

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



TO



Perth, Australia- Mike Greb ponders how to refuel a wallaby, but the wallaby's stance clearly indicates he is the pilot.

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Torque Roll Issue #137
April 2018

PRESIDENT - Bill Bischoff

Well boys and girls, there's not a lot going on right now. The weather has been totally uncooperative so far this year, alternating periods of rain with periods of wind. Although we have been teased with good flying days during the work week, I think I have only gotten to fly once so far this year. Hopefully we'll have decent weather for our contest at the end of April.

Officer nominations are now open. As I mentioned last time, I'm willing to go another term as Prez, but Melvin is ready to retire as sec/treas. Les has mentioned to me that he will go another term as VP. The ballot will be in the next issue, so stay tuned...

The revised NATS schedule is official, and NATS entry is open. Don't expect an entry form in the mail, though. AMA is encouraging everyone to submit their NATS entries online. Remember, its modelaircraft.org.

If you wish to support our F2 Teams competing at the upcoming W.C.'s in France this summer, Shirts and Hats etc. are available.

Visit the team website at <https://www.2018clwc.org> and look for the "team uniform" (whatever) link that is there. You can order them online.

As for a donation: send it to Colleen Pierce at AMA Headquarters and specify it is for the F2C Team Fund.

SOUTHWEST - Ron Duly

I'd like to tell everyone about the excellent contest we had this past Month. I'd like to. I really would. However, it was an untest. See, "con" in Spanish means "with", like chili con carne means hot beans with horse meat.....or something like that. So a "contest" means a test with people. Yep, it does. Therefore, a contest without people is, are you ready for this, an "untest". I rest my case. Seems that the contest schedule didn't get to the right folks, the Olympics were more interesting or nobody cares anymore. Dave Hull and Dave Braun joined yours truly for a beautiful day of bench racing and, oh yes, test flying Dave's new 1/2A trainer plane. Other than that, we didn't fly, Just talked. A lot. We then finished with a fine meal at the usual spot. The next scheduled CONTEST is April 8th, then June 24, September 9, October 21 and finally December 2, all at Whittier Narrows Park, El Monte, California, USA, planet Earth. There, you now have all the information needed for the 2018 SCAR schedule. Come on out. We are nice people. We talk, we fly. We have fun.

SOUTH CENTRAL - Bill Bischoff

A few hearty (foolhardy?) stunt fliers flew in the February contest in Dallas, but the racers all left their stuff in their cars. I'm looking forward to actually getting to fly in April. Look for a glowing report next time.

MIDWEST - Bob Heywood

The Cleveland area based North Coast Control Liners club is planning a club racing event for this season. Dave Evar is the race director. He has provided the following information and rules package:

North Coast Control Liners Mixed Class Scale Aircraft Racing Rules

These rules were copied, plagiarized, or outright stolen from New Jersey, Oregon, Kansas, and Texas Goodyear Racing Rules, then scrambled expanded and mutilated for local purposes. Any issue not expressed within will be referred to the AMA Scale Racing Rules for resolution.

All flight participants, pilot, proxy, and pit crew, must be current AMA members.

Engines: Any model aircraft engines up to .1525 in³ are permitted in this event. It must be a standard production engine; no diesel, prototypes, aftermarket racing, or factory specials are allowed. Mufflers not required.

To increase choices of aircraft and add variety to the event, model can be a scale version of any single engine land-based racing aircraft, in any air-racing event. Thompson, Bendix, Formula 1, Formula V, Goodyear, MacRobertson, Powder Puff, Reno, etc.

Models will be profile fuselage type. Wingspan minimum of 25 in.

The tail surfaces may be enlarged for stability. Scale cheek cowls encouraged.

Landing gear must appear prototype, but may be located forward for better ground handling.

No builder of the model rule. Model must be painted, and canopy easily distinguished.

An AMA license number must be on the upper right wing. Safety inspection is required before racing.

Tank size maximum two ounces.

The club will furnish 10% nitro fuel for race heats only.

Oil content will be castor/synthetic stunt fuel blend or all castor. Fuel shut-off devices are encouraged. Although pit stops are not required they will occur at an inconvenient time and/or location. Shut-offs save wear and tear on pit crews.





To facilitate getting racers into the air quickly at the beginning of the race, electric starters are permitted for first start of each heat. The starter will announce, "Start your engines". When all engines are running a start signal will be given. Be prepared. All subsequent starts during a heat will be manual.

No "hot gloves".

Line length is 60 ft., +/- 6 inches. Line size per AMA rules, .14 solid, .15 stranded, and since this is a fun fly event and not official or for record, 40lb. test Spectra fishing line is also permitted. Spectra lines require uni-knot as approved by AMA. Pull test is 25 lbs., before each heat and whenever lines are disconnected then reconnected or changed.

Appearance scoring one time, before first flight, maximum 20 points:

1 to 9 points for scale accuracy. Proof of scale per AMA rules receives 1 point. Proof of scale limited to 1 page or an unpainted model. 1 to 10 points for craftsmanship. Points will be awarded by those present when plane is judged, and will be averaged. A flyer cannot vote for their plane. In case of appearance tie, lowest flight ET for a plane not in the final race will be named best appearance.

To allow other disciplines to enjoy Control Line flying too, practice flights will be on different circle unless other fliers agree to allow practice on the main circle. Three-up practice is encouraged as it will be necessary for the final race.

There are no flight points.

One plane per contestant. Choose well before the July race. Practice hard.



Substitution permitted if plane crashes during season in, or after first heat.

Plane standings will be reset. Lowest elapsed time is 1st, next highest 2nd, and next highest 3rd. Flight order is according to race day sign-up sheet.

There will be three race days, one for each month, July, August, and September, on the regular meeting day. Rain date will be the next fun meeting.

Field layout will be according to AMA rules. It is important for safety and event control.

Heat races will be 70 laps, two-up or three-up. No byes. Fly low (5 – 15 ft.) pass high. Race heats to be flown on our main circle. Time permitting, additional rounds may be flown if contestants agree. ET determines place standing, low to high.

The top three planes will fly three-up, 140 laps at the fall picnic in October. Date, time and rain date to be determined. If the fliers of the three top planes are not present, proxy pilots are permitted. If no proxy available, the next fastest flier will be drafted until three fliers are available. Only the results in the final race count. Be there or be square.

Lowest ET in the finals determines the 2014 Mixed Class Scale Aircraft Racing Champion.

Race awards to third place. One appearance award. There could be a participation award.

For easy reference all participant ETs will be recorded, heat or practice, and maintained through the season. Practice ET reporting optional and is responsibility of flyer.

It is the intent to keep this competition low-key. Suggested changes to these rules are encouraged and considered, but change is not guaranteed."

Dave also mentioned that wing construction is limited to ¼" sheet wood, airfoiled as desired.

The club flies off grass so that adds an extra challenge.

Club events like this can be a lot of fun. Here's hoping things work out that way.

"Fly low...Fly fast"

Clown Race Engines

By Les Akre

This article will focus on Engines suitable for Clown Race.

There are a great many choices available today, in fact, far more than when the event first surfaced in the North West many years ago.

Without going deep into the history of the event, it has morphed into one that eventually focused on a combination of speed and range. You are essentially racing against the clock, as the intention is to run as many laps as possible in the 7.5 minute preliminary heat(s), to qualify for the 15 Minute Final.

The Engines that I have personally used, pitted, or have seen others use has been extensive. While there was a worry at one time that diesels would "take over" this event, that hasn't happened to date.

Basically, any engine up to and including .19 cu. in. that will restart on a pit stop can be used in this event. Now, if you want to be competitive, then the selection narrows somewhat, and the price starts to go up.

I started out in Clown Race using an out of production Moki .15 Sport Combat Engine, and have used or pitted Nelson .15's both Glow and Diesel, the Norvell .15AME, the Fox .15 BB as modified by Paul Gibeault, the O.S. .15 CVA, and lastly the engine that many say have killed the event, the O.S. .18TZ. Engines I have seen in use by fellow competitors include the Rossi .15 mk2, the Nelson .19, the O.S. .15CV, and Nova Rossi .15

Most of these engines when tuned properly, are capable of running at least 150 laps/7.5 minute heat on 52' lines. On the 60' lines that we are running now at the Nat's, expect up to 10 laps less, and a few mph slower.

The rotational times (seconds) per lap with the extremely fast O.S. .18TZ, combined with the advancing age of the current Pilot's, has necessitated the change to 60' lines at the Nat's, although many clubs still run 52' lines at their local contests, some with restricted engine choices.

In addition to modified rule sets that limit engine choices, some also place a cap on the lap counts to keep the competition close. In the case of the capped lap counts, if you consistently hit these marks or exceed them, you move up the "Open" Competition, and get to play with the "Big Boys".

Looking for a suitable engine for Clown Race, is the same for many other racing events. You need to balance cost with quality. To some individuals, cost is the only concern, to others, money is no object! Most of us fit in somewhere between. With that said, let's get started.

My first concern for any racing engine is: How good is the Piston/Cylinder assy.

If well made, the piston will have a relief taper at the top of the crown that prevents the piston's top edge from catching in the ports, and some relief in the skirt area below the wrist pin, which prevents excessive drag. The liner should have some taper above the exhaust port, hopefully on the order of .001"~.0015". Since we can't check this without disassembly, we have to either ask if anyone else has ever used this particular engine, or knows anything about it, or just roll the dice and take a chance. If you are experienced, then you can probably tell from feel if the Piston/Liner in any particular engine might be suitable.

So, what kinds of engines are suitable?

Glow and Diesels are both suitable, just be forewarned, diesels need an experienced hand if you want to be successful. They are also more expensive and fuel components more difficult to come by. However, don't let that stop you if your heart is set!

I have found that the most successful Glow engines used in Clown Race have relatively moderate timing numbers. After all,

you need a combination of speed AND economy. To that end, most will have exhaust timings around 150-155 degrees, and intakes around 112-118 degrees, with shaft timings around 200 degrees total.

That fancy high timed Gillot Rossi .15, or Nelson .15 that you have in your Open class Scale Racer will appear very tempting, but you may find that when choked down for mileage purposes, they don't run any faster the moderately timed engines, and get worse fuel economy.

I have not kept up on whether or not any new engines have hit the market. Undoubtedly, there will be some that with minimal modification may be quite suitable. The ASP/Magnum line that Bill Bischoff markets would make for a good budget engine to start with. It is an true ABC engine with dual ball bearings and appears to have a reasonably good Piston/Liner set (at least for the cost) and with a hard chromed Liner, should last awhile if the piston material is not too soft. For the Clown Race application, you could buy, or make your own venturi as there is no size restriction.

You can run the engine in stock condition, but optimizing certain areas of the engine will improve performance. Most of the work I do on a Clown Race engine is focused on the head and venturi/Needle valve assy. To me, these are the two most important areas of concern, and the easiest to realize a performance gain. I do not find porting work and timing changes necessary due to the rpm range a typical Clown Race engine runs at, but do a deburr around the cylinder port windows and also the crank timing window

I know there are some folks who feel differently about engine mods and what should be done, and that's fine, but I do what works for me!

When setting up the engine, I will check the plug height first (Height of plug element to top of piston at TDC). This number is simply the result of adding your TDC. Number + head clearance + depth from squish band face to plug element.

For a .15-.18 size motor, I like these to be around .093" to .105" with a head clearance of .003"- .005".

Jacking the plug height up or down effectively advances, or retards your ignition respectively for any given plug you are running. You can also fine tune afterwards by changing plug heat ranges.

Setting the plug height can sometimes be a bit of a pain, especially if it's already too low. On most of the engines suitable for Clown Race, it should be fairly close, either in the range mentioned or a bit high. If too high, you have to remove material from the bottom of the flange to get the head to sit lower in the Cylinder bore, and also from the squish band face to retain the amount of head clearance you wish to use. You may need to enlarge the combustion chamber if you find you're blowing plugs often.

If you have an engine whose design is such that the combustion chamber sits flush on top of the Cylinder instead of down inside, then you need to only remove material from the outer squish band face if the plug height is too high.

The venturi/Needle Valve assy. is next. I will use either Nelson, Super Tigre, or Genuine Rossi Needle Valve assemblies exclusively.

The venturi's method of fuel delivery can be a "sprinkler or finger" type, or a "Peripheral" type, or a conventional spraybar through the middle type. Any of these are fine, as long as they

don't leak air! The sizing of the venturi bore comes down to experience or "your best guess" as you need some speed as well as economy. If your needle starts to become "Dead" you've gone too far and should reduce the venturi's bore size a bit. Any other mods should be relative to fitment of the engine, tank etc., and for convenience sake, as long it doesn't detract from performance.

In closing, the object of this article has not been to tell you what single engine to use to be successful or win. I have used many different engines, and won various Clown Races with all of them at one time or another including the Nat's. Start by Building a good straight, reasonably lightweight airplane in the 18-22 oz. range. Use the best quality engine you can afford. Optimize the key areas mentioned if you are able; select a venturi bore size that allows 45-50 laps per tank at least. Select a "good" fuel tank design that feeds ALL of the fuel, runs as steady as possible, and most of all is easy to fill during the pit. Select a prop within the rules that allows good air speed while maximizing economy.

I hope you all found this helpful. Feel free to contact me with any comments or questions.

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

None

NORTH CENTRAL DISTRICT

None

NORTHWEST DISTRICT

May 25-27

47th 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, Classic Stunt, Profile Stunt, Scale, High-Performance 1/2-A Combat and 80mph Combat

Sunday: Navy Carrier, Advanced-Expert Precision Aerobatics, AMA Fast Combat, Class I Mouse Race, NW Sport Race, NW Super Sport Race, Clown Race.

MIDWEST DISTRICT

**92nd Annual National Aeromodeling Championships
AMA Contest site, Muncie In.**

Control Line Racing July 30 - August 3

Monday, July 30

AM: Clown, PM: F2C

Tuesday, July 31

AM: Mouse I, PM: Quickie Rat

Wednesday, Aug 1

AM AMA Slow Rat, PM: Super Slow Rat

Thursday, Aug 2

AM: AMA Goodyear, PM: Sport Goodyear

Evening: Dinner/Meeting

Friday, Aug 3

AM: 500 lap Sportsman Goodyear

SOUTHEAST DISTRICT

None

SOUTH CENTRAL DISTRICT

Feb 17

Saturday: Quickie Rat, Super Slow Rat, Sportsman Goodyear, Fox Goldberg, Mouse I

April 28-29

Saturday: Quickie Rat, Super Slow Rat, Sportsman Goodyear

Sunday: Clown, AMA Goodyear, Mouse I, Fox Goldberg

June 9

Saturday: Quickie Rat, Super Slow Rat, Sportsman Goodyear, Fox Goldberg, Mouse I

Sept 1

Saturday: Quickie Rat, Super Slow Rat, Sportsman Goodyear, Fox Goldberg, Mouse I

Oct 13-14

Saturday: Quickie Rat, Super Slow Rat, Sportsman Goodyear

Sunday: Clown, AMA Goodyear, Mouse I, Fox Goldberg

SOUTHWEST DISTRICT

Feb 10-11

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

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

c: 714-393-1940

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

Apr 7-8

Bill Nusz Speed, Combat, and Herb Stockton

Racing Memorial, sanction #17/836

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

Top 20 score MACA Combat: Saturday 80 mph combat, double elimination and HP 1/2a 42 foot lines, single elimination. Sunday

F2D fast combat, double elimination, and f2d for cuts, single elimination. 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: Don Jensen flyjensen56@verizon.net Cell 909-576-3430

June 23-24

Bill & Bev Wisniewski Memorial Speed and Racing, sanction #

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

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

c: 714-393-1940. Racing ED:

Sept 8-9

Wayne Trivin Memorial Speed and Racing, sanction

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

CD & Racing ED:

Speed ED:

Oct 20-21

Virgil Wilbur Memorial Speed, Combat, and Racing, sanction

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

Top 20 score MACA Combat: Saturday 80 mph combat, double elimination and HP 1/2a 42 foot lines, single elimination. Sunday F2D fast combat, double elimination, and f2d for cuts, single elimination. 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: Don Jensen flyjensen56@verizon.net Cell 909-576-3430

Dec 1-2

TOYS FOR TOTS Speed, Combat and Racing, sanction

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

Top 20 score MACA Combat: Saturday 80 mph combat, double elimination and HP 1/2a 42 foot lines, single elimination. Sunday F2D fast combat, double elimination, and f2d for cuts, single elimination. 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:

Speed ED: Combat ED: Don Jensen flyjensen56@verizon.net Cell 909-576-3430

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' lines per NCLRA NATS rules
5. Other Racing events may be flown if two entrants show up ready to race
6. All combat is top 20 score eligible.



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

(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



MUNCIE 500



500 LAP SPORTSMAN GOODYEAR RACE

Friday August 3

Races flown per DMAA Sportsman Goodyear rules except as noted
(rules available at dmaa-1902.org)

entries: Each entry gets one 500 lap race. Fastest time wins. One

airplane, one engine. No limit on prop/ plug changes.

pit stops: Minimum of 9 required (avg. 50 laps per tank)

entry fee: One dollar. Winner takes all!



DMAA Spring Warm-up
Gene Hempel Memorial
April 27th, 28th & 29th 2018
Control Line Racing & Speed
Site: Samuell Hobby Park

Northwest Highway & Garland Rd. Dallas, Texas
Samuell Garland Park
11500 McCree Rd. Dallas TX. 75238
GPS 32.866867, -96.671400
Class AA AMA Sanction # —

Pilots Meeting at 9:30 AM Friday, Saturday & Sunday

Friday 04-27

Record Ratio Speed
NASS Sport Jet
NASS Perky Speed

Saturday 04-28

Texas Quickie Rat
Super Slow Rat
Sport Goodyear
Record Ratio Speed
NASS Sport Jet
NASS Perky Speed

Sunday 04-29

Clown
AMA Goodyear
Mouse 1
Goldberg
Record Ratio Speed
NASS Sport Jet
NASS Perky Speed

Speed events all three days. All events are (JSO). Helmets required for racing pit crews.

Entry Fee: \$15 first event, \$5 each additional event, \$25 maximum.

Contest Director: Patrick Hempel
For additional info.
See Web Site: www.dmaa-1902.org

Sponsored by
Dallas Model Aircraft Association
Fuel and awards provided
By NASS, DMAA & NCLRA
AMA: License & Entry fee required

Racing Event Director: Bill Lee



SUPPLIERS

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ELIMINATOR PROPS

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Fuel ready mixed top quality finest ingredients.
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Contact Mike Hazel at: 503-859-2905 Day Phone or 503-871-
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NELSON COMPETITION ENGINES

121 Pebble Creek Lane, Zelienople, PA 16063
Manufacturer of NELSON Racing Engines and parts, FAI Pans
for F2A & FIC Custom Button Heads, Nelson Glow Plugs, many
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MARC WARWASHANA

Rubber fastfills, vintage Dons' racing wheels.
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Whitmore Lake, MI 48189-9124
Phone: 734-449-7355 E-Mail: whellieman@gmail.com

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Tom Wilk, 301 W. Redwing St., Duluth, MN 55803
Phone: 218-724-0928(hm) E-Mail: tawilk36@cpinternet.com

ZALP ENGINES

Zalp F2C&F2D engines- Bob Whitney
456 Garvey rd sw, Palm Bay FL 32908
f2cracer@aol.com

BISCHOFF'S SPORTSMAN GOODYEAR RACING PARTS

ASP S15A engine **\$65.00**

New in bag. (Engines came without boxes)
Includes stock muffler and carburetor.
Requires venturi and needle valve assembly.

ASP/ Magnum 15 VENTURI **\$10.00**

1/4" ID, 4mm spraybar, fits 10mm hole

RSM Supertigre style needle assembly **\$10.00**

Aluminum landing gear struts **\$12.00**

.090" 2024-T3, drilled & tapped, with screws
Edges pre-rounded.

wheels and axles **\$6.00**

1 1/4" Williams Bros. wheels, 1/4" axles

1/4" axles w/o wheels **\$2.00**

With hardware- requires 1/4" hole in wheels

1 oz fuel tank per Margaret June plans **\$20.00**

bellcrank button kit **\$2.00**

includes hex buttons, eyelets, screws

fuel shutoff trigger wire **\$1.00**

per Margaret June article

fuel bottle with fill fitting **8 oz. \$10.00**

16 oz. \$11.00

Deluxe fuel bottle w/spring valve **8 oz. \$14.00**

16 oz. \$15.00

racing handle, 3" spacing **\$25.00**

metal frame, wooden grip, stainless cable
(other spacing available by request)

Shipping \$10.00 for orders with engines / \$8.00 per order including fuel tanks
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