

Vacman's notes



Stuff we've learned over 25 years connecting vacuum with composites

August 2012

Feeding degassed resin into an infused part

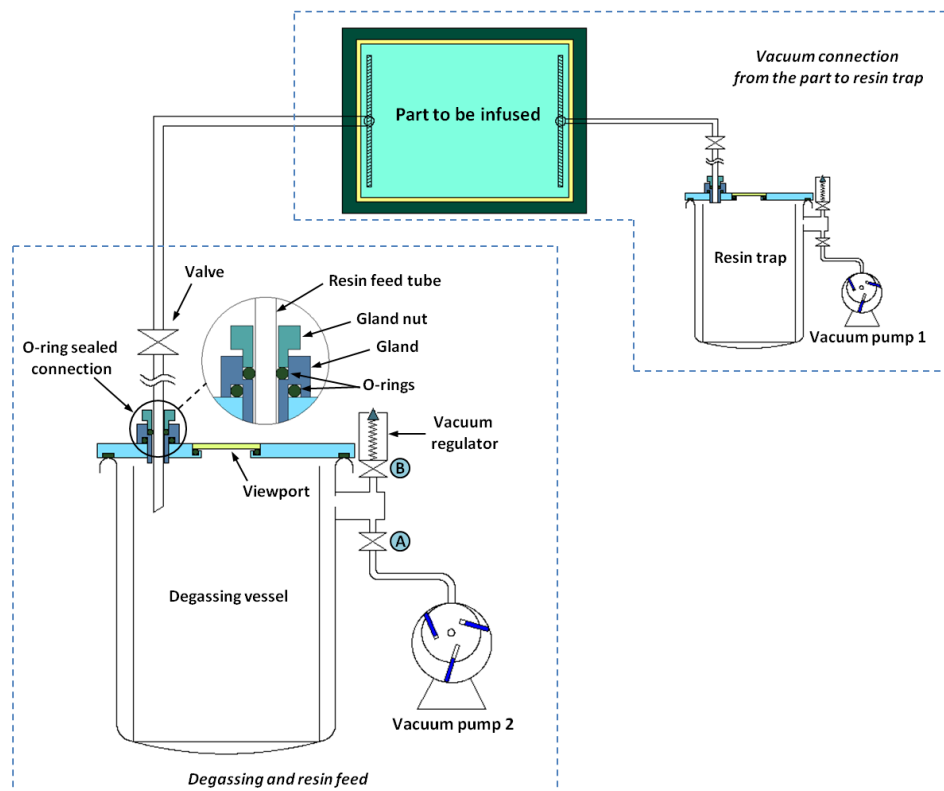
We introduce this note with a word of caution!

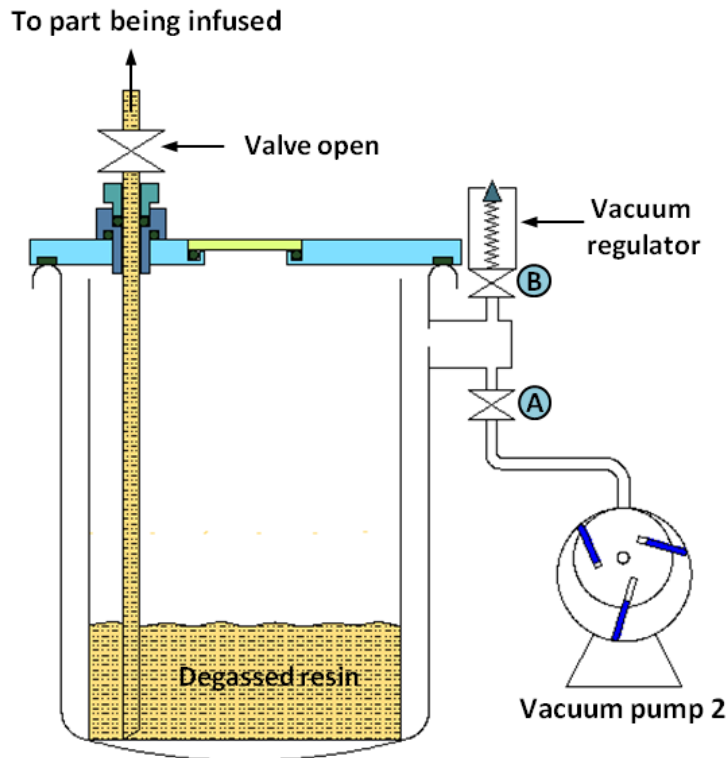
While the following describes a method for transferring a batch of resin from an evacuated vessel into a laminate to be infused without air entry, we are not sure that the end result will be a completely void-free part. This is because applying a vacuum above a static volume of liquid resin does not necessarily remove all the dissolved air. Vacuum degassing may need to be assisted by materials which encourage bubble formation, such as Scotch-Brite, or by the application of heat, or by agitation or by centrifuging. Suggestions for removing voids from infused parts will be most welcome! We will update this note as we learn more...

Subject to the limitation above, it is possible to vacuum degas resin and feed it into a part to be infused without further air contact after degassing. If carefully sequenced, the procedure can be accomplished with one vacuum system, but it is simpler and there is less risk of a mistake if two vacuum systems are used. We will describe the procedure on the assumption that the following equipment is available:

- One vacuum system with an appropriate resin trap for applying vacuum to the part to be infused.
- Another vacuum system with a suitable vessel for degassing resin. This degassing vessel needs at least one O-ring sealed vacuum connection which a resin feed tube can be pushed through (and remain sealed during movement).
- Desirably a disposable O-ring sealed valve that can be inserted into the resin feed line. (A tube clamp will work, but a valve will be easier to use).

With reference to the schematic below, the vacuum connection(s) from the resin trap can be connected to the part in the normal way. The degassing and resin feed line(s) should be set up as in the lower section of the drawing.





Step 2

10. When the resin has been degassed, slightly loosen the gland nut retaining the resin feed tube. Push the tube until the angle-cut end contacts the bottom of the resin bucket – as shown in Step 2. Retighten the gland nut.
11. Open the resin feed valve above the degassing vessel.
12. Open valve “B” under the vacuum regulator and adjust the vacuum level so the air pressure rises (vacuum decreases) above the resin in the degassing vessel. Adjust the vacuum until the flow rate of resin appears satisfactory. If need be, close valve “A” above vacuum pump 2 and admit atmospheric pressure air above the resin (but leave the vacuum pump running).
13. After the part has been completely infused:
 - a) For low vapour pressure resins which are not affected by maximum vacuum, close valve “B” under the vacuum regulator and reopen valve “A” to vacuum pump 2 (if previously closed), or
 - b) For high vapour pressure resins (see note 7 above), open valve “B” below the vacuum regulator and hold the vacuum at the safe level for the resin until it has cured.
14. Excess resin will now return from the resin feed side of the part. As long as the resin viscosity is still low enough, reapplying vacuum to the resin feed side of the part will apply more consistent vacuum to the whole part. This will eliminate the resin rich area typically found at the resin feed side of the part.

Sorry if this appears complicated! With a little practice, this procedure will be found to be quite straightforward.

Feedback or queries on this note?

We are keen to improve the accuracy and value of Vacman’s Notes. If you have any feedback or queries regarding this note, or would like to suggest new topics to be covered, Vacman would be pleased to hear from you! Please email Vacman@vacmobiles.com.

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