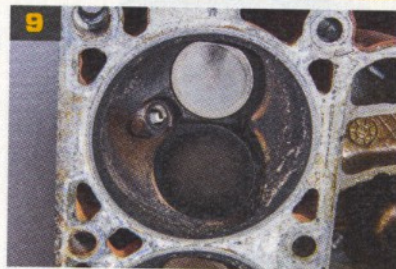


exhaust (75cc vs. 70cc) runners that were reshaped.

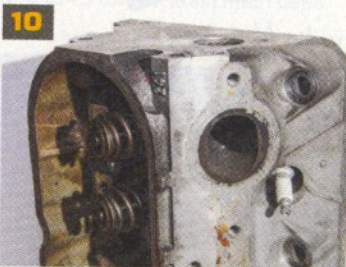
Though a "243" casting may be a rare find in a junkyard, it is easy to tell the higher flowing design by the D-shaped exhaust ports. Earlier designs are oval. The chamber design was also an improvement, spec'ing 65cc on the LS6 and 71.06cc on the LQ9/LQ4 ("035" or "317"). Fun fact: the early LQ4 heads

(1999-'00) were actually made of cast iron, bearing casting number "873." Given the cost and performance increase of aluminum heads, there is no reason to mess with these. [For more info check out the book *GM LS-Series Cylinder Head Guide* from CarTech.]

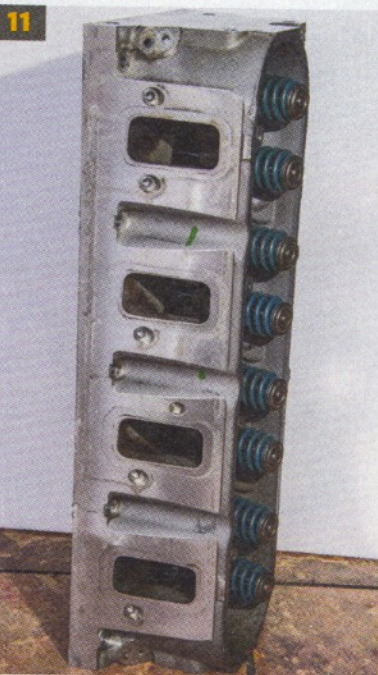
There was some crossover with the years, but the Gen IV officially kicked off in 2005 with the C6 Corvette's LS2.



The chambers were sized 67.3 cc to achieve a 10.2:1 compression. The early design chambers were not nearly as good as the later ones, which is why they typically take more ignition timing (28 degrees from the factory!). Despite the larger 2.00-inch intake valves, the LS1 heads (and even the LS6) can be used on the smaller bore blocks.



The oval ports are a dead giveaway for the early design. The "241" and "853" castings had 70cc exhaust runners, just like the "852" and "706" casting truck heads. Flow was typically around 180 cfm at 0.600-inch. The only difference between the LS1 and early 4.8L/5.3L truck heads were the chambers and valves.



Say hello to the LS3 cylinder head. The cost effective cousin to the LS7 has rectangular port 261cc intake runners that flow 326 cfm at 0.600-inch—incredible for a factory head!

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The LS2 was essentially an aluminum version of the 6.0L truck block with flat-top pistons, LS6 heads, and an LS1 cam. It is a great engine for swaps and stroker kits, due to its exceptionally long cylinder sleeves and the power potential of the larger bore. Unlike the iron block, it will only take a 0.005-inch hone, so 402-416 cubic-inches is about the limit. Also in 2005, GM quietly



One of the reasons these heads flow so much are these massive 2.165-inch intake valves. The downside is that it requires a 4.00-inch bore or larger, and some say a 4.065 or larger is more ideal to reduce shrouding. Another potential downside is that they have considerably larger chambers (68cc) than any cathedral head aside from the 6.0L truck heads, which is not ideal for high compression.



Casting number 821 demarks the LS3, which has hollow-stem intake valves. The "823" and "5364" casting are for the L92 (truck) and L99 (Camaro - auto). The LS3/L92 went back to a D-shaped exhaust port, which has a much larger differential of flow from the intake side than cathedral port heads. This is one reason that cam selection must be considerably different.

started producing Gen IV versions of the 4.8L/5.3L truck engines, such as the aluminum LH6 and LC9, iron LY5, LY2, LMG, and L20. There was even a front-wheel-drive 5.3L LS4, but stay away from this unless you plan on building something with a transaxle (the transmission mounting points are different). We'll cover the difference between Gen III and IV engines another time, but for

now just be aware that although parts are physically interchangeable between all generations and variations—the electronics are different.

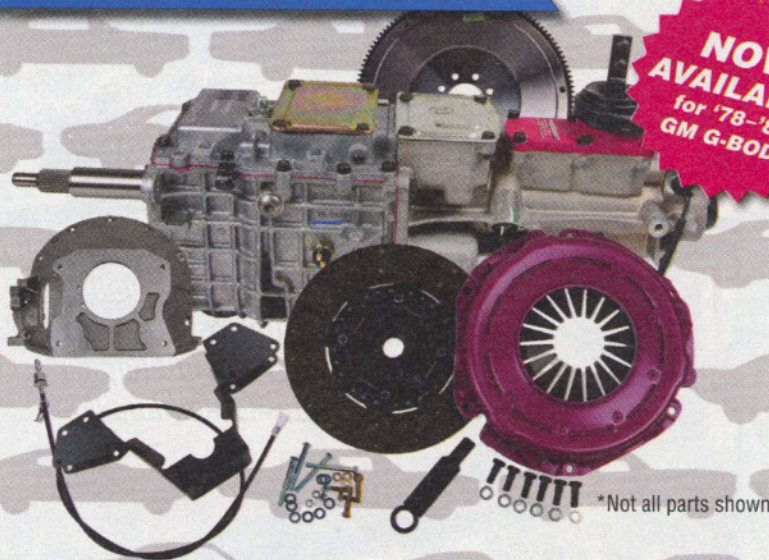
The mighty 7.0L LS7 debuted in the 2006 Corvette Z06. This 505-horse monster used 12-degree heads with square intake ports similar to the C5.R race engine that were CNC-ported from the factory with huge 2.20/1.61-

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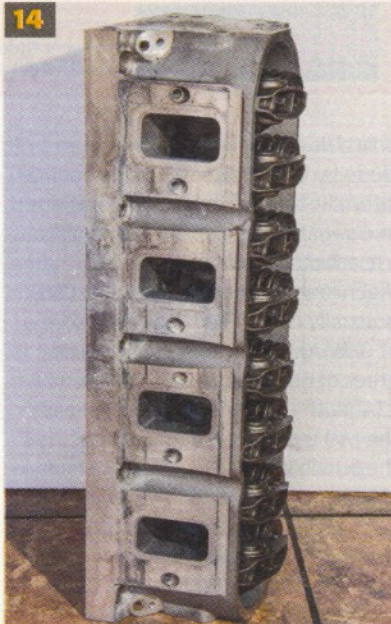
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inch valves for the 4.125-inch bore. These are a rare find in a junkyard, but can sometimes be found as a take-out engine from a build (though not cheap). Perhaps the next best thing is a 6.2L L92, LS3, or L99. The L92 debuted in 2007 and was used in the truck lineup until 2014 when the Gen V took its place. It was essentially a mini LS7 with a 4.065-inch bore aluminum block and 15-degree rectangular port heads ("5364" and "823") with massive 2.165/1.590-inch valves. The differences between the three engines were the camshaft (variable valve timing was used in the L92 and L99), lifters/valley cover (Active Fuel Management in the L92 and L99), and the valves.

The LS3 ("821") had hollow-stem valves, as did the supercharged LSA ("863"), which came later. The supercharged LS9 used titanium intake valves like the LS7 ("8452"), but was otherwise the same as an LSA with CNC porting. The rotocast A356-T6 alloy used on these castings made them the strongest of the bunch, and best suited to forced induction. One other Gen IV worth mentioning is the group of L92-headed 6.0L engines used in trucks as well as the Pontiac G8 GT and Chevrolet Caprice. Aside from the LY6 from the HD and 3/4-ton trucks, these had aluminum blocks like the LS2. Again, the material and engine size on the exterior of the block helps differentiate which block you have. Like the LS2, the LS3/L92 block will take a 4.000-inch and slightly larger stroke for 416-427 cid with the right piston selection. The LS7 was built for a 4.000-inch stroke, but can easily handle up to a 4.125-inch stroke and 441 cid. The only downside is that this engine is dry-sump, and requires some work if you want to convert it to wet-sump. The same goes for the LS9. Additionally, these two engines, along with the LSA, can pose issues when it comes to the unique accessory drive systems. Any other engine can use a variety of OEM or aftermarket solutions for the truck, Corvette, or earlier F-body style arrangements.

There is a lot to cover, so hopefully I didn't lose you up until this

14



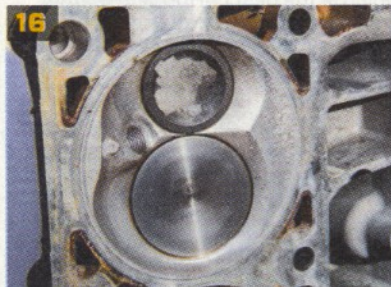
Here is an LS7 head, which has a unique runner shape that is more square, like its C5.R predecessor. The runner is slightly smaller at 259 cc, but by switching the valve angle from 15- to 12-degrees it has a much straighter path. With the factory CNC-porting, these heads flow 371 cfm at 0.600-inch. Additional porting helps them flow better at high lift than any other factory head.

15



At 226 cfm, the exhaust runners are also quite a bit more efficient than the LS3 given their 85cc size (versus 89cc and 198 cfm). You'll notice these heads carry casting number 8452.

16



From the factory, LS7 heads came with Del West 2.20-inch titanium intake and sodium-filled 1.61-inch exhaust valves inside a 70cc chamber. These, too, require a larger bore—4.125-inch is recommended, though some have managed 4.070-inch. While light, these valves are not the sturdiest and should be upgraded with boost or nitrous.



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