

POTENTIAL OBSTRUCTION TO COOLANT FLOW

Timing Chain Cover

This article discusses a potential issue that may hurt the coolant flow in your Y-Block engine's cooling system. It resulted from a "bad" break during manufacturing at the Cleveland Foundry 60 plus years ago. Upon close inspection of the volute opening in the timing chain cover, it appears in the manufacturing process that part of the casting was broken away to make the volute opening. Unfortunately, the breaks vary in how clean the result was.

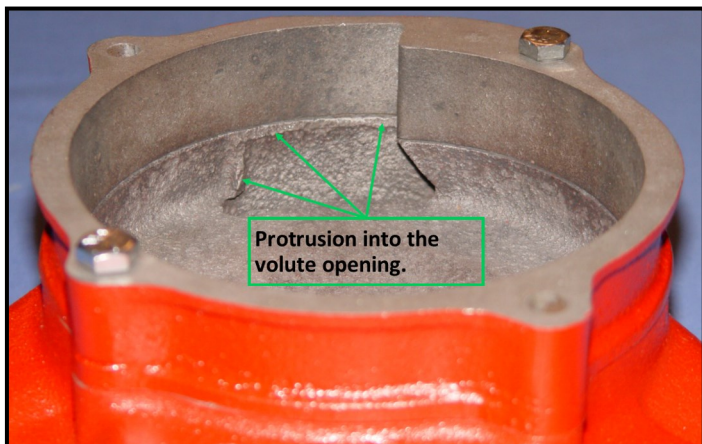


Figure 1.

Figure 1 shows a timing chain cover with an example of a casting protrusion into the volute opening. When the timing chain cover is installed on the engine, a casting protrusion is not something you would see unless you were specifically looking for it.

I had removed and reinstalled my water pump and various spacers several times during flow testing and never saw the protrusion. After I became aware of this potential problem, I removed the water pump just to check. I found a protrusion close in size to the one pictured in Figure 1. I used an angle drill with a 1½ inch sanding drum with number 80 abrasive to remove the most significant part of the protrusion, then stepped down to 1 inch, ¾ inch, and finally a ½ inch drum to get as close to the offset as possible. Cast iron is relatively soft, so check your progress frequently during grinding. After the grinding is complete, the water jacket will need to be thoroughly

flushed to remove all grinding debris.

Figure 2 shows the inner surface of the timing chain cover with which the volute opening should be flush.

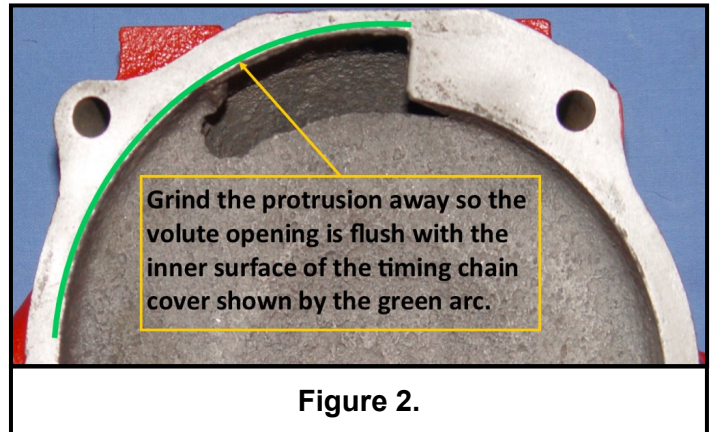


Figure 2.

Because this issue has only recently come to light, most of us have no idea how good the break on our timing chain cover was when manufactured. I suggest you make a note to check it the next time the water pump is removed. There is no better time to check for and remove any protrusion that exists than when the timing chain cover is uninstalled. So don't miss this when you are rebuilding your engine.

One final point on this issue is that while its effect is more significant on Thunderbirds because of the spacer installed between the water pump and the timing cover, it applies to all Y-Blocks.

[Chris Ames](#)

Paragon Technology, Inc.
ChristopherAmes@pti-az.com
(602) 722-0749