

VK7RST 6 METER BEACON.

CALL SIGN - VK 7 RST

OPERATING FREQUENCY - 52.370 + 800 HZ Upward Shift

POWER OUTPUT - Adjustable 10 - 25 watts

POWER SUPPLY - 240 volt step down to 12 v

regulated and limited to 4 AMPS continuous.

CRYSTAL FREQUENCY - 13092.50 x 4 multiplication stability
better than .0015%

KEYER - Diode Matrix clocked by free running oscillator
at 7 WPM every 30 seconds.

EXCITER HARMONIC CONTENT

(WITHOUT FILTER) - Second better than 45 db down
- Third better than 50 db down

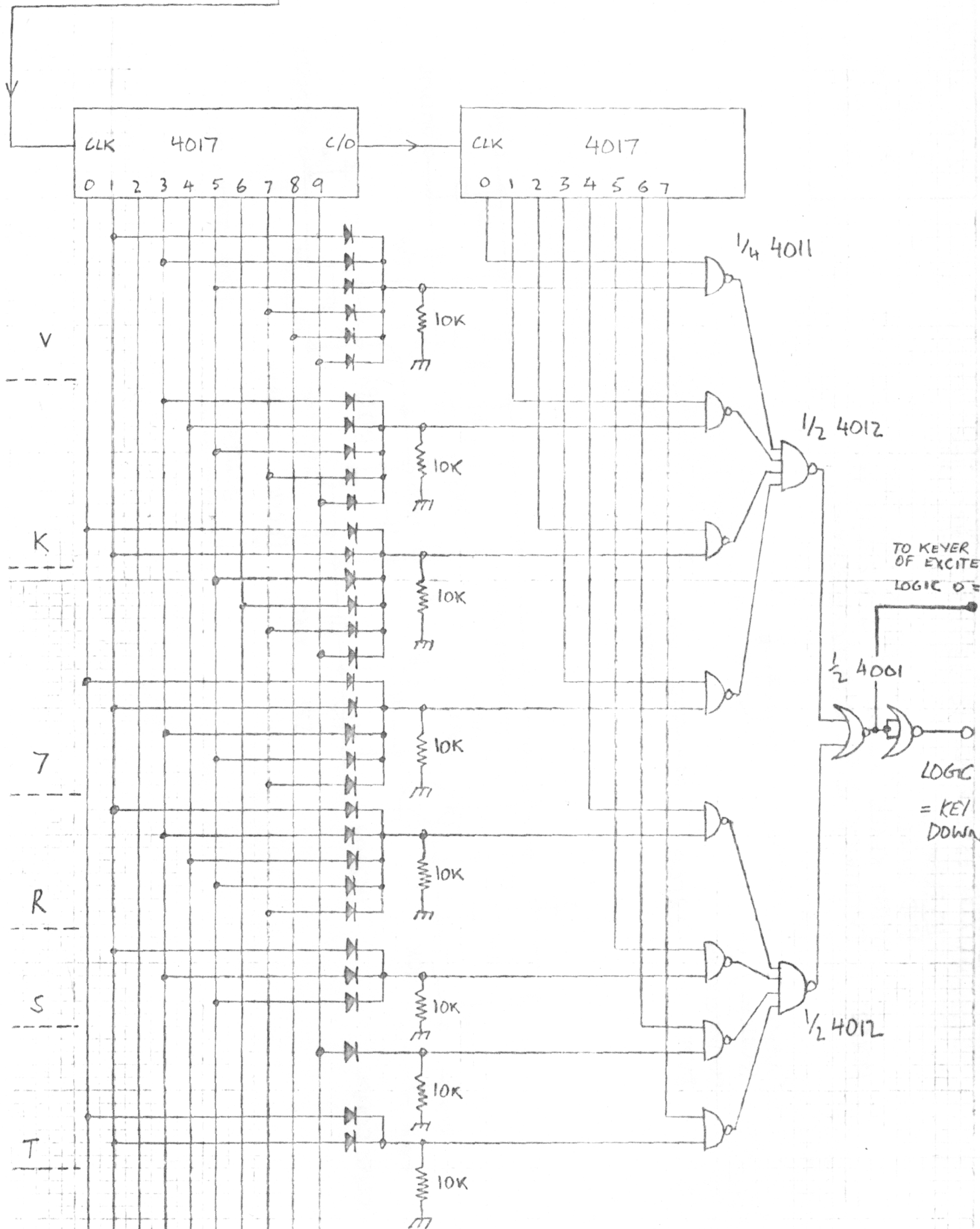
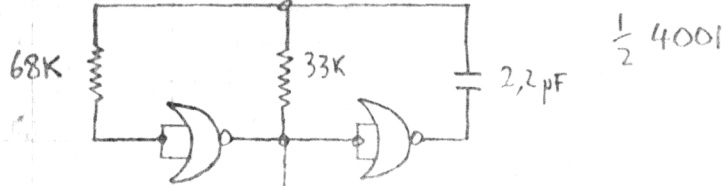
ANTENNA FILTER PERFORMANCE

(SWEEP TEST) - 2 harmonic better than 60 db down
3 harmonic better than 90 db down
insertion loss .1 db at signal frequency.

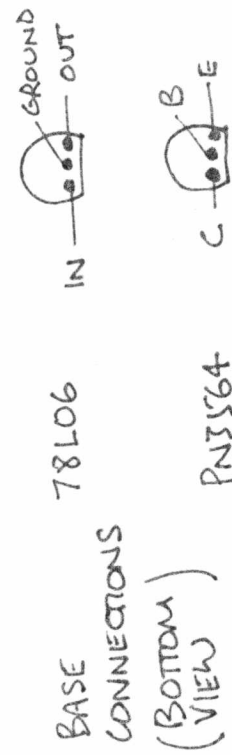
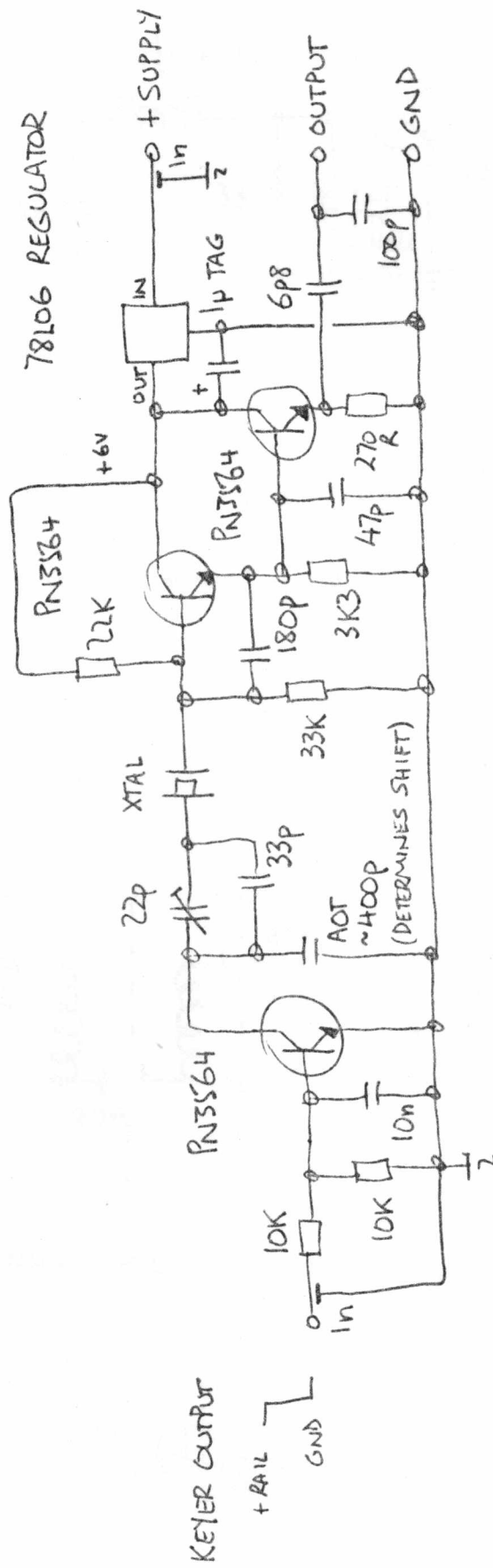
ANTENNA - Crossed dipoles feed with 52 ohm. cable mounted
on 1½ dia. G.S. pipe to be 12 ft. above roof level.

EQUIPMENT LOCATION - Plant Room, Level 5, R.M.C. Building,
Tasmanian College of Advanced Education,
1 Olinda Grove,
MT. NELSON.





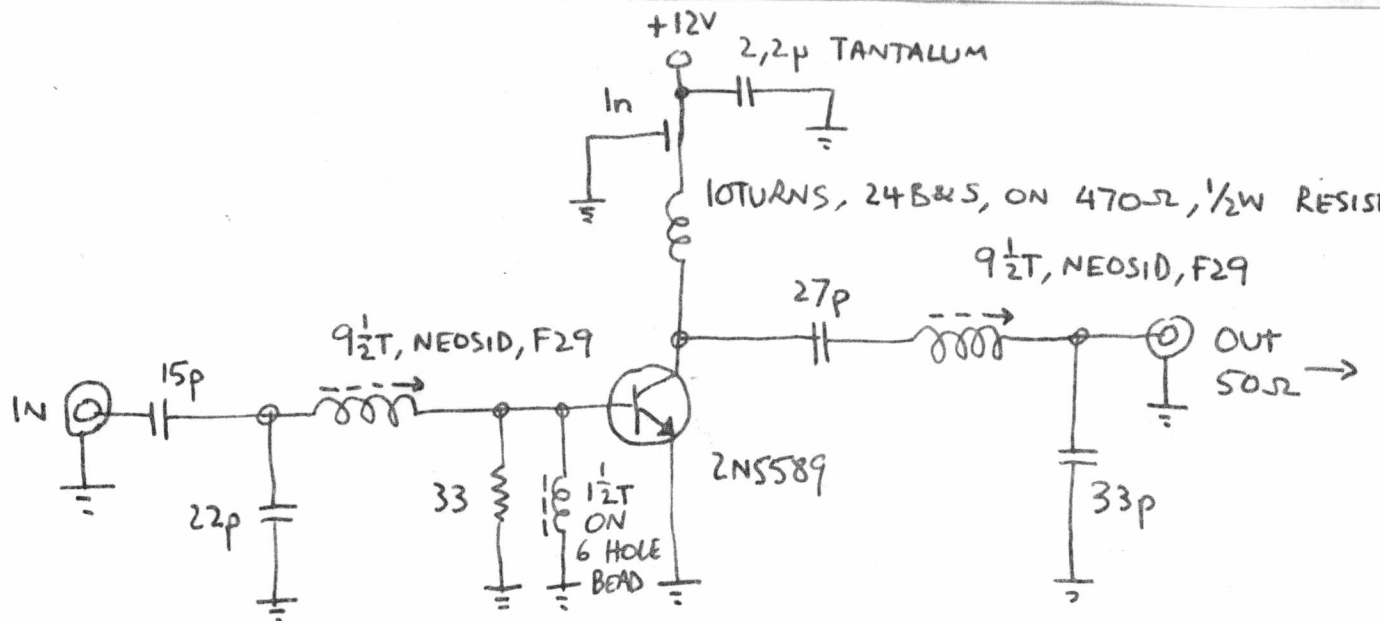
6METRE BEACON - IDENT.
KEYER. DESIGNER VK7ZDC



NOTES. 1/ OSCILLATOR IS AT CARRIER FREQUENCY WHEN KEYS OUTPUT IS AT + SUPPLY RAIL, AND SHIFTS UP WHEN KEYS O/P GOES TO GROUND

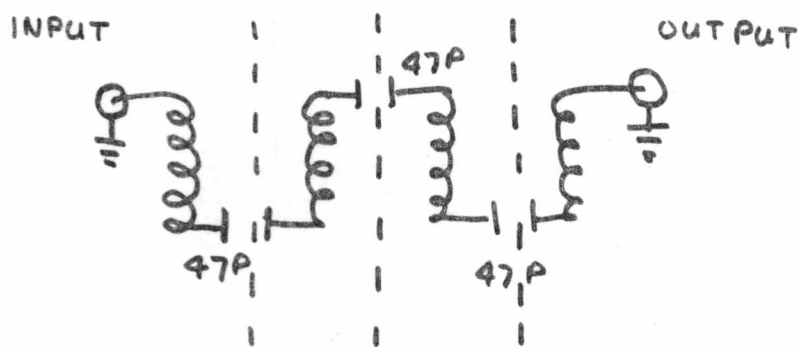
2/ XTAL FREQUENCY IS 13092.5kHz. THE

OSC-BUFFER FOR VK7RST 6M. BEACON
5.79 P.COX

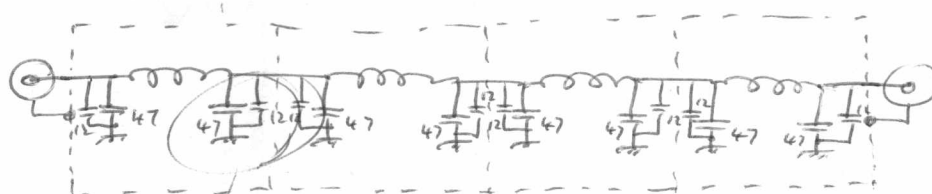


DRIVER STAGE FOR 6-METRE BEACON AMPLIFIER

INPUT 50-100mW ; OUTPUT 3W INTO 50 Ω



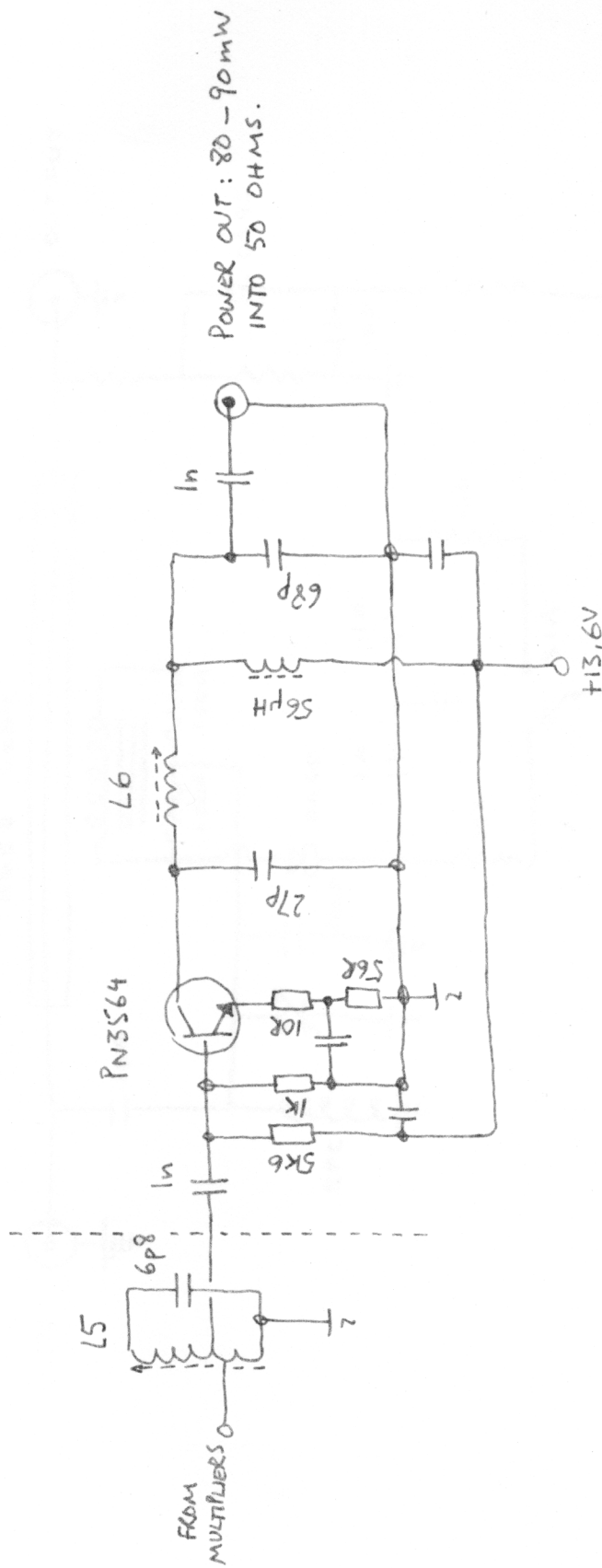
ANTENNA FILTER FOR 6 METER BECON



$$47 + 12 + \text{stray} = 61 \text{ pF.}$$

4 cascade sections of lumped $\lambda/4$ sections.

ex VK7ZDF.



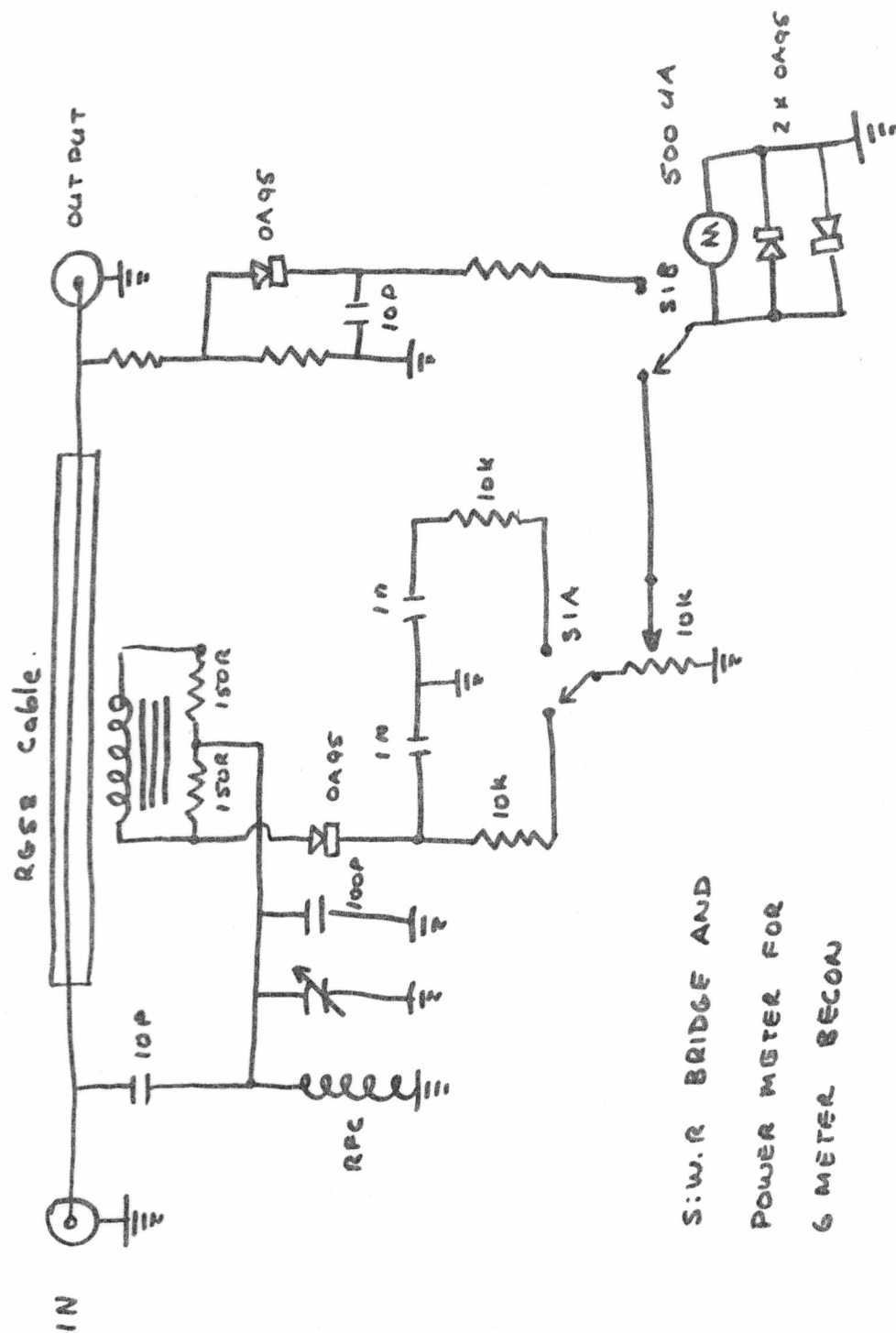
ALL COILS WOUND ON NEEDLE CORES, F29 SLUGS.

L5 17½ TURNS, TAPS AT 1T, 1½T.

L6 6½ TURNS.

UNMARKED CAPACITORS ARE INF BYPASS.

WIA 6 METRE BEACON EXCITER:	
OUTPUT STAGE	
8/78	P.COX



MR15A/1 MODIFICATION TO 52.525 MHz VK7ZJG 11/74.

XTALS FOR 52.525 TX 2.918055 HCU 32 pF PARALLEL RESONANCE.
RX 20.9125 HCU54 SERIES RES. 3 O.T.

THE 15A/1 IS A NARROW BAND UNIT, MAX. DUVN ACCEPTANCE ± 5 KHz.

* REMOVE 70 MHz BANDPASS FILTER AT ANTENNA SOCKET.

R.X. MOD. (ORIGINAL VALUES SHOWN IN BRACKETS)

V8 1ST OSC. ADD 33-47 pF MAX. ACROSS C68 (15 pF) TO ENSURE OSCILLATOR STARTS RELIABLY. (CHECK C68 IS 470 pF IN MULTI CHANNEL UNITS.

L9 REWIND TO 11 TURNS SAME GAUGE SPACED.

REPLACE C70 (3.3 pF) WITH 12 pF.

REPLACE C1 (3.3 pF) WITH 10 pF.

L2 ADD 6.8 pF.

L3 REPLACE C8 (4.7 pF) WITH 10 pF.

L5 " C11 (4.7 pF) WITH 10 pF.

G.D.O CHECK ABOVE FOR RESONANCE, CHECK IF'S AND DISC'R FOR ALIGNMENT AS PER HANDBOOK. MUTE SHOULD OPEN AT BETTER 15 UV.

TX MOD

TR4 PRIMARY REPLACE C102 (18 pF) WITH 47 pF

SECONDARY " C103 (10 pF) " 47 pF.

TR5 PRIM. ADD 10 pF

SEC. ADD 15 pF.

TR6 PRIM ADD 5 pF

SEC ADD 2 x 8.2 pF (EACH SIDE TO C.T.)

L23 ADD 4 ADDITIONAL TURNS SAME GAUGE ENAMEL

2 TURNS EACH SIDE OF C.T. BEWARE 300VDC PERMANENTLY WIRED TO ANODES !! YES ON RECEIVE TOO.

G.D.O. CHECK ABOVE FOR RESONANCE, TUNE AS PER HANDBOOK. OUTPUT SHOULD BE VERY CLOSE TO 16 W INTO 50 OHM LOAD.

13 March, 1979.

Mr. M.J. Hennessy,
Hon. Secretary,
The Wireless Institute of Australia,
P.O. Box 52,
SORELL 7172

Dear Sir,

I refer to your letter of 10 December 1978 and agree to the establishment of a beacon transmitter as you requested.

You are asked to obtain the approval of the P & T Radio Regulatory and Licensing Branch and to make this written approval available to the College before proceeding with the work and to indicate that there is no interference with the present transmission from the campus by the Hobart FM radio facilities.

This approval is given also on the condition that the antenna will have a negligible visual effect.

Maintenance will be the responsibility of your Institute together with all insurance costs. The location of the equipment is to be decided after consultation with the executive of the Hobart FM in an agreed position.

Yours faithfully,



L.H. PEATRIE
CAMPUS MANAGER

14th May, 1979

MEMO TO: Hon. Secretary, Wireless Institute of Australia.
FROM: A. Ruthven, Convenor, Beacon Group.
SUBJECT: 6 Meter Beacon UK7RST.

Dear Sir,

I feel it is timely to report progress on the construction of this beacon.

The construction work load has fallen to two members of the group. Both ill health, and a lack of spare time have delayed its completion.

Negotiations with the T.C.A.E. have concluded and they are agreeable to providing a servicable site at no cost to the W.I.A.

I have discussed the location of both our antenna and equipment and reached agreement with them. Power will be provided shortly.

The only outstanding concession to be met is to furnish a copy of the licence approval to Mr. Peattie.

The antenna has already been completed, tested and erected with coaxial cable feed to the equipment location.

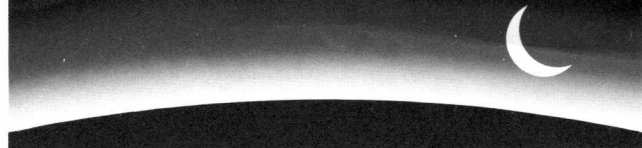
The equipment has been completed and is about to undergo "soak testing". Private arrangements are being made with Departmental officers to assist with the final check out prior to commissioning.

Action required from Council is to proceed with the licence application at your earliest convenience. If all goes well the beacon can be commissioned when approval is given.

The information within the attached folders should be used to support the application and can be retained by Council and P+T for your and their records.

73

A. Ruthven.



MOONRAKER
AUSTRALIA PTY LTD

PRELIMINARY

MOONRAKER AUTOMATIC TUNING ANTENNA SYSTEM - FOR AMATEUR RADIO MOBILE

AND BASE STATION

The Moonraker automatic tuning antenna system comprises the whip (2.7metres) - covering the operating frequency range of 3 to 15 MHz and the antenna control unit.

The system, using a logic controlled stepper motor to provide continuous tuning over the frequency range of the whip, has been designed for multi-frequency land mobile and base station applications.

Typical tuning time for one channel frequency to another is less than 1 second maximum time from lowest to highest frequency is 5 seconds.

On installation no further tuning or technician programming is required - the system being fully automatic.

The whips are centre loaded and are constructed from anodised aluminium alloy tubing with a waterproof lower section housing the control devices, and a mid section spring knuckle (optional) with fibreglass whip top section.

The antenna control unit is the interface between the whip antenna and transceiver and contains the sensor and controlling electronics. As there are no external operator controls, the unit can be installed in any convenient position within the vehicle. The unit can be used up to 20 metres from the antenna for base station installations.

Frequency Range:

Any frequency between 3 and 15 MHz.

Channel Capacity:

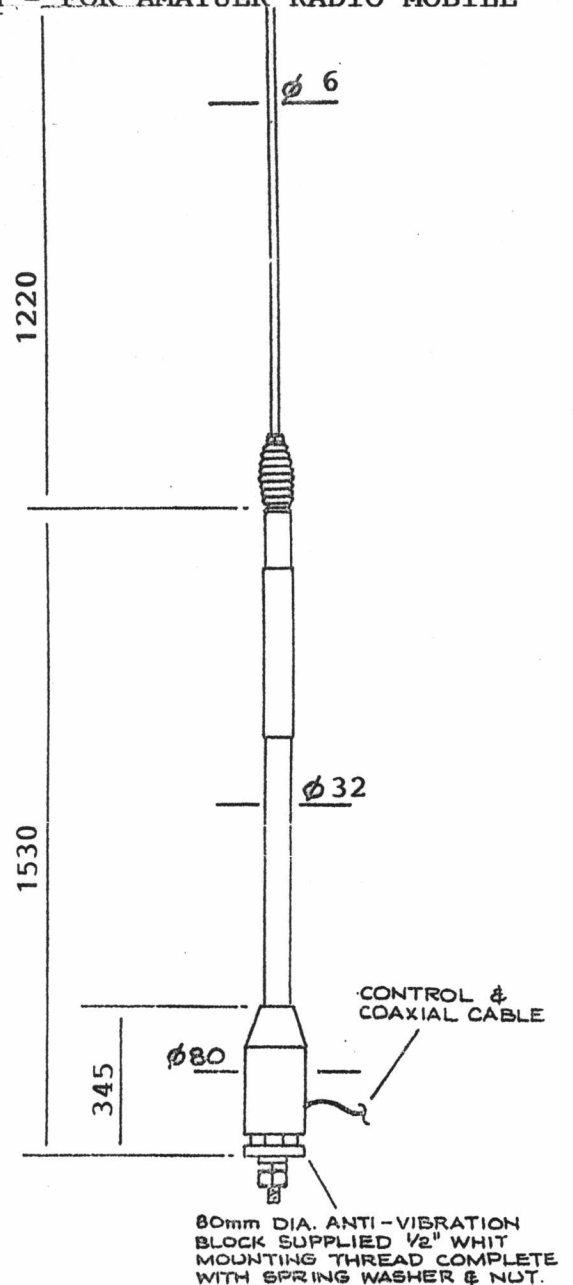
Continuously variable

Power Rating:

120 watts PEP

Weight:

Each antenna 4.0 Kg
Control unit 0.7 Kg



Power Consumption:

100mA - static
2A - tuning (typical)
12V DC nominal

Input Impedance:

50 ohms: VSWR 1.8:1
(typically 1.3:1)

Mounting:

Anti-vibration mount 1/2" Whitworth stainless steel stud, 30mm long, supplied with nut and washers.

Tasmania Technopark Dowsing Point 7010 Tasmania AUSTRALIA

Telephone: National 002 73 1533 Facsimile: National 002 73 1749
International +61 02 73 1533 International +61 02 73 1749

Putting the MR6A on 52.525. by Joe VK7ZGJ

Components required:	2 - 10 pF Disc ceramics
3 - 4.7 pF Disc ceramics	1 - 12 pF Disc ceramic
1 - 33 pF Disc ceramic	1 - 2.188500 Mhz Xtal, TX
1 - 10.905 Mhz Xtal, RX	

Originally the MR6A used a high IF, around 12 Mhz. This put the local oscillator frequency on 65 Mhz giving you an operating frequency of 77 Mhz. By leaving the oscillator on the same frequency and setting the RF and Mixer stage to 52.525, only a very simple modification is required. This entails placing a 4.7 pF disc ceramic capacitor across L1, L2 and L3. Now switch the set on, place a 0 - 1 mA meter in TJB receiver oscillator testpoint and tune the top slug of TR2 for maximum, L6 for maximum and the bottom slug of TR2 for minimum. Because your 10.905 Mhz xtal is close to the original xtal frequency, the stage should have oscillated as soon as it was switched on and tuning should require no more than one or two turns of any one slug to obtain the correct reading.

To align the RF stage. Tune the signal generator to 52.525 and adjust for centre zero on a meter 50 - 0 - 50 uA plugged into DISC. jack TJF. Connect a 0-1 mA meter into the 2nd limiter jack and peak L1 to L5 top and bottom slugs, reducing your signal as you peak each slug so that the meter does not exceed 200 uA. Repeat the alignment of all slugs, to ensure accuracy of tuning adjustments.

After alignment a 1 microvolt signal input to the antenna terminal should give not less than 250 uA in TJD. All this takes about ten minutes if you have the correct equipment.

The Transmitter.

Originally the transmitter used a 2 Mhz xtal and multiplied 36 times to 72 Mhz. Because we wish to maintain the original frequency, we reduce the multiplication to 24 by making the 2nd tripler a doubler, and from this stage we have to lower the frequency of the coils from 72 to 52 Mhz.

To do this place a 33 Pf capacitor in parallel with the existing 33 pF capacitors of TR10. This reduces the frequency from 36 to 26 Mhz. Next place a 10 pF capacitor across L9 and L11 and a 12pF capacitor from pin 6 to pin 8 of V21 (QQEO 3/12).

Transmitter Alignment.

- 1) Disconnect screen resistor at pin 7 of V21
- 2) Plug a 0-1 mA meter into jack TJ6 (1st tripler grid) press PTT and tune top and bottom slugs of TR8 for maximum.
- 3) 0-1 mA meter in TJ4 (2nd tripler) tune top and bottom slugs of TR9 for maximum.
- 4) With 0-10 mA meter in TJJ (2nd doubler) tune TR10 for Max.
- 5) With 0-10 mA meter in TJK (PA grid) tune L9 and L11 for max.
- 6) Re-connect screen resistor and connect wattmeter to aerial connector.
- 7) Tune the PA anode capacitor C96 for maximum power out, then re-adjust L9 and L11 for maximum drive in (PA grid)
- 8) Gradually couple L14 aerial coupling link into L13 PA coil keeping C96 tuned to resonance until a power output of 10 watts is indicated with a PA anode current of 75 mA or less.

Q.R.M.

Typical meter readings.

1st tripler, -5 to -8	2nd doubler, 1 to 1.4
2nd tripler, .8 to 1.2	Drive 2 to 4 mA

Adjust diviation and frequency with the appropriate equipment.
You are now ready to work a lot of DX mobile on 52.525 this summer.

Next month I will produce an AC power supply circuit, suggested modifications and things to check to ensure years of trouble free operation.

Total time for the above modifications is around 30 minutes.

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PUTTING THE AWA MRT25A ON SIX METRES -52.525

by JOE VK7JG.

These radios are available from the H.E.C. for around \$15.00. With about one hour's work you can get them going on six metres. If you are not familiar with the set, you will need a handbook, or bring it to me for alignment. The receiver will go as soon as you modify it. However, the transmitter is a little off tune and you will require a test meter to tune it correctly. The receiver oscillator remains unchanged, i.e. mix on the high side. If possible, check the radio before modifying it as a lot of them are U/S. Fit an additional 18pF capacitor across C2, C8, C11, C16, C18. Increase coupling capacitors C10 and C17 to 3.3pF. Replace the R.F. head and the radio should work.

The transmitter takes a little longer but is just as simple.

$$f_{xtal} = \frac{f_e}{24} = \frac{52.525}{24} = 2.18854 \quad \text{spec D63.}$$

$$\text{Receive xtal} = \frac{f_e + 10.7}{2} = 31.6125 \quad \text{spec D66.}$$

Fit a 220 pF capacitor across C6, C21, C22.

Fit a 33 pF capacitor across C13. Fit 100 pF across C26.

22pF across 12BY7 grid coil.

10pF across " plate coil.

18pF across 12AQ5 plate and grid coils.

10pF across 6883B grid coil.

Rewind plate coil to 10 turns.

Align radio as per handbook. The receiver should receive $\cdot 5 \mu V$ for 20dB quieting.

The transmitter power is 20 watts at 13 volts for 150mA plate current. Adjust deviation to ± 5 KHz.

If you have any problems call me on air, U.H.F. repeater or R.8.
Phone 003.272256.

BRANCH MEETINGS IN TASMANIA.

1. The Southern Branch meets on the first Wednesday in the month in the State Emergency Services building, Melville Street, Hobart, at 8 p.m.
2. The Northwestern Branch meets on the 2nd. Tuesday of the month (except January) at the Penguin High School. The Executive meets on the Tuesday prior to this.
3. The Northern Branch meets on the 2nd. Friday of the month (except January) at Kingsmeadows High School, Launceston.

A REMOTE ANTENNA SWITCH —
next month — don't miss it!