The Birdie Muffler

How to Make your own Silencer

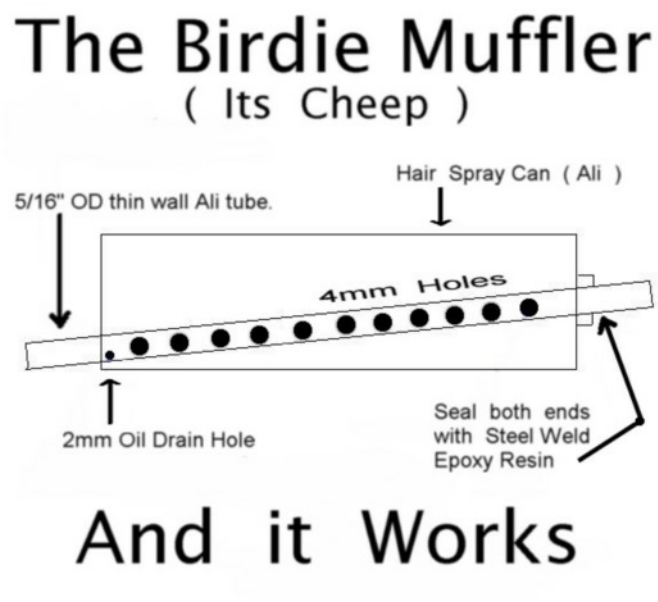
If you want to save your hard earned dosh (and who doesn't) then why not try building your own silencer. Howard has kindly put together details of his design which you can make yourself with little more than an empty aerosol can and a length of ali. tube.

Here's a photo of the finished article on Howard's “Gnat”. It connects to the outlet of the normal engine silencer.

These are the materials you need to make it (more details later):

- An empty aerosol can (several types shown).
- Length of aluminium tube
- Pack of "Locktite Super Steel" Cold Weld Epoxy

Over to Howard for his sketch, notes and photos of the construction:



Regarding muffler details, the size of the can is not that important. It all depends on how much noise reduction is required.

Even the smallest can I've tried (70mm x 35mm) works well.

The largest can I have tried (210mm x 47mm) was so quiet when the plane was in the air, that I took it off and put a smaller one on because I kept thinking I had gone dead stick.

The one I am using on my SC25 is 127mm x45mm, a "Nail Dry Spray" three for the price of one from the 99p shop, Anglia Sq, Norwich.

I think this size would be fine for a 40/46 size engine. but even the smallest container will take the crack out of the exhaust noise.

The governing factor regarding noise reduction is the relationship between Muffler Volume and Exit Hole Diameter. The larger the exit hole dia., the bigger the muffler volume must be to achieve the same level of noise reduction.

The tube I use is 5/16" x .015" wall thickness round aluminium tube, Stock No 1115 from "Pegasus Models". Choose a tube with an inside diameter that is the same size or only very slightly larger than the inside diameter of the outlet stub on the stock engine silencer in question. Using a smaller pipe may upset the breathing of the engine at higher revs

and BOG DOWN. The idea is to get the exhaust gases away from the engine, let them expand and cool before before allowing them escape to atmosphere as a steady stream of low pressure gases rather than a series of high pressure pulses. Using a larger size pipe will require the use of a larger size muffler as stated above.

First remove the valve assy., drill the top of the can with a 4mm pilot drill and ream to the size of the pipe to be fitted.

Next remove the drilled out valve and plastic tube from inside the can and discard.

Next, working from bottom end of can, centre-punch the bottom (curved) face, half the dia. of the tube to be fitted from the edge. This will be the lowest point of the muffler and is the position the exhaust stub will be.
Next drill a 4mm pilot hole and ream to size of pipe to be fitted.

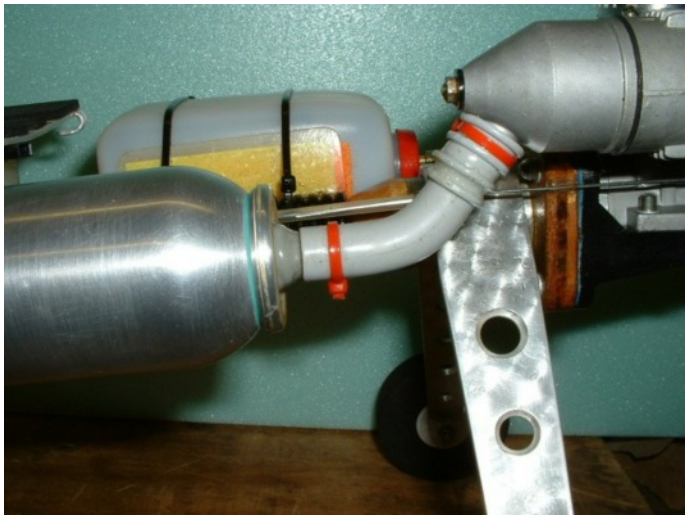
Mark off length of can on pipe and mark positions for holes at 10mm spacing.

The 4mm pepper pot holes in the pipe are drilled THROUGH @ 10mm spacing. Then turn pipe 90deg and drill THROUGH and between 1st drilling. Continue drilling to 75% length of muffler can. A small 2mm oil drain hole is drilled in one end of the pipe in a position to sit just inside the muffler can. This is to enable any oil and water collected in the muffler, to exit via the outlet stub.

Deburr and degrease the pipe and muffler can, removing all sharp edges.

Next take the pipe and feed through the top of the muffler can with the 2mm oil drain hole first. Position the pipe so all holes are covered and that the 2mm hole is to the edge of the can, but within the can itself. In this position, resin the pipe in place using "Locktite Super Steel" Cold Weld Epoxy. Leave for 2 hours to fully harden.

Attach the muffler to the silencer using silicon tubing or a silicon exhaust deflector from local model shops.



The muffler can be mounted to the airframe using tie-wraps / elastic bands / fuel tube & self tappers or wire.
The complete muffler only weighs a few grams, so minimal support is required, in fact it is good practice to rubber mount it to reduce vibration.