



David Bethard's Beautiful MK I has won trophies and awards at every Fly-In. David is from Orange, Texas.

SUBSCRIPTION PRICE \$15.00 A YR. U.S., CANADA AND MEXICO
\$20.00 A YR. ALL OTHER COUNTRIES

FOURTH ANNUAL DRAGONFLY SWARMING

We had a fantastic Swarming this year with approximately 75 Dragonfly builders here from all over the country with many of them bringing their wives. The primary emphasis this year was in the Fun Flight Center with 'hands on' training, showing the builders how to do many of the tasks that have to be completed in the building of a Dragonfly.

Randy Hamilton of Plano, Texas, (incidentally I believe Plano is the Dragonfly capital of the world, there are six Dragonflys being built there now and they are all active builders) was here going through the two week building program. We had scheduled this in such a way that the swarming fell in the middle of his stay here and many of the builders who came to the swarming got involved in Randy's airplane for some 'hands on' experience. During the three days of the swarming, we laid up one side of both the wing and canard and answered just hundreds of questions that the builders had. Just being here and seeing how a lot of these things are accomplished, I believe, was a great help to the builders. We had several comments from builders saying they had learned more just by being here and watching for a couple of days than they had thought possible and they were sure that the couple of days here was going to save them a tremendous amount of time at home in their own workshops.

While my son, Patrick, was running the 'hands on' workshop, I was spending a lot of time talking to builders about flying and

all the other things that are involved in a Dragonfly. We spent quite a bit of time on how to fit the elevator ailerons into the wing and canard sections and we'll talk about that a little later in the newsletter here.

We had four Dragonflys here this year. The Prototype aircraft was here and Jack Shafer, from Parleir, CA, flew over. Some of you will remember reading about Jack's experiences early on, Jack broke a canard on a Mark I and built a Mark II, had a little incidence problem with it that has been corrected. He's now got over 100 hours of fun filled flying on it. Jack gave a lot of rides during the swarming, as did our old faithful buddy, Troy Burris, of Los Alamitos, CA. As usual Troy gave many rides in his Mark I and we really appreciated it. I spent quite a bit of time giving rides in the Prototype and the fourth airplane, Justin Mace's newly completed prefab Mark II is still in its forty hour restriction, so we couldn't use it for rides.

Tom McCutcheon of Oregon flew down here in his 172 Cessna, because he had to get out in instrument weather out of Oregon and leave his Dragonfly at home. He didn't miss out on all the flying, however. We got him in Justin Mace's airplane for a couple of hours of stick time, building time on the airplane and it did give us an opportunity to get four Dragonflys in the air in formation here for some photo sessions and a lot of fun.

At the banquet Saturday night, we had 120 people, with each one of the builders

getting up and telling of his trials, tribulations and triumphs in the building of his Dragonfly. We had a fantastic meal. A catering concern out of Mesa, AZ did a whole roast pig complete with all the western chuck wagon style trimmings and to say that it was fantastic was probably an understatement. You guys who didn't get here really missed a good time and some good eating. Plan on making it next year, 'cause we're gonna have a bigger and better Swarming next year.

It would appear that by next year there will be a whole bunch of new Dragonflies hatched out. Jack Lovett was here from Albuquerque. His airplane is still in restriction. Ed Cunningham, who now owns the old Nichols Dragonfly, 55WN, wanted to be here but unfortunately the Air Force sent him down to Langley, VA to be an aggressor pilot. He flies F-15's and is part of the bad guy squadron, testing our coastal defenses, so he couldn't make it.

It seems that the date of the Dragonfly swarming kind of creates a problem for some people in attendance and we're wondering if maybe moving the Swarming up to the last couple of weeks in September might give us a better date for more people to attend. I'd like a little input on that. If the majority of you feel that that would be a more convenient date, we can change it to that next year.

MORE RUMORS

Recently I was having a conversation with Dr. Richard Goldman of the Chicago area. He was trying to decide on which engine to power his Dragonfly with. He said he really wanted to put our Magnum in, but a couple of things he had heard were bothering him. The bottom line was our imitator in the Chicago area was telling him that we're broke and about to close our doors and etc. ad nauseum.

Richard was concerned to be placing an order with us that we might not be able to deliver or maybe wouldn't be here next year to service that engine. I gave Richard four bank references that we deal with and also the phone numbers of the Chamber of Commerce in Eloy and the Better Business Bureau in Phoenix. We'd invite anybody who is thinking about buying an engine to check on our references, which are included here and while you're at it, why don't you see if you can get references from our competitors.

As a matter of interest, it might be noted that we are now going into our tenth year in the engine business. We are the only people in the engine business who have ever put a written warranty on our engines and ours have always had it. The new Magnum

Plus engines have a greatly extended warranty.

We have introduced more real advances in Volkswagen aircraft engines than all of our competitors put together. We pioneered solid state electronic ignition on our secondary system in 1980. We started using Total Seal piston rings as standard equipment in 1982. In 1984 we built our first set of individual cylinder heads called Magnum heads and exhibited them at Oshkosh 1984. The complete solid state dual electronic ignition system was also shown at Oshkosh 1984. Spring of 1985 we introduced hydraulic valve lifters in all of our engines and completely eliminated valve train maintenance. In the fall of 1985, we repackaged the electronic portion of the solid state dual ignition system and added programmed ignition advance curve that gave us easier starting, super slow idling, better throttle response and a higher power output.

Oshkosh 1986 saw the introduction of the Magnum Plus engine, a big 2.2 liter Magnum headed engine. We also put into production our UltraCarb carburetor. It's a float bowl type carburetor equipped with mixture control, automatic mixture enrichment at high power settings, and idle cut off. This carburetor's available in both updraft and sidedraft models. It might also be noted that when we do introduce something new, it's always after we've been flying it ourselves for an extended period of test time and what we show at Oshkosh is always flown there and then flown home again. I personally probably put more hours every year behind a Volkswagen engine than anyone else in the United States, perhaps anyone anywhere.

The current production HAPI engine, regardless of model is the most technologically advanced, most maintenance free Volkswagen based engine that you can buy from anyone.

Our engines are backed up by a written factory warranty that we stand behind. We've grown to be the biggest manufacturer of Volkswagen based engines in the United States and possibly in the World. We have always considered reliability the most important attribute of any engine. While some of our competitors talk a lot about it, we've gained a reputation for delivering it.

I notice that the airplanes that show up here at the Swarming every year, the vast majority of the airplanes that show up at Oshkosh and the Dragonfly builders who really use their airplanes, put lots and lots of hours on them in cross country flying, are all powered by HAPI's.

We hope that you'll give some serious

thought and do some research before you choose an engine for your Dragonfly. With the Magnum Plus, we can offer you the most powerful normally aspirated engine available and with the 60 series engine, can give you all of the nice options as standard equipment, plus a lot of features such as hydraulic lifters, UltraCarb and solid state ignition, individual cylinder heads designed for aircraft, that our competitors simply can't offer because they are all designed and built by HAPI. If our competitors don't believe in their engines enough to fly behind them, give rides and demonstrate power and performance, then back them up with a written warranty, why should you?

Incidentally, Richard Goldman did check our references and placed his order for a Magnum Plus.

ENGINE BARGAINS?

We recieved the following letter from Nick Mustari describing some of the problems he has had and the high cost of saving money on bargain engines not designed to fit the Dragonfly.

Dear Rex,

Enclosed is a picture of my Dragonfly, my wife and myself.

I purchased plans #225 from Bob Walters and started construction in Nov. 1981. As of Oct. 1986, almost 5 years later, I finally received my license from F.A.A. on 3147B.

I purchased my VW engine from Gilbert Duty at Oshkosh in 1982, at which time I thought it was a huge savings (approx. \$500) compared to HAPI Engines. The engine is a 1834cc, stated to have 71hp developed at 3400 RPM, with a separate 35 amp alternator of Japanese make.

At the time, I thought it was a good idea in the event the alternator went bad, I could change it without pulling the engine and accessory case. This engine also does not have hydraulic valves. When the time came to install the engine, I found that the exhaust stacks did not allow the proper fit for the cowling. I called Gilbert Duty and he said all he supplied was standard exhaust that comes with a VW engine. Needless to say, I ordered stacks from HAPI Engines and with a little adjustment the stacks fit up fine.

The prop hub did not fit properly either. It was too long and required that I have one machined and costing me more time and money!

After much modification on the carburetor (Tillitson), I finally was ready to turn over the engine and ready to take my

Dragonfly to the airport (Kankakee, IL) for taxi testing and eventually my first flight, nearly 5 yrs. from starting.

After 3 1/2 hrs. of taxi testing (some problem with mechanical brakes, Azusa, which I'm sorry I installed), I thought I was ready to fly. But, while taxiing out, the engine suddenly quit. Upon inspection, I found that the aluminum pulley, which was connected to the 1 1/2" hex bolt that attaches to the crankshaft was connected with a tapered bolt which came loose and damaged the Bendix dual magneto. Further investigation showed no rubber pads between impulse coupler and aluminum slotted pulley. The end result was to have an F.A.A. approved repair station overhaul same at a cost of \$416.00. The cost to repair mags plus exhaust stacks and prop extension hub added up to more than the difference in cost between a HAPI Engine and the "bargain" I thought I got in Oshkosh from Gilbert Duty, to say nothing of time lost!

I am now in the process of replacing the pulley and bolts as a one piece steel unit, heat treated and balanced and installing the proper rubber pads to absorb the snock from the impulse coupler. Also, the magneto was installed with aluminum clamps which I changed to steel or that could have become another problem.

Needless to say, Gilbert Duty is no longer in business and could not be reached!" The moral of the story is that there are no "bargains". Pay a little more and buy something from someone who is reliable and plans to stay in business!

Thanks,
Nick J. Mustari 3730 W. 97 th ST. Evergreen Park, Ill. 60642

Dear Rex, Phyllis, Pat and Robin,

Wanted to send y'all a letter for a variety of reasons, but most of all to thank you for your tremendous support and motivation during my two-week stay at HAPI's Fun Flight Center.

My experiences while at Fun Flight Center, working in a controlled environment to begin construction on my airplane, were fantastic! I hardly expected to have both Rex Taylor and Patrick Taylor working at my side, assisting and guiding my progress. The experience that Patrick and Rex brought to my project undoubtedly benefitted my knowledge of composite structure in more ways than even I am aware of at this time. I have to commend both Patrick and Rex on their tremendous patience with me, as I have

never been involved in anything associated with aircraft construction or fiberglass work previously. I would most certainly recommend to the potential builder the use of HAPI's Fun Flight Center as a method of initiating their construction. I would never have attempted to build my own aircraft without having the opportunity to initiate this construction in a controlled environment, and I'm sure many other builders feel the same way. It's simply the only way to go!

I'm currently going through withdrawal from the intense educational experience I had while at Fun Flight Center, and am attempting to get back into the swing of things at work. It's going to be tough! I plan to continue the construction process in my garage until I can no longer facilitate it there; then I will be moving to a hangar to complete the aircraft.

I also wanted to ask you a big favor - that is, would you please extend a big thank you to the numerous builders and interested builders who assisted me with the construction of my airplane during the Swarming in Eloy? If you could throw this in your next edition of the "Dragonflyer", I would surely appreciate it.

Thanks again for your hospitality and friendship; I will miss them both now that I am back home working in my garage. There is, however, one thing I won't miss - that's the 6:15 a.m. wake-up call the crop-dusters have been providing for me. Oh well, guess it's back to the old alarm clock!

Sincerely,
Randy Hamilton

P.S. We had a baby boy on 11/8/86. Yes, Robin, he is 4 weeks early, -but in great shape! Weight - 5 lbs., 8 $\frac{3}{4}$ oz., 19 $\frac{1}{2}$ " long. Wonder if he'll fit under the canard, just aft of the lift bulkhead?

DRAGONFLY CONSTRUCTION TAPES AVAILABLE

We video taped Randy Hamilton's construction process on his Dragonfly from the day he walked in until he was loading the airplane on his pickup. His wing and canard were completed ready for ailerons and elevators to be hung, fuselage with all the wing, lift and drag bulkheads in, all the alignment done, firewall on, landing gear in place. In other words an airplane ready to set on the gear in less than two weeks.

We video taped the whole process and have added a lot of things to the video tape that we tend to take for granted, but for some of you guys that have never built an

airplane before, are perhaps still big questions in your minds.

For instance, we have pictures of our building tables, instructions on how you mix micro, how you mix flox, how you use it; what kind of tools you should have in the form of hand tools. All the little odds and ends that the more experienced people take for granted, but for the new guy, who's never built an airplane are at this point still a big mystery. I'm sure we haven't covered everything that a guy needs to know, but we've put a lot of information into this tape and I believe that those of you out there building, might find it a great help.

We're not suggesting that you build the airplane completely from the tape, but I believe you'll find it a tremendous help. If you read the section of the plans that pertains to the part that you want to build, then look at the tape and study it and see how we do it. There's a lot of little short cuts and hints that we've developed in building almost forty of these airplanes now, that can just save you a tremendous amount of time. A lot of these jobs that appear quite difficult are really pretty easy when you watch somebody do it who has done it before. We can't get everybody in here to see everything first hand, but by the means of the tape, we can pass on the knowledge. Cost of the tape is \$89.50 postpaid. We are absolutely certain that it's going to save you many times the cost of the tape in time and material savings, because when you screw something up, you've got to throw it away. If you watch the tape, you should be able to do it the first time without screwing up and get it right the first time, thus save yourself a lot of money, time and frustration. The tapes are available from Flight Concepts, a little company over in Casa Grande that is specializing in aviation oriented video tapes, address - P.O. Box 1513, Casa Grande, AZ 85231. Allow two weeks for your order to be processed. They keep all their masters on file and duplicate tapes as the orders come in.

FLIGHT TESTING YOUR DRAGONFLY

We're in the process of putting together a new tape now on flight testing a Dragonfly. This tape starts the flight testing process long before the airplane ever leaves the ground. We're using Justin Mace's airplane as a role model and many of the things that are taken for granted by the experienced builder have been gone through in a step by step fashion leading up to that first flight.

We've gone through all these inspections that should be done "on camera", tried to show you all the things that should

be checked and what you should be looking for and most importantly, why we want to do these things. We then put the camera inside the cockpit on a special mount and shot pictures from inside the cockpit of the flight maneuvers, particularly take-offs and landings and mixed these with outside shots from the ground of the airplane taking off and landing, so that we get a view from the outside of what is happening and from the inside why it is happening and how we made it happen. Those pilots who have seen some of this tape are really enthusiastic about it. Even the pilots who have already gotten their Dragonflys flying think that it is great.

I can't personally come out and fly with each one of you builders and many of you can't get here to take the flight training that we offer. I believe the video tape is going to be a great help in transferring experience and information. Don't have a price on it as yet, but expect it to be somewhere between 50 and 80 dollars, depending on the run time length. It's not going to be a short film, because it is also going to include a lot of the lectures that we've had here that have been video taped at different swarmings. We're taking the best information out of that and splicing it in, so there's going to be a tremendous amount of information on this tape. I think it will be a real asset for you builders who have yet to finish your Dragonflys and get them in the air. More on this in the next newsletter. I believe we'll have a tape ready by then.

MORE ON PILOT TRAINING

Received a letter from Gerry Price of 25 West Avenue, Worthing, Sussex, BN11 5LU, United Kingdom and Gerry has been working on a Dragonfly for the past two years or so and is getting very close to the first flight stages. He needed some parts to finish from the states, but the last paragraph of Gerry's letter I wanted to print exactly as written for the benefit of those who maybe still don't believe some pilot training in type is the best way to keep your Dragonfly in one piece on the first few flights.

Gerry Price letter -

To finish, just a couple of comments on the last 2 newsletters. The 'Folksy' one which Rex didn't like much was certainly appreciated by me. We all get a few low spots on our projects when things just don't seem to be going along fast enough, and it

helps to read of other people who got out and did it and are now really enjoying the fruits of all that effort. The next one went back to a more technical theme, and also reminded people of the high standards required, and the sense of getting a checkout at Eloy before a project first flight. Rex is so right to keep hammering all this home, as many people seem to need saving from themselves. As a Boeing 757 Captain, I have about 12500 flight hours in everything from a VP-1 to 747's, and I would not dream of test flying my own project without coming to Eloy to get checked out by the people who know the Dragonfly best. In general, keep up the good work on the newsletters --they're appreciated!!

Best wishes to all of you,

G. D. Price

INCIDENCE JIGS

UPS must be making a fortune transporting the incidence jigs around the country. We have had excellent cooperation from the builders who are getting the jigs, using them and returning them in very short order so the next builder can use them. Keep it up gang, you're doing great.

In areas where two or three Dragonfly builders know each other, possibly work together, consider getting together and checking more than one airplane while the jigs are there. It will save time and free the jigs so that more of the builders can use them.

DOES ANYBODY KNOW ???

Saw some aircraft at Oshkosh with some very nice custom sewn, form fitted covers over the canopies that were made out of this very light weight material that the new backpacker tents are made out of. It's semi transparent, like a heavy oiled silk in color and texture and it has a pattern about 3/16 inch square of a heavier thread running through it. I would love to have a form fitted cover over the canopy and engine section for my Dragonfly, but nobody we've contacted knows where we can buy such material. If any of you builders out there have a source, how about letting us know. Would also like to find somebody that has the capability of making up form fitted covers. Anybody want to try that one on?

BIG BUG WARNING

One of our Dragonfly builders flew him Mark I from Montana to Oshkosh this year. I believe it was Jerry Stict and if it was someone else, I'm awfully sorry. I'm terrible at remembering names anymore. But

what the heck, I'm entitled. I think it's "old-timers disease".

Anyhow, Jerry had a section of an automotive paper element air filter built into the cowling of his Dragonfly in a very nice manner, making a very effective and low cost air filter.

We got into a discussion about it and he said that he'd been flying along, ran into a large flight formation of grasshoppers, totally bugged up the airplane, again proving the Dragonfly will fly when bugged up. He injected so many into his carburetor that the engine just about quit running. So after making it back to the ground safely, he engineered the very nice air filtration system that he had to preclude the possibility of his engine eating more grasshoppers. Jerry, if you will be so kind as to send me a picture of that and a little sketch for the next newsletter, I'd like to include it for the guys. It's a real good idea.

WHAT RAIN PROBLEM?

We recently had Kit Planes writer, Steve Kimball over here researching an article on the Magnum engines. After touring the shop facilities here, Steve and I were going to go flying in Dragonfly early one morning. Following is an excerpt reprinted from Kit Planes latest issue. You might want to read the whole thing in the magazine.

"Surprise number two began dropping on us as we taxied out to the runup area at Eloy. Taylor started getting as excited as Popeye after a spinach sandwich when he saw rain. Never had he had an appropriate witness along to see the Dragonfly operate in rain. With the sort of voice I reserve for asking the doctor if this is going to hurt, I asked Taylor what the Dragonfly would do.

"Nothing" was his reply. Accelerating on the takeoff, the raindrops blew off the control surfaces by about 30 knots. Light sprinkles continued as we lifted off at about 60. Our climb rate, with about 300 pounds of potential vulture bait on board and the fuel tank not quite half full, was about 700 to 800 feet per minute at the 4500-foot density altitude. A few minutes after leveling out, the airspeed indicator showed 160 mph, but Taylor protested that the propeller wasn't allowing enough rpm. Not bad from 75 horsepower. True airspeed was 180 mph.

The rain came and went in spurts, along with occasional light turbulence. We never found any frog-stranglers, but in the light shower, the pitch remained stable and the

plane was oblivious. I'd want to see what happens when a fresh coat of sacrificial flies is applied to the lifting surfaces, but the initial test was positive. Rain didn't bother the Dragonfly and nothing bothered the Magnum. Cylinder head temperature was about 350 degrees during climb on a 90 degree day."

ADJUSTING THE POSA CARBURETOR

We've also worked with Flight Concepts and created a tape that is about an hour and half long on how to install a Posa carburetor, maintain it, adjust it for optimum performance and perhaps most importantly understand what it is and what it does.

There's a lot in this tape that is applicable not only to Posa carburetors but to any carburetion system used on an aircraft. We're showing you how to use the exhaust gas temperature gauge as a reference instrument so that you don't have to guess about what the mixture is going to be on that first flight. You can set it and predict that it's going to be right before you even take off. We're trying to pass on our experience in working with these things for a lot of years in such a way that it is easily understandable.

Carburetion is particularly difficult to try to describe in just printed text, but with the video tapes, we've found that not only can we describe what's happening with narration, but we can show you what the exhaust color should look like. You can hear what the engine should sound like. You can read the exhaust gas temperature instruments and see what's happening as we go through the various adjustments and how they effect the carburetion.

We believe this is really a worthwhile tape and a valuable reference tool. This particular one sells for \$29.95.

DRAGONFLIGHT TO MEXICO

Three weeks ago, Phyllis and I took a little four day trip down to Tepic, Mexico a distance of about 1200 airline miles from Eloy.

We lifted off at Eloy at about 7:30 a.m. after having filed an international border crossing flight plan with Flight Service. We flew roughly 200 miles south landing at Hermosillo, Mexico to clear customs there and fill out the necessary documents to fly legally in Mexico. There is no charge for this. The Mexicans were very cordial and helpful. The only problem we had was that we couldn't hardly get close

to the Dragonfly cause every Mexican on the airport was gathered around it. They'd never seen anything quite like that before.

From Hermosillo we made our next stop at Los Moches for fuel and a nice lunch. The Platus Frutas, or translated, plate of fresh fruit is fantastic in Mexico. We departed Los Moches for Mazatlan for another fuel stop and then headed to our final destination of Tepic about 250 miles further south.

When we got within 70 miles of Tepic we ran into very low cloud cover. The mountains where Tepic is located were obscured by clouds, so we turned back and landed at a little quaint village called Teahuacapan with a beautiful 5000 ft paved runway, but no fuel facilities. We had to walk a mile and a half into town since we hadn't buzzed the town to raise the taxi as is normal in Mexico.

No one in town spoke English, but in our limited Spanish we found out where the local hotel was and arranged lodging for the night, which cost us 1500 pesos. The rate of exchange on pesos is 855 to one, so we paid \$1.75 for the nights lodging. The bed was a little lumpy, but the facilities were quaint and clean. Besides who can complain for the price? Next morning we flew back to Mazatlan again and refueled and went on to Tepic.

Two days later we retraced our route home again landing at Hermosillo, Mexico to turn in our paperwork and depart from the country legally, then entering the United States port of entry at Nogales, AZ to be cleared in by our own Customs Officials.

Mexico is a real fun country to visit and fly in. The government has built many new airports in the last few years, all of them with paved runways at least 5000 ft long, so that many of the smaller towns that were formerly inaccessible by aircraft are now within reach of the air traveler. Many of these towns have seen absolutely no tourists, such as the little town of Teahuacapan that we visited, so prices are very cheap and you can see rural Mexico at its best.

We maintained a home in Mexico for 12 years, speak some Spanish and really enjoy the times we were able to spend in Mexico.

I just talked with Troy Burris of Los Alimos, CA about going to Mexico some time in May of 1987 with a flight of Dragonflies. 7

We would plan to spend a week in Mexico and I believe with our knowledge of Mexico, my wife and I could plan a very enjoyable, inexpensive, itinerary so that our group could go places and see things that the average tourist has not even heard of. The weather in May is warm, but not yet hot, and nights are cool. Typical weather at that time of year is beautiful.

I know there are scare stories about Mexico, but I find them hard to believe. I've been flying in Mexico for the last twenty-seven years, maintained a home in Mexico for twelve years. We have several friends who still maintain homes there and fly in and out of Mexico all the time. We have never known of or no one that we know has ever known anyone who ever had any problem whatsoever in Mexico. Mexico is like any other country. If you go there. treat the people with respect and obey the laws of the country, you have absolutely no problem whatsoever. We'd like to lead a group down there. I think everyone would have a fantastic time.

If the group was large enough, in order to accommodate excess baggage and that sort of thing, we could probably arrange to take in a big Cessna truck to haul the extra goodies, if we could find a pilot who would lower his standards to fly a spam can. There's a lot of you guys getting your airplanes finished and de-bugged so that you've got airplanes that can go out and do the job they were designed to do; take you over long distance at a good rate of speed to get to places where you would enjoy being. Let's go do it!

If you're interested in such a trip, write or call soon. It will take a while planning to make everthing work smoothly.

ODDS AND ENDS OF PARTS AVAILABLE

We have one set of prefabricated wheel fairings for the Mark I Dragonfly from a Task kit. The first guy to place the order gets them.

We have nine Ken Brock Dragonfly spinners. They're shaped a little differently than the other spinner. Frankly, I kinda like the shape. It is shaped as shown on the Tri-Fly here. We're closing them out at \$50.00 each. The wall thickness on the spinner itself is about twice as thick as our other spinner. They are supplied with the recessed back plate to match up with Hapi prop hub and our cowling. They are not supplied with a front plate.

It's necessary that you make a round disc to support the front end of the proper diameter appropriate to the propellor you're using. We have three sets of Spruce longerons for the upper edges of the fuselages in stock. \$15.00 each. NOTE: They must go truck freight, as they are too long for UPS. Also in stock on our bargain table, one brand new, never used, Fairbanks Morse 4 cylinder magneto with impulse coupling. Works on VW engine, \$175.00.

Two brand new 32mm Keihin carburetors that we tested, found them to work pretty well, but they were unavailable in quantity at a price we could afford. \$40.00 a piece.

One 32mm altitude compensated Mikuni carburetor, brand new, \$50.00.

One 0-700 mile an hour airspeed indicator. Could be useful if you are building a super fast Dragonfly, \$10.00.

Approximately 20 used 3 1/8" aircraft instruments of various, probably worthless types, good conversation pieces if shined up and used for ornaments, \$5.00 apiece. Please Note: All of these parts or instruments are sold as is, no returns, no builder support to fit them to your aircraft and etc. When you buy them they're yours.

BARGAIN ENGINE

We have taken in several engines of the model 60 variety from builders who are converting to Magnum heads. We have a long block engine, 1835cc, equipped with dual ignition heads, hydraulic lifters, full flow oil filter, a long prop hub. This engine is built of some new and some slightly used parts such as the heads, out of low time engines. This engine will carry full 100 hour or 1 year factory warranty, can be equipped as single or dual ignition, electronic or magneto ignition. Using this engine as a building block you can add the accessory case, manifolding and such do whatever you like. A bargain at \$2200.00.

ANOTHER BARGAIN ENGINE

Dragonfly builder, Ken Howell, of Prescott, AZ, bought a 60-2DM a little over a year ago. The engine was installed in his Dragonfly, but has never been started yet.

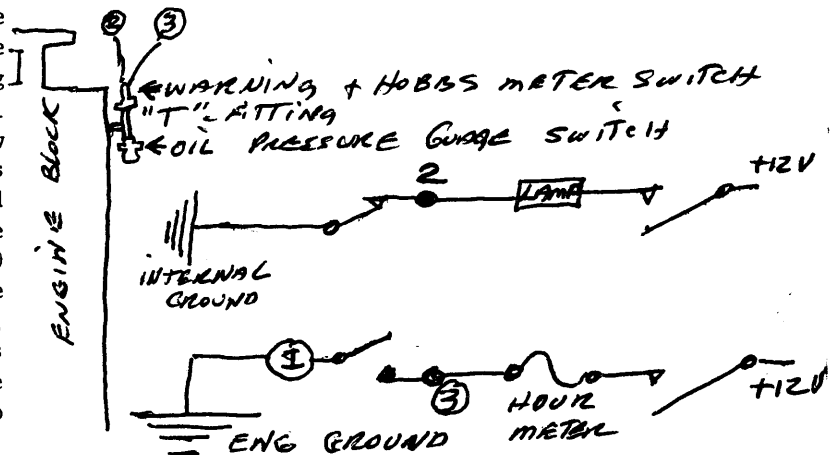
Ken now wants to install a new Magnum plus in his Dragonfly and wanted to trade this engine back in. That engine will be available for \$3300.00 and we will pass along the one year or 100 hour factory warranty to the new owner.

The reason for this is that it involves

far less labor time and less cost to build a brand new Magnum engine from bare parts than to tear an existing engine down, which involves labor work, redo all the necessary things to turn it into a Magnum and then build it back up again.

WARNING LIGHT CIRCUITS

Dragonfly builder Justin Mace, of Tucson, AZ came up with a clever little circuit operated by an oil pressure switch. It gives him a low oil pressure warning light and activates the Hobbs Hourmeter when engine is running. Justin has put a tee in the oil pressure line at the side of the engine block and added a PS127 switch fits Chevy '76, '77, GMC trucks '76 and Pontiac '77 and '78. Retail cost is about \$5.00 available at most local auto parts stores. It is wired per the sketch, so that when the master switch is on, the red idiot light on the panel shows that there is no oil pressure. As soon as the engine is started and develops oil pressure, it turns the red light off and activates the electrically operated hourmeter. The red low oil pressure warning light also doubles as a warning light to indicate that the master switch is still on. I think it might be a worthwhile addition to your Dragonfly that will cost you about 2 oz. in weight.



INSTALLING AILERON AND ELEVATOR HINGES

Pat and I have worked up a system of installing aileron and elevator hinges that saves considerable time over the method that Bob used in the original Dragonfly plans.

If you'll follow these instructions in the order given, you'll find that hingeing isn't that difficult at all.

1. Lay out the hinge location on both the wing and canard. Select the aluminum torque tubes for the proper locations. Allow 1 inch of excess tubing on both ends of the control surface and mark the locations of the hinge hole cutouts in the torque tubes.

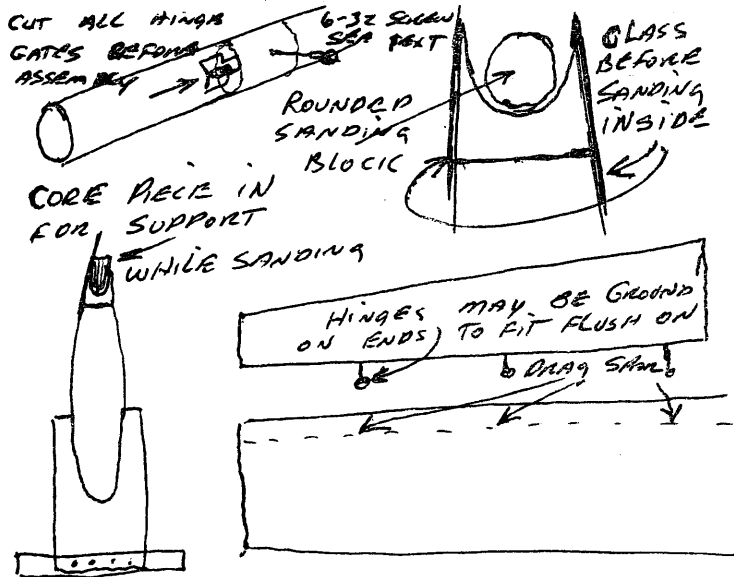
2. Make up a cardboard template with a window in it, exactly the right size to scribe the window cutouts in the torque tube. Using template, scribe the holes to be cut in the torque tube. Drill and file to a proper shape.

3. Assemble and install DF123 hinge assemblies inside the tube and glue them in the proper position with Saf-T-Poxy. NOTE: Make sure the inside of the tubing and the DF123 do not have any oil on them.

4. You can now install the torque tube assembly into the cores for both the elevator and the ailerons.

5. Glass the elevator and ailerons as per Dragonfly plans.

6. Stand both the wing and canard on the leading edge to install the C section foam behind the drag spar. Install as per plans with high density polyurethane foam inserts on both sides of the hinge location. We do this by first installing the C section blue styrene foam, laying out the width of the hinge locations allowing 3/16" width for a hinge slot, then allowing for the width of the high density foam inserts on both sides of that. Cut the blue foam out of that hinge location. we use a hack saw blade to do this kind of work. Use the blue foam as a template to cut the high density inserts. Insert the high density inserts into the hinge locations and allow the resin to cure.



7. Reinsert the scrap piece in the back of the C section to support the edges while you are sanding. See the sketch.

8. Sand the upper and lower surfaces of the C section to smoothly fair with the top and bottom surfaces of the airfoil.

9. Remove the core piece from the C section and cover it with waxed paper to protect it from the glass resins sticking to it and reinsert it into the C section.

10. Glass both the top and the bottom surfaces of the C section and allow to cure.

11. Remove the core piece of the C section, scribe straight lines at the open edge of the C section. Allow plenty of excess to the rear and do the initial trimming.

12. Cut into the leading edge of the control surface you're fitting at the proper hinge locations and expose the hinge gate holes.

13. Drill through the DF123 thimbles and tube with a #36 drill. Tap for 6-32. Install a 6-32 screw. Put a dab of flox over the head of the screw to safety it. This will assure that the DF123 can never move from its position in the tube.

14. Put the hinges in their proper positions on the control surface. Dig out all material that may be in the hinge slots between the high density blocks. Lower the control surface into position and determine how much more you have to take off the trailing edges of the C section to obtain clearance. Continue refitting and removing small amounts from the trailing edge of the T section, until the bases of the hinges rest on the drag spar. NOTE: One hinge will come in contact with the drag spar before all three rest solidly against the spar. It is permissible to grind on the base of the hinges (see the sketch) in order to nest them against the drag spar and obtain proper alignment. As you move the control surface forward into position by trimming the excess on the trailing edge of the C section, it will be necessary for you to sand and clear the blue foam that forms

the C-section to clear the nose of the control surface. A piece of the scrap section cut out of the small end of the C section wrapped with sand paper makes a nice tool to sand clearance with. You should have 1/8" clearance between the nose of the control surface and the interior of the C section when you are finished to allow for the buildup of the glass cloth when you lay up.

15. When all of the hinges rest against the drag spar and everything is in proper alignment, protect the leading edge of the control surface with waxed paper with small slots through it at the hinge locations. Half fill the slots between the high density foam inserts at the hinge locations and install the control surface in place. Use sucker sticks or small wedges between the trailing edge of the C section and control surface to assure alignment while the flox retaining the hinges sets overnight.

16. After curing, remove the control surface from its position by pulling it to the inboard direction, disengaging the hinge pins.

17. Sand and clean out any sharp edges and apply two layers of six ounce glass to the inside of the C section. NOTE: Be certain that you have sanded enough clearance that the glass will not build up and come in contact with the leading edge of the control surface.

That's all there is to it, troops. It's not at all hard to do this way. Everything becomes self-aligning and you'll have hinges that are in the right position. Everything faired to each other the first time. Try it, you'll like it.

TOM ADAMS WHEELPANTS

Tom Adams started on a Mark I and then converted to Mark II before the project was finished. He had kind of pre-built the wheelpants for the Mark I and didn't want to throw away all of his work. If you look carefully at his wheel pants, which look pretty decent, you may note that they are modified Mark I wheelpants and it looks to me quite possible that you guys wanting to make the retrofit could salvage some of the work you have done already. At the tips of your wings reshape the front end of them, presto, a cheap set of wheelpants.

Tom's aircraft has about 100 hours on it. It was being flown without the spinner when this picture was taken. He'd developed a little vibration crack and removed the spinner so we could weld it. Incidentally, those of you out in the field who do have spinners that have developed cracks, these cracks can be avoided by very carefully radiusing all the corners, smoothing them very nicely first with 400 grit sandpaper, then with 600 grit sandpaper, really polishing all the edges. Watch your spinners carefully for cracking and remove them and heliarc weld them at the first sign of a crack.

You may also note in the picture that Tom's tailwheel sets rather high. Tom has installed the tail wheel spring a little differently and after flying in his airplane and hearing his comments on it, I really see nothing wrong with it. His tail wheel spring follows the angle of the top line of the fuselage rather than the bottom line of the fuselage which raises the tail a bit more, gives better over the nose visibility in the three point position, doesn't seem to have any real negative reasons for not doing it that way.

About the only thing that might have a negative impact on is the deceleration rate on landing with the lower angle attack in the three point position. The aircraft won't plow quite as much air and may not slow down quite as quickly, but because the angular difference is so slight, I really doubt that

it could be measured. If you like it, do it.

24 November, 1986

To Mr. Rex Taylor,

Today is a great day! I have made my DRAGONFLY'S flight test. It has been constructed same as Bob designed without modifications.

It took me 2 1/2 years to complete the scratch built MK I and now, I just can tell you that it is very satisfying. The bird flew great with no problems at all. I didn't fix the anti servo trim tab for the first flight, but replaced it by strong spring. It didn't work, so I'll put the trim tab on.

I'm a pilot of hundred and a half hours of experience, but no taildragger. A couple of hours taxiing was sufficient before flight.

An ideal condition with no wind, a sunny day and my courage up, I pushed the throttle, lifted the tail first and flew off at about 55 MPH, lift back to climb 1000 ft/mn. just as any plane does but when I stabilize, it take a couple of second to realize that the airspeed had doubled. The little HAPI 60-2DM seemed to enjoy the run.

I want to thank Bob Walters for this fantastic plane he designed; also thank you Rex for continuing the development of Dragonfly and all the things you are helping to happen in sport aviation.

Sincerely,

Leon Bernard & Marc Labbe
Builders No. 574
Drummondville
Prov. of Quebec, Canada

THE TRI-FLY PROJECT

The following is a letter that we sent out to all of the builders who have indicated an interest in the tri-cycle gear. We will reprint it here in its entirety. We now have commitments from seven builders in house, but need 18 more before we will commit ourselves to the big expense in time and money that is necessary to make tri-cycle gear available. I believe the letter is self-explanatory.

The Tri-Fly is for sale, can be delivered with restrictions flown off to the buyer. The buyer could get a custom paint scheme and upholstery by placing a deposit before the airplane is finished.

Dear Dragonfly builder,

We have had considerable interest in the tri-cycle geared version of the Dragonfly and the airplane is progressing very nicely, although somewhat slower than expected due to the fact that we simply haven't had a lot of time to devote to the project. The tri-cycle geared configuration is being developed entirely with our own funds and on a "time available" basis, when my son, Patrick, and I have time to work on it.

All of the necessary tooling to make the main gear pyramids, the motor mount and nose gear structure, was created at the time the Prototype was built and is ready for production.

From an engineering standpoint, we believe that we have everything under control, subject to verification by flight testing. We are confident that if any adjustments are necessary after flight testing, that they will require only minimal changes in the tooling to change the main landing gear position slightly. We are certain that the motor mount, nose gear support assembly and the nose gear itself will require no redesign during the flight testing period and a considerable latitude for adjustment has been built in to that assembly should adjustment ever be required.

The question now is whether we have a viable product for production with enough numbers to make it feasible.

We have determined that an initial production run of twenty-five (25) landing gear units is necessary to cover our tooling costs and make a modest profit.

The tri-cycle landing gear kit for the Dragonfly is designed to retro-fit into the scratch-built Mark I's and Mark II's as well as the prefab kits.

MARK III LANDING GEAR KIT - consists of ----

--
Nose Gear Section

#1 - A combined motor mount, nose gear support system. A welded tubular structure ready to bolt to your firewall. This mount is the new style Dragonfly mount with extra structure to support the nose gear. These mounts will fit only HAPI engines and we do not contemplate building any mounts for anyone else's engines. Drawings will be installation drawings only. Fabrication drawings for the motor mount, nose gear structure will not be provided. However, complete installation instructions will be provided for installing the motor mount as fabricated by HAPI.

#2 - A complete air oleo pneumatic nose strut with 360 degree castering nosewheel fork equipped with friction damper and

neutral lock. The nosewheel is a 4" diameter nosewheel with a 280 X 260 X 4 tire and tube assembly complete with bearings and axle.

#3 - Hardware is provided to attach the nosewheel assembly to the motor mount assembly. NOTE: The four bolts that retain the motor mount assembly to the firewall are not provided in the kit because the lengths will vary between prefab fuselages and scratch built fuselages. Bolts are standard AN hardware available from Wicks or Spruce. (The above is the necessary parts to install the nose gear on your Dragonfly.)

MAIN LANDING GEAR KIT - consists of -

#1 - Right and left side welded steel tube main landing gear support capture assemblies.

#2 - Two heat treated spring steel tapered main gear legs, one right and one left ready for installation.

#3 - Set of HAPI 5" main landing wheels complete with HAPI hydraulic disc brakes, brake lines, hydraulic line fittings, two master cylinders and two cast aluminum toe brake pedals. The wheel set is complete with all bolts, bearings and cotter pins necessary to install.

#4 - Two 1100 X 4 X 5 main landing gear tires and tubes. NOTE: 500 X 5 tires optional and available at slightly additional cost.

#5 - All necessary fiberglass cloth, high density foam to install main gear in fuselage.

#6 - Complete installation instructions.

Total kit cost \$1345.00.

We must have 25 committed builders to go ahead with this project or it simply isn't feasible and the Mark III Dragonfly would then be a one of a kind airplane. We do have "in house" commitments from 7 builders who want to install the tri-cycle gear on their airplanes. We need a minimum of 18 more. What we're asking you to do is this, if you want to build the tri-cycle geared airplane, send us a check for \$650.00 to cover the nose gear assembly or if you'd rather not send a check, just send a charge card number as your commitment to this. PLEASE NOTE: We will NOT cash your check or charge anything to your credit card until we get the full 25 people and have notified you that we are going ahead with this project and ordering materials.

ANTICIPATED DELIVERY SCHEDULE

If we can get our twenty five committed builders by JAN 15, we will ship these first twenty five builders their complete nose gear assemblies on or before MAR 1, 1987.

When we ship the nose gear assemblies, we will then ask you to prepay the balance for the main gear assemblies. We have a much longer lead time for the items that are not manufactured in house on the main gear. As soon as we get our twenty five committed builders, we will place the orders for the tapered landing gear legs. It will take us just about three months time to get the main landing gear legs made and in house, for the bending and minor machining operations left and then through heat treat to be tempered before shipment to you. In the meantime, we will be building the main gear support assemblies and the brake systems to go along with them.

Assuming we have our twenty five builders by JAN 15TH 1987, you builders can have a complete tri-cycle gear system in your hands by APR. 30, 1987. We expect to have the tri-cycle gear Dragonfly flying in December at the very latest, January, so we will have an opportunity to fly the airplane and make an adjustment on the positioning of the main gear if flight testing proves that such adjustments are necessary before your main gear mounts are shipped to you. We don't believe that they will require adjustment but that's the reason for testing, to prove the hardware is right.

If we are not able to obtain the necessary 25 committed builders by Jan. 15, 1987 we will return the uncashed checks to you and write off the Tri-Fly project for lack of interest. We don't want to take anyone's money on this project until we see the numbers to make it profitable. To some "profit" is a dirty word, but it's what we must have to stay in business, and if there's no profit, Patrick and I don't get a paycheck.

If this letter has not answered all the questions concerning the tricycle gear, please call me between 3:00 and 5:00 Arizona time any weekday during our builder support time and I'll be glad to answer any questions you may have.

Sincerely,



Rex Taylor President

NEWSLETTER PRICE INCREASE

We have been trying in the past few newsletters to increase both the quality and the quantity of the contents. We're trying to include something in each issue such as the canopy installation last issue and the aileron and elevator instructions in this issue, that will save you time and money. We believe in this manner the savings will more than offset the price.

Writing a newsletter such as this takes considerable time for both myself and Lynda on the word processor. Photos have to be taken and processed, then pasting up the master newsletter so that the printer can make plates and do his thing. After that the office girls get to fold and staple the newsletter and attach address labels furnished by another firm who specialize in labels and mailing lists.

It all adds up to more time and expense than \$10.00 a year will cover. The new subscription price will be \$15.00 a year in United States, Canada and Mexico. \$20.00 a year for all other foreign countries. We'll try to continue producing a newsletter that will inform you, supplement the plans and help reduce the building time on your Dragonfly.

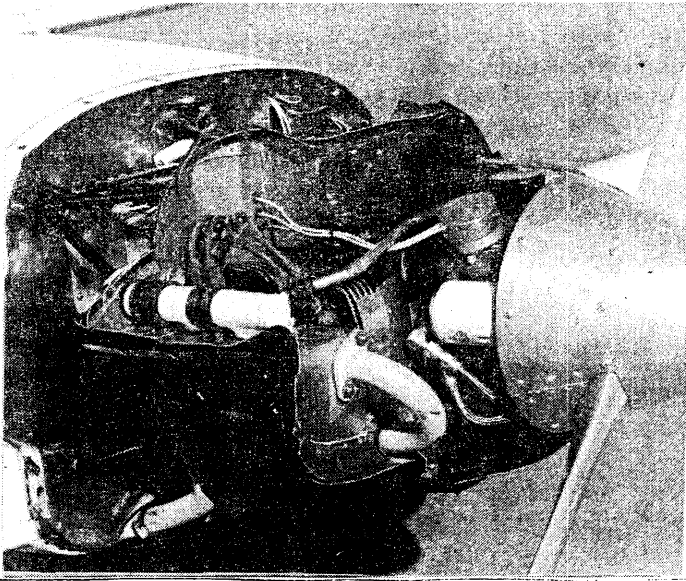
You'll note that this issue of the newsletter is almost double the usual pages due to considerable advertisement enclosed. You may also note, however, that the editorial content is increased by approximately three pages. We'll go back to the normal size with the next issue.

The effective date for the increase in newsletter subscription prices will be January 1, 1987. All existing subscriptions will be fulfilled to the expiry date, at which time your renewal will be at the new rate.

BUILDER SUPPORT HOURS

Most builders have been very cooperative in placing their calls between 3:00 and 5:00 P.M. mountain standard time. Pat and I have set aside those hours every day to provide builder support. We cannot take builder support calls at other hours without neglecting our work in the shop. All of you builders know how frustrating it is to be waiting for a part when you need it. You can help us to meet our delivery schedules and get parts out the door by calling for builder support only during those hours specified.

If you write for builder support, please try to keep your questions short and to the point, then leave a space for the answer. Please also include a stamped self-addressed envelope for the reply. We don't charge for builder support except to ask you to pick up the postage.



FULL FLOW FILTERS

We have added a full flow oil filtering system as standard equipment on all hydraulic lifter engines and we also offer it as a kit to fit any VW conversion. The kit includes special high volume oil pump and cover, stainless steel high pressure lines, filter base casting and filter. Furnished with complete instructions for installation at \$119.50.

You will note in the photo above that the intake manifolds have been redesigned on all Magnum Series engines to clear standard Dragonfly cowlings. The round unit just above the oil filter cartridge is the sensor unit for the dual electronic ignition. Microprocessors are mounted on the firewall. The magneto drive accessory pad can now be used to drive a vacuum pump if desired.

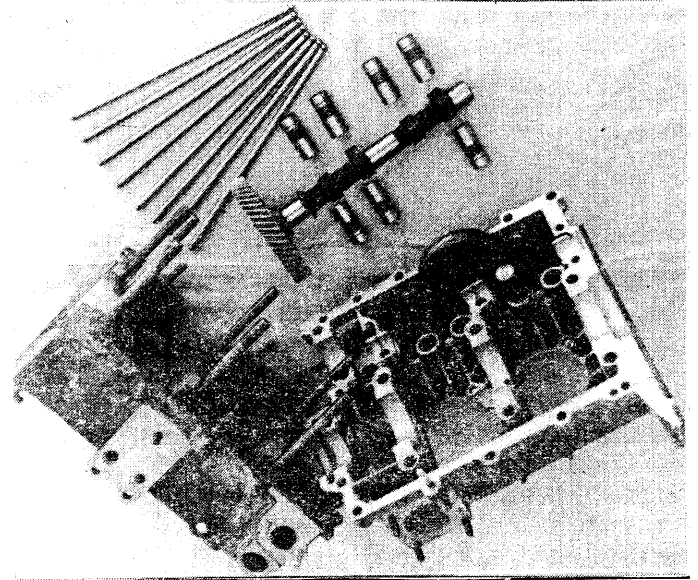
Also note the tray that goes under the oil sump, front lip of which is visible, behind spinner, just below oil lines. Too many builders are not including this tray which is absolutely necessary for good engine cooling, then can't understand why their engines run hot. If you build them right and according to the instructions, they'll work right the first time. We've spent quite literally thousands of flying hours behind VW engines now and we KNOW what it takes to achieve a high standard of reliability.

I am at a complete loss to understand why some of our builders will disregard our advice, take the advice of someone who has no experience basis to give advice, then they get in trouble.

We spend a great deal of time on the phone and responding to letters giving builders support to builders who have bought

somebody else's stuff, that doesn't fit, doesn't work, or has caused some problem and they need bailing out.

The problem is guys, that there's only 24 hours in our day too and we have enough to do supporting our own products. I realize you want to save money. Everybody does, but when your saving money costs us builder support time that we could be using to build our own products and fill our own orders, it becomes a problem. Before you elect to save a couple of bucks, consider the builders support aspect. Can the guy selling the product guarantee that it is compatible with your Dragonfly and does he have the builders support to stand behind it?



HYDRAULIC LIFTER CONVERSION

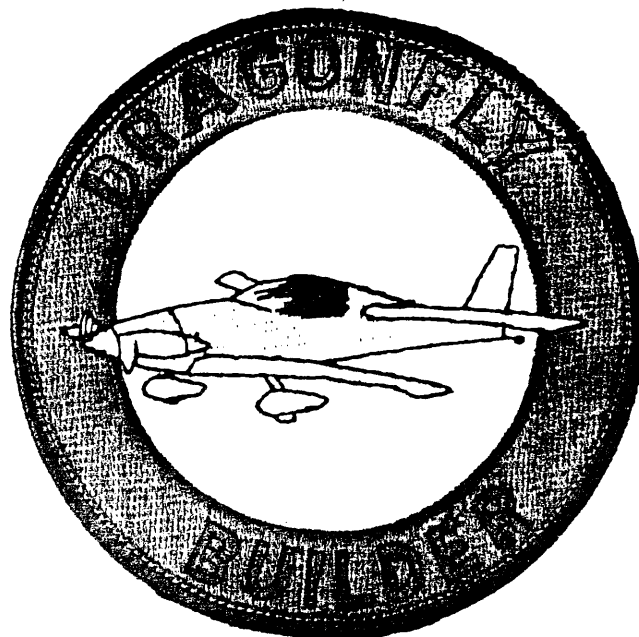
We believe that engineering hydraulic lifters into our engines was the single most significant advance we've ever made toward high reliability on a VW aircraft engine.

On a hydraulic equipped engine, after the first twenty five hours, in which the cylinder heads should be retorqued, you'll NEVER have to readjust the valves.

Installing hydraulics involves machining the crankcase to accept the larger diameter lifter bodies, a special grind on the camshaft and a special length on the pushrods. We are providing this service to those building their own engines. Includes machining, new cam, lifters, pushrods. Case should have cylinder hold down studs removed, as shown in picture, when you send it in for machining. We can also align bore, bore out for big cylinders or do any other machine work that you may require while it is here. Hydraulic lifter conversion sells for \$295.00. NOTE: Crate your case well. We'll return it in the same box.

DRAGONFLY'S FLYING

According to our best guesstimation there are 140 Dragonflys flying at this time. Statistics show that 10% of plans sold actually become flying aircraft. Our flying Dragonflys already exceed the norm and there may be 100 more flying in the near future.



FOLDING CHAIRS

We have approximately twenty folding chairs in stock as shown in this photo. They are of very sturdy all steel construction and fold up to be carried in the shoulder bag over Phyllis' shoulder. Color is a bright blue. Weight is 4 lbs. 2 oz. each. Two of them carried in your Dragonfly make attending a fly-in a whole lot easier on your feet. They sell for \$18.95 each. Christmas special, 2 for \$35.00 postpaid, U.S. only.

ANOTHER NEW DRAGONFLY

Just received a phone call from K.A. Townsend of Orangeburg, S.C. He has put the first flight on his Mark 1 7/8. (A Mark I with inboard gear legs) A few trim adjustments may be necessary, but basically it was a trouble-free first flight.

He reports everything in the engine department worked well the first time out (HAPI powered, of course) and he found the aircraft very easy to land.

We have a good supply of the new Dragonfly builder patches in stock. They are a shiny white Dragonfly on a light blue background, ringed by a dark blue border edged in gold with gold embroidered letters. The xerox image here doesn't do them justice. \$5.00 each postpaid. Look great on your cap or jacket!

BUILDER MEETINGS

I had the pleasure of meeting with the Chicago area Dragonfly builders last month while on a business trip in the area. There were about fifteen builders in attendance and I enjoyed meeting each one of them and having the opportunity to answer questions in person.

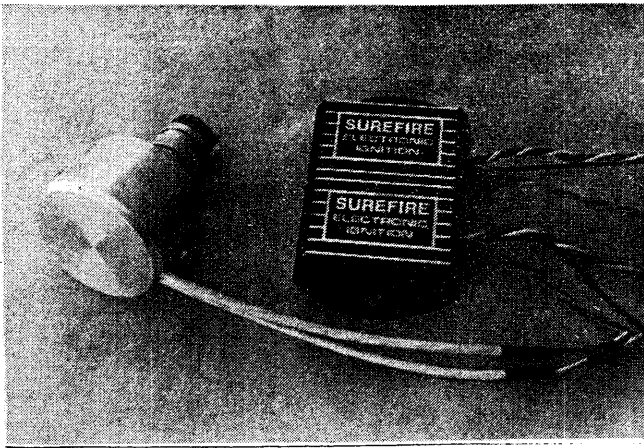
I would very much like to have the opportunity to meet and talk with every Dragonfly builder. I do seem to get about the country though and if groups of builders will write and indicate an interest in having such a meeting, I'll include as many as possible wherever possible in my travel schedules. Give me a name and a phone number to contact.

CLOSED FOR HOLIDAYS

Both HAPI and Viking will close business operations on Dec. 24, 1986 and will remain closed until Jan. 5, 1987.

In anticipation of a holiday break all of our employees work extra hours in the weeks preceding the holidays and bank the time so that we might shut the operation down between Christmas and New Years for a much needed rest.

PLEASE NOTE: There will be an answering machine in operation on the 602-466-9244 line that you can use to record a message if you feel it necessary.



SUREFIRE SOLID STATE IGNITION SYSTEMS

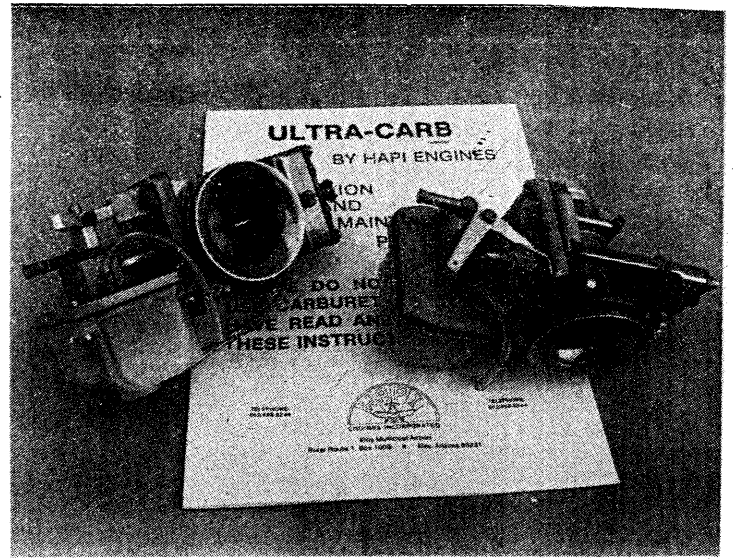
We are equipping all new HAPI engines with Surefire solid state ignition systems as standard equipment unless otherwise specified by the customer. In addition to increased reliability, it offers several distinct advantages; programmed variable ignition timing for slow idle, good throttle response and better top end power output.

Surefire system slips into the distributor drive hole and the black control modules pictured here, which control two ignition coils each, are mounted somewhere on the back of the engine or the firewall. Location is not critical.

Will work on any VW engine that has the distributor drive system intact and a dynamo type alternator. It does not require shielded spark plugs or ignition harness. Puts no interference into the radio. Has absolutely no points, no condensers, only three non-critical moving parts. Best of all, it is much less expensive than the dual magnetos and offers much better performance.



15



WE'RE SHIPPING ULTRACARB CARBURETORS

Standard equipment on all new HAPI engines is now the Ultracarb carburetor. We have spent several years trying to find a carburetor that virtually thinks for itself and protects the engine against over-rich or over-lean conditions and does not require a real understanding of carburetion on the part of the customer. We believe that the Ultracarb meets those goals very well. It is a slide type carburetor, metering fuel with a sculptured, tapered needle, but that's where the similarity ends. UltraCarb has a float bowl to regulate fuel pressure and an Automatic Power Enrichment Jet enriches the mixture at high power settings, such as take-off and climb-out, so that you don't burn valves.

Ultracarb also has a full cockpit adjustable mixture control feature allowing you to lean it at altitude for maximum economy. Mixture control can also be used as idle cut off.

These carburetors are supplied tailored to the displacement of your particular engine. You tell us what size engine you are running; we jet the carburetor properly, put it on an engine and test run it before shipment to you. You should not have to

HAPPY HOLIDAYS
FROM OUR FAMILY
TO YOUR FAMILY

The Taylors

