

Vintage CB AM/SSB

TEABERRY TWIN T”



Dear Owner,

As with any fine piece of equipment familiarization may take some time and use. Please be sure you have read and understood the function of your set. It is a sophisticated piece of electronic equipment and as such, in order to receive its maximum performance benefits, the operator must be aware of how it works. Re-read the manual often for maximum enjoyment of your equipment.

DESCRIPTION:

Your new TEABERRY TWIN "T" is an all transistorized 23-channel citizen band AM/SSB transceiver (of 23 channels for AM and 46 channels for SSB), designed for operation on power ratings of 220V AC for base station and of 13.5V DC for mobile operation, with either positive or negative grounding for DC power operation only.

Your TWIN "T" transmits and receives with the accuracy and reliability of a crystal controlled unit covering all the 23 channels for AM and the 46 channels for SSB (23 channels for each USB and LSB), with such features as:

dual conversion receiver, low noise RF stage, integrated S-Power-SWR meter, noise blanker, speech clarifier, adjustable squelch, RF gain control, external speaker jack, and provisions for paging or public addressing.

SPECIFICATIONS:

Frequency Range : 26.965 MHz to 27.255 MHz
Modes of Operation : Upper Single Side Band, Lower Single Side Band and high-level Class B AM
Power Source : 220-volts AC, 50 or 60 Hz or 13.5 volts DC

AM SECTION

Power Input : 5 Watts
Audio Output : 3 Watts
Audio Response : 300-2700 Hz at 6 dB
Bandwidth : 3.0 KHz

SSB SECTION

Power Input : 15 Watts P.E.P. (Peak Envelope Power)
SSB Section : Switch selects USB or LSB
Frequency Response : 300-2700 HZ at 6 dB
Spurious Response : More than 40 dB down
Output Impedance : 50 ohm to 75 ohm

RECEIVER

Sensitivity : AM: 0.5 μ v @ 6 dB SSB: 0.5 μ v @ 6 dB
Bandwidth : 2.4 KHz nominal using crystal lattice filter
Selectivity : 40 dB down $\pm$ 3 KHz
Delta Tune (clarifier) : $\pm$ 300 Hz.
Speaker : 3½ inch, 8 ohms
Intermediate Frequencies : 1st: 5.2 MHz, 2nd: 455 KHz using 7 IFTs and 6 IF stages
Dimensions : 13" wide X 5¼" high X 9-5/8" deep
Weight : 17 Pounds

DO NOT TRANSMIT WITH THIS EQUIPMENT UNTIL YOU HAVE RECEIVED YOUR LICENSE FROM THE FCC. Illegal operation can result in severe penalties.

Be sure that you have read and understood Part 95 of the FCC Rules and Regulations before operating your station.

EXPLANATION OF AM (DSB)/SSB:

Your new TEABERRY TWIN "T" is a transceiver designed to function as the transmitter and receiver for both AM (DSB) and SSB systems as follows:

As the method of transmission/reception of CB (citizen band), two methods (DSB and SSB) are used.

This amplitude modulation (AM) method uses the carrier which carry the signal waves. This is technically termed double side band (DSB) because the signal waves form symmetrical side band on both the upper and lower side of the carrier wave. Fig. No. 1 & 2 describe this wave formation:

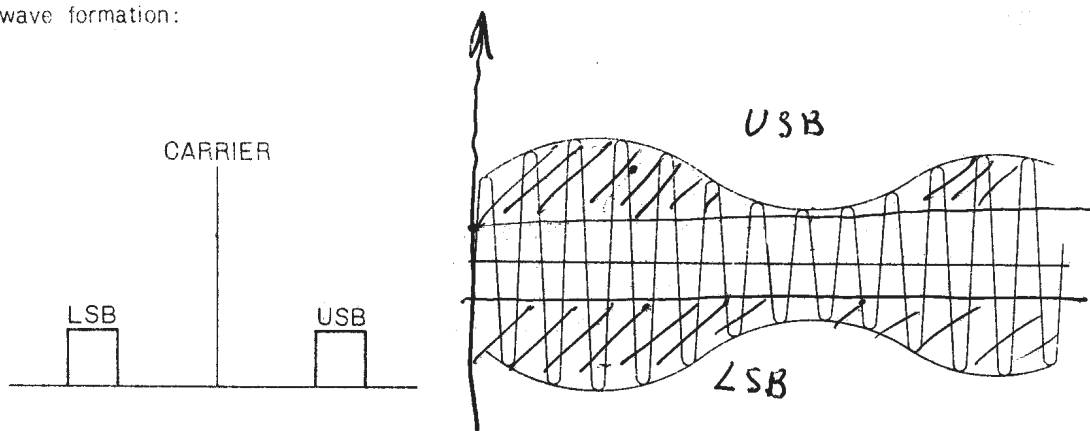


Fig. 1

Fig. 2

However, the essential portion for communication is either side of the symmetrical side wave. Therefore, the carrier and the other side of the waves can be eliminated. This is termed single side band system (SSB)

Compared with DSB, the SSB system has advantages in signal transmission as:

1. The width of frequency occupation is only one half of the DSB method leaving the other half open for another signal wave.
2. The power consumption is more efficient than that of the DSB method due to the narrower width of the waveform. Unlike the DSB method, there is no necessity to keep the transmission of the carrier wave.

All the above signify that on receiving side, the band-width required is only one half of the DSB method so an improved S/N ratio provides the clear tone reproduction with less noise.

INSTALLATION:

POWER CONNECTION:

* AC POWER FOR BASE STATION:

Connect the 8-pin plug of the AC cord, which is provided, to the 8-pin socket of the rear panel, then, connect the AC plug to the AC outlet.

* DC POWER FOR MOBILE OPERATION:

Connect the 8-pin plug of the provided DC cord to the main transceiver unit; connect the red power lead to the positive terminal of the battery, and then connect the black power lead to the grounding terminal.

ANTENNA:

Your TWIN "T" is factory-adjusted to give the optimum performance with the use of 50-70 Ohm antenna. An antenna specifically designed for CB equipment must be used. At no time should the transmitter be tuned to the antenna, instead, the antenna must be adjusted to present the lowest possible SWR (standing wave ratio). A very low SWR means that the antenna is operated at maximum efficiency and that the antenna is adjusted to 50-75 Ohms. The coaxial antenna lead-in should be as short as possible and only RG-58/U or RG-8U are recommended.

CAUTION:

Do not push transmit switch without first connecting 50-75 Ohms antenna or dummy load. RESULTANT DAMAGE VOIDS WARRANTY.

FRONT PANEL OPERATION

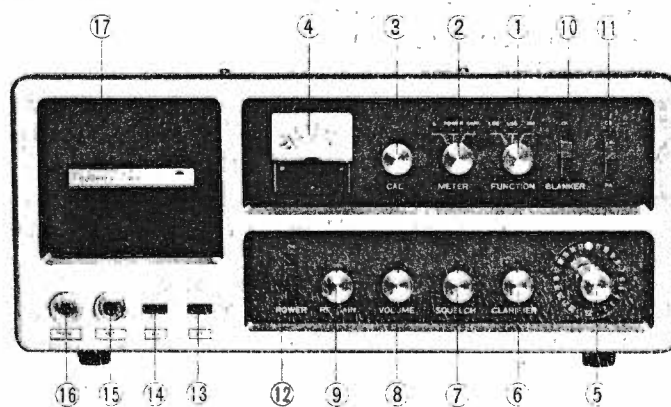


Fig. 3

(1) FUNCTION (MODE SELECTOR)

AM: Set this knob at "AM" position when the unit is to be operated for AM (DSB) transmission/reception.

USB: Set this knob at "USB" position when the unit is to be operated for USB (upper side band) transmission/reception so that only the upper side band is amplified and emitted while the carrier and LSB (lower side band) are removed.

LSB: When this knob is set at this position, only LSB (lower side band) will be amplified and emitted while the carrier and upper side band are eliminated.

(2) and (4) METER SELECTION AND METERS:

S: This meter indicates the intensity of the signals being received.

POWER: This meter indicates the intensity of the RF power being transmitted from the unit to the antenna.

With the function knob set at AM, the intensity of the transmitted power will be indicated on the meter with a push on the push-to-talk button of the microphone regardless of the presence or absence of modulation.

In SSB transmission, the meter indicator will act only while voice transmission is made, even if the push-to-talk button is pressed.

SWR: This meter is for checking the performance of the antenna. Its meter scale is graduated according to the ratio of the forward wave to the reflected waves of the transmission line (coaxial cable). Indication of "1" on the above scale (this means 1:1) signifies that the antenna is completely matched free of reflection. Indications in increased figure marks, for instance "3" (this means 3:1) signifies the mismatching of the antenna to the cable and an adjustment must be made for proper operation of your set.

(3) CALIBRATION KOB: Take the following procedures.

- a) Set the function (mode selector) at "AM" position.
- b) Set the meter selector at "Power" position.
- c) Press down the "push-to-talk" button of microphone.
- d) Watching the power meter, rotate the calibration knob until the indicator points to the "3" mark.
- e) Re-set the meter selector at "SWR" position to read the ratio of forward wave to the reflected wave. If the above reading is less than 2, the antenna is efficiently set and if otherwise not efficient.

(5) CHANNEL SELECTOR:

For selection of one of the 23 frequencies for both transmit and receive. The selected channel is illuminated for your convenience.

(6) CLARIFIER:

This is effective for a fine adjustment of the frequencies so that the reception of the LSB or USB signals will be made clearer. Proper use of the clarifier is important, as improper adjustment may cause eventual distortion of the output sound. Once well adjusted, the clarifier will remain effective and no re-adjustment will be necessary so far as the mode and channel stay same.

(7) SQUELCH:

For elimination of the background noise from AM carrier waves, and for clearer reception off SSB waves by reducing the gain of the signals being received from another transmitter signal. When the knob is fully rotated clockwise, the unit is fully squelched so that even the strongest signals are made least effective; the unit is least squelched when the knob is fully rotated counterclockwise.

(8) VOLUME CONTROL:

This control is for adjustment of the loudness of the sound and increases the volume when turned clockwise.

(9) RF GAIN CONTROL:

For ordinary use, keep this control set at "Max" position (fully clockwise rotated position). When the signal belonging to another is very close to your signal, turn this control counterclockwise, at the same time looking at the "S" meter so that the meter indicator will not swing off the scale.

(10) BLANKER:

This is a noise blanker switch and is designed to blank out only the noise without causing any effect on the input signals.

When any pulse or electrical noise is heard, set this switch at "ON" position.

RELATIONS BETWEEN VOLUME CONTROL, RF GAIN CONTROL & BLANKER:

The amount of volume can be adjusted by either the volume control or the RF gain control, depending on the signal strength

a) Local Communication:

Since the signal is strong, the RF gain control should be turned counterclockwise so that the "S" meter will not peg, then the volume should be adjusted by the volume control.

In most cases, the Blanker switch should be left in the "Off" position for short distance communication, because the incoming signal is strong enough to overwhelm the ignition or pulse noise.

b) DX Communication:

For long distance communication, the RF gain control should be rotated clockwise until the "S" meter shows full scale pegged, in order to get enough RF sensitivity. The volume should then be adjusted for proper level by the volume control.

For long distance communication, the Blanker switch may be left in the "On" position so that any ignition or pulse noise will be eliminated.

c) Function of Blanker Switch:

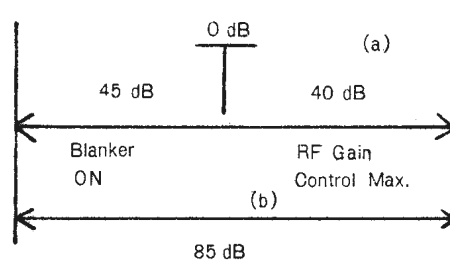


Fig. 4

As shown in above, when the RF gain control is in its minimum position, the blanker will suppress any ignition or pulse noise over 45 dB; when RF gain control is in its maximum position, the noise will be efficiently eliminated when the level is over 85 dB.

(11) CB/PA SELECTOR SWITCH:

Set this switch at "PA" position when you want to use your TWIN "T" as a public address system. Simply connect the external speaker terminals on the rear panel of TWIN "T" to a P.A. speaker (of 8 or 16 ohms).

(12) POWER SWITCH: This switch is for Power on/off.

(13) TRANSMISSION INDICATOR (TX): Light will indicate when unit is transmitting.

(14) RECEIVER INDICATOR (RX): Light will indicate when unit is receiving.

(15) MICROPHONE JACK: Insert the microphone plug into this jack.

MICROPHONE PLUG CONNECTION:

- a) SHOULD YOU USE ANY MICROPHONE OTHER THAN THE ONE PROVIDED WITH THE UNIT, BE SURE THE WIRING OF THE 3-WAY PLUG AS FOLLOWS:

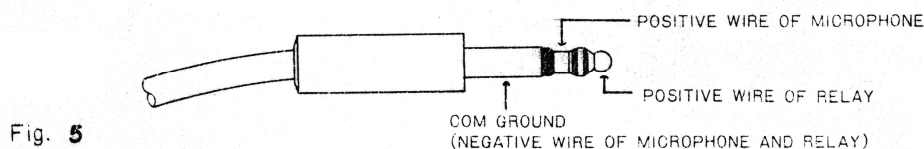


Fig. 5

— IF NOT — THE UNIT WILL NOT TRANSMIT.

- b) THE MICROPHONE SHOULD BE 600 OHM LOW IMPEDANCE DYNAMIC TYPE.

(16) PHONE JACK:

Insertion of a headphone plug into this jack will automatically disconnect the internal speaker.

- (17) INTERNAL SPEAKER: A $3\frac{1}{2}$ " speaker of 8 Ohms is provided.

REAR PENEL OPERATION:

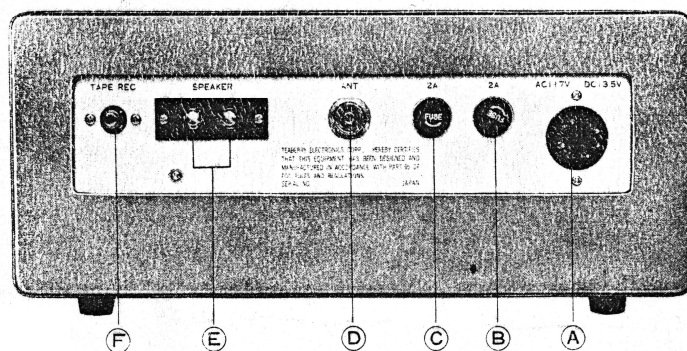


Fig. 6

(A) POWER SUPPLY:

Both AC (220V 60Hz) and DC (13.5V) may be used. Use the black power cord for AC operation; the red and black cord for DC operation.

- (B) 2 Ampere Fuse Holder for AC input.

- (C) 2 Ampere Fuse Holder for DC input.

- (D) ANTENNA CONNECTOR: Connect a 50-75 Ohm CB Antenna.

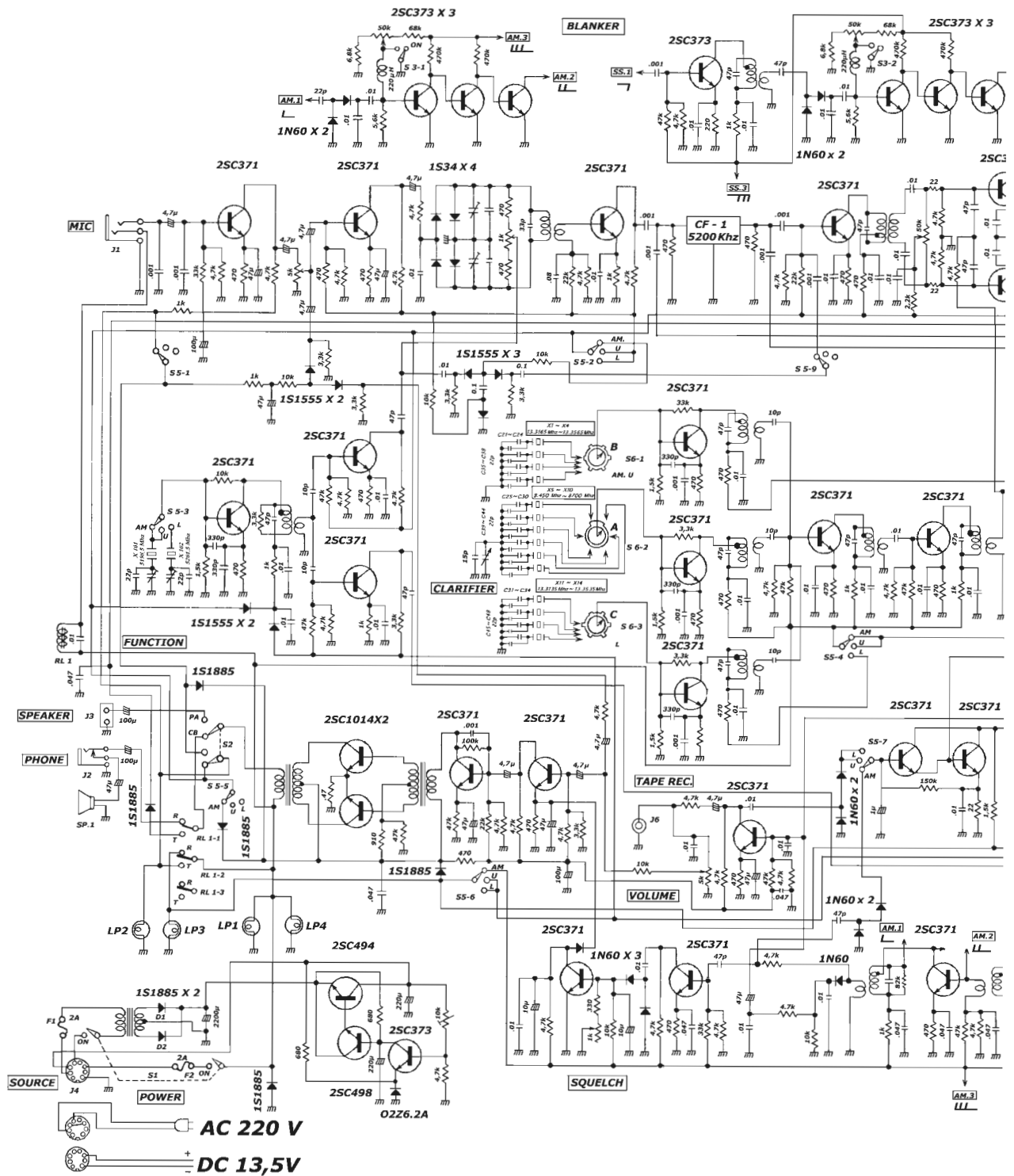
(E) SPEAKER TERMINALS:

Connect a P.A. Speaker (8 or 16 ohms) to the terminal when your TWIN "T" is to be used as a public address system.

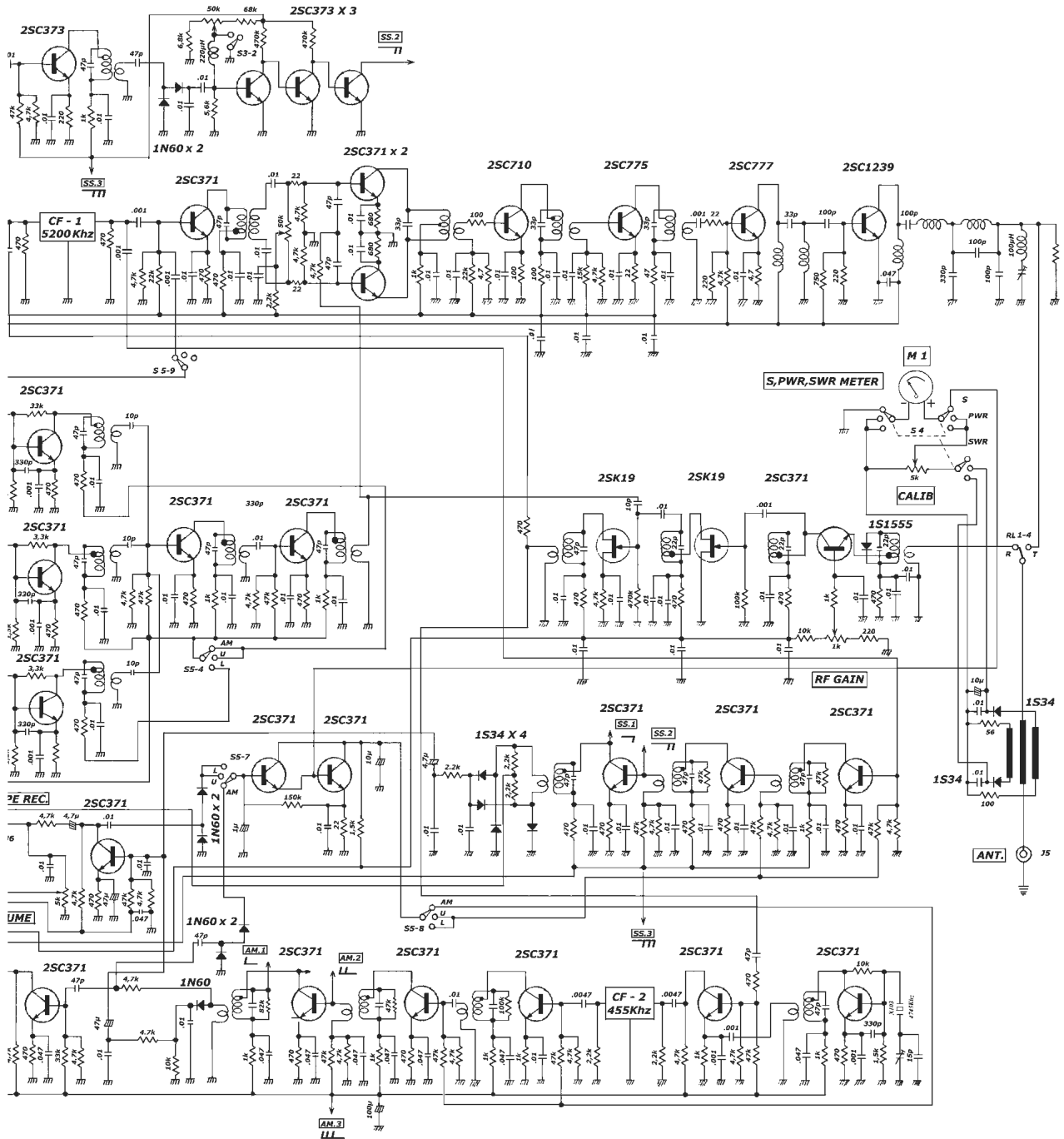
(F) TAPE RECORDER JACK:

Connect the tape recorder plug to the jack. The incoming signals will then be recorded. The volume control setting of your TWIN "T" will not affect the recording volume on your tape. Adjust recording input on tape recorder for correct volume.

SCHEMATIC DIAGRAM



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Known Models: Teaberry Twin "T"

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	8.450	13.3165	13.3135	Ch.13 (27.115)	8.600	13.3165	13.3135
Ch. 2 (26.975)	"	13.3265	13.3235	Ch.14 (27.125)	"	13.3265	13.3235
Ch. 3 (26.985)	"	13.3365	13.3335	Ch.15 (27.135)	"	13.3365	13.3335
Ch. 4 (27.005)	"	13.3565	13.3535	Ch.16 (27.155)	"	13.3565	13.3535
Ch. 5 (27.015)	8.500	13.3165	13.3135	Ch.17 (27.165)	8.650	13.3165	13.3135
Ch. 6 (27.025)	"	13.3265	13.3235	Ch.18 (27.175)	"	13.3265	13.3235
Ch. 7 (27.035)	"	13.3365	13.3335	Ch.19 (27.185)	"	13.3365	13.3335
Ch. 8 (27.055)	"	13.3565	13.3535	Ch.20 (27.205)	"	13.3565	13.3535
Ch. 9 (27.065)	8.550	13.3165	13.3135	Ch.21 (27.215)	8.700	13.3165	13.3135
Ch.10 (27.075)	"	13.3265	13.3235	Ch.22 (27.225)	"	13.3265	13.3235
Ch.11 (27.085)	"	13.3365	13.3335	Ch.23 (27.255)	"	13.3565	13.3535
Ch.12 (27.105)	"	13.3565	13.3535				

Additional Crystals: 5.1985 MHz AM/USB Carrier Osc.
5.2015 MHz LSB Carrier Osc.
4.7450 MHz AM-only RX Oscillator

Synthesis: ["A" + "B" + 5.1985 MHz] = AM/USB carrier; ["A" + "C" + 5.2015 MHz] = LSB carrier

Example: For Ch.1 AM, [8.450 MHz + 13.3165 MHz + 5.1985 MHz] = 26.965 MHz. The Carrier Oscillator and 13 MHz Synthesizer Oscillator are both offset 1.5 KHz on SSB, giving the required total offset of ± 3 KHz. The first I.F. is 5.200 MHz. The 455 KHz second I.F. for AM is produced by mixing the 5.200 MHz high I.F. with a separate 4.7450 MHz crystal RX Local Oscillator, [5.200 – 4.745] = 0.455 MHz or 455 KHz.

Compliments of:

CBC INTERNATIONAL • P.O. BOX 30655 • TUCSON AZ 85751 U.S.A.
TEL/FAX: 888-I-FIX-CBs (1-888-434-9227), (520) 298-7980 • Internet: www.cbcintl.com • Email: info@cbcintl.com

REMARKS: (1) THE POWER SUPPLY IS NOT A POWER SUPPLY IN THE USUAL SENSE OF THE WORD. IT IS A POWER SUPPLY IN THE SENSE OF THE WORD "POWER SUPPLY" AS USED IN THE TITLE OF THIS PAPER.



FIG. 3. POWER SUPPLY CIRCUIT. The power supply is a bridge rectifier connected to a filter capacitor and a load resistor. The transformer has a primary winding connected to an AC source and a secondary winding connected to the bridge rectifier.

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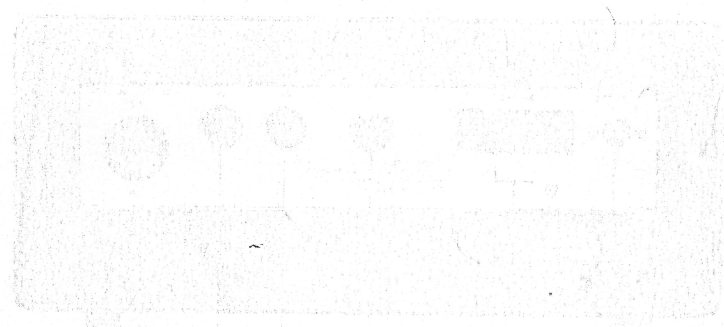


FIG. 4. POWER SUPPLY CIRCUIT. The power supply is a bridge rectifier connected to a filter capacitor and a load resistor. The transformer has a primary winding connected to an AC source and a secondary winding connected to the bridge rectifier.

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N.B. PRINTING CORRECTION TWIN "T" FOR AL-23

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