Straigthening ribs, spars, how not to do it.

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While making the elevators, at some point I realised that I inverted the dimples on the trim tab spar on the left elevator.

No panic... Most of us do that. Vans will tell you just to invert the dimples using the handsqueezer and you will be fine.
Inverting the dimples is allowed, but just once !

In my innocence, I first pushed the dimples back using the manual squeezer. Doing that, you will notice a small ring will be visible. This is normal.
However, I decided for absolutle straightness, I would use two flat rivetting dies in my pneumatic squeezer and give it a 'little' push in order to make the aluminum back as straight as possibly can be. After all, this is where the hinge line will be attached for the trim tab so it better be damned straight.

Using the pneumatic squeezer unleeshes a lot of power, putting it in the hand of the unknowing results in bizarre and unwanted results.

After squeezing the first hole, it looked absolutly great ! In all my enthousiasm, I continued down the entire line of holes (about 25 or so).

By the end of the squeezing, I found out the hard way that the spar had now a nasty bend over the entire line and had a bent of about 10° in the spar.

What happened and what to learn from this ?

Simple answer: the material under the dies gets squeezed and will end up - by the excessive pressure - a bit below the normal gauge. In other words, you crushed the material. The now excess amount of material has to go somewhere, moves out in all directions and starts deforming your bar.

One doesn't do much harm but a series of them will seriously distort the shape.

So golden rule: never use the pneumatic squeezer in an attempt to straigthen a series of deformations in aluminum to set things straight again.

Also: be carefull when using the pneumatic squeezer for dimpling as the same may happen, don't put too much pressure on the squeezer when dimpling. Adjust the distance between the dies to just what is needed, not to squeezer the material down.

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Better is to use the hand seamer when trying to straighten aluminum. Don't expect to get it back how it was originally, it never will...

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