JAYHAWK MODEL MASTERS
AMA # 2013
JUNE

****

JUNE MEETING CANCELED DUE TO LACK OF INTEREST ???

Due to the poor turnouts at the April and May meetings, we have decided to cancel the June meeting. At this time we do plan to hold the JULY 16 meeting as planned. It would seem that most club members are not interested in the club enough to set aside one evening a month to get together. We hope to be able to go back to a monthly meeting format this fall and winter. Please let us know if you have any good ideas to increase meeting attendance.

While on the subject of group participation, I keep hearing people ask. "Why haven't we heard anything about a club Fun-Fly ?" ANSWER= Same as above. The only difference is, everyone wants to fly in one, but knowone wants to help with the work envolved.

****

Meeting Minutes
May

The meeting was called to order promptly at 7:00 PM! Since there were only (2) officers and (4) club members present, the motion was made, and seconded, to recess, and move the meeting to Arther Porters resturant. At Authers it was decided to vote again. The members present voted to spend the club treasury on a party ! WE DID! Somewhere between the 4th & 5th rounds on the drinks it was voted to desolve the club because of lack of interest. Again, the vote was unanamous.

At the meeting, we spent all your money, and desolved the club! You should have been there!

P.S.
The real meeting minutes are below, but maybe I had you going for a second.

The Belt Buckle order was addressed and the final order totaled (6). Again, if you would be interested in a buckle, get ahold of me or Richard B.

Student/instructor program hand-outs were passed out. Sorenson (6), Andes (3), Cordle (2).

Bill Andes reported on current state of lease negotiations, and insurance requirments on the club field.

- New Members- Jerry Lee, Phil Montgumery. (WELCOME)

Report on club Fun-Fly, canceled!

Meeting called to order at 7:35, adjourned at 7:55. (6) out of almost (80) members were present. I might just mention that Chuck Yeager and Burt Rutan will be at our next meeting on July 16. I understand that Burt has some great slides of his vacation in the Ozarks. Im sure you'll all want to see them.

I dont think I want to spend the time to fill in this part !

FOR SALE ***** FOR SALE ***** FOR SALE ***** FOR SALE ***** FOR SALE

FUTABA FGK/7 Channel Radio with 6 Servos, O.S. FS .40 4-Cycle Engine, O.S. .61 4-cycle Engine, Complete Flight Box with all Accessories, .40 Size Cherokee Plane, Stinger 4WD Gas car. For more information contact Gary Marshal at 842-5552.

********** MOWING FEE HAS NOT BEEN RECEIVED FROM THE FOLLOWING PEOPLE **********

DAVE VINYARD ALAN STAUS LARRY CORNELIUS KEN BLACKFORD DAMIAN POWELL

********** I NEED AN A.M.A. NUMBER FROM THE FOLLOWING PEOPLE A.S.A.P. **********

KEN BLACKFORD	RALPH DRAKE	RON GRIFFIN	ROB HARRIS	LARRY SCHULTZ
ALAN STAUS	STAN TIEMEYER	DOUG CLOUD	JOE MARKLEY	BOB OLIVER
JEFF OLIVER	ALLAN HOLLE	JOE McGINNIS		

If you have received your A.M.A. card please contact me as soon as possible with your number. I need to get these sent in on club charter for insurance.

THANK YOU R.L.BALLARD

KCACA/

OLATHE BARNSTORMERS

CITY-WIDE

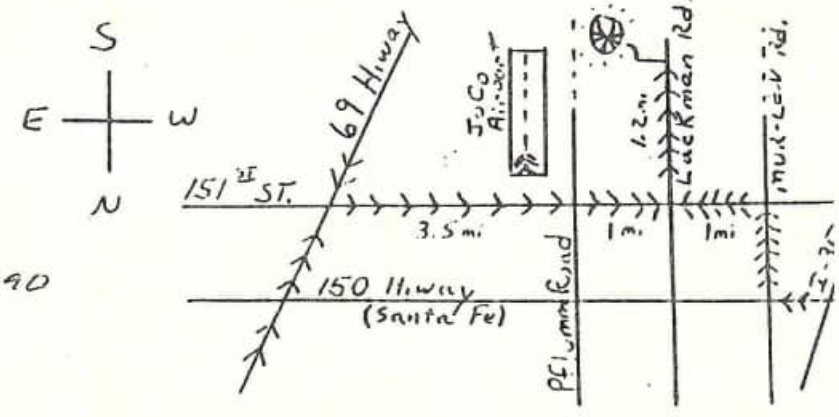
SPRING FUN FLY

SATURDAY JUNE 18. 1988
10AM-4PM

HERITAGE PARK-OLATHE
400 FOOT CEILING!
(W/I 3MI OF AIRPORT)

---FREE HOT DOGS & POP
---NO COMPETITION
---TRANS. IMPOUND
---RAFFLE
--OLD RELIABLE
--PT40/OS40FP
--MORE

CALL: GLEN DOBBINS 262-1399/236-4990
JIM RUSE 782-7858
TOM CARTER 492-2678
PAUL STEVENER 353-2601



HOW IT WORKS: TUNED PIPES

In order to understand how a tuned pipe works, you need a basic understanding of 2-cycle engine operation. In very simple terms, we can narrow this operation down into two cycles! These are:

1. INTAKE CYCLE: As the piston go's up, it creates a vacuum in the crankcase. This vacuum pulls the fresh fuel/air charge into the crankcase through the carb and opening crankshaft passage. The piston seals off the intake and exhaust ports, compressing the fuel charge in the combustion chamber at the same time. At, or just before top dead center, the glow plug ignites the fuel charge and the piston is driven back down.

2. EXHAUST CYCLE: As the piston go's down, it creates pressure in the crankcase, The rotating crankshaft port closes as the exhaust ports, and then the intake ports, are uncovered. The pressurized fuel charge in the crankcase is released into the cylinder and helps push the exhaust gas out of the engine.

3. The cycle repeats itself.

As you can see, a pulsating flow of air/fuel and exhaust gas is flowing through the engine with each complete cycle. When a muffler is used, this flow is allowed to expand and escape freely from the muffler outlet. Most of the exhaust gas and PART OF THE INTAKE FUEL CHARGE IS ALLOWED TO ESCAPE each time the piston uncovers the exhaust port. Losing part of the fuel charge is an accepted part of 2-cycle engine design!

Now visualize a tuned pipe attached to the exhaust port of the engine. As the exhaust gas enters the header (Small Section) of the pipe, it is forced to compress and accelerate to a very high velocity. All of a sudden, it reaches the large section of the pipe and can expand and slow down. Then, just as suddenly, it hits the small section at the end of the pipe and is forced to compress and increase velocity again. This causes a PRESSURE WAVE to flow back and forth inside the pipe with each exhaust cycle.

By ajusting the length of the pipe (from the exhaust port to the pipe outlet) this pressure wave can be timed to flow backward toward the exhaust port just as the escaping fuel charge is pushing the exhaust gas into the header pipe. This pressure wave, if timed correctly, will force the escaping fuel charge back into the cylinder and hold it there untill the piston seals off the exhaust port again.

In effect, the pressure wave acts as a Super-Charger in reverse! Insted of pressurizing the fuel charge from the intake side of the engine, it is doing the same thing from the exhaust side. When engine RPM and pressure wave length are matched, the engine is "On The Pipe" and will gain several hundred RPM from the extra fuel charge that is not allowed to escape with the exhaust gas. At any other RPM the engine is "Off The Pipe" and in general, will not perform as well as it would with a standard muffler.

Another question that often comes up is "Where do you put the pressure tap for tank pressure?" With all this activity taking place inside the pipe, where do you get steady pressure? A generally accepted rule is to place the pressure tap 1/4" inch forward of the start of the largest part of the pipe. There is a "Null" in the pressure wave at, or near this point and line pressure will be very similiar to a standard muffler tap. At any other point on the pipe or header, the Pressure Wave will have a bad effect on your fuel tank pressure.

RI

FUEL FILTER KNOW-HOW

A fuel filter is something most of us don't spend a great deal of time thinking about. If we did, I am sure fuel filters would enjoy more wide-spread use. I am also sure we would all have fewer engine problems when we go out to fly! One of the most frustrating experiances I have had was trying to get an engine to run correctly with a tiny little piece of "Sullivan fuel tank" stuck in the spray bar of the carb. Try as I might, the engine would not ajust out and after repeatedly taking the carb apart, I finally found the tiny speck of clear plastic. Since that time I run fuel filters on both the airplane and on the filler line on my flite box fuel pump. I have had no more problems with dirt in the carb.

Just how small a particle will a filter remove from your fuel supply? Most companies advertise a 130 Micron filter. One Micron is equal to .00003937 inch, so 130 Microns is equal to roughly .005 thousandths of an inch! Suffice it to say that anything that gets past two (2) filters is not going to get stuck in the carb! At least not if you use your filters correctly. Lets take a look at some examples of fuel filter systems.

A. IN-TANK CLUNK FILTER: These are WORTHLESS unless you run a 3rd. filler line to the tank and NEVER fill through the carb fuel line. Why? Think about it! If you pump fuel into the tank through the carb fuel line as most of us do, any dirt will be captured by the Clunk Filter on the "carb" side of the filter. As soon as you start the engine, normal fuel flow will "back flush" the Clunk filter and pull the dirt back into the carb. THE ONLY DIRT A "TWO LINE" CLUNK FILTER SET-UP WILL EVER CATCH, HAD TO BE INSIDE THE TANK WHEN YOU PUT IT TOGETHER!!

B. IN-LINE FILTER BETWEEN TANK AND CARB: You have the same deal here if you pull the line off of the carb to fuel up. The dirt is trapped on the "carb side" of the filter. Again, the filter is "Back-Flushed" when you start the engine and any dirt in the filter is sucked into the carb! ALWAYS PULL THE LINE BETWEEN THE TANK AND THE FILTER TO FUEL. This way any dirt goes into the tank, but is trapped by the filter on the way back to the carb.

C. TWO-PART THREADED FILTERS: These seem like a good idea, but I have had occasional problems with the gasket leaking. This is a very difficult problem to find. A leaking gasket allows the engine to suck in tiny air bubbles at high R.P.M.. This will mess up your mind while trying to get your engine to run like it should! If you must use the screw-apart filters, seal them with Epoxy and put them together with a couple of sets of pliers. Don't plan on taking them apart to clean them as this is not necessary! Occassionally remove the filter (Any kind of filter) and pump some fuel through it from both directions to clean it. This is all that is necessary to keep things working correctly.

Hard to beleave that a little fuel filter could be this complicated isen't it? Use them correctly, and use them always! They will save you some engine problems sooner or later!

Richard Ballard 1988

ABC, LAPPED, OR RINGED PISTON DESIGN
WHICH IS BEST?

There seems to be a lot of questions about engine design and the most often asked concerns piston seal design. Listed below are known facts about each type of engine. (We want to thank Mr. Duke Fox for providing much of the information for this article.) Cost, performance, and life all vary with different engine design. The intended use should be the final deciding factor when you buy a new engine.

Aluminum Ringed Piston/Steel cylinder sleeve

ADVANTAGES= Tolerates dirt and "Lean Runs" better. Good "Hot Re-start" ability. The ring can be cheaply and easily replaced when compression loss occures.

DISAVANTAGES= Ring drag and cylinder port webs in the liner reduce power somewhat. Engines with "Dykes Type" ring have very little compression at cranking speed which can make hand starting difficult. (K&B and some Irvine)

IRON LAPPED PISTON/CAST IRON SLEEVE

ADVANTAGES= Lower cost to manufacture results in low retail price. Easier starting when hot. Fairly cheap to replace piston and liner when necessary. Good compression, hot or cold. Good hand stating.

DISADVANTAGES= Heavy iron piston vibrates more. Can become excessive in .40 and larger size engines. Heat build-up and seizing in engines larger then .40 SIZE.

ABC (ALUMINUM PISTON/BRASS LINER WITH HARD CHROME PLATING)

ADVANTAGES= Maximum power and low vibration. Very good compression when cold.

DISADVANTAGES= Easily damaged by dirt & dust. Poor "hot re-start" capibility. Less forgiving during break-in and should be "Warmed Up" at low speed to prevent rod damage. High cost to replace piston and sleeve when re-build becomes necessary.

By now you may be wondering what the difference is and why each type of engine acts the way it does. Thermal expansion rates of different metals are the key to understanding each type of engine.

When heated: Iron and steel expand the least.
Aluminum expands more then steel.
Brass expands more then aluminum.

So, a ringed engine has a loose Aluminum piston running in a Steel sleeve. It depends on the Iron ring to provide the compression seal. The piston can expand when hot with-out seizing because it was a loose fit to start with.

A lapped Iron piston can expand when hot because the Steel sleeve expands also, although at a slightly lower rate. Given enough heat build-up, the piston will expand more then the sleeve and seize up. When things cool back down, all is well again however. This makes a great beginners engine because no matter what you do wrong, everything is O.K. again when it cools off!

An ABC engine is tight when cool. On start-up, the piston gets hot faster

then the liner, and things can get tight enough to suck a rod if you don't allow the engine to warm up at low speed. Give it time to warm up and all is well! Since the Brass/Chrome sleeve expands more then the Aluminum piston, THE HOTTER IT GETS, THE LOOSER IT GETS! ABC engines thrive on hot lean runs. The hotter they get, the better they run, up to a point. The "point" is when you lean it out so far it isn't getting enough oil and then things start to wear out fast!

ABC? Break them in a tad lean to keep liner expansion up. A "4-cycle rich" break-in can cost a lot of money on High-Performance ABC engines. A friend of mine blew up an ABC boat engine while trying to break it in rich! ABC means "A'l Break Cold"!

So what have we found out from all this?

ALUMINUM PISTON/STEEL SLEEVE= A good choice for all around flying. Long life, good power, and cheap re-build should you need it.

IRON PISTON/STEEL SLEEVE= Long engine life and cheap re-build if you ever need it. Very forgiving for the beginners first engine. Performance won't blow you away however!

ABC= "Go For It" High performance! but expect to pay for it when you buy it, and again later when re-build time comes around!

FLY SAFE RLB

WHEN IS A LONG-STROKE NOT A LONG STROKE?

(and who cares anyway?)

The recent announcement by O.S. Engines of a long-stroke SF series .61 to replace the .61 FSR seems to have resulted in some confusion. The SF series now include .40 and .46 size engines as direct replacements for the .40 and .45 FSR series. It is well to remember however that an SF does not a long-stroke make!

If you look at the bore and stroke measurements on the three new O.S. engines it is apparent that the .61 is a true long-stroke design while the .40 and .46 are not. They are both high R.P.M. over-square designs much like the FSR series they replace.

	Bore	Stroke	Difference
O.S. SF .40	.807"	.778"	Stroke is .029" shorter then bore
O.S. SF .46	.866"	.778"	Stroke is .088" shorter then bore
O.S. SF .61	.905"	.945"	Stroke is .040" longer then bore

What difference does it make? A true long-stroke engine develops its maximum horsepower and torque at a lower R.P.M.. This enables the engine to pull larger diameter or higher pitch props at a lower R.P.M.. The direct result is less noise and more actual pulling power through maneuvers. Also a more constant speed on the up and down side of loops, top hats, etc. An added dividend is that model size props are more efficient at lower R.P.M. (sub-sonic tip speed) which also adds usable power (thrust).

To my knowledge, the O.S. SF .61, Webra Speed .61 long-stroke, and the Fox Eagle III.61 (the first modern long-stroke) are the only true long-stroke engines presently available. Look for more companies to jump on the band wagon in years to come. RLB

KIT REPORT **** GREAT PLANES CAP-21-.61 SIZE

How sad! My CAP-21 became history on its 5th. flight. AH! A radio glitch you say? Or was it pilot error? If you guessed #2, you are correct. But I have an excuse, sort of!!

The CAP-21 has a long-standing reputation as a highly aerobatic aircraft. The roll-rate, spin-rate, and of course, the snap-roll are what made this aircraft a world class contender in the 1979-80 full scale world aerobatic competition. The Great Planes .60 size CAP-21 is a scale model of the real aircraft. As such, it inherited much (or more) of the full size CAP's aerobatic ability. This model will do anything you want it too, RIGHT NOW! As with any high-performance aircraft, it sometimes does it when you don't want it too!! This was the problem. I crashed on my 5th. flight after intering a gentle left turn at about 75 ft. altitude. TOTAL WIPE-OUT!! Why? I don't really know for sure!

The kit built up well and also went together fairly fast as we have come to expect from any Great Planes kit. The extra month of building was spent on a rubber mounted custom muffler and a nice looking pilot and cockpit detail. I would have to give this kit the usual high marks we have come to expect from Great Planes. They are always first rate!

The first test flight proved to be uneventful except for a noticable lack of power (A new Supre-Tigre .61 running very rich due to no break-in time). Further fiddleing and a Perry pump resulted in outstanding power from this engine on a 12/6 prop. On the infamus day of the CAP-21's demise everything was perfect. The first three flights of the day and a little trimming resulted in perfect knife-edge, straight stall-turns, good spin recovery (except for a very pronounced tendency to snap-roll(accellerated stall) out of the pull-up.

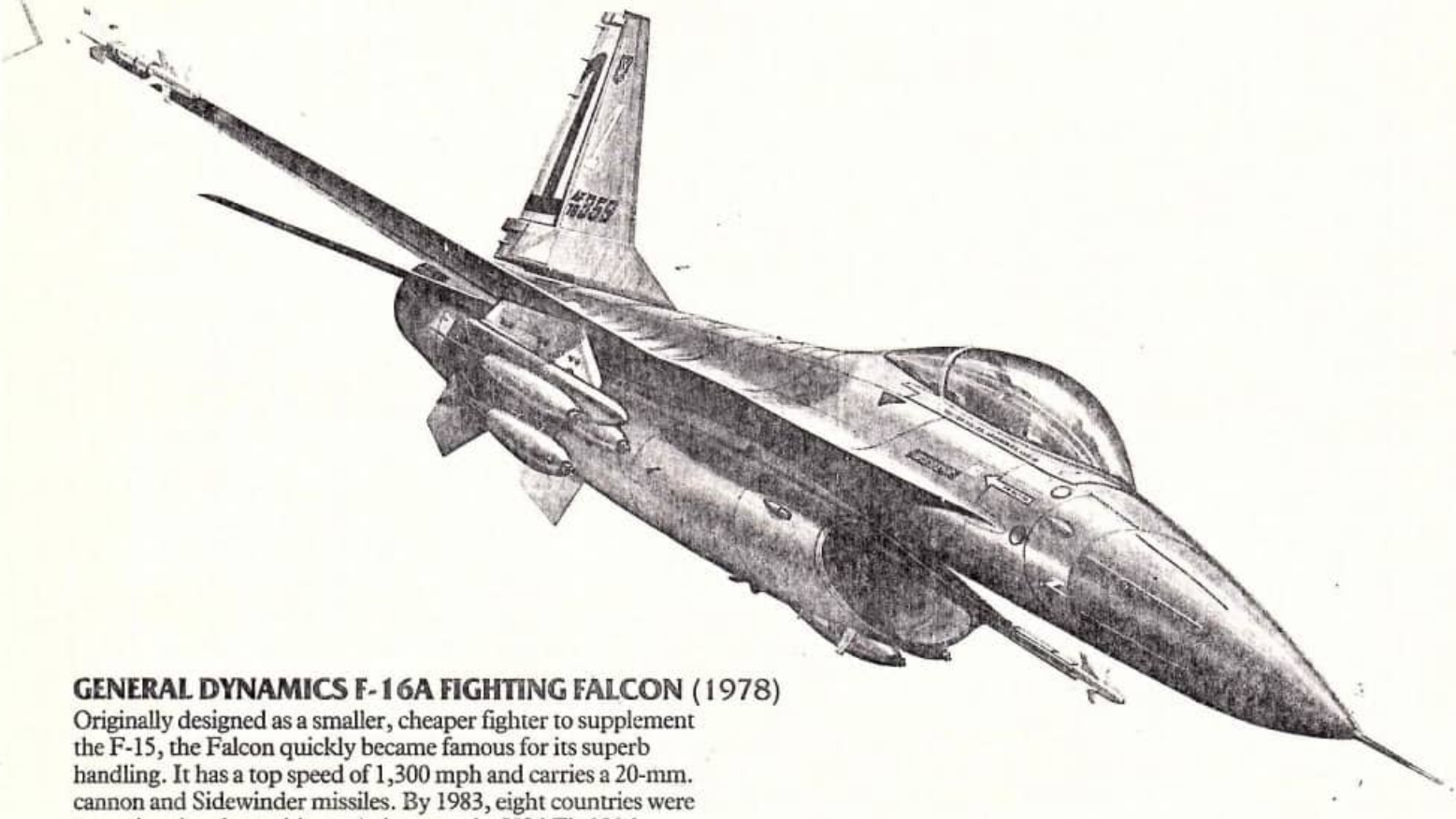
I also noticed that the plane would not rotate on take-off unless more elevator travel then usual was added. Was this a warning sign trying to tell me to park it? I don't know. I decided not to add any more elevator throw as the plane was already showing signs of to much elevator at full flight speed. (Snap-rolls out of up-elevator turns and pull-ups) I do know that the more I flew it, the better I liked it! On the 5th. flight I took off south, did a fairly steep banked turn to the west, and another back north. As I started to turn back west, the CAP snap-rolled out to the right and ended up inverted and headed for the ground (about 75 ft. high) I managed to pull off some power and started pulling out of the resulting dive. TOO LOW!! A little more up elevator to try and save it but the CAP snap-rolled to the left this time!

In a heart-beat, the CAP-21 hit the ground! Total wipe-out! Smoking hole and all that stuff!! Nothing lived but the engine, pilot, and radio. (one servo trashed out) What did I learn? Well for one thing, don't put three months work into a CAP-21. They live on borrowed time! Second of all, I think I have more fun flying a more forgiving design that will let you make a mistake without biting you on the +&*# the first time it gets a chance!

Was it a good kit? Yes! Would I build another one? No, not yet, untill I learn to fly much better!!
RLB

[redacted]

[redacted]



GENERAL DYNAMICS F-16A FIGHTING FALCON (1978)
Originally designed as a smaller, cheaper fighter to supplement the F-15, the Falcon quickly became famous for its superb handling. It has a top speed of 1,300 mph and carries a 20-mm. cannon and Sidewinder missiles. By 1983, eight countries were operating the plane; this one belongs to the USAF's 388th Tactical Fighter Wing.