

“Z cars” radiophone transceiver – 1964 vintage

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This *Hudson* transceiver, without the handset, was on sale for just £1 at a recent rally (King’s Lynn).



What is it?

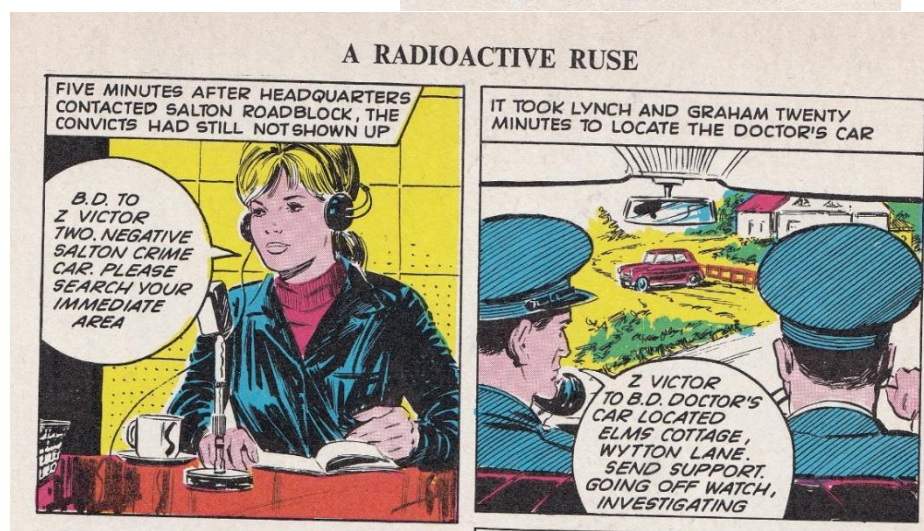
The clue is in the fat “Jones plug” to the bottom right. It connects what looks like a telephone handset with a ptt button over the earpiece. I’d previously bought two of these, somewhere else, at 50p each and they were rotting in my garage.

Here they are in action at *Z Cars*. This was one of the early (1960s) TV series about cops, based in a New Town, commonly thought to be Kirkby in Merseyside.



The "Radiophone"

<https://televisionheaven.co.uk/reviews/z-cars>





This is the FM version and there's also an AM version: FM 208 and AM 108. Apparently, they were used by the Met' and Birmingham City Constabularies.

There's not much on the 'net about these sets, other than they are low band VHF, crystalled, have an inverter from the car battery to operate the valves – valves! – and to retune them is as easy as retuning a four-cloved-shoe ruminant, to put it delicately.

The UK Vintage site has all this information and I've copied it to the Annex.

Here is the crystal makeup of my set:



The crystals in mine are as follows (with an attempt at calculating the frequency). I am assuming the frequencies are somewhere around 70 MHz, but one contributor's calculation would set frequencies at around 30Mhz:

LH row (Tx?)		RH row (Rx?)	
Marked Frequency	Calculated frequency MHz $f * 8$ ($f * 16$)	Marked Frequency	Calculated frequency MHz $f*8$ then add IF) ($f *16$ and add IF)
4355.555	34.844 (69.688)	48537.33	$38.826+10.7=49.526$ ($77.6599 + 10.7 = 88.353$)
4347.22 (P25)	34.778 (69.555)	48566.66 (P36C)	$38.848+10.7= 49.548$ ($77.706 + 10.7 = 88.359$)
4344.444	34.755 (69,511)	43.600	$34.8+10.7 = 45.5$ ($69.76 + 10.7 = 80.46$)
4341.660	34.732 (69.466)	483700.00	$38.696+10.7=49.396$ $9.92+10.7= 88.892$)

The Tx multiplier and the IF were calculated from the information in the Annex attached. One contributor suggests a multiplier of 8, another, 16. Personally, I would go for the multiplier of 16.

Let's look again at the front panel. There are four channel numbers: 6, 8, 10 and 16. So 2 channels up from 6 to 8, and again to 10, and 6 channels up from 10.

NEXT

So, the thing to do is to check and replace all capacitors and most of the resistors, then switch on, press the ptt...and wait for the BANG.

Anyhow enjoy it: ***Z Victor One to B.D...***

73 de andy g0sfj

ANNEX: Information from the 'net.

<https://www.vintage-radio.net/forum/showthread.php?t=147894>

Read this with caution. As usual all capacitors and some resistors) will need to be changed before switching on.

"The mix crystal is 10 megs, the first iF is 10.7 and the second 700kc/s. The Mauritron manual I have, which is not readable in places as mentioned, does give the crystal calcs and I then had a trawl around for some second hand ones. RX is $f_s - 10.7/8$ and TX is $f_s / 8$. I do have my doubts about the TX one though as it does not seem to want to sing. The originals were FT243(?), but I have carefully fitted a couple of HC6U holders in lieu of a pair of the originals.

The TX crystal is the same as Pye Cambridge series 70.26=8.7825

I'm a little surprised that the RX crystal is a fundamental on $(f_s - 10.7)/8$ that would make it $59.56/8 = 7.445\text{MHz}$ I suppose. My first port of call with this would be to check that there is an adequate amount of 59.56MHz at the first mixer and the multipliers are doing what they should. (GDO for this?)

The Cambridge uses $(f_s - 10.7)/2 = 29.78\text{MHz}$ (for 70.26) so also injecting 59.56MHz. Of course a crystal that high in the 1960s had to be made as a 3rd overtone.

As mentioned there is a receive crystal for 70.26MHz fitted and using the aged 2950 test set the front end is tweaked up as best it can; but is still very deaf. The Altai GDO calibration is a little out, 70.26 shows up as circa 70.5. I did not check the calibration on the other frequencies. Below is a list of the outcomes, after a bit of a battle to get close to some of the tuned circuits, the figures in brackets are what it should be.

The first local oscillator multiplier chain: -

L20 - 14.6 (14.89)

L21 - 33 (29.78)

L22 - as above

L23 68 (56.56) Not good.

Then turning to the front end tuned circuits, all should be 70.5 (the GDO's reading for 70.26):

-

L12/13 - 80 Not good

L14 - 70.6

L15/16 - 70.5

L17 - 70.6

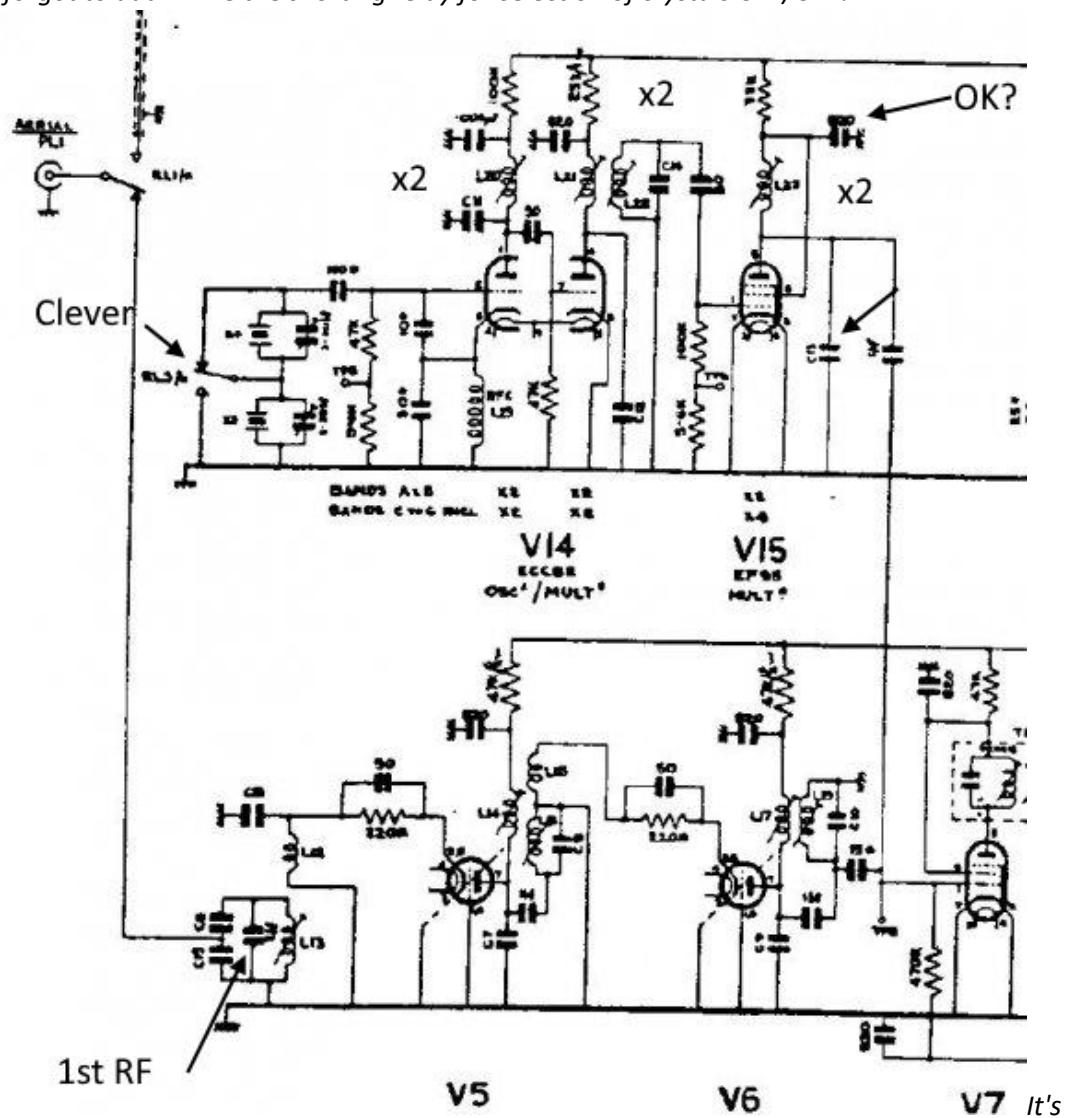
L18 - 70.6

So the errant tuned circuits are the aerial input (L12/13) and the final first LO multiplier, L23. As mentioned there is a receive crystal for 70.26MHz fitted and using the aged 2950 test set the front end is tweaked up as best it can; but is still very deaf. The Altai GDO calibration is a little out, 70.26 shows up as circa 70.5. I did not check the calibration on the other

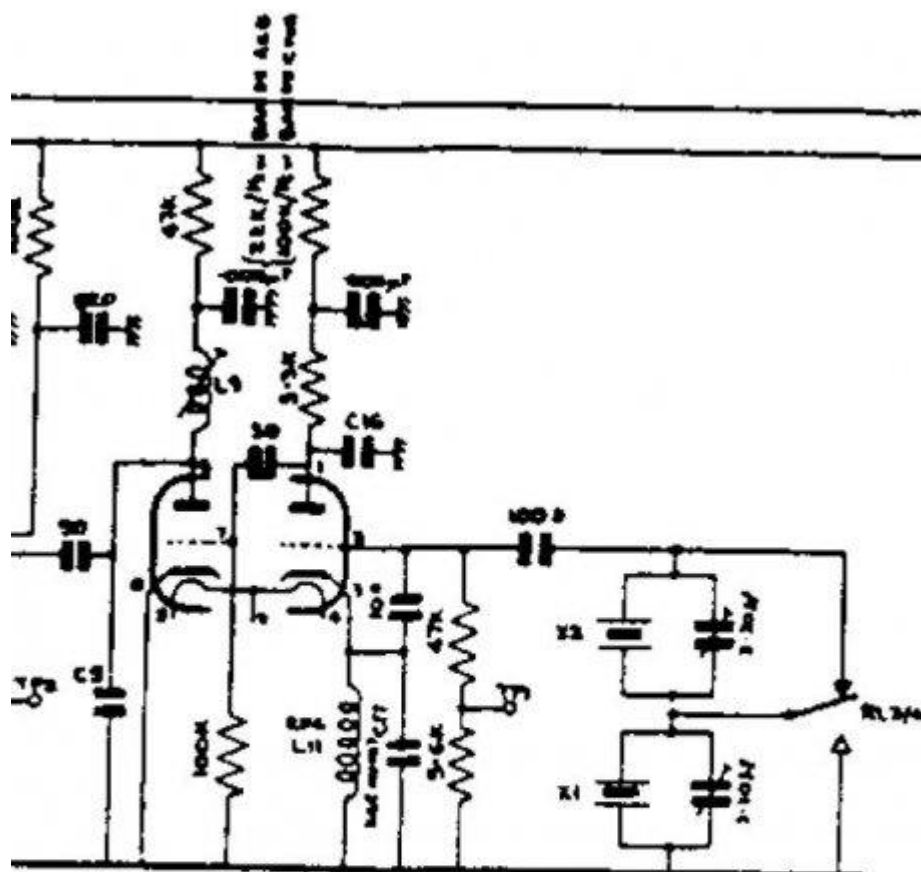
On the 1st RF Stage Input filter there is a capacitive tap across L13 but then another shunt capacitor which might be fitted / not fitted depending if you are working at the top or bottom end of the band maybe? Again I would try adding about the same amount of C here and checking the resonance again.

Good luck - hope you get some time to work on it.

I forgot to add - I like the shorting relay for selection of crystals Ch1/Ch2!



It's an FM208, transistor receiver and valve transmitter. The transmit crystal is 4482.18Kc/s and looks to be times 16 to get to the final frequency. The receive is 9334.37Kc/s. The first IF is 10.7 with a 10.25Mc/s to get to the second IF. Very much like the Pye equipment. There is a times 8 chain on receive.



X2 X1 BANDS A & B
 X2 X2 BANDS C to G INCL

V4
 ECC82
 MULT/Oscillator

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