The AN/ARC-52, AN/ARC-52X

The ARC52 series of UHF transceivers was developed by Collins from their AN/ARC-27 in the early sixties. All receive and transmit between 225 and 399.9 MHz, RF output level 20W. The transceiver includes a separate receiver on 243MHz, the guard channel.
The original versions were:
RT-332 / ARC 52 , the 3 phase 400Hz version
RT-424 / ARC 52X , the 27.5V dc only version.
Channel spacing is 100kHz (1750 channels) on a single control box

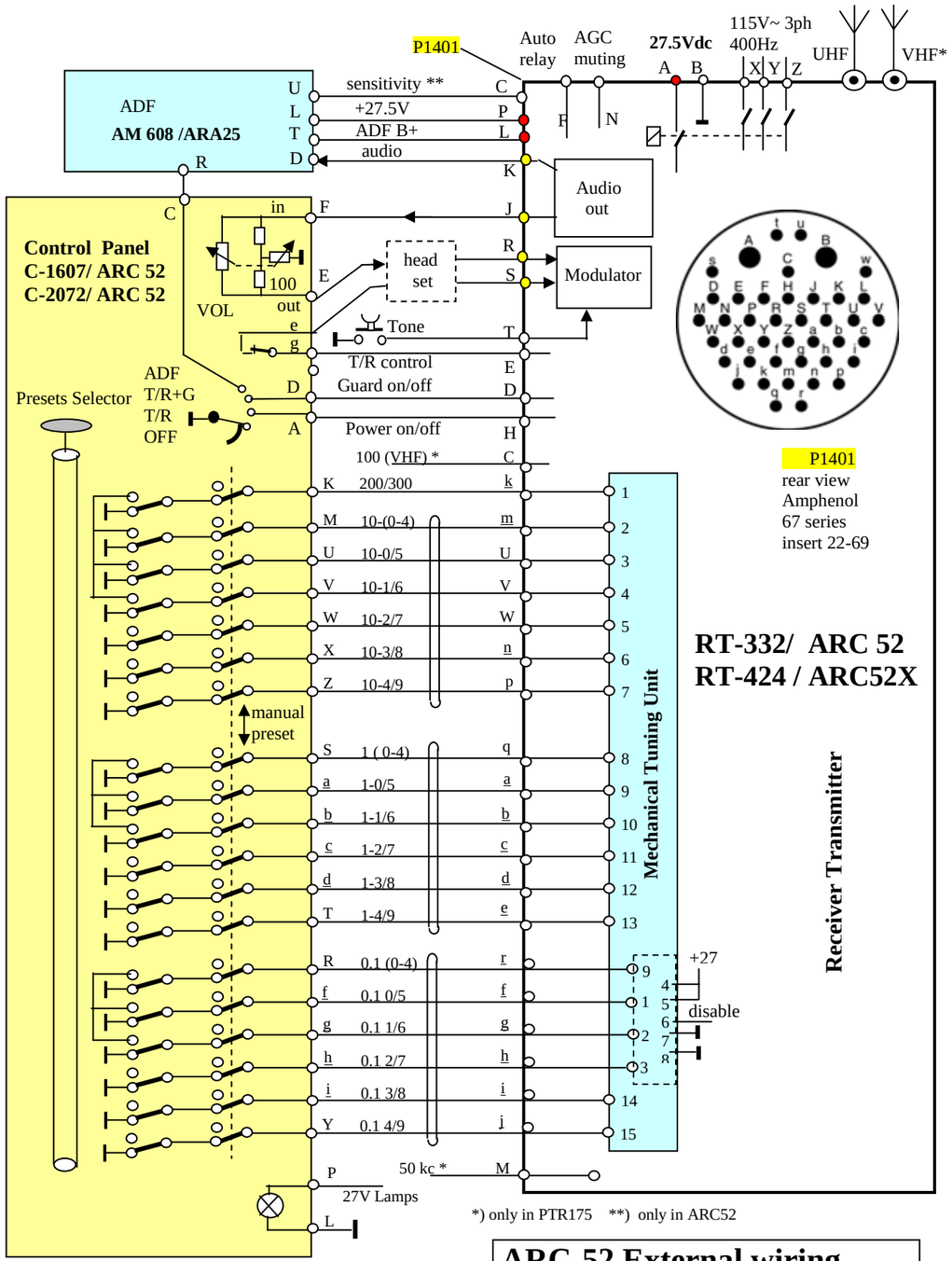
Later developments are
The **ARC552** , made by Collins Canada as 400Hz AC version only. Fully interchangeable with the ARC-52 down to the module level.
Channel spacing is 100kHz (1750 channels) on a single control box

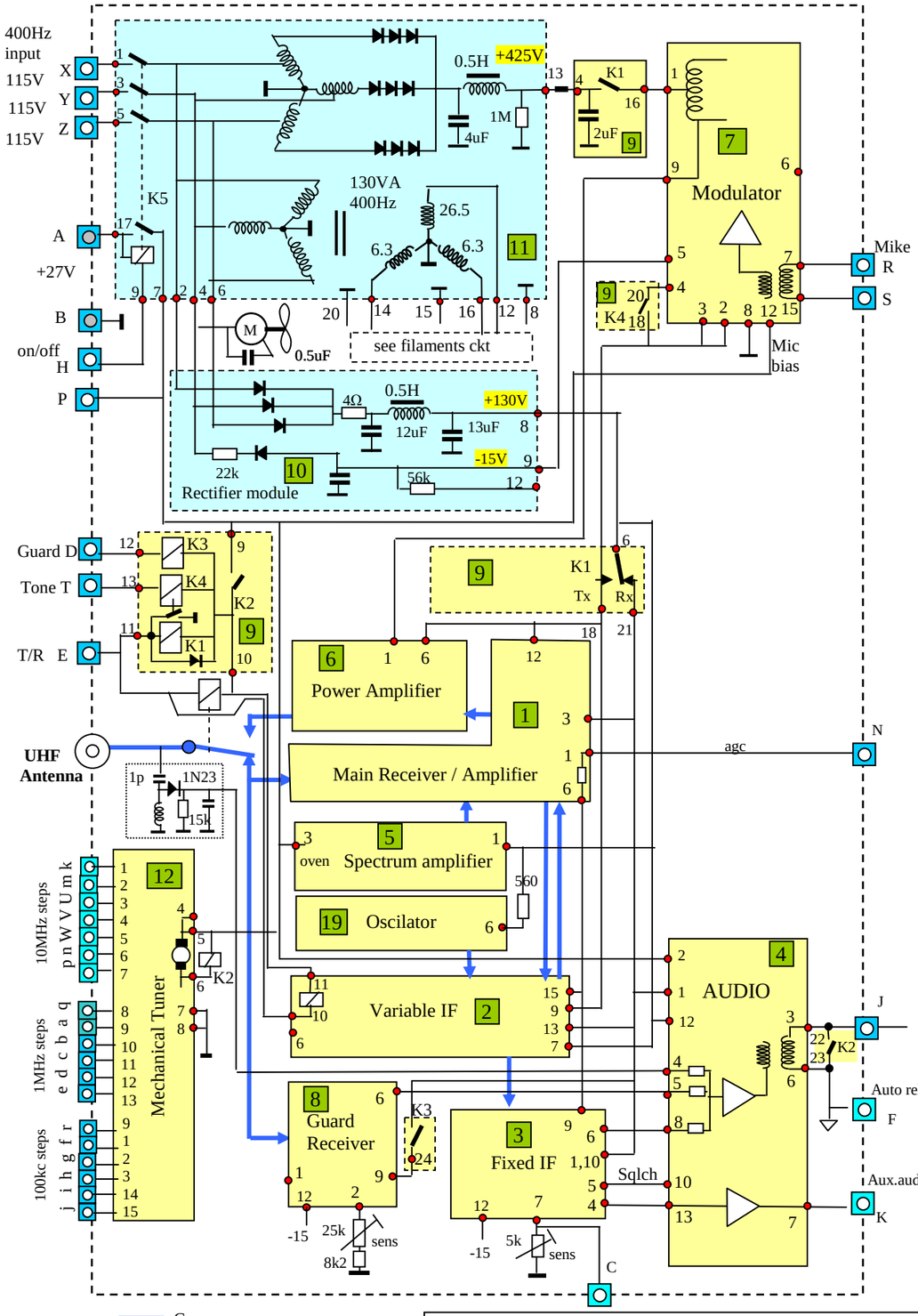
The **618W-2B** was specially made for the F104G Starfighter.
- Only the 3phase 400Hz version;
- Special form to fit into the F104 Starfighter;
- With 34 pin connectors as standard in the F104 ;
- The interphone amplifier AIC-18 was built-in.
- The channel spacing is 50 kc (3500 channels) with third IF amplifier at 500 kHz;
- Separate control boxes for manual frequency select and for the preset channels

PTR 175 was made by Plessey. This unit has all features of the ARC52 but now with 50kHz spacing (3500 channels), and includes a VHF band of 117-5 to 135-95 MHz, also with 50kHz spacing.

This document gives the schematic diagrams of the ARC-52

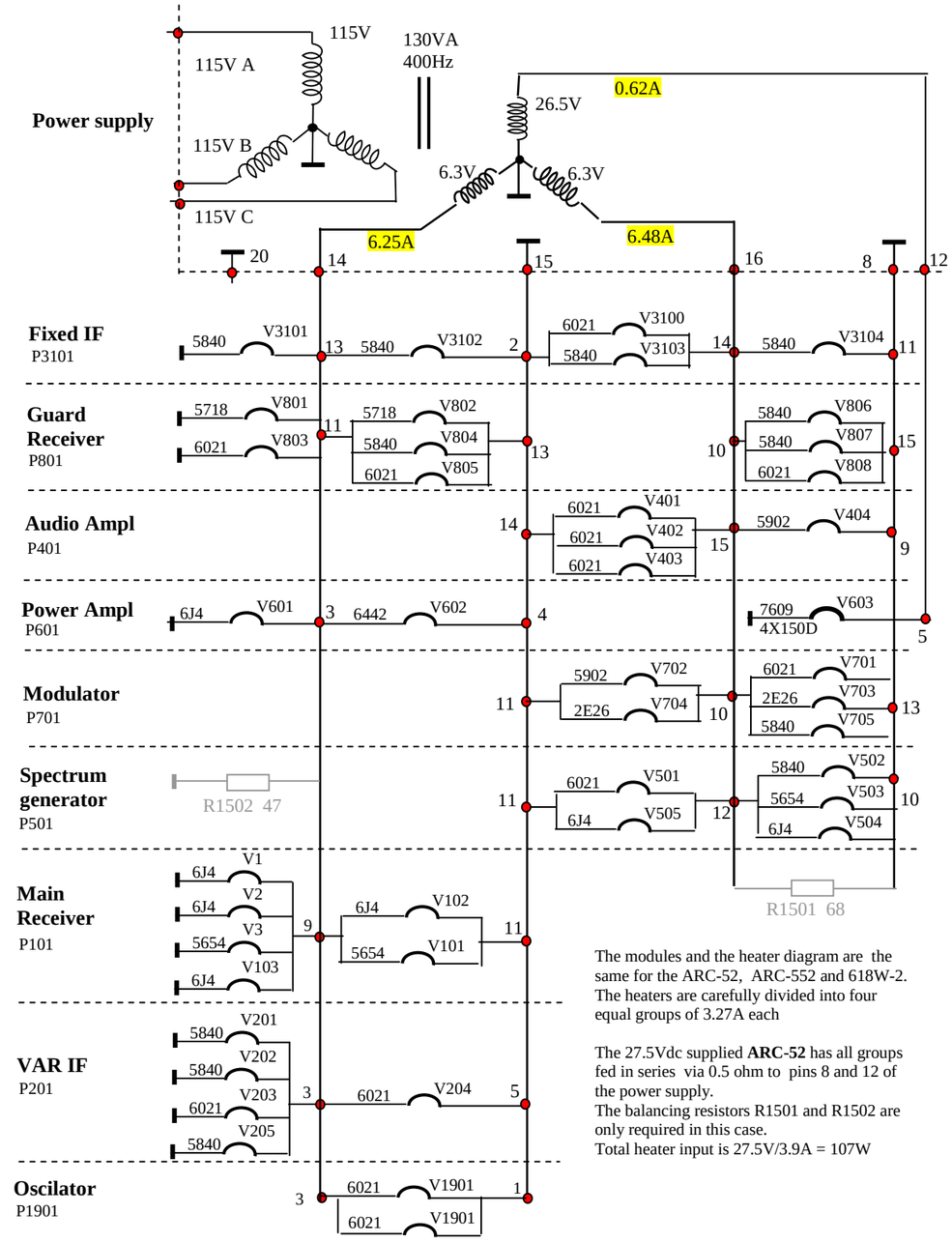
Prefix	Module
1	Main Receiver (UHF part)
2	Variable IF
3	Fixed IF (1.85 MHz)
4	Audio Amplifier
5	Spectrum Generator
6	RF Power Amplifier
7	Modulator
8	Guard Receiver
9	Relay Unit
10	Power Supply
11	Rectifier (ac powered set only)
12	Mechanical Tuning Unit
15	Chassis
19	Oscillator





ARC-52 Main Chassis

19 May 2016 kb



The modules and the heater diagram are the same for the ARC-52, ARC-552 and 618W-2. The heaters are carefully divided into four equal groups of 3.27A each

The 27.5Vdc supplied **ARC-52** has all groups fed in series via 0.5 ohm to pins 8 and 12 of the power supply.
The balancing resistors R1501 and R1502 are only required in this case.
Total heater input is 27.5V/3.9A = 107W

43 tubes

ARC 52 , ARC-552 and 618W-2 Heater circuit

6 june 2012 kb

RF Power Amplifier

Dial	Xtal	Mult	Freq
22	33 33	6	200
23	35.00	6	210
24	36.66	6	220
25	38.33	6	230
26	40.00	6	240
Z7	41.66	6	250
28	43.33	6	260
29	45.00	6	270
30	31.11	9	280
31	32.22	9	290
32	33.33 *	9	300
33	34.44	9	310
34	35-55	9	320
35	36.66*	9	330
36	37.77	9	340
37	38.88	9	350
38	40.00*	9	360
39	41.11	9	370

* Xtal dual used

First LO 200 - 370 MHz
in 18 steps of 10 MHz

15 Xtals on 18 positions see table

doubler/ tripler

tripler

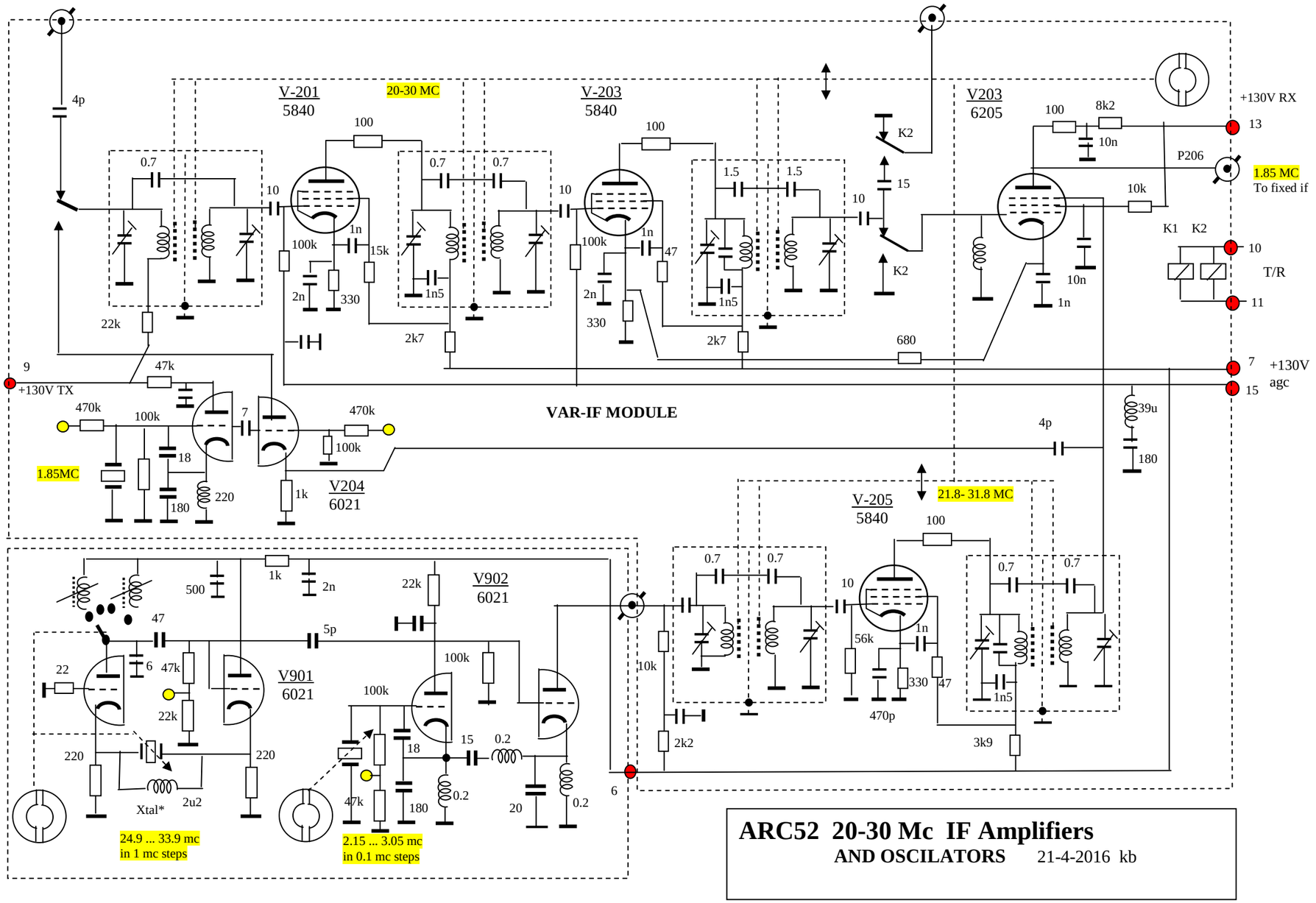
VAR IF
20-30 MC

1962

All relay contacts shown in receive position

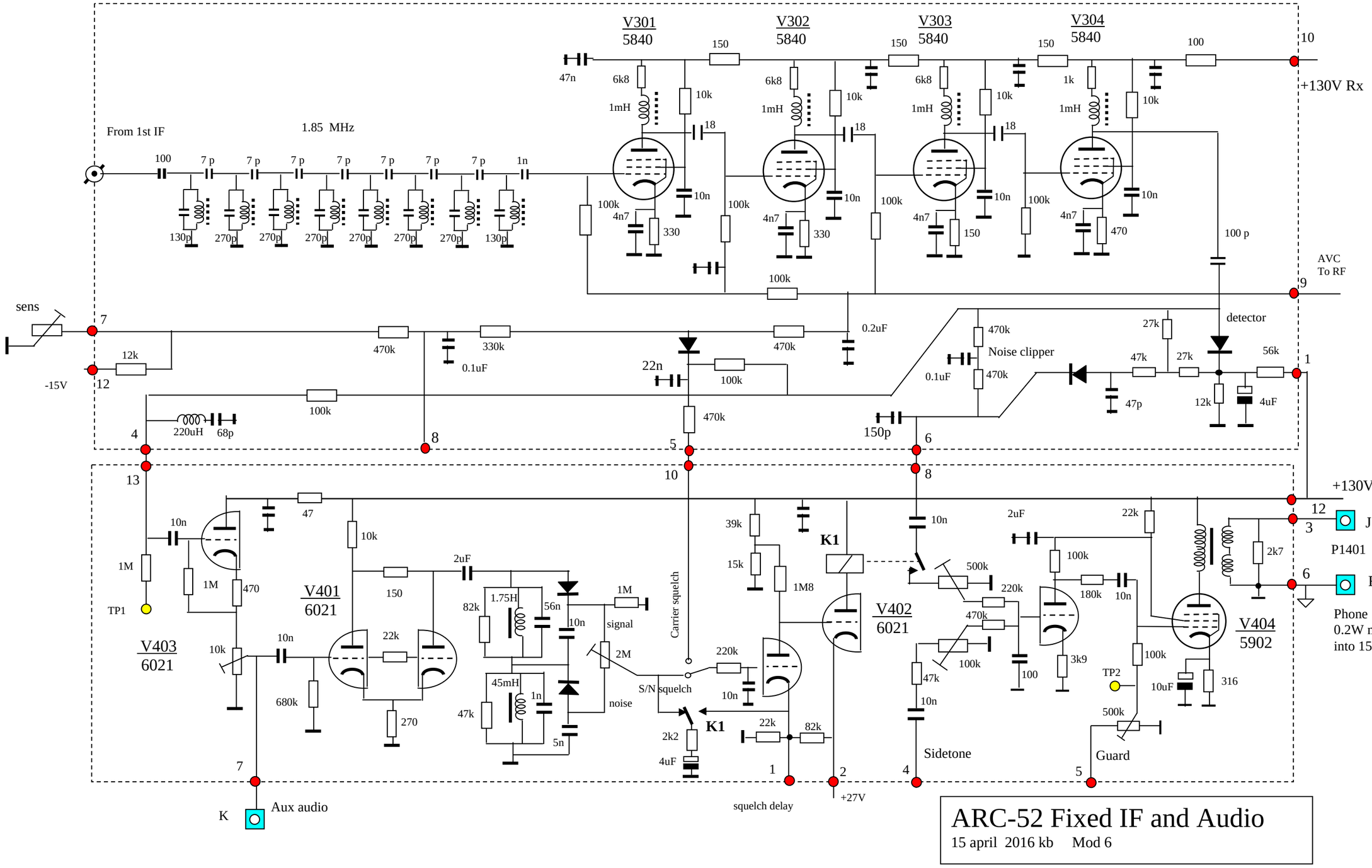
ARC-52 UHF parts

For heaters and oven see power supplies sheet
15 april 2016 kb



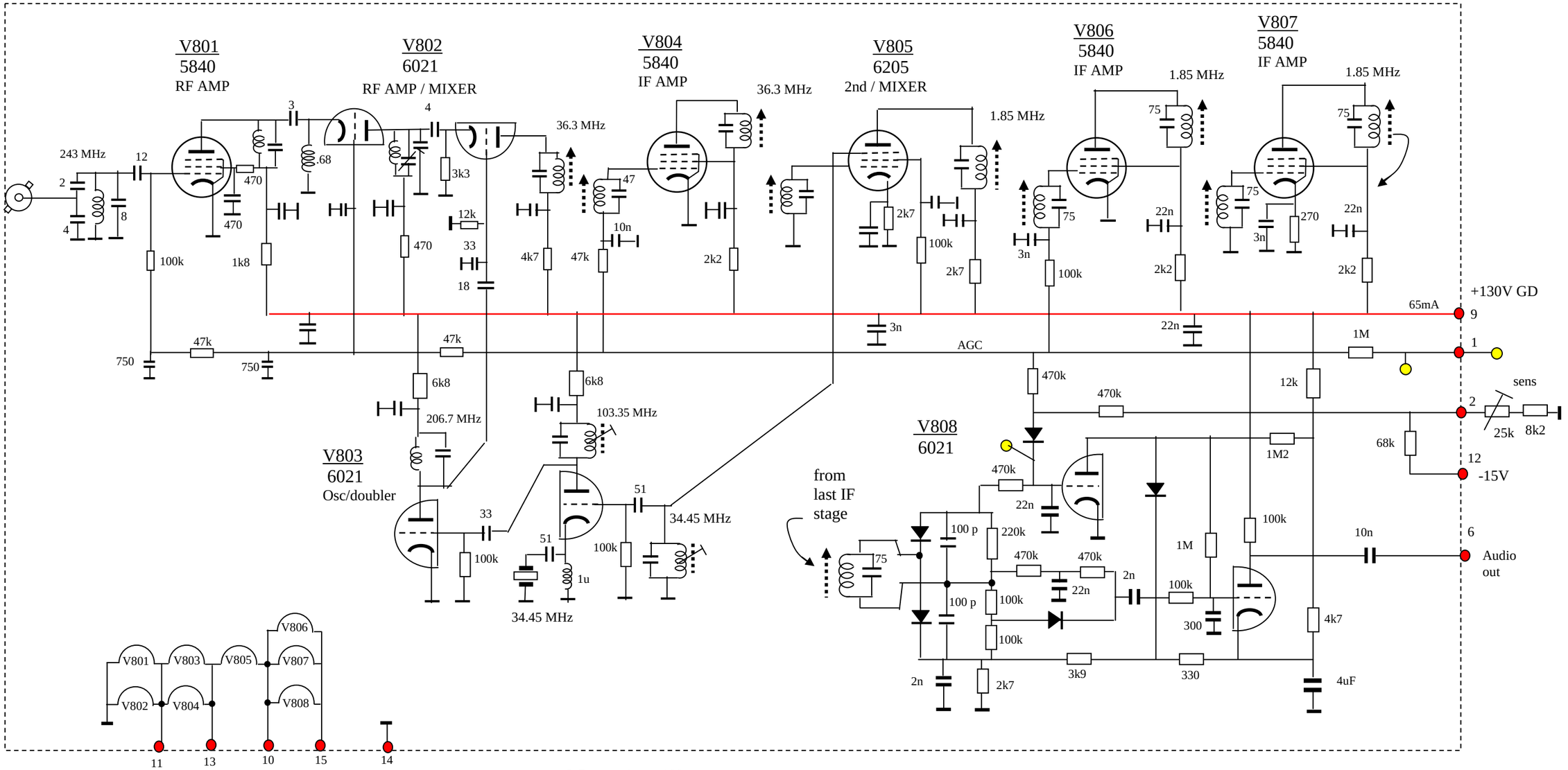
ARC52 20-30 Mc IF Amplifiers

AND OSCILATORS 21-4-2016 kb



ARC-52 Fixed IF and Audio

15 april 2016 kb Mod 6



6dB bandwidth > 100 kc
60dB bandwidth < 400 kc
Sens 1.2µV to open squelch at 6 dB S/N

ARC-52 Guard Receiver

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ARC52 Frequency coding

The autopositioners in the ARC52, ARC552 and the 618W-2 are the same.
The 50kc bit for the 618W-2 is routed directly to a relay, the autopositioner is not involved.

10Mc coding

pos	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
mc	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
10-1				X					X					X				
10-2					X					X					X			
10-3	X					X					X					X		
10-4		X					X					X					X	
10-5			X					X					X					X
10lo	X	X	X						X	X	X	X	X					
200	X	X	X	X	X	X	X	X										

An “X” indicates that the line connects to ground in the control panel
The remaining lines are interconnected in the control panel

1 Mc coding

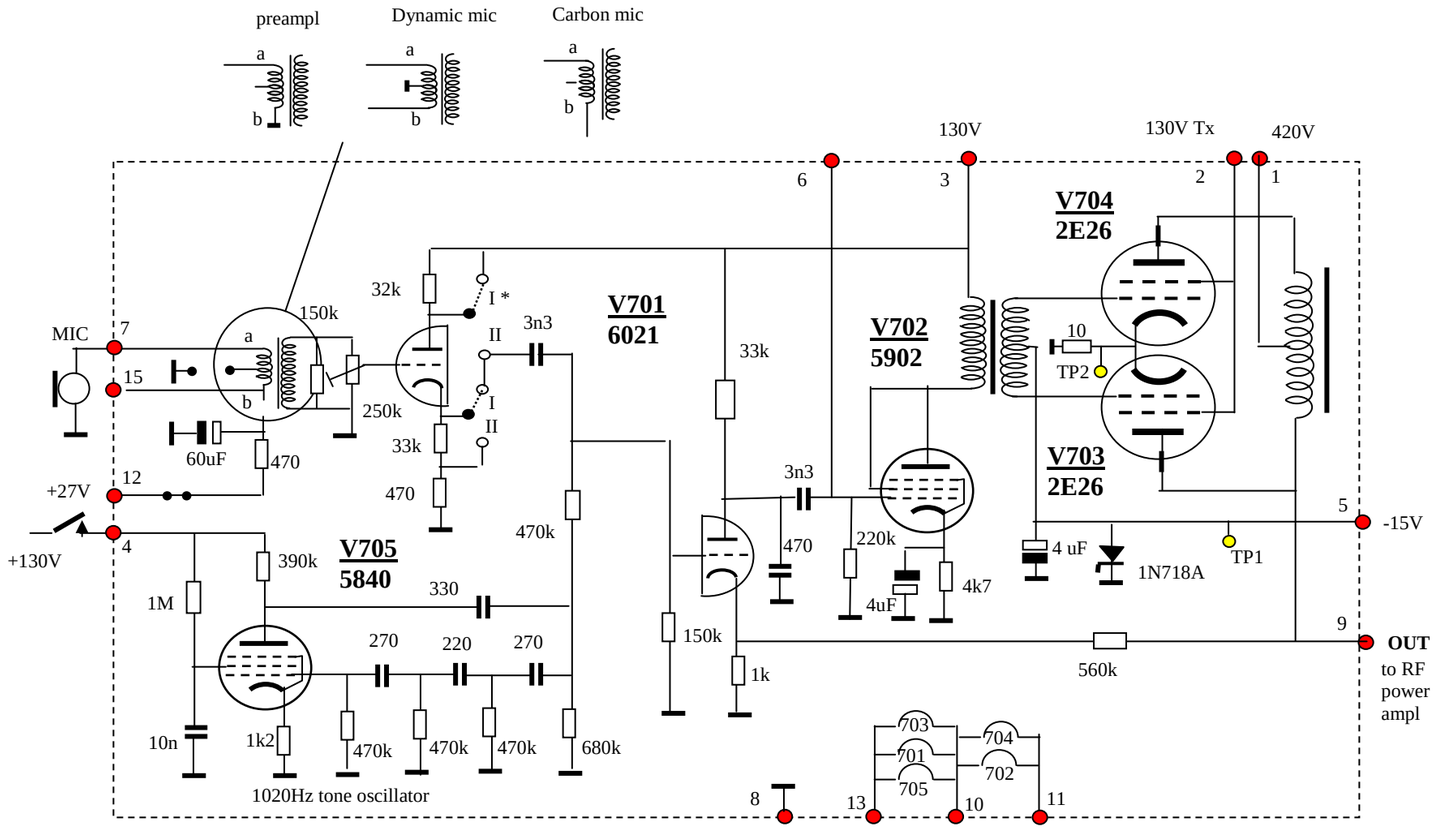
	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
1-1	X	X									X	X								
1-2			X	X									X	X						
1-3					X	X									X	X				
1-4							X	X									X	X		
1-5									X	X									X	X
1.lo	X	X	X	X	X	X	X	X	X	X										
x		X		X		X		X		X		X		X		X		X		X
y	X		X		X		X		X		X		X		X		X		X	

The x and y lines are internally connected with the xxx.0 thru xxx.4, resp.
 xxx.5 thru xxx.9, lines of the 0.1 Mc selection.. The 1Mc knob on the control panel has only 10 positions, but the 1Mc shaft in the transceiver has 20 positions to facilitate smooth tuning of the VAR-IF filters which have 400kc bandwidth.

0.1 Mc coding

	.0	.1	.2	.3	.4	. 5	.6	.7	.8	.9	-	-	-	-
.1-1	X					X								
.1-2		X					X							
.1-3			X					X						
.1-4				X					X					
.1-5					X					X				
.1 lo	X	X	X	X	X									

An “X” indicates that the line connects to ground in the control panel
The remaining lines are interconnected in the control panel.



* Solderlinks I for use with preamplifier or carbon mike.
Solderlinks II for use with dynamic mike

ARC52 MODULATOR
17-4-2016 kb