February 1984

EAA CHAPTER–690 NAV-COM

MEETINGS 2ND FRIDAY EACH MONTH AT STONE MOUNTAIN AIRPORT–8:00 P.M.

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EASTERN HOSTING FEB. MEETING

Thanks to the efforts of Chapter Member Gordon Washburn, Eastern Air Lines will be hosting our next Chapter Meeting. The meeting will be Friday February 10, 1984, and will be held in the "FLORIDIAN ROOM" on Eastern Air Lines Concourse "C" located between Gates C-8 and C-10 at Hartsfield International Airport. The meeting will start at 8:00 p.m.. After the business part of the meeting, Gordon and Bob Jackson of E.A.L., will give us some information regarding the 757 aircraft. From there we will be given a tour of a 757 aircraft. Members are encouraged to make this a family event with wives/girlfriends and only teenage children.

A special thank you to Gordon Washburn, Bob Jackson and Eastern Air Lines for this special program.

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1 NEW & 22 RENEWALS

At the January Chapter Meeting dues were collected from 22 members renewing their membership and we had one new member join the ranks of the Chapter. Please welcome new member Stuart Heaslet. Members renewing for 1984 are as follows: Stephen Durdin, Dan Barker III, Robert Carrick, Gordon Washburn, John Kytle, Doug Lawton, Dennis Balsam, Ed Booth, Jerry Feist, Reinhart Kuntz, W. R. Long, Joel Levine, Tim McNeil, John Popps, Henry Warner, John Henderson, John Howe, Rex Davis, Frank Wilcox, Richard Strand, John Owens, and Charles Sego.

If it isn't one thing than it is another! It's after Christmas and the bills have come and it's right before Taxes are due, and as of January the Chapter Membership Dues are DUE. Please send your $12.00 membership dues to Chapter Treasurer Richard Strand
4433 Lake Ivanhoe Drive
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From the BLACKHAWK Chapter 75 Newsletter:

What is the formula for building an aircraft?

(MONEY x TIME) x COMMITMENT x DESIRE = RESULTS

LETTERS 'N SHOP TALK

THOUGHTS ON BENDING TUBING

By Roy Clemens, EAA 87974, D/N 666, EAA Newsletter, Penticton, British Columbia, Canada

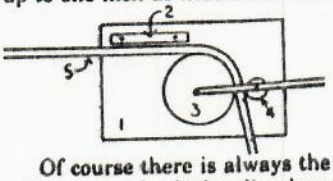
Everyone uses tubes in one place or another; an aircraft without a tube of some kind is a rarity and most aircraft require tubes to be bent. Bending can be done easily if the proper equipment is available. A professional looking job with very little skill required; however, everyone does not have this equipment so improvision is the next best thing.

Small ¼" copper and aluminum can be bent by hand to approximately 2" radius without flattening the tube. Copper should be in its soft annealed state; if not, it can be annealed by heating until soft annealed state; if not, it can be annealed by heating until peacock colors appear on the surface and quench in cold water. Don't try to anneal long sections as hard spots will result making it hard to form uniform bends. Long pieces should be heated as above and allowed to cool in the air. Annealing also makes copper tubes less liable to crack from vibration, and could be done to old tubes during overhaul.

To anneal dural tube in the shop, when it is not possible to have it furnace annealed, play a torce flame over it until a bit of wood held to it will char. (Aluminum will not change when heated.) Then allow it to cool slowly; a good coat of soot will slow the cooling process and can be obtained by using an acetylene flame when temperature has been reached.

Copper and aluminum tube comes in coil form. Unroll it on a long bench or board, roll and beat it with a block of wood to straighten it neatly.

Bending larger diameter tubes can cause problems if sharp radius bends are required; on light wall tubing hand bending will cause buckles. A simple jig can be made from wood, mounting a piece of hardwood or plywood cut to the desired radius on the flat work bench and using great skill and patience, work the tube around this die. A lever pivoted at the center of the radius with a grooved roller or piece of hardwood and adjusted so that there is a right fit between the tube and die can be rigged to make a better job and will be wll worth the effort if several pieces of the same radius be required. With some work and if metal working tools are available, a very versatile bender can be made for tubes up to one inch as illustrated below:



1. Base or Bench
2. Bending Stop
3. Radius Die
4. Pivoted Roller with Groove
5. Tubing

Of course there is always the filling of the tube with sand or salt or several tube bending low melt alloys which are available. Since sand or salt is the most easily obtained in our area, I will deal with them. Plug one end of the tube by driving in a block of wood, fill with sand or salt, tamping as you fill, then drive a wood plug in the end and proceed to bend the tube using a form tacked to the workbench as a guide. Bend cold. Torch heating would burn the wood and only heat one side of the tube. When heated on one side only it will cause the tube to stretch and crack.

Heating only works well when the whole tube is placed in a furnace and heated uniformly, then quickly taken out and bent around a form. One of the common jobs is the bending of exhaust tubing; here the wrinkle bending method can be used, as all wrinkles are on the inside tube diamter and flow is not decreased to any great degree.

In general, from seven to fifteen degrees may be allowed for each wrinkle . . . ten degrees being common. For tubing between one and two inches in diameter take two plates, 4 inches square by ¼ inch thick, drill a hole in the center the same size as the tubing, saw these across the hole and m ake collars out of them so they can be clamped around the tube where the wrinkle is to be. This confines the torch heat to a narrow band; by playing the torch back and forth across the tube while applying pressure at the end of the tube, as the metal softens, the pressure will be felt to slacken off and by playing the torch and applying more pressure the wrinkle can be worked in. A bubble protractor clamped to the end of the tube and set the desired angle will be helpful in getting uniform bends.

ENGINE COWLINGS — MAKE THEM EASY TO OPEN

From the TRIPLE FIVE FLYER, EAA Chapter 555, El Paso, Texas

This bit of trivia came to mind while in the process of removing the 14 DZUS fasteners and 10 machine screws that it takes to open both sides of the cowl on the Starduster Too. I couldn't help but to compare this to the Fournier. Six DZUS fasteners and the entire top half of the cowl comes off. Two more and the bottom half drops off. The Fournier has almost never been flown without a good preflight check of the engine compartment, but already the temptation to just check the oil through the flip-open door on the "Duster" and go fly is getting strong. Well, why not? After all, a lot of "store bought" aircraft use this arrangement. True, but I've always suspected that this was a compromise used to sell airplanes to well-dressed businessmen who don't care to poke around oily engines in their three-piece suits. Most of them would be surprised at how much things can deteriorate under a cowl in as little as five hours time. Cracked baffles, chaffing of cables and wires, nuts missing from exhaust stack attachments, loose generator mounting bolts and a disconnected mixture control are among the items I personally have found over the years. Guess I'll keep unlatching those 14 fasteners and 10 machine screws. When the plate nuts wear out, I'll redesign the cowl. You guys who have your cowl construction ahead of you remember, an engine compartment with easy access will get inspected. Otherwise it will tend to get neglected. It's just human nature.

CRUISE CONTROL

By Dave Harmon, From the El Paso, Texas Chapter 82 Newsletter

The question asked by many pilots is "How do I go the furthest and the fastest for the least amount of fuel?" The answer is to fly high and with the throttle wide open and the engine leaned. But how high, and how much power, and how much fuel consumption to you figure on?

Below you will find a handy dandy chart. These numbers are good for all standard, non-turbocharged gasoline engines. It is based on a standard day, which is 29.99" HG and a temperature of 59 degrees F. Since we seldom ever find a "standard day", these percentages are an approximation, but the error is not enough to make any great difference in your actual performance figures.

There is a number which is sometimes referred to as the "magic number" — it is ".075". If you multiply this number times the actual horsepower at altitude you are flying, you will have the gph you are burning. These figures can be checked against engine/altitude power curves and fuel consumption charts. It is amazing how accurate these numbers are and the best part is you can work them out in the cockpit while flying.

CHART FOR NORMALLY ASPIRATED ENGINES
Full Throttle HP At Altitude

Altitude Ft.	% S.L. HP	Altitude Ft.	% S.L. HP
0	100	8500	74.8
500	98.5	9000	73.5
1000	96.8	9500	72.5
1500	95.3	10000	70.8
2000	93.6	10500	69.5
2500	92.0	11000	68.3
3000	90.5	11500	67.2
3500	89.3	12000	65.8
4000	87.5	12500	64.7
4500	85.9	13000	63.4
5000	84.6	13500	62.3
5500	83.2	14000	61.0
6000	81.7	14500	59.8
6500	80.2	15000	58.7
7000	78.9	15500	57.6
7500	77.5	16000	56.5
8000	76.2	16500	55.4

Well, will find out who has the best Chili! A Chili "cook-off" has been set for Saturday March 24, 1984. Exact time and location will be announced later as we are in the process of obtaining a neutral site for the contest. Tentatively plans are to have the cook-off tied in with some aviation activity. If you have a Chili, recipe and want to enter the contest contact Harold Stalcup at 921-9468 or Rex Davis at 921-6897.

So far the entrants for the contest are Harold Stalcup and Del Howe with their own recipes, and Ed Booth with 2 cans of "Hormel's Chili".

There will be more information in the next newsletter.

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NEED A SHORT LEVELING JACK?

from EAA Chapter 88 Newsletter, The Homebuilder, Wichita, Kansas

While reading the How To's on the BD-5, I found a future need of leveling jack. Figure 1 shows a pipe fitting, with a nut brazed on top. The large fitting is a 2" x 3/4" Bell reducer using 5/8" course thread "all-thread" with a nut brazed on the small end of the pipe reducer, then a nut brazed near the top of the "all-thread" rod.

There are many sizes of reducers and any size may be used. This may be another which has been here all the time.

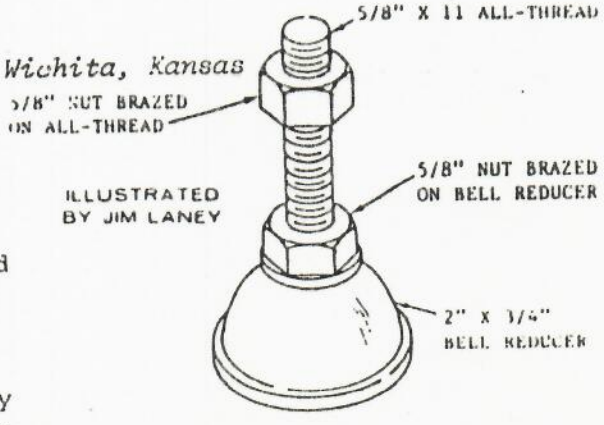
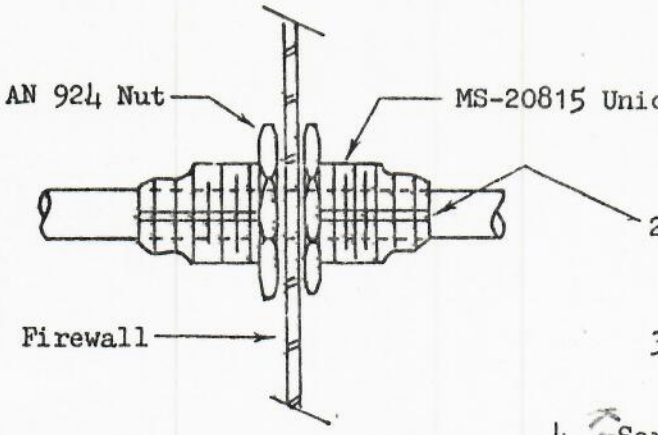


Figure 1

FIREWALL CABLE INSTALLATION
From Chapter 41, Toronto Ontario, CANADA

The following tip for clamping push pull cables through the fire wall comes from the fertile mind of Bill Tee. It is worthy of sport aviation coverage.



1. Drill bore to approximately 0.010" smaller than diameter of cable casing.
2. Slit union and fixed nut full length on one side only.
3. Force cable casing through bore of union.
4. Screw on AN 924 nut. This will tighten fitting onto casing and onto firewall (or bulkhead)

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ATLANTA, GA 303 PM 4 FEB 1984

USA 20c

Bob

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