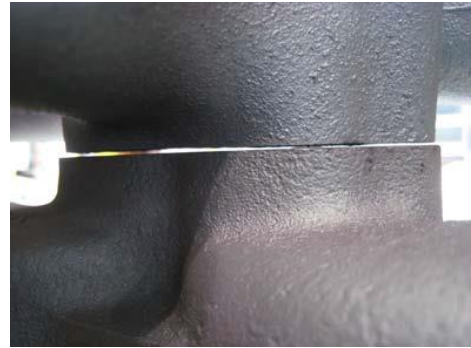


**Home Milling Exhaust Manifolds to Eliminate Gaskets**

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I enjoy the mechanical section most for some reason and one thing that I have been learning more about is the lack of gaskets between the exhaust manifold and the head from the factory. When I originally saw gaskets on cars, I looked at it as non-issue because nothing was missing and nothing modified to add gaskets. I was corrected immediately and reminded of what I had recently learned in a chapter judging school CDCIF and it all clicked – this issue is at least 2 of those letters.

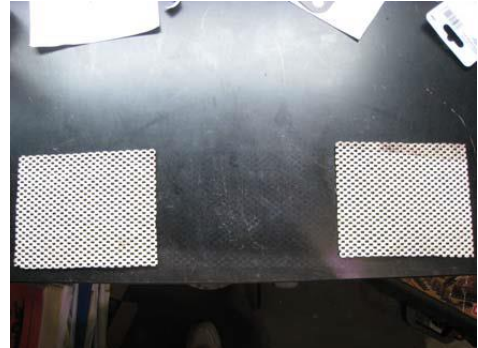
When I recently had the chance to remove my exhaust manifolds (because of a broken valve guide and the need for a head rebuild), I figured that I would reinstall without the dreaded gaskets. That’s when I made an interesting (and apparently popular) discovery; the manifolds don’t seat perfectly to the heads machined casting. Knowing that the heads most likely were not the issue, I measured the manifolds and there it was – warpage! See Photo #1 which shows manifolds back to back – it’s hard to see but this measures several thousandths of an inch).



**Photo # 1**

I called the local shop that rebuilt the heads and was told that he didn’t have anything that would hold the manifold to machine it flat again. That’s when I decided on a home-made solution.

Basically I took a 1” X 6” X 36” piece of marble with some rubber shelf liner to keep it “stuck” to the work bench (see Photo # 2).



**Photo # 2**

Then using carpet tape (very thin double sided tape) and a cut open 3” X 24” sanding belt (80 grit) and stuck it to the marble (see Photo # 3).



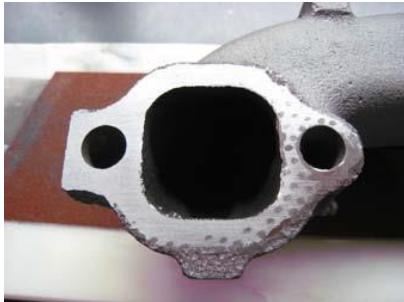
**Photo # 3**

Next I clamped a wooden stop to the edge of the bench and placed the rubber/marble/80 grit assembly against it and was ready to go (see photo # 4).



**Photo # 4**

Slow back and forth motion with some downward pressure and a couple of hours later, I had machined manifolds ready for high temp coating treatment and bolt back on. (See Progress Photos # 5, # 6, # 7 below for views of ½ way there)



**Photo # 5**



**Photo # 6**

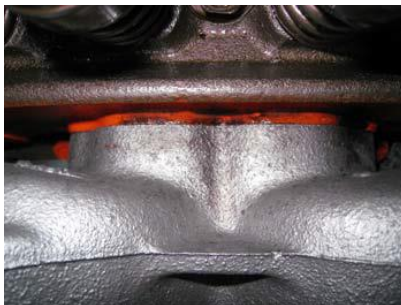


**Photo # 7**

(See Photos # 8, # 9, # 10 below for finished installed connections)



**Photo # 8**



**Photo # 9**



**Photo # 10**

Now it did take a couple of hours each side because you can only do that back and forth motion for only so long AND the cast iron “dust” needed to be cleaned form the 80 grit – sometimes I used a shop vacuum and sometimes I just passed a magnet over the dirty belt and cleaned off the cast iron “dust”. But it worked, didn’t cost more than \$20 and I may pick up a couple of points on my next flight judging adventure.