INSTRUCTION MANUAL

FOR THE

ELECTRICAL TEST SET

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Section I

DESCRIPTION

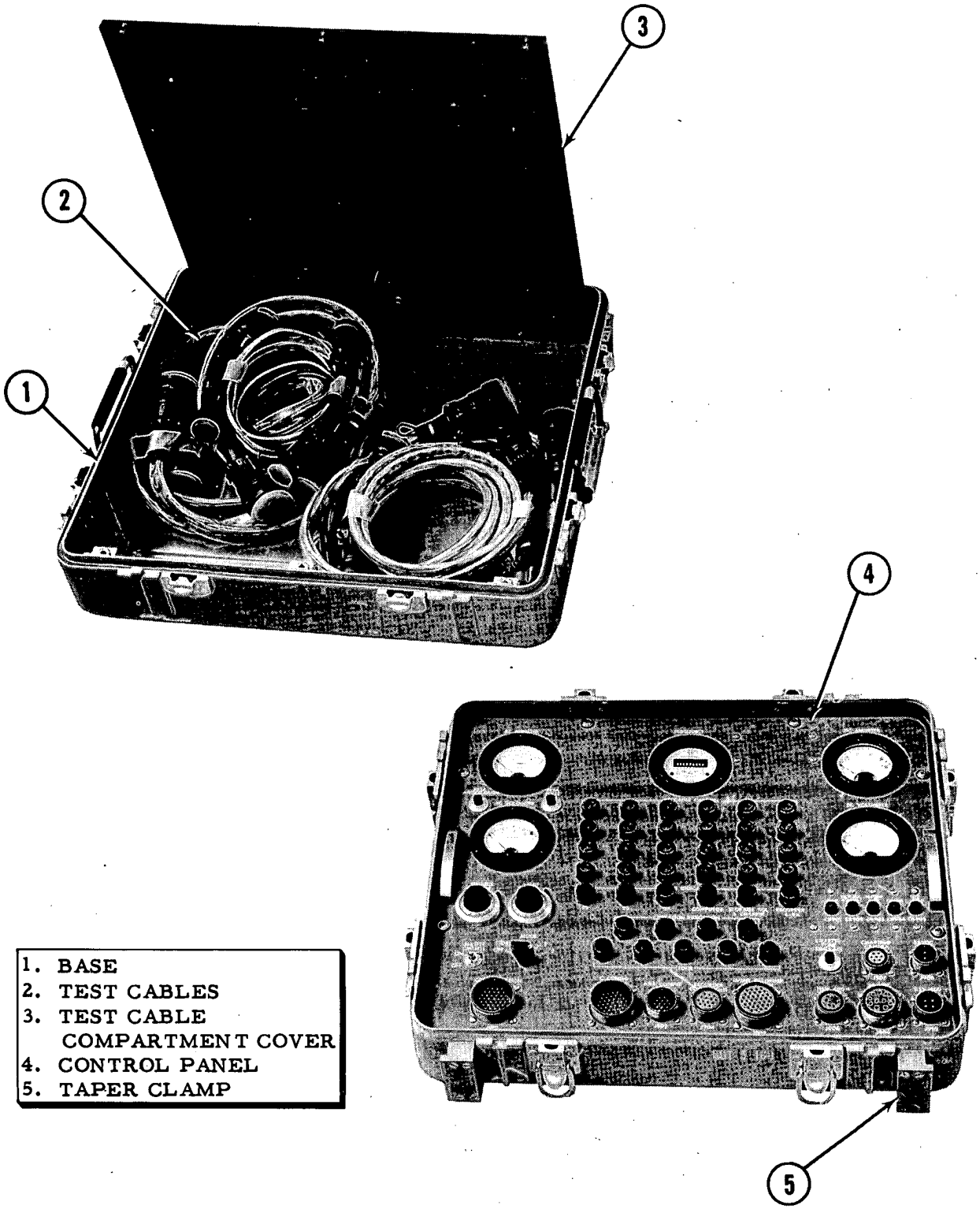
1-1. GENERAL (See figure 1.)

The Electrical Test Set is a portable testing device used to simulate the airframe controls necessary for partial or complete checkout of the A-1, A-2, and B camera configurations. The test set provides meters for monitoring a-c and d-c voltages, currents, and a-c frequency. A group of small incandescent lights are used to provide visual indication of camera sequence of events. Test cables stored in the top cover of the test set are used to connect the test set to the various camera configurations. A graph event recorder is used in conjunction with the test set to provide a permanent record of camera configuration test results. Due to the high degree of portability of the Electrical Test Set a camera configuration may be tested in or out of the airframe. The test set may be used with either the portable power supply cart or with power from the airframe.

1-2. MAJOR COMPONENTS

The Electrical Test Set consists of the following major components: Carrying Case, Control Panel, and Electrical Test Cables.

a. Carrying Case. (See figures 2 and 4.) The test set is contained in a weatherproof, reinforced metal carrying case. The carrying case consists of two separable components, a top cover and a base. The top cover and base are locked together with eight trunk-type latches. The top cover of the carrying case incorporates an inner panel which is hinged to one side of the cover. This hinged panel is used to form a separate compartment in the cover in which the electrical test cables are stored. Two handles, one at each end of the top cover, assist in transporting the test set. The base of the carrying case is equipped with a metal frame which is riveted around the inside of the base approximately three inches below the lip of the base. The frame provides a mounting surface for the test set control panel. Two taper-fit clamps are mounted on the forward end of the base. When the clamps are attached to two mating clamps secured to a test bench, the test set can be securely mounted in an upright attitude for convenient operation.



1. BASE
2. TEST CABLES
3. TEST CABLE COMPARTMENT COVER
4. CONTROL PANEL
5. TAPER CLAMP

Figure 1. Electrical Test Set

The carrying case in itself forms a strong and weatherproof shipping and storage container for the Electrical Test Set.

b. Control Panel. (See figures 3 and 4.) The Control Panel consists of a metal panel on which are mounted an AC VOLTMETER, an AC AMMETER, an AC FREQUENCY meter, a DC AMMETER, a DC VOLTMETER, a BETA ANTICIPATION test button, a BETA PULSE test button, an OBLIQUE ANGLE selector, an IMC RATE selector, a MASTER ON-OFF power switch, a MODE selector switch, a CHARTER TONE SIMULATE test button, five circuit breakers, ten power and test receptacles, 24 clear RECORDER CHANNEL indicator lights, six red LOAD INDICATION lights, four green OPERATION INDICATION lights, and five amber TONE indicator lights.

The Control Panel is attached to the metal mounting frame in the carrying case base by eight screws. Two handles are provided on the front surface of the control panel to assist in the removal of the panel from the carrying case base.

c. Electrical Test Cables. (See figure 1.) There are nine test cables supplied with the Electrical Test Set. The test cables consist of a 115-volt, 400 cycle, power supply cable; a 28-volt dc power supply; a camera configuration 115-volt, 400 cycle, power supply cable; a 28-volt dc camera configuration power supply cable; a charter camera test cable; an event recorder test cable; a continuous recorder test cable; combination A-1, A-2, and B camera configuration test cable; and a camera configuration jumper cable. When not in use these test cables are stored in a compartment in the top cover of the carrying case.

1-3. LEADING PARTICULARS

Over-all Measurements.

Height	-	9 inches
Width	-	18 inches
Length	-	21 inches

Weight.

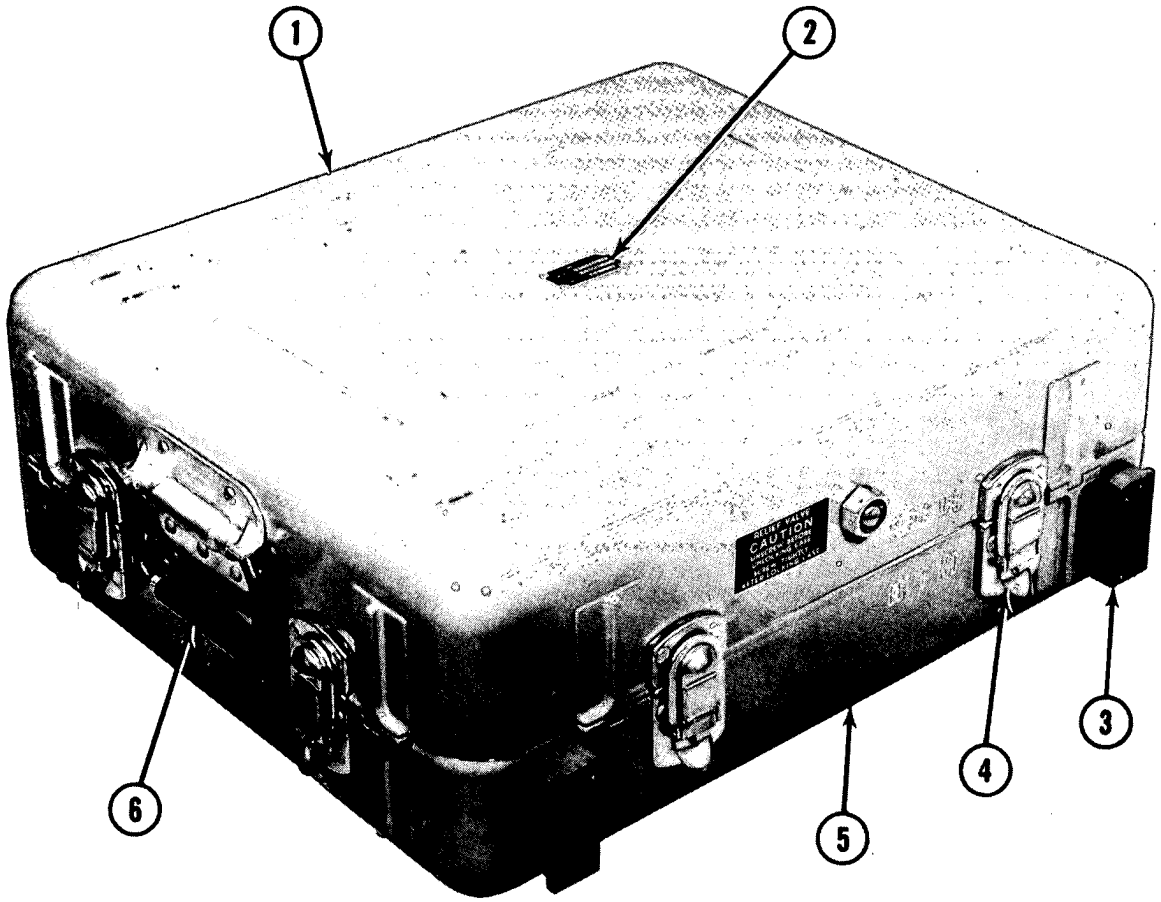
25 pounds

Power Requirements.

115 volts, 400 cycles, ac
28 volts dc

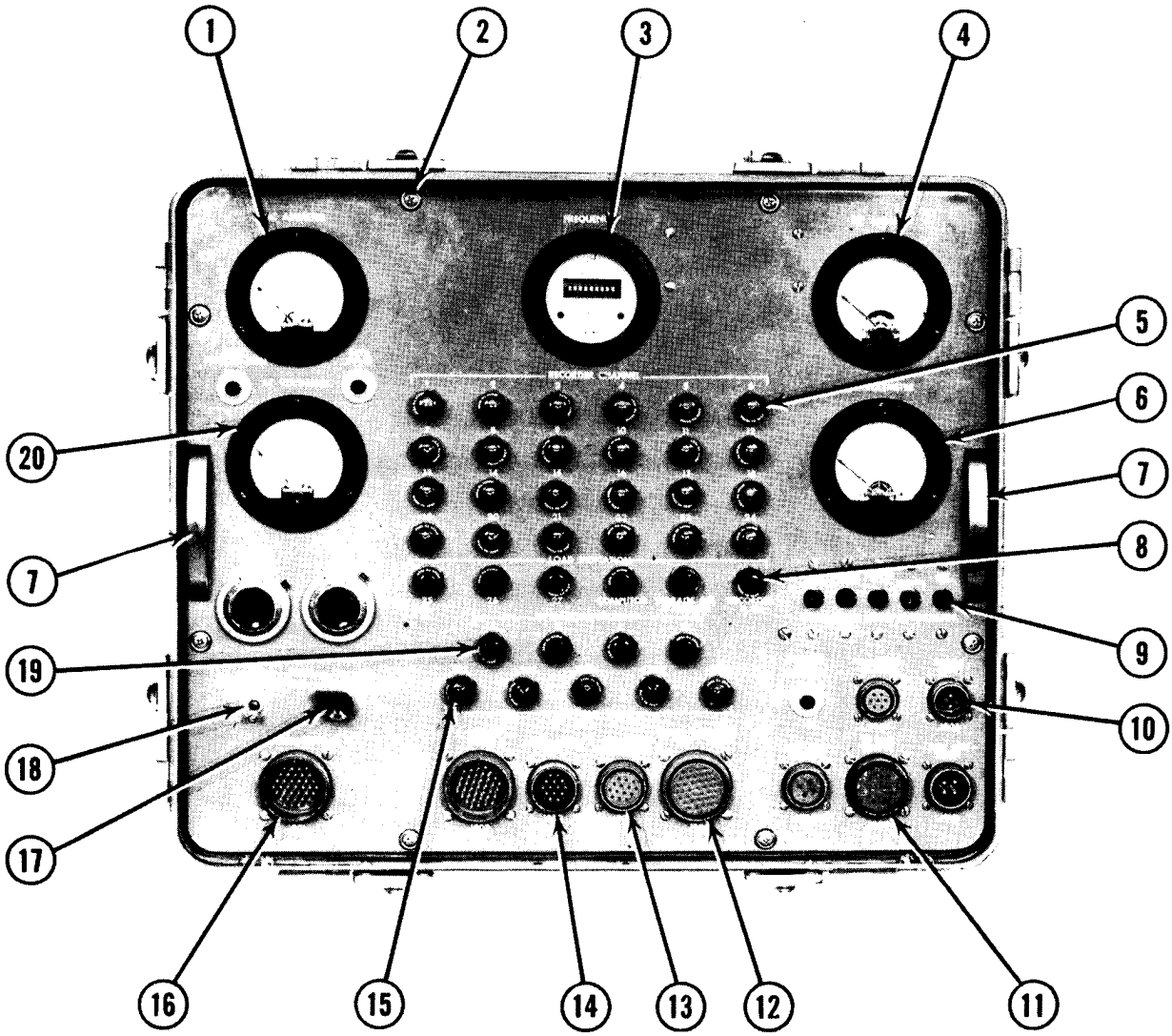
Scope.

A-1 Configuration
A-2 Configuration
B Configuration



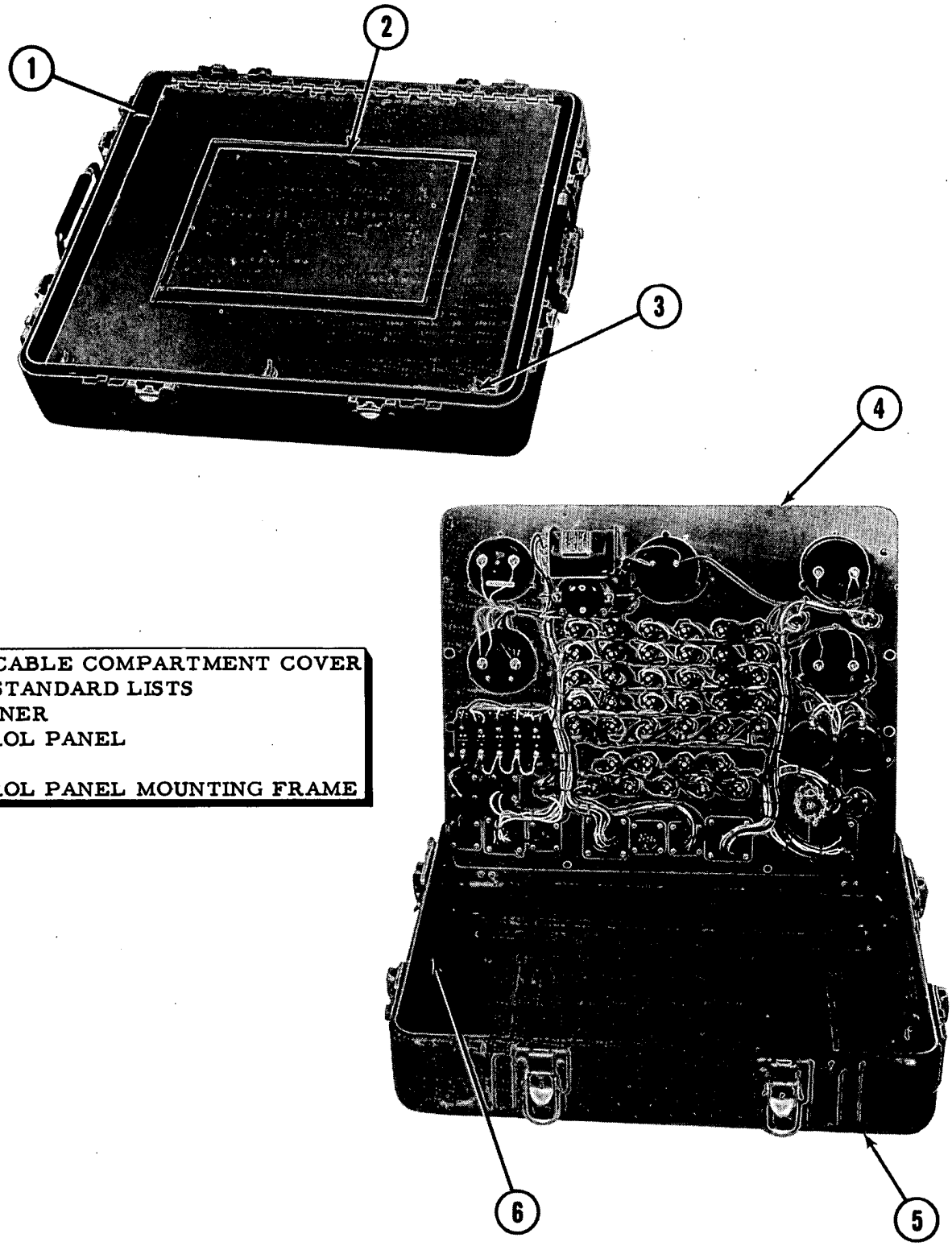
1. TOP COVER
2. NAMEPLATE
3. TAPER CLAMP
4. LATCH
5. BASE
6. HANDLE

Figure 2. Electrical Test Set Carrying Case



1. AC AMMETER	12. EVENT RECORDER RECEPTACLE
2. CONTROL PANEL MOUNTING SCREW	13. CONTINUOUS RECORDER RECEPTACLE
3. AC FREQUENCY METER	14. A AND B CONFIGURATION TEST RECEPTACLE
4. DC AMMETER	15. TONE LIGHT
5. RECORDER CHANNEL LIGHT	16. CONFIGURATION TEST RECEPTACLE
6. DC VOLTMETER	17. MODE SELECTOR SWITCH
7. CONTROL PANEL HANDLE	18. MASTER ON-OFF SWITCH
8. LOAD INDICATION LIGHT	19. OPERATION INDICATION LIGHT
9. CIRCUIT BREAKER	20. AC VOLTMETER
10. 28-VOLT D-C INPUT RECEPTACLE	
11. 28-VOLT D-C OUTPUT RECEPTACLE	

Figure 3. Test Set Control Panel



1. TEST CABLE COMPARTMENT COVER
2. TEST STANDARD LISTS
3. FASTENER
4. CONTROL PANEL
5. BASE
6. CONTROL PANEL MOUNTING FRAME

Figure 4. Electrical Test Set, Inside View

Section II

OPERATION

2-1. GENERAL (See figure 5.)

Operation of the Electrical Test Set requires the use of a portable power supply cart if airframe power is not used, a graph event recorder, and the special test cables provided with the test set.

2-2. TEST SET-UP

a. Place the test set control panel MASTER SWITCH in the OFF position.

b. Place the test set control panel MODE selector switch in the OFF position.

c. Check all test set circuit breakers to see that they are in the operate position.

2-3. A-1 AND A-2 CONFIGURATION MODE 1 TEST

a. Set the test set up as outlined in paragraph 2-2.

b. Connect the test set 28 VDC OUTPUT (J909) receptacle to the configuration POWER cable using test cable 735178.

c. Connect the test set A & B CONFIG TEST receptacle (J903) to the configuration CONFIG TEST receptacle, using test cable 735172.

d. Connect the test set CONFIGURATION (J901) receptacle to the configuration, using test cable 735170.

e. Connect the test set EVENT RECORDER OFF-ON receptacle to the graph event recorder, using test cable 735174.

f. Connect the 28-volt dc power supply cart or airframe power supply to the test set 28 VDC INPUT J908, using test cable 735177.

g. Check all configuration circuit breakers to see that they are in the operate position.

h. Place the graph event recorder start switch in the START position.

i. Place the test set MODE selector switch in the MODE 1 position.

j. Operate the configuration through four complete cycles of operation.

k. Place the test set MODE selector switch in the OFF position.

l. Place the graph event recorder start switch in the STOP position.

m. Compare the test results from the graph event recorder with a test standard for either the A-1 or A-2 Configuration depending on which configuration is being tested.

NOTE

If a malfunction is indicated on the event recorder test results, take proper corrective action. After malfunction has been remedied, retest configuration.

n. Disconnect the test cables from the test set, configuration, power cart, and event recorder, and store the cables in the place provided for them in the test set top cover.

2-4. A-1 AND A-2 CONFIGURATION MODE 2 TEST

The mode 2 test of the A-1 and A-2 Configuration is identical to that of the mode 1 test outlined in paragraph 2-3, except for the test position of the MODE selector switch. For this test the MODE selector switch is placed in the MODE 2 position instead of the MODE 1 position.

2-5. B CONFIGURATION MODE 1 TEST

a. Perform step a through step h of paragraph 2-3.

b. Place the test set MODE selector switch in the STDBY position.

NOTE

The test set MODE selector switch is left in the STDBY position for approximately one minute. This allows the configuration to warm up.

c. Place the test set MODE selector switch in the MODE 1 position.

d. Return the test set MODE selector switch to STDBY immediately after performing step c, and wait for the configuration to complete one cycle of 10 frames.

e. Place the test set MODE selector switch in the OFF position.

f. Place the graph event recorder start switch in the STOP position.

g. Compare the test results from the graph event recorder with a B Configuration test standard.

NOTE

If a malfunction is indicated on the graph event recorder test results, take appropriate corrective action. After malfunction has been remedied, retest configuration.

h. Disconnect the test cables from the test set, configuration, power cart, and graph event recorder. Store test cables in the place provided for them in the test set top cover.

2-6. B CONFIGURATION MODE 2 TEST

The mode 2 test of the B Configuration is identical to that of the mode 1 test outlined in paragraph 2-5, except that the MODE selector switch is placed in the MODE 2 position, and that one cycle will consist of 9 frames instead of 10 frames as stated in step d of paragraph 2-5.

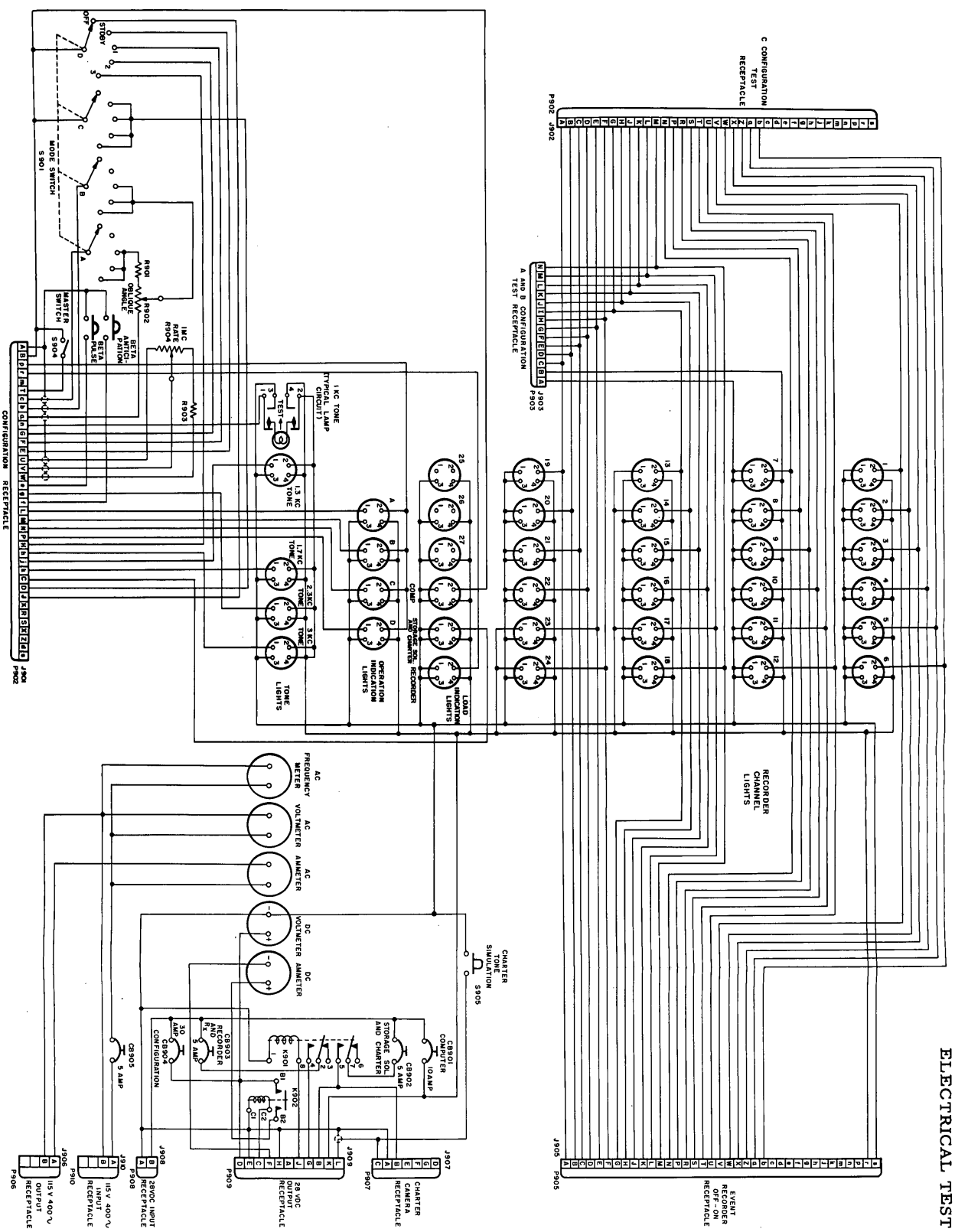


Figure 5. Electrical Test Set Schematic

Section III

MAINTENANCE

3-1. GENERAL

Maintenance of the Electrical Test Set requires a periodic visual inspection and the replacement of defective indicator lights. No attempt should be made to make any major repairs in the field.

Section IV

OVERHAUL

4-1. GENERAL

Major overhaul of the Electrical Test Set must be conducted at the factory.

Section V

PARTS LIST

PART NO.	PART NAME	UNITS PER TEST SET
32-ETS-735160	ELECTRICAL TEST SET ASSY	
32-ETS-735161	CASE	1
32-ETS-735180	SUPPORT	2
32-ETS-735181	SUPPORT, Left	1
32-ETS-735182	SUPPORT, Right	1
32-ETS-735185	FOOT	2
32-ETS-735186	CLAMP	1 of -1 1 of -2
32-ETS-735190	BRACKET FASTENER	3
32-ETS-735165	PANEL ASSY	1
32-ETS-735164	PANEL, Engraving	1
32-ETS-735163	PANEL, Detail	1
32-ETS-735162	SCHEMATIC, Electrical	
32-ETS-735183	BRACKET, Relay	1
32-ETS-735188	SWITCH ASSY	1
32-ETS-735152-51018	INDEX ASSY, PA3Q1	1
32-ETS-735152-51029	STEATITE SECTION, 2-12 Pos	2
32-ETS-735152-51030	STEATITE SECTION, 2-12 Pos	2
32-ETS-735152-51031	STEATITE SPACER, 1/4 in.	8
32-ETS-735152-51001	LIGHT ASSY, White, VM510-5	24
32-ETS-735152-51002	LIGHT ASSY, Red, VM510-6	6
32-ETS-735152-51003	LIGHT ASSY, Green, VM510-7	4
32-ETS-735152-51004	LIGHT ASSY, Amber, VM510-8	5
32-ETS-735152-51005	LAMP BULB, #327, GE	39
32-ETS-735152-51006	FREQUENCY METER, 4059-135	1
32-ETS-735152-51007	VOLTMETER, DC, 0-30v	1
32-ETS-735152-51073	AMMETER, DC, 0-50v	1
32-ETS-735152-51009	VOLTMETER, AC, 0-150v	1
32-ETS-735152-51010	AMMETER, AC, 0-5 amp	1
32-ETS-735152-51011	RELAY, AN3307-1	1
32-ETS-735152-51012	CONTACT, Power, spst, 50 amp	1
32-ETS-735152-51013	CIRCUIT BREAKER, 5 amp	3
32-ETS-735152-51014	CIRCUIT BREAKER, 10 amp	1
32-ETS-735152-51015	CIRCUIT BREAKER, 30 amp	1

PART NO.	PART NAME	UNITS PER TEST SET
32-ETS-735152-51016	SWITCH, Pushbutton	3
32-ETS-735152-51017	SWITCH, Bathandle, spst	1
32-ETS-735152-51019	RECEPTACLE	1
32-ETS-735152-51020	RECEPTACLE	1
32-ETS-735152-51021	RECEPTACLE	1
32-ETS-735152-51022	RECEPTACLE	1
32-ETS-735152-51023	RECEPTACLE	1
32-ETS-735152-51024	RECEPTACLE	1
32-ETS-735152-51026	RECEPTACLE	1
32-ETS-735152-51027	RECEPTACLE	1
32-ETS-735152-51028	RECEPTACLE	1
32-ETS-735152-51051	POTENTIOMETER	2
32-ETS-735152-51050	DUODIAL	2
32-ETS-735152-51052	RESISTOR, 60 ohm, 1/2 W, Comp	2
32-ETS-735152-51066	KNOB, Pointer	1
32-ETS-730175-51316	SCREW, 8-32 NC-2 x 3/8	2
32-ETS-730175-51318	SCREW, 6-32 NC-2 x 1/2	20
32-ETS-730175-51322	SCREW, 4-40 NC-2 x 1/2	20
32-ETS-730175-51324	SCREW, 6-32 NC-2 x 5/8	10
32-ETS-730175-51434	SCREW, 10-32 NF-2 x 5/8	4
32-ETS-730180-51033	NUT, Elastic Stop, 4-40 NC-2	20
32-ETS-730180-51034	NUT, Elastic Stop, 6-32 NC-2	22
32-ETS-730180-51035	NUT, Elastic Stop, 8-32 NC-2	2
32-ETS-735152-51071	DRAWER PULL	2
32-ETS-735187	LID ASSY	1
32-ETS-735189	LID	1
32-ETS-730186-51125	RIVET, 093 x 1/4 Al	9
32-ETS-735152-51053	HINGE	1
32-ETS-735152-51055	STUD, Wing Type	3
32-ETS-730184-51046	WASHER	8
32-ETS-730175-51915	SCREW, 10-32 NF-2 x 7/8	8
32-ETS-730175-51476	SCREW, 10-32 NF-2 x 1 1/4 S/S	8
32-ETS-730180-51099	NUT, Elastic Stop, 10-32 NF-3	8
32-ETS-730180-51084	NUT, Float Anchor, 10-32 NF	8
32-ETS-730186-51049	RIVET, 3/32 dia x 1/4	30
32-ETS-730186-51074	RIVET, 1/8 dia x 7/16	16
32-ETS-735152-51054	RECEPTACLE, Screw-Type	3
32-ETS-735152-51072	EXTRUSION, Rubber	90 in.
32-ETS-735170	CABLE, Configuration	1

PART NO.	PART NAME	UNITS PER TEST SET
32-ETS-735152-51067	SLEEVING, Vinyl, 0.750 ID	98 in.
32-ETS-735152-51035	CONNECTOR, AN3106 E-28-21S	1
32-ETS-735152-51034	CONNECTOR, AN3101 E-28-21P	1
32-ETS-735152-51060	WIRE, 18 Gage, Black	300 in.
32-ETS-735152-51061	WIRE, 20 Gage, White	3400 in.
32-ETS-735171	CABLE, C Configuration	1
32-ETS-735152-51067	SLEEVING, Vinyl, 0.750 ID	98 in.
32-ETS-735152-51036	CONNECTOR, AN3106E-28-21SX	1
32-ETS-735152-51037	CONNECTOR, AN3106E-28-21PX	1
32-ETS-735152-51061	WIRE, 20 Gage, White	3700 in.
32-ETS-735172	CABLE, A and B Configuration	1
32-ETS-735152-51065	SLEEVING, Vinyl, 0.375 ID	98 in.
32-ETS-735152-51039	CONNECTOR, AN3106E-20-27S	1
32-ETS-735152-51038	CONNECTOR, AN3106E-20-27P	1
32-ETS-735152-51061	WIRE, 20 Gage, White	1400 in.
32-ETS-735174	CABLE, Event Recorder	1
32-ETS-735152-51067	SLEEVING, Vinyl, 0.750 ID	50 in.
32-ETS-735152-51041	CONNECTOR, AN3106E-28-21SY	1
32-ETS-735152-51040	CONNECTOR, AN3106E-28-21PY	1
32-ETS-735152-51061	WIRE, 20 Gage, White	1924 in.
32-ETS-735175	CABLE, 115v, 400 cycle, Output	1
32-ETS-735152-51064	SLEEVING, Vinyl, 0.234 ID	98 in.
32-ETS-735152-51059	CONNECTOR, AN3106E-18-10SX	1
32-ETS-735152-51058	CONNECTOR, AN3106E-18-10PX	1
32-ETS-735152-51061	WIRE, 20 Gage, White	400 in.
32-ETS-735176	CABLE, Charting Camera	1
32-ETS-735152-51065	SLEEVING, Vinyl, 0.375 IF	74 in.
32-ETS-735152-51048	CONNECTOR, AN3106E-16-1S	1
32-ETS-735152-51049	CONNECTOR, AN3106E-16S-1P	1
32-ETS-735152-51060	WIRE, 18 Gage, Black	76 in.
32-ETS-735152-51061	WIRE, 20 Gage, White	456 in.
32-ETS-735177	CABLE, 28-VDC, Input	1
32-ETS-735152-51069	SLEEVING, Vinyl, 0.260 ID	50 in.
32-ETS-735152-51046	CONNECTOR, AN3106E-16-11S	1
32-ETS-735152-51047	CONNECTOR, AN3106E-16-11P	1
32-ETS-735152-51062	WIRE, 12 Gage, White	52 in.
32-ETS-735152-51063	WIRE, 12 Gage, Black	52 in.
32-ETS-735178	CABLE, 28-VDC, Output	1
32-ETS-735152-51065	SLEEVING, Vinyl, 0.375 ID	98 in.
32-ETS-735152-51042	CONNECTOR, AN3106E-24-20P	1

PART NO.	PART NAME	UNITS PER TEST SET
32-ETS-735152-51043	CONNECTOR, AN3106E-24-20S	1
32-ETS-735152-51060	WIRE, 18 Gage, Black	100 in.
32-ETS-735152-51061	WIRE, 20 Gage, White	800 in.
32-ETS-735152-51062	WIRE, 12 Gage, White	200 in.
32-ETS-735179	CABLE, 115v, 400 cycle, Input	1
32-ETS-735152-51064	SLEEVING, Vinyl, 0.234 ID	50 in.
32-ETS-735152-51044	CONNECTOR, AN3106E-18-10S	1
32-ETS-735152-51045	CONNECTOR, AN3106E-18-10P	1
32-ETS-735152-51061	WIRE, 20 Gage, White	208 in.
32-ETS-731645	CABLE, Jumper	1
32-ETS-730163-13071	CONNECTOR, DPX, 40-34P	1
32-ETS-730163-13072	CONNECTOR, DPX, 40-33S	1
32-ETS-730163-13073	SHELL, DPX-CG, 2 5/32	2
32-ETS-730160-13008	WIRE, 18 Gage, Black	6 ft.
32-ETS-730160-13048	SLEEVING, Vinyl, 0.625 ID	6 ft.
32-ETS-730160-13030	WIRE, 20 Gage, White	234 ft.
32-ETS-735159	CABLE DIAGRAM	
32-ETS-735152-51080	20 Gage, Stranded, Black, Type SRIR	30 ft.
32-ETS-735152-51081	20 Gage, Stranded, Brown, Type SRIR	30 ft.
32-ETS-735152-51082	20 Gage, Stranded, Red, Type SRIR	30 ft.
32-ETS-735152-51083	20 Gage, Stranded, Orange, Type SRIR	30 ft.
32-ETS-735152-51084	20 Gage, Stranded, Yellow, Type SRIR	30 ft.
32-ETS-735152-51085	20 Gage, Stranded, Green, Type SRIR	30 ft.
32-ETS-735152-51086	20 Gage, Stranded, Blue, Type SRIR	30 ft.
32-ETS-735152-51087	20 Gage, Stranded, Violet, Type SRIR	30 ft.
32-ETS-735152-51088	20 Gage, Stranded, Grey, Type SRIR	30 ft.
32-ETS-735152-51089	20 Gage, Stranded, White, Type SRIR	30 ft.
32-ETS-735152-51090	18 Gage, Stranded, Black, Type SRIR	15 ft.
32-ETS-735152-51091	18 Gage, Stranded, White, Type SRIR	30 ft.
32-ETS-735152-51092	20 Gage, Shielded, External Vinyl Covering	15 ft.
32-ETS-730163-13071	CONNECTOR, DPX, 40-34P	1
32-ETS-730163-13072	CONNECTOR, DPX, 40-33S	1
32-ETS-730163-13073	SHELL, DPX, CG - 25/32	2
32-ETS-730160-13008	WIRE, 18 Gage, Black	6 ft.
32-ETS-730160-13048	SLEEVING, Vinyl, 0.625 ID	6 ft.
32-ETS-730160-13030	WIRE, 20 Gage, White	234 ft.