

## SUPPLEMENTAL SMOOTH GENIE PRO (Sept. 5, '09)

This Genie variation is unusually smooth, graceful & elegant in flight, yet very agile and responsive. From the TE of the wing to the rudder hingeline, the fuse is 5" longer than the regular Genie/Genie Pro fuselage. The liberal tail & long tail moment arm provide fine tracking & pitch response.

This design marries the 130" Genie Pro full carbon wing to the new, resilient, stretched, lower profile, glassed-over, ply/balsa/CF reinforced fuselage. These fuselages are well-engineered, big and rugged, but relatively simple to build as detailed in File 1, 5 & with what follows here. They have a slim, curvaceous, aesthetic beauty to please the most discriminating eye. See the pics at the end of this file.

SGP specs: 130" span, 67" long, 1142 sq. in. + or - a little depending how the bagged TE is trimmed. All up flying weight is 79-80 oz.



At this writing I've built 5. #1 went slightly used to another modeler. This is #2 and also went slightly used. #3 went new to Doug shown below. #4 is painted the same as #2 here. Center is red on the bottom. Tips are black. #5 is similar. 3 more fuses have been built & sold.



This is #3 held by friend Doug Coleman. First flights were 8/12/07 at a sod farm north of Pasco, WA.

Full bore, pedal to the metal launches & 4-5 second zooms are routine. See the Gallery file for Doug doing a "gorilla" launch with this ship at a contest.

#4 was finished 2/16/08 and first flown 2/18/08 on a cool but sunny day. It's a twin sister to #3. #5 was finished late August, '08. Dan Ahearn in Dallas has it now.

Full carbon-skinned wing cost, using CNC pre-cut cores, is about \$250. Doing your own would reduce wing cost, but to get the needed strength use Spyder, Dow Hi Load 60 or other foam of similar density.

**FUSELAGE:** A 5" nose block, 1-1/4" thick & drilled 2" deep with a 7/8" wood bit is now used. This takes up to 3 oz, of lead shot/resin mix & still allows slotting for a removable one-piece single tooth skid of 1/8" x 3/4" aluminum, detailed in Const. file #4.

**REVISED SPLICE LINE ANGLE:** This is now located on the Aug. 25, '09 plans.

**BASIC FUSE PARTS:** Nose block, 1/16" ply slab sides, two 1/8" ply formers, splicing doublers & the deep rails. Triangular stock (TS) goes along SS edges. 1/64" ply is added top & bottom to complete a skinny plywood box. Select thicker balsa is added to shape.

The next pic is of fuse #6 (yellow) & #7 (White). Lengths look different due to position & camera angle. #7 was made with an additional 1/8" bow behind the wing shown on the new plans. Divide the plans along the splice line. If the plans are distorted to show rear section longer than 48", shorten at the rear. Then preferably make up patterns from Sintra, etc. for front & rear sections as mentioned in File 1.



With Sintra patterns in hand, blanks for the rear SS sections can be made as follows: Cut a 4" wide piece off the 48" ply sheet. Draw & cut a diagonal line to make a pair of 1" x 3" x 48" pieces.

If there is any bow in the pieces, flip so they bow outward from each other at their centers. Following File 1, tape together to mark around & stack cut. Save the scraps for doublers and misc.

Due to the low profile fuselage micro servos (JR size, etc.) are needed for rudder & stab so cable & pushrod can easily pass under the main bolt holddown assembly.

Work carefully when trimming the canopy to not get it too short to fit back around the LE of the wing. See File 4 for canopy pics & info.



A nose block, drilled out & filled with lead shot/resin mix, is glued in 1" between the sides. Balancing out should be easy unless you get the tail too heavy.

Less tooth, the block is carved & sanded to shape with the rest of the fuselage. Icing Putty fills ahead of where the sides end.

**VERTICAL TAIL:** The vertical tail area on the plans for the Big Smoothie is a bit large with the extended tail moment arm. Reduce it about 10% by shortening the fin & rudder 1" along the bottom. Reposition rudder ribs to be evenly spaced.

**BALANCE POINT:** With the wing off, balance the rest of the ready-to-fly ship 5-7/8" ahead of the rear edge of former F2. Adjust the stab to give a level glide. For initial launches, place the towhook in a hole at that point or just ahead of it.

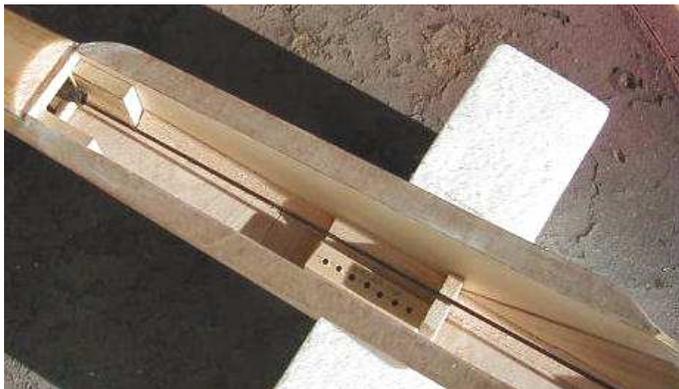


Balsa over 1/64" ply sub-decking is shaped top & bottom. Here, the exterior towhook blocking is seen. The saddle is filleted & contoured using 3/8" triangular stock. The continuous dark line is the sub-decking edge. It forms a reference line to sand to when shaping the fuselage.



The fin mounts directly between the slab sides after the bellcrank has been installed.

Here the fuse has been glassed-over with layers of 1.4 oz. cloth. Fin uses .75 oz. Multiple cloth pieces were attached with 3M77 & then brushed with bagging epoxy. See separate glassing file for details. Note the 1/32" ply inlays that house the bellcrank. The separate dorsal is a 2-piece item with grain running both vertical & horizontal to easily taper. The skid is 1/8" ply with cheeks of balsa. Ply doublers over CF laminate reinforce the small fuse cross section in the area of the fin. This makes a slim, strong, resilient structure.



This shows the .070" CF pushrod entering the support tube made of plastic straws & HS tubing. The deep rails to which the rear bolt plate will fasten are seen at the rear former. The saddle is capped with 1/64" ply. The towhook blocking is in, glued to an internal 1/16" ply plate secured with 1/2" triangular stock. A slotted guide of 1/4" balsa there for the pushrod is yet to be capped.

**ABOUT WEIGHTS:** When doing #7 fuse, I had a nice selection of woods & decided to keep track of weights at different stages of construction. If you have the suggested densities & carve & sand to get rid of bulk, your weights should be something similar. An SGP fin blank that weighs on the order of .6 oz. is essential to keep tail end light.

- 10.9 oz. carved, ready to fine sand, no fin, pushrod, canopy or built-in lead.
- 12.5 oz. ready to glass-over, with fin/bellcrank/pushrod, saddle fillets, icing putty at nose.
- 13.4 oz. with glass attached with 3M77.
- 14.3 oz. with first epoxy resin coat applied & sanded.
- 14.6 oz. after 2<sup>nd</sup> coat applied & sanded.
- 14.7 oz. after scratch filler applied & sanded out to glass-like finish.
- 15.7 oz. Primed & painted with Rustoleum Clean Metal Primer-Gloss Protective Enamel.
- 26.6 oz. with 4AA's battery, servos, Rx, canopy, tow hook, nose tooth, rudder, stabs, cable, wing holddown. Any nose weight is to be determined, but is typically 4- 5 oz.

Wing, with servos, RDS, harness & blades will be right on 48 oz. built as detailed.



