

CODE PRACTICE OSCILLATOR

MODEL

706

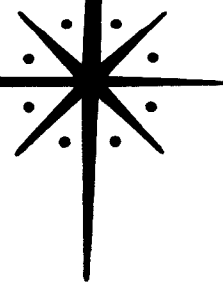


EICO

INSTRUCTION

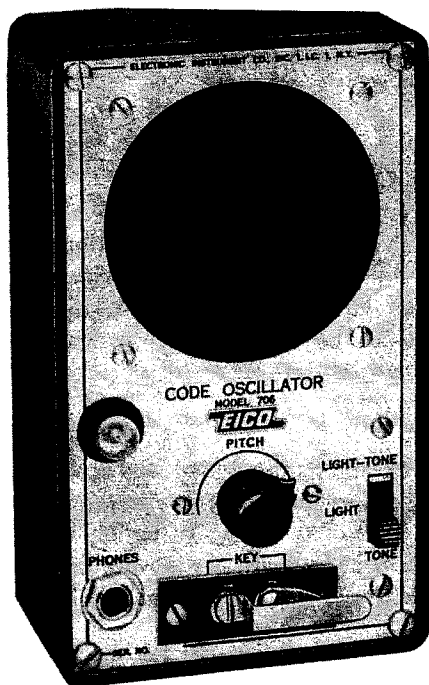
MANUAL

706-1



ELECTRONIC INSTRUMENT CO. INC.
3300 NORTHERN BLVD., L. I. CITY 1, N. Y.





MODEL 706

CODE PRACTICE

OSCILLATOR

general description

The Model 706 Code Practice Oscillator is a valuable aid in the study and practice of Morse code, so important to novice radio amateurs, Boy Scouts, and others interested in radio communication. As a kit, there is additional value in the skill and knowledge developed in the construction, and it offers the novice a chance to become acquainted with transistor circuitry.

The Model 706 is basically a battery-operated transistor audio oscillator, tunable over the range from 500 to 2000 cycles by the pitch control on the panel. An efficient loudspeaker is built in. If desired, a headset may be plugged into the phone jack on the panel, which automatically cuts out the loudspeaker.

A convenient flashing light on the panel can also be used for signaling after dark, when the flashing light can be seen for great distances. A panel switch selects tone alone, light alone, or both tone and light.

External key terminals are provided on the front panel. A formed metal spring and a #6 solder lug are included to serve as a temporary key if a real key is not immediately available.

The Model 706 surpasses other units in offering a pitch control, a phone jack, an outstandingly efficient 3" speaker, and a life-time deep-etched satin aluminum panel. Furthermore, its ruggedness and simplicity assure many years of trouble-free service.

specifications

Tone Frequency Range: Approx. 500 to 2000 cps. continuously variable.

Controls: Pitch, Tone and/or Light.

Current Drain (Tone): 40ma at 3VDC

Current Drain (Light): 300ma at 3VDC

Current Drain (Tone and Light): 340ma at 3VDC

Terminals: Key, Phones

Case: High-impact bakelite

Panel: Satin Finish, deep-etched aluminum

Size: 6 1/2" high, 3 3/4" wide, 2 3/4" deep

Shipping Weight: 2 lbs.

circuit description

The transistor Q1 is a PNP used in the common emitter configuration. The oscillator is basically a Hartley type with the tank circuit comprised of C2 and T1. The tone frequency is controlled by the RC time constant of coupling capacitor C1 and the series combination of resistor R1 and rheostat R2. The tapping of the T1 primary is for the purpose of providing feedback to start and sustain oscillation. T1 is also the output transformer matching the high output impedance of the transistor to the low impedance of the speaker voice coil. The switch S1 applies battery power to either the oscillator circuit alone, the lamp alone, or both together. The only power required is supplied by two size "C" batteries providing 3 volts.

APPLICATIONS

USE AS A KEYING MONITOR

Some people will find use for the Code Practice Oscillator as a keying monitor, since they find it difficult to send code legibly without some way of hearing it. A double

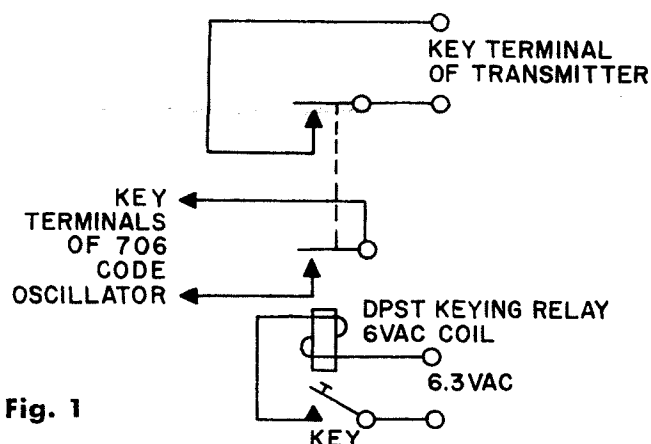


Fig. 1

pole, single throw keying relay (Advance GHA/2C/6VA or equivalent) is required for this application and the hook-up is shown in Figure 1 above.

KEYING TECHNIQUE

A proper "straight" key of the conventional type is essential to the study of keying, as otherwise your technique will not develop properly. Such a key is depicted in Fig. 2 below. The contact spacing should be adjusted to about one-eightieth of an inch (about the thickness of a calling card).

The surface on which the key is placed must be large enough for you to get your forearm and elbow on it in a relaxed position in front of the key. If the key is not weighted, it will have to be fastened to the working surface to prevent it from "traveling" as you operate it.

Before sending, your hand and arm should form a gentle arch with the wrist at the highest point and your thumb, forefinger and index finger resting lightly on the knob. Sending is accomplished by downward wrist action transferred to the hand, which is opposed by the spring tension of the key. The spring tension should be set for free and effortless operation.

MORSE CODE

Morse Code is a sound code. The code characters are read phonetically — "dit" for a dot, "dah" for a dash. A dot-dash sequence (the letter A) is read "didah", dropping the "t" because it is phonetically unnecessary. Characters should be studied a few at a time in the "didah" language until the sound of each is instantly recognized. If you find that you are weak on certain characters, study these additionally until you recognize them with as little trouble as the others. If possible, have a person with good technique "send" to you with the code practice oscillator to help you build up facility. The time between letters can be longer at the beginning and shortened bit by bit as you gain facility at recognizing the sound for each letter.

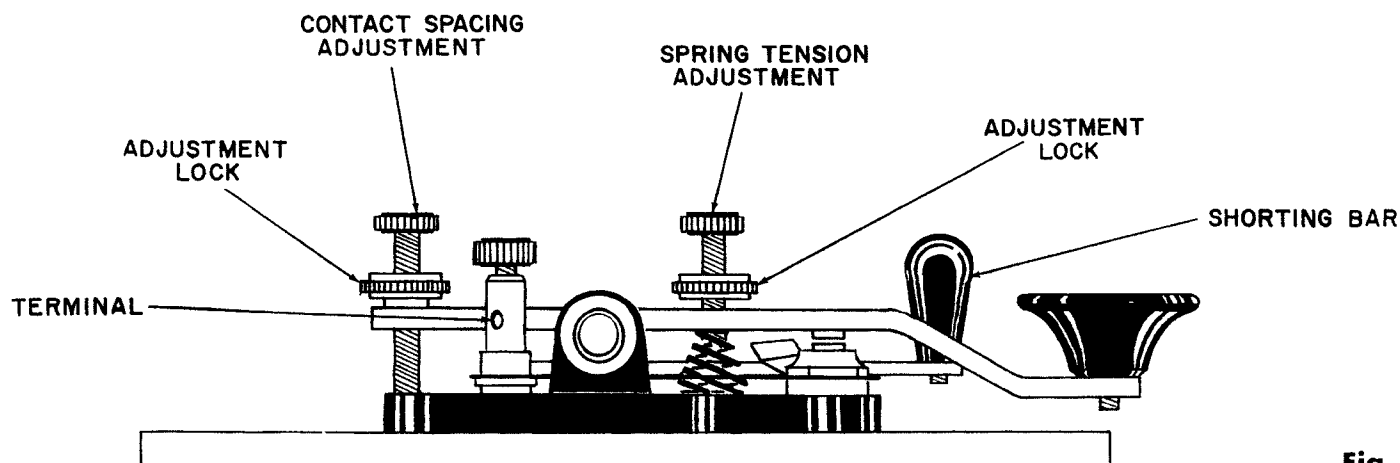


Fig. 2

GENERAL INSTRUCTIONS

The EICO kit you are about to assemble and wire has been designed to meet the highest standards of performance. It is a high quality instrument, to be constructed from the finest components available anywhere.

The following Construction Manual has been written to carefully guide you through the construction of your kit. If you follow all the instructions implicitly and work carefully without haste, you will be rewarded with many years of fine performance from this instrument and a personal inner satisfaction from a job well done.

Your Construction Book: Beginning with the number on this page, and throughout the rest of your Construction Manual, the page numbers are followed by a "C" (1C, 2C, etc.). The Instruction Manual, detailing the installation, operation and maintenance of your instrument, are identified by numerals only, without any letters following these numerals.

Observe that the Instruction Manual section precedes this page and follows the last page of your Construction Book section. After you are certain that you have successfully completed the wiring of your kit, you no longer need the Construction Book. You may remove these centrally located Construction pages, leaving the Instruction section intact for future reference. Keep the Instruction Manual for information as to the installation and operation, as well as for any maintenance that may be necessary in the future, on your amplifier.

Choosing a Workbench and Tools: To avoid the accidental loss or misplacement of components, choose a convenient workbench before unpacking your new kit. You will find it most advantageous to choose a corner on a table that will not be used for any other purpose until you have completed the construction of your kit. Proper precautions should be observed to prevent damage to any table top from a soldering iron or any heavy tools.

When you check the component parts against the Parts List later on, it will be convenient to separate the various pieces into types of components and hardware sizes. It will be convenient to keep these sorted pieces separated in the compartments of specially made trays. Small cartons, egg trays or a refrigerator ice tray with dividers serve equally well.

Several basic tools are required to constructing this kit. They are:

1. Screwdriver - 3/16" to 1/4" blade
2. Screwdriver - 1/8" blade
3. Longnose pliers - 5" or 6"
4. Diagonal wire cutters
5. Soldering iron (100 watts), solder gun or pencil iron (35 watts).
6. High Quality rosin core radio solder. DO NOT use Acid Core solder or paste fluxes under any circumstances.

The following tools are useful, but are not absolutely necessary to construct this kit:

1. Socket wrench set.
2. Open end wrench set.
3. Wire stripper

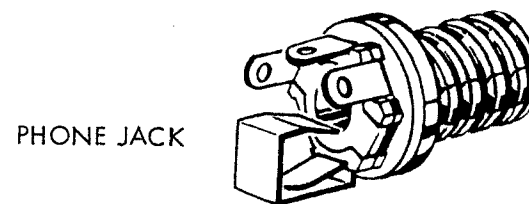
Unpacking the Kit: This procedure serves two purposes. First, it lets you get acquainted with the various types of components. Second, you check to ascertain if you received all the parts required to build the kit. This is your opportunity to have any packing errors corrected.

When unpacking, handle all parts carefully so that you will not damage any fragile components. Do not throw any packing material away until after having checked all components. Check each part off against the "Parts List" which you will find in your Instruction Book. Check the packing for any small parts.

From time to time, due to modernization or possible error, corrections may be necessary to your Parts List. If there are any changes to be made, they will be listed on the loose "addenda sheets" included with this book. Make these corrections, if any, before checking your components. If no corrections to your Parts List are noted on the addenda sheets, or there are no addenda sheets, assume your Parts List is correct, and commence to check all components against this list.

To enable rapid identification of electronic parts, each part has been assigned one or two letters of the alphabet called a reference designation. These reference designations are nothing more than an initial letter or two representing the name of the part. For example, a transistor has been assigned the reference designation letter Q, and a transformer the letter T. Thus, if you have one transistor and one transformer in your kit, these parts would be identified by the designations Q1 and T1, respectively.

The reference designation assigned to the receptacle (often referred to as jack) is the letter J. The jack used in this kit has been assigned the symbol J1



PHONE JACK

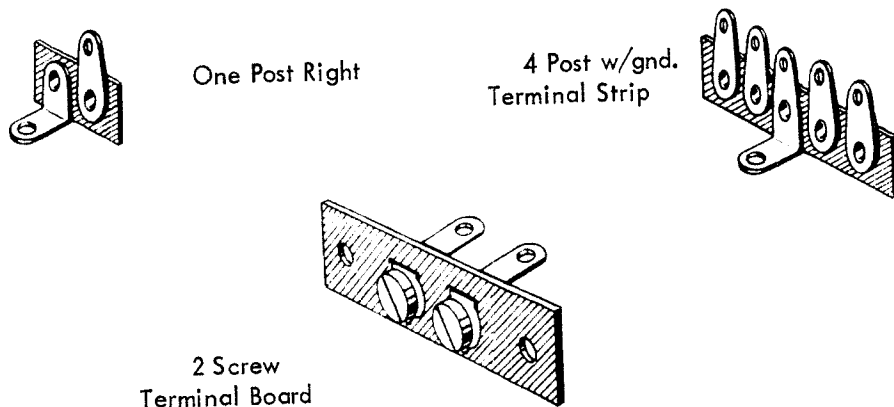
Capacitors have symbol numbers starting with a C.

Two capacitors are included in this kit. C1 is a 2.2mfd capacitor and C2 is a .47mfd capacitor. Both are flat disc capacitors with the values marked on each.

The resistor is denoted by the symbol R1.

Some resistors have their resistance value stamped on the surface of the resistor body. However, other fixed resistors are coded with color marking which indicate their value. The actual color code of the resistor is noted in the book, the actual resistor value may be stamped on the body, rather than the color code.

The various types of terminal strips are assigned the designation letters TB. The types used in this kit are illustrated and denoted in this figure.

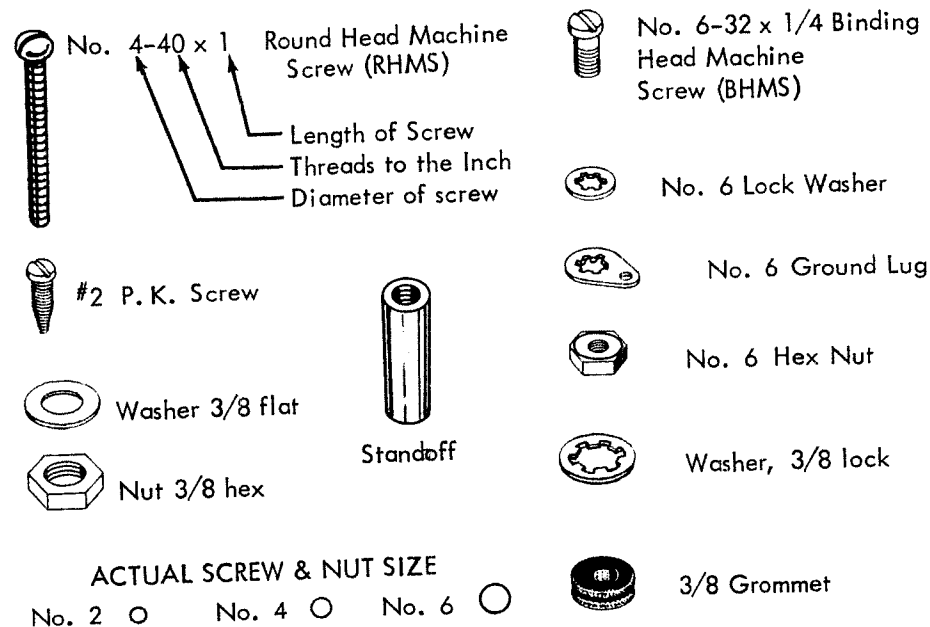


Transistor sockets are shown with the solder lugs up. The pins are numbered as shown in the drawing. Thus "XQ1-1" refers to the socket of transistor "Q1". The "-1" indicates pin "1" on this socket XQ1.

The socket has 4 holes. The three holes towards the outer pin of the socket are the only ones used for holding the transistor. The transistor leads should first be cut to 1/4". Insert the three leads into the pins in the socket which are equivalent to the wire leads on the transistor. Note that if the transistor is turned the wrong way the three leads will not fit easily into the three corresponding pins in the socket. Insert the transistor only so far down so that all three pins hold the three leads on the transistor firmly so that the transistor cannot fall out of the socket.

Hardware is a general term for mechanical parts used in the assembly of EICO kits. Such items are usually screws, nuts and washers. Machine screws are sized in accordance with the diameters of the threaded portion (#4, #6, #8, #10) with the smaller number denoting the smaller diameter. The second number indicates the number of threads to an inch. Thus, a #6-32 screw has a #6 diameter with 32 threads per inch. The final number indicates the length of the threaded portion. A #6-32 x 3/8 has a 3/8" long threaded portion. The diameters are shown in the figure.

HARDWARE ITEMS



The figure also shows the various head types in which these screws are supplied. Use the type specified in the particular step.

Washers and nuts are sized in accordance with the diameter of the screws they are used with.

Various types of washers are supplied. A lockwasher has internal or external teeth. A flat washer is made out of thin metal.

Grommets are rubber devices used for insulating wire from the metal chassis.

Most of the other component parts used with the kit are self evident and require little further explanation or description.

If after having checked all your components against the parts list, you find a shortage, please write us at

Customer Service

Electronic Instrument Co., Inc.

33-00 Northern Blvd.

Long Island City 1, N.Y.

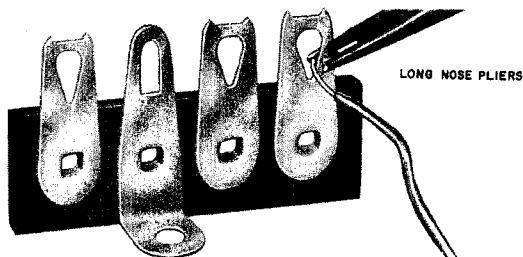
Include the inspection slip with your letter describing the shortage. If there is any slight hardware shortage, you can expedite matters by purchasing these pieces at your local jobber or hardware store.

Soldering Techniques: To get a good, clean connection, use the soldering techniques described below. USE THE BEST GRADE OF ROSIN CORE RADIO SOLDER ONLY. UNDER NO CIRCUMSTANCES SHOULD ACID CORE SOLDER OR FLUX BE USED. The use of acid core solder or paste fluxes can cause serious corrosion and will void all the repair and service guarantees.

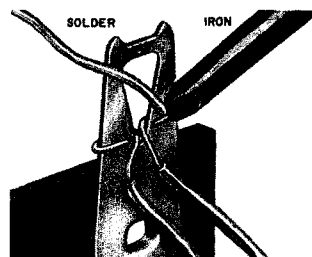
The soldering and wiring techniques described below should be practiced several times by the novice before he attempts to wire or solder components in the actual kit. Practice several connections with a spare piece of wire and a socket or terminal strip you can purchase at your local jobber.

First make a good mechanical connection. Remove 1/4" of insulation from the end of the wire. Feed the wire through the solder lug opening so that the wire insulation just touches the lug. With the long-nose pliers, bend the wire lead around the lug and crimp the wire lead to the lug. Now solder this wire. Place the tip of the hot soldering iron on the lug or terminal at a point close to the wire being soldered. Apply the solder to the junction of the lug, wire and soldering iron. When the lug and wire have been heated to the correct temperature, the solder will flow into and over the joint. Remove the iron when the solder starts to flow and remove the solder immediately after. Use only enough solder to cover the wire at the connection point.

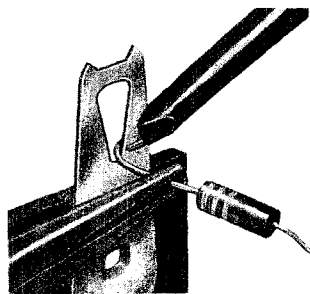
3C



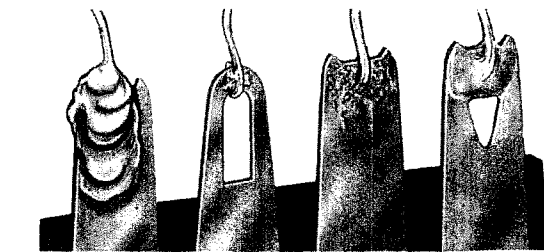
A. CRIMP LEAD TO TERMINAL FOR GOOD CONNECTION



B. APPLY SOLDER TO LUG, WIRE AND IRON



C. USE CLIPS TO CONDUCT HEAT AWAY



TOO MUCH SOLDER TOO LITTLE SOLDER COLD JOINT GOOD CONNECTION

A poor solder connection is obvious by its appearance. A grainy or pitted joint is a poor connection due to insufficient heat. Blobs of solder on the wire or solder lug is also due to insufficient heat. Solder should flow as a result of

the heated lug and wire. Do not solder by applying solder to the iron tip and then wiping the hot solder onto the joint. A well soldered joint is indicated by a smooth bright finish on the soldered connection.

Construction Hints: The various lengths of wire to be used in the kit are specified in the construction steps. After cutting the wire to the length specified, strip the insulation off 1/4" from each end. The exposed wire will be used to make the actual connection to the solder lug.

Components, such as resistors, capacitors, transformers, etc., may have longer leads than specified. Cut the leads to the length indicated in the particular construction step. This length is to be measured from the body of the component. In the case of insulated leads, strip 1/4" of insulation off from the ends and twist the strands (if any) of the wire together.

As an example, one step may specify that each lead on a resistor be cut to 1/2". 1/4" of each lead is used to make a mechanical connection to the solder lug. The other 1/4" is between the socket and the component so that the component will not be overheated when soldering.

When a connection is indicated, a (C) or an (S) will appear next to the lug involved. The (C) indicates that the connection should be made mechanically but is not to be soldered yet, since other leads are to be connected to this same lug. The (S) indicates that the connection should be made and soldered immediately. However, the (S) is always followed by a number, such as (S1), (S2), (S3), etc. This number indicates the number of connections made to the lug. It is a check on the accuracy of your work.

As an example, if it says (S3), you should count three leads going to the lug to be soldered. If there are less than three leads at this particular lug, you will know that you have forgotten one or more leads, or connected them to the wrong lugs. If there are more than three leads, you can be certain you have connected an extra wire to this lug, which should probably go elsewhere.

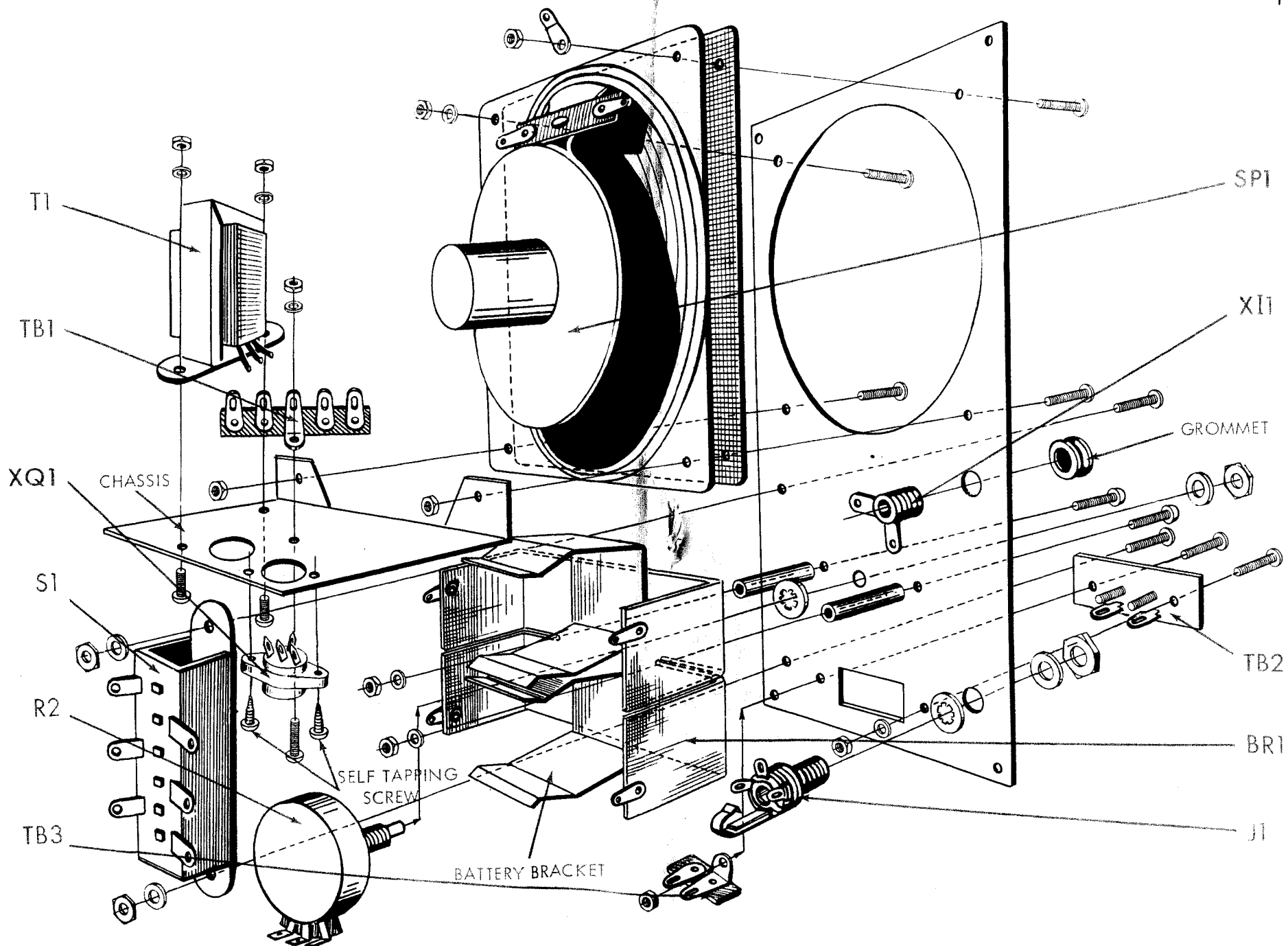
When you assemble the components in your unit, mark the symbol number of each socket and terminal strip near the part with a crayon. This will facilitate your wiring operation.

When wiring, lay the component in, close to the chassis, dressed as shown in the drawing. Be careful to avoid shorts at the lugs. The book is written so that the wiring closest to the chassis usually gets wired in first. The next layer of wires are to be soldered in next. In each case, dress the leads and components as close to the chassis as possible.

Next to each step number you will find a parenthesis (). After you have completed each step, make a check mark in the parenthesis so that you will have a record of your work. Follow the steps in the sequence written in the book. Do not skip steps or pages.

If any addendas are included in your book to modernize your instrument or make corrections or part substitutions, be sure to correct the Construction Book first before you start to wire or assemble your kit.

4C



PANEL MOUNTING

- 5C
- () 1. Fig. 1. Mount the speaker SP1 as shown. Place the speaker grill screen between the speaker and the panel. Mount the chassis directly behind the speaker. Use four 6-32 x 3/8 screws, one #6 ground lug, three #6 lockwashers and four #6-32 hex nuts.
 - () 2. Fig. 1. On the chassis, mount socket XQ1. Use two #2 P. K. self-tapping screws.
 - () 3. Fig. 1. Mount four post terminal strip with ground (TB1) using one #6-32 x 1/4 screw, one #6 lockwasher and one #6-32 hex nut.
 - () 4. Fig. 1. Mount transformer T1 with the three leads towards the speaker. Use two #4-40 x 1/4 screws, two #4 lockwashers and two #4-40 hex nuts.
 - () 5. Fig. 1. Mount switch S1 as shown using two #4-40 x 1/4 screws, two #4 lockwashers and two #4-40 hex nuts. Note that the slider will be able

to move through the three positions only if the switch is mounted properly. If the slider does not move through three positions, reverse the mounting of the switch.

- () 6. Fig. 1. Insert jack J1 in panel as shown using one 3/8 lockwasher, one 3/8 flat washer and one 3/8 hex nut.
- () 7. Fig. 1. Insert 3/8 rubber grommet as shown.
- () 8. Fig. 1. Push bulb socket X11 into rubber grommet until socket is flush with front side of grommet. Moisten grommet to ease insertion of socket.
- () 9. Fig. 1. Mount the screw terminal board TB2, as shown. Use two #4-40 screws, two #4 lockwashers and two #4-40 hex nuts. Under one hex nut (near lug 1) on TB2 mount TB3, as shown.
- () 10. Fig. 1. Mount the 1K pot. R2, as shown. Use one 3/8 lockwasher inside the panel and one 3/8 flat washer and 3/8 nut on the outside of the panel.

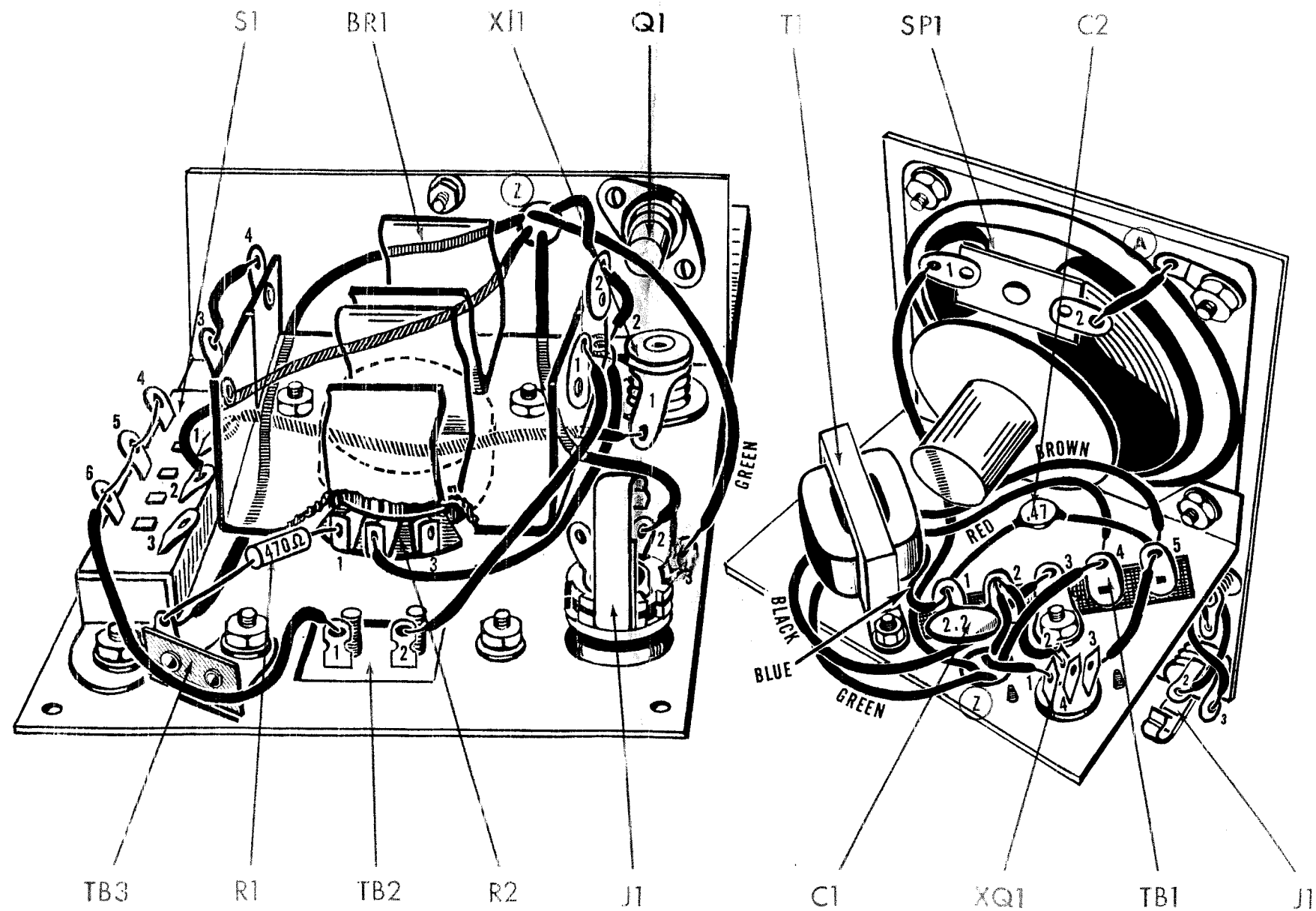


Fig. 2

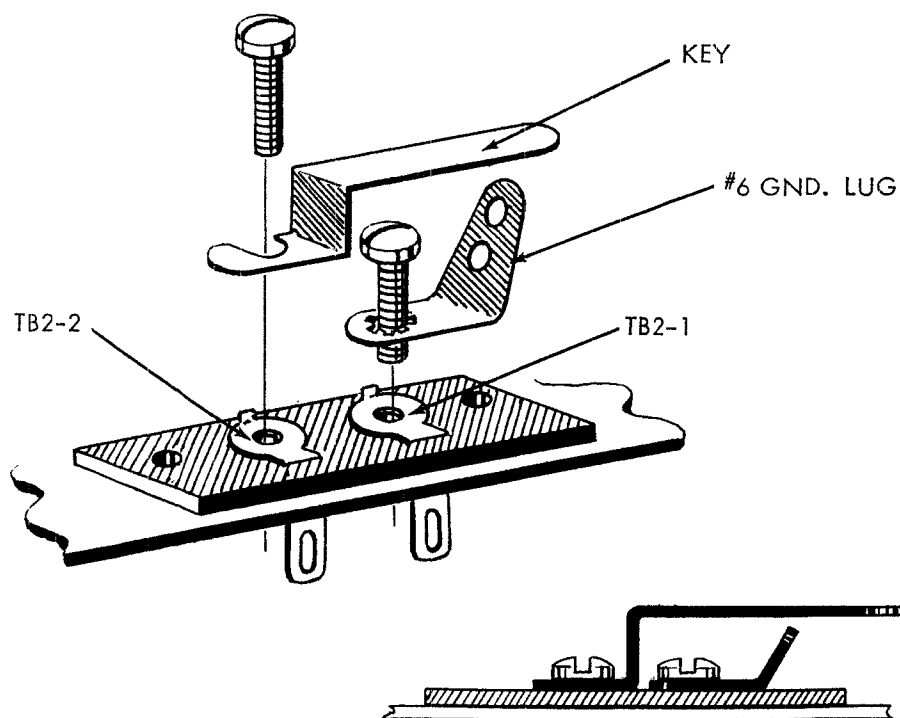
WIRING

- () 1. Fig. 2. Connect the blue lead from transformer T1 to TB1-1 (C), the red lead to TB1-4 (C), the brown lead to TB1-5 (C) and the black lead to TB1-3 (S1). Push the green lead through hole Z in chassis and solder to J1-3 (S1).
- () 2. Fig. 2. Cut both leads on the 2.2mfd 3 volt disc capacitor, C1, to 1/2". Connect one end to TB1-1 (C) and the other end to TB1-2 (C).
- () 3. Fig. 2. Cut a piece of wire to 6" and strip back 1/4" on each end. Connect one end to TB1-2 (C). Push the other end through hole Z and connect to TB3 (C).
- () 4. Fig. 2. Cut a piece of wire to 1 1/2" and strip back 1/4" on each end. Connect one end to TB1-2 (S3) and the other end to XQ1-2 (S1).
- () 5. Fig. 2. Cut a piece of wire to 3" and strip back 1/4" on each end. Connect one end to TB1-4 (S2). Push the other end through hole Z but do not connect yet.
- () 6. Fig. 2. Cut a piece of wire to 1 1/2" and strip back 1/4" on each end. Connect one end to TB1-5 (C) and the other end to XQ1-3 (S1).
- () 7. Fig. 2. Cut both leads on the .47mfd 3 volt capacitor, C2, to 1 1/4". Cover both leads with a 1" piece of insulation (spaghetti). Connect one end to TB1-1 (S3) and the other end to TB1-5 (S3).
- () 8. Fig. 2. Cut a piece of wire to 5 1/2" and strip back 1/4" on each end. Connect one end to XQ1-1 (S1) and pass the other end thru hole Z to S1-2 (S1). Dress wire close to panel.
- () 9. Fig. 2. Cut both leads from the 470Ω resistor R1 (yellow, violet, brown, silver), to 3/4". Connect one end to R2-1 (S1) and the other end to TB3 (S2).
- () 10. Fig. 2. Cut a piece of wire to 3" and strip back 1/4" on each end. Connect one end to X11-2 (C) and the other end to R2-2 (S1).
- () 11. Fig. 2. Cut a piece of wire to 2" and strip back 1/4" on each end. Connect one end to X11-2 (S2) but do not connect the other end yet.
- () 12. Fig. 2. Cut a piece of wire to 4" and strip back 1/4" on both ends. Connect one end to X11-1 (S1) and the other end to S1-1 (S1).
- () 13. Fig. 2. Connect a 1" piece of wire from speaker SP1-2 (S1) to
- () 14. Fig. 2. Cut a piece of wire to 8" and strip back 1/4" on each end. Connect one end to J1-2 (S1). Push the other end through hole Z and connect to SP1-1 (S1).
- () 15. Fig. 2. Cut a piece of wire to 3 1/2". Strip back one end to 1" and the other to 1/4". Connect the stripped 1" end through S1-4 (S1), S1-5 (S1), S1-6 (S1). Connect the other end to TB2-1 (S1).
- () 16. Fig. 2. Mount the battery bracket, BR1 as shown in Fig. 1. Use two standoff, two 4-40 x 1" round head screws, two #4 lockwashers and two #4-40 hex nuts.
- () 17. Fig. 2. Cut a piece of wire to 1 1/2" and strip back 1/4" on each end. Connect one end to BR1-3 (S1) and the other end to BR1-4 (S1).
- () 18. Fig. 2. One end of a wire was previously connected to X11-2. Connect the loose end to BR1-2 (C).
- () 19. Fig. 2. One end of a wire was previously connected to TB1-4 and thru hole Z. Connect the loose end to BR1-2 (S2).
- () 20. Fig. 2. Cut a piece of wire to 3". Strip back 1/4" on both ends. Connect one end to TB2-2 (S1) and the other end to BR1-1 (S1).

FINAL ASSEMBLY

() 1. Cut the leads on the transistor to $5/16$ " long. Straighten the leads carefully so that they are perpendicular to the body of the transistor. Note that the transistor has three leads. The socket has four lugs. Only three of these four lugs are to be used. Only the outer holes are used disregarding the center hole in the socket. The leads of the transistor line up with the three outer holes. Insert the transistor into the socket applying a slight pressure until it fits properly.

() 2. Screw #14 bulb into socket XII.

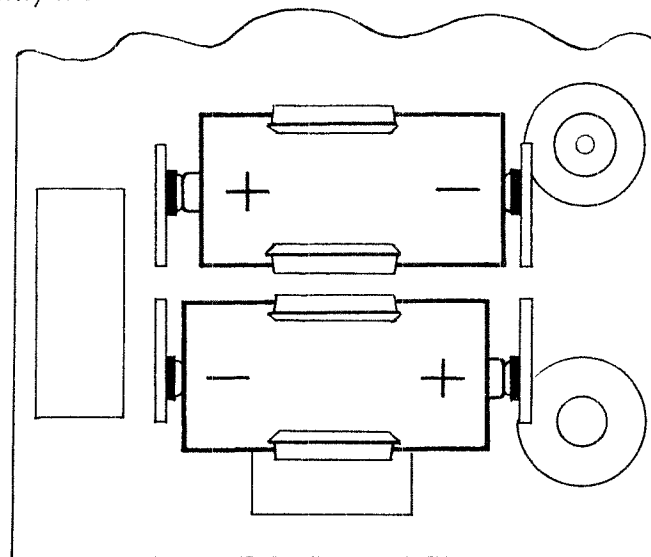


() 3. Remove screw from TB2-1 and insert a #6 ground lug. Replace screw and tighten.

() 4. Loosen screw from TB2-2 and insert key spring. If the spring shorts to the ground lug, bend key spring up.

() 5. Turn the PITCH control to its maximum counter-clockwise position. Place the knob on the shaft so that the indicator on the knob points to the "O" in the words "SER. NO.". Tighten the set screw in the knob.

() 6. Insert batteries into holder as shown making certain that the right polarity is used.



() 7. Mount the unit into case and use four 6-32 x $1/4$ screws to tighten.

SERVICE

If you are still having difficulty, write to our service department listing all possible indications that might be helpful. Note the code number appearing in red under the word "Manual" on the front cover. If there is no number, state this. If desired, you may return the instrument to our factory where it will be placed in operating condition for \$2.00 plus the cost of parts replaced due to their being damaged in the course of construction. This service policy applies only to completed instruments constructed in accordance with the instructions as stated in the manual. Instruments that are not completed or instruments that are modified will not be accepted for repair. Instruments that show evidence of acid core solder or paste fluxes will be returned not repaired.

NOTE: Before returning this unit, be sure all parts are securely mounted. Attach a tag to the instrument, giving your home address and the trouble with the unit. Pack very carefully in a rugged container, using sufficient packing material (cotton, shredded newspaper, or excelsior), to make the unit completely immovable within the container. The original shipping carton is satisfactory, providing the original inserts are used or sufficient packing material is inserted to keep the instrument immovable. Ship by prepaid Railway Express, if possible, to the Electronic Instrument Co., Inc., 33-00 Northern Blvd., L.I.C. 1, New York. Return shipment will be made by express collect. Note that the carrier cannot be held liable for damages in transit if packing, IN HIS OPINION, is insufficient.

THE INTERNATIONAL MORSE CODE

A	didah	P	didahdahdit	5	dididididit
B	dahdididit	Q	dahdahdidah	6	dahdidididit
C	dahdidahdit	R	didahdit	7	dahdahdididit
D	dahdidit	S	dididit	8	dahdahdahdidit
E	dit	T	dah	9	dahdahdahdahdit
F	didahdit	U	dididah	Ø	dahdahdahdahdah*
G	dahdahdit	V	didididah	Period	didahdidahdidah
H	didididit	W	didahdah	Comma	dahdahdidahdah
I	didit	X	dahdididah	Question Mark	didahdahdidit
J	didahdahdah	Y	dahdidahdah	Error	dididididididit
K	dahdidah	Z	dahdahdidit	Double dash (BT)	dahdidididah
L	didahdidit	1	didahdahdahdah	Wait (AS)	didahdididit
M	dahdah	2	dididahdahdah	End of message	didahdahdit
N	dahdit	3	didididahdah	Invitation to transmit	dahdidah
O	dahdahdah	4	dididididah	End of work (SK)	didididahdidah

* The numeral zero is usually written Ø to distinguish it from the capital O.

maintenance

There should be little in the way of maintenance required, except for normal replacement of the batteries. Weak batteries will be indicated by a dimming of the panel lamp and weak or no tone. The batteries used are standard "C" cells available everywhere. In case of breakage or burn-out of the lamp, replace it with a #14 (2.5 volts at 0.3 ampere). Do not leave dead batteries in the unit as they often will leak a corrosive acid damaging to the components.

TROUBLE SHOOTING CHART

Defect: No Tone, bulb lights.

- Check:
1. Polarity of batteries.
 2. Wiring on slide switch S1.
 3. Open speaker on transformer.
 4. Phone jack open.
 5. Open resistor R1.

Defect: No light.

- Check:
1. Bulb
 2. Wiring on slide switch S1.

Defect: No variable pitch.

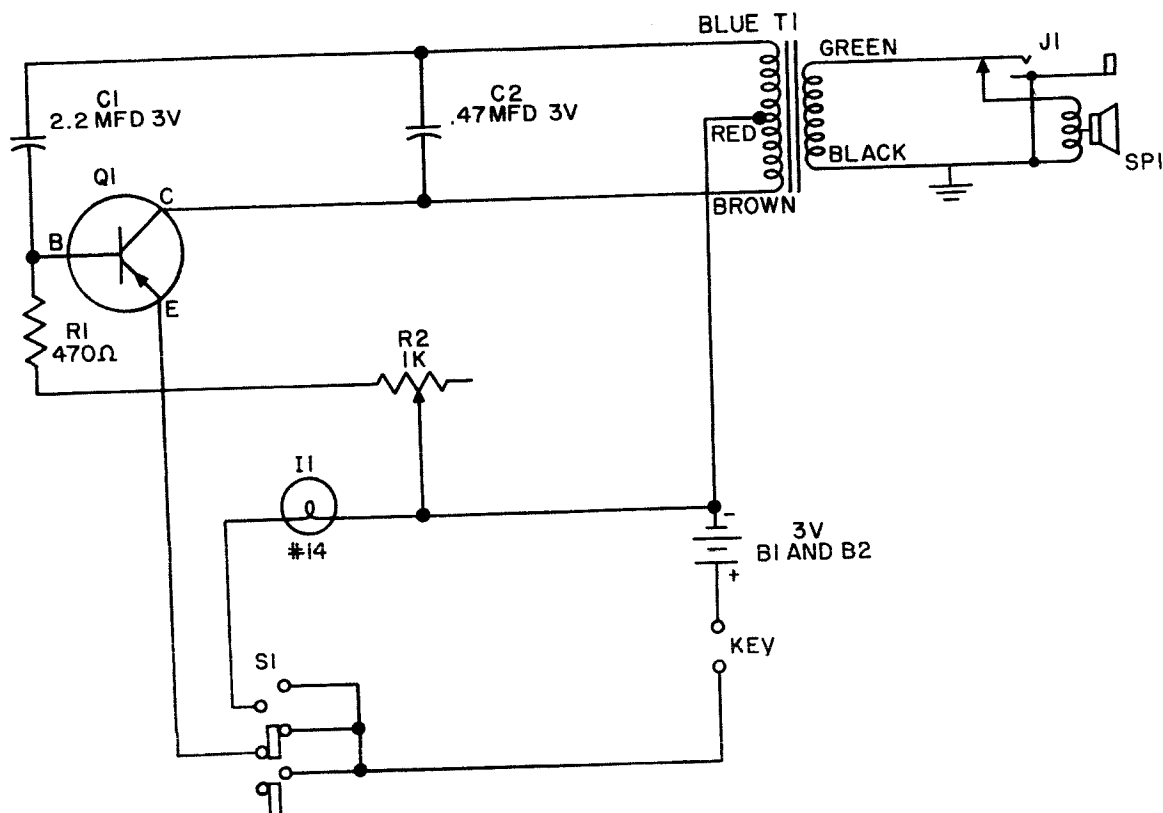
- Check:
1. Wiring on potentiometer R2.

Defect: No tone in light-tone position.

- Check:
1. Correct position of slide switch S1 on panel.
 2. Wiring on slide switch S1.

SERVICE

If trouble develops in your instrument which you can not remedy yourself, write to our service department listing all possible indications that might be helpful. Note number appearing in red under the word "Manual" on the front cover. If there is no number, state this. If desired, you may return the instrument to our factory where it will be placed in operating condition for \$2.00 plus the cost of parts replaced due to their being damaged in the course of construction. NOTE: Before returning this unit, be sure all parts are securely mounted. Attach a tag to the instrument, giving your home address and the trouble with the unit. Pack very carefully in a rugged container, using sufficient packing material (cotton, shredded newspaper, or excelsior), to make the unit completely immovable within the container. The original shipping carton is satisfactory, providing the original inserts are used or sufficient packing material is inserted to keep the instrument immovable. Ship by prepaid Railway Express, if possible, to Electronic Instrument Co., Inc., 33-00 Northern Blvd., L.I.C. 1, N.Y. Return shipment will be made by express collect. Note that a carrier cannot be held liable for damages in transit if packing IN HIS OPINION, is insufficient.



EICO

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MODEL 706 CODE PRACTICE OSCILLATOR

REPLACEMENT PARTS LIST

Stock#	Sym.	Description	Am't.	Stock#	Description	Am't.
56003	B1, 2	battery, 1.5V, Size "C"	2	41014	screw, 6-32 x 3/8	4
56516	BR1	bracket, battery, double size "C"	1	41016	screw, 4-40 x 1/4	6
22565	C1	cap., disc, 2.2mfd, 3V	1	41074	screw, #2 self tapping	2
22566	C2	cap., disc, .47mfd, 3V	1	41082	screw, 4-40 x 1	2
92011	I1	bulb, #14	1	42000	washer, 3/8 lock	2
50022	J1	jack, closed circuit	1	42001	washer, 3/8 flat	2
94006	Q1	transistor	1	42002	washer, #6 lock	4
10429	R1	res., 470Ω, 1/2W, 10%	1	42007	washer, #4 lock	8
16001	R2	pot., 1K	1	43000	ground lug, #6	2
62003	S1	switch, DPTT	1	44010	standoff	2
55013	SP1	speaker, P.M. 3"	1	46012	grommet, rubber, 3/8 I.D.	1
32022	T1	transformer, output	1	53002	knob	1
54018	TB1	terminal strip, 4 post, w/gnd.	1	55303	grill speaker	length
54513	TB2	terminal board, 2 post	1	58004	wire, hook-up	length
54001	TB3	terminal strip, 1 post right	1	58300	spaghetti	1
97704	XI1	socket, bulb	1	80071	panel	1
97043	XQ1	socket, transistor	1	81209	chassis	1
40000		nut, hex, 6-32	5	88068	cabinet	1
40001		nut, hex, 3/8	2	89633	key spring	1
40007		nut, hex, 4-40	8	66089	manual of instructions (wired)	1
41000		screw, 6-32 x 1/4	5	66342	manual of instructions (kit)	1

MODEL 706 ADDENDA

Please make the following changes in your Construction Book.

1. Page 7C, Step 4. Change XQ1-2 (S1) to XQ1-2 (C).
2. Page 7C, Step 4. Add the following sentences:

Connect a 5/8" piece of bare wire from XQ1-2 (S2) to XQ1-4 (S1).

I.E. 1448



ELECTRONIC INSTRUMENT CO. INC. • 33-00 NORTHERN BLVD., L.I. CITY.

MODEL 706 ADDENDA

Page 7C Step 13 should read: Fig. 2. Connect a 1" piece of wire from speaker SP1-2 (S1) to ground lug "A".

I.E. 1315 Electronic Instrument Co., Inc., 33-00 Northern Blvd., L.I.C. 1, N.Y.

I.E. 1379

CAUTION

Under no circumstances use acid core solder or acid flux in constructing this instrument. Use only the best grade of rosin core solder. When in doubt about the solder you have, do not use it; instead buy a new roll which is plainly identified as "Rosin Core Radio Solder". All performance and service guarantees are voided by the use of acid core solder or acid flux. Furthermore, we will not service and return unrepared any instrument in which acid core solder or acid flux is used.



LOCAL AUTHORIZED SERVICE STATIONS FOR OUT-OF-WARRANTY REPAIRS

For the convenience of our customers who may prefer to have their units serviced locally, the following repair stations have been franchised and are equipped to service all EICO units:

Pennsylvania

Michael's TV & Radio Service
1127 West Chester Pike
Havertown, Pa.

Electronic Servicenter
5354 Germantown Ave.
Philadelphia 44, Pa.

South Carolina

Cayce Radio-TV & Appliances, Inc.
906 Knox Abbott Drive
Cayce, S.C.

Texas

Nelson Electronics Eng. Co.
6329 Gaston
Dallas 14, Texas

Test Equipment Co.
9012 Diana Drive
El Paso, Texas

B & M Electronic Service
2215 S. Shepherd Drive
Houston 19, Texas

Mundine Radio & Instrument Service
1022 Navarro
San Antonio 5, Texas

Utah

Anderton Electronic Lab.
129 E. 1800 South
Bountiful, Utah

Canada

J. R. Tilton Ltd.
51 McCormack St.
Toronto, Ontario, Canada

Argentina

Laboratory Hertz
Buenos Aires, Argentina

New Zealand

John C. Gilbert & Co., Ltd.
Anzac Avenue
Auckland, C.I., New Zealand

Connecticut

Crawford Electronics
2 Layton Street
W. Hartford 10, Conn.

New York

A to Z Television Inc.
1109 Harlem Rd.
Cheektowaga 25, N.Y.

Marveltone Recording Service
1168 Flatbush Ave.
Brooklyn 26, N.Y.

Electrosomy Corporation
65-37 Queens Blvd.
Woodside 77, N.Y.
Phone: Illinois 7-7733
Hours: Mon.-Fri. 8 a.m. - 7 p.m.
Sat..... 8 a.m. - 5 p.m.

Syracuse Instrument Labs.
4895 South Ave.
Syracuse 7, N.Y.

Wide Enterprises, Inc.
612 Union St.
Schenectady 8, N.Y.

North Carolina

Speed Instrument Co.
2718 Rothgeb Drive
PO Box 9028
Raleigh, N.C.

Wayne M. Yelverton
8 Olivet Church Rd.
Winston-Salem, N.C.

Ohio

Electronic Instrument Service Co.
10023 Madison Ave.
Cleveland 2, Ohio

Far Hills Service Center
45 W. Whipp Rd.
Dayton 59, Ohio

Dave's Radio & TV
3112 Upton at W. Central
Toledo 13, Ohio

Oklahoma

Greer's Telefix
528 S. 75 East Ave.
Tulsa 12, Okla.

Pennsylvania

Sunshine Scientific Instrument
1810 Grant Ave.
Philadelphia 15, Pa.

These repair stations are authorized to perform out-of-warranty chargeable repair work in accordance with factory standards. In-warranty repairs should be returned to the factory in

For the convenience of our customers who may prefer to have their units serviced locally, the following repair stations have been franchised and are equipped to service all EICO units:

New York

A to Z Television Inc.
1109 Harlem Rd.
Cheektowaga 25, N.Y.

Marveltone Recording Service
1168 Flatbush Ave.
Brooklyn 26, N.Y.

Electrosomy Corporation
65-37 Queens Blvd.
Woodside 77, N.Y.
Phone: Illinois 7-7733
Hours: Mon.-Fri. 8 a.m. - 7 p.m.
Sat..... 8 a.m. - 5 p.m.

Syracuse Instrument Labs.
4895 South Ave.
Syracuse 7, N.Y.

Wide Enterprises, Inc.
612 Union St.
Schenectady 8, N.Y.

North Carolina

Speed Instrument Co.
2718 Rothgeb Drive
PO Box 9028
Raleigh, N.C.

Wayne M. Yelverton
8 Olivet Church Rd.
Winston-Salem, N.C.

Ohio

Electronic Instrument Service Co.
10023 Madison Ave.
Cleveland 2, Ohio

Far Hills Service Center
45 W. Whipp Rd.
Dayton 59, Ohio

Dave's Radio & TV
3112 Upton at W. Central
Toledo 13, Ohio

Oklahoma

Greer's Telefix
528 S. 75 East Ave.
Tulsa 12, Okla.

Pennsylvania

Sunshine Scientific Instrument
1810 Grant Ave.
Philadelphia 15, Pa.

Pennsylvania

Michael's TV & Radio Service
1127 West Chester Pike
Havertown, Pa.

Electronic Servicer
5354 Germantown Ave.
Philadelphia 44, Pa.

South Carolina

Cayce Radio-TV & Appliances, Inc.
906 Knox Abbott Drive
Cayce, S.C.

Texas

Nelson Electronics Eng. Co.
6329 Gaston
Dallas 14, Texas

Test Equipment Co.
9012 Diana Drive
El Paso, Texas

B & M Electronic Service
2215 S. Shepherd Drive
Houston 19, Texas

Mundine Radio & Instrument Service
1022 Navarro
San Antonio 5, Texas

Utah

Anderton Electronic Lab.
129 E. 1800 South
Bountiful, Utah

Canada

J. R. Tilton Ltd.
51 McCormack St.
Toronto, Ontario, Canada

Argentina

Laboratory Hertz
Buenos Aires, Argentina

New Zealand

John C. Gilbert & Co., Ltd.
Anzac Avenue
Auckland, C.I., New Zealand

Connecticut

Crawford Electronics
2 Layton Street
W. Hartford 10, Conn.

These repair stations are authorized to perform out-of-warranty chargeable repair work in accordance with factory standards. In-warranty repairs should be returned to the factory in accordance with the instructions printed in the accompanying manual.



SERVICE WORK ORDER



- Model No. _____ Serial No. _____ Date _____

Indicate red code numbers (if any) under words "INSTRUCTION MANUAL" on cover of manual _____

- Check one: Purchased as kit ☐ Purchased factory-wired ☐

Name _____

Address _____

Item (s) Returned: (specify any separately purchased accessories included in shipment, or any detachable parts normally supplied that are omitted)

Troubles and/or Repairs Required _____

Check one: Warranty Privileges Claimed Yes ☐ No ☐

If Warranty Privileges Are Claimed, Please Supply Information Required Below

.....

WARRANTY REPAIR REQUIRED INFORMATION

- Date of Purchase _____ Date Registration Card Mailed _____

- Date Completed (if kit) _____

Sales Slip (or facsimile thereof) enclosed Yes ☐ No ☐

Distributor _____

Address _____

PARTS REPLACEMENT

If it appears that a component is defective, and you desire a replacement from EICO, address your correspondence to our Customer Service Department.

If you are claiming the right to a no-charge replacement under the terms and conditions of the warranty, it is required that you shall have sent in the registration card within 10 days of the date of purchase, and that you send back the defective part transportation prepaid. EICO will make the necessary replacement at no charge for parts eligible under the terms and conditions of the warranty. In returning tubes, pack them very carefully to avoid breakage in shipment. Broken tubes will not be replaced. Please read the warranty on the subject of parts eligible for replacement.

Further information required on a part returned to the factory for a no-charge replacement under the terms and conditions of the warranty is as follows:

- a) Model number and serial number, if any, of unit. Also any code numbers in red under the words **INSTRUCTION MANUAL** on the cover of the book supplied with the unit.
- b) Stock number and description of part as given on the parts list. If the part is not listed (of itself) in the parts list, it means that the part is integral with a sub-assembly. If the sub-assembly is not sealed, and the defective part is definitely identified and easily replaceable (not more than two connections), you may request replacement for the particular part. If the sub-assembly is sealed, or if the defective part is not definitely identified or is not easily replaceable (more than two connections), then remove the sub-assembly and return it to EICO (less any tubes) for repair or replacement, if your unit is in warranty. If your unit is out of warranty, you are generally advised to order a replacement sub-assembly.
- c) Describe as completely as possible the nature of the defect, or your reason for requiring replacement.

FACTORY REPAIR SERVICE

EICO maintains a Factory Repair Service Department for in-warranty or out-of-warranty repair of EICO equipment. It is intended to serve those customers who are not adequately familiar with electronics to make use of the EICO Service Consultation facilities, or whose difficulties cannot be solved by correspondence.

For all out-of-warranty units, there is a minimum labor and handling fee. Charges for components replaced are additional to the minimum fee.

For in-warranty completed kit units, there is a minimum labor and handling fee. There is no charge for a replaced defective part provided that the terms and conditions of the warranty for no charge replacement

are not violated in the judgement of EICO.

For in-warranty factory-wired units, there is no labor and handling fee if the unit complies with the terms and conditions of the warranty in the judgement of EICO. However, if the terms and conditions of the warranty are violated, then there will be charged to customer a minimum labor and handling fee plus the cost of parts replaced.

In all cases, the unit must be sent to the factory transportation prepaid, and the unit will be returned to the customer transportation collect.

The services rendered for the minimum labor and handling fee are the correction of any minor wiring errors (not extensive corrections or re-wiring), the labor involved in replacing defective parts, and any adjustments, alignment, or calibration procedures that would normally be performed on a factory-wired unit. Units not wired according to instructions, or modified in any way, or showing evidence of the use of acid core solder, will not be serviced and will be returned to the customer forthwith.

Units requiring extensive corrections or re-wiring will incur an additional labor charge which will be set by EICO. The customer will be informed of this situation and written authorization from the customer will be required before the work is done.

Please note: minimum labor and handling fees are subject to revision at any time.

LOCAL REPAIR FACILITIES

Out-of-warranty repair work may also be performed by authorized service stations as well as the EICO factory. A list of authorized service stations is provided with this manual. The roster of stations may change from time to time, and if considerable time has elapsed since you purchased your unit, you are advised to contact the station you choose before sending the unit to them for repair. Use of a local service station will often result in faster service, and, usually, lower transportation costs.

It is necessary that you comply with the Shipping Instructions that follow when sending in a unit for service.

SHIPPING INSTRUCTIONS

You are strongly advised to retain the original shipping carton and inserts in the case that re-shipment is required for service or any other purpose. The carton may be collapsed, for storage in as small a space as possible. In very many cases, the same carton is used for kit and factory-wired units so that the kit carton will serve for re-shipment of the completed kit.

To submit a unit for service, either to the factory or an authorized service station,* fill out completely the Service Work Order form provided with the manual. Pack the unit very carefully, preferably in the original shipping carton with the original inserts.

If this is not possible, use a strong oversize carton, preferably wood, allowing at least 3 inches of resilient packing material such as shredded paper or excelsior, to be inserted between all sides of the unit and the carton. Seal the carton with strong gummed paper tape or strong twine, or both. Include the Service Work Order in the carton and in addition, attach a tag to the instrument on which is printed your name and address and brief reference to the trouble experienced. Affix "FRAGILE" or "HANDLE WITH CARE" labels to at least four sides of the carton or print these words large and clear with a bright color crayon. Ship by prepaid Railway Express or parcel post to:

Electronic Instrument Co., Inc.
33-00 Northern Blvd.
Long Island City 1, New York
Attention: Service Department

Include your name and address on the outside of the carton. Return shipment will be made transportation charges collect. Note that a carrier cannot be held liable for damages in transit, if packing, IN HIS OPINION, is insufficient.

*Authorized service stations are for out-of-warranty units only, unless the station is specifically noted on the List of Authorized Service Stations to be authorized for other work.



THE EICO WARRANTY



The Electronic Instrument Company, Inc., hereafter referred to as EICO, warrants that, for a period of 90 days from the date of purchase, any EICO kit will be free of defects in parts, and that any EICO factory-wired unit will be free of defects in parts and workmanship. For an EICO kit, EICO's obligation is limited to those parts which are returned transportation prepaid to the factory without further damage, and in the judgement of EICO are either originally defective or have become defective in normal use. For an EICO factory-wired unit, EICO's obligation is limited to those parts, sections, or the entire unit which is returned transportation prepaid to the factory without further damage, and in the judgement of EICO are either originally defective or have become defective in normal use.

The warranty does not apply to any parts damaged in the course of handling, assembling, or wiring by the customer, or damaged due to abnormal usage or in violation of instructions or reasonable practice, or further damaged to a consequential degree in return shipment. Furthermore, the foregoing warranty is made only to the original customer, and is and shall be in lieu of all other warranties, whether expressed or implied, and of all other obligations or liabilities on the part of EICO, and in no event shall EICO be liable for any anticipated profits, consequential damages, loss of time, or other losses incurred by the customer in connection with the purchase or operation of EICO products or components thereof.

The registration card, which accompanies each EICO kit or factory-wired unit, must be filled in and returned to the company within 10 days after the date of purchase. This warranty applies only to registered units.

MINIMUM LABOR AND HANDLING FEES

AF4	7.50	368	12.50
RA6	5.00	377	6.00
HF12	7.50	425	6.00
HF14	5.00	460	15.00
HF20	10.00	470	15.00
HF22	5.00	488	5.00
HF30	5.00	495	3.00
HF32	9.50	526	3.00
HF35	5.00	536	3.00
ST40	15.00	540	3.00
HF50	5.00	555	3.00
HF52	10.00	556	3.00
HF60	5.00	565	3.00
HF61	6.00	566	3.00
HF61A	6.00	584	2.00
HF65	6.50	612	2.00
HF65A	6.50	625	6.00
ST70	15.00	630	3.00
HF81	13.50	666	10.00
HF85	8.00	680	6.00
HF86	9.00	706	2.00
HF87	9.00	710	5.00
HF89	9.00	720	13.50
HFT90	7.50	723	7.50
HFT92	9.00	730	7.50
HFT94	7.50	740	9.00
JA96	13.50	760	9.00
MX99	7.50	761	9.00
RP100*		762	9.00
		770	12.00
145	3.50	771-2	12.00
145A	3.50	803	3.50
147	5.00	944	3.00
214	6.00	950	3.50
221	6.00	1020	4.00
222	7.00	1050	3.50
232	6.00	1055	2.50
249	6.00	1060	4.00
250	7.00	1064	6.00
255	7.00	1073	4.00
260	7.00	1078	4.00
315	6.00	1100	3.00
320	4.00	1120	3.00
322	4.00	1140	3.00
324	5.00	1171	3.00
352	3.00	1180	3.00
360	5.00		

*Model RP100 will be billed on the basis of \$10.00 for the first hour and \$5.00 each additional hour. With a maximum unauthorized repair of \$40.00 for the kit and \$25.00 for a wired unit.