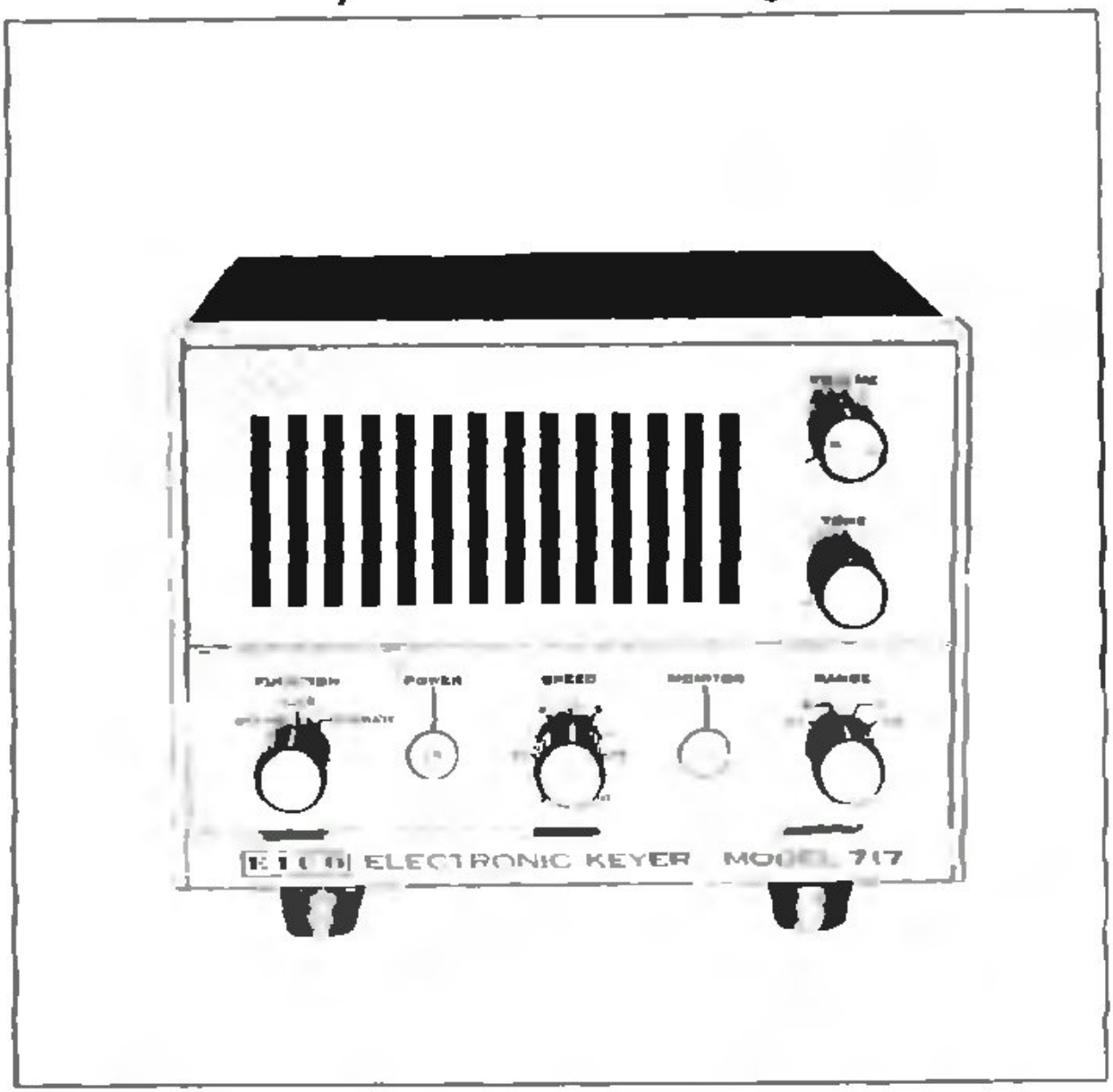
EICO

717/Electronic Keyer



OPERATING MANUAL

GENERAL DESCRIPTION

The EICO Model 717 Electronic Keyer is a compact and highly accurate instrument capable of keying a CW transmitter with perfect machine-like Morse Code at speeds ranging from 3 to over 75 words per minute.

The modern electronic circuitry automatically makes dashes equal in time to three dots, sets the correct one-dot spacing in a series of dots or dashes, and is self-completing — that is — once a dot or dash is started, it is automatically completed so that it becomes impossible to "break" a character by accident once it has started. Output is via a high-speed dry-reed relay having 25 VA contact ratings making it suitable for almost any type of CW transmitter. The high-speed relay contacts close within 2 milliseconds of character start.

An internal audio oscillator is keyed in parallel with the reed relay so that the operator can "hear" what he sends. Both the volume and tone of the internal audio oscillator can be adjusted via front panel controls. This audio feature of the Model 717 also allows the unit to be used as a code practice oscillator. A headphone jack on the rear panel permits using an external loudspeaker or headphones as desired. Plugging into this jack automatically disconnects the internal loudspeaker.

If desired, the audio oscillator volume can be turned down and operation is indicated by a front-panel monitor lamp that also follows the reed relay.

The front panel function switch permits either continuous operation of the transmitter for tune-up purposes, or hand-paddle control for automatic Morse operation.

FUNCTION OF CONTROLS

FUNCTION Switch: In the TUNE position, the transmitter keyed stage is operated by bypassing the reed-relay contacts. This position eliminates holding the key closed for extended periods of time while the transmitter is being tuned. In the OPERATE position, the transmitter is keyed by the Model 717 in accordance with the Morse key operation. The OFF position controls the 117 VAC power supplied to the unit. When turned from the OFF position, power is supplied and the POWER indicator lamp comes on.

RANGE Switch: This four position switch determines the range of operation. When used with the SPEED vernier control, the following code speeds are available:

Position A - 3 to 8 words per minute
Position B - 7 to 18 words per minute
Position C - 17 to 40 words per minute
Position D - 38 to 75 words per minute

VOLUME Control: Determines the volume of the audio tone heard from the internal 3 x 5 inch loudspeaker, or the external loudspeaker or headphones when they are plugged in.

TONE Control: Control the pitch of the audio tone heard. Adjustment is from 450 to 1500 Hz.

MONITOR Indicator Lamp: Blinks in conjunction with the characters being keyed.

Power Required: 100-130 VAC, 50-60 Hz, 40 watts

Dimensions: 5-1/2 x 8 x 8-1/2 inches (HWD)

Weight: 8 lbs.

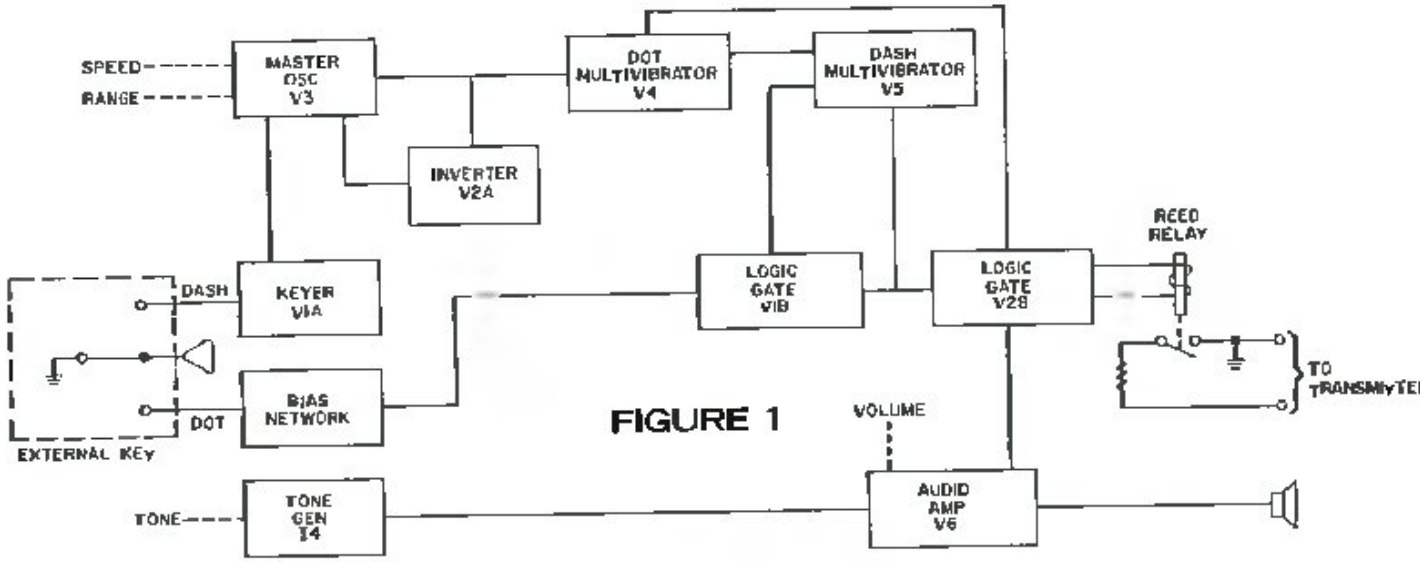


FIGURE 1

CIRCUIT DESCRIPTION

The basic block diagram of the Model 717 is shown in Figure 1. Master oscillator V3 generates a continuous string of timing pulses. The speed of these pulses are controlled by the front-panel RANGE and SPEED controls.

Dots and dashes, as selected by the external key, are created by altering the bias within the computer-like circuits used in the Model 717, and by varying the interdependence of a pair of multivibrators and a pair of logic gates. The interdependence of the circuits is such that once a character is started, it is impossible to "break" it until completion. They also provide an exact one-dot long space between characters having more than one dot or dash. The circuit also ensures that a dash is always three times longer then a dot.

One logic gate drives the reed relay thel in turn keys the transmitter while simultaneously operating the internal audio oscillator.

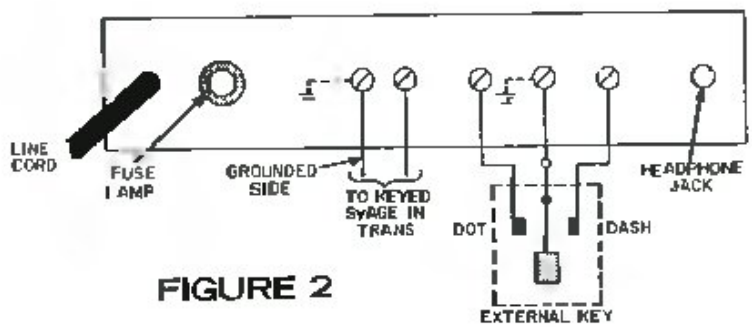


FIGURE 2

OPERATION

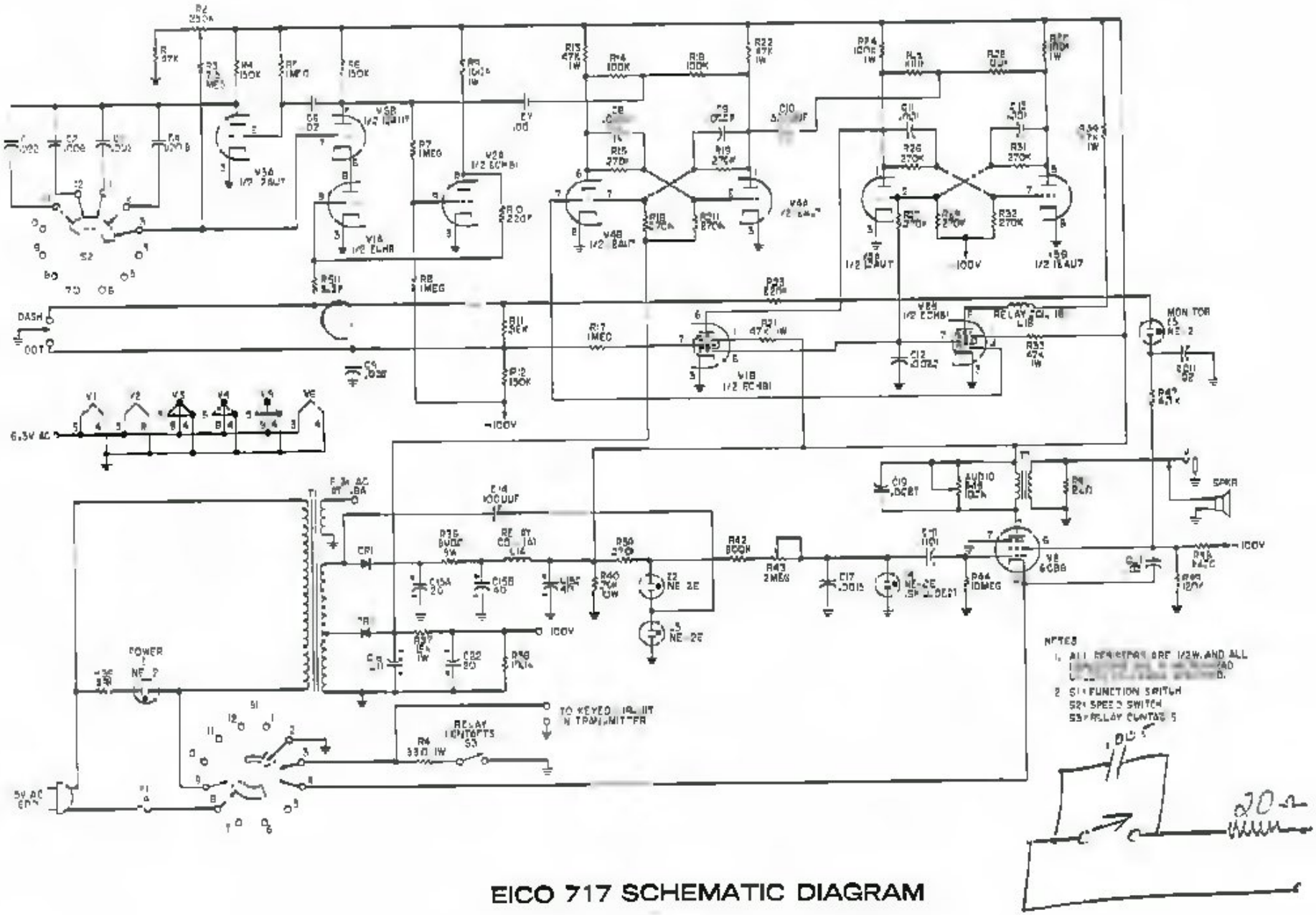
Figure 2 shows the connections to he made at the rear of the unit. The first two connectors at left are connected to the stage to he keyed in the traasmitter. Note that the first connector is internally grounded within the Model 717. The three remaining connectors are hooked up to the Morse key as shown: i.e., the left-hand connector goes to the key dot contact, the right-hand connector goes to the key dash conlact, while the center connector goes to the key common terminal. Note also that this center connector is internatly grounded within the Model 717. In both these grounding cases, grounding means connection to the chassis.

A modified "bug" can he used to key this unit if provisions arc made to isulate the dot and dash contacts, and confine the vibrating arm so thel it does nol oscillate when the dot side of the paddle is operated. In most cases, a rubber band can be used to secure the vibrating arm to the limit stop.

VOLTAGE & RESISTANCE CHART FOR 717 ELECTRONIC KEYER

TUBE	PIN	VOLTAGE*	RESISTANCE*	TUBE	PIN	VOLTAGE*	RESISTANCE*
V1	1	40	75KΩ	V4	1	157	62KΩ
	2	-.5	500KΩ		2	-47.5	190KΩ
	3	0	0		3	0	0
	4	0	0		4	0	0
	5	6.3 VAC	0		5	0	0
	6	25	90KΩ		6	44	62KΩ
	7	-35	1.2MΩ		7	0	190KΩ
	8	46	⌒		8	0	0
	9	-15	117KΩ		9	6.3 VAC	0
V2	1	45	77KΩ	V5	1	27	95KΩ
	2	0	186KΩ		2	0	190KΩ
	3	0	0		3	0	0
	4	0	0		4	0	0
	5	6.3 VAC	0		5	0	0
	6	16	73KΩ		6	118	92KΩ
	7	-.5	500KΩ		7	-40	190KΩ
	8	16	100KΩ		8	0	0
	9	0	610KΩ		9	6.3 VAC	0
V3	1	9.5	200KΩ	V6	1	-7.3	10MΩ
	2	.55	1MΩ		2	0	0
	3	0	0		3	6.3 VAC	0
	4	0	0		4	0	0
	5	0	0		5	215	21.5KΩ
	6	185	165KΩ		6	-11.5	120KΩ
	7	21	8MΩ		7	0	0
	8	47	⌒				
	9	6.3 VAC	0				

FUNCTION SWITCH IN OPERATE, ALL OTHER CONTROLS IN EXTREME CCW POSITIONS.
*VTVM, with respect to chassis.



EICO 717 SCHEMATIC DIAGRAM

PARTS LIST

PRICE EACH	SYM. #	STOCK#	DESCRIPTION
CAPACITORS			
.24	C1	20024	.022uf, mold. tub., 10%
.18	C2	22530	disc, cer., .006uf, 10%
.15	C3	22597	disc, cer., .002uf, 10%
.15	C4,17	22532	disc, cer., .0015uf, 10%
.12	C5	22526	disc, cer., .005uf, GMV
.33	C6,20, 21	22544	disc, cer., .02uf, 10%
.14	C7,11, 13,18	22521	disc, cer., .001ui, 10%
.15	C8,9, 12	22507	disc, cer., .0022uf, 10%
.14	C10	22522	disc, cer., 330pf, 10%
.12	C14	22001	cer., tub., 100pf, 20%
2.75	C15,A, B,C	24005	elec., 20-40-40uf
1.20	C16,22	23045	elsc., 20uf/250V
.15	C19	22518	disc, cer., .0027uf, 10%
DIODES, FUSES, BULBS, JACKS & COILS			
1.00	D1,2	93005	diode
.14	F1	91002	fuse, 1A 3AG
.54	I1,5	97715	neon bulb, panel mt.
.41	I2,3,4	92012	neon bulb, NE-2E
.67	J1	50022	phone jack
13.30	L1A,B	35066	reed coil
RESISTORS (In ohms and rated at 1/2W, 10% unless otherwise stated)			
.08	R1	10428	47K
.21	R3	11535	7-5M, 5%
.08	R4,6, 12	10435	150K
.08	R5,7,8, 17,48	10407	1M
.15	R9,24, 30	10847	100K, 1W
.08	R10,23	10417	220K
.11	R11	10425	56K
.18	R13,21, 22,33, 34	10849	47K, 1W
.08	R14,18, 25,28, 38	10410	100K
.08	R15,16, 19,20, 26,27, 29,31, 32,39	10419	270K
.08	R35	10447	39K
.32	R36	14500	500, 5W, 10%
.16	R37	10052	15K, 1W, 10%
.69	R40	14303	25K, 10W

PRICE EACH	SYM. #	STOCK#	DESCRIPTION
RESISTORS			
.18	R41	10868	33, 1W
.17	R42	11530	800K, 1/2W, 5%
.08	R44	10402	10M
.11	R46	10461	22
.08	R47	10430	4.7K
.08	R49	10444	120K
.11	R50	10420	3.3K
POTENTIOMETERS			
7.50	R2	18083	250K, linear, 10%
7.50	R43	18081	2M, linear, 10%
7.50	R45	18082	100K, 20% audio
SWITCHES			
1.89	S1	80093	function
1.80	S2	80085	speed
14.00	S3	39003	reed
TRANSFORMERS			
5.80	T1	80051	power
2.08	T2	32044	audio, output
TUBES			
2.92	V1, 2	90059	ECH81
2.25	V3, 4, 5	90013	12AU7
2.10	V6	90028	6CB6
SOCKETS			
.17	XV1, 2, 3, 4, 5	97081	9 pin
.23	XV6	97022	7 pin

HARDWARE				
.01	40000	nut, 6-32, hex	(18)
.02	40001	nut, hex, 3/8"-32	(6)
.01	40007	nut, hex, 4-40	(12)
.07	40016	nut, hex, 1/2"	(1)
.01	41000	screw, 6-32 x 1/4 B.H.	(16)
.01	41007	screw, 6-32 x 3/4	(2)
.01	41014	screw, 6-32 x 3/8 B.H.	(1)
.01	41016	screw, 4-40 x 1/4	(14)
.01	41035	screw, #6 P.K.	(4)
.01	41059	screw, 6-32 x 1-1/8	(2)
.01	42001	washer, flat, 3/8"	(8)
.01	42002	washer, lock, #6	(18)
.01	42003	washer, fiber, #6	(4)
.01	42005	washer, flat, #6	(1)
.01	42007	washer, lock, #4	(23)
.03	42029	washer, rubber, 1/2"	(1)
.02	43000	lug, solder #6	(1)
.06	46008	foot (large)	(4)
.05	46019	foot (small)	(2)

MISCELLANEOUS

PRICE EACH	STOCK#	DESCRIPTION	
.03	42064	foot support disc	(2)
.02	42511	neon bulb retainer	(2)
.81	53099	knob	(5)
.10	54001	terminal strip, 1 post right	(2)
.10	54003	terminal strip, 2 post	(1)
.10	54006	terminal strip, 3 post, 2 right	(1)
.10	54007	terminal strip, 3 post, 2 right w/gnd.	(1)
.10	54008	terminal strip, 4 post	(6)
.10	54013	terminal strip, 1 post, left w/gnd.	(2)
.10	54014	terminal strip, 3 post, 2 left	(1)
.10	54015	terminal strip, 3 post, 3 left w/gnd.	(1)
.10	54018	terminal strip, 4 post, w/gnd.	(1)
.10	54019	terminal strip, 2 post right	(1)
.22	54516	5-terminal board	(1)
5.22	55014	3.2Ω speaker	(1)
.31	55200	grill cloth	(1)
.77	57004	line cord	(1)
1.50	66182	manual, operating	(1)
1.50	66423	manual, assembly	(1)
4.00	80108	panel	(1)
.25	81215	L bracket	(1)
4.35	81321	chassis	(1)
.25	81932	neon bulb shield	(1)
.14	82100	clamp, cable	(1)
.10	82101	strain relief	(1)
.15	82111	clamp, cable	(1)
9.25	88092	cabinet	(1)
n/c	89377	label	(1)
.10	89627	capsule, glue	(1)
.99	97305	fuseholder	(1)

To order replacement parts, specify description and part number. Remittance must be made with order, and include $1.00 for mailing and handling with each order ($1.50 for each transformer if order includes 1 or more output or power transformers). Prices subject to change without notice.