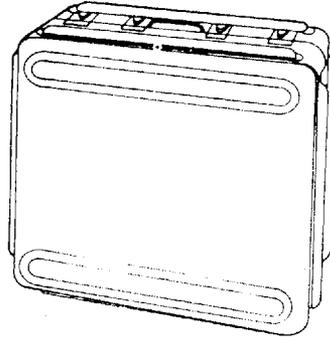
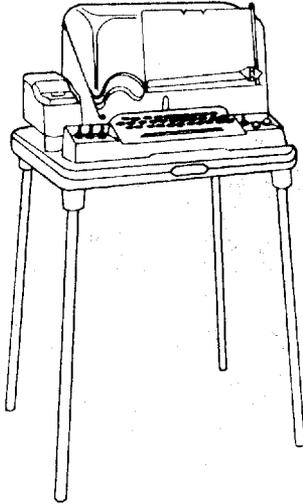


This copy is a reprint which includes current pages from Change 1.

OPERATOR'S MANUAL



EQUIPMENT DESCRIPTION
Page 1-4

DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS
Page 2-1

PREVENTIVE MAINTENANCE CHECKS AND SERVICES
Page 2-14

OPERATION UNDER USUAL CONDITIONS
Page 2-20

MAINTENANCE INSTRUCTIONS
Page 3-1

TELETYPEWRITER SETS

- AN/GGC-3 (NSN 5815-00-503-3309)
- AN/GGC-3A (NSN 5815-00-581-9751)
- AN/GGC-53 (NSN-5815-01-012-8772)
- AN/GGC-53A (NSN 5815-00-017-0956)

AND

TELETYPEWRITER REPERFORATOR-TRANSMITTERS

- TT-76/GGC (NSN 5815-00-503-2760)
- TT-76A/GGC (NSN 5815-00-553-6061)
- TT-76B/GGC (NSN 5815-00-553-6061)
- TT-76C/GGC (NSN 5815-00-553-6061)
- TT-699/GGC (NSN 5815-01-01 2-8446)
- TT-699A/GGC (NSN 5815-01-017-9166)
- TT-699B/GGC (NSN 5815-01-017-91 66)
- TT-699C/GGC (NSN 5815-01-017-9166)

HEADQUARTERS, DEPARTMENT OF THE ARMY

18 JULY 1983



T



5

SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1

DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2

IF POSSIBLE , TURN OFF THE ELECTRICAL POWER

3

IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4

SEND FOR HELP AS SOON AS POSSIBLE

5

AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

CHANGE

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 August 1987

No. 1

OPERATOR'S MANUAL

AN/GGC-3 (NSN 5815-00-503-3309)
AN/GGC-3A (NSN 5815-00-581-9751)
AN/GGC-53 (NSN 5815-01-012-8772)
AN/GGC-53A (NSN 5815-00-017-0956)

AND

TYPEWRITER REPERFORATOR-TRANSMITTERS

TT-76/GGC (NSN 5815-00-503-2760)
TT-76A/GGC (NSN 5815-00-553-6061)
TT-76B/GGC (NSN 5815-00-553-6061)
TT-76C/GGC (NSN 5815-00-553-6061)
TT-699/GGC (NSN 5815-01-012-8446)
TT-699A/GGC (NSN 5815-01-017-9166)
TT-699B/GGC (NSN 5815-01-017-9166)
TT-699C/GGC (NSN 5815-01-017-9166)

TM 11-5815-238-10, 18 July 1983, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

Remove pages

Insert pages

A and B	A and B
i and ii	i and ii
1-1 and 1-2	1-1, 1-2, and 1-2.1/(1-2.2 blank)
1-3 through 1-8	1-3 through 1-8
1-15 and 1-16	1-15 and 1-16
1-19 and 2-0	1-19 and 2-0
2-3 through 2-14	2-3 through 2-14
2-27 and 2-28	2-27 and 2-28
2-31 and 2-32	2-31 and 2-32
2-49 and 2-50	2-49 and 2-50
3-1 and 3-2	3-1 and 3-2
A-1 and A-2	A-1 and A-2
Glossary-1/(Glossary-2 blank).	Glossary-1/(Glossary-2 blank)
Index-1 through Index-5	Index-1 through Index-5/ (Index-6 blank)

2. File this change sheet in the front of the publication for reference purposes,

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Chief of Staff

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Brigadier General, United States Army
The Adjutant General

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To be distributed in accordance with DA Form 12-51
literature requirements for AN/GGC-3, -3A.



HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

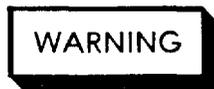
may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technicians are aided by operators, they must be warned about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections of 115 or 230 volts ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.



Do not be misled by the term "low voltage". Potentials as low as 50 volts may cause death under adverse conditions.

GROUND THE INSTRUMENT

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three conductor ac power cable. The power cable must either be plugged into an approved three contact electrical outlet or used with a three contact to two contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable must meet International Electrotechnical Commission (I EC) safety standards.

SAFETY PRECAUTION

A periodic review of safety precautions in TB 385-4, Safety Precautions for Maintenance of E[lectrical/Electronic Equipment, is recommended. When the equipment is operated with covers removed, DO NOT TOUCH exposed connections or components. MAKE CERTAIN you are not grounded when making connections or adjusting components inside the test instrument.

For Artificial Respiration, refer to FM 21-11.

TRICHLOROTRIFLUOROETHANE

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air should not be used for cleaning purposes except where reduced to less than 29 pounds per square inch (psi) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used. Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel.

POISONOUS ODOR

This equipment contains selenium rectifiers. When they burn out, the fumes are VERY POISONOUS. IMMEDIATELY set the power switch to OFF. Get fresh air quick. PERMANENT INJURY OR DEATH may happen if a person BREATHES THE FUMES. THE SMELL IS LIKE ROTTEN EGGS.

OPERATOR'S MANUAL

TELETYPEWRITER SETS

- AN/GGC-3 (NSN 5815-00-503-3309)**
- AN/GGC-3A (NSN 5815-00-581-9751)**
- AN/GGC-53 (NSN 5815-01-012-8772)**
- AN/GGC-53A (NSN 5815-00-017-0956)**

AND

TELETYPEWRITER REPERFORATOR-TRANSMITTERS

- TT-76/GGC (NSN 5815-00-503-2760)**
- TT-76A/GGC (NSN 5815-00-553-6061)**
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- TT-699A/GGC (NSN 5815-01-017-9166)**
- TT-699B/GGC (NSN 5815-01-017-9166)**
- TT-699C/GGC (NSN 5815-01-017-9166)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5000. In either case, a reply will be furnished direct to you.

	Page
CHAPTER 1, INTRODUCTION	1-1
Section I. General Information	1-1
Section II. Equipment Description	1-4

*This manual supersedes so much of TM 11-5815-238-12, 6 December 1965, including all changes, as pertains to operator's maintenance.

CHAPTER 2.	OPERATING INSTRUCTIONS	2-0
Section 1.	Description and Use of Operator's Controls and Indicators	2-1
II.	Preventive Maintenance Checks and Services (PMCS)	2-14
III.	Operation Under Usual Conditions	2-19
IV.	Operation in Unusual Conditions	2-62
CHAPTER 3.	MAINTENANCE INSTRUCTIONS	3-1
Section I.	Troubleshooting	3-1
II.	Maintenance Procedures	3-1
APPENDIX A.	REFERENCES	A-1
B.	COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS	B-1
C.	ADDITIONAL AUTHORIZATION LIST (Nonapplicable)	
D.	EXPENDABLE SUPPLIES AND MATERIALS LIST	D-1
	GLOSSARY	Glossary-1
	INDEX	Index-1

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

This manual describes the operation, maintenance and preventive maintenance checks and services (PMCS) of the following HIGH-LEVEL and LOW-LEVEL teletypewriter sets. These sets contain HIGH-LEVEL and LOW-LEVEL teletypewriter reperforator-transmitters.

High-Level Equipment

Teletypewriter Set	AN/GGC-3
Teletypewriter Reperforator Transmitter of Set AN/GGC-3	TT-76/GGC
Teletypewriter Set	AN/GGC-3A
Teletypewriter Reperforator Transmitters of Set AN/GGC-3A	TT-76A/GGC or TT-76B/GGC or TT-76C/GGC

Low-Level Equipment

Teletypewriter Set	AN/GGC-53
Teletypewriter Reperforator Transmitter of Set AN/GGC-53	TT-669/GGC
Teletypewriter Set	AN/GGC-53A
Teletypewriter Reperforator Transmitters of Set AN/GRC-53A	TT-699A/GGC or TT-699B/GGC or TT-699C/GGC

NOTE

When the official nomenclature is followed by (*), all models of the equipment are being referred to.

1-1.1. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-2. MAINTENANCE FORMS, RECORDS AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.551NAVMATINST 4355.73B/AFR400-54/MCO 4430.3H.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-381 NAVSUPINST 461 0.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3. HAND RECEIPT (-HR) MANUALS

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 11-5815 -238-10-HR) consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from: The US Army Adjutant Publications Center in Baltimore, Maryland, in accordance with the procedures in Chapter 3, AR 310-2, and DA Pam 310-10.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Teletypewriter Sets AN/GGC-3(*) need 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 the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000, We'll send you a reply.

1-4.1. ADMINISTRATIVE STORAGE

a. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness, Disassembly and repacking of equipment for shipment or limited storage is covered in TM 740-90-1.

b. COMSEC equipment must be removed before storage and turned in to the COMSEC account custodian.

1-4.2. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. Nomenclature Cross-Reference List

COMMON NAME	NOMENCLATURE
Teletypewriter Set	Teletypewriter Set AN/GGC-3
Teletypewriter Set	Teletypewriter Set AN/GGC-3A
Teletypewriter Set	Teletypewriter Set AN/GGC-53
Teletypewriter Set	Teletypewriter Set AN/GGC-53A
Teletypewriter	Teletypewriter Reperator- Transmitter TT-76/GGC
Teletypewriter	Teletypewriter Reperator. Transmitter TT-76A/GGC
Teletypewriter	Teletypewriter Reperator- Transmitter TT-76B/GGC
Teletypewriter	Teletypewriter Reperator- Transmitter TT-76C/GGC
Teletypewriter	Teletypewriter Reperator- Transmitter TT-699/GGC
Teletypewriter	Teletypewriter Reperator- Transmitter TT-699A/GGC
Teletypewriter	Teletypewriter Reperator- Transmitter TT-699B/GGC
Teletypewriter	Teletypewriter Reperator- Teletypewriter TT-699C/GGC

COMMON NAME

NOMENCLATURE

Teletypewriter Case	Teletypewriter Reperforator-Transmitter Case CY-1110/GGC
Teletypewriter Table	Teletypewriter Table FN-52/GGC
Teletypewriter Table	Teletypewriter Table FN-108/GGC
Template	Bench Template, p/n 57259
Terminal	Telegraph Terminal TH-5/TG
Bracket	Bracket Assembly, Kleinschmidt p/n 52656A
Chad Bin	Chad Bin: Sig Dwg SM-B-157283
Clip	Clip: Kleinschmidt p/n 53442
Tuning Fork	Tuning Fork: Sig Dwg SC-DL-70237
Worm Gear	Worm Gear: Sig Dwg SC-B-69681
Worm Gear	Worm Gear: Sig Dwg SC-B-70842
Worm Wheel	Worm Wheel Gear: Kleinschmidt p/n 50352A
Worm Wheel	Worm Wheel Gear: Sig Dwg SC-B-70478
Ribbon	Teletypewriter Ribbon: Fed Spec DDD-R-311d
spool	Printing Ribbon Spool: Kleinschmidt p/n 10900
Tape	Teletypewriter Reperforator Tape: Fed Spec UU-T-120
Fuse	Fuse, p/n 20455
Lamp	Lamp, p/n 20791
Lamp	Incandescent Lamp, p/n 20701

NOTE

Official nomenclature **MUST** be used when filling out report forms or when referring to technical manuals.

1.6. LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviations are spelled out the first time they appear in this manual. A complete list of abbreviations used in this manual is given below.

AAL	Additional Authorization List
ac	Alternating current
BII	Basic Issue Items
CAR. RET.	Carriage Return
COEIL	Components of End Items List
dc	Direct current
EI R	Equipment Improvement Recommendation
Fig	Figures
FSCM	Federal Supply Code of Manufacturer
Hz	Hertz
hp	Horse power
LTRS	Letters
MWO	Modification Work Order
OPM	Operations Per Minute
PSIG	Pounds per square inch gauge
PMCS	Preventive Maintenance Checks and Services
REC	Receive
rpm	Revolutions per minute
TR	Transmitter
TD	Transmitter-Distributor
u/m	Unit of measure
V	volt
vps	Vibrations per second
wpm	Words per minute

Section II. EQUIPMENT DESCRIPTION

1-7. PURPOSE, CAPABILITIES AND FEATURES OF TELETYPEWRITER” REPERFORATOR

a. High-Level Models [TT-76()/GGC].*

● Purposes

-send and receive perforated tape messages or coded information.

- Capabilities

- send or receive a standard start-stop, five unit code.
- print coded information on tape with perforations (holes).
- determine the signaling code.
- receive one-way current flow (neutral operation) and two-way current flow (Polar operation).
- wired to send neutral impulses.
- be rewired to send Polar impulses.
- send or receive a possibility of 32 code combinations.
- impulses can be sent as fast as 60 to 100 words per minute (wpm).
- units can be synchronized.
- governed motor operates on 105 to 125 volts, regulated or unregulated ac and turns at 3,600 revolutions per minute (rpm).
- tape used time is between 3 hours, 10 minutes to 5 hours, 20 minutes.

- Features

- send and receive over direct current (dc) wire lines, carrier, or radio systems.
- can be used with telegraph terminal.
- uses standard teletypewriter keyboard.
- tape may be kept for future use.
- other stations can be added as needed.
- with template, can be mounted.
- keyboard-transmitter, transmitter-distributor and reperforator can operate as separate units.
- code mix ups by different motor speeds are prevented.
- 30-volt areas are shielded against accidental contact.

b. Low-Level Models [TT-699()/GGC].*

- Purposes

- send and receive perforated tape messages and coded information on circuits where low level transmission is required.

- Capabilities

- send or receive a standard start-stop, five unit code.
- print coded information on tape with perforations (holes).
- determine the signaling code.
- send Polar impulses.
- send or receive a possibility of 32 code combinations.
- impulses can be sent as fast as 60 to 100 words per minute (wpm).
- units can be synchronized.
- governed motor operates on 105 to 125 volts, regulated or unregulated ac and turns at 3,600 revolutions per minute (rpm).
- tape used time is between 3 hours, 10 minutes to 5 hours, 20 minutes.

Features

1

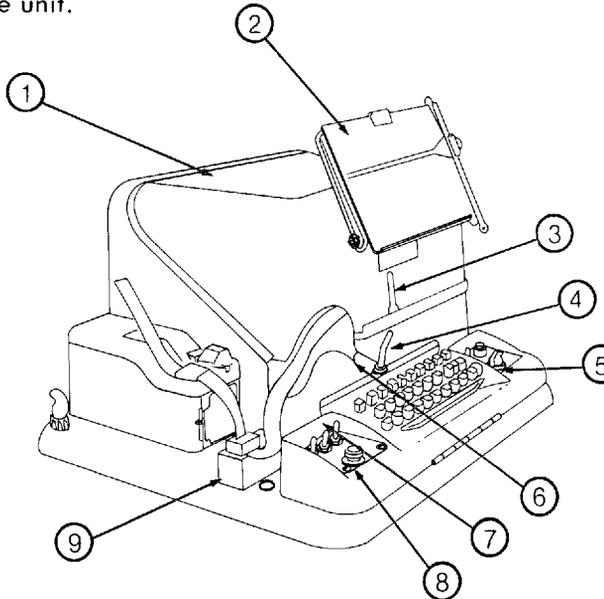
- send and receive over direct current (dc) 6-volt polar signal circuits.
- uses standard teletypewriter keyboard.
- tape may be kept for future use.
- other stations can be added as needed, on a parallel basis only.
- with template, can be mounted.
- keyboard-transmitter, transmitter-distributor and reperforator can operate as separate units.
- code mix ups by different motor speeds are prevented.
- 30-volt areas are shielded against accidental contact.

1-8. DESCRIPTION OF MAJOR COMPONENTS

a. Teletype writer Reperforator- Transmitter,

NOTE

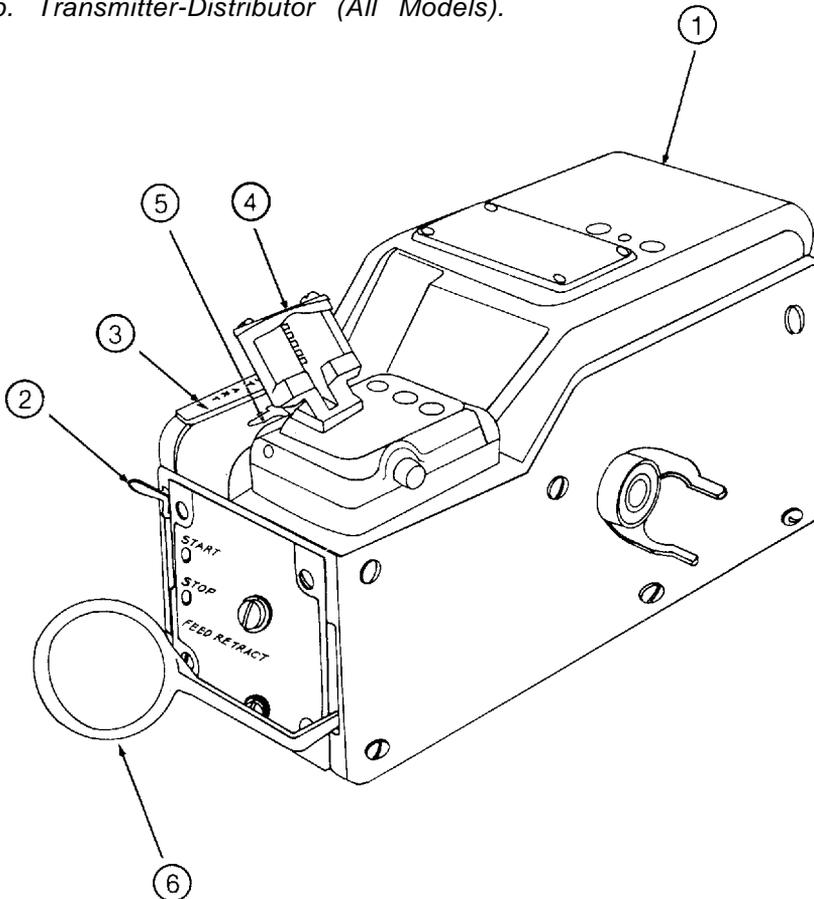
The teletypewriter reperforator-transmitter is the major component. The transmitter-distributor is a part of the whole unit.



- (1) *Dust cover*- used to protect the inside of teletypewriter.
- (2) *Copy Holder* - located on upper front, used to hold information to be sent.
- (3) *Cover Latch* - releases cover for removal, located front center under copyholder.

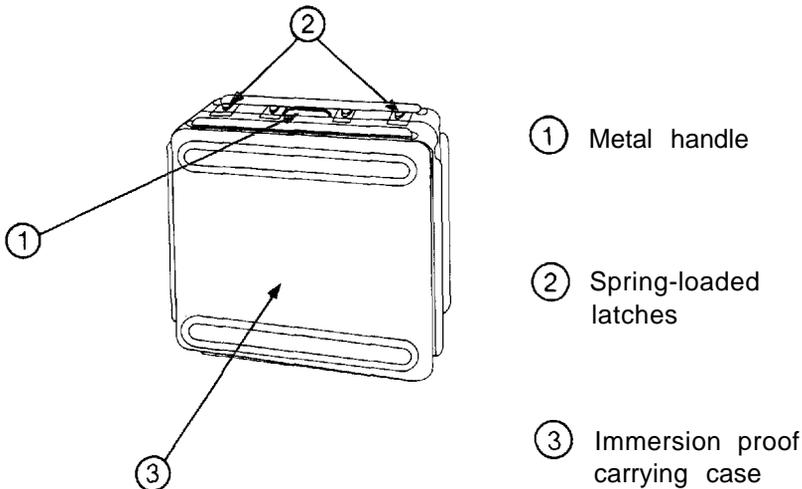
- ④ *Manual Tape Feed-Out lever*- located front center under cover latch; used when installing tape.
- ⑤ *Right Keyboard Guard*- located at right side of keyboard; holds controls.
- ⑥ *Back Space Lever*- allows you to correct errors in tape, located on front to the left of feed-out lever.
- ⑦ *Grounding Strap* - located front left; used to electrically ground and hold cover.
- ⑧ *Left Keyboard Guard*- located at left side of keyboard; holds controls.
- ⑨ *Tape Storage Guide* - where tape leaves the teletypewriter to enter tape storage area.

b. *Transmitter-Distributor (All Models).*



- ① *Transmitter-Distributor* - located on left side of the teletypewriter, Translates the code perforations in the paper tape into electrical impulses and sends them to receiver units.
- ② *Start-Stop Lever* - located on left front; allows stop or start of transmitted message. Also allows tape to be entered.
- ③ *Start Arrow* - located on left side of transmitter-distributor; points at the next character to be sent by the transmitter-distributor.
- ④ *Tape-Cover* . covers tape at point where it is threaded onto gear for movement.
- ⑤ *End-of-Tape Lever* - is located under tape cover; stops transmitter-distributor when tape runs out.
- ⑥ *Tight-Tape Lever* - located on lower front of transmitter-distributor; stops the machine when there is no slack in tape.

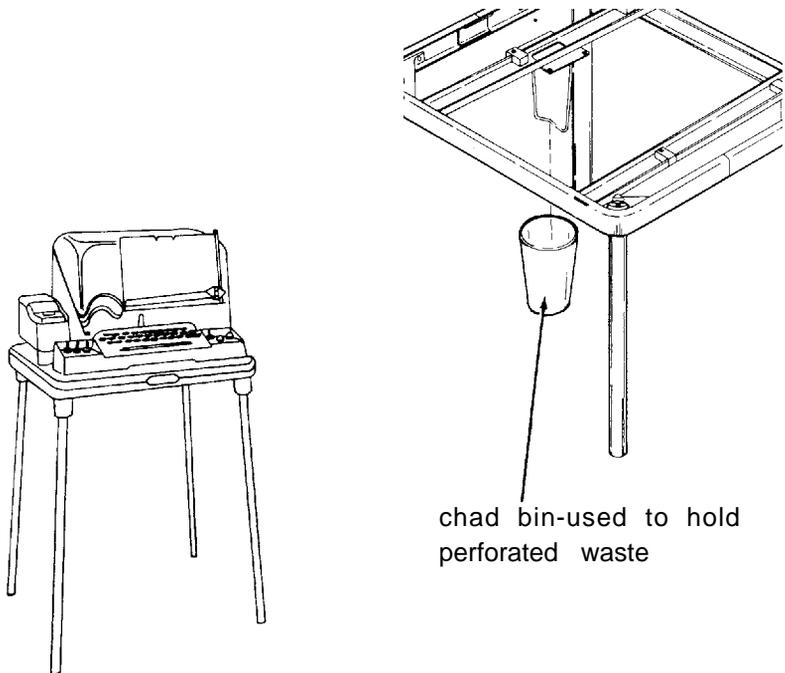
c. *Teletype writer Case (All Models).*



d. *Teletypewriter Table* - For TT-76/GGC.

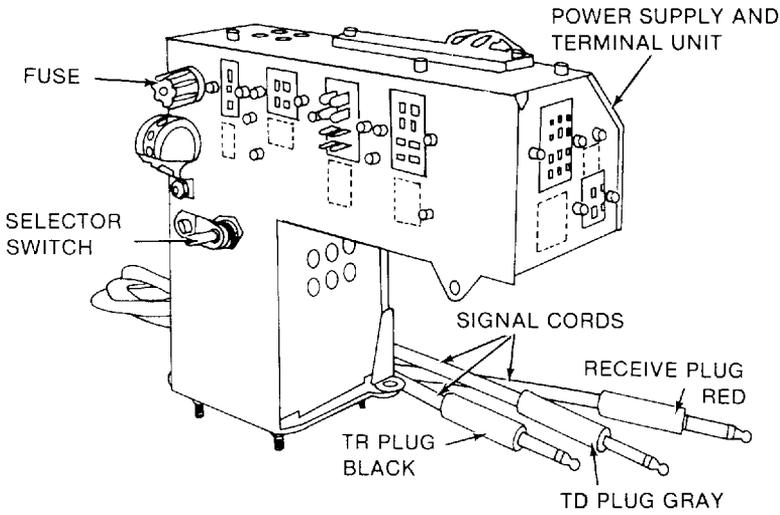
NOTE

The teletypewriter table for the TT-76/GGC A,B and C models is similiar to the table for the plain models, except that the portion of the table top directly under the teletypewriter- reperforator is cut away to allow access to the wiring in the base.

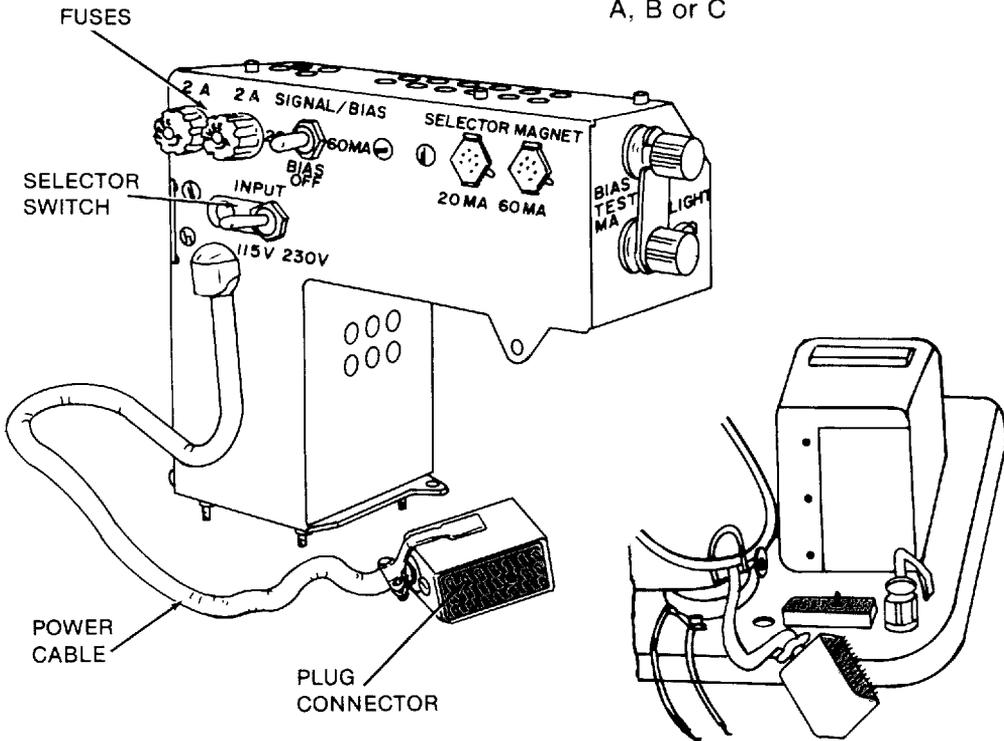


e. Power Supply and Terminal Units

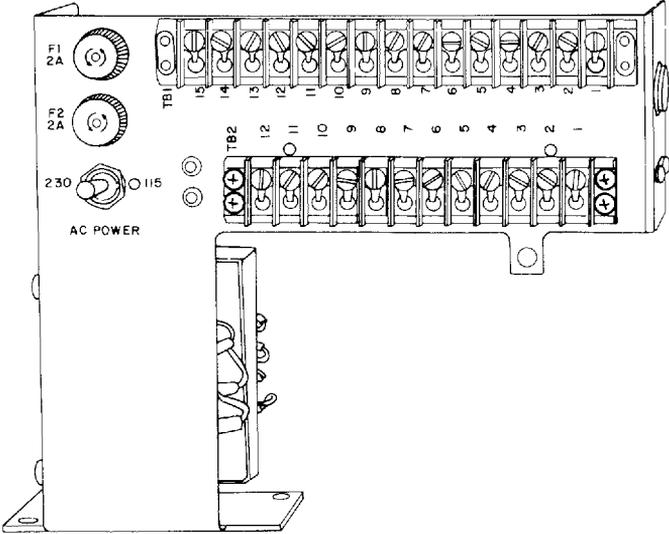
- Used with TT-76/GGC



- Used with TT-76/GGC
A, B or C



- Used with TT-699(*)/GGC.



1-9. DIFFERENCES BETWEEN MODELS

- The TT-76/GGC and TT-76A/GGC are interchangeable when not used as a part of the set AN/GGC-3 or set AN/GGC-3A.
- Certain assemblies in the TT-76A, B, or C/GGC have been changed for ease of installation and maintenance.
- Most information that pertains to the TT-76/GGC is applicable to the TT-699/GGC. Any differences will be stated in a NOTE.
- Most information that pertains to the TT-76A, B, or C/GGC models is applicable to the TT-699A, B, or C/GGC models, Any differences will be stated in a NOTE.
- The table 2-1 lists differences between models.

Table 2-1. Differences Between Models

Item no.	Item	Models	
		Teletypewriter Reperforator-Transmitter TT-76/GGC and TT-699/GGC	Teletypewriter Reperforator-Transmitter TT-76A, B or C/GGC and TT-699A, B, or C/GGC
1	End-of-line indicator	Lamp lights	Lamp lights and margin bell rings
2	Tape reel	Reel cannot be moved	Removable reel
3	Tape-out alarm lever	Tape-out alarm lever rides against top of the paper tape roll	Tape-out alarm lever rides against bottom of the paper tape roll
4	Tape roll retention	Secured by the support arm latch	Locks in place by circular plate equipped with tabs and slots
5	Tape puller mechanism	None	Mounted in path of tape at the front of the reperforator
6	Tape tear wire	None	Mounted on the left of the die support
7	Tape guide lever and position indicator	None	Mounted on the code and die assembly
8	Ribbon spool retainer	U-shaped holding clip	Locking clips at each end of the ribbon spool shaft

Item no.	Item	Models	
		Teletypewriter Reperator-Transmitter TT-76/GGC and TT-699/GGC	Teletypewriter Reperator-Transmitter TT-76A, B, or C/GGC and TT-699A, B, or C/GGC
9	Keyboard guard	Secured to the base plate by machine screws and washers	Hinged, can be tilted away from the Reperator-Transmitter
10	Rangefinder	Held in position by knurled nut and lockwasher or spigot-type dial lock	Secured by spring-loaded dial detent
11	Potentiometer adjustment	Bias potentiometer knob provided	<ul style="list-style-type: none"> • Screwdriver adjustment • Locked in best possible position by locknut
		<p align="center">NOTE</p> <p align="center">Not applicable to the TT-699(*)/GGC</p>	<p align="center">NOTE</p> <p align="center">Not applicable to the TT-699(*)/GGC</p>
12	Wiring options	Made by wiring changes on terminal board of power supply	At the power supply, made by inserting selector magnet plug in receptacle for 20ma or 60ma and setting the SIGNAL/BIAS switch
		<p align="center">NOTE</p> <p align="center">Not applicable to the TT-699(*)/GGC</p>	<p align="center">NOTE</p> <p align="center">Not applicable to the TT-699(*)/GGC</p>

Table 2-1. Differences Between Models - Continued

Item no.	Item	Models	
		Teletypewriter Reperator-Transmitter TT-76/GGC and TT-699/GGC	Teletypewriter Reperator-Transmitter TT-76A, B, or C/GGC and TT-699A, B, or C/GGC
13	Tape cover latch	Mounted on eccentric stud attached to frame	Part of tape cover
14	Transmitter-distributor front plate for indicators	Not stepped	Stepped to prevent accidental movement of the STOP-START lever to FEED RETRACT position
15	Motor, series-governed	Bodine (1/23-hp)	<ul style="list-style-type: none"> • TT-76A/GGC and TT-699A/GGC use Bodine (1/23-hp) • TT-76B/GGC and TT-699B/GGC use either Bodine (1/23-hp) or Howard (1/20 or 1/23-hp) • TT-76C/GGC and TT-699C/GGC use Howard (1/20-hp)

Table 2-1. Differences Between Models - Continued

Item no.	Item	Models	
		Teletypewriter Reperator-Transmitter TT-76/GGC and TT-699/GGC	Teletypewriter Reperator-Transmitter TT-76A, B, or C/GGC and TT-699A, B, or C/GGC
16	Felt lubricating washers (other than clutch)	Not included	<ul style="list-style-type: none"> • TT-76A/GGC, TT-699A/GGC -not included • TT-76B/GGC, TT-699B/GGC (purchased before December, 1959) - not included • TT-76B/GGC, TT-699B/GGC (purchased after December, 1959) included • TT-76C/GGC, TT-699C/GGC -included

1-10. ITEMS USED IN AN OPERABLE TELETYPEWRITER SET AN/GGC-3(*) AND AN/GGC-53(*)

Qty.	Component	Power Requirements	Technical Characteristics
1	Teletypewriter Reperforator-Transmitters TT-76(*)/GGC and TT-699(*) / GGC	Voltage: 115 Vac or 230 Vac 100 Vdc Frequency: 50 to 60 Hz (single phase) Consumption: 150 watts	Standard keyboard, English characters; uses 7/8 inch paper tape, portable, 72 characters per line, sprocket feed, series governed motor, 7.42 unit code 12 1/2 inch H x 18 inch D x 21 inch W, 45 pounds
<p>NOTE</p> <p>The Teletypewriter Reperforator-Transmitter is the basic component end item. The following necessary items are included in the operation of this unit.</p>			
1	Bracket assembly, Kleinschmidt p/n 52656A		
1	Teletypewriter Reperforator-Transmitter case		Metal handles and spring-loaded latches
1	Chad Bin: Sig. dwg. SM-B-157283		
1	Clip: Kleinschmidt p/n 53442		
1	Fork, tuning: Sig dwg SC-DL 70237		Mounted in cover
1	Gear, worm: Sig dwg SC-B-69681		60 wpm, installed in equipment

1-10. ITEMS USED IN AN OPERABLE TELETYPEWRITER SET AN/GGC-3(*)
AND AN/GGC-53(*) . Continued

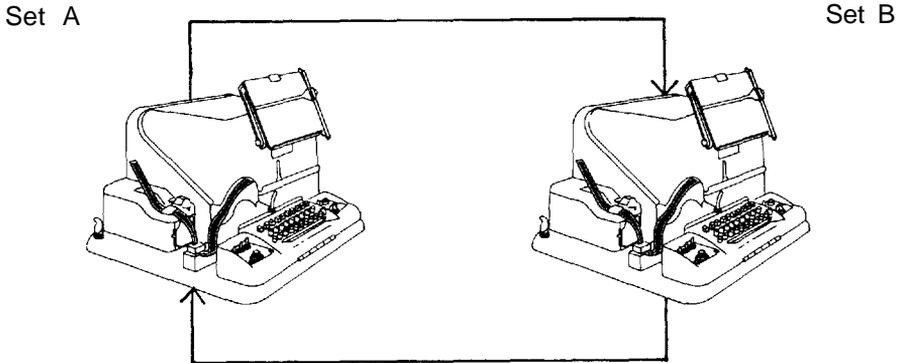
Qty.	Component	Power Requirements	Technical Characteristics
1	Gear, worm: Sig dwg SC-B-70842		100 wpm, mounted in equipment
1	Gear, worm wheel: Kleinschmidt p/n 50352A		60 wpm, installed in equipment
1	Gear, worm wheel: Sig dwg SC-B-70478		100 wpm, mounted in equipment
1	Ribbon, teletypewriter Fed Spec DDD-R-311d		Type 1, grade 1, class 1 installed in equipment
4	Screw, tapping Kleinschmidt p/n 10302		Thread forming
1	Spool, printing Ribbon: Kleinschmidt p/n 10900		Installed in equipment
1	Teletypewriter Table FN-52/ GGC for use with TT-76/GGC and TT-699/GGC		Consisting of: four removable legs Sig dwg SM-B-1572971 and table top assembly sig dwg SM-B-157281
1	Teletypewriter Table FN-108/ GGC for use with TT-76A/ GGC, TT-76B/ GGC, TT-76C/ GGC, and TT-699A/GGC, TT-699B/GGC, or TT-699C/GGC	(Cutaway for wiring in base)	Consisting of: four removal legs Sig dwg SM-B-15729 7 and table top frame, Kleinschmidt p/n 59505A
1	Tape, teletypewriter: Fed Spec UU-T-120		Perforator

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-11. HIGH-LEVEL MODELS [TT-76(*)/GGC]

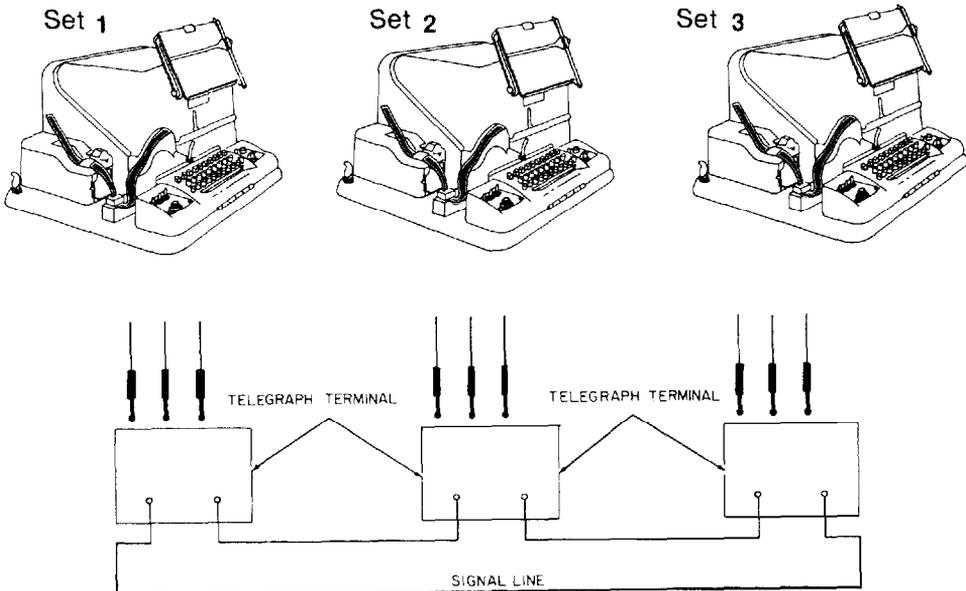
a. Regular Neutral Operation

Teletypewriter-Reperforator Set A receives or sends perforated and/or printed messages to/from Teletypewriter-Reperforator Set B by electrical impulses recorded on paper tape.



b. Additional Operation

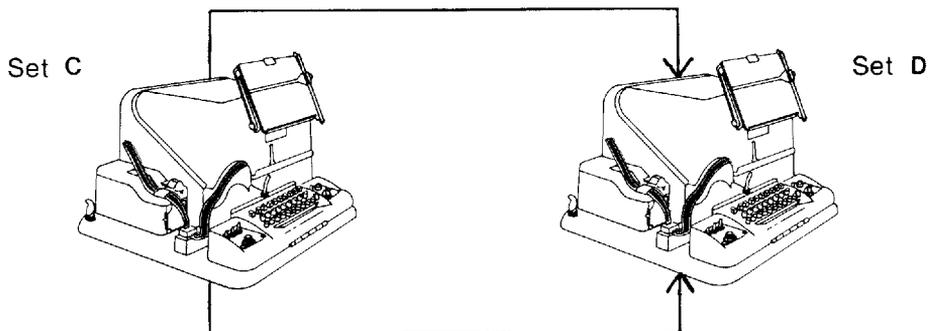
More than one teletypewriter may be used to send and receive messages, using Telegraph Terminal TH-5/TG, or similar line terminating devices.



1-12. LOW-LEVEL MODELS [TT-699(*)/GGC]

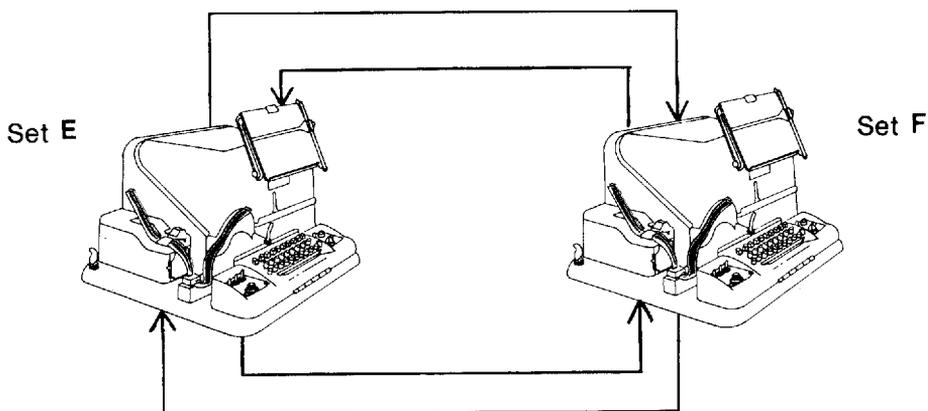
a. Regular Polar Operation (only).

Teletypewriter-Reperf orator Set C sends on two (2) polar signal lines to Teletypewriter-Reperf orator Set D, which receives only.



b. Two-Way Communication.

This requires 4 signal lines. Additional receiving stations may be connected to a sending station on a parallel basis only.



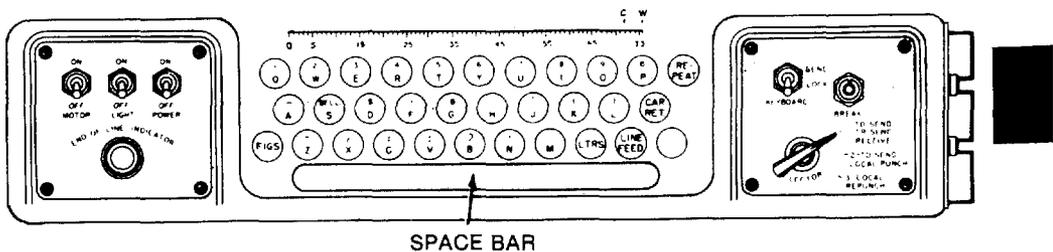
CHAPTER 2
OPERATING INSTRUCTIONS

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Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

NOTE

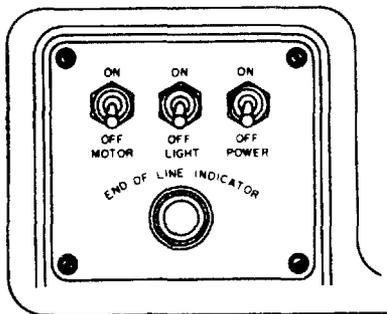
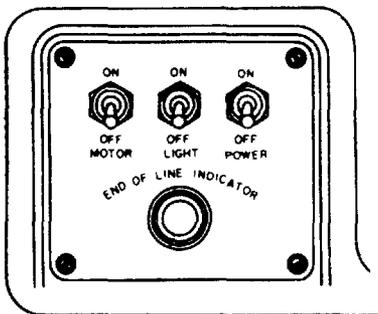
You must become familiar with the location and function of each control or indicator before trying to operate the machine.



2-1. INDICATORS ON LEFT SIDE KEYBOARD GUARD

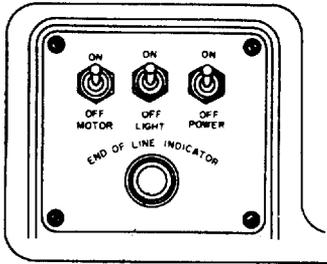
a. POWER Switch (All Models).

- Power is ON in up position
- Power is OFF in down position

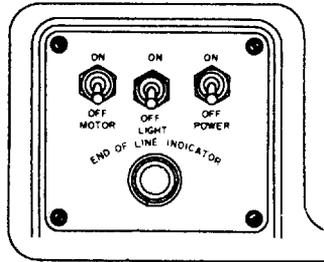


b. LIGHT Switch (All Models).

- All lighting is ON in UP position; POWER switch must be ON.

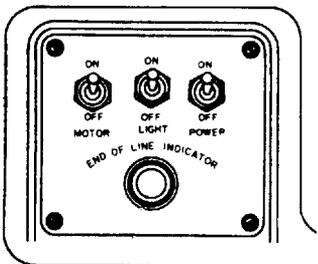


- Lighting is OFF in down position

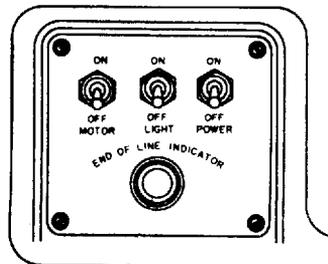


c. MOTOR Switch (All Models).

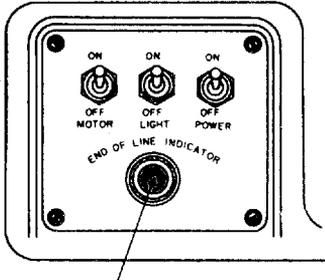
- Motor is ON in up position; POWER switch must be ON.



- Motor is OFF in down position .



d. END OF LINE INDICATOR (All Models).

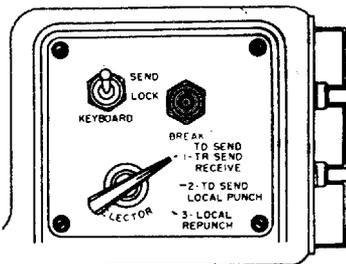
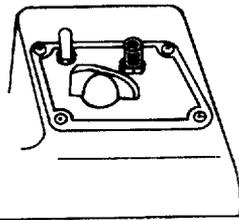
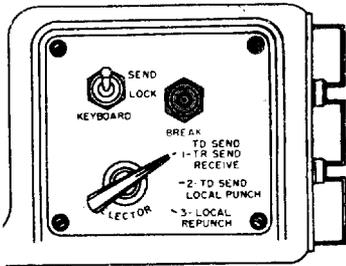


END OF LINE INDICATOR

- Lights up to warn that the end of the line of typing is near; POWER switch must be ON.

2-2. INDICATORS ON RIGHT SIDE KEYBOARD GUARD

a. BREAK Switch.



1. TT-76(*)/GGC

- Press to open keyboard transmitter signal circuit.
- Release to close keyboard transmitter signal circuit.

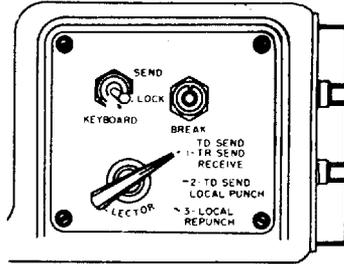
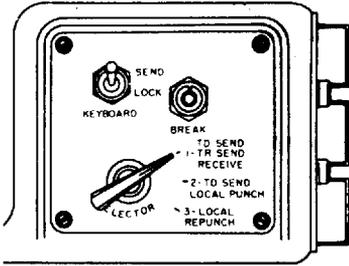
- Overhead view of break switch (all models),

2. TT-699(*)/GGC

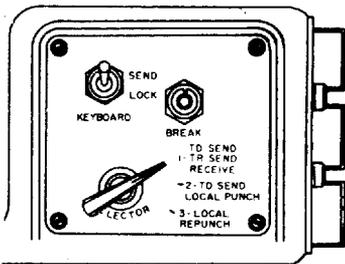
- Press to open keyboard transmitter signal circuit.
- Release to close keyboard transmitter signal circuit,

b. KEYBOARD Switch.

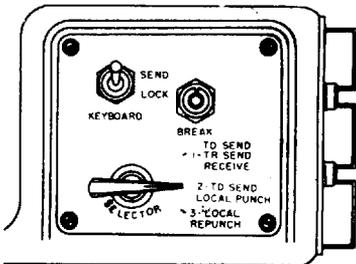
- SEND position permits keyboard transmission (All Models).
- LOCK position permits keyboard transmission (All Models).



c. SELECTOR switch.

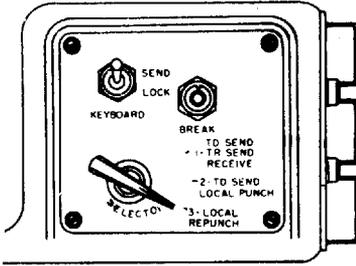


- TD SEND, TR SEND and RECEIVE position gets the teletypewriter ready to send to the signal line from the transmitter-distributor and keyboard transmitter. Receiving from the line on the reperforator is also permitted.



- TD SEND, LOCAL PUNCH position permits sending to the line from transmitter-distributor, and a local message is being prepared on the keyboard transmitter to the reperforator at the same time.

- LOCAL REPUNCH, TT-76(*)/GGC, puts the transmitter-distributor, keyboard transmitter, and receiving portion of reperforator in line with each other, electrically, for preparing local tape. Local testing can also be done.

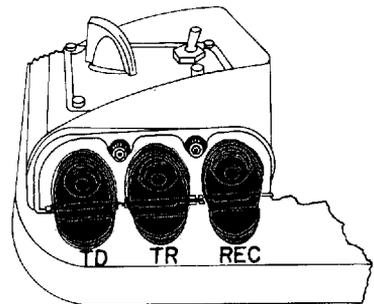
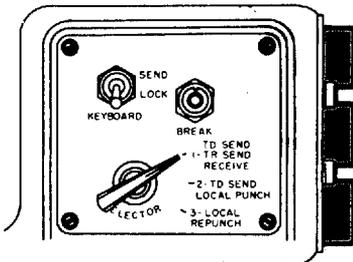


- LOCAL REPUNCH, TT-699(*)/GGC, puts the line transmitter and receiving portion of reperforator side-by-side, electrically, for preparing local tape. Local testing can also be done.

d. TD, TR and REC Jacks [TT-76(*)/GGC only].

- Permits supervisory or monitoring equipment to be connected.

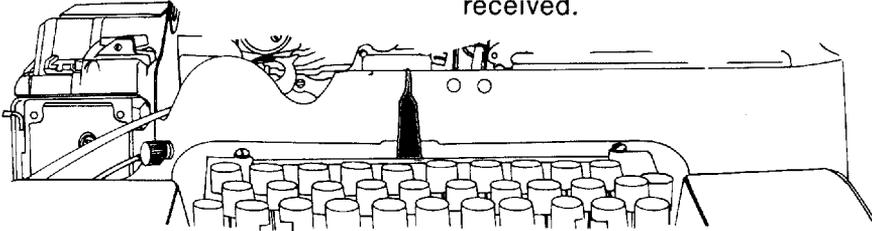
- Sideview of right keyboard guard



2-3. KEYBOARD AREA INDICATORS

a. Manual Tape Feed-out Lever.

- Push to left for tape-feed when NO messages are being received.

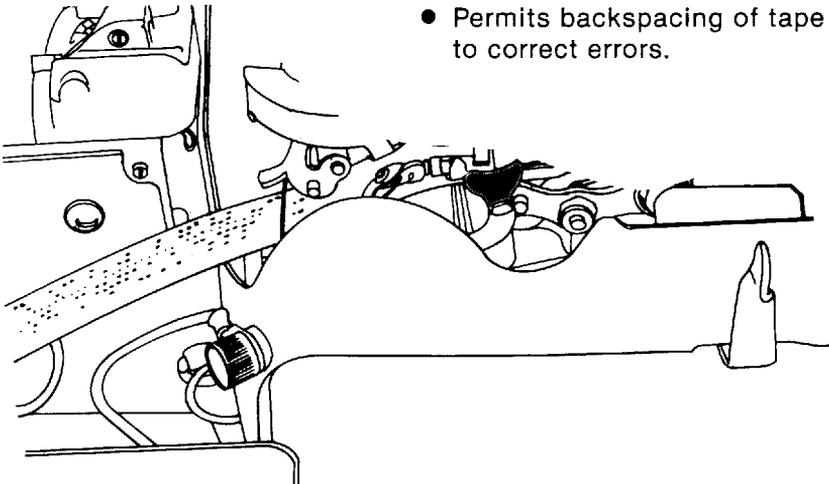


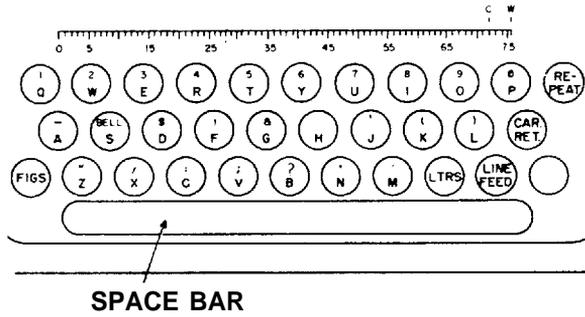
NOTE

Lever is white in color.

b. Backspace lever.

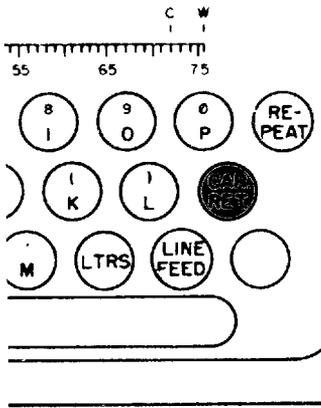
- Permits backspacing of tape to correct errors.





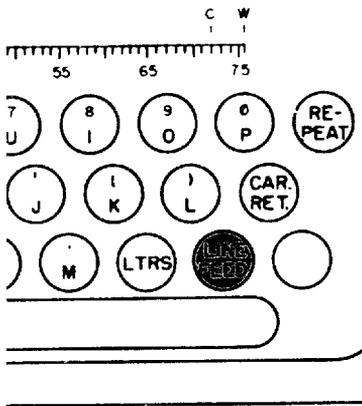
STANDARD TELETYPEWRITER KEYBOARD

c. CAR. RET. Key.



- Returns character counter to zero ,
- Returns carriage on receiving page printer to the left margin.

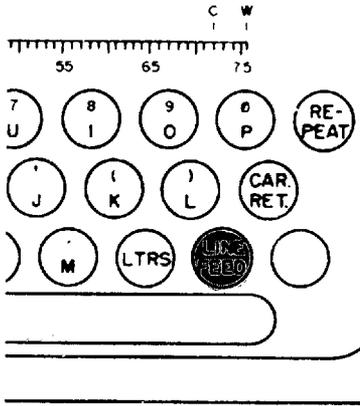
d. LINE FEED Key.



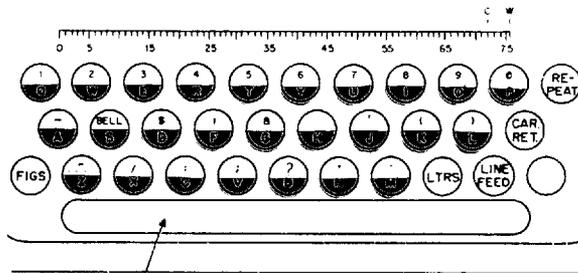
- Causes receiving page printer to feed paper.

e. LTRS Key.

- Positions the type wheel, so it can print lower case characters.



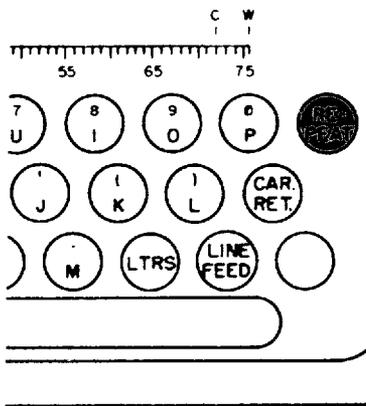
Lower
Case
Charac-
ters



SPACE BAR

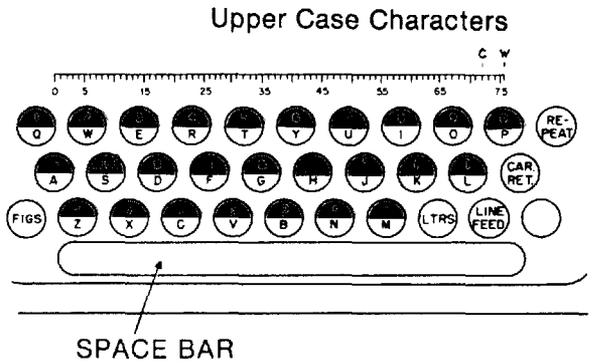
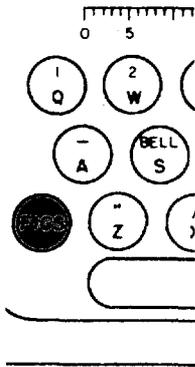
f. REPEAT Key.

- When pressed with another key or space bar, allows a character or space to be repeated as long as the two keys remain pressed.



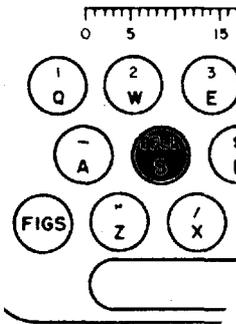
g. FIGS Key.

- Positions the type wheel, so it can print upper case characters or figures.



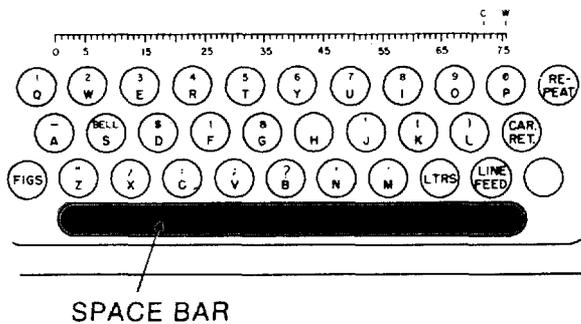
h. BELL Key.

- Depress FIGS Key; BELL key is used as a signaling aid to alert the other operator for some reason.



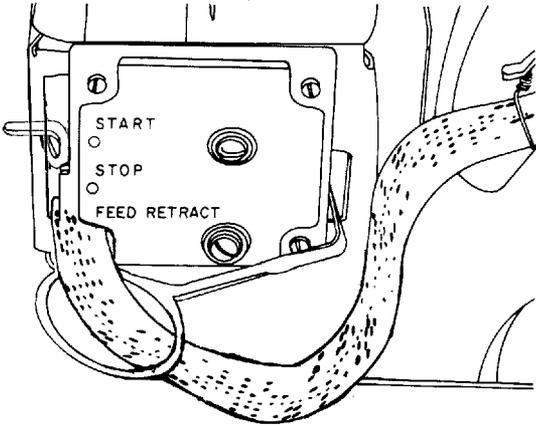
i. SPACE BAR

- Provides spacing between letters, numbers or figures.

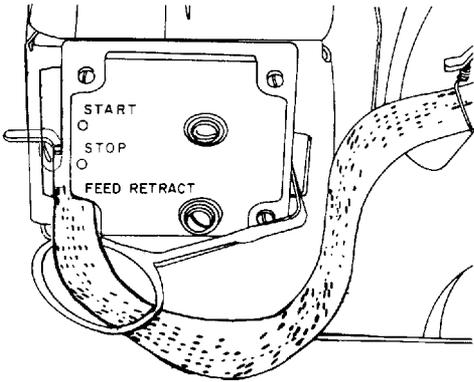


2-4. TRANSMITTER-DISTRIBUTOR CONTROLS

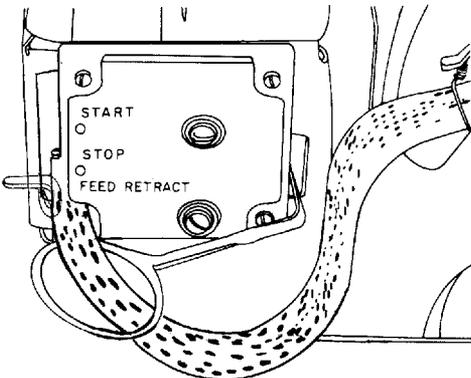
a. START-STOP Lever.



- Allows message to be transmitted in START position



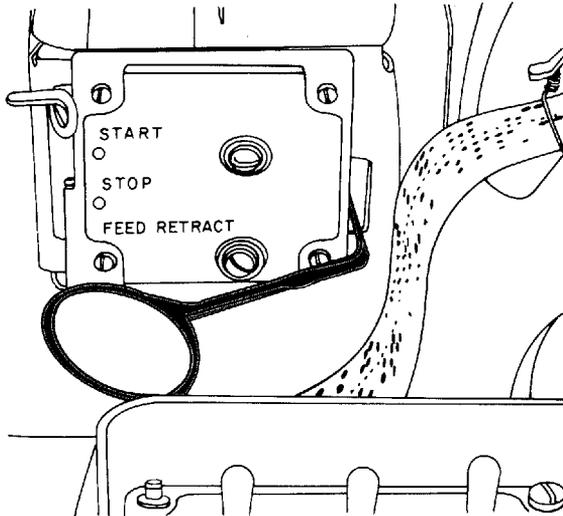
- In STOP position, stops transmission



- In the FEED RETRACT position, allows tape to be inserted.

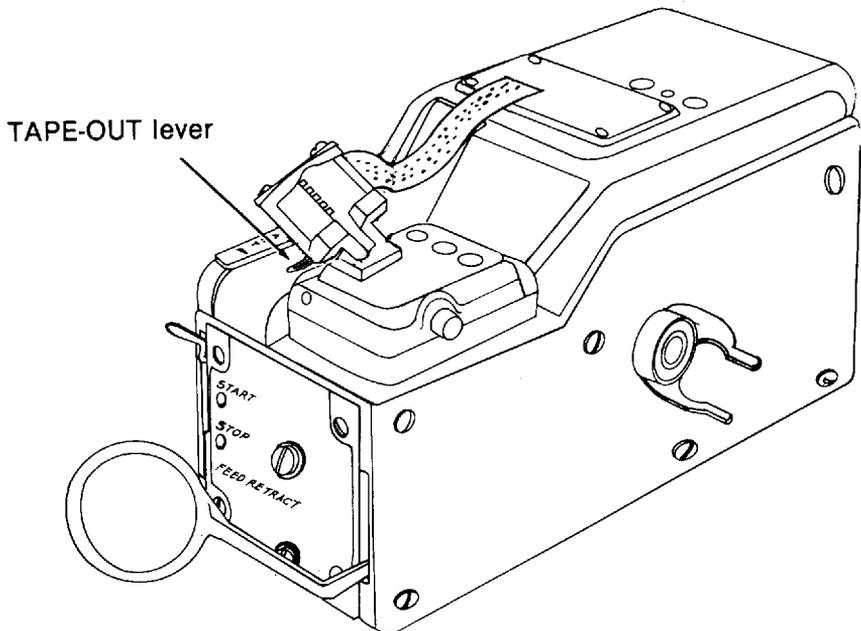
b. TIGHT-TAPE Lever.

- If there is no slack (small loop), tape will become tight and may rip. When lever is raised by tight tape, transmitter-distributor will stop.



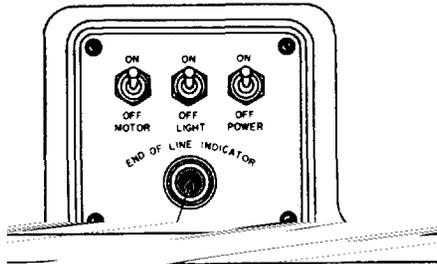
c. TAPE-OUT Lever.

- Stops transmission when end of tape passes through.



2-5. WARNING INDICATORS

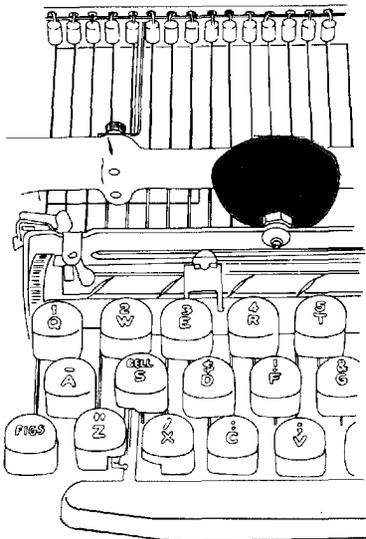
a. END OF LINE INDICATOR LAMP



- Lights up at the 66th character to warn operator that the end of the line of typing is near.

END OF LINE INDICATOR LAMP

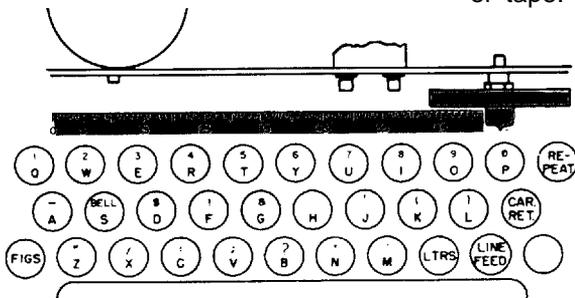
b. WARNING BELL



- Indicates that the end of a line of typing is near. Six (6) spaces of type are left.

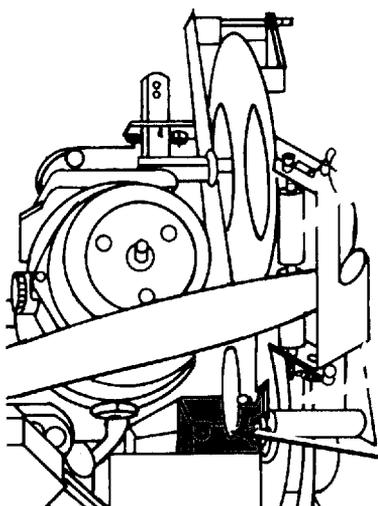
c. CHARACTER COUNTER

- Indicates how many characters were perforated on this line of tape.



- Character counter moves each time a key is pressed, except FIGS, LTRS, LINE FEED or CAR. RET. keys.

d. TAPE-ALARM BUZZER

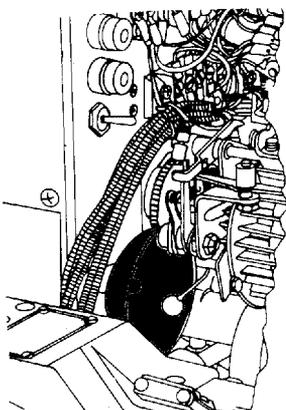


- Warns the operator that the supply of paper tape on the tape reel is getting low. Buzzer is behind right side of keyboard guard.

TAPE-ALARM BUZZER

e. SIGNAL BELL

- Operated by pressing the FIGS key and the BELL key, warns the other operator for any reason.



NOTE

Bell is located at the rear left side of the teletypewriter, in front of the power supply.

**Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES
(PMCS)**

2-6. GENERAL

a. Scope of Maintenance.

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

b. Tools, Materials, and Equipment Required for Maintenance.

No tools or test equipment are required for operator's maintenance. Cleaning materials useful to the operator include a lint-free cloth, soft bristle brush, trichlorotrifluoroethane, and fine sandpaper. Refer to appendix D, expendable supplies and materials list.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

2-7. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PROCEDURES

NOTE

If your teletypewriter set must be in USE ALL THE TIME, check and service those items that can be checked and serviced without stopping its operation. Make COMPLETE checks and services ONLY when the teletypewriter set is finally SHUT DOWN.

a. Explanation of INTERVAL column of PMCS Chart.

NOTE

Always keep in mind all WARNINGS and CAUTIONS when PMCS is performed.

- BEFORE OPERATION - Do your Before (B) PMCS to be sure the teletypewriter set is ready for use.
- DURING OPERATION - Do your During (D) PMCS while you operate your teletypewriter set, to help spot small problems before they become big problems.
- WEEKLY OPERATION - Do your Weekly (W) PMCS to insure that the teletypewriter set is functioning properly after a week of operation.
- MONTHLY OPERATION-DO Your Monthly (M) PMCS to insure that the teletypewriter set is functioning properly after a month of operation.

NOTE

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

- Before the teletypewriter is used on a mission.
- When the teletypewriter is first installed.
- When the teletypewriter is reinstalled after being removed for any reason.

b. Explanation of ITEM TO BE INSPECTED-PROCEDURE Column of PMCS Chart.

This column tells you the item to be inspected on the equipment and how to perform the required checks and services. Carefully follow these instructions. If tools are needed, or the chart instructions tell you, get organizational maintenance to do the necessary work.

NOTE

If any portion of your teletypewriter fails to operate, refer to chapter 3 under troubleshooting for possible problems. Report any malfunctions or failures on the proper DA Form 2404 or refer to TM 38-750.

c. Explanation of EQUIPMENT IS NOT READY IF: Column of PMCS Chart.

Tells you why your equipment cannot be used if the ITEM TO BE INSPECTED doesn't meet the PROCEDURE requirements.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES					
B - BEFORE OPERATION		D - DURING OPERATION		W - WEEKLY OPERATION	M - MONTHLY OPERATION
ITEM NO.	INTERVAL		ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:	
	W	M			
1	●		<p align="center">NOTE</p> <p align="center">EQUIPMENT PERFORMANCE CHECKS For ALL TESTS, except when SELECTOR switch is in position No. 3 (LOCAL PUNCH), signal line current must be supplied by an outside power source.</p> <p>Teletypewriter Set AN/GGC-3(*) Teletypewriter Set AN/GGC-53(*) Teletypewriter Reperforator - Transmitter TT-76(*)/GGC Teletypewriter Reperforator - Transmitter TT-699(*)/GGC</p> <ul style="list-style-type: none"> ● Operate the equipment as described in paragraphs 2-10 and 2-11 of this manual. <p align="center">NOTE</p> <p>If the equipment has been operated within the last week, weekly requirements have been met.</p>	Equipment cannot be operated. Mission cannot be accomplished.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued

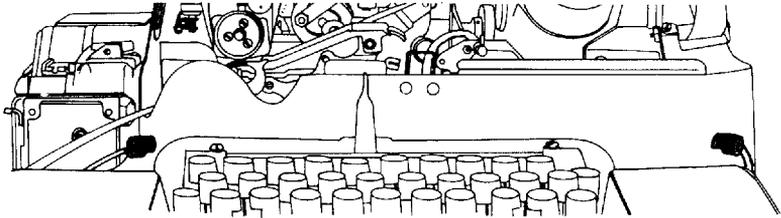
B - BEFORE OPERATION		D - DURING OPERATION		W - WEEKLY OPERATION	M - MONTHLY OPERATION
ITEM NO.	INTERVAL		ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:	
2	●		Teletypewriter Set AN/GGC-3(*) Teletypewriter Set AN/GGC-53(*) Teletypewriter Reperforator-Transmitter TT-76(*)/GGC Teletypewriter Reperforator-Transmitter TT-699(*)/GGC <ul style="list-style-type: none"> ● Perform in the order given, each preliminary adjustment as listed in paragraph 2-9 of this manual. 	<ul style="list-style-type: none"> ● Motor speed cannot be adjusted to proper speed. ● Range does not meet minimum requirements. ● Mission cannot be accomplished. 	
3		●	Fuses <ul style="list-style-type: none"> ● Check all fuses, including spares, for proper quantity, type and value. 		

Section III. OPERATION UNDER USUAL CONDITIONS

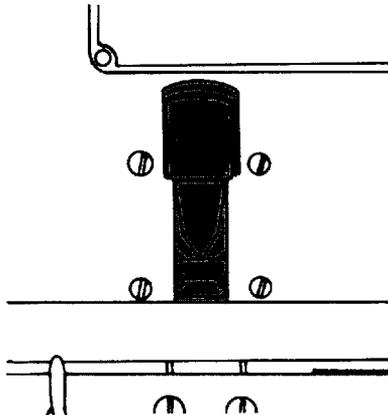
2-8. ASSEMBLY AND PREPARATION FOR USE

a. Removal of Dust Cover (All Models).

- Disconnect the four grounding straps from the binding post on both sides of dust cover.



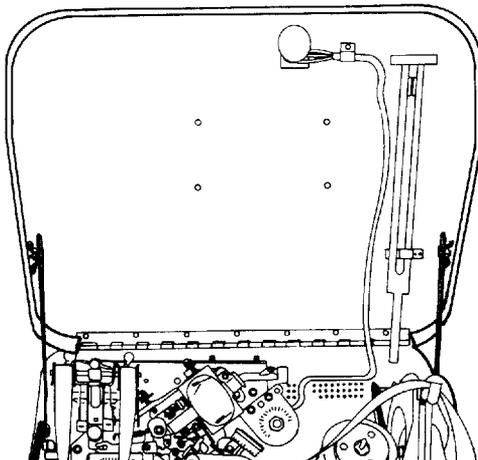
- Release cover latch A, B, C models by pushing in top of latch.

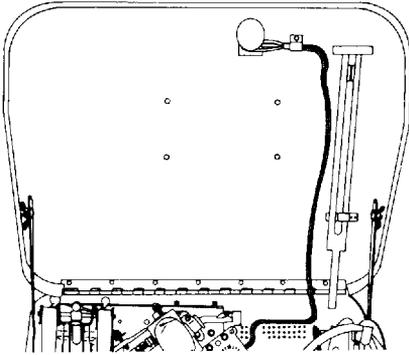


NOTE

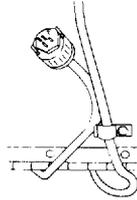
TT-76 has a two-lever squeeze-type latch.

- Lift up dust cover until it locks in open position.



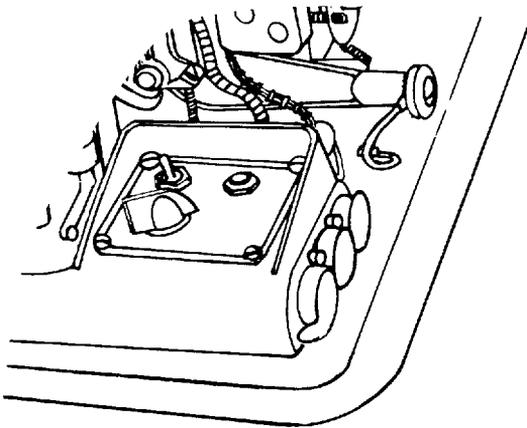


- Pull copy light plug from jack located on right side of power supply.



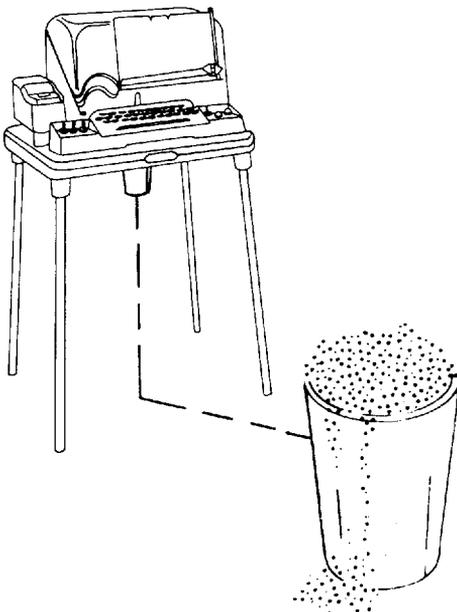
NOTE

On TT-76 plug is located on left side of dust cover and jack is located on the front of the power supply.



- Lift dust cover off the four rubber mounting grommets, two on the right side, and two on the left side.

b. Replace Chad Bin Cup.

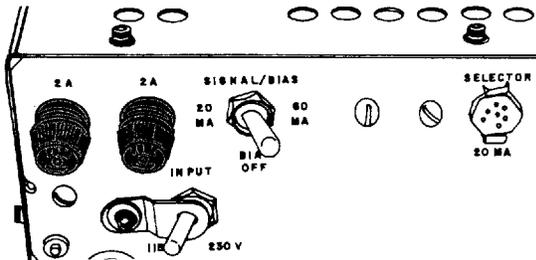


- Lift out chad cup from under teletype-writer.
- Empty and replace.

CAUTION

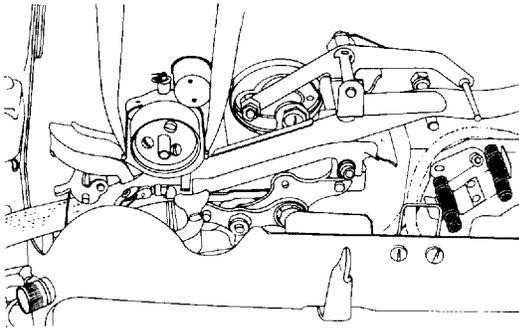
All equipments are now supplied with 2-ampere fuses. Some equipments are still marked on the panel of the power supply as 1.6 ampere fuses. Do not use 1.6 ampere fuses. USE 2 AMPERE FUSES ONLY.

c. Fuses, Power and Grounding,

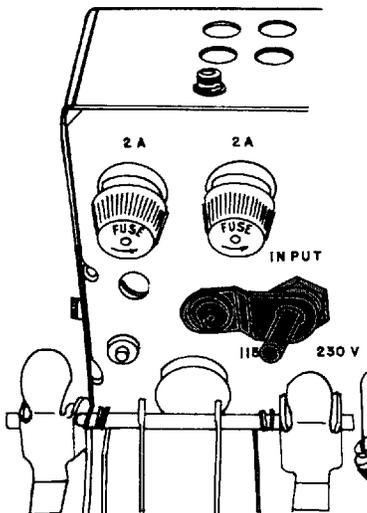


- For TT-76A, B, or C/GGC and TT-699A, B, or C/GGC: Check for two good fuses in the fuse holders of the power supply and terminal unit.

- TT-76/GGC and TT-699/GGC require only one fuse.

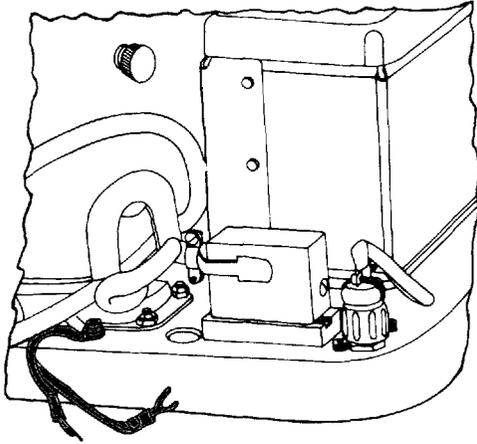


- (All Models)
Check for two extra fuses in the spare fuse clips.

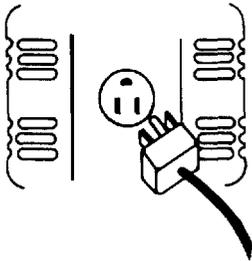


- (All Models)
Check for correct position of AC INPUT switch (115 V or 230 V).
Notify organizational maintenance if incorrect.

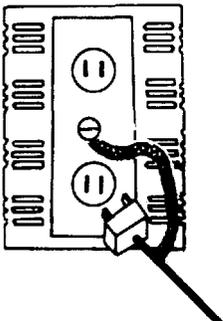
- (All models)
Place MOTOR, LIGHT and POWER switches in OFF position.



- (All models)
Checking of teletype grounds.
 1. Check to insure that there is a ground wire from the grounding post.



2. Check to insure that there is a three prong plug on power cord going into AC outlet. The 3rd prong is the ground connection.

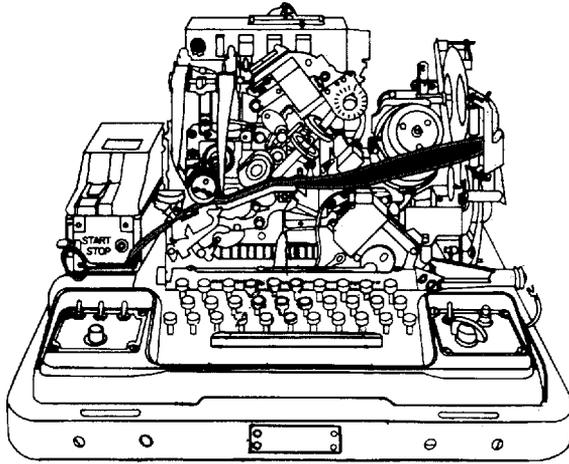


WARNING

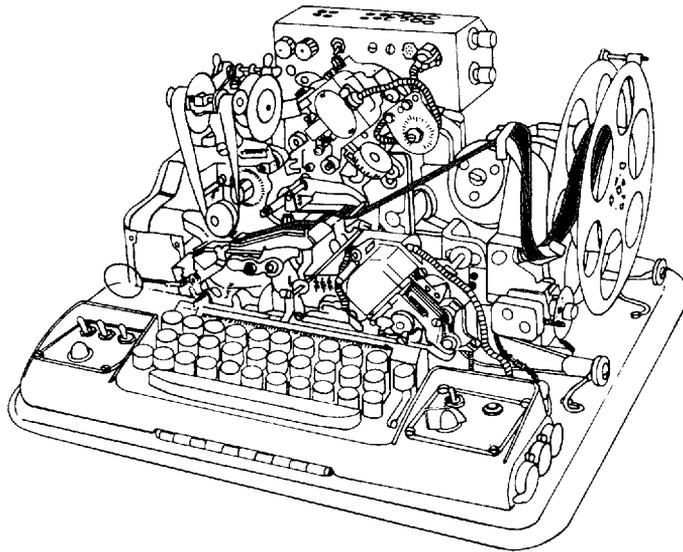
GROUND THE INSTRUMENT

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three conductor ac power cable. The power cable must either be plugged into an approved three contact electrical outlet or used with a three contact to two contact adapter with the grounding wire (green) firmly connected to on electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable must meet International Electrotechnical Commission (IEC) safety standards.

d. Paper Tape Installation.

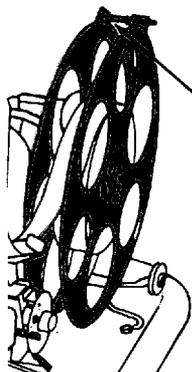


- showing paper tape threaded through plain models.



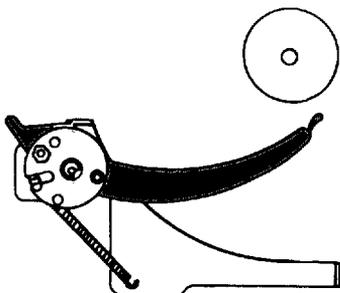
- Showing paper tape threaded through A, B, and C models.

- For TT-76A, B, or C/GGC and TT-699A, B, or C/GGC, if new roll of paper is needed follow these. steps:



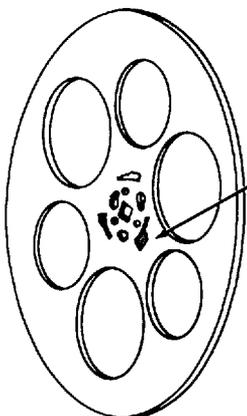
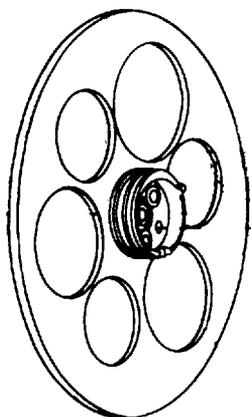
1. Tape reel release latch is located at left of reel. Push latch back and lift reel straight up from teletype.

RELEASE LATCH



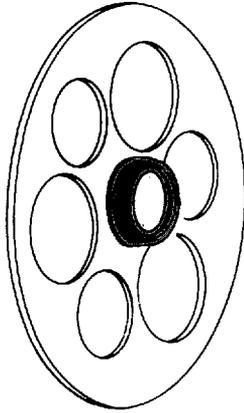
2. Push down on tape alarm lever counterclockwise until it is locked in place by the tape-alarm lever latch. This stops the tape-alarm buzzer.

3. Pick up tape reel. Press the release plunger, Turn retaining plate to left to pull apart tape retaining plates.

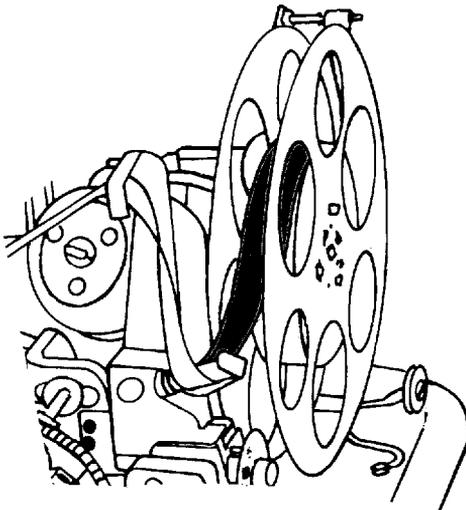


RELEASE PLUNGER

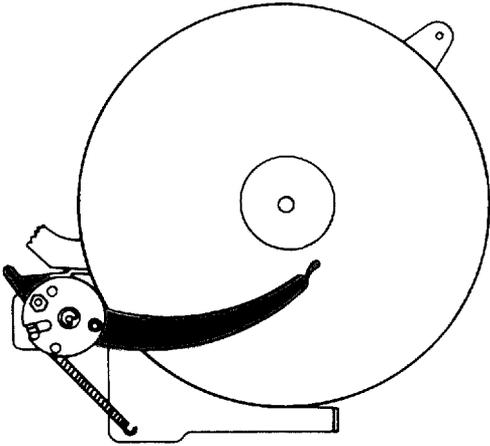
4. Take old paper tape roll core off the tape retaining plate hub.



5. Put the new paper tape roll on the retaining plate.
Tape must thread from the top of the reel, so it will come toward the front of the teletypewriter.

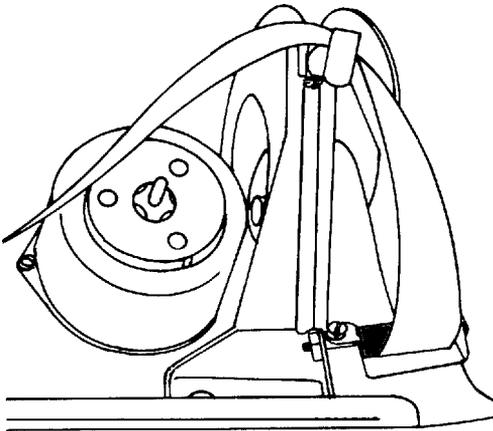


6. Put the retaining plates back together. Turn clockwise until they come together and the release plunger snaps out of its hole in the tape retaining plate.

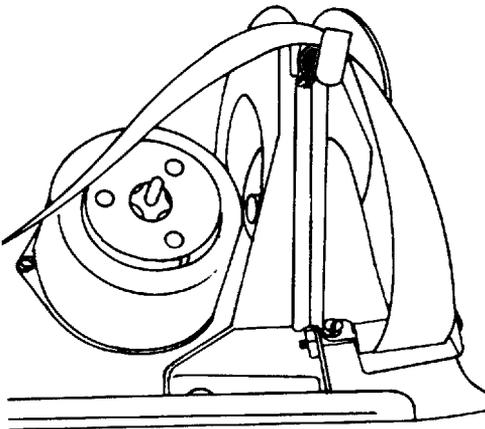


7. Press the tape alarm lever latch release. The tape alarm lever can now push up against the paper tape roll.

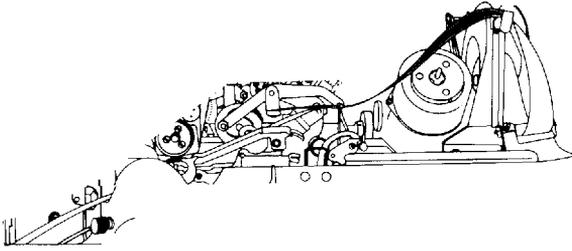
You are now ready to thread the paper tape through the teletypewriter.



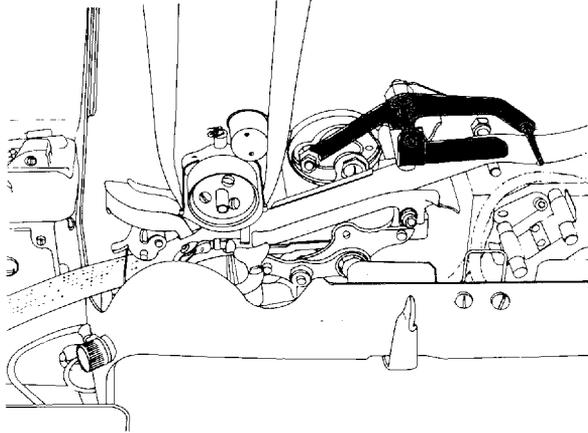
8. Thread the end of the paper tape through the lower tape guide.



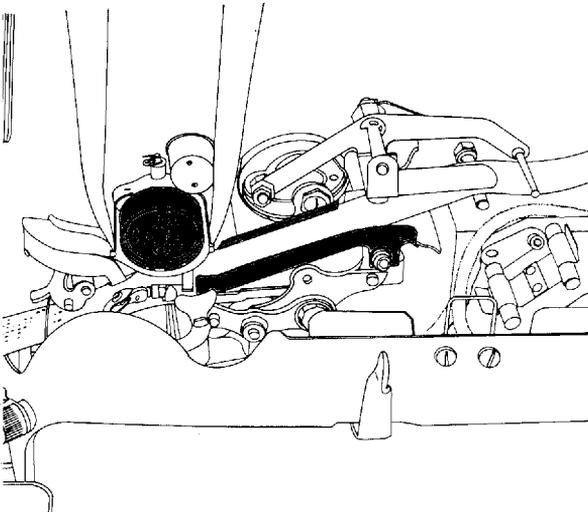
9. Next, thread tape through the upper tape guide.



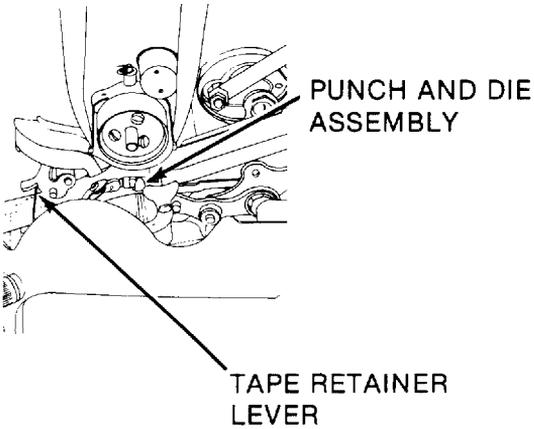
10. Bring tape in front of governed motor to tape puller assembly area.



11. Thread tape under tape puller arm stud, then thread over the tape puller stud, but under tape puller spring. Tape will be between spring and stud.

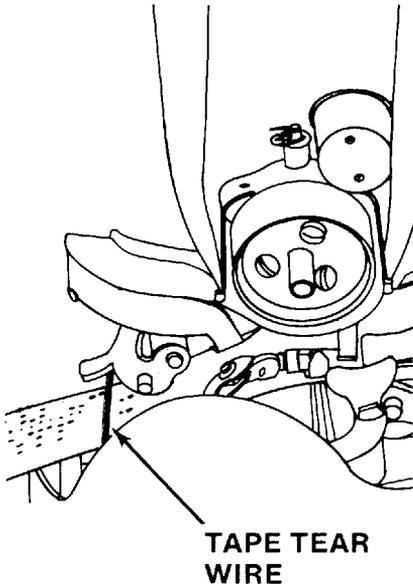


12. Bring the tape end to the top of the tape chute. Feed the tape into the chute, down to the type wheel.
13. Slide tape under the type wheel.



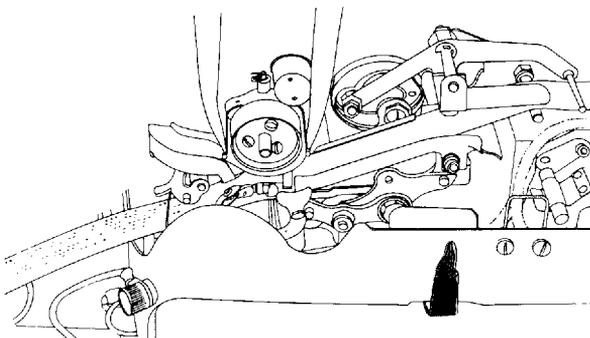
14. Feed the tape into the slot in the punch and die assembly.

15. Hold down the tape retainer lever as you feed the tape under the roller.



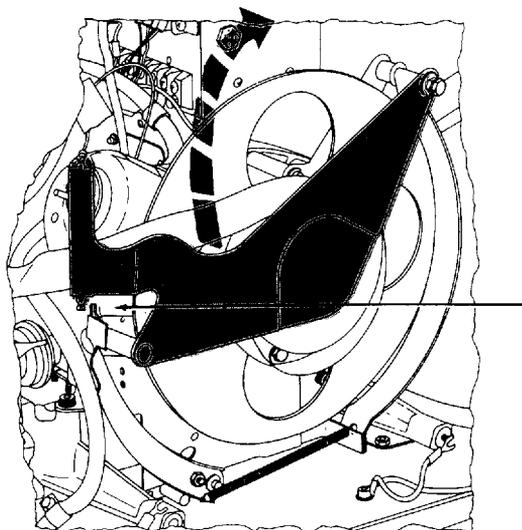
16. Feed tape under tape tear wire

17. Feed enough tape, (at least 10 inches) under the roller and OUT the opening in the dust cover.



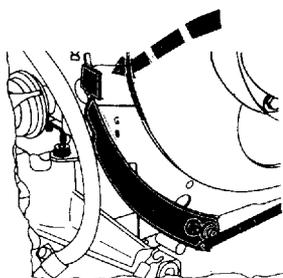
18. Operate manual tape feed out lever an additional 10 inches of tape.

- For TT-76/GGC and TT-699/GGC, if new roll of paper tape is needed follow these steps:



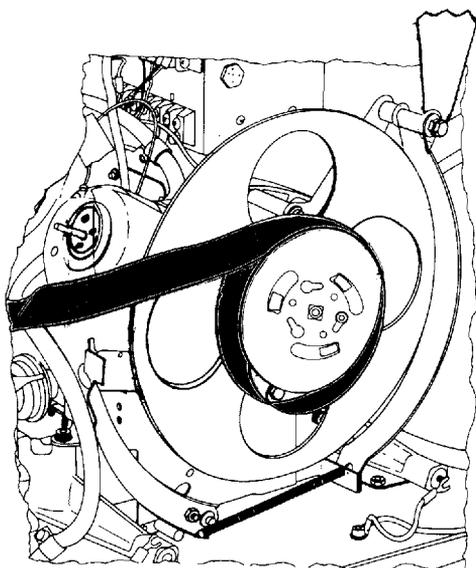
1. Push the reel support latch. Rotate the outer reel support arm completely out of the way.

—REEL SUPPORT LATCH

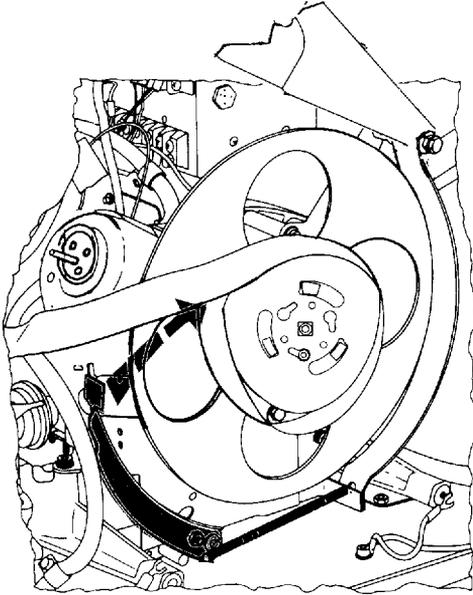


2. Move the tape-out alarm lever away from the reel hub.

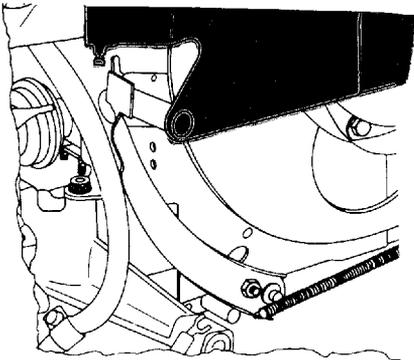
3. Remove old paper tape roll core.



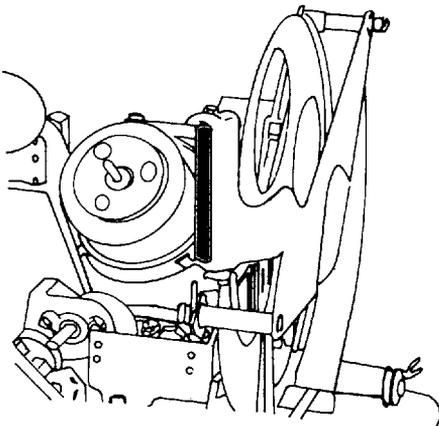
4. Put new roll of paper tape on the hub, so the tape will thread from the top of the reel, toward the front of the teletypewriter (counterclockwise).



5. Replace the tape-out alarm lever, so that the upper end is against the roll of paper tape.

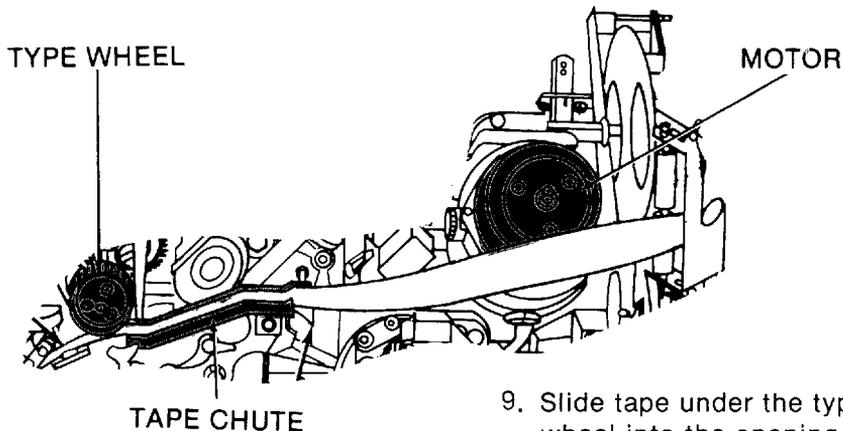


6. Bring the outer reel support arm down to the latched position.

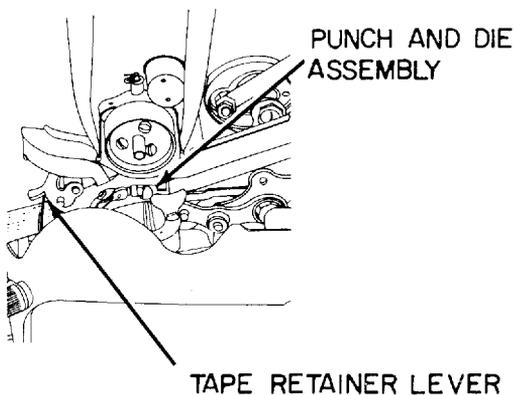


7. Twist the end of the paper tape Up slightly and to the right, so you can put the tape end in the space behind the guide roller.

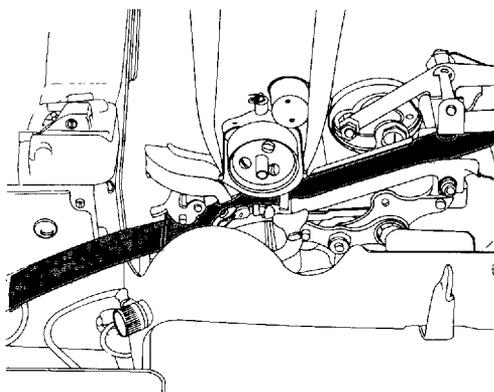
8. Pull tape end through past the motor to the top of the tape chute. Feed the tape into the chute, down to the type wheel



9. Slide tape under the type wheel into the opening to the punch and die assembly



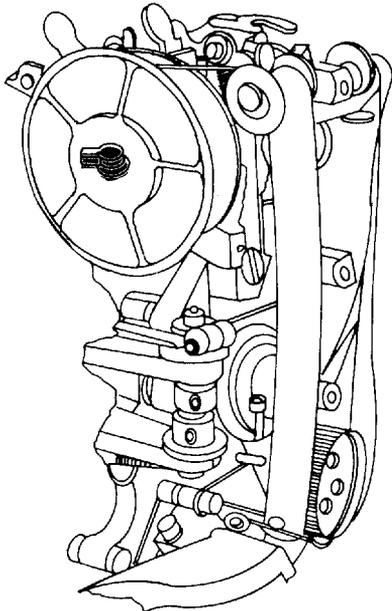
10. Hold down the tape re-tainer lever as you feed the tape under the roller.



11. Feed enough tape, (at least 10 inches) under the roller and OUT the opening in the dust cover.

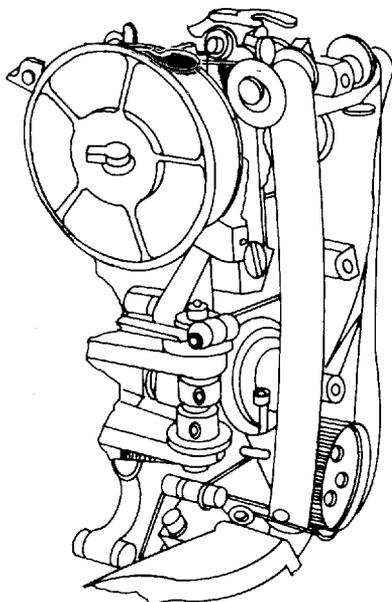
e. Inking Ribbon Installation.

- For TT-76A, B or C/GGC and TT-699A, B, or C/GGC, if new inking ribbon is needed follow these steps:



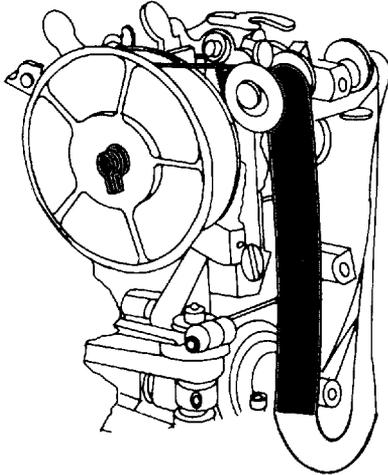
1. Lift ribbon spool locks, at each end of spool shaft, out straight (unlocked position).

2. Pull ribbon retaining levers forward. Take off old ribbon spool and throw away. Leave empty spool on machine.

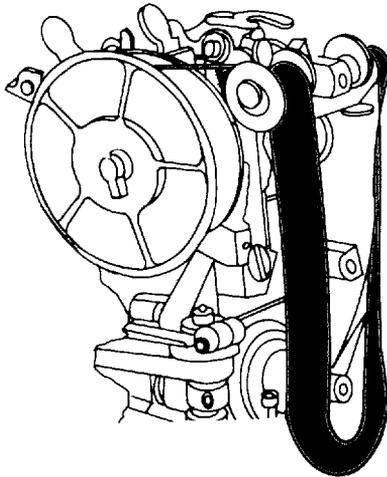


3. Pull ribbon retaining lever forward again. Hold while you place the FULL new spool on the ribbon spool shaft. Place spool on ribbon spool shaft with smooth side facing out.

4. Push down lock.

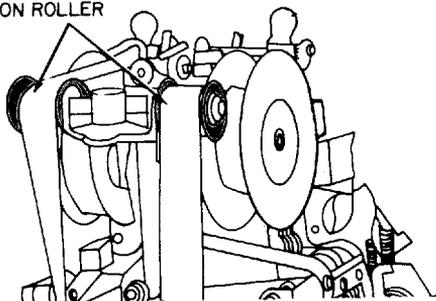


- Attach the free end of inking ribbon to the hook on the empty spool.

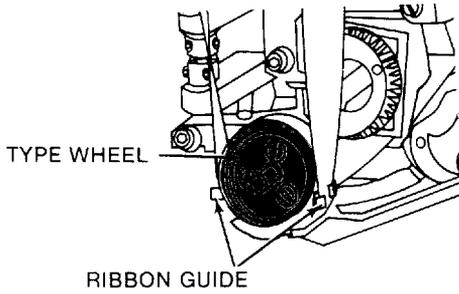


5. Leave a long loop (about 5 inches) in the inking ribbon, between the two spools.

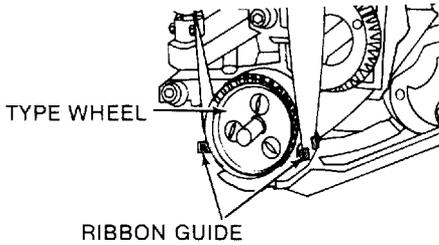
RIBBON ROLLER



6. Bring the inking ribbon over the ribbon rollers located in front of each spool.

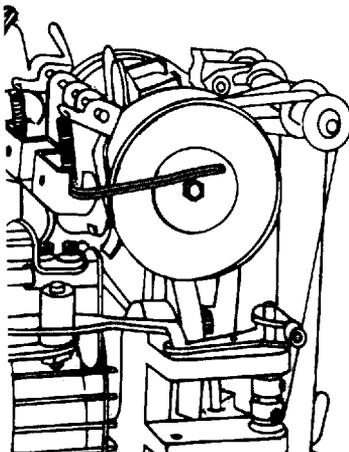


7. Slide tape under the type wheel.

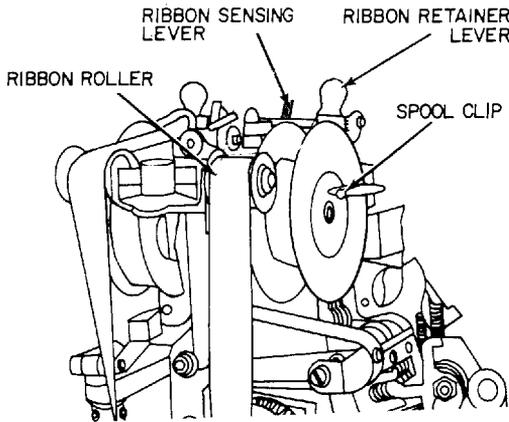


8. Slip the inking ribbon into the ribbon guide openings near the bottom, at both sides of the type wheel.

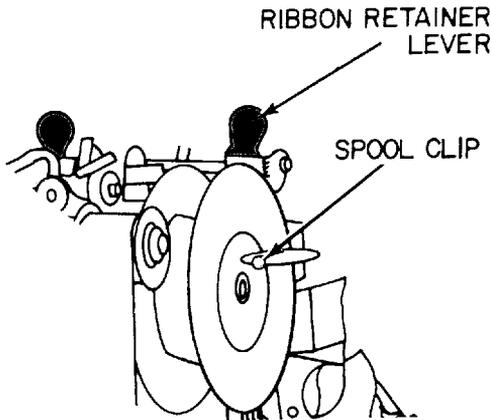
● For TT-76/GGC and TT-699/GGC, if new inking ribbon is needed follow these steps.



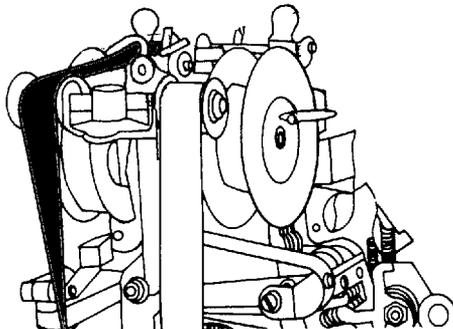
1. Raise ribbon spool holding clip.



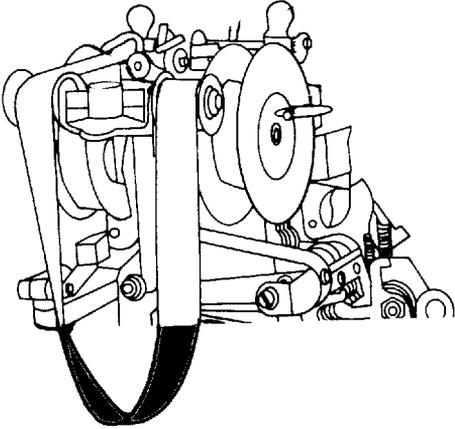
2. Push ribbon sensing lever back, as you pull the tab at the top of the ribbon retainer forward. Remove old ribbon spool and throw away.



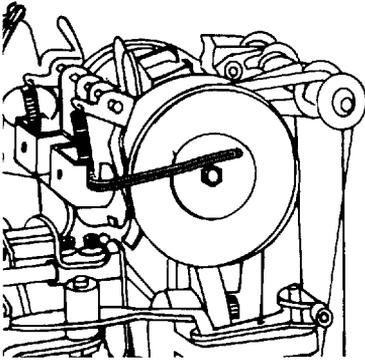
3. Hold ribbon retainer lever forward again, as you place the FULL new spool on the ribbon spool shaft, Make sure the openings in spool hub go together with the area that stands out on the ribbon spool shaft.



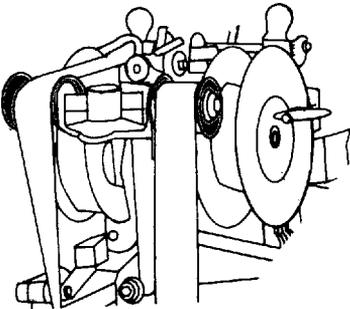
4. Attach the free end of the inking ribbon to the empty spool.



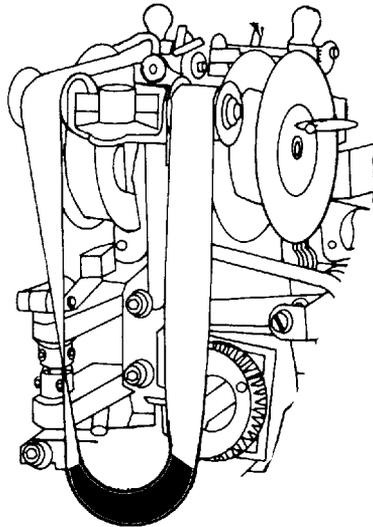
5. Leave a long loop (about 10 inches) in the inking ribbon between the two spools.



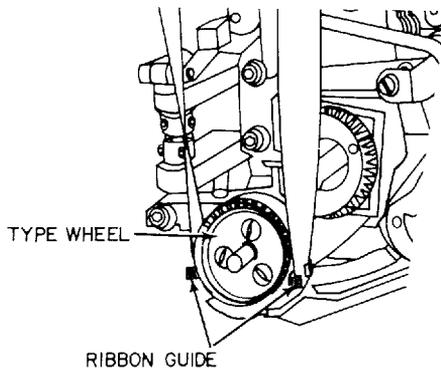
6. Move the spool clip down to its locking position.



7. Be certain to bring the inking ribbon over the ribbon rollers located in front of each spool.



8. Give the inking ribbon a HALF-TWIST as you slide it under the type wheel.



9. Slip the inking ribbon into the ribbon guide openings near the bottom at both sides of the type wheel.

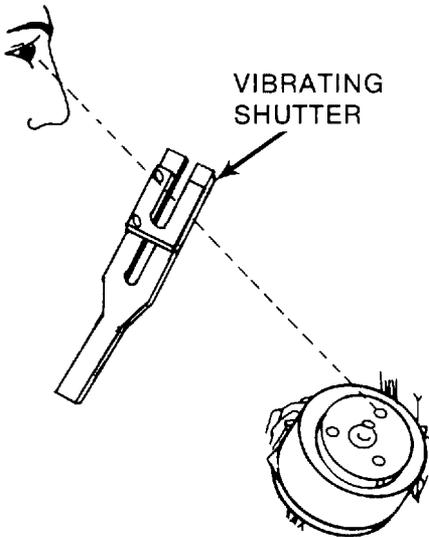
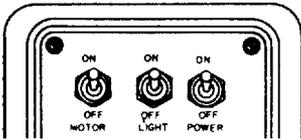
2.9. ADJUSTMENTS BEFORE OPERATION

a. Routine Services.

- Routine services are a collection of checks and observations performed by the operator at all times. Routine services are not listed in the preventive maintenance checks and services table, in order to separate the nonoperational from the operational services.

- You should perform the following routines as necessary.
 - Clean
 - Dust
 - Wash
 - Check for cut or frayed cables
 - Check for dented, bent, or broken components
 - Check to see that items not in use are properly stored
 - Check for rusting
 - Check controls for smooth operation
 - Check for loose nuts, bolts, and connectors
 - Check that the ground is not damaged and that the connection is securely attached
 - Check for completeness of equipment

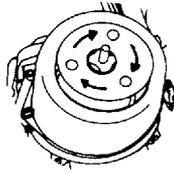
b. Checking and Adjustment of Motor Speed.



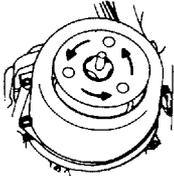
- Place POWER and MOTOR switches to ON
- Tap the tuning fork against your hand to start it vibrating (vibrates at 180 vps).
- Look through the vibrating shutter at the spots on the rotating target wheel.
- If the spots are NOT MOVING, no adjustment is necessary.

CAUTION

Use fingers only to pull or push motor speed adjusting worm. Do not use tools. Do not hold adjusting worm too long. It gets hot!



- If the spots ARE MOVING CLOCKWISE pull the motor speed adjusting worm out. Hold until the clockwise motion stops.



- If the spots ARE MOVING COUNTERCLOCKWISE, push the motor speed adjusting worm in. Hold until the counterclockwise motion stops.

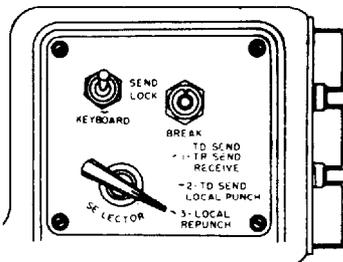
NOTE

Motor now is set at its operating speed of 3,600 revolutions per minute (rpm).

c. Checking and Adjusting Bias Potentiometer (TT-76/GGC Only).

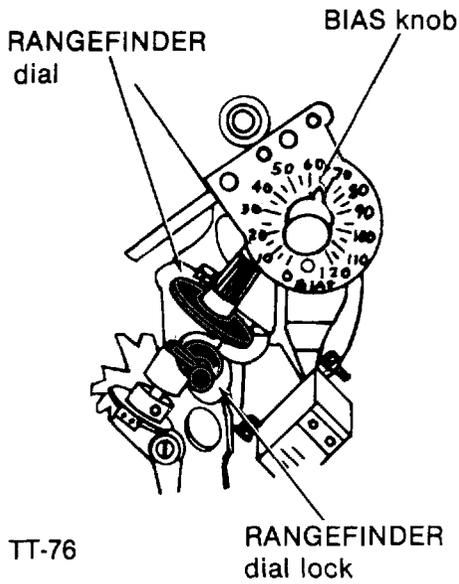
NOTE

Make the following adjustments only when the equipment is operating in a neutral circuit since the bias windings are not for polar operation.



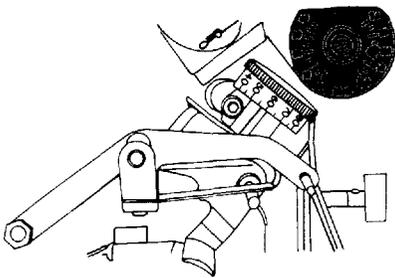
Set KEYBOARD switch to SEND position. Set SELECTOR switch to LOCAL REPUNCH, position 3. Send Ry signals from the keyboard-transmitter.

Loosen rangefinder dial lock by turning it counterclockwise.



- Set the rangefinder dial to 60. While typing RY's, slowly turn the bias potentiometer knob to maximum good copy position, then to minimum. Note dial markings at each position.
- Find midpoint between maximum and minimum good copy positions.
- Set the pointer 5 points above this midpoint.

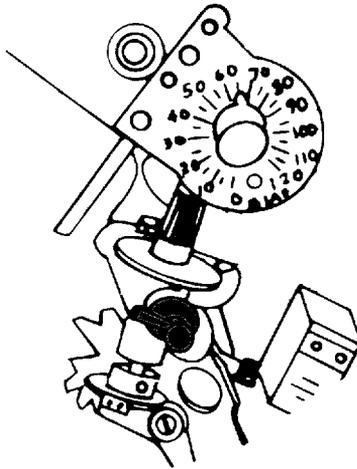
CAUTION



Only support maintenance personnel are authorized to adjust the bias potentiometer on the TT-76A, B, or C/GGC. The bias potentiometer of the TT-76A, B, or C/GGC has been adjusted and locked before shipment. No other adjustments are necessary, except after a complete overhaul or if setting is incorrect.

d. Checking and Adjusting the Rangefinder (All Models).

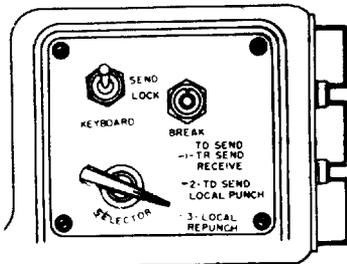
DO NOT CHANGE the position of the rangefinder dial while the teletypewriter is In OFF position. Machine must be on and TYPING



- Turn the rangefinder dial lock counterclockwise to unlock.
- (Lock is omitted on A, B, and C models.)

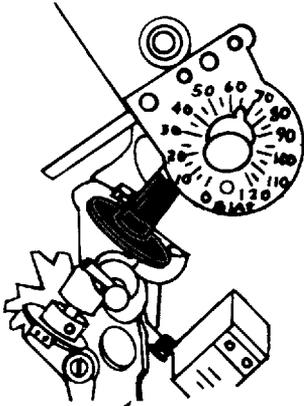
NOTE

On the TT-76(*)/GGC adjust the rangefinder immediately after adjusting the BIAS potentiometer.



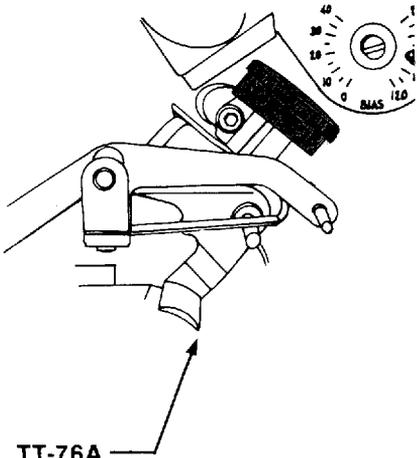
TT-699(*)/GGC

- On the TT-699(*)/GGC, set the keyboard switch to the SEND Position, and the selector switch to LOCAL REPUNCH.



TT-76

- While typing RY's on the keyboard, turn the range finder dial SLOWLY toward the higher numbers on the scale until errors appear in printed copy.
- STOP.
- While typing RY's, turn dial in the opposite direction toward the lower numbers of the scale until NO errors appear in printed copy.



TT-76A

- STOP
- Record this number. This is the upper range limit reading.
- While typing RY's, turn the range finder dial SLOWLY toward the lower numbers of the scale until errors begin to appear in the printed copy.
- STOP
- Turn dial in the opposite direction toward the higher numbers of the scale until NO errors appear in the printed copy.
- STOP
- Record this number. This is the lower range limit reading.

- Figure out the range of your equipment this way:

NOTE

If equipment does not meet minimum range requirements notify maintenance support.

1. Subtract the lower range reading from the upper range reading. This is your equipment point range.

- upper range reading
minus
lower range reading =

2. Point range is a minimum of 70 for 60 wpm operation.

Equipment point range

3. Point range is a minimum of 60 for 100 wpm operation.

e. Setting Rangefinder Dial (All Models) .

- Adjust the rangefinder dial to the middle of the lower and upper reading this way.

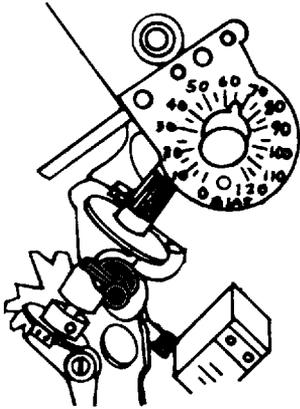
- upper range reading
+lower range reading =

1. Add the lower and upper readings together.

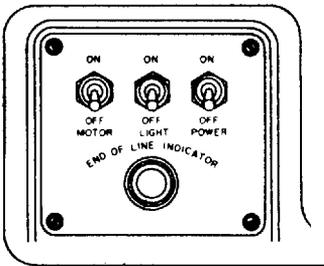
Total of reading

- Middle setting =
Total of reading 2

2. Next, divide the total by two. This is the middle setting.

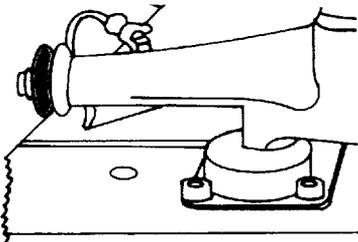


3. LOCK the rangefinder dial in position using the dial lock. Turn dial lock clockwise. (TT-76 only)

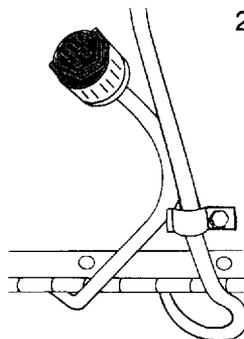
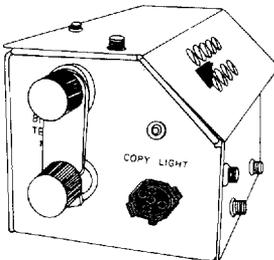


4. Place POWER, MOTOR and LIGHT switches to OFF

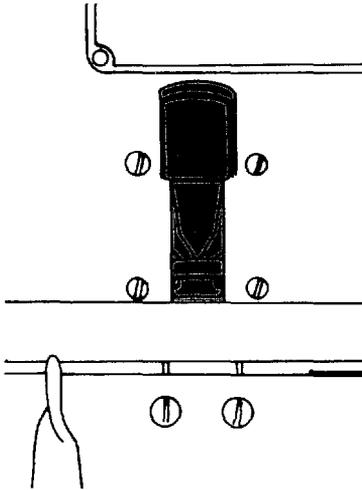
f. Replace dustcover.



1. Place dustcover on rubber mounting grommets.



2. Insert copy light plug into power supply jack on side or front.

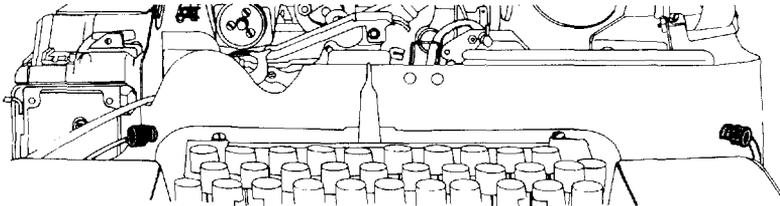


3. Press dust cover into position until cover latch catches.

NOTE

TT-76 has a two-lever squeeze-type latch.

4. Connect the four grounding straps from the binding post on both sides of dust cover.

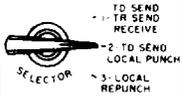


2-10. OPERATING PROCEDURES

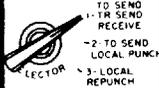
● The following chart describes the type operation, switch positions and plug locations for TT-76(*).

Operating Procedures

- The following Half-Duplex operating procedures are possible when the TT-76(*)/GGC is installed for operation on one line.
- Not applicable to the TT-699(*)/GGC.

Item No.	Type of Operation	Position of		Position of Signal Line Cords to a Telegraph Switchboard, Line Unit, Telegraph Terminal, or other External Circuit Source		
		SELECTOR switch	Transmitter-Distributor START-STOP lever	RED (from Reperator-Transmitter)	BLACK (from Keyboard Transmitter)	GRAY (from Transmitter-Distributor)
1	Send only and Local preparation of tape (at the same time)	No. 2 	FEED RETRACT (for inserting tape) then START	Line 1	Line 1	Line 1

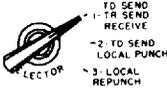
OPERATING PROCEDURES - CONTINUED

Item No.	Type of Operation	Position of		Position of Signal Line Cords to a Telegraph Switchboard, Line Unit, Telegraph Terminal, or other External Circuit Source		
		SELECTOR switch	Transmitter-Distributor START-STOP Lever	RED (from Reperforator-Transmitter)	BLACK (from Keyboard Transmitter)	GRAY (from Transmitter-Distributor)
2	<p>Send to line from Keyboard-Transmitter or Transmitter-Distributor</p> <p>and</p> <p>Receive printed and perforated tape from same line</p> <p>NOT AT SAME TIME</p> <p>(home copy recorded)</p>	<p>No.1</p> 	<p>FEED RETRACT (for inserting tape)</p> <p>then</p> <p>START</p>	Line 1	Line 1	Line 1

OPERATING PROCEDURES - CONTINUED

2 - 4 8

TM 11-5815-238-10

Item No.	Type of Operation	Position of		Position of Signal Line Cords to a Telegraph Switchboard, Line Unit, Telegraph Terminal, or other External Circuit Source		
		SELECTOR switch	Transmitter-Distributor START-STOP lever	RED (from Reperator-Transmitter)	BLACK (from Keyboard Transmitter)	GRAY (from Transmitter-Distributor)
3	<p>One-way operation - can receive a printed and perforated tape from a signal line</p> <p>NO TRANSMISSION is possible</p> <p align="center">NOTE</p> <p>This type of operation is not normally used.</p>	<p>No.1</p> 	NOT USED	Line 1	NOT USED	NOT USED

OPERATING PROCEDURES - CONTINUED

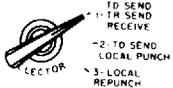
- The following Full-Duplex operating procedures are possible when the TT-76(*)/GGC is installed for operation using two lines.
- Not applicable to the TT-699(*)/GGC.

Item No.	Type of Operation	Position of		Position of Signal Line Cords to a Telegraph Switchboard, Line Unit, Telegraph Terminal, or other External Circuit Source		
		SELECTOR switch	Transmitter-Distributor START-STOP lever	RED (from Reperator-Transmitter)	BLACK (from Keyboard Transmitter)	GRAY (from Transmitter-Distributor)
4	<p>Receive printed and perforated tape from FIRST LINE</p> <p>and</p> <p>Send from the Keyboard Transmitter</p> <p>or</p> <p>Transmitter-Distributor to a SECOND LINE</p> <p>(at the same time)</p>	<p>No.1</p> 	<p>FEED RETRACT (for inserting tape)</p> <p>then</p> <p>START</p>	Line 1	Line 2	Line 2

OPERATING PROCEDURES - CONTINUED

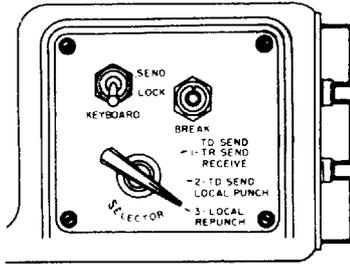
2-50

TM 11-5815-238-10

Item No.	Type of Operation	Position of		Position of Signal Line Cords to a Telegraph Switchboard, Line Unit, Telegraph Terminal, or other External Circuit Source		
		SELECTOR switch	Transmitter-Distributor START-STOP lever	RED (from Reperator-Transmitter)	BLACK (from Keyboard Transmitter)	GRAY (from Transmitter-Distributor)
5	<p>Can send from Keyboard Transmitter to a line</p> <p>or</p> <p>Receive from the same line (making perforated and printed tape, in either case)</p> <p>and</p> <p>Transmit another message (at the same time), to a second line from the Transmitter-Distributor</p>	<p>No.1</p> 	<p>FEED RETRACT (for inserting tape)</p> <p>then</p> <p>START</p>	Line 1	Line 1	Line 2

2-11. OPERATING CHECKS AND PROCEDURES

- a. At the beginning of each operating day, the following PROCEDURES MUST BE DONE to put your teletypewriter- reperforator in READY CONDITION for operation. Lift cover to perform checks.

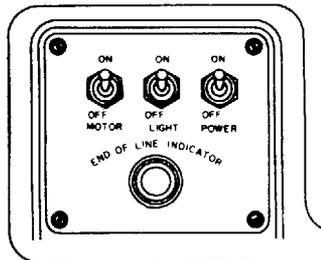


- Turn the SELECTOR switch to position No. 3, LOCAL REPUNCH.

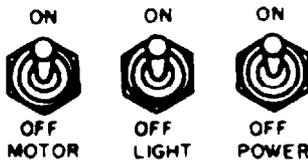


NOTE

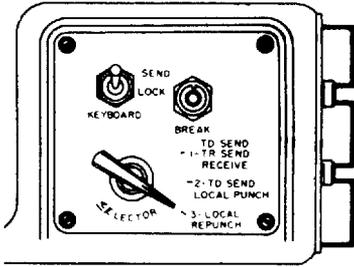
LOCAL REPUNCH position No. 3 is necessary to remove the teletypewriter from the signal line. NOW you are ready for local testing.



- Push POWER, LIGHT and MOTOR switches to the ON position.

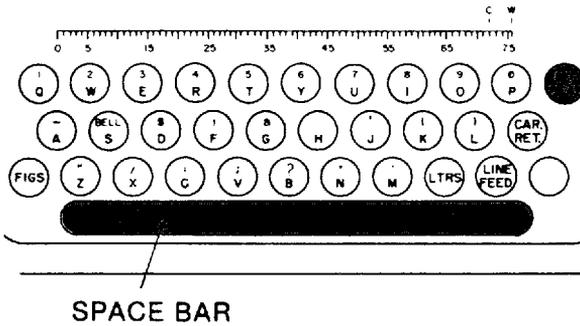


- Move the KEYBOARD switch up to the SEND position.

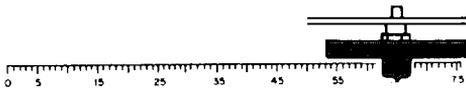


- Transmission is now possible from the keyboard-transmitter.

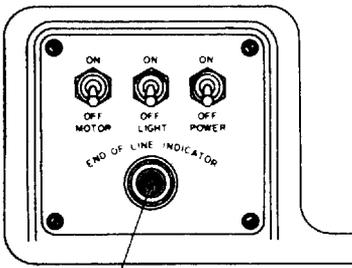
- To check feeding of paper tape, PRESS and HOLD both space bar and REPEAT key.



- As paper tape is feeding, check to see if character counter is working.

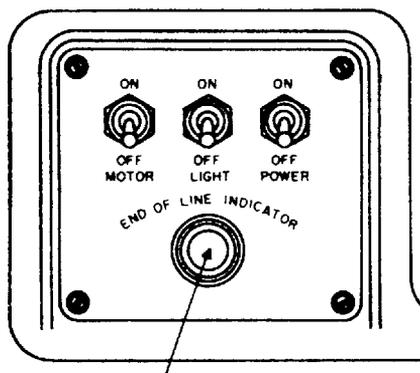
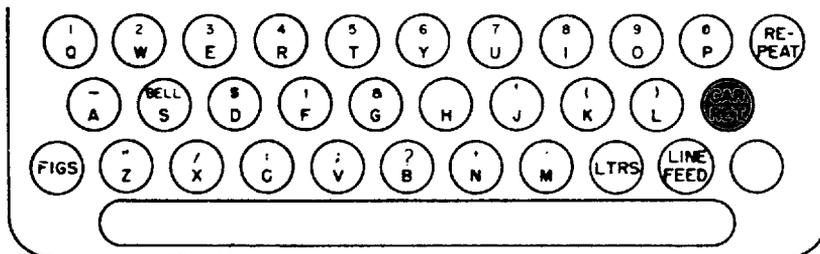


- As character counter reaches the 66th character END-OF-LINE INDICATOR lamp will light and end-of-line warning bell also will ring (on all equipment except TT-76/GGC and TT-699/GGC).



END-OF-LINE INDICATOR

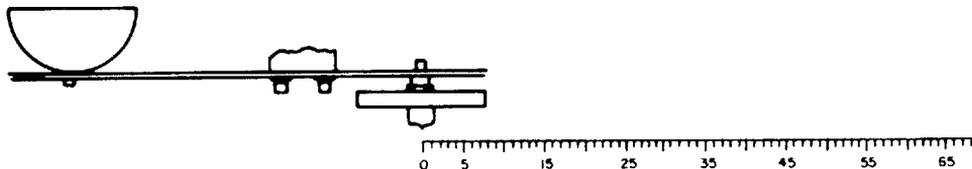
- Press the CAR. RET. key.



END-OF-LINE INDICATOR

- END-OF-LINE INDICATOR lamp will go out.

- Character counter will go back to (0) zero.



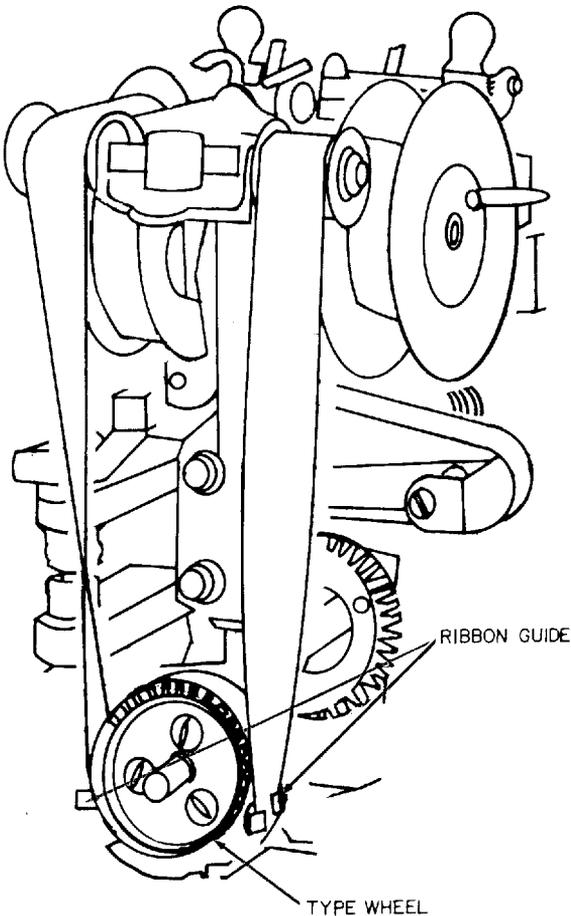
- Send from the Keyboard-Transmitter, at least five copies of the following message:

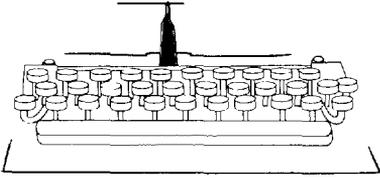
1. LTRS, THE QUICK BROWN FOX
JUMPED OVER THE LAZY DOG'S
BACK, LINE FEED FIGS,
1234567890 - \$! ' () /
: ; ? , .

2. Save this MESSAGE TAPE for future testing.

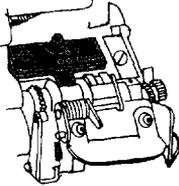
- As the message tape is feeding out, check:

1. Type wheel shifts to the figures position properly.
2. Type wheel moves forward and back for each operation.
3. Inking ribbon moves forward and back with the type wheel for each operation.
4. Inking ribbon feeds every other time a character is printed.

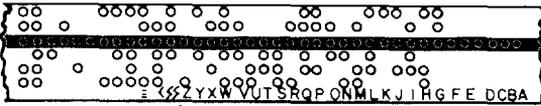




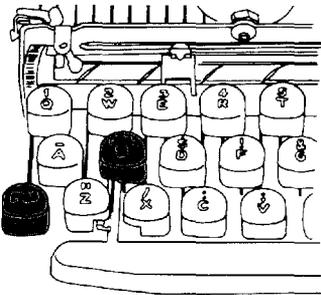
- Move manual tape feed out lever to left. Lever is working if:



1. Paper tape moves out of the punch and die assembly.



3. Blank symbol is printed on the paper tape showing that signals are not being received at the time.



- Press the FIGS key so you can position the BELLE key.

BELL/S key

1. Press the BELL/S key.

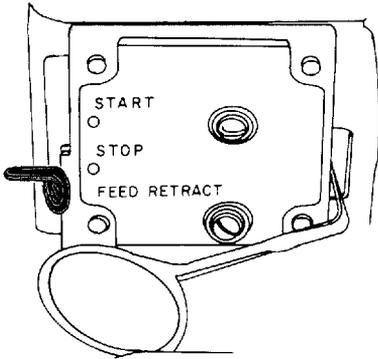


2. The signal bell will ring.

b. Check the Transmitter-Distributor as follows:

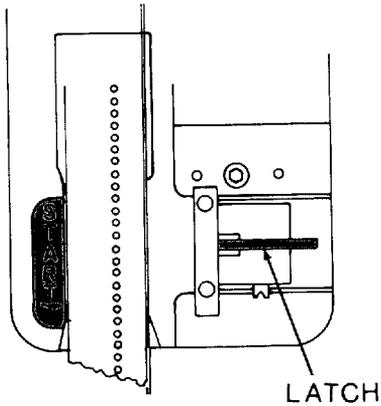
NOTE

When testing a piece of tape it is not necessary for the paper tape to enter the TIGHT-TAPE lever, but this must be done when the tape comes from keyboard transmitter to transmitter-distributor.



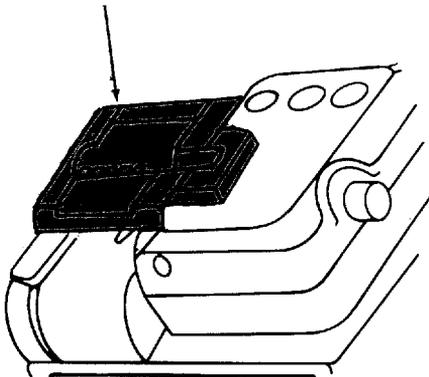
1. Push down STOP-START lever to FEED RETRACT position.

2. Depress latch, raise tape cover.



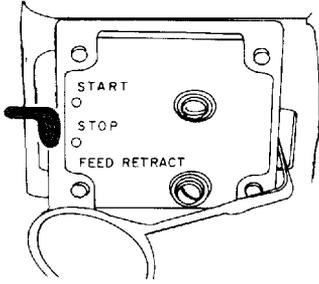
3. Insert a piece of perforated tape under the tape cover

TAPE COVER



4. Line up the first letter or symbol of the message next to the START arrow

5. Close tape cover

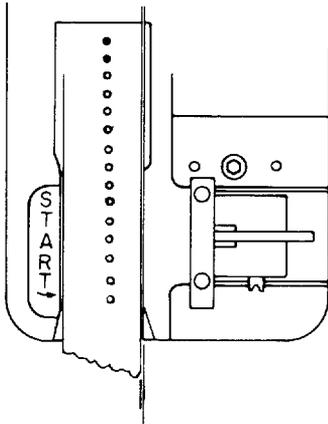


6. Raise START-STOP lever to the STOP position.

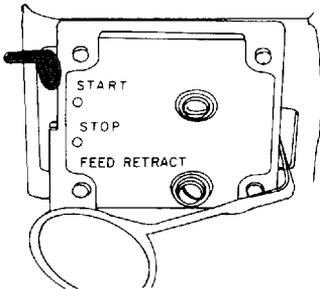
7. Pull tape back gently until tape clicks into position.

NOTE

Be sure FEED HOLES in the paper tape MATCH-UP with the PINS on the feed claw. DO NOT START BEFORE THIS IS DONE.



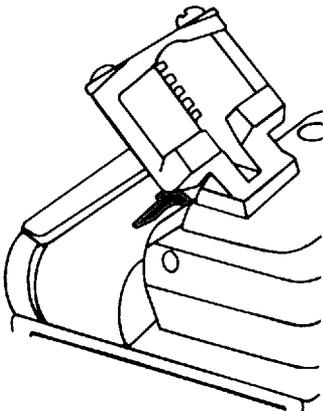
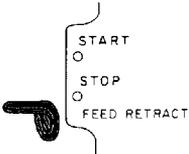
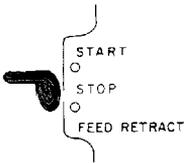
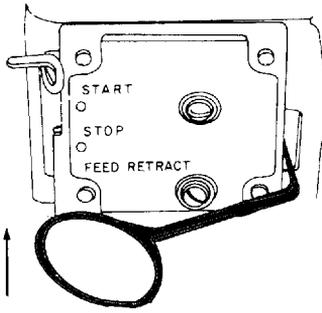
8. Place feed holes of tape on feed pins.



9. Raise the START-STOP lever to the START position.

10. Send five copies of the test message:

LTRS, THE QUICK BROWN FOX
JUMPED OVER THE LAZY DOG'S
BACK, LINE FEED, FIGS.
1 2 3 4 5 6 7 8 9 9 - \$! ' () /
: ; ? , .



- The following actions will stop the Transmitter-Distributor as the tape is being sent:

1. Raise the tight-tape lever

2. Move the START-STOP lever to the STOP position.

3. Move the START-STOP lever to the FEED RETRACT position.

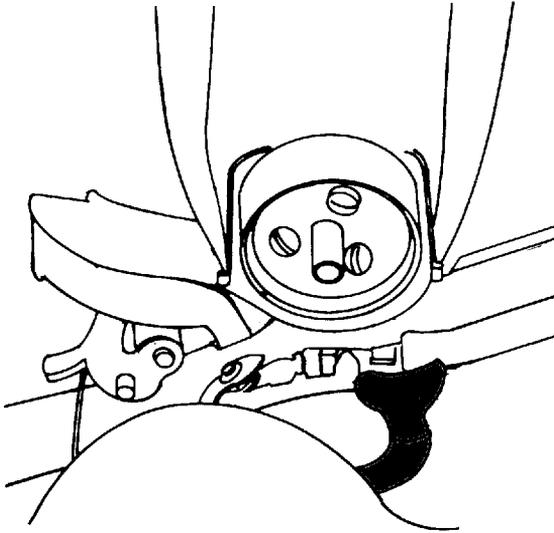
4. Pass the end of the message over the tape out lever. The T-D will stop automatically.

- Turn the SELECTOR switch to the type of operation needed - Duplex or Half Duplex (para 2-10).

NOTE

The set is now ready for operation.

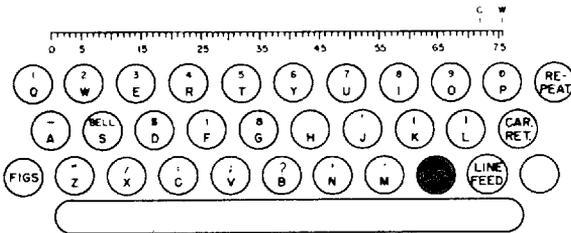
- c. To correct errors in tape do the following:



1. Press down the back-space lever until the error is over the punch portion of the punch and die assembly

NOTE

A red pointer is provided on the A, B and C models to indicate which code group is aligned with the punch and die assembly.



2. Press the LTRS key. This will cancel the wrong code combination that was perforated in the tape.

3. Repeat pressing the LTRS key until you cancel all code groups following the error.

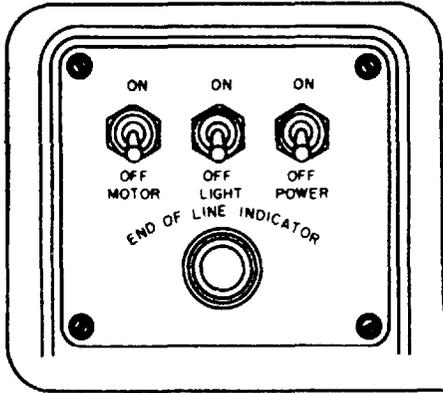
4. Now type the correct letter or symbol and continue your message.

● d. Stopping procedures
(All models).

1 push MOTOR switch to
OFF position.

2 Push LIGHT switch to
OFF position.

3 Push POWER switch to
OFF position.



Section IV. OPERATION IN UNUSUAL CONDITIONS

2-12. GENERAL

The teletypewriter-reperforator is designed to be operated in all types of temperature, humidity or weather conditions, but with some limits.

2-13. CLIMATE LIMITATIONS

a. Temperature Limits. ●

	FAHRENHEIT		CENTIGRADE	
	LOW	HIGH	LOW	HIGH
Equipment in use	+32°F	+132°F	0°C	+55.6°C
Equipment in storage	-80°F	+160°F	-62.2°C	+71.1°C

b. Minimum Barometric Pressure. ●

When operating 16.88 in. mercury (equal to 15,000 ft. altitude)
 In transportation 5.5 in. mercury (equal to 40,000 ft. altitude)

c. Other Conditions. ●

- The equipment can stand high humidity and excess moisture as in the tropics.
- Teletypewriter set AN/G GC-3(*) has an immersion-proof transportation and storage case.

**CHAPTER 3
MAINTENANCE INSTRUCTIONS**

	Page
Cleaning	3-2
Warning -Trichlorotrifluoroethane	3-3
Inspection and Service	3-1
Chad Bin	3-2
Inking Ribbon	3-2
Paper Tape Supply	3-1
Replacements	3-5
Fuses	3-5
Lamps	3-6

Section I. TROUBLESHOOTING

3-1. TROUBLESHOOTING INFORMATION

a. This information will be limited to the use of the operational test explained in chapter 2, section III, paragraph 2-11, Operating Checks and Procedures.

b. If the procedures cannot be solved by the operator through operator's preventive maintenance, a higher maintenance or repair level is needed.

c. Report any malfunction or equipment failure on the proper DA Form 2404 or refer to DA Pam 738-750.

Section II. MAINTENANCE PROCEDURES

3-2. INTRODUCTION

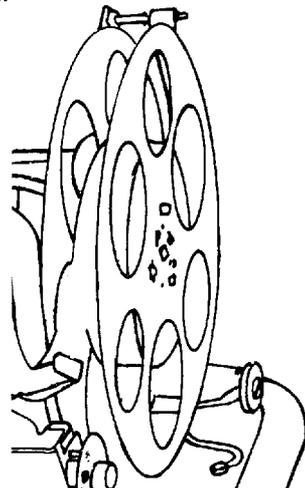
The operator of this teletypewriter-reperforator will be required to do certain maintenance tasks, such as inspect, service, adjust and/or make replacements in certain areas.

3-3. INSPECTION AND SERVICE

These items must be inspected and serviced:

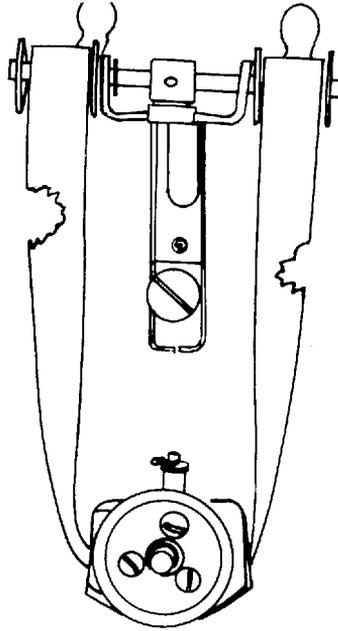
- a. Paper Tape Supply.
 - if new roll is needed, refer to chapter 2, section III, paragraph 2-8d, (Paper/Tape Installation).

Empty reel



b. Inking Ribbon.

- Check for tears or badly worn areas. If new inking ribbon is needed, refer to chapter 2, section III, paragraph 2-8e. (Inking Ribbon Installation).



c. Chad Bin.

- Check to see if Chad Bin needs to be emptied. If bin is full, follow direction for changing in chapter 2, section III, paragraph 2-8b. (Replace Chad Bin Cup).



d. Service - Cleaning and Checking.

- Inspect the exterior of the teletypewriter set, case, and teletypewriter table. The exterior surfaces should be free of dust, oil, grease, moisture, fungus, rust or corrosion.
- Remove dust and loose dirt with a clean cloth.

**WARNING**

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

- Remove grease, fungus and ground in dirt from equipment with TRICHLOROTRIFLUOROETHANE. Dampen a cloth with the cleaning compound.

CAUTION

Be careful when cleaning around plugs and jacks. Dirt forced into jacks will cause malfunction.

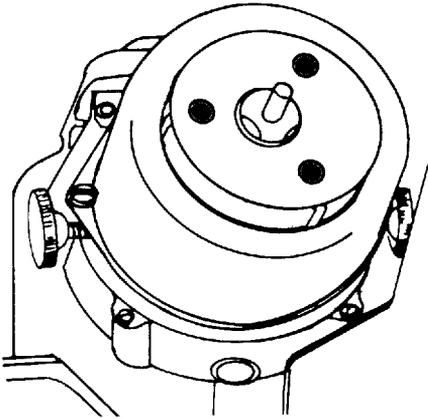
- Clean copyholder, control knobs, switches, keytops, and spacebar; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water. Mild soap may be used for more effective cleaning.
- Check to see if control knobs, switches, keytops or spacebar are loose, broken or damaged in any way.
- Check for loose nuts, bolts and screws.
- Check for cracks or breaks on cables and wire connectors.
- Store or cover items that are not in use.

3-4. ADJUSTMENTS

These items have to be adjusted before daily operation of your equipment.

a. Motor Speed.

- If you see the spots MOVING when you look through the tuning fork, adjustment of motor speed is necessary.

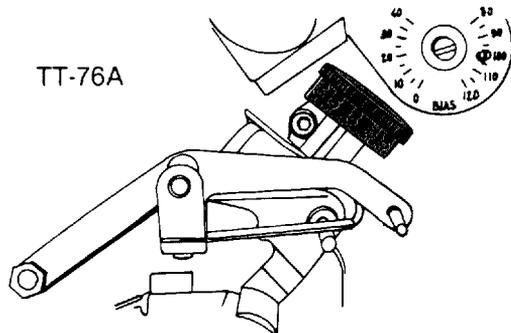
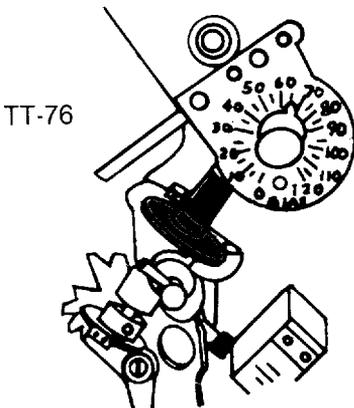


- Refer to chapter 2, section III, paragraph 2-9a, Checking and Adjusting Motor Speed.

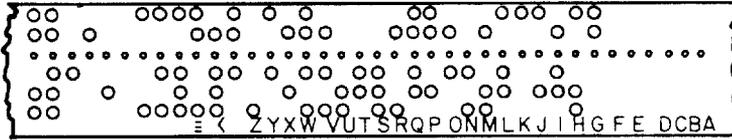
b. Rangefinder Dial.

CAUTION
DO NOT CHANGE the position of the rangefinder dial while the teletypewriter is IN OFF position. Teletypewriter MUST be typing when rangefinder dial is moved

- Check range (para 2-9c).



- Adjustments are necessary if errors show up in the printed copy.



- For adjustments - see chapter 2, section III, paragraph 2-9c, Checking and Adjusting Rangefinder.

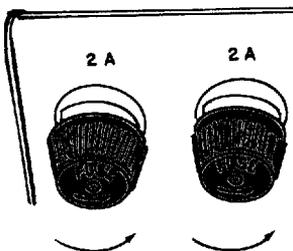
3-5. REPLACEMENTS

a. Fuses.

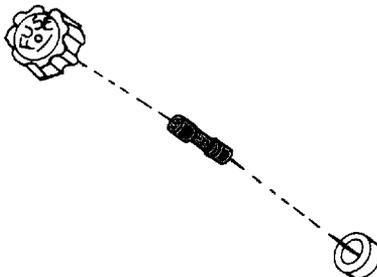
NOTE

All equipments are now supplied with 2-ampere fuses. Some equipments are still marked on the panel of the power supply as 1.6 ampere fuses. Do not use 1.6 ampere fuses. USE 2 AMPERE FUSES ONLY

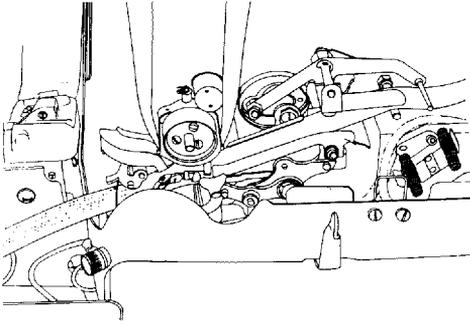
When fuses need replacement, follow these steps:



- Shut off MOTOR and POWER switches.
- Turn fuse holder cap (on Power Supply) counterclockwise to remove.
- Take out fuse.



Check fuse. If defective, metal bar in the fuse will be broken. Throw defective fuse away.



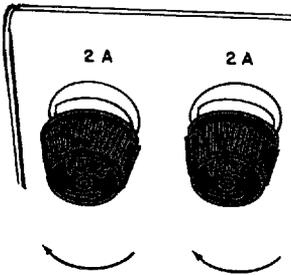
- Take a new fuse from the spare fuse clip located at the front center of your set.

NOTE

Obtain a new fuse from stock and place it in the empty spare fuse holder.



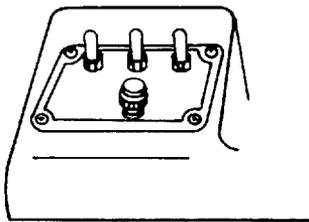
- Place new fuse into the fuse holder of the power supply.



- Replace fuse holder cap
Turn clockwise to tighten.

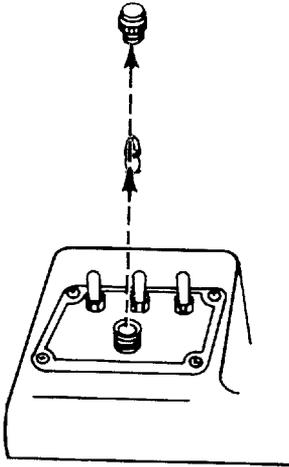
b. Lamps.

- Change the END OF LINE INDICATOR lamp as follows:

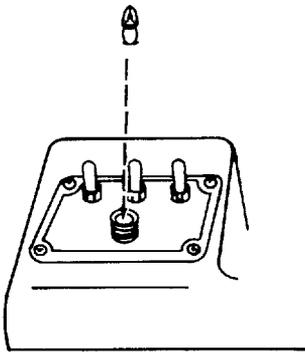


1. Unscrew Indicator lamp lens counterclockwise to remove.

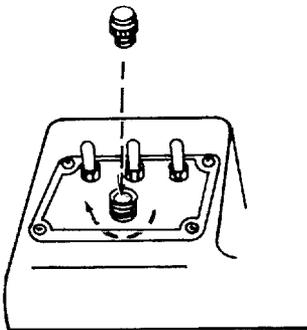
2. Carefully press and turn defective lamp counter-clockwise. Lamp will spring loose. Lift up.



3. Throw away defective lamp.



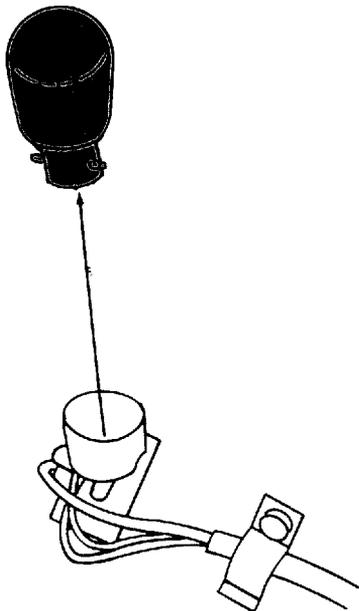
4. Place new lamp into lamp socket. Press and carefully turn clockwise, until it locks in place.



5. Replace lamp lens by screwing clockwise to tighten.

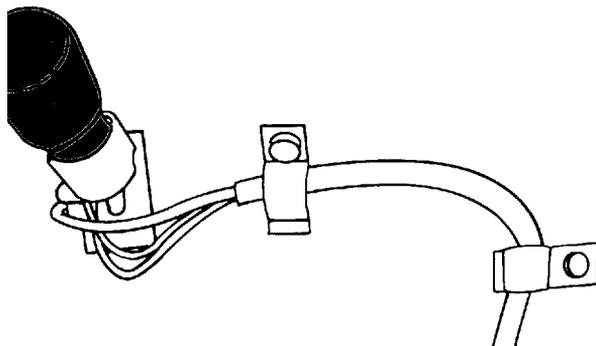
● Change copy light as follows:

1. Carefully press and turn defective lamp counter-clockwise. Lamp will spring loose.



2. Remove and throw away defective lamp.

3. Take copy light from spare copy light holder.



4. Place new lamp into lamp socket. Press and carefully turn clockwise until it locks in place.

NOTE

Obtain new copy light from stock and place it in the spare copy light holder.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms and publications that contain information on the operation and maintenance of Teletypewriter Sets AN/GGC-3(*) and AN/GGC-5(*). The Consolidated Index of Army Publications and Blank Forms, DA Pam 310-1 should be consulted frequently for revisions and new publications that pertain to this manual.

A-2. FORMS

Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Discrepancy in Shipment Report (DISREP)	SF 361
Report of Packaging and Handling Deficiencies	SF 364
Quality Deficiency Report	SF 368

A-3. TECHNICAL MANUALS

Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): Test Sets, Telegraph AN/GGM- 15(V)1 (6625-00-464-1702) and AN/GGM- 15(V)2 (6625-00-442-6131)	TM 11-6625-1688-12
Operator's, Organizational, Direct Support and General Support Maintenance Manual: Multimeter AN/USM-451	TM 11-6625-2593-14
Painting instruction for Field Use.	TM 43-0139
Administrative Storage of Equipment	TM 740-90-1

A-4. MISCELLANEOUS PUBLICATIONS

Equipment Inspection and Maintenance Worksheet,	DA Form 2404
Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
The Army Maintenance Management System (TAMMS)	DA Pam 738-750
First Aid for Soldiers	
Index of Components Lists (Sets, Kits and Outfits Components Lists) for Tool Equipment TE-111 (NSN 5180-00-408-1877)	SC 5180-91-CL-S13
Index of Components Lists (Sets, Kits, and Outfits Components Lists) for Tool Equipment TE-50-B	SM 11-4-5180-S05
Field Instructions for Painting and Preserving Communications Electronics Equipment	TB 43-0118
Safety Precautions for Maintenance of Electrical/Electronic Equipment	TB 385-4

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 teletypewriter set 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:

a. Section II. COMPONENTS OF END ITEM - This listing is for information 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.

b. Section III. BASIC ISSUE ITEMS - These are the minimum essential items required to place the teletypewriter set in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged BII must be with the teletypewriter set during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS

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

a. Column (1) - Illustration Number (Illus No). This column indicates the illustration in which the item is shown.

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

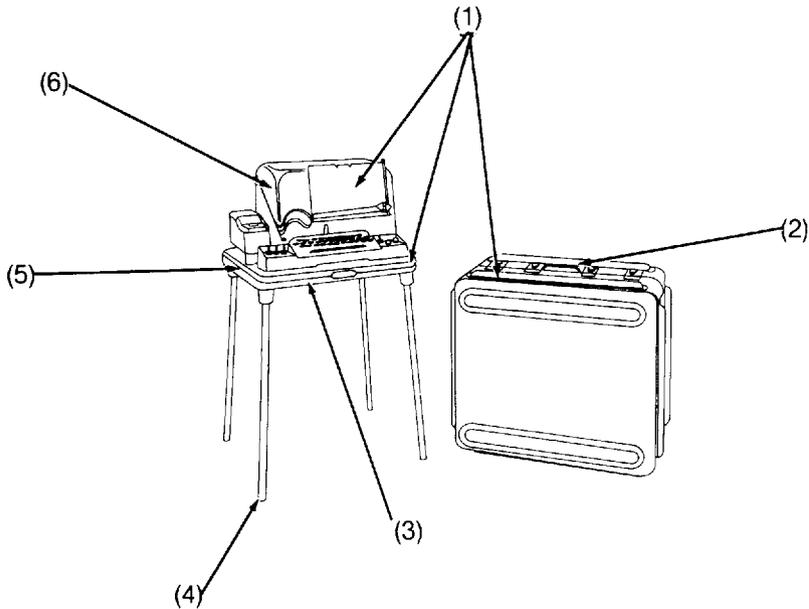
Section I. INTRODUCTION - Continued

c. Column (3) - Description - Indicates the National item name and, if required, a minimum description to identify and locate the item.

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

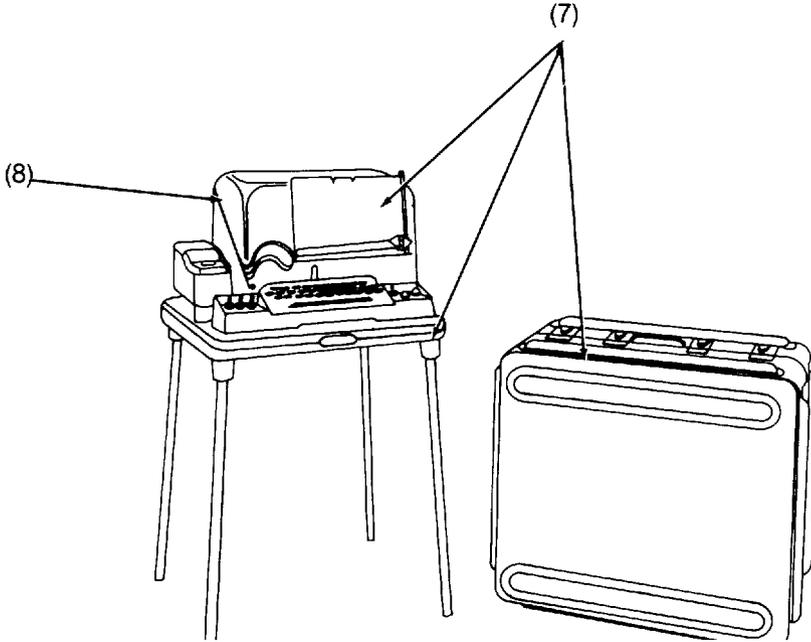
e. Column (5) - Quantity required (Qty rqr) - Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM



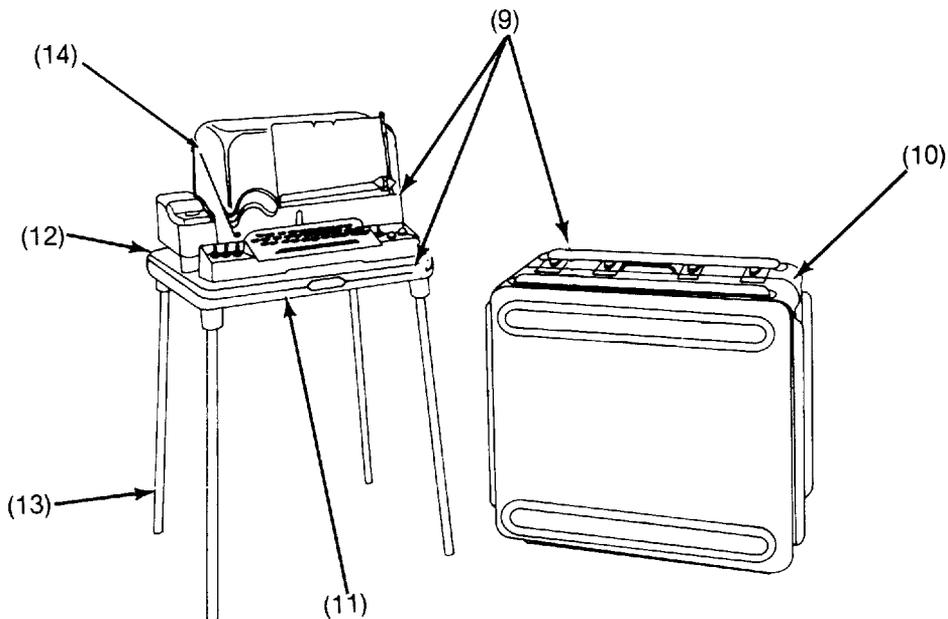
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
1	5815-00-503-3309	TELETYPEWRITER SET AN/GGC-3 CONSISTING OF:	EA.	1
2	5815-00-503-1647	CASE, TELETYPEWRITER REPERFORATOR TRANSMITTER CY-1110/GGC (Order No. 4683-PH-52 only)	EA	1
3	5815-00-503-2620	TABLE, TELETYPEWRITER FN-52/GGC, Consisting of:	EA	1
4	5815-00-392-7821	LEG: Sig dwg SM-B-157297	EA	4
5	5815-00-392-7812	TABLE, TOP-ASSEMBLY: Sig dwg SM-B-157281	EA	1
6	5815-00-503-2760	TELETYPEWRITER REPERFORATOR TRANSMITTER TT-76/GGC, high level operation, standard keyboard, English characters, uses 7/8 inch paper tape.	EA	1

Section II. COMPONENTS OF END ITEM . Continued



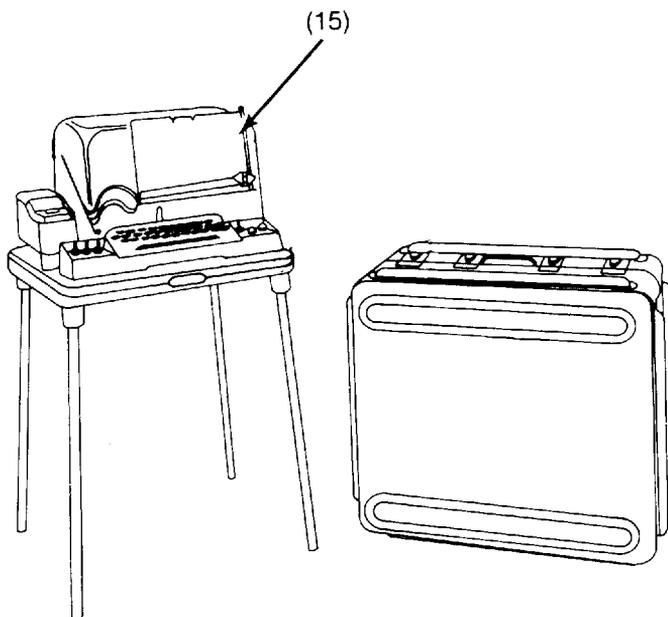
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
7	5815-01-012-8772	TELETYPEWRITER SET AN/GGC-53 NOTE AN/GGC-53 is identical to AN/GGC-3 and consists of the same equipment, except that Teletypewriter-Reperforator Transmitter TT-699/GGC is used instead of TT-76/GGC.	EA	1
8	5818-01-012-8446	TELETYPEWRITER REPERFORATOR TRANSMITTER TT-699/GGC NOTE Teletypewriter Reperforator Transmitter TT-699/GGC is identical to TT-76/GGC, except that it contains circuits for low level operation.	EA	1

Section II. COMPONENTS OF END ITEM - Continued



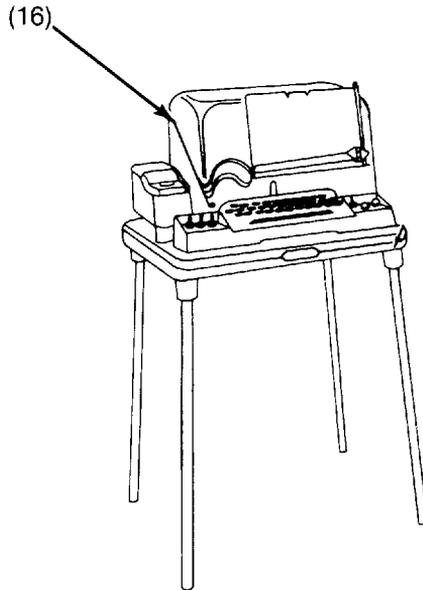
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
9	5815-00-581-9751	TELETYPEWRITER SET AN/GGC-3A CONSISTING OF:	EA	1
10	5815-00-537-7906	CASE, TELETYPEWRITER REPER- FORATOR-TRANSMITTER CY- 1110/GGC	EA	1
11	5815-00-543-1353	TABLE, TELETYPEWRITER FN-108/ GGC Consisting of:	EA	1
12	5815-00-614-5238	FRAME, TABLE TOP: Kleinschmidt p/n 59505A	EA	1
13	5815-00-392-7821	LEG: Sig dwg SM-B-157297	EA	4
14	5815-00-553-6061	TELETYPEWRITER REPERFORATOR -TRANSMITTERS TT-76A/GGC, TT- 76B/GGC or TT-76C/GGC High level operation, standard keyboard, "English characters, uses 7/8 inch paper tape.	EA	1

Section II. COMPONENTS OF END ITEM - Continued



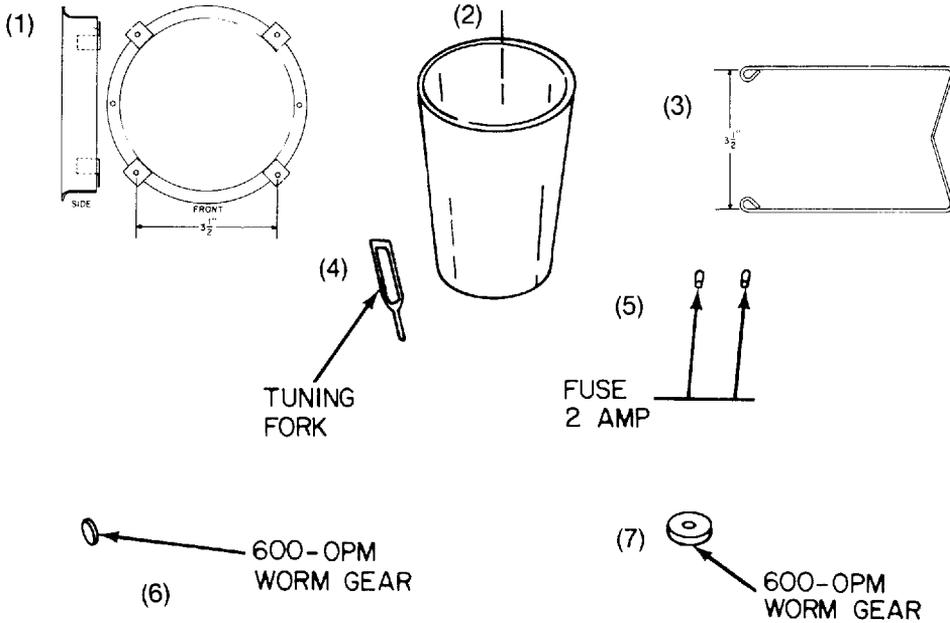
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
15	5815-01-017-0956	TELETYPEWRITER SET AN/GGC-53A NOTE AN/GGC-53A is identical to AN/GGC-3A and consists of the same equipment, except that teletypewriter reperforator transmitter TT-699A/GGC, TT-699B/GGC or TT-699C/GGC are used instead of TT-76A/GGC, TT-76B/GGC or TT-76C/GGC.	EA	1

Section II. COMPONENTS OF END ITEM - Continued



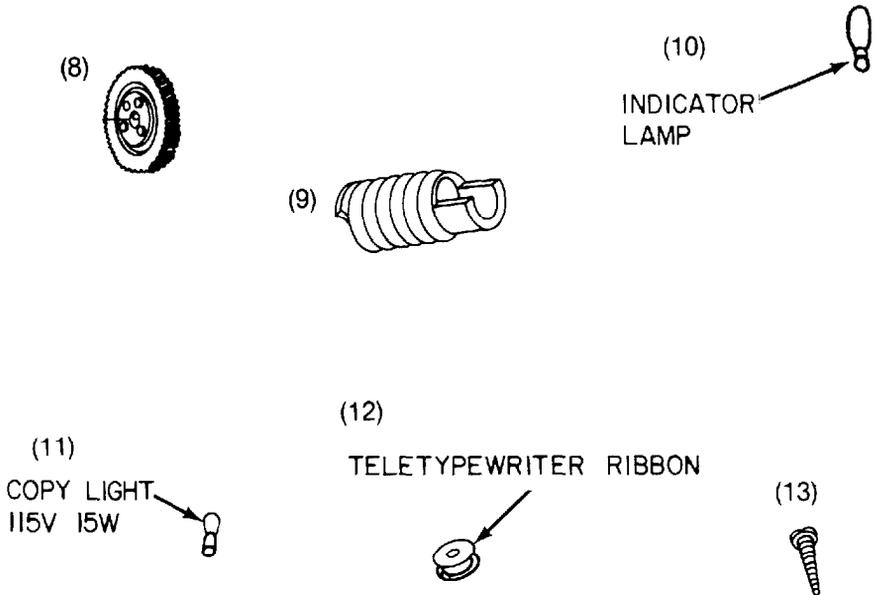
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
16	5815-01-017-9166	<p>TELETYPEWRITER REPERFORATOR -TRANSMITTER TT-699A/GGC, TT- 699B/GGC, or TT-699/GGC.</p> <p style="text-align: center;">NOTE</p> <p>Teletypewriter Reperforator-Trans- mitters TT-699A/GGC, TT-699B/GGC or TT-699C/GGC are identical to TT-76A/GGC, TT-76B/GGC, or TT- 76C/GGC, except that they contain circuits for low level operation.</p>	EA	1

Section III. BASIC ISSUE ITEMS



(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
1	5815-00-392-7822	BRACKET ASSEMBLY, KLEINSCHMIDT p/n 52656A NOTE Bracket assembly not required for TT-76(*) when part of sets AN/GGC-3(*).	EA	1
2	5815-00-392-7813	CHAD BIN: Sig dwg SM-B-157283	EA	1
3	5815-00-219-7020	CLIP: Kleinschmidt p/n 53442	EA	1
4	5815-00-224-9717	FORK, TUNING: Sig dwg SC-DL- 70237 (mounted in cover)	EA	1
5	5920-00-581-4144	FUUSE, 2A, 250v p/n 20455	EA	2
6	5815-00-203-1678	GEAR, WORM: 60 wpm, Sig dwg SC-B-69681 (installed in equipment)	EA	1
7	5815-00-203-1327	GEAR, WORM: 100 wpm, Sig dwg SC-B-70842 (mounted in equipment)	EA	1

Section III. BASIC ISSUE ITEMS - Continued



(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION USABLE (FSCM) AND PART NUMBER ON CODE	(4) U/M	(5) QTY REQD
8	5815-00-378-5593	GEAR, WORM WHEEL: 60 wpm Kleinschmidt, p/n 50352A (installed in equipment)	EA	1
9	5815-00-351-7944	GEAR, WORM WHEEL: 100 wpm, Sig dwg SC-B-70478 (mounted in equipment)	EA	1
10	6240-00-155-8706	LAMP, 6-8v, 0.15A p/n 20791	EA	1
11	6240-00-617-1717	LAMP, incandescent, 115v, 15w p/n 20701	EA	1
12	7510-00-082-2648	RIBBON, TELETYPEWRITER: Fed Spec DDD-R-311d, Type 1, grade 1, Class 1 (installed in equipment)		1
13	5305-00-206-5877	SCREW, TAPPING, THREAD FORMING: Kleinschmidt p/n 10302	EA	1
<p>NOTE</p> <p>Thread forming tapping screw not required for TT-76(*)/GGC when part of AN/GGC-3(*)</p>				

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1 . SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the teletypewriter set. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class v, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Usable cleaning compound, item 3, App. D").

b. Column 2- Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

c. Column 3- National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4- Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column 5- Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

**Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST -
Continued**

(1) ITEM 10.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	c	7510-00-082-2648	RIBBON, PRINTING, TELETYPE- WRITER type 1, grade A, class 1 DDD-R-311d	ROLL
2	c	7530-00-634-6237	TAPE, TELETYPEWRITER, PERFORATOR UU-T-120	ROLL
3	c	6850-00-105-3084	TRICHLOROTRIFLUOROETHANE cleaning compound, 1 pint can	OZ
4	c	8305-00-267-3015	CLEANING CLOTH	YD
5	c	5350-00-598-5908	FINE SANDPAPER	PKG

GLOSSARY

- CHAD BIN.** Container to hold punched out sections of the perforated tape.
- CHARACTERS.** English letters or figures on the keyboard of a teletypewriter.
- DUPLEX OPERATION.** (See FULL DUPLEX.)
- FEED.** To move tape into a position.
- FULL DUPLEX.** Allowing messages to be sent and received at the same time.
- HALF DUPLEX.** Allowing messages to be sent or received, but not at the same time.
- JACK.** Where a plug makes an electrical connection.
- LOWER CASE.** Letters on lower part of keys of teletypewriter keyboard.
- MARKING IMPULSES.** Equal length elements making up a code with spacing elements,
- NEUTRAL OPERATION.** Current flows one way; marking is current, spacing is no current.
- PERFORATED.** Having holes punched in.
- POLAR OPERATION.** Current flows two ways; marking is current in one direction and spacing is current in the other direction (opposite polarity).
- RUN CLOSED.** Selector, printing, and punching mechanisms remain still.
- RUN OPEN.** Selector, printing and punching mechanisms are in motion continuously.
- SPACING.** Equal length elements making up a code with marking elements.
- SLACK.** To make tape loose or leave a loop in.
- SYNCHRONIZE.** Doing something together by arranging time or method before hand.
- TEMPLATE.** A pattern used as a guide.
- THREAD.** To move tape through a certain path.
- UPPER CASE.** Figures or characters on the upper part of keys of teletypewriter keyboard.

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 PUBLICATION DATE: 23 Jan 74
 PUBLICATION TITLE: Radar Set AN/PRC-76

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			<p>Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.</p> <p>REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.</p>
3-10	3-3		3-1	<p>Item 5, Function column. Change "2 db" to "3db."</p> <p>REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.</p>
5-6	5-8			<p>Add new step f.1 to read, "Replace cover plate removed in step e.1, above."</p> <p>REASON: To replace the cover plate.</p>
		FO3		<p>Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."</p> <p>REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.</p>

TEAR ALONG REPORTED LINE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER
 SSG I. M. DeSpirito 999-1776

SIGN HERE

DA FORM 2028-2
 1 JUL 75

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PUBLICATION NUMBER TM 11-5815-238-10		PUBLICATION DATE 18 July	PUBLICATION TITLE Teletypewriter and Teletypewriter Reperforator-Transmitter
BE EXACT PIN-POINT WHERE IT IS			
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:			
PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER			SIGN HERE

TEAR ALONG PERFORATED LINE

DA FORM 2028-2
1 JUL 79

PREVIOUS EDITIONS ARE OBSOLETE

P.S.-IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

Commander
US Army Communications-Electronics Command
and Fort Monmouth
ATTN: DRSEL-ME-MP
Fort Monmouth, New Jersey 07703

TEAR ALONG PERFORATED LINE

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

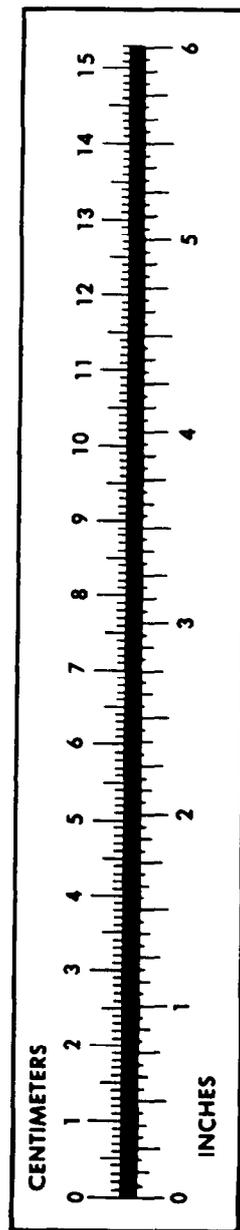
TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



PIN: 053688-001