

NovaClone

This Control Line club has found a new way to beat the building blahs. Modelers begin with given design specs, then improvise on them within specified limits and fly their creations in a variety of events. The results can be surprisingly individual.

Model Design: Bob Dorn Plan: John Hunton

CUSTOMIZED clones? It sounds like an oxymoron, but it makes a lot of sense. Begin with a unified design concept, then ask each modeler to interpret it in his own way. Let Northern Virginia Control Line Club members Bob Dorn and John Hunton

tell you how the idea worked for their group:

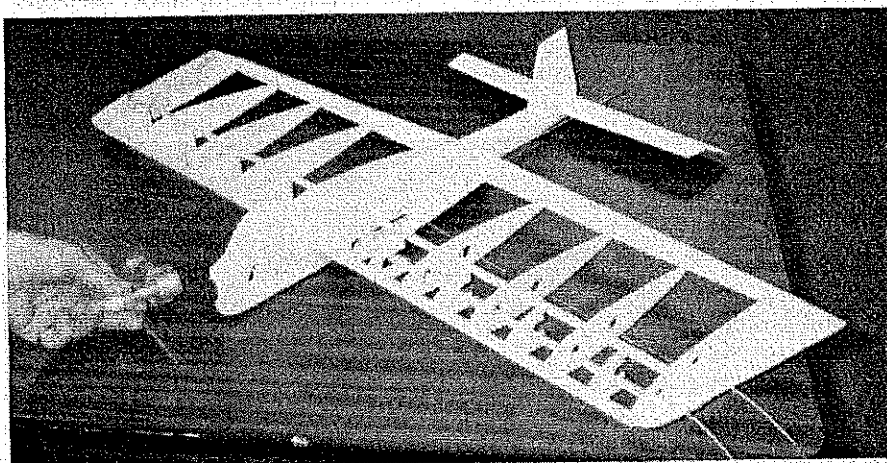
HUNTON: Nova means *new*, and Clone means *all the same*—more or less. The NovaClone concept provides the modeler

with an easy-to-build one-design airframe while leaving room for individuality and innovation. The models are flown in a number of different events during the flying season.

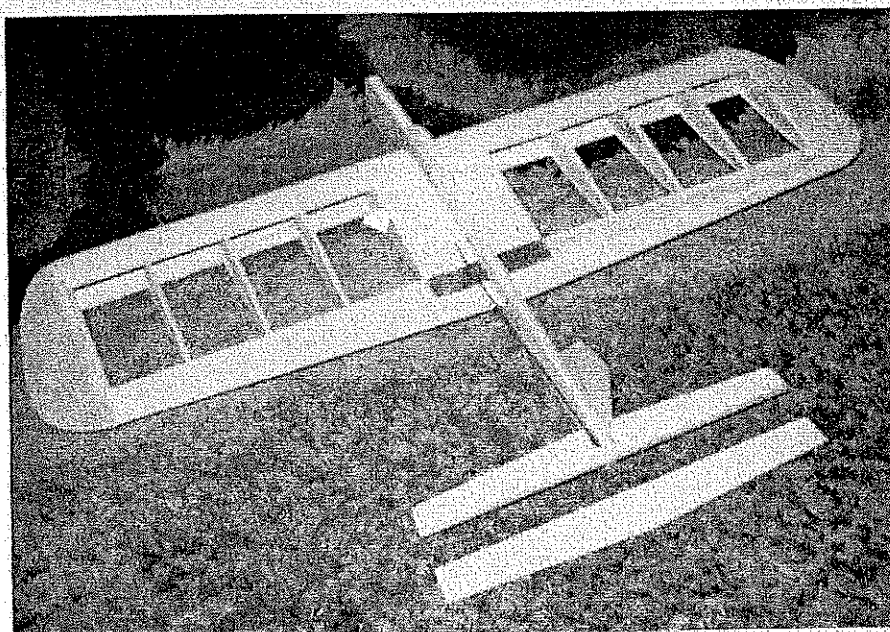
Our Control Line club had sunk into lethargy. This new format revitalized it, attracting new members and bringing people to meetings in record numbers. Our members are excited. Almost everyone is building a 'Clone, no two of them alike.

Fellow NVCL Club member Bob Dorn originated the concept. Club president Ron McNally was supportive, and the idea met with enthusiasm from the membership. Dick Hauser committed himself to preparing and cutting out a dozen kits, complete with band-sawn ribs, bellcrank, pushrod, and even elevator horn. They went like hotcakes at the next meeting for \$10 apiece. Despite the low price, the club netted a profit of \$1.50 per kit, which was used for prizes.

DORN: Many members used the kits, but most simply used their own materials and



Vince Mankowki placed his canopy well forward on the fuselage. This creates a circular propeller slipstream that helps keep the nose pointed to the outside of the circle during launch.



"Now the real work begins," Bob Dorn advises. Bob used the D-tube option in his wing. He also added plywood plate reinforcement in the vulnerable area just behind the wing to prevent breaks from a hard landing. Note the 1/16 plywood fin.



Doug Knoth's 1930 military version, blue and yellow with large stars, placed second in Appearance. Doug won the Endurance event with a fantastic time of over six minutes on the mandatory two ounces of fuel. His old Fox .36 with its baked-on-brown head ran overlean for most of the flight.



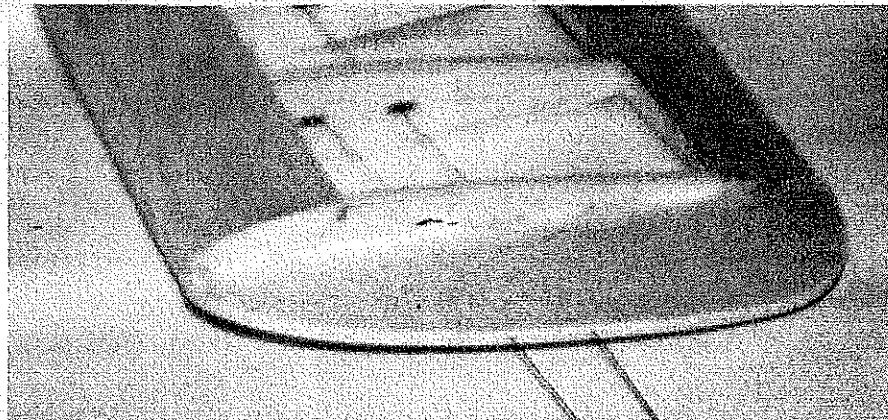
Scott Richlen is a superb builder who subscribes to the axiom, "No model shall be finished before its time." Though it wasn't ready for the Appearance event, his plane placed well in the flying. Take a look at that nice detailing, all permitted within the rules.

tweaked the design—within the prescribed limits—to suit their personal building styles. For example, many installed D-tubes in the wings, adjusted the dimensions and shapes within the limits, or strengthened stress points. One rascal even used geodesics and a hollow fuselage to save weight (wonder who?). Doug Knoth, whose built-up variant was highly competitive, now even has a foam version under construction.

HUNTON: The bottom-line objectives are to have good, close, competitive fun with a model that's easy to build, flies well, and doesn't cost much. There's a variety of events, with a once-a-month schedule. This



Dick Hauser's 'Clone won the Proto Speed event using an O.S. .36. Dick took time for some prop testing and found that a 9 x 8 turned faster than the standard 9 x 6.



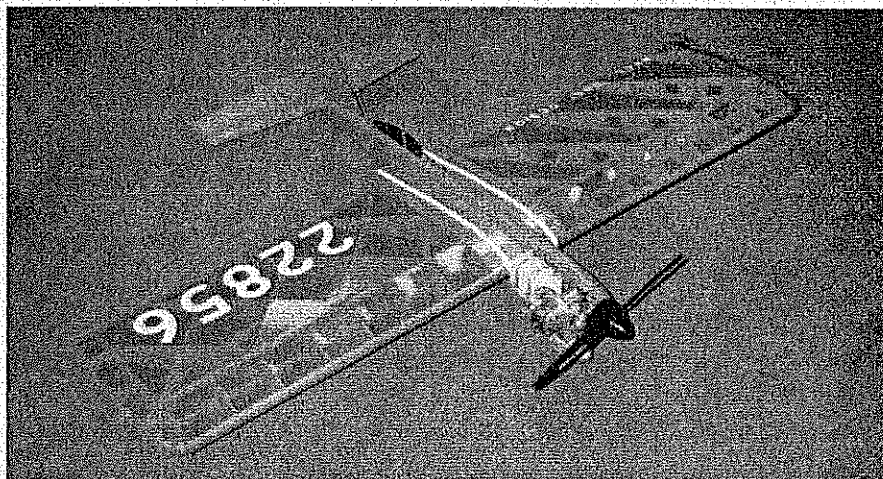
Bob Dorn used laminated wing tips, with the lead-outs emerging straight from the center for accurate alignment. Dorn introduced the NovaClone concept to the NVCL Club.

isn't too demanding on the novice, and gives more experienced builders a chance to revive dormant flying skills.

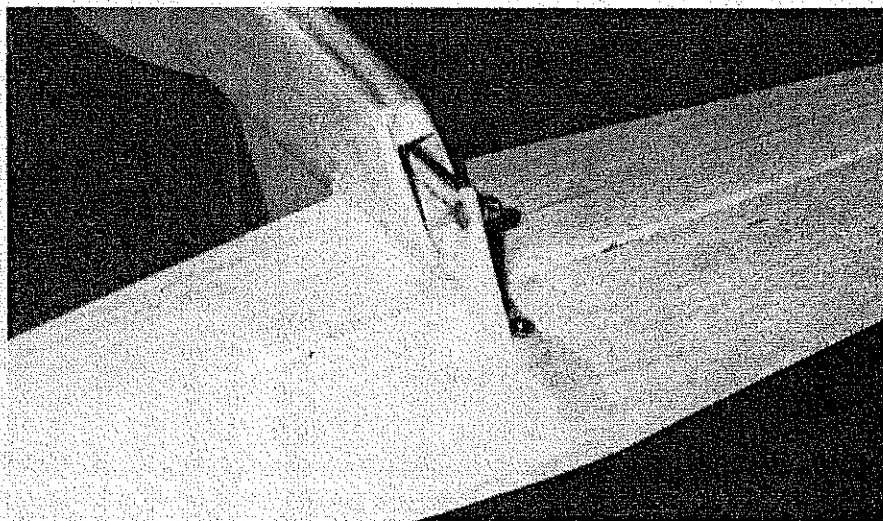
Points are accumulated during the season, with participation as well as performance rewarded. A champion will be determined at the end of the year, based upon the following point distribution: first place—10 points; second place—seven points; third place—five points; participation—three points.

Events include Craftsmanship and Appearance, Proto Speed, Endurance, Beginning Stunt, Slow Rat Race, and Slow Combat. All events are to be conducted in accordance with AMA rules. Note that riskier events are scheduled later in the year. General requirements for the model are as follows:

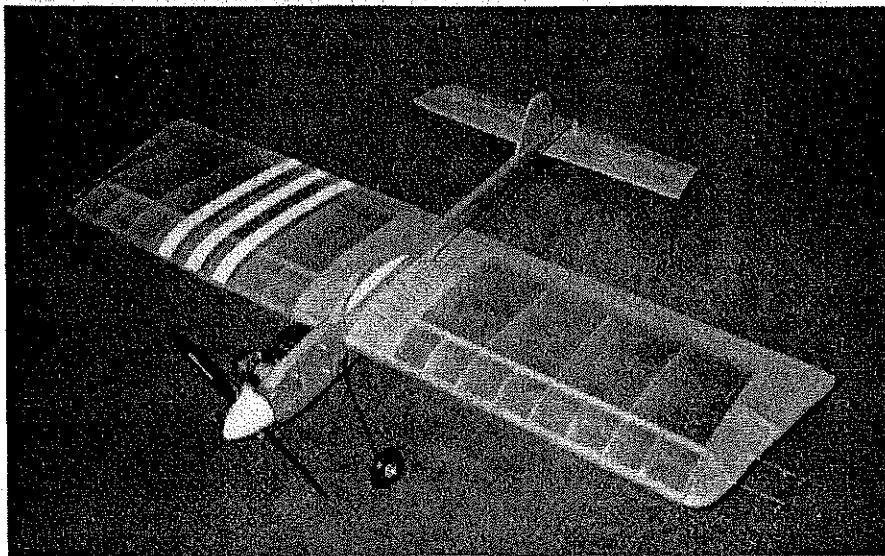
Elevator—18 x 2-in. maximum; no minimum. Stabilizer—18 x 2-in. maximum; no minimum. Wing tips—10.25



John Hunton's geodesic framework saved weight. His faired nose with spinner seemed to help in the Speed events. A 12 x 6 prop and an intake restrictor gave him an edge—and a second-place finish—in Endurance. Hunton placed first in Craftsmanship and Appearance.



Another Hunton touch was to bury his pushrod inside a hollow fuselage.



Dick Minor used silkspan covering to save weight. He also installed the optional landing gear.

x 3-in. maximum; no minimum. Wing structure—36 x 10-in. maximum and minimum. Wing thickness—1.75-in. minimum; no maximum. Rudder and fin—2 in. high x 3 in. long minimum; no maximum. Canopy—1 in. high minimum; no maximum. Fuselage—minimum 24-in. propeller backplate; no maximum. Nose moment—5 in. from backplate to wing leading edge; no maximum. Fixed flap—1 in. wide at root, ¼ in. wide at tip (optional).

The structure may be strengthened. Changes may be made as long as the model retains its profile configuration and dimensions as specified. The canopy may be positioned anywhere along the fuselage. A landing gear is not required, although a skid is allowed for muffler protection. Power can be any plain-bearing production engine with baffle-type piston. Maximum engine displacement is .36 cu. in. Mufflers are required. Pressure-type fuel systems are not permitted. The intent is to use the same model and engine for all events.

DORN: Now for how to build a NovaClone. I'll start with general discussion.

Building this model can be easy if you do it the way it's detailed in the plans. Of course you can make it more difficult by adding the D-tube wing leading edge or geodesics for greater strength. Do what's best for you. If you're a novice, build the model as shown. It will fly just fine. If you're experienced, express yourself within the prescribed limits. The 'Clone may look better but will probably fly the same as the novice's model.

The object is to maximize fun and learning at the same time. Study the plans, and figure up your materials. (A joint club effort in cutting out the basic shapes on a band saw would be worthwhile.) Marshal the tools, grab your adhesives before they grab you, and let's get started.

Wing. Two construction methods are shown on the plans: D-tube and half-rib. The D-tube provides greater torsional strength for lighter covering materials such



Al Jones also covered his model with silkspan. The first day's flying—Proto Speed and Endurance—did a good job of breaking in Jones's brand-new Fox .36 engine.

as silkspan. The half-rib will work fine for stronger covering materials such as MonoKote. Choose your system, and start cutting the wood.

For purists, the airfoil is a 10-in.-long modified NACA 0018 with the high point squished to the 25% chord position.

The wing can be built accurately by blocking up the parts over a flat building board. Lay the plan on the board. Cover it with waxed paper to prevent prematurely covering the wing with the plans. Pin down one trailing edge sheet, then glue on all the full-length ribs with CyA (cyanoacrylate glue).

Using ½-in. (approximately) scraps for support, jack up the bottom spar and fit it into the bottom rib slots. Push the top spar in place. Glue all rib-spar joints with thin CyA.

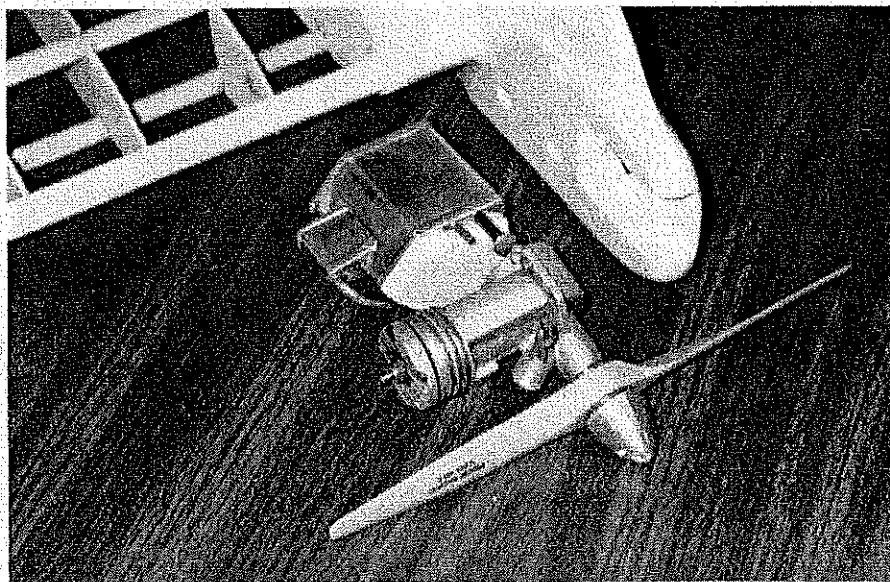
Hold the leading edge in place while gluing it to each rib with CyA. Pin the top trailing edge sheet in place, and wick thin CyA under it to the ribs. The wing subassembly is complete.

For the open-framework option, simply slip in the half-ribs and adhere them with glue.

For you D-tubers, see if you can get through this without getting your fingers stuck. For better alignment, install the D-tube sheet while the wing is still on the board. Glue the bottom sheet to the spar. Then, working from the center, glue the sheet to the ribs and finally to the leading edge. If it's too difficult to mate it with the leading edge, wait until after you've taken the wing off the board to do so.

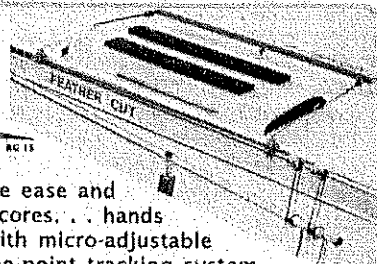
Install the top sheet in a similar manner, holding it to the leading edge with masking tape. Use thick CyA on the leading edge, if possible.

If the wing is still down on the board at this point, nice going. Take it up and finish it in the air. Install the wing tip parts, including the lead-out guide tubing on the inner tip. Cut the tips according to



It's amazing how many engines satisfy the criteria established for NovaClone events. The Fox .29 turns up more often than most of the .35s. This one belongs to Vince Mankowski's model. Note that Mankowski also used a stock uniflow fuel tank.

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down. Tack glue them between the tape strips, remove the tape, then run an ample and continuous flow of CyA down the joints. Wipe off excess CyA. Hooray! That's it for assembly.

Finishing. Oh no! The real work has just begun. This can take as long as building—or longer. Anyway, ain't nothin' to it but to do it.

Go over the entire model with a sanding block fitted with 100- to 150-grit paper. Continue sanding with 200- to 220-grit paper, and finally with 400-grit. Cover the model with fabric, film, or silkspan, and finish with dope or polyurethane to your heart's content. I do recommend Micafilm for covering the voids, and Aerogloss dope for the lightest finish. The lighter the model, the better it will fly.

Mount the engine, propeller, tank, horns, and all hardware. Balance the

model on the spar; any farther back and it may become unstable. In fact, if you're a beginner—or simply rusty—keep the center-of-gravity forward for better balance.

Flying. No secrets here. If the NovaClone is generic and typical, it's also relatively high performance (the wing design is of Combat lineage). While our club has specified 60-ft. .018 lines because of some of the events we're flying (Rat Race and Combat), for just fooling around on a solo basis .015 lines will do fine. But the model will fly the entire aerobatic pattern, so you can wring it out if you want to.

What's in the future for individualized clones? The possibilities are limitless. Perhaps in a few years generic clones could be flown in multi-events at the Nats. Judging could be similar to the system we use for NVCL Club events. Judge the models for craftsmanship/beauty/appearance on the first day, fly a couple of mild events the next day, then finish with

racing and Combat on the third day. What a blast. We'll just have to wait and see.

DORN: Special update on the NVCL Club's NovaClone event in May 1991:

There was a good turnout for the Craftsmanship and Appearance judging. AMA Executive Director Vince Mankowski brought his model—a pleasant surprise.

Doug Knoth won the Endurance event with an overlean 6:36 run on his brown-baked Fox .35. He used two ounces of 10%-nitro stock fuel. John Hunton finished second with a 12 x 6 prop and a restricted venturi. Dick Hauser won Proto Speed, his O.S. .35 turning 69.6 mph. Vince Mankowski came in second at only .25 seconds slower.

Event results are shown in one of the accompanying tables.

Scoring for the Beginning Stunt event of the NVCL NovaClone Club Championship was based on the following maneuvers:

Starting & Launch within one minute	0 or 5
Launch & Level Flight (two laps)	10 - 40
Wingover (not reverse)	10 - 40
Three Inside Loops	10 - 40
Three Outside Loops	10 - 40
Two Inside Square Loops	10 - 40
Two Horizontal Eights	10 - 40
Two Overhead Eights	10 - 40
Approach & Landing	0 - 4
Flight Pattern Points*	0 or 25

*All maneuvers successfully completed, in order.

Note: A minimum of two laps was flown between maneuvers.

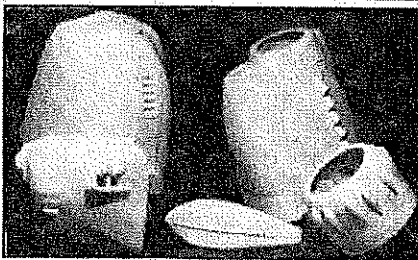
Final Standings

Proto Speed	Mph
Dick Hauser	69.6
Vince Mankowski	69.1
John Hunton	66.9
Bob Klimkiewicz	57.9
Al Jones	57.6
Doug Knoth	53.4

Endurance	Time
Doug Knoth	6:36
John Hunton	6:30
Bob Klimkiewicz	4:12
Dick Hauser	3:18
Al Jones	2:56
Vince Mankowski	0:40

Maybe it's time for your club to give the generic clone concept a try. □

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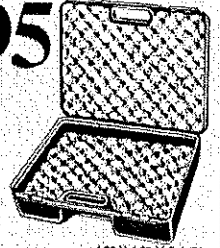
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