

QRM

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Last year it was said that allowing the use of repeaters in the R.D. contest was a real brainwave.

It resulted in an increase in points for most Z calls but more important it gave them an increase in stations to work and that coupled with being able to rework a station after 2 hours gave them their first taste of competition in an R.D. contest. This year repeaters are NOT allowed, however this division upon a little prompting by members has initiated a move to allow the use of repeaters again in this contest by writing to the Federal Contest manager and all Divisional Councillors. What ever the outcome of this, it should certainly be an agenda item for the next Federal Convention. See you in the contest.

JOHN VK7JV

MEETINGS

AUG. 7th NORTH WESTERN BRANCH, LAKIN'S HALL, ULVERSTONE
BRANCH ANNUAL GENERAL MEETING.

AUG. 10th NORTHERN BRANCH, AEB ROOMS, HIGH ST
EQUIPMENT DISPLAY EVENING.

CONTESTS

AUG. 18&19th R.D. DETAILS JULY AMATEUR RADIO.

AUG. 25&26th ALL ASIAN DX CONTEST

Our last meeting drew an attendance of 31 members, 1 visitor Basil VK7BL (VE6BB) and that man from the coast, Ian VK7ZIE.

Many subjects were discussed resulting in three pages of minutes being written up.

Possibly the most important item was preliminary plans for the 1973 Hamfest to be held on the last weekend in November at the Evandale Memorial Hall.

Volunteers and press gang to look after the organisation are VK7's ZLD, ZAH, GW, RH, ZSF, ZBY although Brian doesn't know it yet.

I have an idea I left somebody out but can't think who.

I don't think these gentleman will have any trouble getting more help if they need it.

If you have any ideas on improving on the last Evandale Hamfest then contact any of the above.

Kevin reported that we have \$603.00 in the kitty and John reported that we now have \$880.00 in the clubroom account.

The Golden Jubilee came in for comment, 69 having attended and a good time being had by all.

Peter 7PD took the floor and spoke on a couple of subjects, one of interest being a change of Club call sign to 7NB (Naughty Boys) some wit suggested 7NW (Naughty Women) for the coast, Peter pointed out that this would be more in keeping with the new set up.

R.D. contest came up for discussion and 7JV and 7RH stated that they would go for the full 24 hours, more spartans are required so how about it fellows? Even 12 hours per operator would help.

The use of repeaters for R.D. contacts are yet to be confirmed your scribe awaits clarification on this from the Federal Contest Manager. Forgot to mention that Peter 7PD has a source of cheap QSL cards contact him for details.

Australis news from Peter 7PF promises excitement for the future with OA7 scheduled for launch during the second quarter of 1974.

With an orbit (planned) of 2000 miles and carrying a variety of translators it should further enhance the interest started by OA6 which is ten months old and still going strong.

No doubt Peter will supply us with full details of what the package will contain as soon as details are finalised.

In future, each month I propose to head the notes with a thought provoking observation, a talking point, last month at least one bloke got the message.

This month- ARE AWARDS A GOOD THING? In working 80 and 40 metres nowadays one must exhibit a lot of patience, with current awards running, no more can one have a quiet rag chew with old friends. At allmost every over there are breakers in hordes and in trying to do the right thing one often loses the original caller. My record is three hours non stop and then the BIG switch was pulled with callers still there.

It certainly is different.

Our last meeting was certainly lively, the chairman had a bad cold and I think the boys worked on this as during periods of nose attention much square wave noise was generated by them, very exasperating, my OSCAR went to 7ZJS with 7MS and 7ZIE close behind.

I'll bet that they quieten down at the next meeting, the ANNUAL, when a call is made for office bearers, HI.

After the meeting and supper Tony 7AX conducted us around the new telephone exchange and ably explained many of the complicated bits and pieces, ably interrupted by Bob 7ZJS.

It was pleasing to see two Kens 7KH and 7AI back again, keep it up chaps.

ON A PERSONAL NOTE.

Les 7LH and David 7MS have both aquired TWOHUNDREDS so Devonport should hold its own in the R.D. contest.

Bob 7ZJS was heard mobile on 6 metres, we now have several operative on that band, we have had some openings lately too. Graham 7ZAQ has come up with an ingenious whip lifter upper on top of the car.

This became a necessity after little sister had wiped a couple of whips off under the carport.

Ian 7ZIE with some help has upended a steel mast on which a beacon aerial may sit some day.

And I 7MX have a steel tower stretched across the path waiting for time and week end weather to add extensions.

IT'S A CRUEL WORLD .

CUL 7MX

A note received from Chris VK7UX said

Hi John and fellas

Had an enjoyable 11 days on the PATRIS from Melbourne to Singapore, 2 hectic days in Singapore, I didn't buy anything but had fun looking around, fantastic, most of the passengers bought, hifi gear transistor radio's , cassette players, clothes, cameras etc. Had a long flight by 707 from Singapore via Bahrain to London and arrived at Victoria station after 2.00 AM being up for 26 hours. Been over London and am writing this from Hern Bay. Radio and HiFi gear here is half the price of that in VK cheaper than Singapore.

All mail to C/o CBA bank, 34 Picadilly, London England.

73 CHRIS VK7UX

Thanks Chris for the note and keep sending them, keep us informed, how about a few lines about our hobby, how they go about it in G land. Did you hear about the drop in tariffs in VK? prices should come down quite a bit. CUL John

The Northern equipment store can now obtain all devices manufactured by National Semiconductors at prices only slightly more than those in the U.S.A.

All IGL equipment is still available on order although we will stock a couple of 2 and 6 metre converters.

We have the following in stock

DALO etch resist pens \$2.00
Ferric Chloride per lb .60

TRANSISTORS

2N3563, 2N3564, 2N3565 .40
SE1001 .30
2N3055 \$1.60
2N3866 \$1.00

FET's

2N5245(TIS88) .95
2N3819 .70
NF500 .60
MPF121 .75

DIODES

EM410 1000 VOLT PIV 1 AMP .45
EM404 400 VOLT PIV 1 AMP .30
EM408 800 VOLT PIV 1 AMP .45
HP2800 HOT CARRIER \$1.00
ZENERS 9.1 VOLT 400 MW .45

RESISTORS

$\frac{1}{2}$ and $\frac{1}{4}$ WATT MOST VALUES 4c
1 WATT BAGS CONTAINING
APPR. 35 VARIOUS VALUES \$1.00

CAPACITORS

CERAMIC 2.2Pf-820Pf LIMITED STOCK 5c
MINIATURE DISC .001, .01, .047, 50 VW 5c
TANTALUM 4.7 Mfd 25 V .25
10 Mfd 16 V, 1 Mfd 35 V .25
22 Mfd 16 V .25
ELECTRO 32+32 Mfd 300 VW .30
TRIMMERS .7-6Pf 1.5-9Pf 1.5-12Pf .25

BOOKS ON ORDER ONLY

ARRL HANDBOOK \$5.95
ANTENNA BOOK \$3.00
ARRL VHF MANUAL \$3.30
MOBILE MANUAL ARRL \$3.30

NEOSID

SINGLE BASES 7c
DOUBLE BASES 8c
FORMERS 5c
SINGLE CANS 7c
DOUBLE CANS 8c
F16 SLUGS 2 - 12 Mhz 5c
F29 SLUGS 12 - 200 Mhz 5c

XTAL SOCKETS .20

MINIATURE 12 VOLT RELAYS \$3.00

RELAY SOCKETS .45

VALVE KIT CONSISTING OF

1-6AK5, 2-6AU6, 2-6BA6 \$1.00

BELLING & LEE PLUGS .40

" " SOCKETS .35

" " SOCKETS PCB .30

COAX CONNECTORS

PL259 PLUG .75

SO239 SOCKET .70

INTEGRATED CIRCUITS

MC1550G RF/IF AMP \$2.00

7400 series IC's are available ex stock at various prices.

4 inch 8 Ohm speakers \$2.00

CALLBOOKS 1973-75 \$1.20

LOGBOOKS ARE ON ORDER ?

TAA300 AUDIO AMPS \$5.00

FIBRE GLASS BLANKS FOR

H.F. & 2 METRE $\frac{5}{8}$ WHIPS

ARE ON ORDER AND SHOULD BE

HERE WHEN YOU READ THIS

RADIO COMM. HANDBOOK \$9.80

AMATEUR RADIO TECHNIQUES ?

VHF/UHF MANUAL RSGB \$4.35

14th ALL ASIAN DX CONTEST

1. At 1000 GMT August 25 to 1600 GMT August 26
2. Entry classification, (A) single band, single operator.
(B) multi band, single operator.
(C) multi band, multi operator, single transmitter
3. All H.F. bands, CW only
4. Call : CQ AA
5. Serial numbers, OM stations, five figures, RST + 2 figures
denoting your age. YL stations, five figures, RST + 2 figures.
6. Scoring.
(A) non Asian stations, a contact with an Asian station will
count one point and a multiplier of one point for each prefix
of Asian country worked on each band.
Total score will be the sum of prefix multipliers of each band
multiplied by the sum of the contacts points on each band.
7. Logs (A) all times in GMT
(B) fill in prefix or country first time contacted,
(C) use a separate sheet for each band
(D) Mail to, JARL Contest committee

Central PO BOX 377

TOKYO , JAPAN

Before 30th November 1973

* * * * *

CONGRATULATIONS THIS MONTH GOES TO

JOE 7ZGJ and PHIL on the birth of their first child, a daughter
CHARMAINE LOUISE.

GRAEME 7ZGT and DIANE on the birth of a daughter KAREN LOUISE.

And to MIKE WILSON for his 21st birthday.

* * * * *

After the dinner in Hobart certain gentlemen patronised the Casino
till 3.00 AM and recovered some of their weekend expenditure.
Norm 7NR put his key into the motel door at about 2.30 AM attempting
to open the door when the key broke.
Ten minutes kicking on the manager's door produced another key
from a character dressed for a cold winter night in long johns,
woolly vest and no socks, but suitably insulated internally
against influenza HAPPY DAYS.

7NR

* * * * *

Don VK5BM/MM has been active on ch.4 during last week.
I was silly enough to take up his invitation and visit the "shack"
68000 tons of it, and 750 ft long.
I came away with three impressions, one, you need to be a UNI type
to drive such a shack, two, Sailors haven't changed and three,
"Duty Free" tastes better.
His job would suit an old codger like me, five months leave a
year and a fair wollop of db in salary.

7NR

* * * * *

TECHNICAL ARTICLE - VK7ZBY

A 250 MHZ FREQUENCY COUNTER

PART 4

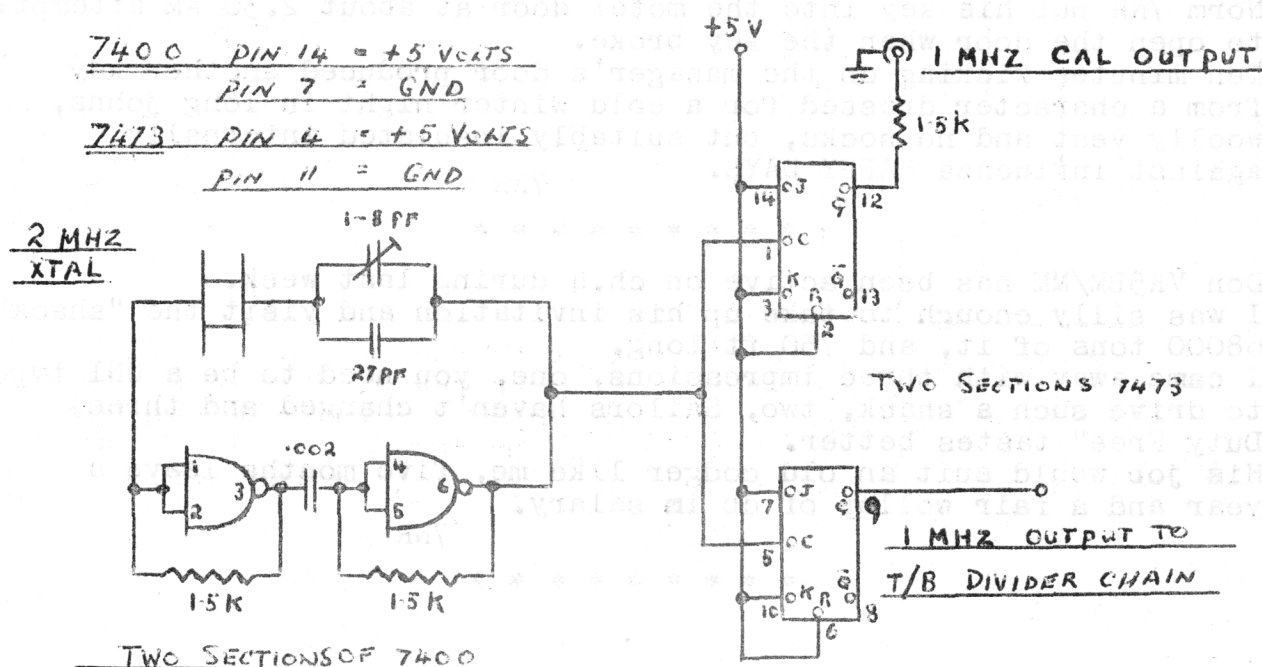
Crystal Oscillator, Timebase Chain, Strobe and Reset Pulse Generation

As mentioned in PART 1 of this article, some means must be employed to open and close the count gate accurately. This is done in this instrument by first starting with a 2 MHz crystal oscillator and then dividing its output down to obtain the required control pulses for the count gate. The strobe and reset pulses are also generated from the timebase chain.

The heart of the instrument is the crystal oscillator, as shown in Fig. 7. This uses a quad two-input "NAND" gate of which only two sections are used in the form of a pair of inverting amplifiers with the crystal in the feedback path. The capacitor/trimmer connected in series with the crystal allows for the adjustment of frequency against a standard such as V.V.V. or some other frequency-measuring device of known accuracy. The crystal used is a D type, with a .003% adjustment tolerance, AT-cut type, specified for operation at ambient temperatures. The crystal was purchased from PVE Pty. Ltd. and the PVE designation for this type of crystal in terms of tolerance and stability is class "F.E.F." with the holder code "Q12A" and the nominal intended shunt capacitance of 30PF. For maximum stability the capacitors in series with the crystal and the two sections of the 7400 should be of good quality.

As we require the input of the timebase chain to be 1 MHz we must first divide the output of the crystal oscillator by two. This is done by using a 7473 dual J-K flip-flop, both as an oscillator buffer and as the initial 2:1 divider. Both flip-flops are connected in the toggling mode and operate from the 2 MHz output. One section providing an effectively buffered 1 MHz output and the other providing an independent 1 MHz signal for the following divider chain:

FIG. 7



TECHNICAL ARTICLE (Contd).....Timebase Chain

The divider chain consists of six 10:1 divider decades (7490s). The first four do nothing else but divide by ten and so provide the outputs necessary to the gate control circuitry. The next two decades, as well as providing outputs for gate control, also provide outputs for strobe and reset pulse generation. One requirement that needs to be met is that the strobe pulse be generated before the reset pulse. If this condition is not met the main counting decades will be reset to zero before their outputs can be displayed. How this effect is stopped will be shown in the write-up on the main counting decades.

Strobe and Reset Pulse Generation

We have a choice of two sampling rates, one per second and ten per second. This is selected by switch S1, which is a triple pole two position switch. Section "A" selects the Q output of the correct half of a 74H20, a dual four input "NAND" gate. Sections "B" and "C" select the correct outputs of the last two decade counters for reset pulse generation. As already mentioned the strobe pulse must be generated before the reset pulse; just how this occurs is as follows:

We will only have to consider the last two decade counters, as these are responsible for the generation of these pulses. As the input frequency to the 5th decade is 100 HZ (10 M/S) there will be a pulse at the input every 10 m/s, and the four "BCD" outputs will change at that rate in the 1-2-4-8 BCD code. The four outputs are QA = 1, QB = 2, QC = 4, and QD = 8. The truth table below indicates what outputs are at Logic 1 for any number of input pulses.

Pulse No.	QA	QB	QC	QD
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
0	0	0	0	0

If we examine the truth table we can select the necessary combinations that will meet the requirements of strobe pulse generation before reset pulse generation. By using the count of 7 (QA, QB, and QC at Logic "1") for strobe and the count of 9 (QA & QD at Logic "1") for reset, this requirement is met.

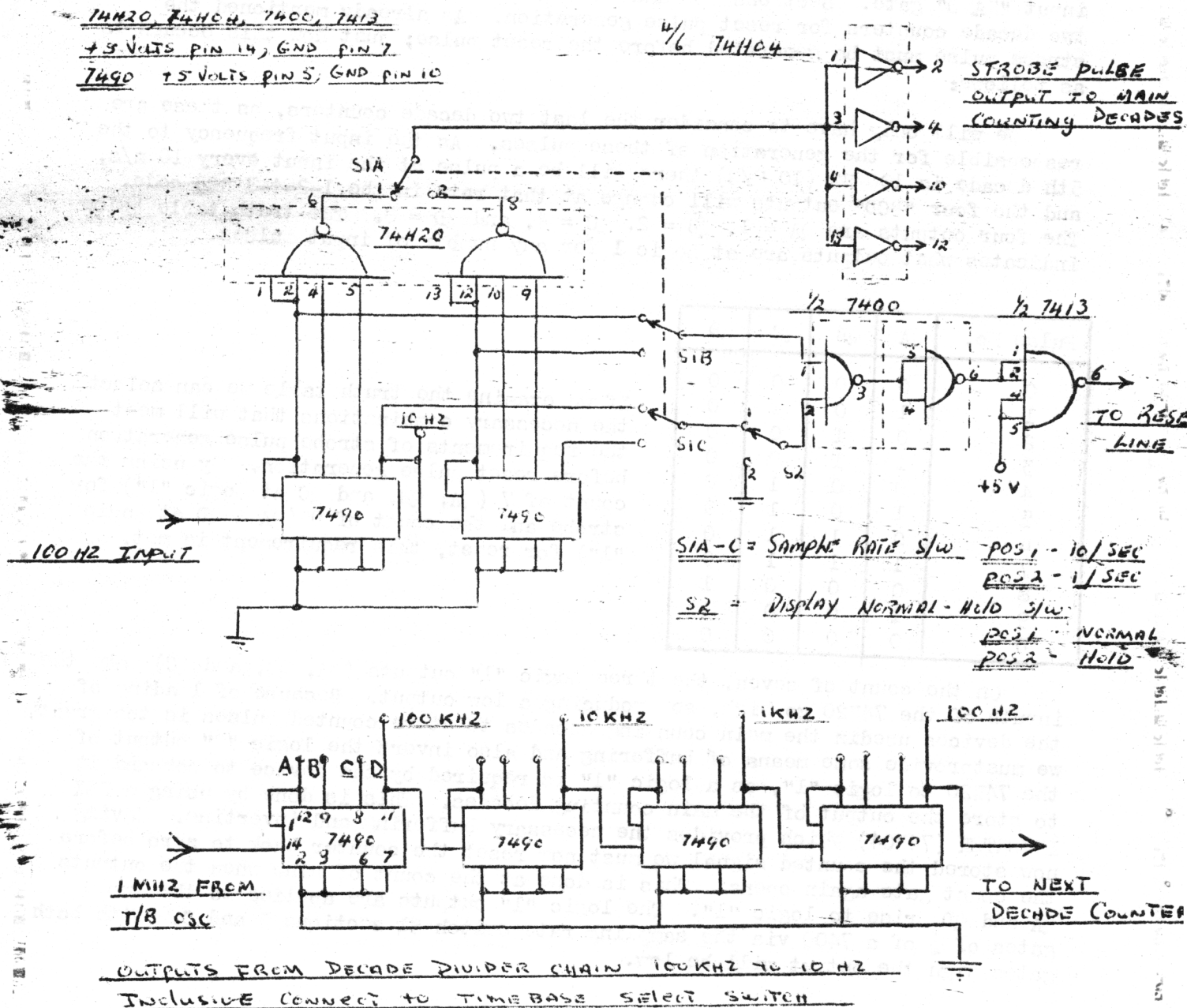
On the count of seven, the three Logic "1" outputs (QA, QB, and QC) make the inputs of the 74H20 go high, so producing a low output. Because of loading of the devices used in the main counting decades to store counted pulses is too great, we must provide some means of buffering and also invert the logic "0" output of the 74H20 to logic "1", as a logic "1" is required by the device to command it to store the output of the main counting decades. This is done by using a HEX INVERTER (74H04) which provides the necessary buffering and inverting. Having now stored the counted signal we must now reset the counter back to zero before the count gate again opens. This is done at the count of nine when the outputs QA and QD rise to logic "1". The logic "1" outputs are applied to the two gates of 1 of a 7400 via the sampling rate switch S1 sections B and C. With both gates high the output will be low.

TECHNICAL ARTICLE (CONT.).....

Strobe and Reset Pulse Generation (Cont)

As this output is of the wrong logic level we must invert it. This is done by another $\frac{1}{2}$ section of the same 7400 used to combine the QA and QD outputs of the decade counter used for resetting. The output of this section is applied to two gates of a dual 4 input Schmitt Trigger (one half used). This Schmitt Trigger will provide the correct pulse shape required for the reset line. The output of this Schmitt Trigger then feeds a number of sections:- they are the gate control circuitry, the main counting and subtracting decades via a dual "NAND" power gate (7440) and to the overflow flip-flop via $\frac{1}{2}$ of a 7400. The 7440 is required because the loading of all the reset gates in the decade counters and gate control would be too great for the 7413 Schmitt Trigger. The section of the 7400 is required for the overflow flip-flop because it requires a logic "0" for resetting. The circuit of the divider chain and control pulse generation appears at Fig. 8.

FIG. 8

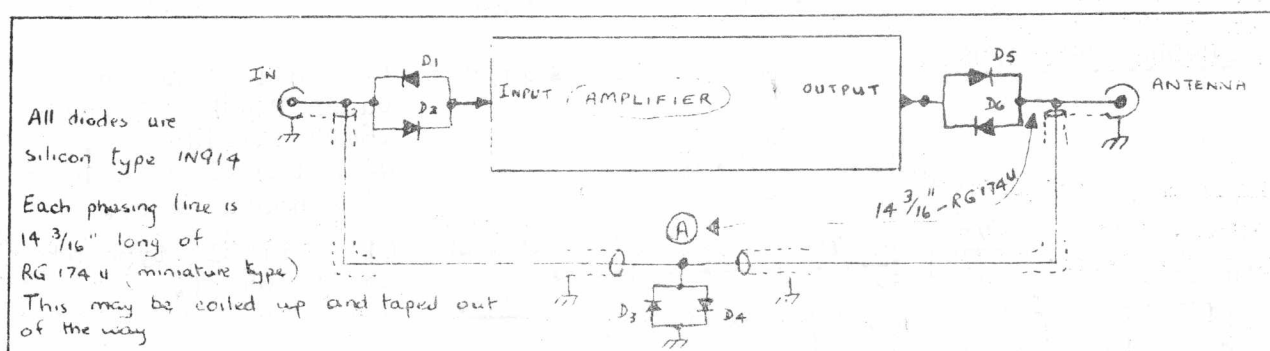


SOLID STATE SWITCHING FOR THAT 2 METRE AMPLIFIER--Basil Barnes VE6BB

If you're building yourself an amplifier for your 2 metre rig--whether it's a tube type or a semiconductor type--you're going to come to the problem of how to switch it in and out of the circuit in the transmit-receive cycle. Here, naturally, I'm referring to the placement of an amplifier after a transceiver.

It is possible to use relays, but they are bulky; they require a switching voltage (keyed to your PTT, no less); and they're prone to failure especially when it will do the maximum harm (Murphy).

The following circuit is very simple, foolproof in normal operation, and allows instantaneous switching by RF. sensing:



Theory of operation is easy to understand. On receive the silicon diodes, with a conduction threshold of from .5 to .7 volts do not conduct so the received signal passes from the antenna to the receiver by-passing the amplifier. There is virtually no signal loss on receive.

On transmit the silicon diodes at point A conduct and ground that point of the coax (i.e. short the centre conductor to the braid). As the coax is a quarter wave-length (allowing for the velocity factor of the coax), then the input end appears as an open circuit. One of the properties of a quarter wave-length transmission line shorted at one end! The signal voltage then overcomes the threshold of the silicon diodes and is applied to the input of the amplifier.

At the output the same effect applies and the signal is shunted out to the antenna! Result is an amplified signal with no interaction with the input circuit.

However it should be noted that if the amplifier is not wanted, then it will have to be switched manually out of the circuit with switches or relays. This is a very small price to pay for such a simple performer.

I have built a solid-state amplifier to follow my TR-2200, with 20 Watts output. The complete amplifier is built into a minibox with the dimensions of 5" x 3" x 1" (minus the heatsink). The 12 volts to the amplifier need not be switched as there is no drain at all without RF excitation.

I am toying with the idea of placing a receiver preamplifier at point A to give a more usable sensitivity. Judicious choice of a drain load resistor may enable the preamplifier to be left on, but to receive virtually no voltage while the amplifier is drawing current.

reprinted from Westlakes Radio Club - Newsletter.

AN EXPERIMENTAL DIRECT CONVERSION RECEIVER FOR 80 METRES.

- D.Crofts.

The circuit described is a relatively simple form of a direct-conversion type receiver. The basic version consists of an R.F. amplifier, feeding directly into a balanced mixer or product detector - with a tunable carrier insertion oscillator at the signal frequency, followed directly by the audio stages and without any form of I.F. amplifier. Provided that the balanced mixer is truly linear, then the effective selectivity is governed by the bandwidth of the A.F. circuits; thus eliminating the need for expensive crystal and mechanical filters.

Such a basic configuration can be extended to A.M. and D.S.B. reception - with substantial theoretical advantages over the use of envelope detection - provided that the local oscillator can be locked to the frequency and phase of the incoming signal. An interesting possibility is that of developing simple transceivers, since the local oscillator on the signal frequency, could be used directly as the transmitter V.F.O. without heterodyning.

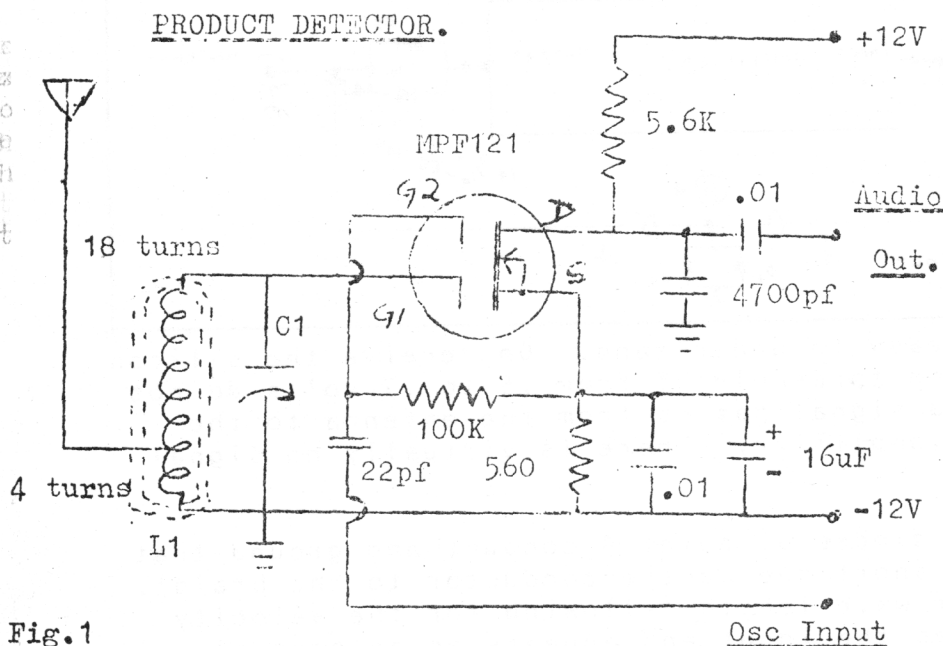
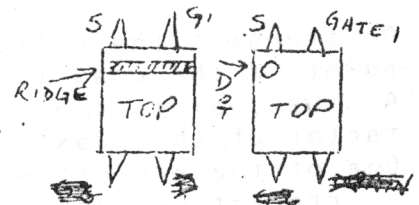


Fig.1

L1: Coil wound on a Ducon F404D/2 Toroid, .680" outside dia. Q2 material with 10 x .010 hookup wire.

C1: Variable type at about 365 pf.

MPF121 connections as shown from above.



The receiver Figure 1, features solid state circuitry and will employ Mosfet IC,s. and discrete transistors. Although the list just shown may appear expensive, it is certainly not so, because components chosen for use were the lowest priced in their class, consistent with performance. The receiver will be presented in 3 main modules, so that the constructor can determine for himself whether to omit a section or include it. The Oscillator, shown in Figure 2 is a tuned-gate type, with a drain feedback winding; no buffer is employed. No attempt has been made to regulate the actual oscillator power supply.

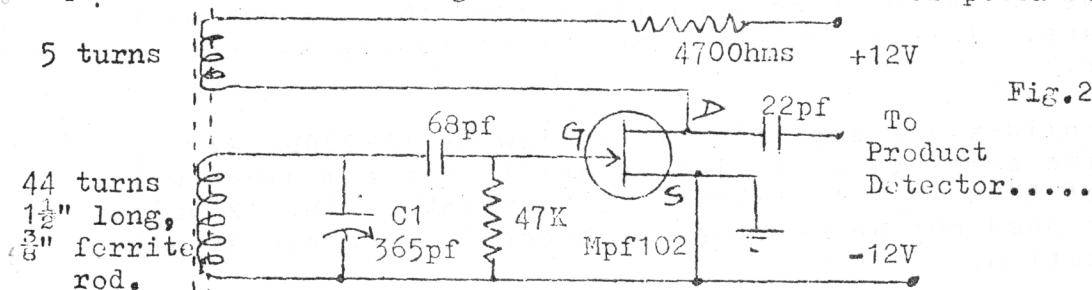
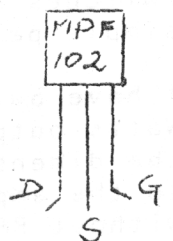
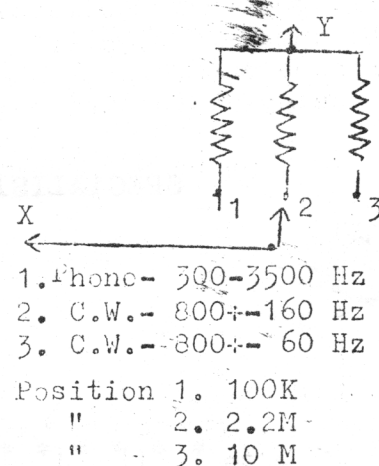
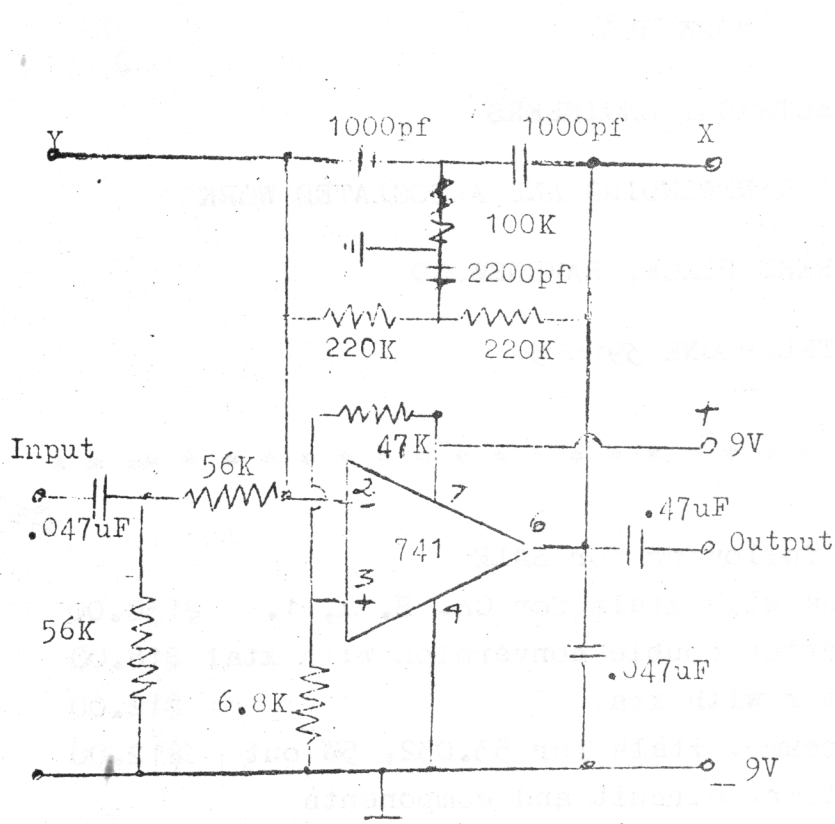
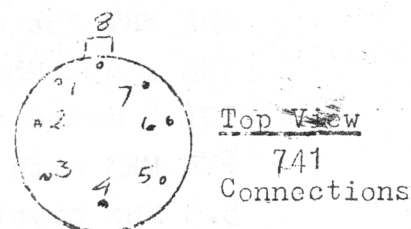


Fig.2



AN EXPERIMENTAL DIRECT CONVERSION RECEIVER : PART 2.

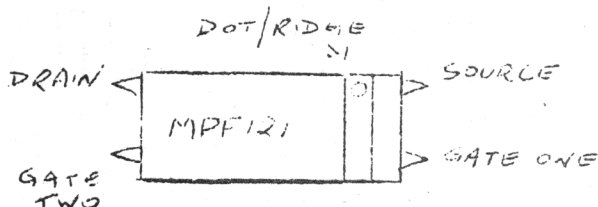
The second module to be shown is the Audio Filter. The filter is of the active type with feedback via a Twin-T network. Three bandwidth positions are available which are: 800, 160, 800, 60, 300-3500 (plus or minus) Hz. These bandwidths cater for both CW and phone. Bandwidth is varied by placing damping resistors across the feedback network. Power requirements are 9 volts at .75 mA.

AUDIO FILTER

As shown in the circuit diagram, the circuit uses a 741 IC; that is use a Fairchild uA741c, National LM741ch, Motorola MC1741G and so on. Unfortunately, all I can tell you about the IC is that it is an internally frequency compensated operational amplifier. You sound surprised !. By next month I will have all the blurb on the IC, including internal circuitry and will publish it them.

I have been so impressed with the Filters performance that I have permanently installed it in my main receiver - a Superhet - and intend to build another one for my direct conversion receiver. If a Morse signal is tuned in, the phone position is covered in static. When it is switched into the CW bandwidth the signal becomes a pure audio tone, with no static or noise. My thanks to Jamie Campbell for verifying the results I have achieved.

Next Month : High gain audio amplifiers (and, hopefully the 741 IC data)



A mistake crept into the connections for the MPF 121, last month. The correct connections are shown opposite.

PLEASE NOTE NEW ADDRESS & PHONE

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JOE VK7ZGJ has the following for SALE

AWA MRT 25a carphone with xtals for CH. B, 4, 1. \$130.00

VK3 , 432 Mhz converter double conversion with xtal \$18.00

IGL 6 metre converter with xtal \$12.00

PYE Mk3 with FET preamp, xtals for 53.032, 5W out \$12.00

5.5 Mhz crystal filter, circuit and components

to built an SSB exciter, including upper and

lower sideband xtals

\$10.00

No 10 xtal calibrator unit

\$ 8.00

Handwritten notes and stamps at the bottom right of the page, including a date stamp "1974" and some illegible text.