POUNDSHOP DC RX - Peter Morris G1INF

Summary of modifications to PMS Scanning VHF FM radio
to produce a 7MHz direct-conversion SSB/cw receiver.

(1) VCO

1. Lift R1 (5k6) from pin 16.
2. Remove RESET, RUN and LIGHT switches.
3. Remove C5 (473).
4. Connect pin 16 to pin 14.
5. Remove L1 (osc. tuning).
6. Fit 7MHz tank in place of L1 (6.8uH / 50p / 20p trimmer)
7. Cut track between hot side of R2 (22k) and pot CW.
8. Remove "C6" link.
9. Connect R1 "loose" end to pot W.
10. Connect pot CW to Vp (+3V).
11. Replace C13 (103) with 15p (Reduces tuning span to around 115KHz).

(2) RF

1. Remove C1 (82p).
2. Connect pin 11 to antenna via 33p.
3. Connect other antenna end to pin 12.

(3) AF

1. Remove C8 (332).
2. Replace C10 (181) with 562.
3. Replace C9 (332) with 104.
4. Connect pin 8 to transistor base with 104.
5. Fit 22k from base to collector of transistor.

NOTES
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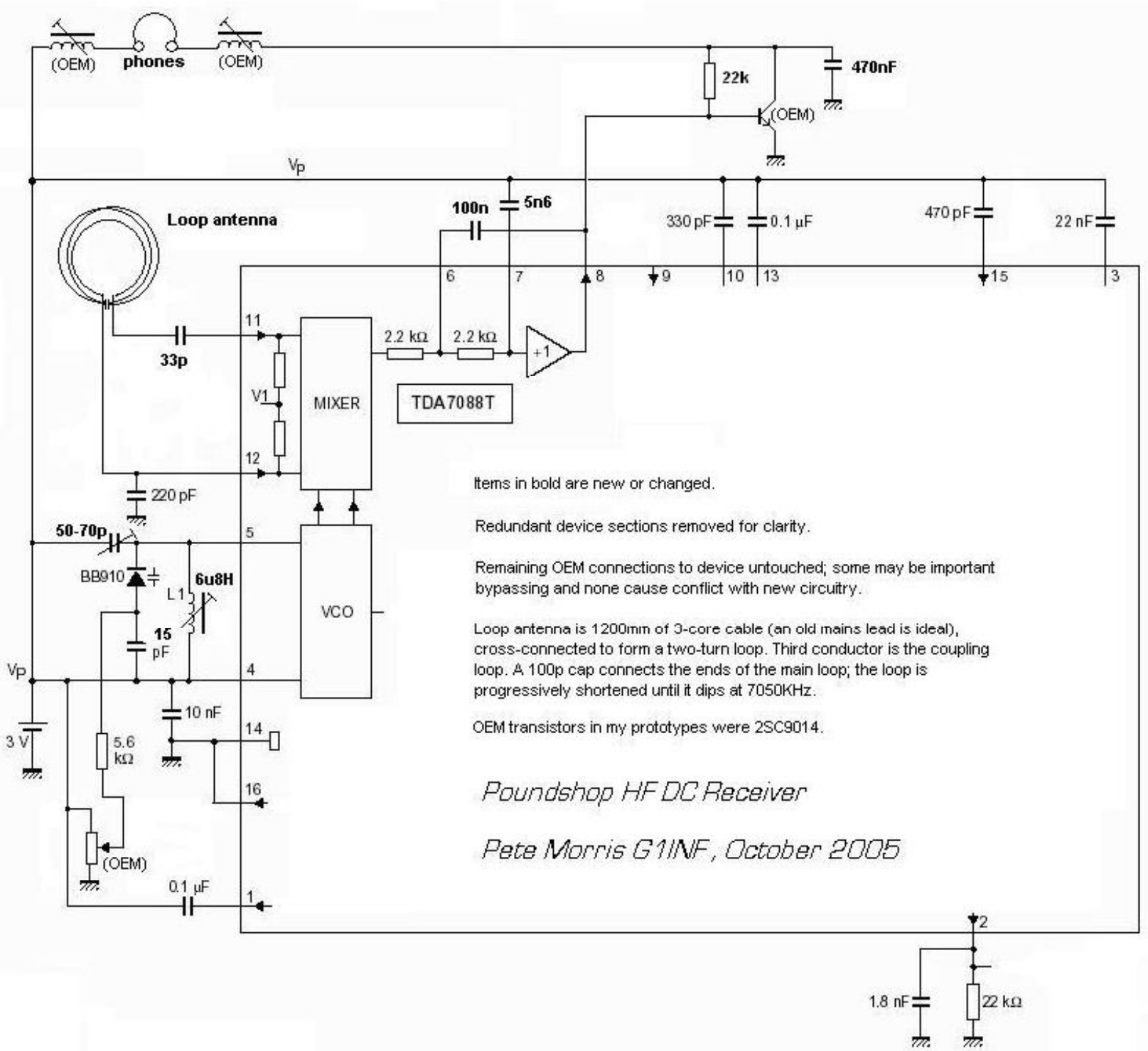
1. Trimmer fits in LIGHT switch area, and a hole drilled in the light switch button makes it accessible without opening the case.
2. A better antenna, perhaps via a matcher, will produce more signal but increases BCI.
3. The basic radio can have a 'standard' LM386 amplifier added for more AF gain, but remember that the TDA7088 can use no more than 5V supply.
4. In principle, any band from 1500KHz to 110MHz can be received by changing the tuning coil. I use ordinary axial chokes for coils. Screened coils may reduce BCI.
5. Loop antenna exits from light-bulb hole. The radio may be worn around the neck for convenience, or hung up, or laid on a table.
6. The supplied 'in-the-ear' headphones work well.


(OEM)
phones
(OEM)
22k
470nF
(OEM)
Vp
Loop antenna
100n
5n6
330 pF
0.1 µF
470 pF
22 nF
6
7
8
9
10
13
15
3
11
33p
2.2 kΩ
2.2 kΩ
+1
V1
MIXER
TDA7088T
12
220 pF
50-70p
5
BB910
6u8H
L1
15
pF
VCO
Vp
4
10 nF
3 V
5.6
kΩ
14
16
(OEM)
0.1 µF
1
2
1.8 nF
22 kΩ
Items in bold are new or changed.
Redundant device sections removed for clarity.
Remaining OEM connections to device untouched; some may be important bypassing and none cause conflict with new circuitry.
Loop antenna is 1200mm of 3-core cable (an old mains lead is ideal), cross-connected to form a two-turn loop. Third conductor is the coupling loop. A 100p cap connects the ends of the main loop; the loop is progressively shortened until it dips at 7050KHz.
OEM transistors in my prototypes were 2SC9014.
Poundshop HF DC Receiver
Pete Morris G1INF, October 2005