



Winnipeg Area Chapter of RAA Canada

November 2009

Executive

President: Jim Oke: – 344-5396
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Gilbert Bourrier – 878-3384
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NEWSLETTER: Bob Stewart Box 22 GRP 2 RR#1 Dugald, MB R0E 0K0
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CALENDAR OF EVENTS

- November 26** **Tour of Canadian Propeller, 482 Brooklyn Ave 7:30pm.**
Note: this meeting is one week later than our regular meeting
- December 5** Saturday evening "Pot-luck" pre Christmas dinner/get together
Lyncrest Flight Centre
- January 28, 2010** Annual rust remover
location to be determined

Regular meeting – Thursday November 26

We have arranged a tour of Canadian Propeller but to accommodate Canadian propeller's schedule we had to move the meeting to Thursday November 26. The meeting will start at 7:30. Canadian Propeller is located at 462 Brooklyn Ave., north of Ness St. Brooklyn runs off of Ness between St. James Rd. and Ferry Rd but Brooklyn does not run through to Ellice Ave.

Congratulation



Rick Riewe and Jill Oakes receiving the Arro award from Jim Oke

Congratulation to Jill Oakes and Rick Riewe for all their continuous support to general aviation in our community. Jill and Rick are this year's winner of the Arro Award.

First Flight Awards

Congratulations to Gilbert Bourrier on the First Flight of his Acco Sport II and George Inman on the First Flight in his RV 8A



Jim Oke presenting Gilbert Bourrier With his First Flight Award



Jim Oke presenting George Inman with his First Flight Award

Ask the MD-RA by Ken Podaima

If you have any questions related to the construction, repair or restoration of an aircraft where the RAAC is involved, please forward your questions to Ken Podaima at (204) 257-1275 or e-mail him at kpodaima@cc.umanitoba.ca

ASK MD-RA

I am building from plans and understand that I need to demonstrate that any changes need to be demonstrated as being sufficiently strong. What level of proof is required? For example, for an item under tensile load is it sufficient to show calculations that the tensile strength of the replacement material is stronger than the original?

Builders of Amateur built aircraft in Canada have the freedom to design their own aircraft or modify existing designs. Ending up with a safe aircraft is a priority with MDRA and so it should be with the builder. The builder is ultimately responsible for any design changes or mods and any acceptance by MDRA is not considered an approval of the changes or mods. Since MDRA inspectors are not trained in structural strength analysis the onus is on the builder to provide the necessary proof that his/her mods are done safely. The level of proof required varies with the

mod or change. The simplest is to obtain written approval from the designer of the aircraft. Currently, designers are somewhat reluctant to provide such approvals. From your question one assumes that you plan to use material other than what is specified by the designer. If the material you plan to use has a greater tensile strength than the designers specs, then tensile strength calculations only would be acceptable and a redesign of the fitting would not be required. If the material has a lower tensile strength then you would have to show that you have increased the cross section sufficiently to maintain the required strength. Depending on what the metal fitting does you may also have to show that that the bearing strength of the material is sufficient for any bolts in this fitting. This involves calculations using the compressive strength properties of the material.

If the fitting is loaded in tension by a single bolt as in the case of a lift strut attachment fitting you would have to show that the fitting is sufficiently strong in tear out and that the bearing strength is adequate. That involves calculations using the tensile, shear and compressive strength properties of the material you are using. By doing the same calculations using the designers specified material you would then know how much to increase the size of the fitting to have the same level of strength as the designer requires.

The builder must remember that providing the required proof is not just to keep MDRA inspectors happy but to insure that a safe aircraft is built.

For welds, how are they inspected? Does a sample of each piece need to be made up for destructive testing?

Welds are only inspected visually. The inspector looks for adequate penetration, evidence of under cut, overheating the base metal, a smooth even bead, evidence of burn through on thin wall tubing and if the weld metal flows into the base metal smoothly. Only a few joints would be inspected on a welded fuselage.

The inspector may ask for sample welds of a butt joint, a lap and corner joint. These are given a simple bend test. You don't have to make a duplicate set of metal fittings for testing.

The safest approach to welding is to get an experienced welder to do the welding on your project. That doesn't mean Joe at the corner garage who occasionally welds a few tail pipes and mufflers. Aircraft grade steel behaves quite differently than mild steel.

Ken

Aileron flutter in 601...update from RAA

In the past two years the Zenith 601 XL has become quite controversial, and there have been questions about aileron flutter. RAA has been in regular contact with Zenith personnel and recently we reported that an independent laboratory had wind tunnel tested the structure and found that if the aileron cables were properly tensioned there would be no flutter.

This week the FAA has released a safety advisory on the 601 XL and is asking pilots not to fly until the factory provides a remedy to some issues they are now addressing. RAA Canada has asked Transport for their position on this matter but no answer has been forthcoming. Neither the US or Canada has an AD process for non certified aircraft so compliance is voluntary. Builders should do the prudent thing and wait until any possible plans revisions have been completed.

RAA Canada will be meeting with key Zenith personnel this week, and as soon as we have an answer it will be made available to subscribers on this email system and in the magazine.

Gary Wolf, RAA Canada

Workshops and Courses

The RAA is interested in planning courses and workshops over the winter. Some of the suggestions are fiber-glassing, fabric covering, bending/riveting, and internet resources for pilots. If you are interested in any of these courses or have suggestions for other courses, please let a member of the executive know and if there is enough interest, we'll try and organize the course or workshop.

Bending Jig for Metal Fittings by Steven Sadler



Figure 1

Here is a handy little jig for bending metal fittings to shape. I used this for bending "U" shaped fitting for my landing gear spring struts but the basic process can be adapted to a wide variety of shapes.

For my fittings I used a small hydraulic press from Princess Auto (Figure 1). These are pretty cheap - under \$200.00. However, the same job can probably be accomplished with a suitably sized vise.



Figure 2

For this bending job I wanted "U" shaped fittings so the jig is pretty straightforward. We need a hollow pocket and an insertion bar to push the steel in the pocket. I welded up two 1/4" flat steel pieces on top of a scrap plate as shown in figure 2. Two reinforcing pieces keep the flat pocket pieces from bowing out under pressure. First step is to round off the edge where the steel will be pushed into the pocket. If you don't the work piece being formed will be scraped and weakened.

To get the pocket pieces parallel and the required distance apart I first calculated what the spacing should be. Since I need a 1/4" space inside my "U" and my metal is 0.090 inches thick the required distance between the two pocket pieces is $(0.090 \times 2) + 0.250 = 0.43$ inches. Step one is to weld the first piece on somewhere on the base plate. To get the required 0.43" spacing parallel to the first pieces go into your drill collection and find the bit closest to and just slightly larger than 0.43".



Figure 3

The drill bit is laid between the two pocket steel pieces while they are tack welded in place. Then complete the weld and weld on the reinforcements. The forming pocket is finished. It's that easy.

To make the insertion bar we need something that will stay in place on the hydraulic press rod and provide the shape needed to push the steel in to the forming pocket. I used a scrap hole saw welded to a 1/4" plate as shown in figure 3. You could do the same thing, and probably better with a piece of pipe.

Metal is formed as shown in figure 4.



Figure 4

Here are a couple of tips to get good results: First, make sure that you start out with a work piece that is longer than you think you need. The bend radius uses up material. Also, it is hard to get the piece to start feeding into the pocket exactly evenly. Normally one end is a little longer than the other. Just grind the ends down to the right length and all is well. However, if it's too short you can't make it longer.

Secondly, make sure that your work piece is square to pocket before you start, if not, the ends won't line up.



Figure 5

Figure 5 shows a sample piece before grinding to length. This is a lot easier and more consistent than pounding out pieces over a vice. Once the jig is made, forming each piece takes about 15 seconds.

For Sale: One RV 6 or 6A wooden fuselage jig. Excellent construction and in excellent conditions. 6 - 6s and 6As have been built using this jig. For more information, contact Bob Stewart at 853-7776.

2009 Membership Form

Winnipeg Area Chapter RAA

Trial (\$25)

Student(\$25)

Full (\$50)

Required Information

Name		OFFICE USE ONLY	
Mailing Address		Renewal Date	
Phone(s)		Chq. Other	Cash
E-mail		Initials	
Are you an RAA national member? ⁽¹⁾		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you give permission for your information to be made available to other Winnipeg RAA members?		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Optional Information

Do you own an aircraft?	<input type="checkbox"/> Yes <input type="checkbox"/> No Make/model: Registration:	Are you a member of other aviation groups?	EAA: <input type="checkbox"/> COPA: <input type="checkbox"/> Others:
Are you building or restoring an aircraft?	<input type="checkbox"/> Yes <input type="checkbox"/> No Make and model of project(s):	What Pilots licences and ratings do you hold?	

Please make cheques payable to: RAA - Winnipeg Chapter
Mailing Address: RAA c/o Steven Sadler PO Box 703 LaSalle Mb. R0G 1B0

Notes:

- 1) RAA Winnipeg contributes \$15 per member towards the insurance program maintained by RAA national. This program provides liability insurance to cover local chapter events. The \$15 does not provide membership in RAAC.**