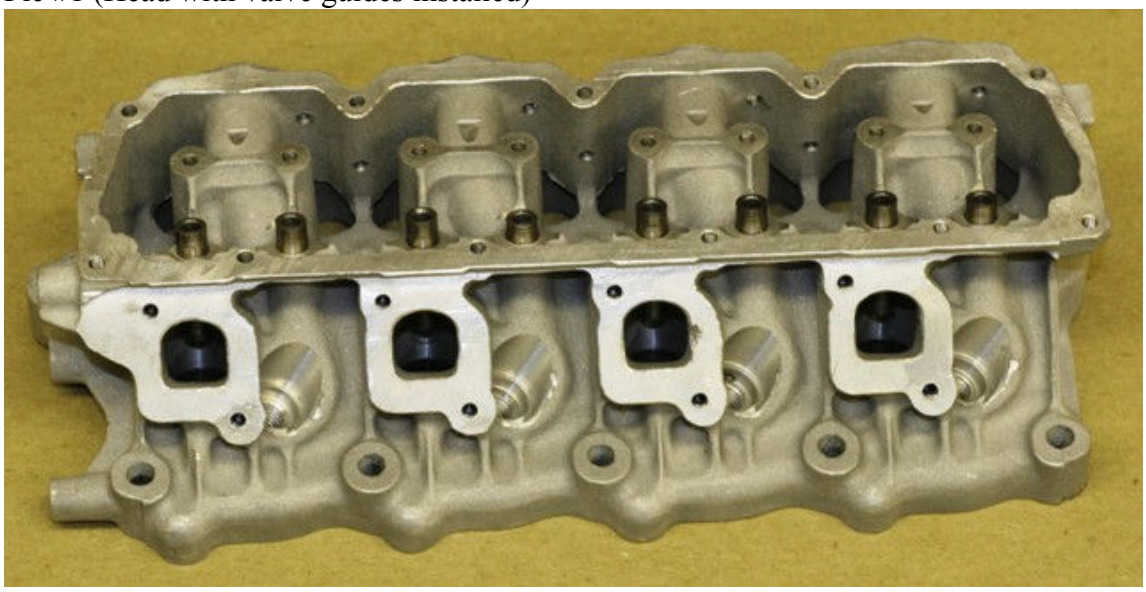
It is now 9:22 on Monday morning the 29th of March and after answering a stack of emails, taking a lot of picture, then editing those pictures I will try to finish the weekly update before lunch. As usual a lot of "things" are happening - some good, some not so good. In the not so good list is that a week ago on Sunday my CNC machining center decided it did not like the voltage that was coming into my facility and would not run. Keep in mind, on Sunday the chance of getting any help is virtually zero. Even the CNC lathe would not operate. When checking the line voltage I discovered that one leg was about 23 volts higher that the other two legs. This may not seam like a lot but the CNC machines do not like a voltage difference of more than about 5 to 7 volts between legs. Once again, after the problems last time with my local electric provider, I decided that spending any time with them was a lost cause. On Monday several hours was spend with the machine manufacturer and was told – again – that my voltage was not in "phase" and I would need to contact the electricity provider. Back to square one. Two more days spent with no luck. Finally I contacted a manufacturer of what is called a Buck-Boost transformer. With their help I was finally able to drop the high leg of the line voltage to an acceptable level and ever since, the machines have work flawlessly. The only reason I am explaining everything is to show that sometimes a lot of time is lost doing things that cannot be prepared for or anticipated

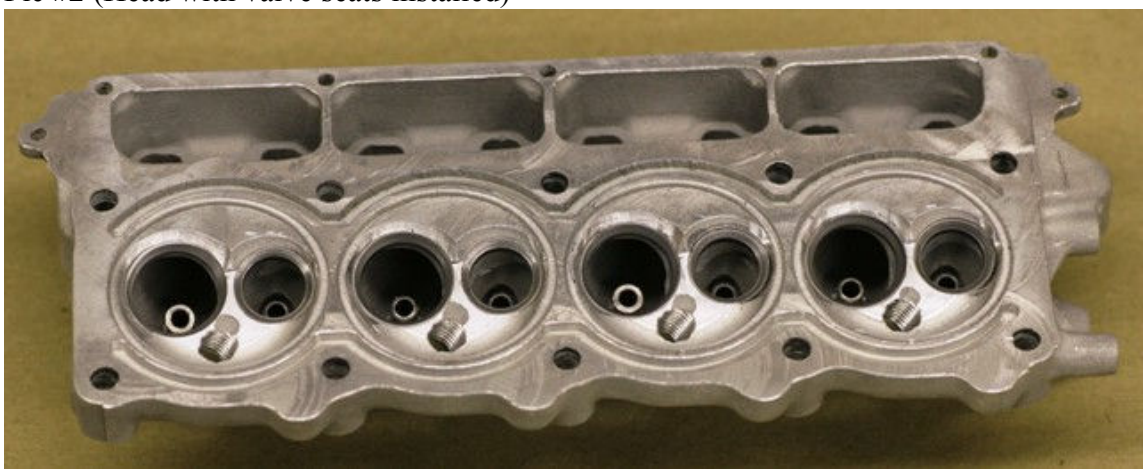
Enough of that - now for the good news! The heads have all the valve guides and valve seats in place and the initial cutting of the valve angle has been done. No matter how accurate you are when the valve seats and guides are pressed into place there is always a small amount of miss-alignment. When this happens I have a special tool that cuts the angle of the valve seat. It has a "pilot" shaft that uses the valve guide as a center, and then slow cuts the valve seat angle to make sure that both items are concentric. This is a critical operation, because if everything is not perfect, the valves will leak and everyone knows what happens then. If that were not enough work, I have a special valve that has been coated with diamond dust which further matches the angle of the valve with the seat. Once this is done then each valve is lapped with 1200 girt aluminum oxide. If you consider that I am making about 90 heads with 8 valves per head, as the saying goes "you do the math". After all 8 valves in each head have been lapped; the head is thoroughly cleaned in a special wash tank then allowed to set in an ultra-sonic cleaning tank for a short period of time. While this is being done, every valve is cleaned individually and oiled. Keep in mind each valve must be kept in order and remain with the valve seat that it was lapped with. When all is cleaned, each valve assemble is put in place. This consist of a "high hat" which holds the "O" ring seal, "E" clip, valve spring, and "E" clip collet retainer. Picture # 3 shows just how many individual valve parts are needed for each head. More and more you will see how all of the previous parts start to "fall in place". And finally a finished head can be seen in Pic #4, #5, and #6.

The progressive jigs which are used for the supercharger gear housing, front plate, and rear plate can be seen in Pic # 7. I might add these jigs be exactly the same. While one complete set is being machined, the other jig is being loaded with unfinished parts. The entire program consisted of about 3,426 bytes of information, takes 22 minutes and 14 seconds to run and when finished I have three completely machined pieces – which is enough for one supercharger. The final three pictures show all of the finished pieces which have been glass beaded and ready for assembly. It is now 11:57 AM.

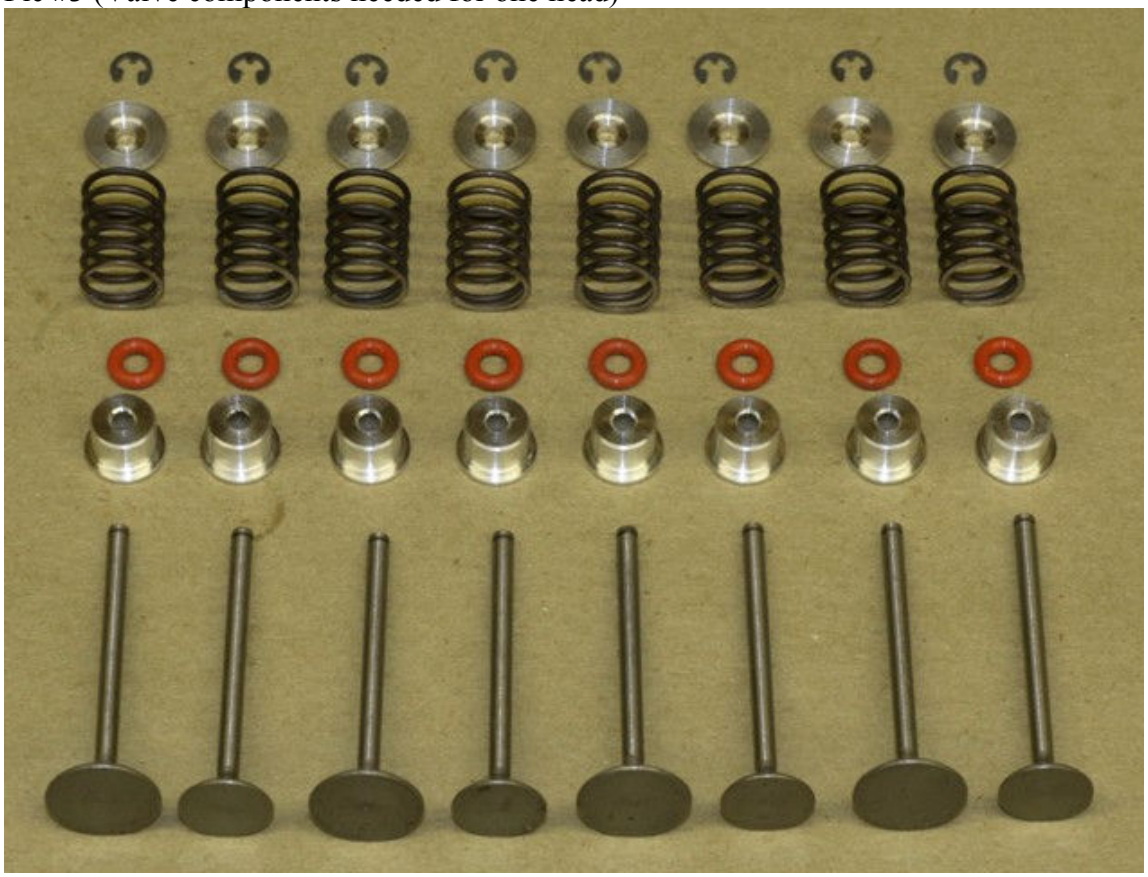
Pic #1 (Head with valve guides installed)



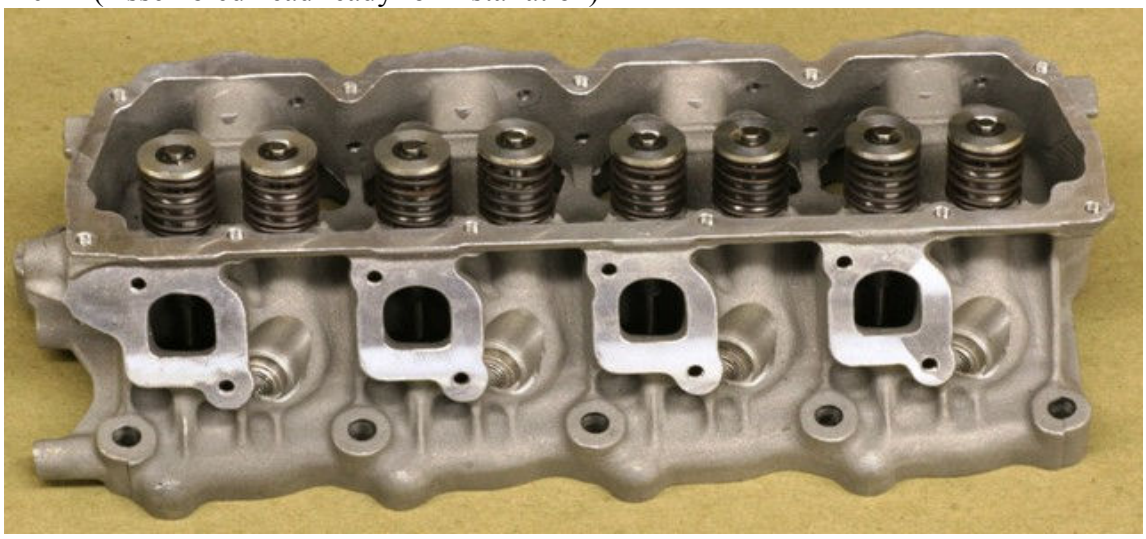
Pic #2 (Head with valve seats installed)



Pic #3 (Valve components needed for one head)

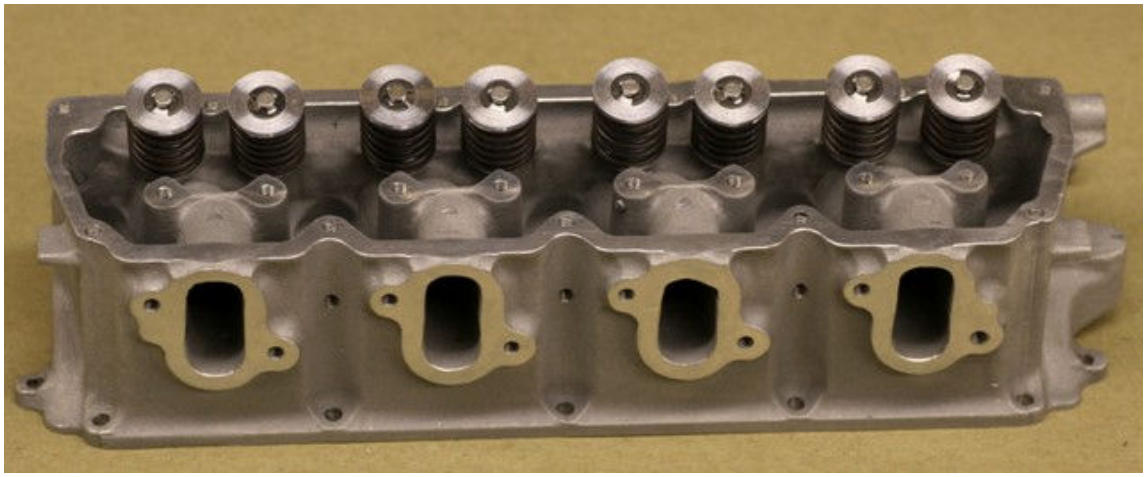


Pic #4 (Assembled head ready for installation)

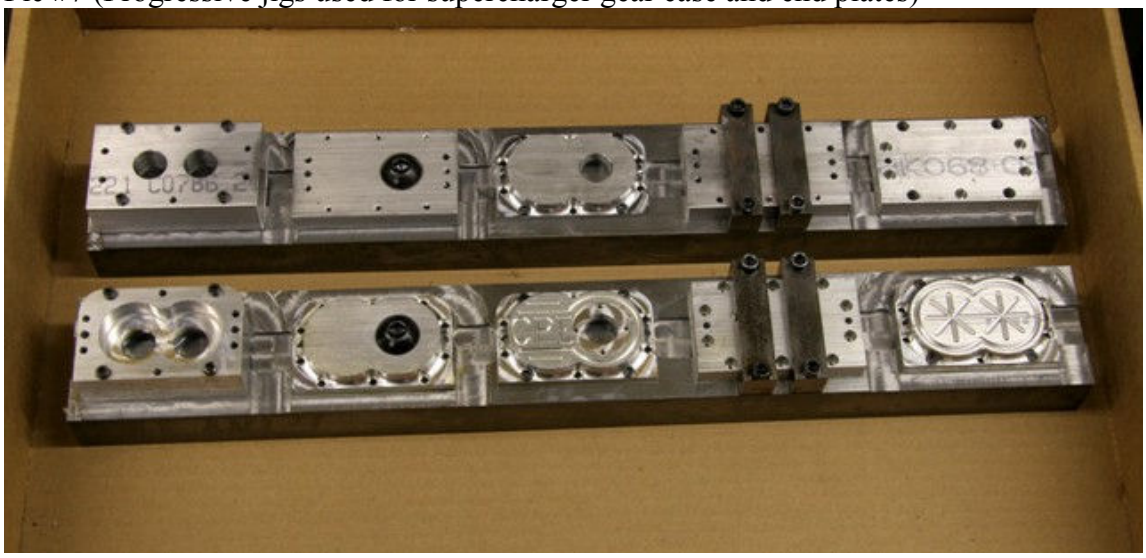


Pic #5

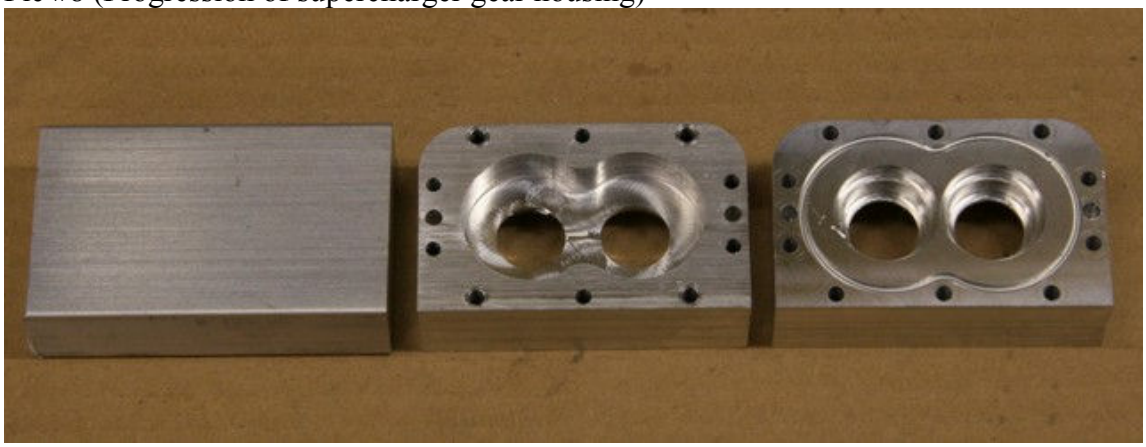
Pic #6



Pic #7 (Progressive jigs used for supercharger gear case and end plates)

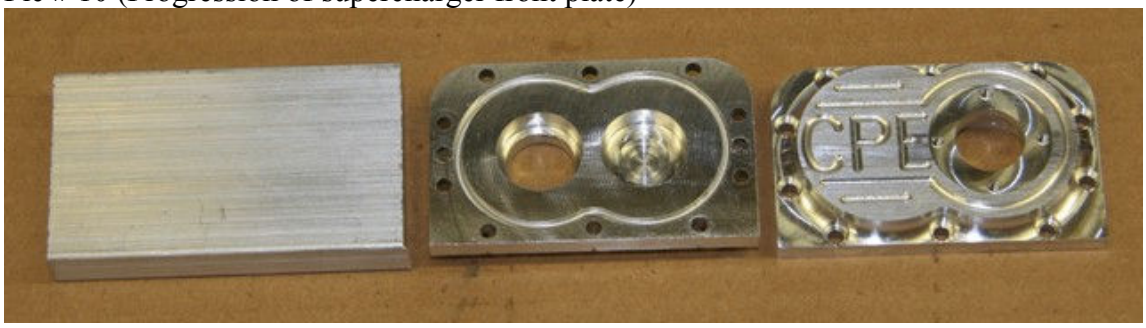


Pic #8 (Progression of supercharger gear housing)

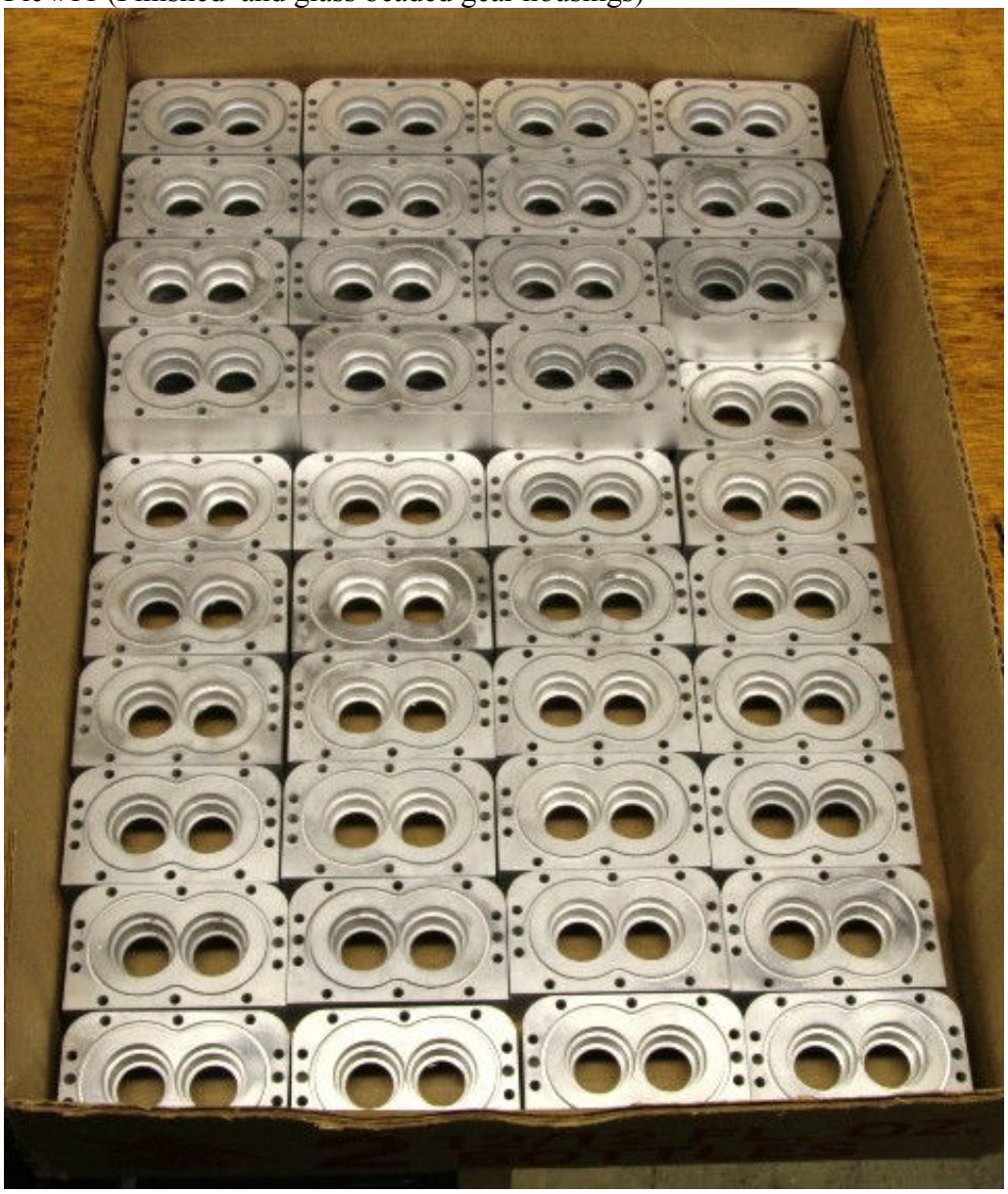


Pic #9 (Progression of supercharger rear plate)

Pic # 10 (Progression of supercharger front plate)



Pic #11 (Finished and glass beaded gear housings)



Pic #12 (Finished and glass beaded front plates)

Pic #13 (Finished and glass beaded rear plates)