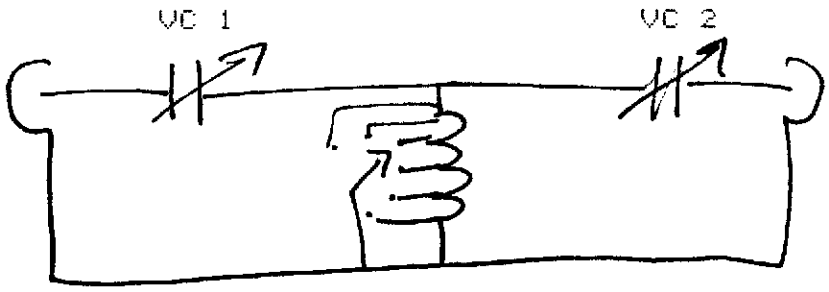
QRP ANTENNA TUNING UNIT

CIRCUIT

VC 1 = 500pF
VC 2 = 500pF



THE T-MATCH ATU CAN BE USED FOR CO-AX OR END FED ANTENNAS. FOR USE WITH BALANCED FEEDER A BALUN IS REQUIRED. SIMILAR ARRANGEMENTS ARE USED IN HEATHKIT'S HF-T 9 ATU AND IN THE HOWES ATU KIT.

PARTS

FOR QRP WORK THE VARIABLE CAPACITORS CAN BE 250+250pF POLYCON TUNING CAPS FROM MAPLINS OR CIRKIT. FOR ABOVE 3W AN EXCELLENT BUY ARE THE 250+250pF AIRSPACED CAPS FROM SPECTRUM COMMUNICATIONS Ltd. WHICH INCLUDE A 3:1 SLOW MOTION DRIVE AND COST £2.50 + p&p.

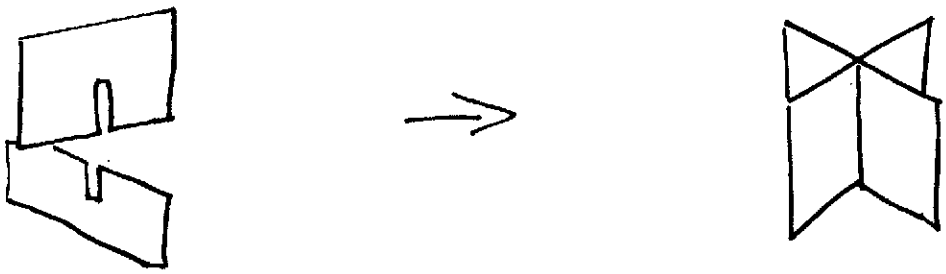
THE COIL IS 20 TURNS AIR SPACED WITH 12 TAPS. THE SWITCH IS A 12-WAY 1-POLE WAFER.

SOCKETS ARE TO SUIT YOUR STATION BUT PHONO'S ARE AS GOOD AS ANY.

THE UNIT IS HOUSED IN AN ALI BOX SUCH AS MINFFORDS PW7.

COIL CONSTRUCTION

TAKE 2 PIECES OF .1 PITCH PERF BOARD 3"x2". CUT SLOTS IN BOTH 1" LONG AND JUST WIDE ENOUGH TO SLIDE OVER EACH OTHER TO FORM AN "X".

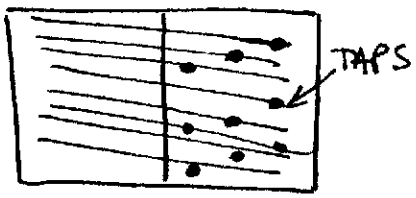


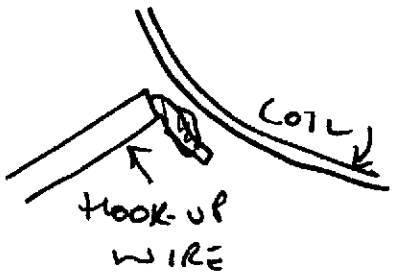
USING 20SWG TINNED COPPER WIRE WIND THE COIL. FEED IT THROUGH THE 3rd HOLE IN FROM ONE CORNER OF THE FORMER. GO TO THE NEXT SIDE AND USE THE SAME HOLE IN IT. DO THIS WITH THE OTHER TWO SIDES. THE NEXT TURN STARTS ONE HOLE UP FROM THE FIRST. CONTINUE FEEDING THE WIRE THROUGH UNTIL YOU HAVE YOUR 20 TURNS. MAKE LOOPS AT THE ENDS TO STOP IT UNWINDING AND TO SOLDER TO. BEND A SOLDER TAG AT 90 DEGREES AND SOLDER TO THE BOTTOM TURN OPPOSITE THE START OF THE COIL.

THE COIL IS TAPPED BY SOLDERING LENGTHS OF HOOK-UP WIRE AT STAGGERED POINTS ALONG ONE QUARTER:

SWITCH POSITION	1	2	3	4	5	6	7	8	9	10	11	12	WIPER
TURNS FROM GROUND	18	17	16	15	13	11	9	7	5	3	2	NC	GROUND

TO FORM THE TAPS, STRIP THE END OF THE WIRE AND BEND AT RIGHT ANGLES. TIN WELL WITH SOLDER AND SOLDER TO COIL. BY STAGGERING THE TAPS THERE IS LESS CHANCE OF SHORTING OUT TURNS.



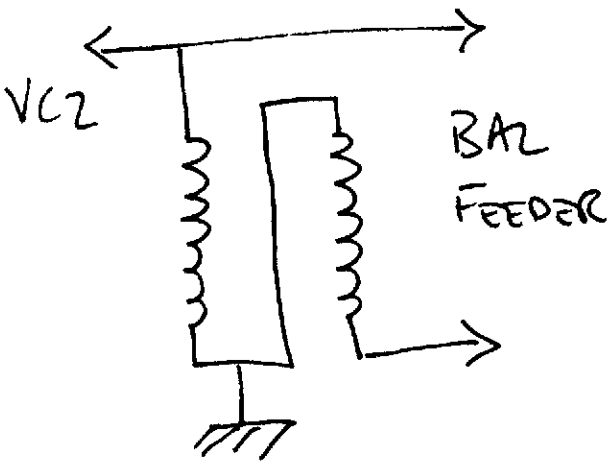


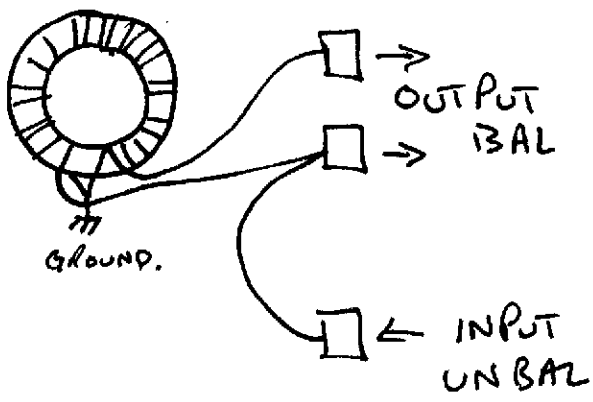
CAPACITORS

BECAUSE BOTH SIDES OF THE CAPS ARE "LIVE" WITH RF THEY MUST NOT COME INTO CONTACT WITH THE METAL BOX AND YOU MUST USE INSULATED KNOBS. IF USING POLYCONS THIS IS EASY AS FIXING SCREWS GO INTO THE PLASTIC CASE. IF USING AIRSPACED CAPS THEY MUST BE MOUNTED ON HARDBOARD OR PERSPEX AND KEPT OFF THE BOX BOTTOM BY WOODEN BATTENS OR SOMETHING. IN BOTH CASES ENSURE THE SHAFTS ARE CLEAR TOO. BOTH GANGS ARE PARRALELED TO GIVE THE 500pF MAXIMUM.

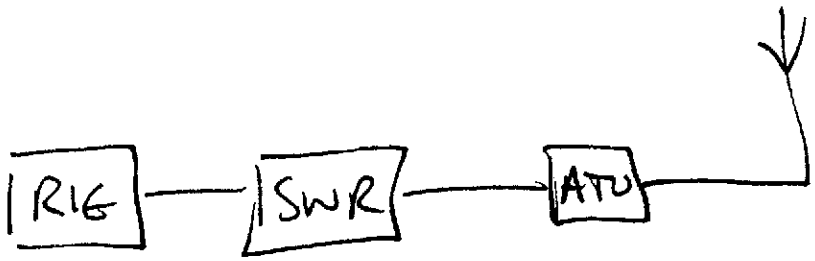
BALUN

IF BALANCED FEEDERS ARE USED A BALUN MUST BE CONNECTED. THE LAYOUT SHOWS ONE WAY OF DOING THIS, A SEPARATE BOX COULD BE USED. THE BALUN IS A 4:1 TYPE MADE BY BIFILAR WINDING 12 TURNS OF HOOK-UP WIRE ONTO A T-68-2 TOROID. THE START OF ONE WINDING AND THE END OF THE OTHER ARE TAKEN TO GROUND.





IN USE



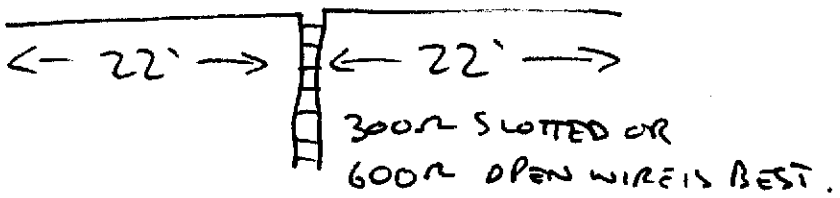
SET VC 1 AND VC 2 TO ABOUT HALF WAY AND KEY YOUR TX. SWEEP THE SWITCH ACROSS THE TAPS UNTILL YOU GET A DIP IN THE SWR. ADJUST VC 1 AND VC 2 ALTERNATELY TO GET THE BEST MATCH. IF THERE IS NO DIP CHANGE THE CAPACITOR SETTINGS AND SWEEP AGAIN. THERE WILL BE A NUMBER OF L/C COMBINATIONS WHICH WILL GIVE ACCEPTABLE SWR READINGS. USE THE ONE WITH THE MOST COIL IN CICUIT, OR USE A FIELD STRENGTH METER TO MONITOR OUTPUT.

IF USING END FEED ENSURE A GOOD EARTH. IF THE POWER SUPPLY MAINS CABLE IS 3 CORE THEN THE CHANCES ARE YOU ALREADY HAVE ONE! IF NOT A SHORT WIRE TO A WATER PIPE OR A GROUND SPIKE WILL DO.

THE UNIT SHOULD MATCH ANY LONG-WIRE TO ANY HF BAND.

BALANCED FEEDER

IT IS NOT A WELL KNOWN FACT THAT A DIPOLE FED WITH OPEN WIRE FEEDER OR 300ohm SLOTTED CABLE WILL TUNE UP ON ALL FREQUENCIES! I USED TO USE THE SAME ARRANGEMENT AS GEORGE GM3OXX TO GREAT EFFECT. GEORGE HAS 200 DXCC COUNTRIES WITH UNDER 1W ON THE ONE ANTENNA:



A BALANCED ATU IS BETTER BUT THIS ONE WITH A BALUN SHOULD DO.

LAYOUT

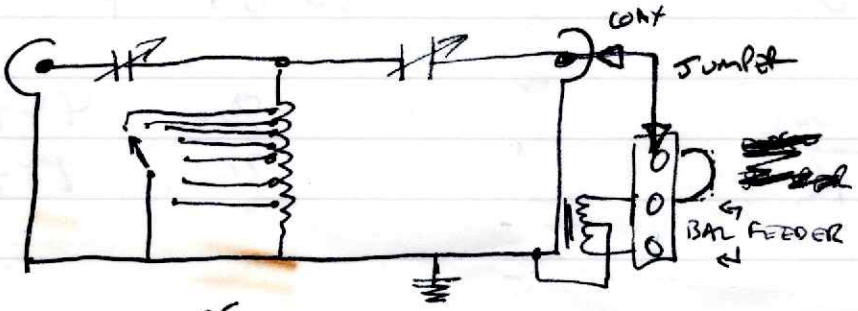
A LAYOUT IS GIVEN BUT YOU DO YOUR OWN THING. I BUILT MINE WITH A BUILT-IN SWR METER (SEE PW DART & PW TEME) TO MATCH MY MODIFIED PW SEVERN (RX AND TX BOARDS FROM ALPHA).

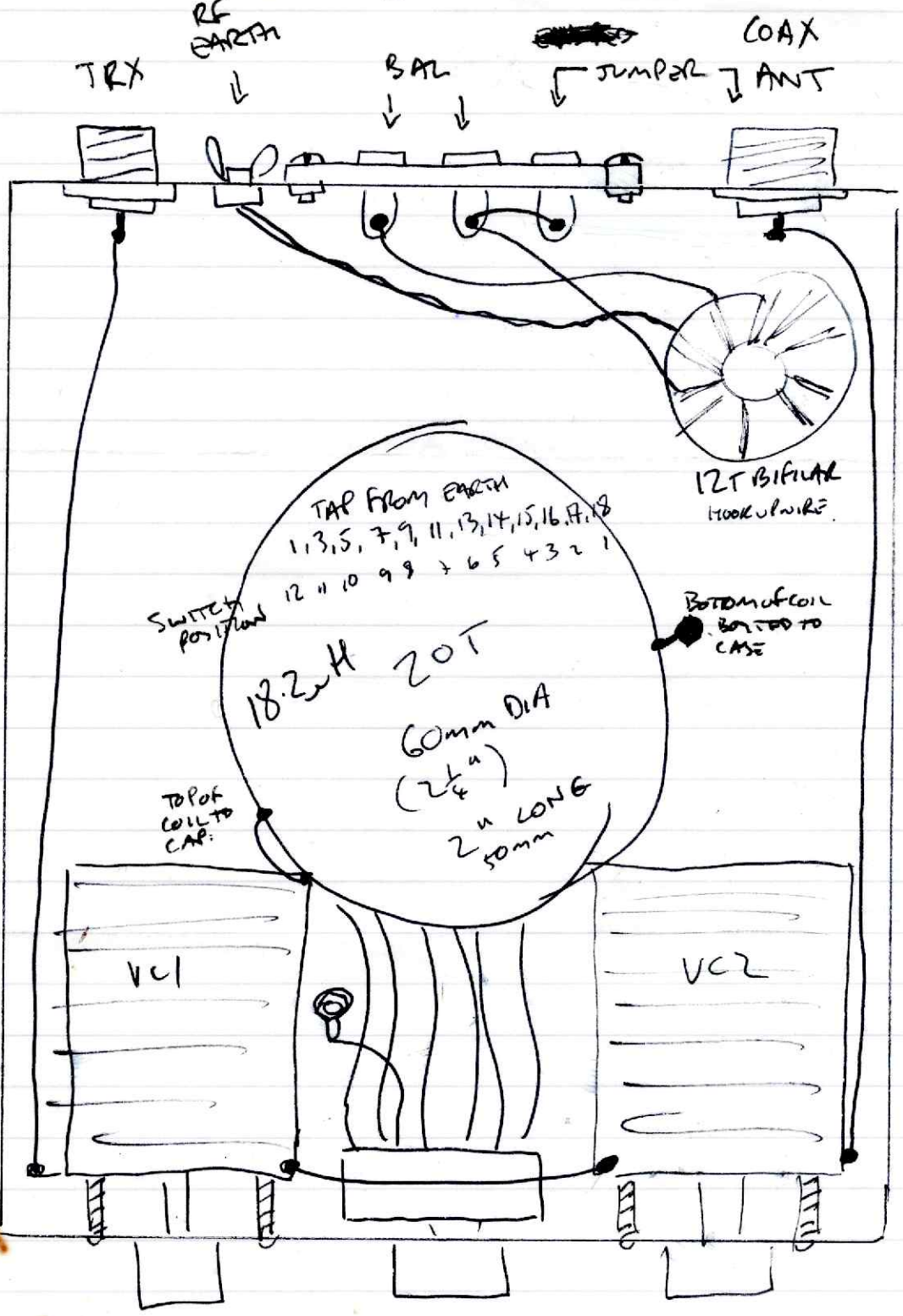
ALL THE BEST, 73s

Steve.

GM0FUW GQRPC 2196.

HEATHKIT HF-T9 ATU

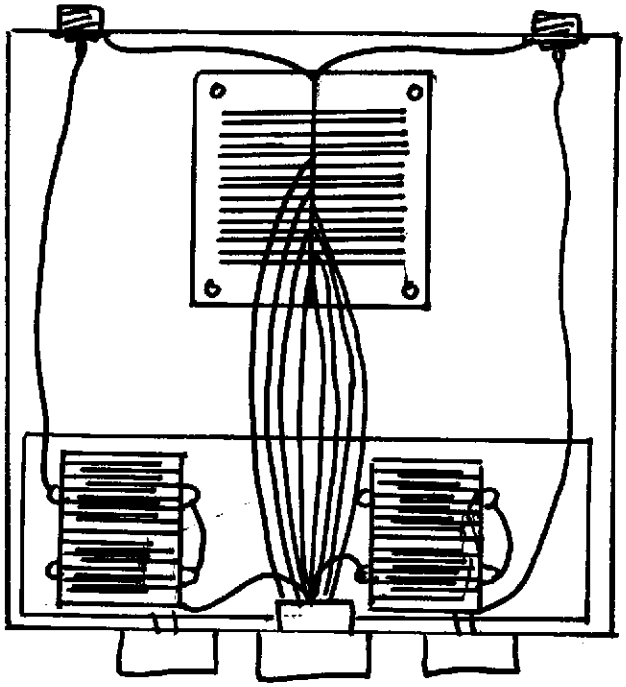


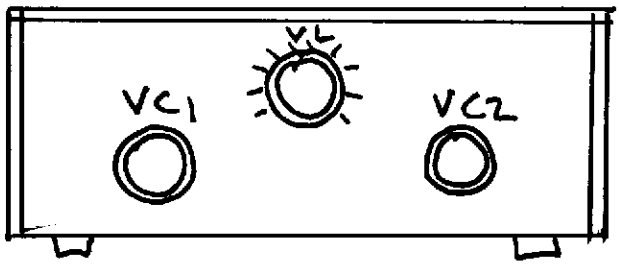


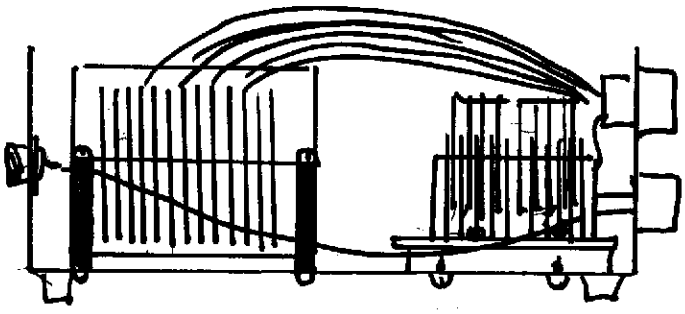
THE GØFUW
ANTENNA TUNING UNIT

GMØFUW JUNIOR

CONSTRUCTION DETAILS





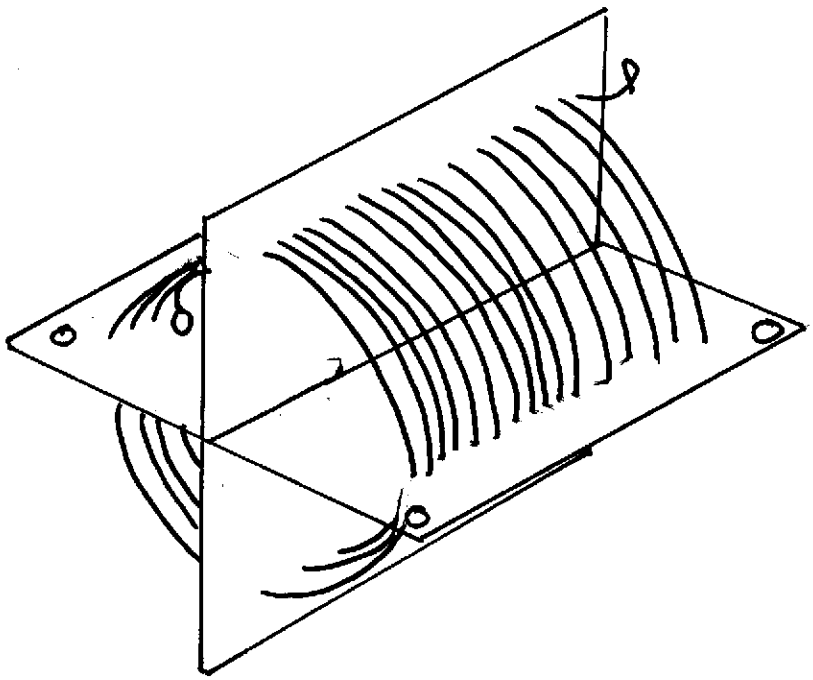


BOX: 8" x 8" x 3"

SWITCH: 1 POLE 12 WAY

CAPS: 250pF + 250pF

COIL DETAIL



DIA ≈ 2.2"

LENGTH 2.4"

PERFBOARD 3" x 3"
x 2 IN X-SECTION.