

INSTRUCTIONS FOR INSTALLING LOW LEVEL  
RFI (POLAR-EMC) KITS ON 28 RACK MOUNTED  
RECEIVE-ONLY PRINTER SETS, AND RACK  
MOUNTED SEND-RECEIVE PRINTER SETS

1. GENERAL

1.01 The modification kits are used to convert the 28 Rack Mounted Receive-Only Printer Sets and the 28 Rack Mounted Send-Receive Printer Sets as follows:

<u>Teletype No.</u>	<u>Navy Nomenclature</u>	<u>Used On</u>
324056		TT-306/UG TT-306A/UG
324057		TT-307/UG TT-307A/UG

1.02 The 324056 modification kit converts the TT-306/UG (or TT-306A/UG) to a 28 RFR1000B Set (except for the paper winder). The 324057 modification kit converts the TT-307/UG (or TT-307A/UG) to a 28 RFK2000B Set (except for the paper winder).

1.03 The basic components of the TT-306/UG or TT-306A/UG Set are converted by the 324056 modification kit as follows:

<u>TT-306/UG Set</u>	<u>TT-306A/UG Set</u>	<u>Converted by 324056 Kit to:</u>
LPC206 cover	LPC206 cover	LPC213 cover
LB10/000 base	LB10/000 base	not affected
LMU3 motor unit	LMU3 motor unit	not affected
LP77YD/AGM typing unit	LP77YD/AGM typing unit	LP135YD/AGM typing unit
PW201 paper winder	LPW300 paper winder	not affected
173395 electrical service assembly	173395 electrical service assembly	replaced by 324060 electrical service assembly
173851 cable assembly	173851 cable assembly	replaced by 325908 and 325914 cable assemblies
173780 cable assembly	173780 cable assembly	replaced by 325909 cable assembly

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1.04 The basic components of the TT-307/UG or TT-307A/UG Set are converted by the 324057 modification kit as follows:

<u>TT-307/UG Set</u>	<u>TT-307A/UG Set</u>	<u>Converted by 324057 Kit to:</u>
LPC206 cover	LPC206 cover	LPC213 cover
LK25 keyboard	LK25 keyboard	LK59 keyboard
LMU3 motor unit	LMU3 motor unit	not affected
LP77YD/AGM typing unit	LP77YD/AGM typing unit	LP135YD/AGM typing unit
PW201 paper winder	LPW300 paper winder	not affected
173395 electrical service assembly	173395 electrical service assembly	replaced by 324061 electrical service assembly
173851 cable assembly	173851 cable assembly	replaced by 325908 and 325914 cable assemblies
173852 cable assembly	173852 cable assembly	replaced by 325915 cable assembly
173780 cable assembly	173780 cable assembly	replaced by 325913 cable assembly

1.05 The 324056 and 324057 modification kits consist of the following major components (refer to Figure 1):

- (a) Cable assemblies, connector brackets, and mounting hardware to convert the LPC206 cover to a LPC213 cover. Also, a power cord for connecting the associated paper winder directly to the cover.
- (b) A 321216 modification kit including a selector magnet assembly with dust cover and mounting hardware to convert the LP77 typing unit to a LP135 typing unit.
- (c) An electrical service assembly containing the necessary power switch, fuse holders, and power factor correction capacitors similar to the original electrical service assembly, and also a low level container assembly for housing the signaling components. In the 324060 electrical service assembly, for receive-only sets, the low level container is equipped with a power supply circuit card and a selector magnet driver circuit card. In the 324061 electrical service assembly, for send-receive sets, the low level container is equipped with a power supply circuit card, a selector magnet driver circuit card, and a polar line keyer circuit card to provide a low level interface for the associated signal generator contacts in the keyboard. In addition, the 324061 electrical service assembly is equipped with a clutch

magnet driver circuit card and its associated power supply circuit card for synchronous pulse operation of the keyboard.

- (d) Cable assemblies for connecting the particular printer set to the associated electrical service assembly.
- (e) The 324057 modification kit also includes a 321272 shielded signal generator contact box for the keyboard, a 326357 contact assembly which replaces the existing synchronous pulse control contact assembly, a 252M magnet which replaces the existing clutch trip magnet, and the necessary cable assemblies and mounting hardware to convert the LK25 keyboard to a LK59 keyboard.

- 1.06 The modified receive-only or send-receive set has the same dimensions as the original equipment except for the electrical service assembly. The original electrical service assembly is approximately 3-1/2 inches high, 16 inches wide, and 12 inches deep. The 324060 or 324061 electrical service assembly is 5-1/2 inches high, 16 inches wide, and 12 inches deep.
- 1.07 The operating features and procedures of the modified equipment are identical to those of the original equipment.
- 1.08 For information not included in this specification, refer to the following:

	<u>Teletype Part No.</u>	<u>Teletype Spec No.</u>	<u>NAVSHIPS Number</u>
Selector magnet driver	303142	50507S	0967-273-8010
Polar line keyer	321991	50509S	0967-273-9010
Clutch magnet driver	324060	50506S	0967-273-7010
Electrical service assemblies	324061	50505S	0967-273-6010
Dust cover	321216	50503S	0967-274-1010
Signal generator contact box	321272	50504S	0967-273-5010
Contact assembly	326357	50047S	
Power supply	321290	50508S	0967-274-7010

- 1.09 The 324056 and 324057 modification kits consist of the following:

<u>Part No.</u>	<u>Description</u>	<u>Modification Kits</u>	
		<u>324056</u>	<u>324057</u>
252M	Magnet coil		X
2191	Lockwasher	X	X
7002	Flat washer	X	X

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<u>Part No.</u>	<u>Description</u>	<u>Modification Kits</u>	
		324056	324057
70314	Flat washer	X	X
76099	Flat washer	X	X
107116	Lockwasher	X	X
121243	Cable clamp		X
151427	Clamp plate	X	X
151632	Screw	X	X
151692	Screw	X	X
154206	Power cable		X
155750	Insulating sleeve		X
155753	Insulating sleeve		X
303142	Polar line keyer		X
304843	Bracket	X	X
321216	Dust cover	X	X
321272	Signal generator contact box		X
321290	Power supply	X	X
321991	Clutch magnet driver		X
323810	Selector magnet driver	X	X
324060	Electrical service assembly	X	
324061	Electrical service assembly		X
325906	Cable assembly	X	X
325907	Cable assembly	X	X
325908	Cable assembly	X	X
325909	Cable assembly	X	X
325910	Strap	X	X
325911	Strap		X
325912	Cord w/terminals	X	X
325913	Cable assembly		X
325914	Cable assembly	X	X
325915	Cable assembly		X
326355	Cable assembly		X
326357	Switch assembly		X

2. THEORY OF OPERATION

2.01 For theory of operation, refer to the specifications on the individual units listed in Paragraph 1.08.

3. INSTALLATION

A. 324056 Modification Kit

3.01 Refer to Bulletin 270B, Volumes 1, 2, and 3 for technical information regarding the equipment to be modified.



Note: The rack mounting plate (not supplied) which supports the equipment must be suitably constructed and secured to provide a rigid structure that inhibits vibration. The rubber feed on the cover base plate should be completely within the confines of the mounting plate. Mounting arrangements should not inhibit air circulation at cover ventilating holes.

3.02 Convert the LPC206 cover to a LPC213 cover as follows:

- (a) Remove the 193950 copy display rack from the LPW300 paper winder (if the cover is so equipped). Remove the paper roll from the typing unit. Disconnect the existing cable (with the 4-point receptacle) from its connector, located on the left side of the cover, and temporarily place the cable over the typing unit platen. Remove any grounding wires which may have been attached to the cover during the original installation. Remove the cover and attached paper winder (if so equipped) from the cover base plate.
- (b) If present, disconnect and discard any cable assembly which may have been installed during the original installation for operation of the LPW paper winder.
- (c) Refer to 4257WD of the LPC206 cover, and disconnect the 173877 cover connector cable assembly from the cover terminal block (T).
- (d) Cut all ties holding the 173877 cable assembly in position along the left rear corner of the cover, and remove the cable from its position between the cover and support channel.
- (e) Remove and retain the mounting hardware which fastens the transformer and connector mounting bracket to the left side of the cover. Discard the bracket and the 173877 cable assembly.
- (f) Referring to Figure 2, fasten the 325906 cover connector cable assembly to the 304843 connector mounting bracket with two 151692 screws and 2191 lockwashers. Mount the 304843 bracket and transformer to the left side of the cover, using the previously removed mounting hardware. Do not fasten any ground wires to the mounting screws.
- (g) Modify the dome door hinge to the cover as follows: Starting at the mounting screw on the right side of the cover hinge, add a 107116 lockwasher under the 7002 flat washer, and replace the existing 2191 lockwasher with another 107116 lockwasher. Refasten each screw, one at a time (6 places), to avoid misalignment of the dome door. At the mounting

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screw on the extreme left side, fasten the ground wire terminal from the 325906 cable assembly and transformer cable assembly between the 7002 flat washer and 107116 lockwasher. Refer to 8325WD.

- (h) Route the 325906 cover connector cable assembly downward between the cover and support channel at the left rear corner of the cover. Connect the cable to the cover terminal block (T) in accordance with 8325WD.
  - (i) If present, remove and discard the 152797 retaining plate, 151532 form slot cover and associated mounting hardware from rear of cover.
  - (j) Refer to 8328WD, sheet 1 and insert the 325912 cord w/terminals through the grommet on the right rear side of the cover. Route and tie cord along the inside of the rear support channel as indicated. Connect the cord to the cover terminal block (T) in accordance with 8328WD. If the cover is equipped with a LPW300 paper winder, connect it to the 325912 cord by means of the associated connectors. Replace insulator cover on terminal block, and reclamp the copylight and margin indicator lamp cables by first taking up the cable slack at the terminal block so that the two cables are held taut to the side of the cover.
  - (k) Remove the LP77YD/AGM typing unit from the LB10/000 base.
  - (l) Refer to 4257WD of the LPC206 cover, and disconnect and discard the 173879 base connector cable assembly from the LB10/000 base motor terminal block (S). Refer to 4304WD and disconnect the 173780 cable assembly from the LB10/000 base motor terminal block (S).
  - (m) Refer to 8325WD of the LPC213 cover and connect the 325907 base connector cable assembly to the LB10/000 base motor terminal block (S). Do not connect the two green protective ground wires until so instructed.
- 3.03 Convert the LP77YD/AGM typing unit to a LP135YD/AGM typing unit as follows:
- (a) Refer to 4196WD of the LP77YD/AGM typing unit, and unsolder the 173450 selector magnet cable assembly from the typing unit connector (AA) on terminals 33, 34, and 35.
  - (b) Install and adjust the 321216 modification kit including a selector magnet assembly with dust cover to the printer in accordance with Specification 50503S. Refer to 8326WD.

- 3.04 Remove the LB10/000 base with LMU3 motor unit from the cover base plate. Neither the LB10/000 base nor the LMU3 motor unit is affected by the 324056 modification kit.
- 3.05 Disassemble the cover base plate and electrical service assembly from the mounting plate as follows:
- (a) Refer to 4304WD and disconnect the 173780 cable assembly from the power terminal block in the electrical service assembly. Discard the 173780 cable assembly. Disconnect all power input connections to the electrical service assembly.
  - (b) Cut the 173851 typing unit cable assembly at the H terminal block in the electrical service assembly. Discard the cable assembly. Unsolder all outgoing lines and control connections from the H terminal block.
  - (c) Remove all outgoing leads and associated conduit from the electrical service assembly.
  - (d) If so equipped, disconnect the PW201 paper winder from the electrical service assembly, and remove the paper winder from the mounting plate.
  - (e) Remove the two 91742 nuts that secure the two 173714 bushings, in the electrical service assembly, to the cover base plate and the mounting plate. Remove the four 74805 screws, 2669 lockwashers, and 41663 flat washers that secure the cover base plate and electrical service assembly to the mounting plate. Discard the electrical service assembly and all mounting hardware.
  - (f) Remove the mounting plate from the mounting rack.
- 3.06 Assemble the 324060 electrical service assembly to the mounting plate and cover base plate as follows, (refer to Figure 3):
- (a) Mounting hardware for the electrical service assembly.

<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
2669	Lockwasher	4
3438	Flat washer	4
91742	Locknut	2
112626	10-32 hex nut	4

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<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
151572	Lockwasher	4
326732	Stud	4
326733	Spacer	2
326734	Nut spacer	4

(b) Screw the shorter threaded end of the 326732 stud into each of the four 10-32 tapped weld nuts on top of the electrical service assembly. Place a 326733 spacer over each of the two 326731 bushings, with 91742 locknuts. Place the mounting plate on the electrical service assembly so that the two bushings and four studs extend through the appropriate holes in the mounting plate. Secure the mounting plate to the electrical service assembly by means of 91742 locknuts on the bushings, and four 326734 nut spacers on the studs. Secure the cover base plate to the mounting plate by means of a 151572 lockwasher, 3438 flat washer, 2669 lockwasher, and 112626 nut on each of the four studs.

3.07 Install the 325908, 325909, and 325914 cable assemblies as follows:

(a) With the cover base plate, mounting plate, and electrical service assembly all fastened together, set the mounting plate on its rear edge and support it in this position. Remove the two screws, lockwashers, and flat washers that fasten the hinged lid of the electrical service assembly, and open the lid so that the components within the assembly are accessible as indicated in Figure 4. Loosen the quarter-turn fastener on the outer cover of the 325919 container assembly and remove the outer cover. Loosen the two quarter-turn fasteners on the inner cover of the 325919 container assembly, and remove the inner cover.

(b) Refer to 8328WD, sheet 1, and insert the 325914 cable assembly through the right 326731 bushing into the electrical service assembly. Remove the nut and lockwasher from the mounting bushing on the cable assembly, but retain them on the cable. Insert the nut and lockwasher while still on the cable wire through the left keyhole slot in the outer frame of the 325919 container assembly so that the terminals on the cable extend through the eyelet in the inner frame of the container. Reassemble the lockwasher and nut back on the mounting bushing, and fasten the cable assembly by means of the mounting bushing to the outer frame of the container. (Refer to Figure 5.) Continue routing the 325914 cable assembly along the upper right corner of the inner frame to the bottom terminal block (TC). Remove the two screws and lockwashers that fasten the terminal block cover and upper insulator to the upper terminal block. Remove the two posts and lockwashers that fasten the upper terminal block and insulator to the lower terminal block. Move the upper terminal block

and its attached wire leads to the left so that the bottom terminal block (TC) is accessible. Connect the 325914 cable assembly to the bottom terminal block according to 8328WD sheet 1, and 8330WD sheet 3. Reassemble the upper terminal block and insulator to the lower terminal block. Reassemble the terminal block cover, and upper insulator after the external signal lines have been connected.

(c) Refer to 8328WD, sheet 1, and insert the 325908 cable assembly through the right 326731 bushing into the electrical service assembly. Route the cable to the 40-point terminal block (H) and secure it there by means of the cable clamp. Connect the cable according to 8328WD.

(d) Refer to 8328WD, sheet 3, and insert the end of the 325909 cable assembly having the shorter green wire lead through the left 326731 bushing into the electrical service assembly. Route the cable to terminal block (TA) located on a bracket attached to the rear wall of the assembly, and secure it there by means of the cable clamp. Connect the cable to terminal block (TA) according to 8328WD sheet 3.

3.08 Replace the mounting plate with the attached electrical service assembly and cover base plate on the mounting rack.

3.09 Replace the LB10/000 base on the cover base plate by means of the four original mounting studs. Refer to 8328WD, sheet 3, and connect the 325909 cable assembly to terminal block (S) on the base. Route the three green protective ground wires (one from the 325909 cable assembly, and two connected to one terminal from the 325907 base connector cable assembly) to the 0.406 inch diameter hole located on the left side of the base. Fasten the wires at the hole by means of a 151632 screw, 2191 lockwasher, 7002 flat washer, the two wire terminals, and a 70314 flat washer above the hole while using a 151427 clamp plate below the hole. (Refer to Figure 6.)

3.10 Refer to 8325WD of the LPC213 cover and route the green protective ground wire of the 325907 base connector cable assembly from the ground screw on the LB10/000 base to the 6-40 tapped hole at the rear center of the cover base plate. Use the tapped hole which is closest to the LB10/000 base. If the cover base plate is equipped with a cover locating screw and bracket in this position, remove and discard them together with the associated mounting hardware. Refer to 8328WD, sheet 1, and fasten one end of the 325910 strap assembly to the cover base plate along with the green protective ground wire. Fasten them by means of a 151632 screw, 2191 lockwasher, 76099 flat washer, green ground wire terminal, strap assembly terminal, 76099 flat washer, and 107116 lockwasher into the plate. (Refer to Figure 7.)



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- 3.11 Loosely assemble the following hardware on the free-end terminal of the 325910 strap assembly: a 151632 screw, 2191 lockwasher, 76099 flat washer, strap assembly terminal, 76099 flat washer, 107116 lockwasher, and 151427 clamp plate.
- 3.12 Install the modified typing unit on the LB10/000.
- 3.13 Connect the 325914 and 325908 cable assemblies to the associated connections on the typing unit. Take up the slack in the 325908, 325909, and 325914 cable assemblies by fitting them under the mounting rails on the cover base plate.
- 3.14 Temporarily place the 8-point receptacle of the 325907 base connector cable assembly over the typing unit platen and place the loose end of the 325910 strap assembly over the typing unit support rod behind the stunt box.
- 3.15 Install the modified cover over the typing unit and position it by means of the shoulder screws located at the sides of the cover base plate. Connect the 8-point receptacle to the associated connector located on the left side of the cover and position the cable assembly along the left side of the cover so that it does not interfere with any moving parts on the typing unit.
- 3.16 Refer to 8328WD, sheet 1, and fasten the 325910 strap assembly to the cover by means of a slot formerly occupied by the retaining plate for the form slot cover. Slide the terminal mounting hardware in the slot so that the cover is clamped between the 76099 flat washer and 107116 lockwasher. (Refer to Figure 7.)
- 3.17 If the original set was equipped with a PW201 paper winder, refer to 1543WD and remove the 89239 3-point connector from the 142557 power input cable assembly, originally furnished with the PW201 paper winder. Install the 89239 connector in place of the 114466 connector on the 325912 cord w/terminal at the right rear corner of the cover. Replace the paper winder on the mounting plate and connect it to the modified 325912 cord by means of the associated connectors.
- 3.18 Replace the paper roll in the typing unit. If the original set was equipped with a 193950 copy display rack, replace that also. Install the paper on the paper winder.
- 3.19 Make the external connections to the set as follows:
  - (a) Refer to Figure 8 for the normal external conduit connections to the electrical service assembly. As in the case of the original service assembly, the ac power input and normal control input may be connected to either side of the assembly by removing the appropriate knockouts.

Access plates, identical to those on the original assembly, are provided at the rear for fastening the locking mechanism to the conduit fittings. Note that the conduit for the signal line input must be connected directly to the 325919 signal circuit container within the service assembly. Synchronous pulse control leads are not required for receive-only sets.

(b) Remove and retain the access plate and its mounting hardware at either or both sides of the electrical service assembly, as desired. Fasten 3/4 inch conduit for the ac power leads to either side of the service assembly, as desired. Route the power leads through the conduit into the compartment on the left side of the service assembly. Refer to 8329WD, sheet 1, and route the power leads to terminal block (TA) located on a bracket attached to the rear wall of the service assembly. Turn the power switch to the OFF position. Connect the power input leads in accordance with 8329WD, paying particular attention to Notes 12, 15, and 17.

(c) Fasten 3/4 inch conduit for the normal control input to either side of the service assembly, as desired. Route the control leads for the typing unit stunt box through the conduit into the compartment on the right side of the service assembly. Refer to 8328WD, sheet 1, and 8331WD, sheet 2, and route the control leads to the 40-point terminal block (H) located on the hinged lid of the electrical service assembly. Connect the control leads in accordance with 8331WD. A cable clamp has been provided to secure the leads. Reassemble the access plate previously removed.

(d) Fasten 3/4 inch conduit for the signal line input to the 325919 container assembly inside the service assembly. Fasten the conduit by means of the 1.094-inch hole provided in the outer frame of the container assembly. Make certain that the conduit fitting does not contact the inner frame of the container. Route the signal line cable through the conduit into the inner enclosure of the container. Refer to 8330WD and 8331WD, sheet 3, and route the signal line cable to the 3-point terminal block (TB) located on the right side of the container. Connect the signal input leads to terminals TB2 (signal) and TB4 (common). Tape the signal shielding to prevent its unintentional grounding. Reassemble the terminal block cover and upper insulator which were previously removed.

3.20 Auxiliary conduit connections have been provided for the synchronous pulse control leads only. These are intended for send-receive sets and are not applicable to receive-only sets.

3.21 Refer to 8330WD, sheet 2, for the 325919 container assembly and insert the 323810 selector magnet circuit card in its associated connector (SA). Insert the 321295 power supply circuit card in its associated connector (PA).



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3.22 Replace and secure the inner cover on the inner frame of the 325919 container assembly. Replace and secure the outer cover on the outer frame of the 325919 container assembly. Close the hinged lid of the electrical service assembly and secure it by first fastening the previously removed mounting screw in the lower side of the lid and then the mounting screw in the upper side of the lid.

3.23 With the installation of the 324056 modification kit thus completed, the equipment is ready to operate. The operation of the modified TT-306/UG or TT-306A/UG Receive-Only Set is similar to that of the original equipment except that it now is intended for use only in systems requiring a polar (+6 v) low level interface. Make certain to finalize the adjustment of the dust cover on the typing unit in accordance with Specification 50503S.

B. 324057 Modification Kit

3.24 Refer to Bulletin 270B, Volumes 1, 2, and 3 for technical information regarding the equipment to be modified.

3.25 Convert the LPC206 cover to a LPC213 cover as follows:

- (a) Remove the 193950 copy display rack from the LPW300 paper winder (if the cover is so equipped). Remove the paper roll from the typing unit. Disconnect the existing cable (with the 4-point receptacle) from its connector, located on the left side of the cover, and temporarily place the cable over the typing unit platen. Remove any grounding wires which may have been attached to the cover during the original installation. Remove the cover and attached paper winder (if so equipped) from the cover base plate.
- (b) If present, disconnect and discard any cable assembly which may have been installed during the original installation for operation of the LPW paper winder.
- (c) Refer to 4257WD of the LPC206 cover, and disconnect the 173877 cover connector cable assembly from the cover terminal block (T).
- (d) Cut all ties holding the 173877 cable assembly in position along the left rear corner of the cover, and remove the cable from its position between the cover and support channel.
- (e) Remove and retain the mounting hardware which fastens the transformer and connector mounting bracket to the left side of the cover. Discard the bracket and the 173877 cable assembly.

- (f) Referring to Figure 2, fasten the 325906 cover connector cable assembly to the 304843 connector mounting bracket with two 151692 screws and 2191 lockwashers. Mount the 304843 bracket and transformer to the left side of the cover, using the previously removed mounting hardware. Do not fasten any ground wires to the mounting screws.
- (g) Modify the dome door hinge to the cover as follows: Starting at the mounting screw on the right side of the cover hinge, add a 107116 lockwasher under the 7002 flat washer, and replace the existing 2191 lockwasher with another 107116 lockwasher. Refasten each screw, one at a time (6 places), to avoid misalignment of the dome door. At the mounting screw on the extreme left side, fasten the ground wire terminal from the 325906 cable assembly and transformer cable assembly between the 7002 flat washer and 107116 lockwasher. Refer to 8325WD.
- (h) Route the 325906 cover connector cable assembly downward between the cover and support channel at the left rear corner of the cover. Connect the cable to the cover terminal block (T) in accordance with 8325WD.
- (i) If present, remove and discard the 152797 retaining plate, 151532 form slot cover and associated mounting hardware from the rear of the cover.
- (j) Refer to 8328WD sheet 1 and insert the 325912 cord w/terminals through the grommet on the right rear side of the cover. Route and tie the cord along the inside of the rear support channel as indicated. Connect the cord to the cover terminal block (T) in accordance with 8328WD. If the cover is equipped with a LPW300 paper winder, connect it to the 325912 cord by means of the associated connectors. Replace the insulator cover on the terminal block and reclamp the copyright and margin indicator lamp cables by first taking up the cable slack at the terminal block so that the two cables are held taut to the side of the cover.
- 3.26 Remove the LP77YD/AGM typing unit from the LK25 keyboard.
- 3.27 Refer to 4257WD of the LPC206 cover, disconnect and discard the 173879 base connector cable assembly from the LK25 keyboard motor terminal block (S). Refer to 4304WD and disconnect the 173780 cable assembly from the LK25 keyboard motor terminal block (S).
- 3.28 Refer to 8325WD of the LPC213 cover and connect the 325907 base connector cable assembly to the LK25 keyboard motor terminal block (S). Do not connect the two green protective ground wires until so instructed.
- 3.29 Convert the LP77YD/AGM typing unit to a LP135YD/AGM typing unit as follows:

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- (a) Refer to 4196WD of the LP77YD/AGM typing unit, and unsolder the 173450 selector magnet cable assembly from the typing unit connector (AA) on terminals 33, 34, and 35.
  - (b) Install and adjust the 321216 modification kit including a selector magnet assembly with dust cover to the printer in accordance with Specification 50503S. Refer to 8326WD.
- 3.30 Remove the LK25 keyboard with motor unit from the cover base plate.
- 3.31 Convert the LK25 keyboard to a LK59 keyboard as follows: (Refer to 8327WD for the LK59 keyboard.)
- (a) Remove and retain the mounting hardware which fastens the 152467 connector to its mounting bracket. Unsolder and remove all attached leads from the connector; retain the connector.
  - (b) Remove the 151632 screw, 7002 flat washer, 2191 lockwasher, and 3598 nut which fastens the 121244 cable clamp at the left rear corner of the keyboard base. Disengage the clamp from its associated cables. Retain the 121244 clamp and 7002 flat washer; discard all other parts.
  - (c) Remove and retain the mounting hardware which fastens the 121242 cable clamp at the 154208 mounting bracket for the margin indicator switch. Disengage the clamp from its associated cable; discard the clamp.
  - (d) Remove and retain the 86304 contact link spring. Remove and retain the mounting hardware which fastens the signal generator contact box to the 154009 front plate of the signal generator mechanism. Discard the contact box with attached cable assembly and also the 154095 eccentric.
- 3.32 Install the 321272 shielded signal generator contact box modification kit on the keyboard as follows:
- (a) Remove the 323838 eccentric from the muslin bag tied to the 323645 contact box assembly. Discard the muslin bag. Place the 323838 eccentric in the slot provided on the contact box mounting bracket and install the assembly with attached cable and connector on the 154009 front plate of the signal generator mechanism using the original mounting hardware. Insert the end of the contact link into the slot in the 154010 transfer bail. Replace the 86304 contact link spring.
  - (b) Mount the 321243 connector mounting bracket on the left rear corner of the keyboard base with two 151632 screws, 2191 lockwashers, 7002 flat washers, and 3598 nuts. Insert the cable from the contact box through

the slot in the connector mounting bracket. Place the connector coupling and its mounting screws through the holes in the mounting bracket. Fasten the connector to the bracket with four 125011 flat washers, 110743 lockwashers, and 3599 nuts.

- (c) Clamp the cables from the 323645 contact box assembly and from the margin indicator switch at the 154208 bracket using the original mounting hardware and the 121244 cable clamp removed in Paragraph 2.31 (b). Make certain that the cables are clamped so that they do not interfere with any moving parts on the keyboard.
  - (d) Clamp the cable from the contact box assembly at the left front mounting screw for the 154088 nut plate near the 154106 bracket using the existing screw and lockwasher with the 7002 flat washer removed in Paragraph 2.31 (b) and a 121243 cable clamp (furnished). Clamp the cable in accordance with 8327WD maintaining cable slack under the top surface of the keyboard base so that there is no interference with any moving parts.
  - (e) Adjust the signal generator contact box assembly in accordance with Specification 50504S and Specification 50509S (Par. 5.01).
- 3.33 Remove and retain the 121242 cable clamp and its mounting hardware located at the front of the keyboard base. Remove and retain the 121243 cable clamp and its mounting hardware located at the right front corner of the keyboard base.
- 3.34 Remove and retain the two 151631 screws, 2191 lockwashers, and 7002 flat washers which fasten the 164650 clutch trip switch assembly to the signal generator frame. Cut the wire leads on the contact terminals and discard the switch assembly.
- 3.35 Remove and retain the two screws, lockwashers, and single flat washer which fasten the 164649 mounting plate to the 164644 and 164645 posts. Remove and retain the screw, lockwasher, and flat washer which fasten the 164649 mounting plate to the top of the keyboard base.
- 3.36 Cut the wire leads which are soldered to the 263M magnet coil. Remove and discard the 164379 cable assembly.
- 3.37 Remove and retain the screw and lockwasher which fasten the 158754 magnet core to the 164647 bracket. Replace the 263M magnet coil with the 252M magnet coil, furnished, and reassemble the magnet core to the bracket.

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- 3.38 Remount the 164649 mounting plate to the 164644 and 164645 posts with the original mounting hardware; use the flat washer on the slotted hole. Refasten the 164649 mounting plate to the top of the keyboard base with the original mounting hardware.
- 3.39 Mount the 326357 clutch trip switch assembly to the signal generator frame by means of the two 151631 screws, 2191 lockwashers, 7002 flat washers, previously removed.
- 3.40 Route the 326355 cable assembly along the front and right side of the keyboard base in accordance with 8327WD. Solder the 326357 switch assembly, 252M magnet and 152467 connector to the cable in accordance with 8327WD. Apply a 155750 insulating sleeve over each magnet and soldered connector terminal (8 places).
- 3.41 Clamp the 326355 cable assembly to the front and right front corner of the keyboard base by means of the original 121242 and 121243 cable clamps and mounting hardware. Make certain that the cable does not interfere with any moving parts on the keyboard.
- 3.42 Install the 154206 power cable assembly and 325911 strap on the keyboard by soldering the wire leads to the 152467 connector in accordance with 8327WD; apply a 155753 insulating sleeve over each soldered terminal (3 places). Connect the cable to the 151415 motor terminal block (S). Route the three green protective ground wires, one being the 325911 strap and two connected to one terminal from the 325907 base connector cable (Paragraph 3.28), to the 0.406 inch diameter hole located on the left side of the keyboard base. Fasten the wires at the hole by means of a 151632 screw, 2191 lockwasher, 7002 flat washer, the two wire terminals, and a 70314 flat washer above the hole while using a 151427 clamp plate below the hole. Refer to Figure 6.
- 3.43 Replace the 152467 connector on its mounting bracket with the original mounting hardware.
- 3.44 Adjust the new synchronous pulsed magnet mechanism and its conditioning contact mechanism in accordance with Bulletin 270B, Volume 1.
- 3.45 Disassemble the cover base plate and electrical service assembly from the mounting plate as follows:
  - (a) Refer to 4304WD and disconnect the 173780 cable assembly from the power terminal block in the electrical service assembly. Discard the 173780 cable assembly. Disconnect all power input connections to the electrical service assembly.



- (b) Cut the 173851 typing unit cable assembly at the H terminal block in the electrical service assembly. Discard the cable assembly. Unsolder all outgoing lines and control connections from the H terminal block.
  - (c) Remove all outgoing leads and associated conduit from the electrical service assembly.
  - (d) If so equipped, disconnect the PW201 paper winder from the electrical service assembly, and remove the paper winder from the mounting plate.
  - (e) Remove the two 91742 nuts that secure the two 173714 bushings, in the electrical service assembly, to the cover base plate and the mounting plate. Remove the four 74805 screws, 2669 lockwashers, and 41663 flat washers that secure the cover base plate and electrical service assembly to the mounting plate. Discard the electrical service assembly and all mounting hardware.
  - (f) Remove the mounting plate from the mounting rack.
- 3.46 Assemble the 324061 electrical service assembly to the mounting plate and cover base as follows, (refer to Figure 3):
- (a) Mounting hardware for the electrical service assembly.

<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
2669	Lockwasher	4
3438	Flat washer	4
91742	Locknut	2
112626	10-32 hex nut	4
151572	Lockwasher	4
326732	Stud	4
326733	Spacer	2
326734	Nut spacer	4

- (b) Screw the shorter threaded end of the 326732 stud into each of the four 10-32 tapped weld nuts on top of the electrical service assembly. Place a 326733 spacer over each of the two 326731 bushings, with 91742 locknuts. Place the mounting plate on the electrical service assembly so that the two bushings and four studs extend through the appropriate holes in the mounting plate. Secure the mounting plate to the electrical service assembly by means of 91742 locknuts on the bushings, and four 326734 nut spacers on the studs. Secure the cover base plate to the mounting plate by means of a

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151572 lockwasher, 3438 flat washer, 2669 lockwasher, and 112626 nut on each of the four studs.

3.47 Install the 325914 cable assembly as follows:

- (a) With the cover base plate, mounting plate, and electrical service assembly all fastened together, set the mounting plate on its rear edge and support it in this position. Remove the two screws, lockwashers, and flat washers that fasten the hinged lid of the electrical service assembly, and open the lid so that the components within the assembly are accessible as indicated in Figure 4. Loosen the quarter-turn fastener on the outer cover of the 325919 container assembly and remove the outer cover. Loosen the two quarter-turn fasteners on the inner cover of the 325919 container assembly, and remove the inner cover.
- (b) Refer to 8328WD, sheet 1, and insert the 325914 cable assembly through the right 326731 bushing into the electrical service assembly. Remove the nut and lockwasher from the mounting bushing on the cable assembly, but retain them on the cable. Insert the nut and lockwasher while still on the cable wire through the left keyhole slot in the outer frame of the 325919 container assembly so that the terminals on the cable extend through the eyelet in the inner frame of the container. Reassemble the lockwasher and nut back on the mounting bushing, and fasten the cable assembly by means of the mounting bushing to the outer frame of the containers. (Refer to Figure 5.) Continue routing the 325914 cable assembly along the upper right corner of the inner frame to the bottom terminal block (TC). Remove the two screws and lockwashers that fasten the terminal block cover and upper insulator to the upper terminal block. Remove the two posts and lockwashers that fasten the upper terminal block and insulator to the lower terminal block. Move the upper terminal block and its attached wire leads to the left so that the bottom terminal block (TC) is accessible. Connect the 325914 cable assembly to the bottom terminal block according to 8328WD sheet 1 and 8330WD sheet 3.

3.48 Install the 325915, 325908, and 325913 cable assembly as follows:

- (a) With the electrical service assembly in the position indicated by Figure 4, refer to 8328WD, sheet 4, and insert the 325915 cable assembly through the right 326731 bushing into the electrical service assembly. Remove and discard the screw, lockwasher, and nut fastened in the right keyhole slot in the outer frame of the 325919 container assembly. Remove the nut and lockwasher from the mounting bushing on the 325915 cable assembly, but retain them on the cable. Insert the nut and lockwasher while still on the cable wire through the left keyhole slot in the outer frame of the 325919 container assembly so that the terminals on the cable extend



through the eyelet in the inner frame of the container. Reassemble the lockwasher and nut back on the mounting bushing and fasten the cable assembly by means of the mounting bushing to the outer frame of the container. Refer to Figure 5. Continue routing the 325915 cable assembly along the upper right corner of the inner frame to the bottom terminal block (TC). Connect the cable to the bottom terminal block in accordance with 8328WD sheet 4, and 8330WD sheet 3. Reassemble the upper terminal block and insulator to the lower terminal block. Reassemble terminal block cover and upper insulator after the external signal lines have been connected.

(b) Refer to 8328WD, sheet 1, and insert the 325908 cable assembly through the right 326731 bushing into the electrical service assembly. Route the cable to the 40-point terminal block (H) and secure it there by means of the cable clamp. Connect the cable according to 8328WD sheet 2.

(c) Refer to 8328WD, sheets 2 and 4, and 8329WD, sheet 2, and insert the 325913 cable assembly through the left 326731 bushing into the electrical service assembly. Route the cable to terminal block (TD) and secure it there by means of the cable clamp provided. Connect the cable to terminal blocks (TD) and (TA) in accordance with 8328WD and 8329WD. Perform a continuity check on the keyboard connector of the 325913 cable assembly to make certain of the proper connections to terminal block (TD).

3. 49 Replace the mounting plate with attached electrical service assembly and cover base plate on the mounting rack.
3. 50 Replace the modified keyboard on the cover base plate by means of the four original mounting studs.
3. 51 Refer to 8325WD of the LPC213 cover and route the green protective ground wire of the 325907 base connector cable assembly from the ground screw on the keyboard base to the 6-40 tapped hole at the rear center of the cover base plate. Use the tapped hole which is closest to the keyboard base. If the cover base plate is equipped with a cover locating screw and bracket in this position, remove and discard them together with the associated mounting hardware. Refer to 8328WD, sheet 1, and fasten one end of the 325910 strap assembly to the cover base plate along with the green ground wire. Fasten them by means of a 151632 screw, 2191 lockwasher, 76099 flat washer, green ground wire terminal, strap assembly terminal, 76099 flat washer, and 107116 lockwasher into the plate. Refer to Figure 7.
3. 52 Loosely assemble the following hardware on the free-end terminal of the 325910 strap assembly: a 151632 screw, 2191 lockwasher, 76099 flat washer, strap assembly terminal, 76099 flat washer, 107116 lockwasher, and 151427 clamp plate.

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- 3.53 Install the modified typing unit on the modified keyboard.
- 3.54 Connect the 325914 and 325908 cable assemblies to the associated connectors on the typing unit. Connect the 325913 and 325915 cable assemblies to the associated connectors on the keyboard. Take up the slack in the four cable assemblies by fitting them under the mounting rails on the cover base plate.
- 3.55 Temporarily place the 8-point receptacle of the 325907 base connector cable assembly over the typing unit platen and place the loose end of the 325910 strap assembly over the typing unit support rod behind the stunt box.
- 3.56 Install the modified cover over the typing unit and position it by means of the shoulder screws located at the sides of the cover base plate. Connect the 8-point receptacle to the associated connector located on the left side of the cover and position the cable assembly along the left side of the cover so that it does not interfere with any moving parts on the typing unit.
- 3.57 Refer to 8328WD, sheet 1, and fasten the 325910 strap assembly to the cover by means of a slot formerly occupied by the retaining plate for the form slot cover. Slide the terminal mounting hardware in the slot so that the cover is clamped between the 76099 flat washer and 107116 lockwasher. Refer to Figure 7.
- 3.58 If the original set was equipped with a PW201 paper winder refer to 1543WD and remove the 89239 3-point connector from the 142557 power input cable assembly, originally furnished with the PW201 paper winder. Install the 89239 connector in place of the 114466 connector on the 325912 cord w/terminal at the right rear corner of the cover. Replace the paper winder on the mounting plate and connect it to the modified 325912 cord by means of the associated connectors.
- 3.59 Replace the paper roll in the typing unit. If the original set was equipped with a 193950 copy display rack, replace that also. Install the paper on the paper winder.
- 3.60 Make external connections to the set as follows:
  - (a) Refer to Figure 8 for the normal external conduit connections to the electrical service assembly. As in the case of the original service assembly, the ac power input and normal control input may be connected to either side of the assembly by removing the appropriate knockouts. Access plates, identical to those on the original assembly, are provided at the rear for fastening the locknuts on the conduit fittings. Note that the conduit for the signal line input must be connected directly to the 325919

signal circuit container within the service assembly. When desired, synchronous pulse control leads are normally brought in with the typing unit (LP) stunt box control leads.

- (b) Remove and retain the access plate and its mounting hardware at either or both sides of the electrical service assembly, as desired. Fasten 3/4 inch conduit for the ac power input to either side of the servicing assembly, as desired. Route the power input leads through the conduit into the compartment on the left side of the service assembly. Refer to 8329WD, sheet 1, and route the power input leads to terminal block (TA) located on a bracket attached to the rear wall of the service assembly. Turn the power switch to the OFF position. Connect the power input leads in accordance with 8329WD, paying particular attention to Notes 12, 15, and 17.
- (c) Fasten 3/4 inch conduit for the normal control input to either side of the service assembly, as desired. Route the control leads for the typing unit stunt box through the conduit into the compartment on the right side of the service assembly. Refer to 8328WD, sheet 1, and 8332WD, sheet 2, and route the control leads to the 40-point terminal block (H) located on the hinged lid of the electrical service assembly. Connect the control leads in accordance with 8331WD. A cable clamp has been provided to secure the leads.
- (d) Route the synchronous pulse control leads, which are normally brought in with control leads for the typing unit stunt box, through the eyelet in the service assembly partition into the compartment on the left side of the assembly. Refer to 8328WD, sheet 4, and 8329WD, sheet 2, and route the synchronous pulse control leads to terminal block (TD). Connect these control leads in accordance with 8329WD, paying particular attention to Note 14. Replace the access plates previously removed.
- (e) Fasten 3/4 inch conduit for the signal line input and output to the 325919 container assembly inside the service assembly. Fasten the conduit by means of the 1.094-inch hole provided in the outer frame of the container assembly. Make certain that the conduit fitting does not contact the inner frame of the container. Route the signal line leads through the conduit into the inner enclosure of the container. Refer to 8330WD and 8332WD, sheet 3, and route the signal line leads to the upper 6-point terminal block (TB) located on the right side of the container. Connect the signal input leads to terminals TB2 (signal) and TB4 (common); connect the signal output leads to terminals TB3 (signal) and TB4 (common). Refer to Note 15 on 8332WD and remove the strap between terminals TB1 and TB3, if desired. Tape the signal shielding to prevent its unintentional grounding.

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- (f) Note that the 325919 container assembly provides +6 volt signal battery to the 303142 low level keyer. If external signal battery is to be provided, follow the procedure outlined in Note 14 of 8332WD.
- (g) Reassemble the terminal block cover and upper insulator which were previously removed from the 325919 container assembly.
- 3.61 Auxiliary conduit connections have been provided for the synchronous pulse control leads only. Refer to Figure 9. If desired, remove the appropriate knockouts and connect 1/2 inch conduit for these control leads directly to either side of the service assembly compartment which houses the synchronous pulse control circuitry. Route the control leads through the conduit directly to terminal block (TD) and connect them as previously instructed.
- 3.62 Refer to 8330WD, sheet 2, for the 325919 container assembly and insert the 321290 power supply circuit card in its associated connector (PA). Insert the 303142 polar line keyer circuit card in its associated connector (KA). Insert the 323810 selector magnet driver circuit card in its associated connector (SA).
- 3.63 Refer to 8329WD, sheet 2, for the 324061 electrical service assembly and insert the 321290 power supply circuit card in its associated connector (PC). Insert the 321991 clutch magnet driver circuit card in its associated connector (CA).
- 3.64 Replace and secure the inner cover on the inner frame of the 325919 container assembly. Replace and secure the outer cover on the outer frame of the 325919 container assembly. Close the hinged lid of the electrical service assembly and secure it by first fastening the previously removed mounting screw in the lower side of the lid and then the mounting screw in the upper side of the lid.
- 3.65 With the installation of the 324057 modification kit thus completed, the equipment is ready for operation. The operation of the modified TT-307/UG or TT-307A/UG Send-Receive Set is similar to that of the original equipment except that it now is intended for use only in systems requiring a polar (+6 v) low level interface. Make certain to finalize the adjustment of the dust cover on the typing unit in accordance with Specification 50503S and the adjustment of the signal generator contact box assembly on the keyboard in accordance with Specification 50504S, and Specification 50509S (Par. 5.02).

- C. Installation of receive-only or send-receive sets when electrical service assembly is separated from the cover base plate.
- 3.66 If for any particular installation the electrical service assembly is not fastened to the cover base plate as indicated in Figure 3, the electrical service assembly must be connected and thereby grounded to the cover base plate by means of 1/2 inch flexible armored conduit. The conduit fittings should be fastened to the electrical service unit and to the cover base plate by means of the mounting holes normally occupied by the 326731 bushings. The interconnecting cables must then be routed through the conduit.

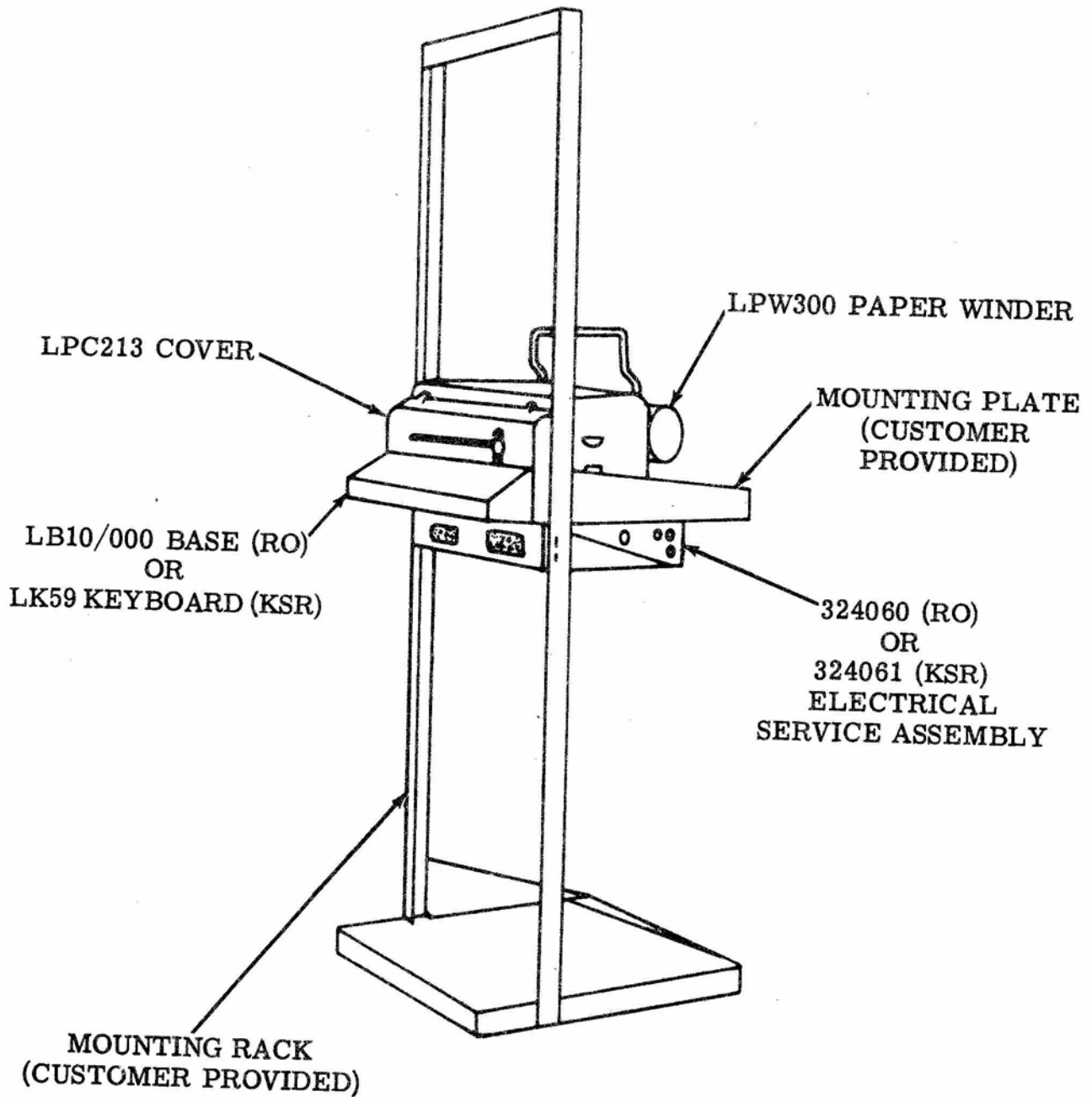


Figure 1 - Rack-Mounted Receive-Only (RO) or Send-Receive (KSR) Printer Set

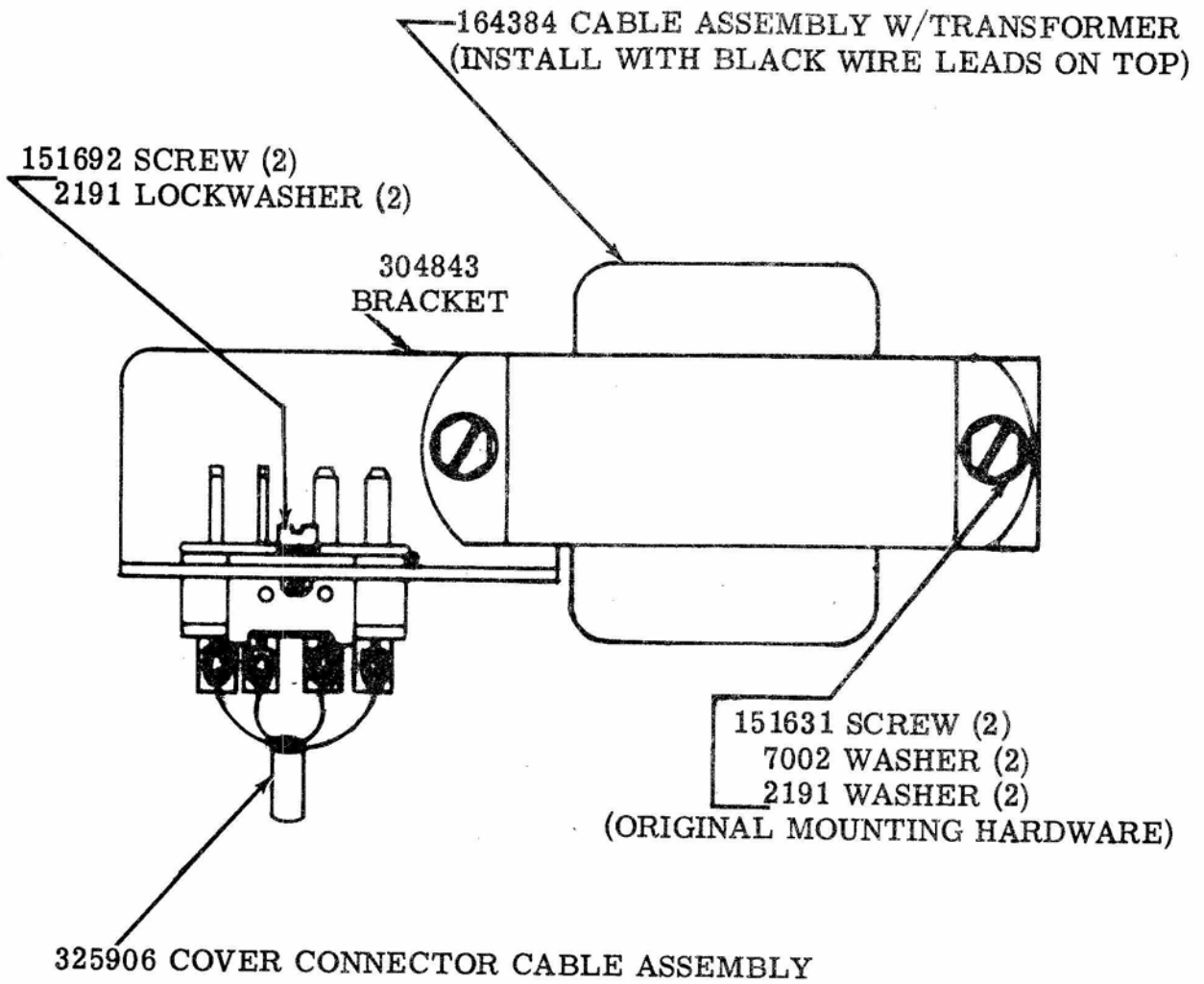


Figure 2 - Modification of a LPC206 Cover to a LPC213 Cover



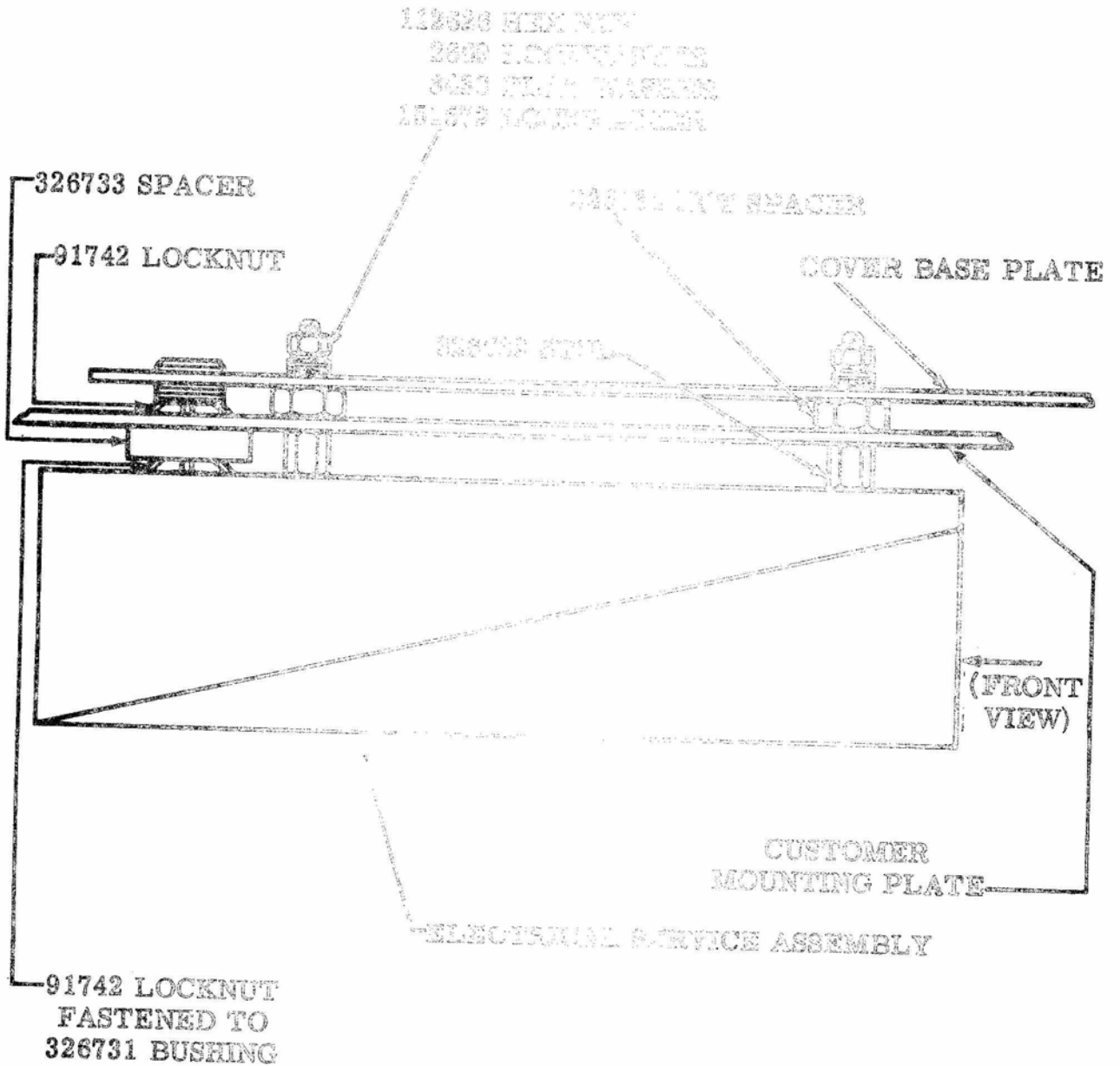


Figure 3 - Installation of the Cover Base Plate and Electrical Service Assembly on Customer Mounting Plate

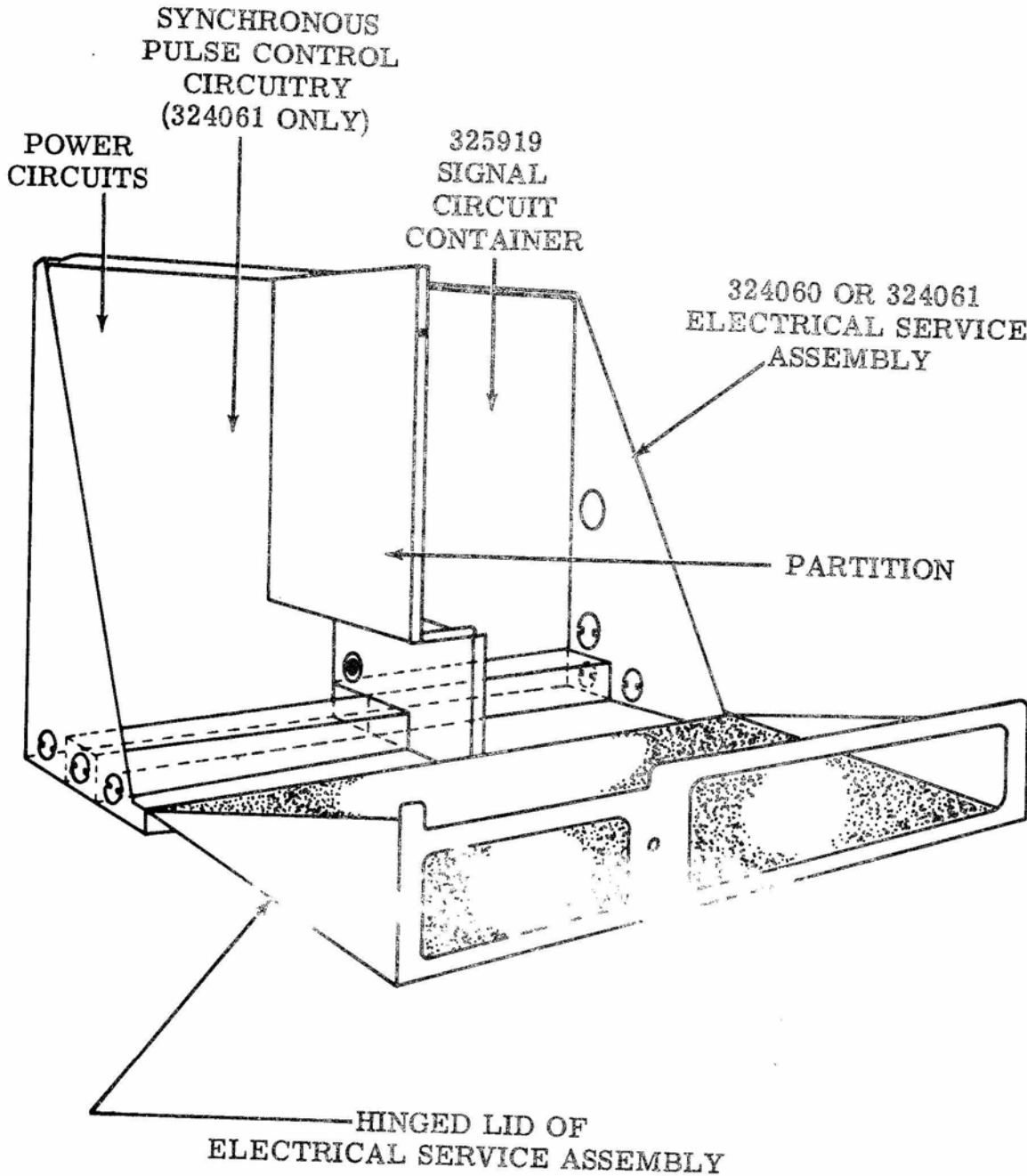


Figure 4 - Inputs for Receive-Only or Send-Receive Sets

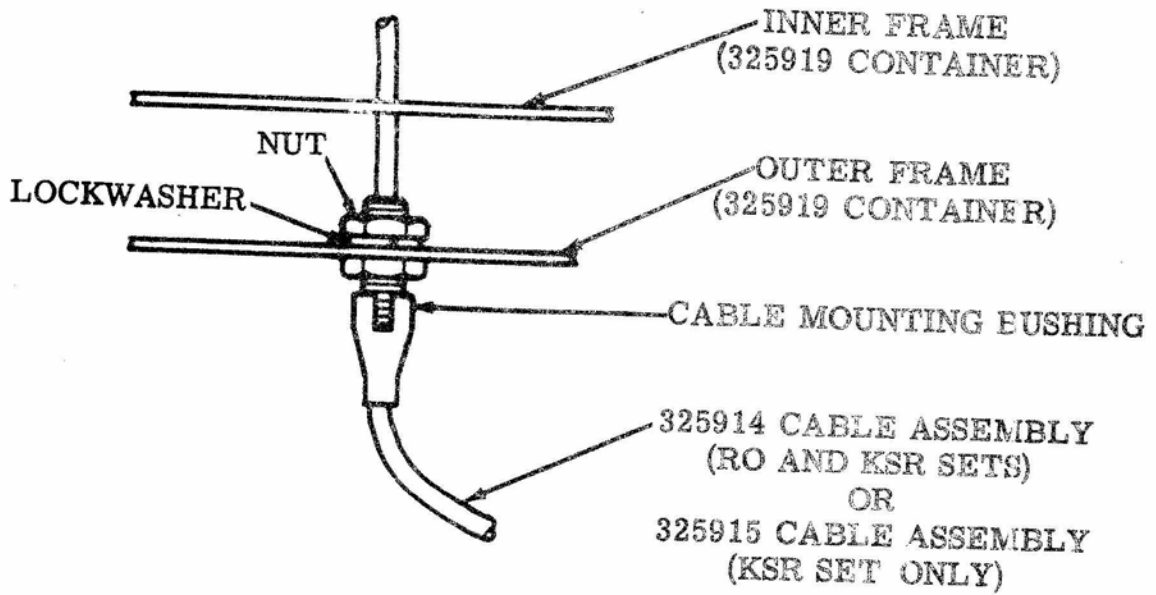


Figure 5 - Cable Assembly Mounting

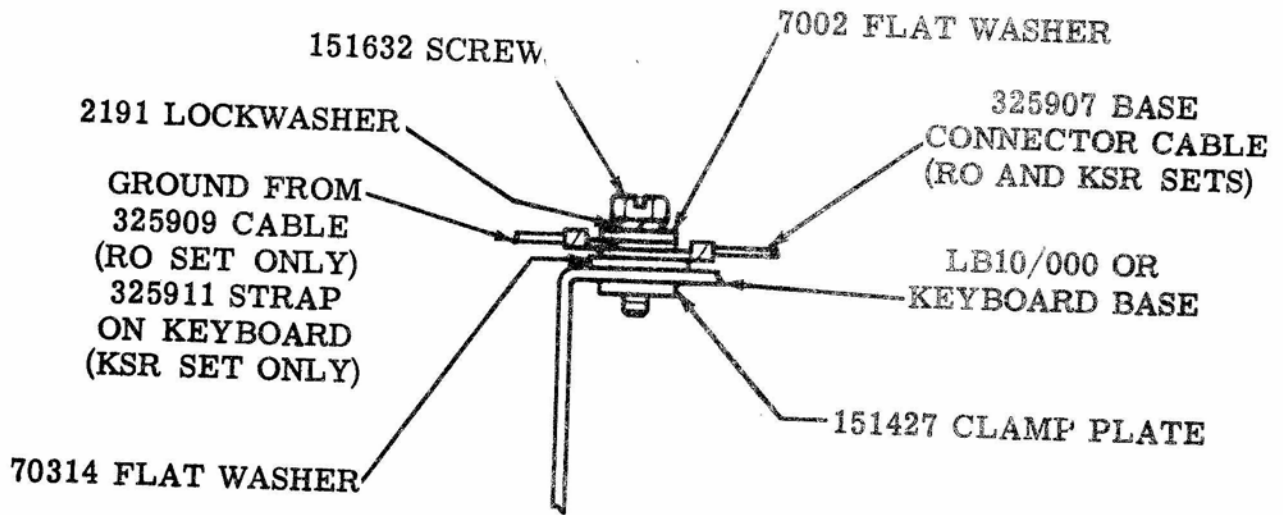


Figure 6 - Cable Assembly Mounting

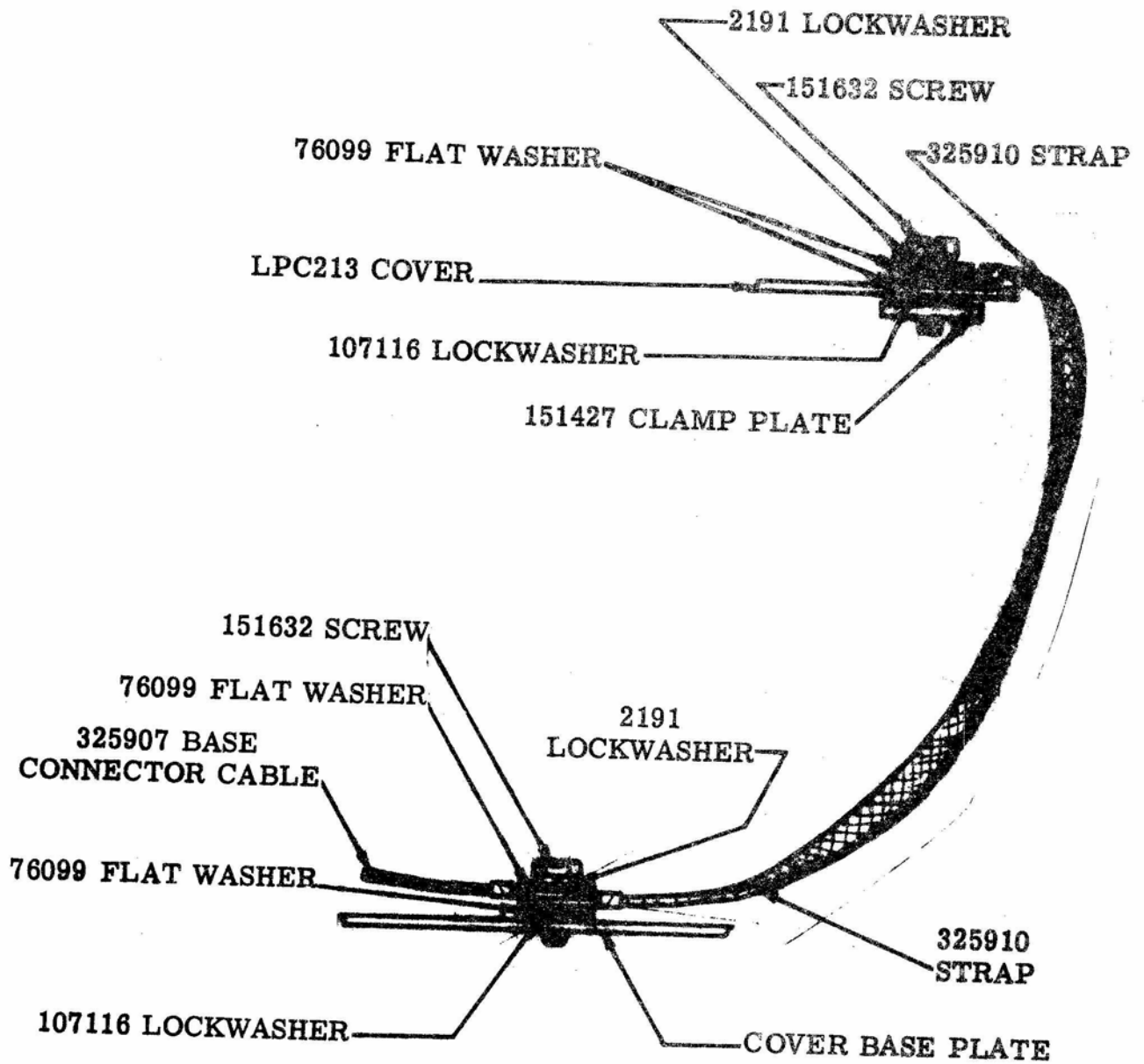
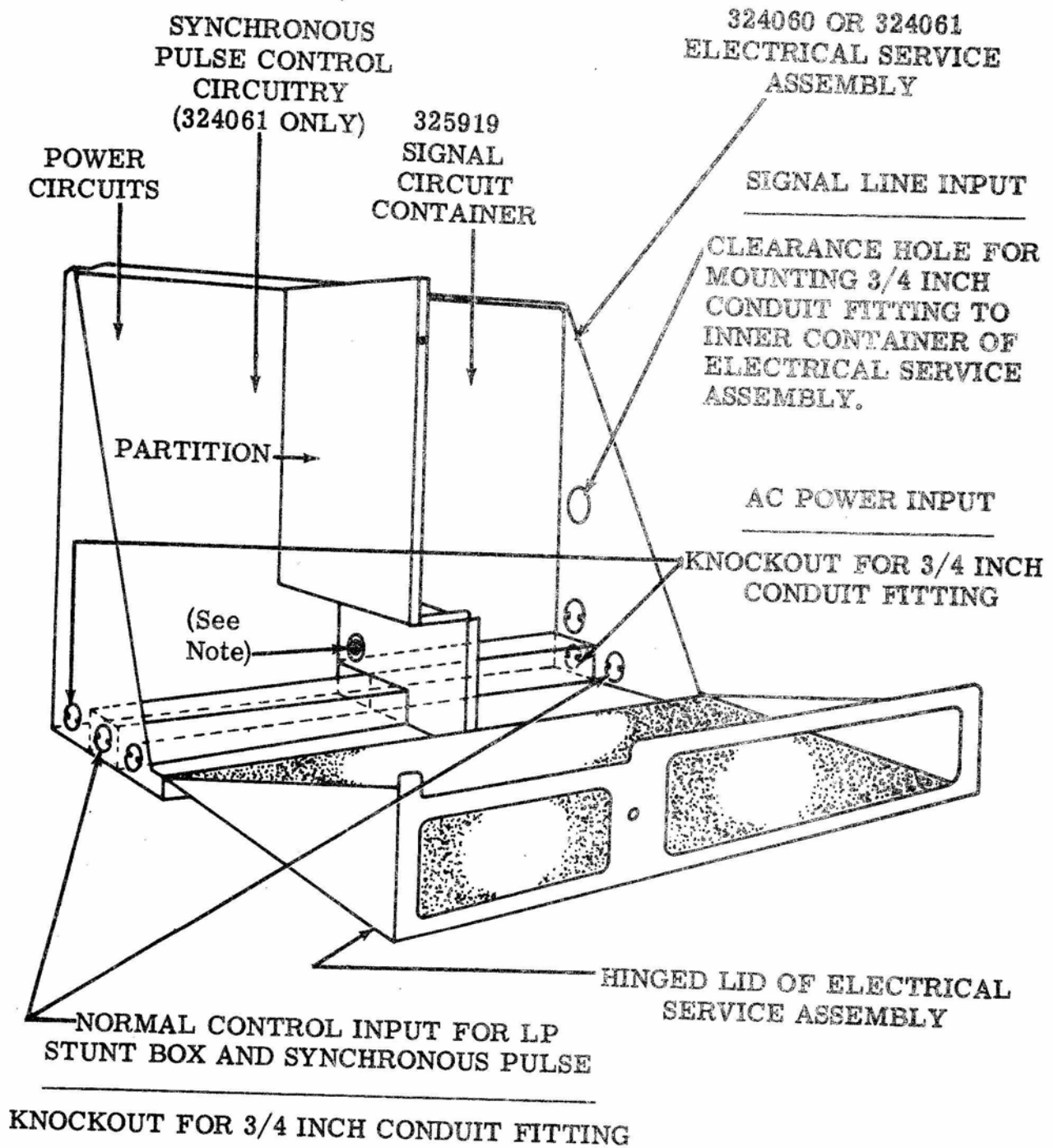


Figure 7 - 325910 Strap Assembly

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Note: Eyelet entrance for synchronous pulse control cable when using normal control inputs.

Figure 8 - Normal Connections for Receive-Only or Send-Receive Sets

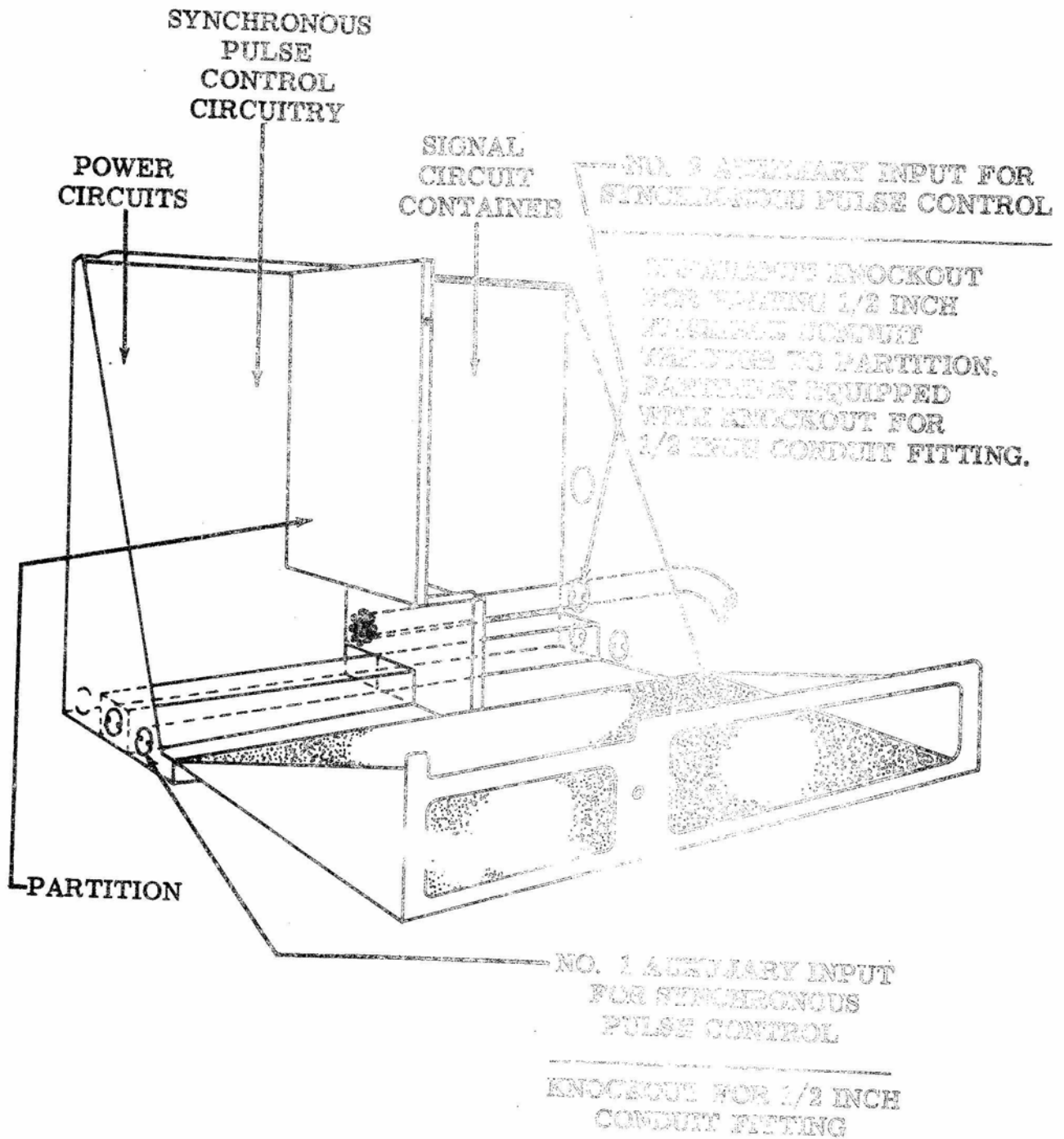


Figure 9 - External Connections to Electrical Service Assembly (Auxiliary Connections for Semi-Inductive Sets Only)

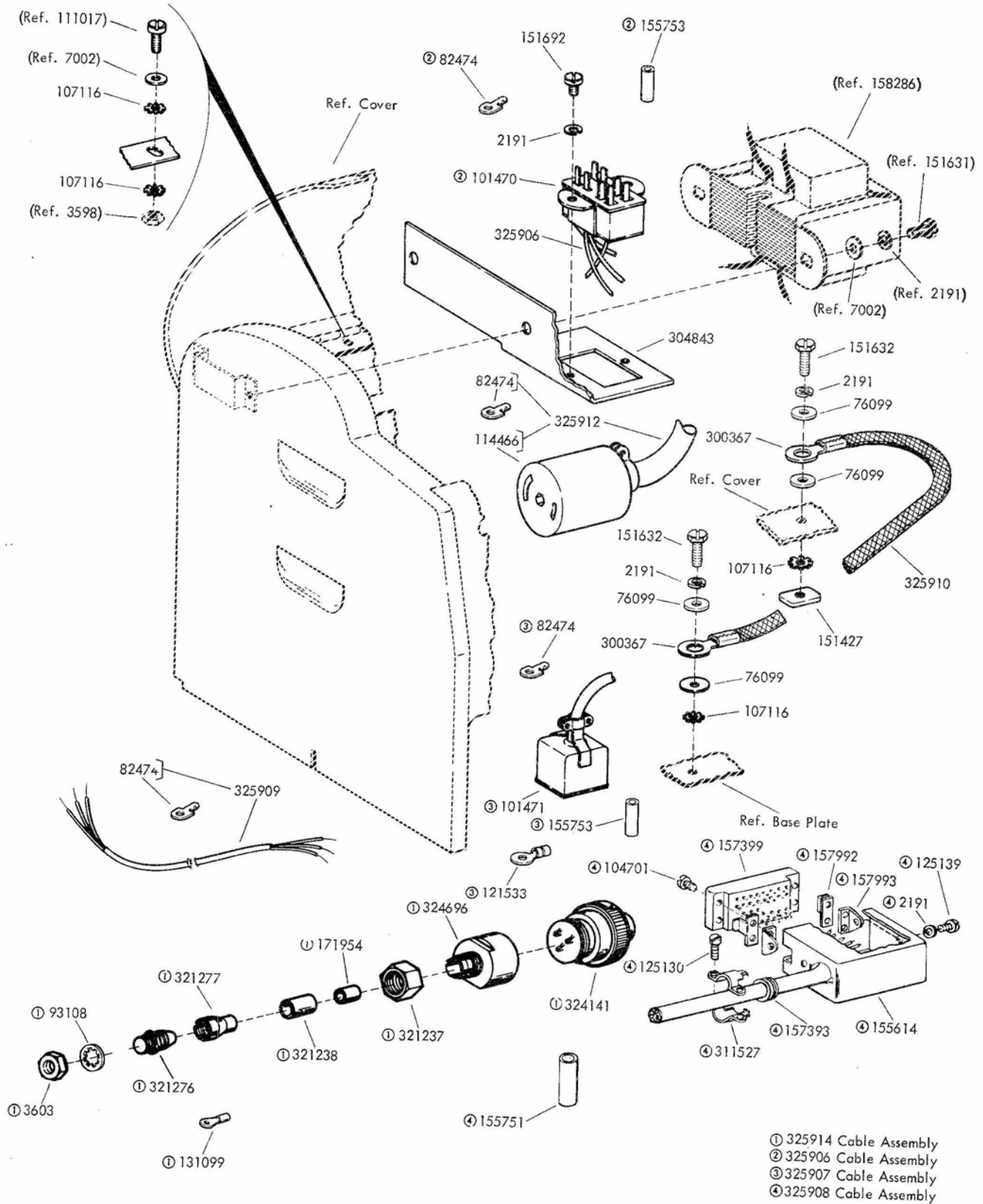


Figure 10 - Parts for Receive-Only and Send-Receive Printer Sets



## NUMERICAL INDEX - FIGURE 10

Part Number	Description	Part Number	Description
2191	Washer, Lock	157393	Grommet, Rubber
3598	Nut, 6-40 Hex	157399	Connector, 35 Pt Receptacle
3603	Nut, 1/4-32 Hex	157992	Bracket
7002	Washer, Flat	157993	Bracket
76099	Washer, Flat	158286	Transformer
82474	Terminal	171954	Connector, Blue Shielding
93108	Washer, Lock	300367	Terminal
101470	Connector, 8 Pt Plug	304843	Bracket, Connector
101471	Connector, 8 Pt Receptacle	311527	Clamp, Cable
104701	Screw, 4-40 x 9/32 Fil	321237	Nut, 3/8-32 Spl
107116	Washer, Lock	321238	Sleeve
111017	Screw, 6-40 x 5/16 Fil	321276	Bushing
114466	Connector, 3 Pt Receptacle	321277	Clamp
125130	Screw, 6-32 x 1/2 Fil	324056	Modification Kit
125139	Screw, 4-40 x 1/8 Fil	324057	Modification Kit
151427	Plate, Clamp	324141	Connector, 3 Pt Receptacle
151631	Screw, 6-40 x 5/16 Hex	324696	Coupling, Connector
151632	Screw, 6-40 x 3/8 Hex	325906	Cable Assembly
151692	Screw, 6-40 x 3/16 Fil	325907	Cable Assembly
155614	Cover	325908	Cable Assembly
155751	Sleeve, 1/8 ID x 1" Lg Insulating	325909	Cable w/Terminals
155753	Sleeve, 1/8 ID x 1/2" Lg Insulating	325910	Strap, 10-1/2 Lg
		325912	Cable Assembly

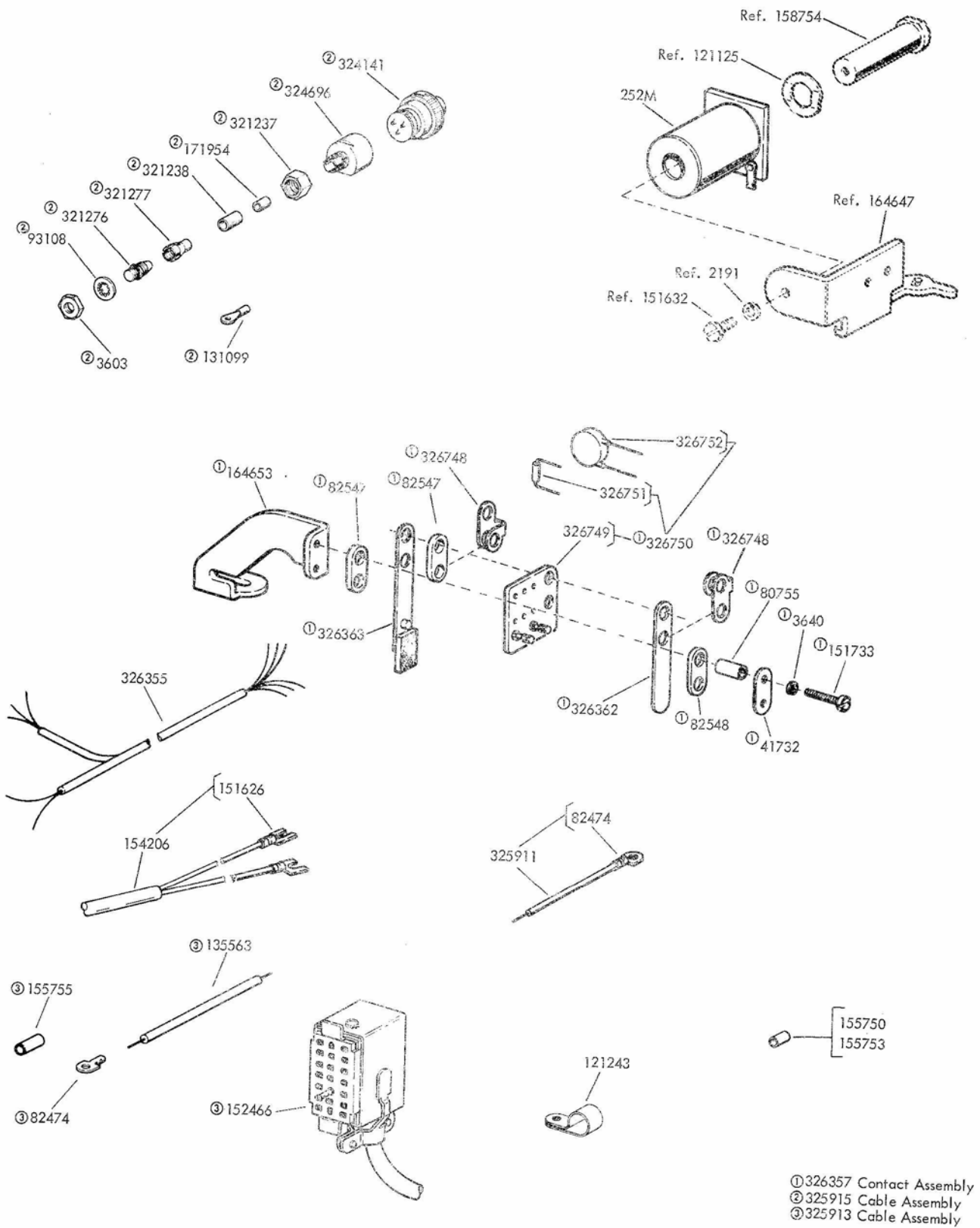


Figure 11 - Parts for Send-Receive Printer Sets

## NUMERICAL INDEX - FIGURE 11

Part Number	Description	Part Number	Description
252M	Coil, Magnet	158754	Core, Magnet
2191	Washer, Lock	164647	Bracket
3603	Nut, 1/2-32 Hex	164653	Bracket
3640	Washer, Lock	171954	Connector, Blue
41732	Plate, Clamp		Shielding
80755	Bushing, Insulating	321237	Nut, 3/8-32 Spl
82474	Terminal	321238	Sleeve
82547	Insulator, .094" Thk	321276	Bushing
82548	Insulator, .062" Thk	321277	Clamp
93108	Washer, Lock	324141	Connector, 3 Pt Receptacle
121125	Washer, Spring	324696	Coupling, Connector
121243	Clamp, 3/16 ID Cable	325911	Jumper, 6-1/2" Lg Green
151626	Terminal	325913	Cable Assembly
151632	Screw, 6-40 x 3/8 Hex	325915	Cable Assembly
151733	Screw, 4-40 x 9/16 Fil	326357	Contact Assembly
152466	Connector, 20 Pt Receptacle	326362	Spring, Contact
154206	Cable	326363	Spring, Contact
155750	Sleeve, 3/32 ID x 1/2" Lg	326748	Strap, Contact
	Insulating	326749	Board, Terminal
155753	Sleeve, 1/8 ID x 1/2" Lg	326750	Board, Filter
	Insulating	326751	Resistor, 22 Ohm
		326752	Capacitor, .03 MFD