TB SIG E19

WAR DEPARTMENT TECHNICAL BULLETIN

JAPANESE RADIO SET

Model 94 Mark 5 Wireless Set
Mark 32 Type Transmitter
Mark 32 Type Receiver

WAR DEPARTMENT **6 DECEMBER 1944**

RESTRICTED

Figure 1a. Nameplate of Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Transmitter.

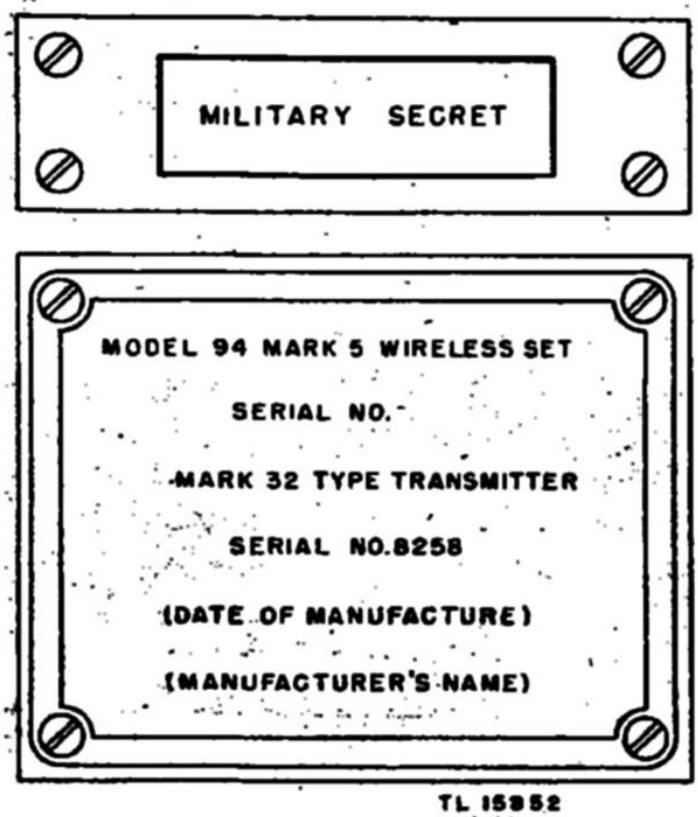


Figure 1b. Nameplate translation of Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Transmitter.

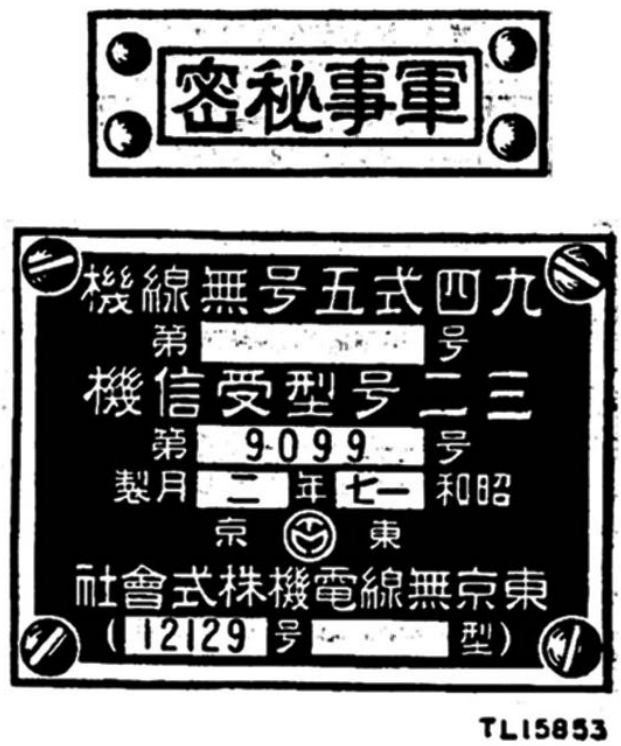
JAPANESE RADIO SET
Model 94 Mark 5 Wireless Set
Mark 32 Type Transmitter
Mark 32 Type Receiver

1. DESCRIPTION.

a. General. The Japanese Radio Set 機線無號五式四方 (Model 94 Mark 5 Wireless Set)* as described in this bulletin consists of the 機信送型號二三 (Mark 32 Type Transmitter) and the 機信受型号二三 (Mark 32 Type Receiver). These will hereafter be referred to as "the set", "the transmitter", and "the receiver". The nameplate of the transmitter and its American equivalent are shown in figures 1*a* and 1*b*. The nameplate of the receiver and its American equivalent are shown in figures 2*a* and 2*b*. The set is used by rear echelon ground troops as a fixed station for both voice and c-w (continuous-wave) communication, and can be used in nets with American amplitude-modulated radio sets within the frequency and distance range. As a means of further identifying the Japanese set control designations, three sets of identifying name tabs are provided which may be cut out and affixed to any Japanese set being used. These name tabs are shown in figures 32, 33, and 34. Views of the set with name tabs are shown in figures 20 and 23.

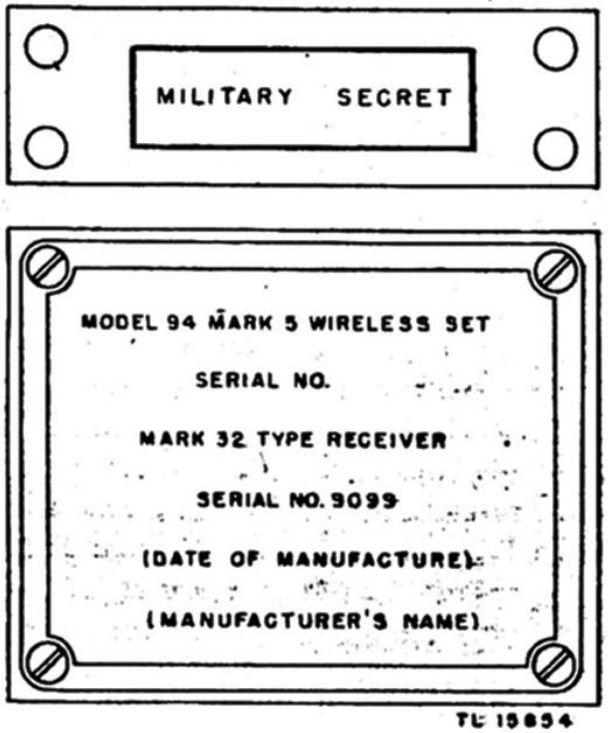
b. The Transmitter. The 機信送型號二三 (Mark 32 Type Transmitter) is contained in a lightweight metal case with leather or canvas cover flaps over the case door (fig. 3). Leather straps are used in carrying the transmitter between operating locations. A view of the transmitter with the cover flaps closed is shown in figure 3. Figure 4 shows the transmitter with the cover flaps open. A single dual-triode type tube is used, with one triode section modulating the second triode section for voice operation, and the two triode sections in parallel for c-w operation. The transmitter contains a switch actuated when the crystal holder is plugged into the crystal holder socket. With the crystal holder out, the transmitter oscillator circuit is a self-excited Hartley. When the crystal

*In this bulletin the Japanese characters are followed by their American military equivalents in parentheses.



TL15853

Figure 2a. Nameplate of Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Receiver.



TL 15854

Figure 2b. Nameplate translation of Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Receiver.

holder is plugged into the socket, the switch changes the oscillator grid circuit and provides for operation of the circuit as a crystal controlled oscillator. The serial number plate of the transmitter is shown in figure 5.

c. The Receiver. The 機信受型号二三(Mark 32 Type Receiver) is housed in a metal case together with its battery power supply. Leather or canvas flaps cover the front of the case and leather straps are used for carrying the case (figs. 3 and 4). The receiver is a three-tube tuned radio-frequency type and, by means of a connecting cable uses the same antenna system as the transmitter (fig. 16). The serial number plate of the receiver is shown in figure 5.

d. Power Supply. (1) The receiver is powered by batteries contained in the bottom of the metal housing case (figs. 4 and 6). The batteries are wired to a four-connector plug strip mounted on the rear of the receiver case which plugs into a four-connector jack strip on the receiver when the receiver is inserted into the case.

(2) The transmitter is normally powered by the 機電發回手型號九— (Mark 19 Type manually operated generator) (figs. 7 and 13). The nameplate of the generator and its American equivalent are shown in figures 8 and 9. The generator dataplate and its American equivalent are shown in figures 10 and 11. The transmitter may also use an external battery pack for a power supply when the hand generator is not available. If a battery pack is used, one end of the four-wire generator cable (fig. 12) must be modified to provide suitable connection to the battery pack. A view of the 機電發回手型號九— (Mark 19 Type manually operated generator) with the cover open is shown in figure 13. The hand generator is corded to the transmitter with a four-wire cable terminated on each end by a four-conductor female plug (fig. 12). The hand generator is carried between operating locations by two leather shoulder-straps. A heavy metal plate which is folded up along one side of the generator when

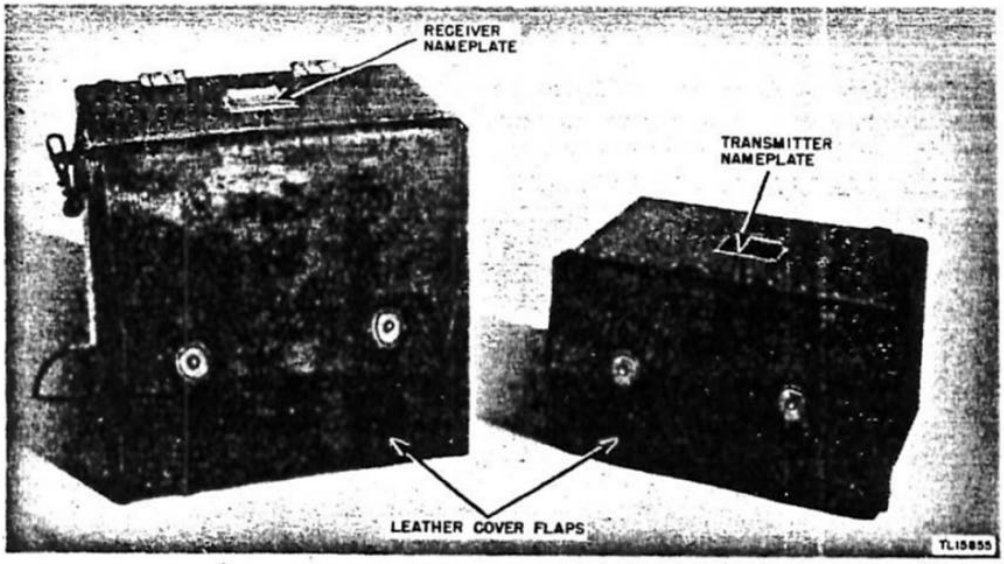


Figure 3. Japanese Radio Set Model 94 Mark 5 Wireless. Set, view of transmitter and receiver with cover flaps closed.

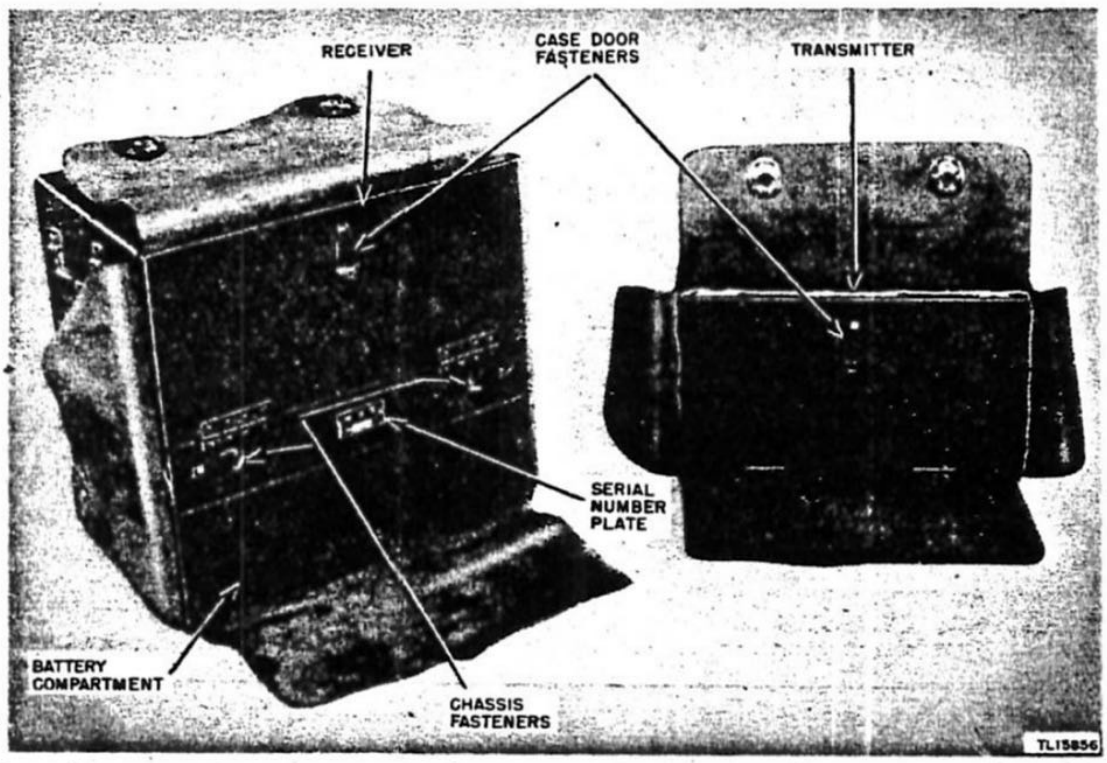


Figure 4. Japanese Radio Set Model 94 Mark 5 Wireless Set, view of transmitter and receiver with cover flaps open.

it is being carried, may be fastened in a rigid sition parallel to the bottom of the generator for operation. The plate is used to mount the generator on a supporting stand, or as a means of holding the generator firmly with the foot. A single folding-type crank for turning the generator is secured to a drive gear and ratchet assembly shaft by a steel pin. The armature is geared to the driving crank through the gear assembly in a ratio of 5,200 to 70. In order to obtain constant speed, a small flywheel is attached to one end of the armature shaft. A further means of obtaining constant speed is observation of the low-voltage voltmeter through the glass window on the top of the generator case. For proper operation of the set, the voltmeter must indicate 6 volts.

e. Accessories. A 6-volt single-button carbon-type microphone is used with a leather and elastic strap for fastening around the neck. The headset consists of two series-connected magnetic-type units of 2,000 ohms d-c resistance. Figure 14 shows the microphone and headset with cording to the 一號F 型送受話器 (Mark 1 Type F microphone and headset plug). Other accessories supplied with the set are: key (with cord and plug); transmitter and receiver connecting cable; two three-section antenna support rods; extension battery cable for receiver; antenna bag; antenna wire, counterpoise wire, and guy ropes for antenna support rods; and accessories bag.

2. PERFORMANCE DATA.

The table below lists the performance data of the set.

a. General.

Can communicate with.....Radio Sets SCR-177-A, SCR-177-B, SCR-188-A, SCR-193-( ), SCR-197-( ), SCR-203, SCR-245-( ), SCR-281-( ), SCR-284, SCR-288-( ), SCR-299-( ), SCR-399-A, SCR-499-A, SCR-506-A, SCR-511-( ), SCR-536-( ), SCR-543-( ), SCR-694-( ), AN/TRC-2-( ), and AN/VRC-1-( ).

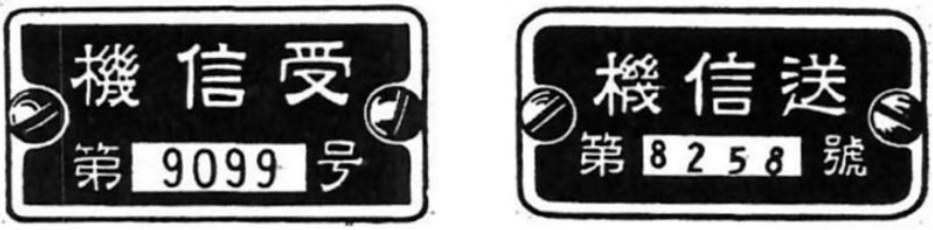


Figure 5. Serial number plates of Mark 32 Type Transmitter and Mark 32 Type Receiver, Model 94 Mark 5 Wireless Set.

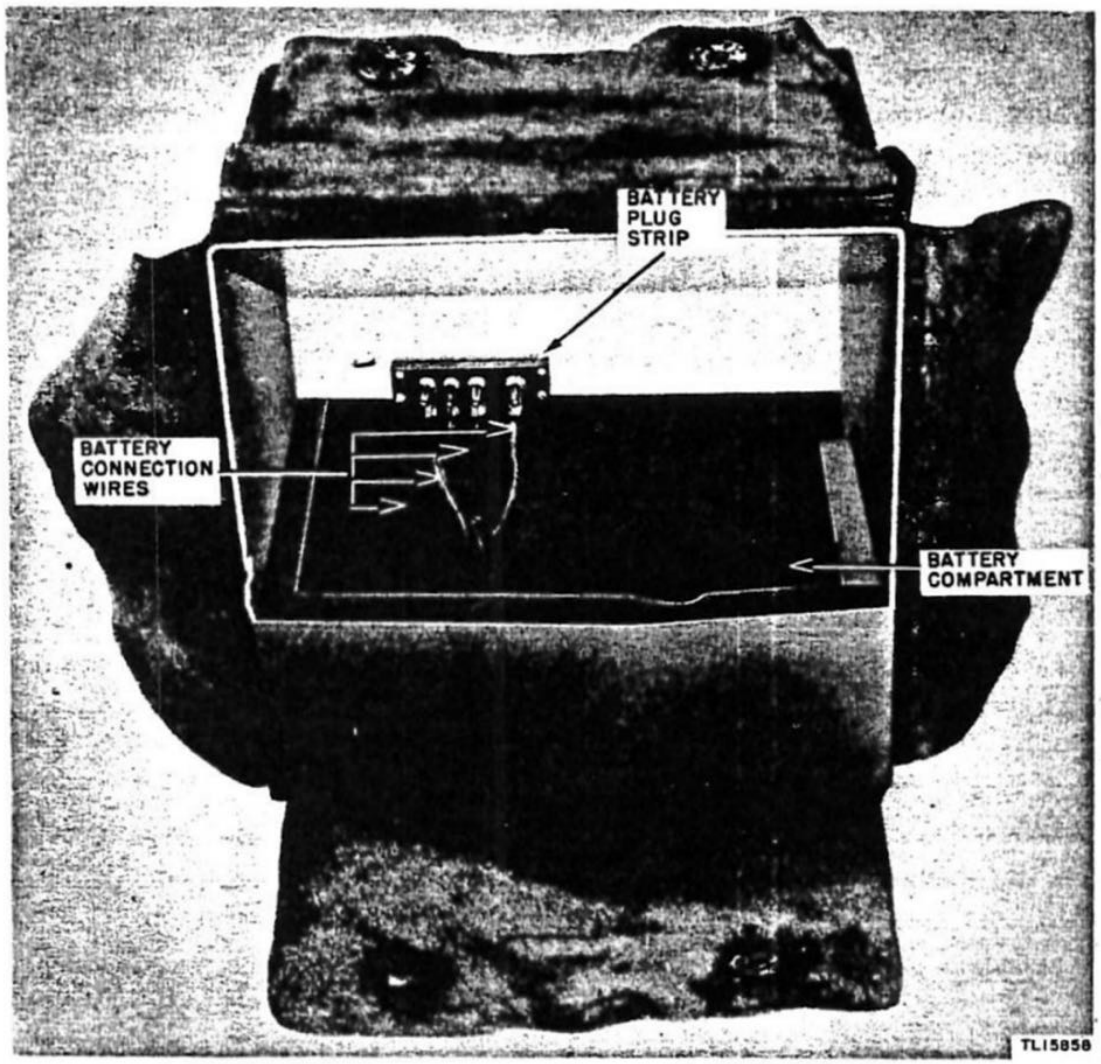


Figure 6. Mark 32 Type Receiver, view of battery compartment, receiver removed from case.

Distance range:

Voice.....approximately 3 miles

Cw.....approximately 7 miles

b. Transmitter.

Frequency range.....C.85 to 5.1 mc in 3 overlapping bands

Band I.....C.85 to 1.62 mc

Band II.....1.55 to 3.C5 mc

Band III.....2.8 to 5.1 mc

Dial graduations.....C to 1CC

Preset frequencies.....1 (crystal only)

Transmitter type.....Hartley oscillator or crystal oscillator

Types of signals emitted.....cw, voice

Type of modulation.....amplitude

Method of modulation.....plate

Number of tubes.....1

Type of tube	*Voice function*	*C-w function*
UZ12C* (Japanese twin-triode)	Triode 1....oscillator	oscillator
	Triode 2....modulator	oscillator (both triode sections in parallel)

Sidetone in set.....none available

Antenna type.....long wire, 53 to 88 feet, with ground or counterpoise; length of counterpoise not critical

Power output:

Voice.....570 milliwatts

Cw.....1.6 watts

Power supply.....hand generator or battery pack

Power requirements (using UZ12C tube)*:

	Voice	*Cw*
Filament	6 v 500 ma	6 v 500 ma
Plates	150 v 41 ma	150 v 44 ma

c. Receiver.

Frequency range.....0.369 to 7.6 mc in 4 overlapping bands

Band I.....0.369 to 0.874 mc

Band II.....0.761 to 1.95 mc

Band III.....1.4 to 3.9 mc

Band IV.....2.5 to 7.6 mc

Dial graduations.....0 to 100

Preset frequencies.....none

Receiver type.....tuned radio-frequency

Types of signals which can be received.....c-w, tone, voice

Number of tubes.....3 (one each as listed)

Type of tube	*Function*
UF134*	radio-frequency amplifier
UF109A*	regenerative detector
UZ133D*	audio amplifier

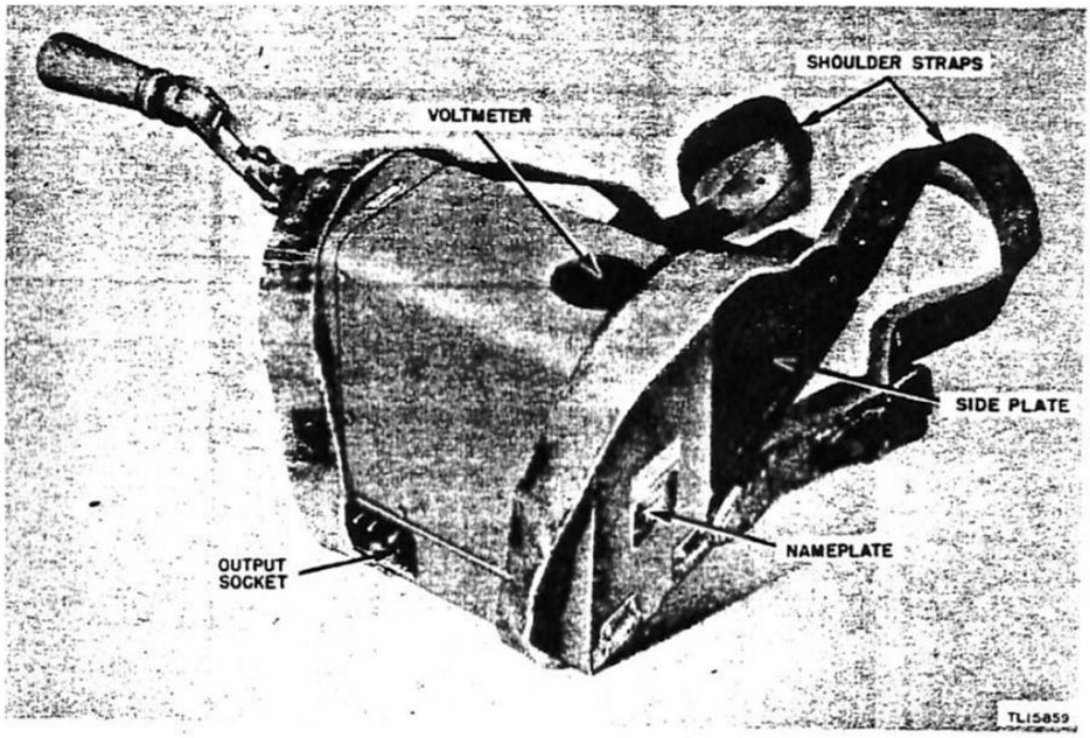


Figure 7. Mark 19 Type manually operated generator, left side view.

Antenna type.....long wire, with ground or counterpoise (when receiver is used with transmitter, the transmitter antenna system is used for the receiver)

Power supply.....dry batteries

Power requirements (using American type tubes)*:

Filaments.....1.5 v 180 ma

Plates.....90 v 10 ma

*NOTE: For interchangeability of American and Japanese tubes types see paragraph **6c**.

Figure 8. Nameplate of Mark 19 Type manually operated operated generator.

3. BATTERY SUBSTITUTION.

If the proper Japanese batteries are available, they may be used for the receiver power supply. However, since a supply of Japanese batteries may not always be obtainable, equivalent Signal Corps types may be used. The expected life of substitute American batteries is given in the table below. Other batteries which will supply 1.5 volts for the filament and 90 volts for the plate may be used. The batteries listed will give reasonable life for a continuous filament drain of 180 milliamperes and a continuous plate drain of 10 milliamperes. The foregoing values represent maximum drain values and would not in all probability be realized in actual operation. Intermittent operation of the receiver will greatly increase the life of the batteries.

FILAMENT SUPPLY

Battery Type	*Number used*	*Connection*	*Delivered voltage*	*Life (hou*
BA-23	1	(see battery)	1.5	17C
	2	Parallel	1.5	5CC
BA-35	1	(see battery)	1.5	2CC
	2	Parallel	1.5	5CC
BA-37	1	(see battery)	1.5	4C
	2	Parallel	1.5	1CC
BA-40	1	(see battery)	1.5	2CC
	2	Parallel	1.5	55C
BA-48	1	(see battery)	1.5	1CC
	2	Parallel	1.5	27C

PLATE SUPPLY

Battery type	*Number used*	*Connection*	*Delivered voltage*	*Lif (hou*
BA-36	2	Series	90	15C
	4	Series-parallel	90	32[illegible]
BA-40	1	(see battery)	90	17C
	2	Parallel	90	42C
BA-48	1	(see battery)	90	9[illegible]
	2	Parallel	90	22[illegible]

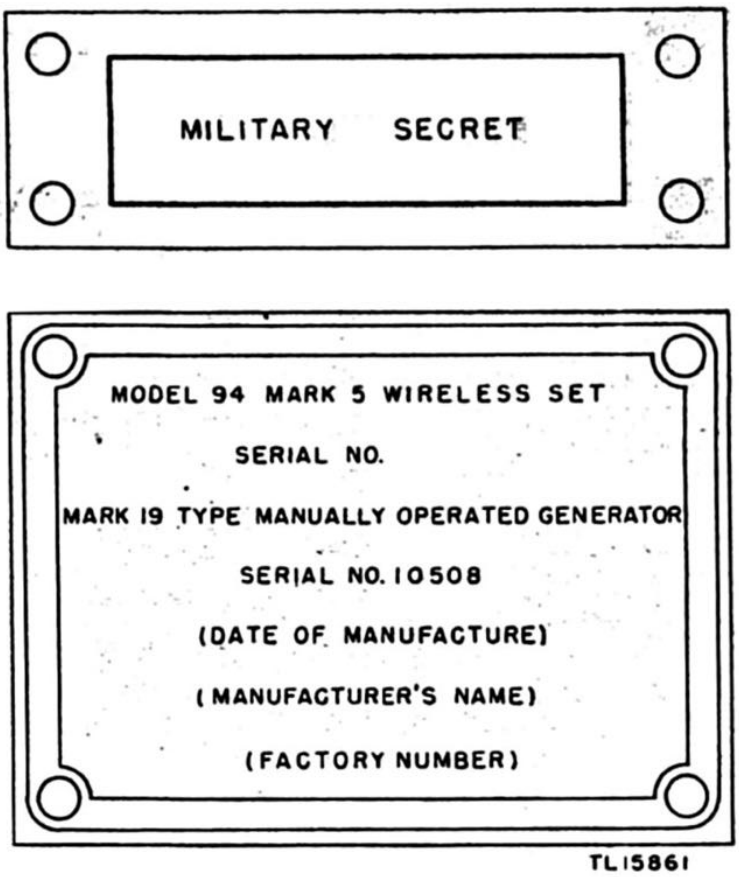


Figure 9. Nameplate translation of Mark 19 Type manually operated generator.

4. INSTALLATION.

a. General. A view of the over-all installation of the set is shown in figure 15, with the relative positions of the component units indicated. The entire set is carried by two men when moving from one operating location to another. If American type batteries are used to power the receiver or the transmitter, it may be necessary to carry the batteries in a separate case such as a musette bag.

b. Antenna. (1) When the transmitter and receiver are used together, the same antenna system is used for both units. Plug the transmitter and receiver connecting cable (fig. 16) into the transmitter and receiver as shown in figure 15. The pin arrangement of the plugs on each end of the cable prevent incorrect insertion of the plugs into the jack strips on the transmitter and the receiver. Connect a long wire antenna from 53 to 88 feet in length to the 空 (antenna) post of the transmitter (fig. 17). Connect the ground or counterpoise wire to the 地 (ground) post of the transmitter (fig. 17).

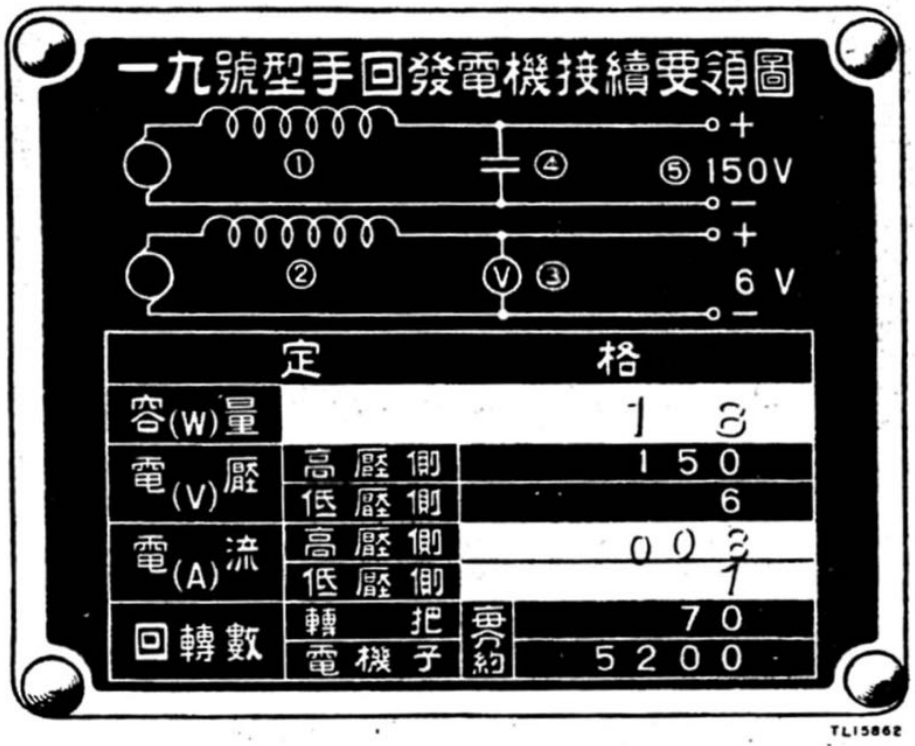


Figure 10. Dataplate of Mark 19 Type manually operated generator.

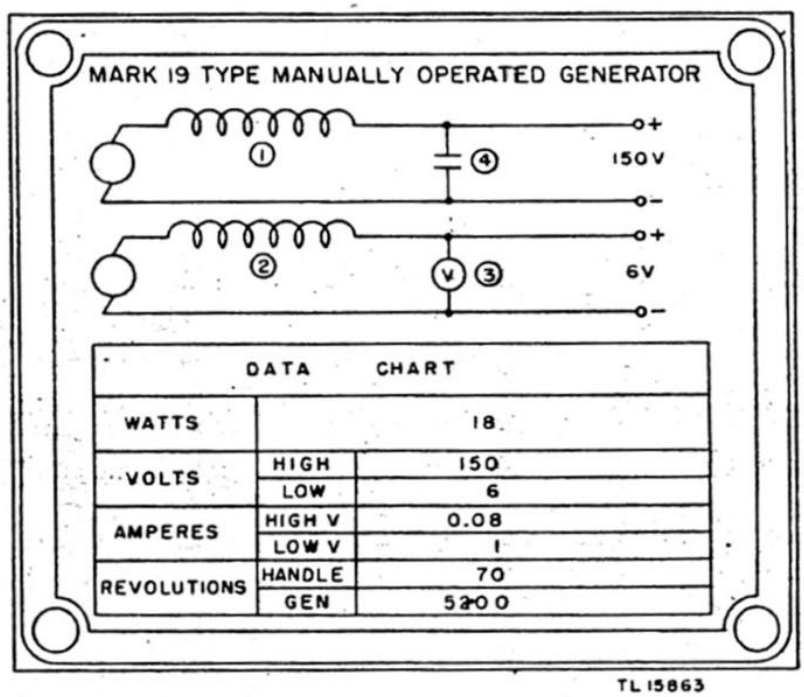


Figure 11. Dataplate translation of Mark 19 Type manually operated generator.

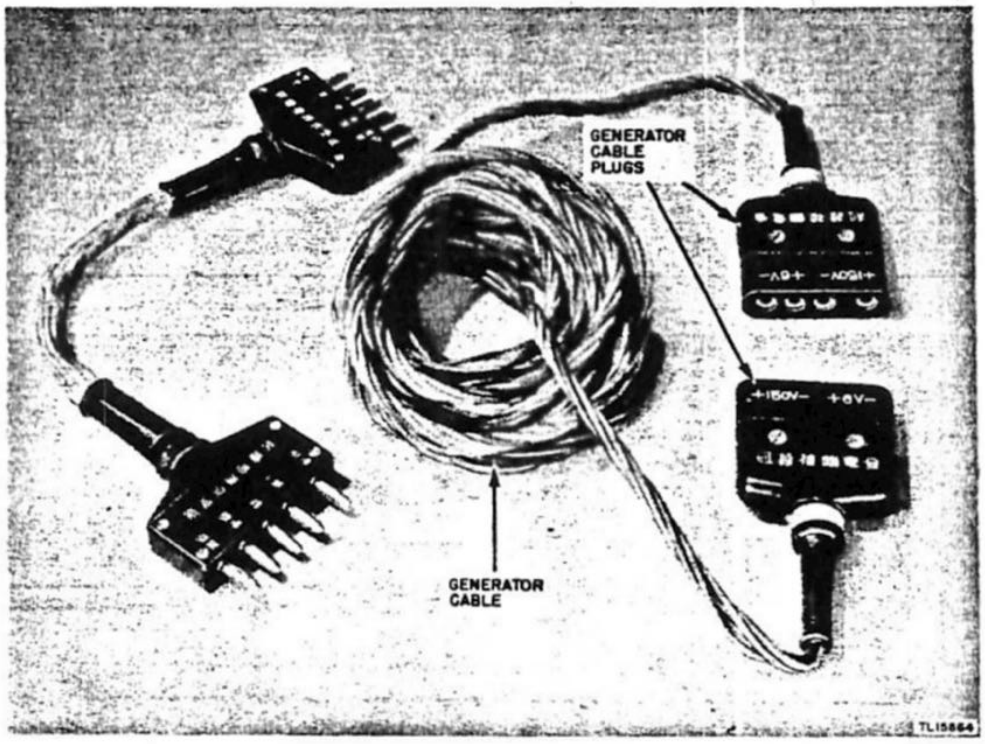


Figure 12. Generator cable for Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Transmitter.

(2) If the transmitter is used separately, the installation is made as described in subparagraph (1) above, except that the transmitter and receiver connecting cable is not used. Installation of the receiver only requires the antenna but no ground or counterpoise. Fasten the end of the antenna nearest the set to a banana type plug as shown in figure 18, and insert into the 空 (antenna) jack of the receiver connecting jack strip.

c. Transmitter. After installation of the antenna system, plug the key plug (fig. 16) into the 鍵電 (key) jack and the 一號F型送受話器 (Mark 1 Type F microphone and headset plug) (fig. 14) into the 器話受送 (microphone and headset) jack. The microphone and headset may be plugged into the receiver 器話受送 (microphone and headset) jack if that position is more convenient. If crystal operation is to be used, pull open the small door on the transmitter front panel (fig. 17) marked 器更變御制 (crystal), and insert the crystal holder.

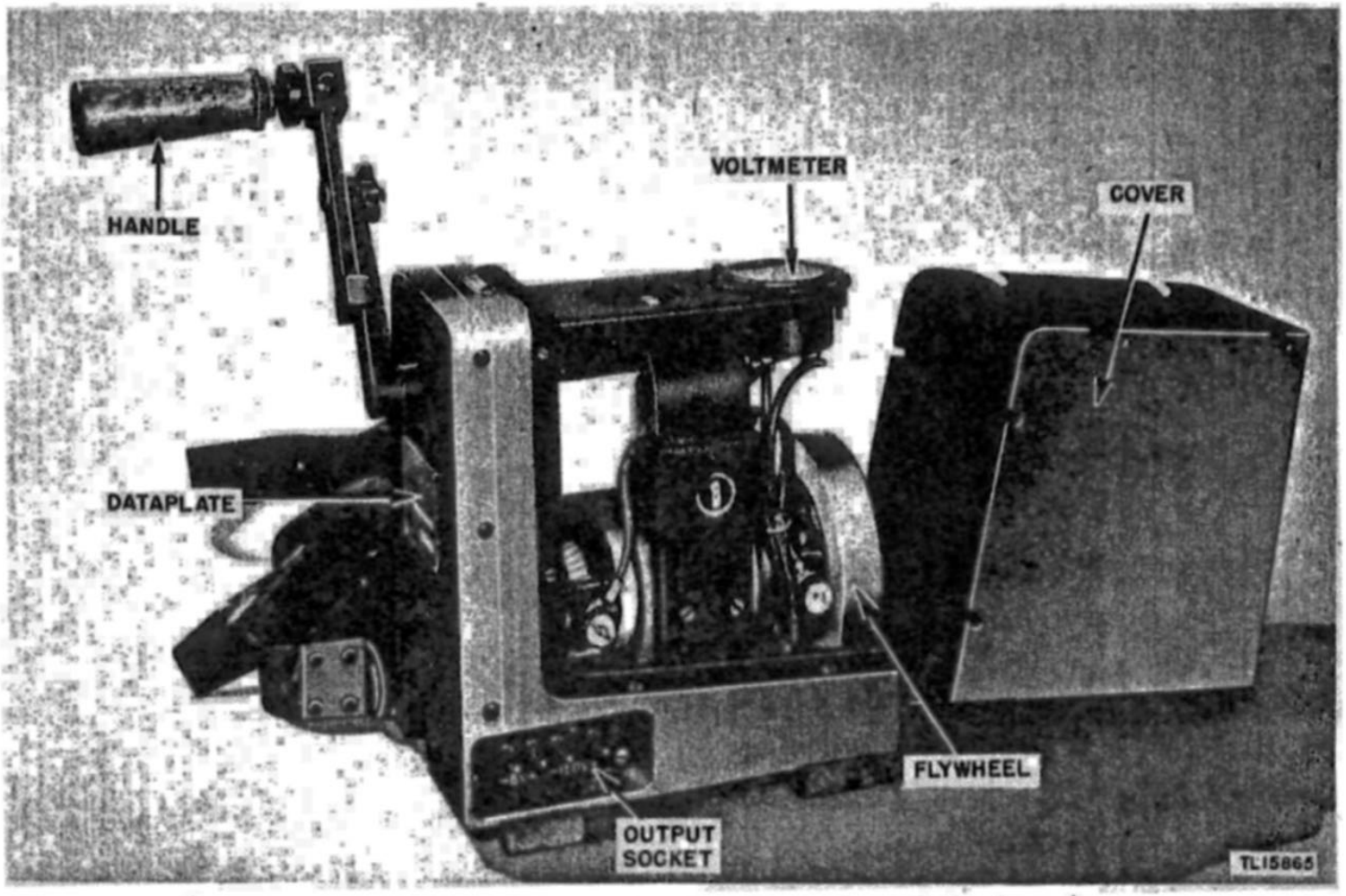


Figure 13. Mark 19 Type manually operated generator, left side view. cover open.

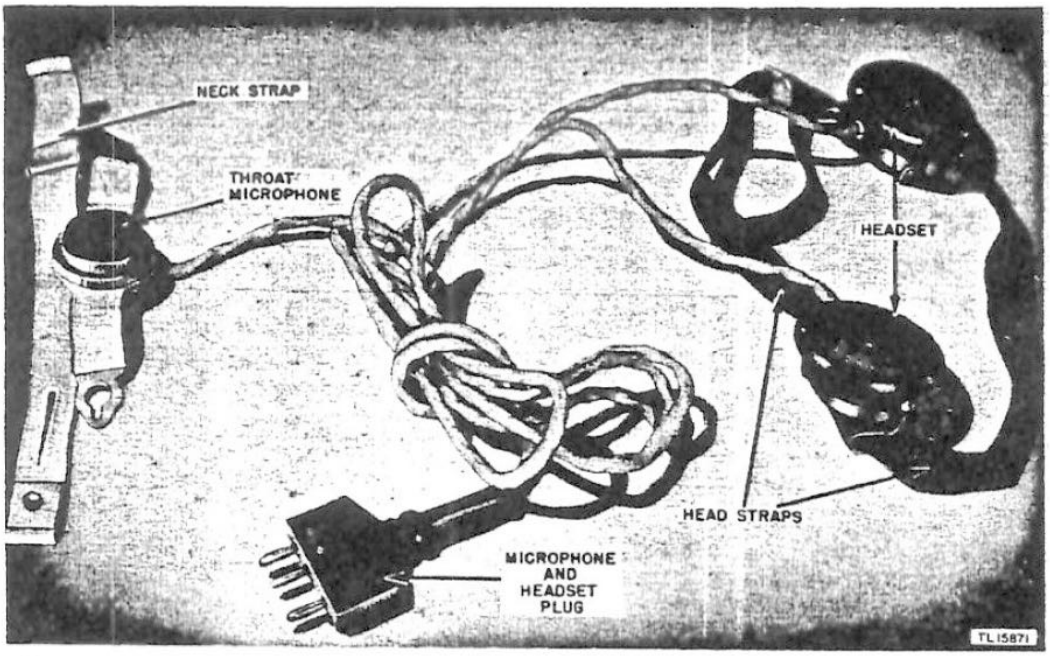


Figure 14. Headset, throat microphone, and plug.

d. Receiver. Following installation of either the transmitter and receiver connecting cable, or a separate antenna system, plug the 一號F型送受話器 (Mark 1 Type F Microphone and Headset Plug) into the 器話受送 (Microphone and Headset) jack if the microphone and headset are not plugged into the transmitter as directed in subparagraph **c** above.

e. Power Supply. (1) Dry batteries for the receiver are installed in the battery compartment in the bottom of the receiver case (fig. 6). If American type batteries are used and it is necessary to carry the batteries in a separate case due to space limitations, a hole may be cut in the bottom of the receiver case and the separate battery pack cabled to the battery plug strip in the battery compartment (fig. 6).

(2) To install the transmitter with the 機電發回手型號九一 (Mark 19 Type manually operated generator) as a power source, use the transmitter generator cable shown in figure 12. Plug one 組續接機電發 (generator cable plug) into the transmitter power socket (fig. 17) and the other 組續接機電發 (generator cable plug) into the transmitter power socket (fig. 17). The pin arrangement of the sockets prevent incorrect insertion of the plugs.

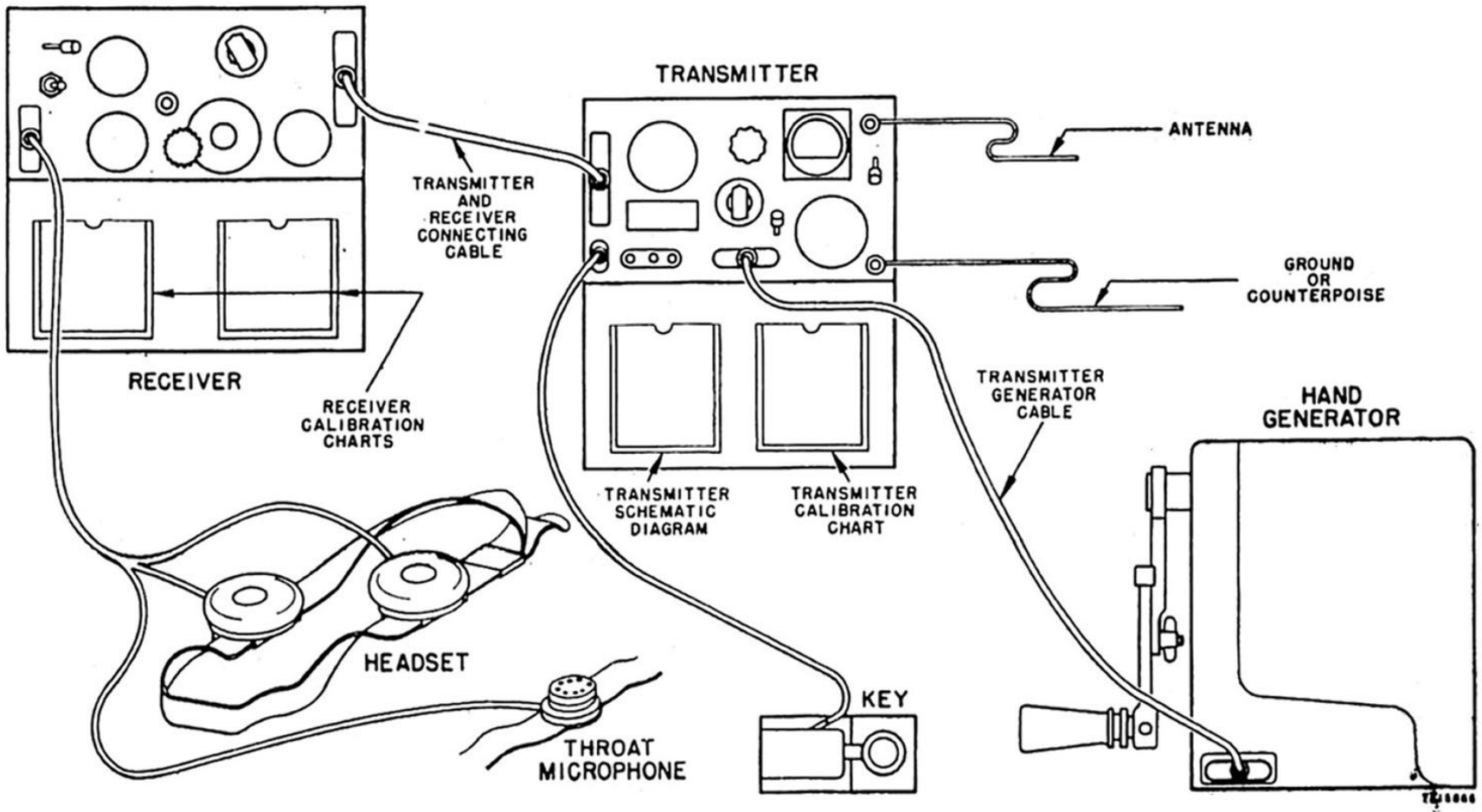


Figure 15. Japanese Radio Set Model 94 Mark 5 Wireless Set, installation of the set.

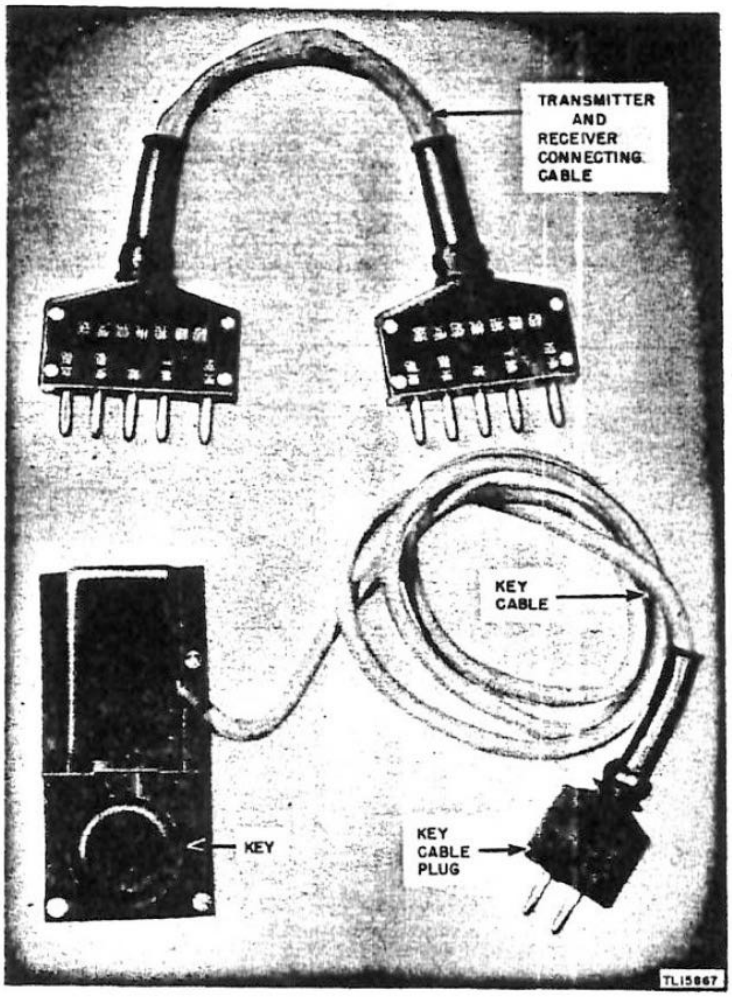


Figure 16. Transmitter and receiver connecting cable, key and key cord with plug.

(3) To install the transmitter with a battery pack, use the generator cable modified as shown in figure 19. The battery pack is connected to the generator cable as follows:

1. + 150 volts to red lead.

2. – 150 volts to brown lead.

3. + 6 volts to green lead.

4. – 6 volts to black lead.

The wiring of the battery pack to the generator cable must follow the above color coding with respect to voltage sources. Damage to the set and component parts may result if this is not done.

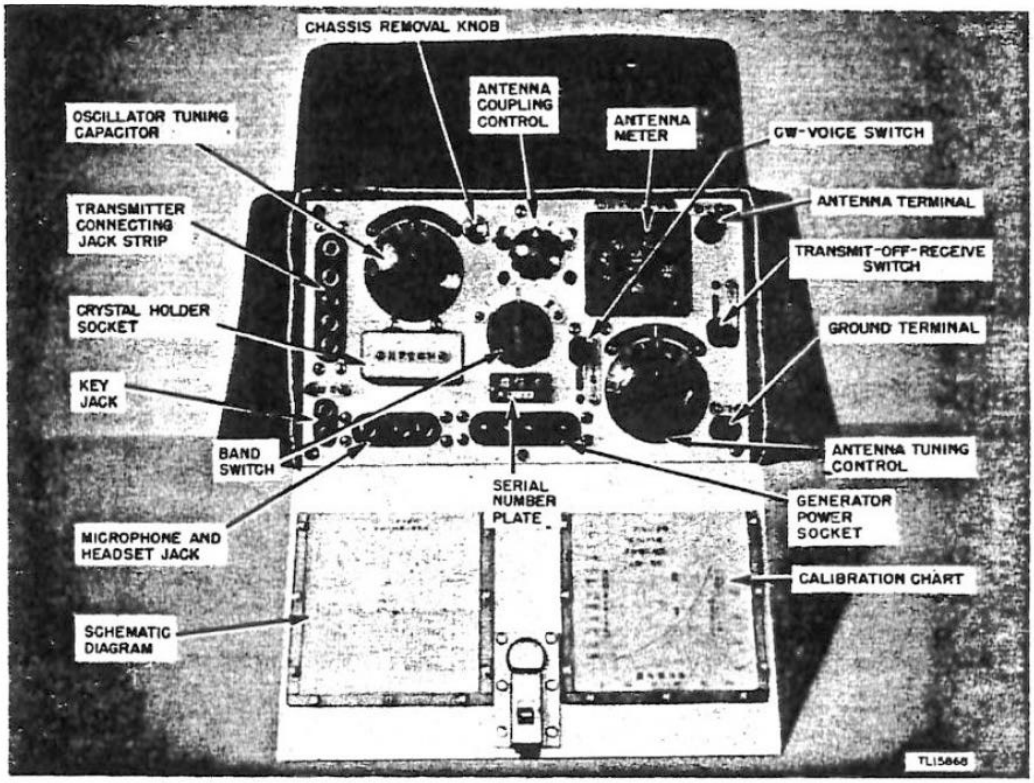


Figure 17. Mark 32 Type Transmitter, front view.

5. OPERATION.

a. Transmitter. After the transmitter is installed, it is placed into operation as follows (figs. 17, 20, and 21):

(1) Refer to the calibration chart on the inside of the transmitter front case cover and determine the band in which the desired frequency is located.

(2) Set the周波數帶轉換器(band switch) to the band on which the desired frequency appears.

(3) If crystal control of the transmitter is desired, open the door on the transmitter panel, marked 器更變御制 (crystal), and plug in the crystal of the required frequency.

(4) If no crystal is available, set the器電蓄調同振發(oscillator tuning capacitor) to the calibration setting corresponding to the desired frequency. The numbers on the dial correspon

with those on the bottom of the chart and the frequencies in megacycles appear on the right and left sides of the chart. Although the charts on the set are color-coded with respect to frequency curves and the frequencies they represent, the chart shown in figure 21 is shown with numbers underlined for frequency band III for clarity of presentation in this bulletin. In order to obtain a dial setting for a specific frequency, read that frequency on the chart and move across into the chart until that frequency line intersects the calibration curve for that band of ffequencies. Then drop directly down to read the proper dial setting for that frequency band on the器電蓄調同振發(oscillator tuning capacitor).

EXAMPLE: To find the dial setting for 4,000 kc, read horizontally from 4,000 on the left side of the chart until an intersection is made with the calibration curve for band III. Drop down at this point and the dial setting will read 60 on band III. (Each set is calibrated individually and the dial readings given in the example do not apply to every set.)

(5) Place the 電信 電話(cw-voice) switch in the up or 電信(cw) position for c-w transmission. If transmission is to be by voice, place the 電信 電話(cw-voice) switch in the down or 電話 (voice) position.

(6) Place the 送 断 受 (transmit-off-receive) switch in the up or 送 (transmit) position.

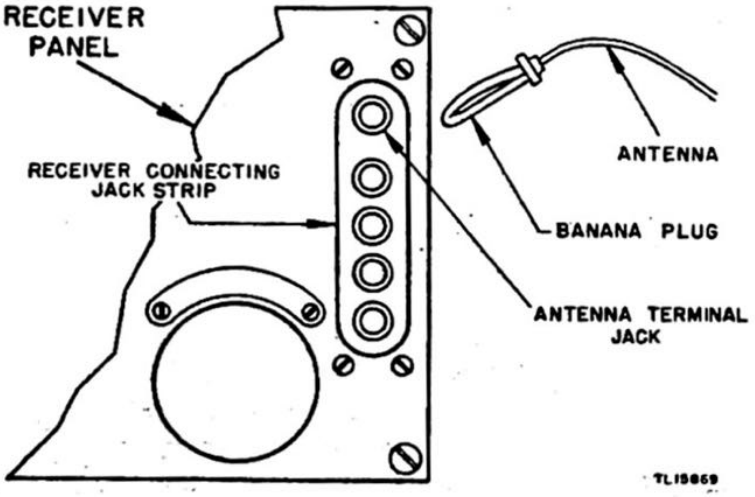


Figure 18. Mark 32 Type Receiver, right side of front panel, cutaway view, installation of antenna.

(7) If the hand generator is used to power the transmitter, turn the generator crank at a speed necessary to produce a 6-volt reading on the meter in the generator.

(8) Adjust the器調同線中空(antenna tuning control) for maximum indication on the計涼電線中空(antenna meter) if operation is on bands I or II.

If operation is on band III, adjust the空結合(antenna coupling control) for maximum indication on the 計涼電線中空(antenna meter).

(9) To remove the transmitter from operation, place the送·斷 受(transmit-off-receive) switch in the斷(off) or middle position.

b. Receiver. After the receiver is installed, it is placed into operation as follows (figs. 22, 23, and 24):

(1) Refer to the calibration charts on the inside of the receiver front case cover and determine the band in which the desired frequency is located.

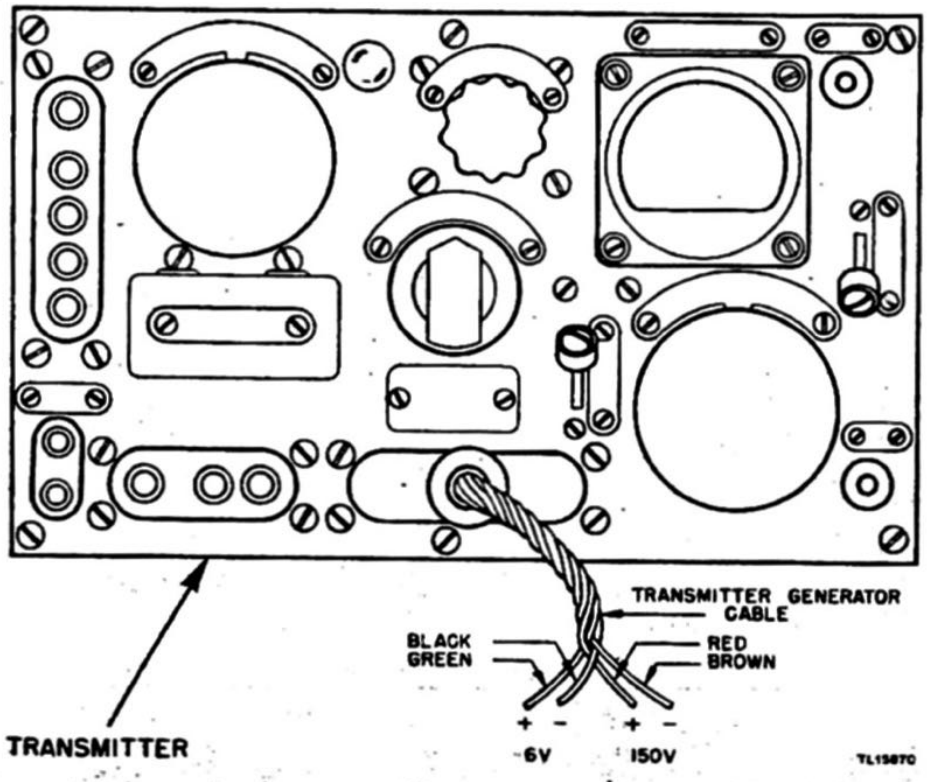


Figure 19. Japanese Radio Set Model 94 Mark 5 Wireless Set, Mark 32 Type Transmitter, cording for battery pack power supply.

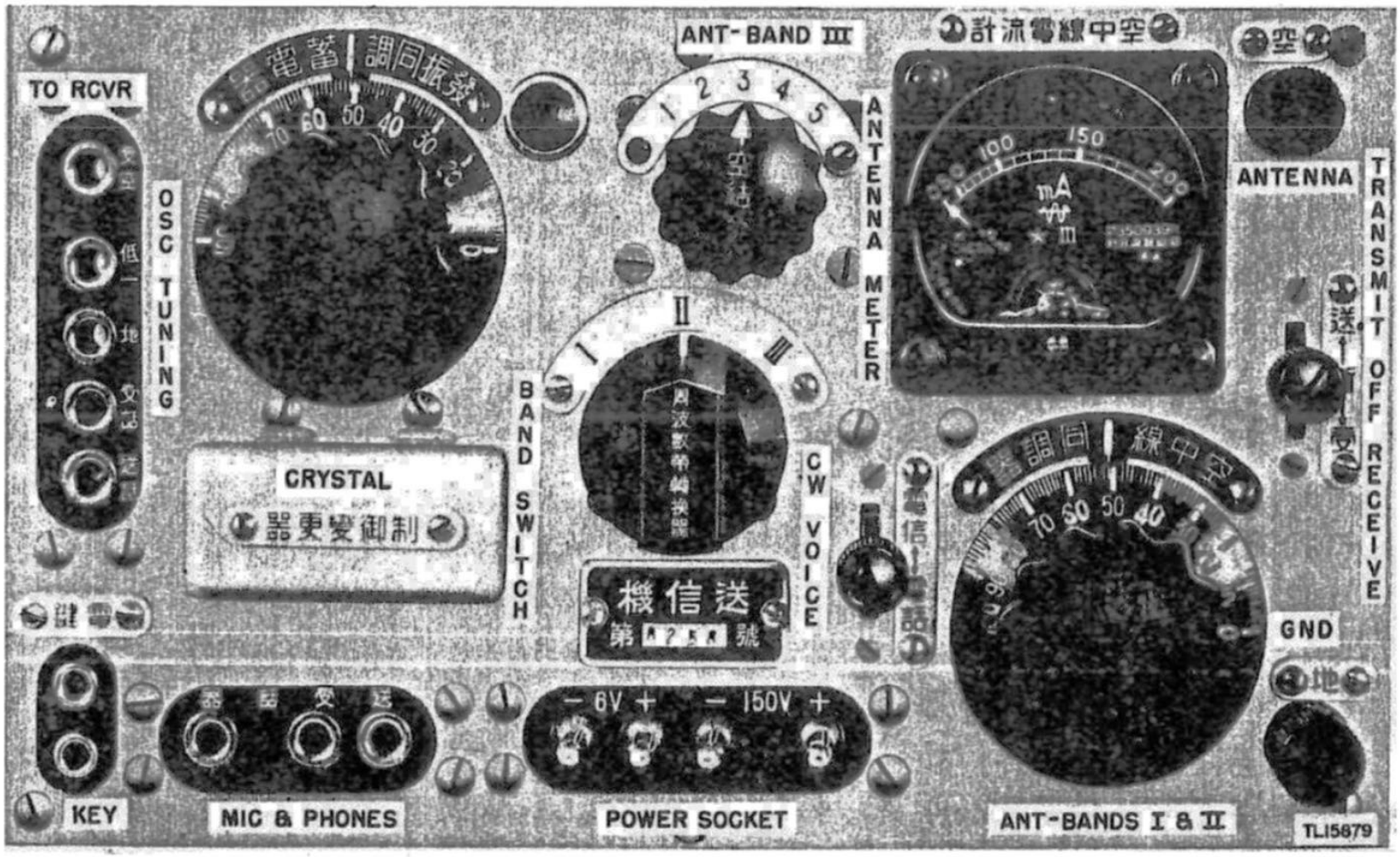


Figure 20. Mark 32 Type Transmitter, view of front panel and operating controls, with name tabs.

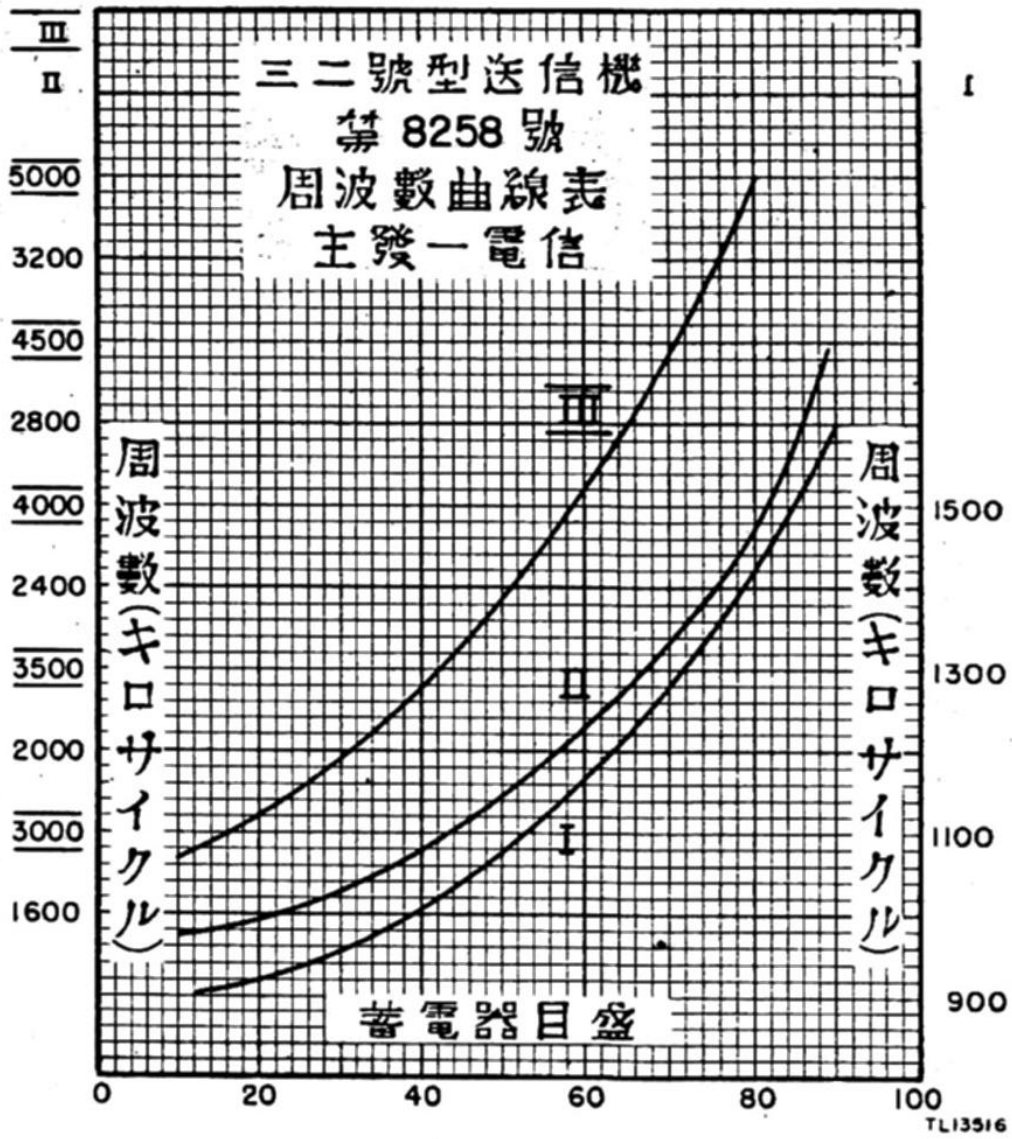


Figure 21. Frequency chart for Mark 32 Type Transmitt.

(2) Set the周波數帶轉換器(band switch) to the band on which the desired frequency appears.

(3) Set the器電蓄調 同(tuning dial) to the calibration setting corresponding to the desired frequency. The numbers on the dial correspond to those on the bottom of the charts, and the frequencies in megacycles appear on the right and left side of the charts. The charts are color-coded with respect to calibration curves and the frequencies they represent. The calibration curves and their respective frequency listing are clearly marked and no trouble should be encountered in using them. In order to obtain a dial setting for a specific frequency on the chart, the procedure outlined for the transmitter in subparagraph a (4) above should be followed.

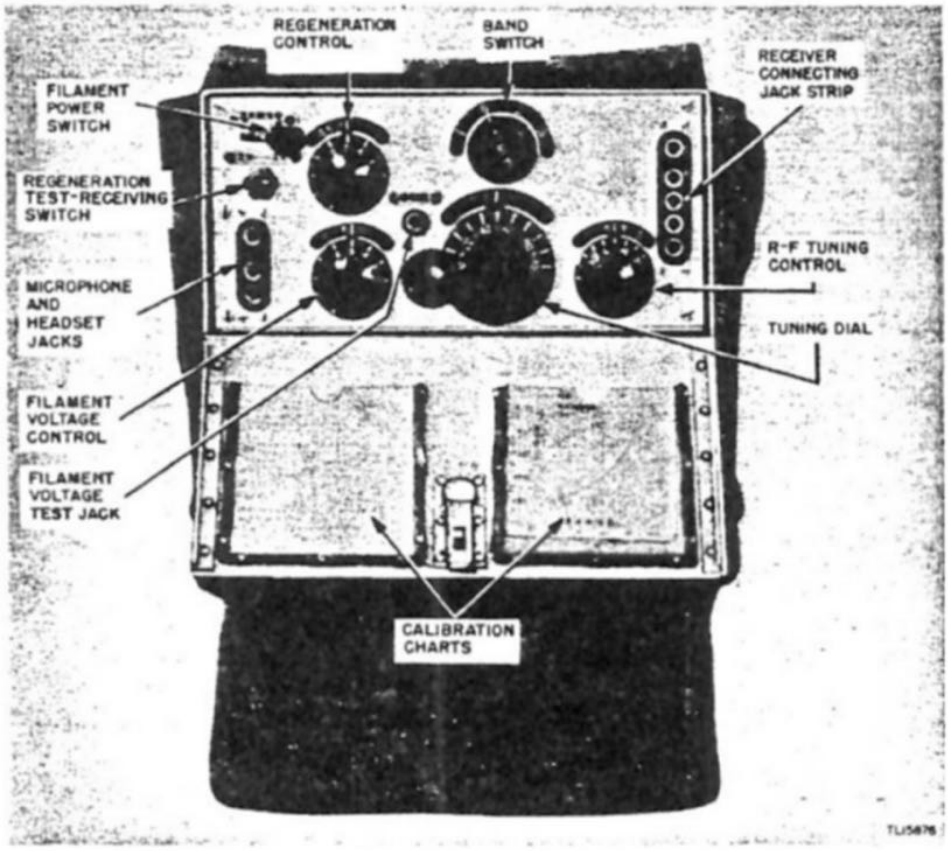


Figure 22. Mark 32 Type Receiver, front view.

(4) If the receiver is part of an installation using the 機信送型號二三 (Mark 32 Type Transmitter) and the connecting cable is plugged into the receiver, the 送 斷 受 (transmit-off-receive) switch on the transmitter must be placed in the down or 受 (receive) position.

(5) Place the 器閉開源電 (power switch open-closed) in the 閉 (closed) position.

(6) Slowly turn the 器抗抵線· (filament voltage control) to the right from the **0** dial position to the **5** dial position if Japanese tubes are used. This will apply **1** volt to the tube filaments. If American tubes are used, turn the (filament voltage control) to the **9** dial position. This will apply approximately 1.4 volts to the tube filaments. The filament voltage may be measured with a test meter by placing the positive test prod to the器抗抵線心 (filament voltage test) jack and the negative test prod to the chassis.

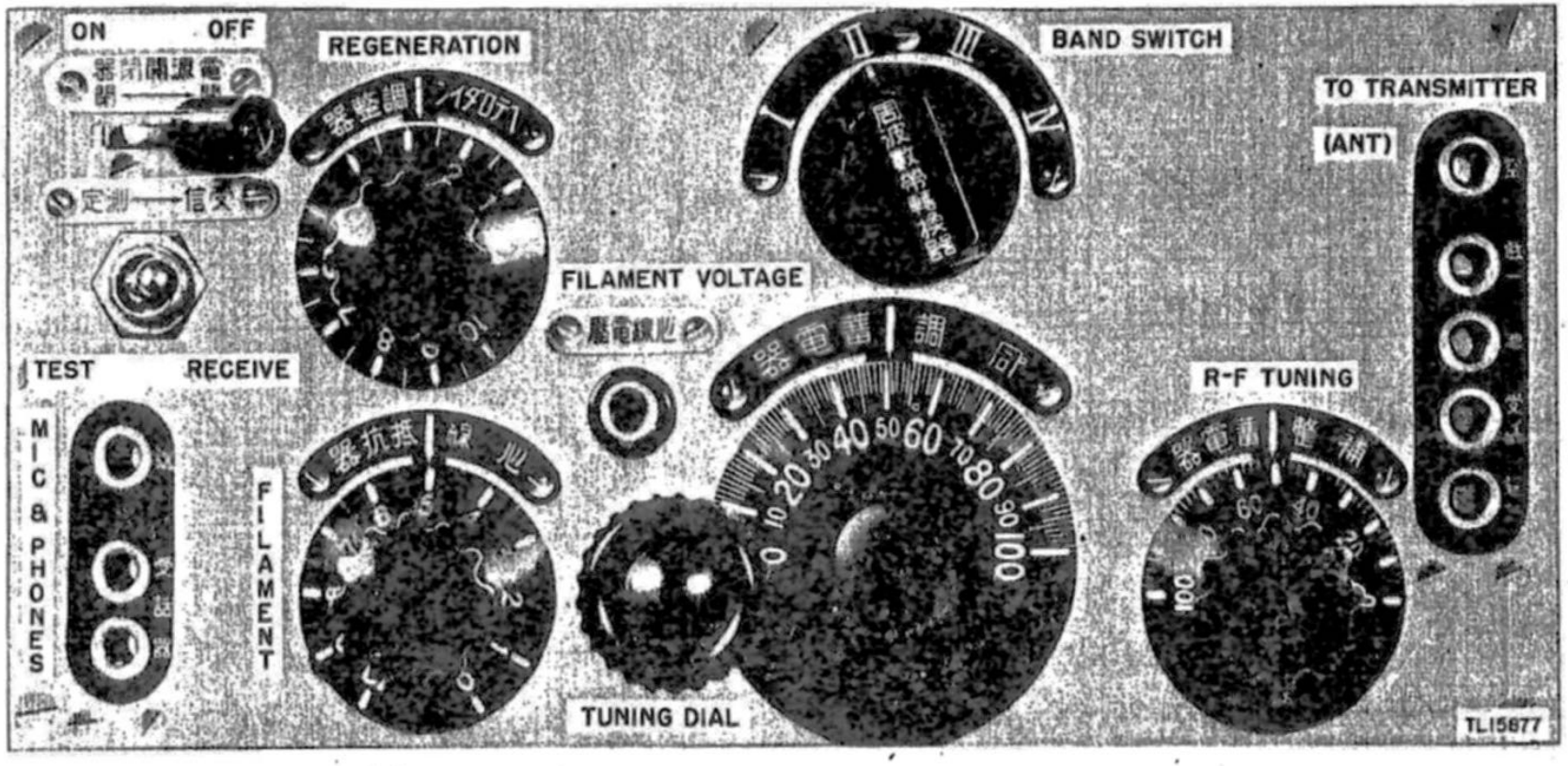


Figure 23. Mark 32 Type Receiver, view of front panel

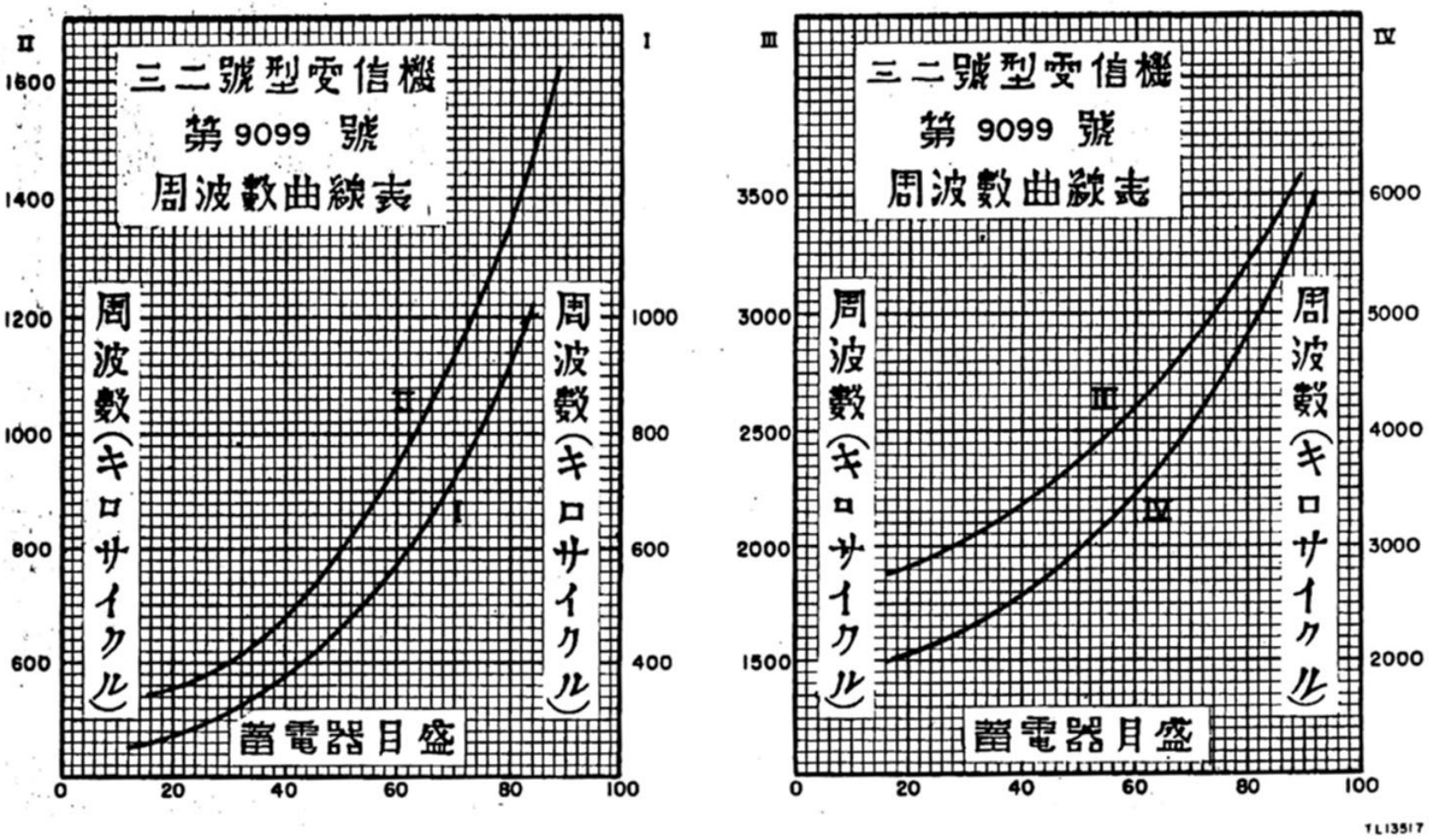


Figure 24. Frequency chart, Mark 32 Type Receiver.

(7) Adjust the 器整調ソイダ口テヘ (regeneration .trol) and the 器電審整 補(r-t tuning control) for maximum sensitivity while listening to the signal in the headset.

(8) To provide a check for oscillation of the regenerative detector tube, a 定測 信受(regeneration test-receiving) switch is provided. Place the switch in the left or 定測 (regeneration test) position to test for oscillation. A sustained howl should be heard if the detector is oscillating properly. Place the switch to the right or 信受 (receiving) position for normal operation of the receiver.

(9) To remove the receiver from operation, place the 器閉開源電 (power switch open-closed) to the right or 開 (open) position.

6. MAINTENANCE.

a. General. Detailed maintenance instructions are not included in this bulletin. The following checks and operating precautions should be observed when the set fails to operate:

(1) Check all cords, plugs, and switches to make sure they are in good order and in proper positions.

(2) If a battery pack is used for any part of the power requirements of the set, check and replace component batteries if necessary.

(3) Replace the tubes. For this operation see subparagraph **b** below.

b. Chassis Removal. (1) To remove the transmitter chassis for a visual check and for tube replacement, it is only necessary to pull on the chassis removal knob (fig. 17) and the chassis will slide out of the case. There are no retaining screws or bolts.

(2) The receiver chassis is removed from the case by pulling up on the chassis fasteners (fig. 4) and sliding the chassis out of the case. A visual inspection may then be made of all the parts, and any necessary tube replacement may be made.

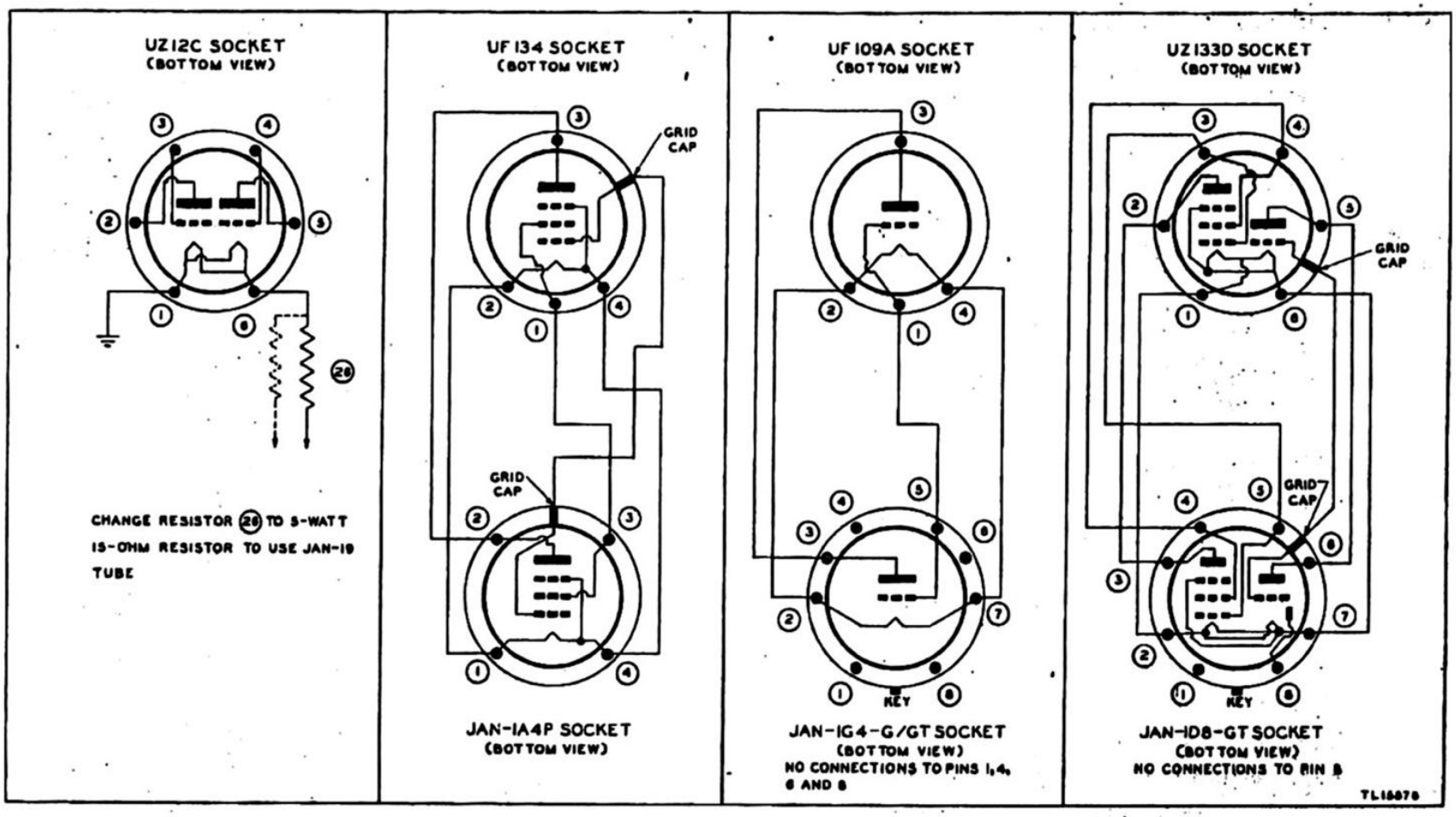


Figure 25. Wiring changes for tube substitution in Mark 32 Type Receiver and Mark 32 Type Transmitter.

c. Tubes. (1) There are no American tubes which are directly interchangeable with the UZ12C Japanese tube in the transmitter. Tube JAN-19 may be used in the transmitter with no changes other than replacing resistor 26, filament voltage-dropping resistor, with a 5-watt 15-ohm resistor. This will result in reduced transmitter efficiency and should not be done where the Japanese type UZ12C is available.

(2) The receiver tubes are not directly interchangeable with any American tube types. By changing the tube sockets, however, the following substitutions of JAN types may be made for the Japanese tubes in the receiver:

Japanese type	JAN type	Change socket to
UF134	1A4P	Standard 4-prong
UF109A	1G4-G/GT	Standard octal
UZ133D	1D8-GT	Standard octal

See figure 25 for details on the wiring of the substitute sockets replacing the Japanese tube sockets.

d. Schematic Diagrams. A schematic diagram of the transmitter is shown in figure 26, and a schematic diagram of the receiver is shown in figure 27. As shown in figures 28, 29, 30, and 31 each part of the set is numbered and these numbers appear on the schematic diagrams.

e. Parts List. See the appendix for a list of parts by number, function, value, and rating.

f. Detailed Maintenance. If the simple procedures outlined above do not make the set operate, send it back to a signal depot. The components may be used to repair other sets. WE CAN USE THE JAPANESE PARTS TO REPAIR OUR OWN AS WELL AS JAPANESE SETS.

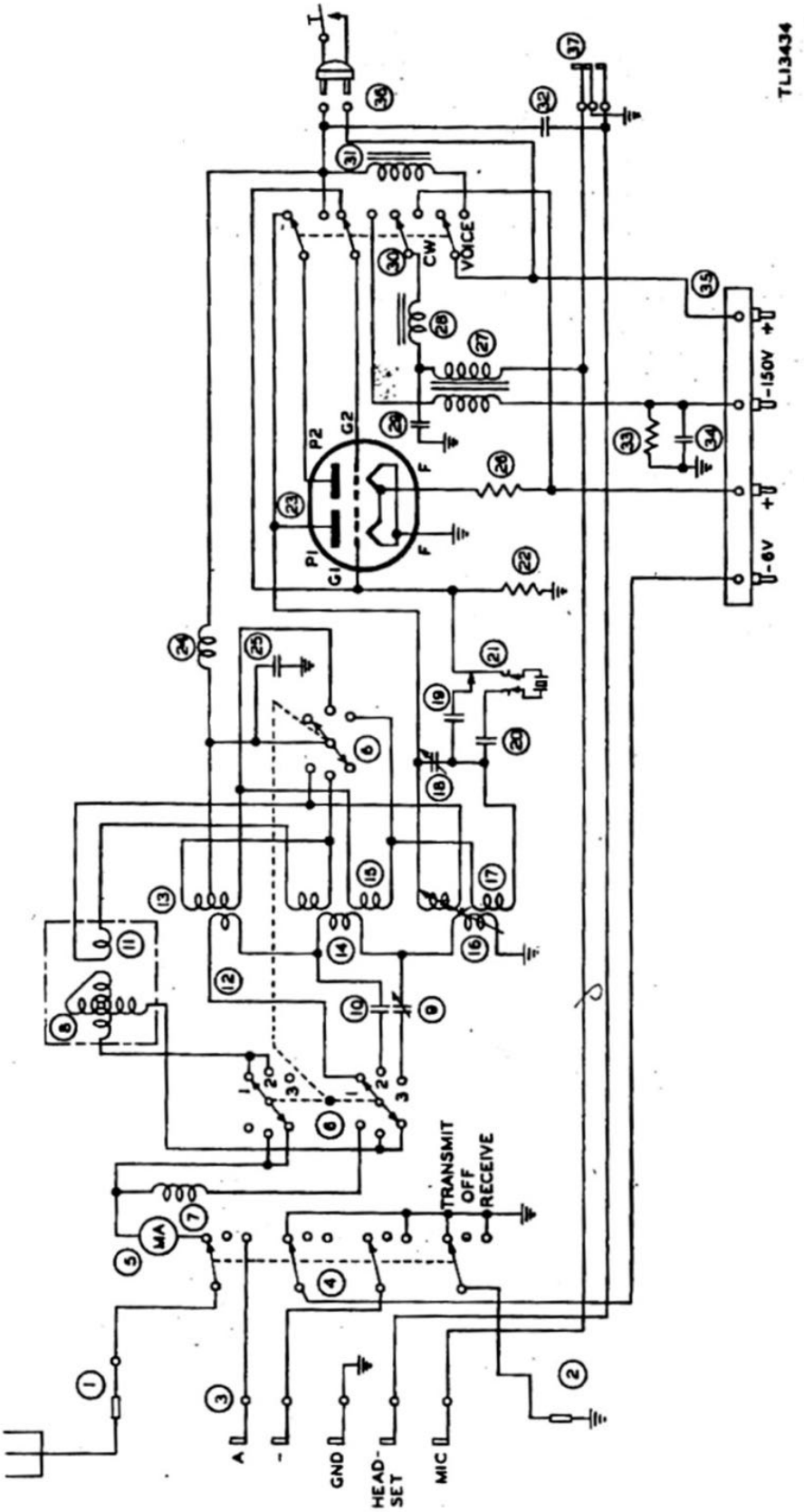


Figure 26. Schematic diagram, Mark 32 Type Transmitter.

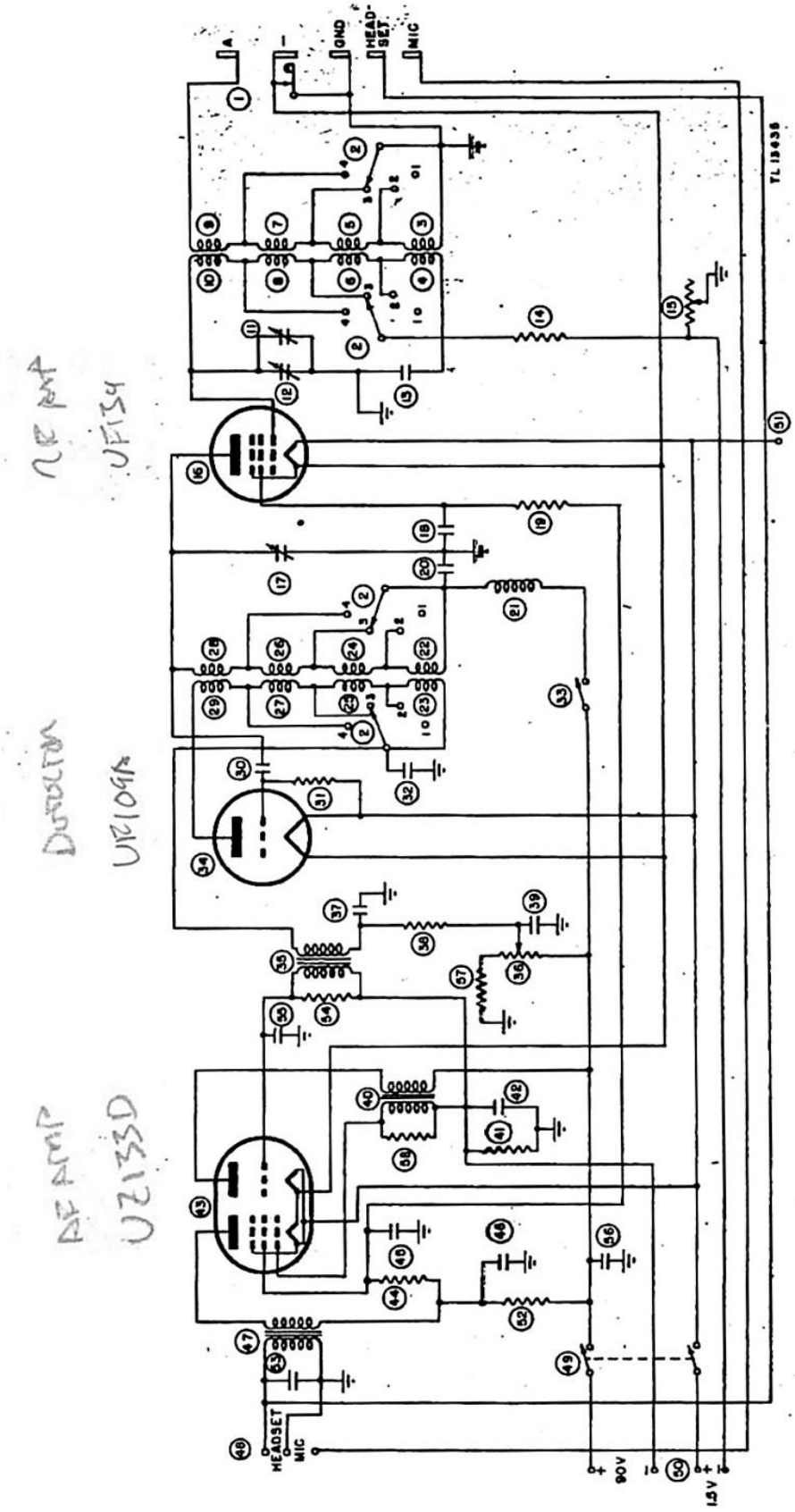


Figure 27. Schematic diagram Mark 20 Tube Receiver.

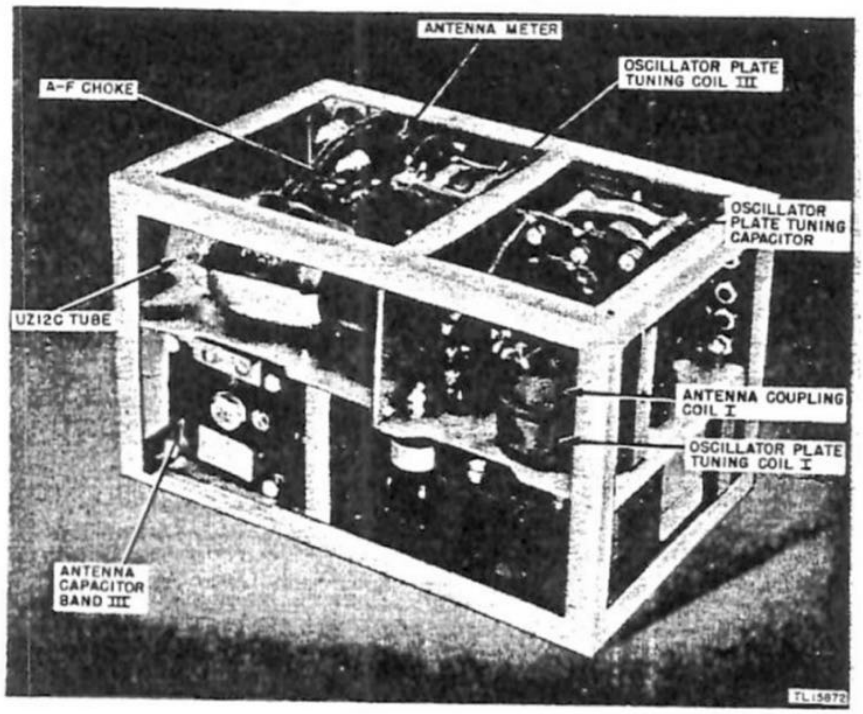


Figure 28. Mark 32 Type Transmitter, left three-quarter view of chassis.

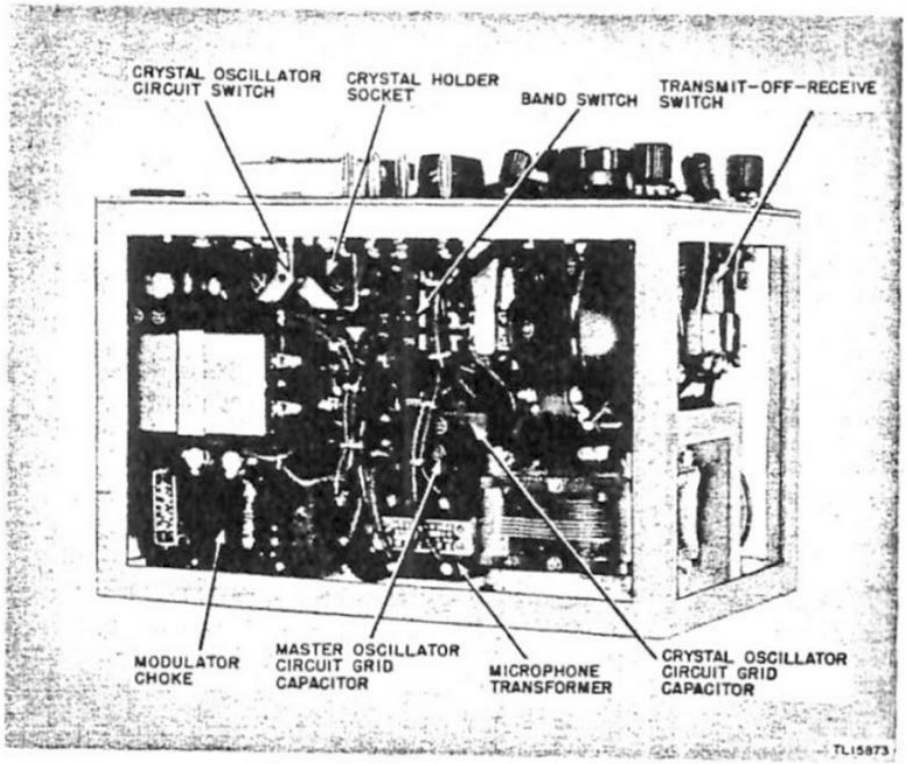


Figure 29. Mark 32 Type Transmitter, bottom view of chassis.

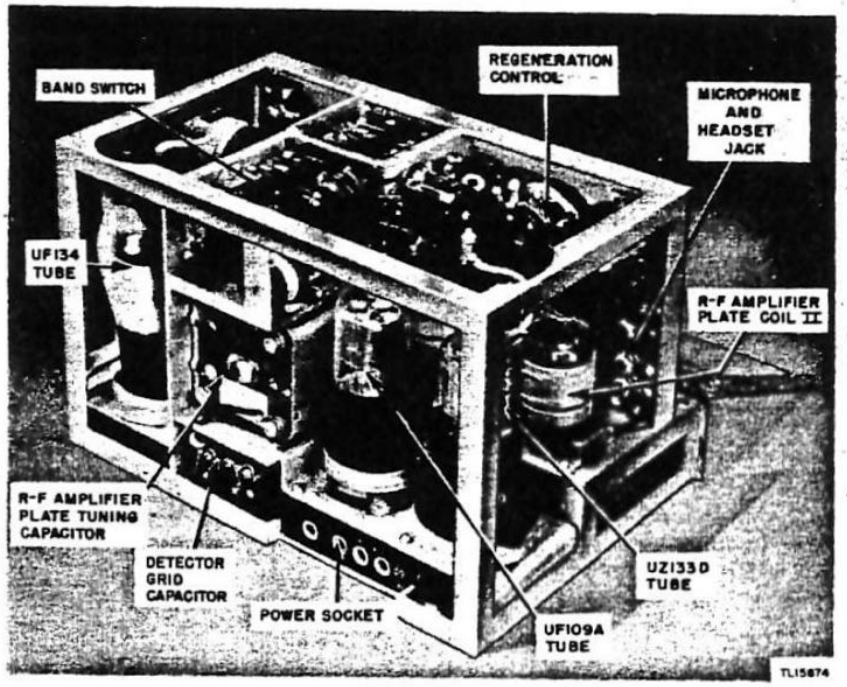


Figure 30. Mark 32 Type Receiver, left three-quarter view of chassis.

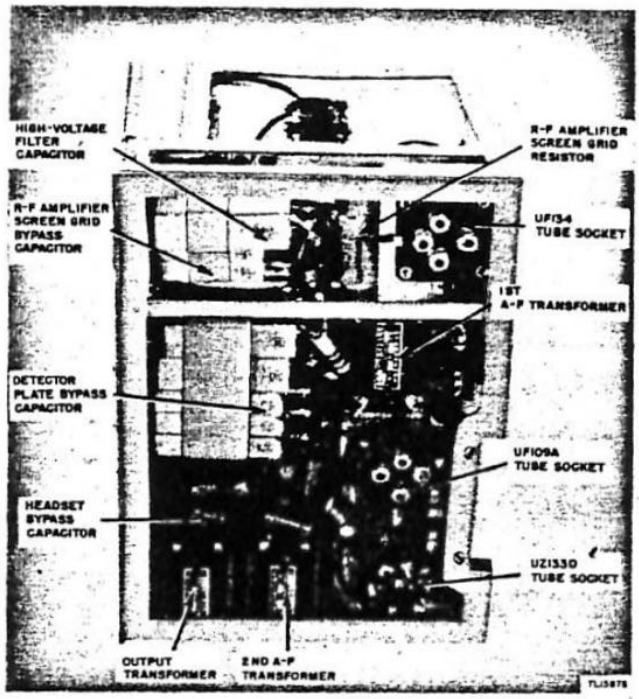


Figure 31. Mark 32 Type Receiver, bottom view of chassis.

7. GLOSSARY.

The Japanese terms on the set and their American military equivalent are presented below. For a more complete listing of Japanese communication terms and their American military equivalent, refer to TM 30-485.

	JAPANESE	AMERICAN
1.	機線無號五式四九	.....Model 94 Mark 5 Wireless Set
2.	機信送型號二三	.....Mark 32 Type Transmitter
3.	機信受型号二三	.....Mark 32 Type Receiver
4.	機電發回手型號九一	....Mark 19 Type manually operated generator
5.	機信送	.....transmitter
6.	機信受	.....receiver
7.	一號F型送受話器	.....Mark 1 Type F microphone and headset plug
8.	空	.....antenna
9.	地	.....ground (or counterposse)
10.	鍵電	.....key
11.	器話受送	.....microphone and headset
12.	器更變御制	.....crystal
13.	紐續接機電發	.....generator cable plug
14.	周波數帶轉換器	.....band switch
15.	器電蓄調同振發	.....oscillator tuning capacitor
16.	キロサイクル	..... kilocycles
17.	電信 電話	.....cw-voice
18.	電信	.....cw
19.	電話	.....voice

	JAPANESE	AMERICAN
20.	送 断 受	transmit-off-receive
21.	送	transmit
22.	断	off
23.	受	receive
24.	器調同線中空	antenna tuning control
25.	空結合	antenna coupling control
26.	器電蕃調 同	tuning dial
27.	器抗抵線 心	filament voltage control
28.	器整調ソイダ口テヘ	regeneration control
29.	器電蕃整 補	r-f tuning control
30.	定測 信受	regeneration test-receiving
31.	定測	regeneration test
32.	信受	receiving
33.	器閉開源電	power switch open-closed
34.	開	open
35.	閉	closed
36.	計涼電線中空	antenna meter
37.	壓電線心	filament voltage test

APPENDIX

PARTS LIST

(Transmitter)

Part No.	Part and Function	Value and Rating
1	Antenna terminal	
2	Ground terminal	
3	Receiver connecting jack	
4	Transmit-off-receive switch	
5	Antenna meter	0-200 ma
6	Band switch	
7	Antenna loading coil	
8	Antenna variometer, bands I & II	
9	Antenna capacitor, band III	870 mmf
10	Antenna capacitor, band II	99 mmf; 1000 v dc
11	Variometer coupling coil	
12	Antenna coupling coil, band I	
13	Oscillator plate tuning coil, band I	
14	Antenna coupling coil, band II	
15	Oscillator plate tuning coil, band II	
16	Antenna coupling coil, band III	
17	Oscillator plate tuning coil, band III	

PARTS LIST (contd.)

(Transmitter)

Part No.	Part and Function	Value and Rating
18	Oscillator plate tuning capacitor	
19	Master oscillator circuit grid capacitor	220 mmf; 1000 v dc
20	Crystal oscillator circuit grid capacitor	55 mmf; 1000 v dc
21	Crystal holder socket, switching type	
22	Oscillator control grid resistor	5,000 ohms
23	UZ12C tube socket	
24	Oscillator plate r-f choke	0.45 millihenries
25	Oscillator plate bypass capacitor	2200 mmf; 1000 v dc
26	Filament resistor	2 ohms
27	Microphone transformer	ratio 1:20
28	A-f choke	0.1 henry
29	A-f bypass capacitor	2.0 mf; 1000 v dc
30	Cw-voice switch,	
31	Modulator choke	5.5 henry
32	Keying circuit bypass capacitor	440 mmf; 1000 v dc
33	Modulator grid bias resistor	200 ohms
34	Modulator bias bypass capacitor	0.5 mf; 1000 v dc

PARTS LIST (contd.)

(Transmitter)

Part No.	Part and Function	Value and Rating
35	Generator power socket	
36	Key jack	
37	Microphone and headset jack	

PARTS LIST

(Receiver)

Part No.	Part and Function	Value and Rating
1	Transmitter connecting jack	
2	Band switch	
3	Antenna coil, band I	
4	R-f grid coil, band I	
5	Antenna coil, band II	
6	R-f grid coil, band II	
7	Antenna coil, band III	
8	R-f grid coil, band III	
9	Antenna coil, IV	
10	R-f grid coil, band IV	
11	R-f grid trimmer capacitor	
12	R-f grid tuning capacitor	
13	R-f grid bypass capacitor	.0.1 mf; 1000 v dc
14	R-f grid resistor	500 ohms

PARTS LIST (contd.)

(Receiver)

Part No.	Part and Function	Value and Rating
15	Filament voltage control	6 ohms
16	UF134, r-f amplifier tube, socket	
17	R-f plate tuning capacitor	
18	R-f screen grid bypass capacitor	0.1 mf; 1000 v dc
19	R-f screen grid resistor	20,000 ohms
20	R-f plate bypass capacitor	0.1 mf; 1000 v dc
21	R-f plate choke	
22	R-f plate coil, band I	
23	Regeneration coupling coil, band I	
24	R-f plate coil, band II	
25	Regeneration coupling coil, band II	
26	R-f plate coil, band III	
27	Regeneration coupling coil, band III	
28	R-f plate coil, band IV	
29	Regeneration coupling coil, band IV	
30	Detector grid capacitor	220 mmf; 1000 v dc
31	Detector grid resistor	500,000 ohms
32	Regeneration capacitor	550 mmf; 1000 v dc

PARTS LIST (contd.)

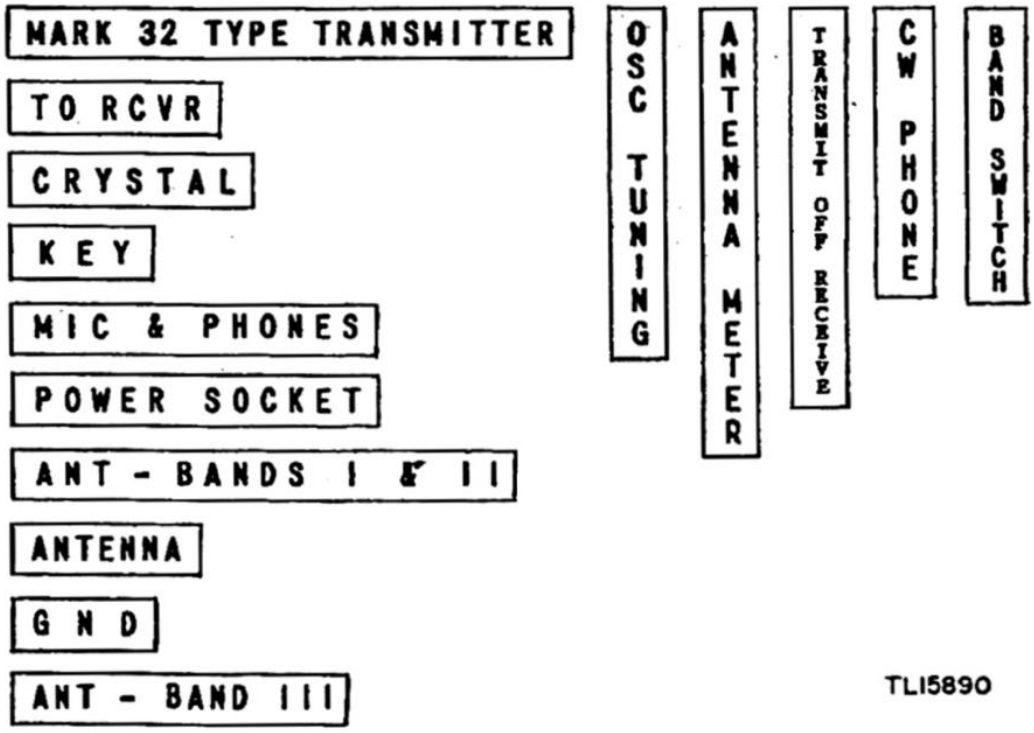
(Receiver)

Part No.	Part and Function	Value and Rating
33	Regeneration test-receiving switch	
34	UF109A, detector tube, socket	
35	1st a-f amplifier transformer ratio 1:3.5	
36	Regeneration control	100,000 ohms
37	Detector plate bypass capacitor	0.5 mf; 1000 v dc
38	Detector plate resistor	5,000 ohms
39	Regeneration control bypass capacitor	0.5 mf; 1000 v dc
40	2d a-f amplifier transformer	ratio 1:3.5
41	A-f amplifier grid bias resistor	200 ohms
42	A-f amplifier grid bypass capacitor	1.0 mf; 1000 v dc
43	UZ133D, a-f amplifier tube, socket	
44	A-f screen grid resistor	2,000 ohms
45	A-f screen grid bypass capacitor	0.5 mf; 1000 v dc
46	2d a-f amplifier plate bypass capacitor	1.0 mf; 1000 v dc
47	Output transformer	ratio 3.5:1
48	Microphone and headset jack	
49	Power switch	

PARTS LIST (contd.)

(Receiver)

Part No.	Part and Function	Value and Rating
50	Power socket	
51	Filament voltage test jack	
52	2d a-f amplifier plate resistor	1,000 ohms
53	Output transformer bypass capacitor	9,900 mmf; 1000 v dc
54	1st a-f transformer secondary shunt resistor	200,000 ohms
55	1st a-f grid bypass capacitor	220 mmf; 1000 v dc
56	High-voltage bypass capacitor	1.0 mf; 1000 v dc
57	Regeneration stabilizing resistor	10,000 ohms
58	2d a-f transformer secondary shunt resistor	200,000 ohms



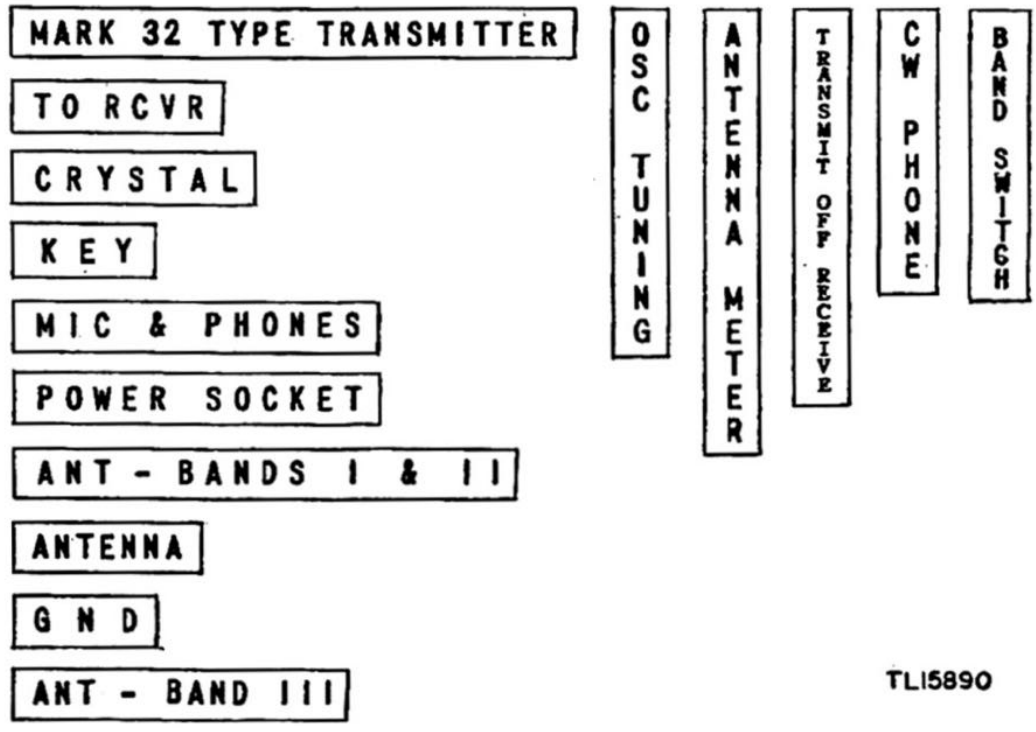


Figure 32. Name tabs for installation and operation of Mark 32 Type Transmitter. (These may be cut out and placed on the transmitter.)

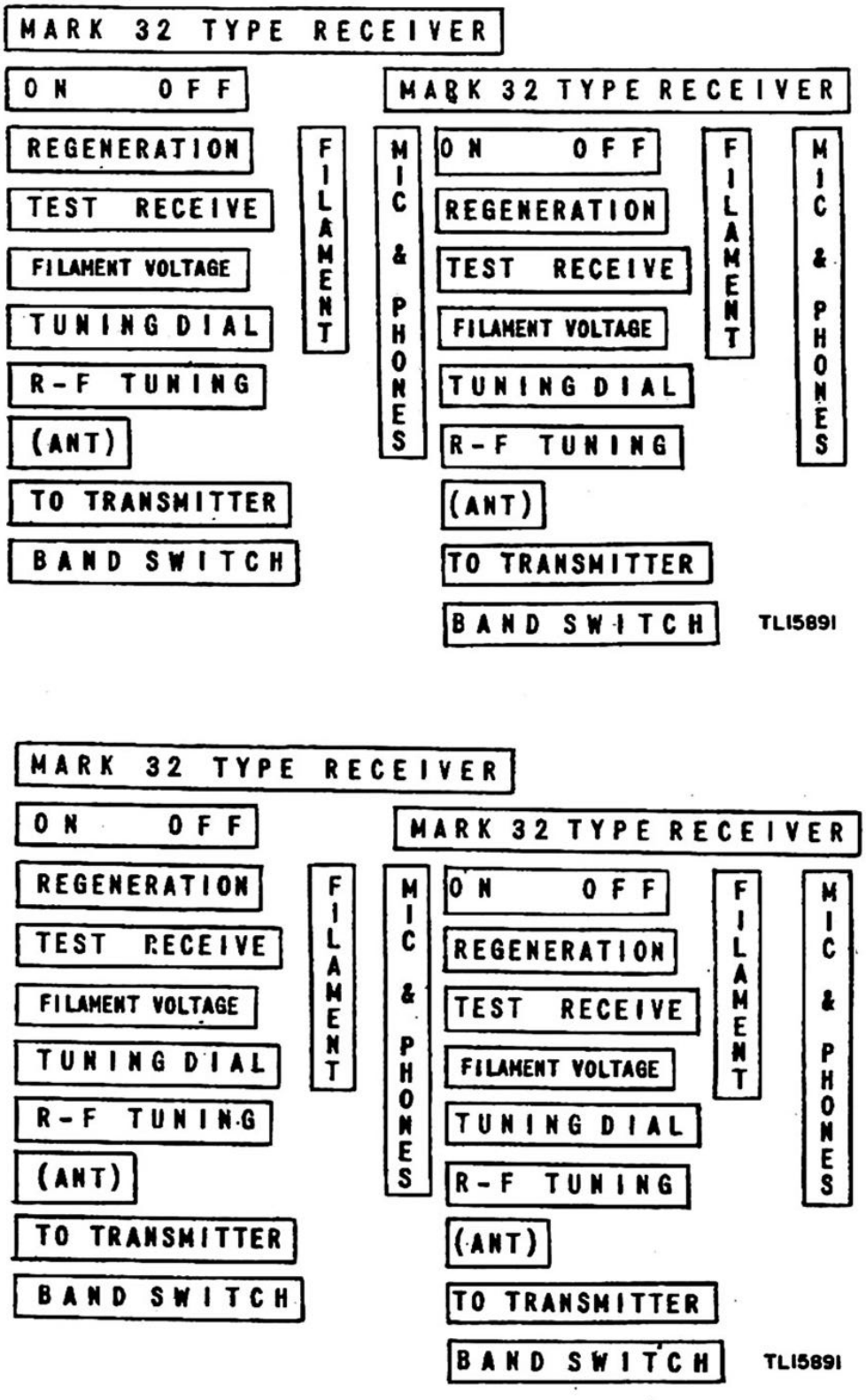
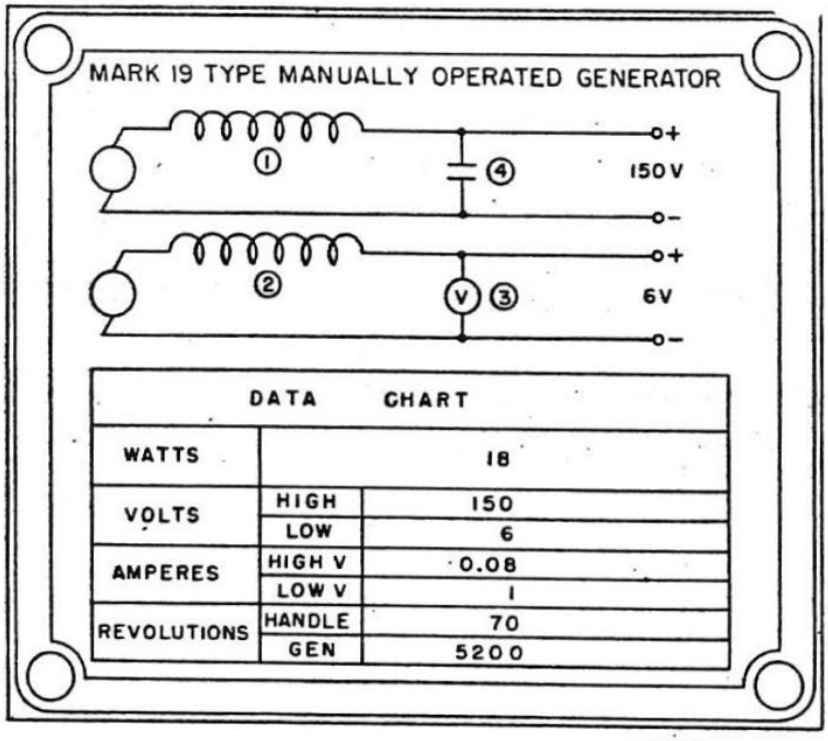


Figure 33. Name tabs for installation and operation of Mark 32 Type Receiver. (These may be cut out and placed on the receiver.)



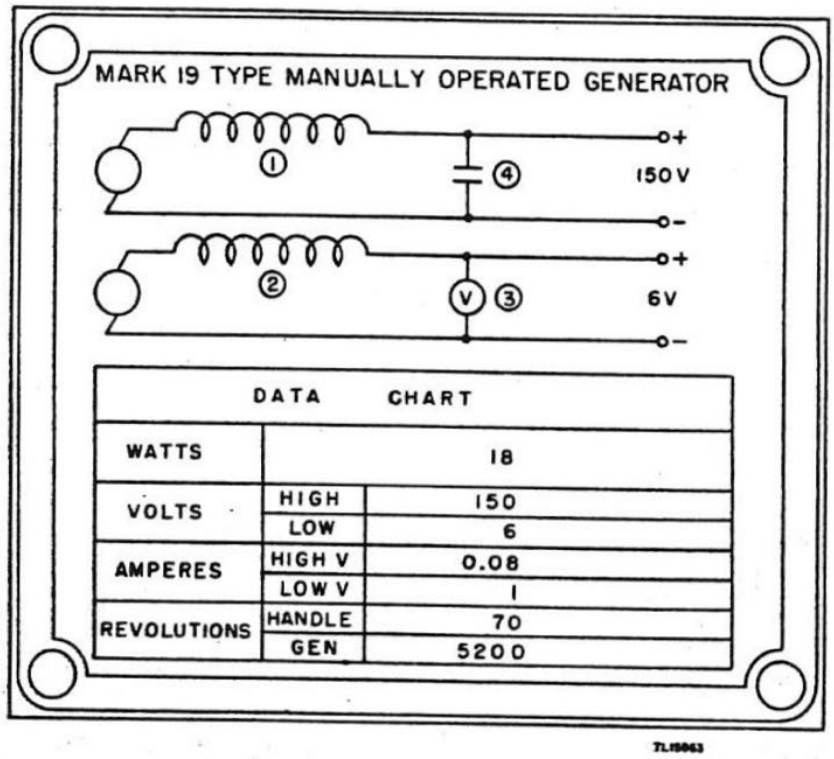


Figure 34. Dataplate tabs for installation and operation of Mark 19 Type manually operated generator. (These may be cut out and placed on the generator.)

☆ U.S. GOVERNMENT PRINTING OFFICE : 1944—O-621209