

DESCRIPTION, OPERATION, AND SERVICING INFORMATION
FOR LOW LEVEL RFI (POLAR-EMC) ELECTRICAL SERVICE
ASSEMBLIES (ESA) WHICH ACCOMMODATE 0.5 OR 1.5
AMPERE, 50 VOLT POWER SUPPLIES

1. GENERAL

1.01 Each electrical service assembly (ESA) provides an electrically shielded container for housing certain components which are used to suppress radio frequency (rfi) interference. Typical ESAs are illustrated in Figures 1 through 4.

1.02 Figure 14 is a chart which lists the electrical service assemblies covered by this specification and delineates certain variables. In addition, the chart shows ESA applicability. Abbreviations used in the chart are defined as follows:

<u>Abbreviations</u>	<u>Meaning</u>
ASR	Automatic Send-Receive
CMD	Clutch Magnet Driver
IR	Isolation Relay
KSR	Keyboard Send-Receive
LLK	Low Level Keyer
LXD	Transmitter Distributor
RO	Receive-Only
ROTR	Receive-Only Typing Reperforator
SMD	Selector Magnet Driver
SRTR	Send-Receive Typing Reperforator

1.03 Thus, each ESA differs in accordance with the mounting provisions and the number of isolation relays and circuit card connectors provided (Figures 5 and 14). The circuit card connectors of each ESA provided for plugging in a certain combination of power supply cards, LLK cards, SMD cards, and CMD cards (Figure 6). These cards, however, are not an integral part of the ESA. For further information on the cards, refer to the specifications given in the following chart:

SPECIFICATION 50505S

<u>Card</u>	<u>Specification</u>
CMD	50506S (NAVSHIPS 0967-273-7010)
SMD	50507S (NAVSHIPS 0967-273-8010)
Power Supply	50508S (NAVSHIPS 0967-274-7010)
LLK	50509S (NAVSHIPS 0967-273-9010)

1.04 Parts ordering information for the electrical service assemblies is illustrated in the back of this specification. For parts other than those given, see the literature written about the equipment or set involved.

1.05 Power Supply Technical Data:

<u>Item</u>	<u>0.5 Amp Power Supply</u>	<u>1.5 Amp Power Supply</u>
Input	100 to 130 volts ac, 45 to 66 hertz. Nominal Power: 55 watts at 115 volts ac for 25 watts output	100 to 130 volts ac, 45 to 66 hertz. Nominal Power: 100 watts at 115 volts ac for 50 watts output
Output	(1) +47 to +53 volts dc at 0.5 amp max (2) +6.6 to +7.8 volts dc at 0.018 amp max (3) -6.6 to -7.8 volts dc at 0.018 amp max	+47 to +53 volts dc at 1.5 amp max --- ---
Ambient Operating Temperature	+40° to +110° F with cooling fan in cabinet	+40° to +110° F with cooling fan in cabinet
Fusing	(1) ac — 0.8 amp slow-blowing (162360) (2) dc — 0.5 amp fast-blowing (131807)	ac — 2.0 amp slow-blowing (120166) dc — 1.5 amp fast-blowing (115358)

2. INSTALLATION

2.01 Instructions for installing any particular ESA can be found in the specification written about the modification kit utilizing the ESA.

3. ADJUSTMENTS AND LUBRICATION

3.01 No adjustments or lubrication is required for the ESAs.

4. DESCRIPTION AND OPERATION

DESCRIPTION

4.01 Figures 7, 8, and 9 illustrate typical parts of the ESA. ESAs which accommodate LLK and SMD cards require double box construction. The inner box functions as an electrostatic shield and is electrically isolated from an outer box which acts as a magnetic shield. CMD cards do not require a double box construction. Single box construction is adequate and serves as a combined electrostatic-magnetic shield.

4.02 The power supply transformer and rectifier filter capacitor form an assembly capable of meeting the power supply requirements specified in 1.05 when used in conjunction with a power supply card (1.03).

4.03 All ESAs are equipped with double-shielded cables with appropriate rf connectors for LLK and SMD connections to external equipment.

OPERATION

A. ESA Using 0.5 Ampere Power Supply Card (Figure 10)

4.04 Power supply transformer T1, diodes CR1, CR3, and power supply rectifier filter capacitor C8 form a full-wave rectifier to obtain a minimum of 58 volts unregulated dc.

4.05 Transistors Q1 and Q2 form a two-stage series voltage regulating element. Both transistors are always conducting, and the base-emitter drop of each transistor is approximately 0.7 volt. The voltage drop across R2 is negligible. (Resistor R2 is used in conjunction with capacitor C5 for rf noise suppression.) In effect, then, the emitter of Q1 is clamped to the same potential as the reference diode combination CR7 and CR12, ie, the dc output of Q1 is nominally 47 volts.

Note: The difference between the Q1 dc output and the unregulated dc appears across the collector-emitter junction of Q1.

4.06 Transistor Q2 is a gain stage for Q1. Resistor R1 limits the current that divides between the CR7-CR12 reference diodes and the base of Q2. The base current of Q1 or the collector current of Q2 is equal to the base current of Q2 multiplied by the dc current gain (HFE) of Q2.

SPECIFICATION 50505S

- 4.07 Resistor R7 acts as a bleeder and assures that Q1 and Q2 will conduct even when no load is connected across the output terminals. Without R7 and no load connected, the output would rise to the same value as the unregulated dc. However, a minimum load of 0.150 ampere must also be applied to maintain the +53 volt regulation limit.
- 4.08 The +7 volt output is obtained by dropping the unregulated dc voltage through resistor R4 to supply the zener reference diode CR6 which is connected across the output.
- 4.09 Resistor R5 and zener diode CR5 provides a -7 volt output in a manner similar to that described in 4.08. However, a full-wave rectifier consisting of rectifier diodes CR2 and CR4 and capacitor C4 is required to obtain the negative unregulated potential with respect to the common circuit.
- 4.10 Capacitors C1, C2, and C3 suppress rf noise transients which occur due to rectifier switching. Capacitors C6 and C7 and inductors L3 and L4 suppress zener diode noise.
- 4.11 The transformer shields and a low-pass filter consisting of L1, L2, C9, C10, C11, and C12 provide noise isolation between power line and power supply.
- 4.12 The electrical service assemblies are normally wired so one 250 ohm (25 watt) resistor is connected across the collector-emitter of Q1 when each associated SMD or CMD is inserted in its connector to reduce power dissipation in Q1. (This is equivalent to paralleling Q1 with 250 ohms for each 0.150 ampere, approximately, of load current.)
- 4.13 Fuse F102 limits the current flowing in the regulating element to a total of 0.5 ampere.
- B. ESA Using 1.5 Ampere Power Supply Card (Figure 11)
- 4.14 Power supply transformer T1, diodes CR1, CR2, and power supply rectifier filter capacitor C5 form a full-wave rectifier to obtain a minimum of 58 volts unregulated dc.
- 4.15 Transistors Q1 and Q2 form a two-stage series voltage regulating element. Both transistors are always conducting, and the base-emitter drop of each transistor is approximately 0.7 volt. The voltage drop across R2 is negligible. (Resistor R2 is used in conjunction with capacitor C4 for rf noise suppression). In effect, then, the emitter of Q2 is clamped to the same potential as the reference diode combination CR3 and CR8, ie, the dc output of Q2 is nominally 47 volts.

Note: The difference between the Q2 dc output and the unregulated dc appears across the collector-emitter junction of Q2.

- 4. 16 Transistor Q1 is a gain stage for Q2. Resistor R1 limits the current that divides between the CR3-CR8 reference diodes and the base of Q1. The base current of Q2 or the collector current of Q1 is equal to the base current of Q1 multiplied by the dc current gain (HFE) of Q1.
- 4. 17 Resistor R4 acts as a bleeder and assures that Q1 and Q2 will conduct even when no load is connected across the output terminals. Without R4 and no load connected, the output would rise to the same value as the unregulated dc.
- 4. 18 Capacitors C1, C2, and C3 suppress rf noise transients which occur due to rectifier switching.
- 4. 19 The transformer shields and a low-pass filter consisting of L1, L2, C6, C7, C8, and C9 provide noise isolation between power line and power supply.
- 4. 20 Fuse F102 limits the current flowing in the regulating element to a total of 1.5 amperes.

5. SERVICING

5.01 Servicing is required only to repair the power supply or correct wiring in case of fault. Wiring can be checked by following the different circuits on the appropriate wiring diagram, point-to-point, and comparing with actual equipment wiring. Wiring diagram packages (WDP) which include the schematic and actual wiring diagrams relevant to the electrical service assemblies (ESA) are listed below:

<u>ESA</u>	<u>WDP</u>	<u>SCHEMATIC</u>	<u>ACTUAL</u>
321225	0014	8297WD	8132WD
321226	0029	8178WD	8137WD
321228	0059	8455WD	8454WD
321230	0014, 0031	8297WD	8132WD
321231	0029	8178WD	8137WD
323811	0042	8141WD	8322WD
323812	0041, 0042, 0043	8405WD	8316WD
323813	0014, 0031	8296WD	8298WD
323814	0056, 0057	8423WD	8422WD
323815	0043	8413WD	8315WD
323820	0014	8306WD	8305WD
323821	0060	8451WD	8450WD

SPECIFICATION 50505S

<u>ESA</u>	<u>WDP</u>	<u>SCHEMATIC</u>	<u>ACTUAL</u>
323822	0060	8453WD	8452WD
323825	0041	8181WD	8180WD
324060	0038	8331WD	8329WD 8330WD
324061	0039	8332WD	8329WD 8330WD
326792	0058	8100WD	8100WD

5.02 Before attempting to repair a power supply fault, familiarize yourself with the power supply card and the ESA wiring. See the circuit descriptions given in Part 4, the 321130 (0.5 ampere) or 321132 (1.5 ampere) power supply card wiring diagrams (Figures 10 and 11), and the appropriate wiring diagrams listed in 5.01.

5.03 To perform the tests outlined in Figures 12 and 13 a multimeter (dc volt-ohm-ammeter) is required.

5.04 Colored test point jacks are located at the top of the power supply circuit card. These jacks accept standard meter probes.

5.05 When a power supply fault is suspected and is not obvious, remove all power from ESA and remove all LLK, SMD, and CMD circuit cards. Then, apply 100 to 130 volts ac power to the ESA and proceed with the fault test procedure outlined in either Figure 12 (0.5 ampere card) or Figure 13 (1.5 ampere card).

CAUTION: BE EXTREMELY CAREFUL OF CAPACITORS, BECAUSE THEY MAY BE CHARGED. A SEVERE ELECTRICAL SHOCK CAN BE RECEIVED FROM A CAPACITOR OR LEADS CONNECTED TO THE POWER SUPPLY WHILE IT IS IN OPERATION.

5.06 Failure to detect the fault using the procedures previously described normally indicates a loose or cold connection or a broken or misplaced wire in the ESA. Recheck all wiring as suggested in 5.01.

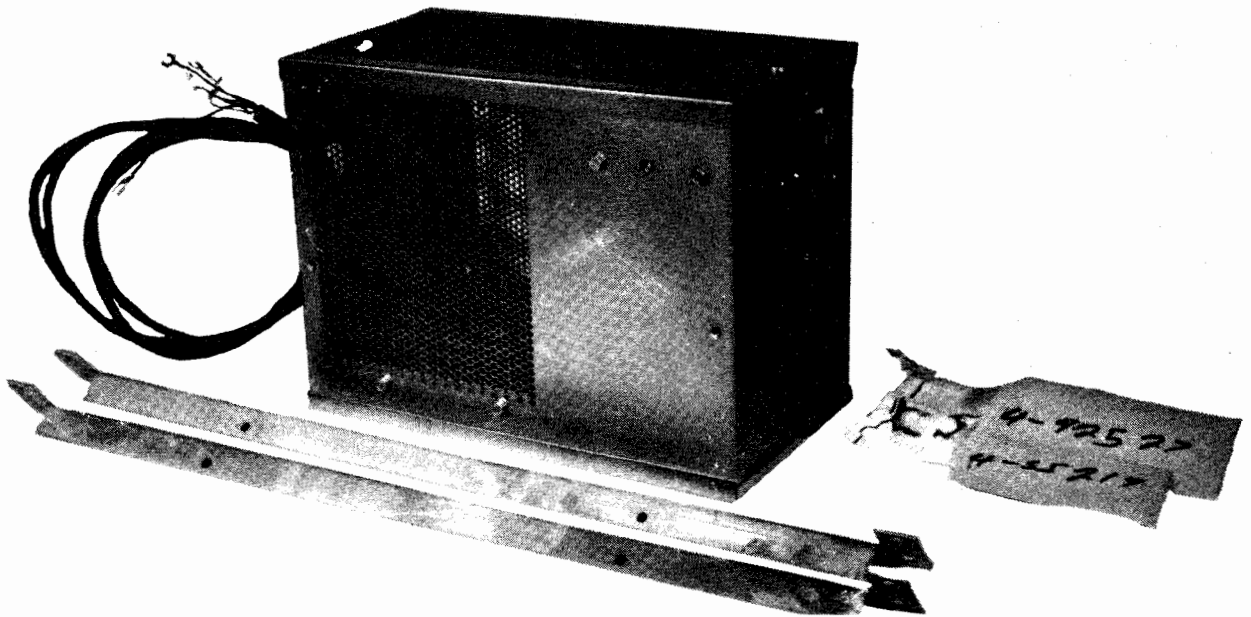


Figure 1 - ESA for Rack Mounting — Single Box Construction

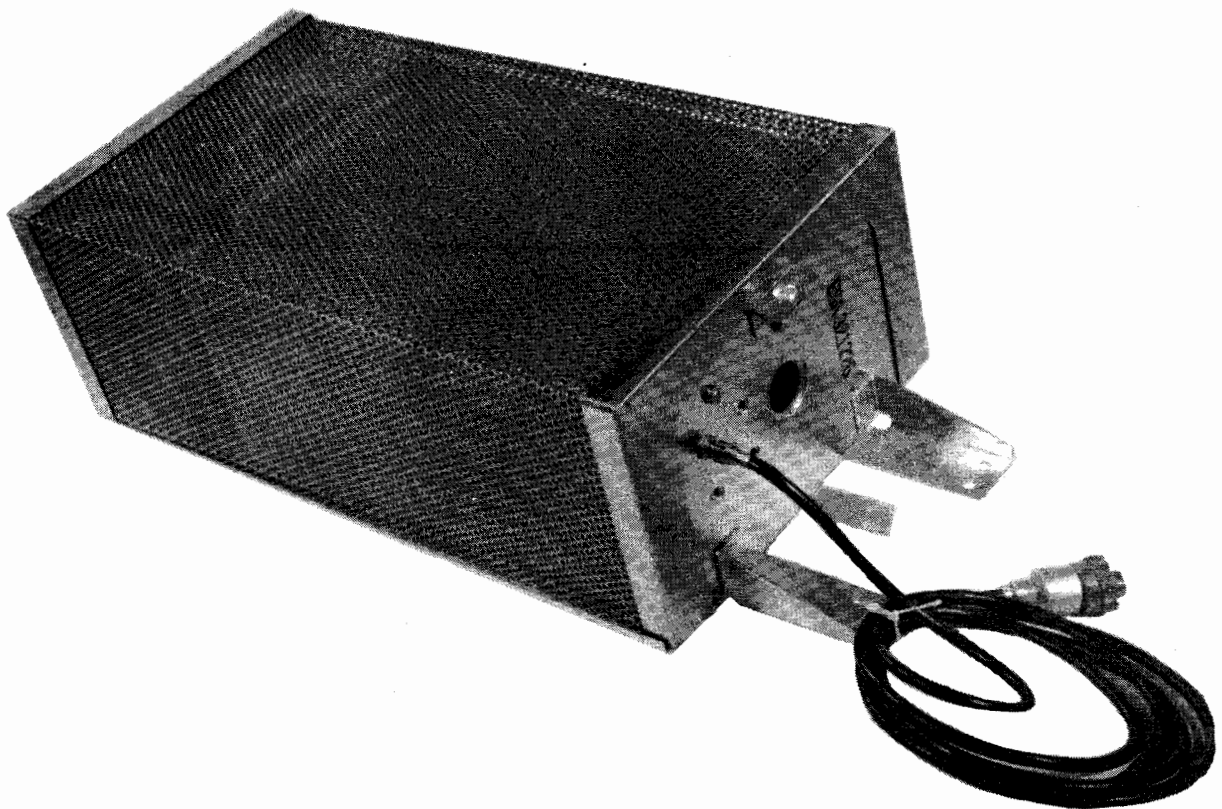


Figure 2 - ESA for Rack Mounting — Double Box Construction

SPECIFICATION 50505S

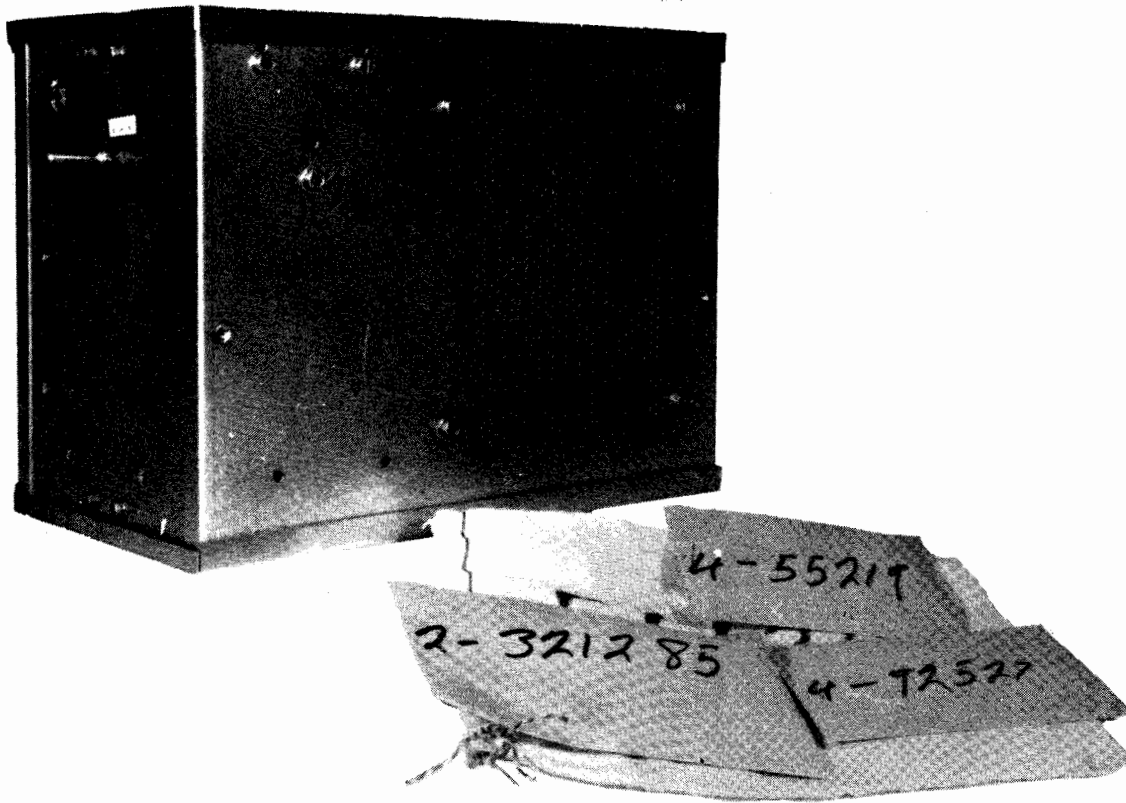


Figure 3 - ESA for Table Mounting — Double Box Construction

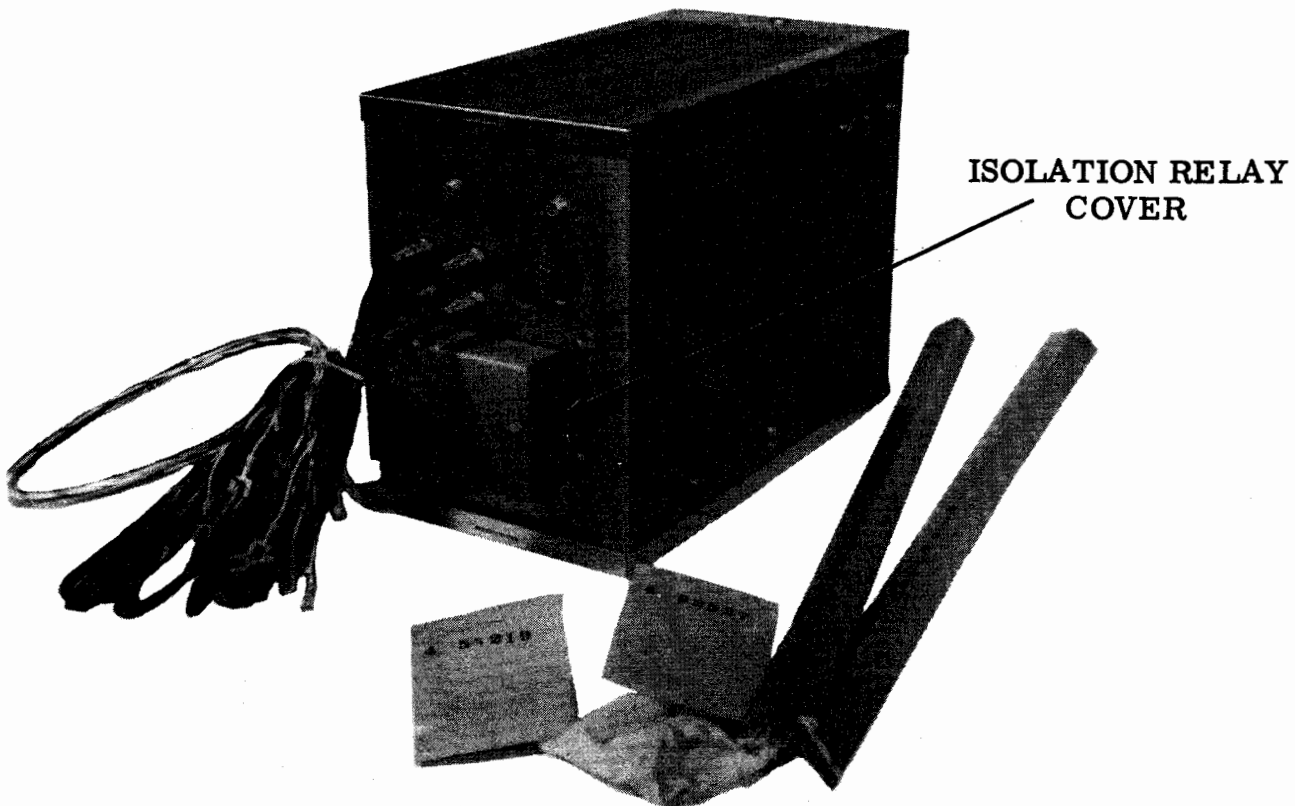


Figure 4 - ESA for Rack Mounting — Single Box Construction with Isolation Relays

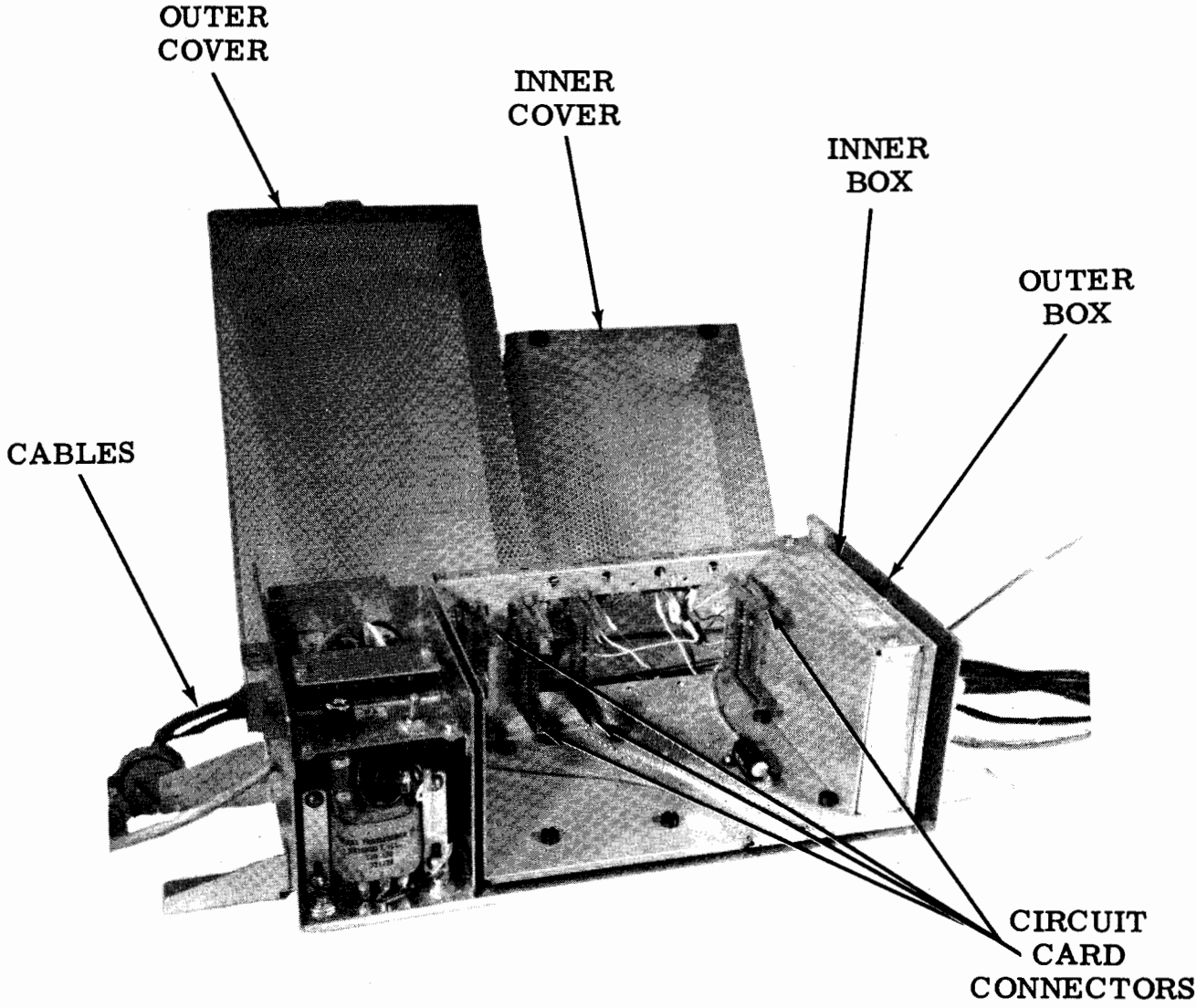


Figure 5 - ESA Showing Circuit Card Connectors

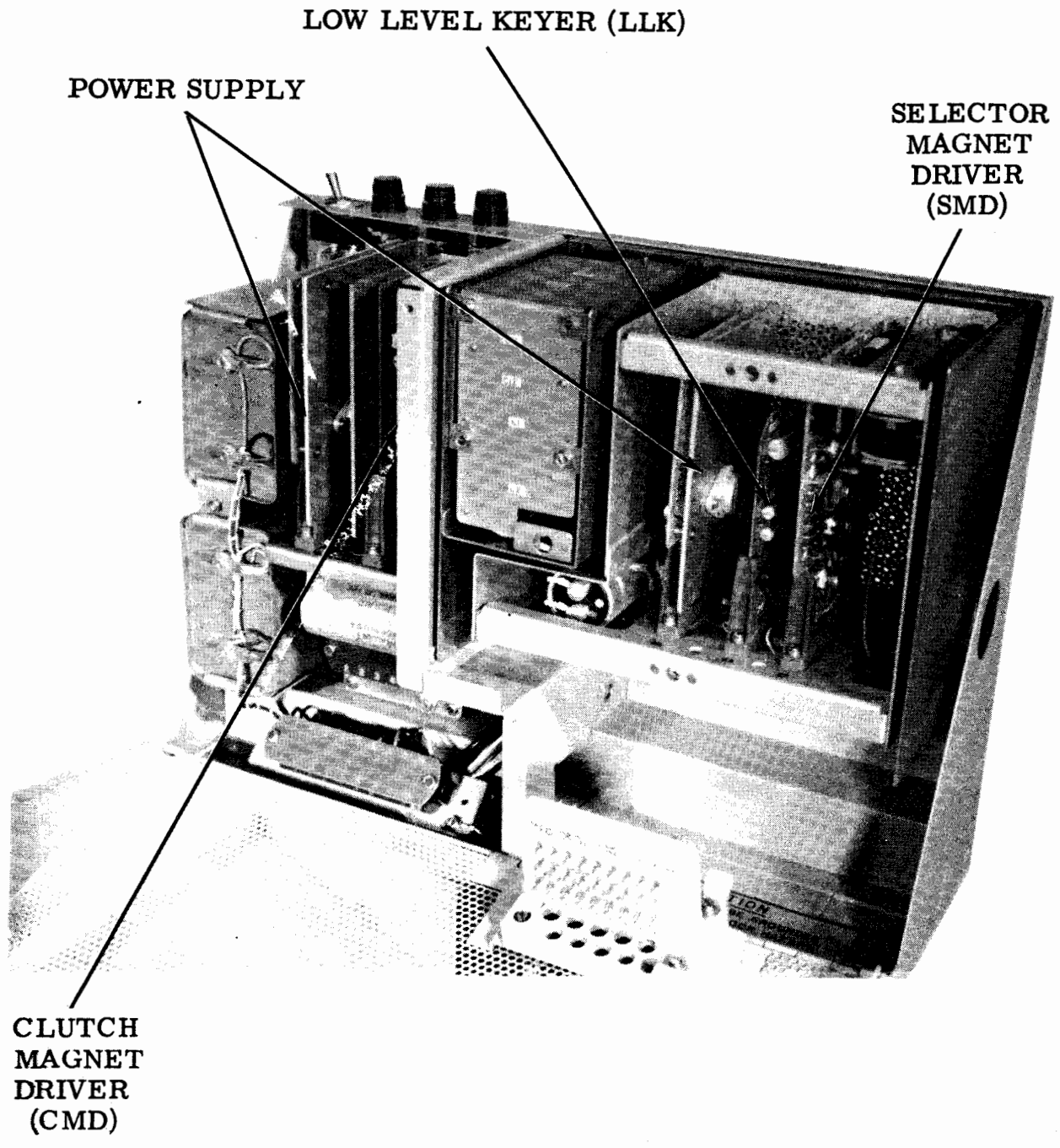


Figure 6 - ESA Showing Typical Circuit Cards

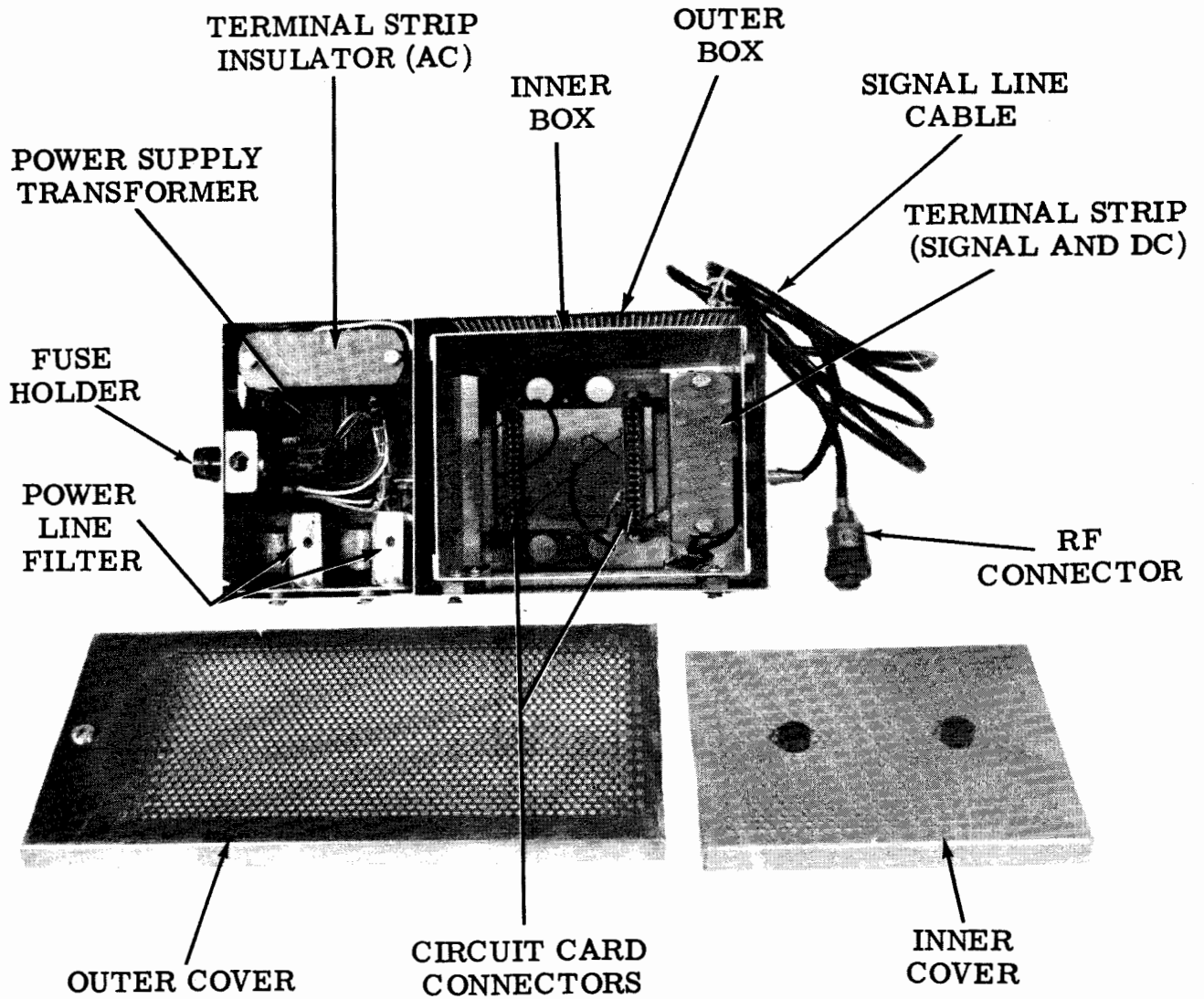


Figure 7 - Typical Parts of an ESA — Double Box Construction, Top View

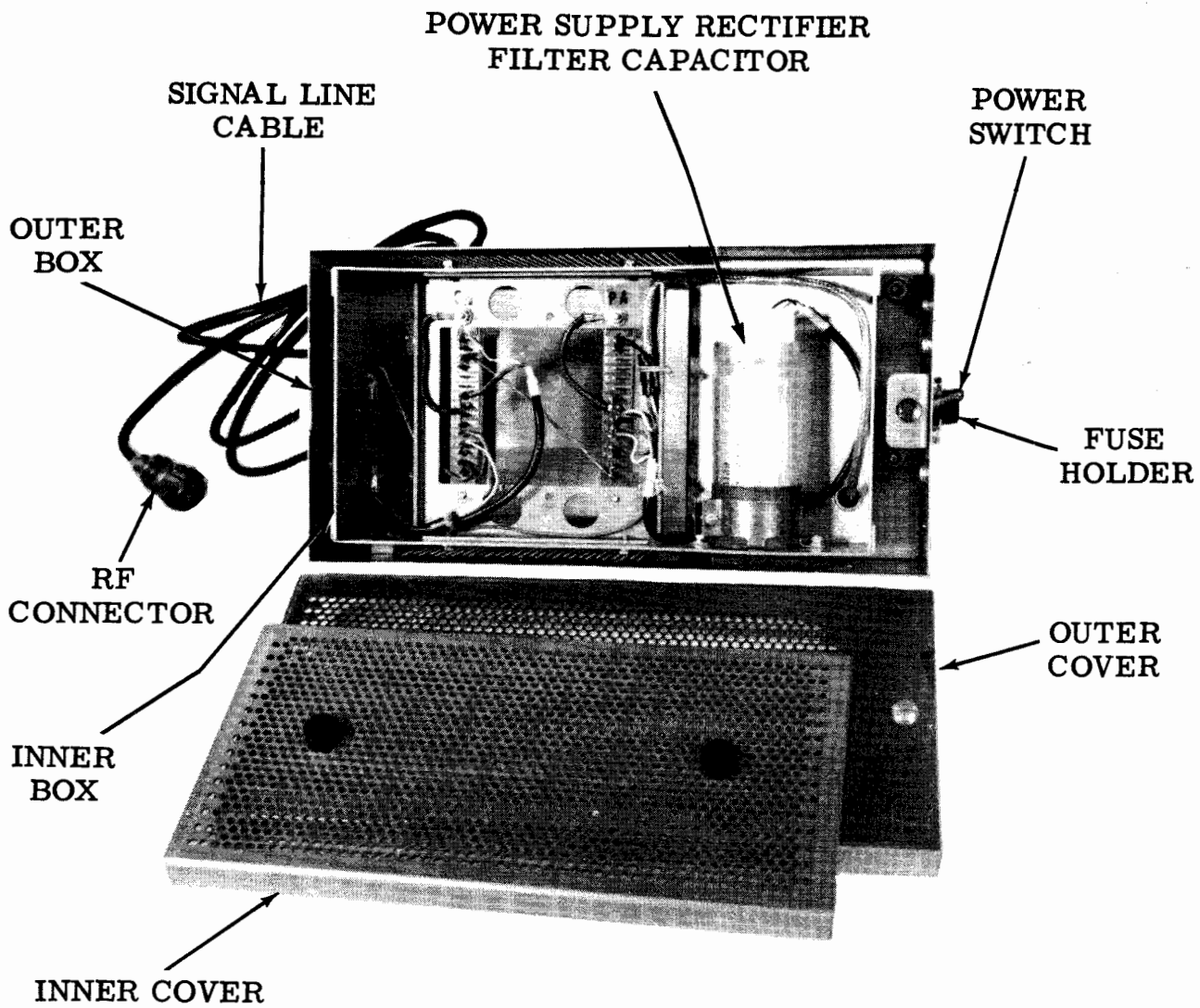


Figure 8 - Typical Parts of an ESA — Double Box Construction, Bottom View

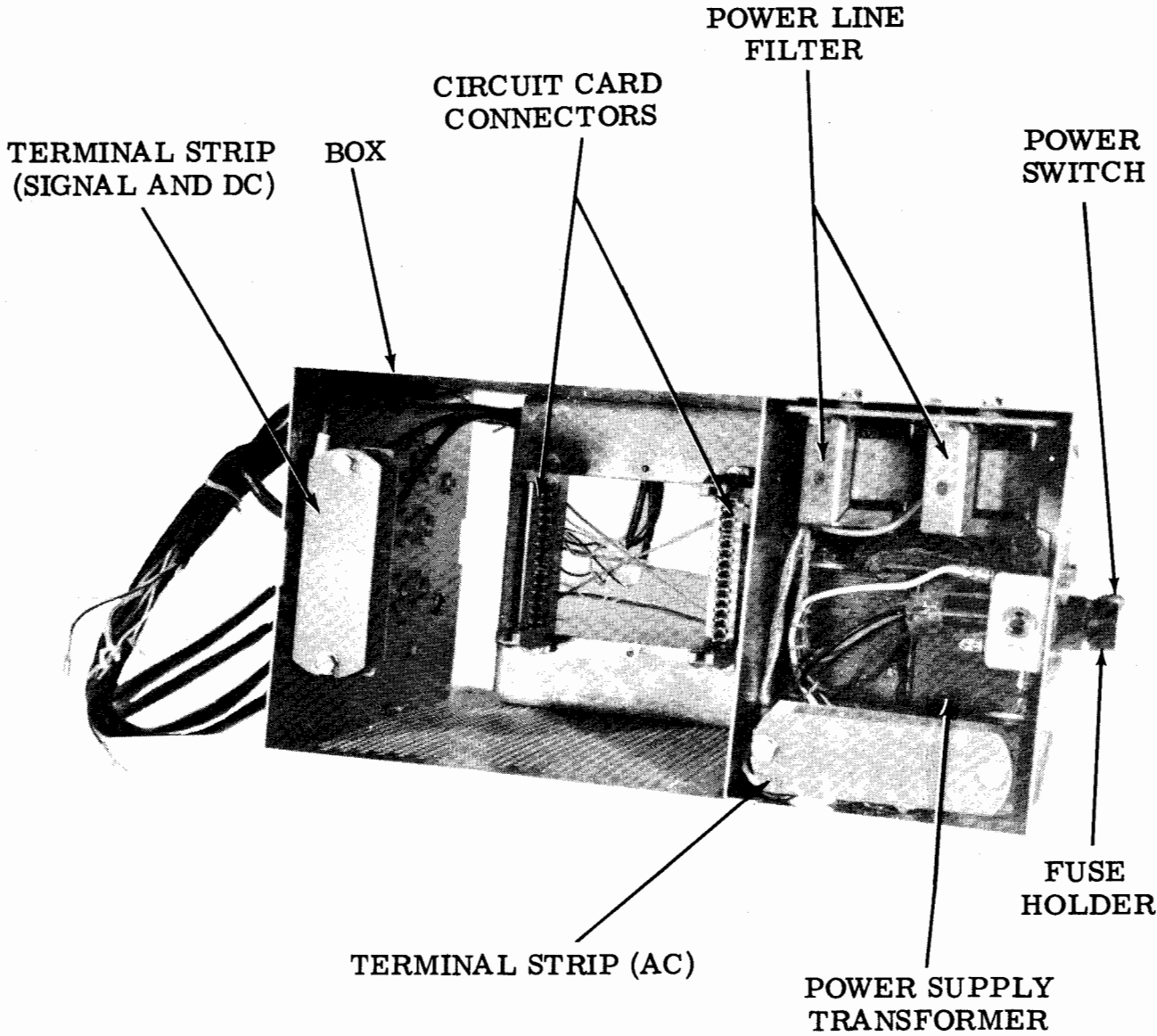
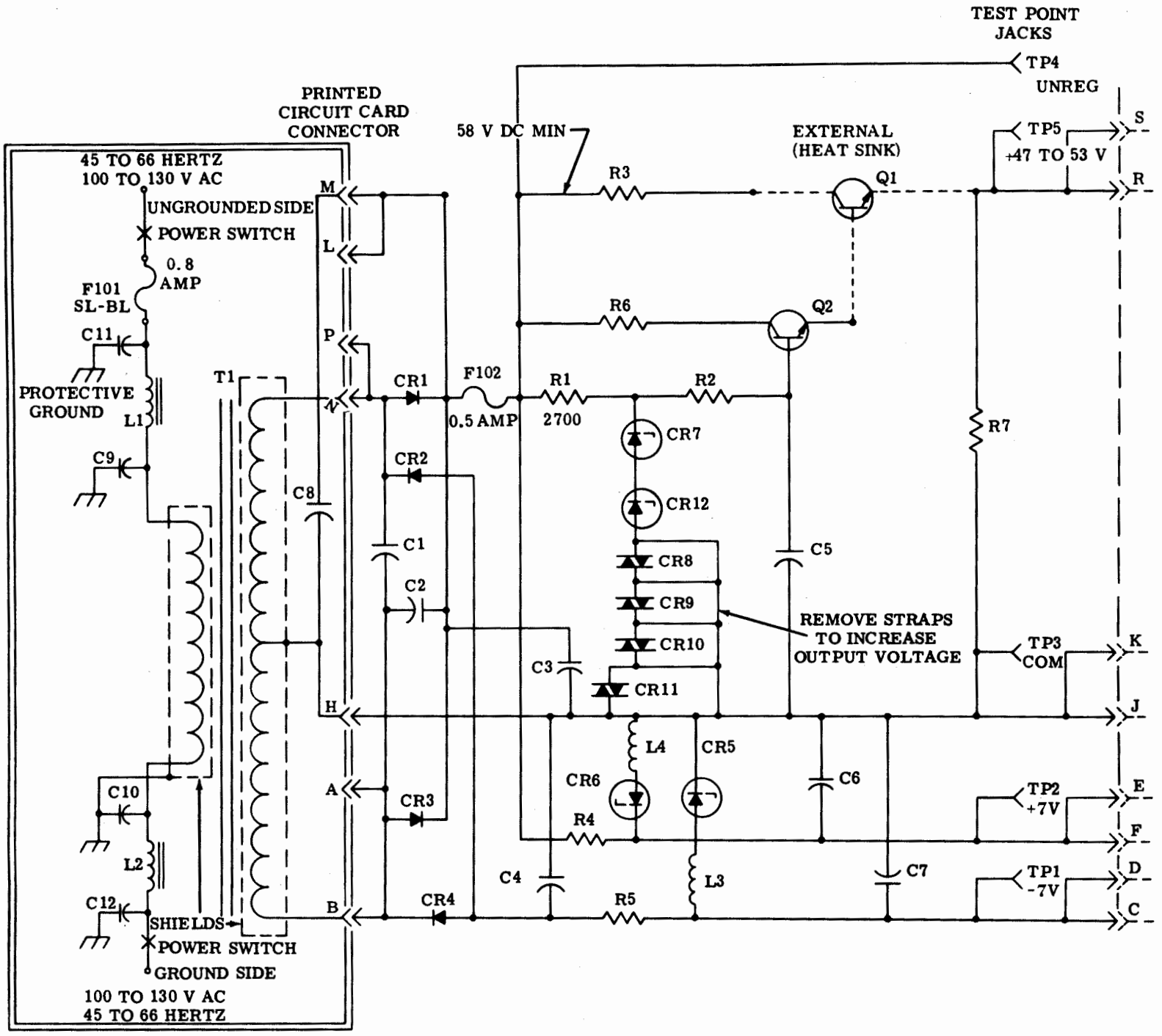


Figure 9 - Typical Parts of an ESA — Single Box Construction, Top View with Covers Removed

Figure 10 - Schematic Diagram — ESA Using 0.5 Amp Power Supply Card



TEST POINT JACKS

PRINTED CIRCUIT CARD CONNECTOR

EXTERNAL (HEAT SINK)

45 TO 66 HERTZ
100 TO 130 V AC

UNGROUNDING SIDE
POWER SWITCH

F101
SL-BL
0.8 AMP

C11
PROTECTIVE GROUND
L1

T1

58 V DC MIN

F102
0.5 AMP

R1
2700

CR7

CR12

CR8

CR9

CR10

CR11

L4

CR6

R4

C4

R5

CR5

L3

R7

REMOVE STRAPS
TO INCREASE
OUTPUT VOLTAGE

TP3
COM

TP2
+7V

TP1
-7V

TP4
UNREG

TP5
+47 TO 53 V

SHIELDS
POWER SWITCH
GROUND SIDE
100 TO 130 V AC
45 TO 66 HERTZ

PRINTED
CIRCUIT CARD
CONNECTOR

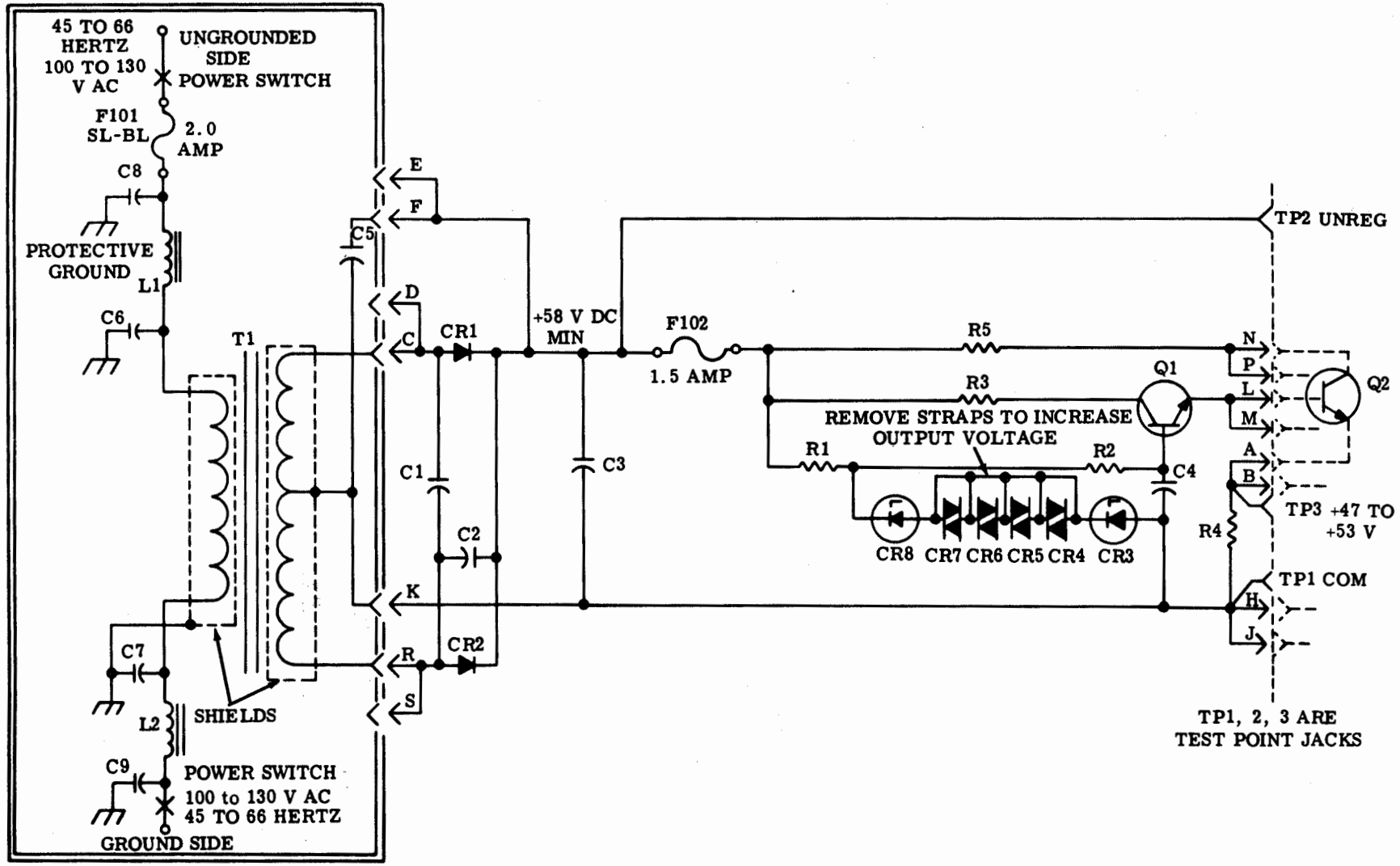


Figure 11 - Schematic Diagram — ESA Using 1.5 Amp Power Supply Card
Page 15

STEP	ACTION	PROBE POSITION	NORMAL RESPONSE	NEXT STEP	ABNORMAL RESPONSE AND PROCEDURE	NEXT STEP
1	Check voltage from -7 test jack.	COM -7	Meter reading should be: Min -6.6 volts Max -7.8 volts.	2	<u>RESPONSE</u> : Meter reading of zero volts. <u>DIFFICULTY</u> : CR5 shorted or R5 open. <u>PROCEDURE</u> : Remove power supply card and repair or replace. <u>RESPONSE</u> : Meter reading of +57 volts to +90 volts. <u>DIFFICULTY</u> : CR5 open. <u>PROCEDURE</u> : Remove power supply card and repair or replace.	1 1
2	Check voltage from +7 test jack.	COM +7	Meter reading should be: Min +6.6 volts Max +7.8 volts.	3	<u>RESPONSE</u> : Meter reading of zero volts. <u>DIFFICULTY</u> : CR6 shorted or R4 open. <u>PROCEDURE</u> : Remove power supply card and repair or replace. <u>RESPONSE</u> : Meter reading of +57 volts to +90 volts. <u>DIFFICULTY</u> : CR6 open. <u>PROCEDURE</u> : Remove power supply card and repair or replace.	1 1
3	Check voltage from UNREG. test jack.	COM UNREG.	Meter reading should be: Min +57 volts Max +90 volts	4	<u>RESPONSE</u> : Meter reading of zero volts. <u>DIFFICULTY</u> : Loose or blown fuse. <u>PROCEDURE</u> : Remove power supply card and secure or replace fuse. <u>RESPONSE</u> : Meter reading indicates voltage which is too low. <u>DIFFICULTY</u> : CR1 and/or CR4 open or shorted. C8 defective. T1 and power line filter defective. <u>PROCEDURE</u> : Remove power supply card or defective parts and repair or replace.	5 1
4	Check voltage from +50 test jack.	COM +50	Meter reading should be: Min +47 volts Max +53 volts.	End of Test	<u>RESPONSE</u> : Meter reading of zero volts. <u>DIFFICULTY</u> : Q1 and/or Q2 open. <u>PROCEDURE</u> : Remove power supply card and repair or replace.	1

					<p><u>RESPONSE</u>: Meter reading of more than zero volts but less than +47 volts.</p> <p><u>DIFFICULTY</u>: Too many shorting straps across CR8, CR9, CR10, and CR11.</p> <p><u>PROCEDURE</u>: Remove power supply card and remove straps, as necessary, to increase voltage. Replace card.</p>	1
					<p><u>RESPONSE</u>: Meter reading of +57 volts to +90 volts.</p> <p><u>DIFFICULTY</u>: Q1 and/or Q2 shorted.</p> <p><u>PROCEDURE</u>: Remove power supply card and repair or replace.</p>	1
5	Check voltage from UNREG. test jack.	COM UNREG.	Meter reading should be: Min +57 volts Max +90 volts.	4	<p><u>RESPONSE</u>: Meter reading of zero volts.</p> <p><u>DIFFICULTY</u>: Repeated fuse blowing.</p> <p><u>PROCEDURE</u>: Disconnect power and remove power supply card. Make continuity checks between card terminals B and N, N and H, B and H. A zero or near zero reading on the 1-ohm scale of a multi-meter indicates a short. Check continuity between Q1 case and its heat sink (Q1 must be electrically isolated from heat sink with mica insulators). If the power supply card checks satisfactorily, check power line filter, T1, and C8 for shorted condition. Repair or replace card.</p> <p><u>RESPONSE</u>: Meter reading indicates voltage which is too low.</p> <p><u>DIFFICULTY</u>: CR1 and/or CR4 open or shorted. C8 defective. T1 and power line filter defective.</p> <p><u>PROCEDURE</u>: Remove power supply card or defective parts and repair or replace.</p>	1

Figure 12 - Power Supply Fault Test Procedure (0.5 Ampere Card)

STEP	ACTION	PROBE POSITION	NORMAL RESPONSE	NEXT STEP	ABNORMAL RESPONSE AND PROCEDURE	NEXT STEP
1	Check voltage from UNREG. test jack.	COM UNREG.	Meter reading should be: Min +57 volts Max +90 volts.	2	<p><u>RESPONSE</u>: Meter reading of zero volts. <u>DIFFICULTY</u>: Loose or blown fuse. <u>PROCEDURE</u>: Remove power supply card and secure or replace fuse.</p> <p><u>RESPONSE</u>: Meter reading indicates voltage which is too low. <u>DIFFICULTY</u>: CR1 and/or CR2 open or shorted. C5 defective. T1 and power line filter defective. <u>PROCEDURE</u>: Remove power supply card or defective parts and repair or replace.</p>	3 1
2	Check voltage from +50 test jack.	COM +50	Meter reading should be: Min +47 volts Max +53 volts.	End of Test	<p><u>RESPONSE</u>: Meter reading of zero volts. <u>DIFFICULTY</u>: Q1 and/or Q2 open. <u>PROCEDURE</u>: Remove power supply card and repair or replace.</p> <p><u>RESPONSE</u>: Meter reading of more zero volts but less than +47 volts. <u>DIFFICULTY</u>: Too many shorting straps across CR4, CR5, CR6, and CR7. <u>PROCEDURE</u>: Remove power supply card and remove straps, as necessary, to increase voltage. Replace card.</p>	1 1

					<p><u>RESPONSE</u>: Meter reading of +57 to +90 volts.</p> <p><u>DIFFICULTY</u>: Q1 and/or Q2 shorted.</p> <p><u>PROCEDURE</u>: Remove power supply card and repair or replace.</p>	1
3	Check voltage from UNREG. test jack.	COM UNREG.	<p>Meter reading should be:</p> <p>Min +57 volts</p> <p>Max +90 volts.</p>	2	<p><u>RESPONSE</u>: Meter reading of zero volts.</p> <p><u>DIFFICULTY</u>: Repeated fuse blowing.</p> <p><u>PROCEDURE</u>: Disconnect power and remove power supply card. Make continuity checks between card terminals D and S, S and K, D and K. A zero or near zero reading on the 1-ohm scale of a multimeter indicates a short. Check continuity between Q2 case and its heat sink (Q2 must be electrically isolated from heat sink with mica insulators). If the power supply card checks satisfactorily, check power line filter, T1 and C5 for shorted condition. Repair or replace card.</p> <p><u>RESPONSE</u>: Meter reading indicates voltage which is too low.</p> <p><u>DIFFICULTY</u>: CR1 and/or CR2 open or shorted. C5 defective. T1 and power line filter defective.</p> <p><u>PROCEDURE</u>: Remove power supply card or defective parts and repair or replace.</p>	1

Figure 13 - Power Supply Fault Test Procedure (1.5 Ampere Card)

Electrical Service Assembly (ESA)	Circuit Card Connectors*						Type of Mounting		*See Paragraph 1.03 for definitions. Applicability	
	Power Supply (Amperes)		LLK	SMD	GMD	IR				
	0.5	1.5								
321225	X				1			X	M28 KSR Set	TT-47D/UG, TT-47E/UG, TT-47H/UG TT-47J/UG, TT-48C/UG, TT-48F/UG
321226	X			1				X	M28 RO Set	TT-171/UG, TT-171A/UG, TT-171C/UG TT-283/UG
321228		X		4				X	M28 Stack-Mounted RO Set	AN/FCC-100
321230	X				1		X		M28 KSR Set	TT-69C/UG, TT-69D/UG, TT-70D/UG, TT-176/UG, TT-176A/UG, TT-176C/UG, AN/UGC-22A
									M28 SRTR Set	TT-253/UG, TT-253A/UG, TT-253C/UG, TT-292/UG
321231	X			1			X		M28 ROTR Set	TT-192/UG, TT-274/UG, TT-274A/UG, TT-192A/UG
									M28 Compact RO Set	AN/UGC-25, AN/UGC-25X
323811	X		2	2				X	M28 ASR Set	AN/UGC-6, AN/UGC-6A AN/UGC-6BX, AN/UGC-6F
323812	X				2	3		X	M28 ASR Set	See 323811, 323815, and 323825
323813	X		1	1			X		M28 KSR Set M28 SRTR Set	See 321230.
									M28 Compact KSR Set	AN/UGC-20
323814		X		6				X	M28 Torn Tape System	TT-331/UG, TT-331A/UG, TT-332/UG, TT-332A/UG, TT-403A/UG, TT-404A/UG, AN/FGR-5A, AN/FGR-6A
323815	X		2	3				X	M28 ASR Set	AN/UGC-13, AN/UGC-13AX, AN/UGC-16
323820	X		1	1				X	M28 KSR Set	See 321225.

323821	X		1	3		3		X	M28 Stack-Mounted KSR Set	AN/FGC-74, AN/FGC-74X, AN/FGC-79A, AN/FGC-79AX
323822	X					1	3	X	M28 Stack-Mounted KSR Set	See 323821.
323825	X		2	1		2		X	M28 ASR Set	AN/UGC-5, AN/UGC-5X
324060	X			1				X	M28 RO Set (CRITICOMM)	TT-306, TT-306A
324061	X		1	1	1			X	M28 KSR Set (CRITICOMM)	TT-307, TT-307A
326792	X		1		1		X		M28 LXD Set	TT-187/UG, TT-187A/UG, TT-187B/UG, TT-187C/UG, TT-273/UG

Figure 14 - Chart Listing ESA Delineating Variables and Showing Applicability

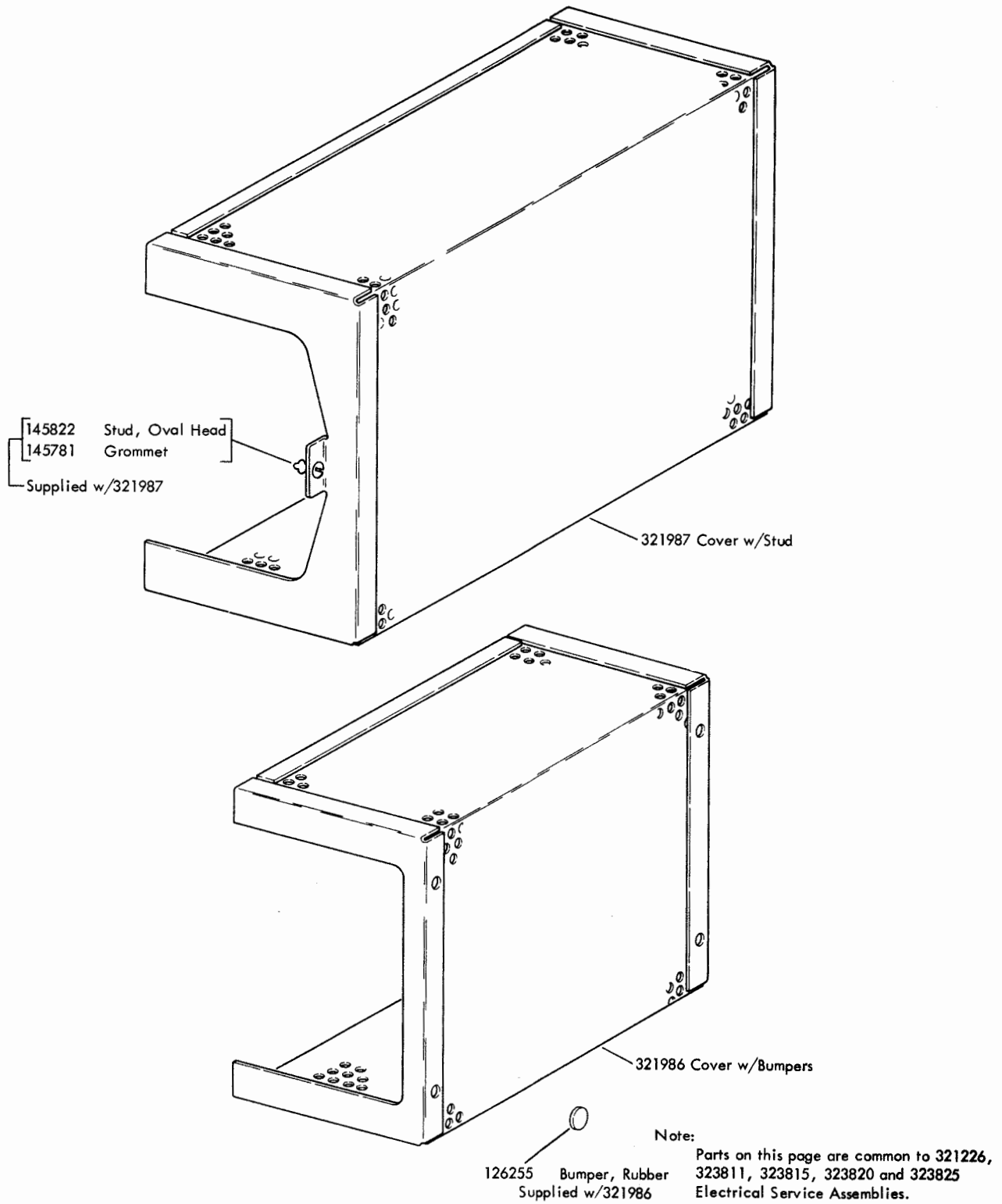
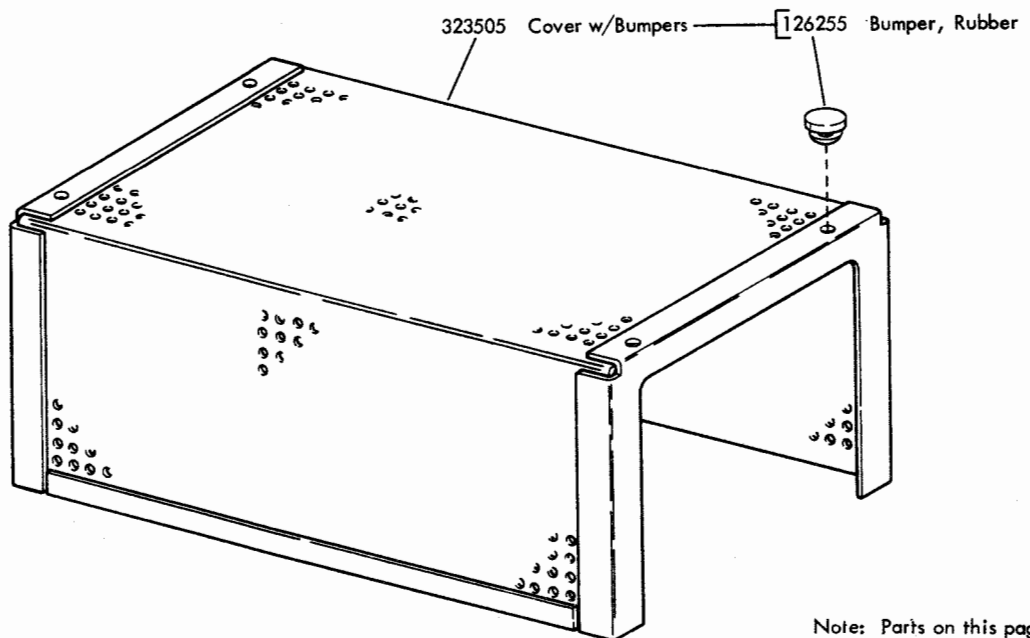
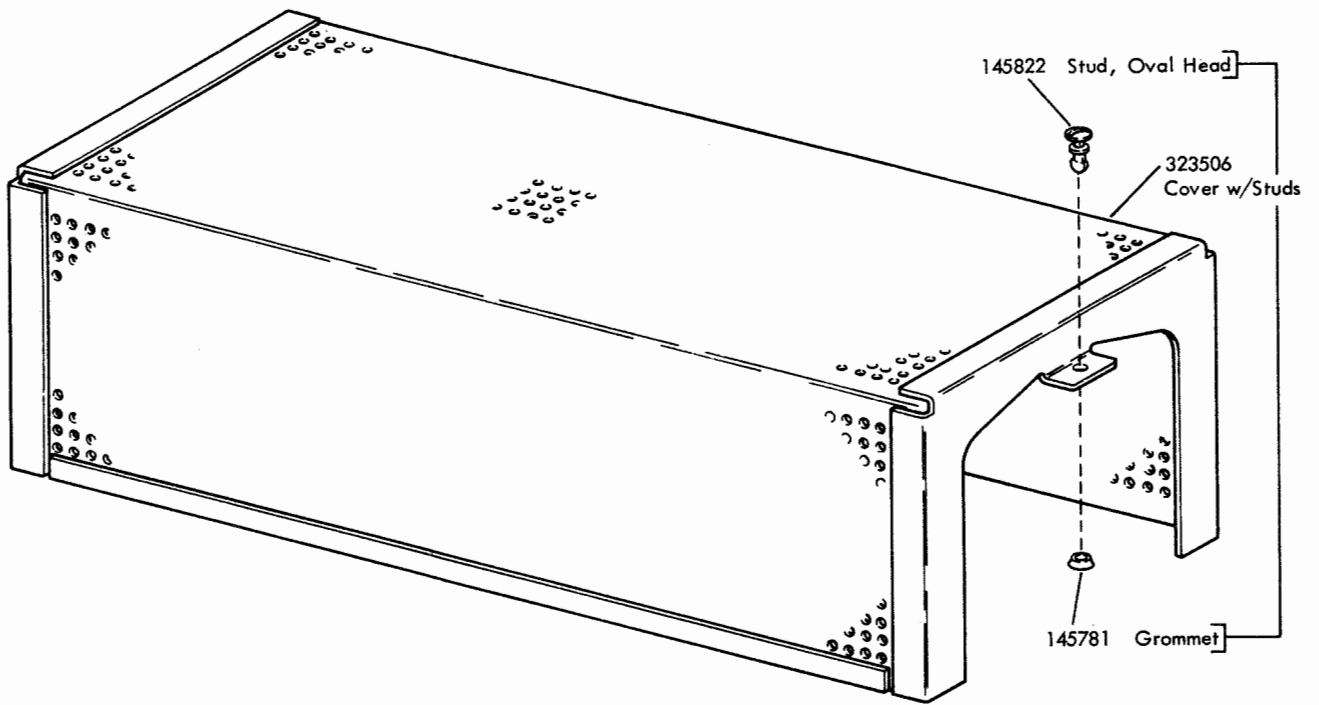


Figure 15 - Electrical Service Assembly Covers



Note: Parts on this page are common to 321228 and 323814 Electrical Service Assemblies.

Figure 16 - Electrical Service Assembly Covers

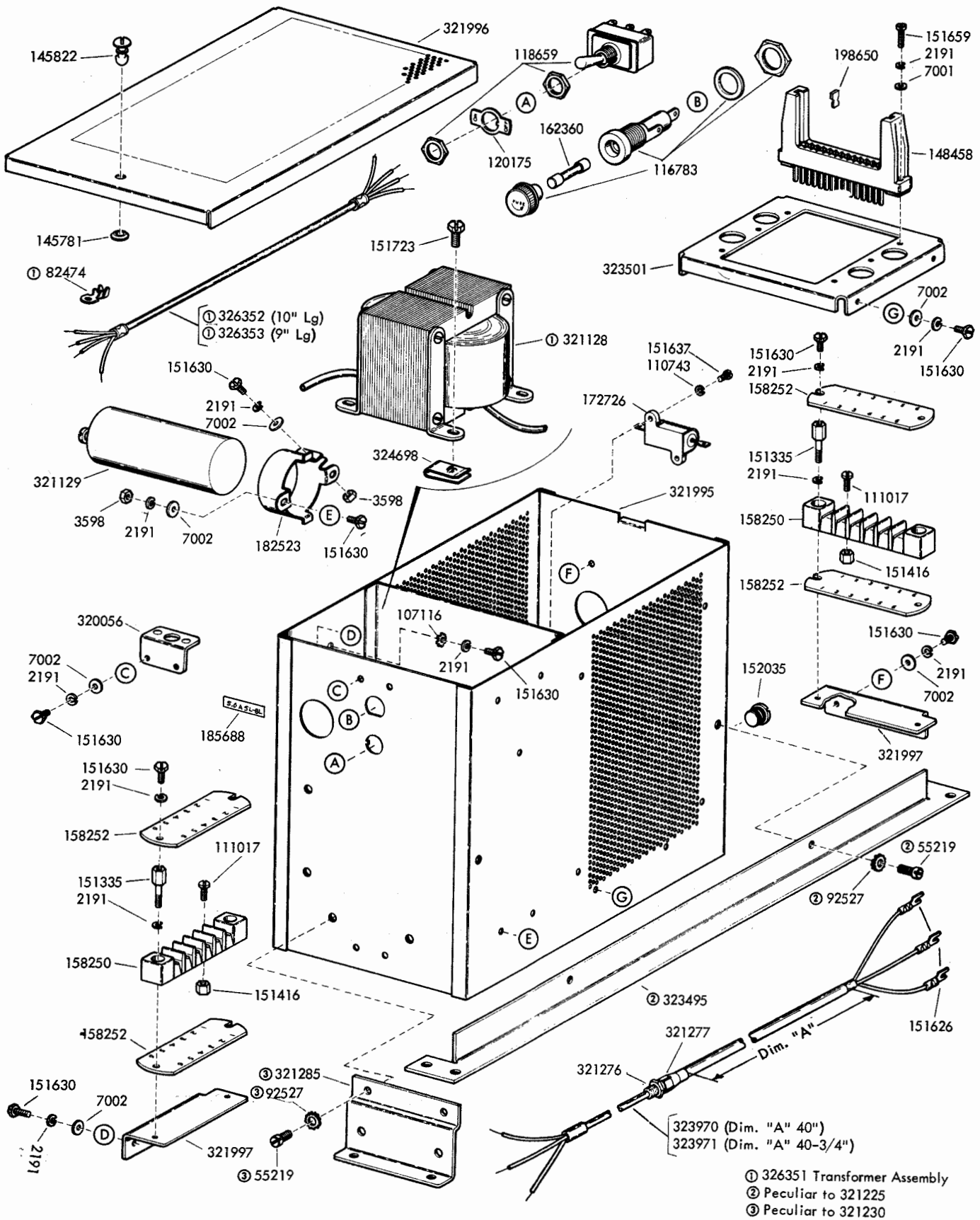


Figure 17 - 321225 (1 CMD - Rack Mounted) and 321230 (1 CMD - Table Mounted) Electrical Service Assemblies

NUMERICAL INDEX - FIGURE 17

Part Number	Description	Part Number	Description
2191	Washer, Lock	162360	Fuse, .8 Amp SL-BL
3598	Nut, 6-40 Hex	172726	Resistor, 250 Ohm
7002	Washer, Flat	182523	Clamp, Mounting
55219	Screw, 8-32 x 3/8 Fil	185688	Plate, Identification
82474	Terminal	198650	Key, Polarizing
92527	Washer, Lock	320056	Bracket
107116	Washer, Lock	321128	Transformer, Power
111017	Screw, 6-40 x 5/16 Fil	321129	Capacitor, 750 MFD
116783	Holder, Fuse	321225	Service Assembly, Electrical
118659	Switch, Toggle	321230	Service Assembly, Electrical
120175	Plate, ON-OFF	321276	Bushing
145781	Grommet	321277	Clamp
145822	Stud, Oval Head	321285	Bracket, Mounting
148458	Connector, 15 Pt Circuit Card	321995	Container, Outer
151335	Stud	321996	Cover
151416	Nut, 6-40 Hex	321997	Bracket
151626	Terminal	323495	Bracket
151630	Screw, 6-40 x 1/4 Hex	323501	Bracket, Connector Mounting
151637	Screw, 4-40 x 1/4 Fil	323970	Cable Assembly
151659	Screw, 6-40 x 1/4 Fil	323971	Cable Assembly
151723	Screw, 10-32 x 3/8 Hex	324698	Nut, #10 Speed
152035	Plug	326351	Transformer Assembly
158250	Block, Terminal	326352	Cable Assembly
158252	Insulator, Terminal Block	326353	Cable Assembly

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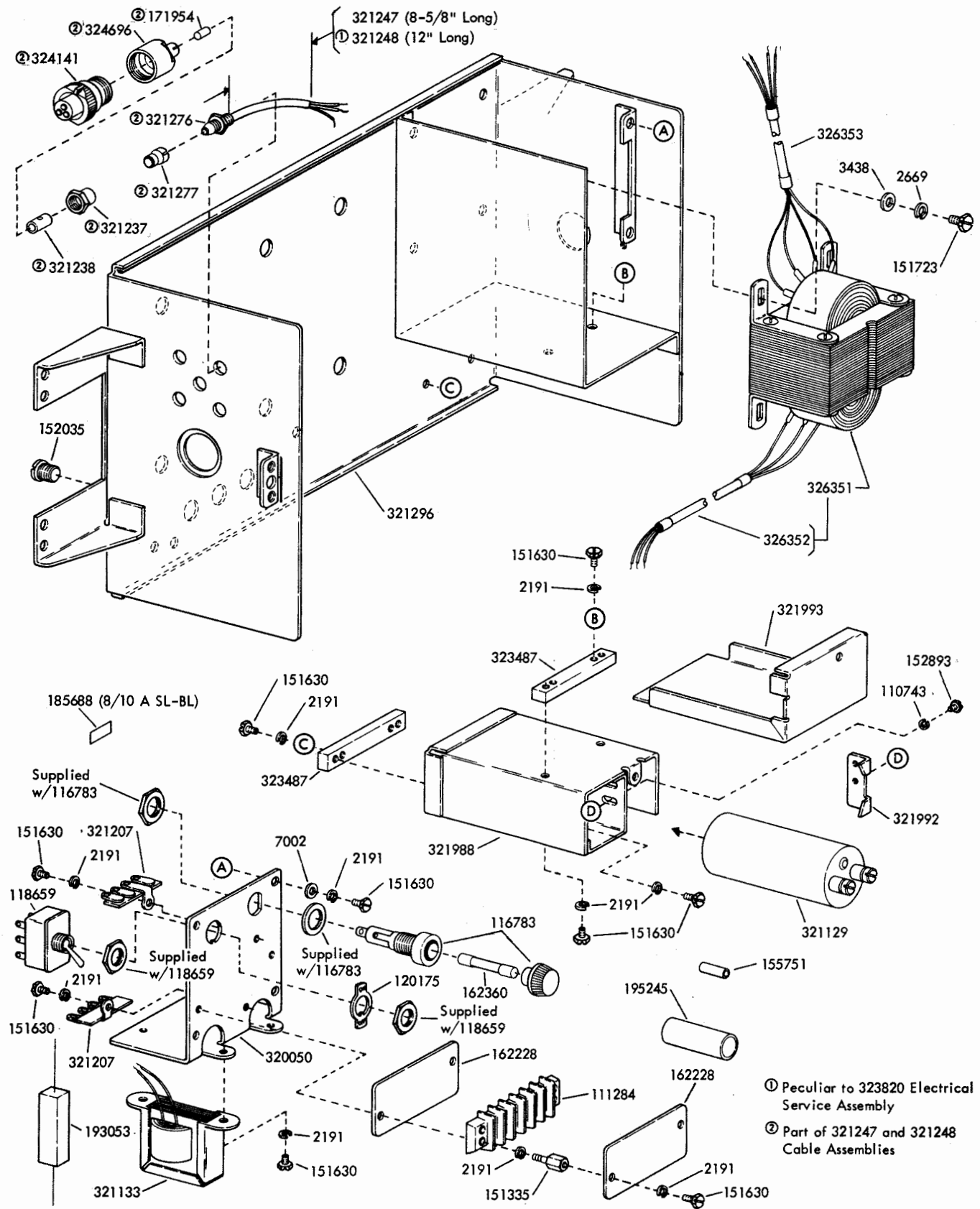


Figure 18 - 321226 (1 SMD) and 323820 (1 SMD and 1 LLK) Electrical Service Assemblies - Apparatus Rack Mounted (continued to Figure 19)

NUMERICAL INDEX - FIGURE 18

Part Number	Description	Part Number	Description
2191	Washer, Lock	320050	Plate, Mounting
2669	Washer, Lock	321129	Capacitor
3438	Washer, Flat	321133	Inductor
7002	Washer, Flat	321207	Strip Terminal
110743	Washer, Lock	321226	Service Assembly, Electrical
111284	Block, Terminal	321237	Nut, 3/8-32 Spl
116783	Holder, Fuse	321238	Sleeve
118659	Switch, DP-DT Toggle	321247	Cable Assembly
120175	Plate, ON-OFF	321248	Cable Assembly
151335	Stud	321276	Bushing
151630	Screw, 6-40 x 1/4 Hex	321277	Clamp
151723	Screw, 10-32 x 3/8 Hex	321296	Frame, Outer
152035	Plug	321988	Container
152893	Screw, 4-40 x 1/4 Hex	321992	Bracket
155751	Sleeve, 1/8 ID x 1" Lg Insulating	321993	Cover
162228	Insulator	323487	Spacer
162360	Fuse, 8/10 Amp, SL-BL	323820	Service Assembly, Electrical
171954	Connector, Blue Shielding	324141	Connector, 3 Pt Receptacle
185688	Plate, Designation	324696	Coupling, Connector
193053	Capacitor, 2 MFD	326351	Transformer Assembly
195245	Sleeve, 1/2 ID x 1-1/2 Lg Insulating	326352	Cable Assembly
		326353	Cable Assembly

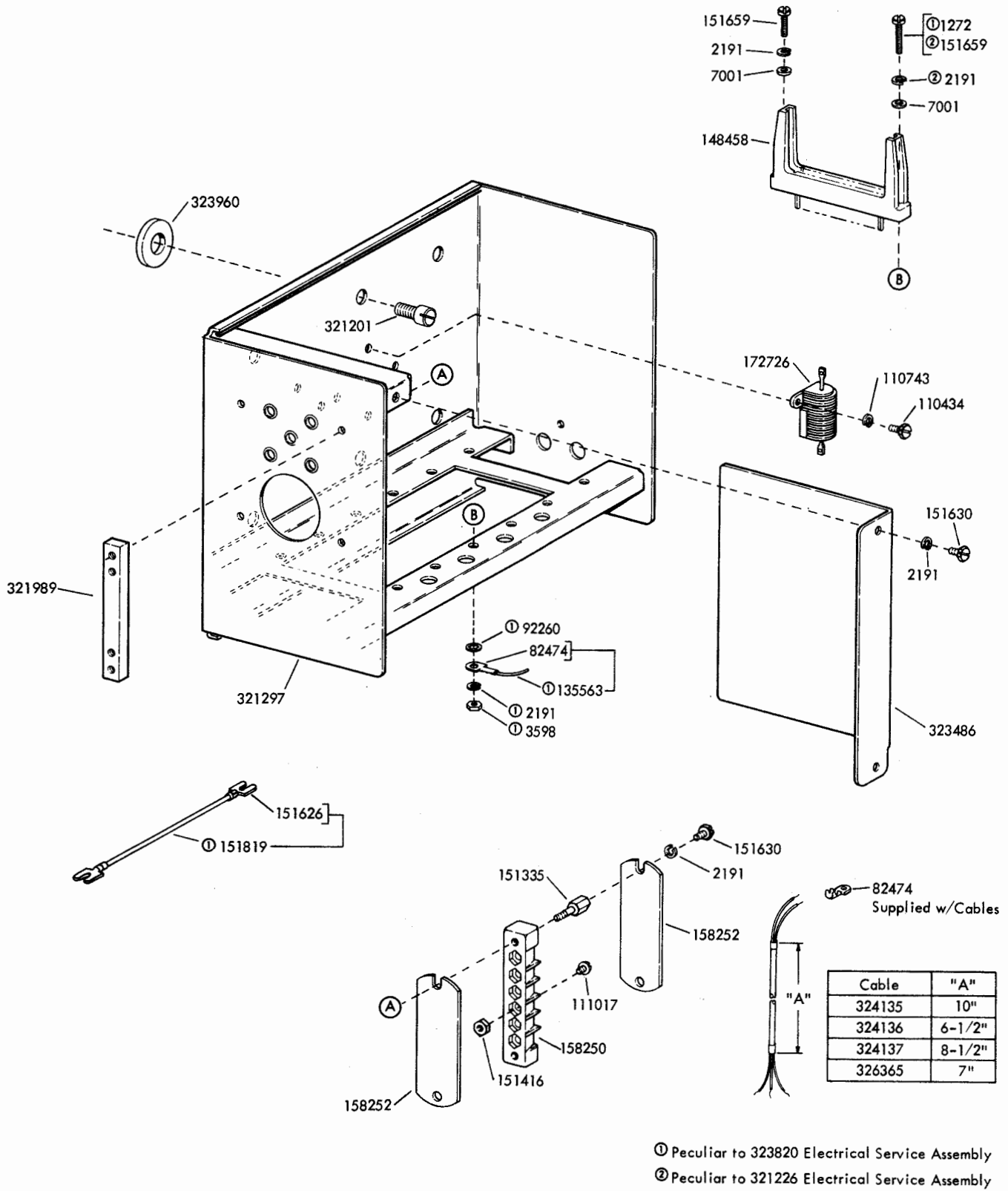


Figure 19 - 321226 (1 SMD) and 323820 (1 SMD and 1 LLK) Electrical Service Assemblies Apparatus Rack Mounted (continued from Figure 18)

NUMERICAL INDEX - FIGURE 19

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	151819	Jumper, 3" Black
2191	Washer, Lock	158250	Block, Terminal
3598	Nut, 6-40 Hex	158252	Insulator, Terminal Block
7001	Washer, Flat	172726	Resistor, 250 Ohm
82474	Terminal	321201	Screw, 1/4-20 x 1/2 Fil
92260	Washer, Lock	321226	Service Assembly, Electrical
110434	Screw, 4-40 x 3/16 Fil	321297	Frame, Inner
110743	Washer, Lock	321989	Spacer
111017	Screw, 6-40 x 5/16 Fil	323486	Cover
135563	Jumper, 2-3/4" Green	323820	Service Assembly, Electrical
148458	Connector, 15 Pt Circuit Card	323960	Spacer
151335	Stud	324135	Cable
151416	Nut, 6-40 Hex	324136	Cable
151626	Terminal	324137	Cable
151630	Screw, 6-40 x 1/4 Hex	326365	Cable
151659	Screw, 6-40 x 1/4 Fil		

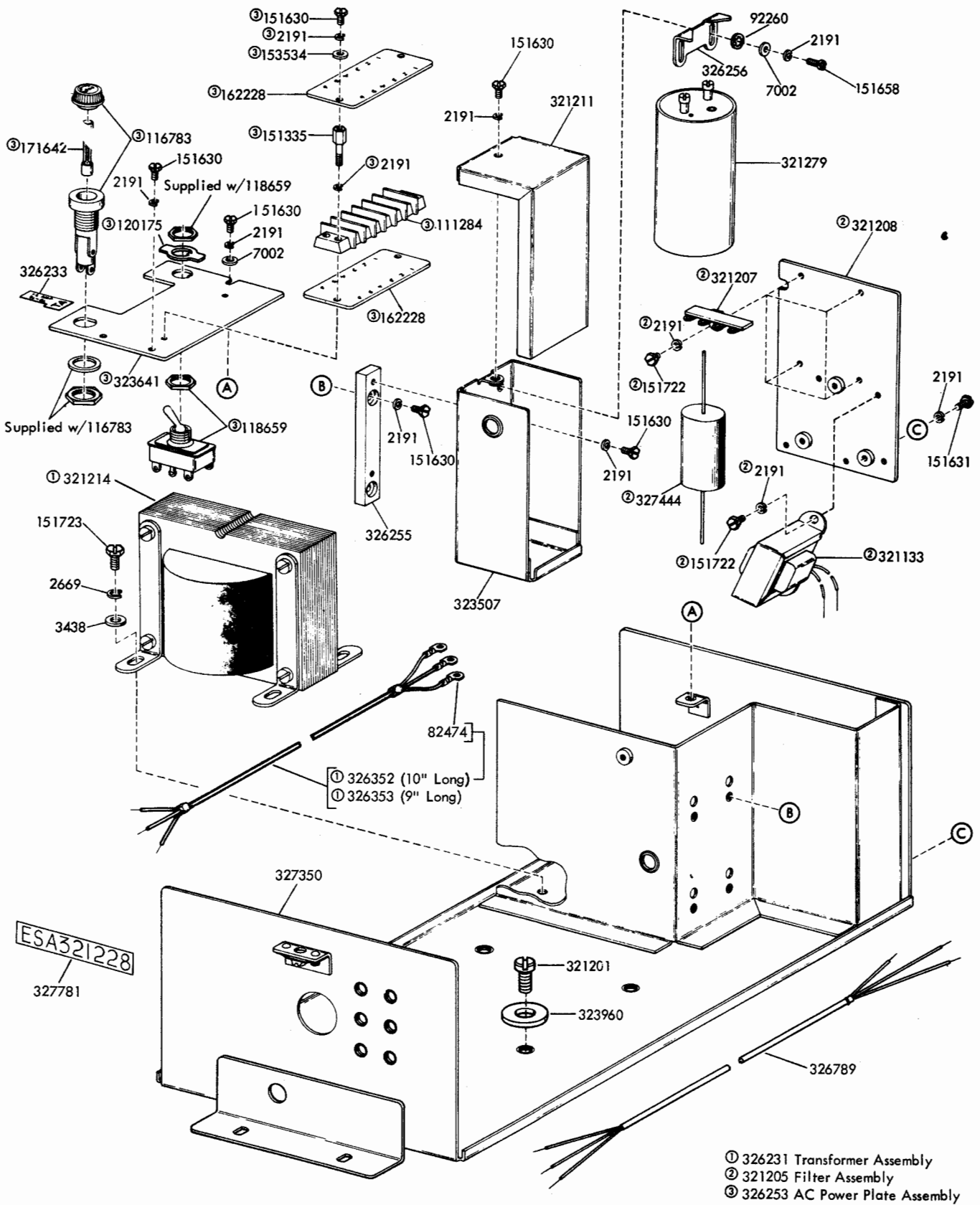


Figure 20 - 321228 Electrical Service Assembly
(continued to Figure 21)

NUMERICAL INDEX - FIGURE 20

Part Number	Description	Part Number	Description
2191	Washer, Lock	321207	Strip, Terminal
2669	Washer, Lock	321208	Plate
3438	Washer, Flat	321211	Cover
7002	Washer, Flat	321214	Transformer
82474	Terminal	321228	Service Assembly, Electrical
92260	Washer, Lock	321279	Capacitor, 1300 MFD
111284	Block, Terminal	323507	Container
116783	Holder, Fuse	323641	Plate
118659	Switch, Toggle	323960	Spacer
120175	Plate, ON-OFF	326231	Transformer Assembly
151335	Stud	326233	Decalcomania
151630	Screw, 6-40 x 1/4 Hex	326253	Plate Assembly, AC Power
515631	Screw, 6-40 x 5/16 Hex	326255	Spacer
151658	Screw, 6-40 x 5/16 Fil	326256	Bracket
151722	Screw, 6-40 x 3/16 Hex	326352	Cable Assembly
151723	Screw, 10-32 x 3/8 Hex	326353	Cable Assembly
153534	Washer, Flat	326789	Cable
162228	Insulator, Terminal Block	327350	Frame, Outer
171643	Fuse, SL-BL 1.6 Amp	327444	Capacitor, 2 MFD
321133	Inductor	327781	Decalcomania
321201	Screw, 1/4-20 x 1/2 Fil		
321205	Filter Assembly		

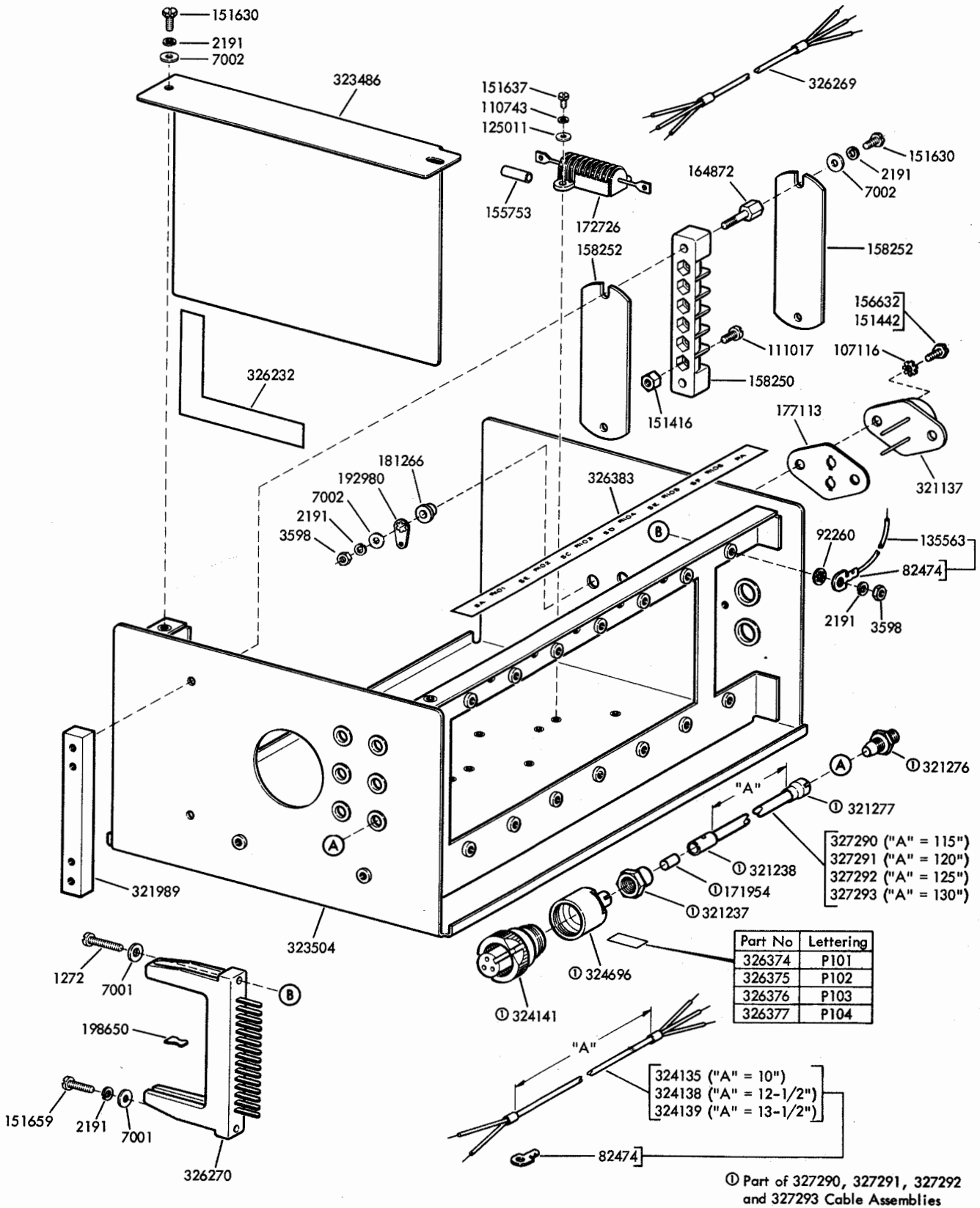


Figure 21 - 321228 Electrical Service Assembly
(continued from Figure 20)

NUMERICAL INDEX - FIGURE 21

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	321228	Service Assembly, Electrical
2191	Washer, Lock	321237	Nut, 3/8-32 Spl
3598	Nut, 6-40 Hex	321238	Sleeve
7001	Washer, Flat	321276	Bushing
7002	Washer, Flat	321277	Clamp
82474	Terminal	321989	Spacer
92260	Washer, Lock	323486	Cover
107116	Washer, Lock	323504	Frame, Inner
110743	Washer, Lock	324135	Cable
111017	Screw, 6-40 x 5/16 Fil	324138	Cable
125011	Washer, Flat	324139	Cable
135563	Jumper, 2-3/4" Green	324141	Connector, 3 Pt Receptacle
151416	Nut, 6-40 Hex	324696	Coupling, Connector
151442	Screw, 6-40 x 1/2 Hex	326232	Decalcomania
151630	Screw, 6-40 x 1/4 Hex	326269	Cable
151637	Screw, 4-40 x 1/4 Fil	326270	Connector, 15Pt Circuit Card
151659	Screw, 6-40 x 1/2 Fil	326374	Label
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	326375	Label
156632	Screw, 6-40 x 13/32 Hex	326376	Label
158250	Block, Terminal	326377	Label
158252	insulator, Terminal Block	326383	Decalcomania
164872	Stud	327290	Cable Assembly
171954	Connector, Blue Shielding	327291	Cable Assembly
172726	Reisitor, 250 Ohm	327292	Cable Assembly
177113	Insulator	327293	Cable Assembly
181266	Bushing, Insulating		
192980	Lug, Terminal		
198650	Key, Polarizing		
321137	Transistor, Power		

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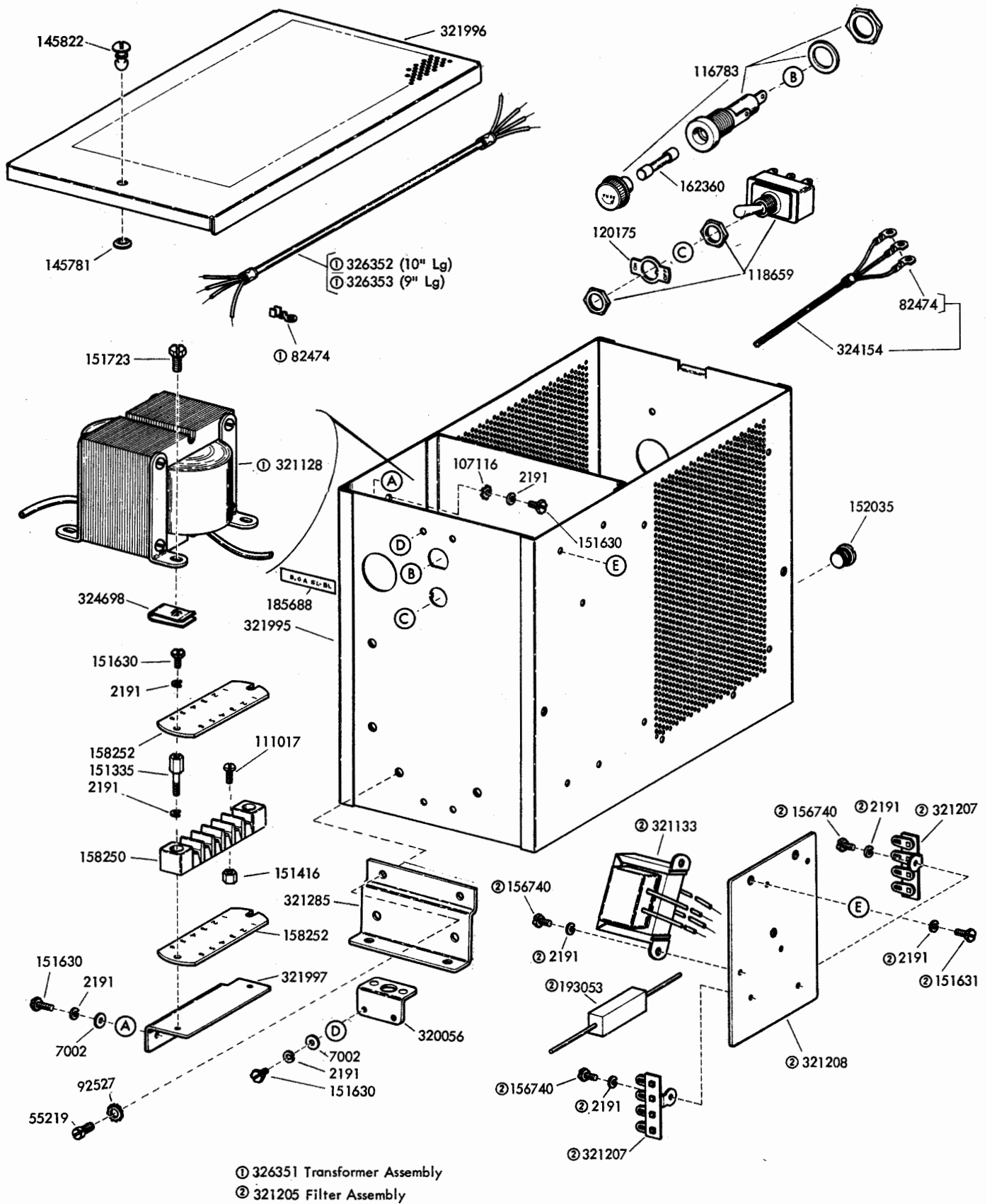


Figure 22 - 321231 (1 SMD) and 323813 (1 SMD and 1 LLK) Electrical Service Assemblies - Table Mounted (continued to Figure 23)

NUMERICAL INDEX - FIGURE 22

Part Number	Description	Part Number	Description
2191	Washer, Lock	162360	Fuse, .8 Amp SL-BL
7002	Washer, Flat	185688	Plate, Identification
55219	Screw, 8-32 x 3/8 Fil	193053	Capacitor, 2 MFD
82474	Terminal	320056	Bracket
92527	Washer, Lock	321128	Transformer, Power
107116	Washer, Lock	321133	Inductor
111017	Screw, 6-40 x 5/16 Fil	321205	Filter Assembly
116783	Holder, Fuse	321207	Strip, Terminal
118659	Switch, Toggle	321208	Plate
120175	Plate, ON-OFF	321231	Service Assembly, Electrical
145781	Grommet	321285	Bracket, Mounting
145822	Stud, Oval Head	321995	Container, Outer
151335	Stud	321996	Cover
151416	Nut, 6-40 Hex	321997	Bracket
151630	Screw, 6-40 x 1/4 Hex	323813	Service Assembly, Electrical
151723	Screw, 10-32 x 3/8 Hex	324154	Cable
152035	Plug	324698	Nut, #10 Speed
156740	Screw, 6-40 x 7/32 Hex	326351	Transformer Assembly
158250	Block, Terminal	326352	Cable Assembly
158252	Insulator, Terminal Block	326353	Cable Assembly

SPECIFICATION 50505S

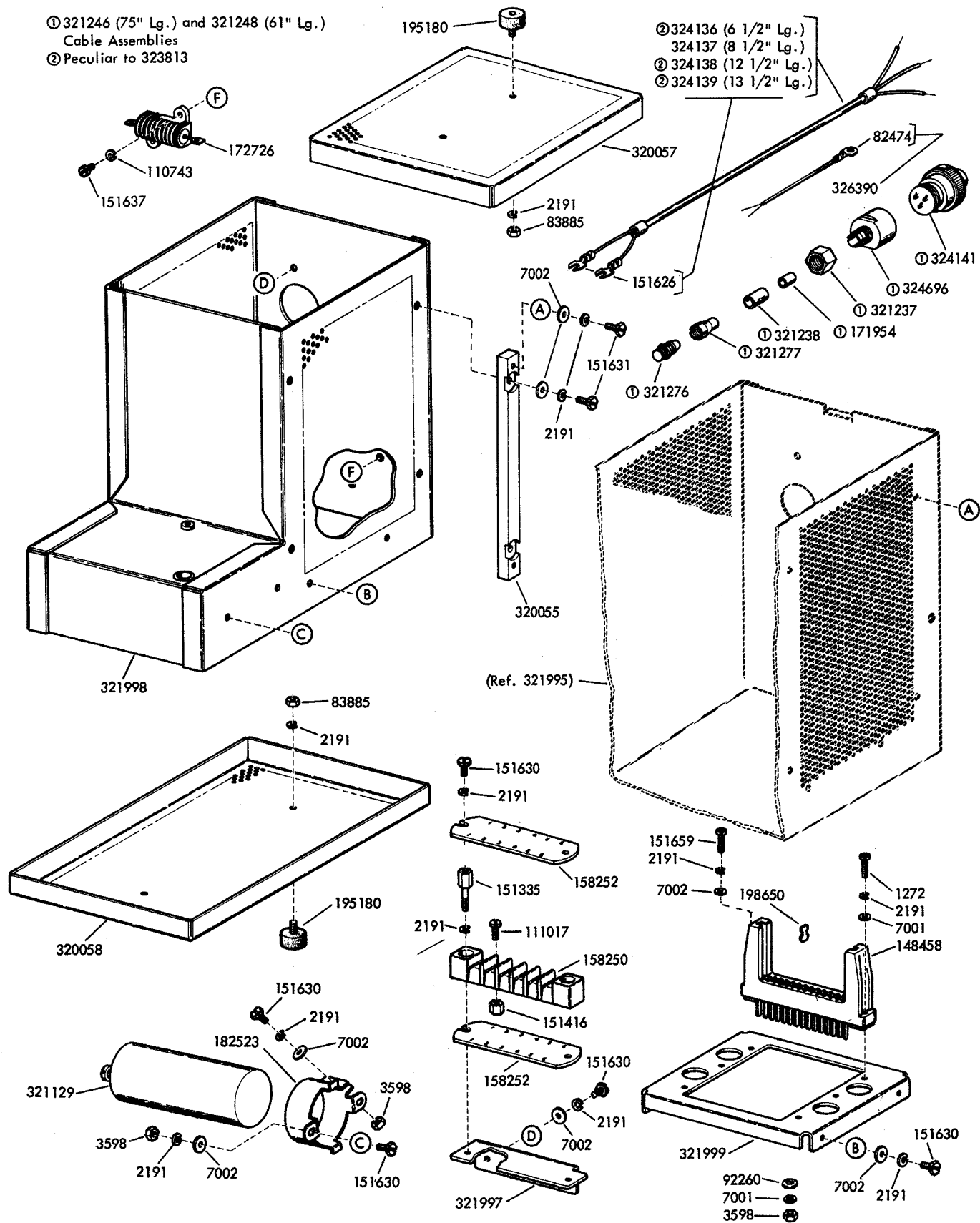


Figure 23 - 321231 (1 SMD) and 323813 (1 SMD and 1 LLK) Electrical Service Assemblies - Table Mounted (continued from Figure 22)

NUMERICAL INDEX - FIGURE 23

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	198650	Key, Polarizing
2191	Washer, Lock	320055	Spacer
3598	Nut, 6-40 Hex	320057	Cover, Top
7001	Washer, Flat	320058	Cover, Bottom
7002	Washer, Flat	321129	Capacitor, 750 MFD
82474	Terminal	321231	Service Assembly, Electrical
83885	Nut, 6-32 Hex	321237	Nut, 3/8-32 Spl
92260	Washer, Lock	321238	Sleeve
110743	Washer, Lock	321246	Cable Assembly
144216	Connector, Insulated Red Shielding	321248	Cable Assembly
148458	Connector, 15 Pt Circuit Card	321276	Bushing
151335	Stud	321277	Clamp
151416	Nut, 6-40 Hex	321995	Container, Outer
151626	Terminal	321997	Bracket
151630	Screw, 6-40 x 1/4 Hex	321998	Container, Inner
151631	Screw, 6-40 x 5/16 Hex	321999	Bracket, Connector Mounting
151637	Screw, 4-40 x 1/4 Fil	323813	Service Assembly, Electrical
151659	Screw, 6-40 x 1/4 Fil	324136	Cable
158250	Block, Terminal	324137	Cable
158252	Insulator, Terminal Block	324138	Cable
171954	Connector, Blue Shielding	324139	Cable
172726	Resistor, 250 Ohm	324131	Connector, 3 Pt Receptacle
182523	Clamp, Mounting	324696	Coupling, Connector
195180	Bumper, Rubber	326390	Jumper w/Terminal (9" Red)

SPECIFICATION 50505S

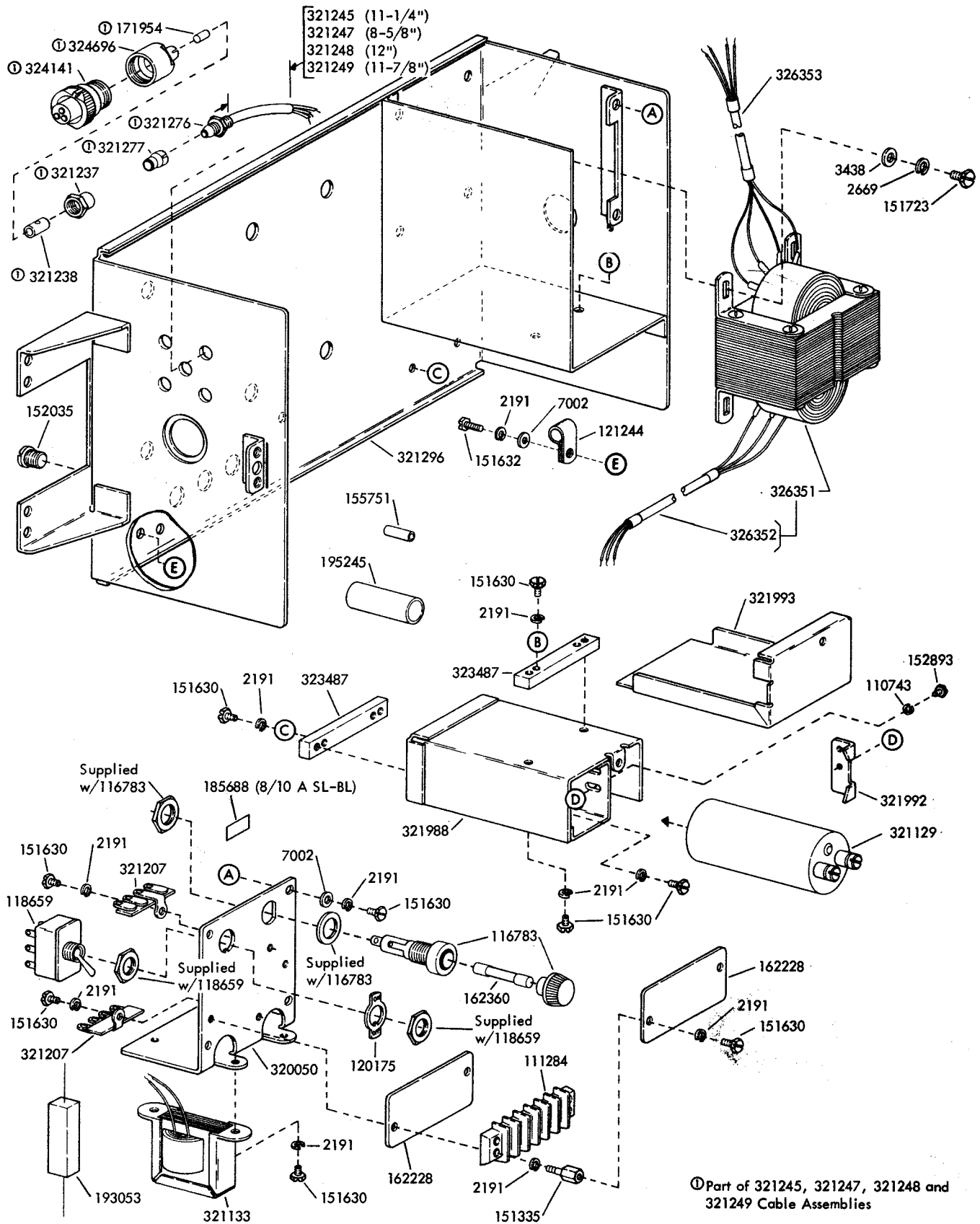


Figure 24 - 323811 (2 SMD and 2 LLK), 323815 (3 SMD and 2 LLK) and 323825 (1 SMD and 2 LLK) Electrical Service Assemblies - Apparatus Rack Mounted (continued to Figure 25)

NUMERICAL INDEX - FIGURE 24

Part Number	Description	Part Number	Description
2191	Washer, Lock	321129	Capacitor, 750 MFD
2669	Washer, Lock	321133	Inductor
3438	Washer, Flat	321207	Strip, Terminal
7002	Washer, Flat	321237	Nut, 3/8-32 Spl
110743	Washer, Lock	321238	Sleeve
111284	Block, Terminal	321245	Cable Assembly
116783	Holder, Fuse	321247	Cable Assembly
118659	Switch, DP-DT Toggle	321248	Cable Assembly
120175	Plate, ON-OFF	321249	Cable Assembly
121244	Clamp, ID Cable	321276	Bushing
151335	Stud	321277	Clamp
151630	Screw, 6-40 x 1/4 Hex	321296	Frame, Outer
151632	Screw, 6-40 x 3/8 Hex	321988	Container
151723	Screw, 10-32 x 3/8 Hex	321992	Bracket
152035	Plug	321993	Cover
152893	Screw, 4-40 x 1/4 Hex	323487	Spacer
155751	Sleeve, 1/8 ID x 1" Lg Insulating	323811	Service Assembly, Electrical
162228	Insulator	323815	Service Assembly, Electrical
162360	Fuse, 8/10 Amp, SL-BL	323825	Service Assembly, Electrical
171954	Connector, Blue Shielding	324141	Connector, 3 Pt Receptacle
185688	Plate, Designation	324696	Coupling, Connector
193053	Capacitor, 2 MFD	326351	Transformer Assembly
195245	Sleeve, 1/2 ID x 1-1/2 Lg Insulating	326352	Cable Assembly
320050	Plate, Mounting	326353	Cable Assembly

NUMERICAL INDEX - FIGURE 25

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	321296	Frame, Outer
2191	Washer, Lock	323486	Cover
3598	Nut, 6-40 Hex	323652	Relay, SP-ST Isolation
7001	Washer, Flat	323811	Service Assembly, Electrical
7002	Washer, Flat	323815	Service Assembly, Electrical
73175	Washer, Lock	323825	Service Assembly, Electrical
82474	Terminal	323849	Coil
92260	Washer, Lock	323960	Spacer
110434	Screw, 4-40 x 3/16 Fil	323961	Cover
110743	Washer, Lock	323966	Retainer
111017	Screw, 6-40 x 5/16 Fil	324135	Cable
135563	Jumper, 2-3/4" Green	324136	Cable
135575	Terminal	324137	Cable
148458	Connector, 15 Pt Circuit Card	324138	Cable
151335	Stud	324139	Cable
151416	Nut, 6-40 Hex	324145	Cable, Relay
151626	Terminal	324699	Cable, Relay
151630	Screw, 6-40 x 1/4 Hex	326365	Cable
151659	Screw, 6-40 x 1/2 Fil	326374	Label
151819	Jumper, 3" Black	326375	Label
155752	Sleeve, 5/16 ID x 1/2" Lg Insulating	326376	Label
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	326377	Label
158250	Block, Terminal	326378	Label
158252	Insulator	326390	Jumper, 9" Red
159404	Post	326391	Jumper, 9-1/2" White
172726	Resistor, 250 Ohm	326392	Jumper, 6-1/2" White
198650	Key, Polarizing	326393	Jumper, 6-1/2" Orange
321201	Screw, 1/4-20 x 1/4 Fil	326394	Jumper, 4" Red
		326395	Jumper, 4" White

SPECIFICATION 50505S

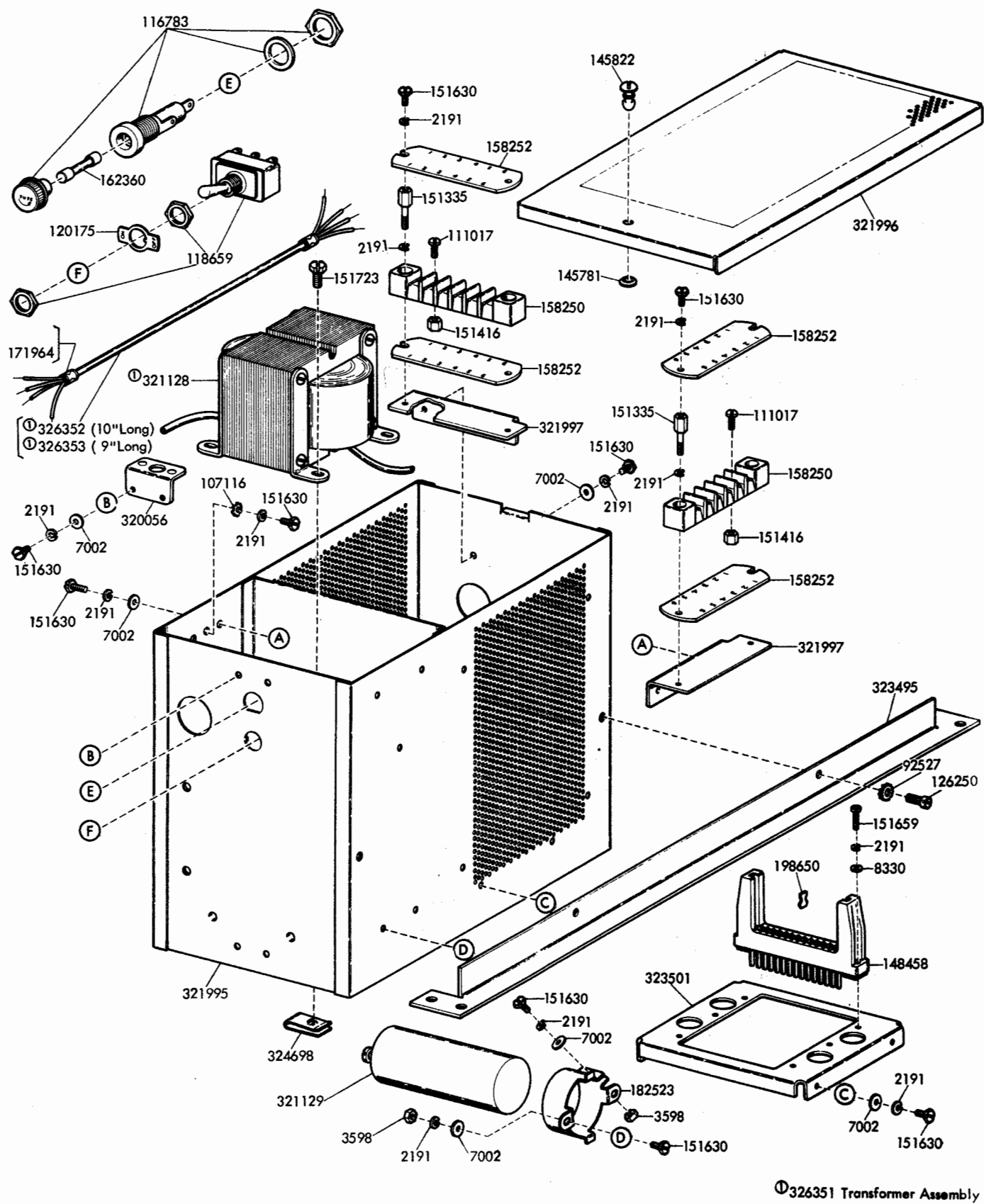


Figure 26 - 323812 (2 CMD) Electrical Service Assembly - Apparatus Rack Mounted (continued to Figure 27)

NUMERICAL INDEX - FIGURE 26

Part Number	Description	Part Number	Description
2191	Washer, Lock	158252	Insulator, Terminal Block
3598	Nut, 6-40 Hex	162360	Fuse, .8 Amp SL-BL
7002	Washer, Flat	171954	Connector, Blue Shielding
8330	Washer, Flat	171964	Connector, Orange Shielding
92527	Washer, Lock	182523	Clamp, Mounting
107116	Washer, Lock	198650	Key, Polarizing
111017	Screw, 6-40 x 5/16 Fil	320056	Bracket
116783	Holder, Fuse	321128	Transformer, Power
118659	Switch, Toggle	321129	Capacitor, 750 MFD
120175	Plate, ON-OFF	321995	Container, Outer
126250	Screw, 8-32 x 1/4 Fil	321996	Cover
145781	Grommet	321997	Bracket
145822	Stud, Oval Head	323495	Bracket
148458	Connector, 15 Pt Circuit Card	323501	Bracket, Connector Mounting
151335	Stud	323812	Service Assembly, Electrical
151416	Nut, 6-40 Hex	324698	Nut, #10 Speed
151630	Screw, 6-40 x 1/4 Hex	326351	Transformer Assembly
151659	Screw, 6-40 x 1/2 Fil	326352	Cable Assembly
151723	Screw, 10-32 x 3/8 Hex	326353	Cable Assembly
158250	Block, Terminal		

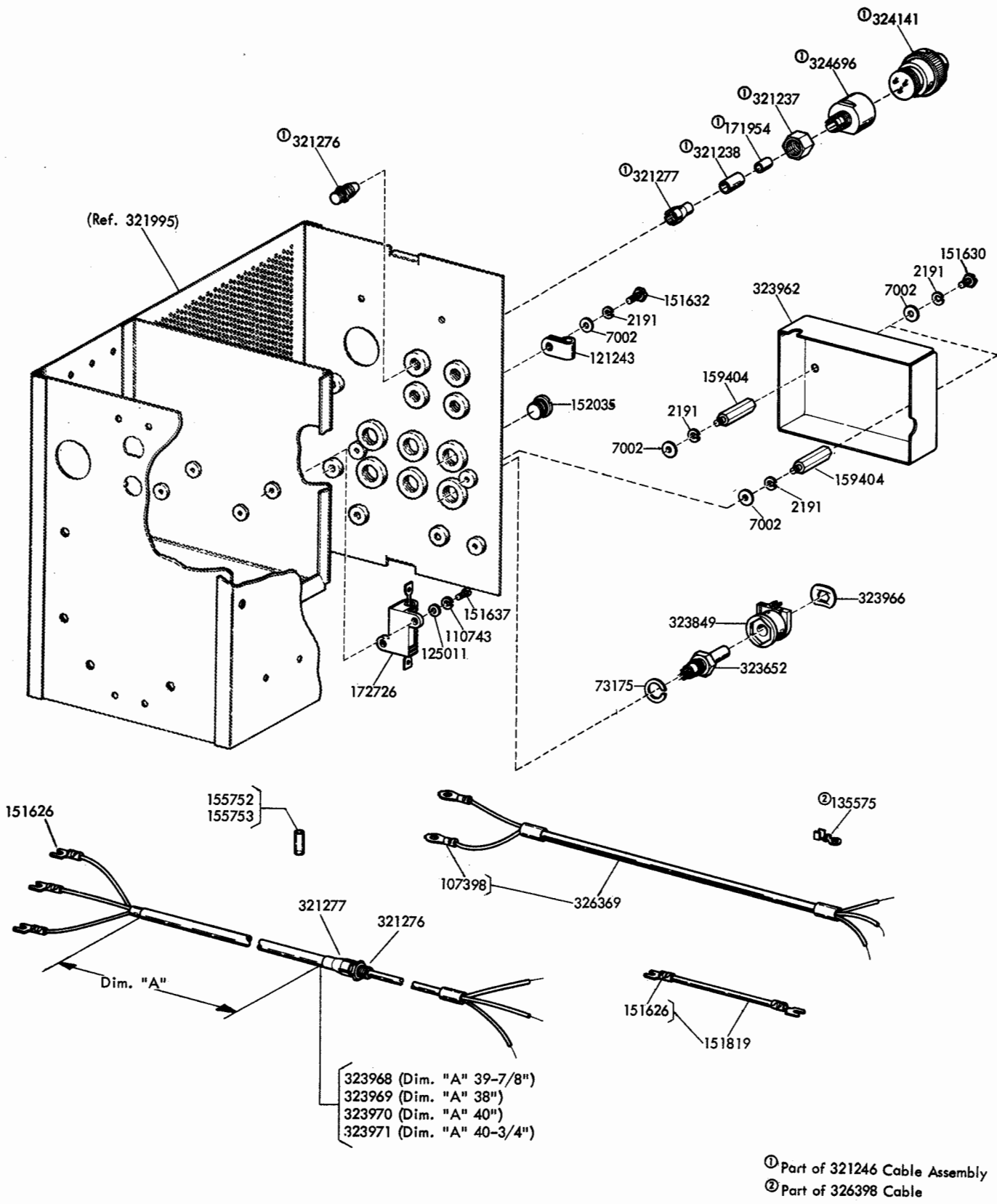


Figure 27 - 323812 (2 CMD) Electrical Service Assembly - Apparatus Rack Mounted (continued)

NUMERICAL INDEX - FIGURE 27

Part Number	Description	Part Number	Description
2191	Washer, Lock	172726	Resistor, 250 Ohm
7002	Washer, Flat	321237	Nut, 3/8-32 Spl
73175	Washer, Lock	321238	Sleeve
107398	Terminal	321246	Cable Assembly
110743	Washer, Lock	321276	Bushing
121243	Clamp 3/16 ID Cable	321277	Clamp
125011	Washer, Flat	321995	Container, Outer
135575	Terminal	323652	Relay, SP-ST Isolation
151626	Terminal	323812	Service Assembly, Electrical
151630	Screw, 6-40 x 1/4 Hex	323849	Coil
151632	Screw, 6-40 x 3/8 Hex	323962	Cover
151637	Screw, 4-40 x 1/4 Fil	323966	Retainer
151819	Jumper, 3" Black	323968	Cable Assembly
152035	Plug	323969	Cable Assembly
155752	Sleeve, 5/64 ID x 1/2" Lg Insulating	323970	Cable Assembly
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	323971	Cable Assembly
159404	Post	324141	Connector, 3 Pt Receptacle
171954	Connector, Blue Shielding	324696	Coupling, Connector
		326369	Cable
		326398	Cable

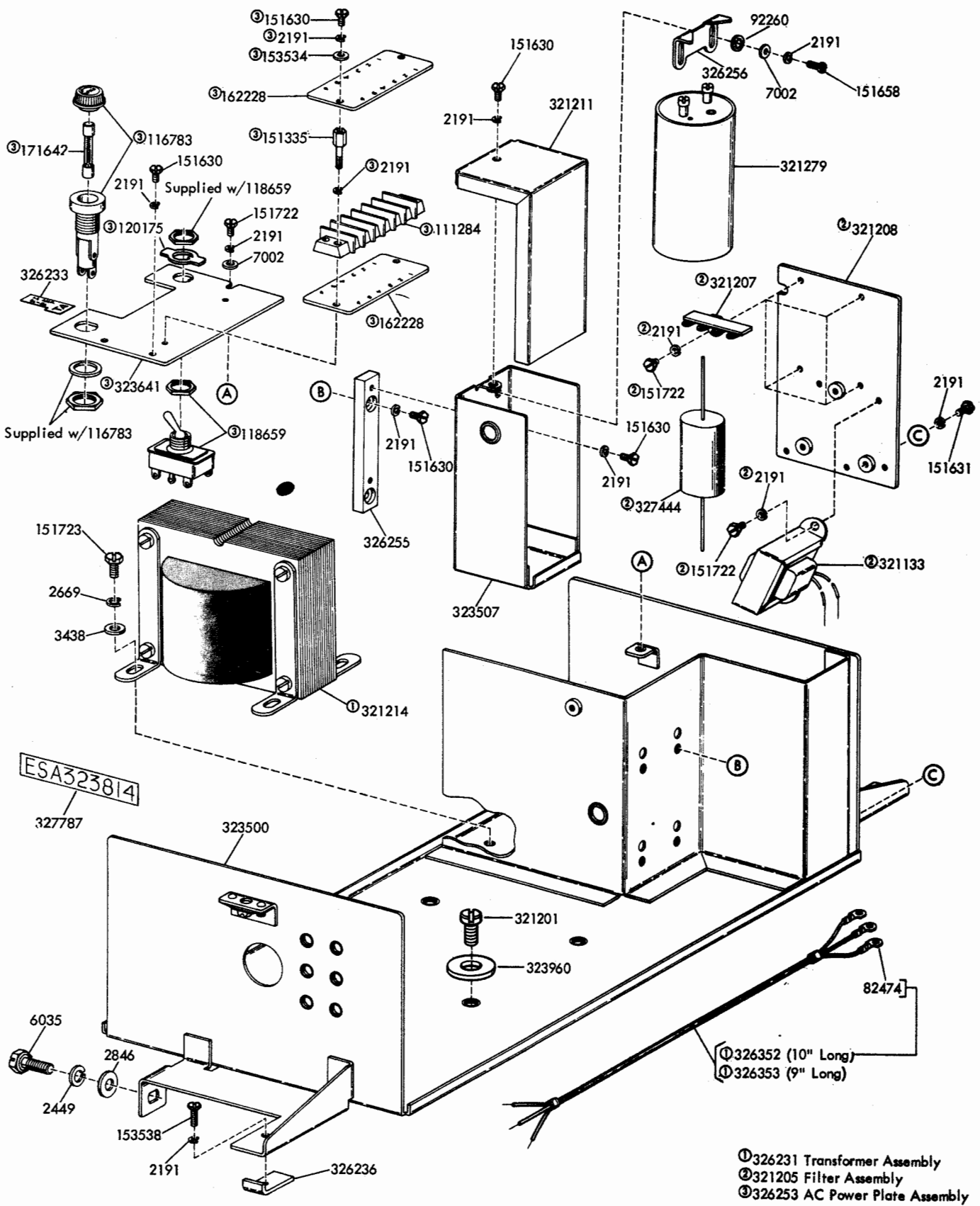


Figure 28 - 323814 Electrical Service Assembly
 (continued to Figure 29)

NUMERICAL INDEX - FIGURE 28

Part Number	Description	Part Number	Description
2191	Washer, Lock	321133	Inductor
2449	Washer, Lock	321201	Screw, 1/4-20 x 1/2 Fil
2669	Washer, Lock	321205	Filter Assembly
2846	Washer, Flat	321207	Strip, Terminal
3438	Washer, Flat	321208	Plate
6035	Screw, 1/4-20 x 5/8 Hex	321211	Cover
7002	Washer, Flat	321214	Transformer
82474	Terminal	321279	Capacitor, 1300 MFD
92260	Washer, Lock	323500	Frame, Outer
111284	Block, Terminal	323507	Container
116783	Holder, Fuse	323641	Plate
118659	Switch, Toggle	323814	Service Assembly Electrical
120175	Plate, ON-OFF		Spacer
151335	Stud	323960	Transformer Assembly
151630	Screw, 6-40 x 1/4 Hex	326231	Decalcomania
151631	Screw, 6-40 x 5/16 Hex	326233	Nut, Bracket
151658	Screw, 6-40 x 5/16 Fil	326236	Plate Assembly, AC Power
151722	Screw, 6-40 x 3/16 Hex	326253	Spacer
151723	Screw, 10-32 x 3/8 Hex	326255	Bracket
153534	Washer, Flat	326256	Cable Assembly
153538	Screw, 6-40 x 7/16 Hex	326352	Cable Assembly
162228	Insulator, Terminal	326353	Capacitor, 2 MFD
171642	Fuse, SL-BL 1.6 Amp	327444	Decalcomania
		327787	

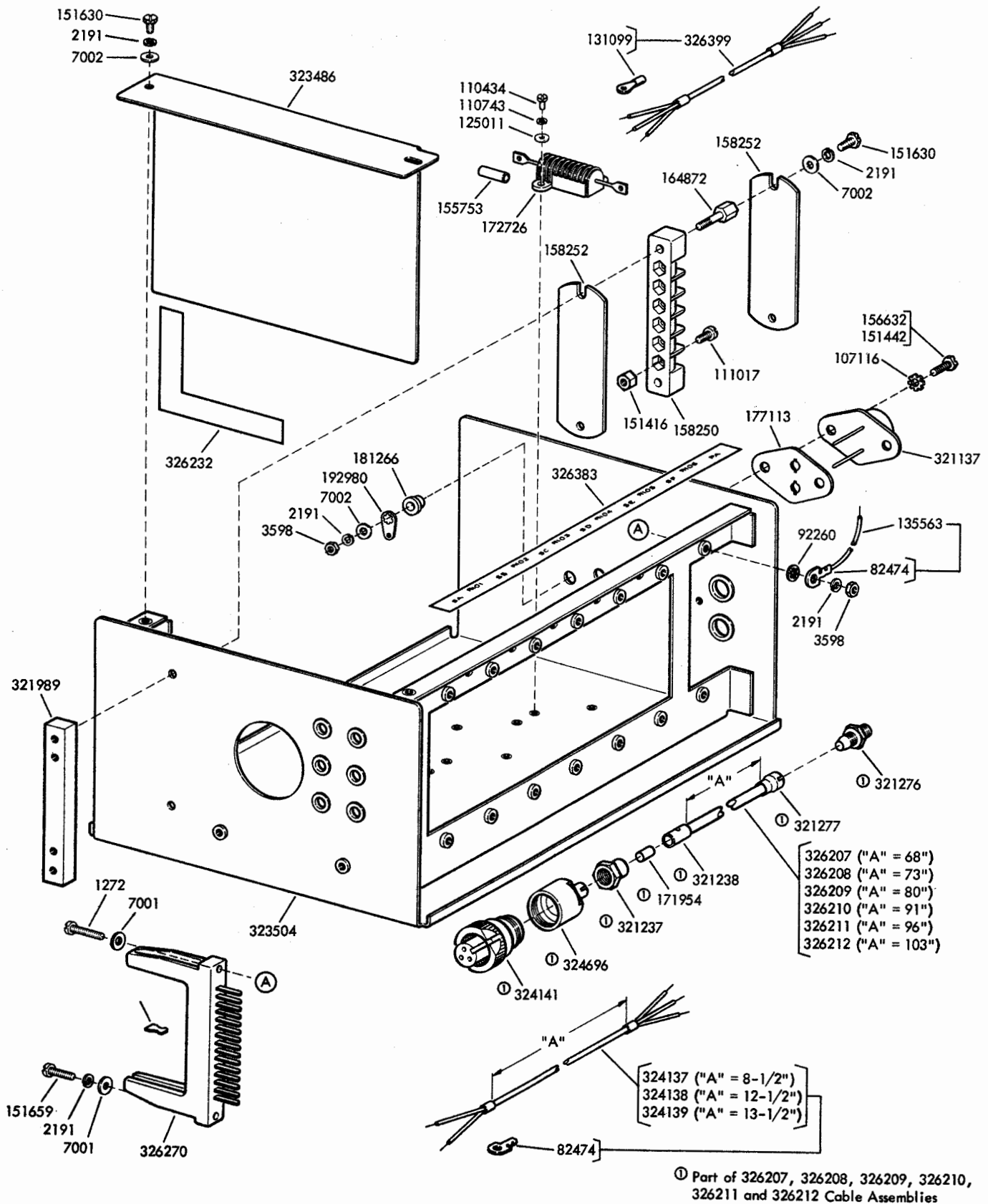


Figure 29 - 323814 Electrical Service Assembly
(continued from Figure 28)

NUMERICAL INDEX - FIGURE 29

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	192980	Terminal, Lug
2191	Washer, Lock	198650	Key, Polarizing
3598	Nut, 6-40 Hex	321137	Transistor, Power
7001	Washer, Flat	321237	Nut, 3/8-32 Spl
7002	Washer, Flat	321238	Sleeve
82474	Terminal	321276	Bushing
92260	Washer, Lock	321277	Clamp
107116	Washer, Lock	321989	Spacer
110434	Screw, 4-40 x 3/16 Fil	323486	Cover
110743	Washer, Lock	323504	Frame, Inner
111017	Screw, 6-40 x 5/16 Fil	323814	Service Assembly, Electrical
125011	Washer, Flat		
131099	Terminal	324137	Cable
135563	Jumper, 2-3/4" Green	324138	Cable
151416	Nut, 6-40 Hex	324139	Cable
151442	Screw, 6-40 x 1/2 Hex	324141	Connector, 3Pt Receptacle
151630	Screw, 6-40 x 1/4 Hex		
151659	Screw, 6-40 x 1/2 Fil	324696	Coupling, Connector
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	326207	Cable Assembly
		326208	Cable Assembly
156632	Screw, 6-40 x 13/32 Hex	326209	Cable Assembly
158250	Block, Terminal	326210	Cable Assembly
158252	Insulator, Terminal Block	326211	Cable Assembly
164872	Stud	326212	Cable Assembly
171954	Connector, Blue Shielding	326232	Decalomania
172726	Resistor, 250 Ohm	326270	Connector, 15Pt Circuit Card
177113	Insulator		
181266	Bushing, Insulating	326383	Decalomania
		326399	Cable w/Terminal

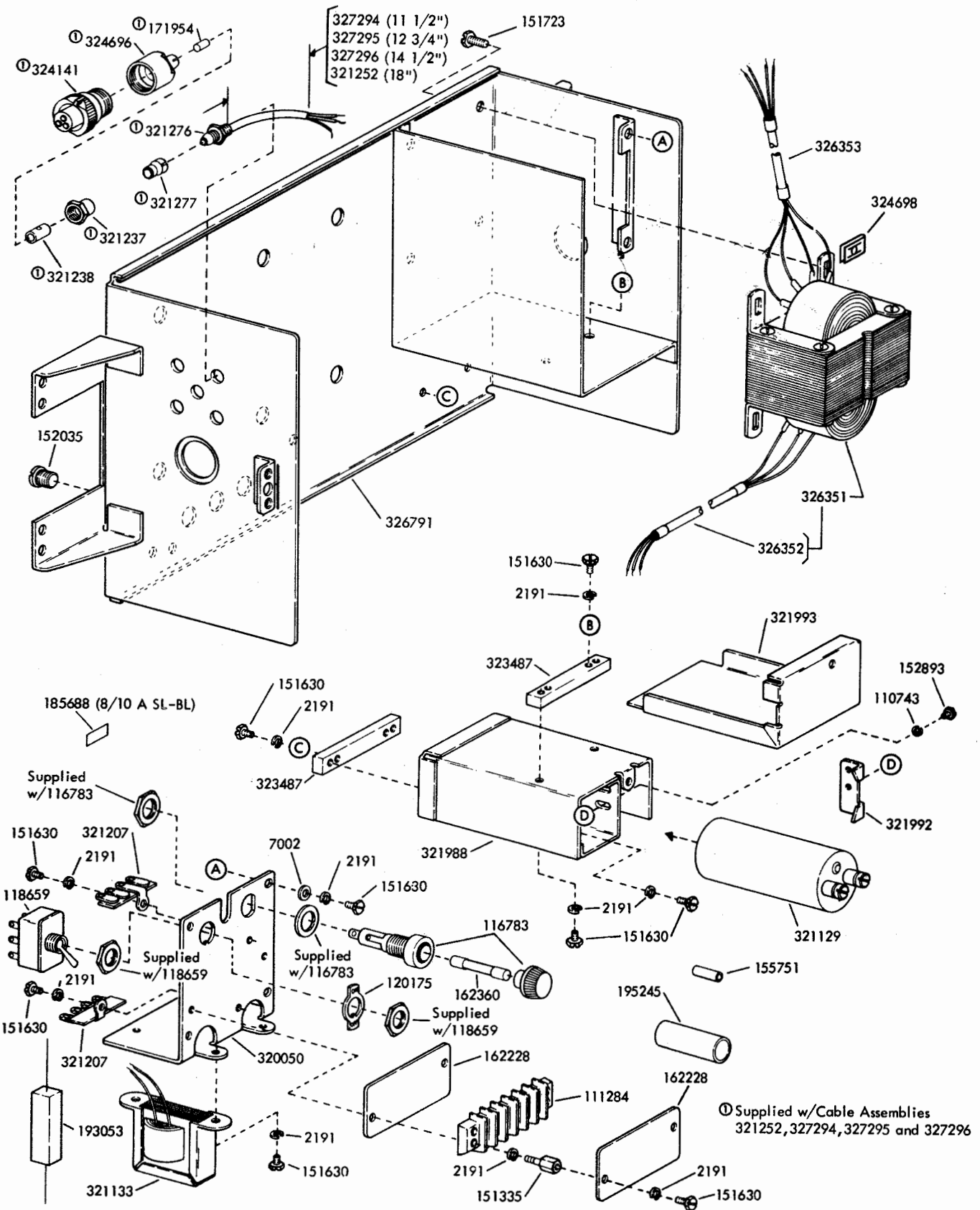


Figure 30 - 323821 Electrical Service Assembly
(continued to Figure 31)

NUMERICAL INDEX - FIGURE 30

Part Number	Description	Part Number	Description
2191	Washer, Lock	321207	Strip, Terminal
7002	Washer, Flat	321237	Nut, 3/8-32 Spl
110743	Washer, Lock	321238	Sleeve
111284	Block, Terminal	321252	Cable Assembly
116783	Holder, Fuse	321276	Bushing
118659	Switch, Toggle	321277	Clamp
120175	Plate, ON-OFF	321988	Container
151335	Stud	321992	Bracket
151630	Screw, 6-40 x 1/4 Hex	321993	Cover
151723	Screw, 10-32 x 3/8 Hex	323487	Spacer
152035	Plug	323821	Service Assembly, Electrical
152893	Screw, 4-40 x 1/4 Hex	324141	Connector, 3 Pt
155751	Sleeve, 1/8 ID x 1" Lg Insulating	324696	Receptacle
162228	Insulator, Terminal Board	324698	Coupling, Connector
162360	Fuse, SL-BL .8 Amp	326351	Nut, #10 Speed
171954	Connector, Blue Shielding	326352	Transformer Assembly
185688	Plate, Identification	326353	Cable Assembly
193053	Capacitor, 2 MFD	326791	Cable Assembly
195245	Sleeve, 1/2 ID x 1-1/2 " Lg Insulating	327294	Frame, Outer
320050	Plate, Mounting	327295	Cable Assembly
321129	Capacitor, 750 MFD	327296	Cable Assembly
321133	Inductor		

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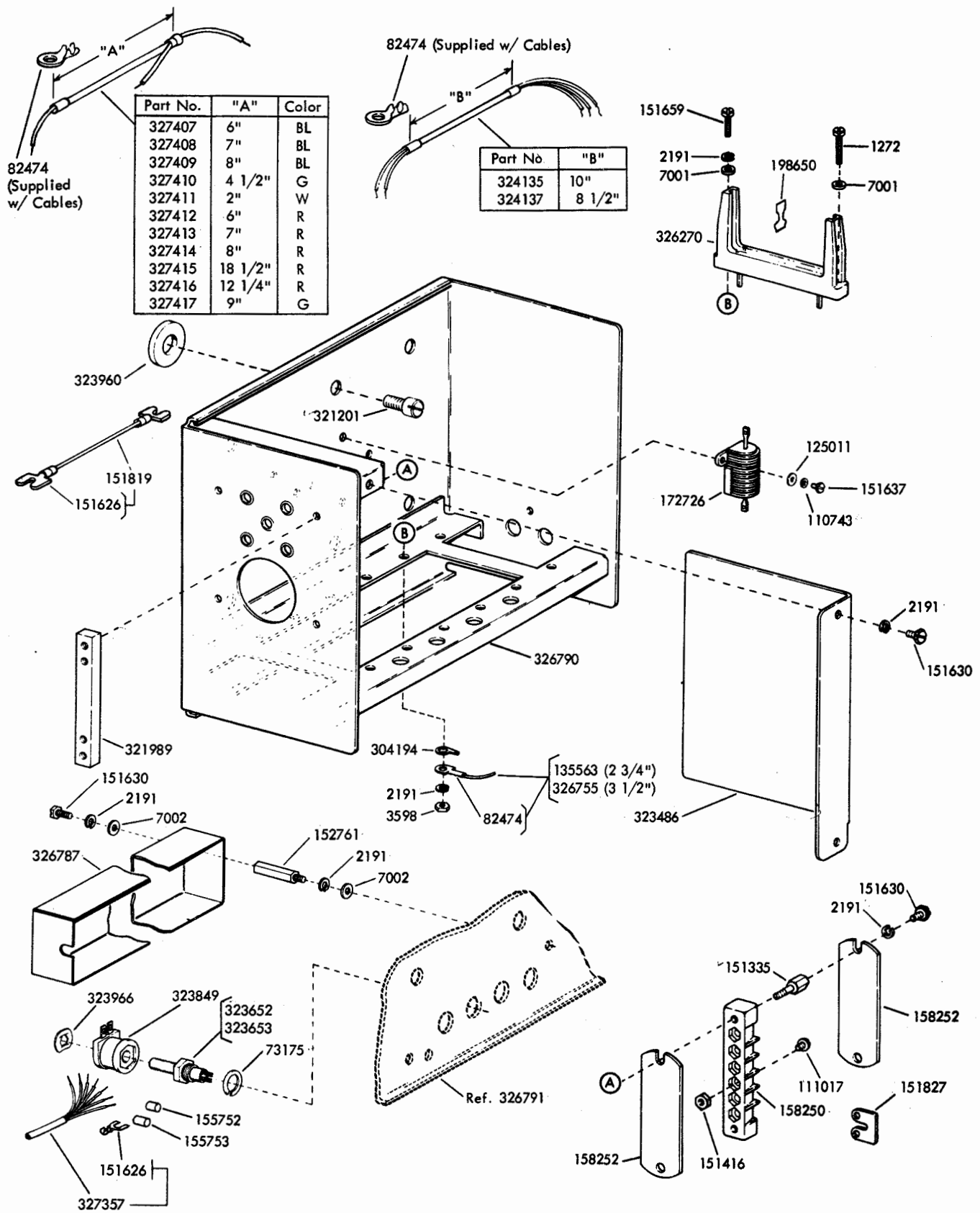


Figure 31 - 323821 Electrical Service Assembly
(continued from Figure 30)

NUMERICAL INDEX - FIGURE 31

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	321201	Screw, 1/4-20 x 1/2 Fil
2191	Washer, Lock	321989	Spacer
3598	Nut, 6-40 Hex	323486	Cover
7001	Washer, Flat	323652	Relay, SP-ST Isolation
7002	Washer, Flat	323653	Relay, Isolation
73175	Washer, Lock	323821	Service Assembly, Electrical
82474	Terminal		
110743	Washer, Lock	323849	Coil, 132 Ohm
111017	Screw, 6-40 x 5/16 Fil	323960	Spacer
125011	Washer, Flat	323966	Retainer
135563	Jumper, 2-3/4" Green	324135	Cable
148458	Connector, 15Pt Circuit Card	324137	Cable
		326270	Connector, 15 Pt Circuit Card
151335	Stud		
151416	Nut, 6-40 Hex	326755	Jumper, 3-1/2 " Green
151626	Terminal	326787	Cover, Switch
151630	Screw, 6-40 x 1/4 Hex	326790	Frame, Inner
151637	Screw, 4-40 z 1/4 Fil	326791	Frame, Outer
151659	Screw, 6-40 x 1/2 Fil	327357	Cable w/Terminal
151819	Jumper, 3" Black	327407	Cable w/Terminal
151827	Strap, Terminal	327408	Cable w/Terminal
152761	Stud	327409	Cable w/Terminal
155752	Sleeve, 5/64 ID x 1/2" Lg Insulating	327410	Cable w/Terminal
		327411	Cable w/Terminal
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	327412	Cable w/Terminal
		327413	Cable w/Terminal
158250	Block, Terminal	327414	Cable w/Terminal
158252	Insulator, Terminal Block	327415	Cable w/Terminal
172726	Resistor, 250 Ohm	327416	Cable w/Terminal
198650	Key, Polarizing	327417	Cable w/Terminal
304194	Lug, Terminal		

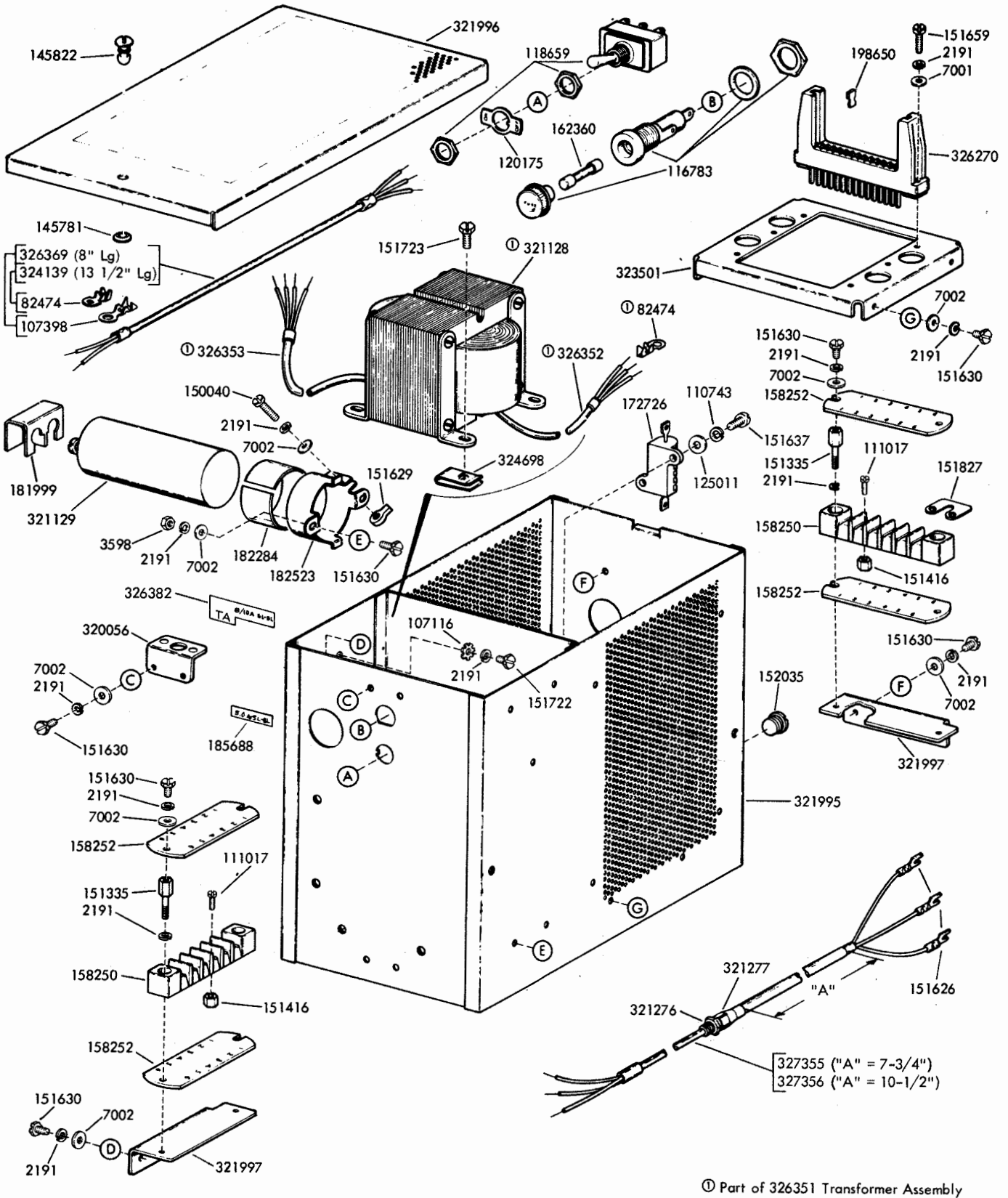


Figure 32 - 323822 Electrical Service Assembly
(continued to Figure 33)

NUMERICAL INDEX - FIGURE 32

Part Number	Description	Part Number	
2191	Washer, Lock	172726	Resistor, 250 Ohm
3598	Nut, 6-40 Hex	181999	Insulator
7002	Washer, Flat	182284	Insulator, .015" Thk
7001	Washer, Flat	182523	Clamp, 1-3/8" ID
82474	Terminal		Mounting
107116	Washer, Lock	185688	Plate, Identification
107398	Terminal	198650	Key, Polarizing
110743	Washer, Lock	320056	Bracket
111017	Screw, 6-40 x 5/16 Fil	321128	Transformer, Power
116783	Holder, Fuse	321129	Capacitor, 750 MFD
118659	Switch, Toggle	321276	Bushing
120175	Plate, ON-OFF	321277	Clamp
125011	Washer, Flat	321995	Container, Outer
145781	Grommet	321996	Cover
145822	Stud, Oval Head	321997	Bracket
150040	Screw, 6-40 x 5/8 Fil	323501	Bracket, Connector
151335	Stud		Mounting
151416	Nut, 6-40 Hex	323822	Service Assembly,
151626	Terminal		Electrical
151629	Nut, 6-40 Lug	324139	Cable
151630	Screw, 6-40 x 1/4 Hex	324698	Nut, #10 Speed
151637	Screw, 4-40 x 1/4 Fil	326270	Connector, 15 Pt Circuit
151659	Screw, 6-40 x 1/2 Fil		Card
151722	Screw, 6-40 x 3/16 Hex	326351	Transformer Assembly
151723	Screw, 10-32 x 3/8 Hex	326352	Cable Assembly
151827	Strap, Terminal	326353	Cable Assembly
152035	Plug	326369	Cable
158250	Block, Terminal	326382	Label
158252	Insulator, Terminal	327355	Cable Assembly
	Block	327356	Cable Assembly
162360	Fuse, SL-BL .8 Amp		

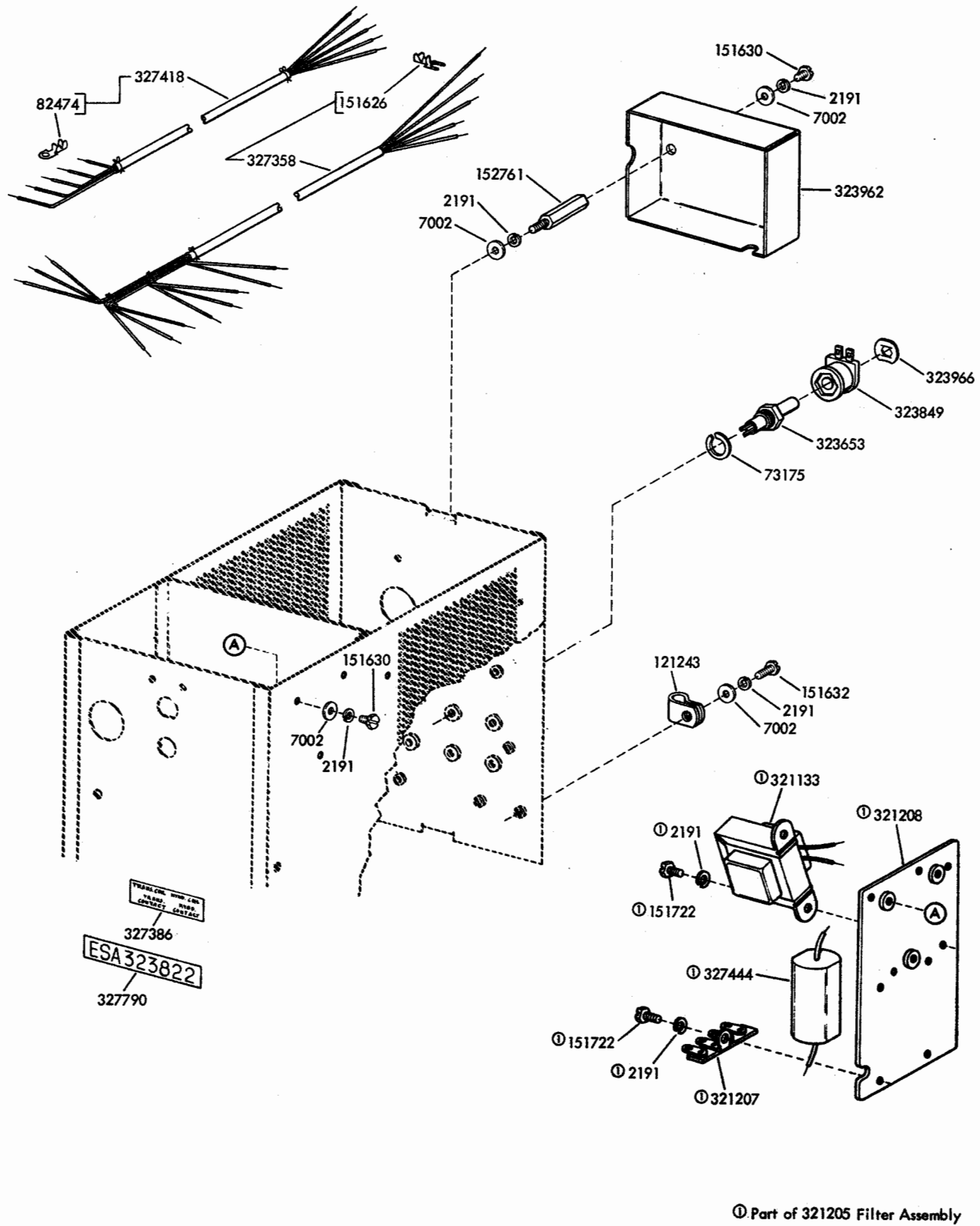


Figure 33 - 323822 Electrical Service Assembly
(continued from Figure 32)

NUMERICAL INDEX - FIGURE 33

Part Number	Description	Part Number	
2191	Washer, Lock	321208	Plate
7002	Washer, Flat	323653	Relay, Isolation
73175	Washer, Lock	323822	Service Assembly, Electrical
82474	Terminal		
121243	Clamp, 3/16 ID Cable	323849	Coil, 132 Ohm
151626	Terminal	323962	Cover
151630	Screw, 6-40 x 1/4 Hex	323966	Retainer
151632	Screw, 6-40 x 3/8 Hex	327358	Cable
151722	Screw, 6-40 x 3/16 Hex	327386	Decalcomanial
152761	Stud	327418	Cable w/Terminals
321133	Inductor	327444	Capacitor
321205	Filter Assembly	327790	Decalcomia
321207	Strip, Terminal		

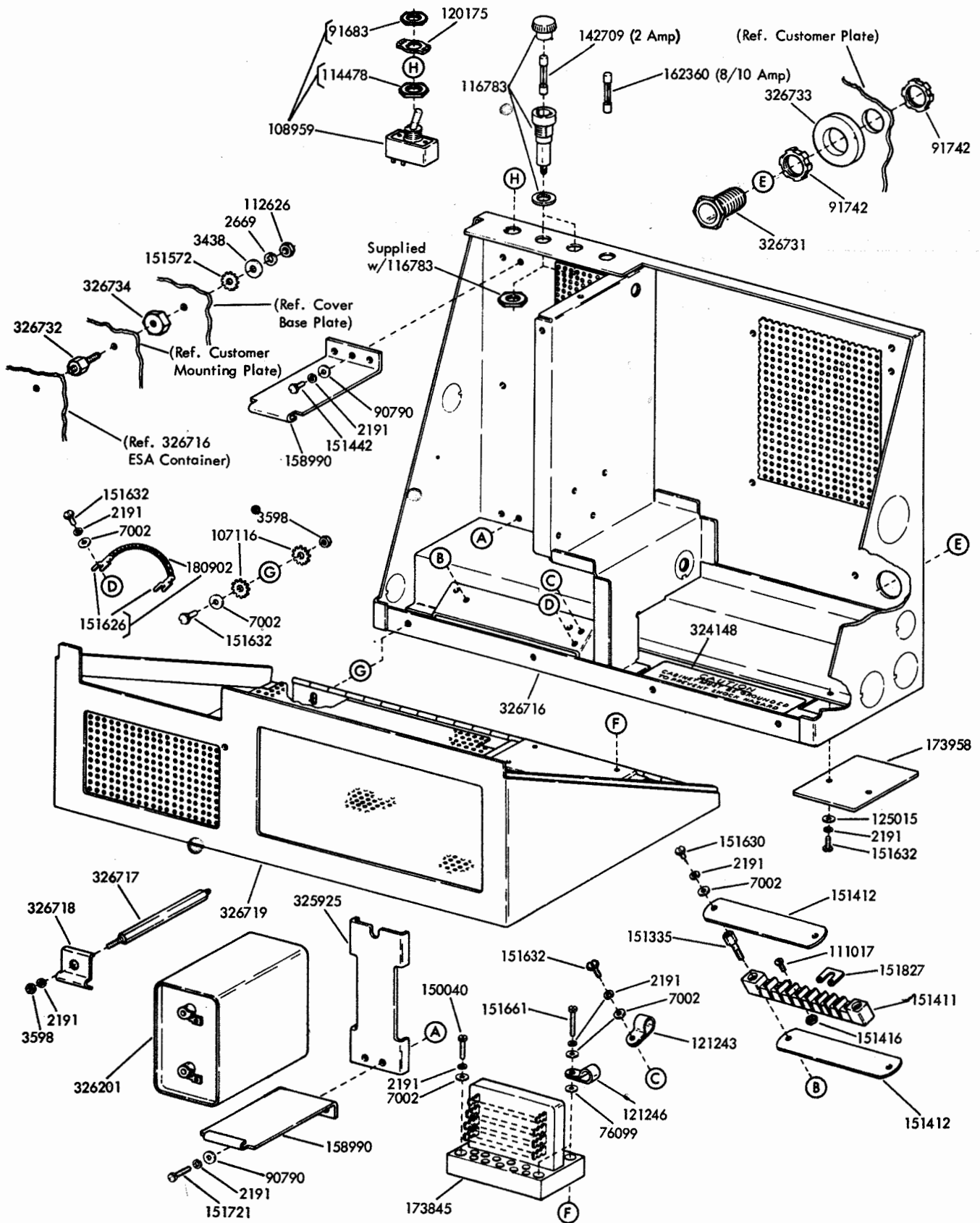


Figure 34 - 324060 (1 SMD) and 324061 (1 SMD, 1 LLK, and 1 CMD) Electrical Service Assemblies - Rack Mounted (continued in Figures 35 and 38)

NUMERICAL INDEX - FIGURE 34

Part Number	Description	Part Number	Description
2191	Washer, Lock	151572	Washer, Lock
2669	Washer, Lock	151626	Terminal
3438	Washer, Flat	151630	Screw, 6-40 x 1/4 Hex
3598	Nut, 6-40 Hex	151632	Screw, 6-40 x 3/8 Hex
7002	Washer, Flat	151661	Screw, 6-40 x 1 Fil
76099	Washer, Flat	151721	Screw, 6-40 x 3/4 Hex
90790	Washer, Flat	151827	Strap, Terminal
91683	Nut, 15/32-32 Hex	158990	Bracket, Mounting
91742	Nut, Lock	162360	Fuse, .8 Amp SL-BL
107116	Washer, Lock	173845	Block, 4 Ron Terminal
108959	Switch, DP-ST Toggle	173958	Plate
111017	Screw, 6-40 x 5/16 Fil	180902	Jumper, 3-1/2" Braided
112626	Nut, 10-32 Hex	324060	Service Assembly, Electrical
114478	Nut, 15/32-32 Hex	324061	Service Assembly, Electrical
116783	Holder, Fuse	324148	Label
120175	Plate, ON-OFF	325925	Plate, Mounting
121243	Clamp, 3/16 ID Cable	326201	Capacitor, 24 MFD
125015	Washer, Flat	326716	Container
142709	Fuse, 2 Amp	326717	Post
150040	Screw, 6-40 x 5/8 Fil	326718	Clamp
151335	Stud	326731	Bushing
151411	Block, Terminal	326732	Stud
151412	Insulator, Terminal Block	326733	Spacer, 11/32 Thk
151416	Nut, 6-40 Hex	326734	Nut, 10-32 Hex
151442	Screw, 6-40 x 1/2 Hex		

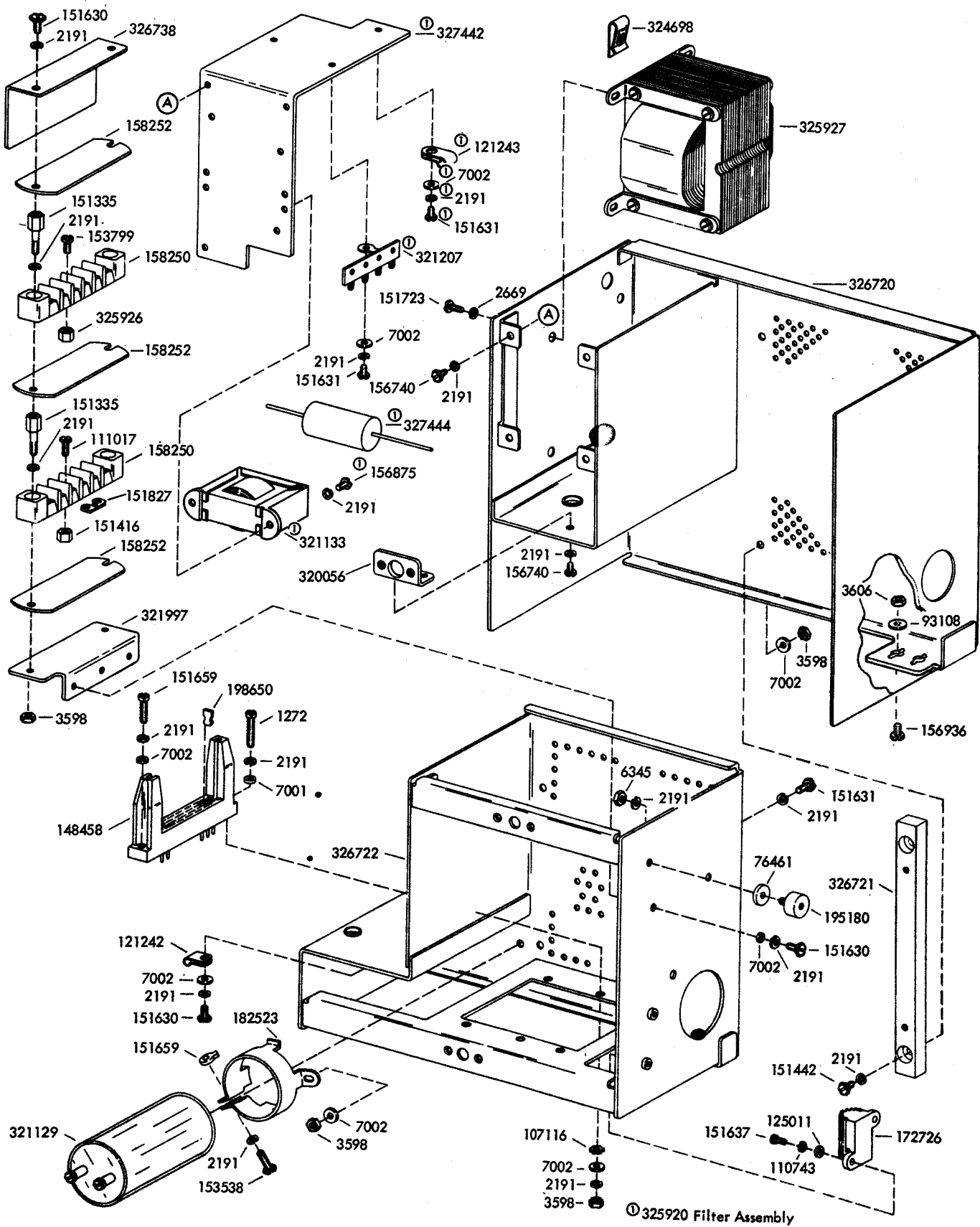


Figure 35 - 324060 (1 SMD) and 324061 (1 SMD, 1 LLK and 1 CMD) Electrical Service Assemblies - Rack Mounted (continued)

NUMERICAL INDEX - FIGURE 35

Part Number	Description	Part Number	Description
1272	Screw, 6-40 x 11/16 Fil	153799	Screw, 4-40 x 21/64 Hex
2191	Washer, Lock	156740	Screw, 6-40 x 7/32 Hex
2669	Washer, Lock	156875	Screw, 6-40 x 5/32 Fil
3598	Nut, 6-40 Hex	156936	Screw, 1/4-32 x 5/16 Hex
3606	Nut, 6-40 Hex	158250	Block, Terminal
6345	Nut, 6-32 Hex	158252	Insulator, Terminal
7001	Washer, Flat	172726	Resistor, 250 Ohm
7002	Washer, Flat	182523	Clamp, 1-3/8" ID Mounting
76461	Washer, Flat	195180	Bumper, Rubber
93108	Washer, Lock	198650	Key, Polarizing
107116	Washer, Lock	320056	Bracket
110743	Washer, Lock	321129	Capacitor, 750 MFD
111017	Screw, 6-40 x 5/16 Fil	321133	Inductor
121242	Clamp, 1/8 ID Cable	321207	Strip, Terminal
121243	Clamp, 3/16 ID Cable	321997	Bracket
125011	Washer, Flat	324060	Service Assembly, Electrical
148458	Connector, 15 Pt Circuit Card	324061	Service Assembly, Electrical
151335	Stud	324698	Nut, #10 Speed
151416	Nut, 6-40 Hex	325920	Filter Assembly
151442	Screw, 6-40 x 1/2 Hex	325926	Nut, 4-40 Hex
151630	Screw, 6-40 x 1/4 Hex	325927	Transformer
151631	Screw, 6-40 x 5/16 Hex	326720	Frame, Outer
151637	Screw, 4-40 x 1/4 Fil	326721	Spacer
151659	Screw, 6-40 x 1/2 Fil	326722	Frame, Inner
151723	Screw, 10-32 x 3/8 Hex	326738	Cover w/Insulator
151827	Strap, Terminal	327442	Bracket
153538	Screw, 6-40 x 7/16 Hex	327444	Capacitor, 2 MFD

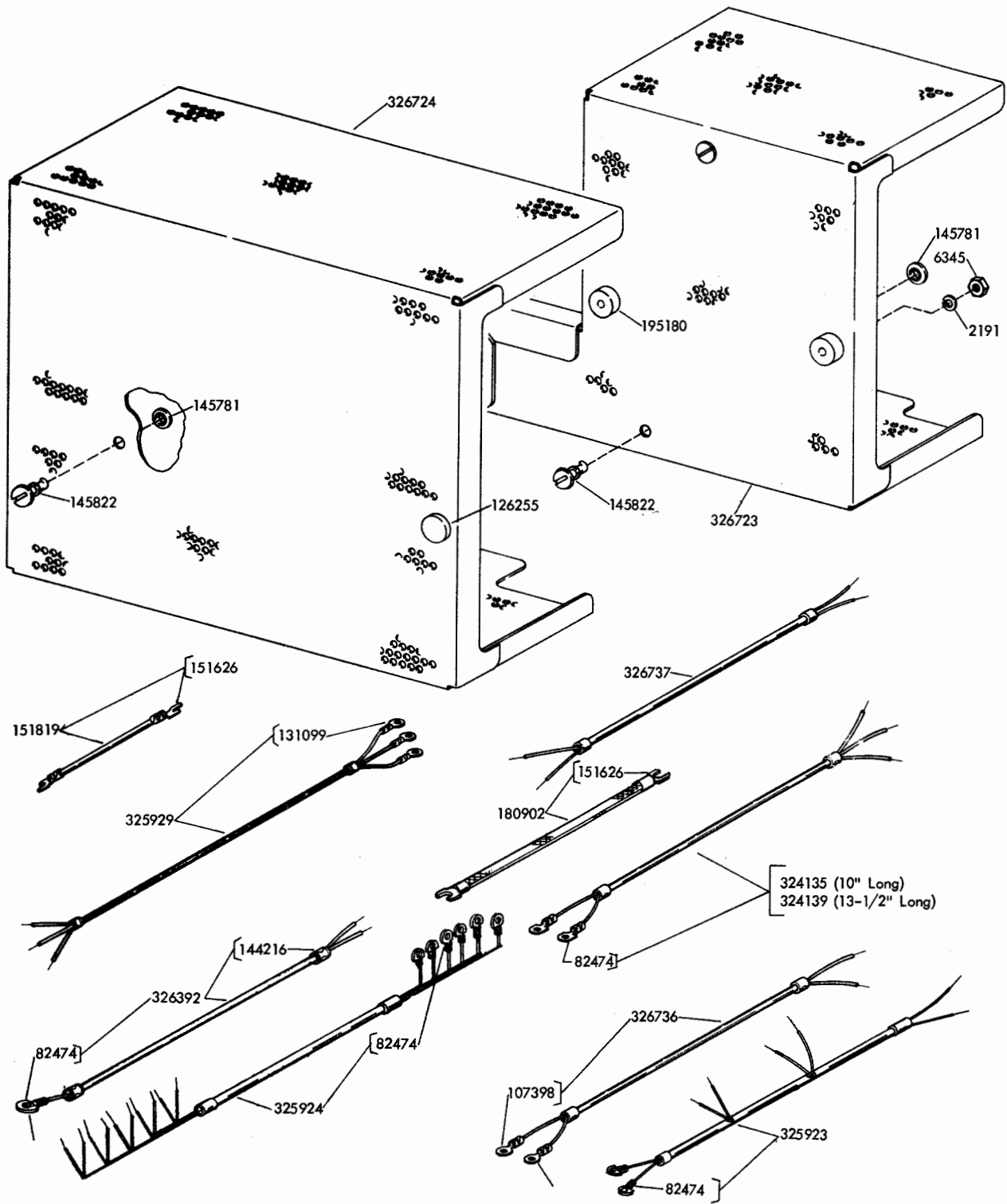


Figure 36 - 324060 (1 SMD) and 324061 (1 SMD, 1 LLK, and 1 CMD) Electrical Service Assemblies - Rack Mounted (continued)

NUMERICAL INDEX - FIGURE 36

Part Number	Description	Part Number	Description
2191	Washer, Lock	324060	Service Assembly, Electrical
6345	Nut, 6-32 Hex	324061	Service Assembly, Electrical
82474	Terminal	324135	Cable w/Terminals
107398	Terminal	324139	Cable w/Terminals
126255	Bumper, Rubber	325923	Cable, P. F. Capacitor
131099	Terminal	325924	Cable, Switch & Fuse
144216	Connector, Red Insulated	325929	Cable w/Terminals
145781	Grommet	326392	Jumper, 6-1/2" White
145822	Stud, Oval Head	326723	Cover, Inner
151626	Terminal	326724	Cover, Outer
151819	Jumper, 3" Black	326736	Cable w/Terminals, Capacitor
180902	Jumper, 3-1/2" Braided	326737	Cable, Resistor
195180	Bumper, Rubber		

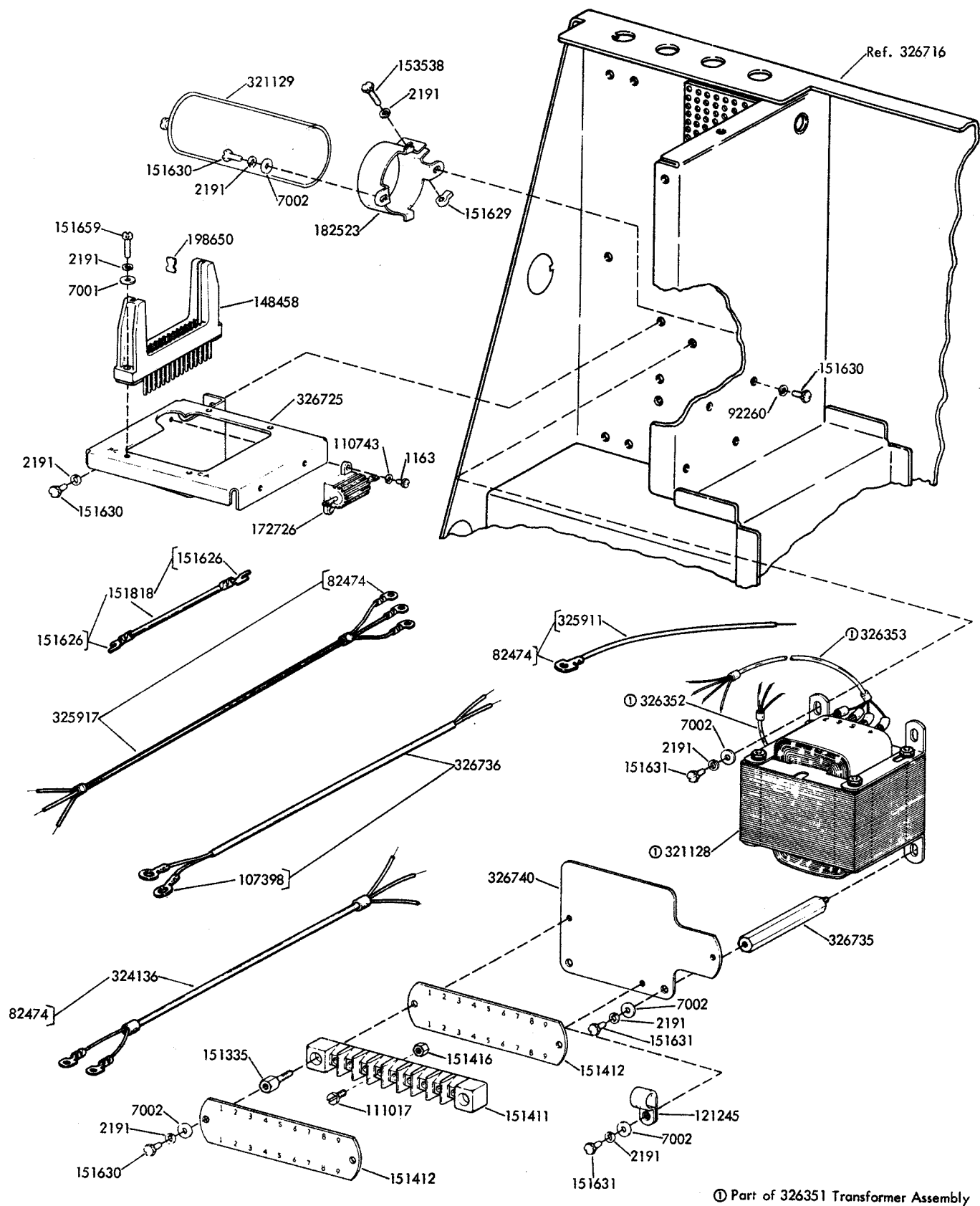


Figure 37 - 324061 (1 SMD, 1 LLK and 1 CMD) Electrical Service Assembly - Rack Mounted (continued from Figures 34, 35, and 36)

NUMERICAL INDEX - FIGURE 37

Part Number	Description	Part Number	Description
1163	Screw, 6-32 x 1/4 Fil	151818	Jumper, 4-1/4" Black
2191	Washer, Lock	153538	Screw, 6-40 x 7/16 Hex
7001	Washer, Flat	172726	Resistor, 250 Ohm
7002	Washer, Flat	182523	Clamp, 1-3/8" ID Mounting
82474	Terminal	198650	Key, Polarizing
92260	Washer, Lock	321128	Transformer, Power
107398	Terminal	321129	Capacitor, 750 MFD
110743	Washer, Lock	324136	Cable w/Terminals
111017	Screw, 6-40 x 5/16 Fil	325061	Service Assembly, Electrical
121245	Clamp, 5/16 ID Cable	325911	Jumper, 6-1/2" Lg Green
148458	Connector, 15 Pt Circuit Card	325916	Cable, Resistor
151335	Stud	325917	Cable w/Terminals
151411	Block, Terminal	326351	Transformer Assembly
151412	Insulator, Terminal Block	326352	Cable Assembly
151416	Nut, 6-40 Hex	326353	Cable Assembly
151626	Terminal	326716	Container
151629	Nut, 6-40 Lug	326725	Bracket, Mounting
151630	Screw, 6-40 x 1/4 Hex	326735	Post
151631	Screw, 6-40 x 5/16 Hex	326736	Cable
151659	Screw, 6-40 x 1/2 Fil	326740	Plate

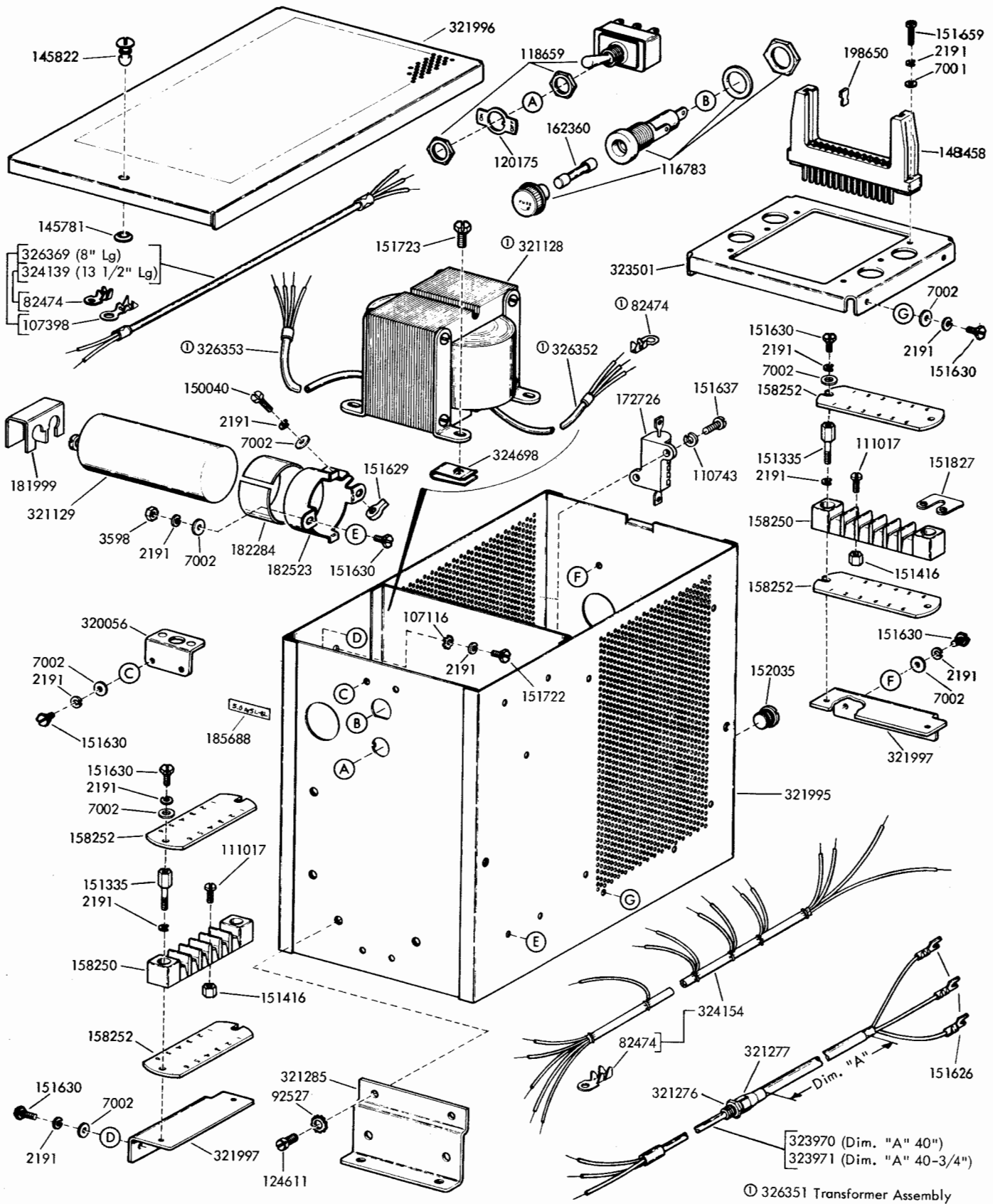


Figure 38 - 326792 Electrical Service Assembly
(continued to Figure 39)

NUMERICAL INDEX - FIGURE 38

Part Number	Description	Part Number	
2191	Washer, Lock	162360	Fuse, SL-BL .8 Amp
3598	Nut, 6-40 Hex	172726	Resistor, 250 Ohm
7001	Washer, Flat	181999	Insulator
7002	Washer, Flat	182284	Insulator, .015" Thk
82474	Terminal	182523	Clamp, 1-3/8" ID
92527	Washer, Lock		Mounting
107116	Washer, Lock	185688	Plate, Identification
107398	Terminal	198650	Key, Polarizing
110743	Washer, Lock	320056	Bracket
111017	Screw, 6-40 x 5/16 Fil	321128	Transformer, Power
116783	Holder, Fuse	321129	Capacitor, 750 MFD
118659	Switch, Toggle	321276	Bushing
120175	Plate, ON-OFF	321277	Clamp
124611	Screw, 8-32 x 3/8 Hex	321285	Bracket, Mounting
145781	Grommet	321995	Container, Outer
145822	Stud, Oval Head	321996	Cover
148458	Connector, 15 Pt	321997	Bracket
	Circuit Card	323501	Bracket, Connector
150040	Screw, 6-40 x 5/8 Fil		Mounting
151335	Stud	323970	Cable Assembly
151416	Nut, 6-40 Hex	323971	Cable Assembly
151626	Terminal	324139	Cable
151629	Nut, 6-40 Lug	324154	Cable
151630	Screw, 6-40 x 1/4 Hex	324698	Nut, #10 Speed
151637	Screw, 4-40 x 1/4 Fil	326351	Transformer Assembly
151659	Screw, 6-40 x 1/2 Fil	326352	Cable Assembly
151722	Screw, 6-40 x 3/16 Hex	326353	Cable Assembly
151723	Screw, 10-32 x 3/8 Hex	326369	Cable
151827	Strap, Terminal	326792	Service Assembly,
152035	Plug		Electrical
158250	Block, Terminal		
158252	Insulator, Terminal Block		

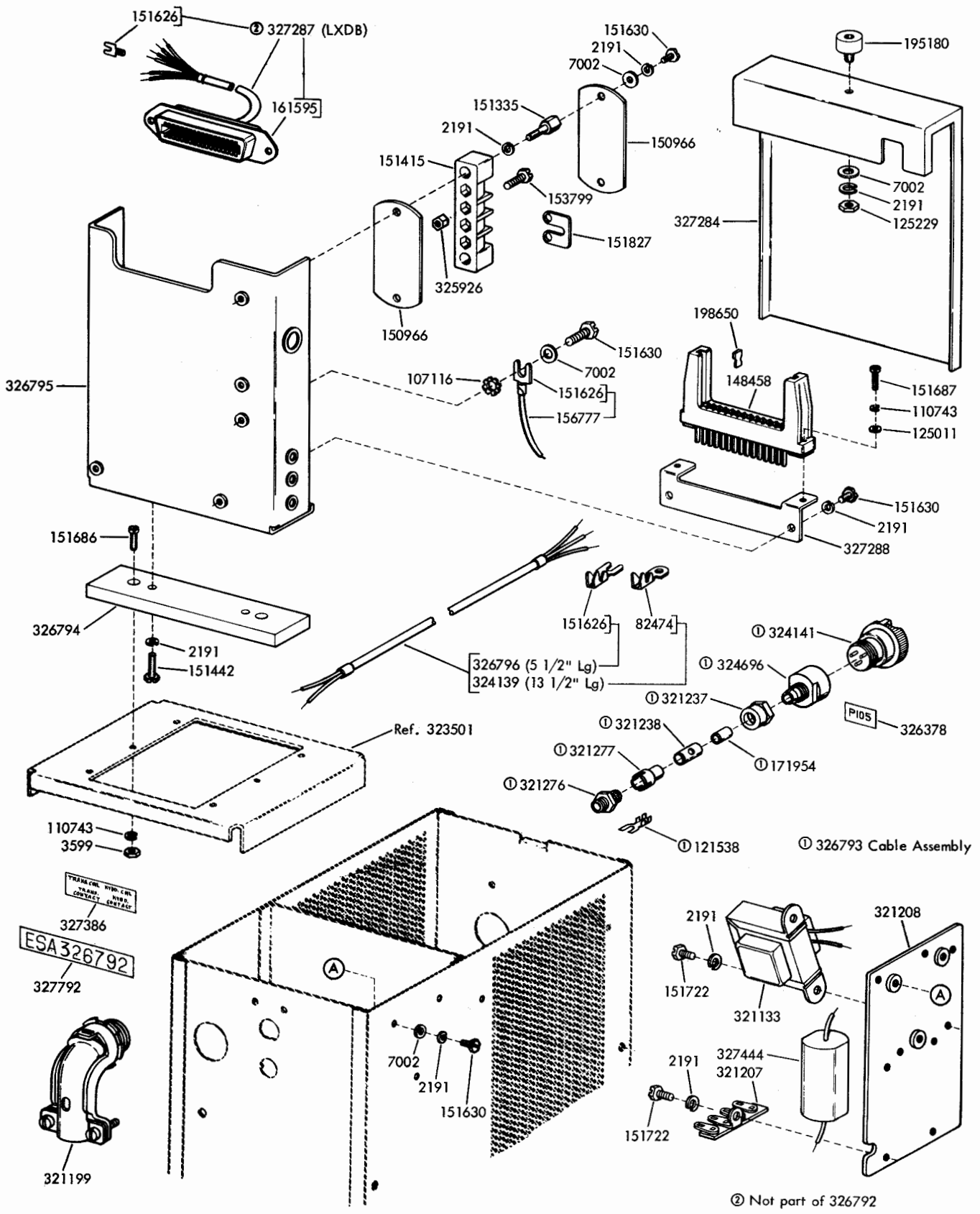


Figure 39 - 326792 Electrical Service Assembly
(continued from Figure 38)

NUMERICAL INDEX - FIGURE 39

Part Number	Description	Part Number	Description
2191	Washer, Lock	198650	Key, Polarizing
3599	Nut, 4-40 Hex	321133	Inductor
7002	Washer, Flat	321199	Connector, 90° Angle
82474	Terminal	321207	Strip, Terminal
107116	Washer, Lock	321208	Plate
110743	Washer, Lock	321237	Nut, 3/8-32 Spl
121538	Terminal w/Insulator	321238	Sleeve
125011	Washer, Flat	321276	Bushing
125229	Nut, 6-32 Hex	321277	Clamp
148458	Connector, 15 Pt Circuit Card	323501	Bracket, Connector Mounting
150966	Insulator, Terminal Block	324139	Cable
151335	Stud	324141	Connector, 3 Pt Receptacle
151415	Block, Terminal	324696	Coupling, Connector
151442	Screw, 6-40 x 1/2 Hex	325926	Nut, 4-40 Hex
151626	Terminal	326378	Label
151630	Screw, 6-40 x 1/4 Hex	326792	Service Assembly, Electrical
151686	Screw, 4-40 x 3/8 Fil	326793	Cable Assembly
151687	Screw, 4-40 x 7/16 Fil	326794	Insulator
151722	Screw, 6-40 x 3/16 Hex	326795	Container, Inner
151827	Strap, Terminal	326796	Cable w/Terminals
153799	Screw, 4-40 x 21/64 Hex	327284	Cover, Inner
156777	Jumper, 2" Black	327287	Cable Assembly
161595	Connector, 36 Pt Receptacle	327288	Bracket
171954	Connector, Blue Shielding	327386	Decalcomania
195180	Bumper, Rubber	327444	Capacitor, 2 MFD
		327792	Decalcomania

