TECHNICAL MANUAL
NO. 11-5810-308-10

*TM 11-5810-308-10

Headquarters
Department of the Army
Washington, D.C., 20 July 1983

OPERATOR'S MANUAL
DEDICATED LOOP
ENCRYPTION DEVICE
TSEC/KG-84
(NSN 5810-01-118-7766)

REPORTING OF ERRORS

You can improve this manual by recommending improvements using DA Form 2028 (Recommended Changes to Publications and Blank Forms). Mail the form direct to Commander, US Army Communications Security Logistics Activity. ATTN: SELCL-NMP-TP, Fort Huachuca, Arizona 85613. A reply will be forwarded direct to you.

This publication is required for administrative or operational purposes only. Distribution is limited to US Government Agencies. Other requests for this document must be referred to Commander, US Army Communications Security Logistics Activity, ATTN: SELCL-NMP-TP, Fort Huachuca, Arizona 85613, for releasibility under the Freedom of Information Act.

***This manual supersedes the operator's portion of TM 11-5810-308-12 & P, 26 April 1982**

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

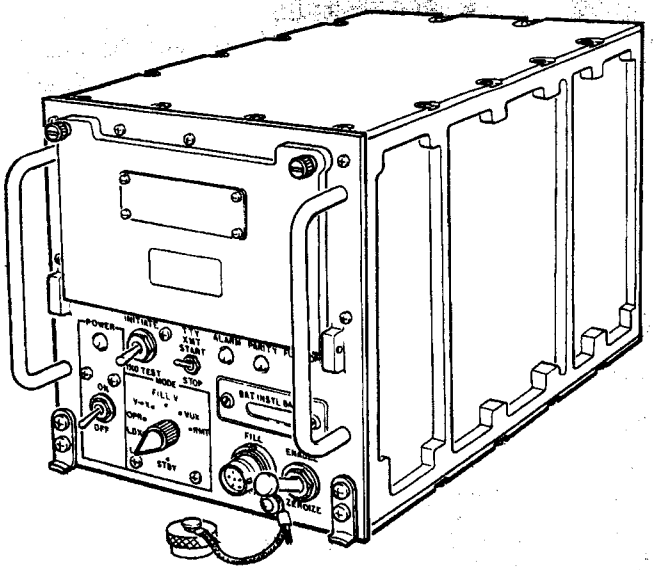
Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-43A, Operator maintenance requirements for TSEC/KG-84 — 308.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1990 - 257-473 - 814/20077



KG-84, Overall View

INDEX

PAGE

CHAPTER 1
INTRODUCTION

SECTION I GENERAL INFORMATION

1-1 SCOPE

- This manual is for use in operating the Dedicated Loop Encryption Device, TSEC/KG-84. It gives operating instructions and will tell you what maintenance to perform.
- The KG-84 is used for encrypting/decrypting teletypewriter and digital data traffic on dedicated links. It is used with various devices and modems and can be remotely controlled.

1-2 MAINTENANCE FORMS AND RECORDS

Department of the Army forms, records and reports used for equipment maintenance will be those as directed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-3 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your KG-84 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know if a task is hard to do or why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, US Army Communications Security Logistics Activity, ATTN: SELCL-NMP-TP, Fort Huachuca, Arizona, 85613. We'll send you a reply.

SECTION [redacted]

1-4 CHARACTERISTICS, CAPABILITIES, AND FEATURES

The KG-84:

- Is used to encrypt/decrypt teletypewriter and digital data traffic on dedicated links.
- Is used with various devices and modems.
- Can be used at tactical, protected, and fixed plant stations.

[redacted] Shows the National Item Name and (if required) a short description to identify and locate the item. The last line for each item shows the Federal Supply Code for Manufacturers (FSCM) in parentheses, followed by the part number.

[redacted] Shows the measure of the item needed to perform the actual operational/maintenance function. This measure is shown by a two-letter abbreviation (for example, EA, OZ, IN).

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	8305-00-267-3015	Cleaning Cloth (81348)	YD
2	C	7930-00-395-9542	Cleaning Compound	OZ
3	C	5340-00-906 3666	Brush, Soft Bristle (01099)	EA

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I GENERAL INFORMATION

D-1 INTRODUCTION

This appendix list expendable supplies and materials you will need to operate and maintain the KG-84.

D-2 EXPLANATION OF COLUMNS

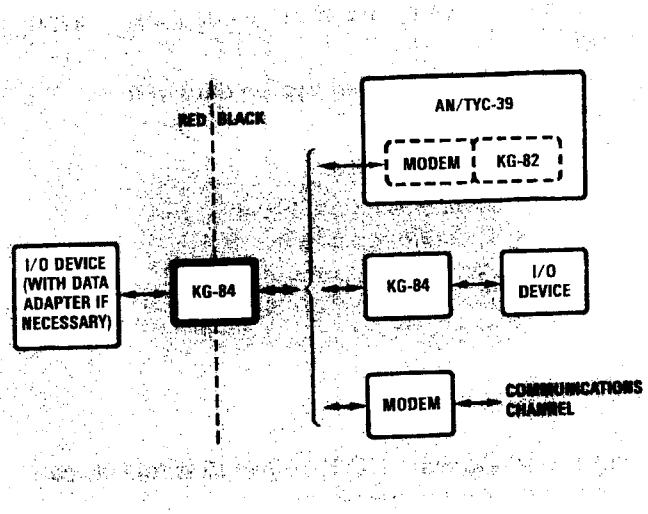
ITEM NO. This number is referenced in the narrative instructions to identify the material (for example. "Use cleaning compound. Item 9, App. C")

LEVEL. Shows the lowest level of maintenance that needs the listed item. Enter as applicable:

C - Crew/Operator
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance
L - Specialized Repair Activity

NATIONAL STOCK NUMBER. Shows the National Stock Number assigned to each item and used to requisition that item.

- Serves as an interfacing element as shown in typical set up below.



- Can handle synchronous digital data up to 64 Kilo bits per second (Kb/s) or teletype data up to 9.6 Kb/s.

- Is normally operated in full duplex but can be used in half-duplex and simplex modes, point-to-point or netted.
- Can operate in any one of three basic crypto sync modes.
- Can transmit/receive encrypted data in four modulation formats.

Nonconditional baseband
Conditioned baseband
Nonconditional diphase
Conditional diphase

- Is used, along with a KYX-15 Net Control Device, for remote keying operation.
- Can be used with a 24 VDC, 115 VAC (60 or 400 Hz), 220 VAC (50 Hz) power source.
- Can be remotely operated.

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY AUTH
	MTOE AUTHOR ZED ITEMS		
5135-00-081-3493	BATTERY: BA 1372/4	EA	2
5810-01-066-7587	CABLE ASSEMBLY, FILL ON 512424 (98230)	EA	1
	NOTE Any of the three fill devices can be used with the KG-84. The KYX-15A/TSEC must be available if REMOTE KEYING operation is used.		
5810-01-026-9618	ELECTRONIC TRANSFER DEVICE, KYK-13/TSEC ON 190318 (98230)	EA	1
5810-01-095-1312	NET CONTROL DEVICE, KYX-15A/TSEC ON 190303 (98230)	EA	1
5810-01-026-9620	TAPE READER, GENERAL PURPOSE, KOI-18/TSEC ON 190315 (98230)	EA	1
5810-01-095-9795	EMP/LIGHTNING PROTECTOR (LINE PROTECTION MODULE) ON 535897 (98230)	EA	1

APPENDIX C
ADDITIONAL AUTHORIZATION LIST

SECTION I INTRODUCTION

C-1 SCOPE

This appendix list additional items you are authorized for the support of the Dedicated Loop Encryption Device.

C-2 GENERAL

This list identifies items that do not have to accompany the (Dedicated Loop Encryption Device) and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3 EXPLANANTION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in Alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

1-5 EQUIPMENT DATA

PHYSICAL CHARACTERISTICS

In carrying case with cover in place.

Height	14.13 inches
Width	11.75 inches
Length	20.50 inches
Weight	41.00 pounds

In carrying case with cover removed.

Height	12.00 inches
Width	11.75 inches
Length	20.50 inches
Weight	28.75 pounds

Removed from case, without Line Protect Module (LPM).

Height	7.80 inches
Width	7.50 inches
Length	15.20 inches
Weight	21.50 pounds

Removed from case with LPM in place.

Height	7.80 inches
Width	7.50 inches
Length	15.60 inches
Weight	22.25 pounds

PRIMARY POWER REQUIREMENTS

INPUT VOLTAGE

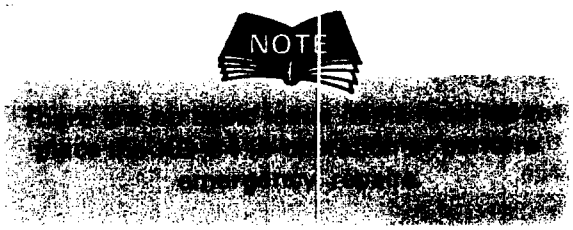
or

or

or

POWER CONSUMPTION

CIRCUIT PROTECTION



models of this equipment, the model is shown under the "Usable On" heading in this column.

Column (4) Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

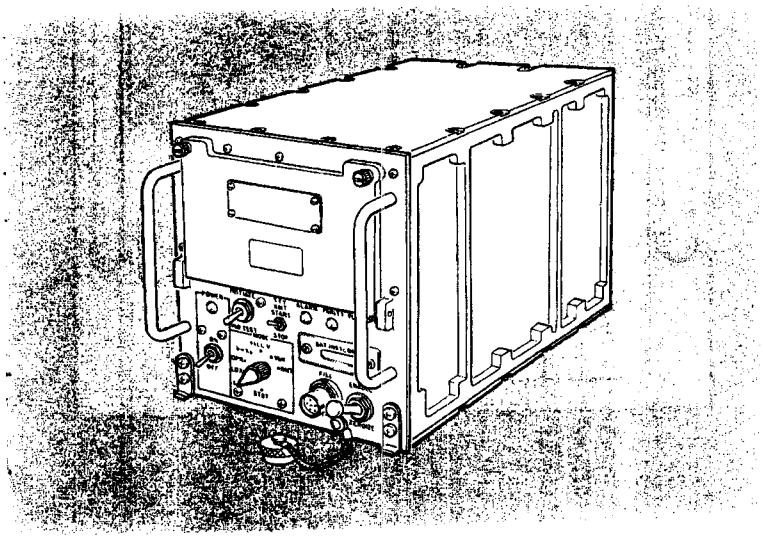
Column (5) Quantity required (Qty rqr.) Indicates the quantity of the item authorized to be used with/ on the equipment.

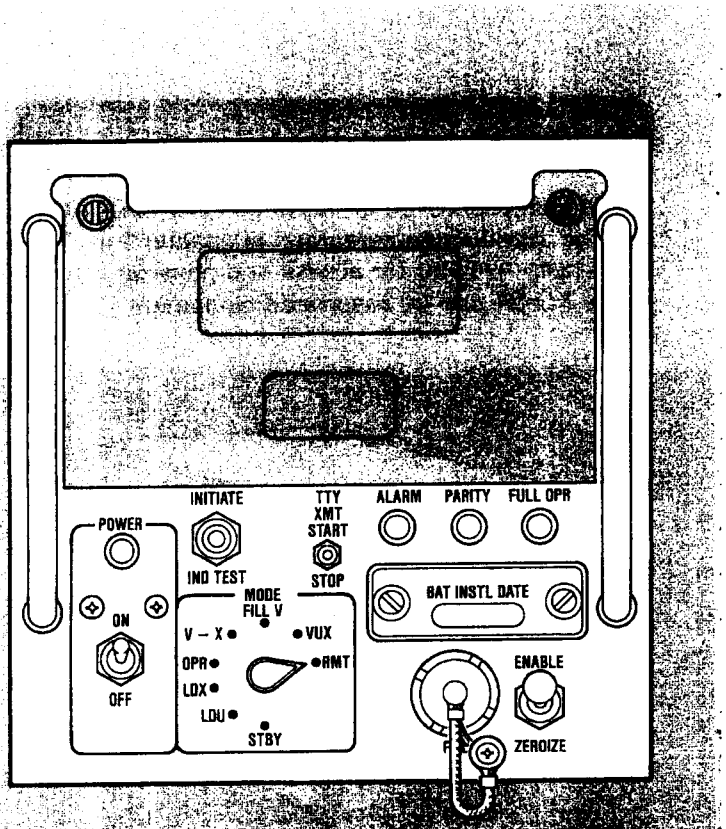
SECTION II COMPONENTS OF END ITEM

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQD
	5810-01-118 7766	DEDICATED LOOP ENCRYPTION DEVICE, KG-84			

ACCESS AND PHYSICAL SECURITY

The unkeyed KG-84 is classified CONFIDENTIAL. See the introduction paragraph of chapter 2 in KAO-184( )/TSEC for access and physical security of the KG-84 and its associated equipment.





Front Panel Controls and Indicators

These are the minimum essential items required to place the KG-84 in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the KG-84 during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end items.

B-3 EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

Column (1) Illustration Number (Illus Number). This column indicates the number of the illustrations in which the item of shown.

Column (2) National Stock Number, Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

Column (3) Description. Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs from different

APPENDIX B
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION I INTRODUCTION

B-1 SCOPE

This appendix lists components of end item and basic issue items for the KG-84 to help you inventory items required for safe and efficient operation.

B-2 GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following Sections:

SECTION II COMPONENTS OF END ITEM

This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

CHAPTER 2
OPERATING INSTRUCTIONS

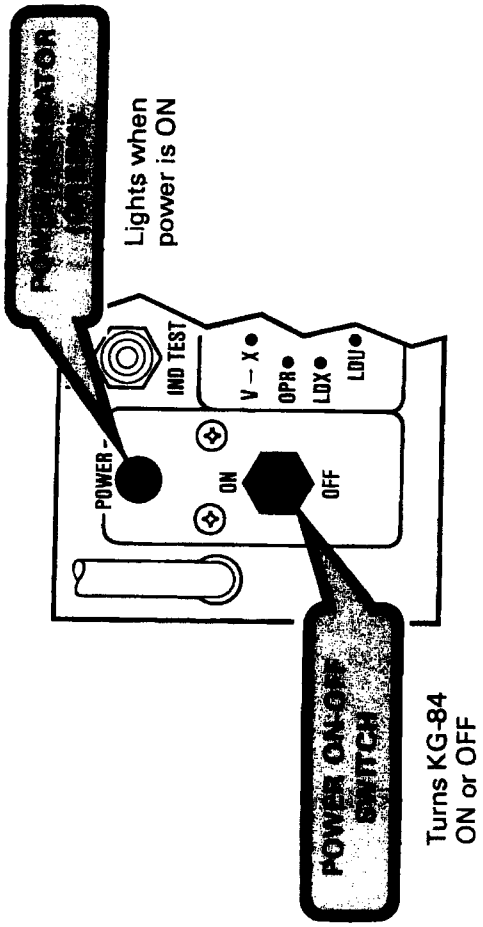
SECTION I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1 GENERAL

Operator controls and indicators are located on the bottom half of the front panel.

Controls behind hinged cover on top half of the front panel are preset for your type of operation. DO NOT TOUCH THEM.

2-2 CONTROLS AND INDICATORS



(c) TB 380-41	Department of the Army Policy for Control of COMSEC Materiel. (u)
(c) TB 750-38	Alteration of Communications Security Equipment. (u)

A-5 TECHNICAL MANUALS (TM)

TM 38-750	The Army Maintenance Management System.

A-6 MAINTENANCE MANUALS

KAO-184 ()/TSEC	Operating Instructions for TSEC/KG-84.

A-7 DA PAMPHLETS (DA-PAM)

DA-PAM 310-9	Index of Communications Security (COMSEC) Publications.

A-8 OTHER PUBLICATIONS

FM 5-25	Explosives and Demolitions
FM 21-11	First Aid for Soldiers

APPENDIX A
REFERENCES

A-1 SCOPE

Following is a list of all forms, Army regulations, technical bulletins, technical manuals, and maintenance manuals required by the KG-84 operator.

A-2 FORMS

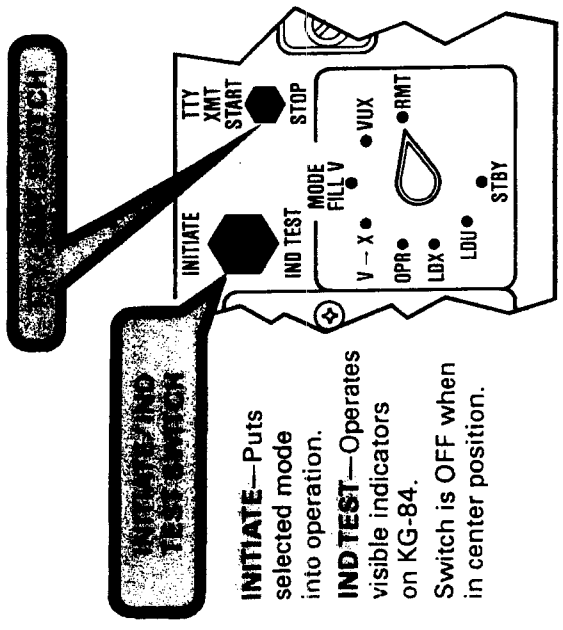
DA Form 2028	Recommended Changes to Publications and Blank Forms.

A-3 ARMY REGULATIONS (AR)

(c) AR 380-40	Department of the Army Policy for Safeguarding COMSEC Information, (u)

A-4 TECHNICAL BULLETINS (TB)

TB 43-0001-06-()	Equipment Improvement Recommendation and Maintenance Digest Report for Communications Security Equipment.



START—Puts KG-84 in transmit mode and initiates a crypto sync. KG-84 will then begin to process incoming plain text for transmission.

STOP—Sends a series of encrypted unique STOP TRANSMISSION characters to a remote KG-84 which indicates the end of a locally transmitted TTY message. The KG-84 changes from a transmitter to a receiver and waits for resync.

INITIATE—Puts selected mode into operation.

IND TEST—Operates visible indicators on KG-84. Switch is OFF when in center position.

NOTE: TTY/XMIT switch is used only for SIMPLEX operation.

Controls operation of KG-84

MODE SWITCH POSITIONS

STBY— COMSEC logic is disabled but step pulses are ready for output to TTY. Used when communications link is not available.

LDU— Loads U variable from fill device.

LDX— Loads X variable from fill device.

OPR— Normal traffic (operate resync enable)

V→X— Transfers V variable to X variable location. Starts automatic resync when mode switch is returned to OPR.

FILL V— Used for loading future traffic variable without interrupting traffic flow.

VUX— Updates X variable each time this position is entered and mode is initiated.

RMT— Used for remote control of KG-84.

Remove old battery and dispose of battery in a safe manner.

Insert fill battery BA-1372 so that pointed end of battery aligns with groove slot of battery cavity. Verify matching polarity.

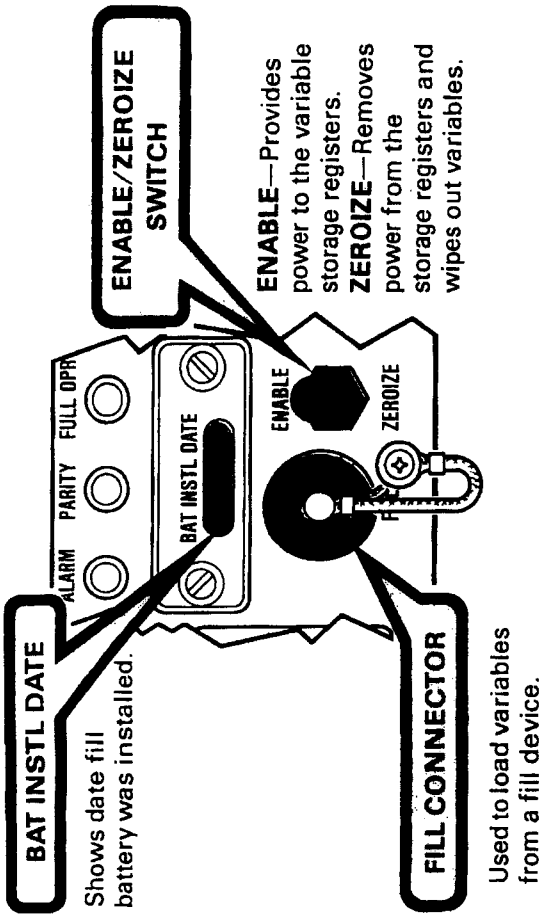
Replace fill battery cover and tighten retaining screws.

WARNING

Be careful when disposing the replaced FILL BATTERY. BA-1372 is a mercury battery and will explode if accidentally shorted or placed in an incinerator. Dispose of battery by burying in a non-conductive container or as specified by local procedures.

If power is OFF you must replace the battery in 10 SECONDS or the variables stored in your KG-84 will be lost.

KG-84



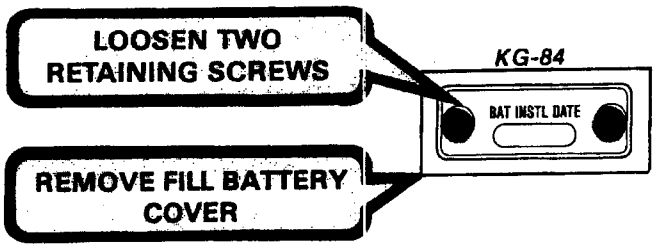
WARNING

Make sure the area is well ventilated when using TRICHLOROTRIFLUOROETHANE. It's fumes are poisonous. Do not use it near open flames or a hot surface. DO NOT GET IT ON YOUR SKIN.

3-4 FILL BATTERY REPLACEMENT

NOTE

Fill battery must be replaced every 180 days.



Screws will remain attached to cover.

3-2 TROUBLESHOOTING TABLE

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. Zeroized unit does not initialize properly.
   - Perform check operation on variables in fill device (See paragraph 2-6, page 2-13).
     - Load with a good variable.

2. Initialized unit ALARM indicator lights when power is turned ON.
   - Check for weak or outdated fill battery.
     - Replace battery and reinitialize unit.

SECTION II MAINTENANCE PROCEDURES

3-3 CLEANING

Remove dust or loose dirt from the outside of your KG-84 with a soft cloth.

Remove grease, oil, fungus and ground-in dirt from cable connectors, pin contacts, and the outside of your KG-84 with a cloth dampened (not wet) with trichlorotrifluoroethane.

SECTION II PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. GENERAL

Operator's Preventive Maintenance Checks and Services (PMCS) is the required daily and weekly inspection and care of your KG-84 required to keep it in good operating condition.

2-4. PMCS

If your KG-84 must be in USE ALL THE TIME, check and service those items that can be checked and serviced without stopping operation. Make your COMPLETE PMCS when the KG-84 is finally SHUT DOWN.

ROUTINE CHECKS

Routine checks like equipment inventory, dusting, washing; checking for frayed, cracked or broken cables, loose connectors, secure mounting, proper operation of control knobs and indicators are not listed as PMCS. These are things that you should do anytime you see they must be done.

EXPLANATION OF INTERVAL COLUMN OF PMCS CHART

Always keep in mind all WARNINGS and CAUTIONS when PMCS are made.

WARNING and CAUTION

CHAPTER 3
OPERATOR MAINTENANCE

Your KG-84 does not require lubrication.

SECTION I TROUBLESHOOTING PROCEDURES

3-1 GENERAL

This section lists problems you may find while operating or doing preventive maintenance.

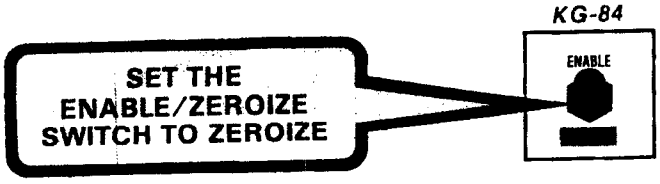
Don't skip over steps. You must follow the steps in the order they are listed.

This section does not list all of the problems that could happen to your KG-84. If a problem is not listed, or if a problem is not fixed by the steps given, notify higher level maintenance or your superior.

Troubleshooting procedures take for granted that your KG-84 is getting power. Be sure to check the power source to see that it is in good working order before you troubleshoot.

2-15 EMERGENCY OPERATION

If you must zeroize your KG-84 in a hurry,



2-16 REMOTE KEYING

A KYX-15/TSEC Net Control Device is needed for remote Keying. See KAO-184/TSEC, Chapter 3, for remote Keying operation.

SECTION IV OPERATION UNDER UNUSUAL CONDITIONS

Operation under unusual conditions may be found in the manual for the communications system with which the KG-84 is used.

BEFORE OPERATION — Do your [B] PMCS to be sure the KG-84 is ready to use.

DURING OPERATION — Do your [D] PMCS while you operate to help spot small problems before they become big problems.

AFTER OPERATION — Do your [A] PMCS to help keep your KG-84 in top shape.

WEEKLY CHECKS — Do your [W] PMCS to make sure serious problems do not happen.

All PMCS must be done as scheduled and also under the following conditions:

- Before a mission.
- When first installed.
- When reinstalled after being removed for any reason.

EXPLANATION OF EQUIPMENT IS NOT READY/AVAILABLE IF: COLUMN

This column tells you why your KG-84 cannot be used to perform its assigned mission.

NOTE

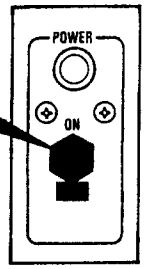
The PROCEDURES column in your PMCS chart tells you how to do your PMCS. Follow these instructions. If tools are needed, or the instructions tell you, get organizational maintenance to do the work.

NOTE

If your KG-84 is not operating as it should, refer to Chapter 3 under TROUBLESHOOTING for possible problems. Report any problems or failures on DA Form 2404. Refer to TM38-750.

KG-84

SET THE POWER ON-OFF SWITCH TO OFF

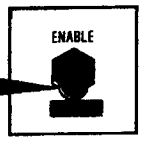


Be sure that your KG-84 has a good fill battery so that variables are held in storage.

FULL SHUTDOWN FOR TRANSIT/STORAGE _ If your KG-84 is being removed for maintenance, transit or storage, it must be zeroized.

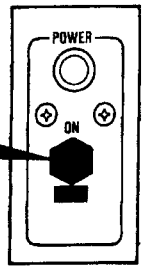
KG-84

SET THE ENABLE/ZEROIZE SWITCH TO ZEROIZE



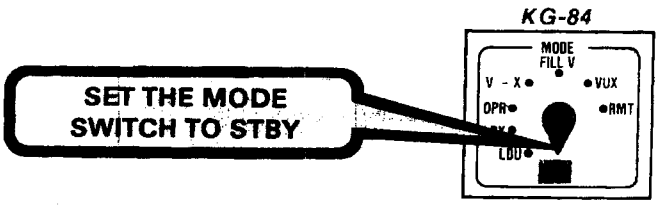
KG-84

SET THE POWER ON-OFF SWITCH TO OFF



Remove fill battery from front panel battery compartment (see paragraph 3-2. page 3-2).

STANDBY OR PARTIAL SHUTDOWN – Should be used when the communications link is being repaired or is not available.



Your KG-84 goes into a reset condition but power is up and step pulses are ready for output to TTY units.

AND

Your KG-84 can put out TTY printer hard copy of data entered at the TTY Keyboard.

AND

Variables are held in storage by equipment power not battery power.

TEMPORARY FULL SHUTDOWN – Should be used if normal operating schedules tell you to shut down your KG-84 for a short period of time.

OPERATORS PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B—BEFORE OPERATION D—DURING OPERATION A—AFTER OPERATION W—WEEKLY CHECK

ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	INTERVAL W	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
1				●	**FILL BATTERY** Check for signs of corrosion and clean if necessary. Check battery insertion date and replace if outdated.	Battery outdated
2				●	**GROUND WIRE** Be sure power is OFF when checking the ground wire. See that it is free from rust, fungus and corrosion and that firm connection is made with KG-84 ground terminal and earth ground. Clean as required.	Proper ground is not available.
3				●	**MODIFICATIONS** Check TB-750-38 for any new applicable MWO's. All **URGENT** MWO's must be applied.	Urgent MWO's have not been applied.

SECTION III OPERATION UNDER USUAL CONDITIONS

2-5 GENERAL

The KG-84 is always used as part of a communication system. Type of operation is controlled by the system used.

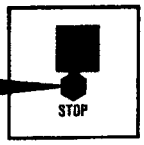
If your KG-84 is installed for one type of operation (for example FULL DUPLEX) and you are ordered to change to another (for example SIMPLEX) have Organizational Maintenance make the required changes to the controls on top of front panel and check the strapping mode record plate for proper strapping options.

The KG-84 can be used for local or remote operation.

Normal operation of the KG-84 is FULL DUPLEX. It can be used as HALF-DUPLEX or SIMPLEX.

KG-84

SET THE TTY-XMT SWITCH TO START



Your KG-84 will go into transmit mode and resync will begin.

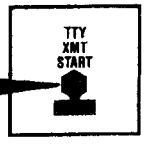
THEN

Your KG-84 will process incoming data for transmission.

OR

KG-84

SET THE TTY-XMT SWITCH TO STOP



Your KG-84 will send a stop transmission message to the receiving crytographic unit.

THEN

Switch to the receive mode and wait for a resync pattern.

2-14 SHUTDOWN

The conditions for shutting down your KG-84 are:

- Standby or partial shutdown.
- Temporary Full shutdown
- Full shutdown for transit or storage.

TRANSMIT-ONLY/ RECEIVE-ONLY _ Do a resync (paragraph 2-11, page 2-42) at the TRANSMIT-ONLY station.

SIMPLEX-RECEIVE -Do a resync (paragraph 2-11, page 2-42) at the SIMPLEX TRANSMIT station or start transmission at a distant station.

INTERNAL SIMPLEX-TRANSMIT -After LDU operation do a resync as shown for SIMPLEX-RECEIVE above.

EXTERNAL SIMPLEX-TRANSMIT _ Resync is automatic.

2-13 USE OF TTY-XMT SWITCH

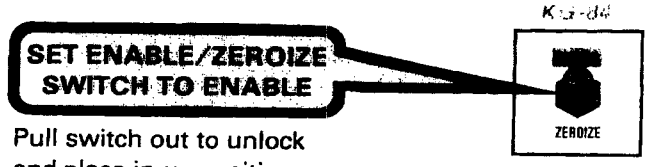
NOTE

The TTY-XMT switch can be used only when your KG-84 is operating in the SIMPLEX-INTERNAL mode.

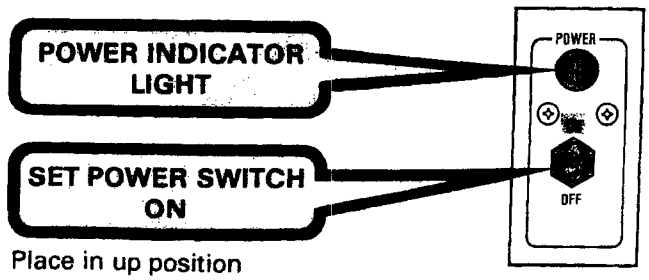
2-6 INITIALIZATION

NOTE

Initialization or "cold start" is required when a zeroized KG-84 is to be put into operation.



Pull switch out to unlock and place in up position



Place in up position
Power indicator will light

KG-84

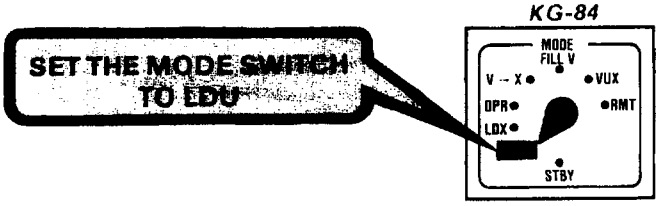
If operation type is:

- FULL DUPLEX
- INDEPENDENT
- TRANSMIT-ONLY
- SIMPLEX TRANSMIT

Alarm indicator will not flash if operation is RECEIVE-ONLY or SIMPLEX-RECEIVE

LOAD THE U VARIABLE

KG-84



Your KG-84 can be variable loaded with a KOI-18, KYK-13 or a KYX-15 fill device

Make sure that your fill device, fill cable and reader tape are good.

- If good, return to page 2-44 and repeat steps to replace the U-variable. If trouble persists, contact higher maintenance.
- If faulty, replace or contact higher maintenance.

RETURNING TO TRAFFIC

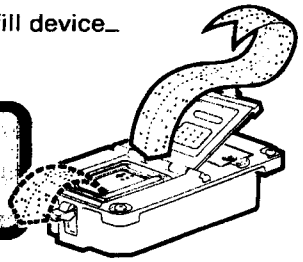
For some modes of operation NO FURTHER ACTION is required. For other modes of operation FURTHER ACTION IS required. Check the following conditions for YOUR MODE OF OPERATION to see what you must do to return to traffic.

FULL DUPLEX _ Do a resync (paragraph 2-11, page 2-42) at either a local or distant station.

DUPLEX-INDEPENDENT _ Do a resync (paragraph 2-11, page 2-42) at both stations.

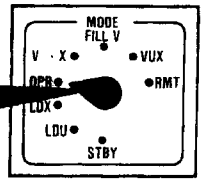
If you are using a KOI-18 fill device_
(See page 2-15).

AFTER PULLING THE TAPE THROUGH THE TAPE READER



If the parity inidicator does not remain lit, the new U variable has replaced the old U variable.

SET THE KG-84 MODE SWITCH TO OPR

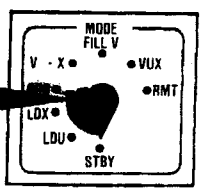


KG-84

NOTE

If the PARITY indicator does remain lit, the original U variable is still in the KG-84 and you must do the following.

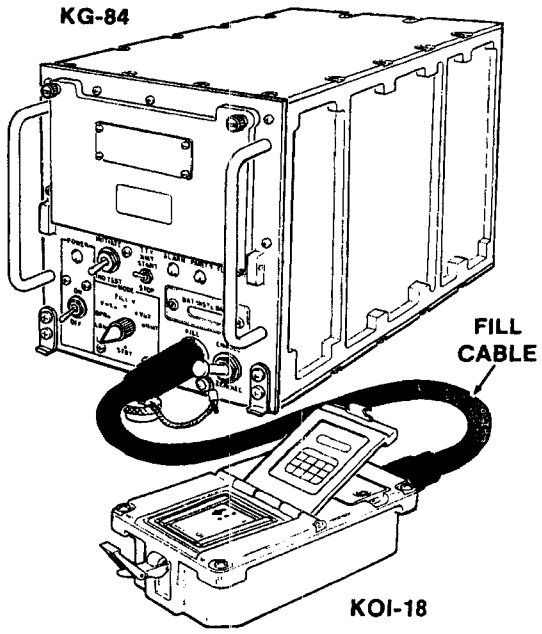
SET THE MODE SWITCH FIRST TO STBY AND THEN TO OPR



This returns your KG-84 to its original condition.

LOADING WITH A KOI-18

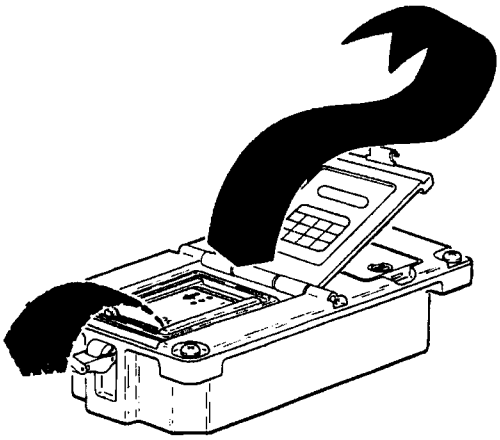
Connect KOI-18 to KG-84 fill connector using fill cable.



CAUTION

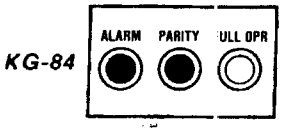
Do your fill action as quickly as you can. Tape should never be left in KOI-18 reader head any longer than you require, as KOI-18 battery life will be shortened.

Insert tape leader into KOI-18/TSEC IN slot. Line up tape feed holes with white dots on KOI-18.



Connect the fill device you have been assigned, loaded with the new U variable, to your KG-84. See:

- Page 2-15 for KOI-18 loading.
- Page 2-18 for KYK-13 loading.
- Page 2-21 for KYX-15 loading.



KG-84 **ALARM** and **PARITY** indicators will flash several times.

NOTE

If your KG-84 is operating in the RECEIVE-ONLY or SIMPLEX mode the ALARM indicator will not light but the PARITY indicator will flash when tones. The FULL OPR indicator will light when a local or distant station is placed in the SIMPLEX-TRANSMIT mode or initiated.

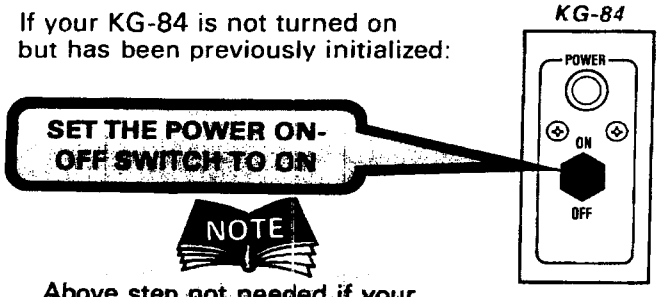
NOTE

While resync is being made, the ALARM and PARITY indicators will flash twice. The FULL OPR indicator will NOT light.

2-12 REPLACING A U VARIABLE

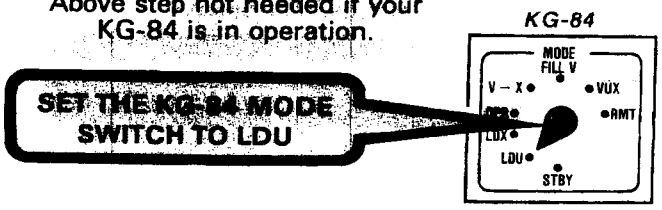
This operation puts your KG-84 in an OFF-LINE status. If traffic is being handled, it will be interrupted.

If your KG-84 is not turned on but has been previously initialized:



NOTE

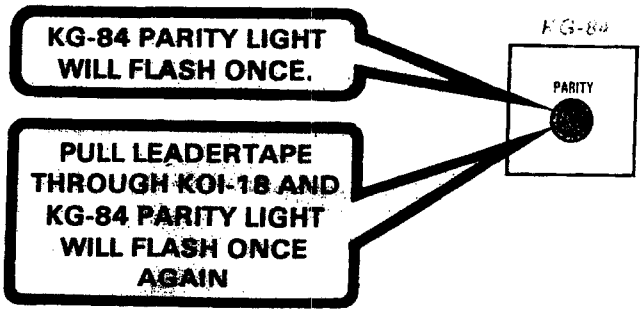
Above step not needed if your KG-84 is in operation.



NOTE

If a U variable is not assigned to you, the X variable or any other variable can be used for LDU initialization.

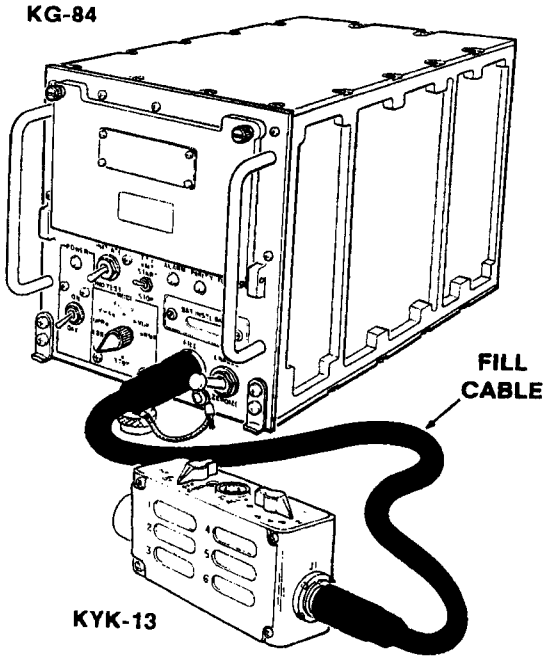
Hold momentarily, then release



Go to page 2-26 and load the X variable.

LOADING WITH A KYK-13

Connect a KYK-13, which has the required variable already loaded, to the KG- 84 by using the fill cable.



NOTE

[redacted]

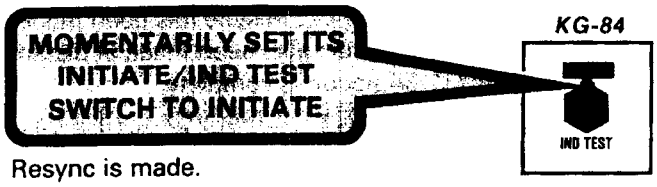
FULL DUPLEX – Resync will be made in both directions and traffic in both directions will be interrupted.

DUPLEX INDEPENDENT/TRANSMIT ONLY OR SIMPLEX TRANSMIT

Resync will be made in the transmit direction and only transmit traffic will be interrupted.

(RECEIVE-ONLY OR SIMPLEX-RECEIVE)

Resync occurs when distant station initiates resync.

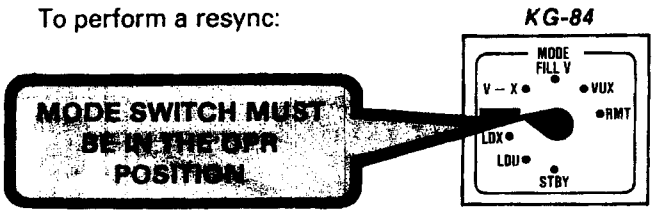


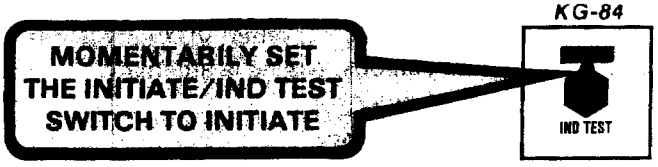
Resync is made.

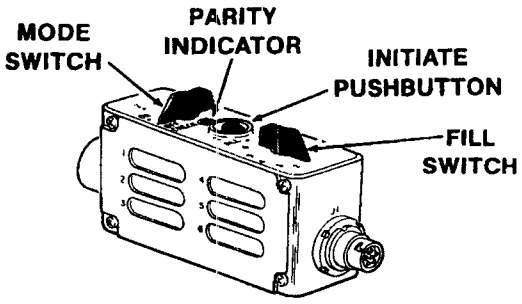
2-11 RESYNCHRONIZATION (RESYNC)

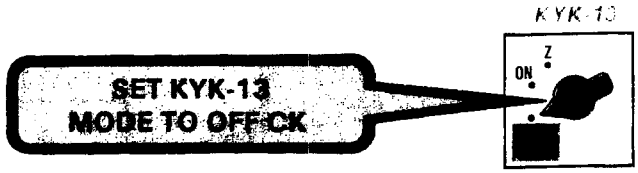
For your KG-84 to handle traffic with a distant station, synchronization (or resync) must be made between the two stations. Both the distant station and your KG-84 must be initialized and hold the same variable.

To perform a resync:

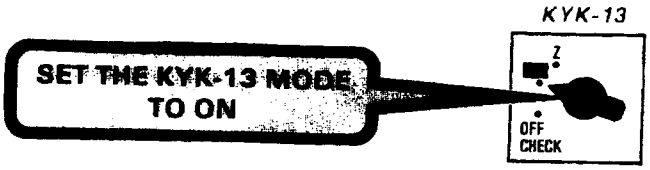






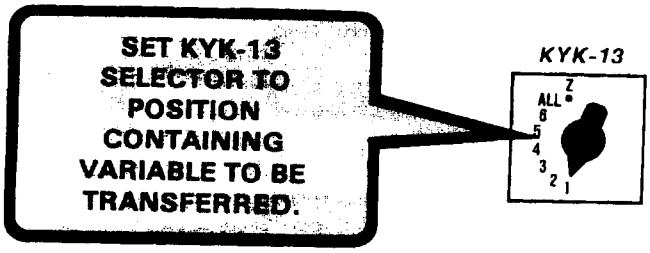


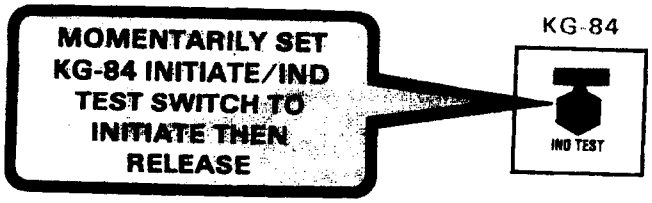
This tells you that the KYK-13 is ready to load your variable.



CAUTION

Do not press KYK-13/TSEC initiate button.



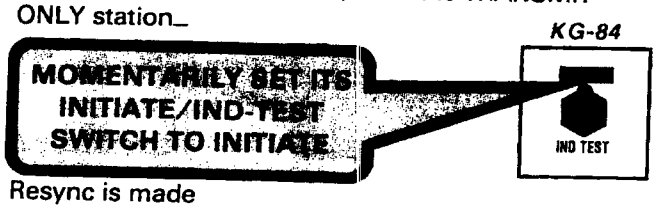


FULL DUPLEX _ Resync has been made when this VUX update has also been made at distant stations. Your KG-84 action is complete.

DUPLEX-INDEPENDENT _ When VUX update has been made at your KG-84 and distant stations_

Resync is now made.

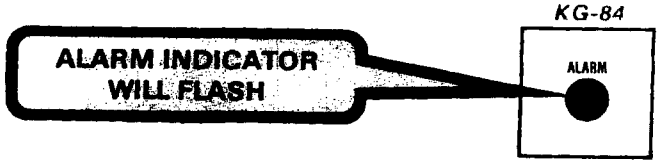
TRANSMIT-ONLY/ RECEIVE-ONLY _ When VUX update has been made at both stations, have the TRANSMIT-ONLY station_

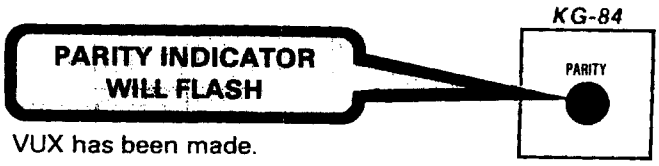


Resync is made

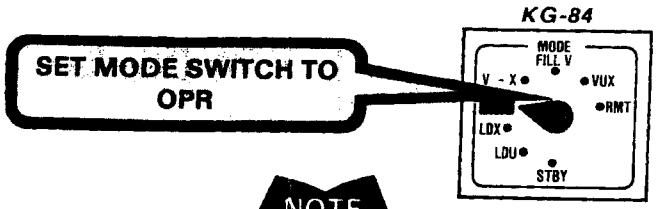
SIMPLEX _ When VUX update has been made at all stations, resync is automatic.

SIMPLEX WITH A DISTANT STATION IN SIMPLEX-TRANSMIT _ When VUX update has been made at all stations, have the SIMPLEX-TRANSMIT station_



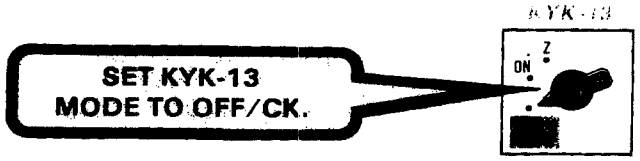


VUX has been made.



For some modes of operation NO FURTHER ACTION is required. For other modes of operation FURTHER ACTION IS required. Check the following conditions for YOUR MODE OF OPERATION to see what you must do to make resync with distant stations.

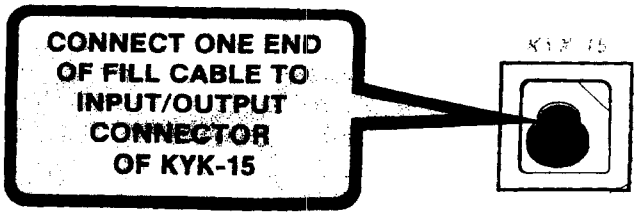
This tells you that your variable has been passed from the KYK-13 to the KG-84



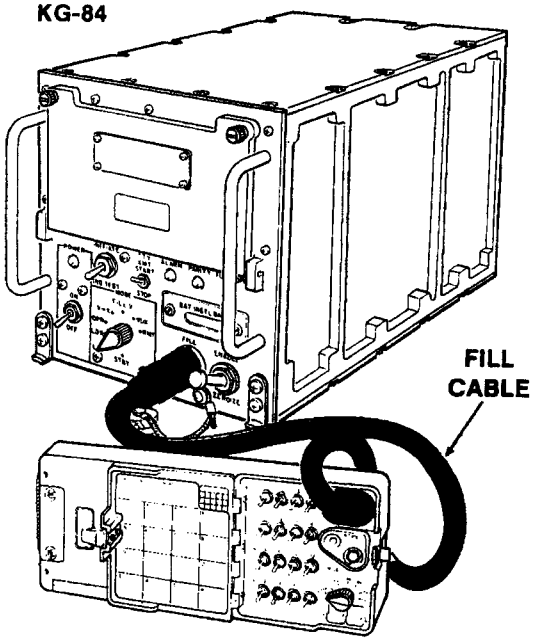
KYK-13 is now ready for further loading action or may be disconnected if no further loading is needed.

Go to page 2-26 and load the X variable.

LOADING WITH A KYX-15



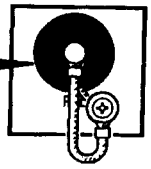
KG-84



KYX-15

KG-84

CONNECT OTHER END OF FILL CABLE TO FILL CONNECTOR OF KG-84

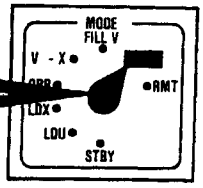


NOTE

The VUX operation must be checked together with all distant stations.

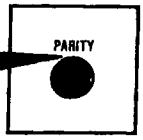
KG-84

SET MODE SWITCH TO VUX



KG-84

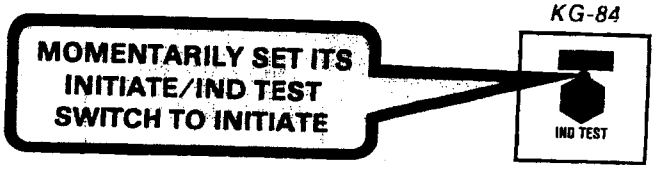
SEE THAT PARITY INDICATOR DOES NOT LIGHT



KG-84

MOMENTARILY SET THE INITIATE/IND TEST SWITCH TO INITIATE

KG-84



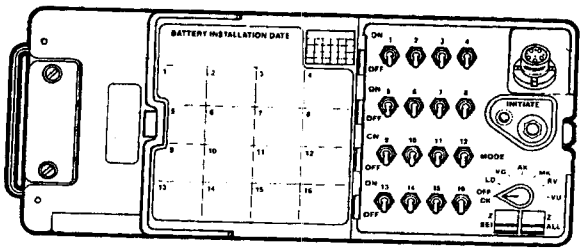
Resync is made.

2-10 UPDATE X-VARIABLE (VUX) OPERATION

The VUX operation is used to update a variable stored in the X-register. This operation can be done only if your KG-84 has been pre-set for this feature.

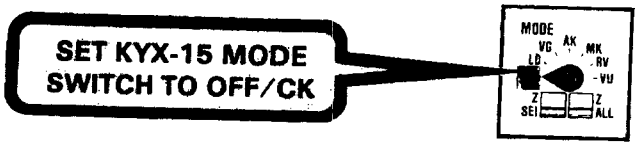
NOTE

You will know if your KG-84 has the X-variable update feature if the PARITY indicator does NOT LIGHT when you set the mode switch to VUX. If the parity indicator does light, you can not do the VUX operation.

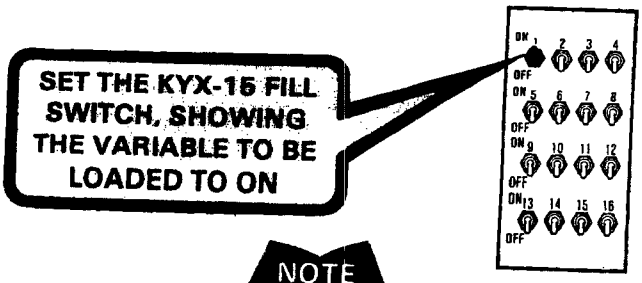


KYX-15

KYX-15



KYX-15



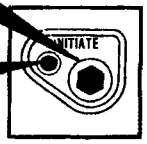
NOTE

All other fill switches must be off.

PRESS KYX-15 INITIATE BUTTON

PARITY INDICATOR OF KYX-15 WILL FLASH

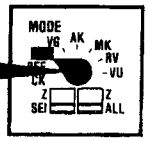
KYX-15



This tells you that the variable is ready to be transferred to the KG-84.

SET THE KYX-15 MODE SWITCH TO LD

KYX-15

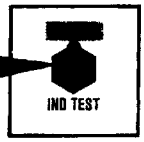


CAUTION

Do not press KYX-15 initiate button.

MOMENTARILY SET KG-84 INITIATE/IND TEST SWITCH TO INITIATE THEN RELEASE

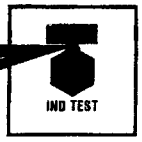
KG-84



TRANSMIT-ONLY/ RECEIVE-ONLY ...When V→X transfer has been made at both stations, have the TRANSMIT-ONLY station ...

KG-84

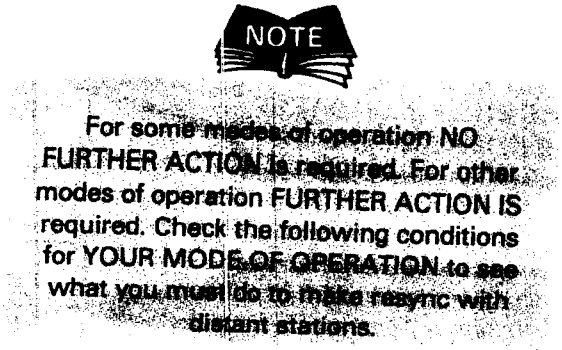
MOMENTARILY SET ITS INITIATE/IND-TEST SWITCH TO INITIATE



Resync is made.

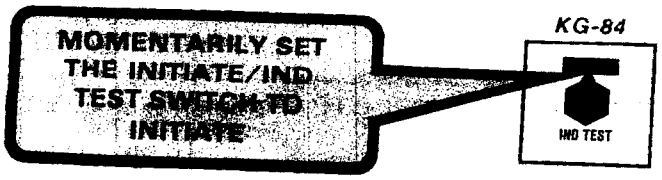
SIMPLEX SYSTEM ...When V→X transfer has been made at all stations, resync is automatic when any station is switched to the SIMPLEX transmit mode.

SIMPLEX WITH A DISTANT STATION IN SIMPLEX-TRANSMIT ...When V→X transfer has been made at all stations, have the SIMPLEX-TRANSMIT station...

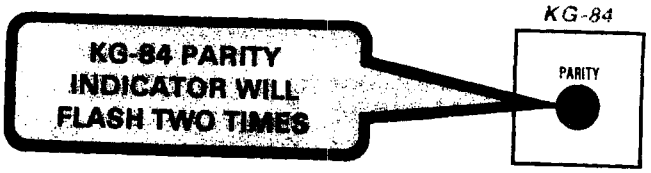


FULL DUPLEX – Resync has been made when this V→X transfer has also been made at distant stations. Your KG-84 action is complete.

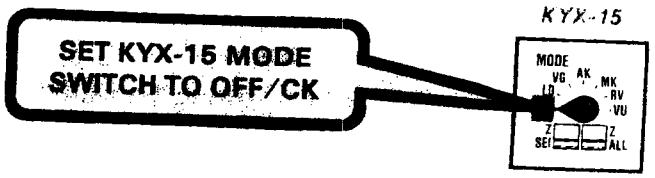
DUPLEX-INDEPENDENT – When V→X transfer has been made at your KG-84 and distant stations—both stations must:



Resync is now made.



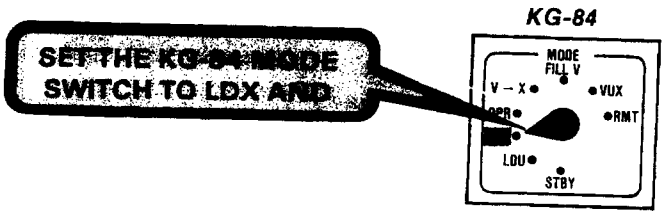
This tells you that the variable has been loaded into the KG-84.



KYX-15 is now ready for futher loading action or may be disconnected if no further loading is needed.

Continue initialization steps by loading the X variable (page 2-26).

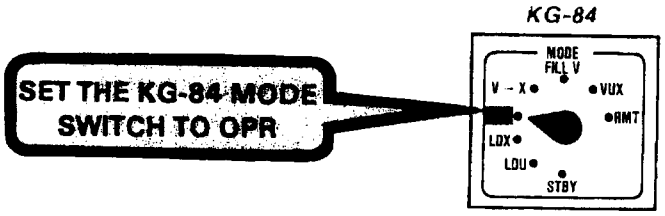
LOADING THE X VARIABLE

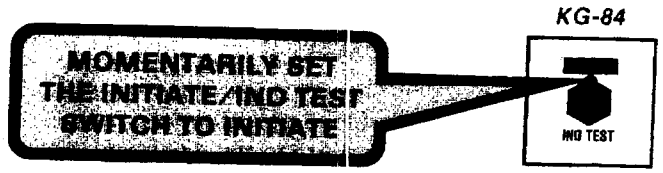


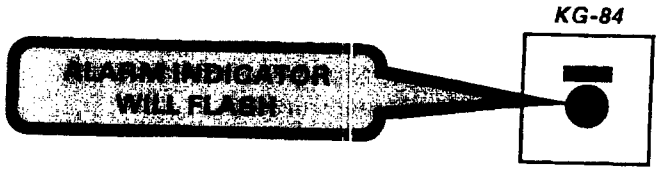
Using the fill device you have been assigned, load the X variable the same way you loaded the U variable. See:

- Page 2-15 for KOI-18 loading.
- Page 2-18 for KYK-13 loading.
- Page 2-21 for KYX-15 loading.

After the X variable has been loaded into the KG-84







V→X transfer has been made.

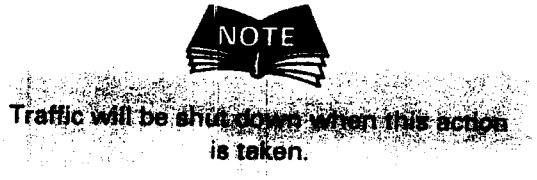
Once again momentarily set the KG-84 INITIATE/IND TEST switch to INITIATE.

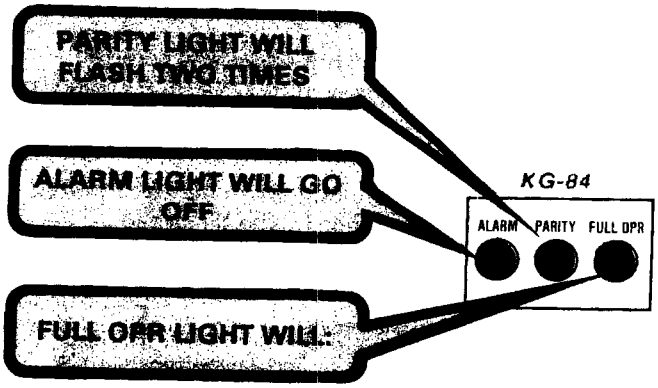
KG-84 PARITY indicator should NOT be lit

You now have good parity

2-9 V→X OPERATION

This mode is used for moving the V variable from the V location to the X and working storage locations. This action must be done together with all distant stations.





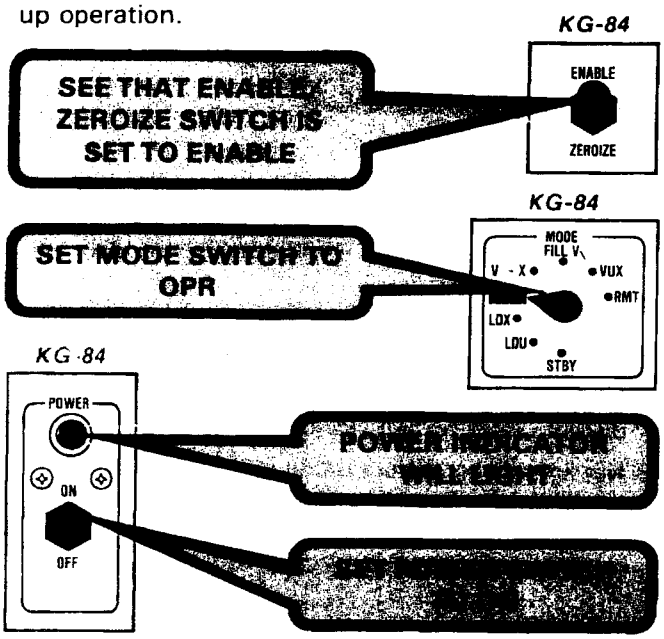
- Light if you are operating in FULL DUPLEX and a distant KG-84 or other compatible device has also been initialized.
- Light if you are operating DUPLEX INDEPENDENT or TRANSMIT ONLY.
- Light if you are operating in RECEIVE-ONLY and a distant unit is turned ON and initialized.
- Not light if you are operating in SIMPLEX until a local or distant unit is placed into SIMPLEX-TRANSMIT

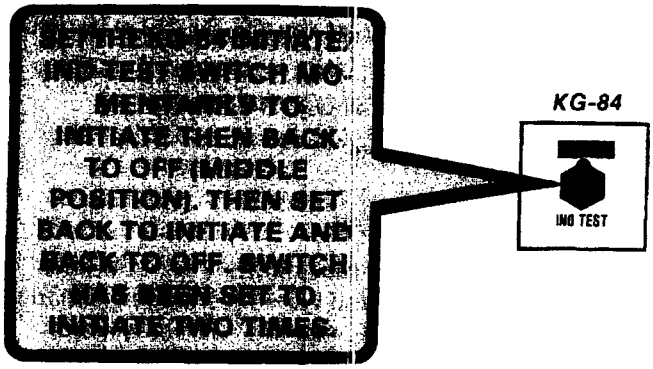
YOUR KG-84 IS NOW INITIALIZED

2-7 NORMAL TURNON

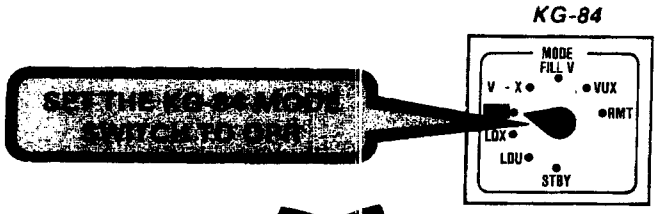
If your KG-84 has been shut down and zeroized (ENABLE/ZEROIZE switch is in the ZEROIZE position) you must begin initialization steps (paragraph 2-6, page 2-13).

If your KG-84 has been shut down but not zeroized (variables are held in storage by the fill storage battery) normal turn on steps are needed to start up operation.





See that KG-84 PARITY indicator is NOT LIT.

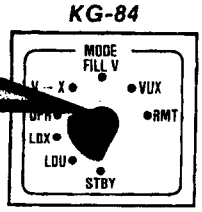


NOTE

If you are operating in FULL DUPLEX, RECEIVE ONLY, or SIMPLEX-RECEIVE you may have garbled input. If you are in some other type of operation do the following step.

RECOVERY WITH THE SAME VARIABLE

SET THE KG-84 MODE SWITCH TO STBY AND THEN BACK TO OPR



If KG-84 PARITY indicator flashes and does not stay lit you now have a good parity.

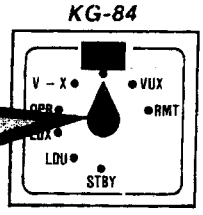
NOTE

If your operation is DUPLEX-INDEPENDENT, RECEIVE-ONLY, or SIMPLEX-RECEIVE, resync must be initiated from a distant station.

RECOVERY WITH A NEW VARIABLE

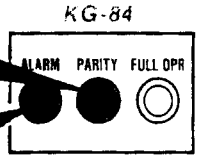
Select a new variable for your fill device

MAKE SURE THE KG-84 MODE SWITCH IS STILL SET TO FILL-V



PARITY LIGHT WILL FLASH TWO TIMES

ALARM LIGHT WILL FLASH



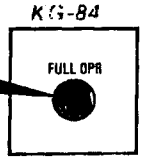
If you are operating in:

- FULL DUPLEX
- INDEPENDENT
- TRANSMIT ONLY
- SIMPLEX-TRANSMIT

NOTE

ALARM light will not flash if your operation is RECEIVE-ONLY or SIMPLEX-RECEIVE.

FULL OPR INDICATOR WILL LIGHT



If you are operating in:

- Full DUPLEX or RECEIVE-ONLY and a distant station is on and initialized.
- DUPLEX-INDEPENDENT
- TRANSMIT-ONLY
- SIMPLEX-RECEIVE

Full OPR indicator will NOT LIGHT if you are operating in any onther mode.

NOTE

Exchange data with a distant station to make sure that crypto-sync has been made.

2-8 FILL-V OPERATION

This operation is used to load a new X-variable, to be held for use at a later time, without stopping present operation.

NOTE

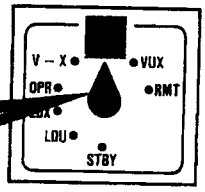
The X-variable can be loaded into the Fill-V position without using a distant station.

Connect the fill device you have been assigned, loaded with the variable you have been assigned, to your KG-84.

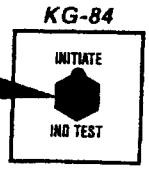
See:

- Page 2-15 for KOI-18 loading.
- Page 2-18 for KYK-13 loading.
- Page 2-21 for KYX-15 loading.

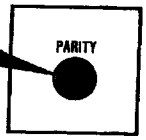
SET THE KG-84 MODE SWITCH TO FILL-V



TEST SWITCH TO INITIATE.



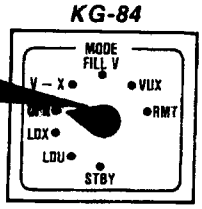
KG-84 PARITY LIGHT WILL FLASH:



Two times if a KYK-13 or a KYX-15 fill device is used.

Once, then once again after tape has been pulled through the tape head if a KOI-18 fill device is used.

SET KG-84 MODE SWITCH TO OPR.



Your new X-variable is now stored and ready for use later on.

NOTE

If the KG-84 PARITY light stays lit instead of flashing, you have a bad parity (variable not transferred to KG-84 properly). To RECOVER from this bad parity do the following steps