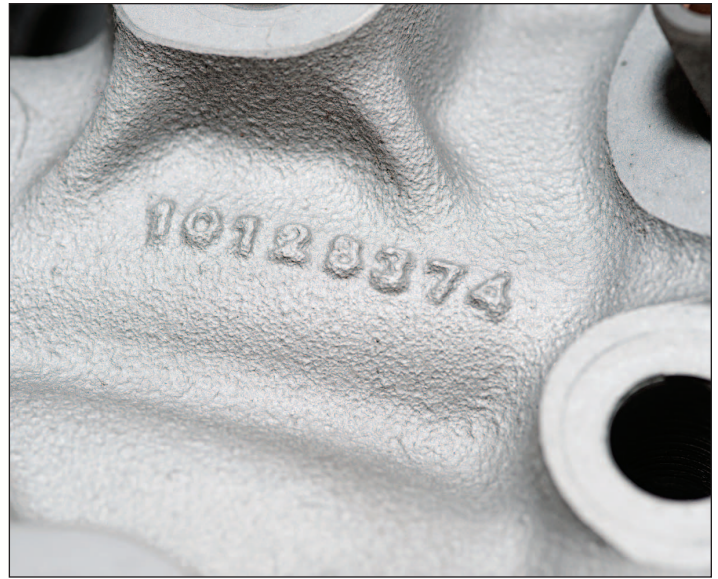




The LT4 head is cast with a mark to distinguish it from the LT1 head. This can help you identify the motor more quickly if you are rummaging through the junkyard.



LT1 casting number 10128374.



These exhaust ports are CNC-finished to a tight standard.

pushrod doesn't seem to make much difference in the RPM capability of the engine.

We experimented with rev kits early in the LT1 production cycle and they seemed to make very little difference in power, durability, or wear. However, other high-performance engine builders have seen power gains after the addition of a rev kit. One possible explanation for this is that they may be running camshaft lobes with extremely fast ramps. Such cams can have "stutter points" where the lifter isn't moving up the ramp smoothly, and if this is the case, a rev kit could be advantageous.

The valves in the LT4 heads are the kind of part that you would find in a premium street race engine. Besides the hollow stem, they are back cut and scoop milled on the heads. Their prices reflect this, as the current cost for an LT1 intake valve is around \$20, while the LT1 exhaust valve is about \$25. On the other hand, the LT4 intake valve costs something like \$34 while the LT4 exhaust valve is around \$50.

So the question is, at almost double the price, are they worth it? Let's examine the weight difference. The LT1 intake weighs 113 grams versus the LT4 at 84 grams. The LT1 exhaust weighs 95 grams versus the LT4 at 73.5 grams. The weight loss on the exhaust valve is most important because the piston chases the closing valve up the bore on the exhaust stroke. With the heavier valve, the spring can lose control and the result is valve float. This can result in a major engine failure if the piston makes contact with the valve.

The next step up in weight savings is a titanium valve. Today, these cost between \$125 and \$175 per valve, so it is not an upgrade for everyone. If your needs can justify the expense, titanium valves represent a genuine weight savings in the valvetrain and will contribute to longer valvespring life as a result. This upgrade is quantifiable enough that even some OEM high-performance vehicles (like the new Corvette) now ship with titanium valves.

One other item unique to the LT/4 is the rocker stud and aluminum

HEADS



The LT1 head has a rocker stud boss that stands taller than the LT4 head, because of the lower port roof height. We have assumed that the original engineering of the motor must have had a high failure rate of this component, which is why we think the engineers felt the need to add the extra bracing.



The LT4 port roof height is significantly higher than the LT1 and, therefore, does not need the extra bracing of the rocker stud boss.



rocker arm. The rocker arm carries a 1.6:1 ratio, compared to the standard 1.5:1 common to all other Chevy small-blocks up to and including the LT1. It is also nonadjustable beyond standard preload (lash) settings. If you change the camshaft, make sure the pushrods are still the correct length.

Head Flow Data

There are many choices for cylinder heads in the market today, and something for anyone's budget. In the Appendix on page 127 there are 22 airflow tests. The flow bench data was collected on a Super Flow 300 bench at the industry-standard 28 inches of water. The casting numbers listed are the last three digits of the factory head casting number. We hope this chart saves you some time. It shows the progression of port design from the L98 to the LT engine.

Comparison of the LT1 (left) and LT4 (right) combustion chambers.