

Bob's Shop Notes

on

Off-the-Shelf Audio Noise Filters

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It has come to my attention that Radio Shack has discontinued their catalog number 270-030 noise filter kit. This kit provided a 0.7 uHy, 4 amp inductor and an electrolytic capacitor as loose parts which were effective in reducing propagation of common noises between accessories on light aircraft. Our website at aeroelectric.com featured an article describing utilization and assembly of the components of this kit for use in Owner Built and Maintained (OBAM) aircraft.

When I became aware of this kit going obsolete, I purchased two other noise filters from Radio Shack for evaluation. This document will describe the findings of that evaluation.

The new parts under consideration are Radio Shack catalog numbers 270-051, 10-amp and 270-055 20-amp rated filters. These filters were disassembled so that their schematic and parts values could be evaluated. Packaging and electronic details of the filters (including the discontinued item) are described elsewhere in this article:

The 270-051, 10A rated filter is a 4-lead device only because the designers choose to bring two black ground wires out of the housing. The 10A filter housing is cylindrical molded plastic. The kit includes a strap clamp for mounting. An iron-core filter choke used in its construction measures 164 microhenries of inductance and 33 milliohms DC resistance. The filter is a pi-configuration with a 1uf "input" capacitor and 2200 uF "output" capacitor.

The 270-055, 20A rated filter is a 3-lead device having only one ground wire brought out. The device is mounted in a rectangular molded plastic housing with

mounting ears. The choke in this product offers 540 microhenries inductance, an attractive 16 milliohms DC resistance, 1 uf "input" capacitance and 4700 uF "output" capacitance.

The nice thing about these filters is that they come assembled and ready to mount. The previous filter article based on the discontinued kit was relatively small and light. It was also an electrically handy size for applications that commonly benefit from noise filters in the power line (turn coordinators, intercoms, small transceivers, etc.)

In spite of the original kit going obsolete these alternatives promise equal or better noise reduction performance. Check out the following pages for more details on these products.

Filters, Filters . . . so many choices . . .

Either filter is rated for enough current to handle about any application you'll encounter. If you're not hurting for space, weight and dollars, then the 272-055 is a good bet. It's noise attenuation characteristics are the best of the two. It has the lowest feed-through resistance for low voltage drop. It's also the easiest one to install with the flat bottom surface and integral mounting ears.

No matter which filter you choose to TRY . . . install it electrically first before you commit to drilling any mounting holes. See if it's doing the job. It's just possible that the filter is not sufficient for the noise. It's also possible that the real propagation mode for the noise has been mis-diagnosed and adding the filter has no benefits whatsoever.

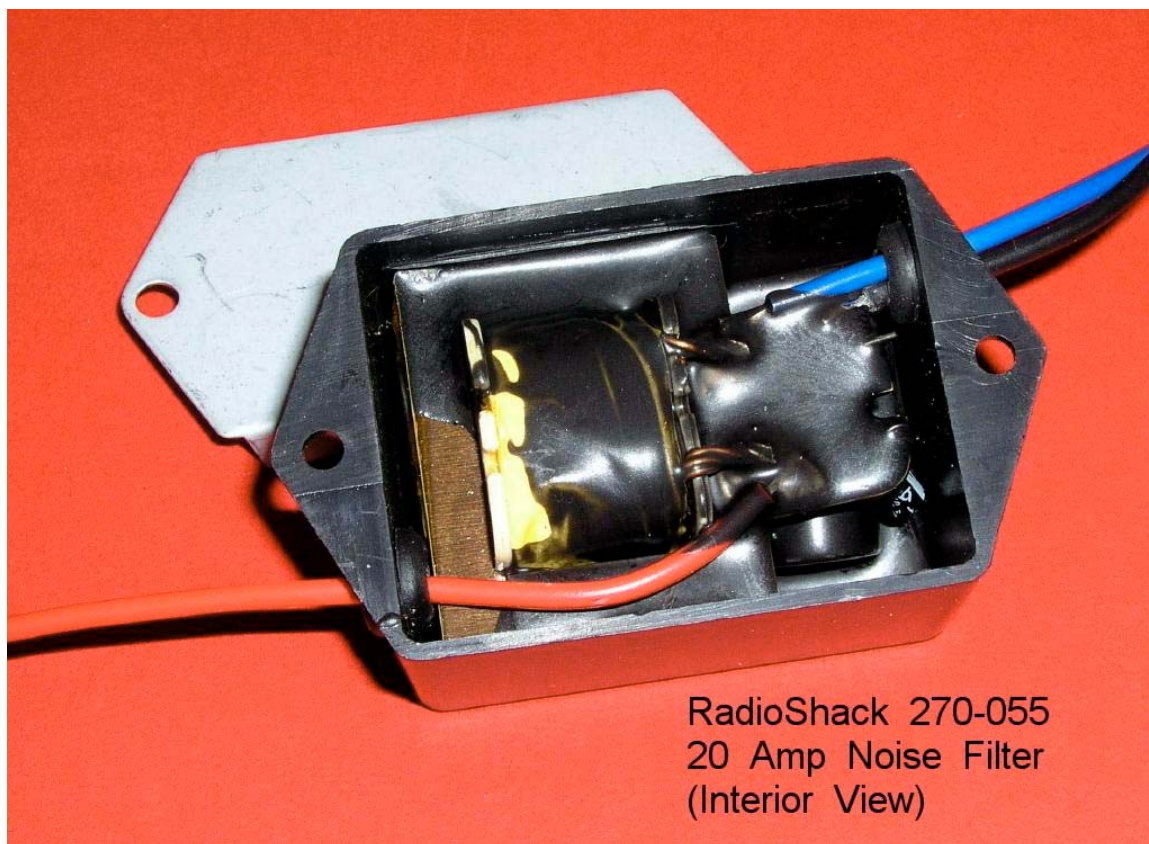
RadioShack 270-030
4 Amp Noise Filter Kit
(Discontinued)



RadioShack 270-051
10 Amp Noise Filter



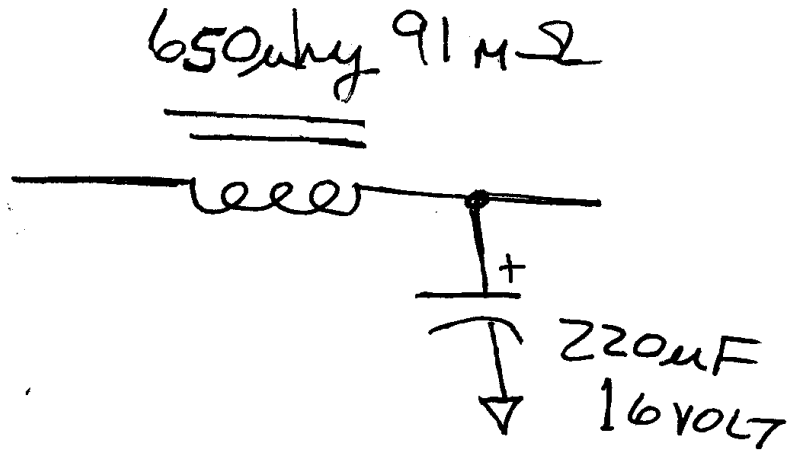
RadioShack 270-055
20 Amp Noise Filter



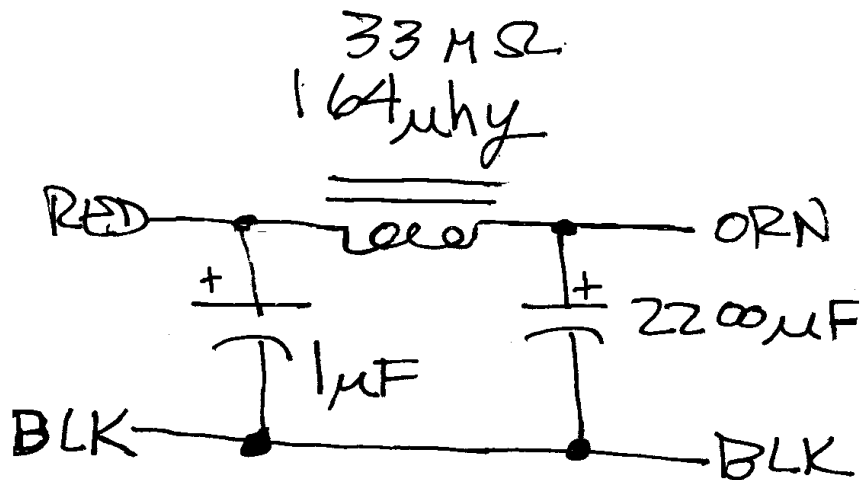
RadioShack 270-055
20 Amp Noise Filter
(Interior View)

RADIO SHACK NOISE FILTERS

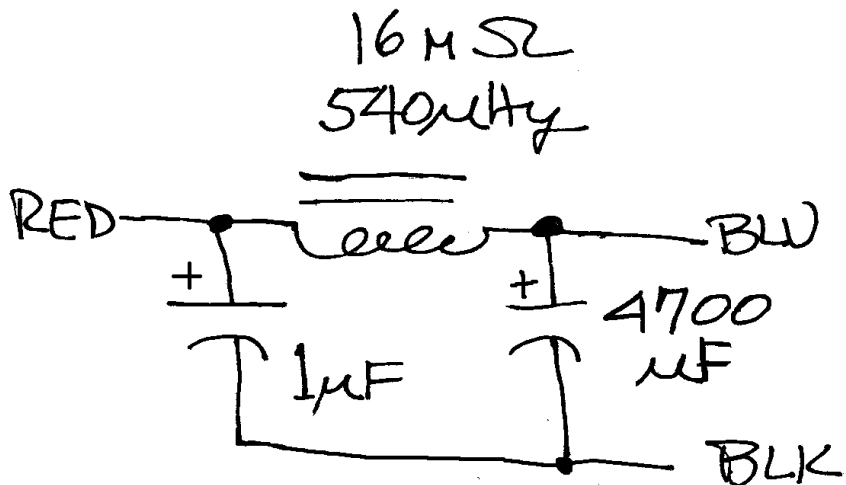
270-030
4AMP
(DISCONTINUED)



270-051
10A



270-055
20A



FOR BEST ATTENUATION OF NOISE, THE "INPUT" OR RED LEADWIRE OF THESE FILTERS SHOULD FACE THE NOISE SOURCE. TOP EXAMPLE SHOWS CONNECTION FOR REDUCING PROPAGATION OF NOISE FROM TURN COORDINATOR OR STROBE SUPPLY. BOTTOM FIGURE IS AN EXAMPLE OF WIRING TO REDUCE NOISE IN RADIO OR AUDIO SYSTEM FROM THE SHIP'S POWER SUPPLY.

