

## VHF Control panels 614U -1 ..7 or C4074/ARC-73

The Collins VHF airborne radio set (51X-2B receiver and 17L-7 transmitter) are controlled by one of the following control panels. The frequency range of each control panels is a bit confusing.

The 51X-2B receiver range 108 – 151.95 MHz.

The 17L-7 transmitter range 118 – 151.95 MHz

The 17L-7A transmitter range 116 – 149.95 MHz ( by different crystal stacking)



**614U-1** with Single Channel Simplex(SCS) or Dual Ch. Simplex or Duplex (DCS/DCD) switch.  
Tx range 118 - 151.95 MHz  
Rx range 118 - 151.95 MHz  
( Hi band above 135.95 MHz can be blocked by removable end stop )

**614U-2** same circuit, gray surface and knobs  
Front text: VHF COMM



**614U-3** without extra switch

Intended for NAV –only sets with ATC converter instead of the 17L-7 transmitter. Has control of the 51V-3 GlideSlope receiver.  
Tx range none, but 20 channel GS  
Rx range 108 – 151.95 MHz

**614U-4** same circuit, gray surface and knobs  
Front text: VHF NAV



**614U-5** with SCS – DCS/DCD switch  
**614U-6** with COMM –NAV/COMM switch

614U-5 is identical to the military C-4074/ARC73

Tx range 116 – 149.95 MHz

(Hi band above 133.95 MHz)

Rx range 116 – 149.95

Front text: VHF

Dual channel possible at 118.xx ,119, 120, 127, 128 and 129.xx MHz but any other frequency can be selected with soldering links on the outer MHz selector switch

ARC73 116-149.95 Tx, 116-151.95 Rx

ARC73A 116-149.95 Tx 108- 151.95 Rx

### Controls

**The 614U-6** Remote Control channels the 51X-2 through both the aircraft navigation and communication frequencies. In addition, the unit provides for automatic selection of glideslope frequencies whenever an ILS channel is selected.

**The 614U-7** Remote Control, in addition to the above, also provides for automatic selection of DME frequencies whenever a VOR channel is selected.

Both controls channel the 51X-2 in 50kc steps over its entire frequency range from 108.0 – 151.95 mc.

# VHF Control Panels 614U -1, 2, 3, 3A, 4, 5, 6 or C4074/ARC-73

The 614U panel has two independent 13-wire frequency control switches, one for 51X-2 receiver and one for the 17L-7 transmitter.

| Switch pos.           |       |   | 1               | 2   | 3   | 4   | 5   | 6                | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15                   | 16  | 17  | 18  | 19  | 20  | 21   | 22  | 23  | 24  |
|-----------------------|-------|---|-----------------|-----|-----|-----|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|----------------------|-----|-----|-----|-----|-----|------|-----|-----|-----|
| Even                  | MHz   | M | ----- NAV ----- |     |     |     |     | ----- COMM ----- |     |     |     |     |     |     |     |     | ----- EXTENDED ----- |     |     |     |     |     | Skip |     |     |     |
| Odd                   | MHz   | J | 108             | 110 | 112 | 114 | 116 | 118              | 120 | 122 | 124 | 126 | 128 | 130 | 132 | 134 | 136                  | 138 | 140 | 142 | 144 | 146 | 148  | 150 | 152 | 154 |
|                       |       |   | 109             | 111 | 113 | 115 | 117 | 119              | 121 | 123 | 125 | 127 | 129 | 131 | 133 | 135 | 137                  | 139 | 141 | 143 | 145 | 147 | 149  | 151 | 153 | 155 |
| TRANSMIT<br>17L-7 pin | P2-7  | A |                 |     | X   | X?  |     | X                |     |     |     | X   | X   |     | X   | X   |                      |     |     | X   | X   |     | X    |     |     |     |
|                       | P2-8  | B |                 |     |     | X   |     |                  | X   |     |     |     | X   | X   |     |     | X                    |     |     |     | X   | X   |      | X   |     |     |
|                       | P2-9  | C |                 |     |     |     |     |                  |     | X   |     |     |     | X   | X   |     |                      | X   |     |     |     | X   | X    |     | X   |     |
|                       | P2-10 | D | X               |     |     |     |     | X                |     |     | X   |     |     | X   | X   |     | X                    |     |     | X   | X   |     | X    | X   | X   |     |
|                       | P1-7  | N |                 |     |     |     |     |                  |     |     |     |     |     |     |     |     | X                    | X   | X   | X   | X   | X   | X    | X   | X   |     |
| RECEIVE<br>51X-2 pin  | 6     | A | X               | X   | X   | X   | X   | X                |     |     |     | X   | X   |     | X   | X   | X                    |     |     | X   | X   | X   |      | X   |     |     |
|                       | 7     | B |                 | X   | X   | X   | X   |                  | X   |     |     |     | X   | X   |     |     | X                    |     |     |     | X   | X   |      | X   |     |     |
|                       | 8     | C | X               |     | X   | X   | X   |                  |     | X   |     |     |     | X   | X   |     | X                    |     |     | X   | X   |     | X    | X   |     |     |
|                       | 9     | D |                 | X   |     | X   | X   | X                |     |     | X   |     |     | X   | X   |     | X                    |     |     | X   | X   |     | X    | X   |     |     |
|                       | 20    | N | X               | X   | X   | X   | X   | X                | X   | X   | X   | X   | X   | X   | X   | X   | X                    | X   | X   | X   | X   | X   | X    | X   | X   | X   |

| Pin nr on 614U control panel |    |                       |
|------------------------------|----|-----------------------|
|                              | Rx | Tx                    |
| MHZ select                   | A  | 1 20                  |
|                              | B  | 2 21                  |
|                              | C  | 3 22                  |
|                              | D  | 4 23                  |
| Fract. MHz select            | E  | 5 24                  |
|                              | F  | 6 25                  |
|                              | G  | 7 26                  |
|                              | H  | 8 27                  |
| Odd MHz                      | J  | 9 28                  |
| 50 kHz                       | K  | 10 29                 |
| 00 kHz                       | L  | 11 30                 |
| Even MHz                     | M  | 12 31                 |
| Extended                     | N  | 13 32                 |
| 10kΩ Squelch pot             | 14 | 33 DCD                |
| 150 Ω Vol.pot top            | 15 | 34 power switch to 19 |
| Vol.pot wiper                | 16 | 35 gnd                |
| Vol pot cold                 | 17 | 36 Dial lamps         |
| gnd                          | 18 | 37 Dial lamps gnd     |

Pink area not accessible    
  Green area 108-117.95 Rx only accessible in 614U-3 or 3A

Fractional MHz control lines E,F,G,H (same code for Rx and Tx) :

| Line | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | Rx pin<br>51X-2B | Tx pin<br>17L-7 |
|------|----|----|----|----|----|----|----|----|----|----|------------------|-----------------|
| E    | X  |    | X  |    |    | X  | X  |    |    |    | 10               | P2-3            |
| F    |    | X  | X  | X  |    |    | X  |    |    |    | 11               | P2-4            |
| G    |    |    | X  |    | X  |    |    | X  | X  |    | 12               | P2-5            |
| H    |    |    |    | X  |    | X  |    |    | X  | X  | 13               | P2-6            |

- J-line to Rx Pin 14 resp. Tx pin P1-17 connected to ground for odd MHz
- K-line to Rx Pin 15 resp. Tx pin P2-12 connected to ground for .x0 MHz
- L-line to Rx Pin 16 resp. Tx pin P2-22 connected to ground for .x5 MHz
- M line to Rx Pin 17 resp. Tx pin P2-11 connected to ground for even MHz
- N-line to Rx Pin 20 resp. Tx pin P1-7 connected as indicated for .extended MHz

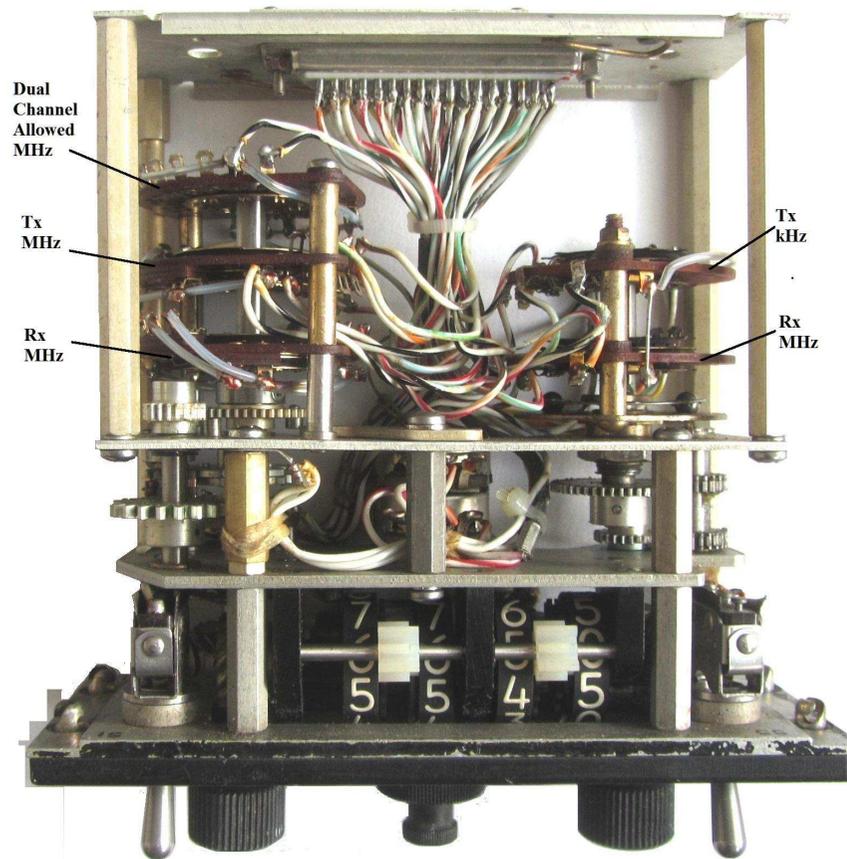
pin 33 connects to ground when DCD selected and freq= 118,119,120,127,128 or 129 MHz  
 pin 34 connects to pin 19 when power switch is "ON"

Positions marked "X" above are connected to ground in the control panel  
 Positions **not** marked "X" are interconnected in the control panel and not to ground.

## Switch decks

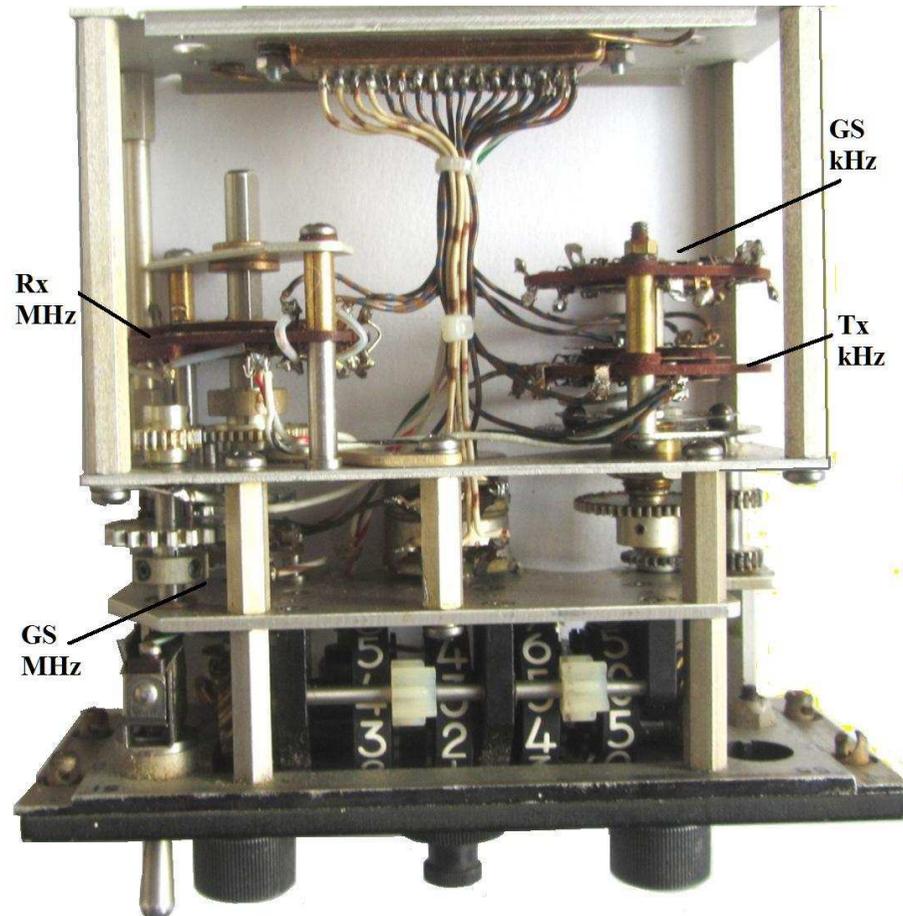
One MHz switch has 4 layers in 24 positions in 2MHz steps from 108 MHz

One kHz switch has 2 layers in 20 positions in 50kHz steps



614U -1 Controls 51X-2 and 17L-7

614U -5 Same with preselectable MHz freq that allow dual channel mode



614U-3 Controls 51X-2 and 51V-3 or any other GlideSlope Receiver.

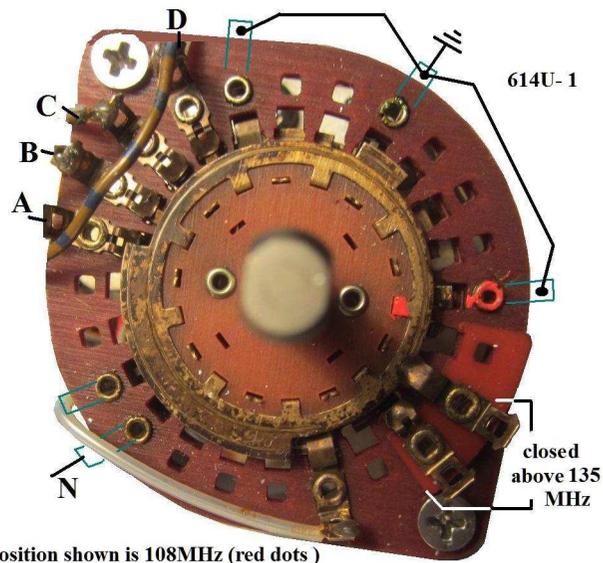
## Receive and Transmit frequency control

The frequency control for the receiver and transmitter is identical, and consists of a MHz switch and a fractional MHz switch.

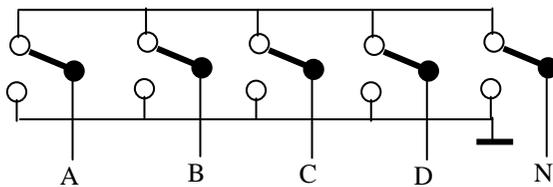
Each switch has a single stator, and

- a rotor with 1 code disc on each side for the fractional MHz, or
- a rotor with 2 code discs on each side for the MHz switch.

The complete MHz switch is shown here, with 4 layers in 24 positions, rotated in 2MHz steps from 108 MHz (shown) to 154 MHz.



Position shown is 108MHz (red dots)



## Glide slope frequency control

The 614U-3 can control the 51X-2 receiver *and* a 20 channel glide slope receiver like the Collins 51V-3, the Bendix GSA-8 or the AN/ARN-31.

The Glide Slope (GS) channels are paired with the LOC channels between 108 and 112 MHz.

LOC and GS channels were those days :

108.1 , 108.3, 108.5, 108.7. 108.9, 109.1 , 109.3, 109.5, 109.7. 109.9, 110.1 , 110.3, 110.5, 110.7. 110.9, 111.1 , 111.3, 111.5, 111.7. 111.9.

The VOR channels are in-between these, at 108.2, 108.4, etc.

The 614U-3 control has an extra switch to select .1, .3, .5, .7, or .9 as fractional MHz, and an extra contact on the small MHz switch that rotates every MHz with 10 positions. The odd/even MHz contacts are already there, one pair is used for the J. M selection ( see page 1), and there are two spare pairs, one is used for the GS.

Another contact closes at 108 and 111 MHz, and then every 10MHz, so at 118 and 121 Mhz etc.

The GS receiver is switched on by the 51X-2 receiver, that has an output contact for the LOC channels, so the phantom frequencies do no harm.

