NAVSHIPS 93107

TECHNICAL MANUAL

for

TRANSMITTER-TELETYPEWRITER CONTROL

C-1004B/SG

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To: All Activities concerned with the Installation, Operation, and Maintenance of the Subject Equipment

Subj: Technical Manual for Transmitter-Teletypewriter Control C-1004B/SG, NAVSHIPS 93107

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Figure 1-1 Transmitter Teletypewriter Control C-1004B/SG, Identification of Front Panel Controls

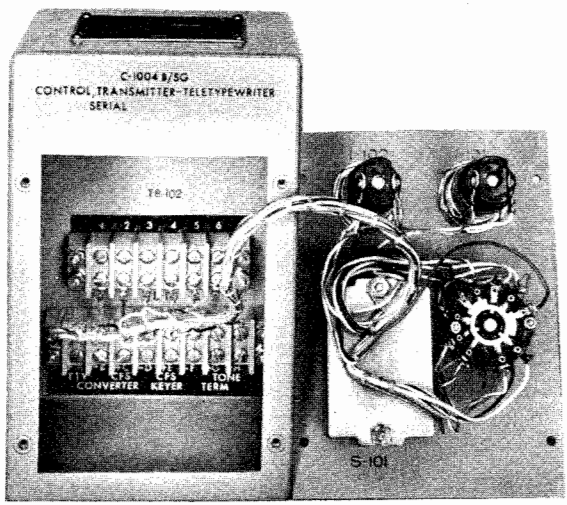

Figure 1-2 Transmitter-Teletypewriter Control C-1004B/SG, with Front Panel Removed

SECTION 1
GENERAL DESCRIPTION

1-1. TECHNICAL MANUAL COVERAGE

This technical manual covers Teletypewriter-Transmitter Control C-1004B/SG as shown in Fig. 1-1.

1-2. PURPOSE AND BASIC PRINCIPLES

The Transmitter-Teletypewriter Control C-1004B/SG is intended for general shipboard installation. It is used in connection with teletypewriter sending and receiving loop circuits. The Control Unit, when properly connected, is intended to accomplish the following basic functions:

(a) To switch a teletypewriter to either one of three d-c loops as follows:

(1) To a channel loop in which an automatic half-duplex tone terminal is connected (Send/Receive Circuit).

(2) To a channel loop in which an f-s keyer or radio is connected (Send Circuit).

(3) To a channel loop in which an f-s converter or comparator is connected (Receive Circuit).

1-3. DESCRIPTION OF UNIT

The Transmitter-Teletypewriter Control C-1004B/SG consists of an aluminum box, 4-3/32 x 4-13/16 x 7-9/16 inches, with the components mounted on the front cover panel as well as in the box. The components mounted on the front cover protrude 1-1/32 inches. The front cover is secured to the box by four mounting screws.

1-4. REFERENCE DATA

a. Nomenclature — Control, Transmitter-Teletypewriter C-1004B/SG.
b. Contract — N126s-83782
c. Contractor — Tabet Mfg. Co. Inc.
d. Cognizant Naval Inspector — Inspector of Naval Material, Baltimore, Maryland.
e. Packages per Complete Shipment — One.
f. Cubic Contents — .107
g. Total Weights — 2 lb.. 13 oz.
h. Power Supply — 110-220v., 60 cycles, single phase.
i. Power Consumption — approximately 10 watts.

TABLE 1—1. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVER-ALL DIMENSIONS			VOLUME	WEIGHT
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
1	Transmitter Teletypewriter Control	C-1004B/SG	$7\frac{9}{16}$	$4\frac{13}{16}$	$5\frac{1}{8}$	.107	2 lb. 13 oz.

Unless otherwise stated, dimensions are inches, volume cubic feet, weight pounds.

SECTION 2
THEORY OF OPERATION

2-1. GENERAL DESCRIPTION OF CIRCUITS

a. Transmitter - Teletypewriter Control C - 1004B/SG (Fig. 1-1) contains the components and circuitry necessary for controlling a teletypewriter radio circuit from a remote position. The C-1004B/SG Control Unit provides the transmitter power on-off switch, the POWER-ON indicator lamp, CARRIER-ON indicator lamp, and a three position rotary selector switch. The rotary selector switch provides the functions described in subparagraphs (1) through (4) below.

1) Switches a send-receive teletypewriter to either a frequency shift keyer circuit (CFS SEND), a frequency shift converter or comparator circuit (CFS REC), or a tone terminal on a send-receive basis (TONE S/R).
2) Shorting of the other two unused sets of terminals when the send-receive teletypewriter is connected to the set of terminals associated with a particular switch position, i. e., when the switch is in the TONE S/R position, the frequency shift keyer terminals (E and F) (CFS SEND) and the frequency shift converter terminals (C and D) (CFS REC) are shorted or closed by switch (S-102).
3) Turning on the transmitter carrier by closing a circuit in the radio transmitter (shorting terminals 5 and 6) when the switch is in the CFS SEND position only.
4) Energizing the CARRIER-ON indicator lamp when the switch is in the CFS SEND position only.

b. When the rotary switch is in the TONE S/R position, the CARRIER-ON indicator lamp and the transmitter carrier are off, the teletypewriter is connected to the tone terminal loop (terminals G and H), while the unused terminals, frequency shift keyer (terminals E and F) and frequency shift converter (terminals C and D), are shorted respectively.

c. When the rotary switch is in the CFS SEND position, the transmitter carrier is turned on, the CARRIER-ON indicator light is illuminated showing that the carrier is on, the teletypewriter is connected to the frequency shift keyer terminal (terminals E and F), while the unused tone terminal (terminals G and H) and frequency shift converter terminal (terminals C and D) are shorted, respectively.

d. When the rotary switch is in the CFS REC position, the CARRIER-ON indicator light and the transmitter carrier are off, the teletypewriter is connected to the frequency shift converter circuit, while the unused terminals, tone terminal (terminals G and H) and frequency shift keyer terminals, (terminals E and F), are shorted.

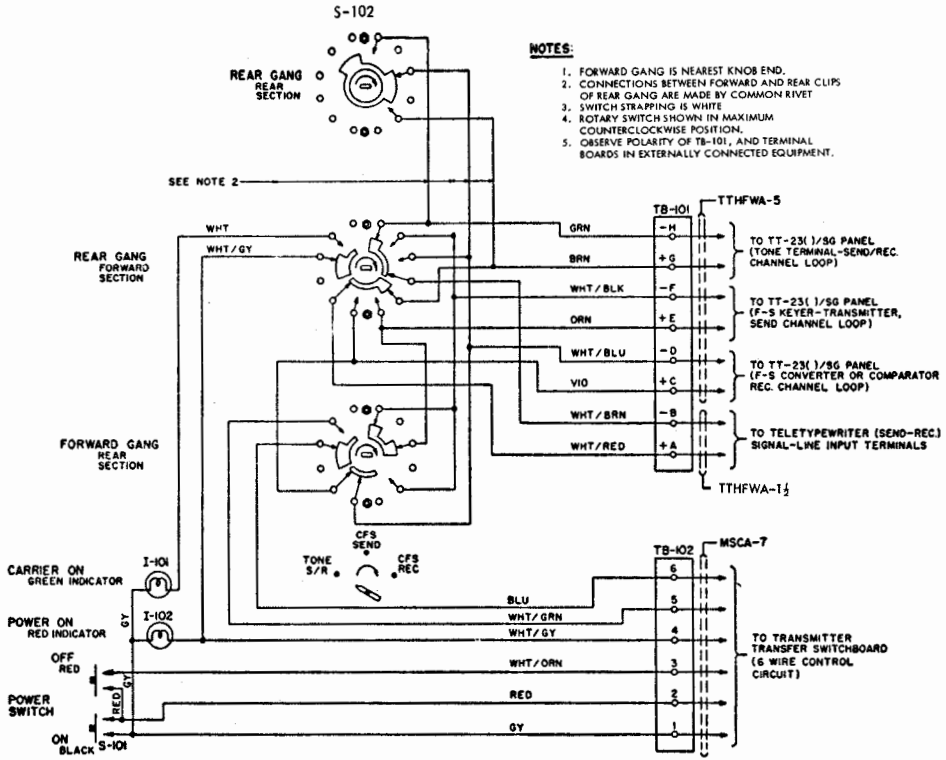

Figure 2–1. Circuit Diagram

SECTION 3
INSTALLATION

3-1. PREPARATION FOR MOUNTING

(a) The C-1004B/SG may be secured by means of angle brackets or straps to the side of or adjacent to a send-receive teletypewriter.

(b) Remove the front cover and terminal boards (TB-101 and 102) before drilling holes for cable, cable clamps and mounting brackets.

(c) Observe the free surface areas in the upper rear of box (Fig. 3-1) where three (3) holes can be drilled to accomodate the following cables with their cable clamps:

One (1) TTHFWA-1 1/2

One (1) TTHFWA-5

One (1) MSCA-7

(d) After drilling, the box should be cleaned of all metallic particles and foreign material.

3-2. EXTERNAL CONNECTIONS

(a) The external cable connections should be made to terminal boards (TB-101 and 102) outside the box.

(b) External cable connections should be in accordance with Fig. 2-1 and with Bureau of Ships Basic Communication system interconnecting wiring plans.

(c) Observe polarities indicated on terminal board (TB-101) and on terminal boards of the associated equipment that will be connected to the C-1004B/SG unit.

3-3. MOUNTING

(a) Replace the terminal boards in the box. Be sure that the designation cards marking the terminals on TB-101 and 102 are between the terminal board and the box.

(b) Mount the box at the teletypewriter or bulkhead at an approximate height of thirty (30) inches from the deck so that controls and indicators are convenient for operation.

(c) Firmly secure the front panel on the box. (Insure that connections, knobs, etc. are firmly secured in the unit.

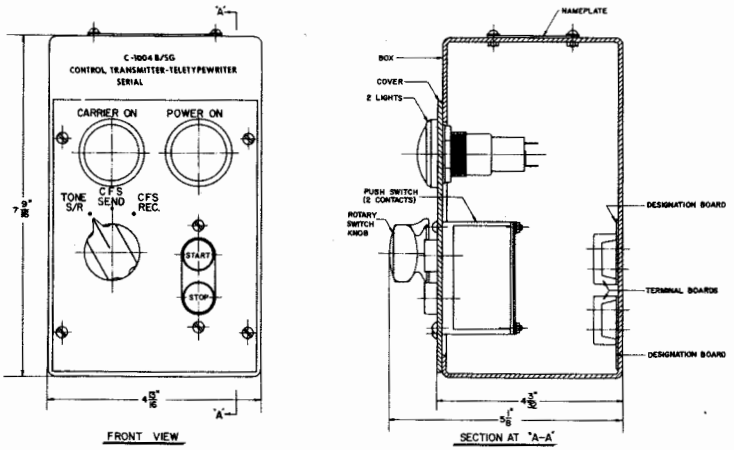

Figure 3-1. Box Assembly

SECTION 4
MAINTENANCE

4-1. MECHANICAL

(a) Periodically inspect the unit to insure that all connections, cable clamps, knobs, etc., are firmly secured.

4-2. INDICATOR LIGHTS

(a) Lights in the CARRIER-ON and POWER-ON sockets can be replaced by removing the light cover.

4-3. REPLACEMENT OF SWITCH (S-102)

(a) In the event it is necessary to replace switch S-102 the following continuity test should be used as a guide to insure that the switch will perform the correct functions. Proceed as follows:

(1) Remove and mark all external conductors on terminal board TB-101.

(2) Connect a 200-ohm resistor across terminals A and B.

(3) Connect an ohmmeter across terminals G and H and place switch (S-102) to TONE S/R position. The ohmmeter should read 200 ohms (terminal resistance between E and F, C and D, should read zero).

(4) Turn switch (S-102) to CFS SEND position and place ohmmeter across E and F. The ohmmeter should read 200 ohms (terminal resistance between G and H, C and D, should read zero). Place ohmmeter across terminals 5 and 6 of TB-102. The meter should read zero. Place the meter across terminals 1 and 4 of TB-102. The meter should read the parallel resistance of lamps I-101 and I-102.

(5) Turn switch (S-102) to the CFS RECEIVE position and connect meter to terminals C and D. The meter should read 200 ohms (terminal resistance between G and H, E and F, should read zero).

(6) Place meter across terminals 1 and 2 of TB-102 and press the START switch (S-101). The meter should read zero.

(7) Place meter across terminals 2 and 3 of TB-102 and press the STOP switch (S-101). The meter should read zero.

SECTION 5
PARTS LIST

5-1. INTRODUCTION

Reference designations (previously referred to as circuit symbol, reference symbol, etc.) have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams, and the parts list.

Sockets associated with a particular plug-in-device, such as an electron tube or a fuse, are identified by a reference designation which includes the reference designation of the plug-in-device. For example, the socket for fuse F101 is designated XF101.

5-2. MAINTENANCE PARTS LIST

Table 5-1 lists the maintenance parts.
Column 1 lists the reference designation of the various parts in alphabetical and numerical sequence.
Column 2 includes the name and description of the various items. Complete information is provided for all parts, as well as the manufacturer and reference number.
Column 3 indicates how the part is used and provides its functional location in the equipment.

5-3. STOCK NUMBER IDENTIFICATION

Table 5-2 is arranged by reference designation. The "Stock Number" column gives stock numbers for the various parts. Stock numbers preceded by an asterisk (*) apply to replacement items which differ from the items supplied in the equipment.

The "Notes Column" provides the Source, maintenance and Recoverability Codes for the maintenance parts.

5-4. SOURCE MAINTENANCE AND RECOVERABILITY CODES

I. Source Codes

P - Applied to parts which are procured in view of relatively high usage and which are relatively simple to manufacture within the Naval Establishment, if necessary. Code "P" indicates that the part is available in the Supply System.

P1 - Applies to parts which are procured in view of relatively high usage but which are very difficult, impractical, or uneconomical to manufacture. Code "P1" indicates that the part is available in the Supply System.

P2 - Applied to parts for which little usage is anticipated but which are procured in limited quantity for insurance purposes. Parts coded "P2" are difficult to manufacture, require special tooling not normally available within the Naval Establishment, or require long production lead time.

P3 - Applied to parts which are procured in quantity in accordance with the life expectancy of the part. Parts coded "P3" are deteriorative in nature and may require special storage conditions.

M Series Manufacture, Parts not Procured

M - Applies to parts which are capable of being manufactured within the Naval Establishment. Parts coded "M" have no anticipated or relatively low usage, or possess restrictive installation or storage factors. Code "M" will not be applied to an item when the item is coded "P" for other applications and system support is maintained; the item appears in the Navy Stock List

of General Stores or the Navy Stock List of the Electronics Supply Office; or supply support responsibility for the item has been vested in another inventory manager.

A Series Assemble, Assembly not Procured:

A - Applied to assemblies which are not procured but which are to be assembled within the Naval Establishment prior to installation. At least one of the parts in the assembly must be "P" series which carries an individual part number and description.

N Series Not Procured or Stocked will be Procured on Demand:

N - Applied to parts which do not meet established criteria for stocking and which are normally readily available from commercial sources. Parts coded "N" will be procured on demand in accordance with applicable procedures.

X Series Not Procured, Normally Impracticable for Stocking, Maintenance or Manufacture

X - Applied to main structural members or similar parts which, if required, would suggest extensive repair. The need for a part, or parts, coded "X" will normally result in a recommendation for complete overhaul or retirement of the equipment from service.

X1 - Applied to parts for which procurement of the next larger assembly source coded "P" is justified; e.g., an internal detail part, such as welded segments inseparable from its assembly, a part which must be machined and installed with other parts in a matched set, or a part of an assembly, which, if required, would suggest extensive reconditioning of each assembly.

X2 - Applied to parts which are not procured for stock but may be acquired for use through salvage. Activities requiring such parts will attempt or obtain from salvage; if not obtainable from salvage, such parts will be requisitioned through normal chan-

nels with supporting justification. Repeated requests may justify a change to a "P" source code.

U Series Not Procured, Not of Supply or Maintenance Significance.

U - Applied to parts which are not of supply or maintenance, such as installation drawings, diagrams, instruction sheets, field service drawing numbers, and parts which should not or cannot be procured or manufactured (optional).

II. Maintenance Codes:

Code	Maintenance Echelon
O	Overhaul Activities
T	Tender or repair ship
F	Activity to which equipment is assigned (e.g. vessel, FASRON or self-supported squadron).
E	Specialized repair facilities
B	Specific maintenance requirments not applicable (optional)

III. Recoverability Codes:

Code	Definition and Application of Code
R	Repairable — Parts which are economical and practicable to repair. Replacements will be obtained and expended parts returned in accordance with instructions issued by the inventory manager.

S Salvageable — Parts which are economical and practical to salvage and which may be placed in "Ready for Issue" condition by cleaning, replating, anodizing, adjusting, replacement of bearings or bushings. "S" coded parts may contain parts or materials which are usable, valuable, or critical, and which may be placed in the supply system for issue.

Consumable (Expendable) — Parts that are neither repairable nor salvageable (optional).

IV, Code Format:

In assigning the above listed codes, the following sequence has been followed:

Source	Maintenance		Recoverability
(1)	(2)	(3)	(4)
Consumer	Lowest Maintenance echelon capable of installing part	Lowest Maintenance echelon capable of manufacturing, assembling, or testing a part prior to installation	Recoverability status

TABLE 5—1. PARTS LIST

REFERENCE DESIGNATION	NAME AND DESCRIPTION	LOCATION FUNCTION
I-101	Lamp; tungsten filament; 250V; 10 watts; candelabra screw base; GE type S-6.	Pilot light CARRIER ON
I-102	Lamp; same as I-101.	Pilot light POWER ON
S-101	Switch, push button - 2 circuit, normally opens Cutler-Hammer, Inc. No. E20412A.	Turns power on or off
S-102	Switch, rotary; three positions, all locking; 30° per throw; 2 impregnated bakelite sections; brass contacts, silver plated 1/2 ampere, 115 volts ac contact rating: 1-17/32 in. lg. X 1-9/32 in. wd. X 1-9/32 in. high overall; solder lug terminals; shorting type mounts in 3/8 in. dia. hole using lockwasher and nut; flatted shaft for knob; Centralab type A-200092 modified per Navy drawing REC 101445. Tabet Mfg. Co. No. 123-1001-3-5.	Switches, CFS SEND, CFS REC, TONE S/R
TB-101	Board, terminal; barrier type; phenolic body; 3-3/8 in. lg. x 1-1/8 in. wd. x 1/2 in. h. overall; 8 screw type termi-	Connect transmitter

TABLE 5—1. PARTS LIST (continued)

REFERENCE DESIGNATION	NAME AND DESCRIPTION	LOCATION FUNCTION
	nals 4 mtg. holes 0.175 in. dia. on 3-1/16 in. by 7/16 in. mtg./c; Kulka Electric Mfg. Co. Inc., type no. 601-8 (MAI-60).	
TB-102	Board Terminal; barrier type; phenolic Body; 4-1/4 in. lg. X 1-1/8 in. wd. X 1/2 in. h. overall; 6 screw type terminals; 4 mtg. holes 0.175 in. dia. on 3-15/16 by 7/16 in. mtg./c; Kulka Mfg. Co., Inc. type no. 601-6 (MAI-60).	To Control Box
XI-101	Lampholder; 250 volts, 10 watts; mounts one ea. candelabra screw base lamp type S-6; includes green lens; mounts in one inch hole; two solder type terminals; 2-7/16 in. lg. x 1-1/8 in. dia., overall; nickel plated brass with phenolic insert; Dial Light Co. of America Type No. 314001-112.	Holds Lamp which indicates CARRIER ON
XI-102	Lampholder; same as XI-101 except red lens. Dial Light Co. of America Type No. 314001-111.	HOLDS LAMP WHICH INDICATES POWER ON

TABLE 5-2. STOCK NUMBER IDENTIFICATION

REFERENCE DESIGNATION	NOTES	FEDERAL STOCK NUMBER
I-101	P1FFC	G6240-151-4914
I-102	P1FFC	G6240-151-4914
S-101	P2FFC	N5930-608-1740
S-102	P2FFC	N5930-608-1473
TB-101	P2FFC	N5940-577-0965
TB-102	P2FFC	N5940-577-0964
XI-101	P2FFC	N6210-299-5227
XI-102	P2FFC	*N6210-233-4376