

**From: National Control Line Racing Association
Bill Bischoff 1809 Melody Ln.
Garland, TX 75042**



TO



Beginner racer Cristopher DeGraff, Grandson of long time racer Dave Betts, checks out the finer points of his airplane.

SPECIAL: BEGINNER RACING ISSUE

INSIDE:

**District Reports
Contest results
Suppliers/Equipment
Updated Contest Calendar**

**Torque Roll Issue #130
February 2017**

PRESIDENT- Bill Bischoff

Theme Issues

The Mouse Racing theme issue was very well received. So much so, we are going to continue with the concept. This issue will be the *BEGINNER* issue. The April issue will be the *PILOT* issue, and the June issue will be the *MECHANIC* issue. Everyone is encouraged to jot down their favorite tip, trick, or tidbit, and send it in to *Torque Roll*. Remember, nobody was born knowing any of this. What may be obvious to you is not obvious to everyone, so don't be shy!

District Rep elections

This is a District Representative election year. The ballot will be in the June issue. If you wish to run for rep, or nominate someone else (get their approval first), please send me an email at billbischoff@hotmail.com. I also ask that all current reps please contact me and indicate their desire to continue or to step down.

NATS

New racing kits

I have been working with Pat King of PKD LLC, and he is now kitting my Mockingbird super slow rat design and my Polecat sport Goodyear. These kits should be available soon if not now. I have already received my Mockingbird kit and it looks good. Of course, I will have to build it to properly evaluate it. If that wasn't enough, Brodak will be kitting my sport Goodyear BooRay, which I designed around their pre-airfoiled wing. John indicated the kits should be ready by "late 2017".

SOUTH CENTRAL REPORT

Dallas has set their contest schedule for the year. Once again, we will have racing at all five of our contests. New this year, we have expanded our racing lineup in April and October to include **F2C** and **AMA Goodyear**. Also, please note that a couple of the dates are different than I reported last time. See the Contest Calendar for details.

HOW FAST AM I GOING?

How many laps do I time? Unlike stunt, which is interested in single lap times, racing planes are timed for multiple laps. How many laps is a function of line length. Please refer to the table below.

What's the best way to time my model? Pick out a landmark on the far side of the circle, opposite of where you are standing. A tree, a pole, the edge of a building all work well. Start and stop the watch as the model passes the landmark. You will find this easier and more accurate than trying to start and stop the watch as the model flies by immediately in front of you.

OK, now what? If you timed your model for 1/2 mile, divide 1800 by the number of seconds you recorded. For example, if

you timed your Sport Goodyear for 8 laps and got 22.5 seconds, $1800/22.5 = 80$ mph. (If you timed 1/4 mile for mouse, divide your resulting speed in half.) Below are some common, easy to remember speeds.

TIME = MPH

15.0	120
18.0	100
20.0	80
22.5	80
24.0	75
25.7	70
30	60

EVENT	LINE LENGTH	LAPS	DISTANCE
Mouse	42'	5	1/4 mile
Sport GY	52 1/2'	8	1/2 mile
Most all	60'	7	1/2 mile

KEEP IT CLEAN

You'd be surprised how much dirt and crud accumulates on your lines. This can affect controllability if the lines begin to stick together, and can also add aerodynamic drag to the lines. Solid lines are especially prone to sticking. Do yourself a favor, and wipe your lines down occasionally with a rag and some alcohol or thinner.



Drink Koozie's, are an excellent choice for securing a set of lines to an airplanes wing. Note how it secures the line reel to the Polecat's wing tip.

Speaking of lines, drink koozies are perfect for holding your line reel between flying sessions. You can buy overruns and misprints on ebay for not much money. Buy a bunch and share with your flying buddies!

WEBMASTER – Bill Lee

Old issues of the NCLRA newsletter

We are trying to capture the history of NCLRA by scanning any, and all, old issues of the NCLRA newsletter for inclusion on the NCLRA website.

NCLRA was formed in the early 90's and for several years the newsletter was produced and mailed to the membership. The newsletter did not acquire the name "Torque Roll" until 1998 or so. This all preceded the wide availability of the WWW.

I have a few of these old and valuable documents and have already added them to the NCLRA website. (See the "TorqueRoll" link there.) But there are many more that I do not have.

If you have any of the old newsletters, please send them to me so I can add them. I ask that you send the actual documents since photocopies degrade the quality and make for poor scanned copies.

My address is:

Bill Lee
601 VZ County Road 4815
Chandler, TX 75758

I will return all documents submitted after I have scanned them into the computer.

MIDWEST – Bob Heywood

So, You Think You Want To Race...

Roscoe Turner, Golden Age air racer and aviation legend, is rumored to have said something to the effect that "There's no excuse for an airplane unless it goes fast...". It may not be quite like strapping yourself into a race plane and dusting the pylons like they used to do at Cleveland or still do at Reno but control line air racing offers the same speed and head to head kind of competition. It gets into your blood and won't let go.

Where to start? First, join NCLRA. Check the Association website for details. Second, pick a racing class. The usual advice is to pick one that is popular and has a ready source for suitable engines, the best options being Sportsman Goodyear or Super Slow Rat. I'm a long time fan of the Goodyear / IF1 racers so will focus on Sportsman Goodyear. Sportsman Goodyear uses the basic rule framework that has been in place since 1961 when team racing for 1/8 scale profile Goodyear racer models was first introduced. Rules can be found on the Dallas Model Aircraft Association web site:

http://www.dmaa-1902.org/Rules/Sportsman_Goodyear.pdf

The next decision is to select a plane. I highly recommend Bill Bischoff's Margaret June article published in the June 2015 issue of Model Aviation. <http://www.modelaviation.com/margaretjune>

In addition to the construction plans there is a wealth of information about racing in this class. If a kit is more to your liking Pat King is now kitting Bill's Pole Cat racer. Contact Pat at

patdk@aol.com for details. In addition, there are lots of plans available from the AMA Plans Service and other plans sources. In racing it's the apparently small details that count. One of those details is the fore / aft position of the line / leadout guide on the model's wing tip. The technical term is Line Rake or Leadout Rake. The position of the guide directly affects how the model tracks the flight circle. If the guide is too far behind the CG location the model will slip around the circle dragging the fuselage sideways, slowing the plane. If the guide is too far forward, the plane will probably turn in on launch, not a good thing. The NCLRA web site has a calculator to figure the optimum location. It is also possible to use an adjustable guide and make a series of test flights to find the best location. I know from experience that getting this right is VERY important.

Once you have the model flying it's time to begin thinking like a race team. The team consists of the pilot and pit crew. Organization for the pit crew is one thing that trips up beginning racers. The first thing the crew needs is a small, compact pit box to hold, in an organized fashion, all the items needed for pitting. This includes fuel, battery w/ glow plug clip, two (2) spare props, two (2) spare plugs, prop & plug wrench, and perhaps one or two critical hand tools. To emphasize, the items in this box are only what is needed for a single race. I've seen too many teams blow a race when the pitman has to run back to a tool box for a plug, prop, or whatever, or try to gather up a bunch of loose items to make a pit stop. Realize that race situations may force a change in pit location.

The pit crew should spend time understanding the subtle nuances of the engine. Starts are everything, both cold and hot.

Team practice should be just like a race. Work under a watch just like the start of a race. If it's not possible to have a third person help, the pilot can work the starting watch. Practice pits just like a race. The pit crew should always have the pit box in hand and be watching for an unscheduled flame out. It does happen. The goal is to practice enough so that everything is done exactly the same way, every time. Practice in differing wind conditions and from different spots on the circle. At a race it's not always possible to pit from a favorite spot. The pilot's role in the pit stop is to bring the plane exactly to the crew. Practice.

As a pilot, it's important to learn to fly the most efficient circle as possible. Ideally, the pilot wants to be right on a line drawn from the center of the circle to the racer. Too many pilots fly behind their plane, for instance if the pilot should be at 12:00 but is really at 3:00, when looking directly down on the pilots circle. This is not good. During test flying work very hard to stay in line with the plane.

Passing efficiently is important. If you have the faster racer, as you begin to overtake the slower plane, climb high enough to clear while stepping behind the other pilot. Once you make the pass drop back down to race altitude and get back in the walking circle with the other pilots. In a hotly contested race this can become physical. Be ready for anything. I still recall a four plane Goodyear race many years ago where I ended up passing under a slower plane while the two other planes went over the top. Nothing like a four high stack-up. It was great!

Finally, watch as much racing as possible. Watch the other pilots and crews, especially the fast teams. Then, Practice, Practice, and Practice.

Racing Tips For Beginners—

By John Thompson

YOUR AIRPLANE

Each racing event has specifications for the airplane. You should read the rules carefully and make sure anything you build follows those specifications. If you are a novice racer, don't try to reinvent the wheel. Find a proven design in use by established competitors and start out with that.

Some things are common to all racing planes:

- **Build it straight:** Like all other modeling events, alignment is important.
- **Build it stiff:** Vibration saps horsepower from the engine. You should make sure the plane is very stiff. Examine the design, especially if it is a kit, to determine whether it would be a good idea to lengthen the motor mounts, substitute a wood doubler with aluminum, etc. Cover airplane parts with fiberglass cloth where possible. Use carbon fiber to strengthen weak areas, such as the fuselage right behind the wing.
- **Build it clean:** A smooth, clean plane will go faster. Is there anything you can legally and safely put inside the structure, such as leadout connectors, shutoff trip wires, etc.?
- **Landing gear:** Study other competitors' planes to determine what type and location of landing gear works best. Usually a wheel approximately on the center of gravity will result in smooth landings and rolls to the pit.

PILOTING

The pilot's job is to maintain complete control of the airplane at all times that it is in motion. It's a big job. The pilot must fly within the rules, must always be aware of the safety of the people on the ground and the other pilots, and at the same time work to make the plane's travel through the course as efficiently and quickly as possible. Here are some piloting basics.

• **Safety First:** We're doing this to have fun and win races, but the first responsibility of a pilot is to make sure nobody gets hurt as a result of his actions. This means the pilot must take special care to assure a safe race. Some safe practices to observe:

— **Takeoff:** Get the plane in the air and inside the racing circle before it reaches the next pit area. That means the pilot should be stepping back toward the center circle immediately as the plane is launched. This not only assures good tension and control, but clears the other pit. If you just hang on to the handle and watch the plane take off, you will place the next pit crew in danger. The pilot must take an active role on takeoff, pulling good line tension and hauling the plane into the circle. At the same time, the pilot must avoid a skyrocket takeoff into traffic, which can cause a collision or line tangle. Come off the ground smoothly and don't interfere with traffic above.

— **During the race:** Occasionally a mishap will occur which involves another plane coming to rest inside the circle, on the ground. The pilots of planes in the air should note the position of that plane and be on the lookout for a pit crew entering to retrieve it. If you have to fly a little higher than normal for safety's sake at this time, do so. Pilots of planes on the ground should position themselves as follows: If your plane is being pitted, you should be just outside the pitting circle, so that

your plane is in the proper pit position. As you take off, you quickly move back toward the center. If your plane is out of the race, either finished or broken, you should position yourself outside the pitting circle, down and out of the way. In the event of a line tangle or other emergency, pilots must cooperate for safety. Shut down if necessary, or if shutoffs are not available, cooperate to improvise a solution. Watch out for officials entering the circle to assist with the tangle.

— **On landing:** Be aware as you land of other pit crews at work in your landing path, and make sure that you clear them. Your plane should be inside the circle until it passes the last pit; then you can move outward. Pit crews are supposed to be in the proper location, but pilots should remember that, if a plane hits a pit crew member, it can cause a serious injury. Be sure that you clear the pit crews, wherever they are!

• **Piloting techniques:** When you pilot a race plane, you are not just hanging on for the ride. You are in control, and there are many ways you can shave seconds off your heat time. Here are a few piloting tips:

— **Get up to speed:** As you take off, be in active control of the plane. Pull on the lines to get good tension on takeoff (this is especially helpful in windy conditions or when you have a poor pit location), and use the first lap to get up to racing speed. Rules allow whipping during the first lap.

— **Walk a tight circle:** Your goal is to make the circle as small as possible. If you walk around the outside of the center circle, you make your plane fly a longer distance. A pilot should try to keep his handle at dead center. Imagine a speed pylon in the center, and try to keep your handle as close to the location of that imaginary pylon as possible. Some contact between pilots is assumed as part of normal racing. Don't worry if you find yourself shoulder to shoulder with other pilots who also are trying to keep their circle tight. If you find it difficult to get between two other pilots who are shoulder to shoulder, muscle your way in (see "courtesy" below). (Also see "backsidings" below).

— **Keep up with your plane:** Note the angle that your lines leave your handle in relation to the circle. If they are angled out to your left, you are behind your plane. Besides holding back your speed, this causes problems for the other fliers. Tighten up your circle and pull your handle around to where the lines are going out straight from your handle to the outer edge of the circle (see "whipping" below).

— **Fly smooth:** A plane that bobs up and down will not go as fast as a plane that moves smoothly. When you have to change elevation to pass, do it smoothly, not with sharp elevation changes.

— **Fly your own race:** If other pilots in the race use sloppy techniques — walking big circles, being behind their planes, etc. — you are not bound to fly the same way. If your opponent walks a big circle, he's giving you the center, and a much tighter race. Take advantage of it.

— **Get it to the pits:** On landing, the pilot is responsible for putting the plane in the pit crew's hands. Tow the plane at a low altitude from the shutoff location to the pit, and bring it in at the proper position and moving at a reasonable speed for the catch. Don't make the plane hard to catch and, for heaven's sake, don't land somewhere other than in the pit location!

— **Courtesy:** Cooperate with the other pilots in the race. If you are shoulder-to-shoulder with another pilot and a third

pilots needs to get between you, let him in. Talk to one another in the circle if it helps keep things clean — let the others know when you are going down for a pit stop, and advise them about other unusual circumstances. If you have the slow plane, fly the low groove. If another plane is having stability problems, give it extra room. Do what it takes to have a clean, fun race.

• **Piloting rules:** There are rules — some written, some not — governing piloting. The race will be more fun for all if you follow the rules — and you'll avoid penalties, complaints and hard feelings.

— Whipping: It is illegal to tow the plane while it is under power. If your lines are moving out from your hand to the right, you are whipping. Whipping is of questionable value as a speed-enhancing technique, because it forces you to enlarge the circle. And it is easy for officials to see and penalize.

— Backsiding: You may keep your handle in the center of the circle. But when you take it to the back side of the circle, you actually shorten the lines. This is unacceptable. Keep it in the center, but not at the back.

— High flying: There is a prescribed maximum height for each category. If you fly above this height, you are subject to lap penalties. If you are a slow plane and fly high, you cause everyone else to fly even higher — causing you a speed disadvantage and raising safety concerns. If you have the faster plane, you are allowed to go up to pass, but you can't stay up there. Bring it down between passes!

— Proper passing: The rules allow one-half lap for passing. You should lift your handle over the slower plane's pilot at the same time that your plane passes his. Do not lift your handle over the pilot before the plane passes. This creates a crossed-lines situation that is unsafe, illegal and subject to penalties. If you have to pass two planes in succession, you must return to normal flying height between passes if you can do so. If you are piloting the plane being passed, keep your plane low; don't bob up as your eyes shift to the passing plane.

— Walk the circle: Even when you are the only pilot with a plane aloft, you must walk a circle. Standing and pivoting is not acceptable.

— Unsafe flying: Anything a pilot does that an official considers to be reckless, dangerous, or in disregard of the rules is subject to disqualification.

PITTING

The pit crew chief is normally the race director for the team. Besides starting and restarting the plane and acting as mechanic, he keeps track of the ever-changing circumstances of the race and signals instructions to the pilot. Here are some pit crew basics:

• **Pit basket:** Have exactly what you need to conduct a race, and nothing extra to get in the way:

— Fuel bottle, large enough for the whole race, with appropriate filling fixture.

— Battery and clip or hot glove appropriate to the event.

— Spare prop

— Spare plug

— Prop/Plug wrench

Don't take a lot of extra tools, glues and accessories to the racing circle. They will only get in the way and slow you down.

• **Sequence:** Practice with your equipment and learn the exact sequence that results in the best starting and restarting. Each plane may be a little different. Once you learn the sequence, stick with it and do it the same way every time. Adjust the sequence if you find a better way.

• **Calm down:** The best pit crews don't seem to be in a big hurry. They don't rush and fumble. The best way to make a fast pit stop is to be deliberate and efficient. Do everything correctly the first time; don't make yourself clumsy by trying to go too fast.

• **Selecting pit location:** The best pit location is downwind. If you get first choice, take that spot. If you are not first on the circle, be aware of the wind direction and the location of the other pits in planning your race (see "when to pit" below). Do not pit upwind.

• **The countdown:** The standard racing countdown is "2 minutes, 1 minute, 30 seconds, 15 seconds, 10 seconds, 5 seconds, go." At some races, the countdown will start at the end of the preceding heat at "5 minutes" or "4 minutes." When back-to-back heats are run, there will be a between-heats countdown, usually 4 or 5 minutes. The official will announce these countdowns at the pilot's meeting. Important: It's the official's responsibility to call out these countdowns but it is your responsibility to hear them. Pay attention to the countdown!

• **Initial start:** Develop a warm-up sequence that results in a quick initial start. Here's one that may work. Adjust it if you find a better way.

— Before the countdown begins, start the engine and get it loose and warm. Top off tank.

— At "2 minutes," start the engine and run it for 10 or 15 seconds. Top off tank.

— At 1-1/2 minutes, start the engine and run it for 10 or 15 seconds. Top off tank.

— At "1 minute," start the engine and run it for 10 or 15 seconds. Top off tank.

— At "30 seconds," start the engine and run it for 10 or 15 seconds. Top off tank.

— At "15 seconds," look around and make sure your area is clear. Pit box, fuel bottle out of the way.

— At "5 seconds," connect battery, set prop in proper position.

— At "Go!" hit prop, remove battery, release plane. Step back from the circle to make sure you're out of the way of other planes taking off.

• **When to pit:** If you have a shutoff, you have some strategic options. Decide what is best for you in the particular race, considering the circumstances. Here are some factors to consider:

— Length of race. In a 70-lap heat, a logical pit stop is at 35 laps. In a 140-lap feature requiring three pit stops, logical stops are at 35, 70 and 105. (In a 140/two-pit feature, such as NWSR, your tank should be able to go 50-60 laps, for stops in the 50-60 and 100-120 range.)

— Circle layout: Study your pit position. You may conclude that it would be better to pit while the other planes are in the air. If so, be ready to adjust your pit timing based on what your opponents do. If you are the back pit, you have the advantage of a clear landing path. If you have the front pit, you have an easier takeoff.

— Adjust as necessary. Circumstances during a race can sometimes necessitate an adjustment in your pit timing. Be prepared to do so (see “Teamwork” below). You may also have to move your pit location. If a plane crashes in front of your takeoff area, or another team misses a catch and ends up in your spot, you will may to signal your pilot to move the landing spot.

• **The pit stop:** Through practice, choreograph this procedure to the point where it is precise and almost automatic. Take it one step at a time and do everything correctly (see “Calm down” above). Here is a basic sequence:

— Catch the plane by the wing or nose, whatever is comfortable and appropriate to the plane. Shift your position to the proper location with regard to the circle markings.

— Fill with fuel.

— Reset shutoff.

— Connect battery.

— Set prop position and flip or smack prop as practice has indicated.

— Release plane.

Note that the precise sequence of these activities will be determined through practice, and that there may be one or two additional steps. For example, with some engines that tend to get hot, you may need to squirt fuel on the engine head for cooling before you fill the tank. Some things can be done simultaneously. You may be able to connect the battery while fueling, especially if you use a hot glove or a battery assistant. When you reset the shutoff will depend on how much fuel charge your engine prefers. You may need to reset while fueling, an instant before stopping fueling, or after stopping the fill. Determine this through repeated pit stops in practice — not on the day of the contest but at home when you have time to experiment.

— A hot glove, or not?: If your racing team uses a single pit person, rigging a hot glove may be the way to go for quick pit stops. However, a hot glove has its drawbacks. Make sure the setup you use is reliable and really is quick to operate. If it is prone to wiring failures, connection problems, or just causes fiddling and fumbling in the pit, you need to work the bugs out. Better yet, use a two-person crew (see below).

— Using a two-person crew: The very fastest way of pitting an uncowed engine is with a two-person crew. The crew chief catches the plane, fills the tank, resets the shutoff and launches. The assistant connects the battery, checks the meter to see that the plug is lit, and removes the battery when the engine starts.

— Keeping track of the race: It is the pit crew chief’s responsibility to know how many laps have been completed, what the current position of the team is in relation to the other entries, how many pit stops each team has made, etc. The pit crew chief decides whether to vary the pit stop timing, move the pit location if necessary, and other factors. You should be aware of how long your tank can run if it’s necessary to pit early or late. In events with no shutoff, you should know about when the plane will quit and be prepared. Most pit crew chiefs count the laps in their head, but you can check with the timer if you lose count or just want to confirm. The crew chief should be paying attention to the race at all times, even between pit stops, because something might happen to cause an early stop such as a mishap or blown plug. The point is, be aware at all times, and don’t let yourself be surprised.

— Safety issues: Normally, the plane is released when it starts, but the pit crew chief should be aware of traffic. If a moment’s hesitation to let traffic clear makes for a safer, cleaner launch, that’s OK. The pit crew is in a dangerous zone. Make sure you are pitting in the appropriate area, but don’t assume that everyone else in the race will look out for you. Keep one eye on planes landing and taking off, and make sure they’re not aimed at you. Better to duck and lose a few seconds than to take a whack on the noggin with an airplane. If you must enter the circle to retrieve a plane, you must ask for the event director’s permission to enter, and you must enter at right angles to the circle and leave as quickly as possible.

— Don’t get snagged: The pit crew and pilot are responsible for keeping the lines on the ground when the plane is at rest. Watch traffic and put the wingtip down if a landing plane is coming by your pit. If you don’t, and the incoming plane snags your lines, you’re disqualified.

TEAMWORK

Racing is a team event. You should practice with your partner as much as possible and work out procedures and job assignments that best suit your team.

Sometimes, however, you must pick up a partner for a particular race — a pilot or pit crew. If you must do this, make sure to discuss procures signals, etc., with them before the race.

• **Signals:** Work out and practice a set of signals so that the pilot and pit crew can communicate during the race. Following are some common ones used by many racing teams. You can work out your own signals if you prefer.

The first signals listed here are those from the pit crew chief to the pilot:

— Time for a pit stop: Pit crew chief raises one hand.

Sometimes the crew chief will use an audible signal to catch the pilot’s attention. A high-pitched “hoot” can be heard well.

— End of race: Pit crew chief raises two hands high.

— Laps remaining: Pit crew chief holds up fingers representing the number of laps remaining. These are held up low, in front of the body, to distinguish from the time-to-pit or end-of-race signals.

— Fly low and smooth to conserve fuel: Pit chief holds hands spread out, palms down, like an umpire’s “safe” signal. This is used when there is a question about whether there is fuel enough to finish the race.

— Keep going: Pit crew chief holds up one finger and moves it in a circle. This means there is no need for further pit stops, fly to the finish on this tank.

— Change pit location: Pit chief points to a spot on the circle.

— Emergency: Pit chief points to trouble: A plane in the circle, etc.

— Wag for shutoff: In events without a shutoff, sometimes a plane will be in danger of flying too many laps and being disqualified. Sometimes bobbing the plane up and down will cause the plane to stop. Pit chief tells the pilot to do this by wagging his hand up and down as if shaking a handle.

Sometimes the pilot needs to signal the pit crew. On some teams, the pilot makes some of the decisions normally made by the pit chief, or emergency circumstances may require the pilot to take control. Here are some pilot-to-pit-chief signals.

— Time to pit: Pilot points to the pit location.

- Move pit location: Pilot points to a new location.
- How many laps remain? Pilot holds up free hand and wiggles fingers.
- Check or change glow plug: Pilot taps his nose with free hand.
- Change needle setting: Pilot points up for “lean out,” down for “richen” or holds up “OK” sign for no change.

PROTOCOL

- **Be ready:** Have your equipment ready to race when your heat comes up. Have things tuned, adjusted, repaired, prepared and pull-tested. Plug checked, prop on tight, fuel bottle filled, etc. The time to do this is before the heat is called, not during the countdown.
- **Show up:** Know where your heat falls in the schedule, and when it is called, move immediately to the circle. The clock marches on. Don't expect officials to wait for you.
- **Picking a pit:** Pit position on the circle is first-come, first-served. Take your plane and lines to the spot you want. If somebody else has your spot, you must move to a second choice a safe distance away. Do not put your pit unsafely close to the pit that's already there.
- **Dealing with officials:** The officials are in charge. Their word is law. You may ask questions, you may make suggestions, you may register a complaint. But once the official has responded, do not argue with them. Arguing with officials is subject to disqualification.

Most of all, in CL racing, plan your racing program carefully, and with the chief goal of **having fun!**

Let's go racin'!

Northwest Sport Race- there are no secrets!

By John Thompson

Can you build a simple Brodak profile CL model kit?
Of course you can!

That means you also can build a competitive Northwest Sport Race airplane. Order the kit now, and a Fox .35 Stunt engine, and you could be flying your first race in a couple of months.

The rules of NWSR are simple:

Kit airplanes of profile design (which meet certain minimum specifications) are powered by stock Fox .35 or O.S. .25 LA engines. The rules allow certain simple modifications that make the plane more suitable for racing; these are not difficult nor do they enhance performance.

Races are similar to standard AMA-type contests: Participants fly preliminary heats of 70 laps (5 miles), with one required pit stop. The top planes from the prelims go to a 140-lap (10 mile) feature race requiring two pit stops. There can be from two to four planes aloft in each heat.

There are details, and all are listed in the Northwest Sport Race Rules available from Flying Lines. However, the entire rules fit on one page and they're not difficult to understand. The things you need to know can be explained as answers to a few questions:

What airplane can I build?

The airplane must be a design that has been manufactured as a kit. You can build it from the kit, or you can build it from

scratch. Your finished airplane must be an accurate representation of the kit design! Right now, one choice for a NWSR plane available in kit form is the Brodak Super Fly. This airplane was designed for NCLRA (National Control Line Association) Fox Racing, which is similar to NWSR. Other choices include the Brodak Super Clown, Brodak Tomahawk, Brodak Buster, old-style Sterling (S-1) Ringmaster or similar. Have fun making your own choice, but follow these basic guidelines for best results: Use a kit design that has a mid-wing (not high- or low-wing), and that has a fairly thin airfoil (rules allow a minimum 1-inch-thick wing. Do not choose an airplane with a thick, aerobatic airfoil, such as a Flite Streak. These are not suitable for racing, because they are difficult to handle in multi-plane circumstances, under windy conditions and hard to land in racing style.

What engine can I use?

The stock Fox .35 Stunt engine is the only engine allowed.

Can I modify the airplane?

You may make internal changes which strengthen or lighten the airplane. You may change the landing gear configuration from the kit design. You may not make changes to the external dimensions or shapes of the airplane.

Can I modify the engine?

You can change the needle valve and spray bar assembly. No other modifications are allowed, and the performance-enhancing Fox hemi/stuffer kits are prohibited. You may take the engine apart and flush it out, and reassemble, making sure that everything is properly tightened down and that there are no leaks or binds. Careful break-in per Fox instructions will result in a good-running racing engine.

How should I build and set up my NWSR airplane?

Generally speaking, you can build the plane just as it comes in the kit (or plans). Most commercially manufactured kits don't need any particular lightening or strengthening. There are a couple of things that you should do to make your plane a true racing plane, and a couple of other allowed modifications that can be considered optional.

Essential setup guidelines:

Controls: You are going to set this plane up for level flight, not for aerobatics. Therefore, you want a detuned control system.

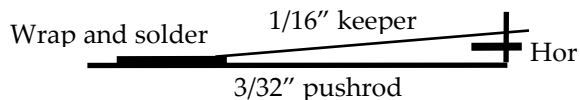
Use a full-size (3-inch) bellcrank, and put the leadouts in the outer holes of the arms. Put the pushrod in the inner hole, nearest the bellcrank hub. At the tail, use a tall elevator horn, and put the pushrod in the hole farthest from the elevator. This will result in a plane that has very little elevator travel, and it will take a lot of arm movement to get control response. This makes for a plane that will have enough control to climb and dive as necessary in racing traffic but will fly level smoothly and land predictably.

You will also balance the plane slightly nose-heavy, for the same reasons. You do not want an airplane that will do stunts!

Do not use threaded quick links, ball links or other such hardware on your pushrod; they will fail under racing conditions. Use only music wire with L-bends or Z-bends for your pushrod ends. See the diagram on top of next page for a bulletproof tail-end connection.

Landing gear: Use a one-wheel gear, positioned just slightly ahead of the center of gravity. At this position, the plane will

Tail end pushrod connector assembly



land without bouncing and roll well along the ground. Note that a 2-inch wheel is required.

The best landing gear is an aluminum sheet gear, bolted into the fuselage on the inboard side. During construction, it would be a good idea to bury some hardwood between the doublers at the landing gear mount location, so that the gear will be securely mounted. You can also use a wire gear; if you choose to do so, make a main leg of 1/8" music wire and a 3/32" supporting strut — and again, bury hardwood where the landing gear will mount. Remember, racing planes take a lot of pounding; a flimsy landing gear will not last long. Both a sheet aluminum gear and a wire gear can optionally be buried inside the fuselage. However, I recommend bolt-on (use clips for the wire style) so that the gear can be replaced if necessary.

Optional allowed enhancements:

There are a few things you are allowed by the rules to do which are not essential but might make your plane last longer and possibly even perform a little better:

Fox stunt engines vibrate quite a bit; anything you can do to stiffen and strengthen the front of the airplane could help assure that your horsepower goes into forward motion rather than into shaking the airplane. I've been told that the Brodak Super Fly, mentioned above, is particularly susceptible to vibration; if you are building one of these, consider strengthening the fuselage to prevent vibration as suggested below.

Some kit designs have short maple engine bearers. Substituting longer bearers — running them back past the leading edge of the wing — will result in a stiffer, stronger fuselage, less prone to vibration and fatigue.

The outboard plywood doubler can be replaced with an aluminum doubler. This will strengthen the front end and help prevent vibration. A thicker inboard doubler also reinforces the nose. If you use an aluminum doubler or an aluminum plate of any kind under the engine, bear in mind that Fox .35 engines' motor mount lugs are not parallel, so mounting on aluminum directly would tend to twist the crankcase. One way to prevent this is to use thin plywood "crush plates" between the engine lugs and the aluminum it's mounted on.

What not to do: Remember, you are not allowed to do anything that changes the airplane's external configuration: Don't clip the wings, leave off the canopy, shorten the rudder, etc.

Finishing:

Your sport racer will lead a hard life. It will be landing at high speed and being caught by your pitman, for example.

I recommend covering all fuselage and tail section areas with lightweight fiberglass cloth, using dope or, better yet if you can find it, epoxy finish to apply the cloth.

Decorating your plane to make it look nice is always fun, but make sure the finish is sturdy. Use Monokote or similar easily repairable plastic finish on the wings and an epoxy or dope finish on the fuselage.

How should I set up my engine?

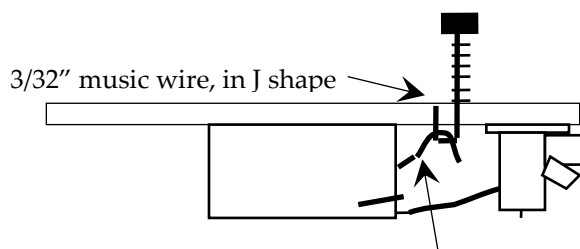
There is no real setup necessary. A clean, well-broken-in stock engine is all you need. You may substitute an after-market needle valve and spraybar assembly if you want to get finer needle valve response.

How do I set up the fuel system?

You need a fuel tank that will run about 50 laps, and less than 70 laps. Fifty laps will give you the mileage you need for the required number of pit stops in the heat and feature races. A tank of about 2 ounces should give you this mileage. Be sure to buy or build a uniflow tank. This is a tank with the fuel pickup tube and the filler tube going to the same location at the back outboard side of the tank. This will give you a consistent engine setting throughout the flight.

Now, here is the one tiny bit of technology you will have to build into your sport racer to go along with the above advice about tanks:

A uniflow tank requires that the overflow tube be capped when the airplane is in flight. Because you will be rapidly refueling the tank on your pit stops, you will want to build a simple spring-loaded pinchoff gizmo so that you don't need to waste time uncapping and recapping the overflow. You just squeeze the pinchoff device when fueling and let go when the tank is full. See the diagram below for how to make very simple pinchoff, using a piece of music wire bent into a "J," a small spring and a wheel collar. Two holes drilled through the fuselage and bushed with brass tubing complete the job.



What accessories and support equipment do I need?

- Propeller: You should try various different props to see what works best on your plane. A good starting place is the ZZ NWSR prop, available from Mike Hazel. Make a trip to the hobby shop and get several props to test, starting with 9x6 or 9x7 props, and variations on that theme.
- Handle: Use a sturdy, narrow-spaced handle, preferably one with a front crossbar so you can hold it with both hands.
- Racing accessory basket: Assemble a small mechanic's basket containing your battery, fueler bottle, prop/plug wrench, spare prop and spare plug.

Do not take a lot of extra tools and repair gear to the circle; it will only get in your way.

What else do I need to know?

Study the rules as published in Flying Lines Issue 198, or go to the website www.Flyinglines.org to see the latest version and for details not covered in this article. A copy of the rules is also available from John Thompson if you don't have Issue 198.

Racing is one of the most fun — and most easily learned — competitive events. It doesn't take much investment to get a lot of enjoyment from your NWSR plane. If you get started now, we'll see you on the field next season!

Questions? Contact John Thompson at johnt4051@aol.com or via Flying Lines.

CONTEST CALENDAR

NOTE! Confirm all contest details with Contest Director!

NCLRA cannot be held responsible for errors or omissions! This calendar is compiled from data collected at the NCLRA website nclra.org. and other published sources. Members can log in to NCLRA.org and submit contest details.

NORTHEAST DISTRICT

2017 RACING SCHEDULE

South Jersey Aero Modelers

Contest Site: Mountain View Park, Middlesex, NJ

Come out and enjoy Control Line Racing.

Inquiries...call Phil Valente-610-692-6469

23-Apr

1 OZ GOODYEAR, FOXBERG, CLOWN RACING-SPORTSMAN, CLOWN SPEED, FOX 35 SPEED, PERKY SPEED

PHIL VALENTE AMA#16155

1523 ULSTER WAY

"WEST CHESTER, PA 19380"

(610) 692-6469

5-Nov

1 OZ GOODYEAR, FOXBERG, CLOWN RACING-SPORTSMAN, CLOWN SPEED, FOX 35 SPEED, PERKY SPEED

PHIL VALENTE AMA#16155

1523 ULSTER WAY

"WEST CHESTER, PA 19380"

(610) 692-6469

19-Nov

1 OZ GOODYEAR, FOXBERG, CLOWN RACING-SPORTSMAN, CLOWN SPEED, FOX 35 SPEED, PERKY SPEED

PHIL VALENTE AMA#16155

1523 ULSTER WAY

"WEST CHESTER, PA 19380"

(610) 692-6469

NORTH CENTRAL DISTRICT

None

NORTHWEST DISTRICT

May 26-27-28

46th Northwest Control-Line Regionals, Roseburg Regional Airport, Roseburg, Ore.

Friday: Speed, Navy Carrier, Old-Time Stunt, Beginner-Intermediate Precision Aerobatics, 15 Fast Combat

Saturday: Speed, Navy Carrier, Scale, Classic Stunt, Profile Stunt, 1/2-A Combat, 80mph Combat

Sunday: Navy Carrier, Racing, Advanced-Expert Precision Aerobatics, AMA Fast Combat

Sponsored by the [Northwest Regionals Management Association](#) in conjunction with other Northwest clubs and individuals.

[Download a flyer](#) with all the details or [email for information](#).

Download a discount [advance entry form](#).

MIDWEST DISTRICT

July 16-22

91st Annual National Aeromodeling Championships

AMA Contest site, Muncie In.

Control Line Racing July 17-20

Monday- AMA Scale Race, DMAA Sportsman Goodyear

Tuesday- 1/2A Mouse 1, NCLRA Quickie Rat

Wednesday- AMA Slow Rat, NCLRA Super Slow Rat

Thursday- F2C Team Race, NCLRA Clown Race

SOUTHEAST DISTRICT

None

SOUTH CENTRAL DISTRICT

Feb 19

Sportsman Goodyear, Sport Goodyear Speed, Sport Goodyear pitstop contest, Sport Goodyear relay race (see below)

Here are the Racing activities for President's Day. Racing **Sunday, Feb 19**

Sportsman Goodyear speed: 8 laps, flying start, flown in the pylon. 3 flights, single best speed.

Sportsman Goodyear Pit Stop contest: 8 timed laps must include a pit stop. 3 flights, single best time.

Sportsman Goodyear Relay race: Pilot stands in center of circle holding prop and glow plug.

Whistle blows, time starts. Pilot runs to airplane, gives prop and glow plug to mechanic. Pilot runs back

to handle while mechanic installs prop and plug and starts plane. time stops when plane completes one lap.

(Plane may be fuelled and engine warmed up ahead of time) 3 flights, single best time.

Sportsman Goodyear race: Back to back 80 lap heats, top 3 (or 6) go to 160 lap final.

April 28-30

*Friday: F2C *Saturday: Quickie Rat, Super Slow Rat,

Sportsman Goodyear *Sunday: AMA Goodyear, Mouse I,

Fox Goldberg

June 10

Quickie Rat, Super Slow Rat, Sport Goodyear, Fox Goldberg, Mouse I.

Sept 2 same as June 10

Sep 29- Oct 1 same as April 28-30

SOUTHWEST DISTRICT

2017 Whittier Narrows Speed, Combat, & Racing Contest Calendar

Whittier Narrows Park, S. El Monte, Ca., **34.042737, -**

118.070392

PRELIMINARY-rev A

Feb 11-12

Lenny Waltemath Speed & Dennis Schauer Racing Memorial, sanction #17-285

All speed events including electric, 301-310 & 334,335 + perky, NW & NASS Sport Jet & C Speed.

Racing Sunday only: SCAR Goodyear, NCLRA Clown,

Super Slow Rat/Fox Race and Quickie Rat

Combat both days.

CD & Speed ED: Howard Doering_h.714-638-4937

c.714-394-5304

Racing ED: Ron Duly h: 818-843-1748

Apr 8-9

Bill Nusz Speed and Herb Stockton Racing Memorial

All speed events including electric, 301-310 & 334,335 + perky & NASS Sport Jet & C Speed.

Racing Sunday only: SCAR Goodyear, NCLRA Clown, Super Slow Rat/Fox Race and Quickie Rat

Top 20 score Combat

CD & Speed ED: Jon DeFries 951-420-1780

Racing ED:

Combat ED:

June 3-4

Bill & Bev Wisniewski Memorial Speed and Racing

All speed events including electric, 301-310 & 334,335 + perky & NASS Sport Jet & C Speed.

Racing Sunday only: SCAR Goodyear, NCLRA Clown, Super Slow Rat/Fox Race and Quickie Rat

CD & Speed ED: Joe Brownlee h: 714-895-1857

c: 714-393-1940

Racing ED:

Sept 9-10

Wayne Trivin Memorial Speed and Racing

All speed events including electric, 301-310 & 334,335 + perky & NASS Sport Jet & C Speed.

Racing Sunday only: SCAR Goodyear, NCLRA Clown, Super Slow Rat/Fox Race and Quickie Rat

CD & Racing ED: Ron Duly h: 818-843-1748

Speed ED:

Oct 21-22

Virgil Wilbur Memorial Speed, Combat, and Racing, sanction #17-284

All speed events including electric, 301-310 & 334,335 + perky & NASS Sport Jet & C Speed.

Combat: 75mph slow, F2D fast

Racing Sunday only: SCAR Goodyear, NCLRA Clown, Super Slow Rat/Fox Race and Quickie Rat

CD & Speed ED: Howard Doering h.714-638-4937

c.714-394-5304

Racing ED:

Combat ED:

Dec 2-3

TOYS FOR TOTS Speed, Combat and Racing

All speed events including electric, 301-310 & 334,335 + perky & NASS Sport Jet & C Speed, Torquette Speed, Hollow Log Speed.

Combat: 75mph slow, F2D fast

Racing Sunday only: SCAR Goodyear, NCLRA Clown & Super Slow Rat/Fox Race and Quickie Rat, Musciano Log Racing

Entry fee: 1 new unwrapped toy, approx value \$10-\$20.

CD & Racing ED: Charlie Johnson

Speed ED:

Combat ED:

NOTES:

1. **Contact CD or ED to confirm contest dates before traveling long distances.**
2. All Racing events Sunday only
3. Same four Racing events each contest
4. Clown will be flown on 60\u2019 lines per NCLRA NATS rules
5. Other Racing events may be flown if two entrants show up ready to race
6. Combat and/or Navy Carrier events may be added to some contests.

NATIONAL RECORDS

SLOW RAT (.25 engine)

Op (70 laps) 3:01.52 Jim Gall/ Les Akre 7/04/11
(140 laps) 6:17.59 Russ Green/ Bill Lee 7/07/09
(no Jr or Sr record)

½ A MOUSE 1

Jr (50 Laps) 2:37.57 Scott Matson 7/15/99
(100 Laps) 5:17.68 Scott Matson 7/17/99
Sr (50 Laps) 2:44.68 Dave Rolley Jr 7/15/99
(100 Laps) 5:20.11 D.J. Parr 7/16/98
Op (50 Laps) 2:12.3 Jim Holland 7/16/04
(100 Laps) 4:22 Ryan & Gibeault 7/15/99

½ A MOUSE 2

Op (70 Laps) 3:01.24 MacCarthy/Kerr 7/11/03
(140 Laps) 6:18.13 Whitney/Hallas 7/10/09

SCALE RACING

Jr (70 Laps) 2:50.65 Bob Fogg III 7/16/91
(140 Laps) 6:08.55 Bob Fogg III 6/23/92
Sr (70 Laps) 3:15.12 Doug Short 7/11/00
(140 Laps) 5:40.05 Bob Fogg III 7/11/95
Op (70 Laps) 2:39.38 Willoughby/Oge 7/15/97
(140 Laps) 5:33.04 Bob Fogg Sr 7/16/91

F2C TEAM RACING

Op (100 Laps) 3:42 Fisher/Wilk 7/13/15
(200 Laps) 6:43.32 Fisher/Wilk 7/16/12

F2CN (NCLRA RULES)

100 Laps 4:14.84 Bill Lee/ Russ Green 7/07/11
200 Laps 8:37:10 Wallick/Brozo 7/15/13

NCLRA 'B' TEAM RACING

Op (35 Laps) 1:24.34 Burke/Duly 7/12/05
(70 Laps) 3:05.73 Green/Lee 7/10/09
(35+70 Laps) 4:33.91 Green/Lee 7/10/09
(140 Laps) 6:08.80 Green/Lee 7/10/09

RAT RACING (.15 RULE)

Op (70 Laps) 2:44.6 Jim Holland 7/15/04
(140 Laps) 5:33.1 Jim Holland 7/15/04
Jr-Sr No record established

NCLRA FOX RACE

Jr (100 Laps) 5:57.11 Scott Matson 7/11/99
Sr (100 Laps) 5:28.09 Scott Matson 7/16/02
Op (100 Laps) 5:32.55 Tim Stone/Bob Oge 7/10/05

NCLRA CLOWN RACE

Op (7 ½ Min.) 150 Laps Bischoff/ Lee 7/15/15
Op (15 Min.) 284 Laps Bischoff/Lee 7/15/15

NCLRA TEXAS QUICKIE RAT

Op (70 Laps) 2:58:72 Bill Lee/Bill Bischoff 7/18/13
(140 Laps) 6:07.01 John McCollum/Bill Lee 7/14/05

NCLRA SUPER SLOW RAT

(100 Laps) 5:14.30 Bill Lee/Russ Green 7/05/09

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Paypal: billbisch@hotmail.com/ mail checks to William Bischoff,
1809 Melody Ln, Garland TX 75042. For questions, call (972)840-
2135 or email billbisch@hotmail.com

Officer's Addresses

President

Bill Bischoff

1809 Melody Ln
Garland, TX 75042
Phone Numbers:
972-840-2135
972-245-8379
Email: billbisch@hotmail.com

Vice- President

Les Akre

13336-129st.
Edmonton, Alberta T5L-1J8
Canada
Home: 780-454-5723
Cell(or other): 780-919-2792
E-Mail: scaleracer@hotmail.com

Secty/Treas

Melvin Schuette

P. O Box 240
Auburn, KS 66402
Home: 785-256-2583
Work: 785-221-7042
Cell(or other): 785-221-7042
E-Mail: mbschuette@cox.net

Editor

Les Akre
13336-129st.
Edmonton, Alberta T5L-1J8
Canada
Home: 780-454-5723
Cell(or other): 780-919-2792
E-Mail: scaleracer@hotmail.com

North West Representative (none)

North Central Representative

Steve Wilk
3257 Welcome Ave. N.
Crystal, MN 55422
Home: 763-531-0604
Cell: 763-257-3588
E-Mail: swilk117@yahoo.com

North East Representative

Phil Valente

1523 Ulster Way
West Chester, PA 19380
Home: 610-692-6469
E-Mail: phil_valente@millipore.com

Midwest Representative

Robert Heywood

1267 Old Country Drive
Dayton, OH 45414-1918
Phone Numbers:
937-890-7555
937-286-8202
Email: rheywood@woh.rr.com

South West Representative

Ron Duly

1806 Karen St.
Burbank, CA 91504
Home 818-843-1748
Email: rduly@earthlink.net

South Central Representative

Bill Bischoff

1809 Melody Ln
Garland, TX 75042
Phone Numbers:
972-840-2135
972-245-8379
Email: billbisch@hotmail.com

South East Representative

Jim Bradley

1337 Pine Sap Court
Orlando, FL 32825
Home: 407-277-9132
BMP4CARBON@aol.com

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Basic membership is free. Simply apply on the web site : <http://www.NCLRA.org/> You will get the Torque Roll newsletter electronically every other month. In addition, you will get voting privileges for whenever a vote by the membership is required.

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