




# The Flightline

EAA Chapter 958 San Marcos, TX  
Where every day is a good flying day!  
February 2015 Issue

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## February Chapter Meeting at Redbird Skyport

*The February meeting will be held at 10:00 am Saturday 2/21/15 preceded by a pancake breakfast at 9:00 am. Please come and support your team, get some good food and a caffeine fix to jump start your day. Please come and support your chapter as we head into an aviation filled new year*

## Prez Sez

The big news this month is that Redbird Skyport is planning a Fly-In for late May or early June. GM John Koenreich would like EAA Chapter 958 to be a part of it and perhaps help or run the concessions as well as possible Young Eagles and /or Eagles flights. He is looking for input and ideas from club members for the event and tentatively will be addressing the group this Saturday.

This this is a fantastic opportunity to put some money in our coffers, interface with other local aviation organizations, promote the EAA and add to our membership. So we hope all our members will come to our meeting and help show our support for Redbird and their gracious hospitality.

Also in the wings will be some program planning for future meetings. This can be an excellent opportunity for the sharing of aviation knowledge and perhaps frustrations in the world of flight and aircraft construction. See Stan Timmerman's articles on the construction of his Bearhawk Patrol.

We're still trying to get organized and get our membership lists updated. When attending the meeting please fill in all of your pertinent information on the sign in sheets. Note that there will be an option asking if you would like to be attached to the chapter "Google Group" (EAA958). Please check yes. We would like to use this as our primary form of communication with the group other than the newsletter for other activities (looking for help, tools, etc.)

On a final note, the Covair College is coming to San Marcos shortly (see editors note), anyone interested in or building a light sport aircraft should check it out.

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## From the Editor

2015 Looks to be an active year for EAA Chapter 958. We have a lot to be thankful for with our new location and great support from the folks at Redbird Skyport. Last months meeting indicated a need for some member support in filling a need for several new chapter officers. This is a great opportunity to help the chapter grow and promote grassroots aviation at the community level. Remember the more we have involved the less any one person has to do.

Redbird Skyport is also in the process of developing a fly-in, for a late May or early June offering and would welcome participation by the chapter. They have indicated that the chapter would be welcome to operate a food concession as a fund raising source for the club as well as a swap meet for aircraft parts, tools etc. GM John Koenreich is Interested in having a Young Eagles and possibly Eagles program offered during the fly-in, and has ideas for several other things to draw in the flying folks. Tentatively John will be addressing the chapter briefly at the meeting Saturday.

At the January meeting it was decided to devide the programs for the year into quarterly topics including:

1. Air frames - aluminum, steel tube & composite
2. Systems - hydraulics, control
3. Avionics - steam, glass
4. Maintenance - certified, homebuilt

And there are surely many more ideas for an informative and educational program.

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On another note, Corvair College is coming up at end of February, beginning of March at San Marcos. Only 5-6 events per year across the country. Folks are welcome to observe. (No lunch though). It is a neat event to observe. Local contact for event - Kevin Perteen  
He has a website [coravair.net](http://coravair.net)

Those interested in LSA projects would be interested in the Corvair as a possible power source. There's a lot to learn at the Corvair College and it only costs \$89 for 3 days of intense mechanics and good food. Nice event.

Contact:  
Guy  
[yyz\\_TTr@yahoo.com](mailto:yyz_TTr@yahoo.com)

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And last we have a special treat as Stan Timmerman gives us a tongue-in-cheek look at his progress as he dives head first into the construction of his Bearhawk Patrol.

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# Building Update Bearhawk Patrol - December

*By Stan Timmerman*

So far, building a rag and tube airplane is mostly wood work. There are a lot of forming tools to make.

I started with the mylar airfoil sheet that came with the plans and cut it close to the line. I then glued the sheet down with 3M 77 spray adhesive to a 0.032 piece of aluminum. With a pair of hand shears and a file, you can make a precise airfoil template.



Using the airfoil template and a flush trim router bit, a MDF wood master was made. Note that I have modified my router with a piece of plexiglass to limit the debris that will be ingested, which reduces future router problems.



The master template outer edge was made with a flush trim bit, but the lightening holes are made on a drill press with a circle cutter. The circle cutter is probably the most dangerous operation. It looks like you can just reach in and push away debris before the blade comes around.



Eventually, you will do something stupid. It is advisable to have band-aids readily available. I would recommend taking them out of the wrapper because it is hard to get that paper off when you are bleeding.



There are endless MDF templates generated off of the master template using the router and a flush trim bit. A spiral 1/2 inch flush trim bit can be used to cut MDF as well as aluminum.

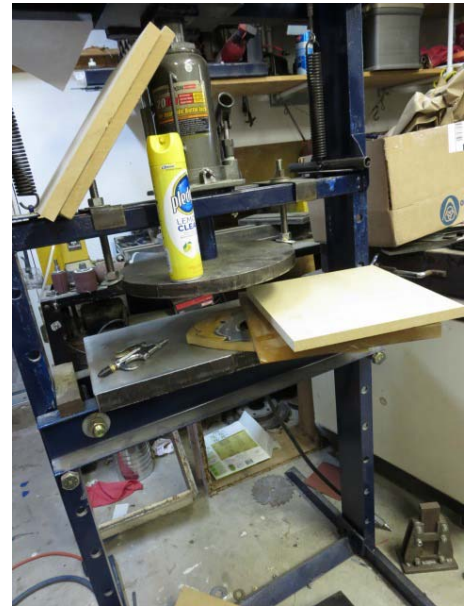


I used a 45 degree chamfer bit to make a flange around the lightening hole.



There are many ways that are simpler and cheaper to form the flange.

Here I must digress and discuss a general principle affecting builders. It is well known that once you see a tool, you will convince yourself that you need it. I suffer from a worse condition than every tool I see I want to make. Here is an air compressor driven 20 ton press. I saw something like it in a youtube video: <https://www.youtube.com/watch?v=EWGAIVDpDLC>



The flange is finished with a \$6 hammer and more MDF forms. In the picture there is a delrin plastic tool that could have been used to make the flange without the 20 ton press.

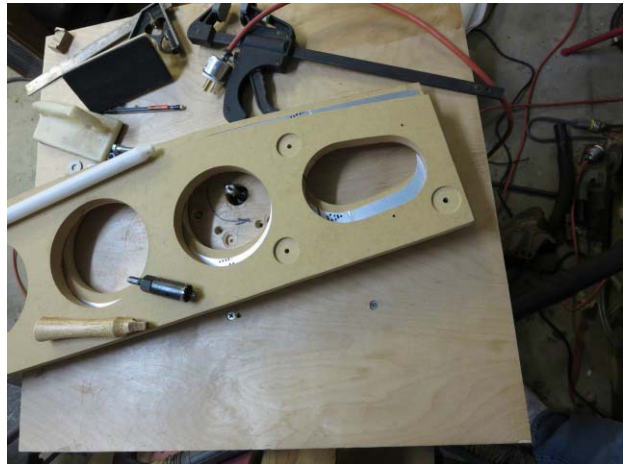


A tool that I made that was actually needed and not just wanted is this table for my upside down mounted router. It is made out of an old table saw base that I had laying around.

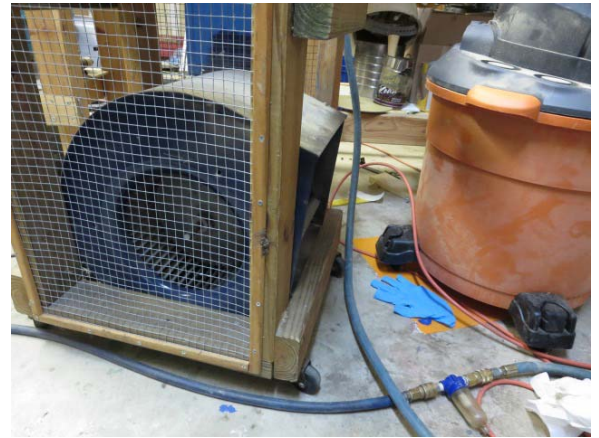
There are two schools of thought. It is easier to build things if you are a pack rat and have chunks of steel and old table saws laying around. Or, it is harder to build things when your garage is full of chunks of steel and old table saws.



This is a typical usage of my router table. I have to point out that the metal chips thrown off are hot and fly all over the place. I had to buy a vacuum cleaner just to clean up the mess from this operation. I also had to have a second pair of sneakers just for the garage to limit tracking metal chips into the house.



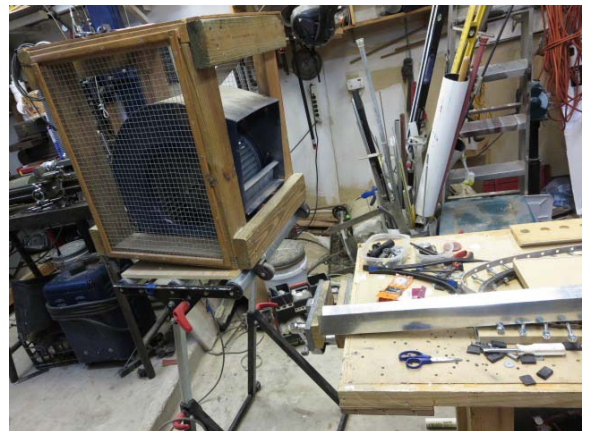
A broom could have solved the metal chip problem. The more complicated and expensive way to do it is a squirrel cage fan that will blow everything outside.



Here I have made an adapter that can be used to clean off tables tops.

To use the automatic cleaning device follow the following steps:

- 1) Position device in front of debris.
- 2) Open garage door
- 3) Check if neighbors are around
- 4) Plug device in
- 5) Close garage door before neighbors can figure out where all of the dust is coming from.



In addition to my router table I could not make much progress without my table saw, and my saber saw. The saber saw is more useful than a band-saw.

There are a lot of MDF forms to make. I like the 1 inch sheets that can be obtained from cabinet supply stores. It comes in 4x8 sheets that are too heavy unless they are cut up into smaller chunks with the saber saw.





# Fluting Pliers for the Bearhawk

*By Stan Timmerman*

The tool that was of interest to me this month was fluting pliers. They are sold commercially for example <http://www.averytools.com/prodinfo.asp?number=500>

The above one goes for about \$50. The drill rod welded on seem to be about 5/32. I made quite a few versions of my own and came to the conclusion that the commercial one is not appropriate for the air foil of a Bearhawk Patrol. One of the defining features of an aircraft is the airfoil. The designer of the wing chose from a wide selection of shapes. Each of these is only useful for a certain mission. The Bearhawk Patrol is the F150 truck of airplanes. It was made for heavy loads and low speed landing on grass strips. The airfoil for the patrol is a Riblett 30-413.5

The website <http://bearhawkaircraft.com/Patrol/Pdescription.php> has the following description

“ A 180hp Patrol has a cruise speed (60% power) of 140 MPH, a takeoff roll of 250 feet and a landing speed of 35 MPH. The wing span is 33 feet. Cabin width is 32 inches. The Patrol has a 1,050 pound useful load (depending on a builder’s equipment selections), if built to Utility Category equivalency as designed. ”

A Vans RV-7 has a speed of around 186 mph at a similar power setting with a takeoff roll of 575 feet and a landing distance of 500 feet. The stall speed is around 58 mph. With a 30% speed margin, I would guess the landing speed to be around 70mph. For those with a physics background the energy that has to be dissipated by the brakes goes up by  $1/2mV^2$ .

My point is that a wing with a shape designed to go fast, carries with it a landing speed increase to go with it. Increased landing speed also means increased landing distance.

Nothing I have said is meant as a criticism. I am simply establishing that all airfoils are mission specific. Landing on an unimproved strip is a trade off for increased flying speed.

Now, back to the subject I want to write about – fluting pliers. From here on everything I write is speculation.

The commercially available pliers do not seem appropriate for a Riblett 30-413.5. If I had to guess, the curvature of the nose rib for a Bearhawk Patrol is greater the curvature for a Vans wing. Perhaps the commercially available 5/32 diameter pin fluter works for a Vans airfoil.

I made 3 different fluting pliers for the nose rib of a Patrol. In the end I came to the conclusion that the flute necessary to establish a curve consistent with a Patrol needs to be around 1/2 diameter.





The relief angle that can be seen on the 1/2 and the 3/8 version is to accommodate my practice of fluting during the forming process.

The reason is that you do not need a flute until you start bending. Then as you bend you need to take up the extra material as it becomes available to move.

The tool uses either 1/2 inch drill rod and or a cut off grade 8 bolt. I generally avoid anything with a zinc coating. Many years ago a bought a bucket of a material called vermiculite. It was the sort of thing you could get at a garden center. The material may not be available anymore because society is run amok with 'do-gooders' that were afraid I would eat it. Typically one would weld and take the glowing work piece and bury it in vermiculite. It will takes hours to go from glowing to cold. This is exactly what is needed to keep cracks from forming after welding high carbon steel.



# Safety Corner

## Aviation Safety Programs and Webinars

### EAA Sponsored webinars (free)

**February 25 - 7 p.m. CST**

*How to Successfully Build a Pietenpol Air Camper*

*Presenter: Steve Williamson*

**March 4 - 8 p.m. CST**

*Cam Distress*

*FAA AMT & Wings Credit*

*Presenter: Mike Busch*

**March 11 - 7 p.m. CST**

*Building and Flying the Zenith CH-750*

*Presenter: Sebastien Heintz*

**March 18 - 7 p.m. CDT**

*Mastering Radio Communications*

*FAA Wings Credit*

*Presenter: Prof. H. Paul Shuch*

**March 25 - 7 p.m. CDT**

*Vertical Power- The Benefits of Electronic  
Circuit Breakers*

*FAA AMT Credit*

*Presenter: Chad Jensen*

### FAAsafety Team (FAAsafety.org)

**Monday, February 23, 2015 at 17:00**

*"FREE WEBINAR - Get a Better Preflight Briefing!"*

*Topic: How to prepare for and receive a better preflight briefing.*

*Location:*

*ONLINE ONLY--Webinar*

*16501 Sherman Way*

*Van Nuys, CA 91406*

*Select Number:*

*WP0160635*

