ARMY
AIR FORCE
MARINE CORPS
NAVY

TM 5-6115-271-14
TO 35C2-3-386-1
TM 05926A-14
NAVFAC P-8-613-14

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE MANUAL

# GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 3 KW, 3 PHASE AC,120/208 AND 120/240 VOLTS,28 V DC

# (LESS ENGINE)

| DOD Model | Hertz | NSN |
|---|---|---|
| MEP-016A | 60 | 6115-00-017-8237 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-026A | DC | 6115-00-017-8239 |

This copy is a reprint which includes current pages from Changes 1 through 11

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

AUGUST 1976

ARMY TM 5-6115-271-14
AIR FORCE TO 35C2-3-386-1
MARINE CORPS TM 05926A-14
NAVY NAVFAC P-8-613-14
C 12

CHANGE

NO. 12

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
AND HEADQUARTERS, U.S. MARINE CORPS
WASHINGTON, D.C., 31 March 1993

# Operator, Organizational, Direct and General Support Maintenance Manual

## GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TABULAR FRAME 3 KW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP-016A | 60 | 6115-00-017-8237 |
| MEP-016C | 60 | 6115-00-143-3311 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-021C | 400 | 6115-01-175-7321 |
| MEP-026A | DC | 6115-00-017-8239 |
| MEP-026C | 28 V DC | 6115-01-175-7320 |

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

TM 5-6115-271-14/TO 35C2-3-386-l/TM 05926A-14/NAVFAC P-8-613-14, 3 August 1976, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a pointing hand.

| Remove pages | Insert pages |
|---|---|
| 3-2.1 and 3-2.2 | 3-2.1 and 3-2.2 |
| 4-13 and 4-14 | 4-13 and 4-14 |
| 8-1 and 8-2 | 8-1 and 8-2 |

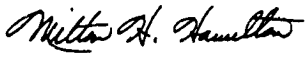
2. Retain this sheet in front of manual for reference purposes.

| | |
|---|---|
| ARMY | TM 5-6115-271-14 |
| AIR FORCE | TO 35C2-3-386-1 |
| MARINE CORPS | TM 05926A-14 |
| NAVY | NAVFAC P-8-613-14 |
| | C 12 |

**By Order of the Secretaries of the Army, Air Force, and Navy (Including the Marine Corps):**

GORDON R. SULLIVAN
*General, United States Army*
*Chief of State*

Official:



MILTON H. HAMILTON
*Administrative Assistant to the*
*Secretary of the Army*

**MERRILL A. McPEAK**
*General, USAF*
*Chief of Staff*

**Official:**

**RONALD W. YATES**
*General, USAF*
*Commander, Air Force Materiel Command*

**DAVID E. BOTTORFF**
*Rear Admiral, CEC, US Navy*
*Commander*
*Navy Facilities Engineering*
*Command*

**RONALD D. ELLIOT**
*Executive Director*
*Marine Corps Systems Command*

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25-E, block no. 0880, requirements for TM 5-6115-271-14.

CHANGE

NO. 11

HEADQUARTERS,
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
AND HEADQUARTERS U.S. MARINE CORPS
WASHINGTON, D.C., 17 September 1991

Operator, Organizational, Direct Support and General Support
Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME,
3 kW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP–016A | 60 | 6115–00–017–8237 |
| MEP–016C | 60 | 6115–00–143–3311 |
| MEP–021A | 400 | 6115–00–017–8238 |
| MEP–021C | 400 | 6115–01–175–7321 |
| MEP–026A | DC | 6115–00–017–8239 |
| MEP–026C | 28 V DC | 6115–01–175–7320 |

Approved for public release; distribution is unlimited

TM 5–6115–271–14/TO 35C2–3–386–1/ TM 05926A–14/NAVFAC P–8–613–14, 3 August 1976 is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

| Remove pages | Insert pages |
|---|---|
| iii through v/(vi blank) | iii through v/(vi blank) |
| 2–2.1/(2–2.2 blank) | 2–2.1/(2–2.2 blank) |
| 4–3 and 4–4 | 4–3 and 4–4 |
| 8–1 through 8–4 | 8–1 through 8–4 |
| 8–4.1 through 8–4.6 | 8–4.1 through 8–4.10 |
| B–1 through B–3/(B–4 blank) | B–1 through B–3/(B–4 blank) |

2. Retain this sheet in front of manual for reference purposes.

ARMY TM 5–6115–271–14
AIR FORCE TO 35C2–3–386–1
MARINE CORPS TM 05926A–14
NAVY NAVFAC P–8–613–14
C 11

**By Order of the Secretaries of the Army , Air Force, and Navy (Including the Marine Corps):**

**GORDON R. SULLIVAN**
*General, United States Army*
*Chief of Staff*

**Official:**

**PATRICIA P. HICKERSON**
*Brigadier General, United States Army*
*The Adjutant General*

**MERRILL A. McPEAK**
*General USAF*
*Chief of Staff*

**Official:**

**CHARLES C. McDONALD**
*General, USAF*
*Commander, Air Force Logistics Command*

**DAVID E. BUTTORFF**
*Rear Admiral, CEC, US Navy*
*Commander*
*Navy Facilities Engineering Command*

**H.E. REESE**
*Executive Director*
*Marine Corps Research, Development and Acquisition Command*

DISTRIBUTION:

To be distributed in accordance with DA Form 12–25E, (qty rqr block no. 0880).

| | |
|---|---|
| ARMY | TM 5-6115-271-14 |
| AIR FORCE | TO 35C2-3-386-1 |
| MARINE CORPS | TM 05926A-14 |
| NAVY | NAVFAC P-8-613-14 |
| | C 10 |

CHANGE

No. 10

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
AND HEADQUARTERS, U.S. MARINE CORPS
WASHINGTON, D.C., 30 November 1989

Operator, Organizational, Direct Support and
General Support Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME
3 KW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP-016A | 60 | 6115-00-017-8237 |
| MEP-016C | 60 | 6115-01-143-3311 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-021C | 400 | 6115-01-175-7321 |
| MEP-026A | DC | 6115-00-017-8239 |
| MEP-026C | 28 V DC | 6115-01-175-7320 |

Approved for public release; distribution is unlimited.

TM 5-6115-271-14/TO 35C2-3-386-1/TM 05926A-14/NAVFAC P-8-613-14, 3 August 1976, is changed as follows:

1. Title is changed as shown above.

2. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

| Remove pages | Insert pages |
|---|---|
| i and ii | i and ii |
| 1 through 1-2.1/1-2.2 | 1 through 1-2.1/1-2.2 |
| 2-1 and 2-2 | 2-1 and 2-2 |
| 3-2.1 and 3-2.2 | 3-2.1 and 3-2.2 |
| 4-13 and 4-14 | 4-13 and 4-14 |
| ---- | 4-14.1/4-14.2 |
| 4-15 and 4-16 | 4-15 and 4-16 |
| A-1 and A-2 | A-1 and A-2 |
| ---- | A-3/A-4 |
| FO-1 | FO-1 |

3. Retain this sheet in front of manual for reference purposes.

| | |
|---|---|
| ARMY | TM 5-6115-271-14 |
| AIR FORCE | TO 35C2-3-386-1 |
| MARINE CORPS | TM 05926A-14 |
| NAVY | NAVFAC P-8-613-14 |

By Order of the Secretaries of the Army, Air Force and Navy (Including the Marine Corps):

OFFICIAL:

CARL E. VUONO
General, United States Army
Chief of Staff

WILLIAM J. MEEHAN, II
Brigadier General, United States Army
The Adjutant General

OFFICIAL:

LARRY D. WELCH, General USAF
Chief of Staff

ALFRED G. HANSEN
General, USAF, Commander, Air Force
Logistics Command

OFFICIAL:

B.F. MONTOYA
Rear Admiral, CEC, US Navy
Commander
Navy Facilities Engineering Command

H. E. REESE
Executive Director
Marine Corps Research, Development and
Acquisition Command

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25A, Operator, Unit, Direct Support and General Support Maintenance requirements for Generator Set, Gas Driven, 120/208V, 120/240V, 28V DC, 3KW, 60/400HZ, 3 HP (MEP-016A, MEP-021A, MEP-026A).

| | |
|---|---|
| ARMY | TM 5-6115-271-14 |
| AIR FORCE | TO 35C2-3-386-1 |
| MARINE CORPS | TM 05926A-14 |
| NAVY | NAVFAC P-8-613-14 |
| | C 9 |

CHANGE
No. 9

HEADQUARTERS, DEPARTMENTS OF
THE ARMY, AIR FORCE AND NAVY
(INCLUDING MARINE CORPS)
WASHINGTON, D.C., 27 June 1988

Operator, Organizational, Direct Support and
General Support Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME
3 KW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP-016A | 60 | 6116-00-017-8237 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-026A | DC | 6115-00-017-8239 |

TM 5-6115-271-14/TO 35C2-3-386-1/TM 05926A-14/NAVFAC P-8-613-14, 3 August 1976, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

TM 5-6115-271-14
TO 35C2-3-386-1
TM 05926A-14
NAVFAC P-8-613-14
C 9

| Remove pages | Insert pages |
|---|---|
| a/b | a/b |
| i through v | i through v/vi |
| 1-1 through 1-2.1/1-2.2 | 1-1 through 1-2.1/1-2.2 |
| 1-3 through 1-6 | 1-3 through 1-6 |
| 2-1 and 2-2 | 2-1 and 2-2 |
| 2-2.1/2-2.2 | 2-2.1/2-2.2 |
| 2-7 through 2-14 | 2-7 through 2-14 |
| 2-14.1 and 2-14.2 | 2-14.1 and 2-14.2 |
| 2-15 and 2-16 | 2-15 and 2-16 |
| 3-1 and 3-2 | 3-1 and 3-2 |
| 3-2.1 and 3-2.2 | 3-2.1 and 3-2.2 |
| 4-3 and 4-4 | 4-3 and 4-4 |
| 4-11 through 4-14.1/4-14.2 | 4-11 through 4-14.1/4-14.2 |
| 5-1 through 5-4 | 5-1 through 5-3/5-4 |
| 6-1 through 6-4 | 6-1 through 6-4 |
| 8-1 and 8-2 | 8-1 and 8-2 |
| 8-4.1 through 8-4.6 | 8-4.1 through 8-4.6 |
| 8-5 through 8-8 | 8-5 through 8-8 |
| 9-1 through 9-3 | 9-1 through 9-3/9-4 |
| 10-1 and 10-2 | 10-1 and 10-2 |
| A-1 and A-2 | A-1 and A-2 |
| B-1 through B-3/B-4 | B-1 through B-3/B-4 |
| C-1 through C-4 | C-1 through C-4 |
| FO-1 | FO-1 |
| FO-3.1 | FO-3.1 |

2. Retain this sheet in front of manual for reference purposes.

**By Order of the Secretary of the Army:**

**CARL E. VUONO**
*General, United States Army*
*Chief of Staff*

**Official:**

**R. L. DILWORTH**
*Brigadier General, United States Army*
*The Adjutant General*

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator, Unit, Direct Support and General Support Maintenance requirements for Generator Set, Gas Driven, 120/208V, 120/240V, 28V DC, 3KW, 60/40HZ, 3HP (MEP-016A, MEP-021A, MEP 026A)

| | |
|---|---|
| ARMY | TM 5-6115-271-14 |
| AIR FORCE | TO 35C2-3-386-1 |
| MARINE CORPS | TM 05926A-14 |
| NAVY | NAVFAC P-8-613-14 |
| | C 8 |

CHANGE
No. 8

HEADQUARTERS, DEPARTMENTS OF
THE ARMY, AIR FORCE AND NAVY
(INCLUDING MARINE CORPS)
WASHINGTON, D.C., 30 June 1986

Operator, Organizational, Direct Support and
General Support Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME
3 KW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP-016A | 60 | 6116-00-017-8237 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-026A | DC | 6115-00-017-8239 |

TM 5-6115-271-14/TO 35C2-3-386-1/TM 05926A-14/NAVFAC P-8-613-14, 3 August 1976, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

| Remove pages | Insert pages |
|---|---|
| 2-1 and 2-2 | 2-1 and 2-2 |
| 3-2.1 and 3-2.2 | 3-2.1 and 3-2.2 |
| FO-1 | FO-1 |

2. Retain this sheet in front of manual for reference purposes.

**By Order of the Secretaries of the Army, the Navy, and the Air Force:**

**JOHN A. WICKHAM, JR.**
***General, United States Army***
***Chief of Staff***

**Official:**

**R. L. DILWORTH**
***Brigadier General, United States Army***
***The Adjutant General***

**J. P. JONES, JR.**
***Rear Admiral, CEC, US Navy***
***Commander***
***Naval Facilities Engineering Command***

**CHARLES A. GABRIEL, *General USAF***
***Chief of Staff***

**Official:**

**EARL T. O'LOUGHLIN**
***General, USAF, Commander, Air Force***
***Logistics Command***

**GEORGE B. CRIST**
***Lieutenant General, USMC***
***Deputy Chief of Staff for Installations and Logistics***

DISTRIBUTION:
Active Army:
To be distributed in accordance with DA Form 12-25A, Operator, Organizational, Direct and General Support maintenance requirements for Generator Set, Gas Driven, 120/208V, 120/240V DC, 3KW, 60/40HZ, 3PH (MEP-016A, MEP-021A, MEP 026A).

## WARNING

**Take particular heed to specific cautions and warnings throughout this manual.**

## HIGH VOLTAGE

**is used in the operation of this equipment.**

## DEATH

**or severe burns may result if personnel fail to observe safety precautions.**
**Do not operate this generator set until the ground terminal stud has been connected to a suitable ground.**
**On gasoline engine driven generator sets utilizing magnetos, set magneto switch to OFF or STOP position.**
**Do not attempt to change load connections when generator is running. Before servicing any part of a generator set, make sure unit is completely de-energized.**
**Slave Receptacle is to be used when extra cranking power is required for starting unit. Other methods are not authorized!**

## DANGEROUS GASES

**are generated as a result of operating this equipment.**

## DEATH

**or severe injury may result if personnel fail to observe safety precautions.**
**Do not smoke, or use open flame when servicing batteries. Batteries generate explosive gas while discharging and charging. Always maintain metal-to-metal contact when filling the fuel tank. Do not smoke or use open flame when filling the fuel tank. Do not attempt to fill the fuel tank when the generator is running. Do not operate generator sets in inclosed areas unless exhaust gases are properly vented to the outside.**
**Exhaust discharge contains noxious and deadly fumes.**

## NOISE

**Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs which were fitted by a trained professional.**

## CAUTION

## DAMAGE

**to the equipment may result if personnel fail to observe safety precautions.**
**If the generator set is shut-down by the operation of a safety device, do not attempt to operate the unit until the cause has been determined and eliminated.**

## WARNING

**Dry cleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 1OO°F-138°F (39°C.–59°C).**

## WARNING

**Serious eye injury can result from the starter rope knot. Wear eye protection when pull starting engine.**

DEPARTMENT OF THE ARMY PUBLICATION
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER
DEPARTMENT OF THE MARINE CORPS TECHNICAL MANUAL
DEPARTMENT OF THE NAVY PUBLICATION

**TM 5-6115-271-14**
**TO 35C2-3-386-1**
**TM05926A-14**
**NAVFAC P-8-613-14**

HEADQUARTERS
DEPARTMENTS OF THE ARMY,
AIR FORCE AND NAVY
(Including Marine Corps)
Washington, D. C., 3 August 1976

# OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

## GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 3 KW, 3 PHASE, AC, 120/208 AND 120/240 VOLTS, 28 V DC (LESS ENGINE)

| DOD MODEL | HERTZ | NSN |
|---|---|---|
| MEP-016A | 60 | 6115-00-017-8237 |
| MEP-016C | 60 | 6115-01-143-3311 |
| MEP-021A | 400 | 6115-00-017-8238 |
| MEP-021C | 400 | 6115-01-175-7321 |
| MEP-026A | DC | 6115-00-017-8239 |
| MEP-026C | 28 V DC | 6115-01-175-7320 |

Approved for public release; distribution is unlimited.


| | | Paragraph | Page |
|---|---|---|---|
| CHAPTER 1. | INTRODUCTION | | |
| Section I. | General | 1-1 | 1-1 |
| II. | Description and Data | 1-9 | 1-2 |
| CHAPTER 2. | OPERATING INSTRUCTIONS | | |
| Section I. | Operating Procedures | 2-1 | 2-1 |
| II. | Operation of Auxiliary Equipment | 2-3 | 2-14 |
| III. | Operation Under Unusual Conditions | 2-5 | 2-15 |
| CHAPTER 3. | OPERATOR/CREW MAINTENANCE INSTRUCTIONS | | |
| Section I. | Consumable Operating and Maintenance Supplies | 3-1 | 3-1 |
| II. | Lubricating Instructions | | 3-1 |
| III. | Preventive Maintenance Checks and Services (PMCS). | 3-3 | 3-2 |
| IV. | Troubleshooting | 3-5 | 3.2.3 /.4 |
| V. | Maintenance Procedures | 3-7 | 3-3 |
| CHAPTER 4. | ORGANIZATIONAL MAINTENANCE | | |
| Section I. | Service Upon Receipt of Equipment | 4-1 | 4-1 |
| II. | Movement to a New Worksite. | 4-5 | 4-12 |
| III. | Repair Parts, Special Tools, Special Test, Measurement and Diagnostic, Equipment (TMDE), and Special Support Equipment | 4-7 | 4-12 |
| IV. | Preventive Maintenance Checks and Services (PMCS). | 4-9 | 4-12 |
| V. | Troubleshooting | 4-11 | 4-13 |
| VI. | Radio Interference Suppression. | 4-13 | 4-15 |
| VII. | Maintenance of the Frame Assembly | | 4-16 |
| VIII. | Maintenance of the Generator Control Box Assembly | 4-14 | 4-17 |
| IX. | Maintenance of the Fuel System | 4-26 | 4-26 |
| X. | Maintenance of the Exhaust System | 4-30 | 4-27 |
| XI. | Maintenance of the Engine Electrical System , | 4-32 | 4-28 |
| CHAPTER 5. | INTERMEDIATE (FIELD), (DIRECT SUPPORT AND GENERAL SUPPORT) AND DEPOT MAINTENANCE INSTRUCTIONS | | |
| Section I. | Repair Parts, Special Tools and Equipment. | 5-3 | 5-1 |
| II. | Troubleshooting | 5-3 | 5-3 |
| III | General Maintenance | | 5-3 |
| CHAPTER 6 | REMOVAL/INSTALLATION OF MAJOR COMPONENTS | | |
| Section I. | General | | 6-1 |
| II. | Engine | 6-1 | 6-1 |
| III. | Control Box Assembly | 6-4 | 6-4 |
| IV. | Generator | 6-4 | 6-4 |

| | | | Page |
|---|---|---|---|
| CHAPTER | 7. | MAINTENANCE OF THE FRAME ASSEMBLY . . . | 7-1 |
| | 8. | MAINTENANCE OF THE CONTROL BOX ASSEMBLY | 8-1 |
| | 9. | MAINTENANCE OF THE HEAT SINK ASSEMBLY . . | 9-1 |
| | 10. | MAINTENANCE OF THE GENERATOR . . . . . | 10-1 |
| APPENDIX | A. | REFERENCES . . . . . | A-1 |
| | B. | BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST . . . . . | B-1 |
| | C. | MAINTENANCE ALLOCATION CHART . . . . . | C-1 |
| INDEX . . . | | . . . . . | I-1 |

## LIST OF ILLUSTRATIONS


| Figure No, | Title | Page |
|---|---|---|
| 1-1 | Generator set,Model MEP-016A. | 1-3 |
| 1-2 | Generator set,Model MEP-021A.. | 1-4 |
| 1-3 | Generator set,Model MEP-026A.. | 1-5 |
| 1-4 | Generator base dimensions | 1-6 |
| 2-1 | Engine Controls | 2-2.1 |
| 2-2 | Generator set controls and instruments (Model MEP-021A) | 2-3 |
| 2-3 | Generator set controls and instruments (Model MEP-016A) | 2-4 |
| 2-4 | Generator set controls and instruments (Model MEP-026A) | 2-5 |
| 2-5 | Voltage conversion(Models MEP-016A and MEP-021A) | 2-6 |
| 2-6 | Typical electrical starting instructions (Sheet l of 2) | 2-7 |
| 2-6 | Typical electrical starting instructions (Sheet 2 of 2) | 2-8 |
| 2-7 | Manual starting instructions | 2-9 |
| 2-8 | Stopping instructions | 2-10 |
| 2-9 | Generator set operating instructions (Models MEP-016A and MEP-021A) (Sheet l of 2) | 2-11 |
| 2-9 | Generator set operating instructions (Models MEP-016A and MEP-021A) (Sheet 2 of 2) | 2-12 |
| 2-10 | Generator set operating instructions (Model MEP-026A) | 2-13 |
| 2-11 | Heating torch operation (TS 0l1892) | 2-14 |
| 3-1 | Fuse, removal and installation (Model MEP-016A) (TS 011893) | 3-4 |
| 3-2 | Winterization kit(TS 011892) | 3-5 |
| 4-1 | AC Generator set load terminals | 4-2 |
| 4-2 | DC Generator set load terminals | 4-3 |
| 4-3 | External power source receptacle | 4-3 |
| 4-4 | Revetment, top view | 4-5 |
| 4-5 | Revetment, side view | 4-6 |
| 4-6 | Revetment, isometric view | 4-7 |
| 4-7 | Revetment, perspective without roof | 4-8 |
| 4-8 | Revetment, front view | 4-9 |
| 4-9 | Revetment, left side view | 4-10 |
| 4-10 | Revetment exhaust duct | 4-11 |
| 4-11 | Radio interference suppression components, location, description, removaland installation | 4-16 |
| 4-12 | Fuel tank and cap, and ground terminal stud, removal and installation | 4-17 |
| 4-13 | Controls and instruments, removal and installation (Models MEP-021A and MEP-016A) (Sheet l of 3) | 4-18 |
| 4-13 | Controls and instruments, removal and installation (Models MEP-021A and MEP-016A) (Sheet 2 of 3) | 4-19 |
| 4-13 | Controls and instruments, removal and installation (Models MEP-021A and MEP-016A) (Sheet 3 of 3) | 4-20 |
| 4-14 | Fuse, holder, removal and installation | 4-21 |
| 4-15 | Slave receptacle, removal and installation (Model MEP-026A). | 4-23 |
| 4-16 | Connector cover plate and receptacle connector, removal and installation (Model MEP.016A) | 4-24 |
| 4-17 | External shunt, bussbars, and load terminals, removal and installation (Model MEP.026A) | 4-25 |
| 4-18 | Load terminals and insulator, removal and installation(Model MEP-016A) | 4-26 |
| 4-19 | Fuel selector valve, fuel filter, fuel filter bracket, fuel hose, fuel line, and fittings, removal and installation | 4-27 |
| 4-20 | Muffler bracket, mufflers, and muffler pipes, removal and installation | 4-28 |
| 4-21 | Starter, removal and installation | 4-29 |
| 4-22 | Starting switch, receptacle, and bracket, removal and installation | 4-29 |
| 5-1 | Adjusting governor control | 5-3 |
| 5-2 | Removing control box access cover | 5-3 |
| 6-1 | Generator, removal and installation (Sheet l of 2) | 6-1 |
| 6-1 | Generator, removal and installation (Sheet 2 of 2) | 6-2 |
| 6-2 | Engine, removal and installation | 6-2 |
| 6-3 | Control box, removal and installation | 6-3 |
| 7-1 | Frame assemblv, removal and installation | 7-2 |
| 7-2 | Frame, disassembly and reassembly | 7-3 |

## LIST OF ILLUSTRATIONS (Continued)


| *Figure No.* | *Title* | *Page* |
|---|---|---|
| 8-1 | Voltage Regulator Testing | 8-2 |
| 8-1A | Q1 and Q2 Test Chart | 8-3 |
| 8-lB | Wiring and wiring harness, voltage regulator and terminal board, removal and installation (Models MEP-016A and MEP-021A) (Sheet l of 2) | 8-4.3 |
| 8-lC | Wiring and wiring harness, voltage regulator and terminal board, removal and installation (Model MEP-026A) (Sheet 2 of 2) | 8-4.4 |
| 8-l D | Standard voltage regulator 3KW, 5KW, 10KW, DC, 60 Hz (1319E0883) | 8-4.5 |
| 8-lE | Voltage Regulator Adjustment Schematic | 8-4.8 |
| 8-lF | Waveforms | 8-4.8 |
| 8-2 | Frequency converter, removal and installation | 8-4.14 |
| 8-3 | Output selector switch and mounting bracket, removal and installation (Model MEP-016A) (Sheet l of 2) | 8-5 |
| 8-3 | Output selector switch and mounting bracket, removal and installation (Model MEP-021A) (Sheet 2 of 2) | 8-6 |
| 8-4 | Current transformer, removal and installation (Models MEP-016A and MEP-021A) | 8-7 |
| 8-5 | Fixed resistor board assembly, removal and installation (Models MEP-016A and MEP-021A) | 8-8 |
| 8-6 | Circuit breaker, removal and installation (Model MEP-026A) | 8-9 |
| 8-7 | Circuit breaker, removal and installation (Model MEP-021 A) | 8-10 |
| 9-1 | Diode rectifier and terminal block, removal and installation (Models MEP-016A and MEP-021A) (Sheet loft) | 9-2 |
| 9-1 | Diode rectifier and terminal block, removal and installation (Model MEP-026A) (Sheet 2 of 2) | 9-3 |
| 9-2 | Right side heat sink, removal and installation (Model MEP-026A) | 9-5 |
| 9-3 | Left side heat sink, removal and installation (Model MEP-026A) | 9-7 |
| 10-1 | Generator schematic diagram (Model MEP-016A) | 10-3 |
| 10-2 | Generator schematic diagram (Model MEP-021A) | 10-4 |
| 10-3 | Generator schematic diagram (Model MEP-026A) | 10-5 |
| 10-3A | Generator schematic diagram (Model DC-3.0-MD/28) | 10-6 |
| 10-4 | Generator, exploded view (Model MEP-021A) | 10-7 |
| 10-5 | Generator; exploded view (Models MEP-026A and MEP-016A) | 10-8 |
| FO-1 | Wiring diagram (Model MEP-016A) | FO- 1 |
| FO-2 | Wiring diagram (Model MEP-021A) | FO-2 |
| FO-3 | Wiring diagram (Model MEP-026A) | FO-3 |
| FO-4 | Wiring diagram, standard voltage regulator (FM097403 132 19E0886) | FO-4 |
| FO-5 | Schematic diagram, standard voltage regulator 3KW, 5KW, 10KW, DC, 60 Hz, 400 Hz (FM097403 13219 E0887) | FO-5 |


**NOTE**

**Throughout this manual all illustrations applicable to Models MEP-016A, MEP-021A, and MEP-026A also apply to MEP-016C, MEP-021C, and MEP-026C.**

## LIST OF TABLES


| *Number* | *Title* | *Page* |
|---|---|---|
| **3-1** | Maintenance and Operating Supplies | 3-1 |
| 3-2 | Operator/Crew Preventive Maintenance Checks and Services | 3-2.1 |
| 3-3 | Troubleshooting | 3-2.3/4 |
| 4-1 | Organizational Preventive Maintenance Checks and Services | 4-13 |
| 4-2 | Troubleshooting | 4-14 |
| 5-1 | Troubleshoot | 5-2 |
| 8-1 | Q2 Test Chart | 8-3 |
| 8-2 | Q1 Test Chart | 8-4.1 |
| 8-3 | Test Conditions | 8-4.9 |


**NOTE**

**Throughout this manual all tables applicable to Models MEP-016A, MEP-021A, and MEP-026A also apply to MEP-O16C, MEP-021C, and MEP-026C.**

# CHAPTER 1
# INTRODUCTION

## Section I. GENERAL

### 1-1. Scope

***a.*** This manual is for your use in operating and maintaining the Military designed DOD Models MEP-016A, MEP-016C, MEP-021A, MEP-021C, and MEP-026A, MEP-026C Generator Sets. Information is provided on the operation, preventive maintenance checks and services, troubleshooting, operator/crew, organizational, intermediate (Field), (Direct Support and General Support) and Depot maintenance.

***b.*** This manual is primarily concerned with the operation and maintenance of the generator sets, less engine. However, where it becomes necessary for understanding, portions of the maintenance and operation instruction which apply to the engine are included. For complete maintenance information on the engine, refer to the 6 hp engine manuals, TM 5-2805-203 series.

***c.*** Appendix A contains a list of reference publications applicable to this manual. Appendix B contains the Items Troop Installed or Authorized List. Appendix C contains the Maintenance Allocation Chart (MAC), which determines the level of maintenance responsibility for Army Users.

### 1-2. Limited Applicability.

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

### 1-3. Maintenance Forms and Records.

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

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

**c.** (MC) Forms and records for Marine Corps users are prescribed in TM 4700-15/1.

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

### 1-4. Reporting of Errors.

Report of errors, omissions, and recommendations for improvement of this publication by the individual user is encouraged. Reports should be submitted as follows:

***a.*** (A) Army–DA Form 2028 (Recommended Changes to Publications and Blank Forms), directly to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

***b.*** (F) Air Force–AFTO Form 22 directly to: Commander, Sacramento Air Logistics Center, ATTN: MMEDTA, McClellan Air Force Base, CA 95652-5609, in accordance with TO-00-5-1.

***c.*** (MC) Marine Corps–NAVMC 10772 directly to Commanding General, Marine Corps Logistics Base, (Code 850), Albany, GA 31704-5000.

***d.*** *(N)* Navy–By letter directly to Commanding Officer, Naval Construction Battalion Center, ATTN: Code 15741, Port Hueneme, CA 93043-5000.

### 1-5. Levels of Maintenance Accomplishment.

***a.*** (A)–Army users shall refer to the Maintenance Allocation Chart (MAC) for tasks and levels of maintenance to be performed.

***b.*** (F)—Air Force users shall accomplish maintenance at the user level consistent with their capability in accordance with policies established in AFM 66-1.

***c.*** (MC)–Marine Corps users shall refer to SL-4-05926A for directions on Maintenance.

***d.*** (N)—Navy users shall determine their maintenance levels in accordance with their service directives.

### 1-6. Destruction of Army Materiel to Prevent Enemy Use.

(A) Demolition of materiel to prevent enemy use will be in accordance with the requirement of

TM 750-244-3 (Procedures for Destruction of Equipment to Prevent Enemy Use for U.S. Army).

**1-7. Administrative Storage.**

If the generator sets must be placed in administrative storage proceed as follows:

*a. (A) Army.*

(1) Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept.

(2) Before placing equipment in administrative storage, current maintenance services and equipment serviceable criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all modification work orders (MWO's) should be applied.

(3) *Storage site selection.* Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containters and other containers may be used.

*b. (F) Air Force.* Refer to TO-35-1-4 (Processing and Inspection of Aerospace Ground Equipment)

*c. (MC) Marine Corps.* Refer to MCOP 4450-7.

**1-8. Preparation for Shipment and Storage.**

If the generator sets must be placed in storage or shipped to another location proceed as follows:

*a. (A), Army.* Refer to TB 740-97-2 (Preservation of USAMECOM Mechanical Equipment for Shipment and Storage).

*b. (F), Air Force.* Refer to TO 35-1-4 (Processing and Inspection of Aerospace Ground Equipment) for the end item generator sets and TO 38-1-5 (Processing and Inspection of Non-Mounted, Non-Aircraft Gasoline and Diesel Engines for Storage and Shipment) for the installed engine.

*c. (N, MC), Navy and Marine Corps.* Refer to individual service directives for requirements.

## Section II. DESCRIPTION AND DATA

**1-9. Description**

*a. General.* The Military Design DOD Models MEP-016A, MEP-O16C, MEP-021A, MEP-021C, and MEP-026A, MEP-026C (figs. 1-1, 1-2, and 1-3, respectively) generators are self-contained, frame mounted, portable units. The "A" models are powered by 4-cylinder, 6 HP Military Standard Engines, Models 4A032-1 or 4A032-2 which are directly coupled to the generator. The "C" models are powered by Model 4A032-3 or 4A032-4 engines. Refer to TM 5-2805-203 series manuals for the engines.

*b. Generators.*

(1) Military Design DOD Model MEP-016 A/C generator set (fig. 1-1) is a self-excited 60 hertz (Hz), alternating current generator. The generator output is 120 or 240 volts, single phase; 120 volt, 3-phase; or 120/208 volt, 3-phase; 4 wire and is rated at 3 kilowatts (kw).

(2) Military Design DOD Model MEP-021 A/C Generator Set (fig. 1-2), is a self-excited, 400 Hz, alternating current generator. The generator output is 120 or 240 volt, single phase; 120 volt, 3-phase; or 120/208 volt, 3-phase; 4 wire and is rated at 3 kw.

(3) Military Design DOD Model MEP-026 A/C Generator Set (fig. 1-3), is a self-excited 28 volt direct current generator.

c. *Control Box.* The control boxes on the generator sets contain all instruments, electrical components, and electrical controls necessary for operation of the generator sets.

## 1-10. Identification and Tabulated Data

*a. Identification.* The generator set has four identification and instruction plates.

**(1) Identification Plate.** The identification plate, which is located on the right side of the control box, lists the manufacturer, manual number, stock number, model number, serial number, contract number, date of manufacturer, engine make and registration number.

**(2) Generator Nameplate.** The generator nameplate, located on top of the generator housing, lists the model number and the serial number.

**(3) Operating Instruction Plate.** The operating instruction plate, located on top of the control box cover, lists the steps required to operate the generator set.

**(4) Wiring Diagram Plate.** The wiring diagram plate, located on the underside of the control box cover, depicts the wiring and schematic diagrams of the generator set.

***b. Tabulated Data.***

**(1) Engine.**

| | |
|---|---|
| Type | Government-furnished Military Standard, Gasoline, 6 **HP** |
| Model | 4A032-3 |
| Part Number | MS39299 |
| National/NATO Stock Number | 2805-01-139-0596 |
| References | See Appendix A |
| Model | 4A032-2 |
| NON | 2805-00-068-7512 |
| Model | 4A032-1 |
| NON | 2805-00-776-0483 |

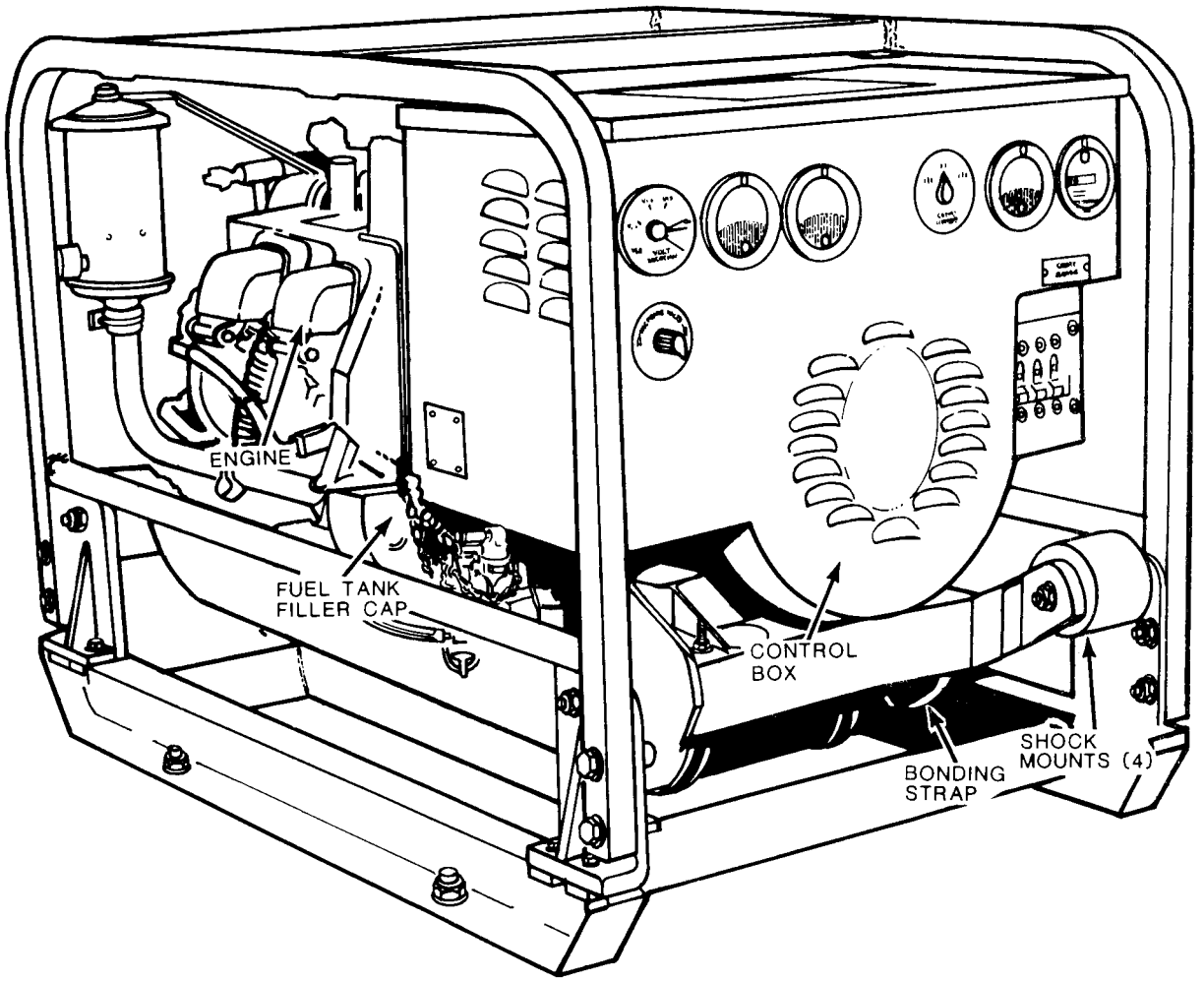



*Figure 1-1. Generator set Model MEP-016A*

(2) *Generator.*

Model . . . . . MEP-016A/C and MEP-021A/C
Output . . . . . 31.2 amperes, AC,120 volts, single-phase; 15.6 amperes, AC, 240 volts, single-phase 18 amperes, AC, 120 volts, 3-phase; 10.4 amperes, AC, 120/208 volts, 3-phase.
Power Output. . . . . 3 kilowatts
Power Factor . . . . . .0.8 percent
Frequency . . . . . 60 hertz (Hz) (MEP-016A/C); 400 hertz (MEP-021A/C)
Speed . . . . . 3600rpm (MEP-016A/C); 3428 rpm (MEP-021A/C)
Resistance Ratings . . . . .Rotor Assembly Exciter 2.4 Generator Stator Continuity Test
Generator Rotor 60 Hz–10.6 OHMS ±10% (per phase) 400 Hz–6.1 OHMS ±10% (per phase)
Exciter Stator 25.4 OHMS ±10%

(3) *Generator.*

Model . . . . . MEP-026A/C
Output. . . . . .107amperes DC at 28 volts
Power Output . . . . . 3 kilowatts (kw)
Speed . . . . . .3600rpm
Resistance Ratings. . . . . Rotor assembly Exciter 2.4 OHMS ±10%

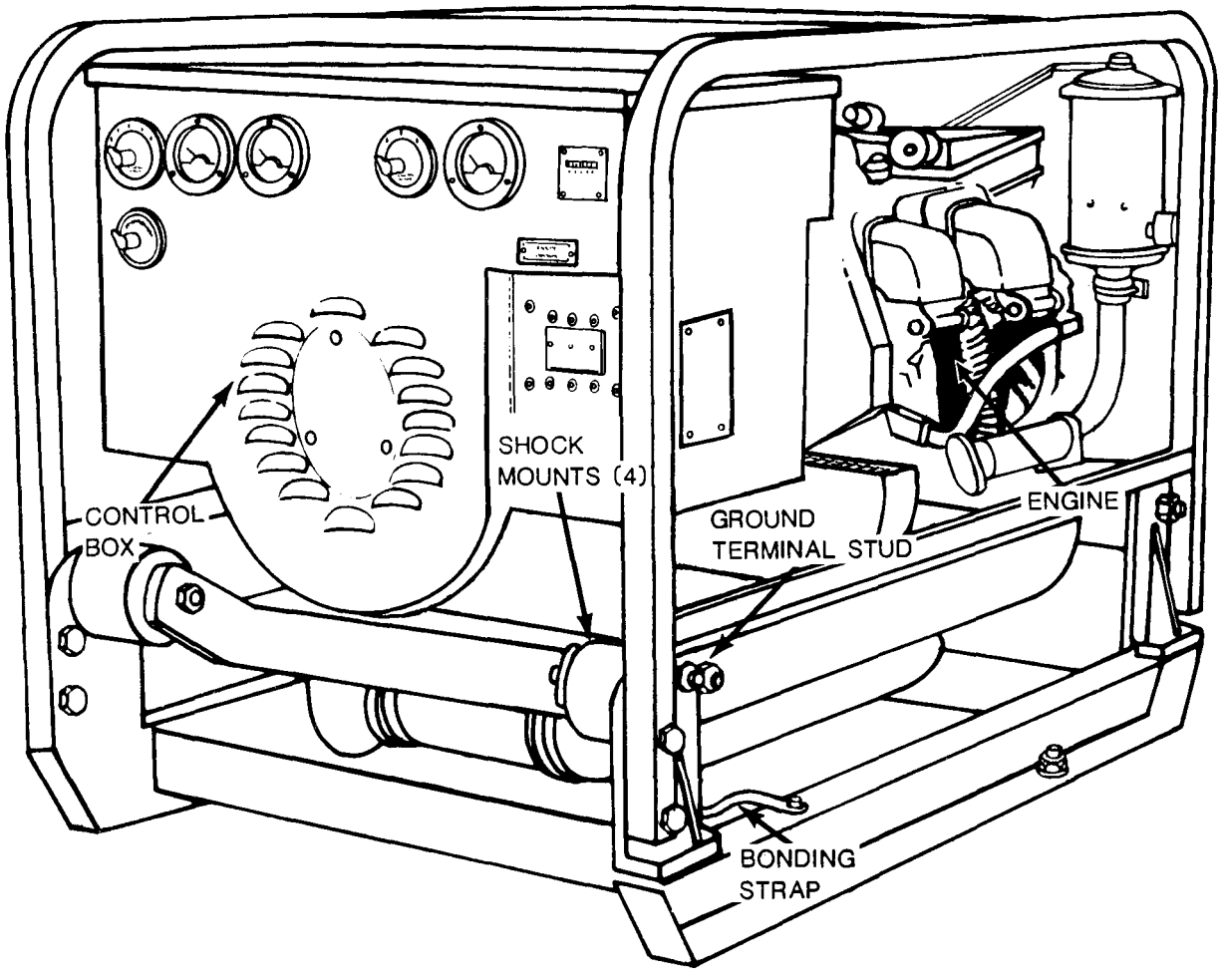



*Figure 1-2. Generator set Model MEP-021A*

Generator Stator continuity test
Generator Rotor 10.6 OHMS ±10%
Exciter Stator 25.4 OHMS ±10%

(4) *Capacities.*

Fuel tank . . . . . 3.75 gallons (15.25 liters)

(5) *Dimensions and weights.*

Length . . . . . 35 inches(87.5 cm)
Width . . . . . .24 inches (60.0 cm)
Height . . . . . 25 inches(62.5 cm)
Weight . . . . . 275 pounds (123.75 kg)
(All models have approximately the same dimension and weights.)

(6) *Generator base dimensions.* Refer to figure 1-4 for the generator base dimension.

(7) *Torque data.*

**NOTE**

Torque values indicated where determined with threads prelubricated with engine oil.

| *Screw Size* | *Torque (Foot pounds)* |
|---|---|
| 1/4 in. . . . . | 3-5 |
| 5/16 in. . . . . | .7-1 |
| 318 in . . . . . | 14-18 |
| 7/16 in . . . . . | 23-28 |
| 1/2 in . . . . . | 32-37 |

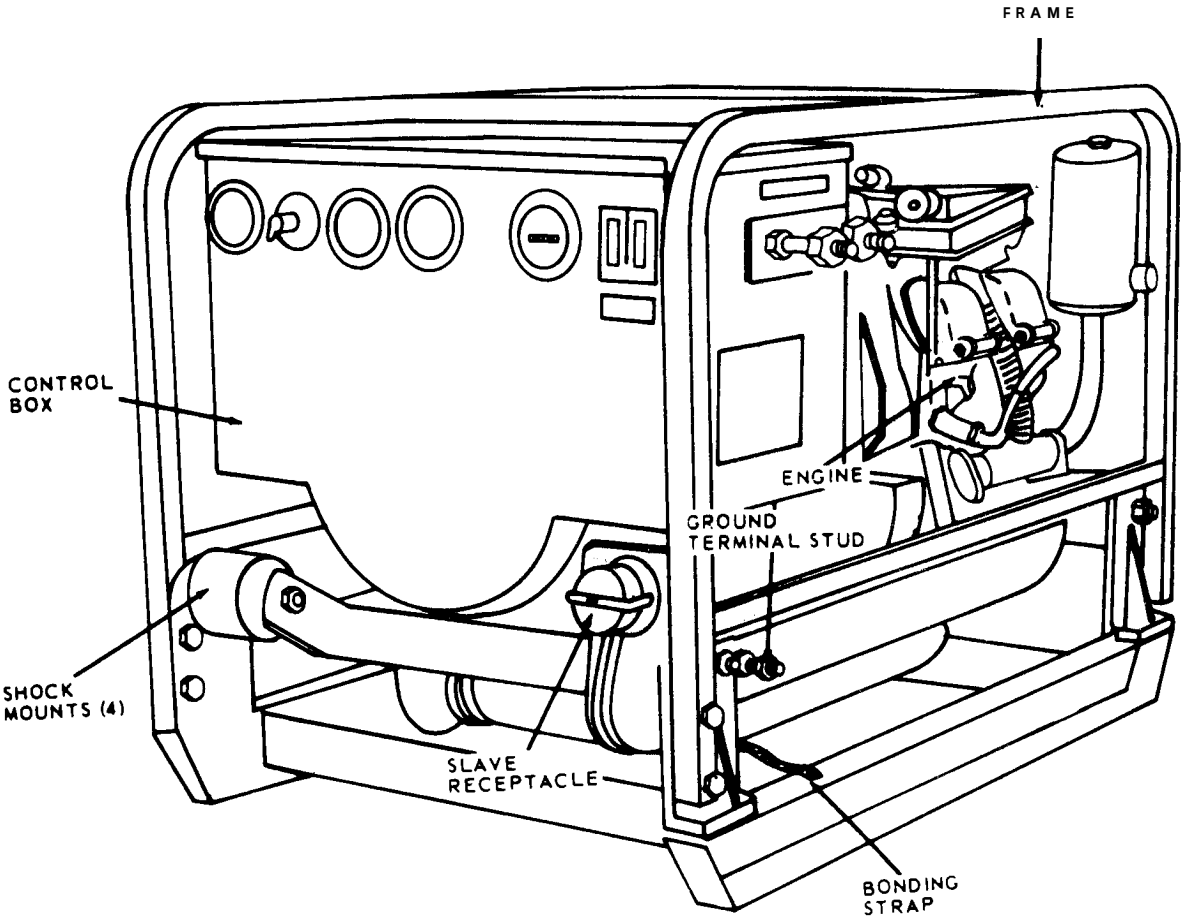



*Figure 1-3. Generator set Model MEP-026A*

*(8) Wiring diagrams.* Refer to FO-1 through FO-3, practical wiring diagram. (These diagrams are located in the back of the manual.) Refer to figures 10-1 through 10-3 for schematic diagram.

(9) *Maintenance and operating supplies.* Refer to Chapter 3 for a complete list of maintenance and operating supplies required for initial operation.

**1-11. Differences Between Models**

This manual covers DOD Models MEP-016A, MEP-016C, MEP-021A, MEP-021C, and MEP-026A, MEP-026C. The differences that exist between these models are thoroughly discussed in the appropriate portions of the manual. The basic difference between models is MEP-016A/C delivers 60 hertz (AC) current; the MEP-021A/C delivers 400 hertz (AC) current, and the MEP-026A/C delivers direct current.

The difference between the "A" and "C" models is that the "A" model is powered by a model 4A032-1 or 4A032-2 engine, while the "C" model is powered by a model 4A032-3 engine. The basic difference between the 4A032-1/-2 and the 4A032-3 engine is that the 4A032-1/-2 engine has a conventional ignition system while the 4A032-3 engine has a breakerless ignition system (BIS) and a larger rope cranking pulley. The 4A032-3 engine is far easier to start and also has greater reliability and requires less maintenance. Note that the "B" models are not covered by this manual since they are DED generator sets.

DOD accepted Army Standard 3KW Models as DOD Standard, hence, SF-3.0-MD, 60 Hz, NSNs 6115-00-075-1640 (Bogue), 6115-00-879-9734 (Hollingsworth) and 6115-00-913-9290 (Eagle) were designated as Model MEP-016A with single NSN 6115-00-017-8237. Likewise, HF-3.0-MD, 400 Hz, NSNs 6115-00-012-1992 (Bogue) and 6115-00-937-1794 (Eagle) were designated as Model

MEP-021A assigned NSN 6115-00-017-8238 and Model DC-3.0-MD/28, 6115-00-012-1997 (Bogue) 6115-00-879-9747 (Hollingsworth) 6115-00-916-9460 (Eagle) designated as MEP-026A assigned NSN 6115-00-017-8239.

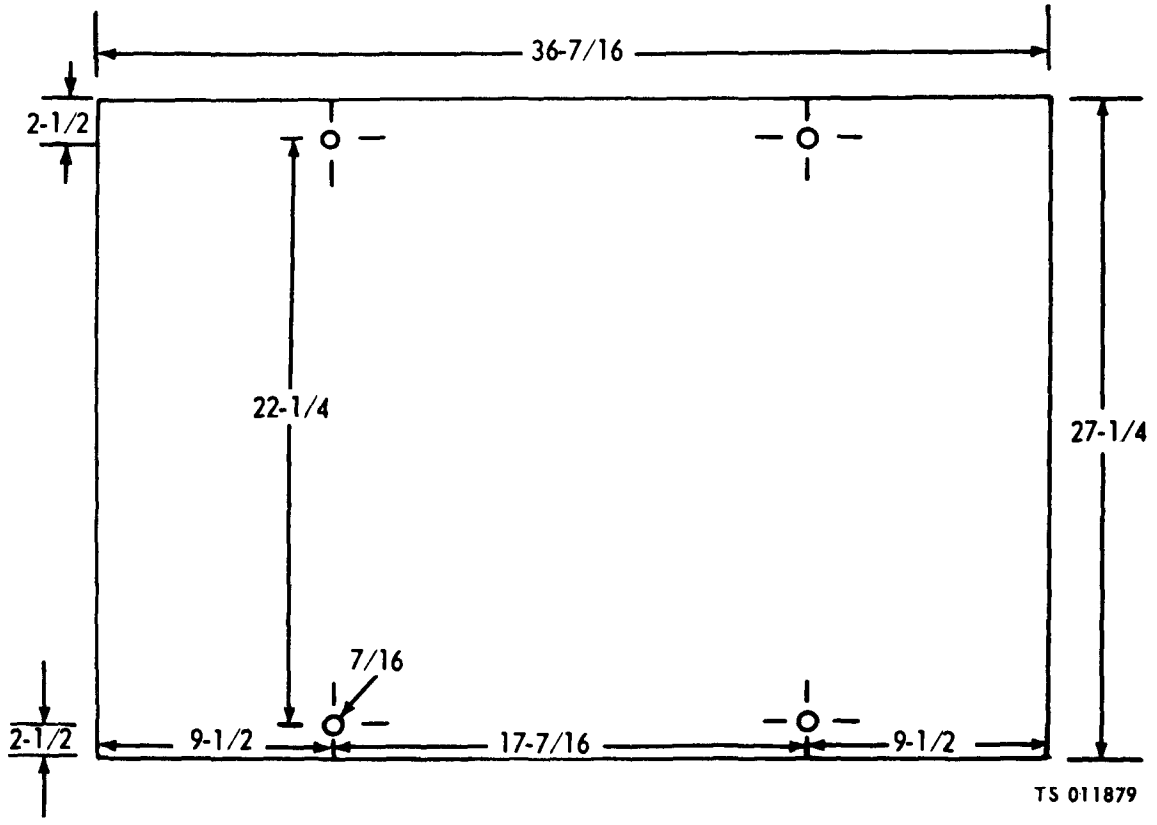



*Figure 1-4 Generator base dimensions*

# CHAPTER 2
# OPERATING INSTRUCTIONS

## Section I. OPERATING PROCEDURES

### 2-1 Controls and Instruments

*a. General.* This paragraph provides information about the various controls and instruments for proper operation of the generator sets.

*b. 400 Hz Generator Set.* The purpose and normal readings of all 400 Hz generator set controls and instruments are illustrated in figures 2-1 and 2-2.

*c.* 60 *Hz Generator Set.* The purpose and normal readings of all 60 Hz generator set controls and instruments are shown in figures 2-1 and 2-3.

*d.* 28 *Volt DC Generator Set.* The purpose and normal readings of all 28 volt DC generator set controls and instruments are shown in figures 2-1 and 2-4.

### 2-2. Operations Under Usual Conditions

*a. General*

(1) The instructions in this paragraph are published for the information and guidance of personnel responsible for operation of the generator sets.

(2) The operator must know how to perform every operation of which the generator sets are capable. This section gives instructions on starting and stopping the generator sets and regulating them to perform the specific task for which the equipment is designated.

**WARNING**

**Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs which were fitted by a trained professional.**

*b. Starting.*

(1) *Preparation for starting.*

*(a)* (A, F, N, MC) Perform the daily preventive maintenance checks and services (Table 3-2).

*(b)* Connect the auxiliary fuel hose to the fuel selector valve (C, fig. 2-1), if an external fuel source is to be used.

*(c)* Select the proper voltage to meet load requirements (fig. 2-5).

*(d)* Properly ground the generator set by driving ground rod (see Items Troop Installed or Authorized List, Section III, Page B-2) eight feet into the ground. Connect the remaining end of the wire to the ground stud of the generator set. If the ground is of sufficient hardness to prevent the ground rod being driven into the ground at the proper depth, a metal plate three or more feet in diameter may be buried in the ground in lieu of the ground rod and if necessary dirt piled up around and over it above ground level. The area around the plate should then be kept saturated with water.

(2) *Electrical starting (optional equipment).*

**NOTE**

**A starter kit is available for general issue. Models MEP-016C, MEP-021C, and MEP-026C are easy to manually start, but may need the kit in very frigid climates, See Appendix B, Section III, for the kit and/or individual components, and requisitioning instructions.**

*(a)* Connect a 24/28 volt external power source to the receptacle,

*(b)* Refer to figure 2-6, sheets 1 and *2* and start the engine electrically.

(3) *Manual starting.*

**WARNING**

**Serious eye injury can result from the starter rope knot. Wear eye protection when pull starting engine.**

*(a)* Refer to figure 2-6, sheet 1 of *2* and perform steps 1 through 7.

*(b)* Refer to figure 2-7 and start the engine manually.

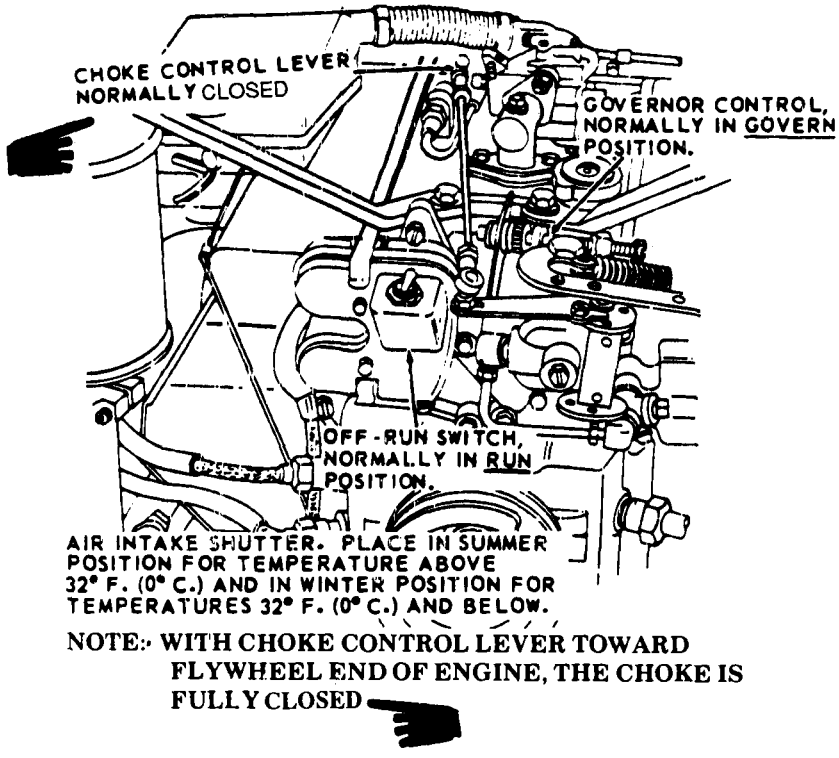
*c. Stopping.* Refer to figure 2-8 and stop the engine.

*d. Operation of Equipment.*

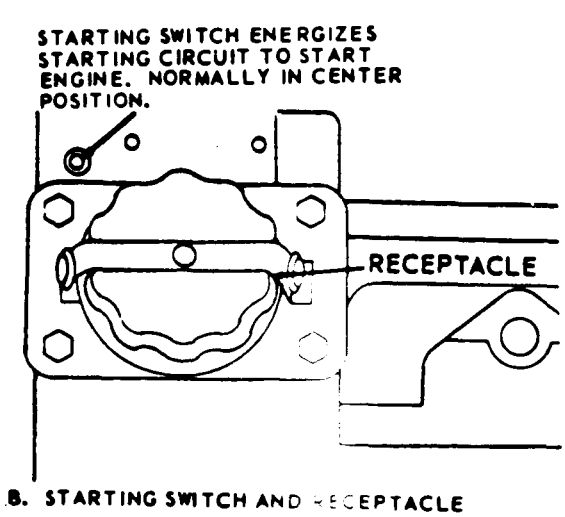
**CAUTION**

**Do not operate at idle speed with or without load attached. At idle speed, frequency drops below 60 Hz, exciter field voltage increases, thereby causing voltage regulator to operate at maximum output. This causes overloading of power transistor.**

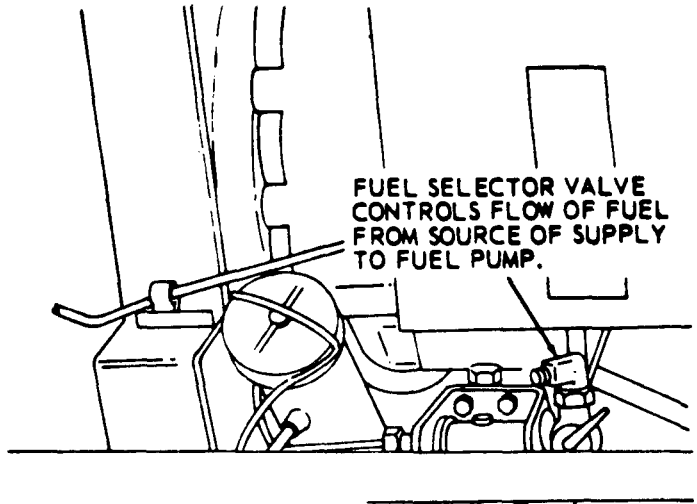
(1) *General.* When the engine is operating and the load is connected, the generator operates at its rated voltage. The generator set models MEP-016A/C and MEP-026A/C are designed to operate continuously at 3600 revolutions per minute in accordance with the engine governor setting. MEP-021A/C operates at 3428 revolutions per minute. The operator must always be observant of the




A. CHOKE CONTROL LEVER, AIR INTAKE SHUTTER, GOVERNOR CONTROL, AND OFF-RUN SWITCH.




B. STARTING SWITCH AND RECEPTACLE




C. FUEL SELECTOR VALVE.

Figure 2–1. Engine Controls.

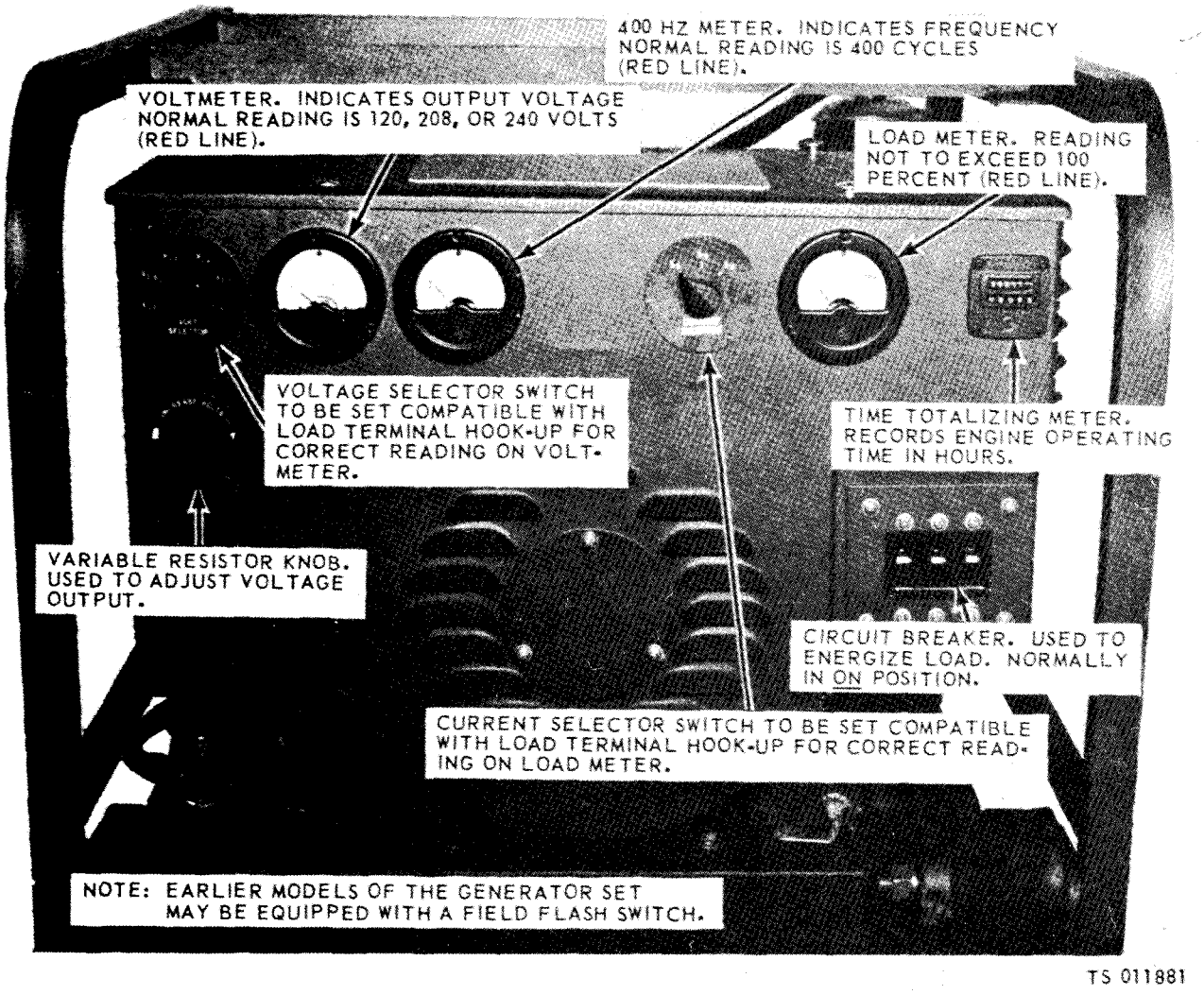



*Figure 2-2. Generator set controls and instruments (Model MEP-021A).*

generator set, paying particular attention to unusual sounds which indicate malfunction. In such an event, stop the engine and report the condition to the appropriate maintenance personnel.

(2) *Operation.*

*(a)* Operate the 400 Hz and 60 Hz generator sets as instructed in figure 2–9, sheets 1 and 2.

NOTE

The controls and instruments on later MEP models have a slightly different location on the face of the control box. However, these instructions apply in the same manner.

*(b)* Operate the 28 volt dc generator set as instructed in figure 2–10.

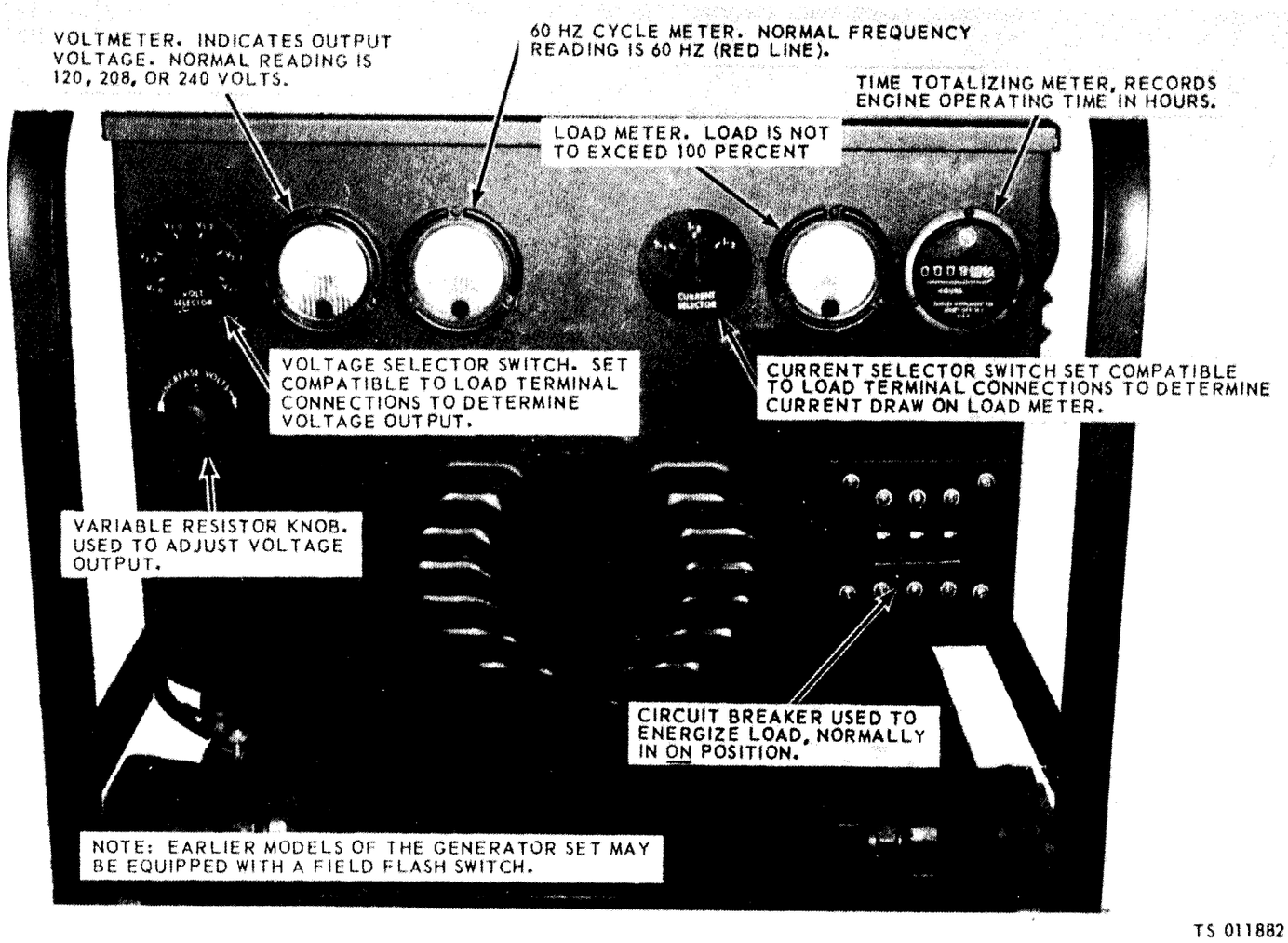



*Figure 2-3. Generator set controls and instruments (Model MEP-016A).*

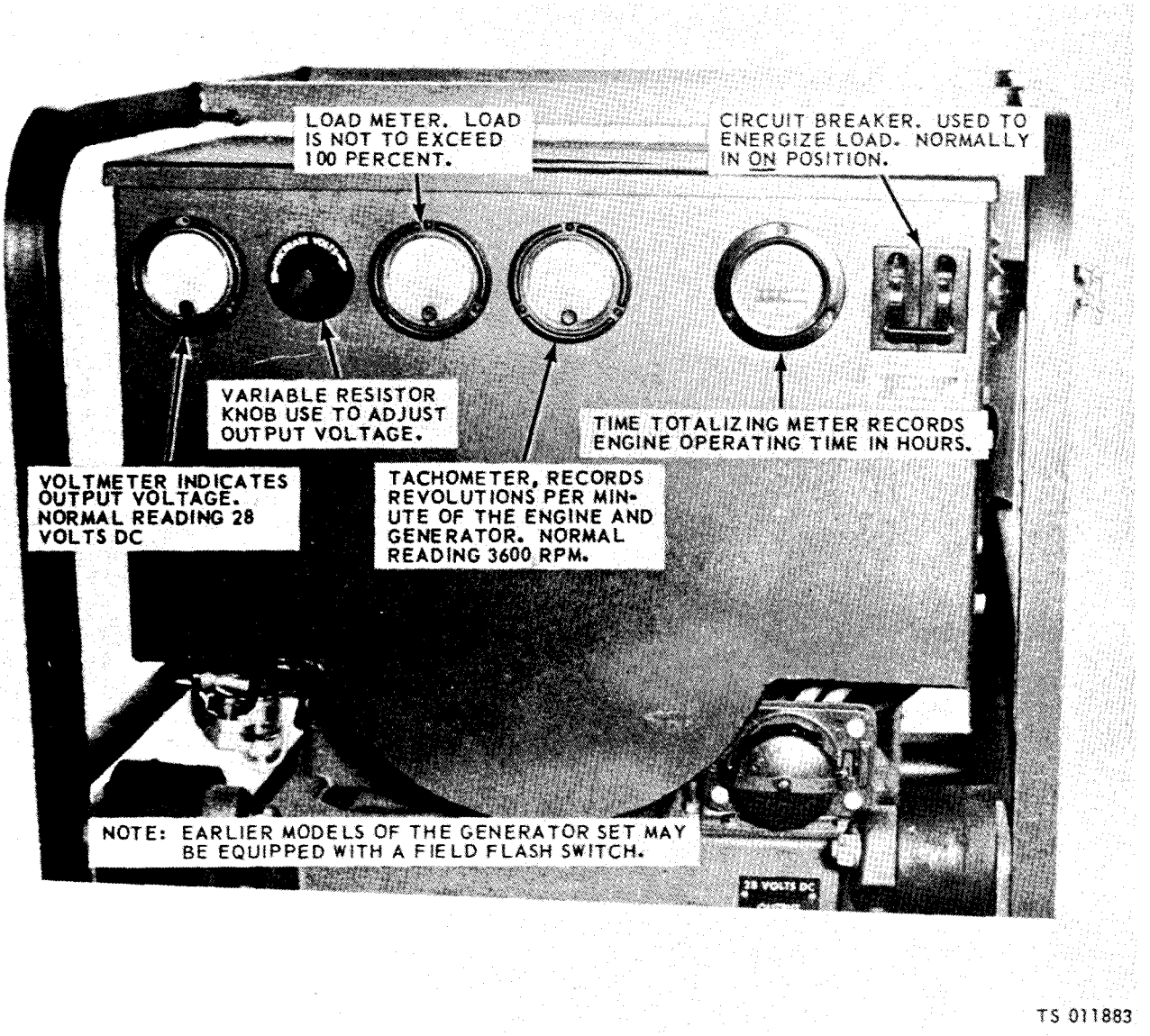



*Figure 2-4. Generator set controls and instruments (Mode MEP-26A).*

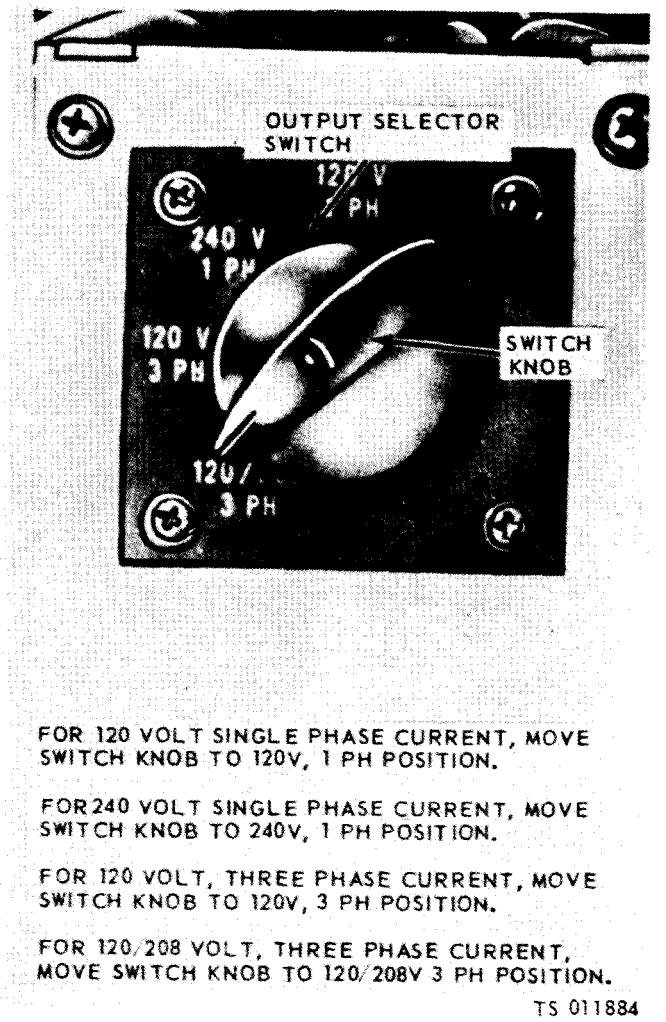
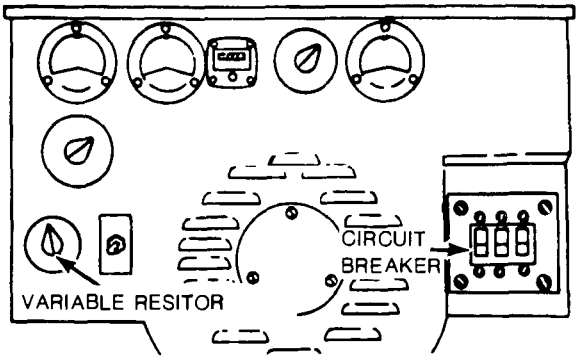
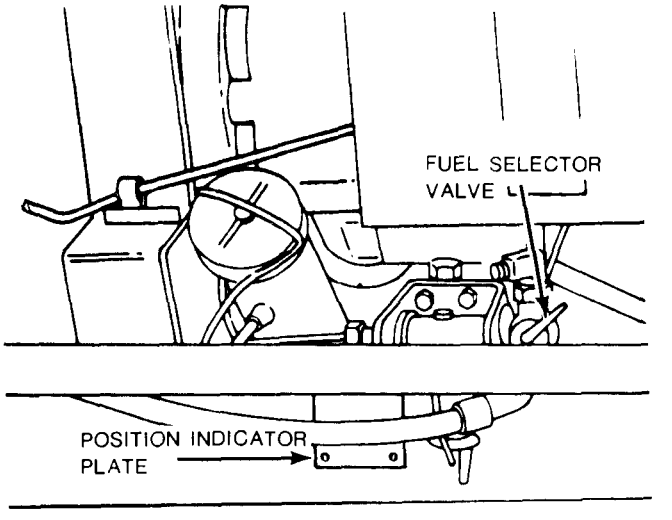



*Figure 2-5. Voltage conversion (models MEP-016A and MEP-021A).*

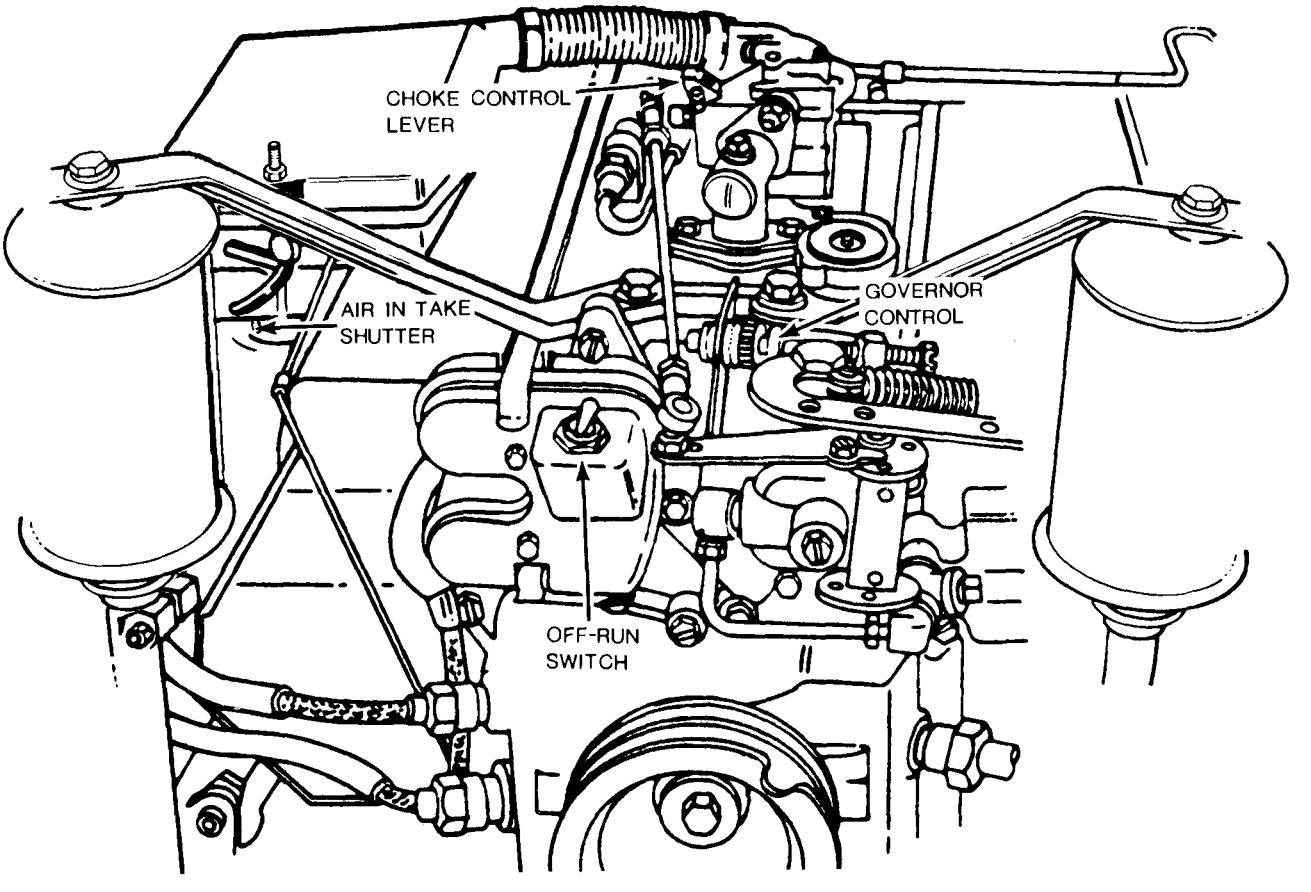



STEP 1. TURN VARIABLE RESISTOR KNOB (LABELED "ADJUST VOLTS" OR "INCREASE VOLTS") FULLY COUNTERCLOCKWISE.

STEP 2. BE SURE CIRCUIT BREAKER IS IN THE OFF POSITION.




STEP 3. PLACE THE FUEL SELECTOR VALVE IN SET TANK OR AUX TANK DEPENDING ON SOURCE OF FUEL SUPPLY.



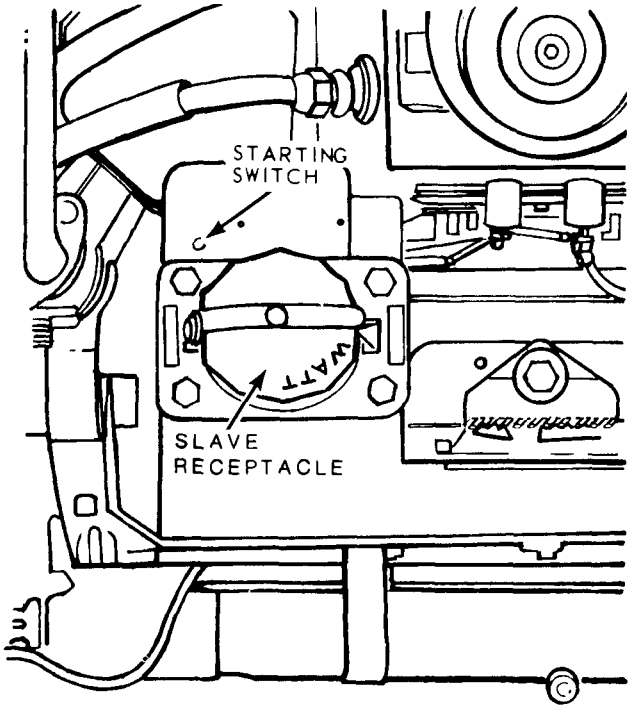

STEP 4. PLACE AIR INTAKE SHUTTER IN THE SUMMER POSITION WHEN TEMPERATURE IS ABOVE 32 F (0 C) AND WINTER POSITION WHEN TEMPERATURE IS BELOW 32 F (0 C).

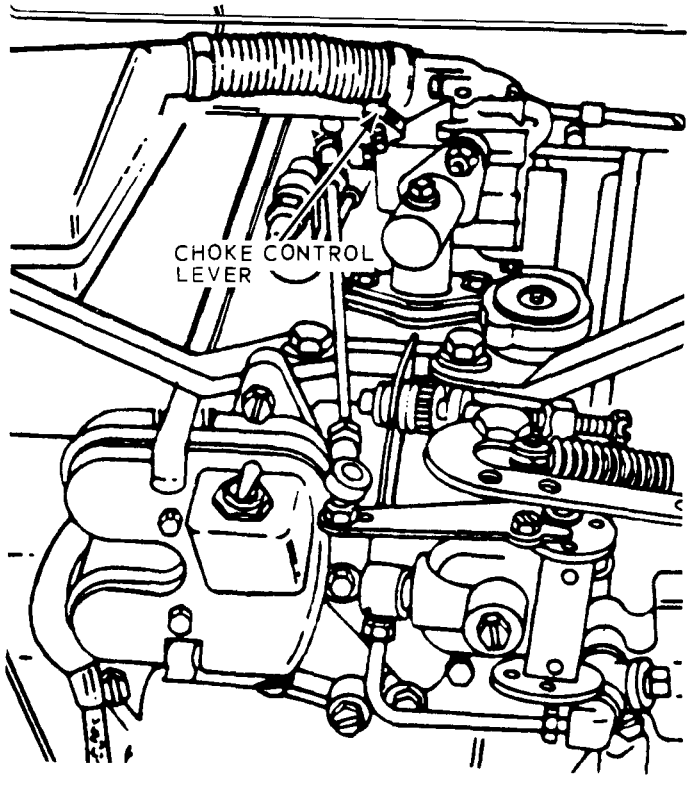
STEP 5. PLACE GOVERNOR CONTROL IN GOVERN OR RUN POSTITION.

STEP 6. CLOSE CHOKE WITH CHOKE CONTROL LEVER.

STEP 7. PLACE OFF-RUN SWITCH IN RUN POSITION.

Figure 2-6. Typical electrical starting instruction (sheet 1 of 2).



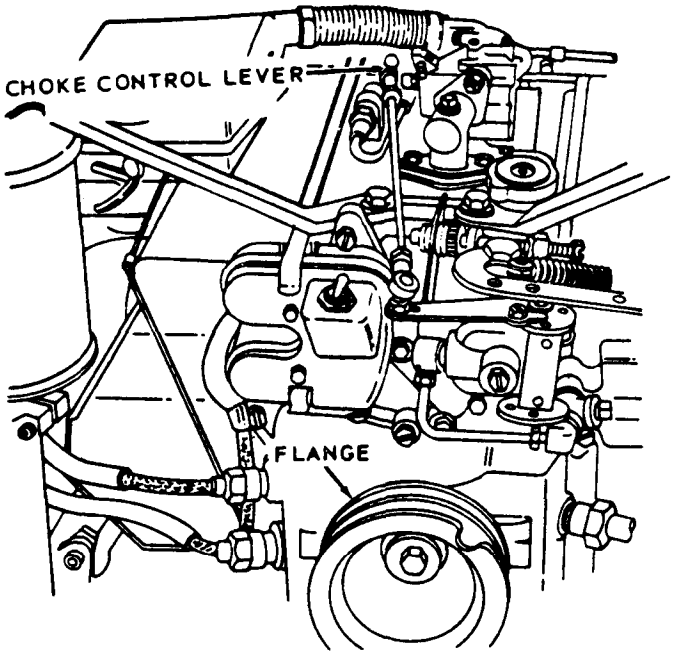




STEP 9. HOLD STARTING SWITCH IN THE START POSITION A MAXIMUM OF 15 SECONDS. IF ENGINE DOES NOT START, ALLOW A COOLING OFF PERIOD OF ONE MINUTE BEFORE ATTEMPTING TO RESTART.

STEP 10. VERIFY GOVERNOR CONTROL IS GOVERN OR RUN

STEP 11. GRADUALLY OPEN CHOKE WITH CHOKE CONTROL LEVER AS ENGINE ATTAINS OPERATING TEMPERATURE.

Figure 2-6 Continued. Typical electrical starting instructions (sheet 2 of 2).




Step 1. Set the circuit breaker to OFF or OPEN position.

Step 2. Set the fuel selector valve to the TANK or AUX position whichever fuel source you are using.

Step 3. Set the output selector switch it is inside the control box to the generator (voltage) output that matches the connected load.

Step 4. Turn the voltage adjusting rheostat all the way to the left.

Step 5. Set the carburetor throttle control in GOVERN or RUN position.

Step 6. a. Set the engine RUN-OFF switch to RUN position.

b. Put the choke in about a 3/4-closed position.

**WARNING**

Serious eye injury can result from the starter rope knot. Wear eye protection when pull starting engine.

c. Make one pull of the starter rope with a quick, steadv motion.

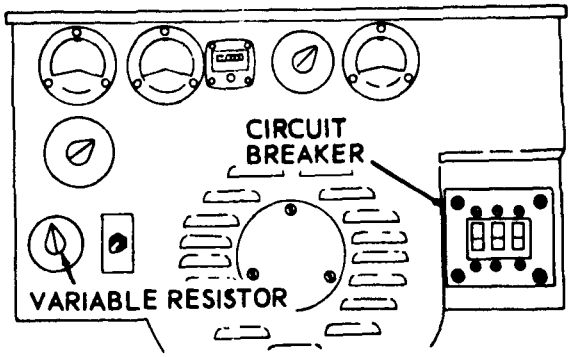
d. If the engine starts, open choke as steady engine operation permits.

**CAUTION**

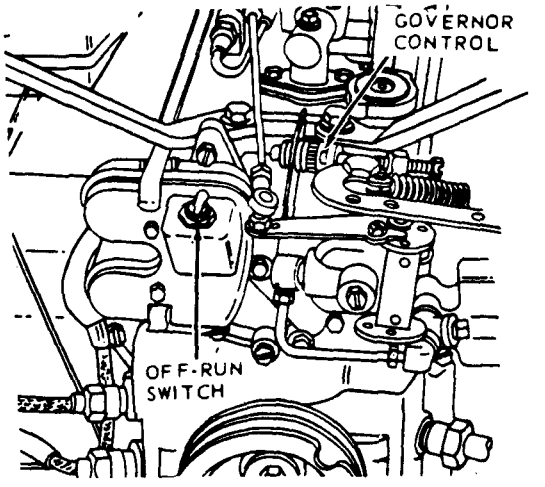
**Unnecessary or excessive use of the choke can cause the lubricating oil to be diluted with gasoline.**

e. If the engine does not start, close choke to full. Take one pull of starter rope. If engine starts, move choke to about 1/2-position. Run engine at 1/2-choke, then open choke as steady engine operation permits.

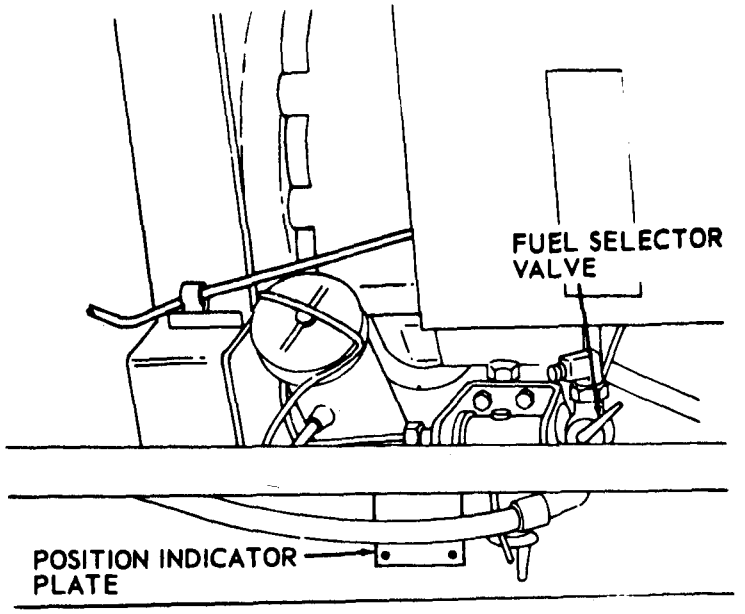
*Figure 2-7. Manual starting instructions.*




STEP 1. PLACE CIRCUIT BREAKER IN OFF POSITION.
STEP 2. TURN VARIABLE RESISTOR KNOB (LABELED "ADJUST VOLTS" AND "INCREASE VOLTS") FULLY COUNTER-CLOCKWISE.

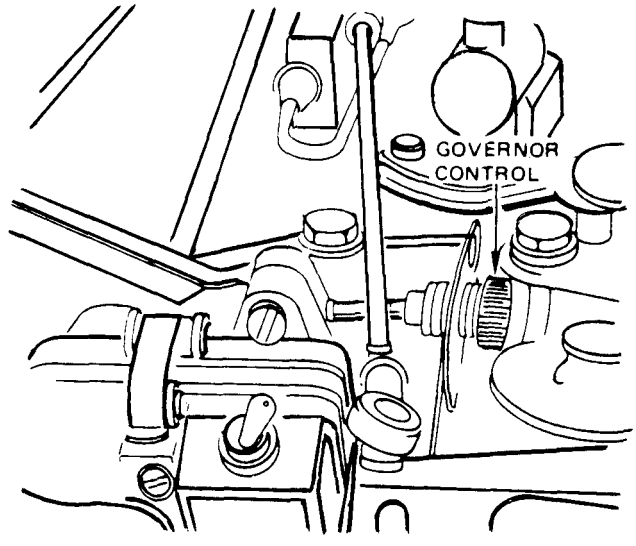



STEP 3. RUN ENGINE AT RATED SPEED 3-5 MINUTES.
STEP 4. PLACE OFF-RUN SWITCH IN OFF POSITION.




STEP 5. PLACE FUEL SELECTOR VALVE IN THE OFF POSITION.

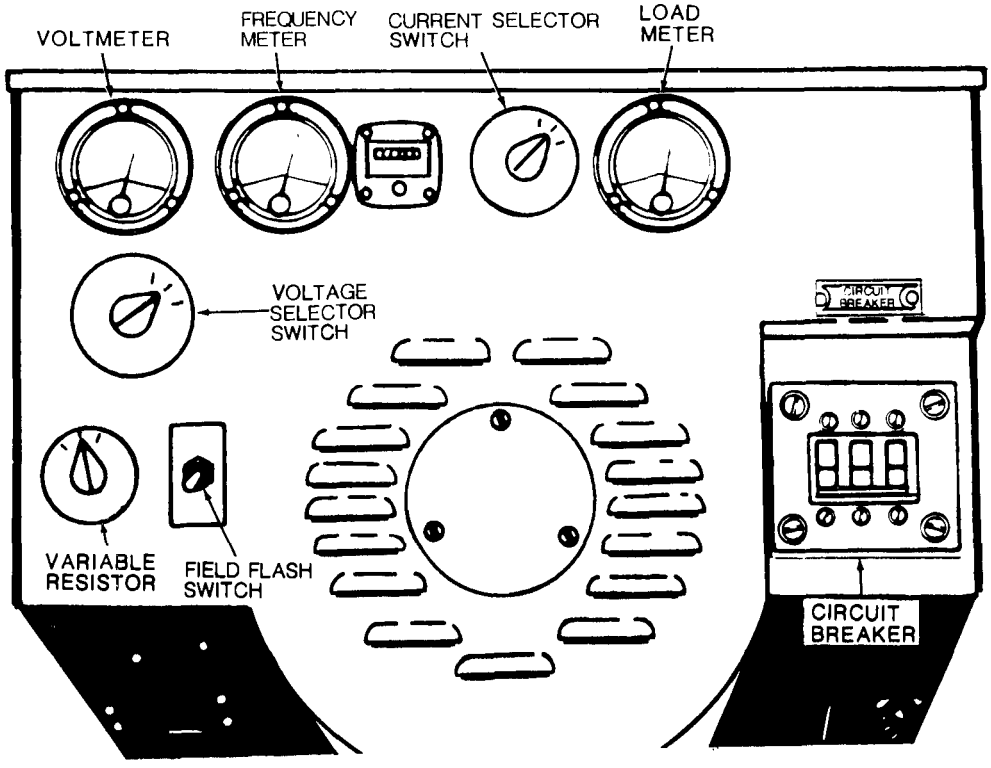
*Figure 2-8. Stopping instructions.*




1. PLACE CIRCUIT BREAKER IN THE OFF POSITION AND TURN VARIABLE RESISTOR KNOB COUNTER-CLOCKWISE UNTIL IT STOPS.
2. PLACE OUTPUT SELECTOR SWITCH IN DESIRED POSITION (FIG. 2-5).
3. PLACE GOVERNOR CONTROL IN GOVERN POSITION.
4. START THE GENERATOR SET.

TS 011889

*Figure 2-9. Generator set operating instructions (Models MEP-016A and MEP-021A) (Sheet 1 of 2).*




STEP 5. SET THE VOLTAGE SELECTOR SWITCH COMPATIBLE TO THE CONNECTIONS AT THE LOAD TERMINALS, THE OUTPUT BETWEEN ANY TWO TERMINALS WILL BE INDICATED ON THE VOLTMETER. FOR EXAMPLE, IF THE VOLTAGE SELECTOR IS SET ON V 1-2 IT WILL CAUSE AN INDICATION ON THE VOLTMETER, REFLECTING THE VOLTAGE OUTPUT BETWEEN LOAD TERMINALS 1 AND 2.

STEP 6. USING THE VARIALE RESISTOR ADJUST UNTIL THE VOLTMETER REGISTERS DESIRED VOLTAGE. THE LOAD METER SOUL READ “O”.

STEP 7. INSPECT THE FREQUENCY METER. IT SHOULD INDICATE 400 HZ OR 60 HZ, DEPENDING ON WHICH MACHINE IS BEING OPERATED.

NOTE: IF THE FREQUENCY READING IS INCORRECT, THE ENGINE GOVERNOR MUST BE ADJUSTED. REFER TO APPENDIX A FOR GOVERNOR ADJUSTMENT,

STEP 8. PLACE THE CIRCUIT BREAKER IN THE ON POSITION TO APPLY THE LOAD.

STEP 9. USE THE CURRENT SELECTOR SWITCH AND THE LOAD METER INDICATIONS TO DETERMINE THE CURRENT DRAW ON EACH TERMINAL (EXCLUDING TERMINAL “LO”) AND PHASE THE LOAD READING SHOULD NOT EXCEED 100% AT ANY POSITION OF THE CURRENT SELECTOR SWITCH.

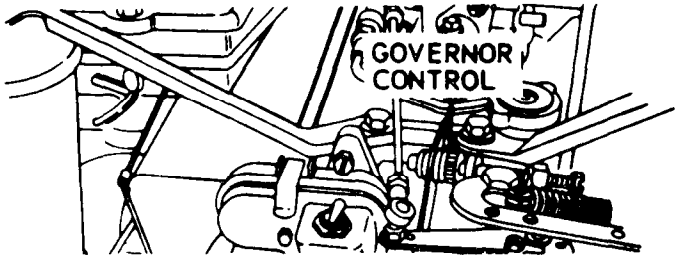
CAUTION: IF MORE THAN 100 PERCENT OF FULL LOAD CURRENT IS INDICATED ON THE LOAD METER, REDUCE THE LOAD OR STOP THE GENERATOR SET AND REPORT TO ORGANIZATIONAL MAINTENANCE.

STEP 10. READJUST THE VARIABLE RESISTOR, IF NECESSARY, TO COMPENSATE FOR THE CURRENT DRAW:

NOTE: THE FIELD FLASH SWITCH IS TO BE USED AS A MANUAL METHOD OF FLASHING THE GENERATOR FIELDS ONLY WHEN THE VOLTAGE FAILS TO BUILD UP AUTOMATICALLY LATER MODELS HAVE NO FIELD FLASH SWITCH.

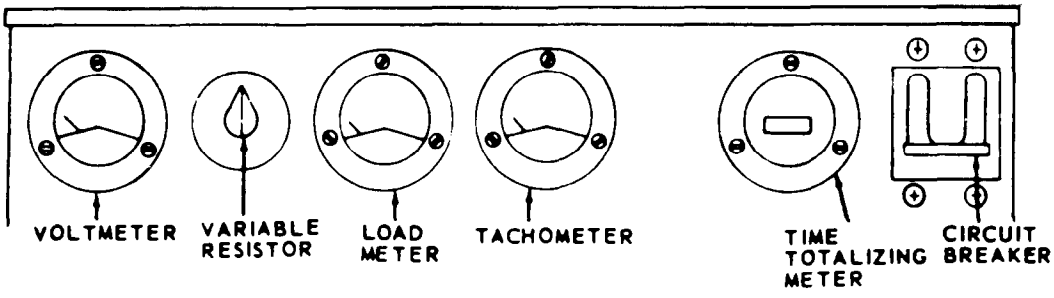
STEP 11. WHEN THE OPERATION IS COMPLETE, PLACE THE CIRCUIT BREAKER IN THE OFF POSITION AND STOP THE GENERATOR SET.

*Figure 2-9. Generator set operating instructions (Models MEP-016A and MEP-021A) (Sheet 2 of 2).*




STEP 1. PLACE GOVERNOR CONTROL IN GOVERN POSITION.

STEP 2. START THE GENERATOR SET.



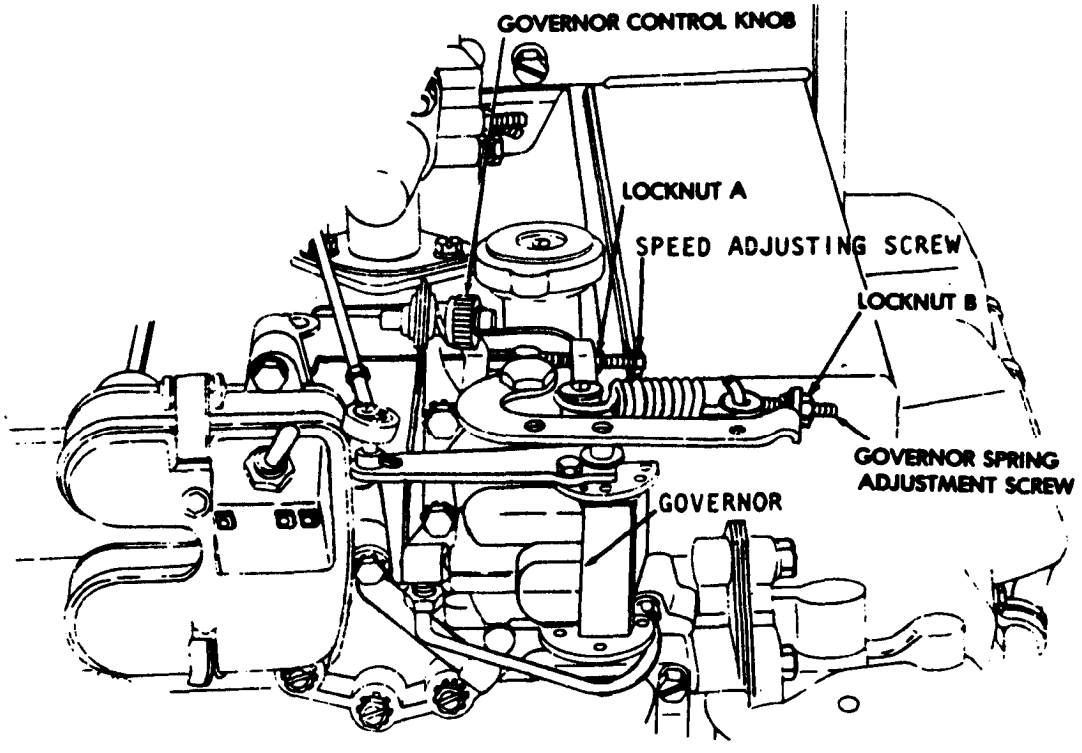

STEP 3. TURN VARIABLE RESISTOR KNOB CLOCKWISE TO INCREASE, COUNTERCLOCKWISE TO DECREASE, AND ADJUST TO 28-VOLTS MAXIMUM ON THE DC VOLTMETER.

NOTE: THE FIELD FLASH SWITCH IS TO BE USED TO FLASH THE GENERATOR FIELDS ONLY WHEN VOLTAGE FAILS TO BUILD UP AUTOMATICALLY. ACTUATE SWITCH MOMENTARILY.

STEP 4. PLACE CIRCUIT BREAKER IN ON POSITION.
STEP 5. READJUST VARIABLE RESISTOR TO 28-VOLTS.
STEP 6. INSPECT THE TACHOMETER FOR CORRECT RPM (REVOLUTIONS PER MINUTE) READING. IF READING IS ABOVE OR BELOW 3600 RPM, THE GOVERNOR MUST BE ADJUSTED.

STEP 7. REPEAT STEP 3.
STEP 8. INSPECT THE LOAD METER, IF MORE THAN 100 PER CENT OF FULL LOAD CURRENT IS INDICATED, REDUCE THE LOAD OR REPORT THE CONDITION TO ORGANIZATIONAL MAINTENANCE.

*Figure 2-10. Generator set operating instructions (Model MEP-026A).*

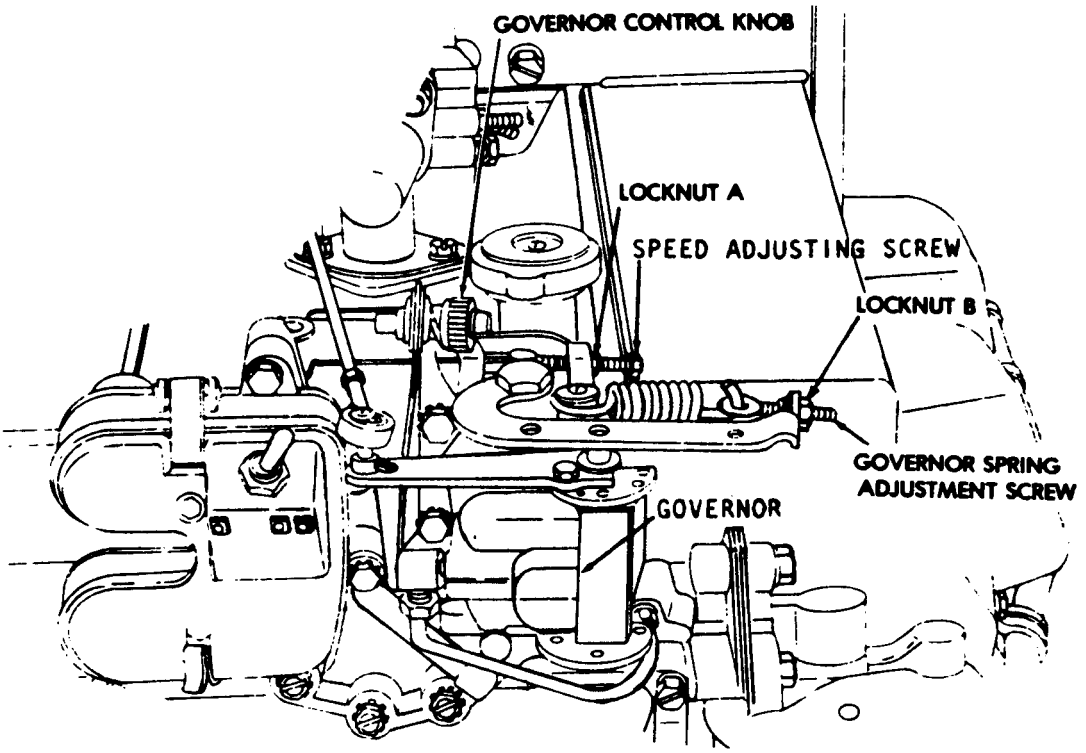



Minimum Droop (Minimum Frequency Regulation)

| Model | 3-KW, 60 Hz MEP-016A | 3-KW, 400 Hz MEP-021A | 3-KW, 28VDC MEP-026A |
|---|---|---|---|
| RPM | 3600 | 3428 | 3600 |
| Frequency | 60 Hz | 400 Hz | — |

STEP 1. Move the governor control knob to the GOVERN or RUN position.
STEP 2. Start engine and allow engine to warmup at rated speed for 3 to 5 minutes.
STEP 3. Apply load. Loosen locknut A and turn minimum speed stop screw to obtain engine speed/frequency given in table above. Tighten locknut A.
STEP 4. Disengage load. Loosen locknut B and turn governor spring adjustment nut counterclockwise until engine begins to "Surge" or "Hunt". Then turn nut clockwise just enough to stop surging.
STEP 5. Apply load and recheck engine speed/frequency. If engine speed/frequency is incorrect, perform operations in Steps 3 through 5 and readjust.
STEP 6. Tighten locknut B.

*Figure 2-10.1 Governor Adjustment using Frequency Meter (Sheet 1 of 2).*




Maximum Droop (Maximum Frequency Regulation)

| | Model | 3-KW, 60 Hz MEP-016A | 3-KW, 400 Hz MEP-021A | 3-KW, 28VDC MEP-026A |
|---|---|---|---|---|
| A | RPM | 3600 | 3428 | 3600 |
| | Frequency | 60 Hz | 400 Hz | — |
| B | RPM | 3708 | 3530 | 3708 |
| | Frequency | 61.8 Hz | 412 Hz | — |

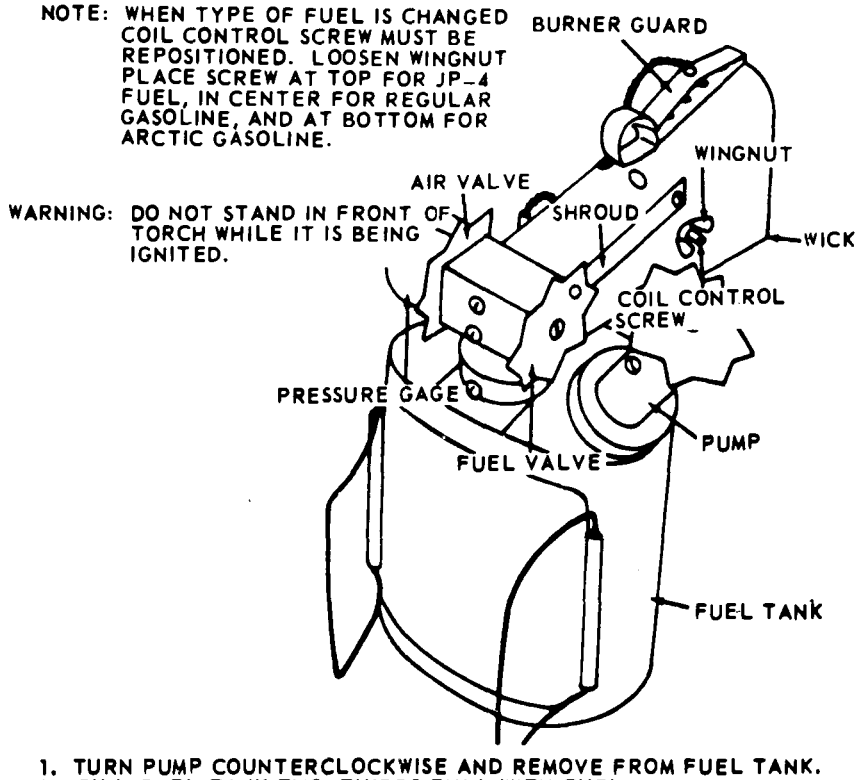
STEP 1. Move the governor control knob to the GOVERN or RUN position.
STEP 2. Start engine and allow engine to warmup at rated speed for 3 to 5 minutes.
STEP 3. Apply load. Loosen locknut A and turn minimum speed stop screw to obtain engine speed/frequency given in lines A of above table. Tighten locknut A.
STEP 4. Disengage load and check engine speed/frequency. If speed/frequency does not exceed values given in table above, lines B, no further adjustment is necessary. If speed exceeds values of table above, lines B, perform steps 5 and 6.
STEP 5. Loosen locknut B and turn governor spring adjustment nut clockwise 4 turns. Tighten locknut B.
STEP 6. Perform steps 3 and 4. NOTE: If no-load speed is adjusted too close to load speed, instability or hunting will occur. If instability occurs, adjust governor spring adjustment nut to obtain no-load speed/frequency indicated in Table 1, Column B. Then perform steps 3 and 4 to obtain stability.

*Figure 2-10.1 Governor Adjustment using Frequency Meter (Sheet 2 of 2).*

## Section II. OPERATION OF AUXILIARY EQUIPMENT

### 2-3. Heating Torch Description

The heating torch is a l-pint (.47 liters), gasoline, pump type torch. It is used to preheat the engine to a point where the moving parts will operate freely.




1. TURN PUMP COUNTERCLOCKWISE AND REMOVE FROM FUEL TANK.
2. FILL FUEL TANK TWO-THIRDS FULL WITH FUEL.
3. INSTALL PUMP AND TIGHTEN SECURELY.
4. CLOSE AIR VALVE AND FUEL VALVE.
5. OPERATE PUMP UNTIL PRESSURE GAGE READS 50 PSI (POUNDS PER SQUARE INCH). (3.515 KG PER SQ. CM)
6. OPEN FUEL VALVE MOMENTARILY TO SATURATE WICK. CLOSE FUEL VALVE.
7. REMOVE BURNER GUARD FROM SHROUD.
8. IGNITE WICK.
9. OPEN FUEL VALVE: THEN OPEN AIR VALVE.
10. SLOWLY CLOSE AIR VALVE AS TORCH FLAME BEGINS TO TURN BLUE.

NOTE: AIR VALVE MUST BE CLOSED EXCEPT WHEN IGNITING AND EXTINGUISHING TORCH.

11. LOOSEN WINGNUT, MOVE CONTROL SCREW UP OR DOWN UNTIL FLAME BURNS BLUE WITH YELLOW TIP, AND TIGHTEN WINGNUT.

NOTE: FLAME MUST HAVE SOME YELLOW TIP TO KEEP AIR-FUEL MIXTURE AT PROPER TEMPERATURE.

12. HEAT OUTPUT OF TORCH IS CONTROLLED BY FUEL TANK PRESSURES LISTED BELOW. REPUMP AS REQUIREDL
    - 55 PSI - 50,000 BTU/HR (BRITISH THERMAL UNITS PER HOUR) (3.8665 KG PER SQ. CM)
    - 40 PSI - 25,000 BTU/HR (2.812 KG PER SQ. CM)
    - 20 PSI - 15,000 BTU/HR (1.406 KG PER SQ. CM)
13. TO EXTINGUISH TORCH: CLOSE FUEL VALVE AND OPEN AIR VALVE.
14. INSTALL BURNER GUARD ON SHROUD.

TS 011892

*Figure 2-11. Heating torch operation.*

**2-4. Heating Torch Operation**

Operate the heating torch as shown by figure 2-11.

**CAUTION**

**Move heating torch continuously while heat is being applied. This will prevent damage to the engine crankcase from overheating any single spot thereon. Do not apply direct heat or flame to the nylon fuel tank, the fuel tank lines and fuel filter system.**

**NOTE**

**The heating torch should be applied at the apertures (four on each side) beneath both sides of the engine.**

## Section iii. OPERATION UNDER UNUSUAL CONDITIONS

**2-5. Operation in Extreme Cold (Below 0°F. (-18°C.))**

**NOTE**

**At temperatures of -25°F. (-32°C.) to -65°F. (-59 *'C.),* it may be necessary to utilize a winterization kit (fig. 3-2).**

*a.* Keep the fuel tank as full as possible at all times to prevent condensation.

*b.* Drain and service the fuel filter more often than under normal conditions. (See Appendix A for appropriate manual.)

*c.* Lubricate the engine as instructed in appropriate manuals (see Appendix A) and LO 5-2805-203-12. Air Force will use the lubrication section of applicable T.O. 35C2-3-1-426 WC Series workcards.

*d.* Remove any ice or snow which may have accumulated on the engine, generator, or wiring.

**CAUTION**

**Do not bend or kink wiring as it becomes brittle with extreme cold.**

*e.* Place the air intake shutter (fig. 2-1) in the WINTER position (to the left) when the ambient temperature is 32°F. (0°C.) or lower.

**NOTE**

**It may be necessary to utilize a heating torch to start the engine. If this does become necessary, refer to paragraph 2-4.**

*f.* After starting the engine, allow sufficient time for it to reach normal operating temperature before applying the load.

*g.* Observe the shutter at the top of the winterization shroud; if it does not operate properly the engine will not reach operating temperatures. (See Appendix A for appropriate manual.)

*h.* When the generator set is not in operation, cover it with the canvas cover.

2-6. Operation in Extreme Heat

*a. Indoor Ventilation.* If the generator set is operated indoors, allow sufficient room around the unit for air circulation and ventilate the room.

*b. Cooling.* Inspect covers, roof, and shrouds frequently to make sure they are clean and properly installed. Place air intake shutter in the SUMMER position (to the right) when the ambient temperature is above 32°F (0ºC).

*c. Generator.* Inspect load meter frequently to make sure the generator is not overloaded.

*d. Lubrication.* Lubricate as specified in LO 5-2805-203-12. Air Force will use the lubrication section of applicable T.O. 35C2-3-1-426 WC Series workcards.

**2-7. Operation in Dusty or Sandy Areas**

*a. Protection.* Shield the generator set from dust. Take advantage of natural barriers which offer protection from dust and sand.

*b. Air Cleaners.* Service the air cleaner daily to keep the carburetor free of dirt and sand. (See Appendix A for appropriate manuals.)

*c. Lubrication.* Clean all lubrication points before applying lubricants. Clean area around oil filler cap before inspecting and adding oil.

*d. Fuel.* Prevent sand from entering fuel while servicing the fuel tank. Service fuel tank strainer prior to adding fuel.

**2-8. Operation under Rainy or Humid Conditions**

*a. General.* If the unit is outdoors and is not operating, cover the unit with the canvas cover. Remove the cover during dry period.

*b. Fuel.* Keep the fuel tank as full as possible to prevent condensation.

*c. Electrical System.* Humid conditions can cause corrosion and deterioration of electrical components. Keep electrical components and wiring clean and dry.

### 2-9. Operation in Salt Water Areas

*a. General.* Wipe the generator set with a clean cloth dampened with clean, fresh water at frequent intervals. Use care not to contaminate the fuel supply or damage the electrical system with water.

*b. Lubrication.* Use care to keep salt water from entering the engine when adding or changing oil. Lubricate more frequently than specified in LO 5-2805-203-12. Lubricate the engine as prescribed in the appropriate manuals (see Appendix A) and LO 5-2805-203-12. Air Force will use the lubrication section of applicable T.O. 35C2-3-1-426 WC series workcards.

*c. Preservation.* Paint all exposed nonpolished surfaces. Coat exposed parts of polished steel or other ferrous material with standard issue rustproofing material if available or cover parts with one light coat of grease. Refer to Appendix A.

### 2-10. Operation at High Altitudes

The generator sets are rated at 3 kw up to 8,000 feet altitude. To calculate specific generator set output above 8,000 feet, use the following formula:

$$\frac{7\% \text{ X actual altitude - } 8{,}000 \text{ X } 3 \text{ kw}}{1{,}000} = \text{kw derating}$$

Example: $\frac{0.07 \times 13{,}000 - 8{,}000}{1{,}000} \times 3 \text{ kw} = \text{kw derating}$

0.07X5X3 kw = kw derating

3 kw– 1.05 kw = 1.95 kw derated power at 13,000 ft.

### 2-11. Operation Using NATO Slave Cable

**CAUTION**

**Before you use any cable, make sure the master battery switches and all electrical switches in both the live and dead equipment are in the OFF position. If you attempt to install the cable into live operating equipment, arcing can occur. You can get burned and your cable will be damaged.**

The existing Army Slave Cable has end connectors with two pins to mate with the Slave Receptacle on the Generator Set (fig. 1-3). The NATO Slave Cable has end connectors with one pin. In order to utilize the NATO Slave Cable on the Generator Set, an Adapter Connector must be used. See Additional Authorization List (AAL) for Adapter Connector.

# CHAPTER 3
# OPERATOR/CREW MAINTENANCE INSTRUCTIONS

## Section i. CONSUMABLE OPERATING AND MAINTENANCE SUPPLIES

### 3-1. General

This section contains a table listing the consumable maintenance and operating supplies required to operate and maintain the generator set. This table includes only items peculiar to and required for maintenance and operation.

### 3-2. Explanation of Columns

An explanation of columns in the tabular list follows:

*a. Component Application.* This column identifies the component application of each maintenance or operating supply item.

*b. National Stock Number.* This column indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. *Description.* This column indicates the item name and brief description.

*d. Quantity Required for Initial Operation.* This column indicates the quantity of each maintenance or operating supply item required for initial operation of the equipment.

*e. Quantity Required for Eight Hours Operation.* This column indicates the estimated quantities required for an average 8 hours of operation.

*f. Notes.* This column indicates informative notes keyed to data appearing in a preceding column.

*Table 3-1. Maintenance and Operating Supplies*

| (1) Component application | (2) National stock number | (3) Description | (4) Quantity required f/initial operation | (5) Quantity required 8 hrs. operation | (6) Notes |
|---|---|---|---|---|---|
| CRANKCASE (1) | | OIL, LUBRICATION: 1 qt. can as follows: | | | (1) Includes quantity of oil to fill engine oil system as follows: |
| | 9150-00-265-9433(2) | OE30 | 2-1/8 qt (2 liters) | (3) | 1-5/8 qt—crankcase<br>1/2 qt–filter |
| | 9150-00-265-9425(2) | OE10 | 2-1/8 qt (2 liters) | (3) | |
| | 9150-00-242-7632(2) | OES | 2-1/8 qt (2 liters) | (3) | (2) See FSC 9100-IL for additional data and requisitioning procedure. |
| | | FUEL, GASOLINE, 5 gal. pail as follows: | | | (3) See current LO for grade application and replenishment intervals. |
| | 9130-00-160-1818(2) | AUTOMOTIVE, COMBAT 91A | 3¾ gal (4) (14.25 1.) | (5) | (4) Tank capacity. |
| | 9130-00-160-1830(2) | AUTOMOTIVE, COMBAT, 91C | 3¾ gal (4) (14.25 1.) | (5) | (5) Average fuel consumption is 0.95 gal. per hour of continuous operation. |
| | 9130-00-148-7103 | GASOLINE, UNLEADED regular grade VV-G-001690 | | | |

## Section ii. LUBRICATING INSTRUCTIONS

Lubrication is not required for the generator. For general lubrication information on the engine, Army, Marine Corps, and Navy users should refer to LO 5-2805-203-12. Air Force will use the lubrication section of applicable T.O. 35C2-3-1-426 WC Series workcards.

## Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

### 3-3. General

To insure that the generator is set and is ready for operation at all times, it must be inspected systematically so that defects maybe discovered and corrected before they result in serious damage or failure. The necessary daily preventive maintenance services to be performed are listed and described in paragraph 3-4. Item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed which would damage the equipment if operation were continued.

### 3-4. Daily Preventive Maintenance Checks and Services

Table 3-2 contains a tabulated listing of preventive maintenance checks and services for the generator set which shall be performed by the operator/crew personnel. Refer to TM 5-2805-203-14 for engine preventive maintenance, checks and services. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

**Table 3-2. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

| INTERVAL | | | | B-BEFORE OPERATION D-DURING OPERATION A-AFTER OPERATION | | |
|---|---|---|---|---|---|---|
| ITEM NO. | B | D | A | ITEM TO BE INSPECTED | PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY | EQUIPMENT IS NOT READY AVAILABLE IF: |
| 1 | ● | | | Generator set | a. Check generator set for tight ground connections and proper ground rod installation. | Generator is not gounded properly. |
| 2 | | | | Gages and Instruments | Check for proper generator operation. | Class III oil leakage or any fuel leaks are detected. |
| | | | | | Models MEP-016A and MEP-021A | |
| | | ● | | a. Voltmeter | Adjust for desired voltage. Rotate voltage selector switch to monitor the various output voltage combinations. | Voltage cannot be adjusted. |
| | | ● | | b. Frequency meter | Normal indication: MEP-021A; 400 Hz (392 to 408) MEP-016A, 60 Hz (59 to 61) | Indicates frequency too high or too low. |
| | | ● | | c. Load meter | Indicates percentage of applied load. Rotate current selector switch to monitor the load applied to each phase. Not to exceed 100%. | |
| | | | | | Model MEP-026A | |
| | | ● | | d. Voltmeter | Adjust for proper DC volts (must not exceed 28 V max). | Voltage cannot be adjusted. |

*Table 3-2. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES*

| INTERVAL B-BEFORE OPERATION D-DURING OPERATION A-AFTER OPERATION | | | | | | |
|---|---|---|---|---|---|---|
| Item No. | B | D | A | Item To Be Inspected | Procedures Check For And Have Repaired Or Adjusted As Necessary | Equipment Is Not Ready Available If: |
| 3 | | | | Fuel Tank | **WARNING**<br>**When handling gasoline, always provide a metal-to-metal contact between the container and fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surface.**<br>**Never service generator set when in operation.**<br>**After operation, assure that tank is full to prevent moisture condensation.** | |
| | | | ● | | After operation, fill tank to prevent moisture condensation. | |
| 4 | ● | | | Generator Set | Check entire generator set for loose or missing hardware and excessive or unusual wear or damage. Inspect for cracked or broken welds. Clean set.<br>**NOTE**<br>**See TM 5-2805-203-14 for engine preventive maintenance checks and services, and LO 5-2805-203-12.** | |

## Section IV. TROUBLESHOOTING

### 3-5. General

This section contains troubleshooting or malfunction information and tests for locating and correcting most of the troubles which may develop in the generator sets. Each malfunction or trouble symptom for an individual component, unit, or system is followed by a list of tests or inspections necessary for you to determine probable causes and suggested corrective actions for you to remedy the malfunction.

### 3-6. Troubleshooting

*a*. This manual cannot list all possible malfunctions that may occur or all tests or inspections and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, you should notify higher level maintenance.

*b*. Table 3-3 lists the common malfunctions that you may find during the operation or maintenance of the generator sets or their components. You should perform the tests/inspections and corrective actions in the order listed.

**NOTE**

Before you use this table, be sure you have performed all normal operational checks. If you have a malfunction which is not listed in this table, notify the next higher level of maintenance.
Air Force users may perform maintenance within the scope of their capabilities.

*Table 3-3. Troubleshooting*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **1. GENERATOR FAILS TO BUILD UP TO RATED VOLTAGE (All Models)**<br>Check to see if the variable resistor is correctly adjusted. The voltmeter reading will change as the variable resistor knob is turned. |

*Table 3-3. Troubleshooting (Cont'd)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **1. GENERATOR FAILS TO BUILD UP TO RATED VOLTAGE (All Models) (Cont'd)** |
| Place the circuit breaker in the OFF position. Turn the variable resistor knob (labeled "adjust volts" and "increase volts") until the required voltage is attained. |
| **2. GENERATOR OVERHEATS (All Models)** |
| Visually inspect for material trapped over the generator ventilators. |
| **Remove any restrictions that were blocking the ventilators.** |
| **3. GENERATOR FAILS TO SUPPLY LOAD (Model MEP-016A)** |
| *Step 1.* Check for a defective fuse by removing the two fusecaps. Push in and turn the caps counterclockwise, and pull the fuses out. Inspect the fuses for burns, cracks, or breaks. Replace the fuse with another fuse carrying a 15-amp, 250 volt rating. To install, push in and turn the cap clockwise. |
| *Step 2.* Check for a cracked, broken or corroded fuseholder. |

*Table 3-3. Troubleshooting (Cont'd)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **3. GENERATOR FAILS TO SUPPLY LOAD (Model MEP-016A) (Cont'd)** |
| Refer to organizational maintenance personnel. |
| *Step 3.* Inspect the load terminals for cracks, breaks, loose terminals and other damage. Refer to organizational maintenance personnel. |
| *Step 4.* Check the circuit breaker to see if it is open. Close the circuit breaker. |
| *Step 5.* If the circuit breaker will not stay closed, it is defective. Refer to organizational maintenance. |
| **4. GENERATOR VOLTAGE FLUCTUATES** |
| Inspect for audible engine speed fluctuation. Refer to APPENDIX A. |
| **5. UNIT CAUSES RADIO INTERFERENCE** |
| *Step 1.* Inspect the load lines for loose connections. Tighten all load line connections securely. |
| *Step 2.* Inspect established ground for loose connections. Tighten all ground connections securely. |

## Section V. MAINTENANCE PROCEDURES

### 3-7. General

This section contains information on the maintenance of the equipment that is the responsibility of the operator.

**WARNING**

**Before servicing any part of the generator set, make certain that the engine is stopped. Failure to observe this safety precaution could result in severe electrical shock or death by electrocution.**

### 3-8. Frame, Shock Mounts and Ground Stud

Inspect the frame, shock mounts, and ground stud (fig. 1-2) for any signs of damage or wear. Refer all removal and/or installation to organizational maintenance personnel.

### 3-9. Controls and Instruments

Clean all meters (figs. 2-2, 2-3 and 2-4) and inspect them for broken glass, improper operation or other damage. Inspect controls for ease of operation, broken knobs, or other obvious damage. Refer any control or instrument requiring replacement to organizational maintenance personnel.

### 3-10. Fuse and Fuseholder (Model MEP-016A)

*a. Inspection.* Inspect fuse to determine if it is defective. Inspect fuseholder for possible damage.

*b. Removal and Installation.* Refer to figure 3-1 to remove a defective fuse and install a new one. Refer removal or installation of the fuseholder to organizational maintenance personnel.

### 3-11. Fuel Tank, Fuel line, Fuel Hose, and Fuel Selector Valve

Inspect the fuel tank (B, fig. 4-12), fuel line (fig. 4-19), fuel hose (fig. 4-19), and fuel selector valve (fig. 4-19) for any signs of damage or wear. Refer to all removal and/or installation to organizational maintenance personnel.

### 3-12. Fuel Filter and Air Cleaner

Service for the fuel filter (fig. 4-19) and air cleaner is as shown in service manuals. (See Appendix A.)

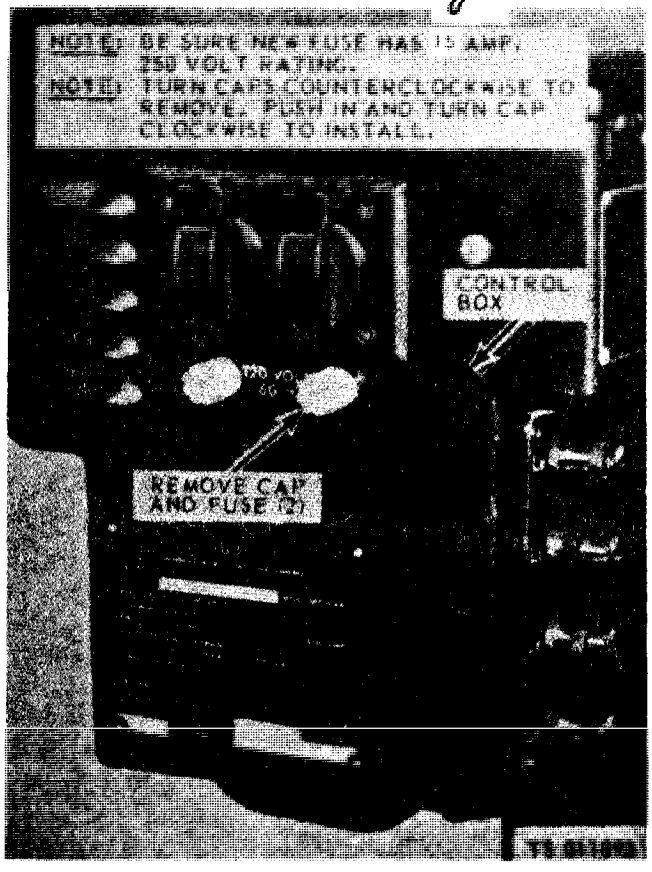



*Figure 3-1. Fuse, removal and installation (Model MEP-016A).*

### 3-13. Fuel Tank Strainer

*a. Cleaning and Inspection.* Inspect fuel tank strainer (A, fig. 4-12) for damage of any kind. Clean strainer as necessary. Replace a damaged strainer.

*b. Removal and Installation.* Remove fuel tank cap from filler neck (A, fig. 4-12) and remove the fuel tank strainer by lifting it from the filler neck.

### 3-14. Fuel Tank Cap and Chain Assembly

*a. Inspect.* Inspect the fuel tank cap and chain assembly (A, fig. 4-12) for cracks, breaks, loose fitting, and other obvious damage.

*b. Removal and Installation.* Refer to A, figure 4-12 to remove and install the fuel tank cap and chain assembly.

### 3-15. Muffler Brackets, Muffler and Muffler Pipes

Inspect the muffler brackets, muffler and muffler pipes (fig. 4-20) for any damage. Refer all removal and/or installation to organizational maintenance personnel.

### 3-16. Generator

Clean the generator and inspect it for cracks, breaks, loose mountings, and other obvious damage. If the generator is damaged, refer to organizational maintenance personnel.

### 3-17. Winterization Kit (Fig. 3-2)

*a.* The winterization kit is of a waterproof nylon material with a flame retarding coating. The material is flexible for easing storing when not in use. The kit is to permit operation of the unit at temperatures of –25° F. (-32° C.) to –65° F. (–54° C). When in use, the kit completely covers the operating unit except for air intake and exhaust outlet ports.

*b.* Inspect the kit (fig. 3-2) for rips, tears, or other damage. Replace a damaged kit.

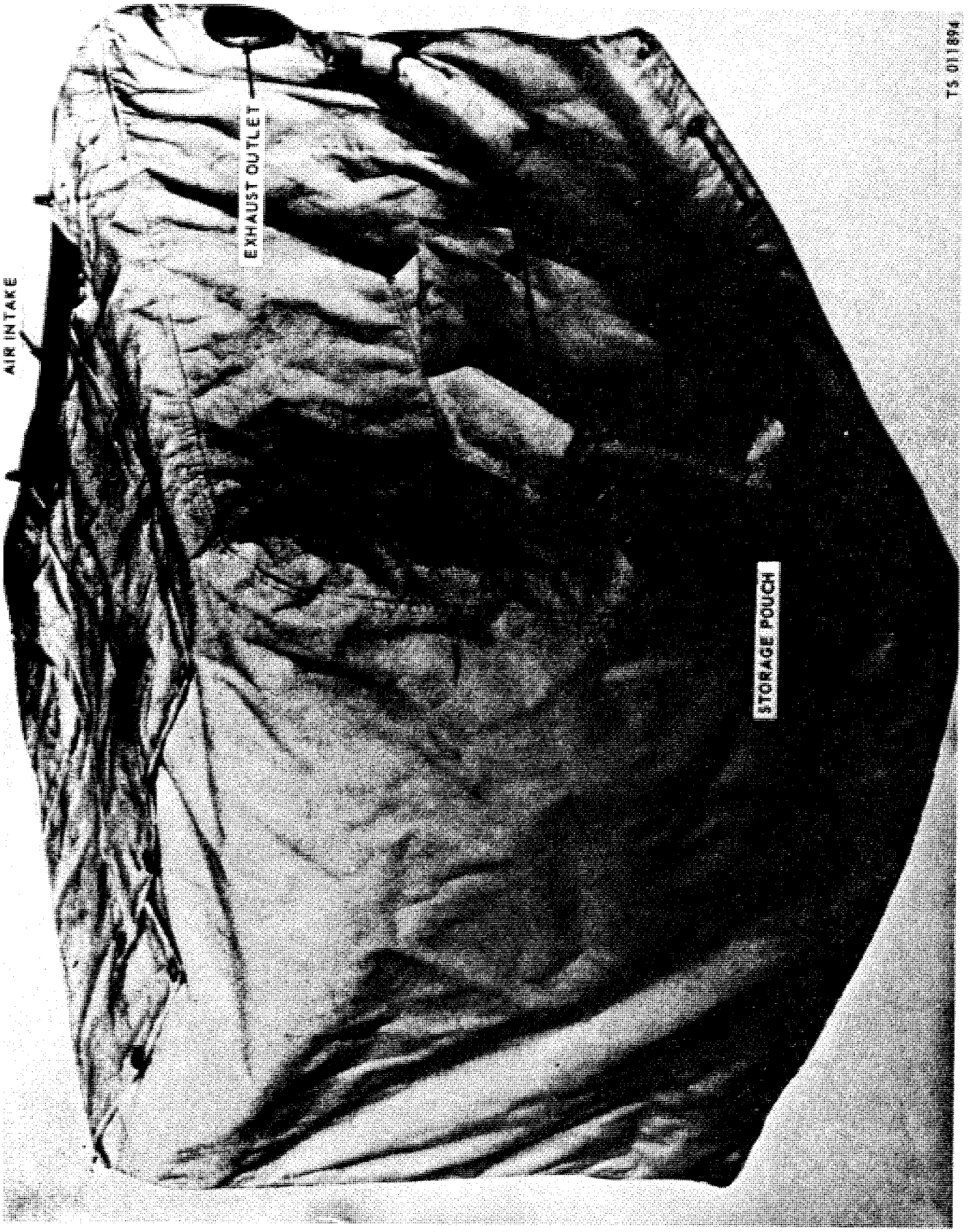



*Figure 3–2. Winterizing kit.*

# CHAPTER 4

# ORGANIZATIONAL MAINTENANCE

## Section I. SERVICE UPON RECEIPT OF EQUIPMENT

### 4-1. Inspection and Servicing the Equipment

*a. Depreservation.* Prepare the generator set for inspection and operation as outlined on the detailed Depreservation Guide for Vehicles and Equipment (DA Form 2258) which is attached to the generator when received new or from rebuild.

*b. Inspection.*

(1) (A, F) perform the Daily Preventive Maintenance Services (Table 3-2).

(2) Refer to Appendix A for engine manuals and inspect and service the engine.

(3) Make a thorough visual inspection of the entire generator set for damage and missing parts and accessories. Report all damaged or missing parts on DD Form 6.

*c. Servicing.*

*(1)* For lubrication of the engine, Army, Navy and Marine Corps users should refer to appropriate service manuals and LO 5-2805-203-12. Air Force will use the lubrication section of applicable T.O. 35C2-3-1-426 WC Series workcards. The generator is equipped with sealed bearings and does not require lubrication.

**WARNING**

**When handling gasoline, always provide a metal-to-metal contact between the container and fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surfaces. When gas tank filler neck is on the same side, or adjacent to load terminals, never service when set is operating.**

(2) Service the fuel filter (see Appendix A). Remove the fuel tank cap and fill the fuel tank with the proper grade of fuel. Fuel strainer should be removed from fuel tank filler neck and cleaned thoroughly. If fuel strainer is damaged in any way, it should be replaced. Inspect filler cap, chain, and gasket for damage. Replace a damaged cap assembly.

### 4-2. Installation.

**WARNING**

**Do not operate the generator set in an inclosed area unless the exhaust gases are piped to the outside. Inhalation of the exhaust fumes can result in serious illness or death.**

*a. General.* If the generator set is attached to a shipping platform, this will provide an adequate foundation. Otherwise, use planks, timbers, ammunition boxes, or other available material to prevent the skids from sinking into soft ground or sand. The level of the set should not exceed a tilt of 15 degrees in any direction. Drainage must be provided to insure run-off of water from the generator set. Refer to figure 1-4 for dimensions of the base.

*b. Grounding Procedure.*

**WARNING**

**Do not rely on grounding or safety devices to prevent accidents. Electrical circuits and equipment are potentially hazardous. Personnel should always exercise caution to prevent injury or possible death due to electrical shock.**

**Generator sets shall be grounded in order to prevent shock due to defective insulation, or external electrical faults. Poor grounding can endanger personnel, may damage equipment, and can create interference in communication or electronic circuits.**

(1) Install one of the following items as a grounding device:

*(a)* Drive a ground rod to a depth of at least 8 feet.

*(b)* Drive a ground pipe, 3/4 inch copper or steel, to a depth of at least 8 feet. An existing underground pipe may be used in an emergency.

*(c)* Bury a ¼ inch thick iron or steel plate, approximately 18 inch x 18 inch size, with ground cable attached, to a depth of at least 4 feet.

*(d)* Bury a 1/16 inch thick aluminum or copper plate approximately 18 inch x 18 inch size, with ground cable attached, to a depth of at least 4 feet.

*(e)* Position a ¼ inch thick iron or steel plate, or 1/16 inch thick aluminum or copper plates, approximately 18 inch x 18 inch size, on the hard ground or bedrock beneath the trailer stand or roll the wheel of a trailer or truck until it comes to rest on top of the grounding plate.

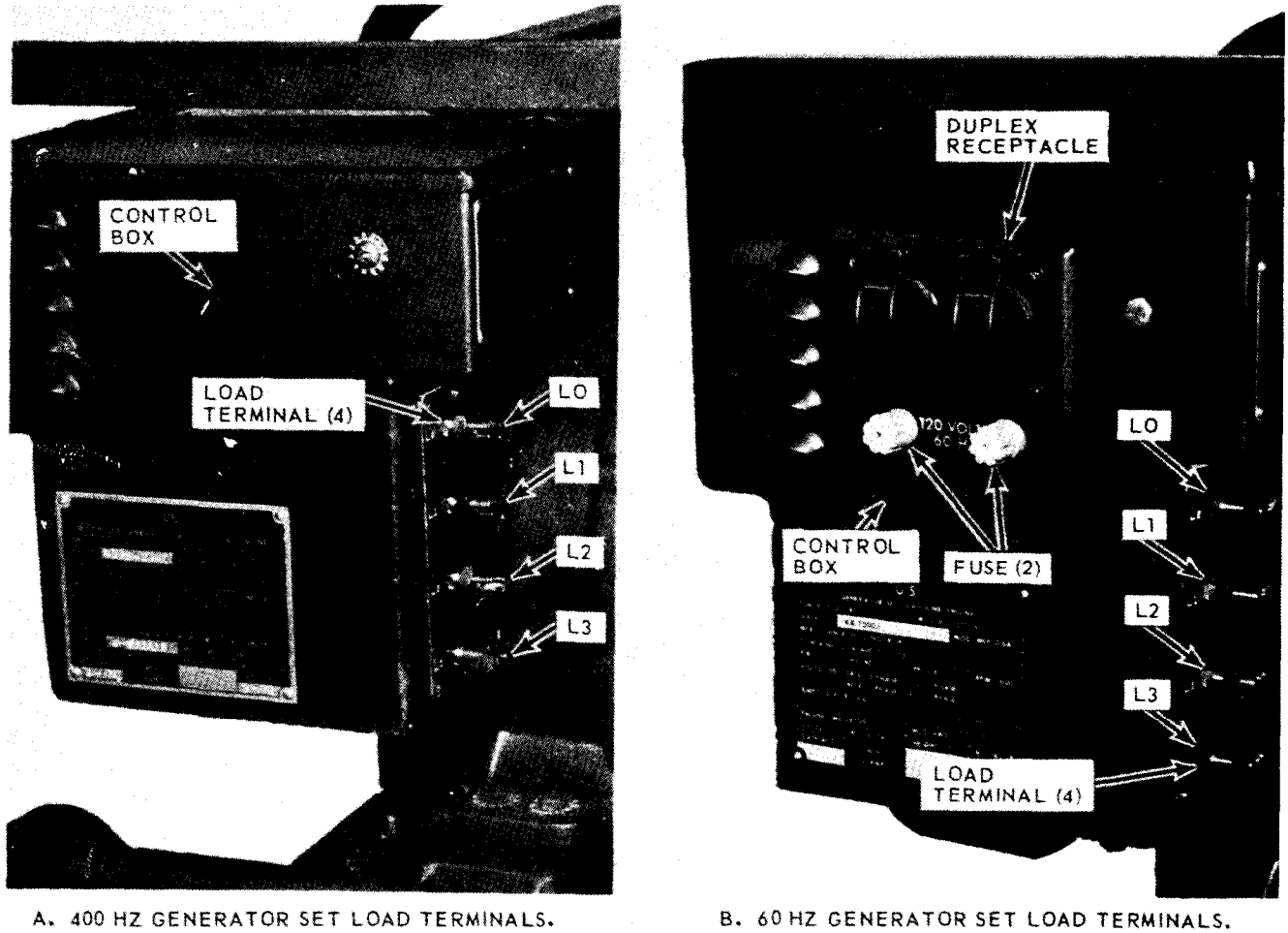
*(f)* Saturate the area around the grounding device with water to increase conductivity.

(2) Ground cables should be copper. Braided cable is the best, but No. 6 AWG gauge (or larger) copper wire will suffice.

(3) Connect the ground cable from the grounding device to the generator set frame ground stud (fig. 1-2) and tighten the nut securely.

*c. Connecting Load Cables.*

(1.) *AC generators.* Refer to figure 4–1 and connect the load cables to the AC generator load terminals.




A. 400 HZ GENERATOR SET LOAD TERMINALS.

B. 60 HZ GENERATOR SET LOAD TERMINALS.

WARNING: DO NOT CONNECT LOAD TERMINALS WHILE THE GENERATOR SET IS OPERATING.
CAUTION: BEFORE CONNECTING LOAD CABLES, POSITION OUTPUT SELECTOR SWITCH.
FOR 120 VOLT SINGLE PHASE, CONNECT CABLES TO TERMINALS L1 AND L2.
FOR 240 VOLT SINGLE PHASE, CONNECT CABLES TO TERMINALS L1 AND L2.
FOR 120 VOLT, THREE PHASE, CONNECT CABLES TO TERMINALS L1, L2, AND L3.
FOR 120/208 VOLT, THREE PHASE (FOUR WIRE), CONNECT CABLES TO TERMINALS LO-L1-L2 AND L3.
NOTE: THESE INSTRUCTIONS FOR CONNECTING THE LOAD CABLES APPLY TO BOTH 400-HZ GENERATOR SETS AND TO THE 60 HZ GENERATOR SET.

TS 011895

*Figure 4-1. AC Generator set load terminals.*

*(2) DC generator.* Refer to figure 4-2 and connect the load cables to the DC generator load terminals. Relatively light electrical loads (12 amps) maybe connected to the generator set by plugging in to the slave receptacle (fig. 1-3).

*d. External Fuel Source.* If an auxiliary fuel source is to be used, connect the auxiliary fuel hose to the fuel selector valve (C, fig. 2-1). A special adapter may be required for all models (see Appendix B, Section III).

e. *External Power Source.* When an auxiliary power source is to be used to start the engine, connect the external power line to the receptacle illustrated in figure 4-3.

**NOTE**
**The external power source must be 24/28 volt direct current.**

*f. Indoor Installation.* Keep the area well ventilated at all times so the generator set will receive a maximum supply of air. Install a gas-tight exhaust line, as large as the exhaust outlet, to pipe the exhaust gases outdoors. Provide metal shields for the exhaust line if it passes through flammable walls. Wrap the line with fiberglass if there is any danger of anyone touching the exhaust line.

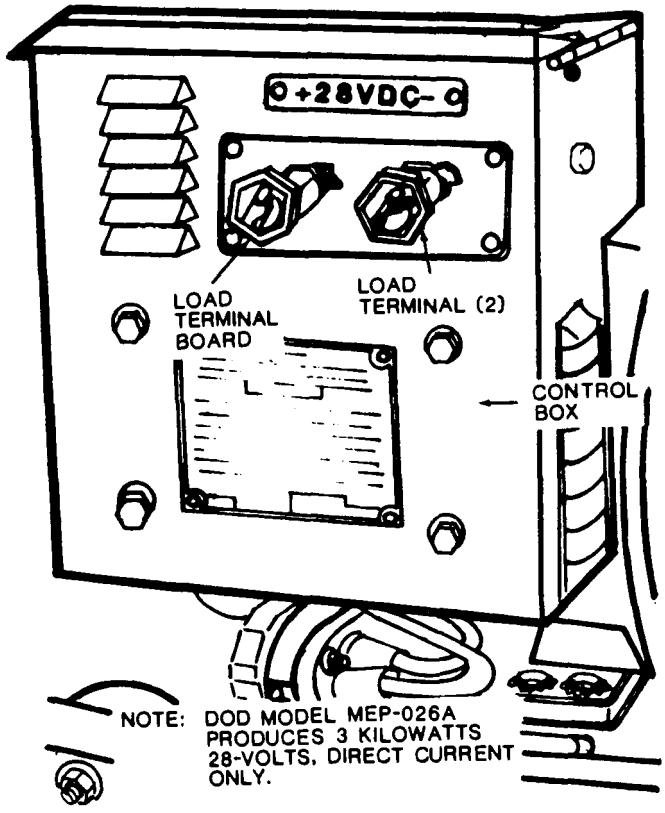



*Figure 4-2. DC generator set load terminals.*

## 4-3. Equipment Conversion (Models MEP-016A, MEP-016C, and MEP-021A, MEP- 021C)

*a.* Refer to figure 2-5 for MEP-016A/C and MEP-021A/C for voltage and phase desired.

*b.* Refer to paragraph *4-2c* and connect the load cables to the proper load terminals.

## 4-4. Procedures for Constructing Revetment

*a. General.* This equipment is designed to operate in the open with unrestricted ventilation. In some situations, it may be necessary to operate the equipment from the protection of a revetment. This paragraph provides information for the construction of a revetment to protect the equipment should it become necessary.

*b. Dimensions.* The minimum allowable inside dimensions are shown in figures 4-4 and 4-5. The entrance to the revetment is shown in figure 4-6. These minimum dimensions are based solely on consideration of engine cooling and ventilation allowing

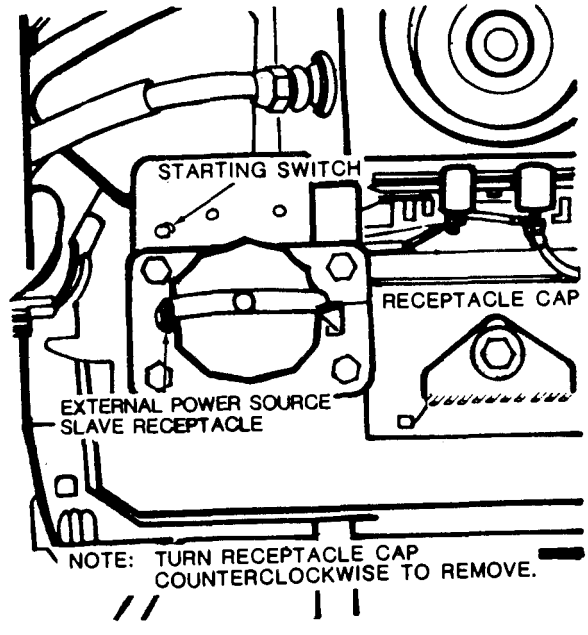



*Figure 4-3. External power source receptacle.*

a minimum practical amount of space for service and maintenance.

*c. Foundation and Drainage.* Refer to figure 1-4 for dimensions of the generator base. In no case should the foundation exceed a height of six inches nor should the level of the generator set exceed a tilt of 15° in any direction. Drainage must be provided to insure run-off of water away from the generator set and out of the revetment through drain holes at inside ground level. Where there is no natural slope for the water to run away from the revetment, a sump and drainage trench must be provided outside of the revetment for each required drain hole.

*d. Wall Construction.* The walls of the revetment may be constructed with sandbags, ammunition boxes filled with sand or dirt, or any other material available. The wall height should not exceed 3 feet (0.91 meters) and should be constructed as shown in figures 4-6 and 4-7.

*e. Roof Construction.* The roof can be supported by any means possible, but should be 1 foot (0.31 meters) above the wall of the revetment and provide as much open space around the top as possible. Refer to figures 4-5, 4-6, 4-7, 4-8 and 4-9. The materials used in the roof construction consist of two pieces of lumber (4 inches by 4 inches) or logs (4 inches in diameter) about 10 feet (3.1 meters) long and the necessary cross pieces of lumber, logs, or steel planking to cover the entire roof as shown in figure 4-9. These cross pieces should be about 8 feet (2.44 meters) long. If the above materials are not readily available, any available material of a like nature maybe used. The thickness of the roof (figs. 4-6, and 4-8) will depend upon the amount and type of protection desired. Caution should be taken when adding protection to the roof to insure that the roof is supported properly to carry the additional weight.

*f. Miscellaneous Construction.* A compartment should be constructed for fuel storage outside of the revetment as shown in figure 4-4. The size of the fuel storage area will depend upon the size of the fuel container being used. Since air temperatures within the revetment will build up considerably above the outside ambient when the generator set is operating, always locate the fuel supply outside of the revetment to minimize safety hazards associated with gasoline at high temperatures. For the same reason, it is recommended that the integral fuel tanks, with which some generator sets are equipped, not be used (see Appendix B, Section III). The exhaust from the generator set is to be ducted out of the revetment. The installation should be similar to that shown in figure 4-10. If flexible pipe is not available to use for an exhaust extension, a piece of exhaust pipe or any other similar material may be utilized. The point at which the exhaust discharge goes through the revetment wall depends entirely upon the equipment that is available. The exhaust may be discharged into an external exhaust chimney constructed as shown in figure 4-4. This chimney will aid in ducting the exhaust gases away from the revetment and will reduce the noise level. A revetment doorway shield must be constructed as shown in figures 4-4, 4-5, and 4-9. This shield is a wall 3 feet (0.91 meters) high and 7.5 feet (2.26 meters) long, constructed in a manner similar to the revetment walls to prevent direct entrance of projectiles or fragments through the doorway into the revetment.

*g. Alignment Instructions.* When constructing the revetment, the orientation of the revetment will be such that its entrance is facing into the direction of the prevailing wind (fig. 4-4). Each generator set will be located within the revetment so that its long axis is parallel to the long axis of the revetment and is centered within the revetment. In addition, the engine end will be towards the doorway. These instructions are very important and must be observed to obtain maximum ventilation and cooling benefits when operating in a revetment.

*h. Multiple Installations.* No more than one generator set will be installed within each revetment. Also, no other neat generating equipment will be placed in the revetment with a generator set.

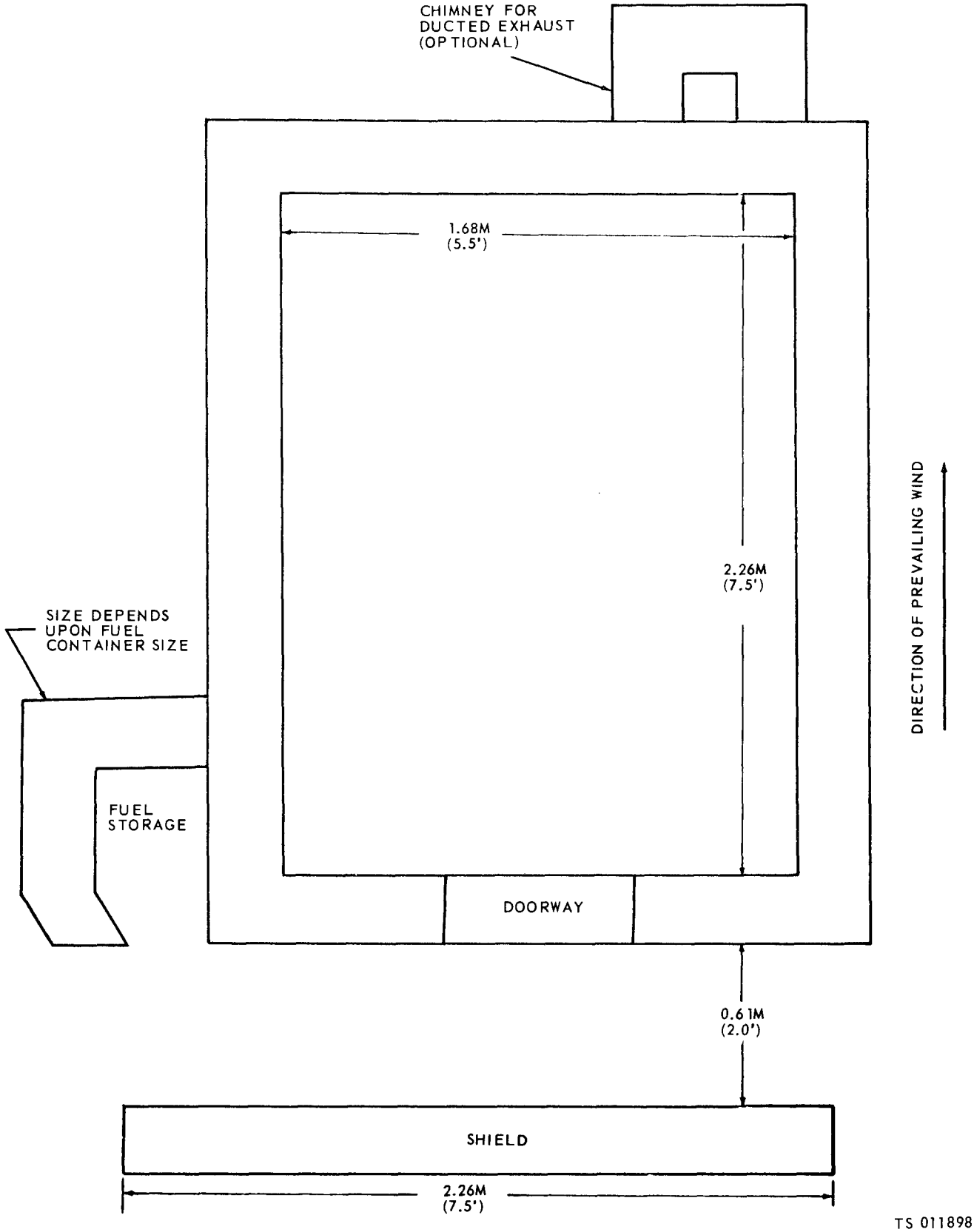



*Figure 4-4. Revetment, top view.*

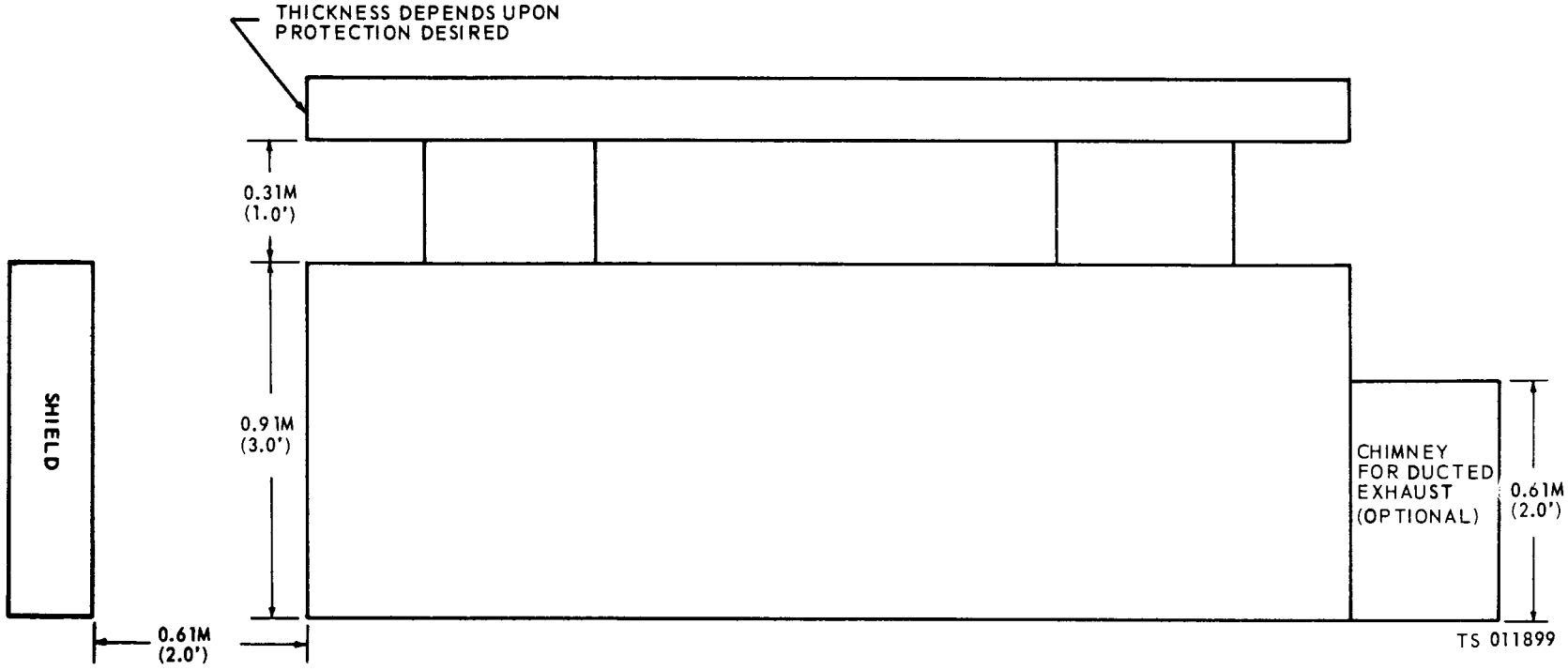



*Figure 4–5. Revetment, side view.*

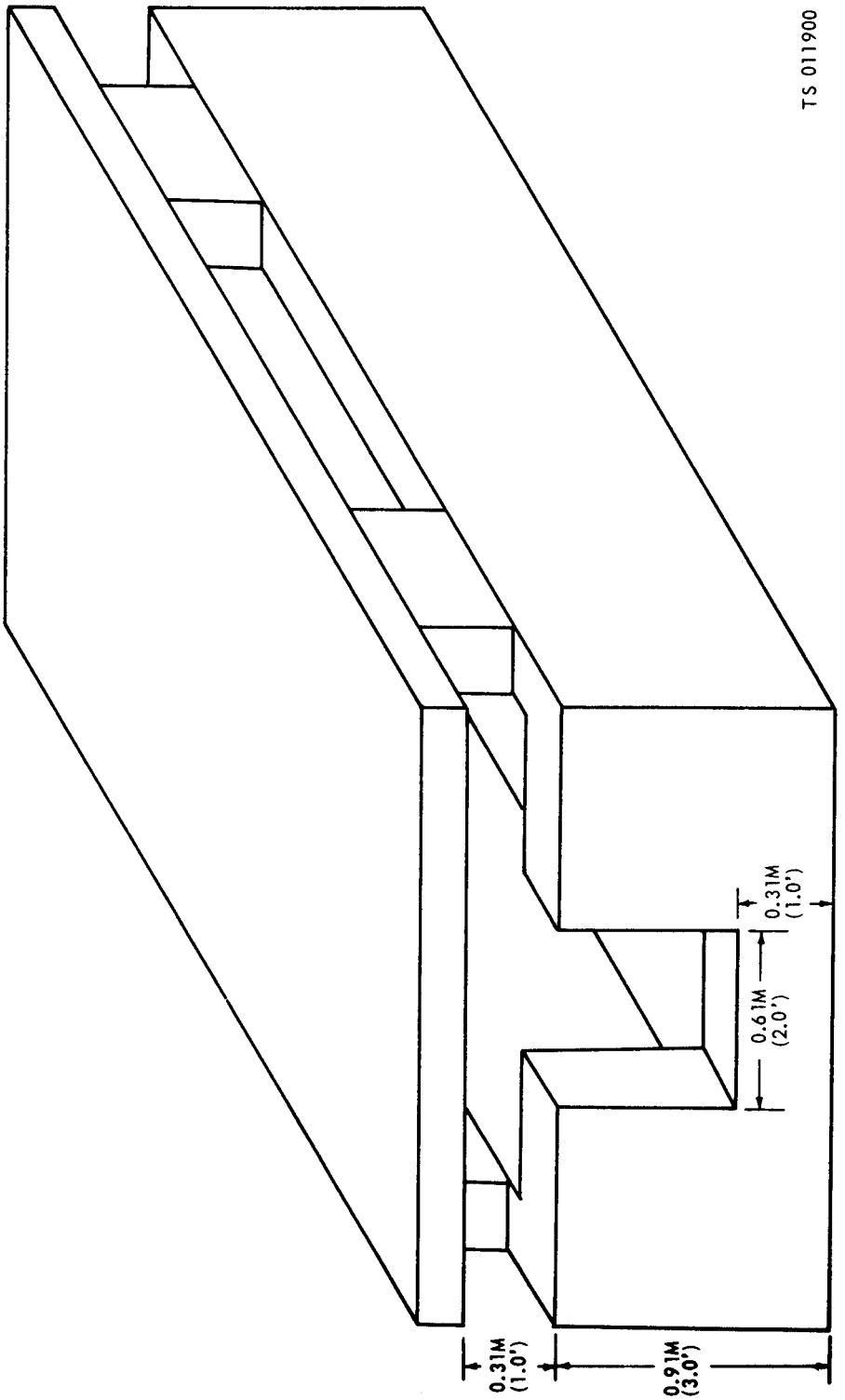
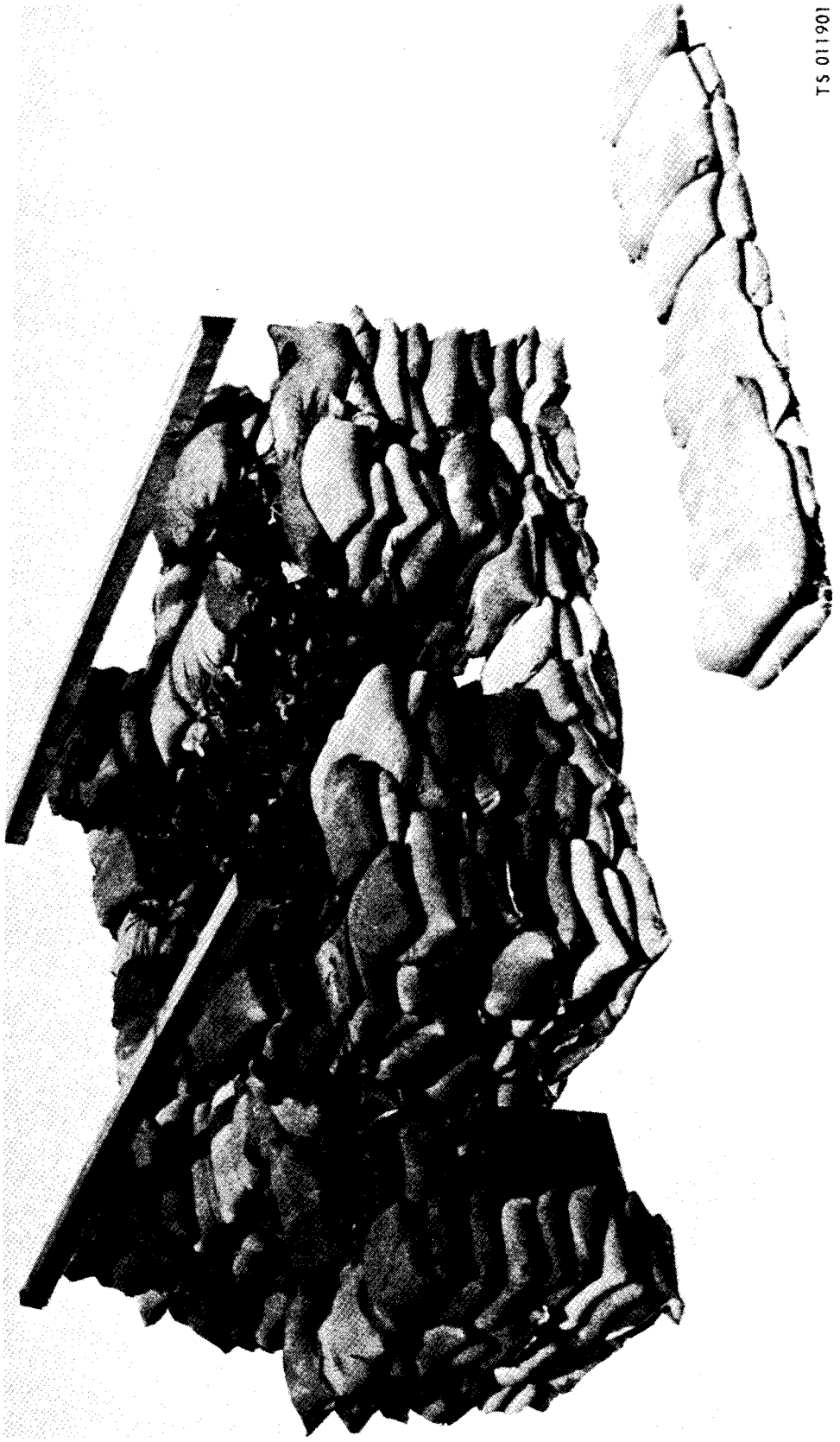



*Figure 4–6. Revetment, isometric.*



TS 011901

*Figure 4–7. Revetment, perspective without roof.*




*Figure 4–8. Revetment, front view.*

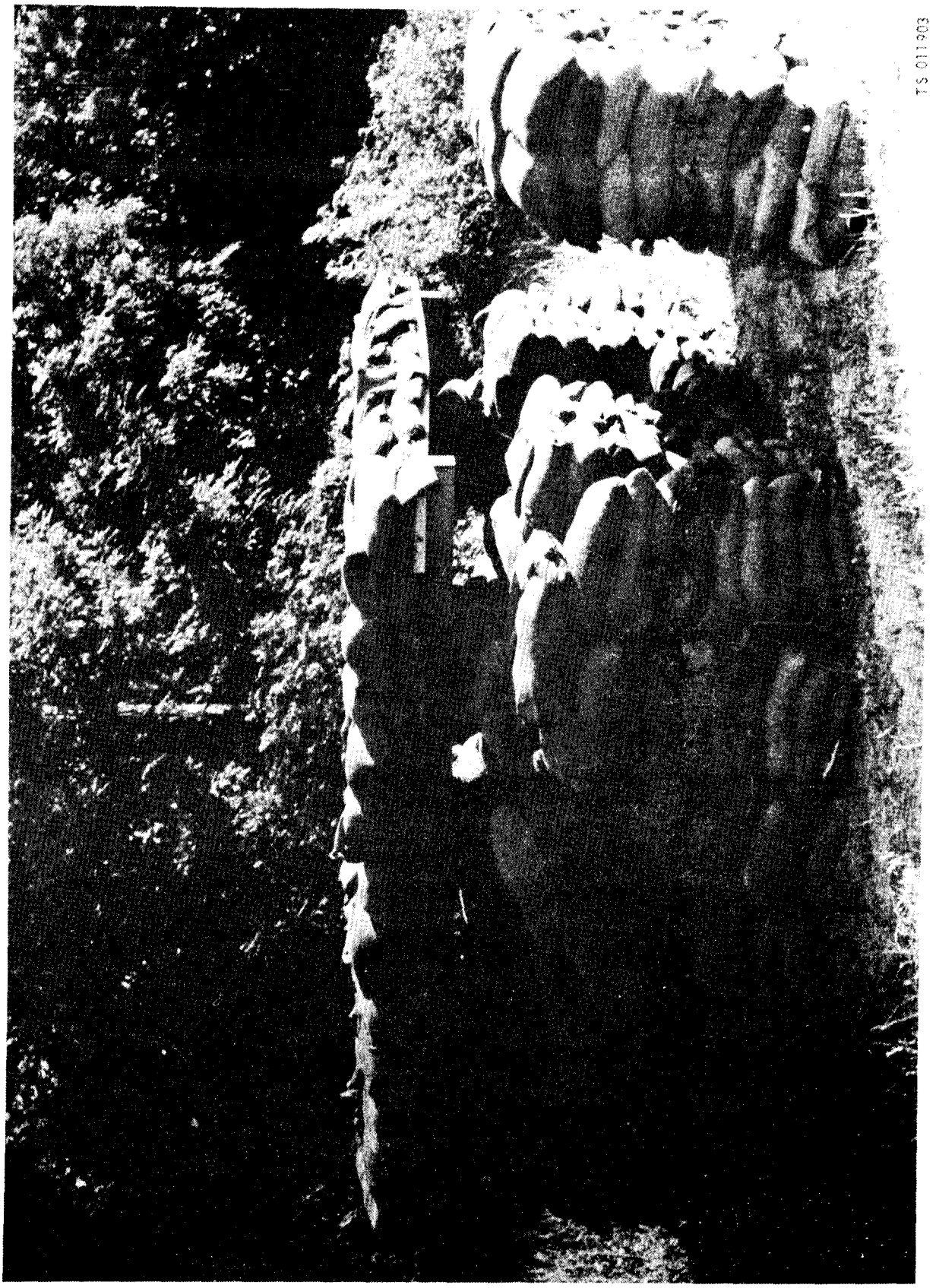
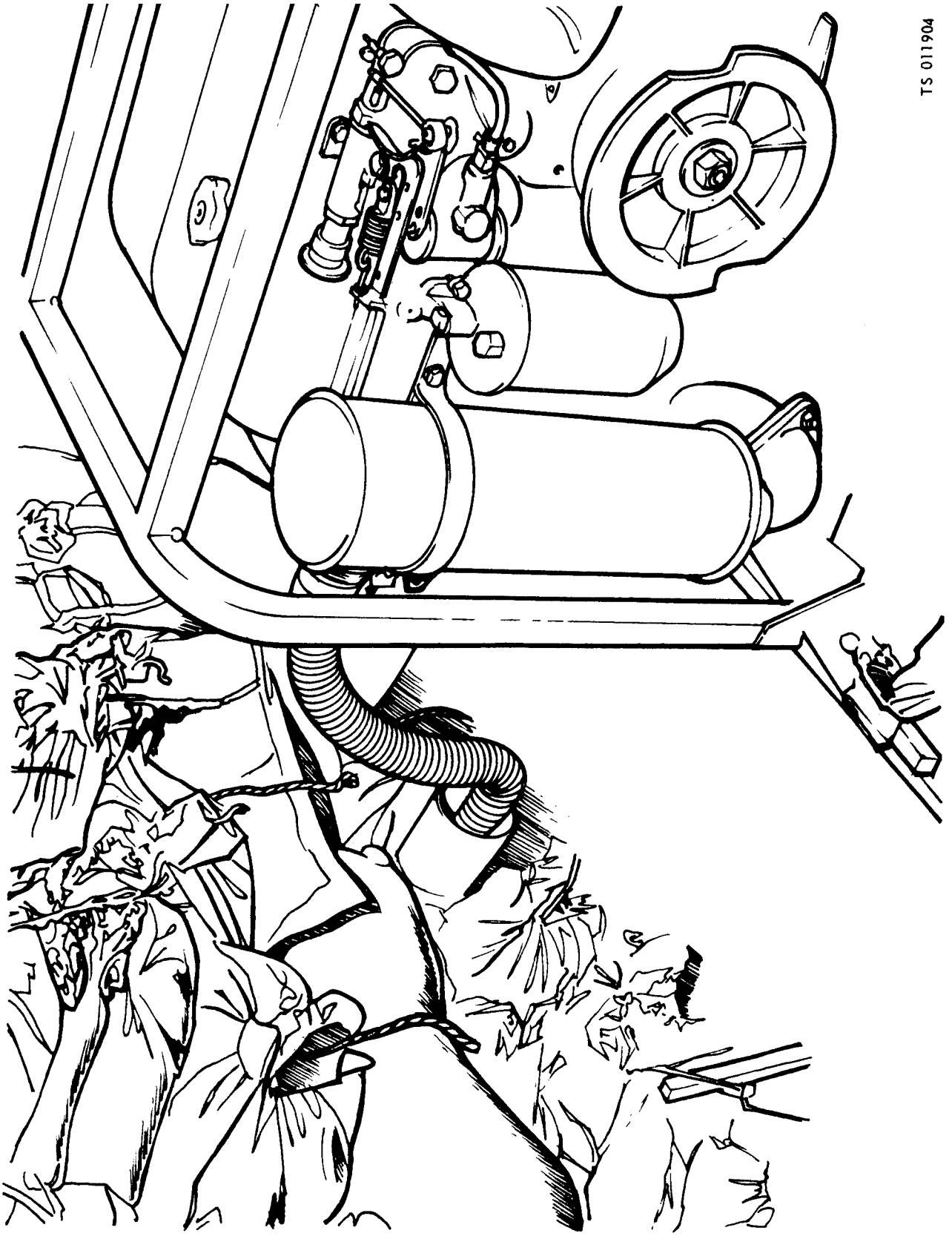



*Figure 4–9. Revetment, left side view.*



TS 011904

*Figure 4-10. Revetment, exhaust duct.*

## Section II. MOVEMENT TO A NEW WORKSITE

### 4-5. Dismantling for Movement

*a. General.* The generator set, being self-contained and lightweight, is readily portable. Disconnect any exhaust piping which may have been installed and remove all holddown bolts. Lift it at the four upper corners of the frame. If it is to be transported, block or tie it to the carrier to prevent damage by shifting during transit.

*b. Load and Ground Cables.* Refer to paragraph 4-2c and disconnect load and ground cables.

*c. Fuel System.* Remove the auxiliary fuel line, if used, and drain the fuel line. Drain the fuel filter bowl.

### 4-6. Reinstallation After Movement

Reinstall the generator set in the same manner as described in paragraph 4-2.

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

### 4-7. Tools and Equipment

No special tools or equipment are required to perform organizational maintenance on the generator set.

### 4-8. Maintenance Repair Parts (A)

Organizational maintenance repair parts are listed and illustrated in the publications listed in Appendix A.

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

### 4-9. General

To insure that the generator set is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Deficiencies discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment. All deficiencies and shortcomings shall be recorded together with the corrective action on the applicable format the earliest possible opportunity. Army and Navy users shall accomplish the necessary preventive maintenance services listed and described in paragraph 4-10. Air Force users shall refer to the applicable inspection manuals and work card sets in the T.O. 35C2-3-1-426 Series for periodic requirements and Table 4-1 for detailed procedures.

### 4-10 Preventive Maintenance Checks and Services (A, F)

The preventive maintenance checks and services to be performed are in Table 4-1 for the generator set less engine. Refer to TM 5-2805-203-14 for engine preventive maintenance checks and services. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

*Table 4-1. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES*

| Item No. | INTERVAL W | | | Item to be inspected | Procedures check for and have repaired or adjusted as necessary | Equipment is not ready available if: |
|---|---|---|---|---|---|---|
| | | | | | **NOTE**<br>**See TM 5-2805-203-14 for engine PMCS and LO 5-2805-203-12.** | |

## Section V. TROUBLESHOOTING

### 4-11. General

This section contains troubleshooting or malfunction information and tests for locating and correcting most of the troubles which may develop in the generator sets. Each malfunction or trouble symptom for an individual component, unit, or system is followed by a list of tests or inspections necessary for you to determine probable causes and suggested corrective actions for you to remedy the malfunction.

### 4-12. Troubleshooting

*a.* This manual cannot list all possible malfunctions that may occur or all tests or inspections, and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, you should notify higher level maintenance.

*b.* Table 4-2 lists the common malfunctions that you may find during the operation or maintenance of the generator sets or their components. You should perform the tests/inspections and corrective actions in the order listed.

**NOTE**

**Before you use this table, be sure you have performed all normal operational checks. If you have a malfunction which is not listed in this table, notify the next higher level of maintenance.**

**Air Force users may perform maintenance within the scope of their capabilities.**

*Table 4-2. Troubleshooting*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **1. GENERATOR FAILS TO SUPPLY LOAD** |
| *Step 1.* Inspect the load terminals for cracks, breaks, loose terminals and other damage. **Replace the load terminals (para 4-25).** Check slave receptacle on MEP-026A28VDC model; **Repair or replace as necessary.** |
| *Step* 2. Check the circuit breaker to see if it is open. **Close the circuit breaker; if the circuit breaker will not stay closed, it is defective. Refer to intermediate (field), (Direct support and general support) maintenance personnel.** |
| *Step* 3. Inspect the generator stator or rotor coils for loose connections or breaks. If either of these parts are defective, there will be no voltage registering on the voltmeter. **Refer to intermediate (field), (Direct support and general support) maintenance personnel.** |
| **2. GENERATOR FAILS TO SUPPLY LOAD (Model MEP-016A)** |
| *Step 1.* Inspect for a cracked, broken or corroded fuseholder. **Replace the fuseholder (para 4-19).** |
| *Step* 2. Test for a defective connector by plugging a known good test lamp into the receptacle. If the test lamp fails to illuminate connector is defective. **Replace the connector (para 4-23).** |

*Table 4-2. Troubleshooting (Cont 'd.)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| *Step3.* Inspect the field flash switch for cracks, breaks, loose terminals and other damage. Test by activating the field flash switch. If the field flash switch does not work, manually flash the field as follows:<br><br>*a.* Open or remove the control box cover (para 4-15).<br><br>*b.* Connect two 1.5 volt flashlight batteries in series and connect a wire to each end.<br><br>*c.* Connect the positive wire from the batteries to terminal No. 20 on the voltage regulator.<br><br>*d.* Start the generator set (para *2-2b).*<br><br>*e.* Momentarily touch the negative wire to terminal No. 21 on the voltage regulator to flash the field.<br>**If the field can be flashed manually, replace the switch (para 4-20).** |
| **3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE**<br><br>*Step 1.* Inspect the variable resistor for cracks, corrosion, loose connections and other damage:<br>Test the variable resistor as follows:<br><br>*a.* Stop the generator set and disconnect terminal 26 of the voltage regulator terminal board.<br><br>*b.* With the multimeter, check resistance across the variable resistor terminals by varying the resistor from full counter-clockwise to full clockwise position. This reading should move smoothly from 0 to 750 ohms ±10% as the variable resistor is rotated to the full clockwise position.<br><br>**NOTE**<br><br>On sets manufactured prior to 1968, this reading will be 0 to 250 ohms ±10%.<br><br>**Replace the variable resistor (para 4-16) if the reading is not within specifications.** |

*Table 4-2. Troubleshooting (Cont 'd.)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE (Cont'd)**<br><br>*Step 2.* Check the voltage regulator for loose wires, corrosion, metal to metal contact, or incorrect wiring.<br>**Refer to intermediate (field) (direct support and general support) maintenance personnel.**<br><br>*Step 3.* Inspect the frequency meter, load meter and voltage selector switch for broken glass, improper operation, or other damage. Test the frequency meter, load meter and voltage selector switch as follows:<br><br>*a.* Frequency Meter.<br><br>(1) Remove load cables and start generator set.<br><br>(2) With a multimeter, measure DC Current across the terminals of the frequency meter. This reading will be in DC micro amperes. Reading at minimum deflection at full scale valve will be 0 to 200 micro amperes. Normal reading at 60 Hz or 400 Hz will be 90 to 110 micro amperes.<br><br>(3) If reading is not within specifications, stop the generator and connect a frequency meter of known accuracy in series with the set fre–quency meter. Be sure to observe polarity.<br><br>(4) Restart the generator set and compare the reading on the set meter and test meter. Frequency variation between these two meters should not exceed 1%.<br>**If the frequency variation exceeds 1% of full value, replace the frequency meter (para 4-17).** |

*Table 4-2. Troubleshooting (Cont'd.)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE (Cent'd)** |
| *b.* Load Meter<br>(1) Connect a load of known wattage and proper voltage to the output terminals of the generator set. Maximum load is 3000 volts.<br>(2) Start the generator and put circuit breaker in the ON position. Observe reading on set load meter. Meters should indicate according to load attached, i.e., 750-watts-25%, 1500 watts–50%, etc.<br>**If load meter does not read within specifications, replace the load meter (para 4-17).** |
| *c.* Voltage Selector Switch.<br>(1) Disconnect load cables, start generator set and allow it to warm up.<br>(2) Put circuit breaker in the ON position. Check reading on voltage selector switch and voltmeter. With a multimeter, measure output voltage across load terminals that are compatible to the setting on the voltage selector swich.<br>**If proper voltages cannot be read on output terminals, replace the voltage selector switch (para 4-21).** |
| *Step 4.* Inspect the voltmeter, time meter and current selector switch for broken glass, improper operation, or other damage. Test the voltmeter, time meter and current selector switch as follows:<br>*a.* Voltmeter.<br>(1) Remove load cables from load terminals and start the generator set. |

*Table 4-2. Troubleshooting (Cont'd.)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE (Cont'd)** |
| (2) Position circuit breaker switch to ON position.<br>(3) With a multimeter, measure output voltage across load terminals on all position settings of the voltage selector switch. Output voltage should not vary more than 5% from the set voltmeter.<br>**If the voltage on the voltmeter varies more than 5%, replace the voltmeter (para 4-17).** |
| *b.* Time Meter. Test the time totalizing meter by checking it against a reliable clock. Check mission duration time against the time totalizing meter.<br>**Replace a defective, inoperative time totalizing meter (para 4-18).** |
| *e.* Current Selector Switch.<br>(1) Stop the generator set.<br>(2) Disconnect the input lead at terminal 11. With a multimeter, check continuity between terminals 11 and 12 ($I_1$), 11 and 13 ($I_2$), 11 and 14 ($I_3$), on all three positions of the current selector switch.<br>**If an open circuit is indicated on selected switch settings of the current selector switch, the switch is defective and should be replaced (para 4-21).** |
| **4. GENERATOR NOISY** |
| Inspect for loose, vibrating mounting bolts.<br>**Tighten the mounting bolts.** |

## Section VI. RADIO INTERFERENCE SUPPRESSION

### 4-13. RFI Suppression Capacitors

*a. General Methods Used to Attain Proper Suppression.* Essentially, suppression is attained by providing a low-resistance path to ground for stray currents. The methods used include shielding the ignition and high frequency wires, grounding the frame with bonding straps, and using capacitors and resistors. For general information on radio interference suppression, see Appendix A for the appropriate service manual.

*b. Interference Suppression Components.*

(1) Refer to figure 4-11 for location, description, and removal and installation of suppression components.

(2) For the removal and installation of the shielded spark plugs, refer to the appropriate service manual in Appendix A.

**CAUTION**

**Do not pull on cable or twist the braided shielding. Gently work the cable from side to side and free the rubber seal. Do not use sharp tools to install the rubber seal.**

*c. Replacement of Suppression Components.*

(1) *General.* Replace radio interference suppression components with components of the same size, type, and rating. The capacity, voltage, and polarity of the capacitors are extremely important. Insure good metal-to-metal contact by using internal-external lockwashers.

(2) *Removal and installation.* Refer to figure 4-11 and remove and install the capacitors and bonding straps.

*d. Testing of Radio Interference Suppression Components.*

**NOTE**

**The only way to accurately test a capacitor is with a capacitor tester. However, you can tell if a capacitor is working by the following method.**

(1) Stop the generator set and disconnect the lead in terminal to the capacitor.

(2) With a multimeter on the ohms setting, touch the test probes to the input terminal and the metal case of the capacitor, then quickly reverse the probes. The multimeter will give a momentary reading then fall back to 0.

(3) If no deflection can be obtained on the multimeter scale, replace the capacitor (fig. 4-11).

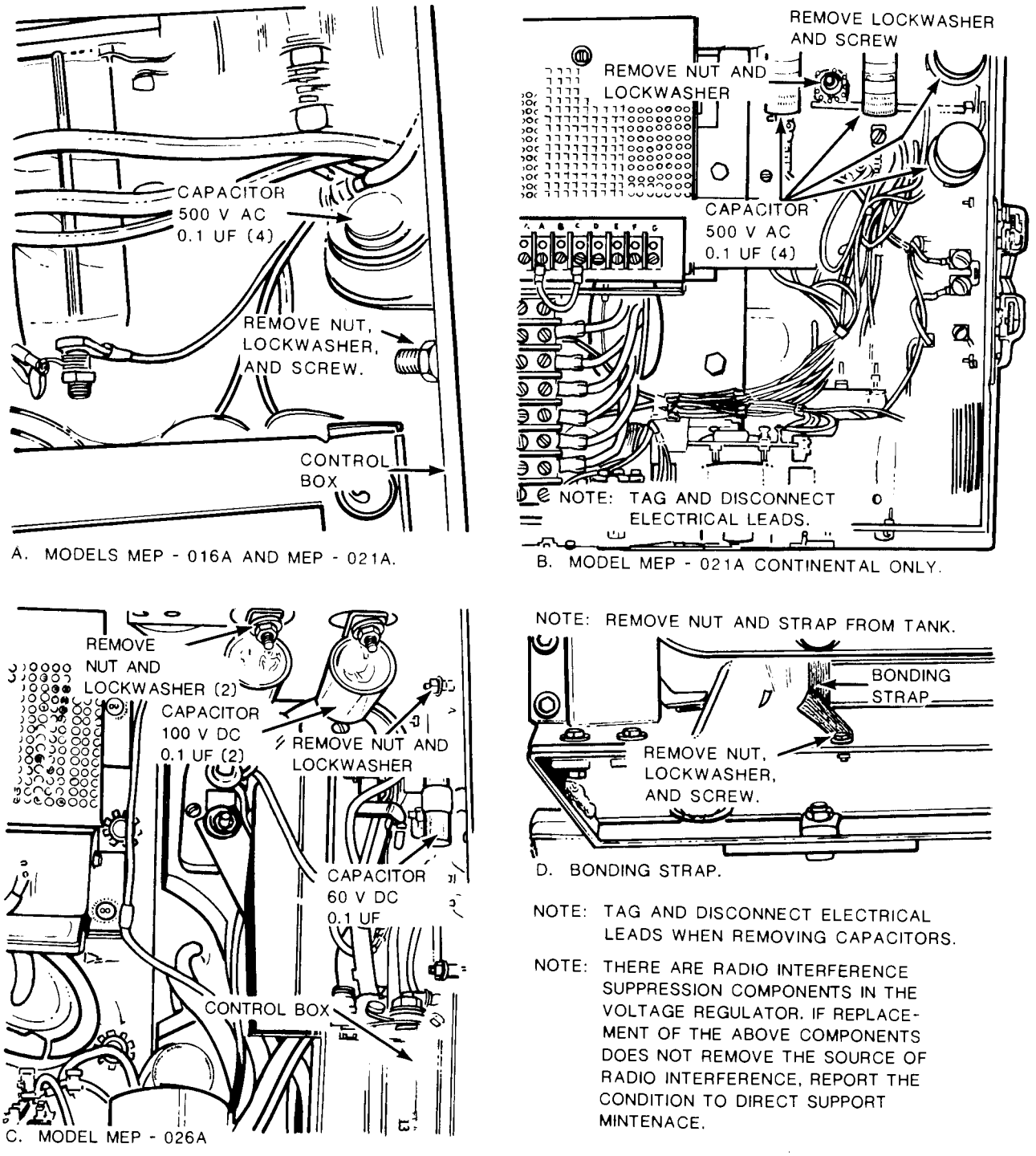
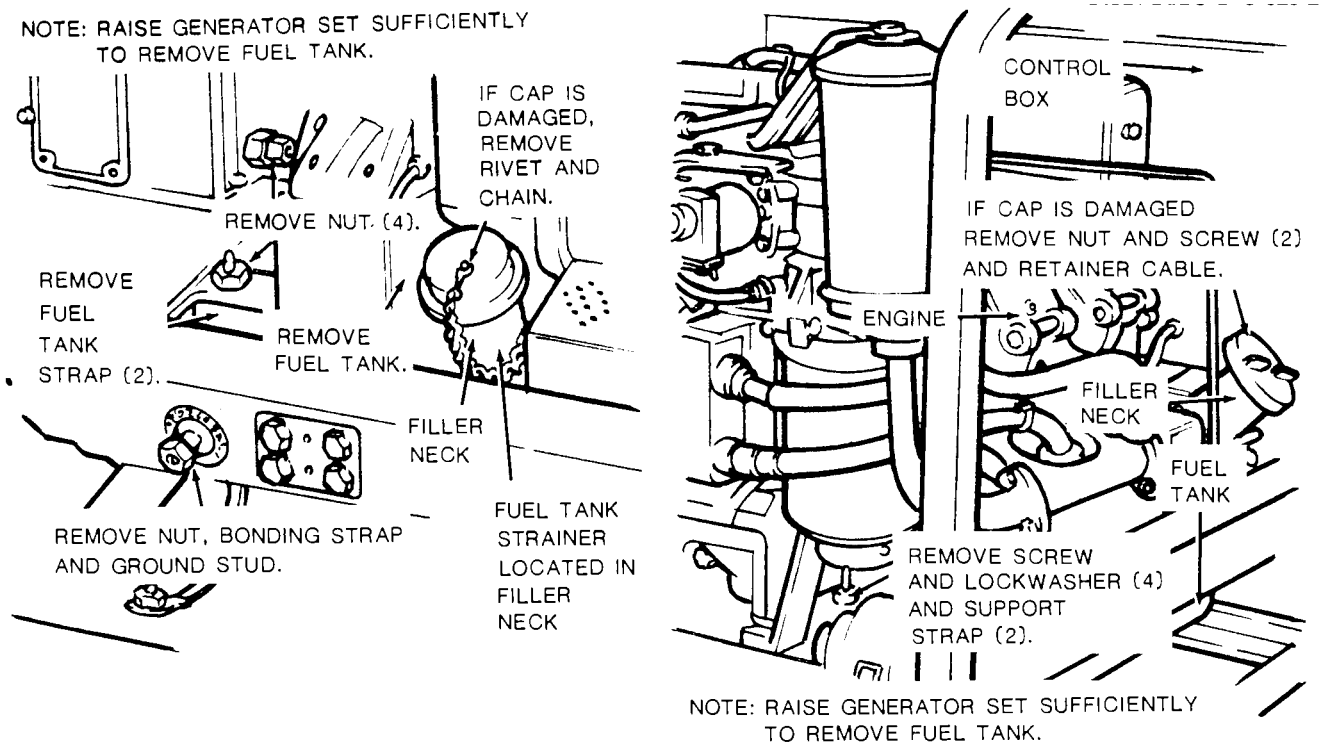



*Figure 4-11. Radio interference suppression components, location, description, removal and installation.*

## Section VII. MAINTENANCE OF THE FRAME ASSEMBLY

To remove and install the ground terminal stud, see figure 4-12. Refer any damage to the frame to direct sup port maintenance. Replace lost or broken terminal clip (retainer, safety clip). For fabrication procedures, see paragraph 4-25A.




A. TYPICAL LOCATION OF FILLER NECK AND FUEL TANK CAP, PRECEDING REPLACMENT OF THE FUEL TANK.

B. TYPICAL LOCATION OF FILLER NECK AND FUEL TANK CAP, FOLLOWING REPLACEMENT OF THE FUEL TANK.

*Figure 4-12. Fuel tank and cap, and ground terminal stud removal and installation.*

## Section VIII. MAINTENANCE OF THE GENERATOR CONTROL BOX ASSEMBLY

### 4-14. General

The generator control box assembly consists of the meters, slave receptacle (Model ME P-016A/C only), circuit breaker, fuseholder (Model ME P-016A/C only). Field flash switch, voltage selector and current selector switch (Models MEP-016A/C and MEP-021A/C). Variable resistor (Labeled ADJUST VOLTS or increase volts), load terminals and buss bars (Model MEP-026A/C).

### 4-15. Control Box Cover

*a. General.* Some models of the generator set are equipped with a fully removable control box cover (4 quick fasteners), while other models are equipped with a hinged non-removable (2 quick fasteners) control box cover.

*b. Opening, Removal and Installation.* To open, remove or install the control box cover, simply loosen (or tighten) the two or four quick fasteners.

### 4-16. Variable Resistor

*a. General.* The variable resistors on each generator set application differ slightly, but basically perform the same function. They can be recognized by the circular identification plate under each control knob which reads either INCREASE VOLTS OR ADJUST VOLTS.

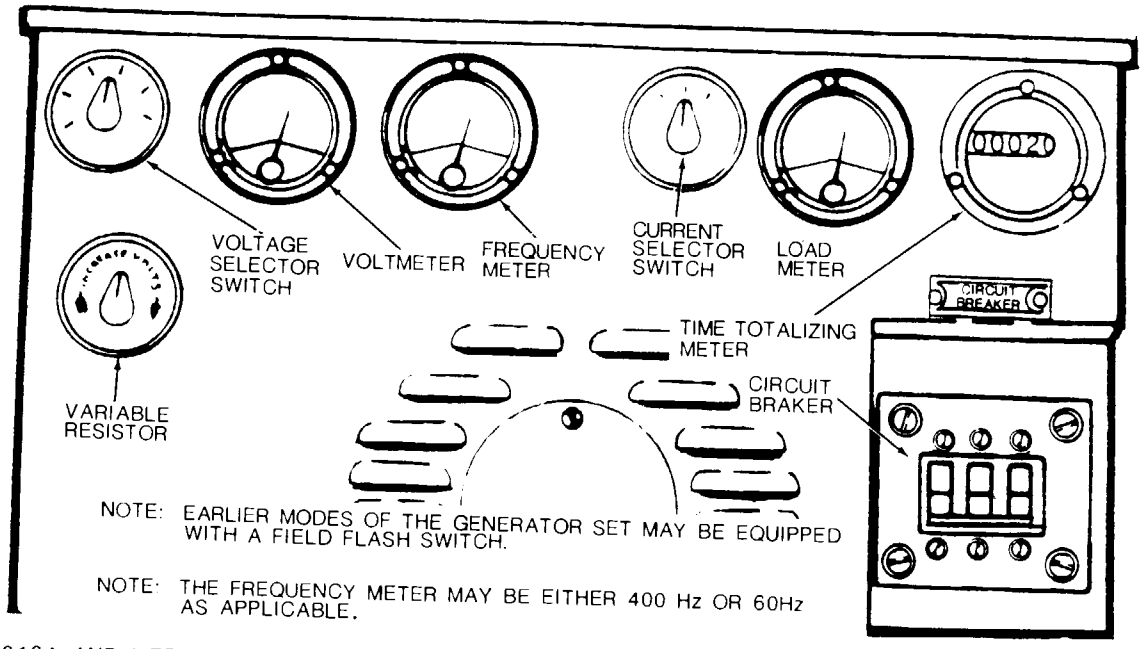
*b. Test.*

(1) Stop the generator set and disconnect terminal 26 of the voltage regulator terminal board.

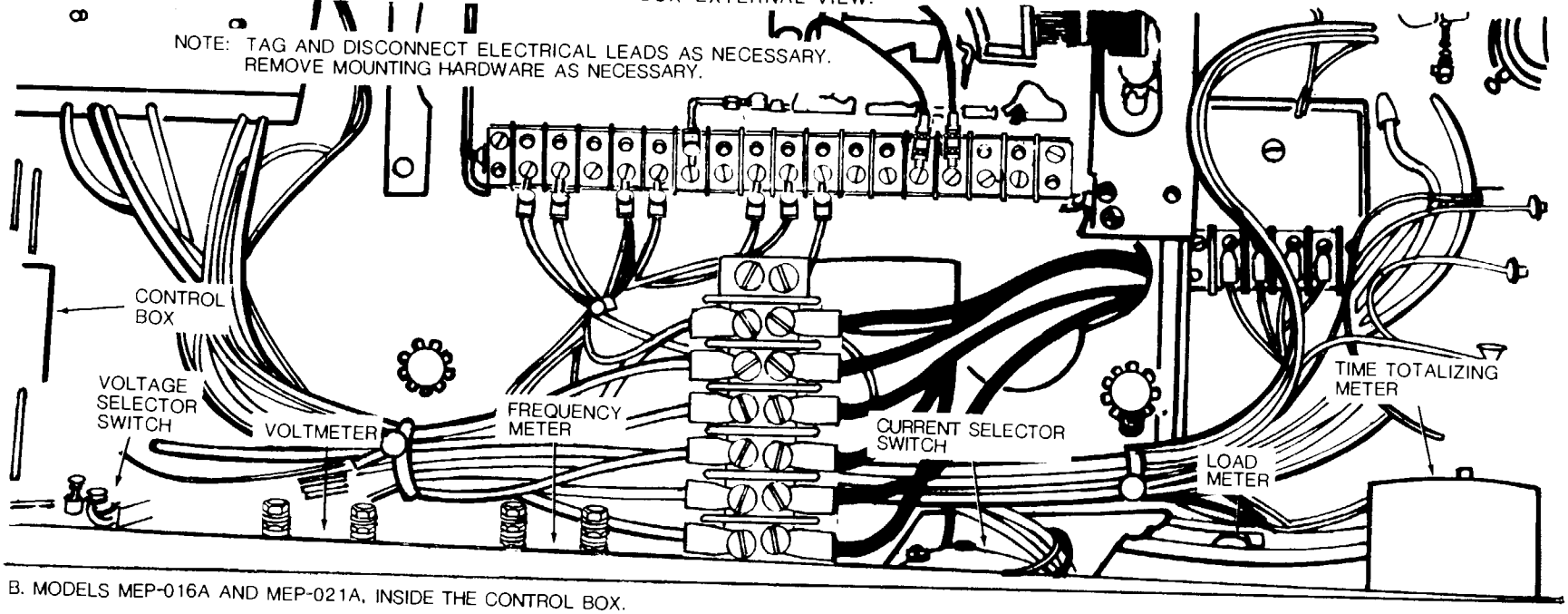
(2) With a multimeter, check resistance across the variable resistor terminals by varying the resistor from full counterclockwise to full clockwise position. This reading should move smoothly from 0 to 750 ohms ±10% as the variable resistor is rotated to the full clockwise position.

**NOTE**

**On sets manufactured prior to 1968, this reading will be 0 to 250 ohms ±10%.**




A. MODELS MEP-016A AND MEP-021A, CONTROL BOX EXTERNAL VIEW.




B. MODELS MEP-016A AND MEP-021A, INSIDE THE CONTROL BOX.

*Figure 4-13. Controls and instruments, removal and installation (sheet 1 of 3).*

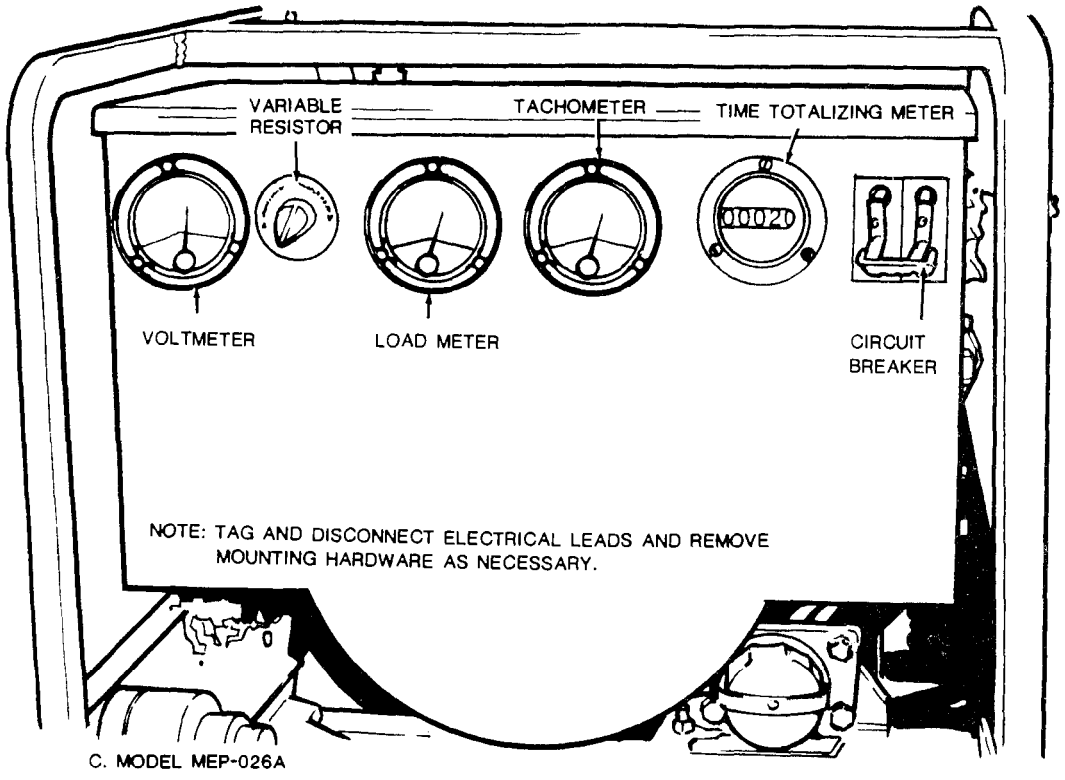



*Figure 4-13. Controls and instruments removal and installation (Model MEP-026A) (Sheet 2 of 3).*

*Figure 4-13. Controls and instruments removal and installation (Model MEP-026A) (Sheet 2 of 3).*

(3) If the reading is not within specifications, replace the variable resistor.

*c. Removal.* Using figure 4-13 as a guide, remove the variable resistor as follows:

(1) Tag and disconnect all electrical leads.

(2) Remove mounting hardware as necessary.

(3) Remove the variable resistor.

*d. Installation.* Using figure 4-13 as a guide, install the variable resistor as follows:

(1) Replace the variable resistor.

(2) Install mounting hardware.

(3) Connect all electrical leads and remove the tags.

**4-17. Frequency Meters (400 Hertz and 60 Hertz), Voltmeter, Loadmeter, and Tachometer (MEP-026A, MEP-026C Only).**

*a. Test.*

(1) *Voltmeter.*

*(a)* Remove load cables from load terminals and start the generator set.

*(b)* Position circuit breaker switch to ON position.

*(c)* With a multimeter, measure output voltage across load terminals on all position settings of the voltage selector switch. Output voltage should not vary more than 5% from the set voltmeter.

*(d)* If voltage varies more than 5%, replace the voltmeter.

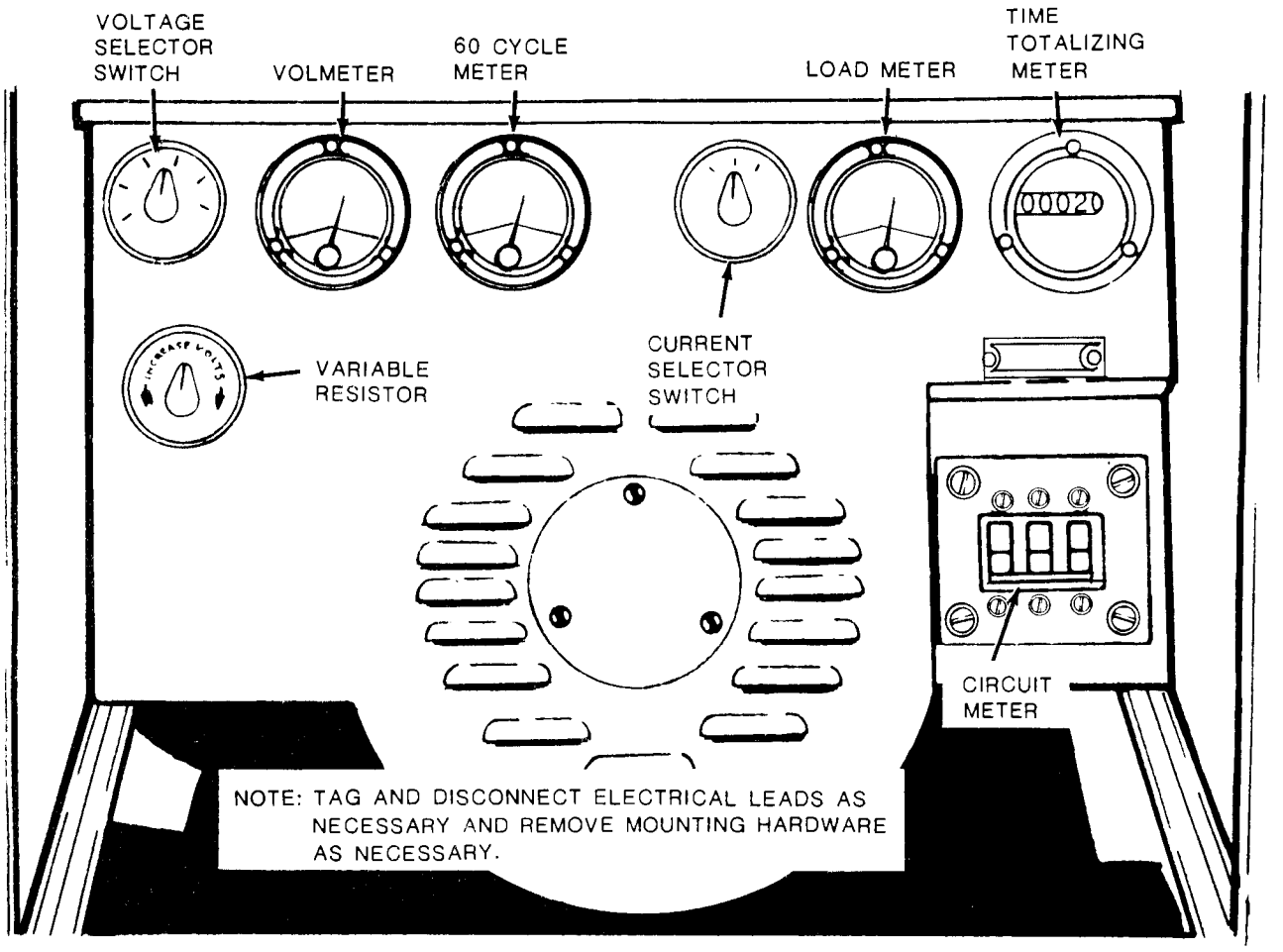
**NOTE**

**All meters (except the voltmeter) suspected of malfunction should be tested by comparison with calibrated master instruments at Direct Support Level or equivalent.**

(2) *Frequency Meter.*

*(a)* Remove load cables and start generator set.

*(b)* With a multimeter, measure DC current across the terminals of the frequency meter. This




D. MODEL MEP-016A.

*Figure 4-13. Controls and instruments, removal and installation (Model MEP-016A) (Sheet 3 of 3).*

reading will be in DC micro amperes. Reading at minimum deflection at full scale valve will be 0 to 200 micro amperes. Normal reading to 60 Hz or 400 Hz will be 90 to 110 micro amperes.

*(c)* If reading is not within specifications, stop the generator and connect a frequency meter of known accuracy in series with the set frequency meter. Be sure to observe polarity.

*(d)* Restart the generator set and compare the reading on the set meter and test meter. Frequency variation between these two meters should not exceed 1%.

*(e)* If frequency variation exceeds 1% of full valve, replace the frequency meter.

(3) *Load Meter.*

*(a)* Connect a load of known wattage and proper voltage to the output terminals of the generator set. Maximum load is 3000 watts.

*(b)* Start the generator and put circuit breaker in the ON position. Observe reading on set load meter. Meters should indicate according to load attached, i.e., 750 watts—25%, 1500 watts—50%, etc.

*(c)* If load meter does not read within specifications, replace the load meter.

*b. Removal.*

(1) Open or remove the control box cover (para 4-15).

(2) Refer to figure 4-13 to remove any of the meters as required.

*c. Installation.*

(1) Refer to figure 4-13 to install any of the meters as required.

(2) Install the control box cover (para 4-15).

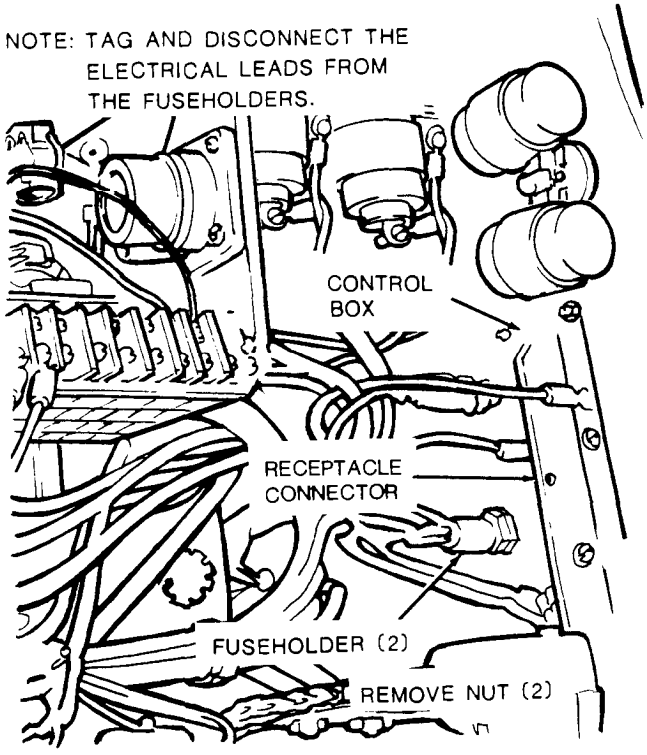



*Figure 4-14. Fuseholder, removal and installation.*

### 4-18. Time Totalizing Meter

**NOTE**

**Double check that correct meter is being installed when it needs replacing. AC hour meters and DC hour meters are not interchangeable.**

*a. Test.* Test the time totalizing meter by checking it against a reliable clock. Check mission duration time against the time totalizing meter.

*b. Removal and Installation.* To remove or install the time totalizing meter, open or remove the control box cover (para 4-15) and refer to figure 4-13.

### 4-19. Fuseholder (Model MEP-016A, MEP-016C)

Refer to paragraph 4-15 and open or remove the control box cover. Refer to figure 4-14 and the following instructions to remove or install the fuseholder.

*a. Removal.*

(1) Tag and disconnect the electrical leads from the fuseholder.

(2) Remove the nut over the body of the fuseholder and remove the fuseholder from the outside of the control box.

*b. Installation.*

(1) From the outside of the control box, replace the fuseholder and install the nut over the body of the fuseholder.

(2) Connect all electrical leads and remove the tags.

### 4-20. Field Flash Switch

*a. General.* Models of the generator set manufactured prior to 1968 are equipped with a field flash switch. This paragraph contains instructions for test, removal and installation of the switch if the generator set is so equipped, and for flashing the generator fields with or without a field flash switch.

*b. Test.* If the field flash switch does not work, refer to manual field flashing instructions in paragraph 4-20*e*(2) below. If the field can be flashed manually, replace the switch.

*c. Removal.*

(1) Open or remove the control box cover (para 4-15).

(2) Tag and disconnect electrical leads as necessary.

(3) Remove the necessary mounting hardware.

*d. Installation.*

(1) Install mounting hardware.

(2) Connect electrical leads and remove tags.

(3) Close or install the control box cover (para 4-15).

*e. Flashing the Fields.*

(1) *Flashing the field with the switch.*

**WARNING**

**Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs which were fitted by a trained professional.**

*(a)* Start the generator set (para 2-2b).

*(b)* Actuate the switch momentarily only to flash fields.

(2) *Flashing the field without a switch.*

*(a)* Open or remove the control box cover (para 4-15).

*(b)* Connect two 1.5 volt flashlight batteries in series and connect a wire to each end.

*(c)* Connect the positive wire from the batteries to terminal No. 20 on the voltage regulator.

*(d)* Start the generator set (para 2-2b).

*(e)* Momentarily touch the negative wire to terminal No. 21 on the voltage regulator to flash the field.

## 4-21. Current Selector Switch and Voltage Selector Switch (Models MEP-016A, MEP-016C, and MEP-021A, MEP-021C).

*a. Test.*

(1) *Current selector switch.*

*(a)* Stop the generator set.

*(b)* Disconnect the input lead at terminal 11. With a multimeter, check continuity between terminals 11 and 12 (I(1)), 11 and 13 (I(2)), 11 and 14 (I(3), on all three positions of the current selector switch.

*(c)* If an open circuit is indicated on selected switch settings, switch is defective and should be replaced.

(2) *Voltage selector switch.*

*(a)* Disconnect load cables, start generator set and allow it to warm up.

*(b)* Put circuit breaker in the ON position. Check reading on voltage selector switch and voltmeter. With a multimeter, measure output voltage across load terminals that are compatible to the setting on the voltage selector switch.

*(c)* If proper voltages cannot be read on output terminals, replace the voltage selector switch.

*b. Removal and Installation.* Refer to figure 4-13 to remove or install the current selector switch or voltage selector switch.

## 4-22. Slave Receptacle (Model MEP-026A, MEP-026C)

*a. General.* The slave receptacle is used for electrical power source when starter kit is mounted on unit.

*b.* On 28 VDC Model MEP-026A the slave receptacle is used for providing an output of 28 VDC for equipment which requires direct current source of power.

*c.* Refer to Figure 4-15 for removal and installation of slave receptacle.

## 4-23. Connector Cover Plate and Recptacle Connector (Model MEP-016A, MEP-016C)

*a. General.* The receptacle connector on the side of the unit has two two-pronged receptacles for operation of appliances or equipment requiring 100/120 volts, 15 amperes current at 60 hertz. The two receptacles are individually covered with a snap-up metal lid. The circuit is fused against overload, but close attention should be paid to the indication on the load meter when an additional current draw is applied.

*b. Test.*

(1) With a voltmeter, measure the input voltage across input terminals on the back of the receptacle. This reading should be 120 V AC.

(2) Measure output voltage of plug-in on the front of the receptacle. If 120 V is not obtained from the plug-in side of the receptacle, replace the receptacle.

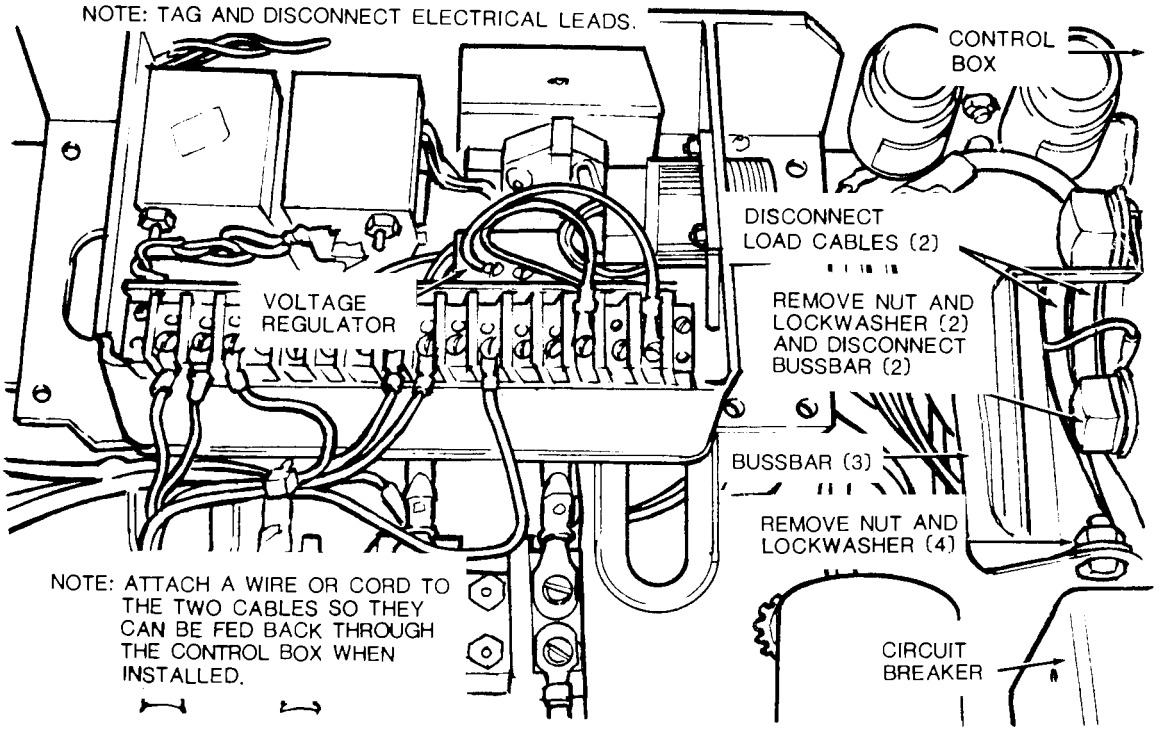
*c. Removal.* With the control box cover opened or removed, refer to figure 4-16 to remove or install the connector cover plate and the receptacle connector.

(1) Tag and disconnect all electrical leads.

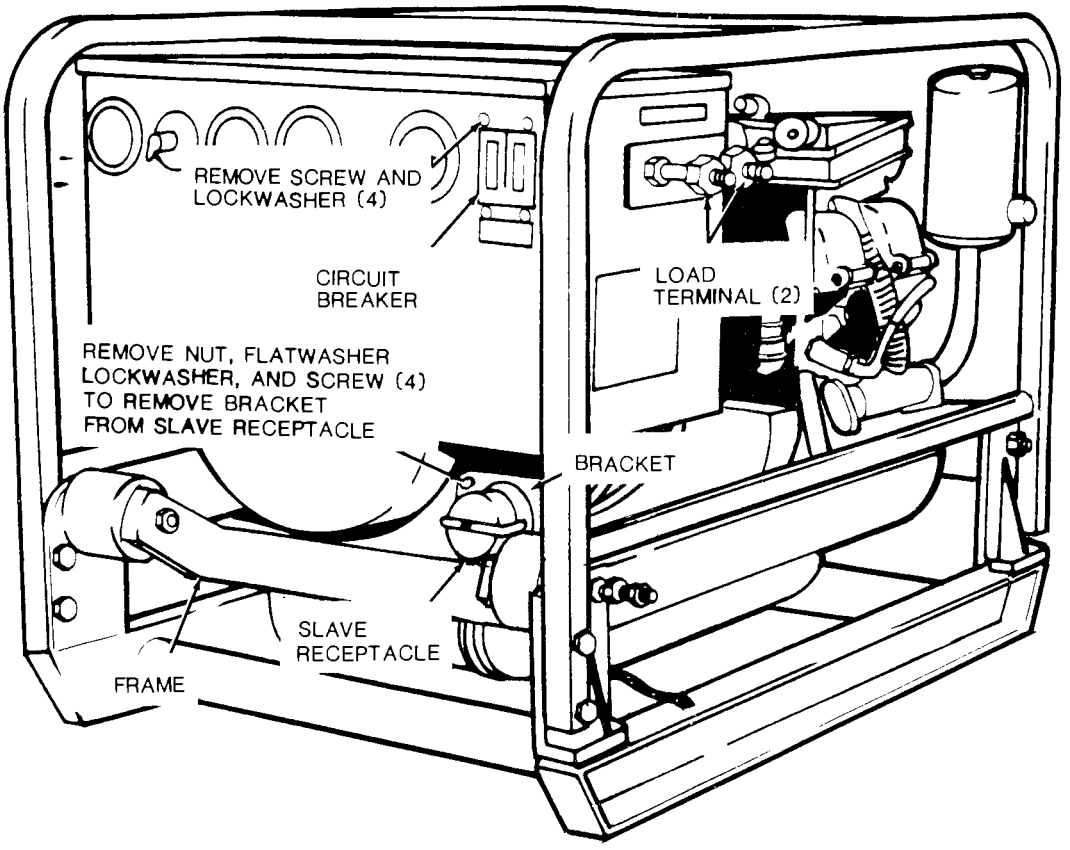
(2) Remove the two nuts, lockwashers, and screws from inside the control box.

(3) Remove the connector.

*d. Installation.*




A. DISCONNECT THE LOAD CABLES AND BUSSBARS.




B. REMOVAL OF CIRCUIT BREAKER AND SLAVE RECEPTACLE.

*Figure 4-15. Slave recepticle, removal and installation (Model MEP-026A).*

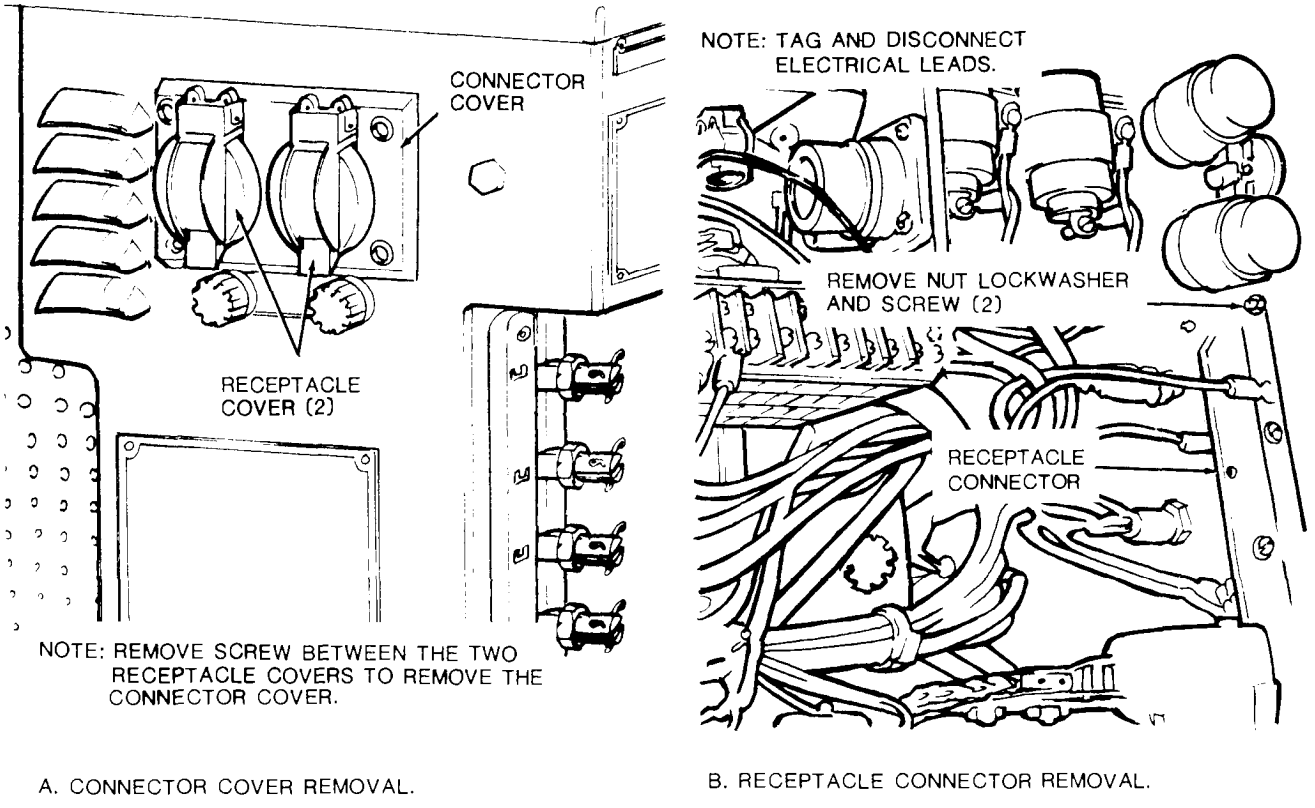



*Figure 4-16. Connector cover plate and receptacle connector, removal and installation (Model MEP-016A).*

(1) Replace the connector.

(2) Install the two nuts, lockwashers, and screws from inside the control box.

(3) Connect all electrical leads and remove all tags.

## 4-24. External Shunt, Bussbars and Load Terminals (Model MEP-026A, MEP-026C)

*a. Removal.*

(1) Open or remove the control box cover (para 4-15).

(2) Refer to figure 4-17 to inspect and remove the external shunt, bussbars, and load terminals.

*b. Installation.*

(1) Refer to figure 4-17 to install the external shunt, bussbars, and load terminals.

(2) Replace the control box cover (para 4-15),

## 4-25. Load Terminals and Insulator (Model MEP-016A, MEP-016C)

Refer to figure 4-18 to remove or install the load terminals and insulator as follows:

a. Removal.

(1) Tag and disconnect all electrical leads.

(2) Remove the four screws.

(3) Following removal of the mounting hardware, pull the terminal block from the control box.

b. Installation.

(1) Replace the terminal block.

(2) Replace the four screws.

(3) Connect all electrical leads and remove the tags.

**NOTE**

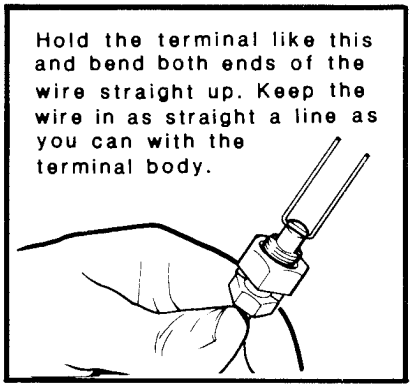
**The load terminals and insulator for Model MEP-021A, MEP-021C are removed and installed in a similar manner.**

### 4-25A. Replace Lost or Broken Terminal Clip (Retainer, Safety Clip)

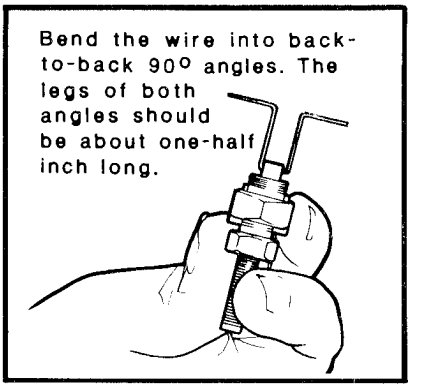
The terminal clip is a component of both the load terminal and the ground terminal. If the terminal clip is lost or broken, fabricate as follows: Requisition bulk wire as stated in the chart. Cut off about 3 inches of the wire, Cut the wire short enough to keep the clips from touching another terminal or the generator frame in the open or closed position. Slip the wire through the hole in the terminal and proceed as shown in the views below.

| NSN | MEP-016A/C MEP-026A/C | MEP-021A/C |
|---|---|---|
| 9505-00-804-3814 (0.042 inch) | Ground | Load and Ground |
| 9505-01-049-0144 (0.050 inch) | Load | - |

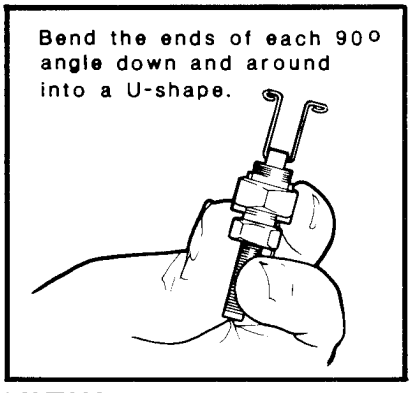
**BULK WIRE CHART**



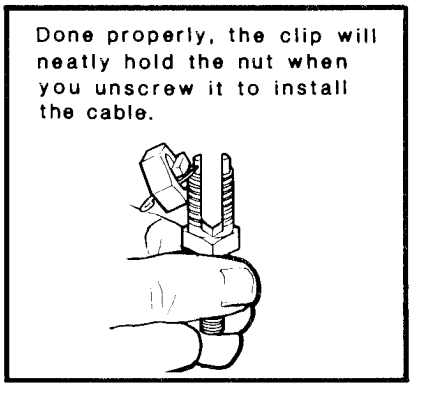

VIEW 1.




VIEW 2.




VIEW 3.




VIEW 4.

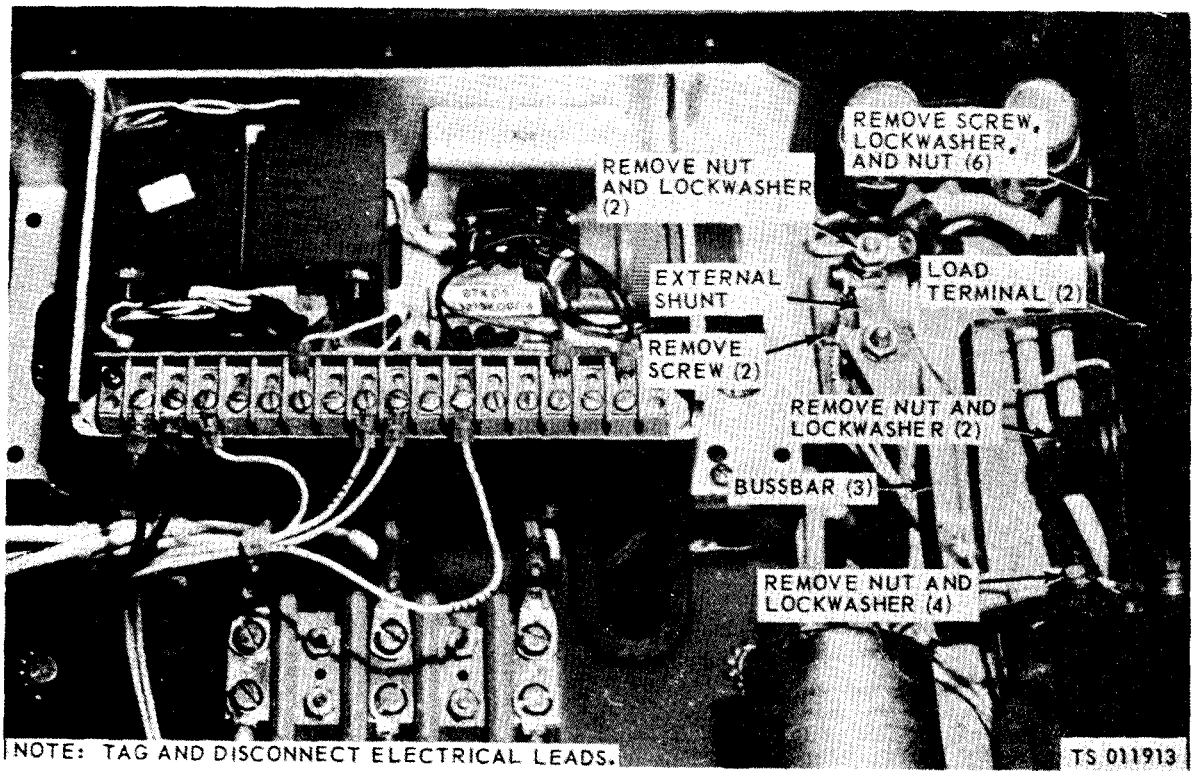



*Figure 4-17. External shunt, bussbars, and load teminals, removal and installation (Model MEP-026A).*

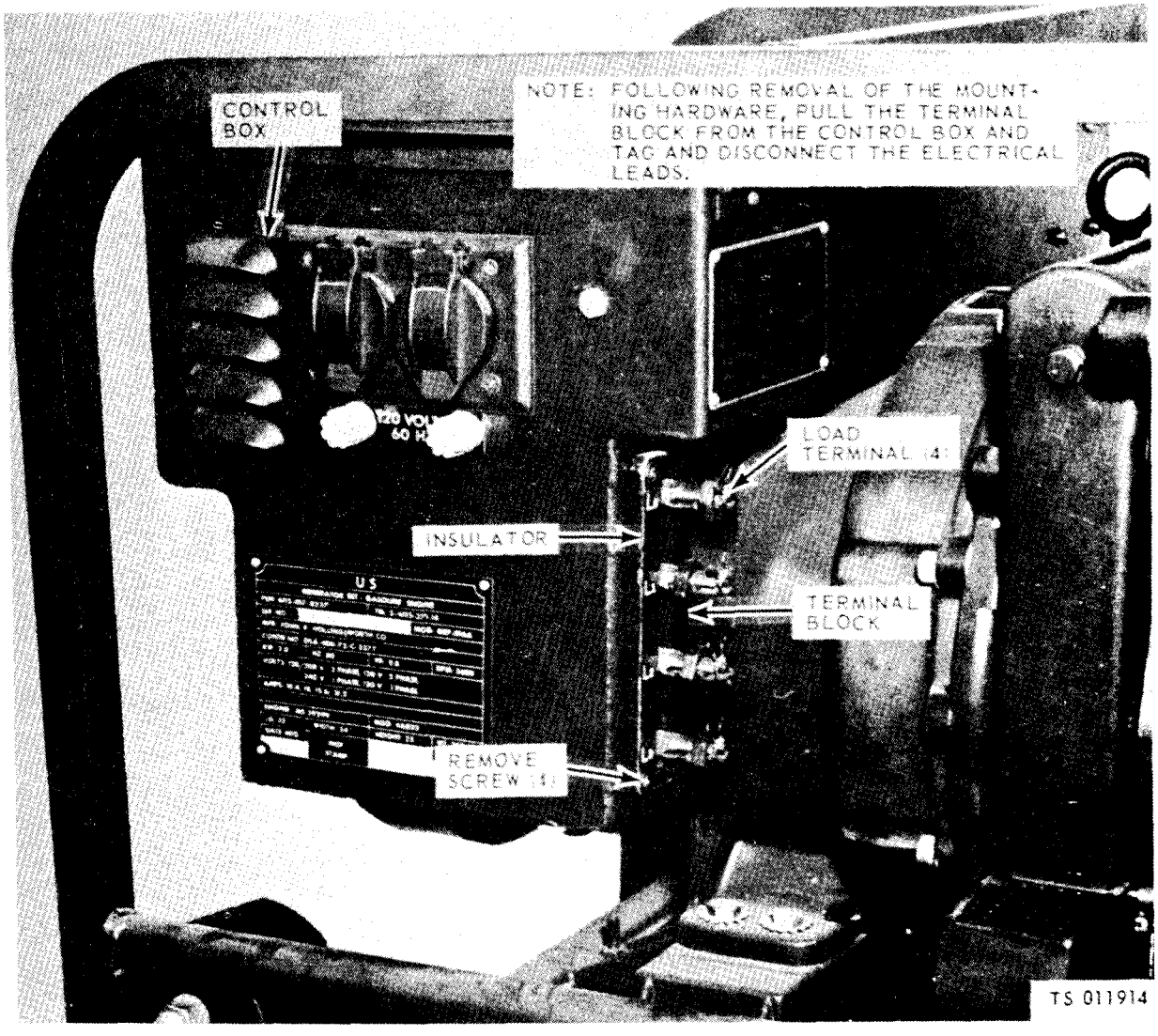



*Figure 4-18. had terminals and insulator, removal and installation (Model MEP-016A).*

## Section IX. MAINTENANCE OF THE FUEL SYSTEM

### 4-26. General

This section includes maintenance instructions for the fuel tank, fuel hose, fuel line, fuel selector valve, fuel filter, and fuel filter bracket.

### 4-27. Fuel Tank

*a. Removal.*

(1) Remove the fuel tank drain plug (located on the fuel tank at the engine end of the generator set) and drain the fuel tank.

(2) Refer to figure 4-19 and disconnect the fuel hose.

(3) Refer to figure 4-12 and remove the fuel tank.

*b. Inspect.* Inspect the fuel tank for dents, cracks, or other damage. Replace if necessary.

*c. Installation.*

(1) Refer to figure 4-12 and install the fuel tank.

(2) Refer to figure 4-19 and connect the fuel hose.

(3) Install the fuel tank drain plug and fill the fuel tank (para 4-lb(2)).

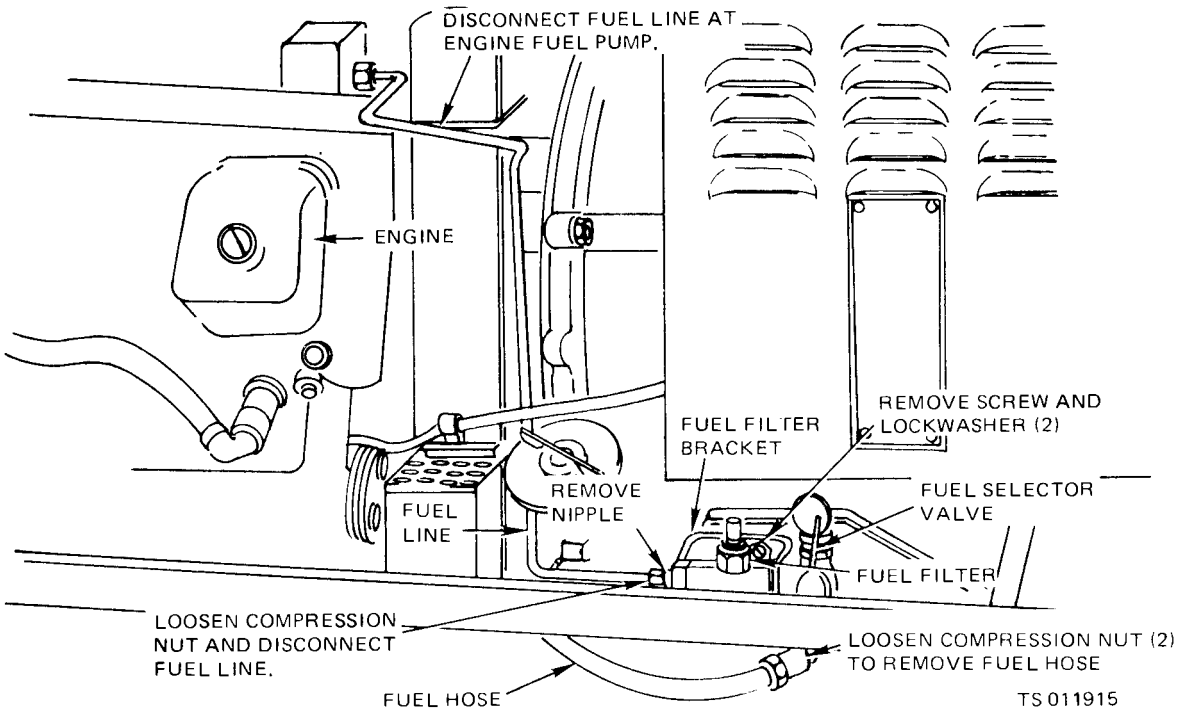



*Figure 4-19 Fuel selector valve, fuel filter, fuel filter bracket, fuel hose, fuel line, and fittings, removal and installation.*

### 4-28. Fuel Hose and Fuel Line

Inspect the fuel hose and line for damage. Refer to figure 4-19 to remove and install the fuel hose and fuel line.

### 4-29. Fuel Selector Valve, Fuel Filter, and Fuel Filter Bracket

Refer to figure 4-19 to remove and install the fuel selector valve, fuel filter, and fuel filter bracket.

## Section X. MAINTENANCE OF THE EXHAUST SYSTEM

### 4-30. General

The exhaust system consists of two mufflers which are connected to the engine exhaust manifold by muffler pipes.

### 4-31. Muffler Brackets, Muffler Pipes, and Muffler

a. Refer to figure 4-20 to remove and install the brackets, mufflers, pipes, and gasket.

b. When a spark arrester is required, the installation procedure will be on the instruction sheet furnished with the spark arrester kit located on page 18, TM 5-6115-271-24P.

**WARNING**

The United States Forestry Service requires that any engine driven equipment operating within National Forests or Parks be provided with spark arresters for the avoidance of forest fires.

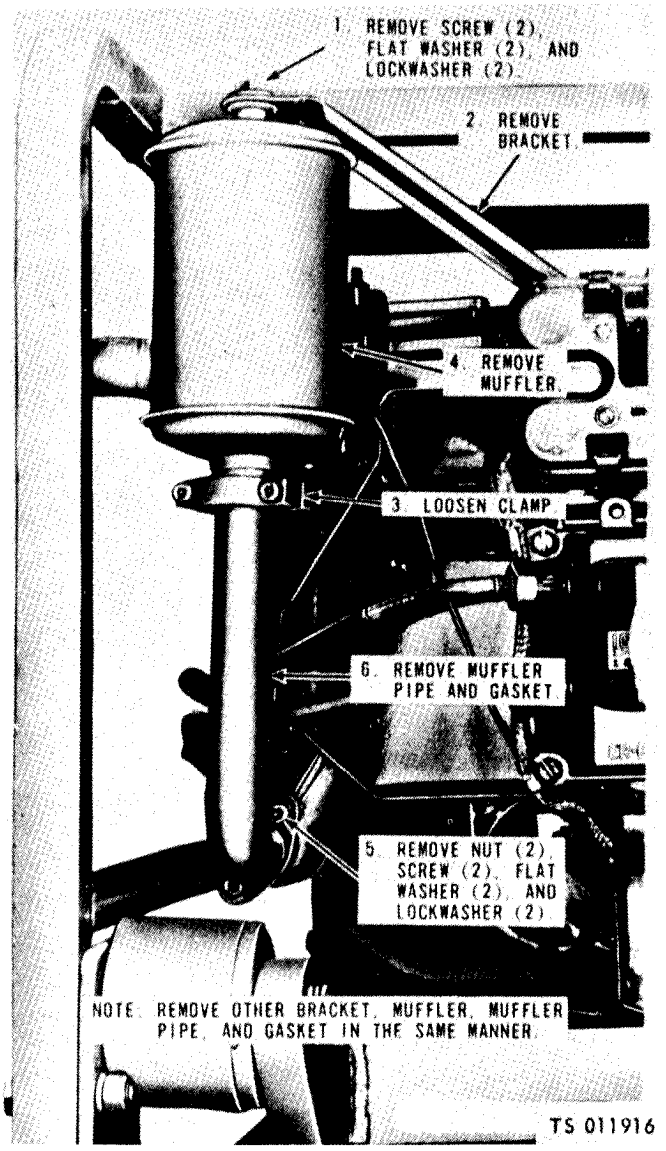



*Figure 4-20. Muffler bracket, mufflers, and muffler pipes, removal and installation.*

## Section XI. MAINTENANCE OF THE ENGINE ELECTRICAL SYSTEM

### 4-32. General

The engine electrical system consists of a receptacle, starting switch, mounting bracket, electric starter, and the necessary wiring. When conditions prevent manual starting, or when the unit is operated in extremely cold weather, the electrical starter kit can be installed on the unit. Connect the 24-volt power supply of a vehicle or other external power source to the receptacle to start the unit electrically.

### 4-33. Starter

*a. General.* Check starter for proper cable connections and loose terminals. Check the condition of the battery. If the starter fails to crank engine, replace starter.

*b. Removal.*

(1) Remove the right exhaust manifold and No. 1 and 3 spark plugs.

(2) Refer to figure 4-21 and remove the starter.

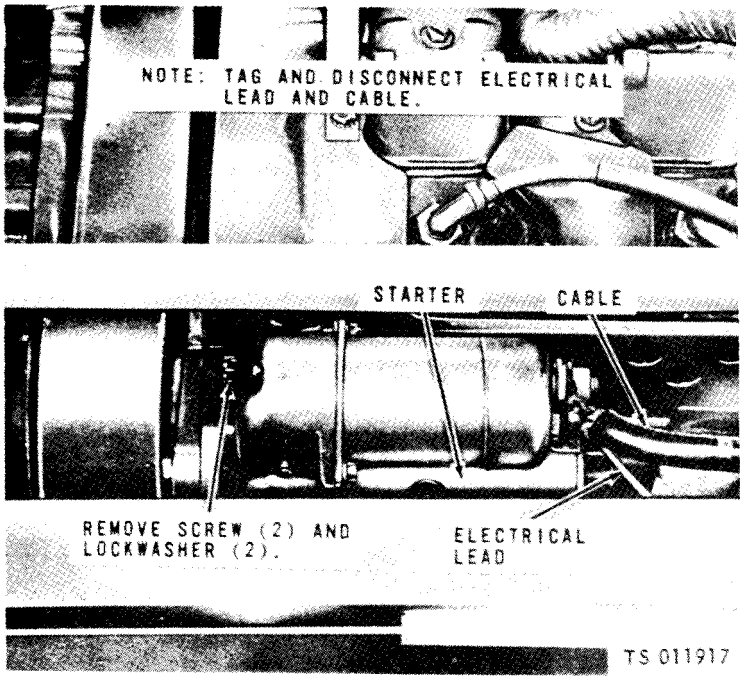



*Figure 4-21. Starter, removal and installation.*

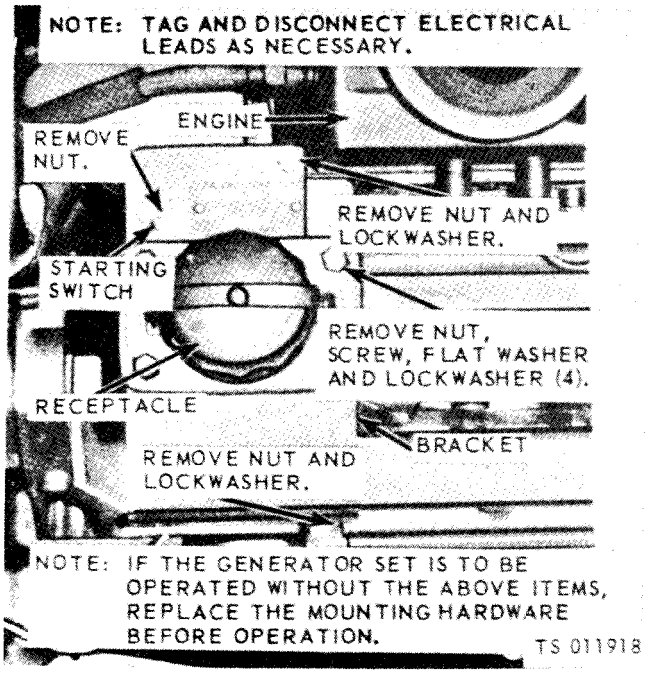



*Figure 4–22. Starting Switch, Receptacle, and bracket, removal and installation.*

*c. Installation.*

(1) Refer to figure 4-21 and install the starter.

(2) Install No. 1 and 3 spark plugs and the right exhaust manifold.

## 4-34. Starting Switch, Receptacle, and Bracket

Refer to figure 4-22 and remove and install the starting switch, receptacle, and bracket.

# CHAPTER 5

# INTERMEDIATE (FIELD), (DIRECT SUPPORT AND GENERAL SUPPORT) AND DEPOT MAINTENANCE INSTRUCTIONS

## Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

### 5-1. Tools and Equipment

No special tools or equipment are required at intermediate (field), (direct support and general support) and depot maintenance levels.

### 5-2. Intermediate (Field), (Direct Support and General Support) and Depot Maintenance Repair Parts and Special Tools

Maintenance repair parts list for intermediate (field), (direct support and general support) and depot Maintenance of the generator and engine are contained in the appropriate service manuals (See Appendix A).

## Section II. TROUBLESHOOTING

### 5-3. General

This section contains troubleshooting or malfunction information and test for locating and correcting most of the troubles which may develop in the generator sets. Each malfunction or trouble symptom for an individual component, unit, or system is followed by a list of tests or inspections necessary for you to determine probable causes and suggested corrective actions for you to remedy the malfunction.

### 5-4. Troubleshooting

*a.* This manual cannot list all possible malfunctions that may occur or all tests or inspections, and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, you should notify higher level maintenance.

*b.* Table 5-1 lists the common malfunctions that you may find during the operation or maintenance of the generator sets or their components. You should perform the tests/inspections and corrective actions in the order listed.

**NOTE**

**Before you use this table, be sure you have performed all normal operational checks. If you have a malfunction which is not listed in this table, notify the next higher level of maintenance.**

**Air Force users may perform maintenance within the scope of their capability.**

*Table 5-1. Troubleshooting*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **1. GENERATOR FAILS TO BUILD UP RATED VOLTAGE** |
| *Step 1.* Inspect the voltage regulator for loose wires, corroded wiring, metal to metal contact, incorrect wiring, or other damage. Test voltage regulator for proper voltage requirements as follows:<br>*a.* Voltage Regulator Testing (AC Unit).<br>(1) Place output selector switch on desired test setting and disconnect load cables.<br>(2) Start generator set. Place circuit breaker in ON position and check output selector switch to indicate load terminals where output voltage is applied.<br>(3) Check set voltmeter for correct setting. Using a multimeter, check load terminals to verify reading on set voltmeter. If voltage is low and the variable resistor will not correct the deficiency, check exciter voltage across terminals 20 and 21 on the voltage regulator terminal board. This voltage will vary but should be about 30 volts. If voltage at terminals 20 and 21 of the voltage regulator terminal board fails to meet specifications, the voltage regulator is defective and should be fully tested and repaired (see para 8-3).<br>(4) Using a multimeter as a check against the set voltmeter, test the output of the generator set on all position settings of the voltage selector switch. |

*Table 5-1. Troubleshooting (Cont'd)*

**MALFUNCTION**
**TEST OR INSPECTION**
**CORRECTIVE ACTION**

**1. GENERATOR FAILS TO BUILD UP RATED VOLTAGE (Cont'd)**

(5) Stop the generator set, and connect the load cables.

(6) Repeat steps (2) through (4) above.

*b.* Voltage Regulator Testing (DC Unit).

(1) Disconnect load cables and turn circuit breaker switch to OFF position.

(2) Start generator set, place circuit breaker switch to ON position and observe set voltmeter and tachometer for proper reading (should be 28 V at 3600 RPM).

(3) Using a multimeter, check load terminals to verify reading on set voltmeter. If voltage is low, adjust it to specifications with the variable resistor.

(4) If the voltage is still low and the variable resistor will not correct the deficiency, check exciter voltage across terminals 20 and 21 of the voltage regulator terminal board. This voltage will vary but should be about 30 volts. If voltage at terminals 20 and 21 of the voltage regulator terminal board fails to meet specifications, the voltage regulator is defective and should be fully tested and repaired (see para 8-3),

(5) If voltage is satisfactory, stop the generator set and attach the load cables.

(6) Repeat steps (2) through (4) above.

**Repair a defective voltage regulator (para 8-3).**

Step 2. Inspect the exciter rotor for loose connections or breaks. Test the exciter rotor as follows:

a. Model MEP-021A, MEP-021C

(1) Start generator set and allow it to warm up.

(2) Observe the voltmeter on the front of the control box. If exciter, rotor, or stator is defective there will be no voltage reading on the set voltmeter.

(3) Manually flash the field windings as prescribed in paragraph 4-20e(2). If stator and rotor are good, voltage will appear and hold on set voltmeter, with 100% load applied.

(4) If voltage comes up, proceed with generator operation. If not, stop the engine and check continuity of exciter stator by loosening terminal 20 or 21 on the voltage regulator terminal board and measure across the exciter stator leads with a multimeter. If bad, then replace the stator assembly.

(5) Remove generator from generator set (para 6-4), and remove the rotor assembly (para 10-2) from the stator assembly. Remove diodes from the exciter rotor (17, fig. 10-4) and test with a multimeter. Replace any bad diodes. If diodes are good, replace the rotor assembly,

*Table 5-1. Troubleshooting (Cont'd)*

**MALFUNCTION**
**TEST OR INSPECTION**
**CORRECTIVE ACTION**

**1. GENERATOR FAILS TO BUILD UP RATED VOLTAGE (Cont'd)**

(6) Reassemble generator set and repeat steps (1) and (2).

*b.* Models MEP-016A, MEP-016C and MEP-026A, MEP-026C

*(1)* Start generator set and allow it to warm up.

*(2)* Observe the voltmeter on the front of the control box. If exciter, rotor, or stator is defective, there will be no voltage reading on the set voltmeter.

*(3)* Manually flash the field windings as prescribed in paragraph 4-20e(2), If stator and rotor are good, voltage will appear and hold on set voltmeter, with 100% load applied.

(4) If voltage comes up, proceed with generator operation. If not, stop the engine and check continuity of exciter stator by loosening terminal 20 or 21 on the voltage regulator terminal board and measure across the exciter stator leads with a multimeter. If bad, then replace the stator assembly.

(5) Remove generator from generator set (para 6-4), and remove the rotor assembly (para 10-2), from the stator assembly. Remove diodes from the exciter rotor (20, fig. 10-5) and test with a multimeter. Replace any bad diodes. If diodes are good, replace the rotor assembly.

(6) Reassemble generator set and repeat steps (1) and (2).

**Replace a defective exciter rotor (para 10-2).**

*Step* 3. Inspect the stator and rotor for loose connections or breaks. Test the stator and rotor (see malfunction 1, step 2).

**Replace the stator and/or rotor (para 10-2).**

**2. GENERATOR VOLTAGE TOO HIGH**

Inspect the voltage regulator for loose wires, corroded wiring, metal-to-metal contact, incorrect wiring, or other darmage. See malfunction 1, step 1 and test the voltage regulator.

**Repair a defective voltage regulator (para 8-3).**

**3. GENERATOR FAILS TO SUPPLY LOAD**

*Step 1.* Inspect the stator for loose connections or breaks, Refer to malfunction 1, step 2 and test the rotor.

**Redate a defective stator (para 10-2).**

*Step* 2. Check the rotor for loose connections or breaks. Refer to malfunction 1, step 2 and test the rotor.

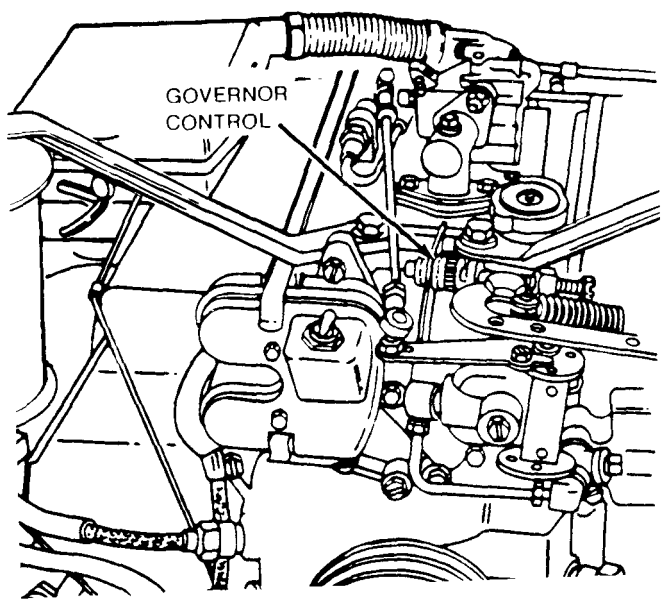
**Replace the rotor (para 10-2).**

*Step* 3. Inspect the voltage regulator for loose wires, corroded wiring, metal to metal contact, incorrect wiring, or other damage. Refer to malfunction 1, step 1 and test the voltage regulator.

**Repair a defective voltage regulator (para 8-3).**

*Table 5-1. Troubleshooting (Cont'd)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **3. GENERATOR FAILS TO SUPPLY LOAD (Cont'd)** |
| *Step 4.* Test the circuit breaker as follows:<br>a. Attach a variable load to output terminals and start the generator set.<br>*b.* Move circuit breaker to ON position and observe load meter and voltmeter. Reading at redline on load meter is 100% load. Circuit breaker should stay on indefinitely under 100% load.<br>c. Adjust variable load until load meter reads in red portion of load meter. Circuit breaker should trip when indicator enters red portion of load meter.<br>If circuit breaker trips below maximum load (100% of 0.8 PF), (Power Factor), replace the circuit breaker (para 8-8). |
| **4. GENERATOR FREQUENCY FLUCTUATES OR DROPS UNDER LOAD (Models MEP-016A/C and MEP-021A/C)** |
| *Step 1.* Inspect the engine to see if it is lacking power. Some indications are:<br>a. Generator will not achieve its rated voltage. |




STEP 1. START THE GENERATOR SET.

STEP 2. PLACE THE GOVERNOR CONTROL IN TH GOVERN POSITION.

*Figure 5-1. Adjusting Governor Control.*

*Table 5-1. Troubleshooting (Cont'd)*

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|
| **4. GENERATOR FREQUENCY FLUCTUATES OR DROPS UNDER LOAD (Models MEP-016A/C and MEP-021A/C) (Cont'd)** |
| *b.* The generator will shut down.<br>(1) Adjust the governor (fig. 5-1).<br>*(a)* Start the generator.<br>*(b)* Place the governor control in the govern position.<br>(2) Refer to appropriate service manual in Appendix A for other corrective action. |
| Step 2. Check the engine for out of adjustment or defects. The frequency and load meters will fluctuate and then drop off.<br>**Adjust (fig. 5-1) or replace the governor (see appropriate service manual in Appendix A).** |
| **5. GENERATOR NOISY** |
| Inspect for a defective bearing.<br>a. On models manufactured prior to 1968, check the bearing by removing the control box access cover (fig. 5-2).<br>(1) Remove the three screws and lockwashers.<br>(2) Remove the control box access cover.<br>(b) On models manufactured after 1968, tear down the generator (para 10-2) and visually inspect the bearing.<br>c. Examine the bearing for signs of wear or discoloration.<br>**Replace a defective bearing (para 10-2).** |

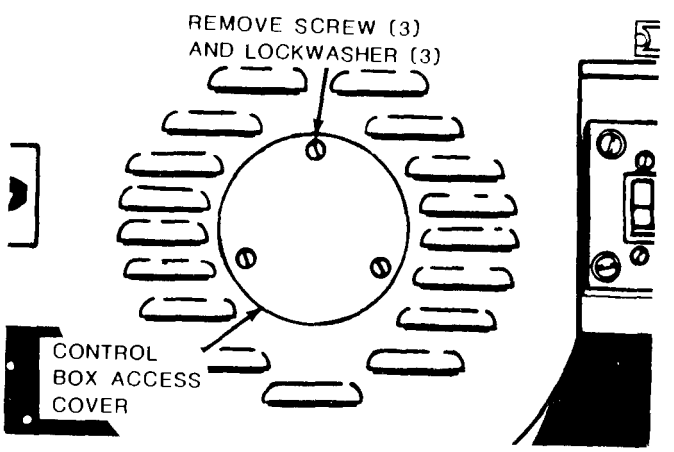



*Figure 5-2. Removing control box access cover.*

## Section III. GENERAL MAINTENANCE

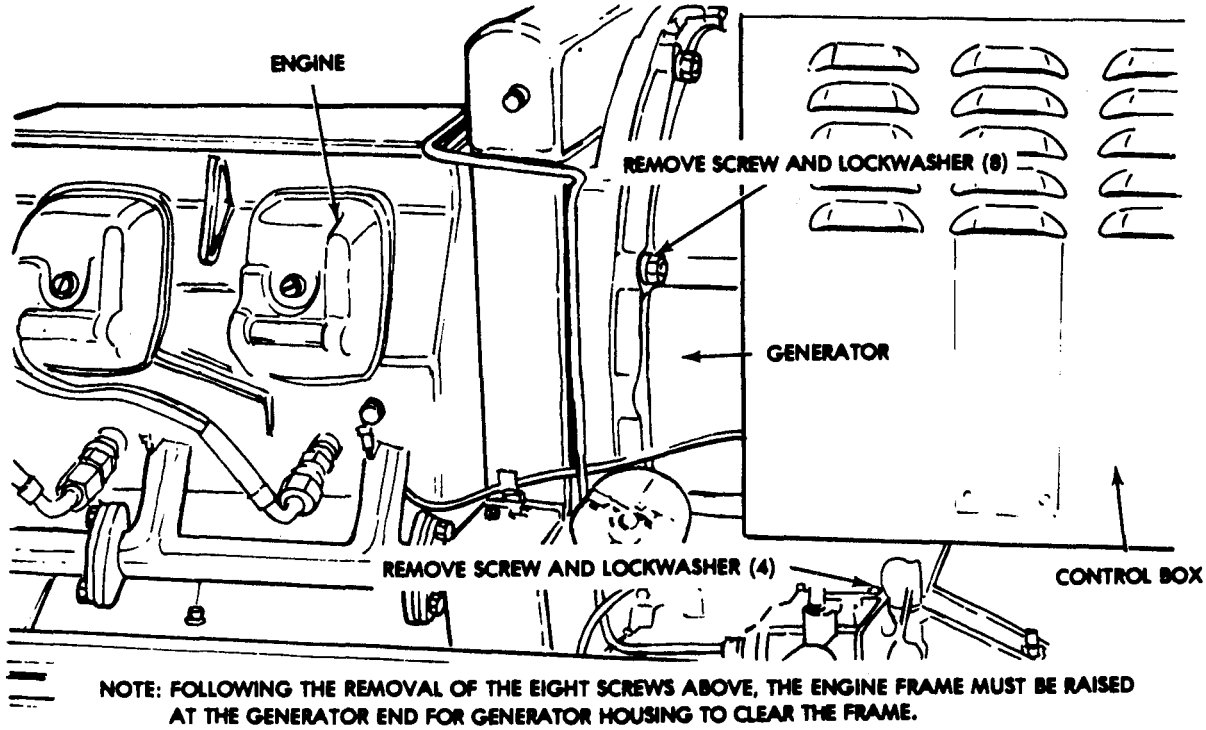
The maintenance to be performed by intermediate (field), (direct support and general support) and depot maintenance personnel on this equipment is limited to repair of the frame. Repair is accomplished by straightening bends using the furnished cutting and welding torch outfit or by replacement.

# CHAPTER 6

# REMOVAL/INSTALLATION OF MAJOR COMPONENTS

## Section I. GENERAL

This chapter contains removal and installation instructions for the major components. The three major components are the control box assembly, the generator and the engine.




A. GENERATOR HOUSING REMOVAL.

*Figure 6-1. Generator, Removal and Installation (Sheet 1 of 2).*

## Section Il. ENGINE

### 6-1. Engine

*a. Removal.*

(1) Remove the starting switch, receptacle, and bracket if installed (fig. 4-22).
(2) Disconnect the fuel Line (fig. 4-19).
(3) Remove the fuel tank (A, fig. 4-12).
(4) Remove the generator (fig. 6-1).
(5) Refer to figure 6-2 and remove the engine.

*b. Installation,*

(1) Refer to figure 6-2 and install the engine.
(2) Install the generator (fig. 6-1).
(3) Install the fuel tank (A, fig. 4-12).
(4) Connect the fuel line (fig. 4-19).
(5) Install the starting switch, receptacle, and bracket if removed (fig, 4-22).

**NOTE**

**When a model 4A032-1 or 4A032.2 engine is replaced with a model 4A032.3 engine the Generator Set ID plate must also be replaced, changing the MEP-OXXA number to MEP-OXXC. NSN on the plate as well as on accountable (including maintenance) records must also be changed.**

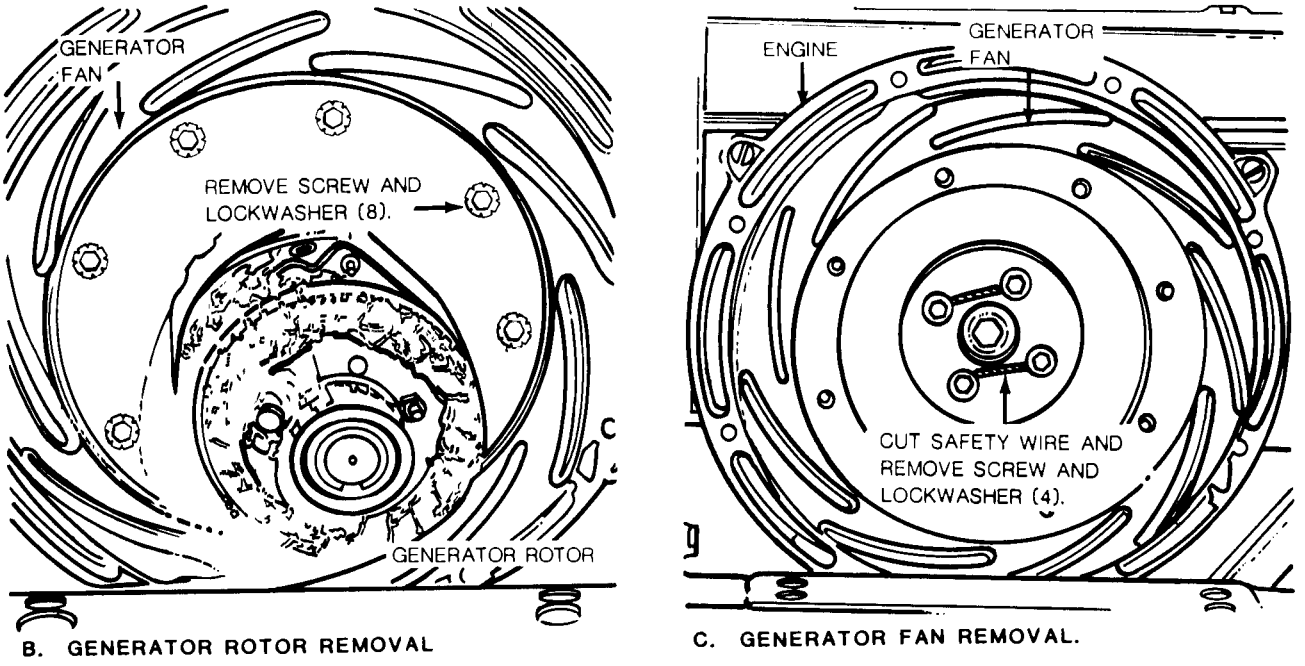



*Figure 6-1. Generator, removal and installation (sheet 2 of 2).*

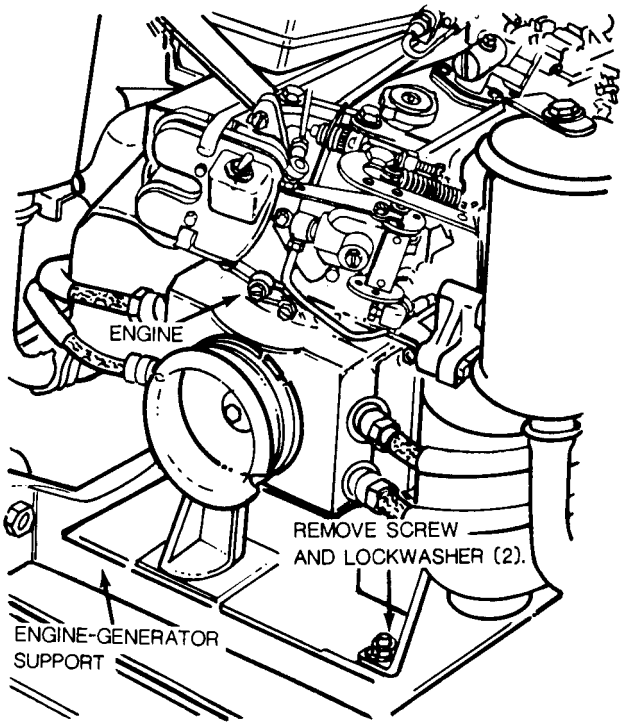



*Figure 6-2. Engine, removal and installation.*

## Section III. CONTROL BOX ASSEMBLY

### 6-2. General

All the controls and instruments necessary for the operation of the generator are contained in the control box. These controls and instruments include the voltage regulator, frequency converter, output selector switch, current transformer, diode rectifier and terminal board, fixed

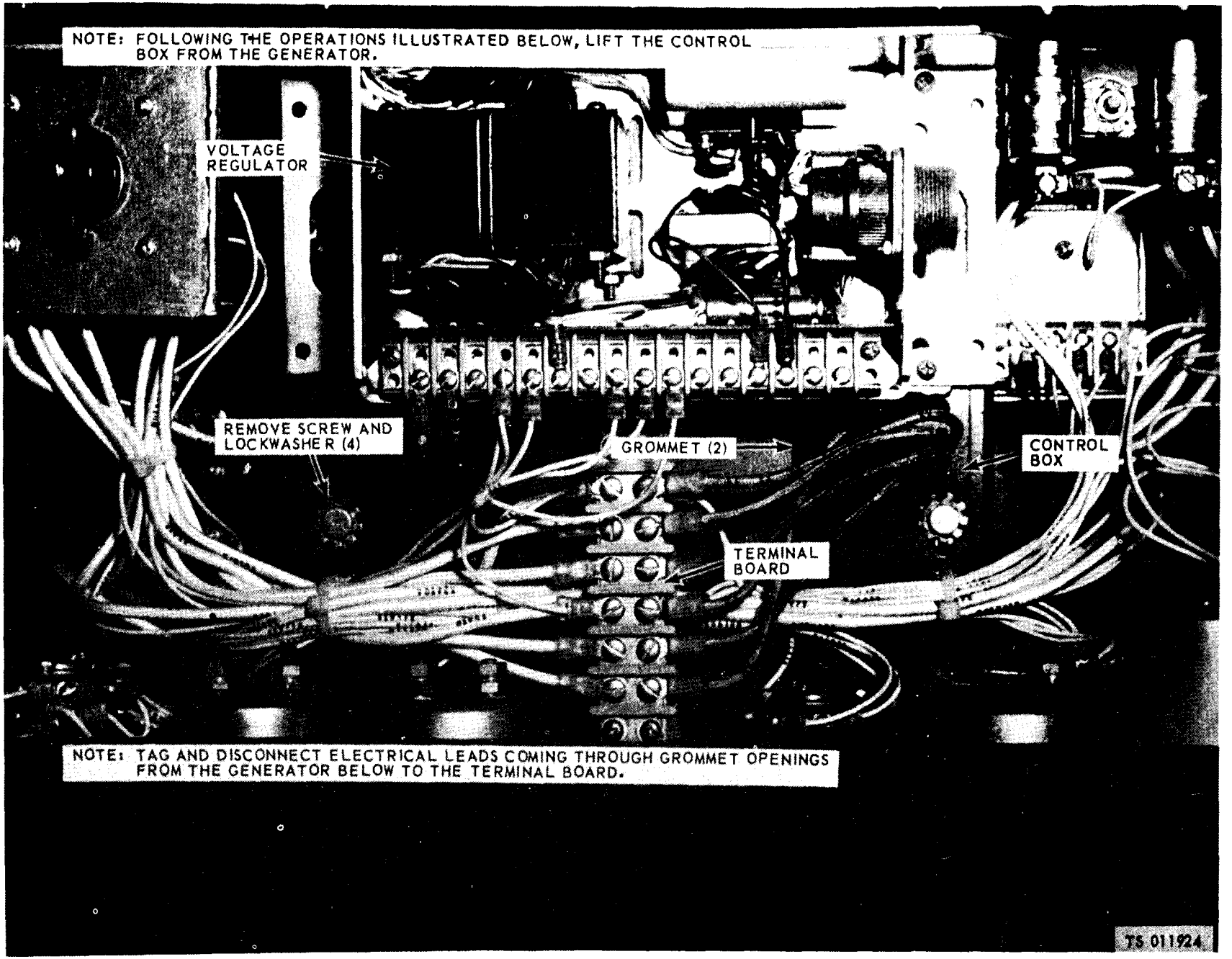



*Figure 6-3. Control box, removal and installation.*

resistor board, heat sink, and the necessary wiring harness.

### 6-3. Control Box

Refer to figure 6-3 to remove and install the control box.

**NOTE**

**Although the interior of the generator sets may differ slightly, the removal and the installation of the control box as illustrated in this figure, is essentially the same.**

## Section IV. GENERATOR

### 6-4. Generator

a. Removal.

(1) Remove the control box (fig. 6-3).

(2) Refer to figure 6-1 and remove the generator.

b. Installation.

(1) Refer to figure 6-1 and install the generator.

(2) Install the control box (fig. 6-3).

# CHAPTER 7

# MAINTENANCE OF THE FRAME ASSEMBLY

## 7-1. General.

The frame assembly includes the engine-generator support, shock mountings, and the frame.

## 7-2. Frame Assembly

*a. Removal.*

(1) Remove the generator (fig. 6-1).

(2) Remove the engine (fig. 6-2).

(3) Remove the ground terminal stud (A, fig. 4-12).

(4) Remove the bonding strap (D, fig. 4-11).

(5) Remove the fuel tank (A, fig. 4-12).

(6) Refer to figure 7-1 and remove engine-generator support, frame and shock mounts.

*b. Disassembly.* Refer to figure 7–2 to disassemble the frame.

c. *Repair.* Repair the upper frame as necessary by straightening, using the furnished cutting and welding torch outfit.

*d. Reassembly.* Refer to figure 7-2 and reassemble the frame.

*e. Installation* Install the frame assembly as follows:

(1) Refer to figure 7-1 and install engine-generator support, frame, and shock mounts.

(2) Install the fuel tank (A, fig. 4-12).

(3) Install the bonding strap (D, fig. 4-11).

(4) Install the ground terminal stud (A, fig. 4-12).

(5) Install the engine (fig. 6-2).

(6) Install the generator (fig. 6-1).

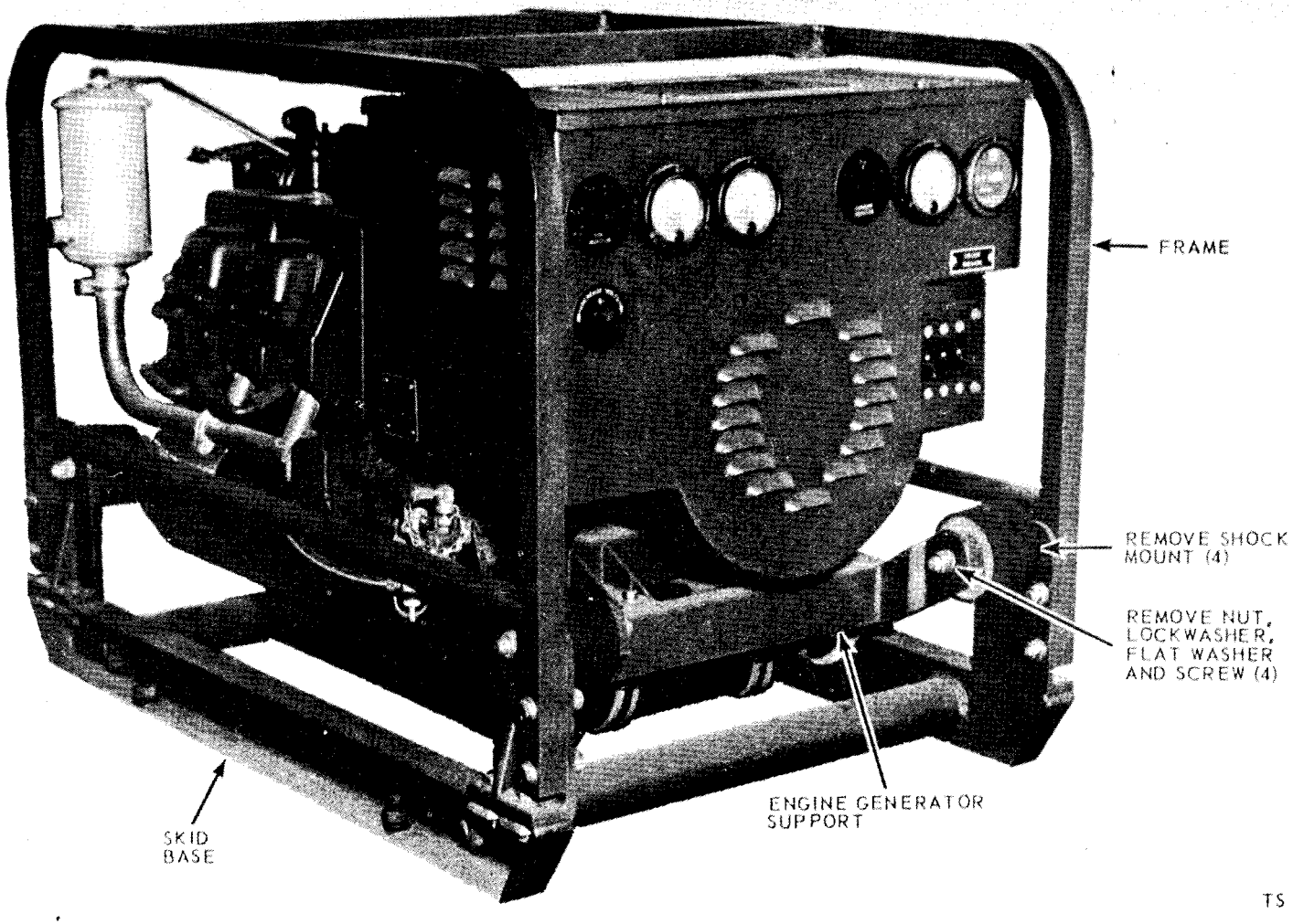
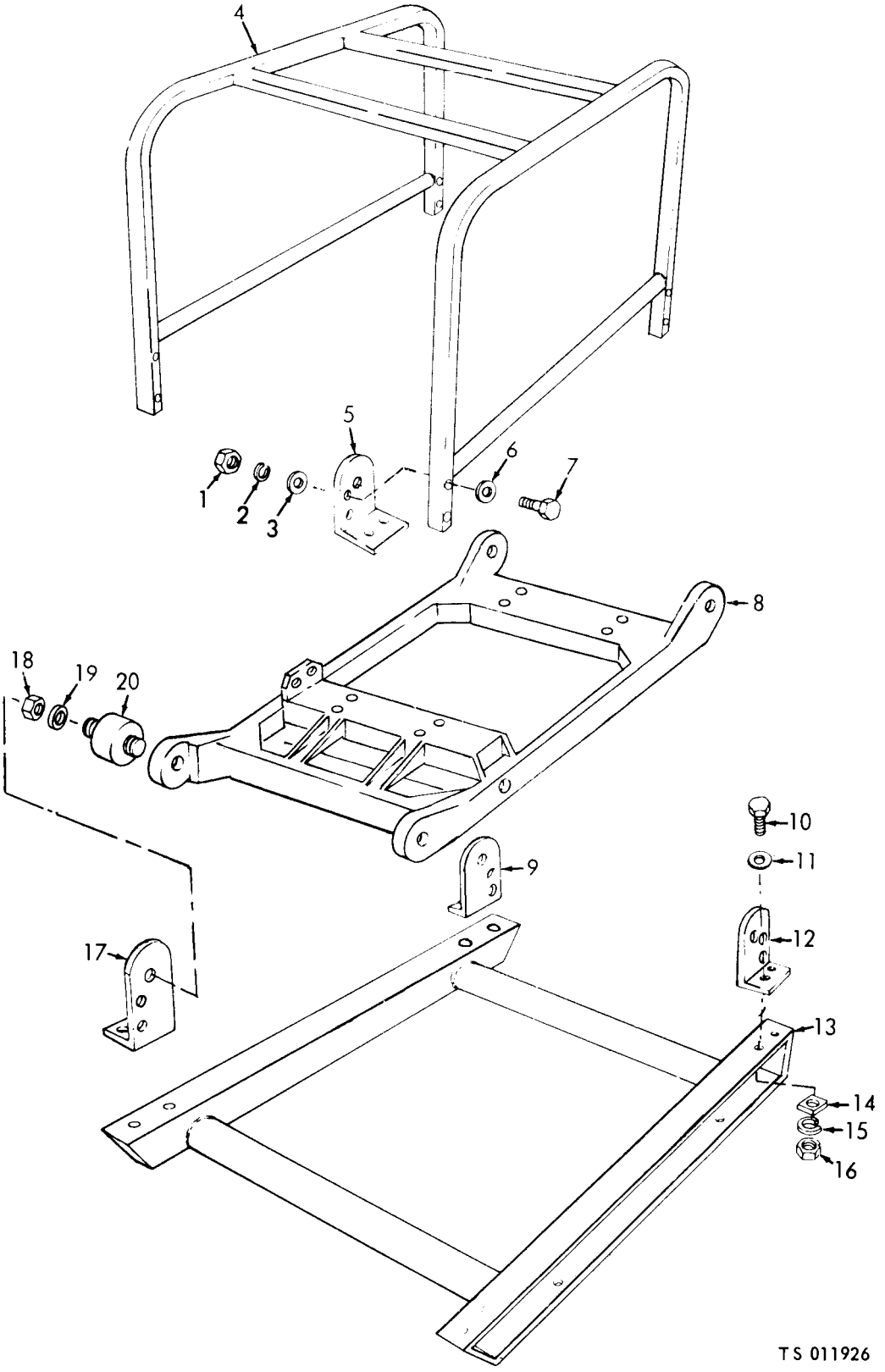



*Figure 7-1. Frame assembly, removal and installation.*




1. Nut
2. Lockwasher
3. Washer
4. Frame, upper
5. Bracket
6. Washer
7. Screw
8. Frame, inner
9. Bracket
10. Screw
11. Washer
12. Bracket
13. Frame, outer
14. Washer
15. Lockwasher
16. Nut
17. Bracket
18. Nut
19. Washer
20. Shock mount

*Figure 7–2. Frame, disassembly and reassembly.*

# CHAPTER 8

# MAINTENANCE OF THE CONTROL BOX ASSEMBLY

## 8-1. General

All the controls and instruments necessary for the operation of the generator are contained in the control box. These controls and instruments include the voltage regulator, frequency converter, output selector switch, current transformer and terminal board, fixed resistor board, and the necessary wiring harness.

**NOTE**

**Some components referenced in this section are not located in all generator sets in the precise location indicated on the illustrations. If any difficulty is encountered in locating individual components, refer to the wiring diagrams (FO-1, FO-2, FO-3).**

## 8-2. Wiring, Wiring Harness and Terminal Board

*a. General.* Inspect the wiring for defective insulation. Wrap slight insulation deterioration with electrical tape. Refer to figures FO-1, FO-2, and FO-3 when replacing or repairing wiring. Make soldering connections where applicable. Tag each wire and corresponding terminal at time of removal to insure correct reassembly of wire to proper terminal.

**NOTE**

**All removal, testing, or installation of control box components require the removal of the control box cover (para 4-15).**

*Figure FO-1. Wiring diagram (Model MEP-016A/C).*
**(Located in back of manual.)**

*Figure FO-2. Wiring diagram (Model MEP-021A/C).*
**(Located in back of manual.)**

*Figure FO-3. Wiring diagram (Model MEP-026A/C).*
**(Located in back of manual.)**

*b. Test.* Check wiring by measuring continuity of wire from point of origin to point of termination.

c. *Removal and Installation.* Refer to Figure 8-lC to remove or install the wiring, wiring harness, and terminal board.

*d. Installation Instructions.*

(1) For Model MEP-026A Regulator, Voltage (universal) IAW FO-3, use potentiometer (750 ohms, 25 watts) per MIL-R-22/3. For connection of red, black, and white jumper, see instructions on front and side plate. Remove and discard wires that connect to terminals 25, A, B, and C.

(2) Capacitor C4 is only used on Model MEP-026A old regulator, Change 9, FO-3.1.

## 8-3. Voltage Regulator.

*a. General.* This paragraph provides instructions covering test and repair procedures for Voltage Regulator NSN 6115-00-764-7621; P/N 13219E0883(97403).

*b. Removal.* Using Figure 8-1B as a guide, remove the voltage regulators as follows:

(1) Tag and disconnect all electrical leads.

(2) Remove four (4) screws and lockwashers.

(3) Remove the voltage regulator.

c. *Test Equipment and Material Required:*

*(1)* Multimeter-TS 352 B/U, AN/URM-105 or equivalent.

(2) Resistor, Fixed: 30 OHMS ±10%, 120 Watt rating.

*(3)* Rheostat, Variable: 750 OHMS ±10%,2 Watt rating (Rheostat supplied with serviceable voltage regulators).

*(4)* Soldering Iron: Small tip, 33 Watts maximum rating.

*(5)* Varnish, MIL-I-24092, Grade CA, Class 155.

*(6)* Solder, Rosin Core.

*(7)* Variable Voltage Source: 0-150 Volts AC, 60 Hz., 0-5 Ampere, single phase.

*(8)* Compound, thermojoint, 13217E3704 (97403).

*d. Test Procedures.*

**WARNING**

**Extreme care should be taken while conducting tests involving use of the 150 Volt, 60 Hz Source, for safety of personnel, and damage to equipment being used.**

**CAUTION**

**While using a soldering iron, caution should be taken to prevent damage to components and printed circuit board from excessive or prolonged applied heat. Damage could result to replacement items, rendering them unsuitable for operation.**

*(1)* Remove voltage regulator, refer to step b Removal.

*(2)* Test power transistor Q2.

(a) Locate power transistor Q2 (1, Figure 8-1) on the back of the voltage regulator housing

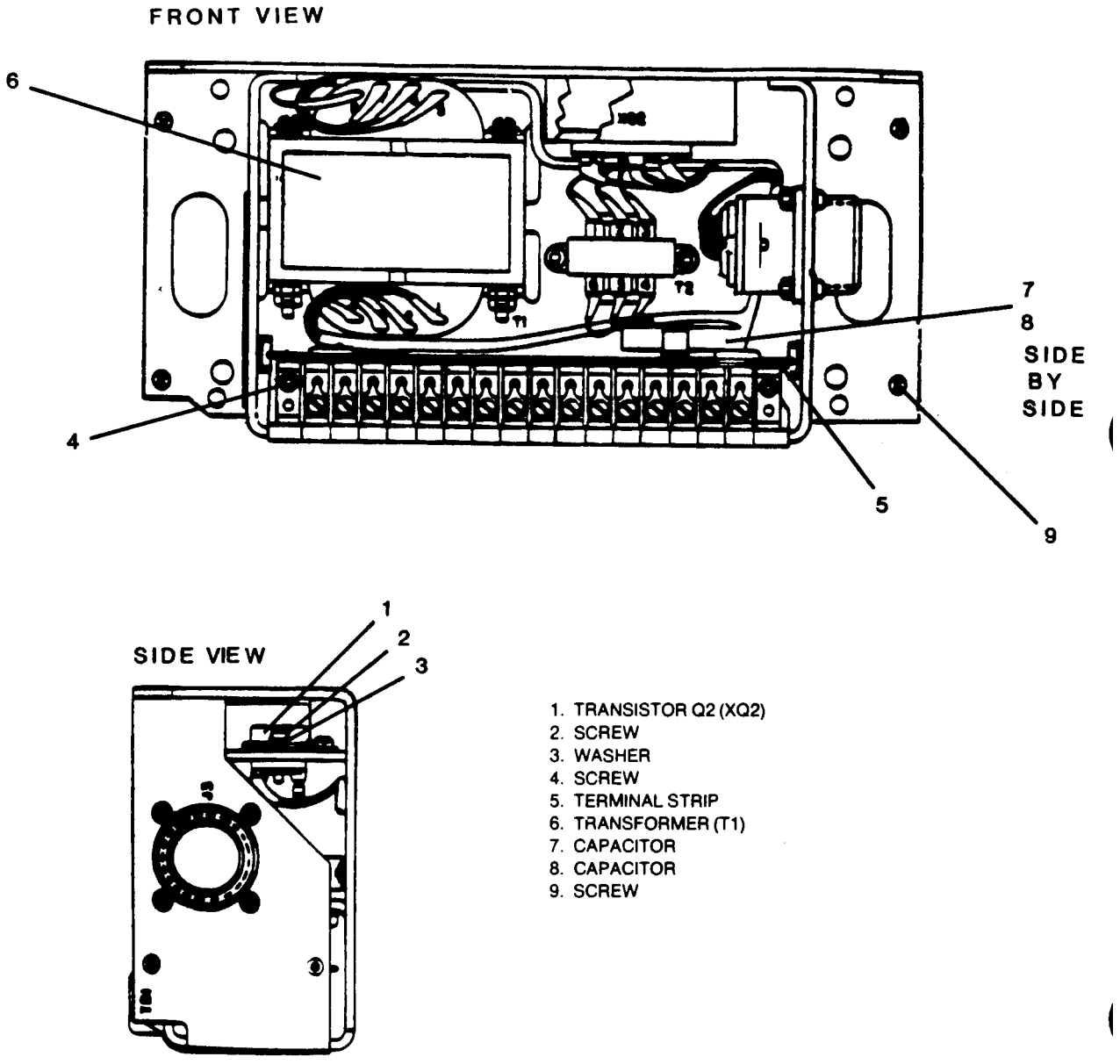



*Figure 8-1. Voltage Regulator Testing.*

*U.S. GOVERNMENT PRINTING OFFICE: 1993- 755-028/80242 PIN: 025150-012

*(b)* Remove screws (2) and washers (3) securing Q2 to housing.

*(c)* Pull transistor (1) straight from housing, being careful not to damage the mica insulator under the transistor.

**CAUTION**

**Do not remove the white heat sink paste from the mica insulator, transistor, or regulater housing. If this compound is removed transistor Q2 will overheat and become damaged.**

*(d)* Test transistor with a multimeter (set to read ohms). Refer to Figure 8-1A and Table 8-1. Multimeter (+) and (–) refer to the multimeter test leads.

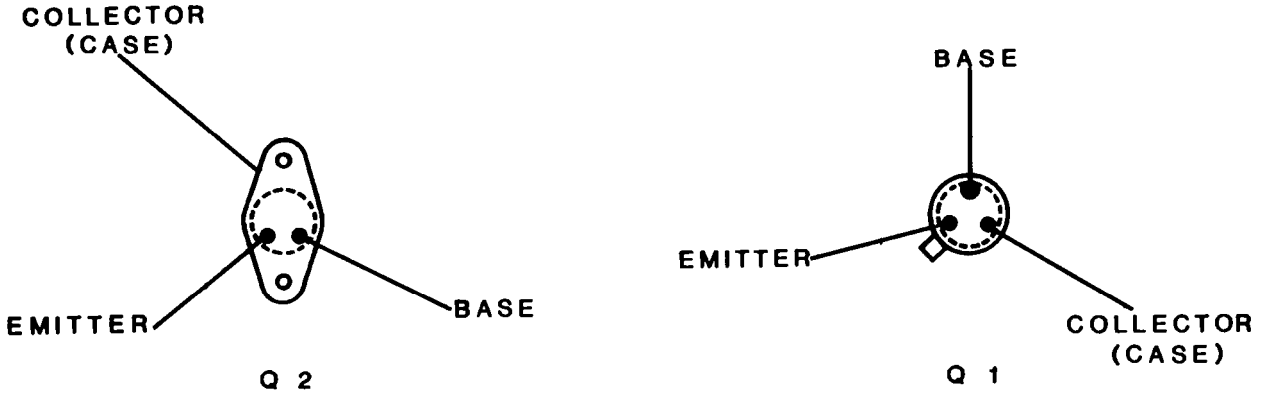



*Figure 8-1A. Q1 and Q2 transistor pin out locations.*

**Table 8-1. Q2 Test Chart.**

| Multimeter ( + ) | Multimeter ( – ) | Meter Reading |
|---|---|---|
| Collector | Emitter | Infinite (oo) |
| Collector | Base | Infinite (oo) |
| Emitter | Collector | Infinite (oo) |
| Base | Collector | 1 to 50 ohms |
| Base | Emitter | 1 to 50 ohms |
| Emitter | Base | Infinite (oo) |

*(e)* Readings other than those listed in Table 8-1 indicate either an open or shorted junction within Q2 and Q2 should be replaced.

**NOTE**

**Do not install transistor Q2 at this time. With Q2 removed, transistor Q1 can be tested without removal of the transistor from the printed circuit board.**

*(3)* Remove terminal strip TB1.

*(a)* Remove two screws (4, Figure 8-1 ) that secure terminal strip TB1 (5).

*(b)* Gently pull terminal strip TB1 (5) along with the printed circuit board upward.

*(4)* Test diode CR5.

*(a)* Locate diode CR5 located on circuit board.

*(b)* Test diode CR5 with a multimeter (set to read ohms). Measure resistance across CR5, reverse test leads, and measure resistance again.

(c) Resistance should be low (1 to 50 ohms) one way and infinite (oo) resistance the other way.

*(d)* If low or high resistance is measured in both directions diode CR5 should be replaced.

*(5)* Test current regulating diode CR6.

*(a)* Locate diode CR6 located on circuit board.

*(b)* Unsolder and lift one end of diode CR6 from the printed circuit board.

(c) Test diode CR6 with a multimeter (set to read ohms). Measure resistance across CR6, reverse test leads, and measure resistance again.

*(d)* Resistance should be low (1 to 50 ohms) one way and greater than 500 ohms resistance the other way.

*(e)* If low or high resistance is measured in both directions diode CR6 should be replaced.

**NOTE**

**Do not install diode CR6 lead to printed circuit board until transistor Q1 has been tested.**

*(6)* Test diode CR7.

*(a)* Locate diode CR7 on circuit board.

*(b)* Test diode CR7 with a multimeter (set to read ohms). Measure resistance across CR7, reverse test leads, and measure resistance again.

*(c)* Resistance should be low (1 to 50 ohms) one way and infinite (00) resistance the other way.

*(d)* If low or high resistance is measured in both directions, diode CR7 should be replaced.

*(7)* Test transistor Q1.

*(a)* Make sure that transistor Q2 is still removed and that one lead of diode CR6 is unattached to the printed circuit board.

*(b)* Locate power transistor Q1 on the printed circuit board.

*(c)* Test transistor with a multimeter (set to read ohms). Refer to Figure 8-1A and Table 8-2. Multimeter (+) and(–) refer to the multimeter test leads.

**Table 8-2. Q1 Test Chart.**

| Multimeter (+) | Multimeter (–) | Meter Reading |
|---|---|---|
| Collector | Emitter | Infinite (oo) |
| Collector | Base | Infinite (oo) |
| Emitter | Collector | Infinite (oo) |
| Base | Collector | 1 to 50 Ohms |
| Base | Emitter | 1 to 50 Ohms |
| Emitter | Base | Infinite (oo) |

*(d)* Resistance measurements other than those listed in Table 8-2 indicate an open or shorted junction within Q1, Q1 should be replaced.

*(8)* Solder lead of diode CR6 to printed circuit board.

*(9)* Install transistor Q2 (1, Figure 8-1) with mica insulator between Q2 and regulator housing.

*(10)* If necessary, apply a small amount of heat sink compound (P/N 13217E3704, FSCM 97403) to transistor Q2 and housing. Secure transistor Q2 with screws (2) and washers (3).

*(11)* Make test connections.

*(a)* Connect a 30 ohm 120 watt resistor to terminals #21 and #20 of terminal strip TB1 (5).

*(b)* Obtain a 750 ohm 2 watt rheostat.

*(c)* Position rheostat so that control shaft is facing you and the three terminal lugs are facing up. Connect a 12-18 AWG insulated wire to the middle terminal lug and another wire to the left hand terminal lug of the rheostat.

*(d)* Attach the two rheostat leads to terminals #26 and #28 of terminal strip TB1 (5). Turn the rheostat clockwise to its maximum rotation.

*(e)* Connect a 0-150 VAC, 60 HZ power supply to terminals #24 and #27 of terminal strip TB1 (5).

*(12)* Perform tests.

*(a)* Turn on the power supply and set for 115 VAC.

*(b)* Set a multimeter to read a 0-50 VDC range.

*(c)* Check for 30-35 VDC between terminals #20 and #21 of terminal strip TB1 (5). Terminal #20 is positive and terminal #21 is negative.

*(d)* Rotate the shaft of the test rheostat counterclockwise to approximately eighty percent of its maximum rotation. The voltage between terminals #20 and #21 of TB1 (5) should now be zero.

*(e)* Rotate the shaft of the test rheostat clockwise while observing the voltage at terminals #20 and #21 of TBl (5).

*(f)* Voltage at terminals #20 and #21 should be between 30 and 35 volts when test rheostat is turned to approximately eighty percent of its clockwise rotation. If no voltage is present, refer to step (i).

*(g)* If there is a delay of two seconds or more between decreases and increases of the voltage at terminals #20 and #21 or if voltage changes do not occur at the eighty percent of maximum rotation points, adjust R6. Refer to (h) for adjustment procedure. If no delay is present and voltage changes occur at the eighty percent rotation points, testing procedure is completed. If no voltage change occurs, regardless of the position of the test rheostat, refer to step (i).

*(h)* Locate R6 on the printed circuit board. Turning the adjustment screw of R6 clockwise will turn the voltage at terminals #20 and #21 of TB1 (5) on for a given setting of the test rheostat. Turning adjustment screw counterclockwise turns the voltage at terminals #20 and #21 off. Adjust screw as required to achieve voltage cutoff and turn on for eighty percent of maximum rotation as described in steps (d), (e), and (f). Troubleshooting is complete after adjustment is made.

**NOTE**

**Adjustment of R6 does not cause the voltage at terminals #20 and #21 of TB1 (5) to vary. Either voltage will be on or voltage will be off.**

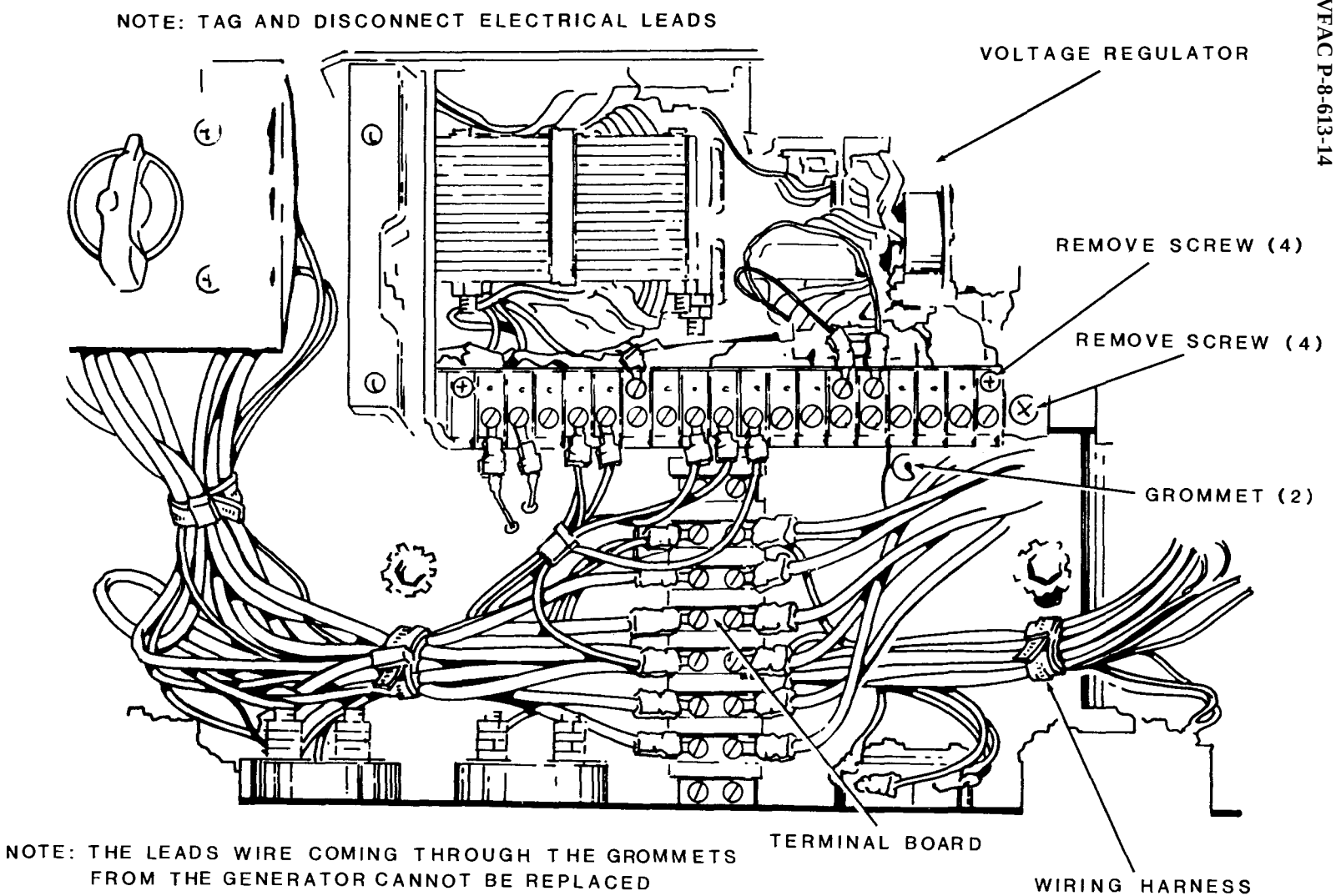



*Figure 8-1B. Wiring and wiring harness, voltage regulator, and terminal board, removal and installation (Models MEP-016A and MEP-021A) (Sheet 1 of 2).*

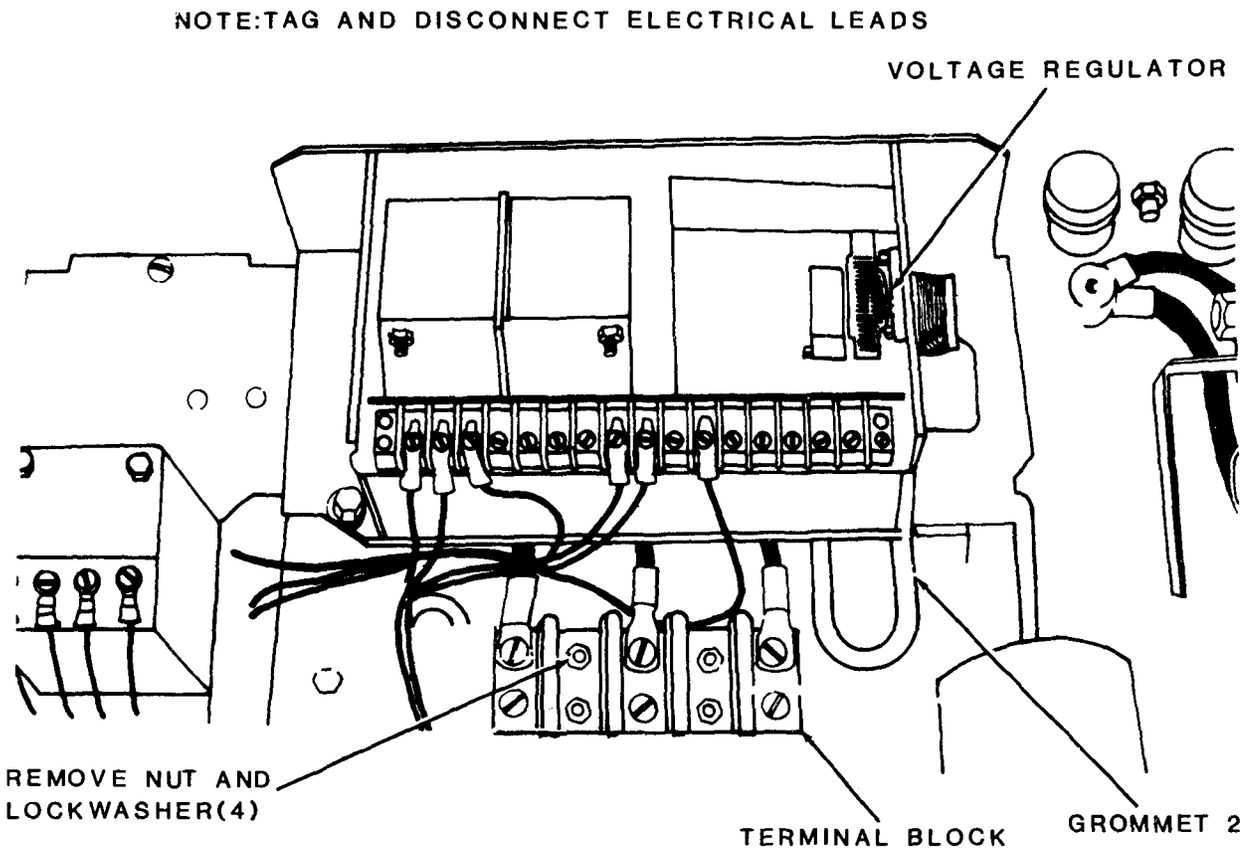


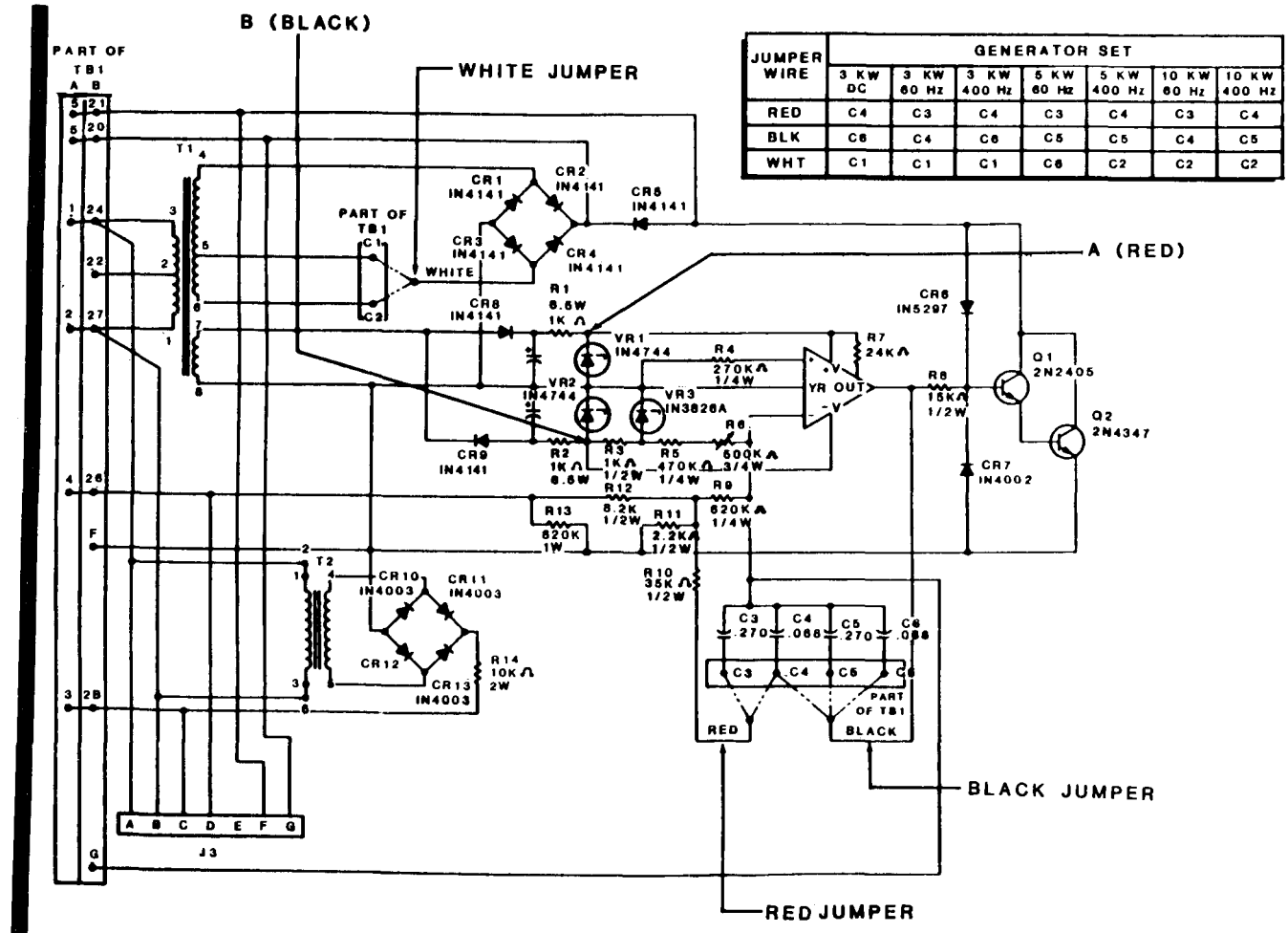

*Figure 8-1C. Wiring and wiring harness, voltage regulator, and terminal board, removal and installation (Model MEP-026A).*

**WARNING**

**Turn off 115 VAC power source before attempting any inspection or repair.**

*(i)* Inspect circuit board for burned or broken printed circuit board paths. If burned or broken paths are present, circuit board should be replaced.

*(j)* Locate components R1 and R2. Refer to Figure 8-1D for a wiring schematic. Apply 115 VAC to terminals #/24 and #27 of terminal strip TB1 (5, Figure 8-1).




| JUMPER WIRE | GENERATOR SET | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3 KW DC | 3 KW 60 Hz | 3 KW 400 Hz | 5 KW 60 Hz | 5 KW 400 Hz | 10 KW 60 Hz | 10 KW 400 Hz |
| RED | C4 | C3 | C4 | C3 | C4 | C3 | C4 |
| BLK | C6 | C4 | C6 | C5 | C5 | C4 | C5 |
| WHT | C1 | C1 | C1 | C6 | C2 | C2 | C2 |

*Figure 8-1D. Standard voltage regulator 3KW, 5KW, 10KW, DC, 60HZ, (1319E0883).*

*(k)* Connect a multimeter (set to read 0-50 VDC) across points "A" and "B" as indicated on wiring schematic. Connect red lead to point "A" and black lead to point "B".

*(l)* A DC voltage of 28-32 volts should be indicated. If voltage is not within this range, check the voltage across voltage regulating (zener) diode VR1 and VR2 on circuit board.

**CAUTION**

**If either zener diode VR1 and VR2 is removed, do not apply the 115 VAC source to the regulator until a replacement is connected into the circuit. Failure of the voltage regulator will occur if this caution is not observed.**

*(m)* The voltage across VR1 and VR2 should be approximately 14 VDC. Replace zener diodes that do not have a voltage drop of approximately 14 VDC.

*(n)* After replacing zener diodes VR1 and/or VR2 and no voltage is indicated across either or both zener diodes VR1 and VR2, check the voltage across terminal lugs #7 and #8 of the T1 power transformer (6).

**NOTE**

**Change setting on multimeter to 0-50 VAC range.**

*(o)* A voltage of 25-35 VAC should be present. If voltage is not present, check that 115 VAC power source is connected properly and all wiring connections to T1 (6) are tight. If power is properly connected and T1 (6) connections are tight transformer T1 (6) should be replaced.

*(p)* After verifying that 25-35 VAC is present across T1 (6) terminals #7 and #8, locate diodes CR8 and CR9 on circuit board (6).

*(q)* Turn off power and unsolder one end of diode CR8 and CR9. Check the resistance of each diode in one direction and then reverse leads and test in the other direction. Resistance should be low in one direction and high in the other.

(r) Replace diodes CR8 or CR9 if they do not pass resistance check.

*(s)* Locate capacitors C1 (7) and C2 (8) on the reverse side of the printed circuit board. Unsolder one end of each capacitor from the circuit board.

*(t)* Test capacitors C1 (7) and C2 (8) with a multimeter (set to read ohms) across the capacitor being tested and then reverse leads across capacitor.

*(u)* Connection of the multimeter (set for ohms) across the capacitor should immediately result in the movement of the meter pointer from the infinity (oo) side of the scale to the low ohms side of the scale and then slowly return to the infinity (oo) side of the scale.

*(v)* If the capacitor is shorted or leaky, the pointer will remain on the low ohms side of the scale. If the capacitor is open, there will be no movement of the meter pointer. Replace open, shorted, or leaky capacitors as required.

*(w)* Locate zener diode VR3 on circuit board and apply 115 VAC to terminals #24 and #27 of the terminal strip TB1 (5, Figure 8-1).

*(x)* Check the voltage across zener diode VR3. Voltage across VR3 should be approximately 4.7 VDC.

*(y)* If voltage across VR3 is greater than 4.7 VDC, replace VR3. If no voltage is indicated across VR3, locate R3 (a 1K ohm resistor) on circuit board.

*(z)* Disconnect the 115 VAC power source from the regulator. Unsolder one end of R3 from the circuit board. Measure the resistance of R3. Resistance should be between 900 and 1100 ohms. If resistor is within this range, reconnect lead. Replace resistor if not within tolerances.

*(aa)* Apply the 115 VAC power to terminals #24 and #27 of the terminal strip TB1 (5). Recheck the voltage drop across zener diode VR2, there should be a voltage drop of 14 VDC present. If 14 VDC is present and there is no voltage drop across zener diode VR3, VR3 should be replaced.

*(bb)* If none of the tests or recommended repairs correct the operation of the voltage regulator, entire voltage regulator should be replaced.

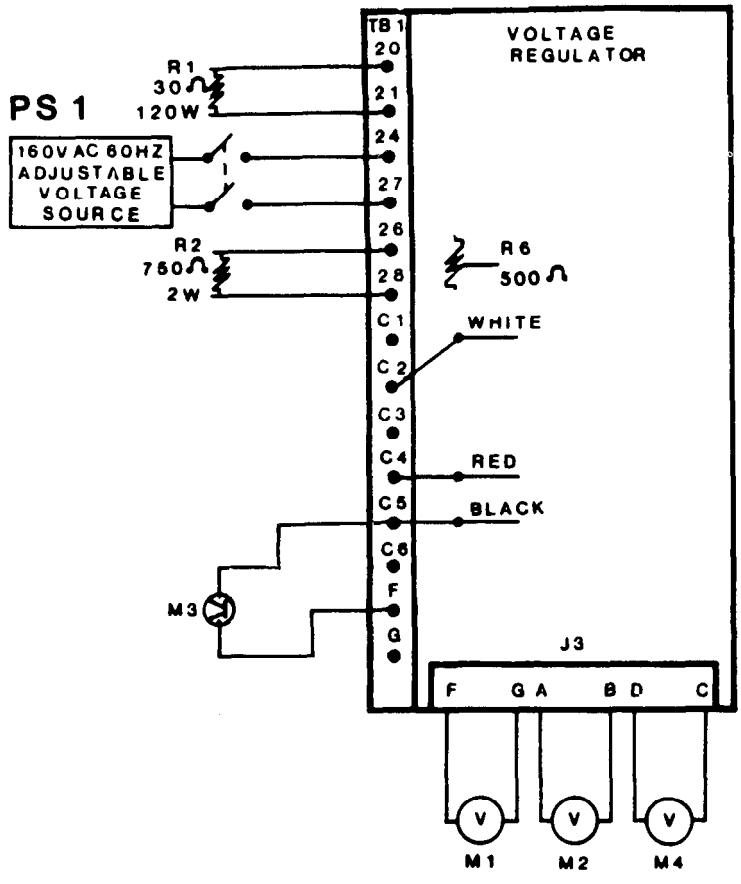



*Figure 8-1E. Voltage Regulator Adjustment Schematic*

*e. Adjustment.*

*(1)* The following components and equipment are needed for the adjustment procedures on the voltage regulator.

- Two DC Voltmeters ±0.5 percent, 0-100 VDC (M1 and M4)
- AC Voltmeter ± 0.5 percent, 0-150 VAC (M2)
- Oscilloscope (M3)
- Voltage source 0-150 VAC 60 Hz, Regulation ± 0.25 percent, from 0-2 Amps (PS1)
- Resistor 30 ohms, 120 watts (R1)
- Resistor, 750 ohms ±5 percent, 2 watts (R2)
- Potentiometer, 500 ohms (R6)

(2) Connect voltage regulator, equipment, and components as shown in Figure 8-1 E.

*(3)* Set potentiometer R6 to 250 ohms (halfway).

*(4)* Turn AC power supply (PS1) on.

*(5)* Slowly increase AC voltage (0 to 30 VAC) while monitoring DC voltmeter (M1) and oscilloscope (M3). DC voltage reading on DC voltmeter (M1) shall increase proportionally with the increasing AC voltage and the voltage wave form trace of oscilloscope (M3) shall move toward a positive voltage level. A voltage shall also be indicated on DC voltmeter (M4). The waveform trace of oscilloscope (M3) swinging below the zero axis (negative) during this (0-30 VAC) test shall be indicative of an unusable/defective operational amplifier.

*(6)* Increase AC voltage for a "maximum reading" on meter (M1) (35 VDC minimum) or until oscilloscope (M3) wave form is just starting to come off the "maximum level" refer to curve 1 of Figure 8-1F.

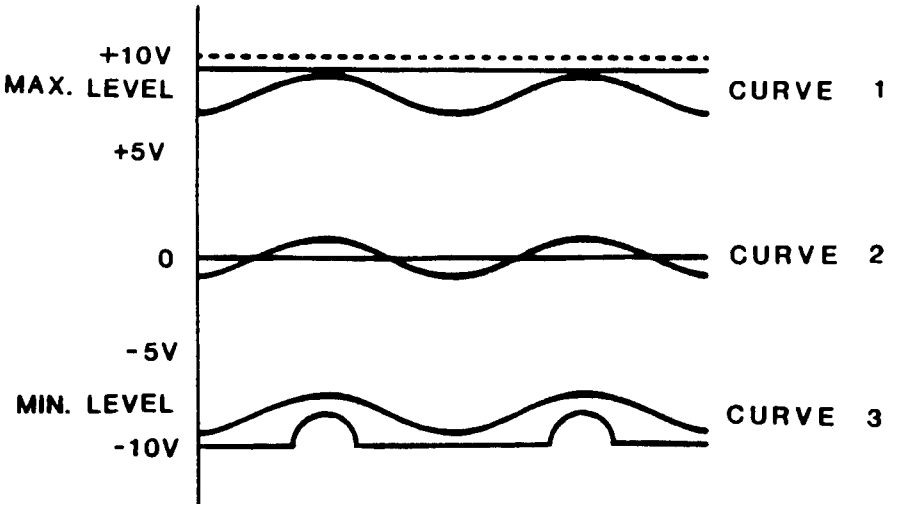



*Figure 8-1F. Waveforms.*

*(a)* If the AC voltmeter (M2) indicates 136 VAC or greater, proceed with step (7).

*(b)* If the AC voltmeter (M2) indicates less than 136 VAC, proceed with step (8).

*(7)* Perform the following adjustment procedures:

*(a)* Adjust AC supply PSI to adjust (M2) to 136 VAC.

*(b)* Slowly adjust R6 clockwise until oscilloscope (M3) wave form begins to decrease from "maximum level". DC voltmeter (M1) reading shall go to zero when wave form passes through zero. Refer to curve 2 on Figure 8-1F.

*(c)* Adjust AC supply (PS1) to adjust (M2) to 133 VAC. The oscilloscope (M3) waveform shall return to maximum level and DC voltmeter (M1) shall read maximum (35 VDC minimum).

*(8)* Perform the following adjustment procedures.

*(a)* Adjust AC supply (PS1) to adjust (M2) to 133 VAC.

*(b)* Slowly adjust R6 counterclockwise until oscilloscope (M3) wave form begins to go up from "minimum level" (curve 3, Figure 8-1F). M1 reading shall go to "maximum level" (35 VDC minimum) when wave form passes through zero.

*(c)* Adjust AC supply (PS1) to adjust (M2) to 136 VAC. The oscilloscope (M3) wave form shall return to "minimum level" and M1 shall read zero volts.

*(9)* Without further adjustment of R6, repeat the above procedure for the remaining three conditions tabulated in Table 8-3. In all cases, similar performance should be achieved.

**NOTE**

**Test condition one in Table 8-3 has already been accomplished in the previous procedures. Procedures are repeated for the remaining three conditions.**

**Table 8-3. Test Conditions.**

| Condition | White Lead | Black Lead | Red Lead | M3 + Lead |
|---|---|---|---|---|
| 1 | C2 | C5 | C4 | C5 |
| 2 | C2 | C5 | C3 | C5 |
| 3 | C1 | C4 | C3 | C4 |
| 4 | C1 | C6 | C4 | C6 |

**NOTE**

**Failure of the unit to meet adjustment requirements is indicative of a defective regulator.**

*(10)* After all adjustments have been made, apply a locking compound (P/N MIL-S-22473 GRHVV, FSCM 80244) between the adjustment screw head and housing surfaces adjacent to screw head.

*f. Cleaning, Inspection, and Repair.*

*(1)* Clean voltage regulator with compressed air and a soft bristle brush.

*(2)* Inspect voltage regulator for cracks, damaged terminals, or other visible damage.

*(3)* For testing, refer to step d. Testing.

*(4)* Repair of components identified by testing as faulty is by component replacement.

**CAUTION**

**Solder joints and/or component leads (except potentiometer leads) should not project more than 0.125 in. beyond the surface of the board.**

*(a)* Transistor replacement:

1 Make sure that replacement transistor has same identification number as the original transistor.

2 Apply heat sinks to the circuit board runs connected to the transistor being replaced.

3 Note and record position of transistor leads and tab on transistor case in relation to the printed circuit board.

4 Unsolder transistor from circuit board and remove.

5 Place new transistor on circuit board. Make sure emmiter, collector, and base leads are positioned as noted during removal.

6 Solder transistor in accordance with MIL-STD-454 Requirement 5. Trim transistor leads.

*g. Installation.*

*(1)* Check that red, black, and white jumper wires are properly positioned for the generator output. Refer to Figure 8-1D.

*(a)* MEP-026A (28 VDC) - Red jumper wire is connected to terminal C4, Black jumper wire is connected to terminal C6, and the White jumper wire is connected to terminal C1.

*(b)* MEP-021A (400 Hz) - Red jumper is connected to terminal C4, Black jumper wire is connected to terminal C6, and white jumper wire is connected to terminal C1.

*(c)* MEP-016A (60 HZ) - Red jumper wire is connected to terminal C3, Black jumper wire is connected to C4, and white jumper wire is connected to terminal C1.

*(2)* Place voltage regulator Figure 8-1B in control box and secure with screws (4) and lockwashers.

*(3)* Use tags for identification to connect leads to voltage regulator.

**8-4. Frequency Converter**

*a. General.* The frequency converter used on Model MEP-026A/C is a sensing unit for a tachometer which indicates the revolutions per minute (rpm) of the generator set. The frequency converter used on Models MEP-016A/C and MEP-021A/C is a sensing unit for a frequency meter which indicates a frequency of 60 hertz or 400 hertz.

*b. Test.*

*(1)* Stop the generator set and disconnect either the positive or negative lead from the frequency converter to the frequency meter.

*(2)* Start the generator set and measure input voltage across terminals L-L with a multimeter. This voltage will normally be 120 volts AC for 60 and 400 Hz sets and 30 volts AC for 28 volt DC sets.

*(3)* Observing polarity, with a multimeter measure DC micro ampere current output on + and – terminal of the frequency converter. This DC micro ampere current should be within the 0 to 200 micro ampere range, and at 120 volts 60 Hz operation, will be close to 100 micro amperes.

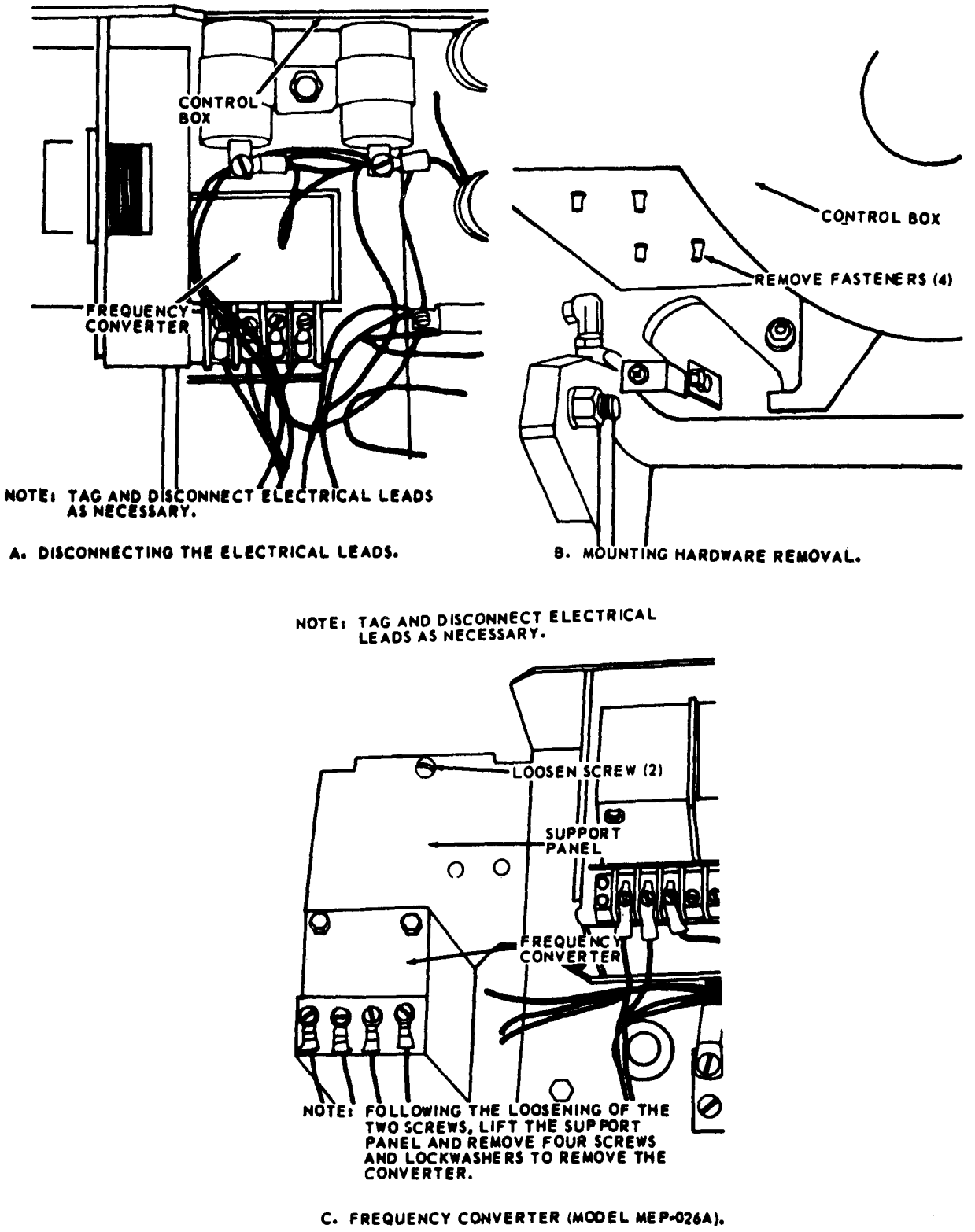



*Figure 8-2. Frequency converter, removal and installation.*

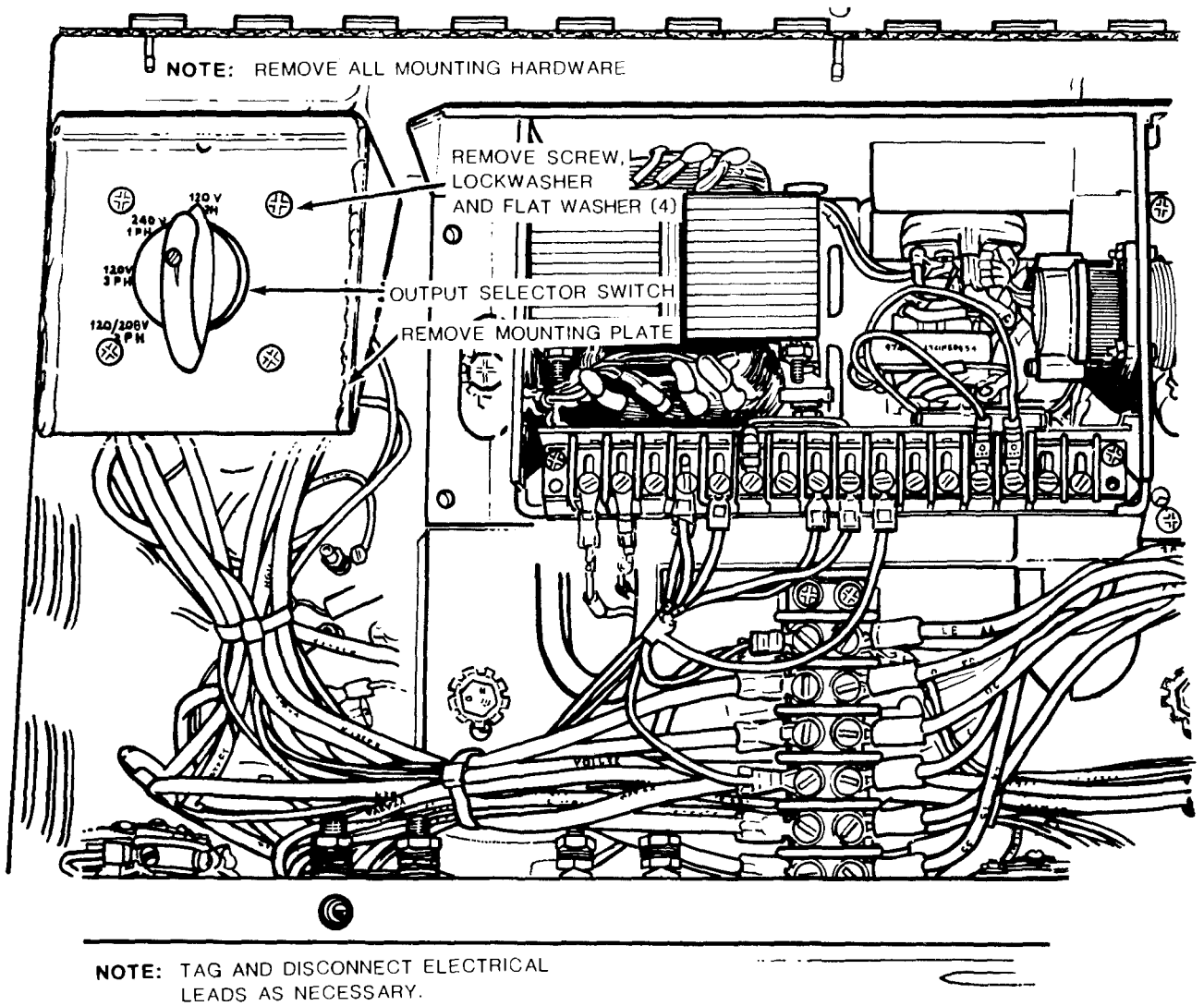



Figure 8-3. Output selector switch and mounting bracket, removal and installation (Model MEP-021A) (Sheet 1 of 2)

(4) If measurements do not meet specifications above, or if no output can be obtained, replace the frequency converter.

c. *Removal and Installation.* Refer to figure 8-2 to inspect, remove or install the frequency converter.

## 8-5. Output Selector Switch and Mounting Bracket (Models MEP-016A/C) and (MEP-012A/C)

*a. Test.*

*(1)* Disconnect load cables, start generator set and allow it to warm up.

*(2)* Place circuit breaker in ON position. Measure output voltage with a multimeter across output terminals according to output switch position.

*(3)* If proper voltages cannot be read across output terminals, replace load selector switch.

*b. Removal and Installation.* Refer to figure 8-3 to inspect, remove or install the output selector switch and mounting bracket.

## 8-6. Current Transformer (Models MEP-016A/C and 021A/C)

*a. Test.*

(1) With load attached, start generator set and allow it to warm up.

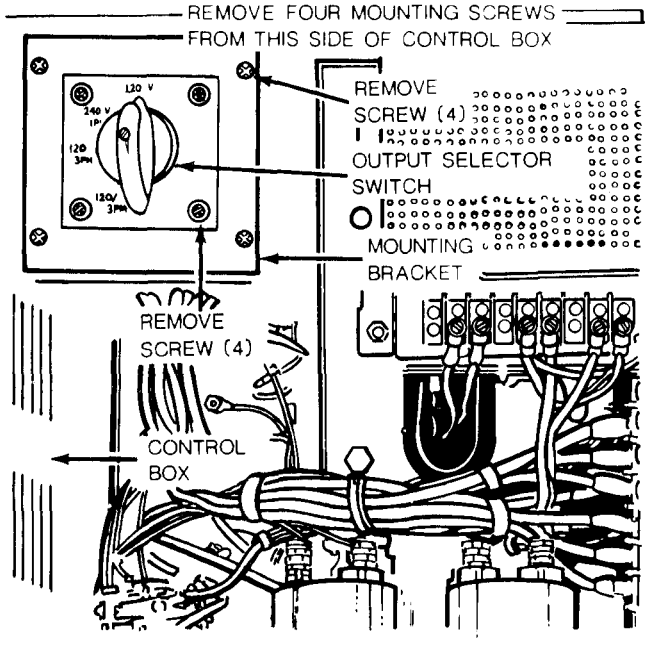



*Figure 8-3. Output selector switch and mounting bracket, removal and installation (Model MEP-021A) (Sheet 2 of 2).*

(2) Turn circuit breaker to ON position and observe load meter on front of control panel. If the current transformer is defective, there will be no reading on the load meter.

(3) To test continuity of the current transformer, disconnect terminals, including resistor connections, at A1, B1, and C1. With a multimeter on low ohms scale, measure continuity between terminals A1 and A2, B1 and B2, and C1 and C2. There will be a small amount of resistance between these terminals but the multimeter reading will be close to a dead short.

(4) If an open circuit is indicated on the multimeter, the current transformer is defective and should be replaced.

*b. Removal.*

(1) Remove output selector switch and bracket if required (para 8-5).

(2) Remove circuit breaker if required (para 8-8).

(3) Refer to figure 8-4 to remove the current transformer.

*c. Installation.* Installation of the current transformer is the reverse of removal.

## 8-7. Fixed Resistor Board Assembly (Models MEP-016A/C and MEP-021A/C)

Refer to figure 8-5 to inspect, remove and install the fixed resistor board assembly.

## 8-8. Circuit Breaker

*a. Test.*

(1) Attach a variable load to output terminals and start the generator set.

(2) Move circuit breaker to ON position and observe load meter and voltmeter. Reading at redline on load meter is 100% load. Circuit breaker should stay on indefinitely under 100% load.

(3) Adjust variable load until load meter reads in red portion of load meter. Circuit breaker should trip when indicator enters red portion of load meter.

(4) If circuit breaker trips below maximum load (100% of 0.8 PF), (Power Factor), replace the circuit breaker.

*b. Removal and Installation.* Using figures 8-6 and 8-7 as guide, remove and install circuit breaker.

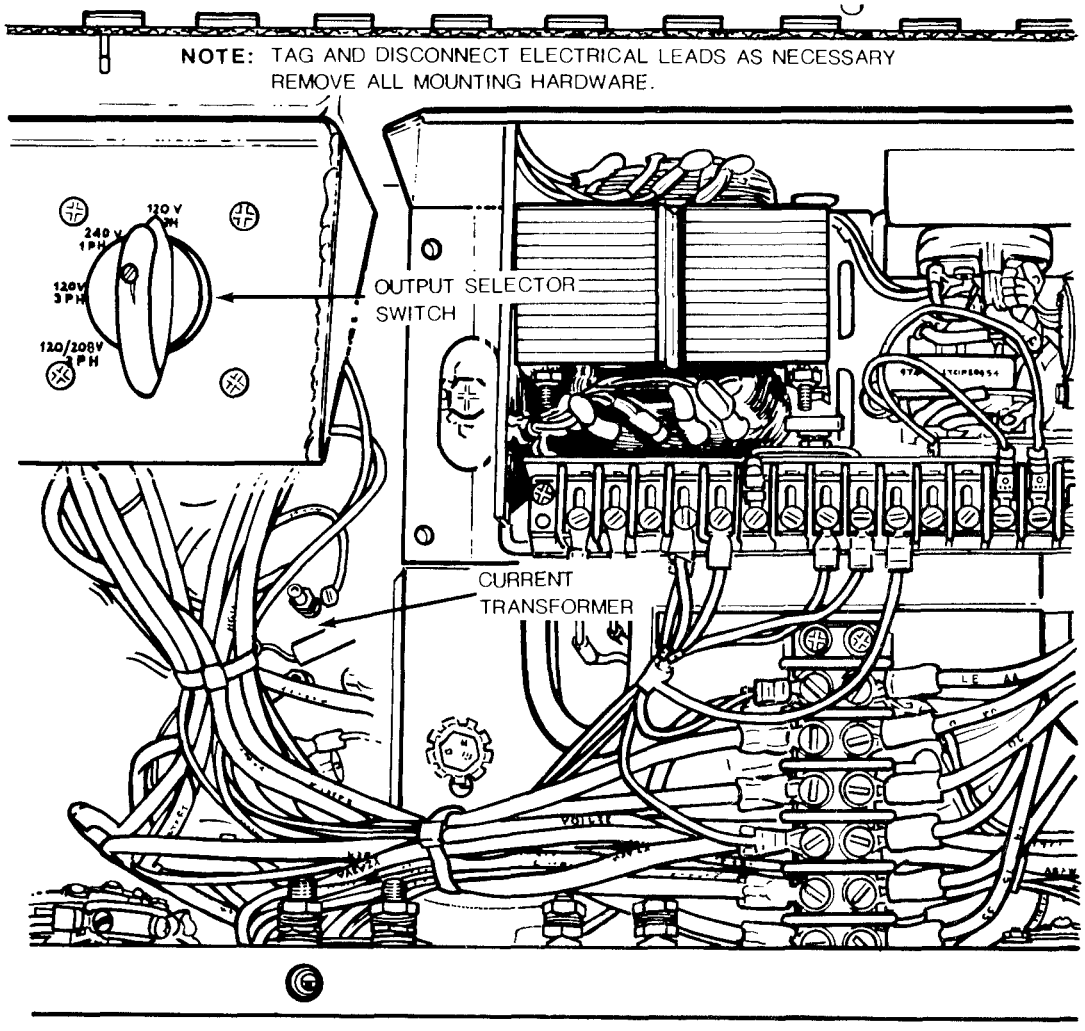



Figure 8-4. Current transformer, removal and installation (Models MEP-016A and MEP-021A).

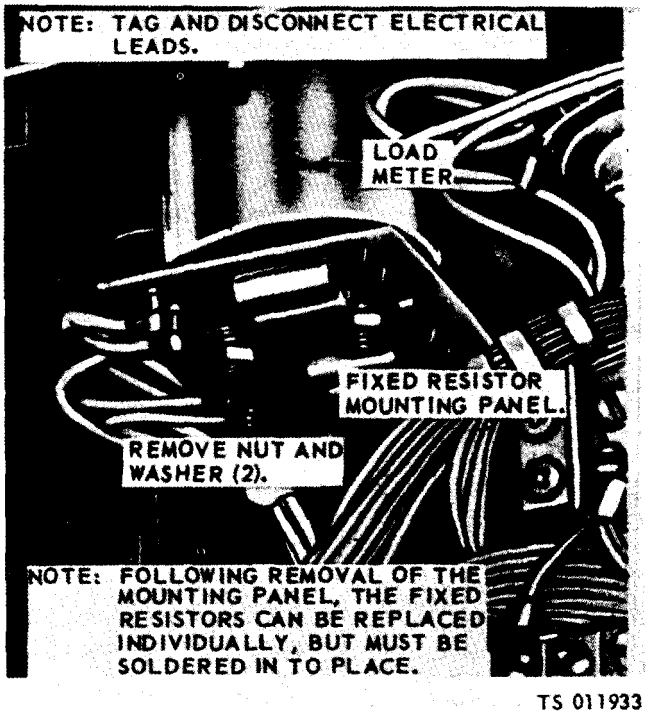
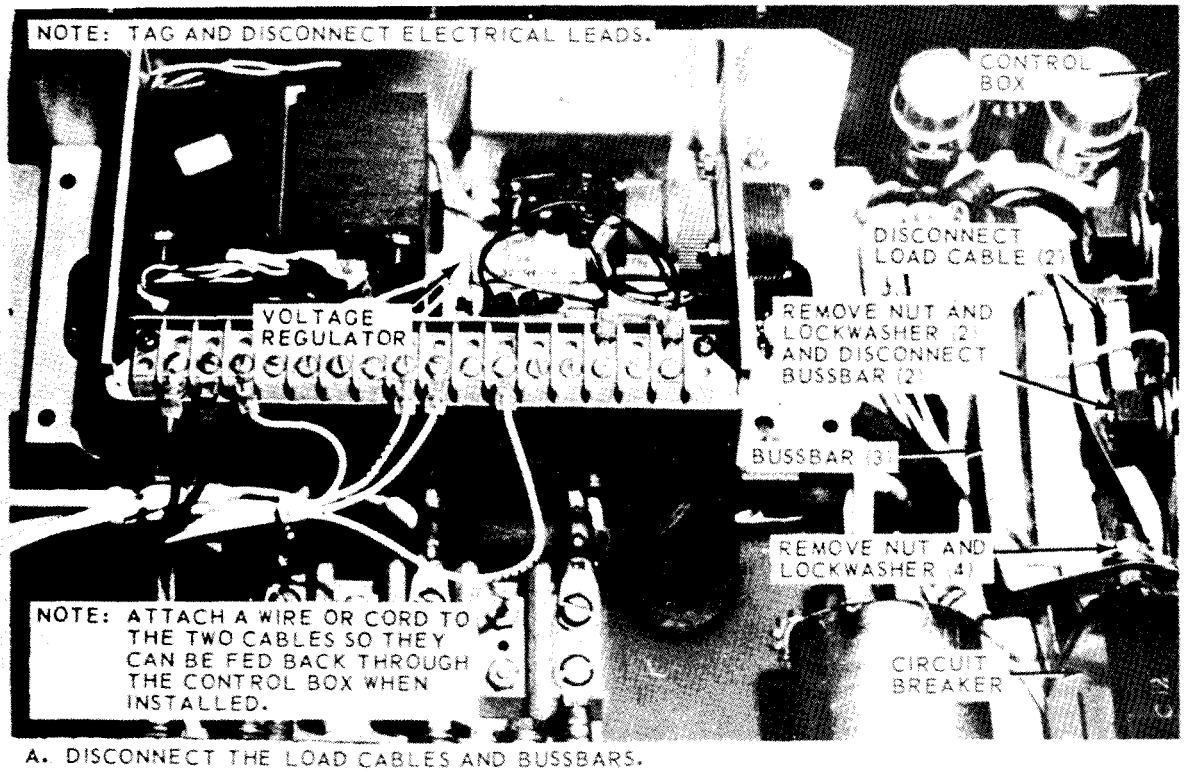
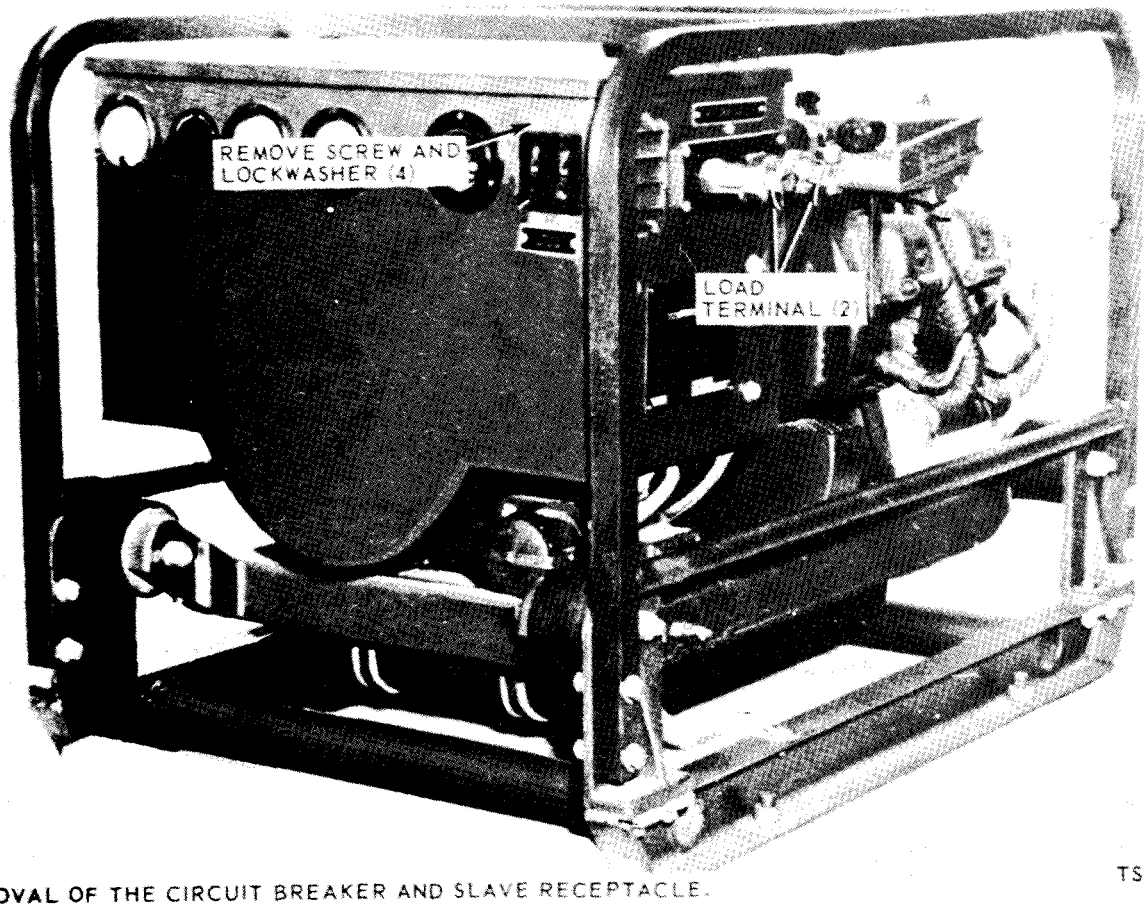



*Figure 8-5. Fixed resistor board assembly, removal and installation (Models MEP-016A and MEP-021A).*

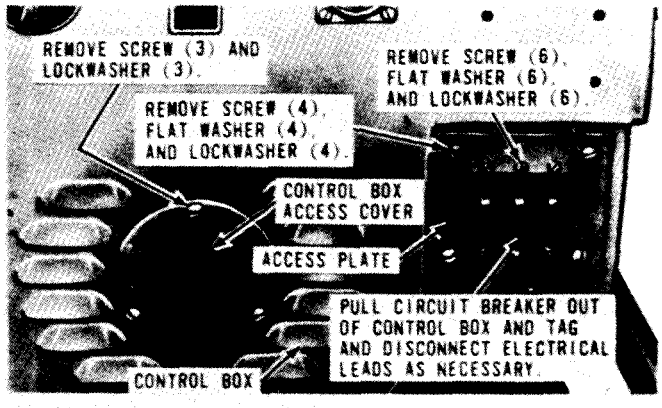



A. DISCONNECT THE LOAD CABLES AND BUSSBARS.




B. REMOVAL OF THE CIRCUIT BREAKER AND SLAVE RECEPTACLE.

*Figure 8-6. Circuit breaker, removal and installation (Model MEP-026A).*




NOTE: MODEL MEP-016A HAS NO CONTROL BOX ACCESSORY COVER.

*Figure 8-7. Circuit breaker, removal and installation (Model MEP-021A).*

# CHAPTER 9

# MAINTENANCE OF THE HEAT SINK ASSEMBLY

## 9-1. General

The heat sink assembly is made up of the following components: Heat sink, LH; Rectifier, LH; Heat sink, RH; and Rectifier, RH.

## 9-2. Diode Rectifier and Terminal Block

Refer to figure 9-1 to inspect, remove and install the diode rectifier and terminal block.

## 9-3. Heat Sink (Model MEP-026A, MEP-026C)

*a. Right Side Heat Sink.*

(1) *Removal.*

(a) Remove circuit breaker (para 8-8).

*(b)* Remove suppression capacitors (para 4-13).

*(c)* Remove external shunt (para 4-24).

*(d)* Remove bussbars and load terminals (para 4-24).

*(e)* Refer to figure 9-2 and remove the right side heat sink.

*(2) Installation.*

*(a)* Refer to figure 9-2 and install the right side heat sink.

*(b)* Replace bussbars and load terminals (para 4-24).

*(c)* Install external shunt (para 4-24).

*(d)* Install suppression capacitors (para 4-13).

*(e)* Replace circuit breaker (para 8-8).

*b. Left Side Heat Sink.*

(1) *Removal.*

*(a)* Remove and inspect the frequency converter (para 8-4).

*(b)* Refer to figure 9-3 to remove the left side heat sink.

(2) *Installation.*

*(a)* Refer to figure 9-3 to install the left side heat sink.

*(b)* Install the frequency converter (para 8-4).

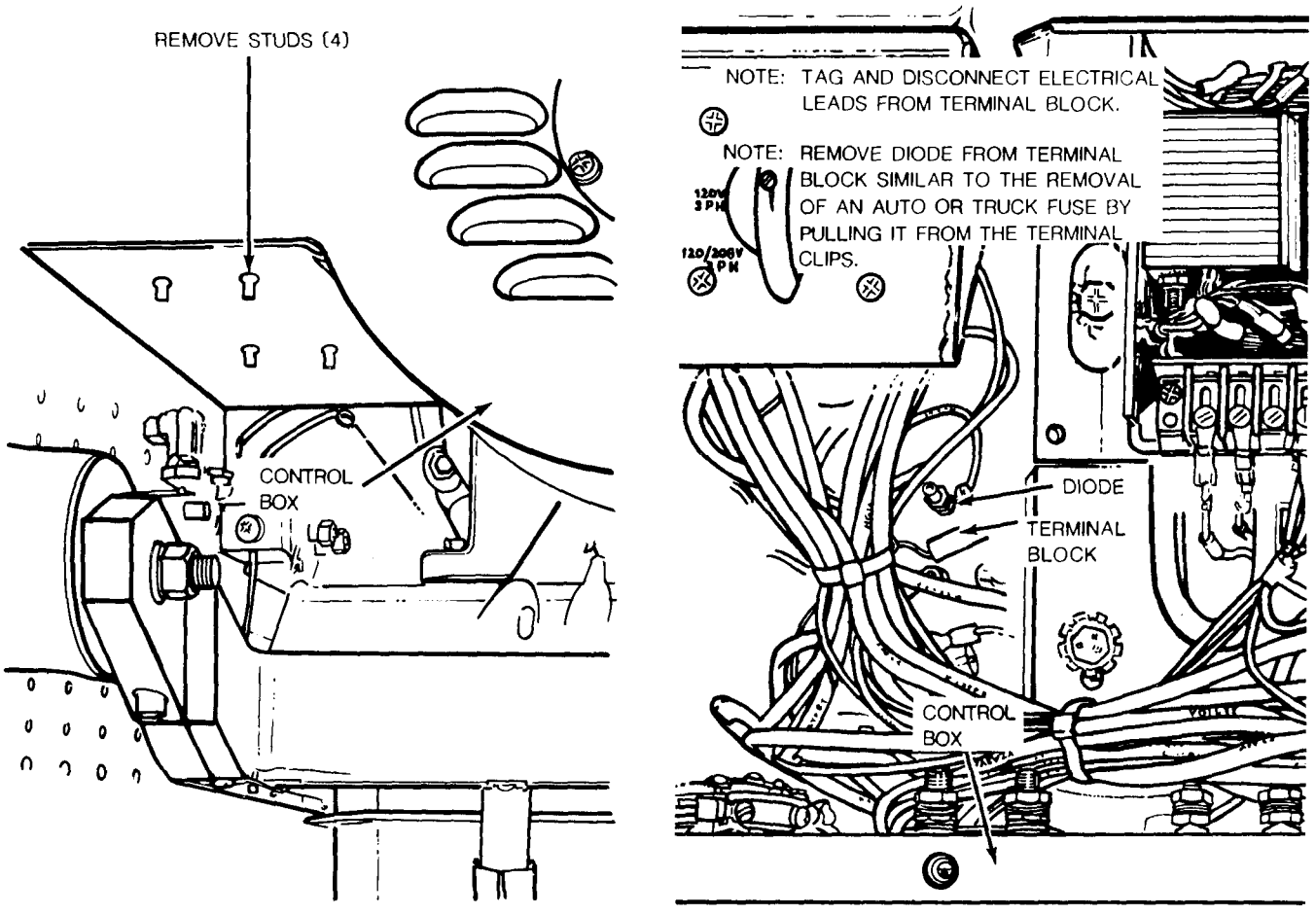



Figure 9-1. Diode rectifier and terminal block, removal and installation (Models MEP-016A and MEP-021A) (Sheet 1 of 2).

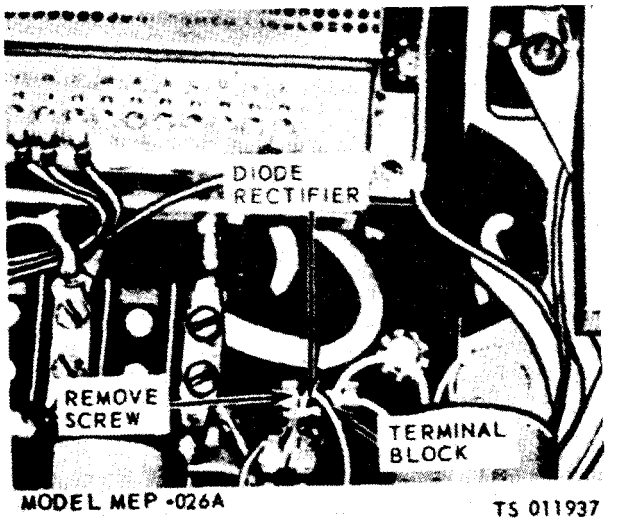
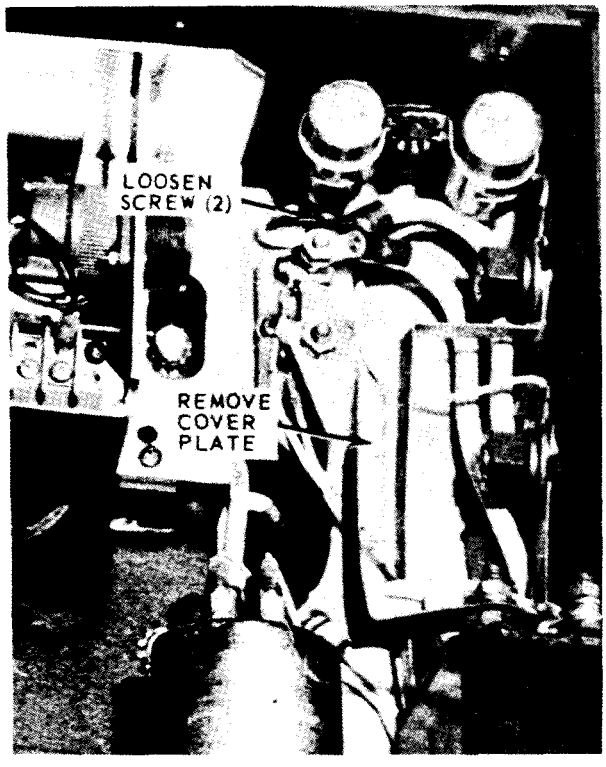
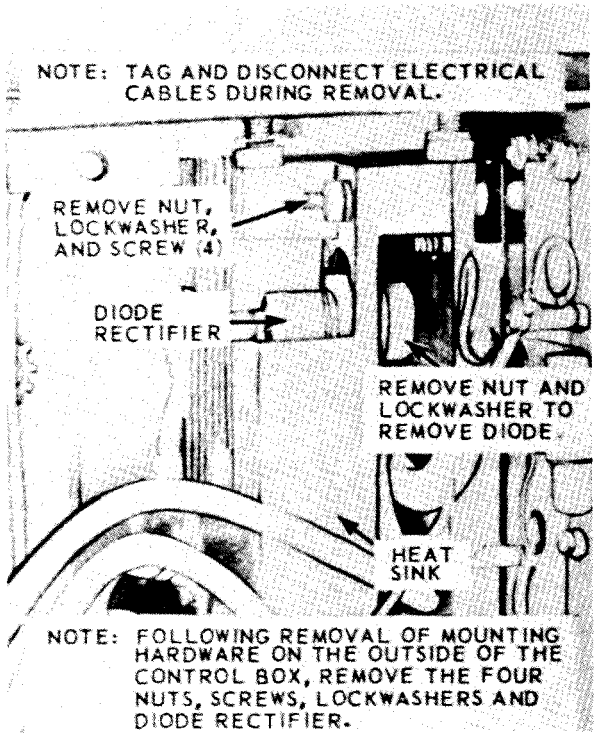


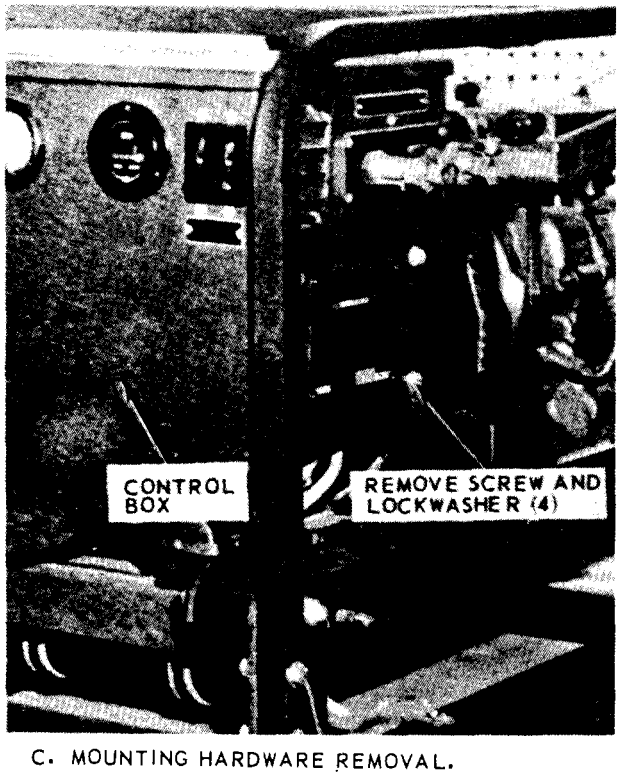

*Figure 9-1. Diode rectifier and terminal block, removal and installation (Model MEP-026A) (Sheet 2 of 2).*




A. COVER PLATE REMOVAL.




B. RIGHT SIDE HEAT SINK REMOVAL.




C. MOUNTING HARDWARE REMOVAL.

TS 011938

*Figure 9-2. Right side heat sink, removal and installation (Model MEP-026A).*

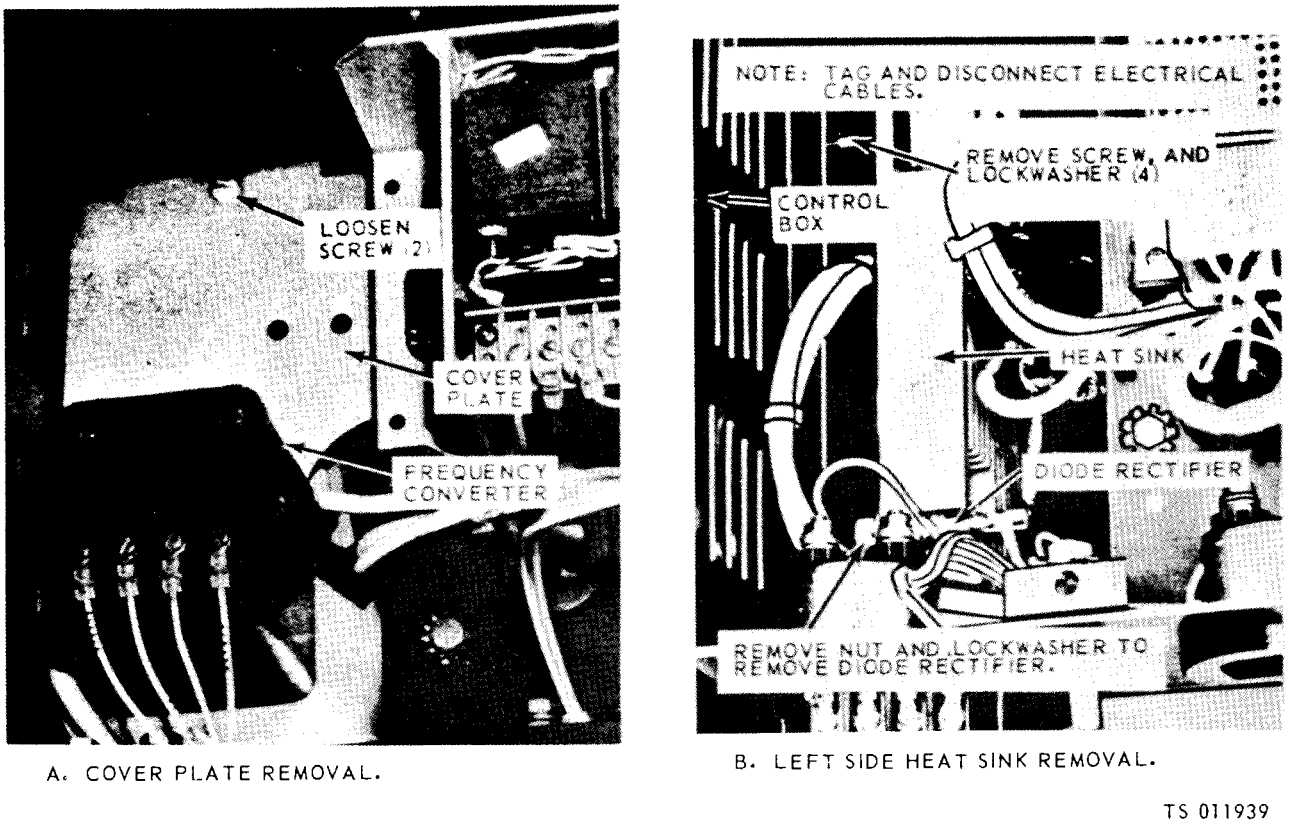



*Figure 9-3. Left side heat sink, removal and installation (Model MEP-026A).*

# CHAPTER 10

# MAINTENANCE OF THE GENERATOR

## 10-1. General

Repair of the generator is limited to the inspection and replacement of faulty parts. The generators on each of the models covered by this manual are nearly identical in outward appearance. Test procedures are similar except for the output as prescribed. Figures 10-1, 10-2 and 10-3 are included here as an aid to maintenance personnel in troubleshooting and repairing the generator sets.

## 10-2. Generator Maintenance

*a. General.* These maintenance instructions apply to the generator after it has been removed from the generator set. For correct procedures for removing the generator from the generator set, refer to figure 6-1.

*b. Model MEP-021A, MEP-021C.*

(1) *Removal.*

*(a)* Remove the control box (fig. 6-3).

*(b)* Refer to figure 6-1 and remove the generator.

(2) *Disassembly and reassembly.* Refer to figure 10-4 to disassemble and reassemble the generator.

(3) *Testing.*

*(a)* Start generator set and allow it to warm up.

*(b)* Observe the voltmeter on the front of the control box. If exciter, rotor, or stator is defective, there will be no voltage reading on the set voltmeter.

*(c)* Manually flash the field windings as prescribed in paragraph 4-20e(2). If stator and rotor are good, voltage will appear and hold on the set voltmeter.

*(d)* If voltage comes up, proceed with generator operation. If not, stop the engine and check continuity of exciter stator by loosening terminal 20 or 21 on the voltage regulator terminal board and measure across the exciter stator leads with a multimeter, for an open or short circuit. If bad, then replace the stator assembly.

*(e)* Remove generator from generator set (A, fig. 6-1), sheet 1 of 2, and remove the rotor assembly (B, fig. 6-l), sheet 2 of 2, from the stator assembly. Remove diodes from the exciter rotor (17, fig. 10-4) and test with a multimeter. Replace any bad diodes. If diodes are good, replace the rotor assembly.

*(f)* Reassemble generator set and repeat steps *(a)* and *(b).*

(4) *Installation.*

*(a)* Refer to figure 6-1 and install the generator.

*(b)* Install the control box (fig. 6-3).

*c. Models MEP-016A, MEP-016C and MEP-026A, MEP-026C*

(1) *Removal.*

*(a)* Remove the control box (fig. 6-3).

*(b)* Refer to figure 6-1 and remove the generator.

(2) *Disassembly and reassembly.* Refer to figure 10-5 to disassemble and reassemble the generator.

(3) *Testing.*

*(a)* Start generator set and allow it to warm up.

*(b)* Observe the voltmeter on the front of the control box. If exciter, rotor, or stator is defective, there will be no voltage reading on the set voltmeter.

*(c)* Manually flash the field windings as prescribed in paragraph 4-20e(2). If stator and rotor are good, voltage will appear and hold on the set voltmeter.

*(d)* If voltage comes up, proceed with generator operation. If not, stop the engine and check continuity of exciter stator by loosening terminal 20 or 21 on the voltage regulator terminal board and measure across the exciter stator leads with a multimeter for an open or short circuit. If bad, then replace the stator assembly.

*(e)* Remove generator from generator set (A, fig. 6-1 sheet 1 of 2), and remove the rotor assembly (B, fig. 6-1 sheet 2 of 2) from the stator assembly. Remove diodes from the exciter rotor (20, fig. 10-5) and test with a multimeter for

resistance. Replace any bad diodes. If diodes are good, replace the rotor assembly.

*(f)* Reassemble generator set and repeat steps *(a)* and *(b)*.

(4) *Installation.*

*(a)* Refer to figure 6-1 and install the generator.

*(b)* Install the control box (fig. 6-3).

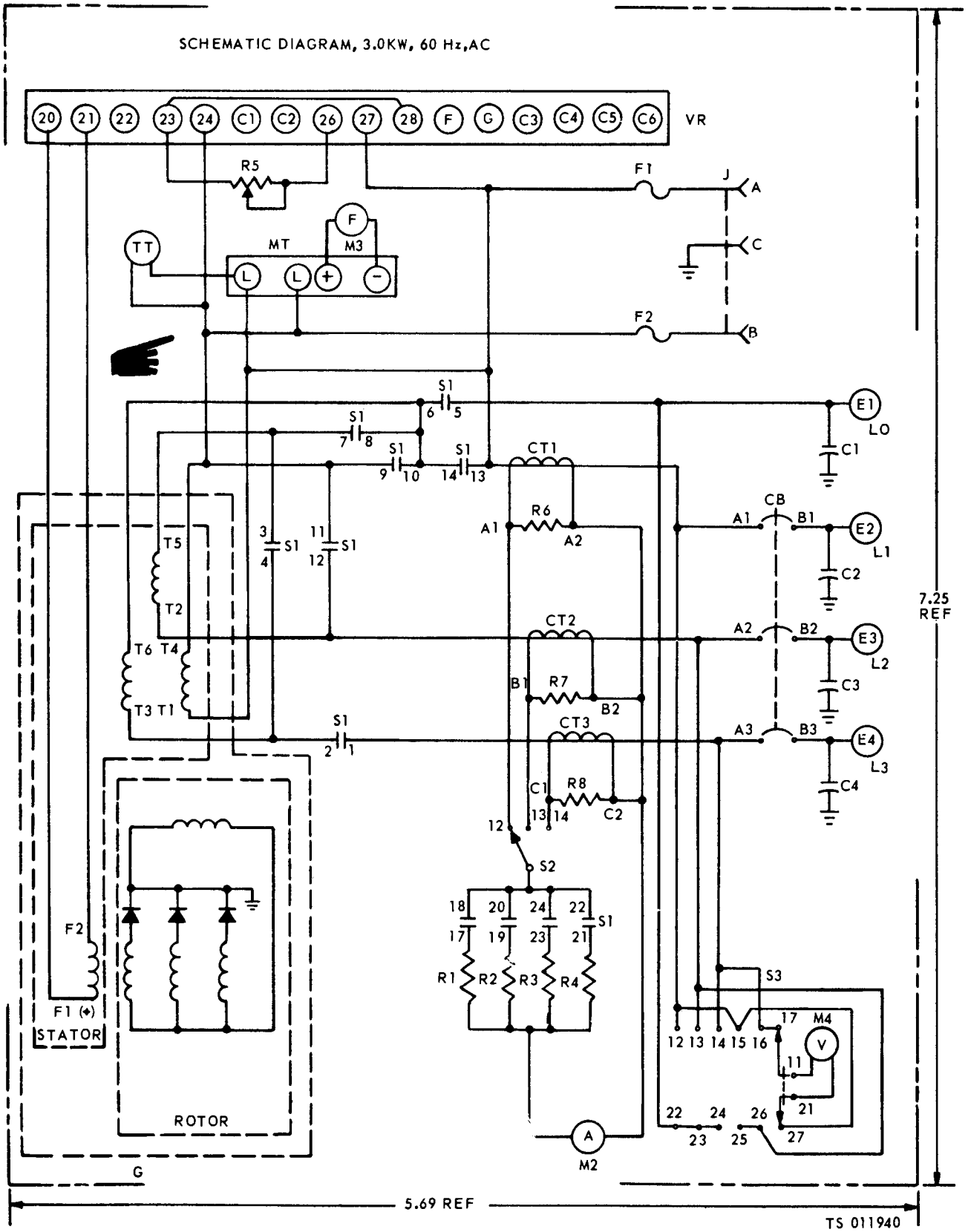



*Figure 10-1. Generator schematic diagram (Model MEP-016A).*

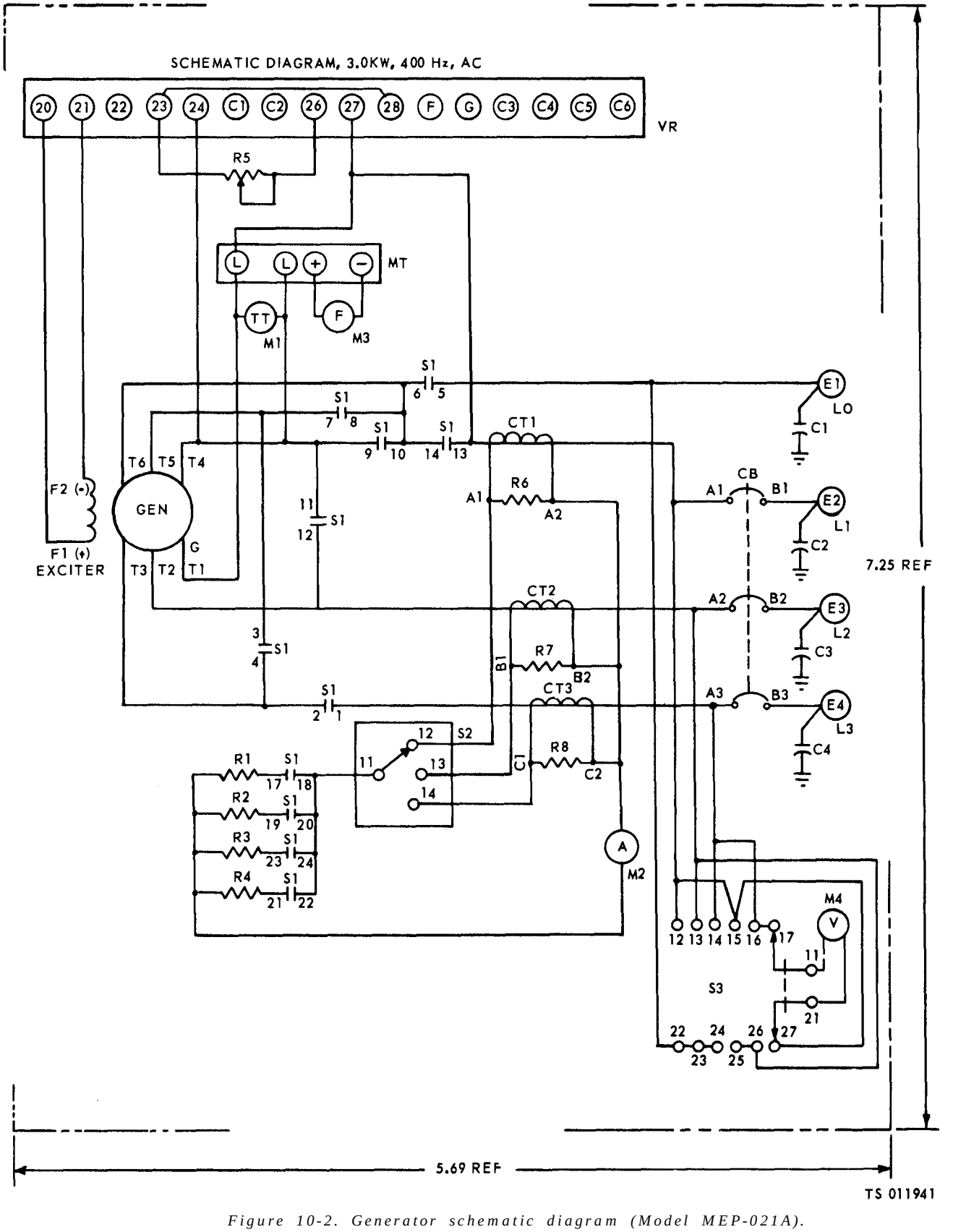
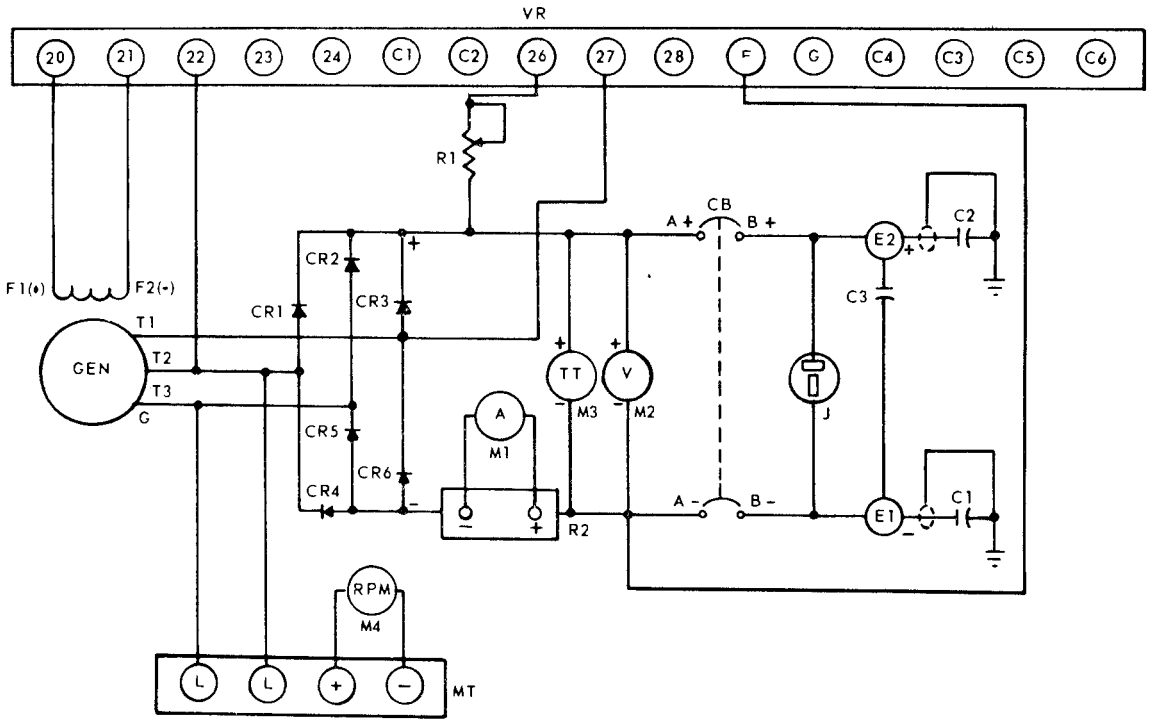



*Figure 10-2. Generator schematic diagram (Model MEP-021A).*

SCHEMATIC DIAGRAM, 3.0KW, 28VDC




TS 011942

*Figure 10-3. Generator shcematic diagram (Model MEP-026A).*

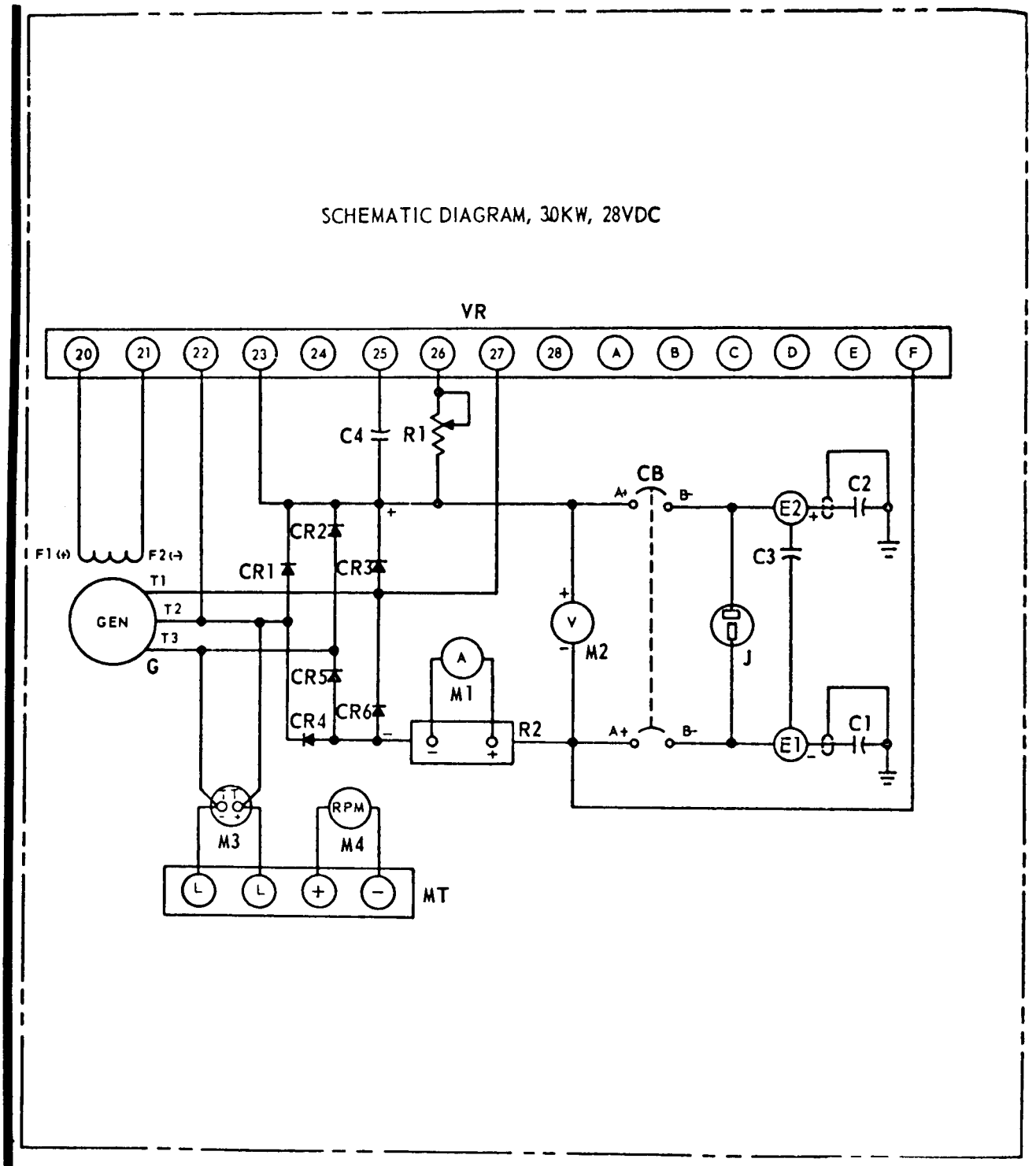
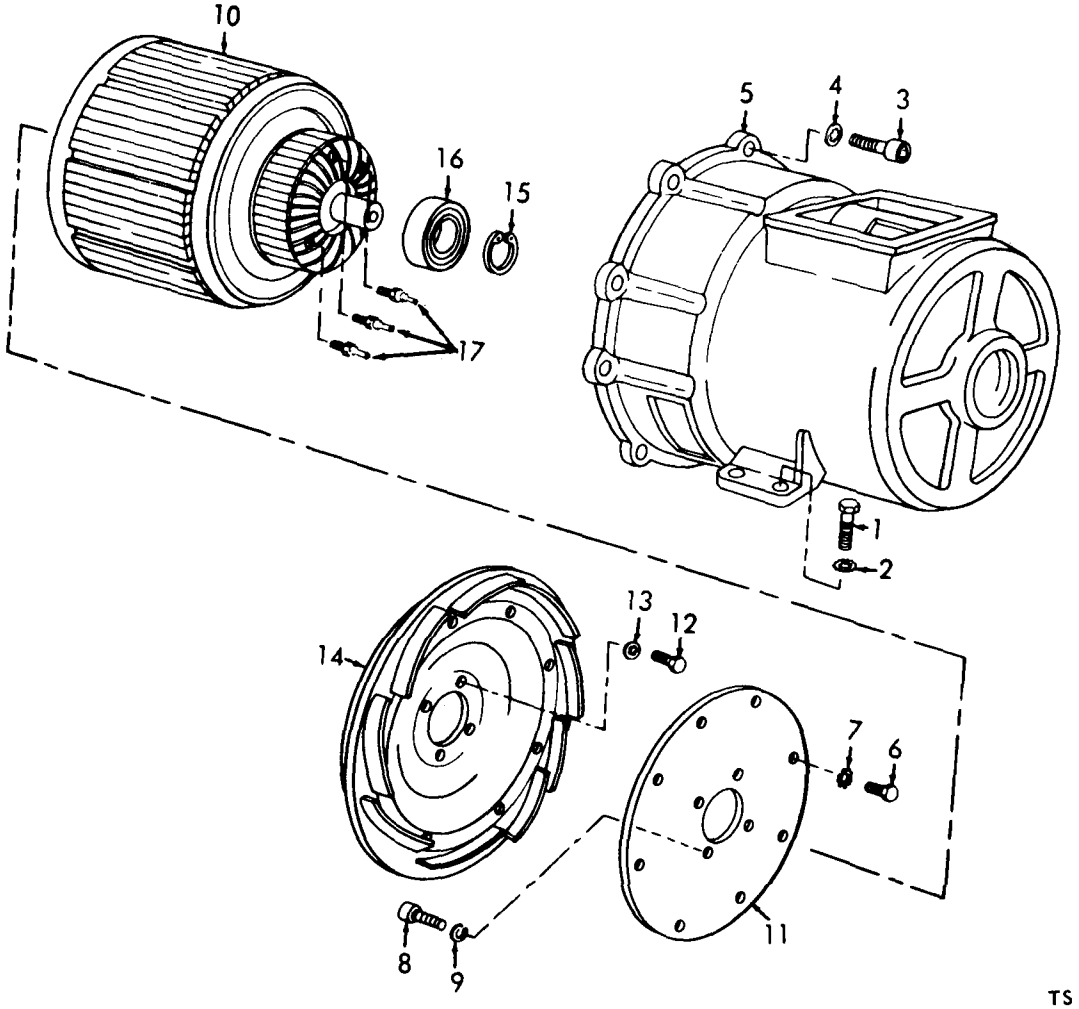
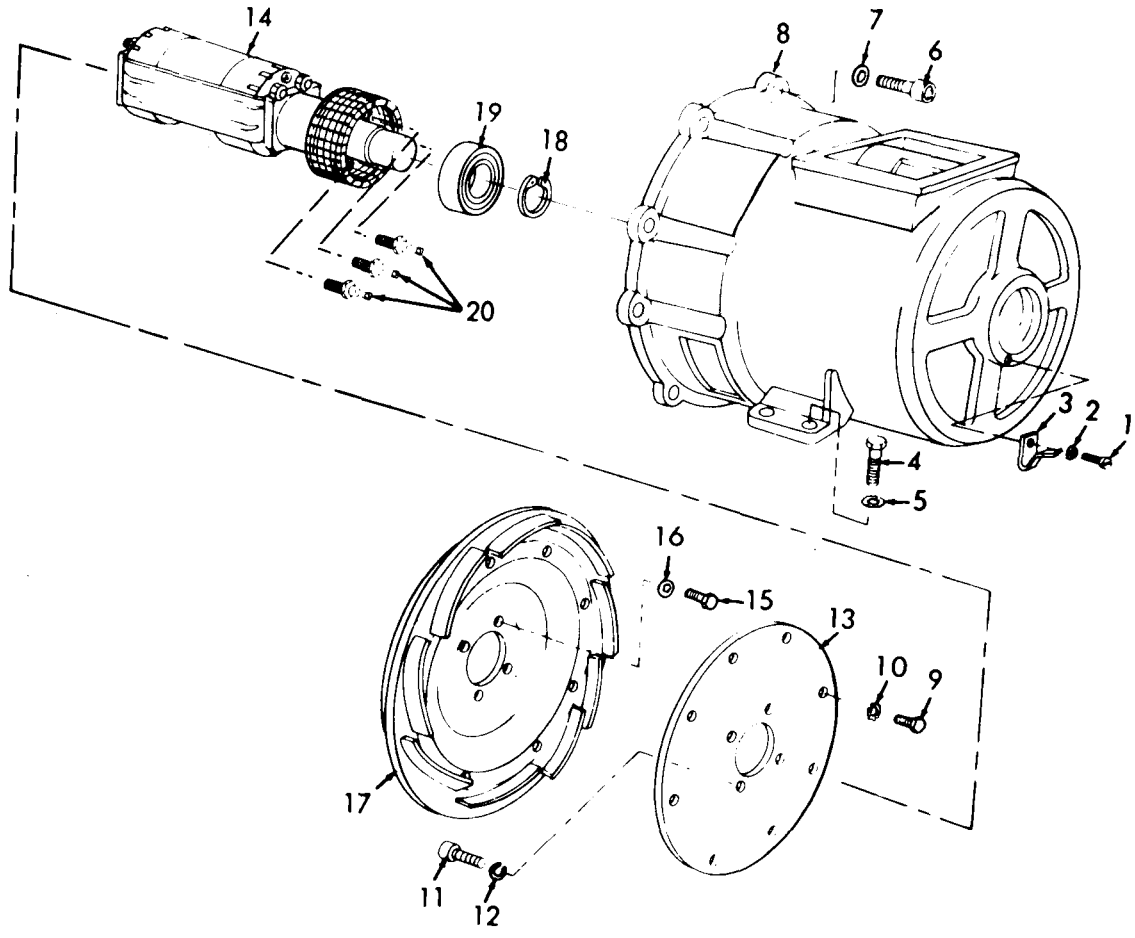



*Figure 10-3A. Generator schematic diagram (Model DC-3.0-MD/28).*




1. Screw
2. Washer
3. Screw
4. Washer
5. Stator
6. Screw
7. Washer
8. Screw
9. Washer
10. Rotor
11. Plate
12. Screw
13. Washer
14. Fan
15. Ring
16. Bearing
17. Diode

*Figure 10-4. Generator, exploded view (Model MEP-021A).*




TS 011944

1. Screw
2. Washer
3. Spring
4. Screw
5. Washer
6. Screw
7. Washer
8. Stator
9. Screw
10. Washer
11. Screw
12. Washer
13. Plate
14. Rotor
15. Screw
16. Washer
17. Fan
18. Ring
19. Bearing
20. Diode

*Figure 10-5. Generator, exploded view (Models MEP-026A and MEP-016A).*

# APPENDIX A

# REFERENCES

This appendix contains a list of reference manuals that may be used in conjunction with this TM in the operation and maintenance of the 3 KW DOD Generator. Those manuals not coded are applicable for use by all services. The manuals are coded (A), for Army use; (F), for Air Force use; and (MC), for Marine Corps use.

## A-1. Fire Protection

| | |
|---|---|
| TB 5-4200-200-10 (A) | Hand Portable Fire Extinguishers Approved for Army Use |

## A-2. Lubrication

| | |
|---|---|
| C9100-IL (A) | Identification List for Fuels, Lubricants, Oils and Waxes |
| LO 5-2805-203-12 (A, MC) | Engine, Gasoline: 6 HP; Military Standard Models 4A032-1, 4A032-2, 4A032-3 and 4A032-4 |
| T.O. 35C2-3-1-426 WC-3-1-1 (F) | Preventive Maintenance Workcards |
| TB 703-1 (A) | Specification List of Standard Liquid Fuels, Lubricants, Preservatives, and Related Products Authorized for Use by U.S. Army |

## A-3. Painting

| | |
|---|---|
| AR 740-1 (A) | Color, Marking, and Preparation of Equipment for Shipment |
| TM 43-0139 (A) | Painting Instructions for Field Use. |
| T.O. 35-1-3 (F) | Painting and Marking of USAF Aerospace Ground Equipment |
| MCO 4750.3B | Painting, Camouflage Pattern Painting, Registration Marking and Identification Requirements for Marine Corps Tactical Equipment |
| NAVMC 2666 | Marine Corps Guide for Camouflage Paint Patterns |

## A-4. Radio Suppression

| | |
|---|---|
| TM 11-483 (A) | Radio Interference Suppression |
| MIL-STD-461 (F,A,MC) | Radio Interference Suppression |
| MIL-STD-633C (F,MC) | Mobile Electric Power Engine Generator Standard Family Characteristics Data Sheet |

## A-5. Maintenance

| | |
|---|---|
| TM 5-2805-203-14 (A)<br>TO 38G2-90-1 (F)<br>TM 03522-15( MC) | Operator, Organizational, DS, and GS Maintenance Manual for Engine, Gasoline, 6 HP; Military Standard Models 4A032-1, 4A032-2, 4A032-3, and 4A032-4. |

**A-5. Maintenance (Continued)**

| | |
|---|---|
| TM 5-764 (A,MC) | Electric Motor and Generator Repair |
| DA PAM 738-750 (A) | The Army Maintenance Management System (TAMMS) |
| MCO P4790.1 (MC) | MIMMS Introduction Manual |
| MCO P4790.2 (MC) | Field Procedures Manual |
| MCO P4790.5 (MC) | Field Users Manual |
| AFM 66-1 (F) | Maintenance Management |
| TM 5-2805-203-24P (A)<br>T.O. 38G2-90-14 (F)<br>SL-4-03522B (MC) | Organizational, Direct and General Support Maintenance Repair Parts and Special Tool Lists: Engine, Gasoline, 6 HP; Military Standard Models 4A032-1, 4A032-2 and 4A032-3 |
| T.O. 35C2-3-426 WC 3-1-1 (F) | Preventive Maintenance Workcards |
| TM 5-6115-271-24P (A)<br>T.O. 35C2-3-386-4 (F)<br>SL-4-059-26A | Organizational, Direct and General Support Repair Parts and Special Tool Lists for Generator Set, GED, 3 KW, Military Design (less engine) AC, 400 Hz, DOD Model MEP-021A, MEP-021C; AC, 60 Hz, DOD Model MEP-016A; MEP-016C; DC, 28 V, DOD Model MEP-026A, MEP-026C. |
| T.O. 35C2-3-1-426 (F) | Maintenance Manual |
| T.O. 00-51 (F) | Air Force Technical Order System |
| T.O. 34Y19-1-111 (F) | Electric Motor and Generator Repair |

**A-6. Shipment and Storage**

| | |
|---|---|
| TB 740-97-2 (A, MC) | Preservation of USAMECOM Mechanical Equipment for Shipment and Storage |
| T.O. 35-1-4 (F) | Processing and Inspection of Aerospace Ground Equipment |
| T.O. 38-1-5 (F) | Processing and Inspection of Nonmounted, Non-Aircraft Gasoline and Diesel Engines for Storage and Shipment |

**A-7. Operation**

| | |
|---|---|
| TM 5-766 (A, MC) | Electric Power Generation in the Field |
| TB MED 251 (A) | Noise and Conservation of Hearing |
| FM 21-11 | First Aid for Soldiers |

**A-8. Demolition of Equipment**

| | |
|---|---|
| TM 750-244-3 (A) | Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command) |

**A-9. Specifications**

| | |
|---|---|
| DA PAM 25-30 | Consolidated Index of Army Publications and Forms |

# APPENDIX B
# BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

## B-1. Scope

(A) This appendix lists items required by the operator for operation of the generator set.

## B-2. General

This list is divided into the following sections:

a. *Basic Issue Items List – Section II. These are the* minimum essential items required to place the generator set in operation, to operate it and to perform emergency repairs. Although shipped separately packaged, BII must be with the generator set during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition BII, based on TOE/MTOE authorization of the end item.

*b. Items Troop Installed or Authorized List - Section III.* A list of items in alphabetical sequence, which at the discretion of the unit commander may accompany the generator set. These items are NOT subject to turn-in with the generator set.

## B-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of items Troop Installed or Authorized, Section III.

*a. National/NATO Stock Numbers.* This column indicates the National/NATO stock numbers assigned to the item and will be used for requisitioning purposes.

*b. Description.* This column indicates the Federal item name and any additional description of the item required.

c. *Unit of Measure (U/M).* A two-character alphabetical abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

*d. Quantiy Authorized.* This column indicates the quantity of the item authorized to be used with the equipment.

## Section II. BASIC ISSUE ITEMS (BII) LIST

| National/NATO Stock Number | Description Part Number & FSCM | Usable on Code | U/M | Qty auth |
|---|---|---|---|---|
| 4210-00-555-8837 | Extinguisher, Fire | | EA | 1 |
| 5975-00-878-3791 | Rod Assembly, Ground | | EA | 1 |
| 5120-01-013-1676 | Slide Hammer, Ground Rod | | EA | 1 |
| | Manual, Technical, TM 5-6115-271-14 | | EA | 1 |

## Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

| National/NATO Stock Number | Description<br>Part Number & FSCM | Usable on Code | U/M | Qty auth |
|---|---|---|---|---|
| 2910-00-066-1235 | ADAPTER ASSEMBLY, fuel | | EA | 1 |
| 7520-00-559-9618 | CASE, maintenance and operation manuals | | EA | 1 |
| 6115-00-960-2703 | COVER, canvas | | EA | 1 |
| 4720-00-274-9480 | HOSE ASSEMBLY, Fuel | | EA | 1 |
| 2920-00-075-1710 | STARTER KIT, ASSEMBLY, electrical 13208E5819(97403), consisting of the following items. Complete Kit should be requisitioned for installing an electrical starter for first time. When components need replacing, requisition the component needed as follows: | | EA | 1 |

**NOTE**

**Starter Kit Assembly for the following generator sets is authorized for general use. Requisitions for this kit must be accomplished by make and model and serial number of the end item generator set.**

| NSN | Hertz | DOD Model |
|---|---|---|
| 6115-00-017-8237 | 3 KW60 | MEP-016A, MEP-016C |
| 6115-00-017-8238 | 3 KW 400 | MEP-021A, MEP-021C |
| 6115-00-017-8239 | 3 KW DC | MEP-026A, MEP-026C |

| | | | | |
|---|---|---|---|---|
| 6115-00-961-1103 | BRACKET<br>13219E0830 (97403) | | EA | 1 |
| 5935-00-814-7432 | CONNECTOR, RECEPTACLE<br>MS75058-1 (96906) | | EA | 1 |

## Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST-Continued

| National/NATO Stock Number | Description<br>Part Number & FSCM | Usable on Code | U/M | Qty auth |
|---|---|---|---|---|
| 2920-00-882-3401 | MOTOR, STARTER<br>13213E3285 (97403) | | EA | 1 |
| | NAMEPLATE, STARTER<br>13208E5818 (97403) | | EA | 1 |
| 5310-00-761-6882 | NUT, PLAIN receptacle mug<br>MS51967-2 (96906) | | EA | 4 |
| 5930-00-655-1522 | SWITCH, TOGGLE<br>MS35058-30 (96906) | | EA | 1 |
| | SCREW CAP, HEX HD<br>MS90725-41 (96906) | | EA | 1 |
| 5305-00-225-3839 | SCREW, CAP: receptacle mug<br>MS90725-8 (96906) | | EA | 4 |
| 5305-00-253-5615 | SCREW, DRIVE<br>MS21318-21 (96906) | | EA | 2 |
| 5305-00-225-8499 | SCREW & EXTERNAL TOOTH LOCKWASHER ASSY<br>5/16-18 UNC-2A x 1LG, STL CAD PLTD SAE-J489 | | EA | 2 |
| 5305-00-036-6982 | SCREW & LOCKWASHER, EXT TOOTHASSY ., 1/4-20 UNC-2AX 3/4 LG, HEX HD TRIMMED, S LOT CADORZN PLTD SAE-J489 | | EA | 1 |
| | TERMINAL LUG<br>MS25036-24 (96906) | | EA | 1 |
| | TERMINAL LUG<br>MS25036-25 (96906) | | EA | 1 |
| | TERMINAL LUG<br>MS25036-6 (96906) | | EA | 2 |
| | TERMINAL LUG<br>MS25036-8 (96906) | | EA | 1 |
| 5940-40-204-8961 | TERMINAL LUG<br>MS25036-10 (96906) | | EA | 1 |
| 5310-00-889-2528 | WASHER, LOCK: Receptacle mtg<br>MS45904-68 (96906) | | EA | 4 |
| 6145-00-195-5602 | WIRE, ELEC #4<br>MS5086/2-4-9 (81349) | | FT | 5 |
| 6145-00-578-7517 | WIRE, ELEC #16<br>M5086/1-16-9 (81349) | | FT | 5 |
| 5935-00-322-8959 | ADAPTER CONNECTOR | | EA | 1 |

# APPENDIX C

# MAINTENANCE ALLOCATION CHART
# (ARMY ONLY)

## Section I. INTRODUCTION

**C-1. General**

a. This section provides a general explanation of all maintenance and repair function authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component and the work measurement time required to perform the functions by the designated maintenance level. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the tools and test equipment required for each maintenance function as referenced from Section II.

**C-2. Explanation of Columns in Section II**

a. *Column (1), Group Number.* Column 1 lists group numbers to identify related components, assemblies, subassemblies, and modules with their next higher assembly. The applicable groups are listed in the MAC in disassembly sequence beginning with the first group removed.

b. *Column (2), Component/Assembly.* This column contains the noun names of components, assemblies, subassemblies and modules for which maintenance is authorized:

c. *Column (3), Maintenance Functions.* This column lists the functions to be performed on the item listed in Column 2. The maintenance functions are defined as follows:

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

(2) *Test,* To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

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

(4) *Adjust.* To maintain within prescribed limits, by bringing into proper or exact 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 measuring and diagnostic equipments used in precision measurement. Consists of comparison 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) *Install.* The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

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

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

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

(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 material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipments/components.

d. *Column (4), Maintenance Category*. This column is made up of subcolumns for each category of maintenance. Work time figures are listed in these sub-columns for the lowest level of maintenance authorized to perform the function listed in column 3. These figures indicate the average active time required to perform the maintenance function at the indicated category of maintenance under typical field operating conditions.

e. *Column (5), Tools and Equipment*. This column is provided for referencing by code, the common tool sets (not individual tools), special tools, test and support equipment required to perform the designated function. Refer to Section III.

**C-3. Explanation of Columns in Section III**

a. *Column (1), Reference Code*. This column consists of an arabic number listed in sequence from column 5 of Section II. The number references the common tool sets, special tools and test equipment requirements.

b. *Column (2), Maintenance Category*. This column shows the lowest category of maintenance authorized to use the special tools or test equipment.

c. *Column (3), Nomenclature*. This column lists the name or identification of the common tool sets, special tools or test equipment.

d. *Column (4), Nationa/NATO Stock No. (NSN)*. This column is provided for the NSN of common tool sets, special tools and test equipment listed in the nomenclature column.

e. *Column (5), Tool Number*. This column lists the manufacturer's code and part number of tools and test equipment.

## Section II. MAINTENANCE ALLOCATION CHART

| (1) Group Number | (2) Component/Assembly | (3) Maintenance Function | (4) Maintenance Category C | O | F | H | D | (5) Tools and Equipment |
|---|---|---|---|---|---|---|---|---|
| 01 | FRAME ASSEMBLY | | ** | | | | | |
| | Frame, Upper . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 0.5 | | | | |
| | | Repair | | | 1.0 | | | 1 |
| | Shock Mounts . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 1.0 | | | | |
| | Ground Stud and Strap . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 0.2 | | | | |
| 02 | CONTROL BOX ASSEMBLY | | | | | | | |
| | Control Box . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | | 0.8 | | | 1 |
| | | Repair | | | 0.6 | | | 1 |
| | Resistor, Variable . . . . . | Inspect | | 0.1 | | | | |
| | | Test | | 0.1 | | | | 2 |
| | | Replace | | 0.2 | | | | |
| | Switches . . . . . | Inspect | | 0.1 | | | | |
| | | Test | | 0.1 | | | | 3,2 |
| | | Replace | | 0.5 | | | | |

*Subcolumns are as follows C-Operator/crew; O-Organizational; F-Direct support; H-General support; D-Depot.
**Indicates Worktime (Manhours) Required

## Section II. MAINTENANCE ALLOCATION CHART-Continued

| (1) Group Number | (2) Component/Assembly | (3) Maintenance Function | (4) Maintenance Category C | O | F | H | D | (5) Tools and Equipment |
|---|---|---|---|---|---|---|---|---|
| | Meters | Inspect | 0.1 | | | | | |
| | | Test | | 0.1 | | | | 3 |
| | | Replace | | 0.3 | | | | |
| | Meter, Frequency Transducer | Inspect | | 0.1 | | | | |
| | | Test | | 0.1 | | | | 3 |
| | | Replace | | 0.3 | | | | |
| | Holder, Fuse . . . . . | Inspect | | 0.1 | | | | |
| | | Replace | | 0.2 | | | | |
| | Circuit Breaker . . . . . | Inspect | | 0.1 | | | | |
| | | Test | | 0.1 | | | | 3 |
| | | Replace | | 0.1 | | | | |
| | Voltage Regulator . . . . . | Inspect | | 0.2 | | | | |
| | | Test | | 0.2 | | | | 3 |
| | | Replace | | 0.2 | | | | |
| | Transformer, Current . . . . | Inspect | | 0.1 | | | | |
| | | Test | | 0.1 | | | | 3 |
| | | Replace | | 0.5 | | | | |
| | Receptacle, Convenience | Inspect | 0.1 | | | | | |
| | | Replace | | 1.0 | | | | |
| | Terminal, Load/Insulator | Inspect | 0.1 | | | | | |
| | | Replace | | 0.5 | | | | |
| | Capacitor, RFI Suppression | Inspect | | 0.2 | | | | |
| | | Test | | 0.2 | | | | 3 |
| | | Replace | | 0.5 | | | | |
| 03 | HEAT SINK ASSEMBLY | | | | | | | |
| | Heat Sink . . . . . | Inspect | | 0.2 | | | | |
| | | Replace | | 1.0 | | | | |
| | Rectifier . . . . . | Inspect | | 0.2 | | | | |
| | | Test | | 0.2 | | | | 2 |
| | | Replace | | 0.5 | | | | |
| 04 | GENERATOR ASSEMBLY | | | | | | | |
| | Generator Assembly . . . . . | Inspect | | | 0.5 | | | |
| | | Test | | | 0.5 | | | 2,3 |
| | | Replace | | | 2.0 | | | |
| | | Overhaul | | | | 2.0 | | |
| | Rotor Generator . . . . . | Inspect | | | 0.2 | | | |
| | | Test | | | 0.5 | | | 3 |
| | | Replace | | | 2.0 | | | |
| | | Repair | | | | 2.0 | | |
| | Rotor Assembly . . . . . | Inspect | | | 0.2 | | | |
| | | Test | | | 0.5 | | | 3 |
| | | Replace | | | 2.0 | | | |
| | | Repair | | | | 2.0 | | |

*9 Subcolumns are as follows C-Operator/crew, O-Organizational ;F-Direct support; H-General support; D-Depot.
**] Idicates Worktime (Manhours) Required

## Section II. MAINTENANCE ALLOCATION CHART—Continued

| (1) Group Number | (2) Component/Assembly | (3) Maintenance Function | (4) Maintenance Category C | O | F | H | D | (5) Tools and Equipment |
|---|---|---|---|---|---|---|---|---|
| | Rotor Assembly Exciter ..... | | | | | | | |
| | | Inspect | | | | | 0.5 | |
| | | Test | | | | | 0.5 | 3 |
| | | Replace | | | | | 2.0 | |
| | | Repair | | | | | 2.0 | 3,2 |
| | Bearing . . . . . | Inspect | | | 0.2 | | | |
| | | Replace | | | 2.0 | | | 4 |
| | Housing Assembly. . . . ..... | Inspect | | | 1.2 | | | |
| | | Test | | | 0.5 | | | 3 |
| | | Replace | | | | | 2.0 | |
| | | Repair | | | | | 3.0 | |
| | Stator Assembly, Generator ..... | Inspect | | | | | 0.5 | |
| | | Test | | | | | 0.5 | 3 |
| | | Replace | | | | | 2.0 | |
| | | Overhaul | | | | | 2.0 | 3,2 |
| | Stator Assembly, Exciter..... | Inspect | | | | | 0.5 | |
| | | Test | | | | | 0.5 | 3,2 |
| | | Replace | | | | | 2.0 | |
| | | Repair | | | | | 2.0 | 2,3 |
| | Housing . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | | 1.0 | | | |
| | | Repair | | | | | 1.0 | 1 |
| 05 | FUEL SYSTEM | | | | | | | |
| | Fuel Tank, . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 0.5 | | | | |
| | Fuel Line..... | Inspect | 0.1 | | | | | |
| | | Replace | | 0.2 | | | | |
| | Fuel Strainer..... | Inspect | 0.1 | | | | | |
| | | Replace | | 0.2 | | | | |
| | Cap and Chain Assembly . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | 0.1 | | | | | |
| | Valve, 3-Way, . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 0.3 | | | | |
| 06 | EXHAUST SYSTEM | | | | | | | |
| | Muffler . . . . . | Inspect | 0.1 | | | | | |
| | | Replace | | 0.5 | | | | |
| 07 | ENGINE ASSEMBLY Refer to TM 5-2805-203-14 | Replace | | | 1.0 | | | |

*Subcolumns are as follows: C—Operator/crew; O—Organizational; F—Direct support; H—General support; D—Depot.
**Indicates Worktime (Manhours) Required

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

| (1) REFERENCE CODE | (2) MAINTENANCE CATEGORY | (3) NOMENCLATURE | (4) NATIONAL STOCK NUMBER (NSN) | (5) TOOL NUMBER |
|---|---|---|---|---|
| 1 | F | TORCH OUTFIT CUTTING AND WELDING (Tool Set L/I W67706) | 3433-00-357-6311 or equal | |
| 2 | 0 | OHMMETER (Megger) . . . . . | 6625-00-581-2466 or equal | |
| 3 | F | MULTIMETER . . . . . | 6625-00-581-2036 or equal | |
| 4 | F | PULLER KIT . . . . . | 5180-00-711-753 or equal | |
| 5 | | Refer to TM 5-2805-203-14 for engine Tool and Test Equipment requirements | | |

By Order of the Secretaries of the Army and the Air Force:

FRED C. WEYAND
*General, United States Army*
*Chied of Staff*

Official:
PAUL T. SMITH
*Major General, United States Army*
*The Adjutant General*

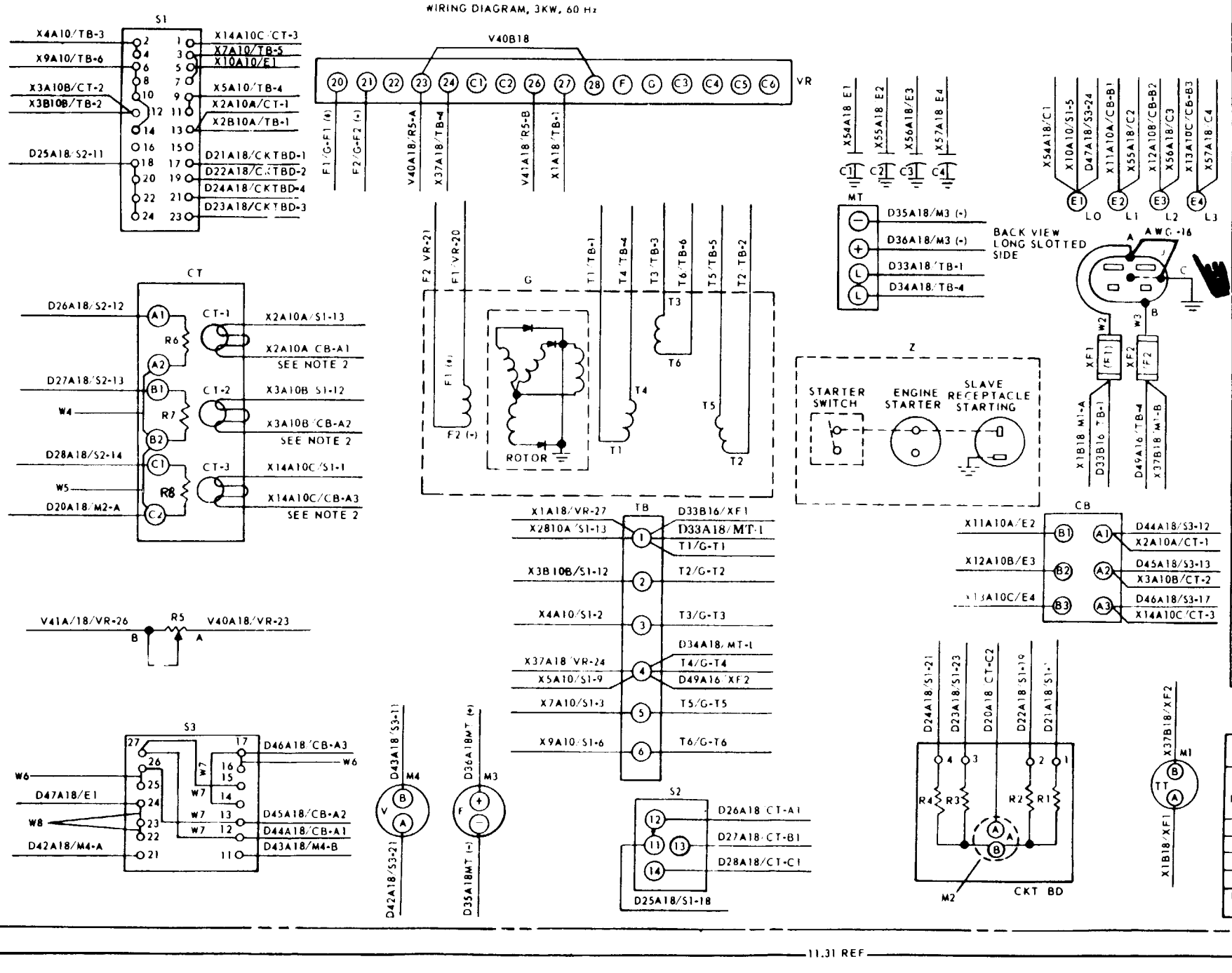
DAVID C. JONES, General, *USAF*
*Chief of Staff*

Official:
JAMES J. SHEPARD, Colonel, *USAF*
*Director of Administration*

Distribution:
To be distributed in accordance with DA Form 12-25D, Organizational maintenance requirements for Generator Sets, Engine Driven 3 KW 60 HZ, 3 KW 400 HZ and 3 KW D.C.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1994 O - 388-421 (02416)

WIRING DIAGRAM, 3KW, 60 Hz




| LIST OF COMPONENTS | | |
|---|---|---|
| REF DESIG. | PART NO. | DESCRIPTION |
| C1, C3 | CA36KFW104 | CAP, RAD-INTER RED, MIL-C-12889/2 0.10 UF, 500VAC/DC |
| C2, C4 | CA37KFW104 | CAP, RAD-INTER RED, MIL-C-12889/2 0.10 UF, 500VAC/DC |
| CB | D13208E5838-1 | CIRCUIT BREAKER |
| CKT BD | D13211E4849 | PRINTED CIRCUIT BOARD ASSY. |
| CT1-CT3 | C13208E5837 | TRANSFORMER, CURRENT |
| CT | C13213E4128 | TRANSFORMER ASSY, CURRENT |
| E1-E4 | C13208E5820-2 | TERMINAL LOAD |
| F1-F2 | FMO3250V15A | FUSE, POWER, MIL-F-23419/3, 15A, 250V |
| G | D13213E4062 | GEN, ASSY, 3KW, 60 Hz |
| J | C13211E6892 | RECEPTACLE, DUPLEX |
| M1 | M3971/2-1 | METER, TIMETOTALIZING |
| M2 | C13211E6919 | METER, INDICATOR CURRENT |
| M3 | D13211E6992-1 | METER, INDICATOR, FREQUENCY |
| M4 | C13211E6905 | VOLTMETER, AC |
| MT | D13211E6901 | CONVERTER, FREQUENCY, 60 Hz |
| R1 | RN70B4321F | RESISTOR, FIXED, FILM, HIGH STABILITY, MIL-R-10509/3,0.75 WATTS, 4320 OHMS. |
| R2 | RN70B9091F | RESISTOR, FIXED, FILM, HIGH STABILITY MIL-R-10509/3, 0.75 WATTS, 9090 OHMS |
| R3 | RN70B1742F | RESISTOR, FIXED, FILM, HIGH STABILITY, MIL-R-10509/3, 0.75 WATTS, 17400 OHMS |
| R4 | RN70B7681F | RESISTOR, FIXED, FILM, HIGH STABILITY, MIL-R-10509/3, 0.75 WATTS, 7680 OHMS |
| R5 | RP10JFD751KK M/22/03-00191 +D | RESISTOR, VARIABLE, MIL-R-22/3 25 WATTS, 750 OHMS |
| R6-R8 | RW74U2500F | RESISTOR, FIXED, WW MIL-R-26/5 |
| S1 | C13213E4091 | SWITCH, ROTARY, SELECTOR, OUTPUT |
| S2 | C13211E4816 | SWITCH, SELECTOR, CURRENT MS25002-1 |
| S3 | C13211E4818 | SWITCH, SELECTOR, VOLT MS25002-2 |
| TB | 39TB6 | TERMINAL BOARD, MIL-T-55164/3 |
| VR | D13219E0883 | STANDARD VOLTAGE REGULATOR ASSEMBLY |
| | | |
| W2-W7 | C13213E4230 | LEADS, ELECTRICAL |
| XF1, XF2 | FHN20G | FUSEHOLDERS, MIL-F-19207/11 |
| Z | SEE NOTE 1 | KIT ASSY, STARTER |

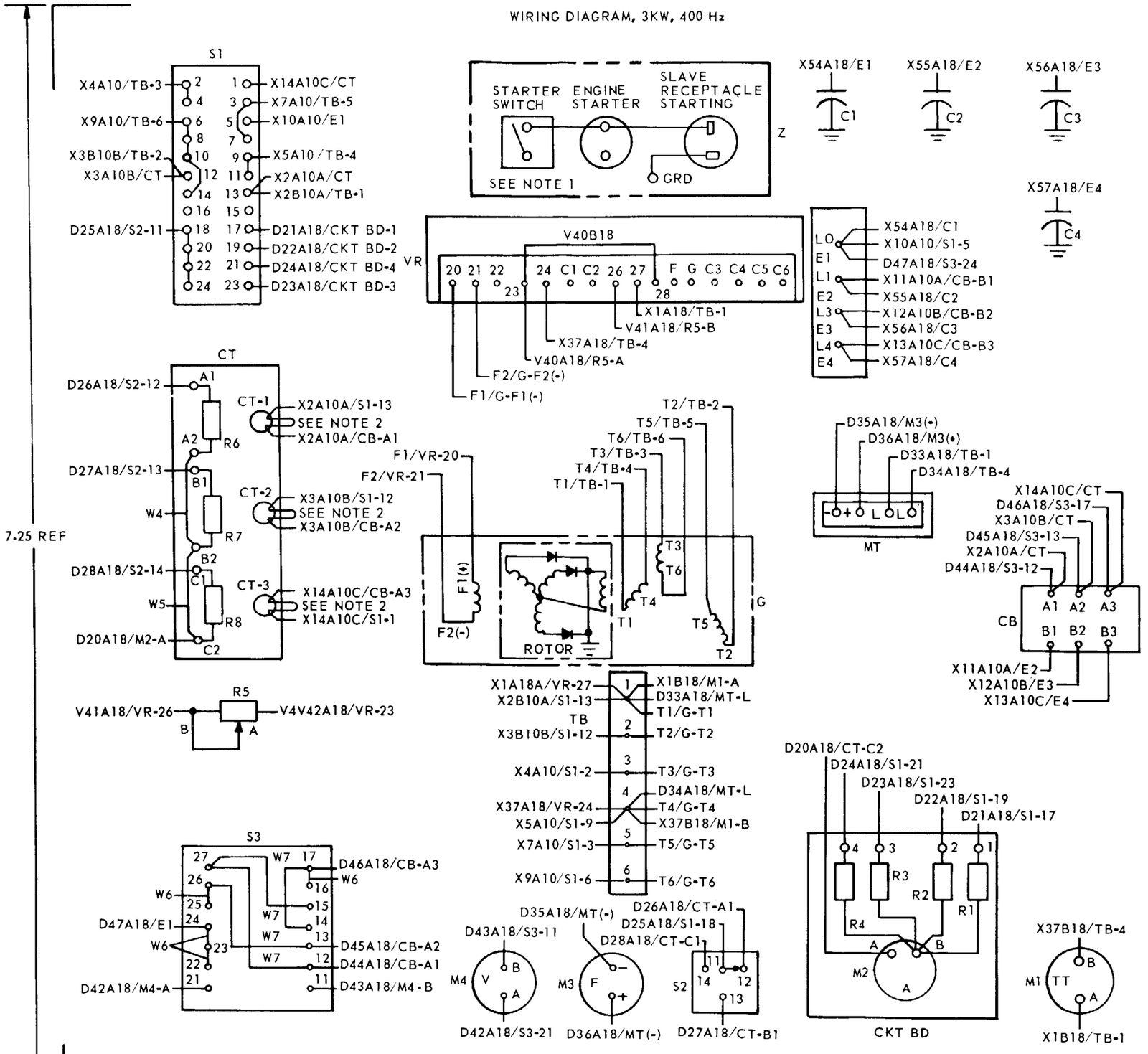
NOTES:
1. FOR ENGINE STARTING KIT SEE GEN SET TM.
2. WIND 2 TURNS FOR CT'S PRIMARY

| SWITCH, ROTARY, SELECTOR, OUTPUT (S1) CONTACT POSITIONS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWITCH POSITION | CONTACTS | | | | | | | | | | | TERMINALS | PHASE AND VOLTAGE |
| | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 17-18 | 19-20 | 21-22 | 23-24 | |
| A | X | | X | X | X | | | | X | | | | L1, L2, L3, LO | 120/208V 3ø |
| B | X | X | | | | X | X | | | X | | | L1, L2, L3 | 120V 3ø |
| C | | X | | | X | | | | | | X | | L1, L2 | 240V 1ø |
| D | | X | | | | X | X | X | | | | X | L1, L2 | 120V 1ø |

NOTES: 1. X - INDICATES CONTACTS CLOSED.
2. "15-16 - CONTACTS AVAILABLE BUT NOT USED.

*Figure FO-1 Wiring diagram (Model MEP-016A)* TS 011945

WIRING DIAGRAM, 3KW, 400 Hz




| LIST OF COMPONENTS | | |
|---|---|---|
| REF DESIG | PART NO. | DESCRIPTION |
| C1, C3 | CA36KFW104 | CAP, RAD-INTFER RED, MIL-C-12889/2 |
| | | 0.10 UF, 500V AC/DC |
| C2, C4 | CA37KFW104 | CAP, RAD-INTFER RED, MIL-C-12889/2 |
| | | 0.10UF, 500VAC/DC |
| CB | D13208E5838-2 | CIRCUIT BREAKER |
| CKT BD | D13211E4849 | PRINTED CIRCUIT BOARD ASSY |
| CT1-CT3 | C13208E5837 | TRANSFORMER, CURRENT |
| CT | C1321E4128 | TRANSFORMER ASSY, CURRENT |
| E1-E4 | C13208E5820-2 | TERMINAL, LOAD |
| G | D13213E4099 | GEN ASSY, 3KW, 400 Hz |
| M1 | B13208E5792 | METER, TIME TOTALIZING |
| M2 | C13211E6919 | METER, INDICATOR, CURRENT |
| M3 | D13211E6992-2 | METER, INDICATOR, FREQUENCY |
| M4 | C13211E6905 | VOLTMETER, AC |
| MT | D13212E8933 | CONVERTER, FREQUENCY 400 Hz |
| R1 | RN70B4321F | RESISTOR, FIXED, FILM, HIGH STABILITY, |
| | | MIL-R-10509/3, 0.75 WATTS, 4320 OHMS |
| R2 | RN70B9091F | RESISTOR, FIXED, FILM, HIGH STABILITY, |
| | | MIL-R-10509/3, 0.75 WATTS, 9090 OHMS |
| R3 | RN70B1742F | RESISTOR, FIXED, FILM, HIGH STABILITY, |
| | | MIL-R-10509/3, 0.75 WATTS, 17400 OHMS |
| R4 | RN70B7681F | RESISTOR, FIXED, FILM, HIGH STABILITY, |
| | | MIL-R-10509/3, 0.75 WATTS, 7680 OHMS |
| R5 | RP101FD751KK | RESISTOR, VARIABLE, MIL-R-22/3 |
| | M/22/93-00191FD | 25 WATTS, 750 OHMS |
| R6-R8 | RW74U2500F | RESISTOR, FIXED, WW, MIL-R-26/5 |
| S1 | C13213E4091 | SWITCH, ROTARY, SELECTOR, OUTPUT |
| S2 | C13211E4816 | SWITCH, SELECTOR, CURRENT |
| S3 | C13211E4818 | SWITCH, SELECTOR, VOLT |
| TB | 39TB6 | TERMINAL BOARD, MIL-T-55164/3 |
| VR | D13219E0883 | STANDARD VOLTAGE REGULATOR |
| | | ASSEMBLY |
| | | |
| W4-W7 | C13213E4230 | LEADS, ELECTRICAL |
| Z | SEE NOTE 1 | KIT ASSY, STARTER |

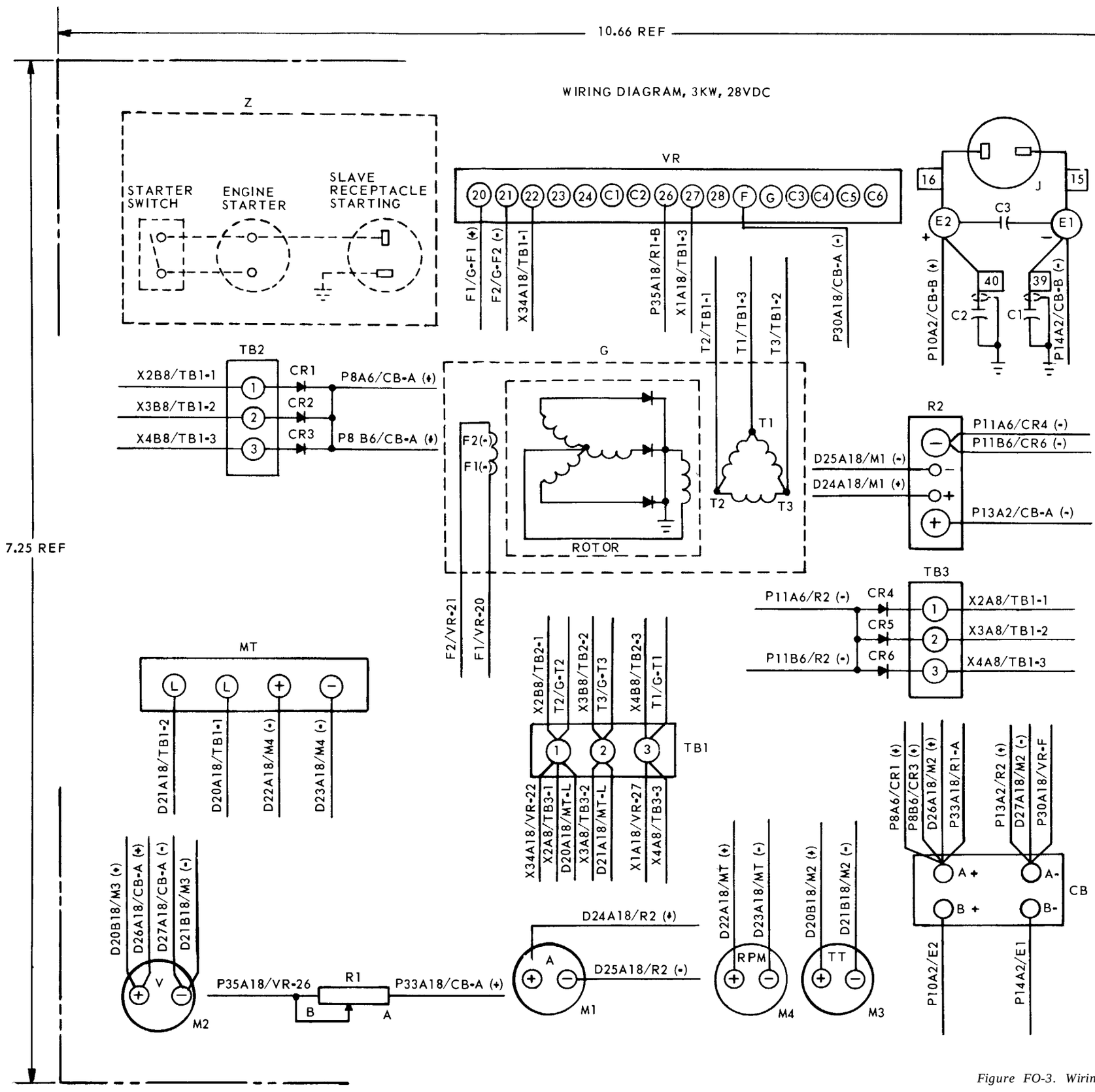
NOTES:
1. FOR ENGINE STARTING KIT SEE GEN SET TM
2. WIND 2 TURNS FOR CT'S PRIMARY

| SWITCH, ROTARY, SELECTOR, OUTPUT (S1) CONTACT POSITIONS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWITCH POSITION | CONTACTS | | | | | | | | | | | | TERMINALS | PHASE AND VOLTAGE |
| | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 17-18 | 19-20 | 21-22 | 23-24 | | |
| A | X | | X | X | X | | | | X | | | | L1,L2,L3,L0 | 120/208V 3Ø |
| B | X | X | | | | X | X | | | X | | | L1,L2,L3 | 120V 3Ø |
| C | | X | | | X | | | | | | X | | L1,L2 | 240V 1Ø |
| D | | X | | | | X | X | X | | | | X | L1,L2 | 120V 1Ø |

NOTES:
1. "X" INDICATES CONTACTS CLOSED.
2. NO. 15-16 CONTACTS AVAILABLE BUT NOT USED.

*Figure FO-2. Wiring diagram (Model MEP-021A).*

TS 011946




| LIST OF COMPONENTS | | |
|---|---|---|
| REF DES | PART NO. | DESCRIPTION |
| C1<br>C2 | CA32KFB504<br>CA33KFB504 | CAP, RAD-INTFER RED, MIL-C-12889/1,<br>.50 UF, 100 VDC |
| C3 | M39006/01-<br>3014 | CAP, FIXED, TANTALUM, MIL-C-39006/1<br>60 UF, 50 VDC |
| | | |
| CB | D13208E5835 | CIRCUIT BREAKER |
| CR1-CR3 | 1N3096 | RECTIFIER, POWER, SILICON |
| CR4-CR6 | 1N3086 REV POL | RECTIFIER, POWER, SILICON |
| E1, E2 | C13208E5820-1 | TERMINAL, LOAD |
| G | D13213E4106 | GEN ASSY, 3 KW, 28 VDC |
| J | MS75058 | CONNECTOR, RECEPTACLE, ELEC-SLAVE,<br>24 V |
| M1 | C13208E8534 | METER, INDICATOR, CURRENT |
| M2 | C13208E8535 | VOLTMETER, DC |
| M3 | M3971/1-1 | METER, TIME TOTALIZING, MIL-N-3971/1 |
| M4 | C13211E5004 | METER, INDICATOR, RPM |
| MT | D13213E4237 | CONVERTER, FREQUENCY, DC |
| R1 | RP101FD751KK<br>M/22/03-00191FD | RESISTOR, VARIABLE, MIL-R-22/3<br>750 OHMS, 25 WATTS |
| R2 | B13213E4264 | SHUNT, INSTRUMENT |
| TB1-TB3 | C13208E5868 | TERMINAL BOARD |
| VR | D13219E0883 | STANDARD VOLTAGE REGULATOR ASSEMBLY |
| Z | SEE NOTE 1 | KIT ASSY, STARTER |

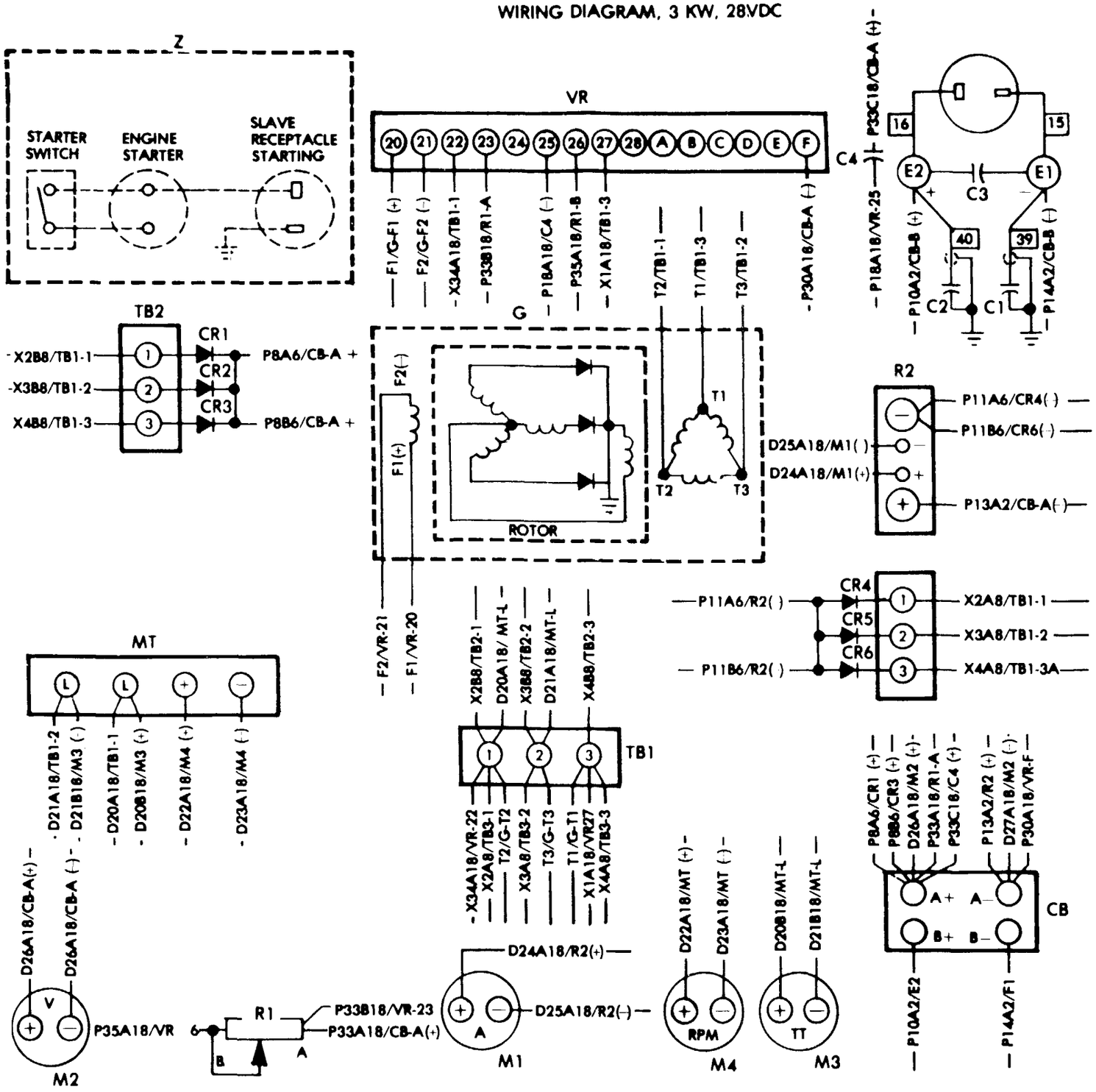
NOTES:

1. FOR ENGINE STARTING KIT SEE GEN SET TM.

*Figure FO-3. Wiring diagram (Model* MEP-026A).

TS 011947

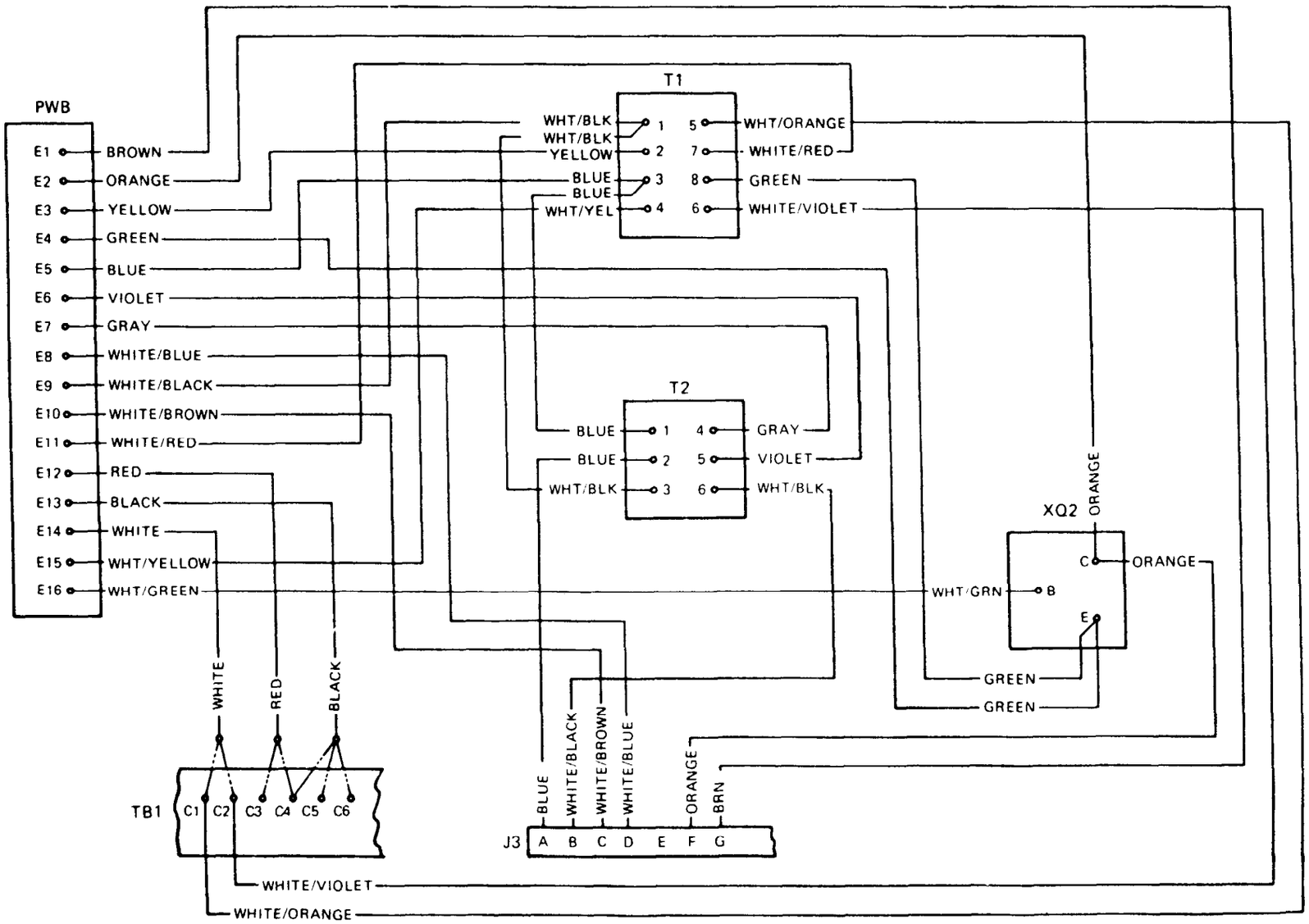
## WIRING DIAGRAM, 3 KW, 28VDC




| LIST OF COMPNENTS | | |
|---|---|---|
| REF DES | PART NO. | DESCRIPTION |
| C1, C2 | CA34KF8504 | CAP. RAD-INTFER RED. MIL-C-12889/1, .50 UF, 100VDC |
| C3 | CL25BJ600UP3 | CAP, FIXED, TANTALUM, MIL-C-3965/2, 60UF .50 VDC |
| C4 | M39006/22-0651 | CAP, FIXED, ELECTROLYTIC MIL-C-39006/22, 14 UF 125 VDC |
| C8 | D13208E5865 | CIRCUIT BREAKER |
| CR1- CR3 | IN 3085 | RECTIFIER, POWER, SILICON |
| CR4-CR6 | IN 3086 REV POL | RECTIFIER, POWER, SILICON |
| E1, E2 | C13208E5820-1 | TERMINAL LOAD |
| G | D13213E4106 | GEN ASSY, 3 KW, 28 VDC |
| J | MS75058 | CONNECTOR RECEPTACLE, ELEC-SLAVE, 24V |
| M1 | C13208E8534 | METER, INDICATOR, CURRENT |
| M2 | C13208E8535 | VOLTMETER, DC |
| M3 | C13211E6930 | METER, INDICATOR, RPM |
| M4 | C13211E5004 | METER, INDICATOR, RPM |
| MT | D13213E4237 | CONVERTER, FREQUENCY, DC |
| R1 | RP101FD751KK M/22/03-00191FD | RESISTOR, VARIABLE, MIL-R-22/3 750 OHMS, 25 WATTS |
| R2 | B13213E4264 | SHUNT, INSTRUMENT |
| TB1-TB3 | C13208E5868 | TERMINAL BOARD |
| VR | D13213E4(81 | REGULATOR ASSY, VOLTAGE |
| Z | D13208E5819 | KIT ASSY, STARTER |

NOTES:
1. ENGINE STARTING KIT (DWG D13208E5819) IS AVAILABLE (SEE GEN-SET TM) UPON REQUEST

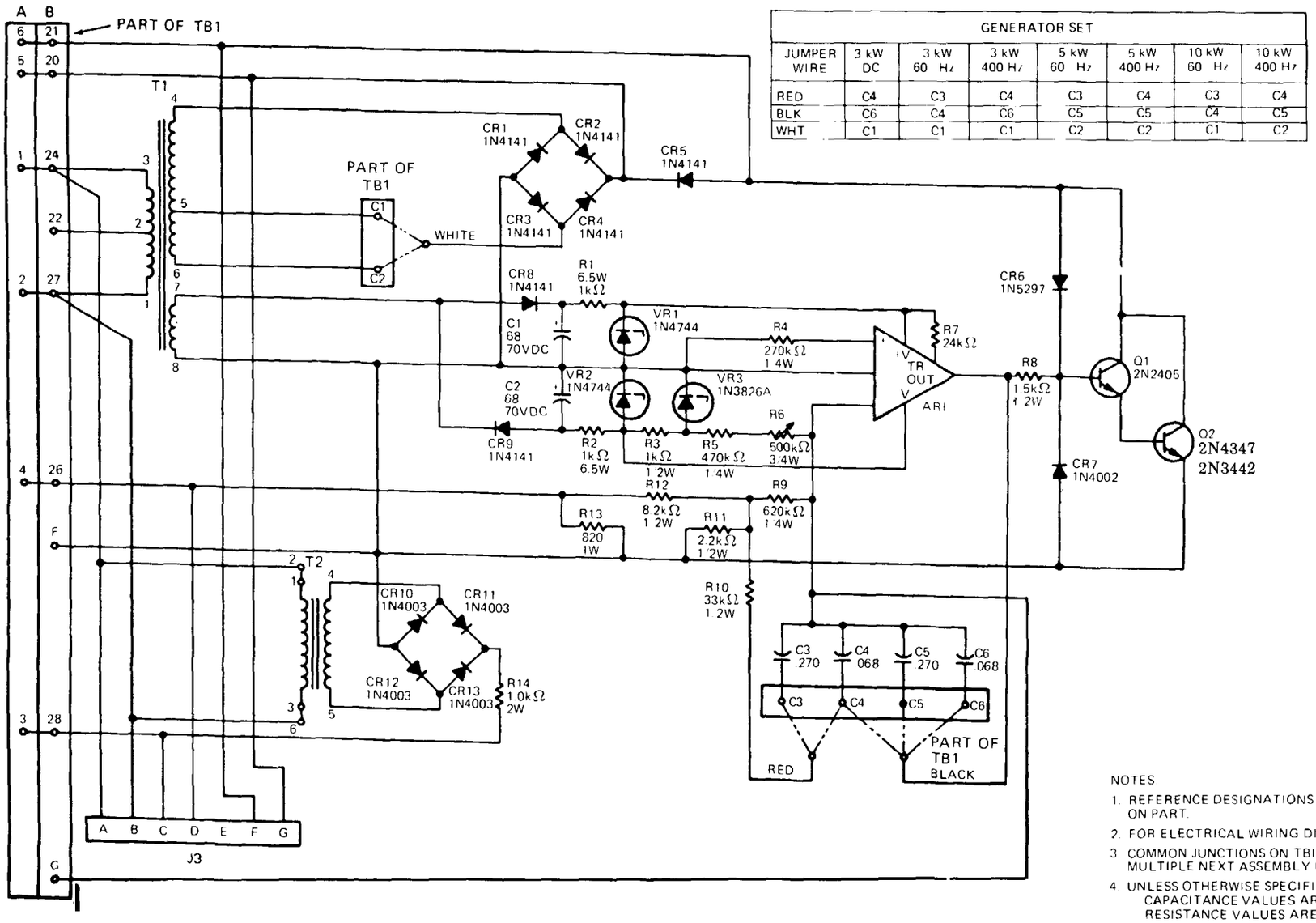
FO-3.1 Wiring Diagram (Model MEP-026A) Old Regulator




| GENERATOR SET | | | | | | | |
|---|---|---|---|---|---|---|---|
| JUMPER WIRE | 3 kW DC | 3 kW 60 Hz | 3 kW 400 Hz | 5 kW 60 Hz | 5 kW 400 Hz | 10 kW 60 Hz | 10 kW 400 Hz |
| RED | C4 | C3 | C4 | C3 | C4 | C3 | C4 |
| BLK | C6 | C4 | C6 | C5 | C5 | C4 | C5 |
| WHT | C1 | C1 | C1 | C2 | C2 | C1 | C2 |

| COMPONENT REFERENCE LIST | | | |
|---|---|---|---|
| REF DES | PART NO. | DESCRIPTION | MFG CODE |
| J3 | MS 3100R20 27P | CONNECTOR | 96906 |
| PWB | 13219E0884 | PRINTED WIRING BOARD | 97403 |
| T1 | 13219E0890 | TRANSFORMER, POWER | 97403 |
| T2 | 13219E0894 | TRANSFORMER SIGNAL | 97403 |
| TB1 | 13219E0893 | TERMINAL BOARD | 97403 |
| XQ2 | 13219E0895 | SOCKET, TRANSISTOR | 97403 |

*Figure FO-4. Wiring Diagram, Standard Voltage Regulator (FMC97403 13219E0886) TSO11947*




| GENERATOR SET | | | | | | | |
|---|---|---|---|---|---|---|---|
| JUMPER WIRE | 3 kW DC | 3 kW 60 Hz | 3 kW 400 Hz | 5 kW 60 Hz | 5 kW 400 Hz | 10 kW 60 Hz | 10 kW 400 Hz |
| RED | C4 | C3 | C4 | C3 | C4 | C3 | C4 |
| BLK | C6 | C4 | C6 | C5 | C5 | C4 | C5 |
| WHT | C1 | C1 | C1 | C2 | C2 | C1 | C2 |

| COMPONENT REFERENCE LIST | | | |
|---|---|---|---|
| MFG CODE | REF DES | PART NO. | DESCRIPTION |
| 97403 | AR1 | 13217E3701 | AMPLIFIER, SOLID STATE, |
| | | | OPERATIONAL |
| 97403 | C1, 2 | 13219E1003 | CAPACITOR, 68 µF, 70 VDC, |
| | | | ELECTROLYTIC, 600D586F075DJ4 |
| 81349 | C3, 5 | MIL-C-39014/02-0277 | CAPACITOR, .270 µF, 50 VDC, |
| | | | MIL-C-39014/2 |
| 81349 | C4, 6 | MIL-C-39014/02-0267 | CAPACITOR, .068 µF, 100 VDC, |
| | | | MIL-C-39014/2 |
| 97403 | CR1, 2, 3, | 13219E1001 | DIODE, SEMICONDUCTOR, IN4141 |
| | 4, 5, 8, 9 | | |
| 97403 | CR6 | 13218E5005 | DIODE, SEMICONDUCTOR, |
| | | | CURRENT REGULATING, IN5297 |
| 97403 | CR7 | 13219E0897 | DIODE, SEMICONDUCTOR, IN4002 |
| 97403 | CR10, 11, | 13219E1000 | DIODE, SEMICONDUCTOR, IN4003 |
| | 12, 13 | | |
| 96906 | J3 | MS 3100R20-27P | CONNECTOR |
| 97403 | Q1 | 13219E1002 | TRANSISTOR, 2N2405 |
| 97403 | Q2 | 13217E3700 * | TRANSISTOR, POWER, **2N4347** |
| 81349 | R1, 2 | RW67V102 | RESISTOR, 1 kΩ, 6.5 W, ±5%, MIL-R-26/4 |
| 81349 | R3 | RCR20G102JM | RESISTOR, 1 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R4 | RCR07G274JM | RESISTOR, 270 kΩ, 1/4 W, ±5%, MIL-R-39008/1 |
| 81349 | R5 | RCR07G474JM | RESISTOR, 470 kΩ, 1/4 W, ±5%, MIL-R-39008/1 |
| 81349 | R6 | RJ12FY504 | RESISTOR, VAR, 500 kΩ, 3/4 W, MIL-R-22097/2 |
| 81349 | R7 | RCR20G243JM | RESISTOR, 24 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R8 | RCR20G152JM | RESISTOR, 1.5 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R9 | RCR07G624JM | RESISTOR, 620 kΩ, 1/4 W, ±5%, MIL-R-39008/1 |
| 81349 | R10 | RCR20G333JM | RESISTOR, 33 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R11 | RCR20G222JM | RESISTOR, 2.2 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R12 | RCR20G822JM | RESISTOR, 8.2 kΩ, 1.2 W, ±5%, MIL-R-39008/2 |
| 81349 | R13 | RCR32G821JM | RESISTOR, 820 Ω, 1 W, ±5%, MIL-R-39008/3 |
| 81349 | R14 | RC42GF102JM | RESISTOR, 1.0 kΩ, 2 W, ±5%, MIL-R-39008/5 |
| 97403 | T1 | 13219E0890 | TRANSFORMER, POWER |
| 97403 | T2 | 13219E0894 | TRANSFORMER, SIGNAL |
| 97403 | TB1 | 13219E0893 | TERMINAL BOARD |
| 97403 | VR1, 2 | 13217E3698 | DIODE, ZENER, IN4744 |
| 81349 | VR3 | 1N3826A | DIODE, ZENER, MIL-S-19500/115 |

***2N3442**

NOTES:

1. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND SHALL NOT APPEAR ON PART.
2. FOR ELECTRICAL WIRING DIAGRAM, SEE 13219E0886.
3. COMMON JUNCTIONS ON TB1 REFLECT TWO NUMBERS ONLY TO ACCOMODATE MULTIPLE NEXT ASSEMBLY USAGE.
4. UNLESS OTHERWISE SPECIFIED:
   CAPACITANCE VALUES ARE IN MICROFARADS.
   RESISTANCE VALUES ARE IN OHMS.

*Figure FO-5. Schematic Diagram Standard Voltage Regulator*
**3KW, 5KW, 10KW, DC, 60Hz, 400Hz (FMC97403 13219E0887)** *TSO11948*

## The Metric System and Equivalents

*Linear Measure*

**1 centimeter = 10 millimeters = .39 inch**
**1 decimeter = 10 centimeters = 3.94 inches**
**1 meter = 10 decimeters = 39.37 inches**
**1 dekameter = 10 meters = 32.8 feet**
**1 hectometer = 10 dekameters = 328.08 feet**
**kilometer = 10 hectometers = 3,280.8 feet**

*Weights*

**centigram = 10 milligrams = .15 grain**
**decigram = 10 centigrams = 1.54 grains**
**gram = 10 decigrams = .035 ounce**
**1 deckagram = 10 grams = .35 ounce**
**1 hectogram = 10 dekagrams = 3.52 ounces**
**1 kilogram = 10 hectograms = 2.2 pounds**
**1 quintal = 100 kilograms = 220.46 pounds**
**1 metric ton = 10 quintals = 1.1 short tons**

*Liguid Measure*

**1 centiliter = 10 milliliters = .34 fl. ounce**
**1 deciliter = 10 centiliters = 3.38 fl. ounces**
**1 liter = 10 deciliters = 33.82 fl. ounces**
**1 dekaliter = 10 liters = 2.64 gallons**
**1 hectoliter = 10 dekaliters = 26.42 gallons**
**1 kiloliter = 10 hectoliters = 264.18 gallons**

*Square Measure*

**1 sq. centimeter = 100 sq. millimeters = .155 sq. inch**
**1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches**
**1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet**
**1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet**
**1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres**
**1 sq. kilometer = 100 sq. hectometers = .386 sq. mile**

*Cubic Measure*

**1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch**
**1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches**
**1 cu. meters = 1000 cu decimeters = 35.31 cu. feet**

## Approximate Conversion Factors

| *To change* | *To* | *Multiply by* | *To Change* | *To* | *Multipy by* |
|---|---|---|---|---|---|
| inches | centimeters | 2.540 | centimeters | inches | .394 |
| feet | meters | .305 | meters | feet | 3.280 |
| yards | meters | .914 | meters | yards | 1.094 |
| miles | kilometers | 1.609 | kilometers | miles | .621 |
| square inches | square centimeters | 6.451 | square centimeters | square inches | .155 |
| square feet | square meters | .093 | square meters | square feet | 10.764 |
| square yards | square meters | .836 | square meters | square yards | 1.196 |
| square miles | square kilometers | 2.590 | square kilometers | square miles | .386 |
| acres | square hectometers | .405 | square hectometers | acres | 2.471 |
| cubic feet | cubic meters | .028 | cubic meters | cubic feet | 35.315 |
| cubic yards | cubic meters | .765 | cubic meters | cubic yards | 1.308 |
| fluid ounces | milliliters | 29.573 | milliliters | fluid ounces | .034 |
| pints | liters | .473 | liters | pints | 2.113 |
| quarts | liters | .946 | liters | quarts | 1.057 |
| gallons | liters | 3.785 | liters | gallons | .264 |
| ounces | grams | 28.349 | grams | ounces | .035 |
| pounds | kilograms | .454 | kilograms | pounds | 2.205 |
| short tons | metric tons | .907 | metric tons | short tons | 1.102 |

PIN: 025150-000

# This fine document...

Was brought to you by me:



## Liberated Manuals -- free army and government manuals

Why do I do it? I am tired of sleazy CD-ROM sellers, who take publicly available information, slap “watermarks” and other junk on it, and sell it. Those masters of search engine manipulation make sure that their sites that sell free information, come up first in search engines. They did not create it... They did not even scan it... Why should they get your money? Why are not letting you give those free manuals to your friends?

I am setting this document FREE. This document was made by the US Government and is NOT protected by Copyright. Feel free to share, republish, sell and so on.

I am not asking you for donations, fees or handouts. If you can, please provide a link to liberatedmanuals.com, so that free manuals come up first in search engines:

<A HREF=http://www.liberatedmanuals.com/>Free Military and Government Manuals</A>

- Sincerely
  Igor Chudov
  http://igor.chudov.com/
- Chicago Machinery Movers