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FUSELAGE DECISIONS

No construction here, but this deserves its own section because I literally spent days thinking about these items before starting on the fuselage. I'm the type that likes to plan way ahead when it comes to the engine and radio installation. I can pass along info about the equipment in my prototype, but I don't have first-hand experience with all the engines and accessories on the market. As an experienced builder, you probably have your own ideas on how to approach these items. Use your best judgment...

❑ **Engine Installation** - I used a 3W-75i, a single-cylinder, rear-induction, electronic-ignition engine in the prototype. For a long time I was stuck on the idea of mounting it inverted and trying to somehow hide the muffler in the cowl or fuselage. Finally, I wondered, "Who am I trying to fool? This isn't a scale model; it's just a big model airplane." With that, I went with an upright cylinder and a muffler hanging out in the breeze.

❑ **Muffler Position** - This goes hand-in-hand with your engine installation. The muffler on my engine is a large canister type manufactured by 3W. The engine could have been mounted with the cylinder at a downward angle and the canister hidden in the fuselage. However, that would have taken up cabin area that may come in handy later, and even though the muffler would be hidden, the engine would have to stick out of the fuselage near the bottom on one side - ugly.

❑ **Side Thrust** - I've never been a big fan of right thrust, but decided to try it on this model because of the high power expected from the 3W-75i. I settled on two degrees of right thrust, and angled my firewall accordingly. Flight testing has shown this to be TOO MUCH! My model definitely pulls to the right with the application of full throttle. For that reason, I suggest using zero side thrust or perhaps a degree at the most. If you do add right thrust, simply expand the front edge of the F-1 notches in the left-hand doubler. You should also offset the engine from the model's centerline so that the prop shaft ends up centered at the front of the model.

❑ **Cowling and Spinner** - This is where builders will need to do their greatest amount of innovating, because of all the possible engine/muffler choices and their positioning. Even though the model is very big, the firewall and cheek cowl area is somewhat tight for a gas engine. You have to balance appearance with ease-of-access. Would a wider firewall make things easier for you? Feel free to call and maybe I can cut a special one for your engine.

❑ **Fuel Tank Installation** - With the pumped carbs on most gas engines, fuel tank position is not critical. But you need to be able to get it in and out, and it must be held securely when installed. Think about how you are going to fuel and de-fuel. I used a fuel "tee" in the feed line (actually, it was an aquarium air line "tee" that I found at Wal-mart for under a buck). The tee'd line is used for fueling; it ends at a fuel dot on the side of the model. Large tanks are available from Sullivan and Du-Bro. My model uses a 40 oz. Du-Bro tank, although 32 oz. would have been plenty. I also replaced the plastic cap with a machined aluminum cap from SWB Manufacturing. It's not necessary, but it's a nice touch and gives a feeling of security. Fasten all of your fuel line connections with clamps or safety wire!

SWB Mfg., 1237 Hwy NN, West Bend, WI 53095. Phone: 262-0675-2848. www.swbmfg.com/

❑ **Ignition System** - If your engine has electronic ignition, you have to plan on the positions of your ignition module, battery, kill switch, and charging jack. I bolted my module to the front of F-1, below the engine. The switch and charge jack are on the left side of the model, opposite the muffler. It's very important to keep your radio receiver, battery, and servos as far away from the ignition as possible to avoid glitches from the engine's ignition system.

❑ **Throttle Pushrod** - A wire or steel cable can carry ignition noise back to your throttle servo. You can avoid that problem by using a plastic tube-in-tube pushrod for your throttle. Some gas engines with side-mounted carbs need bellcranks to transfer the pushrod movement to the throttle arm on the carburetor.

FUSELAGE DECISIONS, Continued...

- ❑ **Landing Gear Mount** - The aluminum landing gear is designed to simply bolt to the bottom of the fuselage. That's fine, but I got fancy and inset the mount 3/8" so the bottom of the gear would be flush with the bottom of the fuselage. It's a little extra work and you lose a bit of prop clearance, but it looks good to my eye. You also need to decide on mounting hardware. I bolted my gear in place using six 10-32 x 1" button-head socket screws threaded into blind nuts. **Note:** *Mounting hardware and axle bolts are included with the optional Main Wheel Package.*
- ❑ **Wheels and Axles** - Du-Bro 6" wheels will probably work okay, but I sure like the looks of the Sullivan 7" wheels on the prototype. The axle holes in the aluminum gear are 5/16". I used hardened-steel 5/16"-18 x 2-1/2" socket-head cap screw for axles. The nice part about these axles is that the wheels actually ride on the smooth part of the shank, and the socket head fits neatly into a recess in the wheel. Simple and strong. I've had a tendency to design landing gear a little light in the past - this one's not going to have that problem!
- ❑ **Tailwheel** - There are several good tailwheel assemblies on the market. My prototype uses a Sig extra-large tailwheel assembly with a 1-3/4" Du-Bro tailwheel. The Graph Tech #304 assembly is a high-quality alternative (available from BTE). If you choose something else, be sure it's rated for at least a 35 lb. model.
- ❑ **Tailwheel and Rudder Cables** - I used Du-Bro 4-40 pull-pull cables on both the rudder and the tailwheel. Both sets of cables are attached to a Sig tiller bar, which in turn is driven by a single servo. Give some thought to the routing of any cables, including the installation of guide tubes.
- ❑ **Servo Positioning** - Lots of room to play with! My elevator servos are in the rear fuselage, under the stabilizer, to keep the pushrods short and stiff. I used Hitec 700BB servos on all of the control surfaces. These are big and heavy, but they have a lot of torque (133 oz.-in. @ 4.8V, 161 oz.-in. @ 6.0V) and they are inexpensive. You will need a variety of servo extension wires, Y-harnesses, and possibly servo reversers. I've had real good luck with the products from ElectroDynamics; they use heavy-gauge wire on all their extensions. They also offer connectors in different colors, which is great for color-coding those aileron and flap leads with the connectors from the receiver. [Electrodynamics, 31091 Schoolcraft, Livonia, MI 48150. Phone: 734-422-5420. www.electrodynam.com](http://www.electrodynam.com)
- ❑ **Radio System** - This is a catch-all category, but you need to think about things like where you want to mount your switch or switches, how many batteries you're going to install, and how to route your antenna. Actually, much of this can wait until the model is framed up, because you might want to position your battery (or batteries) to help with balance. After reading several articles on large model radio installations, I decided to go with two receivers, two batteries, and two switches. The batteries are each 4-cell, 1400mAh and the switches are Super Switches from Cermark (they have a built-in charge jack). The dual Hitec Supreme receivers aren't so much for redundancy, but more to split up the servo load. The left receiver controls the left-hand aileron, flap, and elevator, while the right receiver runs the right-hand aileron, flap, and elevator. My throttle servo is on the left receiver, rudder on the right. At the very least, I recommend using dual batteries and switches for redundancy. If you go with one receiver, you should probably use a servo isolator, like the Pow'R Bus Pro from ElectroDynamics.
- ❑ **Color Scheme** - Think about it now because if you plan to use a plastic film covering, you may want to add support sticks where the colors meet and overlap. Also consider that you will probably want to paint the inside of the cabin area to match your trim scheme. It took nearly ten rolls of Monokote to cover the BTE prototype.
- ❑ **Structural Modifications and Additions** - The Super Flyin' King is a natural for hauling cargo, dropping candy, or towing gliders. Maybe you're thinking about adding floats later. Plan ahead for these things and install hard points or whatever equipment you may need during construction.