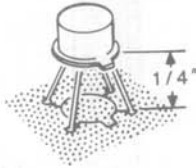


- () Q107: MFE131 transistor (#417-863). Match the tab on the transistor with the outline of the tab on the circuit board. Then insert the leads into their corresponding holes, position the transistor 1/4" above the circuit board, and solder the leads to the foils. Cut off any excess lead lengths.



Install parts in Section 4 of the circuit board as follows. Solder the leads of each part to the foil as you install it and cut off any excess lead lengths.

- () L124: .3 μ H coil (#40-2076).
 () L125: .3 μ H coil (#40-2076).
 () Skip L126.
 () L127: .3 μ H coil (#40-2076).
 () Skip L128.
 () L129: .3 μ H coil (#40-2076).
 () Skip L131 and L132.
 () Q111: 2N5770 transistor (#417-293).
 () Q115: MPSA20 transistor (#417-801).
 () Q114: MPSA20 transistor (#417-801).

Install parts in Section 5 of the circuit board as follows. Solder the leads of each part to the foil as you install it and cut off any excess lead lengths.

- () L137: .44 μ H coil (#40-2075).
 () Q113: MPSA20 transistor (#417-801).

Install parts in Section 6 of the circuit board as follows. Solder the leads of each part to the foil as you install it and cut off any excess lead lengths.

- () Q108: 2N5770 transistor (#417-293).

- () Q109: 2N5770 transistor (#417-293).
 () L135: 3 μ H coil (#40-2070).
 () Q112: MPF105 transistor (#417-169).

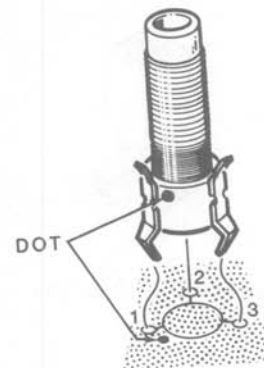
Refer to Pictorial 1-5 (Illustration Booklet, Page 6) for the following steps.

Install parts in the circuit board as follows. Solder each part to the foil as you install it and cut off any excess lead lengths.

NOTE: When you install a control on the circuit board, start the lugs of the control into their circuit board holes and push the control down tight against the circuit board. Then solder the lugs to the foil.



- () R131: 100 k Ω control (#10-941).
 () L118: 5.5 μ H coil (#40-2111). Match the color dot near one lug of the coil with the dot mark on the circuit board and start the lugs into their corresponding holes. Push the coil down tight against the circuit board, solder the lugs to the foil, and cut off any excess lug lengths.
 NOTE: You may have to straighten the lugs on this coil to make it fit the circuit board holes.

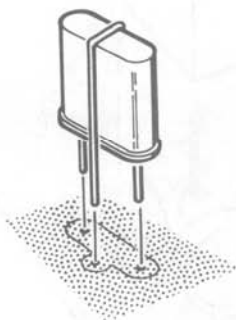


Heathkit®

() P101: 5-pin plug. Start the shorter pins into the circuit board holes. Then push the plug down tight against the circuit board and solder the pins to the foil.

() R173: 500 Ω control (#10-918).

NOTE: When you install a crystal, match the three leads with their corresponding holes in the circuit board. Then push the crystal down tight against the circuit board, solder the leads to the foil, and cut off the excess lead lengths.



() Y101: 18.330 MHz crystal (#404-664).

() Y102: 21.830 MHz crystal (#404-665).

() Skip Y103.

() Y104: 28.830 MHz crystal (#404-667).

() Skip Y105.

() Y106: 35.830 MHz crystal (#404-669).

() Skip Y107 and Y108.

() Y109: 8.8314 MHz crystal (#404-639).

CIRCUIT BOARD CHECKOUT

Carefully inspect the foil side of the circuit board for the following most-commonly-made errors:

() Unsoldered connections. NOTE: There are several unused holes in the circuit board.

() Poor solder connections.

() Solder bridges between foil patterns (See Page 15).

() Protruding leads which could touch each other or the chassis when the circuit board is installed later.

Refer to the illustrations where parts were installed as you make the following visual checks:

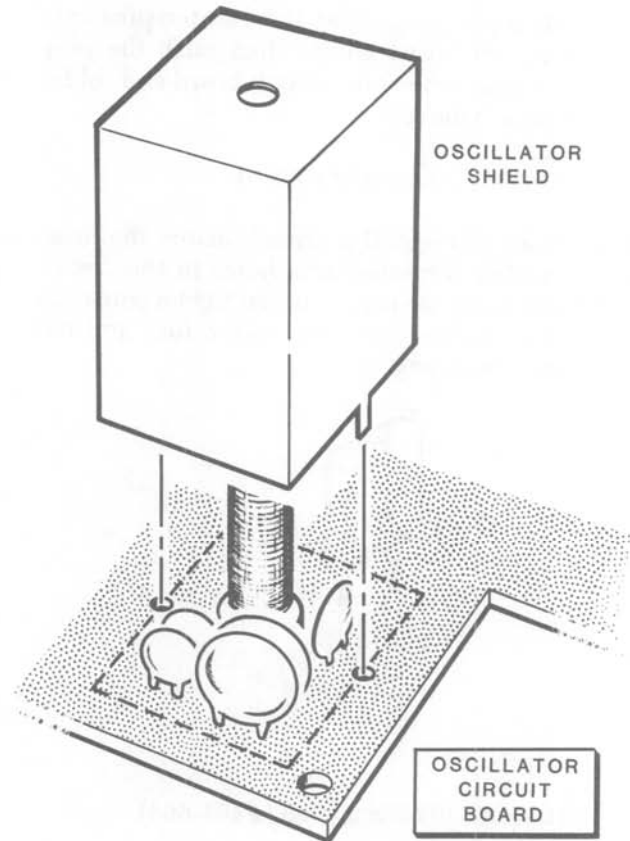
() Transistors for the proper **type** and **installation**.

() Diodes for the proper **type** and **installation**.

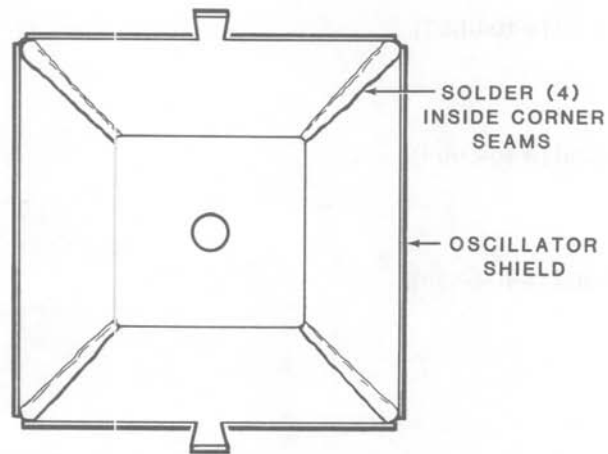
Refer to Pictorial 1-6 for the following steps.

- () Position the oscillator shield as shown in Detail 1-6A. Then melt a bead of solder along one of the four corner seams in the shield.
- () Similarly, melt a bead of solder along the remaining three seams in the shield.
- () Start the lugs on the shield into their corresponding holes in the circuit board as shown in the Pictorial. Then push the shield down tight against the circuit board and solder the lugs to the foil.

Set the oscillator circuit board aside and proceed to "T/R Circuit Board."



PICTORIAL 1-6



Detail 1-6A

T/R CIRCUIT BOARD

PARTS LIST

Remove the parts from Pack #2. Then check each part against the following list. Do not remove components that are supplied on a tape from the tape until you use them in a step. Return any part that is packed in an individual envelope, with the part number on it, back to the envelope after you identify it until that part is called for in a step. Do not throw away any packing material until all of the parts are accounted for.

To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with this kit. If a Parts Order Form is not available, refer to "Replacement Parts" inside the rear cover of this Manual. For prices, refer to the separate "Heath Parts Price List."

TAPED COMPONENTS

NOTE: These parts are taped on a strip which was checked before shipment. Since these parts are taped in the order of assembly, you may not wish to check them against the following list.

HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
RESISTORS				Resistors (Cont'd)			
NOTE: The following resistors are rated at 1/4-watt and have a tolerance of 5% unless otherwise listed. A 5% tolerance is indicated by a fourth color band of gold.				6-101-12	7	100 Ω (brn-blk-brn)	R301, R341, R345, R346, R405, R406, R413 R444
6-279-12	1	2.7 Ω (red-viol-gold)	R418	6-181-12	1	180 Ω (brn-gry-brn)	R305, R311, R322
6-220-12	2	22 Ω (red-red-blk)	R407, R415	6-221-12	3	220 Ω (red-red-brn)	R419
6-470-12	1	47 Ω (yel-viol-blk)	R339	6-331-12	1	330 Ω (org-org-brn)	R372
6-680-12	1	68 Ω (blu-gry-blk)	R324	6-471-12	1	470 Ω (yel-viol-brn)	R332, R417, R428
				6-681-12	3	680 Ω (blu-gry-brn)	

HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
-------------------	------	-------------	----------------------

Resistors (Cont'd)

6-821-12	1	820 Ω (gry-red-brn)	R337
6-102-12	9	1000 Ω (brn-blk-red)	R334, R335, R336, R338, R347, R373, R414, R435, R436
6-122-12	1	1200 Ω (brn-red-red)	R342
6-152-12	1	1500 Ω (brn-grn-red)	R429
6-182-12	1	1800 Ω (brn-gry-red)	R308
6-222-12	3	2200 Ω (red-red-red)	R303, R423, R425
6-272-12	1	2700 Ω (red-viol-red)	R344
6-332-12	4	3300 Ω (org-org-red)	R369, R401, R402, R424 R408
6-392-12	1	3900 Ω (org-wht-red)	R307, R331, R364, R404
6-472-12	12	4700 Ω (yel-viol-red)	R412, R433, R434, R437, R438, R441, R442, R443 R304
6-562-12	1	5600 Ω (grn-blu-red)	R316, R325
6-682-12	2	6800 Ω (blu-gry-red)	R416
6-752-12	1	7500 Ω (viol-grn-red)	R403
6-822-12	1	8200 Ω (gry-red-red)	R343, R431, R439, R446
6-103-12	4	10 kΩ (brn-blk-org)	R323
6-123-12	1	12 kΩ (brn-red-org)	R348, R351
6-153-12	2	15 kΩ (brn-grn-org)	R371
6-223-12	1	22 kΩ (red-red-org)	R314, R349
6-273-12	2	27 kΩ (red-viol-org)	R306, R313, R353, R358, R409
6-333-12	5	33 kΩ (org-org-org)	R312, R328, R422
6-473-12	3	47 kΩ (yel-viol-org)	R302, R309, R315, R321, R355, R356, R361, R362, R363, R365, R366
6-104-12	11	100 kΩ (brn-blk-yel)	R367
6-154-12	1	150 kΩ (brn-grn-yel)	R319
6-564-12	1	560 kΩ (grn-blu-yel)	R352, R357
6-684-12	2	680 kΩ (blu-gry-yel)	R326, R327
6-105-12	2	1 MΩ (brn-blk-grn)	R317, R354, R359
6-155-12	3	1.5 MΩ (brn-grn-grn)	R318
6-515	1	5.1 MΩ, 1/2-watt (grn-brn-grn)	

HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
-------------------	------	-------------	----------------------

CAPACITORS

21-761	26	.01 μF (103) glass ceramic	C302, C304, C307, C311, C314, C315, C316, C321, C322, C323, C325, C338, C349, C353, C354, C358, C424, C425, C426, C432, C433, C441, C442, C443, C445, C579
21-762	9	.1 μF (104) glass ceramic	C331, C332, C351, C352, C355, C356, C361, C446, C569

DIODES

56-20	4	1N295A (red-wht-grn)	D307, D308, D309, D311 D405
56-55	1	1N4753A	D303, D305, D306, D312, D401, D402, D403, D404, D406, D407, D408
56-56	11	1N4149	D301, D302 D409
56-646	2	BA-244 (red-yel-yel)	
57-27	1	1N2071	

NON-TAPED PARTS

The following parts are not taped on strips. The key numbers correspond to the numbers on the "T/R Circuit Board Parts Pictorial" (Illustration Booklet, Page 7).

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.	KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
CAPACITORS					Electrolytic				
Mica									
A1	20-141	1	82 pF	C305	A3	25-922	3	.68 μ F	C571, C572, C575
A1	20-102	1	100 pF	C324	A3	25-923	1	1.5 μ F	C514
A1	20-178	2	160 pF	C562, C564	A3	25-924	4	2.2 μ F	C336, C346, C347, C435
A1	20-108	2	200 pF	C558, C561	A3	25-912	2	3.3 μ F	C317, C576
A1	20-126	1	255 pF	C563	A4	25-864	2	10 μ F, 25V	C319, C357
A1	20-139	1	330 pF	C559	A3	25-880	2	10 μ F, 35V	C427, C436
A1	20-106	2	390 pF	C552, C554	A3	25-927	2	22 μ F	C343, C577
A1	20-167	2	620 pF	C447, C551	A3	25-915	1	47 μ F	C578
A1	20-107	1	680 pF	C553	A3	25-948	2	100 μ F	C333, C342
A1	20-127	2	1300 pF	C448, C449	A3	25-942	1	220 μ F	C359
					A3	25-889	1	330 μ F	C444
Ceramic					INDUCTORS				
A2	21-702	2	5 pF	C415, C439	B1	40-2116	2	.55 μ H toroid coil	L441, L442
A2	21-703	1	6.8 pF	C408	B2	40-2073	2	.71 μ H coil	L412, L413
A2	21-3	2	10 pF	C309, C312	B1	40-2115	2	.9 μ H toroid coil	L438, L439
A2	21-770	1	12 pF	C402	B2	40-2072	2	.9 μ H coil	L407, L408
A2	21-111	1	15 pF	C301	B1	40-2113	2	1.8 μ H toroid coil	L434, L435
A2	21-60	1	18 pF	C318	B3	40-2112	3	3 μ H toroid coil	L431, L432, L433
A2	21-84	1	24 pF	C401	B2	40-2070	2	3 μ H coil	L403, L404
A2	21-75	2	100 pF (100K)	C329, C434	B4	40-2118	1	6.5 μ H toroid coil	T403
A2	21-788	2	110 pF (111)	C416, C417	B2	40-2069	2	13 μ H coil	L401, L402
A2	21-715	2	150 pF (151)	C409, C411	B5	45-73	1	2.2 μ H choke (red-red-gold)	L425
A2	21-746	2	180 pF (181)	C403, C404	B6	45-614	1	10 μ H choke (brn-blk-blk)	L426
A2	21-17	2	270 pF	C306, C568	B7	45-622	1	68 μ H choke (blu-gry-blk)	L304
A2	21-140	10	.001 μ F (1000 pF)	C308, C313, C326, C327, C328, C339, C341, C344, C345, C437	B7	45-621	15	100 μ H choke (brn-blk-brn)	L301, L302, L303, L305, L306, L307, L308, L418, L419, L421, L422, L423, L424, L427, L428
A2	21-164	1	.0015 μ F (1500 pF)	C438	B2	52-193	2	10.7 MHz transformer	T301, T302
A2	21-27	2	.005 μ F (5000 pF)	C334, C335	B8	404-640	1	8.830 MHz crystal filter	FL301
A2	21-143	2	.05 μ F	C429, C431					

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
---------	----------------	------	-------------	-------------------

TRANSISTORS-INTEGRATED CIRCUITS (ICs)

NOTE: Transistors and integrated circuits may be marked for identification in any of the following four ways:

1. Part number.
2. Type number. (For integrated circuits, this refers only to the numbers and letters shown in **bold** print in the Parts List. Disregard any other numbers or letters on the IC.)
3. Part number and type number.
4. Part number with a type number other than the one listed.

C1	417-819	2	MJE171 transistor	Q408, Q409
C2	417-169	2	MPF105 transistor	Q301, Q302
C2	417-801	2	MPSA20 transistor	Q303, Q411
C2	417-865	1	MPSA55 transistor	Q403
C2	417-172	2	MPS6521 transistor	Q401, Q402
C3	417-912	2	MRF237 transistor	Q405, Q406
C2	417-201	2	X29A829 transistor	Q407, Q412
C3	417-205	1	2N3866 transistor	Q404
C4	442-715	1	CA3130 IC	U302
C4	442-602	1	LM324N IC	U304
C4	442-55	1	MC1349P IC	U301
C5	442-96	1	MC1496G IC	U303
C6	442-681	1	78L08 IC	U402
C4	442-734	1	LM388N-3 IC	U306

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.
---------	----------------	------	-------------	-------------------

HARDWARE

D1	250-1412	2	4-40 × 3/8" screw	
D2	252-2	2	4-40 nut	
D3	254-9	2	#4 lockwasher	

MISCELLANEOUS

E1	6-220-1	1	22 Ω, 1-watt (red-red-blk) resistor	R421
E2	10-222	1	50 kΩ control	R445
E2	10-946	1	500 kΩ control	R329
E2	10-318	2	2000 (2 k) Ω control	R333, R368
E3	63-1386	4	Rotary switch	SW401, SW402, SW403, SW404
	85-2957-1	1	T/R circuit board	
E4	150-72	1	Double-balanced mixer	U401
E5	215-45	2	Heat sink	
E6	206-1464	2	Band switch shield	
E7	206-1470	1	PA shield	
E8	432-134	1	Wire socket	
E9	434-230	2	8-pin IC socket	
E9	434-298	2	14-pin IC socket	
E10	453-345	1	7" shaft	
E11	475-10	3	1/8" × 1/4" ferrite bead	
E12	475-12	2	5/16" × 5/16" ferrite bead	
E13	475-15	2	1/8" × 1/8" ferrite bead	
E14	475-17	1	3/16" × 3/8" ferrite bead	
E15	475-24	2	Ferrite core	
E16	490-185	1	Package of desoldering braid	

STEP-BY-STEP ASSEMBLY

() Refer to Pictorial 2-1 (Illustration Booklet, Page 8) for the following steps.

() Position the T/R circuit board as shown in the Pictorial.

NOTE: Due to the density of this circuit board, You will first install the taped components that mount horizontally on the circuit board. When you have these installed, you will install the taped components that mount vertically.

Install a component in Section 1 of the circuit board as follows:

() D406: 1N4149 diode (#56-56). Be sure to position the banded end as shown on the circuit board.

() Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 2 of the circuit board as follows:

() C446: .1 μ F (104) glass ceramic capacitor.

() D405: 1N4753A diode (#56-55).

() C424: .01 μ F (103) glass ceramic capacitor.

() D401: 1N4149 diode (#56-56).

() Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 3 of the circuit board as follows:

() R334: 1000 Ω (brn-blk-red) resistor.

() R428: 680 Ω (blu-gry-brn) resistor.

() R429: 1500 Ω (brn-grn-red) resistor.

() R418: 2.7 Ω (red-viol-gold) resistor.

() C432: .01 μ F (103) glass ceramic capacitor.

() C426: .01 μ F (103) glass ceramic capacitor.

() R414: 1000 Ω (brn-blk-red) resistor.

() C433: .01 μ F (103) glass ceramic capacitor.

() C579: .01 μ F (103) glass ceramic capacitor.

() Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 4 of the circuit board as follows:

() R332: 680 Ω (blu-gry-brn) resistor.

() R331: 4700 Ω (yel-viol-red) resistor.

() D408: 1N4149 diode (#56-56).

() R412: 4700 Ω (yel-viol-red) resistor.

() D303: 1N4149 diode (#56-56).

() Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 5 of the circuit board as follows:

() R357: 680 k Ω (blu-gry-yel) resistor.

() R313: 33 k Ω (org-org-org) resistor.

() R346: 100 Ω (brn-blk-brn) resistor.

() R438: 4700 Ω (yel-viol-red) resistor.

() R437: 4700 Ω (yel-viol-red) resistor.

() R433: 4700 Ω (yel-viol-red) resistor.

() Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 6 of the circuit board as follows:

- C351: .1 μ F (104) glass ceramic capacitor.
- R352: 680 k Ω (blu-gry-yel) resistor.
- R439: 10 k Ω (brn-blk-org) resistor.
- D306: 1N4149 diode (#56-56).
- R364: 4700 Ω (yel-viol-red) resistor.
- R441: 4700 Ω (yel-viol-red) resistor.
- R302: 100 k Ω (brn-blk-yel) resistor.
- R305: 220 Ω (red-red-brn) resistor.
- C311: .01 μ F (103) glass ceramic capacitor.
- R307: 4700 Ω (yel-viol-red) resistor.
- R308: 1800 Ω (brn-gry-red) resistor.
- C354: .01 μ F (103) glass ceramic capacitor.
- R369: 3300 Ω (org-org-red) resistor.
- C353: .01 μ F (103) glass ceramic capacitor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 7 of the circuit board as follows:

- R318: 5.1 M Ω , 1/2-watt (grn-brn-grn) resistor.
- R309: 100 k Ω (brn-blk-yel) resistor.
- C322: .01 μ F (103) glass ceramic capacitor.
- R316: 6800 Ω (blu-gry-red) resistor.
- R372: 470 Ω (yel-viol-brn) resistor.

- R371: 22 k Ω (red-red-org) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 8 of the circuit board as follows:

- R338: 1000 Ω (brn-blk-red) resistor.
- R336: 1000 Ω (brn-blk-red) resistor.
- R335: 1000 Ω (brn-blk-red) resistor.
- R337: 820 Ω (gry-red-brn) resistor.
- R343: 10 k Ω (brn-blk-org) resistor.
- R344: 2700 Ω (red-viol-red) resistor.
- C332: .1 μ F (104) glass ceramic capacitor.
- D308: 1N295A diode (red-wht-grn, #56-20).
- D309: 1N295A diode (red-wht-grn, #56-20).
- D311: 1N295A diode (red-wht-grn, #56-20).
- C321: .01 μ F (103) glass ceramic capacitor.
- C323: .01 μ F (103) glass ceramic capacitor.
- C325: .01 μ F (103) glass ceramic capacitor.
- R325: 6800 Ω (blu-gry-red) resistor.
- R317: 1.5 M Ω (brn-grn-grn) resistor.
- C355: .1 μ F (104) glass ceramic capacitor.
- C361: .1 μ F (104) glass ceramic capacitor.
- Solder the leads to the foil and cut off the excess lead lengths.

Heathkit®

Refer to Pictorial 2-2 (Illustration Booklet, Page 9) for the following steps.

NOTE: Be sure to install the following parts vertically on the circuit board (like you did when you assembled the oscillator circuit board).

Install components in Section 1 of the circuit board as follows:

- R425: 2200 Ω (red-red-red) resistor.
- C443: .01 μF (103) glass ceramic capacitor.
- R424: 3300 Ω (org-org-red) resistor.
- D407: 1N4149 diode (#56-56). Be sure to position the banded end up.
- C442: .01 μF (103) glass ceramic capacitor.
- C441: .01 μF (103) glass ceramic capacitor.
- D404: 1N4149 diode (#56-56).
- R422: 47 k Ω (yel-viol-org) resistor.
- D403: 1N4149 diode (#56-56).
- R423: 2200 Ω (red-red-red) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 2 of the circuit board as follows:

- C445: .01 μF (103) glass ceramic capacitor.
- R401: 3300 Ω (org-org-red) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 3 of the circuit board as follows:

- R419: 330 Ω (org-org-brn) resistor.
- C425: .01 μF (103) glass ceramic capacitor.
- R402: 3300 Ω (org-org-red) resistor.

- R404: 4700 Ω (yel-viol-red) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 4 of the circuit board as follows:

- C569: .1 μF (104) glass ceramic capacitor.
- R417: 680 Ω (blu-gry-brn) resistor.
- R416: 7500 Ω (viol-grn-red) resistor.
- D402: 1N4149 diode (#56-56).
- R406: 100 Ω (brn-blk-brn) resistor.
- R415: 22 Ω (red-red-blk) resistor.
- R403: 8200 Ω (gry-red-red) resistor.
- R408: 3900 Ω (org-wht-red) resistor.
- R407: 22 Ω (red-red-blk) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 5 of the circuit board as follows:

- R323: 12 k Ω (brn-red-org) resistor.
- R315: 100 k Ω (brn-blk-yel) resistor.
- R358: 33 k Ω (org-org-org) resistor.
- R314: 27 k Ω (red-viol-org) resistor.
- R322: 220 Ω (red-red-brn) resistor.
- R431: 10 k Ω (brn-blk-org) resistor.
- D409: 1N2071 diode (#57-27).
- R409: 33 k Ω (org-org-org) resistor.
- R405: 100 Ω (brn-blk-brn) resistor.
- R413: 100 Ω (brn-blk-brn) resistor.
- Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 6 of the circuit board as follows:

- () R444: 180 Ω (brn-gry-brn) resistor.
- () R446: 10 k Ω (brn-blk-org) resistor.
- () R443: 4700 Ω (yel-viol-red) resistor.
- () R435: 1000 Ω (brn-blk-red) resistor.
- () R434: 4700 Ω (yel-viol-red) resistor.
- () R303: 2200 Ω (red-red-red) resistor.
- () C304: .01 μ F (103) glass ceramic capacitor.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 7 of the circuit board as follows:

- () R356: 100 k Ω (brn-blk-yel) resistor.
- () R359: 1.5 M Ω (brn-grn-grn) resistor.
- () R354: 1.5 M Ω (brn-grn-grn) resistor.
- () R355: 100 k Ω (brn-blk-yel) resistor.
- () R442: 4700 Ω (yel-viol-red) resistor.
- () R353: 33 k Ω (org-org-org) resistor.
- () R304: 5600 Ω (grn-blu-red) resistor.
- () R436: 1000 Ω (brn-blk-red) resistor.
- () C307: .01 μ F (103) glass ceramic capacitor.
- () R306: 33 k Ω (org-org-org) resistor.
- () D302: BA-244 diode (red-yel-yel, #56-646).
- () D301: BA-244 diode (red-yel-yel, #56-646).
- () C302: .01 μ F (103) glass ceramic capacitor.
- () R301: 100 Ω (brn-blk-brn) resistor.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 8 of the circuit board as follows:

- () C349: .01 μ F (103) glass ceramic capacitor.
- () R367: 150 k Ω (brn-grn-yel) resistor.
- () D312: 1N4149 diode (#56-56).
- () R365: 100 k Ω (brn-blk-yel) resistor.
- () R366: 100 k Ω (brn-blk-yel) resistor.
- () R349: 27 k Ω (red-viol-org) resistor.
- () C352: .1 μ F (104) glass ceramic capacitor.
- () C338: .01 μ F (103) glass ceramic capacitor.
- () R348: 15 k Ω (brn-grn-org) resistor.
- () R351: 15 k Ω (brn-grn-org) resistor.
- () R361: 100 k Ω (brn-blk-yel) resistor.
- () R362: 100 k Ω (brn-blk-yel) resistor.
- () R363: 100 k Ω (brn-blk-yel) resistor.
- () R312: 47 k Ω (yel-viol-org) resistor.
- () D305: 1N4149 diode (#56-56).
- () R311: 220 Ω (red-red-brn) resistor.
- () C316: .01 μ F (103) glass ceramic capacitor.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 9 of the circuit board as follows:

- () C358: .01 μ F (103) glass ceramic capacitor.
- () R347: 1000 Ω (brn-blk-red) resistor.
- () R341: 100 Ω (brn-blk-brn) resistor.
- () R319: 560 k Ω (grn-blu-yel) resistor.

- () R321: 100 k Ω (brn-blk-yel) resistor.
- () R328: 47 k Ω (yel-viol-org) resistor.
- () R326: 1 M Ω (brn-blk-grn) resistor.
- () D307: 1N295A diode (red-wht-grn, #56-20).
- () R327: 1 M Ω (brn-blk-grn) resistor.
- () R324: 68 Ω (blu-gry-blk) resistor.
- () C314: .01 μ F (103) glass ceramic capacitor.
- () C315: .01 μ F (103) glass ceramic capacitor.
- () R373: 1000 Ω (brn-blk-red) resistor.
- () C356: .1 μ F (104) glass ceramic capacitor.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install components in Section 10 of the circuit board as follows:

- () C331: .1 μ F (104) glass ceramic capacitor.
- () R339: 47 Ω (yel-viol-blk) resistor.
- () R342: 1200 Ω (brn-red-red) resistor.
- () R345: 100 Ω (brn-blk-brn) resistor.
- () Solder the leads to the foil and cut off the excess lead lengths.

Refer to Pictorial 2-3 (Illustration Booklet, Page 10) for the following steps.

Install parts in Section 1 of the circuit board as follows:

- () L428: 100 μ H (brn-blk-brn, #45-621) choke.
- () W417: 1-1/8" violet solid wire.
- () L427: 100 μ H (brn-blk-brn, #45-621) choke.
- () L426: 10 μ H (brn-blk-blk, #45-614) choke.

- () L419: 100 μ H (brn-blk-brn, #45-621) choke.
- () W411: 1-3/8" violet solid wire.
- () Skip W408 and W407.
- () W406: 1-1/2" violet solid wire.
- () Skip W405.
- () W404: 1-1/2" violet solid wire.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install parts in Section 2 of the circuit board as follows:

- () W414: 7/8" small bare wire.
- () W415: 1-5/8" violet solid wire.
- () L425: 2.2 μ H (red-red-gold, #45-73) choke.
- () L424: 100 μ H (brn-blk-brn, #45-621) choke.
- () Wire socket at TP.
- () Two 1/8" \times 1/4" ferrite beads (and a 1" small bare wire) at FB-FB.
- () L421: 100 μ H (brn-blk-brn, #45-621) choke.
- () Skip W403.
- () W402: 1-3/8" violet solid wire.
- () W401: 1" violet solid wire.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install parts in Section 3 of the circuit board as follows:

- () R421: 22 Ω , **1-watt** (red-red-blk) resistor.
- () 1/8" \times 1/4" ferrite bead at FB.
- () L422: 100 μ H (brn-blk-brn, #45-621) choke.



- () L418: 100 μ H (brn-blk-brn, #45-621) choke.
- () L423: 100 μ H (brn-blk-brn, #45-621) choke.
- () W409: 1" violet solid wire.
- () Solder the leads to the foil and cut off the excess lead lengths.

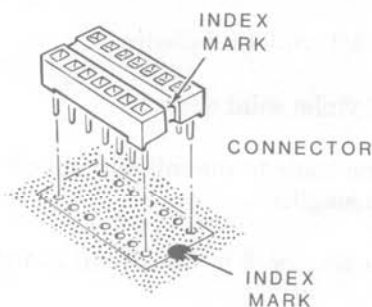
Install parts in Section 4 of the circuit board as follows:

- () W421: 1" violet solid wire.
- () L303: 100 μ H (brn-blk-brn, #45-621) choke.
- () L302: 100 μ H (brn-blk-brn, #45-621) choke.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install parts in Section 5 of the circuit board as follows:

NOTES:

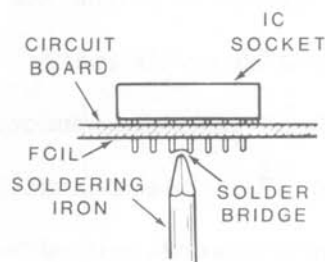
1. In some of the following steps, you will be directed to install an IC socket. First, make sure the pins are straight. Then start the pins into the circuit board holes. The index mark on the circuit board must still be visible after you install the socket. Solder the pins to the foil as you install each socket.



2. It is very easy to form a solder bridge between foils when you install an IC socket. After you install each socket, carefully inspect the foil for solder bridges and remove any that you find, as described below. If you suspect that you have a solder bridge, but are not positive, you can check your foil pattern against the

one shown in the corresponding "X-Ray View" (Illustration Booklet, Page 37).

To remove a solder bridge, hold the circuit board component-side-up as shown and hold your soldering iron tip between the two points that are bridged. The solder will flow down the soldering iron tip.



- () Install a 14-pin IC socket at U304.
- () W422: 1-1/4" violet solid wire.
- () L301: 100 μ H (brn-blk-brn, #45-621) choke.
- () W302: 3/4" small bare wire.
- () L305: 100 μ H (brn-blk-brn, #45-621) choke.
- () L304: 68 μ H (blu-gry-blk, #45-622) choke.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install parts in Section 6 of the circuit board as follows.

- () W303: 1-3/4" violet solid wire.
- () 8-pin IC socket at U302.
- () L307: 100 μ H (brn-blk-brn, #45-621) choke.
- () L308: 100 μ H (brn-blk-brn, #45-621) choke.
- () 8-pin IC socket at U301.
- () L306: 100 μ H (brn-blk-brn, #45-621) choke.
- () 14-pin IC socket at U306.
- () Solder the leads to the foil and cut off the excess lead lengths.



Heathkit®

Refer to Pictorial 2-4 (Illustration Booklet, Page 11) for the following steps.

NOTE: Solder the leads of each of the following parts to the foil and cut off any excess lead lengths as you install it.

Install parts in Section 1 of the circuit board as follows.

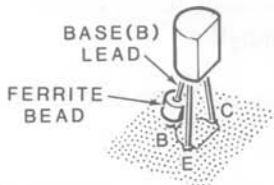
- () Q405: MRF237 transistor (#417-912). Be sure to match the lead spacing on the transistor with the hole spacing on the circuit board (when you have the transistor properly installed, its tab will be positioned as shown on the Pictorial). Mount this transistor down against the circuit board.
- () Q406: MRF237 transistor (#417-912). Mount this transistor down against the circuit board.

Install parts in Section 2 of the circuit board as follows:

- () Q404: 2N3866 transistor (#417-205). Mount this transistor down against the circuit board.

NOTE: Mount the following transistors 1/4" above the circuit board.

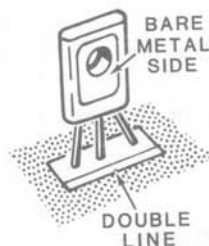
- () Q403: MPSA55 transistor (#417-865). Be sure to match the flat on the transistor with the flat part of the outline on the circuit board.
- () Q401: MPS6521 transistor (#417-172) and 1/8" × 1/8" ferrite bead. Slide the ferrite bead onto the base lead (center lead) as shown below before you install this transistor.



- () Q402: MPSA6521 transistor (#417-172) and 1/8" × 1/8" ferrite bead. Slide the bead onto the base lead (center lead) before you install this transistor.

Install parts in Section 3 of the circuit board as follows:

- () Q302: MPF105 transistor (#417-169).
- () Q412: X29A829 transistor (#417-201).
- () U402: **78L08** integrated circuit (#442-681). Install this IC the same as you install transistors.
- () Q411: MPSA20 transistor (#417-801).
- () Q409: MJE171 transistor (#417-819). Match the metal side of the transistor with the double line on the circuit board. Start the transistor leads into their corresponding circuit board holes and push the transistor down until the wider part of the leads touch the circuit board. Then solder the leads to the foil and cut off any excess lead lengths.



- () Q407: X29A829 transistor (#417-201).
- () Q408: MJE171 transistor (#417-819). Be sure to match the metal side of the transistor with the double line on the circuit board.

Install parts in Section 4 of the circuit board as follows:

- () Q301: MPF105 transistor (#417-169).
- () Q303: MPSA20 transistor (#417-801).

Install part in Section 5 of the circuit board as follows:

- () U303: MC1496G integrated circuit (#442-96). Be sure to match the tab on this IC with the tab shown on the circuit board outline. Then start the leads into their corresponding circuit board holes. Position the IC 1/4" above the circuit board before you solder the leads to the foil.

Refer to Pictorial 2-5 (Illustration Booklet, Page 12) for the following steps.

Install capacitors in Section 1 of the circuit board as follows:

- Skip C567.
- C564: 160 pF mica.
- C561: 200 pF mica.
- Skip C557.
- C554: 390 pF mica.
- C551: 620 pF mica.
- C568: 270 pF ceramic.
- Skip C566.
- C563: 255 pF mica.
- C559: 330 pF mica.
- Skip C556.
- C553: 680 pF mica.
- Skip C565.
- C562: 160 pF mica.
- C558: 200 pF mica.
- Skip C555.
- C552: 390 pF mica.
- Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 2 of the circuit board as follows:

- C439: 5 pF ceramic.
- C437: .001 μ F (1000 pF) ceramic.
- C431: .05 μ F ceramic.

- Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 3 of the circuit board as follows:

- Skip C421 and C418.
- C415: 5 pF ceramic.
- C417: 110 pF (111) ceramic.
- Skip C412 and C414.
- C408: 6.8 pF ceramic.
- C411: 150 pF (151) ceramic. Form the leads of this capacitor to fit the circuit board holes.
- Skip C405 and C407.
- C402: 12 pF ceramic.
- C404: 180 pF (181) ceramic.
- Skip C423, C422, C420, and C419.
- C416: 110 pF (111) ceramic.
- Skip C413.
- C409: 150 pF (151) ceramic. Form the leads of this capacitor to fit the circuit board holes.
- Skip C406.
- C403: 180 pF (181) ceramic.
- C401: 24 pF ceramic.
- Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 4 of the circuit board as follows:

- C449: 1300 pF mica. NOTE: Use the circuit board holes that best fit the capacitor you were supplied.
- C448: 1300 pF mica. NOTE: Use the circuit board holes that best fit the capacitor you were supplied.

- () C447: 620 pF mica.
- () C438: .0015 μ F (1500 pF) ceramic.
- () C434: 100 pF (100K) ceramic.
- () C429: .05 μ F ceramic.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 5 of the circuit board as follows:

- () C345: .001 μ F (1000 pF) ceramic.
- () C344: .001 μ F (1000 pF) ceramic.
- () C339: .001 μ F (1000 pF) ceramic.
- () C341: .001 μ F (1000 pF) ceramic.
- () C306: 270 pF ceramic.
- () C308: .001 μ F (1000 pF) ceramic.
- () C301: 15 pF ceramic.
- () C305: 82 pF mica.
- () C309: 10 pF ceramic.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 6 of the circuit board as follows:

- () C335: .005 μ F (5000 pF) ceramic.
- () C334: .005 μ F (5000 pF) ceramic.
- () C329: 100 pF (100K) **ceramic**.
- () C318: 18 pF ceramic.
- () C326: .001 μ F (1000 pF) ceramic.
- () Solder the leads to the foil and cut off the excess lead lengths.

Install capacitors in Section 7 of the circuit board as follows:

- () C328: .001 μ F (1000 pF) ceramic.
- () C327: .001 μ F (1000 pF) ceramic.
- () C313: .001 μ F (1000 pF) ceramic.
- () C312: 10 pF ceramic.
- () C324: 100 pF **mica**.
- () Solder the leads to the foil and cut off the excess lead lengths.

Refer to Pictorial 2-6 (Illustration Booklet, Page 13) for the following steps.

NOTE: Solder the lugs or leads on the following parts to the foil and cut off any excess lead lengths as you install each part.

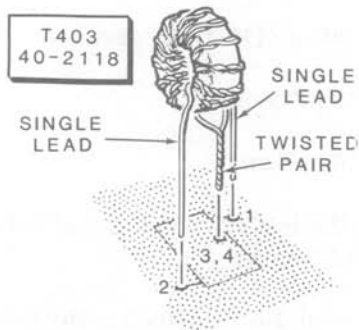
Install parts in Section 1 of the circuit board as follows:

NOTE: When you install a toroid coil, as in the next step, position the coil down against the circuit board as shown.



- () Skip L444.
- () L442: .55 μ H toroid coil (#40-2116).
- () L439: .9 μ H toroid coil (#40-2115).
- () Skip L437 and L443.
- () L441: .55 μ H toroid coil (#40-2116).
- () L438: .9 μ H toroid coil (#40-2115).
- () Skip L436.

- () T403: 6.5 μ H toroid coil (#40-2118). Be sure the twisted pair of leads go into the hole that is inside the outline on the circuit board (labeled 3,4), and the single leads go into holes 1 and 2 as shown.



- () Skip L415.
 () L413: .71 μ H coil (#40-2073).
 () Skip L411.
 () L408: .9 μ H coil (#40-2072).
 () Skip L417, L416, and L414.
 () L412: .71 μ H coil (#40-2073).
 () Skip L409.
 () L407: .9 μ H coil (#40-2072).

Install parts in Section 2 of the circuit board as follows:

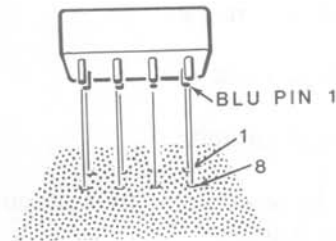
- () L433: 3 μ H toroid coil (#40-2112).
 () L435: 1.8 μ H toroid coil (#40-2113).
 () L434: 1.8 μ H toroid coil (#40-2113).
 () L432: 3 μ H toroid coil (#40-2112).
 () L431: 3 μ H toroid coil (#40-2112).

- () Install two 5/16" \times 5/16" ferrite beads on a 1-1/2" large bare wire at FB-FB. Use pliers to bend the wire to fit the circuit board holes.

- () Skip L406.
 () L404: 3 μ H coil (#40-2070).
 () L402: 13 μ H coil (#40-2069).
 () Skip L405.
 () L403: 3 μ H coil (#40-2070).
 () Skip T401.
 () L401: 13 μ H coil (#40-2069).

Install parts in Section 3 of the circuit board as follows:

- () U401: Double-balanced mixer (#150-72). Be sure pin 1 (marked with a blue dot) goes into hole 1 in the circuit board as shown on the Pictorial.



- () T301: 10.7 MHz transformer (#52-193).

Install parts in Section 4 of the circuit board as follows:

- () FL301: 8.830 MHz crystal filter (#404-640). NOTE: Disregard any In and Out printing that may be on your filter. The filter can be installed either way in the circuit board.
 () T302: 10.7 MHz transformer (#52-193).

Heathkit®

Refer to Pictorial 2-7 (Illustration Booklet, Page 14) for the following steps.

() Refer to Detail 2-7A (Illustration Booklet, Page 15) and use the following procedure to prepare a transformer:

1. Cut a 3" length of desoldering braid. Flatten this desoldering braid to be sure there are no twists in it.
2. Cut a 10" length of small violet solid wire. Then remove 1/8" of insulation from **one end**.
3. Refer to Part A of the Detail and solder the bare end of the violet wire to the side of, and 1" away from, one end of the desoldering braid. Then bend the desoldering braid in half as shown.
4. Refer to Part B of the Detail and insert the ends of the desoldering braid through the holes in a ferrite core. The solder connection for the violet wire should be at the left end of the indicated hole in the ferrite core.
5. Push a round rod (drill bit, etc.) of the largest possible diameter (about 1/8") all the way through into (but not clear through) both holes in the ferrite core to compress the desoldering braid flat against the sides of the web (center) of the ferrite core. Then remove the rod.

NOTE: As you proceed with the winding of this transformer, **continuously push each wire against the web of the ferrite core**. If you do not do this, you will not be able to complete all 6 wraps. Use progressively smaller rods. You can use the large bare wire supplied with this kit to push the last two turns against the ferrite core.

6. Refer again to Part B of the Detail and proceed with the winding of the transformer. Wrap the violet wire around the web (through both holes) of the ferrite core.

7. Refer to Part C of the Detail and finish wrapping the 6 wraps of violet wire (5 wires at the bottom and 6 wires at the top) on the ferrite core. When you complete the 6 wraps, there should not be enough violet wire left to make another complete wrap.

8. Refer again to Part C of the Detail and remove all but 1/8" of insulation from the end of the violet wire at the bottom of the ferrite core. Set the completed transformer aside temporarily.

() Use the same procedure to make another transformer identical to the one you just completed. Set the completed transformer aside temporarily.

() T404: Install one of the prepared transformers in the circuit board at T404. Start the leads of the transformer into their corresponding circuit board holes as shown in Detail 2-7B (Illustration Booklet, Page 15). Then position the transformer down against the circuit board and solder the desoldering braid and wires to the foil. Use only as much heat as necessary to insure a good connection. Cut off any excess braid or wire lengths.

() T401: Similarly, install the remaining prepared transformer in the circuit board at T401.

() Refer to Detail 2-7C (Illustration Booklet, Page 15) and use the following procedure to prepare transformer T402:

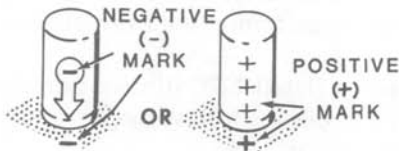
1. Cut an 8" length of violet solid wire and a 4" length of black solid wire. Do not remove any insulation from the ends of these wires yet.
2. Refer to Part A of the Detail and push one end of the prepared violet wire through the 3/16" × 3/8" ferrite bead until it extends 1" from the bead. Then wind seven turns of wire around the bead. Be sure to pull each turn tight against the bead. Also be sure each turn of the wire does not cross another turn.



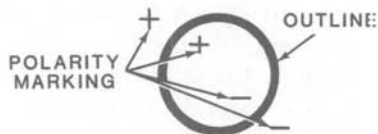
3. Refer to Part B of the Detail and push one end of the black wire through the bead until it extends 1" from the bead and is next to one end of the violet wire. Then wind three turns of wire around the bead so they are between the turns of the violet wire.
4. Refer again to Part B of the Detail and cut off the excess ends of wire so they extend 1/2" away from where they exit the core. Then remove 1/4" of insulation from each wire end.

- () T402: Install the prepared transformer in the circuit board at T402. Be sure the black wires go into circuit board holes 3 and 4 and the violet wires go into holes 1 and 2. Then position the transformer down against the circuit board and solder the wires to the foil. Cut off any excess wire lengths.

NOTE: In some of the following steps, you will install electrolytic capacitors. Before you install an electrolytic capacitor, look at it and identify the leads. One lead will have a positive (+) mark or a negative (-) mark near it. Be sure to install the positive lead in the positive-marked hole, or the negative lead in the negative-marked hole.



- () C436: 10 μ F, 35 V electrolytic capacitor. Be sure to observe the correct polarity. NOTE: Electrolytic capacitors are identified on the circuit board by the following outline:



- () Solder the leads to the foil and cut off the excess lead lengths.

Install parts in Section 2 of the circuit board as follows.

- () R333: 2000 (2 k) Ω control (#10-318).
 () R445: 50 k Ω control (#10-222).
 () C444: 330 μ F electrolytic capacitor.
 () C578: 47 μ F electrolytic capacitor.
 () C571: .68 μ F electrolytic capacitor.
 () C572: .68 μ F electrolytic capacitor.
 () C435: 2.2 μ F electrolytic capacitor.
 () C427: 10 μ F, 35 V electrolytic capacitor.
 () C514: 1.5 μ F electrolytic capacitor.
 () Solder the leads to the foil and cut off the excess leads lengths.

Install electrolytic capacitors in Section 3 of the circuit board as follows.

- () C346: 2.2 μ F.
 () C343: 22 μ F.
 () C347: 2.2 μ F.
 () C342: 100 μ F.
 () C575: .68 μ F.
 () C577: 22 μ F.
 () C317: 3.3 μ F.
 () C576: 3.3 μ F.
 () Solder the leads to the foil and cut off the excess lead lengths.

Heathkit®

Install parts in Section 4 of the circuit board as follows:

- R368: 2000 (2 k) Ω control (#10-318).
- C336: 2.2 μF electrolytic capacitor.
- C333: 100 μF electrolytic capacitor.
- R329: 500 kΩ control (#10-946).
- C319: 10 μF, 25 V electrolytic capacitor.
- C357: 10 μF, 25 V electrolytic capacitor.
- C359: 220 μF electrolytic capacitor.
- Solder the leads to the foil and cut off the excess lead lengths.

Refer to Pictorial 2-8 (Illustration Booklet, Page 16) for the following steps.

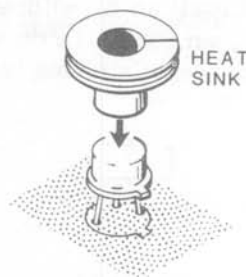
- Prepare the following violet solid wires. These wires are listed in the order in which you will use them.

5"	6-3/4"
3"	7/8"
1-3/4"	2"
1-7/8"	1-1/2"
3-1/2"	5-1/4"

Install the prepared wires in the circuit board as follows. Be sure to position each wire as shown in the Pictorial.

- 5" from hole A to hole A.
- 3" from hole B to hole B.

- 1-3/4" from hole L to hole L. Be sure to route this wire under the leads coming from R431 and D409 as shown.
- 1-7/8" from hole D to hole D.
- 3-1/2" from hole C to hole C.
- 6-3/4" from hole E to hole E. Be sure to route this wire under the lead coming from D409 as shown.
- 7/8" from hole K to hole K.
- 2" from hole J to hole J. Be sure to route this wire under the lead coming from R348 as shown.
- 1-1/2" from hole F to hole F.
- W304: 5-1/4" wire.
- Solder the leads to the foil and cut off the excess lead lengths.
- Push a heat sink onto transistor Q405 as shown below.



- Similarly, push a heat sink onto transistor Q406.



NOTE: Many of the ICs used in this kit are CMOS (complementary metal-oxide semiconductor) devices. These are rugged and reliable components when they are installed, but they can be damaged by static electricity during installation. The other ICs are of a type that is not susceptible to static electricity. Nevertheless, you should treat these ICs as if they were CMOS types, since it will avoid all possible confusion between ICs and provide protection in all cases. Use the procedure shown in Detail 2-8A whenever you are directed to install ICs.

- () U304: LM324N integrated circuit (#442-602).
- () U302: CA3130E integrated circuit (#442-715).
- () U301: MC1349P integrated circuit (#442-55).
- () U306: LM388N-3 integrated circuit (#442-763).

Once you remove a protected IC from its protective foam packing, DO NOT lay the IC down or let go of it until it is installed in its socket. When you bend the leads of a protected IC, hold the IC in one hand and place your other hand on your work surface before you touch the IC to your work surface. This will equalize the static electricity between the work surface and the IC.

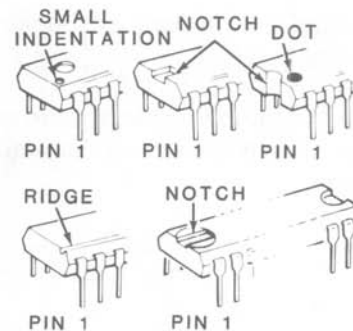
The pins on the IC's may be bent out at an angle, so they do not line up with the holes in the IC socket. DO NOT try to install an IC without first bending the pins as described below. To do so may damage the IC pins or the socket, causing intermittent contact.



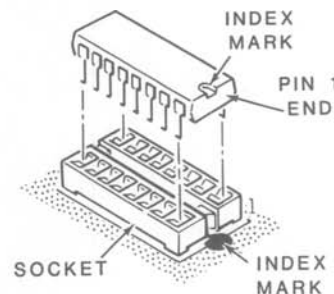
Before you install an IC, lay it down on its side as shown below and very carefully roll it toward the pins to bend the lower pins into line. Then turn the IC over and bend the pins on the other side in the same manner.



Compare the IC to the drawing shown below. Then determine which end of the IC is the pin 1 end.



Position the pin 1 end of the IC over the index mark on the circuit board. Then start the IC pins into the socket. Make sure that all of the pins are started into the socket. Then push the IC firmly into the socket. NOTE: An IC pin can become bent under the IC and it will appear as though it is correctly installed in the socket.



Refer to Pictorial 2-9 (Illustration Booklet, Page 17) for the following steps.

NOTE: Solder the following cables or parts to the foil as you install them.

- () Refer to Detail 2-9A and prepare the following shielded cables:

2-3/4"

8-1/2"

- () Connect one end of the 2-3/4" shielded cable to the circuit board as follows.

Inner lead to hole RF (near L401)

Shield wires to nearby hole GND

- () Connect the free end of the 2-3/4" shielded cable to the circuit board as follows:

Inner lead to hole RF (near U401)

Shield wires to nearby hole GND

- () Connect one end of the 8-1/2" shielded cable to the circuit board as follows:

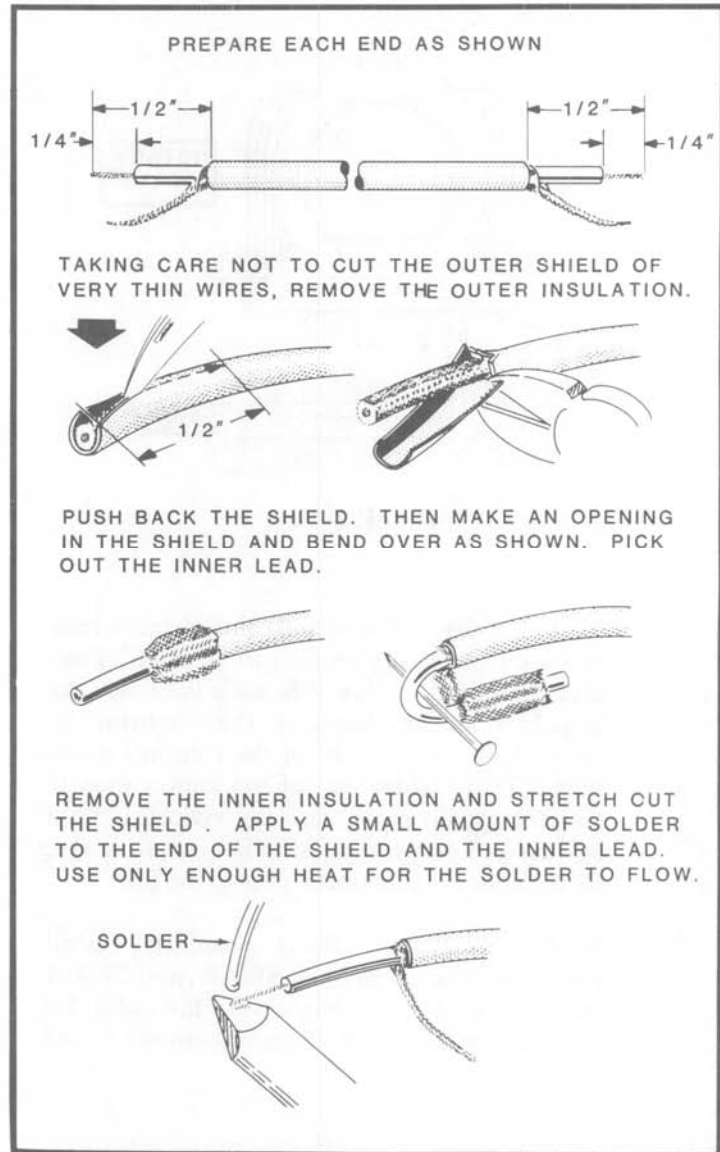
Inner lead to hole SIDE TONE/IN

Shield wires to nearby hole GND

- () Connect the free end of the 8-1/2" shielded cable to the circuit board as follows:

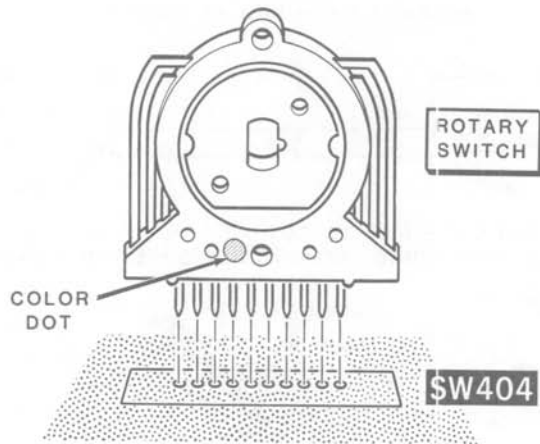
Inner lead to hole SIDE TONE/OUT

Shield wires to nearby hole GND



Detail 2-9A



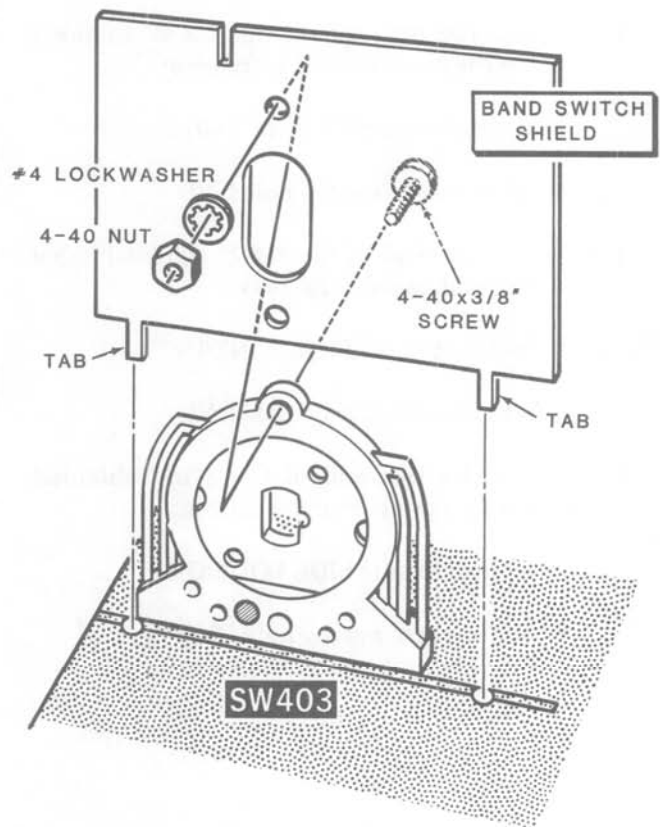


Detail 2-9B

- () SW404: Refer to Detail 2-9B and install a rotary switch at SW404 on the circuit board. **Position the switch so the side with the color dot is positioned as shown in the Pictorial.** Be sure all of the pins are in their circuit board holes. Then solder one of the center pins to the foil. Again make sure the switch is tight against and perpendicular to the circuit board; then solder the remaining pins to the foil.
- () SW403, SW402, & SW401: Similarly, install rotary switches at SW403, SW402, and SW401 on the circuit board. Make sure the color dot on each switch is positioned as shown in the Pictorial.

NOTE: When you install the shields in the following steps, be careful not to pinch and wires between the shields and the circuit board.

- () Refer to Detail 2-9C and mount a band switch shield to rotary switch SW403 as shown. Use a 4-40 \times 3/8" screw, a #4 lockwasher, and a 4-40 nut. Be sure the shield is on the correct side of the switch and is positioned as shown. Also be sure the tabs on the bottom of the shield enter their corresponding holes in the circuit board.



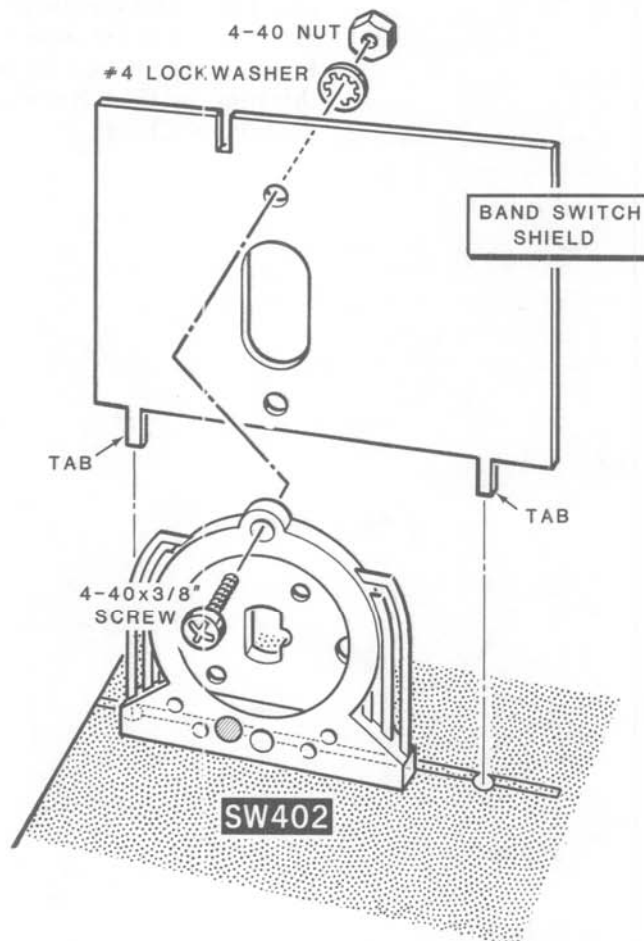
Detail 2-9C

Heathkit®

- () Refer to Detail 2-9D and similarly mount a band switch shield to rotary switch SW402 as shown. Be sure to mount the shield on the correct side of the switch as shown.
- () Refer to Detail 2-9E (Illustration Booklet, Page 17) and rotate the center portions of switches SW404, SW403, SW402, and SW401 so the notch is positioned as shown. Then slide the 7" shaft through the centers of these switches as shown.
- () Push the band switch shields down tight against the circuit board. Make sure the shields and switches are perpendicular to the circuit board. Then solder the two tabs on each shield to the foil.

- () Refer again to Detail 2-9E and use the following procedure to install the PA shield on the circuit board:

1. Position the PA shield as shown in the Pictorial (note the location of the small hole in the shield). Then make sure the tabs on the top of this shield enter the slots in the band switch shields. Also make sure the tab on the bottom of the shield enters its corresponding circuit board hole.
2. Push the shield down tight against the circuit board and solder the bottom tab to the foil. NOTE: Be careful not to pinch any wires between the shield and the circuit board.
3. Solder the top tabs on the PA shield to the notches in the band switch shields.



Detail 2-9D

CIRCUIT BOARD CHECKOUT

Carefully inspect the foil side of the circuit board for the following most-commonly-made errors:

- () Unsoldered connections.
- () Poor solder connections.
- () Solder bridges between foil patterns.
- () Protruding leads which could touch each other or the chassis when the circuit board is installed later.

Refer to the illustrations where parts are installed as you make the following visual checks:

- () Transistors for the proper **type** and **installation**.
- () Integrated circuits for the proper **type** and **installation**.
- () Diodes for the proper **type** and **installation**.
- () Electrolytic capacitors for the correct position of the positive (+) or negative (-) leads.

This completes the assembly of the T/R circuit board. Set the circuit board aside and proceed to "Chassis."

NOTE: If you have the HWA-9 Band Pack Accessory, check each of the parts supplied with that kit against the Parts List. Then install the parts on the oscillator and T/R circuit boards as directed in those Instructions (you will not have to perform the disassembly instructions). If you do not have the Accessory at this time, set the T/R circuit board aside and proceed directly to "Chassis."

