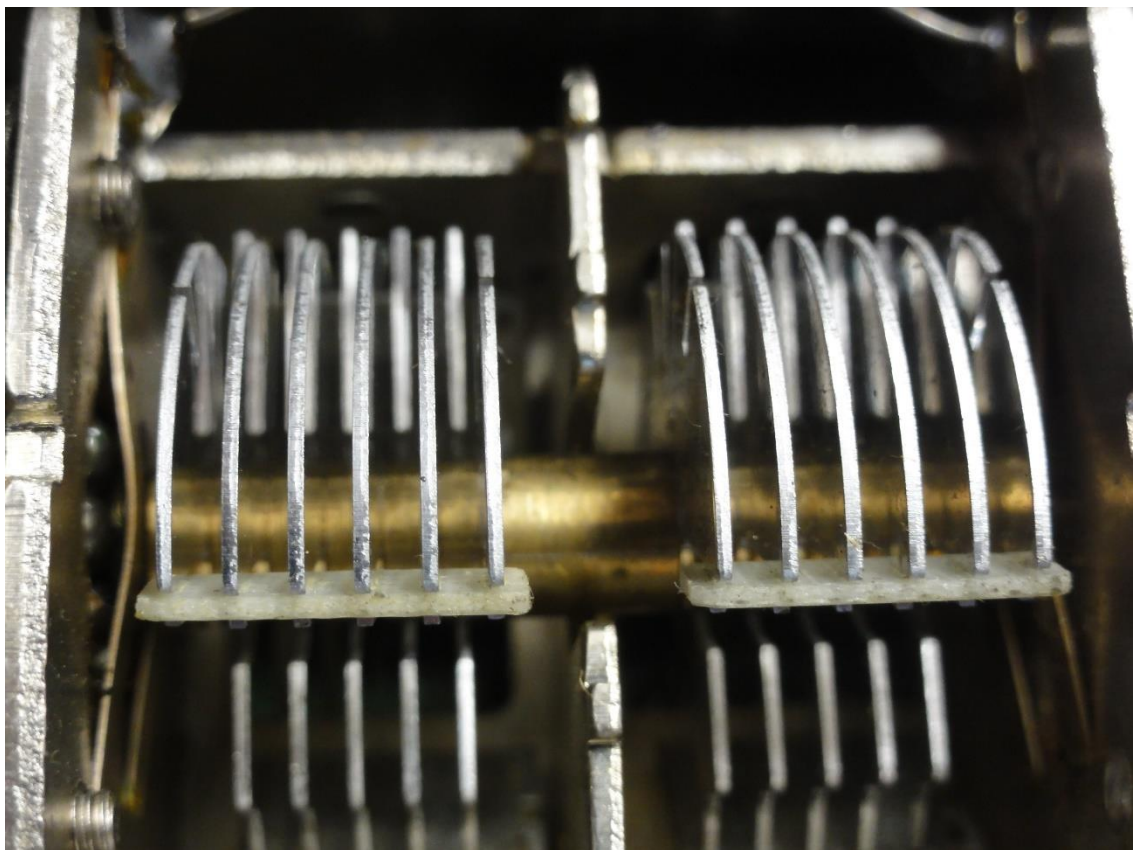


Modification VFO reversal of rotations

Yaesu FT-301D



Modification instructions

April 10, 2019

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Important! Advices or tips for the correct function.



Caution! The instructions must be observed carefully.

1 Introduction

Normally you are used to turning the VFO knob clockwise increasing the frequency and vice versa. With the FT-301D it is just the other way around and therefore very unusual. This is due to the frequency conditioning of the FT-301.

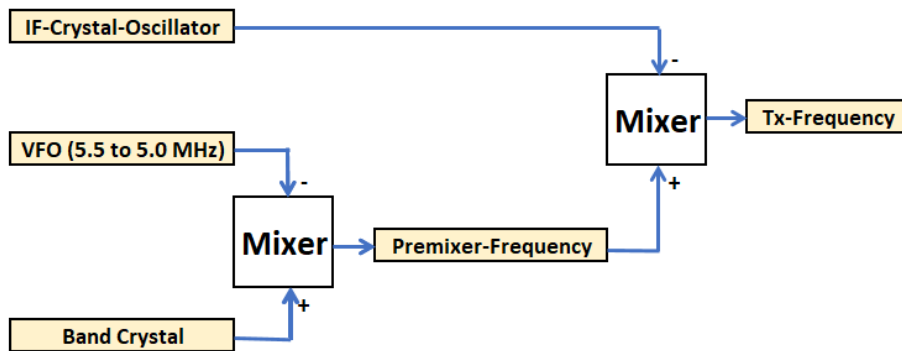


Figure 1

As shown in Figure 1, the VFO frequency is subtracted from the crystal frequencies for the different bands (Band Crystal). Thus, the VFO frequency runs in opposite direction to the pre-mixer frequency and thus also to the transmit frequency (Tx frequency).

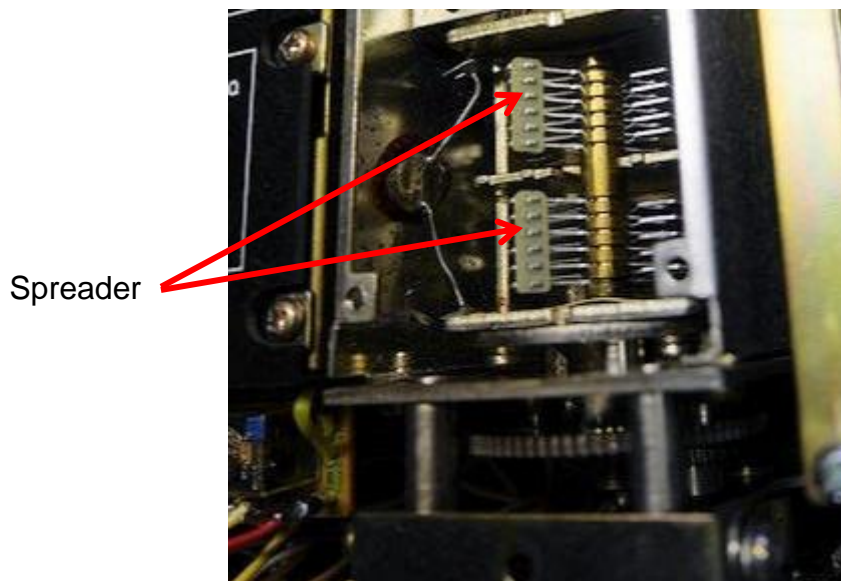


Figure 2

The variable capacitor of the VFO is designed in such a way that the rotor plates turn out clockwise and thus the capacity decreases -> the frequency of the VFO increases -> the Tx frequency decreases.

As shown in Figure 2, the fiber glass spreaders on the two rotor plate packs prevent them from being turned counterclockwise beyond the maximum capacity. However, this would be absolutely necessary to reverse the frequency to the direction of rotation.

The American amateur radio friend David, N0EDS, had the great idea to remove the two spreaders so that the variable capacitor could be rotated freely through 360°.

The following description shows how the modification is carried out.

2 Changing the direction of rotation of the variable capacitor

2.1 Removing the spreaders in the VFO variable capacitor

- Remove the four screws and the VFO cover.
- Remove very carefully, without bending the rotor plate of the variable capacitor VC801, both fiber glass spreaders with a small side cutter.

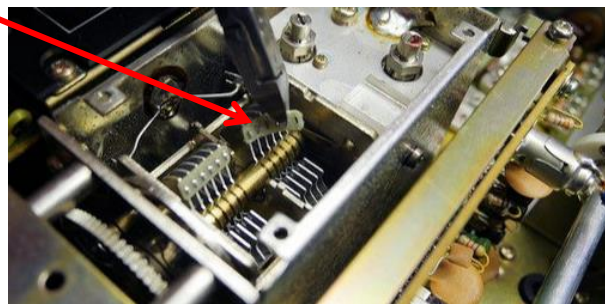


Figure 3

- Place the device upright in front of you so that you can work well on the rotor plates.
- Cover the lower part of the variable capacitor with a cloth to prevent filings from entering the unit. (see Figure 4).

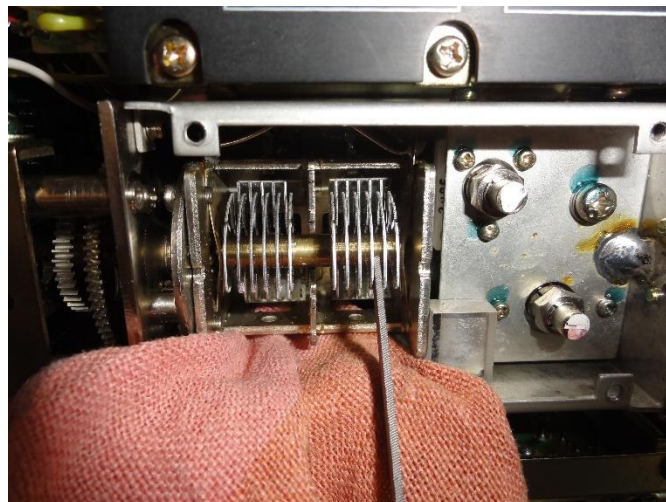


Figure 4

- Carefully deburr all ends of the rotor plates with a needle file on the side where you have removed the spreaders.



Under no circumstances should the rotor and stator plates touch each other!

- Remove the cloth carefully so that no metal chips fall into the device.
- Clean the capacitor between the plates with a contact spray so that there are no more aluminum filings inside.

2.2 Mechanical adjustment of the VFO variable capacitor

- Turn the unit, so that the open variable capacitor is easily accessible from above and the tuning knob at the front.
- Loosen (do not unscrew!) the two grub screws of the gear wheel on the axis of the rotary capacitor. The tuning knob must be turned slightly, as both screws are not accessible at the same time).

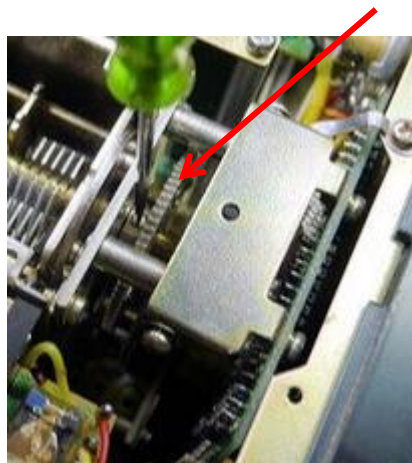


Figure 5

- Position the variable capacitor by hand so that the rotor plates are fully turned in (maximum capacity of the variable capacitor), see Figure 6).



Figure 6

- Turn the tuning knob clockwise to the right stop. The variable capacitor must not rotate, otherwise you have not loosened the grub screws enough.

- In this position tighten the grub screw accessible from above.
- Turn the tuning knob counterclockwise until you see the second grub screw and can tighten this one too.

2.3 Functional test

- Turn on your transceiver. Set the receiver in the 20m band, USB with "Tune" to maximum noise in the speaker.
- Check by slowly turning the VFO knob whether you can hear the noise over the entire tuning range without interruption.
If the noise suddenly decreases at any position of the VFO knob, the rotor plates of the variable capacitor are touching the stator. In this case, check the capacitor carefully with a magnifying glass.

3 Changing the direction of rotation on the CALIB knob

- Turn the unit upside down so that the underside faces upwards.
- Solder off the two resistors R14 (1k Ω) and R15 (3.3k Ω) from the CALIB potentiometer VR6 (5k Ω), see Figure 7 .

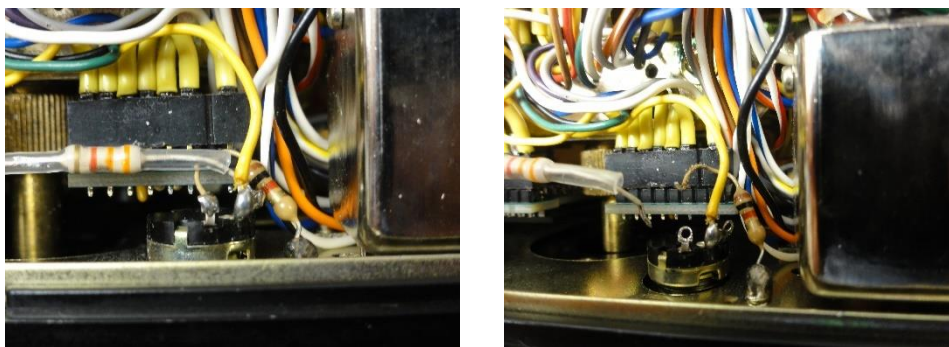


Figure 7

- Solder the two resistors R14 (1k Ω) and R15 (3.3k Ω) in the swapped positions to the CALIB potentiometer VR6 (5k Ω), see Figure 8

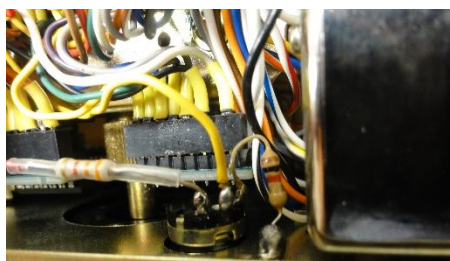


Figure 8

4 Disclaimer of liability

Any actions based on the information contained in this document are taken at the user's own responsibility. Any liability is excluded, both for direct and indirect damages and consequential damages that may arise in connection with the use of the information contained in this document.