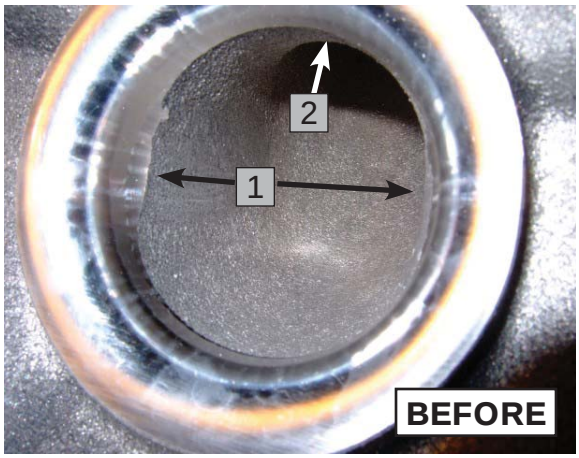
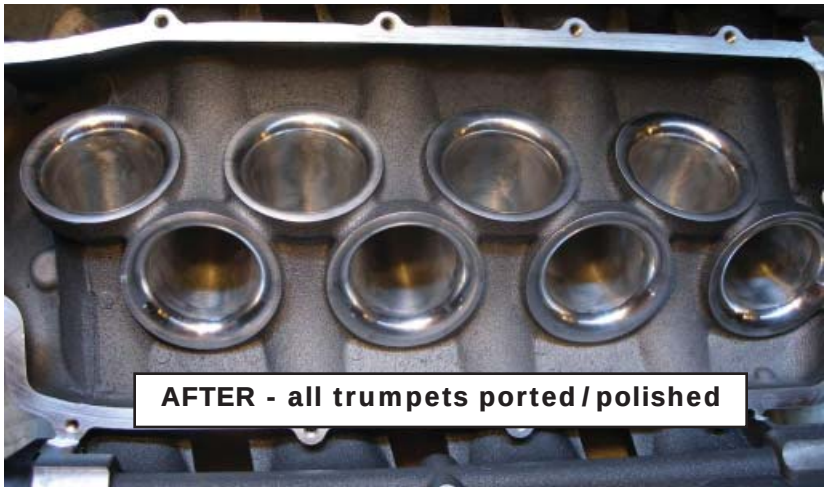
SILVER SPEED

Audi B7 RS4 Intake manifold port / polish

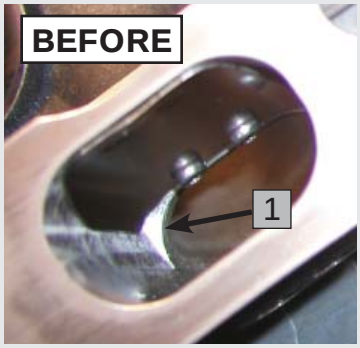


1. The cutting tool that Audi uses to polish the trumpet inlet is round. The trumpet casting, however, is not. This means there is a lip at the transition and a noticable bump on each side of the trumpet.
2. There is another prominent “bump” on the top of the casting where the machining does not line up with the casting.

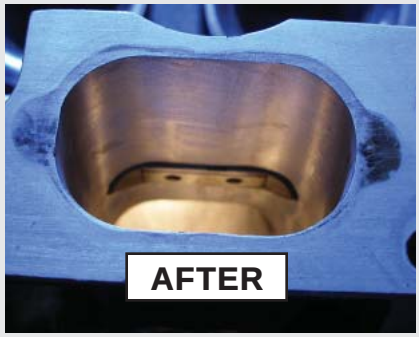
The port work opens up the cast portion of the trumpets to match the round shape of the machined lip. All prominent bumps and lips are removed.



Also...



1. On the “flap end” of the port, the Audi machining process leaves two larges ledges in each port where there is extra cast material.



The port work removes the ledges in the flap area and blends the port surface smooth. The flap is not shown in this photo to better show the blending (although you can see the two screw holes where the flap attached to the shaft). The flap shaft is shown, but it had to be removed prior to the porting. To finish the work, all flaps and shafts are re-installed so that they function normally. It should be mentioned that the shaft removal necessary for this work involves some delicate seals, retainers and sensors as well as some access plugs that can not be re-used. Aside from the sensors, the small parts are not available individually from Audi - they sell only complete manifolds.

Continued...

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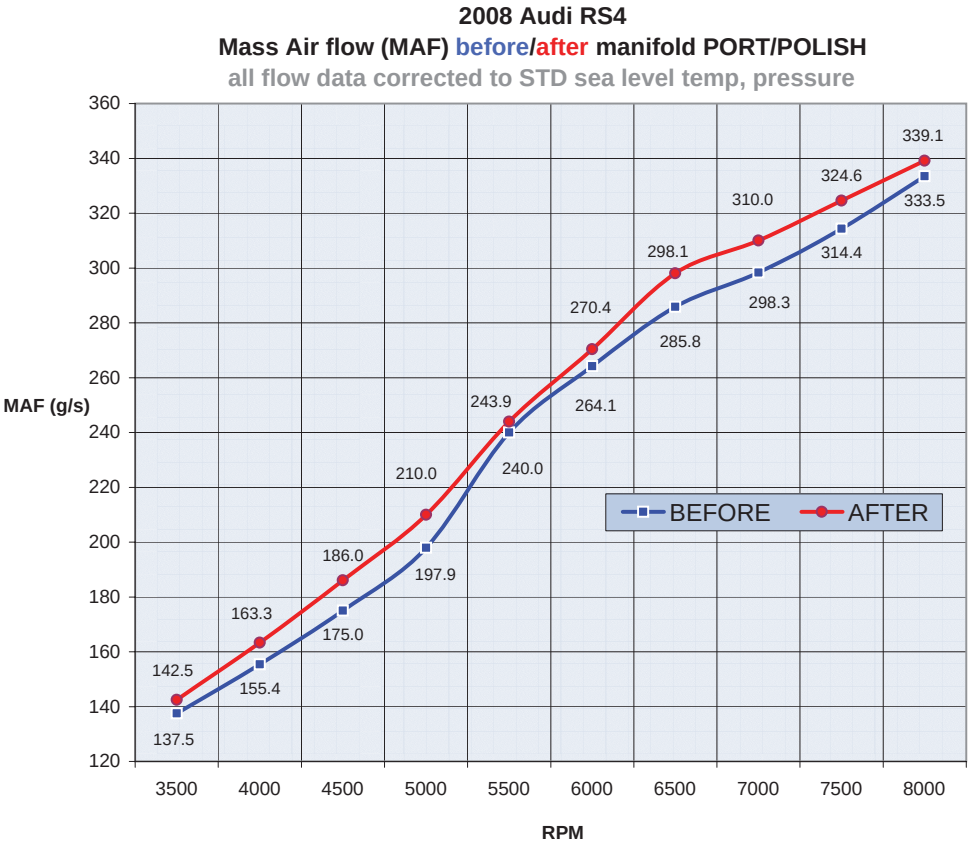

Performance

Before:
0-60 4.85 sec
0-100 10.79 sec
1/4 mile 13.02@111.3 mph

After:
0-60 4.48 sec
0-100 10.29 sec
1/4 mile 12.90@113.7 mph

Notes:
1. The advanced RS4 Engine ECU setup operates in closed loop at WOT. Amount of fuel injected is based on target lamda and mass air flow. Increase in mass air flow is automatically compensated for with correct amount of fuel so that the target lamda is still met (i.e., reflash not necessary).
2. There are 2 ECUs, each responsible for 4 cylinders. VagCom reports flow for each bank of 4 cylinders. MAF shown is total for all 8 cylinders.
3. **The performance both before and after is remarkable. Why?** The intake air temp was below 40F in both cases. Besides running very high octane fuel, cold air is the only way to get the ECU to not retard timing heavily. It is widely known (and documented) that the RS4 likes cool temps. While getting the RS4 to run without retardation is key to peak performance (and trap speeds this high) the data here is to show a performance difference, not necessarily expected performance.
4. Three-run average acceleration testing done at 1500 feet elevation, roughly 4% less air density than at sea level.
5. Before and After Mass flow data has been corrected to Standard sea level temperature and atmospheric pressure (1013mb, 20 deg C) for proper comparison purposes.
6. Besides intake modification, the car is completely stock.

BENEFITS:

- Better air-flow, approximately 3.5% through powerband
- Noticable HP increase, especially at high RPM's (6000+ rpm)

Questions on the project? **PM** me - screen name **silverRS4**

About silverRS4...
- Mechanical Design Engineer by occupation
- Has built race engines, studied fuel-injection and internal combustion engine design
- Converted an engine dyno room to handle fuel-injected engines for ex-Roush racing engine builder
- Programmed several aftermarket EFI systems for the same engine builder
- Extensive experience porting cylinder heads and intake manifolds while evaluating flow increases with flow bench and power increases engine dyno testing