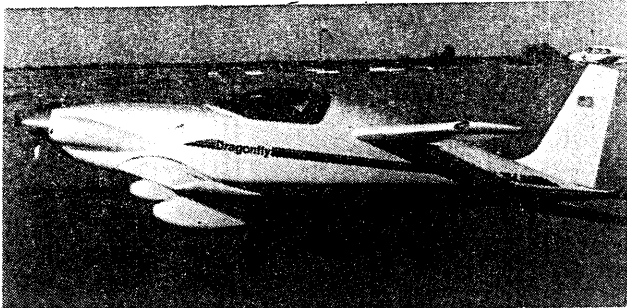
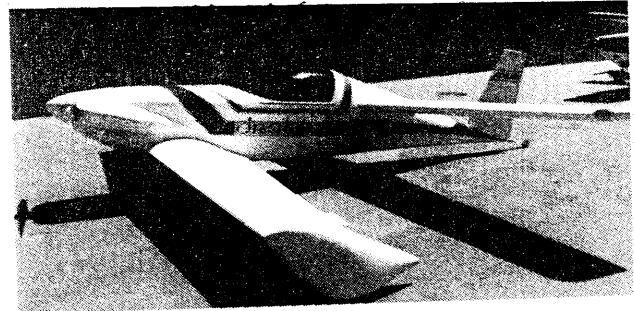


SUBSCRIPTION PRICE \$10.00 \$15.00 OVERSEAS



JACK LEVITTS NEW D-FLY



JUSTIN MACE'S MARK II

OSHKOSH '86

There were eight (8) Dragonflys at Oshkosh '86. Seven Mark I's from various points around the country and the Prototype Mark II.

Del Bradley of Osage Beach, Missouri took the "Best Dragonfly of the Year" award with his beautiful Mark I, just completed with enough time to fly the restrictions off and get it to Oshkosh. Judging was done by two Dragonfly builders who are still in the construction stage. All of the Dragonflys at Oshkosh this year were way above the average, I think, of other aircraft sitting on the line and there wasn't a bad Dragonfly in the bunch.

I've looked at a lot of Dragonflys and of course, I may be a little bit prejudiced, but I believe that the average Dragonfly is a better built airplane and shows a better level of workmanship than the average aircraft of several other designs. The majority of you guys are doing some real nice work and it'll pay off in good flying airplanes.

DRAGONFLY SWARMING 1986

The 1986 Dragonfly builders' get-together here at Eloy will be held October 24, 25 and 26. This year it will be primarily a hands-on, how-to-do-it session with lots of opportunity for you builders who maybe are not too far into the project to get some hands on experience in the Flight Center workshop. We'll have one builder in there building a new Mark II canard for his Mark I and another builder building a complete pre-fab airplane. We are scheduling these builders to work through the weekend of the swarming so that in the three days that you are here you can observe some of the techniques we use and carry those techniques home with you.

I believe that many of you will find that the techniques that you observe and the knowledge gained here may well save you enough money to offset the cost of whatever

travel expenses you may incur getting here.

If you're planning on getting involved in hands-on work, bring a change of old clothes so that you can get a little bit sloppy and plan on being busy from 9:00 AM to 5:00 PM Friday and Saturday. We will be running a session a half day on Sunday. Most people who have driven here will want to get away Sunday afternoon in order to be back on their jobs Monday.

We are planning on having a sale during the Swarming of many items that are used in building a Dragonfly and you guys will be able to save considerable money on items that we've had in inventory for a long time.

Most of these items will be brand new merchandise, but parts that are somewhat obsolete and slow movers or overstocked items. New current production items, not in overstock, won't be discounted.

As usual, we'll be giving as many rides to builders who haven't yet had a chance to ride in the Prototype as time permits and I wouldn't be surprised if some of the other builders who will be here in finished Dragonflys will also give rides. Of course, we can't commit them. They are free to use their airplanes as they want to. Don Purdy and Troy Burris were here last year and between the three of us, we gave about 150 rides over the three day weekend and again, I want to thank both Don and Troy for their help. It was invaluable.

We're going to have a fantastic meal this year on Sat. eve. A local catering firm does a whole roast pig on a spit thing that is really great. We were invited to an affair recently where they did this and everyone raved about it, even our states governor who was there. We figure if it's good enough for the governor, it's good enough for us Dragonfly builders. Make your reservations now.

Those of you who may arrive in campers, motorhomes and etc. may park free here on the airport.

MAGNUM ENGINE IN THE PROTOTYPE

We installed a new engine in Dragonfly just prior to leaving for Oshkosh. We had intended to have it in and have a couple of weeks to fly it, but as usual the world fell in on us and there wasn't time to meet the schedule we'd planned for ourselves. We did get the engine in late Saturday afternoon and I flew it about 15 minutes. We pulled the cowling and checked for oil leaks, put the cowling back on and I left for Oshkosh the next morning. The Magnum engine performed flawlessly the whole trip and to say that we're pleased with the engine and Dragonfly's performance with it would be an understatement.

I've had no problem with anything since putting the new engine in there. The airplane now has 37 hours flight time on a new engine and we haven't laid a wrench on it yet.

Because it has individual cylinder heads, hydraulic valve lifters, totally solid state electronic ignition, with automatically variable timing, our new Ultracarb carburetion system with automatic mixture enrichment at full throttle, virtually everything that we used to take care of from the cockpit is being taken care of by the engine now. All I'm doing is flying it and enjoying it.

You'll note from the picture that we've created a new low profile tuned induction system (intake manifold - for you less technical types) that tucks right inside the off-the-shelf Dragonfly cowling. In fact, it's inside the original Prototype cowling without making any changes whatever. We've got the carburetor tucked up behind the engine, by using a top mount starter. There's all kinds of room under the engine now. The net result has been a real compact package that just works very well.

MAGNUM PLUS

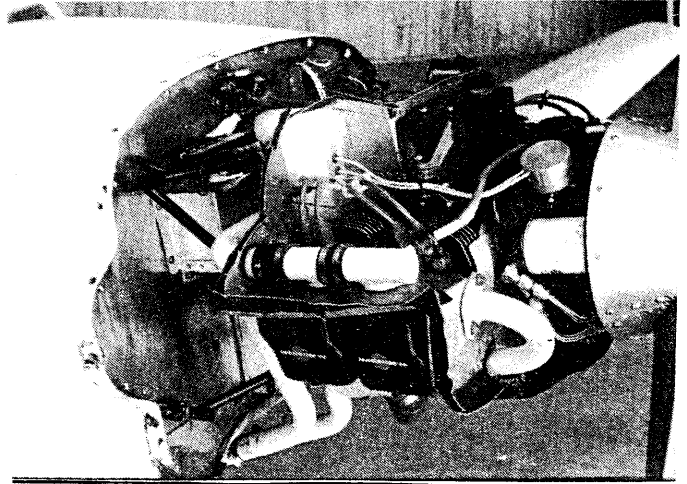
Our Magnum 75 series engines have a bore of 94mm and a stroke of 69mm giving it a displacement of 1915cc's. The Magnum 75 produces 75 horsepower at 3400 RPM and does it continuously, meaning you could push the throttle to the wall and leave it there. The engine will not over heat or damage itself through continuous power delivery.

The Magnum "Plus" engine is an offshoot of an engine designed for a remotely piloted vehicle (radio-controlled surveillance drone) and is almost 2200cc's in displacement. With our own individual cylinder heads, we can use a much larger cylinder bore than is possible when you're locked into modifying a stock VW cylinder head. So we have been able to use an extremely large bore and yet a relatively short stroke and come up with a big engine

that will stay together. The power output is 82 horsepower at 3400 RPM. Weight is 167 lbs. It fits right in a standard Dragonfly cowling and has all of these features as standard equipment:

Individual cylinder heads, hydraulic valve lifters, full-flow oil filter, Ultra-Carb carburetion system with mixture control, totally solid state dual electronic ignition system with TorqueSensor timing, dynamo type alternator with solid state voltage regulator and an extra large oil cooler.

This engine is simply the most powerful normally aspirated Volkswagen based engine that you can bolt into your Dragonfly. The individual aircraft cylinder heads, the solid state ignition with variable timing



and the hydraulic lifters are only available from HAPI. None of our competitors even offer them. Now while we're on the subject, I'd like you Dragonfly builders to take note, there's something else that we've always offered that none of our competition offers, just a simple little thing called a written warranty. We have always warranted our engines for 1 year or 100 hours, whichever comes first from the day that you get the airworthiness certificate on your airplane. I note that most of our competitors don't offer a written warranty at all. One wants you to sign a liability disclaimer before they'll sell you an engine. On the Magnum Plus engines, we'll offer a real simple warranty; three years or 300 hours, whichever comes first from the day you get the airworthiness certificate.

TRI-FLY UPDATE

My son, Pat, and I have been so busy with engines so far this year, that we have fallen behind schedule on the Tri-fly. We had hoped to get it to Oshkosh and then hoped to have it ready for the swarming. The swarming is still possible. If it's not flying it will certainly be on display there and we are ready to start taking orders on the landing gear system, if there are enough builders to warrant a production run of 25

units. Let me explain why a manufacturer such as ourselves has got to have quantity.

The landing gear is a spring steel bar tapered, with threads, shoulders and a bunch of things machined on it. When I ordered the sample set for the Prototype Tri-fly, I paid a lot of money for them. In 25 sets, I can get a reasonable price, so that we can afford to have them made. I paid \$100.00 to have the first pair of landing gears heat treated. I can have 25 sets heat treated for \$150.00. The pyramids, as Pat and I call the main gear sockets, the welded tubular steel assembly that is bonded inside the fuselage, involved buying several different wall thicknesses and sizes of tubing. All the tubing comes in 20' lengths, so we have to buy it in quantity to get a price on it.

We've already built the jigs and fixtures to weld up the pyramids and the nose gear support structure that attaches to and becomes part of the motor mount. The nose gear strut is an air oleo pneumatic unit with a 4" diameter nosewheel which is full casting so that on the ground the Tri-Fly is steered with the brakes which are HAPI hydraulic disc brakes.

The Tri-Fly landing gear system will be furnished with the late style motor mount with the added nose gear support truss, the air oleo strut and all its' hardware, the 4" nosewheel with tire and tube.

The main gear assembly will consist of the two welded pyramid gear socket assemblies, two pre-bent, heat treated main gear legs, 5" wheels with hydraulic disc brakes, a set of tires and tubes, brake lines, toe brake pedals, master cylinders and hydraulic fluid for both the brake system and the nose strut. A fairly simple set of plans will be supplied showing you how to set the gear up and align it preparatory to bonding the pyramid assemblies in the fuselage.

We're going to do something a little new in instructions on this. There will be supplied as part of the kit, a video tape showing you exactly how to put the gear mounts in, make the simple jiggling necessary to align the wheels and then bond the gear sockets in position for the final glassing. We've been exploring video tape and firmly believe that this is probably the very best way of communicating with the bulk of our builders. Most of you builders have a VCR in your homes and many times it is easier to watch somebody do something and then do it yourself, than it is to go strictly from a set of blueprints. The prints of course will include all the dimensions necessary to get it done and probably it could be done by the more experienced builders from the prints alone, but we believe that the video

taped instructions will make it a whole lot easier. You will have to specify whether you want it on VHS or Beta tapes.

The gear system has been designed to retrofit into all the Mark I's and all the Mark II's whether they are plans built airplanes or prefab airplanes. If you have a new style motor mount on your airplane, you can save \$125.00 off the cost of the gear kit by sending it back and we will add the extra structure to it, to support the nose gear.

If your aircraft is equipped with the old style motor mount, sorry guys, but we just can't use it on the nose gear. You'll have to convert over to the new style mount at the same time you put on the nose wheel.

The tricycle landing gear system should add only about 8 lbs. to the weight of a Dragonfly and compared to a Mark I or a Mark II, it is going to cost you 7 MPH in top speed. In other words, instead of expecting to cruise at 165, expect to cruise at about 158.

The tricycle gear will allow you to taxi with excellent over the nose visibility and because the main gear is almost on the CG in the touch down attitude, we expect it to behave itself quite nicely on landing.

Okay, how much is it going to cost and when will it be available? The cost will be \$1295.00 for all the hardware that I've mentioned in the preceding paragraphs. We will have to build 25 sets on the initial production run to make the project feasible. At this point in time we have the motor mounts in stock ready to start making the nose wheel support assemblies and we can have the air oleo pneumatic struts in stock within two weeks.

We will have to order the steel gear leg turnings, get them made, bent, heat treated and we'll have to weld up all of the pyramid assemblies so we do not expect to be able to ship main gear assemblies before the end of January. I know it seems like a long time, but these things take time. We want to make the pyramids last, because by that time the Prototype Tri-fly will have flown and if we have to make an adjustment in main gear position we can make that adjustment before we start welding up the production main gear support assemblies.

Okay, guys, the ball is in your court now. If 25 or more of you will contact me before Oct. 15 and commit half down or \$650.00 for the landing gear set up, we'll get started making them and you guys that do get your half down in on the landing gear set up will receive your complete nose gear; the motor mount, nose gear, nose wheel, tire and tube and such early in December. That'll allow you to go ahead and work on your airplanes and get the balance of the

hardware after the flight tests have verified the positioning also give us time to get the gear legs through the machining, bending, heat treating process.

I believe the tricycle gear will bring in a lot of new Dragonfly builders. It seems a lot of people for whatever reason just simply don't want a taildragger and insist that their airplane have a nosewheel. Well, now they can get one.

PROTOTYPE TRI-FLY FOR SALE

When we've finished our flight tests and gotten the Prototype Tri-fly out of restriction it will be for sale. In fact, if some of you guys are interested in it at this point, we would entertain the idea of selling it with a custom paint job on it, custom upholstery and the like to suit your taste. The aircraft is going to get a Magnum Plus engine and it should be a good performer. If any of you are seriously interested in it, give me a call.



COOLING AIR FLOW IN CLIMB

Troy Burris was over here recently stopping by as he was returning from a trip back to Alabama and points east in his Mark I Dragonfly. Troy mentioned something about his airplane not cooling as well in a climb attitude as he thought it should and we got to comparing Troy's airplane with the Prototype. His baffling is well done and the engine is cooling very well, except in the climb attitude. We noted the only obvious difference between it and the Prototype was in the way the upper side of the two air inlets on the cowling is treated. See the sketch below.

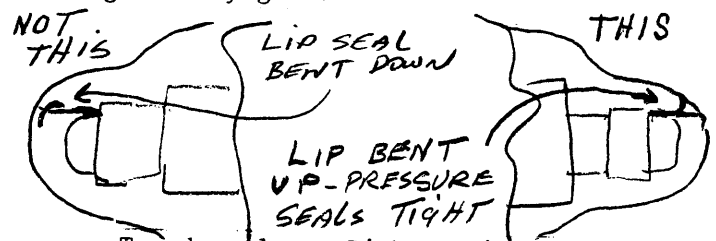
We noted that the Prototype has the lip inside the cowling cut away on the upperside where Troy's cowling retained this. After returning home, Troy did modify the upper lip in his cowling similar to the Prototype and his cooling is significantly improved in the climb.

On the way back to Oshkosh, I stopped in St. Louis, Missouri and visited Rich Werner who has a very pretty Mark I. Rich had a kind of unique problem. He was losing compression on one cylinder. He thought it was from a cylinder head to cylinder leak. He sent the heads back out here for rework. We reground the valves and recut the seal surfaces where the heads go down on the cylinders. Rich bolted the heads back on

his engine and it still had a leak. He called me just before Oshkosh and I told him I would bring a cylinder head with me and stop by his place on my way to Oshkosh so we could get him running and he could make the big show. I arrived at St. Louis and helped Rich put his engine back together with the new head. It still leaked. After some muttering and head scratching, pulling the head again and putting it on the engine again, we still had the leak.

Finally the light came on in my feeble old brain and I remembered that once or twice before we had had a spark plug with a bad seal between the ceramic and the metal in the spark plug itself. To make a long story short, we pulled the spark plug out of the one offending cylinder and replaced it with a new plug and instantly got rid of Rich's problem. He'd gone through a long exercise of regrinding valves and reseating the seal area on the heads when the problem all the time had been a leak through the spark plug itself. If you do encounter low compression on a cylinder, be sure to check the spark plugs as part of the routine tests. It might keep you from doing a whole lot of needless repair work.

I noted in looking at the baffling on Rich's engine, which incidentally, he was having no cooling problems with, that the rubber lip seals just above the cylinder heads outboard of the intake manifold were bent down rather than up. I pointed out to Rich that if he would bring those lips up as per the sketch enclosed, that the ram air pressure inside the cowling would then make it seal better. The way he had it some of the air was leaking past the seals and not doing him any good.



Two days later Rich arrived at Oshkosh and said that he had changed the lip seal on his baffling, as per my suggestion and his oil temperature had dropped twenty degrees from what it formerly ran.

What these little things graphically point out to us Dragonfly builders is that if cowling and baffling are right, these engines will run cool the way they're supposed to, but seemingly simple things like the design of the lip changes the air entry into the cowling. Air leaking through a lip seal can cost you a lot of degrees in temperature. There's no real mystery in getting the engines to cool as they should and if your's isn't cooling as it should,

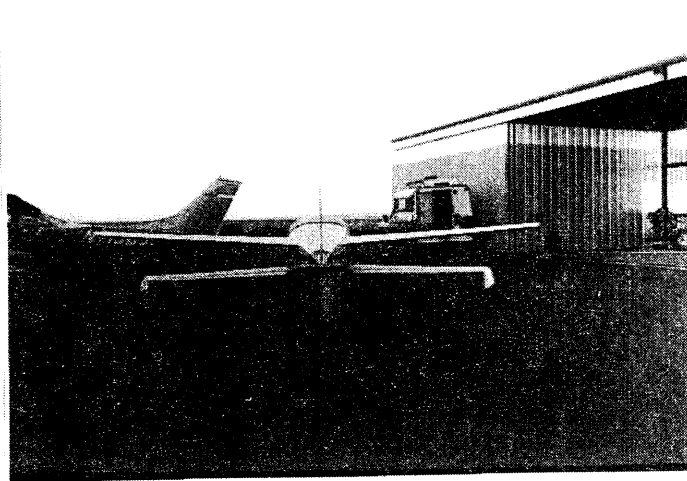
there has to be a reason for it. Take a good look and figure out where that air is leaking to.

ANOTHER NEW DRAGONFLY

I had the pleasure on September 5 of putting the first flight on another very nice new Dragonfly belonging to Jack Lovett of Albuquerque, New Mexico. It's a Mark I with a very pretty paint job on it and a well done interior. A nice looking airplane all the way.

I flew up to Albuquerque on the morning of September 4, spent the afternoon looking Jack's airplane over, helping him adjust the carburetor and just generally making sure everything was ready for that first flight.

We put the tail of the airplane up on a garbage can (see the picture). We then got behind it about 100 feet and sighted the trailing edges against the profile of the main spar. You can spot a warped surface very quickly this way and I can usually predict which way an airplane is going to want to turn by looking at it in this manner and then we make adjustments to get everything as neutral as possible before the first flight. Jack's airplane appeared to have a warped right elevator causing it to droop a little bit, so we adjusted the push rod between the joy stick and the right elevator bell crank to lift that elevator until it appeared that both elevators optically touched the silhouette of the canard at about the same point when you're standing well behind the aircraft and directly on the center line.



Early the next morning the airport manager was out with his little car with all the flashing lights on it to take Jack and some friends who'd helped him build the airplane out close to the runway to observe the first flight. Albuquerque International has a 13,500 ft. main runway. Field elevation is just about 5,000 ft. I applied the throttle slowly and felt the handling. The airplane tracked good up to about 40 MPH

and then got a little squirrely, wanting to dart either direction after the tail lifted and it came up on the main gear. It was managable, but not normal. I continued to accelerate and the airplane lifted and flew at about 60 MPH. Pitch control was very nice. It was flying at about 70 MPH with very little up elevator. It did want to roll to the left, so I had to counteract that with enough right aileron to hold it level. I flew it down the runway for about a mile at reduced power and set the airplane down. At no point was I ever more than 20 feet off of the runway and we got all the information we needed to make quite a few adjustments on the airplane before the next flight. Jack is going to have to go back and check the wheel alignment on the main gear to find out what's making the airplane not want to track straight. I would suspect that one of the wheels or possibly both of them are pointed somewhere other than straight ahead as they should be. The roll to the left can be corrected by raising the right elevator a little more until on subsequent test flights, we achieve roll neutral.

The brakes seemed to want to pull a little bit to the left on landing roll out so he's got to find out the why there.

I would consider this a very normal first test flight. You may read about an airplane flying "hands off" on the first flight, but that seldom ever happens and you shouldn't expect it to happen, because if it does happen you just plain "got lucky."

After last newsletter I got several letters from builders concerned because Charles Bucklow's airplane didn't fly pitch neutral on the first flight. Probably nothing more than a matter of adjusting the trim springs or possibly readjusting the angles on the sparrow strainers so that it would fly pitch neutral. In extreme cases, this inability to fly pitch neutral with the elevator in a neutral streamlined position is almost always an indication that either the wing or canard incidence is incorrect.

Some builders wrote in alarmed about Justin Mace's little problem where the fuel pump overfilled the header tank in flight. Were they going to have to change their fuel systems? Were they going to have the same problem? Hey guy's, gimme a break, will you? IF, repeat IF there were a problem requiring a plans change, we would tell you. Justin had installed a 35gph pump instead of the plans specified 15gph pump. Just follow the plans and newsletters and you won't have these kinds of problems, if you do, give us a call, we'll try to help you out. Please don't assume that there's something we're not telling you. Don't be at all

disappointed if you find on the first flight you've got things that have to be corrected. That's the normal situation and for gosh sakes don't expect everything to work perfectly on the first flight. All of the production airplane manufacturers, Piper, Cessna, Beach, Boeing or anybody else, have production test pilots whose sole job it is to fly new production airplanes, write up a whole list of squawks to be fixed, then fly them again, write up a shorter list of squawks and keep flying them until there are no more squawks to be repaired. If they have to fly off the squawks on a production airplane, where everything is done in jigs and been done hundreds of times before and is under much more precise control than homebuilts, where essentially each airplane is a one of a kind, it's ridiculous to think that everything is going to go absolutely perfect on the first flight and you'll not have anything to go back and redo or readjust. It just won't happen that way. I can almost guarantee it.

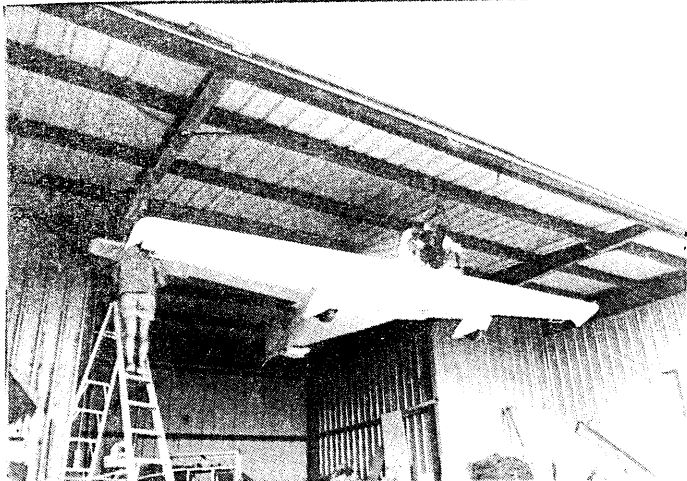
HANGAR ON HIGH

Tom Adams and his wife have been sent to Hong Kong for a period of two years and he's left his Dragonfly here with us to have his model 60 engine upgraded to a Magnum and he was looking for a cheap place to store it.

I suggested to Tom that we store it in the ceiling of my hangar over my Emeraude. Tom was a little bit appalled at the idea of hanging his airplane from the ceiling, but he grew accustomed to it and decided that maybe that wasn't so bad after all.

Tom went to the hardware store and got two large pulleys, some lengths of chain and some 1500 lb. test nylon rope. He attached two pulleys to the I beams in the top of the hangar and ran the rope over the pulleys and then down to the airplane. He attached the chains to the I beams to support the aircraft after it was lifted by the ropes. We positioned his Dragonfly below the pulleys, attached the rope to the motor mounts, (the engine had been removed) and another rope to the tail wheel spring, tied the ropes to the bumper hitch on the car and Tom's wife drove forward slowly and easily. The aircraft levitated up to the top of the hangar. No fuss, no muss, no bother. After securing the chains to the motor mounts we took the pressure off the ropes, hung the rope on the motor mount, as per the photo, and his Dragonfly is hanging solidly from the ceiling where people can't climb on it, peek in it or even reach it to damage it.

I'd suggest to you Dragonfly builders who are looking for a hangar, that you consider this. Find somebody who's got an



airplane in a hangar with enough room over it, put two pulleys on the ceiling, put two lift points in your Dragonfly, blocks with threaded holes that you can screw D rings into, one of them attached to the firewall, the other one in the top of the fuselage just ahead of the rudder and put the two pulleys on the ceiling with 1/8" cables going to a boat winch on the wall. You'll be able to pull your aircraft underneath the two cables and with one arm power, wind it up to the ceiling and leave it hanging there.

They used to do this with sailplanes at Les Arnold's Sky Sailing airport. To safety the airplanes on the ceiling, after the winch was secured, they simply had a hole drilled through the winch and through the side plate to put a padlock through.

Consider this, these airplanes only weigh less than 700 lbs. Though the idea of hanging them on the ceiling might seem a little bit strange, it has a lot of good things going for it and very few negatives. That space up in the top of a hangar can be very cheap hangar space and it's an ideal place to put an airplane where people can't get to it to bother it. It does mean that you have to roll the airplane under it out of the hangar so that you can let it down, but that's no worse than having to roll one out of the hangar so you can move an airplane that's behind it. Think about it. I think you'll find some cheap hangar space that way.

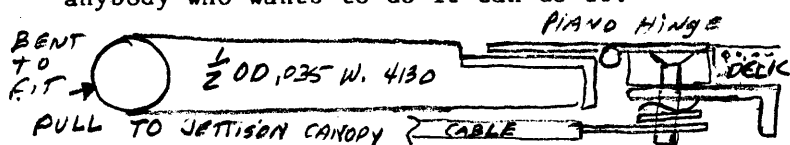
CANOPY HOW TO

We recently installed a canopy on our Tri-Fly starting from a prefab kit and using the prefab canopy frame. Now this frame is available from us for \$177.56 and I think is a worthwhile investment for you scratch builders. It makes the canopy a whole lot easier to deal with.

To install the canopy on the airframe, first you get the forward deck squared away and the bow across the fuselage that forms the rear part of the canopy frame on the

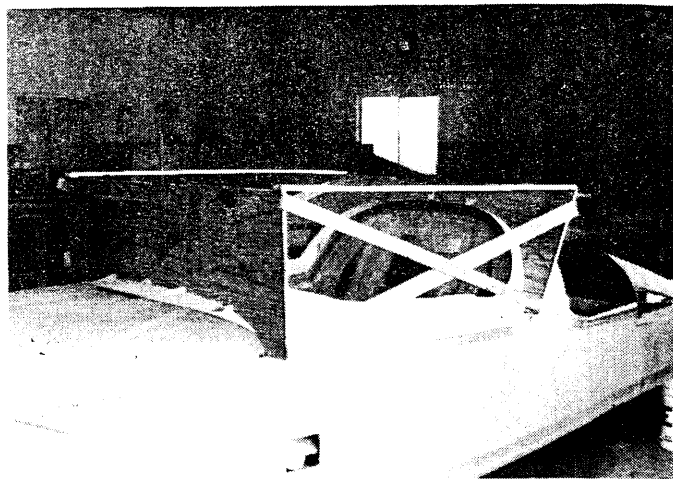
aircraft. Make the small recess all the way around for the lip of the frame. It should be about 1/8" deep over the top of the bow and over the top of the forward deck, so that the lips of the canopy frame can rest over it.

Now you have to figure out what you're going to use for a frame around the canopy. We used a frame pretty much as is shown in the original plans with plywood sills over the top longeron and a bulkhead that forms the aft section of the canopy. We cut all the center portion out on ours, as you can see in the picture because we didn't want the upholstery to ride up with the canopy, but to stay in place. You can pretty much use your own ideas of what you feel makes a nice arrangement for you. We elected to use a forward hinged canopy as we have on the Mark II Prototype and we further decided to use a piano hinge arrangement on the forward canopy and a rough sketch is included here. We don't intend at this time to make any parts for this, but it is not difficult to make and I believe just from the sketches anybody who wants to do it can do it.

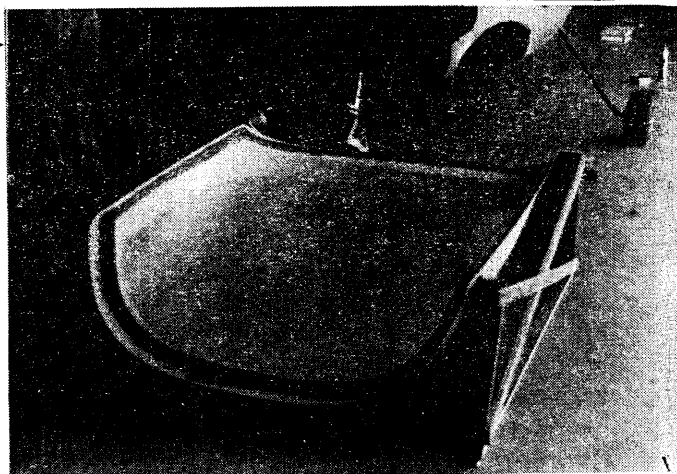


We just hand bent a piece of half inch 4130 tubing .035 wall to fit the contour of the upper forward deck and come down and extend far enough back to meet the wooden canopy frame on top of the upper longerons. I welded two little pieces of tubing and a flat plate up on the forward end in the center, 10 inches wide, to rivet the piece of stainless steel piano hinge to. We took a piece of aluminum angle and C-clamped it to the forward deck on the bottom and liberally floxed it in place. It was later glassed permanently in place. That flattened the top deck a little bit in that area, gave us a 10 inch long flat spot there for the hinge line.

After the metal reinforcing structure was done in the front and the wood side plates and the foam rear bow for the canopy were in place and sanded to match the contour of the exterior surface of the fuselage, we were ready to install the outer frame. We masking taped over all the edges that we did not want the flox to stick to and then used paste wax on top of the masking tape as a release agent. We then floxed all the bonding edges of the foam bulkhead, the wood and the metal and put the canopy frame in place holding it there with sand bags and such, taping it down with masking tape on the outside to hold it firmly in position while the flox set up overnight.



Now we have the canopy frame and the glass outer skin in the exact position that we want it, so we make two plywood end pieces, one cut to fit over the bow at the rear of the canopy and the other one at the front of the canopy. Bondo them to the canopy itself, making sure that the top surfaces are both level with each other. Next you cut some strips of scrap wood and Wilhold glue and nail them to the canopy support structure. Now you can pop all your little bondo joints and pull the canopy frame off of the aircraft. Lay it on a nice level floor and work on it from the bottom. The next step is to lay your canopy in it. Gravity will hold it there real nice. Allow a half inch overlap between the frame and the canopy. Trim the frame. Then mark the canopy. Then trim the canopy and then scribe the line and cut away the protective coating on the canopy so that you can sand



just the exposed edge that you want the flox to stick to when you bond it to the canopy frame.

You next bond the canopy into the canopy frame. Let gravity do the work for you. Then cut away the protective film on the inside of the canopy just enough to expose your area to be bonded to the inside and lay another strip of glass around to do the inside bonding. To finish it up we used

ALUM ANGLE, BONDED TO FORWARD DECK

pour in place foam to puff everything out and then shaped the foam by first cutting it with a hacksaw blade, then finish sanding. Then we microed the foam and put three layers of 6 oz. glass over the top on the inside.



You wind up with a nice smooth interior surface, very well finished and you'll note that we built in sort of an inner channel on the canopy that locks down over the upper longerons to keep the sides firmly in place. I believe that after seeing how we do it with this little throw away jiggling that allows you to work everything off the airplane, that you innovative guys will probably come up with some ideas that make this one look pretty crude. But it does work well and it makes a real easy job out of fitting the canopy. Pat and I have a grand total of 23 man hours in the canopy from the time we walked up to the airplane until the canopy was all finished and ready to put the hinges and latches on to prepare for paint.

EDITORIAL

The last issue of the newsletter, #22, was made up primarily of reports from builders about how well their Dragonflies flew and how happy they were with them. It made nice reading and we got a lot of pats on the back and everything was rosey. But quite frankly, I didn't think it was much of a newsletter. There wasn't much in it of a technical nature to help you guys. Several builders picked up on that.

The reason for the last newsletter being all good news was because we've been catching a little flack from other sources that seems to be all bad news. The plain and simple fact is it's not easy to build an airplane. We use the word easy in describing Dragonfly. It is relatively easy compared to several other airplanes, but there's no such thing as an easy airplane to build.

If a thousand sets of plans are sold

for a particular airplane, probably no more than 5 to 10% of those plans will ever result in a finished airplane. With Dragonfly the ratio has been a whole lot higher. We've sold about 1400 sets of plans and we've already got 130 some airplanes flying and probably another 100 more that will fly within the next year, so our ratio is way above average.

I'd like to think that maybe some of that is due to the builders' support we give our builders. Lord knows we sure try to help our builders out. No other homebuilt aircraft manufacturer has ever given the flight training, gone out and done test flights for people, spent the hours and the time that we have with our builders to make these projects turn out right. We really bust our tails trying to make them turn out right, but we're not always in total control of everything.

It's sad but true that there is a small percentage of the people who try to build any airplane, who simply find it beyond their capability to build an airplane. Some of these people simply can't comprehend that the problem is not in the hardware or in the design. The problem is the builder. He simply doesn't have what it takes to build an airplane.

This doesn't mean however, that he's a bad person or an inferior person.

I'm one of those people. I have tried repeatedly to learn how to play a musical instrument and if my life depended on it, I couldn't make anything that sounds like music come out of a musical instrument. I simply don't have the capability to make music and that's a fact. It's a fact I've learned to live with and accept and I've quit buying and trying to play musical instruments. I've finally accepted the fact that I don't have any musical ability, so when I want to make music, I just turn on the radio, which is equivalent maybe to buying a factory built airplane.

The Dragonfly design is in its' sixth year now. New plans sales have slowed down considerably. Our primary business now is building hardware pieces and providing support for those builders who have already bought plans and are well into their projects.

Some of the builders feel that we're doing a very good job of supporting them and feel that we're giving them good service. Some and I hope that it's the smaller percentage (I'm sure it is judging from our mail) don't feel that we're giving them good service.

I do hope that all you builders will be somewhat aware of what our problems are. In order to build things like motor mounts,

landing gears, carburetor heat boxes, engines, all the multitude of parts that go into making an airplane at a cost that you builders can afford, we have to make things in quantity. Now the sport aircraft business is small. There is no such thing as big quantity, so we can't stock parts like we were General Motors. Some parts are built 5 parts at a time. Some of them are built 25 at a time. Some of them we order 100 at a time.

Your order may hit here for parts that we have a lot of in stock and it will go out real quick. Your order may also hit here when we are waiting for a particular part. We simply can't afford to order it until we have enough orders stacked up to make it worth while to buy it or build it. A lot of our stuff we farm out and have custom built. You builders could help us greatly and help yourselves in the process by anticipating when you will have to have a particular part and order it ahead of time to allow us time to build or buy the part. Most of you pay by Mastercard or Visa anyway, so it's not a matter of putting out money at the time you order it. Simply order the part, be it a motor mount or Mark II landing gear kit, control system hardware or whatever and tell us you want delivery in sixty days or ninety days.

This would help us greatly in planning and being able to get the parts to you in a timely fashion so they're there when you need them. It would allow us to operate our business in such a manner that we might make a little profit.

Some builders seem to think that profit is a dirty word and we're getting rich with the profits we make around here, but I can tell you honestly that we're just a small business. We work very hard to make a reasonable living.

If we do stock a large inventory of parts, we've got our money tied up waiting for those orders to come in and sometimes they don't come. I've got a stock room full of parts that are obsolete, or we're overstocked on, that's the stuff we're discounting at the swarming. That's dead loss.

We could keep the design in a never changing state, for instance, we could have stayed with the Mark I landing gear. We could have stayed with the old motor mounts. We could have not changed a lot of things and perhaps assured ourselves that the inventory would move, but I don't think you builders would like a design that was never improved. We're going to continue to improve the design, continue with good strong builder support, continue to do everything we can to help you guys to build good

Dragonflys and get them in the air successfully with the very minimum of problems.

Rex Taylor

VIDEO TAPES AVAILABLE

We realize that it is not possible for all of you guys to get out here and get checked out in the Prototype. Some of you live in foreign countries and some of you don't have the time available. There are lots of reasons why you can't get here.

We have arranged with a pro photographer to have a lot of video tape footage shot of Dragonfly and we're putting together a movie on test flying a Dragonfly. This video tape will be approximately 5 and a half hours long. It will include flight test discussions excerpted from Dick Rutan's talks, a couple hours of my own talks, a lot of footage shot inside the cockpit, describing what you should do and see from the inside of the cockpit and a lot of footage shot air to air and ground and air describing exactly what is happening and how you make it happen that way. I believe it will be a super valuable aid to you builders who are getting ready to fly and the next best thing to coming out here and getting checked out in the prototype. In fact, I would suggest that you get the video tape, study it several times and then if you can get out here and get some flight training in the Prototype. The best insurance you can buy is to be thoroughly prepared to fly it when you get in it.

This video tape will sell for \$69.50 and will be available the end of Nov. Please specify whether you want VHS or Beta when ordering. We will try to have the tapes available for those builders in foreign countries in the format used on your systems over there. (At actual extra cost to transfer) We have yet to contact the company in New York who transfers tape from one mode to another to make it compatible with the systems in foreign countries. More details on that in the next newsletter.

ADJUSTING A POSA CARBURETOR *ON TAPE!*

How to get a Posa carburetor tuned in and running just right seems to be a kind of a mystery to some builders, particularly builders who've had little or no previous experience with carburetion and it is a thing that is extremely important to flight safety.

With the help of Flight Concepts, we have filmed a video tape that details how a Posa carburetor is put together on the bench, where all the parts go and how to

check them out, how it works, installing it on the engine and, with an engine running on the test stand, how to adjust it. How to recognize too rich from too lean, how to make it run at high speed, how to make it idle. Everything you need to know about a Posa. We're also showing several different installations in different airplanes so that you can use the tape for ideas about how to install your carburetor, your carburetor heat system. How to route the cables. How to put the controls in the cockpit. You will find the tape very useful, very informative. Sells for \$29.95 through Flight Concepts.

COMING SOON

We're currently working on the video version of my book, How To Build A Reliable Aero Engine on video tape. It will be available hopefully by the end of January and show you how to take a used VW engine, tear it down, inspect all the parts for wear, through away the bad stuff, keep the good stuff and then how to build an aircraft engine out of it, step by step, including going through the run stand, setting the timing, adjusting the valves, doing everything that is necessary to put that engine on the front of an airplane. We have sold thousands of copies of my book since I wrote it some seven years ago and we believe that the video tape version of it, which includes a lot of things that weren't in the original book, will be a big help to those of you who want to build your own engines. It appears that the "How To" engine tape will be something in excess of eight hours long and the price will be \$89.50.

Order all tapes only from Flight Concepts, P.O. Box 1513, Casa Grande, AZ. 85222 Note- be sure to specify VHS or Beta. Foreign orders specify line format. An extra charge will be necessary for conversion and overseas postage.

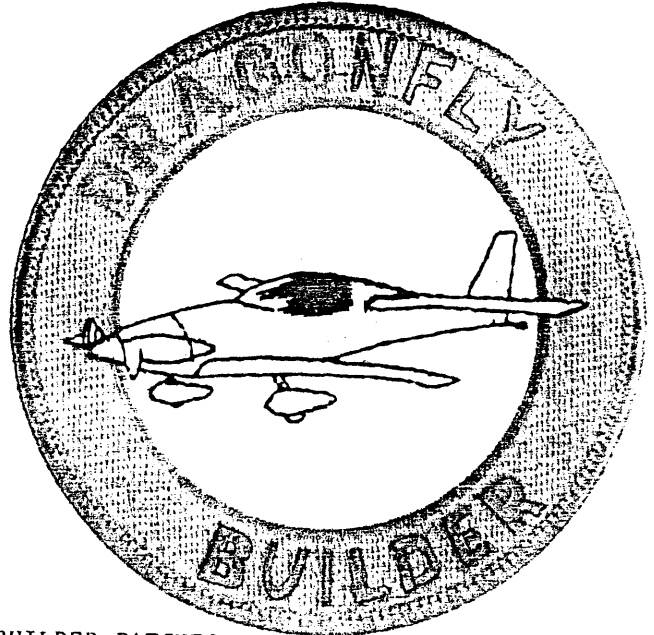
INCIDENCE CHECK

We made up a set of incidence jigs that fit just outboard of the fuselage on both the wing and the canard on a finished aircraft and are used with a little optical inclinometer. The beauty of this system is that the airplane doesn't have to be sitting waterline level. It could be sitting on the tail wheel and you can check incidence. We checked all the Dragonflies that flew into Oshkosh this year. Found five of them to be very close. Gary Konrad said that his airplane always flies with the elevator a little above trail, but flies well. We found that the wing had a little bit of negative incidence in it and he had to fly the elevator above trail to compensate for that.

This incidence thing and the center of gravity are the two most important things to keep under control in your Dragonfly, if it is going to fly right. We have made the incidence jigs available to all the builders. Send in a check for \$100.00, plus one for \$10.00. We'll send you the incidence jigs. The \$10.00 paying for the UPS both ways. Use the jigs quickly, return them very promptly and we'll send you the \$100.00 check back uncashed. We don't want your \$100.00, but we absolutely do have to have the incidence jigs back in very short order.

On the way to Oshkosh I stopped at Bill Terry's house. He has a very nice new prefab airplane coming up. Was just sitting the incidence angles on the wing and canard and we found a mistake on the wing incidence angles with the jigs that was super easy to correct at that point in time. Had the airplane been further finished, correcting it would have become a greater problem.

Get the jigs and the inclinometer. Check your airplane or set it up very quickly and return the jigs so some other builder can use them. I don't believe any builder should have to have them for more than a couple of days.



BUILDER PATCHES

We just got in a supply of nice looking new builder patches. I'll xerox one here, actual size. The aircraft is in white with black lines, on a light blue background. "Dragonfly Builder" is in gold letters on a dark blue background and it has nice gold edging around the dark border. It's a very nice looking patch, I think. We've got plenty of them in supply at \$5.00 each. The builders at Oshkosh snatched them up like candy.

ENCOUNTER OF THE RAIN KIND

Steve Kimble, staff writer for Kit Planes magazine, was here a few days ago to do an article on our new Magnum engines. I was giving him a ride in Dragonfly early in the morning. As we taxied out, it started raining. We continued our run up, pulled onto the runway totally wet with beaded water all over the canard and took off in light rain and enjoyed our flight.

I asked Steve to PLEASE make prominent mention of his experience in the rain in Dragonfly in the engine article he's writing for Kit Planes. I hope that will finally put all the bullshit that Dragonfly won't fly in the rain to rest. It's the first time I've had an opportunity to have a writer in the airplane at the same time it rained here in the desert.

ON LAYING UP SHEAR WEBS

Just this moment had a builder support call from Art Kamm in Bellevue, WA who was having some trouble in getting the bi-directional cloth laid on the shear web in his wing center section. He kept coming up a little short on the edges.

The trick in doing this quite easily is to cut your 15" wide strips then roll them very nicely into small rolls and as you start laying up the spar, start at one end or the other by laying the roll on top of the shear web face unrolling a foot or so of it, pulling the edges down along the spar faces and gradually advancing the roll pulling the edges down over the spar faces, which avoids putting lengthwise tension on the bi-directional cloth which tends to make it skinny down and not want to cover all the faces. Try it, you'll like it.

RUSTY EXHAUST PIPES

Rusty, unsightly exhaust pipes tend to spoil the looks of an otherwise very sanitary engine compartment. When we put the Magnum plus engine in the prototype, we found some 1200 degree exhaust pipe paint at our local Pep Boys store in a light gray color. Sprayed the exhaust pipes and they are standing up very well. I noticed that either the same paint or something very similar is also available at most of the chain discount auto part stores in the areas that I've been in lately. It's available in a lot of colors, so use your imagination. It does seem to be an effective way to stop the rust.

PILOT CHECK-OUT

Last evening I had Joe Ping of Indiana here. Joe has a Mark II that is flying with about 30 hours on it. He was out here at Tucson at the Lear Jet facility undergoing pilot training for his Lear jet rating.

We shot a few touch and go landings and Joe picked up a few pointers.

It's strange that the professional pilots like Joe, if possible, make it a point to come here and get some hands on actual flight experience in Dragonfly and the builders that we have the most trouble convincing that they do need this training are the ones who have very few flight hours and very little flight experience. Get the check out guys. It is cheap insurance.

TIE-DOWN RINGS

Many of you will no doubt forget when you're building your airplane, just as I did, that it will no doubt be tied out somewhere or be setting out sometime and have to be tied down. An easy way to include tie down provisions in your Dragonfly is to put a block of solid aluminum about an inch and a half square underneath the shear web imbedded in the foam, mark its' position so that you can find it and after the canard is totally glassed, painted and completed, you go back to your dimensions and locate the exact center of that block, drill and tap through the glass skins and into the aluminum block to match the thread on the D-ring that you'll screw in there. Now when you're not tied down you can remove the D-rings and the only thing you'll have to spoil the sleek outer skin of your airplane is just a threaded hole in it. If you're really a fanatic about drag, a little round spot of white vinyl tape will cover that up so it's hardly noticeable.

Dragonfly builders, that's about the end of it for this quarter. There will be another issue of the newsletter in November and would appreciate input from you builders on what you think of this issue. I tried to include more technical stuff in this issue. More things that should help you builders out quite a bit.

I hope I don't get the usual five or ten letters bellyaching that some new thing that we have come out with has obsoleted something that the builder bought in the past. That's progress, guys, Ford doesn't take the '85's back when they come out with the 1986's and we can't do it either, but I don't think anybody'd want to settle for no progress.

Hope we will see all of you here at the swarming this year. It is shaping up to be a really good thing this year. Be sure and get your room reservations and meal reservations made early. It will help us greatly in planning. Look forward to seeing all of you here. Bye!