DEPARTMENT OF THE ARMY TM 5-611 5-275-1 4
TECHNICAL MANUAL
DEPARTMENT OF THE NAVY NAVFAC P-8-61 5-14
PUBLICATION
DEPARTMENT OF THE AIR FORCE TO 35C2-3-452-1
TECHNICAL ORDERS

TECHNICAL MANUAL

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

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE: AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-01 8A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

This copy is a reprint which includes current pages from Changes 1 through 3.

HEADQUARTERS, DEPARTMENTS OF THE ARMY, THE NAVY AND THE AIR FORCE
JUNE 1977

WARNING

Pay particular attention 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 fails to observe safety precautions. Do not operate this generator set until the ground terminal stud has been connected to a suitable ground Disconnect the battery ground cable before removing and installing components on engine or in electrical control panel system Before making kilowatt load connections, be sure the generator sets are not operating and main circuit breakers are in the OFF position. 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

DANGEROUS GASES

are generated as a result of operating of this equipment.

DEATH

or severe injury may result if personnel fail to observe safety precautions. Utilize extreme caution, do not smoke, or use open flame in vicinity when servicing batteries. Batteries generate explosive gas during charging and discharging. Always maintain metal to metal contact when filling the fuel tank. Do not smoke or use open flame in vicinity when filling the fuel tank. Do not attempt to fill fuel tank when generator Is running Do not operate generator sets in enclosed areas unless exhaust gases are properly vented to the outside. Exhaust discharge contains noxious and deadly fumes. Use extreme care should a selenium rectifier malfunction, to avoid inhalation of poisonous fumes.

DAMAGE

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

WARNING

Clean all parts in a well-ventilated area Avoid Inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed Spec P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and properly Do not use near open flame or excessive heat Flash point of solvent is 100° F (38°C) 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.

CHANGE

NO. 10

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
WASHINGTON, D.C., 3 March 1997

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support), and Depot
Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED,
TUBULAR FRAME, 10 kW, AC, 120/208 V, 3 PHASE;
AND 120/240 V, SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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

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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
1-1 and 1-2	1-1 and 1-2
6-3 and 6-4	6-3 and 6-4
FO-1	FO-1

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

TM 5-6115-275-14
NAVFAC P-8-615-14
TO 35C2-3-452-1
C 10

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CHANGE

NO. 9

HEADQUARTERS
DEPARTMENTS OF THE ARMY,
NAVY AND AIR FORCE
WASHINGTON, D.C., 9 NOVEMBER 1992

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 kW, AC, 120/208 V, 3 PHASE; AND 120/240 V, SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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Remove pages	Insert pages
iii and iv	iii and iv
2-12.1 through 2-12.4	2-12.1 and 2-12.2
3-7 through 3-12	3-7 through 3-12
3-17 and 3-18	3-17 and 3-18
I-1 and I-2	I-1 and I-2

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

TM 5-6115-275-14
NAVFAC P-8-615-14
TO 35C2-3-452-1
C9

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CHANGE

NO. 8

HEADQUARTERS
DEPARTMENTS OF THE ARMY,
NAVY AND AIR FORCE
WASHINGTON, D.C., **30 September 1991**

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 kW, AC, 120/208 V, 3 PHASE; AND 120/240 V, SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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TM 5-6115-275-14/NAVFAC P-8-615-14/TO 35C2-3-452-1, 16 June 1977 is changed as follows:

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Remove pages	Insert pages
iii through vii/(viii blank)	iii through vii/(viii blank)
2-1 and 2-2	2-1 and 2-2
2-9 and 2-10	2-9 and 2-10
2-11 and 2-12	- - -
2-12.1 through 2-12.4	2-12.1/(2-12.2 blank) and
- - -	(2-12.3 blank)/2-12.4
2-13 through 2-16	2-13 through 2-16
3-1 through 3-4	3-1 through 3-4
3-17 and 3-18	3-17 and 3-18
4-19 and 4-20	4-19 and 4-20
4-21 and 2-22	- - -
4-41 and 4-42	4 41 and 4-42
4-43 and 4 44	- - -
4-45 through 4 48	4 45 through 4-48
4-65 and 4-66	4-65 and 4-66
4-73 through 4-76	4-73 through 4-76
- - -	4-76.1/(4-76.2 blank)
4-79 through 4-88	4-79 through 4-88
4-91 through 4-96	4-91 through 4-96
5-1 thorough 5-4	5-1 through 5-4
5-5 through 5-14	- - -

5-15 through 5-18	5-15 through 5-18
7-5 and 7-6	7-5 and 7-6
- - -	7-6.1/(7-6.2 blank)
7-7 and 7-8	7-7 and 7-8
7-13 through 7-14.4	7-13 through 7-14.4
- - -	7-14.5 through 7-14.8
8-1 and 8-2	8-1 and 8-2
- - -	8-2.1/(8-2.2 blank)
8-7 and 8-8	8-7 and 8-8
8-11 and 8-12	8-11 and 8-12
8-17 and 8-18	8-17 and 8-18

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CHANGE

NO. 7

HEADQUARTERS
DEPARTMENTS OF THE ARMY,
NAVY AND AIR FORCE
WASHINGTON, D.C., **10 October 1990**

Operator, Organizational, Intermediate (Field),

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

**GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED,
TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE;
AND 120/240 V SINGLE PHASE - LESS ENGINE**

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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TM 5-6115-275-14/NAVFAC P-8-615-14/TO 35C2-3-452-1, 16 June 1977 is changed as follows:

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Remove pages	Insert pages
3-17 and 3-18	3-17 and 3-18
4-65 and 4-66	4-65 and 4-66

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TM 5-6115-275-14
NAVFAC P-8-615-14
TO 35C2-3-452-1
C7
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NAVY PUBLICATION **NAVFAC P-8-615-14**
AIR FORCE TECHNICAL ORDER **TO 35C2-3-452-1**
C6

CHANGE HEADQUARTERS
DEPARTMENTS OF THE ARMY,
NAVY AND AIR FORCE

NO. 6 WASHINGTON, D.C., **10 May 1990**

Operator, Organizational, Intermediate (Field),

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED,
TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE;
AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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Remove pages	Insert pages
1-1 and 1-2	1-1 and 1-2
3-3 and 3-4	3-3 and 3-4
A-1 and A-2	A-1 and A-2
C-3 and C-4	C-3 and C-4
F0-3	F0-3

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DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
NO. 5 WASHINGTON, D.C., 22 June 1988

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED,
TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE;
AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

TM 5-6115-275-14/NAVFAC P-8-615-14/TO 35C2-3-452-1, 16 June 1977 is changed as follows:

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Remove pages	Insert pages
3-1 and 3-2	3-1 and 3-2
3-2.1/3-2.2	- - -
3-3 and 3-4	3-3 and 3-4
4-23 and 4-24	4-23 and 4-24
6-5 and 6-6	6-5 and 6-6
7-13 and 7-14	7-13 and 7-14
7-14.1 through 7-14.4	7-14.1 through 7-14.4
B-1/B-2	B-1/B-2
C-1 through C-6	C-1 through C-6
FO-2	FO-2
FO-3	FO-3

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

TM 5-611527514
NAVFAC P-8-615-14
TO 35C2-3-452-1
C5

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CHANGE

NO 4

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
WASHINGTON, D.C.,1 December 1986

Operator, Organizational, Intermediate (Field),
(Direct Support and General Support),
and Depot Maintenance Manual

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED,
TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE:
AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-O1 8A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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Remove pages	Insert pages
iii through vi	iii through vi
1-1 and 1-2	1-1 and 1-2
1-5 and 1-6	1-5 and 1-6
1-9 and 1-10	1-9 and 1-10
2-1 through 2-6	2-1 through 2-6
2-9 through 2-12	2-9 through 2-12
2-12.1 through 2-12.3/2-12.4	2-12.1 through 2-12.4
2-13 and 2-14	2-13 and 2-14
---	3-2.1/3-2.2
3-3 and 3-4	3-3 and 3-4
3-7 and 3-8	3-7 and 3-8
3-15 through 3-18	3-15 through 3-18
4-3 and 4-4	4-3 and 4-4
4-13 and 4-14	4-13 and 4-14
4-17 and 4-18	4-17 and 4-18
4-41 and 4-42	4-41 and 4-42
4-61 through 4-64	4-61 through 4-64
4-67 and 4-68	4-67 and 4-68
4-75 and 4-76	4-75 and 4-76
4-89 and 4-90	4-89 and 4-90
4-93 through 4-95	4-93 through 4-96
5-1 through 5-4	5-1 through 5-4
5-7 through 5-10	5-7 through 5-10

TM 5-6115-275-14
NAVFAC P-8-615-14
TO 35C2-3-452-1
C4

Remove pages	Insert pages
---	5-10.1/5-10.2
5-11 through 5-12.2	5-11 through 5-12.2
7-7 and 7-8	7-7 and 7-8
---	7-8.1/7-8.2
7-9 and 7-10	7-9 and 7-10
7-10.1 and 7-10.2	---
7-11 and 7-12	7-11 and 7-12
7-12.1/7-12.2	---
8-11 and 8-12	8-11 and 8-12
8-21 through 8-24	8-21 though 8-24
B-1	B-l/B-2
C-3 and C-4	C-3 and C-4
FO-1	FO-1
FO-2	FO-2
FO-3	FO-3

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DEPARTMENT OF THE ARMY TECHNICAL MANUAL **TM 5-6115-275-14**
DEPARTMENT OF THE NAVY PUBLICATION **NAVFAC P-8-615-14**
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER **TO 35C2-3-452-1**
C 3

CHANGE
No 3

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
WASHINGTON, D.C., 8 September 1982

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

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE: AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

TM 5-6115-275-14/NAVFAV P-8-615-14/TO 35C2-3-452-1, 16 June 1977, is changed as follows:

1. Remove and insert pages as indicated below:

	Remove pages	Insert pages
Chapter I	1-1 and 1-2	1-1 and 1-2
Chapter 2	2-11 and 2-12	2-11 thru 2-12.3/2-12.4
Chapter	4-19 and 4-20	4-19 and 4-20
	4-41 and 4-42	4-41 and 4-42
	4-47 and 4-48	4-47 and 4-48
	4-75 and 4-76	4-75 and 4-76
Chapter 5	5-7 and 5-8	5-7 and 5-8
	5-11 and 5-12	5-11 thru 5-12.2
	5-15 and 5-16	5-15 and 5-16
Chapter 7	7-9 and 7-10	7-9 thru 7-10.2
	7-11 and 7-12	7-11 thru 7-12.2
Appendix	C-3 and C-4	C-3 and C-4

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TM 5-6115-275-14
NAVFAC P-8-615-14
TO 35C2-3-452-1

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DEPARTMENT OF THE NAVY PUBLICATION **NAVFAC P-8-615-14**
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER **TO 35C2-3-452-1**
C 2

CHANGE:

No 2

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY and AIR FORCE
WASHINGTON, D.C., 7 December 1981

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

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE: AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

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1. Remove and insert pages as indicated below.

	Remove pages	Insert pages
Table of Contents	vii	vii/(viii blank)
Chapter 3	3-1 thru 3-4	3-1 thru 3-4
	3-5 and 3-6	3-5/(3-6 blank)
	3-13 and 3-14	3-13 and 3-14
Chapter 4	4-23 and 4-24	4-23 and 4-24
	4-25 and 4-26	4-25/(4-26 blank)
	4-77 thru 4-80	4-77 thru 4-80

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NAVFAC P-8-615-14
TO 35C2-3-452-1
C2

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CHANGE
No 1

HEADQUARTERS
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WASHINGTON, D.C, 29 December 1980

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

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE: AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	HERTZ	NSN
MEP-018A	60	6115-00-889-1447
MEP-023A	400	6115-00-926-0843

TM 5-6115-275-14, NAVFAC P-8-615-14 and TO 35C2-3-452-1, 16 June 1977, are changed as follows:

1. Remove and insert pages as indicated below.

	Remove pages	Insert pages
Chapter 7	7-13 and 7-14	7-13 and 7-14 7-14.1 and 7-14.2 7-14.3 and 7-14.4 FO-6 FO-7

2. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

3. Retain these sheets in front of manual for reference purposes.

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

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To be distributed in accordance with DA Form 12-25D, Operator maintenance requirements for Generator Sets, Engine Driven 10 KW 60 HZ, 10 KW 400 HZ.

Marine Corps:

MARCORPS CODE: AGB

WARNING

Pay particular attention 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 fails to observe safety precautions. Do not operate this generator set until the ground terminal stud has been connected to a suitable ground. Disconnect the battery ground cable before removing and installing components on engine or in electrical control panel system. Before making kilowatt load connections, be sure the generator sets are not operating and main circuit breakers are in the OFF position. 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.

WARNING

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 of this equipment.

DEATH

or severe injury may result if personnel fail to observe safety precautions. Utilize extreme caution, do not smoke, or use open flame in vicinity when servicing batteries. Batteries generate explosive gas during charging and discharging. Always maintain metal to metal contact when filling the fuel tank. Do not smoke or use open flame in vicinity when filling the fuel tank. Do not attempt to fill fuel tank when generator is running. Do not operate generator sets in enclosed areas unless exhaust gases are properly vented to the outside. Exhaust discharge contains noxious and deadly fumes. Use extreme care should a selenium rectifier malfunction, to avoid inhalation of poisonous fumes.

DAMAGE

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

WARNING

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

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38°C). 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.

DEPARTMENT OF THE ARMY TECHNICAL MANUAL **TM 5-6115-275-14**
DEPARTMENT OF THE NAVY PUBLICATION **NAVFAC P-8-615-14**
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER **TO 35C2-452-1**

HEADQUARTERS
DEPARTMENTS OF THE ARMY, NAVY and AIR FORCE
WASHINGTON, D. C. ***16 June 1977***

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

GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE: AND 120/240 V SINGLE PHASE - LESS ENGINE

DOD MODEL	*HERTZ*	*NSN*
MEP-018A	**60**	**6115-00-889-1447**
MEP-023A	**400**	**6155-00-926-0843**

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* TM 5-6115-275-14 supersedes TM 5-6115-275-15 dated 3 July1969 and TM 5-6115-450-15 dated 28 March 1968 and all change

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual is for your use in operating and maintaining the generator set, Models MEP-018A and MEP-023A.

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 and (N) for Navy. Portions not prefixed are applicable to both services.

1-3. Maintenance Forms and Records

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

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

c. (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 error, omissions, and recommendations for improvement this publication by the individual user is encouraged. Response should be submitted as follows:

a. (A) Army-DA Form 2028 (Recommended Changes to Publications, and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.army.mil>.A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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

c. (N) Navy - by letter direly to: Commanding Officer, Naval Construction Battalion ion Center, ATTN: Code 15741, Bldg. 43, Port Huenme, CA 93043-5000.

d. Applicable Army forms, excluding Standard Form 46 (United States Government Motor Vehicles Operator's Identification Card) which is carried by the operator, shall be kept in manual compartment mounted on equipment.

1-5. Levels of Maintenance Accomplishment

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

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

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

1-6. Demolition of Material to Prevent Enemy Use

(A) Refer to TM 750-244-3 for information and guidance pertaining to destruction of Army materiel to prevent enemy use.

1-7. Administrative Storage (A.F)

a. Army Users:

(1) Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exits. 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 (MWOs) 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 containers and other containers may be used.

b. Air Force users refer to TO 35-1-4, Processing and Inspection of Aerospace Ground Equipment for Storage and Shipment, for instructions relative to administrative storage.

1-8. Preparation for Shipment and Storage

a. (A) Army - Refer to TB 740-97-2 and TM 740-90-1.

b. (Air Force - Refer to TO35-1-4 for end item generator sets and TO 38-1-5 for installed engine.

c. (N) Navy and Marine Corps-Refer to individual service directives.

Section II. DESCRIPTION AND TABULATED DATA

1-9. Description

a. General The Department of Defense, generator sets, Model MEP-018A (figs. 1-1 and 1-2) and Model MEP-023A (figs. 1-3 and 1-4) are self- contained, skid-mounted, portable units. The set is powered by a 4-cylinde, air-cooled engine that is directly coupled to a 10 kilowatt, alternating cur- rent generator.

b. Engine. The generator is supplied with a Military Standard Engine, Model 4A084-3. It is a four cylinder engine capable of delivering 20 net continuous horse power at 3,600 rpm (revolutions per minute). It is equipped with a 10 amp (ampere), 24-volt, ac alternator, regulating type rectifier, and 24-volt dc starter with an electrically operated solenoid. The carburetor is a side-draft with an automatic choke. It is a 4-cycle, horizontally opposed, valve-in-head gasoline engine capable of satisfactory performance in all types of environments. It is designed to operate a minimum of 1,500 hours at rated load and speed before major overhaul. The electrical components of the engine is radio interference suppressed. All accessories of the engine are located so as to provide maximum accessibility.

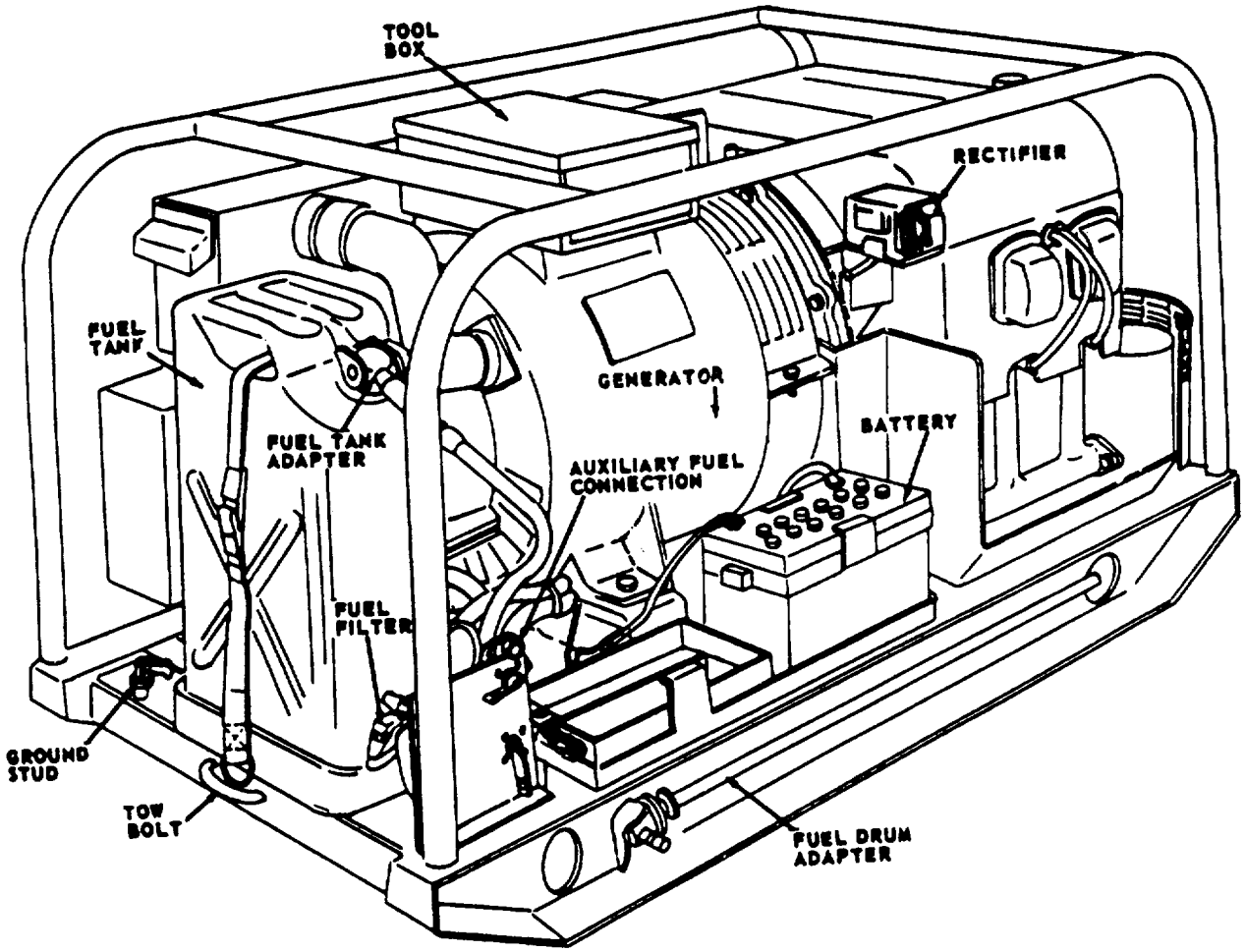


Figure 1-1. Generator set, right rear three-quarter view (all serial Numbers except MA68-0001 through MA68-2967) (Model MEP-018A) (sheet 1 of 2).

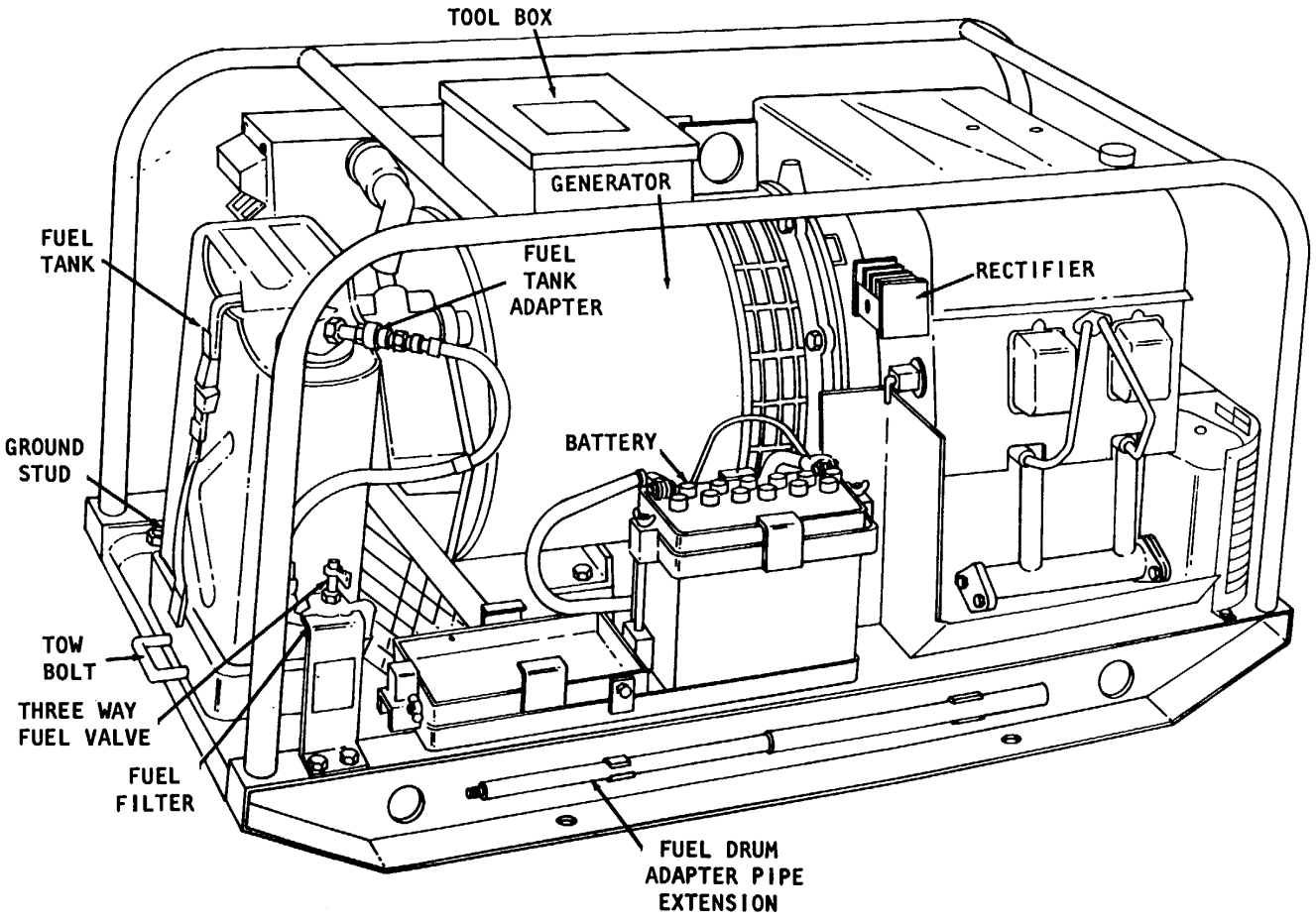
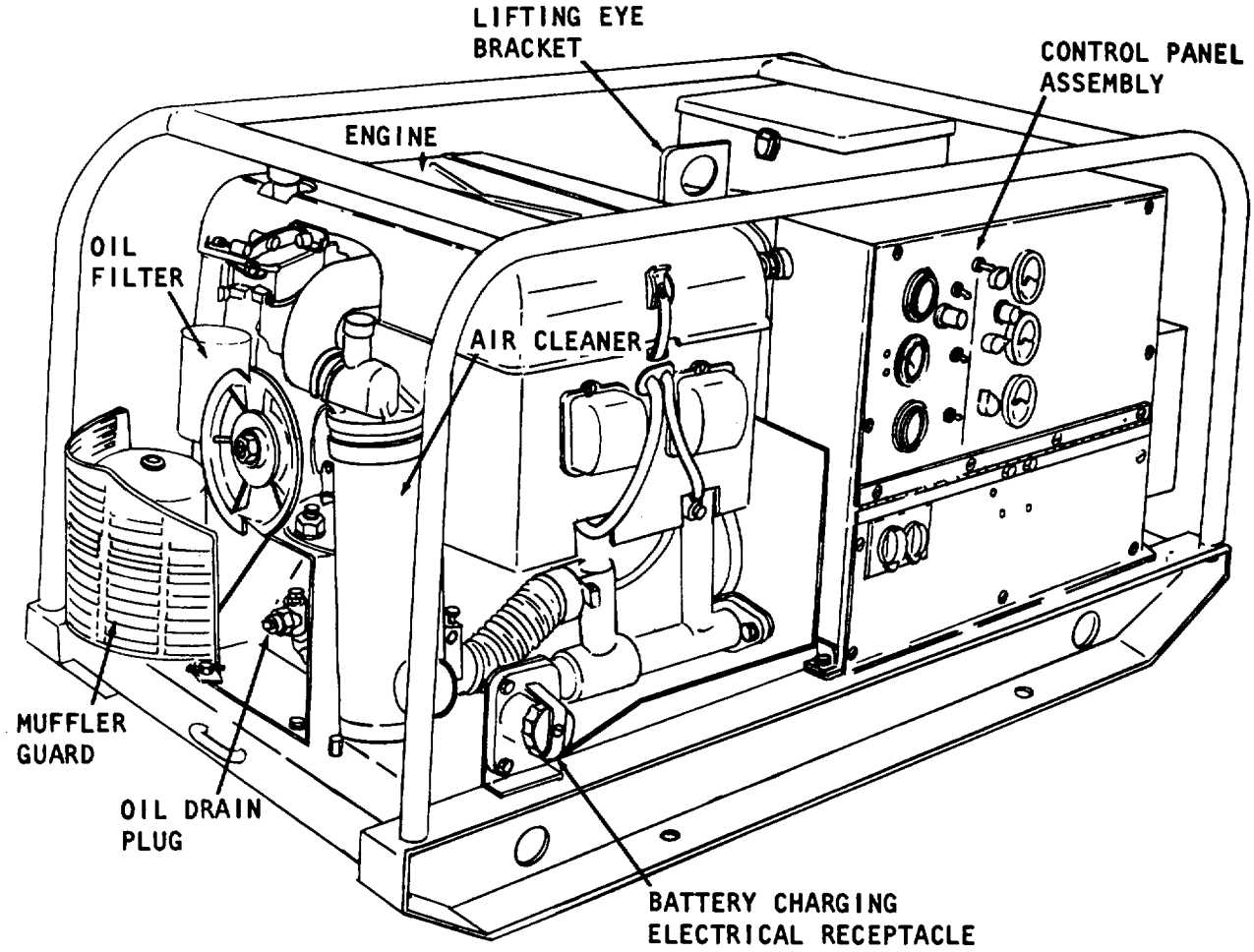
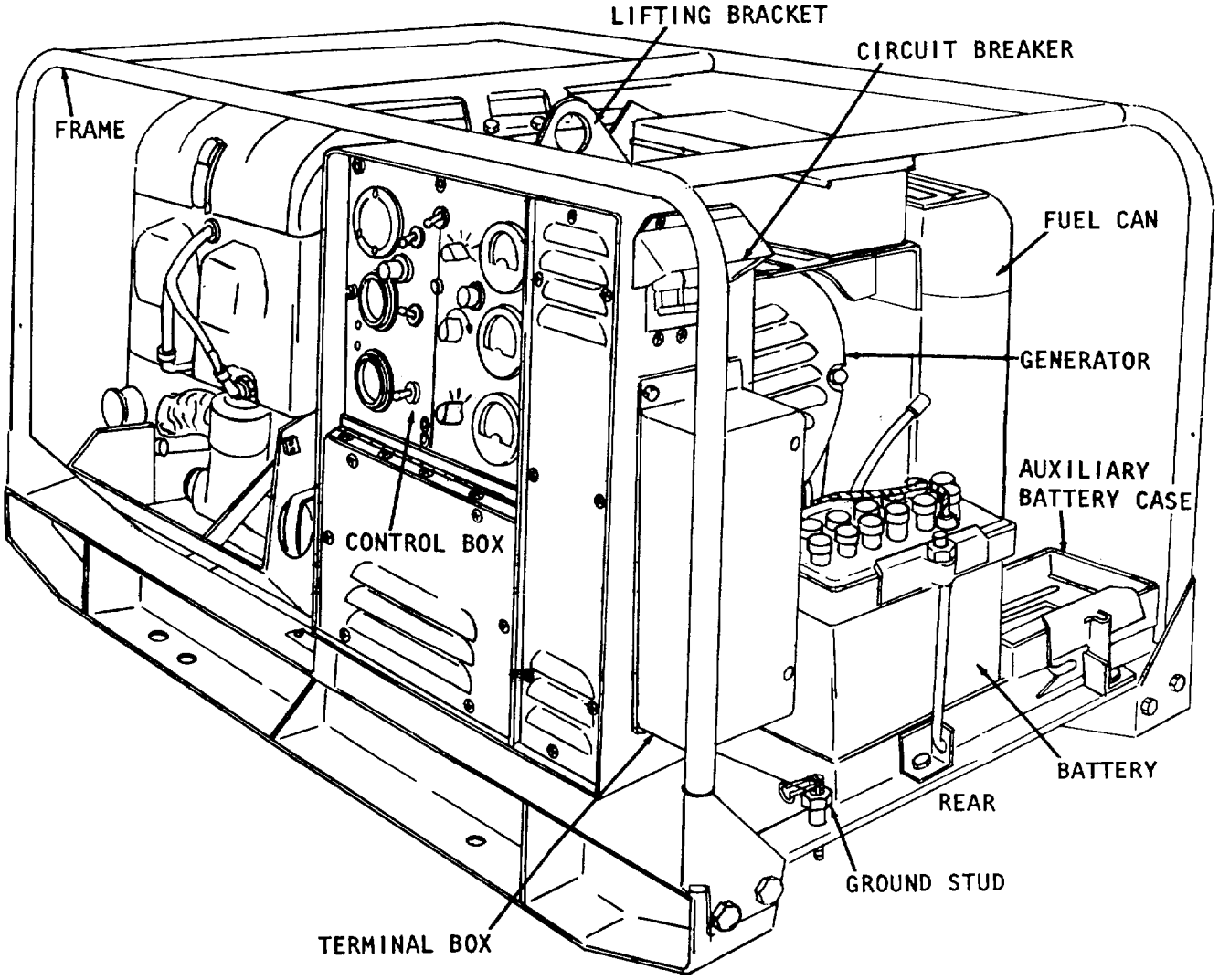


Figure 1-1. Generator set, right rear, three-quarter view (all serial numbers except MA68-0001 through MA68-2987) (Model EP-O18A) (sheet 2 of 2).



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Figure 1-2. Generator set, left front, three-quarter view, (Model MEP-018A)



SHIPPING DIMENSIONS - (CRATED)

	IN PAPER	IN PLYWOOD
LENGTH	54 in. = 137.16 cm	59 3/4 in. = 151.765 cm
WIDTH	32 in. = 81.28 cm	36 in. = 91.44 cm
HEIGHT	31 in. = 78.74 cm	33 3/4 in. = 85.725 cm
WEIGHT	722 lbs. = 324.9 kg	790 lbs. = 355.5 kg

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Figure 1-3. Generator Set, left rear, three-quarter view, with shipping dimensions (Model MEP-023A).

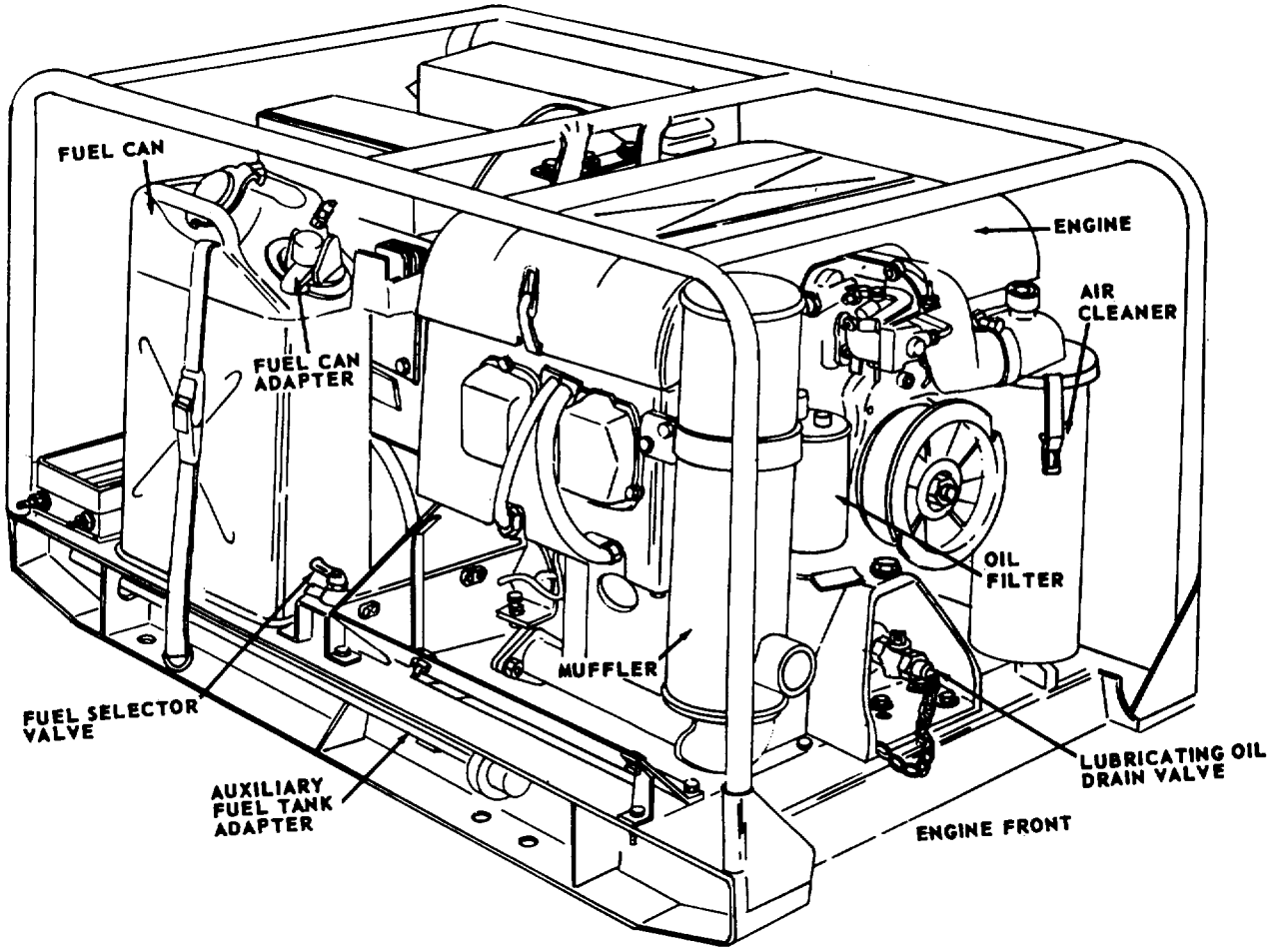


Figure 1-4. Generator set, right front, three-quarter view (Model MEP-A).

c. Generator.

(1) The Model MEP-023A generator is an On Model 10 GFG40XR/E5885A,with a direct-connected, brushless, rotating exciter, 0.8 pf (power factor) 400 hertz, 3428 rpm (revoltions per minute). The generator is rated at 10 KW (Kilowatts), with the following characteristics: 120V, one-phase, two wire; 240 volts, one-phase, two wire: 120 volts, three-phase, three-wire; 120/208 volts three-phase, four-wire. The generator is self-cooled by internal fan.

(2) The Model MEP-018A generator is 60 hertz. The voltage rating is120/240 and 120, 1 phase and 120/20 8 and 120, 3 phase to voltage ratings. The amperage is 3 phase connection load current, 34.7 amperes per line, 1 phase connection load current, 104 amperes and 52 amperes load current on 240 volt connection.

1-10. Identification and Tabulated Data

a. Identification (Model MEP-018A). The generator set has three identification plates.

(1) ***Generator Set Plate.*** The plate is located on the top of the tool box. Specifies the nomenclature, manufacturer, model and serial numbers, contract number, weight and dimensions.

(2) ***Engine Plate.*** The engine plate is located on the upper side of the flywheel housing. It contains information on the manufacturer, model, nomenclature, National Stock Number and displacement.

(3) ***Generator Plate***. Located on the upper right side of the generator. Specifies the rating and rpm (revolutions per minute).

b. Identification (Model MEP-023A).

(1) The engine identification plate is located on the engine flywheel housing and lists the model number, stock number, manufacturer and manual designation number serial number.

(2) The generator name plate is located on the generator frame and lists the electrical ratings and serial number.

(3) The generator set name plate is located on top of the control box bracket. It provides the name of the manufacturer, stock number, weight, dimensions and electrical rating.

1-11. Tabulated Data

a. Generator Set.

Manufacturer	Department of Defense
Type	AC (alternating current)

b. Engine

Manufacturer	Military
Model	4A084-3

c. SAE Standard Torque Specifications. Refer to Table 1-1.

d. Specific Engine Nut and Bolt Torque Data

		(Metrics)
Alternator to Cover	1/2 ft-lbs	(0.07 kgm) (foot-pounds)
Drain Plugs	12-13 ft-lbs	(1.66-1.8 kgm)
Engine Mount	10-12 ft-lbs	(1.38-1.66 kgm)

e. Specific Generator Nut and Bolt Torque Data.

		(Metrics)
Engine		
Mount to Frame	28-30 ft-lbs	(3.87-4.15 kgm)
Engine to Mount	79-81 ft-lbs	(10.93-11.20 kgm)
Generator to Engine	18-22 ft-lbs	(2.49-3.04 kgm)
Generator to Mount	68-71	ft-lbs (9.40-9.82 kgm)
Generator Mount to Frame	19-21 ft-lbs	(2.63-2.90 kgm)

f Battery.

Volts	24
Type	US 4HN
Cells	12
Polarity	Negative Ground

g. Muffler.

Manufacturer	Military Design
Part No	13211E4870

h. Capacities (Generator Set).

		(Metrics)
Fuel Tank	5gal(gallon)	(19 liters)
Engine Crankcase	4 qt	(quart) (3.8 liters)
Oil Filter	1/2 qt	(0.5 liters)

i. Dimensions and Weight (Generator Set) (Mode-018A).

(Metrics)

Length	57 in (inch)	(144.79 cm)
Width	29 in	(73.66 cm)
Height	28-3/4 in	(73.03 cm)
Weight	850 (pound)	(382.5 kg)

j. Dimensions and Weight (Generator Set) (Model MEP-023A).

(Metrics)

Length	51 in.(inches)	(129.54 cm)
Width	30 in.	(76.2 cm)
Height	27 in.	(68.58 cm)
Weight	621 lbs.	(279.45 kg)

k. Wiring Diagram (Model MEP-018A). Refer to Figures FO-1 and FO-2 for the wiring diagram.

l. Wiring Diagram (Model MEP.023A). Refer to figure 1-6 for the wiring diagram and Figure 1-7 for the schematc wiring diagram. For additional wiring diagram data, refer to Figure FO-3.

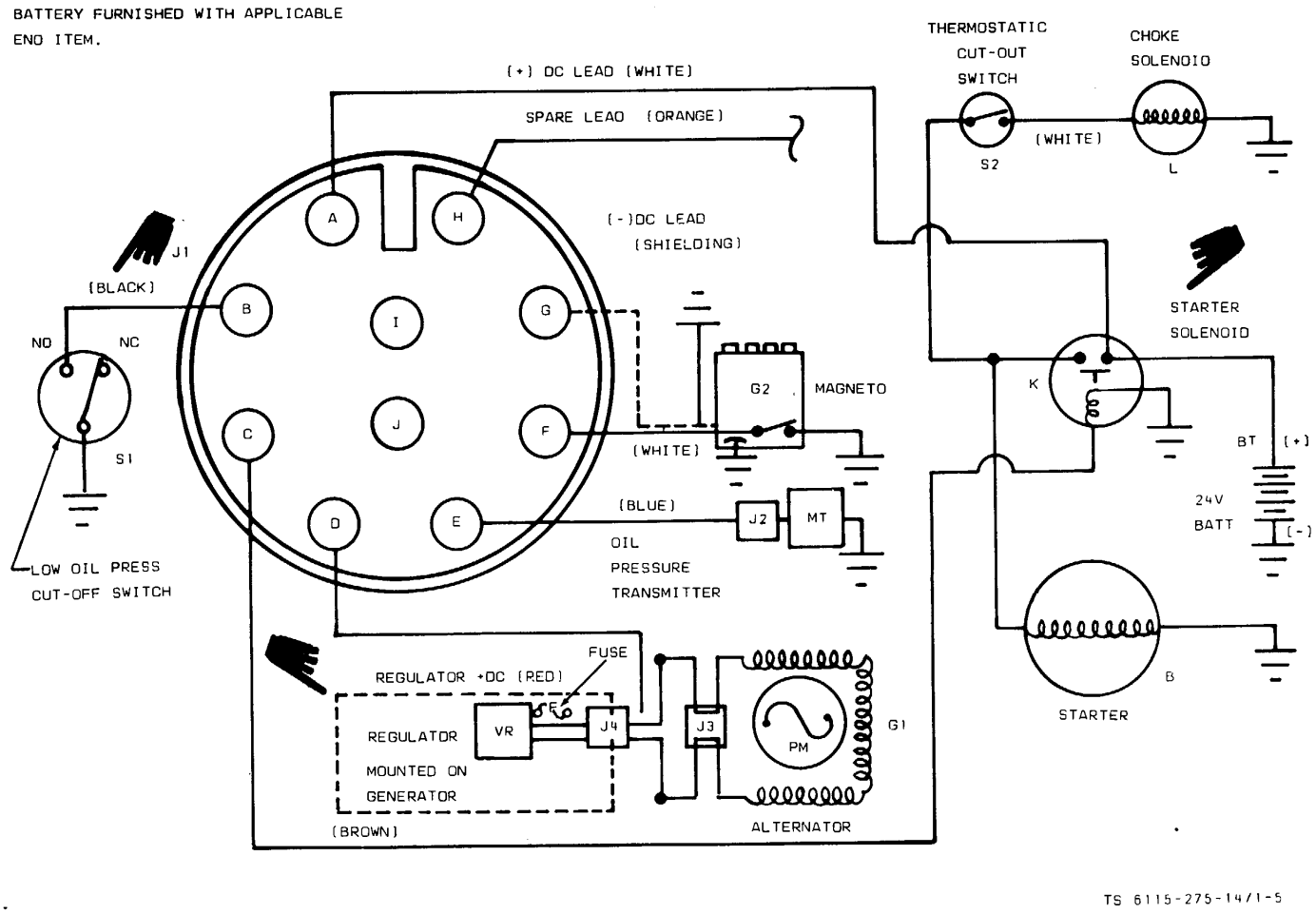


Figure 1-5. WIRING DIAGRAM.

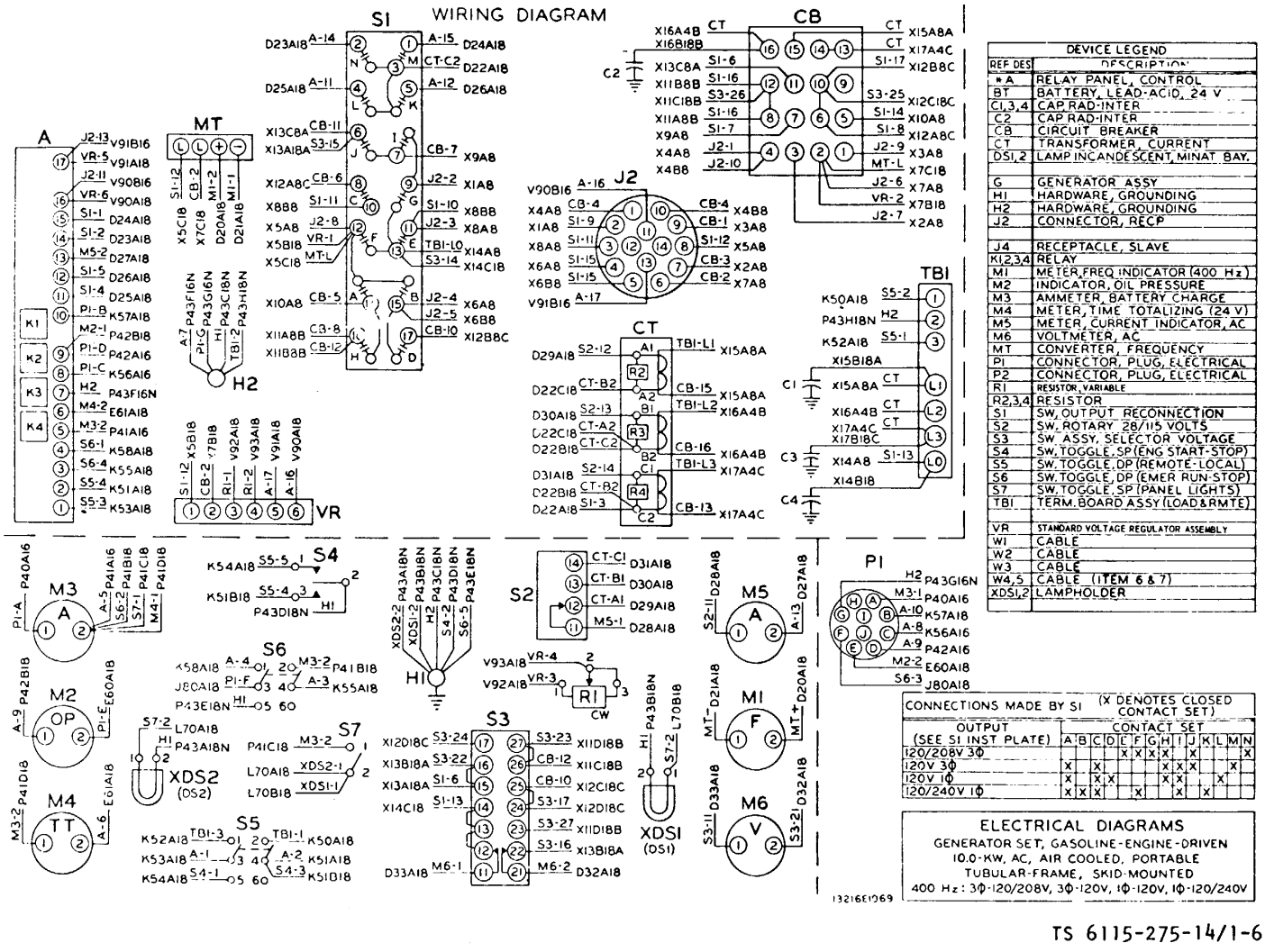


Figure 1-6. Wiring diagram (Model MEP-023A)

Table 1-1. Bolt Capscrew and Nut Torque Wrench Specifications

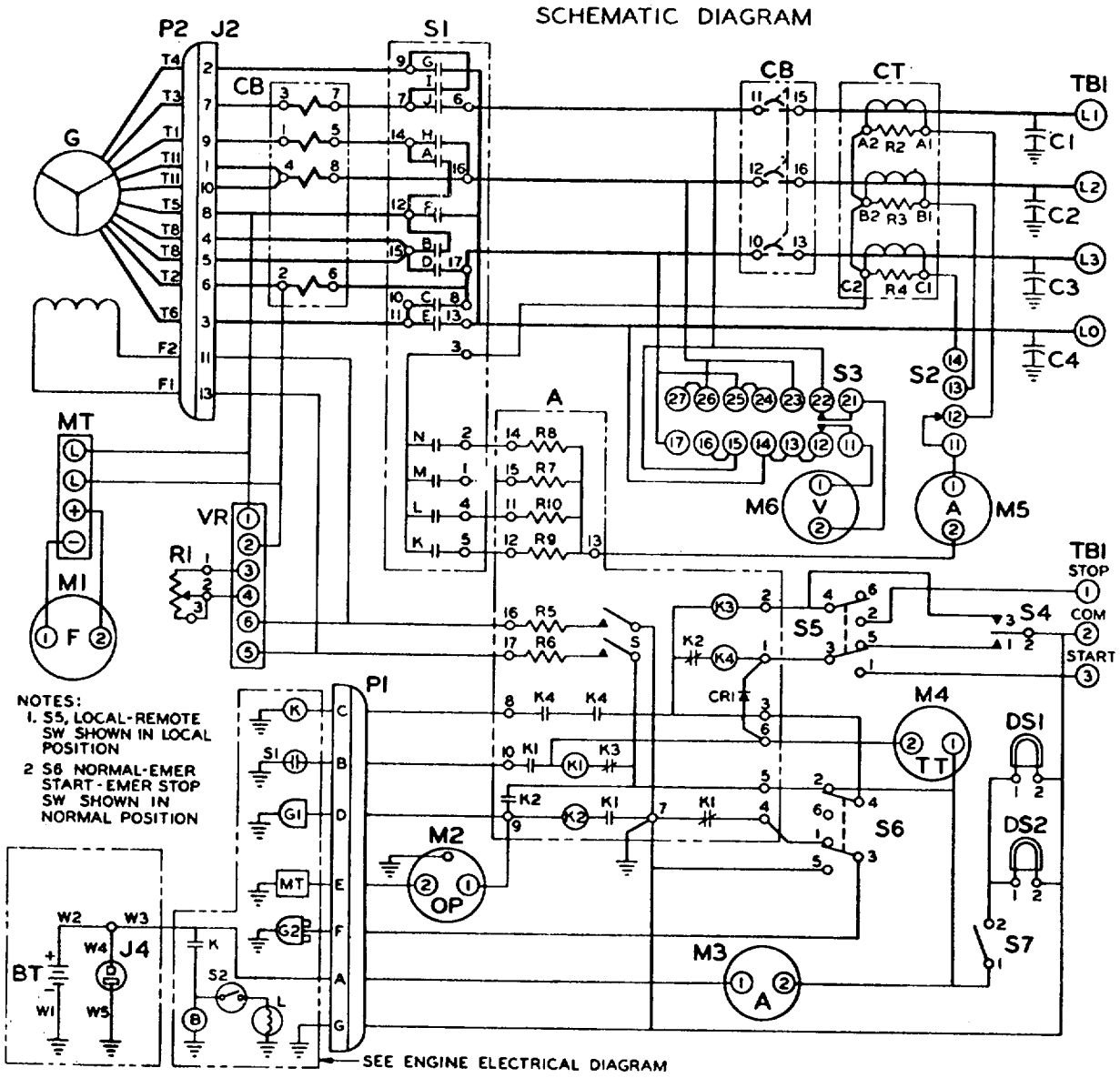
Standard Torque Specifications for Engine Capscrews and Nuts
Capscrew Grade Identification - Capscrew heads are marked as follows:

Grade 2	No Marks
Grade 5	Three Marks - 120° apart
Grade 8	Six Marks - 60 apart

SAE STANDARD TORQUE SPECIFICATIONS IN POUND-FEET*

	GRADE 2		GRADE 5		GRADE 8	
SIZE	NC	NF	NC	NF	NC	NF
¼" (0.64 cm)	5-7 (0.69-0.97 kgm)	6-8 (0.83-1.11 kgm)	9-11 (1.24-1.52 kgm)	11-13 1.52-1.80 kgm)	12-14 1.66-1.94 kgm)	14-16 1.94-2.21 kgm)
5/16" (0.90 cm)	11-13 (1.52-1.80 kgm)	13-15 (1.80-2.07 kgm)	18-20 (2.49-2.77 kgm)	21-23 (2.90-3.18 kgm)	25-27 3.46-3.73 kgm)	28-30 (3.87-4.15 kgm)
3/8" (0.95 cm)	18-21 (2.49-2.90 kgm)	19-22 (2.63-3.04 kgm)	28-33 (3.87-4.56 kgm)	30-35 4.15-4.84 kgm)	41.46 5.67-6.36 kgm)	43-48 5.95-6.64 kgm)
7/16" (1.11 cm)	30-33 4.15-4.56 kgm)	32-35 (4.43-4.84 kgm)	44-49 (6.09-6.78 kgm)	50-55 (6.9-7.61 kgm)	69-74 (9.54-10.23 kgm)	72-77 (9.96-10.65 kgm)
1/2" (1.27 cm)	45-60 (6.22-6.92 kgm)	45-60 (6.22-6.92 kgm)	68-73 (9.40-10.10 kgm)	68-73 (9.40-10.10 kgm)	95-105 (13.14-14.52 kgm)	95-106 (13.14-14.52 kgm)
9/16" (1.43 cm)	60-65 (8.30-8." kgm)	60-65 (8.30-8.99 kgm)	9-10 (13.14-14.52 kgm)	95-105 (13.14-14.52 kgm)	130-140 (17.98-19.38 kgm)	130-140 (17.98-19.36 kgm)
5/8" (1.59 cm)	75-85 (10.37-11.76 kgm)	75-85 (10.37-11.76 kgm)	125-135 (17.29-18.67 kgm)	125-135 (17.29-18.67 kgm)	170-190 (23.51-26.28 kgm)	170-190 (23.51-26.28 kgm)
3/4" (1.91 cm)	125-135 (17.29-18.67 kgm)	125-135 (17.29-18.67 kgm)	210-230 (29.04-31.81 kgm)	210-230 (29.04-31.81 kgm)	290-310 (40.11-42.87 kgm)	290-310 (40.11-42.87 kgm)
7/8" (2.22 cm)	105-115 (14.52-15.91 kgm)	105115 (14.52-15.91 kgm)	290-310 (40.11-42.87 kgm)	290-310 (40.11-42.87 kgm)	450-500 (62.24-69.15 kgm)	450-500 (62.24-69.15 kgm)
1" (2.54 cm)	140-150 (19.36-20.75 kgm)	450-475 (62.24-65.69 kgm)	380-410 (52.54-56.70 kgm)		600-630 (82.98-87.13 kgm)	

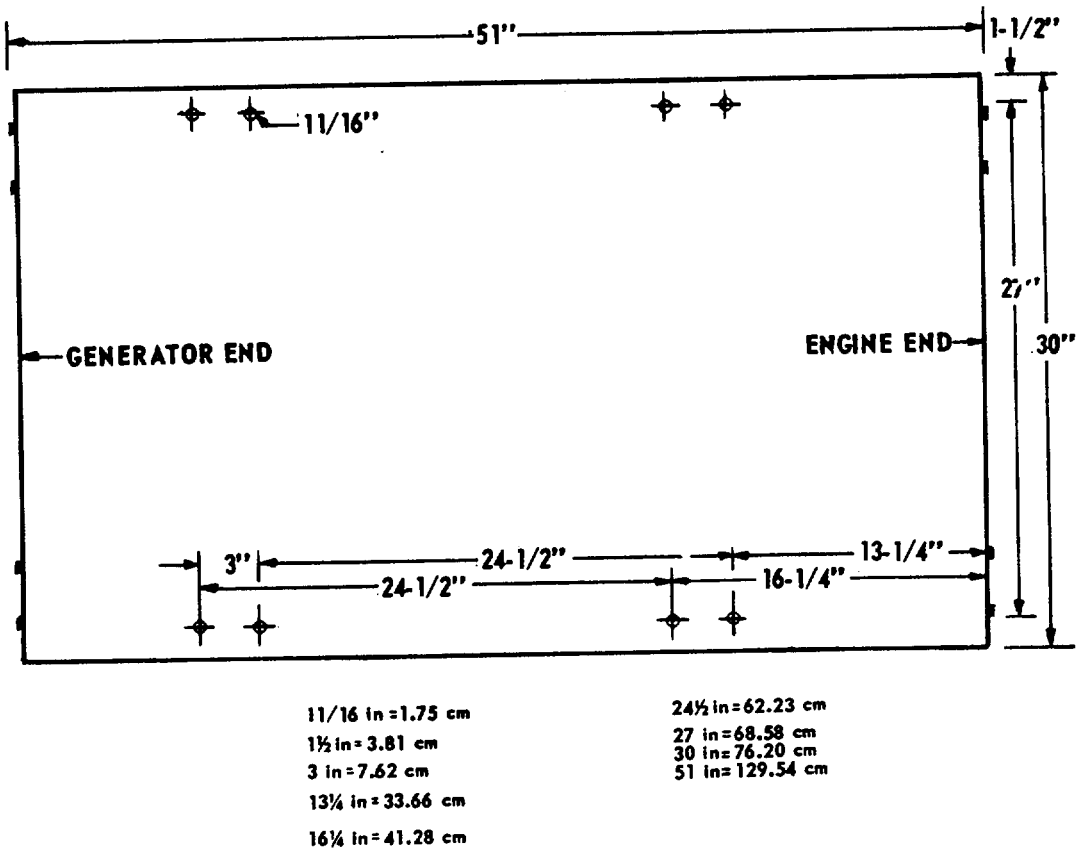
* All torque values listed in this table are for threads lubricated with engine oil.



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Figure 1-7. Schematic wiring diagram (Model MEP-023A)

m. Base Plan (Model MEP-23A). Refer to figure 1-8.



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Figure 1-8. Base plan (Model MEP-023A)

n. Serial Numbers.

(1) The serial number on the generator set (MEP-023A) is comprised of four basic alpha numeric characters to which is appended a numeric series corresponding in quantity to the number of sets furnished.

(a) The first alpha character specifies manufacturer: B - Bogue Electric; E - Onan Division of Studebaker Corp.

(b) The second alpha character denotes Hertz or direct current: B - 400 Hertz.

(c) The third and fourth characters (numeric) represent the year of initial delivery.

(d) The fifth, sixth, seventh, and eighth characters represent the unit number sequence of sets manufactured.

(2) An example for 1., 2., 3., and 4. above would be EB67-0013.

(a) Onan Division of Studebaker Corp.

(b 400 Hertz.

(c) Year of initial delivery - 1967.

(d) Thirteenth set manufactured.

(3) The serial number on the generator set (MEP-018A) is comprised of four alpha-numeric characters, plus a numeric series corresponding in quantity to the number of sets furnished.

(a) The first alpha character identities the manufacturer: B - Bogue Electric; D - Kerz and Root; F - Fermont Corporation; M - Jeta Power.

(b) The second alpha character indicates current: A - 60 Hertz; B - 400 Hertz; C - 28 volts, dc.

(c) The third and fourth characters (numeric) refer to the year of initial delivery.

(d) The fifth, sixth, seventh, and eighth characters represent the unit number sequence of sets manufactured.

(4) An example for 1., 2., 2., and 4. above would be BA-64-0013.

(a) Bogue Electric

(b) 60 Hertz

(c) Year of initial delivery - 1964.

(d) Thirteenth set manufactured.

o. Generator (Model MEP-2A).

Manufacturer	Onan Division of Studebaker Corporation
Model	10GFG-408XR/5885A
Voltage	120, 1-phase; 240, 1-phase; 120, 3-phase; 120/208, 3-phase
Amperage	104 at 120V, 1-phase; 52 at 240V, 1-phase; 24.7 at 120/208V, 3-phase; 60.2 at 120V, 3-phase
Kilowatts	10.0
Kilovolt amps	12.5
Cycle	400 HZ
Power factor	0.8
Phase	1 and 3
RPM	3428
Number of wires	4
Rating:	
Kw (kilowatts)	10 kw
Kva (kilovolts amperes)	12.5 kva
Voltage:	
1 Phase (2 wire)	120V (volts)
1 Phase (2 wire)	240V
3 Phase (3 wire)	120V
3 Phase (4 wire)	120/208V
Amperage:	
1 Phase 120V (2 wire)	104.0 A (amperes)
1 Phase 240V (2 wire)	52.0 A
3 Phase (120V/208V (4 wire)	34.7 A
RPM revolutions per minute)	3428
Phase	1 and 3
Power factor	0.8
Frequency	400 Hz (cycles per second)
Cooling	Integral fan
Lubrication	Sealed bearings
Duty classification	Continuous
Degree of enclosure	Full
Drive	Direct
Type	Synchronous alternator

p Generator (Model MEP-18A).

Rating, voltage	120/240 and 120, 1 phase and 120/208 and 120, 3 phase to voltage ratings.

Amperage	3 phase connection load current, 34.7 amperes per line, 1 phase connection load current, 104 amperes and 52 amperes load current on 240 volt connection.
Rating kva (kilovolt amperes)	12.5
Rating kw (kilowatts)	10
Hertz (cycles per second)	60
RPM (revolutions per minute)	3,600
Phase	1 and 3
Power factor	0.8
Drive	Direct
Cooling	Fan

q Generator Repair and Overhaul Data (Model MEP-023A).

(1) *Stator (Alternator).*

Number of poles	14
Number of slots	60
Number of coils	80
Coil span	1 and 4
Turns per coil	26
Wire size and type	2.6 lb 18, class 155, Type L2, 1.3 lb 18, Class 155, Type L2G2V
Insulation material	Type D100-535
Dipping Compound MIL V-1137	Type M, Gr CB,

(2) *Rotor (alternator).*

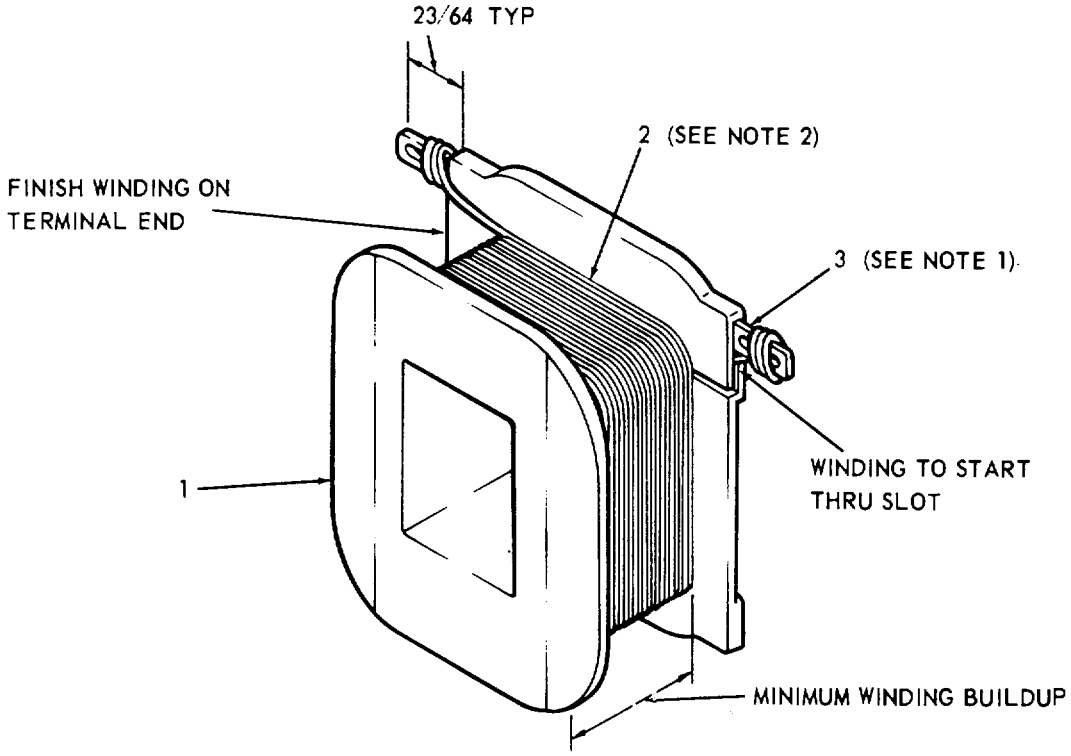
Number of poles	14
Number of coils	14
Turns per coil	100
Turns per layer	N/A-random wound
Wire size and type	18.25 lb, 21, Class 155, Type L2
Coil dimension data and diagram	See Figure FO-4.
Field resistance	5.95 ohms ± 5% at 75°F (24°C)
Dipping compound	Thermopoxy compound E101 per MIL-V-1137A
Fungus treatment	1 additional dipping and baking.
Ring-to-ring resistance	8.8 ohms ± 5% at 25°C. (77°F).

(3) *Exciter Armature.*

Number of coils	39
Number of poles	8
Number of slots	39
Number of coils per slot	1
Turns per coil	14
Coil pitch	1 and 5
Wire size	1.2 lb 20 HNF
Magnet Wire Type of wire	Heavy Nyform
Dipping compound	Type M Grade CB MIL-V-1137A

(4) *Exciter Field.*

Number of coils	8
Turns per coil	630
Wire size	24 SNL Magnet Wire
Type of wire	Single Nyleze
Coil dimen sion data and diagram	See Figure 1-9
Coil connec- ton diagram	See Figure FO-5
Dipping compound per MIL-V-1137A	Type M grade CB varnish
Shunt coil group resistance	51.9 ohms at 75°F (24°C).



LEGEND				
ITEM NO	PART OR IDENTIFYING NO	QTY REQ	NOMENCLATURE OR DESCRIPTION	SPECIFICATION
1	13211E6835	1	FORM, COIL, EXC POLE	
2	CLASS 105, TYPE T	AR	WIRE, MAGNET, ELEC, #24 AWG	MIL-W-583
3	13211E6861	2	LUG, BOBBIN	

NOTES:

(M101) 1. SOLDER IN ACCORDANCE WITH MIL-56872 WRAP 3 FULL TURNS AROUND TERMINAL (1 ½ FREE OF INSULATION) & CUT FLUSH WITH TERMINAL.
(M102) 2. WINDING: 630 TURNS@ 6.8 n 5%.25 C ACROSS TERMINALS.
3. SOAPS: CRITICAL-NONE
MAJOR- AQL 1.0%
M101 - 102
MINOR- NONE

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Figure 1-9. Coil dimension diagram (Model MEP-023A).

r. Generator Repair and Overhaul Data (Model MEP0I18A).

(1). ***Stator.***

Number of slots	36
Number of coils	72
Coil span	12/12/12,120"
phase belts	
Coil pitch	1 to 16
Wire size	No. 16 AWG (American Wire Gage)
Type of wire	Copper
Dipping compounds	Type M, grade CB varnish
per MIL-IL24092	
Resistance	0.127 ohms +10%

(2) **Rotor.**

Number of poles	2
Number of coils	2
Turns per coil	475
Wire size	No16 AWG
Type of wire	Copper
Dipping compounds	Type M, grade CB varnish
per MIL-I-24092	
Ring to ring resistance	6.8 ohms +10%

(3) ***Exciter Armature***.

Number of coils	90
Number of poles	4
Number of dots	45
Number of coils per slot	2
Turn per coil	4
Wire size	No.20 AWG
Type of wire	Copper
Dipping compound	Type M, grade CB varnish
per MIL-I-24092.	
Resistance	.42 ohms ±10%

(4) ***Exciter Field***

Number of coils	6
Turns per coil	190
Wire size	No. 20 AWG
Type of wire	Copper
Number of poles	6
Resistance	8 ohms ±10%
Dipping compounds	Type M, grade CB varnish per MIL-I-24092

(5) ***Frequency Performance***.

Frequency regulation — The frequency regulation shall not exceed three percent with the frequency adjustment constant Frequency regulation is the rated-load frequency divided into the difference between the no-load frequency and the rated-load frequency.

Short-term, steady-state stability — The governing system shall automatically maintain the short-term, steady-state frequency of the set within a band width of plus or minus ½ of one percent of the rated frequency at constant load from no load to rated load during any 30 second period of operation. Rated load is rated KW at 0.8 power factor.

Long-term, steady-state stability — The long-term, steady-state frequency deviation shall not exceed plus or minus one percent of the rated frequency at constant loads from no load to rated load during any 4 hour period of continuous operation except that two frequency excursions beyond the specific. band width for any 4 hour period are permitted. Long term, steady- state frequency deviation is defined as the amount the frequency

deviates from the reference (mean of the observed band) frequency value determined at the beginning of the long- term stability test. Frequency excursion is defined as a short-term, noncylic transient of a self-correcting nature. The excursion shall not exceed the allowable band width by more than 1.5 cps.

Transient performance: Following any sudden increase in load including from no load to rated load, the governing system shall re-establish stable engine operating conditions within 4 seconds. The maximum transient frequency change below the new steady-state frequency (undershoot) shall not be more than 3 per- cent of rated frequency. Following any sudden decrease in load including from rated load to no load, the governing system shall re-establish stable engine operating con- ditions within 6 seconds. The maximum transient frequency change above the new steady-state frequency (over-shoot) shall be not more than 5 percent of rated frequency.

(6) Voltage Performance.

Voltage regulation: The voltage regulation from no load to rated load and from rated load to no load shall exceed three percent of the rated voltage for all connections except for the single-phase, 120/240V connection. For the single-phase, 120/240V connection, regulation shall not exceed 4 percent voltage.

Steady-state regulation: At constant loads from no load to rated load, the generator terminal voltage shall not deviate more than 1/2 percent from its average root mean square (rms) value.

Transient voltage regulation: Following any sudden load change from no load to rated load and from rated load to no load, the instantaneous rms voltage will remain within a band width of plus or minus 20 percent of the no load voltage as measured by a magnetic oscillograph having a no-load voltage deflection of not less than 3-½ inches (8.89 cm). The set shall re-establish stable operation within 2 seconds. Stable operation is operation within plus or minus one-half of one percent of rated voltage.

s. Governor System Specification (Model MEP-023A).

Frequency regulation: The governor is adjustable to maintain frequency regulation not to exceed 3% with the frequency adjustment constant. Frequency regulation is defined as the difference between the no-load frequency and the rated-load frequency.

Short-term steady-state stability: The governing system auto-matically maintains the short-term, steady-state frequency of the set within a band width of $\pm$1/2 of 1% of the rated frequency at

constant loads from no-load to rated-load during any 30 to 45 second period of operation. Rated load is rated kw at 0.8 power factor.

Long-term, steady-state stability

The long-term steady- state frequency does not exceed ±1% of rated frequency at constant loads from no-load to rated load during any 4 hour period of continuous operation. Long-term, steady-state frequency deviation is defined as the amount the frequency deviates from the reference (mean of the observed band) frequency determined at the beginning of the long-term stability test.

Transient response

Following any sudden increase in load, including from no-load to rated-load, the governing system will reestablish stable engine operating conditions (stable engine operating conditions are the conditions specified from steady-state performance) within 4 seconds, and the maximum transient frequency change below the new steady-state frequency is not more than 3% of the rated frequency. Following any sudden decrease in load, including from rated-load to no-load, the governing system will reestablish stable engine operating conditions within 6 seconds, and the maximum transient frequency change above the new steady-state frequency is not more than 5% of rated frequency.

t. Voltage Regulation Specifications (Model MEP-023A).

Voltage regulation

The voltage regulation from no-load to rated load and from rated-load to no-load does not exceed 4% of the rated voltage for all connections except for the single-phase, two wire, 240 volt connection. For this connection, the regulation will not exceed 5% of the rated voltage.

Steady-state performance

At constant loads from no-load to rated load, the voltage at the set terminals will not deviate more than 1% from its average rms. (root mean square) value.

Transient response

Following sudden load changes from rated load to no-load, the instantaneous rms. voltage will remain within a bandwidth of ± 30% of the no-load voltage as measured by a magnetic oscillograph having a no-load voltage deflection of not less than 31/2 inches'(8.89 cm). Stable operation will reestablish within 2 seconds at normal ambient conditions, and within 4 seconds at 250 and +125°F. (40 and 52°C).

1-12. Differences Between Models

This manual covers the Department of Defense generator sets, Models MEP018A and MEP023A. Model MEP018A generators were manufactured by one of the following company's: Bogue Electric, Kerz and Root, Fermont Corporation, Jeta Power. The set is rated at 10 KW (kilowatts), 60 HZ, direct drive, fan cooled, with 0.8 power factor operating at 3600 RPM (revolutions per minute) and is self-contained, skid mounted, and portable. Model MEP : 023A is an Onan Model 10GFG408XR/5885A with a direct-connected, brushless, rotating exciter. The set is rated at 10 KW, 400 HZ, fan cooled, with 0, power factor operating at 3428 rpm and is self-contained, skid mounted, and portable. When model differences exist, the appropriate paragraph or subparagraph will be annotated.

NOTE

Model MEP018A is equipped with a shroud on the generator stator frame on all units, with the exception of the generator sets utilized on all single trailer laundry units, Edial, Model ELT9T, NSN 3510007825294 and Edro Model EP120LTU, NSN 3510-00-169-4735.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. Controls and Instruments

a. This section describes the various controls and instruments and provides the operator/crew sufficient information to insure proper operation of the generator set.

b. Controls and Instruments. The purpose of the controls and instruments and the normal and maximum reading of the instruments are illustrated in figures 21, 2-2, and 2-3.

2-2. Operation Under Usual Conditions

a. General.

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

(2) The operator must know how to perform every operation of which the generator set is capable This section gives instructions on starting and stopping the generator set, operation of the generator set, and on coordinating the basic motions to perform the specific tasks for which the equipment is designed.

Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

NOTE

Do not remove setscrew in top of carburetor for fuel system priming.

b. Starting.

(1) ***Preparation For Starting.***

(a) Perform the operator's preventive maintenance checks and services listed in Table 3-2.

(b) Place the three way fuel valve (B, figs. 2-1, 2-2 and E, 2-3) in the SET or AUX position, depending on the source of fuel.

(c) Place Oil Pan Baffle Rod (D, figure 2-3) in the proper position depending on ambient temperature.

(d) Place air intake shutter (C, fig. 2-3) in the proper position depending on ambient temperature.

(e) Check load terminals (figure 2-5) for correct output connections.

(f) Set voltage phase switch (figure 2-6) for desired output.

(g) Set voltage selector switch (A, figs. 2-1 and 2-3) to monitor desired phase voltage.

(h) Set current selector switch (A, figs. 2-1 and 2-3) to monitor desired current.

(i) Turn voltage adjust knob (rheostat), (A, figs. 2-1 and 2-3) fully counterclockwise.

(j) Place Circuit Breaker in off position (B, fig.2-3).

(k) See that the unit is properly grounded as follows:

1 The ground can be in order of preference, an underground metallic water piping system, a driven metal rod, or a buried metal place.

2 A ground rod must have a minimum diameter of 5/8 inch (1.5875 cm) if solid or ¾ inch (1.905 cm) if pipe, and must be driven to a minimum depth of 8 feet (240 cm). A ground plate must have a minimum area of 9 square feet (0.81 square meters) and be buried to a minimum depth of 4 feet (120 cm). The ground lead must be NO. 6 AWG (American Wire Gauge) copper wire bolted or clamped to the rod, plate or piping system. Connect the other end of the ground lead to the generator set ground stud (A and B, fig. 2-4).

WARNING

Do not operate the generator set without a suitable ground connection. Electrical defects in the unit, load lines, or load equipment can cause death by electrocution when contact is made with ungrounded system.

WARNING

Use slave receptable when extra cranking power is required.

(2) Electrical Starting. Start the generator set as shown in figure 2-7.

(3) Manual Starting. Start the generator set as shown in figure 2-7.1.

CAUTION

Make sure the circuit breaker is in the OFF position.

CAUTION

Do not operate at idle speed. At idle speed, frequency drops below 60 Hertz, exciter field voltage increases, thereby causing voltage regulator to operate at maximum output. This causes overloading of power transistor, Q2.

NOTE

Manual start should not be attempted with a weak battery. Battery voltage is Essential in performing step 7 of fig. 27.1. Minimum voltage required for energizing K1 is 18 volts.

WARNING

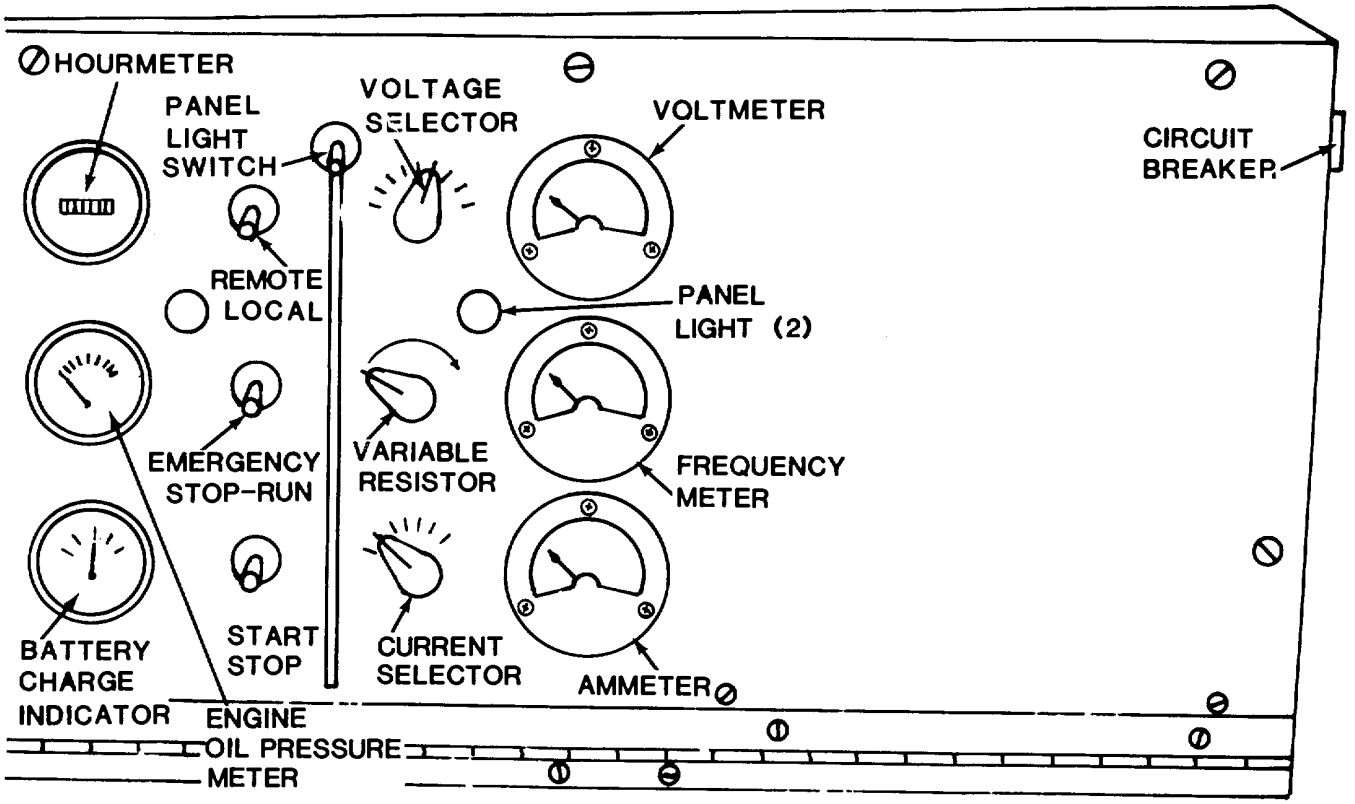
Slave receptable is to be used when extra cranking power is required for starting unit. Other methods are not authorized.

c. Stopping. Refer to figure 2-8 and stop the generator set.

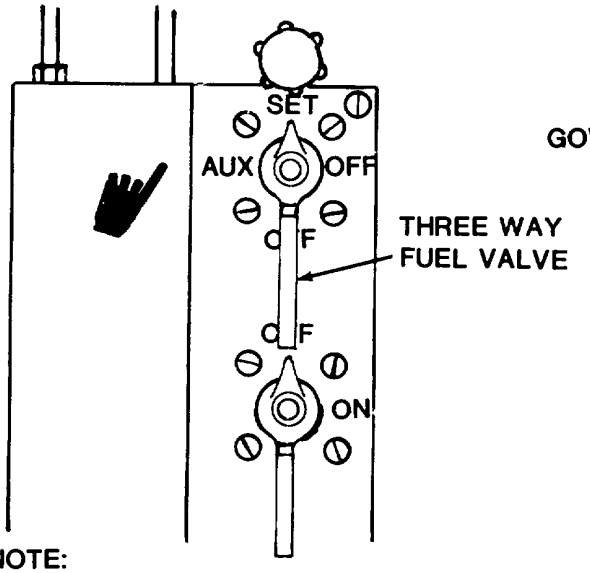
CAUTION

Do not operate at idle speed.

d. Generator Set Operation. Refer to figure 2-9
for generator set operation.



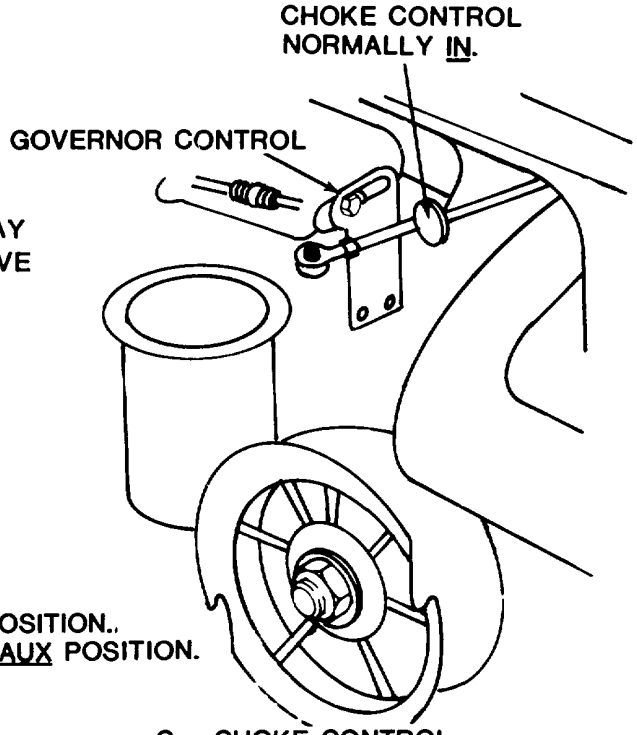
A. ENGINE AND GENERATOR CONTROLS AND INSTRUMENT.



NOTE:

FOR FUEL TANK SUPPLY,PLACE IN SET POSITION..
FOR AUXILIARY FUEL SUPPLY,PLACE IN AUX POSITION.

B. THREE WAY FUEL VALVE.



C. CHOKE CONTROL

TS 6115-275-14/2-1

Figure 2-1. CONTROLS AND INSTRUMENTS(MODEL MEP-018A).

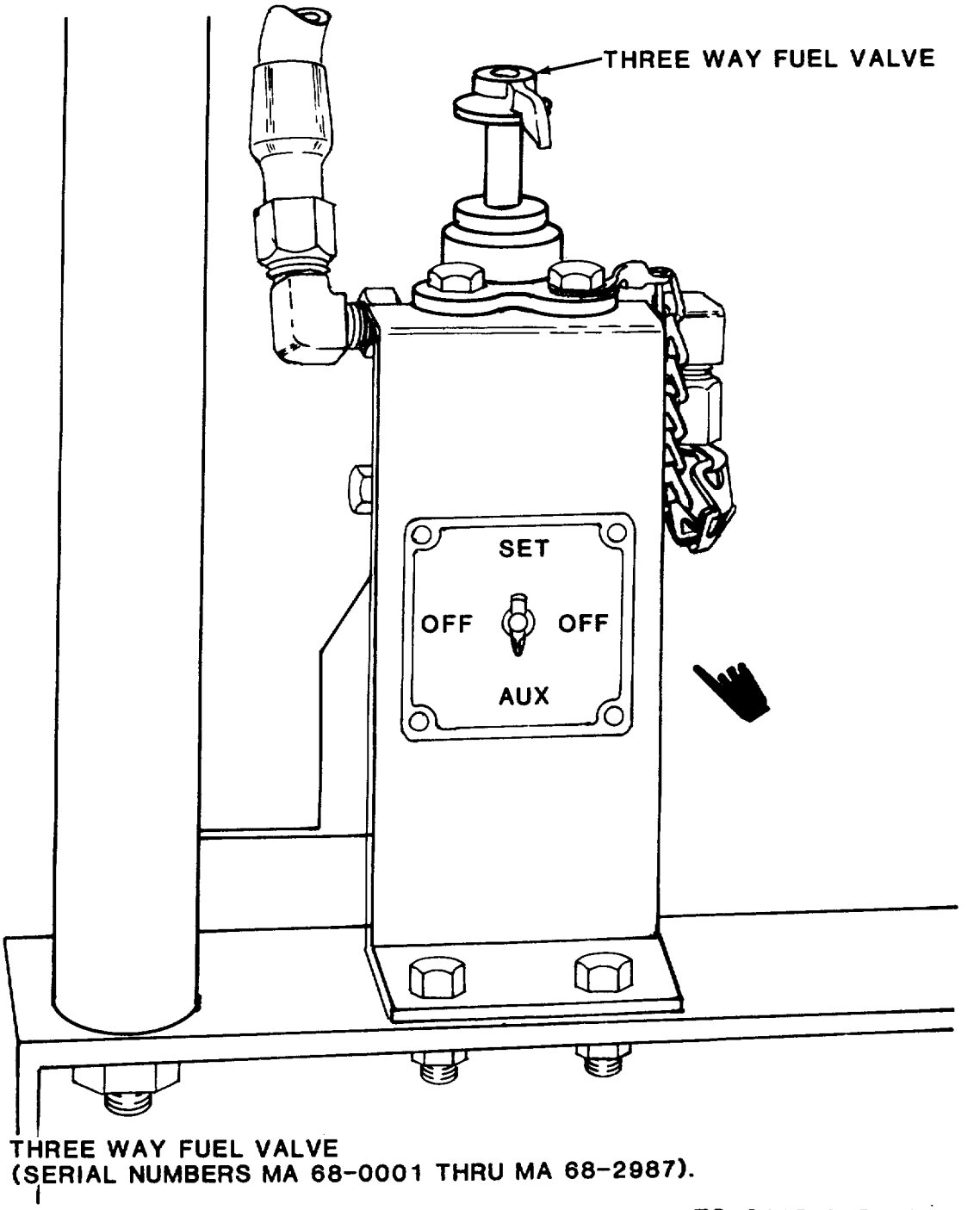
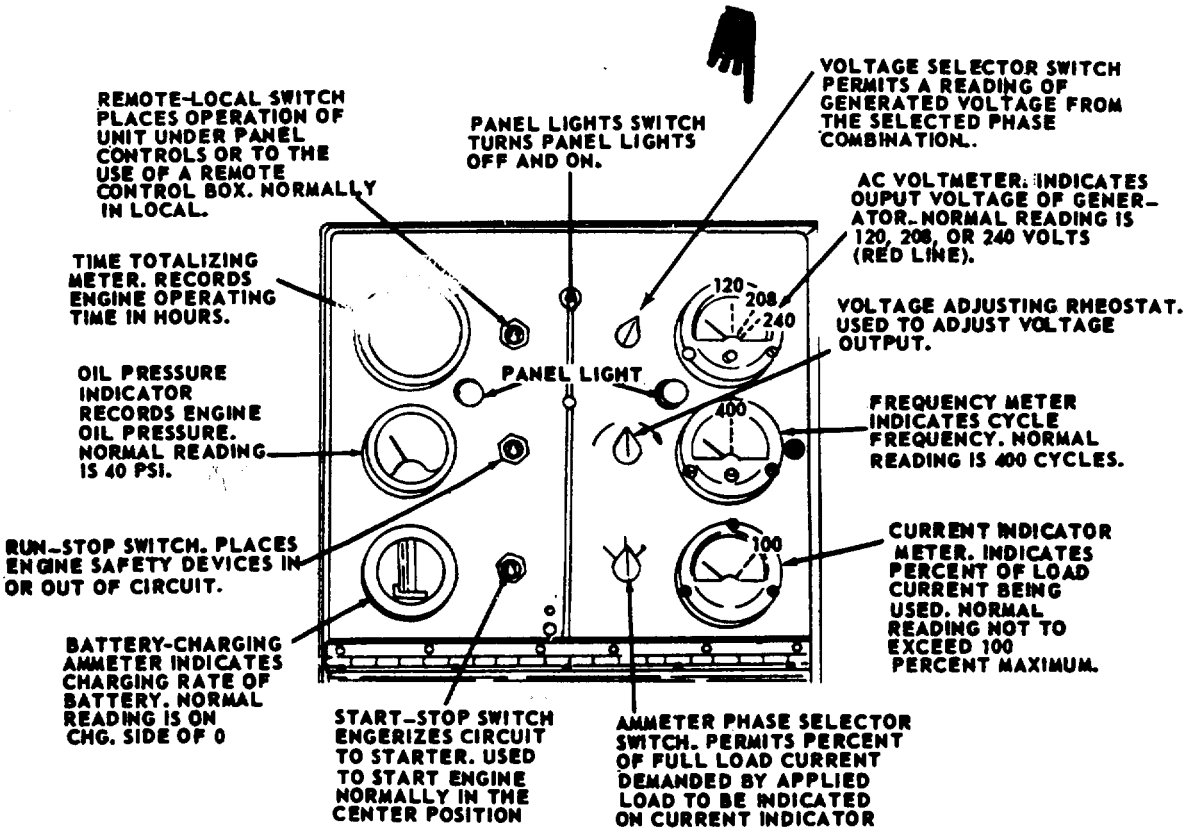
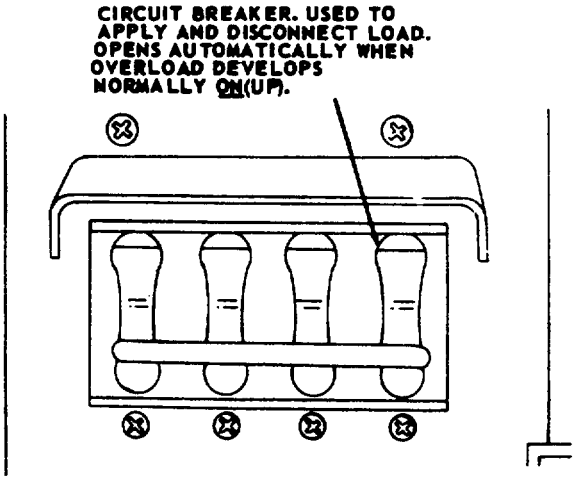


Figure 2-2. CONTROLS AND INSTRUMENTS (SERIAL NUMBER RANGE MA68-000 1 THRU MA68-2987)(MODEL MEP-018A).



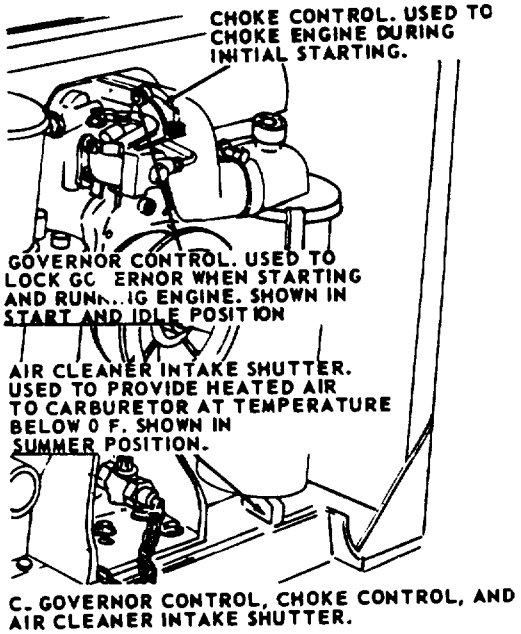
A. CONTROL PANEL



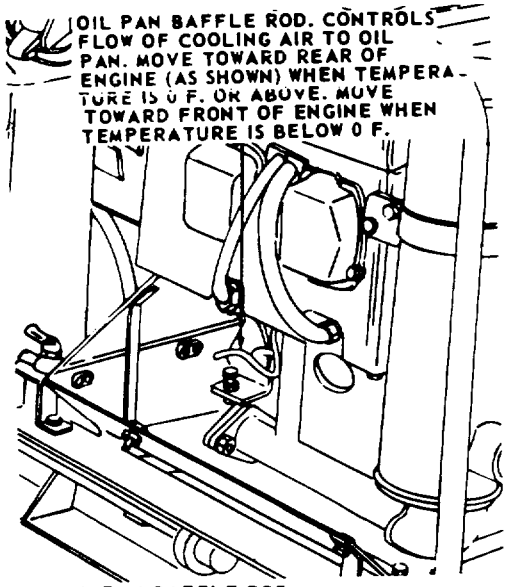
B. CIRCUIT BREAKER

TS 6115-275-14/2-3 (SHEET 1 OF 2)

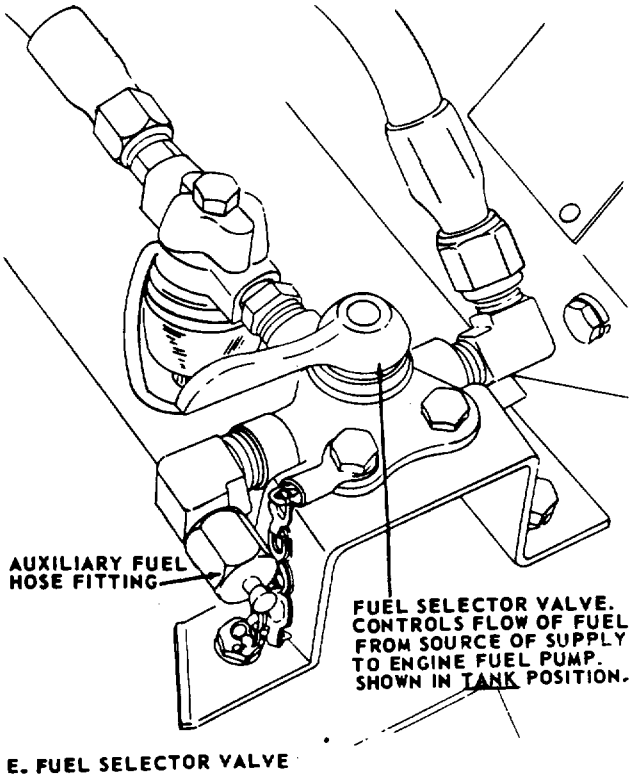
Figure 2-3. Controls and instruments (Model MEP-023A)(sheet 1 of 2).



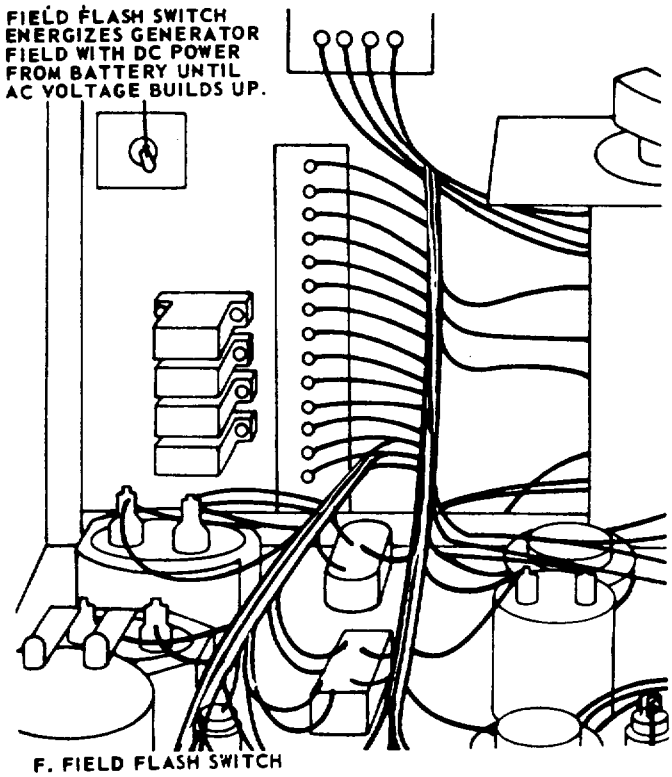
C. GOVERNOR CONTROL, CHOKE CONTROL, AND AIR CLEANER INTAKE SHUTTER.



D. OIL PAN BAFFLE ROD



E. FUEL SELECTOR VALVE



F. FIELD FLASH SWITCH

TS-6115-275-14/2-3 (Sheet 2 of 2)

Figure 2-3. Controls and instruments (Model MEP-023A)(sheet 2 of 2).

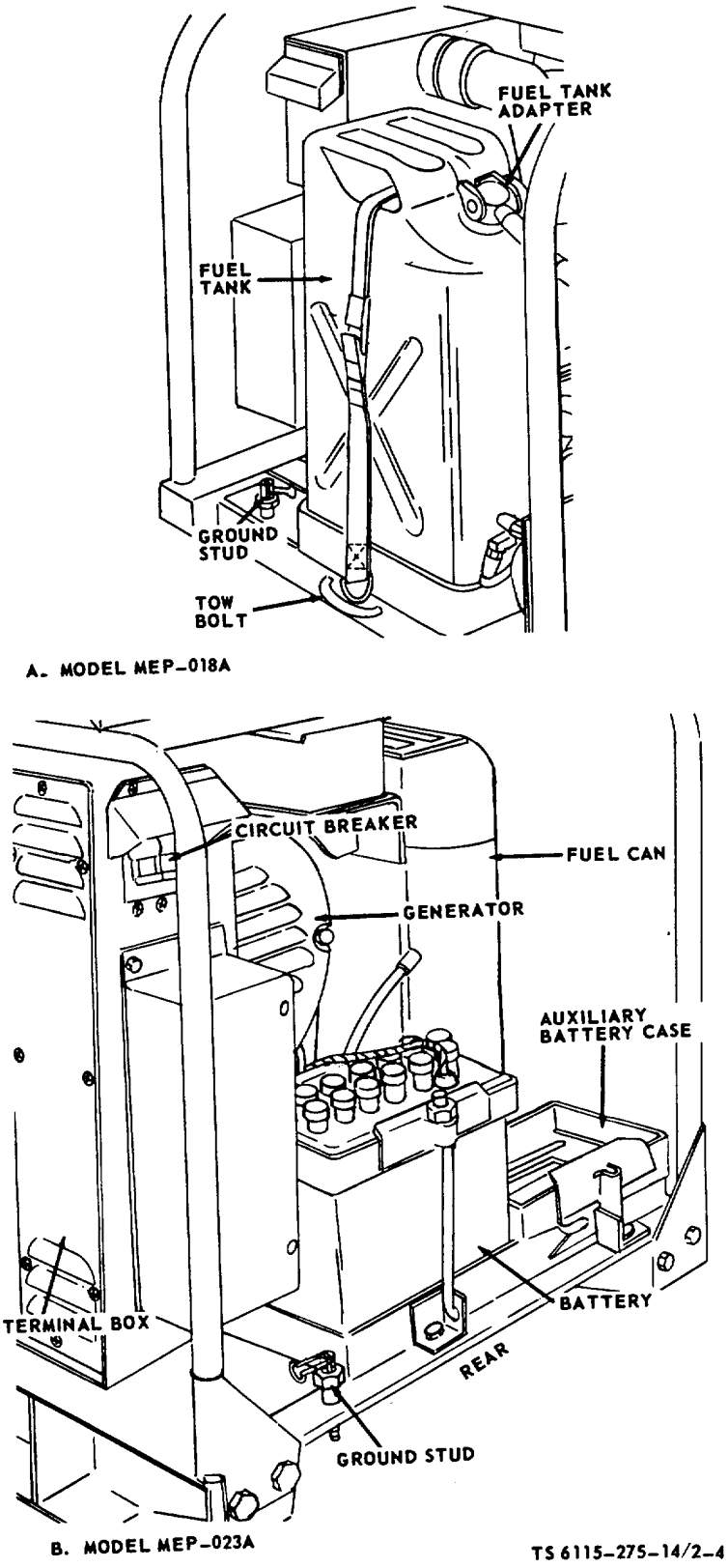


Figure 2-4. Ground stud,

NOTE: BEFORE CONNECTING LOAD LINES, DETERMINE VOLTAGE REQUIREMENTS, AND SELECT THE PROPER VOLTAGE.

FOR 120/240-V, SINGLE PHASE, 3-WIRE CONNECTIONS, CONNECT LOAD LINES TO TERMINALS L2, L3, AND LO.

FOR 120-V, SINGLE PHASE, CONNECT LOAD LINES TO LOAD TERMINALS L2 AND L3.

FOR 120-V, THREE PHASE, 3-WIRE CONNECTIONS, CONNECT LOAD LINES TO LOAD TERMINALS LI, L2, AND LO.

FOR 120/208-V, THREE PHASE, 4-WIRE CONNECTIONS, CONNECT LOAD LINES TO LOAD TERMINALS L1, L2, L3, AND LO.

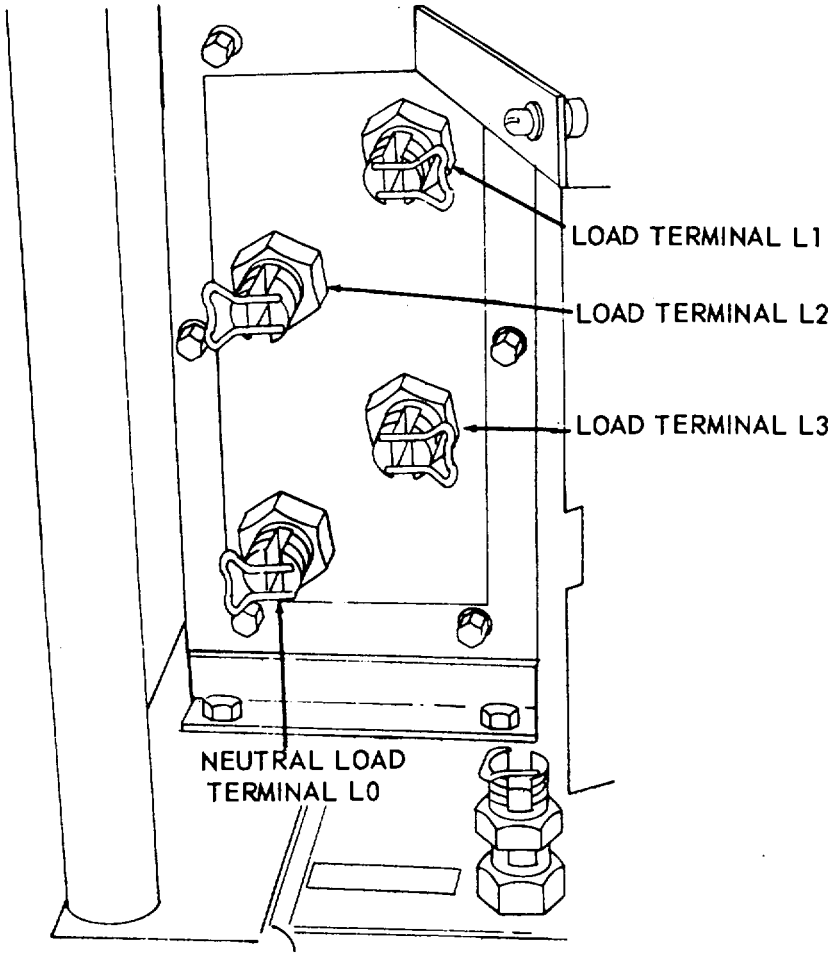


Figure 2-5. Load connections.

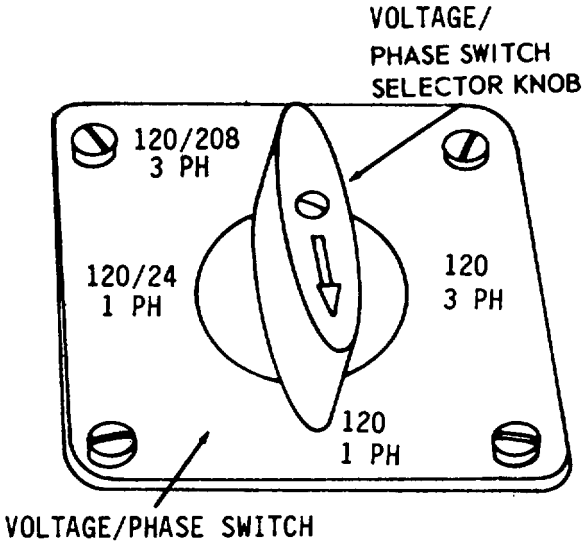
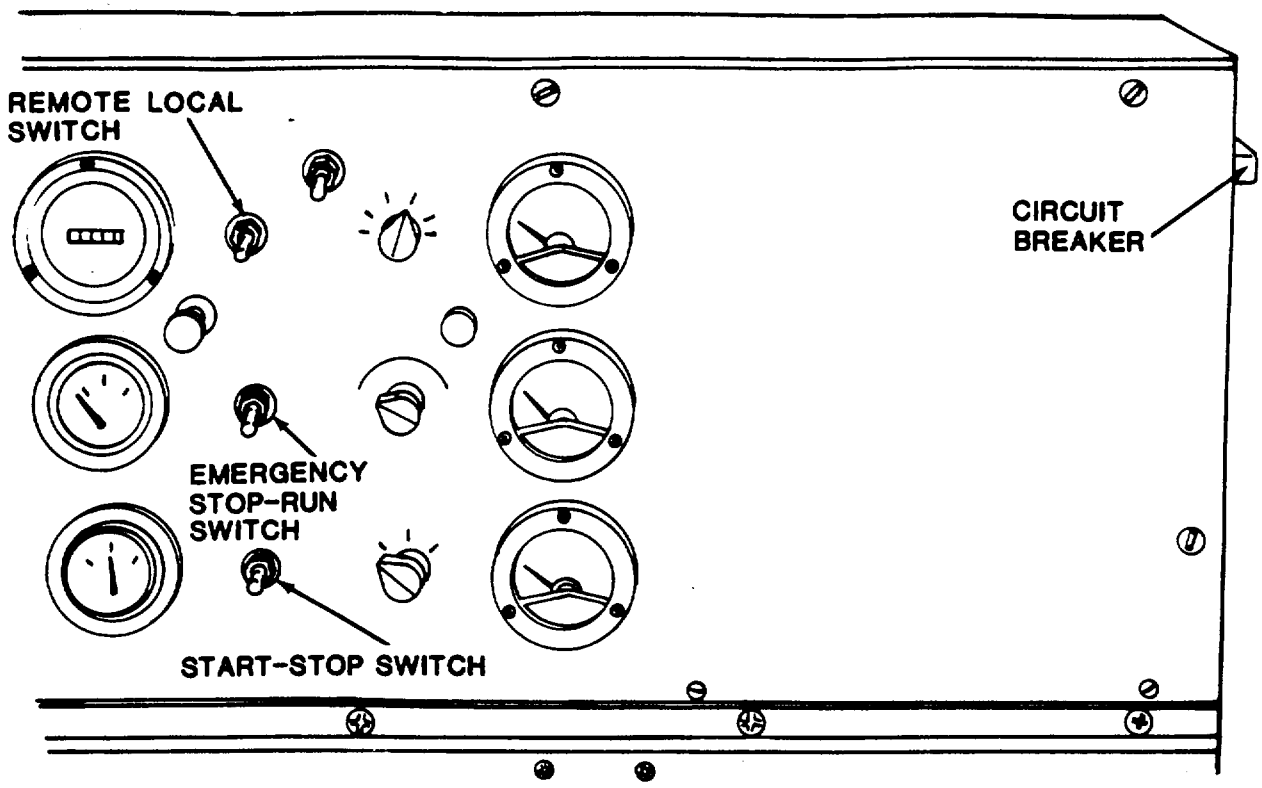


Figure 2-6. Voltage/Phase selector switch



NOTE

WHEN STARTING ENGINE, IF NO OIL PRESSURE IS INDICATED, SHUT UNIT DOWN IMMEDIATELY.

CAUTION

1. PERFORM PREPARATION FOR STARTING FUNCTIONS (PARA 2-2b(1), (a) THRU (k).
2. PLACE REMOVE/LOCAL SWITCH IN LOCAL POSITION.
3. PLACE EMERGENCY STOP/RUN SWITCH IN NORMAL POSITION.
4. PLACE GOVENOR CONTROL IN START POSITION (c, Fig. 2-3).

STEP 5 DELETED

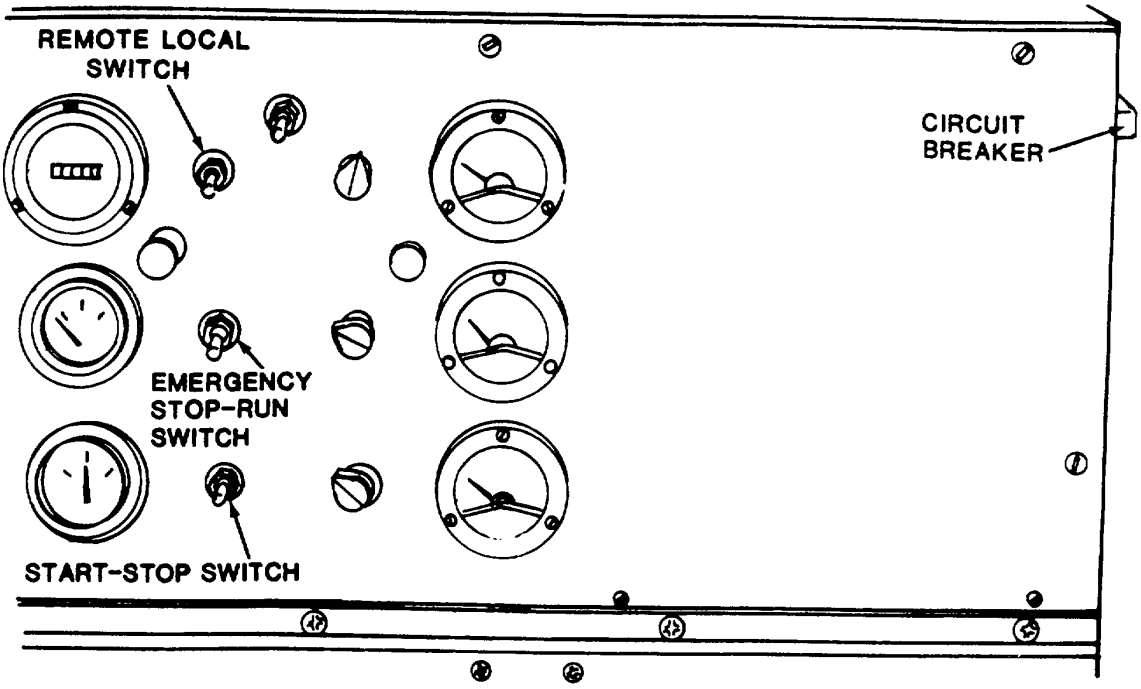
WARNING

Use slave receptacle when extra cranking power is required.

6. PRESS THE START/STOP SWITCH TO THE START POSITION. RELEASE WHEN ENGINE STARTS.
7. POSITION GOVENOR IN GOVERN POSITION.

FIGURE 2-7. ELECTRICAL STARTING INSTRUCTIONS.

All text on pages 2-11 and 2-12 deleted, including figure.



CAUTION

- When engine starts, if no oil pressure is indicated, shut unit down immediately or damage to engine could result.
- **DO NOT IDLE ENGINE.** Voltage regulator can be damaged if engine is idled.

1. Perform preparation for starting functions (para 2-2b(1)(a) thru(k)).
2. Place Remote/Local switch in LOCAL position
3. Place Emergency Stop/Run switch in EMERGENCY RUN position.
4. Place Governor control in START position.
5. Pull out Choke control if engine is cold. After engine starts, slowly return to in position as engine reaches operating temperature. (C, figs 21 and 2-3).
6. Wrap the starter rope around the rope start pulley (C, fig. 2-1). Take quick steady pull with the rope. Repeat until engine starts. If engine does not start, readjust the choke.

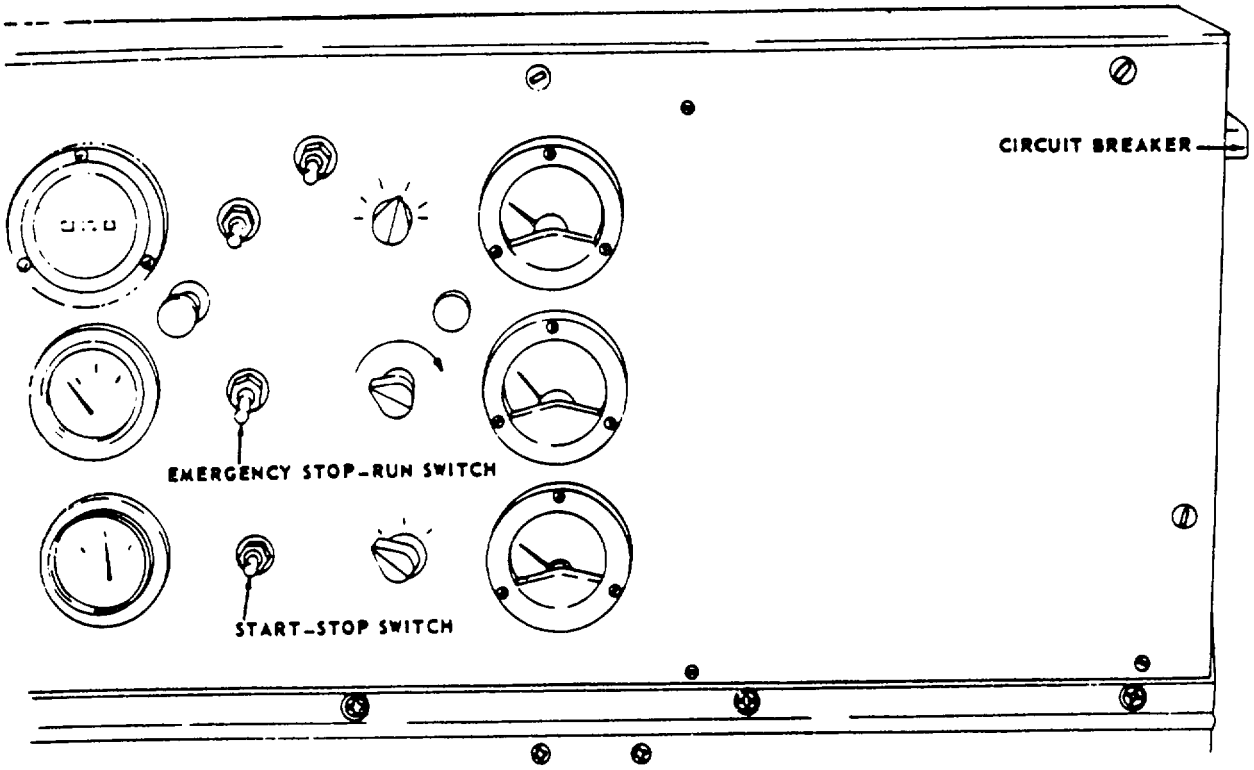
WARNING

Serious eye injury can result from the starter rope knot. Wear protection.

7. When engine starts, place the Emergency Stop/Run switch in the NORMAL position. At the SAME TIME place the Start/Stop switch in the START position.
8. Position Governor control in GOVERN position.

Figure 2-7.1. Manual Starting Instructions.

All text on pages 2-12.2 and 2-12.3 deleted, including Figure 2-7.3.



Step 1. Remove the load by placing the circuit breaker in the OFF position.
Step 2. Turn Voltage rheostat fully counterclockwise.
Step 3. Cool down set at rated speed three to five minutes. DO NOT IDLE.
Step 4. Place start/stop switch in STOP position and hold until engine stops.

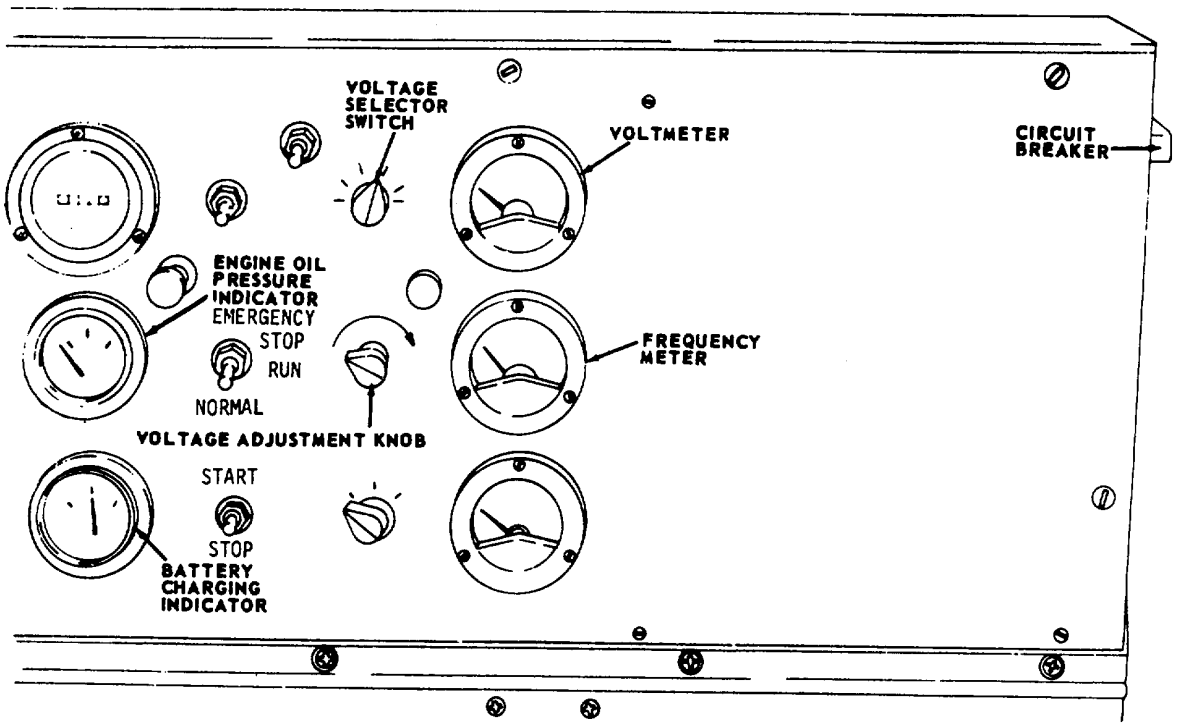
NOTE

When emergency stopping is required, perform step 5 only. Use this mode for stopping the generator ONLY in case of emergency.

Step 5. Place the emergency stop/run switch in the EMERGENCY STOP position.

Step 6. Place the fuel selector valve in the OFF position.

Figure 2-8. Normal and emergency stopping instructions.



WARNING

DO NOT INSTALL OR CHANGE LOAD CABLES OR CHANGE VOLTAGE PHASE SWITCH WHILE THE GENERATOR IS IN OPERATION BECAUSE DAMAGE TO GENERATOR COULD RESULT.

STEP 1. SET VOLTAGE PHASE SWITCH FOR DESIRED OUTPUT.
STEP 2. PLACE CIRCUIT BREAKER IN THE OFF POSITION.
STEP 3. INSURE THAT LOAD LINE IS CONNECTED TO THE PROPER TERMINALS.
STEP 4. START THE GENERATOR SET (FIG. 2-7).
STEP 5. OBSERVE ENGINE OIL PRESSURE INDICATOR FOR PROPER OIL PRESSURE.
STEP 6. OBSERVE BATTERY CHARGING METER FOR PROPER OPERATION.
STEP 7. CHECK FREQUENCY METER FOR PROPER READING. IF METER DOES NOT INDICATE 61 HERTZ THE ENGINE GOVERNOR MUST BE ADJUSTED. REFER TO TM 5-2805-259-14.
STEP 8. CHECK GENERATOR OUTPUT VOLTAGE. OUTPUT VOLTAGE IS CONTROLLED BY VOLT P DJ KNOB ON THE FRONT PANEL.

NOTE

IF NO OUTPUT IS INDICATED AND THE GENERATOR SET HAS BEEN IN STORAGE OR OUT OF OPERATION FOR A LONG PERIOD OF TIME, LOWER THE FRONT PANEL OF THE CONTROL CABINET AND MOMENTARILY PRESS THE FIELD FLASH SWITCH.

STEP 9. WHEN SET IS ADJUSTED TO PROPER LEVELS AND THE ENGINE HAS REACHED OPERATING TEMPERATURE (3 TO 5 MINUTES), PLACE CIRCUIT BREAKER IN ON POSITION.

Figure 2-9. Operating instructions.

Section II. OPERATION OF AUXILIARY EQUIPMENT

2-3. Fire Extinguisher (monobromotrifluoro-methane Type).

a. Description. The monobromotrifluoromethane type fire extinguisher is generally suitable for all type fires, except fires involved with LOX (liquid oxygen) generating equipment. The fire extinguisher is furnished with a disposable type cylinder.

b. Operation. To operate the fire extinguisher,, perform as follows:

(1) Remove fire extinguisher from its location.

(2) Break seal by pulling safety pin from handle.

(3) Point horn at base of flame.

(4) Press trigger for discharge and direct stream at base of flame.

(5) Replace cylinder immediately after using.

2-4. DELETED

Figure 2-10 is deleted.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

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

a. General. The generator set is designed to operate at temperatures as low as -65°F. (Fahrenheit) (-54°C.). To operate successfully at temperatures below -0 ° F. (- 18 ° C), be sure air cleaner intake shutter is in the WINTER position and the oil pan baffle has been moved to the position toward the front of the engine.

b. Fuel System.

(1) Keep the fuel tank as full as possible to prevent condensation.

(2) Remove ice and snow from the fuel tank cap and dispensing equipment before filling the fuel tank.

(3) Drain and service the fuel filter ore frequently during cold weather to remove water and prevent freezing.

c. Generator. When operating in extreme cold, allow as least a five-minute stabilization period before applying the load to the generator.

2-6. Operation In Extreme Heat

a. Indoor Ventilation. When the operator set is operated indoors, allow sufficient room around the equipment for air circulation, and ventilate the room.

WARNING

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

b. Cooling.

(1) Inspect the air baffles frequently to make sure they are clean. Position oil pan baffles rod toward rear of engine for 0°F. (-18°C) and above. Refer to figure 2-11.

(2) Keep all exposed surfaces of the engine and generator clean.

(3) Keep all ventilation openings clean.

(4) Keep the connected load to a minimum. Make frequent current indicator meter readings to detect any overload, and if observed, immediately reduce the load or stop the unit.

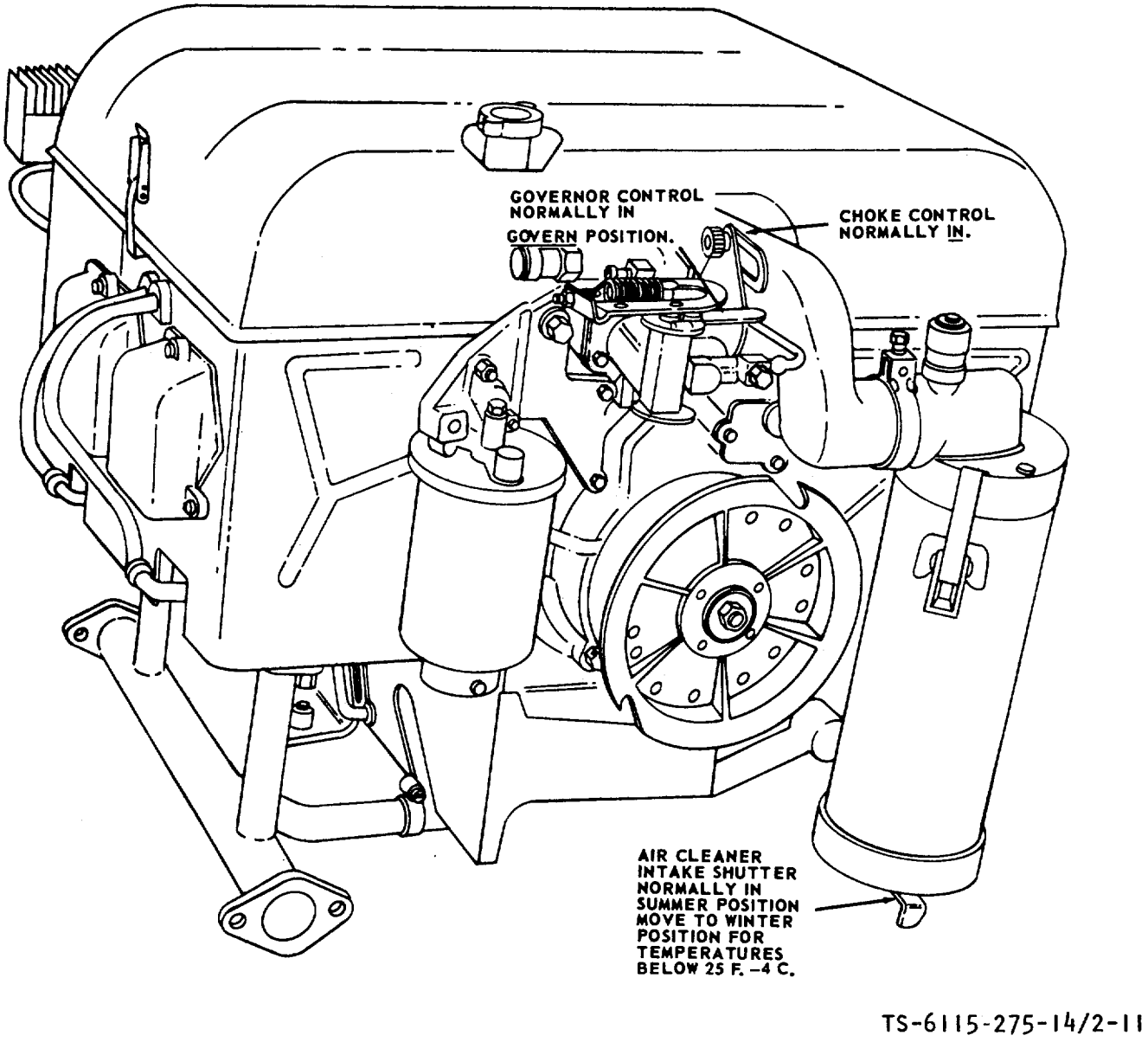


Figure 2-11. Engine, controls .

c. Generator.

(1) Inspect the instruments frequently to make sure the operator is not overloaded.

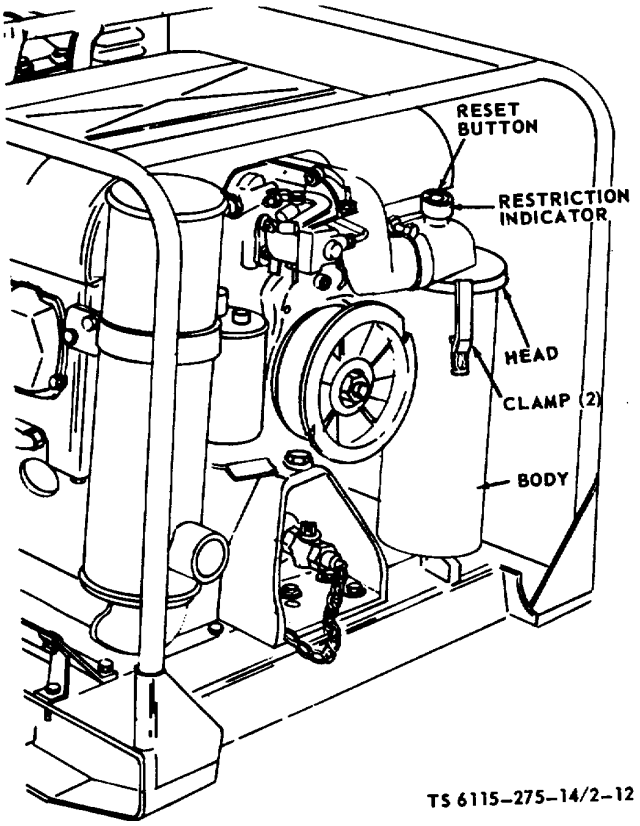
(2) Inspect the generator ventilating screens to make sure they are clean.

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. Cleaning. Keep the unit as clean as possible. Pay particular attention to the engine air baffles and the generator ventilating covers. Use compressed air, if possible, to aid in cleaning.

c. Air Cleaner. Service the air cleaner (fig. 2-12) daily to keep the carburetor free of dirt and sand.



STEP 1. LOOSEN HEAD CLAMP (2).
STEP 2. REMOVE AND FILTER ELEMENT.
STEP 3. CLEAN HEAD AND BODY WITH CLEANING SOLVENT AND DRY THOROUGHLY.
NOTE: WHEN RESTRICTION INDICATOR SHOWS FULLY RED, REMOVE ELEMENT FROM BODY AND CLEAN ELEMENT WITH LOW PRESSURE COMPRESSED AIR.
STEP 4. REPLACE ELEMENT IN BODY AND INSTALL HEAD.
STEP 5. SECURE HEAD WITH CLAMP 2 AND PRESS RESET BUTTON TO RESET RESTRICTION INDICATOR.

Figure 2-12. Air cleaner service

d. Fuel System. Take all precautions necessary to keep the dust and sand out of the fuel system. Clean the area around the tank filler and the spout of the dispensing equipment before adding fuel. Inspect and clean the fuel filter frequently.

e. Lubrication. When operating in dusty or sandy areas the oil filter must be cleaned and the element replaced more frequently. Clean the lubrication points before applying any lubricants. Lubricate the engine in accordance with LO 5- 2805-25 9-12.

2-8. Operation Under Rainy Or Humid Conditions

a. General. Take special precautions to keep the equipment dry. If possible, provide a shelter for the equipment. If a sheltered area is not available, cover the equipment with canvas when not in use. Remove canvas during dry periods.

b. Lubrication. Lubricate the engine in accordance with LO 5-2805-259-12.

c. Fuel System. Keep the fuel tank as full as possible to prevent condensation. Drain and service the fuel filter more frequently than under normal conditions.

d. Electrical System. Humid conditions can cause corrosion and deterioration of electrical components. Keep wiring as clean and dry as possible.

2-9. Operation In Salt Water Areas

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

b. Lubrication. Exercise care to keep salt water from entering the engine when adding or changing oil. Lubricate more frequently than specified in the current lubrication order, refer to DA-
PAM 310-4 for current lisintg.

c. Preservation. Paint all exposed non-polished surfaces. Coat exposed parts of polished metal with standard issue rustproofing material if available, or cover parts with light coat of grease.

2-10. Operation At High Altitudes

The generator is rated at 10kw up to 5, 000 ft. (feet) (150000cm) altitude and 8kw at 8, 000 ft. (240000 cm) altitude. To calculate specific generator set output above 8, 000 ft (240000 cm), use the following formula:

$$6\% \times \frac{\text{actual altitude - 5, 000}}{1000} \text{ (150000 cm)} \times 10 \text{ kw rating} = \text{derating factor.}$$

Example: Solution for 10, 000 ft (300000 cm):

$$\frac{6\text{'\%, x 10, 000 - 5, 000 x 10 kw}}{1, 000} = \text{derating factor}$$

0.06 x 5 x 10 kw 3.0 derating factor
10 kw - 3.0 kw 7 kw (specific output at 10.000 ft. (300000 cm) altitude'

CHAPTER 3

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. CONSUMABLE OPERATING AND MAINTENANCE SUPPLIES

3-1. General

This section contains a listing of the consumable maintenance and operating supplies required to operate and maintain the generator set.

3-2. CONSUMABLE OPERATING AND MAINTENANCE SUPPLIES

Refer to Table 3-1 for a listing of the consumable operating and maintenance supplies.

Table 3-1. Consumable Operating and Maintenance Supplies

(1) Component Application	(2) National Stock No.	(3) Description	(4) Quantity Required F/initial Operation	(5) Quantity Required F/8 hours Operation	(6) Notes
CRANKCASE		OIL, LUBRICATING: 5 gallon (19 liters) pails as follows:			(1) Includes quantity of oil to fill engine oil system as follows: 4 qt (3.8 liters)- Crankcase 1/2 qt (0.48) liters) Oil filter
	9150-00-265-9435 (2)	OE 30 or	4-1/2 qt (4.28 liter)	(3)	
	9150-00-231-6653 (2)	9250	4-1/2 qt	(3)	
	9150-00-265-9428 (2)	EO 10 or	4-1/2 qt	(3)	(2) See C9100-IL for additional data and requisitioning procedures.
	9150-00-231-9037 (2)	9110	4-1/2 qt (4.28 liters)	(3)	(3) See current LO for grade application and replenishment intervals.
	9150-00-242-7603 (2)	OES	4-1/2 qt (4.28 liters)	(3)	(4) Tank capacity.
	9150-00-152-4118 (2)	OE/HDO 15W40		(3)	
TANK, FUEL		FUEL, GASOLINE: Bulk, as follows:			(5) Average fuel consumption is 2.25 gal. (8.55 liters) per hours of continuous operation.
	9130-00-160-1818	Automotive, Combat 91A	5 gal. (19 liters) (4)	18 gal. (68.4 liters) (5)	

Section II. LUBRICATION INSTRUCTIONS

3-3. General

a. This section contains instructions which are supplemental to and not specifically covered in the lubrication order.

b. For current lubrication order listings, refer to LO 5-2805-259-12.

c. Care of Lubricants. Keep lubricants in sealed containers and store in a clean dry place, away from external heat. Allow no dust, dirt, or other foreign materials to mix with the lubricants.

NOTE

Lubrication equipment must be kept clean and ready for use.

d. Instructions. Proper lubrication is required to maintain longer engine life. Review lubrication order carefully and adhere to the pertinent information and specifications required. Apply lubricant specified on the lubrication order.

e. Cleaning. Before lubricating the equipment, wipe all lubrication points clean of dirt and grease with a clean shop towel or equivalent.

NOTE

Keep all external parts not requiring lubrication clean from lubricants. After every external lubrication operation, remove any excess lubricant from the application points and wipe away the spilled lubricant. This prevents accumulation of foreign matter, dust, and dirt which would eventually clog or stop up the lubrication fittings or openings.

f. OES Oil.

(1) Inspect the crankcase oil level frequently as oil consumption can be expected to increase.

(2) The oil may require more frequent changing than usual because contamination, with sludge formations and dilution, will increase when the engine is operated under cold weather conditions.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-4. General

To insure 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. The necessary preventive maintenance services will be performed before operation. Defects discovered during operation will be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation that would damage the equipment if operation were continued.

All deficiencies and shortcomings will be recorded, together with the corrective action taken on the applicable form, at the earliest possible opportunity. Air Force users shall refer to the applicable inspection manuals and work card sets in the T.O. 35C2-3 series for periodic requirements and table 3-2 for detailed procedures.

3-5. Operator's Preventive Maintenance Checks and Services

Table 32 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 5280525914 for engine preventive maintenance, checks and services. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

ALL DATA ON PAGE 3-2.1/3-2.2 deleted.

Table 3-2. Operator/Crew Preventive Maintenance Checks and Services

B-Before Operation **A-After Operation**
C-During Operation

Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not Ready/Available If:
	B	D	A			
1	•		•	Generator Set	a. Visually inspect the generator set for fuel and oil leaks.	Class III oil or Class I fuel leak is detected.
	•				b. Check for proper ground connection.	Generator is not properly grounded.
	•				c. Inspect for loose, damaged, or missing parts and unusual wear or deterioration	Any loose, damaged, or missing parts; (i.e.,spark plugs, manifolds, starter, or other items).
	•				d. Insure load terminal wires are tightened	Loose load terminal wires.
	•				e. Check battery terminals for tightness.	Unservicable or loose battery terminals.
	•				f. Visually inspect all controls for serviceability before starting generator. NOTE Start generator after visual PMCS; insure generator operates as stated in paragraph 2-1.	Loose wire connections or broken controls.
2	•			Oil Gage Rod	Check oil level. Add oil as necessary.	
3				Controls and Instruments	Check for proper operation.	
		•		a. Current indicator meter	Indicates percent of applied load, not to exceed 100%. Rotate ammeter phase selector switch to monitor load applied to each phase.	
		•		b. Battery charging ammeter	Indicates on + side of scale during normal operation	Ammeter indicates a discharge.
		•		c. Oil pressure gage	Normal reading is 20 to 60 psi (1.406 to 4.218 Kg/sq cm).	Oil pressure below 20 psi.
		•		d. AC Voltmeter	Indicates output voltage. Adjust for desired voltage. Change voltage selector switch to monitor the voltage for each phase combination.	Voltage cannot be adjusted.
		•		e. Frequency meter	Indicates generator frequency. Normal Readings: MEP-0 1 8A, 60 HZ (red line) MEP-023A, 400 HZ (red line)	Meter does not indicate the proper frequency.
	•			f. Inside instrument panel	Check for loose wiring, corroded wiring and loose electrical components.	Faulty wiring or improper mounting of electrical components.

Table 3-2. Operator/Crew Preventive Maintenance Checks and Services

B-Before Operation **A-After Operation**
C-During Operation

Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not Ready/Available If:
	B	D	A			
4				Fuel Can	**WARNING** Do not fill fuel can while smoking or in vicinity of an open flame, provide a metal-to-metal contact between the container and the fuel can to prevent a spark from being generated as fuel flows over metallic surfaces. Failure to observe this may result in death to personnel. Do not fill the fuel can while the engine is running. Gasoline spilled on a hot engine may ignite. Add fuel as required to maintain operation. Do not overfill. Fill can after operation to minimize condensation in fuel can, and ready unit for next day's operation. Ensure generator set has cooled off before installing canvas cover. **NOTE** See TM 5-2805-259-14 for engine preventive maintenance checks and services and LO-2805-259-12.	

Section IV. TROUBLESHOOTING

3-6. General

a. This section contains troubleshooting information for locating and correcting operating troubles which may develop in the generator set. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or can not be corrected by listed corrective actions, notify your supervisor.

3-7. Operator's Troubleshooting

NOTE

Before you use Table 3-4, be sure you have per 4 formed all applicable operating checks.

Refer to Table 3-4 for operator's troubleshooting procedures.

Table 3-4. Operational Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. GENERATOR IS NOISY
Inspect the generator for loose mounting bolts.
Tighten the generator mounting bolts, figure 3-1.
1A. ENGINE CRANKS; WILL NOT START
Low charged batteries.
Use slave receptacle J4 for extra cranking power.

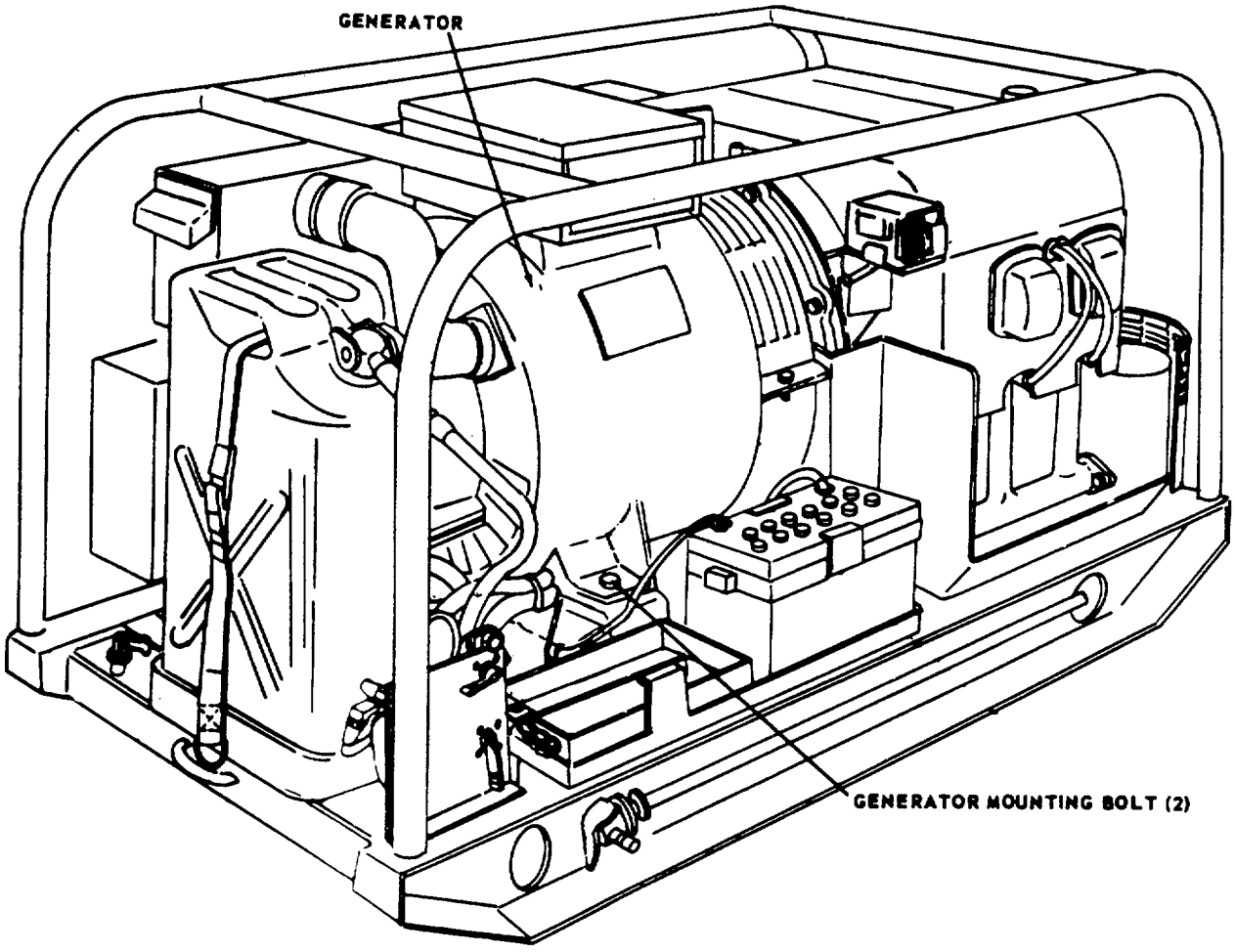


Figure 3-1. Generator mounting.

Table 3-4. Operational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. GENERATOR OVERHEATS OR GENERATOR VOLTAGE FLUCTUATES

Step 1. Refer to figure 3-2 and check gage readings to see if generator is overloaded.

Reduce the load by removing some of the equipment being used (switch circuit breaker to off and shut engine off before loosening the nut on the studs (fig. 3-3) to disconnect the lines). If the generator is not overloaded, go on to step 2.

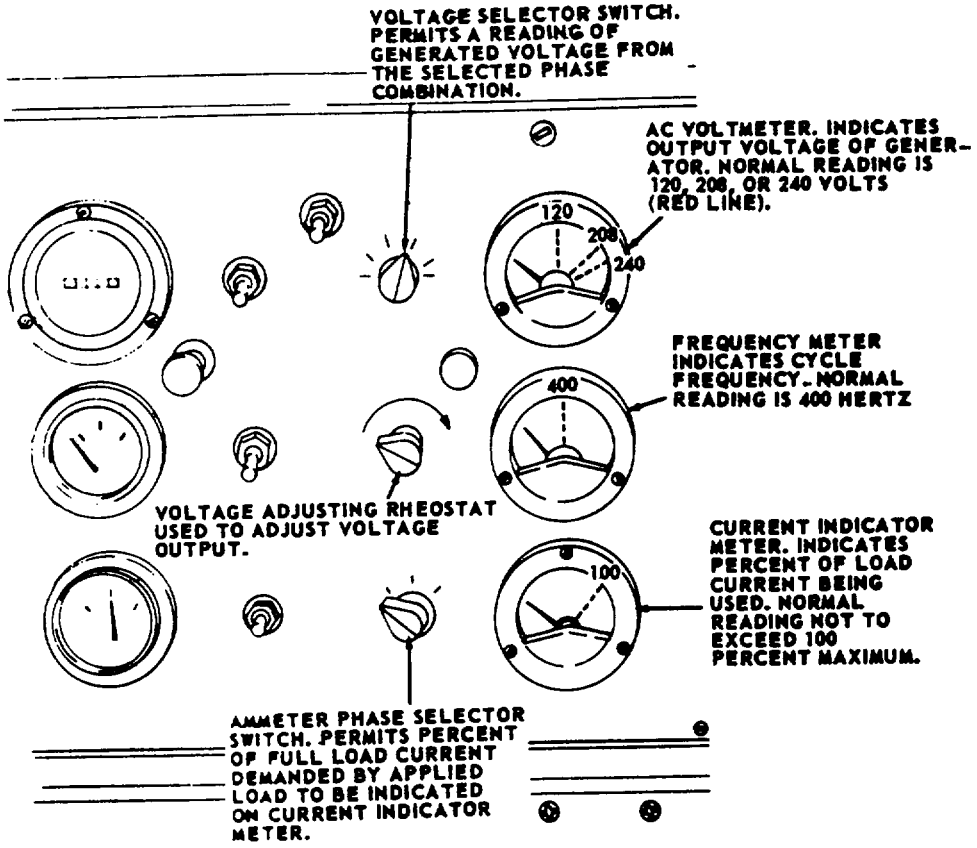


Figure 3-2. Voltage readings.

Table 34. Operational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Refer to figure 3-4 and check ventilating system for debris.

Clean the ventilating system with dry compressed air.

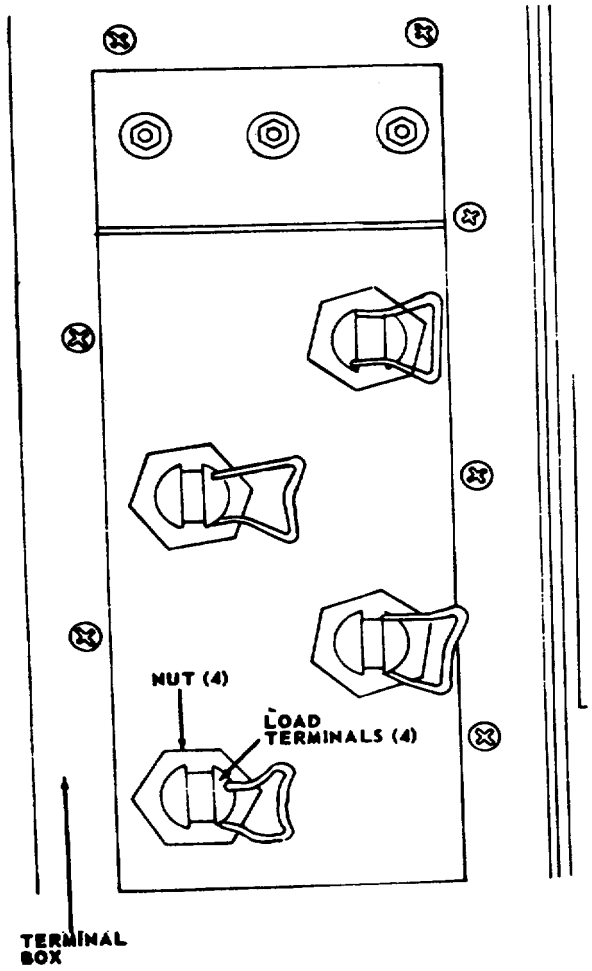


Figure 3-3. Load connections.

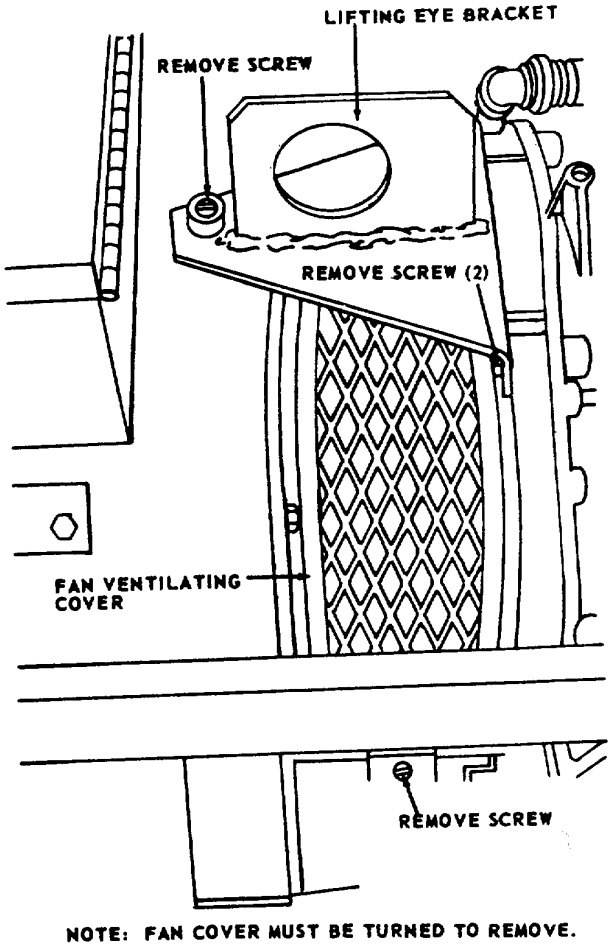


Figure 3-4. Ventilating system.

Table 3-4. Operational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE

Check for low residual field magnetism by pressing the field flash switch (fig. 3-5).

Lower the front panel of the control cabinet and momentarily press the field flash switch, figure 3-5.

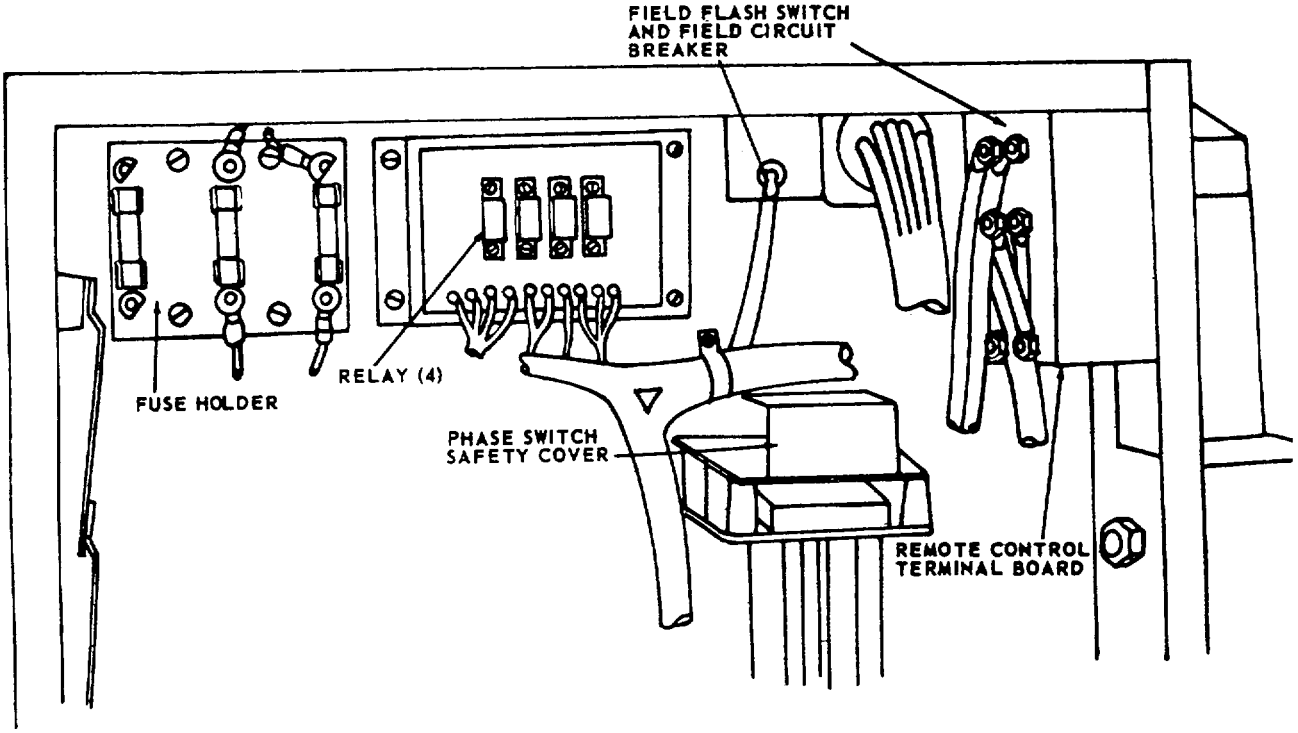


Figure 3-5. Inner control box.

4. GENERATOR FAILS TO SUPPLY POWER

Step 1. Refer to figure 3-3 and grab the load cables and see if they are loose.

If cables are loose, tighten them. If cables are not loose, go on to step 2.

Step 2. Refer to figure 3-2 and check gage readings to see if generator is overloaded.

Reduce the load by removing some of the equipment being used (switch circuit breaker to off and shut engine off before loosening the nut on the studs, figure 3-3, to disconnect the lines).

Table 3-4. Operational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. FREQUENCY FLUCTUATES

Inspect the generator for loose mounting bolts.

Tighten the generator mounting bolts, figure 3-1.

6. GENERATOR VOLTAGE DROPS WHEN LOAD IS APPLIED OR INCREASED

Refer to figure 3-2 and check gage readings to see if generator is overloaded.

Reduce the load by removing some of the equipment being used (switch circuit breaker to off and I shut engine off before loosening the nut on the studs, figure 3-3, to disconnect the lines).

7. VOLTMETER INDICATION TOO HIGH OR TOO LOW

Check to see if the supplied load is properly balanced across phases. Refer to figure 3-2.

Distribute the load, refer to figure 3-3.

8. VOLTMETER FAILS TO REGISTER

Check to see if any loose wire connections exist. Refer to figure 3-6 and 3-7.

Tighten connections.

9. FREQUENCY METER FAILS TO REGISTER

Check to see if any loose wire connections exist. Refer to figure 3-6 and 3-7.

Tighten connections.

Table 3-4. Operational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

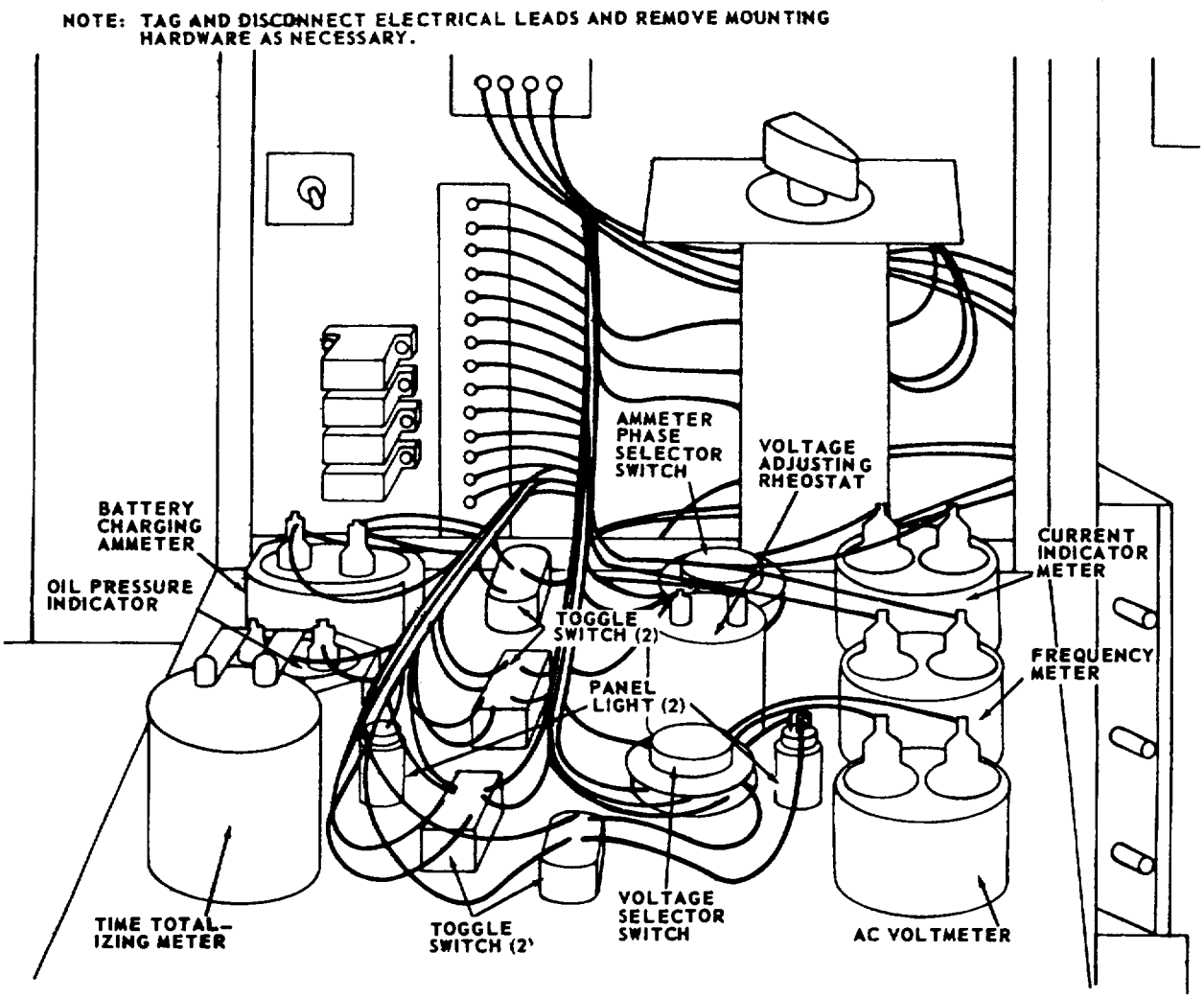
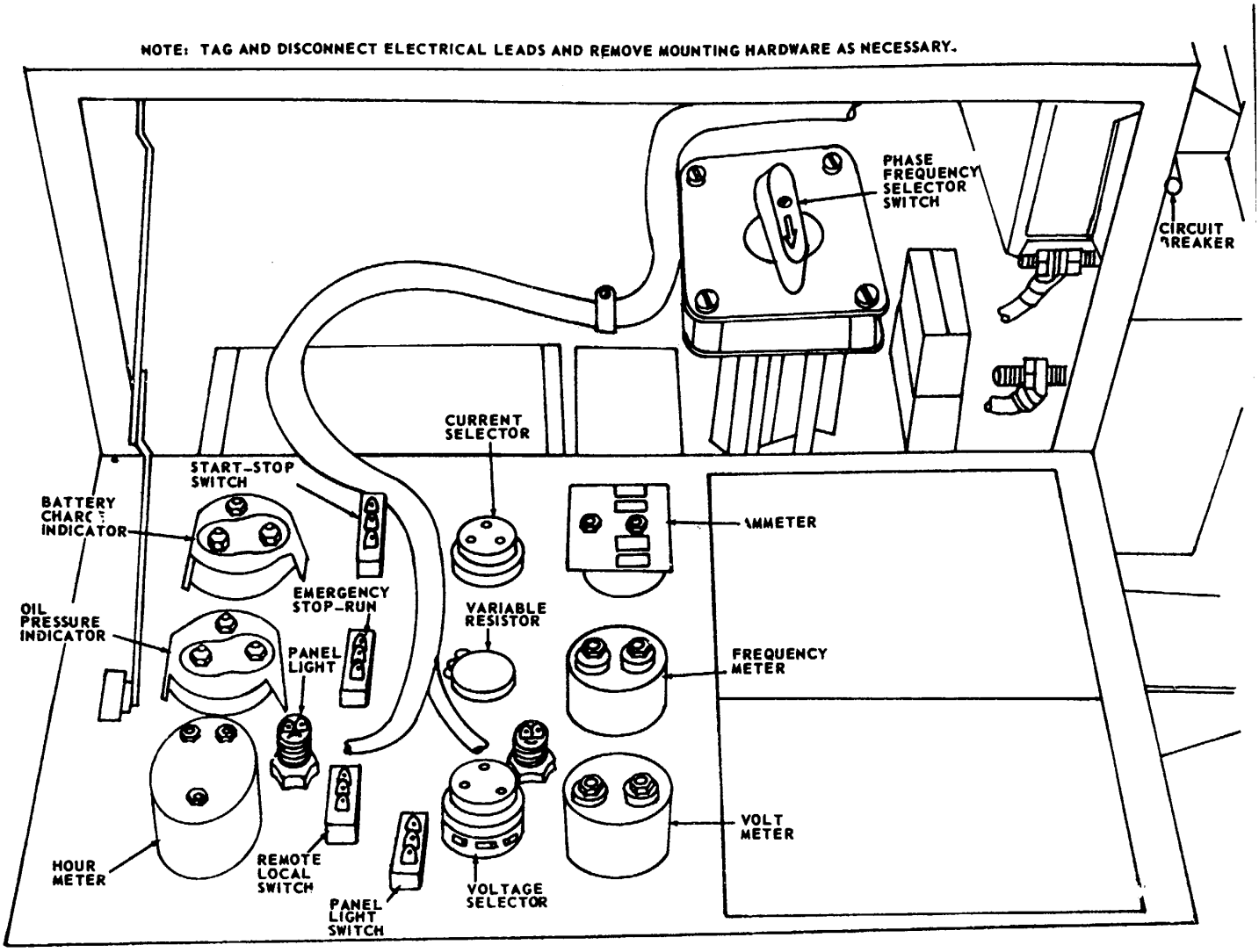


Figure 3-6. Controls and instruments (Model MEP-023A).

Table 3-4. Operational Troubleshooting (Cont'd)



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Figure 3-7. Control and instruments (Model M.EP-OIBA).

Section V. OPERATOR/CREW MAINTENANCE INSTRUCTIONS

The following sections of this chapter will provide repair instructions for all items which are the responsibility of operator/crew maintenance as allocated on the Maintenance Allocation Chart.

Section VI. ENGINE ASSEMBLY

3-8. General

This section contains operator/crew maintenance instructions on the engine accessories that are not described in TM 5-2805-259-14 or TO 38G289-41. For maintenance instructions on the other components of the Military Standard engine, refer to TM 5-2805-259-14 or TO 38G2-89-41.

3-9. Muffler, Pipes and Oil Drain

a. Inspect items for cracks, breaks, holes and wear.

b. If damage is found, report to organizational maintenance for replacement.

c. When a spark arrester is required, the installation procedure will be on the instruction sheet furnished with the spark arrester kit.

NOTE

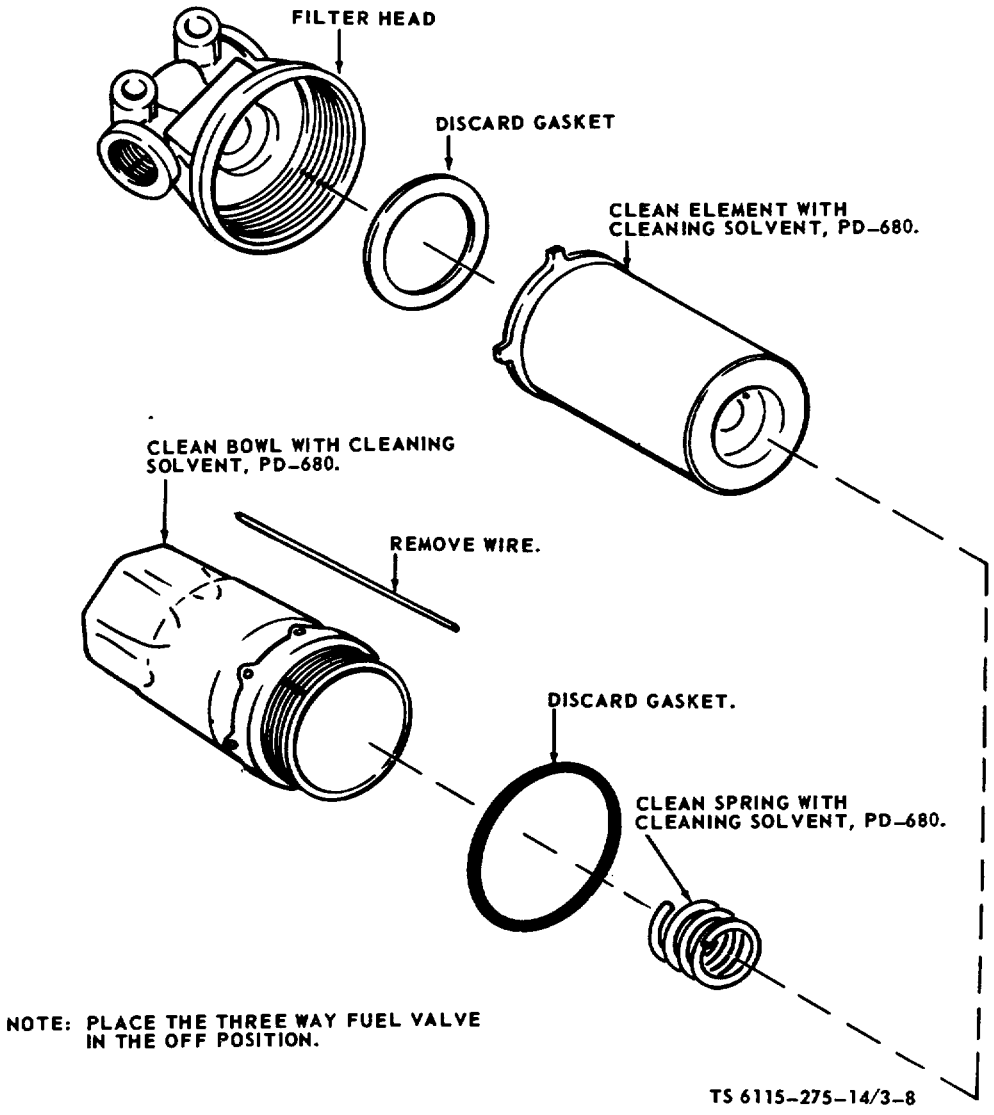
The United States Forest Service requires that any engine driven equipment operating within National Forests or parks be provided with spark arresters for the avoidance of Forest Fires.

Section VII. FUEL SYSTEM

3-10. Fuel Can Components and Fuel Filter

a. Inspection. Inspect the adapter, can, lines, valves and filter for cracks, breaks, and wear. Report a deficiency to organizational maintenance.

b. Service. Refer to figure 3-8 or 3-9 and service the fuel filter.



NOTE

When supply of filter elements is depleted, fuel filter shown on Figure 3-9 should be used on Model MEP-018A also.

Figure 3-8. Fuel filter service instructions, (Model MEP-018A).

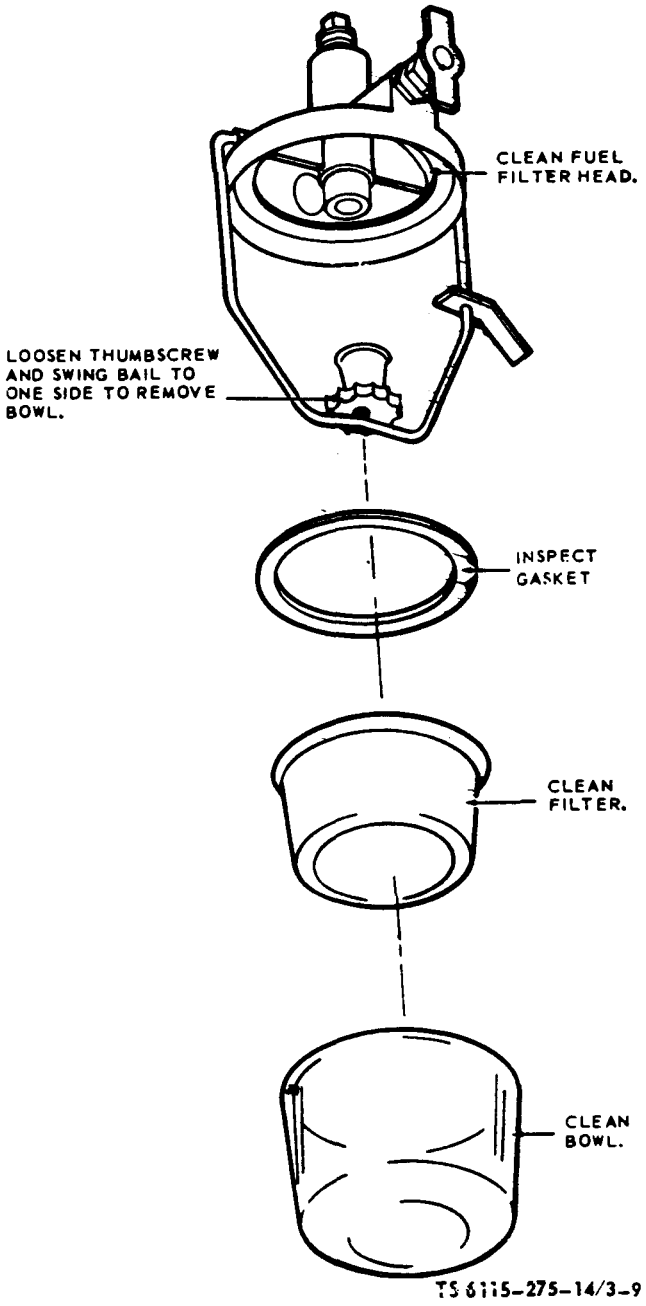


Figure 3-9. Fuel filter service, (Model MEP-023A)

Section VIII. BATTERY AND CABLES

3-11. Battery and Cables

a. Inspection. Inspect items for cracks. Breaks, and wear. Report a deficiency to organizational maintenance.

b. Service. Service the battery as follows:

WARNING

Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas. Failure to observe this warning may result in serious injury to personnel.

(1) Check the electrolyte for proper level (fig 3-10) and see that the batteries are properly charged (TM 9-6140-200-15). The danger of freezing depends on the specific gravity of the electrolyte.

CAUTION

Water added to a battery will freeze unless it is mixed by charging. Do not add water unless the engine is to be operated immediately afterwards for at least 1 hour.

(2) Make sure the battery cap vents are not clogged.

(3) See that the battery terminal clamps are tight, clean, and lightly coated with a general purpose grease to retard corrosion.

(4) Make sure the Battery Terminal Covers, NSN 5940-00-738-6272, are installed over the battery terminals before installing cables.

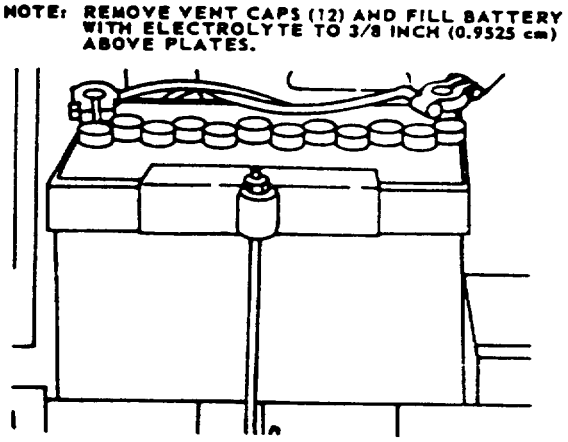


Figure 3-10. Battery servicing.

NOTE

The 6TN and 6TL batteries can be mixed or matched. However, maintenance-free batteries cannot be mixed or matched with military batteries. The 6TN and or the 6TL batteries will perform properly in hot weather as long as electrolyte levels are carefully monitored. If the electrolyte expands and causes the level to rise, some fluid must be removed. If the level becomes too low due to evaporation, distilled water may be used to obtain proper level. A good grade of drinking water (excluding mineral waters) may be used if distilled water is not available.

Electrolyte (NSNs 6810-00-249-9354 and 6810-00-843-1640) have a specific gravity of 1.280 and should be used in these batteries. Do NOT adjust the electrolyte in wet batteries to a lower specific gravity.

c. Optional Battery Installation. See Figure 3-11. Two 12 volt batteries can be installed for optional use in cold climate where hard starting is prevalent.

Section IX. ELECTRICAL PANELS AND CONTROLS

a. General. This section contains operator/crew maintenance instructions for the electrical components.

b. Inspection. Inspect the voltage regulator and control box components for cracks, breaks, defective wiring, and wear. For testing and replacement of parts, refer to organization or field maintenance as allocated by the Maintenance Allocation Chart (MAC).

Section X. GENERATOR ASSEMBLY.

3-12. Generator, Air Baffle, Bearing Bracket, Bearing and Bracket Cover

a. Inspection. Inspect parts for cracks, breaks, and wear. Report to organizational or field maintenance for replacement or repair. Refer to the Maintenance Allocation chart.

b. Service.

NOTE

The generator has sealed bearings and requires no lubrication.

(1) Check the generator for obvious damage or missing parts.

(2) See that all nuts and bolts are in place and secure.

Section XI. FRAME ASSEMBLY

3-13. Skid Base, Lifting Bracket, and Grounding Stud

Inspect part for cracks, breaks, broken welds, and wear.

Report damage to organizational or field maintenance.

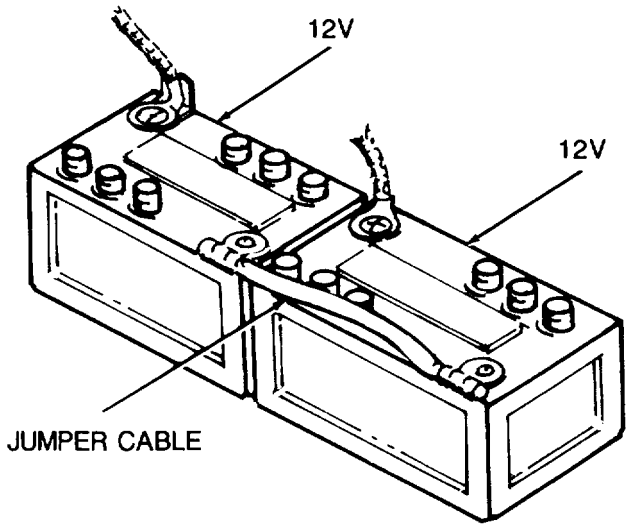


Figure 3-11. Optional Two 12 Volt Battery Installation.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

4-1. Inspecting and Servicing the Equipment

NOTE

Make sure equipment is completely deprocessed before servicing. Make sure preservatives have been removed from the crankcase and fuel filter.

a. Inspect the generator set thoroughly for bent, cracked, or missing parts. See that all nuts and bolts are in place and secure.

b. Inspect visible wiring for loose connections and the wiring insulation for cuts, fraying and other damage.

c. Inspect the unit to see that all protective material and devices have been removed.

d. Lubricate the engine in accordance with curat lubrication order. Refer to(LO 5-2805-259-12).

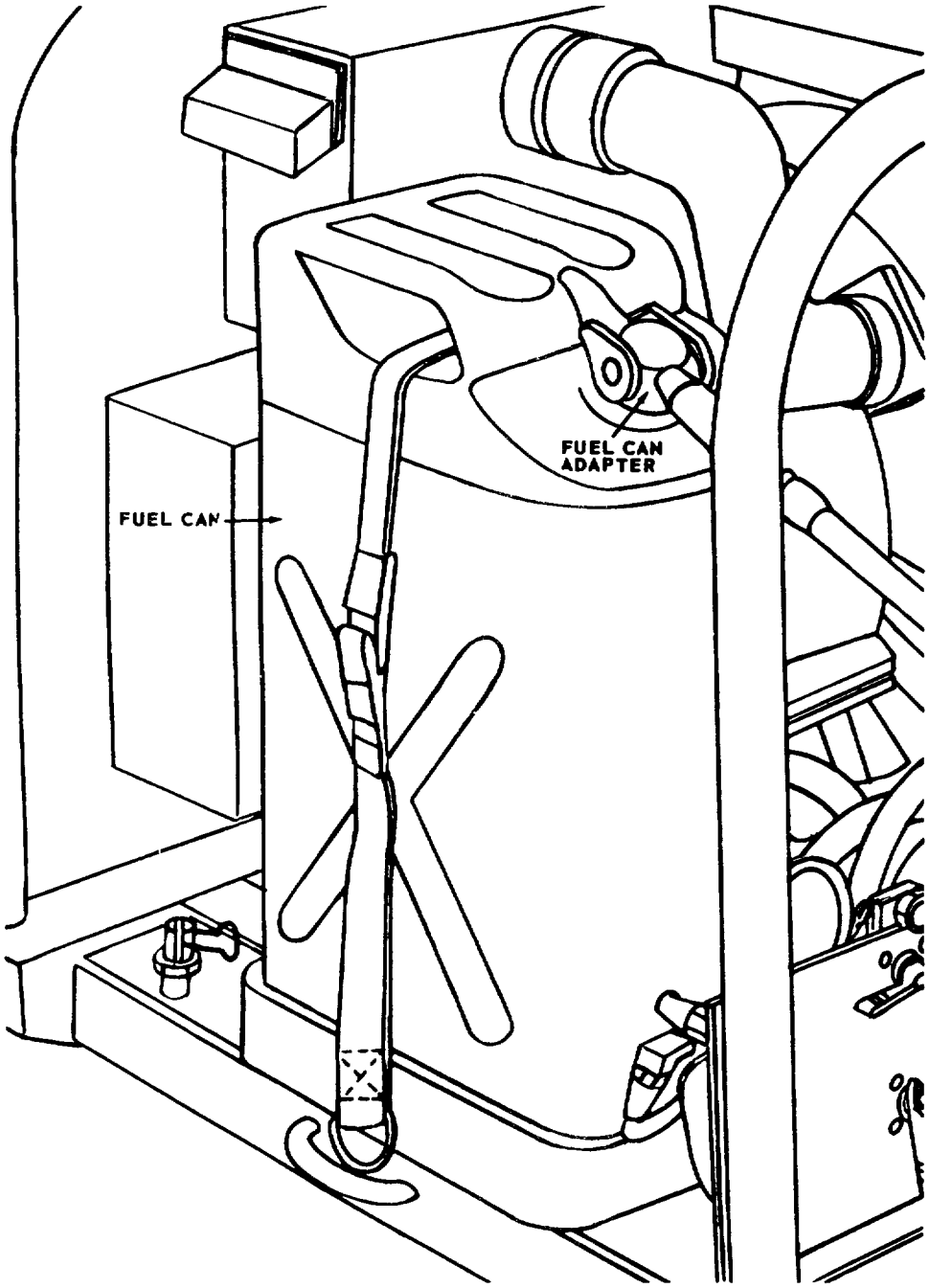
e. Perform the preventive maintenance checks and services as listed in table 4-2.

WARNING

When filling the fuel tank, do not smoke or use an open flame in the vicinity. Always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as fuel flows over metallic surfaces. Failure to observe this warning may result in death to personnel.

Do not fill the fuel tank while the engine is running. Gasoline spilled on a hot engine may explode.

f. Remove the fuel can adapter (fig. 4-1) and fill the fuel can.



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Figure 4-1. Fuel can adapter, removal.

4-2. Installation

a. Installation of Separately Packed Components.

WARNING

When servicing the battery, do not smoke or use an open flame. Batteries generate hydrogen, a highly explosive gas.

The battery electrolyte is shipped in a separate container. When the unit is ready for operation, unpack the electrolyte, remove vent caps and fill each cell of the battery with electrolyte to 3/8 inch (0.9525 cm) above the plates. Install vent caps.

(1) General. The battery and the electrolyte are shipped separately.

(2) Battery. Refer to figure 4-2 and install the battery.

WARNING

Before installing battery cables, Battery Terminal covers NSN 5940-00-738-6272, must be installed over the battery terminals. Covers are not shown in figure 4-2 for clarity sake.

(3) Electrolyte. Refer to figure 4-2 and install the electrolyte in the battery.

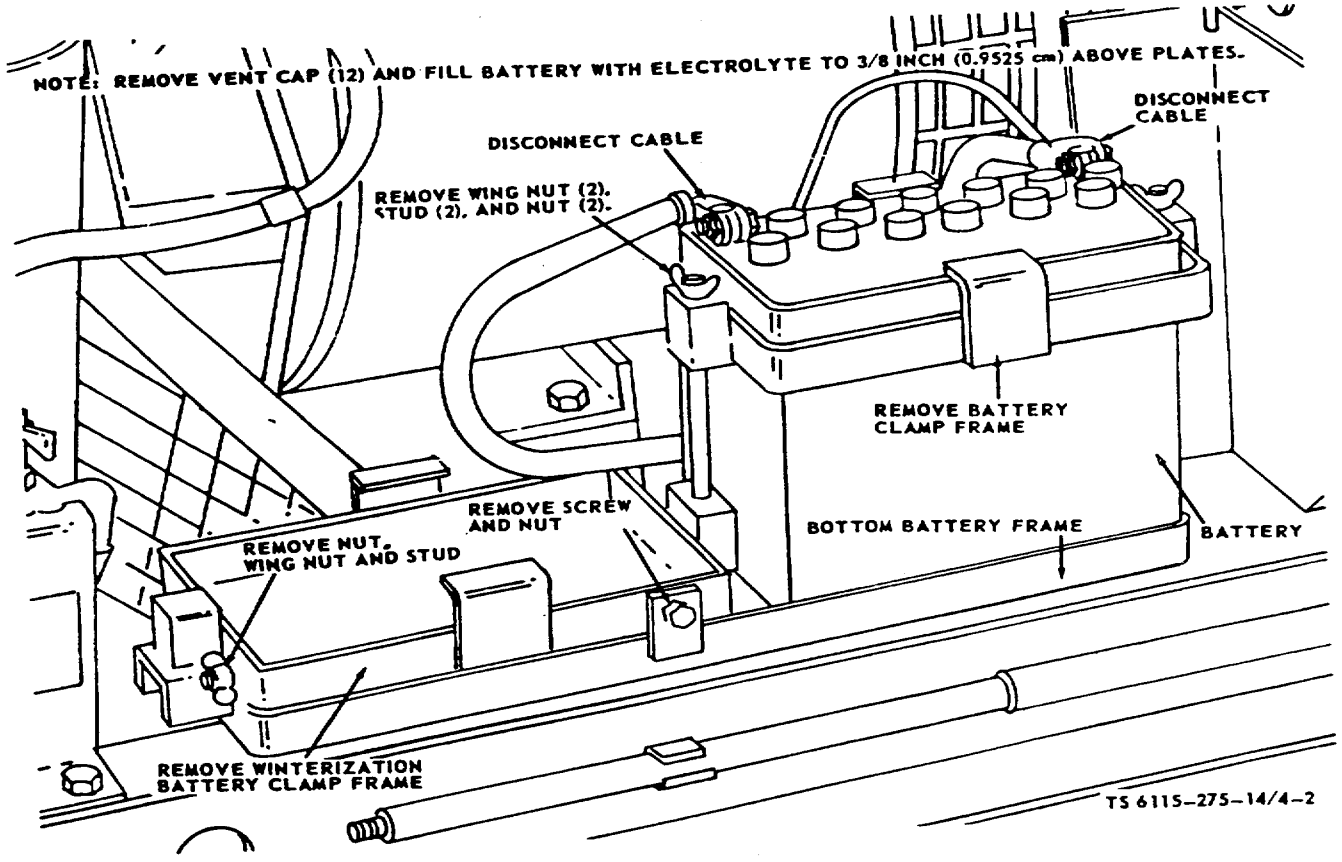


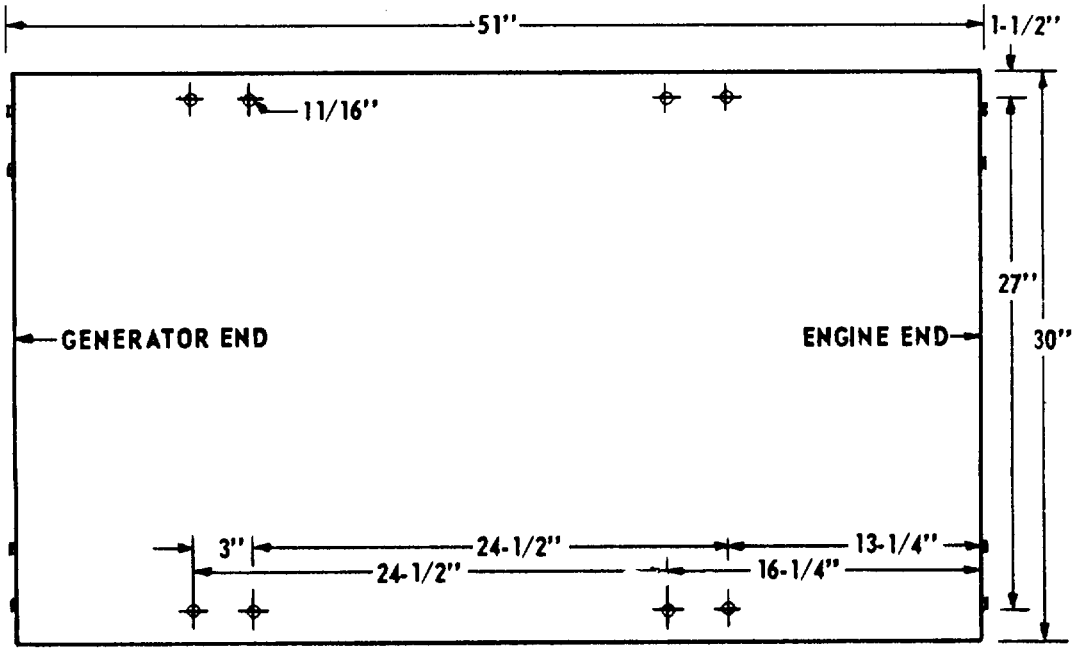
Figure 4-2. Battery servicing, removal and installation.

b. Setting Up Instructions.

(1) General. The generator set may be installed either indoors or outdoors, with temporary or permanent mountings. Locate the unit as near as possible to the load. Make sure the unit is level as possible. In no case should the generator set be operated at an angle of more than 15°from level.

(2) Installation. When preparing for a permanent installation, construct the base as outlined by figure 4 :3 Select a site where there will be sufficient space on all sides for servicing and operation of the unit For temporary installation, move the generator sets as close to the worksite as practical. Avoid, if possible, dusty or sandy locations. Use boards or other material for a base in areas where the ground is soft.

(3) Indoor Installation; Make sure the floor of the enclosure is of sufficient strength to support the weight of the unit. If the installation is to be permanent, the unit may be installed by securing it to the floor. Provide at least 4 ft (120 cm) of space around the unit for accessibility and adequate ventilation. Install a flexible exhaust line to carry the exhaust gases to the outside. Use as few bends as possible and make sure all connections are gas tight. Wrap the exhaust line with asbestos at all points where there is likelihood of personnel touching the line. Connect the unit to a suitable ground as described in (51 below.



1 1/16 in 1.75 cm
1½ in 3.81
3 in 7.62 cm
13¼ in 33.66 cm
16¼ in 41.28 cm
24½ in 62.23 cm
2? in 68.55 cm
30 in 76.20 cm
51 in 129.54 cm

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Figure 4-3. Base plan.

(4) Outdoor Installation.

(a) Whenever possible, locate the generator set in an area free of dust and moisture. Avoid soft or muddy ground. If it is necessary to locate the unit on soft or muddy ground, arrange a foundation of planks or logs to prevent the unit from settling or sinking. The generator set should be operated from a position as level as possible at all times.

(b) Requirements for providing adequate space for operation, maintenance and ventilation (cooling) are contained in paragraphs 1., 2., and 3. below. For the type of construction and fortification necessary for protection of personnel and equipment, refer to Field Manual 5-13, The Engineer Soldiers' Handbook, 5-15 Field Fortification and 5-34 Engineer Field Data.

1. A minimum clearance of four feet (120 cm) from all sides of the unit to the wall should be maintained whether the inclosure is roofed or unroofed, dug in or sandbagged.

2. The height of the sandbagged or dug in inclosure should be a minimum of four feet (120 cm) above the top of the generator.

3. For roofed inclosure, sandbagged or dug in, a minimum clearance of four feet (120 cm) should be maintained between the top of the generator and the roof.

WARNING

Do not operate the generator set until the ground stud terminal has been connected to a suitable ground. Electrical faults in the generator set, load lines, or load equipment can cause death by electrocution from contact with an ungrounded system.

NOTE

Sandbagging may be used to support overhead cover.

(5) Grounding. The generator set must be grounded prior to operation. The ground can be, in order of perference, an underground metallic water piping system, a driven rod, or a buried metal plate. A ground rod must have a mimimum diameter of 5/ 8 inch (1.59 cm) if solid or 3/4 inch (1.91 cm) if pipe, and must be driven to a mimimum depth of 8 feet (240 cm). A ground plate must have a mimimum area of 9 square feet (0.81 M) and be buried at a mimimum depth of 4 feet (120 cm). The ground lead must be a number 6AWG (American Wire Gage) copper wire and be bolted or clamped to the rod, plate, or piping system. Connect the other end of the ground lead to the ground stud terminal.

(6) Leveling. Set up the unit as level as possible. Keep the unit as level as possible during operation.

WARNING

Do not install or change the load cables while the generator set is operating. The voltage generated by this equipment can cause death. When installing load terminals, care should be taken to avoid shorts between terminals. Arrange leads to avoid a short occurring if the cable is bumped or pulled. Tie the leads in position with the insulation material if necessary.

(7) Load Connections.

(a) Loosen the nuts on the studs on the load terminals, figure 4-4.

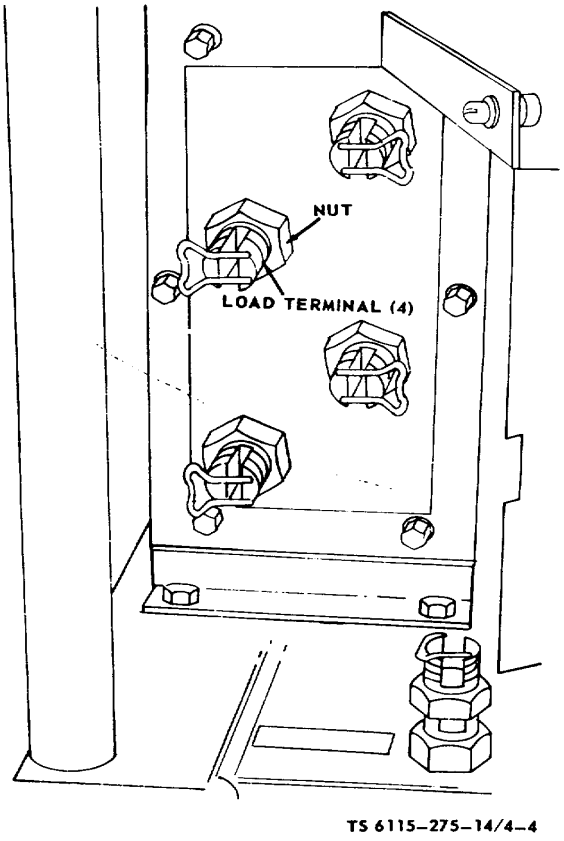


Figure 4-4. Load connections.

(b) Insert the stripped end of the load cable into the terminal stud and tighten the nut.

(8) Auxiliary Fuel Hose Connection.

(a) Remove fuel can adapter from fuel can and install fuel can cap on fuel can, figure 4-5.

(b) Remove auxiliary fuel drum adapter from its stored position. Install auxiliary fuel drum adapter to fuel can adapter.

(c) Remove fuel drum adapter head (Serial Number Range MA69-0001 through MA68-2987, Model MEP-018A) from tool box. Remove pipe extension from its mounting on base. Assemble the head and pipe extension and place in drum. Connect the auxiliary fuel to the connector on the adapter and remove protective cap from fuel valve assembly. Connect the other end of the auxiliary fuel hose.

(d) Install adapter assembly in fuel drum.

(e) Remove dust cap from fitting on fuel selector valve (fig. 4-6).

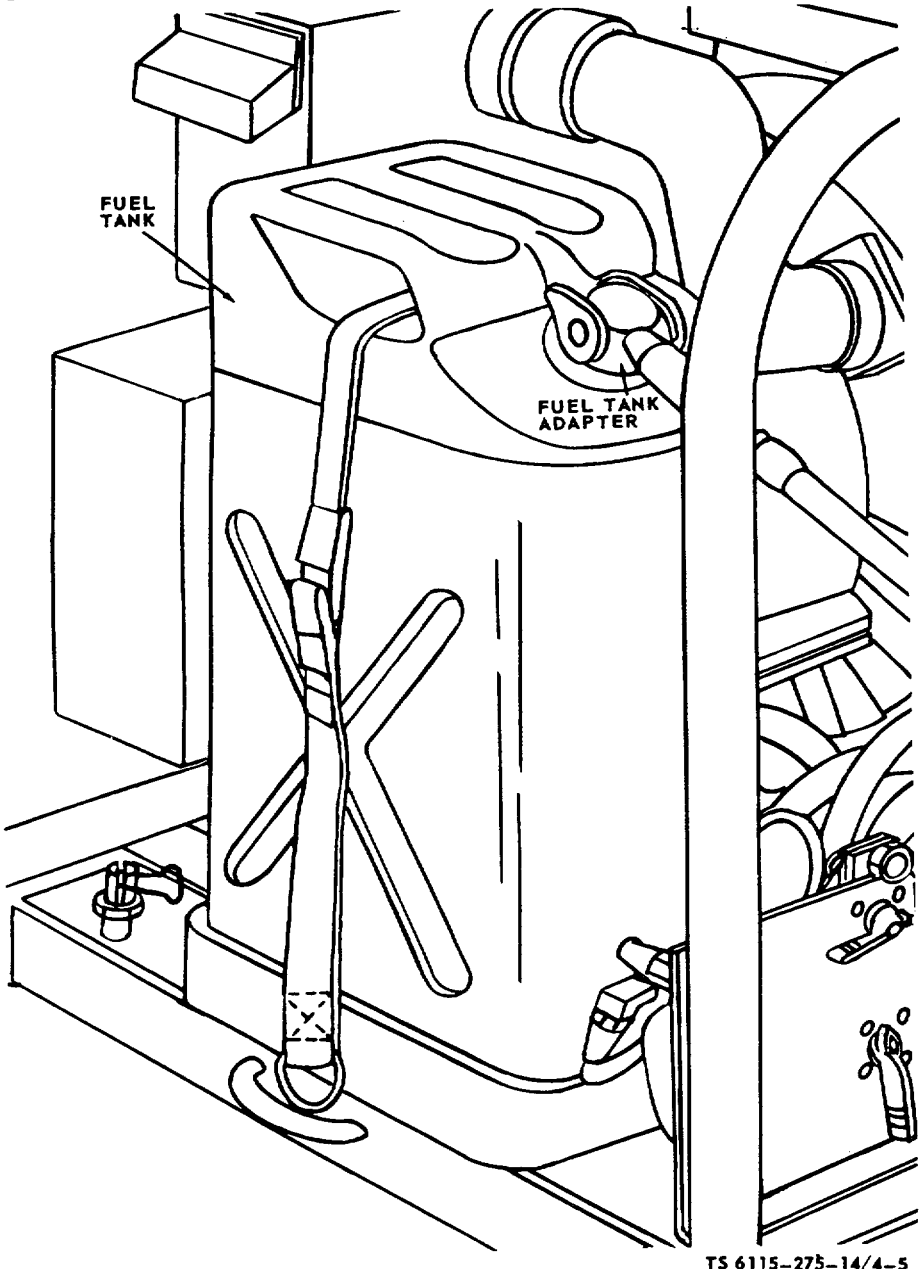


Figure 4-5. Fuel can adapter.

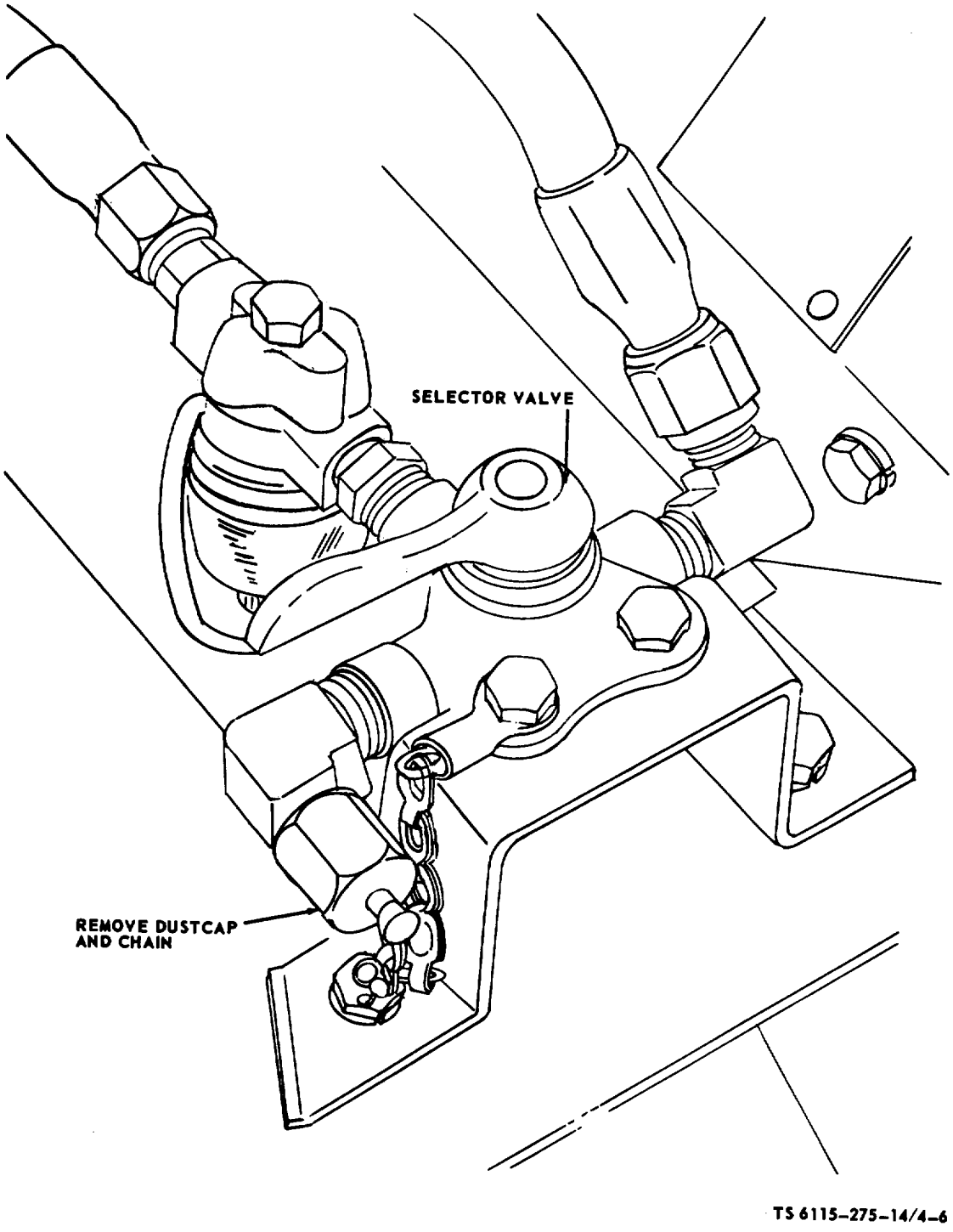


Figure 4-6. Selector valve dust cap.

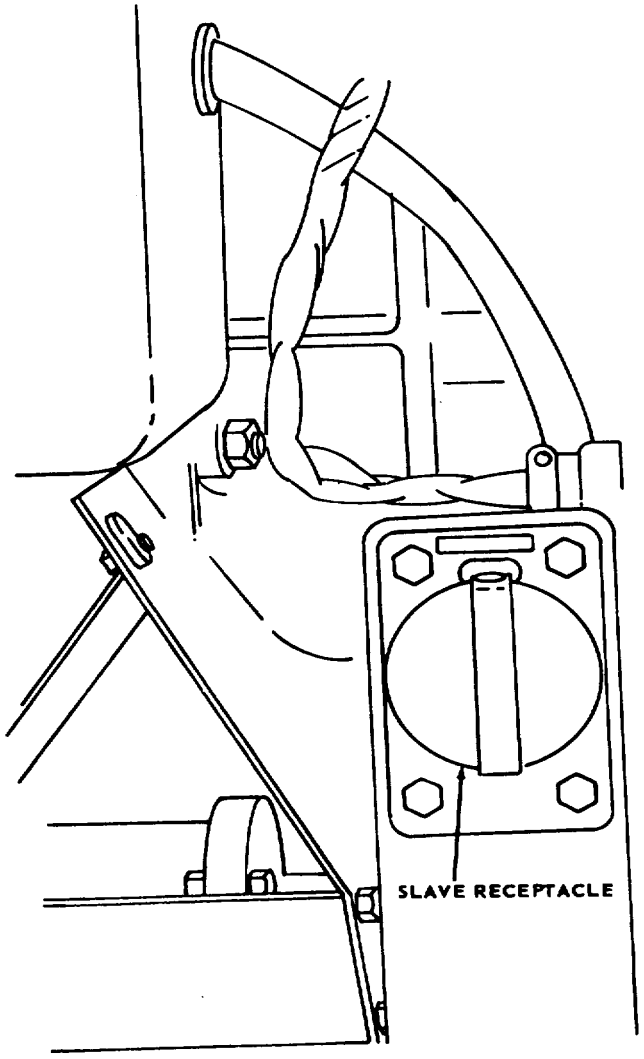
(f) Install one end of auxiliary fuel hose to the fitting on adapter assembly and the other end to the fitting on the fuel selector valve.

(9) External Power Source. When an auxiliary power source is needed to start the engine plug battery cable (with slave plug attached) into slave receptacle (fig. 4-7). Attach opposite end of battery cable to auxiliary battery or other adequate 24/28 volt direct current source.

c. Procedures for Constructing Revetment.

(1) 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 of the construction of a revetment to protect the equipment should it become necessary.

(2) Dimensions. The minimum allowable inside dimensions are shown in figures 4-8, 4-9, and 4-10. These mimimum dimensions are based soley on considerations of engine cooling and ventilation, allowing a mimimum practicable amount of space for maintenance.



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Figure 4-7. Slave receptacle.

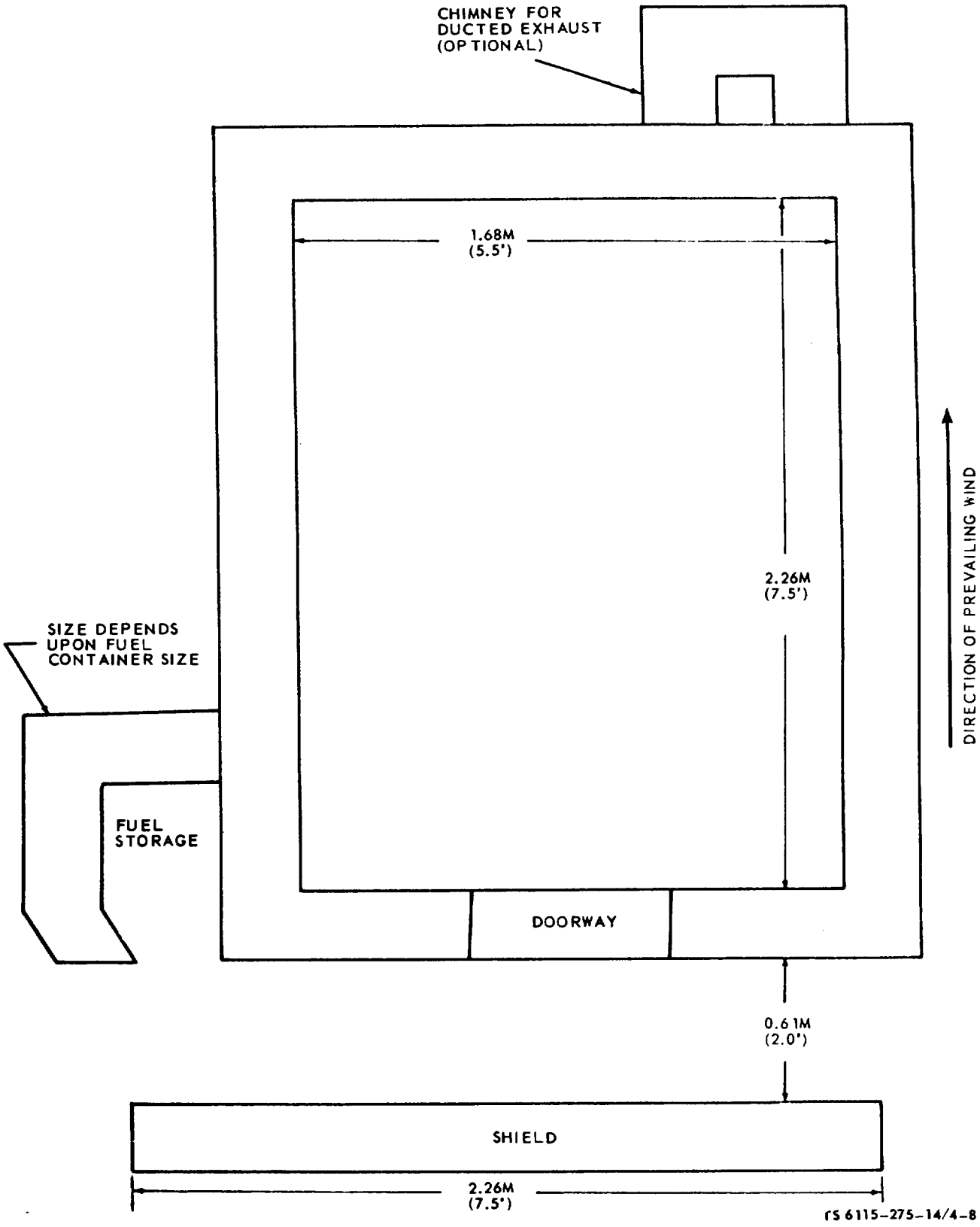
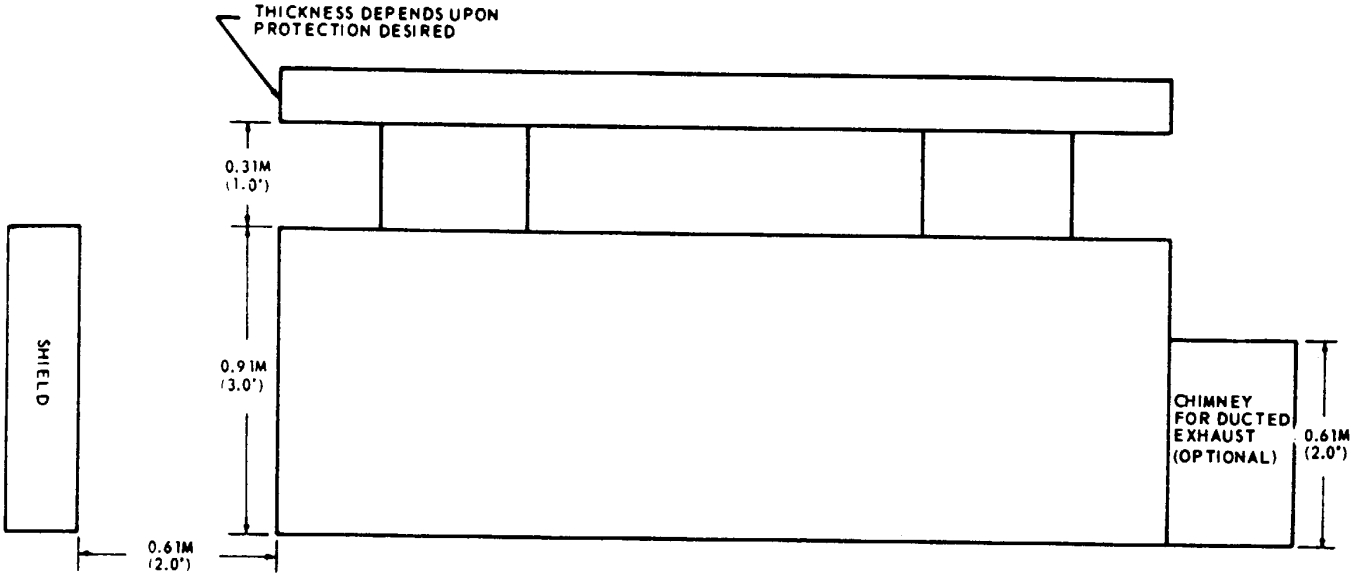


Figure 4-8. Revetment, top view.



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Figure 4-9. Revetment, side view.

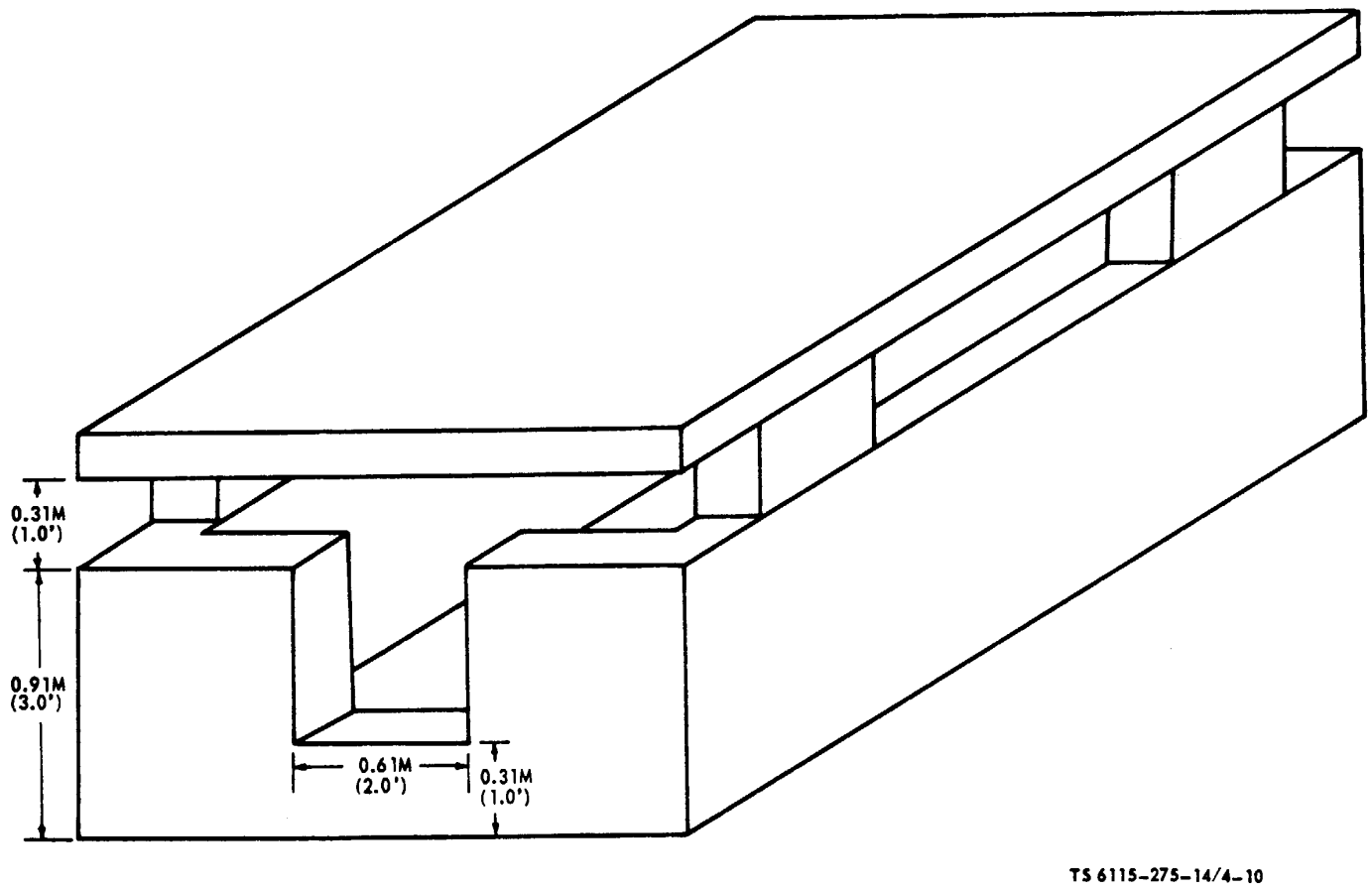


Figure 4-10. Revetment, isometric.

(3) Foundation and Drainage. If the generator set is attached to a shipping platform, this will provide an adequate foundation. Otherwise, use planks, timbers, logs, ammuntion boxes, or other available material to prevent the skids from sinking into soft earth or sand. In no case should the foundation exceed a height of six inches and should be level. Provide drain holes at ground level of the revetment walls to insure the water is drained aw, from the generator set. Drainage trenches a sumps must be provided where the terrain is no, suited to adequate drainage.

(4) Wall Construction. Arrange sand bags according to the dimensions shown in figures 4-8 thru 4-10. Place sand bags so they overlap each other as shown in figures 4-11, 4-12, and 4-13.

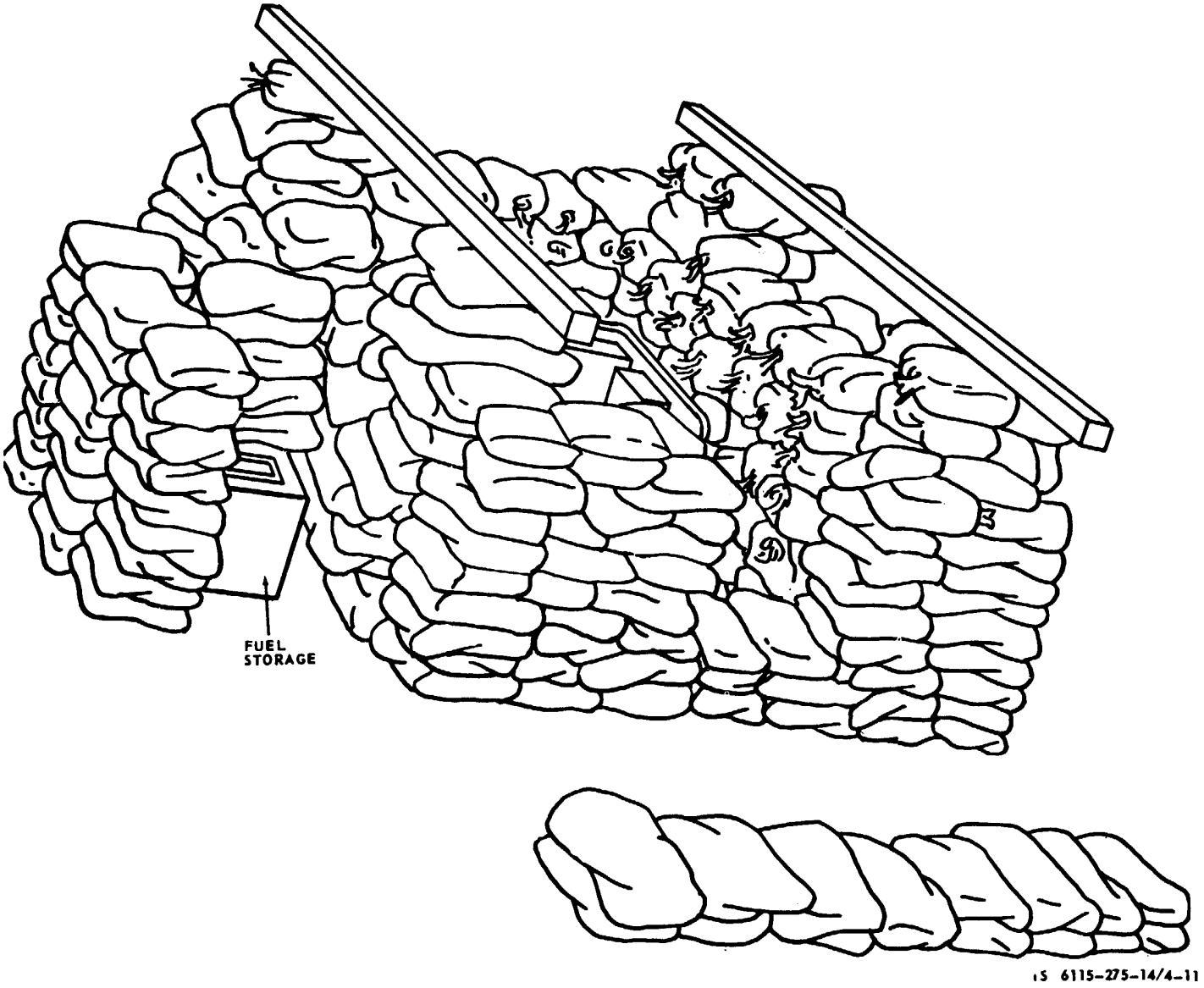


Figure 4-11. Revetment, perspective without roof.

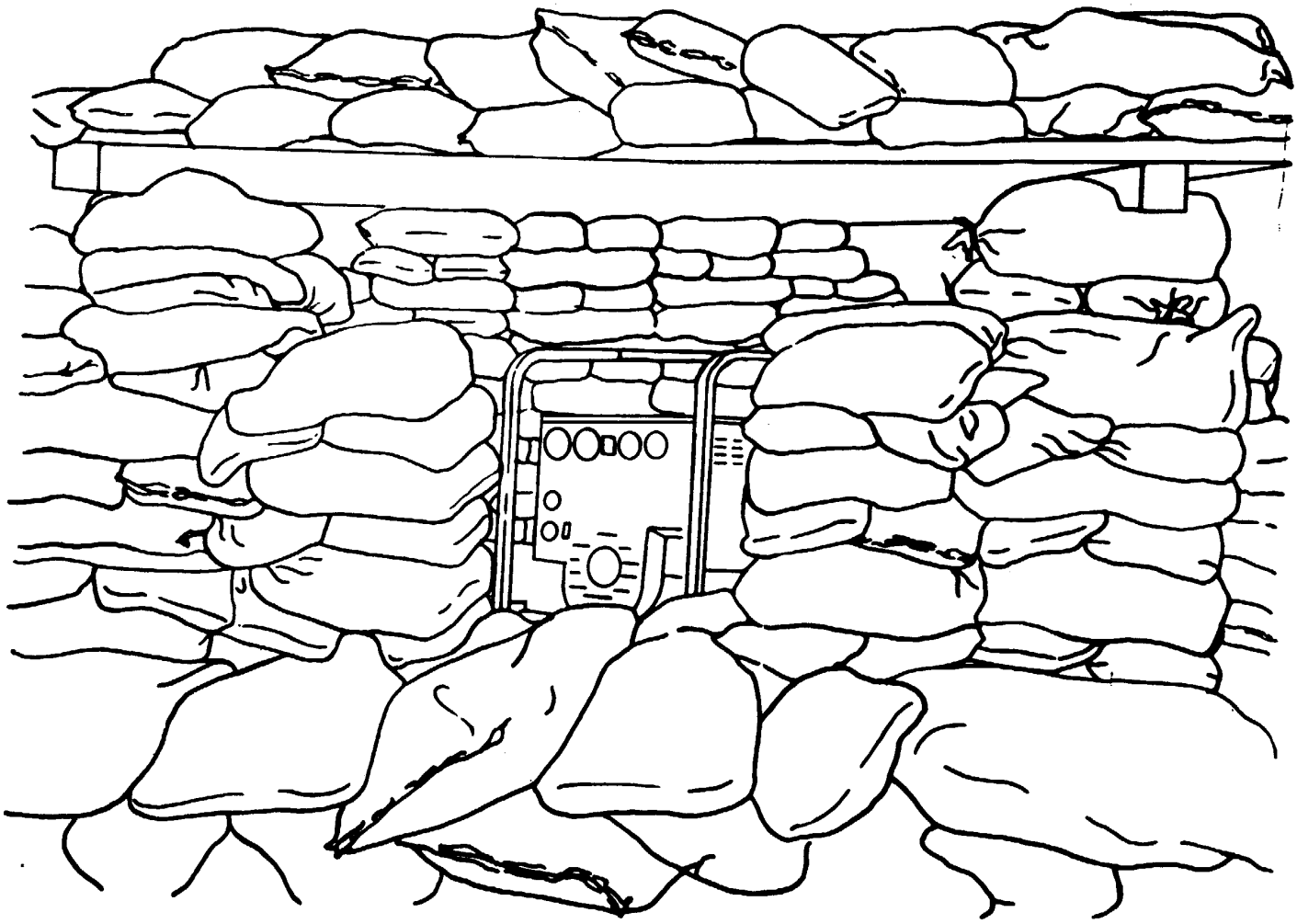


Figure 4-12. Revetment, front.

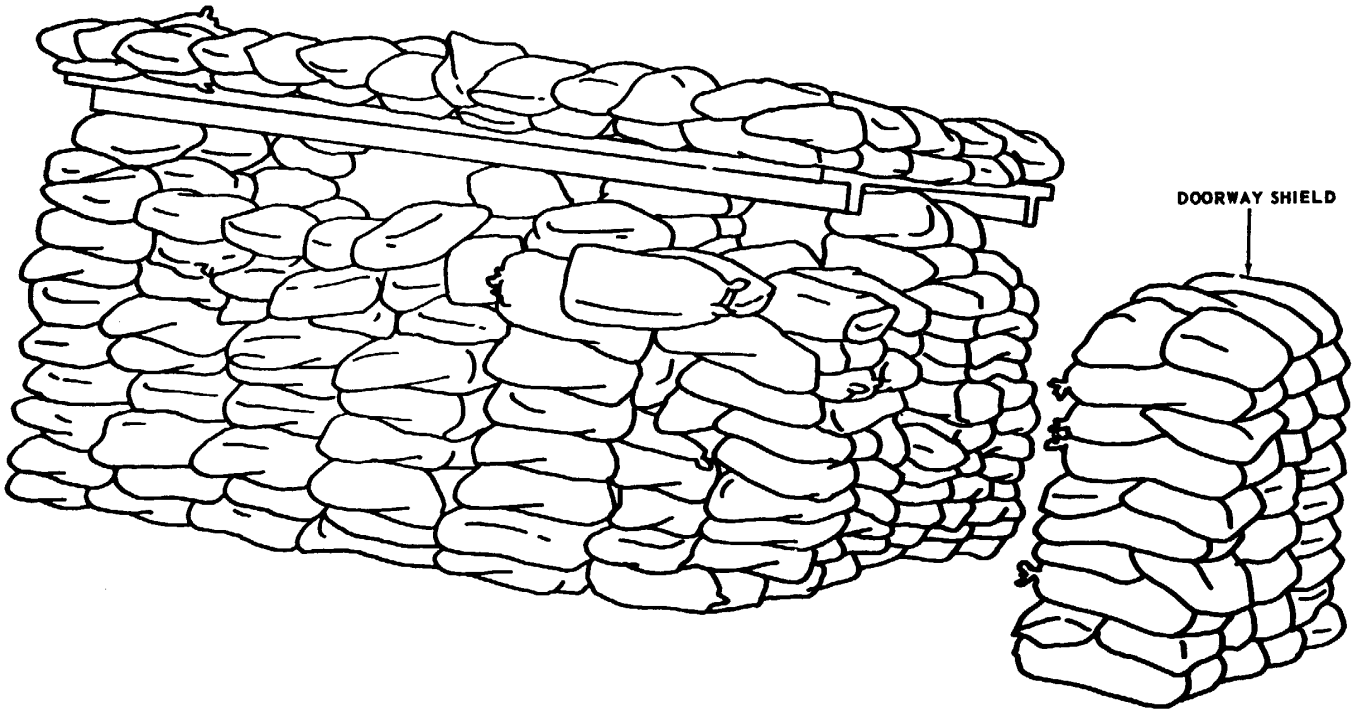


Figure 4-13. Revetment, left side.

(5) Roof Construction. The roof must be elevated 1 ft (0.31 meters) above the top of the wall. The roof consists of two 10 foot (300 cm) pieces of 4" x 4" (10.16 cm) lumber or logs on which cross planking is layed to support the sand bag covering.

(6) Miscellaneous Construction. Construct a fuel storage area outside the revetment as shown in figures 4-8 and 4-11. The size of the fuel storage area will vary according to the size of the fuel containers being used. Locate the fuel supply outside the revetment and use the outside fuel supply instead of that furnished with the equipment.

Vent the exhaust gases outside the revetment using an exhaust duct and flexible pipe in a similar manner to that shown in figure 4-14. The chimney shown in figure 4-8 may be used to discharge exhaust gases.

(7) Arrangement Within the Revetment. Place only one generator set in each revetment. Position the generator set so that it is centered with the engine end toward the revetment entrance.

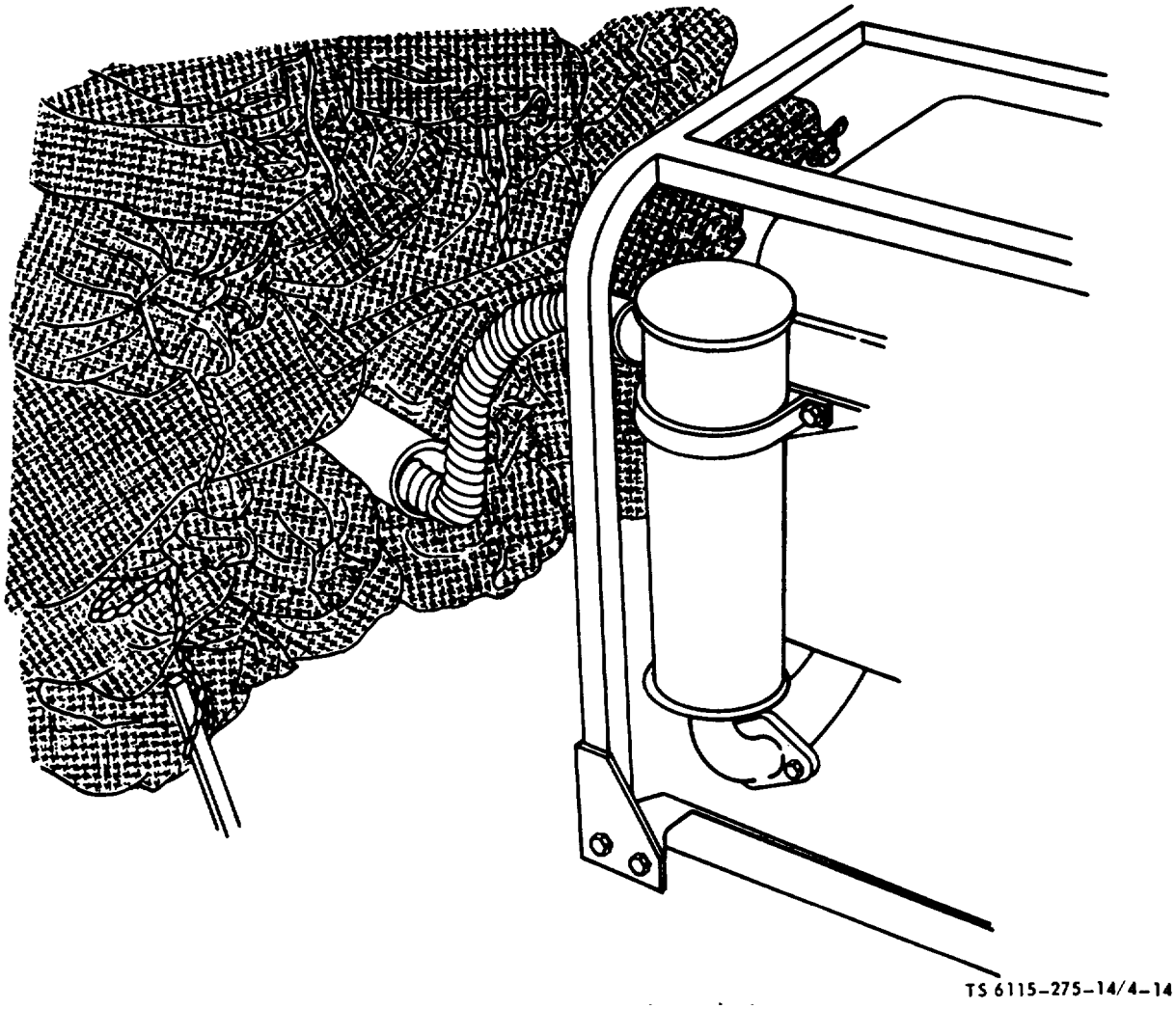


Figure 4-14. Revetment, exhaust duct.

4-3. Equipment Conversion

a. Model MEP-018A.

(1) The generator set has 4 different load and phase combinations. Selection is made by the voltage/phase switch located in the control cabinet, figure 4-15. Instructions for making the different connections at the load terminals (fig. 4-16) are contained in this paragraph.

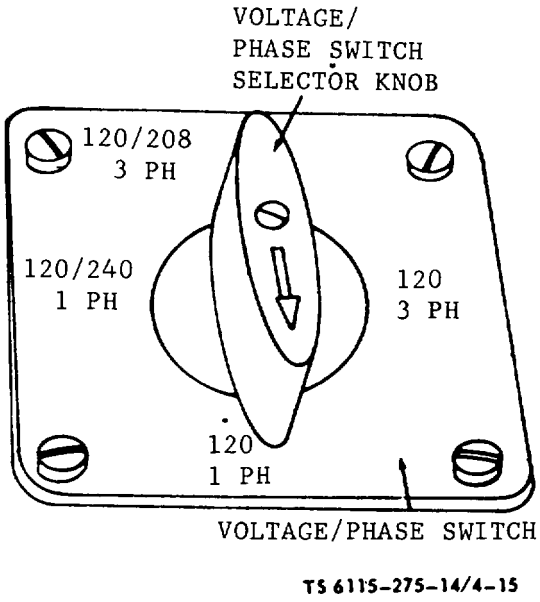


Figure 4-15. Voltage/Phase selector (Model MEP-018A).

WARNING

The voltage generated by this equipment can cause death by electrocution. Never attempt to make a voltage change at the terminal posts or phase switch while the generator set is operating.

(2) Refer to figure 4-16 and connect load lines for phase and voltage desired.

NOTE: BEFORE CONNECTING LOAD LINES, DETEPMINE VOLTAGE REQUIREMENTS AND SELECT THE PROPER VOLTAGE.

FOR 120/240_V, SINGLE-PHASE, 3-WIRE CONNECTIONS, CONNECT LOAD LINES TO TERMINALS L2, L3, AND L0.

FOR 120_V, SINGLE-PHASE. CONNECT LOAD LINES TO LOAD TERMINALS L2 AND L3.

FOR 120-V, THREE-PHASE, 3-WIRE CONNECTIONS, CONNECT LOAD LINES TO LOAD TERMINALS L1, L2, AND L0

FOR 120/208-V, THREE-PHASE, 4-WIRE CONNECTIONS, CONNECT LOAD LINES TO LOAD TERMINALS L1, L2, L3, AND L0.

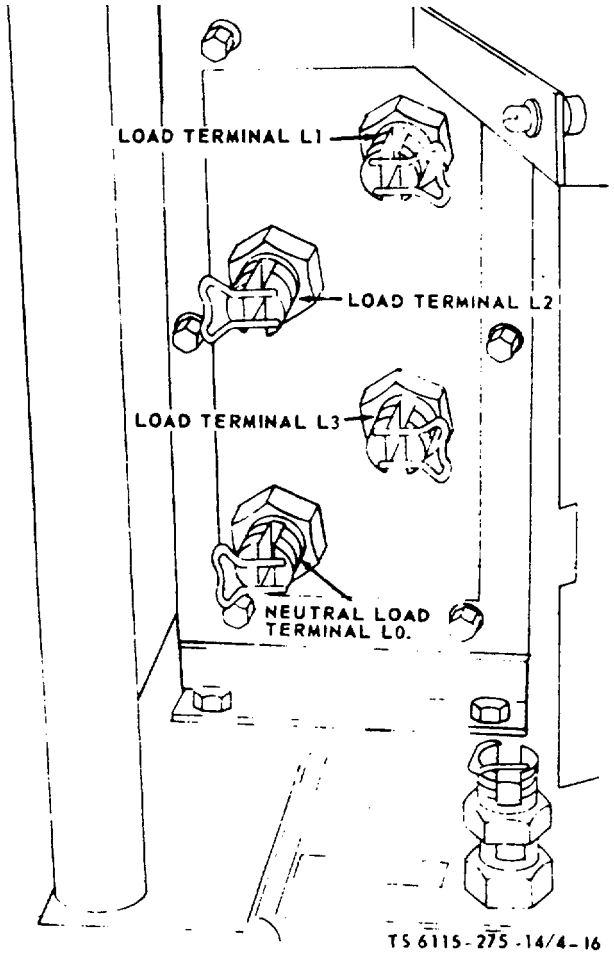


Figure 4-16. Load connections (Model MEP-018A).

b. Model MFP-023A.

(1) The output of the generator set is controlled by the output selector switch (fig. 4-17) and the proper installation of the load cables on the load terminals (fig. 4-18).

(2) To convert the generator set from one output to another, stop the unit, push down on the knob of the output selector switch and turn it to the desired output. Refer to table 4-1 for proper switch , position and load cable connections for voltage desired.

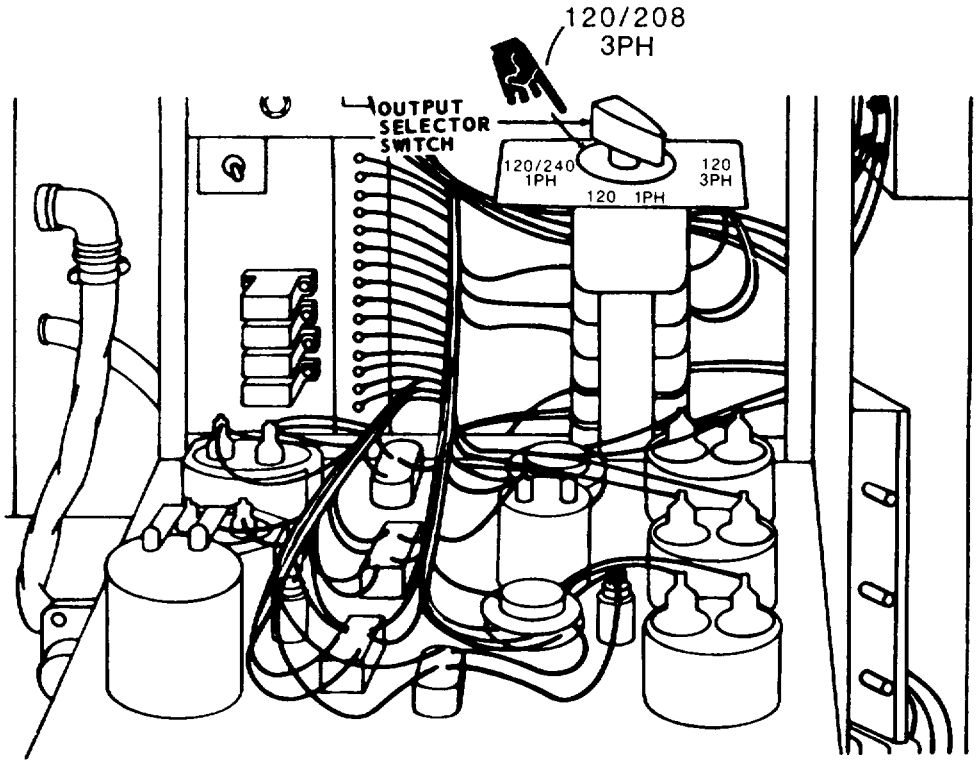


Figure 4-17. Output selector switch (Model MEP-023A)

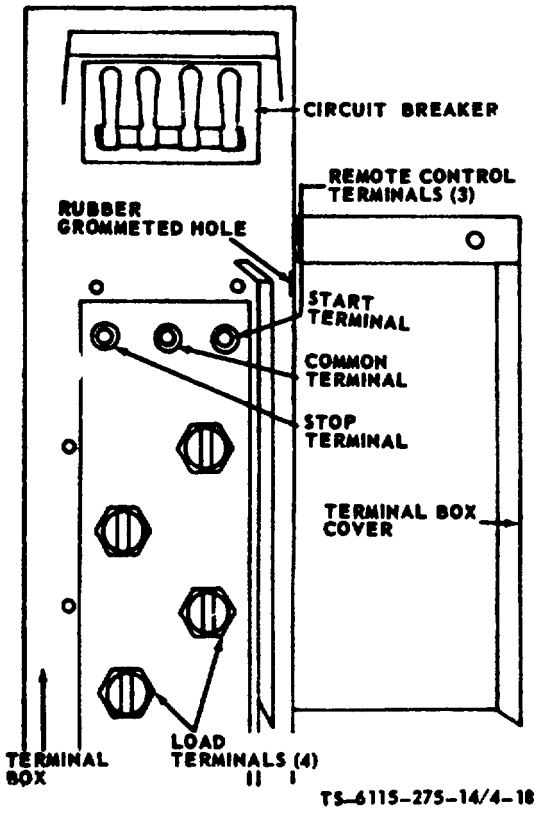


Figure 4-18. Terminal load (Model MEP-023A)

Table 4-1. Output Selector Switch Knob Positions

Knob Position	Output	Connect load cable to load terminals
1	240V, 1 phase, 2 wire	L-2 and L-3
*1	120/240V, 1 phase, 3 wire	L-2, L-3, and L-0
2	120V, 1 phase. 2 wire	L-2 and 1.-3
3	120V, 3 phase, 3 wire	L-1. L.2, and L-3
4	120/208V, 3 phase, 4 wire	L-0, L-1, L-2 and L-3

NOTE

No. 1 position is at the extreme left of the travel of the knob. Switch positions 2, 3, and 4 will then be determined by turning the knob in a counterclockwise direction, the No. 4 position being at the extreme right of the travel of the knob.

Section II. MOVEMENT TO A NEW WORKSITE.

4-4. Dismantling for Movement

a. Preparation for Movement.

(1) Stop the generator set, figure 2-8.

(2) Close the three-way fuel valve, figure 2-3(E).

(3) Disconnect the load lines and ground lead.

(4) Remove the exhaust pipe extension, if used.

(5) Disconnect the auxiliary fuel hose, if used.

(6) Remove all anchoring devices.

b. Handling the Generator Set.

CAUTION

Tubular frame is not to be used for lifting or towing.

(1) If the generator set is to be moved only a short distance, it may be carried or towed to the new worksite.

(2) In movement from the immediate area or over rough terrain, use a hand truck or forklift to move the generator set to the new worksite.

4-5. Reinstallation After Movement

Refer to paragraph 4-2 for reinstallation instructions after movement to a new worksite.

All data on pages 4-21 and 4-22 deleted.

Section III. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

4-6. Tools and Equipment

Basic issue tools and equipment that are authorized for performing maintenance on the generator set are listed in Appendix B.

4-7. Special Tools and Equipment

No special tools and equipment are required by organizational maintenance personnel for performing maintenance on the generator set.

4-8. Organizational Maintenance Repair Parts

The organizational maintenance repair parts are listed and illustrated in TM 5-6115-275-24P, or TO 35C2-452-4.

Section IV. LUBRICATION INSTRUCTIONS

4-9. General

a. This section contains lubrication instructions which are supplemental to and not specifically covered in the lubrication order. For the current lubrication order, refer to LO 5-2805-259-12.

b. Carefully inspect the generator set to insure that proper specifications have been met as required by the lubrication order.

NOTE

Proper preventive maintenance observation and adherence will prolong the life of the generator set.

4-10. Detailed Lubrication Information

Refer to detailed lubrication information in paragraph 3-3.

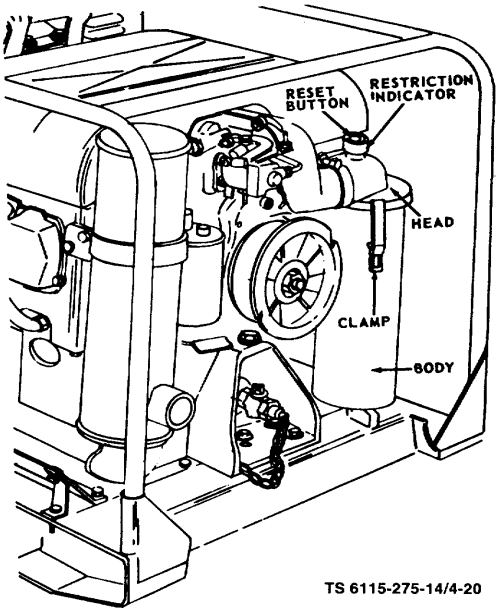
4-11. Air Cleaner Service (Models 4A084-2 and 4A084-3)

a. Refer to figure 4-20 and service the air cleaner.

b. Observe the service notes in the cleaning of the air cleaner.

NOTE

Insure that the passages are not obstructed and are free of dirt and accumulative materials before reassembly.



STEP 1. LOOSEN HEAD CLAMP (2).
STEP 2. REMOVE HEAD AND FILTER ELEMENT.
STEP 3. CLEAN HEAD AND BODY WITH CLEANING SOLVENT AND DRY THOROUGHLY.
NOTE: WHEN RESTRICTION INDICATOR SHOWS FULLY RED, REMOVE ELEMENT FROM BODY AND CLEAN ELEMENT WITH LOW PRESSURE COMPRESSED AIR.
STEP 4. REPLACE ELEMENT IN BODY AND INSTALL HEAD.
STEP 5. SECURE HEAD WITH CLAMP (2) AND PRESS RESET BUTTON TO RESET RESTRICTION INDICATOR.

Figure 4-20. Air cleaner service.

Section V. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-12. General

Preventive maintenance is performed by organizational maintenance personnel at weekly, monthly, and semi-annual intervals. The weekly interval is 40 hours, monthly is 100 hours and semi-annual basis is 500 hours. All deficiencies which are beyond the capabilities of organizational maintenance must be reported to Direct Support Maintenance.

4-13. Preventive Maintenance Checks and Services

The preventive maintenance checks and services to be performed are in Table 4-2 for the generator set less engine. Refer to TM 5-2805-259-14 for engine preventive maintenance checks and services. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

Table 4-2. Organizational Preventive Maintenance Checks and Services

W -- Weekly (40 hours)

Item No.	Interval		Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not Ready/Available If:
	W	H			
1	•		Generator Set	Inspect entire set for loose or missing components and hardware, or unusual wear or damage. Clean set.	
2	•		Fire Extinguisher	Check to ensure seal is intact, and extinguisher has not been used. Replace if used.	
3	•		Batteries	Check battery electrolyte level. Add water as necessary. **NOTE** **In freezing weather run engine a minimum of one hour after adding water to batteries.** Check that the battery cables are tight. Para 3-11, 4-27, and 4-28.	
				NOTE **See TM 5-2805-259-14 for engine PMCS.**	

Section VI. ORGANIZATIONAL TROUBLESHOOTING

4-14. General

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the generator set. Each malfunction for an individual component, unit, or system is followed by a lists of tests or inspections which will help you to determine the probable causes and corrective actions to take. You should perform the tests/ inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

4-15. General Instructions For Use of Multimeters

a. Introduction. In electrical troubleshooting, the Simpson 160, the TS-362B/U, and the AN/URM-105 will do the same job. Therefore, your shop sets may contain any one of these multimeters (fig. 4-21). Any of these three multimeters can be used to troubleshoot your equipment's electrial system. This section shows how.

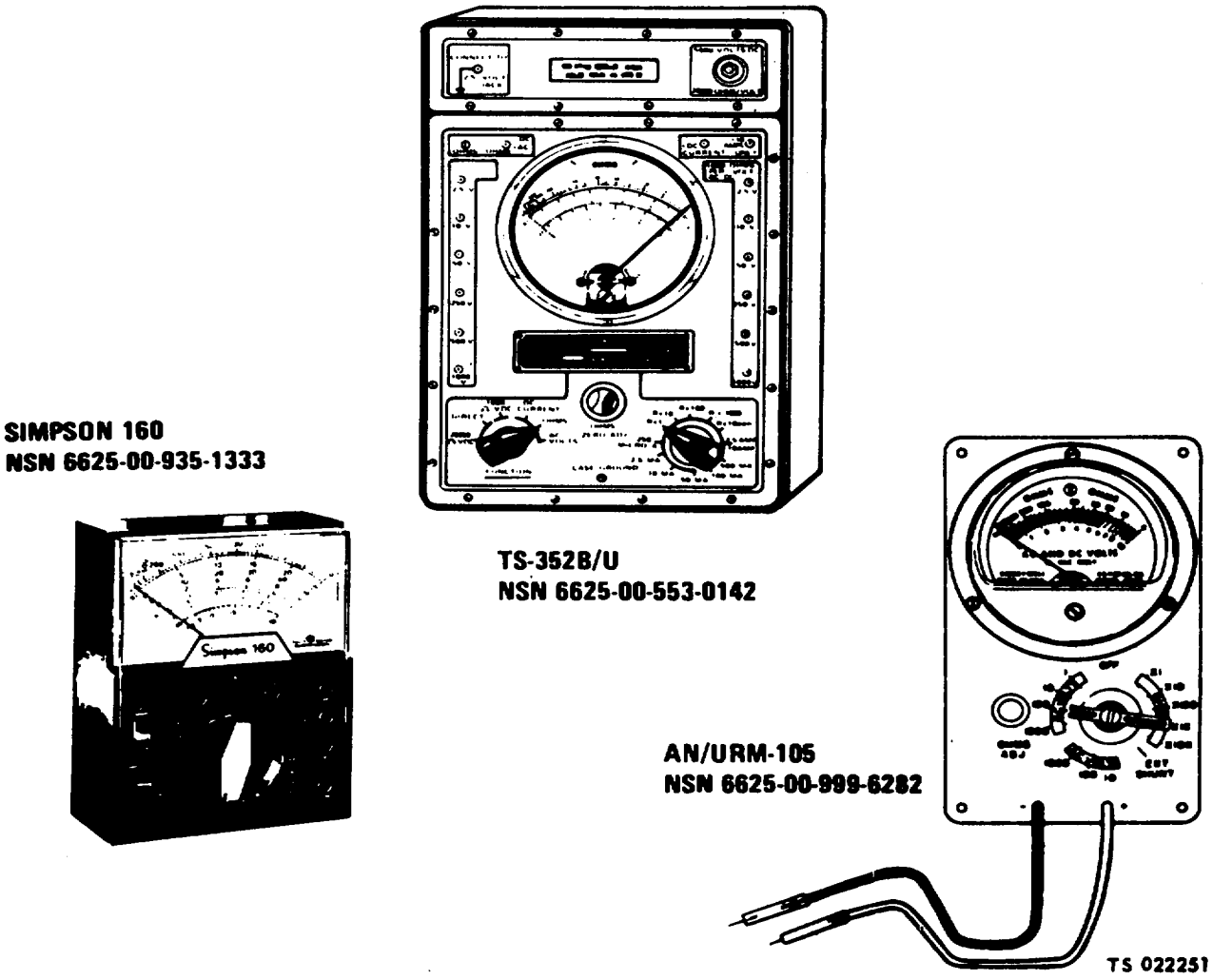


Figure 4-21. Types of multimeters.

NOTE

The Simpson 160 is only available in new shop sets as a substitute for TS-352B/U or AN/URM-105.

b. Using the Ohms Scale. The ohms scale is used to make tests for continuity, shorts and resistance.

(1) "Zeroing" the Meter (Fig. 4-22). The multimeter must be set up and "zeroed" before making these tests.

AN/URM-105

Do the following steps that match the multimeter you have:

NOTE

If the needle will not "zero", replace the batteries. If the needle still will not "zero" after replacing the batteries, turn the meter in for repair.

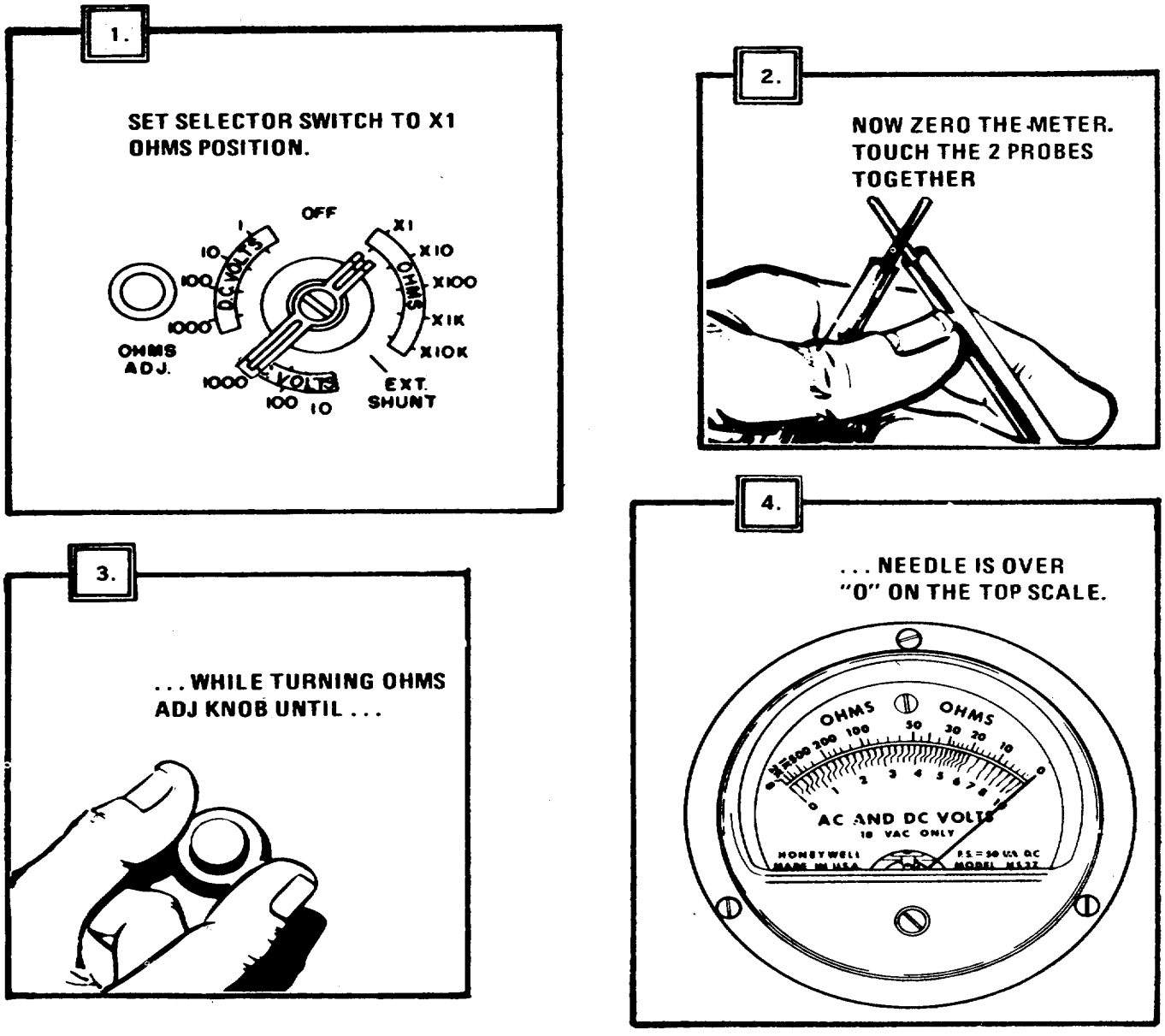
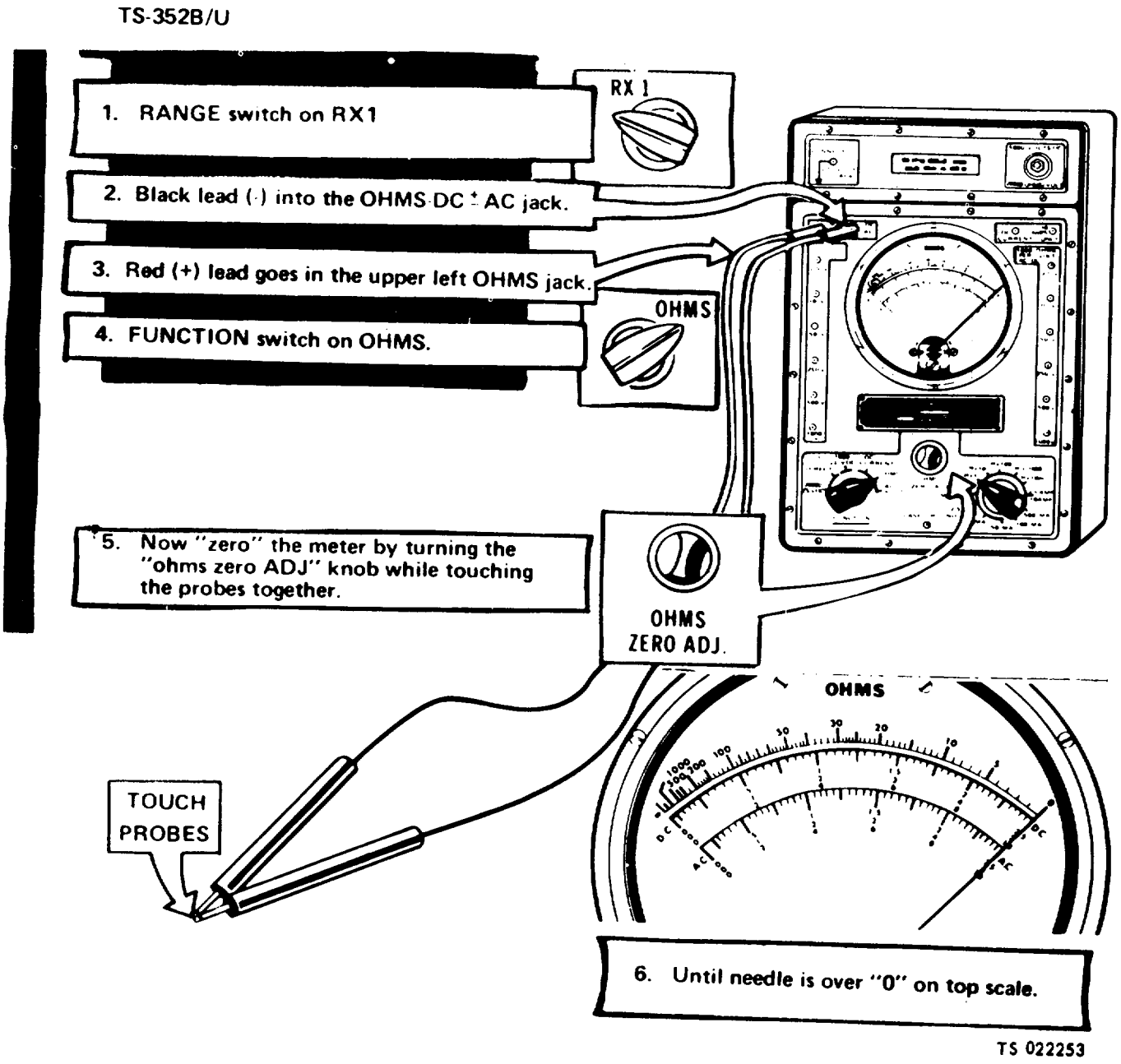


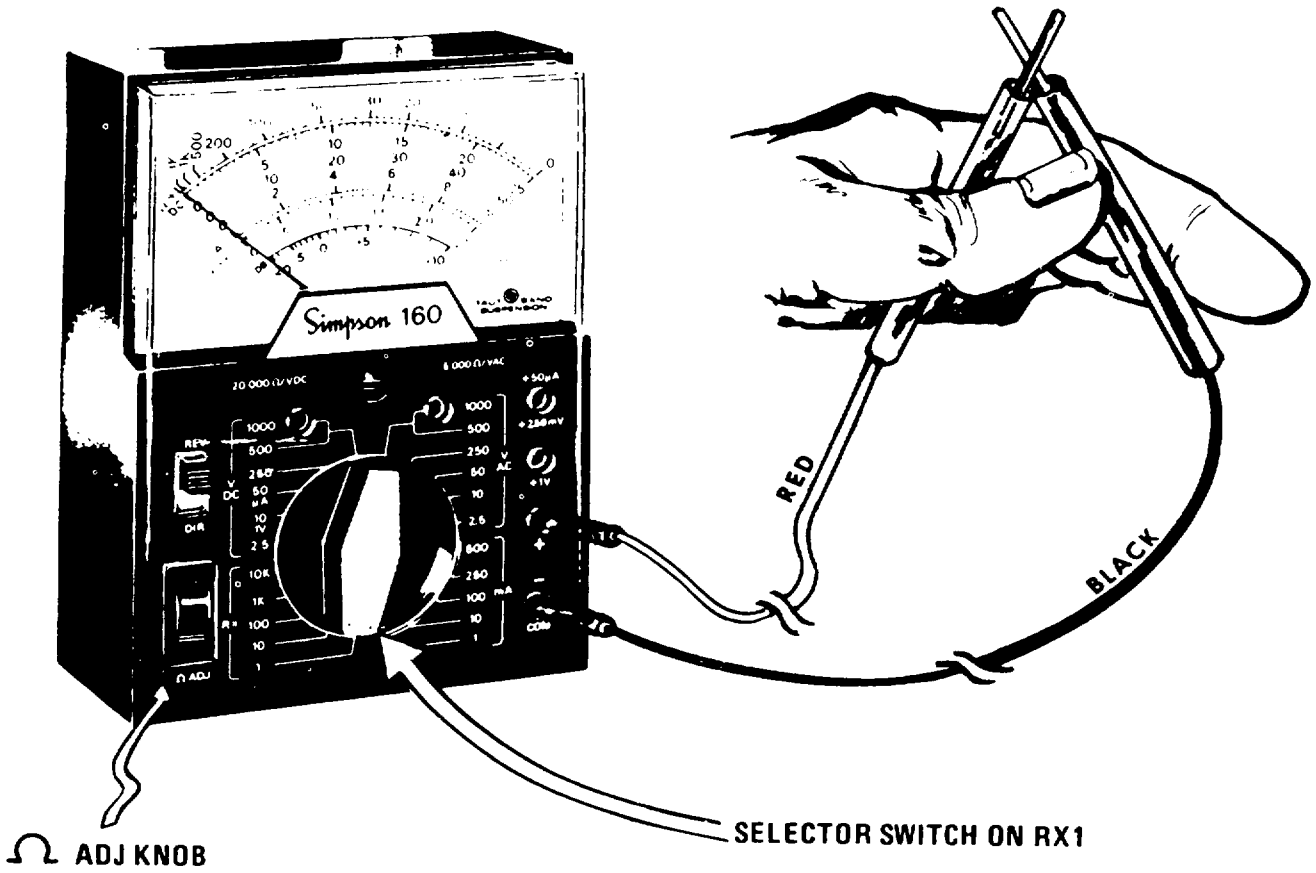
Figure 4-22. Zeroing the AN/URM - 105 meter. (sheet 1 of 3).



NOTE

If the needle will not "zero", replace the batteries, If the needle still will not "zero" after replacing the batteries, turn the meter in for repair.

Figure 4-22. Zeroing the TS-352B/U (Sheet 2 of 3).



1. SET SELECTOR SWITCH ON "RX1".
2. PUT BLACK PROBE IN "COM-" JACK.
3. PUT RED PROBE IN "+" JACK.
4. WHILE TOUCHING THE PROBES TOGETHER, TURN "Ω ADJ" KNOB UNTIL NEEDLE IS OVER THE "'O"' ON THE TOP SCALE.

Figure 4-22. Zeroing the Simpson 160 (sheet 3 of 3).

NOTE

If the needle will not "zero", replace the batteries. If the needle still will not "zero" after replacing the batteries, turn the meter in for repair.

(2) Continuity Tests. Continuity tests are made to check for breaks in a circuit (such as the switch, light bulb, or electrical cable (fig. 4-23). To make a continuity check, do the following steps:

(a) Set up and "zero" the multimeter (fig. 4-22).

CAUTION

Failure to do the following steps can damage the multimeter.

(b) Disconnect the circuit being tested. To be :a1f(e. disconnect the battery ground strap.

(c) Connect the meter probes to both terminals of the circuit being tested. (The TS-352B/U is illustrated (fig. 4-23), but the probes are connected to the circuit the same way with all three multimeters.)

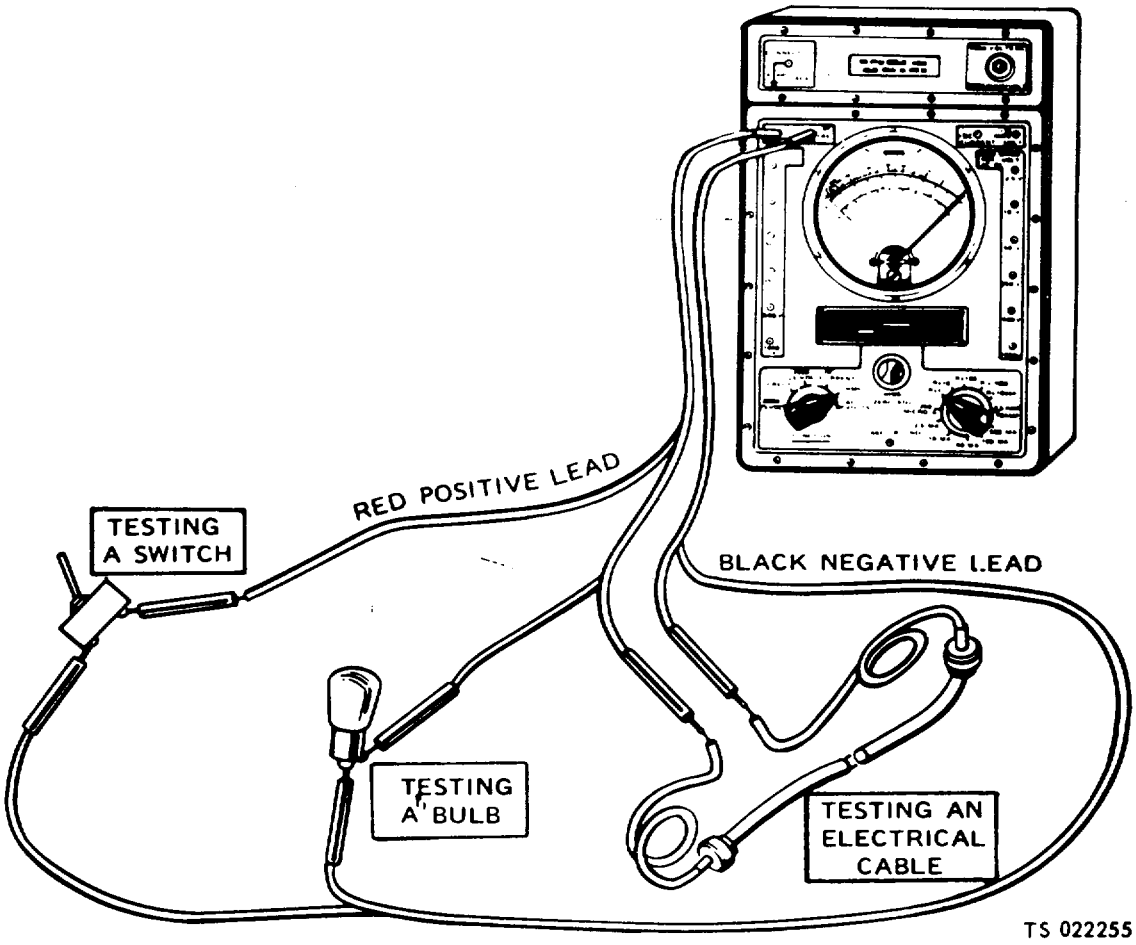


Figure 4-23. TS-352 Continuity test.

(d) Look at the meter needle.

1. If the needle swings to the far right over the "O" on the top scale (on all three multimeters), the circuit has continuity.

2. If the needle doesn't move, the circuit is open (broken).

3. If the needle jumps or flickers there is a loose connection in the circuit being tested.

(3) Testing for Shorts. A short (or short circuit) occurs when two circuits that should not be connected have metal-to-metal contact with each other. A short also occurs when a circuit that should not touch ground has metal to metal contact with ground. To check for shorts, do the following steps:

(a) Set up and "zero" the multimeter (fig. 4-22).

CAUTION
Failure to do the following steps can damage the multimeter.

(b) Disconnect the circuit being tested. To be safe, disconnect the battery ground strap.

(c) With all three multimeters, connect one probe to one circuit and the other probe to the other circuit or ground (if checking for a short to ground). The example below (fig. 4-24) shows a check to see if wire "A" is shorted to wire "B" in the wiring harness.

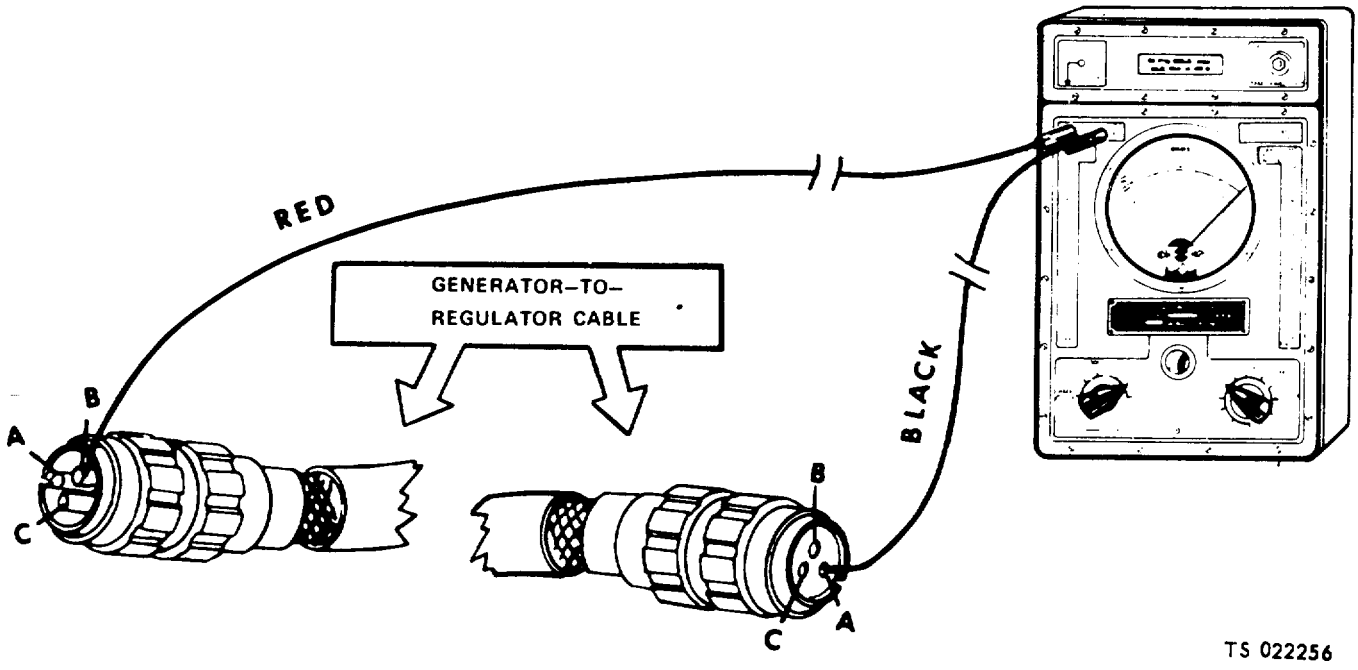


Figure 4-24. Testing for shorts.

(d) Look at the needle.

1. If the needle swings to the far right over the "O" on the top scale (on all three multimeters), the circuits are shorted.

2. If the needle doesn't move, the circuits are not shorted.

3. If the needle jumps or flickers, the circuits are occasionally shorted.

(4) Testing Resistance. To measure resistance in a circuit, do the following steps:

(a) Set up and "zero" the multimeter (fig. 4-22).

CAUTION

Failure to do the following steps can damage the multimeter.

(b) Disconnect the circuit being tested. To be safe, disconnect the battery ground strap.

(c) If the test in this manual calls for an "ohms range" different than "RX1" or "X1", set the selector switch to that range (such as "RX10" or "X10").

NOTE

"Zero" the meter whenever you change ranges.

(d) With all three multimeters, connect the probes across the circuit or item to be measured. The example below (fig. 4-25) shows measuring the resistance of a temperature sending unit.

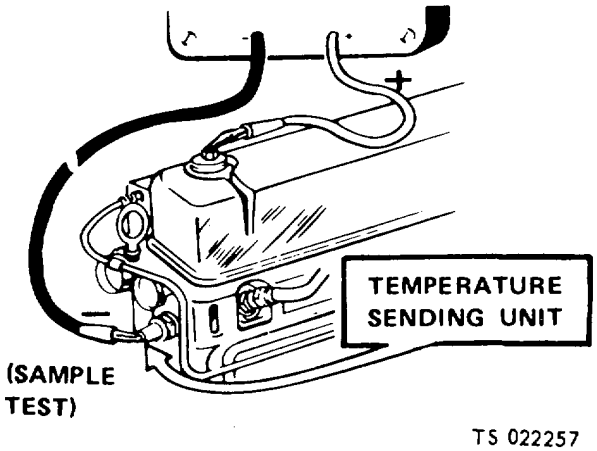


Figure 4-25. Testing resistance.

(e) Read the meter (fig. 4-26). If the meter switch is on the "RX1" or "XI" range, the reading is taken directly from the top scale. If the meter switch is on a different range, multiply the reading on the scale according to the table below:

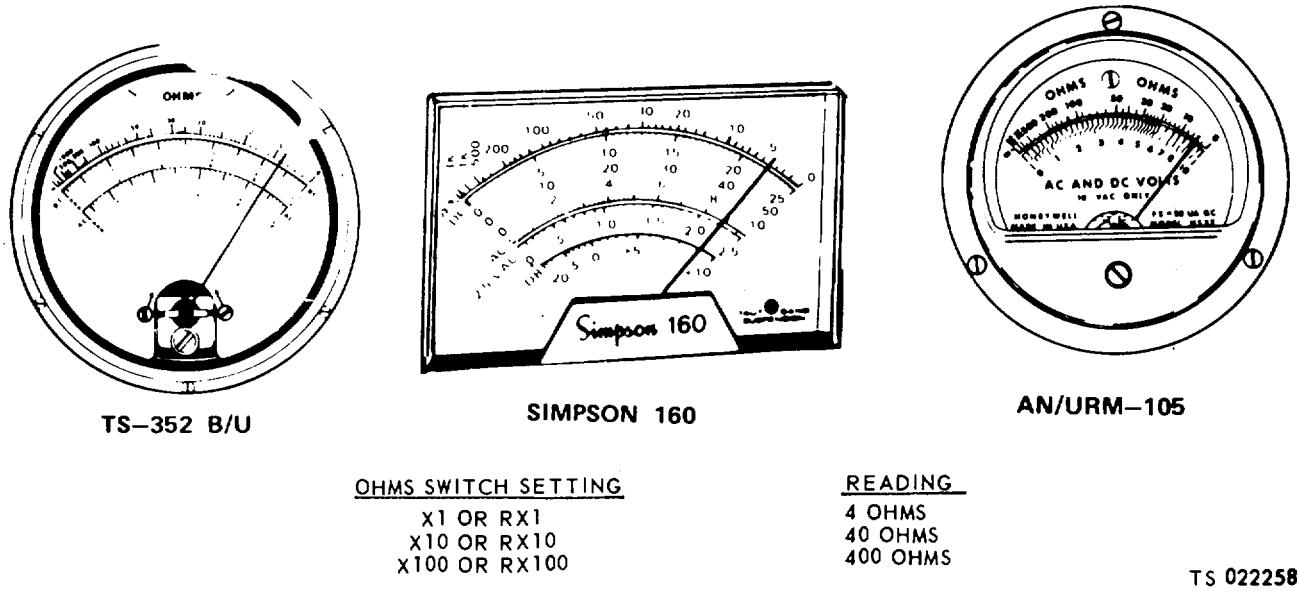


Figure 4-26. Reading the ohm scale.

Ohms Switch Setting	You Do
X1 or RX1	Read number on scale
X10 or RX10	Multiply reading by 10
X100 or RX100	Multiply reading by 100
X1K or RX1K	Multiply reading by 1,000
X10K or RX10K	Multiply reading by 10,000

(Remember: K = 1,000)

c. Using the DC Volts Scale (Figure 4-27). The DC volts scale is used to measure all voltage on the equipment except the 115 AC voltage.

(1) Before using the multimeter to measure DC voltage, do the following steps that match the multimeter you have:

(a) AN/URM-105. Set meter switch to DC volts range given in TM (To measure 24 volts DC, set switch on "100 DC VOLTS' range).

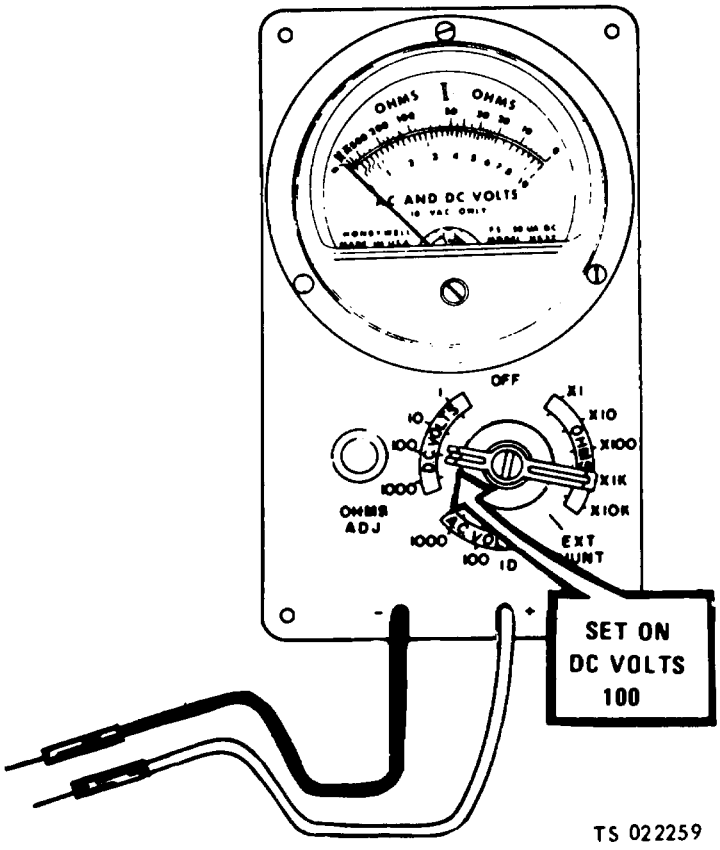


Figure 4-27. DC volts scale (AN/URM-105). (sheet 1 of 3).

(b) TS-325B/U.

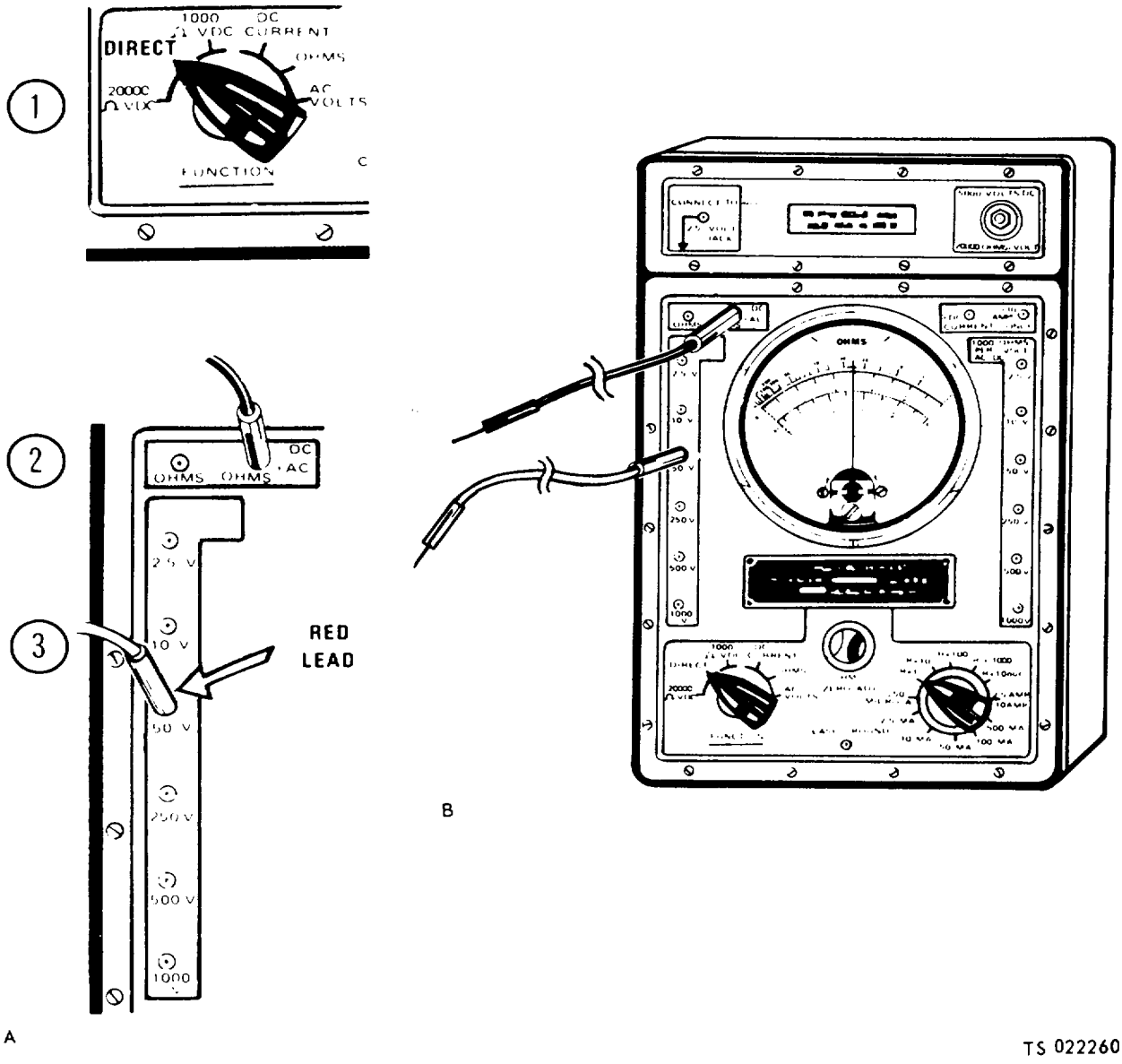


Figure 4-27. DC volts scale (TS-352B/U). (sheet 2 of 3).

1. Set FUNCTION switch to "DIRECT". (RANGE switch can be at any position).

2. Put black lead in "-DC/+AC/OHMS" jack.

3. To measure 24 volts DC, plug red lead into "50V" jack on left side of meter. (If measuring less than 10 volts DC, use "10V" jack. If measuring less than 2.5 volts DC, use "2.5V" jack.)

(c) Simpson 160.

1. Connect black lead to "COM-" jack.

2. Connect red lead to "+" jack.

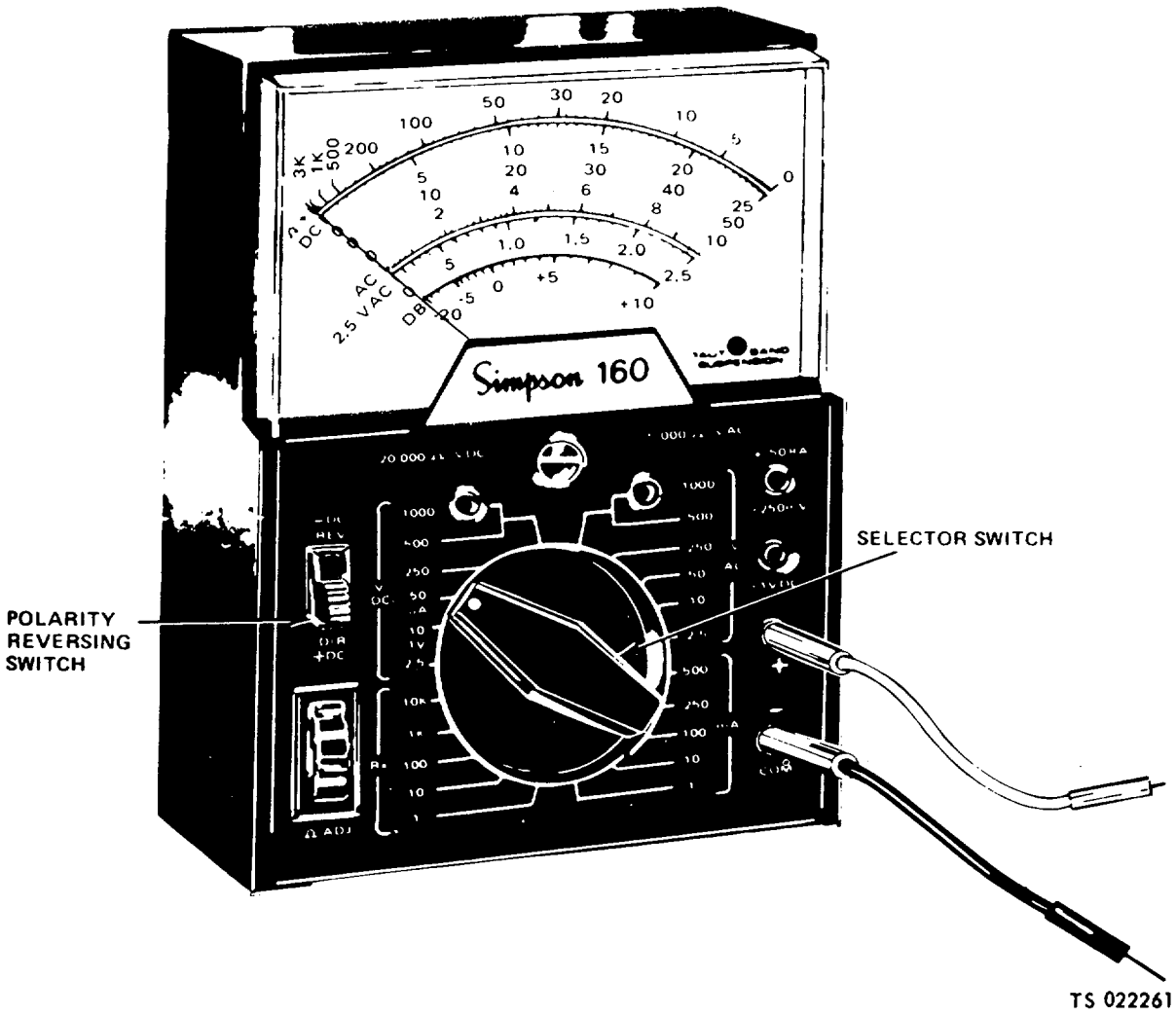


Figure 4-27. DC volts scale (Simpson 160) (sheet 3 of 3).

3. To measure 24 volts I)C, b(et selector switch to "V/DC 50" position. (If measuring less than 10 volts DC, set selector switch to "V/DC 10" position. If measuring less than 2.5 volts DC. set selector switch to "V/DC 2.5" position.)

4. Set polarity reversing switch to the "+DC" position.

(2) To measure DC volts, do the following steps:

(a) Set up multimeter (paragraph (1) above).

NOTE

If you are unsure of the voltage to be measured on the equipment, always start on the highest range. This will protect the meter.

(b) With all three multimeters, connect the red probe to the positive (+) side of the circuit and the black probe to the negative (-) side. The example (Fig. 4-28) shows 24 volts DC being measured across the batteries.

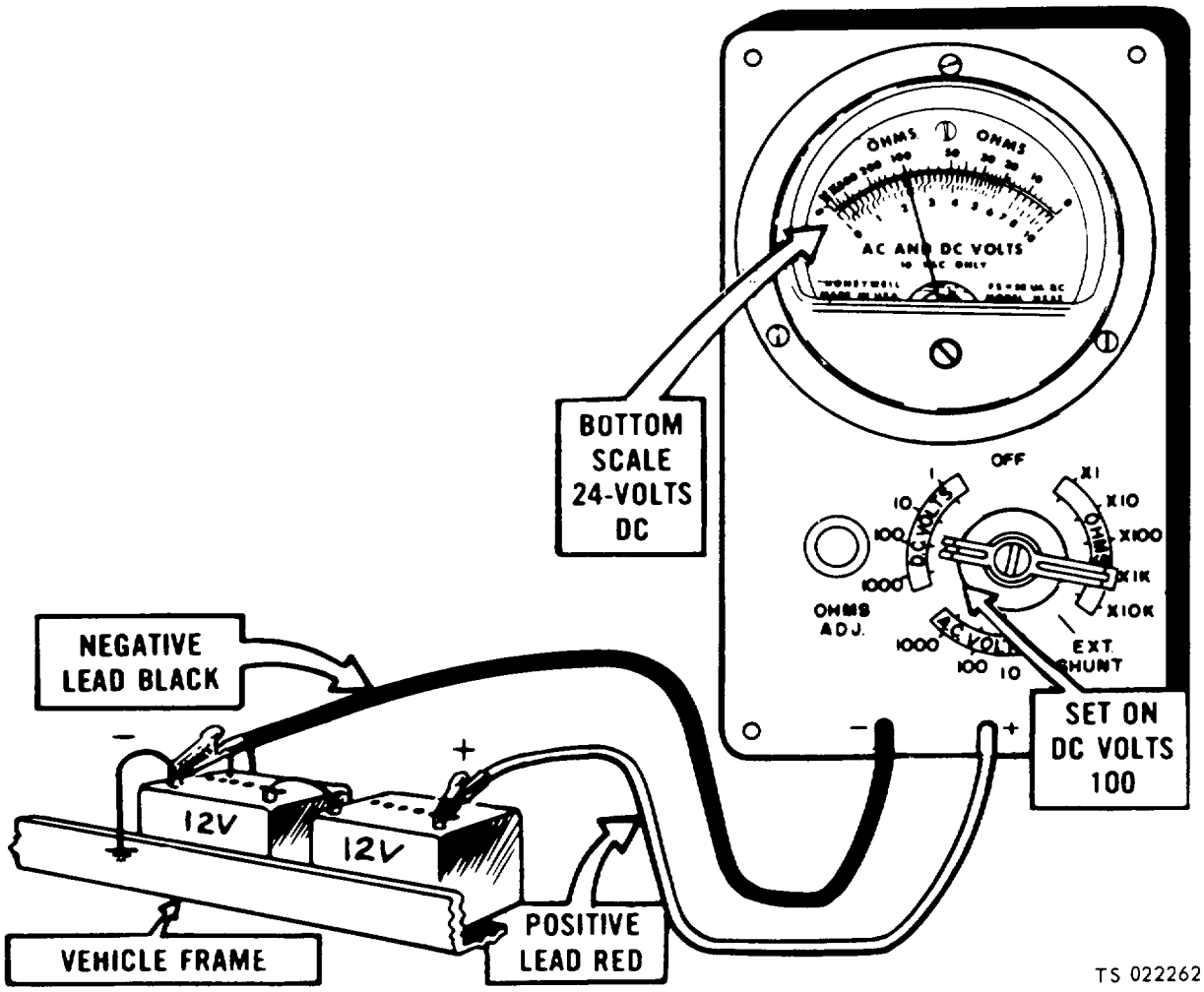


Figure 4-28. Measuring DC voltage.

(c) Read the meter. (The examples (figs. 4-29, 4-30 and 4-31) show how to read all three multimeters.) If the needle tries to move off scale to the left, reverse the probes on the circuit.

1. Simpson 160. Read the "DC" volts scale for the range the selector switch is set at.

Switch Setting	Scale
V/DC 50	0-50
V/DC 10	0-10
V/DC 2.5	0-25 (and divide by 10)

Thus the meter (fig. 4-29) is showing the following readings

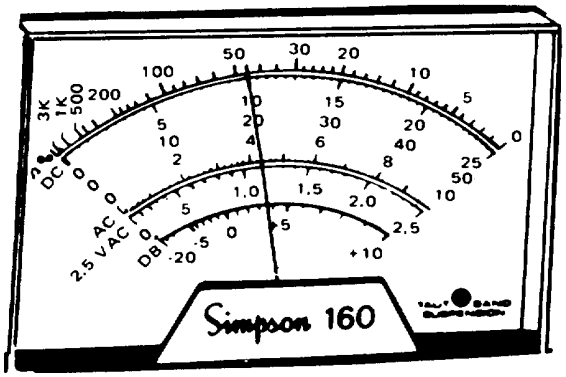


Figure 4-29. Reading DC voltage (Simpson 160)

2. TS-352B/U. Read the "DC" volts scale for the range the red lead is plugged in at.

Range	Scale
50V	0-5 (and multiply by 10)
10V	0-10
2.5V	0-2.5

Thus the meter (fig. 4-30) is showing the following readings:

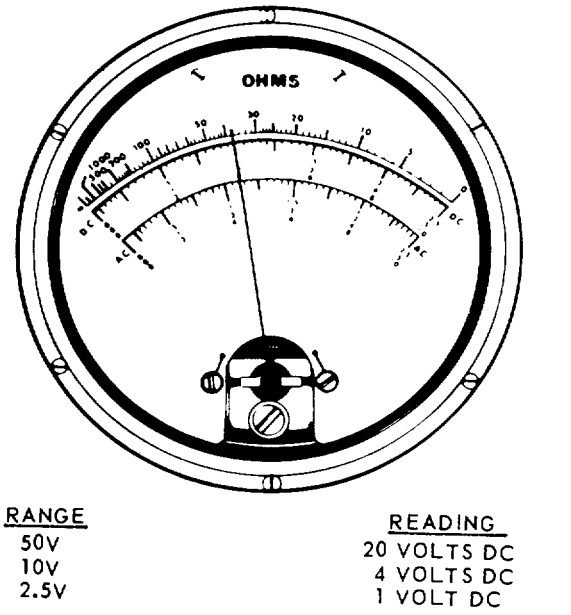


Figure 4-30. Reading DC voltage (TS-352B/U).

3. AN/URM-105. Read the upper, black, straight-lined portion of the "AC and DC volts" scale for the range the selector switch is set at.

Switch Setting	Scale
1000	DC
Volts	0-10 (and multiply by 100)
100	DC
Volts	0-10 (and multiply by 10)
10 DC Volts	0-10
1 DC volt	0-10 (and divide by 10)

Thus the meter (fig. 4-31) is showing the following readings:

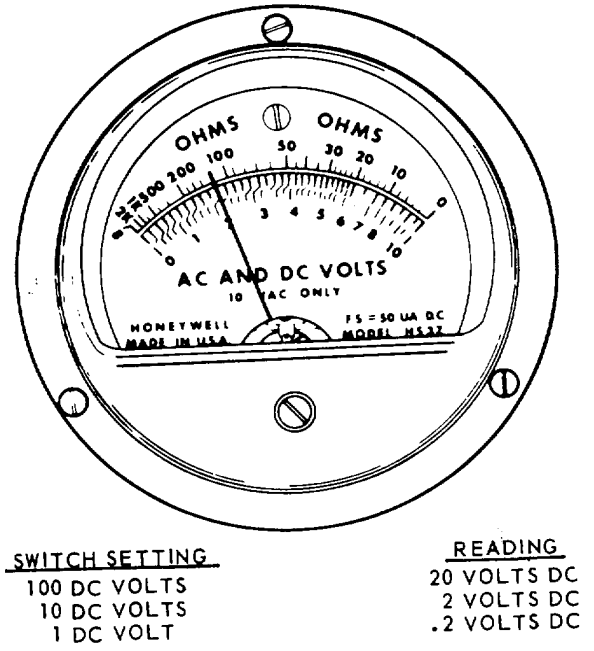


Figure 4-31. Reading DC voltage (AN/URM-105).

d. Using the AC Volts Scale. The AC volts scale is used to measure the 115 AC voltage found in the control panel.

(1) Before using the multimeter to measure 115 AC voltage, do the following steps that match the multimeter you have.

(a) AN/URM-105. Set meter switch to "1000 AC volts" (fig. 4-32).

(b) TS-352B/U.

1. Set "FUNCTION" switch to "AC Volts". ("RANGE" switch can be at any setting) '(A, fig. 4-33).

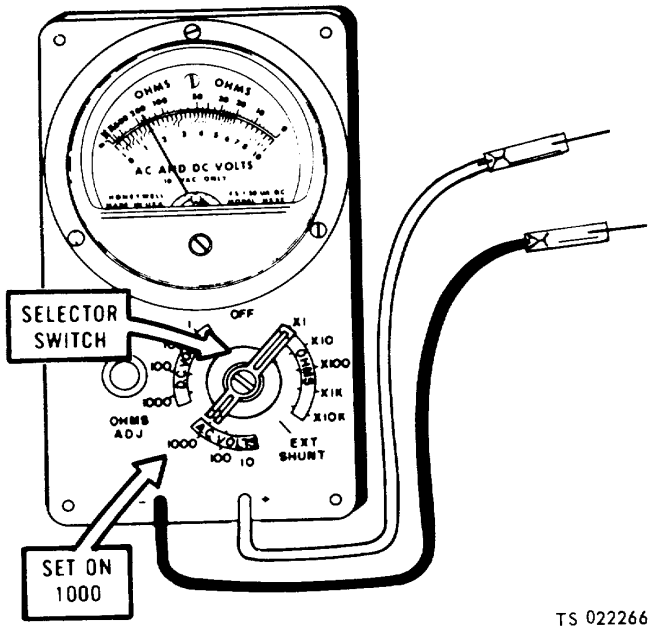


Figure 4-32. AC volt scale (AN/URM-105).

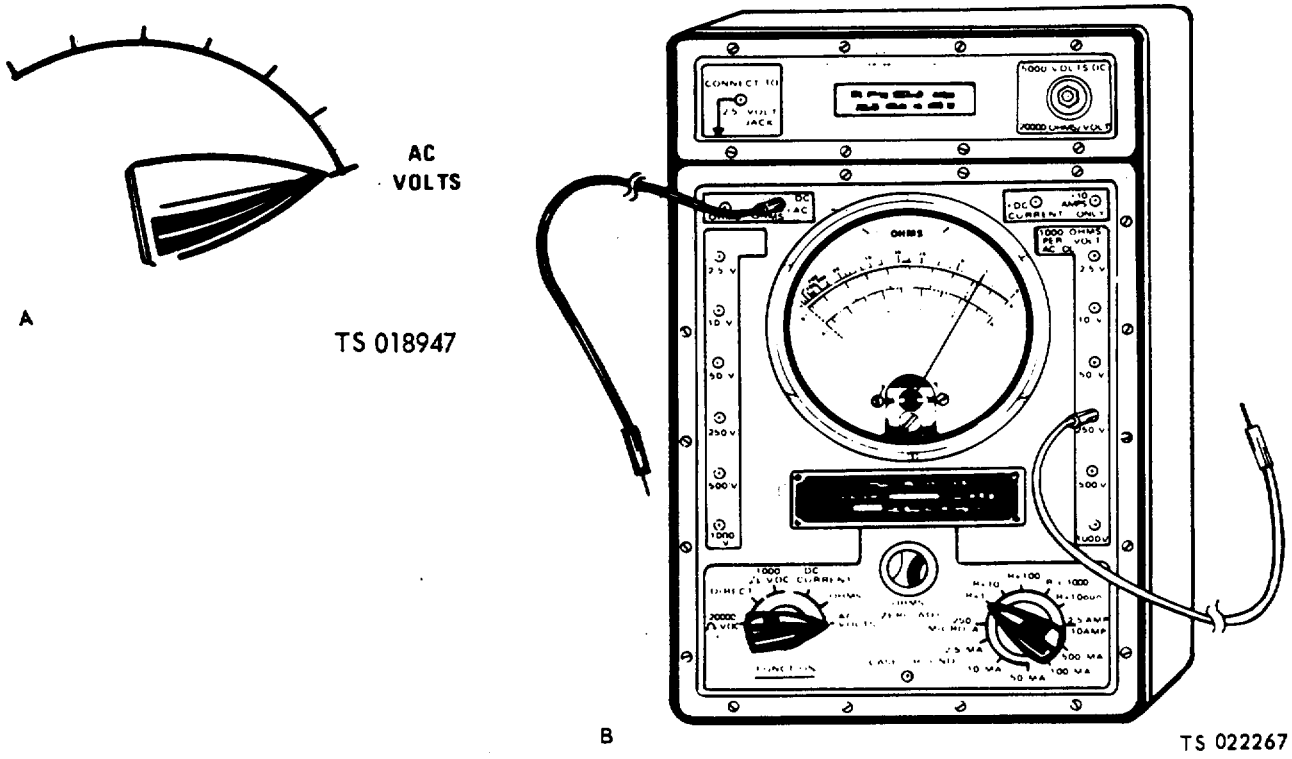


Figure 4-33. AC volt scale (TS-352B/U).

2. Put black lead in "-DC/+AC/OHMS" jack (B, fig. 4-33).

3. Put red lead in "250V" jack on right side of meter.

(c) Simpson 160 (Figure 4-34).

1. Put black lead in "COM-" jack.

2. Put red lead in "+" jack.

3. Set selector switch to "V/AC 250" position.

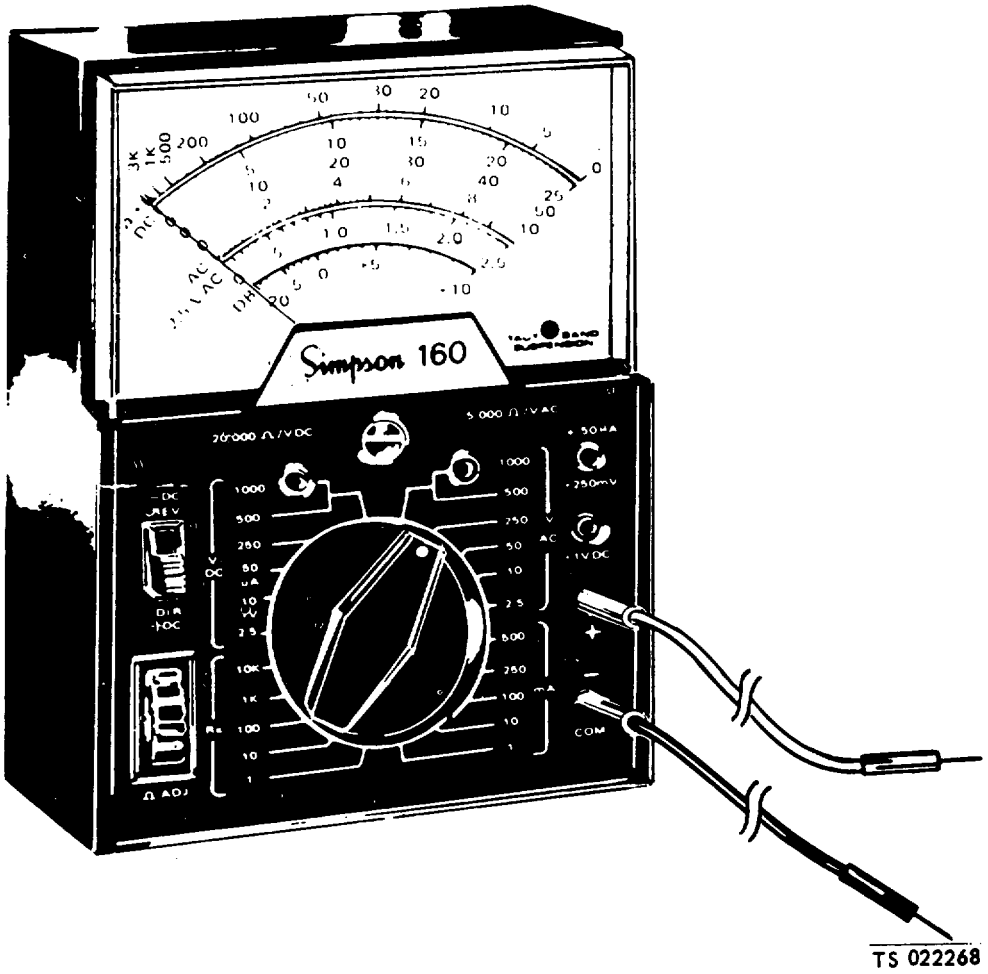


Figure 4-34. AC volt scale (Simpson 160).

(2) To measure 115 AC voltage, do the following steps:

(a) Set up multimeter (fig. 4-35).

(b) With all three multimeters, connect one probe to one side of the circuit and the other probe to the other side. The example (fig. 4-35) shows 115 volts AC being measured across an AC light circuit.

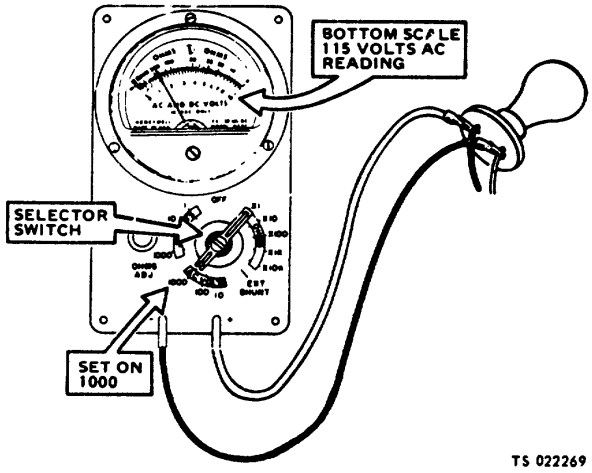


Figure 4-35. Measuring AC voltage.

(c) Read meter on the "AC" scale. Figure 4-36 shows a reading of 115 volts on all meters.

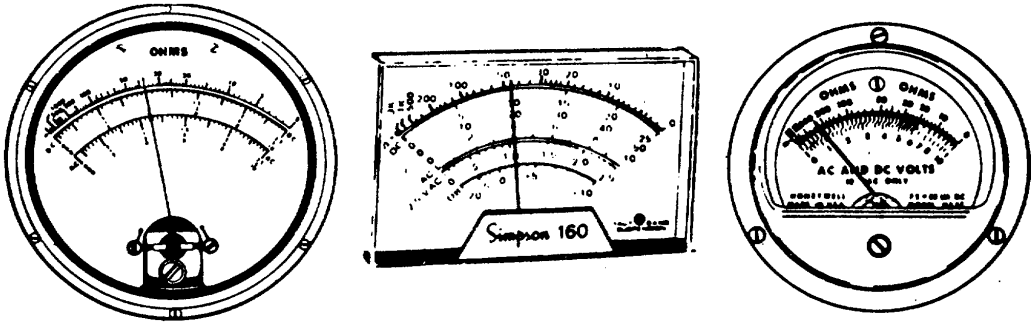


Figure 4-36. Reading AC voltage.

4-16. Troubleshooting Table

NOTE

Before you use Table 4-3, be sure you have performed all applicable operating checks.

Table 4-3. Organizational Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. GENERATOR FAILS TO BUILD UP RATED VOLTAGE

Step 1. Check TM 5-2805-259-14 or TO 38G2-89-41 for throttle setting, governor adjustment, and other related engine defects that would cause low engine speed. Refer to TM 5-2805-259-14, or TO 38G2-89-41.

Make the adjustment and replacement of defective parts as delineated in TM 52805-259-14, or TO 38G-89-41. If engine speed is now low, go on to step 2.

Step 2. Check to see if the field circuit breaker is tripped.

If circuit breaker is tripped, reset it. If resetting circuit breaker does not correct the malfunction, go on to step 3.

Step 3. Inspect voltmeter for loose wires, corroded wiring, incorrect wiring, and breaks and cracks. Also, test the voltmeter with a multimeter to verify readings.

Step 4. Inspect the voltage regulator for loose wires, corroded wiring, metal to metal contact, incorrect wiring or other damage.

Determine if the voltage regulator is defective by performing voltage regulator on-equipment test as described in paragraph 442b.

1A. ENGINE CRANKS; WILL NOT START

Low charged batteries.

Use clave receptacle for extra cranking power.

All data on pages 4-43 and 4 44, including Figures 4-37 and 4-38, deleted.

Figure 4-39 is deleted.

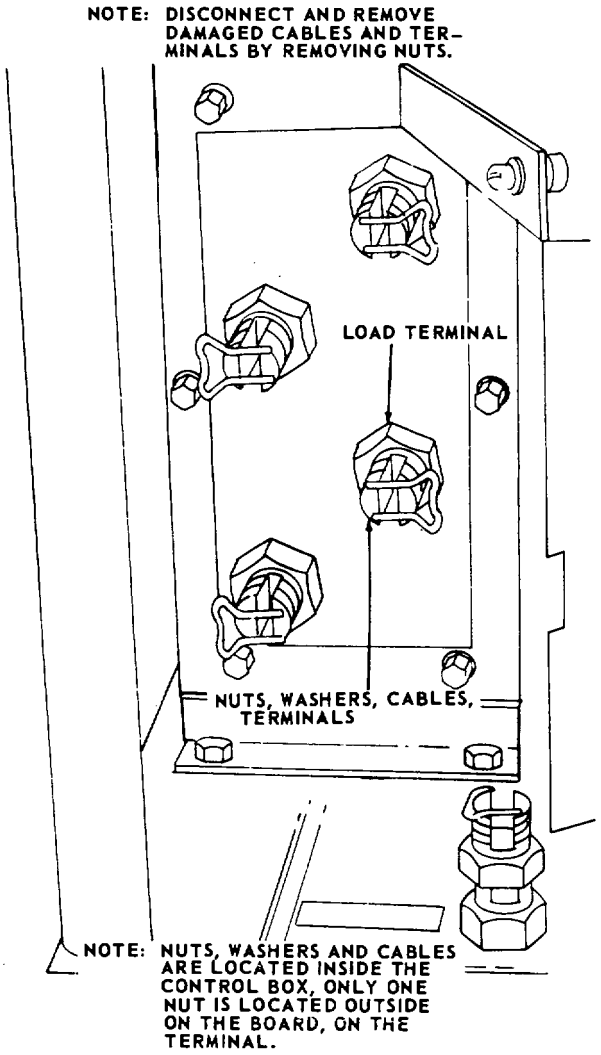
Table 4-3. Organizational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. GENERATOR FAILS TO SUPPLY POWER

Step 1. Inspect the load terminals, hardware and cables for cracks, breaks, loose terminals and other damage

Replace the load hardware and cables (fig. 4-40). If terminals or board assembly needs replacement, refer to field maintenance. If none of the above deficiencies exist, go on to step 2.



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Figure 4-40. Load terminals, removal and installation.

Table 4-3. Organizational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Close the circuit breaker; if the circuit breaker will not stay closed, it is defective.

Refer to field maintenance for replacement of the circuit breaker.

3. GENERATOR VOLTAGE TOO HIGH

Step 1. Test the voltage adjusting rheostat (variable resistor) by referring to para. 4-46c. If test renders the rheostat defective, replace. Refer to figure 461 or 4-62 to remove rheostat from the applicable model generator set. If rheostat is not the cause of the malfunction go on to step 2.

Step 2. Inspect the voltage regulator for loose wires, corroded wiring, metal to metal contact, incorrect wiring or other damage.

Determine if the voltage regulator is defective by performing voltage regulator on-equipment test as described in paragraph 4-42b.

4. GENERATOR VOLTAGE FLUCTUATES

Step 1. Check for fluctuating or faulty engine speed by referring to the engine maintenance manual, TM 5-2805- 259-14 or TO 38G2-89-41.

Make the adjustments and replacement of defective parts as delineated in TM 5-2805-259-14, or TO 8G-89-41. If engine speed is not fluctuating, go on to step 2.

Step 2. Test the voltage adjusting rheostat (variable resistor) by referring to para. 4-46c. If test renders the rheostat defective, replace it. Refer to figure 4-61 or 4-62 to remove rheostat from the applicable model generator set. If rheostat is not the cause of the malfunction, go on to step 3.

Step 3. Inspect the voltage regulator for loose wires, corroded wiring, metal to metal contact, incorrect wiring or other damage.

Determine if the voltage regulator is defective by performing voltage regulator on-equipment test as described in paragraph 4-42b.

Table 4-3. Organizational Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. FREQUENCY FLUCTUATES OR DROPS UNDER LOAD

Check the governor adjustment or the engine power. Refer to TM 5-2805-259-14. or TO 38G2-89-41.

Correct the deficiency, refer to TM 5-2805-259-14, or TO 38G2-89-41.

6. ENGINE OIL PRESSURE NOT INDICATED ON GAGE

Step 1. Inspect oil pressure gage for serviceability, loose or corroded wiring, metal to metal contact, incorrect wiring and cracks or breaks in wiring. If any of the above deficiencies exist, correct them.

Tighten wires, replace wires, etc., if oil pressure gage is damaged, replace it. (Refer to figure 4-61 or 4-62.) If none of those deficiencies exist go on to step 2.

Step 2. Remove the top engine shroud, figure 4-41. Test the oil pressure gage transmitter with a multimeter (paragraph 4-15) for continuity between terminals of the transmitter. inspect the transmitter for cracks, breaks and loose terminals.

Replace defective transmitter, fig. 4-42. Install the top engine shroud, fig. 4-41. If transmitter is not damaged, go on to step 3.

Step 3. Check for a broken or cracked oil pressure indicator. Inspect for loose or corroded wiring and incorrect wiring. Test with a multimeter. refer to paragraph 4-15.

Repair the wiring as necessary, or replace the indicator, refer to figures 461 or 4-62.

7. VOLTMETER INDICATION TOO HIGH OR TOO LOW.

Step 1. Inspect voltmeter for loose wires, corroded wiring, incorrect wiring, and breaks and cracks. Also, test the voltmeter with a multimeter to verify readings.

Step 2. Test the voltage adjusting rheostat (variable resistor) by referring to para. 4-46c. If test renders the rheostat defective, replace it. Refer to figure 4-61 or 4-62 to remove rheostat from the applicable model generator set.

8. VOLTMETER FAILS TO REGISTER

Inspect the voltmeter for cracks or breaks. loose or corroded wiring, and incorrect wiring. Use a multimeter (para 4-15) and test the voltmeter.

Tighten loose wiring and clean corroded wiring. If test shows meter to be defective, replace it.

Table 4-3. Organizational Troubleshooting (Cont'd)

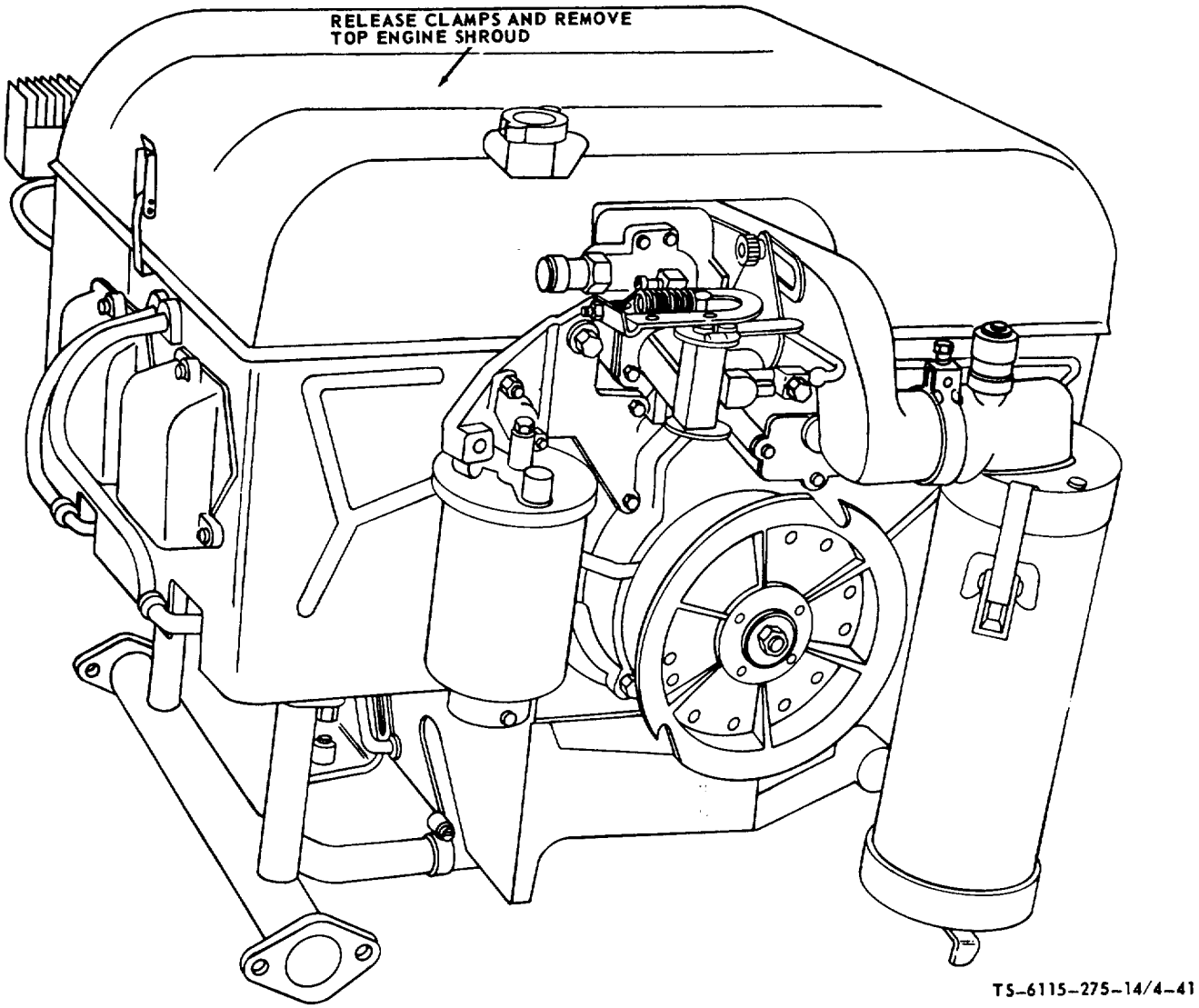


Figure 4-41. Top, left, and right shrouds, removal and installation

Table 4-3. Organizational Troubleshooting (Cont'd)

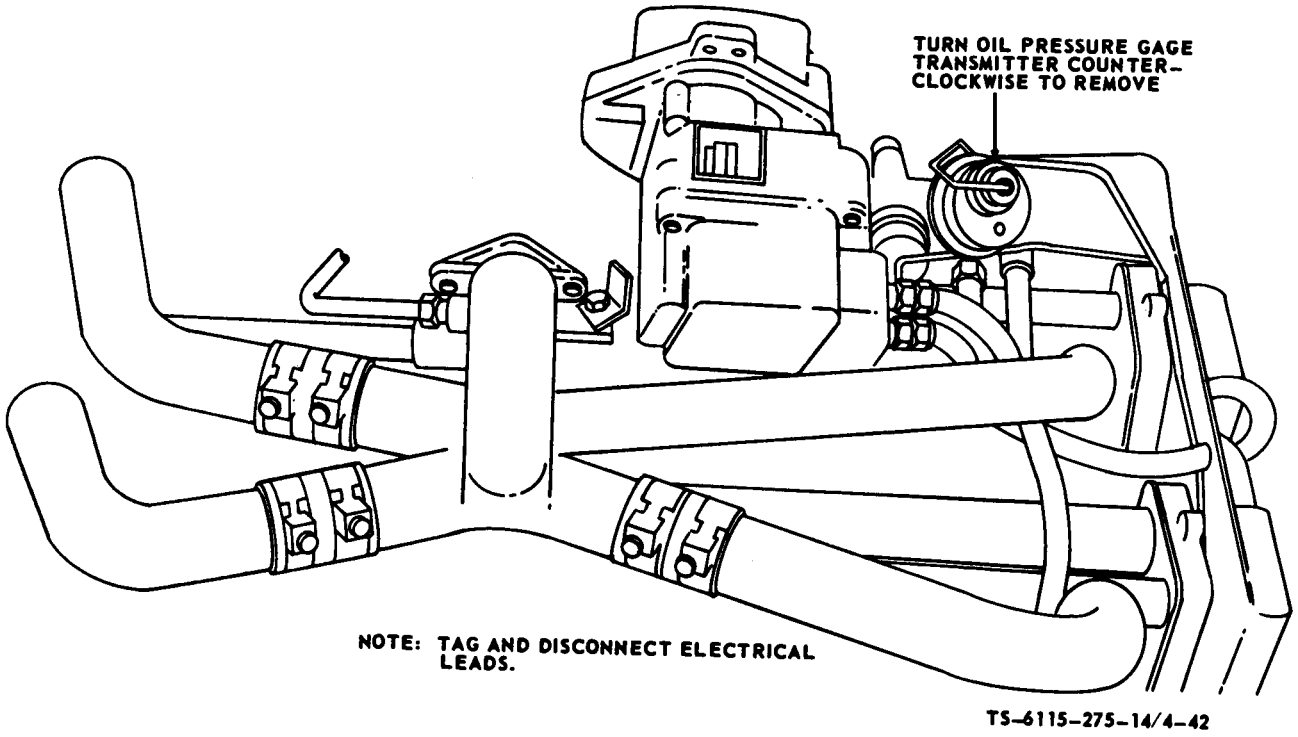


Figure 4-42. Oil pressure gage transmitter, removal and installation.

Section VII. RADIO INTERFERENCE SUPPRESSION

4-17. 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.

4-18. Interference Suppression Components

a. Primary Suppression Components. The primary suppression components are those whose primary function is to suppress radio interference. These components are described and located in figure 4-43.

b. Secondary Suppression Components.- These components have radio interference suppression functions which are incidental or secondary to their primary function.

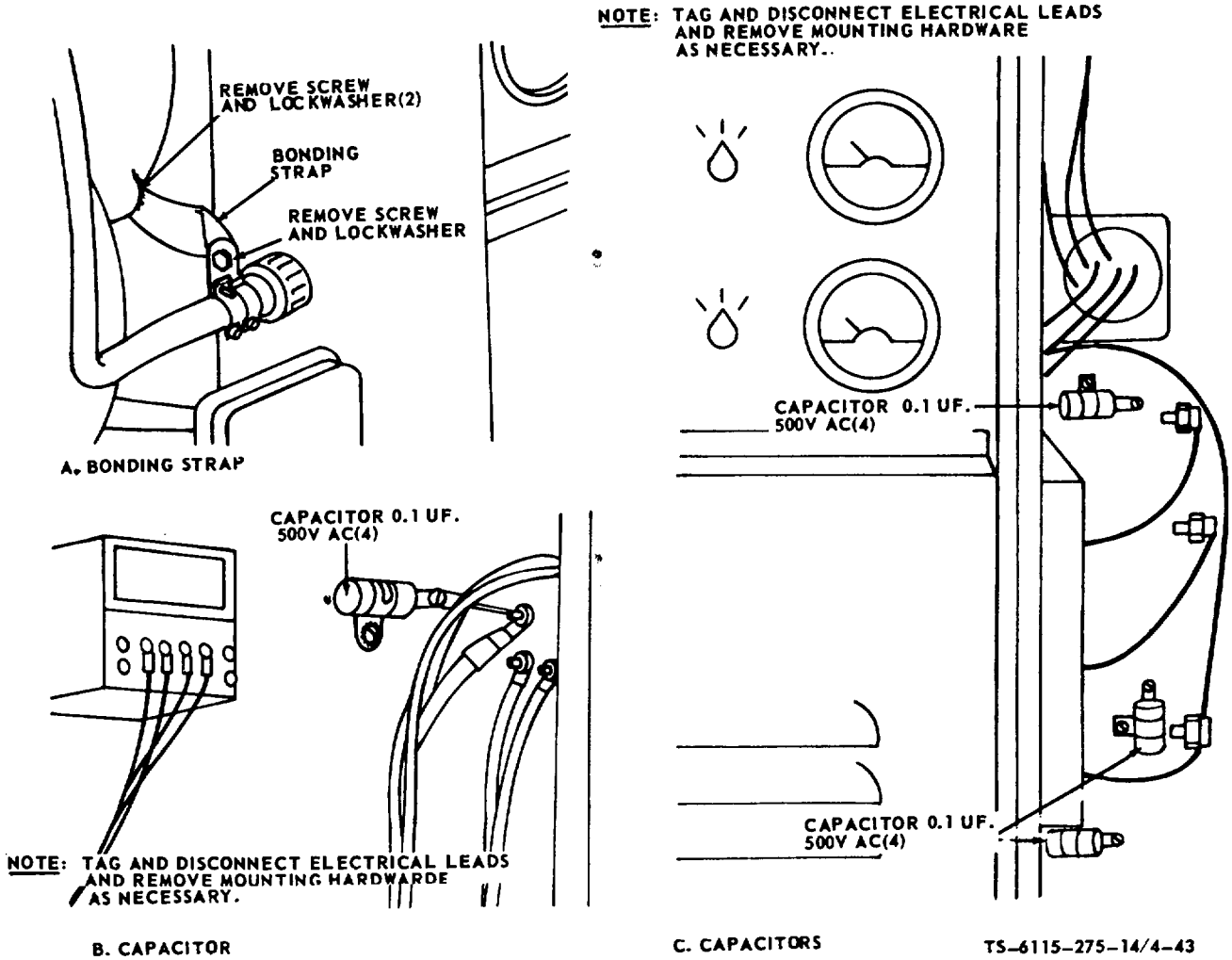


Figure 4-43. Interference suppression components, location, removal and installation (Model MEP-023A).

Section VIII. MAINTENANCE OF ENGINE ASSEMBLY

4-19. Muffler

a. Removal. Model MEP-018A, figure 4-44.

(1) Remove the muffler and muffler guard.

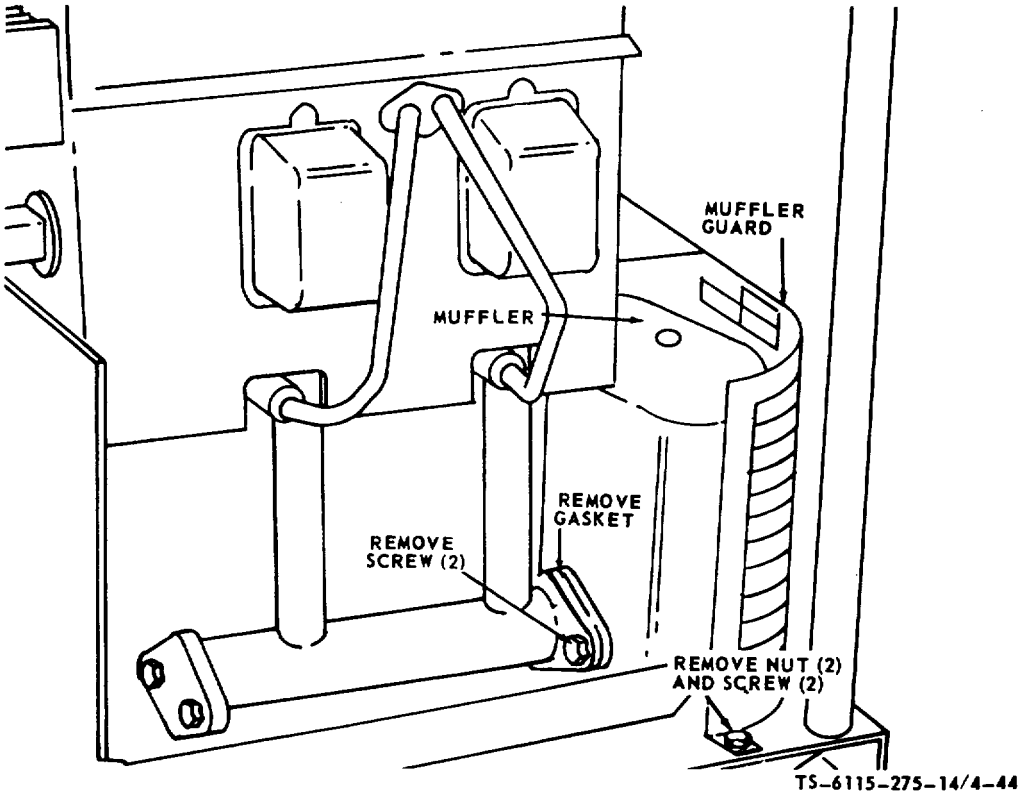


Figure 4-44. Muffler and muffler guard, removal and installation (Model MEP-OISA).

(2) Remove the muffler and brackets, Model MEP-023A, figure 4-45.

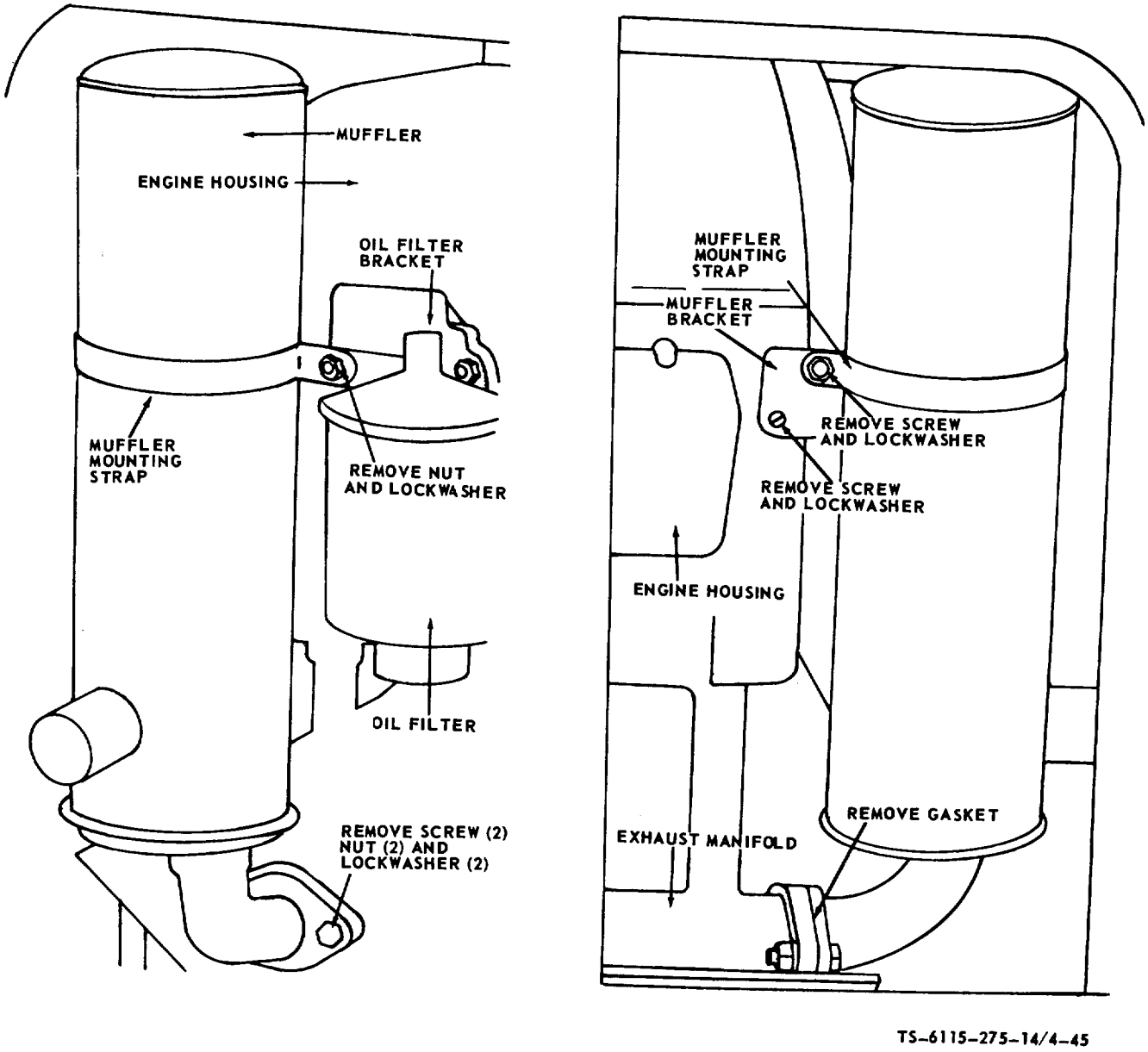


Figure 4-45. Muffler and brackets, removal and installation (Model MFP-023A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38'C).

(1) Clean brackets, straps, guard and hardware with cleaning solvent, Federal Specification P-D-680 or P-S-661, and dry thoroughly.

(2) Clean all rust and scale from the muffler with a wire brush.

(3) Inspect the muffler, brackets and guard for cracks, breaks, and other damage. Replace all damaged or defective parts.

c. Installation.

(1) Install the muffler and muffler guard, Model MEP-018A, figure 4-44.

(2) Install the muffler and brackets, Model MEP-023A, figure 4-45.

4-20. Oil Drain Valve and Fittings

a. Removal. Refer to figure 4-46 and remove the oil drain valve and fittings.

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680' or P-S-661, and dry thoroughly with low pressure compressed air.

(2) Inspect all parts for cracks, breaks, and distorted threads. Replace all damaged parts.

c. Installation. Refer to figure 4-46 and install the oil drain valve and fittings.

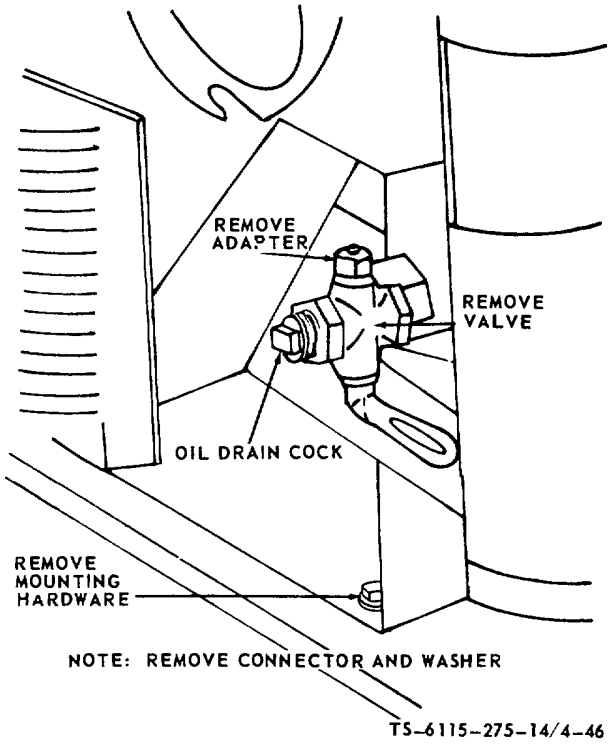


Figure 4-46. Oil drain valve, removal and installation.

Section IX. MAINTENANCE OF FUEL SYSTEM

4-21. Fuel Tank and Components

a. Recoveal

(1) Remove the fuel drum adapter, fig. 4-47.

(2) Remove the fuel tank and fuel tank adapter, figure 4-48.

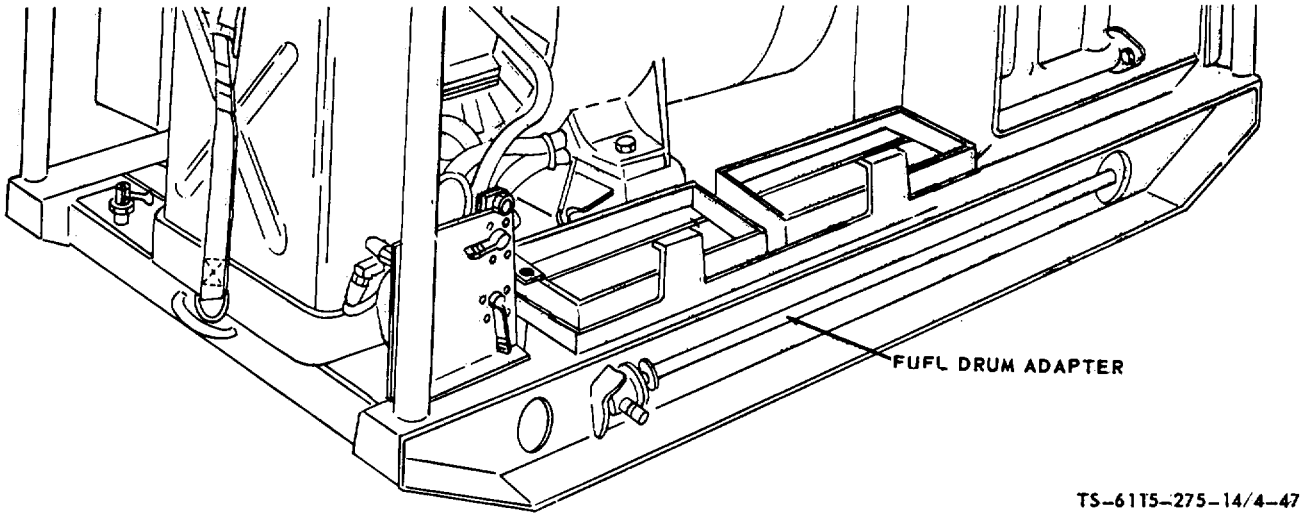


Figure 4-47. Fuel drum adapter, removal and installation.

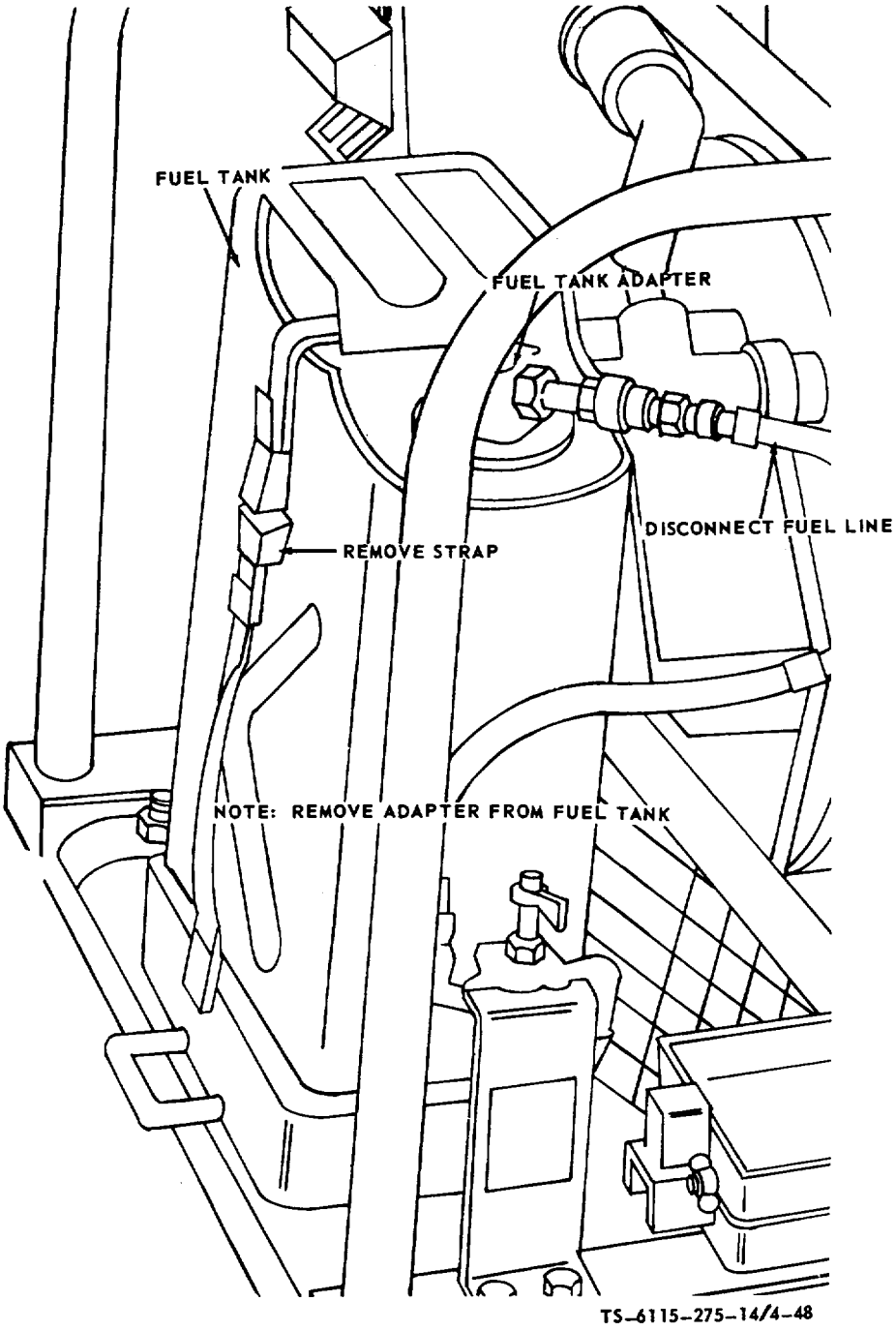


Figure 4-48. Fuel tank and adapter, removal and installation.

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) inspect the fuel tank and adapters for damaged threads, cracks or other defects. Replace a defective fuel tank or adapter.

c. Installation.

(1) Install the fuel tank and fuel tank adapter as shown by figure 4-48.

(2) Install the fuel drum adapter (fig. 4-47).

4-22. Fuel Hoses, Lines, and Filter (Model MEP-018A)

a. Removal (All Serial Number Ranges except MA 68-0001 thru (M.A68-2.987). Refer to figure 4-49 and remove hoses. lines, and fittings.

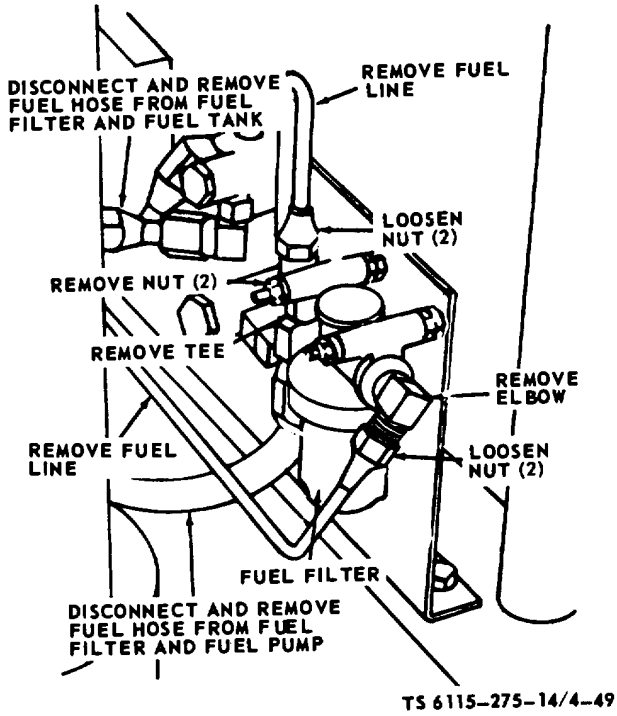


Figure 4-49. Fuel hoses, lines and filter, removal and installation (all serial numbers except MA68-O0001 thru MA68.-2987) (Model MEP-OISA).

b. ***Removal (Serial Number Range MA68-I001 tu 6MA682987).*** Refer to figure 4-50 and remove the hoses. lines and filter.

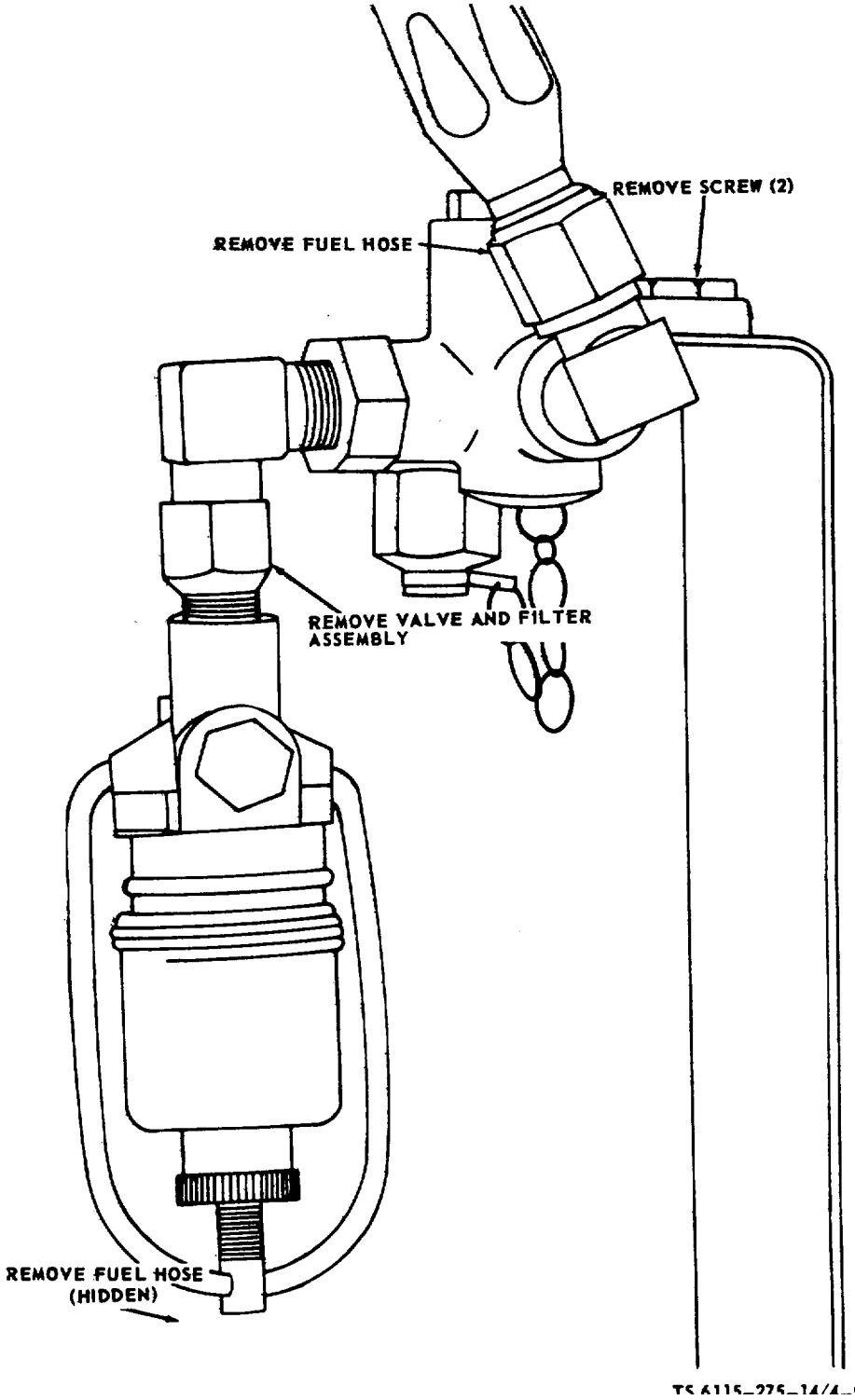


Figure 4-50. Fuel hoses, lines and filter, removal and installation (serial number range MA68-0001 through MA68-2987) (Model MEP-018A)

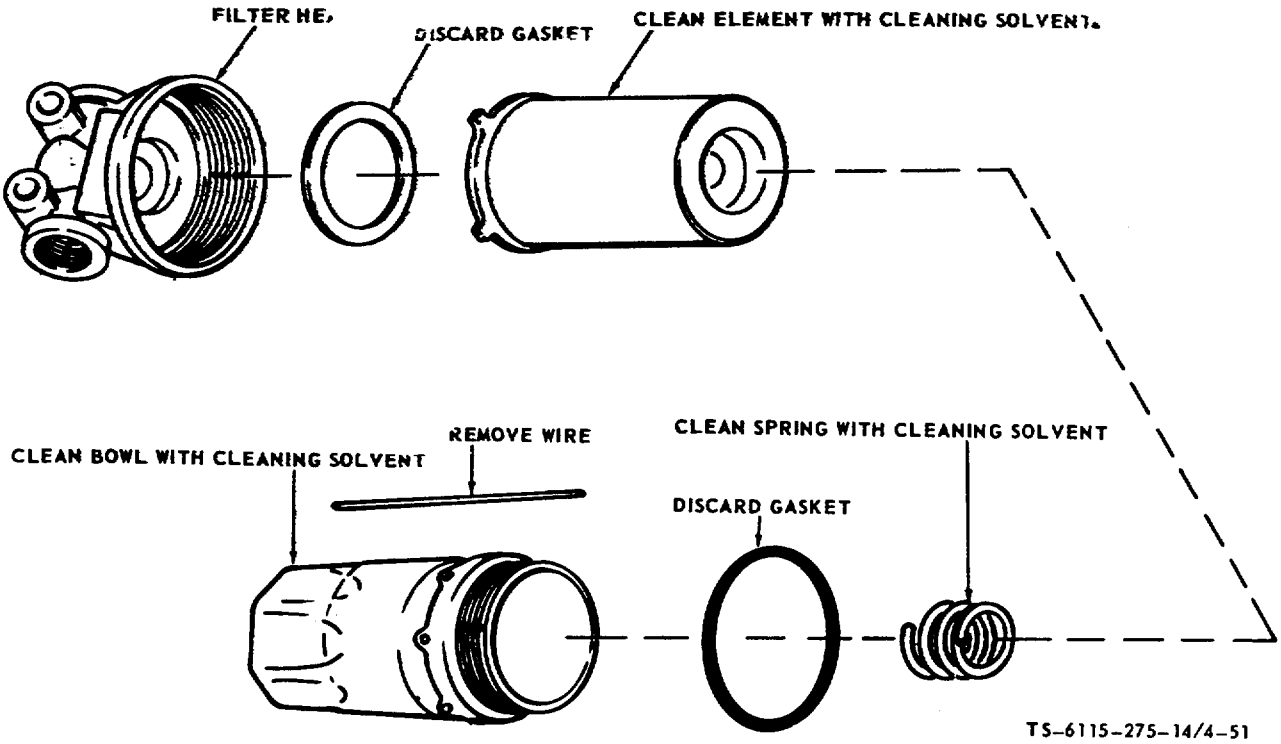


Figure 4-51. Fuel filer, disassembly (Model MEP-018A).

c. Disassembly. Refer to figure 4-51 and disassemble the fuel filter.

d. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 1000 F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect the fuel hoses for cuts, breaks, or deterioration. Inspect the fuel lines for cracks, breaks, or other damage.

(3) Replace a damaged or defective fuel hose or fuel line.

(4) Inspect all parts for cracks, breaks or other damage.

(5) Replace a damaged or defective part.

e. Assembly. Refer to figure 4-51 and assemble the fuel filter.

f. Installation (Serial Number Range except MA68-0001 thru MA68-2-987. Refer to figure 4-49 and install the hoses, lines and filters.

g. Installation (Serial Number Range MA68-0001 thru MA68-2987. Refer to figure 4-50 and in- stall the hoses, lines and filters.

4-23. Fuel Lines and Filter (Model MEP-023A)

a. Removal. Refer to figure 4-52 and remove the fuel filter and lines.

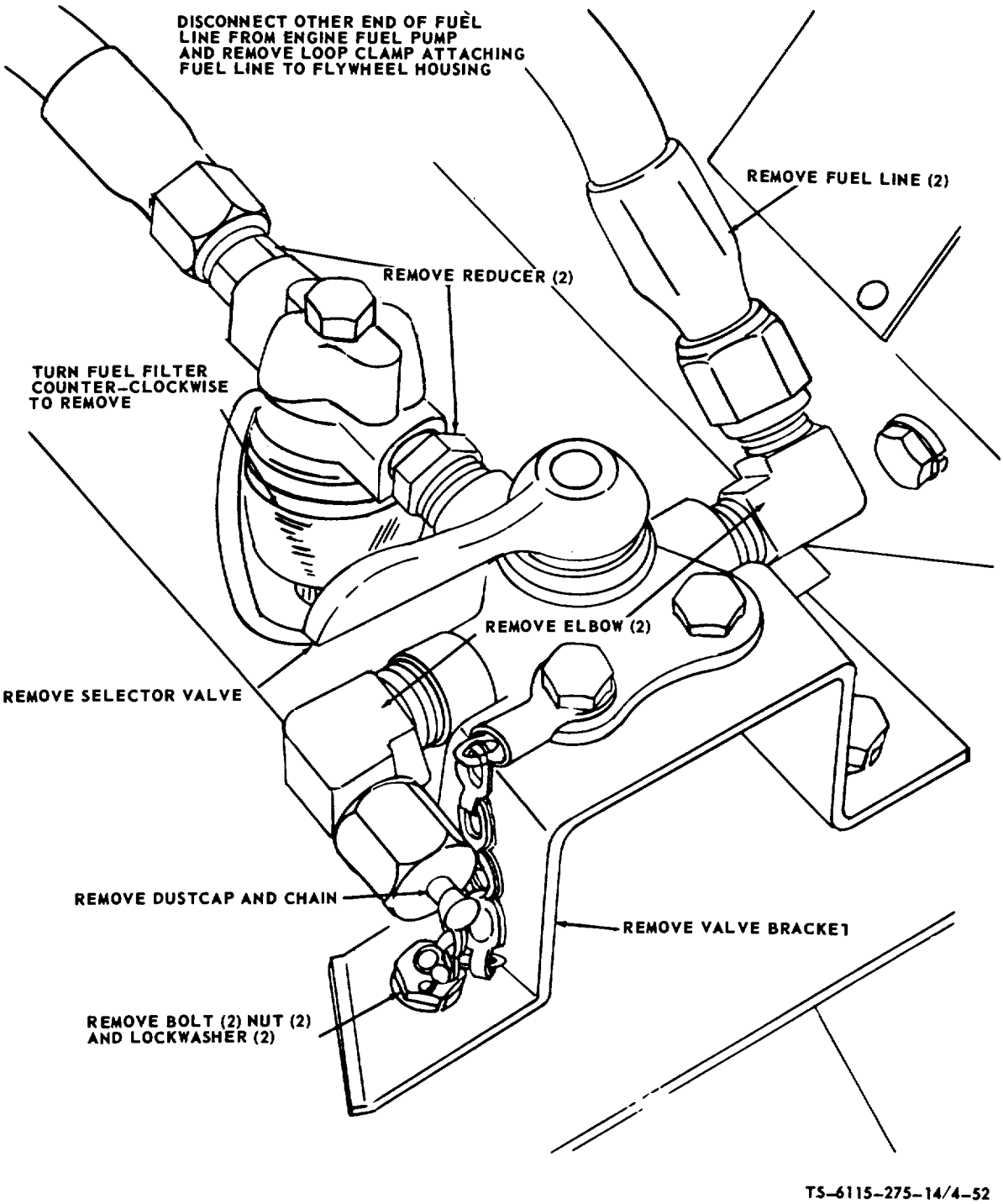


Figure 4-52. Fuel lines, fuel filter and fuel selector valve, removal and installation (Model MEP-023A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°-F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect the fuel lines and filter for cracks, breaks, leakage or deterioration. Replace all damaged or defective parts.

c. Installation. Refer to figure 4-52 and install the fuel filter and lines.

4-24. Three-Way Valve and Heater Fuel Valve (Model MEP-018A)

a. Removal (All Serial Numbers except MA68-0001 thru MA68-2987.

(1) Remove the fuel hose and fuel lines, paragraph 4-22.

(2) Remove the threeway valve, heater fuel valve and brackets, figure 4-53.

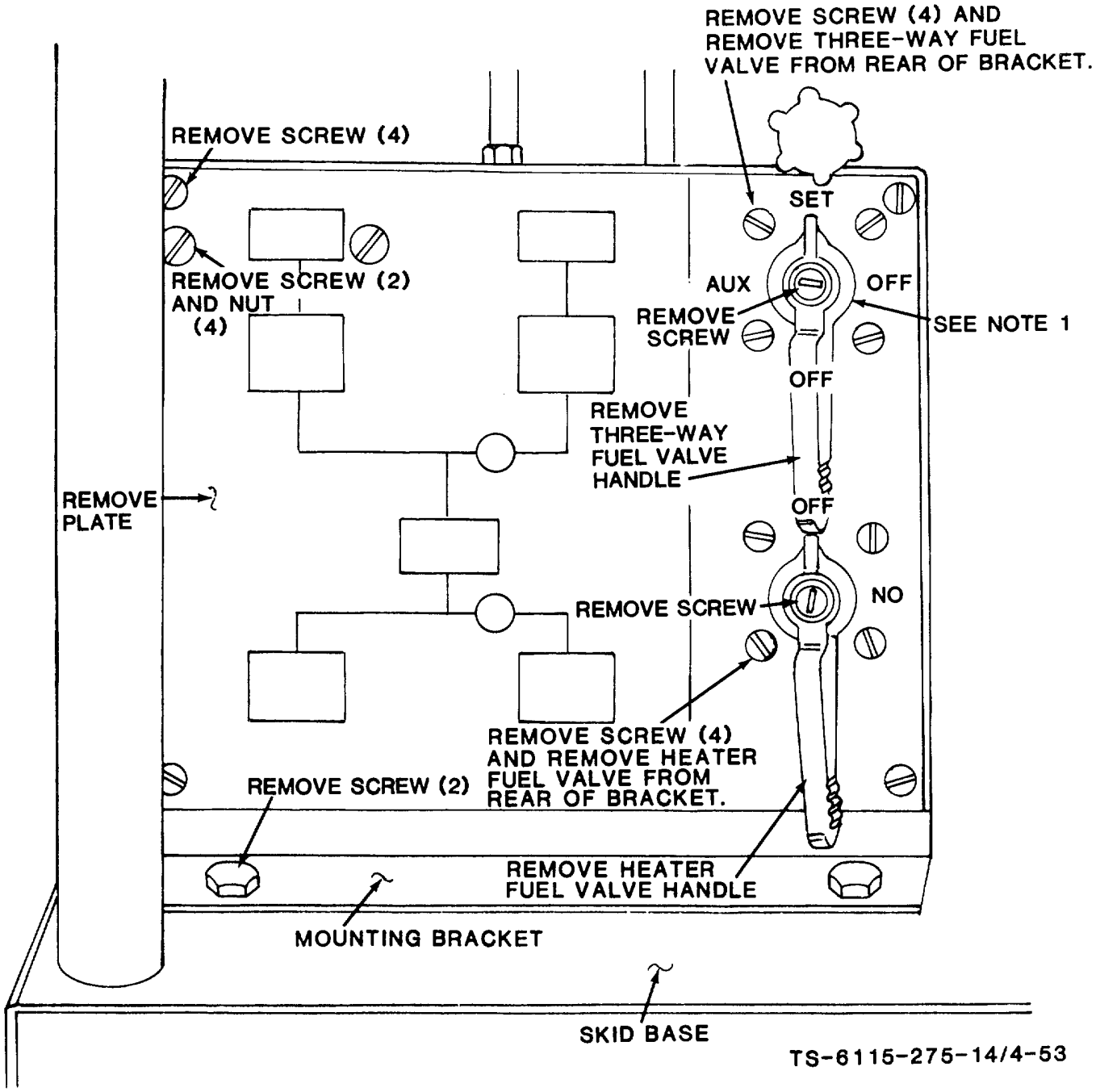


Figure 4-53. THREE-WAY VALVE FUEL FILTER, FUEL VALVE MOUNTING BRACKET, REMOVAL AND INSTALLATION (ALL SERIAL' NUMBERS EXCEPT MA68-0001 THRU MA68-2987) (MODEL MEP-018A)

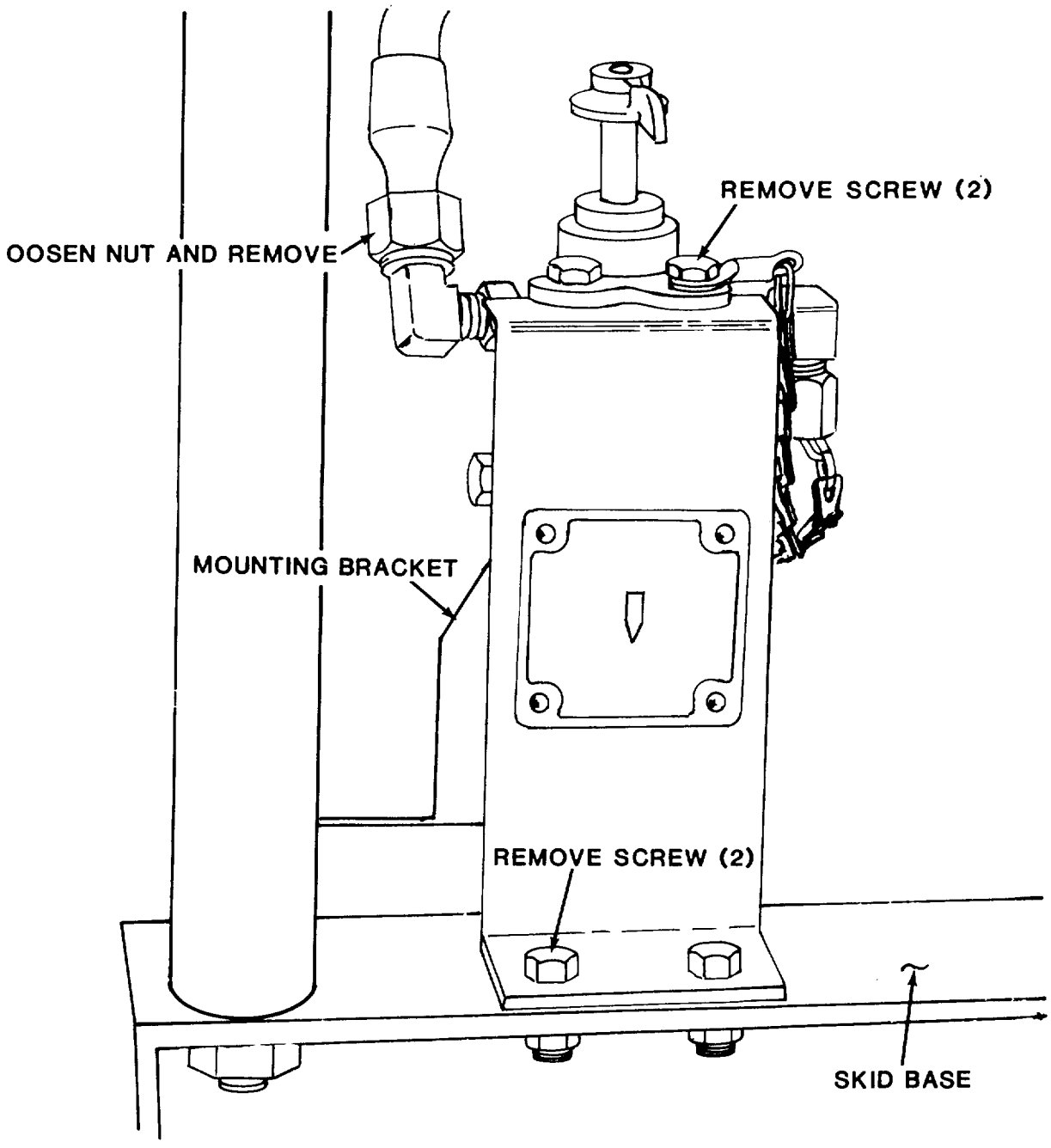


Figure 4-54. THREE-WAY FUEL VALVE, FUEL FILTER, FUEL VALVE, MOUNTING BRACKET, REMOVAL AND INSTALLATION(SERIAL NUMBER RANGE MA68-0001 THRU MA68-2987) (MODEL MEP-018A).

c. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean items with cleaning solvent. Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect all parts for cracks, breaks, stripped threads or other damage.

(3) Replace a damaged or defective part.

d. Installation (All Serial Numbers except MA68-0001 thru MAf68-2987.

(1) Install the three-way valve, heater fuel valve and brackets, figure 4-53).

(2) Install the fuel hose and fuel lines, paragraph 4 22.

e. Installation (Serial Number Range MA680001 thru MA68-2987.

(1) Install the three-way valve, heater valve, and brackets. figure 4-54.

(2) Install the fuel hose and lines. paragraph 4-22.

4-25. Fuel Selector Valve (Model MEP-023A)

a. Removal. Refer to figure 4-52 and remove the fuel selector valve.

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38'C).

(1) Clean item with cleaning solvent, Fed. Spec. P-D-680 or P-S-661 and dry thoroughly.

(2) Inspect the valve for cracks, breaks, and improper operation.

(3) Replace all damaged or defective parts.

c. Installation. Refer to figure 4-52 and install the fuel selector valve.

4-26. Fuel Tank Bracket and Strap Assemblies (Model MEP-018A)

a. Removal.

(1) Remove the fuel tank (par. 4-21).

(2) Remove the fuel tank bracket and strap assemblies as shown by figure 4-55.

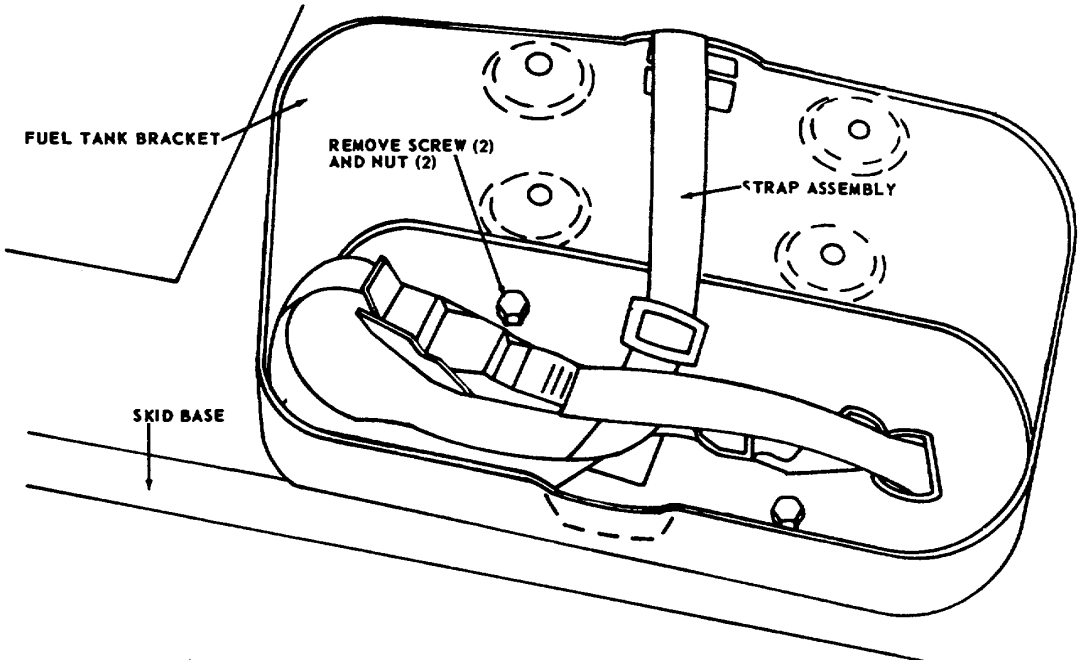


Figure 4-55. Fuel tank bracket and strap assemblies. removal and installation (Model MEP-018A).

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b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D.680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean metal items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661 and dry thoroughly.

(2) Clean the webbing with clean, warm water and detergent.

(3) Inspect all metal parts for cracks, breaks, or other damage. Replace all damaged parts.

(4) Inspect the webbing for cuts, fraying, and deterioration. Replace if damaged.

c. Installation. Refer to figure 4-56 and install the fuel container hold-down assembly and brackets

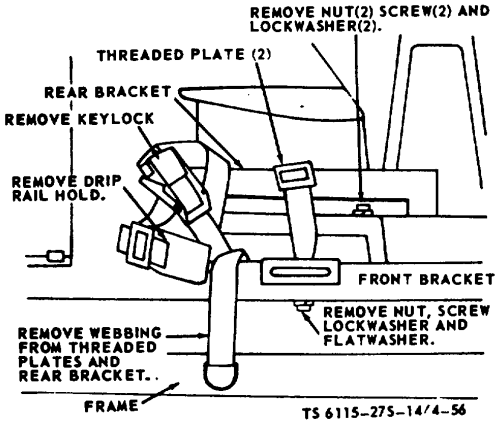


Figure 4-56. Fuel tank brackets. and hold-down assembly, removal and installation (Model MEP-023A)

SECTION X. MAINTENANCE OF THE BATTERY AND CABLES

4-27. Cables

a. Removal. Refer to figure 4-57 and remove the cables.

b. Cleaning, Inspection, and Repair.

(1) Clean all corrosion off of cables with a wire brush.

(2) Clean the terminal stud with a clean dry cloth.

(3) Inspect the cables for fraying and breaks. Replace all damaged cables.

(4) Inspect the terminal stud for cracks and breaks. Replace if damaged.

c. Installation. Refer to figure 4-57 and install the cables.

428. Battery

a. Removal Refer to figure 4-58 and remove the battery.

NOTE

The 6TN and 6TL batteries can be mixed or matched. However, maintenance-free batteries cannot be mixed or matched with military batteries. The 6TN and or the 6TL batteries will perform properly in hot weather as long as electrolyte levels are carefully monitored. If the electrolyte expands and causes the level to rise, some fluid must be removed. If the level becomes too low due to evaporation, distilled water may be used to obtain the proper level. A good grade of drinking water (excluding mineral waters) may be used if distilled water is not available.

Electrolyte (NSNs 68104)0-249-9354 and 681040-843-1640) have a specific gravity of 1.280 and should be used in these batteries. Do NOT adjust the electrolyte in wet batteries to a lower specific gravity.

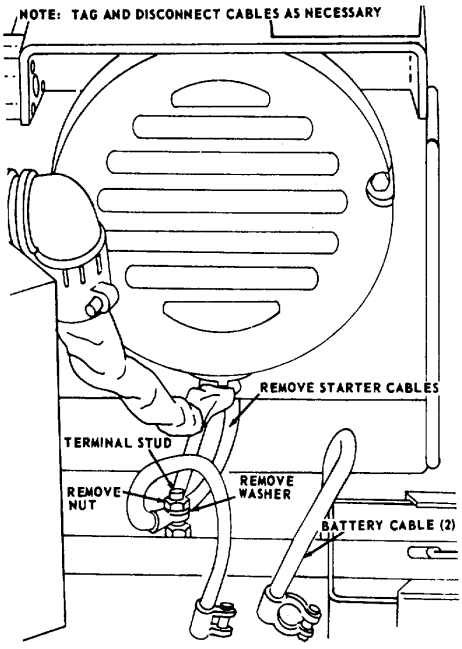


Figure 4-57. Battery and starter cables, removal and installation

*** U.S. GOVERNMENT PRINTING OFFICE: 1991 554-123/20079**

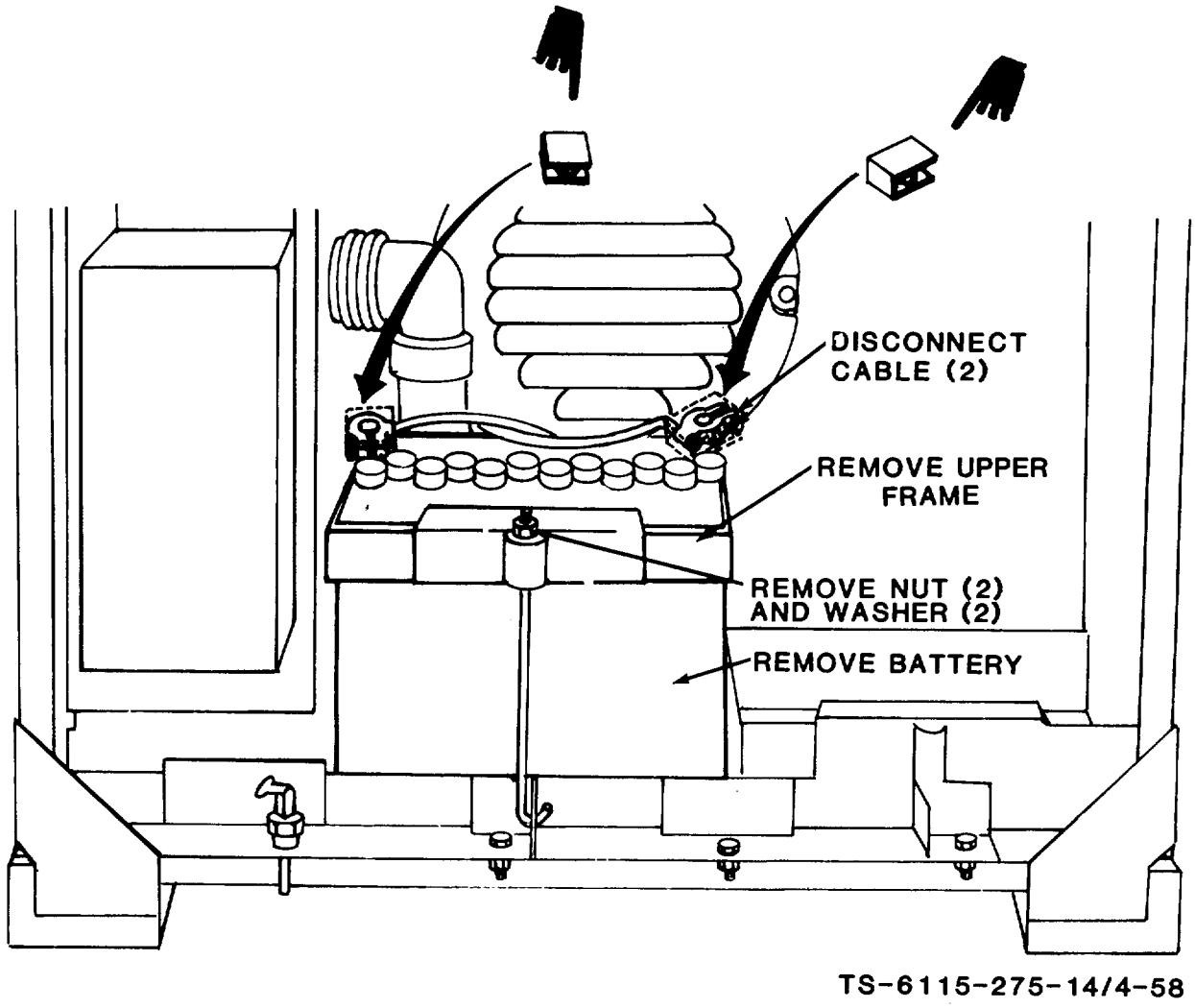


Figure 4-58. BATTERY, REMOVAL AND INSTALLATION.

b. Cleaning, Inspection and Repair.

(1) Clean the battery terminals and the battery cable terminals with a wire brush or a solution of bicarbonate of soda and water. Clean the batteries with a clean dry cloth. Be sure the vent holes in the caps are open.

(2) Inspect the battery and cables for cracks, breaks, loose terminals and for broken or missing caps.

(3) Inspect the frames and mounting hardware for cracks, breaks or other damage.

(4) Replace a damaged or defective part.

c. Installation. Install the battery and cables as shown by figure 4-58.

d. Testing. For instructions on testing the battery, refer to TM 9-6140-200-15.

Section XI. MAINTENANCE OF ELECTRICAL PANELS AND CONTROLS

4-29. General

The control cabinet assembly mounted on the left side of the generator set, can be replaced as a unit. The controls and instruments for operation of the generator set are mounted on the instrument panel and inside the control cabinet.

WARNING

Perform any electrical maintenance or change-load connections while the generator set is operating or connected to an energized line. Failure to observe this safety percaution may result in severe electrical shock or death by electrocution.

4-30. Control Cabinet Assembly

a. Testing and Inspection. Prior to replacing the cabinet assembly, a limited amount of testing should be performed. Visually inspect the terminals on the back of the cabinet for loose connections or broken terminals. Using a multimeter, check accessible wiring. When testing a wire for continuity, disconnect each end of the wire. Refer to the applicable wiring harness (Model MEP-018A or Model MEP-023A). Touch each end of the wire with the probe of the multimeter. If continuity is not indicated. there is a break in the wire.

b. Removal. Refer to figure 4-59 or 4-60 and remove the applicable control box.

c. Installation. Refer to figure 4-59 or 4-60 and install the applicable control box.

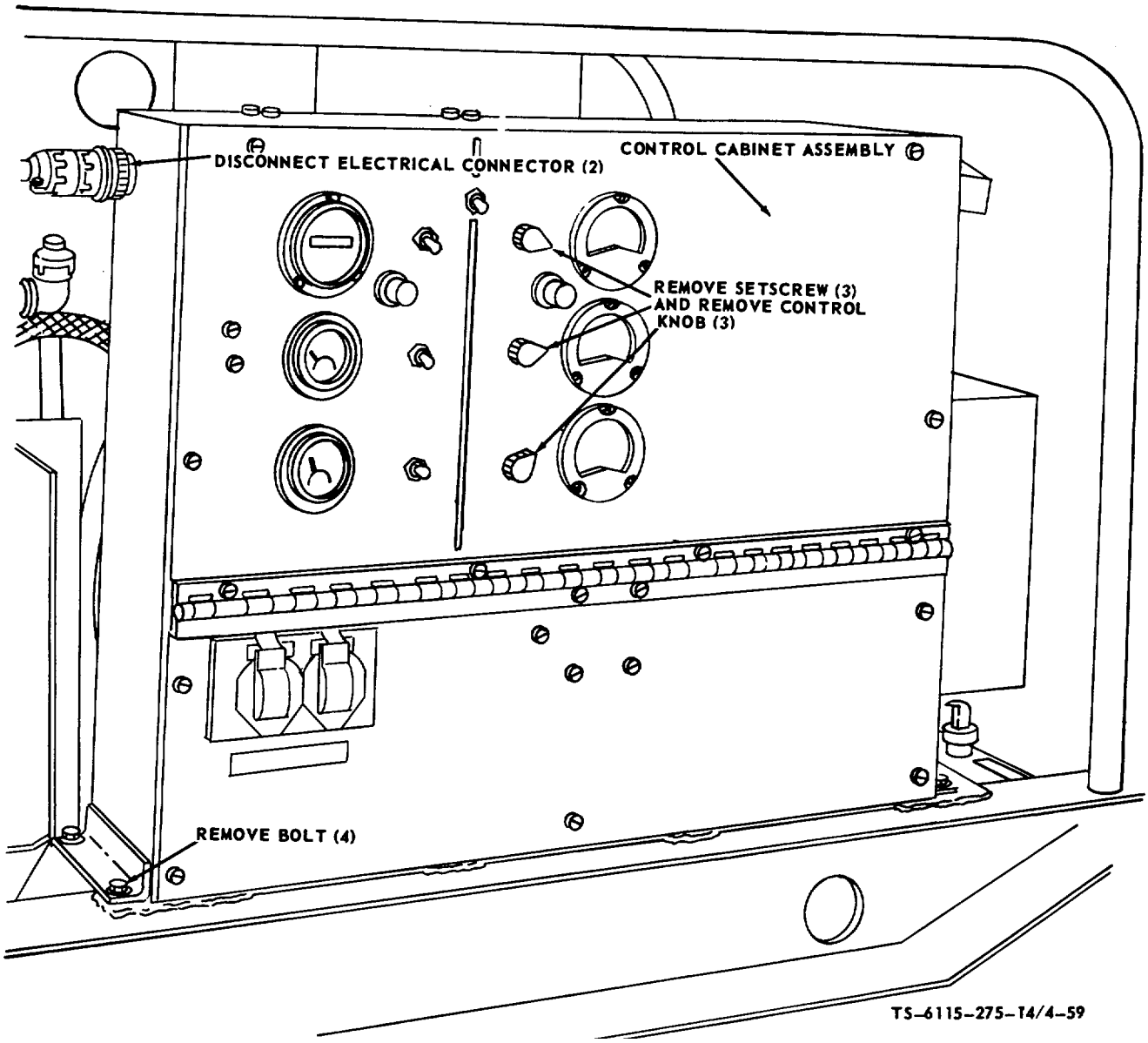


Figure 4-59. Control cabinet assembly, removal and installation (Model MEP-018A).

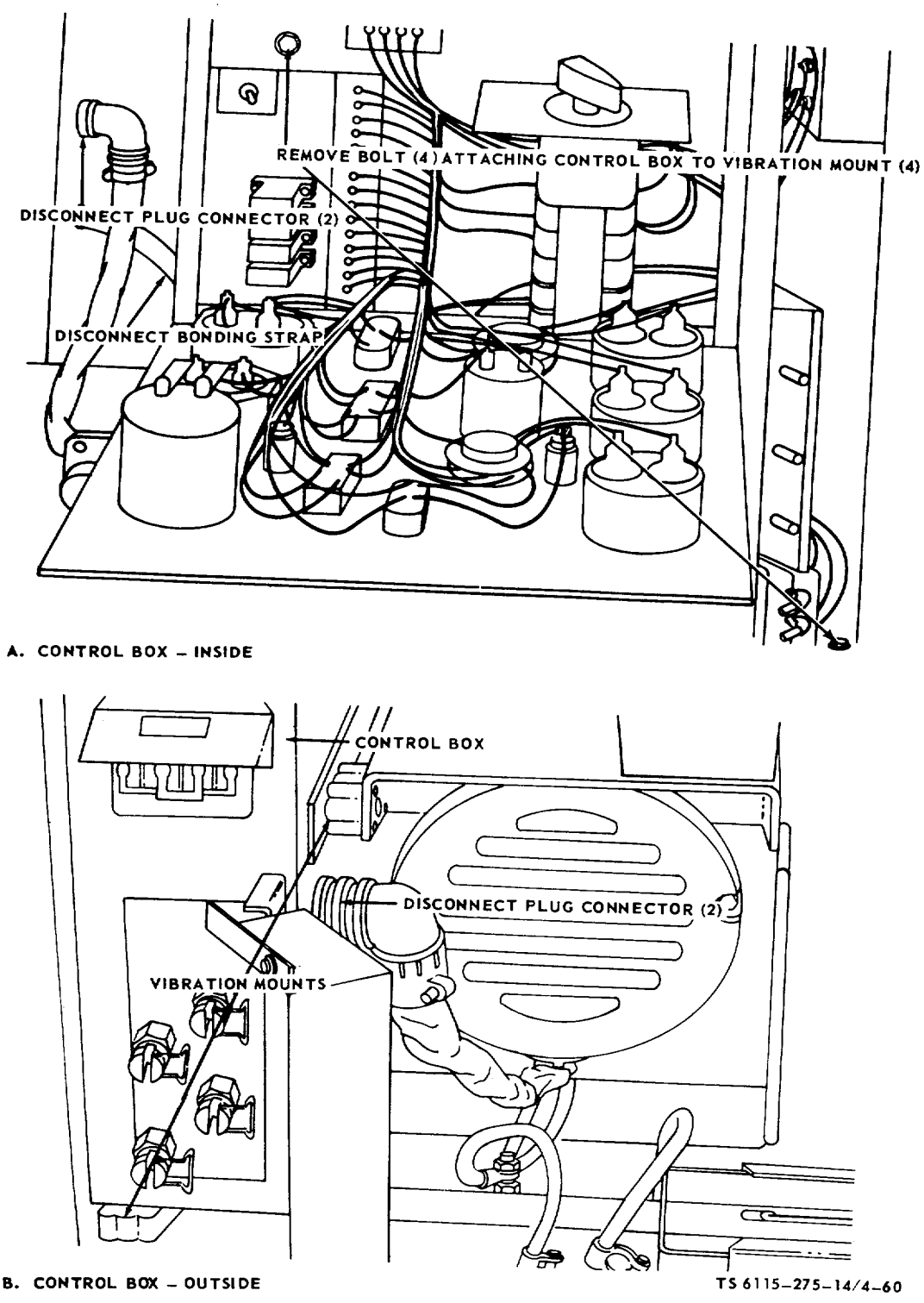


Figure 4-60. Control box, removal and installation (Model MEP-023A).

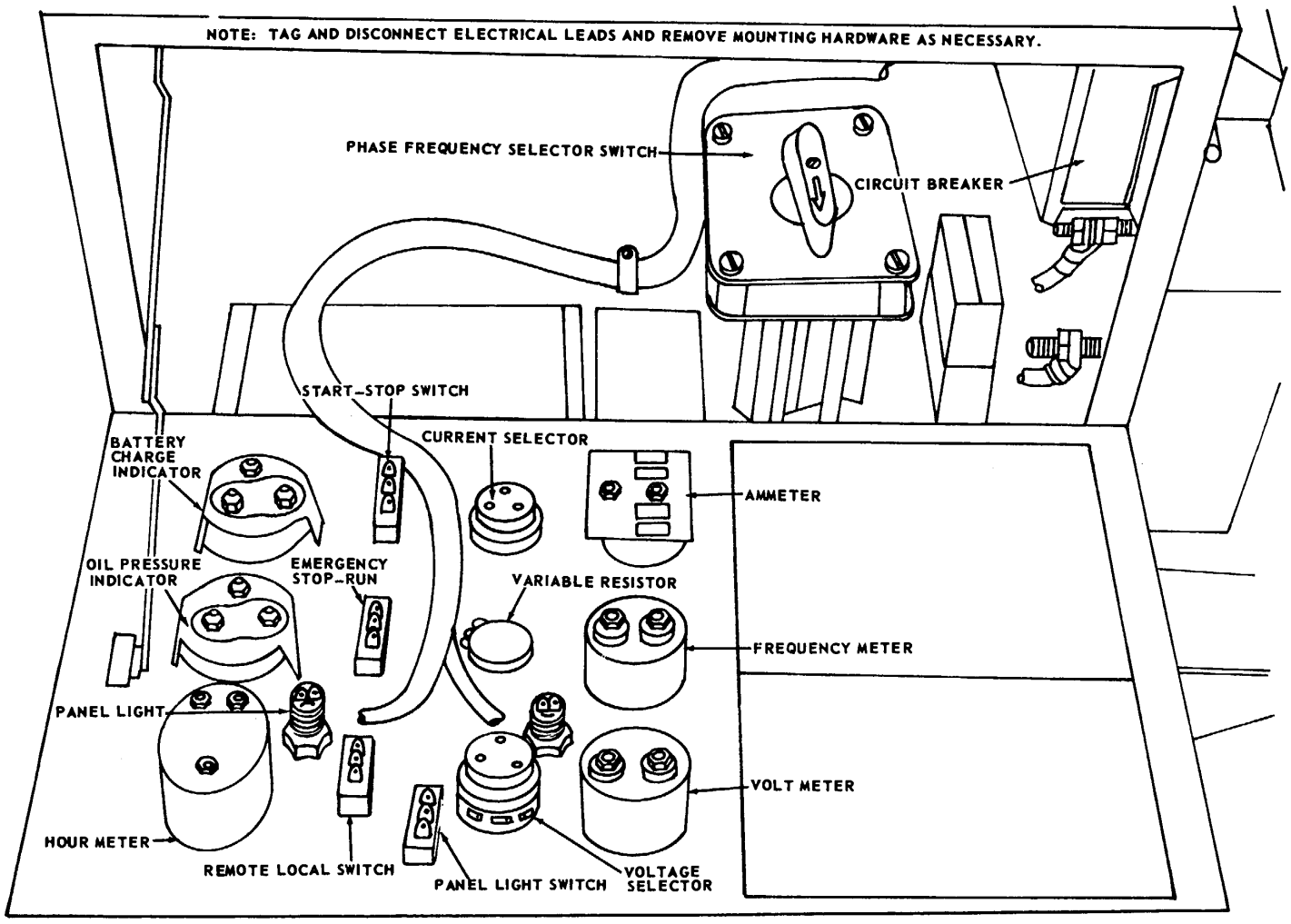


Figure 4-61. Controls and instruments, removal and installation (Model MEP-OI8A).

4-31. Battery Charging Ammeter

a. Removal. Refer to figure 4-61 or 4-62 and remove the battery charging ammeter from the applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean the meter with a clean, dry cloth.

(2) Inspect for damaged or corroded terminals, broken glass or other damage.

(3) Replace a defective meter.

c. Installation. Refer to figure 4-61 or 4-62 and install the battery charging ammeter in the applicable model generator set.

4-32. Oil Pressure Indicator

a. Removal. Refer to figures 4-61 or 4-62 remove the oil pressure indicator from the applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean the indicator with a clean, dry cloth.

(2) Inspect for broken glass or other defects.

(3) Replace a defective indicator.

c. Installation. Refer to figures 4-61 or 4-62 and install the oil pressure indicator in the applicable model generator set.

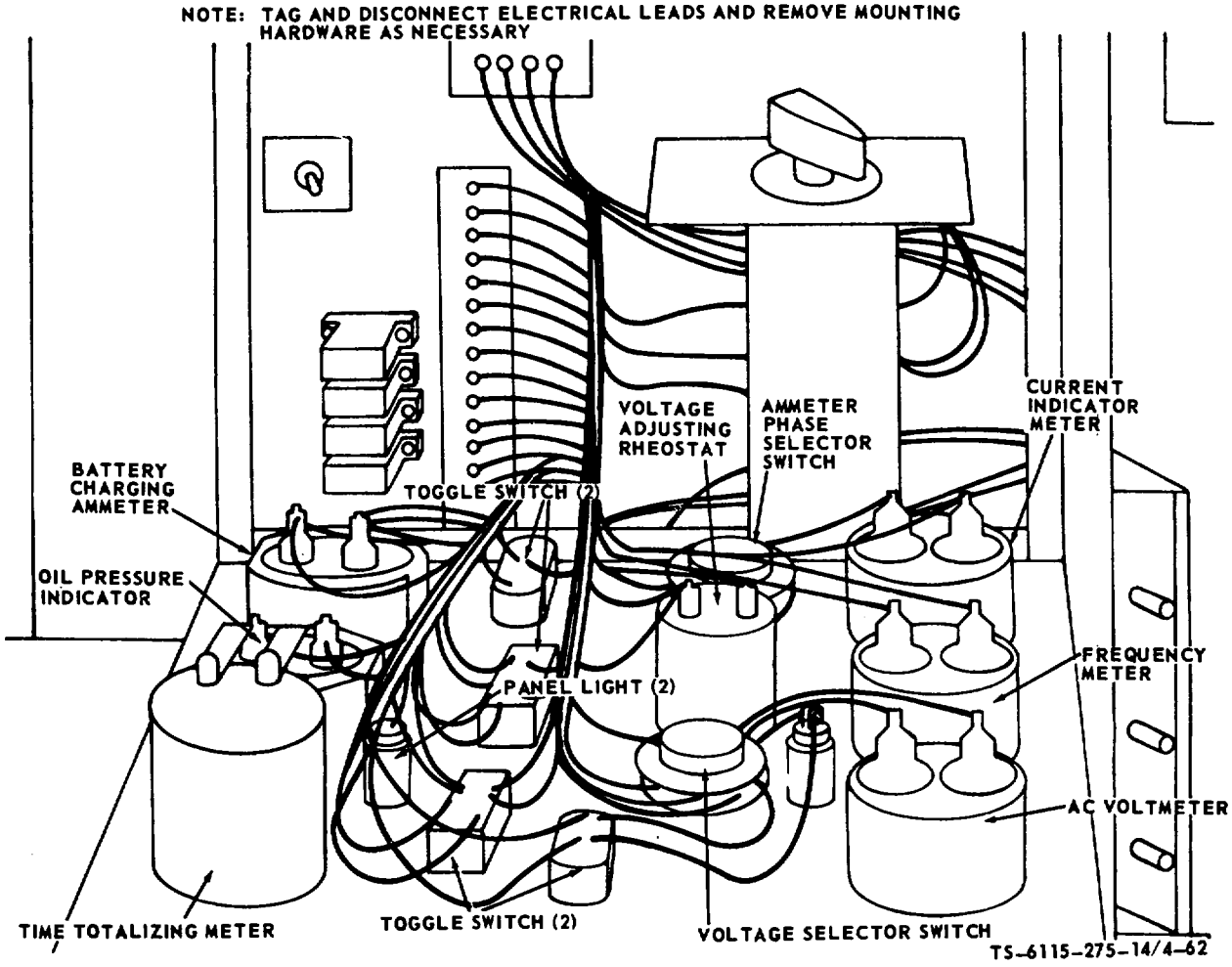


Figure 4-62. Controls and instruments, removal and installation (Model MEP-023A)

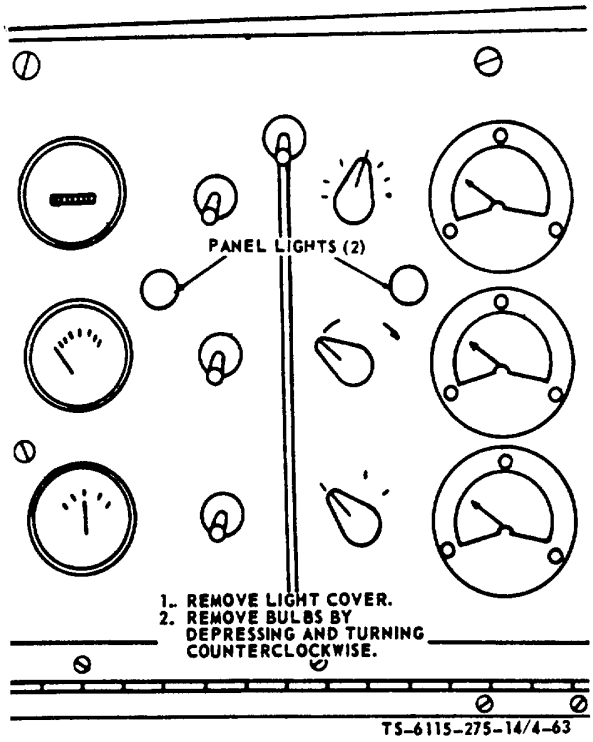


Figure 4-63. Panel light bulbs, removal and installation.

4-33. Panel Light Bulbs

a. Removal. Refer to figure 4-63 and remove the panel lamps.

b. Cleaning, Inspection and Repair.

(1) Clean the lamps with a clean, dry cloth.

(2) Inspect the lamps for defects; replace a defective lamp.

c. Installation. Refer to figure 4-63 and install the panel lamps.

4-34. Panel Lights

a. Removal.

(1) Remove lamps, paragraph 4-35.

(2) Refer to figures 4-61 or 4-62 and remove the panel lights from the applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean the panel lights with a clean, dry cloth.

(2) Inspect for broken or corroded terminals, or other defects. Replace a defective light.

c. Installation. Refer to figures 4-61 or 4-62 and install the panel lights in the applicable model generator set.

4-35. Switches

a. Removal. Refer to figures 4-61 or 4-62 and remove the switches from the applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean the switch with a clean, dry cloth.

(2) Inspect for corroded or damaged terminals, or other defects. Replace a defective switch.

c. Instillation. Refer to figures 4-61 or 4-62 and install the switches in the applicable model generator set.

4-36. Time Totalizing Meter

a. Removal. Refer to figures 4-61 or 4-62 and remove the time totalizing meter from the applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean meter with a dry, clean cloth.

(2) Inspect the meter for cracks, breaks or other damage. Replace a damaged or defective meter.

c. Installation. Refer to figures 4-61 or 4-62 and install the time totalizing meter on the applicable model generator set.

4-37. Voltage and Current Selectors and Voltage Adjusting Knob, Rheostat

a. Removal. Refer to figures 4-59, 4-61 or 4-62 and remove items from applicable model generator set.

b. Cleaning, Inspection and Repair.

(1) Clean the items with a clean, dry cloth.

(2) Inspect for damage and improper operation. Replace if damaged or defective.

c. Testing.

(1) With the electrical leads disconnected from the rheostat, connect a multimeter to both outside terminals. The resistance measured should not be more than 10% above or below 15 ohms for generators equipped with old style voltage regulator, 750 ohms for new universal style voltage regulator.

(2) Connect the multimeter between the center terminal and one outside terminal. Rotate the rheostat from one extreme position to the other. The resistance should vary smoothly from zero to maximum.

d. Installation. Refer to figures 4-59, 4-61 or 462 and install items on the applicable model generator set.

4-38. Ammeter, Voltmeter: Frequency Meter

a. Removal. Refer to figures 4-61 or 4-62 and remove the meters from the applicable model generator set.

NOTE

el MEP-018A, do not remove wiring on the resistor board during removal and installation of the ammeter Remove the two nuts securing the resistance board to the ammeter.

b. Cleaning, Inspection and Repair.

(1) Clean the meters with a clean, dry cloth.

(2) Inspect the meters for broken glass, improper operation, or other damage. Replace if damaged or defective.

c. Testing of AC Voltmeter, Ammeter and Frequency meter. Test meters using a multimeter. Refer to paragraph 4-15.

d. Installation. Refer to figures 4-61 or 4-62 and install the meters on the applicable model generator set.

NOTE

el MEP-018A, secure resistor board to ammeter with two nuts.

4-39. Cabinet Cable Harness

a. General. Wiring harnesses are utilized for the interconnection of the components of the generator set. Terminals and leads of the wiring harness may be removed from the terminals for the replacement of components. Individual wires, not part of the wiring harness, may be replaced.

b. Tagging. When replacing controls and instruments, tag the electrical leads that have been disconnected to facilitate reinstallation.

c. Repair. If there is a break in the insulation of a wire, repair the broken insulation by wrapping the bare area with electrical tape. If there is a break in a wire that is accessible, repair by cutting back the insulation, twisting the ends together, solder the connection and wrap with electrical tape. If a terminal is damaged or lost, replace it by using a wire terminal repair kit. Remove a wire that cannot be repaired and replace it with a new wire of the same size and gage. Identify the new wire with the same identification as the one removed.

4-40. Fuses

a. Removal. Refer to figure 4-64 and remove the fuses and fuseholders.

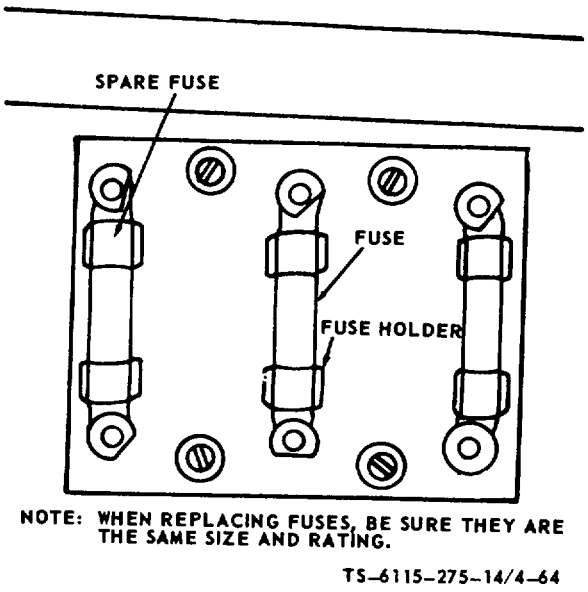


Figure 4-64. Fuses, removal and installation.

b. Cleaning, Inspection and Repair.

(1) clean the fuses and fuseholder with a clean, dry cloth.

(2) Inspect the fuses for visible damage, replace a defective fuse.

c. Installation. Refer to figure 4-64 and install the fuse and fuseholders.

4-41. Doors and Outlet Receptacle

a. Removal. Refer to figure 4-65 and 4-66 and remove items from the applicable model generator set.

b. Cleaning, Inspection and Repair.

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean door with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Clean. receptacle with a clean dry cloth.

(3) Inspect for cracks, breaks or other damage, replace a defective door or receptacle.

c. Installation. Refer to figure 4-65 and install items.

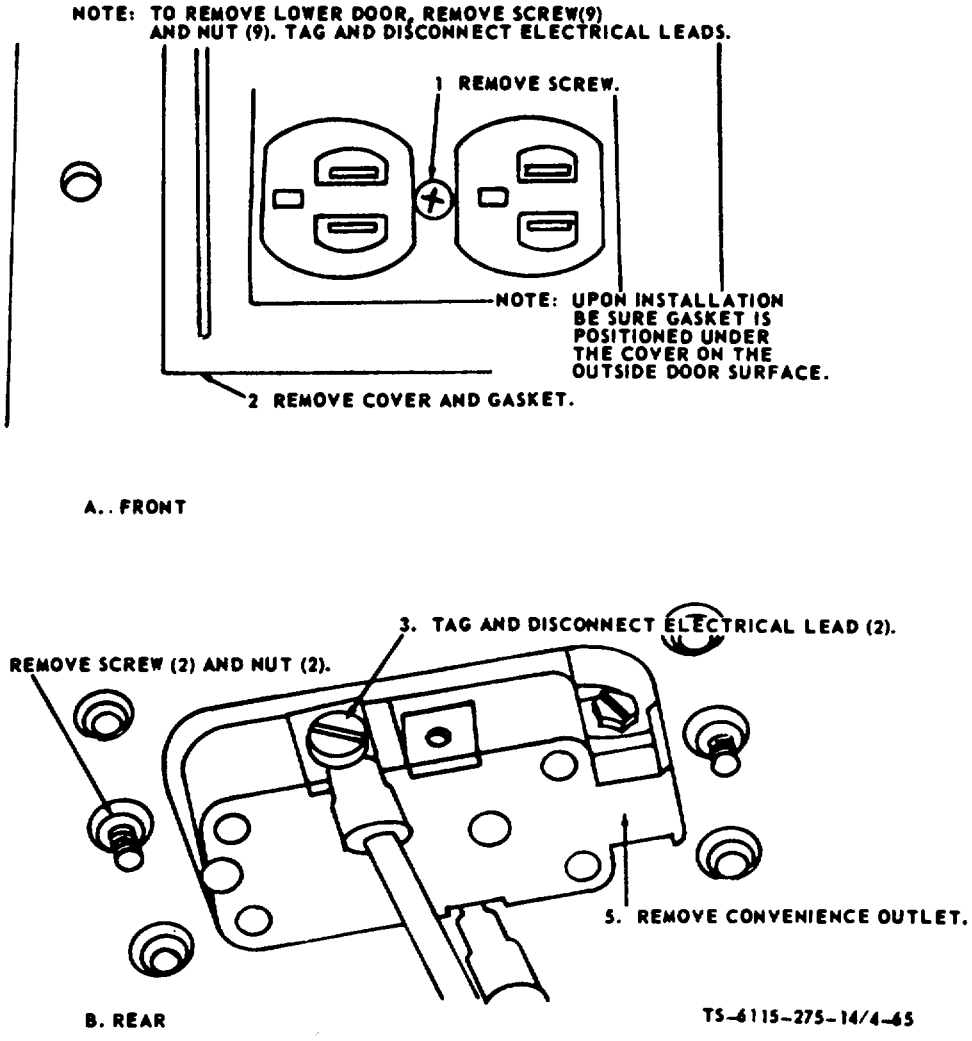


Figure 4-65. Convenience outlet receptacle connector and lower door, removal and installation (Model MEP-018A).

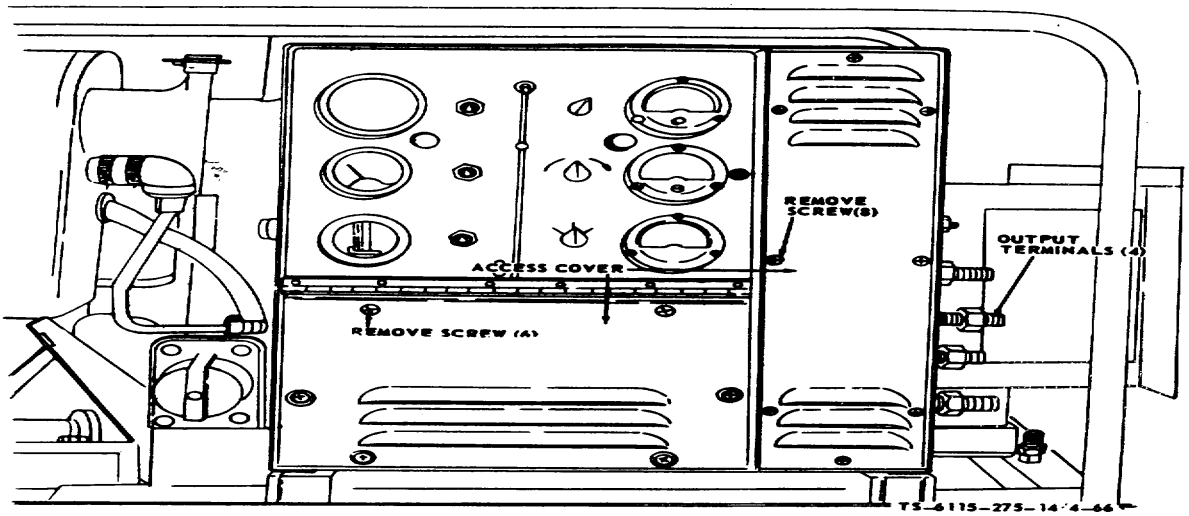


Figure 4-66. Access cover's, removal and installation (Model MEP-023A).

4-42. Voltage Regulator

a. General. The voltage regulator is a universal type designed for DOD model 3KW, 5KW and 10KW generator sets.

b. Testing. Determine if the voltage regulator is defective by performing voltage regulator on-equipment test as described below:

(1) Put output selector switch on desired setting (figure 2-6) and disconnect load cables.

(2) Start the generator set (fig. 2-7). Place the circuit breaker to the ON position and check output selector switch for indication of load terminals where output voltage is applied.

(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 voltage adjust rheostat on the control panel will not correct the deficiency. test the voltage adjust rheostat (para. 4-37). If rheostat tests defective, replace rheostat and retest generator starting with step 1. If rheostat tests good, proceed with step 4.

(4) Check exciter voltage across terminals 20 and 21 of the voltage regulator terminal board. This voltage may vary but should be about 30-35 vdc. If voltage fails to meet above specifications, check for AC voltage across terminals 24 and 27 of the voltage regulator terminal board. The voltage here should be the same as readings obtained at load terminals. If no voltage is present at terminals 24 and 27, proceed to step 5. If voltage is present at terminals 24 and 27 but not at terminals 20 and 21, replace voltage regulator and retest generator output. If voltage is present at 24 and 27 and at 20 and 21, but is not adjustable, replace voltage regulator and retest generator output.

(5) Lower front panel of control cabinet and momentarily press the field flash switch (figure 3-5). If voltage comes up on generator and is adjustable to proper levels, proceed to step 6. If voltage is not present, use a multimeter at pins 11 and 13 of connector P4 and check for battery voltage with manual field flash engaged. If battery voltage is not present at pins 11 and 13, check for open circuit between battery and

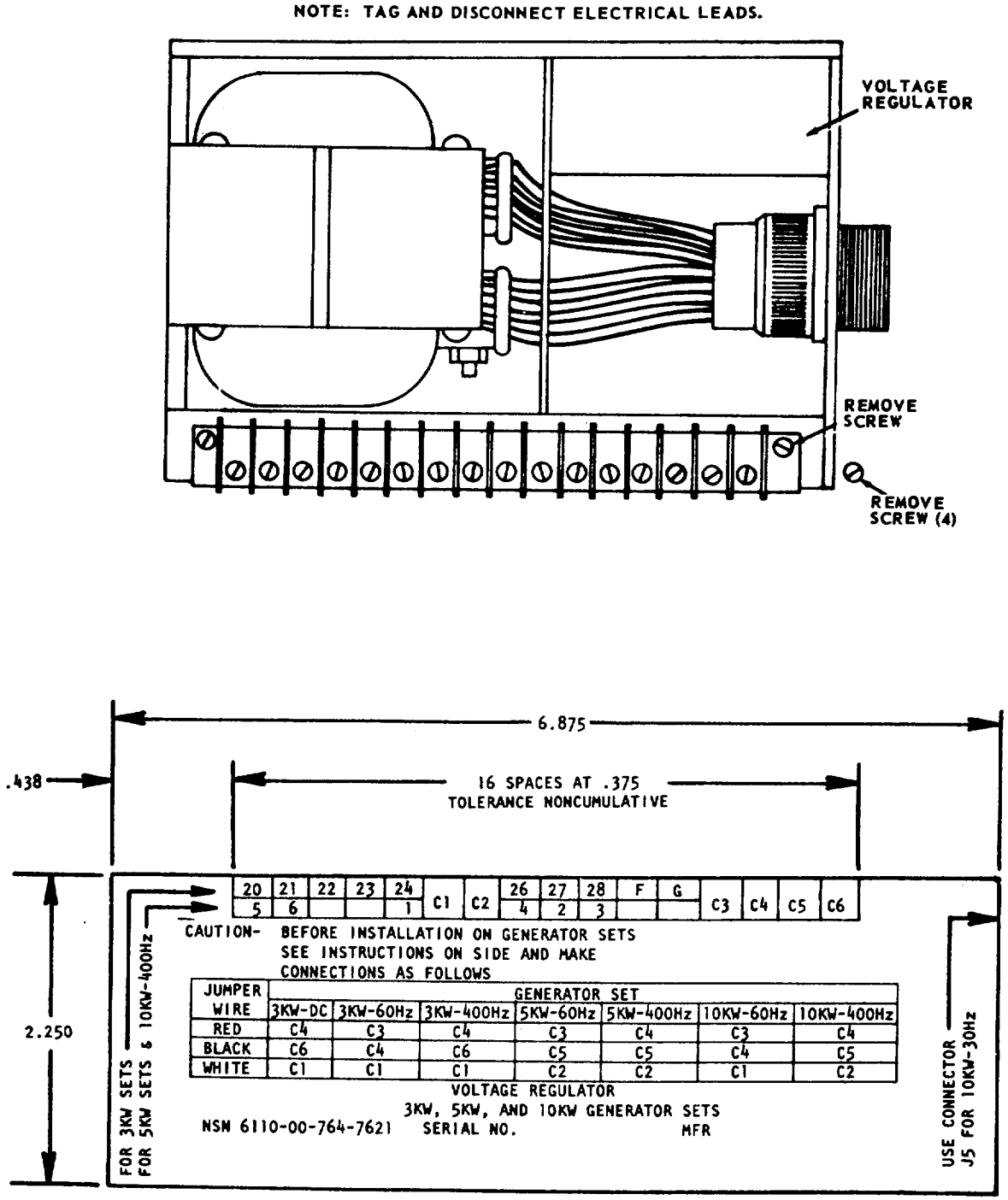
pins 11 and 13. Repair open circuit and retest generator for correct output. If battery voltage is present at pins 11 and 13 of connector P4 but fails to produce voltage, refer to field maintenance for repair of generator assembly.

(6) Using a multimeter as a check against the set voltmeter, test the output terminals of the generator set against all position settings of the voltage selector switch.

(7) Stop the generator set and connect the load cables.

A defective voltage regulator should be repaired, refer to field maintenance. Refer to figure 4-67. Installation instruction: One potentiometer per MIL-R-22/3 (750 ohms, 25 watts) must be used with this regulator. For connection of red, black and white jumpers, see instructions on front plate.

c. Removal. Refer to figure 4-67 and remove the voltage regulator.



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

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Figure 4-67. Voltage regulator, removal and installation.

and normal starting position, noting the oil pressure and ammeter for proper indication. Place the start/stop switch (S1) in the stop position. Engine should stop.

(2) Start the generator set in the local and normal starting position. Switch the generator set in the local and normal starting position. Switch (S2) from normal run position to emergency run position and place the start/stop switch (S1) to the stop position. The generator set should continue to run. Stop the generator set by placing emergency switch (S2) to the emergency stop position. After the set stops, place (S2) back to the emergency run position and attempt to restart the set. The engine should not start with the electrical starter, but should be capable of manual starting (ROPE). Return emergency switch (S2) to normal position.

(3) If the foregoing cannot be performed satisfactorily, test components as noted in (4) and (5) below.

(4) Test silicon diode CRI. Continuity must be indicated in one direction only.

(5) Refer to diagram on top of relay. Check continuity through the coil and the normally closed contacts. Coil resistance is 300 ohms. Energize the coil with 20-24 volts DC and check that normally open contacts have closed. Relays are sealed and cannot be repaired.

4-43. Relays and Resistors

a. Testing (Model MEP-018A).

(1) Make an operational check of the relays (see fig. 4-68), start the generator set in the local

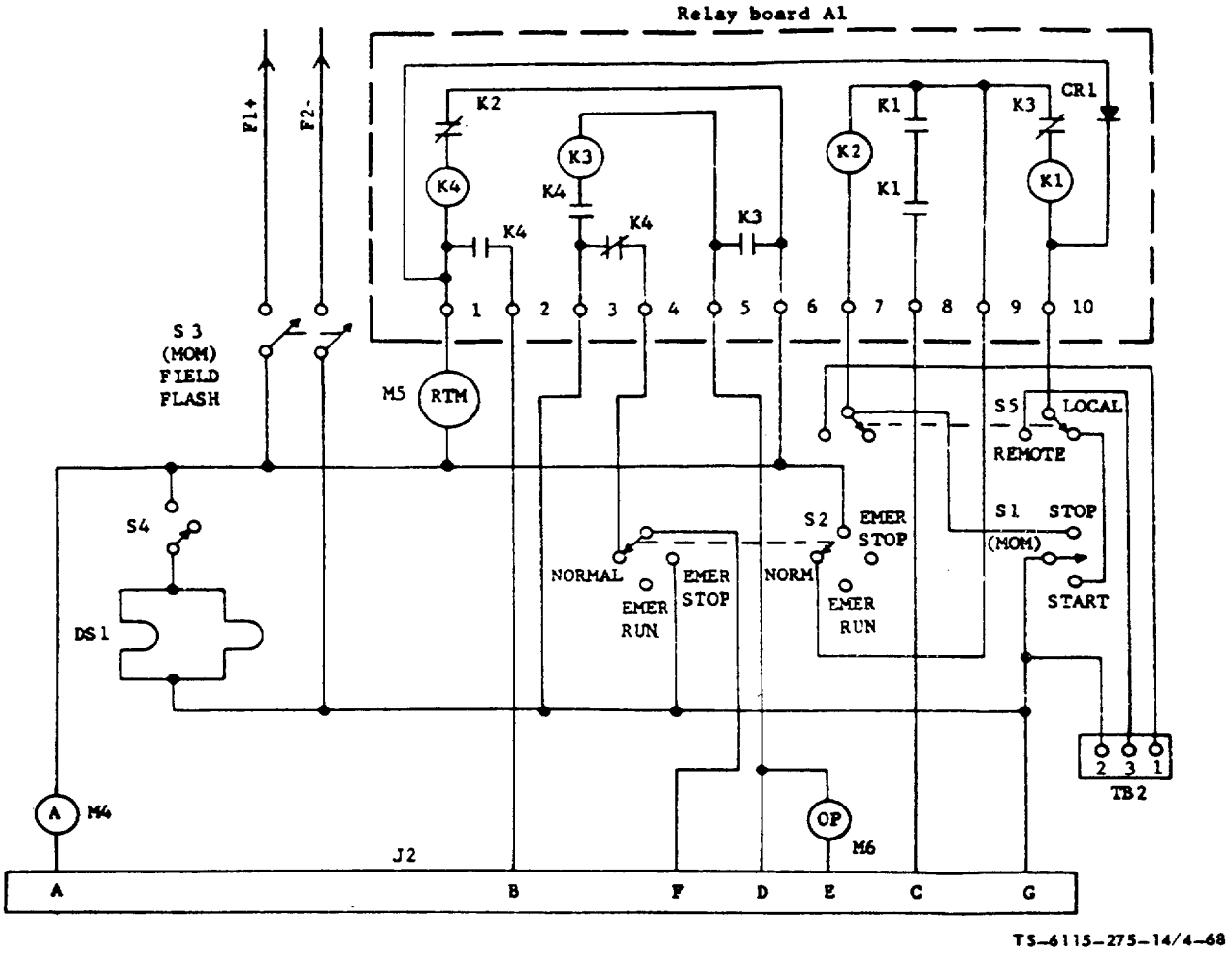


Figure 4-68. Relay circuit (ModelMEP-O18A).

b. Testing (Model MEP-023A). All testing is done with all external leads disconnected from relay panel terminals. Use a multimeter set at appropriate range and measure resistance. Apply test probes to relay panel terminal as indicated below and obtain results as follows:

(1) Resistors. Test from terminal.

13 to 14-4320 ohms-tests R8
13 to 15-9090 ohms-tests R7
13 to 1 I-17.4 ohms-tests R10
13 to 12-7680 ohms-tests R9
16 to 7-270 ohms-(with field flash switch in FLASH-tests).
5. Open circuit indicated with switch in OFF position. 17 to field 5-270 ohms (with flash in FLASH-tests.

R6. Open circuit indicated with switch in OFF position.

(2) Diode Rectifier.

NOTE

A true test is possible only with specialized test equipment but a functional test can be made with a multimeter.

Test of the rectifier can be made by taking a reading between terminals 1 and 6. Reverse the test probes and take a second reading. One reading will be extremely high or infinite while the other reading will indicate some passage of current or a readable resistance.

(3) Relays. Test for some degree of continuity. Normal condition shown may indicate some normal resistance through relay fields where indicated.

(a) With no external load applied to any relay field, test from terminal 1 to 3 for continuity. This tests K2 contact closed through the field of K4. To test the closed contact of K1, check for continuity between terminals 4 and 7. An open circuit indication on the multimeter between terminals 3 and 8 tests both open contacts of K4, between terminals 6 and 10 tests the open contact of K 1, between 5 and 9 the open contact of K2. and between 7 and 9 the open contact of K 1 through the field of K2.

(b) Connect external 24-28 vdc load to terminals 2 and 3.

CAUTION

that resistance measurements are not made in circuits that have current flowing in them. The meter will be seriously damaged.

Test from terminals 6 to 5. An open circuit indication tests the open contact of K3 through the field of K1 and also test action of relay K3.

(c) Disconnect 24-28 vdc from terminals and 3. Connect 24-28 vdc loads to terminals 1 and 3.

Test from terminal 3 to 8 for continuity. This tests both K4 contacts as closed and the action of relay K4.

(d) Disconnect 24-28 vdc from terminals 1 and 3 and connect it to terminals 5 and 6. Test from terminals 4 to 7 for an open circuit indication. This tests the closed contact of K3, and the action of K1. Check between terminals 9 and 7 for continuity to test the closed contact of K 1 through the field of K2. Check between terminals 6 and 10 for continuity. This tests the closed contact of K1.

4-44. Remove Control Terminal Board (Model MEP-018A)

a. Removal. Refer to figure 4-69 and remove the remote control terminal board.

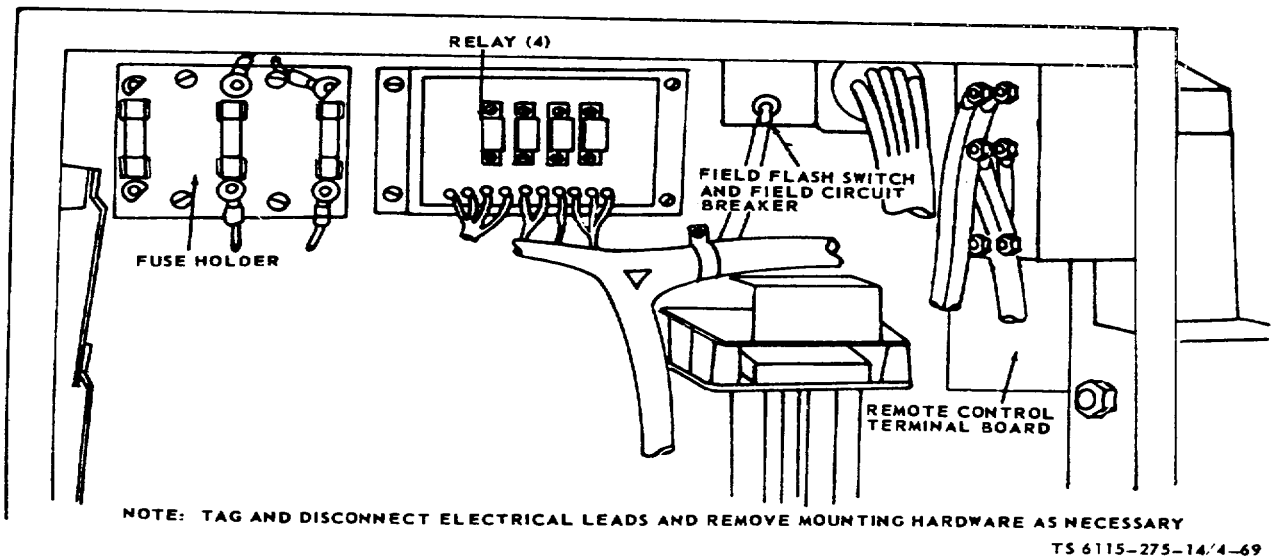


Figure 4-69. Remote control terminal board, removal and installation (Model MEP-018A).

b. Cleaning, Inspection and Repair.

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean metal items with cleaning solvent, Fed, Spec, P-D-680 or P-S-66 1, and dry thoroughly.
(2) Inspect for cracks, breaks, damaged threads, corrosion, and other damage.
(3) Replace a defective terminal board.

c. Installation. Refer to figure 4-69 and install the remote control terminal board.

4-45. Remote Terminals Drip Cover, Circuit Breaker Drip Cover, And Load Terminals Cover (Model MEP-018A)

a. Removal. Refer to figure 4-70 and remove covers.

b. Cleaning, Inspection and Repair.

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near pen flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.
(2) Inspect for cracks, breaks or other damage. Replace all defective parts.

c. Installation. Refer to figure 4-70 and install items.

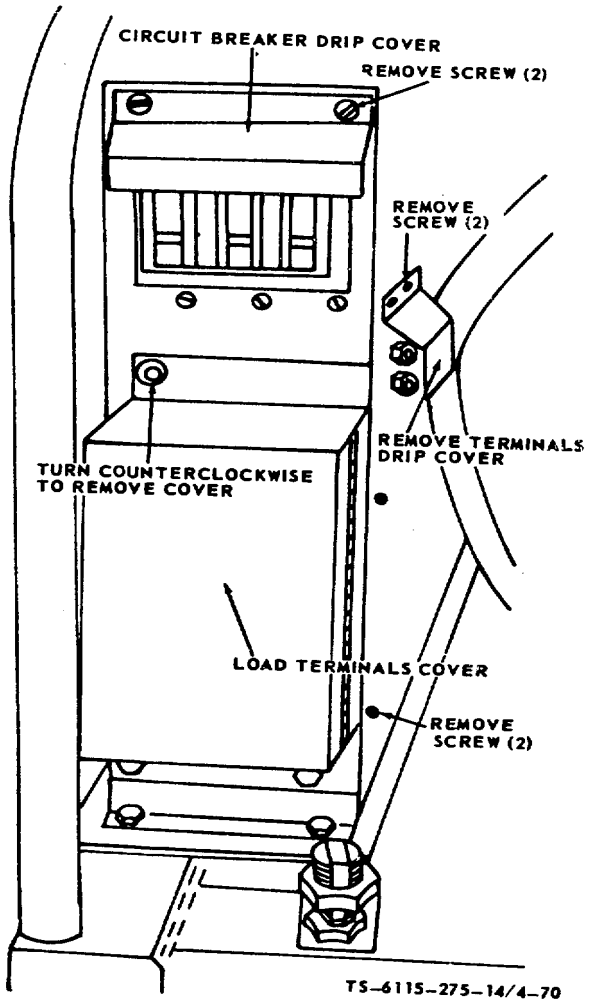


Figure 4-70. Remote terminals drip cover. circuit breaker drip cover, and load terminals cover, removal and installation (Model MEP-018A).

4-46. Electrical Leads

a. Removal.

NOTE

ectrical leads which can be replaced by organizational maintenance are the short jumper leads connecting the controls and instruments on the back of the control box door.

Refer to figures 4-61 or 4-62 and remove the leads as necessary.

b. Cleaning, Inspection and Repair.

(1) Clean the electrical leads with a clean, dry cloth.

(2) Inspect for insulation cracks, breaks, and for defective terminals. Repair or replace all damaged or defective leads.

c. Installation. Refer to figures 4-61 or 4-62 and install the leads.

4-47. Terminal Block (Model MEP-023A)

a. Removal. Refer to figure 4-71 and remove the terminal block.

b. Cleaning, Inspection and Repair.

(1) Clean the terminal block with a clean dry cloth.

(2) Inspect the terminal block for cracks, breaks and other damage. Replace if damaged or defective.

c. Installation. Refer to figure 4-71 and install the terminal block.

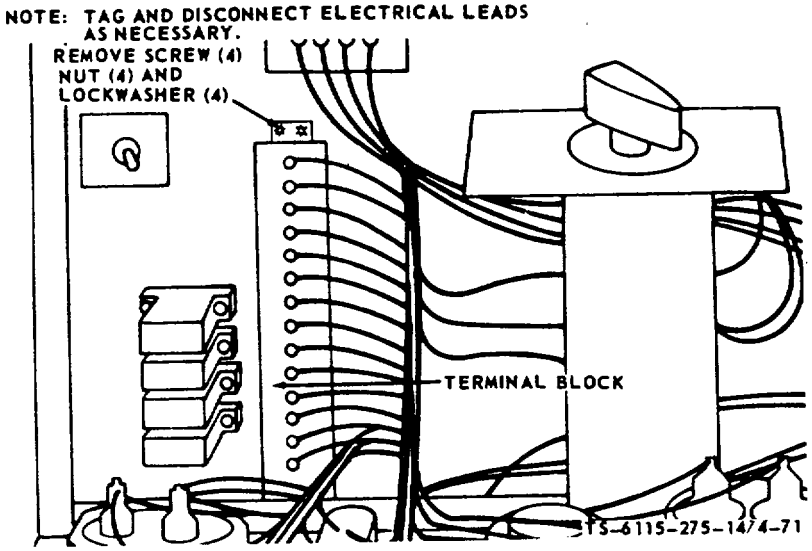


Figure 4-71. Terminal block, removal and installation (Model MEP-023A).

Section XII. MAINTENANCE OF THE GENERATOR ASSEMBLY

4-48. General

The generator is attached to the engine by a coupling on the rotor shaft which connects to the drive hub mounted on the engine flywheel. Disconnection of the coupling from the drive hub permits removal of the generator as a unit.

4-49. Fan and Coupling Assembly

a. Inspect the fan and coupling assembly for damage and defects.

b. Report damage to field maintenance for replacement or repair.

4-50. Shroud Cover and Blower Cover

WARNING

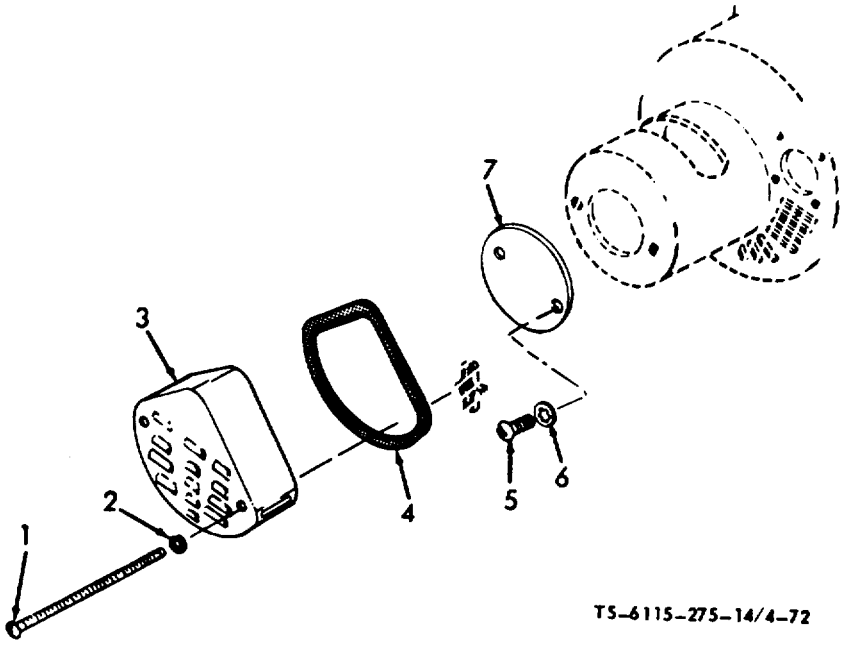
remove or install the shroud cover while the generator is in operation.

a. Shroud Cover Removal (Model MEP-018A).

(1) Remove the bolts (1, fig. 4-72) and washers (2) securing the shroud (3); remove channel (4).

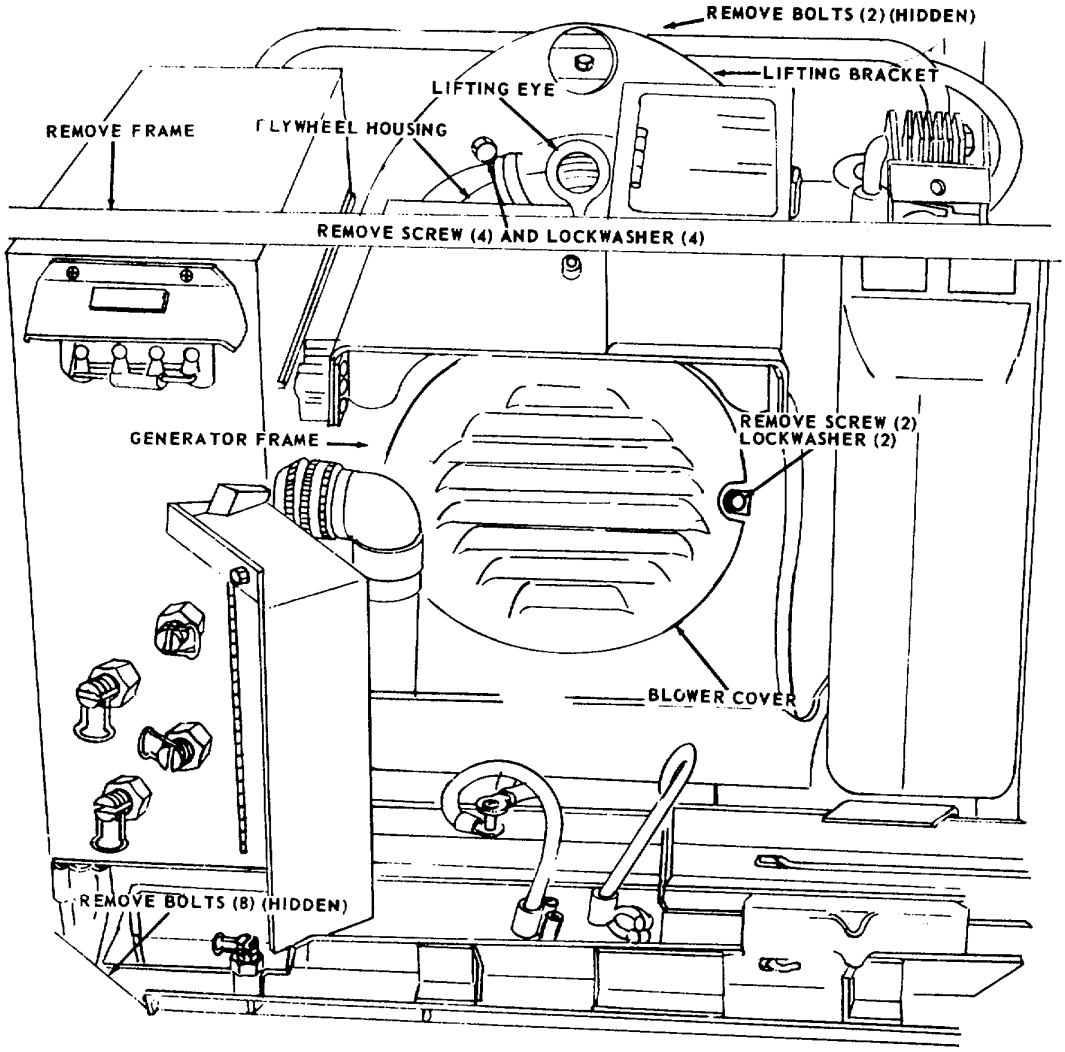
(2) Remove screws (5), washers (6) and cover (7).

b. Blower Cover Removal (Model MEP-023A). Refer to figure 4-73 and remove the blower cover.



1. Bolt
2. Washer
3. Shroud
4. Channel
5. Screw
6. Lockwasher
7. Cover

Figure 4-72. Shroud cover (Model MEP-018A).



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Figure 4-73. Lifting bracket, blower cover, and guard frame, removal and installation (Model MEP-023A)

c. Cleaning, Inspection and Repair. **Flash point of solvent is 100° F(38°C).**

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat.

(1) Clean items with cleaning solvent, Federal Specification P-D-680 or P-S-661 and dry thoroughly.

(2) Inspect shroud, channel and covers for cracks, breaks or other defects. Replace a defective part.

d. Installation of Shroud Cover (Model MEP-018A).

(1) Install cover (7, fig. 4-72) and secure with washers (6)and screws (5).

(2) Install channel (4) and shroud (3); secure with washers (2) and bolts (1).

e. Installation of Blower Cover (Model MEP023A). Refer to figure 4-73 and install the blower cover.

Section XIII. MAINTENANCE OF THE FRAME ASSEMBLY

4-51. Lifting Eye Bracket and Fan Cover (Model MEP-018A).

a. Removal. Refer to figure 4-74 and remove the lifting eye bracket and fan cover.

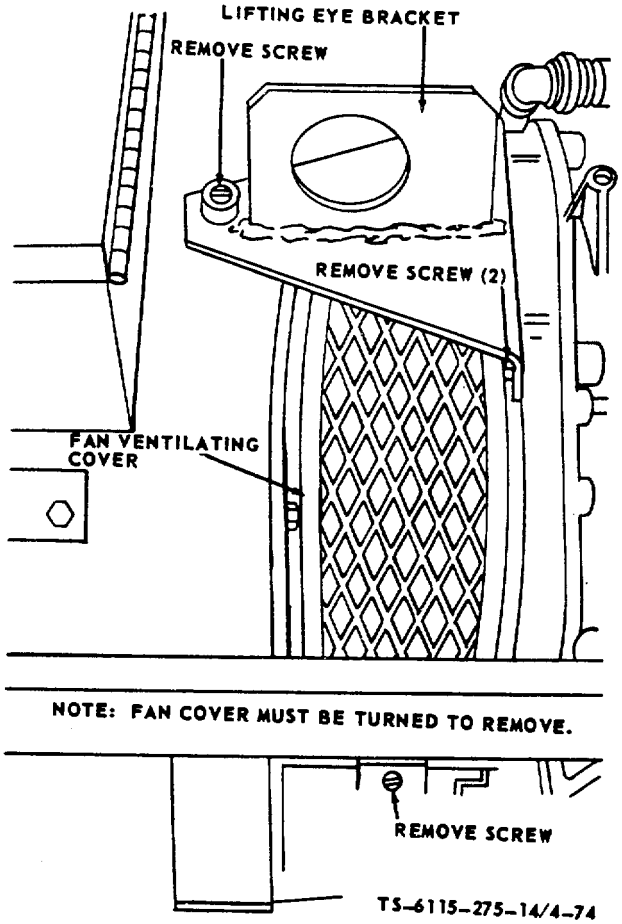


Figure 4-74. Lifting else bracket and fan cover. removal and installation (Model MEP-018A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Federal Specification P-D-680 or P-S-661 and dry thoroughly.

(2) Inspect for cracks, breaks, or other damage. Replace a defective bracket or fan cover.

c. Installation. Refer to figure 4-74 and install the lifting eye bracket and fan cover.

4-52. Tool Box (Model MEP-018A)

a. Removal. Refer to figure 4-75 and remove the tool box.

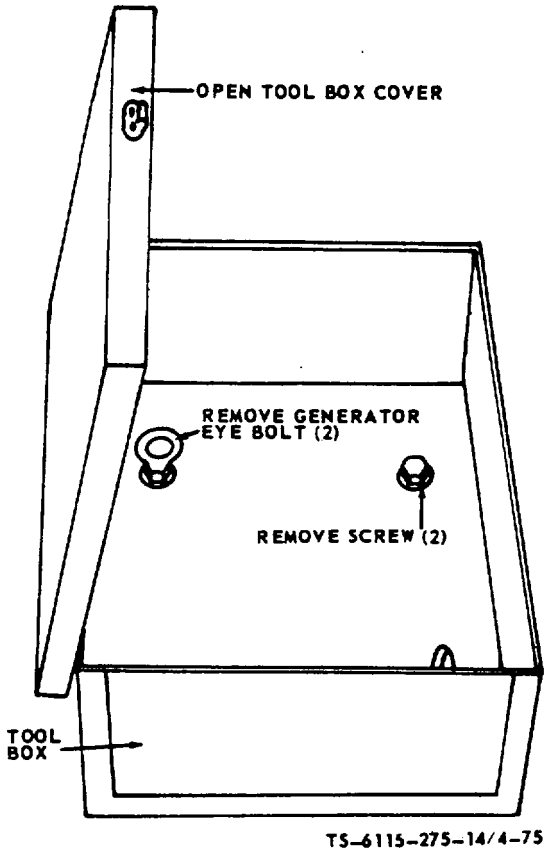


Figure 4-75. Toolbox, removal and installation, (Model MEP-018A).

c. Cleaning, Inspection and Repair.

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Federal Specification P-D-680 or P-S- 661 and dry thoroughly.

(2) Inspect for cracks, breaks, or other damage. Replace a defective bracket or fan cover.

c. Installation. Refer to figure 4-74 and install the lifting eye bracket and fan cover.

4-53. Rail Guard, Ground Stud, Tow Bolt (Model MEP-018A)

a. Removal. Refer to figure 4-76 and remove guard, stud and bolts.

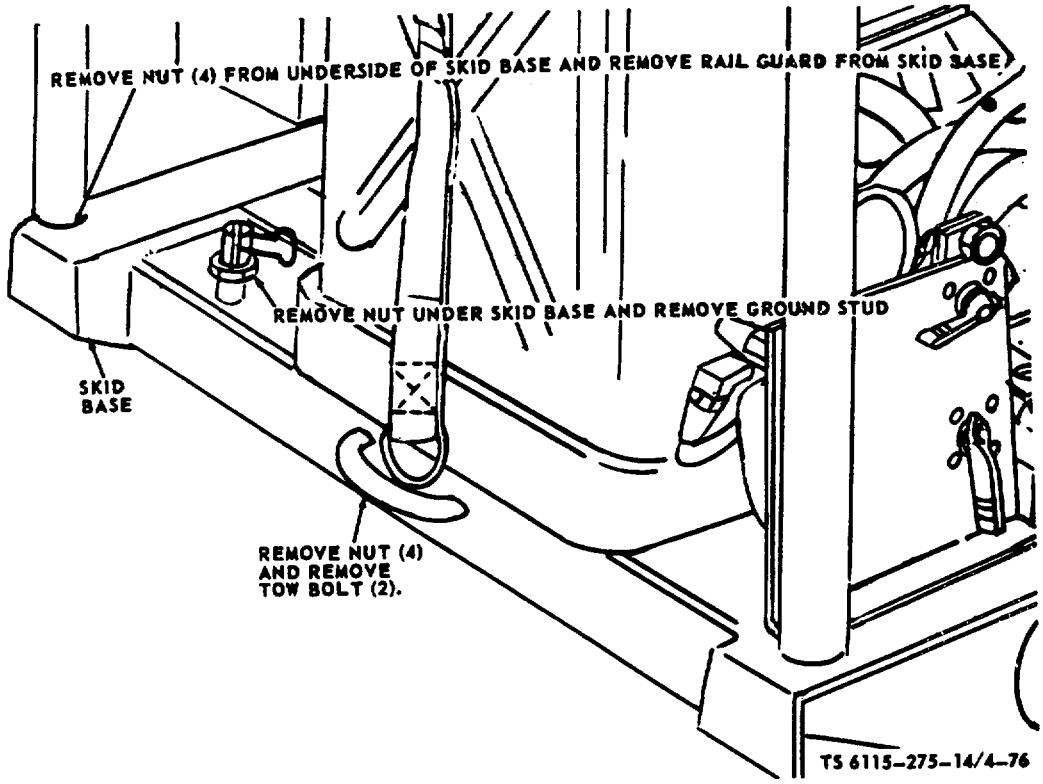


Figure 4-76. Rail guard, ground stud and tow bolts, removal and installation (Model MEP-018A).

b. Cleaning, Inspection and Repair.

WARNING

parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Federal Specification P-D-680 or P-S- 661 and dry thoroughly.

(2) Inspect for cracks, breaks or other damage.

Replace all defective parts.

c. Installation. Refer to figure 4-76 and install guard, stud and bolts.

4-54. Battery Charging Electrical Receptacle Connector and Bracket (Model MEP- 018A)

a. Removal. Refer to figure 4-77 and remove the receptacle connector and bracket.

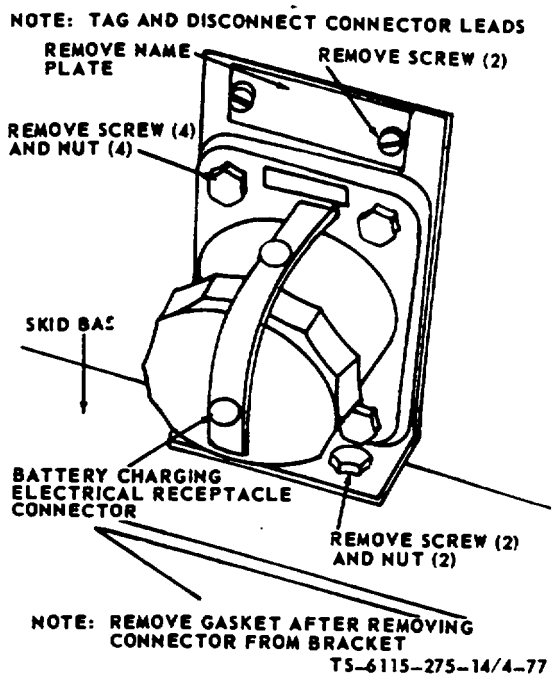


Figure 4-77. Battery charging electrical receptacle connector and bracket, removal and installation (Model MEP-018A).

b. Cleaning, Inspection and Repair.

(1) Clean the cables, connector and bracket with a clean, dry cloth.

(2) Inspect the cables for breaks, loose terminals, oil-soaked or deteriorated insulation and other damage.

(3) Inspect the connector and mounting hardware for cracks, breaks or other damage.

(4) Replace a damaged or defective part.

c. Installation. Refer to figure 4-77 and install connector and bracket.

4-55. Air Baffles (Model MEP-018A)

a. Removal.

(1) Remove the battery, figure 4-78.

(2) Remove the control cabinet, figure 4-79.

(3) Remove the air baffles, fig. 4-80.

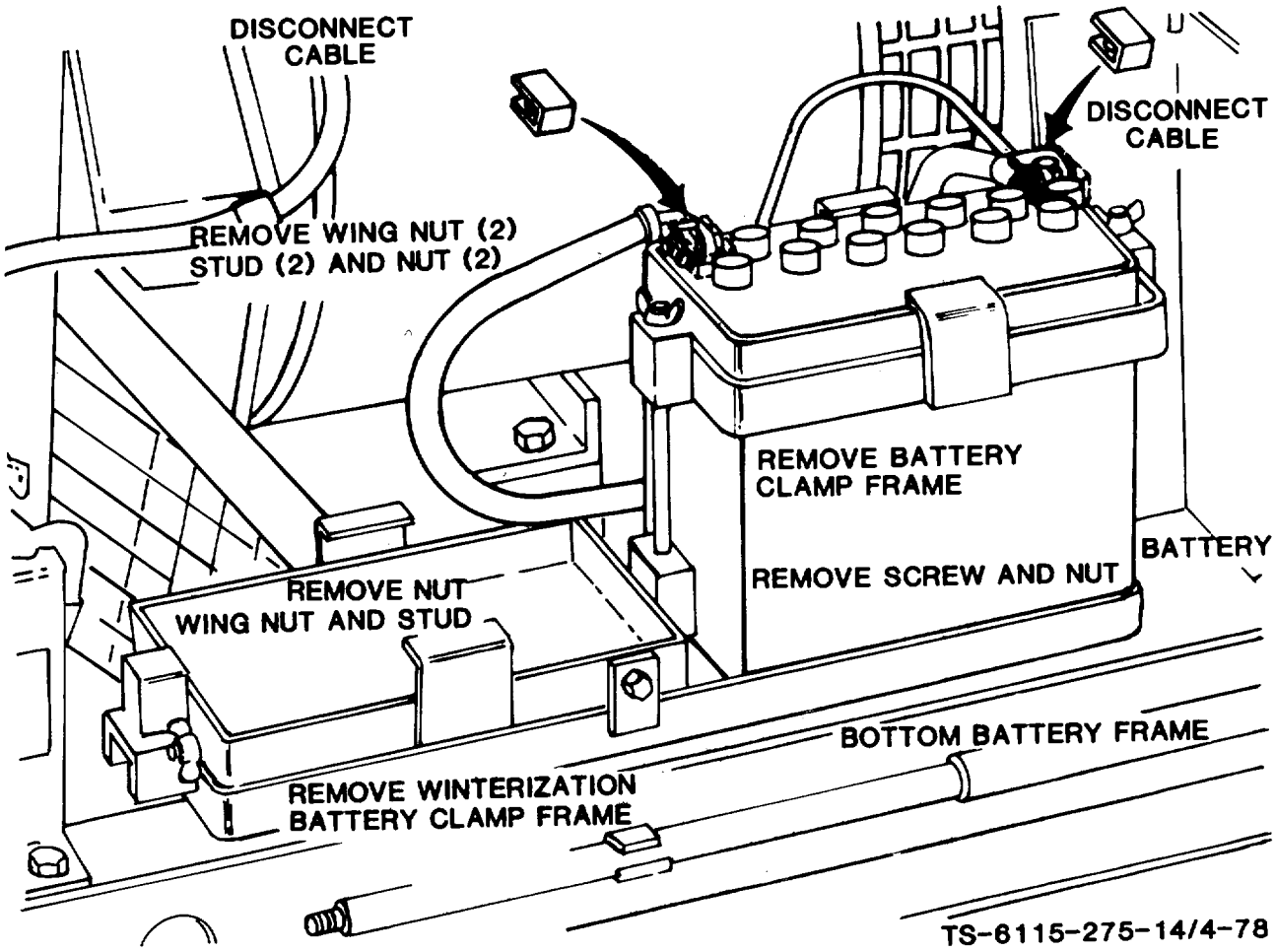
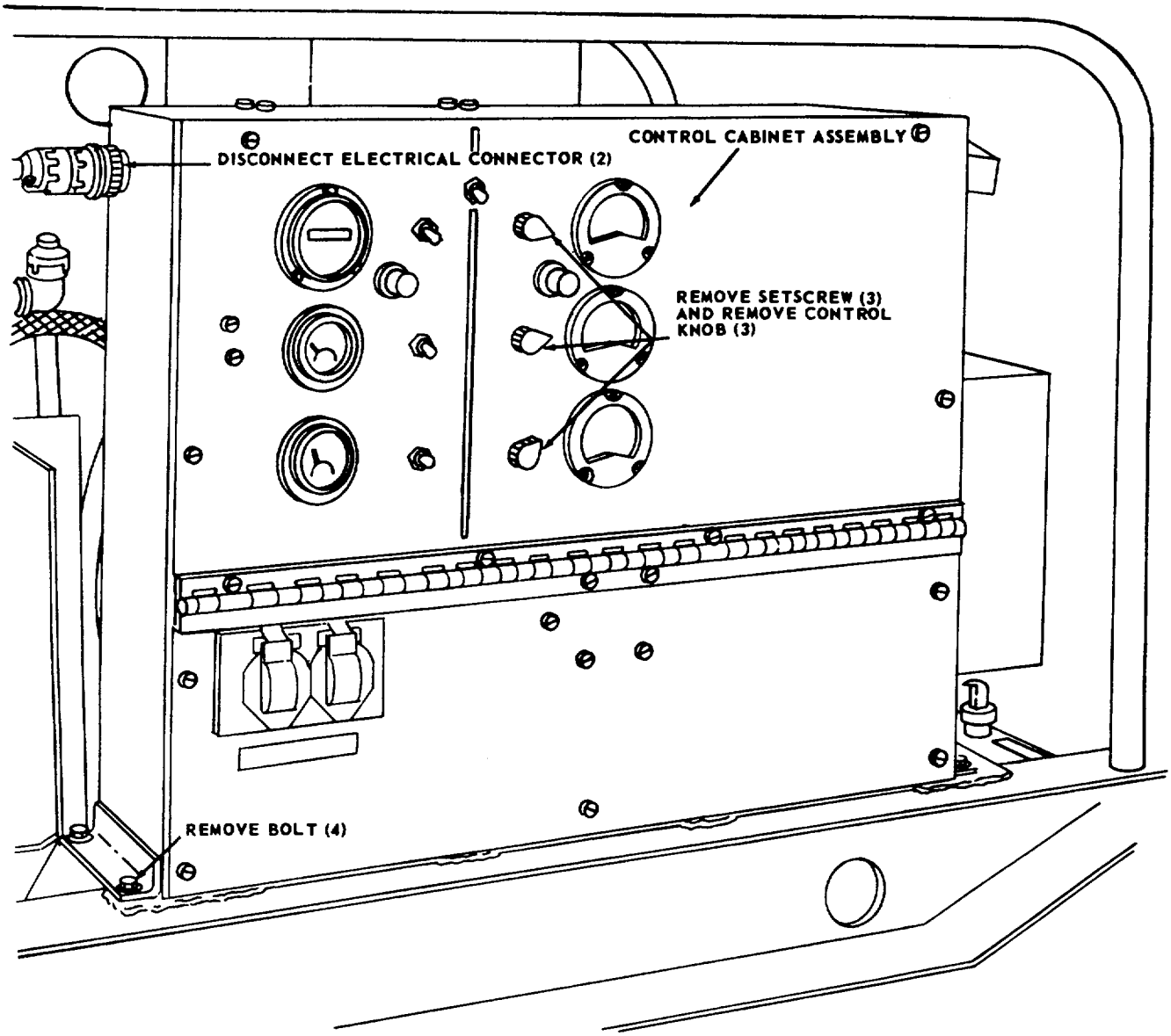


Figure 4-78. BATTERY, REMOVAL AND INSTALLATION (MODEL MEP-018A).



TS-6115-275-14/4-79

Figure 4-79. Control cabinet, removal and installation (Model MEP-018A).

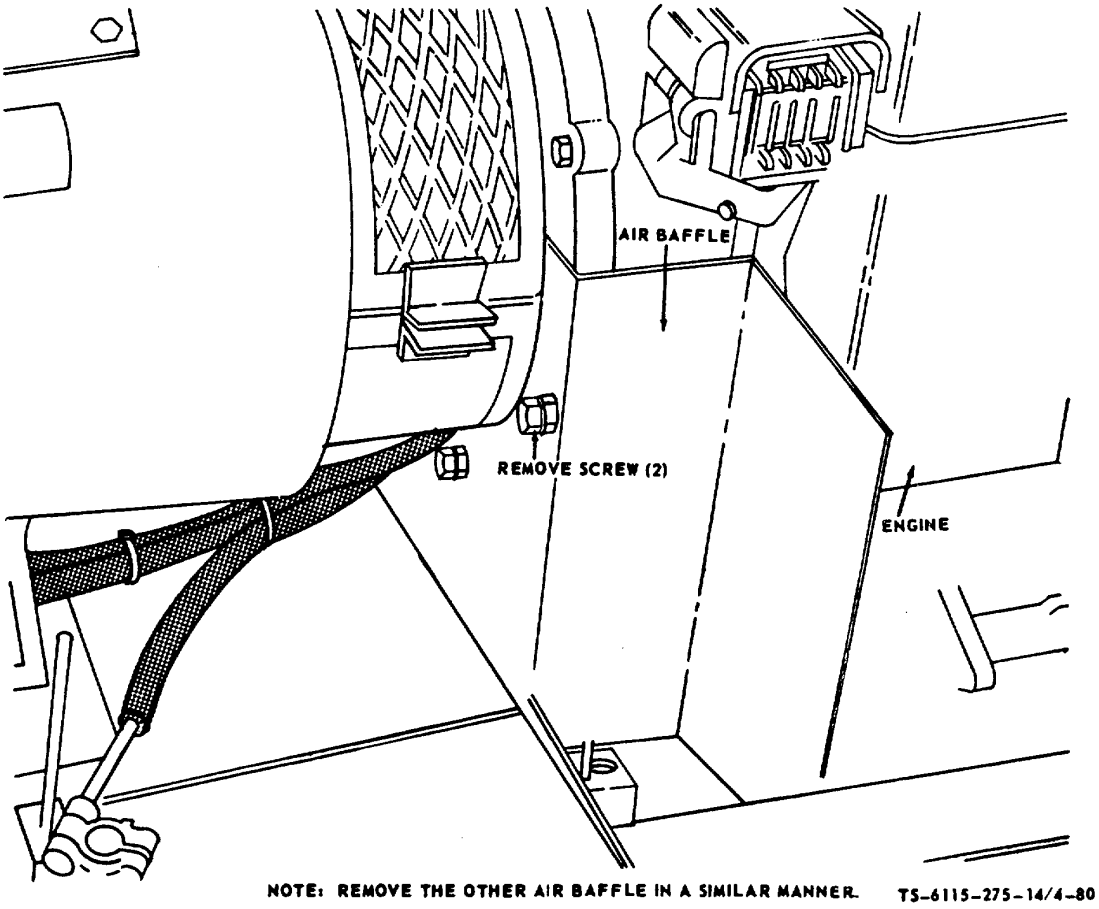


Figure 4-80. Air baffles, removal and installation (Model MEP-018A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean baffles with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.

(2) Inspect for cracks, breaks or other damage. Replace a defective baffle.

c. Installation.

(1) Install the air baffles as shown by figure 4-80.
(2) Install the control cabinet (fig. 4-79).
(3) Install the battery (fig. 4-78).

4-56. Toolbox, Toolbox Bracket, Lifting Eye, Bracket, Guard Frame, and Vibration Mounts (Model MEP-023A)

a. Removal. Refer to figure 4-81 and remove toolbox, brackets, mounts, and rail guard.

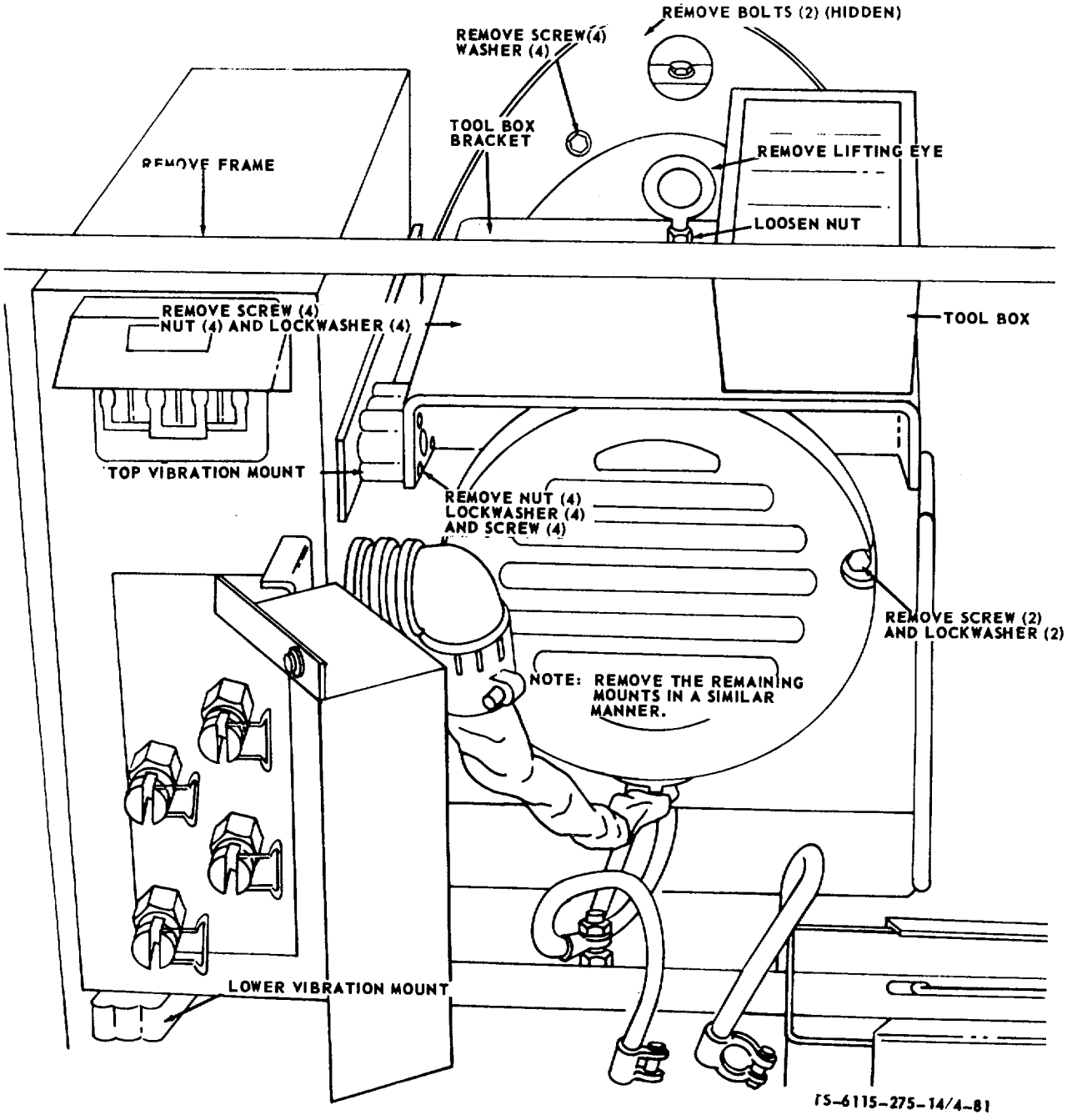


Figure 4-81. Toolbox, toolbox bracket, lifting eye bracket, guard frame, and top vibration mounts, removal and installation (Model MEP-023A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean the toolbox, bracket, rail guard and lifting eye with cleaning solvent, Fed. Spec. P-D-680 or P-S-661 and dry thoroughly.

(2) Clean the vibration mounts with a clean, dry cloth.

(3) Inspect the toolbox, bracket, frame, lifting eye and vibration mounts for cracks, breaks, deterioration and other damage. Replace if damaged.

c. Installation. Refer to figure 4-81 and install the tool box, brackets, guard and mounts.

4-57. Grounding Stud Terminal (Model MEP-023A)

a. Removal. Refer to figure 4-82 and remove the grounding stud terminal.

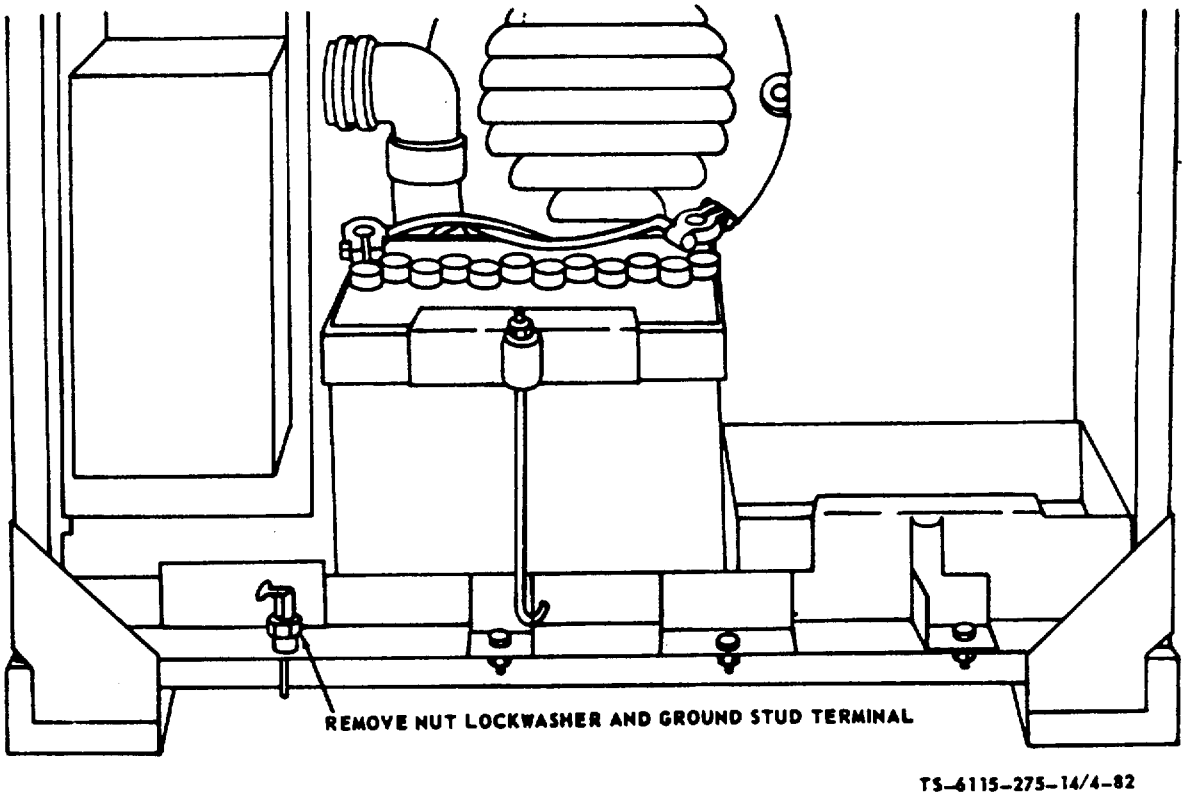


Figure 4-82. Ground stud terminal, removal and installation (Model MEP-0923A).

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.

(2) Inspect ground stud terminal for stripped threads and other defects. Replace a damaged or defective ground stud.

c. Installation. Refer to figure 4-82 and install the ground stud terminal.

4-58A Replace Lost or Broken Terminal Clip (Retainer, Safety Clip).

For fabrication procedures, see paragraph 4-60.

4-58. Slave Receptacle (Model MEP-023A)

a. Removal. Refer to figure 4-83 and remove the slave receptacle.

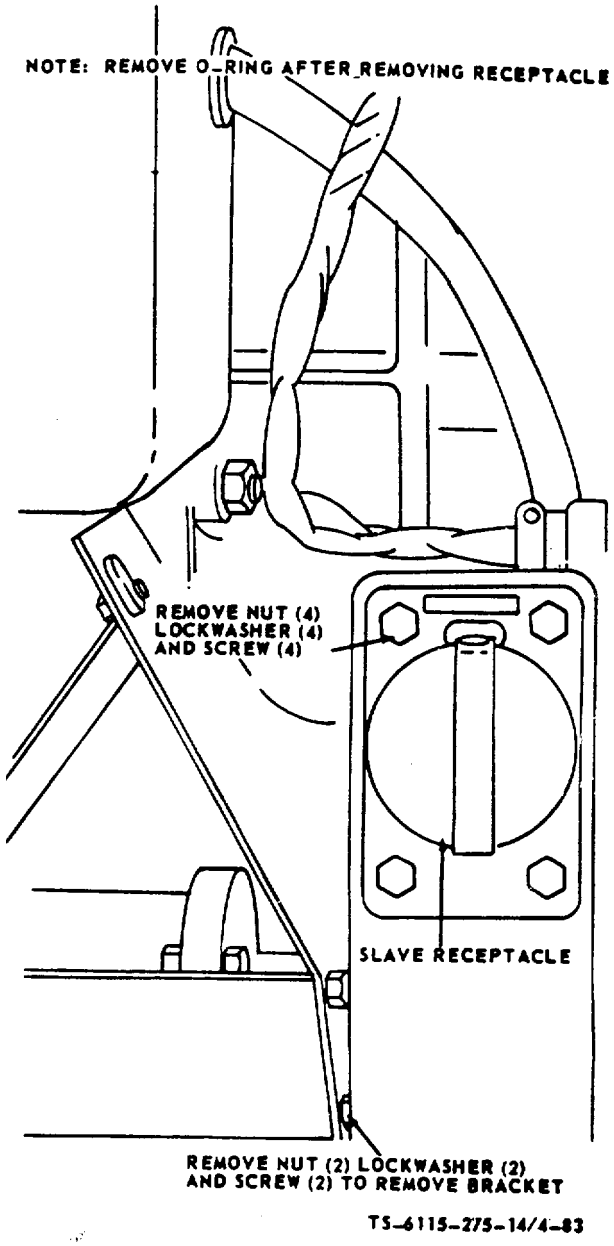


Figure 4-83. Slave receptacle, removal and installation (Model MEP- 023A).

b. Cleaning, Inspection and Repair.

(1) Clean the receptacle with a clean dry cloth.

(2) Inspect the receptacle for cracks, breaks or other damage. Replace a damaged or defective receptacle.

c. Installation. Refer to figure 4-83 and install the slave receptacle.

4-59. Fuel Drum Adapter Clips

a. Removal.

(1) Remove the fuel drum adapter.

(2) Remove the clips as shown by figure 4-84.

b. Cleaning, Inspection and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.

(2) Inspect for cracks, breaks, or other damage. Replace a damaged clip.

c. Installation.

(1) Install the fuel drum adapter clips as shown by figure 4-84.

(2) Install the fuel drum adapter.

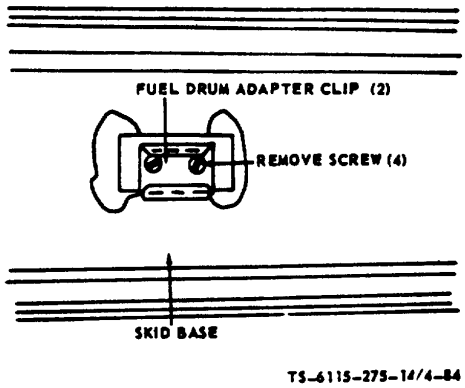
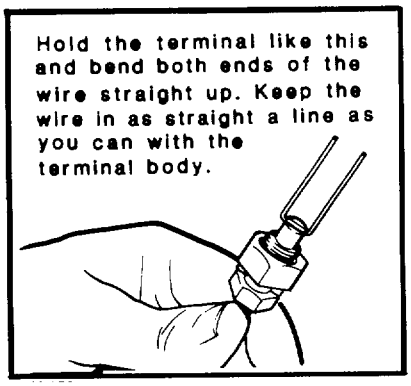


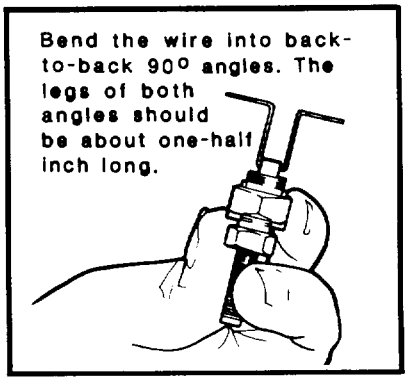
Figure 4-84. Fuel drum adapter clips, removal and installation.

4-60. Replace Lost or Broken Terminal Clip (Retainer, Safety Clip).

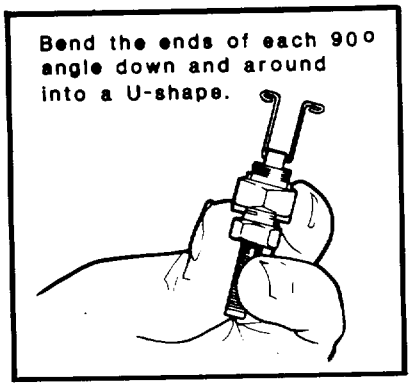
The terminal clip is a component of both the load terminal and the ground terminal. If the terminal clip is lost or broken, fabricate as follows: Requisition bulk wire NSN 9505-01-049-0144, 0.050 inch diameter. Cut off about 3 inches of the wire. Cut the wire short enough to keep the clips from touching 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:



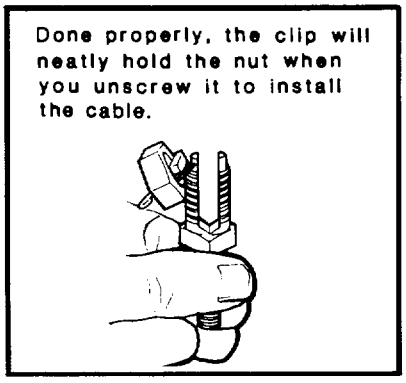
VIEW #1



VIEW #2



VIEW #3



VIEW #4

CHAPTER 5

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

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

5-1. Special Tools and Equipment

There are no special tools or equipment required by Direct and General Support Maintenance to Repair/Overhaul the generator set.

NOTE

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

5-2. Direct and General Support Maintenance Repair Parts

Direct and general support maintenance repair parts are listed and illustrated in TM 5-61 15-275-24P, or TO 35C2-3-452-1.

Section II. TROUBLESHOOTING

5-3. General

a. This section contains troubleshooting information for locating and correcting most of the DS and GS troubles which may develop in the generator set. Each malfunction for an individual component, unit or system is followed by a list of tests or inspections which will help you to determine the probable causes and corrective actions to take. You should perform the tests/inspection and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

5-4. Troubleshooting

a. Before you use this table, consult table 4-1, Organizational Troubleshooting, and be sure you have performed all applicable checks.

b. Refer to table 5-1 for intermediate troubleshooting.

Table 5-1. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. GENERATOR NOISY

Step 1. Inspect the bearing to be sure it moves smoothly and quietly; check for evidence of excessive wear.

If the bearing is loose, noisy or worn, replace it. Refer to paragraph 8-1 or 8-2. If the bearing is not defective, go on to step 2.

Step 2. Inspect the coupling for cracks, breaks, and distortion. Check the fan for wear, binding, cracks, breaks and distortion. Check fan for looseness.

If inspection indicates damage, replace fan and/or coupling. Refer to paragraph 8-1 or 8-2.

2. GENERATOR OVERHEATS

Step 1. Inspect fan and coupling for cracks, breaks, distortion, looseness and binding.

Tighten loose fan. If inspection indicates damage, replace the fan coupling, Refer to paragraph 8-1 or 8-2. If fan and coupling is not damaged, go on to step 2.

Step 2. Inspect generator rotor and stator components as follows:

a. Inspect the rotor shaft at each end for evidence of nicks, rust or wear. Inspect the rotor assembly to be sure all windings are properly pressed into the core slots. Inspect the core for wear and replace a badly scored or defective rotor assembly.

b. Inspect the field windings and leads for damaged or broken wires. Inspect the main frame for damage and broken welds and for nicks and burrs around the mounting flanges.

c. Test generator rotor and stator components for Model MEP-023A as follows:

(1) Stator, refer to paragraph 8-2b. (1).

(2) Rotor, refer to paragraph 8-2b. (2).

(3) Exciter Field Windings, refer to paragraph 8-2b. (3).

d. Test generator rotor and stator components for Model MEP 018 as follows:

(1) Rotor, refer to paragraph 8-1f. (2).

(2) Stators. refer to paragraph 8-1 f. (3).

If test and inspection indicate damage, replace stator and rotor. Refer to paragraph 8-1 or 8-2.

Table 5-1. Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. GENERATOR FAILS TO BUILD UP RATED VOLTAGE

Step 1. Perform all steps under table 4-3, Malfunctions No. 1. If this does not reveal defective part, go on to step 2.

Step 2. Inspect for a defective rotating rectifier diode as follows:

a. Model MEP018A.

(1) Refer to paragraph 81f (1). Replace defective diodes. If diodes are not defective, go on to step 3.

b. Model MEP-023A.

(1) Refer to paragraph 8-2f(1). Replace defective diodes. If diodes are not defective, go on to step 3.

Step 3. Inspect generator rotor and stator components as follows:

a. **Inspect the rotor shaft at each end for evidence of nicks, rust or wear. Inspect the rotor assembly to be sure all windings are properly pressed into the core slots. Inspect the core for wear and replace a badly scored or defective rotor assembly.**

b. **Inspect the field windings and leads for damaged or broken wires. Inspect the main frame for damage and broken welds and for nicks and burrs around the mounting flanges.**

c. **Test generator rotor and stator components for model MEP-023A as follows:**

(1) Stator, refer to paragraph 8-2b. (1).

(2) Rotor, refer to paragraph 8-2b. (2).

(3) Exciter field windings, refer to paragraph 8-2b. (3).

d. **Test generator rotor and stator components for model MEP-018A as follows:**

(1) Rotor, refer to paragraph 8-1f. (2).

(2) Stators, refer to paragraph 8-1f. (3).

All of the test on the following pages has been deleted; 5-4 through 5-10; 5-10.1/(5-10.2 blank); 5-11 and 5-12; 5-12.1 and 5-12.2; 5-13 and 5-14. Delete material included Figures 5-1 through 5-10.

Table 5-1. Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 4. Inspect for a cracked or broken rotating rectifier diode.

Replace diode. Refer to paragraph 8-1 or 8-2. If defective diode is not the cause of the malfunction, go on to step 5.

Step 5. Inspect for a damaged rotor stator, or field winding as follows:

a. Inspect the rotor shaft at each end for evidence of nicks, rust, or wear. Inspect the rotor assembly to be sure all windings are properly pressed into the core slots. Inspect the core for wear.

b. Inspect the field windings and leads for damaged or broken wires. Inspect the main frame for damage or broken wires. Inspect the main frame for damage and broken welds and for nicks and burrs around the mounting flanges.

Use a fine file and remove rust, burrs. and fine edges. If damage is beyond repair, replace defective items. Refer to paragraph 8-1 or 8-2.

4. GENERATOR VOLTAGE TOO HIGH

Step 1. Test the voltage regulator to see if it is defective. Refer to paragraph 4-42b.

If the regulator fails to pass the above test, refer to paragraph 7-9c. for test and repair procedures. If regulator passes above test, go on to step 2.

Step 2. Inspect exciter. Check for broken or damaged windings and leads.

If damage is evident, replace the exciter. Refer to paragraph 8-1 or 8-2.

5. GENERATOR FREQUENCY FLUCTUATES OR DROPS UNDER LOAD

Step 1. Test the frequency converter to determine its condition. Test as follows: a. Model MEP-O18A.

(1) Apply AC input of 120 volts, 60 hertz current across terminals marked "L".

(2) With panel meter (M3) connected to output side meter reading should indicate 60 hertz + 0.5 hertz.

Table 5-1. Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

(3) For test with panel meter disconnected, direct output current of the converter shall be 100 microamperes + 10 microamperes with I 100 ohm load across positive and negative terminals.

b. ***Model MEP-023A.*** With generator set operating at 3428 rpm. remove screw in the face of the frequency converter and adjust the potentiometer for a reading of 400 HZ on the frequency meter. If proper reading is not obtained. proceed as follows:

(1) Disconnect the lead from the positive (+) and the negative (-) terminals on the frequency meter.
(2) Attach a multimeter with the scale set to read at least 200 microamperes, to the + and terminals on the frequency converter.
(3) Operate generator set at 3428 rpm and turn adjusting screw to obtain a 100 microampere reading on the multimeter scale.
(4) If reading is accomplished. the frequency meter on the control panel is faulty and must be replaced.
(5) If reading of 100 microamperes cannot be obtained, disconnect the wire leads from the two L terminals on the frequency converter. Test the wire leads. If no defect is discovered, replace frequency converter (below) and operate the generator set. Turn adjusting screw to obtain 400 HZ meter reading.

If frequency meter does not pass the above test, replace it. Refer to figures 4-61 or 4-62 and replace the meter in the applicable model generator set. If the meter is not defective, go on to step 2.

Step 2. If the cause of the malfunction is engine lack of power. refer to TM 52805-259-14.

For maintenance correction, refer to TM 5-2805-259-14.

6. AC AMMETER FAILS TO REGISTER OR CURRENT METER FAILS TO REGISTER

Test the current transformer as follows:

a. Model MEP-018A.

(1) Refer to figure 5-1 1. Disconnect and test resistors with a multimeter. Proper resistance is 150 ohms + 1%.
(2) Test transformer windings for continuity.

b. Model MEP-023A. To test the current transformer for continuity,. disconnect the six leads and remove the three resistors from the transformer. Use a multimeter set on the RX 1 ohm scale and test between terminals 1 and 2, 3 and 4, and 5 and 6. If continuity is not Indicated on all three cases, the transformer is defective. Before reinstalling the resistors test each to determine if they have a reading within I % of 150 ohms.

If transformer is found to be defective, replace it. Refer to figure 4-61 or 4-62.

Table 5-1. Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

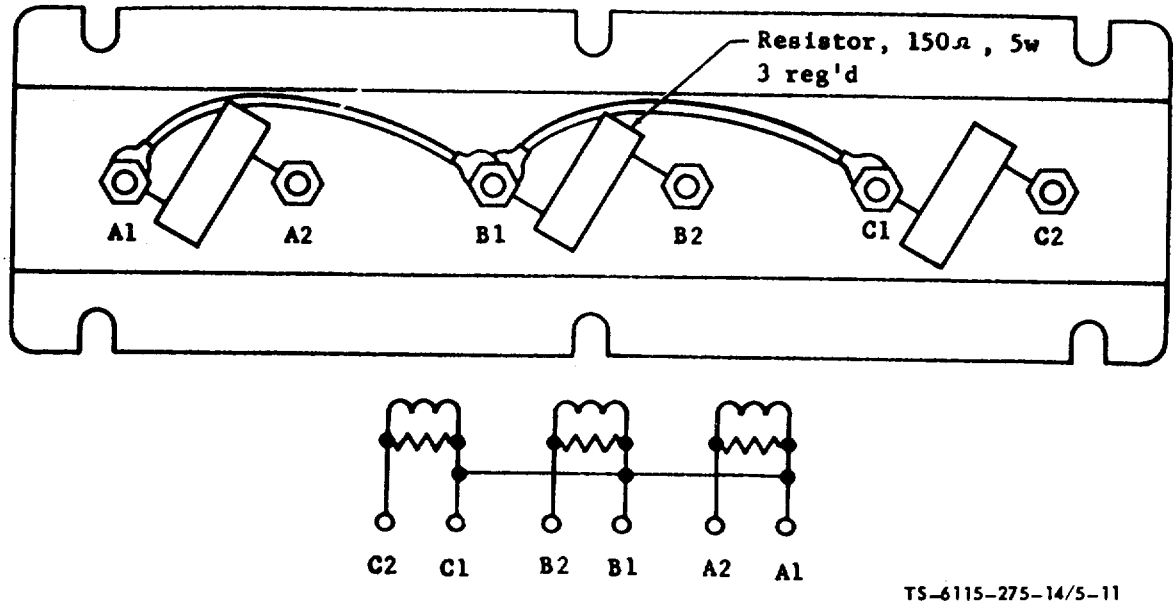


Figure 5-11. Current transformer, wiring diagram (Model MEP-018A).

7. FREQUENCY METER FAILS TO REGISTER

Test the frequency converter to determine its condition.

a. *Model MEP-018A.*

(1) Apply AC input of 120 volts, 60 hertz current across terminals marked "L".
(2) With panel (M3) connected to output side meter reading should indicate 60 hertz ±0.5 hertz,
(3) For test with panel meter disconnected, direct output current of the converter shall be 100 microamperes ±10 microamperes with 1100 ohm load across positive and negative terminals.

Table 5-1. Troubleshooting (Cont'd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
b. Model MEP-023A. With generator set operating at 3428 rpm, remove the screw in the face of the frequency converter and adjust the potentiometer for a reading of 400 HZ on the frequency meter. If proper reading is not obtained, proceed as follows:	
(1) Disconnect the lead from the positive (+) and negative (-) terminals on the frequency meter.	
(2) Attach a multimeter with the scale set to read at least 200 microamperes, to the + and terminals on the frequency meter.	
(3) Operate generator set at 3428 rpm and turn adjusting screw to obtain a 100 microamperes on the multimeter scale.	
(4) If reading is accomplished, the frequency meter on the control panel is faulty and must be replaced.	
(5) If reading of 100 microamperes cannot be obtained, disconnect the wire leads from the two L terminals on the frequency converter. Test the wire leads. If no defect is discovered, replace frequency converter (below) and operate generator set. Turn adjusting screw to obtain 400 HZ reading.	
If frequency meter does not pass the above test, replace it. Refer to figures 4-61 or 4-62 and replace the meter to the applicable model generator set.	

Section III. GENERAL MAINTENANCE

5-5. General

Refer to Chapters 2, 3 and 4 for preventive maintenance checks and services and service to the generator.

5-6. General Disassembly Procedures

a. Components to be repaired shall be disassembled to the extent required for complete serviceability.

b. Serviceable, precision, matched or mated parts shall be marked, handled and stored to preclude damage and to insure reassembly and installation in their matched and mated positions in the same assembly or component.

5-7. General Repair and/or Replacement Criteria

a. In-process inspection shall be performed on each assembly, subassembly and component parts being repaired to insure strict adherence to criteria established by this manual.

b. Welding shall assure complete fusion and penetration and be in compliance with specifications and standards referenced herein.

5-8. General Reassembly Procedures

General precautions shall be adhered to during reassembly to insure that all internal parts have been properly installed and necessary tolerance checks performed.

CHAPTER 6
REMOVAL/INSTALLATION OF MAJOR COMPONENTS

6-1. Control Cabinet Assembly

a. Removal. Refer to figure 6-1 or 6-2 and remove the control box from the applicable model generator set.

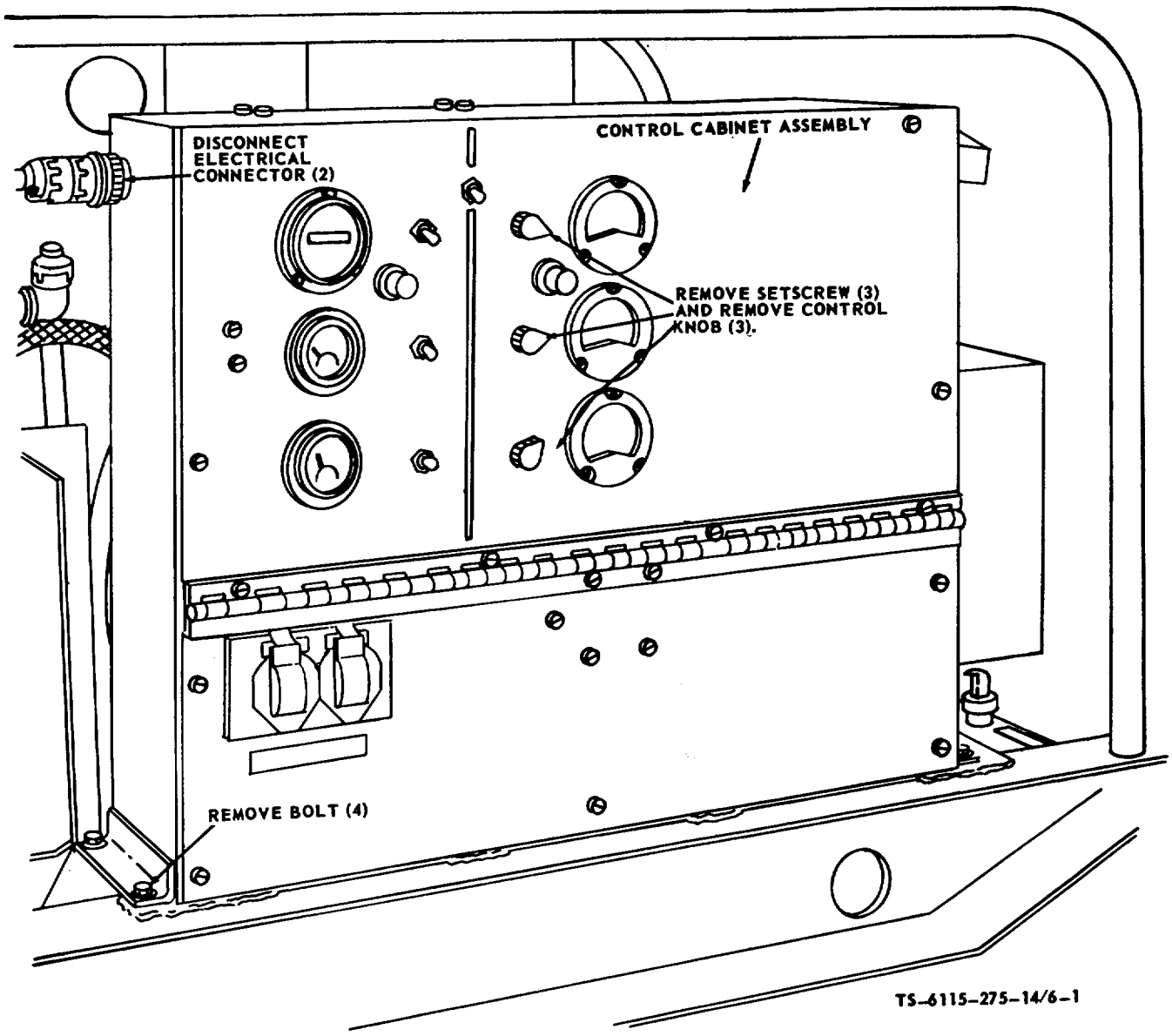
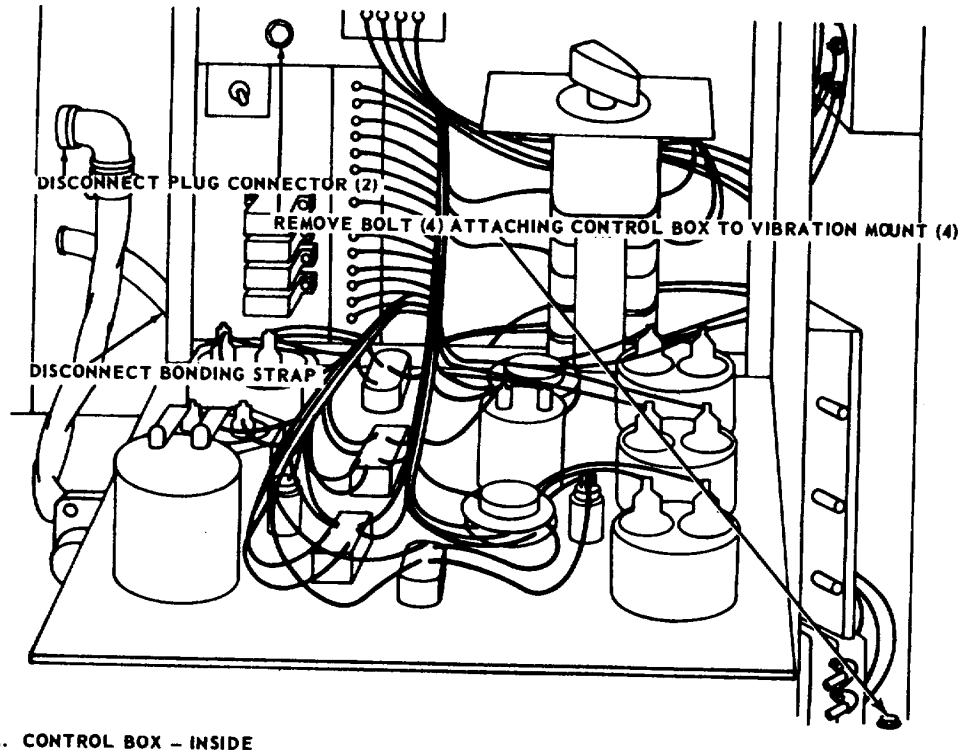
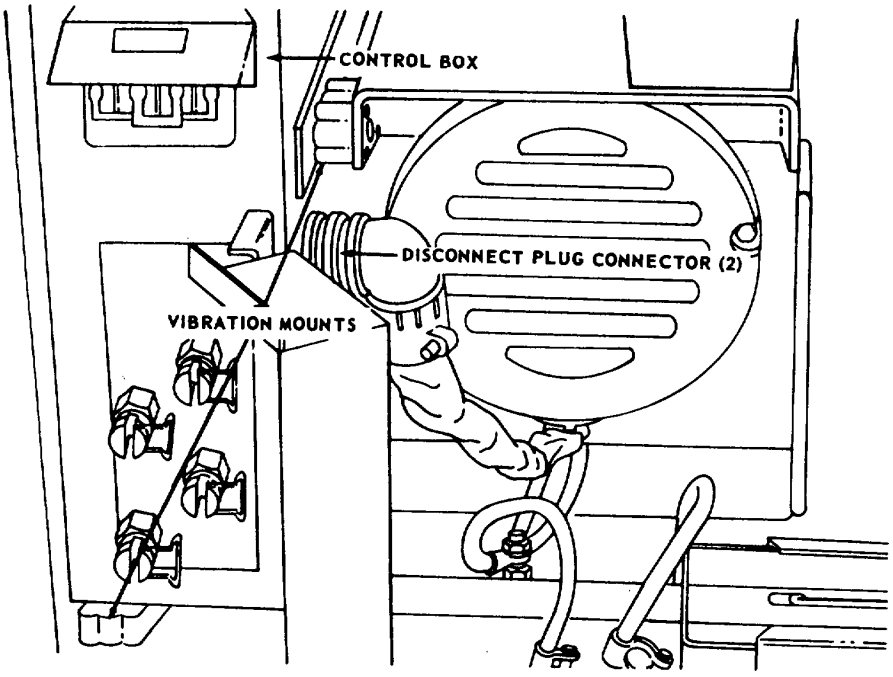


Figure 6-1. Control cabinet assembly, removal and installation (Model MEP-018A).



A. CONTROL BOX – INSIDE



B. CONTROL BOX – OUTSIDE

TS 6115–275–14/6–2

Figure 6-2. Control box, removal and installation (Model MEP-023A).

b. Cleaning and Inspection.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect for damage and defects and replace defective or missing parts as necessary.

c. Installation. Refer to figure 6-1 or 6-2 and install control box on applicable model generator set.

6-2. Generator and Engine

a. Removal.

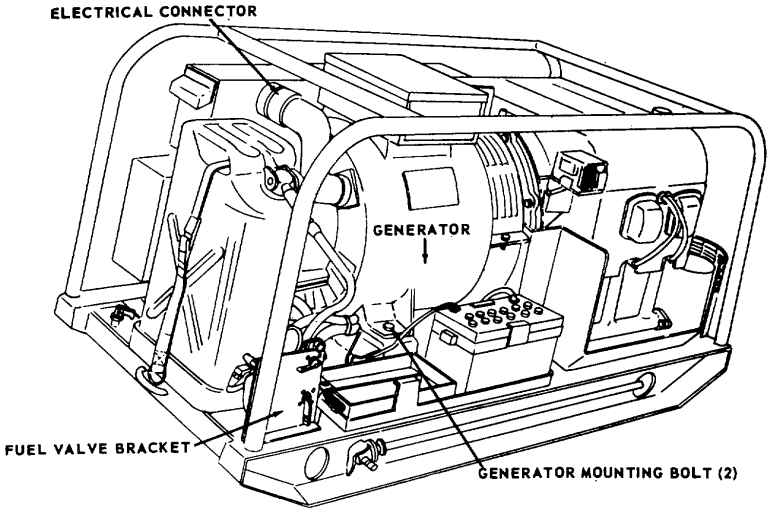
NOTE

Model MEP-018A generator and engine may be removed as a single unit or may be disconnected and removed separately.

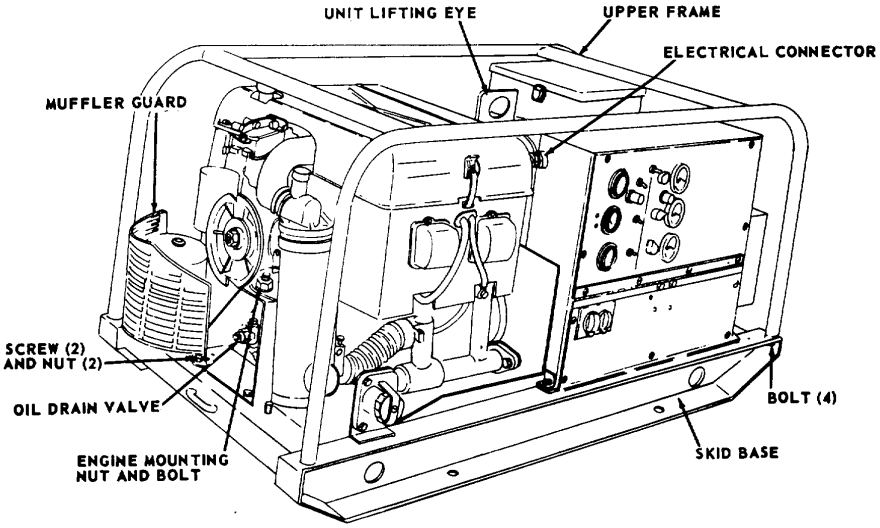
Model MEP-023A generator and engine must be removed as a single unit since removal of the generator from the engine requires disassembly of the generator.

(1) Remove battery.

(2) Refer to figure 6-3 or 6-4 and remove generator and engine from the applicable model generator set.



STEP 1. DISCONNECT 2 ELECTRICAL CONNECTORS FROM CONTROL BOX.
STEP 2. DISCONNECT FUEL LINE FROM FUEL VALVE BRACKET.
STEP 3. REMOVE THE 2 GENERATOR MOUNTING BOLTS
NOTE: IF NECESSARY. FOR ACCESS TO OTHER MOUNTING BOLT, REMOVE CONTROL BOX (PAR 6-1).



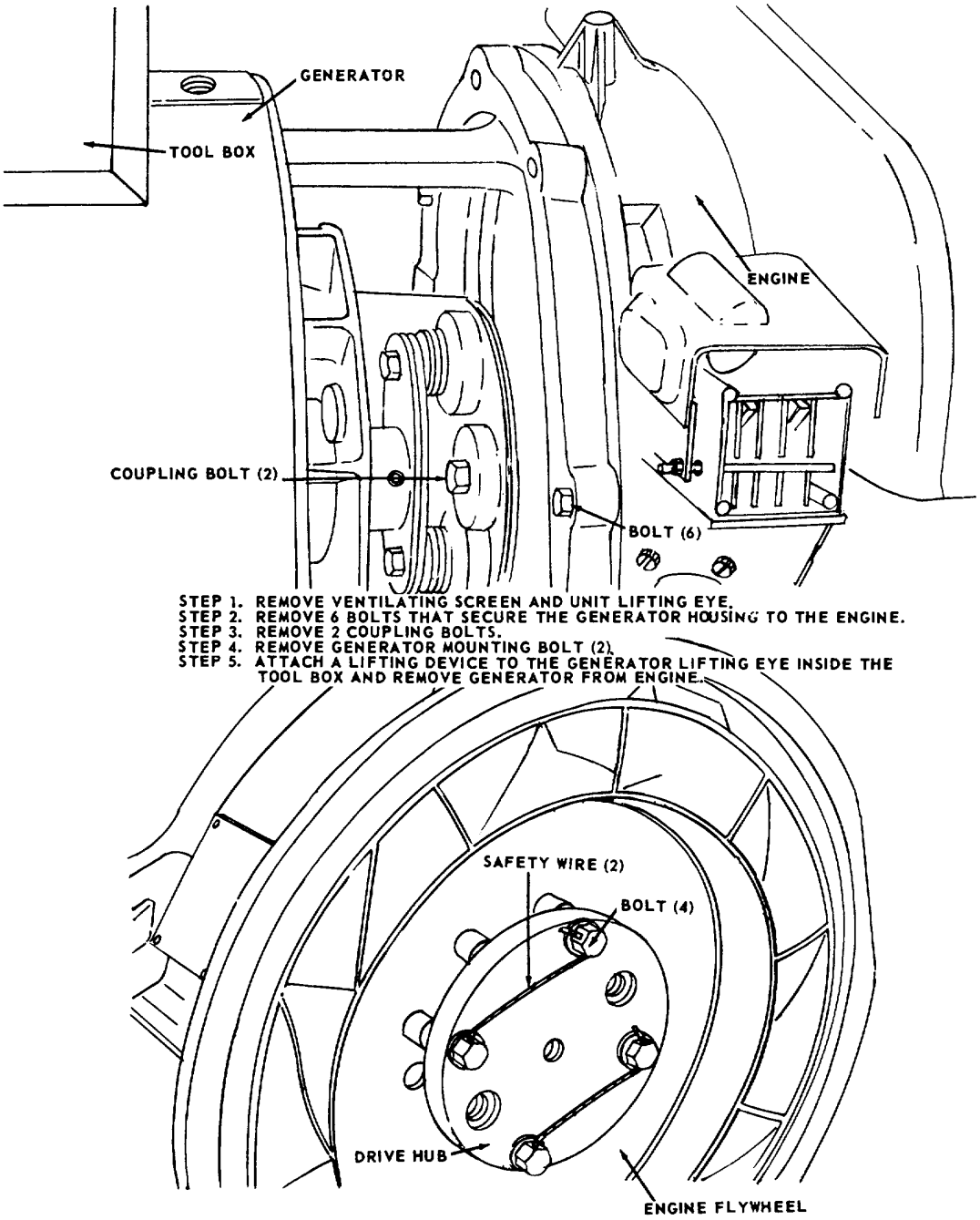
STEP 4. DRAIN OIL INTO SUITABLE CONTAINER AND REMOVE OIL DRAIN VALVE.
STEP 5 REMOVE ENGINE MOUNTING BOLT AND NUT REMOVE 2 SCREWS AND NUTS AND REMOVE MUFFLER GUARD.
STEP 6. REMOVE 4 BOLTS AND REMOVE UPPER FRAME FROM SKID BASE.
STEP 7. DISCONNECT SLAVE RECEPTACLE FROM SKID BY REMOVING 2 BOLTS AND NUTS.
STEP a ATTACH A HOIST TO THE LIFTING EYE AND LIFT THE UNIT FROM THE SKID BASE.

A. UNIT REMOVAL

TS-6115-275-14/6-3 (Sheet I of 2)

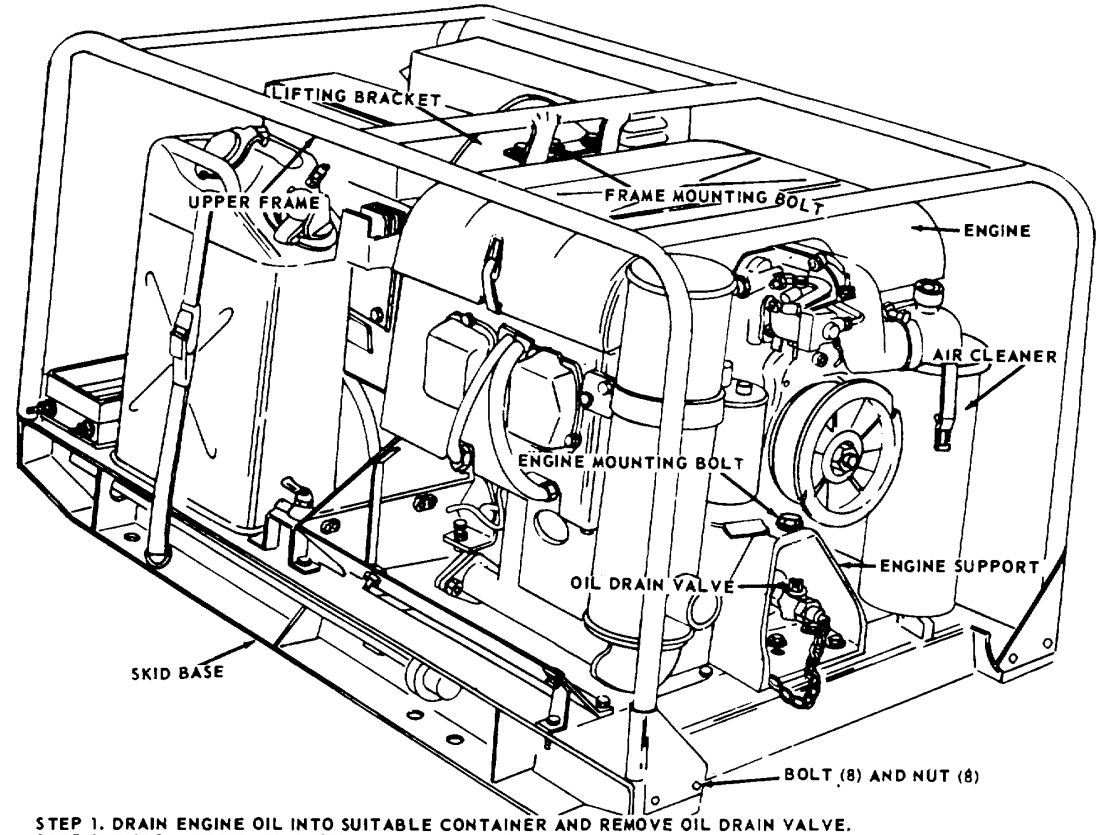
Figure 6-3. Generator and engine, removal and installation (Model MEP-018A) (sheet 1 of 2).

***U.S. GOVERNMENT PRINTING OFFICE: 1997 - 554-024/60103**

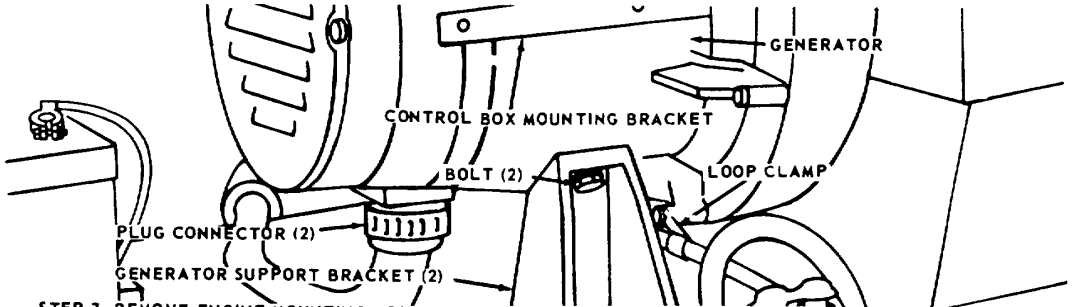


TS-6115-275-14/6-3 (Sheet 2 of 2)

Figure 6-3. Generator and engine, removal and installation (Model MEP-018A) (sheet 2 of 2).



STEP 1. DRAIN ENGINE OIL INTO SUITABLE CONTAINER AND REMOVE OIL DRAIN VALVE.
STEP 2. DISCONNECT FUEL SUPPLY LINE AND REMOVE FUEL TANK.
STEP 2A. DISCONNECT NEGATIVE BATTERY CABLE FROM BATTERY.
STEP 3. DISCONNECT BATTERY CABLE FROM ENGINE STARTER.
STEP 4. REMOVE AIR CLEANER.
STEP 5. REMOVE THE 8 BOLTS AND NUTS THAT SECURE THE UPPER FRAME TO SKID BASE. REMOVE BOLT THAT SECURES TOP CENTER OF FRAME TO FLYWHEEL HOUSING. LIFT OFF UPPER FRAME. REPLACE BOLT IN FLYWHEEL HOUSING.
STEP 6. DISCONNECT FUEL LINE FROM FUEL PUMP AND REMOVE SCREW ATTACHING FUEL LINE LOOP CLAMP TO BOTTOM OF FLYWHEEL HOUSING.



STEP 7. REMOVE ENGINE MOUNTING BOLT AND NUT THAT SECURES ENGINE TO ENGINE SUPPORT.
STEP 8. REMOVE THE 2 SCREWS FROM INSIDE CONTROL BOX THAT SECURE THE CONTROL BOX TO UPPER RESILIENT MOUNTS (FIG. 6-2) AND CONTROL BOX MOUNTING BRACKET.
STEP 9. DISCONNECT PLUG CONNECTOR ATTACHING ENGINE CONTROL WIRING HARNESS TO ENGINE (FIG. 6-2) AND PLUG CONNECTOR ATTACHING GENERATOR WIRING HARNESS TO CONTROL BOX (FIG. 6-2).
STEP 10. REMOVE THE 2 BOLTS THAT SECURE THE GENERATOR TO THE GENERATOR SUPPORT BRACKETS.
STEP 11. ATTACH HOIST TO LIFTING BRACKET AND REMOVE ENGINE AND GENERATOR.

TS-6115-275-14/6-4

Figure 6-4. Generator and engine, removal and installation (Model MEP-023A).

b. Cleaning and Inspection.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean housing with cleaning solvent, Fed. Spec. P-D-680 or P-S-661,GI and dry thoroughly.

(2) Inspect for damaged or missing hardware and replace defective or missing parts as necessary.

c. Installation. Refer to figure 6-3 or 6-4 and install the generator and engine on the applicable model generator set.

CHAPTER 7
MAINTENANCE OF ENGINE AND ELECTRICAL, PANELS AND CONTROLS

Section I. ENGINE ASSEMBLY

7-1. General

a. The Military Standard Engine, Model 4A0843 is designed for general purpose use in industrial type applications.

b. For detailed maintenance of the engine, refer to TM 5-2805-259-14, or TO 38G2-89-41.

7-2. Engine

a. Removal. Refer to paragraph 6-2 for removal of the engine.

b. Cleaning and Inspection.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean housing with cleaning solvent, Fed Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect for missing or damaged hardware and replace missing or defective parts as necessary.

c. Installation. Refer to paragraph 6-2 and install the engine.

Section II. CONTROL BOX

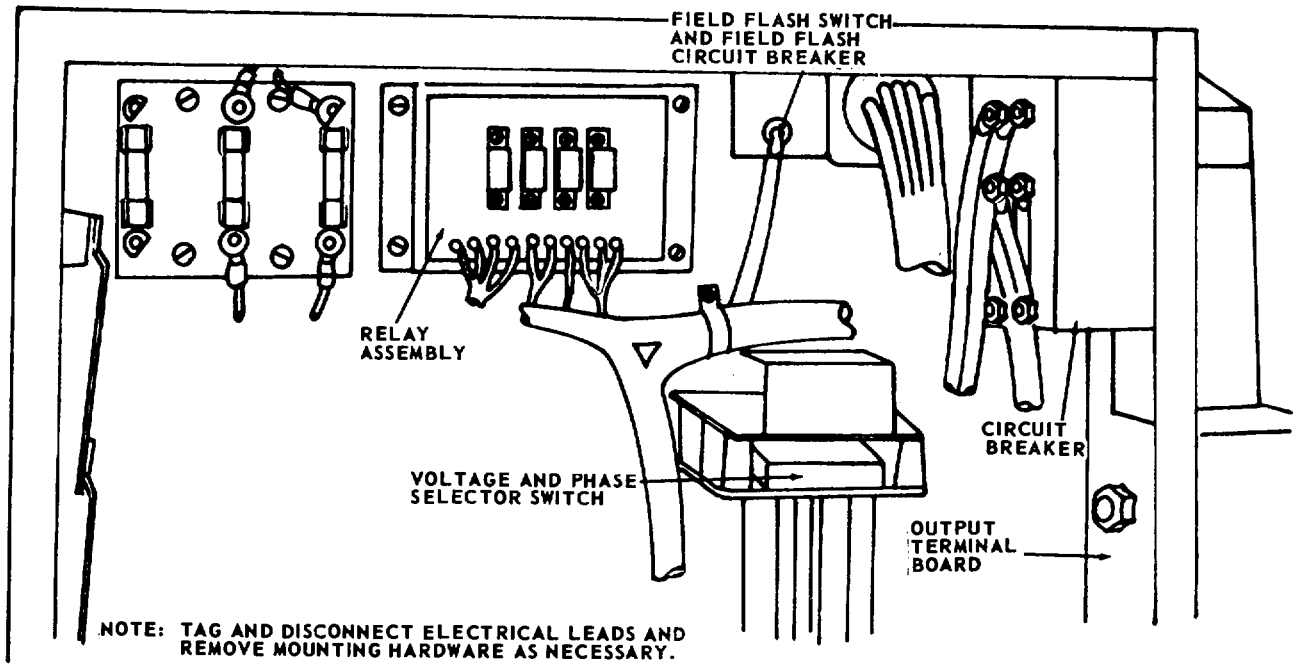
7-3. General

WARNING

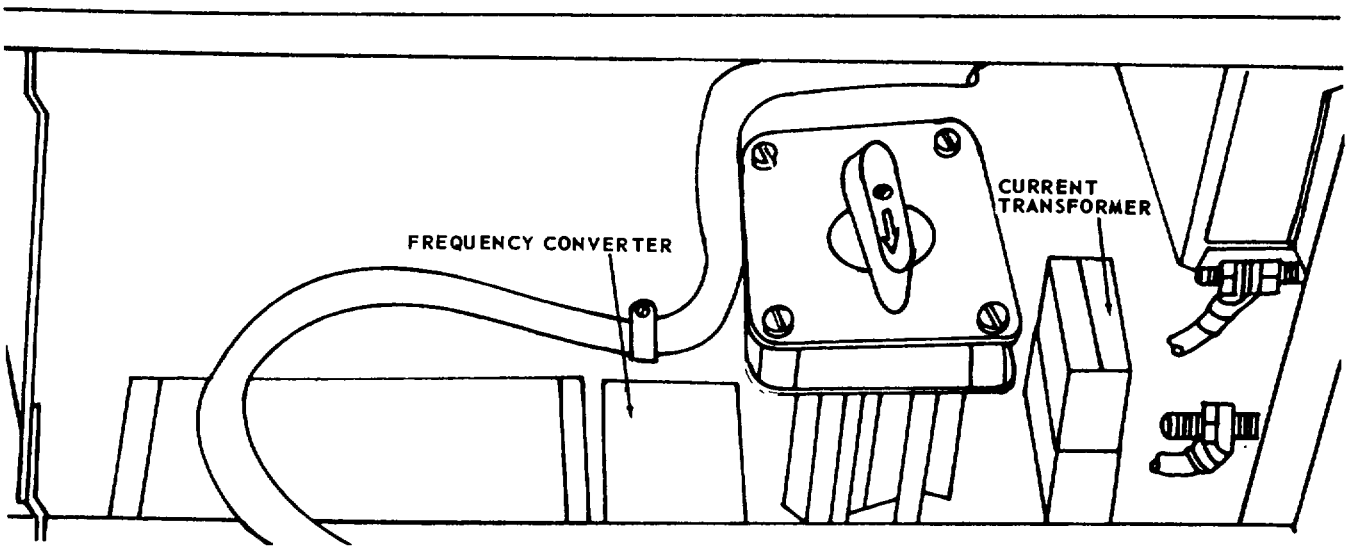
Do not perform any electrical maintenance of change load connections while the generator is operating or connected to an energized line. Failure to observe this safety precaution may result in severe electrical shock or death by electrocution. The control box has a hinged panel on which the gages and instruments are mounted and which opens to give excess to the interior components of the control box.

7-4. Field Flash Switch

a. Removal. Refer to figure 7-1 or 7-2 and remove the switch from the applicable model generator set.



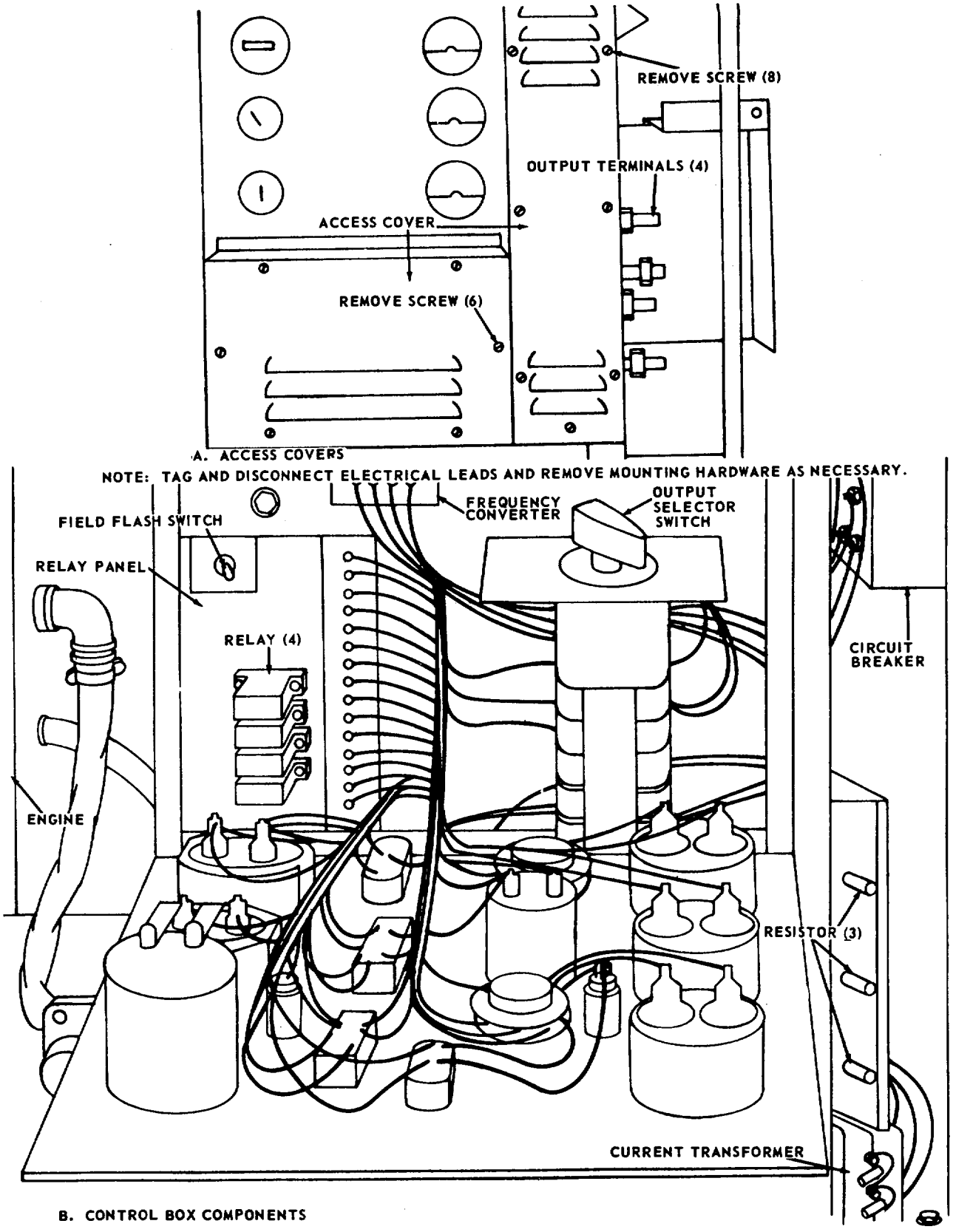
A.. UPPER CONTROL BOX



B. LOWER CONTROL BOX

TS-6115-275-14/7-1

Figure 7-1. Control cabinet assembly components, removal and installation (Model MEP-018A).



TS-6115-275-14/7-2

Figure 7-2. Control box components, removal and installation (Model MEP-023A).

b. Cleaning, Inspection, and Repair.

(1) Clean parts with a clean, dry, lint-free cloth.

(2) Inspect for damage, corroded or loose terminals and defective wiring.

(3) Replace a defective item.

c. Test. Hold switch in flash position and test for continuity. If no continuity is indicated, replace switch. Check circuit breakers for continuity. Replace defective wiring, switch or breakers.

d. Installation. Refer to figure 7-1 or 7-2 and install the switch in the applicable model generator set.

7-5. Voltage and Phase Selector Switch

a. Removal. Refer to figure 7-1 or 7-3 and remove the switches from the applicable model generator set.

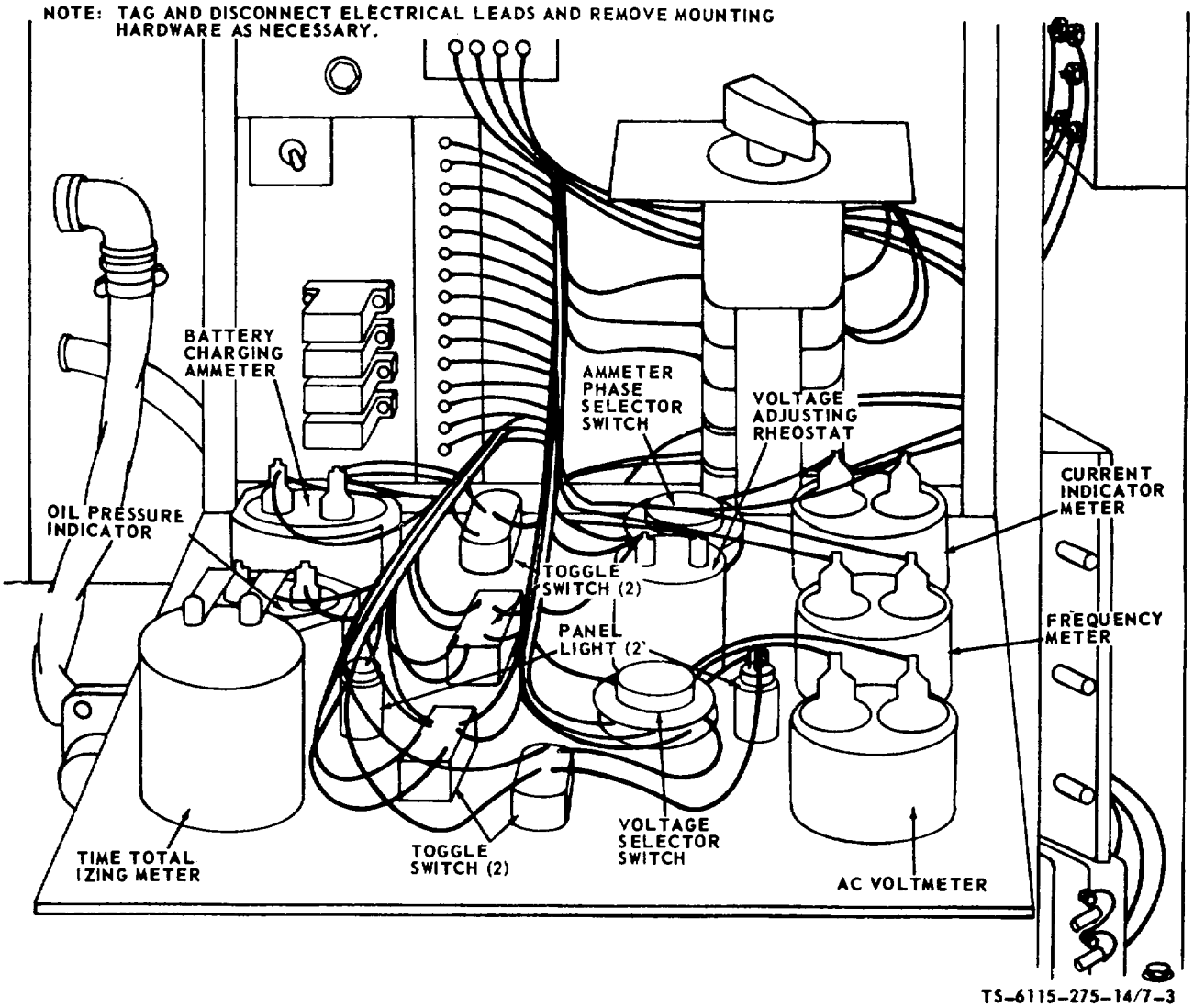


Figure 7-3. Controls and instruments, removal and installation (Model MEP-023A).

b. Cleaning, Inspection, and Repair.

(1) Clean with a dry cloth.

(2) Inspect for corroded terminals, loose connections, and cracked or broken insulators.

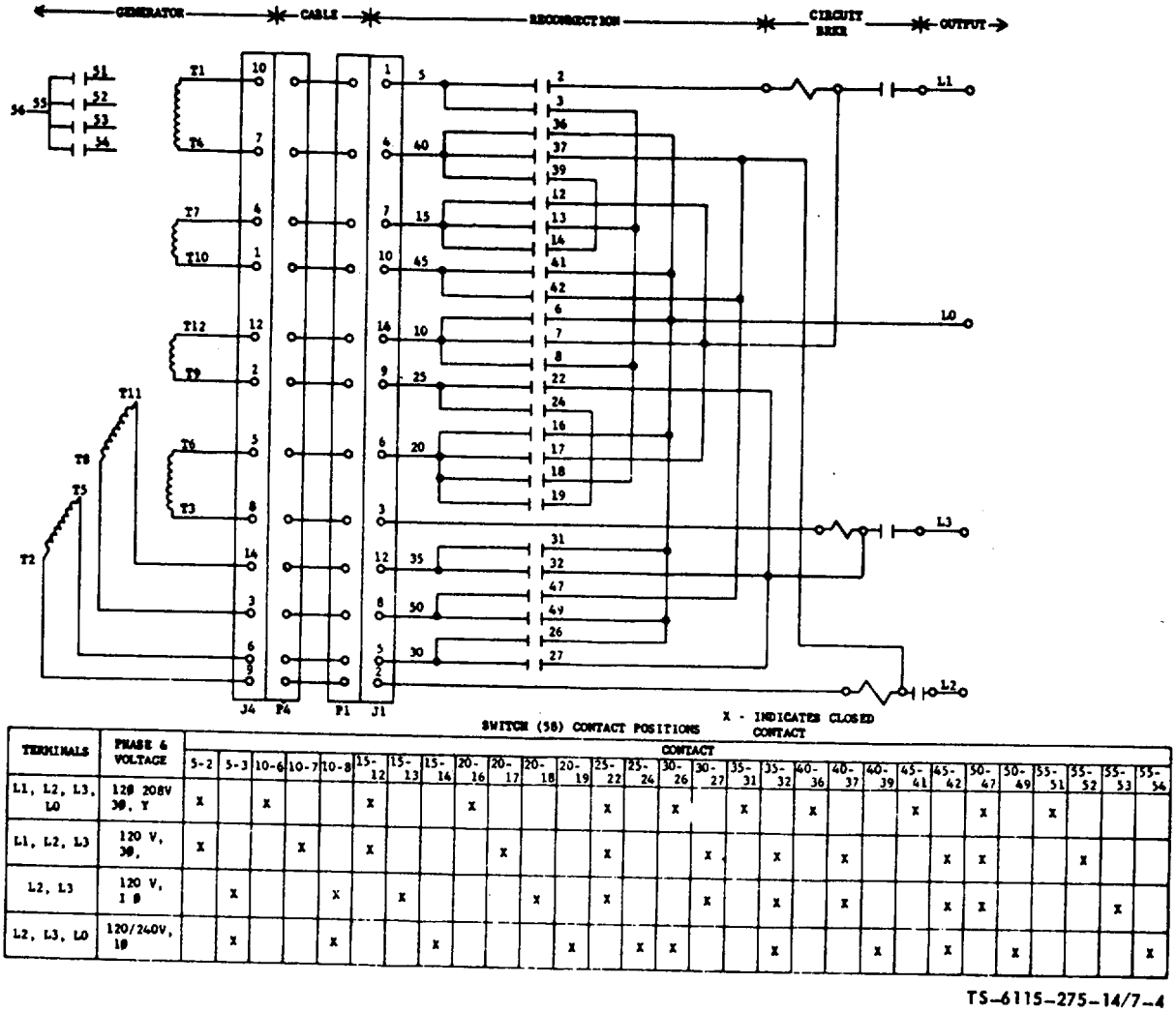
(3) Operate the switch through all four positions. Switch is spring-loaded and should snap into each position.

(4) Check that safety cover is not damaged or missing.

(5) Replace a damaged item.

c. Test (Model MEP-018A).

(1) Refer to figure 7-4 for connection diagram and check continuity in all switch positions. Test between various pins on receptable J1 and output terminals.



TERMINALS	PHASE & VOLTAGE	CONTACT																														
		5-2	5-3	10-6	10-7	10-8	15-12	15-13	15-14	20-16	20-17	20-18	20-19	25-22	25-24	30-26	30-27	35-31	35-32	40-36	40-37	40-39	45-41	45-42	50-47	50-49	55-51	55-52	55-53	55-54
L1, L2, L3, LO	120 208V 3Φ, Y	X		X			X			X				X		X		X		X			X		X		X			
L1, L2, L3	120 V, 3Φ,	X			X		X				X			X			X		X		X				X	X			X		
L2, L3	120 V, 1Φ		X			X		X				X		X			X		X		X				X	X				X	
L2, L3, LO	120/240V, 1Φ		X			X			X				X		X	X			X			X			X		X					X

Figure 7-4. Voltage and phase selector switch wiring diagram (Model MEP-018A).

(2) Operate the set at rated load on all positions of the selector switch and check output for proper voltage and phase. Replace a defective switch.

Test (Model MEP-023A)

(1) Refer to wiring diagram FO-3 for connections diagram and check continuity in all switch positions. Test between various pins on receptacle J2 and output terminals.

(2) Operate the set at rated load on all positions of the selector switch and check output for proper voltage and phase. Replace a defective switch.

CAUTION

shut down the unit when changing load connections.

d. Testing of Ammeter Phase Switch (S2) (Model MEP-023A). To test proceed as follows:

(1) With generator set stopped, disconnect lead from negative (-) side of Current Indicator Meter (M5).

(2) Attach one probe of a multimeter to terminal number 11 of S2 and the other probe to terminal number 12.

(3) With switch knob in position I, continuity should be indicated on the multimeter.

(4) Move probe from terminal number 12 to terminal 13, turn switch knob to 12. The multimeter should read continuity.

(5) Move probe from terminal 13 to terminal 14 and turn switch knob to I3, again the meter should read continuity.

e. Testing of Voltage Selector Switch (S3) (Model MEP-023A). To test proceed as follows:

(1) With generator set stopped, disconnect lead from terminals 15, 25, and 26 of S3.

(2) Attach one probe of a multimeter to post number 2 of Voltmeter (M6). The multimeter should read continuity between post number 2 of M6 and the terminals indicated below for the indicated positions of S3.

VO-1, terminals 15, 16,and22.
VO-2, terminals 23, 26, and 27.
VO-3, terminals 17, 24, and 25.

(3) Move probe of multimeter from post number 2 of M6 to post number 1 and place S3 in VO-1 position. Multimeter should read continuity on terminals 12, 13, and 14 of S3.

f. Testing of Current Selector Switch (56) (Model MEP-018A). To test proceed as follows:

(1) With generator set stopped, disconnect wire number D107A18 from current selector switch (S6).

(2) Attach one probe of a multimeter to terminal number 11 of S6 and the other probe to terminal number 12.

(3) With switch knob in position 11, continuity should be indicated.

(4) Move probe from terminal 12 to terminal 13, turn switch knob to 12, continuity should be indicated.

(5) Move probe from terminal 13 to terminal 14 and turn switch knob to 13, again the meter should read continuity.

g. Installation. Refer to figure 7-1 or 7-3 and install the switches on the applicable model generator set.

7-6. Cabinet Cable Harness

a. General. All wiring on the generator set is tagged with code number. When testing, repairing, or replacing electrical leads and wiring harness, refer to the schematic diagram.

b. Inspection. Inspect the insulation for cracks and fraying. Pay particular attention to wires passing through holes in panels and over rough metal edges. If inspection reveals a broken or cut wire is exposed, repair the wire. If the break in the wire is in the wiring harness, or in an inaccessible area, replace the wire (d below).

c. Testing. Test a wire for continuity by disconnecting each end from the components to which it is connected. Touch the test probes of a multimeter to each end of the wire. If the multimeter fails to show continuity, the wire is defective and must be repaired or replaced.

d. Replacement. Replace a wire by disconnecting it from its attachments and installing a new wire. If a broken wire is part of a wiring harness, disconnect the wire at each end and tape the ends with electrical tape. Install a new wire and attach it to the exterior of the wiring harness.

7-7. Frequency Converter

a. General. The frequency converter, located in the top center of the control box, receives an ac signal of 120 volts from one of the coil groups of the generator and converts it to dc voltage which is proportionate to the frequency of the generator output. The frequency meter is fed this dc voltage which is used to

register hspz (hertz per second).

b. On-Equipment Testing and Adjustment (Model MEP-023A). With generator set operating at 3428 rpm, remove screw in the face of the frequency converter and adjust the potentiometer for a reading of 400 HZ on the frequency meter. If proper reading is not obtained, proceed as follows:

(1) Disconnect the lead from the positive (+) and negative (-) terminals on the frequency meter.

(2) Attach a multimeter with the scale set to read at least 200 microamperes, to the + and terminals on the frequency converter.

(3) Operate generator set at 3428 rpm and turn adjusting screw to obtain a 100 microampere reading on the multimeter scale.

(4) If reading is accomplished, the frequency meter on the control panel is faulty and must be replaced.

(5) If reading of 100 microamperes cannot be obtained, disconnect the wire leads from the two L terminals on the frequency converter. Refer to figure FO-3 and paragraph 7-6 and test wire leads. If no defect is discovered, replace frequency converter and operate generator set. Turn adjusting screw to obtain 400 HZ meter reading.

c. Removal. Refer to figure 7-1 or 7-2 and remove the converter from the applicable model generator set.

d. Cleaning, Inspection, and Repair.

(1) Wipe clean with a lint-free cloth.

(2) Inspect for damage, defects, and erratic meter readings. Replace damaged converter.

e. Test (Model MEP-018A).

(1) Apply ac input of 120 volts. 60 hertz current across terminals marked "L".

(2) With panel meter (M3) connected to output side meter reading should indicate 60 hertz to plus or minus 0.5 hertz.

(3) For test with panel meter disconnected, direct output current of the converter shall be 100 microamperes plus or minus 10 microamperes with 1100 ohm load across positive and negative terminals. Replace a defective frequency converter.

f. Installation. Refer to figure 7-1 or 7-2 and install the converter on the applicable model generator set.

7-8. Circuit Breakers

a. Removal. Refer to figure 7-5 or 7-6 and remove the circuit breaker from the applicable model generator set.

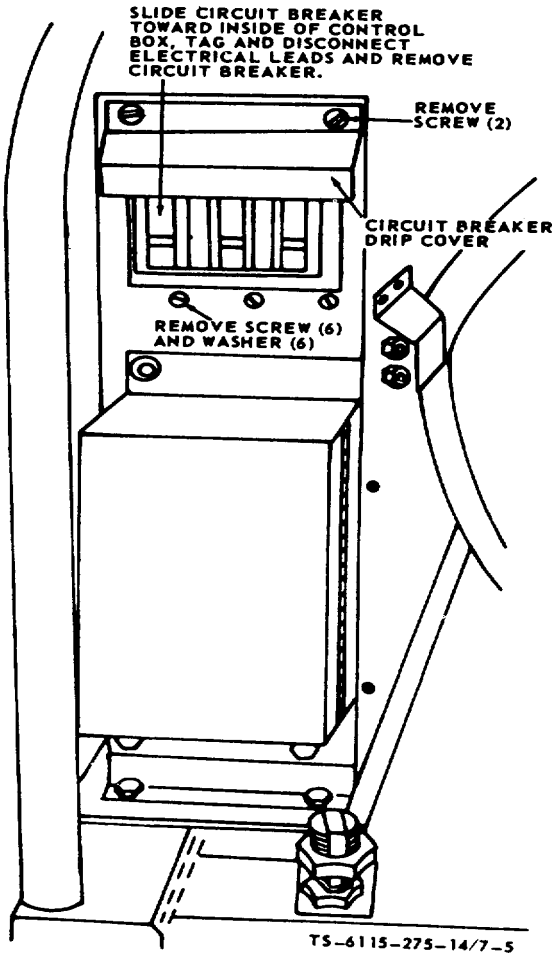


Figure 7-5. Circuit breaker removal and installation (Model MEP-)IHA).

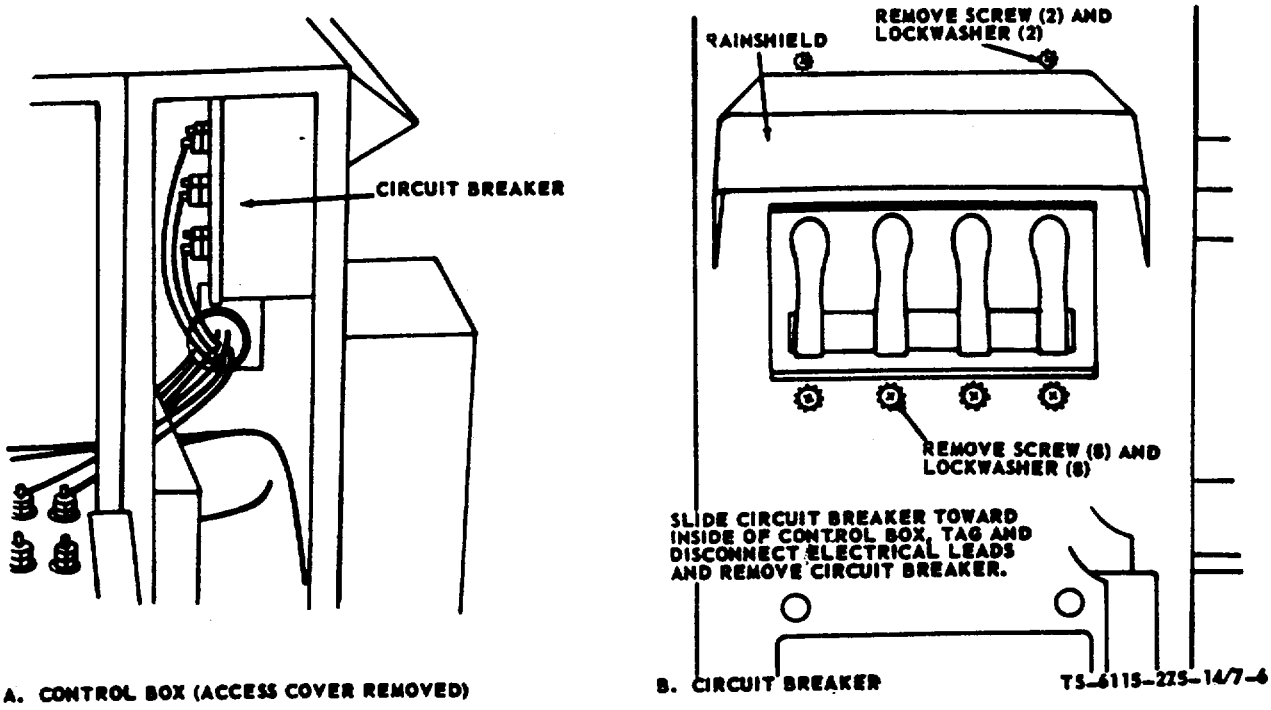


Figure 7-6. Circuit breaker, removal and installation (Model IIEP-023A).

b. Cleaning, Inspection, and Repair.

(1) Clean the circuit breaker with a clean, dry cloth.

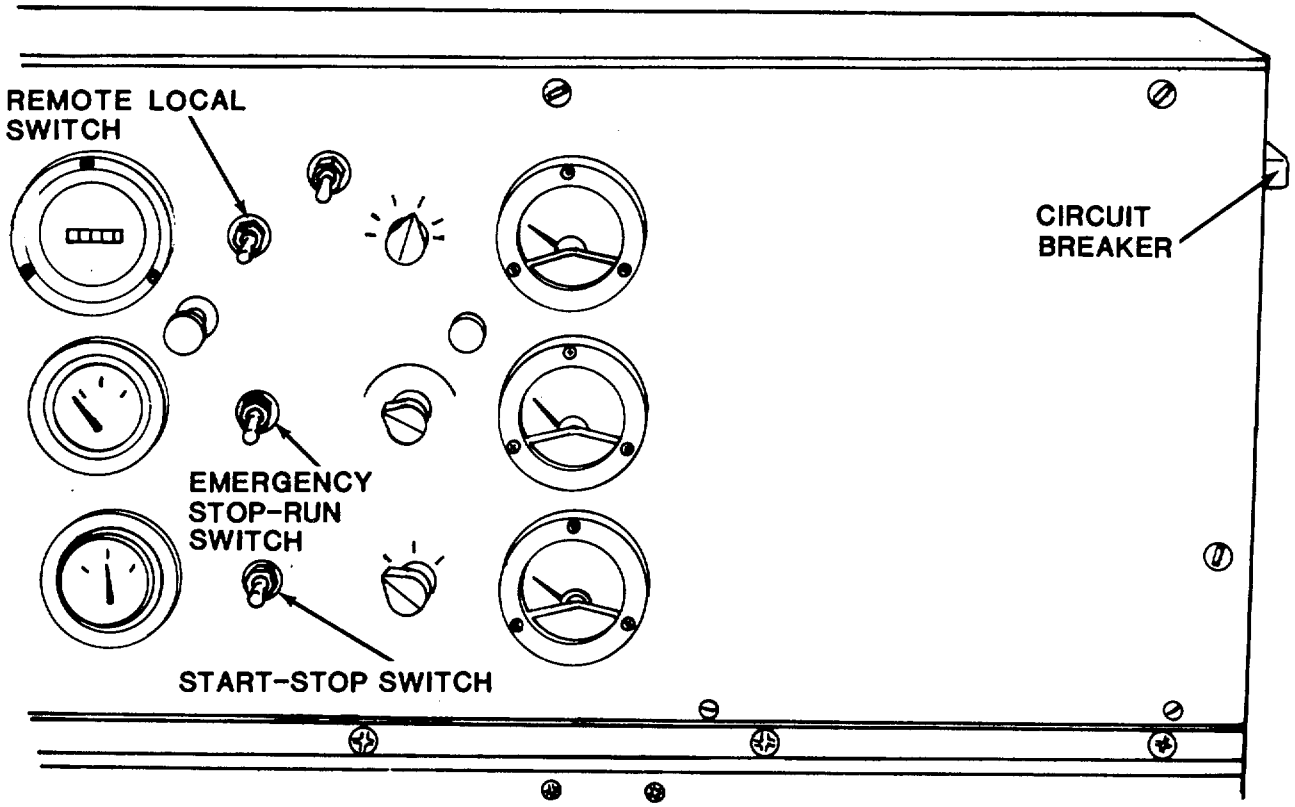
(2) Inspect the circuit breaker for cracks, breaks, and improper operation. Replace if damaged or defective.

c. Installation. Refer to figure 7-5 or 7-6 and install the circuit breaker on the applicable model generator set.

7-9. Voltage Regulator

a. Test the voltage regulator, refer to paragraph 4-42b.

Figures 7-7, 7-8, 7-8.1, 7-9, and 7-12, including all data on pages 7-8.1/(7-8.2 blank), 7-9, 7-10, 7-11, and 7-12, are deleted.

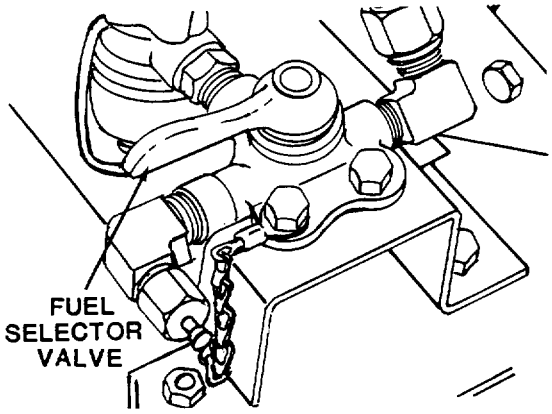


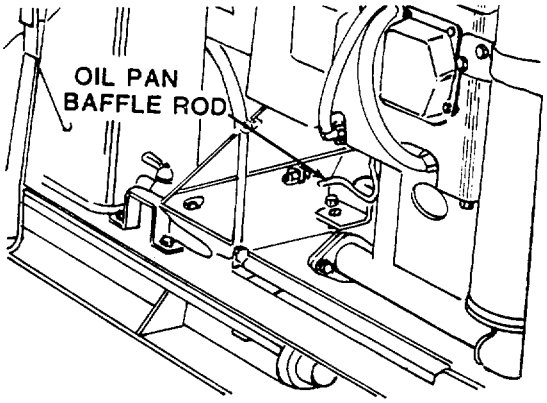
CAUTION

- When starting engine, if no oil pressure is indicated, shut unit down immediately or damage to engine could result.
- DO NOT IDLE ENGINE. Voltage regulator can be damaged if engine is idled.

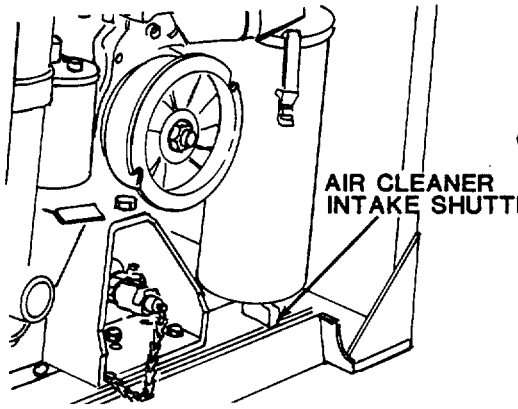
1. Perform preparation for starting functions (para 2-2b(1)(a) thru (k).
2. Place Remote/Local switch in LOCAL position.
3. Place Emergency Stop/Run switch in NORMAL position.
4. Place Governor Control in START position (C, fig. 2-3).
5. Pull out Choke control if engine is cold. After engine starts, slowly return to in position as engine reaches operating temperature. (C, figs. 2-1 and C, 2-3).
6. Press the Start/Stop switch to the START position. Release when engine starts.
7. Position Governor in GOVERN position.

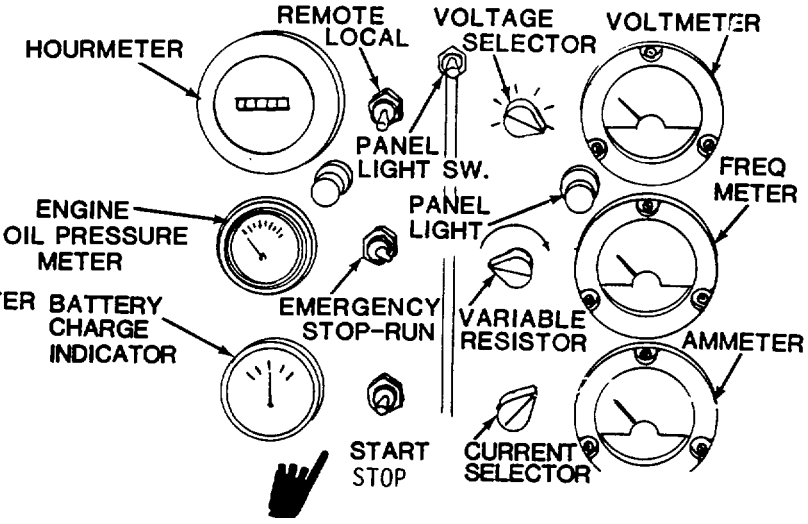
Figure 7-8. Electric Starting Instructions





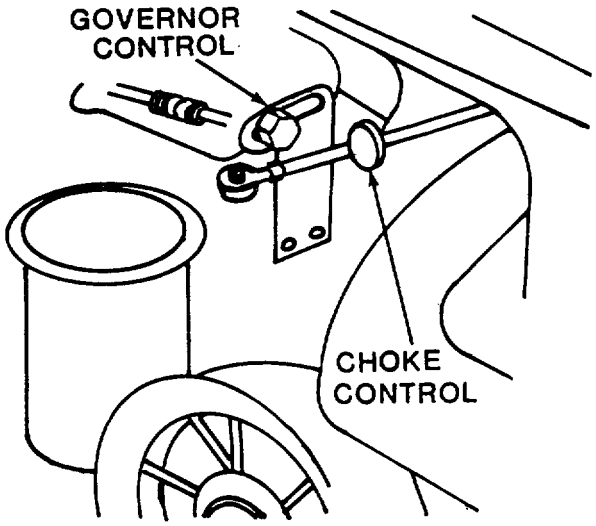
Step 1. Perform PMCSs IAW table 3-2.
Step 2. Place three-way fuel valve in the SET or AUX position, depending on source of fuel.
Step 3. Place oil pan baffle rod in the proper position, depending on ambient temperature.





Step 4. Place air intake shutter in the proper position, depending upon ambient temperature.
Step 5. Check load terminals (fig. 2-5) for correct output connections.
Step 6. Set voltage phase switch (fig. 2-6) for desired output.
Step 7. Set voltage selector switch (part A, figs. 2-1 and 2-3) to monitor desired phase voltage.
Step 8. Set current selector switch (part A, figs. 2-1 and 2-3) to monitor desired current.
Step 9. Turn voltage adjust knob (rheostat) (part A, figs 2-1 and 2-3) fully counterclockwise.
Step 10. Place circuit breaker in off position.
Step 11. Assure unit is properly grounded.
Step 12. Place Remote/Local switch in LOCAL position.
Step 13. Place Emergency Stop/Run switch in NORMAL position.

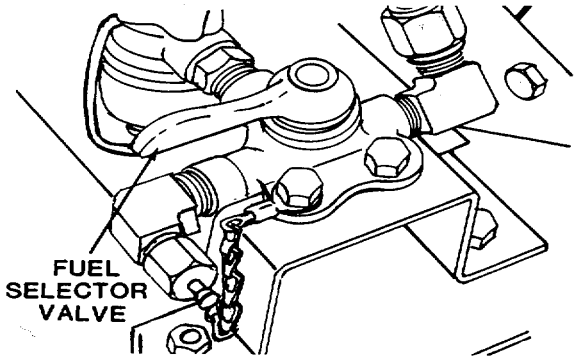
Figure 7-8.1. Electrical starting instructions (sheet 1 of 2).

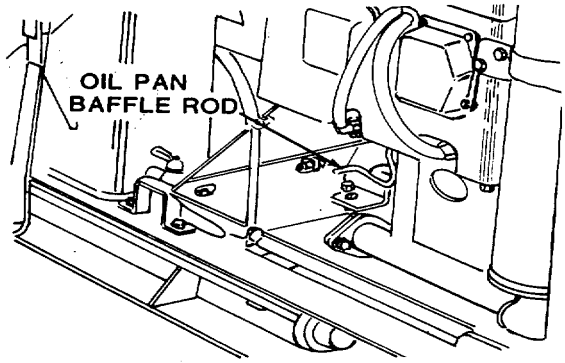


Step 14. Place Governor control in START position (part C, fig. 2-3).
Step 15. Pull out choke control if engine is cold. After engine starts, slowly return to in position as engine reaches operating temperature (part C, figs. 2-1 and 2-3).
Step 16. Press the start/stop switch to the START position. Release when engine starts.
Step 17. Place governor in GOVERN position.

Figure 7-8.1. Electrical starting instructions (sheet 2 of 2).

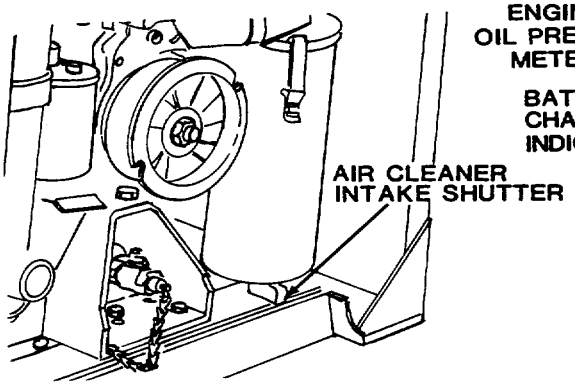
Figure 7-9.1, including all data on pages 7-10.1 and 7-10.2, are deleted.

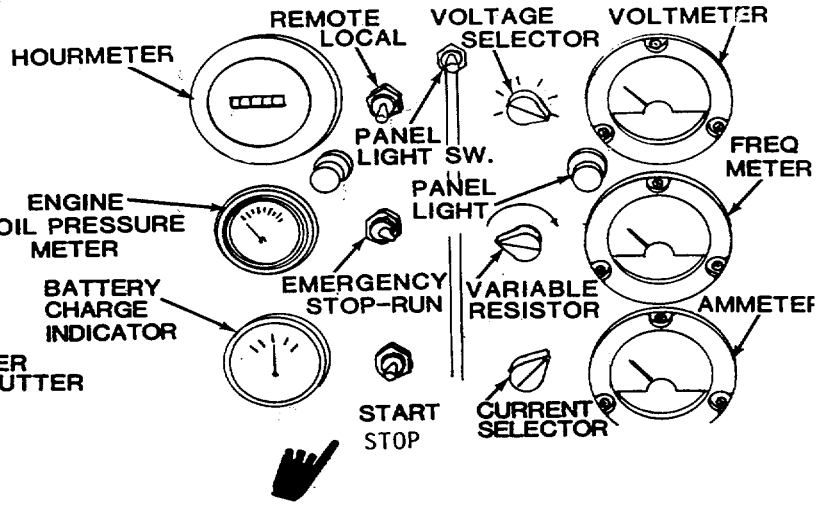




Step 1. Perform PMCSs IAW table 3-2.
Step 2. Place three-way fuel valve in the SET or AUX position. depending on source of fuel

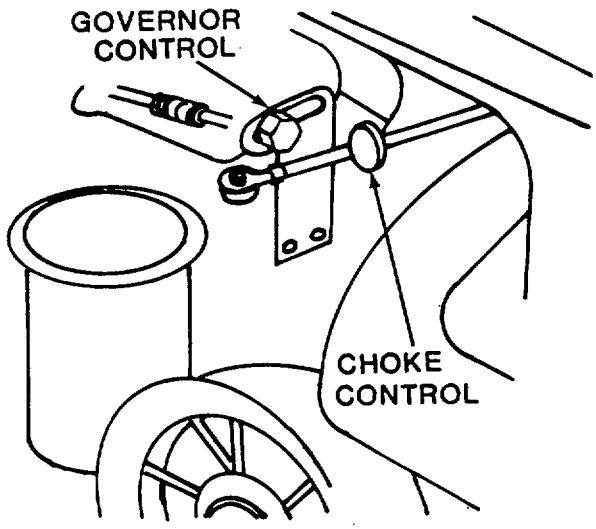
Step 3. Place oil pan baffle rod in the proper position, depending on ambient temperature.





Step 4. Place air intake shutter in the proper position, depending upon ambient temperature.
Step 5. Check load terminals (fig. 2-5) for correct output connections.
Step 6. Set voltage phase switch (fig. 2-6) for desired output.
Step 7. Set voltage selector switch (part A, figs. 2-1 and 2-3) to monitor desired phase voltage.
Step 8. Set current selector switch (part A, figs. 2-1 and 2-3) to monitor desired current.
Step 9. Turn voltage adjust knob (rheostat) (part A, figs 2-1 and 2-3) fully counterclockwise.
Step 10. Place circuit breaker in off position.
Step 11. Assure unit is properly grounded.
Step 12. Place Remote/Local switch in LOCAL position.
Step 13. Place Emergency Stop-Run switch in EMERGENCY RUN position.

Figure 7-9. Manual starting instructions (sheet 1 of 2).



Step 14. Place Governor control in START position.
Step 15. Pull out choke control if engine is cold. After engine starts, slowly return to in position as engine reaches operating temperature (part C, figs. 2-1 and 2-3).

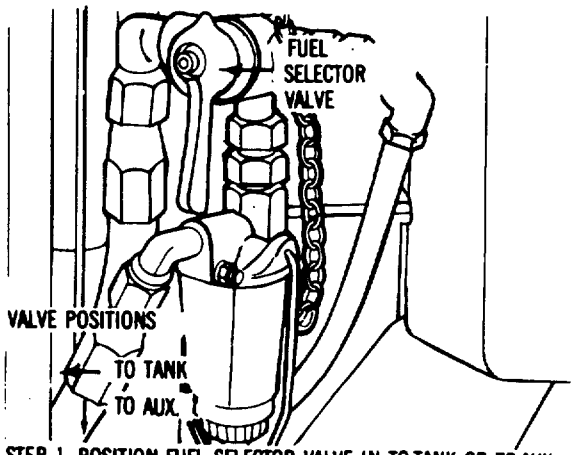
WARNING

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

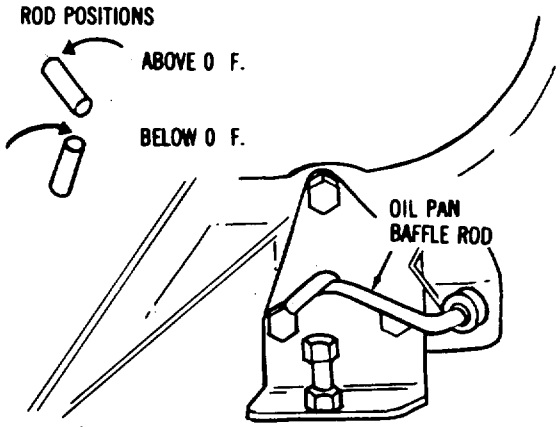
Step 16. Wrap the starter rope around the rope start pulley (part C, fig. 2-1). Take quick steady pull with the rope. Repeat until engine starts. If engine does not start, readjust the choke.
Step 17. When engine starts, place the Emergency Stop/Run switch in the NORMAL position. At the SAME TIME place the Start/Stop switch in the START position.
Step 18. Place Governor control in GOVERN position.

Figure 7-9. Manual .starting instructions (sheet 2 of 2).

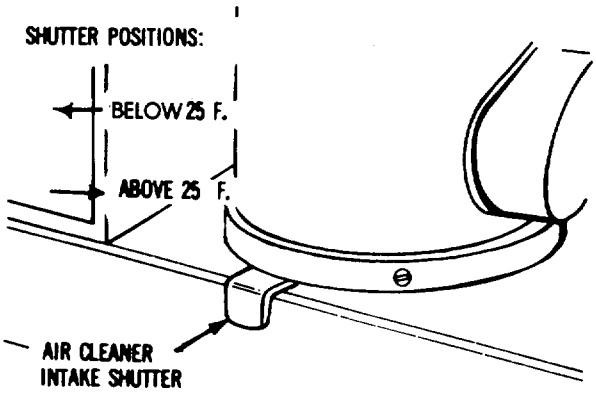
Figures 7-11 and 7-11.1, including all data on pages 7-12.1 and 7-12.2, are deleted.



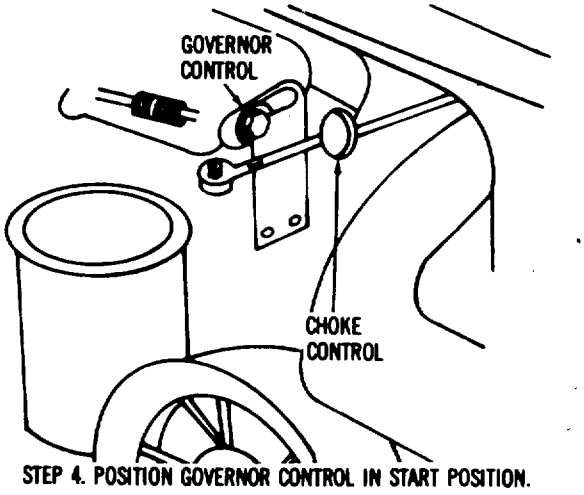
STEP 1. POSITION FUEL SELECTOR VALVE IN TO-TANK OR TO-AUX. POSITION DEPENDING ON SOURCE OF FUEL SUPPLY.



STEP 2. POSITION OIL PAN BAFFLE ROD IN THE PROPER POSITION DEPENDING ON AMBIENT TEMPERATURE.



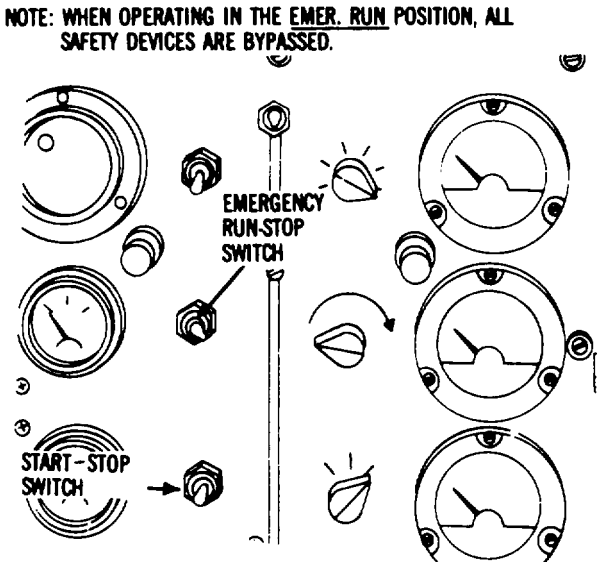
STEP 3. POSITION AIR CLEANER INTAKE SHUTTER IN THE PROPER POSITION DEPENDING ON AMBIENT TEMPERTURE



STEP 4. POSITION GOVERNOR CONTROL IN START POSITION.

Figure 7-11. Manual starting instructions (1 of2).

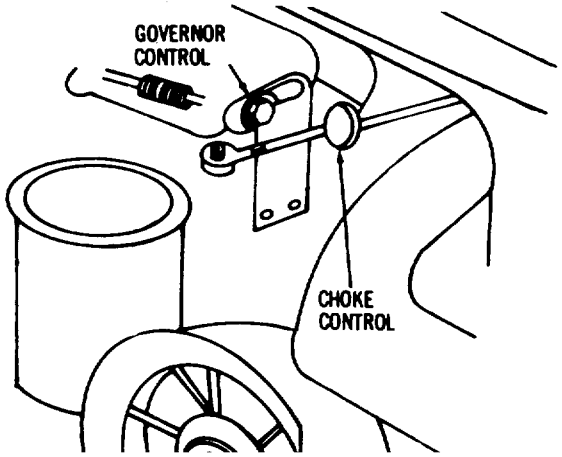
NOTE: WHEN OPERATING IN THE EMER. RUN POSITION, ALL SAFETY DEVICES ARE BYPASSED.



STEP 5. POSITION REMOTE-LOCAL SWITCH IN LOCAL POSITION.

STEP 6. POSITION RUN STOP SWITCH NORMAL POSITION.

STEP 7. POSITION CHOKE CONTROL ABOUT 3/4 CLOSED



STEP 8. TAKE ONE QUICK STEADY PULL WITH THE STARTER ROPE, IF THE ENGINE DOES NOT START, CLOSE CHOKE ALL THE WAY. PULL STARTER ROPE UNTIL THE ENGINE STARTS.

STEP 9. DJUST CHOKE CONTROL AS NECESSARY, AS THE ENGINE WARMS UP.

STEP 10. POSITION GOVERNOR CONTROL IN GOVERN/RUN POSITION AS SOON AS ENGINE STARTS, BRING TO RATED SPEED AND WARM FOR THREE TO FIVE MINUTES.

Figure 7-11.1. Manual starting instruction (2of2).

b. Repair. A voltage regulator that fails to pass the above test must be removed and the necessary repair procedures performed.

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

d. Removal. Using figure 4-67 in Organizational Maintenance as a guide, remove the Voltage Regulator as follows:

(1) Tag and disconnect all electrical leads.

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

(3) Remove the Voltage Regulator.

e. 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).

f. Test Procedures.

WARNING

Extreme care should be taken while conduting tests involving use of the 0-150 Volt, 60 Hz. source, for safety of personnel and to prevent damage to equipment being used.

CAUTION

While using a soldering iron, caution should be exercised 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 d.

Removal.

(2) Test power transistor Q2.

(a) Locate power transistor Q2 (1, Figure 7-13) on the back of the voltage regulator housing.

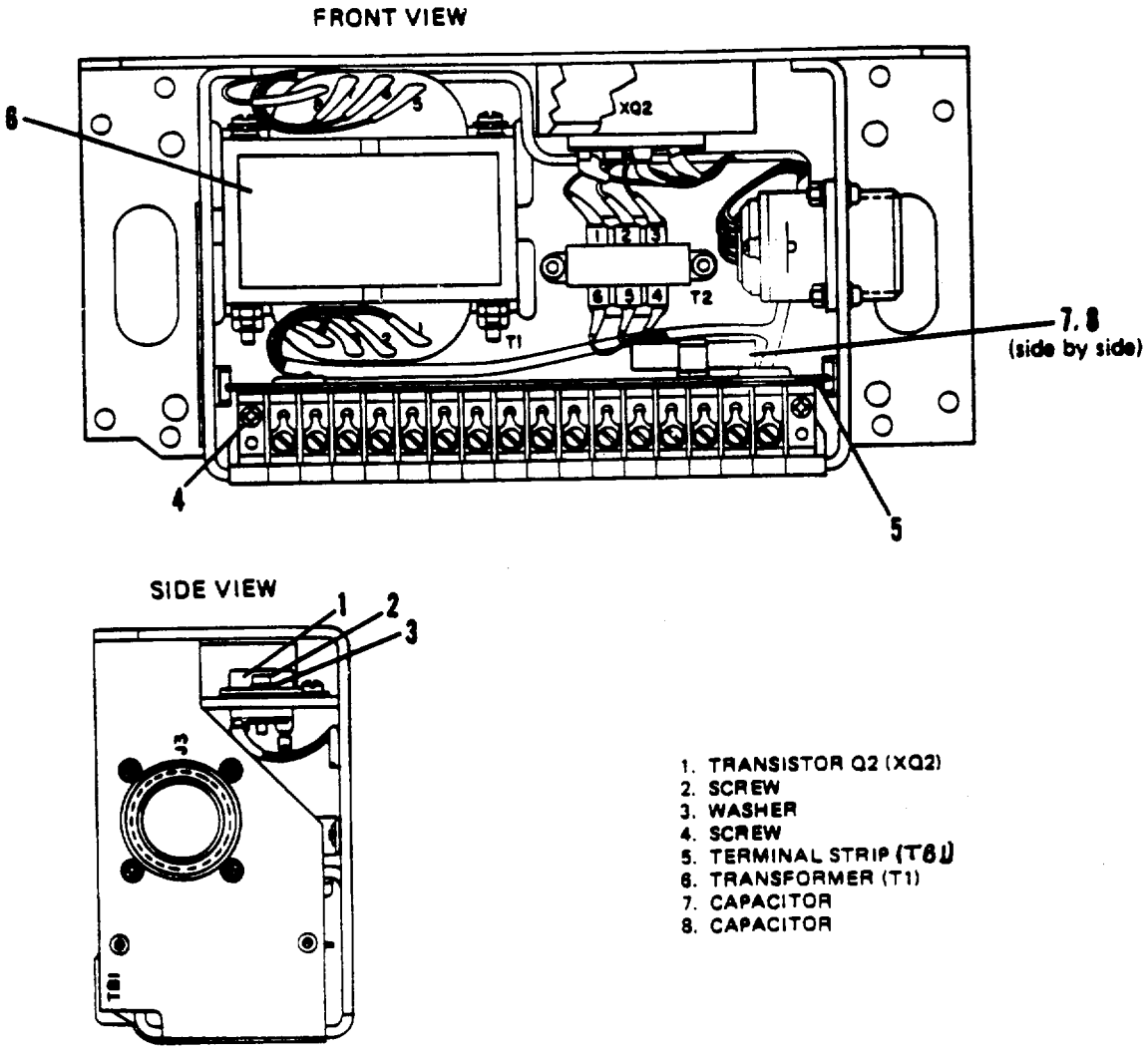


Figure 7-12.1. Voltage Regulator Testing.

(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

:move the white heat sink paste from the mica insulator, transistor, or regulator 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 714 and Table 7-1. Multimeter (+) and (-) refer to the multimeter test leads.

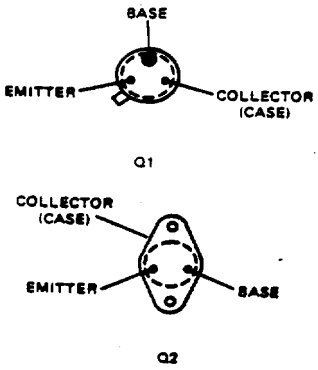


Figure 7-12.2. Q1 and Q2 Transistor Pin Out Locations.

Table 7-1. 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 7-1 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 QI can be tested without removal of the transistor from the printed circuit board.

(3) Remove terminal strip TB 1.

(a) Remove two screws (4, Figure 7-13) that secure terminal strip TB 1 (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 0 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 Q 1 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 (oo) resistance the other way.

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

(7) Test transistor Q 1.

(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 Q on the printed circuit board.

(c) Test transistor with a multimeter (set to read ohms). Refer to Figure 714 and Table 7-2. Multimeter (+) and (-) refer to the multimeter test leads.

Table 7-2. 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 7-2 indicate an open or shorted junction within Q 1, Q I should be replaced.

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

(9) Install transistor Q2 (1, Figure 7-13) 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 TB 1 (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 TBI (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 TB 1 (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 TB 1 (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 TB 1 (5) should now be zero.

(e) Rotate the shaft of the test rheostat clockwise while observing the voltage at terminals #20 and #21 of TB1 (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 (1).

(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 TB 1 (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

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

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 7-15 for a wiring schematic. Apply 1 15 VAC to terminals #24 and #27 of terminal strip TBI (5, Figure 7-13).

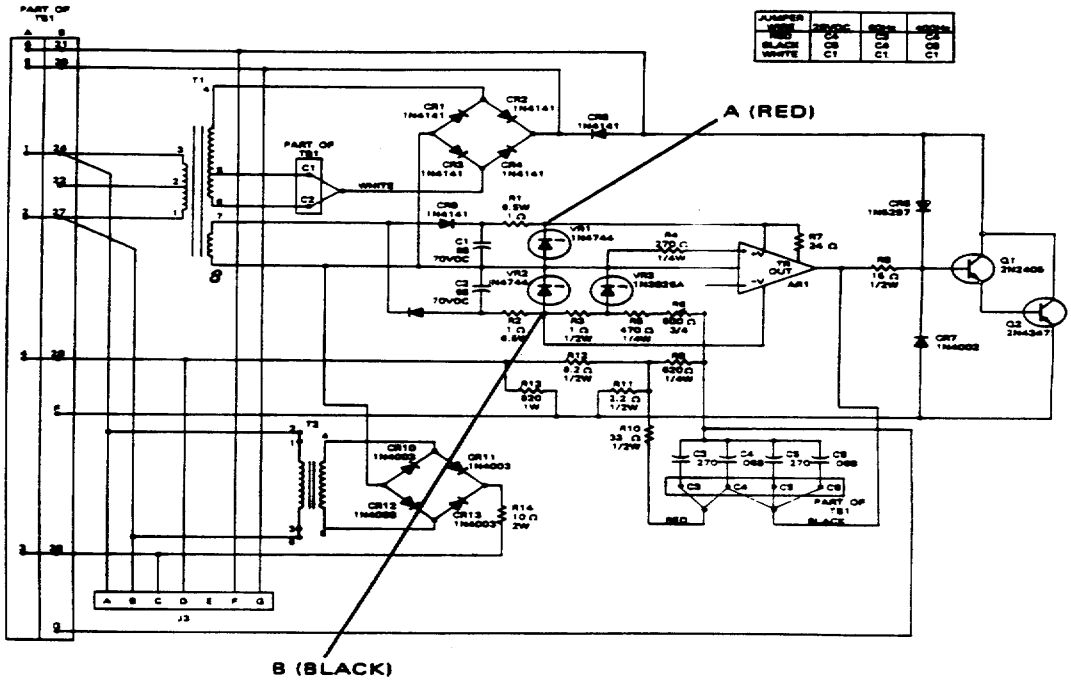


Figure 7-12.3. Voltage Regulator Schematic and Jumper Wire Placement.

(k) Connect a multimeter (set to read 050 VDC) across points "A" and "B" as indicated on wiring schematic. Connect red lead to point "A" and black lead to point "B".

(I) 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

ıer diode VR1 or 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 VRI and/or VR2 and no voltage is indicated across either or both zener diodes VR 1 and VR2, check the voltage across terminal lugs #7 and #8 of the T 1 power transformer (6).

NOTE

:ting on multimeter to 0-50 VAC range.

(o) A voltage of 25-35 VAC should be present. If voltage is not present, check that 1 15 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 T 1 (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 C 1 (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 0 side of the scale to the low ohms side of the scale and then slowly return to the infinity 0 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 TB 1 (5, Figure 7-13).

(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 located 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.

g. Adjustment.

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

- DC Voltmeter + 0.5 percent, 0-100 VDC (M 1 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 (PS)
- 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 7- 16.

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

(4) Turn AC power supply (PS 1) on.

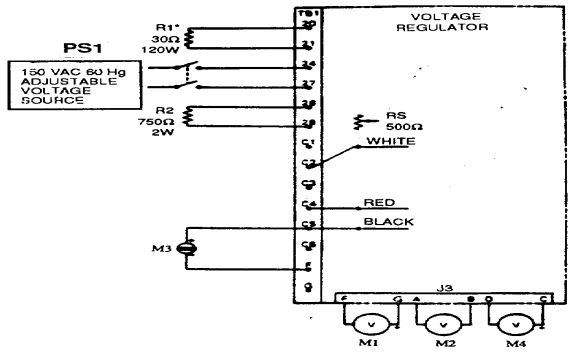


Figure 7-12.4. Voltage Regulator Adjustment Schematic.

(5) Slowly increase AC voltage (O to 30 VAC) while monitoring DC voltmeter (M 1) and oscilloscope (M3). DC voltage reading on DC voltmeter (Ml) 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 meter 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 (M 1) (35 VDC minimum) or until oscilloscope (M3) waveform is just starting to come off the "maximum level" refer to curve 1 of Figure 7-17.

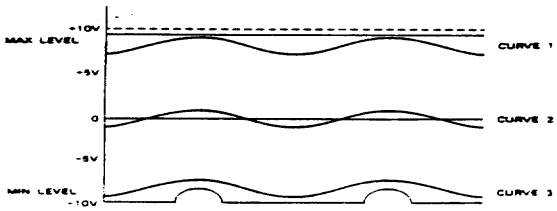


Figure 7-12.5. Waveforms.

(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 (M2) to 136 VAC.

(b) Slowly adjust R6 clockwise until oscilloscope (M3) waveform begins to decrease from "maximum level". DC voltmeter (M l) reading shall go to zero when waveform passes through zero. Refer to curve 2 on Figure 7-17.

(c) Adjust AC input voltage AC voltmeter (M2) to 133 VAC. The oscilloscope (M3) waveform shall return to maximum level and DC voltmeter (Ml) 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) waveform begins to go up from "minimum level" (curve 3, Figure 7-17). M1 reading shall go to "maximum level" (35 VDC minimum) when waveform passes through zero.

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

(9) Without further adjustment of R6, repeat the above procedure for the remaining three conditions tabulated in Table 7-3. In all cases, similar performance should be achieved.

NOTE

ion one in Table 7-3 has already been accomplished in the previous procedures. Procedures are repeated for the remaining three conditions.

Table 7-3. Test Conditions.

Condition	White Lead	Black Lead	Red Lead	M+ 3Lead
C2	CS	C4 C5		
C2	C5	C3 C3		
C1	C4	C3 C4		
C1	C6	C4 C6		

NOTE

ne unit to meet adjustment requirements is indicative of a defective regulator.

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

h. 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 a, 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 emitter, collector, and base leads are positioned as noted during removal.

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

i. Installation.

(1) Check that red, black, and white jumper wires are properly positioned for the generator output. Refer to Figure 7-15.

(2) Place voltage regulator in control box and secure with four (4) screws and lockwashers.

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

7-10. Relays and Resistors

a. General (Model MEP-018A). Relays KI, K2, K3, and K4 furnish starting, stopping, safety and operational control for the generator. The relays are mounted on Printed Circuit Board TB3.

(1) Relay K1 is used to start the generator engine by energizing the starter solenoid through the normally closed contacts of relay K3.

(2) Relay K2 is used to stop the engine. The relay is energized by the S I stop switch and S5 remotelocal switch. When relay K2 is energized, relays K3 and K4 are de-energized, thereby removing the battery charger from the circuit and grounding the magneto through the normally closed contacts of relay K4.

(3) Relay K3 is energized by the battery charger rectifier through the normally closed contacts of K4. and de-energized by low oil pressure.

(4) Relay K4 is energized through the normally closed contacts of relay K2 and the silicon diode, CRI. This occurs when start and stop switch, S1, is activated.

(5) The relays are identical and interchangeable.

b. Removal. Refer to figure 7-1 or 7-2 and remove the relays and resistors from the applicable model generator set.

c. Cleaning, Inspection, and Repair.

(1) Clean board and relays with a dry cloth.

(2) Inspect board for cracks, defective soldering or printed circuitry and varnish deterioration.

(3) Inspect relays and relay sockets for corrosion and damage. Replace damaged items.

d. Installation. Refer to figure 7-1 or 7-2 and install the relays and resistors on the applicable model generator set.

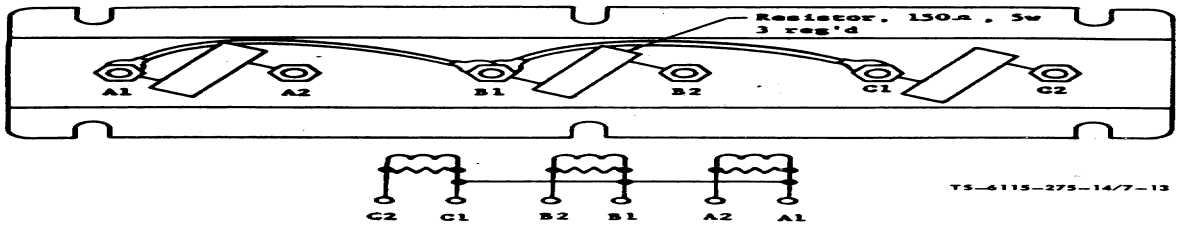


Figure 7-13. Current transformer, wiring diagram (Model MEP-018A).

7-11. Current Transformer

a. Removal. Refer to figure 7-1 or 7-2 and remove the current transformer from the applicable model generator set.

b. Cleaning, Inspection, and Repair.

(1) Clean with a clean, dry cloth.

(2) Inspect for corrosion and damage. Replace a damaged transformer.

c. Testing (Model MEP-018A).

(1) Refer to figure 7-13. Disconnect and test resistors with a multimeter. Proper resistance is 150 ohms + 1%.

(2) Test transformer windings for continuity. Replace defective resistors or transformer.

d. Testing (ModelMEP-023A). To test the current transformer for continuity, disconnect the six leads and remove the three resistors from the transformer.

Use a multimeter set on the RXI ohm scale and test between terminals I and 2, 3 and 4, and 5 and 6. If continuity is not indicated in all three cases, the transformer is defective and must be replaced. Before reinstalling the resistors test each to determine if they have a reading within 1% of 150 ohms. Replace any defective resistor.

e. Installation. Refer to figure 7-1 or 7-2 and install the current transformer on the applicable model generator set.

7-12. Output Terminal Board

a. Removal. Refer to figure 7-1 or 7-2 and remove the output terminal board from the applicable model generator set.

b. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 1OOF (38C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.

(2) Inspect for damage and defects and replace defective terminals or terminal board as necessary.

c. Installation. Refer to figure 7-1 or 7-2 and install the output terminal board on the applicable model generator set.

CHAPTER 8
MAINTENANCE OF GENERATOR ASSEMBLY AND FRAME ASSEMBLY

Section I. GENERATOR ASSEMBLY

8-1. General (Model MEP-018A)

a. General. The generator is attached to the engine by a coupling on the rotor shaft which connects to the drive hub mounted on the engine flywheel. Disconnection of the coupling from the drive hub permits removal of the generator as a unit.

CAUTION

se the setscrew for securing the coupling. This setscrew is used to prevent end play of the key only.

NOTE

sembling the split flange coupling to generator rotor shaft, back off the setscrew to clear the key, secure the flange by tightening the machine screw.

b. On-Equipment Testing.

NOTE

stance measurements, together with their tolerances contained herein, should be used only as a general guide. Take into consideration the accuracy of the instrument used, test lead resistance, and ambient temperature at the time of the test. If more precise measurements are required, use an instrument such as a Kelvin or Wheatstone bridge of comparative measurements between the suspected component and a like item that is known to be good.

(1) Disconnect the plug connector from the rear of the control box.

(2) Use a multimeter set on RX 1 scale and test between pins 3 and 6, 8 and 12, 7 and 10, 1 and 4, 2 and 5, 11 and 13, and 9 and 14. If continuity is not indicated in all tests the stator is defective and should be removed for further testing or replacement.

c. Removal. To remove the generator and engine as an assembly, refer to paragraph 6-2. To remove generator assembly, proceed with step 1,.

(1) Remove battery. Refer to paragraph 4-28.

(2) Remove control cabinet assembly, refer to paragraph 6-1.

(3) Remove 4 nuts and lockwashers and remove upper frame from skid.

(4) Remove ventilating screen and unit lifting eye.

(5) Remove lower support bracket and shrouds.

(6) Remove two remaining bolts that secure generator housing to the engine.

(7) Remove two drive coupling bolts.

(8) Remove two generator mounting bolts.

(9) Attach a lifting device to the generator lifting eyes located inside the tool box and remove generator from engine.

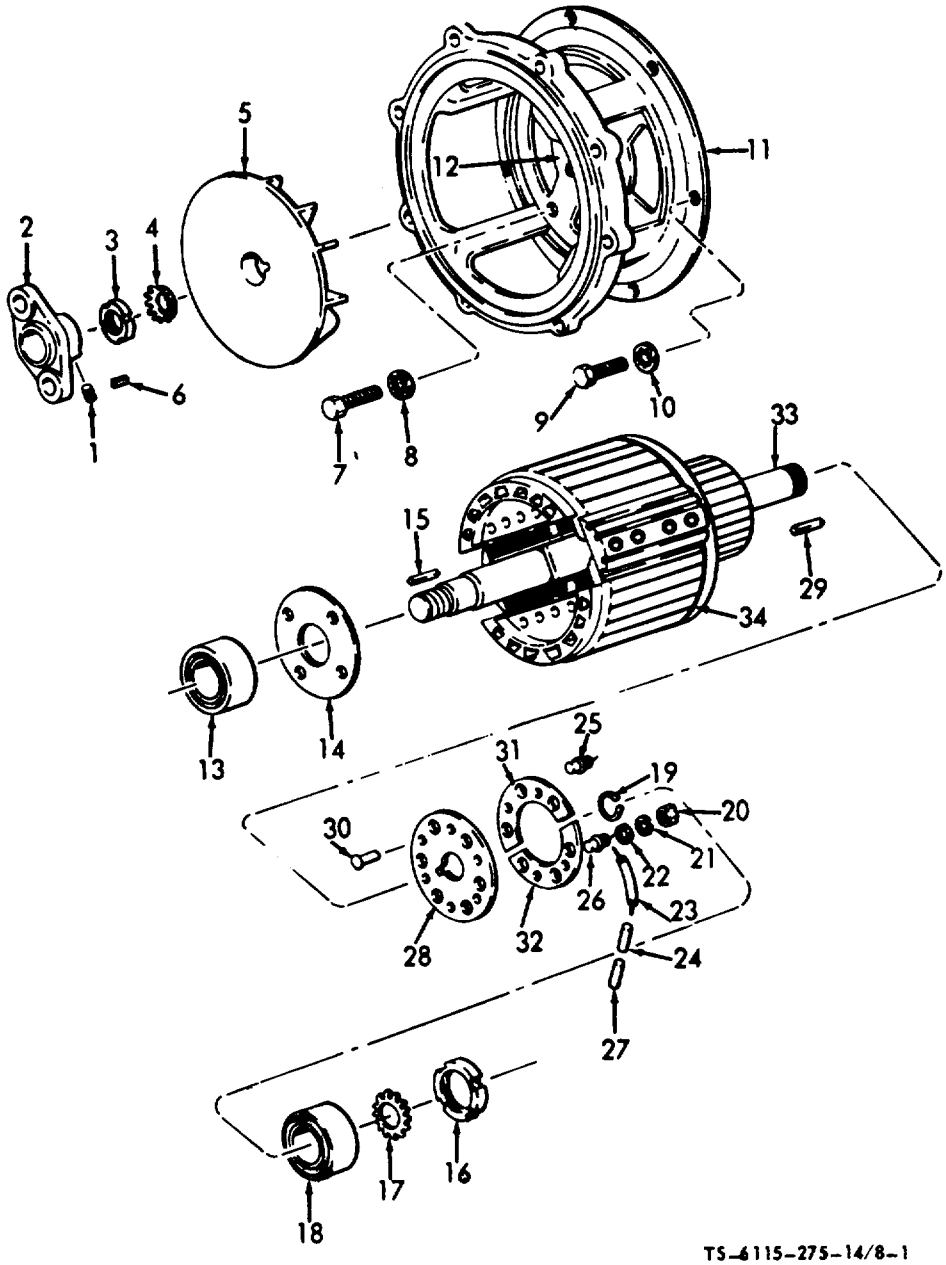
d. Disassembly.

(1) Remove two bolts and nuts holding drive coupling assembly together and separate the two coupling halves.

(2) Remove the setscrew (1, Figure 8-1) from the drive coupling assembly support, loosen alien bolt on drive coupling assembly support, and slip support (2) off the rotor shaft (33).

(3) Remove the coupling and shaft machine key (6).

(4) Loosen and remove the nut (3) and the key washer (4) securing the fan to the generator housing and rotor assembly and remove the fan (5).



Setscrew	9. Bolt	17. Washer	26. Rectifier		
Support	10. Lockwasher	18. Bearing		27. Sleeveing	
Nut	11. Housing ay	19. Ring	28. Hub		
Washer	12. Bushing	20. Nut	29 Key		
Fan	13. Bearing	21. Lockwasher	30. Rivet		
Key	14. Plate	22. Washer	31. Heatsink		
Bolt	15. Key	23. Lead	32. Heatsink		
Washer.	16. Nut	24. Sleeving		33. Shaft	
25. Rectifier	34. Rotor				

Figure 8-1. Drive coupling, rotor and components (Model MEP-018A).

(5) Remove the woodruff key (15) from the generator rotor shaft (33).

(6) Loosen and remove the two bolts (7) and washers (8) securing the bearing retainer plate (14) to the bearing unit housing assembly (11). Loosen and remove the four attaching bolts (9) and lockwashers (10).

(7) Utilizing holes in bearing retainer plate (14), use a bearing puller device to pull bearing unit housing (11) and bearing (13) from the generator rotor (34).

(8) Remove bearing (13) from bearing unit housing (11).

(9) Depress the housing bushing (12) from the bearing unit housing.

(10) Loosen and remove the bearing retaining nut (16) and key type washer (17) from the shouldered rotor shaft (33).

(11) Using a suitable bearing puller, remove the annular ball bearing (18) from the commutator end of the rotor shaft (33).

(12) Remove the retaining ring (19) from the rectifier hub (28).

(13) Unscrew and remove the four nuts (20) from lockwashers (21), and six flatwashers (22) securing the tow leads (23a) to the rectifier hub studs (28a). Remove terminals (27) from the end of leads (23a).

(14) Unsolder leads (23) from rectifiers (25 and 26) and terminal studs (28b). Remove insulation sleeving (24).

(15) Unscrew and remove the rectifiers (25 and 26).

(16) lace a suitable prying device behind the rectifier hub and pry gently to loosen and slip the rectifier hub (28, fig. 8-1) off the rotor shaft and remove the rectifier mounting machine key (29).

(17) "Pop" the six rivets (30) securing the heat sinks (31 and 32) to the rectifier hub (28) and remove the heat sinks.

(18) Unscrew and remove the power cable assembly (1, fig. 8-2) from the generator housing (14).

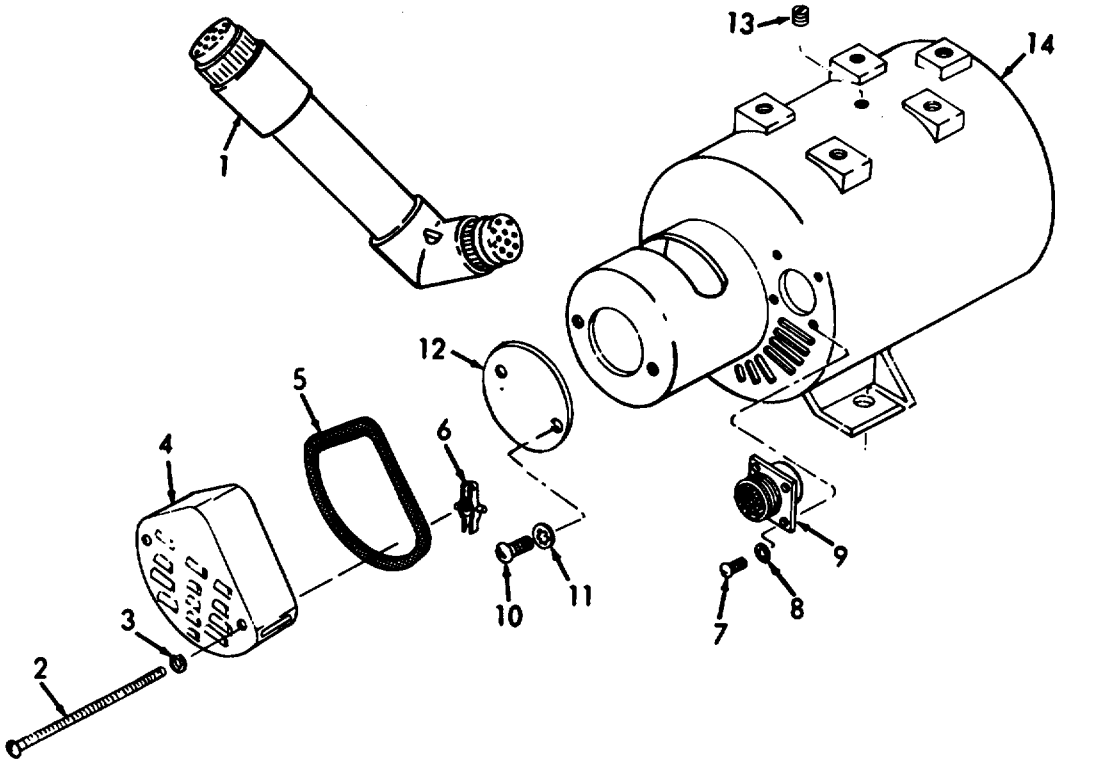
(19) Loosen and remove the two toggle type bolts (2) and lockwashers (3) mounting the shroud to the generator housing and remove the shroud (4), gasket (5) and the toggle (6).

(20) Remove the four screws (7) and washers (8)'securing the electrical connector to the generator housing and remove the electrical connector (9).

(21) Remove the two screws (10) and internal tooth lockwashers (11) mounting the protective cap (12) to the housing (14).

(22) Unscrew and remove the setscrew (13) from the generator housing.

(23) No further disassembly is necessary. The stators are permanently assembled in the housing. If replacement is necessary, replace them as a unit.



1. Cable ay
2. Bolt
3. Lockwasher
4. Shroud
5. Gasket
6. Toggle
7. Screw
8. Washer
9. Connector
10. Screw
11. Lockwasher
12. Cap
13. Setscrew
14. Housing

Figure 8-2. Generator frame and stator (Model MEP-018A).

e. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 1000 F(38°C).

(1) Clean all parts with a cloth dampened in cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect the ball bearing to be sure it moves smoothly and quietly and for evidence of excessive wear. Replace a noisy, loose, or worn ball bearing.

(3) Inspect the rotor shaft at each end for evidence of nicks, rust, or wear. Use a fine file to remove rust, burrs, or fine ridges. Inspect the rotor assembly to be sure all windings are properly pressed into the core slots. Inspect the core for wear and replace a badly scored or defective rotor assembly.

(4) Inspect the field windings and leads for damaged or broken wires. Inspect the main frame for damage and broken welds and for nicks and burrs around the mounting flanges. Remove all the defective wiring that can be replaced without disturbing the main field windings.

(5) Inspect all hardware for defective threads. Replace damaged or missing parts.

(6) Inspect the wiring harness and plug connector for defects and replace all defective parts.

(7) If the bearing (13, fig. 8-1) is to be replaced in the bearing unit housing (11) repair as follows:

(a) Remove old sleeve or enlarge the bracket bore by machining. Be sure to center the bore for proper rotor alignment.

(b) Fabricate a sleeve from a steel bar or tubing, Federal Spec. QQ-S-633, or equal. Machine the sleeve 0.0005 in. (0.0013 cm) larger than the bracket bore to provide a press fit. The I. D. of the sleeve shall be less than the bearing 0. D. to allow for final machining after sleeve is installed.

(c) Press sleeve into bracket.

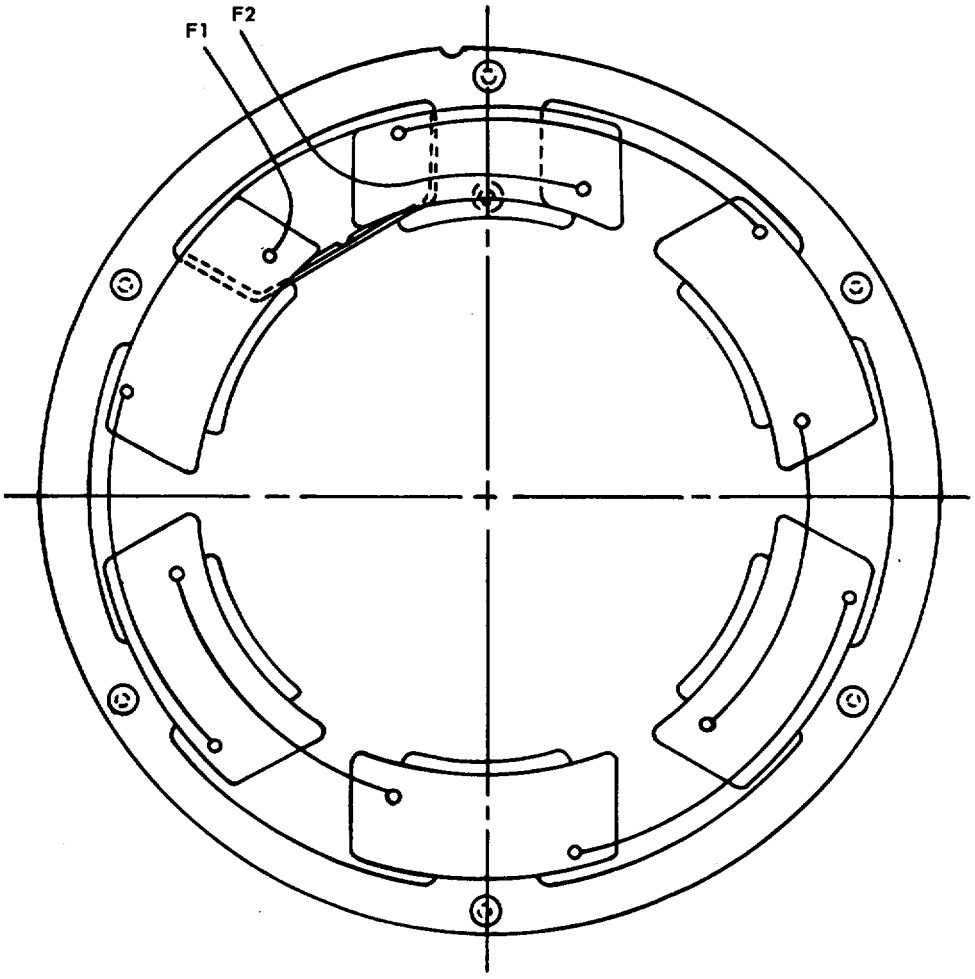
(d) Machine sleeve I. D. same as 0. D. Of bearing, with a tolerance of 0.0005 in. (0.0013 cm).

(e) The use of Loctite Sealant, NSN 8030-00-964-7537, is permissible as an additional aid in locking the bearing in the sleeve.

(8) If the field windings and coils have been replaced, follow the instructions listed below for varnishing and baking:

NOTE

Refer to figures 8-3 and 8-4 for insulation data.



WINDING DATA	
NO. OF POLES	6
TURNS PER COIL	190
CONDUCTOR COPPER	AWG 20
CONNECTION	SERIES
RESISTANCE	8 OHMS ±10%
CONDUCTOR INSULATION	MIL-W-583 CLASS 155 TYPE L3
LEAD WIRE	#AWG 18 MIL-W-16878 TYPE FF

INSULATION DATA		
WHERE USED	TYPE AND FORM	MATERIAL AND SPECIFICATION
SLOT INSULATION	TYPE D100 - 323 FORM S	.009 INSULATION, ELECTRIC, DIELECTRIC BARRIER, LAMINATED, PLASTIC FILM AND SYNTHETIC FIBRE MAT PER MIL-I-22834 COMPOSITION D100-333
SLOT WEDGE	FORM S	1/16 STK NEMA 11-11 GRADE CPO-1
OVER COIL LEADS	CLASS B-C-1	SLEEVE PER MIL-I-3190

Figure 8-3. Exciter stator assembly (Model MEP-018A).

WINDING DATA	
TYPE OF WINDING	2 (3 PHASE 2 LAYER WDGS.)
NO. OF SLOTS	36
NO. OF COILS SIDES PER SLOT	4
TURNS PER COIL	3
PITCH OF COIL	1-16
CONDUCTOR COPPER	2 (4 #16 AWG)
CONDUCTOR INSULATION	MIL-W-583 CLASS 155 TYPE L2
COIL GROUPING	12/12/12 CONSEQUENT POLES 120° PHASE BELTS
LEAD WIRE	#AWG 10 MIL-W-16878 TYPE FF

INSULATION DATA		
WHERE USED	TYPE AND FORM	MATERIAL AND SPECIFICATION
SLOT CELL	TYPE D100 - 323 FORM S	.009 INSULATION, ELECTRICAL, DIELECTRIC BARRIER, LAMINATED, PLASTIC FILM AND SYNTHETIC FIBRE MAT PER MIL - I - 22834 COMPOSITION D100-323
SLOT INSULATION	TYPE D100 - 555 FORM S	.015 INSULATION, ELECTRICAL, DIELECTRIC BARRIER, LAMINATED, PLASTIC FILM AND SYNTHETIC FIBRE MAT PER MIL - I - 22834 COMPOSITION D100-555
SLOT WEDGE	FORM S	1/16 STK NEMA 11-11 GRADE GPO-1
INSULATION OVER CONNECTIONS	CLASS C FORM 5	TAPE .008 PER MIL - Y - 1140
SLEEVE OVER CONNECTORS	CLASS B-C-1	SLEEVE 3BH - 4000 PER MIL - 1 - 3190
TAPE OVER COIL EXTENSIONS	CLASS C FORM 5	TAPE .007 PER MIL - Y - 1140
COIL LEAD	CLASS B-C-1	SLEEVE 7BII - 4000 PER MIL - 1 - 3190

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Figure 8-4. Alternator stator (Model MEP-018A).

(a) Varnish and Baking Procedure. Varnish and baking information is furnished to reinsulate windings where the varnish has deteriorated or when windings and coils have been replaced. Varnish shall conform to Military Specification MIL-I-24092, Type M, Grade CB.

(b) Dipping and Baking Procedure.

1. Stator

(a) Maintain the viscosity of varnish of mfgrs recommended value.

(b) Parts shall be clean, free of all foreign matters.

(c) Preheat part for 2 hours at 290°-300°F. (143°-149°C.).

(d) Cool part to 120°-250°F. (49-121 °C.) before dipping.

(e) Dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(f) Bake for 4 hours at 290°-300°F. (143°-149°C.).

(g) Repeat steps d thru f.

(h) Repeat steps d and e.

(i) Bake for 8 hours at 290°-300°F. (143°-149°C.).

(j) Cool to room temperature.

NOTE

Do not bake the rotating rectifier assembly. Keep varnish off rotor shaft. Before beginning varnish procedure, protect bearing and shaft projection surfaces. No scratches or marks permitted.

2. Rotor

(a) Maintain the viscosity of varnish at mfgrs recommended value.

(b) Parts shall be clean, free of all foreign matters.

(c) Preheat part for 2 hours at 290°-300°F. (143°-149°C.).

(d) Cool part to 120°-250°F. (40°-121 °C.) before dipping.

(e) Dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(f) Bake for 4 hours at 290°-300°F(143°-149°C.).

(g) Repeat steps d thru f.

(h) Repeat steps d and e.

(i) Bake for 8 hours at 290°-300°F. (143°-149°C.).

(j) Cool to room temperature.

3. Exciter Armature

(a) Maintain the viscosity of varnish at mfgrs recommended value.

(b) Parts shall be clean, free of all foreign matters.

(c) Preheat part for 2 hours at 290°-300°F. (143°-149°C.).

(d) Cool part to 120°-250°F. (49-.121 °C.) before dipping.

(e) Dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(f) Bake for 4 hours at 290°-300°F. (143°-149°C.).

(g) Repeat steps d thru f.

(h) Repeat steps d and e.

(i) Bake for 8 hours at 290°-300°F. (143°-149°C.).

(j) Cool at room temperature.

4. Exciter Field

(a) Maintain the viscosity of varnish at mfgrs recommended value.

(b) Parts shall be clean, free of all foreign matters.

(c) Preheat part for 2 hours at 290°-300°F. (143°-149°C.).

(d) Cool part to 120°-250°F. (40'-121 °C.) before dipping.

(e) Dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(f) Bake for 4 hours at 290°-300°F(143°-149°C.).

(g) Repeat steps d thru f.

(h) Repeat steps d and e.

(i) Bake for 8 hours at 290°-300°F. (143°-149°C.).

(j) Cool to room temperature.

(9) Refer to figures 8-5 and 8-6 for rewinding data if the alternator rotor or the exciter rotor is to be repaired.

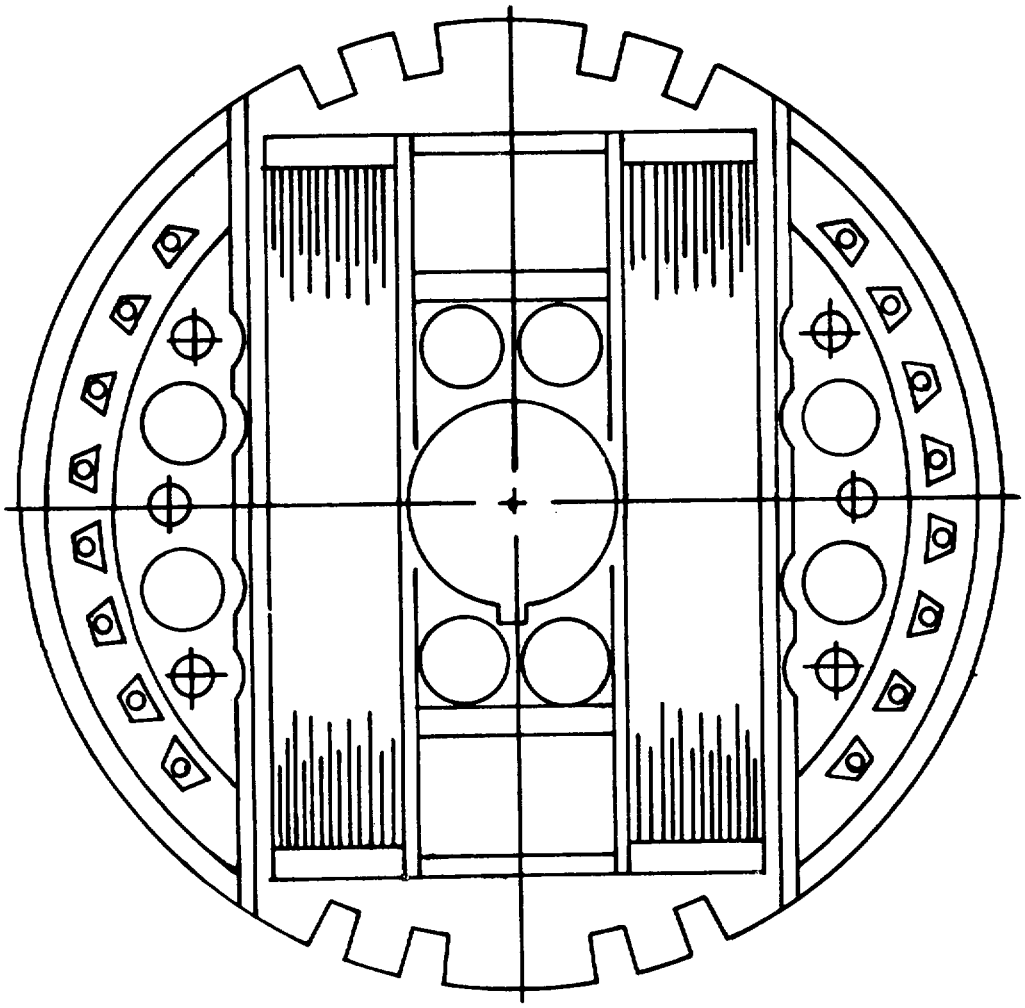
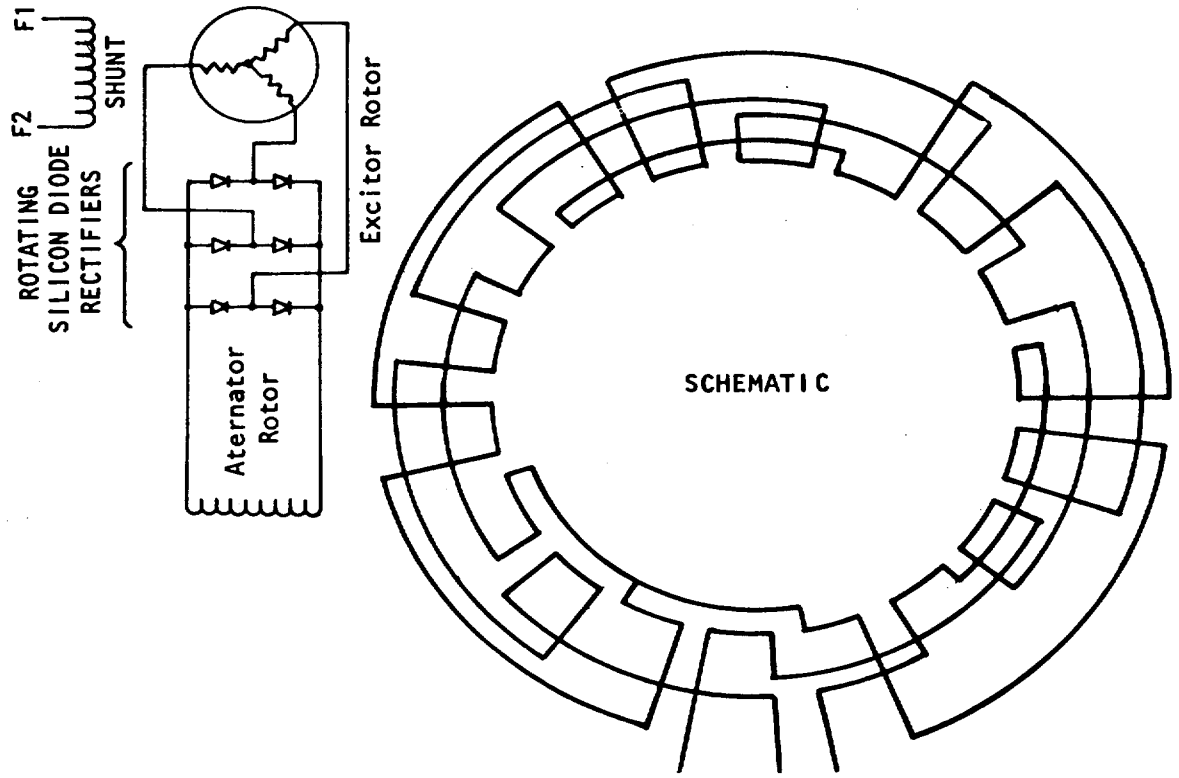


Figure 8-5. Alternator rotor assembly (Model MEP-018A).



A B C INSULATION DATA		
WHERE USED	TYPE AND FORM	MATERIAL AND SPECIFICATION
SLOT CELL	TYPE DM100-323, FORM S	.009 INSULATION, ELECTRICAL, DIELETRIC BARRIER, LAMINATED, PLASTIC FILM AND SYNTHETIC FIBER PER MIL-I-22834. COMPOSITION D100-323.
TAPE OVER COIL EXTENSIONS	CLASS C FORM 5	TAPE .015 PER MIL-Y-1140
SLOT WEDGE	FORM S	1/16 GLASTIC, NEMA GRADE GPO-1
INSULATION OVER COIL EXTENSIONS	CLASS C FORM 5	TAPE .008 PER MIL-Y-1140
SLEEVE OVER CONNECTIONS	CLASS B-C-1	SLEEVE PER MIL-I-3190
COIL LEAD	CLASS B-C-1	SLEEVE PER MIL-I-3190

WINDING DATA	
TYPE OF WINDING	1-Y
NO. OF SLOTS	45
NO. OF COILS SIDES PER SLOT	2
TURNS PER COIL	4
PITCH OF COIL	1-7
CONDUCTOR COPPER	2AWG#20
CONDUCTOR INSULATION	MIL-W-583, CLASS 155 ,TYPE L2
COIL GROUPING	232/323
LEAD WIRE	AWG #18, MIL-W-16878 TYPE FF

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Figure 8-6. Exciter rotor assembly (Model MEP-018A).

f. Testing.

(1) Rotating Rectifier. Test across each rectifier diode for continuity which must be indicated in one direction only.

(2) Rotors.

(a) Using leads disconnected from the rotating rectifier, test continuity of the rotor windings. Use a test lamp or multimeter and test through windings. If continuity is not indicated, an open or short is present and must be isolated.

(b) Use a megohmmeter to test coil insulation. Test between the shaft and each lead on both rotors. A reading of less than 1.0 megohm indicates faulty insulation.

(3) Stators.

(a) Test the exciter stator (field winding) for continuity through the windings. Use pins 1U and 13 on the generator receptacle. If continuity , not indicated, each coil must be tested individually to locate the open.

(b) Test alternator stator windings for continuity at the receptacle (see figure 8-7). Test across pins 5 and 8, 2 and 12, 6 and 9, 3 and 14, 7 and 10, and 1 and 4. Failure to obtain continuity indicates an open coil which must be repaired or replaced.

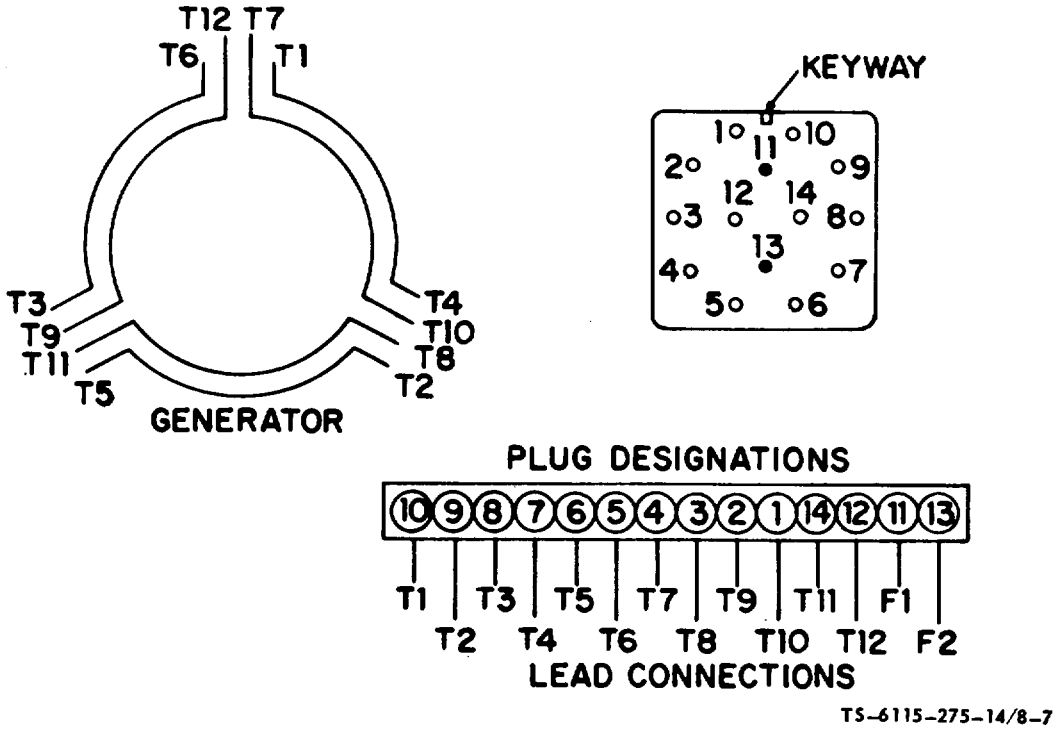


Figure 8-7 Lead connections (Model MEP-018A).

(c) Using a megohmmeter, test between the frame and one lead from each winding in the stators. Use the appropriate pins on the generator receptacle on the alternator stator, test between one coil lead and a lead from each of the remaining five coils. Repeat the test for one lead from each coil group in turn. A reading of less than 1.0 megohm in any test indicates faulty insulation and winding must be repaired or replaced.

g. Assembly.

NOTE

All soldering connections must be touched up with varnish after re-soldering. Use resin core solder only.

CAUTION

Extreme care should be taken to assure the proper replacement of rectifiers (25 and 26, fig. 8-1). Two different rectifiers are used in the exciter circuit of which three are Part No. IN1204A and the other three are Part No. 1 N204AR. The 1N1204AR rectifiers have a reverse polarity of the 1 N 1 204A.

NOTE

Rectifiers (25 and 26, fig. 8-1) must be placed in HEATSINK (32) in the proper direction. If the rectifiers are not installed in the correct position, the generator will not function properly.
The generator sets utilized on all single trailer laundry units use a cover in lieu of the shroud (4, fig. 8-2).

(1) Install the setscrew (13, fig. 8-2) on the generator housing (14).

(2) Install the protective cap (12) on the housing (14) and secure it with lockwashers (1) and screws (10).

(3) Install the electrical connector (9) on the housing and secure it with washers (8) and screws (7).

(4) Install the gasket (5) on the shroud (4); install the toggle (6). Install shroud to generator housing and secure it with lockwashers (3) and bolts (2).

(5) Install the power cable assembly (1, fig. 8-2).

(6) Install the heatsinks (31 and 32, fig. 8-1) to the rectifier hub (28) and secure with six rivets (30).

(7) Install the key (29) and position the rectifier hub (28) on the rotor shaft.

(8) Install insulation sleeving (24) on leads (23). Install rectifiers (25 and 26).

(9) Solder leads (23) to rectifiers (25 and 26) and terminal studs (28b).

(10) Install terminals (27) on the ends of leads (23a). Install leads (23a) on rectifier hub studs (28a) with four nuts (20), four lockwashers (21), and six flatwashers (22).

(11) Install the retaining ring (19) on the rectifier hub (28).

(12) Fit the bearing (18) on the commutator end of the rotor shaft (33).

(13) Install washer (17) and retaining nut (16) on the shaft (33).

(14) Slip the bearing retainer plate (14) on shaft (33).

(15) Fit the drive and bearing (13) on the rotor shaft (33).

(16) Install bushing (I 2) in bearing unit housing (11).

(17) Install key (15) on shaft (33).

(18) Install the bearing unit housing assembly (11) on the generator rotor (34) and secure it with lockwashers (10) and bolts (9).

(19) Install bearing retainer plate (14) to bearing unit housing assembly (11) using lockwashers (8) and bolts (7).

(20) Install key (6).

(21) Install fan (5) and secure it with washer (4) and nut (3).

(22) Install the drive coupling assembly support (2) on rotor shaft (33) and secure it with setscrew (1).

(23) Reassemble the two coupling halves together with two bolts and nuts.

h. Installation. To install generator and engine as an assembly refer to paragraph 6-2. To install generator assembly proceed with step 1.

(1) Attach a lifting device to the generator lifting eyes located inside the tool box and align generator with engine.

(2) Install two generator mounting bolts.

(3) Install two coupling bolts.

(4) Install two bolts that secure generator housing to the engine.

(5) Install shrouds and lower support bracket.

(6) Install ventilating screen and unit lifting eye.

(7) Install upper frame to skid with four lockwashers and nuts.

(8) Install control cabinet assembly, refer to paragraph 6-1.

(9) Install battery, refer to paragraph 4-28.

8-2. GENERATOR (MODEL MEP-023A).

a. General. A general description of the Onan Model O1GFG-408XR/5885A generator is given in Chapter 1. The stator housing is mounted on the engine flywheel housing and the rotor is mounted on a drive disk which, in turn. is mounted on the engine flywheel. The other end is a direct-connected, brushless, rotating exciter. The stator housing houses both the generator field windings and the dc exciter frame and windings.

b. On-Equipment Testing.

(1) Stator

(a) Disconnect the plug connector from the receptacle in the rear of the control box and generator housing.

(b) Use a multimeter set on RX1 scale and test for continuity between contacts 3 and 7, contacts 6 and 8, and contacts 9 and 2. If the multimeter fails to indicate continuity on any of these tests, the stator is defective and must be replaced.

(2) Rotor.

(a) Remove the blower cover and blower wheel (sub-para c. below).

(b) Disconnect rotor winding leads from rectifier. Using multimeter set on RX 1 scale, test field winding of rotor assembly for a reading of 5.95 ohms + 5%. Make a continuity check from each field winding to the shaft.

(3) Exciter Field Windings.

(a) Disconnect the plug connector from the receptacle in the rear of the control box.

(b) Use a multimeter set on RX1 scale and test between contacts 11 and 13 on the plug. The reading should be within 5% above or below 55 ohms or the windings are faulty and should be replaced.

c. Removal and Disassembly.

NOTE

Removal of the engine and generator as a unit (para 6-2) is optional. The generator may be removed from the engine without removing the unit from the skid base.

(1) Refer to figure 8-8 and remove the blower wheel, stator assembly, and support brackets.

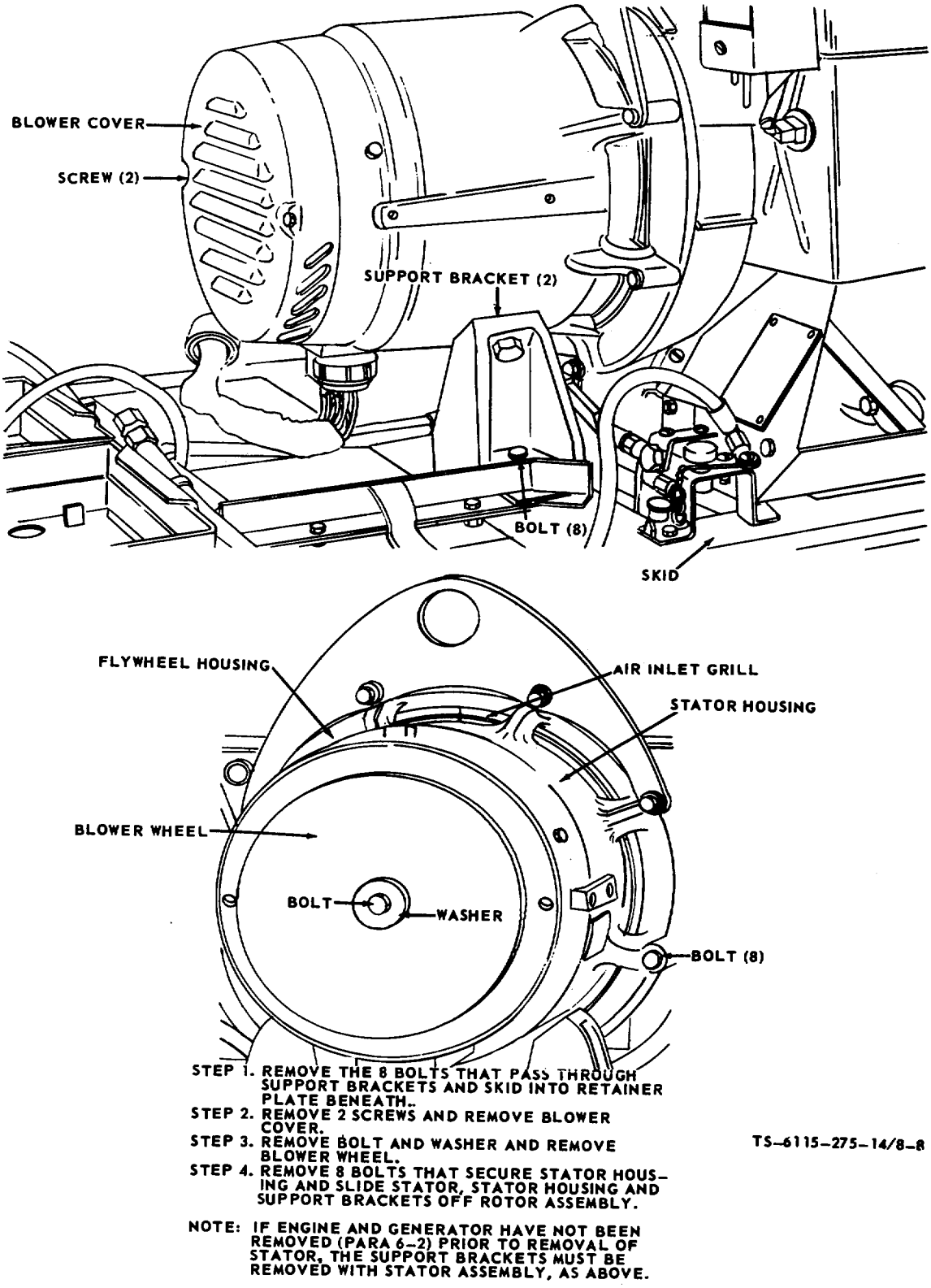
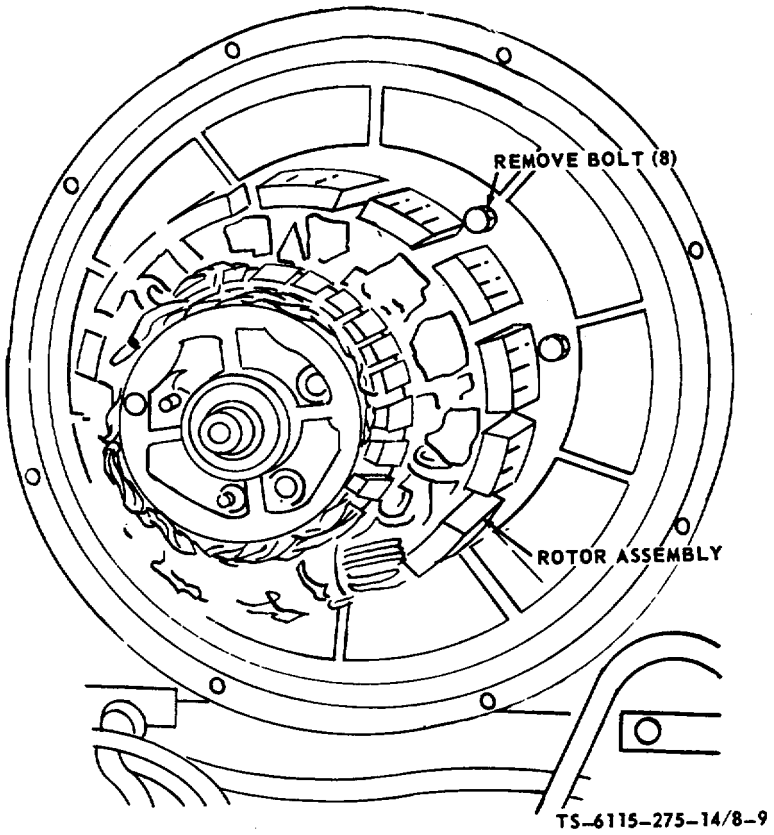


Figure 8-8. Blower wheel, stator assembly, and support brackets, removal and installation (Model MEP-023A).

(2) Refer to figure 8-9 and remove the rotor assembly.



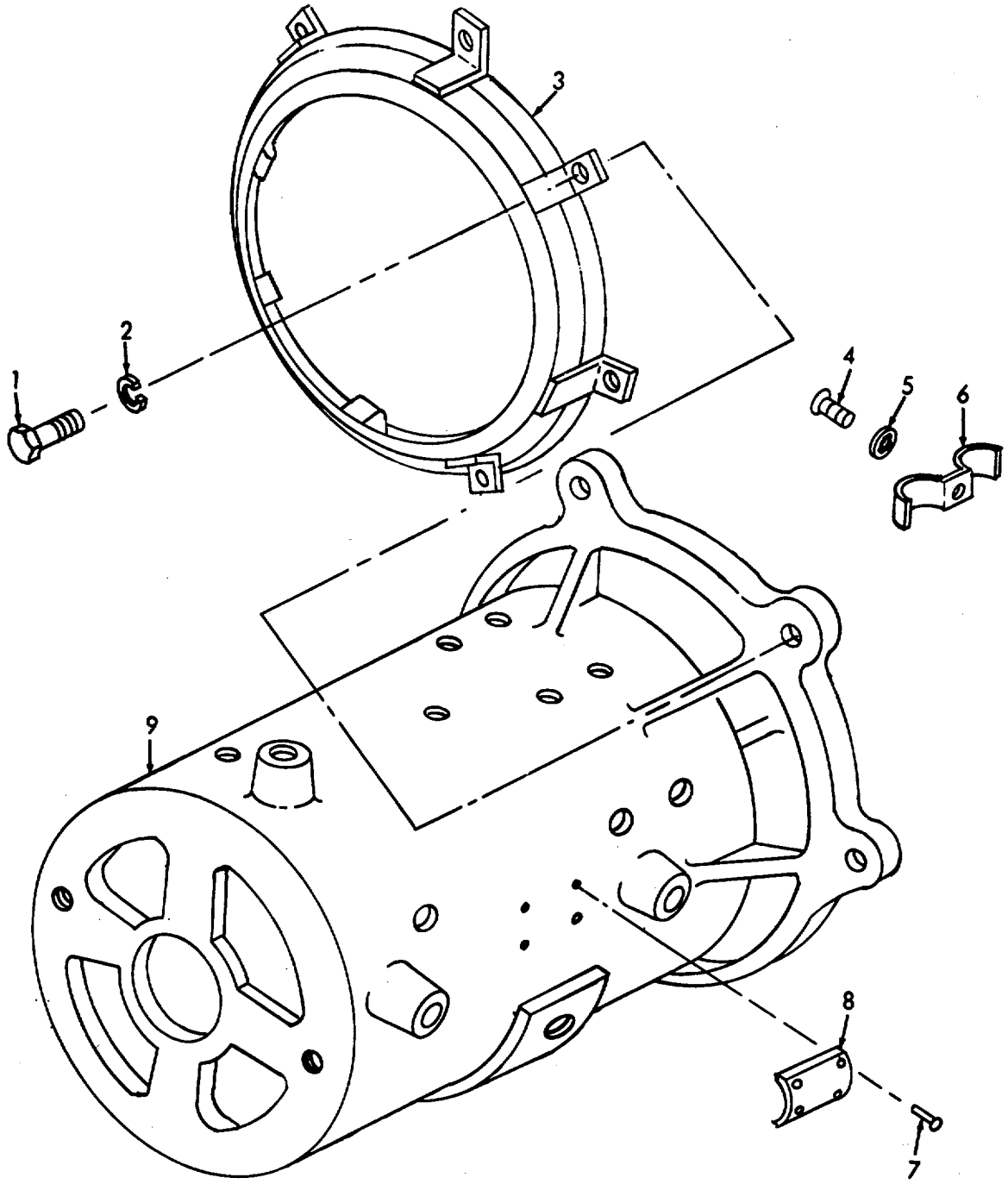
1. Screw
2. Lockwasher
3. Grille
4. Screw
5. Lockwasher
6. Clip
7. Rivet
8. Nameplate
9. Housing

Figure 8-9. Rotor assembly, removal and installation (Model MEP-023A).

(3) Remove eight screws (1,. fig. 8-10) and lockwashers (2) securing air inlet grille (3) to generator housing (9), and remove grille.

(4) Remove screw (4) and lockwasher (5) securing clip (6) to field frame.

(5) Remove four rivets (71 securing generator nameplate (8) to generator housing (9).



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Figure 8-10. Generator housing (Model MEP-023A).

(6) Flatten the tangs on the four lockwashers and remove the four bolts (1, fig. 8-11) and tanged lockwashers (2), securing drive disk adapter (3) to the flywheel housing, and remove adapter.

(7) Remove key (4) from rotor shaft, and bearing retaining clip (5) from bearing (6) and remove bearing which is pressed onto rotor shaft.

NOTE

Use bearing puller to remove bearing from shaft.

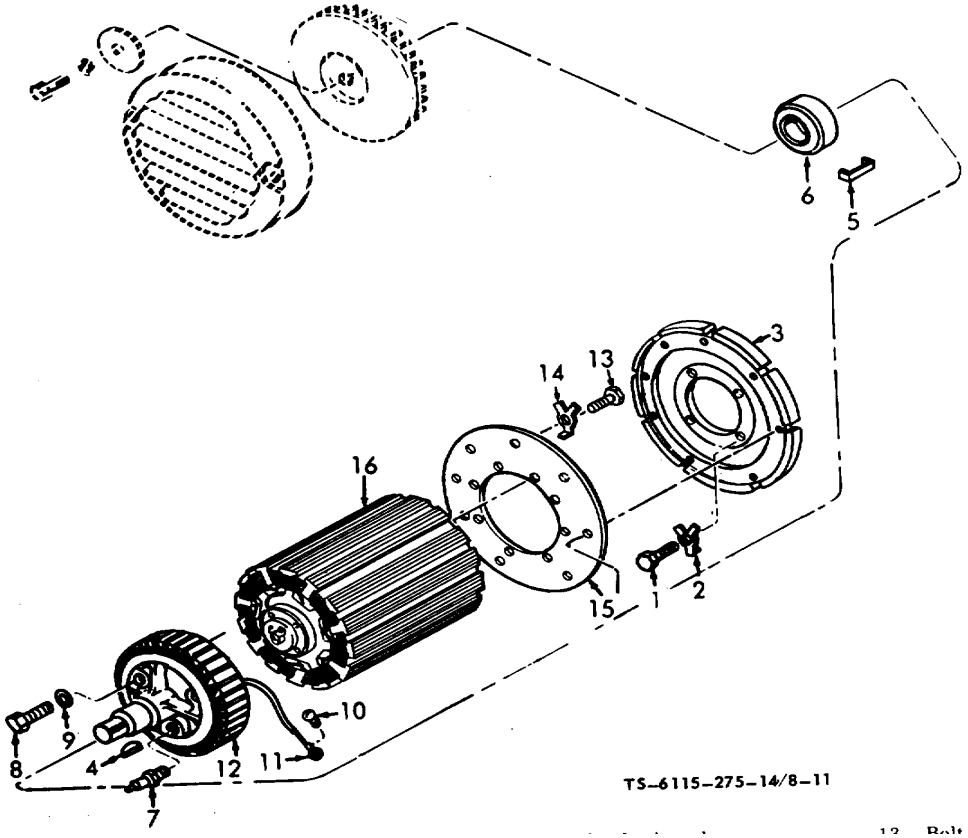
(8) Disconnect the three leads by breaking the soldered connections and remove the three rectifiers (7) from the rotor exciter, and remove the rectifiers.

(9) Remove four screws (8) and lockwashers (9) securing exciter rotor (12) to the alternator rotor (16).

NOTE

When separating exciter rotor from alternator rotor, slide exciter rotor far enough from alternator shaft to remove screw (10) from terminal (11), and remove exciter rotor from alternator rotor.

(10) Flatten tangs on the four lockwashers, and remove eight bolts (13) and tanged lockwashers (14) securing drive disk plate (15, fig. 8-11) to the alternator rotor (16), and remove plate.



1.	Bolt	5.	Clip	9.	Lockwasher		
2.	Lockwasher	6.	Bearing	10.	Screw	14.	Lockwasher
3.	Adapter	7.	Rectifier	11.	Terminal	15.	Plate
4.	Key	8.	Screw	12.	Exciter rotor	16.	Alternator

Figure 8-11. Rotor assembly (Model MEP-023A).

d. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38 C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-66 1, and dry thoroughly.

(2) Inspect the ball bearing to be sure it moves smoothly and quietly and for evidence of excessive wear. Replace a noisy, loose, or worn ball bearing.

(3) Inspect the rotor shaft at each end for evidence of nicks, rust, or wear. Use a fine file to remove rust, burrs, or fine ridges, inspect the rotor assembly to be sure all windings are properly pressed into the core slots. Inspect core for wear and replace a badly scored or defective rotor assembly.

(4) Inspect the field windings and leads for broken or damaged wires. Inspect the main frame for damage and broken welds and for nicks and burrs around the mounting flanges. Remove all defective wiring that can be replaced without disturbing the main field windings.

(5) Inspect all hardware for defective threads. Replace damaged or missing parts.

(6) Inspect the wiring and plug connector for defects and replace all defective parts.

(7) If the field windings and coils have been replaced, follow the instructions listed below for varnishing and baking:

(a) Varnish and Baking Procedure. Varnish and baking information is furnished to reinsulate windings where the varnish has deteriorated or when windings and coils have been replaced. Varnish shall conform to Military Specification MIL-V- 1 37A Type M, Grade CB.

(b) Dipping and Baking Procedure.

1. Stator (Alternator).

(a) To be clean and free of all foreign matter.

(b) Mask machined surface.

(c) Set oven at 300°F (149°C) and heat part until it reaches 290°-300°F. (143°C-149°C.).

(d) With part at 290°-300°F. (143°-149°C.), dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(e) Bake for from 2 hours to 2 hours and 40 minutes at 300°F. (149°C.).

(f) Dip for 2 minutes in varnish and drain for 4-6 minutes.

(g) Repeat step e.

(h) Repeat step f.

(i) Repeat step e.

(j) Remove masking and clean surface.

2. Rotor (Alternator).

(a) To be clean and free of all foreign matter.

(b) Mack machines surfaces.

(c) Preheat assembly for 3 hours at 260°F(127°C) + 15°-0°F.(-9°C).

(d) Resin to be maintained at 75 ° to 85 °F (24°C. to 29°C). during processing.

(e) Rotate at 15-20 rpm while assembly is immersed in resin to a depth sufficient to cover windings. Rotate for 10 minutes minimum while maintaining copper temperatures at 260°F. (127°C) + 15° (-9°C)-0°F.

(f) Remove assembly from resin and continue to rotate for 30 minutes. Maintain copper temperature at 300°F. (149°C) + 20°-0°F. (-7 C).

(g) With axis of assembly in vertical position, cure for 1 hour at 300°F (149°C.) +20°-O0F. (-7°C.), plus 4 hours at 350°F. (177°C.) + 15-0° F. (-9°C).

(h) Remove masking and clean surface.

NOTE

Fungus treatment requires 1 additional dipping and baking.

3. Exciter Armature

(a) To be clean and free of all foreign matter.

(b) Mask machined surface.

(c) Set oven at 300°F (149°C) and heat part until it reaches 290°F (143°C)- 300°F (149°C.).

(d) With part at 290°-300°F. (143°C-149°C.), dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(e) Bake for 35-45 minutes at 350°F. (177°C.).

(f) Dip for 2 minutes in varnish and drain for 4-6 minutes.

(g) Repeat step e.

(h) Repeat step f.

(i) Repeat step e.

(j) Bake for 4 hours and 30 minutes ± 10 minutes at 300°F. (149°C).

(k) Remove masking and clean surface.

4. Exciter Field.

(a) To be clean and free of all foreign matter.

(b) Mask machined surface.

(c) Set oven at 300°F (149°C) and heat part until it reaches 290°F-300°F. (143°C-149°C.).

(d) With part at 290°-300°F. (143°C-149°C.), dip in varnish for 2 minutes or until bubbling ceases and drain for 6-8 minutes.

(e) Bake for 70-80 minutes at 300°F. (149°C.).

(f) Dip for 2 minutes in varnish and drain for 4-6 minutes.

(g) Repeat step e.

(h) Repeat step f.

(i) Repeat step e.

(j) Remove masking and clean surface.

e. Assembly and Installation.

(1) Install the drive disk plate (15, fig. 8-11) to the alternator rotor (16) and secure with lockwashers (14) and bolts (13).

(2) Install terminal (11) and screw (10).

(3) Engage exciter rotor (12) and alternator rotor(l16) by installing lockwashers (9) and screws (8).

(4) Install the rectifiers (7) and leads.

(5) Install key (4).

(6) Install retaining clip (5) to bearing (6).

(7) Install drive disk adapter (3) to the flywheel housing and secure it with lockwashers (2) and bolts (1).

(8) Position nameplate (8, fig. 8-10) on the generator housing (9) and secure with four rivets (7).

(9) Install the clip (6) and secure with lockwasher (5) and screw (4).

(10) Install the air inlet grille (3) and secure with lockwashers (2) and screws (1).

(11) Install the rotor assembly, figure 8-9.

(12) Install the blower wheel, stator assembly, and support brackets, figure 8-8.

(13) To install the unit, refer to paragraph 6-2.

Section II. FRAME ASSEMBLY

8-3. Engine and Drip Pan (Model MEP-018A)

a. Removal.

(1) Remove the engine (para. 6-2).

(2) Refer to figure 8-12 and remove the engine drip pan.

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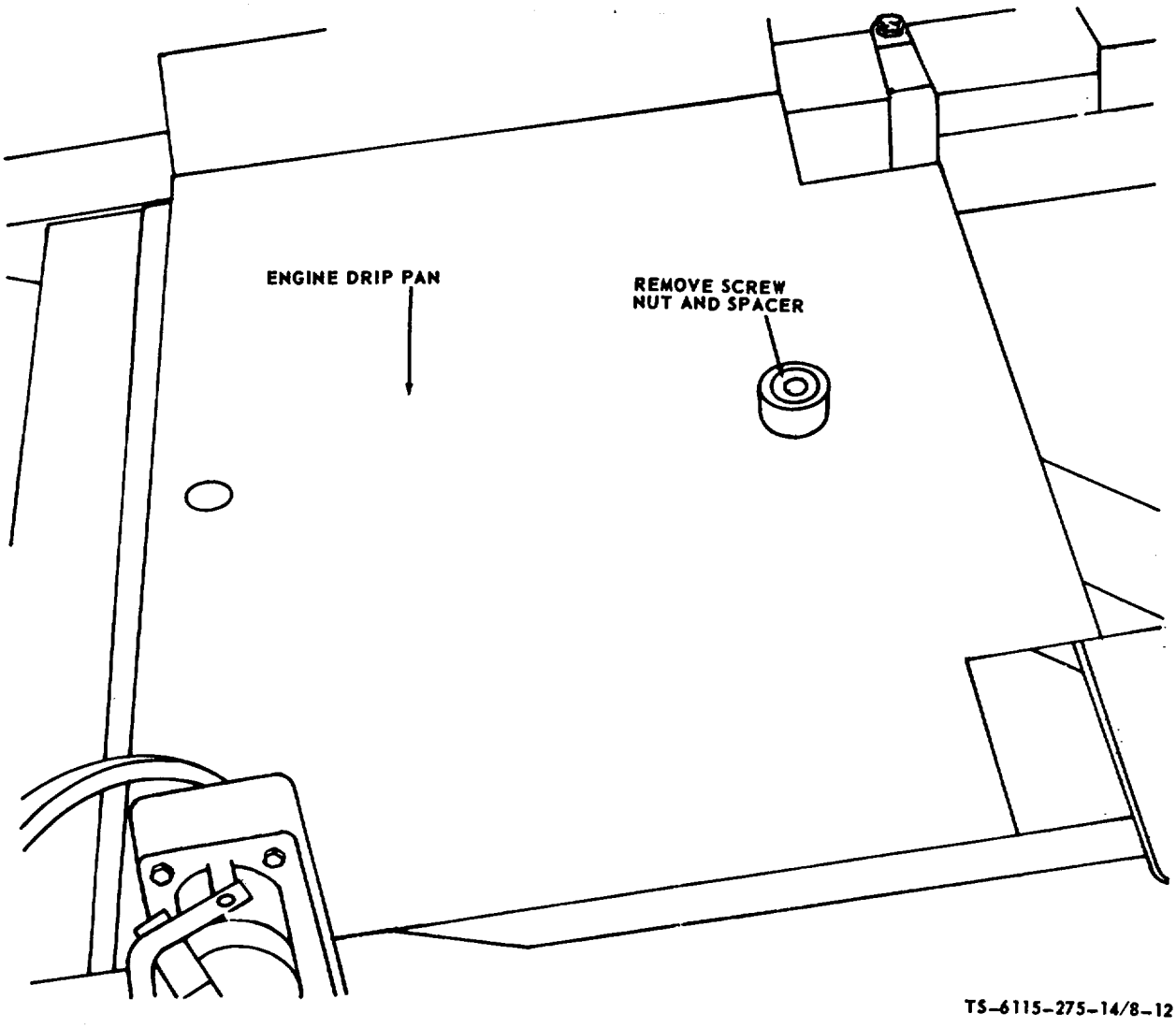


Figure 8-12. Engine drip pan, removal and installation (Model MEP 018A).

b. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentialy dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100° F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect items for cracks, breaks, and dents. Replace a damaged item.

c. Installation.

(1) Refer to figure 8-12 and install the engine drip pan.

(2) Install the engine (para. 6-2).

8-4. SKID BASE (MODEL MEP-018A)

a. Removal.

(1) Refer to figures 8-13, 8-14, 8-15 and 8-16f and remove fuel filter, hoses, lines, and valve as necessary.

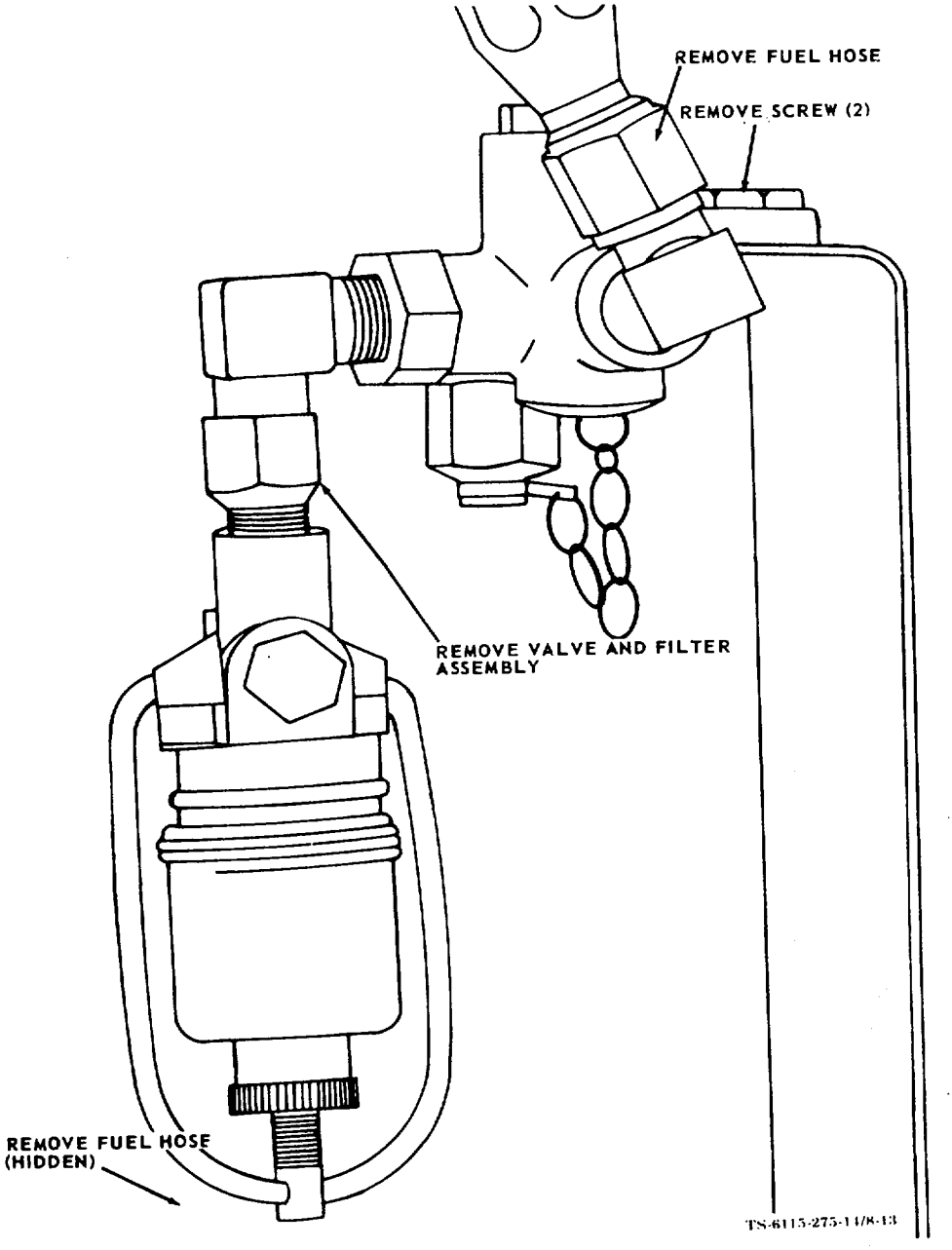


Figure 8-13. Fuel hoses, lines and filter, removal and installation (all serial numbers except MA68-0001 through MA68-2987) (Model MEP-OI8A).

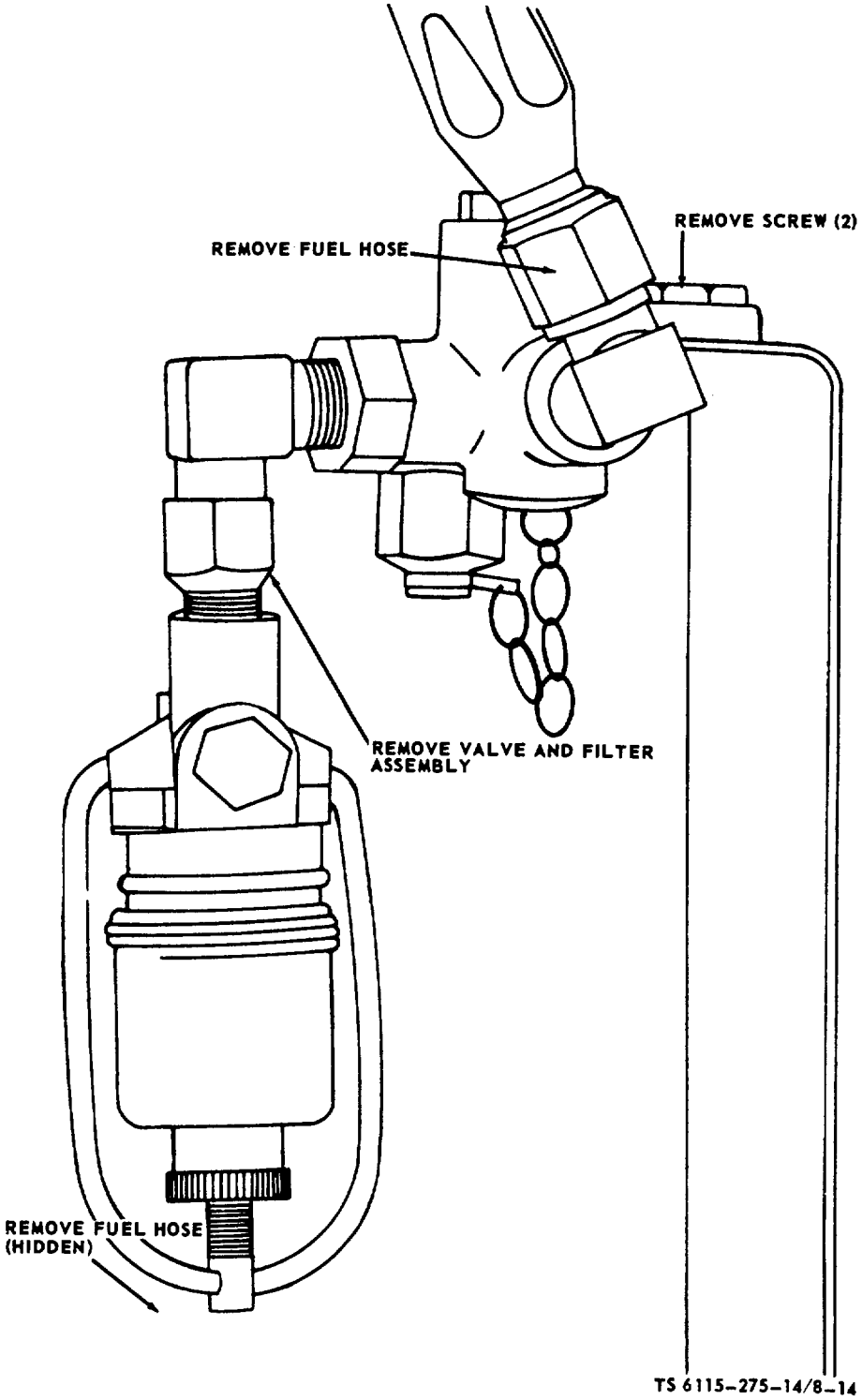


Figure 8-14. Fuel hoses, lines and filter, removal and installation (serial number range MA68-0001 through MA68-2987) (Model MEP-018A).

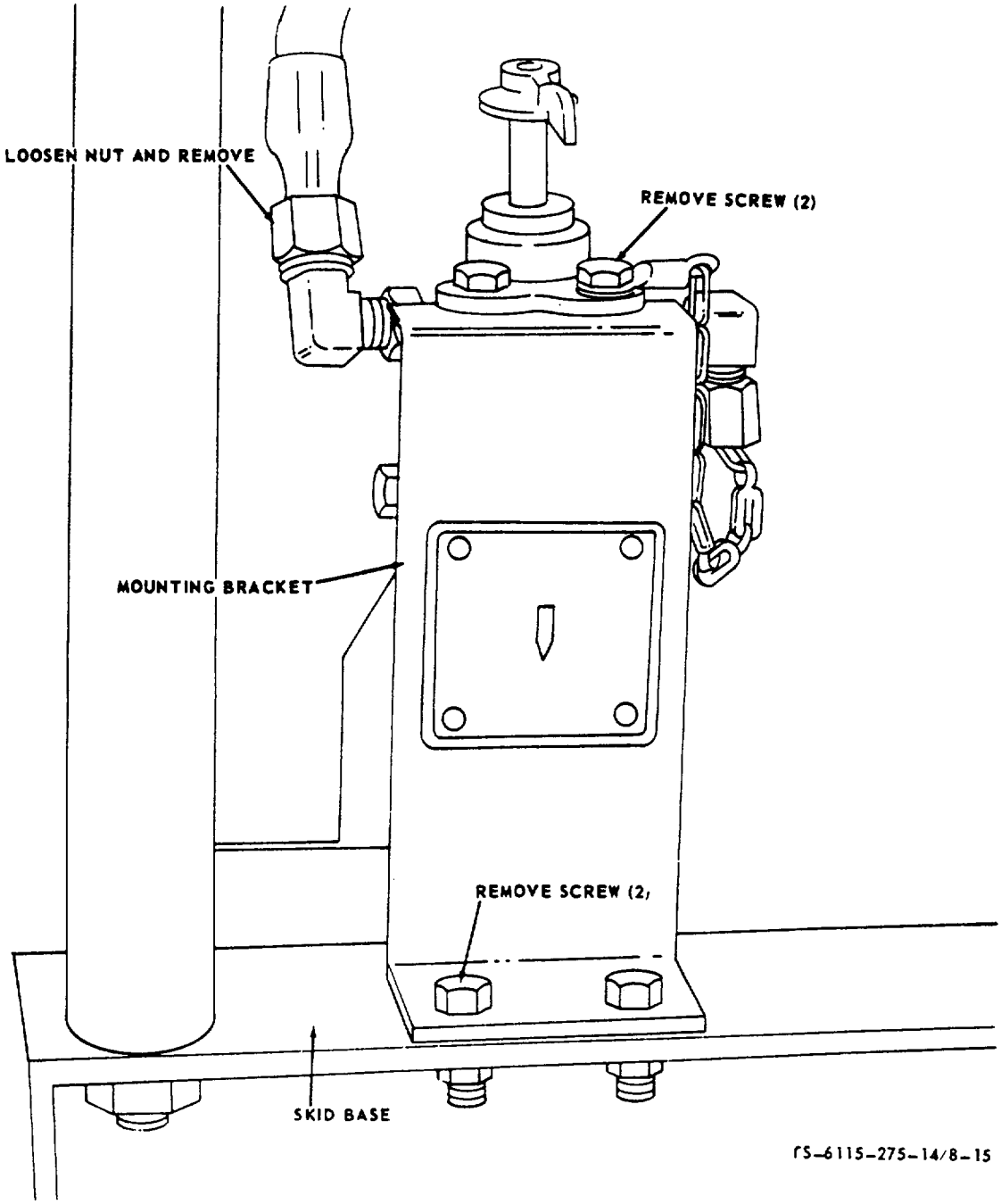


Figure 8-15. Three-way fuel valve, fuel filter, fuel valve mounting bracket, removal and Installation (all serial numbers except MA68-0001 through MA68-2987) (Model MEP-018A).

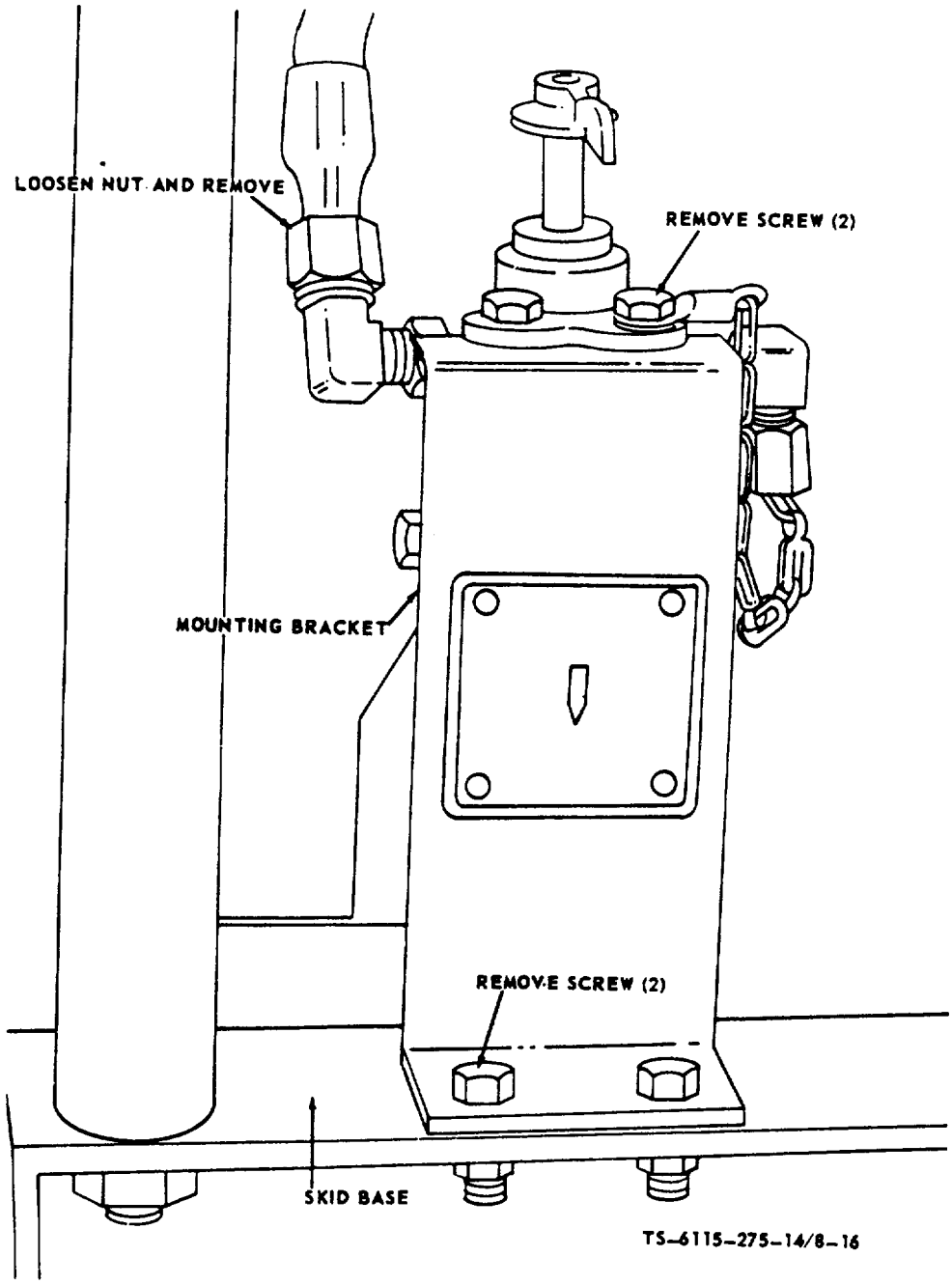


Figure 8-16. Three-way fuel valve, fuel filer, fuel valve mounting bracket, removal and Installation (selal number range MA68-0001 through MA 68-2987) Model MEP-018A).

(2) Refer to figures 8-17 and 8-18 and remove the fuel tank, bracket, and strap.

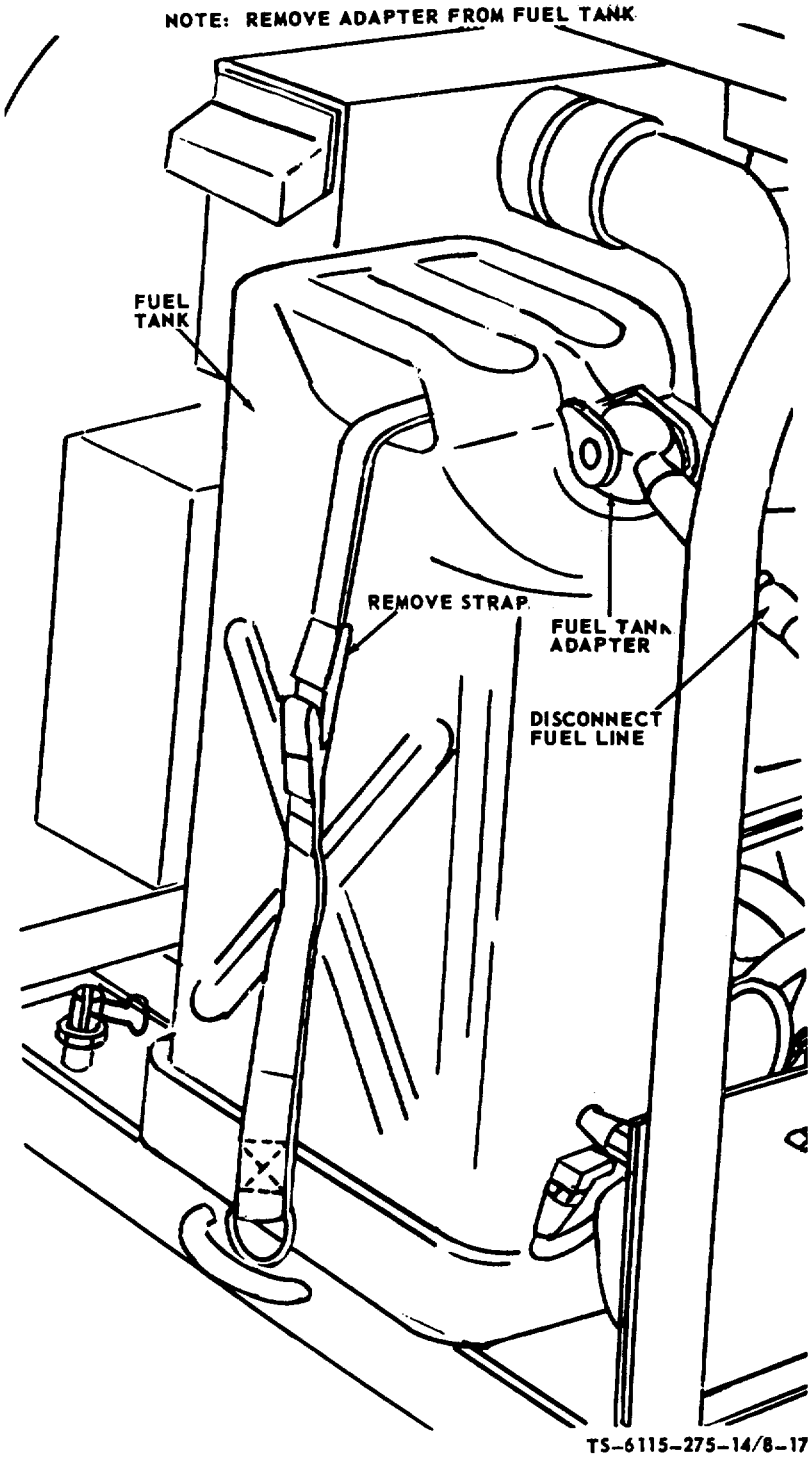


Figure 8-17. Fuel tank and adapter, removal and installation.

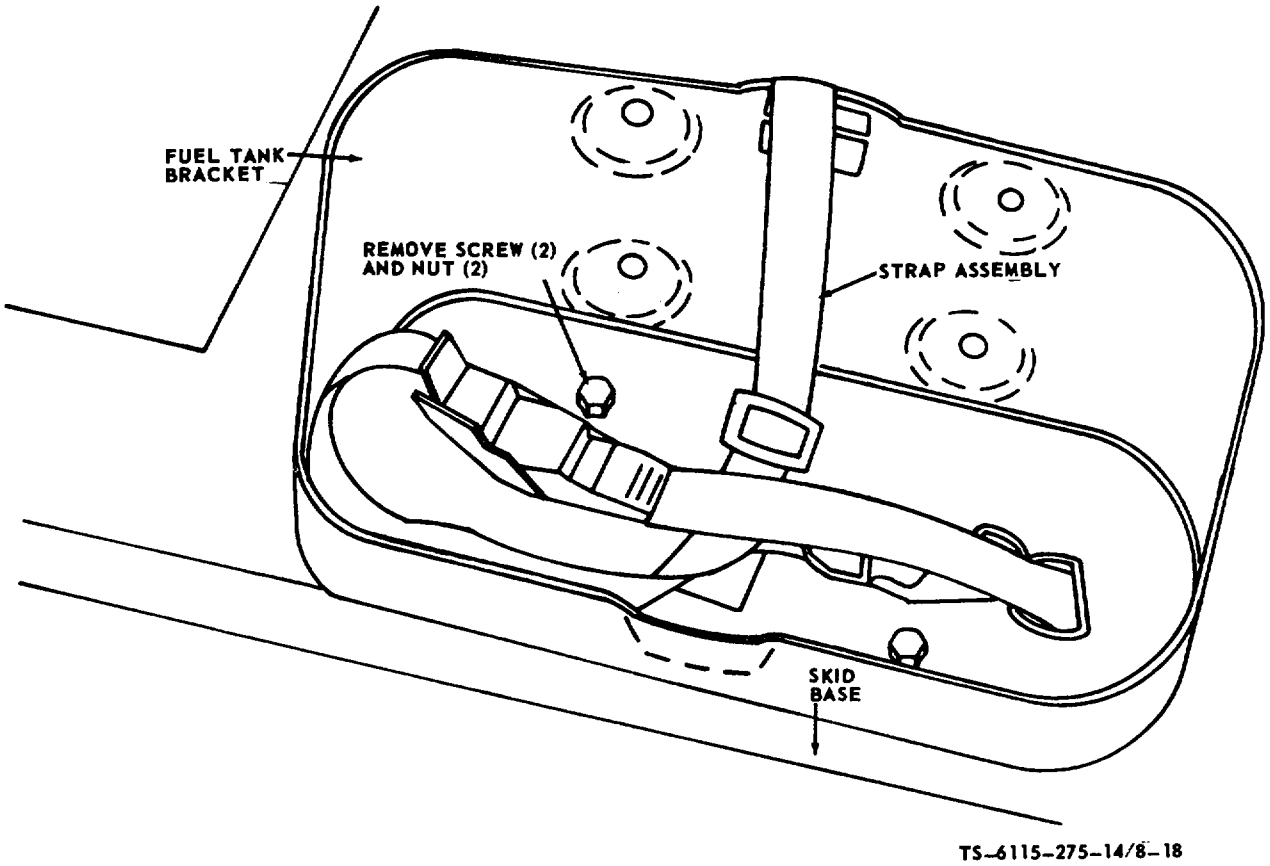


Figure 8-18. Fuel tank bracket and strap assemblies, removal and installation(Model MEP-018A).

(3) Refer to figure 8-19 and remove the electrical receptacle.

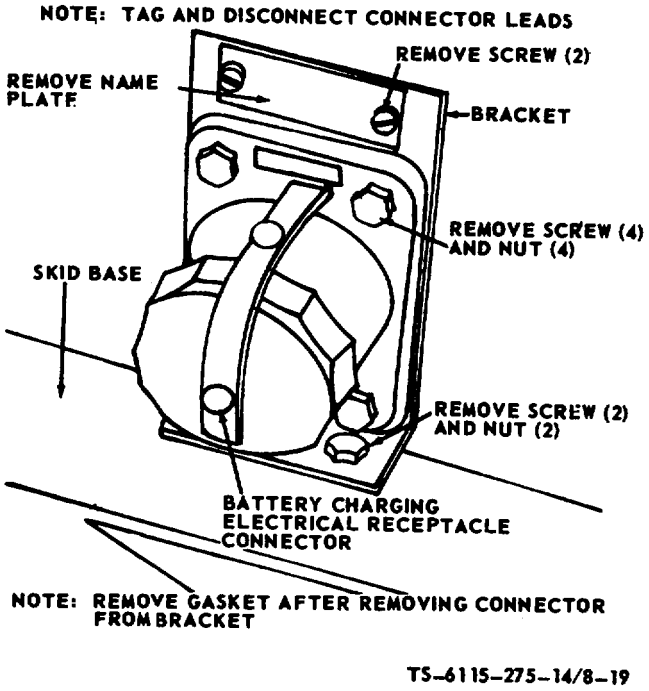


Figure 8-19. Battery charging electrical receptacle connector and bracket, removal and installation (Model MEP-OISA).

(4) Refer to figure 8-20 and remove the grounding stud.

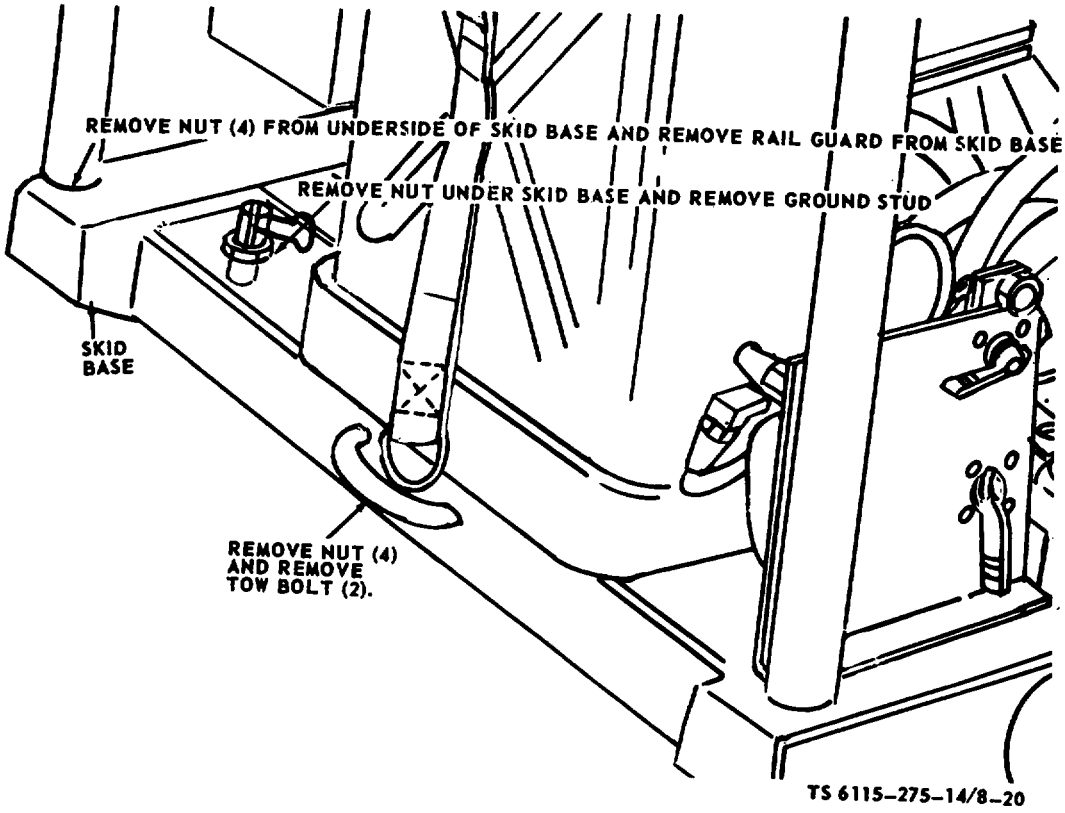


Figure 8-20. Rail guard, ground, and tow bolts, removal and installation (Model MEP-018A).

(5) Refer to figure 8-21 and remove the fuel drum adapter clips.

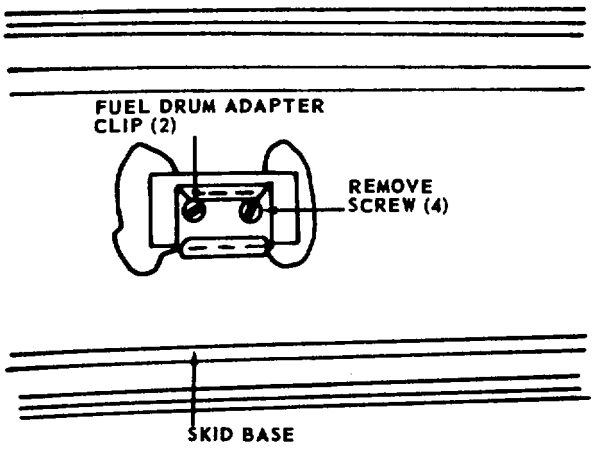


Figure 8-21. Fuel drum adapter lips, removal and installation.

(6) Remove the control cabinet assembly, paragraph 6-1.

(7) Remove the engine and generator, paragraph 6-2.

(8) Remove the engine drip pan, paragraph 8-3.

b. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect for damage and defects. Weld cracks or breaks and straighten dents. Replace a skid base that is damaged beyond repair.

c. Installation.

(1) Install the engine drip pan, paragraph 8-3.

(2) Install the engine and generator, paragraph 6-2.

(3) Install the control cabinet assembly, paragraph 6-1.

(4) Install the fuel drum adapter clip, figure 8-21.

(5) Install the grounding stud, figure 8-20.

(6) Install the electrical receptacle, figure 8-19.

(7) Install the fuel tank, bracket, and strap, figures 8-17 and 8-18.

(8) Install the fuel filter, hoses, lines, and valve as necessary. Refer to figures 8-13, 8-14, 8-15, and 8-16.

8-5. Engine Support, Drip Pan, Deflector Plates, and Baffle Plates (Model MEP-023A)

a. Removal

(1) Remove the engine and generator, paragraph 6-2.

(2) Refer to figure 8-22 and remove the engine support, drip pan, deflector plates and baffle plates.

NOTE: REMOVE 8 NUTS AND BOLTS THAT SECURE SKID BASE TO WOODEN SKID AND RAMISE AND BLOCK SKID BASE FOR ACCESS TO MOUNTING NUTS.

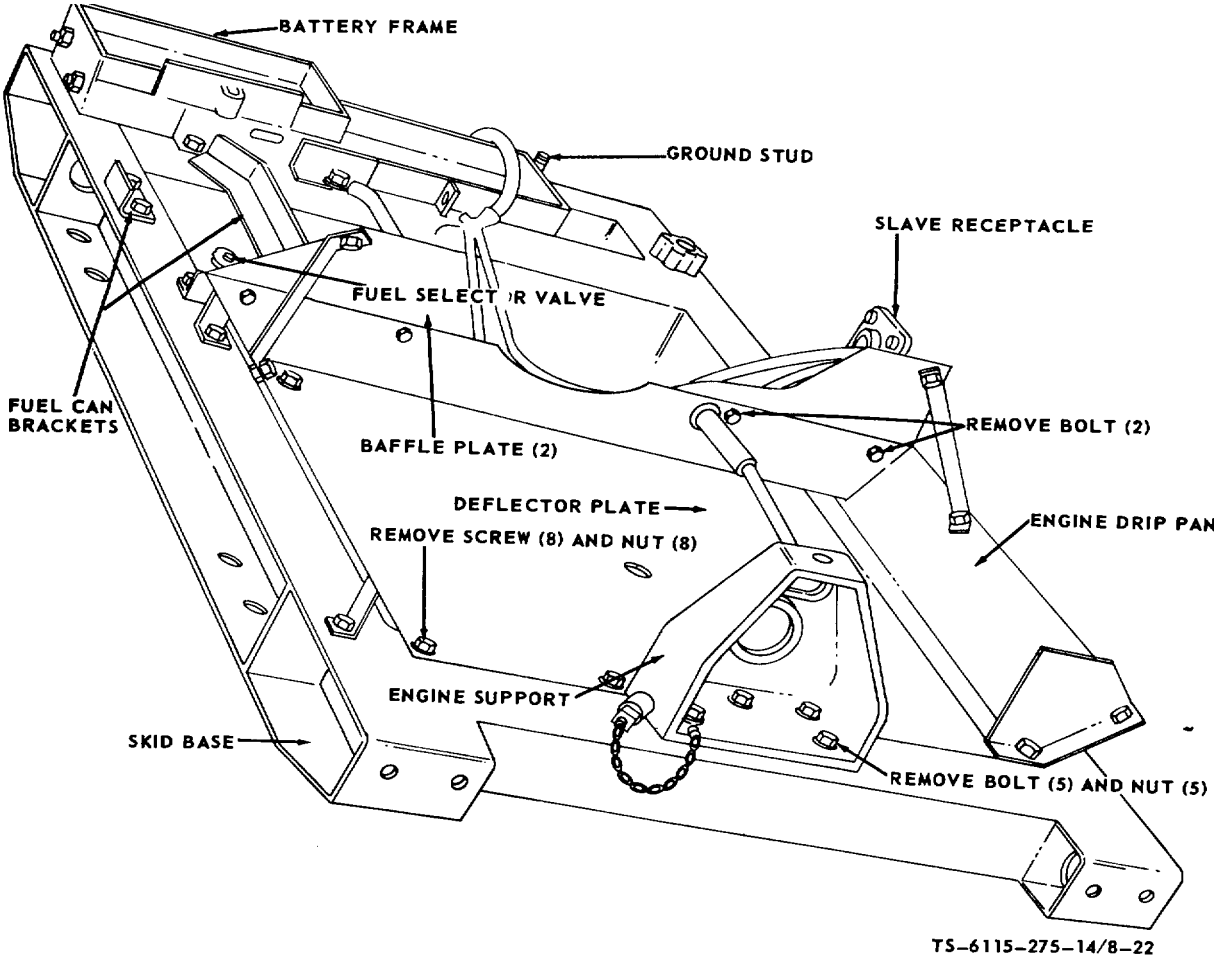


Figure 8-22. Engine, engine support drip pan, deflector plates and baffleplates, removal and installation (Model MEP-023A).

b. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S-661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect items for cracks, breaks, and dents. Replace a damaged item.

c. Installation.

(1) Refer to figure 8-22 and install the engine support, drip pan, deflector plates and faffle plates.

(2) Refer to paragraph 6-2 and install the generator and engine.

8-6. SKID BASE (MODEL MEP-023A)

a. Removal

(1) Remove the fuel tank and adapter, figure 8-17.

(2) Remove the grounding stud, figure 8-23.

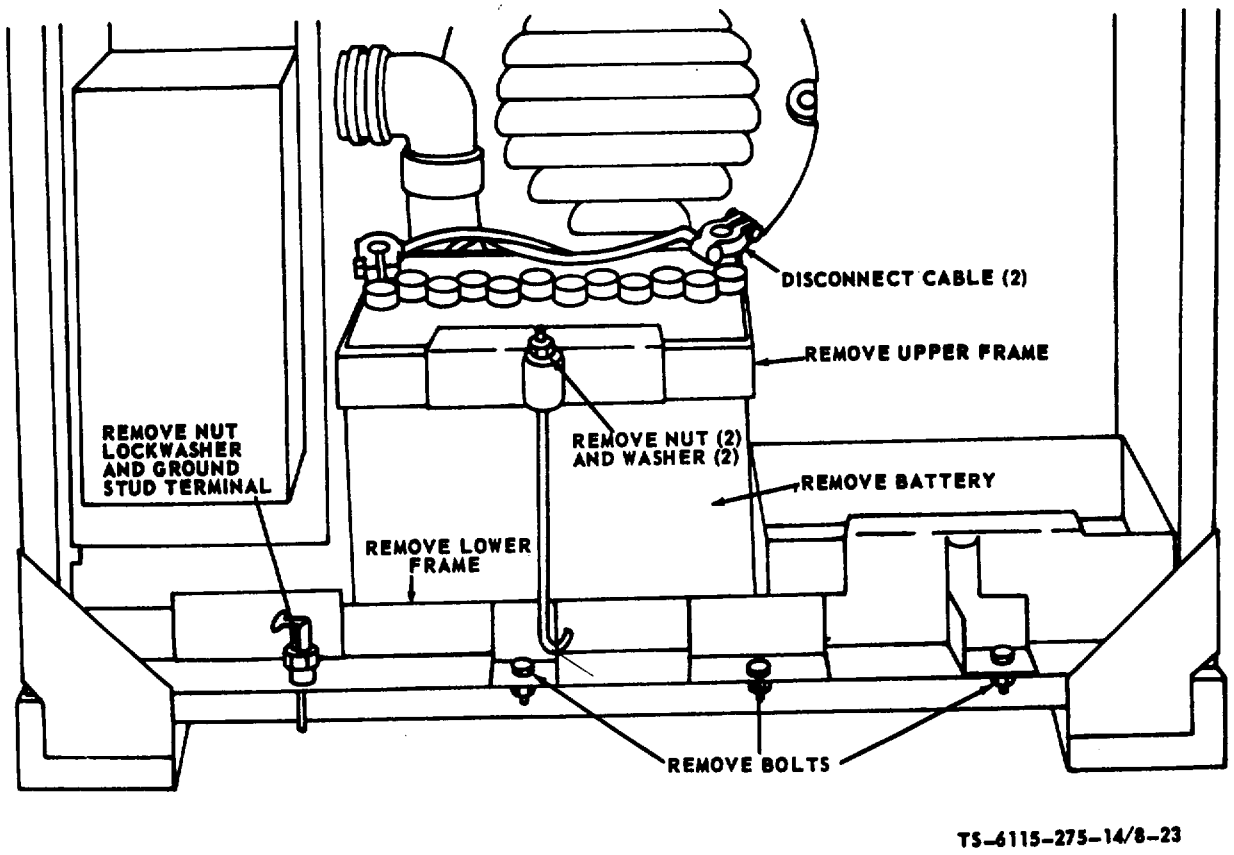


Figure 8-23. Ground stud terminal, removal and installation (Model MEP-02A).

(3) Remove the slave receptacle, figure 8-24.

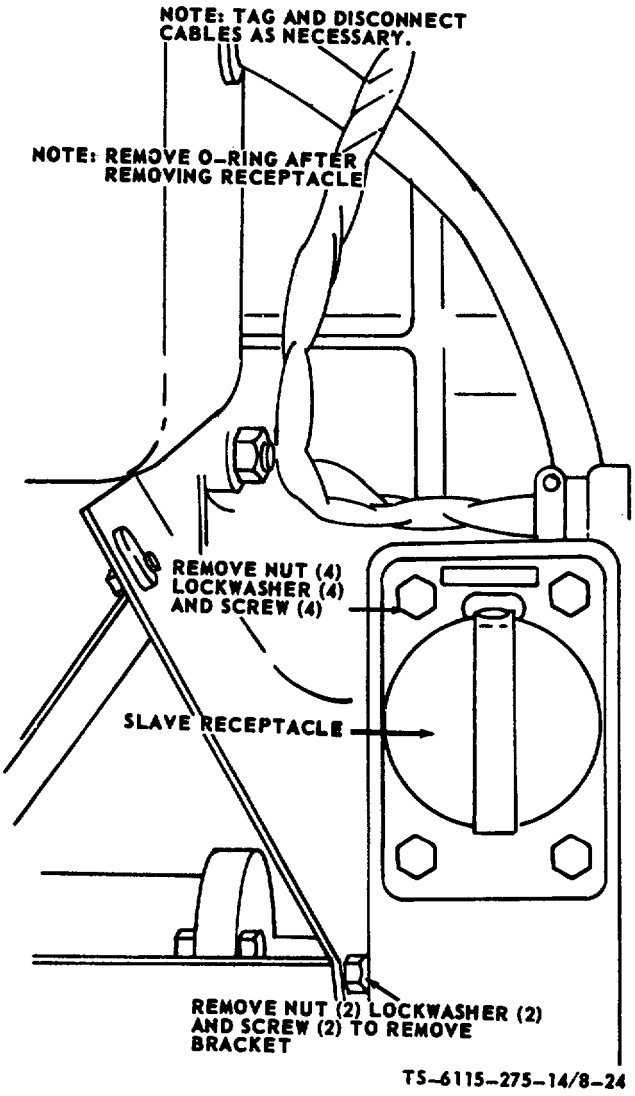


Figure 8-24. Slave receptacle, removal and installation (Model MEP-023A).

(4) Remove the fuel selector valve and bracket figure 8-25.

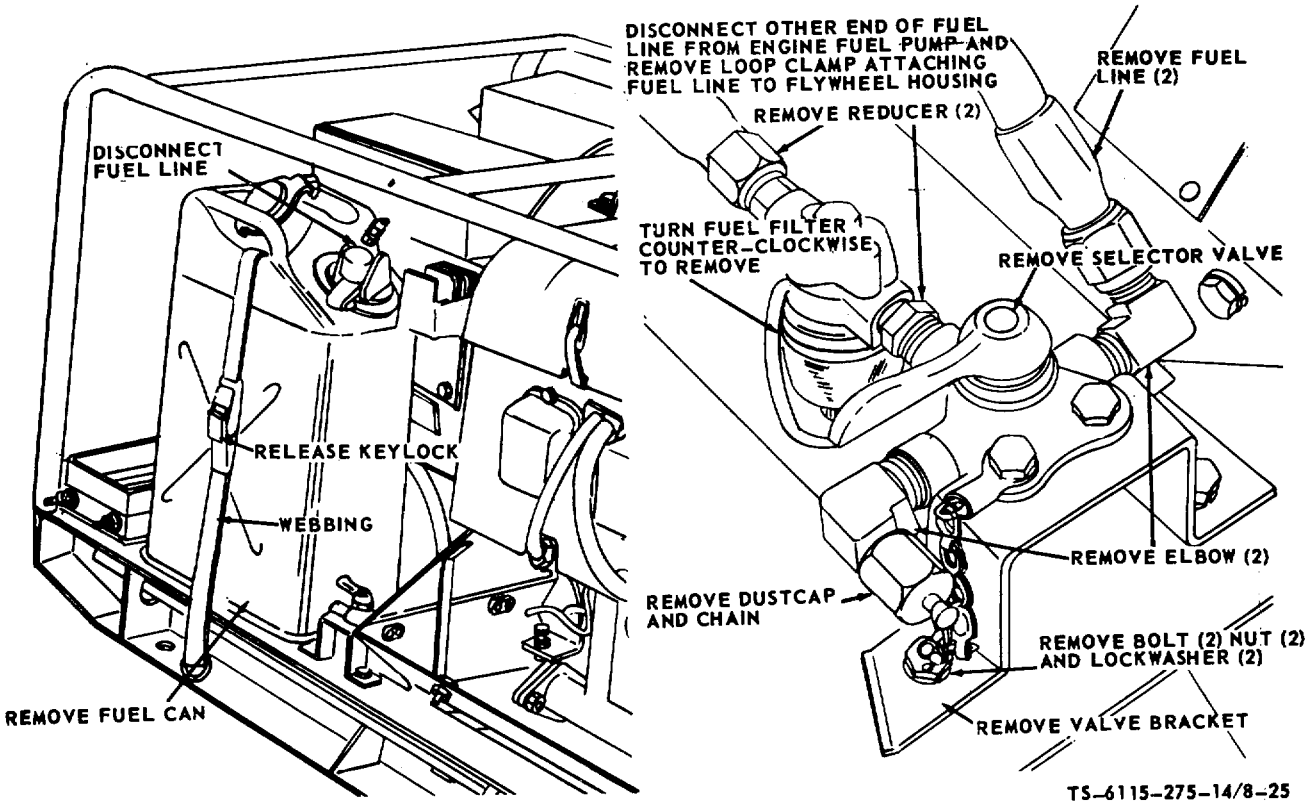


Figure 8-25. Fuel lines, fuel filter and fuel selector valve, removal and installation(Model MEP-023A).

(5) Remove the engine and generator, paragraph 6-2.

(6) Remove the control box, paragraph 6-1.

(7) Remove the generator support bracket, paragraph 8-2.

(8) Remove the engine support bracket and drip paragraph 8-5.

b. Cleaning, Inspection, and Repair.

WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 and P-S661) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100°F(38°C).

(1) Clean items with cleaning solvent, Fed. Spec. P-D-680 or P-S-661, and dry thoroughly.

(2) Inspect for damage and defects. Weld any cracks or breaks and straighten dents. Replace a skid base that is damaged beyond repair.

c. Installation.

(1) Install the engine support bracket and drip pan, paragraph 8-5.

(2) Install the generator support brackets, paragraph 8-2.

(3) Install the control box, paragraph 6-1.

(4) Install the engine and generator, paragraph 6-2.

(5) Install the fuel selector valve and bracket, figure 8-25.

(6) Install the slave receptacle, figure 8-24.

(7) Install the grounding stud, figure 8-23.

(8) Install the fuel tank and adapter, figure 8-17.

CHAPTER 9
GENERATOR SET TEST AND INSPECTION AFTER REPAIR OR OVERHAUL

Section I. GENERAL REQUIREMENTS

The activity performing the repair or overhaul is responsible for the performance of all applicable tests and inspections specified herein. Activities performing maintenance on any portion of the generator set must perform those tests and inspections required by the applicable component or system repair instruction.

Section II. INSPECTION

Refer to Table 9-1:

Section III. OPERATIONAL TESTS

The following operational checks will be made:

a. The proper operation of all components under no load and full capacity load conditions.

b. Proper function and adjustment of all instruments, controls, gages and lights.

c. Overheating, vibration and unusual noises.

d. Record voltage, current, power factor, frequency and temperature readings at the above loads.

e. Check operation of control and protective equipment while conducting the test run and when the test run periods are completed and the load gradually removed, shut down the unit after the ¼ hour idle period.

f. Oil or fuel leaks.

CAUTION

If during the operational test excessive noise or vibration is observed or any overheating or malfunctions occur which may cause damage to the equipment, stop operation immediately until necessary repairs are made.

g. If the malfunction is minor and will not damage the generator set, the tests may continue and defects corrected upon completion of tests.

h. Inspect for proper functioning, components which have been overhauled or repaired

i. Presence of one or more defects shall be cause for rejection until acceptable repair has been made. If repair is required to a major component, repeat the entire operational test.

Table 9-1. Visual and Operational Inspection

	Inspection Point	Condition
1.	Data Plates	***a.*** Must be tightly affixed and legible. ***b.*** Missing plates must be replaced.
2.	Overall	***a.*** All lines, hoses, wiring, guards, floor plates, and panels shall be properly attached and in good condition. ***b.*** All bolts and screws shall be of the proper size, have the required washers, and be securely tightened. ***c.*** Grease fittings shall be undamaged.
3.	Basic Issue Items	All items must be accounted for, and in condition comparable to new.
4.	Engine	The engine must operate efficiently with no unusual noises and should show no signs of overheating during or after operating under full load for a period of one hour.
5.	Fuel System	***a.*** Fuel tank must be free of contamination and rust. ***b.*** Fuel cap gasket must be in good condition and strainer must be clean. ***c.*** Fuel lines must be secure and free of sharp bends. ***d.*** There must be no evidence of leaks.
6	Engine Electrical System	***a.*** Starter, alternator, and regulator must operate smoothly without unusual noises. ***b.*** All wiring must be adequently insulated and securely fastened. ***c.*** Cables shall be in comparable to new condition and wiring harness shall be securely attached.
7.	Control Box and Instruments	***a.*** Control box shall be securely attached. ***b.*** Gages shall be clean and legible. ***c.*** Switches and controls shall operate freely. ***d.*** Wiring and wiring harness shall be attached securely. ***e.*** Normal gage readings during operation: Ammeter D.C. - plus side of scale Oil Pressure - 30-40 psi Voltmeter - 120-208 or 240V Frequency Meter - 60 hertz Current Indicator Meter - Indicates percentage of rated load current being used. Reading depends on load applied Hourmeter - Indicator bar moves when meter is functioning. ***f.*** Panel light shall operate when switch is turned ON.

Table 9-1. Visual and Operational Inspection (Cont'd)

Inspection Point		Condition
8.	Generator	***a.*** Generator must be securely mounted and the rotor exciter shaft securely attached to the flywheel. ***b.*** During operation, there shall be no excessive noise or vibration. ***c.*** Conduct a load test to insure that the set is operable and that all meters are functioning properly.
9.	Radio Interference Suppression	All interference suppression components shall be installed and securely fastened.
10.	Skid Base, Frame and Components	***a.*** The frame, base pan, battery box and supports shall be securely attached, and shall support the generator and engine without buckling when raised, moved or skidded. ***b.*** Welded parts shall be free from breaks or cracks at the weld. ***c.*** All mounting brackets shall be securely attached. ***d.*** Paint shall be as specified for all components of the generator set

APPENDIX A
REFERENCES

A-1	Fire Protection	
	TM 5-400-200-10	Hand Portable Fire Extinguishers Approved for Army Users
A-2	Lubrication	
	LO 5-2805-259-12	Engine, Gasoline: Military Standard
	C 9100 IL	Fuel, Lubricant, Oils and Waxes
A-3	Painting	
	TM 43-0139	Painting Instructions for Field Use
	TO 35-14-3	Painting and Marking of USAF Age
A-4	Radio Suppression	
	TM 11483	Radio Interference Suppression
A-5	Shipment and Storage	
	TO 35-1-4	Processing and Inspection of AGE for Storage and Shipment
	TO 35-1-5	Processing and Inspection of Non-Mounted, Non-Aircraft Gasoline and Diesel Engines for Storage and Shipment
A-6	Maintenance	
	TM 5-764	Electric Motor and Generator Repair
	TM 5-766	Electric Power Generator in the Field
	AFM 66-1	Air Force Maintenance Management
	TM 5-2805-259-14 TO 38G2-89-41	Engine, Gasoline: Military Standard (Model 4A084-) 20 HP
	TM 5-2805-259-24P TO 38G2-89-54	Operator, Organizational and Field Maintenance Repair Parts and Special Tool List
	DA PAM 738-750	The Army Maintenance Management System (TAMMS)
	TM 5-6115275-24P TO 35C2-3-452-4	Organization, Intermediate (Field), Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tool List

TO 35C2-3-1-426	Inspection and Maintenance of FSC 6115, Electrical Generator Sets
TO 36Y-4-1-194	Maintenance of Storage Batteries (Lead Acid Type)
TO 35-1-11	Organizational, Intermediate and Depot Level Maintenance for FSC 6115, Non Airborne Equipment

APPENDIX B

BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

Section I. INTRODUCTION

B-1. Scope

This appendix lists Basic Issue Items, Items Troop Installed or Authorized which accompany the generator set and are required by the Crew/Operator for operation, installation, or operator's maintenance.

B-2. General

This basic issue items, items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List - Section II. Not Applicable.

b. Items Troop Installed or Authorized Lest Section III. A list in alphabetical sequence of items which at the discretion of the unit commander may accompany the end item, but are NOT subject to be turned in with the end item.

B-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basic Issue Items List, Section II, and Items Troop Installed or Authorized, Section III.

a. Source, Maintenance, and Recoverability Code(s) (SMR). Not Applicable.

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 Federal item name and any additional description of the item required.

d. Unit of Measure (U/M). A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, eg., ft, ea, pr, etc.

e. Quantity Authorized (Items Troop Installed or Authorized Only). This column indicates the quantity of the item authorized to be used with the equipment.

Section III. TROOP INSTALLED OR AUTHORIZED LIST

National Stock Number	Description	U/M	Qty Auth
7520-00-559-9618	CASE: Maintenance and Operation Manuals	EA	1
6115-00-066-4933	COVER: Canvas	EA	1
4210-00-555-8837	EXTINGUISHER: Fire	EA	1
4720-00-021-3320	HOSE: Auxiliary Fuel	EA	1
4210-00-878-3791	ROD ASSEMBLY: Ground	EA	1
5120-01-013-1676	SLIDE HAMMER: Ground	EA	1

APPENDIX C
MAINTENANCE ALLOCATION CHART
(FOR ARMY ONLY)

Section I. INTRODUCTION

C-1. General

a. This section provides a general explanation of all maintenance and repair functions 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. Not Applicable.

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 the next higher assembly. The applicable groups are listed in the MAC in disassembly sequence beginning with the first group removed.

b. Column 2, ComponentlAssembly. This column contains the noun names of components, assemblies, subassemblies and modules for which maintenance is authorized.

c. Column/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 though 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. Operation 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, 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), 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 a 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 origin manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army Equipment/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 subcolumns 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.

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, National/NATO Stock Number (NSN). This column is provided for the NSN of common tool sets, special tools and test equipment listed in the Nomenclature column.

e. Column 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	ENGINE ASSEMBLY							
	See TM 5-2805-259-14	Replace			3.0			
02	FUEL SYSTEM							
	Adapter, Fuel Can	Inspect	0.1					
		Replace		0.1				
	Fittings, Fuel Lines	Inspect	0.1					
		Replace		0.1				
	Strap, Fuel Can	Inspect	0.1					
		Replace	0.1					
	Hose Assembly, Fuel	Inspect	0.1					
		Replace		0.1				
	Can, Fuel Supply	Inspect	0.1					
		Replace	0.1					
	Valve, Fuel Selector	Inspect	0.1					
		Replace		0.2				
03	ELECTRICAL SYSTEM							
	Cable Assembly, Battery	Inspect	0.1					
		Replace		0.1				
		Repair		0.2				
	Frame, Battery Top Hold Down	Inspect	0.1					
		Replace		0.2				
		Repair		0.3				5-I
	Battery, Storage	Inspect	0.1					
		Test		0.2				1-B
		Service	0.1					
		Replace		0.2				
	Cable Assembly, Starter	Inspect	0.1					
		Replace		0.2				
		Repair		0.3				
	Receptacle Assembly, Slave	Inspect						
		Replace						
		Repair						
04	CONTROL BOX ASSEMBLY							
	Control Box Assembly	Inspect	0.1					
		Replace		0.6				
		Repair			0.8			2-B
	Lamp Incandescent	Inspect	0.1					
		Replace	0.1					

* 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

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT
	Light Assembly, Panel	Inspect	0.1					
		Replace		0.2				
	Meters	Inspect		0.1				
		Test		0.2				2-B
		Replace		0.2				
	Switches	Inspect		0.1				
		Test		0.2				2-B
		Replace		0.2				
	Resistor, Variable	Inspect		0.1				
		Test		0.1				2-B
		Replace		0.2				
	Meter, Frequency Transducer	Inspect		0.1				
		Test		0.1				2-B
		Replace		0.2				
	Bracket, Control Box	Inspect	0.1					
		Replace		0.1				
		Repair		0.2	-			5-1
	Panel Assembly, Control	Inspect	0.1					
		Replace			0.5			
		Repair		0.5				
05	GENERATOR ASSEMBLY							
	Generator Assembly	Inspect			0.2			
		Test		0.2				2-B
		Replace			1.0			
		Repair					2.0	2-B 3B
	Rotor Assembly	Inspect			0.2			
		Test			0.2			2-B
		Replace			1.0			2-B
		Repair					1.0	2-B 3-B
	Frame Assembly, Exciter	Inspect					0.2	
		Test					0.3	2-B
		Replace					0.5	
		Repair					1.0	-B
	3-B							
	Housing Assembly	Inspect	0.2					
		Test	0.3	2-B				
		Replace	0.8	-B				
	3-B							
		Repair	1.0	3-B				
	5-I							

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** INDICATES WORKTIME (MANHOURS) REQUIRED

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
	Housing, Generator	Inspect			0.1			
		Replace					2.0	
		Repair			1.0			5-1
	Stator Assembly	Inspect			0.3			
		Test			0.3			2-B
		Replace					2.0	
		Repair					2.0	3-B
	Fan, Cooling	Inspect			0.1			
		Replace			0.8			
	Grille, Air Intake	Inspect			0.1			
		Replace			0.2			
	Bearing, Shaft	Inspect			0.2			
		Replace			0.5			4-H
		Repair			0.5			5-1
	Disk, Rotor/Drive	Inspect			0.2			
		Replace			0.8			
	Adapter, Disk, Starter	Inspect			0.2			
		Replace			0.8			
06	FRAME ASSEMBLY							
	Guard, Frame Assembly	Inspect	0.1					
		Replace		0.2				
		Repair			0.3	5-1		
	Bracket, Lifting	Inspect	0.1					
		Replace		0.1				
	Stud, Grounding	Inspect	0.1					
		Replace		0.1				
	Base Assembly, Skid	Inspect	0.1					
		Replace		1.5				
		Repair		1.0				5-1
	Toolbox Assembly	Inspect	0.1					
		Replace			0.2			
		Repair		0.3				5-1

*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

REF. CODE	MAINT. CAT.	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1-B	O	Tester, Battery Electrolyte, Solution	6630-00-171-5126	
2-B	F	Multimeter	6625-00-581-2036 or equal	
3-B	O	Ohmmeter (Megger)	6625-00-581-2466 or equal	
4-H	F	Puller Kit	5180-00-711-753 or equal	
5-1	O	Torch Outfit Cutting and Welding (Tool Set L/I W67706)	3433-00-357-6311 or equal	

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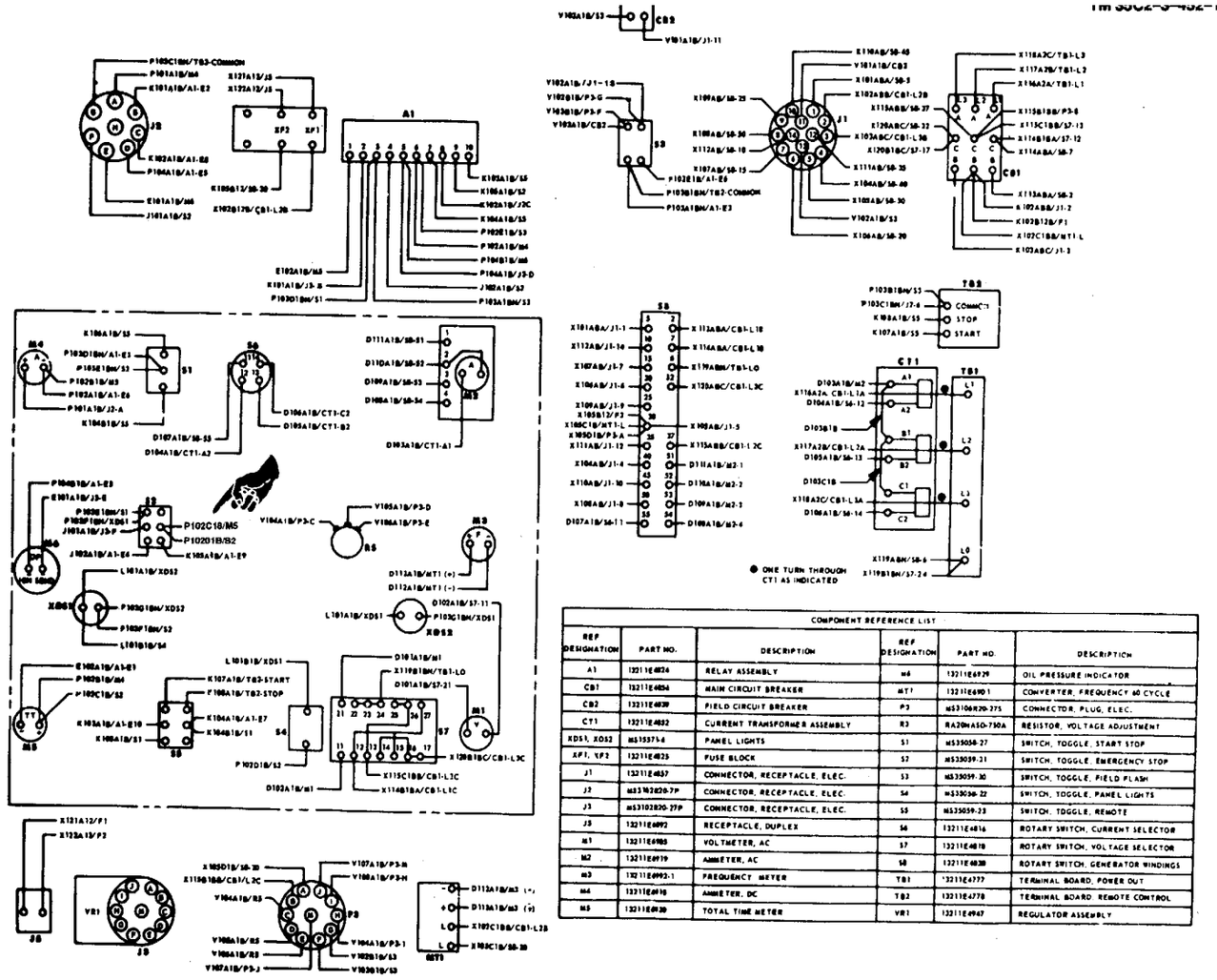
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Toolbox (Model MEP-018A)		
Cleaning, Inspection and Repair	4-53b	4-86
Installation	4-57c	4-86
Removal.	4-53a	4-85
Toolbox, Toolbox Bracket, Lifting Eye, Bracket Guard Frame and Vibration Mounts (Model MEP-023A)		
Cleaning, Inspection and Repair	4-57b	4-93
Installation	4-57c	4-93
Removal	4-57a	4-91
Tools and Equipment (Organizational Maintenance)	4-46c	4-23
Troubleshooting (Intermediate (Field) (Direct Support ad General Support) and Depot Maintenance)	5-4	5-1
Troubleshooting Table (Organization)	4-46	4-41
V		
Variable Resistor (Model MEP-018A)		
Cleaning, Inspection and Repair	4-46b	4-81
Installation	4-46d	4-82
Removal	4-46a	4-81
Testing	4-46c	4-82
Voltage and Current Selectors ad Voltage Adjusting Knob, Rheostat		
Cleaning, Inspection and	4-37b	4-73
Installation	4-37d	4-73
Removal	4-37a	4-73
Testing	4-37c	4-73
Voltage and Phase Selector Switch		
Cleaning, Inspection and Repair	7-5b	7-5
Installation.	7-5f	7-6
Removal	7-5a	7-4
Test (el MEP-01	7-5c	7-5
7tdig of Ammeter Phase Switch (82) (Model MEP-023A)	7-5d	7-6
Testing of Voltage Selector Switch (S3) (Model MEP-023A	7-5e	7-6
Voltage Regulator (Organizational Maintenance)		
Cleaning, Inspection and Repair	4-42d	4-78
General	4-42a	4-76
Installation	4-42e	4-78
Removal	4-42c	4-76
Testing	4-42b	4-76
Voltage Regulator	7-9	7-8



COMPONENT REFERENCE LIST					
REF DESIGNATION	PART NO.	DESCRIPTION	REF DESIGNATION	PART NO.	DESCRIPTION
A1	13211E6826	RELAY ASSEMBLY	M6	13211E6929	OIL PRESSURE INDICATOR
CB1	13211E6856	MAIN CIRCUIT BREAKER	MT1	13211E6901	CONVERTER, FREQUENCY 60 CYCLE
CB2	13211E6838	FIELD CIRCUIT BREAKER	P3	MS3106R20-27S	CONNECTOR, PLUG, ELEC.
CT1	13211E6852	CURRENT TRANSFORMER ASSEMBLY	R3	RA20WA50-750A	RESISTOR, VOLTAGE ADJUSTMENT
XDS1, XDS2	MS15571-6	PANEL LIGHTS	S1	MS35056-27	SWITCH, TOGGLE, START STOP
XF1, XF2	13211E6825	FUSE BLOCK	S2	MS35059-31	SWITCH, TOGGLE, EMERGENCY STOP
J1	13211E6857	CONNECTOR, RECEPTACLE, ELEC.	S3	MS35059-30	SWITCH, TOGGLE, FIELD FLASH
J2	MS3102R20-7P	CONNECTOR, RECEPTACLE, ELEC.	S4	MS35056-22	SWITCH, TOGGLE, PANEL LIGHTS
J3	MS3102R20-27P	CONNECTOR, RECEPTACLE, ELEC.	S5	MS35059-23	SWITCH, TOGGLE, REMOTE
J5	13211E6892	RECEPTACLE, DUPLEX	S6	13211E6816	ROTARY SWITCH, CURRENT SELECTOR
M1	13211E6985	VOLTMETER, AC	S7	13211E6818	ROTARY SWITCH, VOLTAGE SELECTOR
M2	13211E6919	AMMETER, AC	S8	13211E6838	ROTARY SWITCH, GENERATOR WINDINGS
M3	13211E6992-1	FREQUENCY METER	TB1	13211E6777	TERMINAL BOARD, POWER OUT
M4	13211E6910	AMMETER, DC	TB2	13211E6778	TERMINAL BOARD, REMOTE CONTROL
M5	13211E6930	TOTAL TIME METER	VR1	13211E6967	REGULATOR ASSEMBLY

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Figure FO-1. Wiring Diagram (model MEP-018A).

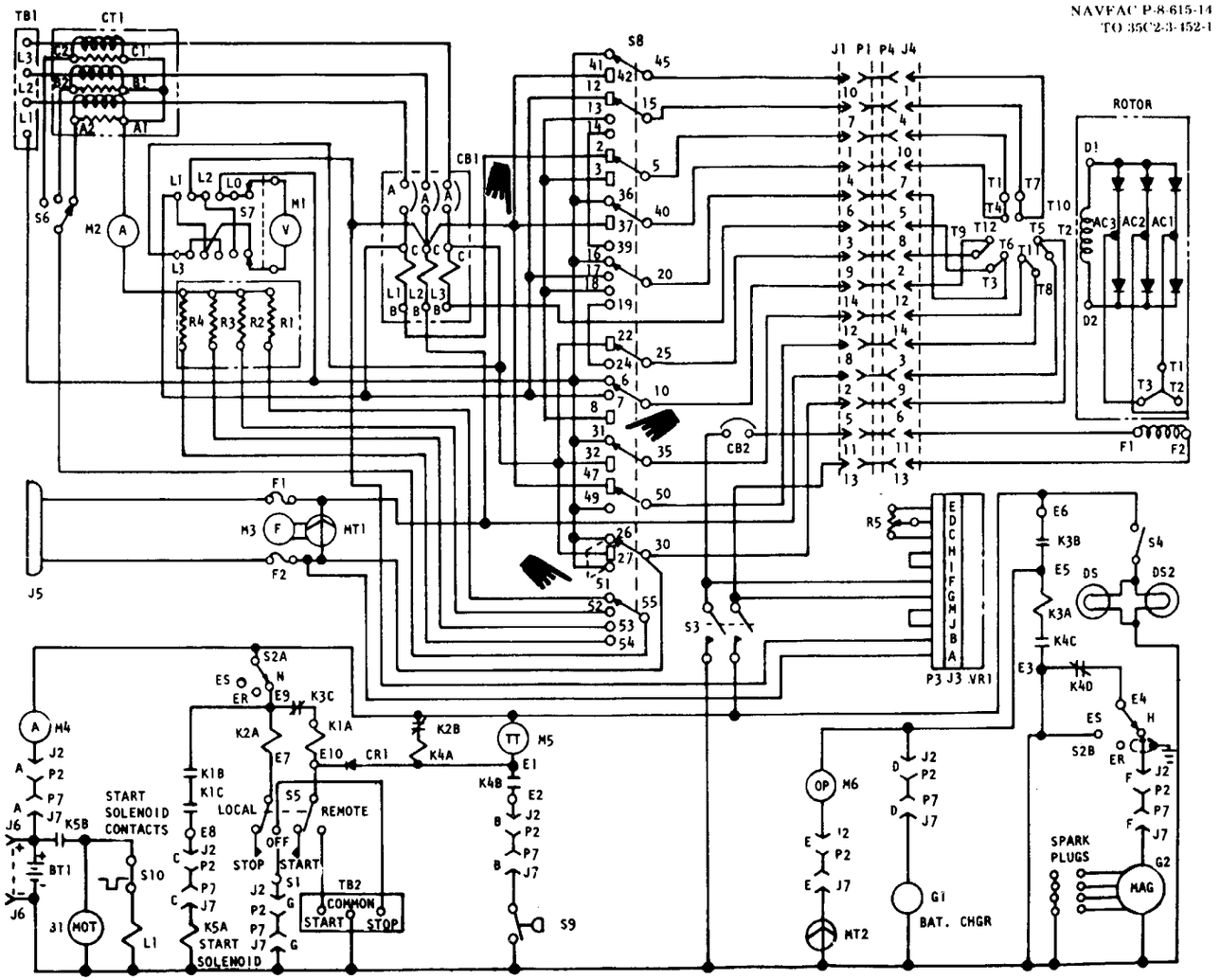
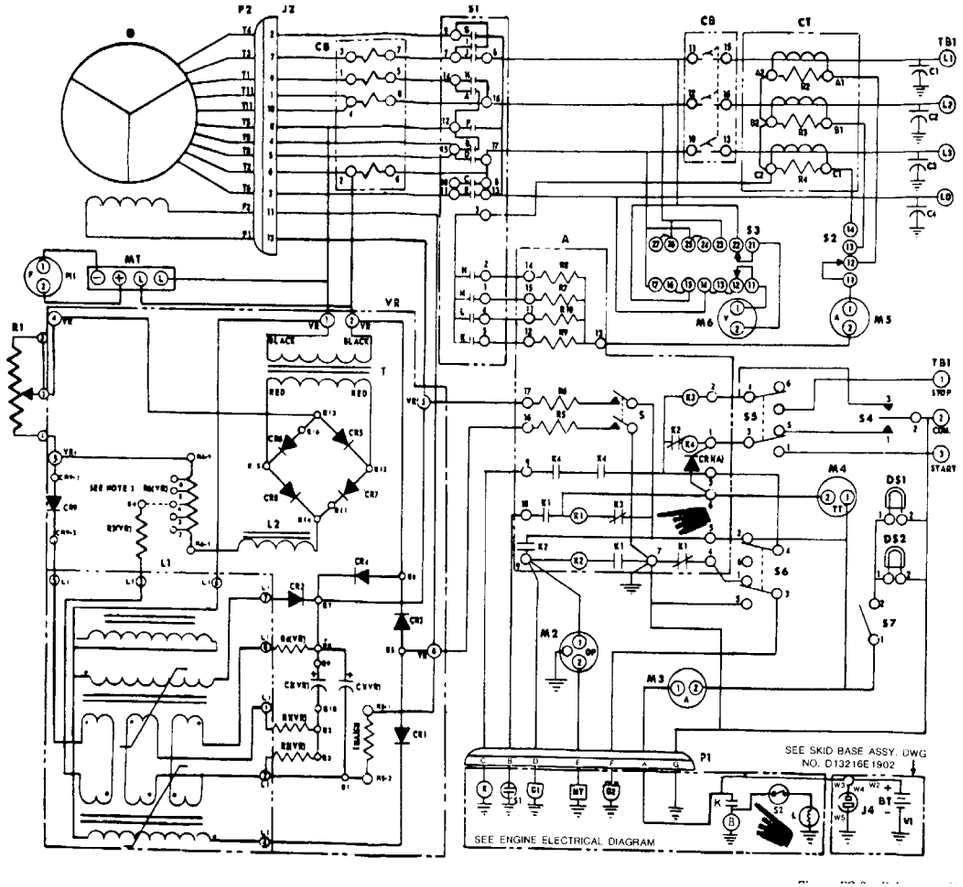


Figure FO-2. Wiring schematic (model MEP-018A).



NOTE
1. Switch S5 (Local–Remote) shown in LOCAL position.
2. Switch S6 (Normal–Emer.Stop–Emer.Start) shown in NORMAL position.
3. Replace faulty resistor with one of identical resistance value.

DEVICE LEGEND	
REF. DESIG.	COMPONENT
A	Relay Panel, Control
BT	Battery, Lead Acid (24 Volt D.C.)
C1,2,3,4	Capacitor, Radio Inter-reference Suppression (0.1 UF, 500 VAC)
CB	Circuit Breaker
CR1(A)	Protection Device Rectifier
CT	Transformer, Current
DS1,2	Lamp, Incandescent
G	Generator
J2	Connector, Receptacle
J4	Receptacle, Slave (24 VDC)
K1,2,3,4	Relay
L2	Reactor Filter
M1	Meter, Frequency Indicator (400Hz)
M2	Indicator, Oil Pressure
M3	Ammeter, Battery Charge
M4	Meter, Time Totalizing (24 VDC)
M5	Meter, Current Indicator, AC
M6	Voltmeter, AC
MT	Converter, Frequency
P1	Connector, Plug
P2	Connector, Plug
R1	Rheostat Assembly, Voltage Adjustment (0–15 ω, 10%, 12–1/2W(Watt)
R2,3,4	Resistor, Fixed (150 , 1%, 5W)
R5,6	Resistor, Fixed (270 , 10%, 2W)
R7	Resistor, Fixed (9090 , 1%, 1W)
R8	Resistor, Fixed (4320 , 1%, 1W)
R9	Resistor, Fixed (7680 , 1%, 1W)
R10	Resistor, Fixed (17.4K , 1%, 1W)
S	Switch, Toggle DP (Field Flash)
S1	Switch, Output Reconnection
S2	Switch, Rotary (Phase Selector) (28–115V)
S3	Switch Assembly, (Voltage Selector)
S4	Switch, Toggle, SP (Engine Start–Stop)
S5	Switch, Toggle DP (Remote–Local)
S6	Switch, Toggle DP (Emer. Run–Stop)
S7	Switch, Toggle, SP (Panel Lights)
TB1	Terminal Board Assembly (Load & Remote)
VR	Voltage Regulator Assembly (AC Generator)
W1,2,3,4,5	Cable, Battery Power (24 VDC)

ELECTRICAL SCHEMATIC DIAGRAM

GENERATOR SET, GASOLINE – ENGINE – DRIVEN
10.0–KW, AC, AIR COOLED, PORTABLE
TUBULAR FRAME, SKID MOUNTED

400 Hz 3Φ-120/208V, 3Φ-120V, 1Φ-120V, 1Φ-120/240V

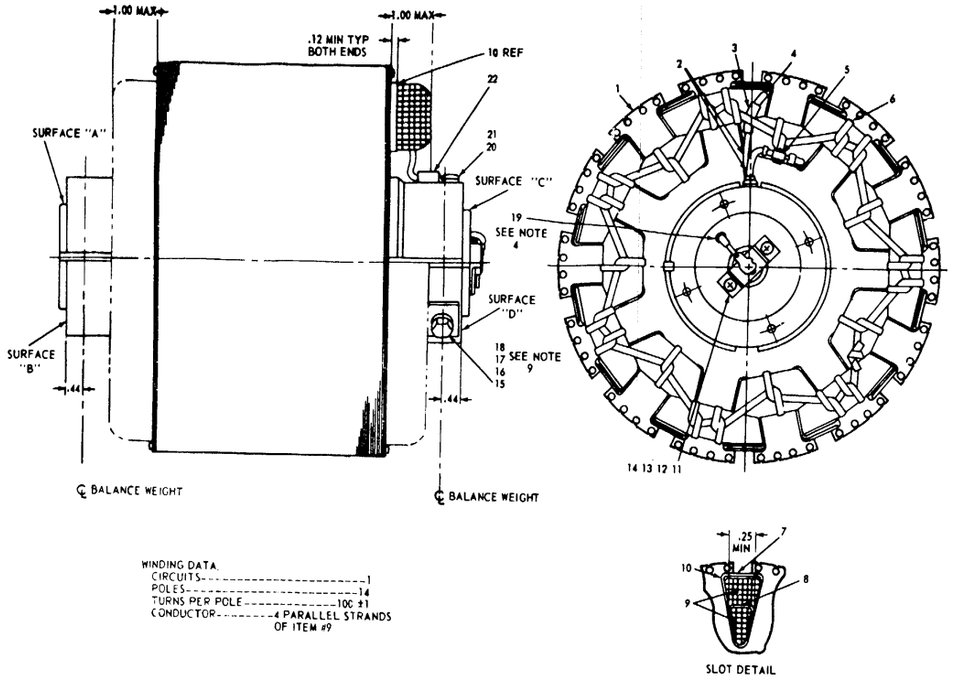
CONNECTIONS MADE BY S1 (X DEMOTES CLOSED CONTACT SET)													
OUTPUT (SEE S1 INST. PLATE)	CONTACT SET												
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
120/208V 3Φ					X	X	X	X		X				X
120 V 3Φ	X		X					X	X	X			X	
120V 1Φ	X		X	X				X	X			X		
120/240V 1Φ	X	X	X			X			X		X			

SYMBOL LEGEND	
	CAPACITOR
	COIL/FIELD
	DIODE
	CIRCUIT BREAKER OVERLOAD PROTECTION
	GROUND
	LAMP INCANDESCENT
	RESISTOR FIXED
	RESISTOR TAPPED
	RESISTOR ADJUSTABLE
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS

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Figure FO-3. Schematic diagram (model MEP-023A).

*** U.S. GOVERNMENT PRINTING OFFICE: 1990 754-124/02017**



1. INSULATE SLOTS WITH INSULATION (ITEM 10). INSERT COILS (ITEM 9) AND INSULATE BETWEEN COILS WITH SEPARATORS (ITEM 8). CLOSE INSULATION OVER COILS WITH .25 MIN LAP AND INSERT WEDGES (ITEM 7). SEE SLOT DETAIL.

2. CONNECT 14 COILS IN SERIES TO PROVIDE POLES OF ALTERNATE MAGNETIC POLARITY. CLEAN WINDING EXTENSIONS AND CONNECT LEADS (ITEM 2) USING ELECTRICAL SPLICER (ITEM 5). WINDING EXTENSIONS AND CONNECTIONS BETWEEN COILS TO BE INSULATED WITH SLEEVING (ITEM 4) EXTENDING INTO THE SLOT INSULATION (ITEM 10) .12 MIN. CONNECTIONS MADE USING ELECTRICAL SPLICERS (ITEM 5) SHALL BE IN ACCORDANCE WITH MIL-E-16366 AND SPLICES INSULATED WITH SLEEVING (ITEM 3).

3. LACE COILS, BOTH ENDS, WITH TAPE (ITEM 6) AS SHOWN.

4. INSERT SLEEVING (ITEM 19) THRU HOLE IN SPIDER .25 MIN AND THREAD LEAD (ITEM 2) THRU SLEEVING. CONNECT LEAD TO TERMINAL (ITEM 11), AND SOLDER PER MIL-S-6872 USING SOLDER (ITEM 23).

5. INSTALL TERMINAL (ITEM 22) ON LEAD (ITEM 2) AND CONNECT TO SPIDER WITH HARDWARE (ITEMS 20 & 21).

6. SURFACES 'A' 'B' 'C', & 'D' SHALL BE FREE OF EPOXY RESIN.

7. SOAPS,
CRITICAL NONE
MAJOR (M101-M103) 100% INSPECTION
MINOR NONE

8. IMPREGNATE AND CURE.

9. (M101) DYNAMICALLY BALANCE ROTOR TO WITHIN 1.0 IN. OZ AT 2000 RPM MIN. TAP 1/4-20 UNC-2B HOLES AT INDICATED LOCATIONS AND ADD WEIGHTS (ITEMS 17 & 18) AND OR HARDWARE (ITEMS 15 & 16) AS REQD. MAX STACK OF WEIGHTS PER SCREW ½ INCH.

10. (M102) WOUND ALTERNATOR ROTOR SHALL WITHSTAND WITHOUT DAMAGE FOR ONE MINUTE 1500 VOLTS RMS, 60 ℗APPLIED BETWEEN THE WINDING AND GROUND WITH GROUNDING TERMINAL DISCONNECTED.

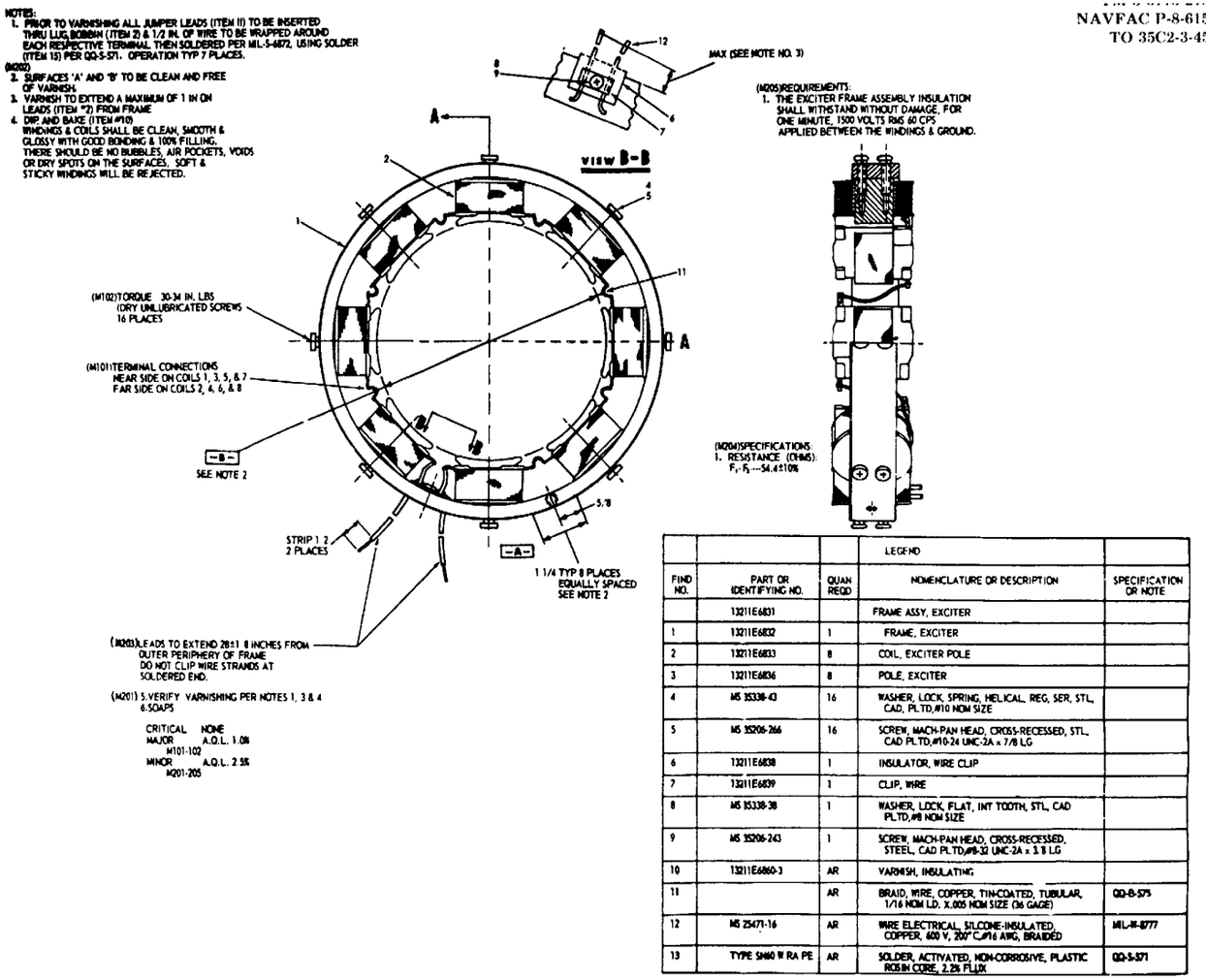
11. (M103) RESISTANCE AT 25° C SHALL BE 5.95% OHMS.

LEGEND

ITEM NO.	PART OR IDENTIFYING NO.	QTY REQD	NOMENCLATURE OR DESCRIPTION	SPECIFICATION
23	SN60 WRAP 2	AR	SOLDER, ACTIVATED, NON-CORROSIVE PLASTIC ROSIN CORE, 2.2% FLUX	QQ-S-571
22	MS25036-8	1	TERMINAL, LUG, CRIMP STYLE, COPPER, INSULATED, CLASS I, #10 STUD SIZE, 16-14 AWG	
21	MS35335-32	1	WASHER, LOCK, FLAT-EXTERNAL TOOTH, CS, CAD PLATED, #10 NOM SIZE	
20	MS35207-261	1	SCREW, MACH-PAN HD, CROSS-RECESSED, CS, CAD PLATED, 10-32 UNF-2A X 3/8 LG	
19	CLASS B-A-1	1	INSULATION SLEEVING ELECTRICAL, FLEX, TREATED, YELLOW, .133 NOM ID X 3.75 LG	MIL-I-3190
18	13212E8983-2	AR	WEIGHT, BALANCE	
17	13212E8983-1	AR	WEIGHT, BALANCE	
16	MS35338-44	AR	WASHER, LOCK-SPRING, HELICAL, REG SERIES, CS, CAD PLATED, 1/4 NOM SIZE	
15	MS90725-8	AR	SCREW, CAP, HEX HD, MED CS, CAD PLATED, 1/4-20UNC-2A X 1" LG	
14	MS35335-30	2	WASHER, LOCK, FLAT-EXTERNAL TOOTH, CS, CAD PLATED, #6 NOM SIZE	
13	MS35206-228	2	SCREW, MACH-FAN HD, CROSS-RECESSED, CS, CAD PLATED, #6-32 UNC-2A X 3/8 LG	
12	13212E8980	2	WASHER, SUPPORT, TERMINAL	
11	13212E8981	1	SUPPORT ASSY, TERMINAL	
10	TYPE D100-535	AR	INSULATION, ELECTRICAL, DIELECTRIC, BARRIER, LAMINATED, PLASTIC FILM & SYNTHETIC FIBER MAT	MIL-I-22834
9	CLASS 155 TYPE L2	AR	WIRE, MAGNET, ELECTRICAL, #21 AWG	MIL-W-583
8	13216E2006	14	INSULATOR, COIL SEPERATOR	
7	13216E2017	14	WEDGE, RETAINER	
6	13212E8985	AR	TAPE, BANDING, GLASS	
5	TYPE CCBC	AR	ELECTRICAL, SPLICER, COND, CABLE CONN, BUTT-CRIMP, #12-10 AWG WIRE SIZE	MIL-E-16366
4	CLASS B-B-1	AR	INSULATION SLEEVING, ELECTRICAL, FLEX, TREATED, BLACK, .095 NOM ID X LG AR	MIL-I-3190
3	CLASS B-B-1	AR	INSULATION SLEEVING, ELECTRICAL, FLEX, TREATED, BLACK, .148 NOM ID X LG AR	
2	MS25471-16	AR	WIRE, ELECTRICAL-SILICONE-INSULATION, CU, 600 V, 200 C, POLYESTER JACKET, #16 AWG	
1	13216E2016	1	ROTOR ASSY, ALTERNATOR	

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Figure FO-4. Coil data diagram (model MEP-023A)



			LEGEND	
FIND NO.	PART OR IDENTIFYING NO.	QUAN REQD	NOMENCLATURE OR DESCRIPTION	SPECIFICATION OR NOTE
	13211E6831		FRAME ASSY, EXCITER	
1	13211E6832	1	FRAME, EXCITER	
2	13211E6833	8	COIL, EXCITER POLE	
3	13211E6836	8	POLE, EXCITER	
4	MS 35338-43	16	WASHER, LOCK, SPRING, HELICAL, REG, SER, STL, CAD, PLTD,#10 NOM SIZE	
5	MS 35206-266	16	SCREW, MACH-PAN HEAD, CROSS-RECESSED, STL, CAD PLTD,#10-24 UNC-2A x 7/8 LG	
6	13211E6838	1	INSULATOR, WIRE CLIP	
7	13211E6839	1	CLIP, WIRE	
8	MS 35338-38	1	WASHER, LOCK, FLAT, INT TOOTH, STL, CAD PLTD,#8 NOM SIZE	
9	MS 35206-243	1	SCREW, MACH-PAN HEAD, CROSS-RECESSED, STEEL, CAD PLTD,#8-32 UNC-2A x 3/8 LG	
10	13211E6860-3	AR	VARNISH, INSULATING	
11		AR	BRAID, WIRE, COPPER, TIN-COATED, TUBULAR, 1/16 NOM I.D. X.005 NOM SIZE (36 GAGE)	QQ-B-575
12	MS 25471-16	AR	WIRE ELECTRICAL, SILICONE-INSULATED, COPPER, 600 V, 200° C,#16 AWG, BRAIDED	MIL-W-8777
13	TYPE SN60 W RA PE	AR	SOLDER, ACTIVATED, NON-CORROSIVE, PLASTIC ROSIN CORE, 2.2% FLUX	QQ-S-571

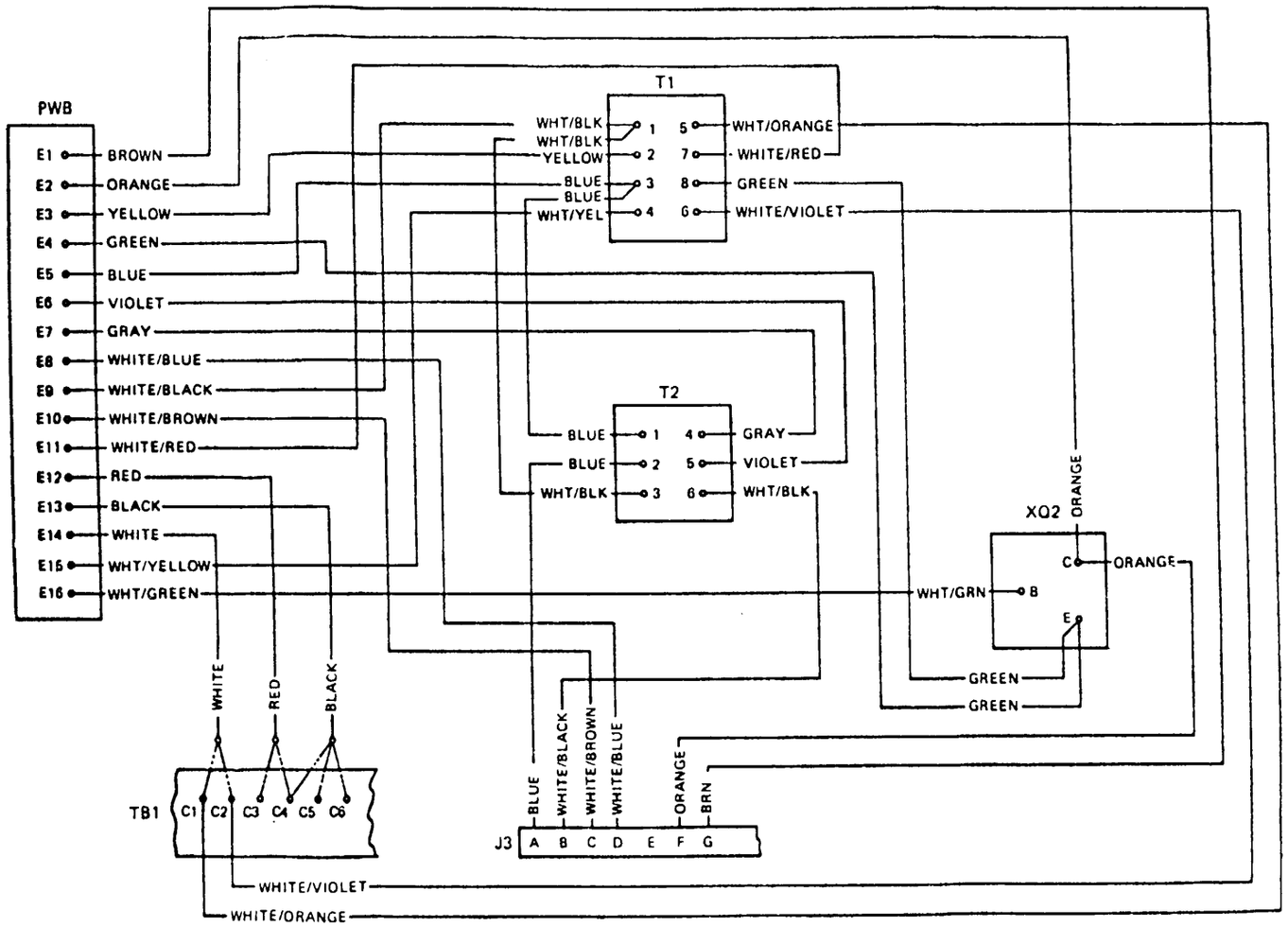
Figure FO-5. Coil connection diagram (model MEP-023A)

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17 and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: mpmt%avma28@st-louis-emh7.army.mil

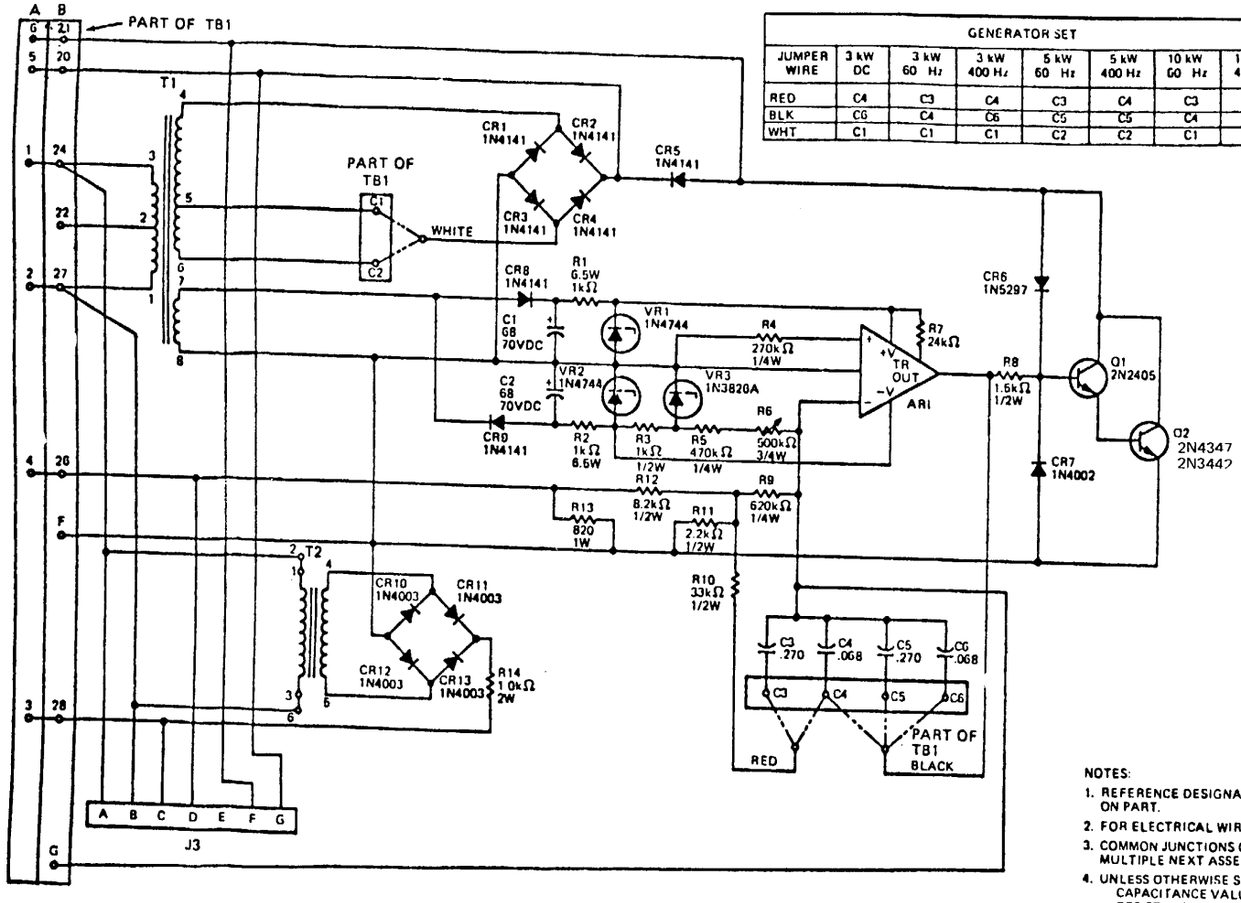
Subject: DA Form 2028
1. From **Joe Smith**
2. **Unit: home**
3. Address: **4300 Park**
4. City: **Hometown**
5. St.**: MO**
6. Zip: **77777**
7. Date Sent**: 19-OCT-93**
8. Pub no**: 55-28540-229-23**
9. Pub Title: **TM**
10. Publication Date**: 04-JUL-85**
11. **Change Number: 7**
12. **Submitter Rank: MSG**
13. Submitter FName: **Joe**
14. **Submitter MName: T**
15. Submitter LName: **Smith**
16. Submitter Phone: **123-123-1234**
17. Problem: 1
18. **Page: 2**
19. **Paragraph: 3**
20. **Line: 4**
21. **NSN: 5**
22. **Reference: 6**
23. **Figure: 7**
24. **Table: 8**
25. **Item: 9**
26. **Total: 123**
27. Text:
This is the text for the problem below line 27.



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-6. Wiring Diagram, Standard Voltage Regulator
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, G000586F075DJ4
81349	C3, 5	MIL-C-39014/02-0277	CAPACITOR, .270 µF, 50 VDC, MIL-C-39014/2
81349	C4, 6	MIL-C-39014/02-0707	CAPACITOR, .068 µF, 100 VDC, MIL-C-39014/2
97403	CR1, 2, 3, 4, 5, 8, 9	13219E1001	DIODE, SEMICONDUCTOR, IN4141
97403	CR6	13218E6005	DIODE, SEMICONDUCTOR, CURRENT REGULATING, IN5297
97403	CR7	13219E0897	DIODE, SEMICONDUCTOR, IN4002
97403	CR10, 11, 12, 13	13219E1000	DIODE, SEMICONDUCTOR, IN4003
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-27097/2
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-7. Schematic Diagram, Standard Voltage Regulator 3KW, 5KW, 10KW, DC, 60Hz, 400Hz

TSO11948

* U.S. GOVERNMENT PRINTING OFICE: 1983-381-647/1153

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
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 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

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 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. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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