figure 4-32. Fuses, Diodes, and Terminal Block

4-27 RECEPTACLE, FILTERS, TERMINALS, AND VOLTAGE RESISTOR MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

Parts/Materials:

As required

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect convenience receptacle (3, Figure 4-33) for corrosion, evidence of electrical short, and obvious damage. Check terminal connectors for damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

TEST

1. Test receptacle by pressing test button to reset GFCI. The reset button should release, and a red mark will show.
2. Press reset button to recycle power. Using multimeter check for voltage.
3. Check that CB3 on back of GFCI (inside set) is not tripped. Reset CB3 switch.
4. Check GFCI CB3 at (TB4), as follows:
 - a. Connect positive (+) probe of multimeter to terminal board (TB4), pin 1.
 - b. Connect negative (-) probe to terminal board (TB4), pin 3.
 - c. Start generator set. Using multimeter check voltage at rear of receptacle.
 - d. If voltage is present, remove and replace GFCI (para 4-27.1).

REMOVE

1. Remove screw (1) to disconnect receptacle cover (2) from convenience receptacle (3). Remove cover and rubber gasket (6) by removing screw and captive washer assemblies (4).

CAUTION

Ensure wire leads on receptacle terminals are not damaged when pulling on receptacle.

2. Remove convenience receptacle (3) from control box by removing two screws (5).
3. Tag and disconnect electrical wiring from rear of convenience receptacle (3).

REPLACE

1. Connect electrical wiring to convenience receptacle (3).
2. Install convenience receptacle (3) to control box and secure using screws (5)
3. Install cover (2) and rubber gasket (6) to control box and secure using screw and captive washer assemblies (4). Replace screw (1).
4. Close main access cover and lock in place using latches.

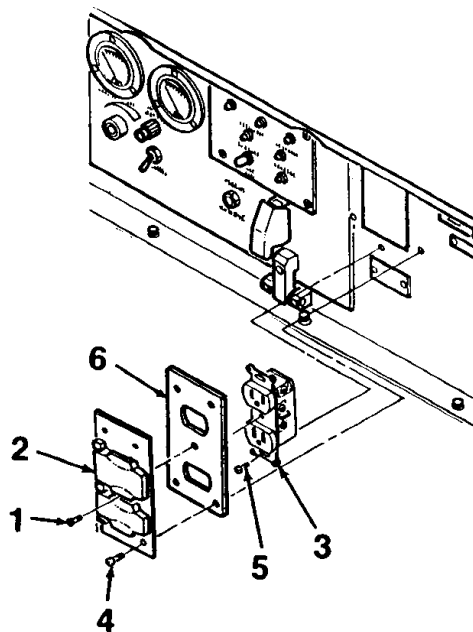


Figure 4-33. Convenience Receptacle

4-27.1 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect GFCI (1, Figure 4-34) for corrosion, evidence of electrical short, and obvious damage. Depress RESET and TEST buttons to ensure smooth operation.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors are securely attached.

TEST

1. Supply power, and press reset button (button should reset).
2. Ensure circuit breaker unit is not tripped.
3. Measure voltage at convenience receptacle by placing positive probe of multimeter into smaller rectangular output socket of receptacle and negative probe of multimeter into larger rectangular output socket of receptacle. Voltage should be 120 VAC +/- 6.
4. Press TEST button. Voltage should drop to zero

REMOVE

1. Tag and disconnect GFCI (1) wiring from terminal block (TB4).
2. Remove GFCI (1) from control box by removing screws (2), washers (3), and nuts (4).

REPLACE

1. Install GFCI (1) to back of control box. Secure using screws (2), washers (3), and nuts (4).
2. Connect GFCI (1) electrical wiring to terminal board (TB4). Replace cover on terminal block (TB4) (para. 4-24).
3. Replace battery and tray (para. 4-19). Replace convenience receptacle (para. 4-27).

4. Close main access cover and lock in place using latches.

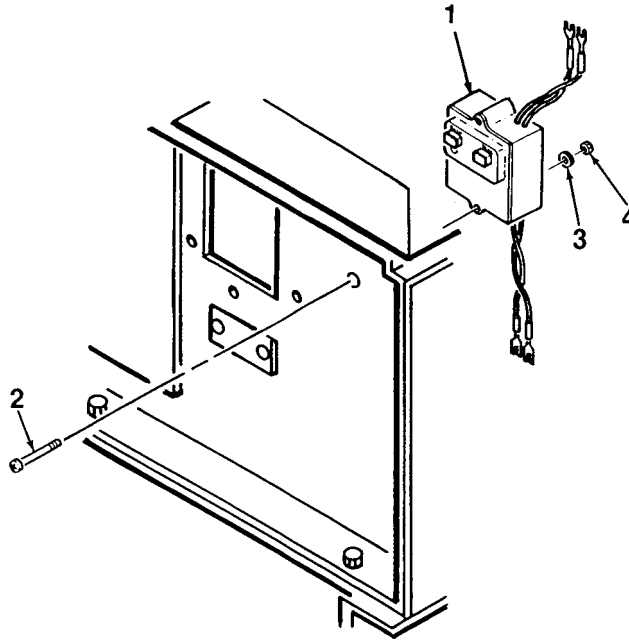


Figure 4-34. Ground Fault Circuit Interrupter (GFCI)

4-27.2 LOAD TERMINALS AND EMI FILTER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open. Turn output panel cover lock (2, Figure 4-35, Sheet 1 of 2) and open output panel cover (1).
2. Inspect load terminals (10) and ground terminal (11) for corrosion, evidence of electrical short, and obvious damage. Check for crossed, stripped, or flattened threads.
3. Inspect EMI filter (9) for obvious damage. Inspect electrical wiring for cuts, abrasions, or bare wire. Ensure connectors are securely fastened.
4. Inspect output panel cover (1) for dents, cracks, or other damage. Ensure it is securely attached. Ensure output panel cover lock (2) operates smoothly, free of binding.

REMOVE

1. Disconnect load and ground wires from load terminals (10), using load wrench (3).
2. Release load wrench (3) lanyard from output box by removing screw (4), washer (5), and locknut (6). Remove lanyard from load wrench (3) only if replacement is required.
3. Tag and disconnect EMI filter (9) electrical connectors. Remove EMI filter from load and ground terminals (10, 11) by removing nuts (7) and washers (8).
4. Remove load board (15) from generator set skid base by removing screws (16), washers (17), and locknuts (18).
5. Remove load terminals (10) by removing nuts (12) and washers (13). Remove ground terminal (11) by removing nut (14) and washers (13).

REPLACE

1. Replace load terminals (10) using nuts (12) and washers (13). Replace ground terminal (11, lower right-hand hole) using nut (14) and washers (13).
2. Install load board (15) to generator set skid base. Secure using screws (16), washers (17), and locknuts (18).

3. Replace EMI filter (9) onto load and ground terminals (10, 11). Secure using nuts (7) and washers (8). Connect EMI filter connectors.
4. Connect electrical cables to load and ground terminals (10, 11) using load wrench (3). Neutral terminal is upper right. Ground terminal is lower right.
5. Attach load wrench (3) lanyard to output box using screw (4), washer (5), and nut (6).
6. Close output panel cover (1) and engage lock (2).
7. Close main access cover and lock in place using latches.

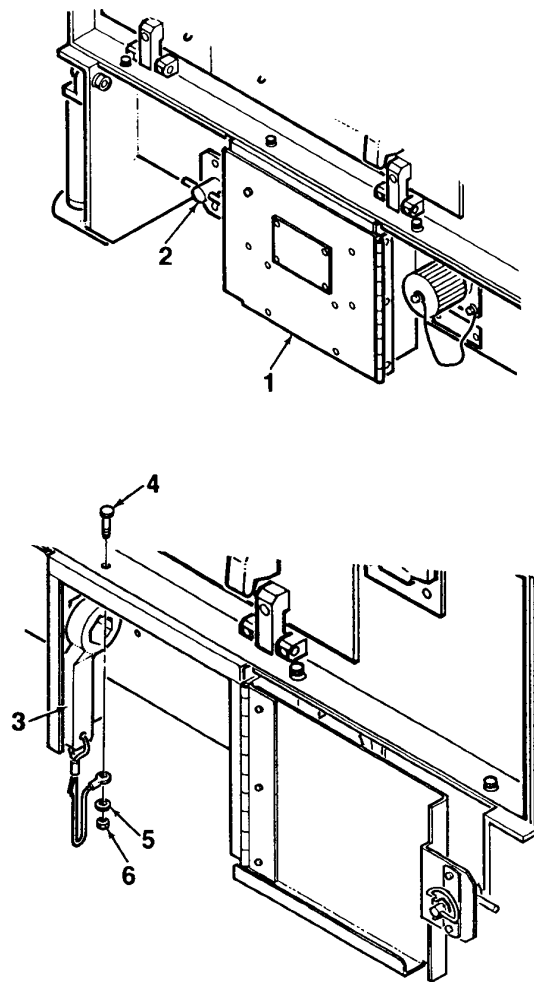


Figure 4-35. Load Terminals and EMI Filter (Sheet 1 of 2)

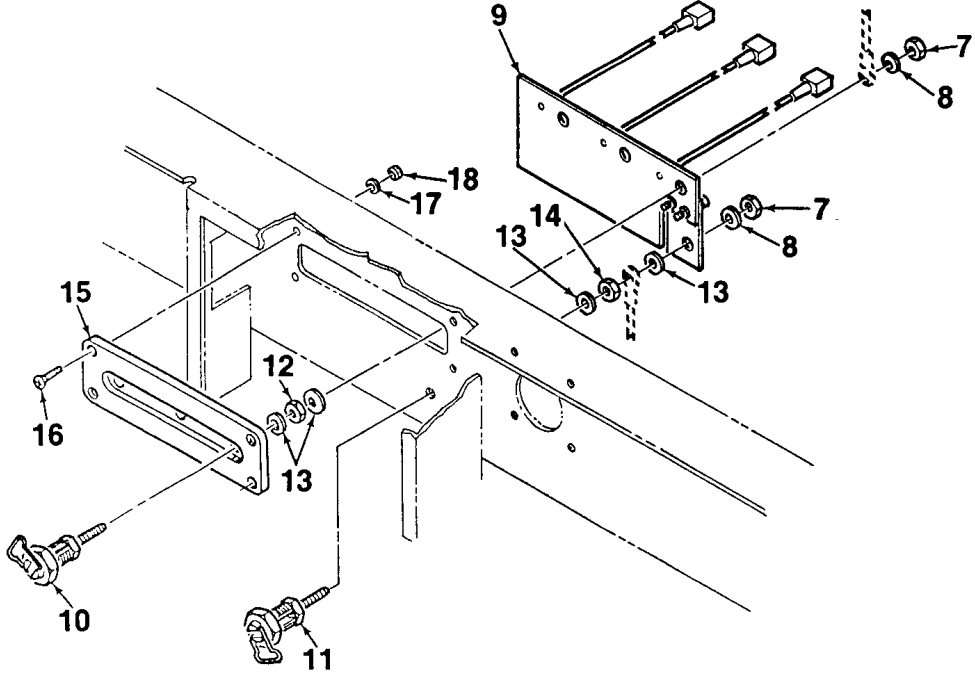


Figure 4-35. Load Terminals and EMI Filter (Sheet 2 of 2)

4-27.3 VOLTAGE RESISTOR MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)
Battery disconnected (para. 4-19)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Using inspection mirror, visually inspect voltage resistors (3, Figure 4-36) for corrosion, evidence of electrical short, and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

REMOVE

1. Turn cover lock (2) and open output panel cover (1).
2. Disconnect electrical wiring from rear of three voltage resistors (3).
3. Remove three voltage resistors (3) from back of output box by removing screws (4), washers (5), and locknuts (6).

REPLACE

1. Connect three voltage resistors (3) to back of output box. Secure using screws (4), washers (5), and locknuts (6).
2. Connect electrical wiring to voltage resistors (3).
3. Close output panel cover (1) and engage cover lock (2).
4. Close generator set main access cover and lock in place using latches.

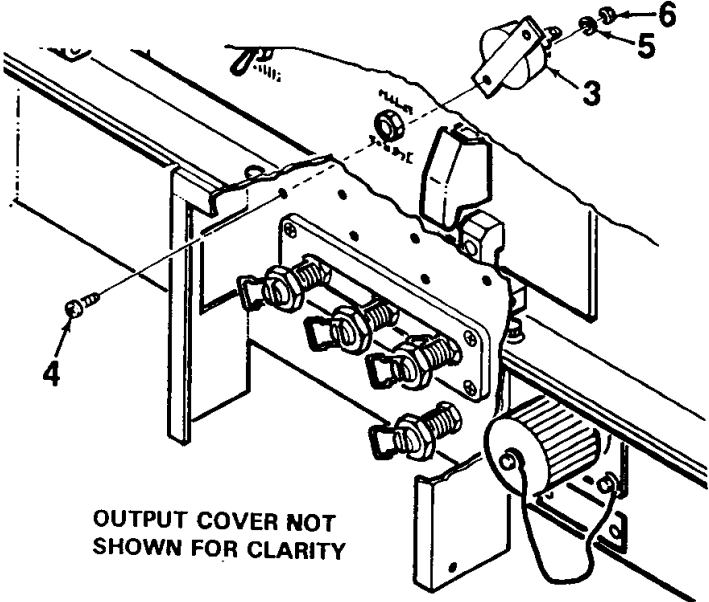
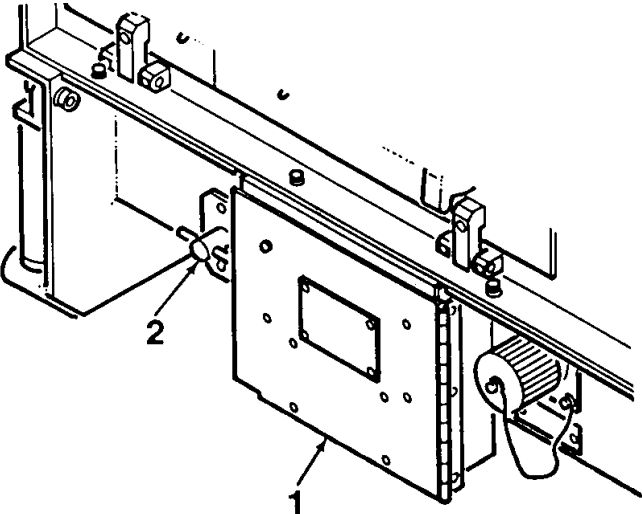


Figure 4-36. Voltage Resistors

4-28 CONTROL BOX WIRING HARNESS MAINTENANCE

This task covers a. inspect.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect harness connector (J7) (1, Figure 4-37) for corrosion, evidence of electrical short, and obvious damage. Check for bent, broken, or missing pins.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors and terminal lugs are securely attached.

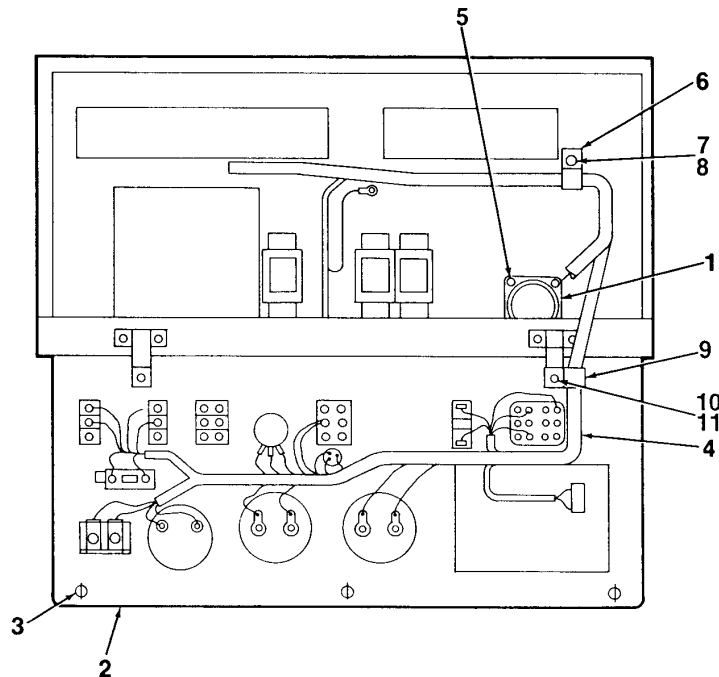


Figure 4-37. Control Box Wiring Harness

4-29 COOLING SYSTEM MAINTENANCE

This task covers a. inspect and b test.

INITIAL SETUP

Tools:

Multimeter
(Appendix B, Section III, Item 5)

Parts/Materials:

N/A

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect air outlet panel (20, Figure 4-38) and cooling fans (2) for obvious damage. Manually operate fan blades to ensure smooth operation.
2. Inspect HI/LO temperature switch (17) for obvious damage. Check that terminal lugs are securely attached and free of corrosion.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.
4. Inspect fan power cords for damage.

TEST

1. Test is limited to (a) a voltage test of the fans (2) and (b) a continuity test of the HI/LO temperature switch (17).
2. Ensure cooling fans (2) operate ON and OFF as dictated by HI/LO temperature switch (17).

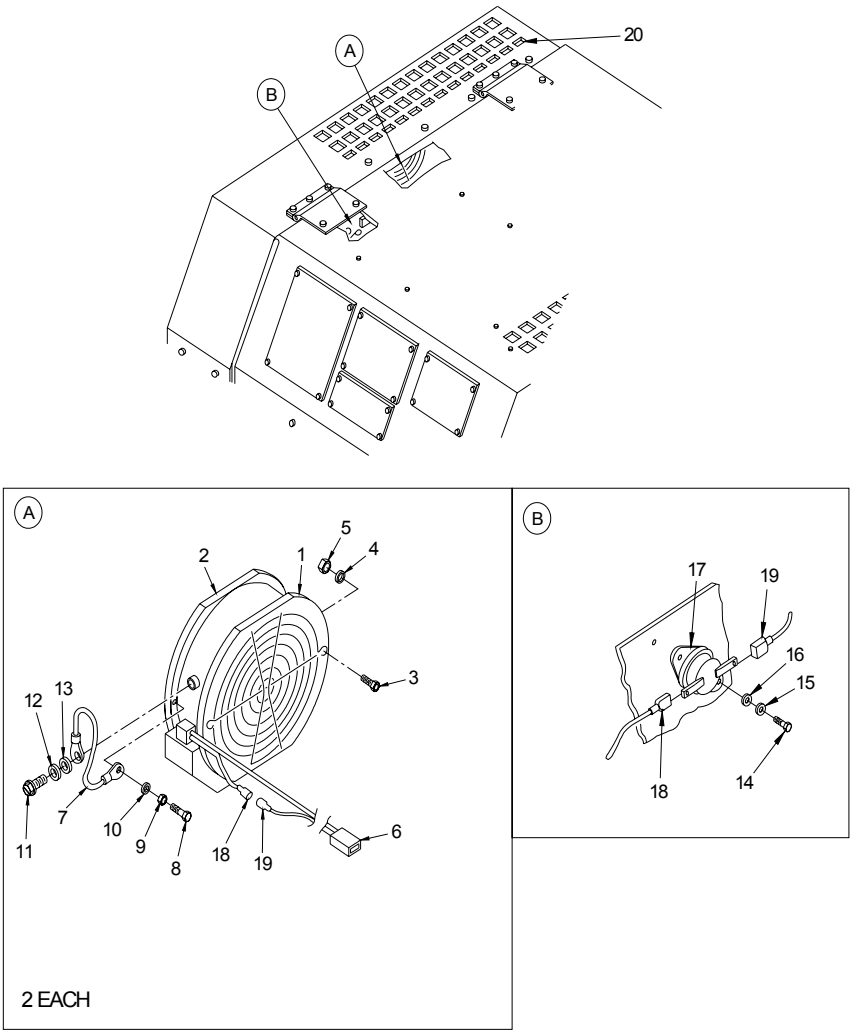


Figure 4-38. Cooling System

4-30 COOLING FAN ASSEMBLY MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

NOTE

Two thermostatically controlled fans are supplied with the generator set. One is attached to the inside of the main access cover, and one is mounted to the right back panel on the inside of the generator set.

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect air outlet panels (1, Figure 4-39) and cooling fans (2) for obvious damage. Manually operate fan blades to ensure smooth operation.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.
4. Inspect fan power cords (6) for damage.

TEST

Perform continuity test of the fans (2), their wires, and connections.

REMOVE

1. Tag and disconnect two electrical wires (18, 19) from B3 high-temperature switch (17) (110° F).
2. Disconnect fan power cord (6) from generator set wiring harness.
3. Remove high-temperature (B3) fan (2) from main access cover by removing screws (8), lockwashers (9), and washers (10).

NOTE

Remove air outlet panel (1) only if fan (2) is to be replaced. Air outlet panel must be retained for use on new fan.

4. Tag and disconnect two electrical wires (18, 19) from B2 low-temperature switch (17) (85° F).
5. Disconnect fan power cord (6) from generator set wiring harness.
6. Remove low-temperature (B2) fan (2) from right back panel of inside generator set by removing two screws (8), lockwashers (9), and washers (10).

NOTE

Remove air outlet panel (1) only if fan (2) is to be replaced. Air outlet panel must be retained for use on new fan.

7. Remove air outlet panel (1) from fan (2) by removing screws (3), washers (4), and nuts (5).
8. Disconnect electrical wire (7) from fan (2) by removing screw (11), lockwasher (12), and washer (13).
9. Remove fan (2).

REPLACE

1. Attach low-temperature fan (B2) (2, Figure 4-39) (85° F) to main access cover and secure using screws (8), lockwashers (9), and washers (10). Connect two electrical wires (7) to low-temperature fan.
2. Attach low-temperature fan (2) to main access cover and secure using screws (8), lockwashers (9), and washers (10). Left-hand screw (8) secures electrical wire (7).
3. Connect fan power cord (6) to generator set wiring harness. Connect wire (7) to fan (2) using screw (11), lockwasher (12), and washer (13).

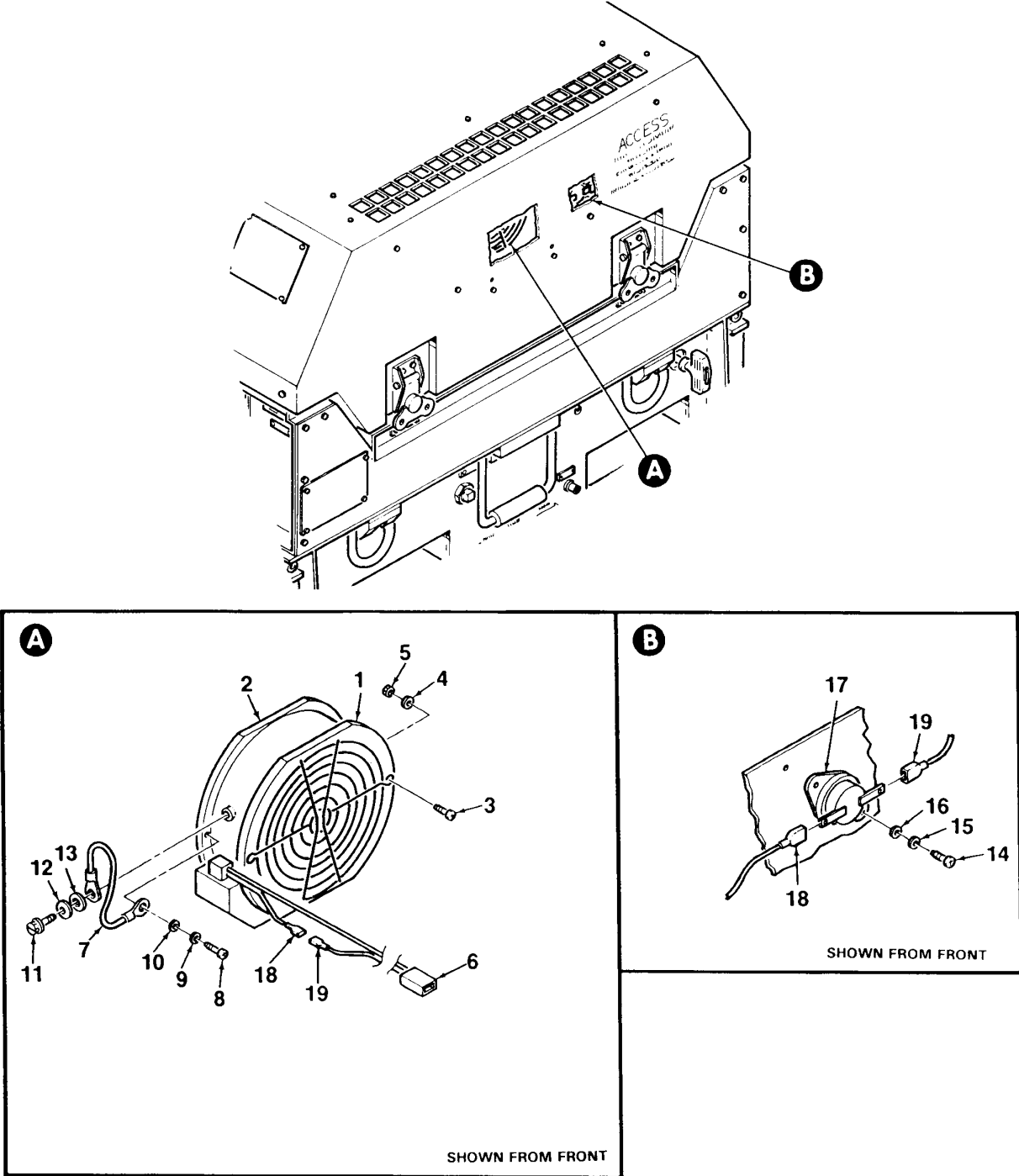


Figure 4-39. Temperature Switch and Cooling Fan

4-31 HI/LO TEMPERATURE SWITCHES MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

NOTE

Each generator set fan has its own
thermostatically controlled switch.

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect temperature switch (1, Figure 4-40) for obvious damage. Check that electrical terminals (2) are securely attached and free of corrosion.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached. Inspect fan power cords (6, Figure 4-39) for damage. Check that electrical connectors are securely attached.

TEST

Perform continuity test on switch.

REMOVE

1. Tag and disconnect two electrical wires (2, 6, Figure 4-40) from B3 high-temperature switch (1) (110° F). Remove B3 high-temperature switch (1) from interior of main access cover by removing screws (5), lockwashers (4), and washers (3).
2. From right-side wall of enclosure, tag and disconnect two electrical wires (6, 2) from B2 low-temperature switch (1), by removing screws (5), lockwashers (4), and washers (3).

REPLACE

1. Attach low-temperature switch (1, Figure 4-40) (85° F) to main access cover and secure using two screws (5), lockwashers (4), and washers (3). Connect electrical wires (2, 6) to B2 low-temperature switch.
2. Attach B3 high-temperature switch (1) (110° F) to main access cover and secure using screws (5), lockwashers (4), and washers (3). Connect electrical wires (2, 6) to B3 high-temperature switch.

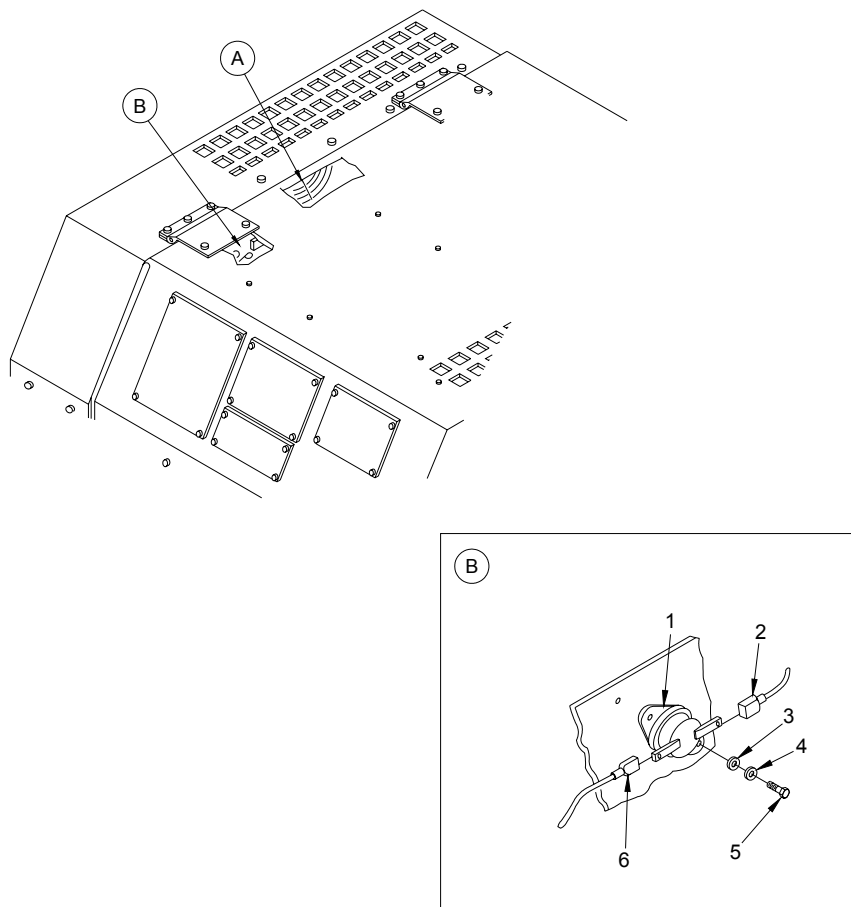


Figure 4-40. HI/LO Temperature Switches

4-32 FUEL SYSTEM ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Basic, Less Power
(Appendix B, Section III, Item 4)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave
Receptacle (para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect fuel level switch (9, Figure 4-41) for corrosion and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure electrical connector plugs are securely attached.

REMOVE

NOTE

Note position of fuel level switch (4, Figure 4-44) and gasket (7) prior to removing from fuel tank (6, Figure 4-41). Take note of hole pattern when removing to ensure proper installation.

1. Disconnect fuel level switch (9, Figure 4-41) electrical plugs (8 and 9, Figure 4-44).
2. Remove any damaged components.

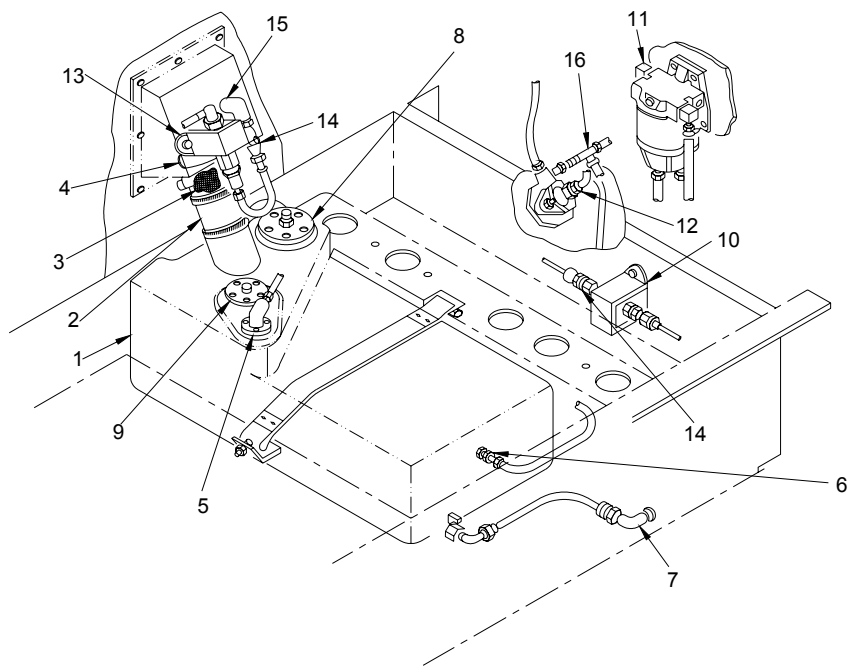
REPLACE

NOTE

If new fuel level switch (9, Figure 4-41) has electrical connector plugs, omit step 1 below.

1. Proceed, as follows, if electrical connector plugs (8 and 9, Figure 4-43) need to be installed on fuel level switch (9, Figure 4-41); otherwise, skip to step 2:
2. Strip 1/8 inch insulation from switch wires (4, Figure 4-44) and crimp male contacts (8) to ends of wires.

3. Insert blue wire into position 1, black wire into position 2, and yellow wire into position 3 of three-circuit connector plug (5).
4. Insert red wires into positions 1 and 2 of two-circuit electrical connector plug (9).
5. Align mounting holes on fuel level switch (4) with holes in gasket (7) prior to mounting into fuel tank (1, Figure 4-41).
6. Replace fuel level switch (4, Figure 4-44) and gasket (7) into fuel tank (1, Figure 4-41). Secure using screws (1, Figure 4-44), lockwashers (2), and washers (3).
7. Connect fuel-level-switch electrical connector plugs (8 and 9).
8. Close main access cover and lock in place.



- | | |
|-----------------------|-------------------------------------|
| 1. Fuel Tank | 9. Fuel Level Switch |
| 2. Filler Neck | 10. Electric Fuel Pump |
| 3. Fuel Strainer | 11. Fuel Filter/Water Separator |
| 4. Fill Cap | 12. Fuel Injection Pump |
| 5. Pick-Up Connection | 13. Auxiliary Fuel Transfer Pump |
| 6. Return Connection | 14. Fuel Strainer |
| 7. Drain Connection | 15. Auxiliary Fuel Input Connection |
| 8. Sending Unit | 16. Tee pipe |

Figure 4-41. Fuel System Assembly

4-33 FUEL TANK STRAINER ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect fuel fill cap (1, Figure 4-42) for obvious damage. Inspect for crossed, stripped, or damaged threads.
2. Inspect fuel strainer assembly (3) for dirt, clogging, and corrosion. Check that all screen material is intact and free from damage. Ensure screen is securely attached to lip.
3. Inspect fuel fill pocket (8) for cracks, dents, or evidence of leakage. Inspect for corrosion.
4. Inspect fill port collar (11) and fuel tank for cracks, dents, or evidence of leakage. Inspect for corrosion.

REMOVE

1. Unlock main access cover latches and lift cover to open.
2. Remove fuel fill cap (1) from fuel fill throat (2). Remove fuel strainer assembly (3).
3. Release fuel cap chain (4) from fill pocket wall by removing screw (5), washer (6), and locknut (7).
4. Loosen clamps (10) and remove fill port collar (11) from fill pocket (8) and fuel tank (9).
5. Disconnect hose (12) from tee (17) by loosening clamp (13).
6. Disconnect hose (14) from fitting (15) by loosening clamp (16). Remove fitting (15), tee (17), and pipe (18) from fill pocket (8).
7. If removal of fill pocket (8) is required, remove auxiliary fuel pump (para. 4-38) and connectors and Frequency Converter (A8) (para. 4-22).
8. Remove fill pocket (8) from enclosure by removing screws (19), lockwashers (20), and washers (21).

REPLACE

1. Apply Teflon tape to threads of all fitting threads prior to installation.
2. Connect pipe (18), tee (17), and fitting (15) to fill pocket (8).
3. Replace collar (11) onto fill pocket (8) and fuel tank (9). Secure by tightening clamps (10).
4. Replace fill pocket (8) using screws (19), lockwashers (20), and washers (21).
5. Secure collar (11) to fill pocket (8) and fuel tank (9) using two clamps (10).
6. Connect hose (14) to fitting (15) and tighten clamp (16). Connect hose (12) to tee (17) and tighten clamp (13).
7. Replace fill cap chain (4) to fill pocket (8) using screw (5), washer (6), and locknut (7).
8. Carefully replace fuel strainer assembly (3) into fuel throat (2), making sure not to damage screen. Screw cap (1) onto throat (2).
9. Replace auxiliary fuel pump (para. 4-38) and fuel connection.
10. Replace Frequency Converter (A8) (para. 4-22).
11. Replace any damaged components.
12. Close main access cover and lock in place using latches.

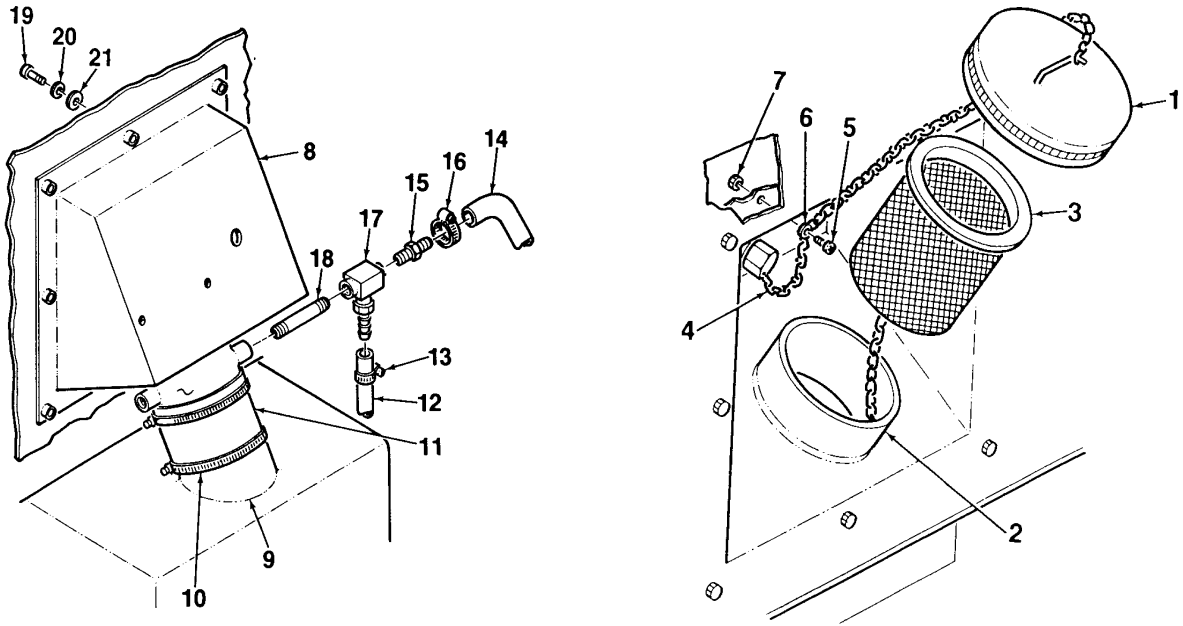


Figure 4-42. Fuel Tank Strainer Assembly

4-34 FUEL-LEVEL ASSEMBLY MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para 4-20)
Cable disconnected for NATO Slave
Receptacle (para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect fuel-level sender (12, Figure 4-43) for corrosion and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage.

TEST

1. Remove fuel-level sender (2) from fuel tank (5).
2. Inspect and ensure float moves up and down freely.
3. Using a multimeter place positive (+) lead on wire #2V18 and negative (-) lead on wire #40A18.
4. Move float up and down. Resistance should vary.

REMOVE

NOTE

Note position of fuel-level sender (2) and gasket (10) prior to removing from fuel tank (5).

CAUTION

The float can come loose. Ensure that you do not disturb the float or release it from its holder.

1. Tag and disconnect electrical wire (1) from fuel-level sender (2) by removing captive nut and washer (3) from stud (4) on fuel-level sender (2).

2. Remove fuel-level sender (2) and gasket (10) from fuel tank (5) by removing screws (6), lockwashers (7), and washers (8). Remove remaining wires (9).

REPLACE

1. Align mounting holes on fuel-level sender (2) with holes in gasket (10) prior to mounting into fuel tank (5).
2. Replace fuel-level sender (2) and gasket (10) on fuel tank (5). Secure sender and wire (9) using screws (6), lockwashers (7), and washers (8).
3. Connect electrical wire (1) to stud (4) on fuel-level sender (2), using nut and captive washer (3).
4. Close main access cover and lock in place.

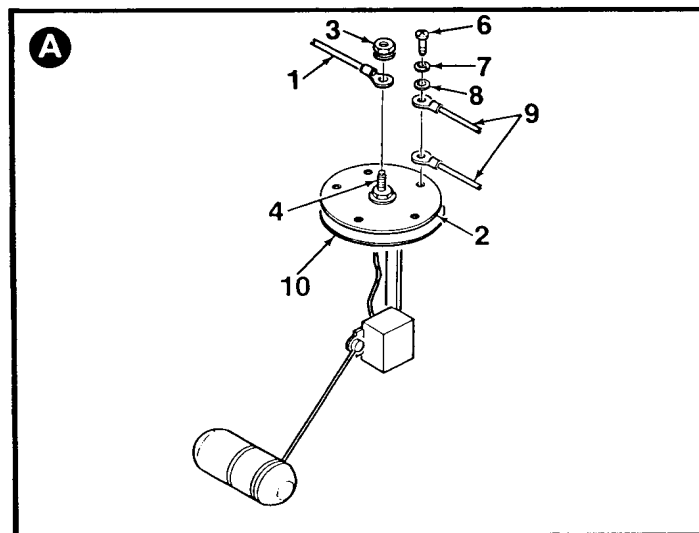
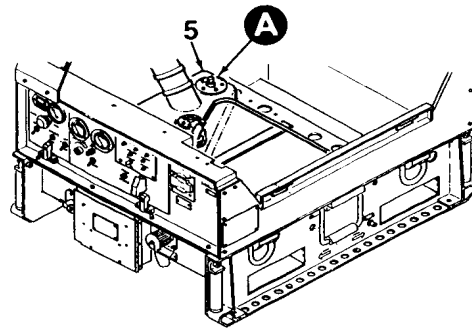


Figure 4-43. Fuel-Level Sender Assembly

4-35 FUEL-LEVEL SWITCH MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave
Receptacle (para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect fuel level switch (4, Figure 4-44) for corrosion and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure electrical connector plugs are securely attached.

NOTE

Note position of fuel-level switch (4) and gasket (7) prior to removing from fuel tank (6). Take note of hole pattern when removing to ensure proper installation.

TEST

1. Remove fuel-level switch (4) from fuel tank.
2. Inspect fuel-level switch (4) and ensure float moves freely.
3. Hold fuel-level switch (4) vertically and ensure float is resting on bottom stops.
4. Check continuity between J8 pins 1 and 2 and between J8 pins 2 and 3.
5. Check continuity between J11 pins 1 and 2.

REMOVE

1. Disconnect fuel-level switch (4) electrical plugs (8 and 9).
2. Remove screws (1), lockwashers (2), and washers (3) from fuel-level switch (4). Remove fuel-level switch (4) and gasket (7) from fuel tank (6).

REPLACE

NOTE

If new fuel-level switch (4) has electrical connector plugs (8 and 9), omit step 1 below.

1. Proceed, as follows, if electrical connector plugs (8 and 9) need to be installed on fuel-level switch (4); otherwise, skip to step 2:
2. Strip 1/8 inch insulation from fuel-level switch (4) wires and crimp male contacts (5) onto ends of wires.
3. Insert blue wire into position 1, black wire into position 2, and yellow wire into position 3 of three-circuit connector plug (5).
4. Insert red wires into positions 1 and 2 of two-circuit electrical connector plug (9).
5. Align mounting holes on fuel-level switch (4) with holes in gasket (7) prior to mounting into fuel tank (6).
6. Replace fuel-level switch (4) and gasket (7) in fuel tank (6). Secure using screws (1), lockwashers (2), and washers (3).
7. Connect electrical connector plugs (8 and 9) of fuel level switch.
8. Close main access cover and lock in place.

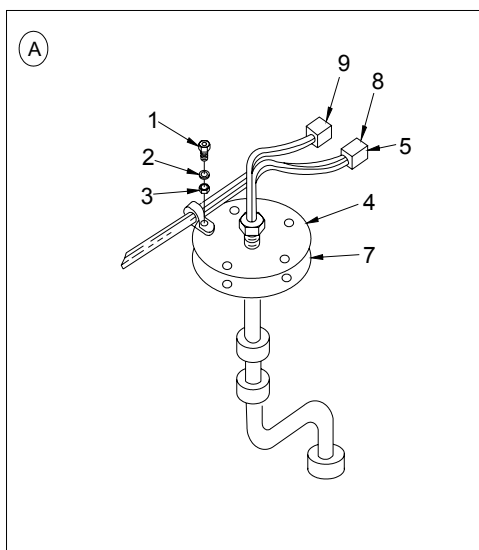
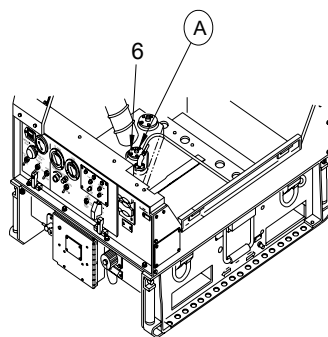


Figure 4-44. Fuel-Level Switch

4-36 FUEL TANK PICKUP TUBE MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect fuel tank pickup tube (9, Figure 4-45).for corrosion and obvious damage.
3. Inspect fuel hose (1) for cuts, cracks, deterioration, or other damage. Check for evidence of leakage. Inspect for crossed, stripped, or damaged threads.

REMOVE

1. Disconnect fuel hose (1) from elbow (2).
2. Remove fuel tank pickup tube (9) and gasket (8) from fuel tank (4) by removing screws (5), lockwashers (6), and washers (7).

REPLACE

1. Replace fuel tank pickup tube (9) and gasket (8) on fuel tank (4). Secure using screws (5), lockwashers (6), and washers (7).
2. Connect fuel hose (1) to elbow (2).
3. Close main access cover and lock in place.

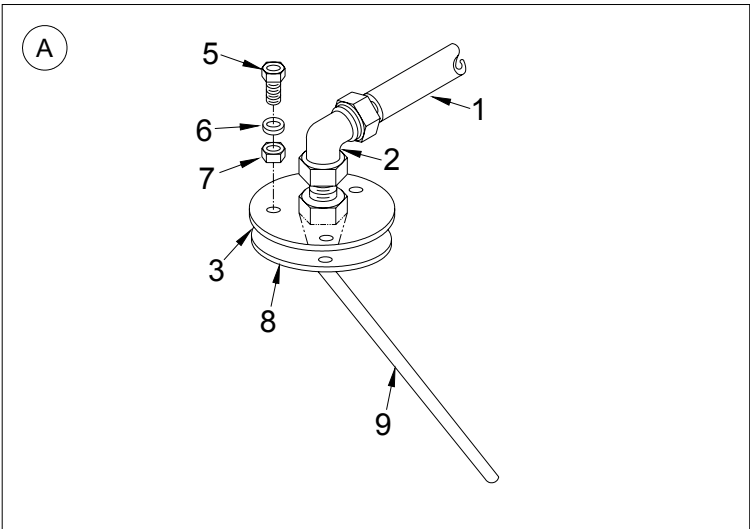
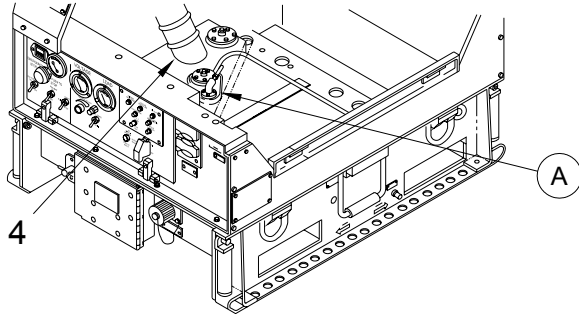


Figure 4-45. Fuel Tank Pickup Tube

4-37 PRIMARY FUEL PUMP MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect primary fuel pump (11, Figure 4-46) for cracks, corrosion, evidence of leakage, and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

TEST

1. Place START/RUN/STOP switch in RUN position.
2. Using a multimeter, check voltage by inserting leads into back side of J12. Voltage reading should be 20-32 VDC.
3. If voltage is present remove and replace primary fuel pump (11).

REMOVE

1. Disconnect fuel pump electrical plug (7).
2. Disconnect fuel hose (1) from fuel filter (2) by loosening clamp (3). Remove filter from fuel pump (11).
3. Disconnect fuel hose (4) from fitting (6) by loosening clamp (5). Remove fitting (6) from fuel pump (11).
4. Remove fuel pump (11) from enclosure assembly wall by removing screws (8), lockwashers (9), and washers (10).

REPLACE

1. Apply Teflon tape to threads of fuel filter (2) and fitting (6). Replace fuel filter (2) and fitting (6) on fuel pump (11).
2. Install fuel pump (11) to wall of enclosure. Secure using screws (8), lockwashers (9), and washers (10).
3. Connect fuel hoses (1) to fuel filter (2) and fitting (6). Tighten clamps (3).
4. Connect fuel pump electrical plug (7).
5. Close main access cover and lock in place using latches.

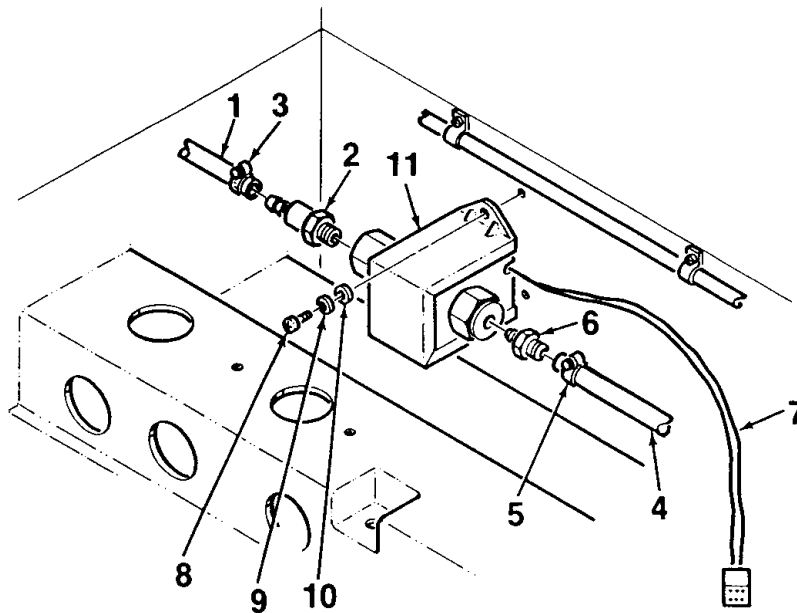


Figure 4-46. Primary Fuel Pump

4-38 AUXILIARY FUEL PUMP MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive (Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Parts/Materials:

Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle (para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect auxiliary fuel pump (7, Figure 4-47) and fuel strainer for cracks, corrosion, evidence of leakage, and obvious damage.
3. Inspect fuel hoses for cuts, cracks, or other damage.
4. Inspect fuel fittings for crossed, stripped, or damaged threads.
5. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

TEST

1. Disconnect J12 from P12 at primary fuel pump (11, Figure 4-46).
2. Disconnect J9 from P9 at auxiliary fuel pump (7, Figure 4-47).
3. Connect J9 to P12 at auxiliary fuel pump, feeding P12 behind engine.
4. Place START/RUN/STOP switch in RUN position.
5. Listen for clicking sound at fuel pump.

REMOVE

1. Disconnect plug to auxiliary fuel pump (7) electrical wires.
2. Disconnect fuel hose (1) from elbow (12) by loosening clamp (2).
3. Disconnect fuel hose (4) from fuel strainer (6) by loosening clamp (5).
4. Remove auxiliary fuel pump (7) from fill pocket (8) by removing screws (9), washers (10), and locknuts (11).

5. Remove elbow (12) from auxiliary fuel pump (7). Remove fuel strainer (6).
6. Disconnect fuel hose (4) from fitting (13) by loosening clamp (5).
7. Remove fitting (13) from elbow (14). Remove cap (17), nut (16), washer (15), and elbow (14) from fill pocket (8).

REPLACE

1. Apply Teflon tape to threads of all fittings prior to installation.
2. Replace elbow (14), washer (15), nut (16), and cap (17) onto fill pocket (8). Connect fitting (13) to elbow (14).
3. Replace elbow (14) and fuel strainer (6) in auxiliary fuel pump (7).
4. Install auxiliary fuel pump (7) to fill pocket (8) and secure using screws (9), washers (10), and locknuts (11).
5. Connect fuel hose (4) to fuel strainer (6) and fitting (13). Secure by tightening clamps (5).
6. Connect fuel hose (1) to elbow (12). Secure by tightening clamp (2).
7. Close main access cover and lock in place using latches.

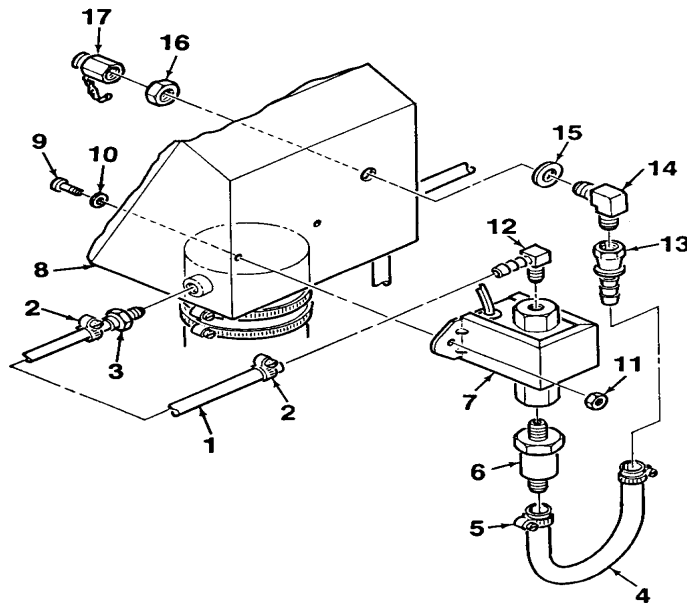


Figure 4-47. Auxiliary Fuel Pump

4-39 FUEL FILTER/WATER SEPARATOR MAINTENANCE

This task covers a. inspect, b remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Sealant, Thread (Appendix F, Item 15)
Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect fuel filter/water separator (5, Figure 4-48) for cracks, corrosion, evidence of leakage, and obvious damage.
3. Inspect fuel hoses for cuts, cracks, or other damage.

REMOVE

1. Open fuel filter/water separator drain valve (13) and drain fluid through hose (4). Close valve (13) and disconnect hose (4).
2. Disconnect fuel hoses (1) from elbows (3) by loosening hose clamps (2).
3. Remove elbows (3) from fuel filter/water separator (5).
4. Remove fuel filter/water separator (5) from bracket (6) by removing screws (7), washers (8), and locknuts (9).
5. If removal of bracket (6) is required, remove air inlet cover (para. 4-43).
6. Remove bracket (6) from enclosure by removing screws (10), washers (11), and locknuts (12).

REPLACE

1. Apply sealant to threads of screws (7, Figure 4-48). Replace fuel filter/water separator (5) on bracket (6) using screws (7), washers (8), and locknuts (9).
2. Apply Teflon tape to threads of elbows (3). Replace elbows (3) in fuel filter/water separator (5).
3. Install bracket (6) to main frame and housing. Secure using screws (10), washers (11), and locknuts (12).
4. Connect fuel hoses (1) to elbows (3) and secure by tightening hose clamps (2).

5. Connect drain hose (4) to fuel filter/water separator (5). Close drain valve (13).
6. Reconnect battery (para 4-19).
7. Close main access cover and lock in place using latches.
8. Place START/RUN/STOP switch in RUN position until fuel bowl is filled. Check for evidence of leaks.

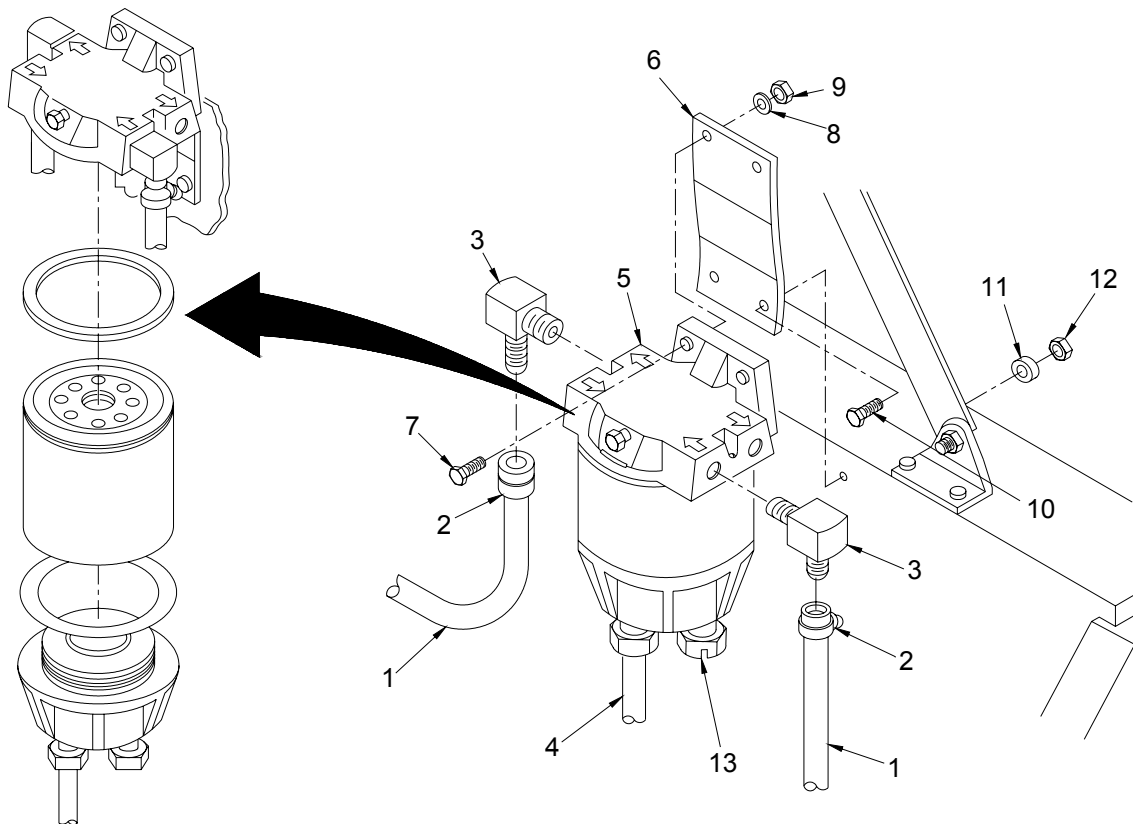


Figure 4-48. Fuel Filter/Water Separator

4-40 AIR CLEANER ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect air filter (5) for dirt and debris.
2. If air filter is dirty, replace.

REMOVE

1. Unlock main access cover latches and lift cover to open.
2. Remove cover (1, Figure 4-49) from air filter housing (2) by removing wing nut (3) and washer (4).
3. Remove air filter (5) from housing (2).

REPLACE

1. Ensure all dirt and debris are removed from housing (2) before replacing air filter element.
2. Replace new filter (5) into housing (2).
3. Replace cover (1) on housing using wing nut (3) and washer (4).
4. Close main access cover and lock in place using latches.

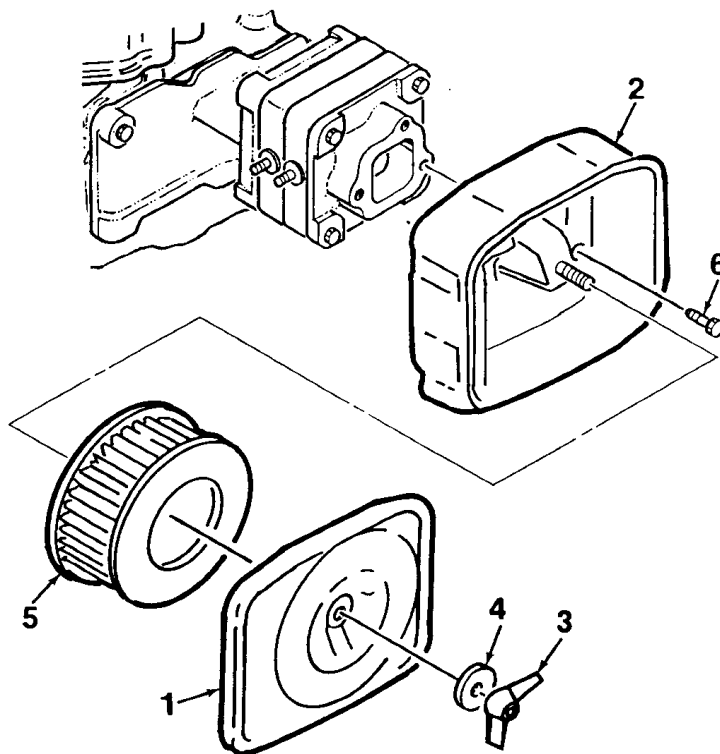


Figure 4-49. Air Cleaner Assembly

4-41 FRAME AND HOUSING ASSEMBLY MAINTENANCE

This task covers a. inspect.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect lifting handles (1, Figure 4-50) for corrosion and obvious damage
2. Inspect lifting handle (1) bracket for cracks or deformation. Replace handle if damaged.
3. Inspect main access cover (2) for corrosion, cracks, dents, scratches, or other obvious damage.
4. Inspect air inlet grate (3) for damage.
5. Inspect main access cover latches (4) for corrosion and damage. Check for smooth operation, free of binding.
6. Inspect main access cover gaskets for cuts, tears, deterioration, or other damage. Ensure insulation is clean, free of dirt, grime, or grease.
7. Inspect main access cover identification and caution plates (5) for legibility and security of attachment.
8. Inspect frame and housing panels (6) for corrosion, cracks, dents, scratches, or other obvious damage. Inspect fuel fill pocket for evidence of fuel leakage.
9. Inspect acoustic insulation for cuts, tears, rips, or deterioration.
10. Inspect for corrosion, dents, grease, grime, general deterioration, and other visible damage. Check for need to repaint.

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MARINE CORPS TM 10155A-OI/1

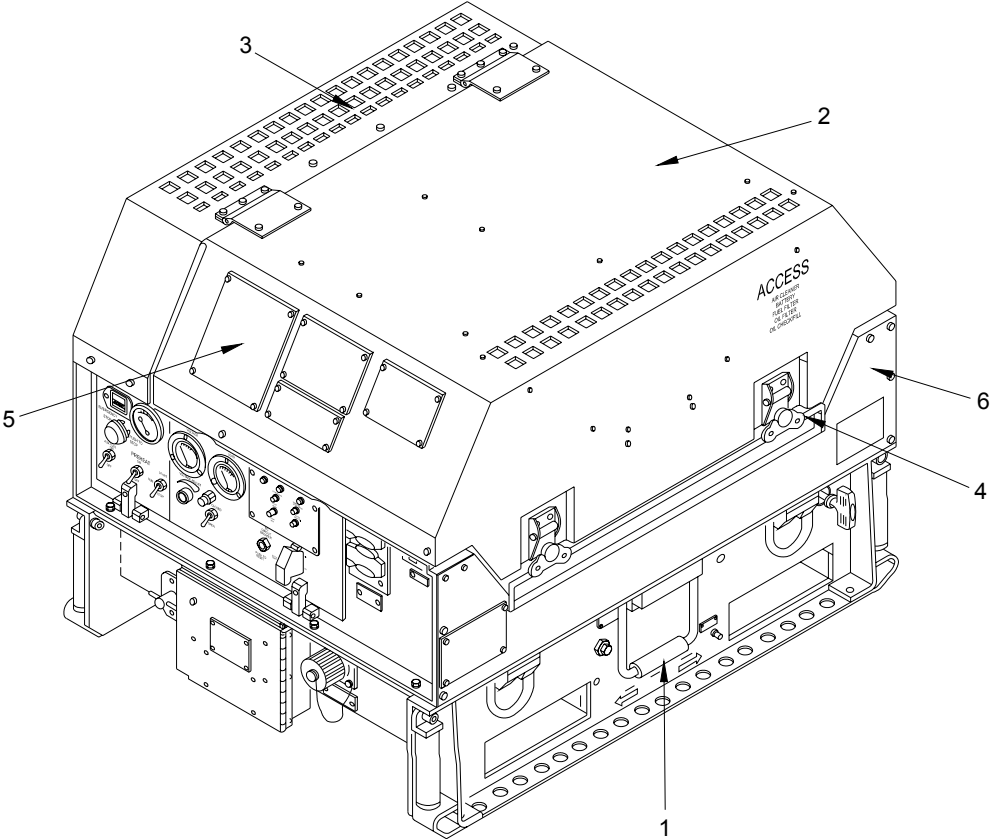


Figure 4-50. Frame and Housing Assembly

4-42 MAIN ACCESS COVER MAINTENANCE

This task covers a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance
and Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect main access cover (1, Figure 4-51) for corrosion, cracks, dents, scratches, or other obvious damage. Inspect air inlet grate for damage.
2. Inspect main access cover latches (2) for corrosion and damage. Check for smooth operation, free of binding.
3. Inspect acoustic insulation for cuts, tears, deterioration, or other damage. Ensure insulation is clean, free of dirt, grime, or grease.
4. Inspect data plates for legibility and security of attachment.

TEST

1. To test for water leakage, unlock main access cover latches (28) and lift main access cover (1) to open.
2. Cover Frequency Converter (A8) (5, Figure 4-17) with plastic.
3. Close main access cover latches (28, Figure 4-51) and lock in place.
4. Spray water (low pressure) over main access cover (1).
5. Wipe exterior of main access cover (1) to remove water.

CAUTION

After powerwashing generator set, allow it to dry out thoroughly. DO NOT START GENERATOR SET UNLESS IT HAS COMPLETELY DRIED AFTER WASHING.

6. Unlock main access cover latches (28) and lift main access cover (1) to open.
7. Inspect for new signs of water.
8. If water is present, dry inside of generator thoroughly and replace gaskets (59).

REMOVE

1. Unlock generator set main access cover latches (2) and lift main access cover (1) to open.
2. Disconnect electrical plug (22) from fan (23). Remove wire clamps (24) by removing screws (25), lockwashers (26), and washers (27).
3. Release two main access cover supports (3) from main access cover (1) by removing screws (4), lockwashers (5), and washers (6).
4. Remove main access cover hinges (7, 11) from main access cover (1) by removing screws (12), washers (13), and locknuts (14).
5. Lift main access cover (1) off generator set and place on a clean work surface for further maintenance.
6. If hinges need replacing, remove hinges (7, 11) from left side panel by removing screws (8), washers (9), and locknuts (10).
7. Remove swivel joints (15) from main access cover supports (3) by removing washers (16) and locknuts (17).
8. If right-side main access cover support (3) must be removed, remove front panel.
9. Remove main access cover supports (3) by removing screws (18), washers (19), and locknuts (20). Remove spacers (21).
10. Remove main access cover latches (28) from main access cover (1) by removing screws (29), washers (30), and locknuts (31).
11. Remove keeper plates (32) from right side panel by removing screws (33), washers (34), and locknuts (35).
12. Remove air outlet panel (36) from underside of main access cover (1) by removing screws (37), washers (38), and locknuts (39).
13. Remove air louver (40) from air outlet panel (36) by removing screws (41), lockwashers (42), and washers (43).
14. Remove laminated cards (44) from document tray (48) by removing screw (45), lockwasher (46), and washer (47).
15. Remove document tray (48) from main access cover (1) by removing screws (49), lockwashers (50), and washers (51). Remove insulation (53).
16. Remove spacers (52) from main access cover (1) by removing screws (54), lockwashers (55), and washers (56).

17. Inspect gaskets and seals for deterioration or other damage.

REPLACE

1. Replace spacers (52) on underside of main access cover (1) using screws (54), lockwashers (55), and washers (56).
2. Replace insulation (53) and document tray (48) over spacers (52). Secure using screws (49), lockwashers (50), and washers (51).
3. Secure laminated cards (44) to document tray (48) using screw (45), lockwasher (46), and washer (47).
4. Replace air louver (40) on air outlet panel (36) using screws (41), lockwashers (42), and washers (43).
5. Replace air outlet panel (36) to underside of main access cover (1) using screws (37), washers (38), and locknuts (39).
6. Replace keeper plates (32) on right-side panel using screws (33), washers (34), and locknuts (35).
7. Replace main access cover latches (28) on main access cover (1) using screws (29), washers (30), and locknuts (31).
8. Replace main access cover supports (3) to skid base using screws (18), washers (19), locknuts (20), and spacers (21).
9. Replace swivel joints (15) on cover supports (3) using washers (16) and locknuts (17).

NOTE

Be sure to check hinge gaskets (57, 58) and cover gasket (59) for evidence of deterioration or damage. Replace as required. The wide or bubble portion of the gasket (59) should be installed toward the hinge side of the cover (1).

10. Secure main access cover hinges (7, 11) to left-side panel using screws (8), washers (9), and locknuts (10).
11. Lift up main access cover (1) and place on generator set, aligning hinge mounting holes. Replace hinges on main access cover (1) using screws (12), washers (13), and nuts (14).
12. Attach main access cover supports (3) to main access cover (1) using screws (4), lockwashers (5), and washers (6).
13. Connect electrical plug (22) to fan (23). Secure electrical wiring to inside of main access cover (1) using wire clamps (24), screws (25), washers (26), and lockwashers (27).
14. Close main access cover (1) and lock latches (2).

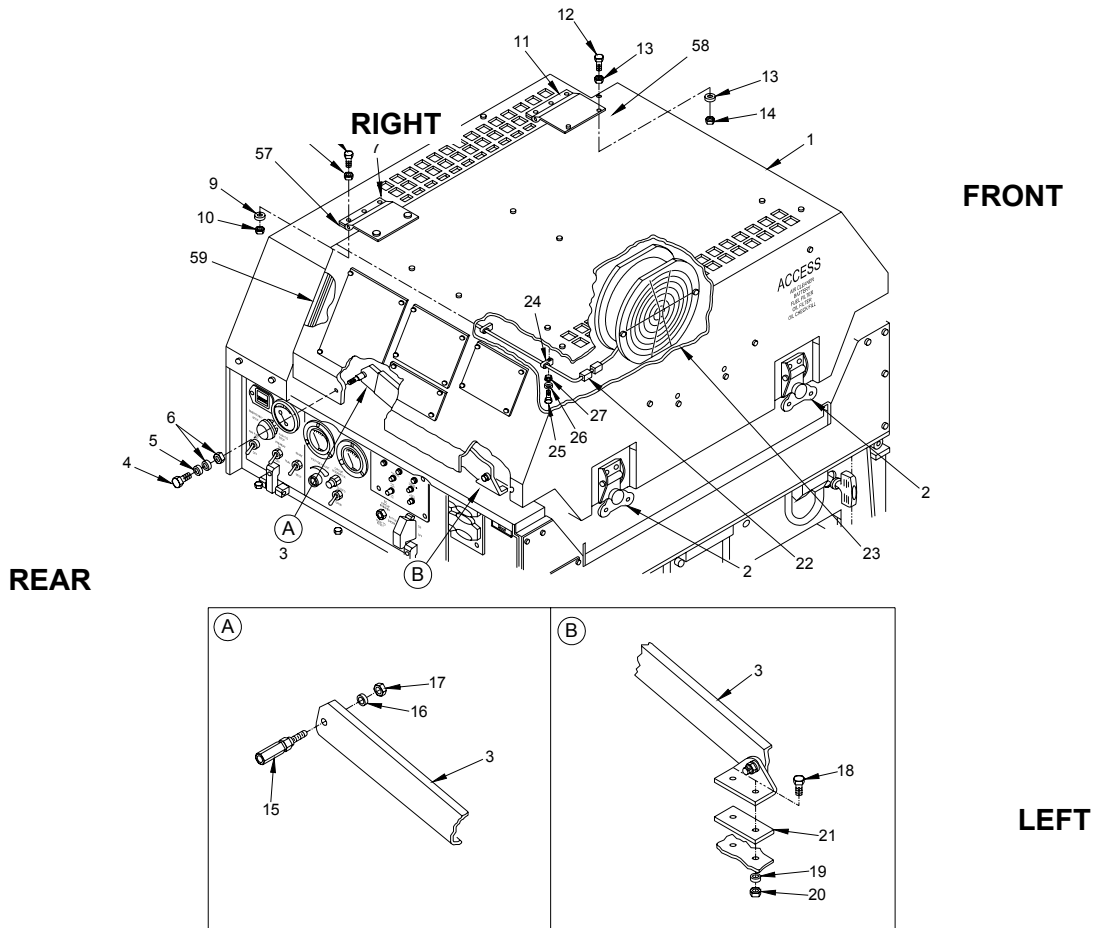


Figure 4-51. Main Access Cover (Sheet 1 of 3)

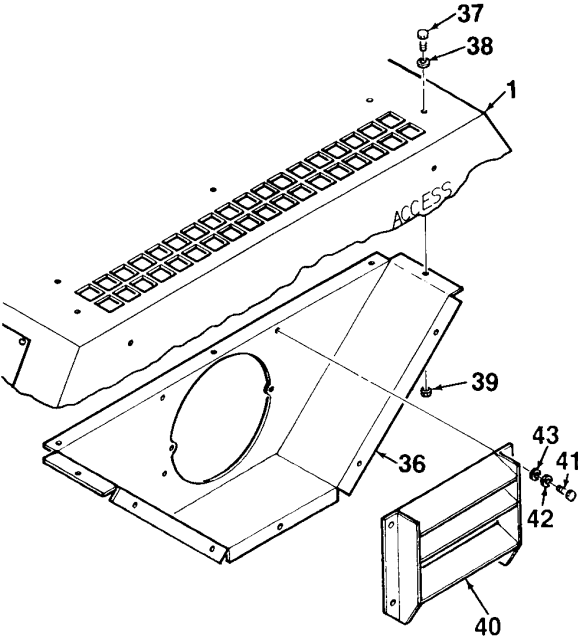
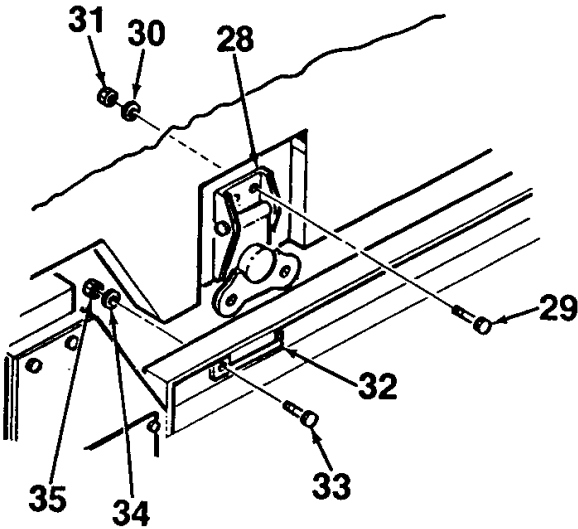


Figure 4-51. Main Access Cover (Sheet 2 of 3)

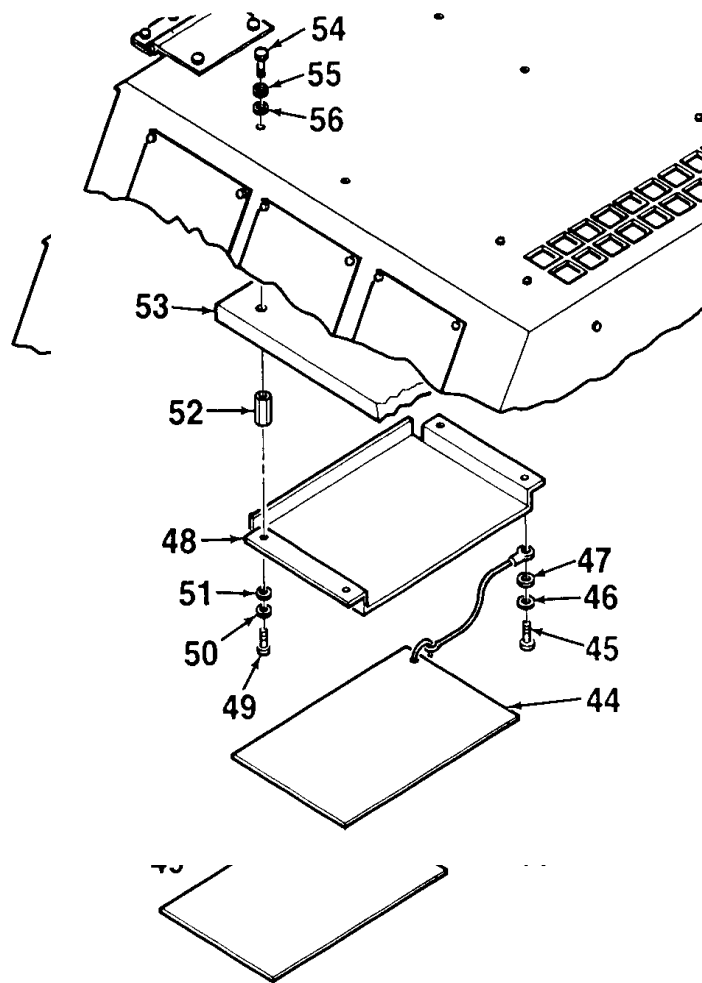


Figure 4-51. Main Access Cover (Sheet 3 of 3)

4-43 FRAME AND HOUSING PANELS MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive (Appendix B, Section III, Item 2)
Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Parts/Materials:

Sealant, RTV (Appendix F, Item 14)

Equipment Condition:

- Generator set shut down (para. 2-9).
 - Battery removed (para. 4-19) and battery cables disconnected (para. 4-20).
 - Cable disconnected for NATO Slave Receptacle (para. 4-45).
 - Control box removed (para. 4-24).
 - Main access cover removed (para. 4-42).
 - HI/LO temperature cooling fan & switch removed (para. 4-30 and 4-31).
 - Fuel fill pocket removed (para. 4-38).
 - Frequency Converter (A8) removed (para. 4-22).
 - DC magnetic contactors removed (para. 4-21).
 - Muffler disengaged from left-side panel (para. 4-54).
 - Fuel pump removed (para. 4-37).
 - Primary fuel line disconnected (para. 4-37).
 - Auxiliary fuel line disconnected (para. 4-38).
-

INSPECT

1. Inspect frame and housing panels (1, Figure 4-52) for corrosion, cracks, dents, scratches, or other obvious damage. Inspect fuel fill pocket (para 4-38) for evidence of fuel leakage.
2. Inspect acoustic insulation (42) for cuts, tears, rips, or deterioration.

REMOVE

1. Remove screws (2), washers (3), and locknuts (4) to release left-side panel (1) from air inlet cover (20).
2. Remove screws (5), washers (6), and locknuts (7). Remove screw (8), washers (9), and locknut (10).
3. Remove screws (11, 12) to release left side panel (1) from skid base.
4. Remove screws (13), washers (14), and locknuts (15) to release left-side panel (1) from bracket (16). Carefully lift left-side panel (1) off skid base.
5. Remove angle bracket (16) from air inlet panel (25) by removing screws (17), washers (18), and locknuts (19).

6. Remove air inlet cover (20) from air inlet panel (25) by removing screws (21), lockwashers (22), and washers (23) from captive nuts (24). Remove acoustic insulation (33).
7. Remove air inlet panel (25) from skid base by removing screws (26), washers (27), and locknuts (28), and by removing screws (29), washers (30), lockwashers (31), and captive nuts (32).
8. Remove air outlet panel (34) from left-side panel (1) by removing screws (35), washers (36), and locknuts (37).
9. Remove louver (38) from air outlet panel (34) by removing screws (39), lockwashers (40), and washers (41).
10. Remove acoustic insulation (42).

REPLACE

1. Replace acoustic insulation (42).
2. Apply RTV sealant to top edge of louver (38). Replace louver (38) on air outlet panel (34) using screws (39), lockwashers (40), and washers (41).
3. Apply RTV sealant to flange of air outlet panel (34) that aligns with left-side panel (1). Replace air outlet panel (34) onto left-side panel (1) using screws (35), washers (36), and locknuts (37).
4. Replace acoustic insulation (33). Replace air inlet cover (20) on air inlet panel (25) using screws (21), lockwashers (22), washers (23), and captive nuts (24).
5. Replace angle bracket (16) on air inlet panel (25) using screws (17), washers (18), and locknuts (19).
6. Replace air inlet panel (25) on skid base using screws (26), washers (27), and locknuts (28), and by using screws (29), washers (30), lockwashers (31), and captive nuts (32).
7. Position left-side panel (1) on skid base. Secure using screws (5), washers (6), and locknuts (7). Replace screw (8), washers (9), and locknut (10). Replace screws (11, 12).
8. Attach left-side panel (1) to air inlet panel (20) using screws (2), washers (3), and locknuts (4).
9. Attach left-side panel (1) to bracket (16) using screws (13), washers (14), and locknuts (15).
10. Replace HI/LO temperature cooling fan and switch (paras. 4-30 and 4-31).
11. Reconnect NATO slave receptacle (para. 4-45).
12. Replace control box. (para. 4-24).
13. Replace main access cover (para. 4-42).
14. Replace auxiliary and primary fuel pumps and fuel lines (paras. 4-38 and 4-37).
15. Replace DC magnetic contactors (para. 4-21).
16. Replace Frequency Converter (A8) (para. 4-22).

- 17. Replace muffler (para. 4-54).
- 18. Replace fuel fill pocket (para. 4-38).

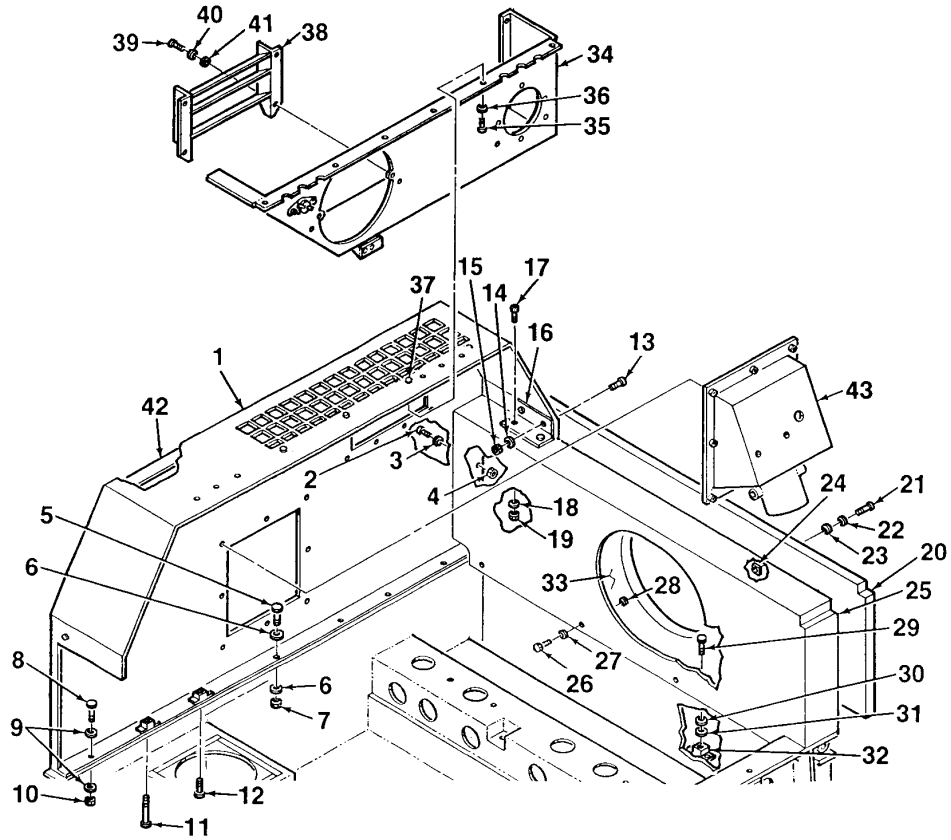


Figure 4-52. Frame and Housing Panels

4-44 FRAME AND LIFTING HANDLES, LIFTING RINGS MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

Parts/Materials:

As required

INSPECT

1. Inspect frame and lifting handles (1 and 6, Figure 4-53) for corrosion and obvious damage.
2. Inspect lifting handle bracket for cracks or deformation. Replace handle if damaged.
3. Inspect frame for dents, cracks, grease, other obvious damage, and the need for paint.

REMOVE

1. Remove lifting handle (1) from generator set frame by removing screw (2), washers (3, 4), and locknut (5).
2. Unlock main access cover latches and lift cover to open.
3. Remove lifting handle (6) from frame by removing screws (7), washers (8), and locknuts (9), and by removing screws (10), washers (11), and locknuts (12).
4. Remove paint chips, grease, and other debris from frame. Prepare for paint, if necessary.

REPLACE

1. Replace lifting handle (6) on frame using screws (7), washers (8), locknuts (9), and by using screws (10), washers (11), and locknuts (12).
2. Replace lifting handle (1) on frame using screw (2), washers (3, 4), and locknut (5).
3. Close main access cover and lock in place using latches.
4. Repaint frame, as necessary, to preserve integrity of system.

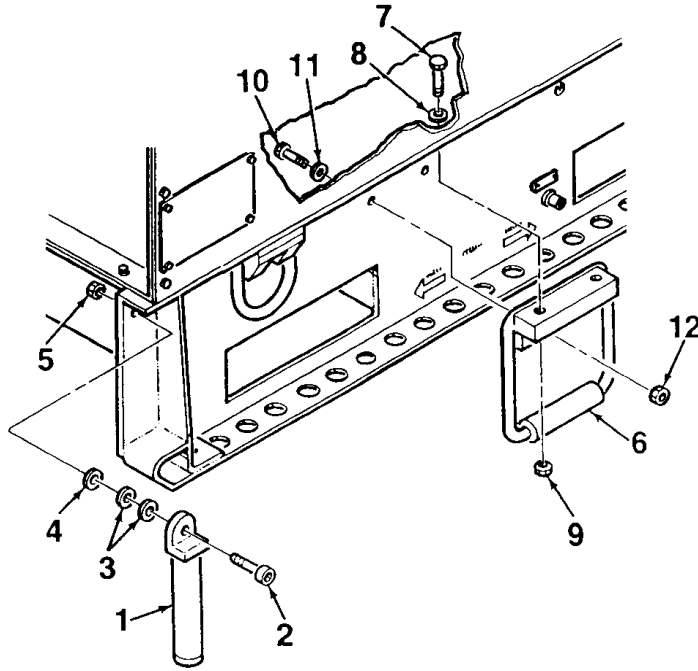


Figure 4-53. Frame and Lifting Handles

4-45 NATO SLAVE RECEPTACLE MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect NATO slave receptacle (1, Figure 4-54) for corrosion, evidence of electrical short, and obvious damage. Check terminal connectors for damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure terminal lugs are securely attached.

REMOVE

1. Tag and disconnect electrical wiring from rear of NATO slave receptacle (1).
2. Remove NATO slave receptacle (1) and attached cap from generator set skid base by removing screws (2), washers (3), and nuts (4).

REPLACE

1. Install NATO slave receptacle (1) and attached cap to skid base. Secure using screws (2), washers (3), and nuts (4).
2. Connect electrical wiring to rear of NATO slave receptacle (1).
3. Replace battery (para. 4-19).
4. Close main access cover and lock in place using latches.

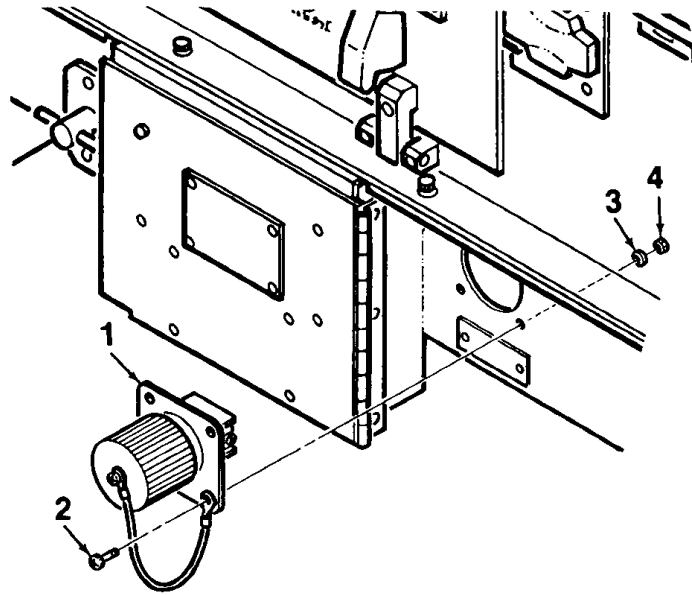


Figure 4-54. NATO Slave Receptacle

4-46 SKID BASE MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

Inspect frame and housing panels for corrosion, cracks, dents, scratches, or other obvious damage.

REMOVE

1. Remove locknuts (1, Figure 4-55), washers (2), and screws (3) from all four sides of skid base assembly (4).
2. Detach skid base assembly (4) from enclosure assembly (5).

REPLACE

1. Reattach skid base assembly (4) to enclosure assembly (5).
2. Replace screws (3), washers (2), and locknuts (1) on all four sides of skid base assembly (4).

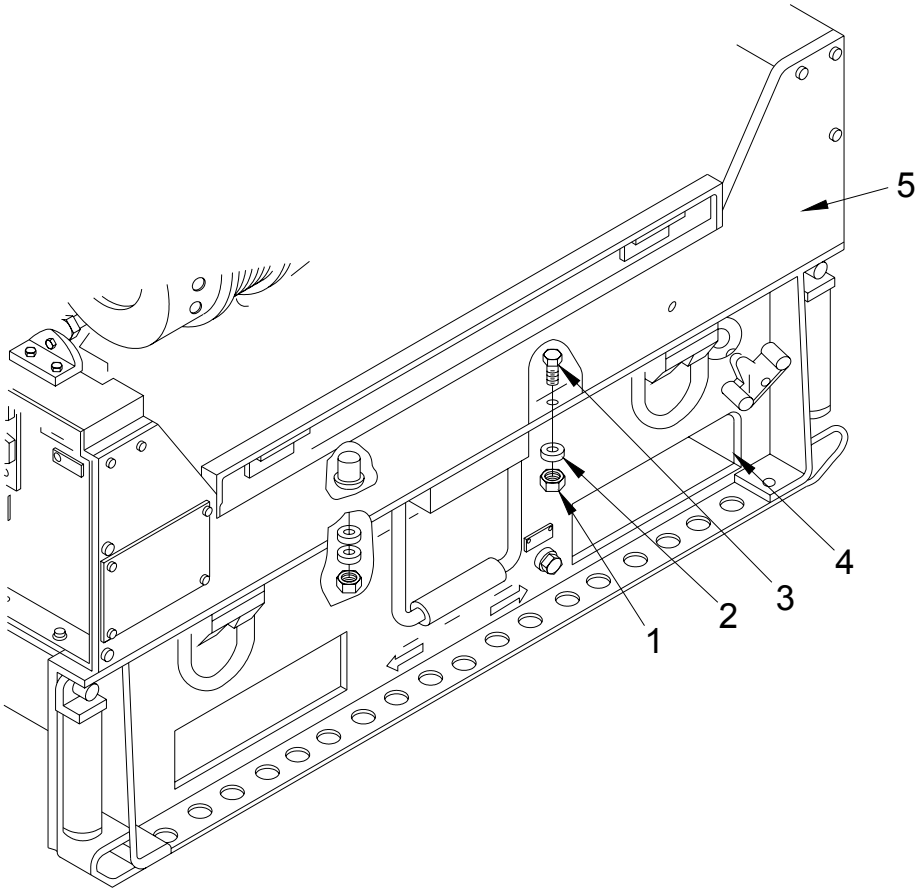


Figure 4-55. Skid Base

4-47 ID PLATES MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

Check ID plates for corrosion, damage, and wear.

REMOVE

NOTE

ID plates are attached to frame by rivets.

1. Remove four rivets (1, Figure 4-56) from ID plate.
2. Remove ID plate.

REPLACE

1. Place new ID plate on generator set, lining up holes for rivets (1).
2. Reattach rivets (1) to ID plates.

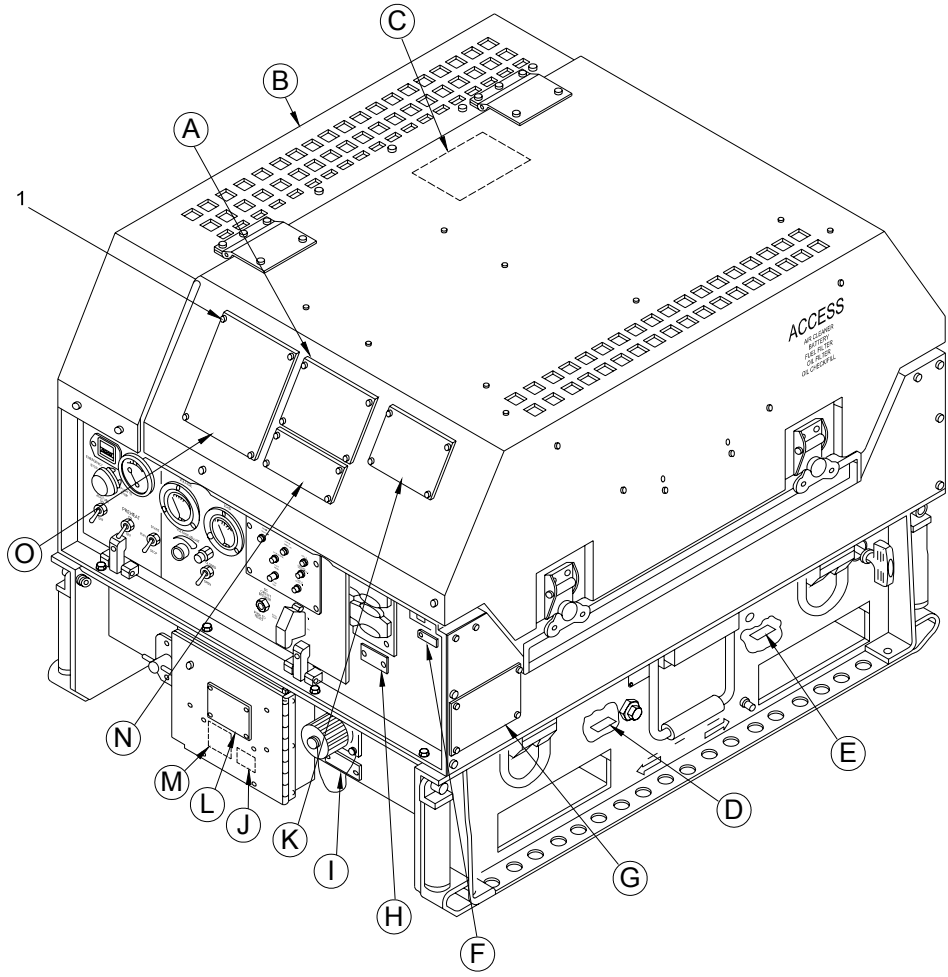


Figure 4-56. ID Plates

4-48 LUBRICATION SYSTEM MAINTENANCE

This task covers a. inspect and b. service.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

Parts/Materials:

As required

INSPECT

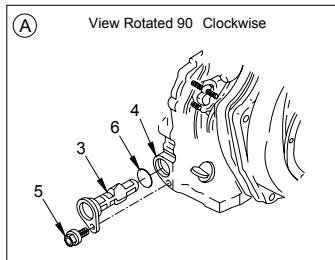
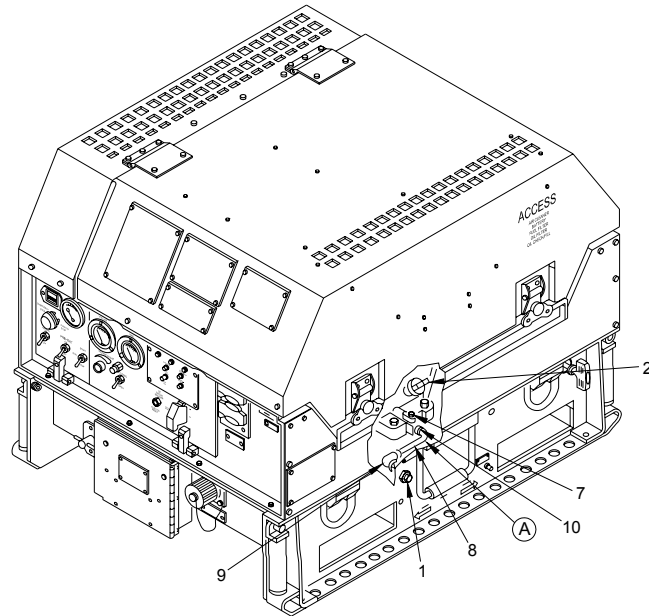
1. Unlock main access cover latches and lift cover to open.
2. Inspect oil drain hose (8, Figure 4-57) for cuts, cracks, deterioration, or other damage. Inspect for evidence of leakage.
3. Inspect drain valve (7) for clogging or obstruction. Ensure valve handle operates smoothly and that valve shuts completely.
4. Inspect elbow (9), fitting (10), and plug (1) for damage. Inspect for crossed, stripped, or damaged threads.
5. Inspect engine temperature switch for corrosion, evidence of electrical short, and obvious damage.
6. Inspect electrical wiring to engine temperature switch for cuts, crimps, bare wire, or other damage. Ensure plug is securely attached.
7. Inspect oil pressure switch for corrosion, evidence of electrical short, and obvious damage.
8. Inspect electrical wiring to oil pressure switch for cuts, crimps, bare wire, or other damage.

SERVICE

Service in accordance with Table 4-1, lubrication procedures (para 4-1).

NOTE

Services include scheduled
as well as preventive maintenance.



- | | |
|--------------------|--------------------|
| 1. oil drain plug | 6. O-ring |
| 2. oil fill cap | 7. oil drain valve |
| 3. oil filter | 8. oil drain hose |
| 4. crankcase cover | 9. elbow |
| 5. bolt | 10. fitting |

Figure 4-57. Lubrication System

4-49 OIL DRAIN ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect oil drain hose (1, Figure 4-58) for cuts, cracks, deterioration, or other damage. Inspect for evidence of leakage.
3. Inspect drain valve (4) for clogging or obstruction. Ensure drain valve handle operates smoothly and that valve shuts completely.
4. Inspect elbow (2), fitting, and plug for damage. Inspect for crossed, stripped, or damaged threads.

REMOVE

1. Confirm drain valve (4) is closed (valve handle perpendicular to valve).
2. Disconnect hose (1) from drain valve (4) and adapter (5), loosening hose clamps (3). Remove adapter (5) from elbow (2).

NOTE

Nut on outside of skid base, adjacent to plug,
is welded in place and not removable.

3. Unscrew plug (8) from elbow (2). Release chain (9) from skid base by removing screw (10), washers (11), and locknut (12). Remove chain (9) from plug only if replacement is required.
4. Remove elbow (2) from skid base by removing nut (6) and star washer (7).
5. If removal of drain valve (4) is required, engine must be removed from generator set. See Chapter 5, Direct Support maintenance.

REPLACE

1. Replace elbow (2) on skid base and secure using nut (6) and star washer (7). Replace plug (8) and secure chain (9) to skid base using screw (10), washers (11), and locknut (12).
2. Replace adapter (5) onto elbow (2).
3. Connect hose (1) to drain valve (4) and adapter (5) and tighten hose clamps (3).

4. Close drain valve (4) by turning handle perpendicular to valve.
5. Service engine oil (para. 4-1).

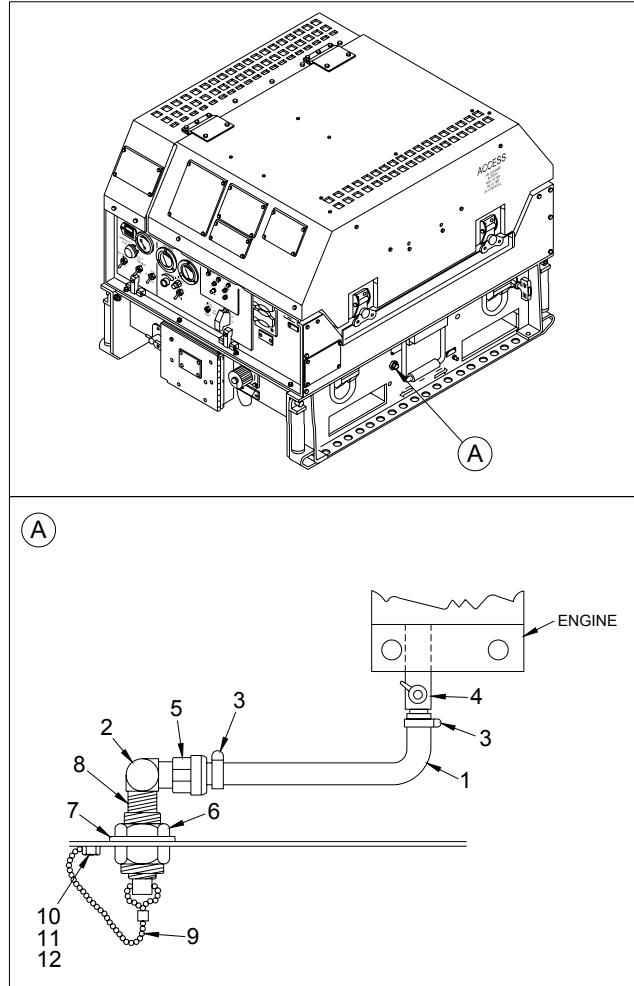


Figure 4-58. Oil Drain Assembly

4-50 OIL PRESSURE SWITCH MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect oil pressure switch (2, Figure 4-59) for corrosion, evidence of electrical short, and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage.

REMOVE

NOTE

It is not necessary to drain oil if a suitable plug is used to plug port when oil pressure switch (2) is removed. If required, drain oil (see para 4-1 and Table 4-2).

1. Tag and disconnect electrical wires (1) from pressure switch (2).
2. Remove oil pressure switch (2) from engine crankcase.

REPLACE

CAUTION

Oil pressure switch (2) is fragile. Do not overtighten. Apply light pressure while tightening to prevent switch from breaking off in engine.

1. Apply Teflon tape to threads of oil pressure switch (2). Replace oil pressure switch (2) in engine crankcase.
2. Connect electrical wires (1) to oil pressure switch (2).
3. Service engine oil (see para 4-1 and Table 4-2), as required.

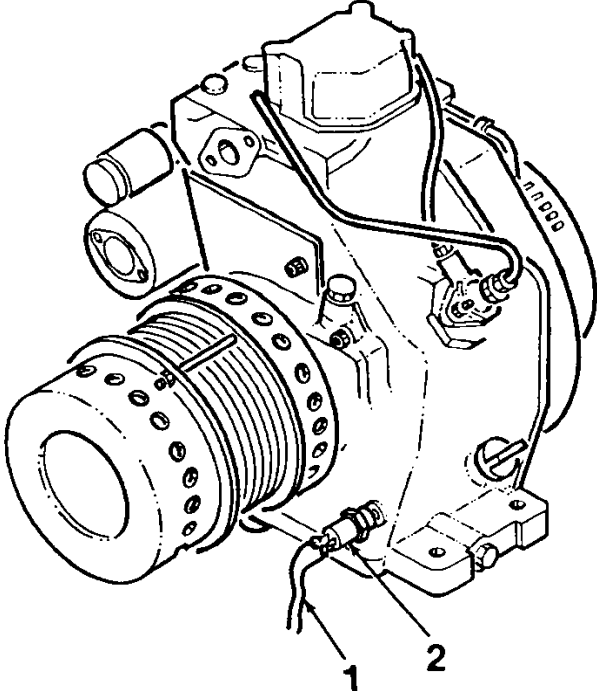


Figure 4-59. Oil Pressure Switch

4-51 ENGINE OIL TEMPERATURE SWITCH MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Tape, Teflon (Appendix F, Item 19)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect engine oil temperature switch (2, Figure 4-60) for corrosion, evidence of electrical short, and obvious damage.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure plug is securely attached.

REMOVE

1. Disconnect electrical plug (1) from engine oil temperature switch (2).
2. Using a 1-inch, open-end wrench, remove engine oil temperature switch (2) from engine crankcase.

REPLACE

CAUTION

Oil temperature switch (2) is fragile. Do not overtighten. Apply light pressure while tightening to prevent switch from breaking off in engine.

1. Apply Teflon tape to threads of engine oil temperature switch (2). Replace engine oil temperature switch (2) into engine crankcase.
2. Connect electrical plug (1) to engine oil temperature switch (2).
3. Check engine oil in accordance with para 4-1 and Table 4-2.

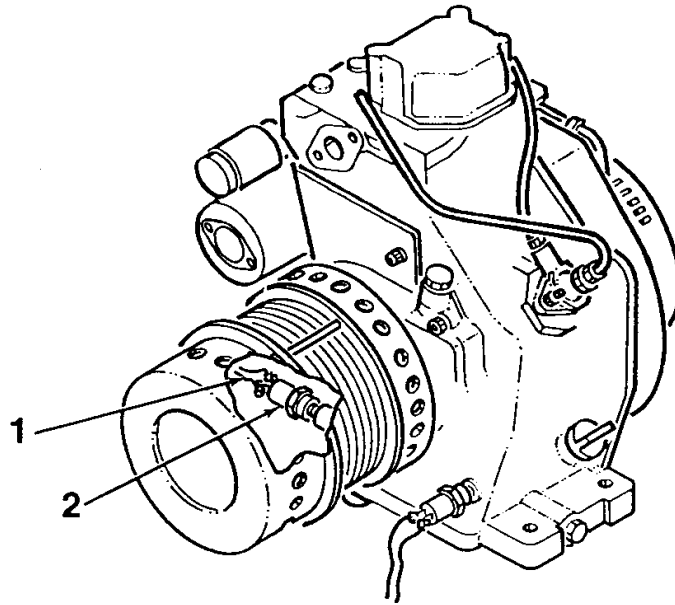


Figure 4-60. Engine Oil Temperature Switch

4-52 OIL FILTER MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

Oil, Engine (Appendix F, Items 1-6)
Cloth, Cleaning (Appendix F, Item 8)

Equipment Condition:

Generator set shut down (para. 2-9)
Engine oil drained (para. 4-1)

INSPECT

1. Inspect oil filter (1, Figure 4-61) for obvious damage.
2. Check oil filter s mesh material for damage.
3. Clean out clogging dirt and residue.
4. Inspect area around oil filter port for evidence of leakage. Using a clean rag, clean area of dirt and accumulated grime.

REMOVE

1. Remove oil filter (1) from crankcase cover (2) by removing bolt (3).
2. Remove and discard O-ring (4).

REPLACE

1. Apply a light coat of lubricating oil to new O-ring (4) and install O-ring onto oil filter (1).
2. Slide oil filter (1) into crankcase (2) and secure using bolt (3).

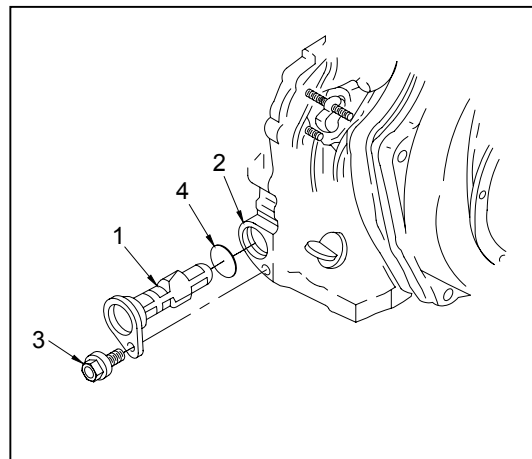


Figure 4-61. Oil Filter

4-53 EXHAUST SYSTEM ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanics Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect muffler bracket, and check for loose bolts and screws.
3. Inspect muffler (1, Figure 4-62), bellows (2), duct (3), and flanges (4) for cracks, dents, corrosion, and obvious damage.
4. Check for holes or evidence of deterioration in muffler (1) and with gaskets (5).

REMOVE

See paras. 4-54, 4-55, and 4-56 for specific tasks in removing subcomponents.

REPLACE

See paras. 4-54, 4-55, and 4-56 for specific tasks in removing subcomponents.

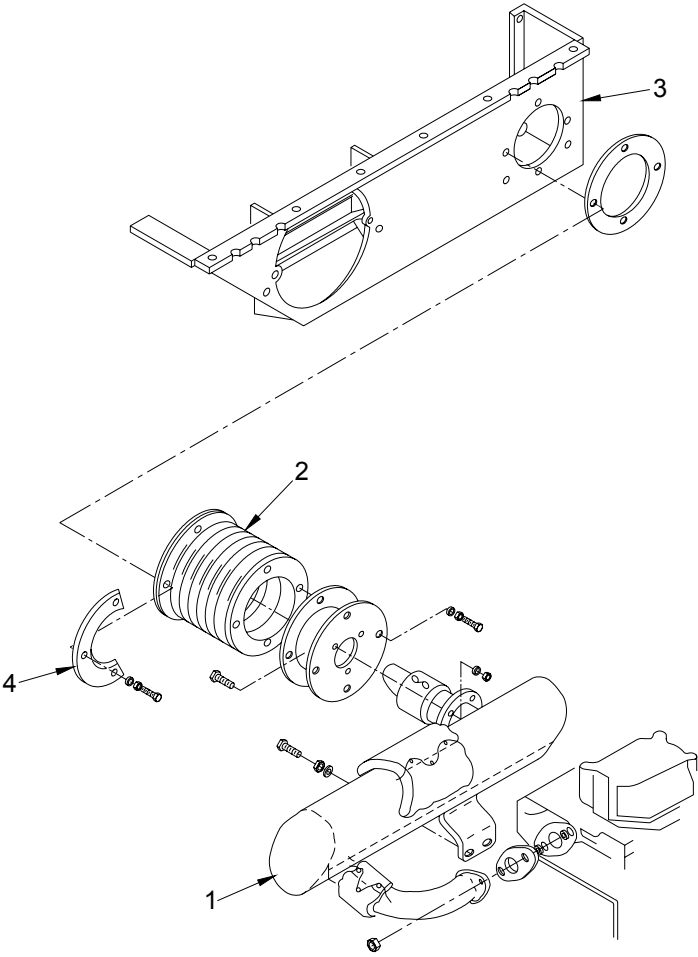


Figure 4-62. Exhaust System Assembly

4-54 MUFFLER ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9) and cool
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect muffler (27, Figure 4-63) for cracks, dents, corrosion, and obvious damage.
3. Check for holes or evidence of deterioration in muffler (27) and with gaskets (21).
4. Check for loose bolts and screws.
5. Check muffler mounting bolts (23) to ensure they are tightened securely.

NOTE

Vibrations can loosen muffler mounting hardware. With loose mounting hardware vibrations will crack exhaust pipe. A crack in the pipe or muffler could lead to an exhaust system failure. If muffler mounting hardware loosens, tighten it. If mounting bolts (23) have suffered thread damage replace them. Some muffler mounting hardware is underneath the muffler, on the back of the engine, and is hard to see.

6. Inspect muffler (27) for flow-through and carbon accumulation.

REMOVE

1. Remove access plate (1) from left-side panel (2) by removing screws (3), lockwashers (4), and washers (5).
2. Remove deflector panel (6) from left-side panel (2) by removing screws (7), lockwashers (8), and washers (9).
3. Remove mounting plate (10) from left-side panel (2) by removing four screws (11), lockwashers (12), and washers (13).
4. Remove thermal wrap (14) from muffler (27) by removing lockwire. Remove nuts (15) from cylinder head studs (16).

5. Remove screws (17), lockwashers (18), and washers (19). Remove bellows (20) and gasket (21) from flange (22).
6. Remove screws (23), lockwashers (24), washers (25), muffler (27), and gasket (26) from engine block.
7. Remove flange (22) from muffler (27) by removing screws (28), lockwashers (29), and nuts (30).
8. Remove thermal wrap (31) and thermal blanket (32) from muffler (27) by removing lockwire.
9. Remove bellows (20), flange (33), and gasket (37) from duct (38) by removing screws (34), lockwashers (35), and washers (36).

REPLACE

1. Replace bellows (20), flange (33), and gasket (37) on duct (38) using screws (34), lockwashers (35), and washers (36).
2. Replace flange (22) on muffler (27) using screws (28), lockwashers (29), and nuts (30).
3. Install muffler (27) and gasket (26) to engine block and secure using screws (23), lockwashers (24), and washers (25).
4. Replace thermal wrap (31) and thermal blanket (32) on muffler (27). Secure using lockwire.
5. Replace bellows (20) and gasket (21) on flange (22). Replace screws (17), lockwashers (18), and washers (19).
6. Replace nuts (15) on cylinder head studs (16). Torque nuts to 14 to 16 ft-lbs. Replace thermal wrap (14) and secure using lockwire.
7. Replace mounting plate (10) on left-side panel (2) using screws (11), lockwashers (12), and washers (13).
8. Replace deflector panel (6) on left-side panel (2) using screws (7), lockwashers (8), and washers (9).
9. Replace access plate (1) on left-side panel (2) using screws (3), lockwashers (4), and washers (5).
10. Close main access cover and lock in place using latches.

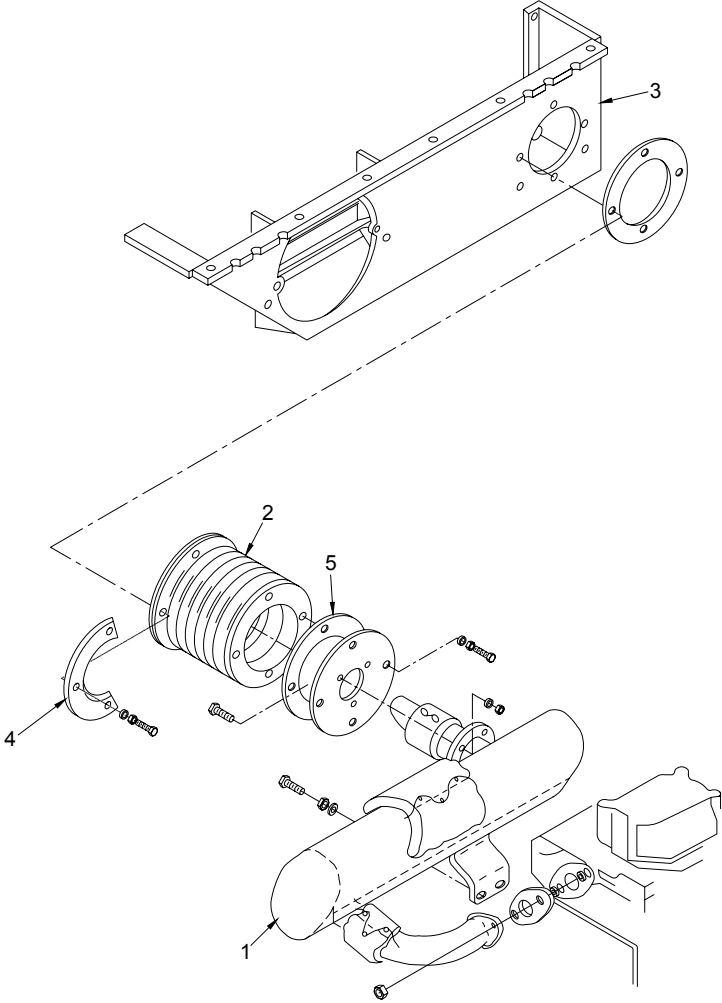


Figure 4-63. Muffler Assembly

4-55 BELLOWS ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect bellows (20, Figure 4-64) for cracks, dents, corrosion, and obvious damage.
3. Check for holes or evidence of deterioration in bellows (20) and with gaskets (21).
4. Check for loose bolts and screws.

REMOVE

1. Remove access plate (1) from left-side panel (2) by removing screws (3), lockwashers (4), and washers (5).
2. Remove deflector panel (6) from left-side panel (2) by removing screws (7), lockwashers (8), and washers (9).
3. Remove mounting plate (10) from left-side panel (2) by removing screws (11), lockwashers (12), and washers (13).
4. Remove screws (17), lockwashers (18), and washers (19). Remove bellows (20) and gasket (21) from flange (22).
5. Remove screws (23), lockwashers (24), washers (25), muffler (27), and gasket (26) from engine block. Remove flange (22) from muffler (27) by removing screws (28), lockwashers (29), and nuts (30).
6. Remove bellows (20), flange (33), and gasket (37) from duct (38) by removing screws (34), lockwashers (35), and washers (36).

REPLACE

1. Replace bellows (20), flange (33), and gasket (37) on duct (38) using screws (34), lockwashers (35), and washers (36).
2. Replace flange (22) on muffler (27) using screws (28), lockwashers (29), and nuts (30).

3. Install muffler (27) and gasket (26) on engine block and secure using screws (23), lockwashers (24), and washers (25).
4. Replace bellows (20) and gasket (21) on flange (22). Replace screws (17), lockwashers (18), and washers (19).
5. Replace mounting plate (10) on left-side panel (2) using screws (11), lockwashers (12), and washers (13).
6. Replace deflector panel (6) on left-side panel (2) using screws (7), lockwashers (8), and washers (9).
7. Replace access plate (1) on left-side panel (2) using screws (3), lockwashers (4), and washers (5).
8. Close main access cover and lock in place using latches.

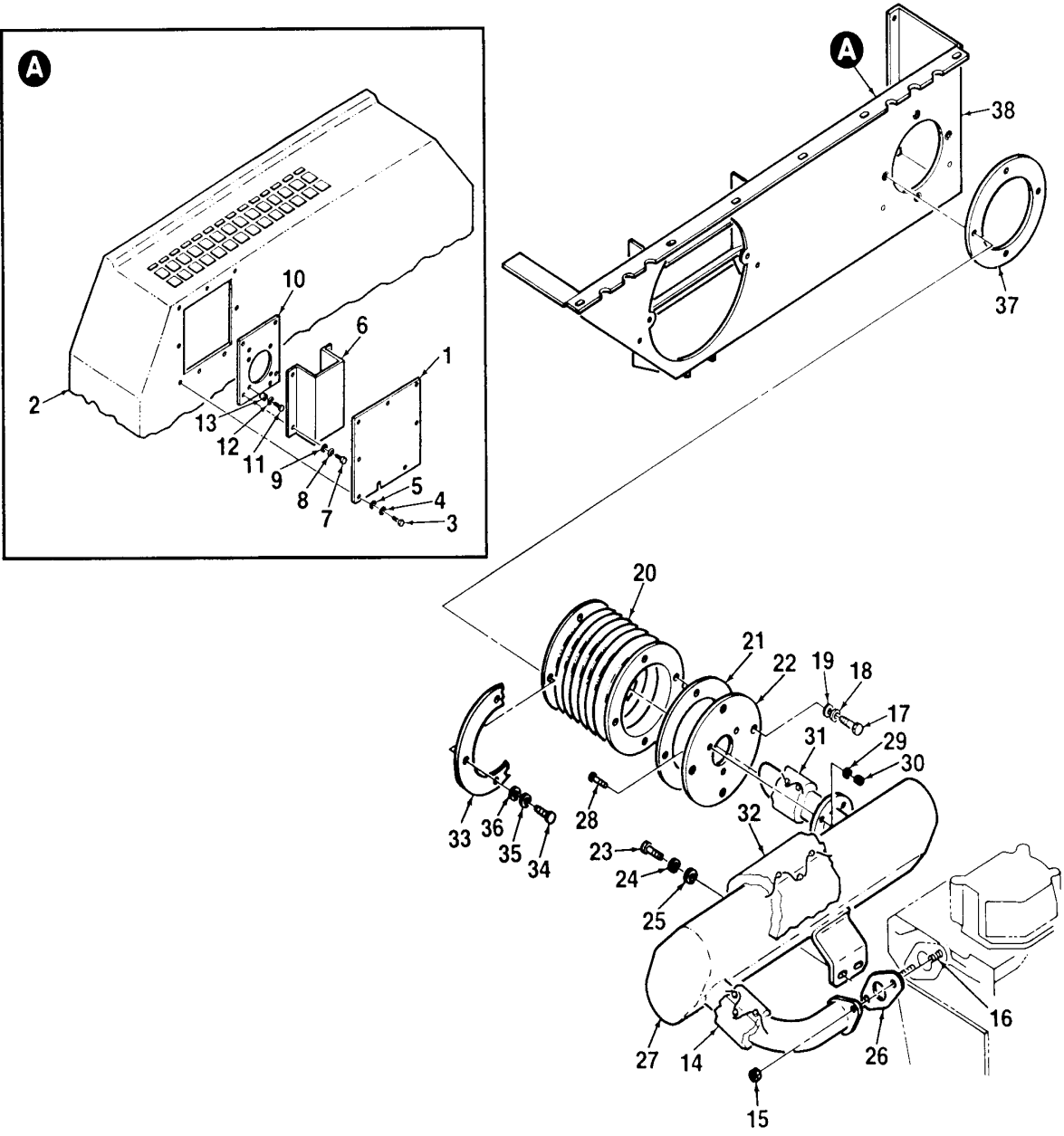


Figure 4-64. Bellows Assembly

4-56 DUCT ASSEMBLY MAINTENANCE

This task covers a. inspect, b. remove, and c. replace.

INITIAL SETUP

Tools:

Tool Kit, General Mechanic s Automotive
(Appendix B, Section III, Item 2)

Parts/Materials:

As required

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Unlock main access cover latches and lift cover to open.
2. Inspect duct (38, Figure 4-65) for cracks, dents, corrosion, and obvious damage .
3. Check for holes or evidence of deterioration in duct assembly (38), mounting plate (10), deflector panel (6), and access plate (1). Also check flange gaskets.
4. Check for loose bolts and screws.

REMOVE

1. Remove access plate (1) from left-side panel (2) by removing screws (3), lockwashers (4), and washers (5).
2. Remove deflector panel (6) from left-side panel (2) by removing screws (7), lockwashers (8), and washers (9).
3. Remove mounting plate (10) from left-side panel (2) by removing screws (11), lockwashers (12), and washers (13).
4. Remove screws (17), lockwashers (18), and washers (19). Remove bellows (20) and gasket (21) from flange (22).
5. Remove screws (23), lockwashers (24), washers (25), muffler (27), and gasket (26) from engine block.
6. Remove flange (22) from muffler (27) by removing screws (28), lockwashers (29), and nuts (30).
7. Remove bellows (20), flange (33), and gasket (37) from duct (38) by removing screws (34), lockwashers (35), and washers (36).

REPLACE

1. Replace bellows (20), flange (33), and gasket (37) on duct (38) using screws (34), lockwashers (35), and washers (36).
2. Replace flange (22) on muffler (27) using screws (28), lockwashers (29), and nuts (30).
3. Install muffler (27) and gasket (26) on engine block and secure using screws (23), lockwashers (24), and washers (25).
4. Replace bellows (20) and gasket (21) on flange (22). Replace screws (17), lockwashers (18), and washers (19).
5. Replace mounting plate (10) on left-side panel (2) using screws (11), lockwashers (12), and washers (13).
6. Replace deflector panel (6) on left-side panel (2) using screws (7), lockwashers (8), and washers (9).
7. Replace access plate (1) on left-side panel (2) using screws (3), lockwashers (4), and washers (5).
8. Close main access cover and lock in place using latches.

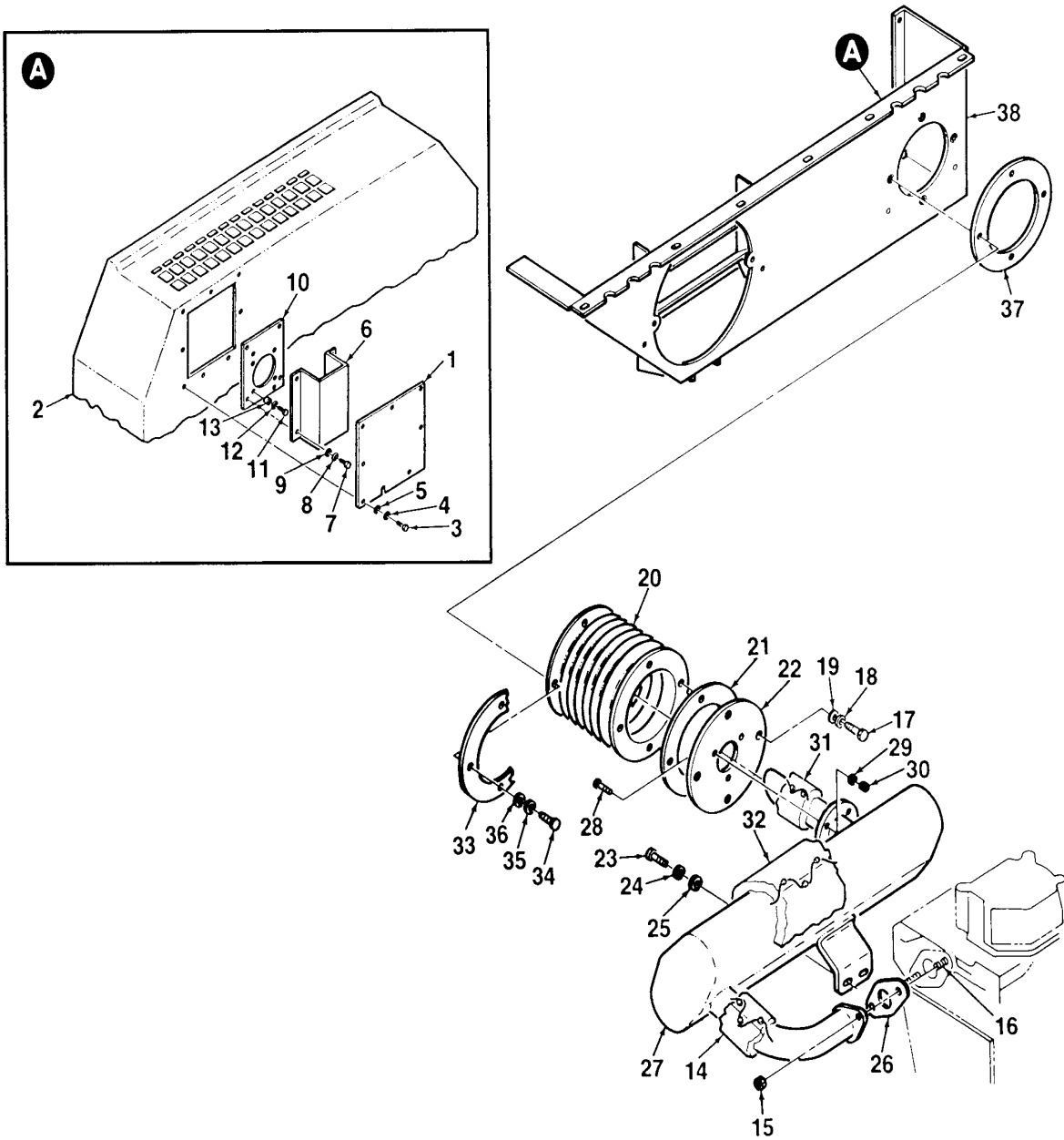


Figure 4-65. Duct Assembly

Section VII. PREPARATION FOR SHIPMENT AND STORAGE

4-57 GENERAL

This section provides instructions for short-term and intermediate-term storage or shipment of the generator set.

4-58 ADMINISTRATIVE STORAGE

Administrative storage shall be in accordance with AR 750-1.

4-59 SHORT-TERM STORAGE (30 days or fewer)

CAUTION

Do not stand on or store heavy objects on generator set.

1. Check engine oil level and service, as required.
2. Conduct a general inspection of unit to ensure all components are present and securely fastened. Close main access cover and lock in position.
3. Stow generator set on level surface in an area protected from the elements. Cover, as required, depending upon weather conditions.

4-60 INTERMEDIATE-TERM STORAGE (more than 30 days)

CAUTION

Do not stand on or store heavy objects on generator set.

1. Start generator set and operate for 10 minutes at full speed to bring engine to normal operating temperature. Shut down generator set.
2. Drain engine oil (para 4-1 and Table 4-2) Fill crankcase to proper level with preservative oil, MIL-L-21260 (Appendix F, Item 17).
3. Close air intake and exhaust openings with moisture-proof tape, PPP-T-60 (Appendix F, Item 18).
4. Stow generator set on level surface in area protected from the elements. Cover, as required, depending on weather conditions.
5. Before returning generator set to service, drain preservative oil and service engine.

4-61 SHIPMENT

1. Close air intake and exhaust openings with moisture-proof tape, PPP-T-60 (Appendix F, Item 18).
2. Attach to generator set all forms, tags, and records applicable to the unit.
3. Load generator set onto carrier and attach shipping tiedowns.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

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**Section I. REPAIR PARTS; TOOLS; SPECIAL TOOLS;
TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE);
AND SUPPORT EQUIPMENT**

5-1 COMMON TOOLS AND EQUIPMENT

- a. For authorized common tools and equipment, see the Modified Table of Organization and Equipment (MTOE), CTA 50-790, or CTA 8-100, as applicable to your unit.
- b. Tool Kit, Master Mechanic, Supply Catalog SC5180-90-N26, is the primary supply source for tools used in Direct Support maintenance of the generator set.

5-2 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

See Appendix C, Repair Parts and Special Tools List (RPSTL), for complete data on special tools and equipment required for generator set maintenance. See Appendix B, Maintenance Allocation Chart (MAC), for special tools and equipment used at the Direct Support maintenance level.

5-3 REPAIR PARTS

- a. The two-level maintenance concept requires on-board spares to accompany deployment operations. See Appendix K for a list of on-board spares required for Direct Support level maintenance of the generator set.
- b. See Appendix C, RPSTL, for illustrations of repair parts.

Section II. SERVICE UPON RECEIPT OF EQUIPMENT

5-4 GENERAL

See para. 2-6 for instructions on unpacking, assembling, and servicing generator set components.

Section III. DIRECT SUPPORT TROUBLESHOOTING PROCEDURES

5-5 GENERAL

This section contains Direct Support troubleshooting information for the generator set.

5-6 TROUBLESHOOTING

Results of troubleshooting tests and inspections performed at the Unit maintenance level (Chapter 4) are to be used in performing additional inspections at the Direct Support maintenance level. This chapter does not list all malfunctions noted in Chapter 4, all tests or inspections that may have been performed by Unit-level personnel, or all corrective actions taken for each malfunction. See Tables 5-1, Direct Support Symptom Index, and 5-2, Direct Support Level Troubleshooting.

See the system electrical schematic (Figure FO-1), system wiring diagram (Figure FO-2), generator set wiring harness diagrams (Figures FO-3 and FO-4), and control panel wiring harness diagrams (Figures FO-5 and FO-6) for assistance in troubleshooting electrical components. Perform continuity checks on suspect wiring and harnesses, as required, using these schematics and diagrams.

See TM 9-2815-257-24 for troubleshooting the diesel engine and its components.

Table 5-1. Direct Support Symptom Index

Problem	Troubleshooting Procedure
Engine fails to crank	1
Engine cranks but fails to start	2
Engine cranks slowly	3
Engine starts and stops	4
Engine fails to start in cold weather	5
Generator set causes radio interference	6
Engine emits white smoke	7
Engine emits black smoke	8
ENGINE HIGH TEMP indicator illuminates	9
Engine has abnormal noise/excessive vibration	10

Table 5-2. Direct Support Level Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. ENGINE FAILS TO CRANK	See TM 9-2815-257-24.	Follow instructions in TM 9-2815-257-24.
2. ENGINE CRANKS BUT FAILS TO START	See TM 9-2815-257-24.	Follow instructions in TM 9-2815-257-24.
3. ENGINE CRANKS SLOWLY	a. Check fuel injection for proper timing. b. See TM 9-2815-257-24.	If not 36 VAC minimum, remove and replace PMA (para. 5-8).
4. ENGINE STARTS AND STOPS	Adjust engine valve clearance in accordance with TM 9-2815-257-24.	Using a feeler gauge check clearance of valves. Clearance should be 0.10 to 0.15 minimum.
5. ENGINE FAILS TO START IN COLD WEATHER	Test preheater relays (K13) and preheater switch (S18). See Table 4-4, item 5.	Replace preheater in accordance with TM 9-2815-257-24.
6. GENERATOR SET CAUSES RADIO INTERFERENCE	Visually inspect EMI filter for damage.	Remove and replace EMI filter in accordance with para 4-27.2.
7. ENGINE EMITS WHITE SMOKE	a. Adjust engine valve clearance. b. Check fuel injection timing.	Adjust in accordance with TM 9-2815-257-24. Adjust in accordance with TM 9-2815-257-24.
8. ENGINE EMITS BLACK SMOKE	a. Check for clogged, sticking, or worn fuel injector nozzle. b. Check fuel injection timing.	Adjust in accordance with TM 9-2815-257-24.
9. ENGINE HIGH TEMPERATURE INDICATOR ILLUMINATES	Check valves and adjust as required.	Adjust in accordance with TM 9-2815-257-24.
10. ENGINE HAS ABNORMAL NOISE/ EXCESSIVE VIBRATION	Visually check for split or cracked rubber on engine mounts.	Repair, as required, in accordance with TM 9-2815-257-24.

Section IV. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

5-7 GENERATOR SET/ENGINE ASSEMBLY MAINTENANCE

This task covers: a. inspect, b. test, c. remove, and d. replace

INITIAL SETUP

Tools:

Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)
Hoist, Lifting
(Appendix B, Section III, P/O Item 3)

Equipment Condition:

Generator set shut down (para 2-6)
Muffler assembly removed (para 4-54)

Personnel Required:

Two (2) maintenance personnel

INSPECT

1. Visually inspect generator set engine assembly for damage. Clean, as required, to view all components carefully. Look for signs of fluid leakage. Check all sealing areas and surfaces.
2. Inspect engine fuel and oil lines for cracks, cuts, abrasions, evidence of leakage, and obvious damage. Check fluid fittings and connectors for security of attachment.
3. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage. Ensure all connectors and terminal lugs are securely attached.
4. Conduct a detailed inspection of suspect components in accordance with the appropriate maintenance paragraph.
5. Remove and replace any component damaged to the extent it will affect safe operation of generator set.

TEST

Verify all tests outlined in chapter 4, Unit-Level Maintenance Procedures, have been performed.

REMOVE

1. Remove two cover supports from main access cover (3, Figure 4-51). Fully open main access cover (1). Remove wire ties.
2. Tag and disconnect electrical wiring from engine components, including oil pressure switch, starter (positive terminal), and two air heater plugs. See FO-3 and FO-4 for wire locations.
3. Disconnect all connectors from TB6A. Disconnect wire from fuse (FU1). Disconnect wire (TB4B9). Disconnect all wires from Frequency Converter (A8).
4. Disconnect fuel return line (1, Figure 5-1) from fuel injector. Disconnect fuel line (2) from fuel tank to tee. Disconnect fuel line (3) from fuel filter/water separator outlet. Disconnect fuel return line (1) from fuel injector.
5. Disconnect oil drain line (4) from oil drain valve (12) by loosening clamp (13).

WARNING

The generator set is heavy. Provide lifting hoist capable of lifting 100 lbs. Do not lift generator set over personnel. Enlist the help of an aide to prevent damage to equipment. Failure to observe this warning could result in severe personal injury or death.

6. Attach lifting hoist to engine lifting cable (10). Raise hoist to remove slack.
7. Release generator set engine assembly (23) from vibration isolators (14) by removing screws (15), lockwashers (16), and washers (17).

CAUTION

End of starter rope can be quickly drawn into recoil winding mechanism, making it pull back out. To prevent this, ensure end of starter rope is knotted or otherwise secured after removing tee handle.

8. Disconnect tee handle from starter pull rope (20, Figure 2-1) by removing knot. Feed end of rope through hole (2A) in skid base (27, Figure 5-1).
9. Carefully lift generator set engine assembly (23) up and out of generator set main frame. Place generator set engine assembly on a flat work surface for further maintenance. If generator set engine assembly (23) is to be replaced, remove lifting cable (10) by removing screws (11), lockwasher (12), and washer (13). Retain for future use.
10. If required, remove generator set engine assembly (23) from engine base (18) by removing screws (19), washers (20), and nuts (21).
11. Remove vibration isolators (14) from skid base (27) by removing screws (24), washers (25), and nuts (26).
12. If generator set engine assembly (23) is being replaced, remove and retain the following engine components for use on new engine: engine air cleaner assembly (5, Figure 4-49), engine oil drain valve (7, Figure 4-57), governor actuator (2, Figure 4-10), and engine lifting cable (10, Figure 5-1).

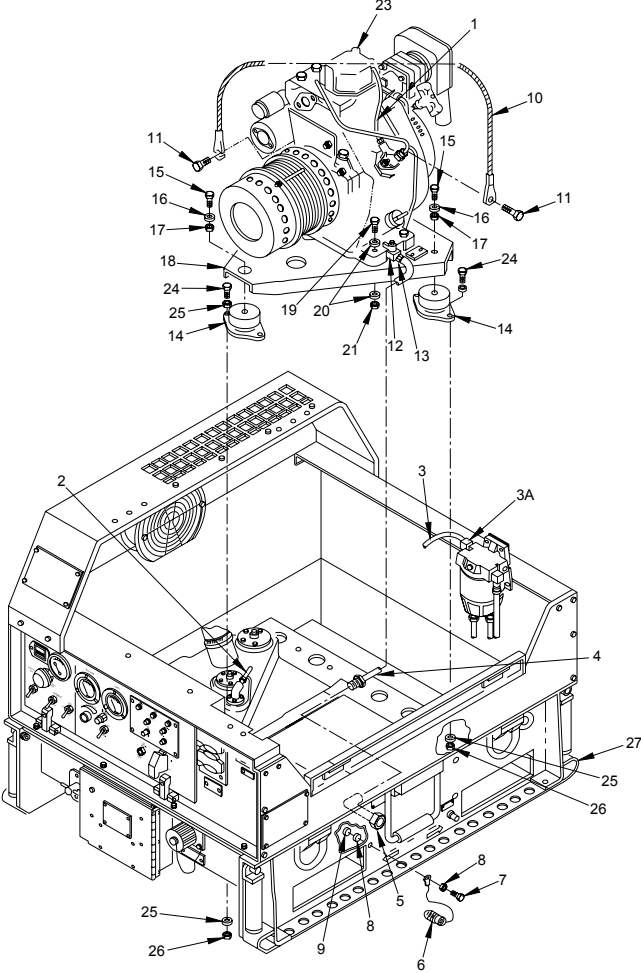


Figure 5-1. Generator Set Engine/Alternator Assembly

REPLACE

WARNING

The generator set is heavy. Provide lifting hoist capable of lifting 100 lbs. Do not lift generator set over personnel. Enlist the help of an aide to prevent damage to equipment. Failure to observe this warning could result in severe personal injury or death.

NOTE

When replacing engine components, use new lockwashers if necessary.

1. Replace engine lifting cable (10, Figure 5-1) on generator set engine assembly (23) using screws (11).
2. Attach lifting hoist to engine lifting cable (10). Raise hoist to remove slack.
3. Carefully lift generator set engine assembly (23) and install on plate (18). Secure using screws (19), washers (20), and nuts (21). Torque screws to 30 ft-lbs.
4. Install vibration isolators (14) on skid base (27) using screws (24), washers (25), and nuts (26).
5. Lift generator set engine assembly (23) and carefully lower into generator set main frame and housing. Make sure mounting holes on plate (18) align with vibration isolators (14).
6. Attach generator set engine assembly (23) to vibration isolators (14) using screws (15), lockwashers (16), and washers (17). Torque screws to 30 ft-lbs.
7. Connect oil drain line (4) to drain valve (12) and secure by tightening clamp (13). If removed, secure drain plug (6) to skid base (27) using screw (7), washers (8), and nut (9).
8. Feed recoil winding mechanism starter rope through hole (2A, Figure 2-1) in skid base (27, Figure 5-1). Install tee handle (2, Figure 2-1) and knot rope to secure handle.
9. Connect fuel line (3, Figure 5-1) to fuel filter/water separator outlet (3a). Connect fuel line (2) from fuel tank to tee pipe (16, Figure 4-41). Connect fuel return line (1, Figure 5-1) to fuel injector. See fuel injector maintenance in TM 9-2815-257-24.
10. Connect electrical wiring (FO-1 and FO-2) to engine components.
11. Attach cover support to main access cover (para. 4-42).
12. Install muffler assembly if necessary (para. 4-54).

5-8 PERMANENT MAGNET ALTERNATOR (PMA) MAINTENANCE

This task covers: a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Shop Equipment, Automotive Vehicle Maintenance
(Appendix B, Section III, Item 1)
Shop Equipment, Automotive Maintenance and
Repair, Field Maintenance, Suppl 1 W/O Power
(Appendix B, Section III, Item 3)
Puller, Mechanical
(Appendix B, Section. III, P/O Item 3)

Parts/Materials:

Adhesive, Loctite
(Item 16, Appendix F)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect Permanent Magnet Alternator (PMA) components (19, Figure 5-2) for damage. To view all components, clean as required.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage. Ensure all connectors and terminal lugs are securely attached.
3. Inspect all components (19) for corrosion. Check attaching parts for crossed, stripped, or damaged threads.
4. Inspect edge gasket (8) for damage. Inspect label (7) for legibility.

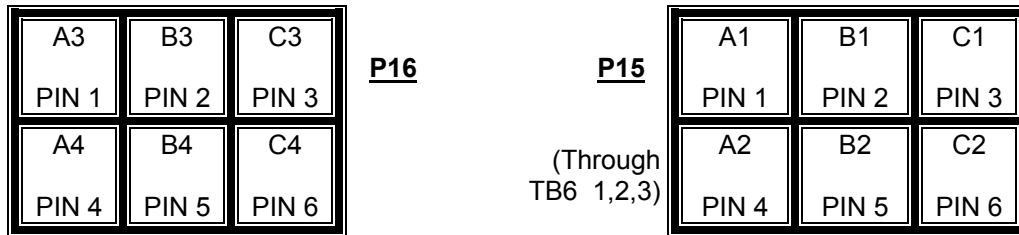
TEST

1. Open VOLTAGE SELECTOR switch door on top on Frequency Converter (A8).

NOTE

This is a safety function to disable the Frequency Converter (A8) output until other parameters are verified. Do not close this door until specifically told to do so.

2. Remove J15 and J16 from Frequency Converter (A8). Zero multimeter on low range (less than 400 ohms) and ensure three pins on each side of plug are same numbered winding, as indicated in table below:



3. Select a multimeter range of high resistance (higher than 1 megohm) and ensure there is no connection between any different numbered windings (A1 winding does not connect to any 2 winding or 3 winding or 4 winding, then the A2 winding does not connect to any 3 winding or 4 winding, then the A3 winding does not connect to any 4 winding). There should be no steady reading under 200K ohms.
4. Measure voltage output of PMA at P15 and P16. Measure voltage between A1 and B1, A2 and B2, A3 and B3, and A4 and B4. Minimum output should be 200VAC. Output between all four should be within 2V of each other. If current voltage is less than 200VAC, manually increase engine speed and check if voltage increases over 200VAC.
5. Measure battery-charging winding output (TB4 terminal 9 and FU1 terminal 2). Output should read approximately 28 to 40 VAC.

REMOVE

1. Tag and disconnect engine/alternator wiring harness (FO-4, Sheet 1 of 2)
2. Using a #4 metric Allen wrench, remove PMA cover (5, Figure 5-2) by removing screws (6). Use care when removing cover to prevent damage to alternator output leads.

CAUTION

Use correct puller. Damage to equipment can occur if wrong puller is used.

NOTE

Rotor assembly (11) is held in stator (14) by magnets. Rotor assembly must be completely removed from stator, or magnets will pull it back into place.

3. Release rotor assembly (11) from engine shaft by removing screw (9) and washer (10). Using a mechanical puller, remove rotor assembly (11) completely from stator (14).
4. Loosen clamping ring (13). Remove stator (14) from engine adapter (18) by removing screws (12).
5. Remove engine adapter (18) from engine by removing screws (15), lockwashers (16), and washers (17).

REPLACE

1. Apply adhesive (Loctite, item 16, Appendix F) to threads of screws (15, Figure 5-2). Install engine adapter (18) on engine using screws (15), lockwashers (16), and washers (17). Torque screws to 15 ft-lbs (see Appendix H).
2. Install stator (14) on engine adapter (18). Stator must be installed so that alternator output leads (1, 2, 3, 4) are at bottom, positioned for their exit through cover (5). Secure stator (14) using screws (12) and clamping ring (13).

WARNING

Rotor assembly (11) is held in stator (14) by magnets. Rotor will snap into place in stator when installed. Use care to prevent injury to fingers. Failure to observe this warning could result in severe personal injury or death.

3. Hold rotor assembly (11) so no part of your fingers will be between rotor and stator (14). Carefully insert rotor assembly (11) into stator (14). Rotor will cock slightly as it is drawn into stator and sticks in place. Using a rubber hammer lightly tap high side of rotor (11) until it slams into place.
4. Apply adhesive (Loctite) to threads of screw (9). Install screw (9) and washer (10). Torque screw to 15 ft-lbs. See Appendix H.
5. Using a feeler gauge check that clearance between rotor assembly (11) and stator (14) is 0.010 inch (minimum) at all points. If clearance is less than 0.010 inch, remove rotor assembly (11) and reinstall.
6. Feed alternator output leads (1, 2, 3, 4) through cover (5). Output leads must exit cover without possibility of abrasion. Secure cover (5) using screws (6).

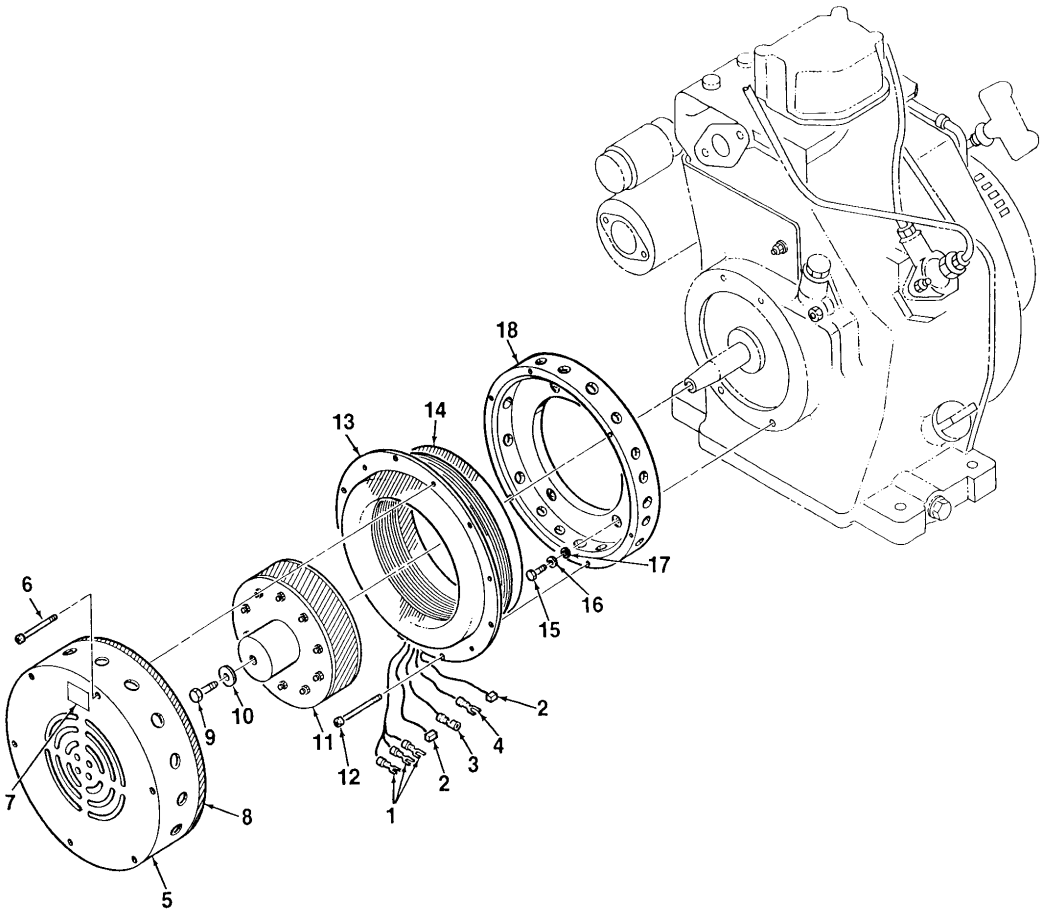


Figure 5-2. Permanent Magnet Alternator

5-9 ELECTRICAL SYSTEM ASSEMBLY MAINTENANCE

This task covers: a. inspect, b. test, and c. repair.

INITIAL SETUP

Tools:

Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle (para. 4-45)

INSPECT

1. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Inspect wiring insulation for damage (see FO-2).
2. Inspect connectors and terminal lugs. Ensure they are securely attached and free from corrosion. Ensure there are no broken connector ends.

TEST

Verify all Unit-level Maintenance procedure tests, shown below, have been performed:

- Electrical System Assembly, para 4-17
- Battery, para. 4-19
- Frequency Converter (A8), para. 4-22

REPAIR

Repair of parts is limited to removing and replacing damaged components. See the following paragraphs for instructions.

- Electrical System Assembly, para 4-17
- Battery-Charging Regulator, para. 4-18
- Battery, para. 4-19
- Battery cables, para. 4-20
- Contactor Assembly, para. 4-21
- Frequency Converter (A8), para. 4-22
- Relays, Electromagnetic, para. 4-23
- NATO Slave Receptacle, para. 4-45

5-10 CONTROL BOX WIRING HARNESS MAINTENANCE

This task covers: a. inspect, b. test, c. remove, and d. replace.

INITIAL SETUP

Tools:

Tool Kit, Master Mechanic s
(Item 3, Appendix B, Section III)

Equipment Condition:

Generator set shut down (para. 2-9)
Battery cables disconnected (para. 4-20)
Cable disconnected for NATO Slave Receptacle
(para. 4-45)

INSPECT

1. Inspect harness connector J7 (1, Figure 5-3) for corrosion, evidence of electrical short, and obvious damage. Check for bent, broken, or missing pins.
2. Inspect electrical wiring for cuts, crimps, bare wire, or other damage. Ensure connectors and terminal lugs are securely attached.

TEST

Using a multimeter conduct continuity check on suspect wires. Ensure connectors and terminal lugs are securely attached.

REMOVE

1. Unlock main access cover latches and lift cover to open.
2. Disconnect generator set wiring harness plug (P7) from control box harness connector (J7) (1, Figure 5-3), located on rear of control box assembly.
3. Unlock and open control panel (2) by turning quarter-turn fasteners (3).
4. Tag and disconnect control box harness wires from control box components. See FO-3, 60Hz Control Box Wiring Harness, and FO-4, 400Hz Control Box Wiring Harness.
5. Release harness connector (J7) (1) from inside wall of control box by removing screws with captive washers (5).
6. Remove clamp (6) by removing screw and captive washer assembly (7) and washer (8). Screw (7) secures panel cable to control box wall.
7. Remove clamp (9) from rear of control panel (2) by removing nut (10) and lockwasher (11). Remove control box wiring harness (4) from control box.

REPLACE

1. Install control box harness connector (J7) (1, Figure 5-3) to inside wall of control box. Secure using screws with captive washers (5).
2. Connect control box harness wires to control box components. See FO-3, 60Hz Control Box Wiring Harness, and FO-4, 400Hz Control Box Wiring Harness.
3. Replace clamp (6) using screw and captive washer assembly (7) and washer (8). Replace clamp (6) using nut (10) and lockwasher (11).
4. Close control panel (2) and lock in place using quarter-turn fasteners (3).
5. Connect generator set wiring harness plug (P7) to control box harness connector (J7) (1).
6. Close main access cover and lock in place using latches.

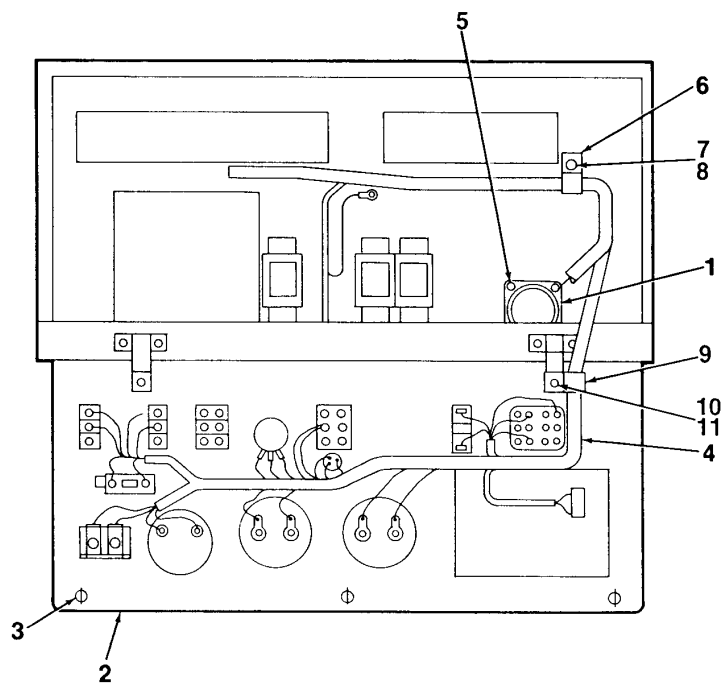


Figure 5-3. Control Box Wiring Harness

5-11 FUEL TANK MAINTENANCE

This task covers: a. inspect, b. remove, c. replace.

INITIAL SETUP

Tools:

Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Suppl 1 W/O Power (Appendix B, Section III, Item 3)

Equipment Condition:

Permanent Magnet Alternator (PMA) removed (para. 5-8)
Auxiliary fuel pump removed (para. 4-38)

INSPECT

1. Inspect fuel tank (14, Figure 5-4) for cracks, dents, cuts, or evidence of leakage. Inspect for corrosion.
2. Inspect fuel hoses for cuts, cracks, or other damage. Check for deterioration.
3. Inspect fuel fittings for crossed, stripped, or damaged threads.
4. Remove and replace any component that is damaged to the extent that it will affect the safe operation of the generator set.

REMOVE

1. Place a suitable container (4-gallon capacity) beneath fuel drain (10, Figure 5-4). Open drain valve (1) and drain fuel into container. Close drain valve (1).
2. Tag and disconnect electrical wiring from fuel tank (14) components.
3. Remove jam nut (3) and washer (4) from hold down bracket (2). Carefully pry pin (5) from pin well to remove hold down bracket (2).
4. Disconnect fuel drain line (6) from bulkhead fitting (8). Remove bulkhead fitting (8), elbow (9), and nut (10).
5. Disconnect fuel return line (11) from fitting (12) by loosening hose clamp (13). Disconnect opposite end of line (to fuel injector) from tee.
6. Remove rubber hose (15) from fuel tank filler neck and fuel pocket (16) by loosening clamps (17, 18).
7. Remove tank bracket (22) from skid base by removing screws (19), lockwashers (20), and washers (21).
8. Slide fuel tank (14) toward drain valve (1) and lift rear of tank to remove from skid base.
9. Disconnect fuel drain line (6) from elbow (7). Remove elbow (7), drain valve (1), and fitting (12) from fuel tank (14).

REPLACE

1. Install drain valve (1, Figure 5-4), elbow (7), and fitting (12) into fuel tank (14). Connect fuel drain line (6) to elbow (7).
2. Place fuel tank (14) into skid base and slide into place. Secure tank bracket (22) using screws (19), lockwashers (20), and washers (21). Torque screws to 30 ft-lbs.
3. Connect rubber hose (15) between fuel tank filler neck and fuel pocket (16). Tighten clamps (17, 18).
4. Connect fuel return line (11) to fitting (12) and tighten hose clamp (13). Connect opposite end of line (to fuel injector) to tee.
5. Install bulkhead fitting (8), elbow (9), and nut (10) onto skid base. Connect drain hose (6) to fitting (8).
6. Install hold down bracket (2) using jam nut (3), washer (4), and pin (5).
7. Connect electrical wiring to fuel tank components. Install PMA (para. 5-8). Install auxiliary fuel pump (para. 4-38).

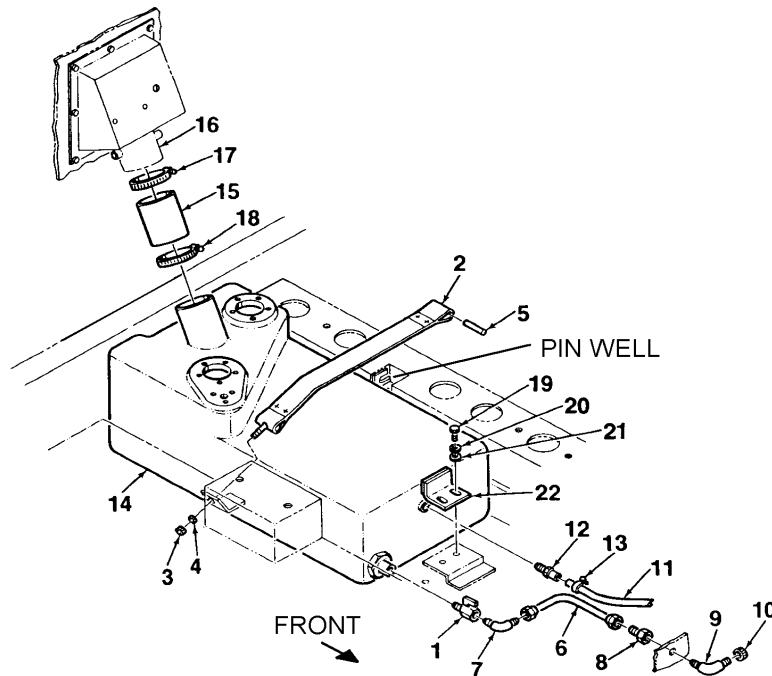


Figure 5-4. Fuel Tank

APPENDIX A

REFERENCES

A-1 SCOPE

This appendix lists all forms, field manuals, and technical manuals referenced in this manual or used in conjunction with the 3kW Tactical Quiet Generator set.

Forms

Maintenance Management of Aircraft	AFR 66-1
Reporting of Transportation Discrepancies	AFR 75-18
Reporting of Packaging Discrepancies	AFR 400-54
Equipment Improvement Report	AFR 900-4
AF Technical Order System	AFTO 00-51
Technical Order System Publication Improvement Report and Reply	AFTO Form 22
Reporting of Transportation Discrepancies in Shipments	AR 55-38
Reporting of Supply Discrepancies	AR 735-11-2
Army Materiel Maintenance Policy	AR 750-1
Expendable/Durable Items	CTA 50-790
Army Medical Department Expendable/Durable Items	CTA 8-100
Recommended Changes to Publications	DA Form 2028
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Equipment Usage Report	DA Form 2408-9
Equipment Maintenance and Inspection Worksheet	DD Form 5988E
Reporting of Item and Packaging Discrepancies	DLAR 4140.55
Reporting of Transportation Discrepancies in Shipment	DLAR 4500.15
Report of Item and Packaging Discrepancies	MCO 4430.0
Report of Discrepancy (ROD)	MCO 4430.3J
Product Quality Deficiency Report (Manual	MCO P4855.10
Transportation and Travel Record of Transportation Discrepancies	MCO P4610.19
MCPDS Index of Technical Publications	MCO P4610.19D
Recommended Changes to Technical Publications	NAVMC 10772
Reporting of Transportation Discrepancies in Shipment	NAVSUPINST 4610.33C
Reporting of Supply Discrepancies	SECNAVINST 4355.18
Transportation Discrepancy Report	SF 361
Report of Discrepancy (ROD)	SF 364
Product Quality Deficiency Report (QDR)	SF 368

Field Manuals

Chemical and Biological Contamination Avoidance	FM 3-3
NBC Protection	FM 3-4
NBC Decontamination	FM 3-5
Theater of Operations Electrical Systems	FM 5-424

Technical Bulletins

Noise and Conservation of Hearing	TB MED 251
Hand Portable Fire Extinguishers Approved for Army Use	TB 5-4200-200-10
Specification List of Standard Liquid Fuels, Lubricants, Preservatives, and Related Products Authorized for Use by U.S. Army	TB 703-1
Preservation of USAMECOM Mechanical Equipment for Shipment and Storage	TB 740-97-2

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

Technical Manuals

Consolidated Index of Army Publications and Blank Forms	DA PAM 25-30
Functional Users Manual for The Army Maintenance Management System (TAMMS)	DA PAM 738-750
Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)	MIL-HDBK-263
Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)	MIL-STD-1686
Preparation of Digital Technical Information for Multi-Output Presentation of Technical Manuals	MIL-STD-40051
Ground Equipment Record Procedures	TM 4700-15/1
Administrative Storage of Equipment	TM 740-90-1
Procedures for Destruction of Equipment to Prevent Enemy Use	TM 750-244-3
Unit, Direct Support, and General Support Maintenance Manual for Diesel Engine Assembly Model L70AE-DEGFR (NSN 2815-01-465-5993) (EIC: N/A) (TO 38G1-128-2; TM 10155A/2815-24/3)	TM 9-2815-257-24
Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine Model L70AE-DEGFR (NSN 2815-01-465-5993) (EIC: N/A) (TO 38G1-128-4; TM 10155A/2815-24P/4)	TM 9-2815-257-24P
Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, 1-Ton Trailer Mounted (with Racks) 3kW, 60Hz, AN/MJQ-42 (NSN 6115-01-322-8583) Power Plant, Diesel Engine Driven, 1-Ton Trailer Mounted (without Racks) 3kW, 60Hz, AN/MJQ-43 (6115-01-322-8582)	TM-6115-658-13&P
The USAF Material and Deficiency Reporting and Investigating System	TO 00-35D54
Repair Parts Kits Users Manual	TO 25-1-3
Corrosion Prevention, Painting, and Marking of USAF Support Equipment (SE)	TO 35-1-3
Processing and Inspection of Support Equipment for Storage and Shipment	TO 35-1-4
Defense Transportation Regulations, Part II	UM 4400-123
Cargo Movement (DoD 4500.9-R)	UM 4400-124

Miscellaneous

Storage and Supply Activity Operations	AR 740-1
Color and Marking of Army Material	AR 746-5
Set, Kits, and Outfits Tool Kit for General Mechanics (GMTK): Automotive	SC 5180-90-N26
Sets, Kits, Outfits, and Tools, for Shop Equipment Automotive Maintenance and Repair: Field Maintenance, Supplemental No. 1, Less Power and Shop Equipment Automotive Maintenance and Repair: Field Maintenance, Supplemental No. 1	SC 4910-95-A62
Sets, Kits, and outfits Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1	SC 4910-95-A74

APPENDIX B

TWO-LEVEL MAINTENANCE MAINTENANCE ALLOCATION CHART (MAC)

INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component levels, which are shown on the MAC in column (4) as:

Field includes two subcolumns, Unit maintenance and Direct Support Maintenance. The Unit maintenance column is divided into two more subcolumns, C for Operator or Crew and O for Unit maintenance.

Sustainment includes two subcolumns, general support (H) and depot (D).

The tools and test equipment (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contains supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance Functions.

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel). This includes scheduled inspection and gaging and evaluation of cannon tubes.
2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to mark (restore obliterated identification), to clean (includes decontaminate, when required), to preserve, to drain, to touch-up paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.
4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.
6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measurement, and diagnostic equipment 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.
7. Removal/Install. To remove and install the same item when required to perform a service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare,

repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. Replace is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance, and Recoverability (SMR) code.
9. **Repair.** The application of maintenance services including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, painting, and maintenance actions to identify troubles and 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.

NOTE

The following definitions are applicable to the repair maintenance function:

Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its lowest component that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

10. **Overhaul.** That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR/NMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
11. **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 (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in MAC

Column (1) Group Number. Column (1) lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

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

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For detailed explanation of these functions refer to Maintenance Function outlined above).

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicated work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time 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 (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels under the two level maintenance concept are as follows:

Field:

- C - Operator or Crew maintenance
- O - Unit maintenance
- F - Direct Support maintenance

Sustainment:

- L - Specialized Repair Activity (SRA)
- H - General Support maintenance
- D - Depot maintenance

NOTE

The L maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work-time figure in the H column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Test Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), Common Test, Measurement and Diagnostic Equipment (TMDE), special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

Explanation Of Columns In Tools And Test Equipment

Column (1) - Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment under the two-level MAC.

Column (3) - Nomenclature. Name or identification of the tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer's part number, model number, or type number.

Explanation Of Columns In Remarks

Column (1) - Remarks Code. The code recorded in column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

**Section II. MAINTENANCE ALLOCATION CHART
 FOR GENERATOR SET (3kW TQG, MEP 831A/832A)**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS & EQUIP REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	GENERATOR SET	INSPECT TEST SERVICE REMOVE REPLACE REPAIR	0.5	0.1 0.5	0.5 5.7 2.0 2.0			2 1,2,3 1,2,3	A A,D C,F,I
01	ENGINE ASSEMBLY, DIESEL	INSPECT SERVICE REMOVE REPLACE REPAIR	0.1	0.1 0.5	2.0 2.0	2.0		1,6	A A,D,F F F F,I
0101	GOVERNOR CONTROL MODULE	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.2 1.0 1.0			7 1,2 1,2	A C	
010101	GOVERNOR ACTUATOR ASSEMBLY	INSPECT TEST ADJUST REMOVE REPLACE	0.2	0.1 0.2 0.5 0.7 0.7			7 1,2 1,2	A C,E C,E	
0102	ENGINE WIRING HARNESS	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5			1,2 1,2	A	
02	PERMANENT MAGNET ALTERNATOR (PMA)	INSPECT TEST REMOVE REPLACE	0.1	0.1 0.4	0.1 1.0 2.0 2.0			3-7 1,2,3 1,2,3	A E
03	ELECTRICAL SYSTEM ASSEMBLY	INSPECT TEST REPAIR	0.3	0.3 0.3	0.3 1.1 1.0			5 1,3	A C,G E
0301	BATTERY CHARGING REGULATOR	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5			1,2,3 1,2,3	A	
0302	BATTERY	INSPECT TEST SERVICE REMOVE REPLACE	0.1	0.1 0.1 0.5 0.5 0.5			4 1,4 2 2	A	
030201	BATTERY CABLES	INSPECT REMOVE SERVICE REPLACE	0.1	0.1 0.3 0.5 0.3			1,2 1,2 1,2	A	
0303	CONTACTOR ASSY	INSPECT REMOVE REPLACE	0.3	0.3 0.5 0.5			1,2 1,2	A	

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MARINE CORPS TM 10155A-OI/1

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS & EQUIP REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0304	FREQUENCY CONVERTER (A8)	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.2 1.5 1.5				5 1,2,3 1,2,3	A B I
0305	RELAYS, ELECTRO- MAGNETIC	INSPECT REMOVE REPLACE	0.3	0.3 0.5 0.5				1,2 1,2	A
04	CONTROL BOX ASSEMBLY	INSPECT TEST REMOVE REPLACE	0.7	0.7 0.5 0.3 0.3				5 1,2 1,2	A C
0401	CONTROL PANEL ASSEMBLY	INSPECT REMOVE REPLACE	0.3	0.3 0.5 0.5				1,2 1,2	A
040101	PANEL METERS, GAUGES, AND SWITCHES	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2 1,2	A
0402	RECEPTACLE, FILTERS, TERMINALS, AND VOLTAGE RESISTOR	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.5 0.5 0.5				5 1,2 1,2	A B,C
0403	CONTROL BOX WIRING HARNESS	INSPECT TEST REMOVE REPLACE	0.2	0.2	0.2 0.2 0.5 0.5			5 1,2 1,2	A
05	COOLING SYSTEM	INSPECT TEST	0.2	0.2 0.2				5	C
0501	COOLING FAN ASSEMBLY	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.3 0.5 0.5				5 1,2 1,2	A C, G
0502	HI/LO TEMPERATURE SWITCHES	INSPECT TEST REMOVE REPLACE	0.1	0.1 0.3 0.3 0.3				5 1,2 1,2	A C
06	FUEL SYSTEM ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 1.5 1.5				1,2,3 1,2,3	A
0601	FUEL TANK STRAINER ASSEMBLY	INSPECT REMOVE REPLACE	0.1	0.1 2.0 2.0				1,2,3 1,2,3	A
0602	FUEL TANK	INSPECT REMOVE REPLACE	0.2		0.2 2.0 2.0			1,2,3 1,2,3	A

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS & EQUIP REF CODE	(6) REMARKS CODE	
			FIELD		SUSTAINMENT				
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT			DEPOT
			C	O	F	H			D
060201	FUEL-LEVEL ASSEMBLY	INSPECT TEST REMOVE REPLACE	0.1	0.1 0.5 0.5 0.5				1,2,5 1,2,3 1,2,3	A C
060202	FUEL-LEVEL SWITCH	INSPECT TEST REMOVE REPLACE	0.1	0.1 0.5 0.5 0.5				1,2,3,5 1,2,3 1,2,3	A C
060203	FUEL TANK PICKUP TUBE	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5				1,2,3 1,2,3	A
0603	PRIMARY FUEL PUMP	INSPECT TEST REMOVE REPLACE	0.1	0.1 0.5 0.5 0.5				5 1,2,3 1,2,3	A C
0604	AUXILIARY FUEL PUMP	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.5 0.5 0.5				1,2 1,2 1,2	A
0605	FUEL FILTER/ WATER SEPARATOR	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5				1,2 1,2	A
0606	AIR CLEANER ASSEMBLY	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5					A
07	FRAME AND HOUSING ASSEMBLY	INSPECT	0.2	0.2					A
0701	MAIN ACCESS COVER	INSPECT TEST REMOVE REPLACE	0.2	0.2 0.5 0.5 0.5				1,2 1,2	A
0702	FRAME AND HOUSING PANELS	INSPECT REMOVE REPLACE	0.2	0.2 1.0 1.0				1,2,3 1,2,3	A
0703	FRAME AND LIFTING HANDLES, LIFTING RINGS	INSPECT REMOVE REPLACE	0.1	0.1 1.5 1.5				1,2 1,2	A
0704	NATO SLAVE RECEPTACLE	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5				1,2 1,2	A
0705	SKID BASE	INSPECT REMOVE REPLACE	0.1	0.1 0.5 0.5				1,2 1,2	A
0706	ID PLATES	INSPECT REMOVE REPLACE	0.1	0.1 0.2 0.2				3 3	A

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS & EQUIP REF CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
08	LUBRICATION SYSTEM	INSPECT SERVICE	0.2	0.2 0.5				1,2	A D
0801	OIL DRAIN ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2 1,2	A
0802	OIL PRESSURE SWITCH	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2 1,2	A
0803	ENGINE OIL TEMPERATURE SWITCH	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2 1,2	A
0804	OIL FILTER	INSPECT REMOVE REPLACE	0.1	0.1 0.2 0.2					A
09	EXHAUST SYSTEM ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 1.2 1.2				1,2 1,2	A
0901	MUFFLER ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 0.2 0.2				1,2 1,2	A
0902	BELLOWS ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2,3 1,2,3	A
0903	DUCT ASSEMBLY	INSPECT REMOVE REPLACE	0.2	0.2 0.5 0.5				1,2,3 1,2,3	A

**Section III. TOOLS AND TEST EQUIPMENT
 FOR GENERATOR SET (3kW TQG, MEP-831A/MEP-832A)**

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER (NSN)	TOOL NUMBER
1	O	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE MAINTENANCE AND REPAIR	4910-00-754-0654	SC4910-95-A74
2	O, F	TOOL KIT, GENERAL MECHANIC S AUTOMOTIVE	5180-01-483-0249	SC5180-90-CL-N26
3	F	SHOP EQUIPMENT, AUTOMOTIVE MAINTENANCE AND REPAIR, FIELD MAINTENANCE, SUPPL 1 W/O POWER	4910-00-754-0706	SC4910-95-CL-A62
4	F	TESTER, BATTERY ELECTROLYTE SOLUTION	6630-00-663-4501	TS765U
5	O, F	MULTIMETER	6625-01-265-6000	AN/PSM-45A

**Section IV. REMARKS
FOR GENERATOR SET (3kW TQG, MEP 831A/832A)**

Remarks Code	Remarks
A	PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).
B	TEST BY DEPRESSING SWITCH TO TEST INDICATOR LIGHTS.
C	TROUBLESHOOTING TEST/CHECK USING MULTIMETER.
D	SERVICE IN ACCORDANCE WITH LUBRICATION INSTRUCTIONS, CHAPTER 4, SECTION I.
E	REPAIR IS LIMITED TO REPLACEMENT OF DAMAGED PARTS.
F	SEE TM 9-2815-257-24 FOR ENGINE REPAIR.
G	CHECK FOR LOOSE WIRES AND CONNECTORS, AND PERFORM CONTINUITY TEST.
H	REPAIR IS LIMITED TO REPLACEMENT OF METERS, SWITCHES, AND GAUGES.
I	REPAIR BY SUSTAINMENT-LEVEL MAINTENANCE FACILITY.

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)



Section I. INTRODUCTION

C-1 SCOPE

This Repair Parts and Special Tools List (RPSTL) lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required to perform Unit and Direct Support maintenance of the 3kW Tactical Quiet Generator (TQG) Set. The RPSTL authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

C-2 GENERAL

This RPSTL is divided into three sections besides Section I, Scope. These sections are shown below:

- a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts that must be removed for replacement of authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component on which they mount. Bulk materials are listed by item name FIG. BULK at the end of the section. Repair parts kits are listed separately in their own functional group. Repair parts for reparable special tools are also listed within Section II. Items listed are shown on the associated illustrations.
- b. **Section III. Special Tools List.** A list of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Not listed are tools that are components of common tool sets and/or Class VII.
- c. **Section IV. Cross-Reference Indexes.** This RPSTL includes two cross-reference indexes: The Part Number Index lists part numbers cross-referenced to each NSN, and each illustration figure and item number appearance. The Figure and Item Number index lists figure and item numbers in alphanumeric sequence and cross-references NSN, CAGEC, and part number.

C-3 EXPLANATION OF COLUMNS IN THE RPSTL (Sections II and III)

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.
SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

Source Code XX		Maintenance Code XX	Recoverability Code X
1st two positions:	3rd position	4th position	5th position
How to get an item.	Who can install, replace, or use the item.	Who can do complete repair* on the item.	Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment to restore serviceability to a failed item.

Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul, of an end item/equipment. Explanations of source codes follow:

<u>Source Code</u>	<u>Application/Explanation</u>
PA	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3 rd position of the SMR code.
PB	
PC	
PD	
PE	
PF	
PG	NOTE Items coded PC are subject to deterioration.
KD	Items with these codes are not to be requested/requisitioned individually. They are part of a kit, which is authorized to the maintenance level indicated in the 3 rd position of the SMR code. The completed kit must be requisitioned and applied.
KF	
KB	
MO	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material, which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group of the RPSTL. If the item is authorized to you by the 3 rd position of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
MF	
MH	
ML	
MD	
AO	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3 rd position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
AF	
AH	
AL	
AD	

<u>Source Code</u>	<u>Application/Explanation</u>
XA	Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawing, diagram, instruction sheets, field service drawings; identified by manufacturer s P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA" or those aircraft support items restricted by the requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance.

<u>Maintenance Code</u>	<u>Application/Explanation</u>
C	Crew or operator maintenance done within unit/AVUM maintenance.
O	Unit level/AVUM maintenance can remove, replace, and use the item.
F	Direct support/AVIM maintenance can remove, replace, and use the item.
H	General support maintenance can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

<u>Maintenance Code</u>	<u>Application/Explanation</u>
O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct support/AVIM is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity is the lowest level that can do complete repair of the item.
D	Depot is the lowest level than can do complete repair of the item.
Z	No reparable. No repair is authorized.
B	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

<u>Recoverability Code</u>	<u>Application/Explanation</u>
Z	Non-reparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3rd position of SMR code.
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.
F	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

CAGE (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item

by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different P/N from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.
2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, sub functional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

C-4 EXPLANATION OF CROSS-REFERENCE INDEXES AND COLUMNS (Section IV)

Part Number (P/N) Index

P/Ns in this index are listed by in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

CAGEC Column. The Commercial and Government Entity Code (CAGEC) is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

PART NUMBER Column. Indicates the P/N assigned to the item.

STOCK NUMBER Column. This column lists the NSN for the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

Figure Number and Item Number Indexes

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list.

ITEM column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

STOCK NUMBER Column. This column lists the NSN for the item.

CAGEC Column. The Commercial and Government Entity Code (CAGEC) is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

PART NUMBER Column. Indicates the P/N assigned to the item.

C-5 SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC: " in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOCs used in the RPSTL are

1. Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk materials are also referenced in the Description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in Appendix G.
2. Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / P/N index and the bulk material list in the repair parts list.
3. Electronic Component Information. For additional information regarding electronic components/wiring, see wiring diagram FO-1.

C-6 HOW TO LOCATE REPAIR PARTS

When NSNs or P/Ns Are Not Known

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or sub functional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

When NSN is Known

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

When P/N is Known

First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list.

SECTION II. REPAIR PARTS LIST

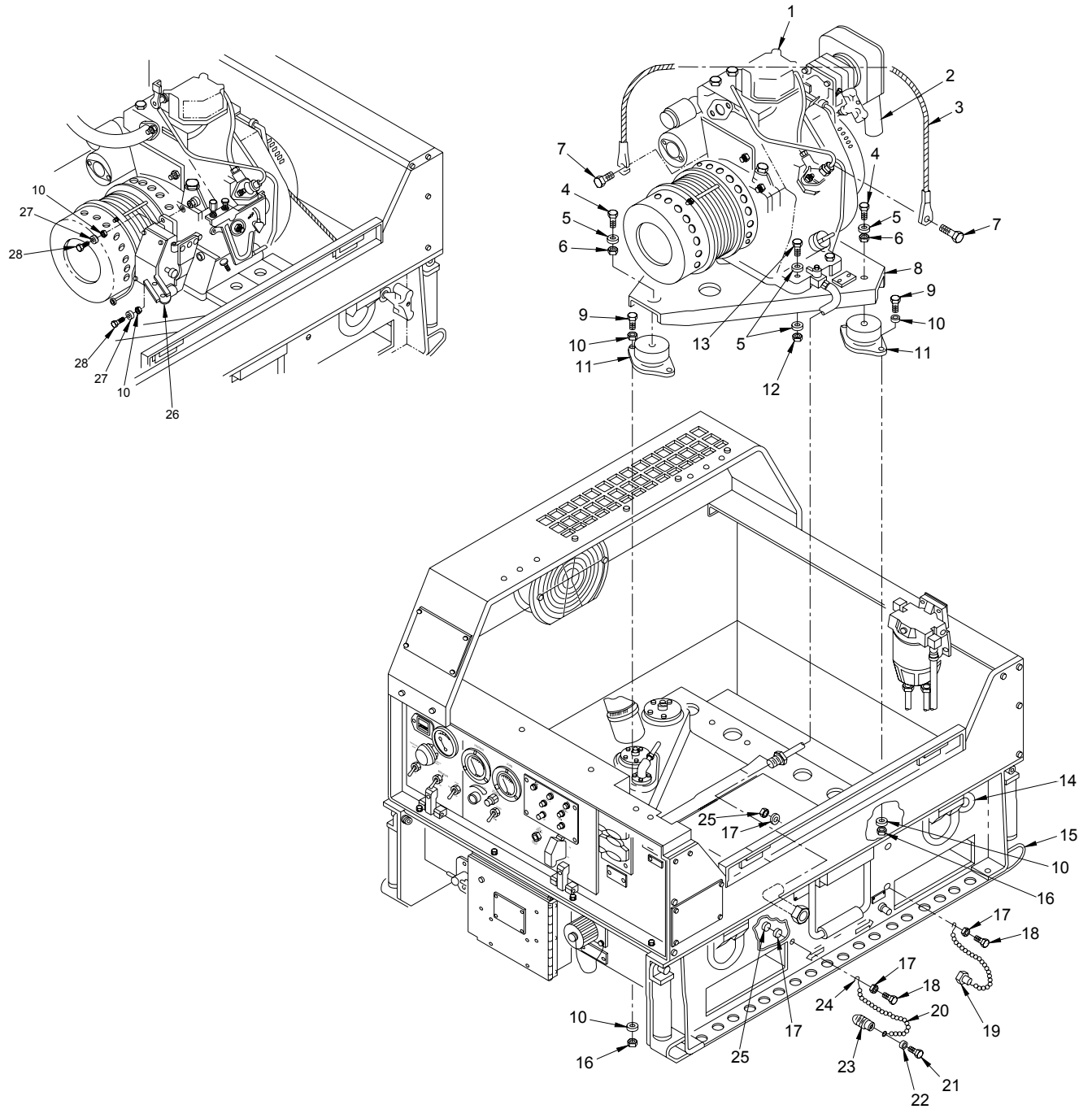


FIGURE 1. GENERATOR SET

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 00	
					FIG. 1. GENERATOR SET	
	PEOFF	6115-01-285-3012	30554	98-831A	GENERATOR SET 3KW, 60HZ, TACTICAL QUIET UOC: LQQ	1
	PEOFF	6115-01-287-2431	30554	98-832A	GENERATOR SET 3KW, 400HZ, TACTICAL QUIET UOC: LQR	1
1	XCOFF		30554	98-19503	GENERATOR SET ASSEM 60HZ UOC: LQQ	1
1	XCOFF		30554	98-19504	GENERATOR SET ASSEM 400HZ UOC: LQR	1
1	PAFHH	2815-01-465-5993	S4163	L70AE-DEGFR	ENGINE, DIESEL SEE ENGINE MANUAL FOR PARTS BREAKDOWN	1
2	PAOZZ	4720-01-476-9814	0AK42	186	HOSE ASSEMBLY, AIR DUCT	1
3	XBOZZ	4010-01-497-2675	2V507	8925T5	CABLE, LIFTING	1
4	PAFZZ	5305-01-380-3395	80204	B18231B10025NF	SCREW, CAP, HEXAGON HEAD	3
5	PAFZZ	5310-01-280-5796	96906	MS27183-57	WASHER, FLAT 3/8	11
6	PAFZZ	5310-01-387-2150	15526	DIN127-B10-FST-B3B	WASHER, LOCK	3
7	PAOZZ	5305-01-303-5631	80204	B18231B08020N	SCREW, CAP, HEXAGON HEAD	2
8	XBFZZ		30554	98-19563	PLATE, MOUNTING, ENGINE	1
9	PAFZZ	5305-01-476-9099	30554	88-20260-44	SCREW, CAP, HEXAGON HEAD	6
10	PAOZZ	5310-00-081-4219	96906	MS27183-12	WASHER, FLAT, 5/16	14
11	PAFZZ	5340-01-477-1375	93742	409320-001	MOUNT, RESILIENT, GEN	3
12	PAFZZ	5310-00-050-6646	96906	MS17830-6C	NUT, SELF-LOCK 3/8-16	4
13	PAFZZ	5305-01-476-9095	80204	B1821BH037C175N	SCREW, CAP, HEXAGON HEAD	4
14	PAOZZ	5975-01-199-9033	83879	ABB-100	BUSHING, ELECTRICAL	1
15	XBFZZ		30554	98-19562	BASE, MOTOR-GENERATOR	1
16	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	NUT, SELF-LOCKING, HEX 5/16-18	6
17	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT, #8	4
18	PAOZZ	5305-01-477-9618	80204	B1821BH164C075H	SCREW, CAP, HEXAGON HEAD	2
19	PAFZZ	4730-00-812-1333	93742	69-539-2	CAP, TUBE	1
20	XBOZZ		81348	TYPEII, GRADEC, CL3	CHAIN, SASH	2
21	PAOZA	5305-01-477-9613	2V507	90081A108	SCREW, DRIVE	1
22	PAOZZ	5310-01-477-9626	30554	88-20033-4A	WASHER, FLAT	1
23	PAOZZ		30554	98-19747	PLUG, PIPE	1
24	PAOZZ	4030-00-270-5436	96906	MS87006-3	HOOK, CHAIN, S	2
25	PAOZZ	5310-00-982-6814	80205	MS21044C08	NUT, SELF-LOCKING #8	2
26	XBOOO	2920-01-477-1320	0BXW5	ADG150	ACTUATOR ASSEMBLY (SEE GROUP 010101 FOR PARTS BREAKDOWN)	1
27	PAOZZ	5310-12-125-0056	D8286	DIN127-B8-FST	WASHER, LOCK	2
28	PAOZZ	5305-01-381-1202	80204	S231NA38MMRC5568	SCREW, CAP, HEXAGON HEAD	2
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAFHH	2815-01-465-5993	S4163	L70AE-DEGFR	GROUP 01 ENGINE ASSEMBLY, DIESEL ENGINE, DIESEL (SEE TM 9-2815-257-24P FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

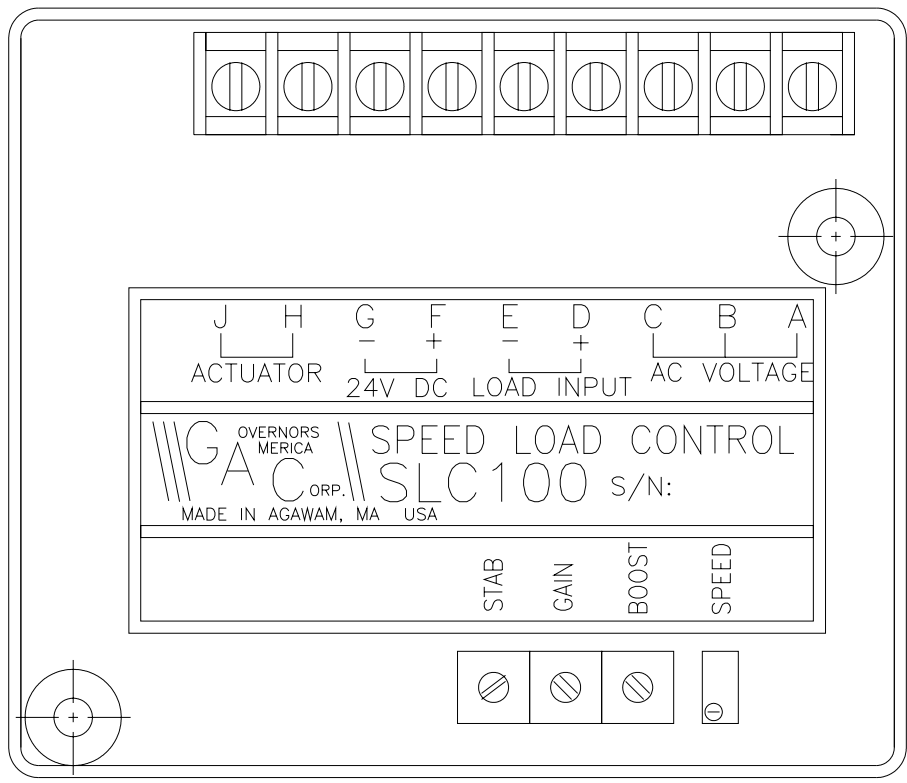


FIGURE 2. ENGINE ASSEMBLY, DIESEL/GOVERNOR CONTROL MODULE

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0101 FIG. 2. GOVERNOR CONTROL MODULE (NON-PROCURABLE) END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

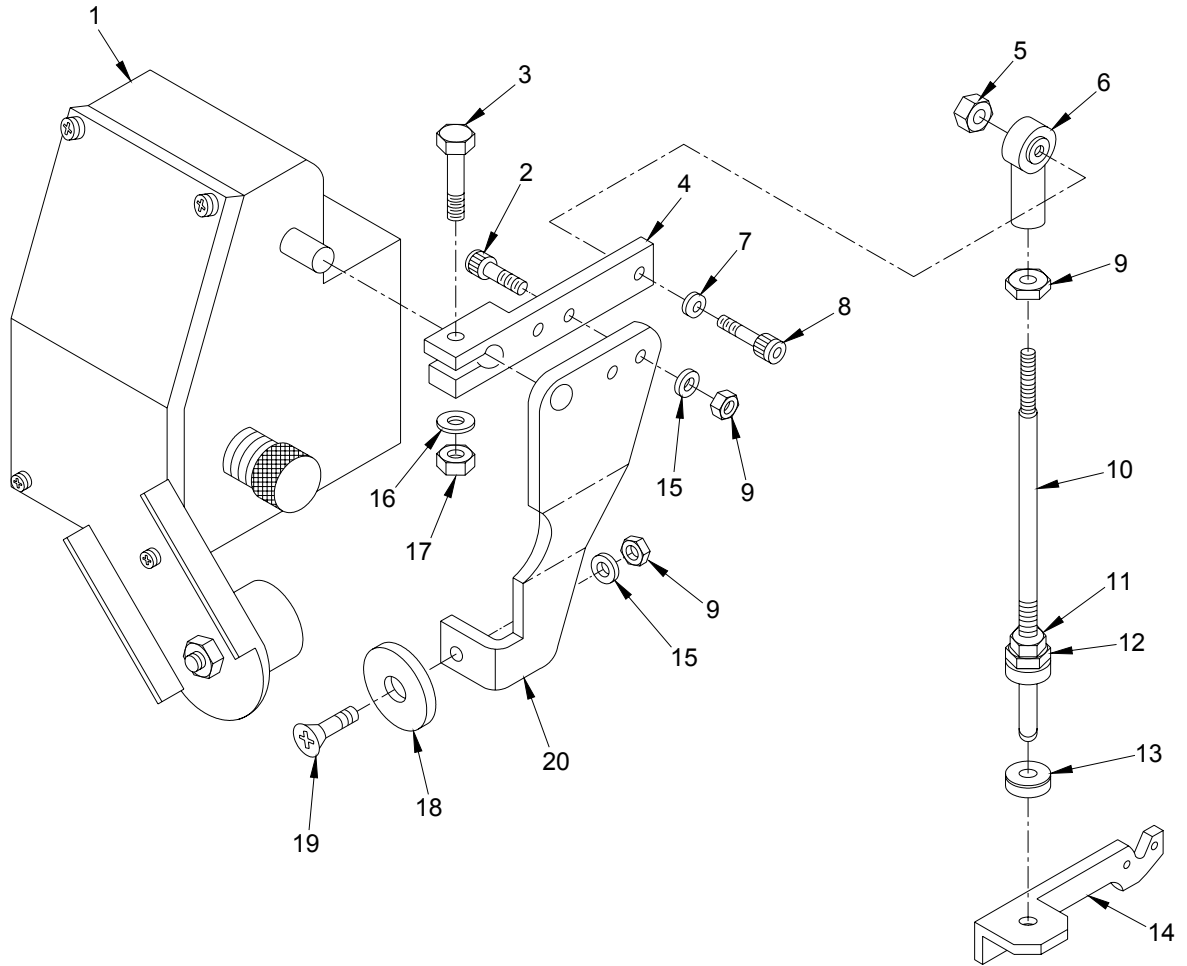


FIGURE 3. GOVERNOR ACTUATOR ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 010101						
FIG. 3. GOVERNOR ACTUATOR ASSEMBLY						
1	PAOZZ	2920-01-477-1320	0BXW5	ADG150	ACTUATOR, ELECTRO-ME	1
2	PAOZZ	5305-01-476-9231	0BXW5	HW900	SCREW, CAP, SOCKET HEAD	2
3	PAOZA	5305-01-477-9615	0BXW5	HW106	SCREW, CAP, HEXAGON HEAD	1
4	XBOZZ		0BXW5	LE154	LEVER	1
5	PAOZZ	5310-00-498-7234	19617	HW310	NUT, PLAIN, ASSEMBLED	1
6	PAOZZ	3120-01-477-2736	0BXW5	BR100	BEARING, PLAIN, ROD END	1
7	PAOZZ	5310-01-476-9198	0BXW5	HW218	WASHER, FLAT	1
8	PAOZA	5305-01-477-9616	0BXW5	HW137	SCREW, CAP, HEXAGON HEAD	1
9	PAOZZ	5310-01-476-9206	0BXW5	HW309	NUT, PLAIN, HEXAGON	4
10	PAOZZ	2910-01-476-9751	0BXW5	RD150	LINKAGE, TELESCOPING	1
11	PAOZZ	5310-01-476-9196	0BXW5	HW303	NUT, PLAIN, HEXAGON	1
12	PAOZZ	5310-01-476-9200	0BXW5	NT102	NUT, PLAIN, SINGLE BA	1
13	PAOZZ	5310-01-476-9201	0BXW5	WA102	WASHER, CONVEX	1
14	XBOZZ		0BXW5	LK150	BRACKET, LINK	1
15	PAOZZ	5310-01-476-9228	0BXW5	HW213	WASHER, LOCK	3
16	PAOZZ	5310-01-476-9203	0BXW5	HW206	WASHER, LOCK	1
17	PAOZZ	5310-01-476-9213	0BXW5	HW300	NUT, PLAIN, HEXAGON	1
18	PAOZZ	5935-00-532-3496	80063	PL152	PLATE	1
19	PAOZZ	5305-01-476-9223	0BXW5	HW198	SCREW, MACHINE	1
20	XBOZZ		0BXW5	LE157	LEVER	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

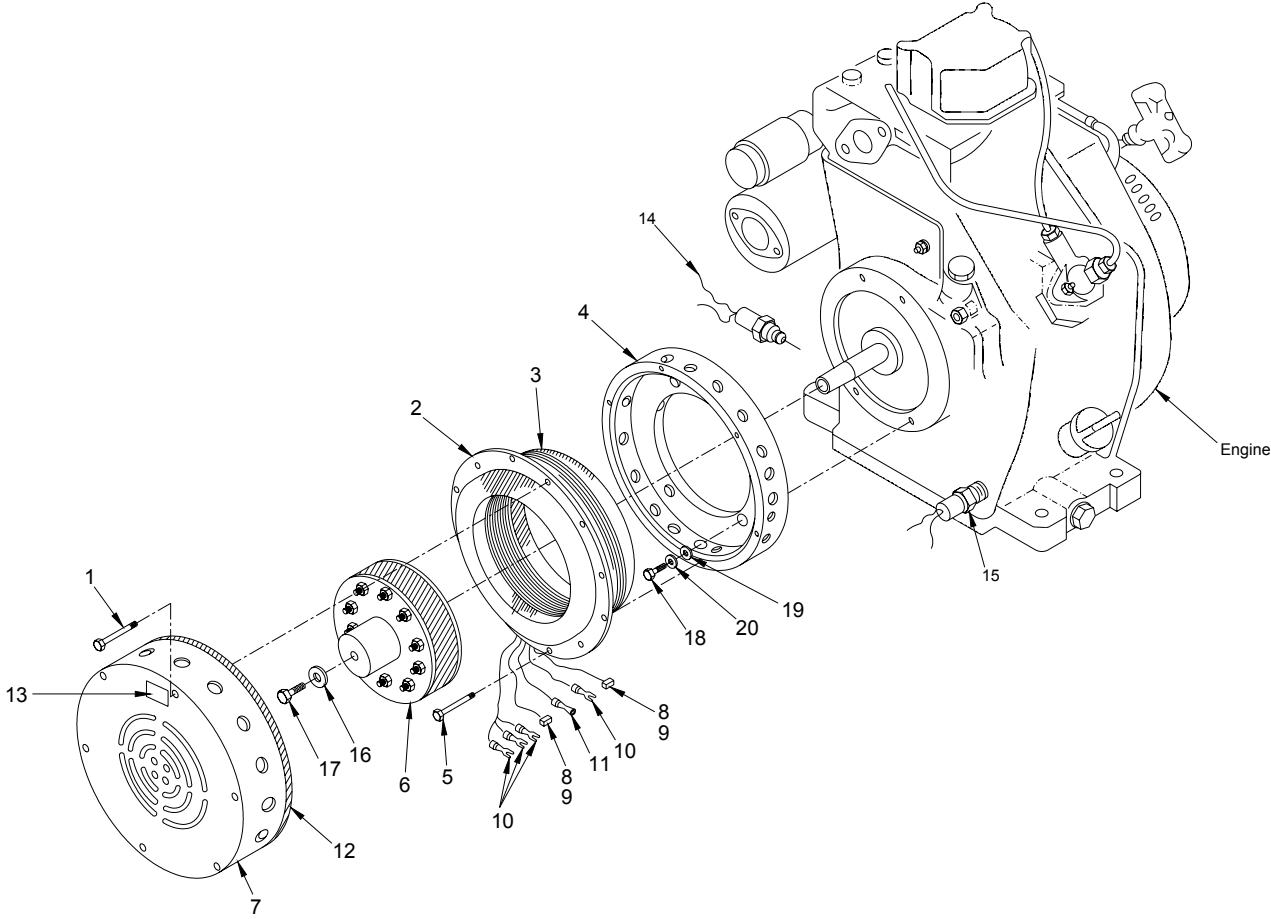


FIGURE 4. PERMANENT MAGNET ALTERNATOR (PMA) (SHEET 1 OF 2)

SECTION II. REPAIR PARTS LIST (CONTINUED)

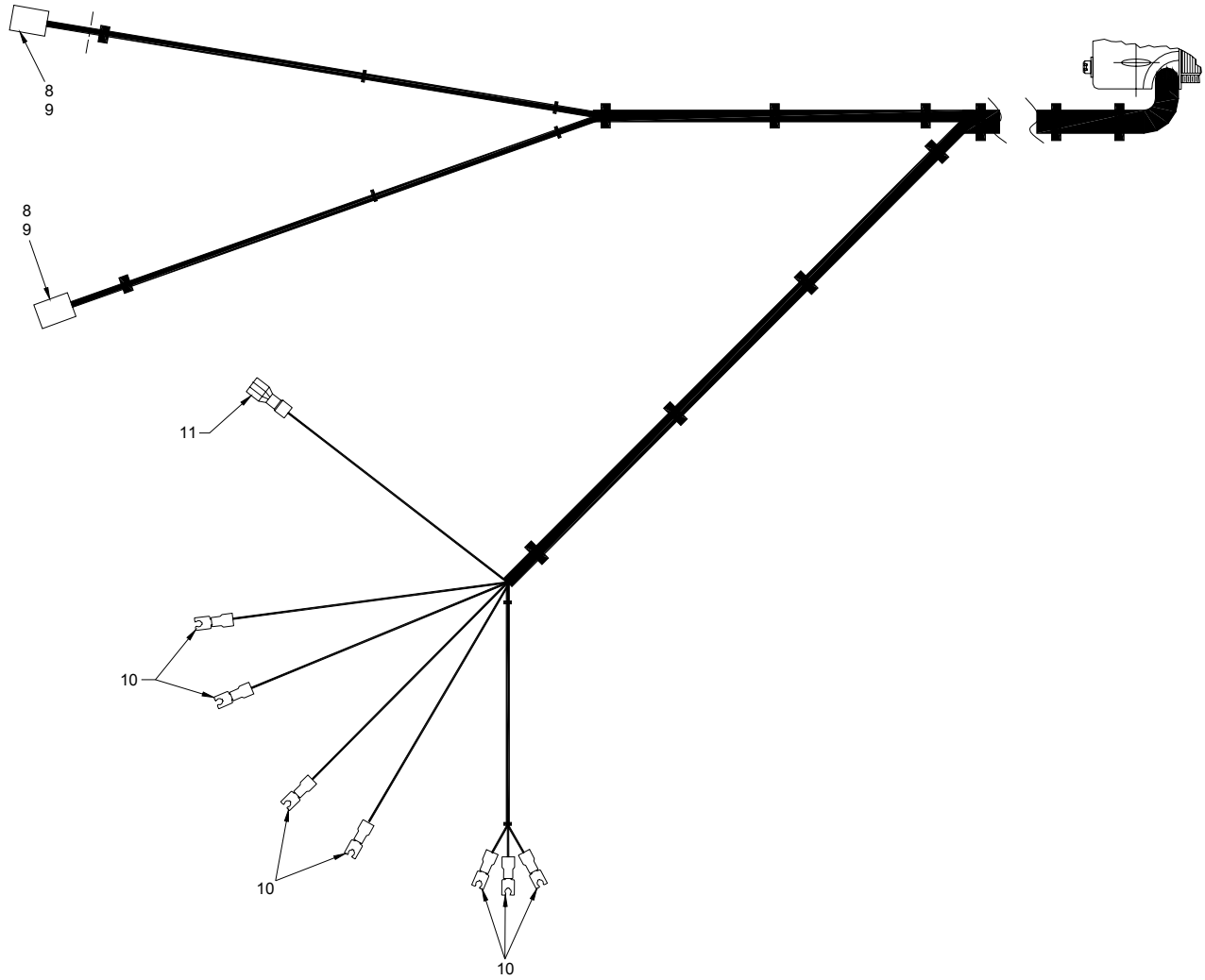


FIGURE 4. PERMANENT MAGNET ALTERNATOR (PMA) (SHEET 2 OF 2)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 02						
FIG. 4. PERMANENT MAGNET ALTERNATOR (PMA)						
1	PAFZZ	5305-01-476-9251	81343	S300NA42FA827574 NNCG	SCREW, CAP, SOCKET HEAD	6
2	PAFZZ	3040-01-477-0228	93742	692507	CLAMP, HUB	1
3	PAFZZ	2920-01-477-0238	93742	692499	STATOR ASSEMBLY	2
4	XBFZZ		93742	692500	ADAPTOR, ENGINE	1
5	PAFZZ	5305-01-476-9248	93742	692497-12	SCREW, CAP, SOCKET HEAD	13
6	PAFZZ	6115-01-476-9356	93742	692505	ROTOR, GENERATOR	1
7	XBFZZ		93742	692501	COVER, END	1
8	PAFZZ	5935-01-415-6239	27264	39-01-2060	CONNECTOR BODY, PLUG	2
9	PAFZZ	5999-01-477-0593	27264	39-00-0077	CONTACT, ELECTRICAL	2
10	PAFZZ	5940-01-425-2020	27264	BB-8707-06	TERMINAL, LUG	7
11	PAFZZ		00779	93-350816-2	CONTACT, ELECTRICAL	1
12	PAFZZ	5325-00-960-2410	80205	MS21266-1N	GROMMET, NONMETALLIC	1
13	PAFZZ		93742	409316-001	LABEL	1
14	PAOZZ	5930-01-477-9743	30554	98-19720	SWITCH, THERMOSTATIC	1
15	PAOZZ	5930-01-478-0122	85814	SM-2B-15F	SWITCH, PRESSURE	1
16	PAFZZ	5310-01-476-9103	30554	98-19662	WASHER, FLAT	1
17	PAFZZ	5306-00-050-1238	80204	B1821BH031F075N	BOLT, MACHINE	1
18	PAFZZ	5305-01-477-0236	30554	98-19730	SCREW, CAP, SOCKET HEAD	4
19	PAOZZ	5310-00-081-4219	96906	MS27183-12	WASHER, FLAT, 5/16	4
20	PAOZZ	5310-12-125-0056	D82286	DIN127-B8-FST	WASHER, LOCK	4
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 03	
					ELECTRICAL SYSTEM ASSEMBLY (NON-PROCURABLE)	
	--	--	--	--	BATTERY CHARGING REGULATOR (SEE GROUP 0301 FOR PARTS BREAKDOWN)	
	PAOZZ	6140-01-476-8945--	-30554-	98-19745	BATTERY (SEE GROUP 0302 FOR PARTS BREAKDOWN)	
	--	--	--	--	BATTERY CABLES (SEE GROUP 030201 FOR PARTS BREAKDOWN)	
	--	--	--	--	CONTACTOR ASSEMBLY (SEE GROUP 0303 FOR PARTS BREAKDOWN)	
	PAODD	5895-01-477-0855	60177	29350	FREQUENCY CONVERTER (A8) (SEE GROUP 0304 FOR PARTS BREAKDOWN)	
	PAOZZ	5945-00-855-7478	16764	1115615	RELAYS, ELECTROMAGNETIC (SEE GROUP 0305 FOR PARTS BREAKDOWN)	
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

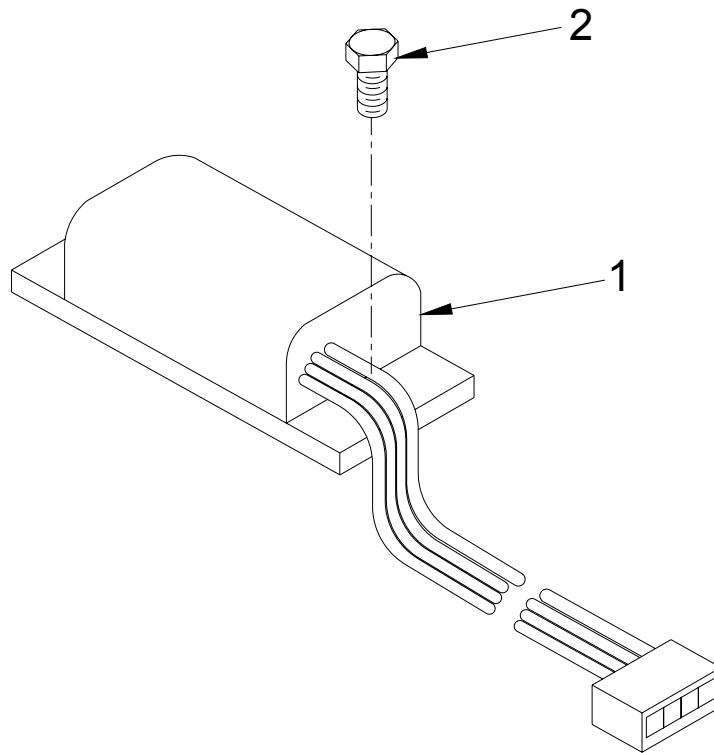


FIGURE 5. ELECTRICAL SYSTEM ASSEMBLY/BATTERY CHARGING REGULATOR

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0301	
					FIG. 5. ELECTRICAL SYSTEM ASSEMBLY/BATTERY CHARGING REGULATOR	
1	PAOZZ	6130-01-476-9148	30554	98-19715	CHARGER, BATTERY	1
2	PAOZZ	5305-01-378-7899	30554	88-20260-22	SCREW, CAP, HEX	2
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

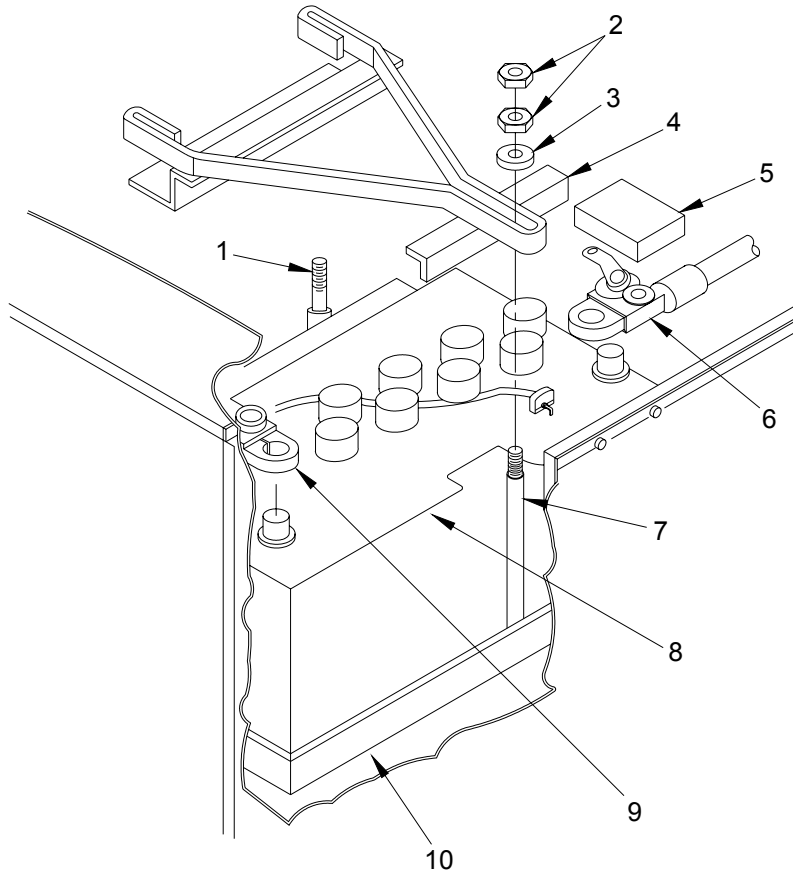


FIGURE 6. ELECTRICAL SYSTEM ASSEMBLY/BATTERY

SECTION II. REPAIR PARTS LIST. (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0302						
FIG. 6. ELECTRICAL SYSTEM ASSEMBLY/BATTERY						
1	PAOZZ	5306-01-519-1096	30554	98-19567-01	ROD, BATTERY HOLDOWN	2
2	PAOZZ	5310-00-997-1888	96906	MS35649-2252	NUT, PLAIN, HEXAGON	6
3	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	3
4	XBOZZ	6160-01-519-0139	30554	98-19566	RETAINER, BATTERY	2
5	PAOZZ	5940-01-476-9076	30554	98-19699	COVER, TERMINAL	2
6	PAOFF	6150-01-476-9061	30554	98-19593	LEAD, STORAGE BATTERY (POS)	1
7	PAOZZ		30554	98-19567-02	ROD, BATTERY HOLDOWN	1
8	PAOZZ	6140-01-476-8945	30554	98-19745	BATTERY, STORAGE (PRIMARY BATTERY SEALED)	1
8A	PAOZZ	6140-00-059-3528	81349	M11188/2-A-24	BATTERY, STORAGE (ALTERNATE BATTERY SHIPPED WITH ACID)	1
8B	PAOZZ	6140-01-390-1968	81349	M11188/2-B-24	BATTERY, STORAGE (ALTERNATE BATTERY SHIPPED DRY)	1
9	PAOFF	6150-01-476-9059	30554	98-19594	LEAD, STORAGE BATTER (NEG)	1
10	XBOZZ		30554	98-19558	TRAY, BATTERY	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

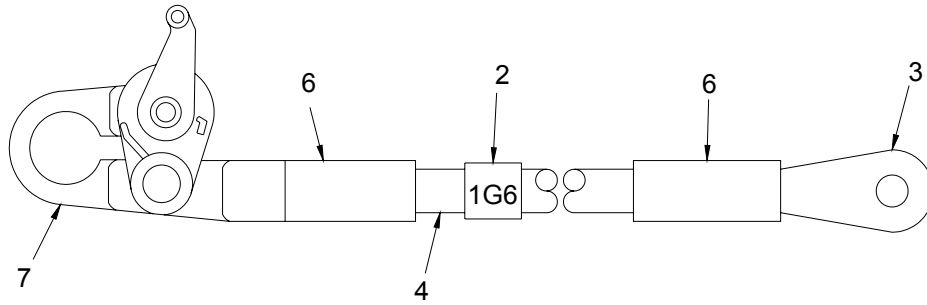
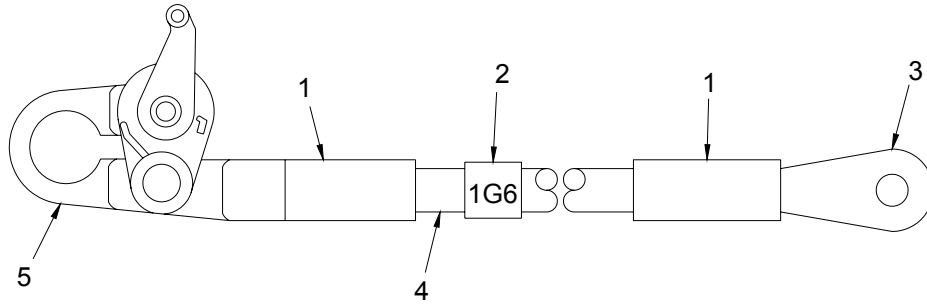


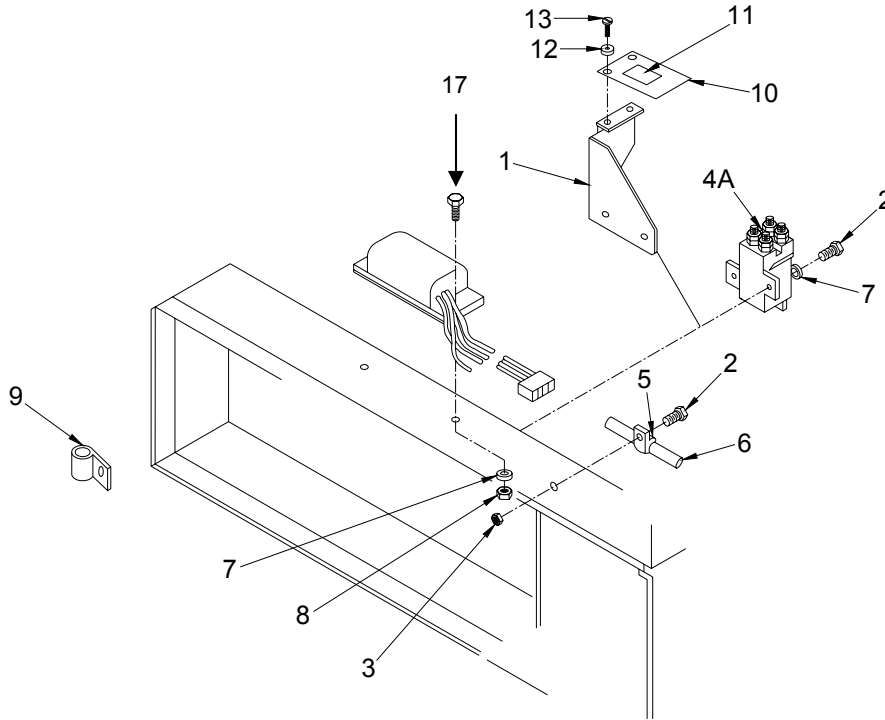
FIGURE 7. ELECTRICAL SYSTEM ASSEMBLY/BATTERY CABLES

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 030201	
					FIG. 7. ELECTRICAL SYSTEM ASSEMBLY/BATTERY CABLES	
1	PAFZZ	5970-00-915-9186	81343	M23053/5-108-2	INSULATION SLEEVING	2
2	XBFZZ		30554	88-20541-16	INSULATION, SLEEVING	2
3	PAFZZ	5940-00-557-4343	96906	MS25036-121	TERMINAL, LUG	2
4	PAFZZ	6145-01-029-6544	16764	264A	WIRE, ELECTRICAL	2
5	PAFZZ	5940-01-476-8951	30554	98-19518-01	TERMINAL, QUICK DISC	1
6	XBFZZ		30554	88-20541-15	INSULATION, SLEEVING	2
7	PAFZZ	5940-01-476-8981	30554	98-19518-02	TERMINAL, QUICK DISC	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

Configuration with Contactor (Item 4A) Part Number E033845



Configuration with Contactor (Item 4B) Part Number CT100D24C1S

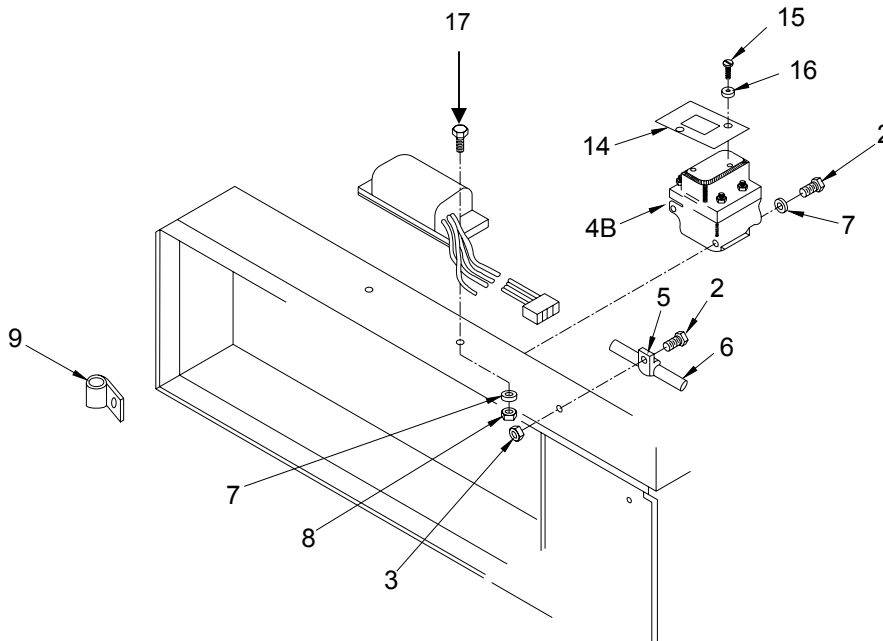


FIGURE 8. ELECTRICAL SYSTEM ASSEMBLY/CONTACTOR ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0303						
FIG. 8. ELECTRICAL SYSTEM ASSEMBLY/CONTACTOR ASSEMBLY						
1	XBOZZ		30554	98-19719	BRACKET, MOUNTING	1
2	PAOZZ	5305-01-187-5878	78189	61-101041-90-014	SCREW, ASSEMBLED, WAS	3
3	PAOZZ	5310-01-477-1368	30554	88-20033-8	WASHER, FLAT	1
4A	PAOZZ	6110-01-507-7938	01XD4	CT100D24C1S	CONTACTOR, MAGNETIC, 2 POLE UOC: LQQ	1
4B	PAOZZ	6110-01-477-1175	1R7H6	JAD-5005	CONTACTOR, MAGNETIC 2 POLE UOC: LQR	1
4C	PROOO	5930-00-422-4948	04426	11-504	SWITCH, SENSITIVE	1
5	PAOZZ	5340-01-476-9004	22175	43LC6-12-SS-R	STRAP, WEBBING	1
6	PAOZZ	6150-01-477-1176	30554	98-19597 (400Hz)	WIRING HARNESS 60/400 UOC: LQR	1
6	PAOZZ	6150-01-477-1177	30554	98-19592 (60Hz)	WIRING HARNESS 60/400 UOC: LQQ	1
7	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT #10 NOM STL CAD	4
8	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	2
9	PAOZZ	5340-01-477-0133	22175	54LC6-8-SS-R	CLAMP, LOOP	1
10	PAOZZ	5999-01-502-6278	30554	98-19726	COVER, PROTECTIVE	1
11	PAOZZ		15563	98-19709-02	LABLE, CAUTION	1
12	PAOZZ	5310-00-983-8483	96906	MS27183-5	WASHER, LOCK	2
13	PAOZZ	5305-00-036-6968	30554	69-662-18	SCREW	2
14	PAOZZ		01XD4	SHD00007A	COVER, PROTECTIVE	1
15	PAOZZ		01XD4	SCW0632-5	SCREW	2
16	PAOZZ		01XD4	WLK0006	WASHER, LOCK	2
17	PAOZZ	5305-01-378-7899	30554	88-20260-22	BOLT	2
END OF FIGURE						

SECTION II. REPAIR PARTS LIST(CONTINUED)

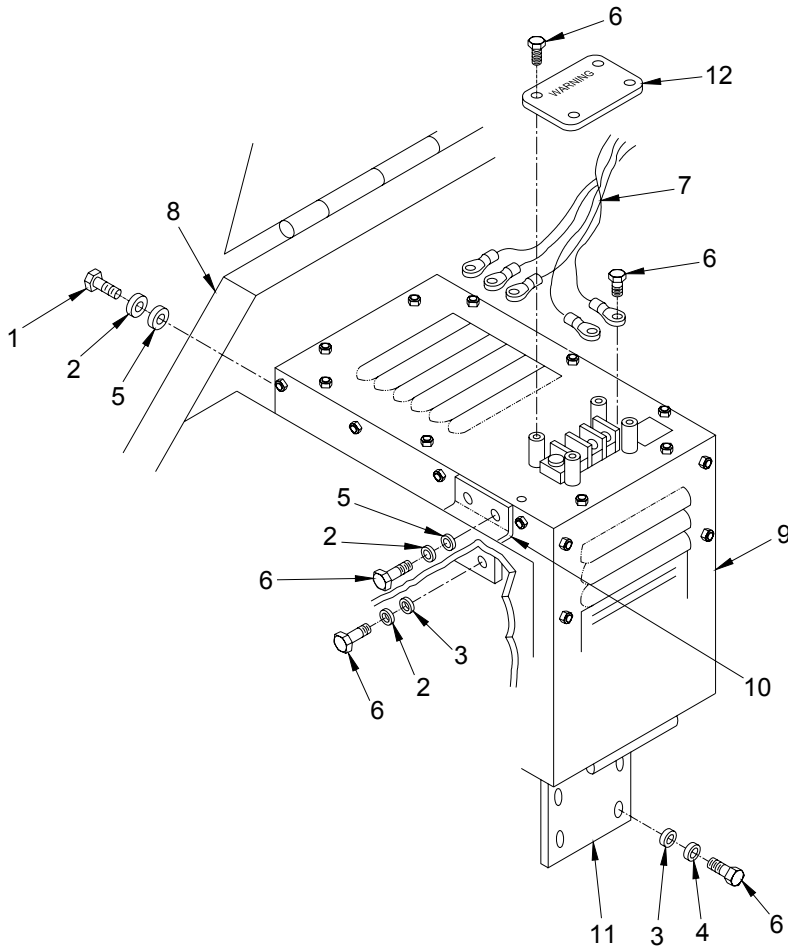


FIGURE 9. ELECTRICAL SYSTEM ASSEMBLY/FREQUENCY CONVERTER (A8)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0304						
FIG. 9. ELECTRICAL SYSTEM ASSEMBLY/FREQUENCY CONVERTER (A8)						
1	PAOZZ	5305-01-056-1501	24617	274825	SCREW, CAP, HEXAGON H	1
2	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	3
3	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT, CADMIUM	2
4	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10 .217 ID x .5 OD	1
5	PAOZZ	5310-00-543-2410	96906	MS35338-40	WASHER, LOCK, #4, SPLIT CADMIUM	2
6	PAOZZ	5305-01-378-7899	30554	88-20260-22	SCREW, CAP, HEXAGON H	15
7	PAOZZ	6150-01-476-9338	30554	98-19633	WIRING HARNESS, 60HZ UOC: LQQ	1
7	PAOZZ	6150-01-477-1173	30554	98-19729	WIRING HARNESS, 400HZ UOC: LQR	1
8	XBOZZ		30554	98-19570	PANEL, LEFT SIDE	1
9	PAOLA	5985-01-477-0855	60177	29340	FREQUENCY CONVERTER (A8) UOC: LQR	1
9	PAOLA	5895-01-477-0855	60177	29350	FREQUENCY CONVERTER (A8) UOC: LQQ	1
10	XBOZZ		30554	98-19618	BRACKET, MOUNTING	1
11	XBOZZ		30554	98-19549	BRACKET, MOUNTING	1
12					WARNING PLATE	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

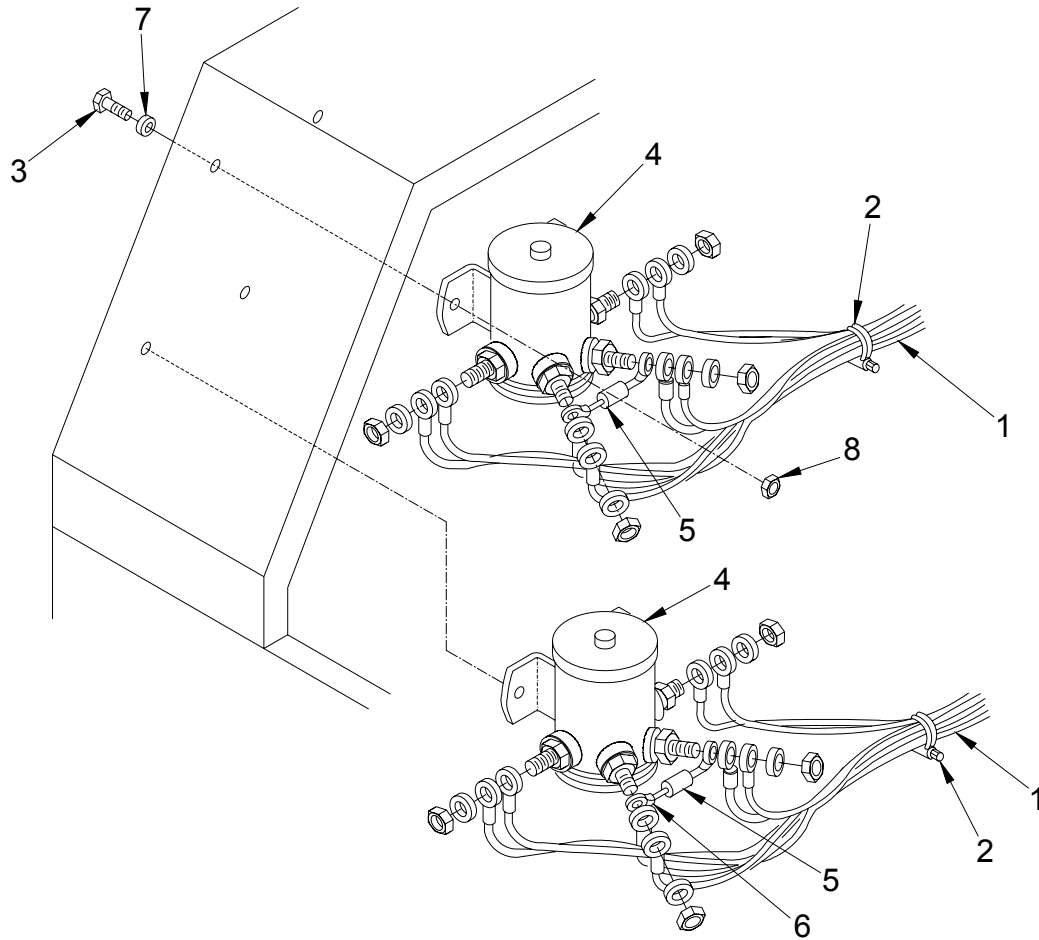


FIGURE 10. ELECTRICAL SYSTEM ASSEMBLY/RELAYS, ELECTROMAGNETIC

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0305	
					FIG. 10. ELECTRICAL SYSTEM ASSEMBLY/RELAYS, ELECTROMAGNETIC	
1	PAOZZ	6150-01-476-9338	30554	98-19633	WIRING HARNESS UOC: LQQ	1
1	PAOFF	6150-01-477-1173	30554	98-19729	WIRING HARNESS UOC: LQR	1
2	PAOZZ	5975-00-111-3208	81343	L-5-30-9-M	STRAP TIE DOWN 6	2
3	PAOZZ	5306-00-484-5730	80256	307608	BOLT, MACHINE	1
4	PAOZZ	5945-00-855-7478	16764	1115615	RELAY, ELECTROMAGNETIC	2
5	PAOZZ	5961-01-057-3305	81349	JANTX1N6072A	SEMICONDUCTOR DEVICE	2
6	PAOZZ	5940-01-369-2270	98410	AA-8715-10	TERMINAL, LUG	4
7	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT	1
8	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEX	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

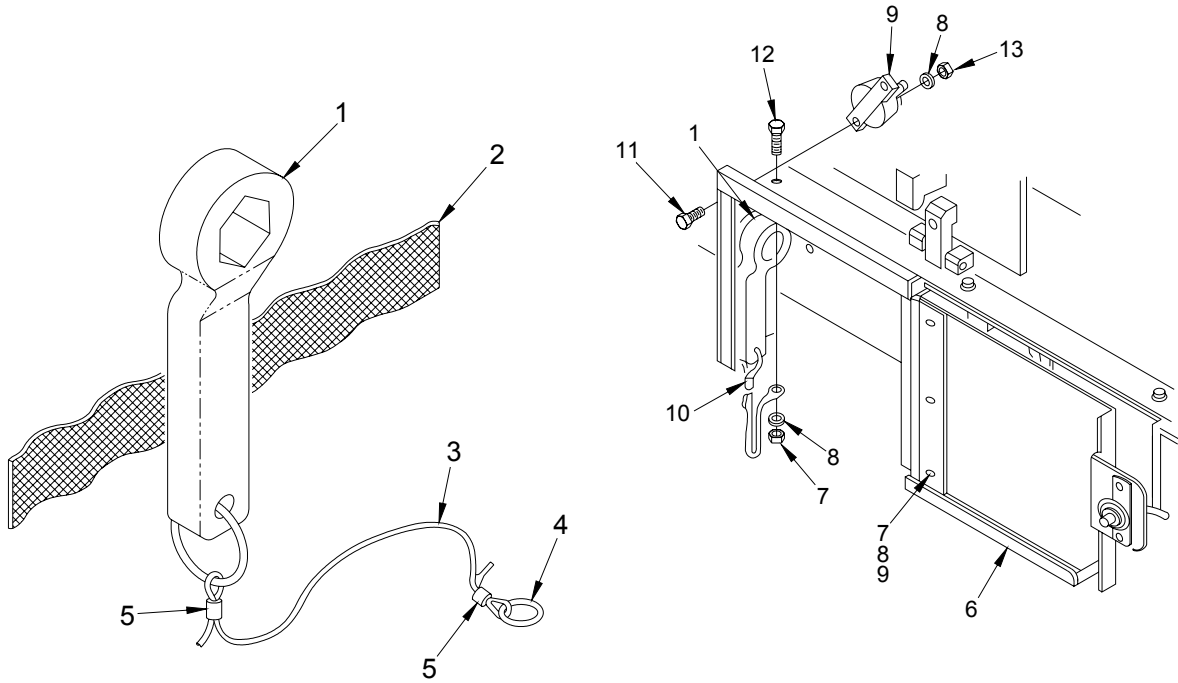


FIGURE 11. CONTROL BOX ASSEMBLY/LOAD WRENCH ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 04						
FIG. 11. CONTROL BOX ASSEMBLY/LOAD WRENCH ASSEMBLY						
1	PAOZZ	5120-01-483-3706	30554	98-19599	WRENCH ASSEMBLY, LOAD	1
2	XBOZZ	5325-01-237-2932	76381	SJ3541 TYPE 400	TAPE, HOOK AND LOOP	1
3	XBOZZ		2V507	8936T43	CORD, POLYESTER	1
4	PAOZZ	5940-00-107-1481	96906	MS20659-104	TERMINAL, LUG	1
5	XDOZZ	4030-01114-3894	96906	MS51844-23	SWAGING SL	2
6	XBOZZ		30554	98-19568	COVER, ASSEMBLY, PANE	1
7	PAOZZ	5310-00-207-8758	72962	79NM-82	NUT, SELF-LOCKING	3
8	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT	3
9	PAOZZ	5905-01-293-0175	34371	V32OPA40A	RESISTOR, VOLTAGE	1
10	PAOZZ	5325-01-237-2933	76381	SJ3542 TYPE 170	FASTENER, DUAL LOCKING	1
11	PAOZZ	5305-01-464-6667	30554	88-22793-4	SCREW, MACHINE	2
12	PAOZZ	5306-01-156-7663	19207	12325869	SCREW, MACHINE	3
13	PAOZZ	5310-00-208-9255	15653	MS21044C3	NUT, SELF-LOCKING	2
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

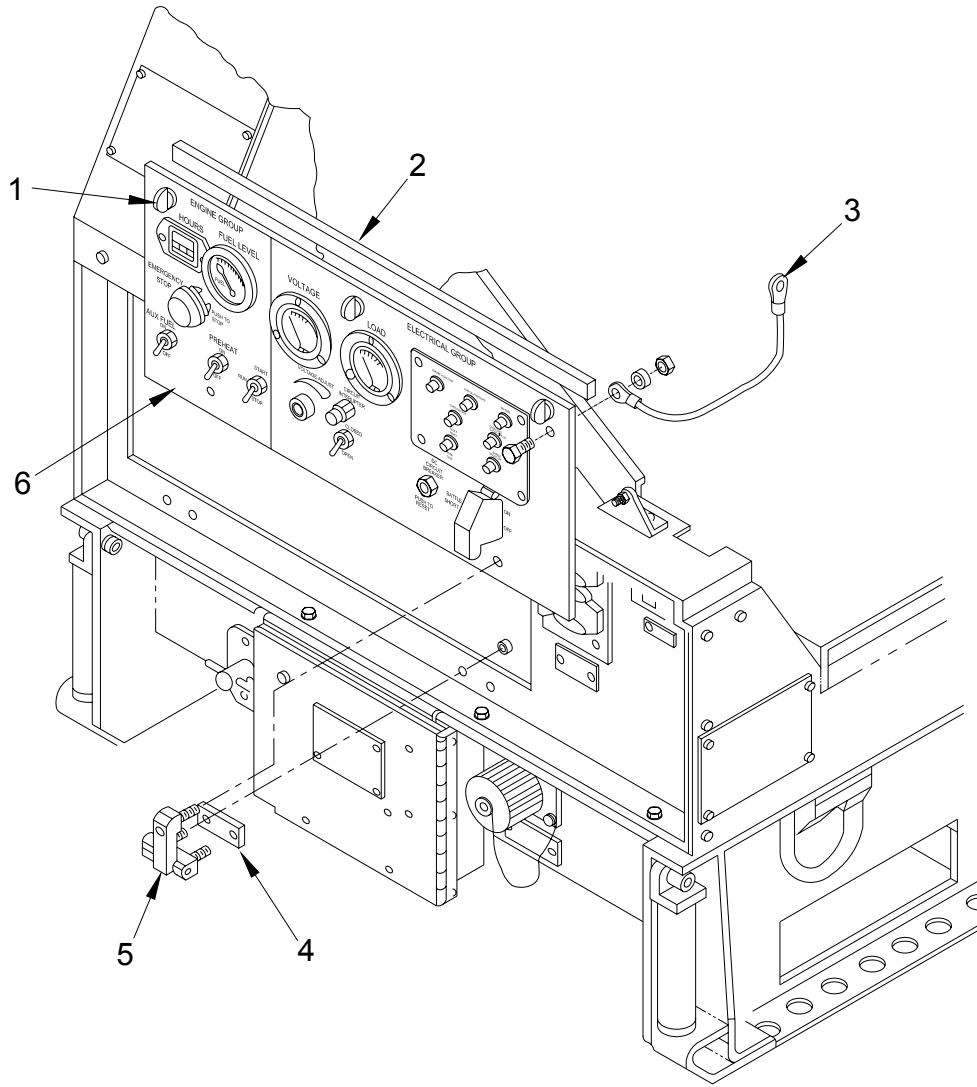


FIGURE 12. CONTROL PANEL ASSEMBLY (60/400 HZ)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0401	
					FIG. 12. CONTROL PANEL ASSEMBLY (60/400 HZ)	
1	PAOZZ	5325-01-301-7903	94222	85-35-309-56	RECEPTACLE, TURNLOCK	3
2	PAOZZ	5330-01-477-9623	30554	98-19645-06	GASKET, STRIP	3
3	PAOZZ	4020-01-476-9072	30554	98-19724	FIBER ROPE ASSEMBLY	1
4	XBOZZ		30554	98-19583	SPACER	2
5	PAOZZ	5340-01-476-9074	0E8J0	1055-U3	HINGE, BUTT	2
6	XBOOO		30554	98-19509	CONTROL PANEL ASSEM	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

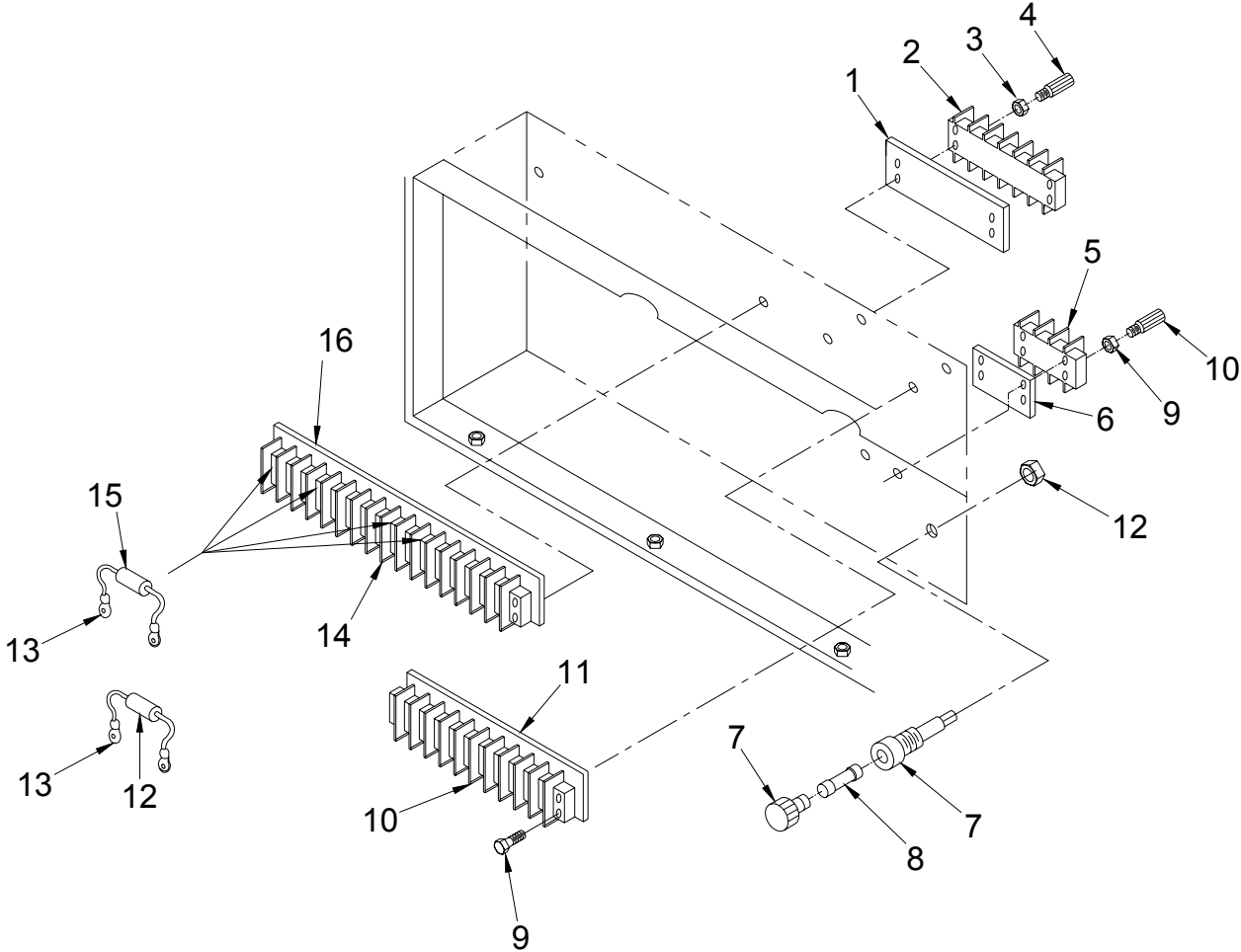


FIGURE 13. CONTROL BOX ASSEMBLY/CONTROL PANEL ASSEMBLY, 60 HZ (SHEET 1 OF 2)

SECTION II. REPAIR PARTS LIST (CONTINUED)

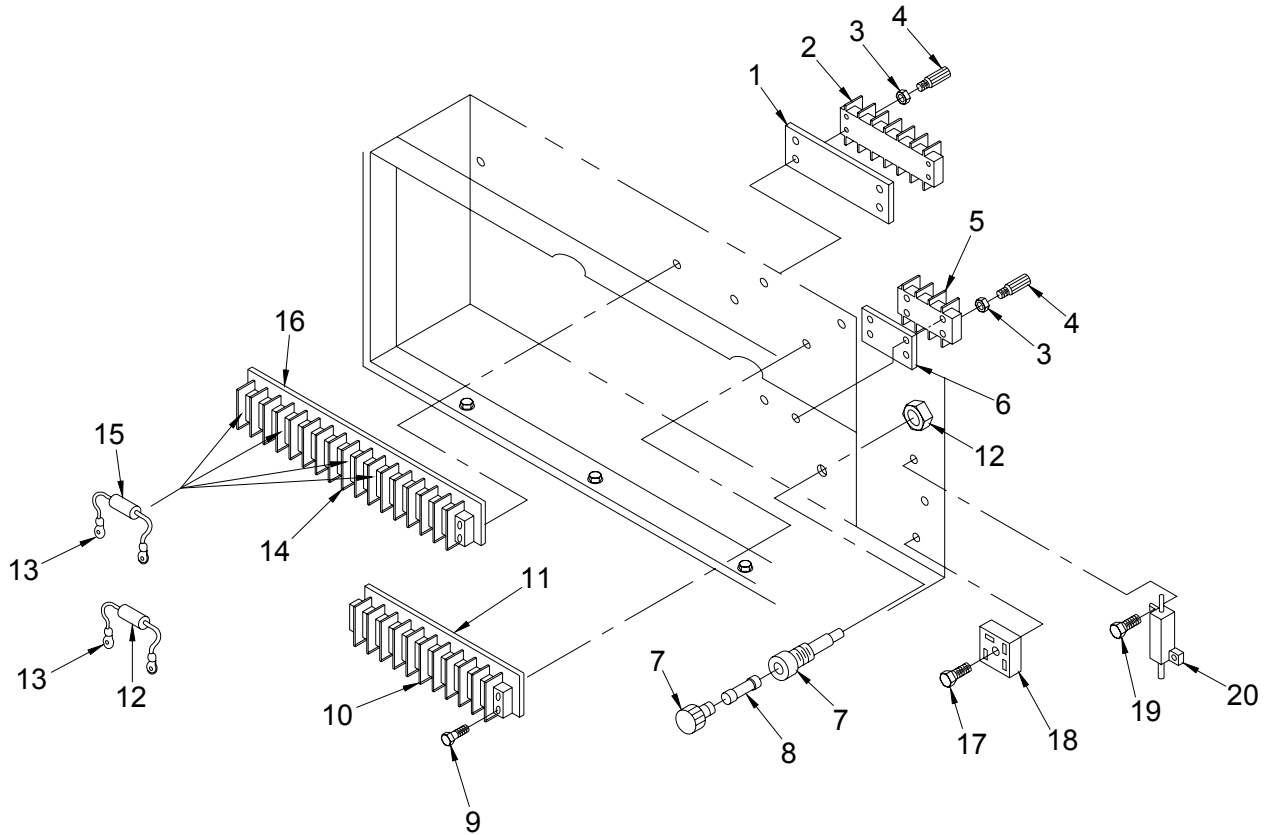


FIGURE 13. CONTROL BOX ASSEMBLY/CONTROL PANEL ASSEMBLY, 400 HZ (SHEET 2 OF 2)

SECTION II. REPAIR PARTS LIST. (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0401						
FIG. 13. CONTROL BOX ASSEMBLY/CONTROL PANEL ASSEMBLY (60/400 HZ)						
1	XBOZZ		9R803	3300-9-XP-74	PLATE, DESIGNATION	1
2	PAOZZ	5940-01-476-9191	9R803	3300-9	TERMINAL BOARD	1
3	PAOZZ	5310-00-045-3296	80205	MS35338-43	WASHER, LOCK #10, SPLIT, CADMIUM	4
4	PAOZZ	5340-01-476-8683	30554	98-19728	STANDOFF, THREADED	4
5	PAOZZ	5940-01-477-1254	9R803	3300-3	TERMINAL BOARD	1
6	XBOZZ		9R803	3300-3-XP-74	PLATE, DESIGNATION	1
7	PAOZZ	5920-01-476-9734	75915	342028PL	FUSEHOLDER, EXTRACTOR POST	1
8	PAOZZ	5920-00-131-9915	81349	F02A32V20A	FUSE, CARTRIDGE	1
9	PAOZZ	5305-00-036-6976	30554	69-662-21	SCREW, ASSEMBLED WAS	4
10	PAOZZ	5940-01-470-2470	9R803	3300-10	TERMINAL BOARD	1
11	XBOZZ	5940-01-470-3031	9R803	3300-10-XP-74	PLATE, DESIGNATION	1
12	PAOZZ		80131	3300-2	SEMICONDUCTOR DEVICE	1
13	PAFZZ	5940-01-425-2020	27264	AA-8704-06	TERMINAL, LUG	12
14	PAOZZ	5940-01-476-9186	9R803	3300-16	TERMINAL BOARD	1
15	PAOZZ	5961-00-484-8041	80131	1N5404	SEMICONDUCTOR DEVICE	3
16	XBOZZ		9R803	3300-16-XP-74	PLATE, DESIGNATION	1
17	PAOZZ	5305-01-187-5878	78189	61-101041-90-014 2B-0542B	SCREW, ASSEMBLED, WASHER	3
18	PAOZZ	5961-01-421-3024	25894	GBPC1204-ND	RECTIFIER, SEMICONDUCTOR DEVICE	1
19	PAOZZ	5305-00-224-1092	30554	69-662-5	SCREW, ASSEMBLED WASHER	2
20	PAOZZ	5905-00-535-1068	81349	RE70G2501	RESISTOR, FIXED	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST. (CONTINUED)

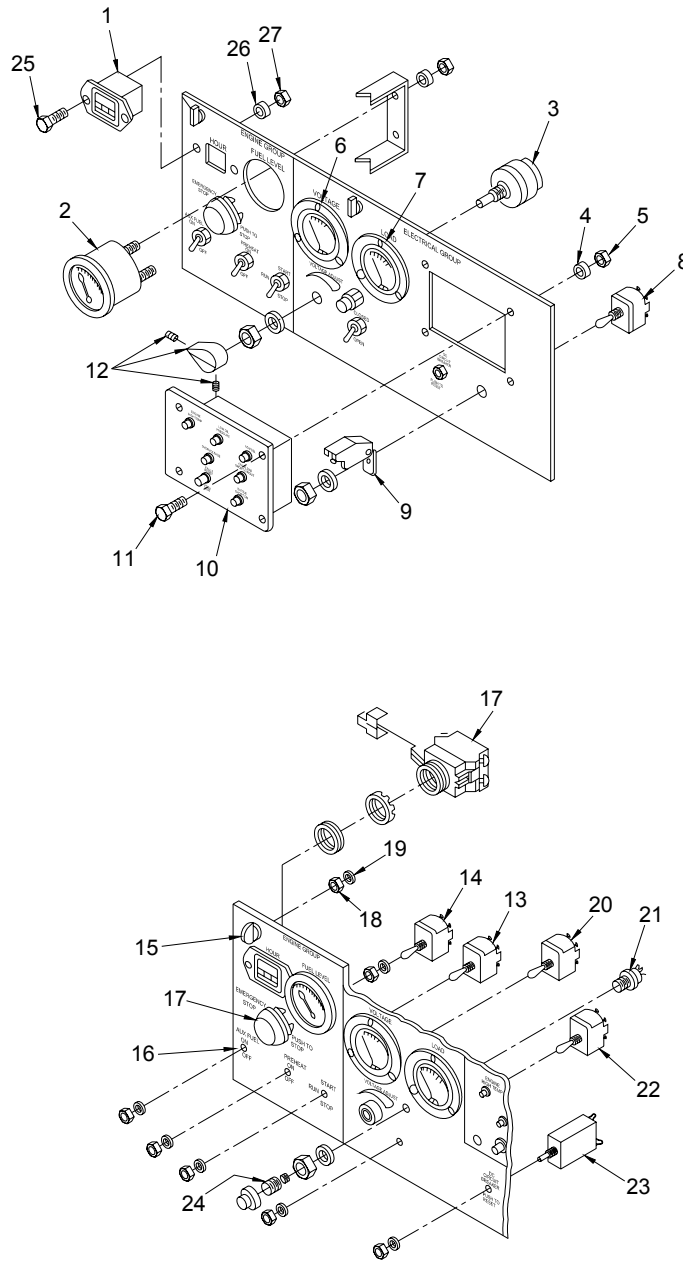


FIGURE 14. CONTROL BOX ASSEMBLY/CONTROL PANEL ASSEMBLY/
PANEL METERS, GAUGES, AND SWITCHES

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 040101						
FIG. 14. CONTROL BOX ASSEMBLY/CONTROL PANEL ASSEMBLY/PANEL METERS, GAUGES, AND SWITCHES						
1	PAOZZ	6645-01-458-7278	74400	85311	METER, TIME TOTALIZING	1
2	PAOZZ	6680-00-933-3600	09527	GG0352	INDICATOR, LIQUID QUANTITY	1
3	PAOZZ	5905-00-539-2573	81349	RV4SAYSD502A	RESISTOR, VARIABLE, N	1
4	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT #10 NOM STL CAD	4
5	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	4
6	PAOZZ	6625-01-477-0732	77221	628-20978	VOLTMETER	1
7	PAOZZ	6625-01-515-2404	77221	628-21025	METER, KILOWATT	1
8	PAOZZ	5930-01-368-2891	81640	8906K4533	SWITCH, TOGGLE	1
9	PAOZZ		30554	88-20549-1	GUARD, SWITCH	1
10	PAOZZ	6625-01-477-0634	60177	29390	INDICATOR, FAULT LOC	1
11	PAOZZ	5305-00-989-7435	96906	MS35207-264	SCREW, MACH-PAN HEAD #10-32 .625 LONG	4
12	PAOZZ	5355-00-559-8943	96906	MS91528-2K2B	KNOB	1
13	PAOZZ	5930-00-683-1626	96906	MS24523-30	SWITCH, TOGGLE	1
14	PAOZZ	5930-00-683-1628	96906	MS24523-22	SWITCH, TOGGLE	1
15	PAOZZ	5325-01-320-8193	94222	85-12-500-16	STUD, TURNLOCK FASTE	2
16	XBOZZ		30554	98-19553	PANEL, CONTROL BOX	1
17	PAOZZ	5930-01-478-0101	60886	HW1B-Y2CO2-R	SWITCH, PUSH-PULL	1
18	PAOZZ	5310-01-365-4381	94222	85-46-103-39	WASHER, FLAT	2
19	PAOZZ	5310-00-822-8525	94222	85-34-101-20	WASHER, SPLIT	2
20	PAOZZ	5930-00-906-3477	96906	MS27407-2	SWITCH, TOGGLE	1
21	PAOZZ	6210-00-583-9349	83330	800-1030-0337-504	LIGHT, INDICATOR	1
22	PAOZZ	5930-01-368-2893	96906	890K4519	SWITCH, TOGGLE	1
23	PAOZA	5925-00-089-3031	77342	W23X1A1G-7.5	CIRCUIT BREAKER	1
24	PAOZZ	6240-00-080-2012	81349	M6363/8-5AS15	LAMP INCANDESCENT	1
25	PAOZZ	5305-01-335-7410	96906	MS51492-02	BOLT,	2
26	PAOZZ		30554	88-20033-6A	WASHER, FLAT	2
27	PAOZZ		30554	95-8125-2	NUT	2
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

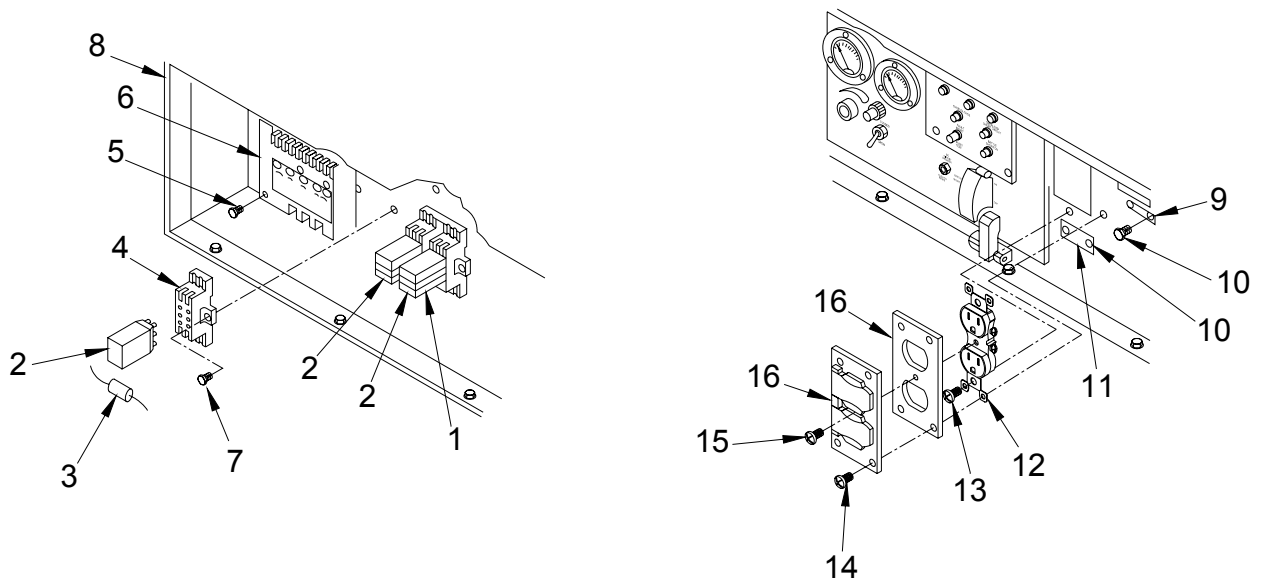


FIGURE 15. CONTROL BOX ASSEMBLY/RECEPTACLE, FILTERS, TERMINALS, VOLTAGE RESISTORS

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0402	
					FIG. 15. CONTROL BOX ASSEMBLY/ RECEPTACLE, FILTERS, TERMINALS, AND VOLTAGE RESISTORS	
1	PAOZZ	5360-01-260-0317	60886	SY4S-02F1	SPRING, HELICAL, EXTE	3
2	PAOZZ	5945-01-461-2084	60886	RH2B-ULDC24	RELAY, ELECTROMAGNET	3
3	PAOZZ	5961-01-057-3305	81349	JANTX1N6072A	SEMICONDUCTOR DEVIC	1
4	PAOZZ	5935-01-477-9883	042U1	SH2B-05	SOCKET, PLUG-IN ELEC	4
5	PAOZZ	5305-01-247-6829	45722	P-15121-38	SCREW, ASSEMBLED WAS	2
6	PAOZZ	2990-01-477-1371	0BXW5	SLC100	CONTROL UNIT, GOVERN	1
7	PAOZZ	5303-01-201-8979	30554	69-662-24	SCREW, ASSEMBLED, WASHER	6
8	XBOZZ		30554	69-19554	CONTROL BOX, 60HZ UOC: LQQ	1
8	XBOZZ		30554	98-19710	CONTROL BOX, 400HZ UOC: LQR	1
9	XBOZZ		30554	98-19586-08	PLATE, IDENTIFICATION	1
10	PAOZZ	5320-00-932-1972	81349	M24243/6-A402H	RIVET, BLIND	4
11	XBOZZ		30554	98-19586-04	PLATE, IDENTIFICATION	1
12	PAOZZ	5935-01-367-7814	74545	CR15	CONNECTOR, BODY, RECE	1
13	PAOZZ	5305-00-036-6972	45722	P15121-20	SCREW, ASSEMBLED, WAS	2
14	PAOZZ	5305-00-036-6976	30554	69-662-21	SCREW, ASSEMBLED, WAS	4
15	PAOZZ	5305-01-467-1561	30554	88-22791-2	SCREW, MACHINE	1
16	PAOZZ	5975-00-879-7234	64533	RP-5	PLATE, WALL, ELECTRIC	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 05	
					COOLING SYSTEM (NON-PROCURABLE)	
	--	--	--	--	COOLING FAN ASSY (SEE GROUP O501 FOR PARTS BREAKDOWN)	1
	--	--	--	--	HI/LO TEMP SWITCHES (SEE GROUP 0502 FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

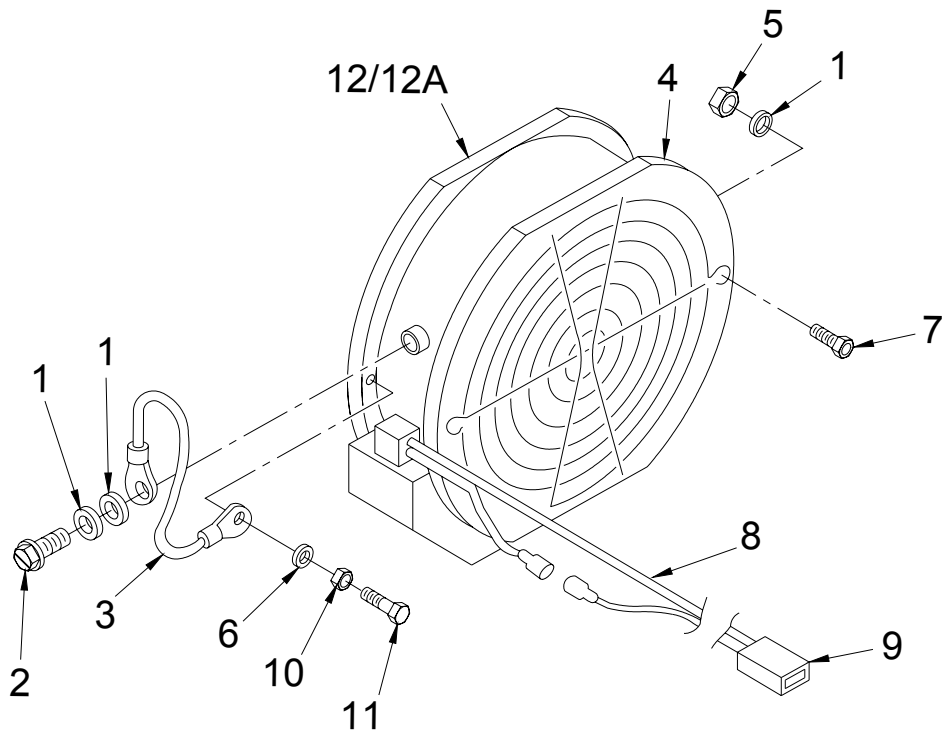


FIGURE 16. COOLING SYSTEM/COOLING FAN ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0501						
FIG. 16. COOLING SYSTEM/COOLING FAN ASSEMBLY						
1	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217ID x .50D	3
2	PAOZZ	5305-01-470-6197	30554	69-662-63	SCREW, ASSEMBLED WAS	1
3	PAOZZ	5920-01-477-0598	30554	98-19734	LINK, GROUND, FAN	2
4	PAOZZ	4140-01-476-9063	5Y921	559262	GUARD, FAN IMPELLER	2
5	PAOZZ	5310-00-982-6814	80205	MS21044C08	NUT, SELF-LOCKING #8	1
6	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT, #8	1
7	PAOZZ	5306-01-156-7663	19207	12325869	BOLT, MACHINE	4
8	PAOZZ	6150-01-478-1124	93742	98-19714-01	CABLE ASSEMBLY, POWE	1
9	PAOZZ	6150-01-476-9315	30554	98-19714-02	PLUG AND CORD ASSEMBLY	1
10	PAOZZ	5310-00-407-9566	96906	MS35338-45	WASHER, LOCK, SPRING	1
11	PAOZZ	3305-01-470-1425	30554	88-20260-11	BOLT, MACHINE	1
12	PAOZZ	4140-01-503-3160	54921	031842	FAN TUBEAXIAL, 60HZ UOC: LQQ	1
12A	PAOZZ	4140-01-476-9068	54921	031897	FAN VENTILATING, 400HZ UOC: LQR	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

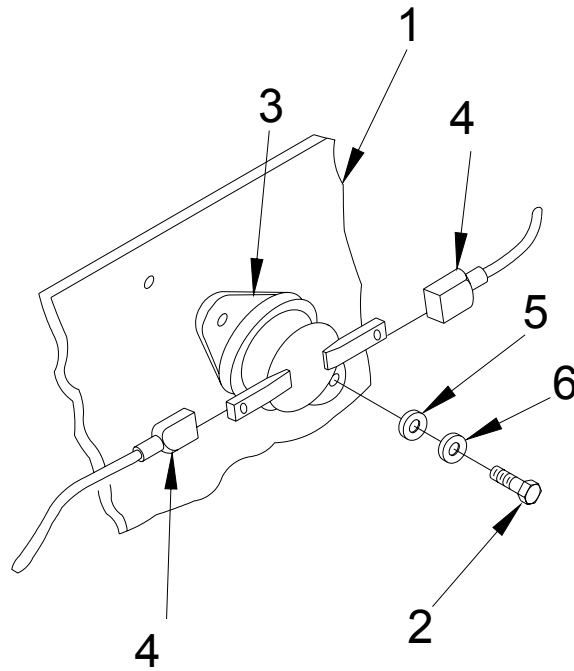


FIGURE 17. COOLING SYSTEM/HI/LO TEMPERATURE SWITCHES

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0502						
FIG. 17. COOLING SYSTEM/HI/LO TEMPERATURE SWITCHES						
1	PAOZZ	5930-01-477-0617	59270	CA-110	SWITCH, THERMOSTATIC	1
2	PAOZZ	5305-00-889-2997	80205	MS24693-C48	SCREW, MACHINE	1
3	PAOZZ	5930-01-436-4959	59270	CA-85	SWITCH, THERMOSTATIC	1
4	PAOOO	6150-01-476-9338	30554	98-19633	WIRING HARNESS, 60HZ UOC: LQQ	1
4	PAOFF	6150-01-477-1173	30554	98-19729	WIRING HARNESS, 400HZ UOC: LQR	1
5	PAOZZ	5310-00-582-5965	96906	MS35338-44	WASHER, LOCK, #1/4, SPLIT CADMIUM	4
6	PAOZZ	5310-00-951-4679	96906	MS27183-3	WASHER, FLAT	4
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 06	
					FUEL SYSTEM (NON-PROCURABLE)	
1	---	---	---	---	FUEL TANK STRAINER ASSEMBLY (SEE GROUP 0601 FOR PARTS BREAKDOWN)	1
2	---	---	---	---	FUEL TANK (SEE GROUP 0602 FOR PARTS BREAKDOWN)	1
3	---	---	---	---	FUEL-LEVEL ASSEMBLY (SEE GROUP 060201 FOR PARTS BREAKDOWN)	1
4	---	---	---	---	FUEL-LEVEL SWITCH (SEE GROUP 060202 FOR PARTS BREAKDOWN)	1
5	---	---	---	---	FUEL TANK PICKUP TUBE (SEE GROUP 060203 FOR PARTS BREAKDOWN)	1
6	---	---	---	---	PRIMARY FUEL PUMP (SEE GROUP 0603 FOR PARTS BREAKDOWN)	1
7	---	---	---	---	AUXILIARY FUEL PUMP (SEE GROUP 0604 FOR PARTS BREAKDOWN)	1
8	---	---	---	---	FUEL FILTER/WATER SEPARATOR (SEE GROUP 0605 FOR PARTS BREAKDOWN)	1
9	---	---	---	---	AIR CLEANER ASSEMBLY (SEE GROUP 0606 FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

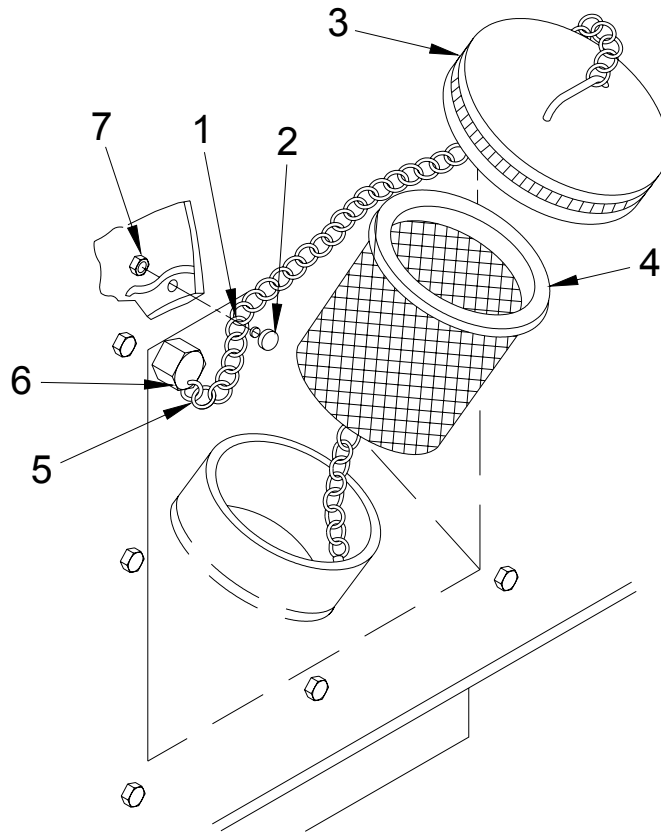


FIGURE 18. FUEL SYSTEM ASSEMBLY/FUEL TANK STRAINER ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601	
					FIG. 18. FUEL SYSTEM ASSEMBLY/FUEL TANK STRAINER ASSEMBLY	
1	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217ID x .5OD	1
2	PAOZZ	5305-01-378-7899	30554	88-20260-22	SCREW, CAP, HEXAGON H	1
3	PAOZZ	5342-01-198-7569	60012	98-19516	CAP, FILLER OPENING	1
4	PAOZZ	4730-01-476-9855	34234	13003	STRAINER ELEMENT, SE	1
5	PAOZZ		81348	SF SIZE 1	CHAIN, SASH	1
6	PAOZZ	4030-00-270-5436	96906	MS87006-3	HOOK, CHAIN S	1
7	PAOZZ	5310-00-982-6814	80205	MS21044C08	NUT, SELF-LOCKING #8	4
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

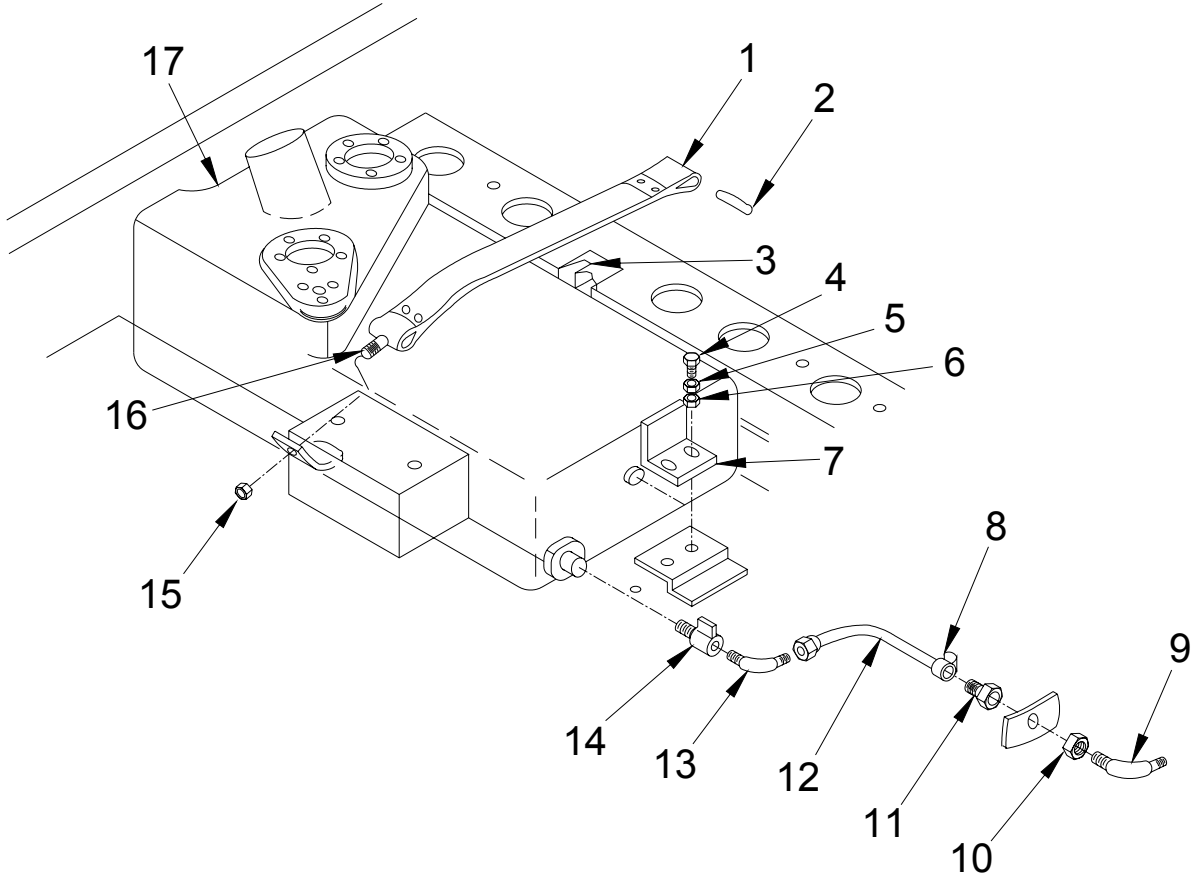


FIGURE 19. FUEL SYSTEM ASSEMBLY/FUEL TANK

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0602						
FIG. 19. FUEL SYSTEM ASSEMBLY/FUEL TANK						
1	PAFZZ	5340-01-476-9144	30554	98-19613	STRAP, RETAINING	1
2	PAFZZ	5315-01-476-9086	30554	98-19703	PIN, STRAIGHT, HEADLE	1
3	PAFZZ	5340-01-476-9147	30554	98-19702	CLIP, ROD RETAINER	1
4	PAOZZ	5306-00-484-5730	80256	88-20260-31	BOLT, MACHINE	2
5	PAOZZ	5310-00-543-2410	96906	MS35338-40	WASHER, LOCK, #4, SPLIT CADMIUM	2
6	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	2
7	XBFZZ		30554	98-19611	ANGLE, FUEL TANK STO	1
8	PAFZZ	4730-01-476-9775	81343	5-5-070701C	ELBOW, HOSE	1
9	PAOZZ	4730-01-470-1626	30554	88-20561-1	CLAMP, HOSE	1
10	PAFZZ	4730-01-020-5607	81343	S-070118C	NUT, SELF-LOCKING	1
11	PAOZZ	4730-00-073-2151	01276	98-19744-02	ADAPTER, STRAIGHT, TU	1
12	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 9.5 INCHES	1
13	PAFZZ	4730-01-476-9101	81343	4-4430260C	ELBOW, HOSE	1
14	PAFZZ	4820-01-477-2791	93061	MV608-4	VALVE, BALL	1
15	PAOZZ	5310-00-997-1888	96906	MS35649-2252	NUT, PLAIN, HEXAGON	1
16	PAFZZ	5305-00-984-6218	96906	MS35206-271	SCREW, MACHINE	1
17	PAFZZ		30554	98-19557	TANK, FUEL	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

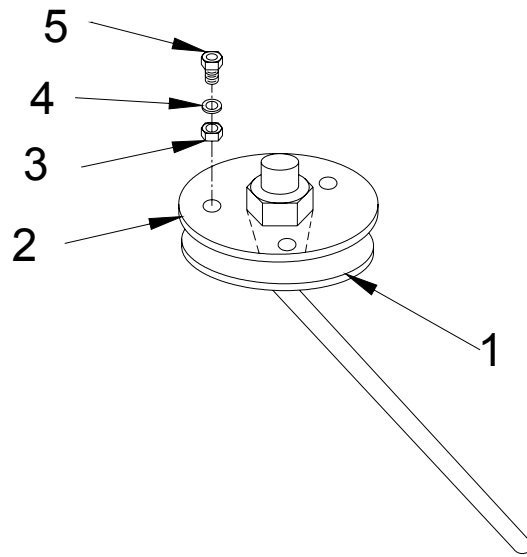


FIGURE 20. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL-LEVEL ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 060201	
					FIG. 20. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL- LEVEL ASSEMBLY	
1	PAOZZ	5330-01-476-9140	30554	98-19610	GASKET	1
2	PAOZZ	4710-01-478-3637	30554	98-19609	TUBE ASSY, METAL	1
3	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK	3
4	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT	3
5	PAOZZ	5305-00-984-6210	96906	MS35206-263	SCREW, MACHINE	3
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

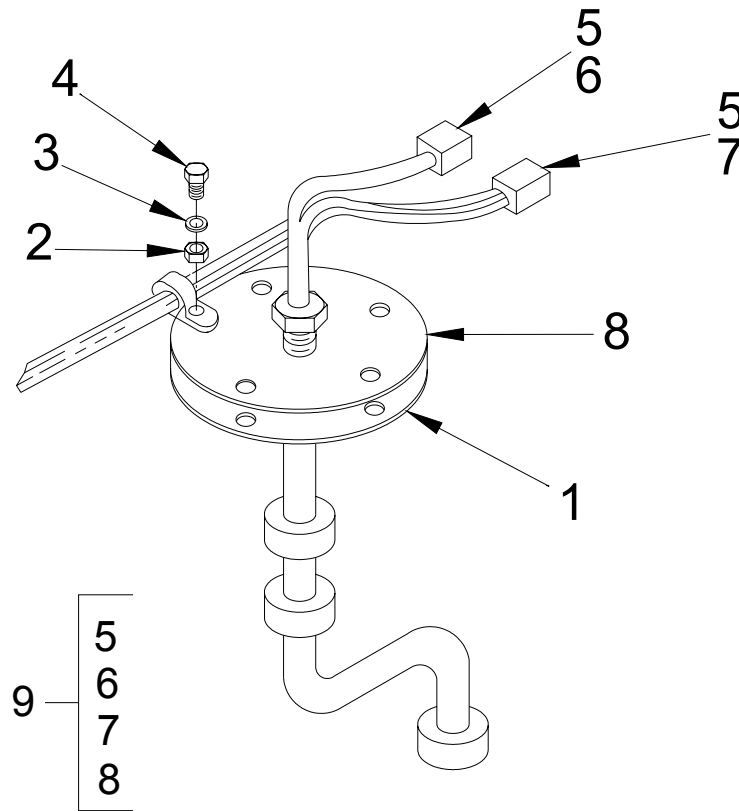


FIGURE 21. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL-LEVEL SWITCH

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 060202	
					FIG. 21. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL LEVEL-SWITCH	
1	PAOZZ	5330-01-476-9140	30554	98-19610	GASKET	2
2	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT	1
3	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK	1
4	PAOZZ	5305-00-984-6210	96906	MS35206-263	SCREW, MACHINE	1
5	PAFZZ		30554	88-20476	CONTACT, ELECTRICAL	2
6	PAFZZ	5935-01-053-1955	30554	88-20473	CONNECTOR BODY, PLUG	1
7	PAFZZ	5935-00-482-7721	30554	88-20471	CONNECTOR BODY, PLUG	1
8	PAFZZ		30554	98-19519	SWITCH, FUEL LEVEL ASSEMBLY	1
9	PAFZZ	2910-01-476-9779	30554	98-19722	SWITCH ASSEMBLY	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

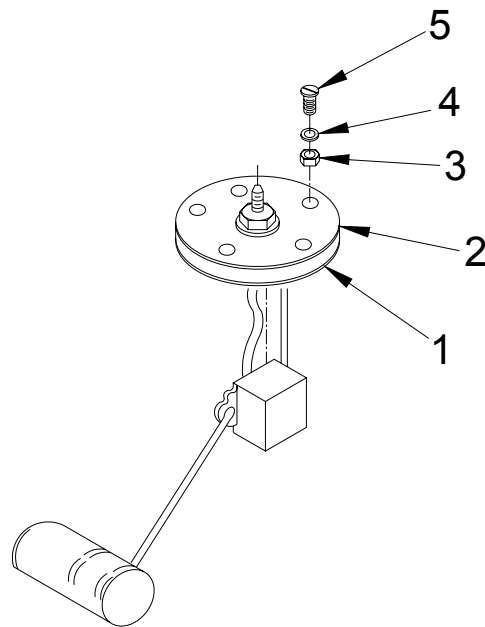


FIGURE 22. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL TANK PICKUP TUBE

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 060203	
					FIG. 22. FUEL SYSTEM ASSEMBLY/FUEL TANK/FUEL TANK PICKUP TUBE	
1	PAOZZ	5330-01-366-2836	30554	88-20286	GASKET	2
2	PAOZZ	6680-01-476-9362	09527	LS4082	TRANSMITTER, LIQUID	1
3	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT	1
4	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT CADMIUM	1
5	PAOZZ	5305-00-984-6210	96906	MS35206-263	SCREW, MACHINE	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

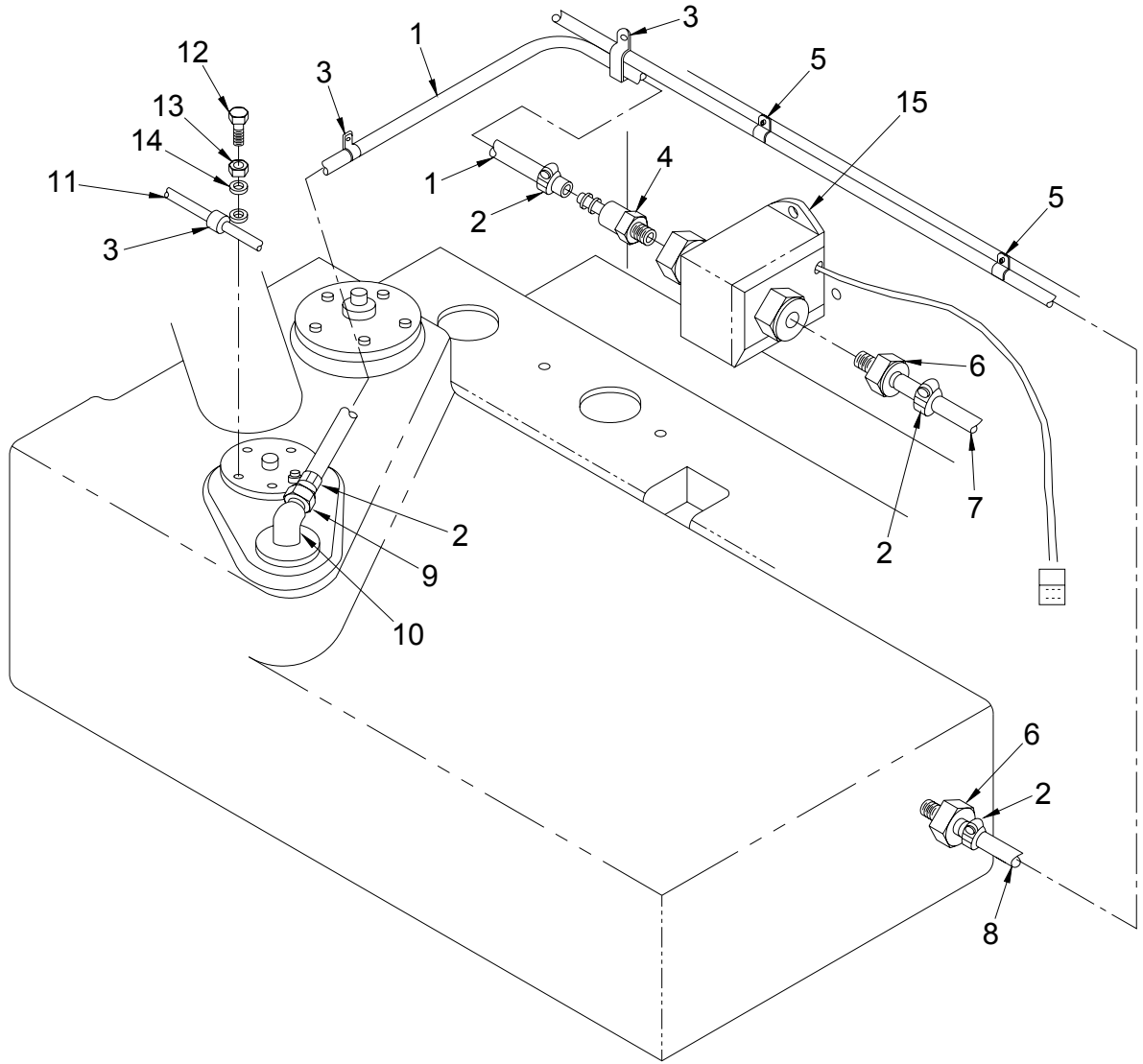


FIGURE 23. FUEL SYSTEM ASSEMBLY/PRIMARY FUEL PUMP

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0603						
FIG. 23. FUEL SYSTEM ASSEMBLY/PRIMARY FUEL PUMP						
1	MOOZZ		30554	88-20579-4	HOSE, NONMETALLIC MAKE FROM P/N 208-5 (98441), 18.0 INCHES	1
2	PAOZZ	4730-01-470-1626	30554	88-20561-1	CLAMP, HOSE	4
3	PAOZZ	5340-00-929-1794	96906	MS21334-31	CLAMP, LOOP	2
4	PAOZZ	2940-01-365-6535	72850	479735	FILTER BODY, FLUID	1
5	PAOZZ	5340-01-476-9004	22175	43LC6-12-SS-R	STRAP, WEBBING	1
6	PAOZZ	4730-00-277-7904	93061	125HBL-5-2	ADAPTER, STRAIGHT, PI	2
7	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 14.2 INCHES	1
8	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 40.0 INCHES	1
9	PAOZZ		30554	98-19744-03	ADAPTER, STRAIGHT, TU	1
10	PAOZZ	4730-00-432-2860	81343	4-4-040221	ELBOW, TUBE	1
11	PAOZZ	6150-01-477-1173	30554	98-19729	WIRING HARNESS	1
12	PAOZZ	5305-00-984-6210	96906	MS35206-263	SCREW, MACHINE	1
13	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT #10 NOM STL CAD	1
14	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT, CADMIUM	1
15	PAOZZ	2910-01-517-8606	30554	98-19749-01	PUMP, ASSEMBLY, FUEL	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

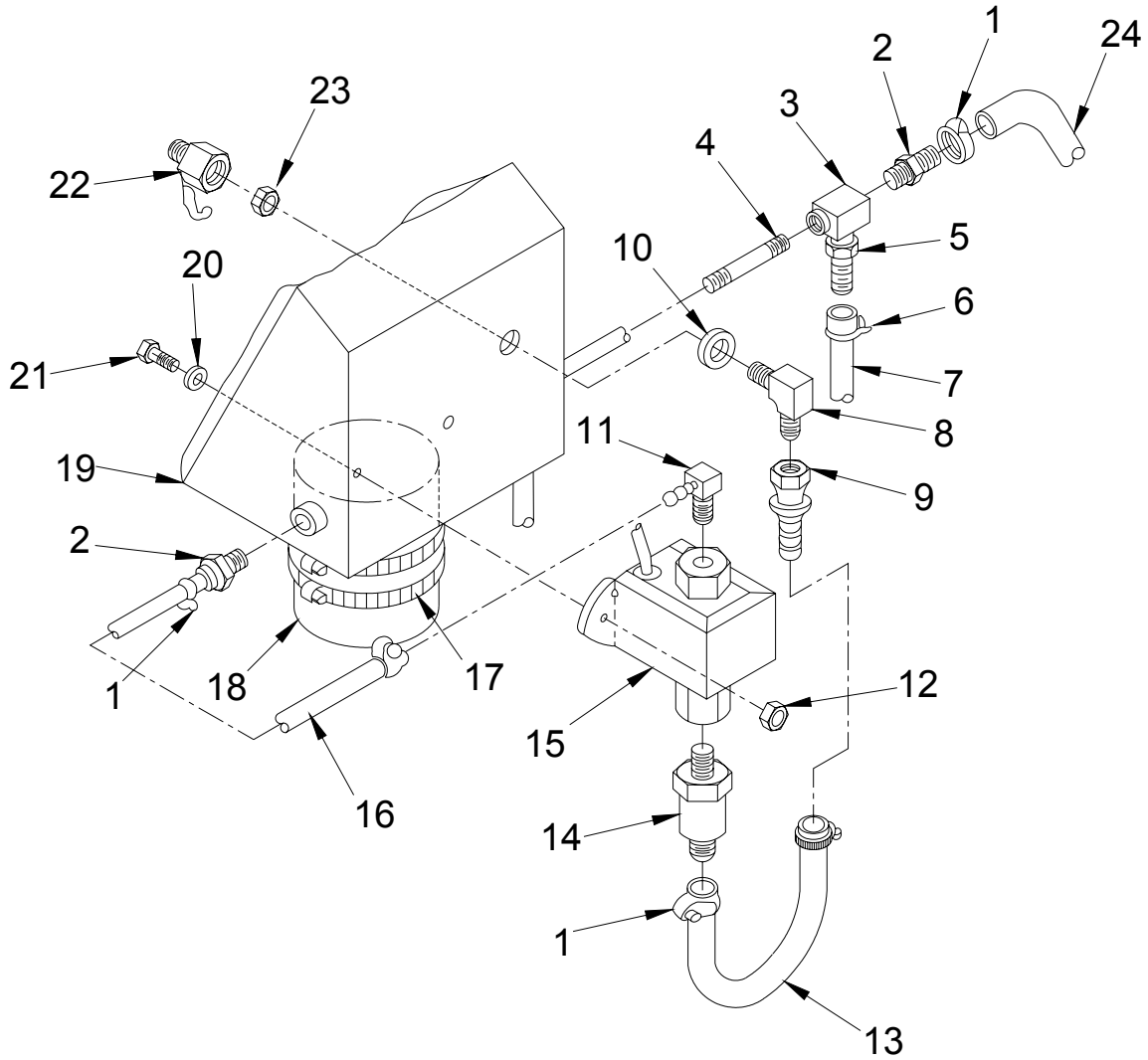


FIGURE 24. FUEL SYSTEM ASSEMBLY/AUXILIARY FUEL PUMP

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0604						
FIG. 24. FUEL SYSTEM ASSEMBLY/AUXILIARY FUEL PUMP						
1	PAOZZ	4730-01-470-1626	30554	88-20561-1	CLAMP, HOSE	14
2	PAOZZ	4730-00-277-7904	93061	125HBL-5-2	ADAPTER, STRAIGHT	1
3	PAOZZ	4730-00-595-1887	81343	2-2-2-140438C	TEE, PIPE	2
4	PAOZZ	4730-00-817-6194	96906	MS51873-10B	NIPPLE, PIPE	1
5	PAOZZ	4730-01-463-2091	93061	125 HB-2-2	ADAPTER, STRAIGHT	1
6	PAOZZ	4730-01-476-9921	2V507	5324K81	CLAMP, HOSE	6
7	PAOZZ		30554	98-19736-01	HOSE, NON-METALLIC	1
8	PAOZZ	4730-01-476-9775	81343	5-5-070701C	ELBOW, HOSE	1
9	PAOZZ		30554	98-19744-01	ADAPTER, STRAIGHT	2
10	PAOZZ	5310-01-399-2044	96906	MS14226-64YC816	WASHER, FLAT	1
11	PAOZZ	4730-01-102-6544	81343	4-2 430260C	ELBOW, PIPE TO HOSE	2
12	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	2
13	MOOZZ	4720-01-470-6230	30554	88-20579-4	HOSE, NONMETALLIC MAKE FROM P/N 208-5 (98441), 10.0 INCHES	1
14	PAOZZ	2940-01-365-6535	72850	479735	FILTER BODY, FLUID	2
15	PAOZZ	2910-01-517-8606	30554	98-19749-02	PUMP, FUEL, ELECTRICA	1
16	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 9.0 INCHES	1
17	PAOZZ	4730-01-470-1423	30554	88-20561-5	CLAMP, HOSE	1
18	XBOZZ		30554	98-19544	COLLAR, FILL PORT	1
19	XBOZZ		30554	98-19608	POCKET, FUEL FILL	1
20	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217ID x .50D	1
21	PAOZZ	5306-01-156-7663	19207	12325869	BOLT, MACHINE	1
22	PAOZZ	4730-00-812-1333	93742	69-539-2	CAP, TUBE	1
23	PAOZZ	4730-01-020-5607	96906	MS51860-54	LOCKNUT, TUBE FITTING	1
24	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 9.0 INCHES	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

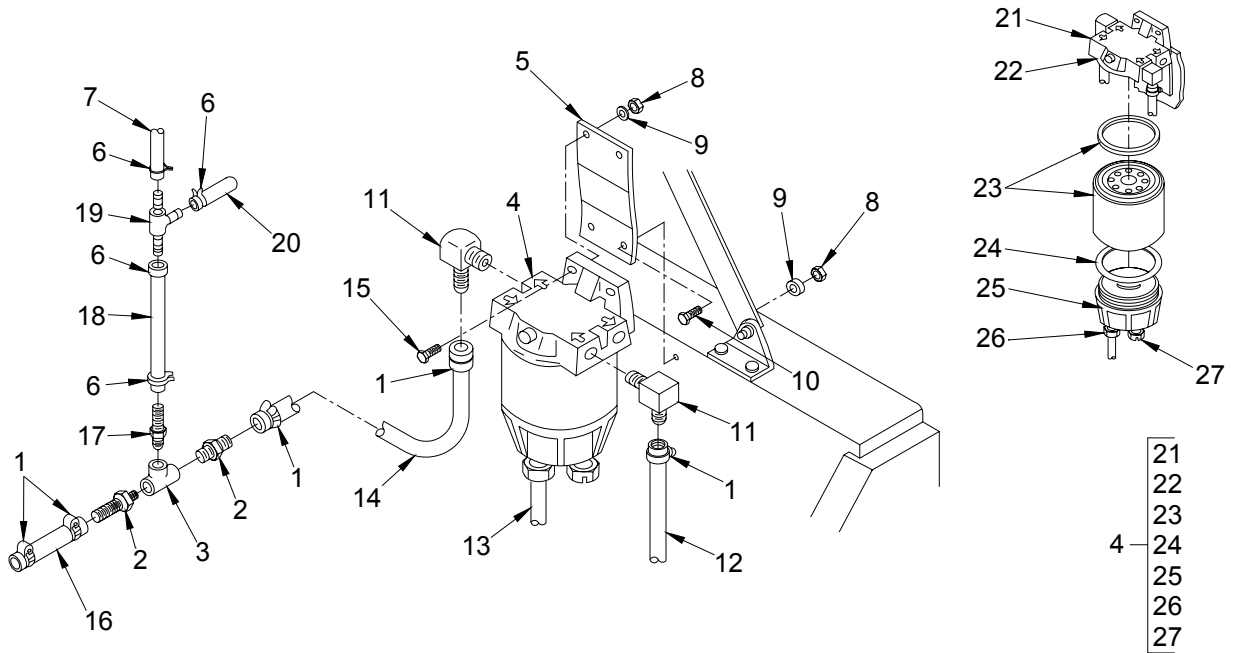


FIGURE 25. FUEL SYSTEM ASSEMBLY/FUEL FILTER/WATER SEPARATOR

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0605						
FIG. 25. FUEL SYSTEM ASSEMBLY/FUEL FILTER/WATER SEPARATOR						
1	PAOZZ	4730-01-470-1626	30554	88-20561-1	CLAMP, HOSE	5
2	PAOZZ	4730-00-277-7904	93061	125HBL-5-2	ADAPTER, STRAIGHT, PI	2
3	PAOZZ	4730-00-595-1887	81343	2-2-2-140438C	TEE, PIPE	1
4	PAOZZ	2910-01-477-0840	30554	98-19535	FILTER, FLUID	1
5	XBOZZ		30554	98-19598	BRACKET, MOUNTING	1
6	PAOZZ	4730-01-476-9921	2V507	5324K81	CLAMP, HOSE	4
7	PAOZZ		30554	98-19736-01	HOSE, NONMETALLIC	1
8	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEX	2
9	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	2
10	PAOZZ		30554	88-20260-31	SCREW, CAP, HEX HEAD	1
11	PAOZZ	4730-01-476-9101	81343	4-4-430260C	ELBOW, HOSE	2
12	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 14.2 INCHES	1
13	MOOZZ	4720-01-470-6230	30554	88-20579-4	HOSE, NONMETALLIC MAKE FROM P/N 208-5 (98441), 15.7 INCHES	1
14	MOOZZ	4720-01-470-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 3.6 INCHES	1
15	PAOZZ	5305-01-381-9970	30554	88-20260-34	SCREW, CAP, HEXAGON HEAD	2
16	MOOZZ	4730-01-490-3929	30554	88-20579-3	HOSE, NONMETALLIC MAKE FROM P/N 208-4 (98441), 2.1 INCHES	1
17	PAOZZ	4730-01-476-9767	028B0	BW-15-BR	RESTRICTION, FLUID FLOW	1
18	PAOZZ		30554	98-19736-02	HOSE, FLEXIBLE, BRAIDED	1
19	PAOZZ	4730-01-476-9224	30554	98-19732	TEE, TUBE	1
20	PAOZZ		30554	98-19736-03	HOSE, FLEXIBLE, BRAIDED	1
21	PAOZZ		55752	RK10214	FILTER HEAD	1
22	PAOZZ	5305-01-428-6791	55752	RK10110	METAL, VENT PLUG	1
23	PAOZZ	4330-01-374-9147	55752	R12T	FILTER, ELEMENT W/O RING	1
24	PAOZZ	5330-01-373-3649	55752	RK10012	BOWL, O RING	1
25	PAOZZ	2910-01-506-3912	55752	RK10215	BOWL/DRAIN/PLUG ASSY	1
26	PAOZZ	4820-01-474-6910	55752	RK30476	DRAIN, VALVE ASSY	1
27	PAOZZ	5365-01-395-4744	55752	RK20126	PLASTIC, PLUG	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

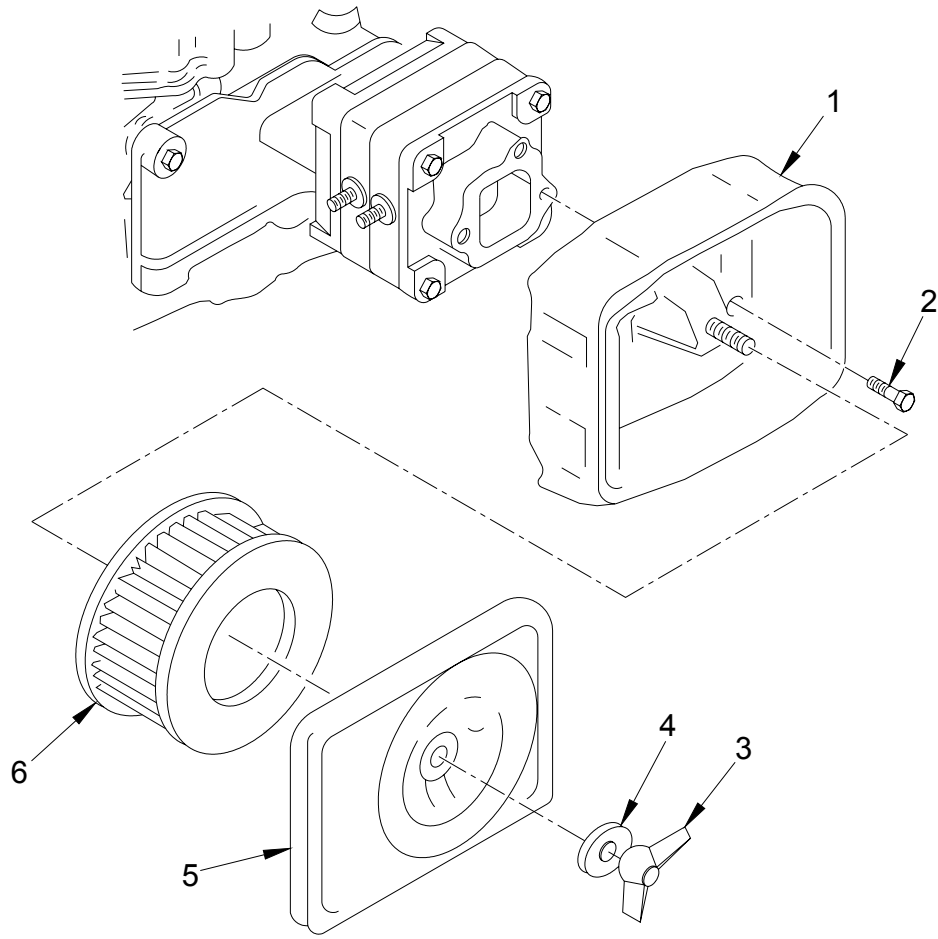


FIGURE 26. FUEL SYSTEM ASSEMBLY/AIR CLEANER ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0606						
FIG. 26. FUEL SYSTEM ASSEMBLY/AIR CLEANER ASSEMBLY						
1	XBOZZ	2940-01-389-9942	54163	114250-12530	HOUSING, FILTER	1
2	PAOZZ	5305-01-300-6264	54163	26106-060122	BOLT, MACHINE	1
3	PAOZZ	5310-01-327-0778	54163	114250-12550	WING, NUT	1
4	PAOZZ	5310-01-322-8747	54163	114250-12560	WASHER, SEAL	1
5	PAOZZ	5340-01-323-7879	54163	114250-1520	COVER, FILTER	1
6	PAOZZ	2940-01-3104495	54163	114250-12580	FILTER, ELEMENT	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 07	
					FRAME AND HOUSING ASSEMBLY (NON-PROCURABLE)	
1	---	---	---	---	MAIN ACCESS COVER (SEE GROUP 0701 FOR PARTS BREAKDOWN)	1
2	---	---	---	---	FRAME AND HOUSING PANELS (SEE GROUP 0702 FOR PARTS BREAKDOWN)	1
3	---	---	---	---	FRAME AND LIFTING HANDLES, LIFTING RINGS (SEE GROUP 0703 FOR PARTS BREAKDOWN)	1
4	---	---	---	---	NATO SLAVE RECEPTACLE (SEE GROUP 0704 FOR PARTS BREAKDOWN)	1
5	---	---	---	---	SKID BASE (SEE GROUP 0705 FOR PARTS BREAKDOWN)	1
6	---	---	---	---	ID PLATES (SEE GROUP 0706 FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

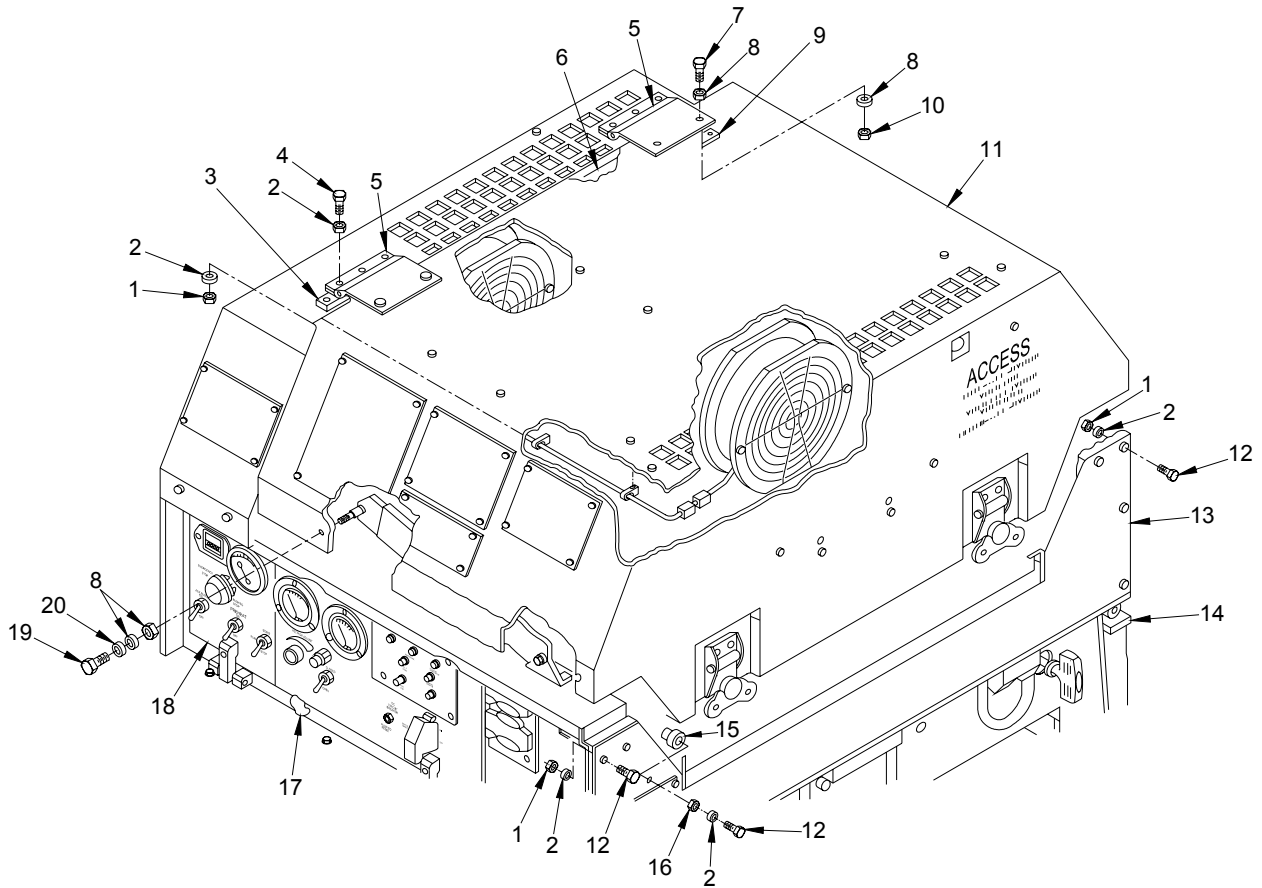


FIGURE 27. FRAME AND HOUSING ASSEMBLY/MAIN ACCESS COVER
(SHEET 1 OF 4)

SECTION II. REPAIR PARTS LIST (CONTINUED)

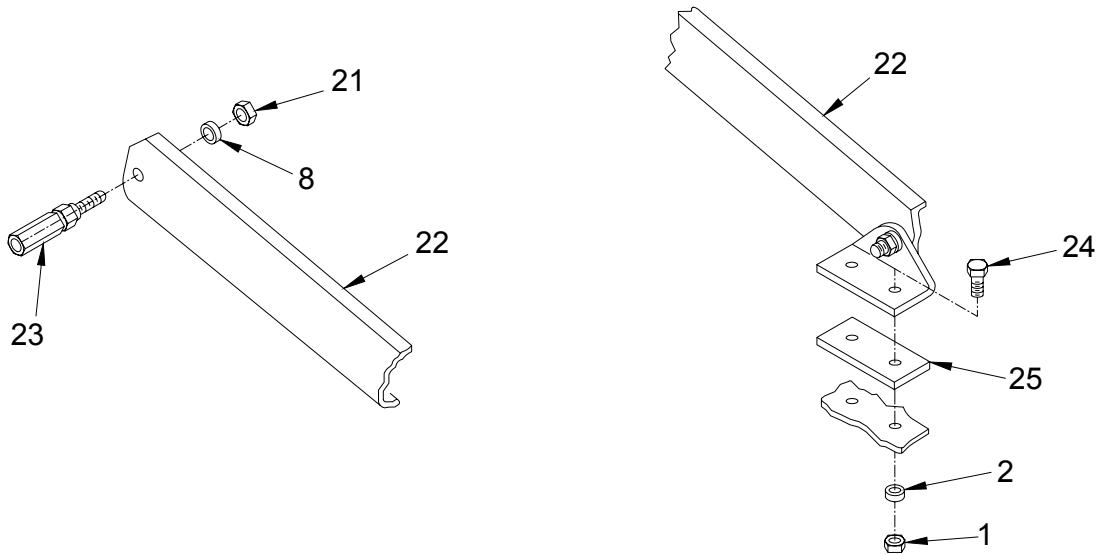


FIGURE 27. FRAME AND HOUSING ASSEMBLY/MAIN ACCESS COVER
(SHEET 2 OF 4)

SECTION II. REPAIR PARTS LIST (CONTINUED)

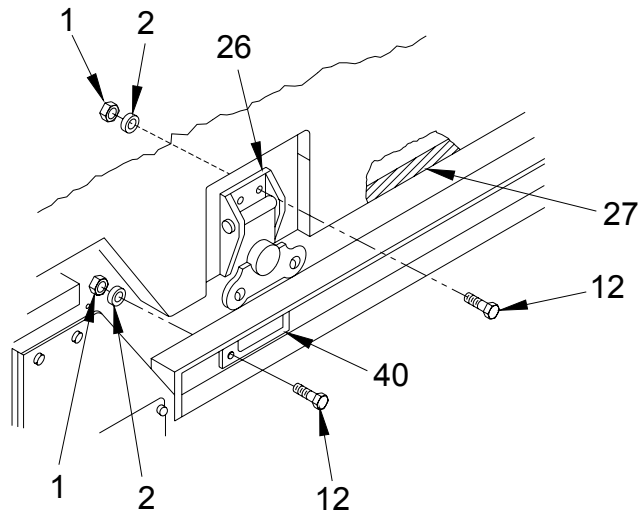


FIGURE 27. FRAME AND HOUSING ASSEMBLY/MAIN ACCESS COVER
(SHEET 3 OF 4)

SECTION II. REPAIR PARTS LIST (CONTINUED)

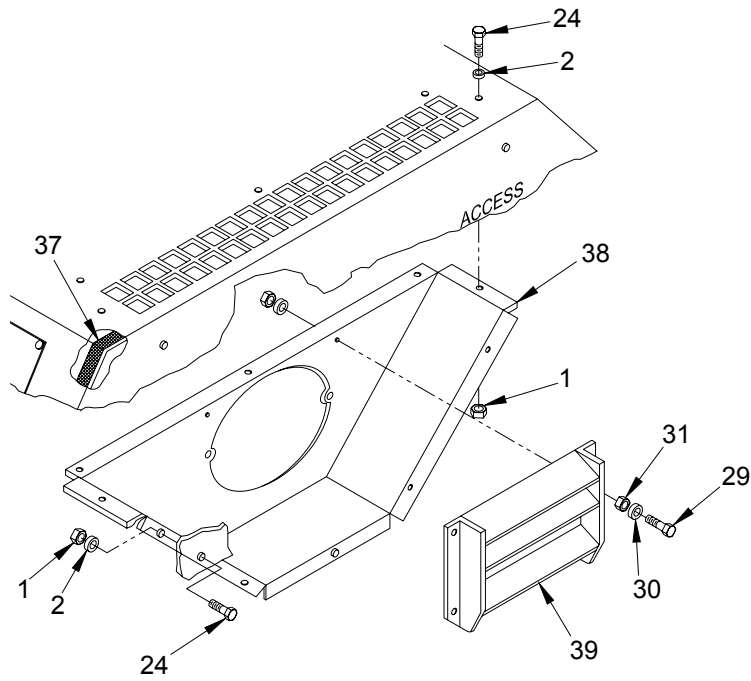
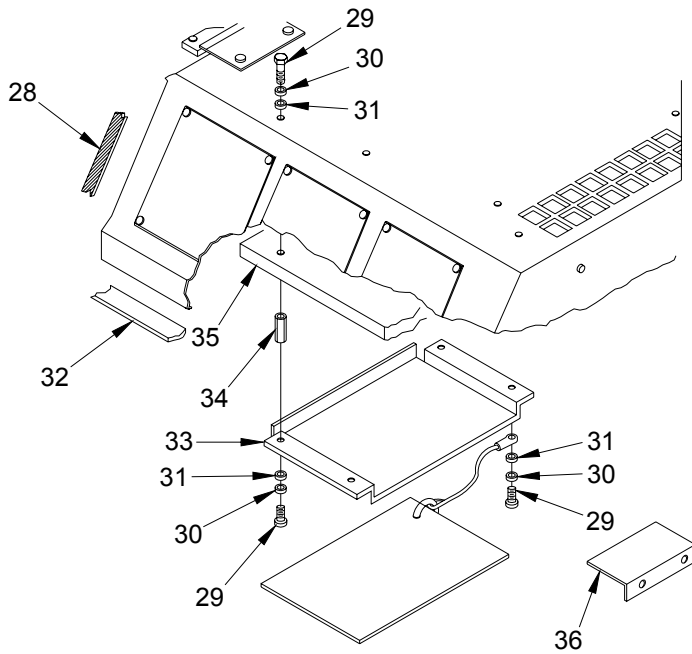


FIGURE 27. FRAME AND HOUSING ASSEMBLY/MAIN ACCESS COVER
(SHEET 4 OF 4)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0701	
					FIG. 27. FRAME AND HOUSING ASSEMBLY/ MAIN ACCESS COVER (4 SHEETS)	
1	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	76
2	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217 ID x .5 OD	128
3	PAOZZ		30554	98-19576-01	GASKET	1
4	PAOZZ	5305-01-365-6313	30554	88-20260-23	SCREW, CAP, HEXAGON HEAD	10
5	PAOZZ	5340-01-476-9071	03007	511811-0297	HINGE, BUTT	2
6	PAOZZ	5330-01-367-6329	30554	88-22705	SEAL, NONMETALLIC SP	1
7	PAOZZ	5305-01-056-1501	24617	274825	SCREW, CAP, HEXAGON H	1
8	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	58
9	PAOZZ		30554	98-19576-02	GASKET, STRIP	11
10	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEXAGON	26
11	XBOZZ		30554	98-19560	COVER, MAIN ACCESS	1
12	PAOZZ	5306-01-156-7663	19207	12325869	SCREW, MACHINE	49
13	XBOZZ		30554	98-19578	PANEL, RIGHT SIDE	1
14	XBFFF		30554	98-19505	SKID BASE ASSY (SEE FIG. 30 FOR PARTS BREAKDOWN)	1
15	PAOZZ	5940-01-476-9272	30554	98-19718-01	BATTERY TERMINAL, STUD	1
16	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT, CADMIUM	42
17	PAOZZ	5365-01-477-2738	30554	98-19701	SPACER	1
18	XBOOO		30554	98-19509	CONTROL BOX ASSY 60HZ (SEE FIG. 13 FOR PARTS BREAKDOWN)	1
18	PAOZZ	6110-01-478-0097	30554	98-19508	CONTROL BOX ASSY 400 HZ (SEE FIG. 13 FOR PARTS BREAKDOWN)	1
19	PAOZZ	5305-00-993-2738	96906	MS35207-280	SCREW, MACHINE	2
20	PAOZZ	5310-00-543-2410	96906	MS35338-40	WASHER, LOCK, #4, SPLIT CADMIUM	10
21	PAOZZ	5310-00-889-2589	80205	MS21044C4	NUT, SELF-LOCKING, ...-28 UNC	2
22	XBOZZ		08EJ0	1097-US	PLATE, METAL	2
23	PAOZZ	3040-00-374-5732	78643	DS-1209F	BALL JOINT	2
24	PAOZZ	5305-01-378-7899	30554	88-20260-22	SCREW, CAP, HEXAGON H	54
25	XBOZZ		30554	98-19621	SPACER	2
26	PAOZZ	5340-01-464-8407	94222	K5-285752	CATCH, CLAMPING	1
27	PAOZZ	5330-01-476-9106	30554	98-19645-03-201	GASKET	2
28	PAOZZ	5330-01-477-9623	30554	SP-2241-1	GASKET	1
29	PAOZZ	5305-01-470-1425	30554	88-20260-11	BOLT, MACHINE	18
30	PAOZZ	5310-00-407-9566	96906	MS35338-45	WASHER, LOCK SPRING	22
31	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT	30
32	PAOZZ	5330-01-476-9106	30554	98-19645-03-201	GASKET	2
33	XBOZZ		30554	98-19548	PLATE, METAL	1
34	PAOZZ	5340-01-476-9030	30554	98-19727	SPACER, THREADED	4
35	PAOZZ		30554	98-19603	INSULATION, ACOUSTIC	1
36	XBOZZ	5340-01-477-9625	30554	98-19735	BRACKET, MOUNTING	1
					(CONTINUED)	

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0701 (CONT D)	
					FIG. 27. FRAME AND HOUSING ASSEMBLY/ MAIN ACCESS COVER (4 SHEETS)	
37	PAOZZ		30554	MS21044C3	INSULATION, ACOUSTIC	1
38	XBOZZ		30554	98-19561	PANEL, AIR, OUTLET	1
39	XBOZZ		30554	98-19584	LOUVER, RAIN, DEFLECT	2
40	XBOZZ		30554	98-19577	PLATE, METAL	2
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

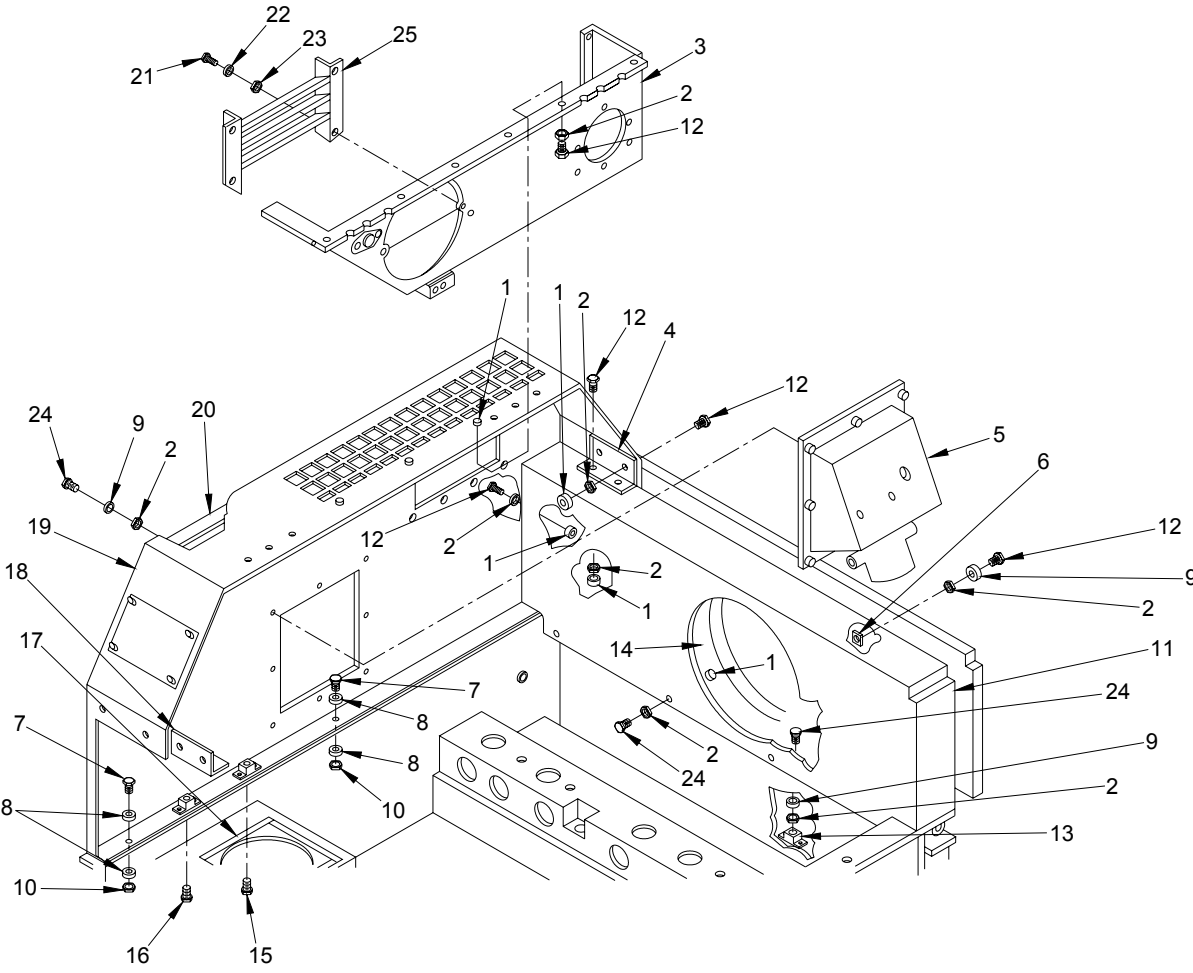


FIGURE 28. FRAME AND HOUSING ASSEMBLY/FRAME AND HOUSING PANELS
(SHEET 1 OF 2)

SECTION II. REPAIR PARTS LIST (CONTINUED)

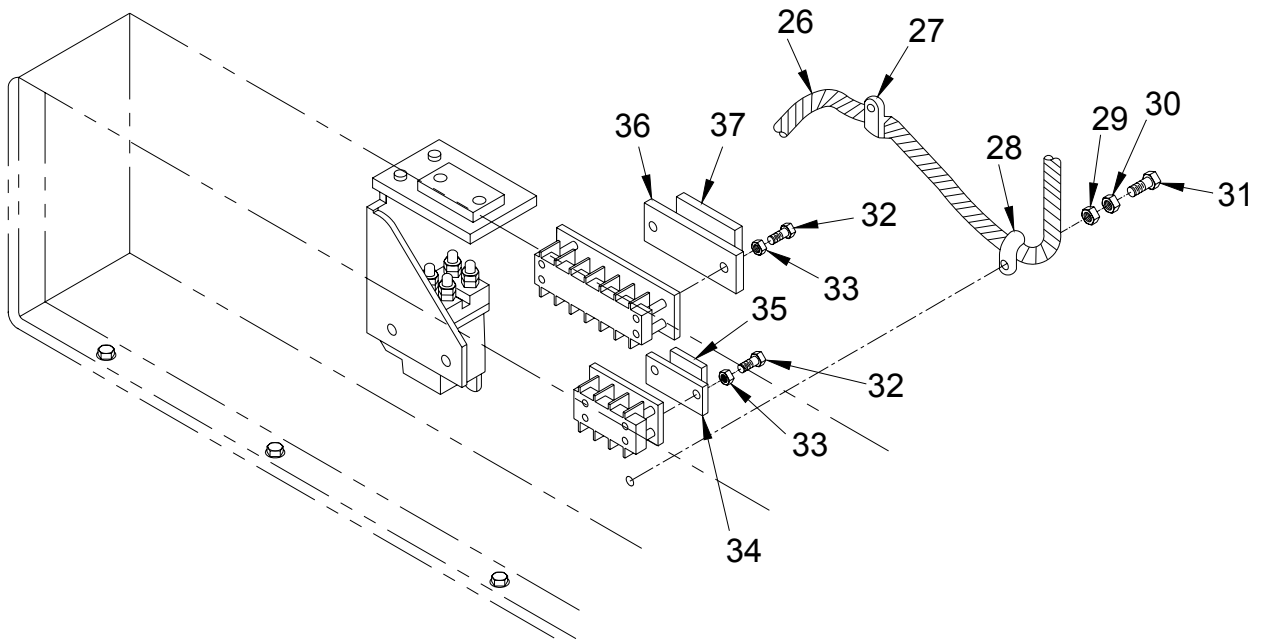


FIGURE 28. FRAME AND HOUSING ASSEMBLY/FRAME AND HOUSING PANELS
(SHEET 2 OF 2)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0702						
FIG. 28. FRAME AND HOUSING ASSEMBLY/ FRAME AND HOUSING PANELS (2 SHEETS)						
1	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	5
2	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217ID x .50D	8
3	XBOZZ		30554	98-19573	PANEL, AIR, OUTLET	1
4	XBOZZ		30554	98-19581-02	BRACKET, MOUNTING	1
5	XBOZZ		30554	98-19608	POCKET, FUEL FILL	1
6	PAOZZ	5310-00-903-8595	78553	C7931-1032-3B	NUT, PLAIN, CINCH	9
7	PAOZZ	5305-01-056-1501	24617	274825	SCREW, CAP, HEXAGON HEAD	2
8	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	4
9	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT, CAD	3
10	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEAD	2
11	XBOZZ		30554	98-19564	PANEL, AIR INLET	1
12	PAOZZ	5306-01-156-7663	19207	12325869	BOLT, MACHINE	5
13	PAOZZ	5310-01-366-8134	30554	88-21674-1	NUT, CAGE	4
14	PAOZZ		30554	98-19552	INSULATION, HOUSING, AIR INLET	1
15	PAOZZ		30554	88-20260-31	SCREW, CAP, HEXAGON HEAD	1
16	PAOZZ	5305-01-470-6197	30554	69-662-63	SCREW, ASSEMBLED, WASHER	2
17	PAOZZ	5330-01-476-9106	30554	98-19645-03-201	GASKET	4
18	XBOZZ		30554	98-19581-01	BRACKET, MOUNTING	1
19	XBOZZ		30554	98-19565	COVER, AIR INLET	1
20	PAOZZ		30554	98-19623	INSULATION, ACOUSTIC	1
21	PAOZZ	5305-01-470-1425	30554	88-20260-11	BOLT, MACHINE	1
22	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT	1
23	PAOZZ	5310-00-407-9566	96906	MS35338-45	WASHER, FLAT	1
24	PAOZZ	5305-01-378-1899	30554	88-20260-22	SCREW, CAP, HEXAGON HEAD	2
25	XBOZZ		30554	98-19584	LOUVER, RAIN, DEFLECT	1
26	PAOOO	6150-01-476-9338	30554	98-19633	HARNESS, WIRING, 60 HZ UOC: LQQ	1
26	PAOOO	6150-01-477-1173	30554	98-19729	HARNESS, WIRING (400 HZ) UOC: LQR	1
27	PAOZZ		22175	43LC6-8-SS-R	CLAMP, LOOP	1
28	PAOZZ	5340-00-843-7825	96906	MS21333-68	CLAMP, HOSE, CUSHION	4
29	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT, #8	1
30	PAOZZ	5310-00-407-9566	96906	MS35338-45	WASHER, LOCK, 5/16	1
31	PAOZZ	5305-01-470-1425	30554	88-20260-11	SCREW, MACHINE	1
32	PAOZZ	5305-00-036-6968	30554	69-662-18	SCREW, ASSEMBLED, WASHER	4
33	PAOZZ	5310-00-983-8489	96906	MS21783-5	WASHER, FLAT	4
34	PAOZZ		15563	98-19709-01	LABEL, CAUTION	1
35	XBOZZ		30554	98-19725-01	COVER, PROTECTIVE	1
36	XBOZZ		30554	98-19725-02	COVER, PROTECTIVE	1
37	PAOZZ		15563	98-19709-02	LABEL, CAUTIONS	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

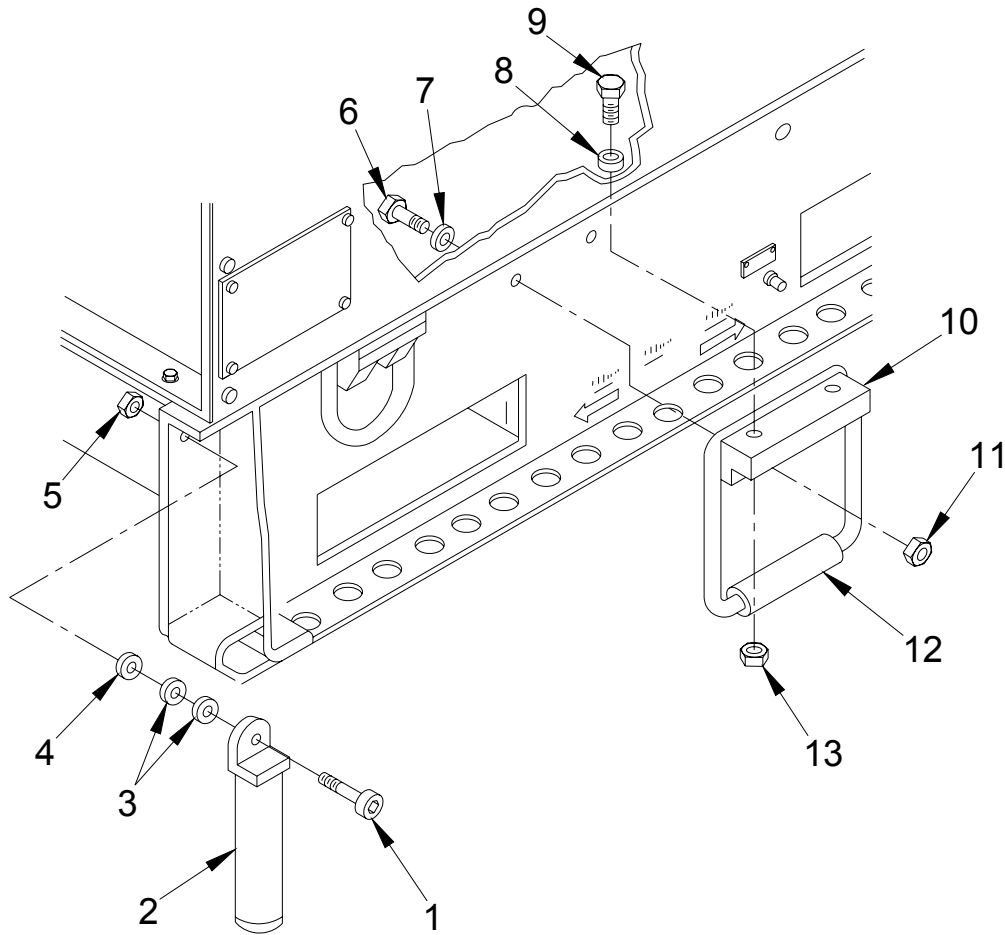


FIGURE 29. FRAME AND HOUSING ASSEMBLY/FRAME AND LIFTING HANDLES, LIFTING RINGS

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0703						
FIG. 29. FRAME AND HOUSING ASSEMBLY/FRAME AND LIFTING HANDLES, LIFTING RINGS						
1	PAOZZ	5305-01-476-9077	30554	98-19665	SCREW, SHOULDER	4
2	XBOZZ		30554	98-19615	HANDLE, LIFTING	4
3	PAOZZ	5310-01-243-9441	39428	92161A033	WASHER, SPRING TENSION	8
4	PAOZZ	5310-01-306-1624	96906	MS27183-58	WASHER, FLAT	4
5	PAOZZ	5310-01-366-4412	08928	21NTE616	NUT, SELF-LOCKING, HEAD	4
6	PAOZZ	5305-01-365-6313	30554	88-20260-23	SCREW, CAP, HEXAGON, HEAD	4
7	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT #10 NOM STL CAD	4
8	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	4
9	PAOZZ	5310-01-056-1501	96906	274825	SCREW, CAP, HEXAGON, HEAD	4
10	XBOZZ		30554	98-19556	BRACKET, MOUNTING	2
11	PAOZZ	5310-00-208-9255	96906	MS21044C3	NUT, SELF-LOCKING	4
12	XBOZZ		30554	98-19555	HANDLE, LIFTING, SIDE	2
13	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEX	4
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

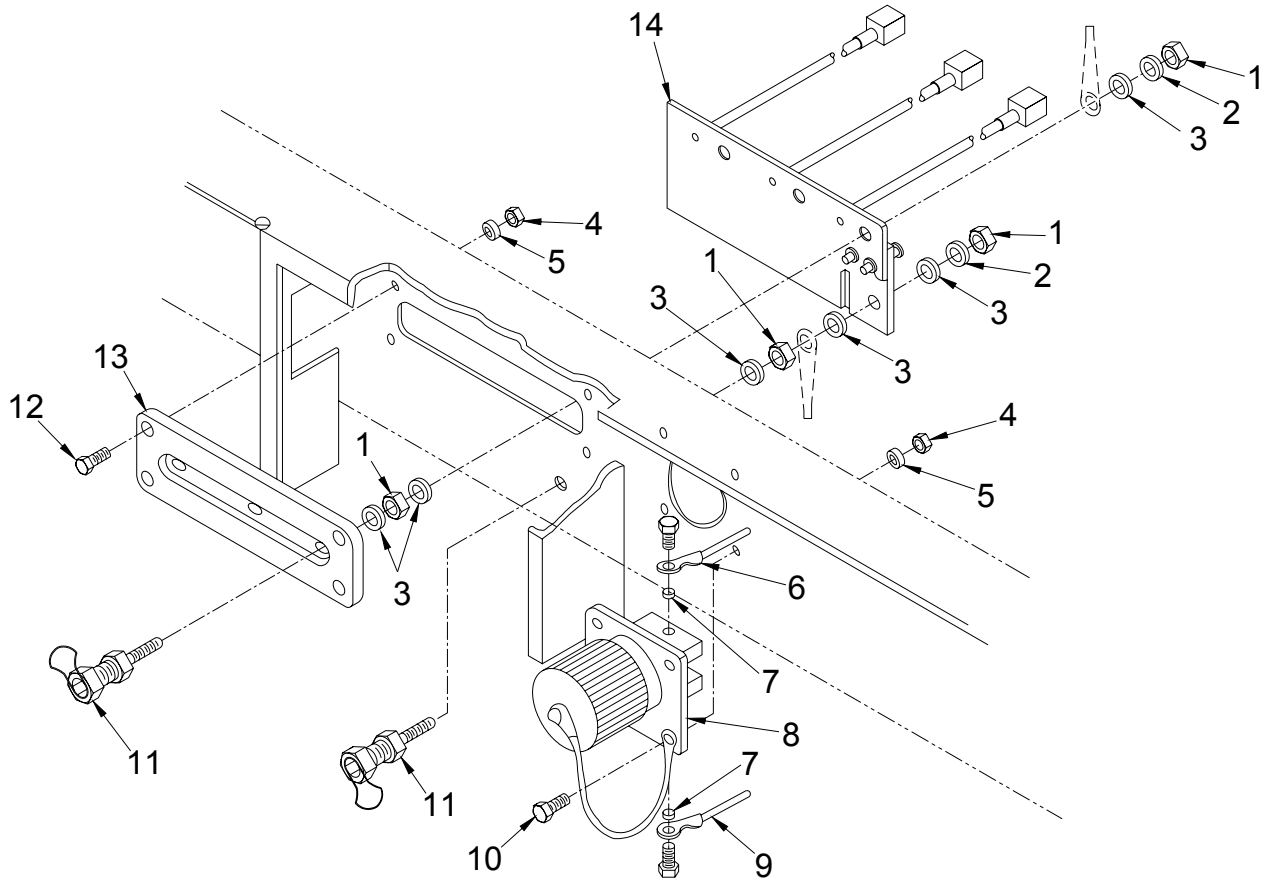


FIGURE 30. FRAME AND HOUSING ASSEMBLY/NATO SLAVE RECEPTACLE

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0704						
FIG. 30. FRAME AND HOUSING ASSEMBLY/NATO SLAVE RECEPTACLE						
1	PAOZZ	5310-00-850-6855	96906	MS35691-12	NUT, HEX, PLAIN	7
2	PAOZZ	5310-01-477-9621	30554	88-20556-6	WASHER, LOCK-SPRING	4
3	PAOZZ	5310-00-081-4219	96906	MS27183-12	WASHER, FLAT	5
4	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	8
5	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT	8
6	PAOZZ	6150-01-476-8666	30554	98-19596	CABLE ASSY, SLAVE	1
7	PAOZZ	5310-01-306-1624	96906	MS27183-58	WASHER, FLAT	2
8	PAOZZ	5935-01-097-9974	19207	11674728	RECEPTACLE, SLAVE	1
9	PAOZZ	6150-01-476-8673	30554	98-19595	CABLE ASSY, SLAVE	1
10	PAOZZ	5305-01-464-6667	30554	88-22793-4	SCREW, MACHINE	4
11	PAOZZ	5940-00-234-3383	30554	69-692-6	TERMINAL STUD	4
12	PAOZZ	5305-00-993-1848	80205	MS35207-265	SCREW, MACHINE	4
13	PAOZZ		60177	19740	BOARD, LOAD	1
14	PAOZZ	5915-01-477-8756	60177	29440	FILTER, EMI	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

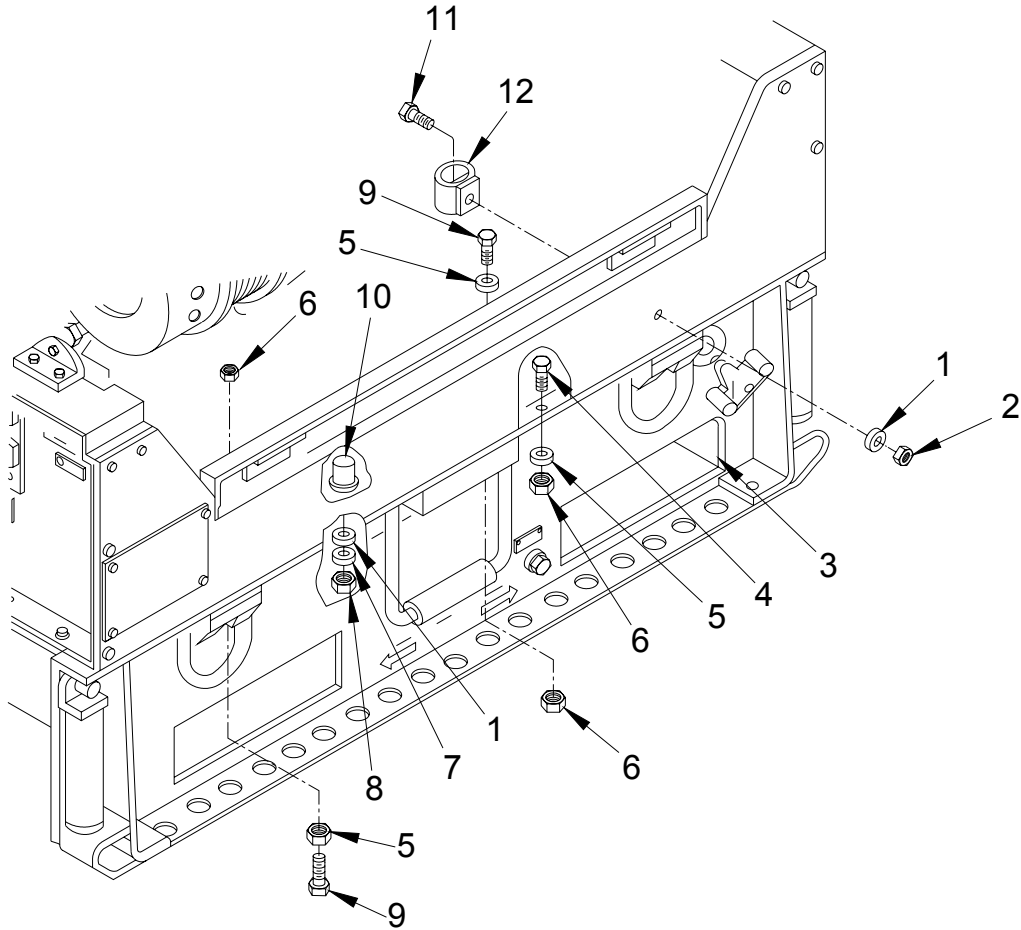


FIGURE 31. FRAME AND HOUSING ASSEMBLY/SKID BASE

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0705						
FIG. 31. FRAME AND HOUSING ASSEMBLY/SKID BASE						
1	PAOZZ	5310-00-014-5850	96906	MS27183-2	WASHER, FLAT, #10, .217ID x .5OD	2
2	PAOZZ	5310-00-208-9255	80205	MS21044C3	NUT, SELF-LOCKING, HEXAGON	1
3	PAOZZ		30554	98-19655	INSULATION, ACOUSTIC	1
4	PAOZZ	5305-01-056-1501	24617	274825	SCREW, CAP, HEXAGON HEAD	1
5	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER, FLAT, CAD, ...	3
6	PAOZZ	5310-00-685-2973	94135	12Z2007-260	NUT, SELF-LOCKING, HEX	3
7	PAOZZ	5320-00-932-1972	81349	M24243/6A402H	RIVET, BLIND	2
8	PAOZZ	5940-01-476-9028	30554	98-19718-02	POST, BATTERY CABLE	1
9	PAOZZ	5310-00-208-9255	30554	88-20260-36	SCREW, CAP, HEXAGON H	8
10	PAOZZ		30554	98-19717	INSULATION	1
11	PAOZZ	5306-01-156-7663	19207	12325869	BOLT, MACHINE	1
12	PAOZZ	5340-01-476-9028	30554	98-19546	STRAP, FABRIC	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

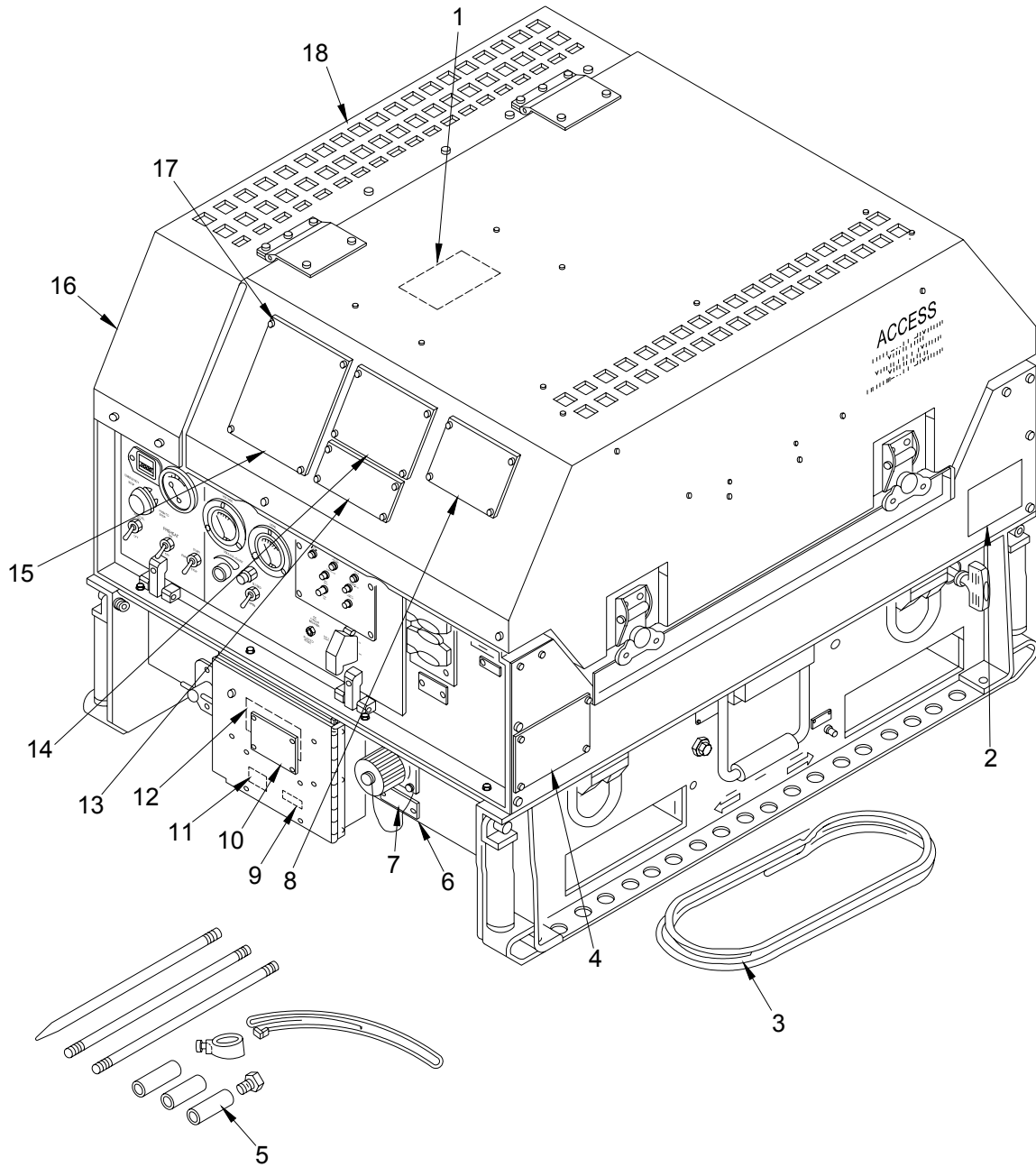


FIGURE 32. FRAME AND HOUSING ASSEMBLY/ID PLATES

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0706						
FIG. 32. FRAME AND HOUSING ASSEMBLY/ID PLATES						
1	XBOZZ		30554	98-19586-11	PLATE, IDENTIFICATION	1
2	XBOZZ		30554	98-19586-23	PLATE, IDENTIFICATION	1
3	PAOZZ	4720-00-021-3320	30554	FA1493FFF3000	HOSE ASSEMBLY, NONMETALLIC	1
4	XBOZZ		30554	98-19586-12	PLATE, IDENTIFICATION	1
5	PAOZZ	5975-00-878-3791	58536	A-A-55804-III-B	ROD, GROUND	1
6	PAOZZ	5320-00-882-8388	81349	M24243/6-A403H	RIVET, BLIND, 1/8 DIAM, 3/16 MAX GRIP	24
7	XBOZZ		30554	98-19586-03	PLATE, IDENTIFICATION	1
8	XBOZZ		30554	98-19586-16	PLATE, IDENTIFICATION	1
8A	XBOZZ		30554	98-19589-17	PLATE, IDENTIFICATION UOC: LQR	1
9	XBOZZ		30554	98-19586-05	PLATE, IDENTIFICATION	1
10	XBOZZ		30554	98-19709-01	LABEL, CAUTION	1
11	XBOZZ		30554	98-19586-20	PLATE, IDENTIFICATION	1
12	XBOZZ		30554	98-19586-25	PLATE, IDENTIFICATION	1
13	XBOZZ		30554	98-19586-09	PLATE, CAUTION	1
14	XBOZZ		30554	98-19586-21	PLATE, IDENTIFICATION UOC: LQQ	1
14A	XBOZZ		30554	98-19586-22	PLATE, IDENTIFICATION UOC: LQR	1
15	XBOZZ		30554	98-19586-15	PLATE, INSTRUCTION	1
16	XCOFF		30554	98-19503	GENERATOR SET ASSEM 60HZ, LQQ	1
16A	XCOFF		30554	98-19504	GENERATOR SET ASSEM 400HZ, LQR	1
17	PAOZZ	5320-00-932-1972	81349	M24243/6-A402H	RIVET, CLOSED END, DOME HD 0.125	32
18	XBOZZ		30554	98-19586-07	PLATE, IDENTIFICATION	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 08	
					LUBRICATION SYSTEM (NON-PROCURABLE)	
1	---	---	---	---	OIL DRAIN ASSEMBLY (SEE GROUP 0801 FOR PARTS BREAKDOWN)	1
2	---	---	---	---	OIL PRESSURE SWITCH (SEE GROUP 0802 FOR PARTS BREAKDOWN)	1
3	---	---	---	---	ENGINE OIL TEMPERATURE SWITCH (SEE GROUP 0803 FOR PARTS BREAKDOWN)	1
					OIL FILTER (SEE GROUP 0804 FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

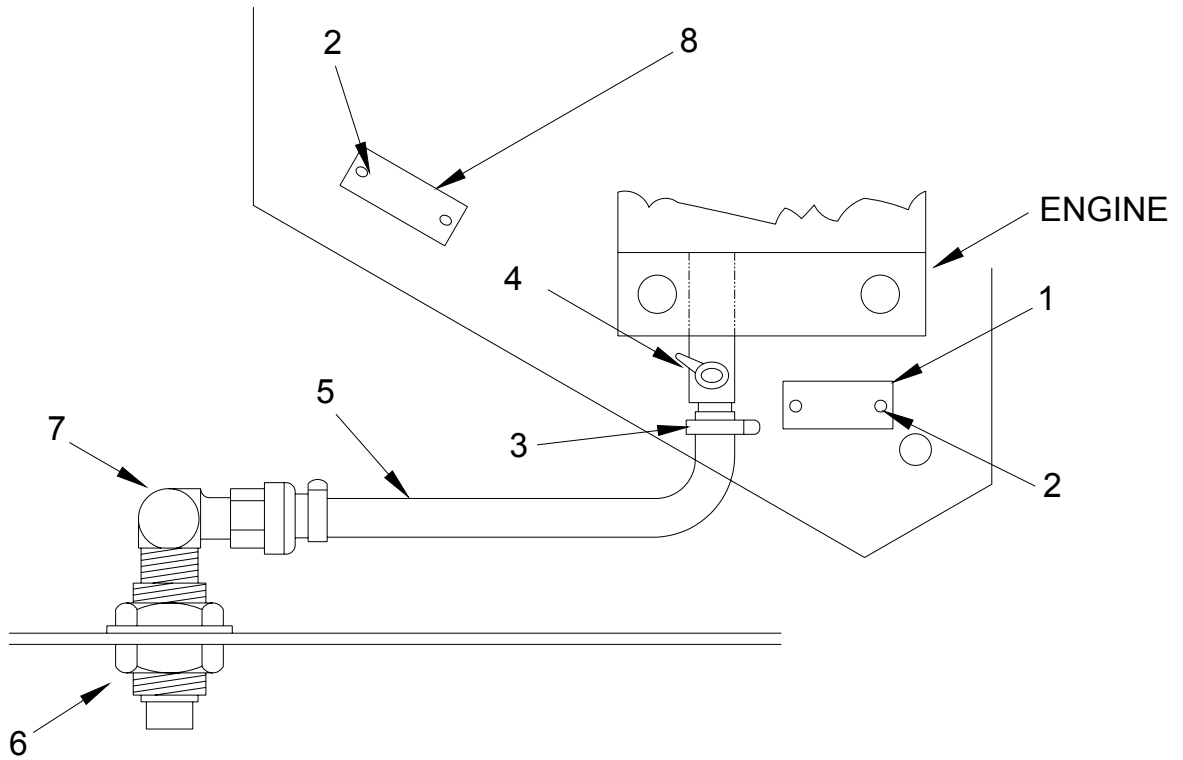


FIGURE 33. LUBRICATION SYSTEM/OIL DRAIN ASSEMBLY

**ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1**

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0801	
					FIG. 33. LUBRICATION SYSTEM/ OIL DRAIN ASSEMBLY	
1	XBOZZ		30554	98-19586-02	PLATE, IDENTIFICATION	1
2	PAOZZ	5320-00-882-8386	81349	M24243/6-A403H	RIVET, BLIND	4
3	PAOZZ	4730-01-470-1626	30554	88-20561-1	CLAMP, HOSE	1
4	PAOZZ	4820-01-476-9731	30554	98-19657	COCK, POPPET DRAIN	1
5	MOOZZ		30554	88-20579-5	HOSE, NONMETALLIC MAKE FROM P/N 208-6 (98441), 9.3 INCHES	1
6	PAOZZ	4730-01-360-6217	79470	W17709	COUPLING, PIPE	1
7	PAOZZ		81343	6-6-430260C	FITTING, ELBOW	1
8	XBOZZ		30554	98-19586-24	PLATE, IDENTIFICATION	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

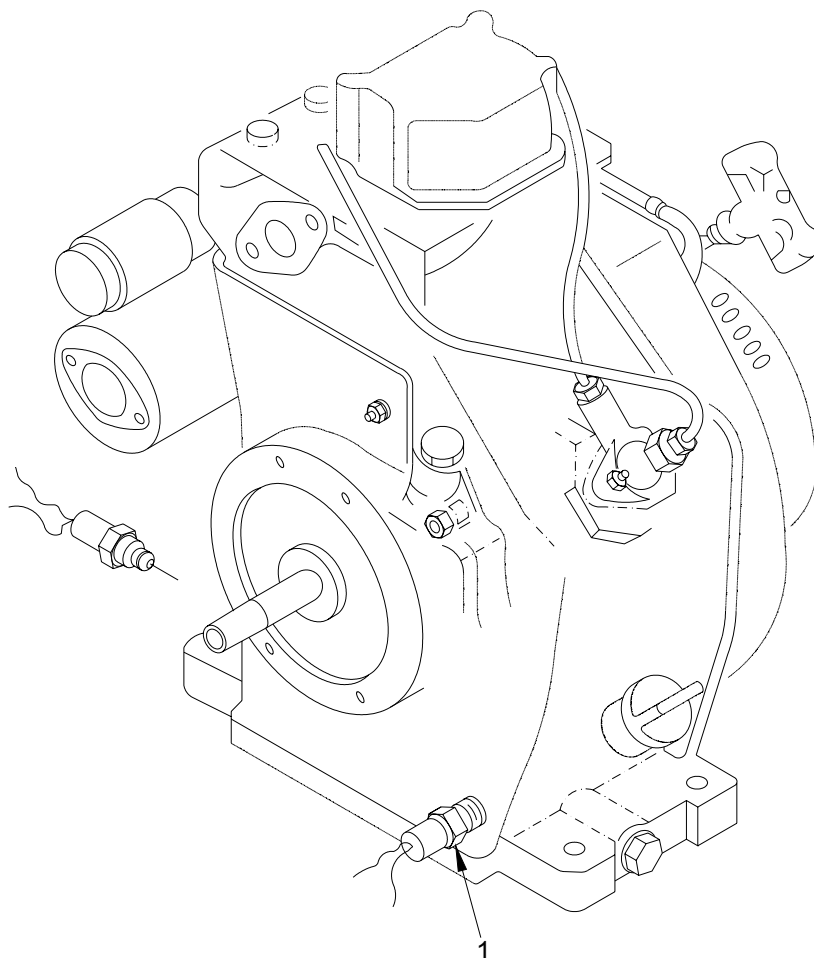


FIGURE 34. LUBRICATION SYSTEM/OIL PRESSURE SWITCH

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ	5930-01-478-0122	85814	SM-2B-15F	GROUP 0802 FIG. 34. LUBRICATION SYSTEM/ OIL PRESSURE SWITCH SWITCH, PRESSURE, OIL	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

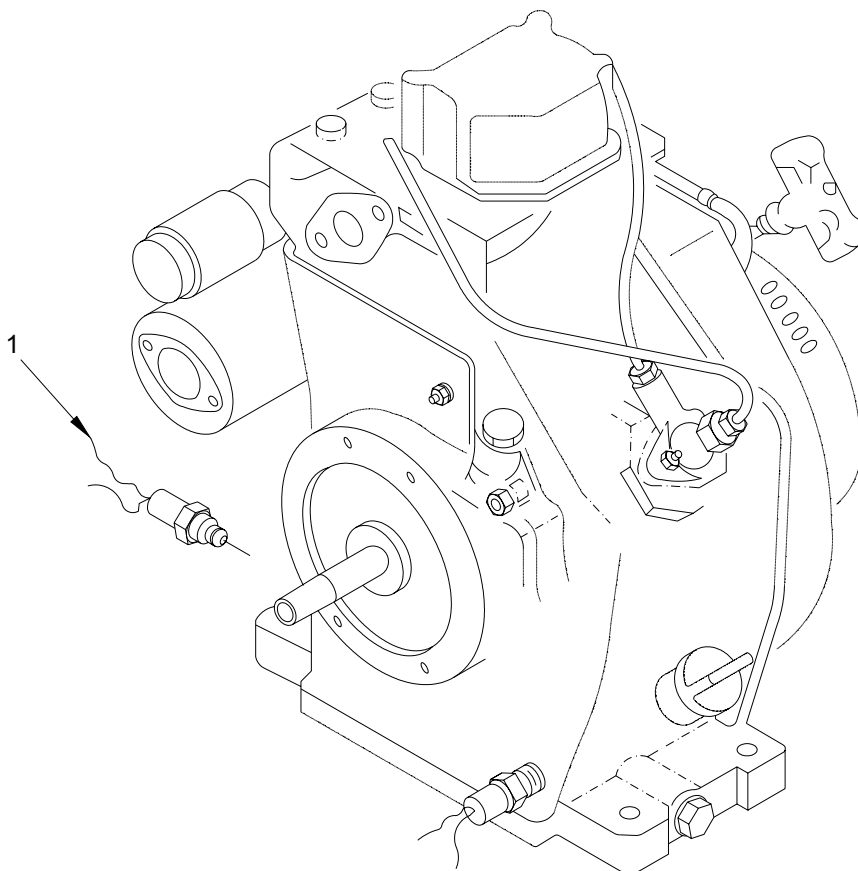


FIGURE 35. LUBRICATION SYSTEM/ENGINE OIL TEMPERATURE SWITCH

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
1	PAOZZ		30554	98-19720	<p style="text-align: center;">GROUP 0803</p> <p style="text-align: center;">FIG. 35. LUBRICATION SYSTEM/ENGINE OIL TEMPERATURE SWITCH</p> <p>SWITCH ASSEMBLY, ENGINE TEMPERATURE</p> <p style="text-align: right;">END OF FIGURE</p>	1

SECTION II. REPAIR PARTS LIST (CONTINUED)

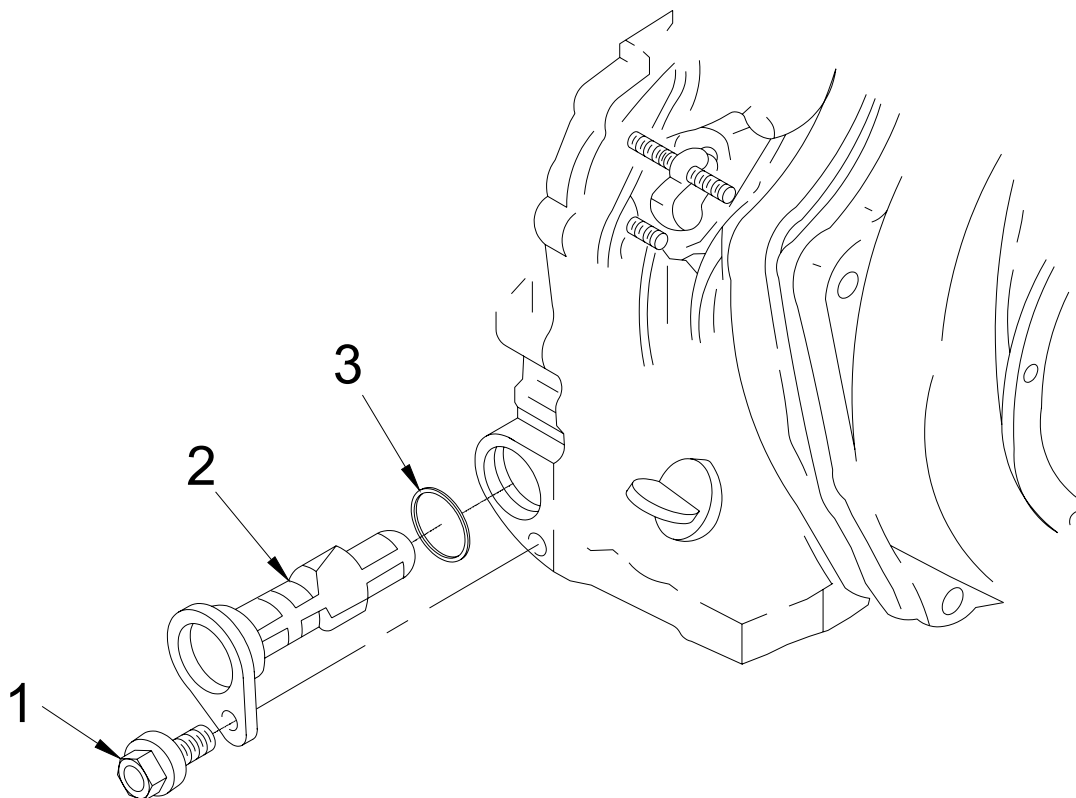


FIGURE 36. LUBRICATION SYSTEM/OIL FILTER

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0804	
					FIG. 36. LUBRICATION SYSTEM/ OIL FILTER	
1	PAOZZ	5305-01-388-6229	OAK42	26106-060162	SCREW, HEX HEAD	1
2	PAOZZ	2815-01-353-7523	OAK42	114250-35070	FILTER, FLUID, OIL	1
3	PAOZZ	5331-01-326-8017	OAK42	24341-000224	O-RING	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 09	
					EXHAUST SYSTEM ASSEMBLY (NON-PROCURABLE)	
1	---	---	---	---	MUFFLER ASSEMBLY (SEE GROUP 0901 FOR PARTS BREAKDOWN)	1
2	---	---	---	---	BELLOWS ASSEMBLY (SEE GROUP 0902 FOR PARTS BREAKDOWN)	1
3	---	---	---	---	DUCT ASSEMBLY (SEE GROUP 0903 FOR PARTS BREAKDOWN)	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

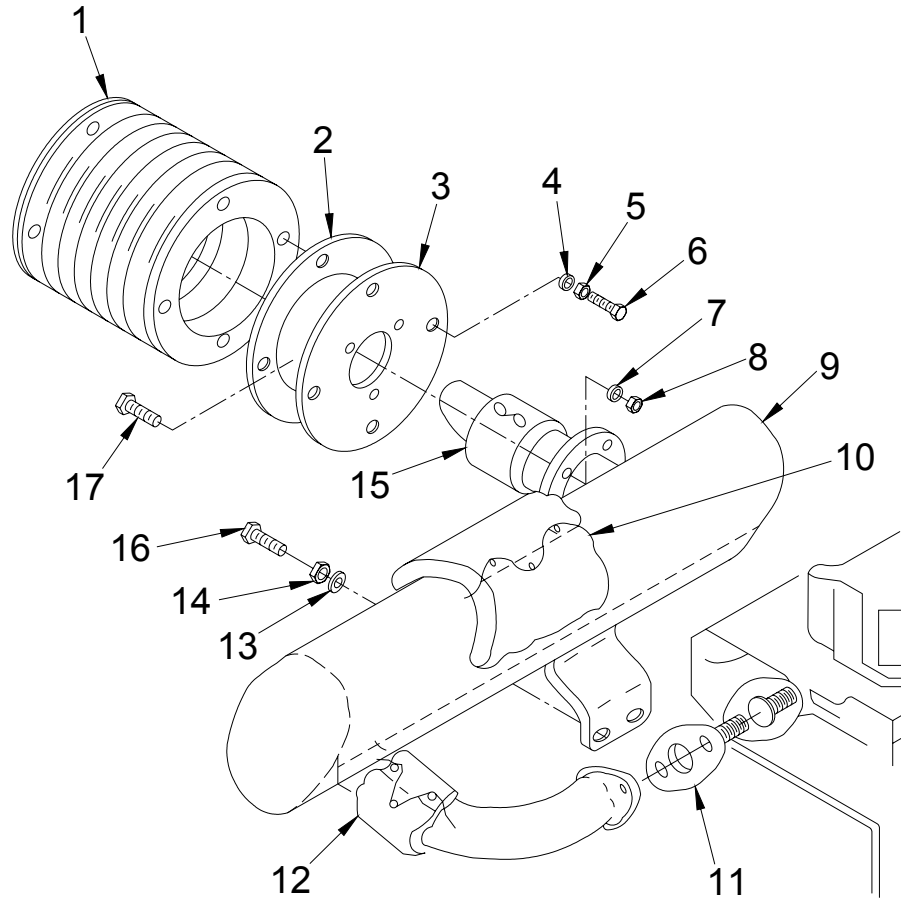


FIGURE 37. EXHAUST SYSTEM ASSEMBLY/MUFFLER ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0901						
FIG. 37. EXHAUST SYSTEM ASSEMBLY/MUFFLER ASSEMBLY						
1	PAOZZ	4720-01-476-9875	30554	98-19585	HOSE, NONMETALLIC	1
2	PAOZZ	5330-01-476-9137	30554	98-19614	GASKET	1
3	XBOZZ		30554	98-19711	SPACER	1
4	PAOZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT #10 NOM STL CAD	4
5	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT CADMIUM	4
6	PAOZZ	5305-01-477-9620	80204	B1821BH190C075H	SCREW, CAP, HEXAGON H	4
7	PAOZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT, #8	3
8	PAOZZ	5310-00-982-6814	80205	MS21044C08	NUT, SELF-LOCKING #8	3
9	PAOZZ	2990-01-477-2195	0TW02	27053N	MUFFLER, EXHAUST	1
10	PAOZZ	2540-01-478-3630	61277	98-19545-01	INSULATION, THERMAL	1
11	XBOZZ		S4163	114250-13201	GASKET, EXHAUST	1
12	PAOZZ	2540-01-477-4776	30554	98-19545-02	INSULATION, THERMAL	1
13	PAOZZ	5310-01-476-9079	30554	98-19664-03	WASHER, LOCK	2
14	PAOZZ	5310-01-476-9081	30554	88-20033-19A	WASHER, FLAT	2
15	PAOZZ	2540-01-477-4775	30554	98-19545-03	INSULATION, THERMAL	1
16	PAOZZ	5305-01-303-5631	80204	B18231B08020N	SCREW, CAP, HEXAGON H	2
17	PAOZZ	5305-01-477-9618	80204	B1821BH164C075H	SCREW, CAP, HEXAGON H	3
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

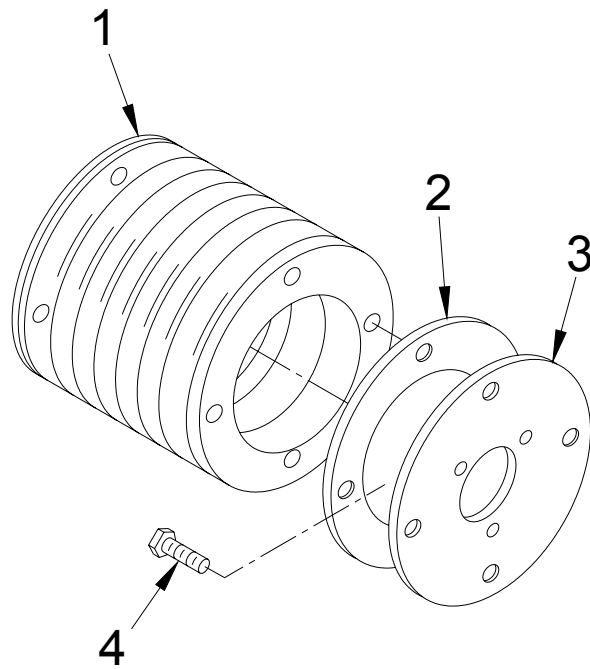


FIGURE 38. EXHAUST SYSTEM ASSEMBLY/BELLOWS ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0902	
					FIG. 38. EXHAUST SYSTEM ASSEMBLY/BELLOWS ASSEMBLY	
1	PAOZZ	4720-01-476-9875	30554	98-19585	HOSE, NONMETALLIC	1
2	PAOZZ	5330-01-476-9137	30554	98-19614	GASKET	1
3	XBOZZ		30554	98-19711	SPACER	1
4	PAOZZ	5305-01-477-9618	80204	B1821BH164C075H	SCREW, CAP, HEXAGON H	1
					END OF FIGURE	

SECTION II. REPAIR PARTS LIST (CONTINUED)

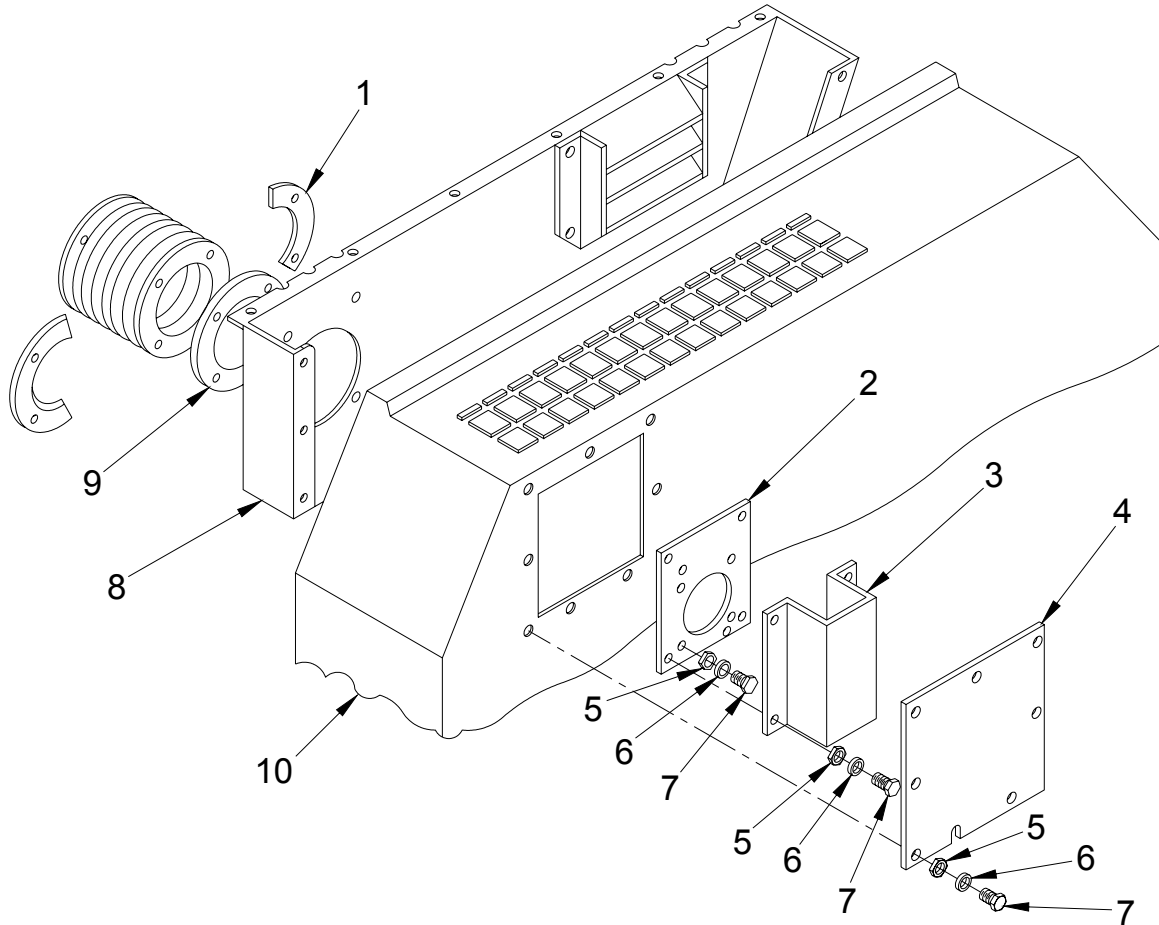


FIGURE 39. EXHAUST SYSTEM ASSEMBLY/DUCT ASSEMBLY

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0903						
FIG. 39. EXHAUST SYSTEM ASSEMBLY/DUCT ASSEMBLY						
1	XBOZZ		30554	98-19737	FLANGE, EXHAUST	1
2	XBOZZ		30554	98-19738	PLATE, MOUNTING	1
3	XBOZZ		30554	98-19574	PANEL, DEFLECTOR	1
4	XBOZZ		30554	98-19739	PLATE, ACCESS	1
5	PAOZZ	5310-00-014-5850	96906	MS27183-42	WASHER, FLAT, #10, .217ID x .5OD	3
6	PAOZZ	5310-00-045-4007	80205	MS35338-41	WASHER, LOCK, #6, SPLIT, CADMIUM	3
7	PAOZZ	5305-01-378-7899	30554	88-20260-22	SCREW, CAP, HEXAGON H	3
8	PAOZZ	5305-01-381-9970	30554	88-20260-34	PANEL	1
9	PAOZZ	5330-01-476-9069	30554	98-19712	GASKET	1
10	PAOZZ	5342-01-476-9283	60012	98-19516	CAP, VENTED	1
END OF FIGURE						

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO.	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 99	
					BULK MATERIAL	
1	PAFZZ	4720-01-470-3929	30554	88-20579-3	HOSE NONMETALLIC MAKE FROM P/N 208-4 (98441)	1
2	PAFZZ	4720-01-470-6230	30554	88-20579-4	HOSE, NONMETALLIC MAKE FROM P/N 208-5 (98441)	1
END OF FIGURE						

SECTION III. CROSS-REFERENCE INDEXES

Part Number Index

CAGE	PART NUMBER	NSN	FIG	ITEM
0AK42	186	4720-01-476-9814	FIG 1	2
34234	13003	4730-01-476-9855	FIG 18	4
60177	19740		FIG 30	13
60177	29350	5895-01-477-0855	FIG 9	9
60177	29390	6625-01-477-0634	FIG 14	10
60177	29440	5915-01-477-8756	FIG 30	14
54921	31842	4140-01-503-3160	FIG 16	12A
54921	31897	4140-01-476-9068	FIG 16	12
74400	85311	6645-01-458-7278	FIG 14	1
24617	274825	5305-01-056-1501	FIG 9	1
24617	274825	5305-01-056-1501	FIG 27	7
24617	274825	5305-01-056-1501	FIG 28	7
96906	274825	5310-01-056-1501	FIG 29	9
24617	274825	5305-01-056-1501	FIG 31	4
80256	307608	5306-00-484-5730	FIG 10	3
80256	307608	5306-00-484-5730	FIG 19	4
72850	479735	2940-01-365-6535	FIG 23	4
72850	479735	2940-01-365-6535	FIG 24	14
5Y921	559262	4140-01-476-9063	FIG 16	4
93742	692499	2920-01-477-0238	FIG 4	3
93742	692500		FIG 4	4
93742	692501		FIG 4	7
93742	692505	6115-01-476-9356	FIG 4	6
93742	692507	3040-01-477-0228	FIG 4	2
16764	1115615	5945-00-855-7478	FIG 10	4
19207	11674728	5935-01-097-9974	FIG 30	8
19207	12325869	5306-01-156-7663	FIG 11	13
19207	12325869	5306-01-156-7663	FIG 16	7
19207	12325869	5306-01-156-7663	FIG 24	21
19207	12325869	5306-01-156-7663	FIG 27	12
19207	12325869	5306-01-156-7663	FIG 28	12
19207	12325869	5306-01-156-7663	FIG 31	11
----	----		FIG 2	1
0E8J0	1055-U3	5340-01-476-9074	FIG 12	5
08EJ0	1097-US		FIG 27	22
54163	114250-12530	2940-01-389-9942	FIG 26	1
54163	114250-12550	5310-01-327-0778	FIG 26	3
54163	114250-12560	5310-01-322-8747	FIG 26	4
54163	114250-12580	2940-01-3104495	FIG 26	6
S4163	114250-13201		FIG 36	11
54163	114250-1520	5340-01-323-7879	FIG 26	5
OAK42	114250-35070	2815-01-353-7523	FIG 35	2
93061	125 HB-2-2	4730-01-463-2091	FIG 24	5

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Part Number Index (Continued)

CAGE	PART NUMBER	NSN	FIG	ITEM
93061	125HBL	4730-00-277-7904	FIG 24	2
93061	125HBL-5-2	4730-00-277-7904	FIG 23	6
93061	125HBL-5-2	4730-00-277-7904	FIG 25	2
94135	12Z2007-260	5310-00-685-2973	FIG 10	8
94135	12Z2007-260	5310-00-685-2973	FIG 25	8
94135	12Z2007-260	5310-00-685-2973	FIG 27	10
94135	12Z2007-260	5310-00-685-2973	FIG 28	10
94135	12Z2007-260	5310-00-685-2973	FIG 29	13
94135	12Z2007-260	5310-00-685-2973	FIG 31	6
80131	1N5404	5961-00-484-8041	FIG 13	12
80131	1N5404	5961-00-484-8041	FIG 13	15
8928	21NTE616	5310-01-366-4412	FIG 29	5
81343	2-2-2-140438C	4730-00-595-1887	FIG 24	3
81343	2-2-2-140438C	4730-00-595-1887	FIG 25	3
9R803	223300-16-XP-74		FIG 13	16
OAK42	24341-000224	5331-01-326-8017	FIG 35	3
54163	26106-060122	5305-01-300-6264	FIG 26	2
OAK42	26106-060162	5305-01-388-6229	FIG 35	1
16764	264A	6145-01-029-6544	FIG 7	4
0TW02	27053N	2990-01-477-2195	FIG 36	9
9R803	3300-10-XP-74	5940-01-470-3031	FIG 13	11
9R803	3300-16	5940-01-476-9186	FIG 13	14
9R803	3300-2	5940-01-470-2470	FIG 13	10
9R803	3300-3	5940-01-477-1254	FIG 13	5
9R803	3300-3-XP-74		FIG 13	6
9R803	3300-9	5940-01-476-9191	FIG 13	2
9R803	3300-9-XP-74		FIG 13	1
75915	342028PL	5920-01-476-9734	FIG 13	7
27264	39-00-0077	5999-01-477-0593	FIG 4	9
27264	39-01-2060	5935-01-415-6239	FIG 4	8
93742	409316-001		FIG 4	13
93742	409320-001	5340-01-477-1375	FIG 1	11
81343	4-2 430260C	4730-01-102-6544	FIG 24	11
22175	43LC6-12-SS-R	5340-01-476-9004	FIG 8	5
22175	43LC6-12-SS-R	5340-01-476-9004	FIG 23	5
22175	43LC6-8-SS-R		FIG 28	27
81343	4-4-040221	4730-00-432-2860	FIG 23	10
81343	4-4430260C	4730-01-476-9101	FIG 19	13
81343	4-4-430260C	4730-01-476-9101	FIG 25	11
1276	4797-5-4B	4730-00-073-2151	FIG 19	11
30554	4797-5-4B	4730-00-073-2151	FIG 23	9
81343	5070118C	4730-01-020-5607	FIG 24	23
3007	511811-0297	5340-01-476-9071	FIG 27	5

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Part Number Index (Continued)

CAGE	PART NUMBER	NSN	FIG	ITEM
2V507	5324K81	4730-01-476-9921	FIG 24	6
2V507	5324K81	4730-01-476-9921	FIG 25	6
22175	54LC6-8-SS-R	5340-01-477-0133	FIG 8	9
81343	5-5-070701C	4730-01-476-9775	FIG 19	8
81343	5-5-070701C	4730-01-476-9775	FIG 24	8
78189	61-101041-90-014	5305-01-187-5878	FIG 8	2
78189	61-101041-90-0142B-0542B	5305-01-187-5878	FIG 13	17
77221	628-20978	6625-01-477-0732	FIG 14	6
77221	628-21025	6625-01-515-2404	FIG 14	7
81343	6-6-430260C		FIG 33	7
93742	692497-12	5305-01-476-9248	FIG 4	5
93742	69-539-2	4730-00-812-1333	FIG 1	19
93742	69-539-2	4730-00-812-1333	FIG 24	22
30554	69-662-18	5305-00-036-6968	FIG 8	13
30554	69-662-18	5305-00-036-6968	FIG 28	32
30554	69-662-21	5305-00-036-6976	FIG 13	9
30554	69-662-21	5305-00-036-6976	FIG 15	14
30554	69662-24	5303-01-201-8979	FIG 15	7
30554	69-662-5	5305-00-224-1092	FIG 13	19
30554	69-662-63	5305-01-470-6197	FIG 16	2
30554	69-662-63	5305-01-470-6197	FIG 28	16
30554	69-692-6	5940-00-234-3383	FIG 30	11
72962	79NM-82	5310-00-207-8758	FIG 11	7
83330	800-1030-0337-50	6210-00-583-9349	FIG 14	21
94222	85-12-500-16	5325-01-320-8193	FIG 1	23
94222	85-12-500-16	5325-01-320-8193	FIG 14	15
94222	85-34-101-20	5310-00-822-8525	FIG 14	19
94222	85-35-309-56	5325-01-301-7903	FIG 12	1
94222	85-46-103-39	5310-01-365-4381	FIG 14	18
30554	88-20033-19A	5310-01-476-9081	FIG 37	14
30554	88-20033-4A	5310-01-477-9626	FIG 1	22
30554	88-20033-6A		FIG 14	26
30554	88-20033-8	5310-01-477-1368	FIG 8	3
30554	88-20260-11	3305-01-470-1425	FIG 16	11
30554	88-20260-11	5305-01-470-1425	FIG 27	29
30554	88-20260-11	5305-01-470-1425	FIG 28	21
30554	88-20260-11	5305-01-470-1425	FIG 28	31
30554	88-20260-22	5305-01-378-7899	FIG 5	2
30554	88-20260-22	5305-01-378-7899	FIG 9	6
30554	88-20260-22	5305-01-378-7899	FIG 18	2
30554	88-20260-22	5305-01-378-7899	FIG 27	24
30554	88-20260-22	5305-01-378-1899	FIG 28	24
30554	88-20260-22	5305-01-378-7899	FIG 38	7
30554	88-20260-23	5305-01-365-6313	FIG 27	4

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30554	88-20260-23	5305-01-365-6313	FIG 29	6
30554	88-20260-31		FIG 25	10
30554	88-20260-31		FIG 28	15
30554	88-20260-34	5305-01-381-9970	FIG 25	15
30554	88-20260-34	5305-01-381-9970	FIG 38	8
30554	88-20260-36	5310-00-208-9255	FIG 31	9
30554	88-20260-44	5305-01-476-9099	FIG 1	9
30554	88-20286	5330-01-366-2836	FIG 22	1
30554	88-20471	5935-00-482-7721	FIG 21	7
30554	88-20473		FIG 21	6
30554	88-20476		FIG 21	5
30554	88-20541-15		FIG 7	6
30554	88-20541-16		FIG 7	2
30554	88-20549-1		FIG 14	9
30554	88-20556-6	5310-01-477-9621	FIG 30	2
30554	88-20561-1	4730-01-470-1626	FIG 19	9
30554	88-20561-1	4730-01-470-1626	FIG 23	2
30554	88-20561-1	4730-01-470-1626	FIG 24	1
30554	88-20561-1	4730-01-470-1626	FIG 25	1
30554	88-20561-1	4730-01-470-1626	FIG 33	3
30554	88-20561-5	4730-01-470-1423	FIG 24	17
30554	88-20579-3	4720-01-470-3929	FIG 19	12
30554	88-20579-3	4720-01-470-3929	FIG 23	7
30554	88-20579-3	4720-01-470-3929	FIG 23	8
30554	88-20579-3	4720-01-470-3929	FIG 24	16
30554	88-20579-3	4720-01-470-3929	FIG 24	24
30554	88-20579-3	4720-01-470-3929	FIG 25	12
30554	88-20579-3	4720-01-470-3929	FIG 25	14
30554	88-20579-3	4730-01-490-3929	FIG 25	16
30554	88-20579-4		FIG 23	1
30554	88-20579-4	4720-01-470-6230	FIG 24	13
30554	88-20579-4	4720-01-470-6230	FIG 25	13
30554	88-20579-5		FIG 33	5
30554	88-21674-1	5310-01-366-8134	FIG 28	13
30554	88-22705	5330-01-367-6329	FIG 27	6
30554	88-22791-2	5305-01-467-1561	FIG 15	15
30554	88-22793-4	5305-01-464-6667	FIG 11	11
30554	88-22793-4	5305-01-464-6667	FIG 30	10
81640	8906K4533	5930-01-368-2891	FIG 14	8
96906	890K4519	5930-01-368-2893	FIG 14	22
2V507	8925T5	4010-01-497-2675	FIG 1	3
2V507	8936T43		FIG 11	3
2V507	90081A108	5305-01-477-9613	FIG 1	21

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39428	92161A033	5310-01-243-9441	FIG 29	3
779	93-350816-2		FIG 4	11
30554	95-8125-2		FIG 14	27
30554	98-19503		FIG 32	16
30554	98-19504		FIG 32	16A
30554	98-19505		FIG 27	14
30554	98-19508		FIG 27	18
30554	98-19509		FIG 12	6
30554	98-19509		FIG 27	18
60012	98-19516	5342-01-198-7569	FIG 18	3
30554	98-19518-01	5940-01-476-8951	FIG 7	5
30554	98-19518-02	5940-01-476-8981	FIG 7	7
30554	98-19519		FIG 21	8
30554	98-19535	2910-01-477-0840	FIG 25	4
30554	98-19544		FIG 24	18
61277	98-19545-01	2540-01-478-3630	FIG 36	10
30554	98-19545-02	2540-01-477-4776	FIG 36	12
30554	98-19545-03	2540-01-477-4775	FIG 36	15
30554	98-19546	5340-01-476-9028	FIG 31	12
30554	98-19548		FIG 27	33
30554	98-19549		FIG 9	11
30554	98-19553		FIG 14	16
30554	98-19555		FIG 29	12
30554	98-19556		FIG 29	10
30554	98-19557		FIG 19	17
30554	98-19558		FIG 6	10
30554	98-19560		FIG 27	11
30554	98-19560		FIG 28	11
30554	98-19561		FIG 27	38
30554	98-19562		FIG 1	15
30554	98-19563		FIG 1	8
30554	98-1965		FIG 28	19
30554	98-19566		FIG 6	4
30554	98-19567-01	5306-01-519-1096	FIG 6	1
30554	98-19567-02		FIG 6	7
30554	98-19568		FIG 11	6
30554	98-19570		FIG 9	8
30554	98-19573		FIG 28	3
30554	98-19574		FIG 38	3
30554	98-19576-01		FIG 27	3
30554	98-19576-02		FIG 27	9

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30554	98-19578		FIG 27	13
30554	98-19581-02		FIG 28	4
30554	98-19583		FIG 12	4
30554	98-19584		FIG 27	39
30554	98-19584		FIG 28	25
30554	98-19585	4720-01-476-9875	FIG 36	1
30554	98-19585	4720-01-476-9875	FIG 37	1
30554	98-19586-02		FIG 33	1
30554	98-19586-03		FIG 32	7
30554	98-19586-04		FIG 15	11
30554	98-19586-05		FIG 32	9
30554	98-19586-07		FIG 32	18
30554	98-19586-08		FIG 15	9
30554	98-19586-09		FIG 32	13
30554	98-19586-11		FIG 32	1
30554	98-19586-12		FIG 32	4
30554	98-19586-15		FIG 32	15
30554	98-19586-16		FIG 32	8
30554	98-19586-20		FIG 32	11
30554	98-19586-21		FIG 32	14
30554	98-19586-22		FIG 32	14A
30554	98-19586-23		FIG 32	2
30554	98-19586-24		FIG 33	8
30554	98-19586-25		FIG 32	12
30554	98-19587-01		FIG 28	18
30554	98-19589-17		FIG 32	8A
30554	98-19593	6150-01-476-9061	FIG 6	6
30554	98-19594	6150-01-476-9059	FIG 6	9
30554	98-19595	6150-01-476-8673	FIG 30	9
30554	98-19596	6150-01-476-8666	FIG 30	6
30554	98-19597	6150-01-477-1176	FIG 8	6
30554	98-19598		FIG 25	5
30554	98-19599	5120-01-483-3706	FIG 11	1
30554	98-19599	5120-01-483-3706	FIG 11	12
30554	98-19603		FIG 27	35
30554	98-19603		FIG 28	14
30554	98-19608		FIG 24	19
30554	98-19608		FIG 28	5
30554	98-19609	4710-01-478-3637	FIG 20	2
30554	98-19610	5330-01-476-9140	FIG 20	1
30554	98-19610	5330-01-476-9140	FIG 21	1

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30554	98-19611		FIG 19	7
30554	98-19613	5340-01-476-9144	FIG 19	1
30554	98-19614	5330-01-476-9137	FIG 36	2
30554	98-19614	5330-01-476-9137	FIG 37	2
30554	98-19615		FIG 29	2
30554	98-19618		FIG 9	10
30554	98-19621		FIG 27	25
30554	98-19623		FIG 28	20
30554	98-19633	6150-01-476-9338	FIG 10	1B
30554	98-19633	6150-01-476-9338	FIG 28	26B
30554	98-19645-03-201	5330-01-476-9106	FIG 27	27
30554	98-19645-03-201	5330-01-476-9106	FIG 27	32
30554	98-19645-03-201	5330-01-476-9106	FIG 28	17
30554	98-19645-06	5330-01-477-9623	FIG 12	2
30554	98-19655		FIG 31	3
30554	98-19657	4820-01-476-9731	FIG 33	4
30554	98-19662	5310-01-476-9103	FIG 4	16
30554	98-19664-06	5310-01-476-9079	FIG 36	13
30554	98-19665	5305-01-476-9077	FIG 29	1
30554	98-19699	5940-01-476-9076	FIG 6	5
30554	98-19702	5340-01-476-9147	FIG 19	3
30554	98-19703	5315-01-476-9086	FIG 19	2
30554	98-19709	5365-01-477-2738	FIG 27	17
15563	98-19709-01		FIG 28	34
30554	98-19709-01		FIG 32	10
15563	98-19709-02		FIG 8	11
15563	98-19709-02		FIG 28	37
30554	98-19710		FIG 15	8
30554	98-19711		FIG 36	3
30554	98-19711		FIG 37	3
30554	98-19712	5330-01-476-9069	FIG 38	9
93742	98-19714-01	6150-01-478-1124	FIG 16	8
30554	98-19714-02	6150-01-476-9315	FIG 16	9
30554	98-19715	6130-01-476-9148	FIG 5	1
30554	98-19717		FIG 31	10
30554	98-19718-01	5940-01-476-9272	FIG 27	15
30554	98-19718-02	5940-01-476-9028	FIG 31	8
30554	98-19719		FIG 8	1
30554	98-19720	5930-01-477-9743	FIG 4	14
30554	98-19720		FIG 34	2
30554	98-19722	2910-01-476-9779	FIG 21	9
30554	98-19724	4020-01-476-9072	FIG 12	3
30554	98-19725-01		FIG 28	35

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30554	98-19726	5999-01-502-6278	FIG 8	10
30554	98-19727	5340-01-476-9030	FIG 27	34
30554	98-19728	5340-01-476-8683	FIG 13	4
30554	98-19729	6150-01-477-1173	FIG 9	7
30554	98-19729	6150-01-477-1173	FIG 10	1A
30554	98-19729	6150-01-477-1173	FIG 17	4
30554	98-19729	6150-01-477-1173	FIG 23	11
30554	98-19729	6150-01-477-1173	FIG 28	26A
30554	98-19730	5305-01-477-0236	FIG 4	18
30554	98-19732	4730-01-476-9224	FIG 25	19
30554	98-19734	5920-01-477-0598	FIG 16	3
30554	98-19735	5340-01-477-9625	FIG 27	36
30554	98-19736-01		FIG 24	7
30554	98-19736-01		FIG 25	7
30554	98-19736-02		FIG 25	18
30554	98-19736-03		FIG 25	20
30554	98-19737		FIG 38	1
30554	98-19738		FIG 38	2
30554	98-19739		FIG 38	4
30554	98-19744-01		FIG 24	9
30554	98-19745	6140-01-476-8945	FIG 6	8
30554	98-19749-01		FIG 23	15
30554	98-19749-02	2910-01-517-8606	FIG 24	15
58536	A-A-55804-III-B	5975-00-878-3791	FIG 32	5
27264	AA-8704-06	5940-01-425-2020	FIG 4	10
27264	AA-8704-06	5940-01-425-2020	FIG 13	13
98410	AA-8715-10	5940-01-369-2270	FIG 10	6
83879	ABB-100	5975-01-199-9033	FIG 1	14
0BXW5	ACD150	2920-01-477-1320	FIG 1	26
0BXW5	ADG150	2920-01-477-1320	FIG 3	1
80204	B1821BH031F075N	5306-00-050-1238	FIG 4	17
80204	B1821BH037C175N	5305-01-476-9095	FIG 1	13
80204	B1821BH164C075H	5305-01-477-9618	FIG 1	18
80204	B1821BH164C075H	5305-01-477-9618	FIG 36	17
80204	B1821BH164C075H	5305-01-477-9618	FIG 37	4
80204	B1821BH190C075H	5305-01-477-9620	FIG 36	6
80204	B18231B08020N	5305-01-303-5631	FIG 1	7
80204	B18231B08020N	5305-01-303-5631	FIG 36	16
80204	B18231B10025NF	5305-01-380-3395	FIG 1	4
0BXW5	BR100	3120-01-477-2736	FIG 3	6
028B0	BW-15-BR	4730-01-476-9767	FIG 25	17
78553	C7931-1032-3B	5310-00-903-8595	FIG 28	6

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59270	CA-110	5930-01-477-0617	FIG 17	1
59270	CA-85	5930-01-436-4959	FIG 17	3
74545	CR15	5935-01-367-7814	FIG 15	12
01XD4	CT100D24C1S	6110-01-507-7938	FIG 8	4A
15526	DIN127-B10-FST-B	5310-01-387-2150	FIG 1	6
D8286	DIN127-B8-FST	5310-12-125-0056	FIG 1	27
D82286	DIN127-B8-FST	5310-12-125-0056	FIG 4	20
78643	DS-1209F	3040-00-374-5732	FIG 27	23
7E656	JAD5005	6110-01-477-1175	FIG 8	4B
81349	F02A32V20A	5920-00-131-9915	FIG 13	8
30554	FA1493FFF3000	4720-00-021-3320	FIG 32	3
25894	GBPC1204-ND	5961-01-421-3024	FIG 13	18
9527	GG0352	6680-00-933-3600	FIG 14	2
0BXW5	HW106	5305-01-477-9615	FIG 3	3
0BXW5	HW137	5305-01-477-9616	FIG 3	8
0BXW5	HW198	5305-01-476-9223	FIG 3	19
60886	HW1B-Y2C02-R	5930-01-478-0101	FIG 14	17
0BXW5	HW206	5310-01-476-9203	FIG 3	16
0BXW5	HW213	5310-01-476-9228	FIG 3	15
0BXW5	HW218	5310-01-476-9198	FIG 3	7
0BXW5	HW300	5310-01-476-9213	FIG 3	17
0BXW5	HW303	5310-01-476-9196	FIG 3	11
0BXW5	HW309	5310-01-476-9206	FIG 3	9
19617	HW310	5310-00-498-7234	FIG 3	5
0BXW5	HW900	5305-01-476-9231	FIG 3	2
81349	JANTX1N6072A	5961-01-057-3305	FIG 10	5
81349	JANTX1N6072A	5961-01-057-3305	FIG 15	3
94222	K5-285752	5340-01-464-8407	FIG 27	26
S4163	L70AE-DEGFR	2815-01-465-5993	FIG 1	1
0BXW5	LE154		FIG 3	4
0BXW5	LE157		FIG 3	20
0BXW5	LK150		FIG 3	14
9527	LS4082	6680-01-476-9362	FIG 22	2
81349	M11188/2-A-24	6140-00-059-3528	FIG 6	8A
81349	M11188/2-B-24	6140-01-390-1968	FIG 6	8B
81343	M23053/5-108-2	5970-00-915-9186	FIG 7	1
81349	M24243/6A402H	5320-00-932-1972	FIG 31	7
81349	M24243/6-A402H	5320-00-932-1972	FIG 15	10
81349	M24243/6-A402H	5320-00-932-1972	FIG 32	17
81349	M24243/6-A403H	5320-00-882-8388	FIG 32	6
81349	M24243/6-A404H	5320-00-882-8386	FIG 33	2
81349	M45913/1-5CG5C	5310-00-984-3806	FIG 1	16
81349	M6363/8-5AS15	6240-00-080-2012	FIG 14	24
96906	MS14226-64YC816	5310-01-399-2044	FIG 24	10

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96906	MS17830-6C	5310-00-050-6646	FIG 1	12
96906	MS20659-104	5940-00-107-1481	FIG 11	4
80205	MS21044C08	5310-00-982-6814	FIG 1	25
80205	MS21044C08	5310-00-982-6814	FIG 16	5
80205	MS21044C08	5310-00-982-6814	FIG 18	7
80205	MS21044C08	5310-00-982-6814	FIG 36	8
80205	MS21044C3	5310-00-208-9255	FIG 8	8
15653	MS21044C3	5310-00-208-9255	FIG 11	14
80205	MS21044C3	5310-00-208-9255	FIG 14	5
80205	MS21044C3	5310-0-208-9255	FIG 24	12
80205	MS21044C3	5310-00-208-9255	FIG 27	1
30554	MS21044C3		FIG 27	37
80205	MS21044C3	5310-00-208-9255	FIG 28	1
96906	MS21044C3	5310-00-208-9255	FIG 29	11
80205	MS21044C3	5310-00-208-9255	FIG 30	4
80205	MS21044C3	5310-00-208-9255	FIG 31	2
80205	MS21044C4	5310-00-889-2589	FIG 27	21
96906	MS21333-68	5340-00-843-7825	FIG 28	28
96906	MS21334-31	5340-00-929-1794	FIG 23	3
96906	MS2166-1		FIG 4	12
96906	MS21783-5	5310-00-983-8489	FIG 28	33
96906	MS24523-22	5930-00-683-1628	FIG 14	14
96906	MS24523-30	5930-00-683-1626	FIG 14	13
96906	MS25036-121	5940-00-557-4343	FIG 7	3
96906	MS27183-10	5310-00-809-4058	FIG 6	3
96906	MS27183-10	5310-00-809-4058	FIG 9	2
96906	MS27183-10	5310-00-809-4058	FIG 10	7
96906	MS27183-10	5310-00-809-4058	FIG 19	6
96906	MS27183-10	5310-00-809-4058	FIG 25	9
96906	MS27183-10	5310-00-809-4058	FIG 27	8
96906	MS27183-10	5310-00-809-4058	FIG 28	8
96906	MS27183-10	5310-00-809-4058	FIG 29	8
96906	MS27183-10	5310-00-809-4058	FIG 31	5
96906	MS27183-12	5310-00-081-4219	FIG 1	10
96906	MS27183-12	5310-00-081-4219	FIG 4	19
96906	MS27183-12	5310-00-081-4219	FIG 30	3
96906	MS27183-2	5310-00-014-5850	FIG 31	1
96906	MS27183-3	5310-00-951-4679	FIG 17	6
96906	MS27183-42	5310-00-014-5850	FIG 9	4
96906	MS27183-42	5310-00-014-5850	FIG 16	1
96906	MS27183-42	5310-00-014-5850	FIG 18	1
96906	MS27183-42	5310-00-014-5850	FIG 24	20
96906	MS27183-42	5310-00-014-5850	FIG 27	2

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96906	MS27183-42	5310-00-014-5850	FIG 38	5
96906	MS27183-5	5310-00-983-8483	FIG 8	12
96906	MS27183-57	5310-01-280-5796	FIG 1	5
96906	MS27183-58	5310-01-306-1624	FIG 29	4
96906	MS27183-58	5310-01-306-1624	FIG 30	7
96906	MS27183-7	5310-00-809-8544	FIG 1	17
96906	MS27183-7	5310-00-809-8544	FIG 16	6
96906	MS27183-7	5310-00-809-8544	FIG 27	31
96906	MS27183-7	5310-00-809-8544	FIG 28	22
96906	MS27183-7	5310-00-809-8544	FIG 28	29
96906	MS27183-7	5310-00-809-8544	FIG 36	7
96906	MS27183-8	5310-00-809-8546	FIG 8	7
96906	MS27183-8	5310-00-809-8546	FIG 11	8
96906	MS27183-8	5310-00-809-8546	FIG 14	4
96906	MS27183-8	5310-00-809-8546	FIG 20	4
96906	MS27183-8	5310-00-809-8546	FIG 21	2
96906	MS27183-8	5310-00-809-8546	FIG 22	3
96906	MS27183-8	5310-00-809-8546	FIG 23	13
96906	MS27183-8	5310-00-809-8546	FIG 29	7
96906	MS27183-8	5310-00-809-8546	FIG 30	5
96906	MS27183-8	5310-00-809-8546	FIG 36	4
96906	MS27407-2	5930-00-906-3477	FIG 14	20
81343	MS3367-5-9	5975-00-111-3208	FIG 10	2
80205	MS35206-215	5305-00-889-2997	FIG 17	2
96906	MS35206-263	5305-00-984-6210	FIG 20	5
96906	MS35206-263	5305-00-984-6210	FIG 21	4
96906	MS35206-263	5305-00-984-6210	FIG 22	5
96906	MS35206-263	5305-00-984-6210	FIG 23	12
96906	MS35206-271	5305-00-984-6218	FIG 19	16
96906	MS35207-264	5305-00-989-7435	FIG 14	11
80205	MS35207-265	5305-00-993-1848	FIG 30	12
96906	MS35207-280	5305-00-993-2738	FIG 27	19
96906	MS35338-40	5310-00-543-2410	FIG 9	5
96906	MS35338-40	5310-00-543-2410	FIG 19	5
96906	MS35338-40	5310-00-543-2410	FIG 27	20
80205	MS35338-41	5310-00-045-4007	FIG 9	3
80205	MS35338-41	5310-00-045-4007	FIG 20	3
80205	MS35338-41	5310-00-045-4007	FIG 21	3
80205	MS35338-41	5310-00-045-4007	FIG 22	4
80205	MS35338-41	5310-00-045-4007	FIG 23	14
80205	MS35338-41	5310-00-045-4007	FIG 27	16
80205	MS35338-41	5310-00-045-4007	FIG 28	9
80205	MS35338-41	5310-00-045-4007	FIG 36	5

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Part Number Index (Continued)

CAGE	PART NUMBER	NSN	FIG	ITEM
80205	MS35338-41	5310-00-045-4007	FIG 38	6
80205	MS35338-43	5310-00-045-3296	FIG 13	3
96906	MS35338-44	5310-00-582-5965	FIG 17	5
96906	MS35338-45	5310-00-407-9566	FIG 16	10
96906	MS35338-45	5310-00-407-9566	FIG 27	30
96906	MS35338-45	5310-00-407-9566	FIG 28	23
96906	MS35338-45	5310-00-407-9566	FIG 28	30
96906	MS35649-2252	5310-00-997-1888	FIG 6	2
96906	MS35649-2252	5310-00-997-1888	FIG 19	15
96906	MS35691-12	5310-00-850-6855	FIG 30	1
96906	MS51492-02	5310-01-335-7410	FIG 14	25
96906	MS51844-23	4030-01-114-3894	FIG 11	5
96906	MS51873-10B	4730-00-817-6194	FIG 24	4
96906	MS87006-3	4030-00-270-5436	FIG 1	24
96906	MS87006-3	4030-00-270-5436	FIG 18	6
96906	MS87006-3		FIG 28	19
96906	MS91528-2K2B	5355-00-559-8943	FIG 14	12
93061	MV608-4	4820-01-477-2791	FIG 19	14
0BXW5	NT102	5310-01-476-9200	FIG 3	12
45722	P15121-20	5305-00-036-6972	FIG 15	13
45722	P-15121-38	5305-01-247-6829	FIG 15	5
80063	PL152	5935-00-532-3496	FIG 3	18
55752	R12T	4330-01-374-9147	FIG 25	23
0BXW5	RD150	2910-01-476-9751	FIG 3	10
81349	RE70G2501	5905-00-535-1068	FIG 13	20
60886	RH2B-ULDC24	5945-01-461-2084	FIG 15	2
55752	RK10012	5330-01-373-3649	FIG 25	24
55752	RK10110	5305-01-428-6791	FIG 25	22
55752	RK10214		FIG 25	21
55752	RK10215	2910-01-506-3912	FIG 25	25
55752	RK20126	5365-01-395-4744	FIG 25	27
55752	RK30476	4820-01-474-6910	FIG 25	26
64533	RP-5	5975-00-879-7234	FIG 15	16
81349	RV4SAYSD502A	5905-00-539-2573	FIG 14	3
81343	S-070118C	4730-01-020-5607	FIG 19	10
80204	S231NA38MMRC5568	5305-01-381-1202	FIG 1	28
81343	S300NA42FA827574NNCG	5305-01-476-9251	FIG 4	1
01XD4	SCW0632-5		FIG 8	15
81348	SF SIZE 1		FIG 18	5
042U1	SH2B-05	5935-01-477-9883	FIG 15	4
01XD4	SHD00007A		FIG 8	14
76381	SJ3541 TYPE 400	5325-01-237-2932	FIG 11	2
76381	SJ3542 TYPE 170	5325-01-237-2933	FIG 11	10

0BXW5 SLC100 2990-01-477-1371 FIG 15 6

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Part Number Index (Concluded)

CAGE	PART NUMBER	NSN	FIG	ITEM
85814	SM-2B-15F	5930-01-478-0122	FIG 4	15
85814	SM-2B-15F	5930-01-478-0122	FIG 34	1
30554	SP-2241-1	5330-01-477-9623	FIG 27	28
60886	SY4S-02F1	5360-01-260-0317	FIG 15	1
81348	TYPEII, GRADEC, CL		FIG 1	20
34371	V32OPA40A	5905-01-293-0175	FIG 11	9
79470	W17709	4730-01-360-6217	FIG 33	6
77342	W23X1A1G-7.5	5925-00-089-3031	FIG 14	23
0BXW5	WA102	5310-01-476-9201	FIG 3	13
01XD4	WLK0006		FIG 8	16
60012	98-19516	5342-01-476-9283	FIG 38	10
			FIG 9	12

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

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FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 1	1	2815-01-465-5993	S4163	L70AE-DEGFR
FIG 1	2	4720-01-476-9814	0AK42	186
FIG 1	3	4010-01-497-2675	2V507	8925T5
FIG 1	4	5305-01-380-3395	80204	B18231B10025NF
FIG 1	5	5310-01-280-5796	96906	MS27183-57
FIG 1	6	5310-01-387-2150	15526	DIN127-B10-FST-B
FIG 1	7	5305-01-303-5631	80204	B18231B08020N
FIG 1	8		30554	98-19563
FIG 1	9	5305-01-476-9099	30554	88-20260-44
FIG 1	10	5310-00-081-4219	96906	MS27183-12
FIG 1	11	5340-01-477-1375	93742	409320-001
FIG 1	12	5310-00-050-6646	96906	MS17830-6C
FIG 1	13	5305-01-476-9095	80204	B1821BH037C175N
FIG 1	14	5975-01-199-9033	83879	ABB-100
FIG 1	15		30554	98-19562
FIG 1	16	5310-00-984-3806	81349	M45913/1-5CG5C
FIG 1	17	5310-00-809-8544	96906	MS27183-7
FIG 1	18	5305-01-477-9618	80204	B1821BH164C075H
FIG 1	19	4730-00-812-1333	93742	69-539-2
FIG 1	20		81348	TYPEII, GRADEC, CL
FIG 1	21	5305-01-477-9613	2V507	90081A108
FIG 1	22	5310-01-477-9626	30554	88-20033-4A
FIG 1	23	5325-01-320-8193	94222	85-12-500-16
FIG 1	24	4030-00-270-5436	96906	MS87006-3
FIG 1	25	5310-00-982-6814	80205	MS21044C08
FIG 1	26		0BXW5	ACDASSY
FIG 1	27	5310-12-125-0056	D8286	DIN127-B8-FST
FIG 1	28	5305-01-381-1202	80204	S231NA38MMRC5568
FIG 2	1		----	----
FIG 3	1	2920-01-477-1320	0BXW5	ADG150
FIG 3	2	5305-01-476-9231	0BXW5	HW900
FIG 3	3	5305-01-477-9615	0BXW5	HW106
FIG 3	4		0BXW5	LE154
FIG 3	5	5310-00-498-7234	19617	HW310
FIG 3	6	3120-01-477-2736	0BXW5	BR100
FIG 3	7	5310-01-476-9198	0BXW5	HW218
FIG 3	8	5305-01-477-9616	0BXW5	HW137
FIG 3	9	5310-01-476-9206	0BXW5	HW309
FIG 3	10	2910-01-476-9751	0BXW5	RD150
FIG 3	11	5310-01-476-9196	0BXW5	HW303
FIG 3	12	5310-01-476-9200	0BXW5	NT102
FIG 3	13	5310-01-476-9201	0BXW5	WA102
FIG 3	14		0BXW5	LK150
FIG 3	15	5310-01-476-9228	0BXW5	HW213
FIG 3	16	5310-01-476-9203	0BXW5	HW206
FIG 3	17	5310-01-476-9213	0BXW5	HW300

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FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 3	18	5935-00-532-3496	80063	PL152
FIG 3	19	5305-01-476-9223	0BXW5	HW198
FIG 3	20		0BXW5	LE157
FIG 4	1	5305-01-476-9251	81343	S300NA42FA827574NNCG
FIG 4	2	3040-01-477-0228	93742	692507
FIG 4	3	2920-01-477-0238	93742	692499
FIG 4	4		93742	692500
FIG 4	5	5305-01-476-9248	93742	692497-12
FIG 4	6	6115-01-476-9356	93742	692505
FIG 4	7		93742	692501
FIG 4	8	5935-01-415-6239	27264	39-01-2060
FIG 4	9	5999-01-477-0593	27264	39-00-0077
FIG 4	10	5940-01-425-2020	27264	AA-8704-06
FIG 4	11		779	93-350816-2
FIG 4	12		96906	MS2166-1
FIG 4	13		93742	409316-001
FIG 4	14	5930-01-477-9743	30554	98-19720
FIG 4	15	5930-01-478-0122	85814	SM-2B-15F
FIG 4	16	5310-01-476-9103	30554	98-19662
FIG 4	17	5306-00-050-1238	80204	B1821BH031F075N
FIG 4	18	5305-01-477-0236	30554	98-19730
FIG 4	19	5310-00-081-4219	96906	MS27183-12
FIG 4	20	5310-12-125-0056	D82286	DIN127-B8-FST
FIG 5	1	6130-01-476-9148	30554	98-19715
FIG 5	2	5305-01-378-7899	30554	88-20260-22
FIG 6	1	5306-01-519-1096	30554	98-19567-01
FIG 6	2	5310-00-997-1888	96906	MS35649-2252
FIG 6	3	5310-00-809-4058	96906	MS27183-10
FIG 6	4		30554	98-19566
FIG 6	5	5940-01-476-9076	30554	98-19699
FIG 6	6	6150-01-476-9061	30554	98-19593
FIG 6	7		30554	98-19567-02
FIG 6	8	6140-01-476-8945	30554	98-19745
FIG 6	8A	6140-00-059-3528	81349	M11188/2-A-24
FIG 6	8B	6140-01-390-1968	81349	M11188/2-B-24
FIG 6	9	6150-01-476-9059	30554	98-19594
FIG 6	10		30554	98-19558
FIG 7	1	5970-00-915-9186	81343	M23053/5-108-2
FIG 7	2		30554	88-20541-16
FIG 7	3	5940-00-557-4343	96906	MS25036-121
FIG 7	4	6145-01-029-6544	16764	264A
FIG 7	5	5940-01-476-8951	30554	98-19518-01
FIG 7	6		30554	88-20541-15
FIG 7	7	5940-01-476-8981	30554	98-19518-02
FIG 8	1		30554	98-19719
FIG 8	2	5305-01-187-5878	78189	61-101041-90-014

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

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FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 8	3	5310-01-477-1368	30554	88-20033-8
FIG 8	4A	6110-01-507-7938	01XD4	CT100D24C1S
FIG 8	4B	6110-01-477-1175	7E656	JAD5005
FIG 8	4C	5930-00-422-4948	04426	11-504
FIG 8	5	5340-01-476-9004	22175	43LC6-12-SS-R
FIG 8	6	6150-01-477-1176	30554	98-19597
FIG 8	7	5310-00-809-8546	96906	MS27183-8
FIG 8	8	5310-00-208-9255	80205	MS21044C3
FIG 8	9	5340-01-477-0133	22175	54LC6-8-SS-R
FIG 8	10	5999-01-502-6278	30554	98-19726
FIG 8	11		15563	98-19709-02
FIG 8	12	5310-00-983-8483	96906	MS27183-5
FIG 8	13	5305-00-036-6968	30554	69-662-18
FIG 8	14		01XD4	SHD00007A
FIG 8	15		01XD4	SCW0632-5
FIG 8	16		01XD4	WLK0006
FIG 9	1	5305-01-056-1501	24617	274825
FIG 9	2	5310-00-809-4058	96906	MS27183-10
FIG 9	3	5310-00-045-4007	80205	MS35338-41
FIG 9	4	5310-00-014-5850	96906	MS27183-42
FIG 9	5	5310-00-543-2410	96906	MS35338-40
FIG 9	6	5305-01-378-7899	30554	88-20260-22
FIG 9	7	6150-01-477-1173	30554	98-19729
FIG 9	8		30554	98-19570
FIG 9	9	5895-01-477-0855	60177	29350
FIG 9	10		30554	98-19618
FIG 9	11		30554	98-19549
FIG 9	12			
FIG 10	1A	6150-01-477-1173	30554	98-19729
FIG 10	1B	6150-01-476-9338	30554	98-19633
FIG 10	2	5975-00-111-3208	81343	MS3367-5-9
FIG 10	3	5306-00-484-5730	80256	307608
FIG 10	4	5945-00-855-7478	16764	1115615
FIG 10	5	5961-01-057-3305	81349	JANTX1N6072A
FIG 10	6	5940-01-369-2270	98410	AA-8715-10
FIG 10	7	5310-00-809-4058	96906	MS27183-10
FIG 10	8	5310-00-685-2973	94135	12Z2007-260
FIG 11	1	5120-01-483-3706	30554	98-19599
FIG 11	2	5325-01-237-2932	76381	SJ3541 TYPE 400
FIG 11	3		2V507	8936T43
FIG 11	4	5940-00-107-1481	96906	MS20659-104
FIG 11	5	4030-01-114-3894	96906	MS51844-23
FIG 11	6		30554	98-19568
FIG 11	7	5310-00-207-8758	72962	79NM-82
FIG 11	8	5310-00-809-8546	96906	MS27183-8
FIG 11	9	5905-01-293-0175	34371	V32OPA40A
FIG 11	10	5325-01-237-2933	76381	SJ3542 TYPE 170

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Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 11	11	5305-01-464-6667	30554	88-22793-4
FIG 11	12	5120-01-483-3706	30554	98-19599
FIG 11	13	5306-01-156-7663	19207	12325869
FIG 11	14	5310-00-208-9255	15653	MS21044C3
FIG 12	1	5325-01-301-7903	94222	85-35-309-56
FIG 12	2	5330-01-477-9623	30554	98-19645-06
FIG 12	3	4020-01-476-9072	30554	98-19724
FIG 12	4		30554	98-19583
FIG 12	5	5340-01-476-9074	0E8J0	1055-U3
FIG 12	6		30554	98-19509
FIG 13	1		9R803	3300-9-XP-74
FIG 13	2	5940-01-476-9191	9R803	3300-9
FIG 13	3	5310-00-045-3296	80205	MS35338-43
FIG 13	4	5340-01-476-8683	30554	98-19728
FIG 13	5	5940-01-477-1254	9R803	3300-3
FIG 13	6		9R803	3300-3-XP-74
FIG 13	7	5920-01-476-9734	75915	342028PL
FIG 13	8	5920-00-131-9915	81349	F02A32V20A
FIG 13	9	5305-00-036-6976	30554	69-662-21
FIG 13	10	5940-01-470-2470	9R803	3300-2
FIG 13	11	5940-01-470-3031	9R803	3300-10-XP-74
FIG 13	12	5961-00-484-8041	80131	1N5404
FIG 13	13	5940-01-425-2020	27264	AA-8704-06
FIG 13	14	5940-01-476-9186	9R803	3300-16
FIG 13	15	5961-00-484-8041	80131	1N5404
FIG 13	16		9R803	223300-16-XP-74
FIG 13	17	5305-01-187-5878	78189	61-101041-90-0142B-0542B
FIG 13	18	5961-01-421-3024	25894	GBPC1204-ND
FIG 13	19	5305-00-224-1092	30554	69-662-5
FIG 13	20	5905-00-535-1068	81349	RE70G2501
FIG 14	1	6645-01-458-7278	74400	85311
FIG 14	2	6680-00-933-3600	9527	GG0352
FIG 14	3	5905-00-539-2573	81349	RV4SAYSD502A
FIG 14	4	5310-00-809-8546	96906	MS27183-8
FIG 14	5	5310-00-208-9255	80205	MS21044C3
FIG 14	6	6625-01-477-0732	77221	628-20978
FIG 14	7	6625-01-515-2404	77221	628-21025
FIG 14	8	5930-01-368-2891	81640	8906K4533
FIG 14	9		30554	88-20549-1
FIG 14	10	6625-01-477-0634	60177	29390
FIG 14	11	5305-00-989-7435	96906	MS35207-264
FIG 14	12	5355-00-559-8943	96906	MS91528-2K2B
FIG 14	13	5930-00-683-1626	96906	MS24523-30
FIG 14	14	5930-00-683-1628	96906	MS24523-22
FIG 14	15	5325-01-320-8193	94222	85-12-500-16
FIG 14	16		30554	98-19553

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FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 14	17	5930-01-478-0101	60886	HW1B-Y2C02-R
FIG 14	18	5310-01-365-4381	94222	85-46-103-39
FIG 14	19	5310-00-822-8525	94222	85-34-101-20
FIG 14	20	5930-00-906-3477	96906	MS27407-2
FIG 14	21	6210-00-583-9349	83330	800-1030-0337-50
FIG 14	22	5930-01-368-2893	96906	890K4519
FIG 14	23	5925-00-089-3031	77342	W23X1A1G-7.5
FIG 14	24	6240-00-080-2012	81349	M6363/8-5AS15
FIG 14	25	5305-01-335-7410	96906	MS51492-02
FIG 14	26		30554	88-20033-6A
FIG 14	27		30554	95-8125-2
FIG 15	1	5360-01-260-0317	60886	SY4S-02F1
FIG 15	2	5945-01-461-2084	60886	RH2B-ULDC24
FIG 15	3	5961-01-057-3305	81349	JANTX1N6072A
FIG 15	4	5935-01-477-9883	042U1	SH2B-05
FIG 15	5	5305-01-247-6829	45722	P-15121-38
FIG 15	6	2990-01-477-1371	0BXW5	SLC100
FIG 15	7	5303-01-201-8979	30554	69662-24
FIG 15	8		30554	98-19710
FIG 15	9		30554	98-19586-08
FIG 15	10	5320-00-932-1972	81349	M24243/6-A402H
FIG 15	11		30554	98-19586-04
FIG 15	12	5935-01-367-7814	74545	CR15
FIG 15	13	5305-00-036-6972	45722	P15121-20
FIG 15	14	5305-00-036-6976	30554	69-662-21
FIG 15	15	5305-01-467-1561	30554	88-22791-2
FIG 15	16	5975-00-879-7234	64533	RP-5
FIG 16	1	5310-00-014-5850	96906	MS27183-42
FIG 16	2	5305-01-470-6197	30554	69-662-63
FIG 16	3	5920-01-477-0598	30554	98-19734
FIG 16	4	4140-01-476-9063	5Y921	559262
FIG 16	5	5310-00-982-6814	80205	MS21044C08
FIG 16	6	5310-00-809-8544	96906	MS27183-7
FIG 16	7	5306-01-156-7663	19207	12325869
FIG 16	8	6150-01-478-1124	93742	98-19714-01
FIG 16	9	6150-01-476-9315	30554	98-19714-02
FIG 16	10	5310-00-407-9566	96906	MS35338-45
FIG 16	11	3305-01-470-1425	30554	88-20260-11
FIG 16	12	4140-01-476-9068	54921	31897
FIG 16	12A	4140-01-503-3160	54921	31842
FIG 17	1	5930-01-477-0617	59270	CA-110
FIG 17	2	5305-00-889-2997	80205	MS35206-215
FIG 17	3	5930-01-436-4959	59270	CA-85
FIG 17	4	6150-01-477-1173	30554	98-19729
FIG 17	5	5310-00-582-5965	96906	MS35338-44
FIG 17	6	5310-00-951-4679	96906	MS27183-3
FIG 18	1	5310-00-014-5850	96906	MS27183-42
FIG 18	2	5305-01-378-7899	30554	88-20260-22
FIG 18	3	5342-01-198-7569	60012	98-19516

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FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 18	4	4730-01-476-9855	34234	13003
FIG 18	5		81348	SF SIZE 1
FIG 18	6	4030-00-270-5436	96906	MS87006-3
FIG 18	7	5310-00-982-6814	80205	MS21044C08
FIG 19	1	5340-01-476-9144	30554	98-19613
FIG 19	2	5315-01-476-9086	30554	98-19703
FIG 19	3	5340-01-476-9147	30554	98-19702
FIG 19	4	5306-00-484-5730	80256	307608
FIG 19	5	5310-00-543-2410	96906	MS35338-40
FIG 19	6	5310-00-809-4058	96906	MS27183-10
FIG 19	7		30554	98-19611
FIG 19	8	4730-01-476-9775	81343	5-5-070701C
FIG 19	9	4730-01-470-1626	30554	88-20561-1
FIG 19	10	4730-01-020-5607	81343	S-070118C
FIG 19	11	4730-00-073-2151	1276	4797-5-4B
FIG 19	12	4720-01-470-3929	30554	88-20579-3
FIG 19	13	4730-01-476-9101	81343	4-4430260C
FIG 19	14	4820-01-477-2791	93061	MV608-4
FIG 19	15	5310-00-997-1888	96906	MS35649-2252
FIG 19	16	5305-00-984-6218	96906	MS35206-271
FIG 19	17		30554	98-19557
FIG 20	1	5330-01-476-9140	30554	98-19610
FIG 20	2	4710-01-478-3637	30554	98-19609
FIG 20	3	5310-00-045-4007	80205	MS35338-41
FIG 20	4	5310-00-809-8546	96906	MS27183-8
FIG 20	5	5305-00-984-6210	96906	MS35206-263
FIG 21	1	5330-01-476-9140	30554	98-19610
FIG 21	2	5310-00-809-8546	96906	MS27183-8
FIG 21	3	5310-00-045-4007	80205	MS35338-41
FIG 21	4	5305-00-984-6210	96906	MS35206-263
FIG 21	5		30554	88-20476
FIG 21	6		30554	88-20473
FIG 21	7	5935-00-482-7721	30554	88-20471
FIG 21	8		30554	98-19519
FIG 21	9	2910-01-476-9779	30554	98-19722
FIG 22	1	5330-01-366-2836	30554	88-20286
FIG 22	2	6680-01-476-9362	9527	LS4082
FIG 22	3	5310-00-809-8546	96906	MS27183-8
FIG 22	4	5310-00-045-4007	80205	MS35338-41
FIG 22	5	5305-00-984-6210	96906	MS35206-263
FIG 23	1		30554	88-20579-4
FIG 23	2	4730-01-470-1626	30554	88-20561-1
FIG 23	3	5340-00-929-1794	96906	MS21334-31
FIG 23	4	2940-01-365-6535	72850	479735
FIG 23	5	5340-01-476-9004	22175	43LC6-12-SS-R
FIG 23	6	4730-00-277-7904	93061	125HBL-5-2

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 23	7	4720-01-470-3929	30554	88-20579-3
FIG 23	8	4720-01-470-3929	30554	88-20579-3
FIG 23	9	4730-00-073-2151	30554	4797-5-4B
FIG 23	10	4730-00-432-2860	81343	4-4-040221
FIG 23	11	6150-01-477-1173	30554	98-19729
FIG 23	12	5305-00-984-6210	96906	MS35206-263
FIG 23	13	5310-00-809-8546	96906	MS27183-8
FIG 23	14	5310-00-045-4007	80205	MS35338-41
FIG 23	15		30554	98-19749-01
FIG 24	1	4730-01-470-1626	30554	88-20561-1
FIG 24	2	4730-00-277-7904	93061	125HBL
FIG 24	3	4730-00-595-1887	81343	2-2-2-140438C
FIG 24	4	4730-00-817-6194	96906	MS51873-10B
FIG 24	5	4730-01-463-2091	93061	125 HB-2-2
FIG 24	6	4730-01-476-9921	2V507	5324K81
FIG 24	7		30554	98-19736-01
FIG 24	8	4730-01-476-9775	81343	5-5-070701C
FIG 24	9		30554	98-19744-01
FIG 24	10	5310-01-399-2044	96906	MS14226-64YC816
FIG 24	11	4730-01-102-6544	81343	4-2 430260C
FIG 24	12	5310-00-208-9255	80205	MS21044C3
FIG 24	13	4720-01-470-6230	30554	88-20579-4
FIG 24	14	2940-01-365-6535	72850	479735
FIG 24	15	2910-01-517-8606	30554	98-19749-02
FIG 24	16	4720-01-470-3929	30554	88-20579-3
FIG 24	17	4730-01-470-1423	30554	88-20561-5
FIG 24	18		30554	98-19544
FIG 24	19		30554	98-19608
FIG 24	20	5310-00-014-5850	96906	MS27183-42
FIG 24	21	5306-01-156-7663	19207	12325869
FIG 24	22	4730-00-812-1333	93742	69-539-2
FIG 24	23	4730-01-020-5607	81343	5070118C
FIG 24	24	4720-01-470-3929	30554	88-20579-3
FIG 25	1	4730-01-470-1626	30554	88-20561-1
FIG 25	2	4730-00-277-7904	93061	125HBL-5-2
FIG 25	3	4730-00-595-1887	81343	2-2-2-140438C
FIG 25	4	2910-01-477-0840	30554	98-19535
FIG 25	5		30554	98-19598
FIG 25	6	4730-01-476-9921	2V507	5324K81
FIG 25	7		30554	98-19736-01
FIG 25	8	5310-00-685-2973	94135	12Z2007-260
FIG 25	9	5310-00-809-4058	96906	MS27183-10
FIG 25	10		30554	88-20260-31
FIG 25	11	4730-01-476-9101	81343	4-4-430260C
FIG 25	12	4720-01-470-3929	30554	88-20579-3
FIG 25	13	4720-01-470-6230	30554	88-20579-4

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 25	14	4720-01-470-3929	30554	88-20579-3
FIG 25	15	5305-01-381-9970	30554	88-20260-34
FIG 25	16	4730-01-490-3929	30554	88-20579-3
FIG 25	17	4730-01-476-9767	028B0	BW-15-BR
FIG 25	18		30554	98-19736-02
FIG 25	19	4730-01-476-9224	30554	98-19732
FIG 25	20		30554	98-19736-03
FIG 25	21		55752	RK10214
FIG 25	22	5305-01-428-6791	55752	RK10110
FIG 25	23	4330-01-374-9147	55752	R12T
FIG 25	24	5330-01-373-3649	55752	RK10012
FIG 25	25	2910-01-506-3912	55752	RK10215
FIG 25	26	4820-01-474-6910	55752	RK30476
FIG 25	27	5365-01-395-4744	55752	RK20126
FIG 26	1	2940-01-389-9942	54163	114250-12530
FIG 26	2	5305-01-300-6264	54163	26106-060122
FIG 26	3	5310-01-327-0778	54163	114250-12550
FIG 26	4	5310-01-322-8747	54163	114250-12560
FIG 26	5	5340-01-323-7879	54163	114250-1520
FIG 26	6	2940-01-310-4495	54163	114250-12580
FIG 27	1	5310-00-208-9255	80205	MS21044C3
FIG 27	2	5310-00-014-5850	96906	MS27183-42
FIG 27	3		30554	98-19576-01
FIG 27	4	5305-01-365-6313	30554	88-20260-23
FIG 27	5	5340-01-476-9071	3007	511811-0297
FIG 27	6	5330-01-367-6329	30554	88-22705
FIG 27	7	5305-01-056-1501	24617	274825
FIG 27	8	5310-00-809-4058	96906	MS27183-10
FIG 27	9		30554	98-19576-02
FIG 27	10	5310-00-685-2973	94135	12Z2007-260
FIG 27	11		30554	98-19560
FIG 27	12	5306-01-156-7663	19207	12325869
FIG 27	13		30554	98-19578
FIG 27	14		30554	98-19505
FIG 27	15	5940-01-476-9272	30554	98-19718-01
FIG 27	16	5310-00-045-4007	80205	MS35338-41
FIG 27	17	5365-01-477-2738	30554	98-19709
FIG 27	18		30554	98-19509
FIG 27	18		30554	98-19508
FIG 27	19	5305-00-993-2738	96906	MS35207-280
FIG 27	20	5310-00-543-2410	96906	MS35338-40
FIG 27	21	5310-00-889-2589	80205	MS21044C4
FIG 27	22		08EJ0	1097-US
FIG 27	23	3040-00-374-5732	78643	DS-1209F
FIG 27	24	5305-01-378-7899	30554	88-20260-22
FIG 27	25		30554	98-19621

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 27	26	5340-01-464-8407	94222	K5-285752
FIG 27	27	5330-01-476-9106	30554	98-19645-03-201
FIG 27	28	5330-01-477-9623	30554	SP-2241-1
FIG 27	29	5305-01-470-1425	30554	88-20260-11
FIG 27	30	5310-00-407-9566	96906	MS35338-45
FIG 27	31	5310-00-809-8544	96906	MS27183-7
FIG 27	32	5330-01-476-9106	30554	98-19645-03-201
FIG 27	33		30554	98-19548
FIG 27	34	5340-01-476-9030	30554	98-19727
FIG 27	35		30554	98-19603
FIG 27	36	5340-01-477-9625	30554	98-19735
FIG 27	37		30554	MS21044C3
FIG 27	38		30554	98-19561
FIG 27	39		30554	98-19584
FIG 27	40		30554	98-19577
FIG 28	1	5310-00-208-9255	80205	MS21044C3
FIG 28	2	5310-00-014-5850	96906	MS27183-42
FIG 28	3		30554	98-19573
FIG 28	4		30554	98-19581-02
FIG 28	5		30554	98-19608
FIG 28	6	5310-00-903-8595	78553	C7931-1032-3B
FIG 28	7	5305-01-056-1501	24617	274825
FIG 28	8	5310-00-809-4058	96906	MS27183-10
FIG 28	9	5310-00-045-4007	80205	MS35338-41
FIG 28	10	5310-00-685-2973	94135	12Z2007-260
FIG 28	11		30554	98-19560
FIG 28	12	5306-01-156-7663	19207	12325869
FIG 28	13	5310-01-366-8134	30554	88-21674-1
FIG 28	14		30554	98-19603
FIG 28	15		30554	88-20260-31
FIG 28	16	5305-01-470-6197	30554	69-662-63
FIG 28	17	5330-01-476-9106	30554	98-19645-03-201
FIG 28	18		30554	98-19587-01
FIG 28	19		30554	98-19565
FIG 28	20		30554	98-19623
FIG 28	21	5305-01-470-1425	30554	88-20260-11
FIG 28	22	5310-00-809-8544	96906	MS27183-7
FIG 28	23	5310-00-407-9566	96906	MS35338-45
FIG 28	24	5305-01-378-1899	30554	88-20260-22
FIG 28	25		30554	98-19584
FIG 28	26A	6150-01-477-1173	30554	98-19729
FIG 28	26B	6150-01-476-9338	30554	98-19633
FIG 28	27		22175	43LC6-8-SS-R
FIG 28	28	5340-00-843-7825	96906	MS21333-68
FIG 28	29	5310-00-809-8544	96906	MS27183-7

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 28	30	5310-00-407-9566	96906	MS35338-45
FIG 28	31	5305-01-470-1425	30554	88-20260-11
FIG 28	32	5305-00-036-6968	30554	69-662-18
FIG 28	33	5310-00-983-8489	96906	MS21783-5
FIG 28	34		15563	98-19709-01
FIG 28	35		30554	98-19725-01
FIG 28	36		30554	98-19725-02
FIG 28	37		15563	98-19709-02
FIG 29	1	5305-01-476-9077	30554	98-19665
FIG 29	2		30554	98-19615
FIG 29	3	5310-01-243-9441	39428	92161A033
FIG 29	4	5310-01-306-1624	96906	MS27183-58
FIG 29	5	5310-01-366-4412	8928	21NTE616
FIG 29	6	5305-01-365-6313	30554	88-20260-23
FIG 29	7	5310-00-809-8546	96906	MS27183-8
FIG 29	8	5310-00-809-4058	96906	MS27183-10
FIG 29	9	5310-01-056-1501	96906	274825
FIG 29	10		30554	98-19556
FIG 29	11	5310-00-208-9255	96906	MS21044C3
FIG 29	12		30554	98-19555
FIG 29	13	5310-00-685-2973	94135	12Z2007-260
FIG 30	1	5310-00-850-6855	96906	MS35691-12
FIG 30	2	5310-01-477-9621	30554	88-20556-6
FIG 30	3	5310-00-081-4219	96906	MS27183-12
FIG 30	4	5310-00-208-9255	80205	MS21044C3
FIG 30	5	5310-00-809-8546	96906	MS27183-8
FIG 30	6	6150-01-476-8666	30554	98-19596
FIG 30	7	5310-01-306-1624	96906	MS27183-58
FIG 30	8	5935-01-097-9974	19207	11674728
FIG 30	9	6150-01-476-8673	30554	98-19595
FIG 30	10	5305-01-464-6667	30554	88-22793-4
FIG 30	11	5940-00-234-3383	30554	69-692-6
FIG 30	12	5305-00-993-1848	80205	MS35207-265
FIG 30	13		60177	19740
FIG 30	14	5915-01-477-8756	60177	29440
FIG 31	1	5310-00-014-5850	96906	MS27183-2
FIG 31	2	5310-00-208-9255	80205	MS21044C3
FIG 31	3		30554	98-19655
FIG 31	4	5305-01-056-1501	24617	274825
FIG 31	5	5310-00-809-4058	96906	MS27183-10
FIG 31	6	5310-00-685-2973	94135	12Z2007-260
FIG 31	7	5320-00-932-1972	81349	M24243/6A402H
FIG 31	8	5940-01-476-9028	30554	98-19718-02
FIG 31	9	5310-00-208-9255	30554	88-20260-36
FIG 31	10		30554	98-19717
FIG 31	11	5306-01-156-7663	19207	12325869

SECTION III. CROSS-REFERENCE INDEXES (CONTINUED)

Figure and Item Number Index (Continued)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 31	12	5340-01-476-9028	30554	98-19546
FIG 32	1		30554	98-19586-11
FIG 32	2		30554	98-19586-23
FIG 32	3	4720-00-021-3320	30554	FA1493FFF3000
FIG 32	4		30554	98-19586-12
FIG 32	5	5975-00-878-3791	58536	A-A-55804-III-B
FIG 32	6	5320-00-882-8388	81349	M24243/6-A403H
FIG 32	7		30554	98-19586-03
FIG 32	8		30554	98-19586-16
FIG 32	8A		30554	98-19589-17
FIG 32	9		30554	98-19586-05
FIG 32	10		30554	98-19709-01
FIG 32	11		30554	98-19586-20
FIG 32	12		30554	98-19586-25
FIG 32	13		30554	98-19586-09
FIG 32	14		30554	98-19586-21
FIG 32	14A		30554	98-19586-22
FIG 32	15		30554	98-19586-15
FIG 32	16		30554	98-19503
FIG 32	16A		30554	98-19504
FIG 32	17	5320-00-932-1972	81349	M24243/6-A402H
FIG 32	18		30554	98-19586-07
FIG 33	1		30554	98-19586-02
FIG 33	2	5320-00-882-8386	81349	M24243/6-A404H
FIG 33	3	4730-01-470-1626	30554	88-20561-1
FIG 33	4	4820-01-476-9731	30554	98-19657
FIG 33	5		30554	88-20579-5
FIG 33	6	4730-01-360-6217	79470	W17709
FIG 33	7		81343	6-6-430260C
FIG 33	8		30554	98-19586-24
FIG 34	1	5930-01-478-0122	85814	SM-2B-15F
FIG 34	2		30554	98-19720
FIG 35	1	5305-01-388-6229	OAK42	26106-060162
FIG 35	2	2815-01-353-7523	OAK42	114250-35070
FIG 35	3	5331-01-326-8017	OAK42	24341-000224
FIG 36	1	4720-01-476-9875	30554	98-19585
FIG 36	2	5330-01-476-9137	30554	98-19614
FIG 36	3		30554	98-19711
FIG 36	4	5310-00-809-8546	96906	MS27183-8
FIG 36	5	5310-00-045-4007	80205	MS35338-41
FIG 36	6	5305-01-477-9620	80204	B1821BH190C075H
FIG 36	7	5310-00-809-8544	96906	MS27183-7
FIG 36	8	5310-00-982-6814	80205	MS21044C08

SECTION III. CROSS-REFERENCE INDEXES (CONCLUDED)

Figure and Item Number Index (Concluded)

FIG	ITEM	NSN	CAGE	PART NUMBER
FIG 36	9	2990-01-477-2195	0TW02	27053N
FIG 36	10	2540-01-478-3630	61277	98-19545-01
FIG 36	11		S4163	114250-13201
FIG 36	12	2540-01-477-4776	30554	98-19545-02
FIG 36	13	5310-01-476-9079	30554	98-19664-06
FIG 36	14		0BXW5	88-20033-19A
FIG 36	15	2540-01-477-4775	30554	98-19545-03
FIG 36	16	5305-01-303-5631	80204	B18231B08020N
FIG 36	17	5305-01-477-9618	80204	B1821BH164C075H
FIG 37	1	4720-01-476-9875	30554	98-19585
FIG 37	2	5330-01-476-9137	30554	98-19614
FIG 37	3		30554	98-19711
FIG 37	4	5305-01-477-9618	80204	B1821BH164C075H
FIG 38	1		30554	98-19737
FIG 38	2		30554	98-19738
FIG 38	3		30554	98-19574
FIG 38	4		30554	98-19739
FIG 38	5	5310-00-014-5850	96906	MS27183-42
FIG 38	6	5310-00-045-4007	80205	MS35338-41
FIG 38	7	5305-01-378-7899	30554	88-20260-22
FIG 38	8	5305-01-381-9970	30554	88-20260-34
FIG 38	9	5330-01-476-9069	30554	98-19712
FIG 38	10	5342-01-476-9283	60012	98-19516

APPENDIX D

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LIST

Section I. INTRODUCTION

D-1 SCOPE

This appendix list Components of End Item (COEI) and Basic Issue Items (BII) for the 3kW TQG to help you inventory the items for safe and efficient operation of the equipment.

D-2 GENERAL

The COEI and BII lists are divided into the following sections:

- a. **Section II, Components of End Item.** This list is for information purposes only and is not authority to requisition replacements. These items are part of the generator set. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.
- b. **Section III, Basic Issue Items.** These essential items are required to place the generator set in operation, operate it, and perform emergency repairs. Although shipped separately packaged, BII must be with the generator set during operation and when it is transferred between property accounts. This list is your authority to request or requisition them for replacement, based on authorization of the end item by the Table of Organization and Equipment (TOE)/Modified Table of Organization and Equipment (MTOE). Illustrations are furnished to help you find and identify the items.

D-3 EXPLANATION OF COLUMNS

- a. **Column 1, Item Number,** gives you the number of the item listed.
- b. **Column 2, National Stock Number,** identifies the National Stock Number (NSN) of the item to be used for requisitioning purposes.
- c. **Column 3, Description and Usable On Code,** identifies the Federal item name (in all capital letters) followed by a minimum description, when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number, as applicable.
- d. **Column 4, U/I (Unit of Issue),** indicates how the item is issued for the NSN shown in Column (2).
- e. **Column 5, Qty Rqd,** indicates the quantity required.

Section II. COMPONENTS OF END ITEM

(1) Item Number	(2) National Stock Number (NSN)	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Rqd
1		GENERATOR SET 3KW, 60HZ, TACTICAL QUIET UOC: LQQ		

GENERATOR SET
 3KW, 400HZ, TACTICAL QUIET
 UOC: LQR
 GENERATOR SET ASSEM 60HZ
 UOC: LQQ

Section III. BASIC ISSUE ITEMS

(1) Illus Number*	(2) National Stock Number (NSN)	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Rqd
1	5975-00-878-3791	ROD, GROUND (49956) P/N 00245260	EA	1
2	N/A	TECHNICAL MANUAL, TM 9-6115-639-13&P	EA	1
3	N/A	TECHNICAL MANUAL, TM 9-2815-257-24	EA	1
4	N/A	REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL), TM 9-2815-257-24P	EA	1

* See Figure D-1, Sheets 1-4.

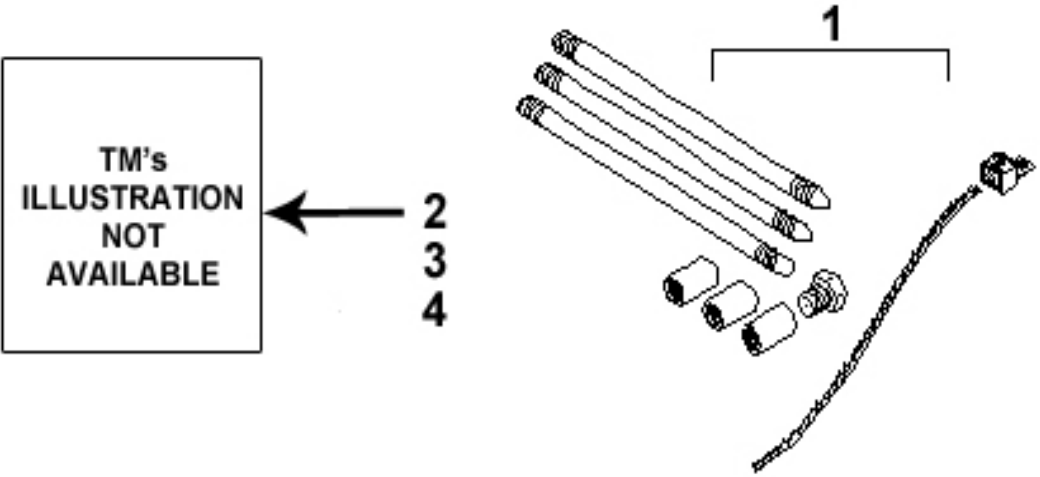
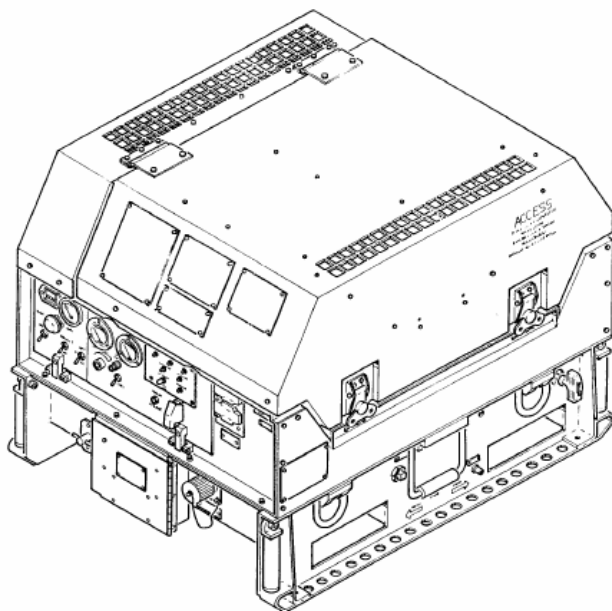


Figure D-1. Basic Issue Items Items 1 4 (Sheet 1 of 4)

**OPERATOR, UNIT, AND DIRECT SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**



OPERATING INSTRUCTIONS	2-1
OPERATOR TROUBLESHOOTING	3-4
UNIT LEVEL PMCS	4-8
UNIT LEVEL TROUBLESHOOTING	4-14
UNIT MAINTENANCE PROCEDURES	4-38
DIRECT SUPPORT TROUBLESHOOTING	5-4
DIRECT SUPPORT MAINTENANCE	5-6
MAINTENANCE ALLOCATION CHART (MAC)	B-1
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)	C-1

**3kW TACTICAL QUIET GENERATOR SET
MEP-831A (60 Hz) (NSN: 6115-01-285-3012) (EIC: VG6)
MEP-832A (400 Hz) (NSN: 6115-01-287-2431) (EIC: VN7)**

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*This manual supersedes TM 9-6115-639-13 dated 1 November 2000 thru TM 9-6115-639-13, Change 1 dated 15 September 2002; and TM 9-6115-639-23P dated 15 October 2002.

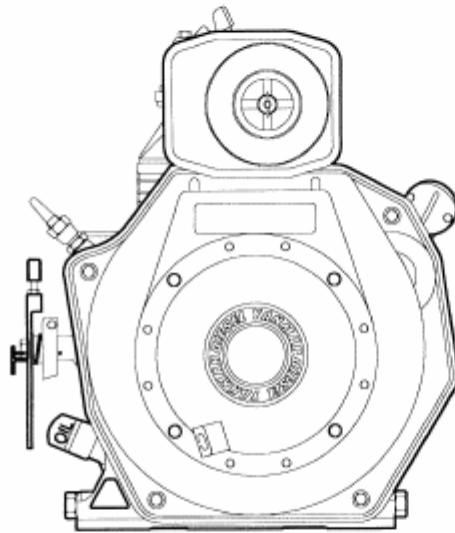
**DEPARTMENTS OF THE ARMY AND THE AIR FORCE
AND HEADQUARTERS, MARINE CORPS**

15 AUGUST 2005
PCN 182 101550 00

Figure D-1. Basic Issue Items Item 2 (Sheet 2 of 4)

**ARMY TM 9-2815-257-24
AIR FORCE TO 38G1-128-2
MARINE CORPS TM 10155A/2815-24/3**

**UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL**



PRINCIPLES OF OPERATION	2-2
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**DIESEL ENGINE ASSEMBLY
MODEL L70AE-DEGFR
(NSN: 2815-01-465-5993) (EIC: N/A)**

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1 November 2000
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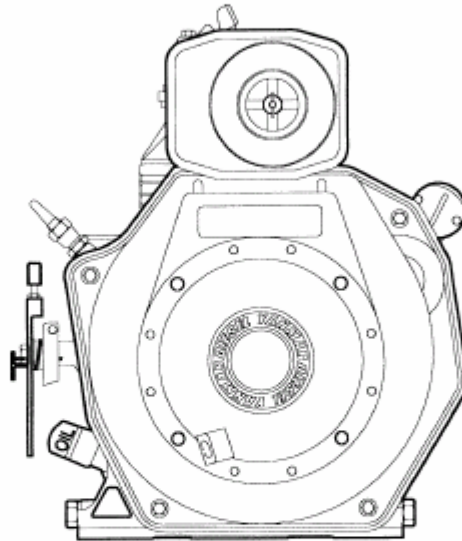
Figure D-1. Basic Issue Items Item 3 (Sheet 3 of 4)

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

ARMY TM 9-2815-257-24P
AIR FORCE TO 38G1-128-4
MARINE CORPS TM 10155A/2815-24P/4

TECHNICAL MANUAL

UNIT, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST FOR



DIESEL ENGINE
MODEL L70AE-DEGFR
(NSN: 2815-01-465-5993) (EIC: N/A)

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HEADQUARTERS, MARINE CORPS

1 APRIL 2001
PCN 182 101553 00

Figure D-1. Basic Issue Items Item 4 (Sheet 4 of 4)

APPENDIX E

ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

E-1 SCOPE

This appendix lists additional items authorized to you for support of the 3kW TQG.

E-2 GENERAL

This list identifies items that do not accompany the generator set and that do not have to be turned in with it. These items are all authorized by Consolidated Table of Allowance (CTA), Modified Table of Organization and Equipment (MTOE), Table of Distribution Allowances (TDA), or Joint Tables of Allowance (JTA).

E-3 EXPLANATION OF LISTING

National Stock Numbers (NSNs), descriptions, and quantities are provided to help identify and request the additional items required to support the generator set. These items are listed in alphabetical sequence by item name under the type of document (such as CTA, MTOE, TDA, or JTA) that authorizes the item(s).

Section II. ADDITIONAL AUTHORIZATION LIST

(1) ITEM NUMBER	(2) National Stock Number (NSN)	(3) Description Usable On Code CAGEC and Part Number	(4) Unit of Measure	(5) Qty Rqd
1	2910-00-066-1235	ADAPTER, CONTAINER (06076) P/N 13211E7541	EA	1
2	5120-01-013-1676	SLIDE HAMMER, GROUND (45225) P/N P74-144	EA	1
3	5120-00-251-4489	HAMMER, HAND, 8 LBS		
4	4210-00-270-4512	EXTINGUISHER, FIRE, CARBON DIOXIDE (02788) P/N F5COV	EA	1
5	7240-01-337-5269	CAN, GASOLINE, MILITARY (56161) P/N 10502788	EA	1
6	4720-00-021-3320	HOSE ASSEMBLY, AUXILIARY FUEL (30554) P/N FA1493FFF3000	EA	1
7	7240-00-177-6154	SPOUT, CAN, FLEXIBLE (19207) P/N 11677020	EA	1
8	5975-00-794-2523	COUPLINGS (3 IN SET), GROUND ROD (06VU6), GRC 58	EA	1
	5999-00-186-3912	CLAMP, ELECTRICAL (04655), 70-801074	EA	1
	5975-00-924-9927	DRIVE/HEAD STUD (73616), GRB 58	EA	1
	5940-00-271-9504	GROUND TERMINAL LUG (01667), CBA 70	EA	1
	6145-00-395-8799	WIRE, ELECTRICAL, (58536), AA59551-C06B1T, NO. 6 AWG, 7 STRANDS, CLASS B, TEMPER, 6 FT LONG	FT	1

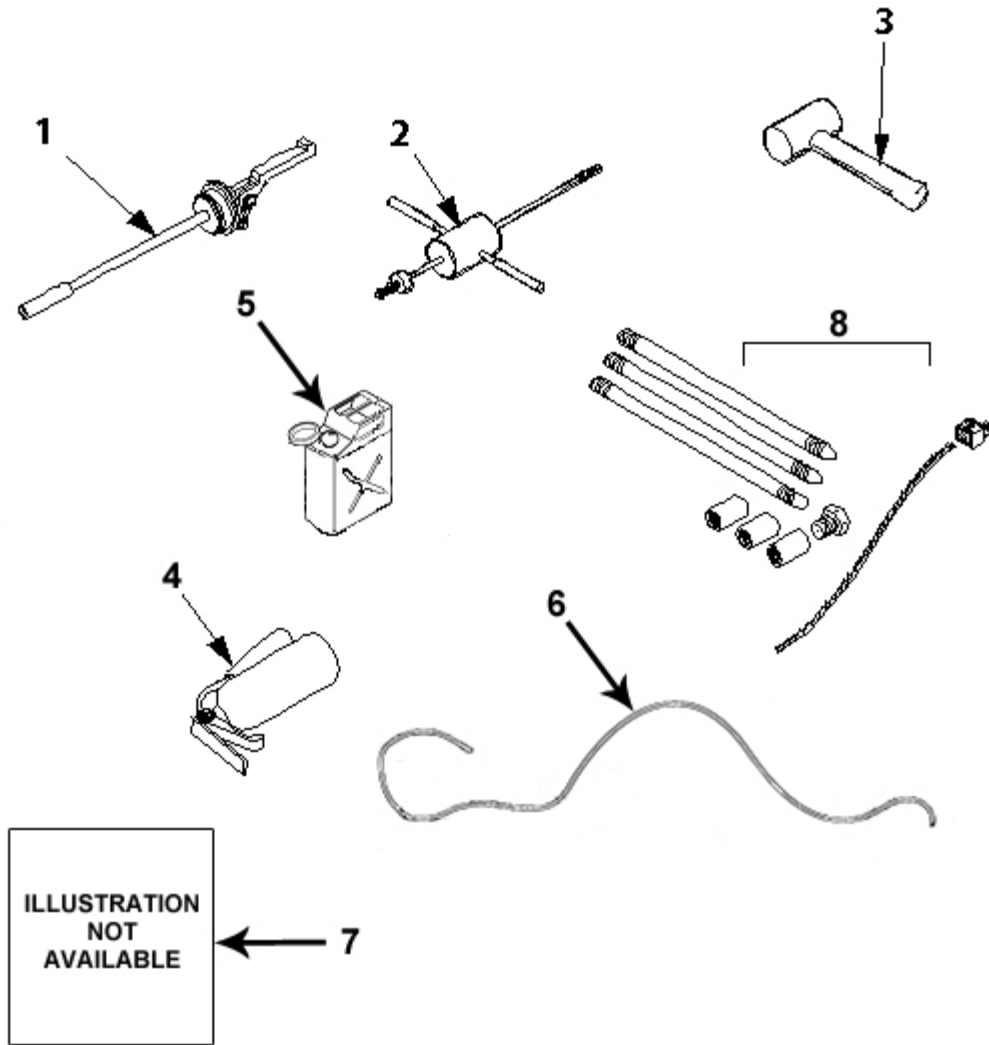


Figure E-1. Additional Authorized List Items

APPENDIX F

EXPENDABLE AND DURABLE ITEMS LIST

Section I. INTRODUCTION

F-1 SCOPE

This appendix lists expendable and durable items needed to operate and maintain the generator set. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by Consolidated Table of Allowance (CTA) 50-790, Expendable/Durable Items (except medical, class V repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

F-2 EXPLANATION OF COLUMNS

- a. **Column 1, Item Number.** This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item [for example, Cleaning Compound (Item 7, Appendix F)].
- b. **Column 2, Level.** This column identifies the lowest level of maintenance that requires the item.
- c. **Column 3, National Stock Number.** This is the National Stock Number (NSN) assigned to the item, used for requisitioning purposes.
- d. **Column 4, Item Name, Description, CAGEC, Part Number.** This provides the other information you need to identify the item, the item name, the item description, the Commercial and Government Entity Code (CAGEC), and the part number.
- e. **Column 5, U/M.** This code shows the Unit of Measure (U/M), the physical measurement or count of an item, such as gallon, dozen, pound, or gross.

**Section II. EXPENDABLE/DURABLE SUPPLIES AND
 REQUIREMENTS LIST**

(1) Item Number	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description CAGEC, Part Number	(5) U/M
1	O, F	9150-00-402-2372	OIL, ENGINE, MIL-L-46167, OEA	QT
2	O, F	9150-00-491-7197	OIL, ENGINE, MIL-L-2104, OE/HDO-15/40	QT
3	O, F	9150-00-189-6727	OIL, ENGINE, MIL-L-2104, OE/HDO-10	QT
4	O, F	9150-01-092-3205	OIL, ENGINE, MIL-L-2104, OE/HDO-30	QT
5	O, F	9150-01-433-7970	OIL, ENGINE, MIL-L-2104, OE/HDO-40	QT
6	O, F	6850-01-160-3868	OIL, INHIBITOR, CORROSION	QT
7	O, F	6850-01-277-0595	CLEANING COMPOUND, SOLVENT, 59557, 134-HI-SOLV (5 GAL)	GAL
		6850-01-244-3207	CLEANING COMPOUND, SOLVENT, 59557, 134-HI-SOLV (55 GAL)	
		6850-01-474-2316	CLEANING COMPOUND, SOLVENT, 0K209, BREAKTHROUGH, 55 GAL	
8	O, F	7920-01-338-3329	CLOTH, CLEANING	BG
9	O, F	9150-00-663-1770	GREASE, GENERAL PURPOSE, 630AA	OZ
10	O, F	8010-01-229-7547	PAINT, CARC, MIL-C-46168, COLOR GREEN 383, NO. 34094	GL
11	O, F	8010-01-340-5175	PAINT, CARC, MIL-C-46168, COLOR BLACK, NO. 37038	GL
12	O, F	3439-00-974-1873	SOLDER, TIN ALLOY	SL
13	O, F		TUBING, HEAT SHRINK	IN
14	O, F	8040-00-843-0802	SEALANT, RTV 108	OZ
15	O, F		SEALANT, THREAD, PERMATEX 70-1536	OZ
16	F	8030-01-025-1692	SEALING COMPOUND, ADHESIVE, LOCTITE 242	OZ
17	O, F	9150-00-111-201	OIL, LUBRICATING, ENGINE, PE 30, MIL-L-21260	QT
18	O, F	7510-00-836-0810	TAPE, PRESSURE SENSITIVE ADHESIVE, PPT-T-60	RL
19	O, F	8030-00-889-355	TAPE, ANTISEIZING, TEFLON	EA
20	F	6810-00-107-1510	WATER, DISTILLED	DR
21	O	2815-01-353-7523	FILTER, FLUID, OIL, S4163, 114250-35070	EA

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MARINE CORPS TM 10155A-OI/1

(1) Item Number	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description CAGEC, Part Number	(5) U/M
22	C, O	5331-01-326-9017	O-RING, S4163, 24341-00024	EA
23	C, O	2940-01-310-4495	FILTER, ELEMENT (AIR), 54163, 114250-12580	EA
24	O	2940-01-365-6535	FILTER BODY, FLUID (FUEL), 72850, 479735	EA

APPENDIX G

ILLUSTRATED LIST OF MANUFACTURED ITEMS

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at Unit and Direct Support maintenance levels. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure that covers fabrication criteria. A crimping tool (see Appendix B, Section III, P/O Item 3) is required.

G-1 MANUFACTURED ITEMS PART NUMBER INDEX

Part Number of Manufactured Item	Applicable Figure
Control Box Wiring Harness, 60Hz	FO-5
Engine Wiring Harness, 400Hz	FO-4

G-2 GENERAL INSTRUCTIONS

The manufacture of items listed above consists of cutting wires to the length required (see Figure G-1) and soldering terminal lugs or connectors on appropriate wires. Use standard shop procedures in the manufacture of these items, as shown below:

1. Cut wire (6) to length required. Strip ends of wire.
2. Install insulation sleeving (2) by sliding over positive wire of diode (3).
3. Crimp terminal lug (1) to positive wire of diode (3).
4. Install insulation sleeving (2) over terminal lug (1). Heat-shrink to a firm fit.
5. Slide splice (5) over negative wire of diode (3) and crimp.
6. Slide wire (6) into splice (5) and crimp.
7. Slide insulation marker (4) over wire (6), splice (5), and diode (3). Heat-shrink to a firm fit.
8. Slide terminal lug (7) onto wire (6) and crimp.
9. Mark appropriate wire number, consisting of the FROM termination (a double-headed arrow (\leftrightarrow)) and the TO termination.

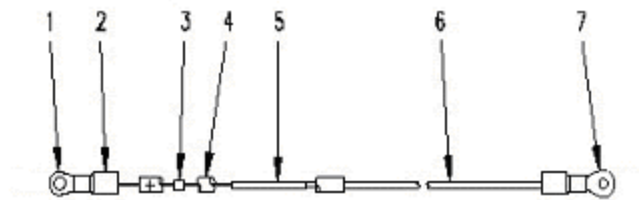


Figure G-1. Typical Manufactured Wire

APPENDIX H

TORQUE LIMITS

Section I. INTRODUCTION

H-1 SCOPE

This appendix lists torque ratings for fasteners used on the generator set. When torque values are called out in the maintenance procedures, those torques supersede the torques specified in this appendix. Table H-1 lists torque limits for standard fasteners installed dry. Table H-2 provides formulas for converting the dry torque values to wet. Table H-3 lists torque limits for standard metric fasteners installed dry.

Section II. TORQUE LIMITS

Table H-1. Torque Limits for Dry Fasteners

SIZE			TORQUE					
			SAE GRADE 0-1-2		SAE GRADE 3		SAE GRADE 5	
Diameter in Inches	Threads Per Inch	Millimeters	Foot Pounds	Newton Meters	Foot Pounds	Newton Meters	Foot Pounds	Newton Meters
1/4	20	6.350	6	8	9	12	10	14
1/4	28	6.350	7	9	10	13	11	15
5/16	18	7.937	12	16	17	23	19	26
5/16	24	7.937	13	18	18	25	21	28
3/8	16	9.525	20	27	30	40	33	45
3/8	24	9.525	22	30	33	44	36	49
7/16	14	11.112	32	43	47	64	54	73
7/16	20	11.112	35	47	51	69	59	80
1/2	13	12.700	47	64	69	93	78	106
1/2	20	12.700	51	69	75	102	85	115
9/16	12	14.287	69	94	103	140	114	155
9/16	18	14.287	75	102	112	152	124	168
5/8	11	15.875	96	130	145	197	154	209
5/8	28	15.875	105	142	158	214	168	228
3/4	10	19.050	155	210	234	317	257	348
3/4	26	19.050	169	229	255	346	280	380
7/8	9	22.225	206	279	372	504	382	518
7/8	24	22.225	225	304	405	550	416	565
1	8	25.400	310	420	551	747	587	796
1	14	25.400	338	458	601	814	640	867

Table H-1. Torque Limits for Dry Fasteners (Concluded)

SIZE			TORQUE					
			SAE GRADE 0-1-2		SAE GRADE 3		SAE GRADE 5	
Diameter in Inches	Threads Per Inch	Millimeters	Foot Pounds	Newton Meters	Foot Pounds	Newton Meters	Foot Pounds	Newton Meters
1/4	20	6.350	6	8	9	12	10	14
1/4	28	6.350	7	9	10	13	11	15
5/16	18	7.937	12	16	17	23	19	26
5/16	24	7.937	13	18	18	25	21	28
3/8	16	9.525	20	27	30	40	33	45
3/8	24	9.525	22	30	33	44	36	49
7/16	14	11.112	32	43	47	64	54	73
7/16	20	11.112	35	47	51	69	59	80
1/2	13	12.700	47	64	69	93	78	106
1/2	20	12.700	51	69	75	102	85	115
9/16	12	14.287	69	94	103	140	114	155
9/16	18	14.287	75	102	112	152	124	168
5/8	11	15.875	96	130	145	197	154	209
5/8	28	15.875	105	142	158	214	168	228
3/4	10	19.050	155	210	234	317	257	348
3/4	26	19.050	169	229	255	346	280	380
7/8	9	22.225	206	279	372	504	382	518
7/8	24	22.225	225	304	405	550	416	565
1	8	25.400	310	420	551	747	587	796
1	14	25.400	338	458	601	814	640	867

Table H-2. Effect of Lubrication on Torque

Lubricant	TORQUE RATING IN FOOT-POUNDS	
	5/16-18 Thread/Inch	1/2-13 Thread/Inch
NO LUBE, Steel	29	121
Plated and cleaned	19 (66%)	90 (26%)
SAE 20 Oil	18 (38%)	87 (28%)
SAE 40 Oil	17 (41%)	83 (31%)
Plated and SAE 30	16 (45%)	79 (35%)
White Grease	16 (45%)	79 (35%)
White Moly Film	14 (52%)	66 (45%)
Graphite and Oil	13 (55%)	62 (49%)

Table H-3. Torque Limits for Dry Fasteners (Metric)

Diameter in Millimeters	Coarse Thread Pitch	Inches	5D		8G		10K		12K	
			Standard 5D		Standard 8G		Standard 10K		Standard 12K	
			Ft-lb	Nm	Ft-lb	Nm	Ft-lb	Nm	Ft-lb	Nm
6	1.00	0.2362	5	7	6	8	8	11	10	14
8	1.00	0.3150	10	14	16	22	22	30	27	37
10	1.25	0.3937	19	26	31	42	40	54	49	66
12	1.25	0.4624	34	46	54	73	70	95	86	117
14	1.25	0.5512	55	75	89	121	117	159	137	186
16	2.00	0.6299	83	113	132	179	175	237	208	282
18	2.00	0.7087	111	150	182	247	236	320	283	384
22	2.50	0.8771	182	247	284	385	394	534	464	629
24	3.00	0.9449	261	354	419	568	570	773	689	934

APPENDIX I

MANDATORY REPLACEMENT PARTS

Section I. INTRODUCTION

I-1 SCOPE

This appendix lists all mandatory replacement parts referenced in the maintenance procedures in this manual. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as time and operating hours.

Section II. MANDATORY REPLACEMENT PARTS

(1) Item No.	(2) Part Number	(3) National Stock Number (NSN)	(4) Nomenclature	(5) Qty
1	MS3367-5-9	5975-00-111-3208	STRAP,TIEDOWN,ELECTRIC	V
2	H1104	5975-00-727-5153	STRAP,TIEDOWN,ELECTRIC	V
3	MS51844-23	4030-01-114-3894	SWAGING SLEEVE,WIRE	2
4	PLT 2S	5975-01-128-0390	STRAP,TIEDOWN,ELECTRIC	V

APPENDIX J

WARRANTY INFORMATION

Section I. INTRODUCTION

J-1 SCOPE

This appendix provides information on manufacturer s warranties for generator set components. The warranty period begins on the date of end item shipment to the government, as defined by the warranty date, unless otherwise noted in Table J-1.

Warranty service may be obtained with two methods: (1) by contacting the actual warranted component manufacturer listed in Table J-1, column 1 (each manufacturer will provide instructions on filing a claim) or (2) by filling out a Warranty Claim in accordance with DA PAM 738-750. The Warranty Claim form is SF 368, Product Quality Deficiency Report.

Troubleshooting should be performed to the level of warranted component, but no further. Troubleshooting to the failed part inside warranted components may invalidate the warranty.

If you have difficulty with or questions about the warranty process, contact your local CECOM LAR or the CECOM Generator Branch, DSN 992-1313, (732) 532-1313.

Section II. WARRANTY INFORMATION

Table J-1. Manufacturer s Warranties

(1) MANUFACTURER	(2) COMPONENT UNDER WARRANTY	(3) WARRANTY PERIOD
Fermont 141 North Avenue Bridgeport, CT 06606 Attention: Joe Agresta joe.agresta@fermont.com Phone: 203-366-5211, x525 Fax: 203-367-3642 CAGE: 93742	Alternator Assembly, 3KW Permanent Magnet (PN: 98-19634, VPN: 692497)	1 Year or 1800 Hours
Technology Research Corporation (TRC) 5250 140 th Avenue North Clearwater, FL 33760 Attention: Marge Matson or Ray Wood Phone: 727-535-0572, ext. 327 Fax: 727-535-4828 CAGE: 60177	Frequency Converter (A8), 60Hz (PN: 98-19604-01, VPN: 29350) Frequency Converter (A8), 400Hz (PN: 98-19604-02, VPN: 29340) Regulator, Battery Charger (PN: 98-19626, VPN: 29380) Module, Fault Indicator (PN: 98-19527, VPN: 29390) Interrupter, Ground Fault (PN: 19541, VPN: 29410)	18 months 18 months 1 Year 1 Year 1 Year
Bell Power Systems (for Yanmar) 36 Plains Road Essex, CT 06426 Attention: Carl Sanca, 1-800-225-8669 Fax: 860-767-7290 CAGE: S4163	Engine, Diesel (PN: 98-19513, VPN: L70AE-DEGFR)	1 Year
Comair Rotron Inc. 2675 Custom House Ct San Diego, CA 92154 Phone: 619-661-6688 Fax: 619-661-6057 www.comairrotron.com CAGE: 5Y921	Fan, 115VAC, 60 Hz (PN: 98-19512-01, VPN: 031842) Fan, 24VDC (PN: 98-19512-02, VPN: 031843)	1 Year

Table J-1. Manufacturer s Warranties (Continued)

(1) MANUFACTURER	(2) COMPONENT UNDER WARRANTY	(3) WARRANTY PERIOD
<p>Governors America Corporation 720 Silver Street Agawam, MA 01001 Phone: 413-786-5600 Fax: 413-786-5666 CAGE: 0BXW5</p>	<p>Actuator, Governor, 24VDC (PN: 98-19580, VPN: ACD150)</p> <p>Controller, Governor, 24VDC (P/N 98-19539, VPN: SLC100)</p>	1 Year
<p>Fleetguard, Inc. 1801 Hwy 51 West Stoughton, WI 53589 P.O. Box 428 Attention: Ron Prochnow, Fleetguard Warranty Specialist (Nelson Brands) ron.w.prochnow@fgdnel.com Phone: 608-873-4265 Fax: 608-873-2409 CAGE: 0TW02</p>	<p>Muffler Assembly, Exhaust (PN: 98-19607, VPN: 27053N)</p>	1 Year
<p>Madison Company 27 Business Park Drive Branford, CT 06405 Attention: Cathy Akers Phone: 203-488-4477, x103 Fax: 203-481-5036 www.madisonco.com CAGE: 21603</p>	<p>Switch, Fuel Level (PN: 98-19519, VPN: M3770)</p>	1 Year from date of shipment from Madison
<p>Purolator Products Inc. Motor Components LLC PO Box 1502 Elmira Heights, NY 14903 Phone: 607-737-8011 Fax: 607-737-8335 (customer svc) CAGE: 72850</p>	<p>Pump, Fuel Auxiliary (PN: 88-21738, VPN: 40194)</p>	1 Year from date of shipment from Purolator
<p>Ametek Prestolite Switch Division 2220 Corporate Drive Troy, Ohio 45373 <u>To return a part:</u> 1701 Industrial Boulevard Hidalgo, TX 78557-1072 Attn: Edgar Fernandez, 956-843-4066 <u>For warranty questions:</u> Skip Moore, 419-382-2728 CAGE: 7E656</p>	<p>Contactora, 2-Pole, 100 Amp (PN: 98-19523, VPN: JAD-5005)</p>	1 Year

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Table J-1. Manufacturer s Warranties (Continued)

(1) MANUFACTURER	(2) COMPONENT UNDER WARRANTY	(3) WARRANTY PERIOD
Contact Industries Inc. 25 Lex-Industrial Drive, PO Box 3086 Lexington, OH 44904 Attention: Warren Guest, Quality Mgr. Phone: 419-884-9788 Fax: 419-884-9767 CAGE: 01XD4	Contactor, 2-Pole, 100 Amp (PN: 98-19755, VPN: CT100D24C1S)	1 Year

APPENDIX K

ON-BOARD SPARES

Section I. INTRODUCTION

K-1 SCOPE

This appendix lists on-board spares (essential repair parts) required during deployment of the 3kW TQG.

K-2 GENERAL

On-board spares are required during deployment to perform emergency repairs. Although shipped separately packaged, these on-board spares must be with the generator set during operation and when the generator set is transferred between property accounts. This list is your reference to buy on-board spares, based on authorization of the end item by the Table of Organization and Equipment (TOE)/Modified Table of Organization and Equipment (MTOE).

K-3 EXPLANATION OF COLUMNS

- a. **Column 1, Illus Number**, gives you the illustration number in this TM.
- b. **Column 2, National Stock Number**, identifies the National Stock Number (NSN) of the item to be used for requisitioning purposes.
- c. **Column 3, Description and Usable On Code**, identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number.
- d. **Column 4, U/I (Unit of Issue)**, indicates how the item is issued for the NSN shown in Column (2).
- e. **Column 5, Qty Rqd**, indicates the quantity required.

Section II. ON-BOARD SPARES

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Rqd
4-17	5895-01-477-0855	FREQUENCY CONVERTER (A8)	1	EA
4-12	6115-01-476-8607	PERMANENT MAGNET ALTERNATOR (PMA)	1	EA
4-6	2990-01-477-1371	GOVERNOR SPEED CONTROL MODULE	1	EA
4-13	6130-01-476-9148	BATTERY CHARGING REGULATOR (A9)	1	EA
4-25	6625-01-477-0634	FAULT INDICATOR MODULE	1	EA
4-10	2920-01-477-1320	GOVERNOR ACTUATOR	1	EA
4-65	2990-01-477-2195	EXHAUST SYSTEM	1	EA
4-37	2910-01-477-0840	FUEL PUMP, PRIMARY	1	EA
4-38	2910-01-517-8606	FUEL PUMP, AUXILIARY	1	EA
4-41	2910-01-477-1311	FUEL INJECTOR PUMP	1	EA
4-4	2815-01-465-5993	ENGINE	1	EA
4-16	6110-01-507-7938	CONTACTOR, MAGNETIC	1	EA
4-16	6110-01-477-1175	CONTACTOR, MAGNETIC	1	EA

APPENDIX L

SPECIAL PACKAGING INSTRUCTIONS

This appendix contains special packaging instructions for 3kW Tactical Quiet Generator (TQG) sets.

SPECIAL PACKAGING INSTRUCTION (MIL-STD-2073)			CODE IDENT 30554		SPI NO.
PART OR DRAWING NO. MEP-831A/MEP-832A		NATIONAL STOCK NO. 60Hz 6115-01-285-3012 400Hz 6115-01-287-2431		DATE 110104	REVISION 0
QUP 001	ICQ 000	UNIT PACK WT MEP-831A 304 lbs. MEP-832A 302 lbs	UNIT PACK CUBE 14.8	UNIT PACK SIZE MEP-831A/MEP-832A 34.8 x 27.8 x 26.5	SHEET 1 of 2
<u>Preservation:</u> Generator Set: MIL-P-116, Method lib Engine: MIL-E-10062, Level A, Type II, Method II <u>Cleaning:</u> MIL-P-116 <u>Driving:</u> MIL-P-116 <u>Packing:</u> Level A: MIL-STD-2073-1A <u>Marking:</u> MIL-ST-129			STEPS	REQ D	DESCRIPTION
			1		Preserve generator set IAW MIL-P-116, 1lb
			2		Preserve diesel engine IAW MIL-E-10062, A, II
			3		Tape air intake and exhaust openings. Tape PPP-T-60, IV
			4		Container; PPP-B-601, overseas-type (inside diameter) 29.5 x 16 x 21.7 inches
NOTES: 1. Seal air intake and exhaust openings with tape PPP-T-60, Type IV (or MIL-T-22085, Type II). 2. An internal-type humidity indicator shall be required as specified in MIL-P-116. 3. Generator set shall be packed in a close-fitting plywood box conforming to PPP-B-601, overseas-type. Metal strapping shall be zinc-coated.					

DD Form 2169, 1 Jan 79

Special Packaging Instructions, MEP-831A/MEP-832A (Sheet 1 of 2)

ARMY TM 9-6115-639-13&P
AIR FORCE TO 35C2-3-386-51W/IPB
MARINE CORPS TM 10155A-OI/1

SPECIAL PACKAGING INSTRUCTION (MIL-STD-2073) (CONTINUATION SHEET)		CODE IDENT 30554	SPI NO.
PART OR DRAWING NO. MEP-831A/MEP-832A	NATIONAL STOCK NO. 60Hz 285-3012 400Hz 287-2431	DATE 110104	REVISION 0
			SHEET 2 OF 2

DD Form 2169, 1 Jan 79

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PUBLICATION NUMBER TM 11-5840-340-12&P	PUBLICATION DATE 23 Jan 74	PUBLICATION TITLE Radar Set AN/PRC-76
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BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			<p>Recommend that the installation antenna alignment procedure be changed throughout to specify a 20 IFF antenna lag rather than 10.</p> <p>REASON: Experience has shown that with only a 10 lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 20 without degradation of operation.</p>
3-10	3-3		3-1	<p>Item 5, Functional column. Change 2 dB" to 3 dB".</p> <p>REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 dB (500 watts) adjustment to light the TRANS POWER FAULT indicator.</p>
5-6	5-8			<p>Add new step f.1 to read, "Replace cover plate removed in step f.1, above."</p> <p>REASON: To replace the cover plate.</p>
		FO-3		<p>Zone C 3. On J1-2, change +24 VDC" to +5 VDC".</p> <p>REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.</p>

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DESIGNATION	DESCRIPTION
A2	MALFUNCTION GROUP
A5	GOVERNOR CONTROL
A6	GOVERNOR ACTUATOR
A8	POWER CONVERTER
A9	REGULATOR, BATTERY CHARGING
B1	STARTER, ENGINE
BT1	BATTERY, 24V
B2, B3	FAN, VENTILATING
CB1	CIRCUIT BREAKER, DC CONTROL
CB3	GROUND FAULT CIRCUIT INTERRUPTER
CR1, CR2, CR3	DIODE, BLOCKING (BATT REV POLARITY)
CR4	RECTIFIER, FULL WAVE
DS6	INDICATOR, AC CIRCUIT INT CLOSED
E1	PUMP, AUX FUEL TRANSFER
E2	PUMP, ENGINE FUEL TRANSFER
EMI	FILTER, EMI
FL1	FUSE, BATTERY CHARGING REGULATOR SWITCH, FLOAT, LOW FUEL SHUTDOWN
FL2A	SWITCH, FLOAT, AUX FUEL PUMP OFF
FL2B	SWITCH, FLOAT, AUX FUEL PUMP ON
G1	GENERATOR, 3KW
GND	GROUND STUD
H1, H2	HEATER, AIR
HT	SWITCH, ENGINE HIGH TEMP.
J1	CONVENIENCE RECEPTACLE (DUPLEX)
K1	A.C. CIRCUIT INTERRUPTER
K2	CONTACTOR, ENGINE START
K3	OVERVOLTAGE RELAY (P/O A8)
K6	SHORT CIRCUIT RELAY (P/O A8)
K8	OVERLOAD SHORT CIRCUIT RELAY (P/O A8)
K12	RELAY, FAULT LOCKOUT
K13	CONTACTOR, ENGINE PRE-HEAT
K14	RELAY, AUX FUEL TRANSFER
K15	RELAY, STARTER CUTOUT
L1, L2, N	LOAD TERMINAL
L4	SOLENOID, ENGINE STARTER (PART OF B1)
M1	VOLTMETER, AC (0-250V)
M2	KILOWATT METER
M3	METER, TOTAL TIME (TT)
M5	METER, FUEL LEVEL
MT5	FUEL LEVEL SENDER
OP	SWITCH, LOW OIL PRESSURE
R1	RHEOSTAT, VOLTAGE ADJUST
R6	RESISTOR, STARTER CUTOUT RELAY
RV1, RV2, RV3	SURGE ARRESTOR
S1	SWITCH, MASTER (STOP-RUN-START)
S5	SWITCH, A.C. CIRCUIT INTERRUPTER
S7	SWITCH, BATTLE SHORT
S17	SWITCH, AUX FUEL
S18	SWITCH, ENGINE PRE-HEAT SYSTEM
S19	SWITCH, EMERGENCY STOP
S20, S21	SWITCH, TEMPERATURE
SR1	SLAVE RECEPTACLE (NATO)
TB2	TERMINAL BOARD, OUTPUT LOAD
TB3	TERMINAL BOARD, DIAGNOSTIC TEST POINTS
TB4, TB5, TB6	TERMINAL BOARD
TVS1-TV56	TRANSIENT VOLTAGE SUPPRESSOR
CONNECTOR	
J4/P4	A2 (MALFUNCTION GROUP)
J5/P5	HT (SWITCH, ENG HIGH TEMP)
J6/P6	A9 (REG BATTERY CHARGING)
J7/P7	CONTROL BOX CONNECTOR
J8/P8	FL2A/FL2B (FLOAT SWITCH)
J9/P9	E1 (PUMP)
J10/P10	A6 (GOVERNOR ACTUATOR)
J11/P11	FL1 (FLOAT SWITCH)
J12/P12	E2 (PUMP)
J13/P13	B2 (FAN)
J14/P14	B3 (FAN)
J15/P15	A8 (POWER CONVERTER)
J16/P16	
J17/P17	

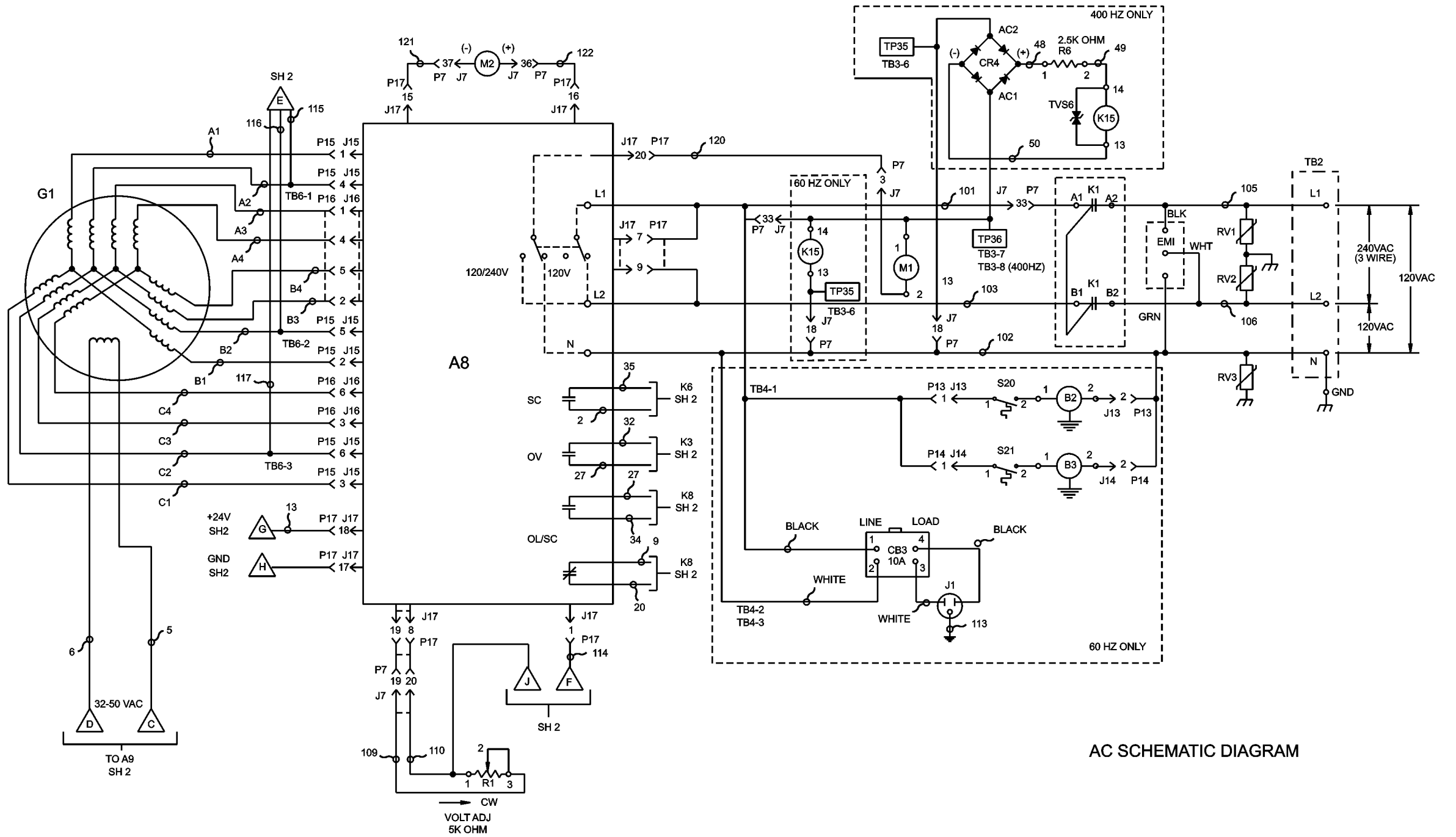


Figure FO-1. Generator Set Electrical Schematic (Sheet 1 of 2)

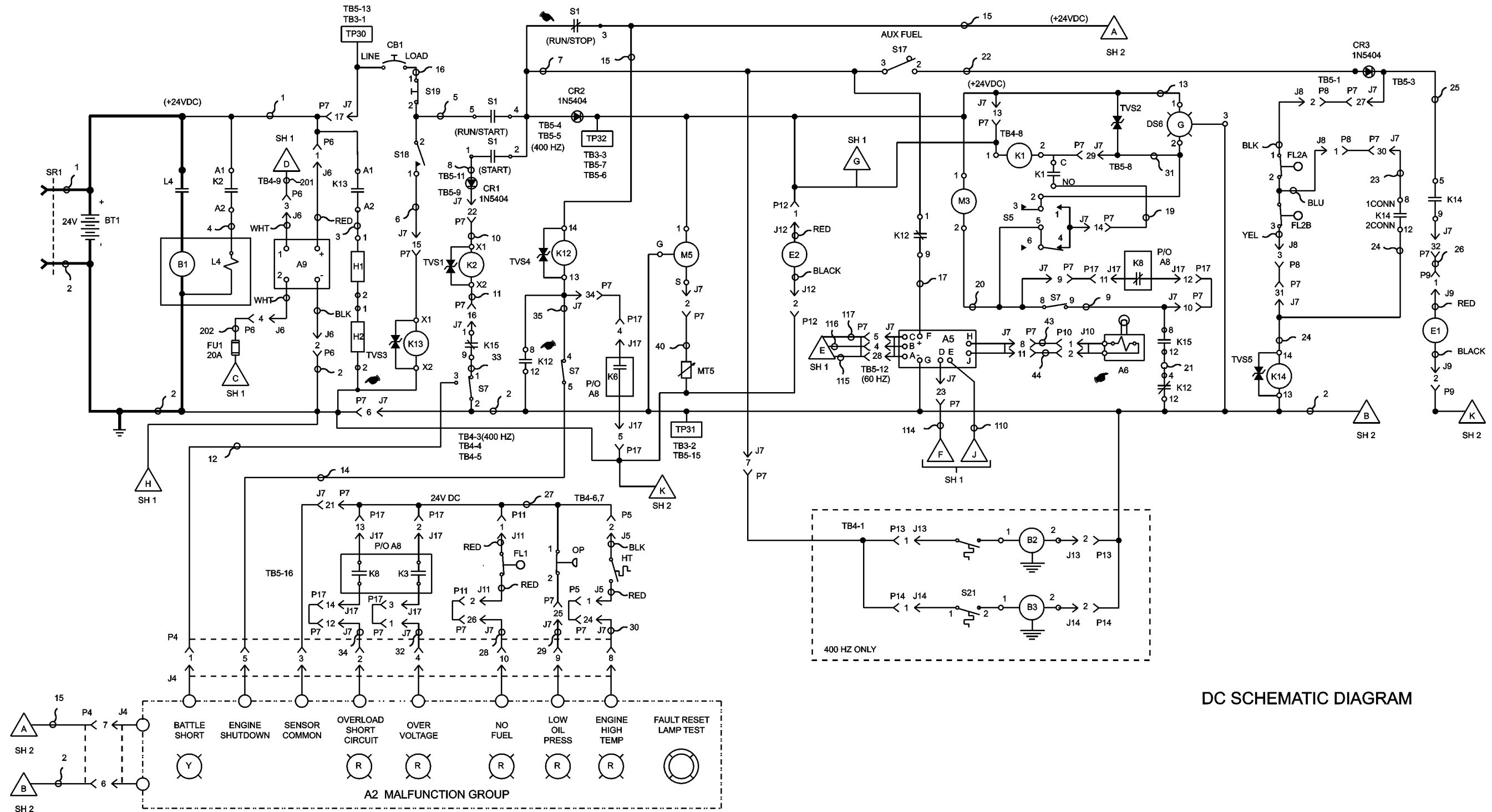
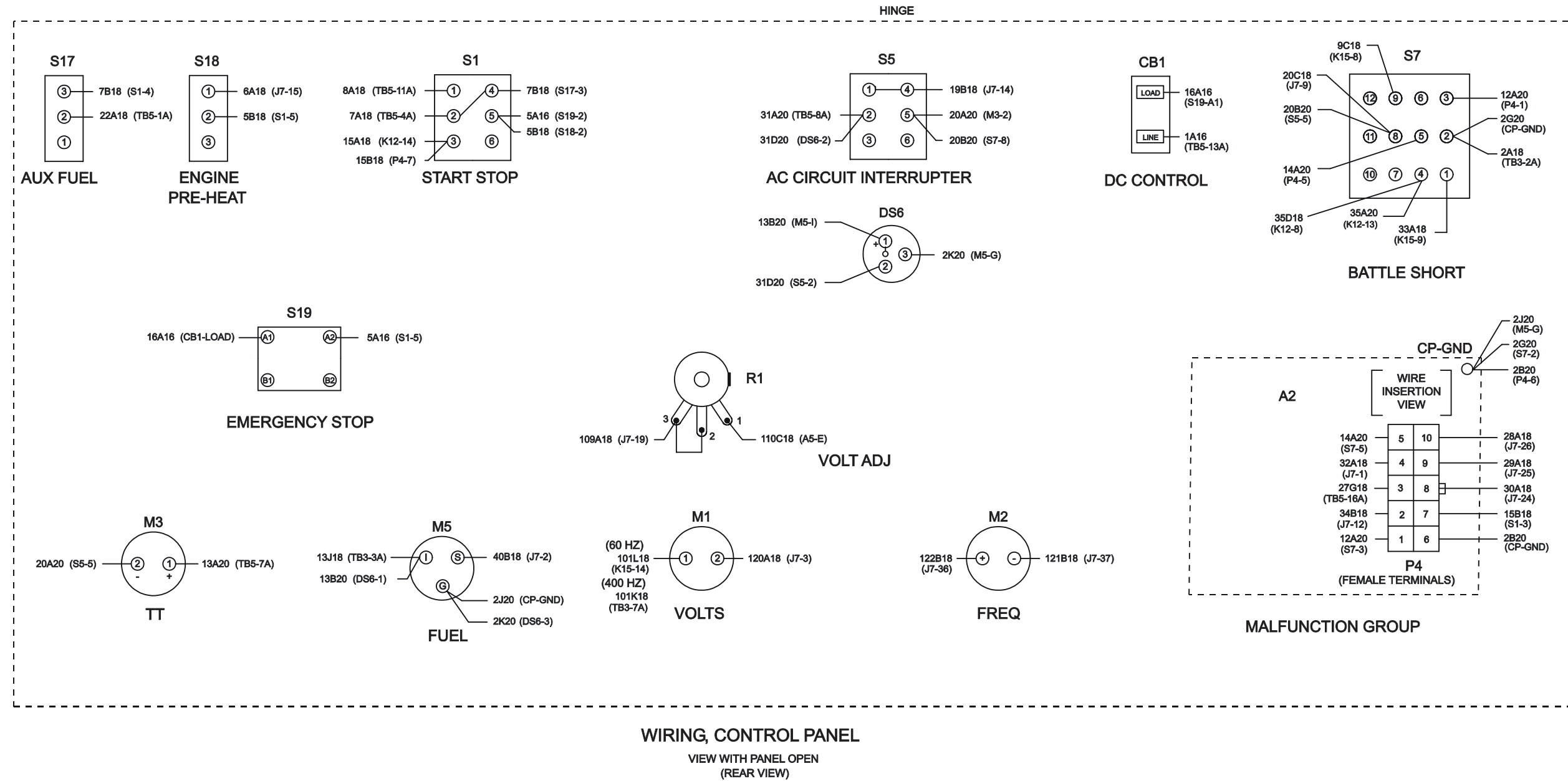


Figure FO-1. Generator Set Electrical Schematic (Sheet 2 of 2)



FO-2. Generator Set Wiring Diagram (Sheet 1 of 4)

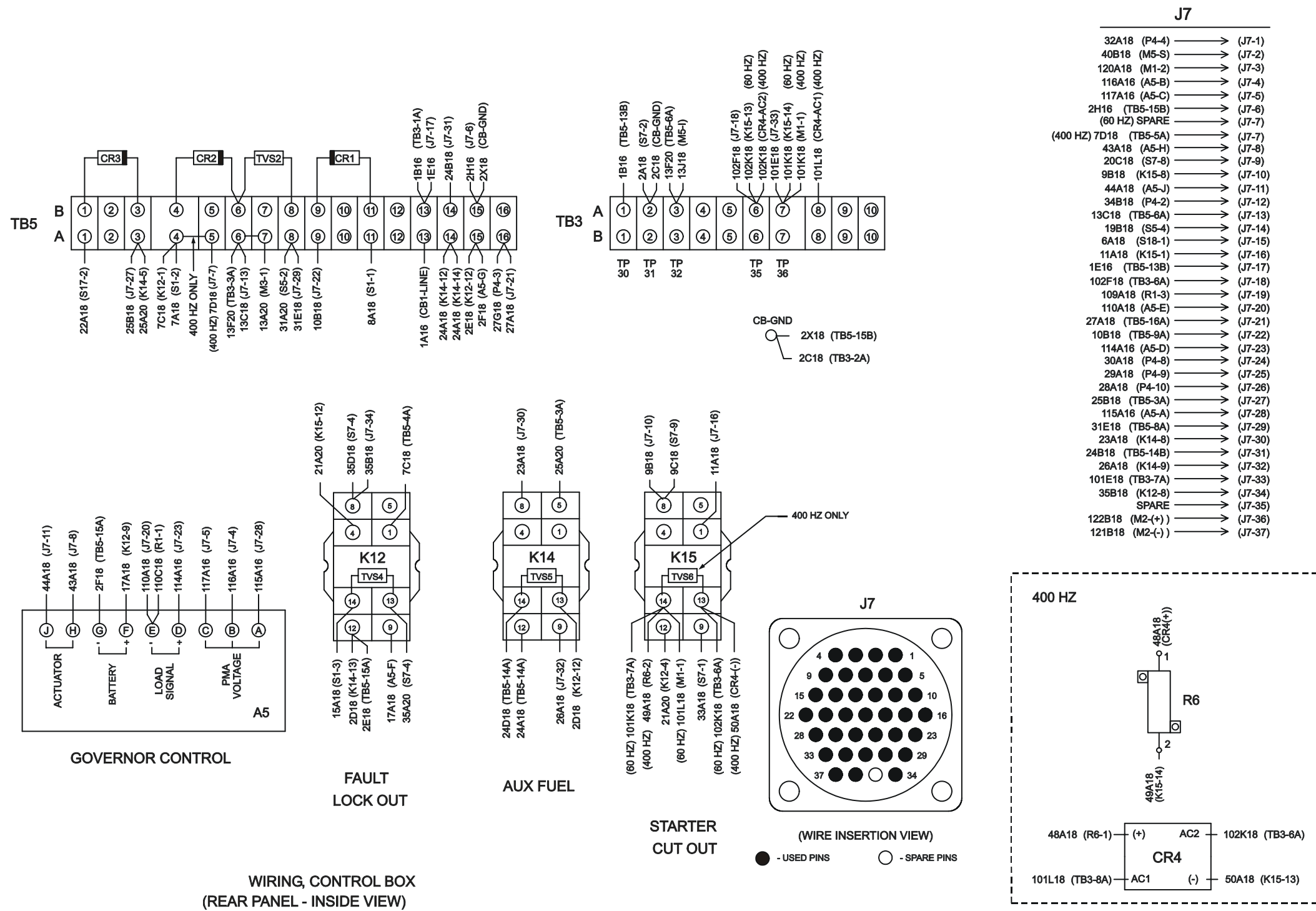


Figure FO-2. Generator Set Wiring Diagram (Sheet 2 of 4)

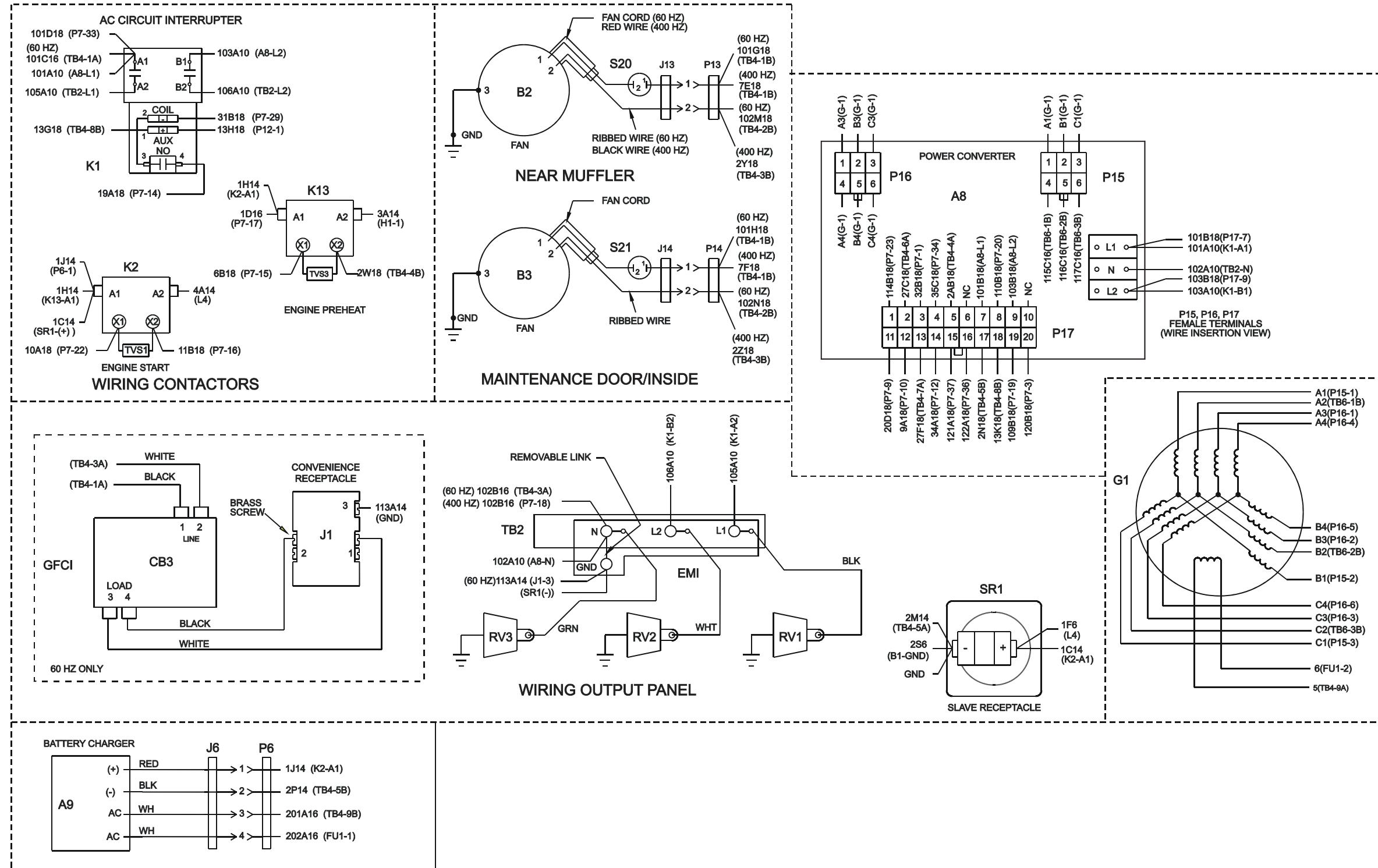


Figure FO-2. Generator Set Wiring Diagram (Sheet 3 of 4)

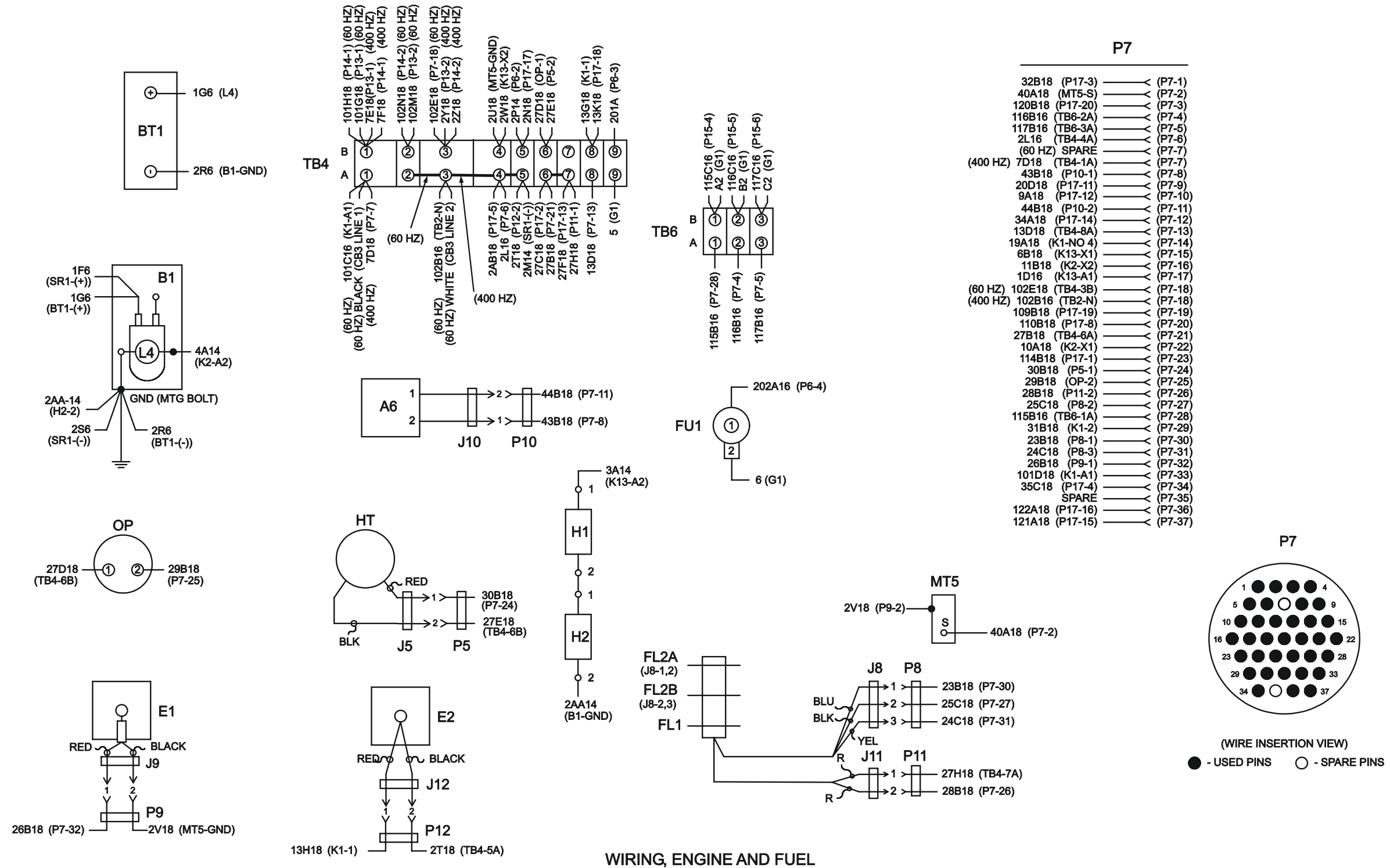
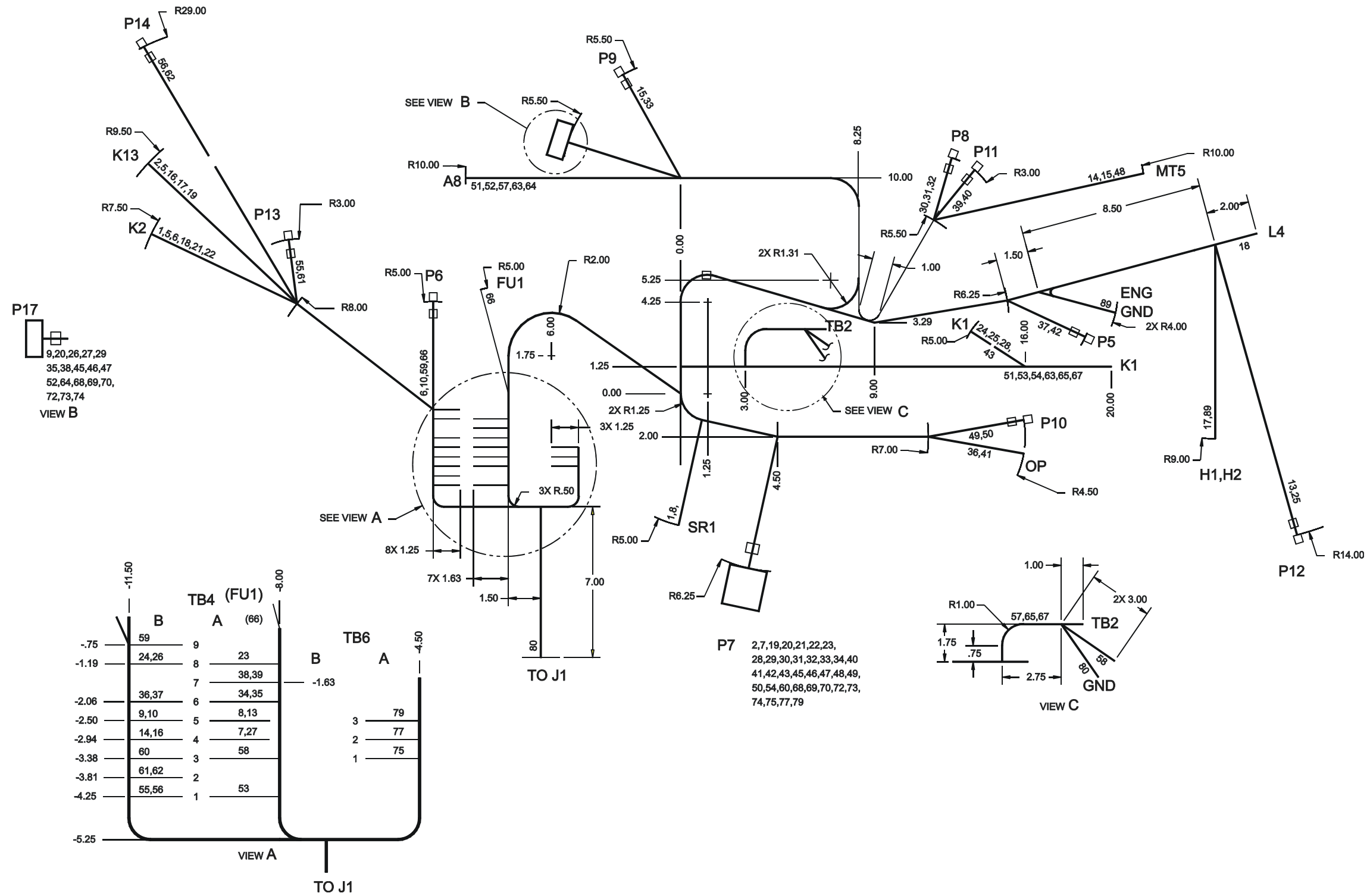


Figure FO-2. Generator Set Wiring Diagram (Sheet 4 of 4)



FO-3. Engine Wiring Harness Diagram, 60Hz (Sheet 1 of 2)

WIRE LIST TABLE

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
1	1C14	SR1-(+)	22	K2-A1	9	7	RED	50
2	1D16	P7-17	2	K13-A1	9	6	RED	57.5
3								
4								
5	1H14	K2-A1	9	K13-A1	9	7	RED	16
6	1J14	P6-1	15	K2-A1	9	7	RED	20.5
7	2L16	P7-6	2	TB4-4A	26	6	RED	31
8	2M14	SR1-(-)	22	TB4-5A	26	7	RED	34
9	2N18	P17-17	34	TB4-5B	27	5	RED	58
10	2P14	P6-2	15	TB4-5B	26	7	RED	8.5
11								
12								
13	2T18	P12-2	15	TB4-5A	27	5	RED	59
14	2U18	MT5-GND	13	TB4-4B	27	5	RED	54
15	2V18	P9-2	15	MT5-GND	13	5	RED	36
16	2W18	K13-X2	30	TB4-4B	27	5	RED	21.5
17	3A14	H1-1	31	K13-A2	9	7	RED	84
18	4A14	K2-A2	9	L4	21	7	RED	73
19	6B18	P7-15	2	K13-X1	30	5	RED	57.5
20	9A18	P7-10	2	P17-12	34	5	RED	46
21	10A18	P7-22	2	K2-X1	30	5	RED	55.5
22	11B18	P7-16	2	K2-X2	30	5	RED	55.5
23	13D18	P7-13	2	TB4-8A	27	5	RED	29
24	13G18	K1-1	18	TB4-8B	27	5	RED	48
25	13H18	K1-1	18	P12-1	15	5	RED	62
26	13K18	TB4-8B	27	P17-18	34	5	RED	59
27	2AB18	P17-5	34	TB4-4A	27	5	RED	50
28	19A18	P7-14	2	K1-NO4	18	5	RED	35
29	20D18	P7-9	2	P17-11	34	5	RED	46
30	23B18	P7-30	2	P8-1	15	5	RED	35
31	24C18	P7-31	2	P8-3	15	5	RED	35
32	25C18	P7-27	2	P8-2	15	5	RED	35
33	26B18	P7-32	2	P9-1	15	5	RED	46
34	27B18	P7-21	2	TB4-6A	27	5	RED	30
35	27C18	P17-2	34	TB4-6A	27	5	RED	49
36	27D18	OP-1	19	TB4-6B	27	5	RED	43
37	27E18	P5-2	15	TB4-6B	27	5	RED	51
38	27F18	P17-13	34	TB4-7A	27	5	RED	48.5
39	27H18	P11-1	15	TB4-7A	27	5	RED	38.5
40	28B18	P7-26	2	P11-2	15	5	RED	35
41	29B18	P7-25	2	OP-2	19	5	RED	20
42	30B18	P7-24	2	P5-1	15	5	RED	38
43	31B18	P7-29	2	K1-2	18	5	RED	35
44								
45	32B18	P7-1	2	P17-3	34	5	RED	46
46	34A18	P7-12	2	P17-14	34	5	RED	46
47	35C18	P7-34	2	P17-4	34	5	RED	46
48	40A18	P7-2	2	MT5-S	13	5	RED	44
49	43B18	P7-8	2	P10-1	15	5	RED	20
50	44B18	P7-11	2	P10-2	15	5	RED	20
51	101A10	A8-L1	20	K1-A1	8	4	BLK	56
52	101B18	A8-L1	19	P17-7	34	5	BLK	15.5
53	101C16	TB4-1A	26	K1-A1	9	6	BLK	40
54	101D18	P7-33	2	K1-A1	10	5	BLK	33.5
55	101G18	TB4-1B	27	P13-1	15	5	BLK	16.5
56	101H18	TB4-1B	27	P14-1	15	5	BLK	41.5

CONTINUED

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
57	102A10	TB2-N	8	A8-N	20	4	BLK	43
58	102B16	TB4-3A	26	TB2-N	9	6	BLK	27.5
59	201A16	P6-3	15	TB4-9B	26	6	BLK	7.0
60	102E18	P7-18	2	TB4-3B	27	5	BLK	38
61	102M18	TB4-2B	27	P13-2	15	5	BLK	16
62	102N18	TB4-2B	27	P14-2	15	5	BLK	41
63	103A10	A8-L2	20	K1-B1	8	4	BLK	56
64	103B18	A8-L2	19	P17-9	34	5	BLK	15.5
65	105A10	TB2-L1	8	K1-A2	8	4	BLK	22
66	202A16	P6-4	15	FU1-1	12	6	BLK	21.5
67	106A10	TB2-L2	8	K1-B2	8	4	BLK	22
68	122A18	P7-36	2	P17-16	34	5	BLK	46
69	109B18	P7-19	2	P17-19	34	5	BLK	46
70	110B18	P7-20	2	P17-8	34	5	BLK	46
71								
72	120B18	P7-3	2	P17-20	34	5	BLK	46
73	121A18	P7-37	2	P17-15	34	5	BLK	46
74	114B18	P7-23	2	P17-1	34	5	BLK	46
75	115B16	P7-28	2	TB6-1A	26	6	BLK	38
76								
77	116B16	P7-4	2	TB6-2A	26	6	BLK	38.5
78								
79	117B16	P7-5	2	TB6-3A	26	6	BLK	39
80	113A14	J1-3	32	GND	9	7	BLK	37
81								
82								
83								
84								
85								
86		SR1-(-)	23	GND	8	4		8
87								
88		H1-2	31	H2-1	31	7		2
89	2AA14	H2-2	31	B1-GND	31	7	BLK	21

Figure FO-3. Engine Wiring Harness Diagram, 60Hz (Sheet 2 of 2)

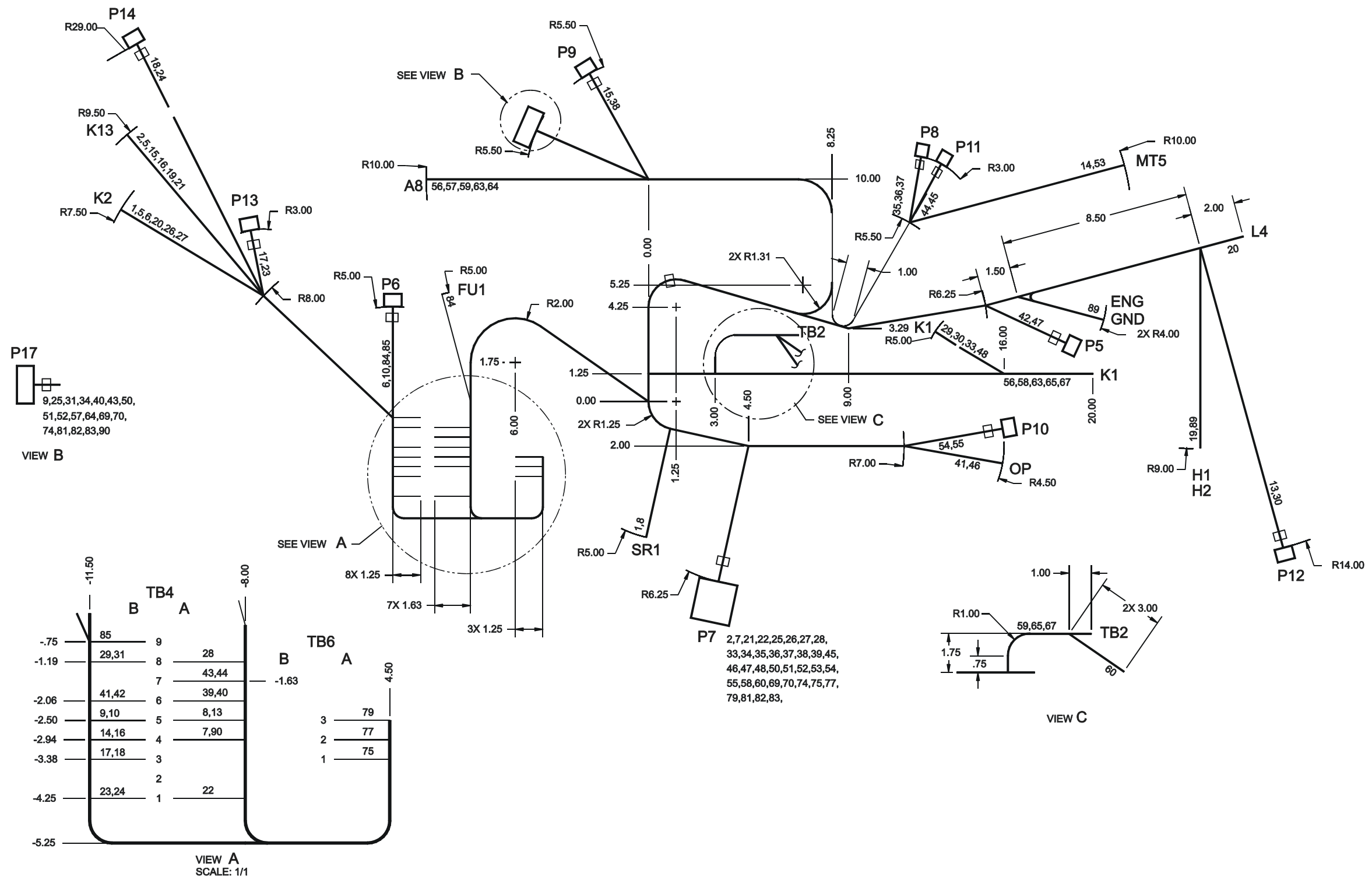


Figure FO-4. Engine Wiring Harness Diagram, 400Hz (Sheet 1 of 2)

WIRE LIST TABLE

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
1	1C14	SR1-(+)	22	K2-A1	9	7	RED	50
2	1D16	P7-17	2	K13-A1	9	6	RED	57.5
3								
4								
5	1H14	K2-A1	9	K13-A1	9	7	RED	16
6	1J14	P6-1	15	K2-A1	9	7	RED	20.5
7	2L16	P7-6	2	TB4-4A	26	6	RED	31
8	2M14	SR1-(-)	22	TB4-5A	26	7	RED	34
9	2N18	P17-17	34	TB4-5B	27	5	RED	58
10	2P14	P6-2	15	TB4-5B	26	7	RED	8.5
11								
12								
13	2T18	P12-2	15	TB4-5A	27	5	RED	59
14	2U18	MT5-GND	13	TB4-4B	27	5	RED	54
15	2V18	P9-2	15	MTG-GND	13	5	RED	36
16	2W18	K13-X2	30	TB4-4B	27	5	RED	21.5
17	2Y18	TB4-3B	27	P13-2	15	5	RED	15.5
18	2Z18	TB4-3B	27	P14-2	15	5	RED	40.5
19	3A14	H1-1	31	K13-A2	9	7	RED	84
20	4A14	K2-A2	9	L4	21	7	RED	73
21	6B18	P7-15	2	K13-X1	30	5	RED	57.5
22	7D18	P7-7	2	TB4-1A	27	5	RED	32.5
23	7E18	TB4-1B	27	P13-1	15	5	RED	16.5
24	7F18	TB4-1B	27	P14-1	15	5	RED	41.5
25	9A18	P7-10	2	P17-12	34	5	RED	46
26	10A18	P7-22	2	K2-X1	30	5	RED	55.5
27	11B18	P7-16	2	K2-X2	30	5	RED	55.5
28	13D18	P7-13	2	TB4-8A	27	5	RED	29
29	13G18	K1-1	18	TB4-8B	27	5	RED	48
30	13H18	K1-1	18	P12-1	15	5	RED	62
31	13K18	TB4-8B	27	P17-18	34	5	RED	59
32								
33	19A18	P7-14	2	K1-NO4	18	5	RED	35
34	20D18	P7-9	2	P17-11	34	5	RED	46
35	23B18	P7-30	2	P8-1	15	5	RED	35
36	24C18	P7-31	2	P8-3	15	5	RED	35
37	25C18	P7-27	2	P8-2	15	5	RED	35
38	26B18	P7-32	2	P9-1	15	5	RED	46
39	27B18	P7-21	2	TB4-6A	27	5	RED	30
40	27C18	TB4-6A	27	P17-2	34	5	RED	49
41	27D18	OP-1	19	TB4-6B	27	5	RED	43
42	27E18	TB4-6B	27	P5-2	15	5	RED	51
43	27F18	TB4-7A	27	P17-13	34	5	RED	48.5
44	27H18	TB4-7A	27	P11-1	15	5	RED	38.5
45	28B18	P7-26	2	P11-2	15	5	RED	35
46	29B18	P7-25	2	OP-2	19	5	RED	20
47	30B18	P7-24	2	P5-1	15	5	RED	38
48	31B18	P7-29	2	K1-2	18	5	RED	35
49								
50	32B18	P7-1	2	P17-3	34	5	RED	46
51	34A18	P7-12	2	P17-14	34	5	RED	46
52	35C18	P7-34	2	P17-4	34	5	RED	46
53	40A18	P7-2	2	MT5-S	13	5	RED	44
54	43B18	P7-8	2	P10-1	15	5	RED	20
55	44B18	P7-11	2	P10-2	15	5	RED	20
56	101A10	A8-L1	20	K1-A1	8	4	BLK	56

CONTINUED

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
57	101B18	A8-L1	19	P17-7	34	5	BLK	15.5
58	101D18	P7-33	2	K1-A1	10	5	BLK	33.5
59	102A10	TB2-N	8	A8-N	20	4	BLK	43
60	102B16	P7-18	2	TB2-N	9	6	BLK	23.5
61								
62								
63	103A10	A8-L2	20	K1-B1	8	4	BLK	56
64	103B18	A8-L2	19	P17-9	34	5	BLK	15.5
65	105A10	TB2-L1	8	K1-A2	8	4	BLK	22
66								
67	106A10	TB2-L2	8	K1-B2	8	4	BLK	22
68								
69	109B18	P7-19	2	P17-19	34	5	BLK	46
70	110B18	P7-20	2	P17-8	34	5	BLK	46
71								
72								
73								
74	114B18	P7-23	2	P17-1	34	5	BLK	46
75	115B16	P7-28	2	TB6-1A	26	6	BLK	38
76								
77	116B16	P7-4	2	TB6-2A	26	6	BLK	38.5
78								
79	117B16	P7-5	2	TB6-3A	26	6	BLK	39
80								
81	120B18	P7-3	2	P17-20	34	5	BLK	46
82	121A18	P7-37	2	P17-15	34	5	BLK	46
83	122A18	P7-36	2	P17-16	34	5	BLK	46
84	202A16	P6-4	15	FU1-1	12	6	BLK	21.5
85	201A16	P6-3	15	TB4-9B	26	6	BLK	7.0
86		SR1-(-)	23	GND	8	4		
87								
88		H1-2	31	H2-1	31	7		
89	2AA14	H2-2	31	B1-GND	31	7	BLK	21
90	2AB18	P17-5	34	TB4-4A	27	5	RED	50

Figure FO-4. Engine Wiring Harness Diagram, 400Hz (Sheet 2 of 2)

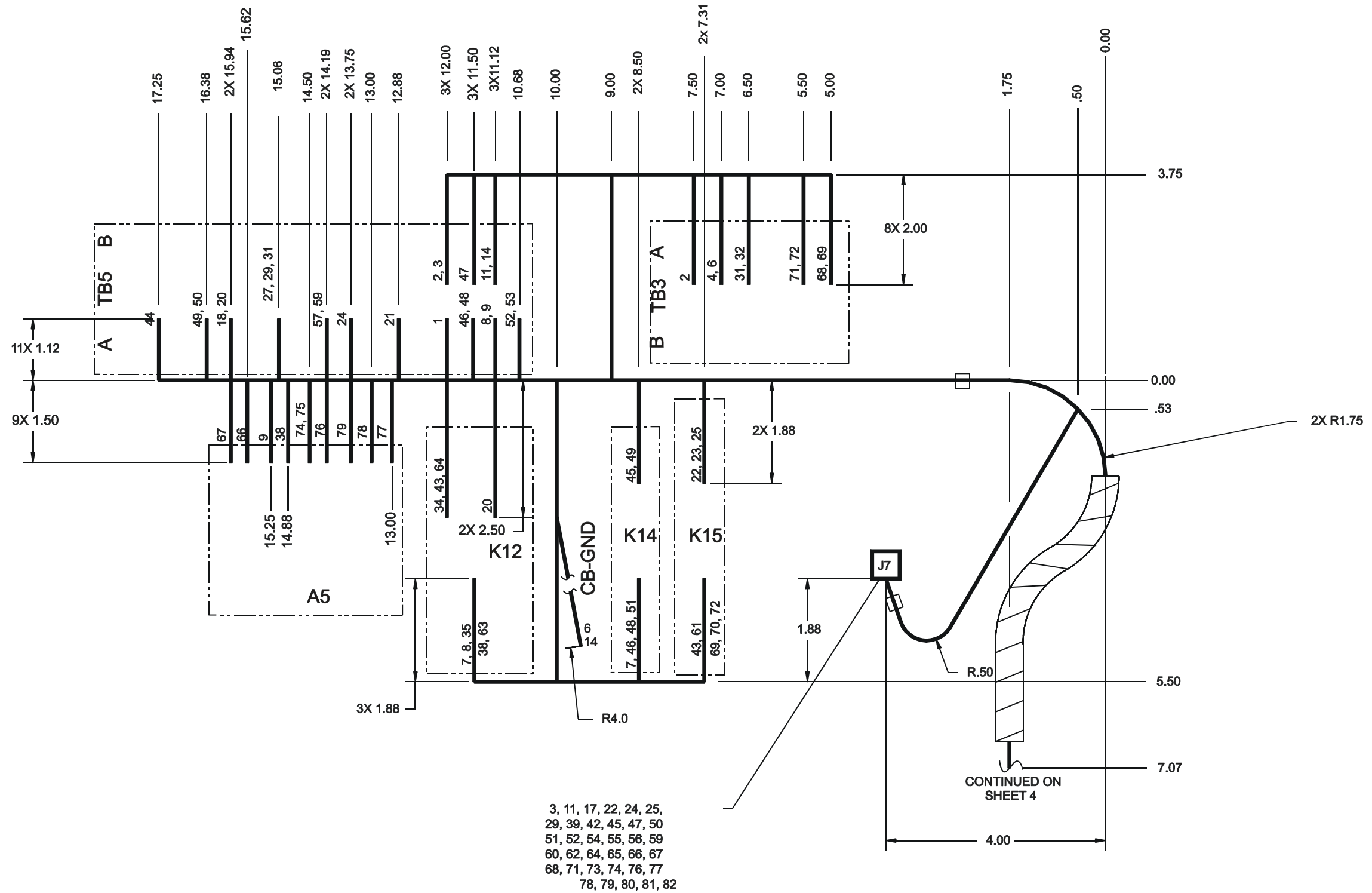


Figure FO-5. Control Box Wiring Harness Diagram, 60Hz (Sheet 1 of 3)

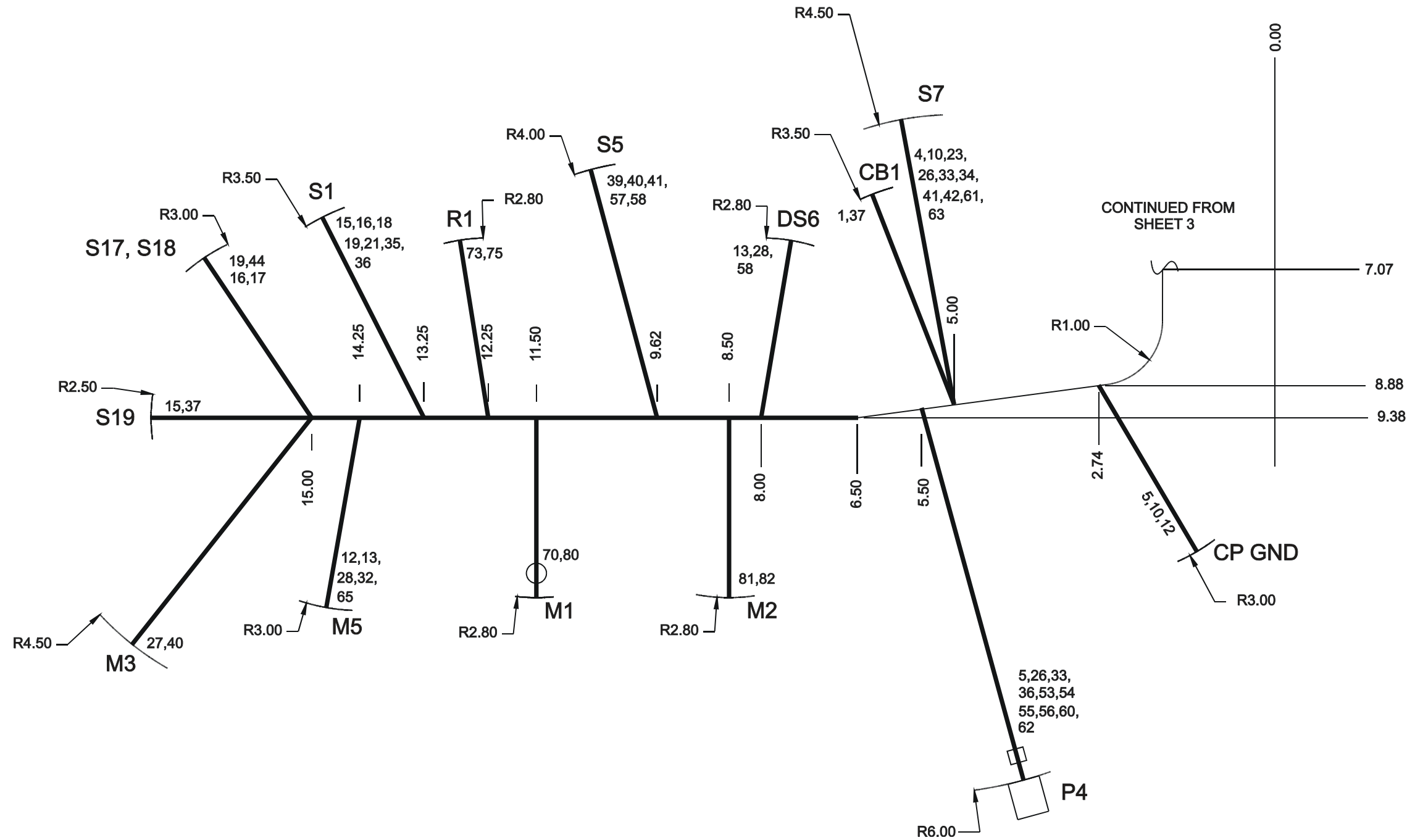


Figure FO-5. Control Box Wiring Harness Diagram, 60Hz (Sheet 2 of 3)

WIRE LIST TABLE

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
1	1A16	TB5-13A	7	CB1-LINE	8	3	RED	26.5
2	1B16	TB5-13B	7	TB3-1A	7	3	RED	8.0
3	1E16	J7-17	2	TB5-13B	7	3	RED	23.5
4	2A18	TB3-2A	6	S7-2	6	4	RED	32.0
5	2B20	CP-GND	10	P4-6	13	5	RED	12.8
6	2C18	TB3-2A	6	CB-GND	10	4	RED	14.3
7	2D18	K14-13	6	K12-12	6	4	RED	6.0
8	2E18	K12-12	6	TB5-15A	6	4	RED	10.3
9	2F18	A5-G	6	TB5-15A	6	4	RED	6.5
10	2G20	CP-GND	10	S7-2	6	5	RED	11.0
11	2H16	J7-6	2	TB5-15B	7	3	RED	22.0
12	2J20	M5-G	10	CP-GND	10	5	RED	18.5
13	2K20	M5-G	10	DS6-3	TIN	5	RED	12.0
14	2X18	CB-GND	10	TB5-15B	6	4	RED	13.5
15	5A16	S1-5	7	S19-2	7	3	RED	11.0
16	5B18	S1-5	6	S18-2	6	4	RED	7.3
17	6A18	J7-15	2	S18-1	6	4	RED	32.0
18	7A18	S1-2	6	TB5-4A	6	4	RED	39.5
19	7B18	S1-4	6	S17-3	6	4	RED	8.5
20	7C18	K12-1	6	TB5-4A	6	4	RED	8.0
21	8A18	S1-1	6	TB5-11A	6	4	RED	37.3
22	9B18	J7-10	2	K15-8	6	4	RED	15.5
23	9C18	S7-9	6	K15-8	6	4	RED	24.8
24	10B18	J7-22	2	TB5-9A	6	4	RED	20.5
25	11A18	J7-16	2	K15-1	6	4	RED	15.3
26	12A20	S7-3	6	P4-1	13	5	RED	10.8
27	13A20	TB5-7A	6	M3-1	9	5	RED	41.5
28	13B20	M5-I	10	DS6-1	TIN	5	RED	12.0
29	13C18	TB5-6A	6	J7-13	2	4	RED	22.0
30								
31	13F20	TB5-6A	6	TB3-3A	6	5	RED	14.3
32	13J18	TB3-3A	6	M5-I	10	4	RED	39.5
33	14A20	S7-5	6	P4-5	13	5	RED	10.5
34	35D18	K12-8	6	S7-4	6	4	RED	29.5
35	15A18	K12-14	6	S1-3	6	4	RED	40.0
36	15B18	S1-3	6	P4-7	13	4	RED	16.8
37	16A16	S19-1	7	CB1-LOAD	8	3	RED	14.5
38	17A18	K12-9	6	A5-F	6	4	RED	14.0
39	19B18	J7-14	2	S5-4	6	4	RED	28.0
40	20A20	M3-2	9	S5-5	6	5	RED	13.3
41	20B20	S5-5	6	S7-8	6	5	RED	11.8
42	20C18	S7-8	6	J7-9	2	4	RED	23.8
43	21A20	K15-12	6	K12-4	6	5	RED	13.0
44	22A18	S17-2	6	TB5-1A	6	4	RED	43.0
45	23A18	K14-8	6	J7-30	2	4	RED	16.5
46	24A18	K14-12	6	TB5-14A	6	4	RED	10.0
47	24B18	TB5-14B	6	J7-31	2	4	RED	23.0

WIRE LIST TABLE (CONTINUED)

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
48	24D18	K14-14	6	TB5-14A	6	4	RED	10.3
49	25A20	TB5-3A	6	K14-5	6	5	RED	10.5
50	25B18	TB5-3A	6	J7-27	2	4	RED	24.3
51	26A18	K14-9	6	J7-32	2	4	RED	24.0
52	27A18	TB5-16A	6	J7-21	2	4	RED	18.5
53	27G18	TB5-16A	6	P4-3	13	4	RED	30.0
54	28A18	J7-26	2	P4-10	13	4	RED	26.3
55	29A18	P4-9	13	J7-25	2	4	RED	26.3
56	30A18	P4-8	13	J7-24	2	4	RED	26.3
57	31A20	TB5-8A	6	S5-2	6	5	RED	35.5
58	31D20	S5-2	6	DS6-2	TIN	5	RED	8.8
59	31E18	J7-29	2	TB5-8A	6	4	RED	21.5
60	32A18	J7-1	2	P4-4	13	4	RED	26.3
61	33A18	S7-1	6	K15-9	6	4	RED	34.5
62	34B18	J7-12	2	P4-2	13	4	RED	26.3
63	35A20	S7-4	6	K12-13	6	5	RED	33.0
64	35B18	K12-8	6	J7-34	2	4	RED	20.0
65	40B18	M5-S	10	J7-2	2	4	RED	31.5
66	43A18	A5-H	6	J7-8	2	4	RED	23.5
67	44A18	A5-J	6	J7-11	2	4	RED	24.0
68	101E18	TB3-7A	6	J7-33	2	4	BLK	24.9
69	101K18	TB3-7A	6	K15-14	6	4	BLK	19.0
70	101L18	K15-14	6	M1-1	11	4	BLK	40.0
71	102F18	J7-18	2	TB3-6A	6	4	BLK	24.5
72	102K18	TB3-6A	6	K15-13	6	4	BLK	19.0
73	109A18	R1-3	TIN	J7-19	2	4	BLK	29.0
74	110A18	A5-E	6	J7-20	2	4	BLK	22.0
75	110C18	A5-E	6	R1-1	TIN	4	BLK	37.0
76	114A16	A5-D	7	J7-23	2	3	BLK	22.0
77	115A16	A5-A	7	J7-28	2	3	BLK	20.5
78	116A16	A5-B	7	J7-4	2	3	BLK	21.0
79	117A16	A5-C	7	J7-5	2	3	BLK	21.5
80	120A18	M1-2	11	J7-3	2	4	BLK	29.0
81	121B18	J7-37	2	M2(-)	11	4	BLK	25.3
82	122B18	J7-36	2	M2(+)	11	4	BLK	25.3
83		S1-2	6	S1-4	6	4		4.3
84		S5-1	6	S5-4	6	4		1.3
85								
86		R1-2	TIN	R1-3	TIN	4		4.0

Figure FO-5. Control Box Wiring Harness Diagram, 60Hz (Sheet 3 of 3)

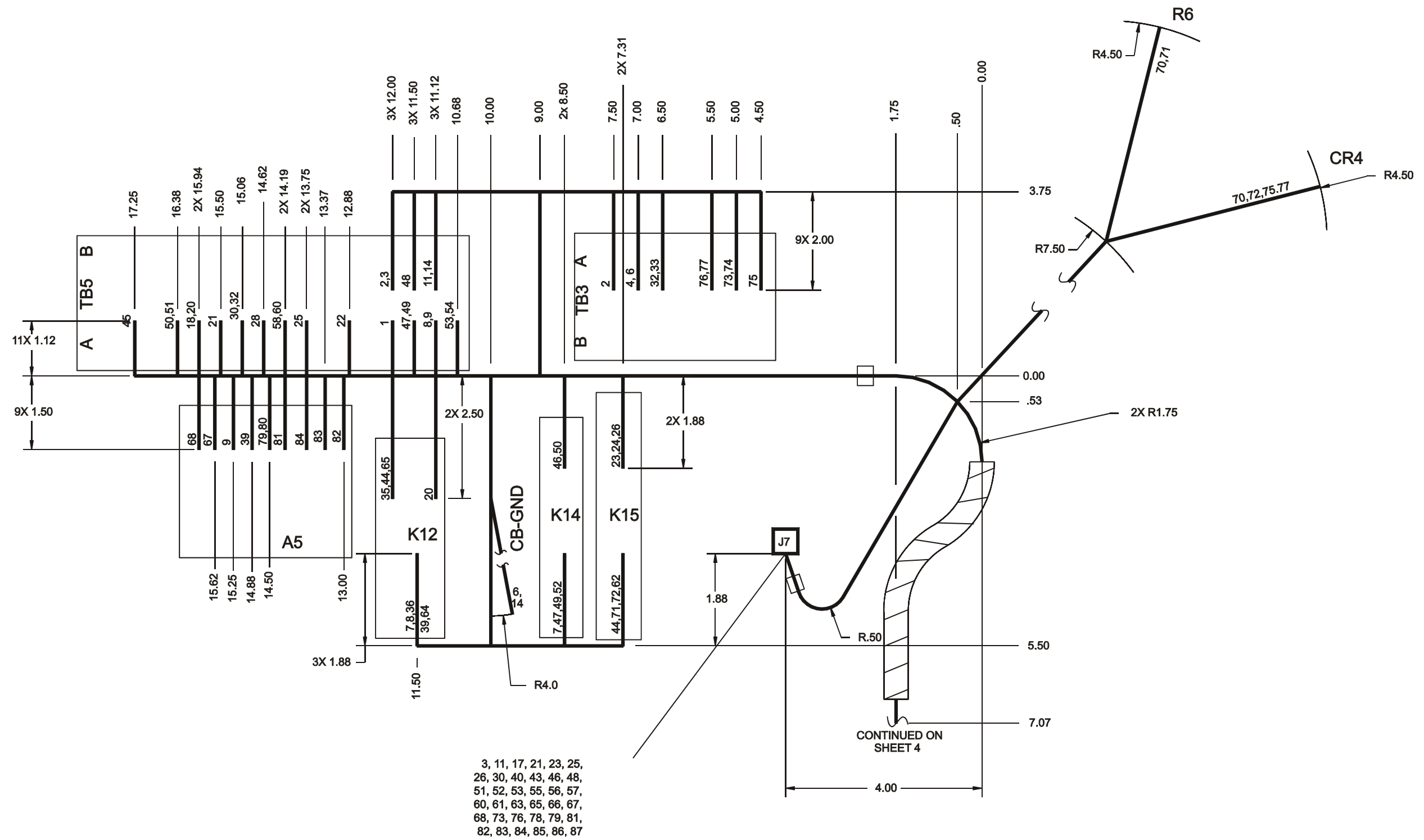


Figure FO-6. Control Box Wiring Harness Diagram, 400Hz (Sheet 1 of 3)

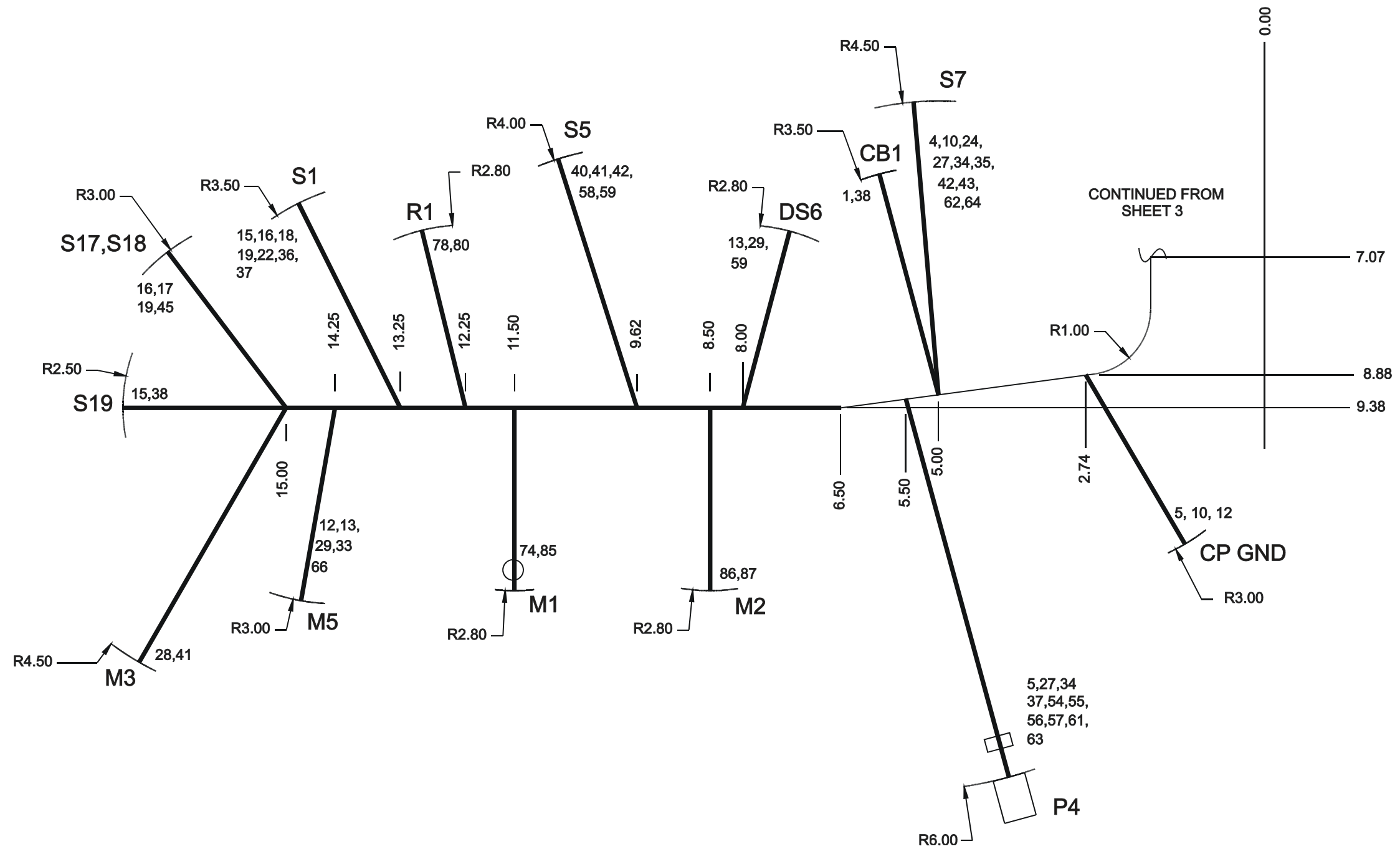


Figure FO-6. Control Box Wiring Harness Diagram, 400Hz (Sheet 2 of 3)

WIRE LIST TABLE

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
1	1A16	TB5-13A	7	CB1-LINE	8	3	RED	26.5
2	1B16	TB5-13B	7	TB3-1A	7	3	RED	8.0
3	1E16	J7-17	2	TB5-13B	7	3	RED	23.5
4	2A18	TB3-2A	6	S7-2	6	4	RED	32.0
5	2B20	CP-GND	10	P4-6	13	5	RED	12.8
6	2C18	TB3-2A	6	CB-GND	10	4	RED	14.3
7	2D18	K14-13	6	K12-12	6	4	RED	6.0
8	2E18	K12-12	6	TB5-15A	6	4	RED	10.3
9	2F18	A5-G	6	TB5-15A	6	4	RED	6.5
10	2G20	CP-GND	10	S7-2	6	5	RED	11.0
11	2H16	J7-6	2	TB5-15B	7	3	RED	22.0
12	2J20	M5-G	10	CP-GND	10	5	RED	18.5
13	2K20	M5-G	10	DS6-3	TIN	5	RED	12.0
14	2X18	CB-GND	10	TB5-15B	6	4	RED	13.5
15	5A16	S1-5	7	S19-2	7	3	RED	11.0
16	5B18	S1-5	6	S18-2	6	4	RED	7.3
17	6A18	J7-15	2	S18-1	6	4	RED	32.0
18	7A18	S1-2	6	TB5-4A	6	4	RED	39.5
19	7B18	S1-4	6	S17-3	6	4	RED	8.5
20	7C18	TB5-4A	6	K12-1	6	4	RED	8.0
21	7D18	TB5-5A	6	J7-7	2	4	RED	22.0
22	8A18	S1-1	6	TB5-11A	6	4	RED	37.3
23	9B18	J7-10	2	K15-8	6	4	RED	15.5
24	9C18	S7-9	6	K15-8	6	4	RED	24.8
25	10B18	J7-22	2	TB5-9A	6	4	RED	20.5
26	11A18	J7-16	2	K15-1	6	4	RED	15.3
27	12A20	S7-3	6	P4-1	13	5	RED	10.8
28	13A20	TB5-7A	6	M3-1	9	5	RED	41.5
29	13B20	M5-1	10	DS6-1	TIN	5	RED	12.0
30	13C18	TB5-6A	6	J7-13	2	4	RED	22.0
31								
32	13F20	TB5-6A	6	TB3-3A	6	5	RED	14.3
33	13J18	TB3-3A	6	M5-1	10	4	RED	39.5
34	14A20	S7-5	6	P4-5	13	5	RED	10.5
35	35D18	K12-8	6	S7-4	6	4	RED	29.5
36	15A18	K12-14	6	S1-3	6	4	RED	40.0
37	15B18	S1-3	6	P4-7	13	4	RED	16.8
38	16A16	S19-1	7	CB1-LOAD	8	3	RED	14.5
39	17A18	K12-9	6	A5-F	6	4	RED	14.0
40	19B18	J7-14	2	S5-4	6	4	RED	28.0
41	20A20	M3-2	9	S5-5	6	5	RED	13.3
42	20B20	S5-5	6	S7-8	6	5	RED	11.8
43	20C18	S7-8	6	J7-9	2	4	RED	23.8
44	21A20	K15-12	6	K12-4	6	5	RED	13.0
45	22A18	S17-2	6	TB5-1A	6	4	RED	43.0
46	23A18	K14-8	6	J7-30	2	4	RED	16.5
47	24A18	K14-12	6	TB5-14A	6	4	RED	10.4
48	24B18	TB5-14B	6	J7-31	2	4	RED	23.0
49	24D18	K14-14	6	TB5-14A	6	4	RED	10.3

WIRE LIST TABLE (CONTINUED)

WIRE REF NO	WIRE MARKING	FROM	TERMINAL FN	TO	TERMINAL FN	WIRE FN	MARKING COLOR	WIRE LENGTH
50	25A20	TB5-3A	6	K14-5	6	5	RED	10.5
51	25B18	TB5-3A	6	J7-27	2	4	RED	24.3
52	26A18	K14-9	6	J7-32	2	4	RED	24.0
53	27A18	TB5-16A	6	J7-21	2	4	RED	18.5
54	27G18	TB5-16A	6	P4-3	13	4	RED	30.0
55	28A18	J7-26	2	P4-10	13	4	RED	26.3
56	29A18	P4-9	13	J7-25	2	4	RED	26.3
57	30A18	P4-8	13	J7-24	2	4	RED	26.3
58	31A20	TB5-8A	6	S5-2	6	5	RED	35.5
59	31D20	S5-2	6	DS6-2	TIN	5	RED	8.8
60	31E18	J7-29	2	TB5-8A	6	4	RED	21.5
61	32A18	J7-1	2	P4-4	13	4	RED	26.3
62	33A18	S7-1	6	K15-9	6	4	RED	34.5
63	34B18	J7-12	2	P4-2	13	4	RED	26.3
64	35A20	S7-4	6	K12-13	6	5	RED	33.0
65	35B18	K12-8	6	J7-34	2	4	RED	20.0
66	40B18	M5-S	10	J7-2	2	4	RED	31.5
67	43A18	A5-H	6	J7-8	2	4	RED	23.5
68	44A18	A5-J	6	J7-11	2	4	RED	24.0
69								
70	48A18	CR4-(+)	9	R6-1	TIN	4	RED	9.0
71	49A18	R6-2	TIN	K15-14	6	4	RED	32.1
72	50A18	CR4-(-)	9	K15-13	6	4	RED	32.1
73	101E18	TB3-7A	6	J7-33	2	4	BLK	24.9
74	101K18	TB3-7A	6	M1-1	11	4	BLK	38.7
75	101L18	TB3-8A	6	CR4-AC1	9	4	BLK	31.2
76	102F18	J7-18	2	TB3-6A	6	4	BLK	24.5
77	102K18	TB3-6A	6	CR4-AC2	9	4	BLK	30.2
78	109A18	R1-3	TIN	J7-19	2	4	BLK	29.0
79	110A18	A5-E	6	J7-20	2	4	BLK	22.0
80	110C18	A5-E	6	R1-1	TIN	4	BLK	37.0
81	114A16	A5-D	7	J7-23	2	3	BLK	22.0
82	115A16	A5-A	7	J7-28	2	3	BLK	20.5
83	116A16	A5-B	7	J7-4	2	3	BLK	21.0
84	117A16	A5-C	7	J7-5	2	3	BLK	21.5
85	120A18	M1-2	11	J7-3	2	4	BLK	29.0
86	121B18	J7-37	2	M2-(-)	11	4	BLK	25.3
87	122B18	J7-36	2	M2-(+)	11	4	BLK	25.3
88		S1-2	6	S1-4	6	4		4.3
89		S5-1	6	S5-4	6	4		1.3
90								
91		R1-2	TIN	R1-3	TIN	4		4.0

Figure FO-6. Control Box Wiring Harness Diagram, 400Hz (Sheet 3 of 3)

