

## Engine Mounting

by Pat Roy

I'm going to illustrate my method of centering and mounting engines. It's a bit different because it does not require a kit supplier to have first purchased every imaginable type of engine that could fly the plane, and expended the time and labor to mount them in order to make a template. Easy for the buyers but a royal and expensive PITA for the distributors. Everybody that owns an engine has the ability to make a simple and easy to use template for each of their engine types. More on that in a moment.

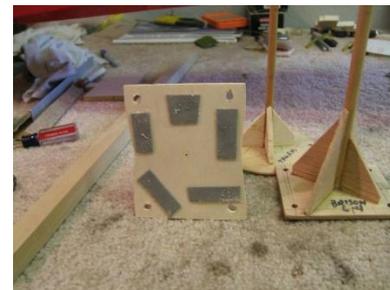
Somewhere and sometime, somebody is going to ask "What length standoffs do I need?". The answer is the depth of the cowl from the firewall to the face of the cowl ring, minus the depth of the engine from the mounting lugs or plate to the face of the prop hub, plus 1/8".

The next question will be something along the lines of "What length standoffs should I buy?" The answer will be: Why do you ask when you can make your own faster, cheaper, lighter, and stronger than any commercially made standoff available?" I'll show you a method that's easier and faster than what I normally do for my smaller planes, while being much more supportive than some spindly legged aluminum standoffs. You'll have yours made and mounted before a supplier could get them in the mail to you. Another side to this standoff thing is that you have to bet that someone that's doing their first gasser will browse through this thread thinking they might see something that would help them mount their engine. Hopefully they will find an answer.



No matter what engine you elect to use on any plane, a basic mounting template can be home made out of a length of 3/8" or whatever wood dowel long enough to reach from the firewall through the cowl ring, a piece of 1/8" plywood, and some 1/8" balsa sheet triangle gussets. That's it, that's all, and you have an engine template that can be used on any plane you choose to use that engine on. You only need to determine the engine mounting

hole pattern, and determine the relationship of the crankshaft to the mounting holes. Most engines have the crankshaft centered between the mounting holes but a few, such as 3w and 3mm, do not. Those just take a few minutes longer to lay out. See the pics to better visualize how to make a template. A little extra time making a "transferable" engine template saves a lot of time and work later when you assemble other planes that will use the same engines.



Once you have made the template apply some double sided tape to the back of the template. Use that to stick the template on the firewall. It lets you move the template around to find that magic center spot. You

may have to stick the template on the firewall before you install the cowl. No biggie since you can still move the template around. If you already have a spinner that fits the cowl ring install the backplate on the template to make centering a little faster. Hopefully you used a wood dowel that is close to the size of the prop mounting hole. When the backplate, sitting on the wood dowel, fits nicely on the cowl ring you've found center. No backplate? Just use a tape measure and shoot for +/- 1/32". Now mark the mounting screw holes and check them for correct positioning, again using the template, one more time before drilling.

Below are engine templates for a Taurus 3.2, Brisson 6.4, and a rear induction Aerovate 100. For those that don't have table saws there's a picture of a tool you can pick up at any hardware store pretty cheap for making accurate cuts on the engine mount stock.



The wood engine mount standoffs here are 3/4" hardwood square stock available at lumber yards or hardware stores. Costs a couple of bucks. After cutting them to length, center drill them on a drill press. If you don't have a drill press find someone who does. Go slow and don't pressure the bit to prevent bending the drill. That's what makes for center holes that angle away from true center. After the standoffs are installed you can cut some 1/8" ply to connect (glue) the standoffs and make them as solid as the firewall.



No need to glue them to the aircraft firewall unless you want to but that makes it a bit tough to change to another engine type at some later date. I prefer the structural rigidity that a "boxed" engine mount provides. No engine twist as you would have with individual standoffs. Nada, nyet, none! You can box the entire mount or simply add a sheet of ply to any pair of legs. No movement at all and much more secure than individual aluminum standoff legs.

