

*Bought 1-7-61
Curle Radio Supply Co.*

INSTRUCTION MANUAL
FOR
TR-75TV5 TRANSMITTER

Power Rating: 60 Watts final input -Telegraphy

Frequency Coverage: 160, 80, 40, 20, 15, 11 and 10 meter
bands

Supply Source: 115 volts, 60 cycles

WARNING

to

Owners & Operators
of this equipment

LETHAL VOLTAGES are present
in this equipment. Personal con-
tact with this voltage can be fatal.
Never change coils or work on the
TR-75TV 5 when the high voltage
supply is turned on.

A SAFETY HABIT: Whenever you
remove the top cover or the bottom
plate, turn off all voltages entering
the transmitter.

SWITCH TO SAFETY-TODAY

RESISTANCE MEASUREMENT CHART

Measurements made with all coils in place but tubes removed from their sockets. Switch SW3 in position C, and key closed.

Tube No.	Pin No. 1	Pin No. 2	Pin No. 3	Pin No. 4	Pin No. 5	Pin No. 6	Pin No. 7	Pin No. 8
6AG7	0	0	0	56K	450	70K	0.5	50K
1625	0.5	open (used as tie point)	75K <i>open</i>	23K	open	300 <i>open</i>	0.5	plate cap 60K <i>open</i>

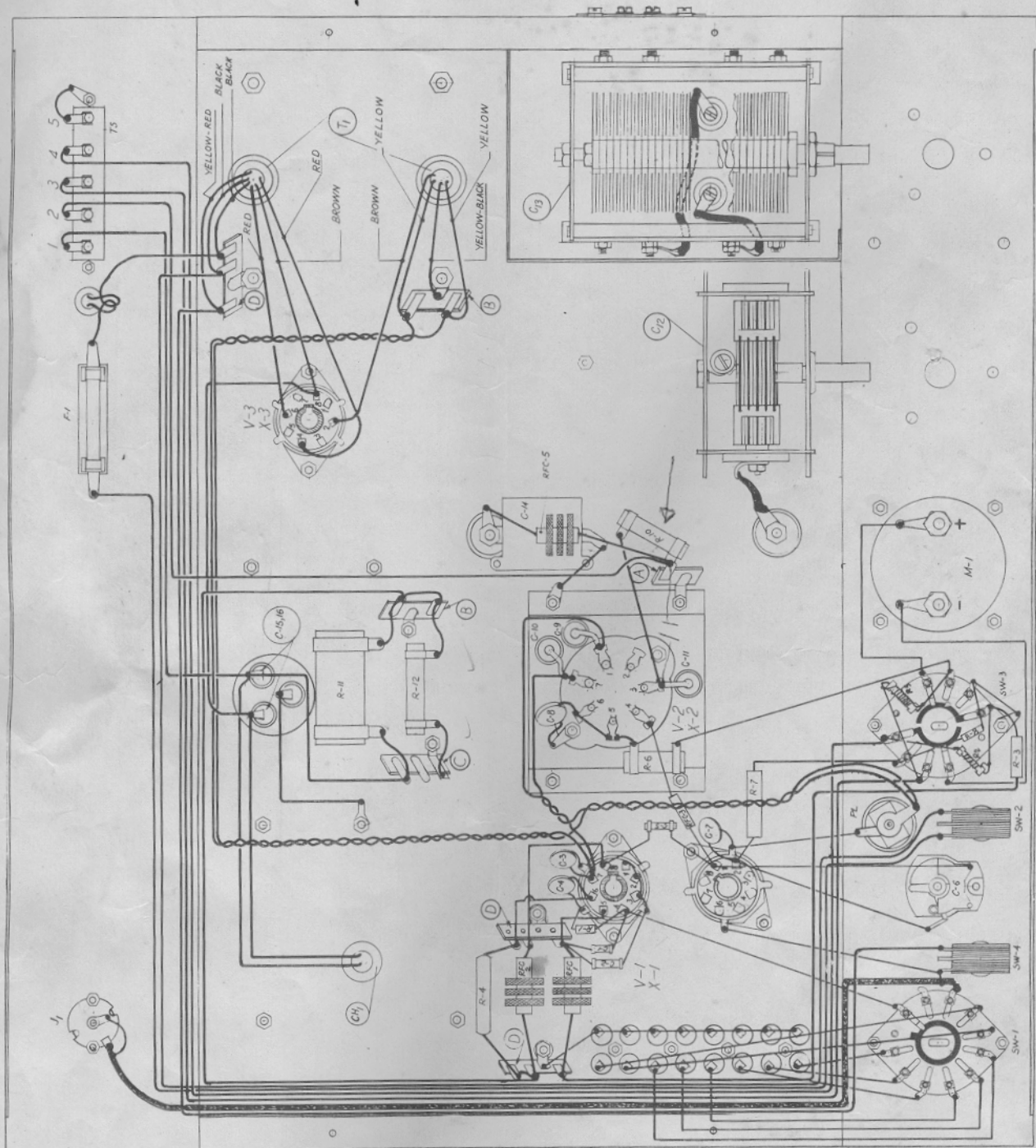
Take all measurements between the pins indicated, and ground. Use any accurate ohmmeter.

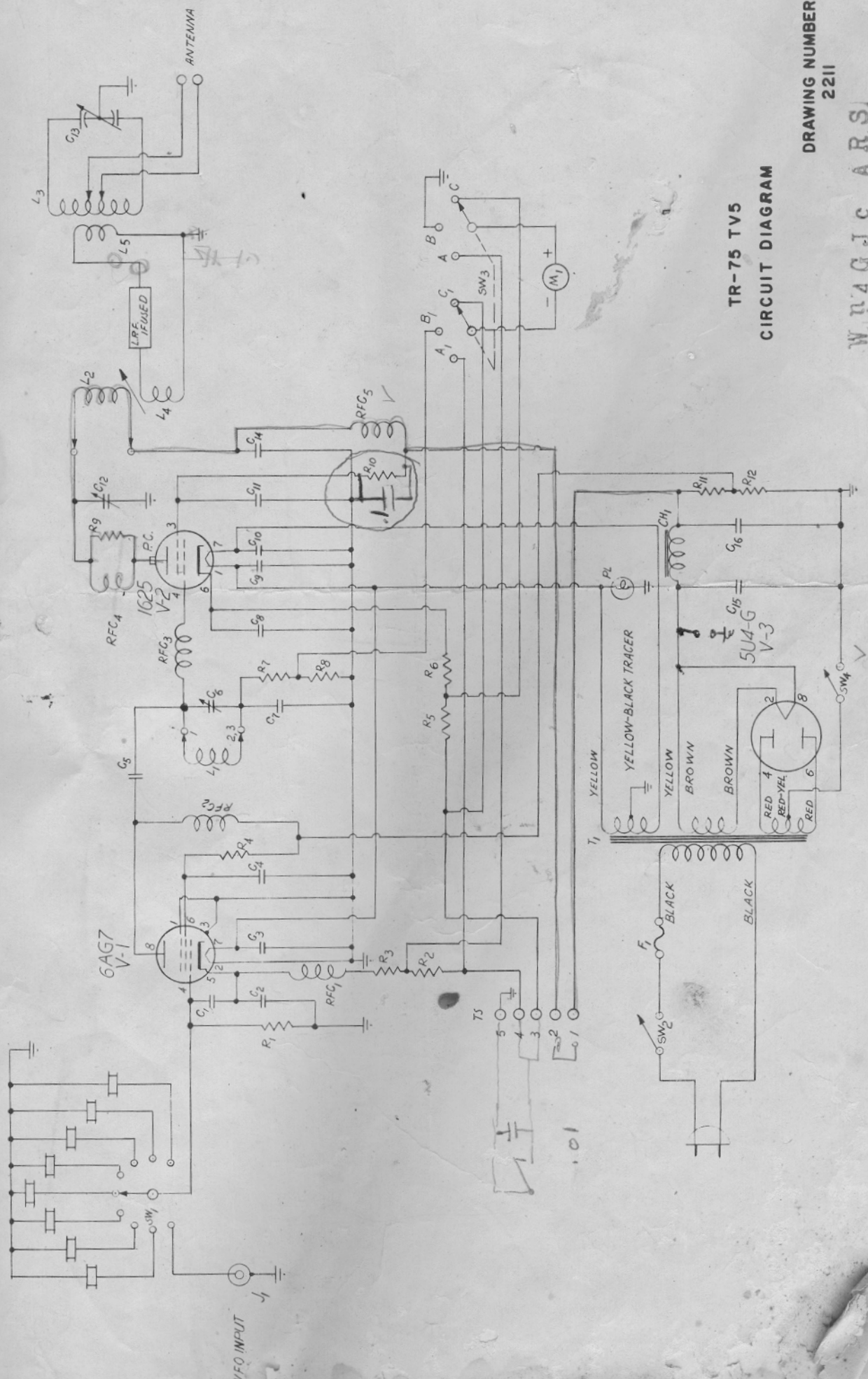
VOLTAGE MEASUREMENT CHART

Voltage measurement made with transmitter operating into lamp bulb load on 80 meters or 40 meters. Pin numbers 4 of both tubes measured with R. F. choke in series with voltmeter.

Tube No.	Pin No. 1	Pin No. 2	Pin No. 3	Pin No. 4	Pin No. 5	Pin No. 6	Pin No. 7	Pin No. 8
6AG7	0	0	0	-13	12	180	6.3AC	300
1625	6.3AC	0	250	-115	0	26	6.3 AC	plate cap 550*

* Measured at Pin No. 1 of terminal strip





TR-75 TV5
CIRCUIT DIAGRAM

DRAWING NUMBER
2211

W 40 J C A R S

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Item- Part No. Qty .J2~\$criptj.on Ches~:.'

1 1 Chassis, top cover; , bottom plate
2 1 Rectangular coil shield and mtg. bracket 3 1 Tube mount (U-Bracket) 4 2 Right-angle shields
5 T1 V1 Power transformer TR-75
6 CH1 1 Filter choke 10 Hy ,@ 200 ma 7 C1 1 Condenser-Mica 10 mmfd
8 C2 1 Condenser-Ceramic 100 mmfd 9 C4, C7, C8 Lt ~ Condenser-Disc .0047 mfd ~ 10 ~C9, C10 :l , Condenser-Button 500 mmfd
11 C5 1 Condenser-Ceramic 50 mmfd
12 C6 1 Condenser- Variable 100 mmfd miniature 13 C11 1 Condenser-Button 2400 mmfd 14 C12- 1 Condenser variable 100 mmfd
14A C13 1 Condenser variable 260 mfd per section 15. C14 1 Condenser-Mica 0.005 mfd 1000V DC 16 C15, C16 2 Condenser-Dual Filter 5.0 mfd 17 R1 1 Resistor- 56K ohm 1/2 watt
18 R2 1 Resistor-Special 60 ma shunt approx 4 ohm 19 R3 1 Resistor-400 ohm 1 watt 20 R4, R7- 2 Resistor-22K ohm 1 watt
21 R5 1 Resistor-Special 150 ma shunt approx 1 ohm 22 R6 1 Resistor 250 ohm 4 watt
23 R8 -1 Resistor-470 ohm 1/2 watt 24 R9 1 Resistor-100 ohm 1 watt
25 R10 1 Resistor 25/30K ohm 10 watt , 26 R11 1 Resistor 10/12K ohm 20 watt
27 R12 1 Resistor 40 to 50K ohm 10 watt , 28 RFC 1, 2, 5 3 RF chokes 2.5 mh
29 RFC3 1 RF choke-25T #26 wire
30 , RFC 4 1 RF choke(to be wound) 10 turns #16 wire on R9
31 v'''3 Tube sockets-octal 32 v 1 Tube socket- 7 pin
33 v4 c Twin crystal sockets
34 ~ Meter-Eldico 0 to 15, 60 & 150 ma (and R2 and R5) 35 1 Pilot lamp assembly 36 SW2, SW4 2 SPST toggle switch
37 SW1 1 Nine-position rotary switch
38 SW3 1 Double-,pole-triple-throw switch 39 --15 Knobs
40 1 Fuse holder and 3 amp fuse
41 V:1 VFO input jack and plug 42 " 1 Terminal strip 5T

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_ /h/ .'

PARTS LIST TR-75TVb (continued)

Item Part No. Description Check 43 12, L3 2 Grooved ceramic coil forms 2" dia. 44 11 1 Grid Coil Form and base 45 V1 v1 Vacuum tube -6AG7 46 V2 v-i Vacuum tube -5U4G
 47 2 Jacks, banana -Feed-through 48 2 Jackst banana -stand-off 49 \ 1" vacuum tube -1625 50 4 Plugst banana
 51 2 Insulator-Feed-through 52 1 Line cord and plug
 53 v1. Terminal strips (type A) 54 /2 Terminal strips (type B) 55 vi Terminal strip (type C)
 56 v 3 Terminal strips (type D) 57 2 Tank coil wire clips 58 1 plate cap for 1625
 59 20' #20 plain enamel wire 60 40' #16 tinned wire 61 351 .Hook-up wire 62 11 Spaghetti
 63 1811 Single-cond. shielded wire 64 611 Metal shield braid -1/4 in.
 65 1 .Bag of Machine screws and nuts
 metal screws and soldering lugs 66 L4t L5 2 C oupling coil forms 67 10' Wire for L4 and L5
 68 2 Insulator 3/8 to 1/211
 69 1 Antenna terminal strip
 , 70 2 Condenser-Buttons -100 mmfd "
 ; 71 2 Condenser-Ceramic -73 mmfd 72 1 Condenser-Ceramic -18 mmfd

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TR-75TV5 TRANSMITTER INSTRUCTIONS

FOREWORD

Eldico's TR-75TV5 Transmitter is a re-designed and improved version of the now famous Eldico TR-75. As such it incorporates the utmost in filtering and bypassing, and has integral and complete shielding against undesirable radiation. As further protection against TVI, provision is made for installation of a self-contained TVI filter (a junior version of the Eldico TVD-62), which may be used when conditions warrant its inclusion in the circuit.

A further design consideration has been ease of construction. The mechanical and electrical layout is such that any amateur capable of using screwdriver, pliers, and soldering iron should have no difficulty making the TR-75TV5, if the wiring instructions are carefully followed. Eldico sincerely trusts that all who build the TR-75TV5 will find the construction work interesting and the performance of the completed unit all that they desire.

The component parts used are the finest available. Certain of the items have been purchased in large quantity by Eldico from surplus Government stock. The superior quality of these particular components and the economy resulting from such purchases are a double benefit which is passed on to Eldico's customers.

Eldico wishes also to have the buyer know that the company is ready at all times to lend a helping hand or an interested ear to the problems or successes of its customers. While the organization cannot enter into lengthy correspondence covering each kit, it is ready and anxious to answer any specific problems. Suggestions are solicited. Please feel free to write personally to Don Merten, W2UOL, at any time.

General Description

The TR-75TV5 Transmitter is a 60 watt c. w. transmitter with a self-contained power supply. For on-the-air operation it is necessary to add only the key and the antenna. Band changing is accomplished by plug-in coils, while frequency changing inside a given band is taken care of by a crystal selector switch. All necessary operating controls are available from the front panel.

By use of the proper coils operation is possible on seven amateur bands: 160, 80, 40, 20, .15, 11 and 10 meters. For 160 meter operation 1.8 to 2.0 megacycles, crystals are required; for 80 meter operation 3.5 to 4.0 megacycle crystals are required;

For 40 Meter operation either 3.5 to 3.65 or 7.0 to 7.3 megacycle crystals may be used; while for operation on 20, 15, 11 and 10 meters, 7.0 to 7.5 megacycle crystals are needed. A variable-frequency oscillator may be used in place of a crystal, and provision for the VFO connection has been made in the TR-75TV5.

This transmitter has been designed for use with an antenna employing : any type feeder and the components furnished in the kit provide for this because of the desirability of using coaxial line for TVI reduction. A single long wire antenna may be used without changes, connecting the other terminal to ground. For full information on antenna feed system, refer to ARRL Handbook.

The TR-75TV5 can be used for 'phone operation on authorized amateur bands by means of the Eldico AM-40 Modulator, which has (been designed especially for this purpose, or any modulator capable of providing the proper audio impedance and power. Terminal points TS1 and TS2 are provided for this purpose. Remove the jumper between these points and connect the secondary of the modulation transformer when' phone operation is desired.

When severe TVI is encountered which is due to harmonic radiation from the antenna or antenna feed-line, installation of the enclosed low pass filter is recommended. This filter is installed between the output tank circuit link (L4) and the antenna tuning network line (L5) and is included in kit form with your TR-75TV5. Complete details on this filter are given in the drawing #2203 in the rear of this Instruction Manual.

In general, the Low Pass Filter will not be required, because a fully-shielded antenna tuning network is provided in the TR-75TV5. This antenna tuner provides approximately 40 db attenuation to harmonics and materially aids in reducing television interference.

All of the coils in the TR-75TV5 are of the plug-in type so that the transmitter can be used on any band by simply plugging in the correct crystal and coil combination. Coil forms, jacks, clips, and sufficient wire of the required size are furnished so that the coils can be wound for anyone amateur band. Additional coil sets are available at a cost of \$4.50 net per amateur band. Please specify band.

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The radio-frequency portion of the transmitter consists of a 6AG7 crystal oscillator driving a 1625 final. A nine position switch in the 6AG7 stage permits selection of eight crystals or a VFO for frequency control. The heavy-duty power supply uses a pi-section filter and the rectifier tube is a 5U4G. A switch in the primary of the power transformer serves as the main OFF-ON switch (SW2) while a second switch (SW4) in the high-voltage center-tap acts as the SEND-RECEIVE switch. A double pole double throw switch (DPDT-not furnished) may be substituted if additional circuits such as antenna relay are to be controlled.

The 6AG7 crystal oscillator circuit is the harmonic generating type, and is capable of operation on the second and third harmonic, as well as on the crystal fundamental. The 6AG7 was chosen as an oscillator because it makes a stable oscillator, as well-shielded tube, and is generally free from spurious responses. With 3.5 Mc crystals, the output of the oscillator may be tuned to 3.5 or 7.0 Mc. With 7.0 Mc crystals, the output may be on 7.0, 14 or 21 megacycles. The output of the oscillator, whether operating at the crystal fundamental or at the second or third harmonic is sufficient to drive the 1625 final.

The 1625 final tube is used either as a straight through power amplifier or as a doubling power amplifier. The following chart shows the recommended arrangement of crystals and coils for operation on the seven amateur bands covered by this transmitter:

CRYSTAL OSCILLATOR 1625 OUTPUT FREQUENCY :fl:REQUENCY- ..1:..£~qu~ ~~UENCX

1.75 1.75 1.75 1.75

3.5 Mc 3.5 Mc 3.5 Mc 3.5 Mc 3.5 or 7.0 7.0 7.0 7.0. 7.0 14.0 14.0 14.0 7.0 21.0 -21.0 6.75 13.5
27.0 27.0 7.0 14.0 28.0 28.0

It will be noted that the 1625 final tube acts as a doubler only when the transmitter is operated on the eleven-meter or the ten-meter band. Complete coil data for all bands is given in the wiring instructions.

The TR-75TV transmitter may be keyed by keying the power amplifier stage alone, or by keying both the power amplifier and the oscillator stage. When break-in operation is desired, it is necessary to key both stages of the transmitter. Keying, in either stage, is done in the

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Cathode circuit. The cathode connection of both the oscillator and the final is brought to the terminal strip. If just the final is keyed, the oscillator cathode should be connected to ground by connecting a wire from terminals TS4 to TS5. The key is then connected between terminals TS3 and TS5. If you wish to key both stages, connect terminal TS3 to TS4, then connect the key between TS4 and TS5.

The single meter in the circuit is connected to a three-position switch so that it may read cathode current of the 6AG7, grid current of the 1625, or cathode current of the 1625. In position A, when reading oscillator cathode current, the full scale reading of the meter is 60 ma.; in position B the full-scale current is 15 ma. for the 1625 grid current range; and, in position C full-scale current is 150 ma.

The actual current ratings to be expected will be found in the operating Instructions.

WIRING INSTRUCTIONS

Before starting the construction of the transmitter, read this

Instruction Book in its entirety. It is absolutely essential that you become familiar with the circuit details and the component parts before you attempt to build the TR-75TV. The instructions about to be given are complete in every respect and are simple to follow, but familiarity with the component parts is required to follow the instructions intelligently.

After you have read the instructions and studied the circuit diagram, refer to the Parts List. Examine the material contained in the kit and check each piece against the Parts List to ensure that no error or shortage exists. If you find a shortage, notify Eldico at once so that the construction of the transmitter will not be unduly delayed.

We suggest you write directly to Eldico, thereby saving the time of your distributor forwarding your request to Eldico.

Because some of the components are color-coded, you may wish to arrange these components, after identification, in a manner so that you will know their value later. One way to do this with resistors is to push the wire leads through a piece of paper, so that the resistor is held to the paper, and then mark the value of the resistance on the paper. Transparent adhesive tape may also be used for this purpose with resistors and other components.

Your TR-75TV transmitter kit is complete with a pre-punched and drilled chassis. This chassis has been painted for rust-prevention purposes. At certain points where material is mounted to the chassis it is necessary to scrape away this paint and expose the bare metal so

that a good ground connection can be obtained. This scraping is easily accomplished with a sharp knife. Scrape away an area just slightly larger than the size of the component being mounted. After all wiring is complete, rust can be prevented at these points by applying colorless nail polish to the area of metal exposed.

Throughout the wiring instructions the abbreviation SC will be used , to indicate that the chassis paint should be scraped away. It will be necessary to do this only at the points identified in the instructions with the abbreviation SC. Use only rosin core solder NEVER ! *ACID* CORE.

When wiring the transmitter it is a good idea to mark the circuit diagram at the same time. You can use a red pencil and draw a red line over each connection lead on the diagram after you make the actual connection in the transmitter. By marking the circuit diagram in this manner you have a record of the wiring you have done, and you "are sure that none of the connections will be omitted.

CONSTRUCTION , V I. Arrange all the component parts so that they are easily accessible. Provide space on your work bench and place the circuit diagram so that it can be seen easily.

V2. Refer to the --- and mount all of the major components as follows: Mount the filter choke CH. Mount the power transformer T1, and as you do, place a Type B terminal strip under the mounting nut nearest the chassis center, and a type D terminal strip under the r' mounting nut directly behind the first strip. The transformer should, be placed so that the hole with the two brown wires, the two yellow wires and the yellow wire with black tracer is toward the front of the, chassis. Refer to the pictorial sketch number 2BG4 for details. At the two points where the terminal strips are mounted, SC.

Mount the large right-angle shield on the top of the chassis, and SC for the three mounting screws. With this shield mounted, you can now place the chassis upside down on the work bench so that it rests on the filter choke and the shield, and the rest of the mounting will be simpler to perform. Mount the rectangular filter condenser C 15 and C16 as shown in the photograph, and SC. The common connections to be grounded as identified by a small letter II c II.

Mount the 5U4G octal socket next to the filter condensers so that pin 1 of the socket is toward the power transformer. Mount the five terminal Jones strip on the rear of the chassis. Mount the fuse holder

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in the single hole next to the terminal strip. Mount the VFO input Jack, J1 in the other hole on the rear of the chassis, placing a soldering lug under one of the screws. SC at this point.

Locate the two banana jack stand-off insulators and the two small feed-through insulators and mount them as follows: Looking at the top of the chassis in the corner surrounded by the right-angle shield are four holes in a line. Mount the two feed-through insulators in the middle holes, making sure that a soldering lug is on both ends of the insulators. Solder a 4" length of tinned wire on each lug of the bottom side of the two feed-thru insulators. These wires should be connected to C13 as it is mounted later. Next mount the banana jack stand-off insulators in the two outside holes, making sure there is a soldering lug under the head of the open nut on the top of the ceramic insulator. Before proceeding further, take the large grooved coil Form L3, attach a banana plug on each and plug the forms into the two insulated jacks you have just mounted. This is just to make sure that the coil form fits snugly.

Mount the antenna terminal to the left end of the chassis. Next, locate the two banana jack feed-through insulators and mount them in the two large holes adjacent to the right angle shield, on top of the chassis. A soldering lug should be placed on top of the insulator nearest the front of the chassis, and on the bottom of both insulators, under the chassis.

Mount the condenser (C13) in the front panel hole on the far left of the chassis (as viewed from the front). Make connections from condenser to feed thru insulators as previously mentioned. Refer to sketch. SC on the inside of the panel at this point. Tighten the condenser screws and nuts securely. Mount the remaining right-angle shield around C13 with four machine screws. SC at all four mounting points, under the bolt heads. Mount the 100 mmfd condenser (C12) next to the shield, using three machine screws. Tighten carefully and SC at the three points, under the bolt heads.

Referring to the ^{drawing 2204} photograph, mount the pilot lamp assembly, the switch SW2 in the hole below the pilot light, the small variable 100 mmf condenser, C6, in the next hole to the pilot light, and switch SW4 next to C6. Next, mount the rotary switch SW1 in the hole on the far right of the front panel. Be certain that the common terminal of this switch is as pictured in drawing.

Condensers C9 and C10 are colored with three dots -- green, black and brown. Attach these two condensers to the metal shield in the two holes provided next to pin 1 and 7, and face them so the metal tabs on each touch the socket pin lugs 1 and 7. Mount C11 (colored red, yellow, red) in a similar manner in the hole next to pin 3. Now, locate one of the disc condensers (C8), and twist the two outside leads together, and attach these two leads to socket terminal 6. The single lead from C8 goes to the soldering lug which you placed between pins 5 and 6. Solder to the soldering lug. If you are furnished with green two wire condensers these are single .0047 mfd and wires should not be twisted.

Mount the "U" bracket shield under the chassis, using four machine screws through the top of the chassis. SC at all points. The position of the shield is indicated on sketch 2204. Now fasten a Type A terminal strip to the chassis in the hole between the "U" bracket shield and the banana feed-through insulator, as shown in sketch 2204. ✓

5. Cut a 13 inch length of hook-up wire, and connect one end to the insulated terminal on the type A terminal strip just mounted. Connect RF choke (RFC5) between this same point and the feed-through insulator as shown in sketch 2204. ✓ Next R10 should be attached to the same point by a short piece of wire and the junction soldered. Make sure that none of the wiring at this point touches the grounded terminal of the Type A terminal strip. ✓

Run a piece of hook-up wire from the other end of R10 to pin 3 of the 1625 socket, and solder, making sure that the tab from C11 is securely soldered at the same time. ✓ Run the 13 inch piece of wire from the Type A terminal strip directly to the rear of the chassis, make a right angle bend in it, and run it to the 5 terminal strip, and connect it to TS2. Solder. ✓

Connect a short piece of #16 tinned to one end of C14, then mount as shown in pictorial drawing. Solder. Now cut a 2-1/2" piece of metal braid and tin at both ends. Solder one end of the other feed thru terminal for coil L2 and solder the other end to the stator connection of C12, directly adjacent to meter. Do not loose the other small piece of metal braid, as it will be used eventually. ✓

6. Connect a piece of hook-up wire between pin 1 of the 1625 socket and one terminal of the pilot lamp assembly. Solder at pin 1 of the 1625 socket, making certain that the tab from C3 is securely soldered at the same time. Connect another piece of hook-up wire between the same terminal of the pilot lamp assembly and pin 7 of the 6AG7 socket. Solder the connection on the pilot lamp assembly. Now cut an 18 inch length of hook-up wire and connect one end to pin 7 of the 6AG7 socket. Now mount C3 between pin 7 of this socket and the ground lug on the socket below pin 7. Solder at the ground lug point, and solder the tab of C3 to pin 7 along with the two wires you just connected there. Now run the 18 inch length of wire from this point to the rear of the chassis, along it until you get to the power transformer, then run it to the type B terminal strip near the right shield, and connect the wire as shown in sketch 2204.

Now cut a 24 inch length of hook-up wire and connect one end to pin 7 of the 1625 socket. Solder at this point, making certain that the tab of C10 is securely soldered at the same time. Run this wire along with the wire which you just connected to pin 7 of the 6AG7 socket, and connect it to one of the terminals of the type B terminal strip as shown in sketch 2204.

7. Separate the 5 leads coming from the power transformer (Yellow, yellow, yellow and black, brown and brown). Cut to the proper length and connect one yellow lead to each of the outside terminals of the Type B terminal strip as shown in sketch 2204. Solder at both points. Connect the yellow and black lead to the center terminal of this terminal strip and solder. If the two wires are not of equal length, trim them to the same length as shown in sketch 2204. Solder at both points. Connect the other yellow and black lead to the center terminal of this terminal strip and solder.

Bend the two brown leads shown in sketch 2204 and connect one to pin 1 of the 5U4G socket. Solder. Connect the other brown wire to pin 2 on the 5U4G socket and also connect a piece of hook-up wire from this point to filter condenser C15. Solder at pin 2. Run a piece of hook-up wire from C15 along the back of the chassis to one lead of C10. Solder at both ends.

Separate the five (5) leads coming from the other portion of the power transformer (two red leads, one red and yellow lead and two black leads). The center-tap connection of the high-voltage secondary is the red-yellow lead. Cut this to length and fasten it to the insulated terminal on the Type D terminal strip as shown in sketch 2204. Next run the two red wires to the 5U4G socket, connecting one to pin 4 and the other to pin 6. Solder at both points.

10. Examine switch SW-1, which you have mounted previously. You will note that there are twelve terminals around that circumference, and a single terminal near the middle of the switch. The switch should be fastened to the panel so that this single terminal is pointing directly toward the nearest pair of crystal sockets. If this is not the case, rotate SW1 until this condition is satisfied. Since several types are used here a substitution may be made in your kit. Inspection will reveal the operation, however. Align switch and connections so knob will point to correct crystal in operation. ✓

Take a piece of #16 tinned wire and run it through all the crystal socket terminals on the right, referring to sketch 2204, and then without cutting the wire, bend it at right angles where it emerges from the crystal socket terminal closest to the rear of the chassis and connect this wire to ground lug. ✓

Using the same #16 tinned wire, do the rest of the wiring between the switch and the crystal sockets. Refer to the photograph for a picture of how this wiring should look. ✓

Locate the 18 inch piece of single-conductor shielded wire. With an icepick or similar tool, pierce the outer metal braid gently and unravel it for a distance of $3/4$ inch, then twist the braid into a solid lead, and solder it to the ground lug which is next to the VFO input jack J1, on the rear apron of the chassis. The inner conductor is soldered at the same time to the middle lug on this jack. Lay the wire along the chassis and bring it to terminal 9 of SW1. Cut to length. Unravel the braid for $1/2$ inch and cut it off. Wrap a piece of tape around the braid at this point. Strip the insulation from the inner conductor and solder to terminal #9 of SW1. ✓

11. Using #16 tinned wire, connect terminals #10 of SW1 with the terminal 4 of X1, 6AG7 oscillator tube socket, as shown in sketch 2204. Solder at terminal #10 only. ✓ Locate C1, and mount between pin 4 and 5 of 6AG7 socket. Solder. ✓ Locate C4 and connect it between pin 6 of the 6AG7 socket and the ground lug on the socket below pin 6. ✓

✓ Locate C2 and run it between pin 5 of the 6AG7 socket and the ground lug to which you just connected C4. Solder at the ground lug point. As before with the three-lead disc condensers, the two outer leads connect to the tube socket, and the middle lead connects to the ground lug. Total lead length should not exceed $3/8$ inch. ✓

Resistor R1 should now be connected from pin 4 of the 6AG7 socket to the ground lug below pin 2. Solder at both points.

Using #16 tinned wire, connect pins 1, 2 and 3 of the 6AG7 socket, and run this wire to the ground lug under pin 3. Solder at all four points. Connect RFC1 to pin 5 of the 6AG7 socket. Next, run a piece of hook-up wire from the other end of R3 to terminal A of SW3 (refer to sketch 2204). Solder at both ends. ✓

12. Connect C5 from pin 8 of the 6AG7 socket to pin 1 of the coil L1 socket. ✓ Run a piece of #16 tinned wire from pin 2 to pin 3 of this socket. ✓ Run a piece of hook-up wire from pin 8 of the 6AG7 socket to RFC2. ✓ Solder at all points except pin 2. ✓ Run a piece of #16 tinned wire from pin 2 of L1 socket to the rotor of C6. ✓ The rotor connection is the one which sticks out at an angle. ✓ Solder at the rotor end. Run another piece of the same wire to the stator connection of C6 from pin 1 of L1 socket. ✓ Use the stator connection nearest SW4. Solder at both ends. ✓

Locate C7, connect one wire to pin 3 of the L1 socket, and connect the other wire to the ground terminal. ✓ Solder at the ground terminal only. ✓ Locate R7. Connect one end to pin 3 of the L1 socket and solder at this point. Place a piece of spaghetti over the other lead of R7 and connect and solder to terminals B' of SW3. See sketch 2204. ✓

13. Using #16 tinned wire, run a lead from terminal B of SW3 to the unused terminal of the pilot assembly, and from there to the ground lug mounted on L1 socket. Solder at all three points. ✓

✓ Locate R6 and connect it between terminal C of SW3 and pin 6 of the 1625 socket. Solder at both ends. Locate the RF choke made with 25 turns of #26 wire and solder one end with a short lead to pin 4 of the 1625 socket. On the other end of this choke (RFC3) attach a piece of the #16 tinned wire and cover this length of wire with a piece of spaghetti and connect to the other stator connection of C6.

Connect any points not specifically mentioned and this completes all the under-chassis wiring.

14. Locate the small piece of metal shield braid referred to in the instruction 5 (last sentence) and tin both ends. Solder one end to the lug which is attached to the banana feed-thru insulator for L2. This is the insulator nearest the front center of the chassis, and the lug referred to is on the top of the chassis. Run a piece of #16 tinned wire from the jack of the right end of L3 to the center feed-thru insulator directly under L3. Now connect the other feed-thru insulator to the other jack with another piece of #16 tinned wire.

Locate R9. Take a length of #16 tinned wire and wind a coil with this wire on R9. The coil should have 10 turns and should be spaced the length of the resistor. Solder this coil to both ends of the resistor. Locate the plate cap for 1625 tube, and solder one end of the resistor, with a SHORT lead, to this plate cap. Now insert the 1625 tube in its socket, and place the plate cap on the tube. Measure the lead on the other end of the resistor so that you can connect it to the piece of shield braid, cut the lead to length and solder the resistor to the shield braid. Remove the tube.

With the exception of the coil winding, the wiring is now complete.

15. Refer to the resistance measurement Chart in the rear of this Instruction Book and make all indicated measurements. If the readings you get are not those indicated, check the wiring carefully until the difficulty is located. Double check the red pencil marks on your circuit diagram to make certain that all connections have been made. It will be necessary to temporarily run a wire from pins 1 to 2 of the L 1 coil socket, and a wire between the two L2 coil terminals in order to make the resistance measurements properly.

When you are certain that your TR-75TV is correctly wired, you may wish to cable together the wires under the chassis. Regular lacing twine, obtainable at your distributor, may be used.

..16. The final step before testing the transmitter is the coil winding job. Follow the instructions given in the coil-winding table.

Assuming that a TVD-62 Filter is not used, coils L4 and L5 may be wound from a single piece of wire, and a solder joint made in the wire.

The photograph shows clearly how this is done. Be certain that the two link coils(L4 and L5) are on the proper end of the coil form, as shown in the Low Pass Filter and Coil Sketch at the rear of the book. Sufficient material is included so that a set of coils may be wound for anyone band.

TESTING AND OPERA TING

Plug the three coils into their respective sockets, and plug in the tubes. If the knobs have not been put on, do that at this time. Place a crystal in one of the crystal sockets, and make certain that the crystal is in the position which connects this crystal into the circuit. If a grid-dip oscillator is available, it is wise to check the resonant frequency of the three coils.

Connect TS3 and TS4 together. Connect a key between ground (TS5) and either TS3 or TS4. Make sure that no external jumper exists between TS1 and TS2. Check to make sure that switches SW2 and SW4 are

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open. Plug the A. C. line into a source of 115 volts 60 cycle power. Turn on the filament switch and allow 45 seconds for the tubes to heat. Turn switch SW3 counter-clockwise so that the meter is connected to terminals A and A'; in which position the meter reads oscillator cathode current.

Turn on switch SW4, which applies plate voltage. Press the key, and the meter should read upscale. Full scale reading in this range is 60 ma. While the key is pressed, adjust C6 until current is a minimum. This will be about 20 ma. If the plate circuit of the 6AG7 is tuned to a harmonic of the crystal frequency, the current will rise evenly on each side of resonance. If the circuit is tuned to the crystal fundamental frequency, then the current will jump suddenly to a high value when C6 is tuned to the highest capacitance side of resonance. This condenser should be set to the low-capacity side of resonance

To insure reliable output of the crystal during keying, place the meter switch in position B to read grid current to the 1625 tube. Press the key to make sure that grid current is present. This may be as high as 10 ma. but should be detuned to about 5 ma. for best results. Go no further until at least 3-5 ma is obtained.

Now remove the a. c. cord from the socket and turn the plate and filament switches off. Place a jumper between TS1 and TS2. This will now allow plate and screen voltage to be fed to the final. Place a dummy load on antenna terminals. A 60 watt light bulb may be used for this dummy load. Connect the antenna terminal with coil L3 as shown in sketch 2203.

Place the bottom cover on the transmitter. Plug the a. c. line into the power plug. Turn on SW2, wait 45 seconds, then turn SW3 so the meter is in position C, where it reads final cathode current. Turn on switch SW4. Press the key and quickly tune C12 for minimum current as read by the meter. Full-scale reading on this range is 150 ma. The actual current read may be anything from 30 to 100 ma at this time. Now load the transmitter properly by tuning C13, then retuning C12 quickly for minimum current. Repeat this process until the meter reads about 100 or 110 ma. If you are unable to get this much current, tap the dummy load down on the coil L3. Move each coil clip one turn closer to or further from the center of coil. Whenever these taps are adjusted they should be an equal distance from center of coil for balanced output. At some point on the coil you should find the proper point so that the transmitter can be loaded fully. For 160 meter operation a 60 watt lamp will load properly when tapped as shown in sketch 2203.

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Once these preliminary testing steps have been taken, the dummy load can be removed and the coil tap and ground should be connected to the antenna posts. After all adjustments have been made, place the top cover on the transmitter and you are ready to operate.

OPERATING SUGGESTIONS

For safety sake, never remove the cover or the bottom plate W, when the a. c. line is connected to a power source. If you must have the transmitter on when the top cover or the bottom plate is removed, use the utmost caution. Never attempt to change coils when power is on.

Whenever you change bands, check your signal with a monitor before going on the air. This ensures that your note is clean and that you are on a correct frequency.

Do not worry too much about squeezing the last watt out of the transmitter. A power reduction of 50 percent means only a 3 db. reduction in transmitted signal strength, and this change will be hardly noticed by the amateur you are working. Operate your equipment conservatively and it will give you long and faithful service.

TR-75TV TRANSMITTER

Coil Winding data

Unless otherwise specified, all L1 coils are wound with 41=20

enamel wire on the 1-5/16 diameter coil forms and all L2 and L3 " coils are wound with 41= 16 tinned wire on the large ceramic coil forms. All L4 and L5 coils are wound with six turns hook-up wire. 160 meter coils are the exception.

When winding L2 and L3 coils, it will sometimes be necessary to use the strip on top of coils for making spacing on coil forms and for making taps. When strip or extra condenser is needed, it will be so indicated below.

1.75 Mc (160 Meters)

L1 90 turns #24 enamel plus 25 mmfd fixed mica condenser placed inside of coil.

L2 72 turns #20 enamel and 25 mmfd condenser placed under coil between plug connections. L3 As L2 but less fixed condenser and with strip.

3.5 Mc (80 Meters)

L1 45 turns - :tJ ?0 £rla#)~ / '~ L2 36 turns with 25 mmfd as in 160 meter L2 L3 36 turns with strip

7 Mc (40 Meters)

.1 ~" ;|xl>r/'Yl L1 30 turns # ~" ena...mg/£q ()11 l 'l" O.c .;

L2 & L3 18 turns with strip # /l,. '7'i""n ne:.j w; r!.. 14 Mc (20 meters) L1 10 turns

L2 & L3 8 turns with strip

21 -28 Mc (15-10 meters) L1 10 turns #7'&1 ~;.1a.,'11 e:.../E4

L2 & L3 5 turns -#/'" 77/?ne:d

~ mil\1

TR-75TV TRANSMITTER

Coil Winding data

Unless otherwise specified, all L1 coils are wound with #20 enamel wire on the 1-5/16 diameter coil forms and all L2 and L3 coils are wound with #16 tinned wire on the large ceramic coil forms. All L4 and L5 coils are wound with six turns hook-up wire. 160 meter coils are the exception.

When winding L2 and L3 coils, it will sometimes be necessary to use the strip on top of coils for making spacing on coil forms and for making taps. When strip or extra condenser is needed, it will be so indicated below.

1.75 Mc (160 Meters) L1 90 turns #24 enamel plus 25 mmfd fixed mica condenser placed inside of coil.

L2 72 turns #20 enamel and 25 mmfd condenser placed under coil between plug connections. L3 As L2 but less fixed condenser and with strip.

3.5 Mc (80 Meters)

L1 45 turns #20 enamel L2 36 turns with 25 mmfd as in 160 meter L2 L3 36 turns with strip

7 Mc (40 Meters)

L1 30 turns #20 enamel L2 18 turns with strip L3 18 turns with strip

14 Mc (20 meters) L1 10 turns L2 & L3 18 turns with strip #16 tinned wire

L2 & L3 8 turns with strip

21-28 Mc (15-10 meters) L1 10 turns #16 tinned wire L2 & L3 5 turns #16 tinned wire

L2 & L3 5 turns #16 tinned wire

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