

Military
Telecommunications
Equipment

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TABLE OF CONTENTS

Tactical, Send-Receive and Receive-Only Page Printers	1
(AN/PGC-1, AN/TGC-7(*), TT-4C/TG, TT-335/TG and TT-537/G)	
Tactical, Keyboard and Tape Send-Receive Sets	2
(AN/GGC-3A and TT-76C/GGC)	
Send-Receive and Receive-Only Page Printers	3,4
AN/FGC-20(*), -21(*), -64, -66, -67(*), -80, AN/UGC-4, -29(*) and TT-259/FG	
Variable Mode Page and Tape Send-Receive Sets	5,6,7
(AN/FGC-25(*), -26(*), -52(*), -57, -68, -140, AN/GGC-16, AN/UGC-30(*), -39)	
Paper Winder	8
(RL-236/UG)	
Tape Printing Reperforators	9
(TT-107(*)/FG, TT-108/FG, TT-109/FG, TT-345/FG, TT-346/FG)	
Teletypewriter, Typing-Reperforator-Transmitter-Distributor	10
(Model 117)	
Tape Transmitters	11
(TT-122A/FG, TT-123A/FG, TT-235/FG)	
Markable Distributor-Transmitter	12
(TT-174A/FG)	
Semiautomatic Send-Receive Monitor Tape Relays	13
(AN/TGC-5(*) and AN/TGC-12(*)	
Mobile Semiautomatic Distributor-Transmitter	14
(AN/GGC-9)	
Multi-Channel Semiautomatic Send-Receive Monitor Tape Relays	15
(AN/FGC-70(*)	
Automatic Switching Center	16
(AN/FGC-30)	
Distributor-Transmitter, Teletypewriter	17
(AN/UGC-72(V))	
Reperforator	18
(AN/UGC-73(V))	
Teletypewriter	19
(AN/UGC-74(V)*)	
Teletypewriter Sets	20,21
(AN/UGC-75(V)*, -76(V)*)	
Cross Index, Teletypewriter Sets - Components	
Cross Index, Components - Teletypewriter Sets	
(*) Indicates more than one model.	

Tactical, Send-Receive and Receive-Only Page Printers

AN/PGC-1
AN/TGC-7
TT-4C/TG

TT-173/TG
TT-335/TG
TT-537/G

TELETYPEWRITER SET AN/PGC-1

Teletypewriter Set AN/PGC-1 consists of a teletypewriter TT-4C/TG and a case CY-694A/PGC-1. The case is constructed of lightweight metal, reinforced with wooden battens. It can be used as a container for the teletypewriter, or as a pedestal to support the teletypewriter at a comfortable height. The base of the teletypewriter contains lashing hooks for securing it with rope to the top of the case, or to a back pack for portage. Electrical power for operating the teletypewriter in a forward area can be provided by a gasoline driven generator. Note: The generator and back pack are not included in an AN/PGC-1 procurement.

TELETYPEWRITER AN/TGC-7(*)

Teletypewriter AN/TGC-7(*) is similar to AN/PGC-1 except that it is equipped with a modified keyboard and printer for European use.

TELETYPEWRITER TT-4C/TG

Teletypewriter TT-4C/TG is a rugged lightweight portable page printing receiver and keyboard transmitter, engineered for use in tactical communications systems over standard signal channels (dc wire lines, voice frequency, carrier or radio teletypewriter systems). The teletypewriter can be used at standard operating speeds between 60 and 100 words per minute. Alternate gear sets are available to permit on-site speed changes within this range. The equipment is normally used in neutral circuits; the keyboard, however, can be readily adapted for polar transmission. When adapted for polar transmission, received polar signals are fed via an external polar relay, or such, before being applied to the receiver. Two



or more equipments can be interconnected, for operation with each other without the need for intermediate line modifying equipment. The TT-4C/TG features figures "H" motor stop and figures "S" signal bell. It also includes a line break switch, signal line current adjustment, and a manual carriage positioning knob. It includes a waterproof cover which, when latched in places, makes the unit buoyant in water.

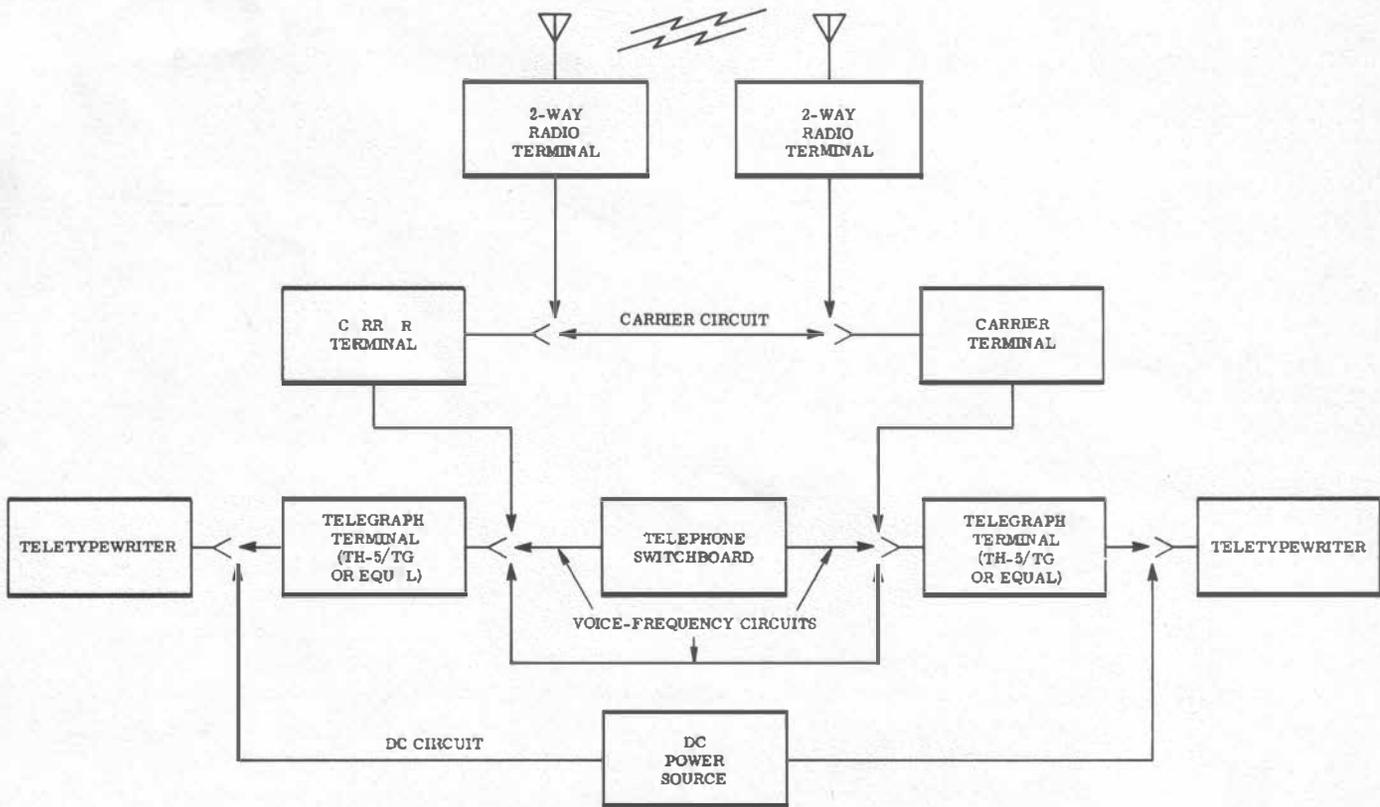
TELETYPEWRITER TT-335/TG

Teletypewriter TT-335/TG has electrical heating elements in the frame in addition to all the features described for the TT-4C/TG. The heating elements provide quick warm-up to operating temperature after the equipment has been exposed to low temperature such as might be encountered in an air drop or other exposure.

TELETYPEWRITER TT-537/G

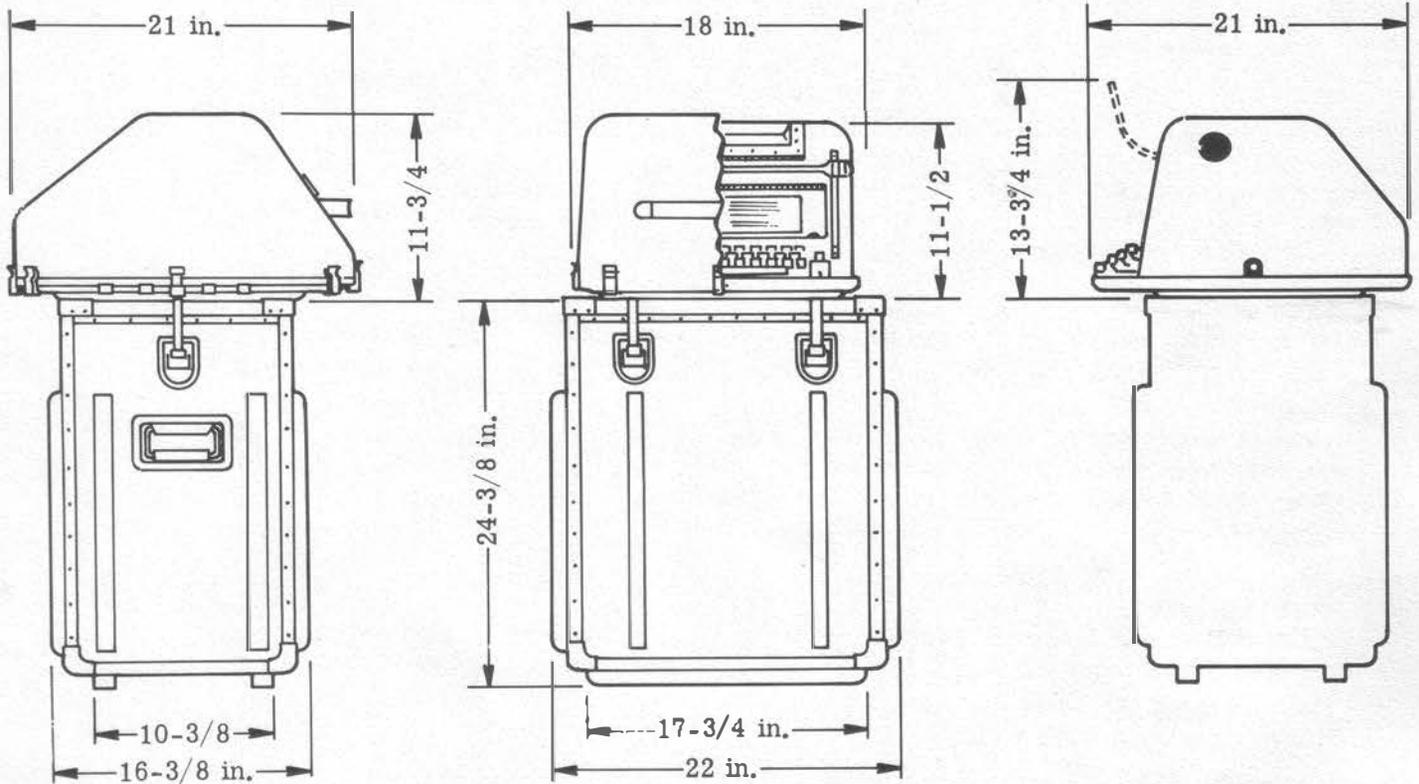
Teletypewriter TT-537/G is intended primarily for receive-only operation in a field artillery gun direction computer system (FADAC); however, the receive and transmit features of the TT-335/TG (described above) have been retained. The TT-537/G also features a universal electrical interface to permit application in either a low voltage (6 volt nominal) FADAC system, or conventional high level (120 volt nominal) neutral communications system. The signal line, in either case, is connected directly to the teletypewriter; no switching or wiring changes are neces-

sary. A jack, in parallel with a terminal strip, permits either phone plug or spade-lug type of signal line terminations. The equipment also includes the following: End-of-line automatic carriage return and line feed to inhibit the loss, or overprinting, of vital information; carriage and platen locks, which are accessible with the dust cover installed (these protect mechanism during hard traveling). Cable connectors and paper roll mountings are ruggedized to enable the teletypewriter to be shut down and stowed quickly when the carrier vehicle is to be relocated.



TYPICAL APPLICATION BLOCK DIAGRAM

TECHNICAL CHARACTERISTICS



WITH IMMERSION COVER ← | → WITHOUT IMMERSION COVER

RELEVANT LITERATURE:
 Manufacturing Specification
 ... MIL-T-14579(SigC).
 Military Manuals
 ... See ordering information.

PRINTING:
 English, standard communications symbols.
 AN/TGC-7(*)
 ... 69 characters per line.
 AN/PGC-1
 ... 72 characters per line.

MOTOR POWER REQUIREMENTS:
 TT-4C/TG
 ... 160 w., 105-125 vdc, or ac 50-60 Hz, single phase.
 TT-335/TG and TT-537/G
 ... 200 w., 120-130 vac, 400 ± 4 Hz, single phase.

OPERATIONAL SPEEDS AVAILABLE
 (Using Alternate Gear Sets):
 Per Minute
 ... Words 60 66 75 or 100
 ... Operations 368.1 404 460 or 600

PAPER CAPACITY:
 Friction fed standard single and multicopy roll,
 8-1/2 inches wide.

SIGNALING CHARACTERISTICS:
 Types of Signals (Battery Not Supplied)
 ... High Level - Transmit and receive, 105 thru 125 vdc, neutral 20 or 60 ma. dc.
 ... Low Voltage (TT-537/G) - Receive only, 4.85 thru 7.15 vdc, neutral, either positive or negative with respect to ground.

Type of Code
 ... Baudot, five data bits, plus start bit and stop element.

Code Units per Character
 ... Received - 7.00 units, or more.
 ... Transmitted - 7.42 units.

Distortion
 ... Transmitted - Not more than 5 percent.
 ... Tolerated by receiver - Printer is equipped with a range adjustment and calibrated scale to compensate for bias distortion up to 40 percent, and end distortion up to 35 percent.

Nominal Operating Range by Direct Wire
 ... High Level - Up to 25 miles.
 ... Low Voltage (TT-537/G) - Up to 8 feet.

FINISH:
 Semi-gloss olive drab per MIL F. 14072, P711.

TEMPERATURE AND PRESSURE LIMITS
 (Tests per MIL-STD-169 and 170):

Equipment	Pressure Inches of Mercury	Equivalent Altitude
TT-4C/TG and TT-173(*)/FG Equipment in use ... +32°F minimum		
... +132°F maximum	16.88	15,000
Equipment in storage ... -80°F through +160°F	5.8	40,000
TT-335/TG and TT-537/G Equipment in use ... -25°F minimum	16.88	15,000
Equipment in storage ... -60°F through +160°F	5.8	40,000

WEIGHT (Less Paper and Cable Assembly):
 Case 43-1/4 lbs.
 Teletypewriter in immersion cover 53-3/4 lbs.
 Teletypewriter 48-1/2 lbs.

DIMENSIONS (In Inches):

	Height	Width	Depth
Case	24-3/8	16-3/8	22
Teletypewriter in immersion cover	11-3/4	18	21
Teletypewriter			
Cover closed	11-1/2	18	21
Cover open	13-3/4	18	21

ORDERING INFORMATION

ITEM NAME	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.	WHERE USED				
					AN/TGC-7(*)	AN/PGC-1	TT-4C/TG	TT-335/TG	TT-537/G
Teletypewriter Set AN/TGC-7(*)	1			5815-503-2651	x				
Teletypewriter Set AN/PGC-1	1		90427A-08.00	5815-198-5963		x			
Bag, Accessories, CW-356/U		1	57090	5815-594-0000	x	x			
Special Purpose Cable Assembly CX-1200/U (GFP)	1		51784A	5995-170-8780	x	x			
Special Purpose Cable Assembly CX-1201/U (GFP)	1		51786A	5995-170-8773	x	x			
Power Cable Assembly CX-1202/U (GFP)	1		51788A	5995-170-8775	x	x			
Signal Cable	1		51908	5995-089-4251					x
Teletypewriter TT-4C/TG	1		90427A-07.00	5815-198-4438		x	x	x	
Teletypewriter TT-173(*)/TG	1			4TTT-173	x				
Teletypewriter TT-335/TG	1		90128A	5815-878-8449				x	
Teletypewriter TT-537/G	1		90133A	5815-926-7378					x
Bag Accessories (Line Cable)	1			5815-869-3647					x
Cover, Teletypewriter (Immersion)	1			5815-682-8785	x	x	x	x	x
Fuse, Cartridge, Type FO2GR125A, 1/8 Amp.	1	1		5920-356-2188	x	x	x	x	x
Fuse, Cartridge, 2 Amp., Slow-Blow	1	1		5920-581-4144					x
Shaft Assembly (Paper Roll)	1			5815-356-3371	x	x	x	x	x
Heating Element	1			5815-802-2652				x	x
Heating Element	1			5815-802-2653				x	x
Heating Element	1			5815-819-4635				x	x
Case CY-694A/PGC-1	1		51325A	5815-407-7394	x	x	x	x	
Fuse, 1/8 Amp., 250 Volt	1	6	20451	5920-356-2188	x	x	x	x	
Fuse, 1.6 Amp., 125 Volt (Slow-Blow)	1	6	20455	5920-224-5269	x	x	x	x	
Fuse, Cartridge	1	6	20474	5920-296-1520					x
Fuse, Cartridge, Type FO2B125V3A	1	5	20481	5920-131-9821					x
Gear, Worm, 60 WPM		1*	50350	5815-203-1678		x	x		
Gear, Spur, 60 WPM		1*	50352A	5815-378-5593		x	x		
Gear, Worm, 60 WPM		1*	64863	5815-892-4574				x	x
Gear, Spur, 60 WPM		1*	64862A	5815-892-4572				x	x
Gear, Worm, 66 WPM	1				x				
Gear, Spur, 66 WPM	1				x				
Gear, Worm, 100 WPM		1*	50596	5815-203-1327		x	x		
Gear, Spur, 100 WPM		1*	50597A	5815-351-7944		x	x		
Gear, Worm, 100 WPM		1*	64933	5815-892-4573				x	x
Gear, Spur, 100 WPM		1*	64932A	5815-892-4571				x	x
Lamp, 115V, 10W	1	1	23213	6240-892-6102		x	x	x	x
Paper, Teletypewriter (Roll 5 x 8-1/2 in.)	1	2	10931	7530-281-2694		x	x	x	x
Ribbon, Teletypewriter (Black)	1	1	10901	7510-511-6690	x	x	x	x	x
Spool, Ribbon, Empty	1		10900	5815-356-3227	x	x	x	x	x
Tuning Fork, 180 V.P.S.	1		50996A	5815-224-9717	x	x	x	x	
Technical Manual TM 11-5815-206-12 with Changes	2			NSNR (GFP)	x	x	x	x	x
Technical Manual TM 11-5815-206-35 with Changes	2			NSNR (GFP)	x			x	x
Supplement (23 June 1954) To TM 11-2234				NSNR (GFP)	x				

* Indicates alternate gear sets.

Tactical, Keyboard and Tape Send-Receive Sets

AN/GGC-3A and TT-76C/GGC

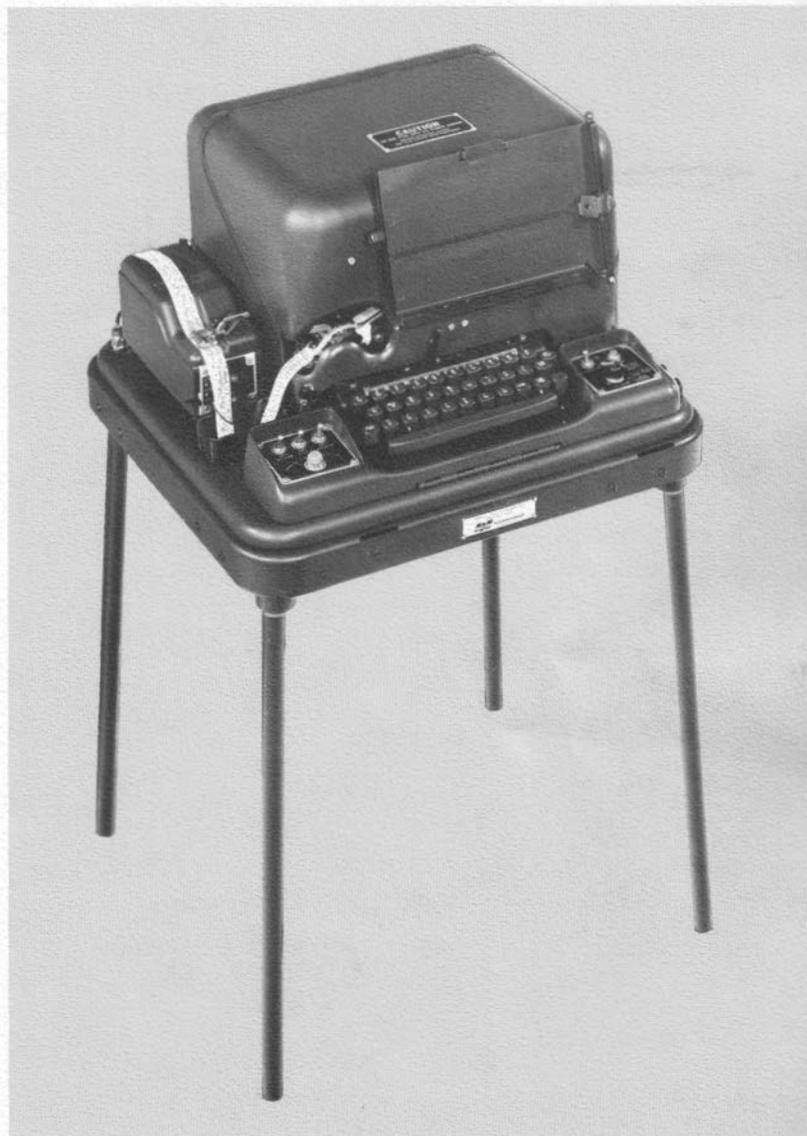
TELETYPEWRITER SET AN/GGC-3A

Teletypewriter Set AN/GGC-3A consists of a reperforator transmitter TT-76C/GGC, table FN-52/GGC with removable legs, and a watertight case CY-1110/GGC. The entire equipment, when stowed in the case, forms a package which can float in water, and it is engineered for the type of rough handling encountered during amphibious landings or other tactical applications.

The set may be used in field, or fixed stations, to send and receive over standard communications channels, i.e., direct current (dc) wire lines, carrier or radio systems in association with usual line terminal equipment such as telegraph terminal TH-5/TG, line unit BE-77-A, or similar line terminating devices.

REPERFORATOR-TRANSMITTER TT-76C/GGC

Reperforator-Transmitter TT-76C/GGC combines a rugged reperforator which interprets baudot coded messages in punched and printed form on paper tape, with a keyboard transmitter and a tape reading transmitter distributor (TD). The TT-76C/GGC can be used in a local or semi-local loop, using the keyboard and reperforator to cut tape on a send-receive half duplex or full duplex (simultaneous) basis. Note: A power supply (included in the TT-76C) provides battery for local loop, and the local loop portion of semi-local operation, but not for the external signal line. In full duplex systems, the reperforator, TD and keyboard can be used independently, or the TD and reperforator can be used in unison, as a tape relay, to redistribute incoming messages as they are received. The keyboard can be used to transmit to the signal line and/or used in a semi-local loop with the reperforator to prepare punched tape while the TD is operating independently.



Controls and indicators include a range adjustment for counteracting distortion and asynchronization between the reperforator and the sending station, character counter, figures and letters shift, visible and audible end-of-line indicators, low tape alarm, figures "S" signal bell, copy holder, tape back space, motor switch, copy lights and line break, manually controlled keyboard lock, tape feed, carriage return and line feed, and monitor jacks for keyboard, TD and reperforator.

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Manufacturing Specification
 ... MIL-R-11177.
 Military Manual
 ... TM 11-5815-283-12

PRINT SYMBOLS:
 English - Standard communications.

PRINTED CHARACTERS PER LINE:
 Standard equals 72, weather equals 76.

FINISH:
 Olive drab per MIL F. 14072, P711.

DIMENSIONS AND WEIGHT (Inches and Pounds)

	Height	Width	Depth	Weight
Teletypewriter	12	21	18	45
Table	26-1/4	22	19	15
Case	18	27-3/16	24	30

... Space required for installed equipment (less case) - 8 cubic feet.
 ... Total weight with full roll of tape - 97 lbs.

MOTOR POWER REQUIREMENTS:
 150 w., 115 or 230 vac, 50 to 60 Hz, single phase.

SIGNALING CHARACTERISTICS:
 Types of Signals (Battery not supplied)
 ... Received - Neutral (20 and 60 ma dc), and polar (15 thru 30 ma dc).
 ... Transmitted - Neutral only, 20 and 60 ma.

Type of Code
 ... Baudot, five data bits, plus start bit and stop element (7.42 units).

Distortion
 ... Transmitted - Not more than 5 percent.
 ... Tolerated by receiver - Reperforator has a range adjustment and calibrated scale to compensate for bias distortion up to 40 percent, and end distortion up to 35 percent.

Dc Wire Range (60 ma)
 ... 25 miles at 60 WPM.
 ... 15 miles at 100 WPM.

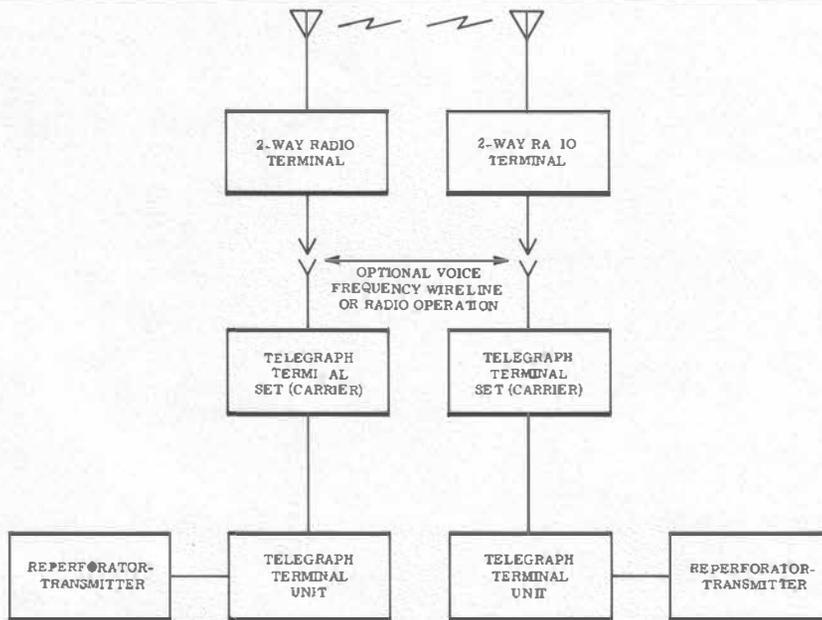
OPERATIONAL SPEEDS AVAILABLE

Per Minute	Words...	60	66	75	or	100
Operations...		368.1	404	460		600

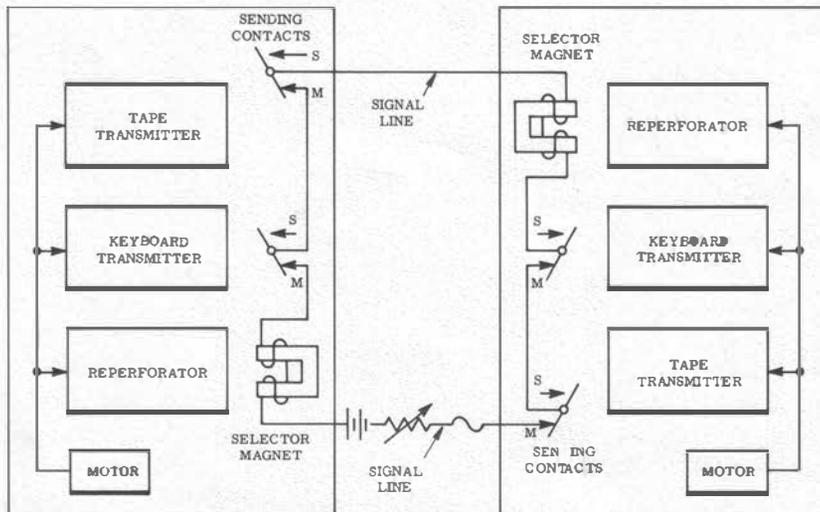
TAPE SPECIFICATIONS:
 Size... Standard roll, 7/8-inch or 11/16-inch.
 Capacity... 5-1/3 hours at 60 WPM.
 ... 3-1/6 hours at 100 WPM.

TEMPERATURE AND PRESSURE LIMITS
 (Tests per MIL-STD-169 and 170)

Temperature	Pressure	
	Inches of Mercury	Equivalent Altitude
Equipment in use		
... +32°F (0°C) thru +132°F (+55°C)	16.88	15,000
Equipment in storage		
... -80°F (-62.2°C) thru +160°F (+71.1°C)	5.5	40,000

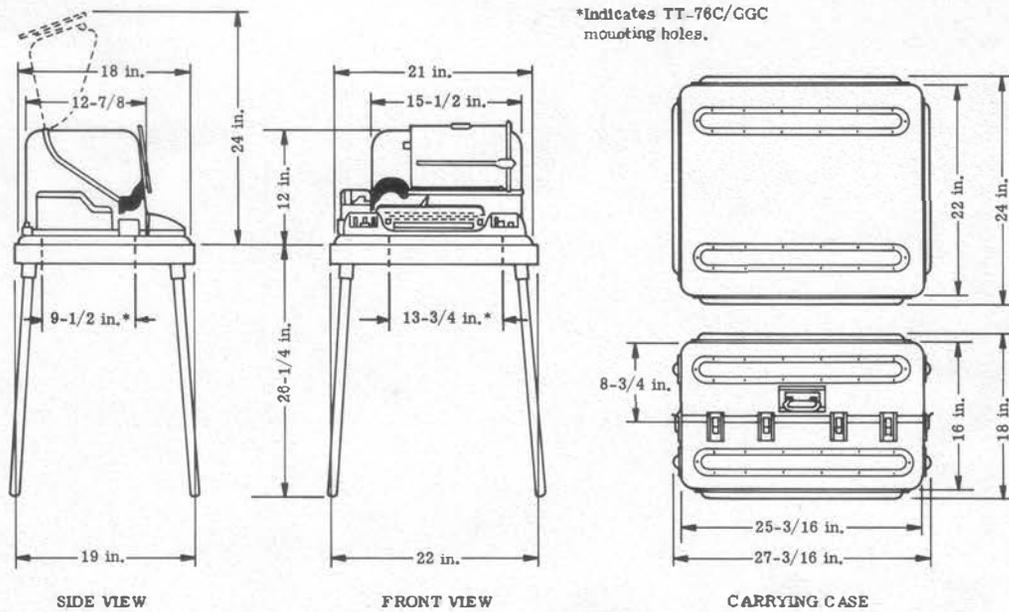


TYPICAL APPLICATION BLOCK DIAGRAM



TYPICAL APPLICATION, HOOK-UP SCHEMATIC

TECHNICAL CHARACTERISTICS



ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

END ITEM	FED. STOCK NO.	MAJOR COMPONENTS	FED. STOCK NO.
Teletypewriter Set AN/GGC-3A	5815-503-3309	Reperforator-Transmitter	5815-553-6061
		Teletypewriter TT-76C/GGC	5815-543-1353
		Table, Teletypewriter FN-108/GGC	5815-537-7906
		Case, Teletypewriter-Reperforator	
		Transmitter CY-1110/GGC	
		Technical Manual	
		TM 11-5815-238-12	GFP
Reperforator-Transmitter		Technical Manual	
Teletypewriter TT-76C/GGC	5815-553-6061	TM 11-5815-238-12	GFP

FUNCTIONAL PARTS

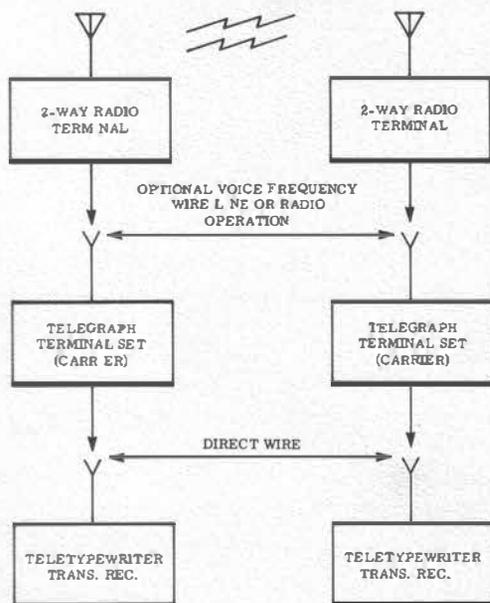
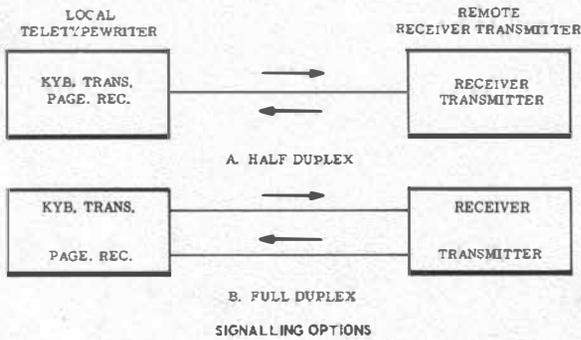
ACCESSORIES	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.	WHERE USED	
					TT-76C/GGC	AN/GGC-3
Chad Bin	1		52628A	5815-392-7813	x	x
Fork, Tuning	1		50996A	7720-224-9717	x	x
Gear, Worm, 600 OPM		1	50596	5815-302-1327	x	x
Gear, Worm Wheel, 600 OPM		1	50597A	5815-351-7944	x	x
Gear, Worm, 60 WPM	1		50350	5815-303-1678	x	x
Gear, Worm Wheel, 60 WPM	1		50352A	5815-378-5593	x	x
Ribbon, Teletypewriter (Black)	1	1	10901	7510-511-6690	x	x
Spool, Teletypewriter Ribbon	1		10900	5815-356-3227	x	x
Tape, Teletypewriter 7/8-inch	1	4	10982	7530-634-6237	x	x
Lamp, Incandescent, 6.3V, 0.15 Amp.	1	1	20791	6240-155-8706	x	x
Lamp, Incandescent, 120V, 15W	1	1	20701	6240-143-3084	x	x
Fuse, Cartridge, Slow-Blow, 2A, 250V	2	5	20474	5920-581-4144	x	x
Screw (KLI Part No. 10302)	4		10302	5305-206-5877	x	x
Clip	1		53442	5815-219-7020	x	x
Chad Holder Assembly	1		52656A	5815-392-7822	x	x
Template, Bench	1		57259	5815-672-6727	x	

Send-Receive and Receive-Only Page Printers

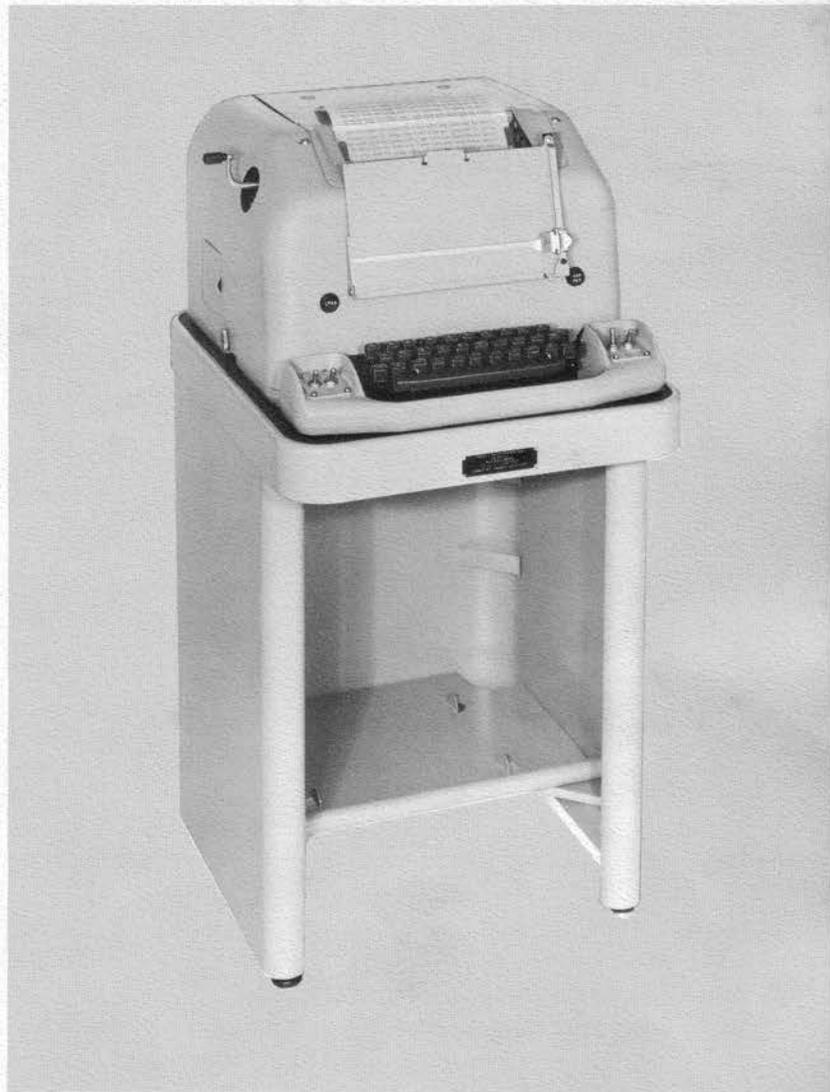
AN/FGC-20
AN/FGC-21
AN/FGC-64

AN/FGC-66
AN/FGC-67
AN/UGC-4

AN/UGC-29
TT-259/FG



TYPICAL APPLICATION BLOCK DIAGRAM



These Teletypewriter Sets comprise a keyboard transmitter and page printing receiver mounted on a table. The table supports the teletypewriter at a convenient height and provides storage and a feed chute for fanfold paper. The keyboard can be removed and minor electrical changes performed to convert the equipment to a receive-only printer. Equipments are designed and manufactured for installation in fixed stations and mobile communications vans to operate on a full- or half-

duplex basis over dc wire lines, carrier or radio systems. The set can be used to transmit, monitor and receive coded signals, and produce typed text on multiple copy paper at predetermined standard operating speeds from 60 thru 100 words per minute. Certain models (see technical characteristics) are precision controlled for operation at the specified standard baud rates. Alternate gear sets are available to facilitate speed changes within this range. They can be adapted readily

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Manufacturing Specification
 ... MIL-T-11749D.
 Military Manuals
 ... See ordering information.

MOTOR POWER REQUIREMENTS:

150 w.
 Voltage Requirements
 ... Either (1) 115 VAC, regulated 60 Hz, single phase, and 105-125 VAC, unregulated 50-60 Hz, single phase.
 ... Or (2) 95-125 and 190-260 VAC, regulated and unregulated, single phase.

SIGNALING CHARACTERISTICS:

Types of Signals (With or without battery)
 ... Neutral, 20 and 60 ma, dc and polar 15 thru 30 ma dc.

Type of Code

... Baudot, five data bits, plus start bit and stop element. The duration of the stop element may be specified on procurement to be equal to, or longer than one unit (data or start bit).

Code Units per Character

... Received - 7.00 units or more.
 ... Transmitted - 7.42 or 8.00 units as specified. (See Operational Speeds Available below).

Distortion

... Transmitted - Not more than 5 percent.
 ... Tolerated by Receiver - Printer is equipped with a range adjustment and calibrated scale to compensate for bias distortion up to 40 percent, and end distortion up to 35 percent.

OPERATIONAL SPEEDS AVAILABLE

(Using Alternate Gear Sets):

Equipments are classified as either "words per minute (WPM) rated" or "baud rated".

... WPM Rated Equipments

Per Minute	Words (7.42 unit code)	60	66	75	100
Operations		368.1	404	460	600

... Baud Rated Equipments

Bauds	45.5	50	56.8	75
Approx. WPM	65	71.3	81.2	107
	56.9	62.4	70.0	93.6

PRINTED CHARACTERS PER LINE:

Standard equals 72, weather equals 76.

PAPER CAPACITY:

Friction fed standard single roll and multicopy sprocket fed fanfold forms, 8-1/2 inches wide.

TEMPERATURE AND PRESSURE LIMITS

(Tests per MIL-STD-169 and -170):

Equipment in use	Pressure	
	Inches of Mercury	Equivalent Altitude
... +32°F (0°C) thru +132°F (+55°C)	16.88	15,000
Equipment in storage		
... -80°F (-62.2°C) thru +160°F (+71.1°C).	5.5	40,000

PRINT SYMBOLS:

English - Standard communications, or weather, or interchangeable.

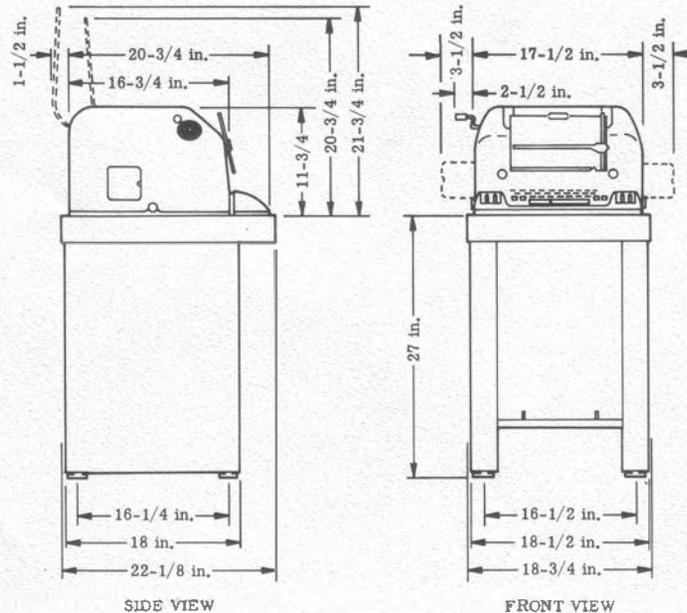
FINISH:

Semi-gloss gray per MIL E. 15090.

DIMENSIONS AND WEIGHT (Inches and Pounds):

	Height	Width	Depth	Weight*
Teletypewriter Set	38-1/4	18-3/4	22-1/4	87
Send-Receive Teletypewriter	11-1/4	17-1/8	20-9/16	54
Receive-Only Teletypewriter	11-1/4	17-1/8	16-3/4	44
Table	27	18-3/4	22-1/4	22
Dc Power Supply	4	9	4	7

*Less paper.



at installation, or thereafter, to transmit and receive neutral or polar signals, directly, without the need for intermediate line relay equipment.

OPTIONS

End item procurements can include or exclude keyboard, table, dc power supply or interchangeable type characters, and can specify ac or universal motors. The table is human-engineered to support the teletypewriter at a comfortable operating height. It also provides storage and a feed chute for fanfold paper.

The dc power supply is a self-contained, plug-in type minor component. It contains a patchboard which accepts ac inputs

ranging between 95 and 125 volts, and between 190 and 250 volts, and delivers ac output to the teletypewriter motor, and dc outputs for signal line battery. If weight is a factor and signal line battery can be provided by some other source, the dc power supply is removed; spring loaded contacts automatically switch the motor into circuit with the ac supply.

When interchangeable type is specified, the type basket installed in the equipment can be readily removed and replaced.

Equipments feature automatic carriage return and line feed, figures "H" motor stop control, local control for letters and carriage return, and repeat key operation of all characters and functions.

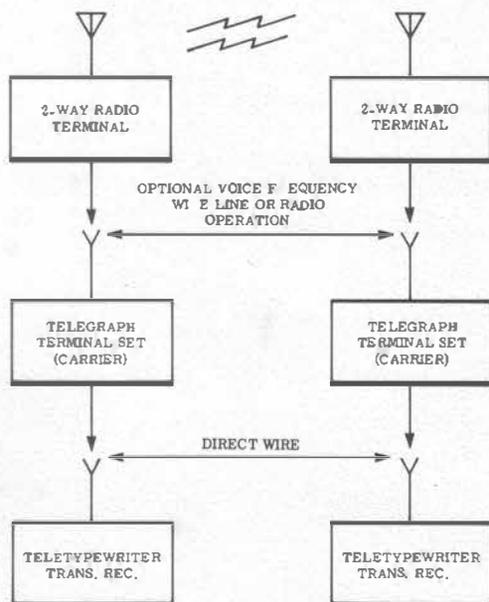
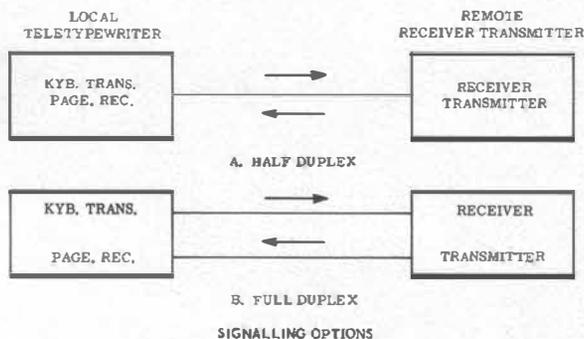
ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

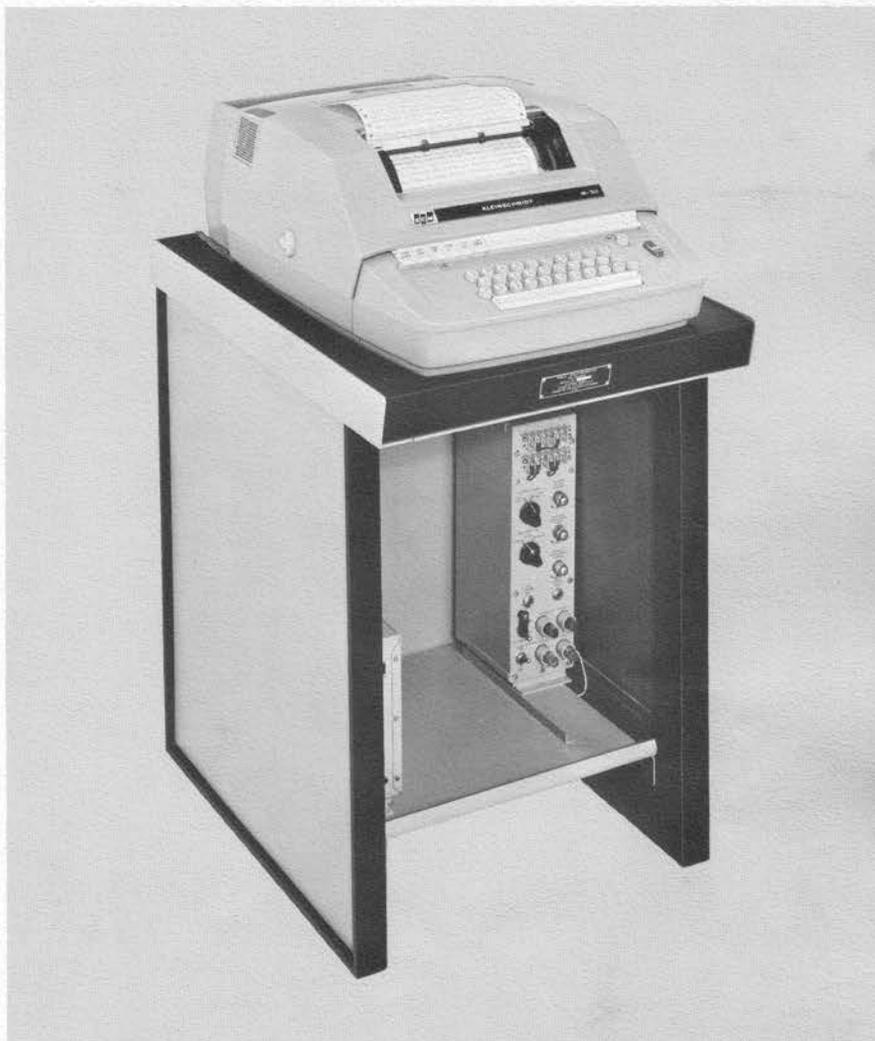
	RECEIVED	TRANSMITTED	DIFFERENCES IN MODELS				END ITEM	FEDERAL STOCK NO.	MAJOR COMPONENTS																						
			CODE UNITS						FEDERAL STOCK NO.	Teletypewriter	TT-100D FG	Teletypewriter	TT-88B FG	Teletypewriter	TT-99 FG	Teletypewriter	TT-293 FG	Teletypewriter	TT-300 FG	Teletypewriter	TT-482 UGC	Teletypewriter	TT-483 UGC	Power Supply	PP-978 FG	Table, Teletypewriter	FN-59 FG	Technical Manual	TM 11-5912-200-12	Technical Manual	TM 11-5912-200-35
			S = Sync.	C = Ser.	Cov.																										
All equipments can receive 7.00 units and over	7.42	S	S	W	F	Teletypewriter Set AN/FGC-20	5815-503-2652		x																						
	7.42	G	S	W	F	Teletypewriter Set AN/FGC-20X Identical set less table is Teletypewriter Set AN/UGC-4	5815-392-7743 5815-557-597			x																					
	7.42	S	W	W	F	Teletypewriter Set AN/FGC-21	5815-503-2653				x																				
	8.00	S	W	B	F	Teletypewriter Set AN/FGC-64	5815-752-5320					x																			
	7.42	G	S	W	I	Teletypewriter Set AN/FGC-66	5815-817-9277							x																	
	8.00	S	S	B	F	Teletypewriter Set AN/FGC-67 Identical set less table is Teletypewriter Set AN/UGC-29	5815-082-4197 5815- 82-4199								x																
	8.00	G	S	B	F	Teletypewriter Set AN/FGC-67X Identical set less table is	5815-082-4198																								
						Teletypewriter Set AN/UGC-29X	5815-082-4200																								
		S	S	W	F	Teletypewriter Set AN/UGC-29X	5815-082-4200																								
		S	S	W	F	Teletypewriter Set AN/UGC-29X	5815-082-4200																								
		S	S	W	F	Teletypewriter Set AN/UGC-29X	5815-082-4200																								
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	S	S	W	F	Teletypewriter Set AN/UGC-29X	5815-082-4200																									
	S	S	W	F	Teletypewriter Set AN/UGC-29X	5815-082-4200																									

Send-Receive Electronic Data Printer

AN/FGC-80



TYPICAL APPLICATION BLOCK DIAGRAM



Teletypewriter Set AN/FGC-80 is a fixed station equipment with facilities for transmitting, monitoring and receiving in communication centers. The set comprises a keyboard-transmitter and medium speed receive page printer. These are mounted on a table which houses an RFI filter box, signal distribution box, and facilities for storing and feeding fanfold paper. Solid state plug-in electronic circuit cards are housed in a bustle enclosed in the rear of the printer. The signal distribution box provides 65- and 130-volt dc supplies for signal line operation and switches which permit the AN/FGC-80 to be arranged

for full- or half-duplex, 20- or 60-milli-ampere, neutral or polar operation, with either internal or external signal line dc supply. The filter box provides RF isolation between the AN/FGC-80 and the ac supply. In addition to outlets for ac power connections of the distribution box and teletypewriter, the filter box includes spare outlets for the use of test equipment. Messages may be transmitted or received on either neutral or polar basis without the use of relays or other signal conversion equipment. The set may be procured with self-contained low level interface as defined in Military Standard 188B. Modular

construction permits the major components to be mechanically disconnected and rearranged in other configurations to accommodate unusual installation requirements.

The teletypewriter set is supplied with plug-in time base circuit cards, that

provide transmitting and receiving, in switch selected two-speed combinations to match existing communications line speeds of 45.5 and 75 baud, or 75 and 150 baud rates. Time base circuit cards for other two-speed combinations, within this range, are available for procurement.

TECHNICAL CHARACTERISTICS

TYPE OF INSTALLATION:

Fixed station; sending and receiving by direct wire, carrier or radioteletype.

KEYBOARD SYMBOLS:

Standard.

TYPE OF CHARACTERS:

English.

CHARACTERS PER LINE:

72.

POWER REQUIREMENTS:

200 watts nominal, 115 VAC \pm 10%, 60 Hz \pm 1/2 Hz.

PAPER FEED:

Friction and sprocket.

PAPER STORAGE:

Friction paper (original only)

... Stored on 5-inch diameter roll in printer module.

Fanfold sprocket paper (original and three tissue copies)

... Stored on shelf in table and fed via a chute to printing mechanism.

SIGNALING CODE:

Transmit

... Five unit, start-stop (7 equal units).

Receive

... Five unit, start-stop (7.00 units plus).

TYPES OF SIGNALS:

Transmit and Receive - 20 or 60 ma neutral or 20 ma polar.

OPERATING SPEEDS:

Transmit

... 45.5 bauds (65 wpm), 75 bauds (107 wpm) or 150 bauds (214 wpm).

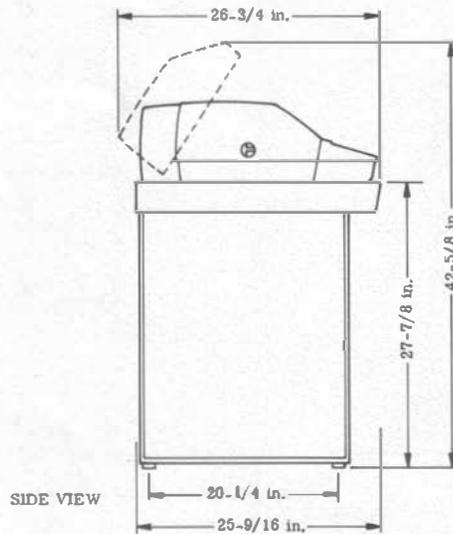
Receive

... 45.5 bauds - 65 wpm with 7.00 code.

... 75 bauds - 107.1 wpm with 7.00 code.

... 150 bauds - 214.3 wpm with 7.00 code.

DIMENSIONS (In Inches):



SIDE VIEW

SURROUNDING TEMPERATURE LIMITS:

Equipment in use

... 32°F (0°C) to 132°F (55.6°C).

Equipment in storage

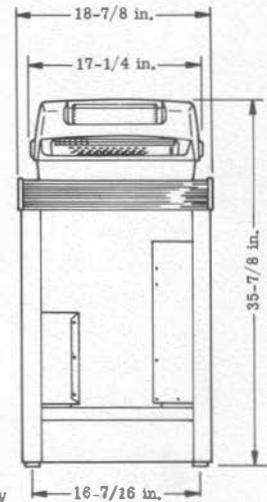
... -80°F (-82.2°C) to 160°F (71.1°C).

FINISH:

Semi-gloss gray per MIL E. 15090.

TOTAL WEIGHT (When Installed):

Approximately 112 lbs.



FRONT VIEW

ORDERING INFORMATION

ITEMS	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.
Teletypewriter Set AN/FGC-80			90451A-00.00	5815-941-0068
Teletypewriter TT-512/FG	1		90443A-91.00	5815-026-0204
Lamp, Incandescent, 14V, Clear	1	1		6240-851-4352
Lamp, Incandescent, 14V, Red	1	1	24401	6240-926-1264
Lamp, 6.3V	2	1	23274	6240-941-8487
Fuse, Cartridge, 4 Amp, Slow-Blow, 125V	2	5	20456	5920-284-7466
Fuse, Cartridge, 2 Amp, 250V	2	5	20483	5920-474-6125
Fuse, Cartridge, .75 Amp, 250V	1	5	20465	5920-284-9494
Ribbon, Black, Teletypewriter	1	1	66517A	7510-923-0252
Paper Roll, 5 in. diameter, 8-1/2 in. wide	1	1	10931	7530-223-7966
Circuit Card Assembly (Receive and transmit at 75 and 150 baud)	1		71055A	5815-933-9979
Circuit Card Assembly (Receive and transmit at 75 and 150 baud)	1		90454A-00.00	5815-941-5514
Table, Teletypewriter, FN-195/FG	1			5815-941-0069
Distribution Box J-2619/FG	1		69766A	6110-999-2716
Fuse, Cartridge, 1/2 Amp, 250V	2	5	23512	5920-280-8344
Fuse, Cartridge, 1/8 Amp, 250V	2	5	20451	5920-356-2188
Filter, Radio Interference F-1078/FG	1		69767A	5915-926-0059
Fuse, Cartridge, 5 Amp, Slow-Blow 125V	2	3	23518	5920-280-5066
Technical Manual TM 11-5815-306-12 With Applicable Changes	1			NFSNR (GFP)

Variable Mode Page and Tape Send-Receive Sets

AN/FGC-25
AN/FGC-26
AN/FGC-52

AN/FGC-57
AN/FGC-68
AN/UGC-30

These Teletypewriter Sets comprise a keyboard transmitter, page printing receiver, receiving perforator (reperforator) which interprets baudot coded messages in punched and printed form on paper tape, and a tape reading transmitter-distributor (TD), mounted on a table. The table supports the equipment at a convenient operating height, and provides storage for fanfold paper, and a paper feed mechanism, which directs the paper to the printing area. The door of the table is a sliding drawer which acts as a receptacle for perforated tape. Equipments are designed and manufactured for installation in fixed stations and mobile communications vans to operate over dc wire lines, carrier or radio systems.

A multiposition patch board enables the individual components to be used with four signal lines, in all possible combinations, on a full-duplex (sending and receiving simultaneously) or a half-duplex (alternately sending and receiving) basis. Instead of receiving from the signal line, the page printer and/or reperforator can be used in local loops (closed circuits), to monitor information transmitted from the keyboard or TD. The TD and reperforator can be used in unison as a tape relay to redistribute incoming messages as they are received. A line return mechanism permits a specified receiver to transfer automatically from local-loop to on-line operation when a message starts to arrive. The AN/FGC-52 is equipped with a remote control facility to enable the TD to operate either in a free running mode, like the other models, or transmit one character at a time on demand by the receiving station.



OPERATOR'S CONTROLS AND INDICATORS

The set features all the usual teletypewriter controls. These are readily accessible to the operator, without the need for removing covers, and their identity is clearly marked on the equipment.

The Keyboard Transmitter features either a standard or weather communications keyboard, including "figures" and "letters" selector keys. The keyboard touch is similar to that of a modern typewriter. Keyboard controls include a line break switch for starting the remote receivers, character counter, and end-of-line indicator lamp, usual tabulator (tab) mech-

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Manufacturing Specification
 ... MIL-T-11979,
 Military Manuals
 ... See ordering information.

PRINT SYMBOLS:

English - Standard communications or weather.

PAPER AND TAPE CAPACITY:

Paper
 ... Friction-fed, standard single and multicopy roll, and sprocket-fed fanfold forms, 8-1/2 inches wide.

Tape
 ... Standard roll, 7/8-inch with edge printing, or 11/16-inch non-printing. Reperforator may be readily modified to print on center (over feed holes) on 11/16-inch tape.

TEMPERATURE AND PRESSURE LIMITS

(Tests per MIL-STD-169 and -170):

Temperature	Pressure	
	Inches of Mercury	Equivalent Altitude
Equipment in use		
... +32°F (0°C) thru +132°F (+55°C)	16.88	15,000
Equipment in storage		
... -80°F (-62.2°C) thru +160°F (+71.1°C)	5.5	40,000

MOTOR POWER REQUIREMENTS:

380 w., 95- thru 125-vac and 190- thru 250-vac; regulated 60 Hz, single phase; or 440 w., 95- thru 125-vac and 190- thru 250-vac, regulated and unregulated 50-60 Hz, single phase.

SIGNALING CHARACTERISTICS:

Type of Signals (Transmit Battery Provided)
 ... Received - Neutral (20 and 60 ma dc) and polar (15 thru 30 ma dc).

... Transmitted - Neutral only, 20 and 60 ma.

Type of Code
 ... Baudot, five-data bits plus start bit and stop element. The duration of the stop element may be specified on procurement to be equal to or longer than one unit (Data or start bit).

Code Units per Character

... Received - Reperforator and page printer can receive 7.00 units, or more.

... Transmitted - 7.00, 7.42 or 8.00 as specified, see under Operational Speeds Available below.

Distortion

... Transmitted - Not more than 5 percent.

... Tolerated by Receivers - The reperforator and page printer are equipped with range adjustments and calibrated scales which compensate for bias distortion up to 40 percent, and end distortion up to 35 percent.

OPERATIONAL SPEEDS AVAILABLE

(Using Alternate Gear Sets)

Equipments are classified as either "words per minute (WPM) rated" or "baud rated".

... WPM Rated Equipments - AN/FGC-25, -26, and -57

WPM (7.42 unit code) 60 66 75 100
 Operations per minute 368.1 404 460 600

... Baud Rated Equipments - AN/FGC-52, -52X, -68, AN/UGC-30, -30X.

Baud	45.5	50	56.8	75	Code Units
Approx. WPM	65	71.3	81.2	107	7.00
	56.9	62.4	70.0	93.6	8.00

FINISH:

Semi-gloss gray per MIL-E. 15090.

DIMENSIONS (In Inches)

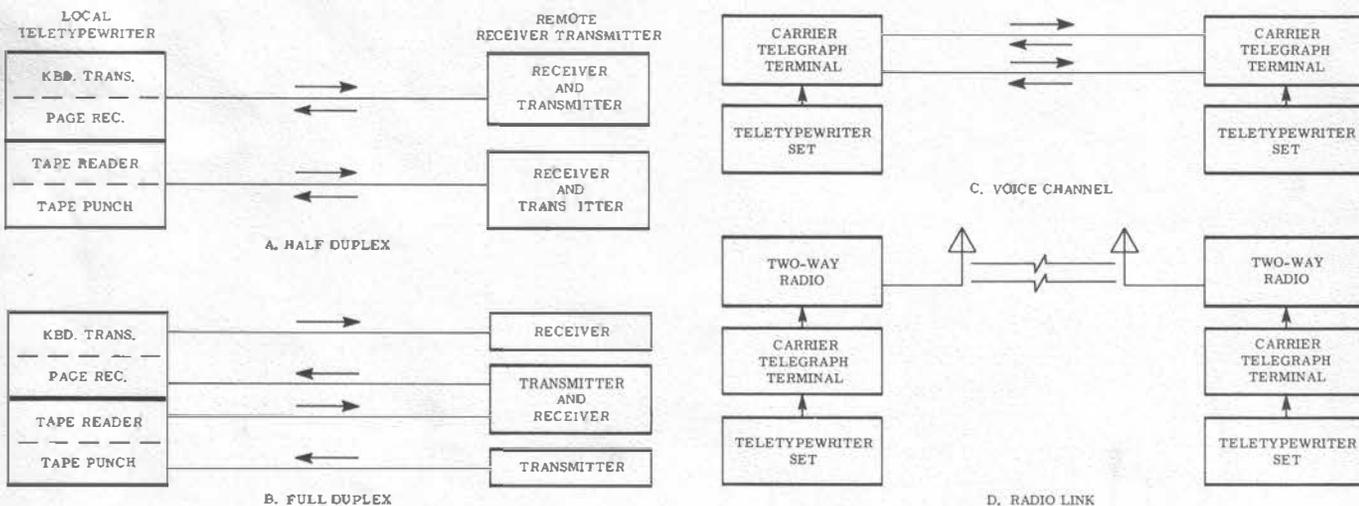
Printer	Height	Width	Depth
(Including keyboard)	11-3/4	17-1/8	20-9/16
Reperforator and TD	13-1/8	17-1/8	22-3/16
Table	27	40	23-1/2

Complete set

(With cover open) 50 40 23-1/2

WEIGHT (In Pounds)

Printer	58
Reperforator and TD	79
Table	52
Complete Set (With tape and paper rolls)	192-1/2

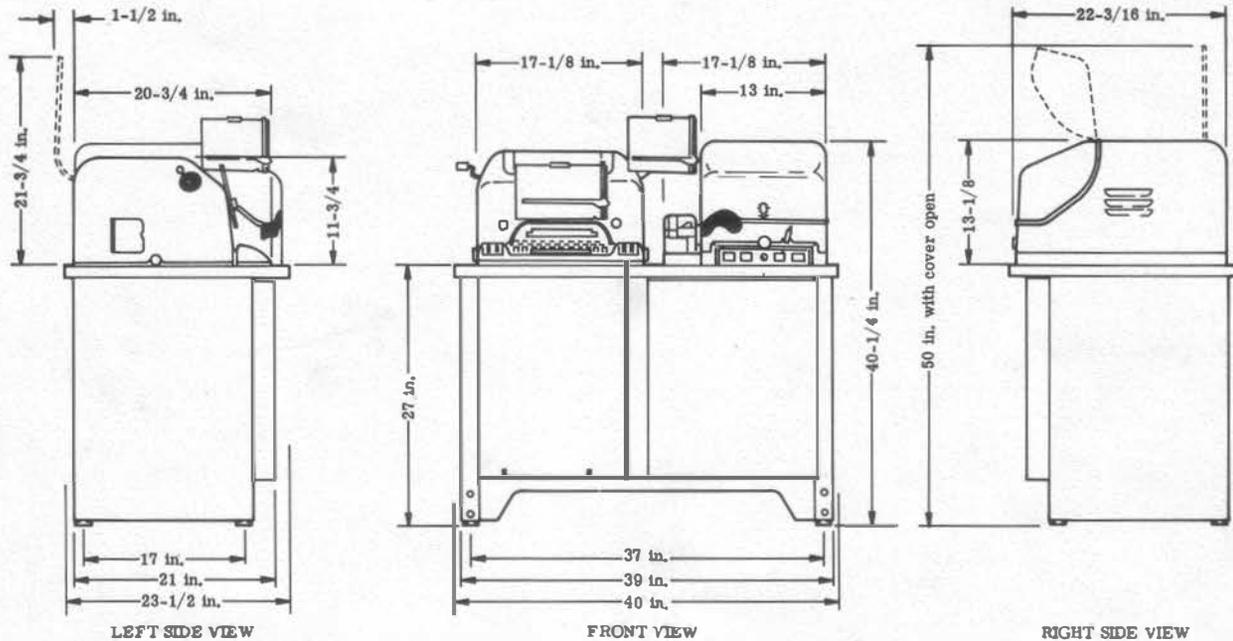


TYPICAL APPLICATIONS BLOCK DIAGRAM

anism, manual carriage return and line feed, and a keyboard control lever which places the keyboard in a closed loop with the reperforator, thereby avoiding speed limitations imposed by the signal line and enabling the operator to press keys as rapidly as humanly possible (up to 125 words per minute) when preparing tape.

A tape reverse lever enables errors to be cancelled and repunched. A "send lock" switch is provided, which prevents inadvertent operation of the keyboard; it also allows the page printer to be used as a receive-only device should it become desirable to remove the keyboard from the set.

TECHNICAL CHARACTERISTICS



ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

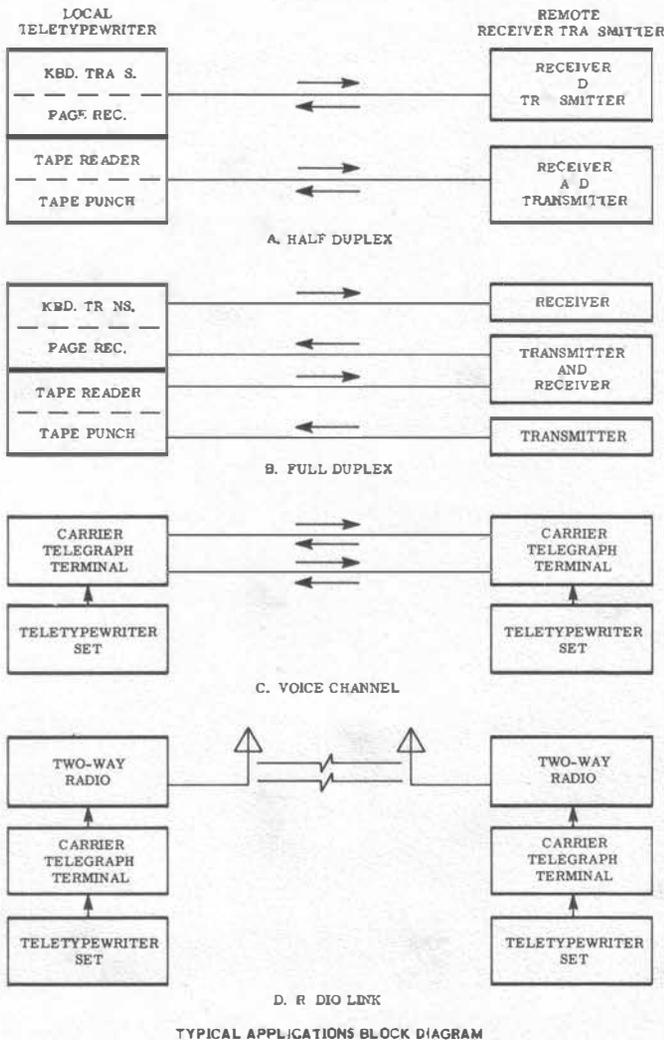
DIFFERENCES IN MODELS				END ITEM	FEDERAL STOCK NO.	MAJOR COMPONENTS	FEDERAL STOCK NO.		
RECEIVED	KEYBOARD	TRANSMITTED	MOTOR TYPE						
T.D.			S = Sync., G = Ser. Gov.						
			SYMBOLS						
			S = Standard, W = Weather						
			KBD, LOCKOUT MECH.						
			F = Elect., M = Manual						
All printers and reperforators receive 7.00 units and over	7.42		S	S	E	Teletypewriter Set AN/FGC-25	5815-503-3316	Teletypewriter TT-117C/FG Reperforator-Transmitter TT-179B/FG Table FN-65/FG	5815-521-1402 5815-303-2769 5815-503-2824
	7.42		G	S	E	Teletypewriter Set AN/FGC-25X	5815-519-5644	Teletypewriter TT-119C/FG Reperforator-Transmitter TT-178B/FG Table FN-65/FG	5815-539-7773 5815-543-1327 5815-503-2624
	7.42		S	W	M	Teletypewriter Set AN/FGC-26	5815-583-0065	Teletypewriter TT-118/FG Reperforator-Transmitter TT-181/FG Table FN-65/FG	5815-581-8593 5815-581-8594 5815-503-2824
	7.42		G	W	M	Teletypewriter Set AN/FGC-26X	5815-583-0065	Teletypewriter TT-120/FG Reperforator-Transmitter TT-180/FG Table FN-65/FG	5815-973-4745 5815-973-4746 5815-503-2624
	8.00	7.00	S	S	M	Teletypewriter Set AN/FGC-52 Identical set less table is Teletypewriter Set AN/UGC-30	5815-539-6761 5815-082-4232	Teletypewriter TT-269B/FG Reperforator-Transmitter TT-270A/FG Table FN-65/FG	5815-682-2710 5815-754-9051 5815-503-2624
	8.00	7.00	G	S	M	Teletypewriter Set AN/FGC-52X Identical set less table is Teletypewriter Set AN/UGC-30X	5815-688-8919 5815-082-4233	Teletypewriter TT-271B/FG Reperforator-Transmitter TT-272A/FG Table FN-65/FG	5815-682-2709 5815-754-9050 5815-503-2624
	7.42		S	S	M	Teletypewriter Set AN/FGC-57	5815-517-6152	Teletypewriter TT-117A/FG Reperforator-Transmitter TT-250A/FG Table FN-111/FG	5815-521-1402 5815-657-9952 5815-617-5879
	8.00	7.00	S	W	M	Teletypewriter Set AN/FGC-68	5815-732-0911	Teletypewriter TT-396/FG Reperforator-Transmitter TT-397/FG Table FN-65/FG	5815-973-4706 5815-973-4707 5815-503-2624

Government furnished literature:

Field and Depot Maintenance Manual TM 11-5815-244-35 (TO 31W4-2FGC-232) with all current changes.
 Operational and Organizational Maintenance TM 11-5815-244-12 (TO 31W4-2FGC-221) with all current changes.

Variable Mode Page and Tape Send-Receive Set

AN/FGC-140()



Teletypewriter Set AN/FGC-140() is an Automatic Data Set which is designed for continuous operation as peripheral equipment in a data processing system or as fixed station equipment in communication centers. The set combines a keyboard transmitter, medium speed receive page printer, high speed paper tape punch and reader, on a table. The console provides internal storage and automatic feeding for both roll and fanfold paper, and housing for interface and logic circuit boards, and dc power supply.

The four elements (keyboard, punch, reader and printer) can be used in any combination to prepare punched tapes, to transmit from tape or keyboard, and to receive on page copy and/or paper tape.

The AN/FGC-140() may be procured with plug-in time base circuit cards that provide transmitting and receiving in switch selected two-speed combinations to match existing communications line speeds from 45.5- to 300-baud rates.

TECHNICAL CHARACTERISTICS

TYPE OF INSTALLATION:

Fixed station; sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

KEYBOARD TYPES:
3-row communication.

TYPE OF CHARACTERS:
As required.

CHARACTERS PER LINE:
72, 76 or 80.

POWER REQUIREMENTS:
300 watts nominal, 115 VAC $\pm 10\%$, 60 Hz ± 3 Hz.

TYPES OF SIGNALS:
Transmit and Receive
... Low Level - Interface compatible with EIA requirements per RS 232.

COPY PAPER:
Friction and sprocket.

STORAGE:
Friction paper (original only)
... Stored on 5-inch diameter roll in printer module.

Fanfold sprocket paper (original and three tissue copies)
... Stored on shelf in table and fed via a chute to printing mechanism.

PAPER TAPE:
Type... Dry or oiled, chad or chadless.
Size ... 11/16 or 7/8-inch.
Capacity... 1000 feet nominal.
Feed... Sprocket, 10 characters per inch.

SERIAL SIGNALING CODE:
Five bit ... Start-stop (8.00 units).

OPERATING SPEEDS:
Switch selected two-speed combinations from 45.5 thru 300 bauds in serial systems.

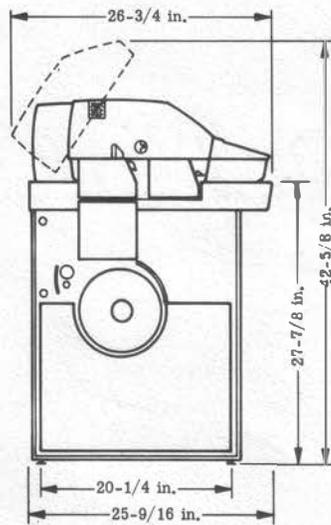
SURROUNDING TEMPERATURE LIMITS:
Equipment in use
... 32°F (0°C) to 132°F (55.6°C).

RFI SUPPRESSION:
Per MIL-E-55301 (EL).

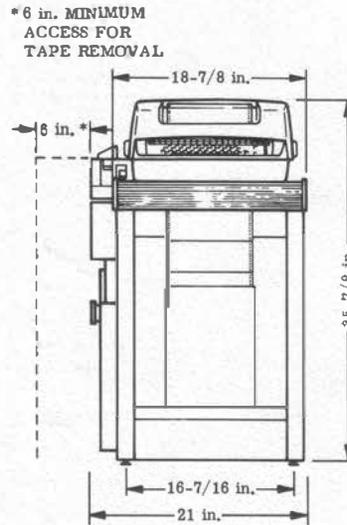
FINISH:
Semi-gloss gray per MIL E 15090.

TOTAL WEIGHT (When Installed)
Approximately 130 lbs.

DIMENSIONS (In Inches)	Height	Width	Depth
Cover closed	35-7/8	21	25-9/16
Cover open	42-5/8		26-3/4



SIDE VIEW



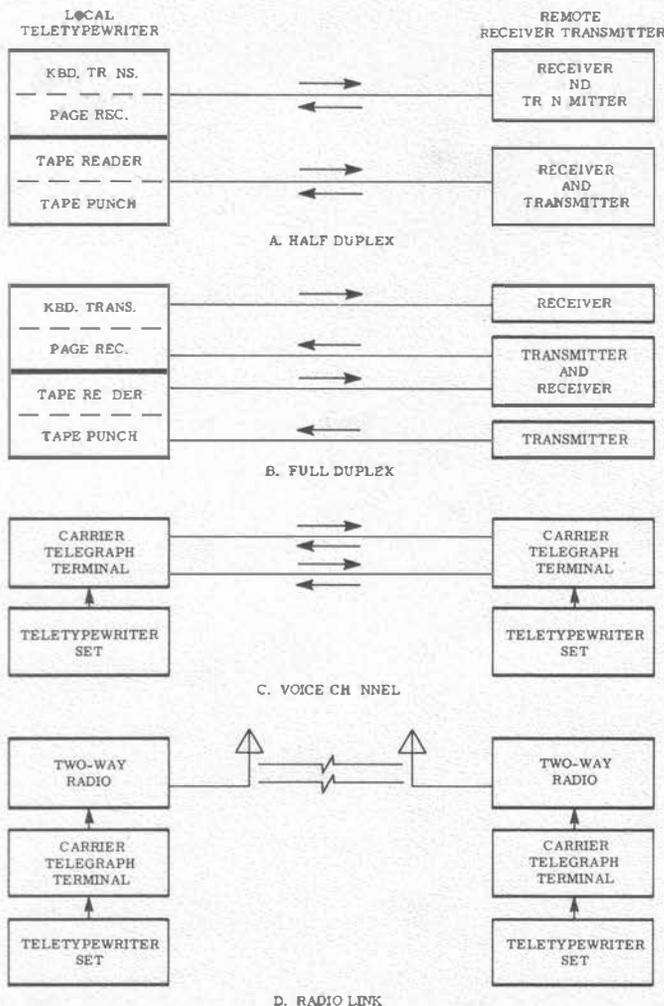
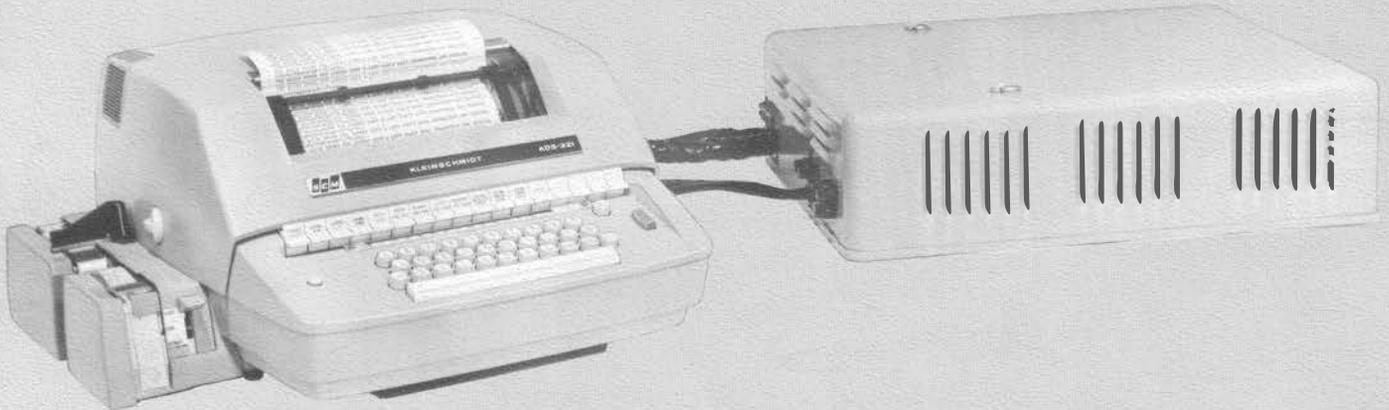
FRONT VIEW

ORDERING INFORMATION

ITEMS	IN USE	PART NO.	FEDERAL STOCK NO.
Teletypewriter Set AN/FGC-140()	1	90448-02.80	NFSN
Lamp, Clear	3	24400	6240-196-4491
Lamp, Copy	2	23274	6240-941-8487
Fuse, 4A, SB	2	20456	5920-284-7466
Fuse, 4A	1	23515	NFSN
Fuse, 2A	1	20483	5920-474-6125
Fuse, 3A	1	23500	5920-010-6652
Spool (with ribbon)	1	66517	7510-923-0252
Circuit Card Assembly (specify printing speed)	1		
Circuit Card Assembly (specify printing speed)	1		
Circuit Card Extender	1	15180	5815-999-2729
Circuit Card Extractor	1	15176	5120-921-6169
50 Hz Modification Kit and	1	90425	NFSN
Instruction Sheet	1	99507	NFSN

Variable Mode Page and Tape Send-Receive Sets

AN/GGC-16
and AN/UGC-39



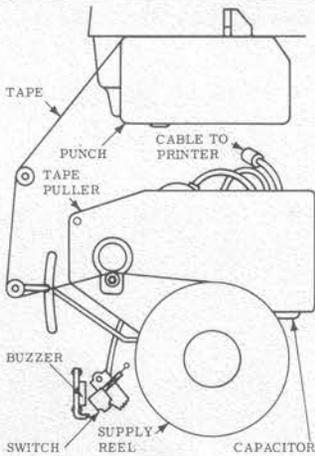
TYPICAL APPLICATIONS BLOCK DIAGRAM

Teletypewriter Sets AN/GGC-16 and AN/UGC-39 are Automatic Data Sets which are designed for continuous operation as peripheral equipment in data processing systems, or as fixed station equipment in communication centers. A set combines a keyboard transmitter, medium speed receive page printer, high speed paper tape punch and reader, and an external package which houses logic circuits and power supply. Modular construction permits installation where space is at a premium such as airborne and shipboard installations and field communications vehicles.

The four elements (keyboard, punch, reader and printer) can be used in any combination to prepare punched tapes, to transmit from tape or keyboard, and to receive on page copy and/or paper tape.

The equipment may be procured with plug-in time base circuit cards that provide transmitting and receiving in switch selected two-speed combinations to match existing communications line speeds from 45.45- to 300-baud rates.

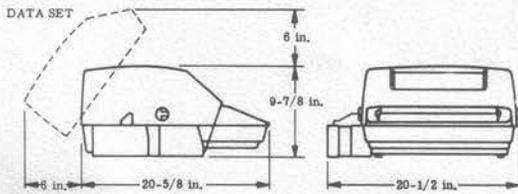
TECHNICAL CHARACTERISTICS



SUGGESTED INSTALLATION OF TAPE PULLER AND REEL ASSEMBLY

MOUNTING DATA (In Inches):

	A (Front)	B (Side)	C (Rear)
Data Set	12-7/8	10-7/8	12-13/16
Logic Module	15-13/16	20-5/16	



TYPE OF INSTALLATION:
Fixed or mobile station; sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

KEYBOARD TYPES:
3-row communications.

TYPE OF CHARACTERS:
As required.

CHARACTERS PER LINE:
72, 76 or 80.

POWER REQUIREMENTS:
AN/GGC-16
... 300 watts nominal, 115 VAC, 60 Hz $\pm 1/2$ Hz.
AN/UGC-39
... 300 watts nominal, 115 VAC, 400 Hz ± 20 Hz.

COPY PAPER:
Friction and sprocket.

STORAGE:
Friction paper (original only)
... Stored on 5-inch diameter roll in printer module.
Fanfold sprocket paper (original and three tissue copies)

PAPER TAPE:
Type... Dry or oiled, chad or chadless.
Size... 11/16, 7/8 or 1 inch.
Capacity... 1000 feet nominal.
Feed... Sprocket, 10 characters per inch.

SERIAL SIGNALING CODE:
Five bit ... Start-stop (8.00 units).

TYPES OF SIGNALS:
Transmit and Receive
... Low Level - Per MIL-STD-188B.

OPERATING SPEEDS:
Switch selected two-speed combinations from 45.45 thru 300 bauds in serial systems.

SURROUNDING TEMPERATURE LIMITS:
Equipment in use
... 32°F (0°C) to 132°F (55.6°C).
Equipment in storage
... -80°F (-62.2°C) to 160°F (71.1°C).

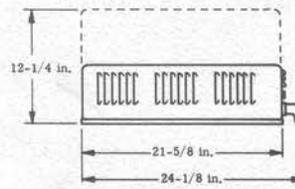
RFI SUPPRESSION:
Per MIL-1-11748E.

FINISH:
Semi-gloss gray per MIL E 15090.

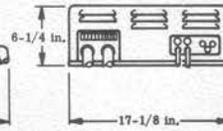
TOTAL WEIGHT (When Installed):
Approximately 117 lbs (including paper roll).

ELECTRONIC MODULE

MOUNTING DIAGRAM



MOUNTING DIAGRAM



ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

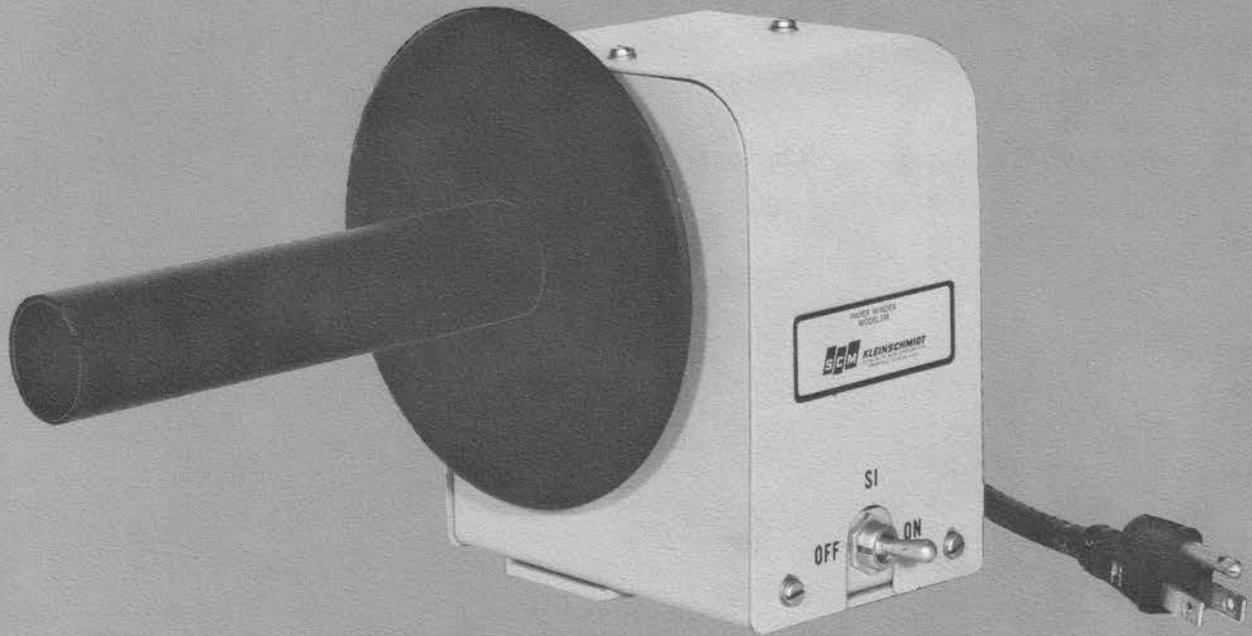
AC SUPPLY FREQUENCY (Hz)	NOMENCLATURE	PART NUMBER
60 36 VDC	Teletypewriter Set AN/GGC-16 Electronic Module TH/66-UGC() Tape Puller TT-518/GGC-16()	90448-18.00
50/60 400 36 VDC 400	Teletypewriter Set AN/UGC-39() Electronic Module TH/66-UGC() Tape Puller TT-520/UGC-39()	90448-09.00

FUNCTIONAL PARTS

ITEMS	IN USE	PART NO.	FEDERAL STOCK NO.
Teletypewriter Set AN/GGC-16	1	90448-18.00	
Lamp, Clear	3	24400	6240-196-4491
Lamp, Copy	2	23274	6240-941-8487
Fuse, 4A, SB	2	20456	5920-284-7466
Fuse, 4A	1	23515	NFSN
Fuse, 2A	1	20483	5920-474-6125
Fuse, 3A	1	23500	5920-010-6652
Spool (with ribbon)	1	66517	7510-923-0252
Circuit Card Assembly (specify printing speed)	1		
Circuit Card Assembly (specify printing speed)	1		
Circuit Card Extender	1	15180	5815-999-2729
Circuit Card Extractor	1	15176	5120-921-6169
50 Hz Modification Kit and Instruction Sheet	1	90425	NFSN
	1	99507	NFSN

Paper Winder

RL-236/UG



Reeling Machine RL-236/UG is a self-contained paper winder, designed for unattended and continuous operation in conjunction with a teletypewriter page printer. Its compact size and light weight makes it suitable for installation on the page printer dust cover. In operation, the reeling machine maintains a slight, yet steady tension on the printed copy issuing from the page printer as shown.

TECHNICAL CHARACTERISTICS

POWER DEMAND:

115 watts.

MOTOR TYPE:

Synchronous

MOTOR SPEED:

3,500 rpm.

MOTOR POWER REQUIREMENT:

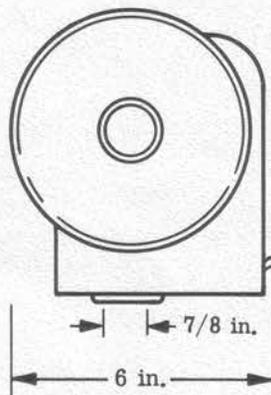
105 to 125 volts, 60 cycles, single-phase, ac.

PAPER CAPACITY:

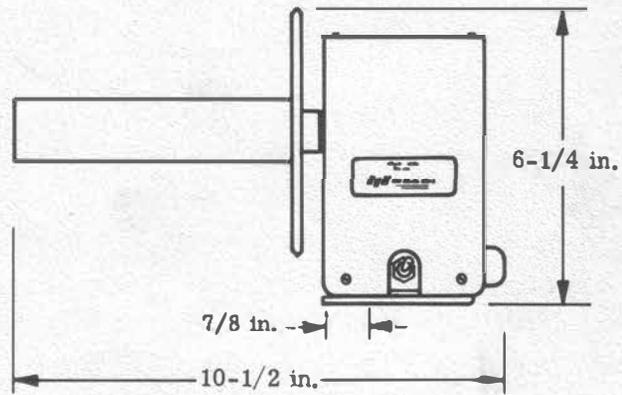
Will accommodate approximately three-fourths of a full paper roll.

DIMENSIONS AND WEIGHT (Inches and Pounds):

Height	Width	Depth	Weight
6-1/4	10-1/2	6	6-3/4



SIDE VIEW



FRONT VIEW

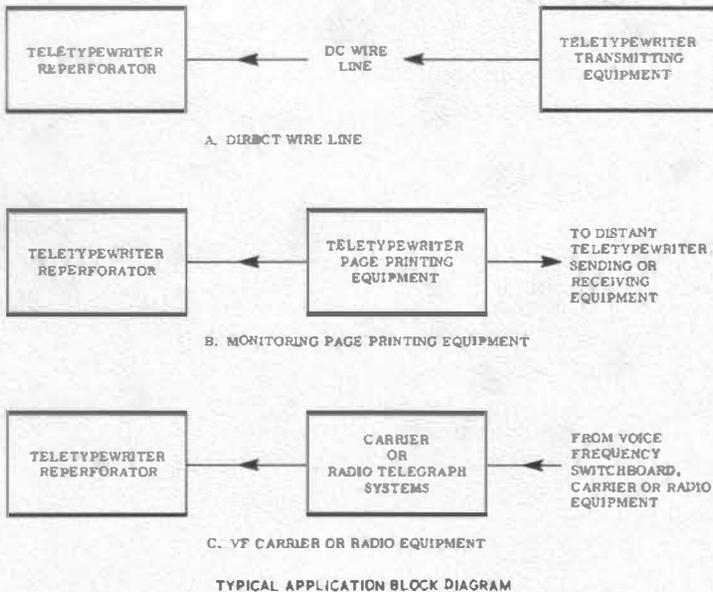
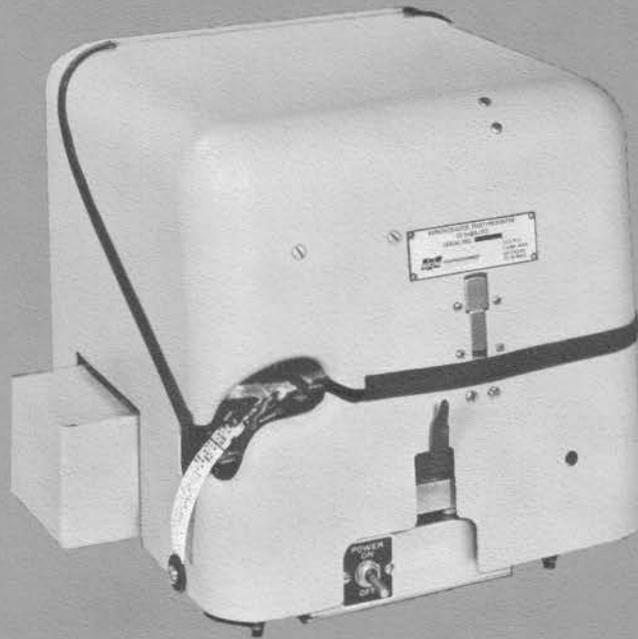
ORDERING INFORMATION

ITEM	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.
Reeling Machine, Paper, Motor Driven RL-236/UG	1		90322A-04.00	5815-013-8135
Fuse, 1 Amp., 250 V	1	5	20468	5920-284-9220

Teletypewriter-Reperforators

TT-107/FG
 TT-107B/FG
 TT-108/FG

TT-109/FG
 TT-345/FG
 TT-346/FG



The Teletypewriter Reperformer is a compact lightweight unit comprising a signal receiver, tape perforator, tape printing mechanism, a driving motor and signal line battery supply. It is designed for installation in fixed station and mobile communications centers to receive start-stop, five unit code impulses. The equipment may be used as a line terminal, or in conjunction with a teletypewriter when tape copy is required. Alternate gear sets are available for procurement to permit on-site speed changes within the range of 60 thru 100 words per minute.

TECHNICAL CHARACTERISTICS

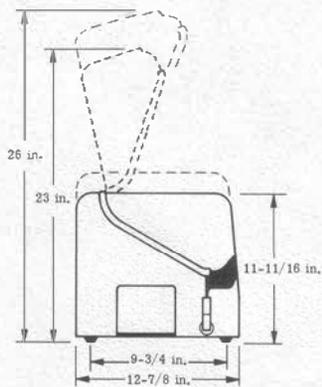
RELEVANT LITERATURE:
 Manufacturing Specification
 ... MIL-R-11985,
 Military Manual
 ... See ordering information.

PRINT SYMBOLS:
 English - Standard communications or weather.

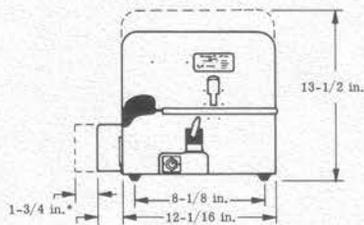
FINISH:
 Semi-gloss gray per MIL.E. 15090.

SIGNALING CHARACTERISTICS:
 Type of Signals
 ... Neutral 20 and 60 ma dc.
 ... Polar 30 ma.
 Type of Code
 ... Baudot, five data bits plus start bit and stop element.
 Code Units per Character
 ... 7.00 units or over.
 Distortion Tolerance
 ... The Teletypewriter Reperforator is equipped with a range adjustment and calibrated scale to compensate for bias distortion up to 40 percent and end distortion up to 35 percent.
 Nominal Operating Range (direct wire)
 ... Up to 25 miles.

* For access only



SIDE VIEW



FRONT VIEW

MOTOR POWER REQUIREMENTS:
 TT-108/FG and TT-345/FG
 ... 120 w., 115 vac, 60 Hz, single phase.
 TT-346/FG
 ... 150 w., 105 thru 125 vac, 50-60 Hz, single phase.

OPERATIONAL SPEEDS AVAILABLE
 (Using Alternate Gear Sets):

Per Minute	Words...	60	66	75	or	100
Operations...	368.1	404	480	600		

TAPE SPECIFICATIONS:
 Size... Standard roll, 7/8-inch with edge printing, or 11/16-inch non-printing. Reperforator may be readily modified for center (over feed holes) printing.
 Capacity... 5-1/3 hours at 60 WPM.
 ... 3-1/6 hours at 100 WPM.

TEMPERATURE AND PRESSURE LIMITS
 (Tests per MIL-STD-169 and 170):

Temperature	Pressure	Inches of Mercury	Equivalent Altitude
Equipment in use ... +32°F (0°C) thru +132°F (+55°C)		16.88	15,000
Equipment in storage ... 80°F (-62.2°C) +160°F (+71.1°C)		5.8	40,000

ORDERING INFORMATION

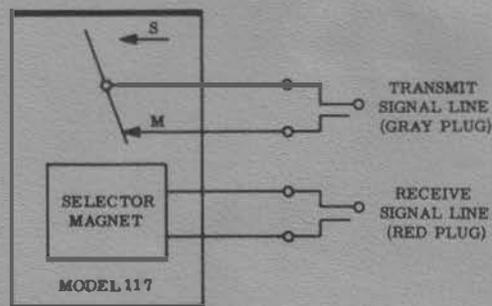
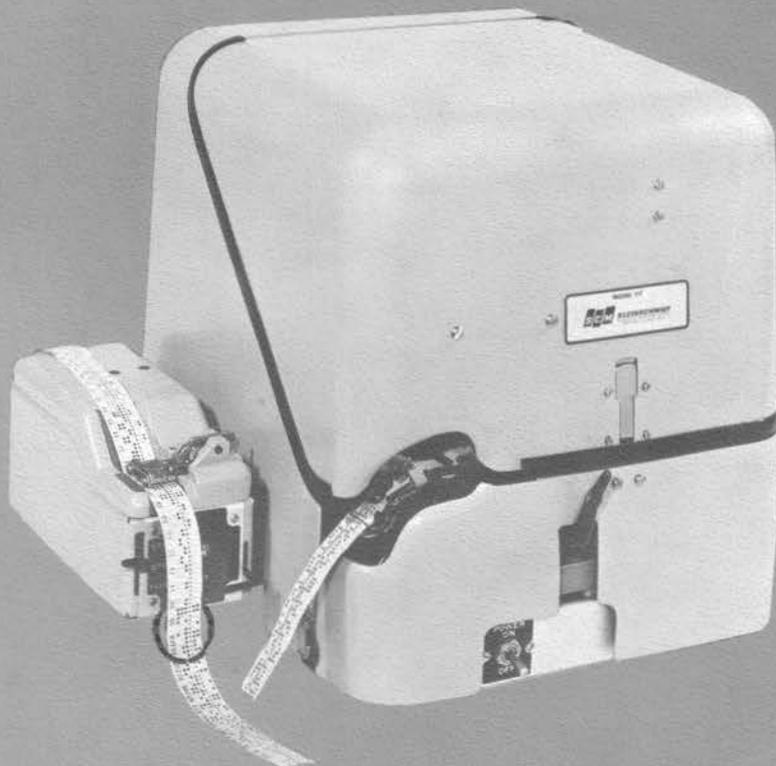
DIFFERENCES IN MODELS						END ITEMS				FEDERAL STOCK NO.	
MOTOR TYPE	PRINT SYMBOLS	TAPE SYMBOLS	TAPE TEAR WIRE	UNIVERSAL POSITION INDICATOR	Y-LEVER ASSEMBLY	NOMENCLATURE					
S = Sync. G = Ser. Conv.	S = Standard	W = Weather	7/8 in. and 11/16 in.			DIMENSIONS AND WEIGHT					
						H	W	D	WT.		
S	S					Reperforator Teletypewriter TT-107/FG	12-5/16	12-1/4	12-5/8	37	4TTT-107
S	S	x				Reperforator Teletypewriter TT-107B/FG	11-11/16	12-1/16	12-7/8	37	5815-503-1168
S	W	x				Reperforator Teletypewriter TT-108/FG	11-11/16	12-1/16	12-7/8	37	5815-583-0468
G	S	x				Reperforator Teletypewriter TT-109/FG	13-1/2	12-1/16	12-7/8	37	5815-543-0568
S	S	x	x	x	x	Reperforator Teletypewriter TT-345/FG	11-11/16	12-1/16	12-7/8	37	5815-892-1097
G	S	x	x	x	x	Reperforator Teletypewriter TT-348/FG	13-1/2	12-1/16	12-7/8	37-1/2	5815-892-1098
						Technical Manual TM 11-2226 (TO 31W4-2FG-181)					GFP

ACCESSORIES	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.	WHERE USED		
					TT-345A/FG	TT-109/FG and TT-346A/FG	TT-107B/FG and TT-108/FG
Fuse, Cartridge, 1A, 250V	2	5	20468	5920-284-9220	x		
Lamp, Incandescent, 15W, 120V	1	1	20701	6240-243-8331	x	x	x
Gear, Worm, 60 WPM		1*	50350	5815-203-1678	x	x	
Gear, Worm Wheel, 60 WPM		1*	50352A	5815-378-5593	x	x	
Gear, Worm, 100 WPM		1*	50596	5815-203-1327	x	x	x
Gear, Worm Wheel, 100 WPM		1*	50597A	5815-351-7944	x	x	x
Chad Bit	1		57611A	5815-592-0790	x	x	
Ribbon (Black)	1	1	10901	7510-511-6690	x	x	x
Spool, Ribbon	1		10900	5815-356-3227	x	x	x
Tape, 7/8-inch	1	4	10982	7530-634-6237	x	x	x
Fuse, Cartridge, 1.6A, 125V	2	5	20455	5920-224-5269		x	
Fuse, Cartridge, 1A	2	1		5930-199-3969			x

*Indicates alternate gear sets.

Teletypewriter Typing-Reperforator-Transmitter-Distributor

MODEL 117



TYPICAL APPLICATION DIAGRAM

The Model 117 combines a typing reperforator with a distributor-transmitter in a single compact lightweight assembly. It is designed for installation in fixed station and mobile communications centers to transmit and receive start-stop five-unit code impulses, via dc wire lines or via carrier or radio telegraph equipment. As supplied, it is arranged for operation at 100 words per minute; alter-

nate gear sets are available for procurement to permit operation at 60 words per minute. The equipment is suitable for operation as a monitor reperforator-rerun transmitter or manual torn tape relay, or as a line terminal unit for transmitting and/or receiving functions. It is designed to withstand high humidity such as encountered in the tropics.

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:
 Military Manuals
 ... See ordering information.

PRINT SYMBOLS:
 English - Standard communications.

MOTOR POWER REQUIREMENTS:
 150 w, 105 thru 125 vac, 50-60 Hz, single phase.

Temperature Equipment in use	Inches of Mercury		Equivalent Altitude
	Temperature	Mercury	
... +32°F (0°C) thru +132°F (+55°C)	16.88	15,000	
Equipment in storage ... 80°F (-62.2°C) +180°F (+71.1°C)	5.8	40,000	

FINISH:
 Semi-gloss gray per MIL-E-15090.

DIMENSIONS AND WEIGHT (Inches and Pounds)

Height	Width	Depth	Weight
* 13-1/2	16-1/2	13-1/2	44-3/4

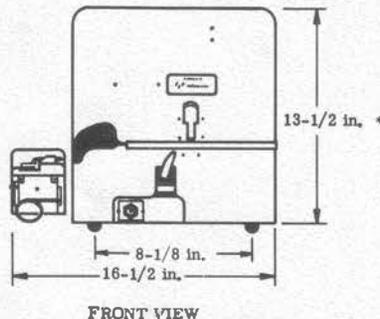
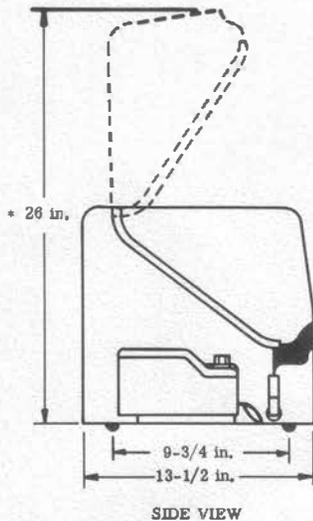
* Plus sufficient room for chad disposal.

SIGNALING CHARACTERISTICS:
 Type of Signals (Battery Not Provided)
 ... Neutral 20 and 80 ma, dc.
 ... Polar 30 ma.
 Type of Code
 ... Baudot, five data bits plus start bit and stop element.
 Code Units per Character
 ... Receive: 7.00 units or over.
 ... Transmit: 7.42 units.
 Distortion Tolerance
 ... The receiver is equipped with a range adjustment and calibrated scale to compensate for bias distortion up to 40 percent and end distortion up to 35 percent. Transmitted distortion into a dc line at 368.1 operations per minute does not exceed 5 percent.
 Nominal Operating Range (direct wire)
 ... Up to 25 miles.

OPERATIONAL SPEEDS AVAILABLE
 (Using Alternate Gear Sets):

Per Minute	Words ...	80	66	75	or 100
Operations ...	368.1	404	480	or	600

TAPE SPECIFICATIONS:
 Size ... Standard roll, 7/8-inch with edge printing, or 11/16-inch non-printing. Reperforator may be readily modified for center (over feed holes) printing.
 Capacity ... 5-1/3 hours at 60 WPM.
 ... 3-1/6 hours at 100 WPM.



ORDERING INFORMATION

END ITEMS

ITEM	PART NO.
Teletypewriter, Typing-Reperforator-Transmitter-Distributor	(NFSN) 90404-32.00
Technical Manual TM 11-2226 (TO 31W4-2FG-181)	
Technical Manual TM 11-2277 (TO 31W4-2FG-1141)	

FUNCTIONAL PARTS

ACCESSORIES	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.
Fuse, Cartridge, 1A, 250V	4	8	20468	5920-284-9220
Lamp, Incandescent, 15W, 120V	1	1	20701	6240-243-8331
Gear, Worm, 60 WPM		1*	50350	5815-203-1678
Gear, Worm Wheel, 60 WPM		1*	50352A	5815-378-5593
Gear, Worm, 100 WPM	1		50596	5815-203-1327
Gear, Worm Wheel, 100 WPM	1		50597A	5815-351-7944
Chad Bin	1		57611A	5815-592-0790
Ribbon (Black)	1	1	10901	7510-511-6690
Spool, Ribbon	1		10900	5815-356-3227
Tape, 7/8-inch	1	4	10982	7530-634-6237
Fuse, Cartridge, 1.6A, 125V	4	8	20455	5920-224-5269
Fuse, Cartridge, 1A	2	1		5930-199-3969
Gear, Worm, 100 WPM	1		52108	5815-534-3010
Gear, Worm Wheel, 100 WPM	1		52109A	5815-534-3011
Gear, Worm, 60 WPM		1*	52105A	5815-697-7889
Gear, Worm Wheel, 60 WPM		1*	52106A	5815-697-7890
Fuse, Cartridge, 1A, 125V	2	5		5920-199-9499
Gear, Worm, 75 Baud	1*			5815-820-4814
Gear, Spur, 75 Baud	1*			5815-821-0221
Gear, Worm, 50 Baud	1*		62197	5815-820-4813
Gear, Spur, 50 Baud	1*			5815-820-1504

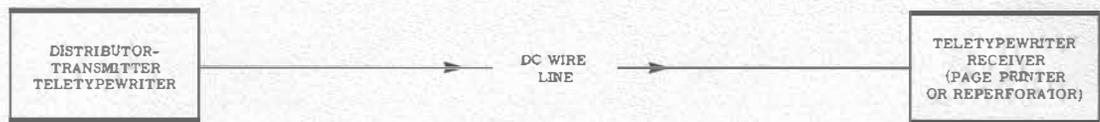
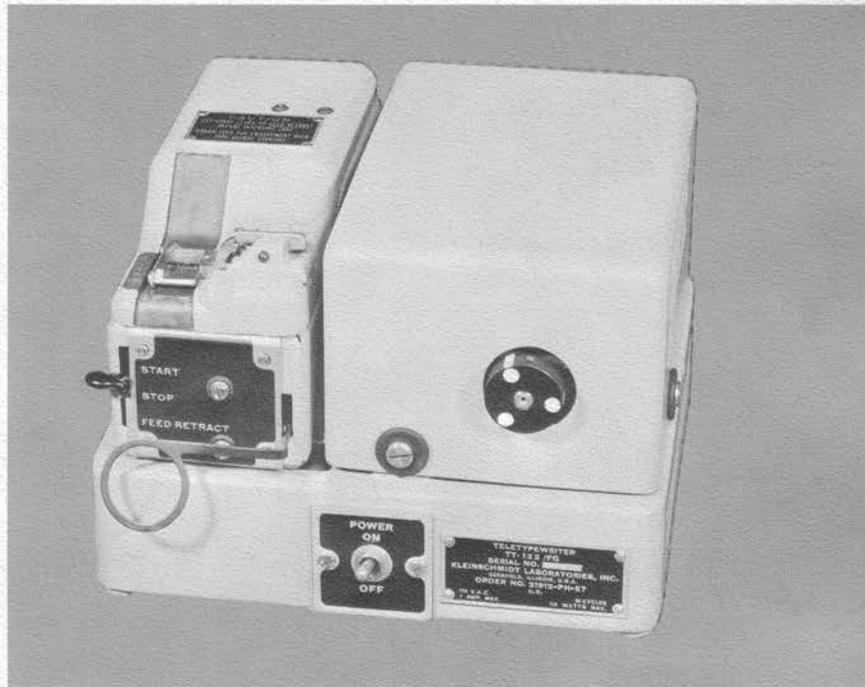
* Indicates available alternate gear sets.

Distributor-Transmitters

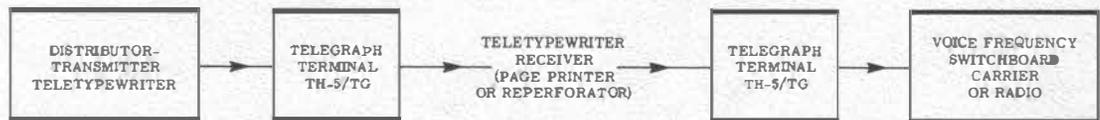
TT-122A/FG,
TT-123A/FG
and TT-235/FG

The Distributor Transmitter is a compact lightweight unit comprising a tape reading transmitter distributor and a driving motor mounted on a base. It is designed for installation in fixed station and mobile communication centers, to transmit start-stop five unit code impulses to teletypewriter receiving equipment, via dc wire lines or via carrier or radio telegraph equipment. The equipment can be used at standard operating speeds between 60 and 100 words per minute. Alternate gear sets are available for procurement to permit on-site speed changes within this range.

Model TT-235/FG is equipped with a remote control facility to enable it to transmit one character at a time on demand, or operate like the other models in a free running mode. An integral battery is provided for the pulsing control mechanism. Signal battery is not provided.

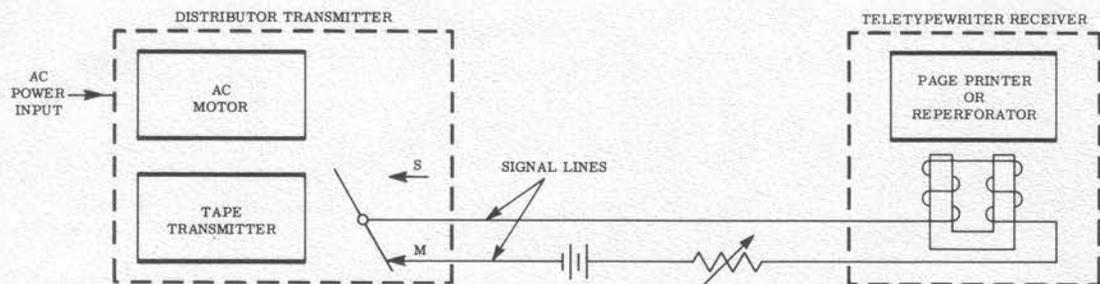


A. DIRECT WIRE LINE



B. VF CARRIER OR RADIO EQUIPMENT

TYPICAL APPLICATION, BLOCK DIAGRAM



TYPICAL APPLICATION, HOOK-UP SCHEMATIC

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Manufacturing Specification
 ... MIL-D-140740A.
 Military Manual
 ... See ordering information.

SIGNALING CHARACTERISTICS:

Type of Signals (Signal Battery Not Provided)
 ... Neutral 20 and 60 ma dc.
 ... Polar 30 ma.
 Type of Code
 ... Baudot, five data bits, plus start bit and stop element.
 Code Units per Character
 ... 7.00 or 7.42 units as specified (see under Operational Speeds Available below).
 Distortion
 ... Not more than 5 percent into dc line at 368.1 operations per minute.

MOTOR POWER REQUIREMENTS:

115 w., 115 vac, 60 Hz, single phase; or
 184 w., 105 thru 125 vac, 50-60Hz, single phase.

TAPE SIZE:

7/8- or 11/16-inch paper tape.

TEMPERATURE AND PRESSURE LIMITS:

(Tests per MIL-STD-169 AWO-170)

Temperature	Pressure	
	Inches of Mercury	Equivalent Altitude
Equipment in use		
... +32°F (+55°C)	16.88	15,000
Equipment in storage		
... -80°F (-62.2°C) thru 160°F (+71.1°C)	5.8	40,000

FINISH:

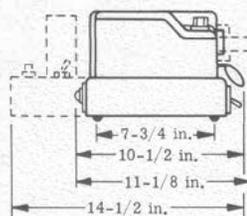
Semi-gloss gray per MIL-E, 15090.

OPERATIONAL SPEEDS AVAILABLE:

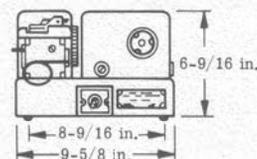
(Using Alternate Gear Sets)
 Equipments are classified as either "words per minute (WPM) rated" or "baud* rated,"
 ... WPM Rated Equipments (TT-122A/FG and TT-123A/FG)
 Per Minute
 Words (7.42 unit code) 60 75 100
 Operations 368.1 480 600
 ... Baud Rated Equipments (TT-235/FG)
 Bauds (7.00 unit code) 45.5 56.8 75
 Approximate WPM 65 81.2 107
 * Bits per second.

DIMENSIONS AND WEIGHT (Inches and Pounds):

	Height	Width	Depth	Weight
TT-122A/FG	6-9/16	9-5/8	10-1/2	17-3/16
TT-123A/FG	6-9/16	9-5/8	11-1/8	17-3/16
TT-235/FG	6-9/16	9-5/8	14-1/2	20-1/2



SIDE VIEW



FRONT VIEW

ORDERING INFORMATION

DIFFERENCES IN MODELS				END ITEM	FEDERAL STOCK NO.
PULSING CONTROL	CODE UNITS	MOTOR TYPE	RATING		
NO	7.42	S	W	Teletypewriter TT-122A/FG	5815-557-6257
NO	7.42	G	W	Teletypewriter TT-123A/FG	5815-557-6256
YES	7.00	S	B	Teletypewriter TT-235/FG	5815-474-4063

Technical Manual TM 11-2277 (TO 31W4-2FG-1141)

FUNCTIONAL PARTS

ACCESSORIES	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.	WHERE USED		
					TT-122A/FG	TT-123A/FG	TT-235/FG
Gear, Worm, 100 WPM		1*	52108	5815-534-3010	x	x	
Gear, Worm Wheel, 100 WPM		1*	52109A	5815-534-3011	x	x	
Gear, Worm, 60 WPM		1*	52105	5815-697-7889	x	x	
Gear, Worm Wheel, 60 WPM		1*	52106A	5815-697-7890	x	x	
Fuse, Cartridge, 1A, 250V	2	5	20468	5920-284-9220	x		
Fuse, Cartridge, 1.6A, 125V	2	5	20455	5920-224-5269		x	
Fuse, Cartridge, 1A, 125V	2	5		5920-199-9499			x
Gear, Worm, 75 baud	1*			5815-820-4814			x
Gear, Spur, 75 baud	1*			5815-821-0221			x
Gear, Worm, 50 baud	1*		62197	5815-820-4813			x
Gear, Spur, 50 baud	1*			5815-820-1504			x

*Indicates alternate gear sets.

Markable Distributor Transmitter

TT-174A/FG

Teletypewriter Distributor-Transmitter TT-174A/FG is a markable distributor-transmitter (MTD). It converts simultaneous teletypewriter signals received from other sources within a central office into sequential, start-stop, teletypewriter code groups. The sequential code groups are transmitted to other teletypewriter units within a central office or to outgoing lines.



TECHNICAL CHARACTERISTICS

SPEED:

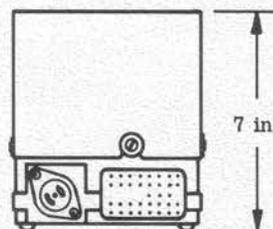
Operations per Minute (OPM)
 ... 368.1 404 460 or 600
 Words per Minute (WPM)
 ... 60 66 75 or 100

MOTOR POWER REQUIREMENTS:
 184 watts, 105 to 125 volts, 60 cps, single phase, synchronous, 1/40 hp, 3600 rpm.

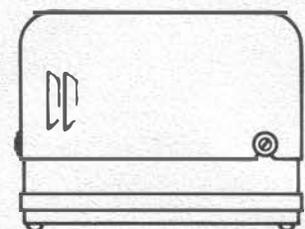
DISTORTION TOLERANCE:
 ± 5 percent (maximum) of transmitted signals.

DIMENSIONS AND WEIGHT (Inches and Pounds):

Height	Width	Depth	Weight
6	7	9	10-1/2



FRONT VIEW



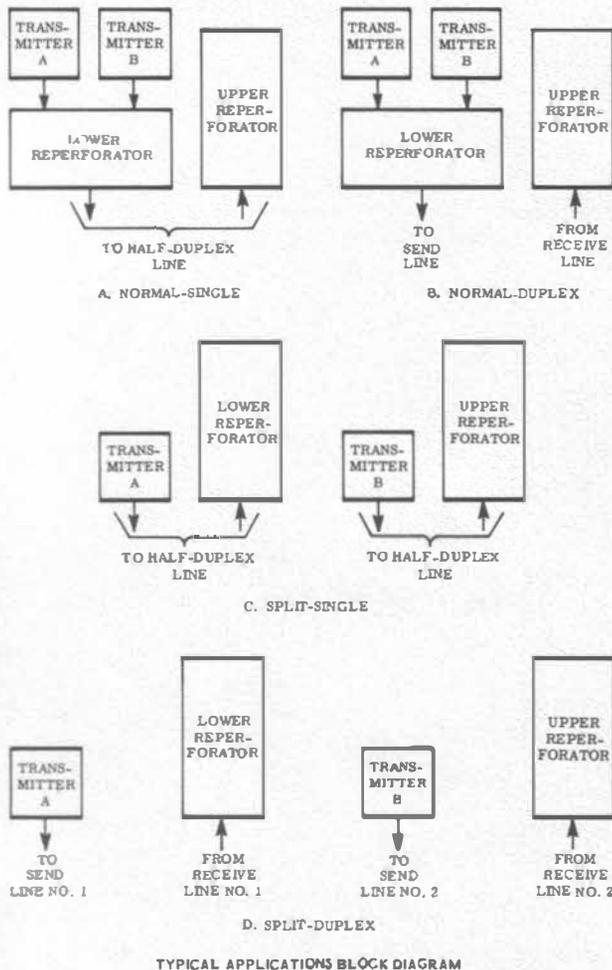
SIDE VIEW

ORDERING INFORMATION

END ITEM	FEDERAL STOCK NO.
TT-174/FG	5815-557-6258

Semiautomatic Send-Receive Monitor Tape Relay

AN/TGC-5
AN/TGC-12



TELETYPEWRITER SET AN/TGC-5

Teletypewriter Set AN/TGC-5 consists of a transmit and a receive console. It is a semi-automatic teletypewriter set that sends, receives and monitors teletypewriter messages, using the Baudot, start-stop, 7.42 unit code signals.

Messages are transmitted from, and received on, a perforated tape on which the text of the message is also printed. The set is used in fixed station tape relay centers, or in tributary stations that are part of a tape relay network. Transmission and reception may be at either 60 or 100 words per minute on 20- or 60-ma neutral signals. The set may be arranged for either half-duplex or full-duplex operation, or to transmit signals

on a 10-wire simultaneous basis.

In addition to the open signal line alarm, automatic message numbering and automatic tape feed-out; features include a remotely controlled rerun transmitter and a priority alarm lamp. The rerun transmitter enables the TGC-5 to retransmit, on command, a previously garbled or faded message. The priority alarm lamp lights to indicate reception of a priority message.

TELETYPEWRITER SET AN/TGC-12

Teletypewriter Set AN/TGC-12 is basically the same as described above except that it operates on 7.00 unit code, and is readily adaptable for control from an external pulsing source.

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Manufacturing Specification
 ... MIL-T-12562
 Military Manuals
 ... See ordering information.

SIGNALING CHARACTERISTICS:

Signaling Code
 ... Baudot, five data bits plus start bit and stop element.
Type of Signals
 ... Transmitted - 20 or 60 ma neutral (Battery optional).
 ... Received - 20 or 60 ma neutral and 30 ma polar.
Transmitted Signal Distortion
 ... Plus or minus 5 percent.
Distortion Tolerance (Received Signal)
 ... 60 WPM - 40 percent maximum.
 ... 100 WPM - 30 percent maximum.

PRINT SYMBOLS:

English - Standard communications.

MOTOR POWER REQUIREMENTS:

105- to 125-volt, 60-cycle, ac, single phase at 10 amperes.

TYPE OF INSTALLATION:

Fixed station.

OPERATIONAL SPEEDS AVAILABLE:

60 and 100 WPM. Quick change gear sets for other speeds within this range are available.

TAPE SPECIFICATIONS:

Paper Tape Size
 ... Transmitters - 7/8 and 11/16 inch.
 ... Reperforators - 7/8 inch only.
 Tape Capacity (Reperforators)
 ... 5 hours, 20 minutes at 60 WPM.
 ... 3 hours, 10 minutes at 100 WPM.

RFI SUPPRESSION:

Teletypewriter does not interfere with radio reception at frequencies between .35 and 150 mc when located one foot or more from the radio antenna.

FINISH:

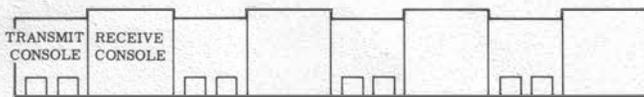
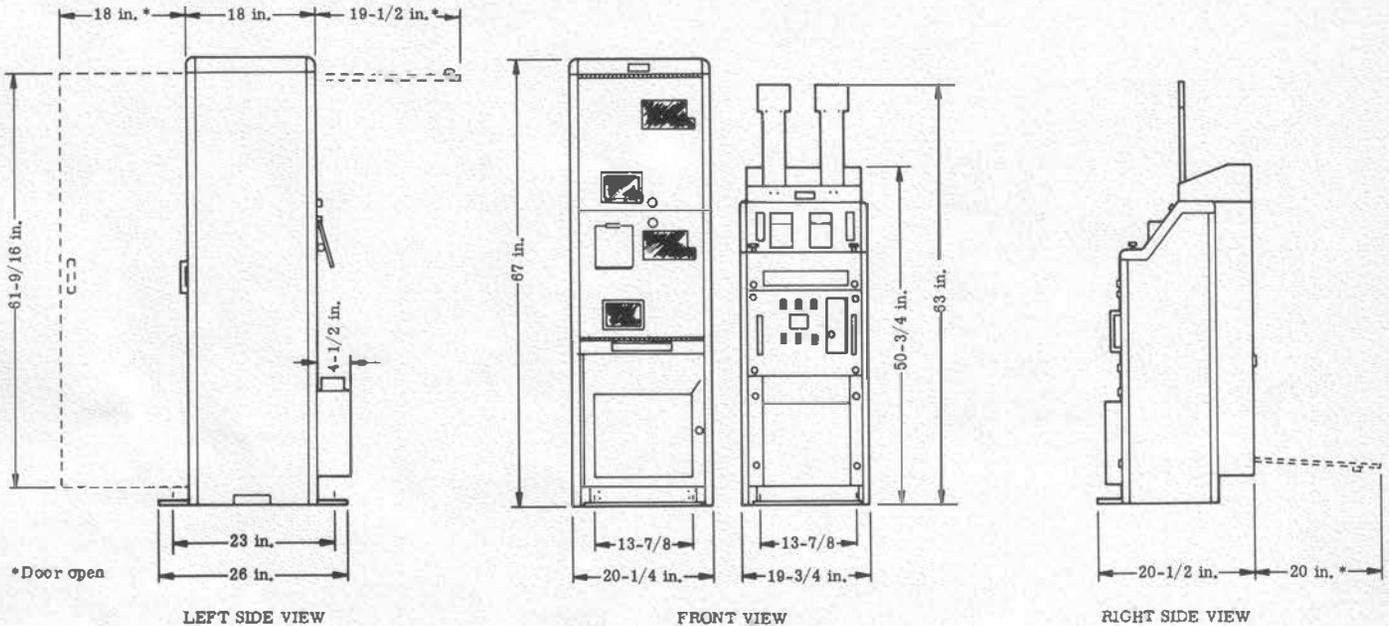
Semi-gloss gray per MIL-E-15090.

WEIGHT (In Pounds):

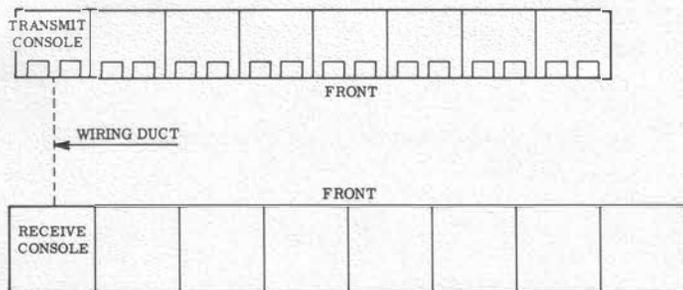
Transmit Console (Without tape holder) 223
 Receive Console 303

DIMENSIONS (In Inches):

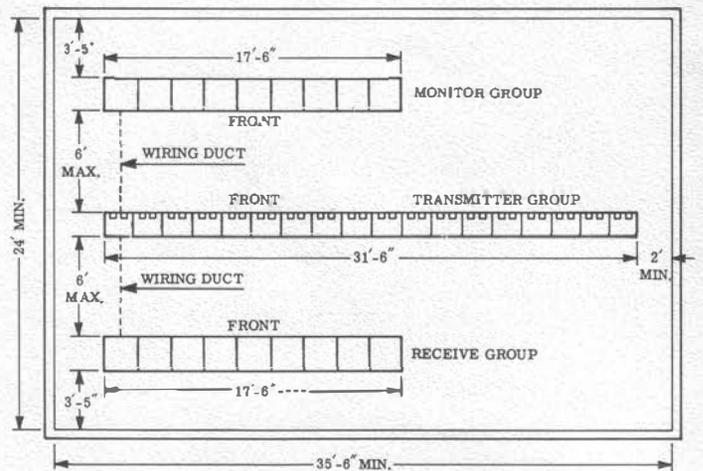
	Height	Depth	Width
Transmit Console (Without tape holder)	50-1/4	20-1/2	19-3/4
(With tape holder)	63		
Receive Console	67	26	20-1/4



A. TYPICAL SINGLE ROW INSTALLATION



B. TYPICAL DOUBLE ROW INSTALLATION



C. TYPICAL TRIPLE ROW INSTALLATION

FLOOR PLANS FOR TYPICAL INSTALLATIONS OF THE AN/TGC-5(4)

ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

CODE UNITS	DIFFERENCES IN MODELS		END ITEM	FEDERAL STOCK NO.	MAJOR COMPONENT	FEDERAL STOCK NO.	MINOR COMPONENT (See Accessory List Below)	FEDERAL STOCK NO.
	MOTOR TYPE S = Sync.	TRANSMIT CONTROL F = Ser. Gov. R = Fixed Rate E = Ready Busy						
7.42	S	F	Teletypewriter Set AN/TGC-5B	5815-082-4221	Console (Xmit) Switching Control CY-2215C/TGC-5 Console (Rec) Switching Control CY-2216B/TGC-5	5815-082-4217 5815-082-4218	Reperforator Teletypewriter TT-224B/TG	5815-556-0449
7.42	G	F	Teletypewriter Set AN/TGC-5BX	5815-082-4222	Console (Xmit) Switching Control CY-2214C/TGC-5X Console (Rec) Switching Control CY-2213B/TGC-5X Two Technical Manuals TM 11-2249-10 with changes	5815-082-4220 5815-082-4219 NFSNR (GFP)	Reperforator Teletypewriter TT-225B/TG	5815-552-9380
7.00	S	F and R	Teletypewriter Set AN/TGC-12		Console (Xmit) Switching Control CY-2515/TGC-12 Console (Rec) Switching Control CY-2216A/TGC-5A	5815-647-3953	Reperforator Teletypewriter TT-224/TG	5815-556-0449
7.00	G	F and R	Teletypewriter Set AN/TGC-12X		Console (Xmit) Switching Control CY-2514/TGC-12X Console (Rec) Switching Control CY-2213A/TGC-5X	5815-647-3952	Reperforator Teletypewriter TT-225/TG	5815-552-9380
Auxiliary equipment available - - - - -							Distributor-Transmitter Teletypewriter TT-260/FG Power Supply PP-1801/FG	5815-690-8725 5815-542-6442

FUNCTIONAL PARTS

ACCESSORIES	TRANSMIT CONSOLE		RECEIVE CONSOLE		FEDERAL STOCKNO.	PART NO.
	IN USE	SPARES	IN USE	SPARES		
Fuse, Cartridge; Type FO 2DIR 60B	2	5	8	10	5920-224-5269	
Fuse, Cartridge; 2A, 125V			2	5	5920-297-7013	
Fuse, Cartridge; Type FO 36 10ROA			2	5	5920-280-5002	20475
Gear, Worm; 368.1 OPM	1*				5815-697-7889	52105
Gear, Worm Wheel; 368.1 OPM	1*				5815-697-7890	52106A
Gear, Worm; 600 OPM		1*			5815-534-3010	52108
Gear, Worm Wheel; 600 OPM		1*			5815-534-3011	52109A
Lamp, Incandescent, 48V, 0.032 A	4	1	4	1	6240-715-0037	
Lamp, incandescent, 120V, 15W			2	1	6240-143-3084	
Wrench, Open End Fixed		1			5120-650-4552	58420A
Reperforator Teletypewriter				2	See components list above.	
Each reperforator includes the following:						
Gear, Worm Wheel; 368.1 OPM			1*		5815-378-5593	50352A
Gear, Worm Wheel; 368.1 OPM			1*		5815-203-1678	50350
Gear, Worm Wheel; 600 OPM				1*	5815-351-7944	50597
Gear, Worm Wheel; 600 OPM				1*	5815-203-1327	50596
Spool, Teletypewriter Ribbon			1		5815-356-3227	10900
Ribbon, Teletypewriter, Black			1	2	7510-511-6690	10901
Tape, Teletypewriter; 7/8 in.			2	8	7530-634-6237	10982
Power Supply PP-1801/FG (120V)					5815-542-6442	58001A
Transmit Battery Option						
Fuse, Cartridge 3/10 A.			1	4	5920-235-8362	

* Alternates.

Mobile Semiautomatic Distributor Transmitter

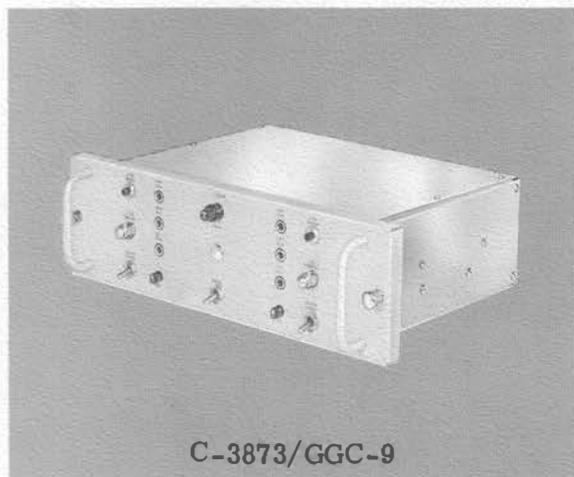
AN/GGC-9



MX-3650-GGC-9



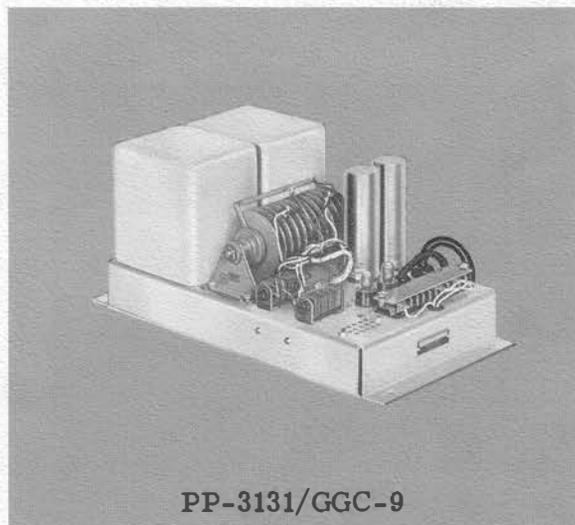
TT-322/GGC-9



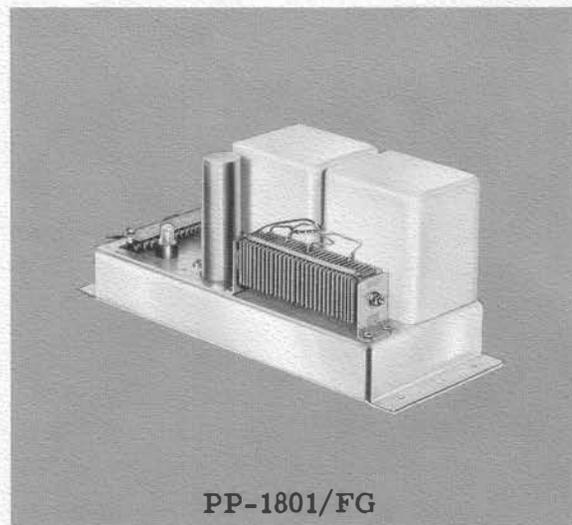
C-3873/GGC-9

Distributor-Transmitter Set, Teletypewriter AN/GGC-9 transmits teletypewriter messages from 11/16- or 7/8-inch wide perforated tape. It also transmits message identification and processing information consisting of channel designating letters, message numbers, and message processing information for either automatic or semi-automatic teletypewriter switching systems.

The set consists of two TRMTD's, a numbering unit, control base, 48V power supply and a 120V power supply.



PP-3131/GGC-9



PP-1801/FG

TECHNICAL CHARACTERISTICS

DISTRIBUTOR SET

NUMBERING UNIT

TYPE OF INSTALLATION:
Mobile communication center.

MOTOR TYPE:
Series-governed.

NUMBERING RANGE:
001 to 999.

POWER REQUIREMENTS:
105 to 125 VAC, 50-60 cycle,
single phase.

TYPE OF SIGNALS:
Neutral (20 or 60 ma).

POWER INPUT REQUIREMENT:
48 VDC.

SIGNALING CODE:
7.42 unit code.

OPERATING SPEEDS:
60, 66, 75 and 100 wpm.

ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

END ITEM	FED. STOCK NO.	MAJOR COMPONENTS	FED. STOCK NO.
Distributor-Transmitter AN/GGC-9	5815-892-3434	Distributor-Transmitter TT-322/GGC-9 (Two required)	5815-892-3435
		Numbering Unit, Teletypewriter Message MX-3650A/GGC-9	5815-856-3909
		Power Supply, PP-3131/GGC-9 (48V)	5815-823-2956
		Cable Assembly, Special Purpose Electrical, Branched CX-7640/GGC-9	5995-876-4270
		Cable Assembly, Power, Electrical Branched CX-7641/GGC-9	5995-876-4269
		Cable Assembly, Special Purpose Electrical CX-7642/GGC-9 (Two required)	5995-823-2953
		Cable Assembly, Power, Electrical CX-7643/U	5995-823-2947
		Control, Distributor-Transmitter Teletypewriter C-3873/GGC-9	5815-856-3908
		Power Supply, PP-1801/FG (120V)	5815-542-6442
		Technical Manual TM 11-5815-281-12 With Applicable Changes (Two required)	
			GFP

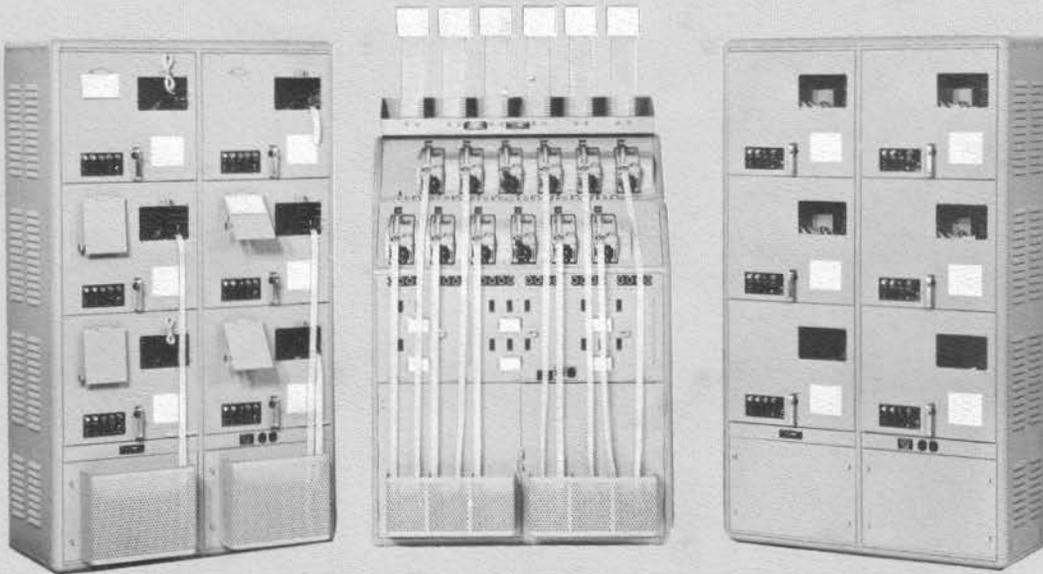
FUNCTIONAL PARTS

ACCESSORIES	IN USE	SPARES	PART NO.	FEDERAL STOCK NO.	WHERE USED	
					AN/GGC-9	TT-322/GGC-9
Brush, Motor	4		60503	5977-686-5195	x	x
Brush, Governor	4		51543A	5977-521-8272	x	x
Brush, Governor	2			5920-232-5279	x	x
Fuse, 1.6 Amp	4	10	20455	5920-224-5269	x	x
Gear, Worm, 100 WPM		2*	52108	5815-534-3010	x	x
Gear, Spur, 100 WPM		2*	52109A	5815-534-3011	x	x
Fuse, 3 Amp	1	5	20481	5920-131-9821	x	x
Fuse, 3 Amp	1	5	20472	NFSN	x	x
Fuse, 2 Amp	1	5	20470	5920-543-1166	x	x

*Indicates alternate gear sets.



AN/FGC-70



Teletypewriter Set AN/FGC-70 consists of a transmit, a receive, and a monitor console. It is a semi-automatic teletypewriter set that sends, receives and monitors teletypewriter messages, using the Baudot, start-stop, five unit code signals.

Messages are transmitted from, and received on, perforated tape on which the text of the message is also printed. The set is used in fixed station tape relay centers, or in tributary stations that are part of a tape relay network.

The equipment can terminate six signal lines on a half-duplex (send-receive) basis, or six send and six receive on a full-duplex basis. The equipment may be specified on procurement to include an additional bank of six transmitters (as pictured here) to permit tandem (alternate) operation on each send line.

The Monitor Console contains six typing reperforators with take-up reel mechanisms, six tape transmitters for retransmission of tape when necessary, and six transmission control boxes. It also

includes a small (20 ma) dc power supply which is suitable for transmission line battery to local cryptographic equipment. A terminal board and adequate space is available in the bottom of the console for the installation of a dc power supply if external signal line battery is to be required from the AN/FGC-70.

The Transmit Console features six channel numbering units, one for each outgoing circuit, which provides a visible indication of the sequence numbers of the messages being transmitted, six dc power supplies, and six line control relays. The relays are equipped with line current potentiometers and breaklock relays to prevent transmission from a TRMTD to an open line. Six tape holders and a tape tray are mounted atop the console cabinet.

The Receive Console contains six typing reperforators and associated control boxes, and a 48 vdc power supply which provides power for the relay control functions of all three consoles. It features audible and visible priority message alarms, and manual tape feed-out control.

TECHNICAL CHARACTERISTICS

TYPE OF INSTALLATION:
Fixed station.

PRINT SYMBOLS:
English - Standard communications.

MOTOR POWER REQUIREMENTS:
104- to 125-volt, 50/60 cycle, ac, single phase at 40 amperes.

TAPE SPECIFICATIONS:
Paper Tape Size
... Transmitters - 7/8 and 11/16 inch, chad or chadless.
... Reperforators - 7/8 and 11/16 inch, chad type only.

Tape Capacity (Reperforators)
... 5 hours, 20 minutes at 60 WPM.
... 3 hours, 10 minutes at 100 WPM.

SIGNALING CHARACTERISTICS:
Signaling Code
... 7.42, start-stop, five unit.
Type of Signals
... Transmitted - 20 or 60 ma neutral.
... Received - 20 or 60 ma neutral and 30 ma polar.
Transmitted Signal Distortion
... Plus or minus 5 percent.
Distortion Tolerance (Received Signal)
... 60 WPM - 40 percent maximum.
... 100 WPM - 30 percent maximum.

OPERATIONAL SPEEDS AVAILABLE:
60, 66, 75 or 100 WPM. Quick change gear sets for speeds within this range are available.

FINISH:
Semi-gloss gray per MIL-E-15090.

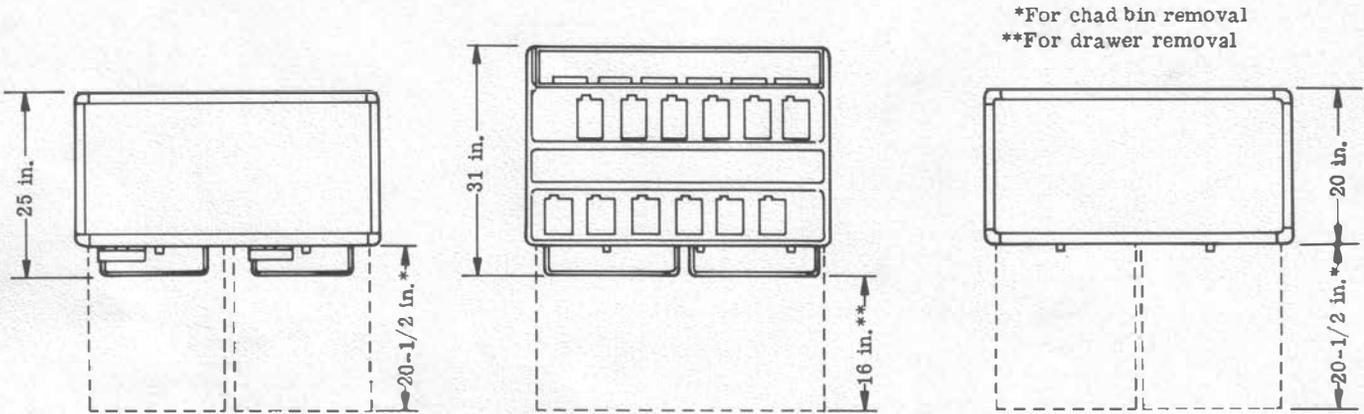
RFI SUPPRESSION:
Teletypewriter does not interfere with radio reception at frequencies between .35 and 150 mc when located one foot or more from the radio antenna.

DIMENSIONS (In Inches):

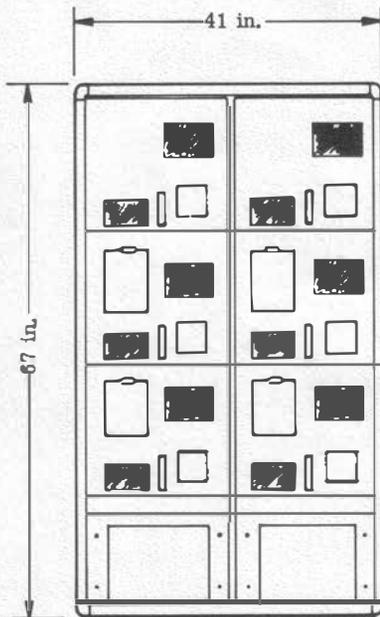
	Height	Depth	Width
Transmit Console (Without tape holder)	54-1/4	31	41
(With tape holder)	71-1/2		
Monitor Console	67	20	41
Receive Console	67	25	41

WEIGHT (In Pounds):

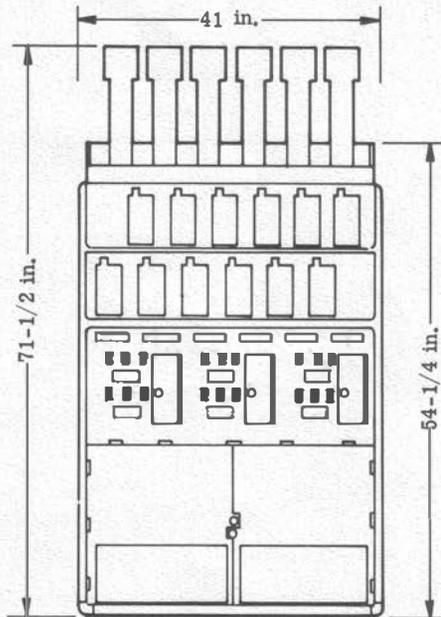
Transmit Console (Without tape holder)	700
Monitor Console	750
Receive Console	800



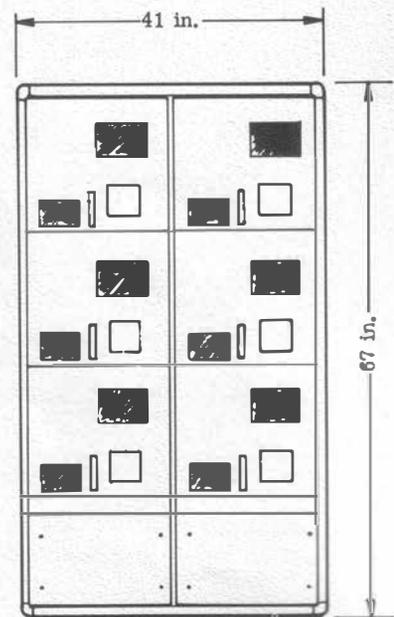
*For chad bin removal
**For drawer removal



RECEIVE
CONSOLE



TRANSMIT
CONSOLE



MONITOR
CONSOLE

ORDERING INFORMATION

END ITEMS AND MAJOR COMPONENTS

NOMENCLATURE	FEDERAL STOCK NO.	WHERE USED																			
		Quantity Required	Tty. Set	AV/FGC-70	Tty. Set	AV/FGC-70	Dis. Trans. Gp. OA-4192A/FGC-70	Dis. Trans. Gp. OA-3987A/FGC-70	Rec. Gp. OA-4193A/FGC-70X	Rec. Gp. OA-3988A/FGC-70	Mon. Gp. OA-4194A/FGC-70X	Mon. Gp. OA-3989/FGC-70X									
Teletypewriter Set AN/FGC-70 - - - - (Series Governed Motor)	5815-889-3870	1	x																		
Teletypewriter Set AN/FGC-70X - - - - (Synchronous Motor)	5815-892-3841	1		x																	
Distributor-Transmitter Group, Teletypewriter OA-4192A/FGC-70	5815-889-3871	1	x			x															
Distributor-Transmitter Group, Teletypewriter OA-3987A/FGC-70X	5815-064-5437	1		x				x													
Distributor-Transmitter, Teletypewriter TT-364A/FGC-70X	5815-064-5446	6	x	x		x		x													
Numbering Unit, Teletypewriter Message MX-6438A/FGC-70X	5815-072-6133	3	x	x		x		x													
Control, Distributor-Transmitter Teletypewriter C-6263/FGC-70X	5815-072-6134	6	x	x		x		x													
Cabinet, Electrical Equipment CY-3719A/FGC-70	5815-892-9067	1	x			x															
Cabinet, Electrical Equipment CY-3639A/FGC-70X	5815-064-5433	1		x				x													
Installation Kit, Distributor-Transmitter Teletypewriter MK-695A/FGC-70	5815-973-2414	1	x			x															
Installation Kit, Distributor-Transmitter Teletypewriter MK-675A/FGC-70X	5815-064-5444	1		x				x													
Receiver Group, Teletypewriter OA-4193A/FGC-70	5815-889-3872	1	x							x											
Receiver Group, Teletypewriter OA-3988A/FGC-70X	5815-064-5439	1		x								x									
Repeater, Teletypewriter TT-390A/FGC-70	5815-889-3869	6	x							x											
Repeater, Teletypewriter TT-365A/FGC-70X	5815-892-3842	1		x								x									
Power Supply, PP-3427/FGC-70X (48 VDC)	5815-889-0842	1	x	x						x		x									
Cabinet, Electrical Equipment CY-3640A/FGC-70X	5815-064-5436	1	x	x						x		x									
Modification Kit, Universal Tape Printing MK-771/FGC	5815-078-4217	12	x	x						x		x									
Monitor Group, Teletypewriter OA-4194A/FGC-70	5815-889-3873	1	x																	x	
Monitor Group, Teletypewriter OA-3989/FGC-70X	5815-064-5445	1		x																	x
Repeater, Teletypewriter TT-391A/FGC-70	5815-889-3868	6	x																	x	
Repeater, Teletypewriter TT-366A/FGC-70X	5815-892-3843	1		x																	x
Power Supply PP-3428/FGC-70X (20 MA, 120 VDC)	5815-889-0841	1	x	x																x	x
Distributor-Transmitter Teletypewriter TT-367/G	5815-064-5442	2	x	x																x	x
Cabinet, Electrical Equipment CY-3641A/FGC-70X	5815-892-9031	1	x	x																x	x
Installation Kit, Distributor-Transmitter Teletypewriter MK-682/FGC-70X	5815-064-5443	2	x	x																x	x
Operation and Maintenance Manual and Changes TM 11-5815-283-12		1	x	x																	
Field and Depot Maintenance Manual and Changes TM 11-5815-283-35		1	x	x																	

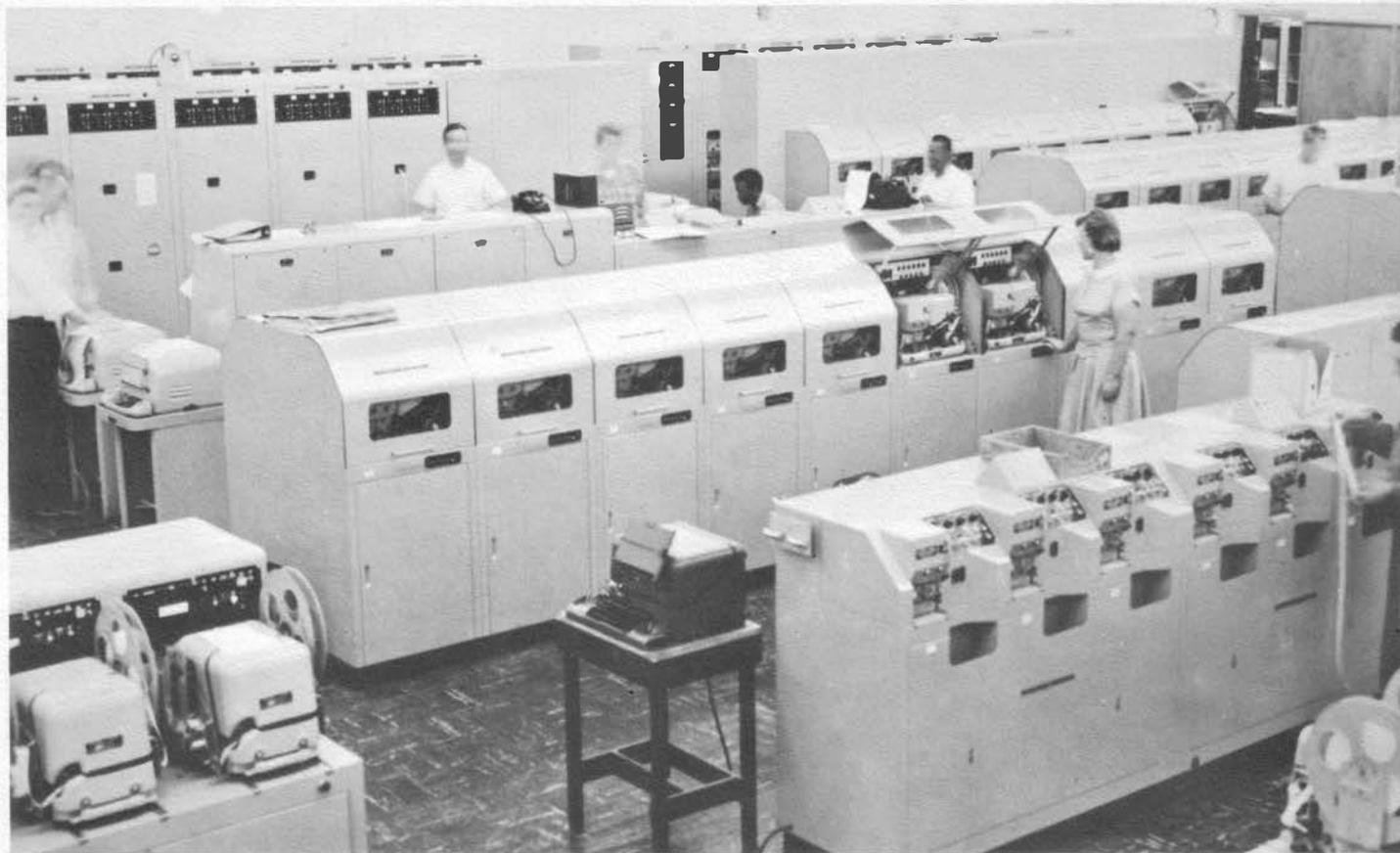
FUNCTIONAL PARTS

ACCESSORIES	PART NO.	FEDERAL STOCK NO.	WHERE USED																			
			Dist. Trans. Gp. OA-4192A/FGC-70	Dist. Trans. Gp. OA-3987A/FGC-70X	Rec. Gp. OA-4193A/FGC-70	Rec. Gp. OA-3988A/FGC-70	Mon. Gp. OA-4194A/FGC-70	Mon. Gp. OA-3989/FGC-70	Cab. Elect. Eq. CY-3719A/FGC-70X	Cab. Elect. Eq. CY-3639A/FGC-70	Reper. Tty. TT-390A/FGC-70	Reper. Tty. TT-365A/FGC-70X	Power Sup. PP-3427/FGC-70X	Cab. Elect. Eq. CY-3640A/FGC-70X	Reper. Tty. TT-391A/FGC-70	Reper. Tty. TT-366A/FGC-70X	Power Sup. PP-3428/FGC-70X					
Fuse, Cartridge, 6 Amp., 250 V	20482	5920-548-3126	1	3	1	3																
Fuse, Cartridge, 2 Amp., 250 V	20474	5920-581-4144	2	5																		
Fuse, Cartridge, 10 Amp., 250 V	20475	5920-280-5002			1	3	1	3														
Fuse, Cartridge, 12 Amp., 250 V	23502	5920-660-6264			1	3	1	3														
Fuse, Cartridge, 5 Amp., 250 V	23503	5920-296-1519			1	3	1	3														
Fuse, Cartridge, 1.6 Amp., 125 V	20455	5920-224-5289			6	10	6	10	6	10	6	10										
Fuse, Cartridge, 1 Amp., 125 V	20488	5920-284-9220			1	5	1	5	1	5	1	5										
Fuse, Cartridge, 5 Amp., 250 V	20480	5920-298-0879	1	3	1	3	1	3	1	3	1	3	1	3	1	3						
Fuse, Cartridge, 3 Amp., 250 V	23500	5920-010-6652			1	5	1	5														
Fuse, Cartridge, 1/4 Amp., 250 V	20466	5920-043-2641							1	5	1	5										
Fuse, Cartridge, 3/8 Amp., 250 V	23504	5920-660-6859							1	5	1	5									1	
Fuse, Cartridge, 2 Amp., 250 V	20483	5920-280-4960							1	5	1	5									5	
Fuse, Cartridge, 3 Amp., 125 V	20481	5920-131-9821																				
Lamp, Incandescent, .032 Amps., 48 V	20907	8240-153-6515	24	5	24	5	24	5	24	5	18	4	18	4	24	5	24	5				
Lamp, Incandescent, 10 W, 120 V	23213	8240-892-6102			6	3	6	3	6	3	6	3	6	3								
Lamp, Incandescent, 1/7 W, 115 V	23233	8240-682-3411			6	3	6	3	6	3	6	3	6	3								
Tape, Teletypewriter, 7/6-inch width	10982	7530-634-8237			6	6	6	6	6	6	6	6	6	6								
Ribbon, Teletypewriter (Black)	10901	7510-511-6690			6	6	6	6	6	6	6	6	6	6								
Spool, Teletypewriter Ribbon	10900	5815-356-3227			6	6	6	6	6	6	6	6	6	6								
Gear, Worm, 100 WPM**	50596	5815-203-1327							6	6	6	6	6	6								
Gear, Worm Wheel, 100 WPM**	50597A	5815-351-7944							6	6	6	6	6	6								
Gear, Worm, 100 WPM**	52108	5815-534-3010																				
Gear, Worm Wheel, 100 W M**	52109A	5815-534-3011																				
Wrench, Open End	58420A	5120-650-4552	1																			

Note 1: Asterisk (*) indicates either quantity "1" or "2" depending on whether 6 or 12 TRMTD's are installed.
 Note 2: Asterisks (**) indicates alternate gear sets.

Teletypewriter Central Office Set

AN/FGC-30



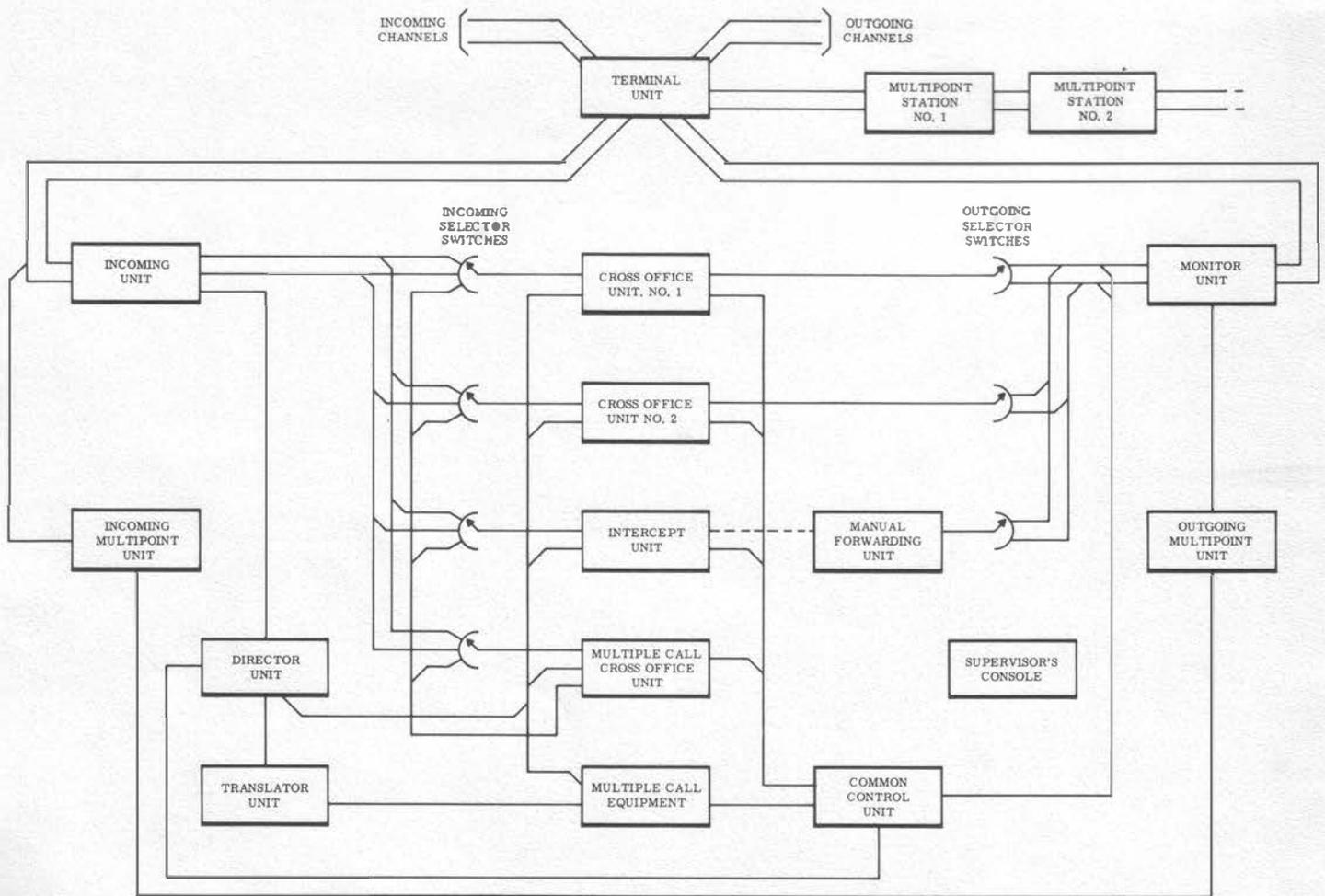
The AN/FGC-30, Teletypewriter Central Office Set, is a fully automatic switching center for routing teletypewriter messages, as required by signaling procedures. In addition to central office automatic switching equipment and components, the Set includes the following end item components: AN/FGC-20, AN/FGC-25, AN/FGC-57. These equipments are described separately in this booklet.

Teletypewriter messages received on incoming reperforators are routed to suitable outgoing lines, or to temporary storage for subsequent retransmission, without the intervention of operators or any manual processing. Intercept facilities are provided, however, to receive traffic which cannot be handled automatically. A means is also provided to monitor and scan traffic on marginal radio circuits before it is switched.

The system can be installed at any point

of a network and it is compatible with existing types of U.S. military switching systems. It requires a minimum of floor space. Plug connected, easily removable, conveniently operated and serviceable components are used.

A minimum system can accommodate 25 lines, but is capable of expansion up to 250 lines by the addition of like components. The following features are inherent in the design: Edge printed tapes, immediate message handling, automatic message numbering, multi-point circuit operation, multi-channel selection, manual forwarding facilities, full precedence consideration, automatic "break in" on high precedence, high message security, multiple call messages, routing indicator flexibility, alternate routing facilities, message sequence control, rerun routing facilities, and a high level of reliability and easy maintenance.



INTERCONNECTION BLOCK DIAGRAM

TT-107B/FG (TT-175A/FG)

This is a typing reperforator. It perforates and prints paper tape on receipt of serial code groups. It includes a 120 VDC power supply for selector magnet bias. TT-107B/FG is mounted on a table FN-101/FG.

TT-174A/FG

This is a markable transmitter distributor. It receives data on a 5-wire parallel basis and transmits it sequentially (serial basis).

TT-226/FG or TT-254/FG

This combines a typing reperforator with a double shaft TRTD. The reperforator of TT-226/FG includes an end of message recognition feature. The reader of the TRTD senses tape and transmits data on a 5-wire parallel basis. On receipt of a "ready" signal from the receiving device, the tape is sensed by the TD and transmitted on a serial basis.

TT-227/FG or TT-255/FG

This combines a typing reperforator with a single shaft TRTD. Tape from the reperforator passes via a storage bin to the reader and TD. Control data only is transmitted by the reader, whereas all code groups are transmitted by the TD. It is equipped with a tape storage indicator.

TT-228/FG

This is a typing reperforator. It perforates and prints paper tape on receipt of serial code groups. It includes a tape supply reel.

TT-229/FG or TT-256/FG

This is a single shaft TRTD. It senses tape and transmits in parallel and serial form simultaneously.

TT-230/FG

This is a typing reperforator. It perforates and prints paper tape on receipt of serial code groups. It includes tape supply and take-up reels.

TT-231/FG or TT-257/FG

This combines a typing reperforator with a double shaft TRTD. Tape from the reperforator passes via a storage bin to the reader and TD. On receipt of a "ready" signal from the receiving device, tape is sensed by the TD and transmitted in serial form.

TT-239/FG

This is a tape reader. It senses perforated tape at speeds up to 25 characters per second (250 WPM) and provides a 5-wire parallel output. Power for tape feed and code sensing is provided by a stepping magnet. Indicators include switches for tight tape and end of message, and a retransmit lamp.

SA-419/FG

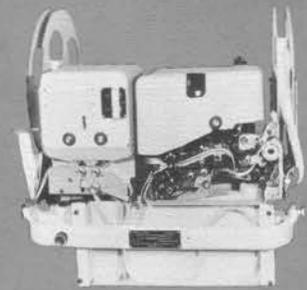
This is a code actuated switch. It is commonly called the "SCAT". It receives serial teletypewriter code groups, and completes one of 32 output circuits, depending on the code group arrangement received.



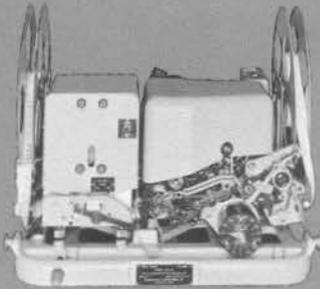
TT-174A/FG



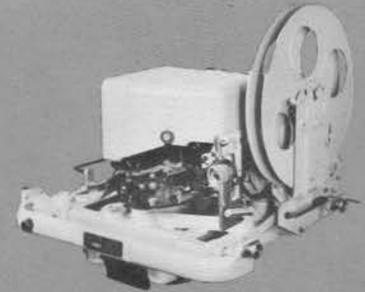
TT-107B/FG (TT-175A/FG)



TT-226/FG or TT-254/FG



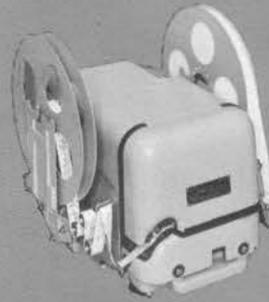
TT-227/FG or TT-255/FG



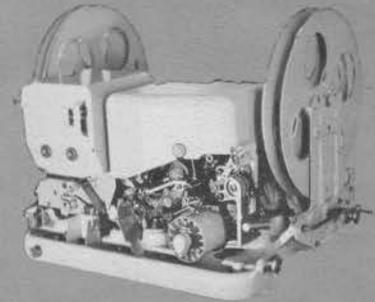
TT-228/FG



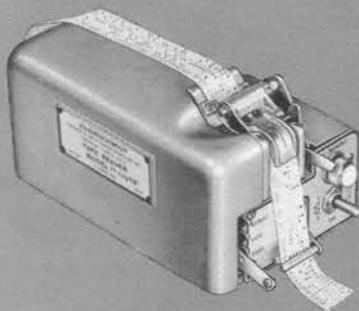
TT-229/FG or TT-256/FG



TT-230/FG



TT-231/FG or TT-257/FG



TT-239/FG



SA-419/FG

TELETYPEWRITER MAJOR COMPONENTS OF TELETYPEWRITER CENTRAL OFFICE SET AN/FGC-30

END ITEM	FEDERAL STOCK NO.	LOCAT ON (Cabinet)	UNITS Quantity Required For Typical 100-Line System
Teletypewriter Set AN/FGC-20	5815-503-2652		4
Teletypewriter Set AN/FGC-25	5815-503-3316		4
Teletypewriter Set AN/FGC-57	5815-517-6152		4
Teletypewriter Distributor Transmitter TT-174A/FG	5815-557-6258		117
Teletypewriter Reperforator Set TT-226/FG or Teletypewriter Reperforator Set TT-254/FG	5815-602-5255	In coming	102
Teletypewriter Reperforator Set TT-227/FG or Teletypewriter Reperforator Set TT-255/FG	5815-542-7101	Incoming	102
Teletypewriter Reperforator Set TT-227/FG or Teletypewriter Reperforator Set TT-255/FG	5815-602-5256	Cross Office	119
Teletypewriter Reperforator Set TT-228/FG	5815-542-7102	Cross Office	119
Teletypewriter Reperforator Set TT-228/FG	5815-602-5257	Cross Office Intercept	19
Teletypewriter Distributor Transmitter TT-229/FG or Teletypewriter Distributor Transmitter TT-256/FG	5815-538-2787	Manual Forwarding	14
Teletypewriter Distributor Transmitter TT-256/FG	5815-542-7169	Manual Forwarding	14
Teletypewriter Reperforator Set TT-230/FG	5815-538-2783	Monitor	102
Teletypewriter Reperforator Set TT-231/FG or Teletypewriter Reperforator Set TT-257/FG	5815-602-7999	Multicall Cross Office	16
Teletypewriter Reperforator Set TT-257/FG	5815-257-7103	Multicall Cross Office	16
Teletypewriter Tape Reader TT-239/FG	5815-614-9921	Monitor	102
Teletypewriter Code Actuated Switch SA-419/FG	327990-419	Multipoint Incoming	As required
Teletypewriter Reperforator Set TT-175A/FG	5815-503-1170	Standby	9
Teletypewriter Reperforator TT-107B/FG	5815-503-1168	Components of TT-175A/FG	
Table FN-101/FG	5815-519-8148		
Technical Manual for AN/FGC-30	TM 11-5815-203-15		
Technical Manual for Teletypewriter Reperforator TT-107B/FG	TM 11-2226		
Technical Manuals for AN/FGC-20, AN/FGC-25, AN/FGC-57	See Pages 3-3 and 5-3 of this booklet.		

SPECIAL TOOLS AND TEST EQUIPMENT

ITEMS	PART NO.	FEDERAL STOCK NO.	QUANTITY
TE-579A 10-Wire Reperforator		NFSN	4
TE-1000B Circuit Selector and Control Unit		NFSN	1
TE-1001B Contact Switching and Power Supply		NFSN	1
TE-1002 Table		NFSN	4
TE-1003 Isolation Converter		NFSN	1
Carts, Wheeled, for Test Equipment		NFSN	2
Gage, Feeler	56355A	5815-703-8004	6
Gage, Sprocket and pin	56346	NFSN	6
Gage, Ratchet Wheel	56344	NFSN	6
Gage, Spring	15024	NFSN	6
Gage, STCA Bracket	56342	NFSN	6
Gage, Alarm Lever, Adjusting	56343	NFSN	6
Gage, TRTD Gear	56375A	NFSN	6
Hemostat	15032	6515-334-5600	6
Rule, Spring	56347A	NFSN	6
Screwdriver	15023	NFSN	6
Screwdriver, Socket Set	15018-22	NFSN	6
Screwdriver, Socket Set	56351-55	5815-703-15 4	6
Splicer, Tape	56345	NFSN	3
Wrench, Allan	56357-61	5815-703-1546	3
Wrench	15017	NFSN	3

AUXILIARY EQUIPMENT

ITEMS	PART NO.	FEDERAL STOCK NO.	QUANTITY
Bin, Tape	59340A	5815-620-8479	25
Holder, Tape	59700	5815-614-9924	4
Spindle	56295A	5815-614-9922	20
DXD-1 Modification Kit (AN/FGC-30)		NFSN	1

ORDERING INFORMATION

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

Military Manuals
... See ordering information.

ELECTRICAL POWER REQUIREMENTS:

(TT-239/FG Excepted)
... 1.6 amperes at 115 VAC, regulated 60 Hz,
single phase.
TT-239/FG
... 1.3 amperes at 48 VDC.

MOTORS:

(TT-239/FG Excepted)
... Synchronous 3600 rpm.
TT-239/FG
... Powered by a stepping magnet.

SEQUENTIAL SIGNALING CHARACTERISTICS:

(TT-239/FG Excepted)
Type of Signals
... Incoming and Outgoing - Neutral, 20 or
60 ma.
... Intra System - Polar 30 ma.
Type of Code
... Baudot, five data bits plus start bit and stop
element.
Code Units per Character
... Received - 7.00 units and over.
... Transmitted - 7.42 units.
Distortion
... Transmitted - Not more than 5 percent.
... Received - Receivers are equipped with
range adjustments and calibrated scales to
compensate for bias and end distortion.
Bias Distortion
... Up to 40 percent at 368.1 opm (60 wpm).
... Up to 35 percent at 600 opm (100 wpm).
End Distortion
... Up to 35 percent at 368.1 opm.
... Up to 30 percent at 600 opm.

SIMULTANEOUS (PARALLEL) SIGNALING
CHARACTERISTICS:

(TT-239/FG Only)
... 5 channel output at 25 characters per second
(250 wpm).

OPERATIONAL SPEEDS AVAILABLE:

With the use of readily interchangeable gear sets
(TT-239/FG Excepted)
... 60, 75, or 100 words per minute.

TYPE OF INSTALLATION:

Fixed station; automatic tape relay; sending
and receiving; direct line radio or carrier
circuit.

PRINT SYMBOLS:

English - Standard communications.

TAPE:

7/8-inch, printed and perforated.



Distributor-Transmitter, Teletypewriter

AN/UGC-72(V) 1

(Formerly TT-409/TG)

The Distributor Transmitter is a bit serial, multi-speed tape transmitter, designed for continuous operation in tactical areas and mobile telecommunications centers. It uses infrared optical sensing to read any conventional 5- and 8-channel fully perforated paper tape and accommodates three standard tape widths. It is ruggedized for use in moving vehicles, such as jeeps, vans and aircraft, and is intended to be used in secure locations where radio frequency interference, and undesired signal data emissions must be suppressed. The tape transmitter is completely self-contained with immersion-proof dust cover, stepping motor, signal line battery and interface. When parity perforated tape is used, the transmitter can be readily adapted to invert the eighth bit to permit even or odd parity transmission.

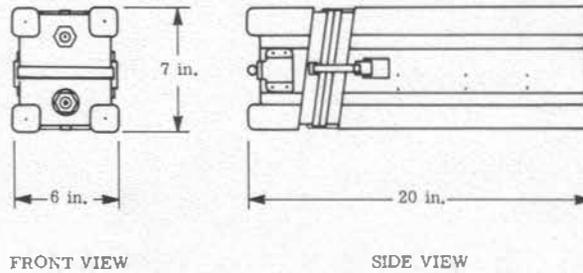
Controls and indicators include: Off-on switch and lamp, broken tape lamp, copy lamp with dimmer switch, end of tape switch, local and remote single-step manual control, "transmit", "inhibit"* or "NUL only" selector for DEL and NUL configurations of the ASCII code, and a "transmit" or "inhibit"* selector for the "blank" code configuration of the Baudot code, and line break and break stop controls.

*Facilities are provided for the rapid stepping (slewing) of tape, when inhibited code groups are sensed.



This new family of "Electronic Telecommunications Equipment for the Future" is an engineering design model developed under contract with the U.S. Army Electronics Command, Fort Monmouth, New Jersey.

TECHNICAL CHARACTERISTICS



RELEVANT LITERATURE:
SCL 4713, POMM 11-5815-315-14

TYPE OF INSTALLATION:
Table or rack mounting, sending and receiving by direct wire, carrier or radio-teletype, on a serial basis.

WEIGHT:
25 pounds.

FINISH:
Semi-gloss, olive drab.

ELECTRICAL POWER REQUIREMENTS:

- Power ... 75 watts.
- Voltage ... Dc*, 26 ± 4 volts or Ac, 115 or 230 volts ± 15 percent 50, 60 or 400 Hz ± 5 percent; Single phase.
- *Over voltage and transient protection - Continuous . . . , Up to 36 VDC Transients . . . 15 VDC thru 100 VDC

SIGNALING CHARACTERISTICS
(Per MIL-STD-188B):

Type of Code
... Bit serial; 5- and 8-bit (7.0, 10.0 and 11.0 unit). Start-stop.

Operational Speeds (Internal and External Clock)

	Bits per Second (± .1 %)	(Approx.) WPM
... ASCII 10.0 unit (8-bit)	75	75
... ASCII 10.0 unit (8-bit)	150	150
... ASCII 11.0 unit (8-bit)	75	68.2
... ASCII 11.0 unit (8-bit)	150	136.4
... Baudot 7.0 unit (5-bit)	50	71.4
... Baudot 7.0 unit (5-bit)	75	107.1

Interface Characteristics

- ... Standard. Polar; low level per MIL-STD-188B; internal battery.
- 6 VDC ± 1 VDC, balanced within ±5 percent; 100 milliamperes maximum.

- ... Interim Standard. Neutral; external battery.
- High Level (Telegraphic): 130 VDC ± 20 percent; 20 and 60 ma ± 3 percent.
- Low Voltage: 1.5 VDC; 70 microamperes per mark.

Distortion

- ... Less than 2 percent bias, RFI and Undesired Signal Data
- ... Tested per MIL-E-55301 (E1) and FED-STD 222.

ENVIRONMENTAL LIMITATIONS:

- Operating**
- ... Temperature: -25°F. to 125°F. (-31°C. to 51°C).
- ... High Humidity: 100 percent up to 85°F. (29°C).
- ... Dewpoint from 85°F. (29°C) to 120°F. (48°C).
- ... Low Humidity: 5 percent up to 120°F. (48°C).
- ... Elevation: 10,000 feet maximum.
- Non-Operating in Combination Case**
- ... Temperature: -65°F. to 155°F. (-53°C. to 68°C).
- ... Elevation: 50,000 feet maximum.
- ... Immersion: 3 feet of water.

SUPPLEMENTARY CHARACTERISTICS

TAPE (Per MIL-STD-188B):

- Supply ... Sprocket-fed prepunched tapes, 11/16-, 7/8- and 1-inch wide; located externally, up to 5 feet away.

- Sensing**
- ... Infrared, optical.

CODES:

- ASCII
- ... Senses even parity 8-level tapes and trans-

mits even or odd parity as selected. A manual control allows selection of:

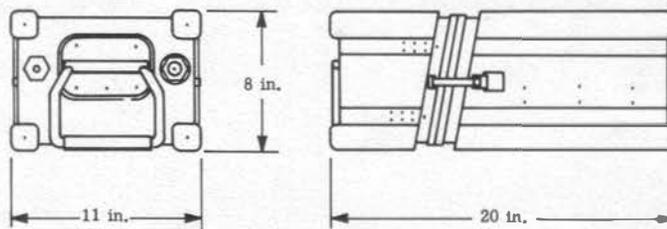
- A. Inhibit NUL and DEL,
- B. Transmit NUL, inhibit DEL.
- C. Transmit NUL and DEL.

Baudot

- ... Senses 5-level tapes and transmits 58 code groups. Includes a blank "transmit" or inhibit selector.

FORMERLY	GOVERNMENT NOMENCLATURE	APPLICABLE CODE A=ASCII B=Baudot
TT-409/TG	AN/UGC-72(V) 1 Distributor-Transmitter, Teletypewriter	A, B

TECHNICAL CHARACTERISTICS



FRONT VIEW

SIDE VIEW

RELEVANT LITERATURE:

SCL 4713, POMM 11-5815-315-14

TYPE OF INSTALLATION:

Table or rack mounting, sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

WEIGHT:

45 pounds.

FINISH:

Semi-gloss, olive drab.

ELECTRICAL POWER REQUIREMENTS:

Power

... 150 watts.

Voltage

... Dc*, 26 ± 4 volts or
 Ac, 115 or 230 volts ± percent
 50, 60 or 400 Hz ± 5 percent;
 Single phase.

*Over voltage and transient protection -

Continuous . . . Up to 36 VDC

Transients . . . 15 VDC thru 100 VDC

SIGNALING CHARACTERISTICS

(Per MIL-STD-188B):

Type of Code

... Bit serial; 5- and 8-bit (7.0, 10.0 and 11.0 unit). Start-stop.

Operational Speeds (Internal and External Clock)

	Bits per Second (± .1 %)	WPM (Approx.)
... ASCII 10.0 unit (8-bit)	75	75
... ASCII 10.0 unit (8-bit)	150	150
... ASCII 11.0 unit (8-bit)	75	68.2
... ASCII 11.0 unit (8-bit)	150	136.4
... Baudot 7.0 unit (5-bit)	50	71.4
... Baudot 7.0 unit (5-bit)	75	107.1

Interface Characteristics

... Standard. Polar; low level per MIL-STD-188B.

Sensitivity: .5 VDC thru 7 VDC; 01 milli-ampere. Positive and negative excursions of available voltage to be balanced within 10 percent.

... Interim Standard. Neutral.

High Level (Telegraphic): 130 VDC ± 20 percent; 20 and 60 ma ± 3 percent.

Low Voltage: 48 VDC; 20 ma.

Distortion

... Tolerated: Up to 49 percent marking and spacing bias or end, without adjustment.

RFI and Undesired Signal Data

... Tested per MIL-E-5530i (E1) and FED STD 222.

ENVIRONMENTAL LIMITATIONS:

Operating

... Temperature: -25°F to 125°F (-31°C to 51°C).

... High Humidity: 100 percent up to 85°F (29°C).

Dewpoint from 85°F (29°C) to 120°F (48°C).

... Low Humidity: 5 percent up to 120°F (48°C).

... Elevation: 10,000 feet maximum.

Non-Operating in Combination Case

... Temperature: -65°F to 155°F (-53°C to 68°C).

... Elevation: 50,000 feet maximum.

... Immersion: 3 feet of water.

SUPPLEMENTARY CHARACTERISTICS

TAPE (Per MIL-STD-188B):

Supply

... Sprocket-fed roll or fanfold; 11/16-, 7/8- and 1-inch wide. Supply roll up to 8-1/2-inches diameter housed inside assembly, sufficient for 3 hours operation at 75 Baud. Fanfold container located externally.

Recording

... Fully perforated round holes. Printing between feed holes, 6.5 positions behind code holes. Last printed character visible after tape steps.

CODES:

ASCII

... Perforates 128 code groups, using channel 8 to produce even parity; prints 64 symbols.

Baudot

... Perforates 32 code groups and prints International Telegraph Alphabet No. 2, American version.

RIBBON:

Nylon or cotton, ink.

FORMERLY	GOVERNMENT NOMENCLATURE	APPLICABLE CODE A = ASCII B = Baudot
TT-411/TG	AN/UGC-73(V) 1 Reperforator, Teletypewriter	A, B

Teletypewriter

AN/UGC-74(V)
(Formerly TT-412/TG)



The Teletypewriter is a bit serial, multi-speed page teleprinter. It can be procured as a receive-only, or as a keyboard send-receive unit. Designed for continuous operation in the most severe tactical environment, it is ruggedized for use in moving vehicles such as jeeps, vans and aircraft and can be used in secure locations where radio frequency interference and undesired electrical emissions must be suppressed. The equipment is self-contained with low level transmit battery, logic and interface circuits.

This new family of "Electronic Telecommunications Equipment for the Future" is an engineering design model developed under contract with the U.S. Army Electronics Command, Fort Monmouth, New Jersey.

KEYBOARD TRANSMITTER

The keyboard transmitter, either 3-row Baudot or 4-row ASCII, comprises a light touch keyboard with the home keys textured for touch identification and

necessary simultaneous-transmit micro logic boards. Signal battery, transmit interface and parallel/serial converter circuits are provided in the accompanying page printer.

The keyboard includes a mechanical interlock to prevent simultaneous depression of more than one key, other than repeat, and shift and control keys (ASCII only), and an electrical lock to limit the keying speed to the signal line speed.

Additional features include: Local and remote keyboard disable; character counter and end-of-line indicator, synchronized to the receiving printer line length; tabulator facility, up to eight columns; transfer contact and line break switch for resetting remote receivers.

PAGE PRINTER

The page printer receives bit serial, character serial, electrical impulses from the signal line, and prints information on roll paper or fanfold forms. Printing is performed by impacting one of 80 hammers on a rotating print drum, thereby eliminating the traditional carriage, carriage feed and carriage return mechanism. Signal detection, decoding, hammer selection and synchronization is performed electronically, for the most part by micro logic integrated circuits, thus reducing mechanical parts and increasing reliability.

While the printer is compatible with

existing low speed and medium speed communications teleprinters, it can adapt to much higher signaling speeds with the same excellent display of accuracy and reliability, thus opening the door to really high speed printed communications. Format restrictions usually associated with carriage return are unnecessary and other printer functions are performed in a time frame equal to a printed character. The last character printed is visible without need for spacing.

The equipment features automatic line feed and carriage return* from immediate end of selected line length; automatic time delay motor stop and override; automatic and remotely controlled motor restart; end-of-line, and low paper volume adjustable bell, and end-of-paper lamp. A switch on the printer permits selection of even or odd parity check. A parity error causes printing of an error symbol, and lights an error lamp.

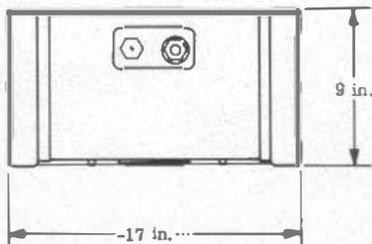
*Although there is no carriage, the term "carriage return" is used to avoid misunderstanding.

Included are local controls for line feed, carriage return, case shift (Baudot only), single or double line feed.

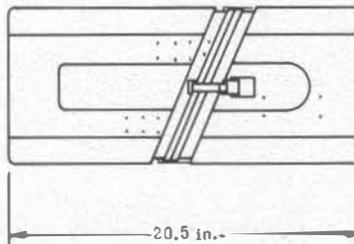
Additional features include automatic answer-back of 20 selectable characters, and override control; open signal line bell and lamp; off/on switch and lamp; and figures "S" bell for Baudot, interchangeable with figures "J" for CCITT-No. 2.

FORMERLY	GOVERNMENT NOMENCLATURE	APPLICABLE CODE A = ASCII B = Baudot
TT-412/TG	AN/UGC-74(V) 2 Teletypewriter	B
TT-412/TG	AN/UGC-74(V) 6 Teletypewriter	A

TECHNICAL CHARACTERISTICS



FRONT VIEW



SIDE VIEW

RELEVANT LITERATURE:

SCL 4713, POMM 11-5815-315-14

TYPE OF INSTALLATION:

Table or rack mounting, sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

WEIGHT:

88 pounds.

FINISH:

Semi-gloss, olive drab.

ELECTRICAL POWER REQUIREMENTS:

Power

... 200 watts.

Voltage

... Dc*, 26 ± 4 volts or

Ac, 115 or 230 volts T 15 percent

50, 60 or 400 Hz ± 5 percent;

Single phase.

*Over voltage and transient protection -

Continuous . . . Up to 36 VDC

Transients . . . 15 VDC thru 100 VDC

SIGNALING CHARACTERISTICS

(Per MIL-STD-188B):

Type of Code

... Bit serial; 5- and 8-bit (7.0, 10.0 and 11.0 unit). Start-stop.

Operational Speeds (Internal and External Clock)

	Bits per Second (± 1 %)	WPM (Approx.)
... ASCII 10.0 unit (8-bit)	75	75
... ASCII 10.0 unit (8-bit)	150	150
... ASCII 11.0 unit (8-bit)	75	68.2
... ASCII 11.0 unit (8-bit)	150	136.4
... Baudot 7.0 unit (5-bit)	50	71.4
... Baudot 7.0 unit (5-bit)	75	107.1

Interface Characteristics

... Standard, Polar; low level per MIL-STD-188B; internal battery.

Transmit: 6 VDC ± 1 VDC, balanced within ± 5 percent; 100 milliamperes maximum.

Receiver Sensitivity: .5 VDC thru 7 VDC;

.01 milliampere. Positive and negative excursions of available voltage to be

balanced within 10 percent.

... Interim Standard, Neutral; external battery.

High Level (Telegraphic). Transmit and

receive: 130 VDC ± 20 percent; 20 and

60 ma ± 3 percent.

Low Voltage

Transmit: 1.5 VDC; 70 microamperes

per mark,

Receive: 48 VDC; 20 ma.

Distortion

... Transmitted: Less than 2 percent bias.

... Tolerated by receivers: Up to 49 percent marking and spacing bias or end, without adjustment.

Interconnection

... Full duplex and half duplex.

RFI and Undesired Signal Data

... Tested per MIL-E-55301(E1) and FED STD 222.

ENVIRONMENTAL LIMITATIONS:

Operating

... Temperature: -25°F. to 125°F. (-31°C. to 51°C.),

... High Humidity: 100 percent up to 85°F. (29°C.).

Dewpoint from 85°F. (29°C.) to 120°F. (48°C.).

... Low Humidity: 5 percent up to 120°F. (48°C.).

... Elevation: 10,000 feet maximum.

Non-Operating in Combination Case

... Temperature: -65°F. to 155°F. (-53°C. to 68°C.).

... Elevation: 50,000 feet maximum.

... Immersion: 3 feet of water.

CODE TRANSMITTED

Baudot (3-Row)

... 32 code groups (30 plus letters and figures).

ASCII (4-Row)

... 128 code groups.

PRINT SYMBOLS:

51 Baudot, 64 ASCII (military version) convertible within one hour from either to the other.

TYPE STYLE:

Sans serif elite Gothic, 12 characters horizontal and 6 lines vertical per inch.

RIBBONS:

Nylon or cotton, ink.

COPY PAPER:

Friction fed 5-inch roll (original only), housed

within printer assembly. Sprocket fed fanfold

forms, original plus two copies. Box of fanfold

externally located behind printer and fed through

slot to printing area.

LINE LENGTH:

Adjustable for 69, 72, 76 and 80 characters.

BREAK STOP:

In reaction to an open transmit or receive circuit

in full duplex operation, and in reaction to an

open transmit circuit only in half duplex

operation.

Teletypewriter Set

AN/UGC-75(V)

(Formerly AN/GGC-20)



This Tape Relay and Preparation Set comprises a keyboard transmitter, tape transmitter and a typing reperforator. It includes transmit battery and electrical interface. The set can be used on and off line to prepare tapes, to transmit from tape or keyboard, to receive or monitor printed data on paper tape. In a full duplex hook-up, the distributor transmitter takes precedence over the keyboard, inhibiting keyboard operation until it has finished. The dust cover fulfills the dual functions of immersion cover and carrying case when the cover lid is in place.

This new family of "Electronic Telecommunications Equipment for the Future" is an engineering design model developed under contract with the U.S. Army Electronics Command, Fort Monmouth, New Jersey.

The equipment is capable of a high degree of reliability in the most severe tactical environments. Unitized packaging, small size and lightweight make it ideally suited to a variety of configurations for installation in vehicles, shelters and offices where space is limited. Modular construc-

tion of sub-assemblies, combined with the use of integrated circuits and few moving parts result in easy maintenance and a high level of reliability. Major components are slide mounted and can be extended (drawer fashion) for programming or maintenance.

In addition to the usual teleprinter controls and indicators, the equipment features extra controls; these are itemized under individual components. All controls are readily accessible to the operator. Correct illumination is provided by dimmer-switch controlled lamps. Both transmit and receive lines are monitored elec-

tronically for open line conditions. If a break occurs, the active transmitter immediately stops, and open line alarms on the receivers are energized.

Quality control in manufacture assures compatability with Electronics Command Technical Requirement SCL 4713 and related military specifications and standards for the following tests - - Electromagnetic Compatibility, R.F.I., Acoustical, Fungus, Humidity, Rain, Salt Fog, Sand and Dust, Elevation, Orientation, Low and High Temperatures, Power and Transient Voltage, Vibration, Bounce, Ballistic Shock, Immersion, Munson Road, Reliability.

CONTROLS AND INDICATORS

KEYBOARD: Home keys textured for touch identifications; interlock prevents simultaneous depression of more than one key other than REPEAT, SHIFT and CONTROL keys (ASCII only); keying speed limited automatically to signal line speed; local and remote keyboard disable control; character counter and end of line indicator, synchronized to selected printer line length; tabulator facility up to eight columns; transfer contact; and a line break switch for resetting remote receivers.

DISTRIBUTOR TRANSMITTER: Off-on switch and lamp, broken tape lamp, copy lamp with dimmer switch, end of tape switch, local and remote single-step manual control, "transmit", "inhibit"*, or "NUL only" selector for DEL and NUL configurations of the ASCII code, and a

"transmit" or "inhibit"* selector for the "blank" code configuration of the Baudot code, and line break and break stop controls.

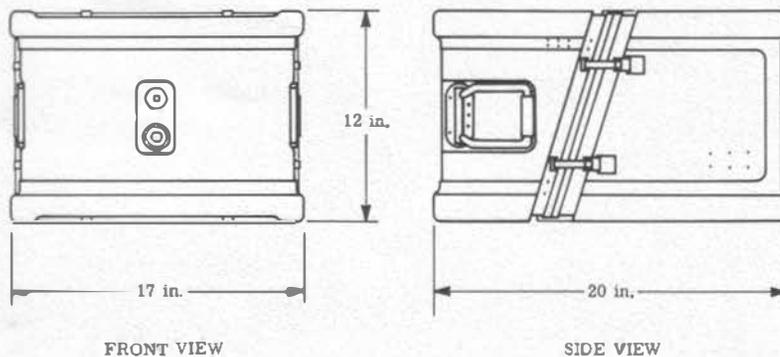
*Facilities are provided for the rapid stepping (slewing) of tape, when inhibited code groups are sensed.

Additional Features: Off-on switch and lamp; broken tape lamp, end of tape detector, local and remote manual control for single step; open transmit line detector and break-stop signal detector (from receiver).

REPERFORATOR: Power-on switch and lamp. Bell code, end-of-tape, and open signal line alarms, and open signal line lamp. Tape feed out, and tape back-up controls, and line break transmit switch.

FORMERLY	GOVERNMENT NOMENCLATURE	APPLICABLE CODE A=ASCII B=Baudot
AN/GGC-20	AN/UGC-75(V) 1 Teletypewriter Set	B
AN/GGC-20	AN/UGC-75(V) 3 Teletypewriter Set	A

TECHNICAL CHARACTERISTICS



RELEVANT LITERATURE:
SCL 4713, POMM 11-5815-315-14

TYPE OF INSTALLATION:
Table or rack mounting, sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

WEIGHT: 85 pounds.

FINISH: Semi-gloss, olive drab.

ELECTRICAL POWER REQUIREMENTS:

Power
... 225 watts.
Voltage
... Dc*, 26 ± 4 volts or
Ac, 115 or 230 volts ± 15 percent
50, 60 or 400 Hz ± 5 percent;
Single phase.
*Over voltage and transient protection -
Continuous - - - Up to 36 VDC
Transients - - - 15 VDC thru 100 VDC

SIGNALING CHARACTERISTICS

(Per MIL-STD-188B):
Type of Code
... Bit serial; 5- and 8-bit (7.0, 10.0 and 11.0 unit), Start-stop.

Operational Speeds (Internal and External Check)

	Bits per Second (± .1 %)	WPM (Approx.)
... ASCII 10.0 unit (8-bit)	75	75
... ASCII 10.0 unit (8-bit)	150	150
... ASCII 11.0 unit (8-bit)	75	68.2
... ASCII 11.0 unit (8-bit)	150	136.4
... Baudot 7.0 unit (5-bit)	50	71.4
... Baudot 7.0 unit (5-bit)	75	107.1

Interface Characteristics

... Standard. Polar; low level per MIL-STD-188B; internal battery.

Transmit: 6 VDC ± 1 VDC, balanced within ± 5 percent; 100 milliamperes maximum.

Receiver Sensitivity: .5 VDC thru 7 VDC; .01 milliampere. Positive and negative excursions of available voltage to be balanced within 10 percent.

... Interim Standard. Neutral; external battery. High Level (Telegraphic). Transmit and receive: 130 VDC ± 20 percent; 20 and 60 ma ± 3 percent.

Low Voltage

Transmit: 1.5 VDC; 70 microamperes per mark.
Receive: 48 VDC; 20 ma.

Distortion

... Transmitted: Less than 2 percent bias.
... Tolerated by receivers: Up to 49 percent marking and spacing bias or end, without adjustment.

Interconnection

... Full duplex and half duplex.
RFI and Undesired Signal Data
... Tested per MIL-E-55301(E1) and FED STD 222.

ENVIRONMENTAL LIMITATIONS:

Operating

... Temperature: -25°F to 125°F (-31°C to 51°C).
... High Humidity: 100 percent up to 85°F (29°C).
Dewpoint from 85°F (29°C) to 120°F (48°C).
... Low Humidity: 5 percent up to 120°F (48°C).
... Elevation: 10,000 feet maximum.

Non-Operating in Combination Case

... Temperature: -65°F to 155°F (-53°C to 68°C).
... Elevation: 50,000 feet maximum.
... Immersion: 3 feet of water.

SUPPLEMENTARY CHARACTERISTICS

KEYBOARD

CODE TRANSMITTED:
Baudot (3-Row)
... 32 code groups (30 plus letters and figures).
ASCII (4-Row)
... 128 code groups.

DISTRIBUTOR TRANSMITTER

TAPE (Per MIL-STD-168B):
Supply
... Sprocket fed prepunched tapes, 11/16-, 7/8- and 1-inch wide; located externally, up to 5 feet away.
Sensing
... Infrared, optical.

CODES:

Senses even parity 8-level tape and transmits: ASCII
... Even or odd parity as selected. A manual control allows selection of:
A. Inhibit NUL and DEL.
B. Transmit NUL, inhibit DEL.
C. Transmit NUL and DEL.

Baudot

... Senses and transmits 58 code groups. Includes a blank "transmit" or inhibit selector.

REPERFORATOR

TAPE (Per MIL-STD-168B):
Supply
... Sprocket fed roll or fanfold; 11/16-, 7/8- and 1-inch wide. Supply roll up to 8-1/2-inches diameter housed inside assembly,

sufficient for 3 hours operation at 75 baud. Fanfold container located externally.

Recording

... Fully perforated round holes. Printing between feed holes, 6.5 positions behind code holes. Last printed character visible after tape steps.

CODES:

ASCII
... Perforates 128 code groups, using channel 8 to produce even parity; prints 64 symbols.

Baudot

... Perforates 32 code groups and prints International Telegraph Alphabet No. 2, American version.

RIBBON:

Nylon or cotton, ink.

Teletypewriter Set

AN/UGC-76(V)

(Formerly AN/GGC-19)



This is an automatic send-receive set, comprising a keyboard transmitter, tape transmitter, typing reperforator and page printer. It includes transmit battery and electrical interface. The set can be used on and off line to prepare or edit tapes, to transmit from either tape or keyboard and to receive on page copy and/or paper tape. In a full duplex system, the distributor transmitter takes precedence over the keyboard, inhibiting keyboard opera-

This new family of "Electronic Telecommunications Equipment for the Future" is an engineering design model developed under contract with the U.S. Army Electronics Command, Fort Monmouth, New Jersey.

tion until it has finished; either receiver can be used to monitor the active transmitter. If user application requires it, each of the functional elements can be

procured separately, comprising transmit battery, electrical interface and complete with dust cover. The dust cover fulfills the dual functions of immersion cover and carrying case when the cover lid is in place.

The equipment is capable of a high degree of reliability in the most severe tactical environments. Unitized packaging makes it ideally suited to a variety of configurations for installation in vehicles, shelters and offices where space is limited. Modular construction of subassemblies, combined with the use of integrated circuits and few moving parts result in easy maintenance and a high level of reliability. Major components are slide mounted and can be extended (drawer fashion) for programming or maintenance.

All arrangements of the components are designed to operate in conjunction with synchronous transmission equipment. Equipments adapted for use with ASCII code transmit odd parity code groups and

can be arranged for odd or even parity reception.

In addition to the usual teleprinter controls and indicators, the equipment features extra controls; these are itemized under individual components. All controls are readily accessible to the operator. Correct illumination is provided by dimmer switch controlled lamps. Both transmit and receive lines are monitored electronically for open line conditions. If a break occurs, the active transmitter immediately stops, and open line alarms on the receivers are energized.

Quality control in manufacture assures compatibility with Electronics Command Technical Requirement SCL 4713 and related military specifications and standards for the following tests -- Electromagnetic Compatibility, R.F.I., Acoustical, Fungus, Humidity, Rain, Salt Fog, Sand and Dust, Elevation, Orientation, Low and High Temperatures, Power and Transient Voltage, Vibration, Bounce, Ballistic Shock, Immersion, Munson Road and Reliability.

CONTROLS AND INDICATORS

KEYBOARD: Home keys textured for touch identification; Interlock prevents simultaneous depression of more than one key other than REPEAT, SHIFT and CONTROL keys (ASCII only); keying speed limited by automatic control to signal line speed; local and remote keyboard disable control; character counter and end of line indicator, synchronized to selected printer line length; tabulator facility up to eight columns; transfer contact; and a line break switch for resetting remote receivers.

PRINTER: Automatic "carriage return" and line feed from immediate end of selected line length, automatic time delay motor stop and override. Automatic and remotely controlled motor restart. The last printed character is visible without need for spacing. "Even" or "Odd" parity check (selectable locally), error symbol printing and error indicating lamp; end of line and low paper volume-adjustable bell, and end of paper lamp. Local switches for carriage return, line feed and case shift (Baudot only); "single" or "double" line feed manual selector. Automatic answer-back of 20 selectable characters and override; open signal line

bell and lamp; off/on switch and lamp; figures "S" bell for Baudot, interchangeable with figures "J" for CCITT-No. 2.

DISTRIBUTOR TRANSMITTER: Off/on switch and lamp, broken tape lamp, copy lamp with dimmer switch, end of tape switch, local and remote single-step manual control, "transmit", "inhibit"*, or "NUL only" selector for DEL and NUL configurations of the ASCII code, and a "transmit" or "inhibit" selector for the "blank" code configuration of the BAUDOT code, and line break and break stop controls.

*Facilities are provided for the rapid stepping (slewing) of tape when inhibited code groups are sensed.

Additional Features: Off/on switch and lamp; broken tape lamp, end of tape detector, local and remote manual control for single step; open transmit line detector and break stop signal detector (from receiver).

REPERFORATOR: Power on switch and lamp. Bell code, end-of-tape, and open signal line alarms, and open signal line lamp. Tape feed out, and tape back up controls, and line break transmit switch.

TECHNICAL CHARACTERISTICS

RELEVANT LITERATURE:

SCL 4713, POMM 11-5815-315-14

TYPE OF INSTALLATION:

Table or rack mounting, sending and receiving by direct wire, carrier or radioteletype, on a serial basis.

WEIGHT:

160 pounds.

FINISH:

Semi-gloss, olive drab.

ELECTRICAL POWER REQUIREMENTS:

Power

... 425 watts.

Voltage

... Dc*, 28 ± 4 volts or
 Ac, 115 or 230 volts ± 15 percent
 50, 60 or 400 Hz ± 5 percent;
 Single phase.

*Over voltage and transient protection -

Continuous . . . Up to 36 VDC

Transients . . . 15 VDC thru 100 VDC

SIGNALING CHARACTERISTICS

(Per MIL-STD-188B):

Type of Code

... Bit serial; 5- and 8-bit (7.0, 10.0 and 11.0 unit). Start-stop.

Operational Speeds (Internal and External Clock)

	Bits per Second (± .1 %)	WPM (Approx.)
... ASCII 10.0 unit (8-bit)	75	75
... ASCII 10.0 unit (8-bit)	150	150
... ASCII 11.0 unit (8-bit)	75	68.2
... ASCII 11.0 unit (8-bit)	150	136.4
... Baudot 7.0 unit (5-bit)	50	71.4
... Baudot 7.0 unit (5-bit)	75	107.1

Interface Characteristics

... Standard, Polar; low level per MIL-STD-188B; internal battery.

Transmit: 6 VDC ± 1 VDC, balanced within ±5 percent; 100 milliamperes maximum.
 Receiver Sensitivity: .5 VDC thru 7 VDC; .01 milliampere. Positive and negative excursions of available voltage to be balanced within 10 percent.

... Interim Standard, Neutral; external battery. High Level (Telegraphic). Transmit and receive: 130 VDC ± 20 percent; 20 and 60 ma ± 3 percent.

Low Voltage

Transmit: 1.5 VDC; 70 microamperes per mark.
 Receive: 48 VDC; 20 ma.

Distortion

... Transmitted: Less than 2 percent bias.
 ... Tolerated by receivers: Up to 49 percent marking and spacing bias or end, without adjustment.

Interconnection

... Full duplex and half duplex.
 RFI and Undesired Signal Data
 ... Tested per MIL-E-55301(E1) and FED STD 222.

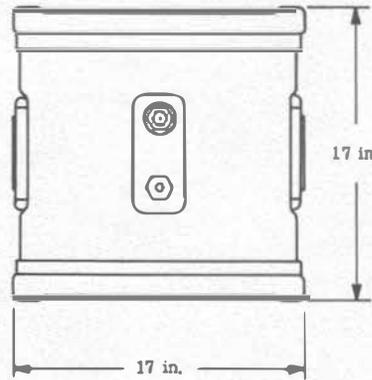
ENVIRONMENTAL LIMITATIONS:

Operating

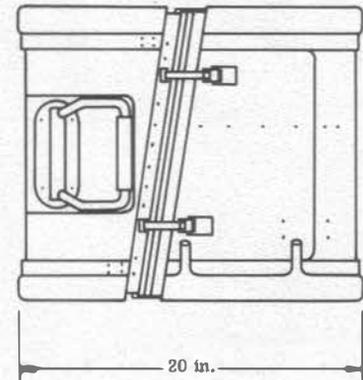
... Temperature: -25°F. to 125°F. (-31°C. to 51°C.).
 ... High Humidity: 100 percent up to 85°F. (29°C.).
 Dewpoint from 80°F. (26°C.) to 120°F. (48°C.).
 ... Low Humidity: 5 percent up to 120°F. (48°C.).
 ... Elevation: 10,000 feet maximum.

Nonoperating in Combination Case

... Temperature: -65°F. to 155°F. (-53°C. to 68°C.).
 ... Elevation: 50,000 feet maximum.
 ... Immersion: 3 feet of water.



FRONT VIEW



SIDE VIEW

SUPPLEMENTARY CHARACTERISTICS

(KEYBOARD AND PRINTER)

CODE TRANSMITTED:

Baudot (3-Row)
 ... 32 code groups (30 plus "letters" and "figures").
 ASCII (4-Row)
 ... 128 code groups.

PRINT SYMBOLS:

51 Baudot, 64 ASCII (military version) convertible within one hour from either to the other.

TYPE STYLE:

Sans serif elite Gothic, 12 characters horizontal, and 6 lines per vertical inch.

RIBBONS:

Nylon or cotton, ink.

(REPERFORATOR)

TAPE (Per MIL-STD-188B):

Supply

... Sprocket fed roll or fanfold; 11/16, 7/8- and 1-inch wide. Supply roll up to 8-1/8-inches diameter housed inside assembly, sufficient for 3 hours operation at 75 Baud. Fanfold container located externally.

Recording

... Fully perforated round holes. Printing between feed holes, 6.5 positions behind code holes. Last printed character visible after tape steps.

CODES:

ASCII

... Perforates 128 code groups, using channel 8 to produce even parity; prints 64 symbols.

Baudot

... Perforates 32 code groups and prints International Telegraph Alphabet No. 2, American version.

RIBBON:

Nylon or cotton, ink.

COPY PAPER:

Friction fed 5-inch roll (original only), housed within printer assembly. Sprocket fed fanfold forms, original plus two copies. Box of fanfold externally located behind printer and fed through slot to printing area.

LINE LENGTH:

Adjustable for 68, 72, 76 and 80 characters.

BREAK STOP:

In reaction to an open transmit or receive circuit in full duplex operation and in reaction to an open transmit circuit only in half duplex operation.

(DISTRIBUTOR TRANSMITTER)

TAPE (Per MIL-STD-188B):

Supply

... Sprocket fed prepunched tapes, 11/16-, 7/8-, and 1-inch wide; located externally, up to 5 feet away.

Sensing

... Infrared, optical.

CODES:

ASCII

... Senses even parity 8-level tapes and transmits even or odd parity as selected. A manual control allows selection of:

- A. Inhibit NUL and DEL.
- B. Transmit NUL, inhibit DEL.
- C. Transmit NUL and DEL.

Baudot

... Senses 5-level tapes and transmits 58 code groups. Includes a blank "transmit" or inhibit selector. Slewing feature operates when blank or inhibit codes are sensed.

FORMERLY	GOVERNMENT NOMENCLATURE	APPLICABLE CODE A = ASCII B = Baudot
AN/GGC-19	AN/UGC-76(V) 1 Teletypewriter Set	B
AN/GGC-19	AN/UGC-76(V) 3 Teletypewriter Set	A

**INDEX BY
TELETYPEWRITER SETS**

TELETYPEWRITER SETS	COMPONENTS	PAGE NO.
AN/FGC-20	TT-100(*)/FG, PP-978/FG, FN-59/FG	3
AN/FGC-20X	TT-98(*)/FG, PP-978/FG, FN-59/FG	3
AN/FGC-21	TT-99/FG, PP-978/FG, FN-59/FG	3
AN/FGC-25	TT-117(*)/FG, TT-179(*)/FG, FN-65/FG	5
AN/FGC-25X	TT-119(*)/FG, TT-178(*)/FG, FN-65/FG	5
AN/FGC-26	TT-118(*)/FG, TT-181(*)/FG, FN-65/FG	5
AN/FGC-26X	TT-120/FG, TT-180/FG, FN-65/FG	5
AN/FGC-30	TT-226/FG or TT-254/FG, TT-227/FG or TT-255/FG, TT-228/FG, TT-229/FG or TT-256/FG, TT-230/FG, TT-231/FG or TT-257/FG, TT-174A/FG, TT-175A/FG TT-239/FG AN/FGC-57, AN/FGC-25 AN/FGC-20	16 16 16 16 5 3
AN/FGC-52	TT-269(*)/FG, TT-270(*)/FG, FN-65/FG	5
AN/FGC-52X	TT-271(*)/FG, TT-272(*)/FG, FN-65/FG	5
AN/FGC-57	TT-117A/FG, TT-250/FG, FN-111/FG	5
AN/FGC-64	TT-293/FG, PP-978/FG, FN-59/FG	3
AN/FGC-66	TT-300/FG, PP-978/FG	3
AN/FGC-67	TT-482/UGC, PP-978/FG, FN-59/FG	3
AN/FGC-67X	TT-483/UGC, PP-978/FG, FN-59/FG	3
AN/FGC-68	TT-396/FG, TT-397/FG, FN-65/FG	5
AN/FGC-70	Transmitter Console - OA-4192A/FGC-70, CY-3719A/FGC-70, C-4200/FGC-70X or C-6263/FGC-70X, TT-364A/FGC-70X Receive Console - OA-4193A/FGC-70, CY-3640A/FGC-70X, TT-390A/FGC-70, PP-3427/FGC-70X Monitor Console - OA-4194/FGC-70, CY-3641A/FGC-70X, TT-391/FGC-70, PP-3428/FGC-70X, TT-367/G	15
AN/FGC-70X	Transmitter Console - OA-3987A/FGC-70X, CY-3639A/FGC-70X, C-4200/FGC-70X or C-6263/FGC-70X, MX-4249/FGC-70X or MX-6438/FGC-70X, TT-364A/FGC-70X Receive Console - OA-3988/FGC-70X, CY-3640A/FGC-70X, TT-365A/FGC-70X, PP-3427/FGC-70X Monitor Console - OA-3989/FGC-70X, CY-3641A/FGC-70X, TT-366A/FGC-70X, PP-3428/FGC-70X, TT-367/G	15
AN/FGC-80	TT-512/FG, J-2619/FG, F-1078/FG, FN-195/FG	4
AN/FGC-140		6

TELETYPEWRITER SETS	COMPONENTS	PAGE NO.
AN/GGC-3A	TT-76B/GGC, FN-108/GGC	2
AN/GGC-9	TT-322/GGC-9, MX-3650/GGC-9, C-3873/GGC-9, PP-3131/GGC-9, PP-1801/FG	14
AN/GGC-16	TT-517/GGC-16, TT-518/GGC-16, TH-66/UGC	7
AN/PGC-1	TT-4(*)/TG, CY-694(*)/PGC-1, CW-356/U	1
AN/TGC-5B	Transmitter Console - CY-2215C/TGC-5 Receive Console - CY-2216B/TGC-5, TT-224B/TG	13
AN/TGC-5BX	Transmitter Console - CY-2214C/TGC-5X Receive Console - CY-2213B/TGC-5X, TT-225B/TG	13
AN/TGC-12	Transmitter Console - CY-2515/TGC-12 Receive Console - CY-2216A/TGC-5A Teletypewriter Reperforator TT-224/TG	13
AN/TGC-12X	Transmitter Console - CY-2514/TGC-12X Receive Console - CY-2213A/TGC-5X Teletypewriter Reperforator - TT-225/TGC	13
AN/UGC-4	TT-98(*)/FG, PP-978/FG	3
AN/UGC-39	TT-519/UGC-39, TT-520/UGC-39, TH-66/UGC	7

(*) Indicates more than one model.

**INDEX BY
COMPONENTS**

COMPONENT NOMENCLATURE	TELETYPEWRITER SET NOMENCLATURE	PAGE NO.
C-3873/GGC-9, Control Base	AN/GGC-9	14
C-4200/FGC-70X, Control Base	AN/FGC-70, AN/FGC-70X	15
C-6263/FGC-70X, Control Base	AN/FGC-70, AN/FGC-70X	15
CW-160/PGC-1, Bag	AN/PGC-1	1
CW-356/PGC-1, Bag	AN/PGC-1	1
CW-356/U, Bag, Accessory	AN/PGC-1	1
CY-694(*)/PGC-1, Case, Teletypewriter	AN/PGC-1	1
CY-1110/GGC, Case, Teletypewriter	AN/GGC-3(*)	2
CY-2213B/TGC-5X, Cabinet, Receive Console	AN/TGC-5B	13
CY-2214C/TGC-5X, Cabinet, Transmitter Console	AN/TGC-5BX	13
CY-2215C/TGC-5, Cabinet, Transmitter Console	AN/TGC-5B	13
CY-2216B/TGC-5B, Cabinet, Receive Console	AN/TGC-5B	13
CY-3639A/FGC-70X, Cabinet, Transmitter Console	AN/FGC-70X	15
CY-3640A/FGC-70X, Cabinet, Receive Console	AN/FGC-70, AN/FGC-70X	15
CY-3641A/FGC-70X, Cabinet, Monitor Console	AN/FGC-70, AN/FGC-70X	15
CY-3719A/FGC-70, Cabinet, Transmitter Console	AN/FGC-70	15
F-1078/FG, Filter, Radio Interference	AN/FGC-80	4
FN-52/GGC-3 (Old Table)	AN/GGC-3	2
FN-59/FG, Teletypewriter Table	AN/FGC-20, AN/FGC-20X, AN/FGC-21, AN/FGC-64 AN/FGC-66, AN/FGC-67, AN/FGC-67X	3
FN-65/FG, Teletypewriter Table	AN/FGC-25, AN/FGC-25X, AN/FGC-26, AN/FGC-26X, AN/FGC-52, AN/FGC-52X, AN/FGC-68	5
FN-101/FG, Teletypewriter Table	AN/FGC-30, TT-175A/FG	16
FN-108/GGC, Teletypewriter Table	AN/GGC-3(*)	2
FN-111/FG, Teletypewriter Table	AN/FGC-57	5
FN-195/FG, Teletypewriter Table	AN/FGC-80	4
J-2619/FG, Distribution Box	AN/FGC-80	4
MX-3650/GGC-9, Numbering Unit	AN/GGC-9	14
MX-4249/FGC-70X, Numbering Unit	AN/FGC-70, AN/FGC-70X	15
MX-6438/FGC-70X, Numbering Unit	AN/FGC-70, AN/FGC-70X	15
OA-3987A/FGC-70X, Transmit Group	AN/FGC-70X	15
OA-3988/FGC-70X, Receiver Group	AN/FGC-70X	15
OA-3989/FGC-70X, Monitor Group	AN/FGC-70X	15
OA-4192A/FGC-70, Transmit Group	AN/FGC-70	15
OA-4193A/FGC-70, Receiver Group	AN/FGC-70	15

COMPONENT NOMENCLATURE	TELETYPEWRITER SET NOMENCLATURE	PAGE NO.
OA-4194/FGC-70, Monitor Group	AN/FGC-70	15
PP-978/FG, Power Supply	AN/FGC-20, AN/FGC-20X, AN/FGC-21, AN/FGC-64, AN/FGC-66, AN/FGC-67, AN/FGC-67X, AN/UGC-4	3
PP-1801/FG, Power Supply	AN/TGC-5B, AN/TGC-5BX, AN/GGC-9	13 14
PP-3131/GGC-9, Power Supply	AN/GGC-9	14
PP-3427/FGC-70X, Power Supply	AN/FGC-70, AN/FGC-70X	15
PP-3428/FGC-70X, Power Supply	AN/FGC-70, AN/FGC-70X	15
PP-3429/FGC-70X, Power Supply	AN/FGC-70X	15
SA-419/FG, Switch, Code Actuated	AN/FGC-30	16
TH-66/UGC, Electronic Module	AN/GGC-16, AN/UGC-39	7
TT-4C/TG, Teletypewriter	AN/PGC-1	1
TT-76C/TG, Reperforator-Transmitter	AN/GGC-3(*)	2
TT-98(*)/FG, Teletypewriter	AN/FGC-20X, AN/UGC-4	3
TT-99/FG, Teletypewriter	AN/FGC-21	3
TT-100(*)/FG, Teletypewriter	AN/FGC-20	3
TT-107(*)/FG, Reperforator	AN/FGC-30	9 and 16
TT-108/FG, Reperforator	*	9
TT-109/FG, Reperforator	*	9
TT-117A/FG, Teletypewriter	AN/FGC-57	5
TT-117C/FG, Teletypewriter	AN/FGC-25	5
Model 117, Typing Reperforator Transmitter-Distributor	*	10
TT-118(*)/FG, Teletypewriter	AN/FGC-26	5
TT-119A/FG, Teletypewriter	AN/FGC-25X	5
TT-120/FG, Teletypewriter	AN/FGC-26X	5
TT-122A/FG, Transmitter-Distributor	*	11
TT-123A/FG, Transmitter-Distributor	*	11
TT-173A/TG, Teletypewriter	*	1
TT-174A/FG, Markable, Transmitter-Distributor	AN/FGC-30	12, 16
TT-175A/FG, Teletypewriter Set	AN/FGC-30	16
TT-178B/FG, Reperforator	AN/FGC-25X	5
TT-179B/FG, Reperforator	AN/FGC-25	5
TT-180/FG, Reperforator	AN/FGC-26X	5
TT-181(*)/FG, Reperforator	AN/FGC-26	5
TT-224/TG, Reperforator	AN/TGC-12	13
TT-224B/TG, Reperforator	AN/TGC-5B	13
TT-225/TG, Reperforator	AN/TGC-12X	13
TT-225B/TG, Reperforator	AN/TGC-5BX	13
TT-226/FG, Reperforator	AN/FGC-30	16
TT-227/FG, Reperforator	AN/FGC-30	16
TT-228/FG, Reperforator	AN/FGC-30	16
TT-229/FG, Transmitter-Distributor	AN/FGC-30	16

COMPONENT NOMENCLATURE	TELETYPEWRITER SET NOMENCLATURE	PAGE NO.
TT-230/FG, Reperforator	AN/FGC-30	16
TT-231/FG, Reperforator	AN/FGC-30	16
TT-235/FG, Transmitter-Distributor	*	11
TT-239/FG, Tape Reader	AN/FGC-30	16
TT-254/FG, Reperforator	AN/FGC-30	16
TT-255/FG, Reperforator	AN/FGC-30	16
TT-256/FG, Transmitter-Distributor	AN/FGC-30	16
TT-257/FG, Reperforator	AN/FGC-30	16
TT-259/FG, Teletypewriter	AN/FGC-20	3
TT-260/FG, Distributor-Transmitter	AN/TGC-5(*)	13
TT-269B/FG, Teletypewriter	AN/FGC-52	5
TT-270A/FG, Reperforator	AN/FGC-52	5
TT-271B/FG, Teletypewriter	AN/FGC-52X	5
TT-272A/FG, Reperforator	AN/FGC-52X	5
TT-293/FG, Teletypewriter	AN/FGC-64	3
TT-300/FG, Teletypewriter	AN/FGC-66	3
TT-322/GGC-9, TRMTD	AN/GGC-9	14
TT-335/TG, Teletypewriter	*	1
TT-345/FG, Reperforator	*	9
TT-346/FG, Reperforator	*	9
TT-364(*)/FGC-70X, TRMTD	AN/FGC-70, AN/FGC-70X	15
TT-365(*)/FGC-70X, Reperforator	AN/FGC-70X	15
TT-366(*)/FGC-70X, Reperforator	AN/FGC-70X	15
TT-367/G, Distributor-Transmitter	AN/FGC-70, AN/FGC-70X	15
TT-390(*)/FGC-70, Reperforator	AN/FGC-70	15
TT-391(*)/FGC-70, Reperforator	AN/FGC-70	15
TT-396/FG, Teletypewriter	AN/FGC-68	5
TT-397/FG, Reperforator	AN/FGC-68	5
TT-482/UGC, Teletypewriter	AN/FGC-67	3
TT-483/UGC-Teletypewriter	AN/FGC-67X	3
TT-512/FG, Teletypewriter	AN/FGC-80	4
TT-517/GGC-16, Teletypewriter	AN/GGC-16 (50/60 Cycle)	7
TT-518/GGC-16, Tape Puller	AN/GGC-16 (50/60 Cycle)	7
TT-519/UGC-39, Teletypewriter	AN/UGC-39 (400 Cycle)	7
TT-520/UGC-39, Tape Puller	AN/UGC-39 (400 Cycle)	7
TT-537/G, Teletypewriter	*	1

* Indicates the component is currently not part of a Teletypewriter Set.

(*) Indicates more than one model.