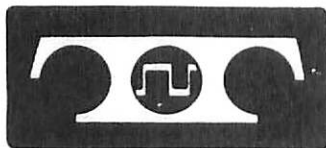


BULLETIN 311B/RF
NAVSHIPS 0967-173-7030
T. O. 31W4-4-5-1064
VOLUME 3 (Of 4 Volumes)

TECHNICAL MANUAL
28 KEYBOARD SEND-RECEIVE (KSR)
AND RECEIVE-ONLY (RO)
TELETYPEWRITER SETS



TELETYPE[®]
CORPORATION

5555 TOUHY AVENUE, SKOKIE, ILLINOIS

INTRODUCTION

Volumes 3 and 4 have been added to Bulletin 311B to include Radio Frequency Interference Suppression features for the 28 Keyboard Send-Receive (KSR) and Receive-Only (RO) Teletypewriter Sets. These volumes are identified by an RF suffix and must be used with Volumes 1 and 2 which contain literature for the standard features. Volumes 1 and 2 must be used with all sets whether RFI modified or not.

Volume 3, identified as 311B/RF (NAVSHIPS 0967-173-7030), provides descriptive information and parts ordering information peculiar to sets with RFI features installed.

Volume 4, identified as 311B/RF (NAVSHIPS 0967-173-7040), provides wiring diagrams for sets and their components that are equipped with RFI features.

Each volume is made up of a group of appropriate independent sections. The sections are complete within themselves; they are separately identified by title and section number and the pages of each section are numbered consecutively, independent of other sections.

The identifying number of a section, a 9-digit number, appears at the top of each page of the section, in the left corner of left-hand pages and the right corner of right-hand pages.

To locate specific information, refer to the table of contents. The name of the involved component, the title of the section, and the 9-digit section number may then be found. The sections are arranged in the order shown in the table of contents. Turn to page one of the section indicated where the contents of the section will be found (except where a section is small and does not require a listing of contents).

VOLUME 3

TABLE OF CONTENTS

<u>Title</u>	<u>Contents</u>	<u>Section</u>	<u>Issue</u>
Radio Frequency Interference (RFI) Suppression for 28 Teletypewriter Equipment	Description	573-600-100TC	1
Radio Frequency Interference (RFI) Suppressed 28 Teletypewriter Sets	Installation	573-600-200TC	1
Radio Frequency Interference (RFI) Suppression for 28 Typing Units and Typing and Nontyping Reperforators	Description and Adjustments	573-610-100TC	1
Radio Frequency Interference (RFI) Suppression for 28 Keyboards, 28 Transmitter Distributors, and 28/32 Keyboards	Description and Adjustments	573-611-100TC	1
Radio Frequency Interference (RFI) Suppression for 28 Cabinets	Description	573-612-100TC	1
Electrical Service Assemblies for Low-Level Radio Frequency Interference (RFI) Suppression	Description and Principles of Operation	573-613-100TC	1
Radio Frequency Interference (RFI) Suppression for 28 Electrical Service Assemblies and Associated Components	Troubleshooting	573-613-300TC	1
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets 28 Typing Unit	Parts	573-610-800TC	1
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets 28 and 28/32 Keyboards and Bases (LK, LTRK, LAK, LLK and LB, LLB)	Parts	573-611-800TC	1
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets — 28 ASR/KSR Cabinets	Parts	573-612-800TC	1
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets — 28 Multi-Page Printer Cabinet	Parts	573-612-801TC	1

VOLUME 3

TABLE OF CONTENTS (Continued)

<u>Title</u>	<u>Contents</u>	<u>Section</u>	<u>Issue</u>
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets — 28 Electrical Service Assembly (ESA)	Parts	573-613-800TC	1
Radio Frequency Interference (RFI) Suppression Features for Low-Level Sets — 28 Electrical Service Units	Parts	573-613-801TC	1

RADIO FREQUENCY INTERFERENCE (RFI) SUPPRESSION
FOR 28 TELETYPEWRITER EQUIPMENT

GENERAL DESCRIPTION

CONTENTS	PAGE
1. GENERAL	1
2. SIGNALING	1
3. CABLING	1
4. ELECTRICAL SERVICE ASSEMBLY	1
5. CROSS REFERENCE CHARTS	3

1. GENERAL

1.01 This section, together with other associated sections, is intended for use as a supplement to standard literature covering teletypewriter equipment sets which have radio frequency interference (rfi) suppression features installed. It presents the general principle and purpose of radio frequency interference suppression as applied to 28 teletypewriter equipment. Only a broad view is taken in this section, since rfi has been applied to various equipment sets. For more detailed information regarding particular sets and component units, refer to associated sections in this series.

1.02 Rfi suppression as applied to teletypewriter equipment is accomplished by means of shielding and wave shaping a low level electrical telegraph signal throughout the equipment. The installations vary with each set, but produce the same results of insuring signal line privacy.

2. SIGNALING

2.01 The code is transmitted by means of a ± 6 volt polar signal through a network of shielded cables to the shielded container of the electrical service assembly. A +6 volt signal is mark; a -6 volt signal is space.

3. CABLING

3.01 The shielded cabling varies with each set according to need. Each component unit of a set is equipped with sufficient shielding, in the form of metallic enclosures and shielded cables, to suppress signal radiation. All signal generators and magnet assemblies in the signal circuitry are shielded by means of metal containers attached to their respective cables. Interconnecting cables join the component units to the electrical service assembly by means of metal connectors which screw together for a tight shielded connection.

4. ELECTRICAL SERVICE ASSEMBLY

4.01 The electrical service assembly is an electrically shielded container in which the shielded cables terminate. It also serves as a housing for certain components such as plug-in selector magnet driver circuit cards, clutch magnet driver circuit cards, keyer circuit cards, power supply circuit cards, and relays.

4.02 Electrical service assemblies which house low level keyers (LLK) and selector magnet drivers (SMD) have double shielded containers and double shielded cables with appropriate connectors for LLK and SMD connections to external equipment.

SECTION 573-600-100TC

5. CROSS REFERENCE CHARTS

5.01 These charts provide a cross reference of Navy coded sets and Teletype coded sets, list the components that make up a set, the electrical service assembly for each set, and the wiring diagram package (WDP) applicable to each set.

5.02 The abbreviations used in the charts are defined as:

ASR - Automatic Send-Receive
KSR - Keyboard Send-Receive

RO - Receive Only
ROTR - Receive-Only Typing Reperforator
SRTR - Send-Receive Typing Reperforator
ESA - Electrical Service Assembly
LLK - Low-Level Keyer
SMD - Selector Magnet Driver
CMD - Clutch Magnet Driver
PS - Power Supply
WDP - Wiring Diagram Package

5.03 A chart providing detailed information for the various electrical service assemblies can be found in Section 573-613-100TC covering the electrical service assemblies.

NOTE: CHART A on Pages 3/4 is missing...

CHART B

COMPONENTS

SETS OF GEARS

28 KSR AND RO SETS	WDP	LP134YD/AGM LP135RN/AJG LP138RN/AJG LP153YD/ACX TP173795 Gear Set (45-5) TP104986 Tuning Fork TP154754BR Subbase	LAC227BR LAC230BR LPC213BR	LESU128 LESU131	LK59BRW LK61BRW LK61ARN LK73ARN LB10/000 LB40	LMU3 LMU38 LMU41	ESA321225* ESA321226* ESA323820* ESA324060* ESA324061* ESA325918* ESA326471*	LPW300BR	Copy Display Rack	Baud						
										Part No.						
										74.2	50	75	75			
										161295	163504	163505	312705			
AN/UGC-47 28RFK2002B/005/AVX/BR	0050	28RFC2001B/005/AVX/BR X	X	X X	X	X	X X								X	
AN/UGC-47X 28RFK2002B/005/BWX/BR	0050	28RFC2001B/005/BWX/BR X	X	X	X	X	X X									X
AN/UGC-50 28RFK1000B/009/AVX/BR	0038	28RFC1000B/009/AVX/BR X		X		X	X		X	X					X	
AN/UGC-50X 28RFR1000B/009/BWX/BR	0038	28RFC1000B/009/BWX/BR X		X		X	X		X	X					X	
AN/UGC-51 28RFK2000B/009/AVX/BR	0039	28RFC2000B/009/AVX/BR X		X	X	X	X		X	X					X	
AN/UGC-51X 28RFK2000B/009/BWX/BR	0039	28RFC2000B/009/BWX/BR X		X	X	X	X		X	X						
AN/UGC-50Y 28RFK1000B/009/AWX/BR	0038	28RFC1000B/009/AWX/BR X		X		X	X		X	X					X	
AN/UGC-51Y 28RFK2000B/009/AWX/BR	0039	28RFC2000B/009/AWX/BR X		X	X	X	X		X						X	
AN/UGC-55 28RFK2001B/009/AWX/BR	0039	28RFC2003B/009/AWX/BR X		X	X	X	X		X	X					X	
28RFR1003B/011/AWX/BR	0077	28RFC1003B/011/AWX/BR X		X		X	X		X						X	
AN/UGC-58 28RFK1001B/008/AWX/BR	0038	28RFC1001B/008/AWX/BR X		X		X	X		X	X					X	
AN/UGC-60 28RFK2001A/004/AAX/BR	0050	28RFC2001A/004/AAX/BR X	X	X	X	X	X X							X		
AN/UGR-8 28RFR1002B/004/AVX/BR	0110	28RFC1002B/004/AVX/BR X	X	X		X X	X								X	
AN/FGC-144 28RFK2003B/009/AWX/BR	0050	28RFC2002B/009/AWX/BR X	X	X	X	X	X X								X	
AN/FGC-148 28RFK2002B/009/AVX/BR	0050	28RFC2002B/009/AVX/BR X	X	X	X	X	X X									

* For components of ESA, see chart in Section 573-613-100TC

CHART C

28 MULTIPLE PAGE PRINTER SETS	WDP	COMPONENTS									SETS OF GEARS								
		LP149RN/AJG	LP150RN/AJG	LBAC280BR	LBAC281BR	LK71/ARN	ESA321228*	ESA332726*	ESA332727*	LMU3	LMU21	LMU28	LMU38	LMU41	LMU52	Baud			
																74.2	74.2	75	75
																Part No.			
159700	161295	163505	312705																
AN/UGR-10 28RFL7400B/004/AMB/BR	0100	28RFC7400B/004/AMB/BR 4	1	1	1	4									4				
AN/UGR-10X 28RFL7400B/004/AZB/BR	0100	28RFC7400B/004/AZB/BR 4	1	1	1									4				4	
AN/UGC-61 28RFL7300A/004/AAA/BR	0099	28RFC7300A/004/AAA/BR 3	1	1	1	1	2											3	
AN/UGC-61X 28RFL7300A/004/AJA/BR	0099	28RFC7300A/004/AJA/BR 3	1	1	1					1				2	3				
AN/UGC-61Y 28RFL7300A/004/ABA/BR	0099	28RFC7300A/004/AJA/BR 3	1	1	1					2			1						

* For components of ESA, see chart in Section 573-613-100TC.

CHART D

28 TYPING REPERFORATOR SRTR AND RO SETS	WDP	COMPONENTS														SETS OF GEARS						
		LPC202BR	LPC211BR	LPR85BRP	ESA323813*	ESA321230*	LLK303142	SMD323810	CMD321991	PS321290	LPR72BRP	LPR88AWA	LTRK11ARN	LSRC200BR	LRB8**	LRB62**	TP174459 Sliding Base	ESA321231*	LMU3	LMU56	Baud	
																					74.2	74.2
																					Part No.	
161295																						
TT-571/UG RFP6000A/005/AAX/BR	0061	28RFC6000A/005/AAX/BR X																X	X			
TT253()/UG 28RFP6200A/005/AAX/BR	0031	28RFC6200A/005/AAX/BR X X X X X X X X X										X	X						X			X
TT605/UG 28RFP6000B/004/XXX/BR	0111	28RFC6000B/004/XXX/BR X									X				X	X	X		X			

* For components of ESA, see chart in Section 573-613-100TC.

** Gear Shift Assembly for 60, 75, 100 WPM.

RADIO FREQUENCY INTERFERENCE (RFI)

SUPPRESSED 28 TELETYPEWRITER SETS

INSTALLATION

CONTENTS	PAGE
1. GENERAL	1
2. UNPACKING	1
3. INSTALLATION	1
A. Floor Model Automatic Send-Receive (ASR) Set	1
B. Floor Model Keyboard Send-Receive (KSR) Set	3
C. Floor Model Receive-Only (RO) Set	4
D. Table Model Receive-Only Typing Reperforator (ROTR) Set, Receive-Only Page Printer (RO) Set and Receive-Only Compact Page Printer (RO) Set	4
E. Table Model 28/32 Compact Keyboard Send-Receive (KSR) Set, Keyboard Send-Receive (KSR) Set, and Send-Receive Typing Reperforator (SRTR) Set	4
F. Rack Mounted Keyboard Send-Receive (KSR) Set	4
G. Rack Mounted Receive-Only (RO) Set	8
H. Multiple Page Printer Keyboard Send-Receive (KSR) Set	8
I. Multiple Page Printer Receive-Only (RO) Set	10
J. Transmitter Distributor (Self-Contained)	10
K. Floor Model Automatic Send-Receive (ASR) Set With Electronic Message Numbering	11

1. GENERAL

1.01 This section covers the general installation procedures for teletypewriter sets equipped with rfi suppression. The purpose of this section is to provide information for the electrical connection of the electrical service assembly to a power source, telegraphic signal line, and other interrelated connections necessary for the operation of the set. Wherever applicable, reference should be made to appropriate standard literature covering the mechanical installation of set components such as typing unit, reperforator, motor unit, etc.

1.02 A wiring diagram package (WDP) is packed with each rfi set and contains pertinent schematic and actual wiring diagrams. Reference should be made to the appropriate WDP for specific wiring information.

1.03 References made to left or right, top or bottom, and front or rear apply to the set in its normal operating position as viewed from the front.

1.04 The photographs included in this section are of typical rfi installations and should be used in support of their associated text.

1.05 Check the cabinet ground connection before turning power on to prevent the hazard of electrical shock.

2. UNPACKING

2.01 All equipment is packed for maximum protection during shipment. However, due caution must be taken in unpacking and handling to prevent damage and to insure personal safety. In unpacking, observe all caution labels as well as any special instructions on the cartons. All small bags and loose parts should be kept with their associated apparatus until used in the installation.

3. INSTALLATION

A. Floor Model Automatic Send-Receive (ASR) Set (Figure 1)

3.01 Unpack and mount the typing unit, auxiliary typing reperforator, and tape winder. Connect all cable assemblies to their associated connectors. The power input cables for the paper winder have been factory installed on the cabinet. Route the power input cable to the paper winder by removing the coverplate from the right rear corner of the floor in the lower compartment of the cabinet. Route this cable upward on the outside of the cabinet to the associated cable on the paper winder.

3.02 Two junction boxes are provided on the bottom floor of the cabinet. The box on the right side is for power input; the one on the left is for signal line and clutch stepping control input.

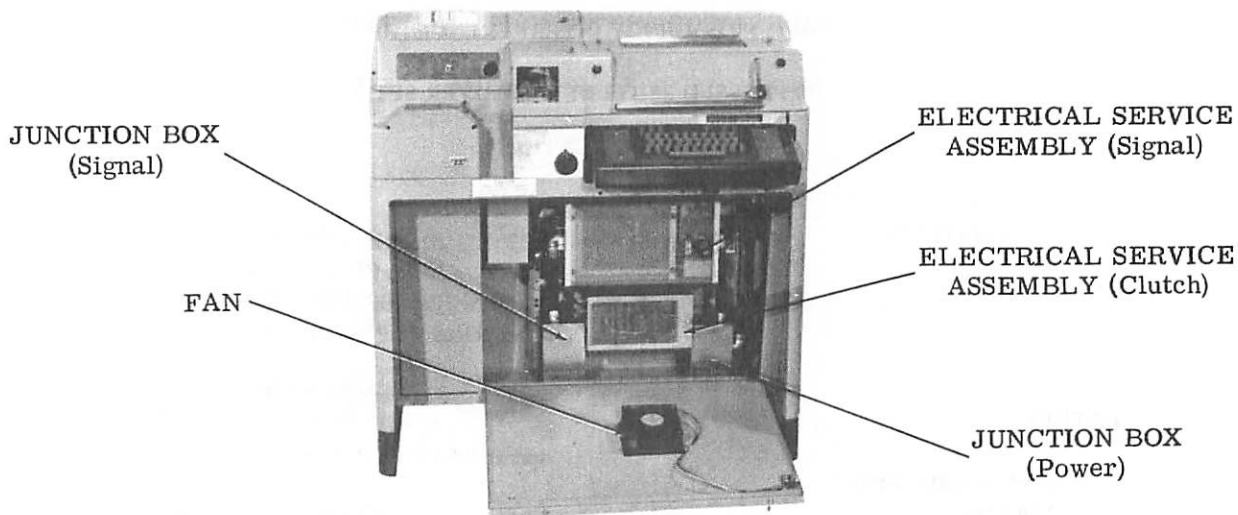


Figure 1 - Floor Model Automatic Send-Receive (ASR) Set

3.03 Power is distributed by means of a three-conductor shielded cable, routed through flexible conduit. Separate conduit is connected from the junction box to the electrical service assembly containing the clutch magnet drivers. Separate conduit is also routed to the electrical service assembly containing the selector magnet driver, polar line keyer, and to the power line filters in the upper compartment of the cabinet.

3.04 Power should be brought in from the bottom of the cabinet by means of conduit connected to the junction box. Two conduit connectors are attached to the junction box to provide two separate power line inputs; one power line for the clutch and signal electrical service assemblies and one for the cabinet power to motors, lamps, etc. The junction box is also compartmented to maintain power line separation. A five-point terminal block is provided on the left side of the junction box for the clutch stepping control and signal line electrical service assemblies. A three-point terminal block is provided on the right side of the junction box for the cabinet power. Where only one power source is used, power should be brought into either side of the junction box and routed to the other side through a knockout in the partition. Make certain that the shielding which surrounds the power input leads is connected to the appropriate terminals in the junction box.

3.05 The junction box on the left side of the cabinet provides for the signal line input and output and the transmitter stepping signal input. Terminal blocks are not

provided in this box since cable leads are routed directly to the appropriate electrical service assembly. The junction boxes permit connection of conduit (one or two) to the bottom of the cabinet. Clutch and signal cable leads can be routed through separate compartments. If a single conduit is used, it can be routed into one compartment and brought into the other through a knockout in the partition.

3.06 The transmitter step pulse input should be routed through the junction box to the lower electrical service assembly (clutch control). Remove the cover from the service assembly and any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. Connect the step pulse input leads to the TD terminal block. Replace the circuit board assemblies and the cover on the container.

3.07 The signal input and output leads should be routed through the junction box and through the flexible conduit to the upper electrical service assembly (signal). Remove the outer and inner covers from the service assembly and any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. A label on the terminal block cover identifies the end of the three terminal blocks on the left side of the electrical service assembly. Connect the signal input leads to the TC terminal block and the signal output leads to the TB terminal block. Replace the circuit board assemblies making certain that the keyer card is placed in the KA connector. Replace the inner and outer covers on the container. The signal electrical service assembly provides ± 6 v dc voltage for the polar line keyer. A terminal strapping option permits use of an external battery.

3.08 With the installation of the signal lines completed, the set is ready for operation. Place the power switch in each electrical service assembly in the ON position.

B. Keyboard Send-Receive (KSR) Set (Figure 2)

3.09 Power is distributed by means of a three-conductor shielded cable routed through flexible conduit. Separate conduit connects the junction box to the clutch magnet, selector magnet driver, and keyer of the electrical service assembly (signal) and to power line filters in the upper compartment of the cabinet.

3.10 Power should be brought in from the bottom of the cabinet. The junction box, located on the lower right side of the cabinet, is compartmented to provide for two separate power lines. One compartment contains five terminals which provide power connections for the clutch and signal electrical service assemblies. The other compartment contains three terminals which provide power connections for the cabinet (motor, lamps, etc). Where only one power source is used, power should be brought into either compartment and led to the other compartment

through a knockout in the partition. The shielding which surrounds the three power leads should be connected to the terminals in the junction box.

3.11 The junction box on the left provides the signal input and output and the transmitter stepping signal input. No terminal blocks are provided in this box since the leads are to run directly to the appropriate electrical service assembly. The junction boxes permit the connection of conduit to the bottom of the cabinet. Clutch and signal leads can be routed through separate compartments. If a single conduit is used, the leads can be brought into one compartment and routed to the other by means of a knockout in the partition. The transmitter step pulse input should be pulled through the flexible conduit leading to the electrical service assembly (clutch).

3.12 The signal input and signal output should be pulled through the flexible conduit to terminal block TB in the electrical service assembly (signal). A decal on the terminal block cover identifies each of the three terminal blocks.

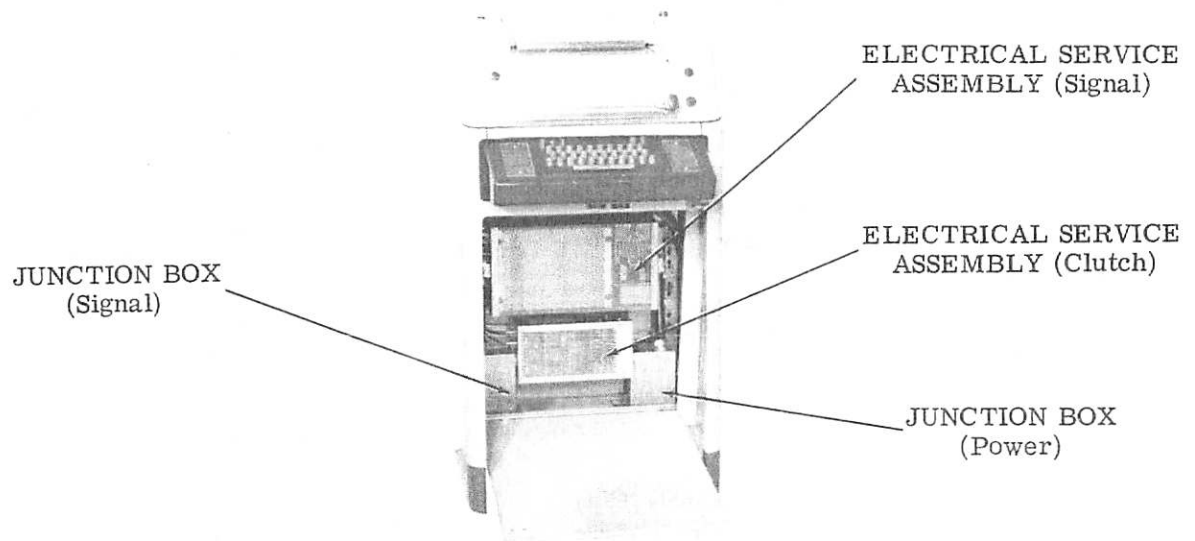


Figure 2 - Floor Model Keyboard Send-Receive (KSR) Set

C. Floor Model Receive-Only (RO) Set

3.13 Power is distributed by means of a three-conductor shielded cable, routed through flexible conduit. Separate cables connect the junction box to the selector magnet driver in the electrical service assembly and power line filters in the upper compartment of the cabinet.

3.14 Power should be brought in from the bottom of the cabinet. The junction boxes are compartmented to provide for two separate power lines. One compartment provides five terminals for the electrical service assemblies clutch and signal power. The other compartment provides three terminals for cabinet power to motors, lamps, etc. Where only one power source is used, power should be brought into either compartment and routed to the other compartment through a knockout in the partition. The shields surrounding the three power leads are connected to terminals in the junction box.

3.15 The junction box on the left provides a means for the signal input. No terminal blocks are provided in this box since leads should be run directly to the appropriate electrical service assembly. The junction boxes permit the connection of conduit to the bottom of the cabinet. Clutch and signal leads can be routed to separate compartments. If a single conduit is used, the clutch and signal leads can be brought into one compartment and routed to the other through a knockout in the partition.

3.16 The signal input and output leads should be pulled through the flexible conduit to terminal block TB on the signal electrical service assembly. A label on the terminal block cover identifies each of the three terminal blocks on the left end of the electrical service assembly. Make the connections between the signal electrical service assembly and the appropriate selector magnet assembly. The mating connector pairs are identified.

D. Table Model Receive-Only Typing Reperforator (ROTR) Set, Receive-Only Page Printer (RO) Set, and Receive-Only Compact Page Printer (RO) Set (Figures 3 and 4)

3.17 A table mounted electrical service assembly (ESA) is used and can be mounted in space available anywhere near the set within the limit of the signal cable. Mounting brackets for the ESA are supplied, however, the customer must supply the hardware to fasten these brackets to a table or wall.

3.18 Route the signal line conduit or cable to the ESA container (the side opposite the fuse) and attach by means of a conduit fitting. The container has two 7/8-inch diameter knockouts for 1/2-inch conduit fittings.

3.19 Route the power line conduit or cable to the ESA container (the side with the fuse and power switch) and attach by means of a conduit fitting. The container has a 7/8-inch diameter knockout for 1/2-inch conduit fitting. A separate power cable should be brought into the base for the motor.

3.20 Route the signal cable from the ESA to the apparatus through the notch in the rear of the cover, through the nylon cable clamp at the rear of the base, and along the left side of the set to the selector magnet assembly connector. Tie the cable to the motor mounting post at the base to keep it clear of the fan.

E. Table Model 28/32 Compact Keyboard Send-Receive (KSR) Set, Keyboard Send-Receive (KSR) Set, and Send-Receive Typing Reperforator (SRTR) Set (Figures 5 and 6)

3.21 Mount the electrical service assemblies (ESA) in space available anywhere near the set within the limit of the signal cables. Mounting brackets for the ESA are supplied, however, the customer must supply the hardware to fasten these brackets to a table, wall, or cabinet.

3.22 Route the signal line conduit or cabling to the keyer selector magnet driver of the ESA. Route the signal line to the opposite side of the fuse and attach by means of a conduit fitting. The ESA container has two 7/8-inch diameter knockouts for 1/2-inch conduit fittings.

3.23 Route the synchronous pulse control conduit or cable to the ESA opposite the side of the fuse and attach by means of conduit fittings.

3.24 Route the power line conduit or cable to both ESA containers. Connect the power line to the side on which the fuse and power switch are located. Attach by means of a conduit fitting.

3.25 Route the clutch magnet driver output cable and signal cables through the notch in the rear of the cover. Route the cables through the nylon clamp on the base and connect to the appropriate terminal block and connector.

F. Rack Mounted Keyboard Send-Receive (KSR) Set (Figure 7)

3.26 Remove and retain the access plate and its mounting hardware at either or both sides of the electrical service assembly (ESA). Fasten 3/4-inch conduit for the ac power input to either side of the ESA. Route the power input leads through the conduit into the compartment on the left side of the ESA. Route the power leads to terminal block (TA) located on a bracket attached to the rear wall of the ESA. Turn the power switch to the OFF position.

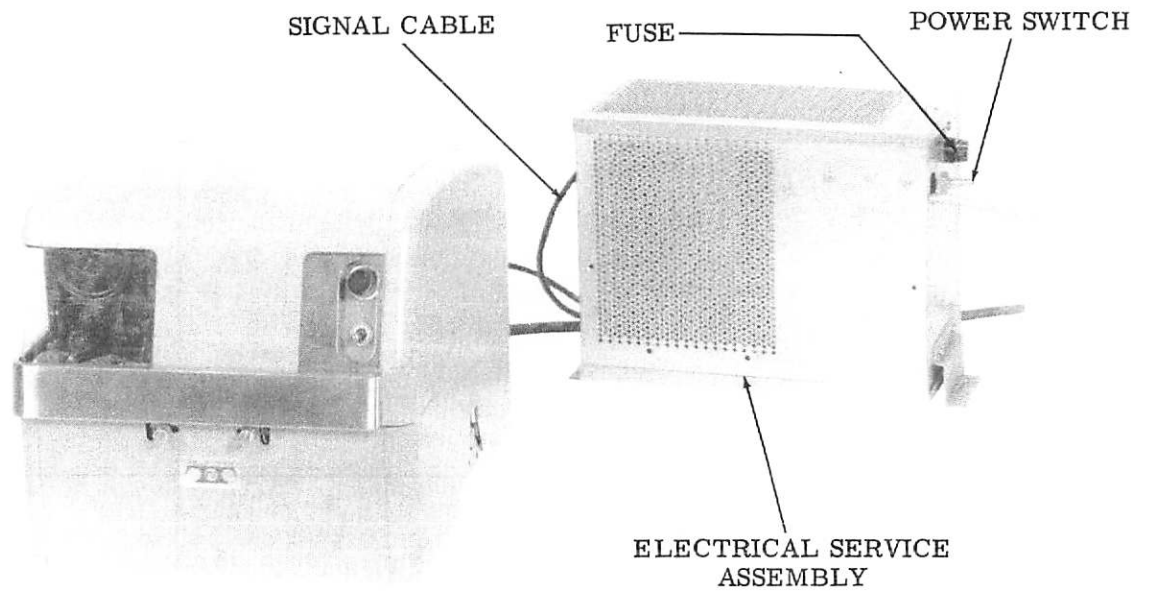


Figure 3 - Table Model Receive-Only Typing Reperforator (ROTR) Set

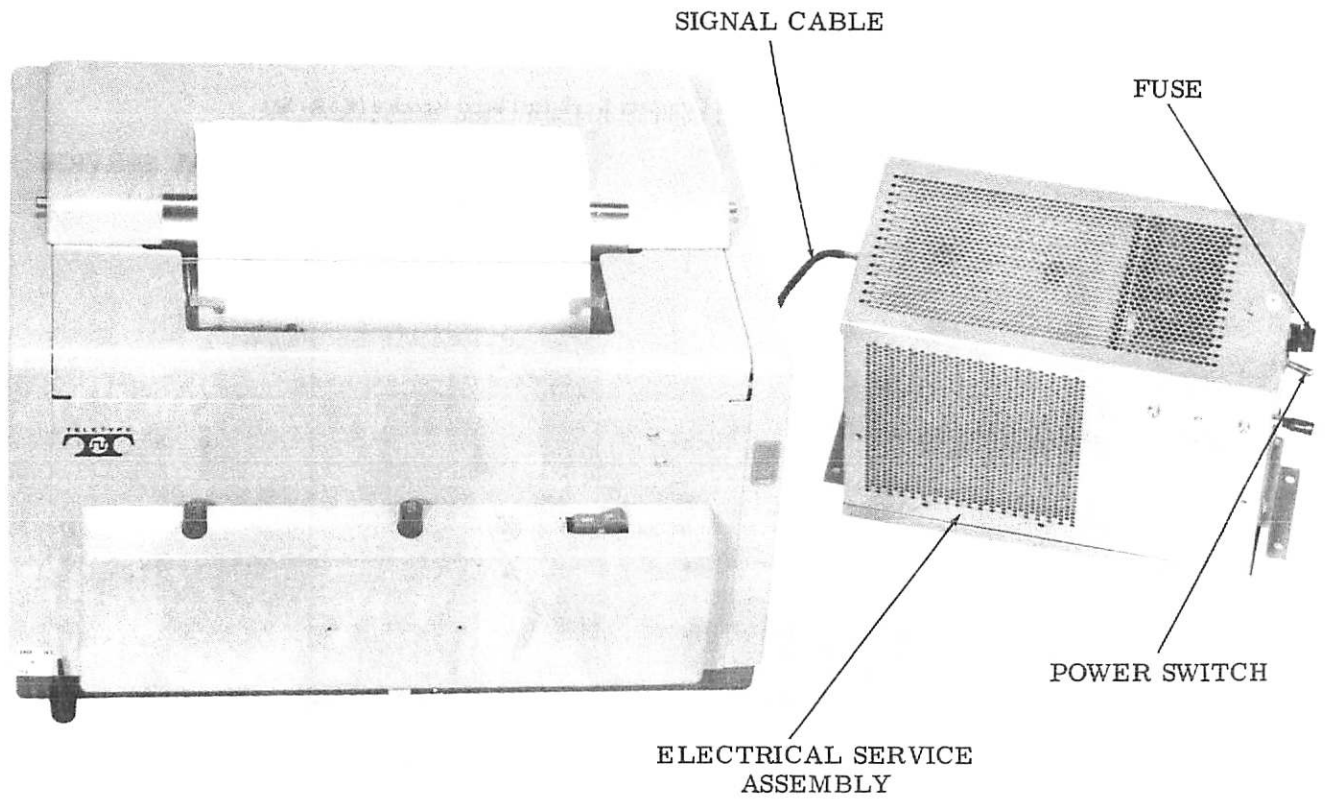


Figure 4 - Table Model Receive-Only Compact Page Printer (RO) Set

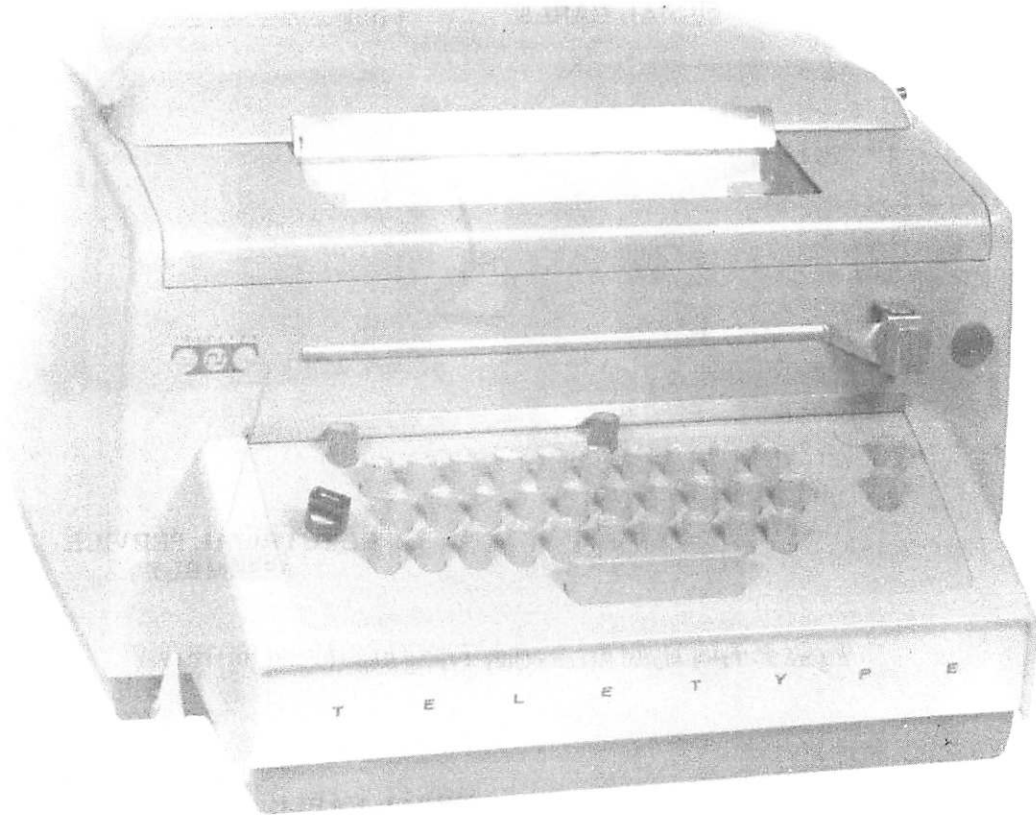


Figure 5 - Table Model 28/32 Compact Keyboard Send-Receive (KSR) Set

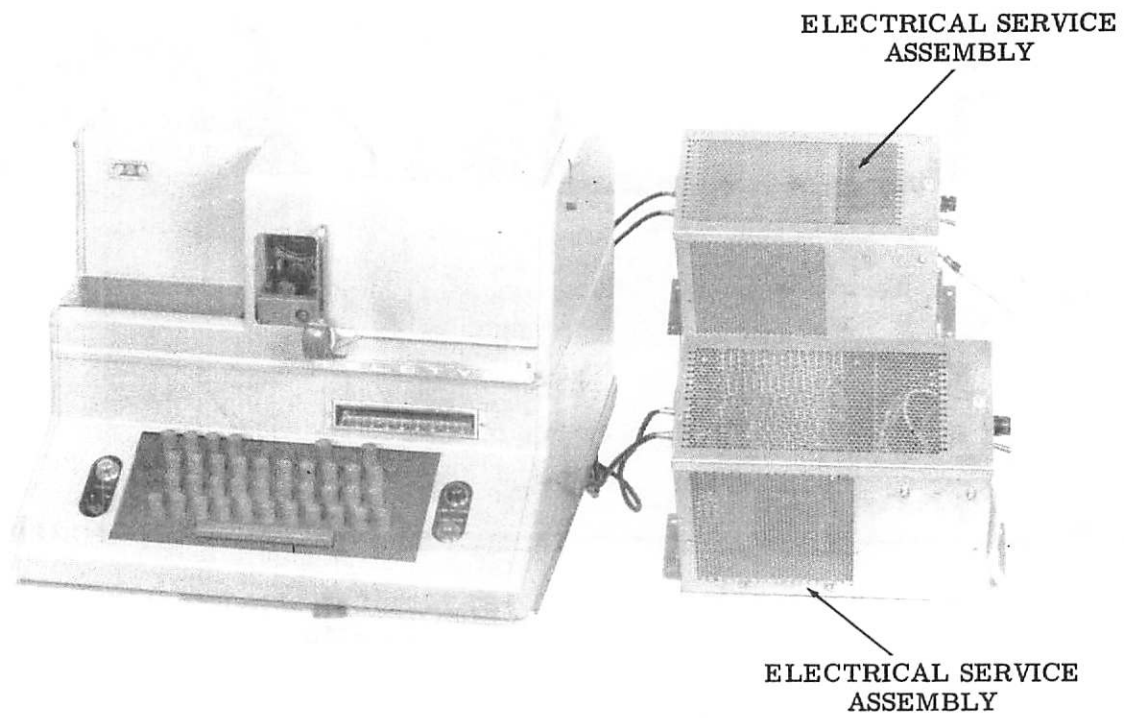


Figure 6 - Table Model Send-Receive Typing Reperforator (SRTR) Set

3.27 Fasten 3/4-inch conduit for the normal control input to either side of the ESA. Route the control leads for the typing unit stunt box through the conduit into the compartment of the right side. Route these leads to the 40-point terminal block (H) located on the hinged lid. A cable clamp has been provided to secure the leads.

3.28 Route the synchronous pulse control leads through the eyelet in the ESA partition, into the compartment on the left side, and to terminal block (TD). Replace the access plates previously removed.

Note: Synchronous pulse leads are normally brought in with control leads for the typing unit stunt box.

3.29 Fasten 3/4-inch conduit for the signal line input and output to the inner container of the ESA. Fasten the conduit by means of the 1.094-inch hole provided in the outer frame of the container. 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. Connect signal leads to the upper 6-point (TB) terminal block. Tape the signal shielding to prevent its unintentional grounding.

Note: The container assembly provides ± 6 volt signal battery to the low-level keyer. If external signal battery is to be provided, follow the procedure outlined in the appropriate wiring diagram package.

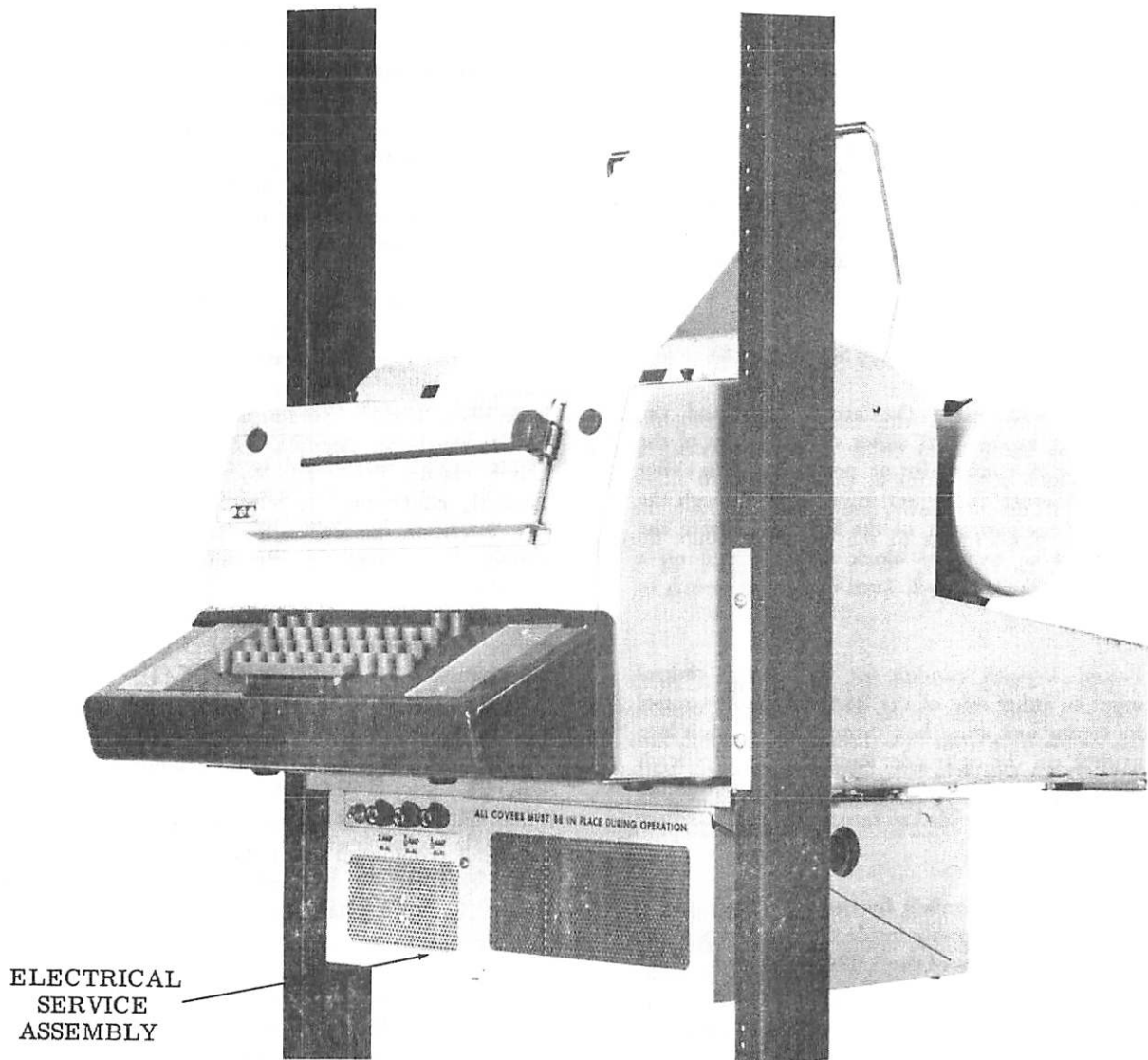


Figure 7 - Rack Mounted Keyboard Send-Receive (KSR) Set

3.30 Reassemble the terminal block cover and upper insulator previously removed from the container assembly.

3.31 Auxiliary conduit connections have been provided for the synchronous pulse control leads only. To install these leads proceed as follows:

- (a) Remove appropriate knockouts.
- (b) Connect 1/2-inch conduit directly to control circuitry.
- (c) Route control leads through conduit to terminal block (TD).
- (d) Connect leads.

3.32 Replace and secure the inner cover on the inner frame of the container assembly. Replace and secure the outer cover on the outer frame of the container. Close the hinged lid of the ESA and secure it by fastening the mounting screws in the lower side and upper side of the lid.

G. Rack Mounted Receive-Only (RO) Set (Figure 8)

3.33 Remove and retain the access plate and the mounting hardware at either or both sides of the ESA. Fasten 3/4-inch conduit for ac power input to either side of the ESA. Route the power input leads through the conduit into the compartment of the left side. Route the power input leads to terminal block (TA) located on a bracket attached to the rear wall. Turn the power switch to the OFF position.

3.34 Fasten 3/4-inch conduit for the normal control input to either side of the ESA. Route the control leads for the typing unit stunt box through the conduit into the compartment on the right side. Route the control leads to the 40-point terminal block (H) located on the hinged lid. A cable clamp has been provided to secure the leads. Replace the access plates.

3.35 Fasten 3/4-inch conduit for the signal line input to the 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. Route the signal line cable to the upper 6-point terminal block (TB) located on the right side of the container. Tape the signal shielding to prevent its unintentional grounding. Reassemble the terminal block cover and upper insulator.

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

3.36 Replace and secure the inner cover on the inner frame of the container assembly. Replace and secure the outer cover on the outer frame of the container. Close the hinged lid of the ESA and secure it by fastening the mounting screws in the lower and upper side of the lid.

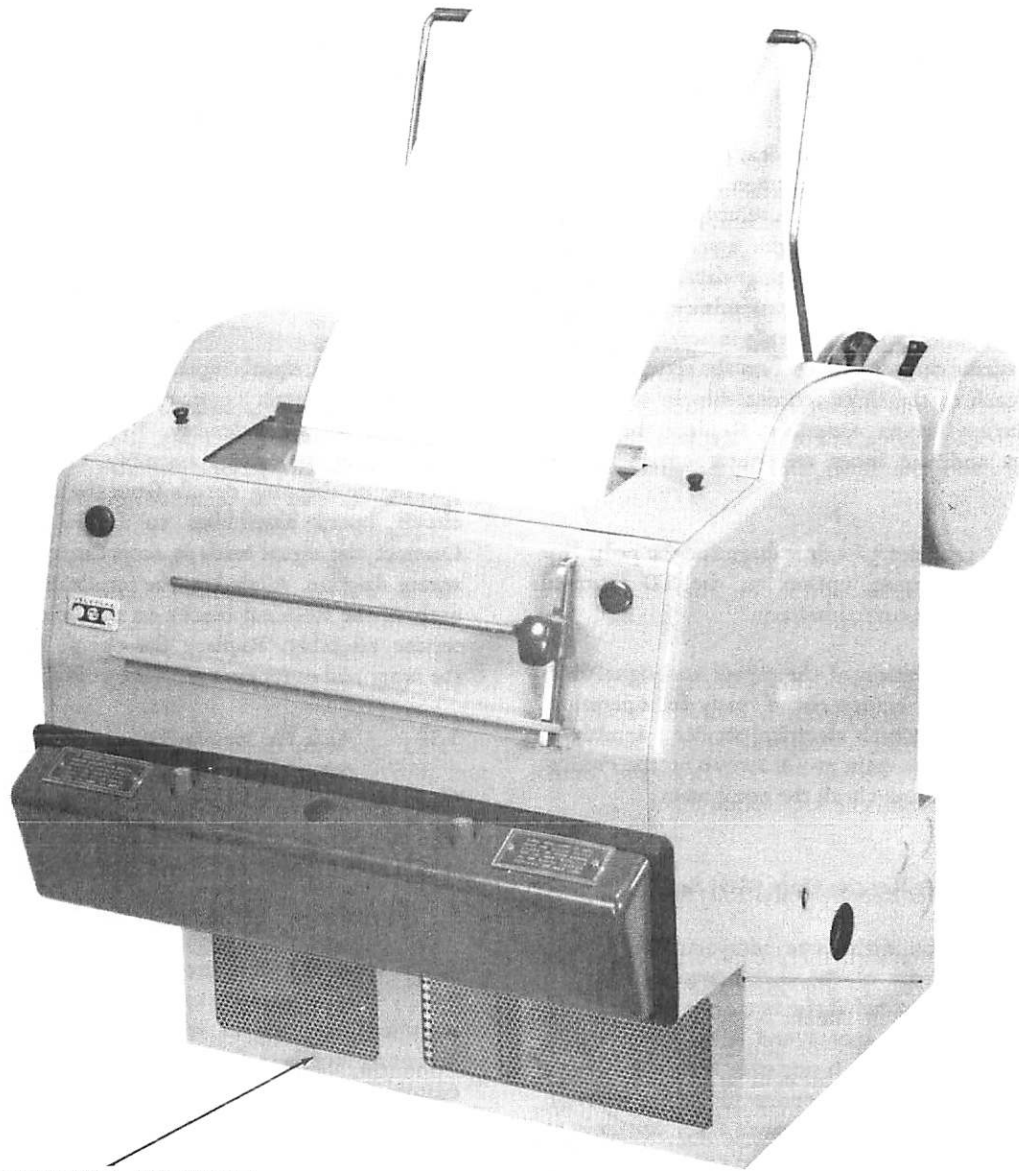
H. Multiple Page Printer Keyboard Send-Receive (KSR) Set

3.37 A junction box with three compartments is provided at the rear of the rack assembly which is fastened to the mounting panel at the bottom of the cabinet. Signal power input, cabinet motor and lamp power input, and signal line and clutch step control wiring should be brought in from the bottom of the cabinet by means of conduit connected to the junction box. Route the conduit through the wiring duct openings at the bottom of the cabinet up through the cutout at the rear of the mounting panel to the junction box.

3.38 Signal power is distributed by means of a three-conductor shielded cable, routed from the terminal block in the upper compartment of the junction box through flexible conduit to the signal and clutch electrical service assemblies. Separate conduit is connected from the junction box to the lower electrical service assembly containing the clutch magnet driver and to the upper electrical service assembly containing the selector magnet drivers and polar line keyer. A knockout for 1/2-inch diameter incoming conduit is provided in the upper compartment of the junction box.

3.39 Cabinet motor and lamp power is distributed by means of a three-conductor cable routed from the terminal block in the middle compartment of the junction box to the control panel on the rack assembly. A knockout for 1/2-inch diameter incoming conduit is provided in the middle compartment of the junction box. Where only one power source is used, power is brought into either the upper or middle compartment of the junction box and led to the other compartment through a knockout in the partition. Strap the appropriate terminals to achieve the proper connections.

3.40 The lower compartment of the junction box provides an entrance for the signal line input and output and transmitter stepping signal input. A terminal block is not provided in this compartment of the junction box since the signal leads must be routed directly into the appropriate electrical service assembly. A knockout for 3/4-inch diameter incoming conduit is provided in the lower compartment of the junction box.



ELECTRICAL SERVICE
ASSEMBLY

Figure 8 - Rack Mounted Receive-Only (RO) Set

3.41 The transmitter step pulse input should be routed through the lower compartment of the junction box to the clutch control electrical service assembly. Remove the cover from the service assembly. Remove and discard any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. Connect the step pulse input leads in accordance with the appropriate wiring diagram. Replace the circuit board assemblies and the cover on the container.

3.42 The signal input and output leads should be routed through the lower compartment of the junction box to the signal electrical service assembly. Remove the outer and inner covers from the service assembly. Remove and discard any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. Connect the signal leads in accordance with the appropriate wiring diagram. A label on the terminal block cover identifies each of the three terminal blocks on the left side of the electrical service assembly. Replace the circuit board assemblies and the inner and outer covers on the container.

3.43 The ESA provides +7 v dc voltage for the polar line keyer. A strapping option on the TD terminal board permits the use of external battery.

3.44 With the installation of the power and signal lines completed, the equipment is ready for operation. Place the power switch in each electrical service assembly in the ON position. Place the main power switch on the control panel in the ON position and check the equipment.

I. Multiple Page Printer Receive-Only (RO) Set

3.45 A junction box with three compartments is provided at the rear of the rack assembly which is fastened to the mounting panel at the bottom of the cabinet. Signal power input, cabinet motor and lamp power input, and signal line wiring should be brought in from the bottom of the cabinet by means of conduit connected to the junction box. Route the conduit through the wire duct openings at the bottom of the cabinet, up through the cutout at the rear of the mounting panel, and to the junction box.

3.46 Signal power is distributed by means of a three-conductor shielded cable routed from the terminal block in the upper compartment of the junction box, through flexible conduit, to the signal electrical service assembly containing the selector magnet drivers. A knockout for 1/2-inch diameter incoming conduit is provided in the upper compartment of the junction box.

3.47 Cabinet motor and lamp power is distributed by means of a three-conductor cable routed from the terminal block in the middle compartment of the junction

box to the control panel on the adjacent rack assembly. A knockout for 1/2-inch diameter incoming conduit is provided in the middle compartment of the junction box. Where only one power source is used, power is brought into either the upper or middle compartment of the junction box and routed to the other compartment through a knockout in the partition. Strap the appropriate terminals to achieve the proper connections.

3.48 The lower compartment of the junction box provides for the signal line input. A terminal block is not provided in this compartment of the junction box since the signal leads must be routed directly into the electrical service assembly. A knockout for 3/4-inch diameter incoming conduit is provided in the lower compartment of the junction box.

3.49 The signal input leads should be routed through the lower compartment of the junction box to the electrical service assembly. Remove the outer and inner covers from the service assembly. Remove and discard any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. Connect the signal leads in accordance with the appropriate wiring diagram. A label on the terminal block cover identifies each of the terminal blocks on the left side of the electrical service assembly. Replace the circuit board assemblies and the inner and outer covers on the container.

3.50 With the installation of the power and signal lines completed, the equipment is ready for operation. Place the power switch in the electrical service assembly in the ON position. Place the main power switch on the control panel in the ON position and check the equipment.

J. Transmitter Distributor (Self-Contained)

3.51 A table mounted electrical service assembly (ESA) is used and can be mounted in space available anywhere near the set within the limit of the signal cable. Mounting brackets for the ESA are supplied, however, the customer must supply the hardware to fasten these brackets to a table or wall.

3.52 Route the synchronous pulse and signal line conduit or cabling to the opposite side of the fuse and attach by means of 3/4 inch conduit fitting. Connect the power line to the side of the ESA on which the fuse and power switch are located and attach by means of a 3/4 inch conduit fitting. Route the signal cable, the clutch magnet driver cable, and the monitoring cable to the apparatus through a notch in the rear of the transmitter distributor cover. A Receive-Only (RO) Set may be connected to the monitoring cable for the purpose of monitoring the signals from the transmitter distributor. Connect the power cord from the distributor to a power source. Connect all grounding straps such as the snap panel to mounting plate and cover to mounting plate.

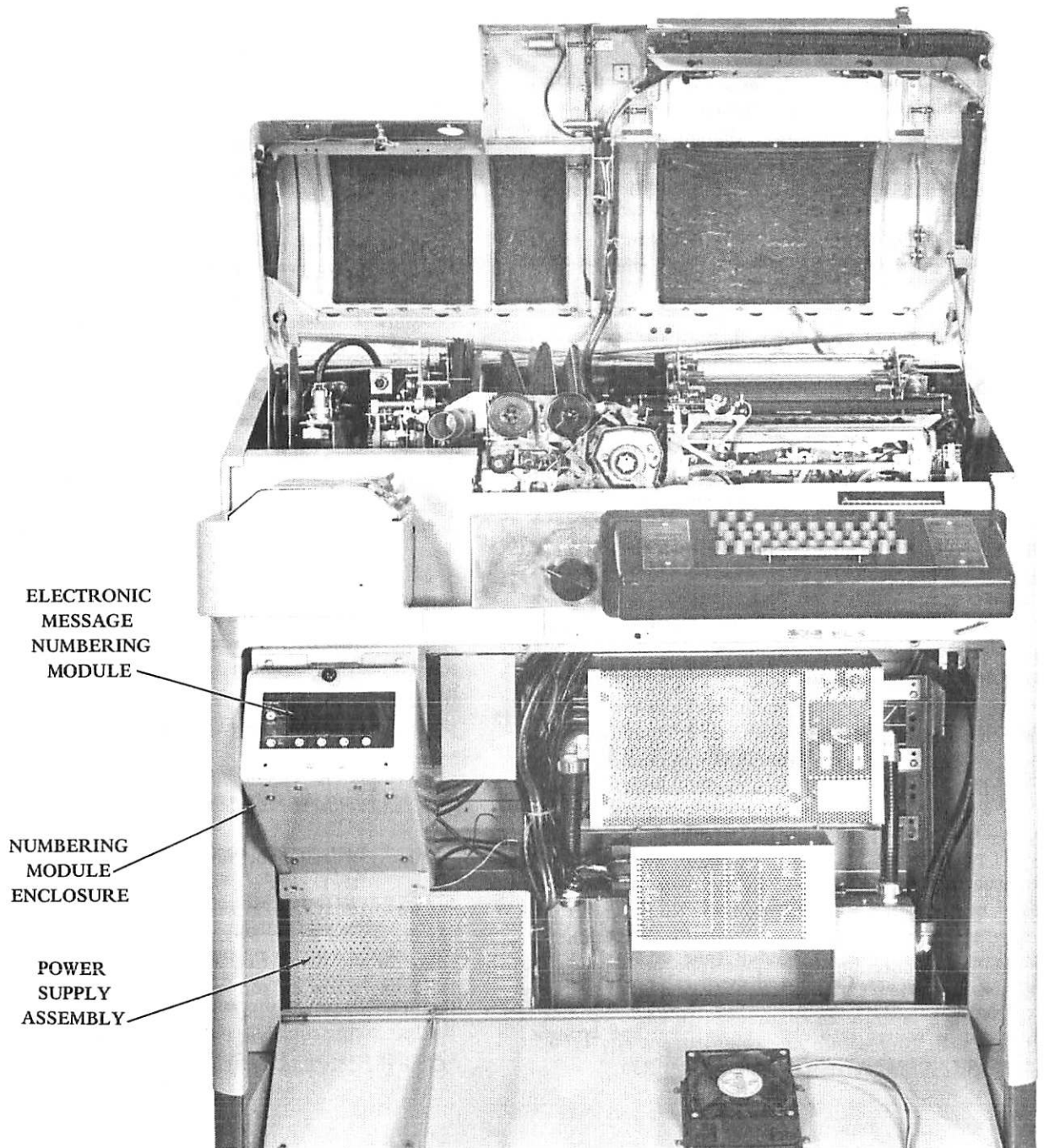


Figure 9 - Floor Model Automatic Send-Receive (ASR) Set With Electronic Message Numbering

K. Floor Model Automatic Send-Receive (ASR) Set With Electronic Message Numbering

3.53 Two junction boxes are provided at the bottom of the cabinet. The junction box on the right side is for power, the box on the left is for signal line input and output and stepping signal (clutch) input.

3.54 Power is distributed by means of three-conductor shielded cables, routed through flexible conduit. Separate conduit is connected from the junction box to the electrical service assembly containing the clutch magnet drivers. Separate conduit is also routed to the electrical service assembly containing the selector magnet driver and polar line keyer and to the power line filters in the upper compartment of the cabinet, and the numbering module power supply.

3.55 Power should be brought in from the bottom of the cabinet by means of conduit connected to the junction box. Two conduit connectors are attached to the junction box to provide two separate power line inputs; one power line for the clutch and signal electrical service assemblies and one for the cabinet power to motors, lamps, etc. The junction box is also compartmented to maintain power line separation. A five-point terminal block is provided on the left side of the junction box for the clutch stepping control, signal line electrical service assemblies, and numbering module power supply. A three-point terminal block is provided on the right side of the junction box for the cabinet power. Where only one power source is used, power should be brought into either side of the junction box and routed to the other side through a knockout in the partition. Make certain that the shielding which surrounds the power input leads is connected to the appropriate terminals in the junction box.

3.56 The junction box on the left side of the cabinet provides for the signal line input and output and the transmitter stepping signal input. Terminal blocks are not provided in this box since cable leads are routed directly to the appropriate electrical service assembly. The junction boxes permit connection of conduit (one or two) to the bottom of the cabinet. Clutch and signal cable leads can be routed through separate compartments. If single conduit is used, it can be routed into one compartment and brought into the other through a knockout in the partition.

3.57 The transmitter step pulse input should be routed through the junction box to the lower electrical service assembly (clutch control). Remove the cover from the service assembly and any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. Connect the step pulse input leads to the appropriate terminal block. Replace the circuit board assemblies and the cover on the container.

3.58 The signal input and output leads should be routed through the junction box and through the flexible conduit to the electrical service assembly (signal). Remove the outer and inner covers from the service assembly and any packing or shipping details from the container. Remove the circuit board assemblies to facilitate cable installation. A label on the terminal block cover identifies the end of the three terminal blocks on the left side of the electrical service assembly. Connect the signal input leads to the appropriate terminal block in the electrical service assembly. Should the set be installed as it is shipped from the factory and without any wiring changes, be sure to remove the TP303142 low-level keyer circuit card from the KB connector. Replace the inner and outer covers on the container. The signal electrical service assembly provides ± 6 volts dc voltage for the polar line keyer. A terminal strapping option permits use of an external battery.

3.59 Make the electrical connections between the electrical service assembly (signal) to the appropriate selector magnet assembly and the electrical service assembly (clutch) to the cabinet terminal strip (C strip). The mating connector pairs for these connections are identified.

Note: The TP330520 tool kit may be utilized to loosen and adjust the cradle railing in the cabinet.

3.60 Remove the numbering module from its carton. Reference should be made to Section 573-614-100TC for information concerning the installation of the crystal and programming the format option. Open the door of the numbering module enclosure by loosening the retaining screw on top of the door. Insert the module into the inner frame of the enclosure. Push the module in until the rear connector plugs are fully seated in their receptacles. Close the door and tighten the retaining screw.