INSTRUCTION MANUAL

706 CODE PRACTICE OSCILLATOR

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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

<u>Terminals:</u> Key, Phones <u>Case:</u> High-impact bakelite <u>Panel:</u> Satin Finish, deep-etched aluminum <u>Size:</u> 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. TI 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



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.



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		THE	INT	ERNATIONAL	MORSE CODE
Α	didah		Р	didahdahdit	5 didididit
В	dahdididit		Q	dahdahdidah	6 dahdididit
C	dahdidahdit		R	didahdit	7 dahdahdididit
D	dahdidit		S	dididit	8 dahdahdahdidit
E	dit		Т	dah	9 dahdahdahdahdit
F	dididahdit		U	dididah	Ø dahdahdahdahdah*
G	dahdahdit		V	dididah	Period didahdidahdidah
H	didididit		W	didahdah	Comma dahdahdididahdah
I	didit		X	dahdididah	Question Mark dididahdahdidit
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 didahdidahdit
N	dahdit		3	dididahdah	Invitation to transmit dahdidah
0	dahdahdah		4	didididah	End of work (SK) didididahdidah
	* The	e numera	l zero	is usually written \$\$ to c	istinguish 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 Sl.
 - 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 Slon panel. 2. Wiring on slide switch Sl.

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 atag 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.





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, $4-40 \times 1$	2
92011	11	bulb, #14	1	42000	washer, 3/8 lock	2
50022	JI	jack, closed circuit	1	42001	washer, 3/8 flat	2
94006	QI	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	TI	transformer, output	1	53002	knob	1
54018	TB1	terminal strip, 4 post, w/gnd.	1	55303	grill speaker	1
54513	TB2	terminal board, 2 post	1	58004	wire, hook-up	length
54001	TB3	terminal strip, 1 post right	1	58300	spaghetti	length
97704	X11	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







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