

AMATEUR BAND TRANSMITTER KIT

MODEL NO. 153-03



NEW ADDRESS
KELVIN ELECTRONICS
7 FAIRCHILD AVE.
PLAINVIEW, N.Y. 11803
(516) 349-7620 \ (800) 645-9212

Kelvin electronics inc.

1900 NEW HIGHWAY • FARMINGDALE • N.Y. 11735 • 516-249-4646

GENERAL DESCRIPTION

The Amateur Band Transmitter (Stock No. 153-03) is a crystal controlled C.W. (Continuous Wave-Telegraphy) 50 watt transmitter kit operating on both the 80 and 40 meter "ham" bands. A crystal oscillator/amplifier stage and a final output stage combining with plug-in coil make this an excellent transmitter kit for the beginner or Novice operator. Both mechanical and electrical construction is made simple by the use of a full-size chassis drilling template, stage-by-stage wiring pictorials and schematic diagram.

The amplifier tank circuit is a pi-network designed to work into a wide range of antenna impedances. A single coil is used for both bands by simply switching the band selector switch on the front panel. The crystal and the pi-network coil is simultaneously switched when the band switch is changed on the front panel. For this reason, the proper crystal for each band must be in its proper socket for the transmitter to operate. For maximum performance, the "Tune" and "Load" adjust on the front panel must be tuned each time the band switch is changed. A meter is incorporated to permit visual indication of maximum R.F. output. Tune-up and operation of this transmitter is as any other transmitter. Refer to the Radio Amateur's Handbook or any other publication on the subject.

80 and 40 Meter crystals are used; 80 Meter crystals for 80 Meter operation (3.5-4.0 MC) and 40 Meter crystals for operation on 40 Meters (7.0-7.3 MC). Crystals used should be of the popular FT-243 type. Both stages are "keyed" simultaneously to provide for "break-in" keying.

CAUTION

Use extreme care during initial testing and all subsequent operation of this Transmitter. While the Transmitter is designed for maximum safety, never lose respect for the high voltage present in this unit. Always protect yourself against lethal or severe electric shock.

NOTE: An amateur radio operator and station license is required to place this Transmitter on the air. Information regarding licensing and amateur frequency allocation may be obtained from publications of the Federal Communications Commission, or from the American Radio Relay League in the U.S.A.

Mechanical

Unless otherwise stated, all components are mounted with 4-40 screws (1/4" long) and 4-40 x 3/16" nuts supplied.

1. Drill all holes in the aluminum chassis and front panel according to the instructions given on the "Chassis Drilling Template." (Center page).
2. Mount all sockets as shown in Pictorial 1 and Pictorial 2. Be sure the key on the sockets are positioned as shown in Pictorial 1.
3. Mount the two variables with #6-32 x 1/4" screws. Use a lock washer on each screw. Refer to Pictorial 5.
4. Mount all other components shown on the chassis and front panel.

Notes on Wiring

Each kit is supplied with more than enough hookup wire for complete wiring. A length of insulated hookup wire, unless otherwise specified, should have about 1/4" of insulation removed or "stripped" from each end. Excessive wire exposure increases the possibility of shorts to nearby wiring or terminals.

When connecting to the terminal lug, simply wrap or "crimp" the lead to the terminal. Solder the terminal when you see a solder designation (S) followed with a number specifying the amount of wires that should be soldered. The designation (S2) means that two wires should be soldered on the terminal. If the terminal does not have the specified number of wires, recheck your wiring to that terminal. We suggest when each wire or component is connected to the kit, color the wire or component in the pictorial with a colored pencil. This will keep track of what you have done.

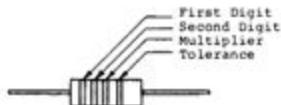
Wire the kit as shown in each pictorial. When the wiring is completed for that stage, check your work for shorts and miswiring. If everything is correct, follow the instructions in the pictorial. Then go on to the next pictorial. Be sure to remove the line cord from the house current before resuming work on the set.

Note: Because of the frequencies involved with the transmitter, all wires must be made as short as possible.

A FEW DON'TS

- Don't use acid core solder - It will ruin your kit.
Use only resin core solder.
- Don't solder unless you have double checked your connections.
- Don't solder on transistor or diode without using a heat sink.
Excess heat will destroy the component. A long nose plier or clip is a good heat sink.
- Don't solder a diode or electrolytic capacitor without checking for proper polarity.
- Don't apply power to your kit without carefully checking your wiring.

RESISTOR COLOR CODE



COLOR	DIGIT	MULTIPLIER	TOL.
Black	0	1	-
Brown	1	10	-
Red	2	100	-
Orange	3	1,000	-
Yellow	4	10,000	-
Green	5	100,000	-
Blue	6	1,000,000	-
Violet	7	10,000,000	-
Grey	8	100,000,000	-
White	9	1,000,000,000	-
Silver	-	0.01	10%
Gold	-	0.1	5%

DIODES

Schematic Diagram



Polarity Identification



Epoxy

ANODE CATHODE



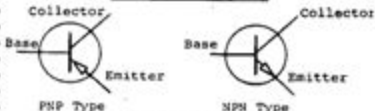
Banded



Tapered End

TRANSISTORS

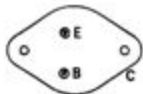
Schematic Diagram



PNP Type

NPN Type

Size And Lead Connections



CHASSIS BOTTOM

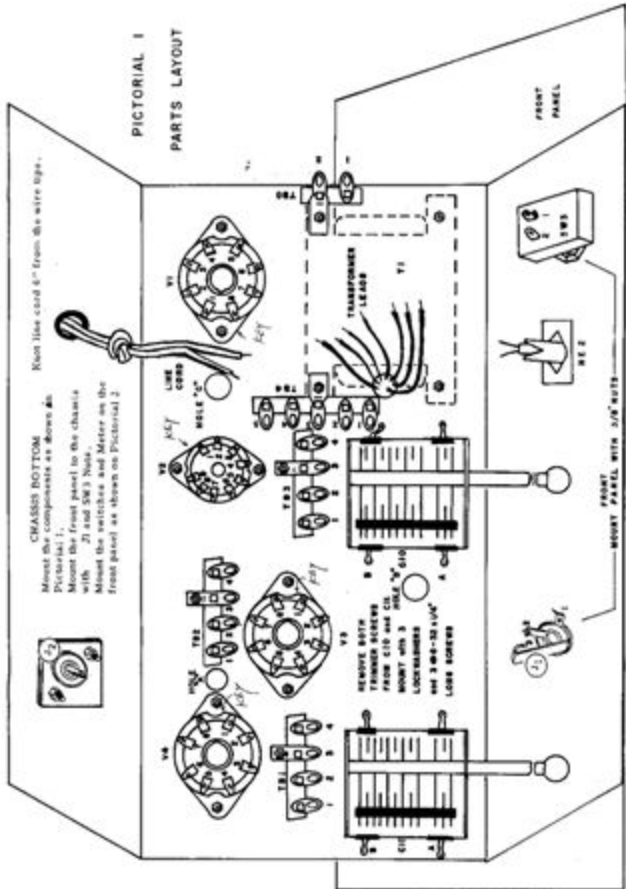
Mount the components as shown in Pictorial 1.

Mount the front panel to the chassis with #1 and SW3 Nuts.

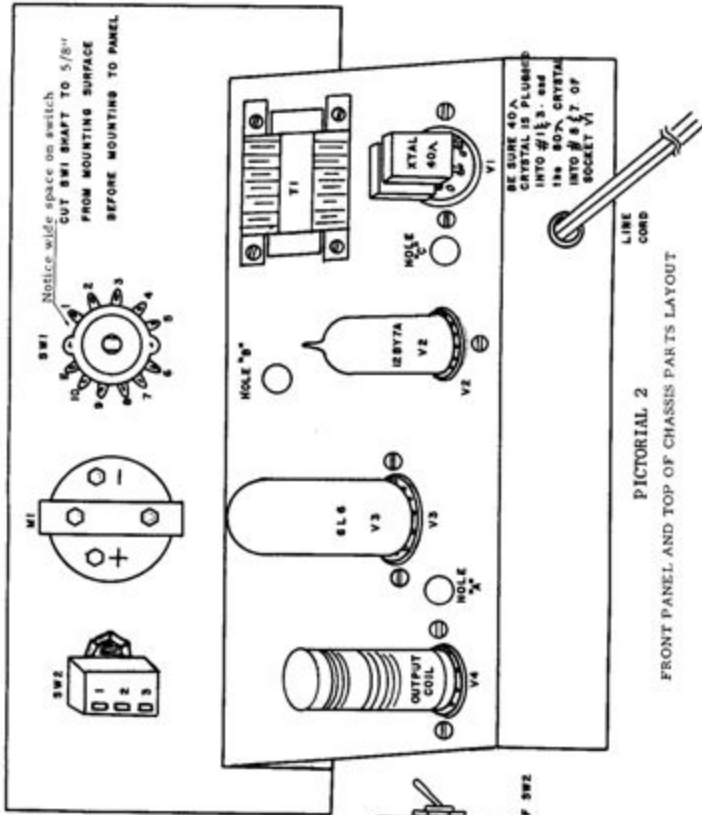
Mount the switches and Meter on the front panel as shown on Pictorial 2.

Run line cord 4" from the wire type.

**PICTORIAL 1
PARTS LAYOUT**



REMOVE BOTH
TRIMMER SCREWS
FROM C10 AND C11
MOUNT WITH 3
LOCKWASHERS
AND 3 #4-32x1/4"
LOBE SCREWS

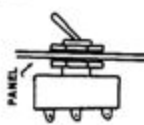


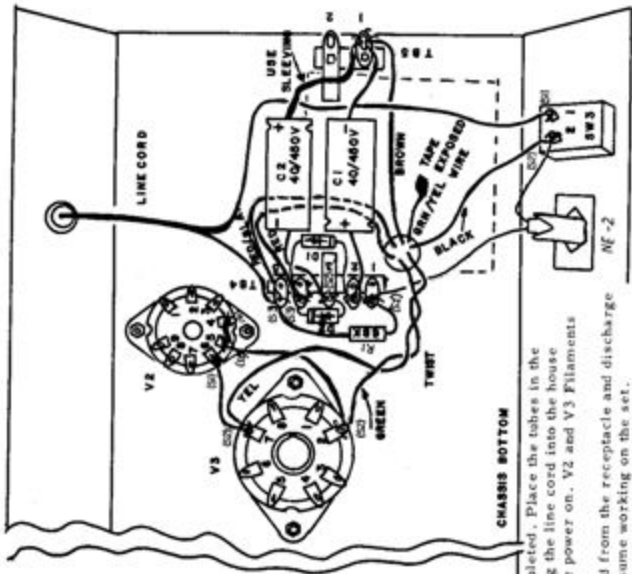
PICTORIAL 2

FRONT PANEL AND TOP OF CHASSIS PARTS LAYOUT

BE SURE 40A CRYSTAL IS PLUGGED INTO #1 & 3. AND THE 80% CRYSTAL INTO #8 & 7. OF SOCKET V1

SIDEVIEW OF SW2 MOUNTING





VOLTAGES

FB4-2	670V
FB5-1	333V

Chassis is common ground.

After wiring is completed, place the tubes in the proper sockets. Plug the line cord into the house receptacle. Turn the power on. V2 and V3 filaments should be lit. Remove the line cord from the receptacle and discharge C1 and C2 before resume working on the set.

PICTORIAL 3

**FILAMENT AND POWER SUPPLY
WIRING**

PREPARING AND WINDING PI-NETWORK COIL

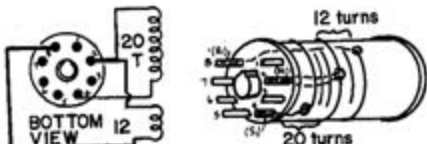
In preparing the coil form it will be necessary to drill a few small 1/16" Dia. holes. These holes should be drilled slowly and carefully in the smooth portions of the form.

Coils must be wound neatly with equally spaced turns - avoid winding turns on the top of each other and getting any "twists" or kinks in the wire. The coil form is "grooved" to facilitate ease of winding.

Be sure to scrape off the enameled insulation on wire ends before soldering.

Refer to diagram below:

1. Drill a hole near the bottom of the coil form adjacent to pin 4
2. Drill a hole adjacent to pin 2 but 7/8" above the first hole.
3. Drill a hole adjacent to pin 8 but 5/8" above the second hole.
4. Solder one end of the scraped enameled wire to pin 4 and wound clockwise 20 turns as shown. Cut wire long enough to go through Pin 2. Do not solder.
5. With the remainder of the enameled wire, push through pin 2 and solder the 2 wiresto pin 2. Wound 12 turns in the same direction as the first coil. Solder the end to pin 8.



PI NETWORK COIL WINDING

TRANSMITTER TUNING PROCEDURE

1. Let the transmitter warm up for 30 seconds.
2. Band switch to 80 meter position, current switch in the up position. "Tune" and "Load" control indicators pointing up. The Variables are now half open.
3. It is important that the crystals are in the right sockets. The 40 meter crystal is near the rear apron. The transmitter will not operate when the crystals are reversed.
4. Connect a 25W light bulb to the antenna jack.
5. Plug the telegraph key into the transmitter and momentarily key the transmitter. The light bulb will glow.
6. Hold the telegraph key down and adjust the "Tune" control for a dip on the panel meter.
7. Adjust the "Load" control to read 0.8 on the meter.
8. Readjust the "Tune" control for a dip.
9. Readjust the "Load" control to read 0.8 on the meter.
At this point the light bulb should be fully lit.
10. The current switch can be switched to "Screen" position. This will indicate how well the transmitter is matched to the antenna. With the light bulb as a load, the meter will read approximately 0.6. LEAVE THE SWITCH IN THIS POSITION DURING TRANSMISSION.

The same procedures are used to tune the 40 meter band. Each time the bank switch is changed, the transmitter must be retuned.

K4XL's **BAMA**

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