

TRAP IN THE MAIN

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Back to 90th, it happened, that my power PA begun to produce TVI and very heavy TVI were appeared only on 40 meters. A low frequency filter that was installed on the PA had not given any effect. My researches showed me, that neighbours' TV-sets were overloaded by power signals leaking from my PA to wire of the main. Most power leaking was only on 40 meters. I did not know the reason for the damage till now, but I needed to remove the TVI. What could I do?

For good rejection the traps should be made as possible best. In my design, L1 and L2 coils, intended for suppression of frequencies of range of 40 meters, contained 30 turn of copper wire of 1-mm diameter (#18 AWG), ID for the coils was 2.5 cm, length was 4 cm. LED was connected to seventh turn of the coil. Air dielectric variable capacitor of 10-100-pF is used for each trap. **Figure 2** shows the design of the traps. Please, Note, **Figure 2** is not in scale.

Well, usual rejection circuits (trap) were switched on in main wires, as shown in **Figure 1**. And that is all, the TVI were disappeared.

The traps were placed in a box made from PC board material. The box was disposed directly on the back panel of my PA. The trap box should be connected to main transformer of the PA by short, as it is possible,

Rejection circuits in main wires

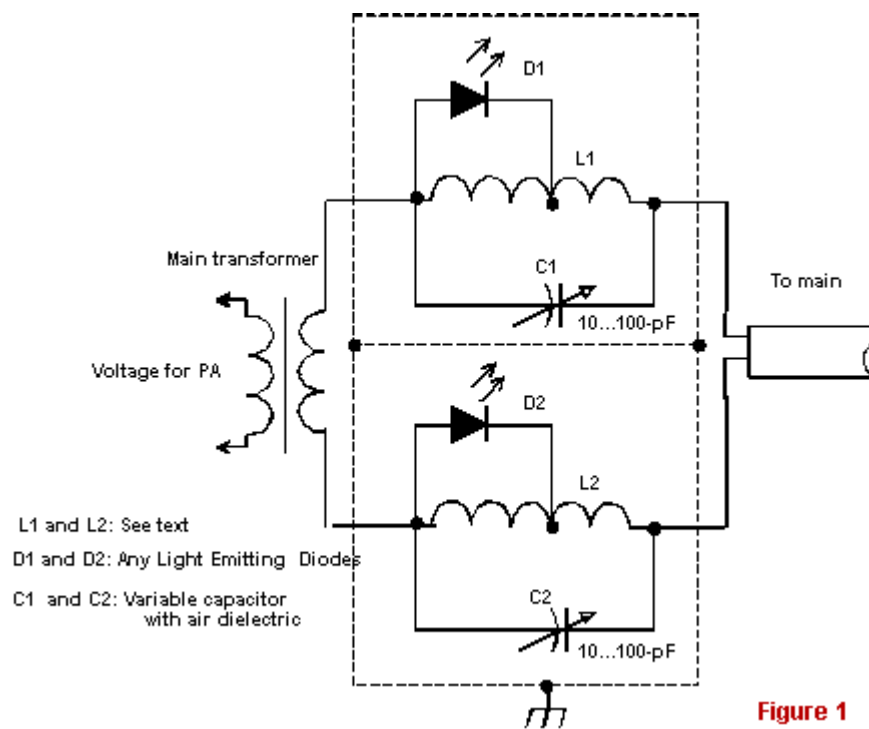


Figure 1

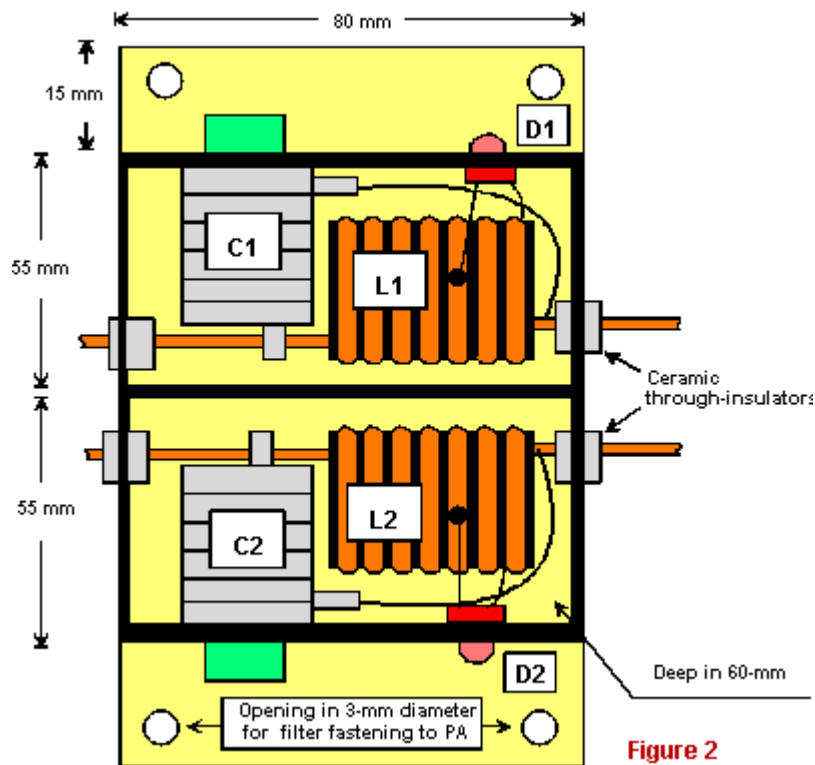
wires. If a free place is near a main transformer inside a PA the trap box can be placed at this place. The PA case was grounded by 3 cm width copper tape.

Having installed the trap box in the PA, switch the PA to transmission mode and once again tune fine the traps by C1 and C2. If the LEDs too shine out, decrease tap number from the coils. When traps are tuned, it is possible **not** disconnected the LED from coil.

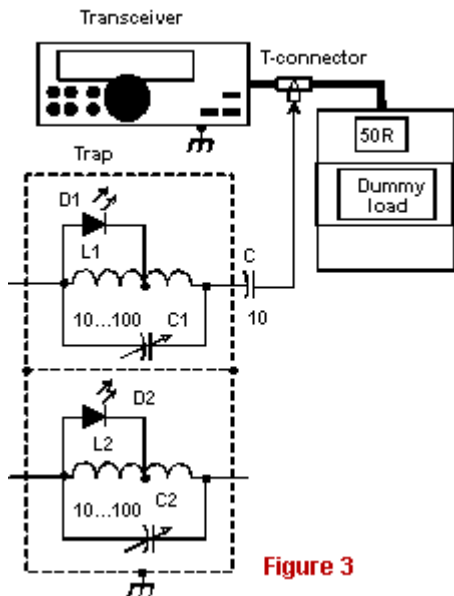
Tuning: Trap must be tuned to the middle of the amateur frequency band. **Figure 3** shows how to do this. Each trap is connected to a PA, loaded at a dummy load, through a capacitor of 10-pF. Out power in 10-W is enough for tuning the trap. By variable capacitors C1 and C2 do maximum glow from LEDs D1 and D2.

On my view, set-up the trap by a PA is very conveniently. However, the way is not sole. For example, a GDO gives good result also. At this method the trap is tuned to needed resonance frequency. Other method is to use a RF-voltmeter

Trap design



Trap tuning



and to do tuning to the maximum of RF-voltage across the trap.

If RF –voltage is leaking to the main at other amateur ranges, traps in main’s wire must be installed for each of these ranges. The basic requests for the traps are the traps must have as possible high Q-factor and the traps must be shielded from each other. Distance between a screen and coils should be not less half of diameter of the coil. **Table 1** shows data for trap intended for amateur ranges from 160 up to 10 meters. Air dielectric variable capacitor of 10 -100-pF is used for tuning the traps.

Figure 4 shows schematic and construction for symmetrical retuning main filter. You may try to do the filter if you have leaking of RF energy to the main at several amateur bands. Data for coils takes from **Table 1**. The filter is tuned or by a LED (see **Figure 1**) or by a RF- voltmeter.

<http://www.antentop.bel.ru/>



Table 1 Data for coils of trap design

Band, MHz	Coil diameter, mm	Length of winding, mm	Quantity of turns, n	Wire diameter, mm/AWG
1.9	20	20	100	0.15/34
3.5	20	20	50	0.3/29
7	25	40	30	1.0/18
10	25	30	15	1.0/18
14	25	25	12	1.0/18
18	25	30	10	1.0/18
21-24	20	15	8	1.0/18
26-30	20	20	8	1.0/18

Retuning symmetrical RF filter

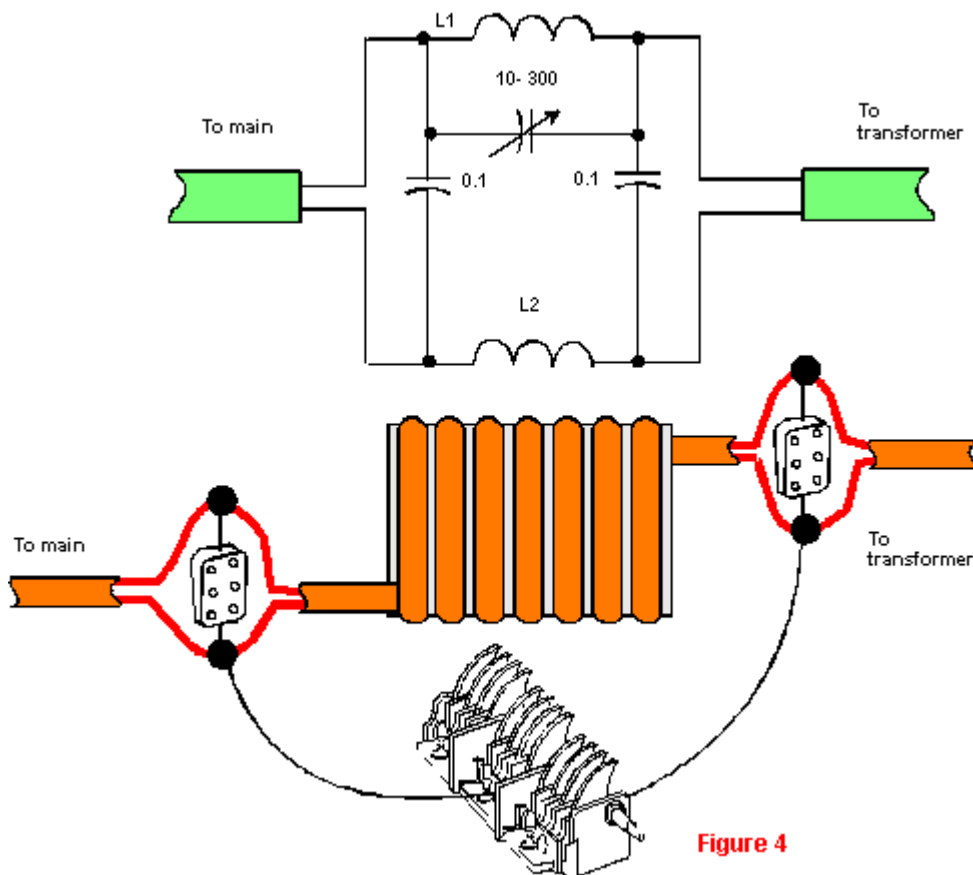


Figure 4

<http://www.cqham.ru/>

