

ARDFrx80-7.
Details of coils and crystals.

pa0nhc 20171 **215**

Print this page, and also see "Setup".

L102 : two wires twisted, 7 turns, 1mm dia on a Conrad 8x50mm $U_i=300$ ferrite rod.
Use one pair twisted wires from a CAT5 network cable. Total turn is 14 with center tap.
Once adjusted correctly, do NOT re-adjust. This inductance ensures good tracking between antenna and oscillator.

Tuning of the antenna circuit should be done later on by adjustment of trimmer capacitor C105.

Nominal self inductance : 8.0 uH. See "Setup" for one time adjustment of L102.

If another ferrite rod is used, for instance a 150 x 8 mm $U_i=250$ rod (Amidon.de FS-150x84B), the number of turns must be changed to achieve 8.0 uH inductance.

L101 : 3 turns at or near the center of the ferrite rod. (not over L102). The number of turns is not critical. Globally : Turns(L101) = 3/14 turns(L102).

Coils are becoming more difficult to obtain. If possible i give more than one usable type, but an adaption to the coil or tuning capacitor can be needed.

Local oscillator coil L2 :

Standard Neosid 1.0 uH 7.5 x 7.5mm **BV5048** . Available at **Amidon.de** or **Box73.de** .

If no measuring equipment is available, order at "Amidon.de" a to 1.0 uH pre-adjusted coil type 7.1 "WZ6,5" 1.0 uH.

One time adjustment of L2 :

Once adjusted correctly, do NOT re-adjust. The inductance of 1.0 uH ensures good tracking between antenna and oscillator circuits. Tuning of the oscillator should be done later on only by adjusting trimmer capacitor C110.

With an inductance meter :

Adjust L2 to 1.00 uH using an inductance meter if available. Use no connecting wires is they add inductance.

More precise with a ridDipOsillator is available :

- Connect a capacitor of 150 pF 1% **with abt. 2cm long legs** to pins 1 and 5.
- Hold the grid dip meter coil to the space between the capacitor wires, (these wires are your temporarily coupling loop).
- Find the circuit resonance.
- Adjust the ferrite core **WITH A SPECIAL WELL FITTING TOOL** for 13.0 MHz resonance.
- Remove the capacitor.
- From now on, L2 should **NOT** be readjusted. Tuning of the oscillator should only be done by C110.

10,7 MHz IF coils.

L3,6 : 7.5 x 7.5mm. 3.3 uH to 5.6 uH.

At **Amidon.de** are pre-adjusted 7.1 coils available :

L [uH]	Type
1.0	WZ6,5
3.3	WZ12,25
3.9	WZ13,5
4.7	WZ15,25
5.6	WZ16,25

Also usable is a Standard Neosid coil **BVW5170**. Available at **Amidon.de** .

For correct coil connections, you first have to make following modification to coil BVW5170 :

1. To mark the original position, using a permanent felt pen, make one dot onto the bottom of the plastic coil form, and one near it onto the copper can.
2. Push the coil form out of the can by pressing onto the ferrite core.
3. Cut the middle pin (#3) of the row of three fully down.
- 4 As seen from the pin side of the coil form, turn the coil form 90 degr. to the right
5. Push the coil form in its new position into the copper can.

After soldering into the PCB, CHECK that no short circuits are present, especially near the soldered ground lugs.

Chokes.

REM: the ealier used Neosid SD75 type chokes have a high self inductance at a given **Self Resonating Frequency** than smaller chokes on ferrite rods. But axial 7x3mm chokes are wider available and suggested now

Ferrite beads are replaced by easier obtainable resistors.

L7,10,11,12 - 22uH: Axial chokes Epcos or Fastron 7x3mm, vertically placed..

L13,14,15,201 : 10uH Axial chokes Epcos or Fastron 7x3mm. **Conrad orderNr 501881**

FB2,5.

Resistors 1k, vertically positioned, with the body at the G2 trace directly to the PCB.

FB6,7.

Resistors (220 Ohms). Vertically positioned. Their value depend on the needed attenuation in order to achieve a max. loudness of 85 dBa from the used head phone. They also function as RF blockers. Over the connecting wires between PCB HPH and the chassus phone bus a small ferrite core (Fr) is advised.

Crystals.

10.7 MHz crystal filter F1+2: Order at www.box73.de : "quartz filter" **10M12B.**

BFO crystal Cr:

Order at www.box73.de : "quartz **10.7MHz HC18U**".

In order to improve frequency stability, and to prevent 10.7 MHz RF radiation, you should solder the rim of the can if the crystal QUICKLY to a special grounding surface near the crystal.
