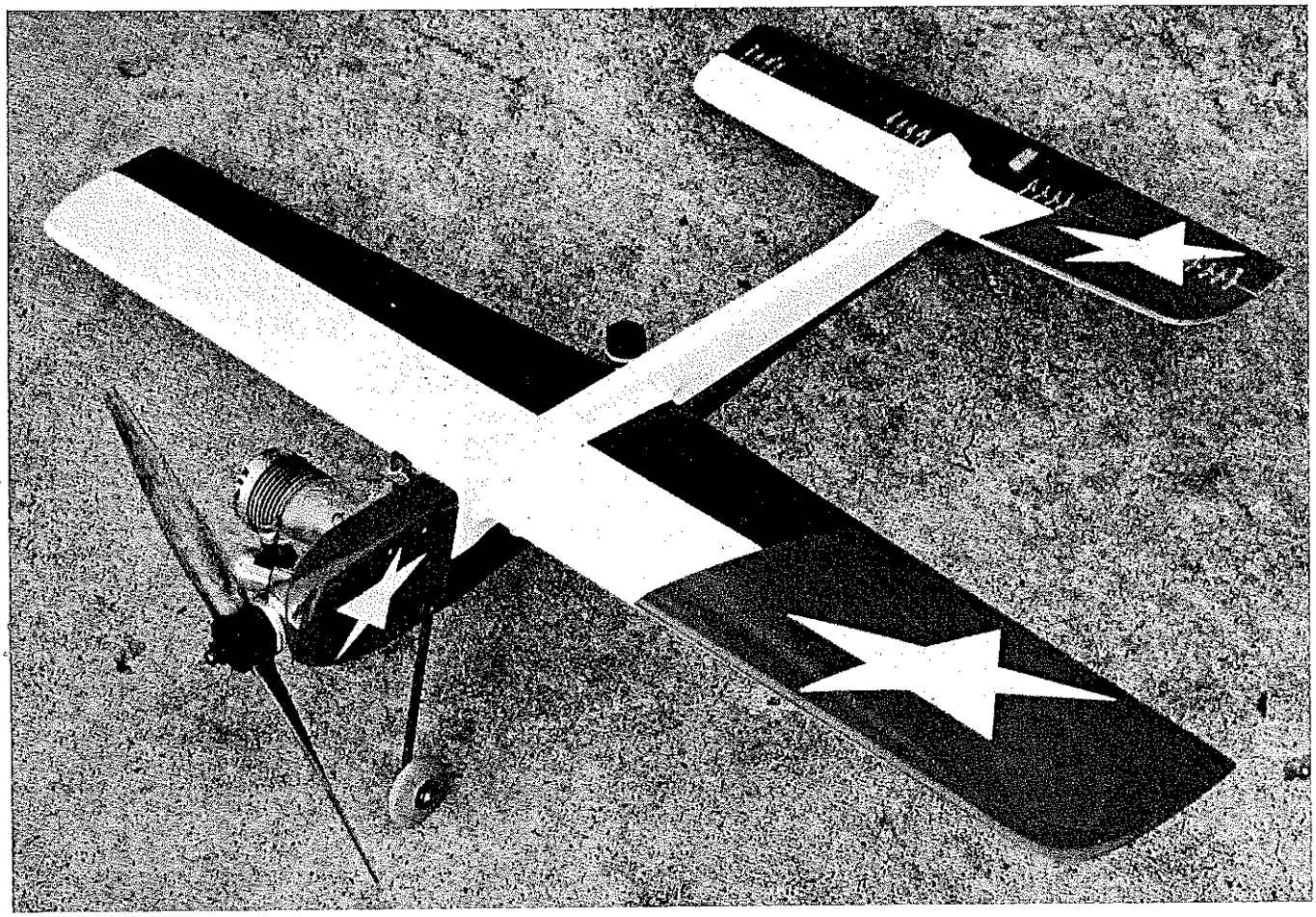
#524

TEXAS QUICKIE RAT



Model's simple design is based on Rat Racers of the 1960s when Control Line racing was enjoying its heyday. The colorful red, white, and blue Texas flag paint scheme was done with K&B Superpoxy paint. It's simple to build and easy to fly at the slower racing (100 mph) speeds.

It doesn't take super quick speeds to make racing fun. What it does take is close competition and good flier turnout. This new experimental category—already being flown in various forms around the country—to be unofficially flown at this year's Nats for the first time may be the vehicle to put the fun and numbers back into Control Line Racing. ■ Frank Williams

Three-up racing with Control Line models is without a doubt one of the most exciting forms of model aircraft competition. Twenty-five years ago, when Control Line flying was flourishing, Rat Racing attracted competitors from all areas of modeling. Even though there was only one form of racing, it often took all day to run the event, because of the many entries. The planes could be built and flown by the average modeler, and he didn't need an engineering degree to design the workings or muscles like Charles Atlas to fly them. Things were just simpler then.

Unfortunately, we outdid ourselves striving for more horsepower, cleaner, faster airplanes and such. Never daring to take a step backward, we went faster and faster, finally arriving at "two-up speed." Isn't it interesting that RC has become so popular in recent years that it has drawn away all our competitors. I wonder if what has happened to CL Racing has caused it?

What we need to do is to get back to basics—to racing that emphasizes the *sport* of racing. We need races like we had 25 years ago (they were so much fun), races that could be flown three and four of us at a time, and planes that didn't necessarily take a special pilot to handle the pull. Almost by definition, races that can be flown three-up will be physically within the reach of most people, and with thoughtful attention to the rules we can legislate a simple airframe and build around inexpensive available engines. It is this kind of racing that promotes success.

Every area of the country has attempted to do this in one form or another, developing local "sport race" events in order to provide not only an entry level racing event but also a format for three-up racing for all skill levels to enjoy. Northwest Sport Race, Florida Slow Rat, ACLA Slow Rat, Fox Goldberg, Midwest Sport Race, Big Goodyear, Formula Unlimited, and Texas Quickie Rat all evolved to fill this need. All have proven successful for the most part—

some more than others.

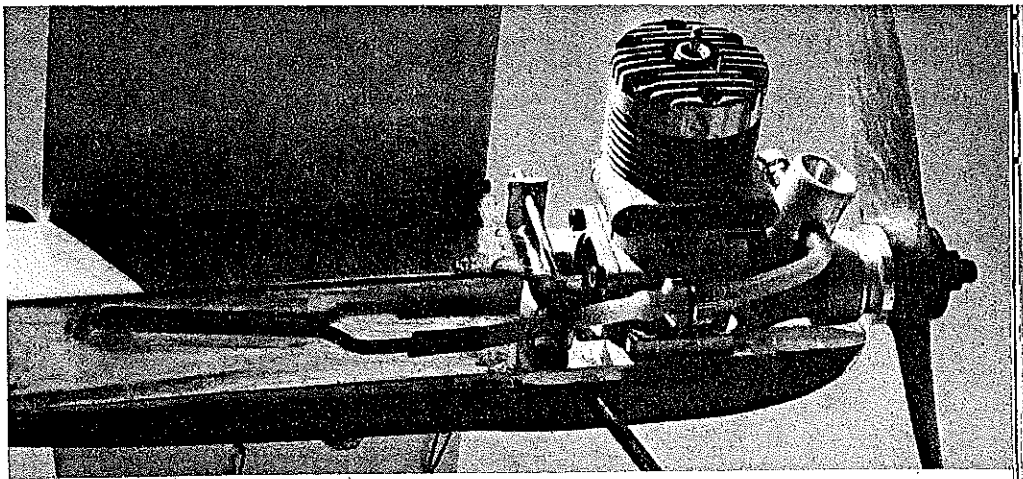
Quickie Rat is the most popular form of Control Line racing in the Texas/Louisiana area, and contest participation has grown every season. Many "crossovers" from Stunt and Combat enjoy racing and call Quickie their second event. At the same time, though, we have several full-blown national-level racing competitors who spend more of their time practicing and working with Quickie than they do with their Fast Rats and Goodyears. The appeal of the event spans from beginner to expert.

One of the things that makes the local events work is that the process for changing the rules is much simpler. When a "trick" emerges that pushes up the airspeed or technology, all that is required is for the local elders to gather on the field and say, "Don't do that—from now on that's not legal."

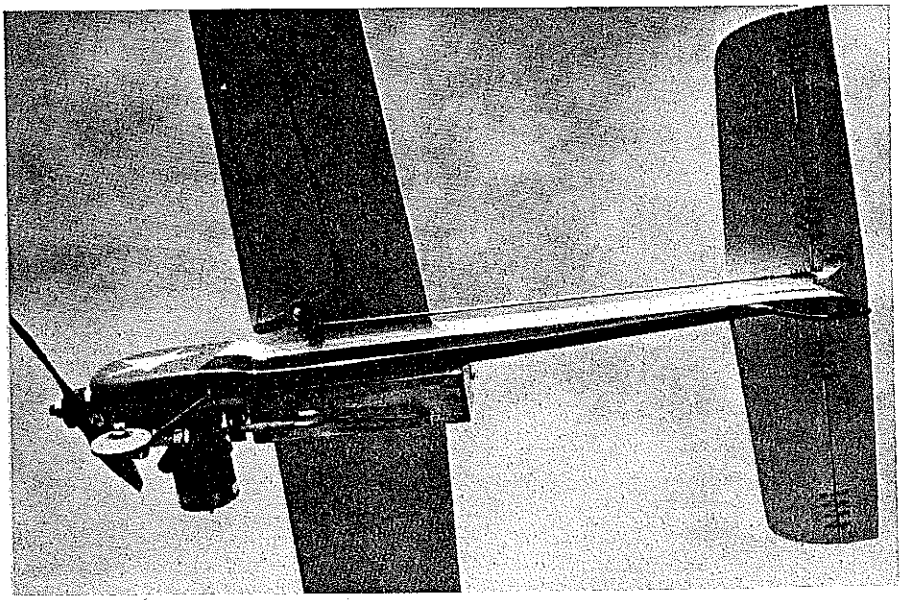
At the same time we've benefitted through the years from looking at AMA Slow Rat, Goodyear, and Fast Rat. We have, or certainly should have, a fairly good idea what caused these events to escalate in speed and/or technology, and so far we have been able to write the proper limitations into our rules to keep the events at the level we desired.

There are several things about Quickie Rat that make it a perfect event to promote success. First of all, the airplane, itself, is an attempt to legislate a 1960 Rat racer—simple to build, functional, and durable. The engine specification is based on a pool of available inexpensive engines that are equal in power and ringed for easy starting. Finally, we recognized that just saying "draw only" for the fuel system wasn't enough; something more was needed to keep things in the proper perspective.

The aircraft specifications call for profile construction, no pans, a totally-exposed control system, and external line connections—a slab-wing sidewinder aircraft of fairly standard Rat proportions. We learned from Slow Rat that a big airplane with a thick wing doesn't necessarily mean low airspeeds. By the time we were done in Slow Rat, we finally reached 130 mph.



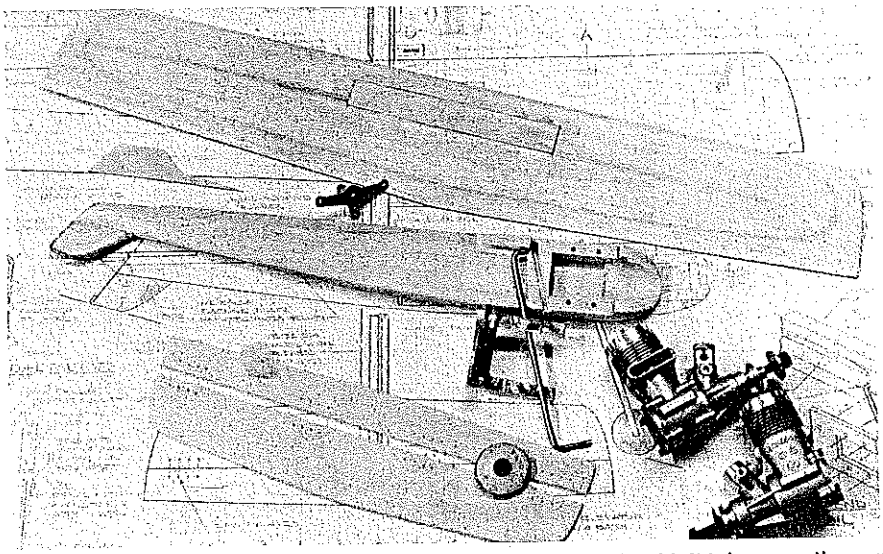
Engine specifications are based on the readily available, inexpensive sport .40 RC engines. Rules for venturi and spraybar diameters help keep the emphasis on pilot, not the engine.

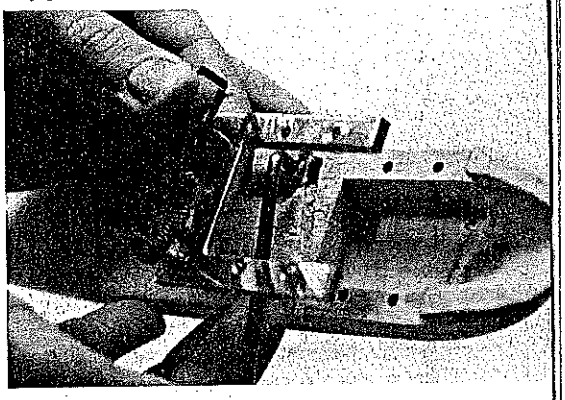


The required exposed control system relieves the pressure and added work of having to bury the controls inside the wing to be competitive. It's easier to concentrate on the racing when you don't have to worry so much about what the other guy is doing to his model or engine.

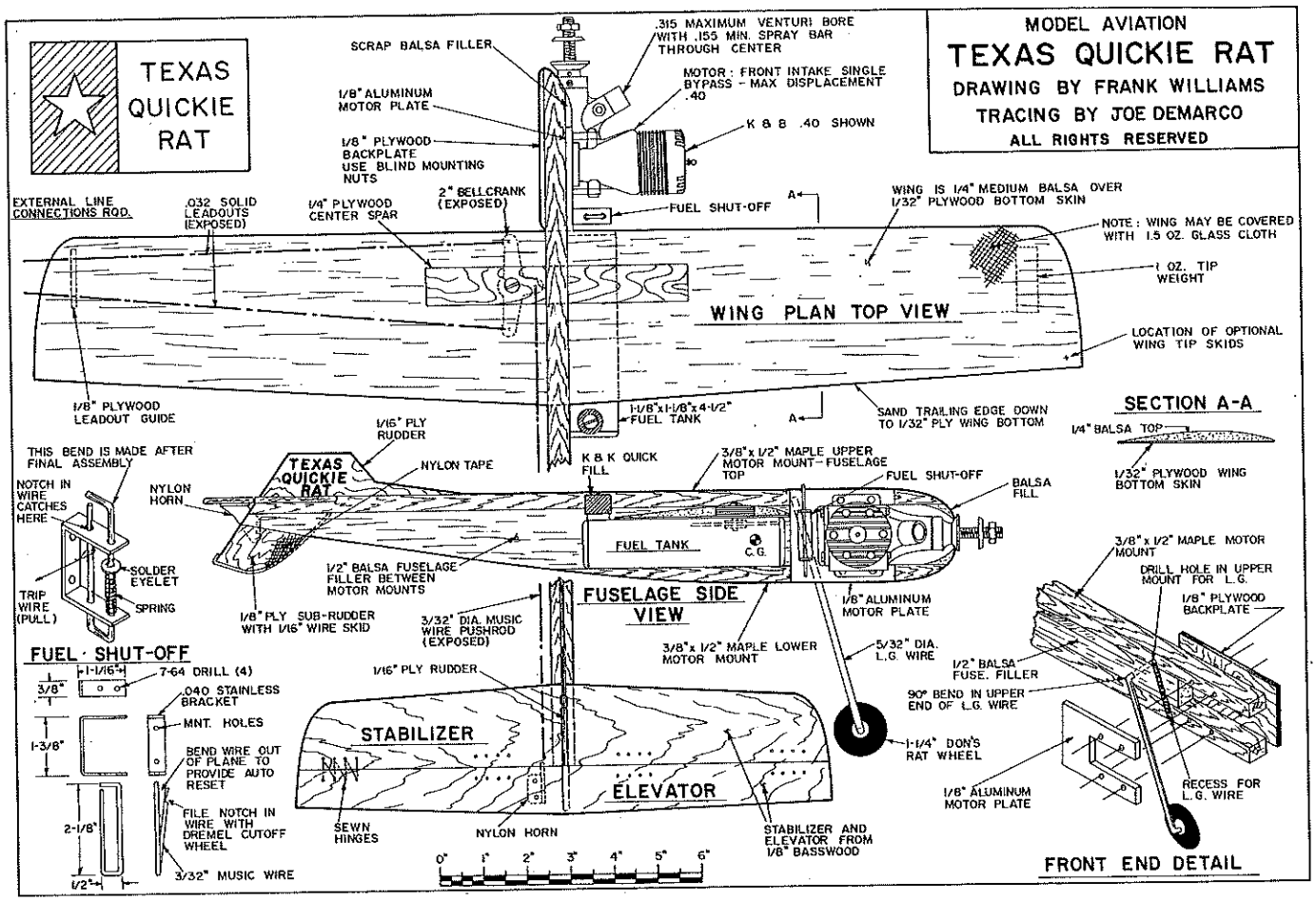
Is there any precedent for specifying an exposed control system? Sure—Class 1 Mouse does. Trust me; if the words weren't there, in a season or two every entry would have the bellcrank buried in the wing. In Mouse it would be absurd. In Quickie—sure we could do it, but why? It's just so simple to bolt the hardware on and quit. When you don't have to worry about the other quy doing it, it's like a breath of fresh air.

Engine specification is fairly straightforward; A .40 cu.in. maximum displacement, front intake, single bypass (non Schnuerle), no ABCs, produced in quantity, and available through retail outlets. Any parts substituted must have been made





Left: Parts layout of the Texas Quickie are proof alone that it shouldn't take more than an evening or two to build. While simple, model is durable and good for several seasons. Right: Landing gear wire fits into recesses in fuselage and hole in engine mount. Mount plate holds it.



for that engine by the original engine manufacturer.

What we're taking advantage of is the wealth of inexpensive sport .40 RC engines—K&B, O.S., Enya, Webra, and ST to name a few. The fact is that we've run out of .35's. The K&B .35 isn't available anymore, and since it was a ringed engine, it was about the only choice for Sport Racing events. Sure, everyone has a Fox Combat Special, and we could base a class racing event around those, but what makes racing fun is having the engine start in a pitting situation. A ringed engine generally will, but the lapped engine is a poor choice for hot pits. This class of ringed .40s has proven to be an excellent source of Control Line Racing engines that are inexpensive, ($45-$65), easily available both new and used, and great starters. With proper venturi specification, the horsepower output can be easily controlled.

The problem with "draw only" racing is that you can't stop drilling out the venturi until the other guy does, and you know that he won't. To get the airspeed you need to be competitive, you've got to get as much air as possible into the engine. After a while you can no longer get a reliable needle setting just running in the pits; you've got to "set the needle in the air." Next, you worry, "Will it have enough draw to get off the ground?" Since most of the Sport racing events have outlawed inboard tanks and swing-weight carbs, you finally resort to (and I've seen it done) a little thumb over the venturi as it starts and a quick throw into the air! Oh my gosh! It sounded so simple—"draw only."

As it turns out, the sport .40s left to run "draw only" with drilled-out venturis would generate more power than we want, or need to achieve a 95 to 100-mph speed. So we killed two birds with one stone and specified a maximun venturi bore and minimum spraybar size. We limited the power output of the engine and at the same time, we promoted the success of the competitors by giving the event an engine/venturi combination that anyone can easily needle on the ground. The venturi regulation, when you come to think about it, is necessary to most internal combustion racing in the long run, ergo, carburetor plates in auto racing. For that matter you could race current Fast Rats three-up with the proper venturi specification, without changing anything else. If they start running faster than you'd like, next year just knock off a thousandth or so on the venturi bore.

For Quickie Rat we've arrived at a venturi bore of .315 in. (5/16 in. drill plus a little slop) and a minimum spraybar diameter of .155 in., the spraybar going

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Don Cranfill, Ron Esman, and Richard Stubblefield in another hotly-contested race. Three-up Control Line Racing is just too much fun to let it slip under the horsepower curve. Get yours ready for the 1986 Nats. With this event, time is best spent practicing your flying.

CL Speed/Hempel

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ucts. The larger-sized jets will have to be machined. Use a brass 10-32 machine screw. Cut to the desired length, drill out almost the entire length with a No. 42 drill bit, and drill the very last portion with the desired drill size. Machine off enough of the threads for fuel tubing to slide on.

Starting procedure: Utilizing the fuel mixtures listed previously, the engine is very easy to start. Attach the air supply and Model T coil ignition. Raise the nose of the model to about 45°, turn on the coil, and pump. It should start in two to four pumps. Launching the model is by simply letting it go either straight ahead or angled out slightly. It is very important for the pilot to back up and keep the lines tight for the first ¼ lap. Remember, the thrust is a push from behind rather than a pull, and the line tension must be maintained until speed builds up and centrifugal force keeps the model moving straight. We fly this model on 65-ft. .018 single-strand (solid) wire.

There are two more pieces of equipment you will need that are not normally in a modeler's tool box; a piece of 1¼-in. steel pipe and a good hammer. The jet pipes bend with a hard landing. These can be straightened by forcing the pipe inside the jet pipe and smoothing out the dents with the hammer.

Give Jet a try: you might just get hooked. The first weekend out we put in over 30 flights.

Suppliers of needed supplies: Sears Auto Center—high-volume tire pump. JC Whitney—Model T ignition coil. Paint store—MEK (standard brands chain). Jet Engine—P&G Metal Products, 301 North Yale Dr., Garland, TX 70542.

This month's column was written with the help of Charlie Davis, noted Jet modeler and Speed flier. He has been the motivation behind having more fun at flying Speed instead of standing in front of a milling machine or lathe.

Gene Hempel, 301 N. Yale Dr., Garland, TX 75042.

Quickie Rat/Williams

Continued from page 74

through the center of the venturi. It goes without saying that the rules prohibit introduction of air into the engine through any passage other that the venturi and designate a minimum length above and below the spraybar that the specified bore must be maintained. We also supply 10% fuel for the event. These requirements allow us to race comfortably in the 100-mph range and provide us with a simple, reliable system that promotes success for all competitors, no matter what level.

The Clear Lake Line Winders plan to sponsor Quickie Rat as an unofficial event at the Lake Charles Nats this summer. If you're going to the Nats we'd like to have you come and race with us.

Construction of the airplane is pretty straightforward. There just aren't a whole lot of parts to deal with, so it won't take more than a couple of days to build one.

The wing is built by epoxying (or Titebonding) a piece of ¼-in. medium-to-firm balsa onto the 1/32-in. plywood wing bottom. The bottom should be a continuous piece of plywood; don't butt two 12-in. pieces together at the center. You can substitute 1/16-in. plywood for the wing bottom if you like; I used to build them that way, but I've decided that the 1/32 works just as well and saves some weight. Rout out the center of the balsa down to the plywood, but not through it, inset the ¼-in. plywood bellcrank mount/main spar with epoxy. After it has cured, sand the wing to shape, bringing the trailing edge down to the plywood skin.

This construction method gives a fairly light, rigid wing with a trailing edge firm enough to be grasped during pitting without damage. Rout out a recess in the outboard tip, and bury about 1 oz. of lead in the wing tip. If you like, the wing can be covered with a layer of 1.5-oz. glass cloth adhered with K&B clear Superpoxy.

The fuselage isn't more than an evening's work either. The engine mounts *are* the fuselage. You'll need a piece of ⅜ x ½ x 18-in. maple for the upper engine mount and a shorter piece for the lower. Fill between the mounts with ½-in. balsa, add a ⅛-in. plywood sub-rudder/tail skid and a piece of ⅛-in. plywood on the inboard side of the engine; take your power sander to it. Rout a recess into the fuselage/engine mounts for the landing gear wire to lay into, and at the same time cut an engine plate from ⅛-in. aluminum to fit your engine. Bend the landing gear wire at the upper end so that it fits into the upper engine mount. The bend will keep it from rotating, and the aluminum engine plate holds it in place. I've been using 5/32 music wire for the landing gear, but ⅛ in. also works fine.

The stab and elevator are cut from ⅛-in. basswood. I've shown sewn hinges, but anything will do. Add a 1/16-in. plywood rudder if you like. Mount the wing and stab to the fuselage using liberal amounts of epoxy and nylon tape, and check carefully for proper alignment. I like the wing to go through the fuselage rather than be mounted on top of the upper engine mount; it's just safer and sturdier. Add a ⅛-in. plywood lead-out guide, and you're just about done with the woodwork. Give the whole thing a couple of coats of K&B Superpoxy clear, and set it aside.

All that's left to do is build a tank, a shutoff of your favorite type, and tip skids if you like, then bolt on the bellcrank. I've recently taken to using silicone sealer to attach the tank to the body. Of course the standard is to add some hooks and rubberband the thing on, and this does give you easy access to repair leaks and the like, but since we aren't running pressure, that's just not as critical.

The planes are really quite durable. I have one eight years old that I use as a loaner.

Engine rework? You'd be better off spending your time practicing racing and pitting than trying to polish, re-time, or soup. With the intake restrictions, a new engine runs as well as anything else I've seen.

Three-up Control Line Racing is too much fun to let slip away under the horsepower curve. Quickie Rat captures the excitement and fun of Racing and does so in an atmosphere that promotes success and appeals to all levels of competitors.

I would like to hear from anyone with suggestions or comments. Frank Williams, 710 Silverpines, Houston TX 77062; phone 713-488-1371.

Elec. Champs/Naccarato

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RC Old-Timer, Seven-Cell. 1. Paul Hingtgen, Playboy, Astro Co 05, 7x800mAh Sanyo, 2020 pts.; 2. Bob Sliff, Playboy, Astro Co 05, 7x800mAh Sanyo; 2008 pts.; 3. Larry Jolly, Interceptor, Astro Co 05, 7x800mAh Sanyo, 1996 pts.; 4. Chuck Hollinger, Nomad, Astro Co 05, 7x800mAh Sanyo, 1865 pts.; 5. Jim Hall, Playboy, Leisure 05, 7x800 mAh Sanyo, 1860 pts.

RC Old-Timer, Open. 1. Mike Charles, Super Quaker, Astro Co 60, 26x800mAh Sanyo, 2020 pts.; 2. Frank Chasteler, Lanzo, Keller 35, 16x800 mAh Sanyo, 2020 pts.; 3. Ross Thomas, Lanzo, Astro Co 40, 26x800mAh Sanyo, 2013 pts.; 4. Lowell Howe, Sunduster, Astro Co 25, 16x800mAh Sanyo, 1660 pts.; 5. Larry Jolly, Interceptor, Astro Co 05, 7x800mAh Sanyo, 1619 pts.

RC Stand-Off Scale. 1. Bill Young, Stephen's Akro, Astro Co 60, 30x1200mAh Sanyo, 204 pts.; 2. Brian Chan, Bede-5N, Keller 25, 14x1200mAh Sanyo, 177 pts.; 2. Ken Holcomb, Porterfield, Astro SF 15, 12x1200mAh Sanyo, 135 pts.; 3. Tony Naccarato, J-3 Cub, Astro Co 60, 28x1200mAh Sanyo, 129 pts.; 4. Bob Sliff, Monocoupe, Astro SF 40, 18x 1200mAh Sanyo, 127 pts.

RC Aerobatics. 1. Steve Neu, MK Arrow, Keller 50, 14x1200mAh G.E., 150 pts.; 2. Larry Jolly, XC-40, Keller 80, 26x1200mAh G.E., 145 pts.; 4. Ed Depue, Etude, Astro 05, 7x1200mAh Sanyo, 71 pts.; 4. Bob Sliff, Snark, Astro 05, 7x1200mAh Sanyo, 50 pts.

RC Pylon Racing, Seven-Cell. 1. Larry Jolly, Ohmen, Astro Co 05, 7x1200mAh Sanyo, 8 pts.; 2. Lowell Howe, Fast Eddy, Astro Co 05, 7x1200mAh Sanyo, 6 pts.; 3. Mike Charles, Avanti, Keller 25, 7x1200mAh G.E., 3 pts.; 4. Steve Neu, original, Keller 25, 7x1200mAh Sanyo, 3 pts.

Load Tests/Myers

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frame will show two blurred images. This happens because the TV image is really made by interlacing two pictures made 1/60th of a second apart, as described above. "Exposure time" of each TV picture is effectively 1/60th of a second.

A movie camera can obtain similar information but without the double images since movie cameras make the whole frame at once. Silent movies are usually taken at 18 frames per second; sound movies are taken at 24 frames per second; both are exposed at 1/40th second (assuming that you are using Kodachrome film). Video in the U.S.A. is always at 30 frames per second and interlaced as described above. If your movie camera has "slow motion" capability, you may get 36 or 54 frames per second at a shorter exposure (like 1/90th to 1/200th second). Some home movie cameras can be synchronized with strobe units that light as briefly as 1/50,000th of a second. Short exposures can minimize blurring relative both to the TV image and to the common movie camera exposure time of 1/40th of a second. That's enough about simple instrumentation.

A sample test. By drop testing an airplane having performance characteristics already well known, I can accomplish two things. I can demonstrate how the method works, and I can validate the procedure (convince you that there is a correlation between what you see in the test and what you see in service). While preparing this article I made a series of free drops onto turf using a Spickler Quicky 500 that had been flown many times. It was built from a kit and included the stock wire landing gear. The videotape shows that at two feet drop height, the gear let the belly of the fuselage hit the ground. The plane then bounced a foot into the air, hit again on the tail skid, then slammed down and bounced a couple more times on the wheels. Experienced Quicky 500 fliers will testify that if you make such a landing you will indeed break a prop

After the bouncing stopped, the landing gear (and the rest of the plane) looked undamaged except for the dents where the wheels went up through the wing leading edge bottom sheeting. The same thing happened for drops of up to five feet, except the belly hit harder. If the prop had been turning, it would have been broken on just about every drop test. This corresponds to our flight experiences. Now, would you say that the landing gear passed or failed the drop test? After repairing the wing a few times and buying a bunch of props, you might decide that a stiffer landing gear would help the situation. Of course if you can land better, you won't have any trouble.

Thus you might or might not evaluate the drop test results as failure. The landing gear neither tore out of the airplane nor separated into two or more loose pieces. Given favorable landing conditions and a skillful pilot, it is possible to land a Quicky 500 without breaking a prop. Lots of fliers do.

In this discussion, the reader should also be aware that the design of any aircraft, model or full-size, is a mixture of compromises. The ideal situation for one aspect may be detrimental to another. While the Quicky 500 gear is somewhat springy, this allows placing the wheels near the CG for improved takeoffs. The opposite side of the coin is that a very stiff landing gear might be ripped off, causing more damage, when subjected to a landing condition of the type that would make the wheels dent a Quicky 500 wing.

Regardless of how you evaluate the landing gear, I would call it a successful proof test. The airplane wasn't broken when the testing was over (if you consider that the wing damage was secondary damage due to the flexibility of the landing