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 schematics 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
13  Chassis
14  Oscillator

**Only in ARC52**
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.
RF Power Amplifier

Transmit 20W

Antenna

VAR IF

Dual 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
27 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 35.56 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

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 Guard Receiver

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

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An "X" indicates that the line connects to ground in the control panel

The remaining lines are interconnected in the control panel.

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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.

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OUT to RF power ampl

1020Hz tone oscillator

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