AC mains pre-heat winding had low insulation resistance to internal can, as did dc heater. Ribbon wiring between the two ends showed some wire-to-wire shorting. Internal can was completely excavated from housing for inspection. DC heater inspected and charred leakage paths to can removed or minimized. Ribbon wiring replaced with silicone insulated wiring. Failed parts on pcbs identified and replaced. Charred/hard foam was removed as much as practical, but some portions retained to provide locations. Internal can refitted with neoprene strips used for thermal insulation to walls and nomex paper used to insulate ends and centre the can. Coarse frequency adjustment shaft had broken deep inside can – no fix, so workaround was to use heater temperature adjustment trimpot.

Terminal end pcb
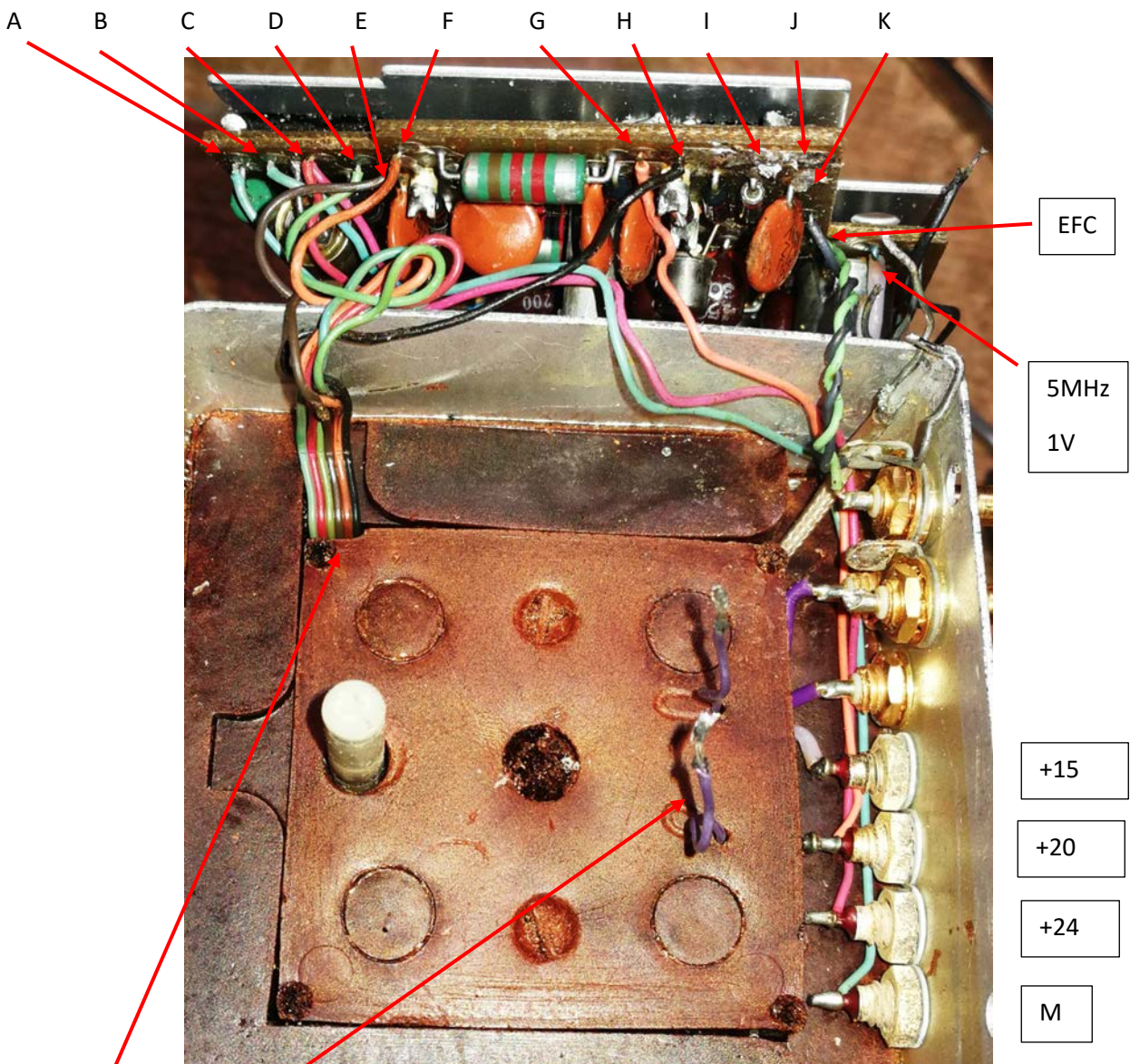
Two purple wires from crystal embedded in central square foam.

Ribbon (black, orange, brown, green, red, blue) to other end pcb as well as internal DC heater.

	Pcb circuit	Wire to …	Note (* likely swapped)
A *	L3	Blue to ribbon to DC heater	Replaced by silicon red (4 bar)
B *	C4/Q3/Q4 node	Blue to M terminal	original
C	+24V star node	Red to +24 terminal	Replaced by silicon red
		Red to ribbon to other pcb F1 RHS	Replaced by silicon black
D	Feedback to Q2	Green to ribbon to other pcb f/b CR2/C10	

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	Pcb circuit	Wire to …	Note (* likely swapped)
E	Feedback to 4R7	Brown to ribbon to other pcb f/b CR1/C10	
F	L1/R1/R5/C11	Orange to ribbon to other pcb C9/R11	Incorrect on schematic
			Replaced by silicon red
G	L1	Orange to +20 terminal	
H	Gnd near DIV	Black to ribbon to other pcb gnd	Pcb trace with 3 gnds
I	Gnd near DIV	TCW to DIV socket lug	Pcb trace with 3 gnds
J	Gnd near DIV	Coax sheath to 5MHz can feedthrough	Pcb trace with 3 gnds
K	C1 then R1	Coax core to 5MHz can feedthrough	
DIV	C6/C8	Signal to light green to terminal end pcb	
(J4)	gnd	Shield to dark green to terminal end pcb	
1V		Signal insulated to terminal end pcb	
		Shield TCW to terminal end pcb	
-EFC		R1 (10kΩ) to can	
+EFC		R2 (10kΩ) to can	
+15		L2 (220uH) to can	
+20		Orange to terminal end pcb	
		L1 (220uH) to can	
+24		Red to terminal end pcb	
M		Blue to terminal end PCB	
	CR2 gnd	Black to 5MHz/1V shield lug	

AC heater end pcb

AC wiring to AC terminals and AC heater and pcb F2/C11 disconnected.

C

A'

Green x2

to RT1 in can

Ribbon   F   H   D   E
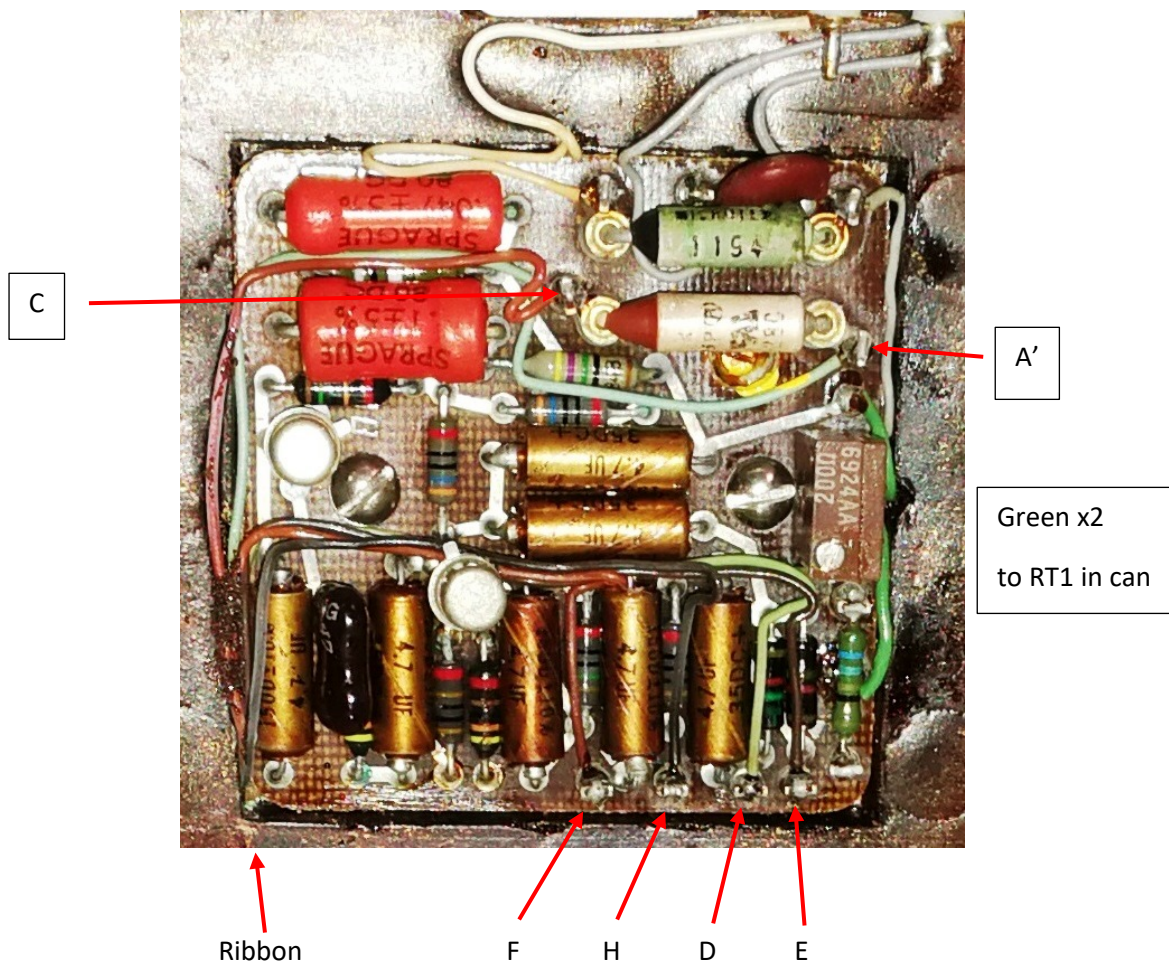
	Pcb circuit	Wire to …	Note
A'	F1 LHS	Blue to ribbon to DC heater	Now to F1 RHS
C	F1 RHS	Red to ribbon to other pcb +24V star	Now to F1 LHS Replaced by silicon black
D	CR2/C10	Green to ribbon to other pcb feedback Q2	Replaced by silicon red (1 bar)
E	CR1/C10	Brown to ribbon to other pcb feedback 4R7	Replaced by silicon red (2 bar)
F	C9/R11	Orange to ribbon to other pcb +20V	Replaced by silicon red (3 bar)
H	gnd	Black to ribbon to other pcb gnd	

Note that heater can connect to F1 at either end to suit wiring.

Additional neoprene strips used to fill cavity once in-situ and correctly located for end-caps.

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