

MR6249


**SPERRY UNIVAC
REMOTE KEYSTATION
ADAPTER
TYPE 8598**

**INSTALLATION
PROCEDURES**

AUGUST 1980

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HANDBOOK APPLICATION

SPERRY UNIVAC 1900 CADE,
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HB2367 SPERRY UNIVAC
Remote Keystation Adapter
Type 8598 Servicing

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Installation Procedures

REVISION STATUS

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SECTION 1
INTRODUCTION

1-1. SCOPE

This book contains system installation procedures and supplementary information for the SPERRY UNIVAC Remote Keystation System (RKS). The contents are arranged as follows:

Section 1 contains reference material, a description of the system, and a detailed description of the SPERRY UNIVAC Remote Keystation Adapter Type 8598 (RKA).

Section 2 provides the system installation procedures, including the system interface cabling.

Section 3 contains strapping requirements for the system.

Section 4 provides confidence test information.

Section 5 contains RKA printer information.

Section 6 provides deinstallation procedures.

1-2. REFERENCE MATERIAL

The following handbooks provide installation and servicing information associated with equipment in the system:

<u>Handbook</u>	<u>Title</u>
HB2301	SPERRY UNIVAC Communications Output Printer Types 8541-02, -03, -06, -07 and Auxiliary Printer Types 8541-08, -09 (Starting with Serial Number 20,000)
HB2358	SPERRY UNIVAC Keystation Type 3541-00 through -02 Servicing

1-3. SYSTEM DESCRIPTION

The RKS provides the capability of controlling remote keystations over telephone lines. The RKS consists of two RKAs, two modems, and associated cables (see Figure 1-1). The RKS interface to a central control unit (CCU) is the same as the interface to a standard keystation. The RKA (Figure 1-2) appears as a keystation to the CCU when in local mode and as a CCU to a keystation when in remote mode. Remote and local modes are determined by programmable read-only memories (PROMs) within the RKA.

The RKA interfaces up to four keystations on the remote end. The only limitation on the number of remote keystation systems interfaced to a CCU is the normal coaxial-unit limitation (up to 32 keystations and station printers, combined). The RKS is considered as either two or four of the total number of allowable keystations, depending on internal RKA strapping (see Section 3).

1-4. REMOTE KEYSTATION ADAPTER

The RKA consists of a cabinet, a backplane, two printed circuit assemblies (PCAs), a power supply, and associated switches, indicators, and cabling. The cabinet, backplane, and power supply are the same as used in the SPERRY UNIVAC Universal Terminal System 400 Controller Terminal Type 8594. The logic for the RKA is contained on two PCAs, the processor, and the coaxial interface.

The processor PCA (part number 2823884) uses a microprocessor integrated circuit for control of the remaining logic. The processor PCA also contains read-only memory (ROM), random-access memory (RAM), the logic for two RS-232 communications interfaces (one for the modem interface and one for the optional printer interface), a coaxial output for an optional SPERRY UNIVAC Data Communications Terminal Type 8541 (DCT 500) receive only, and related timing and control circuitry. The coaxial interface PCA (part number 2872302) contains the logic to interface with the local or remote coaxial link.

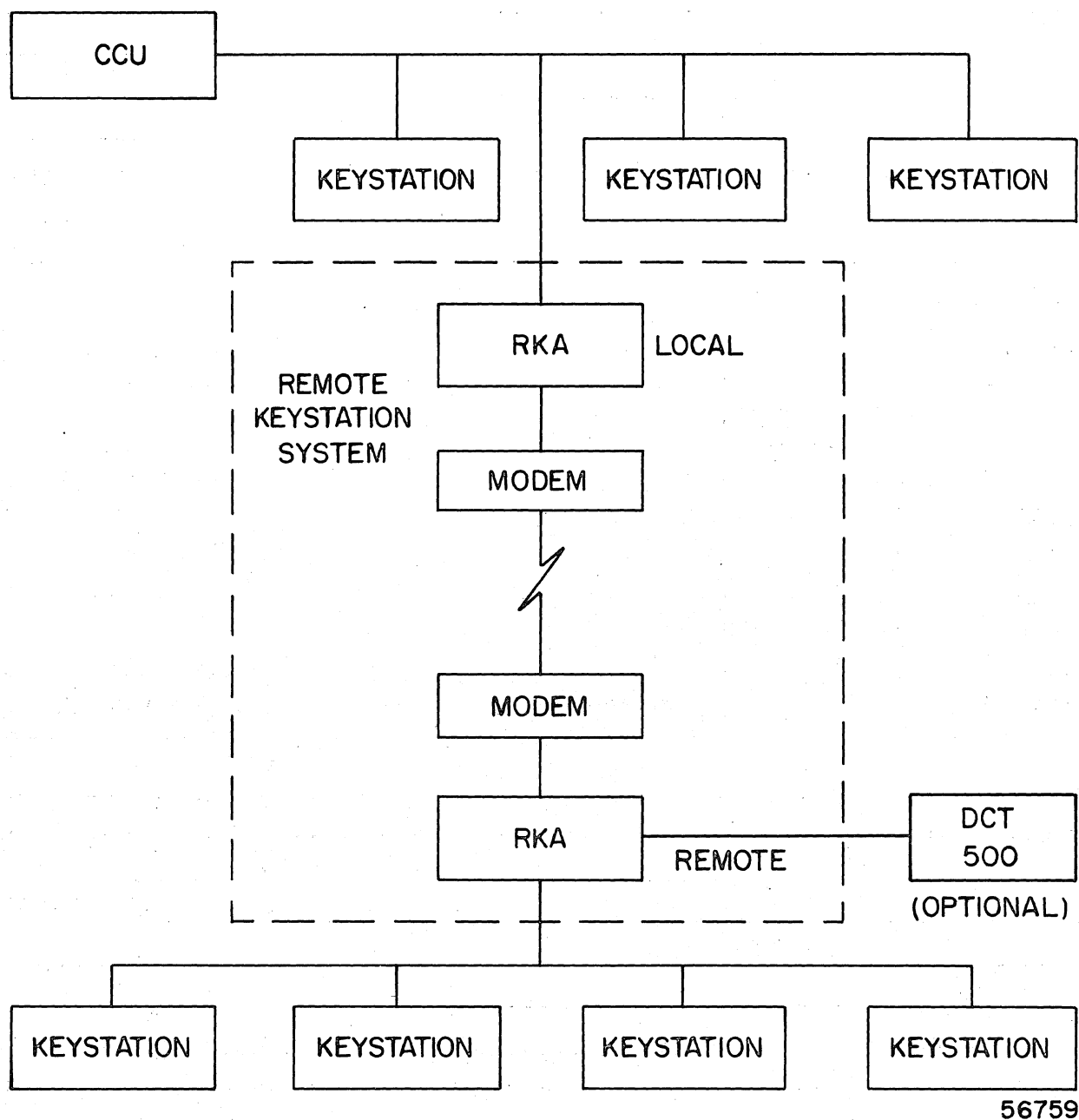


Figure 1-1. Remote Keystation System

Introduction

The remote RKA appears as a CCU to interface with the remote keystations, and the local RKA appears as a keystation to interface with the CCU. The hardware is identical for the remote and local interfaces. The difference is in the firmware (PROMs) contained in program memory. The coaxial interface PCA uses a four-bit miniprocessor (nanoprocessor) and a ROM to control the remote and local interfaces. Data is transferred between PCAs and between logic circuits within the PCAs on a tri-state bus.

The RKA is configured into four types. The type numbers vary according to use (local or remote) and input voltages as described in Table 1-1. The RKA unit is shown in Figure 1-2.

Table 1-1. RKA Types

Type		Volts AC
Local	Remote	
8598-00	8598-02	100 to 120V, 50 or 60 Hz
8598-01	8598-03	200 to 240V, 50 to 60 Hz

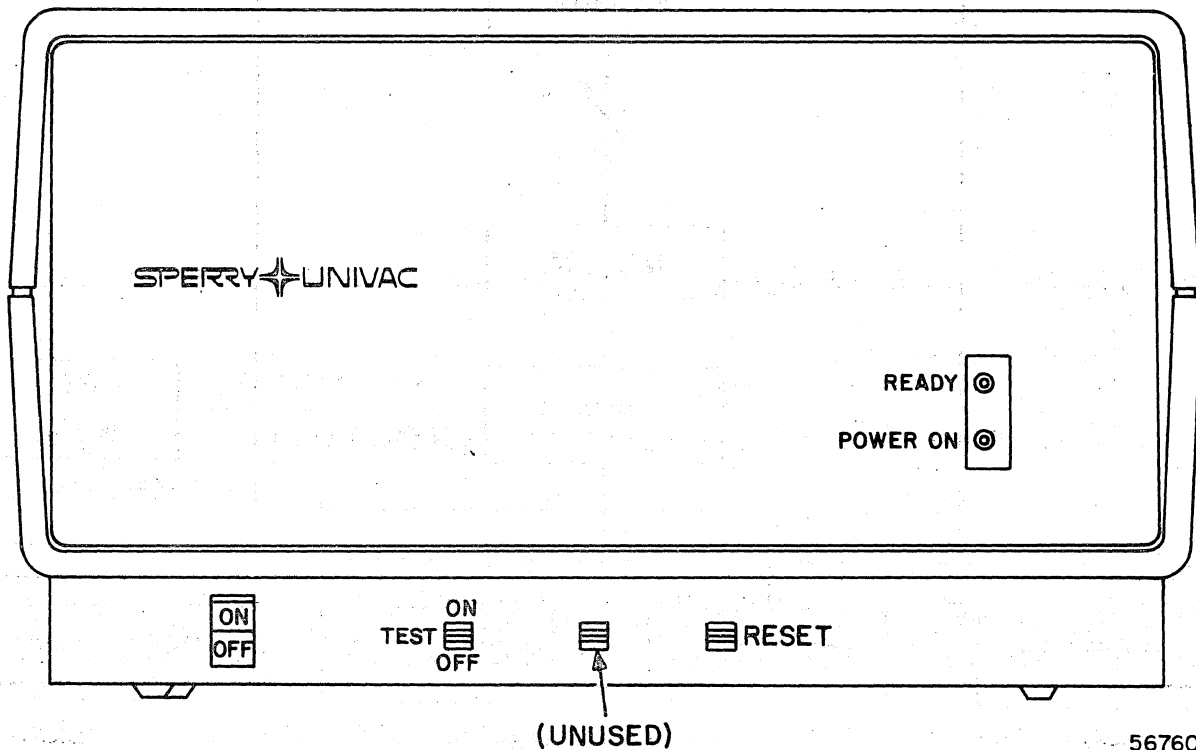


Figure 1-2. Remote Keystation Adapter

1-5. MODEM

The RKS uses a synchronous full-duplex modem with an RS-232 interface at line speeds of up to 9600 baud. Either switched or dedicated lines may be used. A SPERRY UNIVAC Direct Connection Module (DCM) Type 8543 may be used at sites where remote RKA and CCU are located within the same building and within minimal distance from one another (see Table 1-2).

Table 1-2. Allowable Distance Between DCMs

Transmission Rate (bps)	Distance (feet)	Distance (meters)
Up to 2400	15,000	4572
2400 to 3600	10,000	3048
3600 to 9600	5,000	1524

SECTION 2

INSTALLATION PROCEDURES

2-1. GENERAL

This section contains information for unpacking and installing the SPERRY UNIVAC Remote Keystation Adapter Type 8598 (RKA).

2-2. EQUIPMENT PLACEMENT

The carrier is responsible for moving the equipment to its approximate location in the prescribed area. The customer should be present while the carrier is unloading the equipment to ensure that it is not handled roughly and that improper lifting devices are not used.

CAUTION

Do not use a forklift to move equipment containers. The equipment is packed in a polystyrene container which should be handled with care. The container can be easily penetrated by forklift prongs, and the equipment severely damaged.

The customer should instruct the carrier as to initial unit placement at the operating location. Correct placement at this time will avoid problems in unpacking later. After the system is loaded and placed in the approximate operating location, inspect the container or containers for signs of damage that may have occurred during shipment.

Installation Procedures

If damage is found or if a portion of the shipment is missing, the customer must note it on the bill of lading. Note also on the bill of lading any equipment that was handled roughly or was dropped during loading or placement, even though no damage may be apparent. This notation on the bill of lading aids in filing a claim if damage is discovered during unpacking.

2-3. UNPACKING PROCEDURE

The procedures for unpacking the RKA are contained in Table 2-1.

Table 2-1. RKA Unpacking Procedures

Step	Procedure
1	Place carton on floor and remove RKA.
2	Cut bands holding container sections together and remove container top.
3	Remove bagged communication cable (if present) from the package.
4	Remove RKA top cover as follows: a. Loosen the two retaining screws on the rear of cabinet and back them out 8 to 10 turns (about 1/4-inch). b. Tip cover and front panel toward front and lift off.
5	With cover removed, ensure that all light emitting diode (LED) indicators are securely in place in their sockets.
6	Remove any internal packing material from module cages.
7	Inventory the units and fill in appropriate sections of the inventory and inspection report shipped with each unit. Notify branch office of any damage or shortage.
8	If installation is to be completed at this time, proceed to Table 2-2; if not, continue to step 9.
9	Replace exterior casework and place unit in a suitable place.

2-4. INSTALLATION PROCEDURE

The procedure for installing a remote keystation system is contained in Tables 2-2 and 2-3. Table 2-2 contains procedures for local site installation and Table 2-3 contains procedures for remote site installation.

Table 2-2. Installation Procedures for Local Site

Step	Procedure	Reference
1	Unpack the keystations as described in HB2358, SPERRY UNIVAC Keystations Type 3541 Servicing, and position in applicable installation locations.	HB2358
2	Unpack peripheral devices (if applicable) as described in the related servicing manuals and position at the proper installation locations.	Para. 1-2
3	Ensure that the RKA is unpacked as described in Table 2-1.	Table 2-1
4	If not already accomplished, remove RKA top cover. (Loosen two retaining screws at rear of cabinet and back them out about 1/4-inch. Tip cover and front panel toward front and lift off).	
5	Check RKA for broken or cracked connectors on terminal boards, and bent or shorted connector pins. Inspect for foreign material.	
6	Ensure that all push-on terminals within the RKA are securely attached to their respective switches, indicators, potentiometers.	Figure 2-1
7	Ensure that all RKA internal cables are properly routed and plugged into the appropriate connectors.	Figure 2-1
8	Determine the nominal primary ac voltage of the operating location. If necessary, remove cover from power supply module and strap power supply as described in Section 3.	Section 3
9	Replace RKA power supply module cover, if removed.	
10	Check all RKA modules for proper strapping. Strap modules, as necessary, according to the information in Section 3.	Section 3
11	Replace top cover on RKA.	
12	Position RKA at appropriate installation location.	

Table 2-2. Installation Procedures for Local Site (Cont)

Step	Procedure	Reference
13	<p>Configure system at each site as determined by site system analyst. Cabling for a typical site is shown in Figure 2-2.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">The RKA is cabled the same as a keystation (see Figure 2-1).</p>	Figure 2-2
14	<p>Connect RKA from J1 to modem with cable part number 2805096-XX or 2808043-XX as shown in Figure 2-2.</p>	Figure 2-2

Table 2-3. Installation Procedure for Remote Site

Step	Procedure	Reference
1	<p>Unpack keystations as described in HB2358, <u>SPERRY UNIVAC Keystation Type 3541-00 through -02 Servicing</u>, and position in applicable installation locations.</p>	HB2358
2	<p>Strap keystation address as described in Section 3.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Up to four keystations may be cabled to each remote RKA.</p>	Section 3
3	<p>Ensure that RKA is unpacked as described in Table 2-1.</p>	Table 2-1
4	<p>If not already accomplished, remove RKA top cover. (Loosen two retaining screws at rear of cabinet and back them out 1/4-inch. Tip cover and front panel toward front and lift off.)</p>	
5	<p>Check RKA for broken or cracked connectors on terminal boards, and bent or shorted connector pins. Inspect for foreign material.</p>	
6	<p>Ensure that all push-on terminals within RKA are securely attached to their respective switches, indicators, and potentiometers.</p>	Figure 2-1

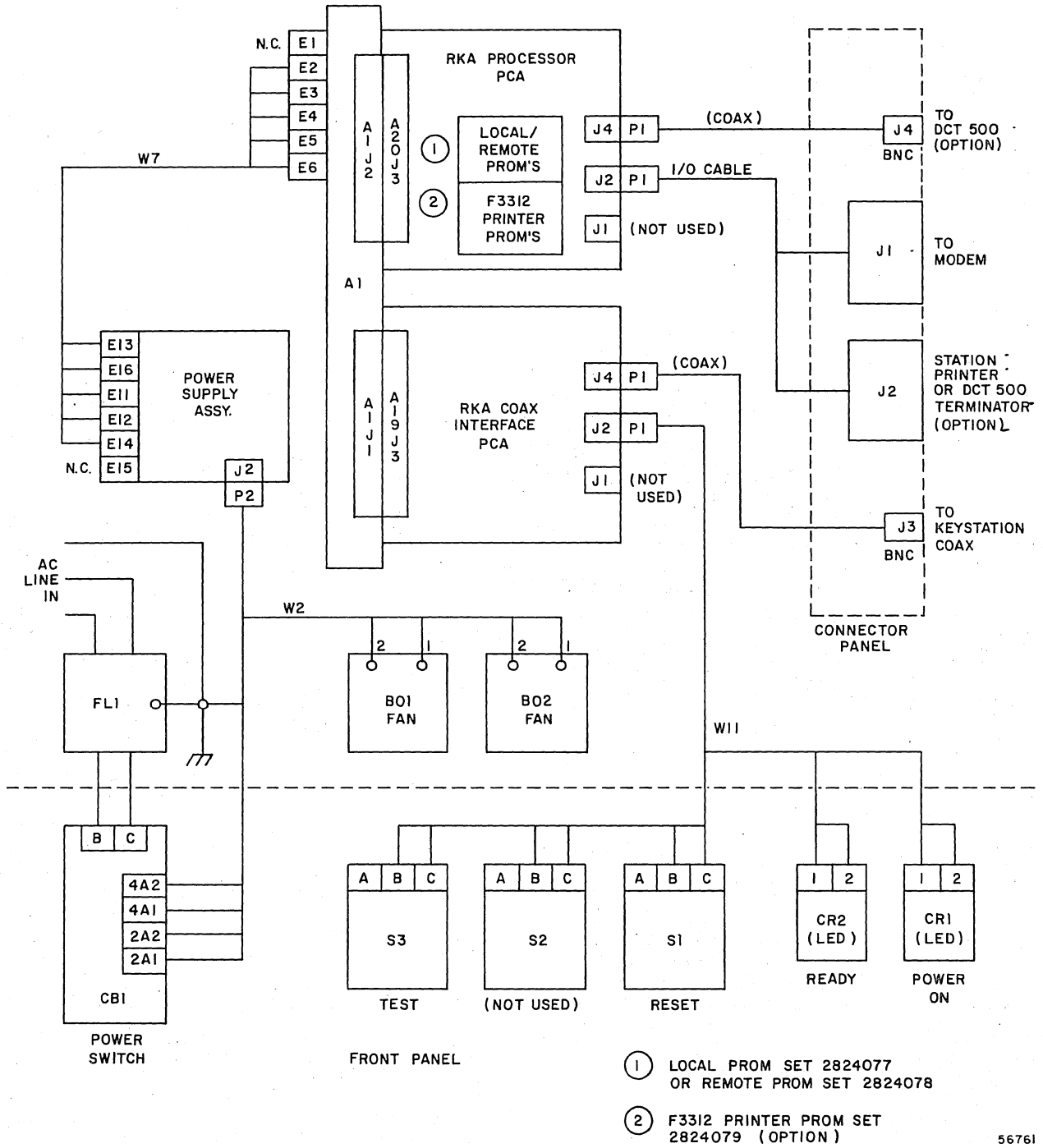
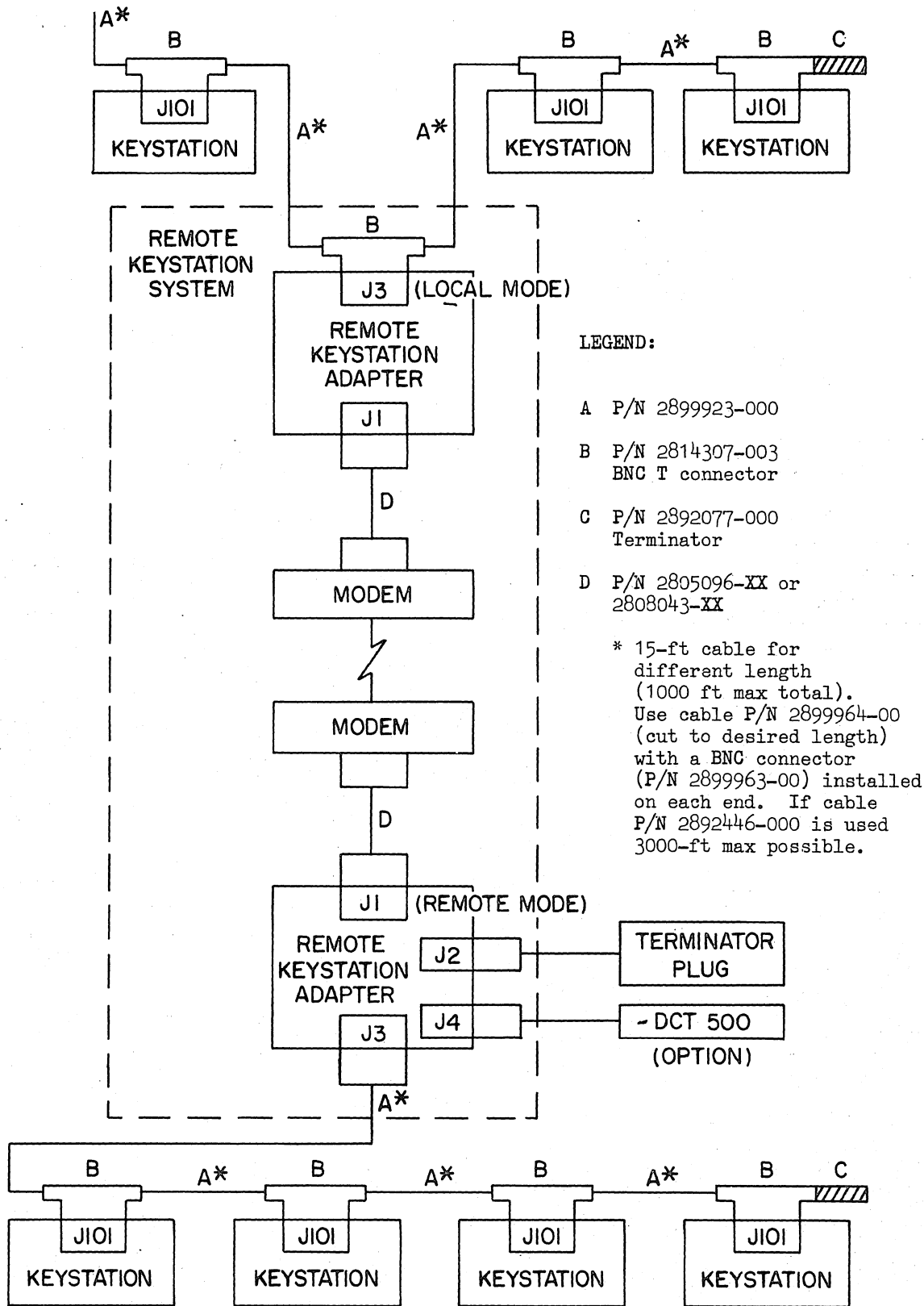


Figure 2-1. RKA Internal Gabling

Table 2-3. Installation Procedures for Remote Site (Cont)

Step	Procedure	Reference
7	Ensure that all RKA internal cables are properly routed and plugged into appropriate connectors.	Figure 2-1
8	Determine nominal primary ac voltage of the operating location. If necessary, remove cover from RKA power supply module and strap the power supply as described in Section 3.	Section 3
9	Replace RKA power supply module cover, if removed.	
10	Check all RKA modules for proper strapping. Strap modules according to information in Section 3.	Section 3
11	Replace top cover on RKA.	
12	Position RKA at appropriate installation location.	
13	Cable keystation(s) to RKA J3 as shown in Figure 2-2, ensuring that a terminator (part number 2892077-000) is installed at end of daisy-chain.	Figure 2-2 Section 3
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">From <u>one</u> to <u>four</u> keystations may be installed at each remote site, depending on system configuration. The local RKA must be strapped for either two or four workstations, as described in Section 3.</p>	
14	Connect RKA from J1 to modem with cable part number 2805096-XX or 2808043-XX.	Figure 2-2



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Figure 2-2. Typical RKS Cabling

SECTION 3

STRAPPING

3-1. GENERAL

This section provides the required strapping information for the SPERRY UNIVAC Remote Keystation Adapter 8598 (RKA). Strapping procedures are provided for the power (primary ac voltage input), RKA keystation addressing strapping, and local/remote programmable read-only memory (PROM) complement. Also included are the modem and remote RKA keystation address strapping requirements. The strapping procedures are provided in the following paragraphs:

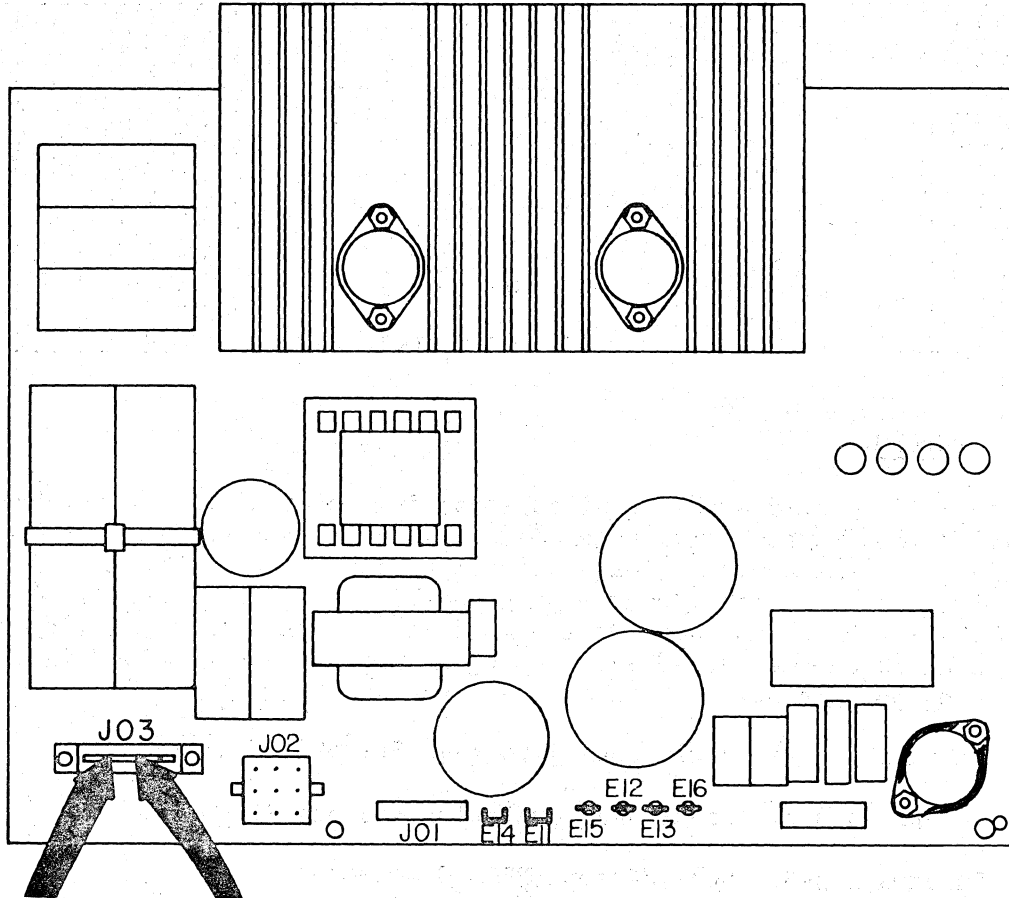
- Paragraph 3-2. Power Supply Voltage Selection
- Paragraph 3-3. Local RKA Keystation Address Strapping
- Paragraph 3-4. Local/Remote PROM Complement
- Paragraph 3-5. Modem Strapping Requirements
- Paragraph 3-6. Remote RKA Keystation Address Strapping

3-2. POWER SUPPLY VOLTAGE SELECTION

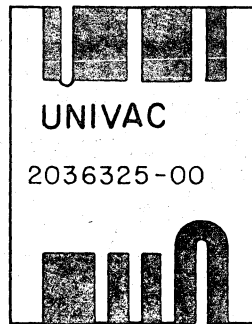
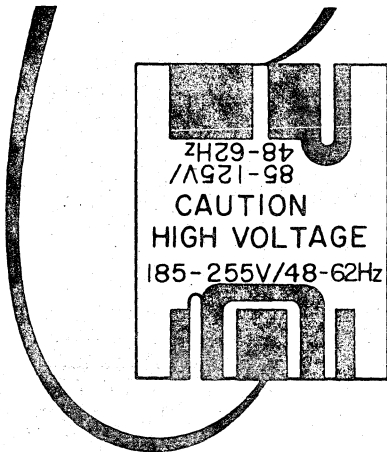
The only strapping option on the power supply (part number 2036465) is the power line voltage. The voltage is selected by circuit board A1, which is plugged into connector J03 in one of two ways (see Table 3-1 and Figure 3-1), providing a means to condition the power supply for a line voltage of either 85 to 125 volts ac or 185 to 255 volts ac in the frequency range of 48 to 62 Hz.

Table 3-1. Power Supply Voltage Selection

Voltage Selection	Procedure
85 to 125 volts ac (50/60, ± 0.5 Hz)	Plug the ''85-125V/48-62Hz'' end of A1 into J3 (see Figure 3-1).
185 to 255 volts ac (50/60, ± 0.5 Hz)	Plug the ''185-255V/48-62Hz'' end of A1 into J3 (see Figure 3-1) .



PLUG IN THIS END FOR 230 VAC OPERATION PLUG IN THIS END FOR 115 VAC OPERATION



OPPOSITE SIDE

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Figure 3-1. Power Supply Voltage Selection

3-3. LOCAL RKA KEYSTATION ADDRESS STRAPPING

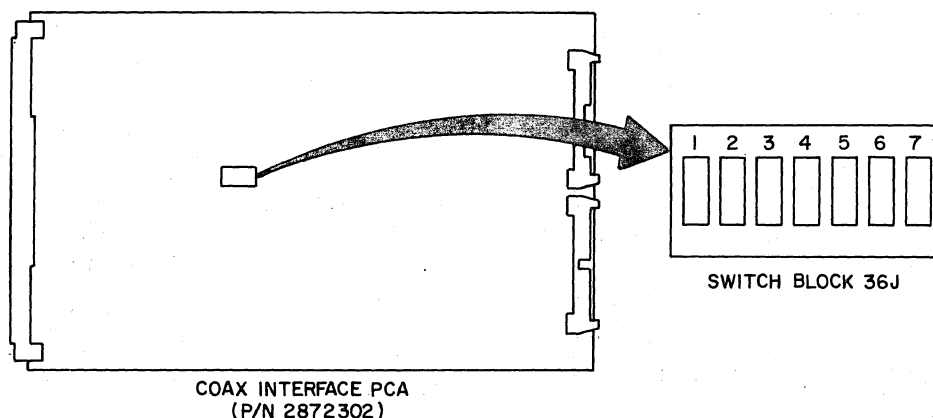
The local RKA must be strapped to select either two or four remote keystations, and to generate the specified keystation address. An inline switch block is provided on the coaxial interface printed circuit assembly (PCA) part number 2872302) to accomplish this strapping (see Figure 3-2).

The selection of two or four remote keystations is accomplished with switch 4 on switch block 36J.

Remote keystation address strapping is set by switches 1, 2, 3, 5, and 6 of the switch block (see Figure 3-2) in the local RKA. These switches have the following binary values when closed:

<u>Switch</u>	<u>Binary Value</u>
Switch 5	32
Switch 6	16
Switch 1	8
Switch 2	4
Switch 3	2

The position of the switches on switch block 36J (coaxial interface PCA) designates the address of the first keystation on the remote RKA. The remaining keystation(s) are addressed sequentially from this value. For example, if the local RKA is strapped for an address of 52, and strapped for four remote keystations, the keystation addresses are 52, 53, 54, and 55. The strapped address must always be an even number and, when strapped for four-keystation operation, the address must be in increments of 4 (0, 4, 8, 32).



Switch 4	Selection
OFF	Two remote keystations*
ON	Four remote keystations**

* This selection is made for one or two remote keystations.
 ** This selection is made for three or four remote keystations.

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Figure 3-2. Remote Keystation Strapping

NOTE

System software presently allocates addresses 0, 1, and 2 for specific functions. Address 4 is, therefore, the lowest address that may be used for remote keystations.

Table 3-2 provides strapping instructions for operation of four remote key-stations (switch 4 closed). Table 3-3 provides instructions for operation of two remote keystations.

Table 3-2. RKA Address Strapping for Four-Keystation System

Address	Switch 5	Switch 6	Switch 1	Switch 2	Switch 3*	Switch 4**
4	0	0	0	1	X	1
8	0	0	1	0	X	1
12	0	0	1	1	X	1
16	0	1	0	0	X	1
20	0	1	0	1	X	1
24	0	1	1	0	X	1
28	0	1	1	1	X	1
32	1	0	0	0	X	1
36	1	0	0	1	X	1
40	1	0	1	0	X	1
44	1	0	1	1	X	1
48	1	1	0	0	X	1
52	1	1	0	1	X	1
56	1	1	1	0	X	1
60	1	1	1	1	X	1
Binary Bit Value	32	16	8	4	2	1

Legend 0 - Off 1 - On X - Don't care

*Switch 3 is ignored by the firmware when local RKA is selected for four-keystation operation, (switch 4 on).

**Switch 4 - 1 selects four-keystation option

Table 3-3. RKA Address Strapping for Two Keystation System

Address	Switch 5	Switch 6	Switch 1	Switch 2	Switch 3	Switch 4*
4	0	0	0	1	0	0
6	0	0	0	1	1	0
8	0	0	1	0	0	0
10	0	0	1	0	1	0
12	0	0	1	1	0	0
14	0	0	1	1	1	0
16	0	1	0	0	0	0
18	0	1	0	1	1	0
20	0	1	0	1	0	0
22	0	1	0	1	1	0
24	0	1	1	0	0	0
26	0	1	1	0	1	0
28	0	1	1	1	0	0
30	0	1	1	1	1	0
32	1	0	0	0	0	0
34	1	0	0	0	1	0
36	1	0	0	1	0	0
38	1	0	0	0	1	0
40	1	0	1	0	0	0
42	1	0	1	0	1	0
44	1	0	1	1	0	0

Table 3-3. RKA Address Strapping for Two Keystation System (Cont)

Address	Switch 5	Switch 6	Switch 1	Switch 2	Switch 3	Switch 4*
46	1	0	1	1	1	0
48	1	1	0	0	0	0
50	1	1	0	0	1	0
52	1	1	0	1	0	0
54	1	1	0	1	1	0
56	1	1	1	0	0	0
58	1	1	1	0	1	0
60	1	1	1	1	0	0
62	1	1	1	1	1	0
Binary Bit Value	32	16	8	4	2	1

Legend: 0 - Off 1 - On

*Switch 4 - 0 selects two-keystation option

3-4. LOCAL/REMOTE RKA PROM COMPLEMENT

The PROM complement (see Table 3-4 and Figure 3-3) plugged into the RKA processor PCA (part number 2823884) and switch 5 of the switch module determine whether the unit functions as a local or a remote RKA.

Table 3-4. PROM Complement

Function	PROM Set	PROM Part Number	Switch 5
Local	2824077	2823991-00 2823991-01 2823991-02	Off
Remote	2824078	2823992-00 2823992-01 2823992-02	On

The remaining switches on the module and various unused integrated circuit sockets have been reserved for future enhancements.

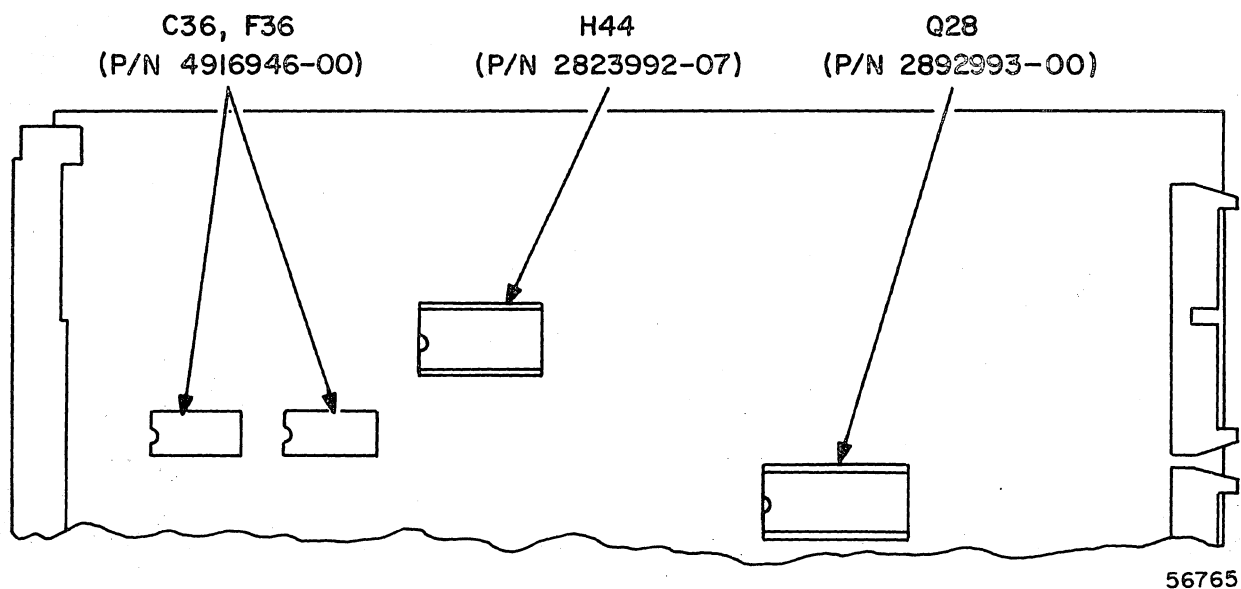


Figure 3-3. PROM Complement Locations

3-5. MODEM STRAPPING REQUIREMENTS

Modem strapping varies with site requirements and configuration. The following options, however, are required:

- (1) Modem must provide the clock signal.
- (2) Modem must provide the data set ready (DSR) signal.

3-6. REMOTE RKA KEYSTATION ADDRESS STRAPPING

Keystations attached to a remote RKA must be addressed as shown in Table 3-5.

Table 3-5. Remote Keystation Address Requirements

Keystation	Address
1	8
2	9
3	10
4	11

These addresses appear only within the RKA. The keystation system address is the same as the address strapped on the local RKA. For example, if the local RKA is strapped with an address of 52, the first keystation on the remote RKA would appear to the system to have an address of 52, the second remote keystation as 53, etc.

SECTION 4
CONFIDENCE TESTS

4-1. GENERAL

This section provides step-by-step procedures for performing the power-on confidence (POC) tests on the SPERRY UNIVAC Remote Keystation Adapter Type 8598 (RKA), associated modems, and cables. The POC test includes the remote and local RKA tests (see Figure 4-1).

The local RKA test is an internal self-test which also tests the communications line between the RKA and the system to check for polling. The message POC SUCCESSFUL appears on the workstation if the test is successful. If the test is not successful, the message NO CCU ACTIVITY (where CCU means central control unit) will also appear immediately following the POC SUCCESSFUL display.

The remote RKA test is an internal self-test of the remote RKA and works in conjunction with the self-test on the local RKA. After the self-tests on both RKAs have been successfully completed, the remote RKA test checks continuity in the communications lines between the remote and local RKAs. The test checks the parity of the remote RKA, and, if the parity check is successful, the message BASIC POC SUCCESSFUL appears on the remote RKA display screen.

4-2. LOCAL RKA TEST

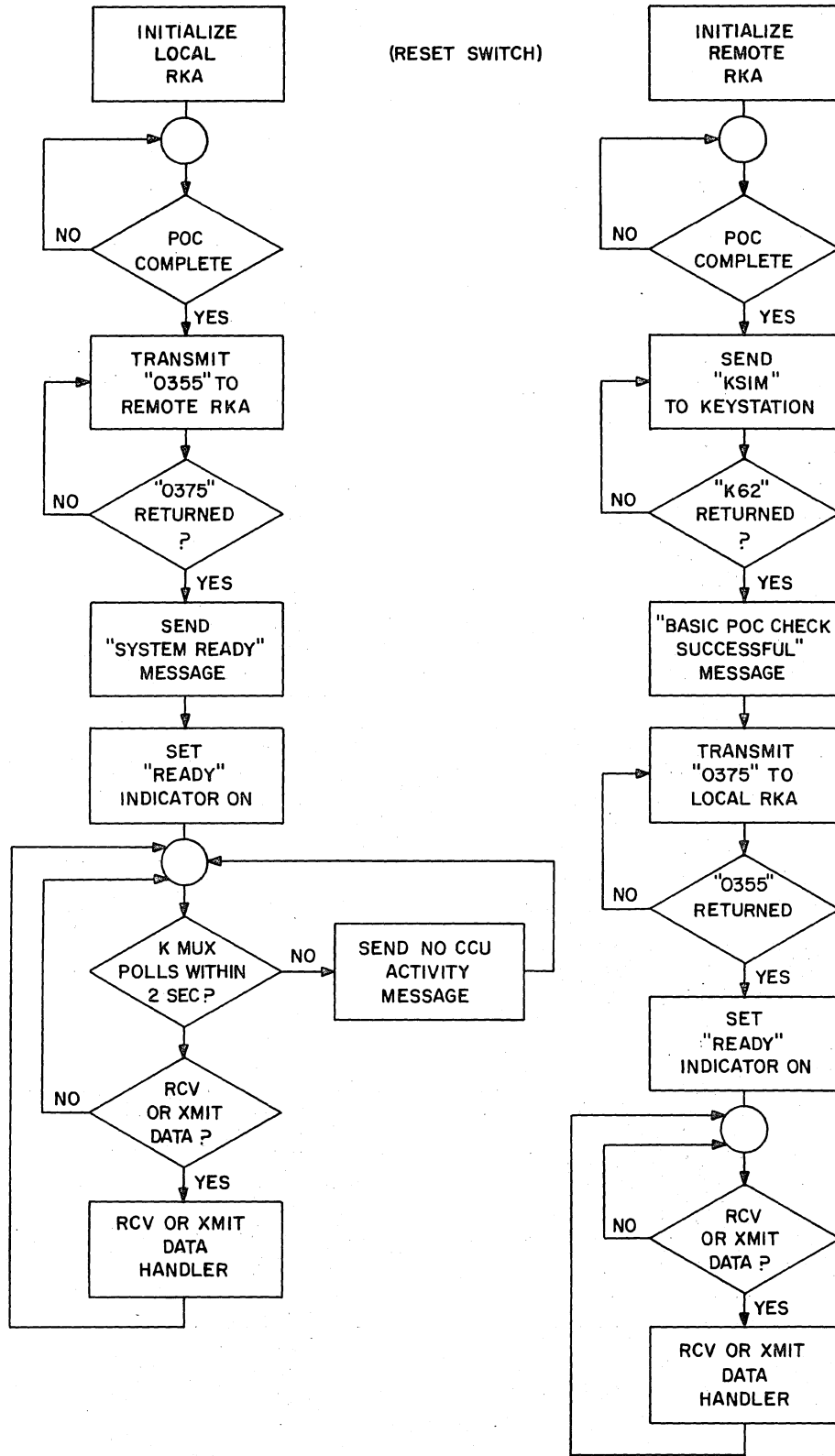
This test is initialized by the RESET switch. Successful completion is indicated by the RKA READY light which lights when the hardware successfully completes its test and a 0375 octal character is received from the remote RKA.

Confidence Tests

A subsequent test is automatically initiated to determine if the local RKA, system, and communications lines are operational (the local RKA sends 0355 octal). The SYSTEM READY message indicates successful completion.

4-3. REMOTE RKA TEST

This test is initialized by the RESET switch. Successful completion of the test is indicated by the READY indicator lighting and the message BASIC POC CHECK SUCCESSFUL appearing on the selected workstation.



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Figure 4-1. POC and Ready Sequence Flow Chart

SECTION 5
RKA PRINTER

5-1. GENERAL

This section explains the operator functions, programming considerations, and printer strapping necessary to use the SPERRY UNIVAC Remote Keystation Adapter Type 8598 (RKA) printer feature.

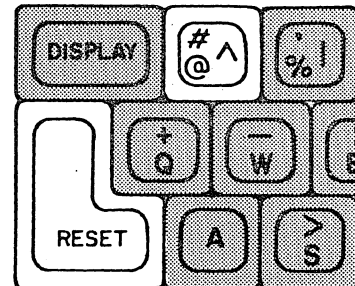
5-2. RKA PRINTER OPERATION

The RKA printer feature SPERRY UNIVAC Data Communications Terminal Type 8541 (DCT 500 R0), is capable of two modes of operation: PRINT 1 and PRINT 2.

5-3. PRINT 1 MODE

In the PRINT 1 mode, either a single display screen of lines 3 through 12 is printed or printing continues until the print stop character is detected. Line length is 40 characters. The remote character printer may be used to display the screen contents as follows:

- (1) Press and hold the RESET key.
- (2) Press the # key.



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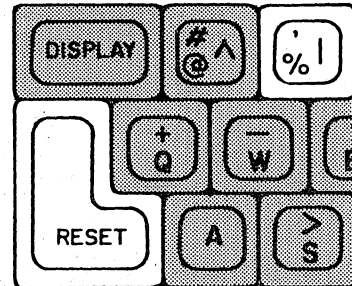
This action enables the PRINT 1 mode, which halts after a single screen print of screen lines 3 through 12 or after the following RESET/BYPASS key procedure.

- (1) Press and hold the RESET key.
- (2) Press the BYPASS key.

5-4. PRINT 2 MODE

The PRINT 2 mode is designed to print several screens in the write or print mode without operator intervention. Upon entering PRINT 2 mode, the operator is prompted on line 3 to enter a 3-digit line code. The data entered is not echoed. Screen lines 4 through 12 are then printed. To enable the PRINT 2 mode, perform the following procedure:

- (1) Press and hold RESET key.
- (2) Press comma key.
- (3) A screen prompt requests entry of a 3-digit line length code.
- (4) Enter 3-digit line code as requested.



A variation can take place and a short screen may be produced by placing the print stop character on the screen. Whenever the line-length count is exhausted, the print will recommence at the next screen line.

At the end of each screen print, a 'record forward' key stroke is sent to the local RKA. Further printing is delayed until the next screen of data is received from the system. Printing will begin when data appears on line 3; therefore, line 3 must be created after lines 4 through 12. The screen after the last screen printing should have line 3 blank so the operator may press the RESET and BYPASS key(s) to stop the printing process and cause a PRINT CANCELLED message to appear on the display screen.

5-5. OPTIONAL PRINTER STRAPPING

The RKA optional interface firmware is designed to be used with the printer strapped for one of the following:

- (1) 300 baud
- (2) Odd parity
- (3) Carriage return (CR) not coupled to line feed (LF)
- (4) LF not coupled to CR
- (5) Printwheel not able to space upon receipt of control characters
- (6) Printer motor always on

CR, LF, and the time-fill characters are the only forms control performed by the printer interface. A PRINT 2 option with 132 characters per line will cause a double space as both the firmware and the printer generate an LF function. For actual strapping information, refer to HB2301, SPERRY UNIVAC Communications Output Printer Types 8541-02, -03, -06, -07 and Auxiliary Printer Types 8541-08, -09 (Starting with Serial Number 20,000) Servicing.

The following messages may appear when using the printer:

- (1) PRINT CANCELLED - This message occurs if a line length greater than 256 is keyed in response to the PRINT 2 ENTER PRINTER LINE LENGTH (XXX) message.
- (2) PRINT CANCELLED - This message appears when printing is aborted because of an operator request (RESET and BYPASS key combination).

SECTION 6

DEINSTALLATION

6-1. GENERAL

This section contains general instructions for disconnecting and packing the SPERRY UNIVAC Remote Keystation Adapter Type 8598 (RKA) in preparation for shipment. Table 6-1 lists the cleaning material and equipment required to prepare RKA for shipment. Table 6-2 contains instructions for disconnecting and packing the RKA.

Table 6-1. Cleaning Materials and Equipment

Quantity	Description
1 pt	Mild household detergent
1	Vacuum cleaner
As required	Clean, dry, lint-free cloth

NOTE

If the original packing materials were saved, order new binding straps to replace the original straps. If the original packing materials were not saved, order a new shipping container.

6-2. DEINSTALLATION

Deinstall and prepare the RKA for shipment as described in Table 6-2.

Table 6-2. Deinstallation

Step	Procedure
1	Ensure that power is turned off at RKA to be deinstalled.
2	Disconnect ac power cables at user's receptacle.
3	Disconnect all interface cables at rear of terminal.
4	Remove casework.
5	Vacuum all accessible parts of terminal.
6	Replace casework and ensure that fasteners are secure.
7	Clean casework.
8	Pack unit in polystyrene container.
9	Bind sections of container together.
10	Carefully place polystyrene container in cardboard container and seal container.
11	Stencil or mark cardboard container for shipment as required.