

TECHNICAL MANUAL

**REPERFORATOR TELETYPEWRITER
SETS TC-16 AND TC-17**

**(Including Reperforator Transmitters TG-26-A and TG-26-B and
Perforator-Transmitter TT-56/MGC)**

CHANGES }
No. 1 }

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 8 October 1952

TM 11-2201, 23 May 1947, is changed as follows:

The title of the manual is changed to read:

**REPERFORATOR TELETYPEWRITER SETS
TC-16 AND TC-17**

**(Including Reperforator Transmitters TG-26-A and TG-26-B and
Perforator-Transmitter TT-56/MGC)**

Change Reperforator Transmitter TG-26-A to Reperforator Transmitter TG-26-(*) in the following places in the manual:

- Page 1, paragraph 1*d*, line 2.
- Page 2, figure 1, designation on illustration.
- Page 2, figure 2, caption.
- Page 3, paragraph 2*a*, table of components.
- Page 3, paragraph 2*b*, line 4.
- Page 4, paragraph 3, table of contents of package.
- Page 4, paragraph 4*a*, heading.
- Page 5, paragraph 4*b*, line 3.
- Page 6, figure 4, caption.
- Page 6, figure 5, caption.
- Page 8, figure 8, caption.
- Page 9, paragraph 5*a*, lines 2 and 3.
- Page 9, paragraph 5*b*, line 2.
- Page 15, paragraph 10*f*, line 3.
- Page 16, figure 13, caption.
- Page 23, figure 16, designation on diagram.
- Page 24, figure 17, designation on diagram.

Change Line Unit BE-77-A to Line Unit BE-77-(*) in the following places in the manual:

- Page 2, figure 1, designation on illustration.
- Page 3, paragraph 2*a*, table of components.
- Page 4, paragraph 3, table of contents of package.
- Page 5, paragraph 4*c*, heading and last line.
- Page 7, figure 6, caption.

Page 23, figure 16, designation on diagram.

Page 24, figure 17, designation on diagram.

Page 32, paragraph 18*c*, heading.

Page 33, paragraph 19*a*, line 2.

Page 35, paragraph 22*i*, line 4.

Page 54, paragraph 47*a*, line 3.

Change Line Units BE-77-A and BE-77-B to Line Unit BE-77-A, BE-77-B, or BE-77-C in the following places in the manual:

Page 37, paragraph 23*b* (2), line 3.

Page 37, paragraph 23*b* (2) (*a*), heading.

Change Rectifier RA-87 to Rectifier RA-87 (*) in the following places in the manual:

Page 2, figure 1, designation on the illustration.

Page 3, paragraph 2*a*, table of components.

Page 4, paragraph 3, table of contents of package.

Page 5, paragraph 4*d*, line 4.

Page 7, figure 7, caption.

Page 23, figure 16, designation on diagram.

Page 33, paragraph 18*d*, heading.

Page 60, paragraph 54*b*, line 7.

Change TM 11-957 to TM 11-957A in the following places in the manual, if the rectifier in use is a Rectifier RA-87-A:

Page 5, paragraph 4*d*, line 6.

Page 33, paragraph 18*d* (2), line 1.

Page 33, paragraph 18*d* (3), line 3.

Page 40, paragraph 28*d*, line 2.

Page 47, paragraph 37, item No. 4 under action or condition.

Page 60, paragraph 54*b*, line 6.

CHAPTER 1

INTRODUCTION

Notes. (Added): 1. Reperator Teletypewriter Sets TC-16 furnished on Order Nos. 25578-Phila-49, 18101-Phila-50, and 6573-Phila-51 use Reperator Transmitter TG-26-B, a major component, instead of Reperator Transmitter TG-26-A, furnished in earlier Reperator Teletypewriter Sets TC-16. Reperator Transmitter TG-26-B includes a break-lock mechanism; this break-lock mechanism is not provided in Reperator Transmitter TG-26-A.

2. Perforator-Transmitter TT-56/MGC, a component of Radio Sets AN/GRC-26A and AN/MRC-2A, furnished on Order No. 1908-Phila-51, differs from Reperator Transmitter TG-26-A and TG-26-B only in that Perforator-Transmitter TT-56/MGC includes a noise-suppression filter not provided in Reperator Transmitter TG-26-A or TG-26-B.

3. Official nomenclature followed by (*) indicates all models of the item of equipment included in this change and the technical manual. For example, Reperator Transmitter TG-26-(*) represents Reperator Transmitters TG-26-A and TG-26-B; Line Unit BE-77-(*) represents Line Units BE-77,

BE-77-A, BE-77-B, and BE-77-C; and Rectifier RA-87-(*) represents Rectifiers RA-87 and RA-87-A. TM 11-359 gives detailed information on the line unit, TM 11-957 covers Rectifier RA-87, and TM 11-957A covers Rectifier RA-87-A.

4. All information contained in TM 11-2201 relative to earlier models of Reperforator Teletypewriter Set TC-16 applies equally to models covered in these changes, unless otherwise indicated. TM 11-2222 covers in detail the transmitter distributor components of Reperforator Transmitter TG-26-(*) and Perforator-Transmitter TT-56/MGC. Reperforator components of these equipments are covered in TM 11-2223.

1. General

* * * * *

b. Except for differences * * * TC-17 are alike. These differences are explained in **paragraphs 4a.1 and 5.**

* * * * *

d. Reperforator Teletypewriter Set TC-16 uses Reperforator Transmitter **TG-26-(*)** (fig. 2), **or Reperforator Transmitter TG-26-B, both of which have standard keyboards** and typebar symbols. Reperforator Teletypewriter Set * * * figures-printing position (par. 5).

* * * * *

4. Description of Major Components

* * * * *

a.1. (Added) *Reperforator Transmitter TG-26-B.* This reperforator transmitter is the same as Reperforator Transmitter TG-26-A except that Reperforator Transmitter TG-26-B has included in it a break-lock mechanism not provided in Reperforator Transmitter TG-26-A. Use of this device at a transmitting station permits a receiving station to stop transmission from a transmitter distributor by use of a break signal. It also prevents transmission from a transmitter distributor into an open circuit. The break-lock mechanism is equipped with a disabling device so that it may be made inoperative if desired.

* * * * *

e. (Added) *Perforator-Transmitter TT-56/MGC.* This perforator transmitter is a Reperforator Transmitter TG-26-A that has been modified for noise suppression by the addition of a .01- μ f (microfarad) capacitor which functions as a bypass to ground at the junction of two 500-ohm resistors and the motor field winding of the transmitter distributor. This modification is shown in figure 37.1. A complete wiring diagram before modification is shown in figure 96 of TM 11-2222.

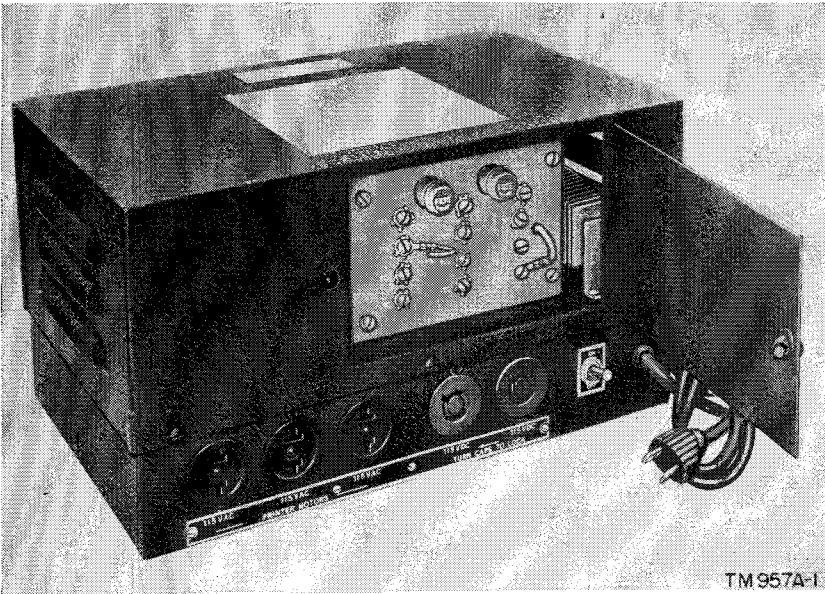


Figure 7.1 (Added). Rectifier RA-87-A, door open.

10. General Functioning of Teletypewriter Sets TC-16 and TC-17

* * * * *

r. (Added) *Break-Lock Mechanism on Reperforator Transmitter TG-26-B.* Refer to paragraphs 4a.1 and 31.1 for a description of the functions and operation of this mechanism.

16. Connections to Line and Other Equipment

* * * * *

a. Power Connections.

* * * * *

(2) For operation on * * * reperforator teletypewriter set.

Note. (Superseded) A separate rectifier is ordinarily used with each teletypewriter set or similar equipment. However, there may be times when enough rectifiers are not available and it may be necessary to supply more than one set from a common d-c source. In such cases, never connect more than two line units to one Rectifier RA-87-(*). When two line units are to be connected to a common d-c power source, be sure to pole the connections properly before the ground wire is attached to the GND binding post of the line unit; this prevents short-circuiting the power supply. Obtain the proper polarity by connecting the power cords so that the meters of both line units (if they are BE-77-A, BE-77-B, or BE-77-C) deflect in the same direction. If Line Units BE-77 are used, make power, line, and ground connections to each line unit separately to check polarity before the common connections to the d-c power source are made.

* * * * *

31.1. Operation of Break-lock Mechanism on Reperforator TG-26-B

(Added)

a. When Reperforator Transmitter TG-26-B is prepared for operation, turn the rod knob in a counterclockwise direction to be sure that the break-lock mechanism (fig. 28.1) is not in the disabled position.

b. The break-lock push rod is located under the right-hand side of the transmitter distributor base, with the knurled finger knob emerging through a hole in the right-hand side of the base casting. Whenever the break-lock mechanism operates to stop transmission because of the receipt of a break signal or because of an open circuit, transmission cannot be resumed unless the mechanism is released by pushing in the push rod.

c. If it is necessary to operate the transmitter distributor in a signal circuit having a current value below the operating value of the break-lock mechanism (approximately 20 ma) or if the mechanism is operating incorrectly because of maladjustment, it may be made inoperative by pushing in the push rod and turning the knob one-quarter turn in a clockwise direction, thus locking it in the disabled position.

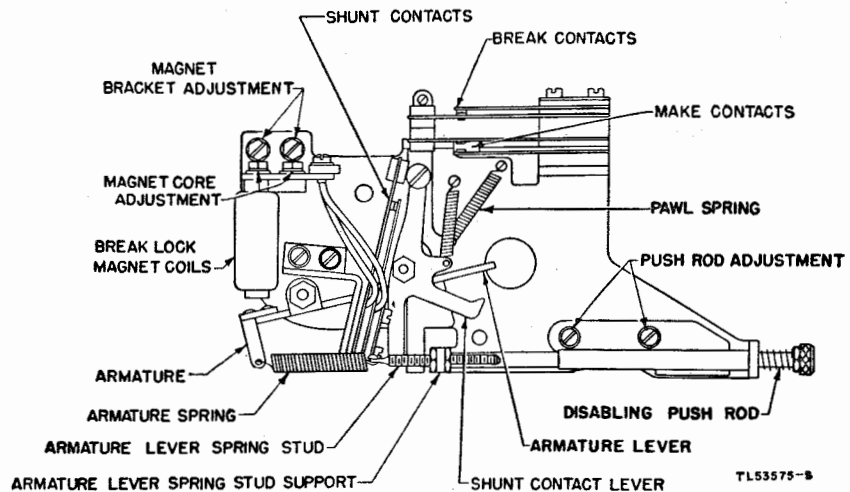


Figure 28.1 (Added). Break-lock mechanism.

49.1. Adjusting Break-Lock Mechanism on Reperforator Transmitter TG-26-B

(Added)

a. With the distributor brush arm in the stop position, the forward edge of the shunt contact lever (fig. 28.1) should rest on the cam $\frac{1}{32}$ inch ($\pm \frac{1}{64}$ inch) from the cam notch. If necessary, shift the break-lock mechanism, which is provided with elongated mounting holes, to provide the necessary clearance. Tighten the three retaining nuts which hold the break-lock mechanism on the studs.

b. There should be some play, not more than .002 inch, between the armature lever (fig. 28.1) and the high part of the cam. If adjustment is necessary, loosen the two screws mounting the magnet bracket; shift the magnet bracket to give the required adjustment, and tighten the screws.

c. Both faces of the magnet core should be flush against the armature when held in an operated position. If necessary, adjust by bending the magnet bracket at a point near the mounting plate.

d. The magnet core should be approximately equidistant from the ends and sides of the armature when it is held in an operated position. If adjustment is necessary, loosen the two screws mounting the magnet core (fig. 28.1), shift the magnet core to give required adjustment, and tighten the screws. Recheck the magnet bracket adjustments (b and c above).

e. The operating cam should be positioned so that the No. 5 transmitter contact tongue leaves the lower (marking) contact screw when the distributor brush arm is on the stop segment and the trailing edge of the brush is $\frac{1}{2}$ inch to $\frac{1}{6}$ inch from the leading edge of the stop segment. Be sure to tighten the cam mounting screws.

f. Check the armature spring tension and break-lock operation. *Because this is a critical procedure, perform it with extreme care as follows:*

- (1) Connect a test circuit to a source of 115 volts dc; the circuit should consist of a milliammeter, a jack and a variable resistor (maximum value approximately 6,000 ohms) connected in series.
- (2) Insert the signal-circuit plug (gray) of the transmitter distributor in the test jack.
- (3) Replace the distributor cover and invert the transmitter distributor so that it is upside down.
- (4) By means of a piece of wire, fasten the tight-tape stop rod in position so that the tape stop contacts are closed.
- (5) Adjust the variable resistor so that the current in the test circuit is 20 ma. *Be sure that the disabling push rod is in the released position.*
- (6) Operate the motor switch to ON and the SEND-STOP switch to SEND.
- (7) Operate the push rod momentarily. The distributor should start and the break lock should operate to stop the distributor within two revolutions. Repeat this step several times.
- (8) If the distributor does not stop with two revolutions, loosen the two nuts locking the armature lever spring stud to its support (fig. 28.1) and increase the spring tension until required operation is obtained. Tighten the locknuts.
 - (a) After the 20-ma requirement is met, increase the test current to 25 ma.

- (b) Operate the push rod momentarily. The break lock should not operate and the distributor should run continuously.
- (c) If the distributor does not run continuously, decrease the armature lever spring tension just enough to meet the requirement.
- (d) Recheck the operation of the break-lock mechanism on 20 ma.

55. Wiring and Schematic Diagrams

Wiring and schematic * * * and mechanical troubles. A partial wiring diagram that shows the modification made in the transmitter distributor component of Reperforator Transmitter TG-26-A to produce Perforator-Transmitter TT-56/MGC is shown in figure 37.1.

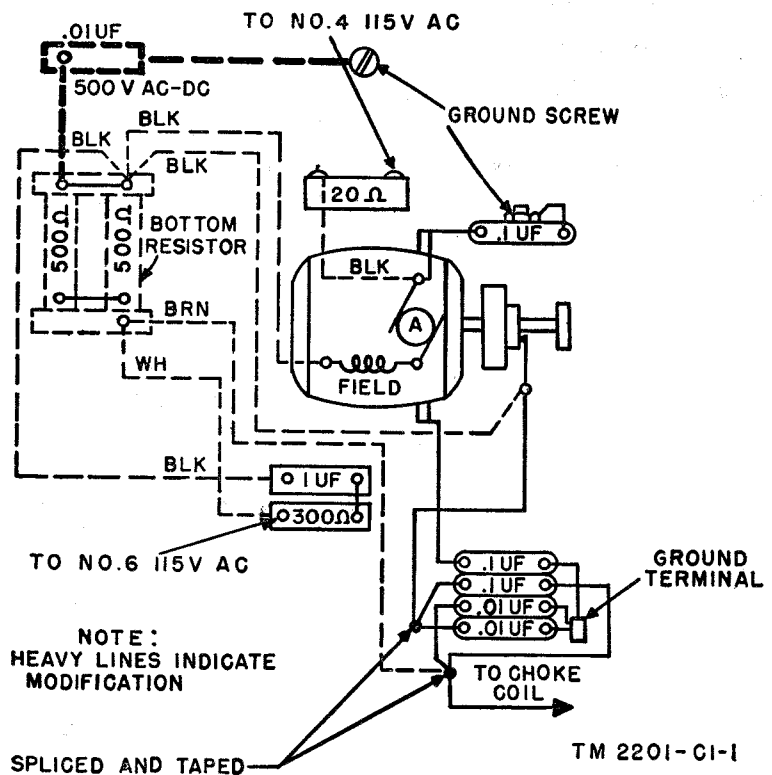


Figure 37.1 (Added). Perforator-transmitter TT-56/MGC, partial wiring diagram showing modification of reperforator transmitter TG-26-A.

APPENDIX III

IDENTIFICATION TABLE OF PARTS

(Superseded)

Note.—Following are identification tables of parts for Reperforator Teletypewriter Set TG-16 (Sig. C stock No. 4TTC16) and Perforator-Transmitter TT-56/MGC (Sig. C stock No. 4TTT56). The fact that a part is listed in this table is not sufficient basis for requisitioning the item. Requisitions must cite an authorized basis, such as a specific T/O&E, T/A, SIG 10, list of allowances of expendable material, or another authorized supply basis. The Department of the Army Supply Catalog applicable to the equipment covered in this manual is SIG 7 & 8-TC-16, SIG 7 & 8-BE-77, SIG 7 & 8-RA-87, and SIG 7 & 8-TG-26-A. For an index of available supply catalogs in the Signal portion of the Department of the Army Supply Catalog, see the latest issue of SIG 1.

1. Identification Table of Parts for Reperforator Teletypewriter Set TC-16 (Sig C stock No. 4TTC16)

Fig. ref.	Name of part and description	Function of part	Signal Corps stock No.
	CABLE, power: Cordage CO-144; 2 #18 AWG cond.	-----	3E2144
	CABLE ASSEMBLY, power: Cord CD-388; rubber-jacketed; 20' lg; 2 #18 AWG stranded cond.	Extension cord to d-c source.	3E1388
1	CASE: Chest CH-53-A-----	Carrying case for Line Unit BE-77-(*) and accessories.	4TCH53A
1	CASE: Chest CH-158-----	Carrying case for Rectifier RA-87-(*)	6F858
	CLAMP: Clamp TM-106 and connection; adj for 3/8" to 1 1/4" pipe.	Terminates ground lead to a water pipe.	6Z1906
16	CONNECTOR, adapter: male one end, triple-ended female other end; 2 flat parallel male cont, 3 pr flat parallel female cont.	Three-way plug to connect power cords.	6Z7566
16	CONNECTOR, plug: 2 pol rectangular female cont; straight type.	Connection for power cable.	2Z7230
6	LINE UNIT BE-77-(*) Refer to TM 11-359 for an identification table of parts for this component.	Connects station equipment to neutral or polar-ential lines, repeats signals, measures and adjusts current, and measures voltage.	4TBE77A

1. Identification Table of Parts for Reperforator Teletypewriter Set TC-16 (Sig C stock No. 4TTC16)—Continued

Fig. ref.	Name of part and description	Function of part	Signal Corps stock No.
4	REPERFORATOR TRANSMITTER TG-26-(*); 5-unit code arrangement; communication character arrangement with P and Ø on one key and L on same key as H. TM 11-2222 contains an identification table of parts for the transmitter distributor component of this unit and TM 11-2223 contains an identification table of parts for the reperforator component.	Perforates and types messages on tape from keyboard locally or from line signals, and sends messages from tape which is run through the transmitter.	4T12.1A-1
7	RECTIFIER RA-87 or Rectifier RA-87-A; metallic disk type; output 115 v dc, 400 ma and 115 v ac, 500 w max, 50 to 60 cps; input voltage 95 to 125 or 190 to 250 v ac, 50 to 60 cps, 600 w.	Converts a-c voltage to d-c voltage for operation of reperforator transmitter signal circuits, local circuits, and line unit circuits.	3H4699-87
18	ROD, ground: Ground Rod MX-148/G; galv steel; approx 6' lg x 3/4" dia.	-----	3Z3330-148

2. Identification Table of Parts for Perforator-Transmitter TT-56/MGC (Sig C stock No. 4TTT56)

Fig. ref.	Name of part and description	Function of part	Signal Corps stock No.
37.1	BOLT, machine: teletypewriter part/dwg #105719.	-----	4T105719
	CAPACITOR, fixed: paper; 10,000 µf; 600 v ac/dc working; 3/4" lg x 5/8" dia case; Sig C Capacitor CA-472 modified by addition of wire connection.	Suppresses interference within frequency range of 1.5 to 38.9 mc.	3DA10-363
	MOUNT, vibration: 2 1/4" sq x 1" thk; rubber cushion.	Base plate mounting -----	4T107091
	PAD: felt, gray; 15 1/2" lg x 3/8" wd x 3/8" thk.	Silencer -----	4T107410

2. Identification Table of Parts for Perforator-Transmitter TT-56/MGC (Sig C stock No. 4TTT56)—Continued

Fig.	Name of part and description	Function of part	Signal Corps stock No.
1	REPERFORATOR; Teletype Model No. 14 (FPR17). For an identification table of parts for this component, refer to TM 11-2223.	For receiving and transmitting messages and recording messages both in code perforations and in typewritten characters on the same paper tape.	4TRTKXS-GDCSZ
1	TRANSMITTER DISTRIBUTOR: 7.42-unit distributor, single-channel; 110 v AC, 60 cye governed motor w/single 10-spot target geared for 368 opm at 2102 rpm. For an identification table of parts for this component, refer to TM 11-2222.	Translates code perforations recorded in paper tape into electrical impulses and then transmits these impulses as five-unit, start-stop teletypewriter code.	4TXD82FS

[AG 300.7 (29 Aug 52)]

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