D 101.11:
6115-320-34

TM 5-6115-320-34

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

GENERATOR SET, GAS TURBINE ENGINE: 45 KW, AC, 120/208 240/416 V, 3 PHASE, 4 WIRE, SKID MOUNTED: WINTERIZED (AIRESEARCH MODEL GTGE 70-6-1)

FSN 6115-075-1639

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HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1971

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WARNING

**Be sure generator set is properly grounded before operation.
Serions injury or death may result
from electrical shock if set is not grounded.**

WARNING

**Turbine or compressor failures caused by foreign material
entering the generator set may cause injury to personnel
in the immediate area.
During engine start, do not stand or work
in stand clear areas.**

WARNING

**When the unit is operating, stand clear of exhaust stream.
Ear plugs should also be worn.**

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CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *29 September 1*

Direct Support and General Support Maintenance Manual

GENERATOR SET, GAS TURBINE ENGINE: 45 KW, AC, 120/208, 240/416V, 3-PHASE, 4-WIR SKID MOUNTED; WINTERIZED (AIRESEARCH MODEL GTGE 70-6-1) FSN 6115-075-1639

TM 5-6115-320-34, 29 October 1971, is changed as follows:

Page 1-1, paragraph 1-5. At end of paragraph add the following note.

NOTE

Adjust paralleling and electrical frequency capabilities removed by MWO 5-6115-320-50/1.

Paragraph 1-6*b*(1) is superseded as follows:

(1) *Fuel Control unit.*

Manufacturer .....Airesearch Manufacturing Co.
Fuel inlet pressure at 100 percent rpm ...15.0 to 16.0 psig.

Paragraph 1-6*b*(2) is rescinded.

Page 1-2. Paragraph 1-6*b*(13), line 3, is changed to read "Fuel discharge pressure, 400 ± 50 psig".

Page 2-12, table 2-2, Troubleshooting. Steps and 23 are superseded as follows:

Malfunction	*Probable cause*	*Corrective action*
22. Voltage droop cannot be adjusted.	*a.* Voltage droop potentiometer defective.	*a.* Replace voltage droop potentiometer.
	b. Current transformer (CT4) defective.	*b.* Perform test procedure (para 4-4). If malfunction is indicated replace current transformer CT4 (fig. 4-4)
23. Not used after application of MWO 5-6115-320-50/1.		

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Page 3-2. **Figure 3-1 is superseded as follows:**

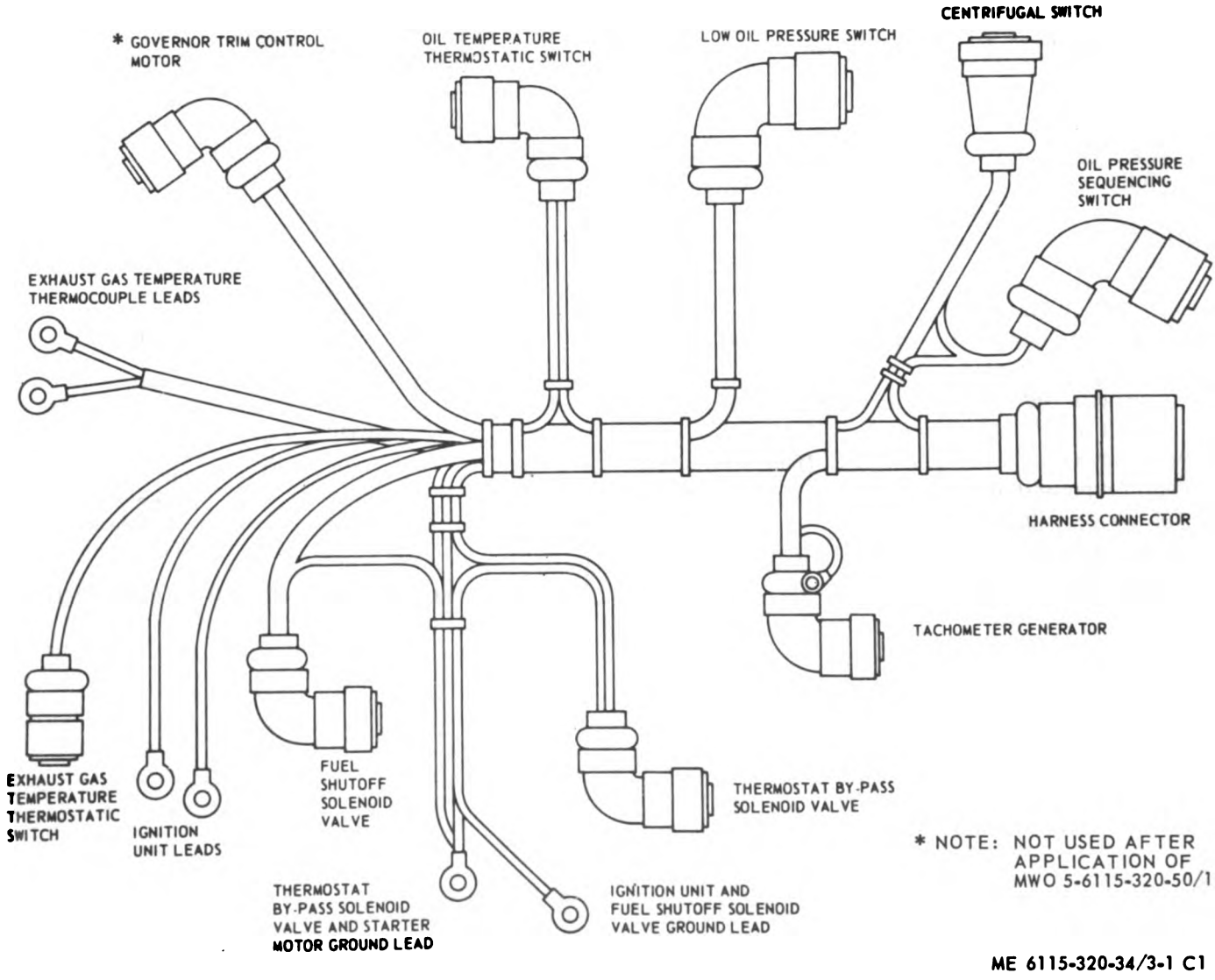

Figure 3-1. Engine wiring harness identification. (ME 6115-320-34/3-1, C1)

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Page 3-7. Paragraph 3-5*b* is superseded as follows:

b. Remove fuel control unit as shown on figure 3-5(1).

Paragraph 3-5*e* is added as follows:

e. Adjustment. The fuel scheduling and governor pump assembly may be adjusted for engine governed speed and acceleration as follows:

(1) *Engine governed speed adjustment.* The governed speed of turbine engine is adjusted by rotating the governor adjustment screw (fig. 3-5 (2)). If a new governor is installed, fuel control exchanged, or the governor setting has been disturbed for any reason, adjust the engine governor speed as follows:

(*a*) Control the engine speed at 41,000 rpm (4,203 analyzer tachometer indication) by adjusting the by-pass valve on the engine analyzer (fig. 2-3). If the governor is set at an rpm less than 41,000 adjust the by-pass valve to control speed slightly below the governor setting.

(*b*) Remove lockwire and loosen nut on governor adjustment screw (fig. 3-5(2)).

(*c*) Rotate governor adjustment screw clockwise to increase rpm and counterclockwise to decrease rpm as required to set governed speed to 41,000 rpm. (4,203 analyzed tachometer indication) or 402 ± 1 HZ generator frequency as observed on analyzer frequency meter (fig. 2-3). If governor setting is below 41,000 rpm, make adjustment in small increments (one eighth turn or less) and control the rpm increase with the analyzer by-pass valve (fig. 2-3) until governed speed of 41,000 rpm is attained.

(*d*) Tighten locknut and install lockwire to secure adjustment position. Close the by-pass valve and disconnect engine analyzer air by-pass hoses from the engine and connect engine control air lines for normal operation. Verify that engine governed speed is between 40,902 and 41,106 rpm (4,192 to 4,213 analyzer tachometer indication) or 402 ± 1 hertz generator frequency as observed on analyzer frequency meter.

(2) *Engine acceleration time adjustment.* Acceleration time of the engine should be between 20 seconds and 30 seconds maximum and is adjusted by rotating the acceleration adjustment screw (fig. 3-5(2)). The engine analyzer should be used during adjustment to check that exhaust gas temperatures do not exceed 635°C. If acceleration is slow (more than 30 seconds to 95 percent of governed speed) and exhaust gas temperature is below 635°C, adjust as follows:

(*a*) Remove lockwire and loosen nut on acceleration adjustment screw (fig. 3-5(2)).

(*b*) Rotate acceleration adjustment screw clockwise in small increments (one eighth turn or less) and start engine. Check acceleration time and exhaust gas temperature. Continue adjustments until acceleration time is 30 seconds or less and exhaust gas temperature does not exceed 635°C.

(*c*) In the event that acceleration time is less than 20 seconds, follow procedure outlined in (1) above, except rotate the acceleration adjustment screw counterclockwise.

(*d*) Tighten locknut and install lockwire to secure adjustment position.

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Figure 3-5 is superseded as follows:

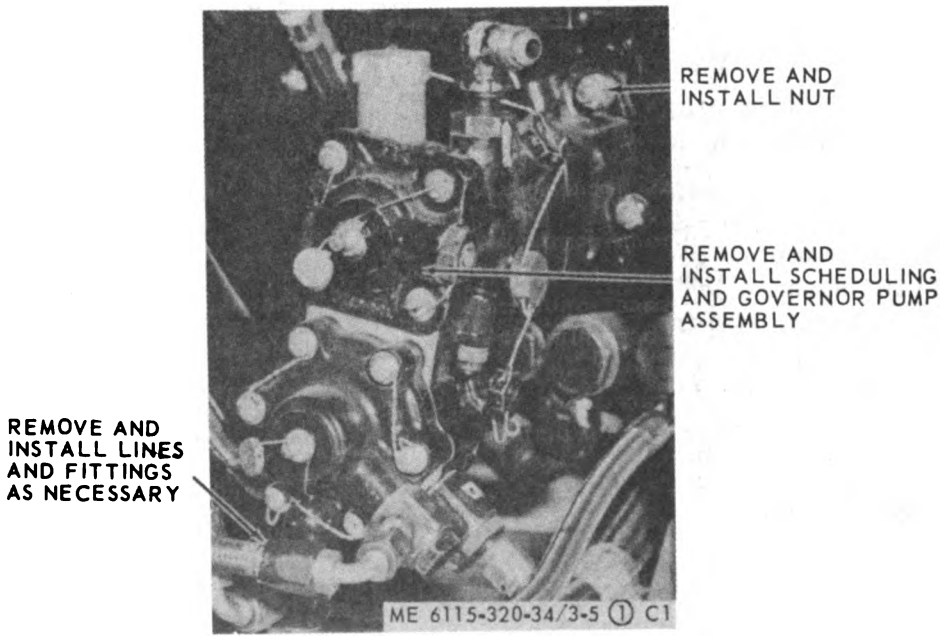

Figure 3-5. Fuel control removal and installation (sheet 1 of 2). (ME 6115-320-34/3-5(1), C1

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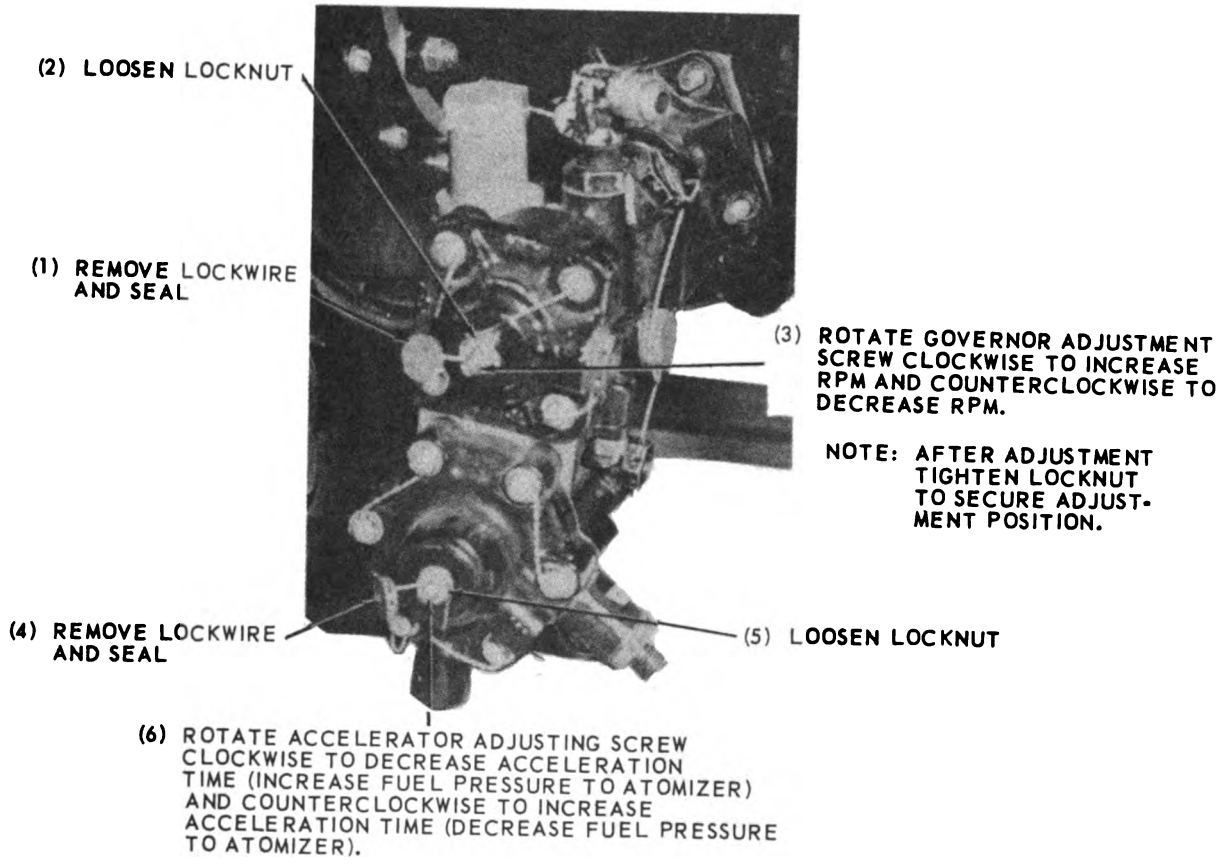

Figure 3-5. Fuel control accelerator and governor adjustment (sheet 2 of 2).
ME 6115-320-34/3-5(2), C1

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Page 4-5. Paragraph 4-3*a*(2) is superseded as follows:

(2) The load anticipator is not used after application of MWO 5-6115-320-50/1.

By Order of the Secretary of the Army:

BRUCE PALMER, JR.
General, U. S. Army
Acting Chief of Staff

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-25D, (qty rqr block no. 739) Direct and General Support maintenance requirements for Generator Sets, Engine Driven 45 KW. 60 HZ.

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onverter

MFD 75 W VDC
8 MHY 2.5 AMPS.

Pump
p

Noise Suppression) 0.1 MFD 500 VAC-DC
Noise Suppression) 0.1 MFD 500 VAC-DC
Noise Suppression) 0.1 MFD 500 VAC-DC
Noise Suppression) 0.1 MFD 500 VAC-DC
reaker
ater CB Circuit Breaker
aker
reaker (Sergeant Special)
mer (Instrumentation)
mer (Instrumentation)
mer (Instrumentation)
mer (Voltage Droop)
p
p
p
Lamp
ater Lamp
mp

Ground Stud
Stud
eptacle Fuse
e
e
eneral J14 Receptacle
ceptacle J15
J18 Receptacle
5 Amp Convenience Receptacle
pecial J25 Receptacle (Sergeant)
p J27 Receptacle (Sergeant)
J28 Receptacle (Sergeant)
eceptacle

p. 1
p. 2
ld Relay

Relay
trol Relay
ay
lay AC
l Relay
y
t Circuit) Relay
ure Sensing Relay
age Sensing Relay
ator

M2	Exhaust Gas Temperature Gage
M3	Oil Pressure Gage
M4	Battery Charging Ammeter
M5	Start Counter
M6	Engine Hourmeter
M7	AC Voltmeter
M8	Frequency Meter
M9	AC Ammeter
M10	Kilowatt Meter
MT	Frequency Transducer
P1	Control Plug
P2	Gas Turbine Plug
P3	Control Plug
P7	AC Generator Plug
P8	Battery Heater Plug
* P9	Load Anticipator Plug
* P10	Load Anticipator Plug
P11	Voltage Regulator Plug
P12	Battery Charger Plug
P13	Main Circuit Breaker Plug
P14	Internally Wired Plug
P17	Battery Electrolyte Temperature Sensor Plug
P20	Fuel Boost Pump Plug
P21	Battery Heater Fuel Pump Plug
P24	Tachometer Indicator Plug
P25	Internally Wired Plug (Sergeant)
R1	Voltage Adj Rheostat 350 Ohms 12.5 Watt
* R2	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
* R3	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
* R4	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
* R5	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
* R6	Frequency Droop Rheostat 3500 Ohms 12.5 Watt
R7	Voltage Droop Rheostat 25 Ohms 25 Watt
* R8	Frequency Adj Potentiometer 3500 Ohms 3 Watt
R9	Resistor 1000 Ohms 1 Watt
R10	Resistor 1000 Ohms 1 Watt
R11	Resistor 1000 Ohms 1 Watt
R12	Resistor 15 Ohms 10 Watt
S1	Panel Lights Switch
S2	Master Switch
S3	Local Remote Control Selector Switch
S4	Over Volt Reset Switch
S5	Main CB Circuit Breaker Switch
S6	Protection Bypass Switch
S8	Winterization Heater Switch
S10	Battery Electrolyte Temperature Sensor
S11	Volt-Amp Selector Switch
* S12	Unit-Parallel Selector Switch
S13	Local Remote Sensing Voltage Selector Switch
TB1	Terminal Board
TB2	Terminal Board
TB3	Terminal Board
TB4	Terminal Board
TB5	Voltage Change Panel
TB7	AC Power Output Terminal Board
TB8	Terminal Board
TB9	Terminal Board
TC1	Fire Detector
TC2	Fire Detector
TC3	Fire Detector
TC4	Fire Detector
VR1	Voltage Regulator

* NOTE : PARALLELING AND ELECTRICAL FREQUENCY ADJUSTMENT CAPABILITIES REMOVED BY MWO 5-6115-320-50/1

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FO-2(2), FO-2(4), FO-2(5), and FO-2(6) are superseded as follows:

	M2	Exhaust Gas Temperature Gage
	M3	Oil Pressure Gage
	M4	Battery Charging Ammeter
	M5	Start Counter
	M6	Engine Hourmeter
40 MFD 75 W VDC	M7	AC Voltmeter
100 8 MHY 2 5 AMPS.	M8	Frequency Meter
	M9	AC Ammeter
ost Pump	M10	Kilowatt Meter
Pump	MT	Frequency Transducer
	P1	Control Plug
	P2	Gas Turbine Plug
Radio Noise Suppression) 0.1 MFD 500 VAC-DC	P3	Control Plug
Radio Noise Suppression) 0.1 MFD 500 VAC-DC	P7	AC Generator Plug
Radio Noise Suppression) 0.1 MFD 500 VAC-DC	P8	Battery Heater Plug
Radio Noise Suppression) 0.1 MFD 500 VAC-DC	* P9	Load Anticipator Plug
cuit Breaker	* P10	Load Anticipator Plug
on Heater CB Circuit Breaker	P11	Voltage Regulator Plug
t Breaker	P12	Battery Charger Plug
cuit Breaker (Sergeant Special)	P13	Main Circuit Breaker Plug
nsformer (Instrumentation)	P14	Internally Wired Plug
nsformer (Instrumentation)	P17	Battery Electrolyte Temperature Sensor Plug
nsformer (Instrumentation)	P20	Fuel Boost Pump Plug
nsformer (Voltage Droop)	P21	Battery Heater Fuel Pump Plug
Lamp	P24	Tachometer Indicator Plug
Lamp	P25	Internally Wired Plug (Sergeant)
Lamp	R1	Voltage Adj Rheostat 350 Ohms 12.5 Watt
losure Lamp	* R2	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
on Heater Lamp	* R3	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
ge Lamp	* R4	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
amp	* R5	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
amp	* R6	Frequency Droop Rheostat 3500 Ohms 12.5 Watt
rnal Ground Stud	R7	Voltage Droop Rheostat 25 Ohms 25 Watt
ound Stud	* R8	Frequency Adj Potentiometer 3500 Ohms 3 Watt
e Receptacle Fuse	R9	Resistor 1000 Ohms 1 Watt
tor	R10	Resistor 1000 Ohms 1 Watt
eptacle	R11	Resistor 1000 Ohms 1 Watt
eptacle	R12	Resistor 15 Ohms 10 Watt
ntrol General J14 Receptacle	S1	Panel Lights Switch
ve Receptacle J15	S2	Master Switch
Power J18 Receptacle	S3	Local Remote Control Selector Switch
Cycle-15 Amp Convenience Receptacle	S4	Over Volt Reset Switch
ntrol Special J25 Receptacle (Sergeant)	S5	Main CB Circuit Breaker Switch
el Pump J27 Receptacle (Sergeant)	S6	Protection Bypass Switch
Power J28 Receptacle (Sergeant)	S8	Winterization Heater Switch
Base Receptacle	S10	Battery Electrolyte Temperature Sensor
by	S11	Volt-Amp Selector Switch
by	* S12	Unit-Parallel Selector Switch
lay No. 1	S13	Local Remote Sensing Voltage Selector Switch
lay No. 2	TB1	Terminal Board
ge Hold Relay	TB2	Terminal Board
elay	TB3	Terminal Board
Relay	TB4	Terminal Board
y-Pass Relay	TB5	Voltage Change Panel
e Control Relay	TB7	AC Power Output Terminal Board
ge Relay	TB8	Terminal Board
age Relay AC	TB9	Terminal Board
Control Relay	TC1	Fire Detector
Relay	TC2	Fire Detector
(Short Circuit) Relay	TC3	Fire Detector
perature Sensing Relay	TC4	Fire Detector
e Voltage Sensing Relay	VR1	Voltage Regulator
Indicator		

LLELING AND ELECTRICAL FREQUENCY ADJUSTMENT
BILITIES REMOVED BY MWO 5-6115-320-50/1

ME 6115-320-34/FO-2 ① C1

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Converter
tor Governor Control
ctifier
r

60 MFD 75 W VDC
.00 8 MHY 2 5 AMPS

Pump
ump

dio Noise Suppression) 0 1 MFD 500 VAC-DC
dio Noise Suppression) 0.1 MFD 500 VAC-DC
dio Noise Suppression) 0.1 MFD 500 VAC-DC
dio Noise Suppression) 0.1 MFD 500 VAC-DC
it Breaker
Heater CB Circuit Breaker
breaker
it Breaker (Sergeant Special)
former (Instrumentation)
former (Instrumentation)
former (Instrumentation)
former (Voltage Droop)
amp
amp
amp
ure Lamp
Heater Lamp
Lamp
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p
al Ground Stud
nd Stud
eceptacle Fuse

acle
acle
l General J14 Receptacle
Receptacle J15
er J18 Receptacle
e-15 Amp Convenience Receptacle
l Special J25 Receptacle (Sergeant)
Pump J27 Receptacle (Sergeant)
er J28 Receptacle (Sergeant)
Receptacle

No 1
No. 2
Hold Relay

lay
oss Relay
ontrol Relay
Relay AC
Relay AC
trol Relay
lay
hort Circuit) Relay
ature Sensing Relay
oltage Sensing Relay
icator

NG DIAGRAM USED ON UNITS
UMBER P21468 AND SUBSEQUENT.

M2 Exhaust Gas Temperature Gage
M3 Oil Pressure Gage
M4 Battery Charging Ammeter
M5 Start Counter
M6 Engine Hourmeter
M7 AC Voltmeter
M8 Frequency Meter
M9 AC Ammeter
M10 Kilowatt Meter
MT Frequency Transducer
P1 Control Plug
P2 Gas Turbine Plug
P3 Control Plug
P7 AC Generator Plug
P8 Battery Heater Plug
P9 Load Anticipator Plug
P10 Load Anticipator Plug
P11 Voltage Regulator Plug
P12 Transformer Rectifier Plug
P13 Main Circuit Breaker Plug
P14 Internally Wired Plug
P17 Battery Electrolyte Temperature Sensor Plug
P20 Fuel Boost Pump Plug
P21 Battery Heater Fuel Pump Plug
P24 Tachometer Indicator Plug
P45 Internally Wired Plug (Fuel Tank Base Receptacle)
P25 Internally Wired Plug (Sergeant)
R1 Voltage Adj Rheostat 350 Ohms 12 5 Watt
R2 Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R3 Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R4 Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R5 Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R6 Reactive Frequency Droop Rheostat 3500 Ohms 12 5 Watt
R7 Voltage Droop Rheostat 25 Ohms 25 Watt
R8 Frequency Adj Potentiometer 3500 Ohms 3 Watt
R9 Resistor 1000 Ohms 1 Watt
R10 Resistor 1000 Ohms 1 Watt
R11 Resistor 1000 Ohms 1 Watt
R12 Resistor 15 Ohms 10 Watt
S1 Panel Lights Switch
S2 Master Switch
S3 Local Remote Control Selector Switch
S4 Over Volt Reset Switch
S5 Main CB Circuit Breaker Switch
S6 Protection Bypass Switch
S8 Winterization Heater Switch
S10 Battery Electrolyte Temperature Sensor
S11 Volt Amp Selector Switch
S12 Unit-Parallel Selector Switch
S13 Local Remote Sensing Voltage Selector Switch
TB1 Terminal Board
TB2 Terminal Board
TB3 Terminal Board
TB4 Terminal Board
TB5 Voltage Change Panel

TB8 Terminal Board
TB9 Terminal Board
TC1 Fire Detector
TC2 Fire Detector
TC3 Fire Detector
TC4 Fire Detector
VR1 Voltage Regulator

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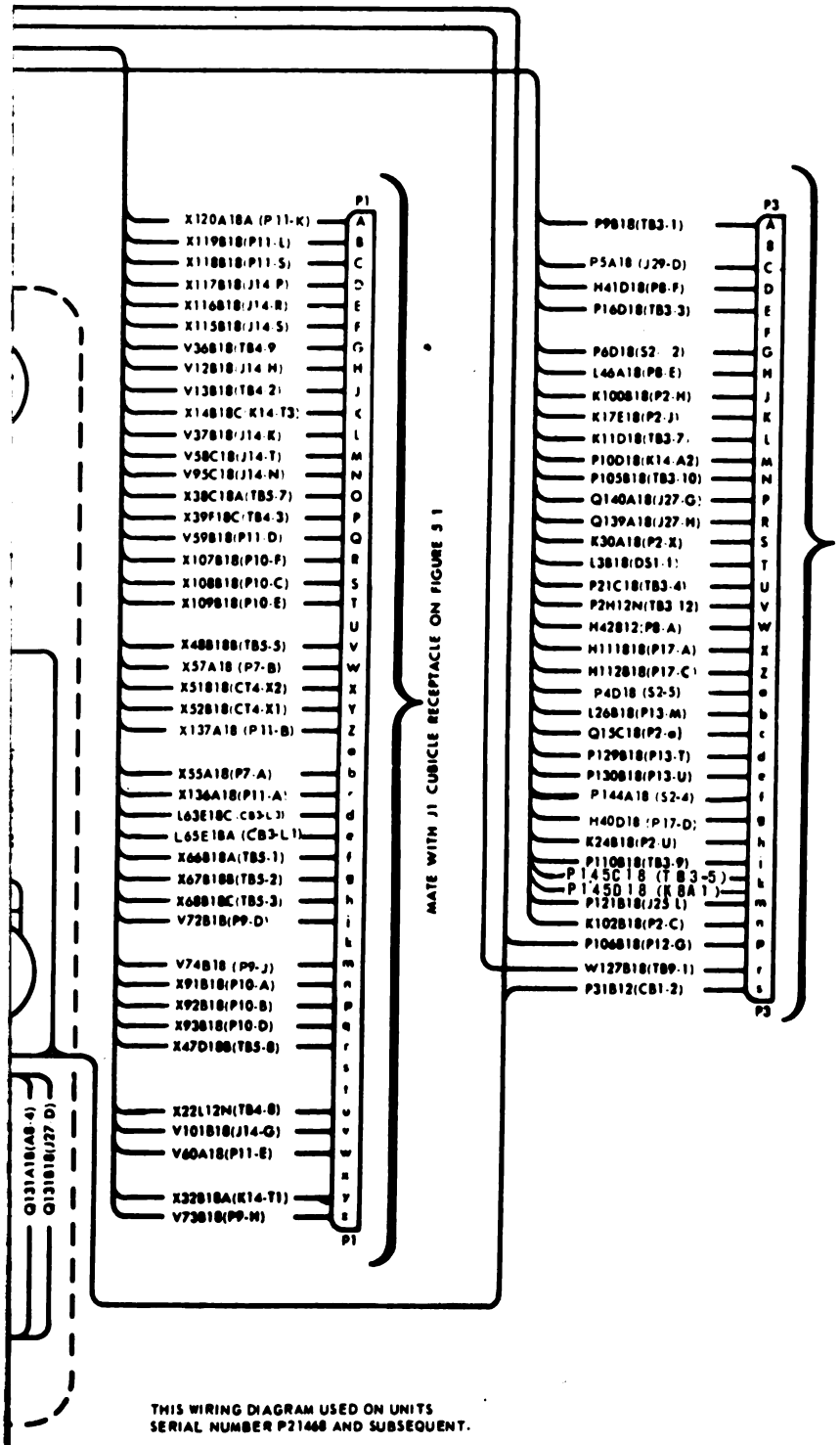

THIS WIRING DIAGRAM USED ON UNITS SERIAL NUMBER P21468 AND SUBSEQUENT.

ME 6115-320-34/FO-2 (4) C1

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VOLTAGE	OHMS	REMARKS: CIRCUIT BREAKER REF DES	CIRCUIT BREAKER POSITION	GENERATOR SET	SWITCH REF DES	SWITCH POSITION
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	1350	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	1220	CB-3	CLOSED		S2	OFF
					S12	UNIT
0		CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	38	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	3.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	3.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	9.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	2.7K	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	2600	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	INFINITY	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	INFINITY	CB-3	OPEN		S2	OFF
					*S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					*S12	PARALLEL

B. AC GENERATOR (G1)

0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244

* SEE NOTE FIGURE FO-2 (1)

ME 6115-320-34/FO-2 (5) C1

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	VOLTAGE	OHMS	REMARKS: CIRCUIT BREAKER REF DES	CIRCUIT BREAKER POSITION	REMARKS: GENERATOR SET	REMARKS: SWITCH REF DES	REMARKS: SWITCH POSITION
J1	0	INFINITY					
	0	INFINITY					
—	0	INFINITY					
	0	INFINITY					
J1	0	INFINITY					
	0	0					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
	0	INFINITY					
	0	220					
A	0	INFINITY					
	0	260					
	0	220					
	0	40					
	0	INFINITY					
	0	70					
	0	70					
	0	INFINITY					
	0	INFINITY					
	0	INFINITY					
	0	INFINITY					
	0	70					
	0	INFINITY					
	0	200			J1 AND J3 WITH BOTH P1 AND P3		
	0	INFINITY			DISCONNECTED		
	0	INFINITY					
	0	INFINITY					
	0	INFINITY					
	0	37					
	0	INFINITY					
	0	INFINITY					
	0	200					
A	0	INFINITY					
	0	INFINITY					
	0	INFINITY					
	0	150					
	0	INFINITY					
	0	INFINITY					
	0	150					
	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					
IER	0	INFINITY					

I. CONTROL CUBICLE PLUGS

0	INFINITY	* WITH ALL CIRCUIT BREAKERS CLOSED AND ALL SWITCHES IN OFF OR NEUTRAL POSITION, "UNIT-PARALLEL" SWITCH IN "PARALLEL" POSITION, VOLT-AMP SELECTOR IN POSITION "C-A", BOTH P1 AND P3 REMOVED
0	INFINITY	
0	INFINITY	
0	INFINITY	
0	INFINITY	
0	INFINITY	
0	2.1K	
0	INFINITY	* SEE NOTE FIGURE FO-2 (1)
0	INFINITY	
0	0	

ME 6115-320-34/FO-2 (6) C1

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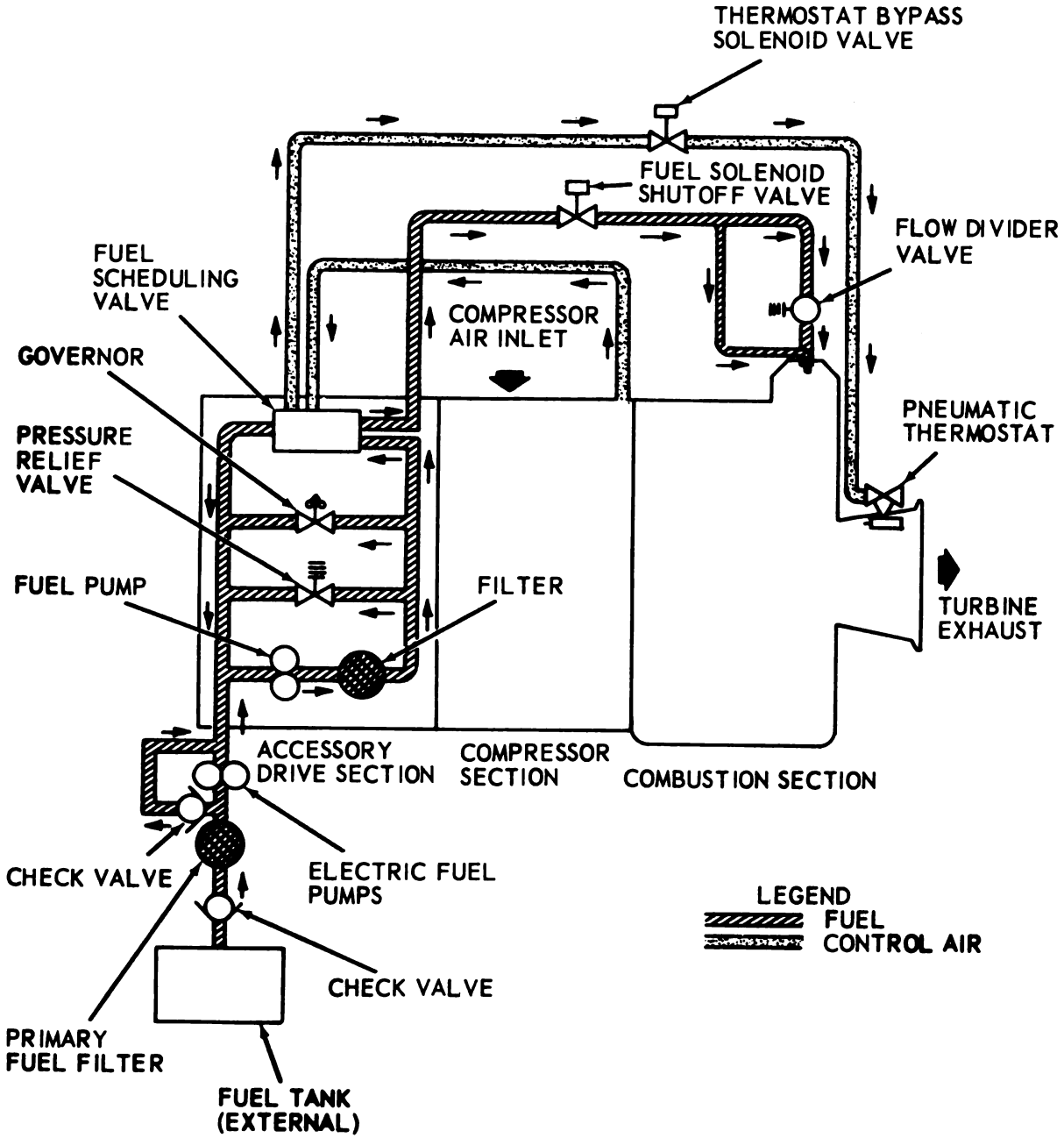
Page FO-3, figure FO-3 is superseded as follows:



ME 6115-320-34/FO-3 C1

Figure FO-3. Fuel and air flow diagram, turbine engine.
ME 6115-320-34/FO-3, C1

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DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

GENERATOR SET, GAS TURBINE ENGINE: 45 KW, AC, 120 / 208 240 / 416 V, 3 PHASE, 4 WIRE, SKID MOUNTED: WINTERIZED (AIRESEARCH MODEL GTGE 70-6-1)

FSN 6115-075-1639

* This manual supersedes TM 5-6115-320-34, 20 August 1965, including all changes.

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LIST OF ILLUSTRATIONS

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual contains instructions for the use of direct support and general support maintenance personnel maintaining of the generator set (Airesearch Model GTGE70-6-1) as allocated by the Maintenance Allocation Chart. It provides information on equipment maintenance which is beyond the scope of the tools, equipment, personnel or supplies normally available at organizational maintenance.

1-2. Forms and Records

Maintenance forms, records and reports which are to be used by maintenance personnel at all maintenance levels are listed in, and prescribed by TM 38-750.

1-3. Reporting of Errors

Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded direct to Commanding General, U. S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

Section II. DESCRIPTION AND DATA

1-4. Description

A general description of the generator set is contained in TM 5-6115-320-12. A more detailed description of specific components and assemblies is contained in the applicable sections of this manual. Detailed description of components of the generator set are provided in the applicable maintenance paragraph of this manual.

1-5. Difference Between Models

This manual covers only Model GTGE70-6-1 generator set. A difference exists in the wiring covering serial numbers P21468 and up. See figure FO-2 (Located in back of manual) sheets 2 of 7 and 4 of 7.

1-6. Tabulated Data

a. Identification. The major identification plates of the generator set are located and described in TM 5-6115-320-12.

b. Tabulated Data. Tabulated data pertaining to direct and general support maintenance follows:

(1) *Fuel control unit.*

Manufacturer	Airesearch Manufacturing Company
Fuel inlet pressure at 100 percent rpm (revolutions per minute)	15.0 to 16.0 psi (pounds per square inch)
Acceleration limiter cracking pressure	38 to 39 psi at 15 ± 1 psi

(2) *Governor trim motor.*

Manufacturer	Airesearch Manufacturing Company
Operating voltage	5 VDC
Operating current	156 milliampere
Coil resistance	50 ohms / coil

(3) *Oil pressure sequencing switch.*

Manufacturer	Airesearch Manufacturing Company
Current capacity	4 amps at 30 VDC
Actuation	3.0 ± 0.5 psi
Reset	1.5 psi

(4) *Low oil pressure switch.*

Manufacturer	Airesearch Manufacturing Company
Actuation	65 ± 3 psi
Reset	55 ± 3 psi
Current capacity	4 amps at 14 to 29 VDC

(5) *Oil temperature thermostatic switch.*

Manufacturer	Fenwall Inc., Ashland, Massachusetts
Actuation	250° F (121° C) (Refer to tag on switch for tolerance).
Current capacity	1 amp at 32 VDC or 115 VAC

(6) *Exhaust gas temperature thermostatic switch.*

Manufacturer	Airesearch Manufacturing Company
Actuate (increasing)	1135° ± 25° F (625° ± 14° C)
Current capacity	10 amps at 28 VDC and 500° F(260° C)

(7) *Acceleration and overtemperature control thermostat.*

Manufacturer	Airesearch Manufacturing Company

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(7) *Acceleration and overtemperature control thermostat—Continued*

Actuation temperature	1225° F + 10° F / 5° F (663° C + 12.2° C / 6.1° C)
Normal position	Closed

(8) *Exhaust gas temperature thermocouple.*

Manufacturer	Airesearch Manufacturing Company
Type	Alumel chromel
Temperature range	400° F to 1400° F (204°C to 760° C)

(9) *Centrifugal switch assembly.*

Manufacturer	Airesearch Manufacturing Company

Centrifugal switch action:

Switch	*Switch Shaft RPM*
Starter cutout	3,585 ± 50
Ready to load	9,542 ± 42 (increasing) 9,208 ± 122 RPM (decreasing)
Overspeed	10,900 ± 20 RPM

(10) *Generator set relays.*

	Close	*Open*
Start (K1)	18 VDC	7+0 / -5.5 VDC
Master (K2)	18 VDC	+0 / -5.5 DC typ
No. 1 holding (K3)	18 VDC	+0 / -5.5 DC typ
No. 2 holding (K4)	18 VDC	+0 / -5.5 DC typ
Overvoltage hold (K5)	18 VDC	13 VDC
AC reset (K6)	18 VDC	13 VDC
AC voltage (K7)	90 VAC	30+0 / -25 VAC
Protection by-pass (K8)	18 VDC	7±5 VDC
Temperature control (K9)	18 VDC	13 VDC
Overvoltage (K10)	160 VAC	152 VAC
Undervoltage (K11)	105 ± 5 VAC	60 ± 84 VAC
Generator control (K12)	18 VDC	7+0 / -5.5 DC
Fire sensing (K13)	18 VDC	13 VDC
Overcurrent (K14)	375 ± 37.5a	50-2000
Battery temperature sensor (K15)	2.8 ma	1.0 ma
Local-remote voltage sensing (K16)	18 VDC	7 ± 5 VDC
Main circuit breaker (CB3) (mechanically locked)	15 VDC	15 VDC

(11) *Tachometer generator.*

Specification	MS28054-1
Pole type	2

(12) *Repair and replacement standards.* Table 1-1 lists manufacturers dimensions on tolerances in inches with required shimming instructions.

(13) *Adjustment data.*

Fuel control unit:	
Input shaft speed	0 to 5000 rpm
Fuel inlet pressure	15.0 psi
Fuel discharge pressure	0 to 430 psi
Low oil pressure switch:	
Actuate	65 ± 3 psi
Reset	55 ± 3 psi
Starter clutch:	
Slip torque	130 to 145 inch-pounds
Oil pressure switch:	
Actuate	3 ± 1 psi
Reset	1.5 ± 0.5 psi

Centrifugal switch assembly (actuation):

Switch	*Switch shaft rpm*
Starter cutout	3,585 ± 50 rpm
Ready to load	9,542 ± 42 rpm (increasing) 9,208 ± 122 rpm (decreasing)
Overspeed shutdown	10,900 ± 20 rpm

(14) *Diagrams.* The wiring diagrams (FO-1 and FO-2) (Located in back of manual) show electrical connections for major components of the generator set. The fuel and air flow diagram (FO-3) and oil and gas flow diagram (fig. 1-1) show the fluid flow system of the turbine engine.

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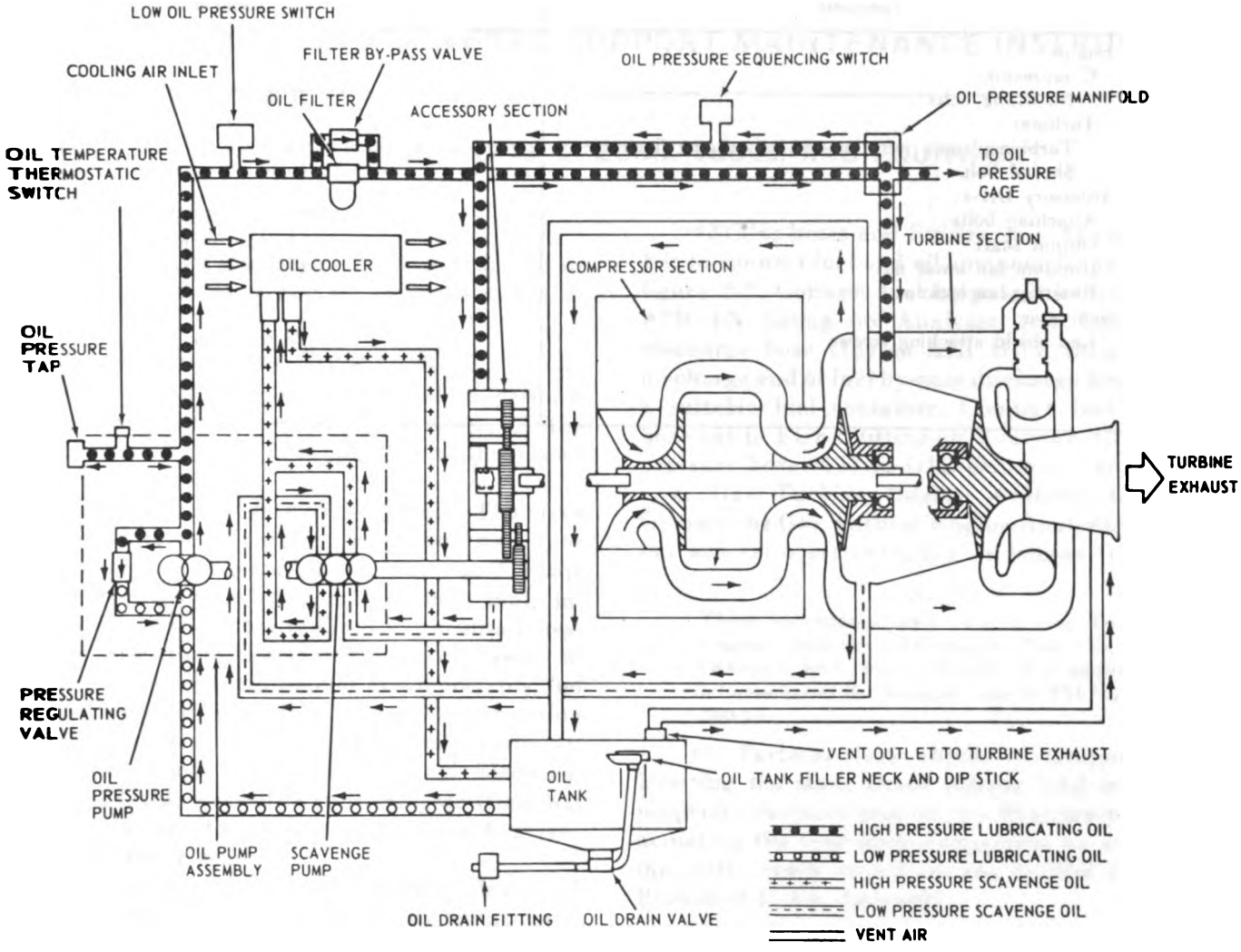

Figure 1-1. Oil flow diagram, turbine engine.

Table 1-1. Repair and replacement standards

Component	Manufacturers dimensions and tolerances in inches	
	Minimum	Maximum
Combustion assembly:	0.00	0.006
Combustion chamber flange in turbine torus to plenum assembly (to be shimmed toward turbine) (shim with outer plenum gaskets)		
Turbine exhaust flange to plenum flange (shim with turbine exhaust flange gaskets to obtain compression preload on plenum flange)	0.00	0.08
Accessory assembly:		
Output shaft bearing to seal retainer (shim for pinch)	0.000	0.003
Output shaft seal rotor to seal carbon face (shim for depression)	0.030	0.035

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Table 1-2. Nut and bolt torque data.

Component	Torque (in-lb)
Engine:	
Compressor:	
Oil fitting bolts	20 to 25 in. lb
Turbine:	
Turbine plenum nuts (at turbine exhaust flange)	40 to 60 in. lb
Shroud bolts	45 to 50 in. lb.
Accessory Drive:	
Attaching bolts	50 to 70 in. lb.
Output shaft	145 to 155 in. lb.
Rotating fan lower nut	150 to 175 in. lb.
Rotating fan locknut	150 to 175 in. lb.
Generator:	
End shield attaching screws	25 to 30 in. lb.

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CHAPTER 2

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

2-1. Tools and Equipment

Tools, equipment, and repair parts issued with or authorized for the generator set are listed in TM 5-6115-320-12.

2-2. Special Tools and Equipment

Special tools and equipment required to perform direct and general support maintenance of the generator set are listed in table 2-1, and illustrated in figure 2-1.

a. Gas Turbine Engine Analyzer. The Gas Turbine Engine Analyzer may be used for troubleshooting the generator set. The Gas Turbine Engine Analyzer is a portable unit that incorporates electrical, hydraulic, and pneumatic test systems and their associated controls and indicators. A portable multimeter and a portable fuel pressure gage are provided for use in performing troubleshooting checks at various components on the generator set. The Special Purpose Electrical Branched Cable Assembly and Analyzer Hose Kit are used to connect the test systems of the Analyzer to the generator set.

(1) The Special Purpose Electrical Branched Cable Assembly is used to electrically connect the analyzer to the generator set. A static test switch is provided with the Cable Assembly to permit individual component checks when the Analyzer is connected to the generator set.

(2) The Analyzer Hose Kit provides hoses and plumbing fittings for pneumatic and hydraulic connections between the generator set and the Analyzer.

b. Gas Turbine Engine Analyzer Connections. Connect the Gas Turbine Engine Analyzer to the generator set as shown in figure 2-2 and observing the following.

(1) Install thermocouple and thermocouple harness (22), provided with Analyzer, in place of engine thermocouple and connect thermocouple harness to THERMOCOUPLE receptacle on Analyzer.

(2) Install Special Electrical Branched Cable Assembly on MAIN receptacle on Analyzer and connect into generator set electrical harnesses as designated on Cable Assembly connectors. Install identification plate attached to Cable Assembly over Analyzer indicator lights to provide proper identification of indicator lights and switches.

(3) Use hoses and fittings from Analyzer Hose Kit to connect fuel and oil components as shown in figure 2-2. Connect fuel by-pass inlet hose (2) to AIR IN fitting on Analyzer and fuel by-pass discharge hose (15) to AIR OUT fitting. Insert discharge end of fuel by-pass discharge hose (15) in a suitable fuel container. Connect fuel pressure hose (4) to FUEL fitting on Analyzer. Connect oil pressure hose (11) to OIL fitting on Analyzer.

c. Gas Turbine Engine Analyzer Operation. Operate the Gas Turbine Engine Analyzer to check out generator set operation as follows, (fig. 2-3).

NOTE

These instructions apply only to Gas Turbine Engine Analyzer, AiResearch Part Number 281069-1 FSN 4920-778-6091. For additional information on the Analyzer, refer to TM 5-4920-200-15.

(1) Perform static checks of components by inserting the static check jumper lead in the appropriate electrical post on the Analyzer panel and actuating the individual component by energizing the static check switch on the Special Electrical Branched Cable Assembly.

(2) Perform operational check of the generator set by operating the generator set and observing the Analyzer for the following indications.

(a) MASTER Switch (on generator set) in RUN position.

MASTER RELAY light illuminated.
LOW OIL PRESS light illuminated.

(b) MASTER Switch (on generator set or analyzer) momentarily in START position.

AC RESET RELAY light illuminated.
STARTER light illuminated.
HOLD RELAY light illuminated.
TACH GENERATOR RPM indicator indicates rpm.
OIL pressure gage indicates pressure.

(c) Oil Pressure Reaches 2.5 to 3.5 PSIG.

FUEL light illuminates.
IGNITION light illuminates.
EXHAUST TEMP indicator indicates exhaust gas temperature.

(d) Generator set accelerates from 35 to 37 percent governed rpm starter cutout, switch in centrifugal switch assembly actuates.

STARTER light is extinguished.

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(e) Oil pressure reaches 55 to 65 psig.

LOW OIL PRESS light is extinguished.

(f) Generator set acceleration reaches approximately 95 percent of governed speed, ready to load switch in centrifugal switch assembly actuates.

95 per cent RELAY light illuminates.

IGNITION light is extinguished.

(g) Place CKT BREAKER CLOSED switch in ON position.

CKT BREAKER CLOSED light illuminates.

(h) If oil temperature exceeds 250°F.

HI OIL TEMP light illuminates.

(i) If oil pressure drops below 55 psig.

LOW OIL PRESS light illuminates.

All lights except LOW OIL PRESS and MASTER RELAY are extinguished (generator set shuts down).

(j) If exhaust gas temperature exceeds 1200°F.

HIGH TURB TEMP light illuminates.

(k) Protection BY-PASS Switch (on generator set) placed in ON position.

OVER TEMP SOL light illuminates.

(l) If enclosure temperature exceeds 450°F (fire inside enclosure).

(4) FIRE light illuminates.

(3) Special checks and observations of engine operating sequence may be performed by controlling engine rpm with the VALVE on the Analyzer to by-pass fuel as required to obtain the desired rpm.

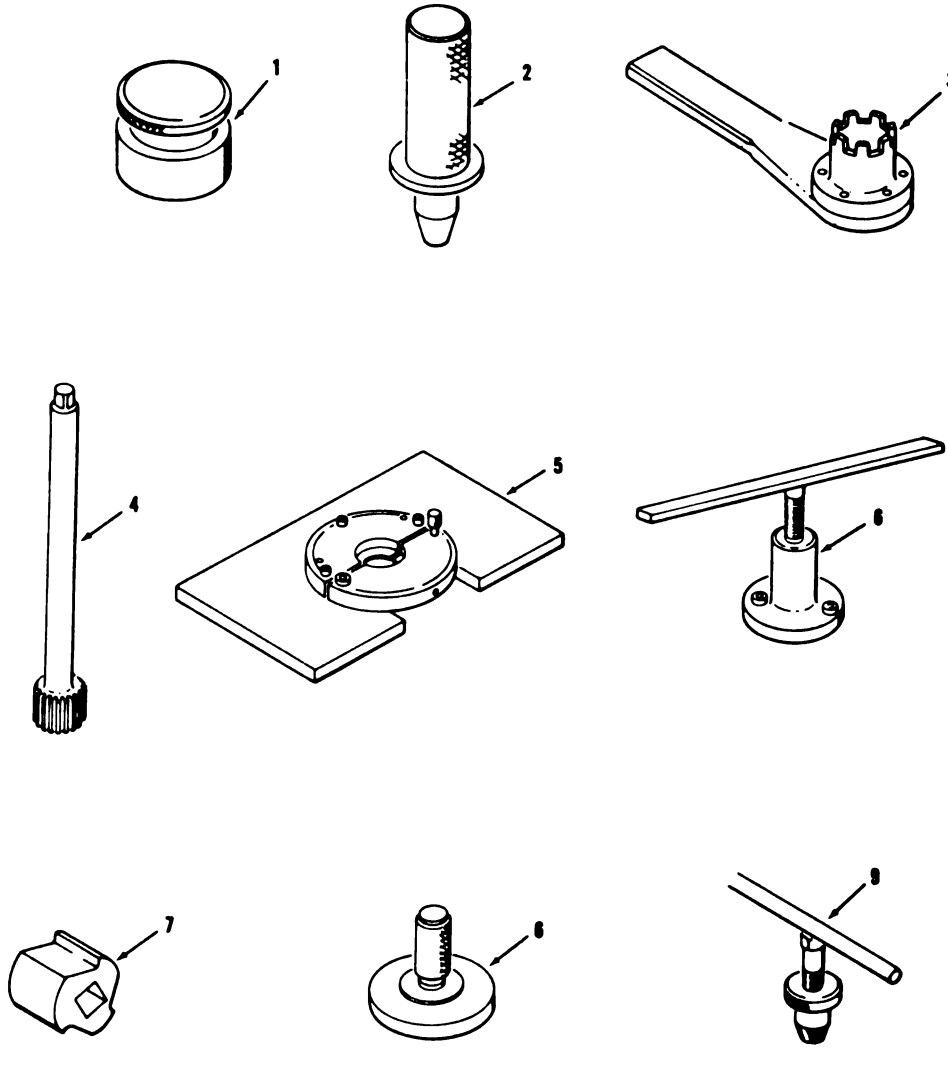

Figure 2-1. Special tools and equipment (sheet 1 of 3).

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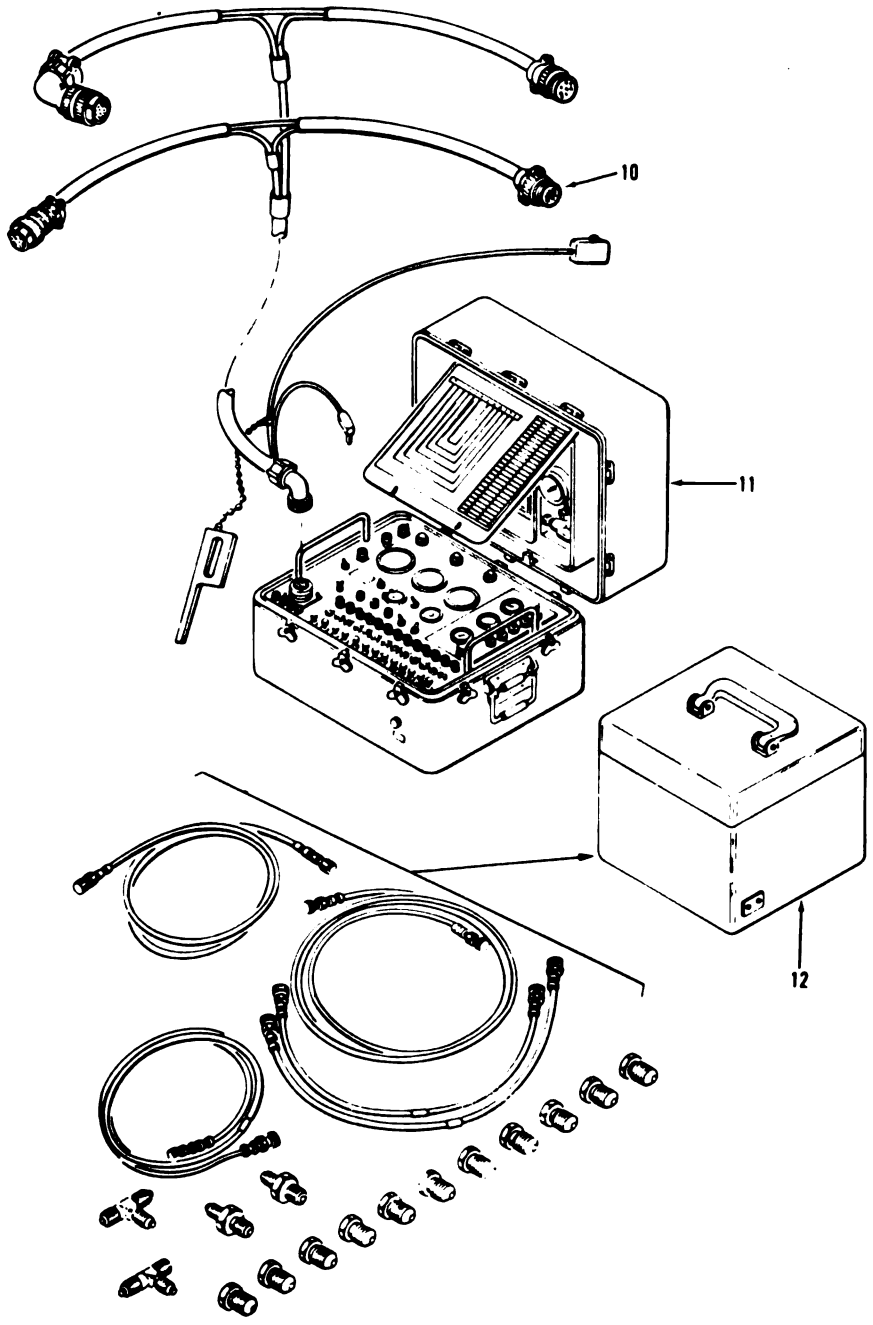

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Figure 2-1. Special tools and equipment (sheet 2 of 3).

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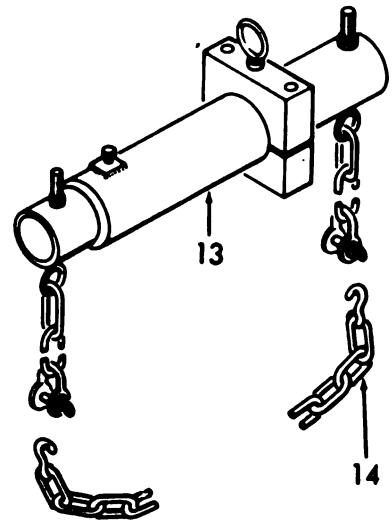

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Figure 2-1. Special tools and equipment (sheet 3 of 3).

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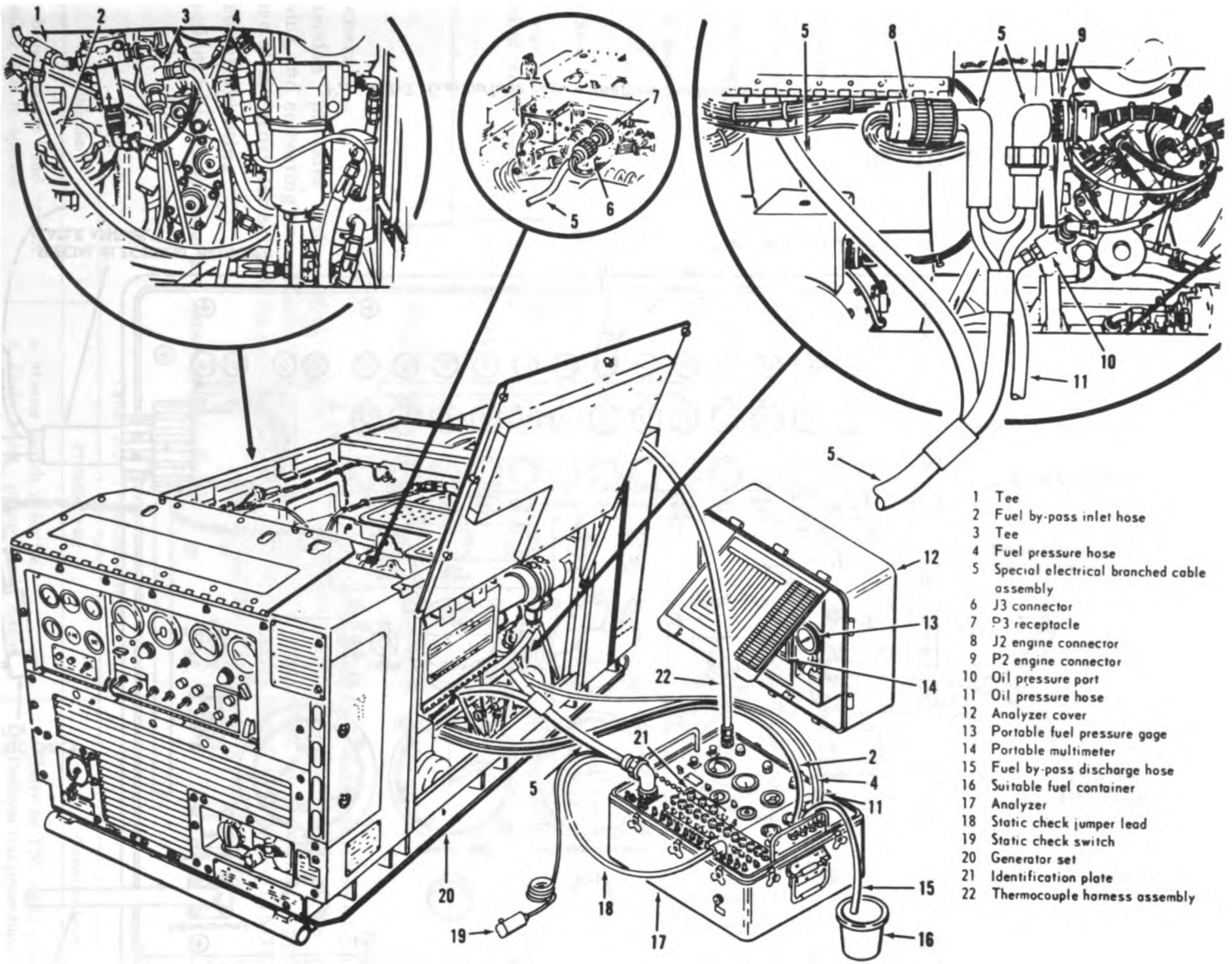

Figure 2-2. Connecting gas turbine engine analyzer to generator set.

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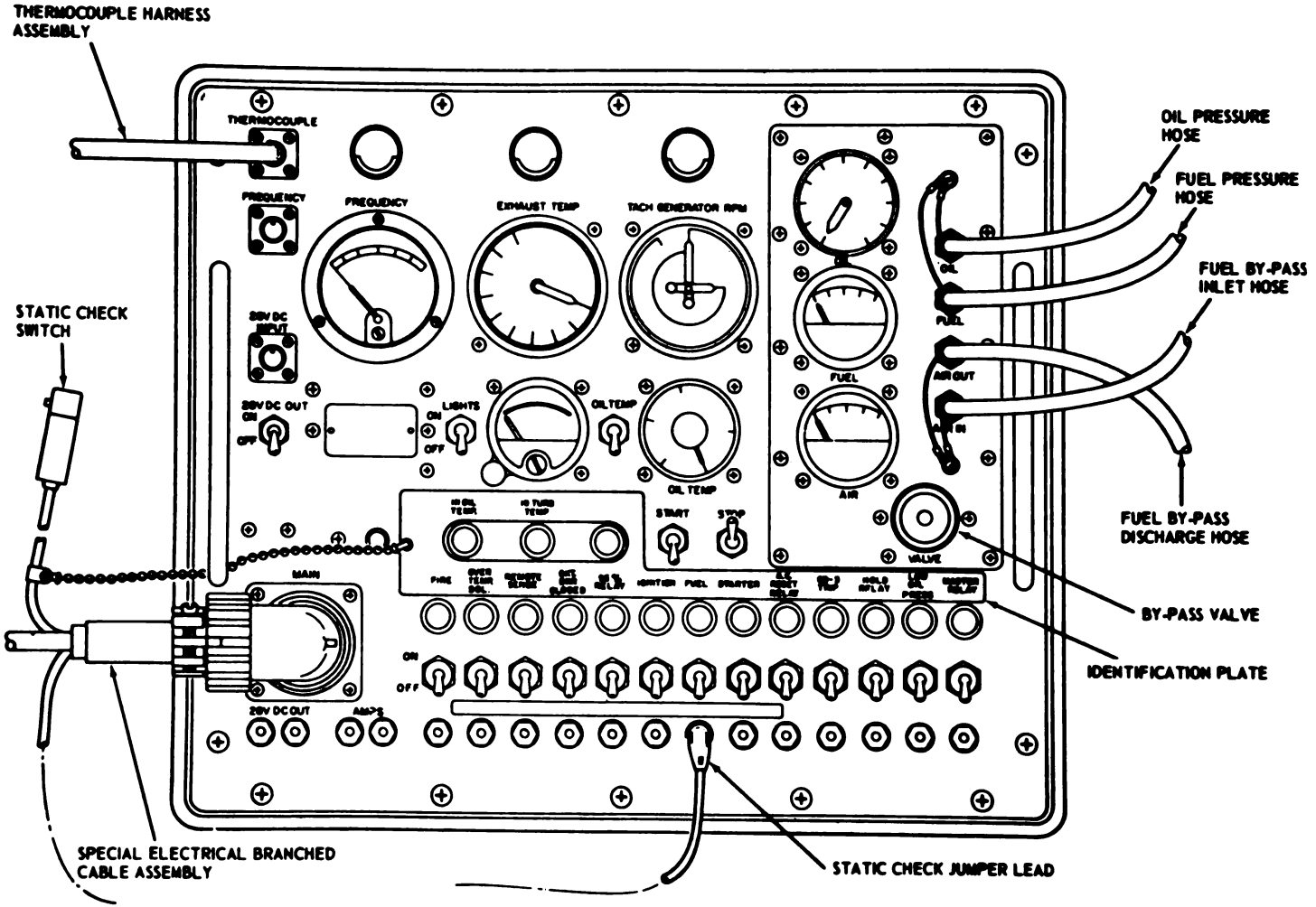

Figure 2-3. Gas turbine engine analyzer controls and instruments panel.

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-3. Maintenance Repair Parts

Repair parts and equipment required to perform direct and general support maintenance of the generator set are listed and illustrated in TM 5-6115-320-34P.

Table 2-1. Special tools and test equipment

Item	FSN or P / N	Reference Fig.	Reference Item	Reference Para	Use
Spanner wrench	5120-778-6120	2-1	3	3-17	To replace the accessory output shaft nut.
Clutch torquing holder	5120-862-0050	2-1	5	3-3	To hold the starter clutch housing in a fixed position in an arbor press while assembling clutch parts and when checking clutch slip torque.
Mechanical fan puller	5120-778-6118	2-1	6	3-17	To remove the fan from the rotating assembly shaft of the accessory assembly.
Seal puller	5120-778-6115	2-1	1	3-17	To install the output shaft seal in the seal retainer of the accessory assembly.
Seal driver	5120-778-616	2-1	2	3-17	To install the oil pump seal located in the case assembly of the accessory assembly.
Mechanical seal puller	5120-608-8939	2-1	9	3-8	To replace the oil pump shaft seal.
Torque wrench adapter	5120-862-0049	2-1	7	3-3	To check the slip torque of the starter motor clutch assembly.
Wrench adapter	5120-608-6794	2-1	4	3-17	To hold output shaft stationary while the nut is being removed.
Seal installing holder	5120-778-6117	2-1	8	3-17	To replace the fan shaft seal within the accessory case.
Gas turbine engine analyzer	4920-778-6091	2-1	11	2-2	To monitor operating conditions of the gas turbine engine and as a bench setup for individual component troubleshooting.
Adjustable beam type sling	6115-731-0051	2-1	13	2-9	To hoist the gas turbine engine with the generator attached.
Chain	Commercial 2,000 lb test	2-1	14	2-9	To hoist the complete enclosure.
Analyzer hose kit	1450-799-8432	2-1	12	2-2	To supply hoses and fittings necessary to supplement the gas turbine engine analyzer.
Special purpose electrical branched cable assembly	(99193) 284044-1-1 FSN 6150-014-5556	2-1	10	2-2	To electrically interconnect the gas turbine engine analyzer DC circuitry with the gas turbine engine control system.

Section II. TROUBLESHOOTING

2-4. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components.

2-5. Troubleshooting

Malfunctions which may occur are listed in table 2-2. Each malfunction stated is followed by a list of probable causes of the trouble. The corrective action recommended is described opposite the probable cause. Refer to TM 5-6115-320-12 for initial trouble-shooting information.

Table 2-2. Troubleshooting

Malfunction	Probable Cause	Corrective Action
1. Fuel boost pump and motor assembly fails to operate	*a.* Master switch defective *b.* Fuel boost pump and motor assembly defective	*a.* Refer to TM 5-6115-320-12. *b.* Perform test procedure (para 3-6). If test indicates a defective pump, repair pump (fig. 3-6). If fuel boost pump and motor assembly is defective beyond repair, replace fuel boost pump and motor assembly (para 3-6).

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Table 2-2. Troubleshooting—continued

Malfunction	Probable Cause	Corrective Action
2. No response when master switch placed in start position	*a.* Master switch defective	*a.* Refer to TM 5-6115-320-12.
	b. Start motor defective	*b.* Replace start motor brushes (fig. 3-3). If starter motor is defective beyond repair, replace starter assembly (para 3-3).
	c. Start relay defective	*c.* Refer to TM 5-6115-320-12
	d. Centrifugal switch assembly starter cutout switch defective	*d.* Perform continuity check between pins A and B of centrifugal switch assembly electrical receptacle. If continuity is not indicated, replace centrifugal switch assembly (para 3-18).
	e. Master relay (K2) defective	*e.* Replace master relay (fig. 3-37).
	f. No. 1 holding relay (K3) defective	*f.* Perform test procedure (para 3-4). If malfunction is indicated, replace relay (fig. 3-4).
	g. Centrifugal switch assembly defective	*g.* Perform continuity check between pins in centrifugal switch assembly electrical receptacle. Pin A to B should indicate continuity. Pin C to D should indicate continuity. Pin D to E should indicate continuity. Pin D to F should indicate no continuity. If malfunction is indicated, replace centrifugal switch assembly (TM 5-6115-320-12).
	h. Start relay defective	*h.* Refer to TM 5-6115-320-12.
3. Starter rotates but does not crank engine	*a.* Starter clutch defective	*a.* Adjust clutch (para 3-3). If clutch is defective, replace starter assembly (para 3-3).
	b. Accessory drive assembly defective	*b.* Check for positive coupling through engine by manually turning turbine wheel. If defective, replace accessory drive assembly (fig. 3-23).
4. Engine fails to start	*a.* Centrifugal switch assembly overspeed shutdown switch defective	*a.* Perform continuity check between pins C to D in centrifugal switch assembly electrical receptacle. If continuity is not indicated, replace centrifugal switch assembly (para 3-18).
	b. Fuel boost pump defective	*b.* Perform test procedure (para 3-6). If malfunction is indicated, repair fuel boost pump (fig. 3-6).
	c. Fuel control unit defective	*c.* Perform test procedure (para 3-5). If malfunction is indicated, replace fuel control unit (fig. 3-5).
	d. Oil pump assembly defective.	*d.* Repair defective oil pump assembly (para 3-8). If pump is defective beyond repair, replace oil pump assembly (fig. 3-7).
	e. Oil pressure sequencing switch defective	*e.* Perform test procedure (TM 5-6115-320-12). If malfunction is indicated, adjust or replace oil pressure sequencing switch (TM 5-6115-320-12).
	f. Engine wiring harness defective	*f.* Repair engine wiring harness (para 3-2). If wiring harness is defective beyond repair, replace engine harness (fig. 3-1).
	g. Ignition unit defective	*g.* Refer to TM 5-6115-320-12.

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Table 2-2. Troubleshooting—continued

Malfunction	Probable Cause	Corrective Action
Low fuel pressure	*a.* Fuel control unit defective	*a.* If malfunction is indicated, replace fuel control unit (fig. 3-5).
	b. Fuel boost pump defective	*b.* Perform test procedure (para 3-6). If malfunction is indicated, repair fuel boost pump (fig. 3-6). If fuel boost pump is defective beyond repair, replace fuel boost pump and motor assembly (para 3-6).
. Starter cranks engine but combustion does not occur. Normal fuel pressure and no pressure drop at 10 percent speed	*a.* Fuel shutoff solenoid valve defective	*a.* Refer to TM 5-6115-320-12.
	b. Oil pressure sequencing switch defective	*b.* Perform test procedure (TM 5-6115-320-12). If malfunction is indicated, adjust or replace oil pressure sequencing switch (TM 5-6115-320-12).
	c. Oil pump assembly defective	*c.* Repair oil pump assembly (fig. 3-8). If pump is defective beyond repair, replace oil pump assembly (fig. 3-7).
	d. Ignition unit defective	*d.* Refer to TM 5-6115-320-12.
. Engine stops immediately after combustion occurs	*a.* Holding relays (K3 and K4) defective	*a.* Perform test procedure (para 3-4). If malfunction is indicated, replace holding relays (fig. 3-4).
	b. Oil pressure sequencing switch defective	*b.* Perform test procedure (TM 5-6115-320-12). If malfunction is indicated, adjust or replace oil pressure sequencing switch (TM 5-6115-320-12).
	c. Fuel control unit defective	*c.* If malfunction is indicated, replace fuel control unit (fig. 3-5).
	d. Oil pump assembly defective	*d.* Replace oil pump assembly (fig. 3-7).
3. Engine starts, accelerates to governed speed or less, and shuts down	*a.* Centrifugal switch assembly overspeed shutdown switch setting too low	*a.* Record rpm on tachometer at cutoff point. Adjust overspeed shutdown switch setting (para 3-18). If centrifugal switch assembly is defective beyond adjustment replace centrifugal switch assembly (fig. 3-25).
	b. Low oil pressure switch defective	*b.* Perform test procedure, (TM 5-6115-320-12). If malfunction is indicated, adjust or replace low oil pressure switch (TM 5-6115-320-12).
	c. Fire detector defective	*c.* Perform test procedure (para 3-24). If malfunction is indicated, replace fire detector (fig. 3-35).
	d. Fire detector relay (K13) defective	*d.* If malfunction is indicated, replace fire detector relay (K13) (fig. 3-37).
). Engine does not reach governed speed or rate of acceleration too slow.	*a.* Starter motor assembly defective	*a.* Replace starter motor brushes (fig. 3-3). Adjust starter motor clutch (para 3-3). If starter motor assembly is defective beyond repair, replace starter motor assembly (para 3-3).
	b. Fuel control unit defective	*b.* If malfunction is indicated, replace fuel control unit (fig. 3-5).
	c. Acceleration and overtemperature control thermostat defective	*c.* If malfunction is indicated, replace acceleration and overtemperature control thermostat (fig. 3-33).
10. Acceleration erratic	*a.* Acceleration and overtemperature control thermostat defective	*a.* If malfunction is indicated, replace acceleration and overtemperature control thermostat (fig. 3-33).
	b. Fuel control unit defective	*b.* If malfunction is indicated, replace fuel control unit (fig. 3-5).

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Table 2-2. Troubleshooting—continued

Malfunction	Probable Cause	Corrective Action
11. Excessive exhaust gas temperature on start, or flaming start	*a.* Turbine plenum drain obstructed	*a.* Remove obstruction from plenum drain.
	b. Accleration and overtemperature control thermostat defective	*b.* If malfunction is indicated, replace acceleration and overtemperature control thermostat (fig. 3-5).
	c. Fuel atomizer assembly defective	*c.* Refer to TM 5-6115-320-12.
	d. Fuel control unit defective	*d.* If malfunction is indicated, replace fuel control unit (fig. 3-5).
12. Excessive oil smoke from engine exhaust during operation	*a.* Packing in oil jet tube or oil breather tubes defective	*a.* Replace packing (fig. 3-11).
	b. Defective air-oil seals in turbine or compressor assemblies	*b.* Report condition to depot maintenance
13. Low oil pressure or loss of oil pressure	Oil pump assembly defective	Repair oil pump assembly (fig. 3-8). If oil pump assembly is defective beyond repair, replace oil pump assembly (fig. 3-7).
14. Engine shuts down during operation	*a.* Fuel boost pump and motor assembly defective	*a.* Perform test procedure (para 3-6). If malfunction is indicated, repair fuel boost pump motor assembly (fig. 3-6). If defective beyond repair, replace fuel boost pump and motor assembly (para 3-6).
	b. Fuel control unit defective	*b.* If malfunction is indicated, replace fuel control unit (fig. 3-5).
	c. Oil pump assembly defective	*c.* Repair oil pump assembly (fig. 3-8). If defective beyond repair, replace oil pump assembly (fig. 3-7).
	d. Low oil pressure switch defective	*d.* Perform test procedure (TM 5-6115-320-12). If malfunction is indicated, adjust or replace low oil pressure switch (TM 5-6115-320-12).
	e. Fire detector defective	*e.* Perform test procedure (para 3-24). If malfunction is indicated, replace fire detector (fig. 3-35).
	f. Fire detector relay (K13) defective	*f.* If malfunction is indicated, replace fire detector relay (K13) (fig. 3-37).
	g. Oil pressure sequencing switch assembly defective	*g.* Perform test procedure (TM 5-6115-320-12). If malfunction is indicated, replace oil pressure sequencing switch (TM 5-6115-320-12).
	h. Centrifugal switch assembly defective	*h.* Perform continuity check between pins in centrifugal switch assembly electrical receptacle. Pin A to B should indicate continuity. Pin C to D should indicate continuity. Pin D to E should indicate continuity. Pin D to F should indicate no continuity. If malfunction is indicated, replace centrifugal switch assembly (fig. 3-25).
15. Excessive fuel leakage from fuel control unit drain	Fuel control unit defective	Replace fuel control unit (fig. 3-5).
16. Oil leakage from fuel control unit drain	Oil pump drive shaft seal (25, fig. 3-23)	Replace oil pump drive shaft seal (25, fig. 3-23) (para 3-17).

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Table 2-2. Troubleshooting—continued

Malfunction	Probable Cause	Corrective Action
17. Engine speed drops more than 1000 rpm when load is applied or exhaust gas temperature too high (above 1,200° F) (648°C)	*a.* Fuel control unit defective	*a.* Replace fuel control unit (fig. 3-5).
	b. Acceleration and overtemperature control thermostat defective	*b.* If malfunction is indicated, replace acceleration and overtemperature control thermostat (fig. 3-33).
	d. AC generator defective	*d.* Perform test procedure (para 4-1). If malfunction is indicated, repair or replace AC generator (para 4-1).
	e. Thermocouple defective	*e.* Perform test procedure (para 3-19). If malfunction is indicated, replace thermocouple (TM 5-6115-320-12).
	f. Exhaust gas temperature indicator defective	*f.* Perform test procedure (TM 5-6115-320-12) If malfunction is indicated, replace exhaust gas temperature indicator (TM 5-6115-320-12).
18. No AC generator output, overvoltage light is off	*a.* No. 2 holding relay (K4) defective	*a.* If malfunction is indicated, replace relay (K4) (fig. 3-37).
	b. AC generator permanent magnet generator (PMG) defective	*b.* Perform test procedure (para 4-1). If PMG is defective, replace PMG rotor (fig. 4-1). If PMG winding is defective, replace AC generator (fig. 2-5).
	c. Voltage regulator (VR1) defective	*c.* Perform test procedure (para 4-1). If PMG is defective, replace PMG rotor (fig. 4-1). If PMG winding is defective, replace ac generator (fig. 2-5).
	d. AC generator control relay (K12) defective	*d.* If malfunction is indicated, replace generator control relay (K12) (fig. 3-37).
	e. AC generator rotor windings defective	*e.* Perform test procedure (para 4-1). If malfunction is indicated, replace AC generator (fig. 2-5).
	f. AC generator exciter rectifiers defective	*f.* Perform test procedure (para 4-1). If malfunction is indicated, replace rectifiers (fig. 4-1).
19. No AC generator output, overvoltage light is on	*a.* Voltage regulator (VR1) defective	*a.* If malfunction is indicated, replace voltage regulator (VR1) (fig. 4-3).
	b. Overvoltage relay (K10) defective	*b.* If malfunction is indicated, replace overvoltage relay (K10) (fig. 3-37).
	c. AC generator defective	*c.* Perform test procedure (para 4-1). If malfunction is indicated, repair generator (para 4-1). If generator is defective beyond repair, replace generator (fig. 2-5).
	d. Circuit breaker (S5) defective	*d.* Refer to TM 5-6115-320-12.
	e. Main circuit breaker (CB3) defective	*e.* Replace main circuit breaker (CB3) (fig. 4-6).
	f. Overvoltage, underfrequency, or undervoltage condition in external load	*f.* Correct condition in external load
20. AC generator trips off and cycles when circuit breaker switch is held closed	*a.* Overvoltage relay (K5) defective	*a.* If malfunction is indicated, replace overvoltage relay (K5) (fig. 3-37).
	b. Overcurrent relay (K14) defective	*b.* Perform test procedure (para 4-6). If malfunction is indicated, replace overcurrent relay (K14) (fig. 3-37).
	c. Undervoltage relay (K11) defective	*c.* If malfunction is indicated, replace undervoltage relay (K11) (fig. 3-37).

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Table 2-2. Troubleshooting—continued

Malfunction	Probable Cause	Corrective Action
20. Continued	*d.* Overload from AC generator	*d.* Check for proper connection of phase leads. Perform test procedure (para 4-11). If malfunction is indicated repair generator (para 4-11). If generator is defective beyond repair, replace generator (fig. 2-5).
	e. Centrifugal switch assembly defective	*e.* Replace centrifugal switch assembly (fig. 3-25).
21. Voltage can not be adjusted	*a.* Voltage adjusting rheostat defective	*a.* Replace voltage adjusting rheostat (fig. 3-37).
	b. Voltage regulator (VR1) defective	*b.* If malfunction is indicated, replace voltage regulator (VR1) (fig. 4-3).
	c. AC generator exciter rectifier defective	*c.* Perform test procedure (para 4-11). If malfunction is indicated, replace rectifiers (fig. 4-11).
	d. AC generator defective	*d.* Perform test procedure (para 4-11). If malfunction is indicated, repair generator (para 4-11). If generator is defective beyond repair, replace generator (fig. 2-5).
22. Voltage droop cannot be adjusted	*a.* Frequency and voltage droop potentiometers defective	*a.* Replace frequency and voltage droop potentiometers (fig. 3-37).
	b. Current transformer (CT4) defective	*b.* Perform test procedure (para 4-4). If malfunction is indicated, replace current transformer (CT4) (fig. 4-4).
	c. Unit parallel switch in unit position	*c.* Place switch in parallel position.
23. Frequency droop cannot be adjusted	*a.* Load anticipator defective	*a.* If malfunction is indicated, replace load anticipator (fig. 4-3).
	b. Fuel control unit defective	*b.* Replace fuel control unit (fig. 3-5).
	c. Current transformers (CT1 thru CT3)	*c.* Perform test procedure (para 4-4). If malfunction is indicated, replace defective current transformers (fig. 4-4).
	d. Frequency droop potentiometer defective	*d.* Replace frequency droop potentiometer (fig. 3-37).
24. Battery heater does not operate	*a.* Battery temperature sensor (K15) defective	*a.* If malfunction is indicated, replace battery temperature sensor relay (K15) (fig. 3-37).
	b. Temperature control relay (K9) defective	*b.* If malfunction is indicated, replace temperature control relay (K9) (fig. 3-37).
	c. Heater circuit breaker defective	*c.* Refer to TM 5-6115-320-12.
25. Battery heater fan operates but heater does not ignite	*d.* Heater igniter defective	*d.* Replace heater igniter (fig. 5-11).
26. Fan operates when switch is off	Note. Fan will normally operate for a short period after heater is shut off until flame switch cools and actuates	
	Wiring defective	Replace defective wiring (para 4-8).

Section III. GENERAL MAINTENANCE

2-6. General

This section contains maintenance information that would otherwise have to be repeated throughout this manual.

2-7. Maintenance Requirements

a. Hardware and Threaded Parts. Inspect hardware for damaged threads, rounded corners, and damaged slots. Threaded holes and parts should accept their mating parts without requiring excessive torque. Threads may be chased with a tap or die. Replace any threaded parts which cannot be repaired.

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b. Gaskets. Replace all gaskets which are disturbed during repair operations or which show evidence of leakage. When installing gaskets, use grease or gasket cement to retain gasket in position during reassembly procedures.

c. Oil Seals and Packings. Thoroughly lubricate the sealing lip of spring loaded seals with grease or other suitable lubricant when installing. Apply non-hardening sealer to the outer circumference of encased seals or to the mating bores to prevent possible leakage. Immerse preformed packings in the liquid or lubricant with which they will be in contact.

d. Ball and Roller Bearings. After removing antifriction bearings, cover them immediately to keep out dirt and abrasives. Flush thoroughly with solvent, tap them against a wooden block to remove packed lubricant, and air dry. Coat cleaned bearings with oil, and wrap in clean paper. Replace any bearings that are scored, pitted, discolored from overheating, or otherwise damaged. When installing bearings against shoulders, be sure the chamfered side faces the shoulder. Lubricate the bearing and its mating surface when pressing a bearing into place. Press bearings only on the race adjacent to the mating part. Use drivers which contact as much of the race as possible.

e. Repair of Damaged Machine and Polished Surfaces. Remove rough spots, scores, burrs, galling, gouges, and other surface damage from machined and polished surfaces. Use a suitable honing stone, crocus or emery cloth, file, or any other method that will permit the part to function efficiently. The finish of the part must approximate that of the original finish. Do not alter critical dimensions beyond acceptable limits. Build up shafts, rods, and other worn parts by metallizing, chrome plating, or welding. Grind built up parts to original size.

f. Welding Repair. Welding must be performed by a qualified welder. Welds must provide complete fusion and penetration and comply with governing specifications. Inspect all welds using a radiographic or magnetic particle process. Grind all new welds flat and smooth whenever possible.

g. Part Replacement. Replace parts which are worn or defective with new parts. Consider such factors as age, operating hours, usage, and parts availability to determine the necessity of part replacement.

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS

2-8. General

The major components of the generator set are the gas turbine engine and ac generator assembly, and the battery heater assembly. In order to facilitate repair of the gas turbine engine, and generator, they may be removed as a unit, with the mounting frame. This section covers direct and general support maintenance instructions for the removal, installation and where necessary the adjustment, of these components as authorized by the maintenance allocation chart.

2-9. Engine and Generator Assemblies

a. Removal. To remove the gas turbine engine and generator assembly, refer to figure 2-4 and proceed as follows:

(1) Remove top panels (TM 5-6115-320-12).

(2) Remove clamps (1, fig. 2-4) from cooling duct and remove cooling duct.

(3) Remove fire detector from firewall by removing screws (2), washer (3), and nuts (4), from mounting bracket on firewall.

(4) Remove screws (5) and washers (6) from upper firewall assembly (7).

(5) Remove upper firewall assembly (7) by pushing back from engine compressor section, then pulling up until firewall assembly is clear of guides.

(6) Disconnect generator electrical leads (8) and tag for identification.

(7) Disconnect starter motor electrical leads (9).

(8) Disconnect connector (10) and tag for identification.

(9) Disconnect connector (11) and tag for identification.

(10) Disconnect fuel control inlet line (12) and tag for identification.

(11) Disconnect fuel control drain line (13) at enclosure and tag for identification.

(12) Disconnect oil drain line (14) and tag for identification.

(13) Disconnect bleed air line (15) and tag for identification.

(14) Disconnect plenum drain line (16) and tag for identification.

(15) Remove clamp (17) and gasket (18) from exhaust pipe flange.

(16) Remove bolts (19) and washers (20) from frame.

(17) Secure a 2,000 pound test chain to lifting eyes (21 and 22). Support weight of engine ac generator assembly with adjustable beam type sling and a hoist.

CAUTION

Do not attach chains from the hoist assemblies to the lifting equipment in such a manner that the angle between

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any of the chains and the top of the engine is less than 45°. Any angle less than 45° will cause an excessive strain, which could possibly bend or break the lifting eyes.

(18) While lifting gas turbine engine and ac generator, push aside cable as necessary to prevent binding.

b. Installation. Install the gas turbine engine and ac generator in reverse order of removal using figure 2-4 as a guide.

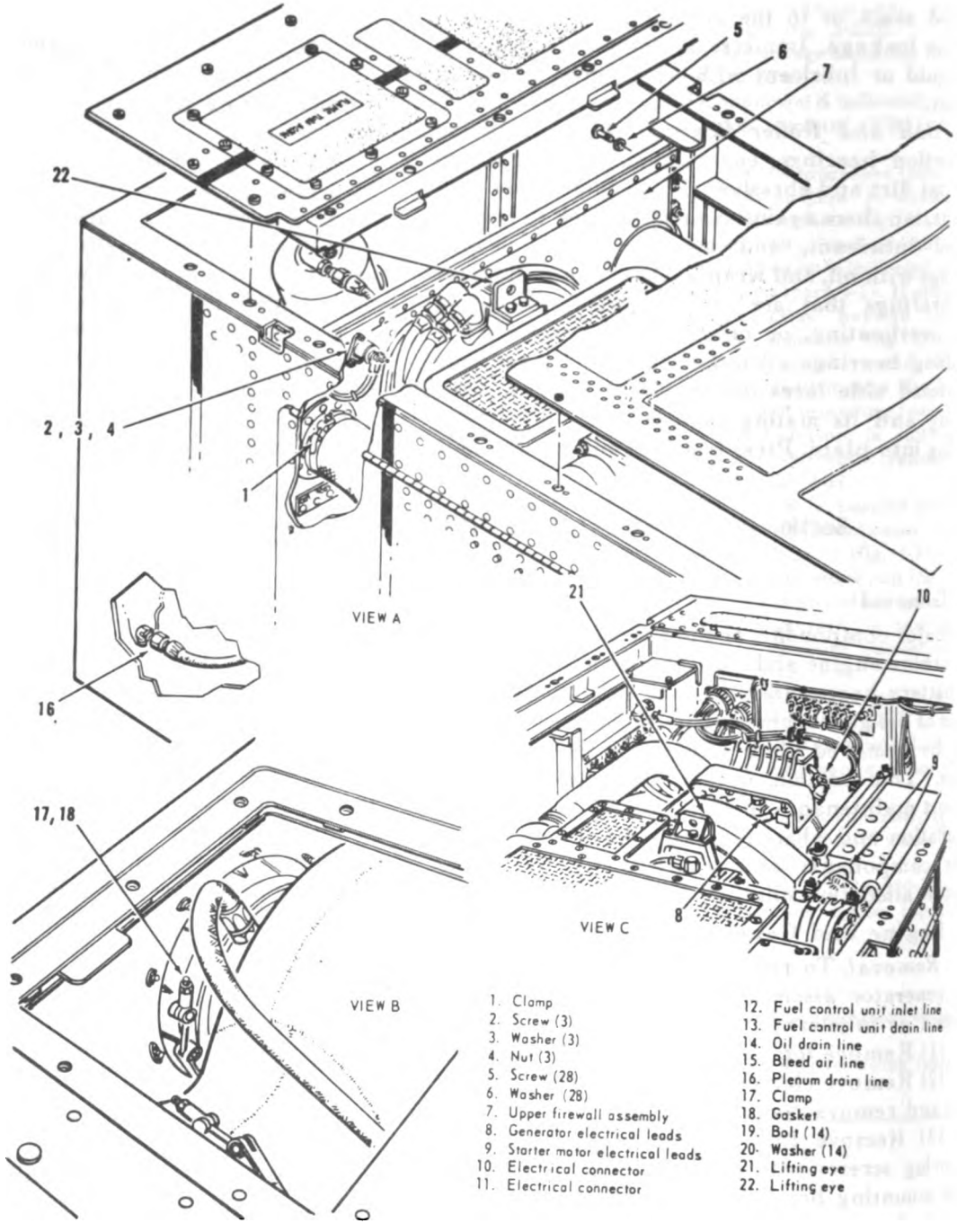

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Figure 2-4. Engine and ac generator assembly removal and installation. (sheet 1 of 2).

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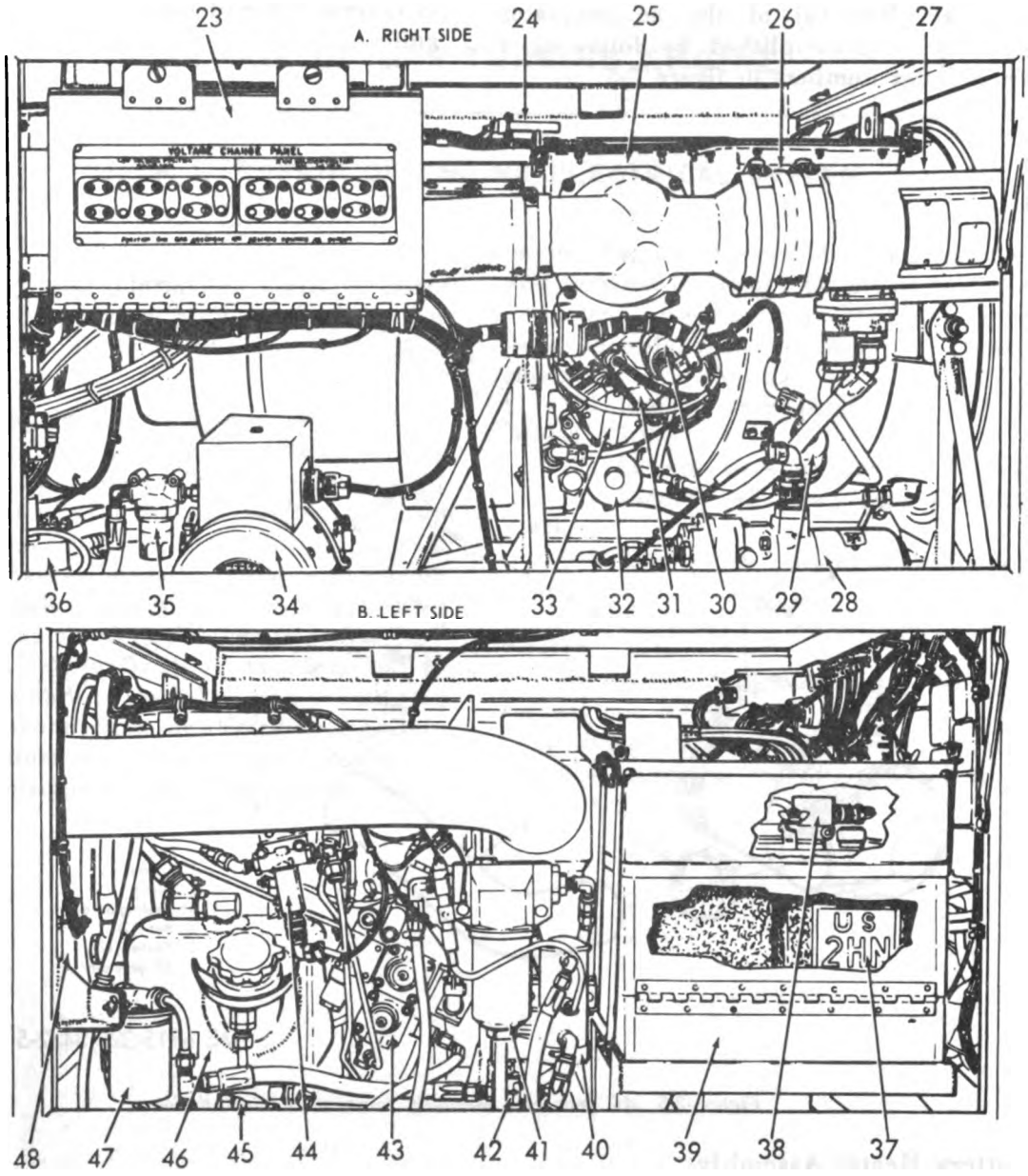

23. VOLTAGE DISTRIBUTION PA: :L
24. FIRE DETECTOR PROBE
25. COOLING AIR FAN ASSEMBLY
26. OIL COOLER COOLING AIR DUCT
27. TUBULAR OIL COOLER
28. FUEL BOOST PUMP AND MOTOR ASSEMBLY
29. LOW QIL PRESSURE SWITCH
30. OIL PRESSURE SEQUENCING SWITCH
31. CENTRIFUGAL SWITCH ASSEMBLY
32. OIL PUMP ASSEMBLY
33. TACHOMETER GENERATOR
34. INTERNAL COMBUSTION BATTERY HEATER
35. BATTERY HEATER FUEL FILTER ASSEMBLY
36. START RELAY
37. BATTERIES
38. BATTERY ELECTROLYTE TEMPERATURE SENSOR
39. BATTERY BOX ASSEMBLY
40. BATTERY HEATER ELECTRIC FUEL PUMP
41. OIL FILTER ASSEMBLY
42. BATTERY HEATER FUEL SHUTOFF VALVE
43. FUEL CONTROL UNIT
44. FUEL SOLENOID VALVE
45. OIL DRAIN VALVE
46. OIL TANK ASSEMBLY
47. FUEL FILTER ASSEMBLY
48. FIRE DETECTOR PROBE

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Figure 2-4. Engine and ac generator assembly removal and installation. (sheet 2 of 2).

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2-10. AC Generator Assembly

a. Removal. Removal of the ac generator assembly may be accomplished by following a sequence of index numbers in figure 2-5.

b. Installation. Install the ac generator assembly in reverse order of removal using figure 2-5 as a guide.

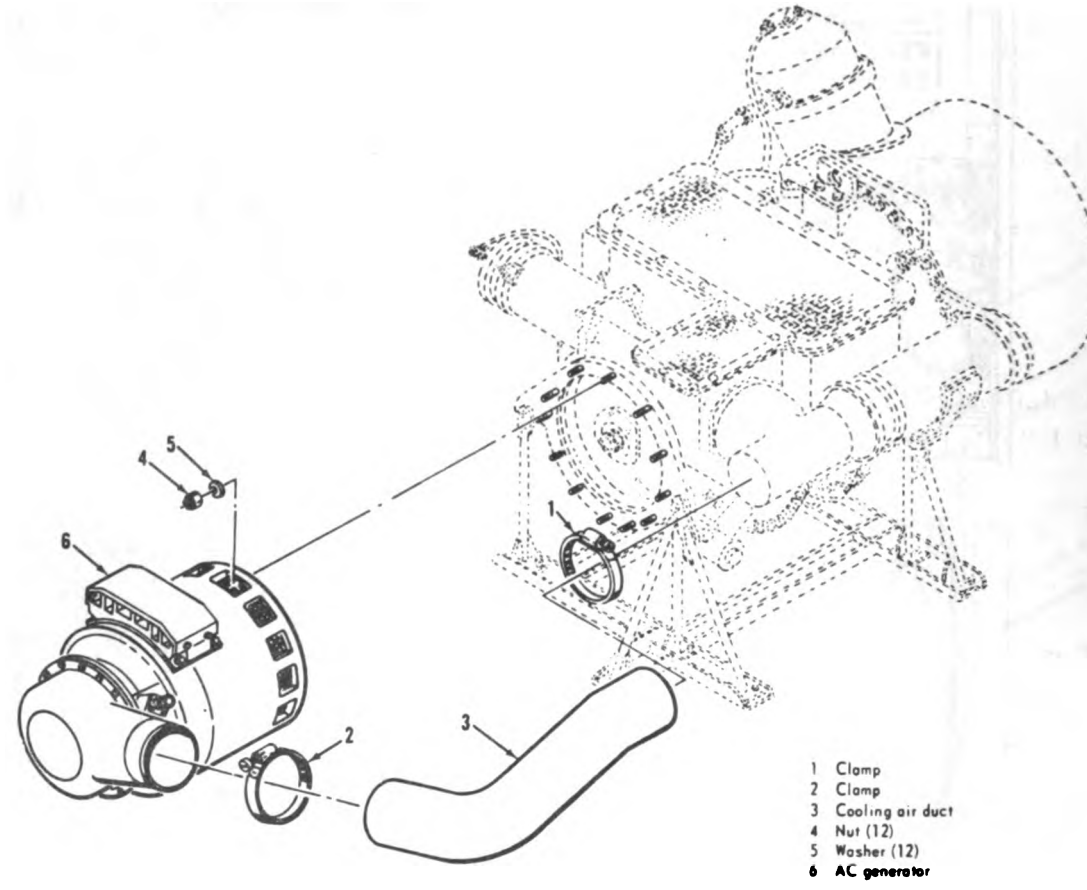

Figure 2-5. AC generator assembly removal and installation.

2-11. Battery Heater Assembly

Refer to TM 5-6115-320-12 for removal and installation procedures.

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CHAPTER 3

REPAIR OF GAS TURBINE ENGINE

Section I. REPAIR OF ENGINE ELECTRICAL SYSTEM

3-1. General

This section contains information useful to direct and general support maintenance personnel in their performance of maintenance of the engine electrical system.

3-2. Engine Wiring Harness Assembly

a. General. The gas turbine engine wiring harness assembly connects to a receptacle attached on a bracket mounted to the accessory cooling duct on the right side of the engine. The gas turbine engine wiring harness assembly consists of wiring, attached terminals and connectors to interconnect all electrically operated engine componehts.

b. Removal. Refer to figure 3-1 for identification of engine wiring harness assembly. Remove harness assembly by disconnecting the electrical connectors and terminals from the various engine components and removing clamps securing harness assembly to engine. Tag or otherwise identify connectors, leads, and location of clamps for aid at installation.

c. Repair. Refer to figure FO-4 and figure 3-2 for wire identification, routing and replacement, observing the following:

(1) Replace thermostat lead with lead per MIL-C-25038.

(2) All wire sizes are number 18 AWG.

(3) Identify all new leads with approved markers.

(4) Provide drip loops as applicable per MIL-W5088.

(5) Soldering of connections shall be per MIL-S-6872.

(6) Solder used shall be per QQ-3-571, composition SN50.

d. Installation. Install engine wiring harness assembly in reverse order of removal, using figure 3-1 as a guide.

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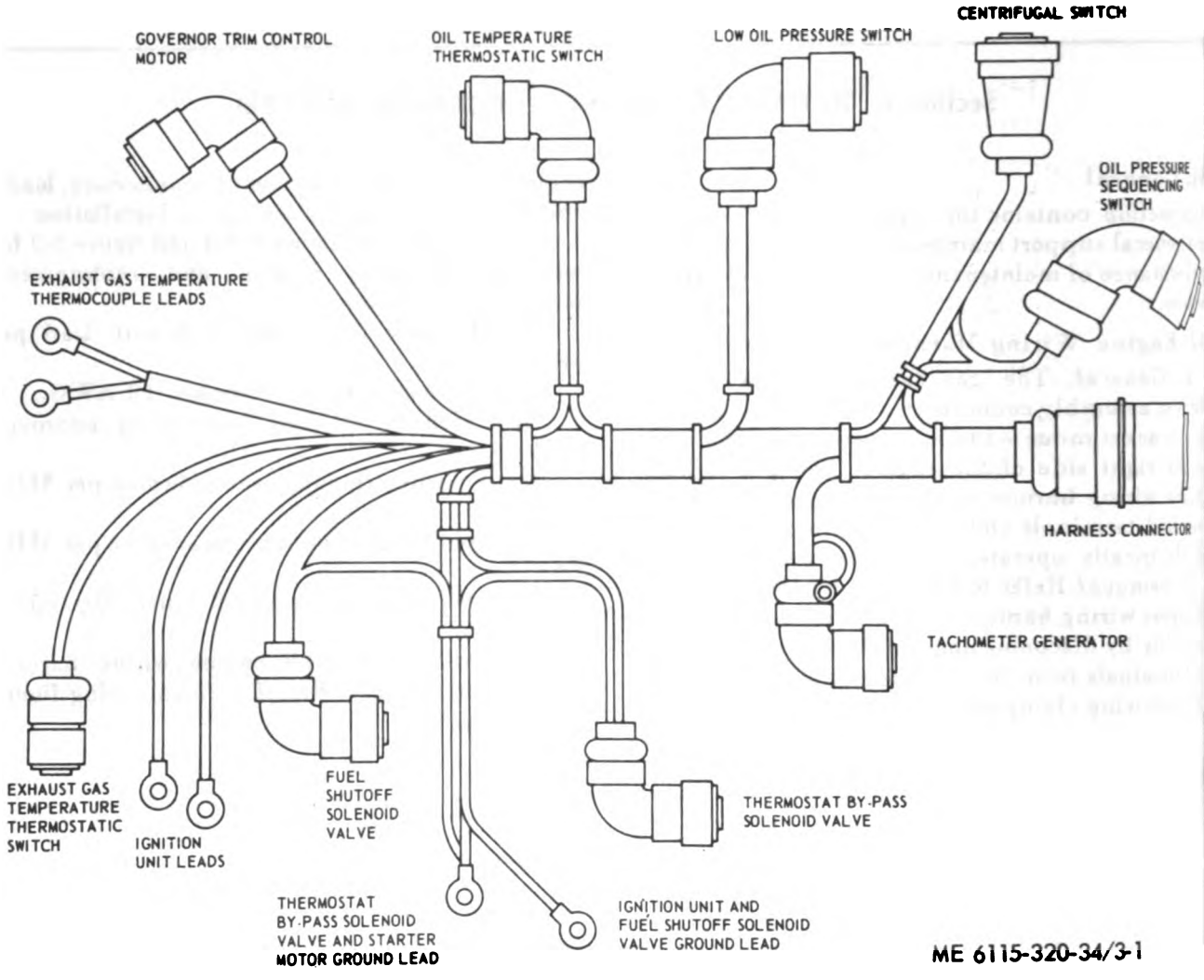

Figure 3-1. Engine wiring harness identification.

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AWG SIZE	LENGTH INCHES	WIRE NUMBER	LOCATION PIN NO. FROM		LOCATION PIN NO TO	
18	89	E311A18	1	K	22	3
18	89	E312A18	1	R	22	1
18	18	E315A18	1	f	15	C
18	18	E316A18	1	g	15	D
18	19	K11B18	14	A	15	A
18	18	K111C18	14	A	17	D
18	57	K114B18	14	B	13	A
18	18½	E310A18	1	V	11	B
18	18½	E309A18	1	h	11	A
18	79	ALUMEL	1	T	39	—
18	79	CHROMEL	1	S	39	—
18	18½	E306A18	1	G	12	B
18	18½	E305A18	1	F	12	A
18	49½	K304A18	1	P	10	D
18	49½	K303A18	1	N	10	C
18	49½	K302A18	1	M	10	B
18	49½	K301A18	1	L	10	A
18	16½	K117A18	1	J	17	E
18	16½	K116A18	1	D	17	F
18	41½	K115A18	1	U	38	—
18	14	K114A18	1	e	14	B
18	18	K113A18	1	X	15	B
18	44	K112A18	1	H	16	A
18	18	K111A18	1	W	15	A
18	16½	K110A18	1	C	17	C
18	16½	K108A18	1	B	17	B
18	16½	K107A18	1	A	17	A
18	13½	K102D18N	36	—	40	—
18	13	K102C18N	13	B	36	—
18	13½	K102B18N	16	B	36	—
18	45	K102A18N	1	Z	36	—

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Figure 3-2. Engine wiring harness, wire identification chart.

3-3. Starter Motor Assembly

a. General. The starter motor assembly is mounted at the top left side of the accessory assembly. Three pawls and a clutch mechanism, mounted on the starter shaft drive end engage with a ratchet on the end of the accessory drive shaft. The pawls are spring-loaded and are in retracted position until the starter motor is operated. When the starter motor is operated, the inertia of the pawls and cage overcomes the spring load and force the pawl inward to engage with the ratchet. Torque, as a result of the starting operation, is absorbed by a clutch which is adjusted to slip at 130 to 145 inch-pounds. This arrangement absorbs shock at initial engagement, and allows the starter motor to engage with the ratchet at any time the engine is running, provided the speed of the engine is less than the cut-out speed of the starter motor

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(35 to 55 percent of governed speed). The starter motor is series wound and has an output of one and one-half horsepower at 5,000 rpm.

b. Removal and Installation. Refer to TM 5-6115-320-12 for removal and installation of the starter.

c. Disassembly. Refer to figure 3-3 for disassembly procedures observing the following:

(1) Remove clamp (1).

(2) Remove insulator (2).

(3) Remove screw (3) and washers (4 and 5).

(4) Remove brush holder (6).

(5) Remove brushes (7).

(6) Replace brushes that are shorter than ½ inch.

(7) Record the position of pawls (10) and spider (11) to aid in reassembly.

(8) Remove retainer (8).

(9) Straighten end of spring (15) and remove spider (11), pins (9), and pawls (10).

(10) Remove threaded ring (12) with spanner wrench.

(11) Remove plates (13), clutch retainer (14), clutch spring (15), spring washer (16), and washer (17).

(12) Drive out pin (18) and remove housing (19) from starter motor (20) if necessary.

NOTE

Do not remove pin (18) and housing (19) from starter motor (20) unless retainer housing or starter motor is defective.

d. Cleaning.

(1) Remove all dust, dirt, and foreign matter from starter motor assembly by using clean, dry compressed air.

(2) Clean all disassembled parts in cleaning solvent (Fed P-D-680).

e. Inspection. Inspect all disassembled parts for evidence of wear or damage. If defective, replace as necessary.

f. Repair. If the starter motor assembly is defective beyond repair outlined in this section, replace starter motor assembly and clutch assembly as a unit. If the clutch assembly requires repair, disassemble and replace parts only to the extent necessary to replace the defective part.

g. Reassembly. Refer to figure 3-3 as a guide and reassemble the starter motor observing the following:

(1) Install housing (19) on starter motor (20) and secure with pin (18).

(2) Install washers (17), spring washer (16), clutch plates (13), and clutch retainer (14).

NOTE

Coat clutch plates (13) with OE 10 and install with friction face of plates against flange of clutch retainer (14).

(3) Install threaded ring (12) and clutch spring (15).

(4) Assemble spider (11), pawls (10), and pins (9) and install into clutch retainer (14).

(5) Install retainer (8).

(6) Bend end of clutch spring (15) 35 to 55 degrees.

h. Adjustment. Mount clutch torquing holder on starter motor assembly. Use torque wrench adapter and torque wrench to check slip-torque. Slip-torque must be 130 to 145 inch-pounds. If slip-torque is not within the specified limits, adjust threaded ring (12) accordingly.

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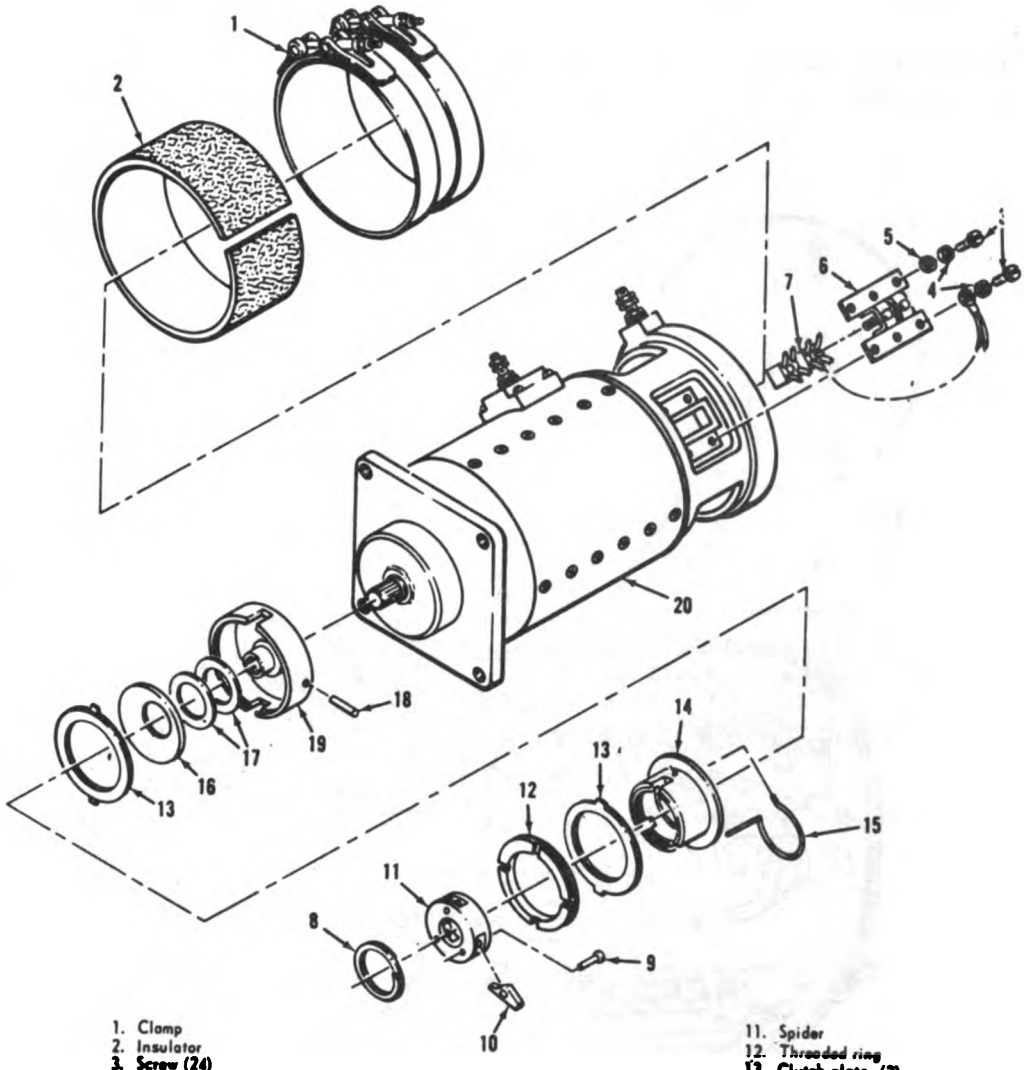

Figure 3-3. Starter motor assembly disassembly and reassembly.

-4. Turbine Holding Relays

a. Removal. Remove turbine holding relays (K3 nd K4) according to sequence of index numbers ssigned to figure 3-4.

b. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter rom turbine holding relays with clean, dry com- ressed air.

(2) Clean the turbine holding relays with a loth moistened with solvent (FED P-D-680) and ry thoroughly.

(3) Inspect for evidence of damage or stripping of threads. If defective, replace turbine holding relay.

c. Testing. To test the turbine holding relays proceed as follows:

(1) Use a multimeter set at the lowest ohm scale to test the turbine holding relays.

(2) When the relay coils are not energized, continuity should be indicated between terminals A2 and A3, B2 and B3, C2 and C3, D2 and D3. The same shall apply to K4 and K5 except that D terminals are not used on K4 and A terminals are not used on K5.

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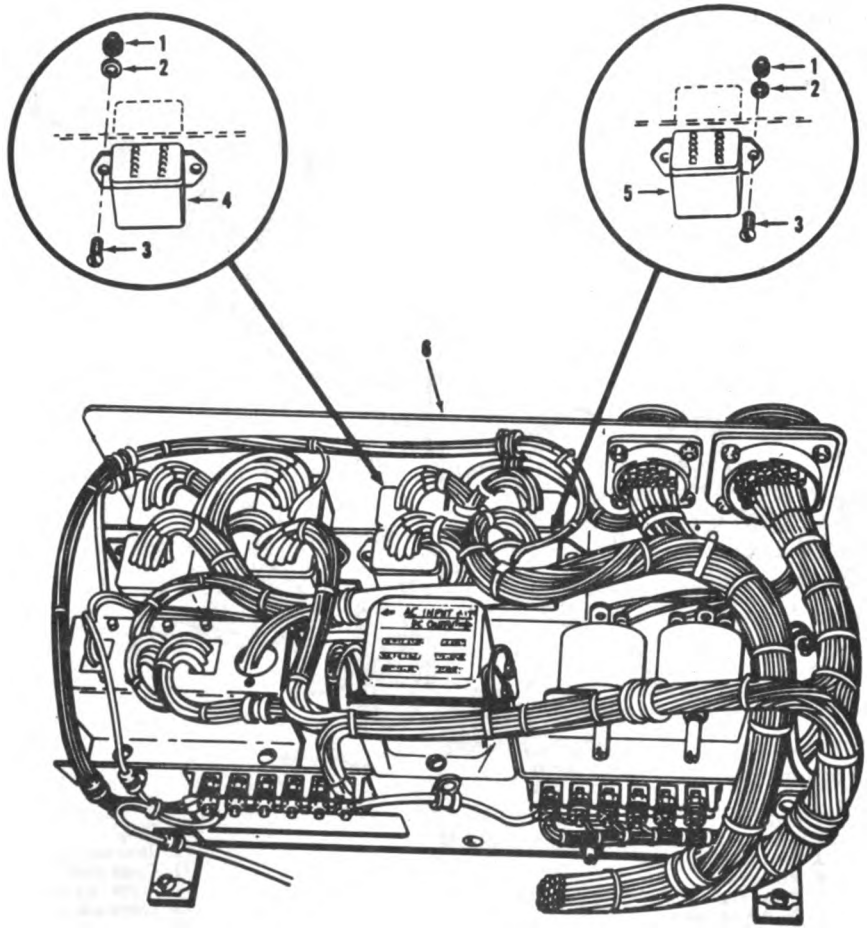
(3) Connect the negative terminal of a 24 v dc power source to the X1 terminal of the relay and connect the positive terminal of the power source to terminal X2.

(4) With the relay coils energized as instructed in (3) above, continuity should be indicated between terminals A1 and A2, B1 and B2, C1 and C2, D1 and D2.

(5) Disconnect the multimeter and power source.

d. Installation. Install the turbine holding relays in the reverse order of removal procedure using figure 3-4 as a guide.



1. Nut (4)
2. Washer (4)
3. Screw (4)
4. Relay K4
5. Relay K3
6. Electrical equipment rack

ME 6115-320-34/3-4

Figure 3-4. Turbine holding relays (K3 and K4) removal and installation.

Section II. REPAIR OF THE FUEL SYSTEM

3-5. Fuel Control Unit

a. General. The fuel control unit, mounted on the lower left side of the accessory assembly is the major component of the gas turbine engine fuel system, and is driven by the oil pump assembly drive shaft. The fuel control unit meters fuel to the atomizer assembly to accelerate the engine to governed speed during starting and to maintain engine rpm at governed speed regardless of load changes.

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b. Removal. Remove fuel control unit according to sequence of index numbers assigned to figure 3-5.

CAUTION

Carefully withdraw fuel control unit in a straight line to prevent damage to splines.

c. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from the fuel control unit with clean, dry, compressed air.

(2) Clean the fuel control unit (externally) with cleaning solvent (FED P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage or wear. If defective, replace the fuel control unit.

d. Installation. Install the fuel control unit in reverse order to removal procedure using figure 3-5 as a guide and observing the following:

CAUTION

Carefully install fuel control unit in a straight line to prevent damage to splines. If necessary, rotate turbine wheel manually to aline splines.

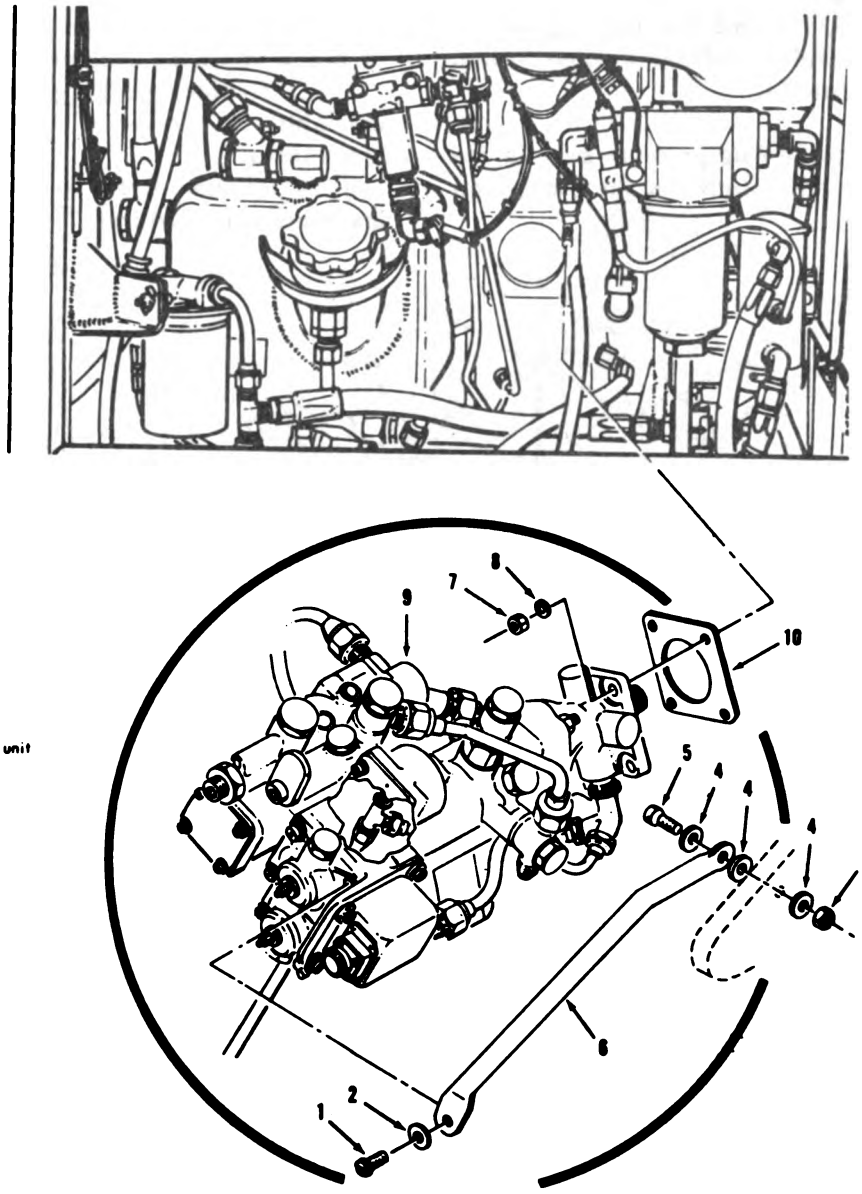

Figure 3-5. Fuel control unit removal and installation.

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3-6. Fuel Boost Pump

a. Fuel Boost Pump. The fuel boost pump is mounted on the right side of the enclosure base forward of the gas turbine engine firewall and is an electrically driven rotary-gear type pump. The fuel boost pump draws fuel from an external source and supplies it to the fuel control unit.

b. Removal. Refer to TM 5-6115-320-12 for removal procedures.

c. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from the fuel boost pump with clean, dry compressed air.

(2) Clean the fuel boost pump in an approved solvent (FED. P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, corrosion, wear, or stripped threads.

d. Testing.

(1) Install a 0 to 30 psig pressure gage in the boost pump discharge line between the pump and fuel control unit.

(2) Apply 24v dc to terminal 1 (positive) and 11 (negative) of TB3 (fig. FO-1) to operate pump.

(3) Observe pressure gage for 15 psig minimum indication.

NOTE

Pressure in step *c* (3) above is valid only when fuel supply is within 25 feet of fuel boost pump.

(4) Pressure may be adjusted by removing cap nut on side of pump stator (12, fig. 3-6) and turning adjustment screw clockwise to increase or counterclockwise to decrease pressure.

e. Repair.

(1) Disassemble pump according to sequence of index numbers assigned to figure 3-6.

(2) Replace packing, seal, and gasket and assemble in reverse order of disassembly procedures.

f. Installation. Refer to TM 5-6115-320-12 for installation procedures.

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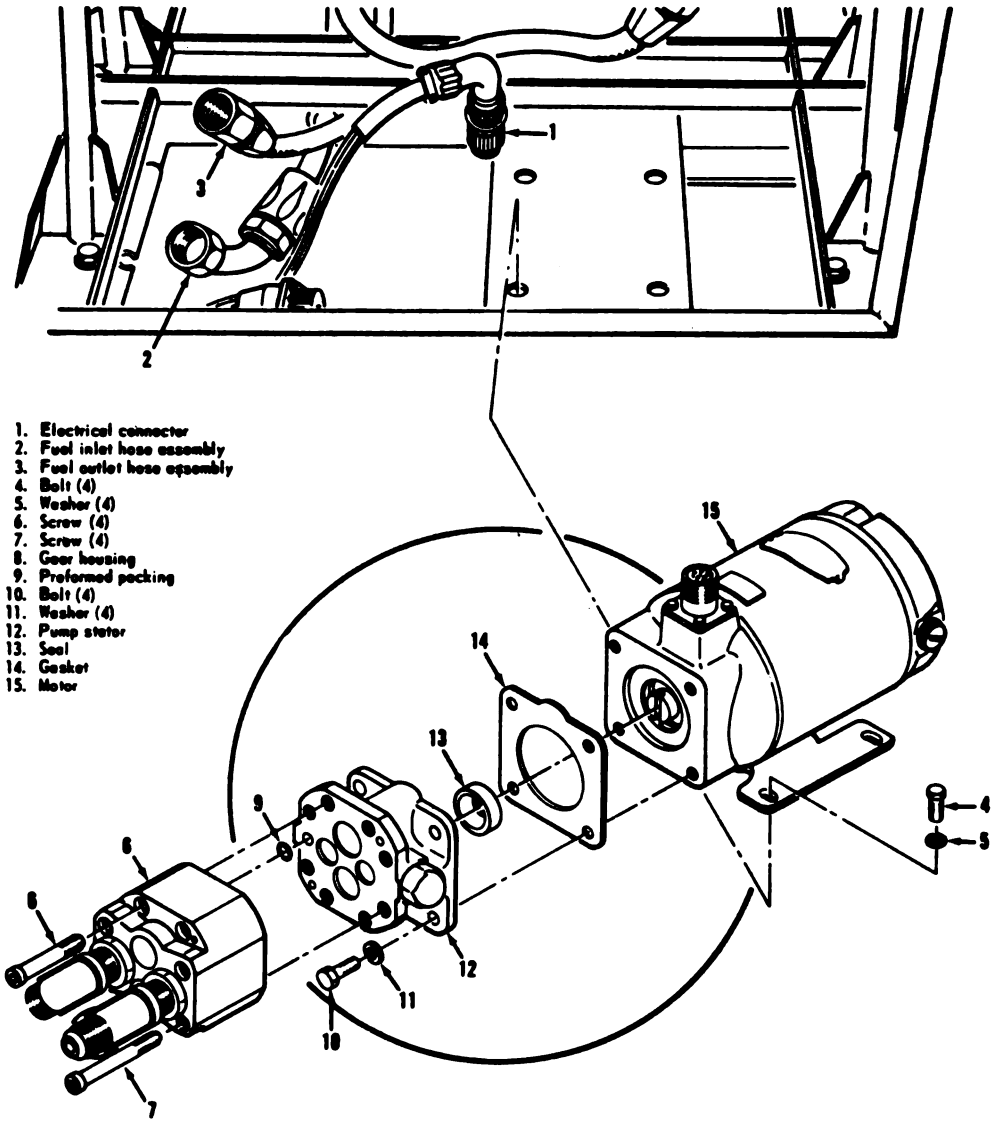

Figure 3-6. Fuel boost pump, exploded view.

3-7. Fuel Atomizer Assembly

a. Removal. Refer to TM 5-6115-320-12 for removal procedures.

b. Repair.

(1) Inspect screen for breaks and clogged condition. Replace a defective screen. Discard packing and gasket.

(2) Repair parts having minor burrs on roughness by polishing with abrasive (Fed. Spec. P-P-101, 400 to 600 grit) paper.

CAUTION

Do not use abrasive paper or sandpaper to clean or repair head; alteration of fuel spray pattern may result.

(3) Replace all parts that do not pass inspection or are damaged beyond simple repair.

c. Installation. Refer to TM 5-6115-320-12 for installation procedures.

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Section III. REPAIR OF LUBRICATING SYSTEM

3-8. Oil Pump Assembly

a. Oil Pump Assembly. The oil pump assembly is mounted on the lower left side of the accessory drive assembly case and is mechanically driven. The oil pump assembly consists of two major subassemblies; the oil pressure pump and the oil scavenge pump. The two subassemblies are bolted together and share a common drive shaft.

b. Removal. Remove tachometer-generator as described in paragraph 3-23. Remove thermostatic oil switch as described in TM 5-6115-320-12. Remove centrifugal switch assembly as described in paragraph 3-18. Remove oil pump assembly according to sequence of index numbers assigned to figure 3-7.

c. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from the oil pump assembly with clean, dry, compressed air.

(2) Clean the oil pump assembly in cleaning solvent (FED-P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, corrosion, cracks, wear, or stripped threads. If defective, replace oil pump assembly.

d. Repair.

(1) Disassemble oil pump assembly according to sequence of index numbers assigned to figure 3-8.

(2) Replace preformed packings. Replace tachometer-generator seal using Mechanical Seal Puller.

(3) Assemble oil pump assembly in reverse order of disassembly procedures.

e. Installation. Install the oil pump assembly in reverse order of removal procedures using figure 3-7 as a guide.

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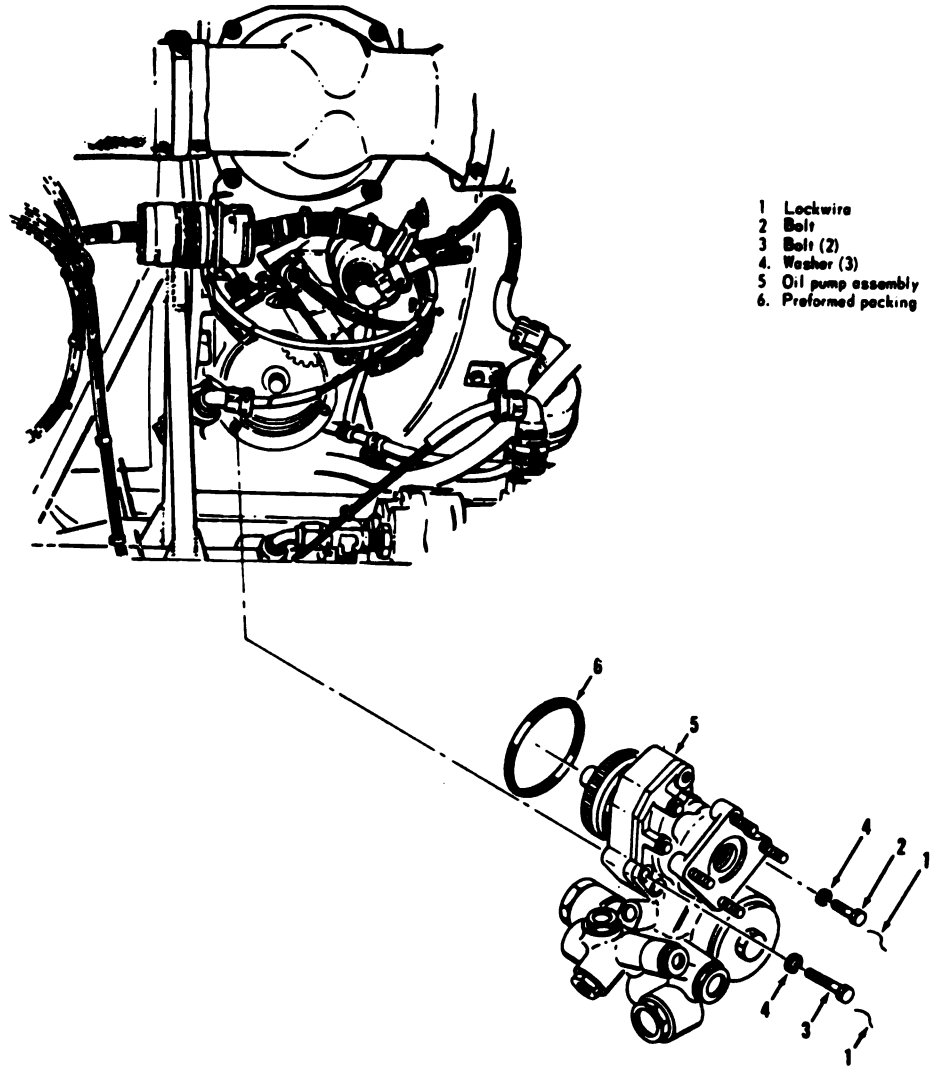

Figure 3-7. Oil pump assembly removal and installation.

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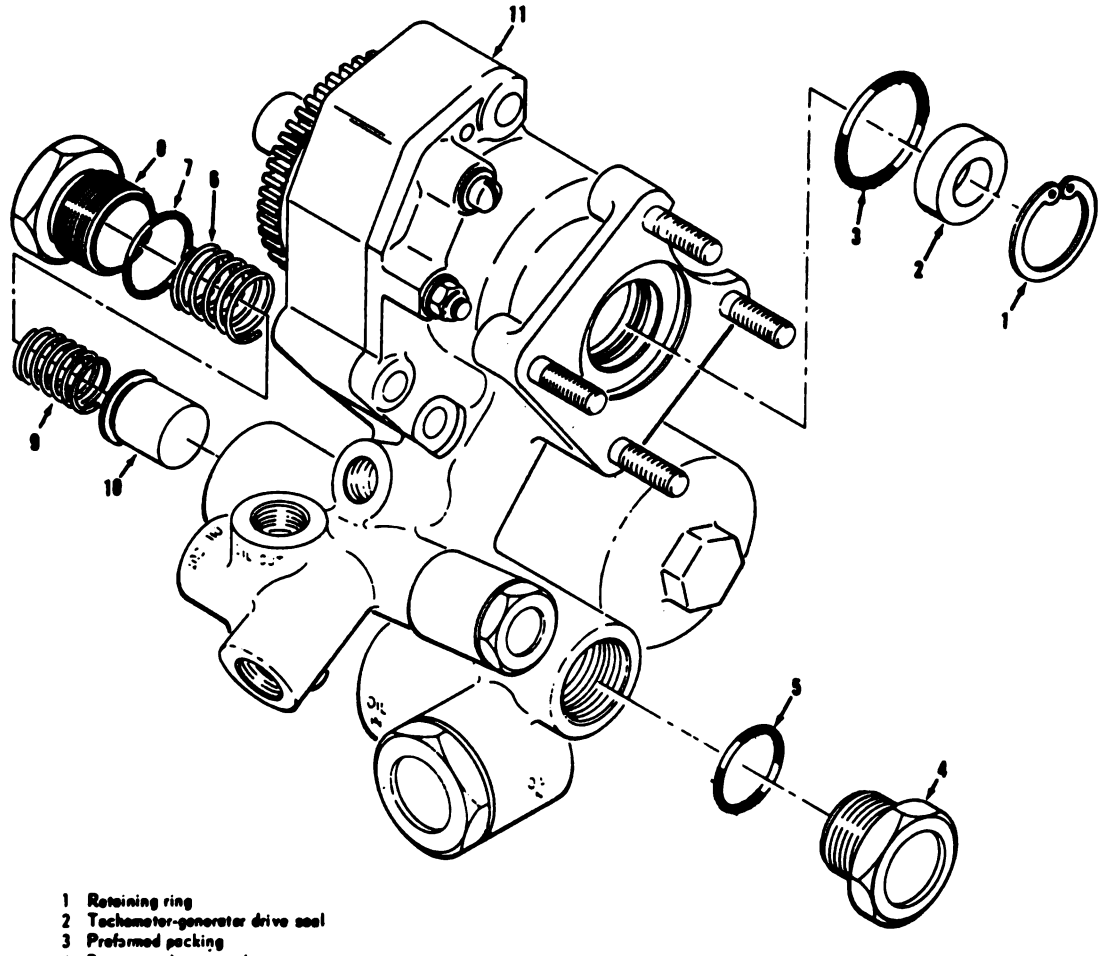

Figure 3-8. Oil pump assembly, exploded view.

3-9. Oil Tank Assembly

a. Oil Tank Assembly. The oil tank assembly is mounted on the left side of the compressor assembly plenum. The oil tank assembly supplies oil to the oil pressure pump and serves as an oil storage container for the gas turbine engine.

b. Removal. Refer to TM 5-6116-320-12 for removal procedures.

c. Cleaning and Inspection.

(1) Remove external dust, dirt and foreign matter from the oil tank assembly with clean, dry compressed air.

(2) Clean the oil tank assembly in cleaning solvent (FED P-D-680) and dry thoroughly.

(3) Inspect the oil tank assembly for evidence of damage, cracks, corrosion, excessive wear and stripped threads. If defective, replace the oil tank assembly.

d. Repair.

(1) Disassemble oil tank assembly according to sequence of index numbers assigned to figure 3-9.

(2) Replace preformed packings and assemble oil tank assembly in reverse order of disassembly procedures using figure 3-9 as a guide.

e. Installation. Refer to TM 5-6115-320-12 for installation procedures.

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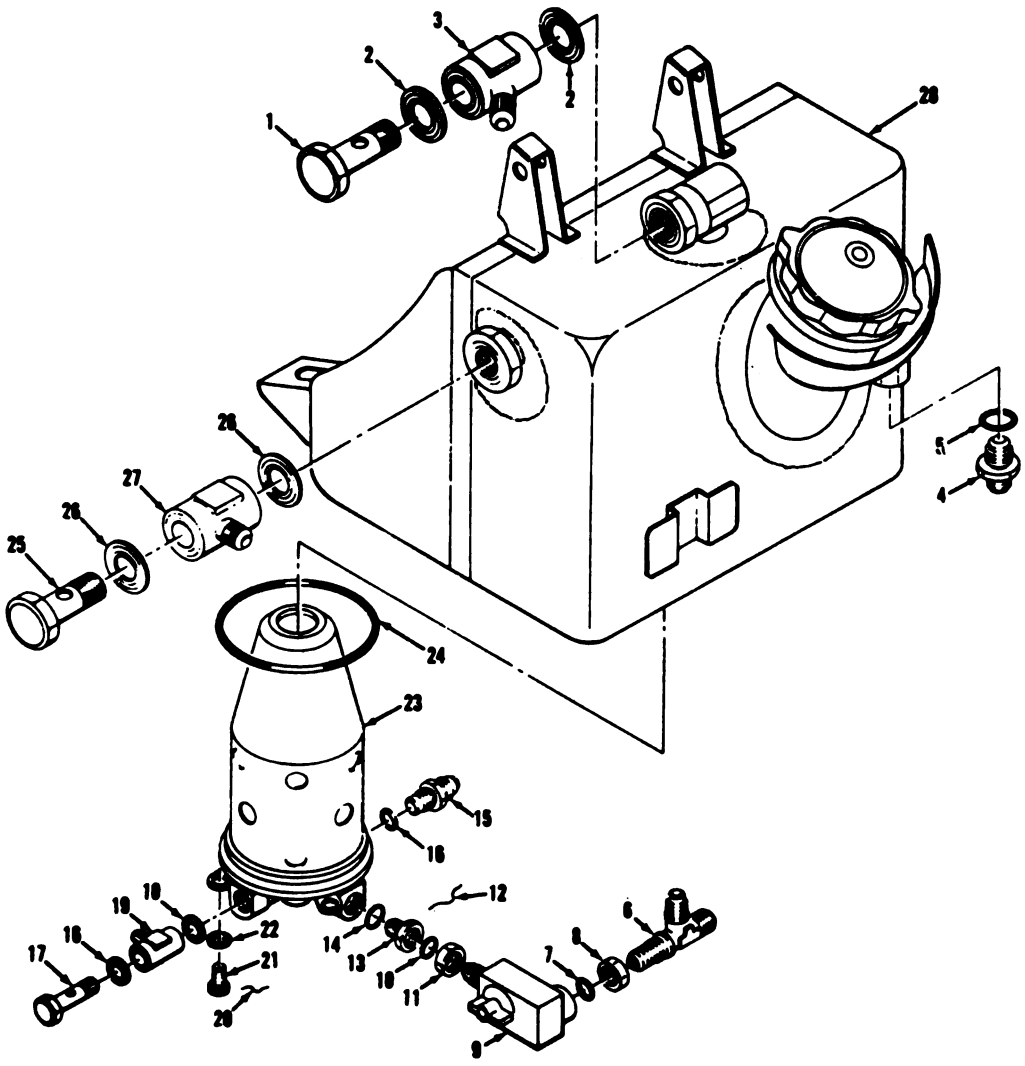

1. Bolt
2. Banjo seal
3. Elbow
4. Union
5. Preformed packing
6. Tee
7. Preformed packing
8. Nut
9. Oil drain valve
10. Preformed packing
11. Nut
12. Lockwire
13. Reducer
14. Preformed packing
15. Union
16. Preformed packing
17. Bolt
18. Banjo seal
19. Elbow
20. Lockwire
21. Bolt (4)
22. Washer (4)
23. Tube
24. Preformed packing
25. Bolt
26. Banjo seal
27. Elbow
28. Oil tank

ME 6115-320-34/3-9

Figure 3-9. Oil tank assembly, exploded view.

3-10. Oil Spray Jet and Breather Tubes

a. Oil Spray Jet and Breather Tubes. The oil spray jet and breather tubes are two concentric tubes installed in a port on top of the compressor assembly case. An external fitting provides separate connections for the two tubes. The outer tube is a breather tube and allows oil vapor and air to be vented from the compressor-turbine bearing cavity to the oil tank. The inner tube mates with a spray jet assembly in the compressor assembly which directs streams of oil to the compressor shaft bearing and the turbine assembly bearing.

b. Removal. Remove oil spray jet and breather tubes according to sequence of index numbers assigned to figure 3-10.

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c. Cleaning and Inspection.

(1) Remove dust, dirt and foreign matter from the oil spray jet and breather tubes with clean, dry, compressed air.

(2) Clean the oil spray jet and breather tubes in cleaning solvent (Fed P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage or stripped threads. Replace defective parts.

d. Repair.

(1) Disassemble oil spray jet and breather tubes according to sequence of index numbers assigned to figure 3-11.

(2) Replace all preformed packings and assembled oil spray jet and breather tubes in reverse order of disassembly using figure 3-11 as a guide.

e. Installation. Install the oil spray jet and breather tubes in the reverse order of removal procedures using figure 3-10 as a guide.

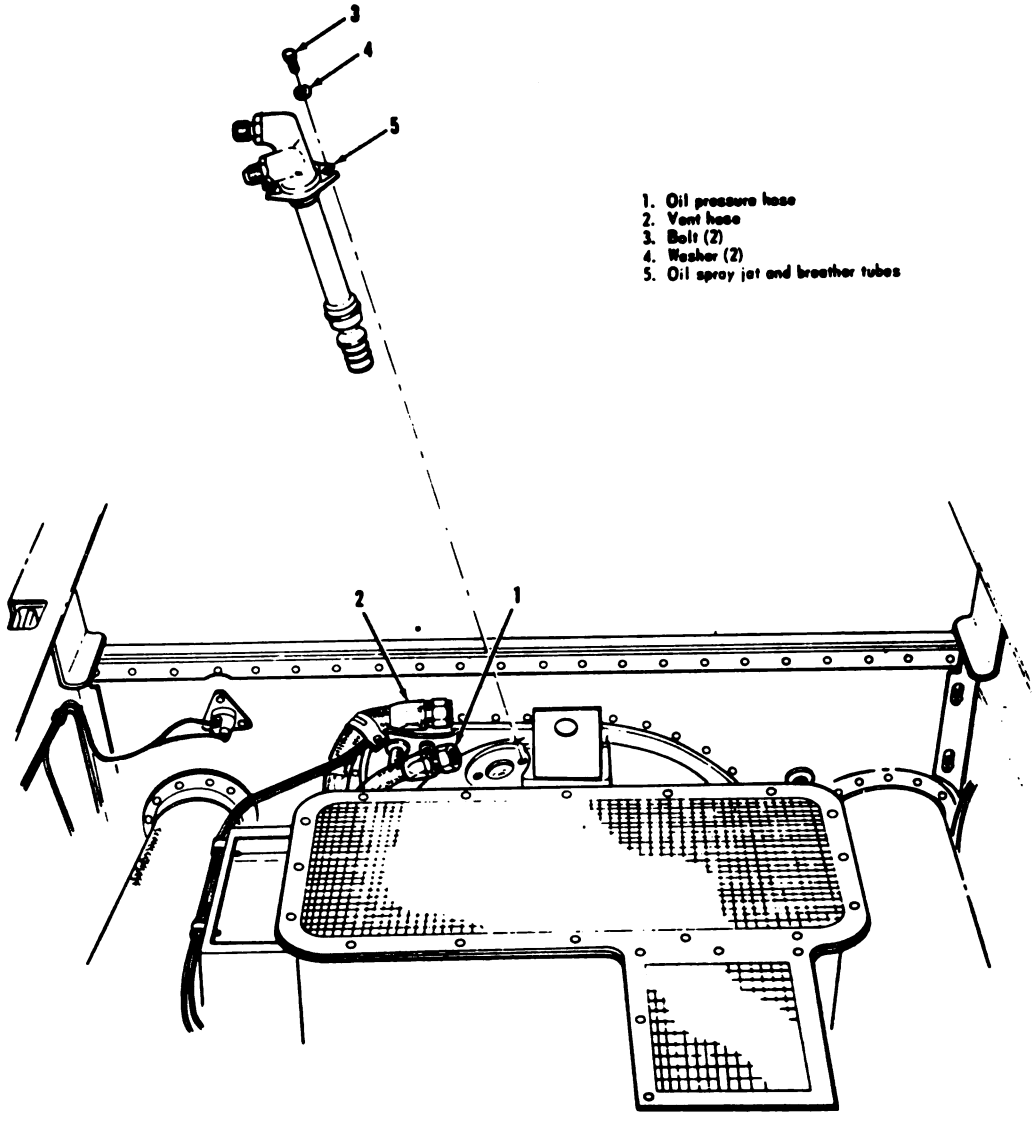

Figure 3-10. Oil spray jet and breather tubes removal and installation.

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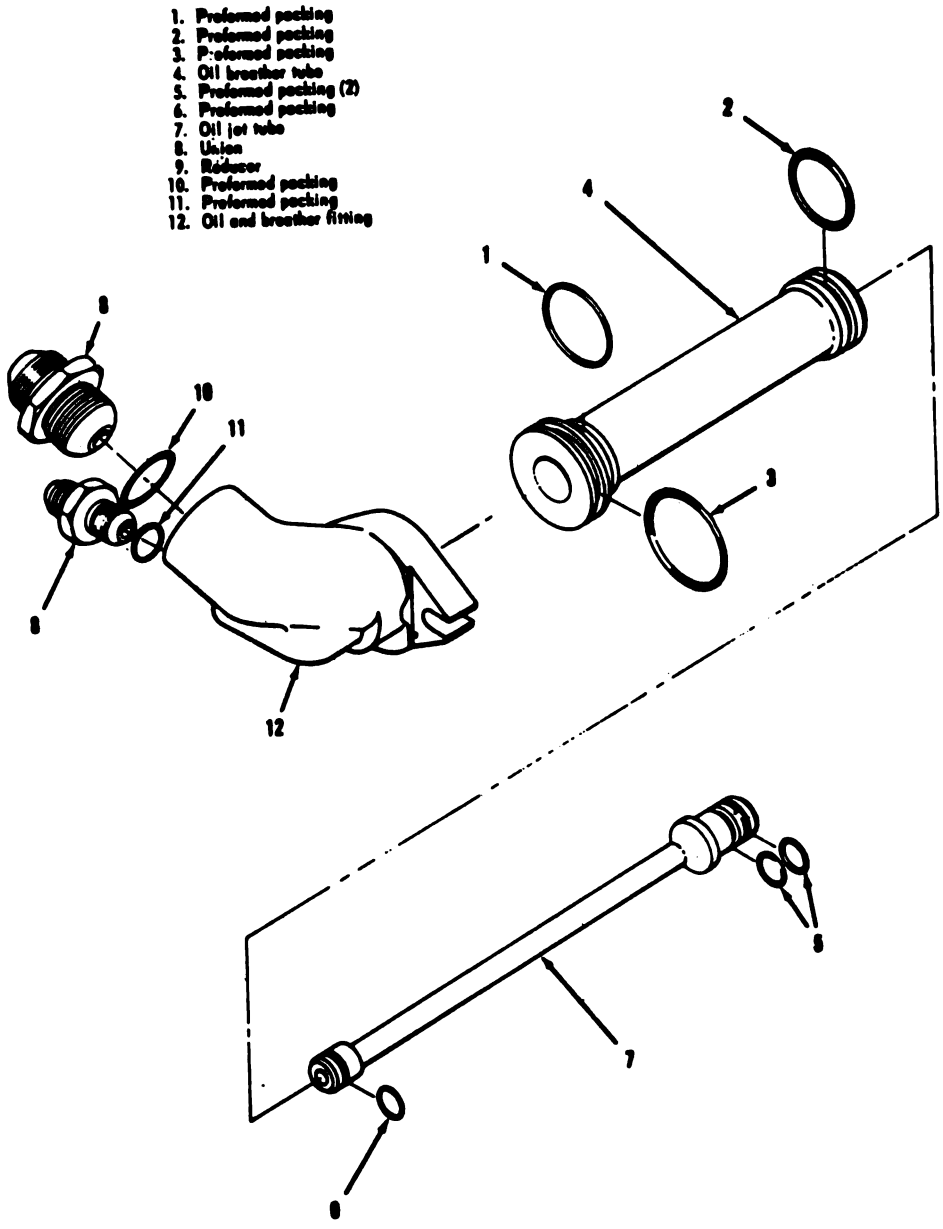

Figure 3-11. Oil spray jet breather tubes, exploded view.

Section IV. REPAIR OF COMBUSTION ASSEMBLY

3-11. Combustion Chamber Assembly

a. Combustion Chamber Assembly. The combustion chamber assembly (5, fig. 3-12) is constructed of steel and is ceramic coated to withstand high temperatures. It is perforated to permit entry of air for combustion from the compressor. The lower end of the combustion chamber assembly is mated with the turbine torus, which directs the products of combustion to the turbine nozzle and shroud assembly, and thence to the turbine wheel.

b. Removal. Refer to TM 5-6115-320-12 for removal procedures.

c. Repair. Repair cracks in the combustion chamber assembly as shown in figure 3-13.

d. Installation. Refer to TM 5-6115-320-12 for installation procedure.

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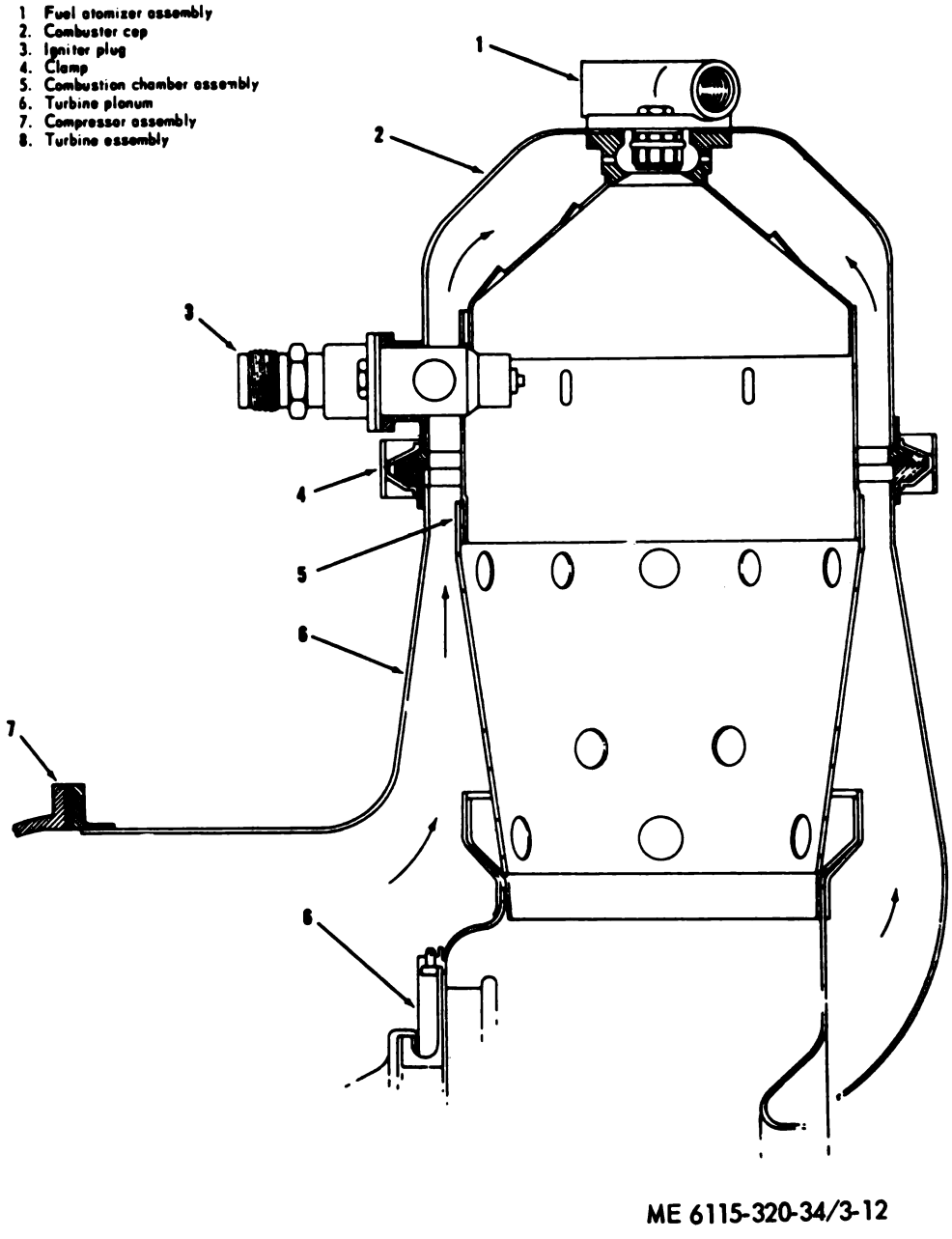

Figure 3-12. Combustion system air flow.

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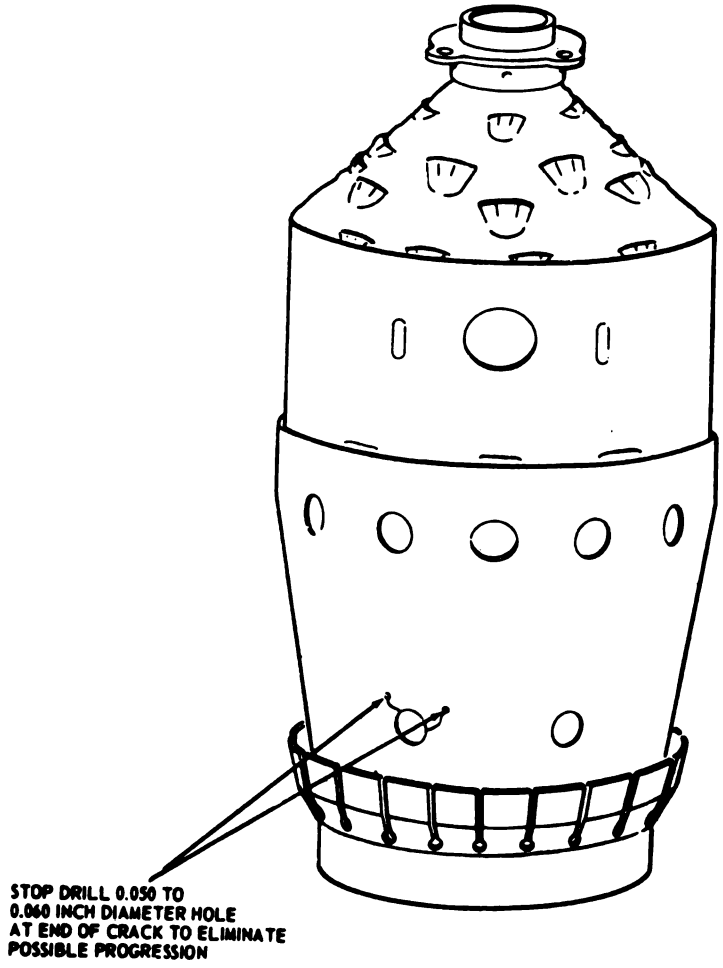

ME 6115-320-34/3-13

Figure 3-13. Combustion chamber assembly, exploded view.

3-12. Turbine Plenum

a. Turbine Plenum. The turbine plenum is bolted to the rear of the compressor and surrounds the turbine. It directs the air to the combustion chamber assembly as shown in figure 3-11. The fuel atomizer assembly is mounted in the combustor cap and arranged to spray the fuel into the combustion chamber assembly. The igniter plug is also mounted in the combustor cap and protrudes into the combustion chamber assembly. The turbine plenum is an effective heat shield and enclosure for the combustion chamber assembly.

b. Removal. Remove the muffler, turbine exhaust flange, combustor cap assembly, and combustion chamber assembly as described in TM 5-6115-320-12. Remove the turbine plenum according to sequence of index numbers assigned to figure 3-14.

c. Cleaning and Inspection.

(1) Clean the turbine plenum with cleaning solvent (FED. P-D-680) and dry thoroughly.

(2) Inspect for cracks, breaks, and other damage.

d. Repair. Repair the turbine plenum by welding as shown in figure 3-15.

e. Installation. Install the turbine plenum in reverse order of removal procedures, observing alinement requirements specified in figure 3-16.

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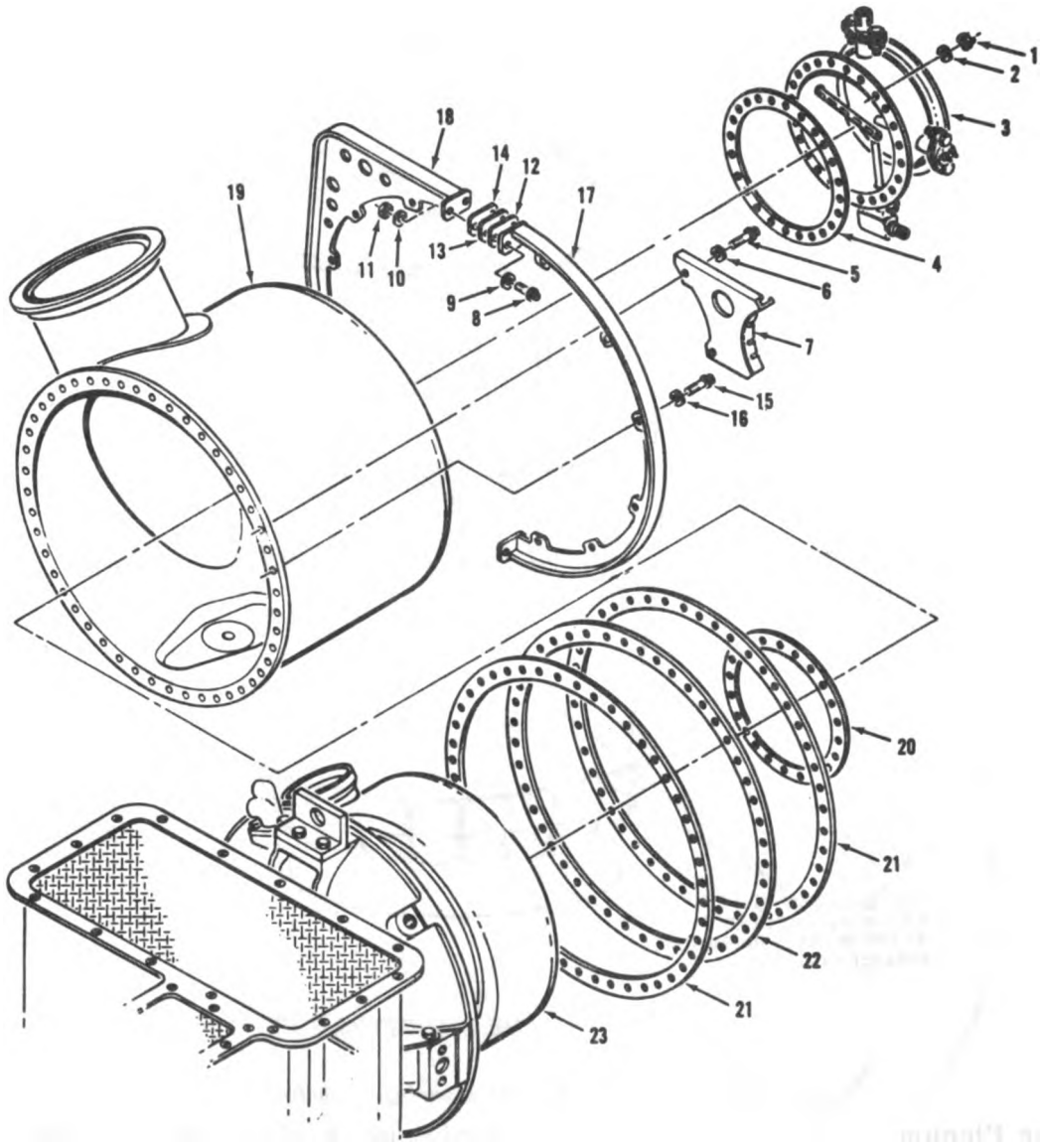

1. Nut (24)
2. Washer (AR)
3. Flange
4. Gasket
5. Bolt (36)
6. Washer (36)
7. Bracket
8. Bolt (4)
9. Washer (4)
10. Washer (4)
11. Nut (4)
12. Gasket
13. Gasket
14. Gasket
15. Bolt (12)
16. Washer (12)
17. Support
18. Support
19. Turbine plenum assembly
20. Gasket
21. Gasket
22. Gasket
23. Turbine assembly

ME 6115-320-34/3-14

Figure 3-14. Turbine plenum removal and installation.

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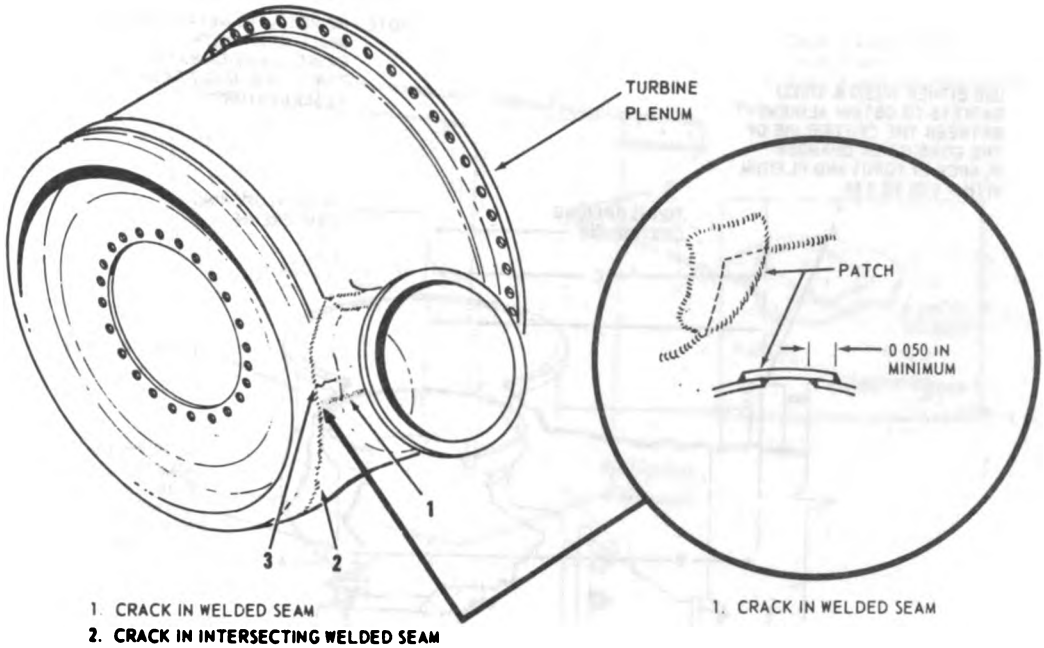

1. CRACK IN WELDED SEAM
2. CRACK IN INTERSECTING WELDED SEAM
3. CRACK IN WELDED SEAM AND ADJOINING MATERIAL

NOTES:

A. WELD PER TM 9-237 AND MIL-W-8611.
B CLEAN AND REWELD ANY CRACK SHOWN IN ITEM 1.
C. ITEMS 2 AND 3 WILL REQUIRE PATCHES.
D. MINIMUM PATCH THICKNESS 0.035 INCH.
E. DO NOT OVERLAP PATCHES.
F. REMOVE ENOUGH MATERIAL SO AS TO ELIMINATE ALL TRACES OF CRACK.
G. ITEMS 1, 2, AND 3 ARE ILLUSTRATIVE OF THE TYPES OF CRACKS AND DO NOT INDICATE LOCATION WHERE A CRACK MAY APPEAR.
H. ALL PATCHES ARE TO BE WELDED ON THE OUTER SKIN OF THE PLENUM. NO NEGATIVE STEPS ARE ALLOWED INSIDE OF PLENUM.
I INSIDE FLOW SURFACE AND JOINTS TO BE FREE OF EXCESS WELD
J. RESISTANCE SEAM WELD NOT PERMISSIBLE OTHER THAN TO HOLD PIECES FOR FUSION WELDING.
K PRESSURE TEST WELD AT 85 PSIG TO 90 PSIG. NO LEAKAGE PERMITTED
L. MATERIAL 321 CRES PER SPECIFICATION MIL-S-6721 COMP. T1

ME 6115-320-34/3-15

Figure 3-15. Turbine plenum, exploded view.

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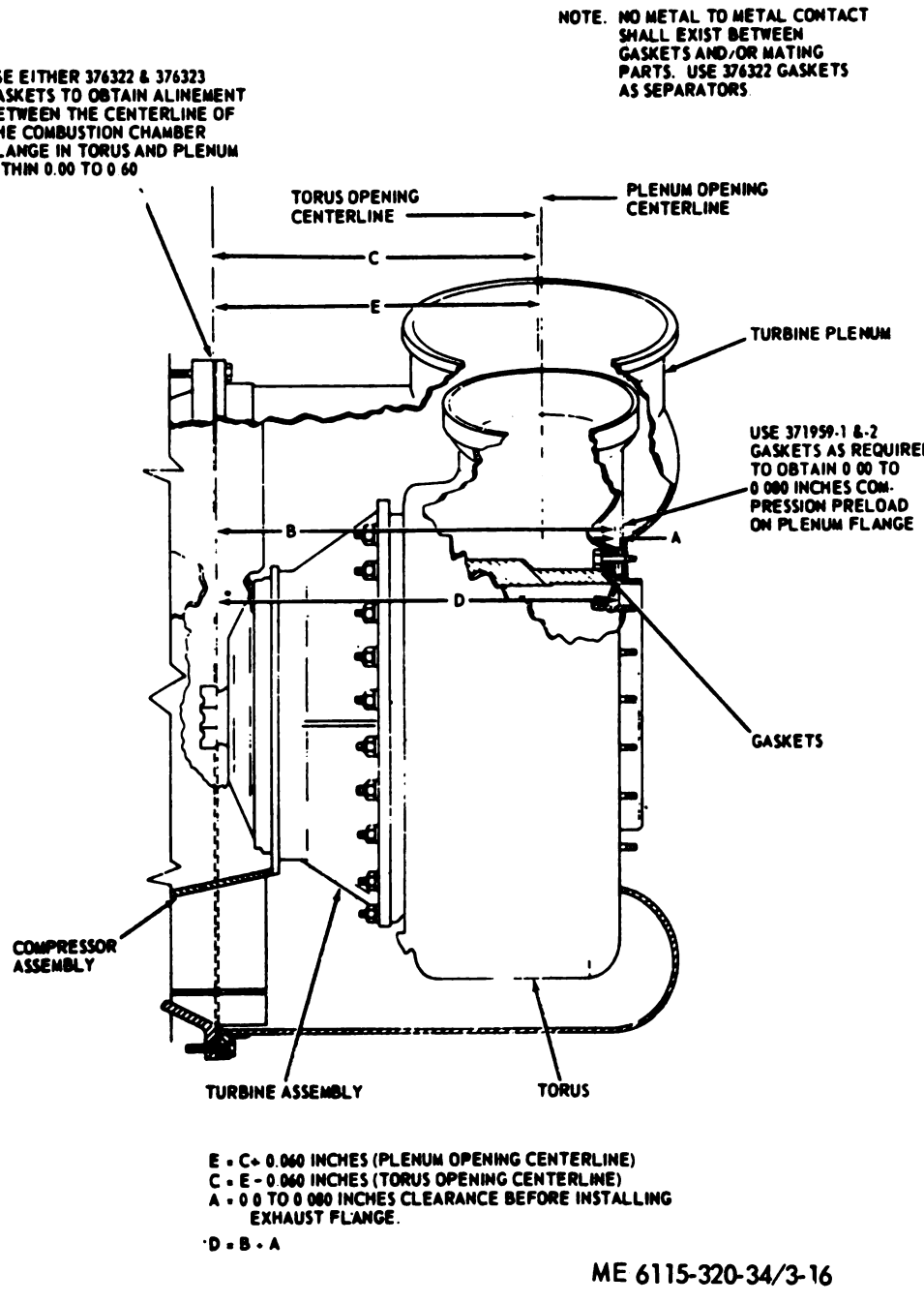

Figure 3-16. Turbine plenum alinement.

Section V. REPAIR OF EXHAUST SYSTEM

3-13. Exhaust Pipe and Ejector

a. Removal. Refer to TM 5-6115-320-12 for removal of exhaust pipe and ejector.

b. Repair. Repair cracks and breaks of the exhaust pipe and ejector by welding.

c. Installation. Refer to TM 5-6115-320-12 for installation procedure.

3-14. Muffler Assembly

a. Removal. Remove, clean and inspect as described in TM 5-6115-320-12.

b. Repair. Repair the muffler, as required, by welding as shown in figure 3-17.

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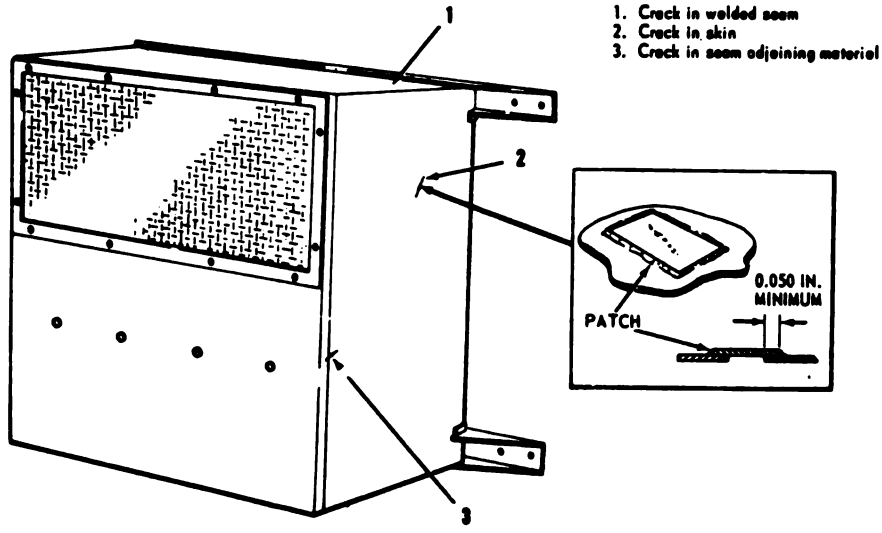

NOTES:

A. WELD PER TM 9-237 AND MIL-W-8611.

B. CLEAN AND WELD ANY CRACKS SUCH AS SHOWN AT 1 ABOVE OR ANY SPOT WELDED SEAMS THAT HAVE PARTED.

C. WELD PATCHES OVER CRACKS IN MATERIAL SUCH AS SHOWN AT 2 AND 3 ABOVE.

D. MINIMUM PATCH THICKNESS 0.025 INCH.

E. DO NOT OVERLAP PATCHES.

F. REMOVE ENOUGH MATERIAL TO ELIMINATE ALL TRACES OF CRACK.

G. ITEMS 1, 2, AND 3 ARE TYPICAL OF THE TYPES OF CRACKS THAT MAY BE FOUND, BUT DO NOT INDICATE LOCATIONS WHERE CRACKS ARE LIKELY TO APPEAR.

H. RESISTANCE SEAM WELD PERMISSIBLE ONLY TO HOLD PIECES FOR FUSION WELDING.

J. MATERIAL CRES 321 PER SPECIFICATION MIL-S-6721 COMPOSITION T1.

ME 6115-320-34/3-17

Figure 3-17. Muffler assembly, exploded view.

Section VI. REPAIR OF TURBINE ASSEMBLY

3-15. Turbine Assembly

a. General. The turbine assembly is comprised mainly of a turbine wheel and integral shaft, bearing housing, bearings, nozzle and shroud assembly, torus, and seal. The turbine wheel is a radial inward-flow type. The shaft is supported in the bearing housing by two pressure-lubricated ball bearings. A carbon seal, located between the turbine wheel and the adjacent bearing, prevents entrance of air around the turbine wheel to the oil cavity. The nozzle and shroud assembly forms a close fitting shroud at the back and sides of the turbine wheel, and contains nozzle vanes which receive the hot gases from the combustion chamber and direct the gases against the turbine wheel blades. A heat shield mounted on the wheel end of the bearing housing prevents excessive heat from penetrating to the shaft bearings. The torus mates with the discharge end of the combustion chamber assembly and directs combustion gases into the nozzle vanes leading to the turbine wheel.

b. Removal. Remove the turbine assembly as follows:

(1) Refer to TM 5-6115-320-12 for removal of the muffler assembly, exhaust ejector assembly, fuel atomizer assembly, ignitor plug, combustor cap, and combustion chamber assembly.

(2) Refer to paragraph 3-12 for removal of the turbine plenum.

(3) Remove nuts (1, fig. 3-18), washers (2),

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and assembled turbine assembly (index numbers 6 through 16) from compressor assembly (17).

(4) Remove quill shaft (3), spring (4), and packing (5).

c. Cleaning.

(1) Remove dust, dirt and foreign matter from the turbine assembly with clean, dry, compressed air.

(2) Clean the turbine assembly in cleaning solvent (FED. P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, wear, cracks, and corrosion. Replace defective parts.

d. Inspection. Inspect the nozzle and shroud assembly as follows:

(1) Two shroud cracks less than one-quarter inch apart on the same side of vane which could intersect and break off a segment of material are not permissible (see example 1, fig. 3-19).

(2) Maximum permissible cracks on individual vanes are two cracks less than one-quarter inch long, separated by by one-quarter inch minimum, or three cracks less than one-eighth inch long separated by one-eighth inch minimum (see example 2, fig. 3-19).

(3) Concentrations of small cracks are permissible on outer periphery of nozzle shroud (see example 3, fig. 3-19).

(4) Cracks from vane to shroud are permissible under one-quarter inch length (see example 4, fig. 3-19).

CAUTION

A vane to shroud crack may progress along the inside fillet until it joins a crack from an adjacent vane. Examine carefully for this possibility and replace nozzle and shroud assembly if this condition has occurred or is in progress.

(5) Damage from particles striking inner vane (trailing edges) is permissible if nicks, cracks, or dents do not exceed one-sixteenth inch in length; or one crack per vane, providing such damage is not at junction of shroud and vane (see example 5, fig. 3-19).

(6) Bolt hole cracks are permissible provided there are no more than four cracked bolt holes; cracked bolt holes must be separated by a minimum of six holes; cracks may extend to outer periphery but not into inner flange radius.

e. Repair. Repair turbine assembly as follows:

(1) Disassemble turbine assembly according to sequence of index numbers 6 through 16, figure 3-17. Note quantity and thickness of gaskets (9) and shims (14, 15) removed to facilitate assembly.

(2) Replace gaskets (9) with same quantity and thickness noted at disassembly.

(3) Replace torus assembly (8).

(4) Replace quill shaft (3).

(5) Replace preformed packing (5).

f. Installation. Install the turbine assembly in reverse order of disassembly and removal procedure observing the following: (refer to fig. 3-18).

(1) With nozzle and shroud assembly (13) placed on a bench in horizontal position, stand bolts (12) in upright position in slots of nozzle and shroud assembly.

(2) Secure bolts (12) in upright position with single loop of safety wire, and apply a small amount of approved high temperature thread compound to threads of each bolt.

(3) Install nozzle and shroud assembly (13) on turbine rotating assembly (16) using same number and thickness of shims (14, 15) noted at disassembly.

(4) Tighten nuts (11) to a torque of 24 to 28 inch-pounds.

(5) Install torus (8) to nozzle and shroud assembly (13) using same quantity and thickness of new gaskets (9) as noted at disassembly. Use additional gaskets (9) as required to aline holes for pins (7).

(6) Install spring (4) into compressor assembly (17).

(7) Coat spline ends of quill shaft (3) with compound (FSN 9150-664-0050), then install shaft in compressor section.

NOTE

End of shaft (3) with missing spline tooth must be installed against spring.

(8) Install new preformed packing (5), then install turbine assembly on compressor assembly (17).

CAUTION

Aline turbine assembly as straight as possible when installing it on compressor assembly to avoid damage to oil jet. Damage to oil jet may alter oil flow pattern with resulting bearing damage. Exercise care as shaft splines mesh.

(9) Coat nuts (1) and washers (2) with an approved high temperature thread compound and install to secure turbine assembly.

(10) Refer to paragraph 3-12 for installation of the turbine plenum.

(11) Refer to TM 5-6115-320-12 for installation of the combustion chamber assembly, combustor cap, igniter plug, atomizer assembly, exhaust ejector assembly, and muffler assembly.

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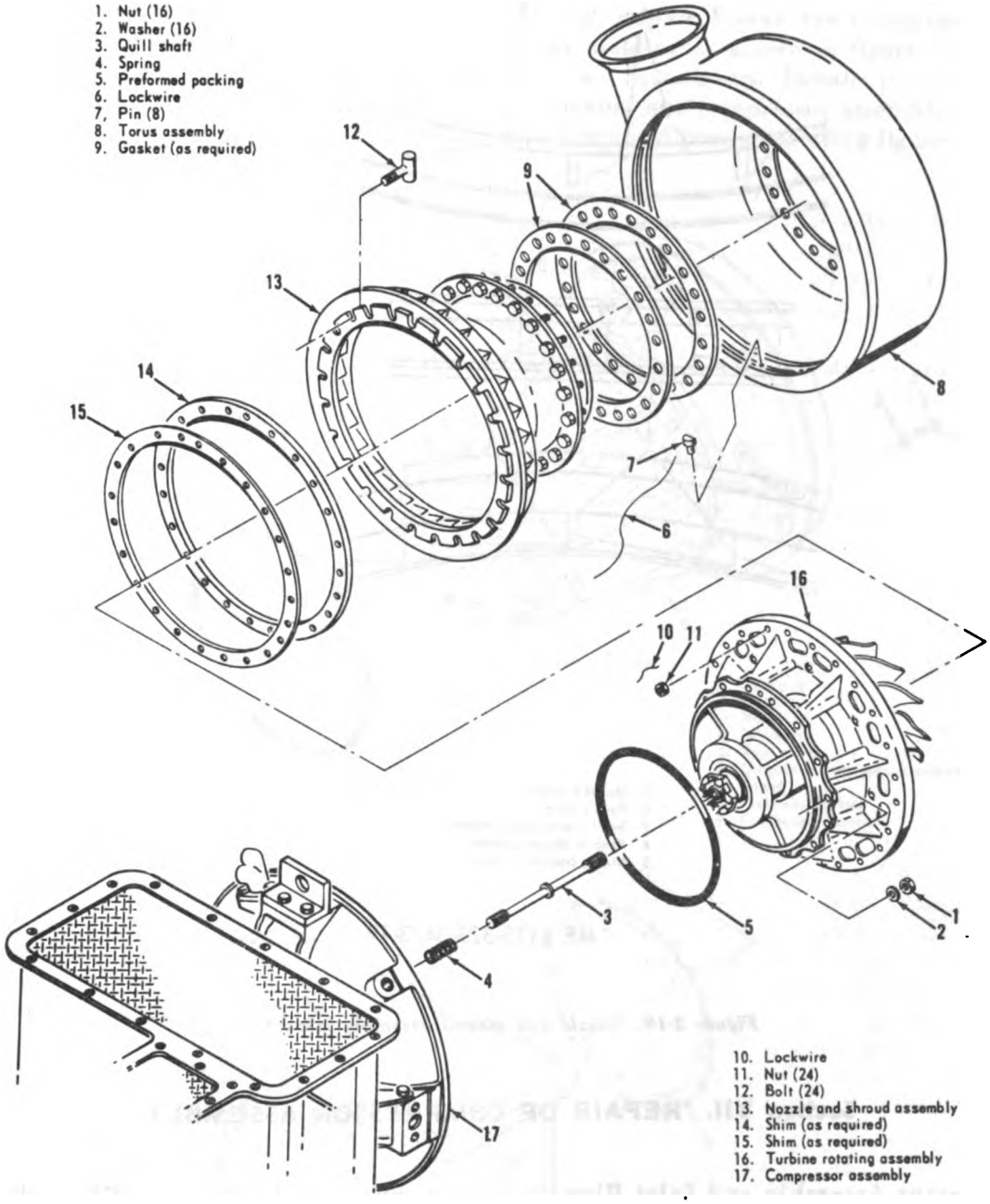

Figure 3-18. Turbine assembly, removal, disassembly, reassembly and installation.

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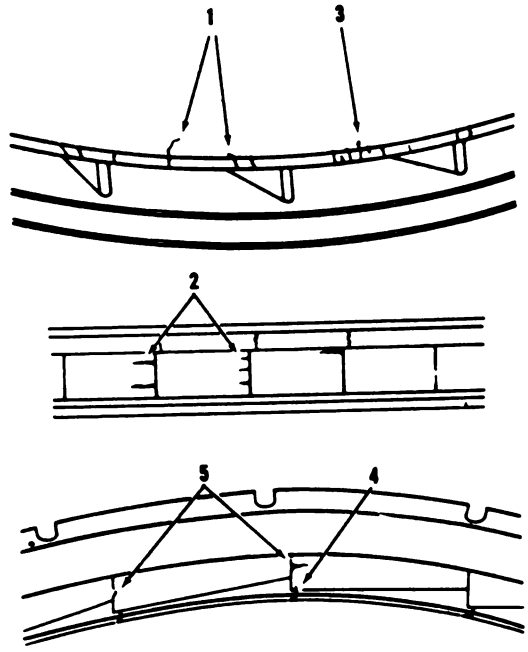

1 Shroud cracks
2 Vane cracks
3 Small crack concentration
4 Vane to shroud cracks
5 Nicks, cracks, or dents

ME 6115-320-34/3-19

Figure 3-19. Nozzle and shroud assembly inspection.

Section VII. REPAIR OF COMPRESSOR ASSEMBLY

3-16. Compressor Assembly and Inlet Plenum

a. General. The compressor is a two-stage, centrifugal type, with a compressor inlet plenum attached. The turbine assembly is mounted on the rear of the compressor assembly and the accessory drive assembly is mounted on the front end. Both the turbine assembly and the accessory drive assembly must be removed before the compressor assembly is accessible.

(1) *Compressor inlet plenum.* The compressor inlet plenum has a top opening, protected by a screen, for the air supply to the compressor. The compressor inlet plenum is fabricated from aluminum alloy sheets.

(2) *Compressor assembly.* Inlet air from the inlet plenum passes through the two stages of compression and is discharged from the peripheral outlet into the turbine plenum. The compressor shaft is hollow with internal splines at the center. A splined quill shaft within the hollow shaft is used to connect the compressor to the turbine which drives it. The accessory drive is connected to the compressor by another splined quill shaft, mated to the hollow shaft.

b. Removal. Remove the compressor assembly and inlet plenum as follows:

(1) Remove the engine and generator assemblies as described in paragraph 2-9.

(2) Remove the accessory drive assembly as described in paragraph 3-17.

(3) Remove the compressor inlet plenum according to sequence of index numbers assigned to figure 3-20.

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(4) If required for compressor assembly replacement, remove the turbine assembly as described in paragraph 3-15.

c. Cleaning and Inspection.

(1) Clean the compressor assembly and inlet plenum with cleaning solvent (FED. P-D-680) and dry thoroughly.

(2) Inspect for cracks, breaks, and other damage.

d. Repair. Repair the compressor inlet plenum by welding as shown in figure 3-21.

e. Installation. Install the compressor inlet plenum and compressor assembly in reverse order of removal procedure using figure 3-20 as a guide.

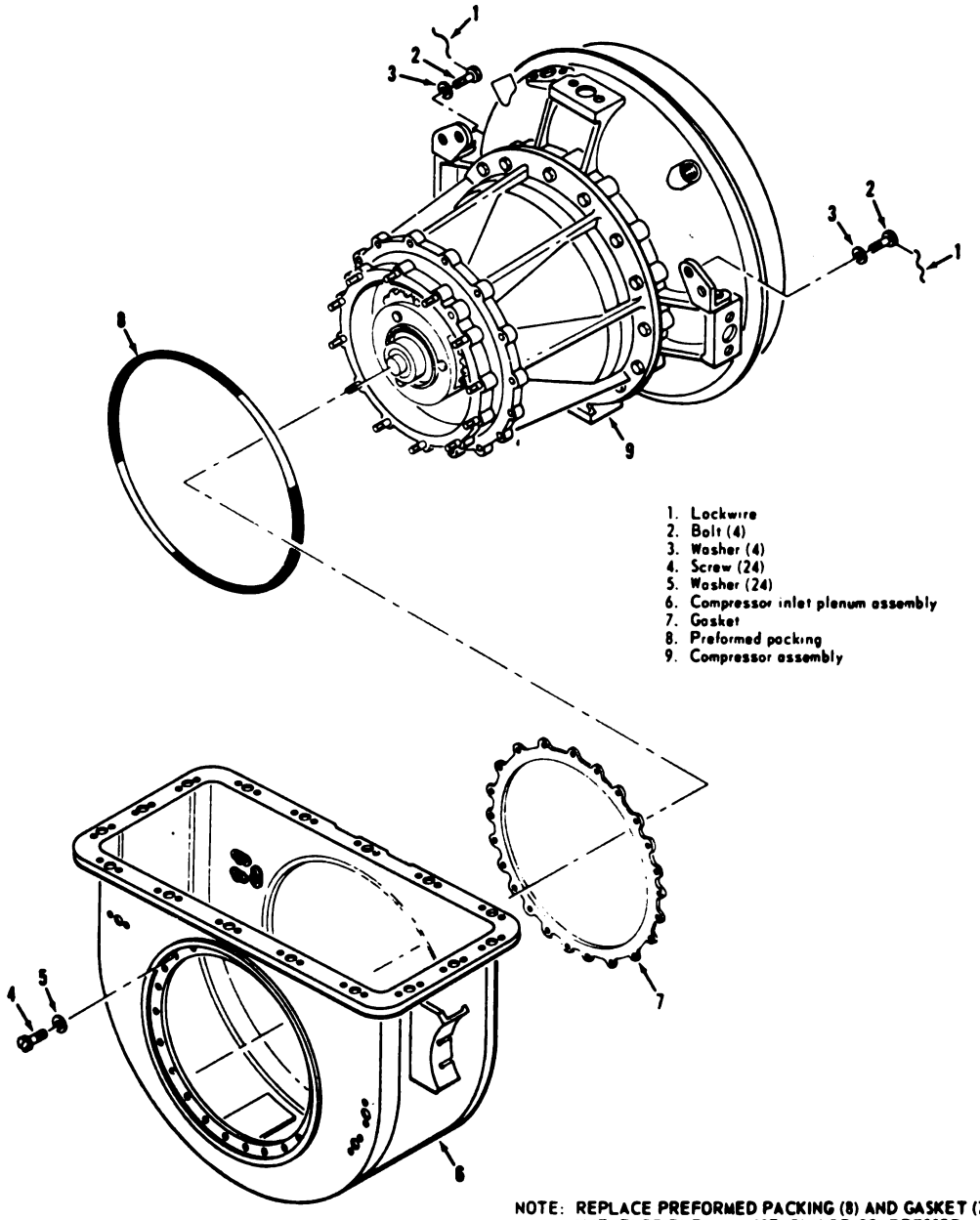

Figure 3-20. Compressor inlet plenum removal and installation.

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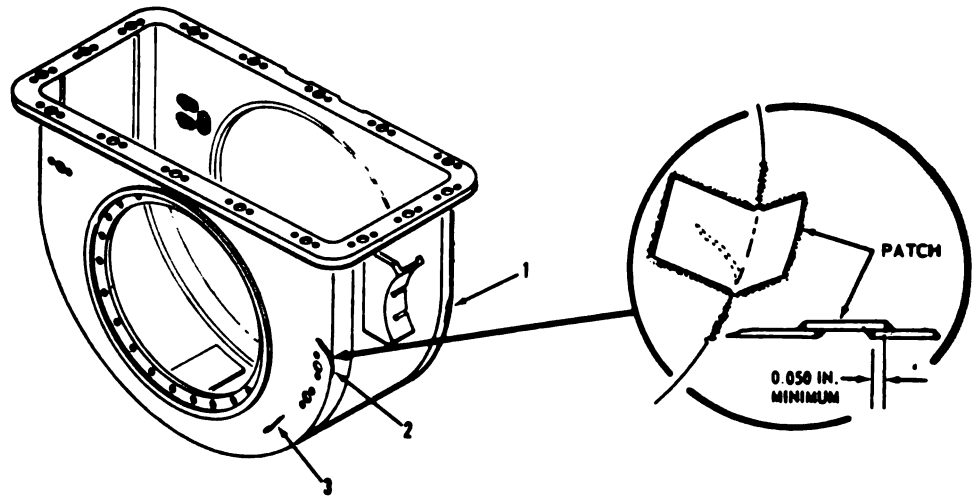

1. Crack in welded seam
2. Crack in welded seam and adjoining material
3. Crack in material

NOTES:

A. WELD PER TM 9-237.
B. CLEAN AND REWELD ANY CRACK SUCH AS ITEM 1.
C. CRACKS SUCH AS ITEM 2 AND 3 REQUIRE PATCHES.
D. MINIMUM PATCH THICKNESS 0.023 INCH.
E. DO NOT OVERLAP PATCHES.
F. REMOVE ENOUGH MATERIAL TO ELIMINATE ALL TRACES OF CRACK.
G. ITEMS 1, 2, AND 3 ARE TYPICAL OF THE TYPES OF CRACKS, BUT DO NOT INDICATE LOCATIONS WHERE CRACKS MAY APPEAR.
H. ALL PATCHES ARE TO BE WELDED ON OUTER SKIN.
J. MATERIAL ALUMINUM ALLOY 6061-T4 PER SPECIFICATION QQ-A-327.

ME 6115-320-34/3-21

Figure 3-21. Compressor inlet plenum, exploded view.

Section VIII. REPAIR OF ACCESSORY DRIVE

3-17. Accessory Drive Assembly

a. General. The accessory drive assembly is mounted on the forward end of the compressor assembly and is designed as a separate assembly. The accessory drive assembly consists of an alloyed magnesium housing containing a gear reduction train to drive the fuel control unit, centrifugal switch assembly, cooling air fan assembly, oil pump assembly, tachometer-generator, and ac generator. The arrangement of the drive train is such that the starter motor assembly drives all accessories in addition to driving the compressor, turbine and generator assemblies during the initial phase of starting.

b. Removal. To remove the accessory drive assembly, proceed as follows:

(1) Remove gas turbine engine and generator from enclosure (para 2-9).

(2) Remove ac generator from engine (para 10).

(3) Remove air inlet screen assembly (TM 6115-320-12).

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(4) Remove and tag wiring harness, fuel lines, oil lines, and air lines as necessary.

(5) Remove starter motor assembly (TM 5-6115-320-12).

(6) Remove fuel control unit (para 3-5).

(7) Remove oil pump assembly (para 3-8).

(8) Remove oil cooler air duct (TM 5-6115-320-12).

(9) Remove accessory drive assembly according to sequence of index numbers assigned to figure 3-22.

c. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from the accessory drive assembly with clean, dry, compressed air.

(2) Clean the accessory drive assembly with cleaning solvent (FED. P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, wear, stripped threads, or broken gear teeth. If defective, replace accessory drive assembly.

d. Repair. To repair the accessory assembly, refer to figure 3-23 and proceed as follows:

NOTE

Before performing the following step, check for an alinement scribe mark on nuts (1) and fan shaft. If necessary, rescribe mark for later assembly realinement.

(1) Remove nut (1) and washer (2).

(2) Attach Mechanical Fan Puller to fan assembly (3) with screws (10-24 x 1½ inch long) threaded into tapped holes in fan assembly. Tighten shaft of Mechanical Fan Puller to remove fan assembly.

(3) Remove bolts (4) and washers (5), then remove assembled parts (6 through 13).

(4) Remove bolts (6) and washers (7).

(5) Remove and replace housing (8) and plenum (9) as necessary.

(6) Remove retainer (10) and shim (11).

(7) Remove and replace preformed packing (12) and seal (13) using Seal Installing Holder.

(8) Remove lock key (14).

(9) Remove nut (15) using Wrench Adapter and Spanner Wrench.

(10) Remove lockwire (16).

(11) Remove screws (17) and washers (18).

(12) Remove retainer (19) and seal (20).

(13) Remove spacer (21), shims (22) and (23).

(14) Press seal (20) out of retainer (19) using Seal Driver and replace seal.

(15) Remove old cement from retainer (19) using methyl-ethyl-ketone (Federal Specification TT-M-261).

(16) Remove snap ring (24).

(17) Remove seal (25) by driving seal from oil pump side through fuel control unit side with Seal Driver. Replace seal as necessary.

(18) Assemble accessory drive assembly in reverse order of disassembly using figure 3-23 as a guide and observing the following:

(a) Cement seal (20) into retainer (19) using an approved clear cement (No. 1276 clear glyptal).

(b) Install shims (22) and (23) as required using figure 3-24 as a guide.

(c) Tighten nut (15) to a torque of 145-155 inch-pounds.

e. Installation. Install the accessory drive assembly in reverse order of removal procedure using figure 3-22 as a guide

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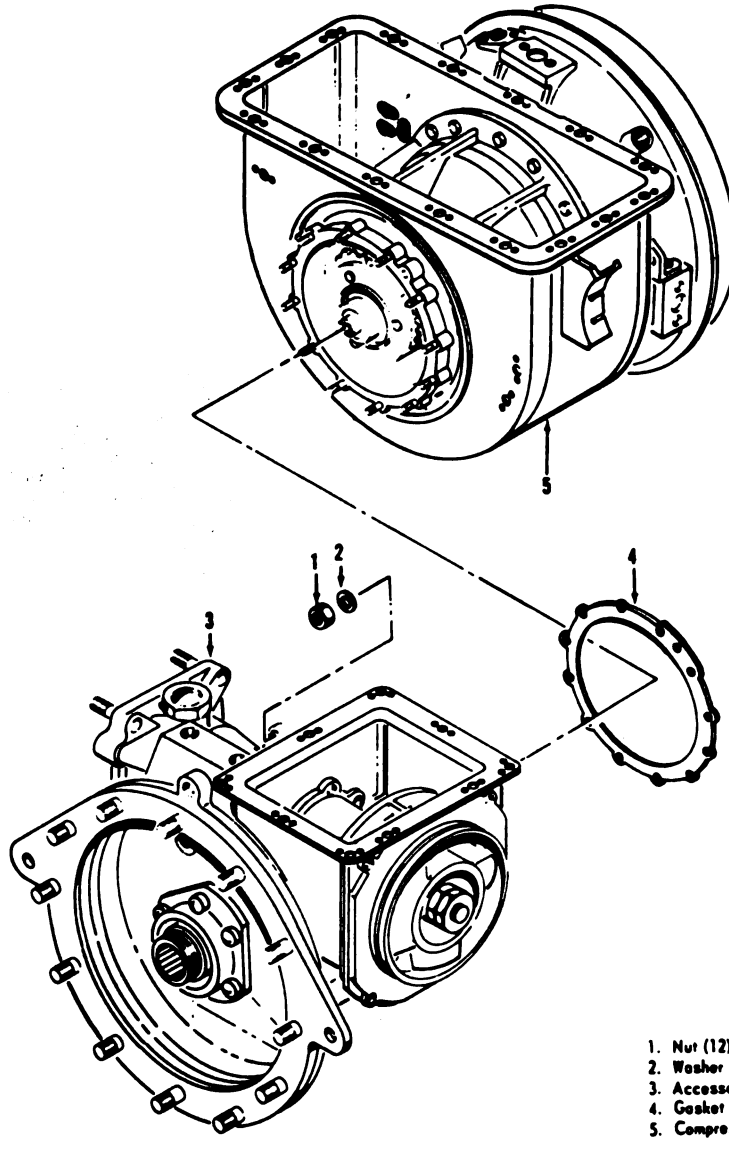

1. Nut (12)
2. Washer (12)
3. Accessory drive assembly
4. Gasket
5. Compressor assembly

ME 6115-320-34/3-22

Figure 3-22. Accessory drive assembly removal and installation.

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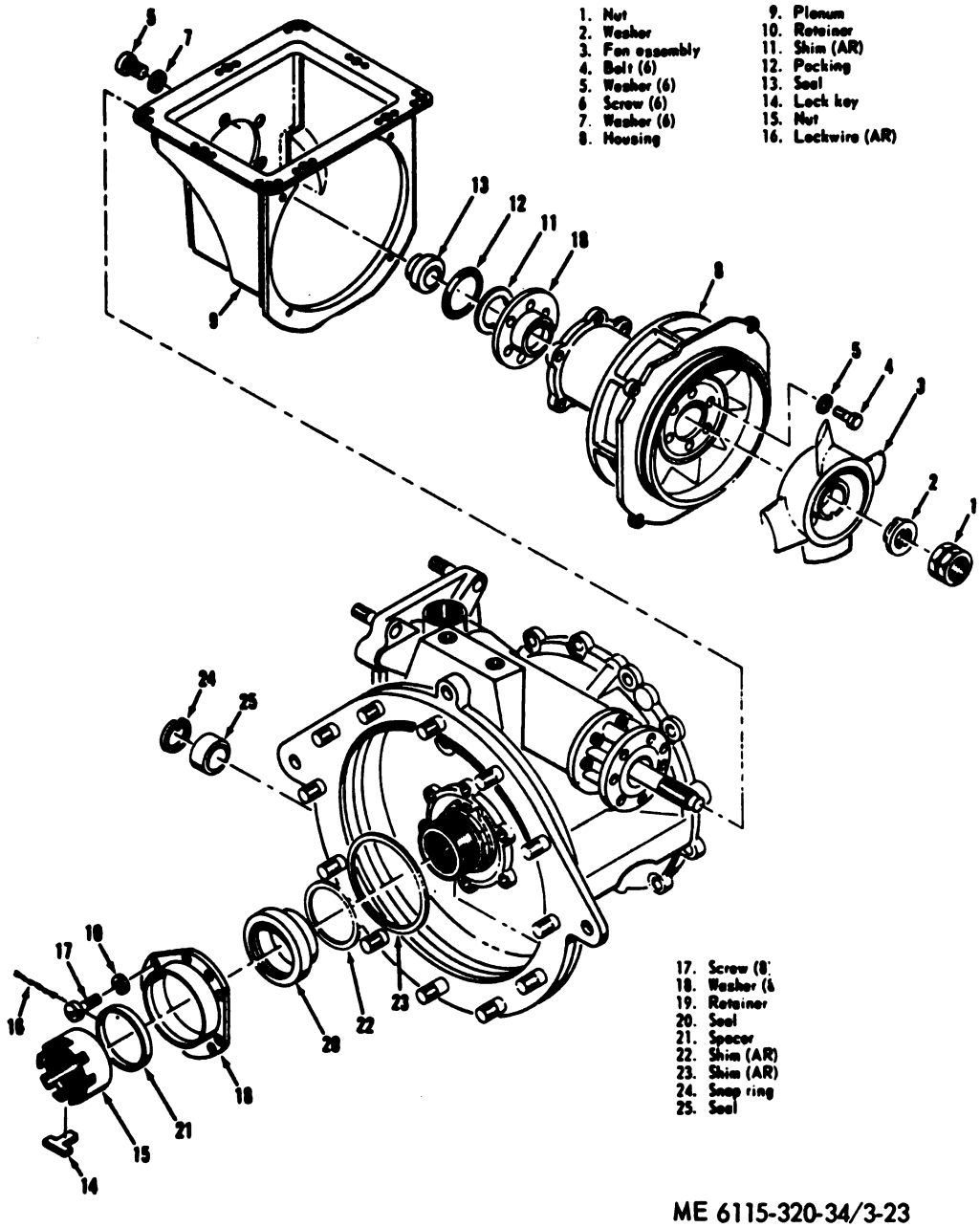

Figure 3-23. Accessory drive assembly, exploded view.

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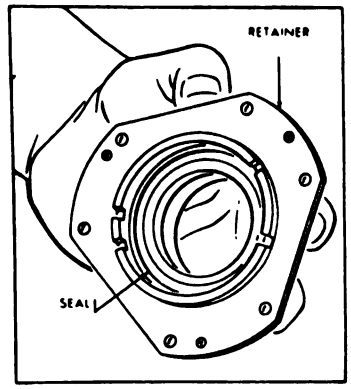
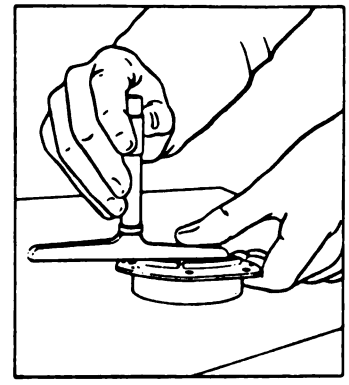
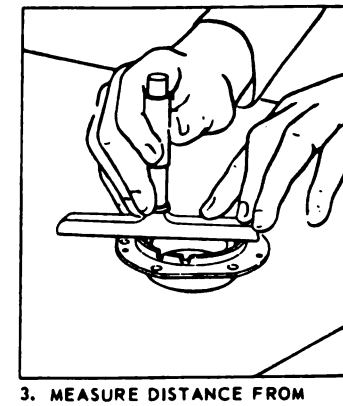


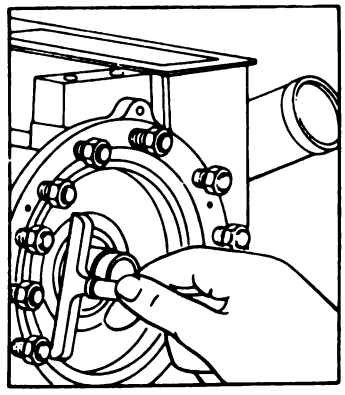
1. INSPECT RETAINER TO BE SURE SEAL IS PROPERLY SEATED IN RETAINER.



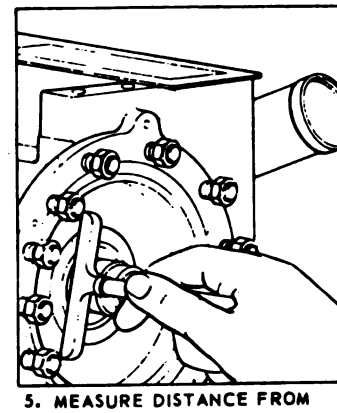
2. MEASURE DISTANCE FROM FLANGE OF RETAINER TO TOP OF LIP OF RETAINER RECORD AS "A" DIMENSION (SEE STEP 6).



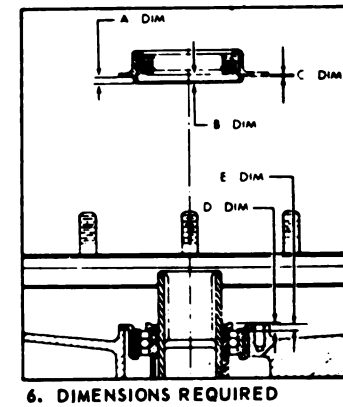
3. MEASURE DISTANCE FROM TOP OF LIP OF RETAINER TO FACE OF CARBON SEAL AND RECORD AS "B" DIMENSION. (SEE STEP 6) SUBTRACT A DIMENSION FROM "B" DIMENSION AND RECORD AS "C" DIMENSION.



4. MEASURE FROM SURFACE OF BEARING RETAINER AND RECORD AS "D" DIMENSION (SEE STEP 6) SUBTRACT "C" DIMENSION (STEP 5) FROM "D" DIMENSION. "D" DIMENSION MUST BE 0.030 TO 0.035 INCH GREATER THAN "C" DIMENSION (STEP 5). IF NECESSARY ADD SHIMS BETWEEN SEAL ROTOR AND BEARING TO OBTAIN THIS VALUE. INSTALL SHIMS IF REQUIRED.



5. MEASURE DISTANCE FROM OUTER FACE OF BEARING RETAINER TO BEARING RECORD AS DIMENSION "E". "A" DIMENSION OBTAINED IN STEP 2 MUST BE 0.000 TO 0.003 GREATER THAN "E" DIMENSION.



6. DIMENSIONS REQUIRED IN STEPS 2, 3, 4, 5.

ME 6115-320-34/3-24

Figure 3-24. Output shaft seal and bearing shim measurements.

Section IX. REPAIR OF SAFETY CONTROLS

3-18. Centrifugal Switch Assembly

a. General. The centrifugal switch assembly mounts on the right side of the accessory section housing adjacent to the oil pump assembly and is driven by the accessory section gear train. The self-actuating and self-resetting centrifugal switch assembly is of the flyweight type and contains an input shaft, flyweights, fulcrum lever, actuator, push rods, bearings, springs, three micro switches, housing and cover. The function of the centrifugal

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switch assembly is to control the sequence of operation of the electrical system components by movement of the flyweights in response to the speeds of the gas turbine engine. The flyweights cause a pushrod to exert force on a lever which contains two adjustable leaf springs and a button to operate each of the three switches. Three pushrods, each with an adjustment spring, oppose flyweight force against the lever to decrease the movement of the flyweights as necessary to actuate the switches in sequence. The switches actuate at approximately 35 percent, 95 percent and 110 percent speeds. The starter cutout (35 percent) switch controls the operation of the starter circuit to open the circuits when not required for operation of the power unit. The ready to load (95 percent) switch opens the ignition circuit to de-energize the igniter plug and allows closing of CB3. The overspeed shutdown (110 percent) switch functions to stop the gas turbine engine at overspeed conditions (refer to fig. 3-26).

b. Removal. To remove the centrifugal switch assembly, refer to figure 3-25 and proceed as follows:

(1) Remove tachometer generator (para 3-22).

(2) Remove electrical connector (1).

(3) Remove screws (2, 3) and washers (4).

(4) Separate upper half (5) of centrifugal switch assembly from lower half (10) of centrifugal switch assembly.

NOTE

Remove stud (6) and shims (7) from lower half of centrifugal switch assembly to prevent loss. Record quantity and thickness of shims (7) and exercise care to prevent loss of stud (6) or shims (7).

(5) Remove screws (8) and washers (9).

(6) Separate lower half of centrifugal switch assembly (10) from turbine engine.

NOTE

Do not replace either section of centrifugal switch assembly without replacing the other section.

c. Cleaning and Inspection.

(1) Remove all dust, dirt, and foreign matter from centrifugal switch assembly with clean, dry, compressed air.

(2) Clean the centrifugal switch assembly with a cloth moistened with cleaning solvent (FED. P-D-680), and dry thoroughly.

(3) Inspect for evidence of damage or excessive wear. If defective, replace centrifugal switch assembly.

d. Adjustment. The centrifugal switch assembly switch actuation points may be checked and adjusted without removal of the switch assembly from the gas turbine engine by connecting the Gas Turbine Engine Analyzer to the unit as described in paragraph 2-2, and controlling engine operation as follows.

(1) Start the generator set (refer to TM 5-6115-320-12). Open the fuel by-pass valve (fig. 2-3) to by-pass fuel and control engine acceleration. Observe engine rpm on the Analyzer tachometer. Refer to figure 3-27 for Analyzer tachometer to engine rpm conversion data.

(2) Note that STARTER light (fig. 2-3) is extinguished at 1,465 to 1,545 rpm Analyzer tachometer indication indicating actuation of the starter cutout (35 percent) switch. If reading is outside these limits, remove cover plate (3, fig. 3-28) and rotate starter cutout switch adjustment screw (fig. 3-28) counterclockwise to decrease actuation point and clockwise to increase actuation point.

NOTE

Any change in the setting of the starter cutout switch will automatically change the settings of the ready-to-load (95 percent) and overspeed shutdown (110 percent) switches. The ready-to-load and overspeed shutdown switches must be readjusted whenever the starter cutout switch setting is changed.

(3) After satisfactory check or adjustment of starter cutout switch, increase engine rpm until 95 per cent RELAY light (fig. 2-3) illuminates. Note actuation rpm on Analyzer tachometer indicator and continue increasing engine rpm until Analyzer tachometer indicates approximately 4,100 rpm. Slowly open fuel by-pass valve (fig. 2-3) to decrease engine rpm, note Analyzer tachometer indication when 95 percent RELAY light is extinguished.

(4) Actuation point of ready-to-load (95 percent) switch on increasing rpm should be 4,030 rpm or less. Actuation point on decreasing rpm should be 3,818 to 3,918 rpm. If actuation point is outside these limits, turn ready-to-load switch adjustment screw (fig. 3-28) counterclockwise to decrease actuation point and clockwise to increase actuation point.

NOTE

Whenever the ready-to-load switch deceleration actuation point is set, the actuation point during acceleration is automatically set. Any change in the setting of the ready-to-load switch will change to setting of the overspeed shutdown switch but not the starter cutout switch. The overspeed shutdown switch must be adjusted if the ready-to-load switch is adjusted.

(5) After satisfactory check or adjustment of starter cutout and ready-to-load switches, gradually increase engine rpm to 4,580 rpm (Analyzer tachometer indicator) or the gas turbine engine shuts down automatically. Note analyzer tachometer indication at engine shutdown point.

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CAUTION

Never allow the gas turbine engine to operate at an Analyzer tachometer reading above 4,592 rpm.

(6) Overspeed shutdown switch actuation should occur at 4,370 to 4,580 rpm. If switch actuation and engine shutdown does not occur within these limits, turn overspeed shutdown switch adjustment screw (fig. 3-28) counterclockwise to decrease actuation point and clockwise to increase actuation point.

NOTE

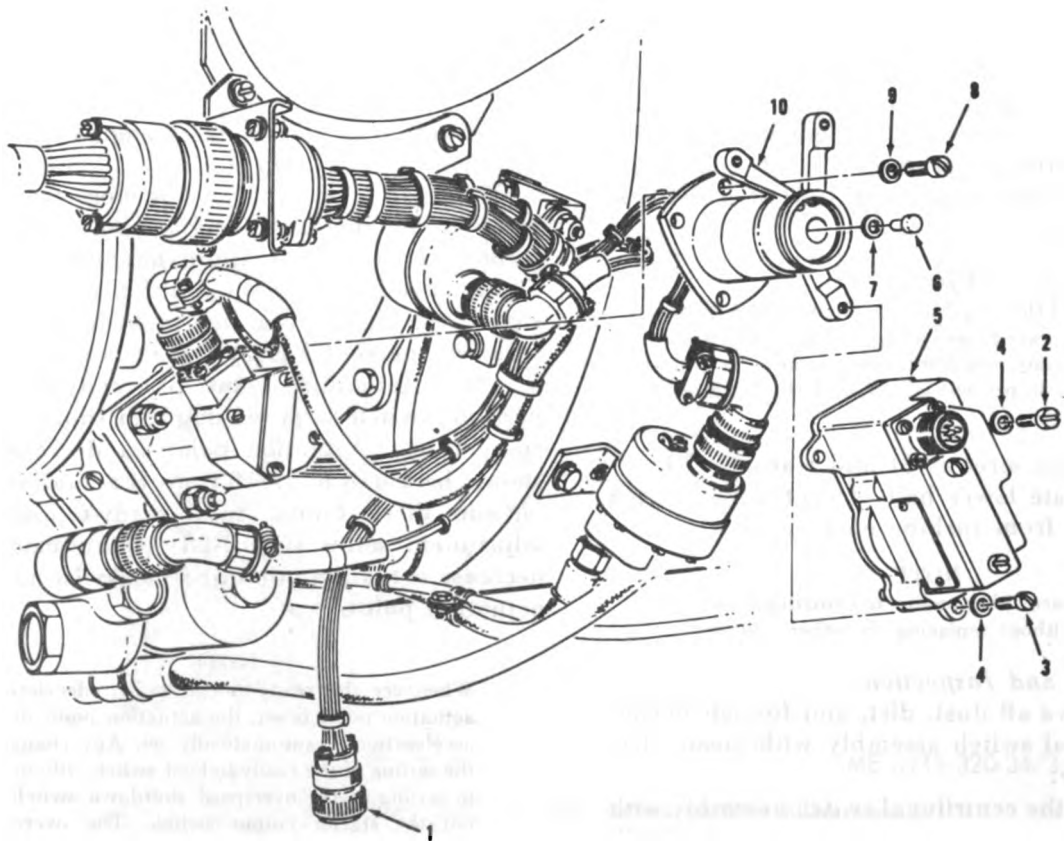
Changing the setting of the overspeed shutdown switch does not change the settings of the starter cutout or ready-to-load switches.

(7) After satisfactory check or adjustment of the centrifugal switch assembly, shutdown generator set and disconnect Gas Turbine Engine Analyzer.

d. Repair. Disassemble centrifugal switch assembly according to sequence of index numbers assigned to figure 3-29 to replace preformed packings. Assemble centrifugal switch assembly in reverse order of disassembly.

e. Installation. Install the centrifugal switch assembly in reverse order of removal procedure using figure 3-25 as a guide.

1. Connector
2. Screw
3. Screw (2)
4. Washer (3)
5. Centrifugal switch assembly upper half
6. Stud
7. Shim
8. Screw (4)
9. Washer (3)
10. Centrifugal switch assembly lower half



NOTE: RECORD QUANTITY AND THICKNESS OF SHIMS (7) TO FACILITATE ASSEMBLY.

ME 6115-320-34/3-25

Figure 3-25. Centrifugal switch assembly removal and installation.

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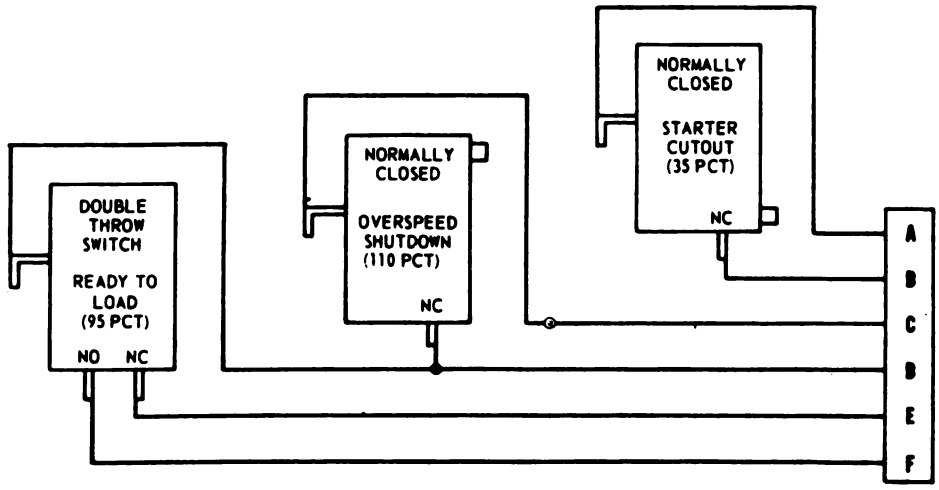
SWITCH ASSEMBLY SHAFT SPEED	CONDITION	STARTER CUTOUT SWITCH (35 PCT)	READY TO LOAD SWITCH (95 PCT)		OVERSPEED SHUTDOWN (110 PCT)
			A	B	
0		CLOSED	OPEN	CLOSED	CLOSED
3,485 to 3,585	INCREASING	OPEN	OPEN	CLOSED	CLOSED
9,500 to 9,584	INCREASING	OPEN	CLOSED	OPEN	CLOSED
9,086 to 9,330	DECREASING	OPEN	OPEN	CLOSED	CLOSED
10,880 to 10,920	INCREASING	OPEN	CLOSED	OPEN	OPEN



ME 6115-320-34/3-26

Figure 3-26. Centrifuga switch assembly wiring diagram.

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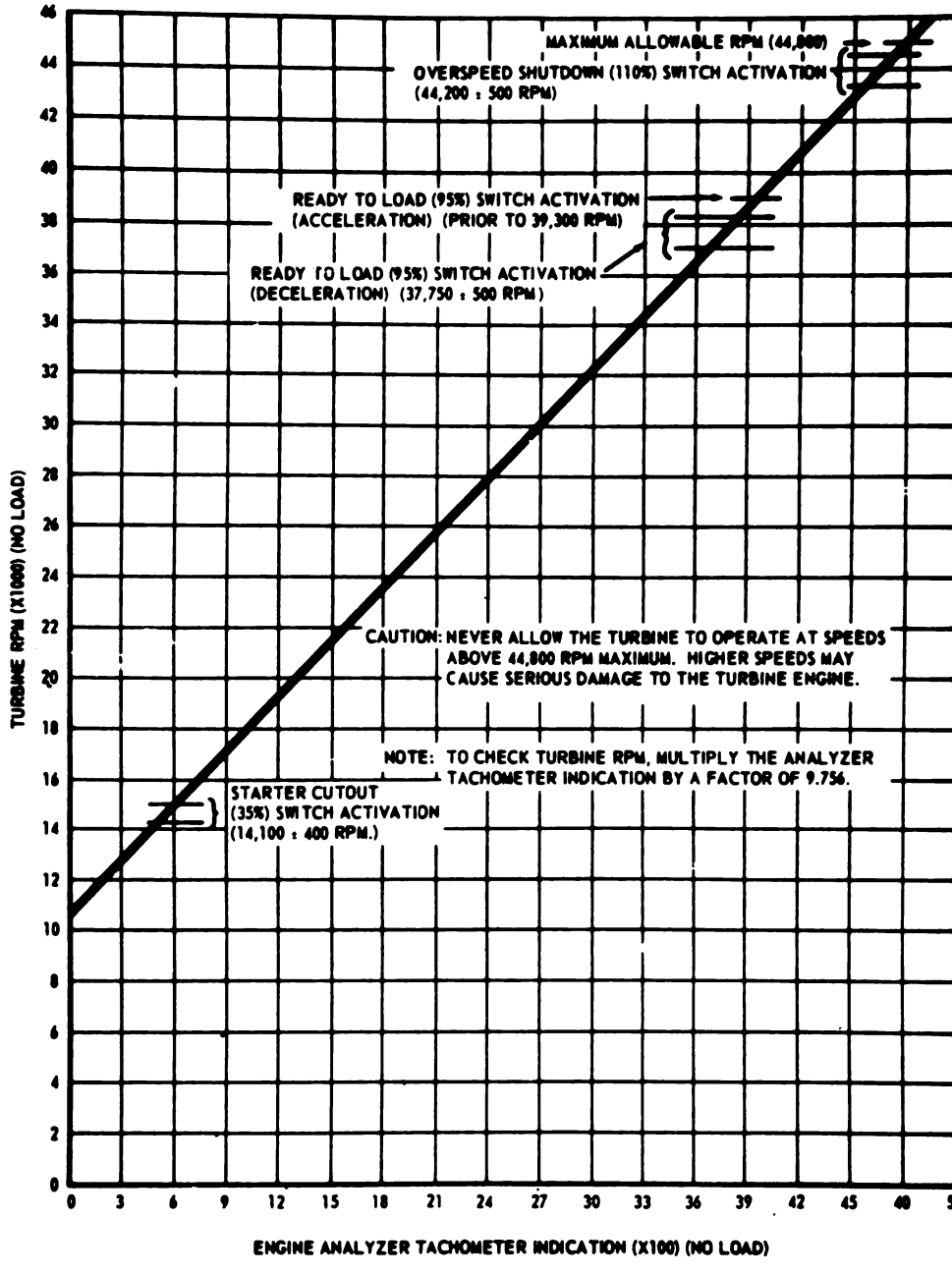

ME 6115-320-34/3-27

Figure 3-27. Conversion of tachometer indications to turbine rpm.

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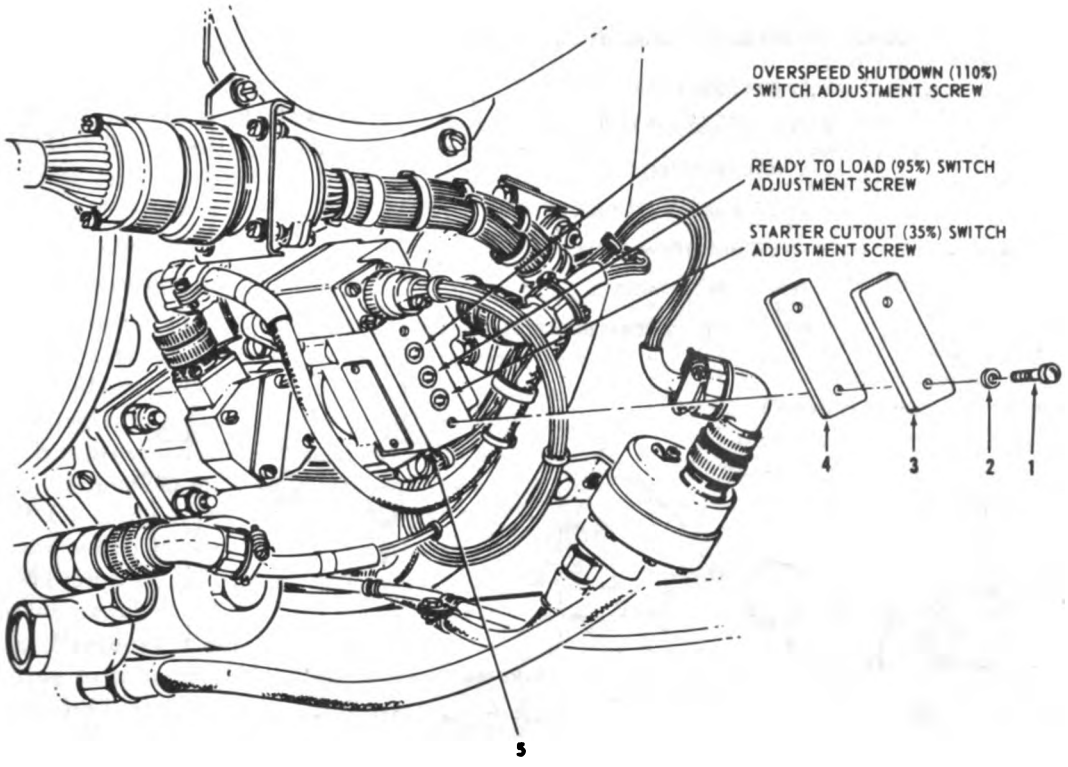

1. Screw (2)
2. Washer (2)
3. Cover plate
4. Gasket
5. Centrifugal switch assembly

ME 6115-320-34/3-28

Figure 3-28. Centrifugal switch assembly adjusting screws.

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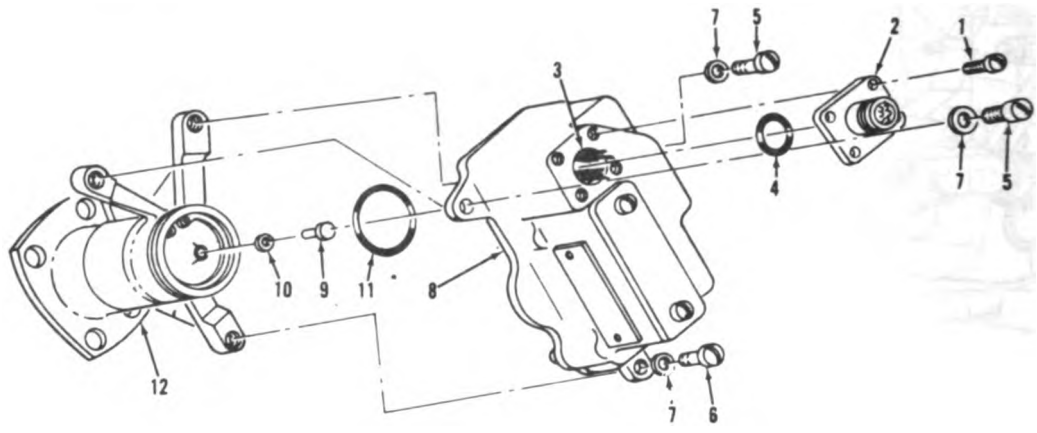
CONNECTOR PREFORMED PACKING REPLACEMENT PROCEDURES

1. REMOVE FOUR SCREWS (1).
2. TAG AND UNSOLDER ELECTRICAL LEADS (3).
3. REMOVE RECEPTACLE (2).
4. REPLACE PREFORMED PACKING (4).
5. SOLDER ELECTRICAL LEADS.
6. REPLACE RECEPTACLE (2).
7. INSTALL AND TIGHTEN FOUR SCREWS (1).



CENTRIFUGAL SWITCH PREFORMED PACKING REPLACEMENT PROCEDURES

1. REMOVE THREE SCREWS (5) AND (6), AND WASHERS (7)
2. SEPARATE UPPER HALF (8) FROM LOWER HALF (12).
3. REMOVE STUD (9) AND SHIMS (10) TO PREVENT LOSS.

   NOTE: RECORD QUANTITY AND THICKNESS OF SHIMS (10) FOR AID AT ASSEMBLY.

4. REPLACE PREFORMED PACKING (11).
5. INSTALL SAME QUANTITY AND THICKNESS OF SHIMS (10) AS REMOVED AND STUD (9).
6. REPLACE UPPER HALF (8) ON LOWER HALF (12).
7. INSTALL THREE WASHERS (7) AND SCREWS (5) AND (6) AND TIGHTEN.

ME 6115-320-34/3-29

Figure 3-29. Centrifugal switch assembly exploded view.

Figure 3-30. (This figure is not used).

Figure 3-31. (This figure is not used).

3-19. Thermocouple

a. General. The thermocouple is mounted on the left side of the turbine exhaust flange with a probe extending into the exhaust duct. The thermocouple senses exhaust gas temperatures and relays the reading electrically to the exhaust gas temperature indicator. The thermocouple is a temperature sensing device consisting of two wires of dissimilar material fused together at one end and connected to separate terminals at the other end.

b. Removal. Refer to TM 5-6115-320-12 for thermocouple removal procedures.

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c. Testing. Connect a multimeter to the two terminals of the thermocouple and check for continuity. If there is no continuity, replace the thermocouple. If there is continuity, test the thermocouple for an indication of 1,200°F ±200°F (650°C ± 94°C) using a controlled heat source and a master gage. Replace a defective thermocouple.

d. Installation. Refer to TM 5-6115-320-12 for thermocouple installation.

3-20. Thermostatic Switch

a. General. The thermostatic switch is a temperature actuated electrical switch mounted on the bottom of the turbine exhaust flange with a probe extending into the exhaust duct. The thermostatic switch is provided for Sergeant Weapon System use only. When a temperature between 1,110°F (599°C) and 1,160°F (627°C) is reached the thermoswitch closes, which illuminates the TAIL TEMPERATURE lamp located on the remote control panel.

b. Removal. Remove thermostatic switch according to sequence of index numbers assigned to figure 3-32 observing the following:

(1) Remove muffler (TM 5-6115-320-12).

(2) Remove turbine access panel and tailpipe (TM 5-6115-320-12).

(3) Tag or otherwise identify all connectors to facilitate installation.

c. Cleaning and Inspection.

(1) Remove all dust, dirt, and foreign matter from thermostatic switch with clean dry compressed air.

(2) Clean thermostat switch with a cloth moistened with solvent (FED P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage or excessive wear. If defective, replace thermostatic switch.

d. Testing. Test the thermostatic switch for continuity with a multimeter. Continuity should be indicated between terminals 1 and 2. No continuity should be indicated between terminals 1 and 3, and 2 and 3.

e. Installation. Install the thermostatic switch in reverse order of removal procedure using figure 3-32 as a guide. Use a new gasket (6) and coat threads of bolt (4) with approved high temperature compound.

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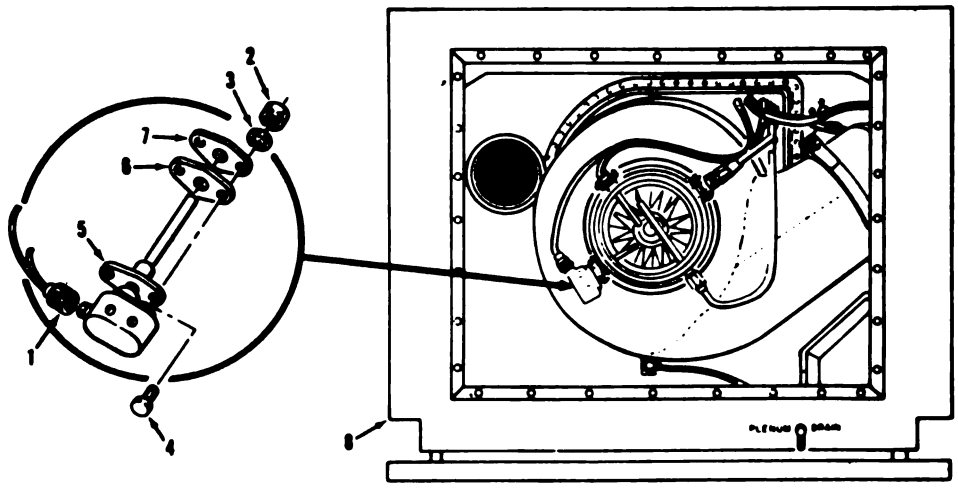
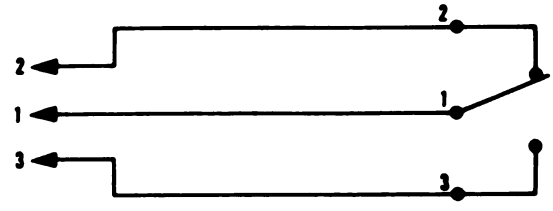


1 Electrical connector
2 Nut (2)
3 Washer (2)
4 Bolt (2)
5. Thermostatic switch
6 Gasket
7 Mounting flange
8 Generator set enclosure (rear)



WIRING DIAGRAM

ME 6115-320-34/3-32

Figure 3-32. Thermostatic switch removal and installation.

3-21. Acceleration and Overtemperature Control Thermostat

a. Removal. Remove thermostat according to sequence of index numbers assigned to figure 3-33.

b. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from the thermostat with clean, dry, compressed air.

(2) Clean the thermostat in cleaning solvent (FED. P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, corrosion or stripped threads. If defective, replace thermostat.

c. Installation. Install the thermostat in reverse order of removal procedure using figure 3-33 as a guide.

NOTE

Install the thermostat with one row of slots toward the rear of unit.

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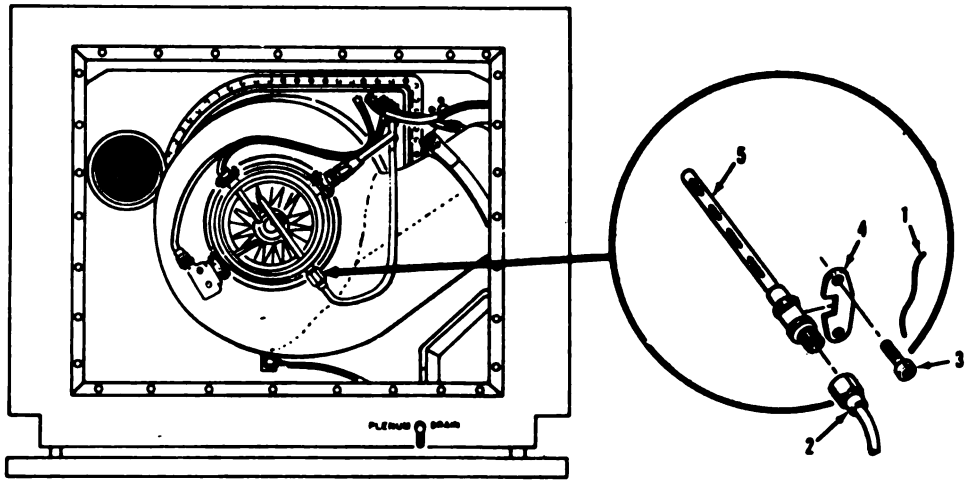

1. Lockwire
2. Control air tube assembly
3. Bolt (2)
4. Plate
5. Acceleration and overtemperature control thermostat

CAUTION: HOLD THERMOSTAT BY HEXAGON FITTING WHILE TIGHTENING OR LOOSENING "B" NUT ON TUBE ASSEMBLY.

ME 6115-320-34/3-33

Figure 3-33. Acceleration and overtemperature control and installation.

3-22. Engine Controls Instruments Panel Assembly

a. Removal. Remove engine controls instrument panel assembly as follows:

(1) Tag and disconnect wiring harness electrical leads from panel assembly components.

(2) Remove panel assembly by removing screws and washers attaching panel hinge to cabinet.

b. Cleaning and Inspection.

(1) Clean the engine controls instrument panel assembly with a cloth moistened in solvent (FED P-D-680) and dry thoroughly.

(2) Inspect for evidence of damage, loose terminals, stripped threads, corrosion or excessive wear of mating parts.

c. Repair. Refer to TM 5-6115-320-12 for individual component repair.

d. Installation. Install the engine controls instruments panel assembly in reversing order of removal.

3-23. Tachometer-Generator

a. Removal. Remove tachometer-generator according to sequence of index numbers assigned to figure 3-34.

b. Cleaning and Inspection.

(1) Remove all dust, dirt and foreign matter from tachometer-generator with clean, dry compressed air.

(2) Clean the tachometer-generator with a cloth moistened in cleaning solvent (FED. P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage of stripped threads. If defective, replace tachometer-generator.

c. Installation. Install tachometer-generator in reverse order of removal procedure using figure 3-34 as a guide.

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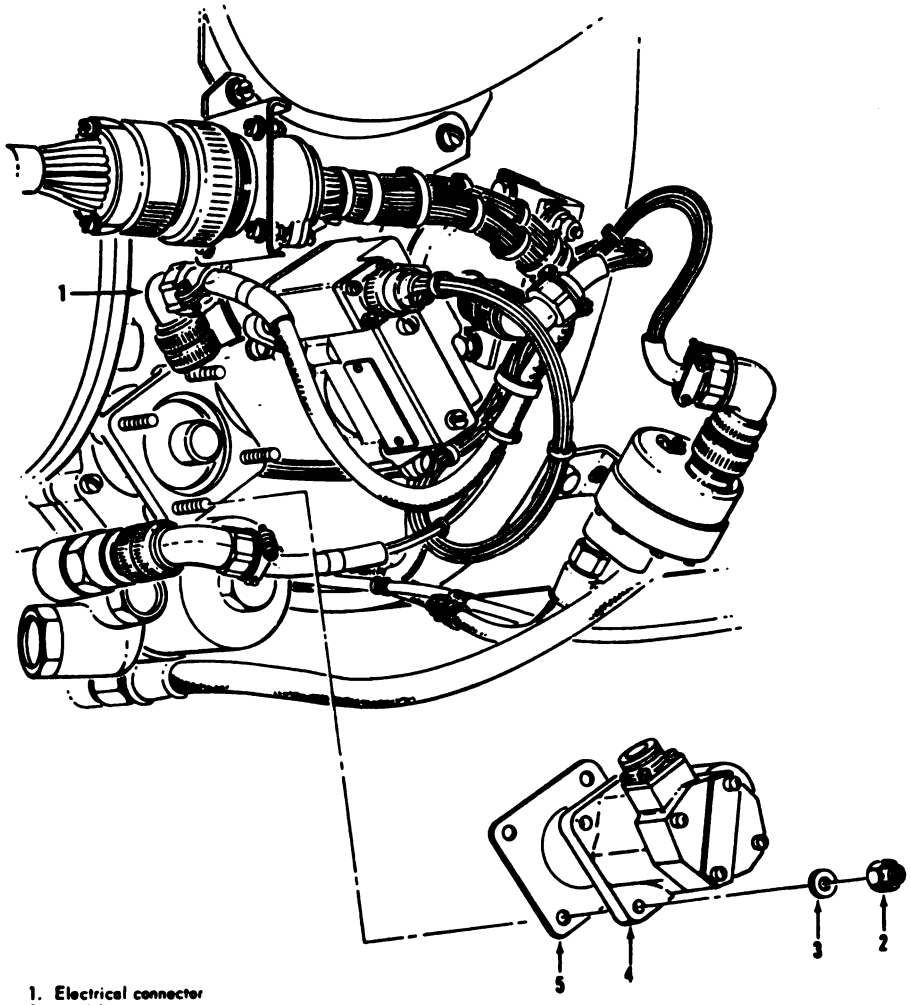

1. Electrical connector
2. Nut (4)
3. Washer (4)
4. Tachometer generator
5. Gasket

ME 6115-320-34/3-34

Figure 3-34. Tachometer-generator removal and installation.

3-24. Fire Detectors

a. Removal. Remove fire detectors according to sequence of index numbers assigned to figure 3-35.

b. Cleaning and Inspection.

(1) Remove all dust and dirt from fire detectors with clean, dry compressed air.

(2) Clean the fire detector with a cloth moistened with cleaning solvent (FED P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage or stripped threads. If defective, replace fire detector.

c. Testing. To test the fire detectors, proceed as follows:

(1) Remove the leads from the terminals of the fire detectors.

(2) Use a multimeter and test for continuity between the terminals of one of the fire detectors. If continuity is indicated, the fire detector is defective and must be replaced.

(3) Heat the fire detector to 450°F (232°C).

(4) If continuity is not indicated, the fire detector is defective and must be replaced.

d. Installation. Install the fire detectors in reverse order of removal procedure using figure 3-35 as a guide.

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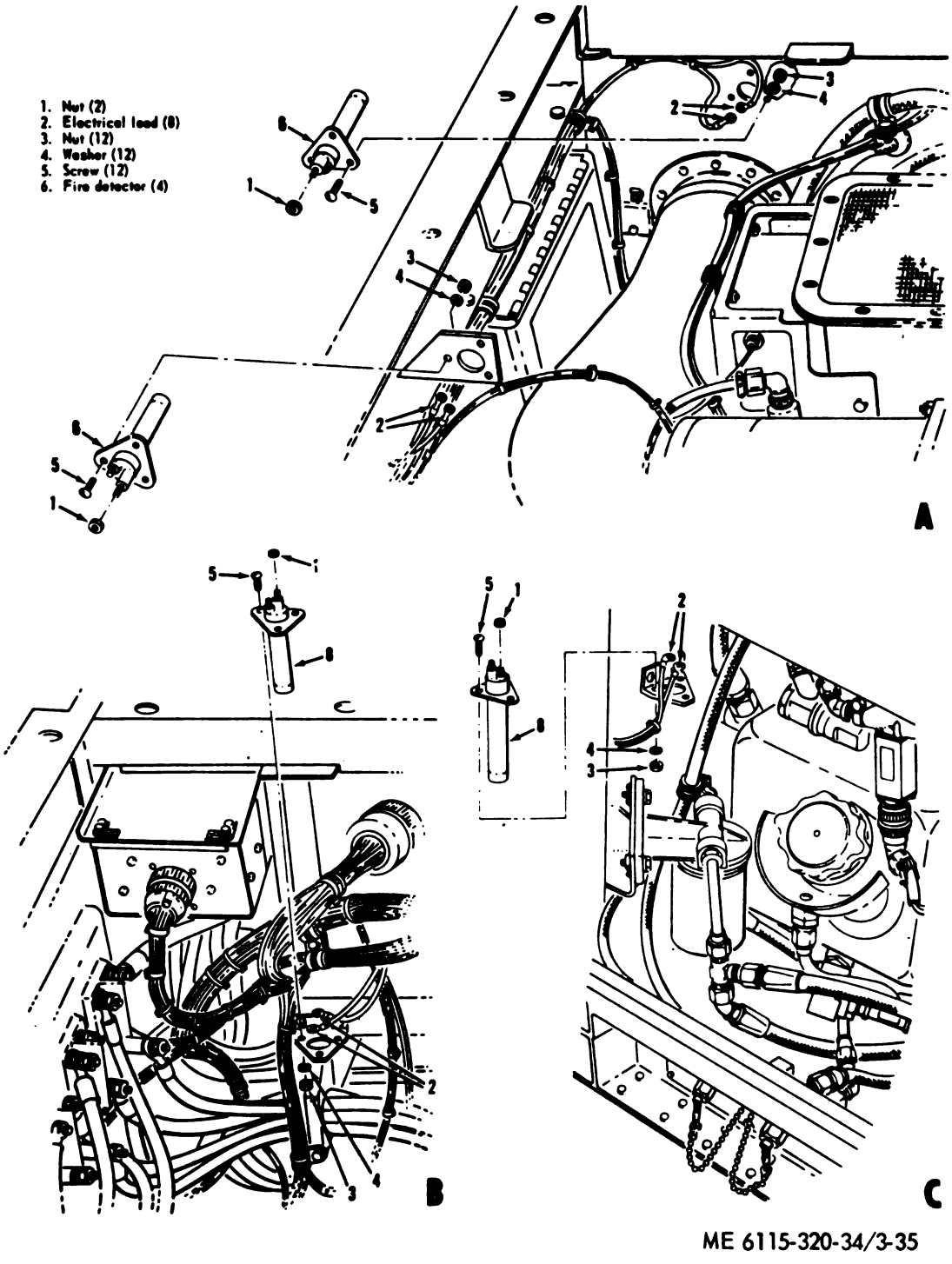

Figure 3-35. Fire detectors removal and installation.

3-25. Electrical Controls Instruments Panel Assembly

a. Removal. Remove electrical controls instruments panel assembly as follows:

(1) Tag and disconnect wiring harness electrical leads from panel assembly components.

(2) Remove panel assembly according to sequence of index numbers assigned to figure 3-36.

b. Cleaning and Inspection.

(1) Clean the electrical controls instruments panel assembly with a cloth moistened in cleaning solvent (FED. P-D-680) and dry thoroughly.

(2) Inspect for evidence of damage, loose terminals, stripped threads, corrosion or excessive wear of mating parts.

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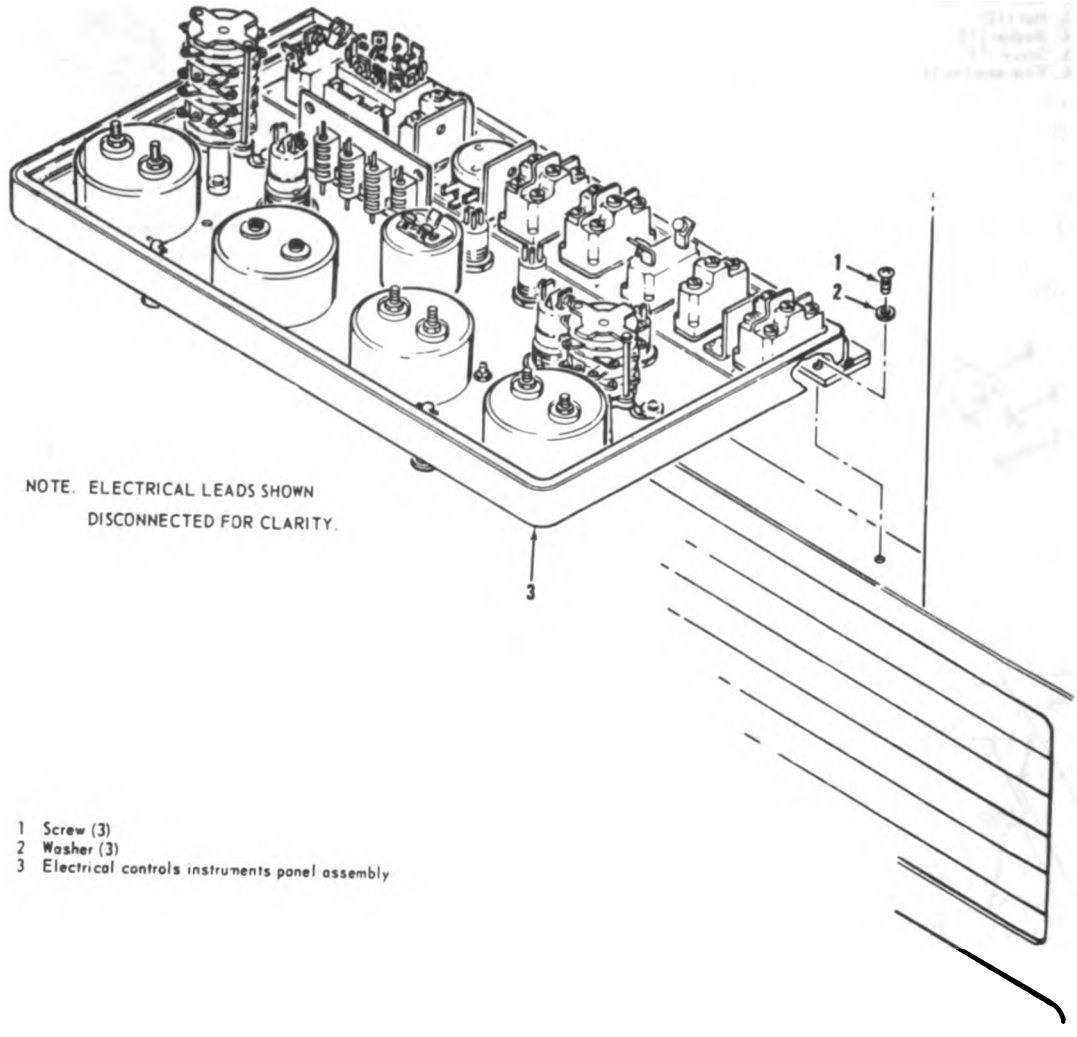

ME 6115-320-34/3-36

Figure 3-36. Control panel assembly removal and installation.

3-26. Electrical Controls and Instruments

a. Removal.

(1) To remove the wattmeter and thermal watt converter, refer to figure 3-37 and proceed as follows:

NOTE

Wattmeter and thermal watt converter must be replaced as a matched set.

(a) Remove nuts (1) and washers (2).
(b) Tag and disconnect electrical leads.
(c) Remove nuts (3), screws (5), and washers (4).
(d) Remove wattmeter (6).
(e) Remove screws (7) and washers (8).
(f) Tag and disconnect electrical leads.
(g) Remove screws (9) and washers (10).
(h) Remove thermal watt converter (11).

(2) To remove the frequency meter and transducer, refer to figure 3-37 and proceed as follows:

NOTE

Frequency meter and transducer must be replaced as a matched set.

(a) Remove nuts (12) and washers (13).

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(b) Tag and disconnect electrical leads.

(c) Remove nuts (14), screws (16), and washers (15).

(d) Remove frequency meter (17).

(e) Remove screws (18) and washers (19).

(f) Tag and disconnect electrical leads.

(g) Remove screws (20) and washers (21).

(h) Remove frequency transducer (22).

(3) To remove the voltage adjusting rheostat, refer to figure 3-37 and proceed as follows:

(a) Remove screws (23).

(b) Tag and disconnect electrical leads.

(c) Remove nut (24) and washer (25).

(d) Remove voltage adjusting rheostat (26).

(4) To remove the voltage droop potentiometer, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nut (27) and washer (28).

(c) Remove voltage droop potentiometer (29).

(5) To remove frequency droop potentiometer, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nut (30) and washer (31).

(c) Remove frequency droop potentiometer (32).

(6) To remove relays K2, K3, K4, K5, K8, K9, K12, K16, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect leads as necessary.

(b) Remove applicable nuts (33), washers (34), and screws (35).

(c) Remove relay K2 (36).

(d) Remove relay K9 (37).

(e) Remove relay K8 (38).

(f) Remove relay K16 (39).

(g) Remove relay K5 (40).

(h) Remove relay K4 (41).

(i) Remove relay K12 (42).

(j) Remove relay K3 (43).

(7) To remove relays K6, K7 and K13, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nuts (44) and washers (45).

(c) Remove relay K13 (46).

(d) Remove relay K6 (47).

(8) To remove relay K15, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nuts (49), washers (50).

(c) Remove relay K15 (51).

(9) To remove relay K11, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove screws (52) and washers (53).

(c) Remove relay K11 (54).

(10) To remove relay K10, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove screws (55) and washers (56).

(c) Remove relay K10 (57).

(11) To remove receptacle J1, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nuts (58), washers (59), and screws (60).

(c) Remove receptacle J1 (61).

(12) To remove receptacle J3, refer to figure 3-37 and proceed as follows:

(a) Tag and disconnect electrical leads as necessary.

(b) Remove nuts (62), washers (63), and screws (64).

(c) Remove receptacle J3 (65).

b. Cleaning and Inspection.

(1) Clean all components with a cloth moistened in cleaning solvent (FED. P-D-680) and dry thoroughly.

(2) Inspect for evidence of damage, stripped threads, loose connections or pins, shorting, or cracks. Replace defective components.

c. Installation. Install the frequency meter and transducer, wattmeter and thermal watt converter, voltage adjusting rheostat, relays (K2 through K13, K15 and K16), and electrical equipment rack receptacle in reverse order of removal procedures using figure 3-37 as a guide.

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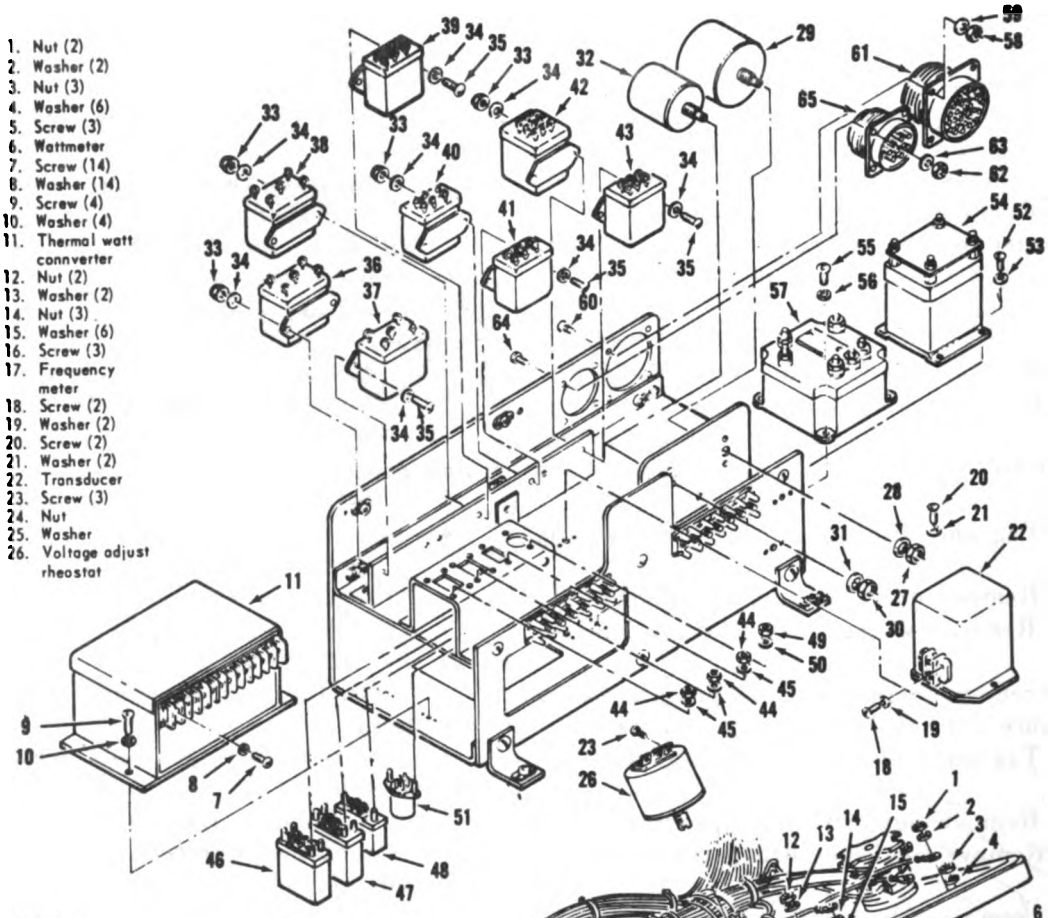

Figure 3-37. Frequency meter and transducer, wattmeter and thermal watt converter, voltage adjusting rheostat, voltage and frequency droop potentiometer, relays (K2 through K13, K15, and K16) and electrical equipment rack receptacles removal and installation.

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CHAPTER 4

REPAIR OF ELECTRICAL SYSTEM

Section I. REPAIR OF ELECTRIC GENERATOR

4-1. AC Generator

a. General. The ac generator is of brushless design in which the dc for the rotor is supplied through rectifying the ac in the exciter armature windings. The generator stator is wound for dual voltages of 120/208 and 240/416. As the generator is brought up to speed, the permanent magnet generator (PMG) begins to supply power to the voltage regulator. This power is then supplied to the exciter field windings. As the exciter armature conductors cut the magnetic field of the exciter stator, a voltage is induced in the armature. The ac output of this armature is then fed to the rectifiers which convert it to dc to feed the rotor windings of the alternator. The wound rotor of the alternator is essentially a rotating electro-magnet. As it rotates, the lines of force are cut by the coils in the alternator stator causing a voltage to build up. The regulator controls the excitation to the exciter field which controls the current feed to the rotor windings and the output of the generator.

b. On-Unit Test. To test the ac generator and components while they are in the unit, refer to figure 4-1 and proceed as follows:

(1) Remove all connectors from generator.

(2) Use an impedance bridge and check for 0.0220 to 0.0244 ohms between terminals T1 to T4, T2 to T5, T3 to T6, T7 to T10, T8 to T11, T9 to T12.

(3) Use an impedance bridge to check for 13.2 to 14.7 ohms between terminals D and F.

(4) Use an impedance bridge to check for 0.895 to 0.995 ohms between terminals A and B.

(5) Reconnect leads to generator and install electrical connector.

(6) Start generator set (refer to TM 5-6115-320-12), and run at governed speed.

(7) Adjust generator for no load, 208 volts line-to-line (refer to TM 5-6115-320-12).

(8) Use a multimeter set at the appropriate range to check for 0.75 ampere.

(9) Disconnect V50A18 from TB4-4 and connect to the negative lead from the multimeter.

(10) Connect the positive lead of multimeter to terminal 4 of TB4.

(11) Current shall not exceed 0.750 ampere.

(12) Adjust generator for full load, 208 volts line-to-line (refer to TM 5-6115-320-12).

(13) Use a multimeter set at the appropriate range to check for 1.3 amperes.

(14) Connect multimeter as in step (9) and (10) above.

(15) Current shall not exceed 1.3 amperes.

(16) Shut down generator set (refer to TM 5-6115-320-12).

NOTE

The following test must be performed while the generator is at operating temperature, therefore perform steps (17 through 21) below immediately after shut down.

(17) Disconnect all leads from generator.

(18) Place one probe of an insulation tester on ground and the other to T1 of generator.

(19) Set insulation tester for 500 v ac.

(20) Energize insulation tester and observe indicator light on insulation tester for leakage indication.

(21) Repeat test for T2, T3, T7 through T9, pins F and B of connector P7.

c. Removal. Remove ac generator as follows:

(1) Remove engine and ac generator assemblies as described in paragraph 2-9.

(2) Remove ac generator according to sequence of index numbers assigned to figure 2-5.

d. Cleaning and Inspection.

(1) Clean the ac generator and components with a clean paint brush moistened in cleaning solvent (FED P-D-680). Dry the generator thoroughly.

CAUTION

Avoid harsh or brisk rubbing on varnished parts and do not soak components containing windings as solvents may tend to soften the varnish.

(2) Visually inspect all parts for defects such as cracks, broken or loose connections, stripped threads, and excessive or abnormal wear.

e. Disassembly. Disassemble the ac generator according to sequence of index numbers assigned to figure 4-2.

NOTE

Disassemble the ac generator only to the extent required to replace a defective component.

f. Repair. To repair the ac generator, replace the

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armature and rotor, stator, PMG rotor, and rectifiers if found defective when testing in paragraph *d* above. Replace defective exhaust air duct, bearings, shield pads, bearing supports, and inner shaft assembly if found defective in paragraph *b* above. For further instructions, refer to TM 5-764.

g. Reassembly. Reassemble the ac generator in reverse order of disassembly procedure using figure 4-1 as a guide.

h. Installation. Install ac generator in reverse order of removal procedure using figure 2-5 as a guide.

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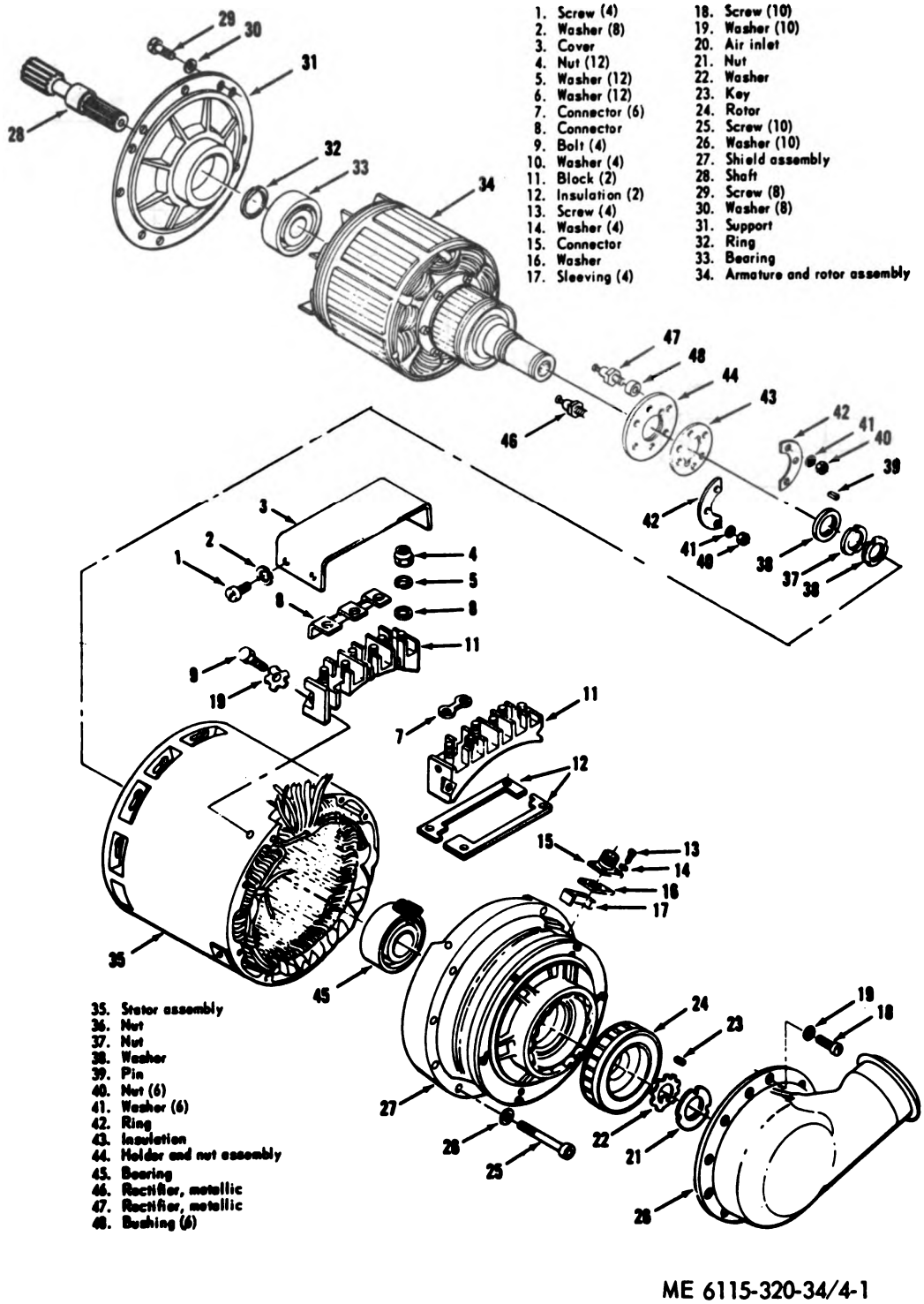

Figure 4-1. AC generator disassembly and reassembly.

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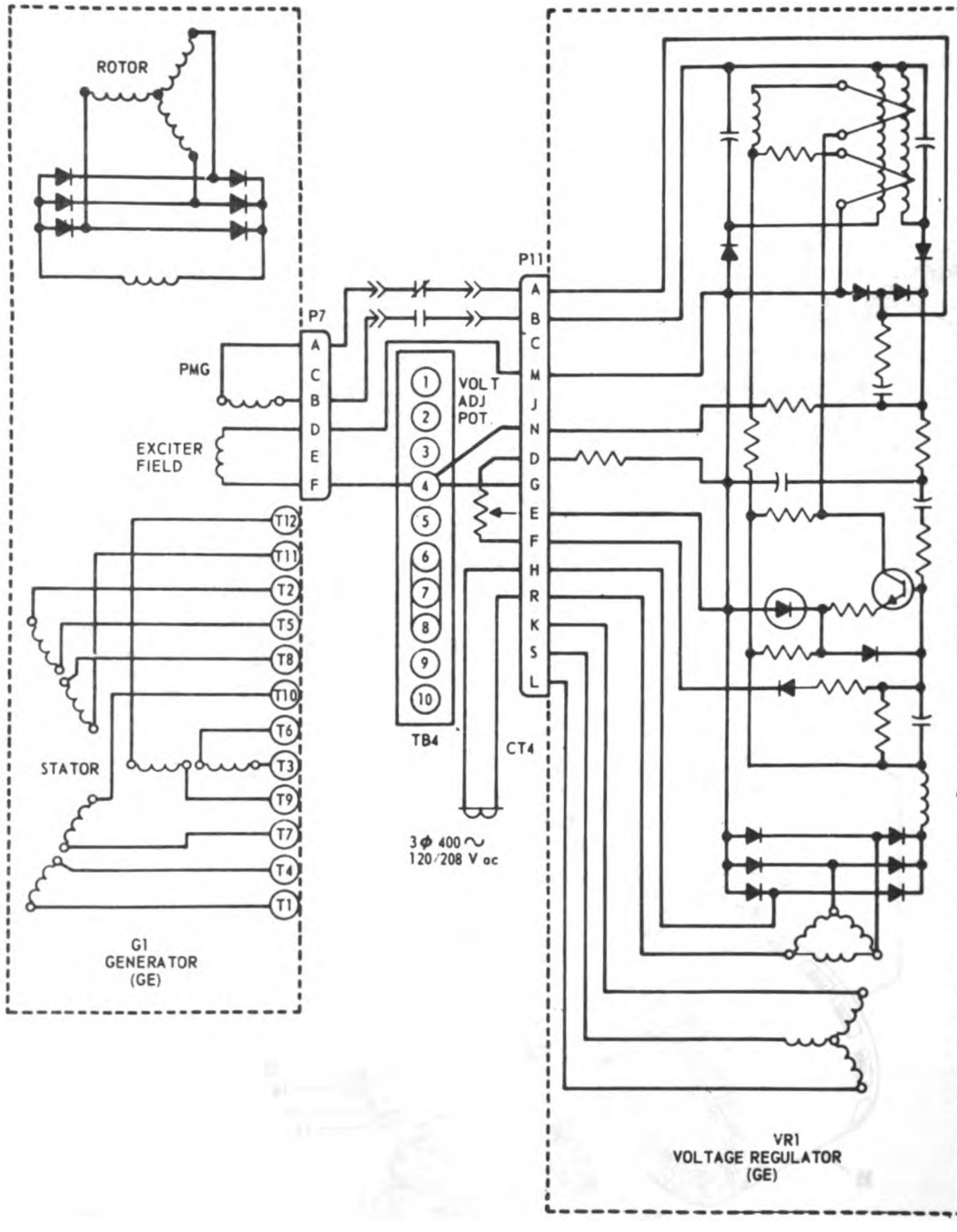

Figure 4-2. AC generator testing, schematic wiring diagram.

Section II. REPAIR OF ELECTRICAL SYSTEM COMPONENTS

4-2. General

The electrical system components in this section consist of the voltage regulator assembly, load anticipator, terminal boards (TB4, TB7, and TB8), current transformers, battery charger and wiring harness, voltage change panel generator set wiring harness, cubicle ac wiring harness, and cubicle dc wiring harness.

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4-3. **Voltage Regulator Assembly, Load Anticipator, and Terminal Boards (TB4, TB7, and TB8.**

a. Removal.

(1) To remove the voltage regulator assembly, refer to figure 4-3 and proceed as follows:

(a) Remove electrical connector (1).

(b) Remove bolts (2) and washers (3).

(c) Remove voltage regulator assembly (4).

(2) To remove the load anticipator, refer to figure 4-3 and proceed as follows:

(a) Remove electrical connector (5).

(b) Remove screws (6) and washers (7).

(c) Remove load anticipator (8).

(3) To remove terminal board TB8, refer to figure 4-3 and proceed as follows:

(a) Remove protective cover (9).

(b) Tag and disconnect electrical leads to terminal posts.

(c) Remove nuts (10) and washers (11).

(d) Remove nuts (12) and screws (13).

(e) Remove terminal board TB8 (14).

(4) To remove terminal board TB7, refer to figure 4-3 and proceed as follows:

(a) Remove nuts (15) and washers (16).

(b) Tag and disconnect electrical leads to terminal posts.

(c) Remove screws (17), nuts (18), and washers (19).

(d) Remove terminal board TB7 (20).

(5) To remove terminal board TB4, refer to figure 4-3 and proceed as follows:

(a) Remove nuts (21) and washers (22).

(b) Tag and disconnect electrical leads to terminal posts.

(c) Remove bus bar (23) and washers (22).

(d) Remove nuts (24), washers (25), and screws (26).

(e) Remove terminal board TB4 (27).

b. Cleaning and Inspection.

(1) Clean the voltage regulator assembly, load anticipator, and terminal boards with a clean cloth moistened in cleaning solvent (Fed. Spec. O-T634B).

(2) Inspect for evidence of damage, stripped threads, loose connections or excessive wear.

(3) Replace a defective component.

c. Installation. Install the voltage regulator assembly, load anticipator, and terminal boards (TB4, TB7, and TB8) in reverse order of removal procedure using figure 4-3 as a guide.

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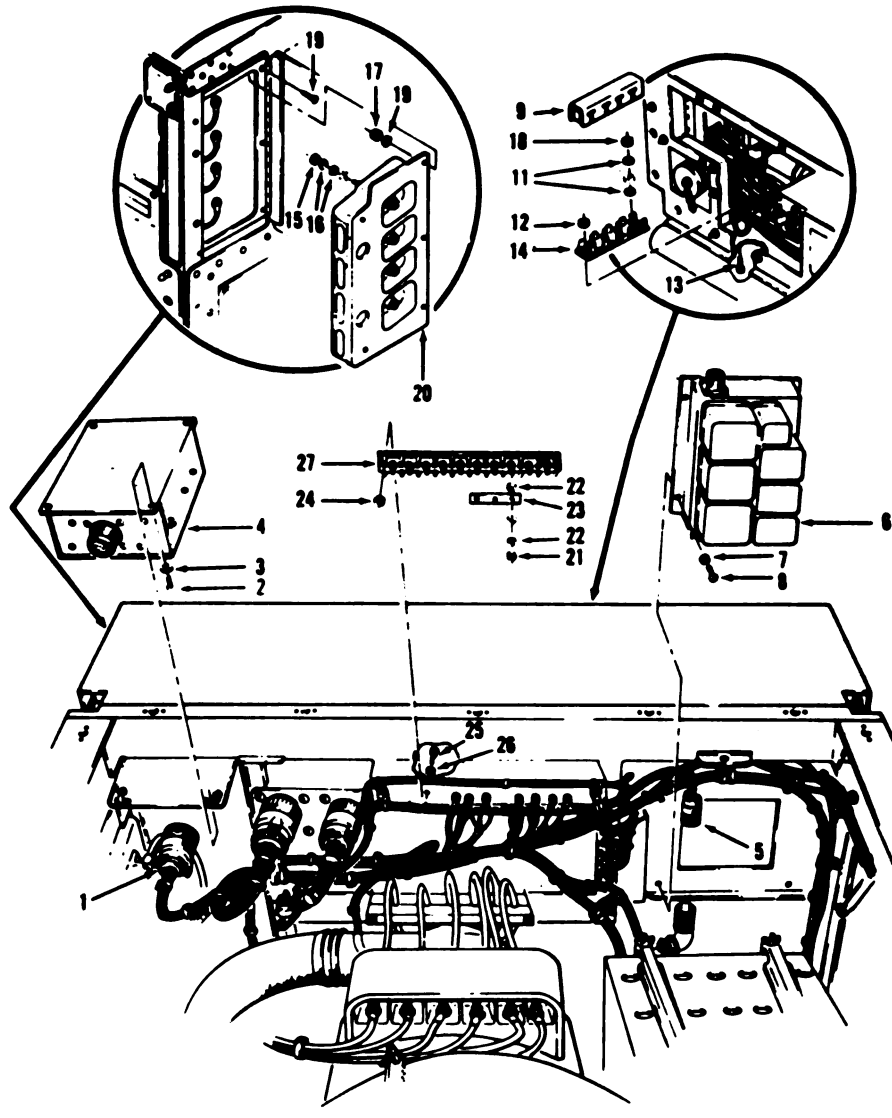

1	Electrical connector	10	Nut (4)	19	Screw (5)
2	Screw (4)	11	Washer (8)	20	Terminal board TB7
3	Washer (4)	12	Nut (2)	21	Nut (10)
4	Voltage regulator	13	Screw (2)	22	Washer (20)
5	Electrical connector (2)	14	Terminal board TB8	23	Bus bar (2)
6	Screw (4)	15	Nut (4)	24	Nut (2)
7	Washer (4)	16	Washer (8)	25	Screw (2)
8	Load anticipator	17	Nut (5)	26	Washer (2)
9	Protective cover	18	Washer (5)	27	Terminal board TB4

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Figure 4-3. Voltage regulator assembly, load anticipator, and terminal boards (TB4, TB7 and TB8) removal and installation.

4-4. Current Transformers

a. Removal. Remove current transformers according to sequence of index numbers assigned to figure 4-4.

b. Cleaning and Inspection.

(1) Clean the current transformers with a cloth moistened in cleaning solvent (Fed. Spec O-T634B) and dry thoroughly.

(2) Inspect for evidence of damage, shorting, loose connections, or excessive overheating. If defective, replace current transformer.

c. Testing.

(1) Connect an insulation tester to either terminal of transformer and mounting bracket, and apply 500 volts ac.

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(2) Observe indicator lamp for indication of leakage.

(3) If insulation is defective, replace transformer.

(4) Connect a multimeter to terminals of transformer.

(5) Check transformer for continuity.

(6) If transformer is defective, replace transformer.

d. Installation.

(1) Install the current transformer in reverse order of removal procedure using figure 4-4 as a guide.

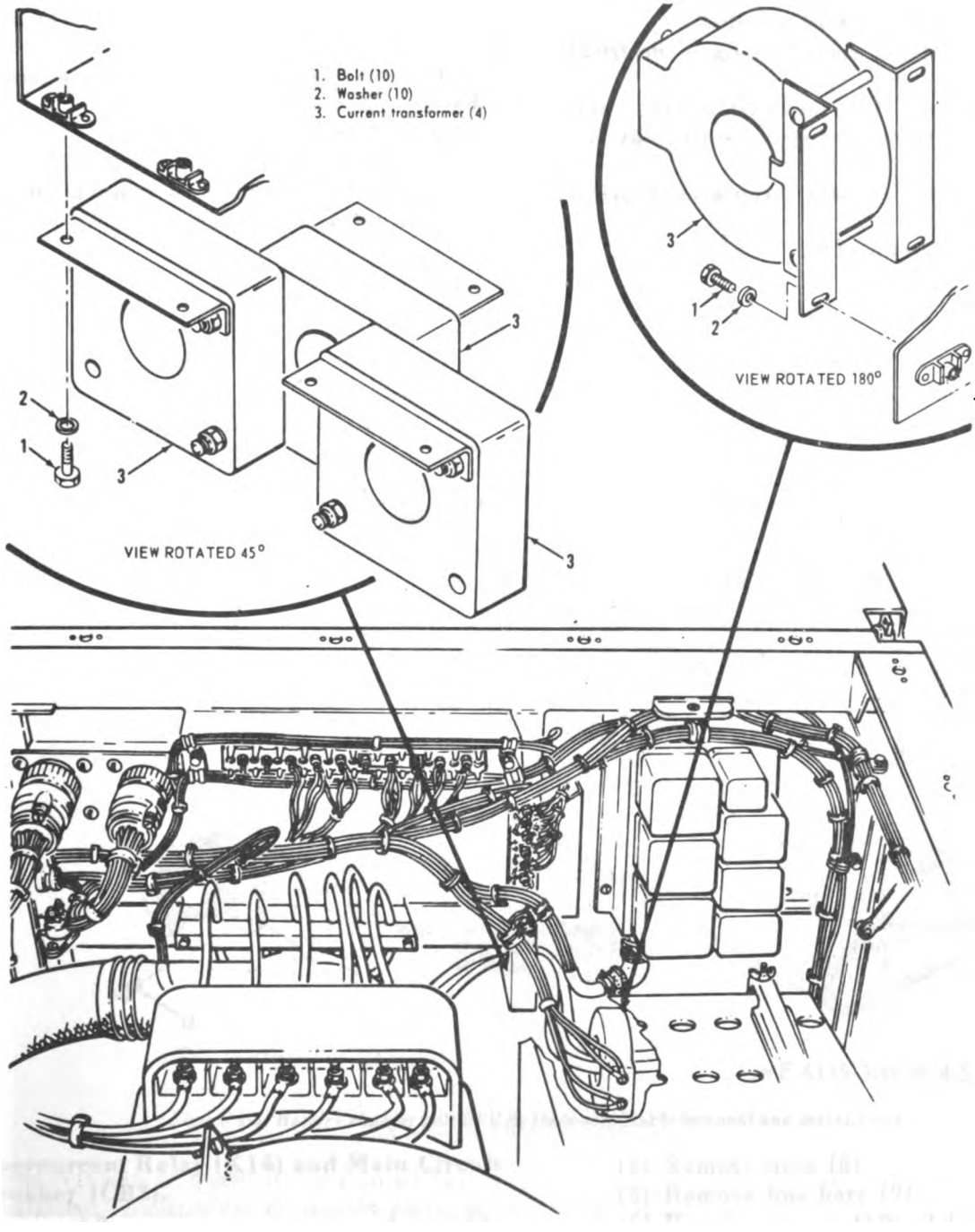

Figure 4-4. Current transformers removal and installation.

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4-5. Battery Charger and 24 V DC Slave Receptacle

a. Removal. To remove the battery charger and 24v dc slave receptacle, refer to figure 4-5 and proceed as follows:

(1) Remove electrical connector (1).

(2) Remove screws (2) and washers (3).

(3) Remove battery charger (4).

(4) Remove nut (5), lock washer (6), and plain washer (7) from ground stud E2 (8).

(5) Remove 24v dc slave receptacle electrical lead.

(6) Remove nut (9), lockwasher (10), and plain washer (11) from terminal of start relay K1 (16).

(7) Remove 24v dc slave receptacle electrical lead.

(8) Remove screws (12).

(9) Remove 24v dc slave receptacle (13).

b. Cleaning and Inspection.

(1) Clean the battery charger and 24v dc slave receptacle with a cloth moistened in cleaning solvent (Fed Spec. O-T634B), and dry thoroughly.

(2) Inspect the electrical leads for evidence of damage, excessive wear, stripped threads or loose connector pins and terminals.

(3) Inspect the battery charger for evidence of damage, excessive wear, stripped threads or corrosion.

(4) Replace a defective 24v dc slave receptacle or battery charger.

c. Installation.

(1) Install the battery charger and 24v dc slave receptacle in reverse order of removal procedure using figure 4-5 as a guide.

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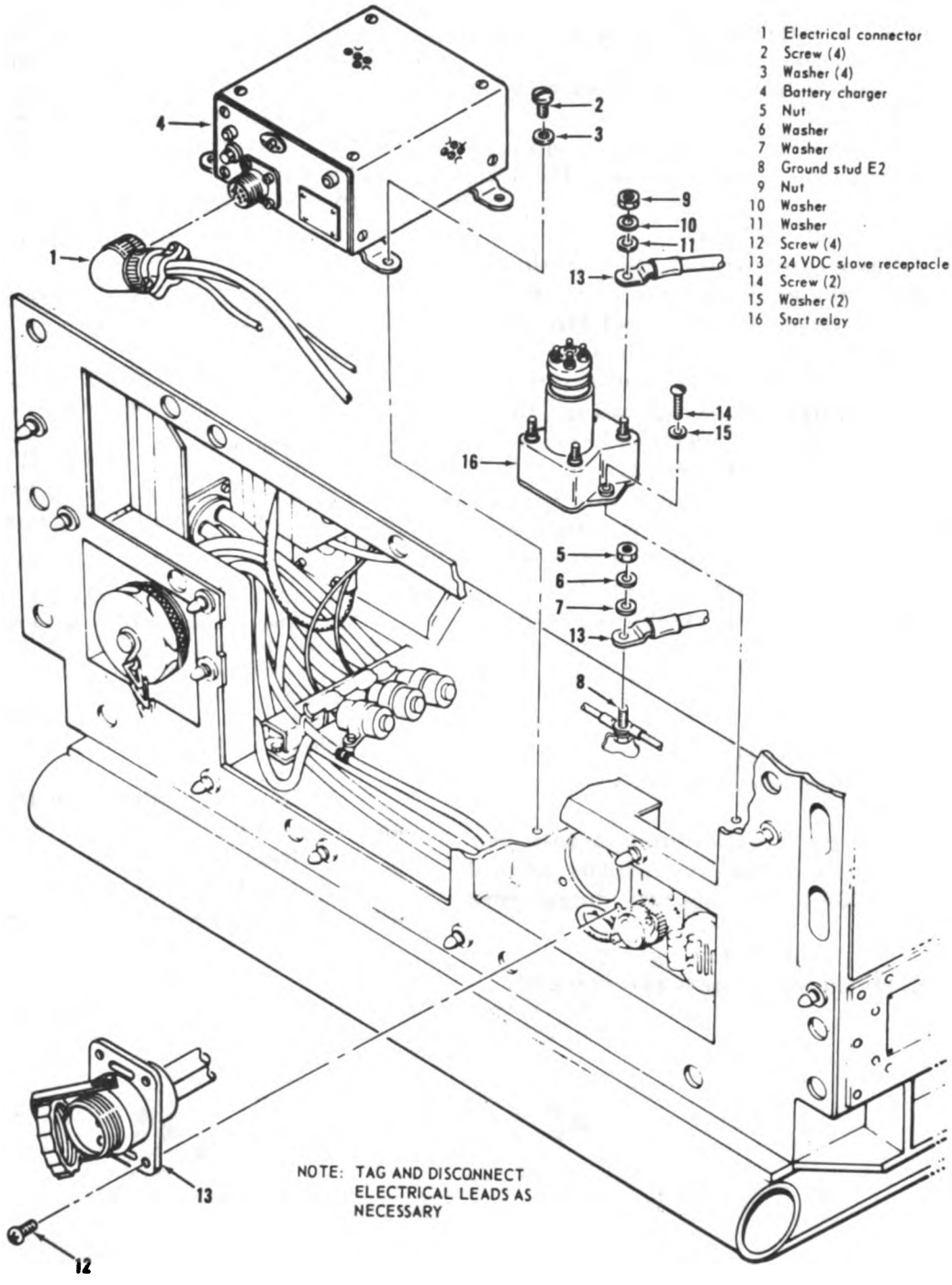

Figure 4-5. Battery charger and 24 v dc slave receptacle removal and installation.

4-6. Overcurrent Relay (K14) and Main Circuit Breaker (CB3).

a. Removal. To remove overcurrent relay (K14) and main circuit breaker (CB3), refer to figure 4-6 and proceed as follows:

(1) Remove electrical connector (1).
(2) Remove nuts (2, 3, and 4).
(3) Tag and remove electrical leads (5, 6, 7).
(4) Remove nuts (8).
(5) Remove bus bars (9).
(6) Remove screws (10) and washers (11).
(7) Remove main circuit breaker (12).
(8) Remove screws (13) and washers (14).
(9) Remove overcurrent relay (15).

b. Cleaning and Inspection.

(1) Clean the overcurrent relay and main

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circuit breaker with a cloth moistened in cleaning solvent (Fed. Spec O-T634B) and dry thoroughly.

(2) Inspect for evidence of damage, stripped threads, excessive wear or corrosion.

(3) Replace a defective overcurrent relay or main circuit breaker.

c. Testing. Overcurrent relay (K14) may be tested on unit by observing the following procedures.

WARNING

High voltages are present during the operation of the generator set. Death on contact may result if personnel fail to observe safety precautions. Be careful not to contact electrical connections when this equipment is operating. In case of accident from electrical shock, shut down the generator set at once. If the generator set cannot be shut down, free the victim from the live conductor with a board or any nonconductor. If the victim is unconscious, apply artificial respiration and get medical help.

(1) Connect a AN-2 size jumper wire from terminal L1 to terminal L2 of TB7, and secure firmly.

NOTE

Do not use a jumper wire larger than AN-2 size.

(2) Start generator set for multipurpose local operation in accordance with instructions outlined in TM 5-6115-320-12 and operate at governed speed.

CAUTION

While performing the next two steps be ready to shut down the generator set as quickly as possible if MAIN CB CLOSURE lamp does not immediately extinguish. Extremely high current could cause extensive damage to the generator set electrical currents.

(3) Momentarily set MAIN CB circuit breaker switch in CLOSE position and observe that MAIN CB CLOSURE lamp illuminates, then immediately extinguishes.

NOTE

Since voltage to the filaments of MAIN CB CLOSURE lamp will be instantaneous (approximately two-tenths of one second) it will be necessary to observe MAIN CB CLOSURE lamp closely and while it is shaded from direct sun light.

(4) If MAIN CB CLOSURE lamp does not immediately extinguish, place MAIN CB circuit breaker switch in OPEN position.

NOTE

If MAIN CB CLOSURE lamp does not immediately extinguish after performing step four above, place MASTER switch in OFF position and allow generator set to come to a complete stop. Since the AN-2 size jumper wire will burn, it will act as a fuse when the current exceeds the tolerance of the overcurrent relay being tested.

(5) Remove jumper wire from terminals L1 and L2 of TB7.

(6) Replace a defective overcurrent relay.

d. Installation. Install overcurrent relay (K14) and main circuit (CB3) in reverse order of removal.

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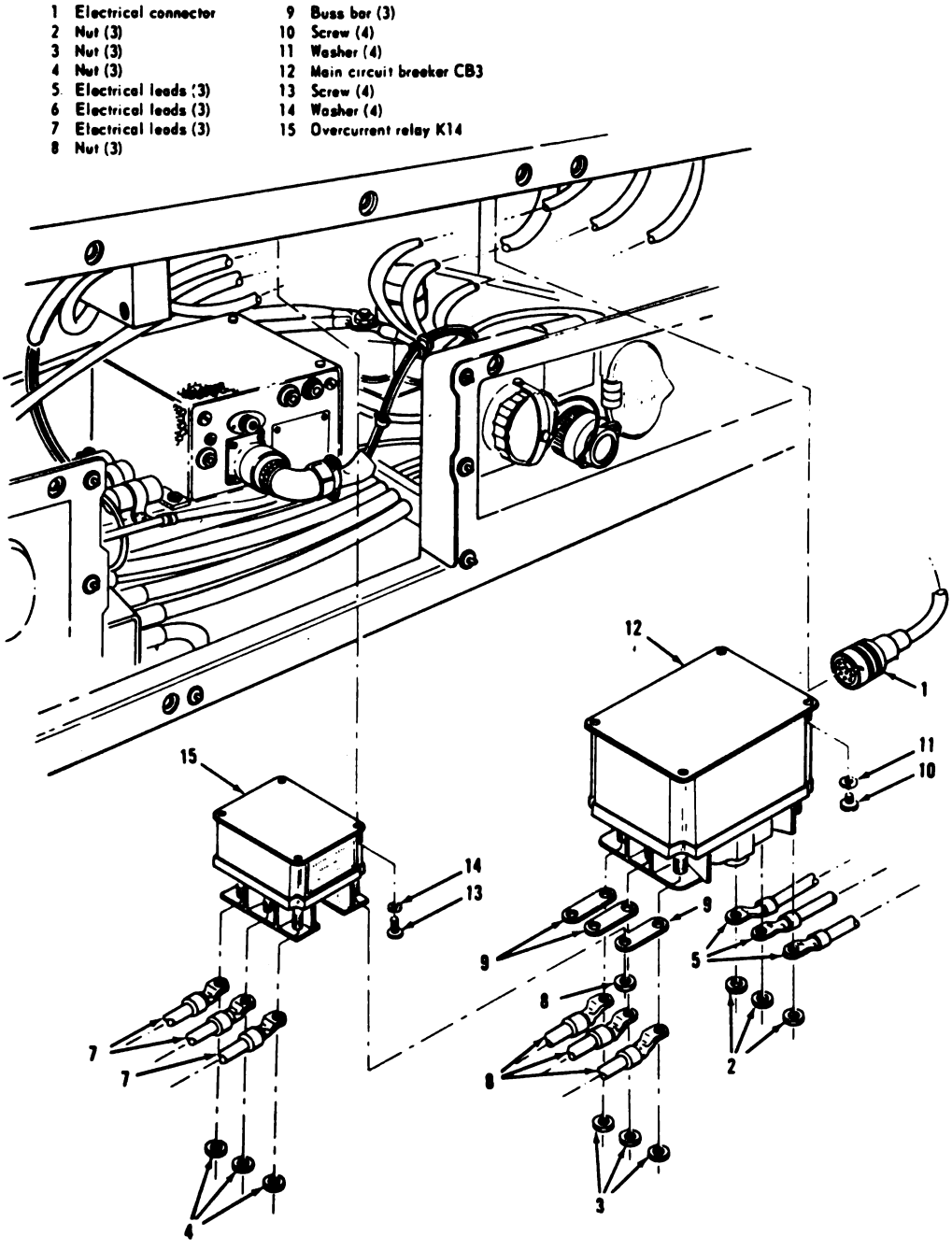

Figure 4-6. Overcurrent relay (K14) and main circuit breaker (CB3) removal and installation.

4-7. Voltage Change Panel Assembly

a. Removal. Remove voltage change panel assembly according to sequence of index numbers assigned to figure 4-7.

b. Cleaning and Inspection.

(1) Clean the voltage change panel assembly in cleaning solvent (Fed. Spec. O-T634B) and dry thoroughly.

(2) Inspect for evidence of damage, cracks, corrosion or loose terminals.

(3) Replace a defective voltage change panel assembly in reverse order of removal procedure using figure 4-7 as a guide.

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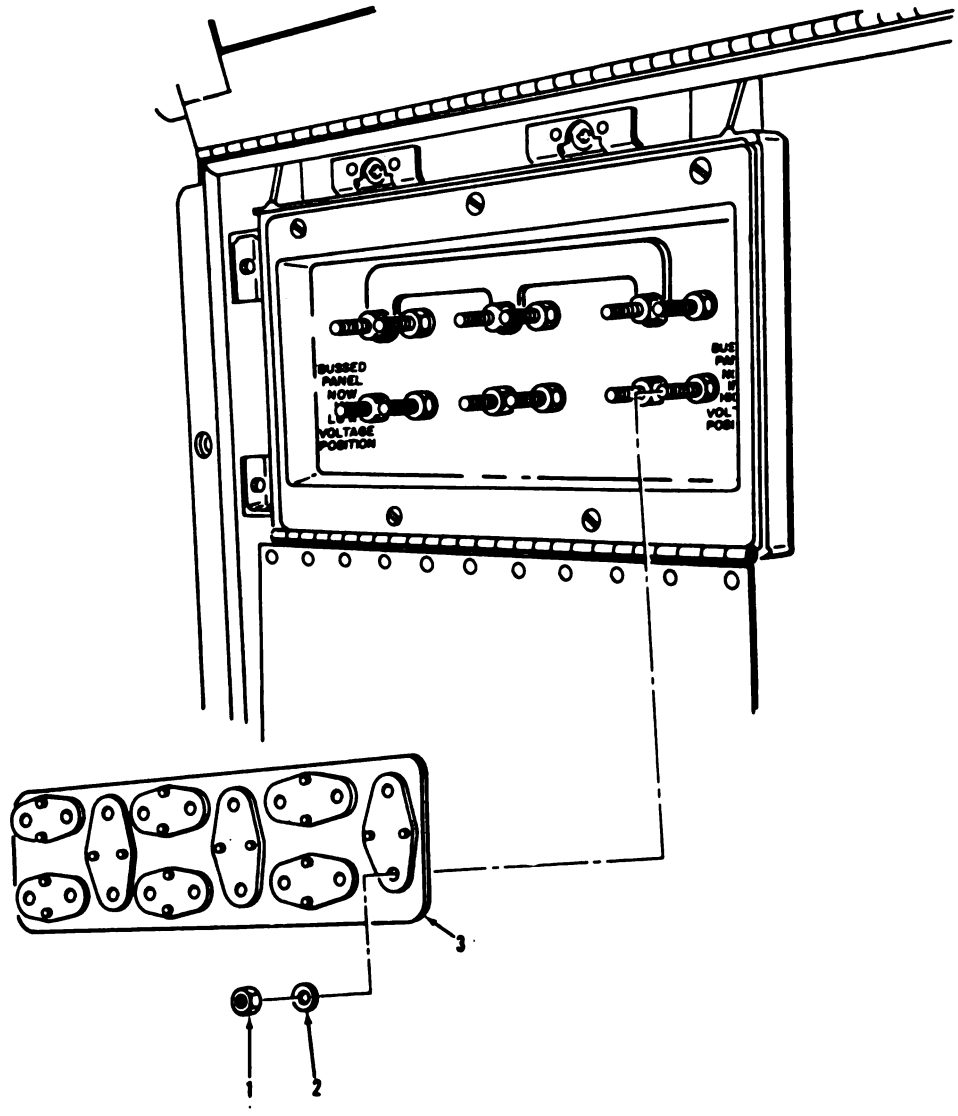

1. Nut (12)
2. Washer (12)
3. Voltage change panel assembly

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Figure 4-7. Voltage change panel assembly removal and installation

Section III. REPAIR OF GENERATOR SET WIRING HARNESS

4-8. Generator Set Wiring Hanress

a. Removal. To remove the generator set wiring harness, refer to figure FO-5 and proceed as follows:

(1) Tag and disconnect all electrical leads.

(2) Tag and disconnect all electrical connectors.

(3) Remove wiring harness noting location and position of attaching clamps and straps.

b. Cleaning and Inspection.

(1) Clean the wiring harness with a clean cloth moistened in cleaning solvent (Fed. Spec. O-T634B) and dry thoroughly.

(2) Inspect for evidence of damage, excessive

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wear, cracks, stripped threads or loose pins on connectors, or burned areas from shorting.

c. Repair. Refer to table 4-1 and replace defective wires.

Table 4-1. Generator set wiring harness wiring table

From	To	Wire no.	Wire size	Color	Length (in.)
B3-(minus)	TB3-11	Q2AM18N	18	Red	94
B5-(minus)	TB3-11	H2AL18N	18	Red	120
A8-1	J27-E	Q53A18	18	Red	
A8-2	A8-3	Q142A18	18	Red	
A8-3	A8-2	Q142A18	18	Red	
A8-4	CB4-1	Q131A18	18	Red	52
A8-5	TB3-11	Q2AN18N	18	Red	
C1-1	J19-1	X114B18C	18	White	
C2-1	K14-L1	X66E18A	18	White	30
C3-1	K14-L2	X67E18B	18	White	30
C4-1	K14-L3	X68F18C	18	White	30
CB1-1	TB9-4	P4B18	18	Red	
CB1-1	S2-B2	P4A18	18	Red	8
CB1-2	CB4-2	P31D12	12	Red	3
CB1-2	P3-s	P31B12	12	Red	
CB4-1	J27-D	Q131B18	18	Red	52
CB4-1	A8-4	Q131A18	18	Red	52
CB4-2	CB1-2	P31D12	12	Red	3
CB4-2	P12-I	P31C12	12	Red	49
CB4-2	M4+ (plus)	D31A12	12	Red	7
CT1-X1	P9-A	X79A18	18	White	36
CT1-X2	CT2-X2	X22N18N	18	White	6
CT2-X1	P9-E	X78A18	18	White	40
CT2-X2	CT3-X2	X22P18N	18	White	6
CT2-X2	CT1-X2	X22N18N	18	White	6
CT3-X1	P9-I	X77A18	18	White	44
CT3-X2	TB4-8	X22Q18N	18	White	34
CT3-X2	CT2-X2	X22P18N	18	White	6
CT4-X1	P1-Y	X52B18	18	White	45
CT4-X1	P11-H	X52A18	18	White	52
CT4-X2	P1-X	X51B18	18	White	45
CT4-X2	P11-R	X51A18	18	White	52
DX1-1	DS2-1	L3C18	18	Red	8
DX1-1	P3-T	L3B18	18	Red	45
DS1-2	DS2-2	L2R18N	18	Red	8
DS1-2	TB3-13	L2Q18N	18	Red	46
DS2-1	DS3-1	L3D18	18	Red	12
DS2-1	DS1-1	L3C18	18	Red	8
DS2-2	DS3-2	L2S18N	18	Red	12
DS2-2	DS1-2	L2R18N	18	Red	8
DS3-1	DS2-1	L3D18	18	Red	12
DS3-2	DS2-2	L2S18N	18	Red	12
E1	E2	P2AQ18N	8	Red	
E2	E1	P2AQ18N	8	Red	
E2	TB3-15	P2C8N	8	Red	68
F1-1	TB4-3	X39D12C	12	White	47
F1-2	J19-1	X114A12C	12	White	
J14-A	TB3-10	P105C18	18	Red	40
J14-B	TB3-9	P110E18	18	Red	39
J14-C	S2-A1	P7C18	18	Red	72
J14-D	TB3-4	P21E18	18	Red	34
J14-E	M6-1	P16G18	18	Red	68
J14-F	K14-A2	P10F18	18	Red	24
J14-G	P1-v	V101B18	18	White	58
J14-H	P1-H	V12B18	18	White	58
J14-J	TB4-2	V13D18	18	White	50
J14-K	TB3-6	P37D18	18	Red	36
J14-K	P1-L	V37B18	18	White	
J14-L	TB3-5	P36D18	18	Red	35
J14-L	TB4-9	V36C18	18	White	

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Table 4-1. Generator set wiring harness wiring table—continued.

From	To	Wire no.	Wire size	Color	Length (in.)
J14-M	TB4-3	X39E18C	18	White	49
J14-N	P1-N	V95C18	18	White	58
J14-P	P1-D	X117B18	18	White	58
J14-R	P1-E	X116B18	18	White	58
J14-S	P1-F	X115B18	18	White	58
J14-T	P1-M	V58C18	18	White	58
J14-U	P10-L	X138A18	18	White	
J14-V	TB4-7	X22K18N	18	White	45
J19-1	C1-1	X114B18C	18	White	5
J19-1	F1-2	X114A12C	12	White	
J19-2	TB4-8	X22J12N	12	White	43
J25-E	TB3-7	P11C-8	18	Red	79
J25-F	TB3-9	L110D18	18	Red	86
J25-H	S2-A1	P7D18	18	Red	59
J25-J	TB3-10	P105D18	18	Red	87
J25-K	TB3-9	P110C18	18	Red	86
J25-L	P3-m	P121B18	18	Red	84
J25-M	P2-K	L124A18	18	Red	95
J25-N	P13-N	L125A18	18	Red	63
J25-P	P2-g	L123A18	18	Red	95
J25-R	P2-h	L122A18	18	Red	95
J25-S	J27-B	L126A18	18	Red	7
J25-T	TB9-1	L127G18			41
J25-X	TB3-12	P2L18N	18	Red	89
J27-A	TB3-2	Q9G18	18	Red	75
J27-B	J25-S	L126A18	18	Red	7
J27-C	TB3-12	Q2J18N	18	Red	85
J27-D	CB4-1	Q131B18	18	Red	52
J27-E	A8-1	Q43A18	18	Red	
J27-F	TB3-12	Q2K18N	18	Red	85
J27-G	P3-P	Q140A18	18	Red	
J27-H	P3-R	Q139A18	18	Red	
J29-A	K14-A1	Q9M18	18	Red	
J29-B	TB3-14	Q2AP18N	18	Red	
J29-C	TB9-4	L4C18	18	Red	
K1-A2	P13-L	K11B18	18	Red	19
K1-B2	M4—(minus)	D1C12	12	Red	57
K1-X1	M5-1	E8B18	18	Red	79
K1-X1	P2-B	K8A18	18	Red	51.5
K1-X2	TB3-14	P2G18N	18	Red	44
K1-11	P2-A	K7B18	18	Red	53.5
K1-11	S2-A1	P7A18	18	Red	76
K1-12	TB3-7	P11P18	18	Red	37.5
K14-A1	J29-A	Q9M18	18	Red	
K14-A1	TB3-1	P9A18	18	Red	48
K14-A2	J14-F	P10F18	18	Red	24
K14-A2	P13-B	P10E18	18	Red	21
K14-A2	P3-M	P10D18	18	Red	59
K14-L1	C2-1	X66E18A	18	White	30
K14-L2	C3-1	X67E19B	18	White	30
K14-L3	C4-1	X68F18C	18	White	30
K14-T1	P1-y	X32B18A	18	White	36
K14-T3	P1-K	X14B18C	18	White	38
M2-A1	P2-T	E83A-ALML			73
M4+ (plus)	CB4-2	D31A12	12	Red	7
M4— (minus)	K1-B2	D1C12	12	Red	57
M5-1	K1-X1	E8B18	18	Red	79
M6-1	J14-E	P16G18	18	Red	68
M6-1	TB3-3	E16E18	18	Red	87
M6-2	P24-C	E2V18N	18	Red	8
M6-2	TB3-13	E2T18N	18	Red	97
P1-A	P11-K	X120B18	18	White	23
P1-B	P11-L	X119B18	18	White	23
P1-B	P7-A	X55A18	18	White	34

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Table 4-1. Generator set wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
P1-C	P11-S	X118B18	18	White	23
P1-D	J14-P	X117B18	18	White	58
P1-E	J14-R	X116B18	18	White	58
P1-F	J14-S	X115B18	18	White	58
P1-G	TB4-9	V36B18	18	White	
P1-H	J14-H	V12B18	18	White	58
P1-J	TB4-2	V13B18	18	White	29
P1-K	K14-T3	X14B18C	18	White	38
P1-L	J14-K	V37B18	18	White	
P1-M	J14-T	V58C18	18	White	58
P1-N	J14-N	V95C18	18	White	58
P1-O	TB5-7	X38C18A	18	White	52
P1-P	TB4-3	X39F18C	18	White	28
P1-Q	P11-D	V59B18	18	White	23
P1-R	P10-F	X107B18	18	White	52
P1-S	P10-C	X108B18	18	White	52
P1-T	P10-E	X109B18	18	White	52
P1-V	TB5-5	X48B18B	18	White	24
P1-W	P7-B	X57A18	18	White	34
P1-X	CT4-X2	X51B18	18	White	45
P1-Y	CT4-X1	X52B18	18	White	45
P1-Z	P11-B	X137A18	18	White	
P1-Z	P11-N	V53B18	18	White	23
P1-a	TB4-5	V54B18	18	White	26
P1-c	P11-A	X136A18	18	White	
P1-d	TB8-3	L63E18C	18	White	52
P1-e	TB8-1	L65E18A	18	White	49
P1-f	TB5-1	X66B18A	18	White	52.5
P1-g	TB5-2	X67B18B	18	White	49.5
P1-h	TB5-3	X68B18C	18	White	46.5
P1-j	P9-D	V72B18	18	White	46
P1-m	P9-J	V74B18	18	White	46
P1-n	P10-A	X91B18	18	White	52
P1-p	P10-B	X92B18	18	White	52
P1-q	P10-D	X93B18	18	White	52
P1-r	TB5-8	X47D18B	18	White	57
P1-u	TB4-6	X22L12N	12	White	25
P1-v	J14-G	V101B18	18	White	58
P1-w	P11-E	V60A18	18	White	23
P1-y	K14-T1	X32B18A	18	White	36
P1-z	P9-H	V73B18	18	White	46
P2-A	K1-11	K7B18	18	Red	53.5
P2-B	K1-X1	K8A18	18	Red	51.5
P2-C	P3-n	K102B18	18	Red	48
P2-D	TB3-3	K16F18	18	Red	35
P2-F	P24-A	E85A18	18	Red	75
P2-G	P24-B	E84A18	18	Red	75
P2-H	P3-J	K100B18	18	Red	48
P2-J	P3-K	K17E18	18	Red	48
P2-K	J25-M	L124A18	18	Red	95
P2-L	P10-H	X86A18	18	White	73
P2-M	P10-G	X89A18	18	White	73
P2-N	P10-J	X87A18	18	White	73
P2-P	P10-I	X88A18	18	White	73
P2-R	TB3-2	K9F18	18	Red	33
P2-S	R12-CR	E82A-CHROM			73
P2-T	M2-AL	E83A-ALML			73
P2-V	TB3-1	K9D18	18	Red	32
P2-W	TB3-7	K11A18	18	Red	38
P2-X	P3-S	K30A18	18	Red	48
P2-Z	TB3-13	P2N18N	18	Red	45
P2-a	P3-c	Q15C18	18	Red	48
P2-f	TB3-2	K9E18	18	Red	33

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Table 4-1. Generator set wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
P2-g	J25-P	L123A18	18	Red	95
P2-h	J25-R	L122A18	18	Red	95
P2-v	93-h	K24B18	18	Red	48
P3-A	TB3-1	P9B18	18	Red	26.5
P3-C	S2-B1	P5A18	18	Red	98
P3-D	P8-F	H41D18	18	Red	49
P3-E	TB3-3	P16D18	18	Red	28.5
P3-G	S2-A2	P6D18	18	Red	98
P3-H	P8-E	L46A18	18	Red	49
P3-J	P2-H	K100B18	18	Red	48
P3-K	P2-J	K17E18	18	Red	48
P3-L	TB3-7	K11D18	18	Red	32.5
P3-M	K14-A2	P10D18	18	Red	59
P3-N	TB3-10	P105B18	18	Red	35.5
P3-P	J27-G	Q140A18	18	Red	
P3-R	J27-H	Q139A18	18	Red	
P3-S	P2-X	K30A18	18	Red	48
P3-T	DS1-1	L3B18	18	Red	45
P3-U	TB3-4	P21C18	18	Red	29.5
P3-V	TB3-12	P2H12N	12	Red	37.5
P3-W	P8-A	H42B12	12	Red	49
P3-X	P17-A	H111B18	18	Red	120
P3-Z	P17-C	H112B18	18	Red	120
P3-a	S2-B2	P4D18	18	Red	98
P3-b	P13-M	L26B18	18	Red	34
P3-c	P2-a	Q15C18	18	Red	48
P3-d	P13-T	P129B18	18	Red	34
P3-e	P13-U	P130B18	18	Red	34
P3-g	P17-D	H40D18	18	Red	120
P3-h	P2-v	K24B18	18	Red	48
P3-j	TB3-9	P110B18	18	Red	34.5
P3-m	J25-L	P121B18	18	Red	84
P3-n	P2-C	K102B18	18	Red	48
P3-p	P12-D	P106B18	18	Red	71
P3-r	TB9-1	W127B18			31
P3-s	CB1-2	P31B12	12	Red	
P7-A	P1-B	X55A18	18	White	34
P7-B	P1-W	X57A18	18	White	34
P7-C	P11-C	X56A18	18	White	34
P7-D	TB4-5	V54D18	18	White	22
P7-D	P11-M	V54A18	18	White	35
P7-F	TB4-4	V50A18	18	White	23
P8-A	P3-W	H42B12	12	Red	49
P8-B	P8-G	H44B18	18	Red	8.0
P8-B	P21-A	H44A18	18	Red	150
P8-D	TB3-11	H2D12N	12	Red	49
P8-E	P3-H	L46A18	18	Red	49
P8-F	P3-D	H41D18	18	Red	49
P8-G	P8-B	H44B18	18	Red	8.0
P9-A	CT1-X1	X79A18	18	White	36
P9-B	TB4-6	X22R18N	18	White	35
P9-C	TB5-7	X38B18A	18	White	59
P9-D	P1-j	V72B18	18	White	46
P9-E	CT2-X1	X78A18	18	White	40
P9-F	TB5-8	X47C18B	18	White	47
P9-G	TB5-9	X39B18C	18	White	44
P9-H	P1-z	V73B18	18	White	46
P9-1	CT3-X1	X77A18	18	White	44
P9-J	P1-m	V74B18	18	White	46
P10-A	P1-n	X91B18	18	White	52
P10-B	P1-p	X92B18	18	White	52
P10-C	P1-S	X108B18	18	White	52
P10-D	P1-q	X93B18	18	White	52
P10-E	P1-T	X109B18	18	White	52

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Table 4-1. Generator set wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
P10-F	P1-R	X107B18	18	White	52
P10-G	P2-M	X89A18	18	White	73
P10-H	P2-L	X86A18	18	White	73
P10-I	P2-P	X88A18	18	White	73
P10-J	P2-N	X87A18	18	White	73
P10-K	TB4-6	X22AK18N	18	White	
P10-L	J14-U	X138A18	18	White	
P10-M	TB4-9	V36A18	18	White	
P11-A	P1-c	X136A18	18	White	
P11-B	P1-z	X137A18	18	White	
P11-C	P7-C	X56A18	18	White	34
P11-D	P1-Q	V59B18	18	White	23
P11-E	P1-w	V60A18	18	White	23
P11-F	TB4-2	V13C18	18	White	38
P11-G	TB4-4	V50B18	18	White	36
P11-H	CT4-X1	X52A18	18	White	52
P11-J	TB4-6	X22S18N	18	White	34
P11-K	P1-A	X120B18	18	White	23
P11-L	P1-B	X119B18	18	White	23
P11-M	P7-D	V54A18	18	White	35
P11-N	P1-Z	V53B18	18	White	23
P11-N	TB4-4	V50C18	18	White	27
P11-R	CT4-X2	X51A18	18	White	52
P11-S	P1-C	X118B18	18	White	23
P12-C	TB5-9	X39M18C	18	White	53
P12-D	P3-p	P106B18	18	Red	71
P12-E	TB4-7	X22AJ18N	18	White	
P12-H	TB3-14	P2F12N	12	Red	52
P12-I	CB4-2	P31C12	12	Red	49
P13-A	TB3-4	P21D18	18	Red	27
P13-B	K14-A2	P10E18	18	Red	21
P13-C	TB3-13	P2P18N	18	Red	36
P13-L	K1-A2	K11B18	18	Red	19
P13-M	P3-b	L26B18	18	Red	34
P13-N	J25-N	L125A18	18	Red	63
P13-R	TB3-2	P9H18	18	Red	25
P13-T	P3-d	P129B18	18	Red	34
P13-U	P3-e	P130B18	18	Red	34
P17-A	P3-X	H111B18	18	Red	120
P17-B	TB3-14	H2E18N	18	Red	96
P17-C	P3-Z	H112B18	18	Red	120
P17-D	P3-g	H40D18	18	Red	120
P20-A	TB3-1	Q9C18	18	Red	84
P21-A	P8-B	H44A18	18	Red	150
P24-A	P2-F	E85A18	18	Red	75
P24-B	P2-G	E84A18	18	Red	75
P24-C	M6-2	E2V18N	18	Red	8
R12-CR	P2-S	E82A-CHROM			73
S2-A1	J25-H	P7-D18	18	Red	59
S2-A1	J14-C	P7-C18	18	Red	72
S2-A1	K1-11	P7-A18	18	Red	76
S2-A2	P3-G	P6D18	18	Red	98
S2-B1	P3-C	P5A18	18	Red	98
S2-B2	P3-a	P4D18	18	Red	98
S2-B2	CB-1	P4A18	18	Red	8
TB3-1	P2V	K9D18	18	Red	32
TB3-1	P20-A	Q9C18	18	Red	84
TB3-1	P3-A	P9B18	18	Red	26.5
TB3-1	K14-A1	P9A18	18	Red	48
TB3-2	P13-R	P9H18	18	Red	25
TB3-2	J27-A	Q9G18	18	Red	75
TB3-2	P2-R	K9F18	18	Red	33
TB3-2	P2-f	K9E18	18	Red	33
TB3-3	P2-D	K16F18	18	Red	35

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Table 4-1. Generator set wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
TB3-3	M6-1	E16E18	18	Red	87
TB3-3	P3-E	P16D18	18	Red	28.5
TB3-4	J14-D	P21E18	18	Red	34
TB3-4	P13-A	P21D18	18	Red	27
TB3-4	P3-U	P21C18	18	Red	29.5
TB3-5	J14-L	P36D18	18	Red	35
TB3-6	J14-K	P37D18	18	Red	36
TB3-7	K1-12	P11P19	18	Red	37.5
TB3-7	P3-L	K11D18	18	Red	32.5
TB3-7	J25-E	P11C18	18	Red	79
TB3-7	P2-W	K11A18	18	Red	
TB3-9	J14-B	P110E18	18	Red	39
TB3-9	J25-F	L110D18	18	Red	86
TB3-9	J25-K	P110C18	18	Red	86
TB3-9	P3-j	P110B18	18	Red	34.5
TB3-10	J25-J	P105D18	18	Red	87
TB3-10	J14-A	P105C18	18	Red	40
TB3-10	P3-N	P105B18	18	Red	35.5
TB3-11	A8-5	Q2AN18N	18	Red	
TB3-11	B3— (minus)	Q2AM18N	18	Red	94
TB3-11	B5— (minus)	H2AL18N	18	Red	120
TB3-11	P8-D	H2D12N	12	Red	49
TB3-12	J27-F	Q2K18N	18	Red	85
TB3-12	J25-X	P2L18N	18	Red	89
TB3-12	J27-C	Q2J18N	18	Red	85
TB3-12	P3-V	P2H12N	12	Red	37.5
TB3-13	M6-2	E2T18N	18	Red	97
TB3-13	DS1-2	L2Q18N	18	Red	46
TB3-13	P13-C	P2P18N	18	Red	36
TB3-13	P2-Z	P2N18N	18	Red	45
TB3-14	J29-B	Q2AP18N	18	Red	
TB3-14	K1-X2	P2G18N	18	Red	44
TB3-14	P12-H	P2F12N	12	Red	52
TB3-14	P17-B	H2E18N	18	Red	96
TB3-15	E2	P2C8N	8	Red	68
TB4-2	J14-J	V13D18	18	White	50
TB4-2	P11-F	V13C18	18	White	38
TB4-2	P1-J	V13B18	18	White	29
TB4-3	P1-P	X39F18C	18	White	28
TB4-3	J14-M	X39E18C	18	White	49
TB4-3	F1-1	X39D12C	12	White	47
TB4-3	TB5-9	X39C12C	12	White	37
TB4-4	P11-N	V50C18	18	White	27
TB4-4	P11-G	V50B18	18	White	36
TB4-4	P7-F	V50A18	18	White	23
TB4-5	P7-D	V54D18	18	White	22
TB4-5	P1-a	V54B18	18	White	26
TB4-6	P10-K	X22AK18N	18	White	
TB4-6	P11-J	X22S18N	18	White	34
TB4-6	P9-B	X22R18N	18	White	35
TB4-6	P1-u	X22L12N	12	White	25
TB4-7	P12-E	X22AJ18N	18	White	
TB4-7	TB4-12	X22M12N	12	White	36
TB4-7	J14-V	X22K18N	18	White	45
TB4-8	CT3-X2	X22Q18N	18	White	34
TB4-8	J19-2	X22J12N	12	White	43
TB4-9	J14-L	V36C18	18	White	
TB4-9	P1-G	V36B18	18	White	
TB4-9	P10-M	V36A18	18	White	
TB5-1	P1-f	X66B18A	18	White	52.5
TB5-2	P1-g	X67B18B	18	White	49.5
TB5-3	P1-h	X68B18C	18	White	46.5
TB5-5	P1-V	X48B18B	18	White	24
TB5-7	P1-O	X38C18A	18	White	52

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Table 4-1. Generator set wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
TB5-7	P9-C	X38B18A	18	White	59
TB5-8	P1-r	X47D18B	18	White	57
TB5-8	P9-F	X47C18B	18	White	47
TB5-9	P12-C	X39M18C	18	White	53
TB5-9	TB4-3	X39C12C	12	White	37
TB5-9	P9-G	X39B18C	18	White	44
TB5-12	TB4-7	X22M12N	12	White	36
TB8-1	P1-e	L65E18A	18	White	49
TB8-3	P1-d	L63E18C	18	White	52
TB9-1	J25-T	L127G18			41
TB9-1	TC1-2	W127C18			26
TB9-1	P3-r	W127B18			31
TB9-2	TC4-2	W127F18			66
TB9-2	TC3-2	W127E18			58
TB9-2	TC2-2	W127D18			36
TB9-4	J29-C	L4C18	18	Red	
TB9-4	CB1-1	P4B18	18	Red	
TB9-4	TC2-1	W4P18			39
TB9-4	TC1-1	W4N18			23
TB9-5	TC4-1	W4R18			69
TB9-5	TC3-1	W4Q18			61
TC1-1	TB9-4	W4N18			23
TC1-2	TB9-1	W127C18			26
TC2-1	TB9-4	W4P18			39
TC2-2	TB9-2	W127D18			36
TC3-1	TB9-5	W4Q18			61
TC3-2	TB9-2	W127E18			58
TC4-1	TB9-5	W4R18			69
TC4-2	TB9-2	W127F18			66

d. Installation. Install the generator wiring harness in reverse order of removal procedure using figure FO-5 as a guide.

4-9. Cubicle AC Wiring Harness

a. Removal. To remove the cubicle ac wiring harness, refer to figure 4-8 and proceed as follows:

(1) Tag and disconnect all electrical leads.

(2) Tag and disconnect all electrical connectors.

(3) Remove wiring harness noting location and position of attaching clamps and straps.

b. Cleaning and Inspection.

(1) Clean the wiring harness with a clean cloth moistened in an approved cleaning solvent and dry thoroughly.

(2) Inspect for evidence of damage, excessive wear, cracks, stripped threads or loose pins on connectors, or burned areas from shorting.

c. Repair. Refer to table 4-2 and replace defective wires.

Table 4-2. Cubicle AC wiring harness wiring table

From	To	Wire no.	Wire size	Color	Length (in.)
A2+ (plus)	M10+ (plus)	D75A18	18	White	52
A2— (minus)	M10— (minus)	D76A18	18	White	52
A2-L1	S11-1	X71A18	18	White	51
A2-L2	S11-2	X69A18B	18	White	50
A2-L3	S11-8	S70A18	18	White	47
A2-N1	A2-N2	X22V18N	18	White	4
A2-N1	K11-N	X22X18N	18	White	16
A2-N2	A2-N3	X11W18N	18	White	4
A2-N2	A2-N1	X22V18N	18	White	4
A2-N3	A2-N2	X22W18N	18	White	4

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Table 4-2. Cubicle AC wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
A2-S1	J1-j	V72A18	18	White	25
A2-S2	J1-z	V73A18	18	White	24
A2-S3	J1-m	V74A18	18	White	23
A2-V1	K10-L1	X38F18A	18	White	15
A2-V1	MT-1	X38E18A	18	White	31
A2-V2	K10-L2	X47F18B	18	White	15
A2-V2	J1-r	X47E18B	18	White	23
A2-V3	K10-L3	X39H18C	18	White	15
A2-V3	J1-P	X39G18C	18	White	36
DS7-1	R2-2	L62A18C	18	White	16
DS7-2	J1-d	L63F18C	18	White	44
DS8-1	R4-2	L96A18A	18	White	9
DS8-2	J1-e	L65F18A	18	White	33
J1-A	R9-1	X120A18	18	White	18
J1-B	E10-1	X119A18	18	White	18
J1-C	R11-1	X118A18	18	White	18
J1-D	K16-A1	X117A18	18	White	26
J1-E	K16-B1	X116A18	18	White	23
J1-F	K16-C1	X115A18	18	White	23
J1-G	R8-CCW	V36D18	18	White	
J1-H	S3-9	V12A18	18	White	35
J1-J	R1-CW	V13A18	18	White	38
J1-K	S12-1	X14C18C	18	White	45
J1-L	R8-S	V37A18	18	White	
J1-M	R1-CCW	V58B18	18	White	
J1-N	R1-S	V95B18	18	White	36
J1-O	MT-1	X38D18A	18	White	19
J1-P	A2-V3	X39G18C	18	White	36
J1-Q	S3-11	V59A18	18	White	33
J1-R	S12-12	X107A18	18	White	43
J1-S	S12-14	S108A18	18	White	44
J1-T	S12-13	X109A18	18	White	43
J1-V	K7-X1	X48C18B	18	White	21
J1-W	K12-A2	X57B18	18	White	
J1-X	S12-8	X51C18	18	White	45
J1-Y	S12-7	X52C18	18	White	45
J1-Z	K12-A3	X137B18	18	White	
J1-b	K12-C2	X55B18	18	White	
J1-c	K12-C3	X136B18	18	White	
J1-d	DS7-2	L63F18C	18	White	44
J1-e	DS8-2	L65F18A	18	White	33
J1-f	S11-A	X66C18A	18	White	34
J1-g	S11-B	X67C18B	18	White	34
J1-h	S11-C	X68C18C	18	White	39
J1-j	A2-S1	V72A18	18	White	25
J1-m	A2-S3	V74A18	18	White	23
J1-n	R6-CCW	X91A18	18	White	8
J1-p	R6-S	X92A18	18	White	8.5
J1-q	R6-CW	X93A18	18	White	9
J1-r	A2-V2	X47E18B	18	White	23
J1-u	TB1-6	X22T12N	12	White	18
J1-v	S3-12	V101A18	18	White	35
J1-w	S3-8	V60B18	18	White	33
J1-y	S12-6	X32C18A	18	White	43
J1-z	A2-S2	V73A18	18	White	24
K7-A2	S12-5	X94B18A	18	White	52
K7-A3	R5-2	X64B18A	18	White	43
K7-B2	S12-3	X90A18C	18	White	50
K7-B3	R3-2	X61B18C	18	White	40
K7-X1	J1-V	X48C18B	18	White	21
K7-X2	MT-2	X22Z18N	18	White	10
K10-L1	K11-L1	X38G18A	18	White	22
K10-L1	A2-V1	X38F18A	18	White	15
K10-L2	K11-L2	X47G18B	18	White	14

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Table 4-2. Cubicle AC wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
K10-L2	A2-V2	X47F18B	18	White	15
K10-L3	K11-L3	X39J18C	18	White	14
K10-L3	A2-V3	X39H18C	18	White	15
K11-L1	K10-L1	X38G18A	18	White	22
K11-L1	R9-2	X38H18A	18	White	30
K11-L2	R10-2	X47H18B	18	White	30
K11-L2	K10-L2	X47G18B	18	White	14
K11-L3	R11-2	X39K18C	18	White	30
K11-L3	K10-L3	X39J18C	18	White	14
K11-N	A2-N1	X22X18N	18	White	16
K11-N	TB1-6	X22U18N	18	White	23
K12-A2	J1-W	X57B18	18	White	
K12-A3	J1-Z	X137B18	18	White	
K12-C2	J1-b	X55B18	18	White	
K12-C3	J1-c	X136B18	18	White	
K16-A1	J1-D	X117A18	18	White	23
K16-A2	R9-1	X120C18	18	White	8
K16-A3	R9-2	X38J18A	18	White	8
K16-B1	J1-E	X116A18	18	White	23
K16-B2	R10-1	X119C18	18	White	8
K16-B3	R10-2	X47B18B	18	White	8
K16-C1	J1-F	X115A18	18	White	23
K16-C2	R11-1	X118C18	18	White	8
K16-C3	R11-2	X39L18C	18	White	8
M7-1	S11-H	D98A18	18	White	7
M7-2	S11-D	D97A18	18	White	6
M8+ (plus)	MT+ (plus)	D81A18	18	White	44
M8— (minus)	MT— (minus)	D80A18	18	White	44
M9-1	S11-4	D103A18	18	White	8
M9-2	S11-N	D22AD18N	18	White	8
M9-2	S12-15	X22AC18N	18	White	21
M10+ (plus)	A2+ (plus)	D75A18	18	White	52
M10— (minus)	A2— (minus)	D76A18	18	White	52
MT+ (plus)	M8+ (plus)	D81A18	18	White	44
MT— (minus)	M8— (minus)	D80A18	18	White	44
MT-1	A2-V1	X38E18A	18	White	31
MT-1	J1-O	X38D18A	18	White	19
MT-2	K7-X2	X22Z18N	18	White	10
MT-2	TB1-6	X22Y18N	18	White	7
R1-S	J1-N	V95B18	18	White	36
R1-S	S3-7	V95A18	18	White	12
R1-CW	J1-J	V13A18	18	White	38
R1-CCW	J1-M	V58B18	18	White	36
R1-CCW	S3-10	V58A18	18	White	13
R2-1	R3-2	X61A18C	18	White	3
R2-2	DS7-1	L62A18C	18	White	16
R3-1	S12-3	X90B18C	18	White	12
R3-2	R2-1	X61A18C	18	White	3
R3-2	K7-B3	X61B18C	18	White	40
R4-1	R5-2	X64A18A	18	White	3
R4-2	DS8-1	L96A18A	18	White	9
R5-1	S12-5	S94A18A	18	White	14
R5-2	R4-1	X64A18A	18	White	3
R5-2	K7-A3	X64B18A	18	White	43
R6-S	J1-p	X92A18	18	White	8.5
R6-CW	J1-q	X93A18	18	White	9
R6-CCW	J1-n	X91A18	18	White	8
R7-S	R7-CCW	X52D18	18	White	3
R7-CW	S12-8	X51D18	18	White	45
R7-CCW	R7-S	X52D18	18	White	3
R7-CCW	S12-7	X52E18	18	White	45
R8-S	J1-L	V37A18	18	White	
R8-CW	TB1-6	X22AL18N	18	White	
R8-CCW	J1-G	V36D18	18	White	

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Table 4-2. Cubicle AC wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
R9-1	K16-A2	X120C18	18	White	8
R9-1	J1-A	X120A18	18	White	18
R9-2	K16-A3	X38J18A	18	White	8
R9-2	K11-L1	X38H18A	18	White	30
R10-1	K16-B2	X119C18	18	White	8
R10-1	J1-B	X119A18	18	White	18
R10-2	K16-B3	X47B18B	18	White	8
R10-2	K11-L2	X47H18B	18	White	30
R11-1	K16-C2	X118C18	18	White	8
R11-1	J1-C	X118A18	18	White	18
R11-2	K16-3C	X39L18C	18	White	8
R11-2	K11-L3	X39K18C	18	White	30
S3-7	R1-S	V95A18	18	White	12
S3-8	J1-w	V60B18	18	White	33
S3-9	J1-H	V12A18	18	White	35
S3-10	R1-CCW	V58A18	18	White	13
S3-11	J1-Q	V59A18	18	White	33
S3-12	J1-v	V101A18	18	White	35
S11-A	S11-G	X66D18A	18	White	8
S11-A	J1-f	X66C18A	18	White	34
S11-B	S11-E	X67D18B	18	White	4
S11-B	J1-g	X67C18B	18	White	34
S11-C	S11-F	X68D18C	18	White	8
S11-C	J1-h	X68C18C	18	White	39
S11-D	M7-2	D97A18	18	White	6
S11-E	S11-B	X67D18B	18	White	4
S11-F	S11-C	X68D18C	18	White	8
S11-F	S11-K	X68E18C	18	White	6
S11-G	S11-A	X66D18A	18	White	8
S11-H	M7-1	D98A18	18	White	7
S11-K	S11-F	X68E18C	18	White	6
S11-N	S11-9	X22AE18N	18	White	6
S11-N	M9-2	D22AD18N	18	White	8
S11-1	S11-6	X71B18	18	White	4
S11-1	A2-L1	X71A18	18	White	51
S11-2	S11-7	X69B18B	18	White	3
S11-2	A2-L2	X69A18B	18	White	50
S11-3	S11-8	X70B18	18	White	3
S11-4	M9-1	D103A18	18	White	8
S11-5	S11-9	X22AF18N	18	White	3
S11-6	S11-1	X71B18	18	White	4
S11-7	S11-2	X69B18B	18	White	3
S11-8	S11-3	X70B18	18	White	3
S11-8	A2-L3	X70A18	18	White	47
S11-9	S11-N	X22AE18N	18	White	6
S11-9	S11-5	X22AF18N	18	White	3
S12-1	J1-K	X14C18C	18	White	45
S12-3	R3-1	X90B18C	18	White	12
S12-3	K7-B2	X90A18C	18	White	50
S12-5	K7-A2	C94B18A	18	White	52
S12-5	R5-1	X94A18A	18	White	14
S12-6	J1-y	X32C18A	18	White	43
S12-7	R7-CCW	X52E18	18	White	45
S12-7	J1-Y	X52C18	18	White	45
S12-8	R7-CW	X51D18	18	White	45
S12-8	J1-X	X51C18	18	White	45
S12-10	S12-15	X22AB18N	18	White	4
S12-10	TB1-6	X22AA18N	18	White	47
S12-12	J1-R	X107A18	18	White	43
S12-13	J1-T	X119A18	18	White	43
S12-14	J1-S	X108A18	18	White	44
S12-15	S12-10	X22AB18N	18	White	4
S12-15	M9-2	X22AC18N	18	White	21
TB1-6	R8-CW	X22AL18N	18	White	

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Table 4-2. Cubicle AC wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
TB1-6	S12-10	X22AA18N	18	White	47
TB1-6	MT-2	X22Y18N	18	White	7
TB1-6	K11-N	X22U18N	18	White	23
TB1-6	J1-u	X22T12N	18	White	18

d. Installation. Install the cubicle ac wiring harness in reverse order of removal procedure using figure 4-8 as a guide.

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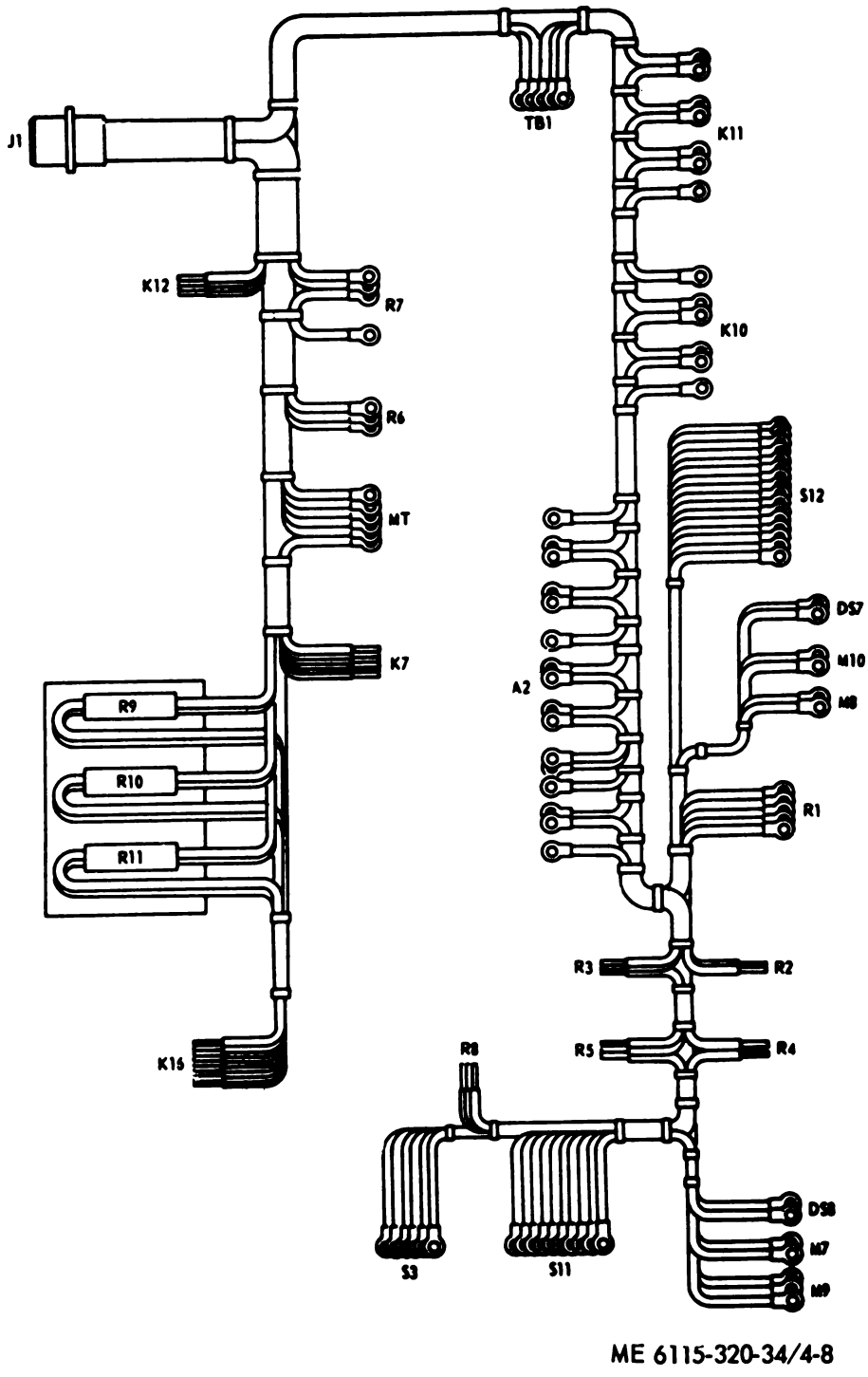

Figure 4-8. Cubicle AC wiring harness.

4-10. Cubicle DC Wiring Harness

a. Removal. To remove the cubicle dc wiring harness, refer to figure 4-9 and proceed as follows:

(1) Tag and disconnect all electrical leads.

(2) Tag and disconnect all electrical connectors.

(3) Remove wiring harness noting location and position of attaching clamps and straps.

b. Cleaning and Inspection.

(1) Clean the wiring harness with a clean cloth moistened in an approved cleaning solvent and dry thoroughly.

(2) Inspect for evidence of damage, excessive wear, cracks, stripped threads or loose pins on connectors or burned areas from shorting.

c. Repair. Refer to table 4-3 and replace defective wires.

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Table 4-3. Cubicle DC Wiring Harness Wiring Table

From	To	Wire no.	Wire size	Color	Length (in.)
CB2-1	S8-2	H41A12	12	Red	4
CB2-1	J3-D	H41C18	18	Red	9.5
CB2-2	TB1-1	P31F12	12	Red	25
DS4-1	DS6-1	L2AK18N	18	Red	10
DS4-1	DS5-1	L2AJ18N	18	Red	11
DS4-2	J3-b	L26A18	18	Red	34
DS4-3	DS6-3	L4H18	18	Red	10
DS5-1	DS4-1	L2AJ18N	18	Red	11
DS5-1	TB2-3	L2AH18N	18	Red	27
DS5-2	J3-H	L46B18	18	Red	37
DS5-3	S8-2	L41B18	18	Red	6
DS6-1	DS4-1	L2AK18N	18	Red	10
DS6-2	K10-P	L34C18	18	Red	43
DS6-2	K6-B2	L34A18	18	Red	
DS6-3	DS4-3	L4H18	18	Red	10
DS6-3	S1-2	L4G18	18	Red	
J3-A	S13-2	K9J18	18	Red	
J3-C	S3-2	P5B18	18	Red	29
J3-D	CB2-1	H41C18	18	Red	9.5
J3-E	S5-2	P16C18	18	Red	33
J3-G	S3-1	P6A18	18	Red	29
J3-H	DS5-2	L46B18	18	Red	37
J3-J	K8-B1	K100A18	18	Red	18
J3-K	TB2-6	K17D18	18	Red	14
J3-L	TB2-5	P11E18	18	Red	14
J3-M	S5-4	P10C18	18	Red	32
J3-N	S3-3	P105A18	18	Red	
J3-P	S6-4	Q140B18	18	Red	
J3-R	S6-1	Q139B18	18	Red	
J3-S	K13-A2	K30B18	18	Red	17
J3-T	S1-3	L3A18	18	Red	31
J3-U	S5-3	P21B18	18	Red	33.5
J3-V	TB2-3	P2W12N	12	Red	16
J3-W	K9-4	H42A12	12	Red	16
J3-X	K15-5	H111A18	18	Red	15
J3-Z	K15-1	H112A18	18	Red	15
J3-a	TB2-4	P4E18	18	Red	15
J3-b	DS4-2	L26A18	18	Red	34
J3-c	K8-A1	Q15B18	18	Red	17
J3-d	S13-3	P129A18	18	Red	32.5
J3-e	K16-X1	P130A18	18	Red	15
J3-g	S8-3	H40C18	18	Red	37
J3-h	K4-B3	K24A18	18	Red	10
J3-j	S3-6	P110A18	18	Red	32
J3-m	K6-X1	P121A18	18	Red	
J3-n	K3-D1	K102A18	18	Red	9.5
K3-p	K3-A1	P106A18	18	Red	8
J3-r	K13-X1	W127A18	18		19
J3-s	TB1-1	P31E12	12	Red	24
K2-1	S3-5	P6C18	18	Red	42
K2-2	K8-D2	P4L18	18	Red	6
K2-2	TB2-4	P4K18	18	Red	26
K2-4	K3-D2	K9L18	18	Red	14
K2-5	K9-5	P2Y18N	18	Red	6
K2-5	TB2-1	P2X18N	18	Red	29
K3-A1	J3-p	P106A18	18	Red	8
K3-A2	TB1-1	P31H18	18	Red	26
K3-B1	TB2-6	P17A18	18	Red	19
K3-B2	K8-C2	P25A18	18	Red	14
K3-C2	TB2-4	P4J18	18	Red	19
K3-C3	K8-C3	P10B18	18	Red	15
K3-D1	J3-n	K102A18	18	Red	9.5
K3-D2	K2-4	K9L18	18	Red	14
K3-D2	S13-2	K9K18	18	Red	

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Table 4-3. Cubicle DC wiring harness wiring table—continued

From	To	Wire no.	Wire size	Color	Length (in.)
K3-X1	K13-A3	P132A18	18	Red	12
K3-X2	TB2-2	P2AE18N	18	Red	21
K4-A1	K4-X1	P16H18	18	Red	4
K4-A2	K4-B1	P11N18	18	Red	4
K4-A3	K8-A2	P132C18	18	Red	13
K4-B1	K4-A2	P11N18	18	Red	4
K4-B1	K5-B1	P11M18	18	Red	6
K4-B2	K8-A1	P15A18	18	Red	15
K4-B3	J3-h	K24A18	18	Red	10
K4-C2	K5-D1	P18B18	18	Red	6
K4-C3	K5-D2	P19B18	18	Red	6
K4-C3	K12-X1	P19A18	18	Red	13
K4-X1	K4-A1	P16H18	18	Red	4
K4-X1	K6-A2	P16B18	18	Red	
K4-X2	TB2-2	P2AC18N	18	Red	21
K5-B1	K5-C1	P11L18	18	Red	4
K5-B1	K4-B1	P11M18	18	Red	6
K5-B2	S4-2	P27A18	18	Red	40
K5-C1	K5-B1	P11L18	18	Red	4
K5-C1	TB2-5	P11K18	18	Red	20
K5-C2	K11-A3	P17C18	18	Red	19
K5-D1	K4-C2	P18B18	18	Red	6
K5-D1	K8-B3	P18A18	18	Red	15
K5-D2	K4-C3	P19B18	18	Red	6
K5-X1	K10-P	P34B18	18	Red	26
K5-X2	TB2-2	P2AB18N	18	Red	23
K6-A2	K4-X1	P16B18	18	Red	
K6-A2	S5-2	P16A18	18	Red	
K6-A3	S5-3	P21A18	18	Red	
K6-B1	S4-3	P23A18	18	Red	
K6-B2	DS6-2	L34A18	18	Red	
K6-X1	J3-m	P121A18	18	Red	
K6-X2	TB2-3	P2AG18N	18	Red	27
K8-A1	J3-c	Q15B18	18	Red	17
K8-A1	K4-B2	P15A18	18	Red	15
K8-A2	K4-A3	P132C18	18	Red	13
K8-A2	K13-A3	P132B18	18	Red	12
K8-B1	J3-J	K100A18	18	Red	18
K8-B2	TB2-5	P11F18	18	Red	26
K8-B3	K5-D1	P18A18	18	Red	15
K8-C2	K3-B2	P25A18	18	Red	14
K8-C3	K3-C3	P10B18	18	Red	15
K8-C3	S5-4	P10A18	18	Red	47
K8-D1	TB1-1	P31G18	18	Red	20
K8-D2	K2-2	P4L18	18	Red	6
K8-X1	S6-2	P35A18	18	Red	46
K8-X2	S6-5	P141A18	18	Red	
K9-1	K15-3	H43A18	18	Red	6.5
K9-2	S8-3	H40B12	12	Red	49
K9-2	K15-4	H40A18	18	Red	6.5
K9-4	J3-W	H42A12	12	Red	16
K9-5	K2-5	P2Y18N	18	Red	6
K10-P	DS6-2	L34C18	18	Red	43
K10-P	K5-X1	P34B18	18	Red	26
K10-T	K12-B2	P11J18	18	Red	
K10-T	TB2-5	P11H18	18	Red	
K11-A2	S4-6	P29A18	18	Red	37
K11-A3	K5-C2	P17C18	18	Red	19
K11-A3	TB2-6	P17B18	18	Red	18
K12-B2	K10-T	P11J18	18	Red	
K12-B3	S4-5	P28A18	18	Red	
K12-X1	K4-C3	P19A18	18	Red	13
K12-X2	TB2-2	P2AD18N	18	Red	23
K13-A2	J3-S	K30B18	18	Red	17

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Table 4-3. Cubicle DC wiring harness wiring table—continued.

From	To	Wire no.	Wire size	Color	Length (in.)
K13-A3	K8-A2	P132B18	18	Red	12
K13-A3	K3-X1	P132A18	18	Red	12
K13-X1	J3-r	W127A18	18		19
K13-X2	TB2-1	P2AF18N	18		16
K15-1	J3-Z	H112A18	18	Red	15
K15-3	K9-1	H43A18	18	Red	6.5
K15-4	K9-2	H40A18	18	Red	6.5
K15-5	J3-X	H111A18	18	Red	15
K16-X1	J3-e	P130A18	18	Red	15
K16-X2	TB2-1	P2AA18N	18	Red	26
S1-2	S5-5	P4S18	18	Red	
S1-2	DS6-3	L4G18	18	Red	
S1-2	TB2-4	P4F18	18	Red	20
S1-3	J3-T	L3A18	18	Red	31
S3-1	S3-5	P6B18	18	Red	3
S3-1	J3-G	P6A18	18	Red	29
S3-2	J3-C	P5B18	18	Red	29
S3-3	J3-N	P105A18	18	Red	32
S3-5	S3-1	P6B18	18	Red	3
S3-5	K2-1	P6C18	18	Red	42
S3-6	J3-j	P110A18	18	Red	32
S4-2	K5-B2	P27A18	18	Red	40
S4-3	K6-B1	P23A18	18	Red	
S4-5	K12-B3	P28A18	18	Red	
S4-6	K11-A2	P29A18	18	Red	37
S5-2	J3-E	P16C18	18	Red	33
S5-2	K6-A2	P16A18	18	Red	
S5-3	J3-U	P21B18	18	Red	33.5
S5-3	K6-A3	P21A18	18	Red	
S5-4	J3-M	P10C18	18	Red	32
S5-4	K8-C3	P10A18	18	Red	47
S5-5	S1-2	P4S18	18	Red	
S6-1	J3-R	Q139B18	18	Red	
S6-2	K8-X1	P35A18	18	Red	46
S6-3	S13-2	P9N18	18	Red	
S6-4	J3-P	Q140B18	18	Red	
S6-5	K8-X2	P141A18	18	Red	
S6-6	TB2-1	P2Z18N	18	Red	
S8-2	CB2-1	H41A12	12	Red	4
S8-2	DS5-3	L41B18	18	Red	6
S8-3	J3-g	H40C18	18	Red	37
S8-3	K9-2	H40B12	12	Red	49
S13-2	S6-3	P9N18	18	Red	
S13-2	K3-D2	K9K18	18	Red	
S13-2	J3-A	K9J18	18	Red	
S13-3	J3-d	P129A18	18	Red	32.5
TB1-1	K3-A2	P31H18	18	Red	26
TB1-1	K8-D1	P31G18	18	Red	20
TB1-1	J3-s	P31E12	12	Red	24
TB1-1	CB2-2	P31F12	12	Red	25
TB2-1	K16X2	P2AA18N	18	Red	26
TB2-1	S6-6	P2Z18N	18	Red	
TB2-1	K2-5	P2X18N	18	Red	29
TB2-1	K13-X2	P2AF18N	18	Red	16
TB2-2	K3-X2	P2AE18N	18	Red	21
TB2-2	K12-X2	P2AD18N	18	Red	23
TB2-2	K4-X2	P2AC18N	18	Red	21
TB2-2	K5-X2	P2AB18N	18	Red	23
TB2-3	DS5-1	L2AH18N	18	Red	27
TB2-3	K6-X2	P2AG18N	18	Red	27
TB2-3	J3-V	P2W12N	12	Red	16
TB2-4	K2-2	P4K18	18	Red	26
TB2-4	K3-C2	P4J18	18	Red	19
TB2-4	S1-2	P4F18	18	Red	20

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Table 4-3. Cubicle DC wiring harness wiring table—continued.

From	To	Wire no.	Wire size	Color	Length (in.)
TB2-4	J3-a	P4E18	18	Red	15
TB2-5	K5-C1	P11K18	18	Red	20
TB2-5	K10-T	P11H18	18	Red	
TB2-5	K8-B2	P11F18	18	Red	26
TB2-5	J3-L	P11E18	18	Red	14
TB2-6	J3-K	K17D18	18	Red	14
TB2-6	K11-A3	P17B18	18	Red	18
TB2-6	K3-B1	P17A18	18	Red	19

d. Installation. Install the cubicle dc wiring harness in reverse order of removal using figure 4-9 as a guide.

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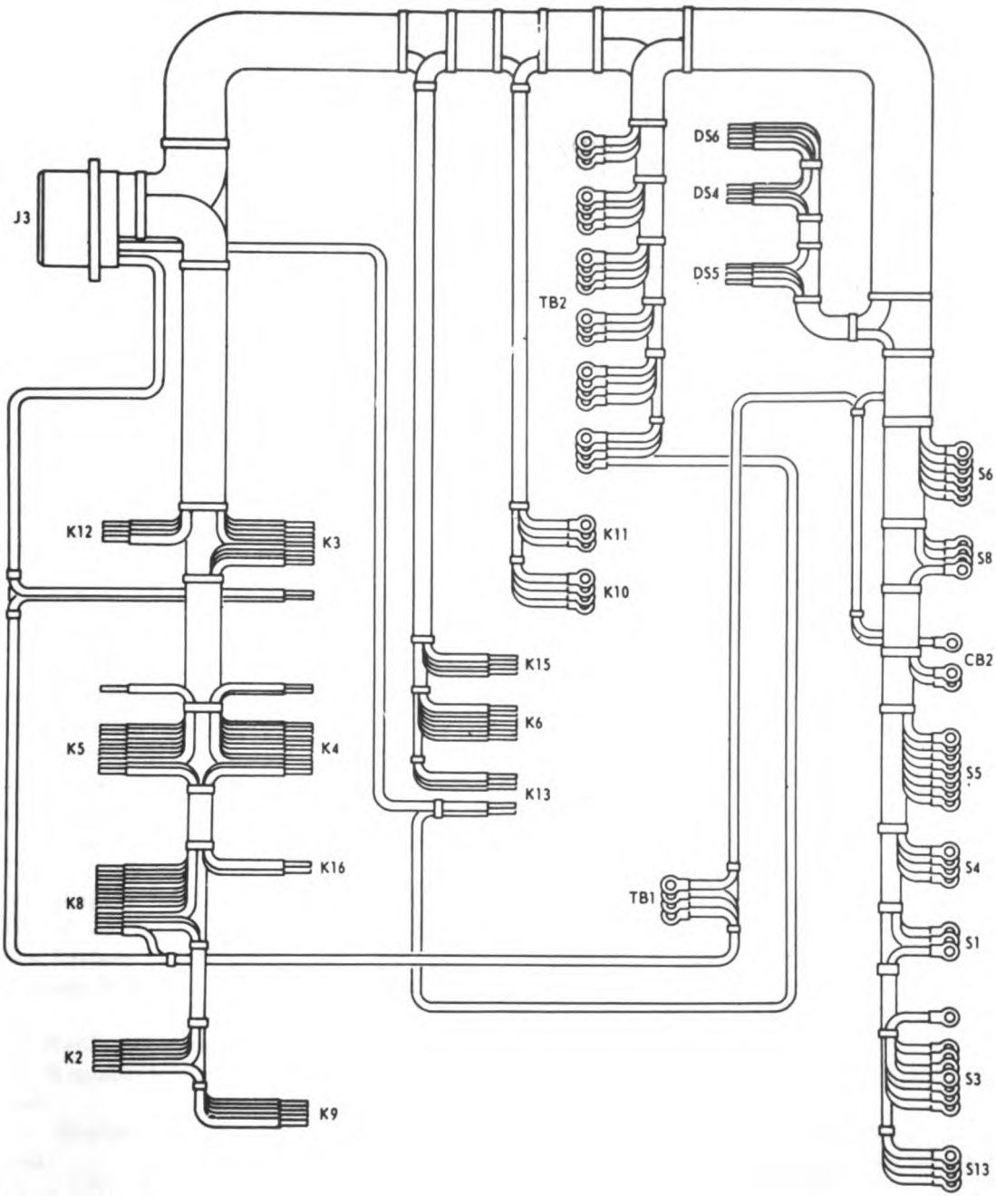

ME 6115-320-34/4-9

Figure 4-9. Cubicle DC wiring harness.

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CHAPTER 5

REPAIR OF WINTERIZATION EQUIPMENT

Section I. REPAIR OF BATTERY HEATER

5-1. General

The battery heater is a light weight compact internal combustion, liquid fuel burning heater, used for heating the two-twelve volt batteries of the generator set. The battery heater is designed to operate on the same fuel used by the generator set at extreme low temperatures without modification or adjustment to the fuel system. The ducting provides the means for routing the heated air from the heater to the bottom of the battery box.

5-2. Battery Heater

a. Removal. Refer to TM 5-6115-320-12 for removal procedures.

b. Disassembly. Disassemble battery heater as required for parts replacement according to sequence of index numbers assigned to figure 5-1.

c. Cleaning and Inspection.

(1) Remove all excess dust and foreign matter from the battery heater with dry, compressed air.

(2) Clean the battery heater parts with a cloth moistened in cleaning solvent (Fed. Spec. O-T 634B).

(3) Inspect all battery heater parts for evidence of damage or excessive wear. Replace defective battery heater parts.

d. Repair. Refer to figure 5-1 and proceed as follows:

(1) Replace burner (31) if damaged.

(2) Replace burner assembly casing (35) if damaged.

(3) Replace combustion chamber (6) if damaged.

e. Assembly. Assemble the battery heater in reverse order of disassembly procedure using figure 5-1 as a guide.

f. Testing.

(1) Perform a bench test on the heater as follows:

(a) Operating test.

1. Install the heater assembly on a test stand equipped to operate the unit and measure voltage, amperage, and fuel flow.

2. Turn the test stand voltage selector switch to 24v dc.

3. Turn on the test stand fuel pump.

4. Place the test stand heater switch in the high heat position.

5. The blower should start immediately and the ammeter should indicate 15 amperes.

6. After an interval of 60 seconds, maximum, the flame switch should transfer, the blower should speed up, and the amperage should drop to 7 amperes. The indicator lamp will light when the flame switch transfers.

7. Place the test stand heater switch in the OFF position.

8. The burner should go off within 45 seconds, but the blower should continue to operate approximately 2 minutes to purge and cool the heater. The indicator light should continue to burn during this interval and should go out when the flame switch transfers and stops the blower.

9. If the heater fails to operate as described above, replace defective parts.

(b) Fuel control valve test.

1. With the heater connected as in *(a)1* above, and with the test stand heater switch in the OFF position, turn on the test stand fuel pump.

2. Turn the test stand fuel flow meter control valve to ON position. When the fuel flow meter is full, set the flow meter control valve to OFF position.

3. Observe the level of gasoline in the fuel flow meter. If it is dropping, the heater fuel control valve is defective. Replace a defective heater fuel control valve.

4. Turn the fuel flow meter control valve to ON position.

5. Turn the test stand heater switch to high heat position.

6. After the heater is started and is operating normally, turn the fuel flow meter control valve to the off position.

7. With a stop watch, measure the time required for the fuel level in the fuel flow meter to drop from the FULL mark to the EMPTY mark.

8. From the table furnished with the test stand, compute the fuel consumption. It should be 22 to 28 cubic centimeters per minute.

9. With the test stand heater switch in the low heat position, repeat the steps in *6* through *8* above. The fuel consumption for low heat operation should be 14.5 to 19.5 cubic centimeters per minute.

10. Turn off the heater. Replace a defective fuel control valve as required.

(2) Remove the heater from the test stand.

g. Installation. Refer to TM 5-6115-320-12 for installation procedures.

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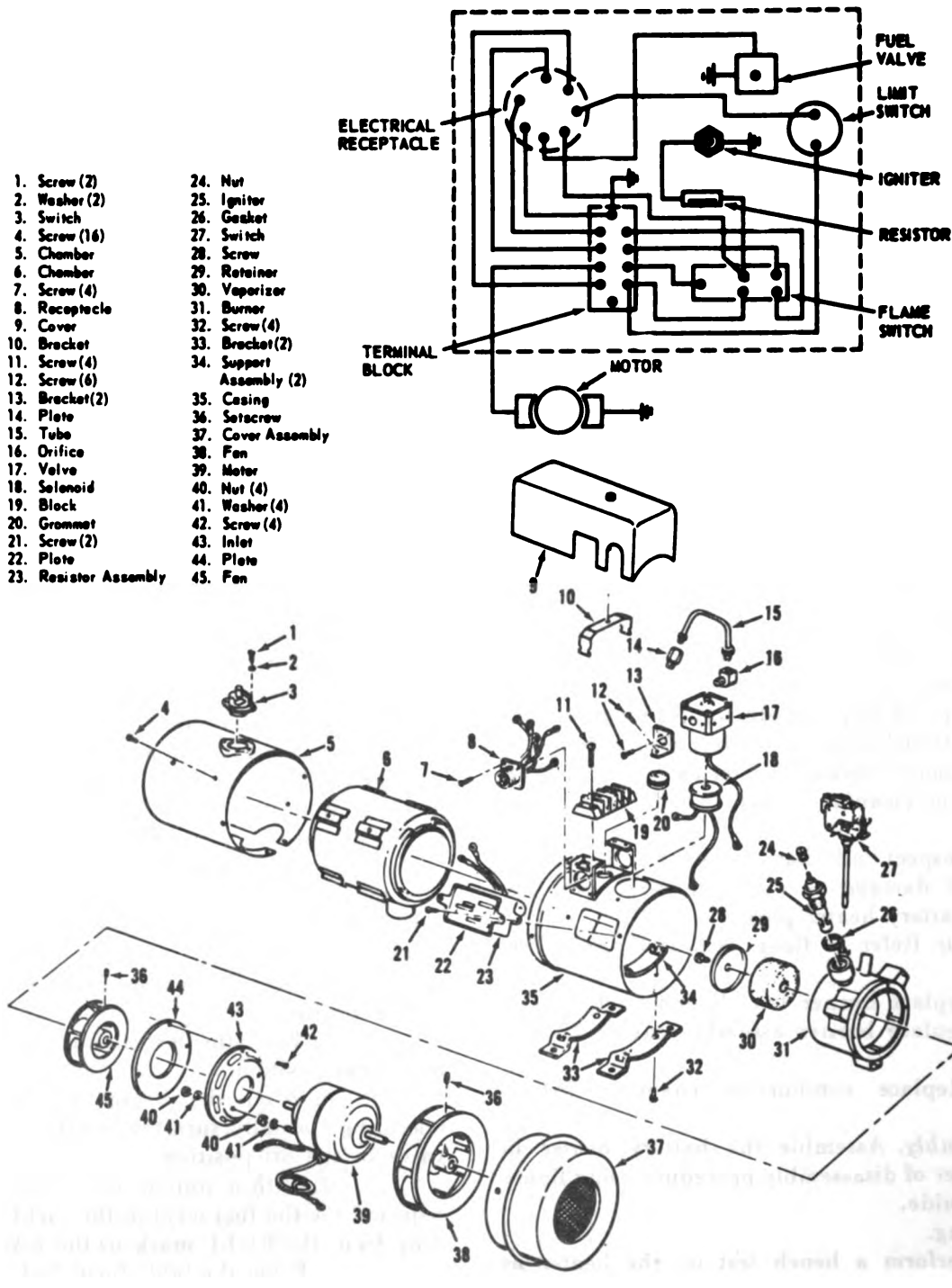

Figure 5-1. Battery heater assembly disassembly and reassembly.

5-3. Battery Heater Ducting

a. Removal. To remove the battery heater ducting, refer to figure 5-2 and proceed as follows:

(1) Remove electrical connector (1).
(2) Remove clamp (2) and seal (3).
(3) Remove bolts (4) and washers (5).
(4) Remove clamp (6) and seal (7).
(5) Remove battery heater (8).
(6) Remove bolts (9) and washers (10).
(7) Remove battery heater pipe assembly (11).
(8) Remove screw (12) and washer (13).
(9) Remove cap assembly (14).
(10) Remove tube (15).
(11) Remove screw (16) and washer (17).

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(12) Remove cap assembly (18).

(13) Remove tube (19).

(14) Remove accumulator assembly (20).

b. Cleaning and Inspection.

(1) Remove all excess dust, dirt, and foreign matter from the battery heater ducting with dry, compressed air.

(2) Clean the battery heater ducting in cleaning solvent (FED-P-D-680).

(3) Inspect for evidence of damage, corrosion, stripped threads or excessive wear. Replace defective ducting.

c. Installation. Install the battery heater ducting in the reverse order of removal procedure using figure 5-2 as a guide.

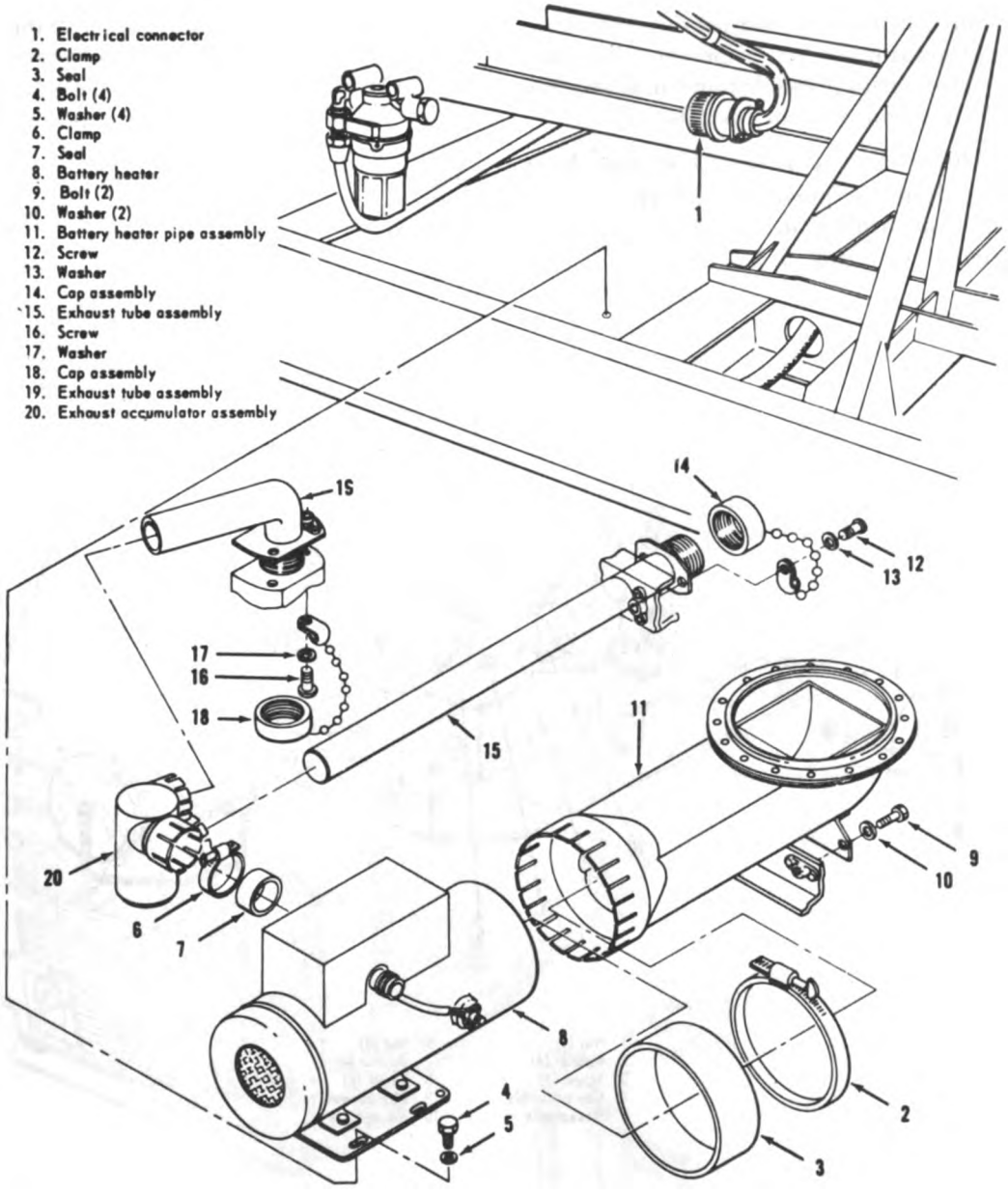

Figure 5-2. Battery heater ducting removal and installation.

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Section II. REPAIR OF ENCLOSURE ASSEMBLY

5-4. General

The enclosure consists of the necessary panels, skins, frame and supporting members to provide a weather tight housing for the turbine engine, generator, and components. The C.O.E. data plate provides the identifying data for the generator set. The power outlet receptacles (J18 and J26) provide the means for electrically connecting external cables to the generator set for ac power. The base plan provides a pictorial presentation for mounting SERGEANT Weapon System installations.

5-5. Power Outlet Receptacles (J18 and J26)

a. Removal. Remove power outlet receptacles (J18 and J26) according to sequence of index numbers assigned to figure 5-3.

b. Cleaning and Inspection.

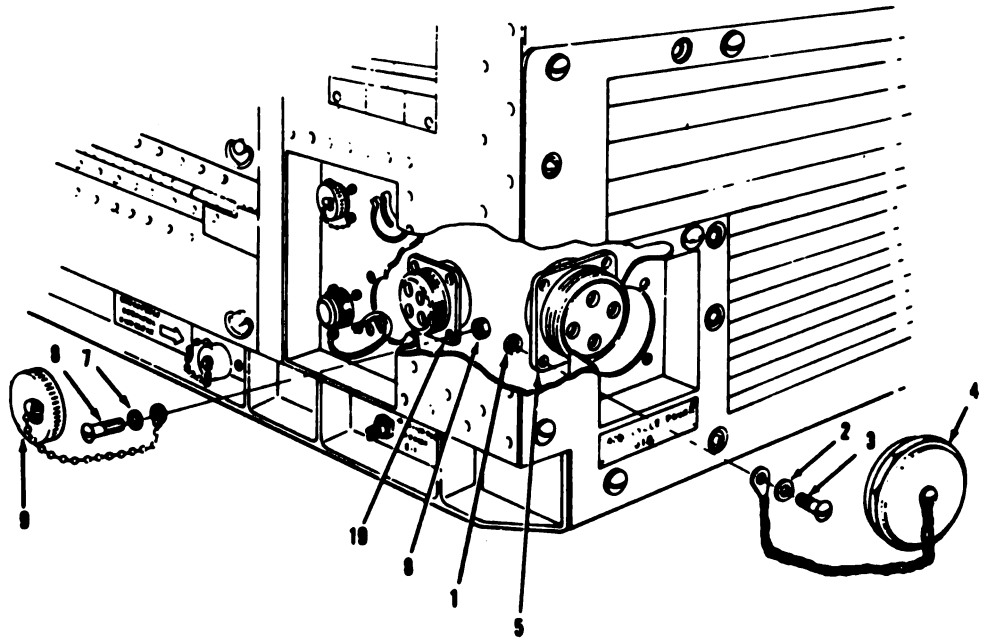
(1) Remove all dust, dirt, and foreign matter from the power outlet receptacles with dry compressed air.

(2) Clean the receptacles with a cloth moistened in cleaning solvent (Fed. Spec. O-T 634B) and dry thoroughly.

(3) Inspect the receptacles for damage, excessive wear, cracks, loose pins, or stripped threads.

(4) Replace a defective receptacle.

c. Installation. Install the power outlet receptacles in reverse order of removal procedure using figure 5-3 as a guide.



1 Nut (4)
2 Washer (4)
3 Screw (4)
4. Cap assembly
5 Receptacle
6 Nut (4)
7 Washer (4)
8 Screw (4)
9 Cap assembly
10 Receptacle

ME 6115-320-34/5-3

Figure 5-3. Power outlet receptacles (J18 and J26) removal and installation.

5-6. Enclosure Assembly Components and C.O.E. Data Plate

a. Removal. To remove the C.O.E. data plate, hoist assembly, right door retainer, access door clip, ac access door, and skid base, refer to figure 5-4 and proceed as follows:

(1) Remove screws (3), washers (2), and nuts (1).

(2) Remove C.O.E. data plate (4).

(3) Remove cotter pin (5), washer (6), and straight pin (7).

(4) Remove hoist assembly (8).

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(5) Remove screws (9) and washers (10).

(6) Remove sound attenuation installation 11).

(7) Remove rivets (12).

(8) Remove clip (13).

(9) Remove rivets (14).

(10) Remove ac access door (15).

(11) Remove skid base.

b. Cleaning and Inspection.

(1) Remove all dirt, dust, and foreign matter rom the enclosure assembly components and C.O.E. data plate with dry, compressed air.

(2) Clean the enclosure assembly components in cleaning solvent (FED-P-D-680) and dry thoroughly.

(3) Inspect for evidence of damage, excessive wear or stripped threads. Inspect the C.O.E. data plate for legibility.

(4) Replace defective parts.

c. Repair. Weld all cracks or breaks per TM 9-237.

d. Installation. Install the C.O.E. data plate and enclosure assembly components in reverse order of removal procedure using figure 5-4 as a guide.

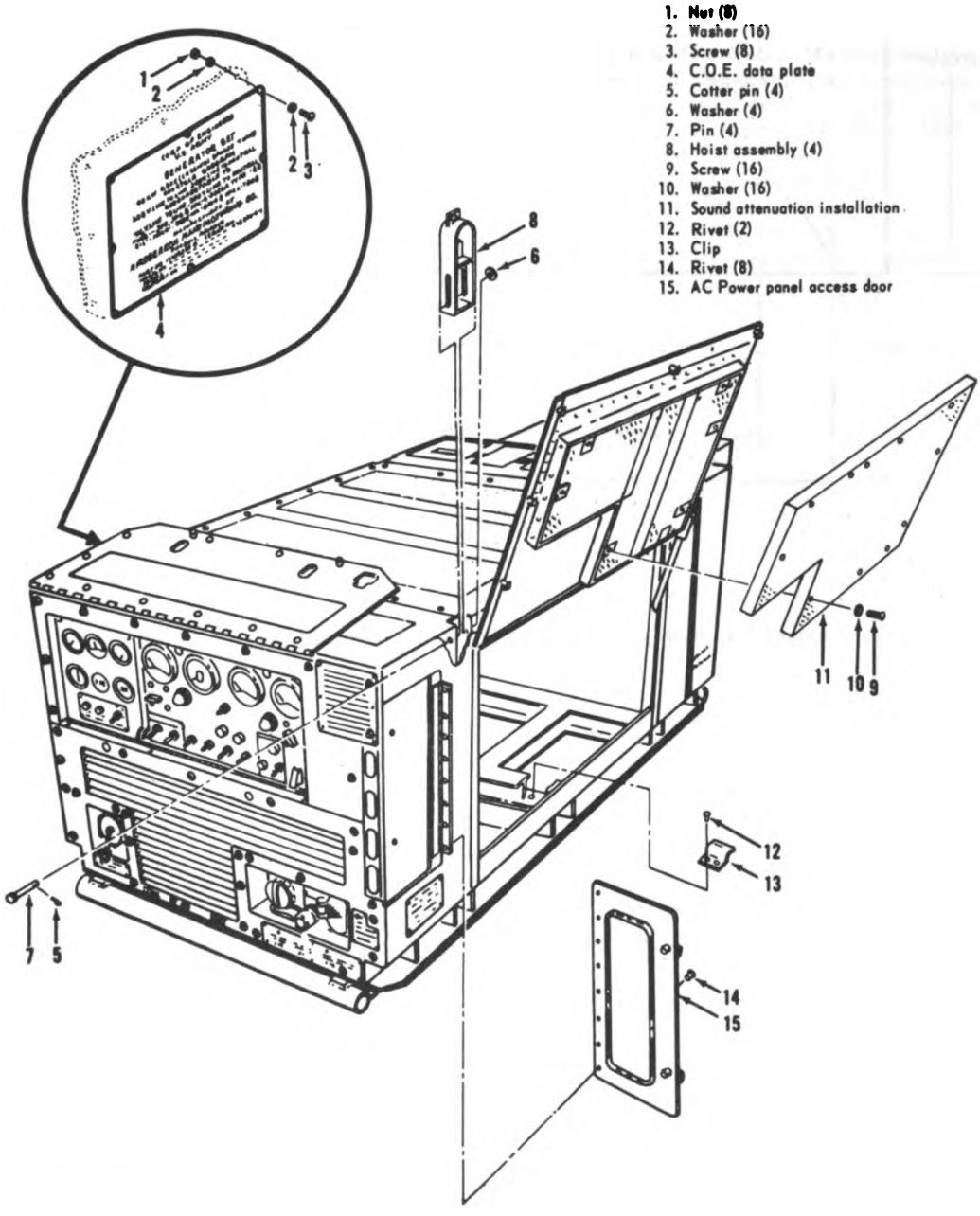

Figure 5-4. Enclosure assembly components removal and installation.

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5-7. Base Plan for Launching Station Installations

Refer to figure 5-5 for base plan of generator set for launching station installations.

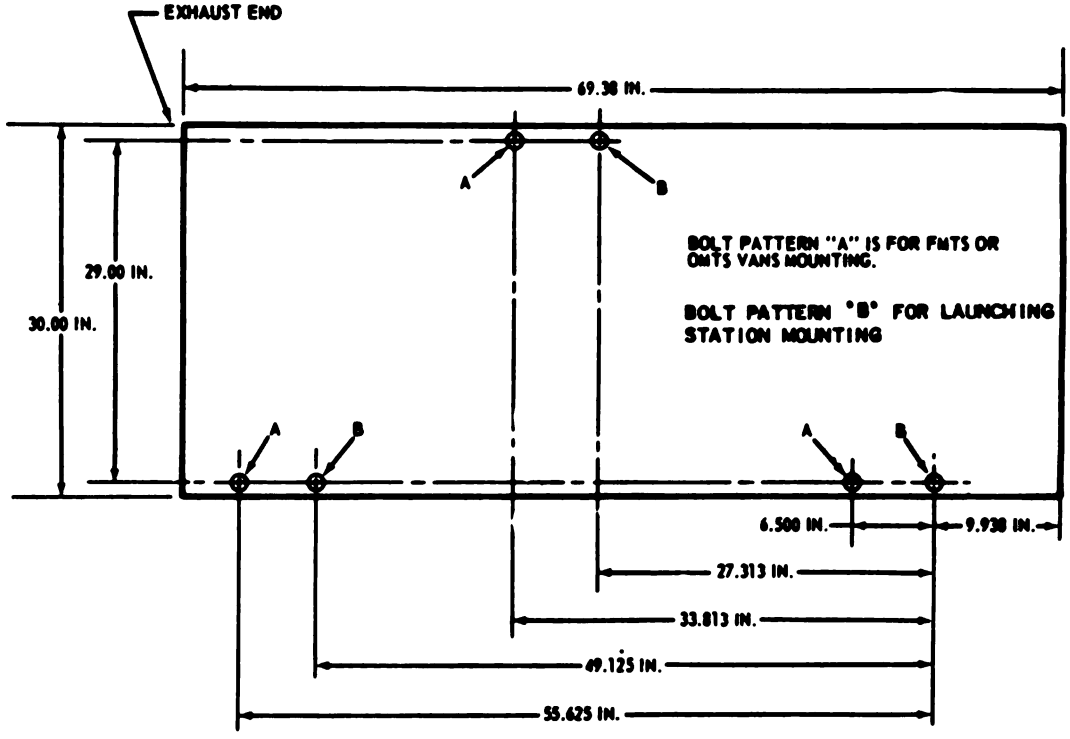

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Figure 5-5. Base plan for launching station installation.

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APPENDIX A

REFERENCES

A-1. Fire Protection

TB 5-4200-200-10	Hand Portable Fire Extinguishers for Army Users.

A-2. Lubrication

C9100IL	Fuels, Lubricants, Oil.
LO 5-6115-230-12	Lubrication Order.

A-3. Painting

TM 9-213	Painting Instructions for Field Use.

A-4. Maintenance

TM 38-750	The Army Maintenance Management System (TAMMS).
TM 5-6115-320-12	Operator and Organizational Maintenance Manual
TM 5-6115-320-20P	Organizational Maintenance Repair Parts and Special Tools Lists
TM 5-6115-320-34P	Direct, General Support and Depot Maintenance Repair Parts and Special Tools Lists.
TM 5-764	Electric Motor and Generator Repair.
TM 9-6140-200-15	Operator and Organizational Field and Depot Maintenance Storage Batteries, Lead, Acid Type.

A-5. Shipment and Storage

TB 740-93-2	Preservation of USAMEC Mechanical Equipment for Shipment and Storage.
TM 740-90-1	Administrative Storage of Equipment.

A-6. Destruction of Army Materiel

TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command).

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Chief of Staff.

Official:

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Major General, United States Army,
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To be distributed in accordance with DA Form 12-25, Section IV (qty rqr block no. 767) Direct and General Support Maintenance requirements for Motor Generators, 45 KW.

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	wer J18 Receptacle
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	Voltage Sensing Relay
	Indicator

M2	Exhaust Gas Temperature Gage
M3	Oil Pressure Gage
M4	Battery Charging Ammeter
M5	Start Counter
M6	Engine Hourmeter
M7	AC Voltmeter
M8	Frequency Meter
M9	AC Ammeter
M10	Kilowatt Meter
MT	Frequency Transducer
P1	Control Plug
P2	Gas Turbine Plug
P3	Control Plug
P7	AC Generator Plug
P8	Battery Heater Plug
P9	Load Anticipator Plug
P10	Load Anticipator Plug
P11	Voltage Regulator Plug
P12	Battery Charger Plug
P13	Main Circuit Breaker Plug
P14	Internally Wired Plug
P17	Battery Electrolyte Temperature Sensor Plug
P20	Fuel Boost Pump Plug
P21	Battery Heater Fuel Pump Plug
P24	Tachometer Indicator Plug
P25	Internally Wired Plug (Sergeant)
R1	Voltage Adj Rheostat 350 Ohms 12.5 Watt
R2	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R3	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R4	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R5	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R6	Frequency Droop Rheostat 3500 Ohms 12.5 Watt
R7	Voltage Droop Rheostat 25 Ohms 25 Watt
R8	Frequency Adj Potentiometer 2500 Ohms 3 Watt
R9	Resistor 1000 Ohms 1 Watt
R10	Resistor 1000 Ohms 1 Watt
R11	Resistor 1000 Ohms 1 Watt
R12	Resistor 15 Ohms 10 Watt
S1	Panel Lights Switch
S2	Master Switch
S3	Local Remote Control Selector Switch
S4	Over Volt Reset Switch
S5	Main CB Circuit Breaker Switch
S6	Protection Bypass Switch
S8	Winterization Heater Switch
S10	Battery Electrolyte Temperature Sensor
S11	Volt-Amp Selector Switch
S12	Unit-Parallel Selector Switch
S13	Local Remote Sensing Voltage Selector Switch
TB1	Terminal Board
TB2	Terminal Board
TB3	Terminal Board
TB4	Terminal Board
TB5	Voltage Change Panel
TB7	AC Power Output Terminal Board
TB8	Terminal Board
TB9	Terminal Board
TC1	Fire Detector
TC2	Fire Detector
TC3	Fire Detector
TC4	Fire Detector
VR1	Voltage Regulator

ME 6115-320-34/FO-1 (1)

1. Generator set schematic wiring diagram. (sheet 1 of 2).

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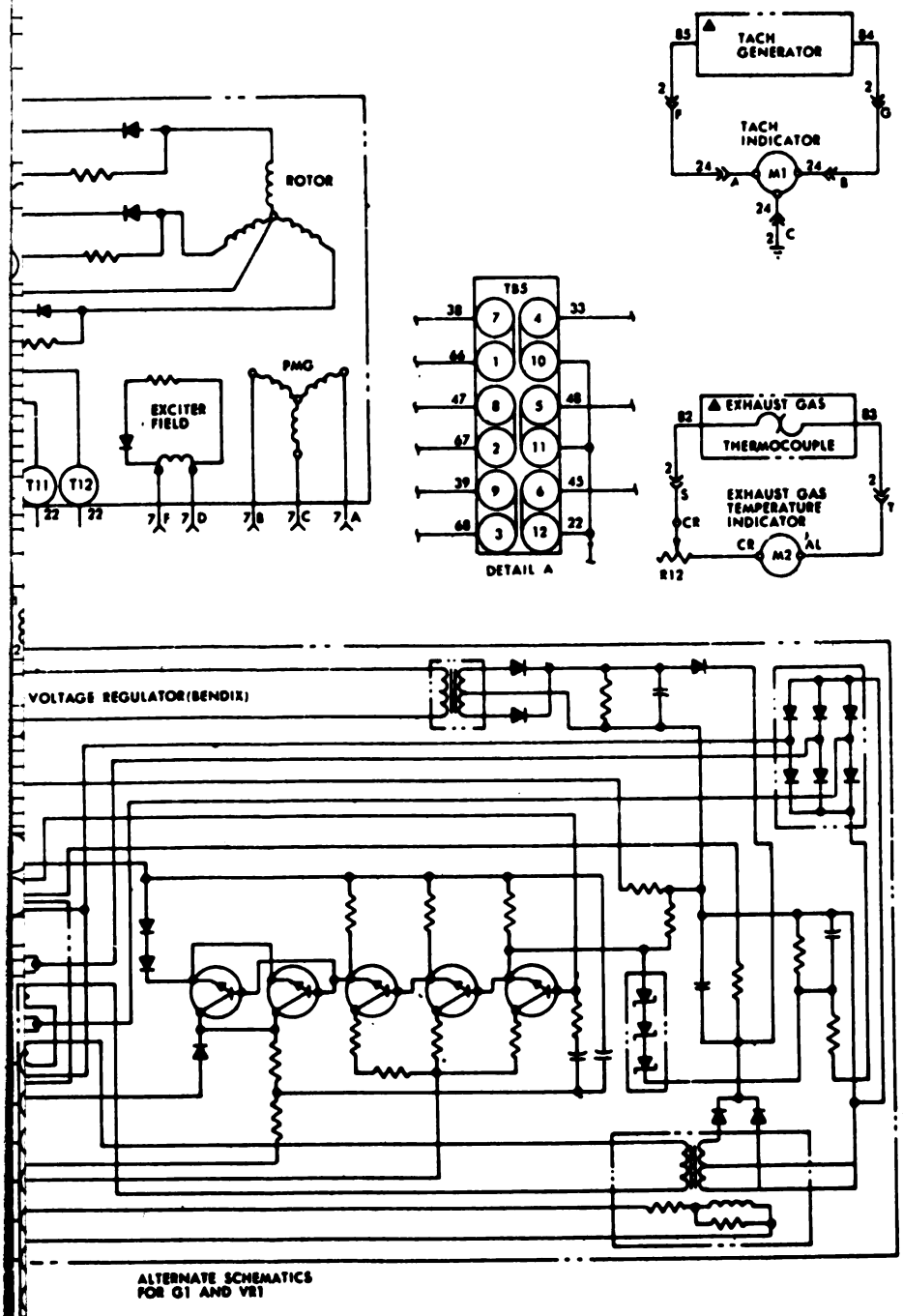

ME 6115-320-34/FO-1 (2)

)-1. Generator set schematic wiring diagram. (sheet 2 of 2).

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Cycle-15 Amp Convenience Receptacle	
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el Pump J27 Receptacle (Sergeant)	
Power J28 Receptacle (Sergeant)	
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Indicator	

M2	Exhaust Gas Temperature Gage
M3	Oil Pressure Gage
M4	Battery Charging Ammeter
M5	Start Counter
M6	Engine Hourmeter
M7	AC Voltmeter
M8	Frequency Meter
M9	AC Ammeter
M10	Kilowatt Meter
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P2	Gas Turbine Plug
P3	Control Plug
P7	AC Generator Plug
P8	Battery Heater Plug
P9	Load Anticipator Plug
P10	Load Anticipator Plug
P11	Voltage Regulator Plug
P12	Battery Charger Plug
P13	Main Circuit Breaker Plug
P14	Internally Wired Plug
P17	Battery Electrolyte Temperature Sensor Plug
P20	Fuel Boost Pump Plug
P21	Battery Heater Fuel Pump Plug
P24	Tachometer Indicator Plug
P25	Internally Wired Plug (Sergeant)
R1	Voltage Adj Rheostat 350 Ohms 12.5 Watt
R2	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R3	Reshtor (Synchronizing Light) 5000 Ohms 10 Watt
R4	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R5	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
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R8	Frequency Adj Potentiometer 3500 Ohms 3 Watt
R9	Resistor 1000 Ohms 1 Watt
R10	Resistor 1000 Ohms 1 Watt
R11	Resistor 1000 Ohms 1 Watt
R12	Resistor 15 Ohms 10 Watt
S1	Panel Lights Switch
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TB5	Voltage Change Panel
TB7	AC Power Output Terminal Board
TB8	Terminal Board
TB9	Terminal Board
TC1	Fire Detector
TC2	Fire Detector
TC3	Fire Detector
TC4	Fire Detector
VR1	Voltage Regulator

ME 6115-320-34/FO-2 (1)

Generator set practical wiring diagram. (sheet 1 of 7).

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DIAGRAM USED ON UNITS
ER P21468 AND SUBSEQUENT.

M2	Exhaust Gas Temperature Gage
M3	Oil Pressure Gage
M4	Battery Charging Ammeter
M5	Start Counter
M6	Engine Hourmeter
M7	AC Voltmeter
M8	Frequency Meter
M9	AC Ammeter
M10	Kilowatt Meter
MT	Frequency Transducer
P1	Control Plug
P2	Gas Turbine Plug
P3	Control Plug
P7	AC Generator Plug
P8	Battery Heater Plug
P9	Load Anticipator Plug
P10	Load Anticipator Plug
P11	Voltage Regulator Plug
P12	Transformer Rectifier Plug
P13	Main Circuit Breaker Plug
P14	Internally Wired Plug
P17	Battery Electrolyte Temperature Sensor Plug
P20	Fuel Boost Pump Plug
P21	Battery Heater Fuel Pump Plug
P24	Tachometer Indicator Plug
P45	Internally Wired Plug (Fuel Tank Base Receptacle)
P25	Internally Wired Plug (Sergeant)
R1	Voltage Adj Rheostat 350 Ohms 12.5 Watt
R2	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R3	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R4	Resistor (Synchronizing Light) 2500 Ohms 10 Watt
R5	Resistor (Synchronizing Light) 5000 Ohms 10 Watt
R6	Reactive Frequency Droop Rheostat 3500 Ohms 12.5 Watt
R7	Voltage Droop Rheostat 25 Ohms 25 Watt
R8	Frequency Adj Potentiometer 3500 Ohms 3 Watt
R9	Resistor 1000 Ohms 1 Watt
R10	Resistor 1000 Ohms 1 Watt
R11	Resistor 1000 Ohms 1 Watt
R12	Resistor 15 Ohms 10 Watt
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TB4	Terminal Board
TB5	Voltage Change Panel
TB8	Terminal Board
TB9	Terminal Board
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TC2	Fire Detector
TC3	Fire Detector
TC4	Fire Detector
VR1	Voltage Regulator

ME 6115-320-34/FO-2(2)

enerator set practical wiring diagram. (sheet 2 of 7).

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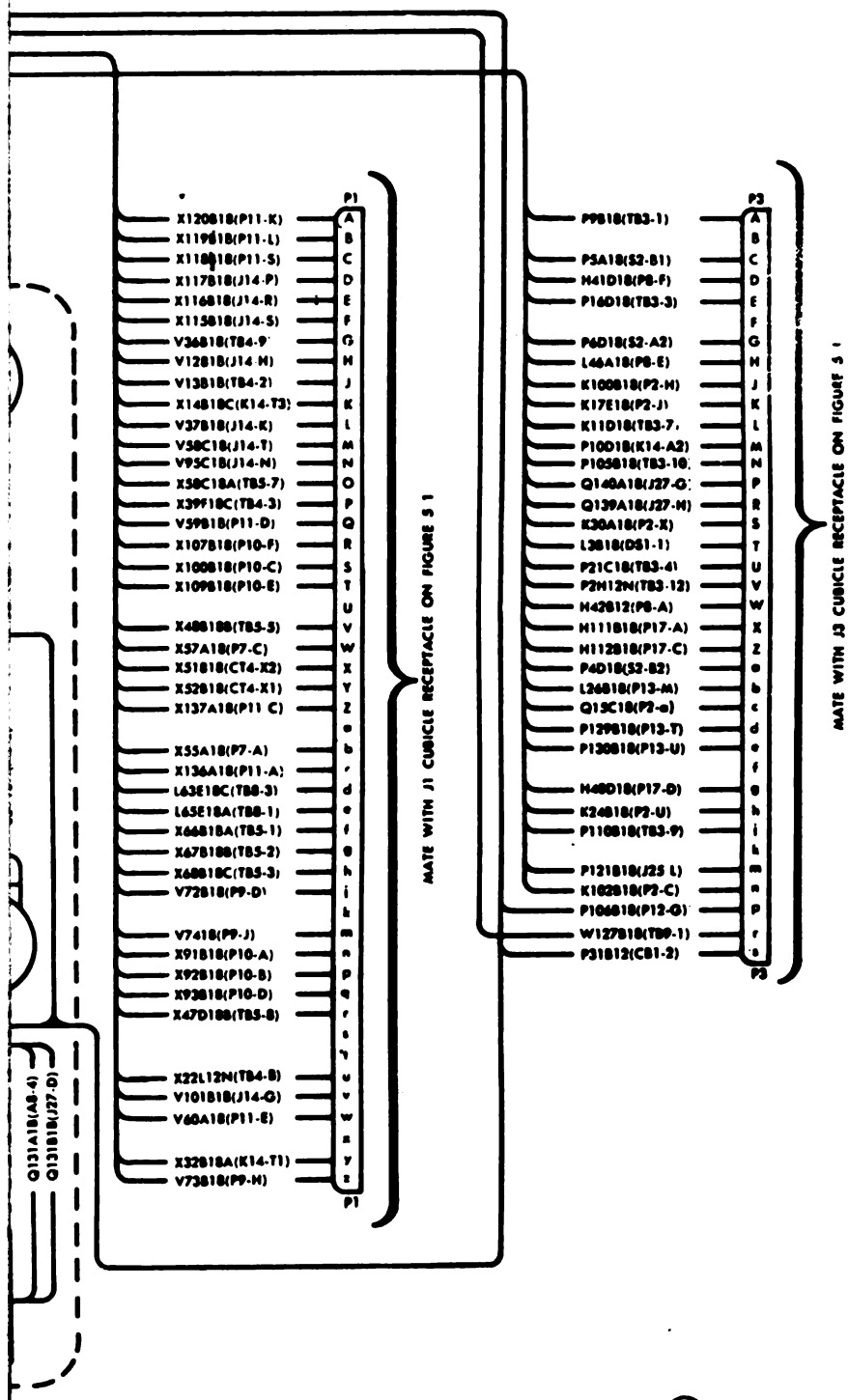

ME 6115-320-34/FO-2 (3)

Generator set practical wiring diagram. (sheet 3 of 7).

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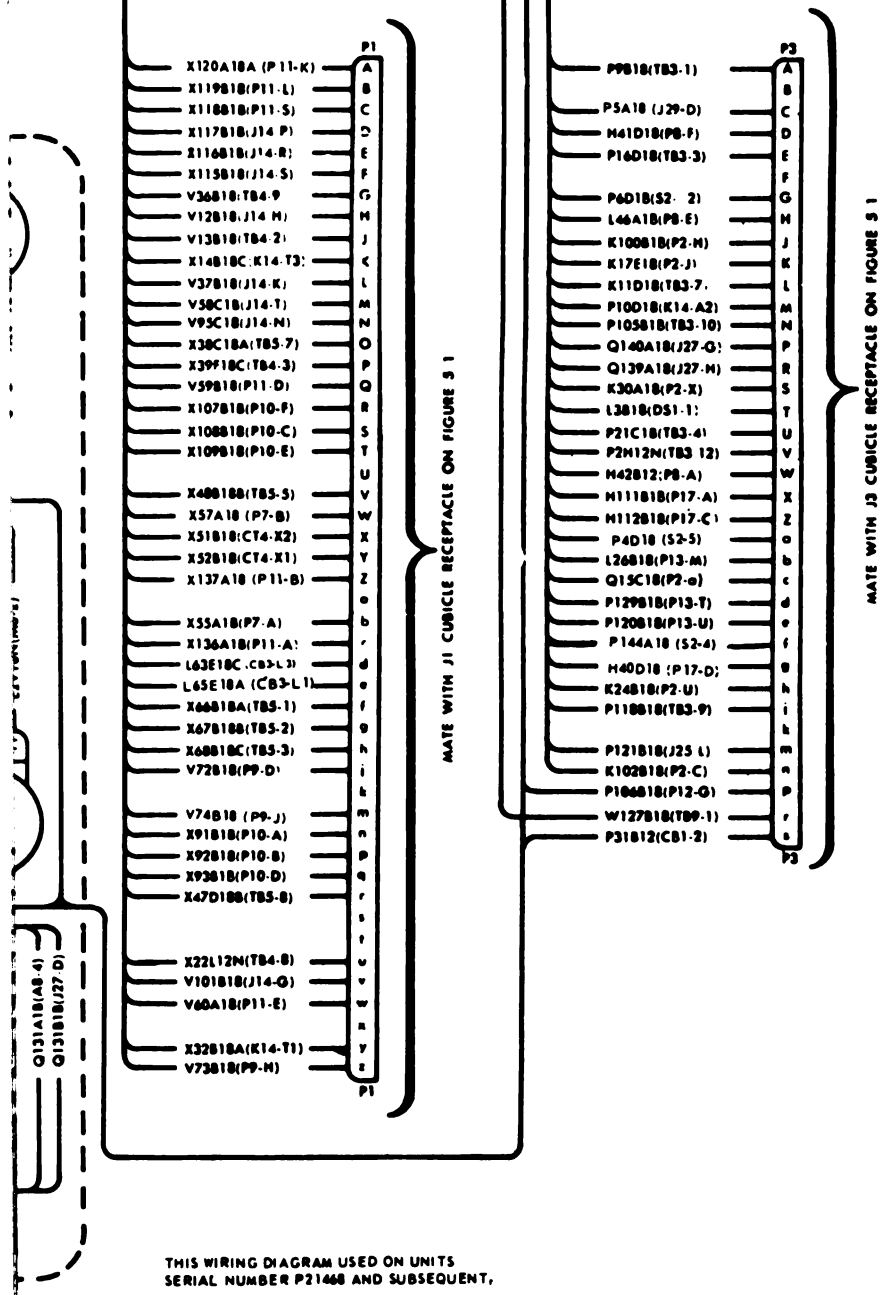

THIS WIRING DIAGRAM USED ON UNITS
SERIAL NUMBER P21468 AND SUBSEQUENT.

ME 6115-320-34/FO-2 (4)

Generator set practical wiring diagram. (sheet 4 of 7).

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VOLTAGE	OHMS	REMARKS: CIRCUIT-BREAKER REF DES	CIRCUIT-BREAKER POSITION	GENERATOR SET	SWITCH REF DES	SWITCH POSITION
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	1390	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	1220	CB-3	CLOSED		S2	OFF
					S12	UNIT
0		CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	38	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	3.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	3.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	9.1	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	0	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	2.7K	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	INFINITY	CB-3	CLOSED		S2	OFF
					S12	UNIT
0	2600	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	INFINITY	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	INFINITY	CB-3	OPEN		S2	OFF
					S12	PARALLEL
0	2600	CB-3	OPEN		S2	OFF
					S12	PARALLEL

B. AC GENERATOR (G1)

0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244
0	0.0220 TO 0.0244

ME 6115-320-34/FO-2(5)

FO-2. Generator set practical wiring diagram. (sheet 5 of 7).

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VOLTAGE	OHMS	REMARKS: CIRCUIT BREAKER REF DES	CIRCUIT BREAKER POSITION	GENERATOR SET	SWITCH REF DES	SWITCH POSITION
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	0					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	220					
0	INFINITY					
0	260					
0	220					
0	40					
0	INFINITY					
0	70					
0	70					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	70					
0	INFINITY					
0	200			J1 AND J3 WITH BOTH P1 AND P3		
0	INFINITY			DISCONNECTED		
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	37					
0	INFINITY					
0	INFINITY					
0	200					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	150					
0	INFINITY					
0	INFINITY					
0	150					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					

1. CONTROL CUBICLE PLUGS

0	INFINITY			WITH ALL CIRCUIT BREAKERS CLOSED AND		
0	INFINITY			ALL SWITCHES IN OFF OR NEUTRAL		
0	INFINITY			POSITION, "UNIT-PARALLEL" SWITCH IN		
0	INFINITY			"PARALLEL" POSITION, VOLT-AMP SELECTOR		
0	INFINITY			IN POSITION "C-A", BOTH P1 AND P3		
0	INFINITY			REMOVED		
0	2.1K					
0	INFINITY					
0	INFINITY					
0	0					

ME 6115-320-34/FO-2 (6)

)-2. Generator set practical wiring diagram. (sheet 6 of 7).

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VOLTAGE	OHMS	REMARKS: CIRCUIT BREAKER REF DES	CIRCUIT BREAKER POSITION	GENERATOR SET	SWITCH REF DES	SWITCH POSITION
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	.6					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	30					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	0					
0	INFINITY					
0	INFINITY					
0	INFINITY					
0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					
OTHER 0	INFINITY					

N. BATTERY TEMPERATURE SENSOR (S10)

13,000.0	CONNECT NEGATIVE LEAD TO PIN 3
13.0	CONNECT POSITIVE LEAD TO PIN 3
220.0	CONNECT POSITIVE LEAD TO PIN 4
INFINITY	CONNECT NEGATIVE LEAD TO PIN 4
950.0	CONNECT NEGATIVE LEAD TO PIN 4
675.0	CONNECT POSITIVE LEAD TO PIN 4
9,000.0	CONNECT NEGATIVE LEAD TO PIN 4
10,000.0	CONNECT POSITIVE LEAD TO PIN 4

ME 6115-320-34/FO-2-7

FO-2. Generator set practical wiring diagram. (sheet 7 of 7).

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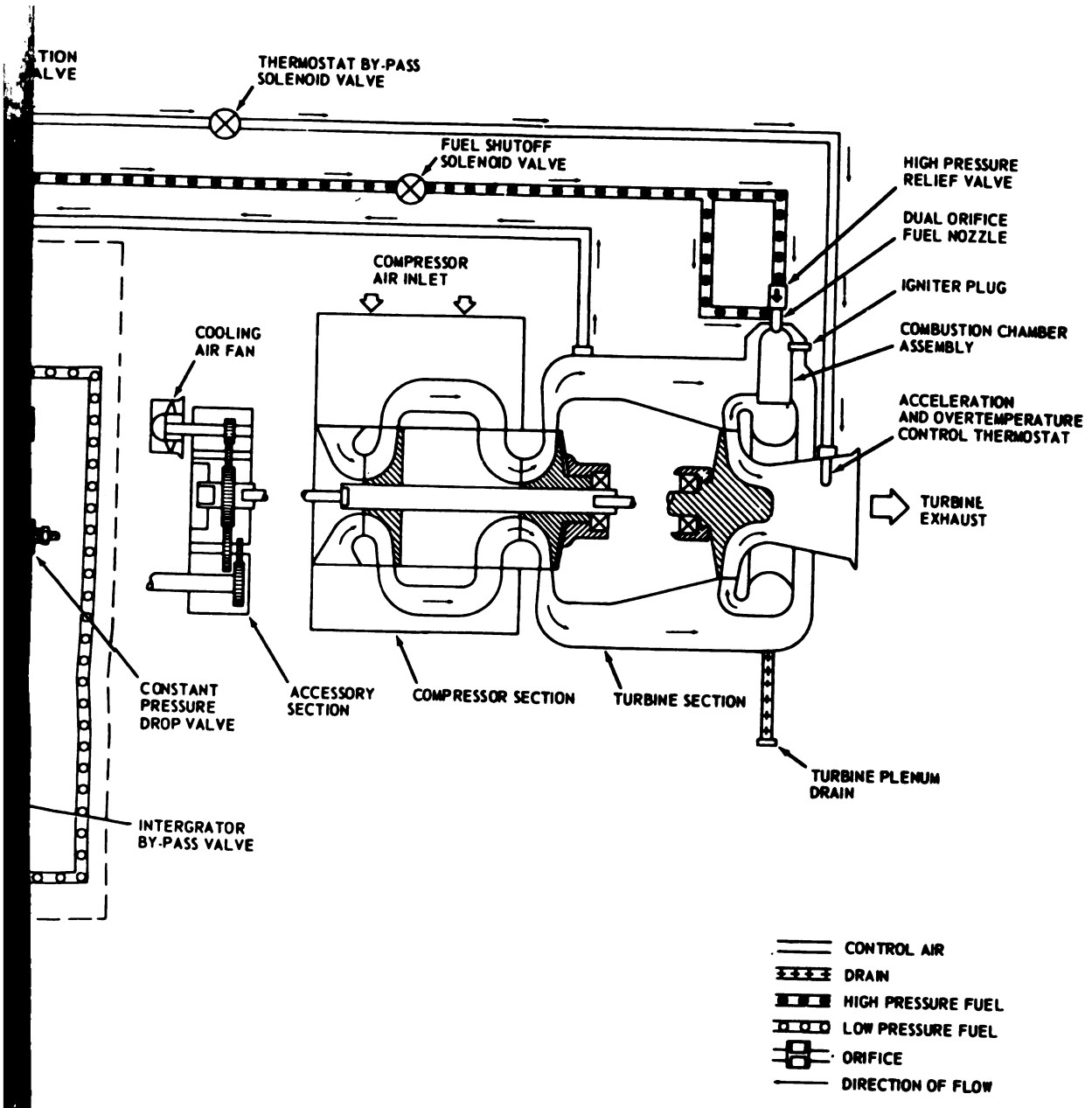

ME 6115-320-34/FO-3

Figure FO-3. Fuel and air flow diagram, turbine engine.

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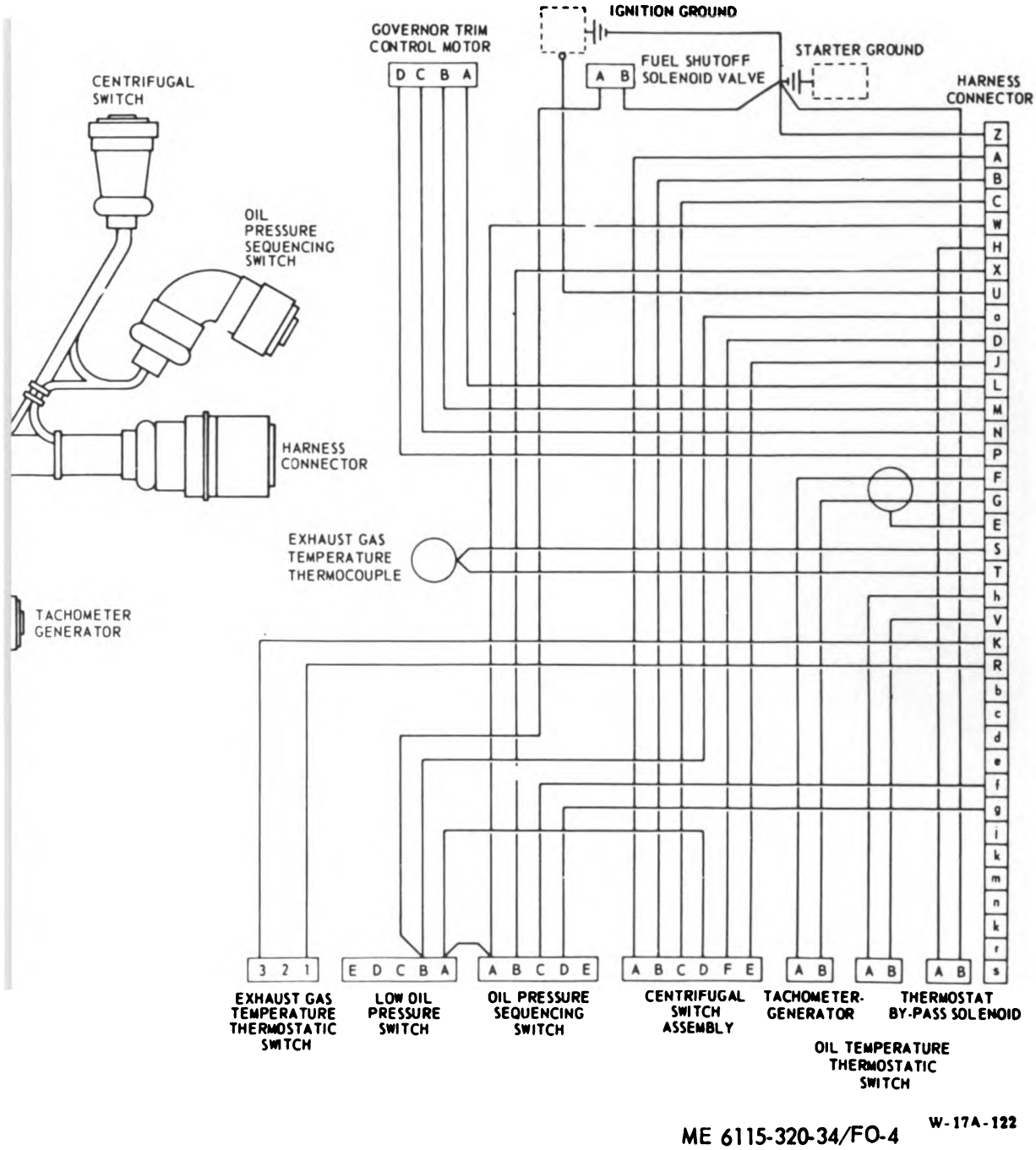

Figure FO-4. Engine wiring harness assembly and schematic diagram.

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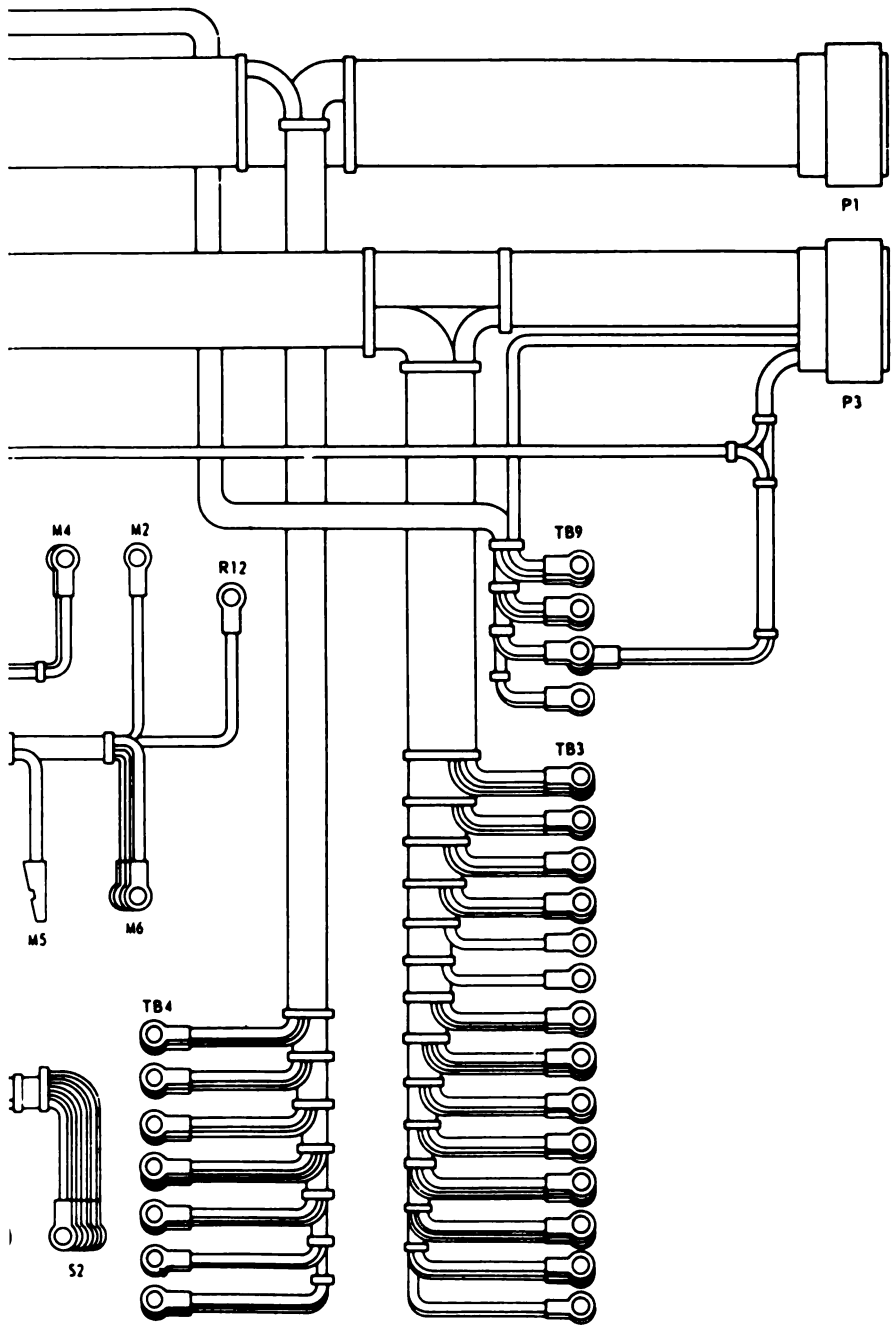

Figure FO-5. Generator set wiring harness.

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