

- Exhaust basics
The key point in changing your exhaust system is to increase flow. 2.25" is sufficient to flow well 2.5" is better but often is much louder and difficult to get it sounding right (more later). Of course any system should be Mandrel bent rather than press bent. What this means is that bending the turns and bends in the exhaust system on a Mandrel result in even pipe diameter and much better flow. Press bending is how the stock system is manufactured. You can easily see a press bent curve where the stock system runs over the rear axle.
- Exhaust Headers or Extractors
Exhaust gases leave the engine through the header and this is where torque characteristics can be changed with the engine. Basically there are two types of header for NA applications. Both have their merits. 4 into 1 (4-1) and 4 into 2 into 1 (4-2-1). These numbers refer to how many pipe divisions there are from the cylinder down to the single pipe collector. (4) Refers to the primaries, obviously being the first and being long in a set of 4-1 headers. In a set of 4-2-1 the primaries are much shorter and feed into the secondaries (2) these secondaries then feed into the main collector (1). In short the 4-1 are more race style and offer greater gains above 4000rpm with a loss of some torque at low revs. 4-2-1 retain more low end torque but will flow less near the redline. Note: US spec cars carry a catalytic converter arrangement in the header under the "Hot" shield. This will have to be removed and a new one installed down the line somewhere if you wish to pass emissions tests.
- Header/Extractors Ceramic Coating (HPC)
Ceramic coating of your headers involves a process of electro statically charging the header and a ceramic powder coat being applied. This is much the same process as powder coating however it serves much more than looks. BTW different colors can be applied. The coating should be applied to both inside and outside of the header. This in effect sandwiches the metal of the header between two ceramic coats. Radiant heat is significantly reduced within the engine bay, which is great for intake temps. But it also has gains on the inside the exhaust gas heat soak into the header is greatly reduced. This does two things. 1. The exhaust gas flow is much improved as the velocity is maintained due to the heat. 2. The header metal itself is protected from fatigue from constantly soaking high temps and then cooling.
- Exhaust Flex Pipe
From the collector a flex pipe is installed on the factory system and new one must be installed on your new system to safeguard against your system cracking due to driveline flex under acceleration. The bigger the flex the better on a high-flow system (up to 2.5" dia).
- Exhaust "dog leg"
I call this piece the dogleg as it is on my system to take the exhaust, which is offset slightly to get past the differential, to the center of the chassis to the linkage tunnel. Non US spec cars carry an Oxygen sensor in this part to meter O2 content for the ecu. This is probably the best location for modified US spec cars to retain the O2 sensor.
- Exhaust Catalytic Converter (CAT)
The catalytic converter is quite small on a stock Tiburon system. Therefore it should be trashed and the largest high flowing item you can afford installed. Some people assume that because the inlet and outlet holes measure 2.25"/2.5" that this is sufficient for high flow. This is a misnomer. Of course the inlet and outlet should be the correct size for your system but what ascertains how well a cat will flow is the area or size of the mesh like grid inside the cat. When purchasing a cat ask to look at it first. Stand it on one of its ends and look down into the other end the grid should be around 8"x6"(approx). If unsure compare it to the stock item. Bigger grid better flow.
- Exhaust Cat-Back
If you are building a race car then pipe from here straight out is best. In the real world a car needs to be roadworthy. So some resonators / mufflers need to be put in the line. A system with no muffler besides being VERY loud will often

sound bad. It is a common trait of DOHC multivalve engines below 2.5 liters in capacity to develop a farty zinging sound. Now you may like the performance that this system gives but you will grow tired of people laughing at your car at wide open throttle. A large (no smaller than 18") hot dog resonator will give good results and maintain that all-important flow as a primary. A second muffler can be put at the very rear of the car to further quiet the car and adjust tone and note. Resonators should always be straight thorough, not baffled, for best flow. What this means is avoid the muffler types that use an obstruction (baffles) within to reduce sound. Straight thru mufflers employ perforated inners packed with glass and/or metal fibers to absorb sound. Some also employ chambered sections within also to reduce noise. This type when used as the first resonator in the line is effective in producing a deep note to the exhaust and eliminating the farting tone.

- Which Companies can I buy Exhaust parts from?
Just about any exhaust shop can supply a larger diameter exhaust. If you prefer pre-built, contact one of the following companies: [Hyundai Vehicle Enhancements \(HVE\)](#) [Shark Racing Speed State](#) There's more, if you know of one, please email random@hyundaiaftermarket.com
- I want to replace my stock exhaust manifold with a header. What's available?
None of the headers that are currently available on the market will "bolt up" to North American spec stock exhaust systems. They are either lacking a second O2 sensor threaded hole, or the proper style connection/flange to hook up to the remaining stock exhaust system. All of the headers sold WILL work, but they will require installation by a professional exhaust shop, or access to welding supplies and pipe fabrication supplies. All of the header's on the market remove the first catalytic converter. Some North American spec exhaust systems have 2 catalytic converters, some have only one. If you have an exhaust system with only ONE catalytic converter, please make sure you install an aftermarket [catalytic converter](#) to replace the unit removed.
There are many different styles of 4 cylinder exhaust header. The 2 main designs are 4-1 and 4-2-1. The 4-1 header is usually for top end horsepower, at the sacrifice of low end torque. The 4-2-1 header is usually for low end torque and midrange power, at the expense of top end horsepower. In general, automatic transmission equipped cars should only use a 4-2-1 header, and 4-1 header should only be used for manual transmissions where the goal is top end HP.
Some header designs come with Flex pipes. Some require you to buy/install a new Flex pipe to match the end diameter of the header.
[Shark Racing](#) 4-1 and 4-2-1 designs
[HDK Autosports](#) 4-1 and 4-2-1 designs
Obx([SSAutochrome](#)) 4-1 design
[Hyundai Vehicle Enhancements \(HVE\)](#) 4-1 design
[RPW](#) 4-1 and 4-2-1 designs
- How do I Install my Headers?
[Brendans Install Guide](#)

Thanks to Kristo for this contribution

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