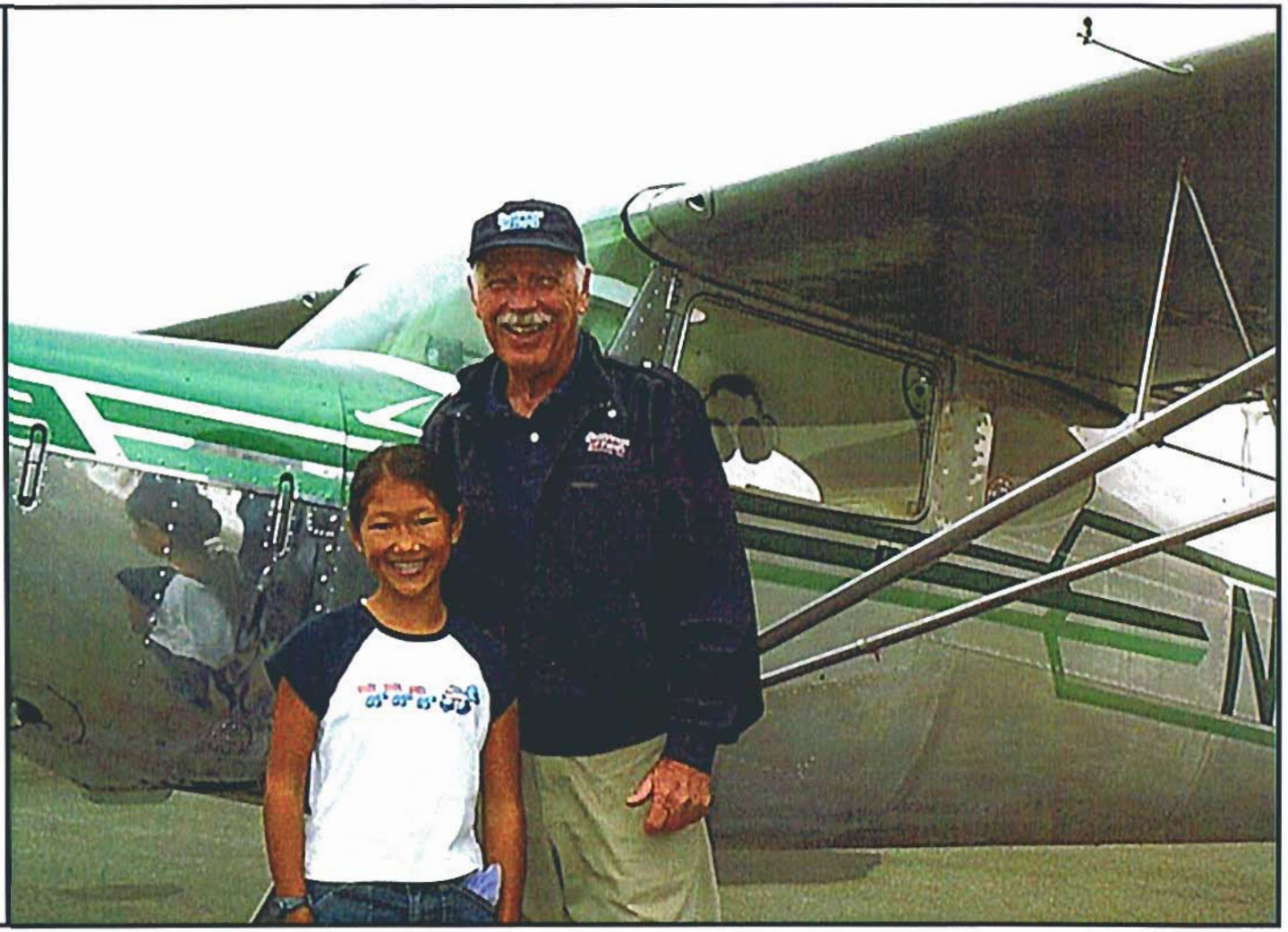
International Cessna 120/140 Association

P.O. Box 830092
Richardson, TX 75083-0092

ISSUE 325 APRIL/MAY 2005

"In This Issue"



This is Dale Whinery and his 11 year old granddaughter with their C-140.

The picture is from the French Valley Fly-in. I didn't make it; the weather was lousy that day. The picture was taken by Duane Shockey the C170 rep.

From **Tina Visco,** CA State Rep

2004-2005 OFFICERS

Mac & Donna Forbes, President
336-226-4582
Email: mcforbes55@bellsouth.net
Reddoch Williams, Vice President
850-863-3330
Email: reddoch@aol.com
Marty & Sharon Lochman, Sec/Treas
405-391-6773
Email: my140@mcloudtelcco.com
Doug Corrigan, Past President
815-633-6858
Email: DPCflyer@aol.com

BOARD MEMBERS

Lorraine Morris, Newsletter Editor
815-547-3991
Email: taildragger7w@aol.com
Denise Jackovich, Merchandise Coordinator
319-285-7296
Email: vbjfly@aol.com
Ken Dwight, State Rep Coordinator
281-440-7919
Email: kdwight@swbell.net
Ken Morris, Member at Large
815-547-3991
Email: taildragger7W@aol.com

STATE REPRESENTATIVES

ALABAMA-
Steve & Edna Earle Simmons
334-898-7376
Email: sesimmons@centurytel.net
Ken Spivey 205-979-5436
Email: kennceth.r.spivey@faa.gov
ALASKA -
Jason Mayrand 907-832-5614
Email: alaska120@yahoo.com
ARIZONA -
Curtis E. Clark 602-953-2571
Email: azskybum@aol.com
ARKANSAS -
Richard Gulley 501-954-9669
Email: richard@richardgulley.com
Bill Morgan - 870-239-4017
Email: brmorgan@grnco.net
Donnis Hamilton - 870-236-1500
Email: hamilton@grnco.net
BRITISH COLUMBIA -
Herb Hough 604-852-2240
Email: herb_hough@telus.net
CALIFORNIA -
Tina Visco 760-373-4433
Email: tina.visco@earthlink.net
CHILE -
Olegario Reyes - 56-2-2205917
oreyes@mi.cl
COLORADO -
Jack Cronin 303-333-3000
Email: jcronin@ix.netcom.com
CONNECTICUT -
Bob & Sandy Boyer - 203-264-7512
Email: bobandsandy140@charter.net
DELAWARE -
Hugh Horning 302-655-6191 - 410-228-7521
Email: yeepie121@aol.com
EUROPEAN -
FRANCE - Jean Luc Kaiser
(33) 3 87-50 70 57
Email: jlk@leuropevueduciel.com
UK - John Stainer
Email: john@stainair.fsnet.co.uk
NETHERLANDS - Pieter Standaart
Email: piet.standaart@wxs.nl
WEST GERMANY - Wolfgang Schuele
Email: wedees@gmx.net
FLORIDA -
Mike Quinlan 352-625-3369
Email: quin3369@webtv.com
Robert Ray 850-678-3133
Email: betsynbob@peoplepc.com
GEORGIA -
Charlie Wilson 770-927-6179
Email: cwilson193@aol.com
Bob Parks 770-962-6875
rparks@kcc.com
IDAHO -
David Hoffman 208-495-2307
Email: dhpd@iousa.net
ILLINOIS -
Doug Corrigan 815-633-6858
Email: DPCflyer@aol.com
Stacey Greenhill 847-541-7793
Email: sjg140@earthlink.net
Jeff Kohlert 630-513-9275
Email: kohlertjc@comcast.net
INDIANA -
Scott Spencer 317-291-4293
Email: bluecavu@aol.com
IOWA -
Vince & Denise Jackovich
563-285-7296
Email: vbjfly@aol.com
KENTUCKY -
David Lowe 270-736-5392
Email: loweaviate@earthlink.net
LOUISIANA -
Paul Crouch 504-892-1979
MARYLAND -
Fred & Sue Lagno 410-827-7896
Email: train@shore.intercom.net
MASSACHUSETTS -
Jack Manchester 508-378-3557
Email: jmanches@hotmail.com
MICHIGAN -
Don Preister 231-839-2191
Email: fun4me2fly@netonecom.net
Richard L. Acker 517-465-6229
Email: ackerd@voyager.net
MINNESOTA -
Tom & Jan Norton 651-459-1423
Email: jannorton@compuserve.com
MISSISSIPPI -
Mitch Hendrix 662-324-3330
Email: tdragger1@yahoo.com
MISSOURI -
Frank Murray 636-227-4111
Email: dee-frank@worldnet.att.net
NEBRASKA -
Ward Combs - 402-895-8601
Email: wacii@prestox.com
NEW HAMPSHIRE & AREA -
Glenn Mori 603-539-8655
Email: GMoriFly5@yahoo.com
NEW JERSEY -
Jim & Diane Morton 609-884-8723
Email: jdmort@bellatlantic.net
NEW YORK -
Howard Hilton 716-595-3454
Martin Green 607-739-1204
Email: n2319n@aol.com
NORTH CAROLINA -
Thomas Reddeck - 704-279-2110
w4vhh@juno.com
OHIO -
Terri Hull 419-375-4704
Email: bthull@bright.net
OKLAHOMA -
Marty & Sharon Lochman 405-734-2118
Email: my140@mcloudteleco.com
OREGON -
Bruce Gustafson 541-461-0574
Email: gustafsonb@lanecc.edu
PENNSYLVANIA -
Mark & Yvonne Macario 610-380-1313
Email: macario@prodigy.net
Michele Vida 724-770-0776
QUEBEC, CANADA -
Michel Charette
Email: m_charette@videotron.ca
RHODE ISLAND -
Erik Thomas 401-635-4381
Email: nc76220@aol.com
SOUTH CAROLINA -
Todd Clamp 803-321-9046
Email: tclamp11v@msn.com
Bo Mabry 843-524-5637
Email: swiftbo@isle.net
TENNESSEE -
Don Mitchell 615-223-1005
E-mail: hawk175@aol.com
TEXAS -
Leonard Richey 940-627-1883
Email: mrichey@ntws.net
Ken Dwight 281-440-7919
Email: kdwight@swbell.net
Billy Shires - West Texas 806-353-1177
Orville Winover - North Texas 903-939-3645
Email: owinover@aol.com
VIRGINIA -
Lonzo Cornett & Robin Bourne
804-966-2386
E-mail: lonzo140@excite.com
WASHINGTON -
Dave Sbur360-699-0727
sbur@hei.net
WEST VIRGINIA -
Rod Bush 304-275-3508
Email: funflite@citynet.net
Bill Motsinger 304-757-7706
Email: wmotsinger@tai-cwv.com
WINNIPEG, CANADA -
Jack Foster 204-256-0754
WISCONSIN -
Matt & Carole Rybarczyk 414-767-0920
Email: crybarck@wi.net

DIRECTOR OF MAINTENANCE
DAVID LOWE
Phone: 270-736-5392
Email: loweaviate@earthlink.net

TECHNICAL ADVISOR - VICTOR GRAHN
17465 Woodland Lane, Nunica, MI 49448
Phone: 616-846-9363
zenyamaero@netzero.com

From the Left & Right Seats

OFFICER NOMINATIONS.

Association offices/board positions to be filled at this year's Annual Meeting (Sept. 23, 2005 @ 4:30 PM) are: President, Member-at-Large, Merchandise Coordinator and State Representative Coordinator. *Please* consider serving your Association - submit your name for one of these, or submit (with permission, of course) the name of a fellow member who will serve. Your Nominating Committee is: Orville Winover (owinover@aol.com 903-939-3645); Matt Lahti (eight8november@yahoo.com 248-762-1836); Frank Murray (dee-frank@worldnet.att.net 636-227-4111.

WELCOME TO NEW STATE REPS!

Special *thanks* to recently volunteering Association State Representatives! These additions to the growing network of enthusiastic, helpful "go to" members bring experience and advice on ownership, flying and maintenance issues a bit closer to many out there. Erik Thomas now ably fills the key role in Rhode Island, Jeff Kohlert brings energetic assistance to Illinois members and fellow State Reps. Joining the great team in Texas, Orville Winover is on board in the East with his famous help & hospitality, and Vic White is readily available to share experience and expertise in the Texas Hill Country. (See contact information elsewhere in this Newsletter, or in your Membership Directory.)

ON LYING TO THE FAA (*DON'T*!).

We just learned of a local chap who failed to include on his airman medical application that he had been convicted of what appears to have been a "minor" felony years ago. As a result, he was charged and convicted of "making a false statement" and will serve five months, plus five months of "house arrest" (...like Martha?). While we'd be surprised that any of our members have similar skeletons in the closet, this does serve as a reminder to be totally "up front" with your friendly AME when completing the medical application.

NOTES FROM NEAL WRIGHT.

Long time special friend and advisor to all of us, Neal holds much in common with Bill Rhoades, Dave Lowe, Ken & Lorraine Morris, Victor Grahn and a growing "list" of true experts who willingly and unselfishly share a wealth of information, thoroughly researched experience, and solid expertise. Neal reports: "*I usually have somewhere between three and fifteen(?) Story lines in work at any time.*" The exciting thing is that he is working with the Association to find the best, most effective methods for sharing his famous articles, both new and old! Look for more on this here and on the website.

For the present, should you need access to one of Neal's articles, be sure to drop him an email with a specific request - he wants to be sure that anyone reading a particular article has benefit of the latest edition. And, be *sure* to include in the "subject line" of any email something to do with "airplanes" as Neal, too, must deal with the proliferation of "spam". ...his email: cougarnfw@aol.com.

JENS KAMPE FINDS HIS 140!

Many of us know the "agony" of searching for a 120 or 140...reading ads, making phone calls, visiting airports and inspecting lots that may be a bit less than we expected before finding our "perfect" plane. Imagine, then, the complication of accomplishing all of that *from Germany*! Jens Kampe was energetic and relentless in searching for his 140 and has enthusiastically reported that his now has it "home"! A regular at USA fly-ins and a genuine fan of "our" planes as well as 120/140/140A people, Jens says a big THANKS to the many USA 120/140/140A friends who helped him find & purchase his "dream".

THE *SEASON*!!

With Sun'N'Fun, we have kicked off the eastern "fly-in season", while Randy & Chris Thompson and the West Coast Club have had theirs cranked up for several months already. We can all quickly agree that it's a wonderful time of the year all over this great Country. We're looking forward to seeing and being with lots of you at Burlington, Lumberton, Oshkosh, Petersburg, other regional fly-ins and, of course, at the "biggie" - the *Convention @ Omaha, Sept. 21 - 25*. Make your plans and reservations *early* - *this* promises to be one of the greatest ever!

From The Left & Right Seats,
We See Positive Traffic @ 12:00!
Mac & Donna

Ski Plane Flying

by Lorraine Morris

We live on an airport community. Every winter when it snows, we see the neighbors getting out their skis and playing in the snow with their airplanes! Every time we watch these nuts out their freezing their bodies off, Ken starts waxing poetic about ski plane flying. Every year, I get to hear about how he sold his Federal 1500 skis for $200 when he moved to El Paso in 1977, figuring he wouldn't ever need the skis again, (he kept the ski fittings)... Every year.

I get to hear about when he was ski plane flying how he landed in a field amongst a bunch snow mobilers. How one of them had long blond hair and looked great in a snow mobile suit. (How anyone can look good wrapped in all that insulation is beyond me. Must be the teenage hormones.) How all the snow mobile dudes thought he was SOOOOOO cool. How HE thought he was SOOOOOO cool.

Then, I get to hear about how he flew into another local residential airpark (which shall remain nameless) on skis after an ice storm to pick up a gear box for his dad's Bonanza. How he slid off the end of the runway and had to drag the airplane back on the runway to get out of there. Every Year.

He tells me how he would go out where the plane was tied down, and spend hours in the freezing cold messing with the skis, rigging and such. He would scoop the snow away from the wheels and struggle to get the tires off. He would have to figure out some kind of jack system to lift the gear up and get the skis on. Then he would spend endless hours in the cold attaching all the ski fittings, and making sure all the bungees were the correct tension.

Then I hear about how cold it was and how he would spend all day trying to get the engine started. Having no pre-heating available, they would finally get to fly for about a half hour before sunset. (sure sounded fun to me...) Did I mention I get to hear this EVERY YEAR?

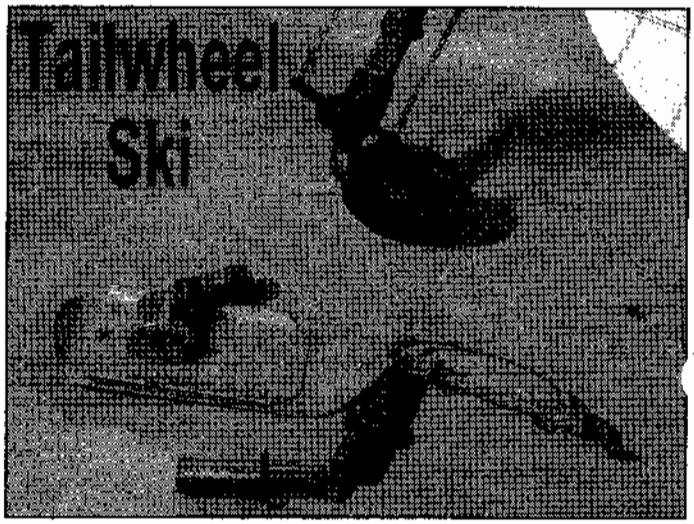
Ten years ago, Ken offered to try and find a pair of skis for the 140. After listening to his tales for years, it sounded like way too much work for way too little fun. But...

Last year at Oshkosh, when I saw a pair of Federal 1500's for sale in the Aeromart, I decided it was time for Ken to have another pair of skis. I figured I was getting quite the deal, because in addition to the two skis, complete with bungee cords and cables, I got a tail ski! I showed Ken my great purchase and he was excited too!

Well, the skis sat in the middle of the hangar for months. My plan was that if you had to trip over them, you wouldn't forget them! As is typical for us, we just pushed them aside, and forgot them. Till it snowed.

January rolled around, and we got a big snow in Chicago land. Once again, we looked out the window and saw our neighbors playing with their ski planes. OH! We realize WE have a set of skis too (the ones we have been tripping over in the hangar).

So, while it is a beautiful snowy day outside and our neighbors are playing in the snow, we are in the hangar trying to get the skis to fit the airplane. There is nothing like waiting till the last minute to try and get things together, at least the hangar is warm. Ken decided not to use the tail wheel ski. Mainly because we hadn't a clue how to put it on, but also he says you have more control with the tail wheel. (I think it is really cause he doesn't know how to put it on!)

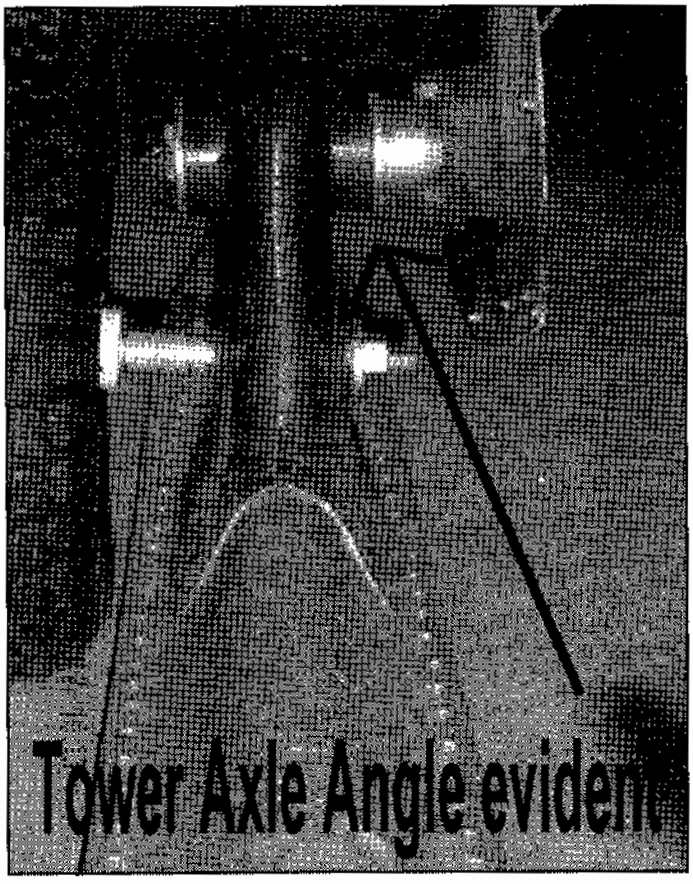


All the while we are working on the skis, Ken is telling me about landing among the good looking snow mobilers, and going into the nameless airpark. I also get to hear about rigging and fitting the skis in the snow, outside, where it is cold... Again.

We kept our copy of AC 43.13-2A on hand to make sure we were doing it right and we were able to get the skis on the axels just fine. Then we realized we needed some spacers and washers and the cables weren't the right length. The skis were an approved ski for the 140, but they were approved for other airplanes also. It became obvious that they were on something other than a 140 prior to us acquiring them.

We spent the perfect ski weather messing with the darn skis. After getting the cable correct, and after getting the bushings and washers fitted, we found that we had two right skis. (There is a subtle, but important difference, in the axle angles).

Fortunately for us, the folks at Federal were pretty clever. They made only one ski tower/casting (the part that the axel fits into). They just mounted them opposite on the skis.



We picked a victim ski and took it completely apart. We put it back again, with the tower reversed and made it a left ski! Now we have a right ski and a trans-left-ski! We finally got it all rigged up and went skiing!

First Ken took off and re-acquainted himself with the ski plane experience. It was a nasty overcast day, so Ken only did a few landings, then came over to pick me up and let me try a few.

The visibility was pretty stinky, thanks to some light moisture in the air, but since all we were doing was pattern work, that really didn't matter. For the first take off, Ken said, "Just barely get the tail up, hold that attitude, it will fly off, soft field style".

So of course, I shoved the nose way forward, and Ken had to drag it back and remind me of what he

Good Landing

had just said. "Oh, just barely up! Why didn't you say that!' I told him.

The plane flies just like it did with wheels, so the flying part wasn't different. Then we came around for the first landing. "Three point it", he says. This time I listened and it worked! I think I actually got a "Nice Job!" out of him!

The next two take offs and landings were pretty uneventful. Then he jumped out and let me solo it. I went around a couple of times, but the light moisture in the air had started to build up on the windshield, and it was getting a bit hard to see out of the window, so I stopped. Ken said I looked SOOOOOO cool in the plane. Heck, *I* think I looked SOOOOO cool in the plane!

We had rigged up a bag that contained a portable hand jack for raising the gear, a couple of cheap pneumatic tires, and a wrench to get the tires off. We kept that at the end of the runway so when we were done skiing so we could just taxi to the bag and put the 'taxi tires' on and make it back to the hangar without dragging the skis and wrecking the bottoms. I taxied back to the bag where Ken met me and we rigged it for taxiing. I made it back to the hangar without hitting anything or generally screwing up. All in all a successful day!

We pulled the plane out later (after the ice had melted off) and went around the patch a few more times. Then we put it away for the day. Over the next few days, the temperature warmed up and by the end of the week the snow was gone.

We spent a week getting the skis rigged and got to fly for a couple of hours. Hmmmmm. Sounds a lot like his tales of yesteryear to me.

Our neighbor is one of the flying fools. He has a Cessna 170 and if the weather cooperates, he is out and flying around. He has skis on his plane in the winter, and he is one of the ones that Ken always watches out of the window. He brought over one of his skis for us to see. Someone had replaced the bottom with a wider aluminum plate for more surface area, then added ¼ inch plastic for less friction. Ken's eyes lit up and now he thinks that will be our summer project! Uh-huh. I think we'll leave them in the middle of the hangar so we don't forget them!

Sun 'n Fun

April 12-16 - See us at the Type Club Tent - 9 am-4 pm
Friday, April 15 - Dinner, check at the type Club Tent for details
Saturday, April 16 - Maintenance Forum - 9-11 am

Contact Mac & Donna Forbes - Email: mcforbes55@bellsouth.net

Computer Corner, no batteries allowed!

Here are the questions for this issue months. Be sure to check out the next newsletter for the answers.

1. Time to Turn. You have 4 hours and 10 minutes of fuel (4:10). If your groundspeed out is 166 mph, and your groundspeed back is 150 mph, what is your time to turn? (Don't worry about reserves, etc. Just find out how long you can go outbound before you have to turn around and still have just enough fuel to make it back to your starting point.)

2. How long will it take you to fly a distance of 200 sm if you have a ground speed of 135 mph?

Answers for the questions from the Feb/Mar Issue:

1. A Cessna flying from Carbondale, IL (MDH) to Dupage, IL (DPA) burns 11.4 gph (gallons per hour), flys the total distance of 260 nm and uses 24.8 gallons of gas. How long was the flight (Hours/Min)? ***2:13***. How fast was his ground speed? ***118 mph***

2. T.A.S. (True Air Speed) is 188 mph and the pressure altitude is 5000', The air temp is -5 degrees C. What is the C.A.S. (Calibrated Air Speed)? ***180 mph***

How did you do? I only got ONE response, from David Holloway, and he was correct!!!! Thanks David!

Hi Lorraine,
Thanks for quiz, I worked the questions out on my old E6B purchased back in the 70s. Still have the Jeppesen I bought back in 1959 when I began ground school. I can't use the old Jepp now, numbers too small even with glasses. I hope you have in mind to use the '36 sec' scale and the ' 10 ' scale for fuel weight and rate of climb computations. In the words of our president George W. 'Bring it on'.

1. 11.4 GPH, 24.8 gals burned = 2 hours 10 and 1/2 minutes with a ground speed of 119.5 K.

2. T.A.S. 188 MPH , pressure alt. 5000', air temp -5 C. C.A.S. 178 MPH or 154 K.

Again Thanks
David Holloway, nc77453, 1946 C-120.
Awarded best custom 120 at Gainesville Tx. Convention in 2000.
I have owned this 120 for 29 years.

■ FOR SALE ■ FOR SALE ■

■ **140 Parts:** Serial # 1027. Cont. C-85-12F, 2264 TT, 1050 since OH. Complete, lo;gs. Landing gear legs, tailwheel, gas tanks (R&L), doors (R&L), seats, wheels. This A/C was damaged, all parts should be inspected. Also Cont. A-65 parts and many A/C instruments. **C. Hewitt, Jr.** 850-824-5839. Would like to deal with someone in New England area.

■ **1946 Cessna 120,** S/N 9422, N72248. Complete restoration. C-85 with STC for O-200 crankshaft. $25,500. For complete details contact **Rod Rodriguez** at rrodr747@yahoo.com

■ WANTED ■

■ Looking for a **Vertical Fin Upper Cap** part #0431139. Also looking for **Rudder Upper Tip Cap** Part # 0411174. **Tyrone Bryant** 509-936-0234.
Email: bluecrk@theofficenet.com

■ **Pancake Muffler** for right side exhaust. Repairable condition OK. **Joe Sills,** 3250C CR 268, Leander, TX 78641. Phone: 512-259-9104.
Email: jgsills@hillconet.net

■ **Nose Cowl** for 1948 C-140. I am told it is different from the 1946. Must be in decent shape, little ding or damage OK. **Bill Schuerman,** 20220 44th Ave NE, Arlington, WA 98223. Phone: 360-474-1741.
Email: william.r.schuerman@boeing.com

■ **1947 Cessna 140,** Serial # 13656, N4885N, TT 3310, SMOH 720. April 4 annual, 760 channel Bendix flip-flop radio, KY97A transponder, Garmin 295 color GPS, metal wings, Cleveland brakes, wheel extensions, Scott tailwheel, oil cooler, all new tires, full electric, folding landing light. Hangar J10, Falcon Field, Mesa. Asking $19,950. Contact **Chuck Kent** at 480-659-0221 or **Sherm Lindell** at 480-641-1927.

■ **1947 Cessna 120,** 1520 TT, 108 SMOH and wing recover. Superior cylinders, oil filter, shoulder harness, wingtip & tail strobes, leading edge landing & taxi lights. King Radio, silver finisy. **Edwin J. Hergot,** 120-432-5965, Email: Edhergot@juno.com

■ **1948 Cessna 140,** S/N 2115V, TTAF 3,350, TSMOH 1,100, C-85. restored in 2000 has new wiring w/circuit reakers, transponder, CHT, spin-on filter, Collins250 radio, Hooker harnesses, Scott tailwheel, Cleveland wheels & Bakes,. Annual to be completed April 2005 for $17,500. Based at Whitman Airport in the San Fernando Valley of Los Angeles, CA. Contact **John burrell** at 949-492-4255 or Email: JudynJohnBurrell@sbcglobal.net

■ **1948 C140,** TTAF 3258, TSMOH 840. O-200A, many new parts, very clean and straight, original condition 8+ in and out. Hangared, logs since new, $18,000. **David Brown** 970-945-7986.

Note from the Editor

Member Profiles: Hmmm... Nobody is sending me ANYTHING for the member profile section. I thought there would be this mad rush to be profiled in the newsletter and a chance to get your airplanes picture on the cover! Alas, 'tis not so. However, I am not about to let this end! There are about 16 Cessna 120s and 140s based at airports near me, so unless I start getting some submissions from other members, you are going to get an education about the people and planes in Northern Illinois!

Slowness of newsletter mailings. We have researched the chronic mail slowness and found the following: We use the periodical rate for mailing and found that it is basically at the whim of the local Post Office. Some Post Offices treat periodicals just like First Class mail, and some don't. Periodicals are almost the lowest mail type on the Post Office Food Chain, just above junk mail and that is how you get the cheaper postage. Consequently, they sometimes get shoved to the back and sent out when the carrier or postal worker has the time. The cost of first class mail for the newsletters would be more than our dues alone, so it looks like periodical rate will be it for a while.

Back to the Basics: I have decided to go back to the basics, and start a series of articles on the basic bits and pieces of our airplanes. This month we will start with what our airplanes eat... or drink... or burn... oh, whatever! This month we learn about Aviation Fuel. Hopefully you will get a little something out of it.

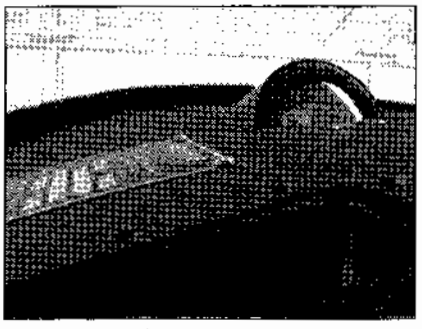
Great Website: Every now and then I get a free moment and get on the internet and check out our website. I am always amazed at the job the volunteers do! Between the Website Master (Yvonne Macario) and the Website Moderators (John von Linsowe, Victor Grahn, Matt Lahti and Mike Smith) they are really doing a great job. If you get a free moment, and you haven't been there in awhile, check it out. If you like what you see, drop the volunteers a note and thank them for their hard work!

Here is a picture, sent by my friend, who goes up to the lakes in Wisconsin to go ice fishing. I guess the owners of these 'planes' turn the seats around and have a pusher propeller mounted high on the firewall. They use these all the time. Sure looks interesting...

Those trees were awfully close . . . .

We had gone to a breakfast at a private grass strip with the 140. They put on a good feed with pancakes, fried eggs, hash browns, sausage, bacon , coffee and juice so we try not miss it. This Sunday was hot with the temperature in the 90's and humidity in the 80's. After we had breakfast and visited with friends and we were ready to leave, the temperature had gone up a couple of degrees and the wind had dropped to zero. They have a nice sod runway with lush green grass, about 2800 feet with tall trees on all four sides.

The acceleration in the hot, humid air and lush grass, did not exactly push you back in the seat. It took about half of the runway to get the 140 flying

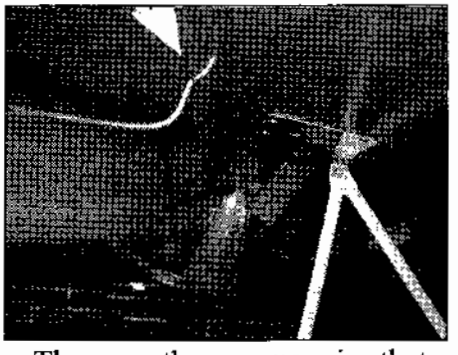


and all of the second half to get high enough to clear the trees. That's when my wife said, those trees were awfully close.

I thought it would be nice if there was a way to know exactly how to get every bit of climb the airplane is capable of. I don't like the feeling that I may be on the edge of a stall, and the airspeed won't tell you because that will change with load, temperature and humidity.

Turns out there is. Its called an angle of attack indicator. An airfoil will always stall at the same angle of attack regardless of the load, temperature, humidity or speed.

The Wright Brothers knew this, they had one. I don't know how we got away from having them on our airplanes. If you are like me, after you have flown an airplane with one installed, you will not want to fly without one. I have a friend that installed one on his airplane and he said, when I land I don't ever look at that, what do you call that other gauge? Oh yea, airspeed.



There are three companies that make angle of attack indicators. the bacon saver, which is a simple vane device, Proprietary Software Systems, which is an electronically operated and is fairly complicated to install, and the one I installed in the 140.

The Lift Reserve Indicator or LRI made by DepotStar that I used comes in several versions. They have indicators that are rows of colored LEDS arranged in a straight line either vertical or horizontal or in a round gauge that require an electrical source. The one I chose to install is a simple mechanical one that uses two small hoses for connection to the probe that mounts on the wing and a two and one forth inch gauge that can either be mounted in the instrument panel or it comes with its own round case and bracket that can be attached to the dash. I chose to recess mine in the dash with just the top part of the gauge showing. The probe mounts on the wing, and in my case, I installed it on the small opening cover behind the pitot tube. The probe comes with a plate that can be mounted in an inspection hole. The principle of the unit is quite simple, there are two holes in the probe that are connected to the hoses from the gauge, one hole in the front and one in the bottom of the probe. As the wing tilts up relative to the air flow there is more air pressure in the lower hole than in the front thus causing the gauge to deflect.

To adjust the unit is a matter of changing the angle of the probe, the gauge is marked in red, white and green. You adjust the angle of the probe so the gauge will indicate at the very top of the red, at the point that the wing stalls. It took me a couple of flights to get it adjusted. Once adjusted it will indicate the stall point regardless of load, speed or density altitude. It gives me a lot more confidence on approach to or taking off from a short field and maybe the next time the trees won't be so close.

LRI, along with installation instructions, include a letter from the FAA district office that says a Form 337 is not required if it is not heated and there is no electrical connection.

For additional information you can call Mark Korin at toll free number 1 (877) 571-3770 or email (markk@depotstar.com)

Del Dammann #2277

Back to the Basics: Aviation Gasoline 101

by Mac Purvis, Jr.

History & Development

The history of aviation gasoline, usually referred to as avgas, is as old as the history of powered flight. The earliest gasoline powered engines for aircraft were essentially identical to those used in automobiles or motorcycles. The fuel for these engines was naturally occurring, straight-run gasoline produced simply by distilling crude oils. As the both automobile and aircraft engines developed, the requirements for suitable fuels also developed. The needs of automobile and aircraft engines, while similar, diverged in many areas. The years of World War II saw avgas reach its peak of development. Many grades of increasingly higher octane were formulated. World War II also saw the development of gas turbine engines for use in aircraft. The advent of these jet engines froze the further development of aviation gasolines. While large amounts are and will be consumed, further development of the fuel is unlikely. Avgas is one of the most complex, rigidly controlled products produced by oil refiners. A great number of physical and chemical properties must be controlled in order to produce a very consistent fuel. While specifications are quite detailed, they also contain a suitability requirement. This eliminates the possibility that some product that meets the "specs" but is not adequate for use in aircraft could be marketed. Refiners are forced to consider whether their product actually meets the intent of the specification not just the test results. Specification for avgas are by necessity quite tight. Unlike other common forms of transportation, occupant safety in aviation is directly related to continuous power production. Thus, the fuel is a safety critical item and demands care and attention in its manufacture, distribution and storage. The various specifications have produced excellent quality fuels that perform well in a wide range of environments and applications.

Content

Aviation gasoline, avgas, is required to be an all hydrocarbon product. That is, its components must be chemicals that contain only carbon and hydrogen atoms. The use of oxygenated, chemicals that include oxygen atoms, compounds such as alcohols or ethers, is not permitted. Only a few select additives are permitted and their use is strictly controlled and limited. The primary ingredient in avgas is isooctane. This is a special component produced in the refining process by specialized equipment. Small amounts of isopentane and aromatic (ring) compounds are also used. The isopentane allows the correct volatility to be achieved in the final fuel blend. Aromatics are used to improve the rich mixture ratings. However, these aromatics must be limited to achieve other specifications. Grade 80 avgas may also contain straight-run gasoline but this component's lower octane rating makes it unsuitable for higher octane blends. Approved additives include alkyl-lead anti-knock additives. Other additives are also used to then control lead deposit formation. Color dyes are required in most grades for safety identification. Another common, and required, additive includes oxidation inhibitors to improve storage stability and inhibit gum formation. Theses anti-oxidant additives also help prevent lead compound precipitation (separation). Other additives such as corrosion inhibitors, fuel system icing inhibitor and static dissipator additives may also be included by agreement with the user, by the military or by some foreign specifications. All other additives are forbidden.

Grades

Aviation gasoline continued to develop and obtain increasingly higher octane ratings through the end of World War II. Since that time about 6 grades have seen service. Table below shows various current and historic grades. The advent of jet engines and the subsequent removal of gasoline powered aircraft from airline and military service, has resulted in reduced grade availability. Only one grade is now generally available in the in the United States. Fuel grades are designated by their anti-knock characteristics. Engine knock, which describes explosive detonation of the fuel/air mixture or preignition, can cause severe engine damage and subsequent failure in a short period of time. Anti-knock ratings are expressed as Octane Numbers for those of 100 or less and as Performance Numbers for those ratings above 100. These numbers relate the fuels performance compared to a reference fuel of pure isooctane. Because the anti-knock characteristics are influenced by the air/fuel mixture ratio, ratings are developed for both rich mixture performance and lean mixture performance. Rich mixture settings yield higher octane or performance numbers since the added fuel acts as an internal coolant and suppresses knock. Prior to 1975, both numbers were reported as the grade designation but current specification utilize only the lean mixture rating. Currently, ASTM (American Society for Testing and Materials) specifies five grades - 80, 82UL, 91, 100, and 100LL (low lead). In practice only 100LL is widely available. Production of Grade 80 has generally ceased due to small demand. Grade 100 is not now seen in the continental US. Two grades have been added in recent years. The all new 82UL an unleaded aviation gasoline designed to meet the requirements of older and lower horsepower engines. This grade was designed to be made in most refineries capable of manufacturing motor gasolines. The 91/98 grade dropped in the late 1960's was revived in 2001 to provide a fuel for development and testing purposes by engine and engine control manufacturers. It met the requirements of the majority of general aviation engines and is thought to be a precursor to a widely available general aviation unleaded gasoline.

Volatility and Vapor Pressure

Aviation gasoline must be a fuel that is easily converted from its liquid for to a vapor to allow the formation of a combustible air/fuel mixture. If it is not volatile enough, liquid fuel will wash cylinder walls and pistons causing increased wear and crankcase oil dilution. The fuel is also not distributed well amongst the cylinders in carbureted engines. On the other hand, too light of a fuel can cause vapor lock, increased carburetor icing and excessive venting losses. In specifications for aviation gasoline, distillation ranges are given. These specify at what temperature a certain percentage of a sample is evaporated. Initially, between 10 and 40 percent of

the fuel must evaporate by 167F. The 10% requirement ensures sufficient volatility for cold weather starting while the 40% maximum restrains problems with vapor lock and carburetor icing. A 50%, or mid-point, is specified to ensue the fuel consists in an even mixture of components and not combinations of light and heavy materials only. At the upper end of distillation, 90% of the sample must evaporate by 275F. This helps ensure that lower volatility components are held in proportion. Lower temperatures could be specified, however, a too restrictive specification could result in lower product availability. The sample must be fully evaporated by 338F. This precludes the inclusion of very heavy materials that would adversely affect performance and contribute to motor oil dilution. This is also used to check fuel samples for contamination by distillate fuel such as diesel or jet fuels. The vapor pressure measures the fuels tendency to form vapors over the liquid fuel. The vapor pressure must be high enough to allow adequate vapor formation for starting. However, when an aircraft proceeds to higher altitudes, it is possible to lower the pressure over the liquid fuel to less than the vapor pressure and cause the fuel to vapor off. Avgas must have a vapor pressure of between 5.5 to 7.0 psi. This provides the fuel with adequate vapor pressure for starting while maintaining suitability for high altitude flight.

Physical and Content Specifications

The density and heat of combustion of aviation gasoline is specified. However, other specification, such as distillation range, greatly limit any variability in these measurements. The freezing point of the gasoline is specified to prevent the formation of solid hydrocarbons during prolonged cold soak at altitude. The formation of solids would of course jeopardize fuel flow and prevent full fuel availability. Avgas must also be stable in storage and under a variety of conditions. A primary form of deterioration is the formation of "gum" through oxidation and polymerization of fuel molecules. These can deposit on fuel system components and cause serious problems. Therefore gum formation is strictly limited in the specifications. The addition of anti-oxidants is required and results in good to excellent storage stability. The sulfur content of avgas is limited to a very small amount. This is needed because sulfur can cause a deterioration in the anti-knock performance of the lead additive. Sulfur also contributes to corrosion of fuel system and engine components. Fuel corrosiveness is tested by a cooper strip corrosion test. Avgas is also tested for water reaction. In this test samples of fuel and water are mixed and resulting changes are noted. This is used to detect the presence of high octane but water soluble components such as alcohols in the fuel. These are not permitted and can be detected by both volume change and phase separation in the test sample.

Fuel in a Nutshell

— from Phillips 66 —

Octane rating, based on how much the fuel could be compressed inside an engine's cylinders, was created during the early 1930s as the need for more uniform fuel specifications grew. However, because there was no standard by which to test uniformity, different and unrelated sets of specifications proliferated. By 1937 some 14 independent sets of specification, all based on **anti-knock value**, had been established. By 1938 the trend was being reversed, largely through the efforts of the Cooperative Fuel Research Committee, and Jimmy Doolittle who, as manager of Shell Oil's Aviation Division, persuaded his company to produce 100-octane fuel in volume. By the start of World War II, three standard grades of aviation fuel had been adopted; 73-, 91-, and 100-octane, and the United States Army Air Corps had declared that all of its engines had to be designed to use 100-octane fuel. Today, 100-octane fuel is still the standard high-performance aircraft fuel.

Characteristics of Piston Engine Fuels

The ability of a fuel to evaporate is known as its volatility. Measuring volatility is important because fuel only burns as vapor. Volatility, and therefore efficient combustion, increases as the boiling point of the fuel is lowered.

Knock value measures the tendency of the fuel to become overheated in the engine cylinder. Overheated fuel suffers **pre-ignition** which occurs when the fuel burns before being suitably compressed in the cylinder to provide maximum efficiency. Not only does pre-ignition reduce efficient operation, the condition can also lead to serious engine damage.

Octane number is a measurement of fuel **compressibility**. High octane fuels can be compressed more than low octane fuels. More compression means more power when the fuel burns in the cylinder. Octane numbers can only go as high as 100 which means that the fuel is pure isooctane. Numbers higher than 100 are **performance numbers** and utilize tetraethyl lead as a fuel additive.

Vapor lock occurs when fuel boils in the engine fuel lines and is the result of too much fuel vapor being introduced into the carburetor. Vapor lock reduces engine efficiency and, ultimately, power output.

Stability is the fuel's resistance to chemical change during storage. Unstable aircraft fuels may degrade over time and may lose as many as 25 or 30 performance numbers. Fuel suffering from instability can cause the formation of gummy residues which can coat engine parts, block fuel lines, and cause *sticky valves*.

The **chemical composition** of fuels varies but all are composed of **hydrocarbons** produced through the distillation of **petroleum.** Other ingredients in aircraft fuels include **sulfur, water, bromine,** and **gum inhibitors. Tetraethyl lead** may also be added to help prevent engine knocking.

Continental O-200

By Mike Berry

(This article is reprinted by permission from 'Light Plane Maintenance', September 2004. The article as originally printed, contained pictures that we are unable to replicate for the newsletter.)

The venerable O-200 was selected by the Voyager team for the around the world flight.

The Teledyne Continental O-200 engine was certified by the FAA under CAR part B with a type certificate number of E 252. This certificate is shared with the C-90 engine and variants as well as the O-200, O-200A and O-200B models. It is currently out of production, with the IO-240 taking its place as the smallest of the Continental engines.

The O-200 has roots back to the 1940s and even earlier. It has a displacement of 201 cubic inches, a dry basic weight of 190 lbs., 100 hp at 2750 RPM, and a minimum fuel requirement of 80/87. It has a bore of 4.06 inches and a stroke of 3.87 inches.

Some O-200 models were configured for a variable pitch propeller (O-200C), some with fuel injection, and other models designed for pusher type propeller installations (O-200B). The most common engine is the basic O-200A model with the original Marvel Schebler carburetor (now owned by Precision), fixed-pitch prop, Slick or Bendix mags, provision for a vacuum pump, fuel pump, and oil cooler. It's equipped with a starter and generator or alternator and shielded ignition system. This engine and other similar models have been very reliable provided that they are (as quoted from the official Type Certificate statement) "installed, operated, and maintained as prescribed by the approved manufacturer's and other approved instructions."

This is an important statement in that any maintenance or operation not consistent with "approved procedures" may degrade the performance and reliability of this and any aviation product.

Improvements have been made to this engine over the years and many more years of use can be expected. Parts availability, factory technical support as well as aftermarket support are available. As with any product that was originally introduced over 50 years ago this engine has had a few problems that can be attributed to poor design.

The engine crankcase is machined for rubber engine mount "bushings" as opposed to a Dynafocal mount system found on more modern engine. The forward crankcase incorporates a "boss" for the installation of a crankcase breather.

The air intake system consists of an external manifold with individual supply tubes to each cylinder, and a carburetor attached below the manifold in a standard aviation "updraft" arrangement. Below the carburetor is an air intake housing, carb heat box, and an attachment for the air filter.

To the rear of the carburetor is the kidney shaped oil sump and further aft is the accessory housing incorporating the oil pump and oil screen as well as machined pads for magnetos, tachometer drive, generator, and starter drive.

The introduction of the starter and generator was a giant leap forward as earlier engines of the 50, and 65 hp range had no provision for a starter or generator. The design of the earlier 4-cylinder engines together with weight considerations for aircraft with limited weight carrying ability restricted the use of an electrical system.

The O-200 has hydraulic lifters, and the push rod tubes (2 per cylinder) are swedged to the upper cylinder but are connected to the crankcase by tubes secured with special "rings." Pushrod tubes occasionally leak oil from this swedged connection although it may seem the valve cover gasket is leaking. Correcting a leaking push rod tube requires that the tube be re-secured (special tool).

REAL gasket company, Corvallis OR, Ph 541-754-3622, makes a kit that incorporates a replaceable (STC approved) seal design similar to the later model TCM engines. New style TCM cylinders also have been improved with similar tube seal rather than the swedged on original metal to metal tube connection. REAL also makes silicone (reusable) valve cover gaskets to replace the original cork style gasket.

While this engine is very simple it does have some "special" characteristics that require discussion. The design of the float-type carburetor and intake system seems to promote carburetor icing more so in this engine than in similar type engines by other manufacturers. For this reason the carburetor heat system must be maintained in near perfect condition and used faithfully prior to reduction in engine power or any time carb ice is suspected.

The exhaust system, heat muff, and mufflers must also be well maintained. Worn carb heat butterfly bushings or bearings must be promptly replaced; operating cable and linkage must move the carb heat butterfly full travel with no "hitches." Cracked sheet metal baffling, exhaust leaks, and missing muffler baffles must be repaired or replaced.

Contrary to popular belief, muffler baffles are not for the purpose of noise reduction but to provide some back pressure as well as retain and exchange heat when the engine is operating at low power.

Mufflers that are not completely intact including baffles are not airworthy. All clamps, braces, and brackets should be checked for cracks or damage and repaired or replaced if required.

With only four cylinders and the old mount system, more vibration occurs causing cracks or damage to airframe and engine components. Engine vibration together with frequent use of throttle, carburetor heat, and mixture controls require more frequent operational checks.

The use of auto fuel can contribute to the increased formation of ice in the carburetor under certain atmospheric conditions. The discussion of the carburetor would not be complete without including the latest AD (98-01-06) and service information (Precision bulletins MSA 2 and MSA 9) regarding the Precision brand float type carburetor venturi.

It is important to verify that the installed carburetor is the correct one for the engine. Many models of carburetors will fit on the intake manifold but only a few specific part number carburetors are approved for the O-200A engine. The part number (not the model) identifies the exact jets, settings and details necessary to operate the engine correctly.

An incorrect part number carburetor cannot be exchanged for the correct (different) one so a *new* (expensive) carburetor must be purchased. Early carburetors were equipped with composite floats that were attacked by 100-octaine fuel and auto fuel and actually absorbed fuel causing the float to partially sink making for a rich mixture.

Metal and latest factory supplied composite floats are safe for use with auto and 100-octane fuels and should always be used when repairing or overhauling a carburetor.

The original nozzle when installed in conjunction with the single piece venture sometimes caused engine roughness and rich conditions in the O-200. This required replacing the original nozzle with a nozzle "kit" specially designed for the O-200. This replacement (kit 666-942) is covered by precision bulletin MSA-7 and was replaced for no cost to those who produce a receipt for the purchase of the Precision brand venturi. Call Precision at 800-838-8181.

The O-200 engine was originally designed for 80/87-aviation fuel. As this fuel disappeared problems developed with the use of the 100-octane fuel with much higher lead content. Auto fuel was extensively tested by the EAA and approved under STC obtained by the EAA as well as Petersen Aviation.

While it may seem that auto fuel was just the ticket to replace the 80/87, this was not quite the case. Operation with unleaded auto fuel or 100-octane avgas eventually leads to valve problems unless cylinders have the latest style hardened valves, seats and guides.

As a separate issue stuck valves plagued many engines originally designed for 80/87 and were operated on 100-octane fuel. This stuck valve problem has been corrected with the use of improved valve assembly materials and tolerances as well as improved materials used in valve manufacture, and correct valve seat angles.

A newly available strengthened cylinder incorporating the latest valve/seat/guide modifications allows the engine timing to be advanced to the original 28 degrees BTDC according to TCM bulletin MSB 94-8A and AD 96-12-06.

An original specification for the O-200 engine called for timing to be set at 28 BTDC but was changed to 24 BTDC when cylinder cracking became an issue with the original style cylinders. The timing advance to 28 BTDC can only be done with all four cylinders are replaced with the qualifying "new" cylinder assemblies (including Superior).

Eyeballing the timing is a bad idea; the timing marks on the crankshaft flange can easily be misinterpreted.

When working on cylinders (or engines) always use the most current approved part as there are old "new surplus" parts available at a reduced price but these are no bargain if you experience a stuck valve or require premature engine maintenance.

AD (94-05-05 rev1) addresses rocker shaft boss inspection for cracks and dimensional inspection is required for all cylinders every time a cylinder is removed. "Parts having discontinuities (cracks) shall be rejected." However, certain FAA approved shops are allowed to repair (weld) cracks in cylinders.

Rocker bosses that are not within limits can be repaired according to the TCM overhaul manual by reaming and the addition of bushings. Cracked or broken rocker bosses are a serious problem and effectively "shut off" the cylinder. While not proven, stuck or sticking valves can contribute to rocker boss cracks and failure; another reason to use the current valves, valve guides and adhere to the strict tolerances of valve stem-to-guide clearances.

Starters on TCM engines require an adapter and clutch unit to engage the starter rotational movement to the engine. The Cessna 150 with O-200 engine had two types of starter drive: the early style pull-type and the later style key-start model.

The pull model should have sufficient cable tension to hold the shift lever in the fully released position or excessive wear will result. Carefully follow the overhaul manual adjustment procedure.

Key-type starters are energized by the ignition key through a solenoid. The rotation of the starter engages an overrunning clutch in the starter adapter, which turns the engine. The key to both systems is the proper operation of the clutch.

The early pull starter adapter is generally more reliable than the later key start model as long as the adjustment is checked often and the complete adjustment procedure is followed. Single grade AD oil that is changed often as opposed to the multi-viscosity oils is the best bet for the starter systems of this engine.

Checking the oil and oil screen or filter for metal contamination at each oil change is important as metal flakes can either identify a problem with the starter adapter or other engine problems. Metal contaminated oil can lead to premature failure of a starter clutch.

Never use oil additives unless it is certain to not harm the starter clutch. Do not operate the starter motor for more than a few seconds if the prop does not turn as damage to the adapter, clutch or engine may occur Niagara Air Parts (800-565-4268, www.niagaraairparts.com) offers starter adapter repairs, repair kits, overhauls and can supply improved (STC approved) starters and adapters.

B&C Specialty products 316-382-800, www.bandcspeciality.com, makes a lightweight replacement starter and other accessories for the O-200 engine. Sky Tec also offers a new starter for the O-200, see www.skytecair.com.

The oil system consist of a gear type oil pump contained in the accessory housing and is driven by the cam gear. A pressure oil screen is incorporated into the accessory housing as standard equipment. Oil filters were originally available from the airframe manufacturer (i.e. Cessna) as optional equipment on the Cessna 150. Currently, oil filters using aftermarket adapters are available as an approved modification.

Inspection Basics

Be systematic and write things down. Start by researching the history in the engine logbook. When was it last overhauled, who did it, what parts were replaced, are there specific details as to part numbers, yellow (maintenance release) tags, work orders etc.?

Recommended overhaul for the O-200 is 1800 hours or 12 years. Many times engines are overhauled for economic reasons (cracked crankcase or low oil pressure etc.) not because the engine was due for overhaul.

Were all the parts required to be replaced actually replaced according to the TCM bulletin M87-11? The position of the FAA and "overhauls" is that unless all the required inspections, parts replacements, and repair processes and testing specified in the manufacturer's overhaul manual followed exactly then the overhaul is not valid and cannot be considered as such.

Was the crankcase overhauled? Were the cylinders "repaired" or actually overhauled or replaced with new cylinders? When were the accessories overhauled; is the carburetor modified to the latest configuration? When were the magnetos last overhauled or replaced? This information is important as even though an engine may be low time, cheap overhauls to not make TBO.

What were the compression readings at the last inspection and how do they compare to the previous readings? Does the serial number and model number on the data plate match with what the logbook states and is the engine approved for installation in this aircraft?

The person doing the inspection needs to have current knowledge and data available to check for AD note compliance, that the proper parts and accessories are installed, and that the engine meets its type design specifications or is in an "approved" modified condition. Modifications that are STC approved must have the proper documentation, including copies of 337 forms, instructions for continued airworthiness and possibly flight manual supplements.

Unapproved modifications render an engine unairworthy and must be returns to the original condition to meet airworthy status. After completing preliminary research, operate the engine to check oil pressure, magneto "drop" checks, idle speed check, mixture check at idle cut off (slight RPM increase), carb heat operation, alternator/generator operaton, vacuum pump output etc.

A check of static RPM (with a known calibrated tachometer) also should be made and checked against the required value listed in the official FAA Type Certificate Data Sheet, available free from the FAA Web site. After the preliminary engine checks are done remove the engine cowling, take a compression check, and an oil sample.

Use the TCM recommended method to check engine compression. While engine compression readings are significant, many people place a high degree of importance on slight variations of compression figures without investigating the reason.

Actual low compression (i.e. 50 or less) can generally be confirmed by listening to the exhaust, intake or breather to determine the source of the leak; further investigation can be made using a borescope.

Checking the lower spark plugs for oil fouling or excessive carbon to confirm a cylinder in poor condition. Compresison figures can vary because of a wide range of variables such as engine temperature, calibration of the compression gauges and even the person doing the check.

Oil samples are a good "tool" but oil samples when compared over a period of operating time can reveal more information. Just as with the compression readings, oil samples are not an exact science and should not be used as a stand-alone method.

Check for oil leaks and seeps and investigate each leak. While oil leaks can be minor, the reason for the leak may not be minor. Cracked crankcases, loose case half studs or through-bolts, or cracked cylinders can all lead to major repairs.

Another source for oil leaks is from the valve cover when a rocker shaft wears into the cover. The new style cylinders supplied by TCM have a fix for this problem with a set screw to hold the shaft in position.

Other areas to check for oil leaks are the forward crankshaft seal. A leak in this area is usually repairable with the replacement of the seal but check the logbook for multiple replacements of shaft seals.

This may indicate a problem with the crankshaft (pitting or scratches) or the seal cavity in the case worn or damaged. The oil breather should be checked for excessive oil residue indicating possible blowby.

Crankcase halves occasionally leak and while the problem of loose through-studs may cause this another cause can be worn, frfetting or loose crankcase through-bolts. A tip that this may be a problem area can be a generous amount of sealant along parting surfaces. This method of sealing is not an approved method of "repair" and leaks must be corrected.

Oil leaks from the accdessory housing or installed accessories can also be an indication of a problem. Oil leaks around the vacuum pump must no be tolerated as any oil or oil vapor can be drawn into the vacuum pump destroying it in short order.

Check for exhaust leaks especially around the exhaust manifold to cylinder attachment area. Leaks in these areas can lead to cracked cylinders. When replacing exhaust gaskets always check for cracks in the exhaust port before replacing an exhaust gasket. Intake manifolds, pipes and rubber connector tubes should also be checked for leaks - fuel stains are a dead giveaway.

Often overlooked, a neglected air filter and air box can introduce destructive dust and dirt particles into an engine. Such wear can be rapid and require a complete engine overhaul.

There is an AD (96-09-06) on early style Bracket air filter housings that requiresa 100 hour inspection of the rubber seal between the air intake housing and the filter frame. Replacement of the filter housing with an improved housing within 500 hours of the effective date of the AD will end the repetitive inspection requirement.

Paper air filters (original Cessna are paper) are subject to AD 84-26-02, which requires replacement of all paper filters at 500 hour intervals.

Problems with filters are not necessarily the filter but poor sealing around and after the air filter allowing dust to be drawn in. A final area to check on the engine is that of the ignition system especially the spark plug leads.

These are often neglected unless there is a problem. If the ignition cables are not flexible or show signs of chaffing it's time to replace individual leads or the harness.

Engine baffling should be inspected for missing, cracked or broken sheet metal and attaching hardware. Missing inter-cylinder baffling can lead to cracked cylinders or other damage from incorrect heat transfer. Check cylinders for burned paint where missing baffles are discovered.

Overall the O-200 is a stout little performer that needs to have proper maintenance to assure a long and trouble free life. On the down side as an out-of-production engine some parts can be extremely hard to find.

Be sure to not underestimate the level of care needed to assure it remains the reliable powerplant it was designed to be.

NEBRASKA

COME FIND THE GOOD LIFE

We have an opportunity to have an air show consisting of a Russian Sukoi, a Christen Eagle and a P51, if weather is good and things work out. It looks like we will do the air show on Thursday or Saturday during the day.

We can also eat one or two meals at the North Omaha Airport - nothing fancy, but they're prepared to feed us once or twice for a few dollars each.

We have a Banquet guest speaker - no charge other than food. He's a retired Air Force officer who flew the SR71. By coincidence, it is his ship hanging in the Strategic Air & Space Museum. He is a real gentleman and will be a great speaker. We reconfirmed - he is on the schedule.

A representative from Worldwide Aircraft Recovery is a possible speaker. They contract with the U.S. government and civilian corporations for major aircraft recovery and moving disabled aircraft around the world. They have moved some of the world's largest aircraft and should have some unique pictures and stories.

The north Omaha Airport is willing to work with us on any airplane activities we want to incorporate.

How to Fly a Jenny

By Fred S. Disosway

Editor's note: The following set of instructions was given to Capt. Eddie Vaughn (US Airways, Ret.) by the granddaughter of Fred S. Disosway, who flew the Jenny in World War I and was the proprietor of Disosway Airport in Sheldon, Ill. Capt. Vaughn thought that some of ALPA's younger members who have never flown a vintage aircraft would enjoy reading the article.

1. Inspection - It is best not to inspect this ship. If you do, you'll never get in it.

2. Climbing into the cockpit - Do not attempt to enter the cockpit in the usual way. If you put your weight on the lower wing panel, it will fall off. And besides, your foot will go through the wing, probably breaking your leg. The best way to enter the cockpit is to climb over the tail surfaces and crawl up the turtleback. Be sure to brush the gopher and squirrel nests out of the cockpit. Try not to cut your hands on the broken windshield.

3. Instruments - After having carefully lowered yourself into the cockpit and groped in vain for the safety belt, take a good look at your instruments-both of them. The one on the right is a tachometer. It doesn't work. The other one is an altimeter. It functioned perfectly until 1918, when the hands came off. Look at them now, for when the engine starts, you won't be able to see them.

4. Starting the motor - The switch is on the right. It doesn't work because it isn't connected. However, it gives a sense of confidence to the mechanic who is pulling the prop through, as he can hear the switch click when you say "switch off." If, for some reason, the motor doesn't start, don't get out to pick up the cut and bleeding mechanic - he deserves it.

5. Warming up - Don't warm up the engine. It will run only a few minutes anyway, and the longer it runs on the ground the less flying time you have. After the throttle is opened, do not expose any portion of your body outside the cowling. It is no fun having your face slapped by a flying rocker arm, or to be peppered with small bits of piston rings, valves, etc., that are continually coming out of the exhaust stacks.

6. The takeoff - The takeoff is in direct defiance of all the laws of nature. If you have a passenger, don't try it.

7. The flight - After you have dodged trees, windmills, and chimneys until you are over the lake, you will see a large hole in the left side of the fuselage. The hole is to allow the stick to be moved far enough to make a left turn. Don't try one to the right.

8. The landing - The landing is made in accordance with the laws of gravity. If the landing gear doesn't collapse on the first bounce, don't worry - it will on the second. After you have extracted yourself from the wreckage and helped the spectators put out the fire, light a cigarette and, with a nonchalant shrug, walk (don't run) disdainfully away.

More on the Gear

By Victor Grahn

I recently saw a picture on the web that reminded me about a landing accident to one of our planes. This picture showed a nice white with orange striped C-140, N527ST that had a landing incident down in the Carolinas. I recall meeting the gentleman that owned this airplane, he had just purchased it and flew it up to Lumberton NC for the Convention in 2003. He was really enjoying flying it, and the plane had a great paint job and a killer interior.

Later that year, after the accident, he wrote a thread on both web sites entitled "AAAAAArrrrrrrgggggggg it's gone". It has since been purchased more or less as Salvage and taken up to Virginia where it is now being rebuilt, and this is where I saw the web picture.

What happened? Essentially the left landing gear spring broke, right through the step hole. It seems this is happening about once every ten years (that I know of) to an airplane, the gear spring (leg) will crack through one of the two holes that the bolts go through that hold the step onto the gear leg.

The last one of these I heard of was an airplane that's gear leg failed on landing during the Michigan Convention in 1995.

Folks, if you have purchased an airplane recently, or have not looked at this area in years, pull the two little AN3 (might have AN525 screws) bolts out of each of your gear steps and carefully inspect those holes in the gear leg, you are looking for corrosion or the beginning of a crack (let me re-phrase that, "you do not want to find corrosion or a crack).

I suspect, after looking at mine years ago, Cessna when they manufactured the gear leg simply drilled the hole and left the sharp edges where the drill bit exited the hole. This, in my humble estimation is a great place to start a crack, a sharp edge that gets flexed, over and over. I have taken and lightly countersunk and then burnished this area to smooth out that sharp edge, and on average pull the two bolts (per side) and inspect it about every other annual. Last year at St. Louis I conferred with David Lowe on this, his thoughts were "be careful, that is a heat treated piece of spring steel and you may go through the heat treated portion in that area by countersinking". Hard to argue with that, it's just I couldn't live with that sharp edge.

So now you have some info on the subject, look your plane over and come up with a plan, yours may not have a really sharp edge like mine did, but at the very least inspect those areas!

Cessna knew they had a problem in this area years ago when they issued SLN 67 in NOV of 47 and then superseded in by issuing SLN 63-14 in March of 63. Follow these instructions or just inspect the area after thoroughly cleaning and using a magnifying glass. If you really want to get involved you could have your local A&P Dye Penetrant inspect it for you. Cessna seemed to feel the crack would start on the bottom of the gear leg first, or at least that is how the above service letters read. I suspect they had several failed gear legs to look at and could determine where the crack initiated.

As long as we're in the gear area.....

Repeatedly I see on the web site discussions about gear extenders. Some people like em and some people detest them. This is sort of a wheel landing vs 3 point landing discussion. You've got your favorite, and no matter how much you talk, you still probably won't sway someone with "your view".

So, if you are running gear extenders, and neither I nor anyone else can talk you out of them, take a minute and consider this little bit of info.

On or about serial number 14300 Cessna started installing what is described as "Swept forward" landing gear. Slightly earlier in the s/n range by about 150 numbers Cessna started adding an "angle" in the forward and aft lower corners of the gear box bulkhead area, both left and right sides, a strengthener if you will

See parts book figure 18, item 29 and 30. Or part numbers 0411503, and 0511503-1 and 0411504 and 0411504-1 for a total of four parts.

These angles were added to help take up the additional load placed on the gear box area of the "flex forward" or torque movement of the gear as it put a side load "per se" on the gear box. The earlier gear being more of an up and down movement rather than a twisting force in addition to the up and down load.

If you add wheel extenders to your airplane (older s/n's here) you have about the same thing as the swept forward gear without the added protection of these angles. Unless someone has added these to your airplane, they aren't in there. I'm not the pessimistic kind but Cessna felt those angles were needed and should you care to run extenders for long periods of time you may want to consider keeping a close eye on your gearbox and associated skins. Certainly adding these 4 angles would be a significant job since both floor boards behind the rudder peddles would have to come up as well as the seat pan.

One other factor that may sway you in the decision to keep or remove the extenders is the large amounts of lower door posts cracks that are being found, in the area where the strut attaches to the fuselage. Personally I think the most likely suspect for these cracks is the fact than when the door post aft skin was made, this radius was just cut out. The sharp edges were not filed away. Had the manufacturing process included that, a fair argument could be made that "X" number of cracks probably would not have started. Then, add in the airplanes that were on skis, floats and possibly gear extenders and you could have the majority of the reasons for these door post cracks.

Just a few things to consider, and to keep an eye on while keeping our favorite Cessna's flying.

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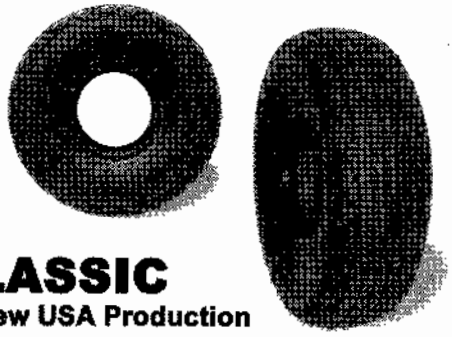

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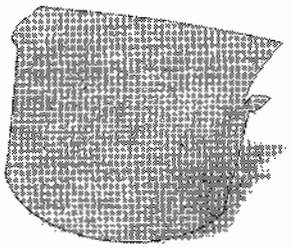

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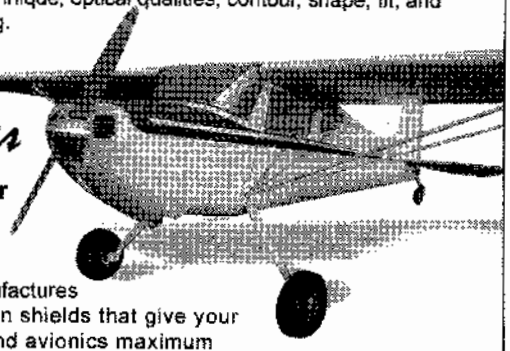

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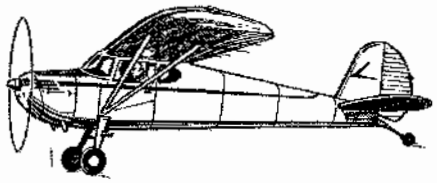

www.cessna120-140.org

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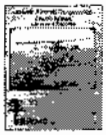

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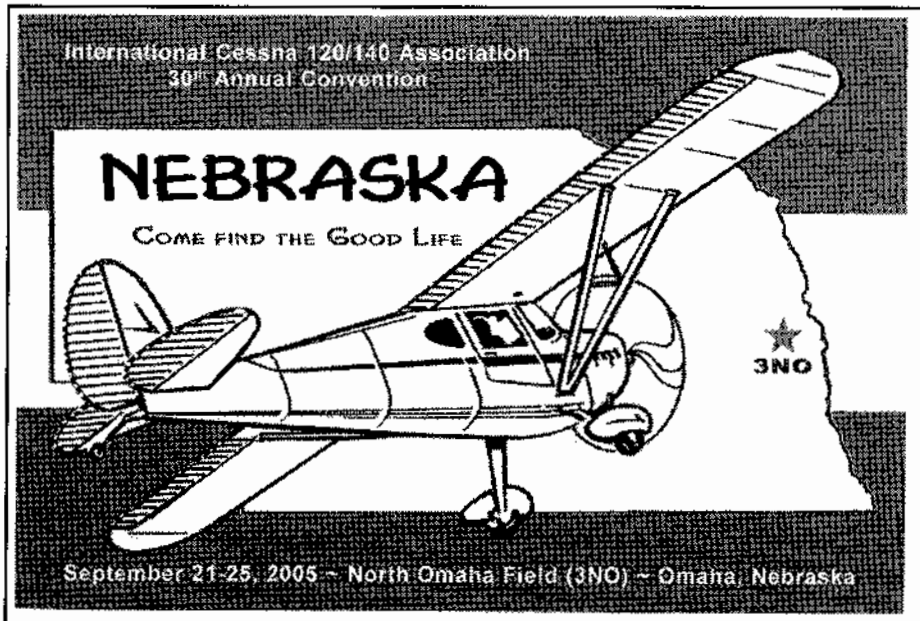

"TENTATIVE" SCHEDULE OF EVENTS

Wednesday, September 21 -
Early Arrivals - Breakfast on your own
Hospitality room open at 6:00 pm
Thursday, September 22 -
Breakfast on your own
Aircraft judging
Possible nerf ball drop, short takeoff, short landing for those arriving early
Hospitality room opens at 6:00 pm
Friday, September 23 -
Breakfast on your own
Reservations t have been made for one or two buses from Arrow Stage Lines. These buses will provide transportation from the North Omaha Airport and the Crowne Plaza to Mahoney State Park for an all-you-can-eat buffet lunch (buffet lunch is $8.70 per person, including beverage), then to the Strategic Air & Space Museum (admittance is $6.00 per person). They will also provide return transportation from the Museum to the Crowne Plaza.
Hospitality room opens at 4:00 pm
Business Meeting before dinner at airport
Saturday, September 24 -
Breakfast on your own
First Timers Breakfast will be in the Regency Room at Crowne Plaza at 7:00 am
9:00 am - Nerf ball drop, short takeoff, short landing, aircraft judging
The awards banquet will be held in the Regency Room at the Crowne Plaza from 6:30-10 pm, with a Cash Bar. This room will be our hospitality room immediately following the banquet
Sunday, September 25 -
Departures at your leisure

See Page 15 for additional possibilities and activities

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■ COMING EVENTS ■ COMING EVENTS ■

<<< ALWAYS BRING YOUR TIEDOWNS >>>

Sun 'n Fun EAA Fly-In

April 12-18 - Lakeland Linder Regional Airport
Lakeland, FL (LAL)
See Page 6 for more info

Come Join Us?

If you're ever out on a Sunday morning, listen for our Breakfast Club on 122.75 at 8 am (Chicago area). We go all over the place! See ya later. **Gary Latronica.**

FOURTH SUNDAY OF EVERY MONTH

Riverside Flabob "International" Airport (RIR)
Breakfast at the Silver Wings Cafe.

TEXAS & SOUTHERN OKLAHOMA BREAKFAST/LUNCH SCHEDULE

Most every Sunday the group from Texas and Southern Oklahoma gets together for breakfast about 8:30 at the scheduled airport. Here is their schedule:

1st Sunday - Lake Texoma
2nd Sunday - Lake Murray
3rd Sunday - Cedar Mills, at Pelican Bay, Texas side of Lake Texoma
4th Sunday - Hicks Field (T67)
5th Sunday - Hicks Field again

Call Leonard Richey, 940-627-1883, for more info.