



## ***PMS Instrument Company***

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### **Replacing Rate Valve Needle and Insert - Tutorial**

This tutorial is to help replace a damaged needle or damaged insert/seat of the Rate Valve.

1) You will need the following tools:

- Allen Wrench (1/16")
- Needle type metal probe (Safety Pin is OK)
- 5/8" Standard Wrench
- Thicker probe (pencil will work)
- Replacement Rate Valve Insert/Seat
- Replacement Rate Valve Needle (1 Degree slope)



2) Use the 5/8" Wrench and turn the Rate Valve – counter clock-wise to remove.



3) Pull Rate Valve – “Needle Assembly” up and out of base of valve.



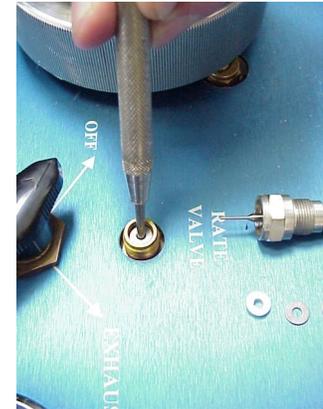
4) Using the needle-type metal probe – gently lift out the Teflon and metal washers. – **DO NOT use the needle assembly to do this job!**



4) Assembly should look like this now.



5) Using a slightly thicker metal probe, gently lift out the old insert/seat.



6) The metal insert might be brass or stainless steel. Below the insert will be a small Teflon washer – if you have a replacement, you can now remove this and replace it with the new washer. If you do not have a replacement, leave the old Teflon washer in place.



7) Insert new brass spacer/seat. Replace washers back in same order you removed them. If you do not need to replace the needle, then skip down to instruction #13.

### Replacing the Needle

8) First, use the Allen Wrench to remove the set-screw in the black cap of the Rate Valve.



9) Next, pull the cap up from the Needle.



10) Spin the needle counter-clockwise out of the Rate Valve housing. The Needle will come completely out.



11) The Needle will now be completely out of the housing.

12) Thread the new Needle back into the housing and screw into place. Replace black cap by pushing down cap completely onto needle and then tightening the set-screw into place.



13) Turn black cap counter-clockwise about 5 turns to ensure that needle will not come into contact with the bottom (seat) of the insert.

Gently slide needle back into valve base.

Turn clock-wise until hand tight.

Tighten needle assembly gently with 5/8" wrench. This should be just tight enough to prevent leaking, but loose enough to be able to turn easily.



Any questions concerning this replacement, please contact us directly at:

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For more information about instrument maintenance or repair, consult our website at:  
<http://www.pmsinstrument.com/tutorials/tutorials.htm>