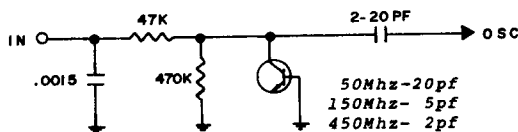
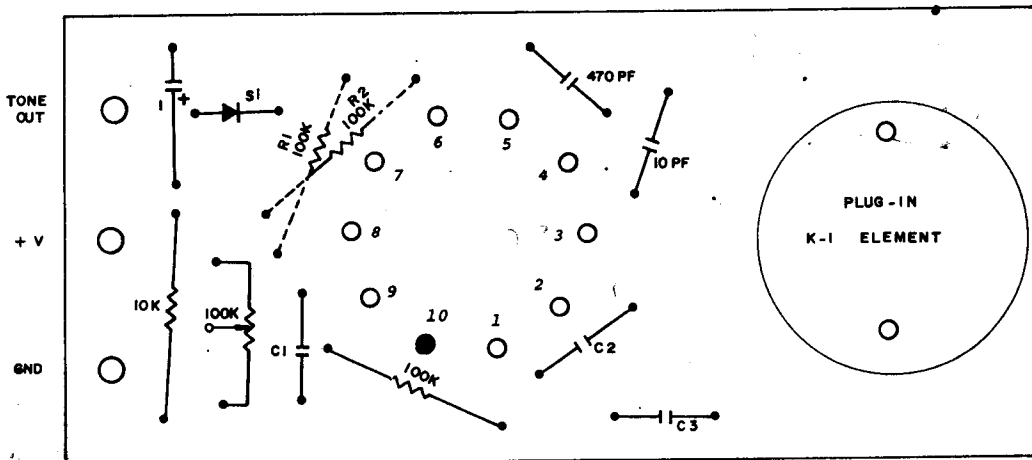


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ME-3 MICROMINIATURE TONE ENCODER

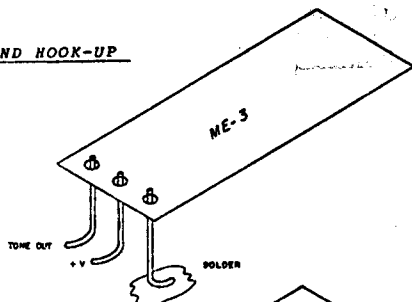


CRYSTAL MODULATOR CIRCUIT

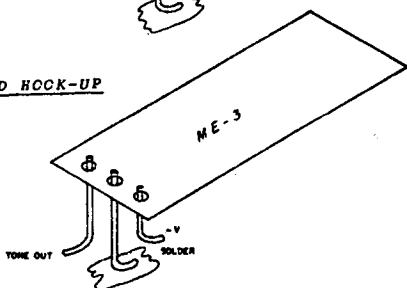


VIEW FROM COMPONENT SIDE BOARD

NEGATIVE GROUND HOOK-UP



POSITIVE GROUND HOOK-UP

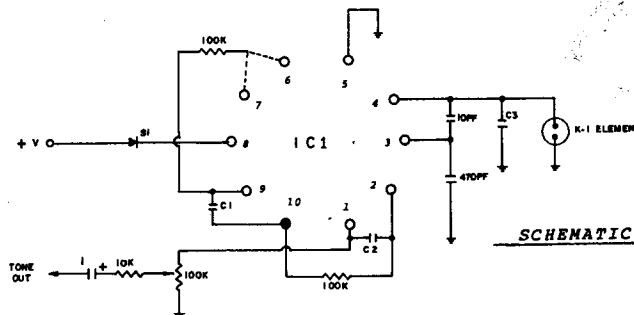


BAND CHANGE VALUES

	67.0-131.8Hz	136.5-203.5Hz
C2	.015uf	.01uf
C3	NONE	NONE-56pf
R1	IN	OUT
R2	OUT	IN

PARTS LIST

1- 10k	1/8w	.25ea
2- 100k	"	.25ea
1- 100k pot	"	1.75ea
1- 10pf	CN15 "NPO" ceramic	1.00ea
1- 470pf	"	1.00ea
1- 4700pf	CW15 "W"	C1 1.25ea
1- .01uf	"	C2 1.50ea
or .015uf	"	C2 1.75ea
1- 0-56pf	CN15 "NPO"	C3 1.00ea
1- luf-35v	tant. cap.	.85ea
1- Silicon diode	"	.15ea
1- Drilled, plated	PCB	2.00ea
1- Microcircuit	"	15.00ea
1- K-1 element	"	3.00ea
2- Socket pins	"	.25ea



SCHEMATIC DIAGRAM

MOUNTING

The unit is mounted with a 1/2w resistor lead (not supplied) about 1/2" long. Solder one end to the eyelet of the correct polarity desired. The other end of the lead is soldered to the PCB or chassis in the radio unit. See above diagram for correct hook-up. In portable units, the encoder may be insulated with tape or its equivalent and placed inside unit with no mounting. The unit is immune to RF.

POWER HOOK-UP

The voltage to the encoder MUST be keyed with the transmitter in most mobile units. This is because the encoder operates in the fundamental mode around the IF frequencies of some receivers. If keyed voltage is not available, an RF choke of 10uh to 100uh may be placed in series with the voltage supply to the encoder to eliminate the problem. Use the above diagram to apply correct polarity to the unit. If the polarity is reversed, the unit will not operate but it will NOT be damaged. If it is necessary to operate the encoder off supplies greater than 16vdc, use the following formula to determine the correct series dropping resistor value. R = Supply voltage - 12 divided by .008. If "T" whine, vibrator hash, or AC hum are present in the tone output, add a 220 ohm 1/4w resistor in series with the supply lead and the encoder and bypass this point to the negative supply (or GND) with a 100uf-16v capacitor. For base operation in tube-type units, the -20v bias supply will provide adequate voltage with a 1k series dropping resistor.

TONE OUTPUT

Tone may be added to most transmitters directly to the center of the mod pot or directly to the modulator grid (or base in a transistorized transmitter). Note that a 10k series resistor is provided internally in the encoder so no other series resistance should be needed. If more tone level is required either the input voltage may be raised or this resistor may be jumpered across. Some older tube-type transmitters accept sub-audible tone more readily if injected with a crystal modulator circuit as shown above. Various values of coupling capacitance are shown for the different frequency ranges of the transmitter. The VARICAP (or transistor base to collector junction with the emitter cut off) changes ac voltage into changing capacitance which truly FM modulates the transmitter. No intermoding of distortion of the voice will be noted with this method.

GENERAL

Be sure to solder the eyelets to the foil on the PCB. If it is necessary to change tone frequency outside the band the unit was shipped on, see the list above for the proper band change parts values. Also note that C3 should be cut out (if it is present) anytime tone frequency is changed in the field. Any K-1 elements shipped for field replacement will NOT require C3. Band change parts may be ordered from the parts list for field changes in frequency. The entire encoder may be returned to the factory for a flat \$7.00 charge which includes band parts change, new K-1 element, and return Air Mail postage. All encoders will be processed and shipped the same day received.

Price with K-1 element is \$29.95. Extra K-1 elements are \$3.00ea. Your PREPAID order will be sent POSTPAID by AIR MAIL or UPS the same day it is received. California residents supply resale number or remit 6% sales tax.

Send check or money order to: COMMUNICATIONS SPECIALISTS  
PO BOX 153  
BREA, CALIF. 92621  
(714) 998-3021

When ordering parts only, please remit an additional 75¢ to cover postage.