

AMERICA'S LATEST V8

THE OLDSMOBILE PRO STOCK ROCKET

By Al Kirschenbaum

Unlimited-style racing traditionally inspires leading-edge technology.

Until recently, however, transforming this technology into hardware was almost as tough as originally sorting out the science. In the past, nearly all speed-secret hardware had to be custom-crafted by hand, with the high-tech pieces coming one-at-a-time.

Once the organized automotive aftermarket stormed into high gear, however, you could buy virtually all custom car parts (called California parts back then) by the discounted carload.

Until recently, even the industry's ambitious power-parts manufacturers avoided the low-volume, hardcore hardware that only Detroit (and a few

exotic overseas outfits) supplied to racers. Granted, the cylinder heads and blocks we're talking about here are not your average over-the-counter replacement items, and until the right racing rules are established, there may not be a profitable demand. At the same time, we're also aware there are a lot of folks putting considerable time and effort into improving the state-of-the-art parts that they are able to obtain.

In commercial terms, that translates into "market." Again, it wasn't until a few years ago that the "custom casting" industry came along to make the limited production of relatively low-volume, high-performance parts both possible and practical. Thanks to this current flexibility in industrial processes and production, autosports enthusiasts now have access to a half-dozen or so all-out race blocks, and about twice that many selections in maximum-performance, custom-made cylinder heads.

So when Oldsmobile decided to challenge the established technology of National Hot Rod Association unlimited-style Pro Stock drag racing, the division had access to the hardware with which to do the job. Rather than waste valuable track time with a ground-up Rocket attack, the engineers involved simply started with what they knew



Oldsmobile's current competition efforts are centered around two basic castings: a highly refined iron-cylinder block (part No. 22521056) and a state-of-the-art, high-tech aluminum cylinder head (part No. 22522055). The pieces shown here propelled Warren Johnson's 1983 Hurst/Olds into the NHRA World Finals winner's circle. A second batch of head castings introduced early this year featured revised port and runner arrangements, reduced weight, better metallurgy and other structural improvements.



Visibly similar to an earlier GM iron V8 casting, a close inspection of this latest Oldsmobile Rocket will reveal the beefier features that help make it a nearly bulletproof race motor. The deck surfaces are nearly an inch thick and the bores are siamesed for superior structural strength. Eight additional cylinder head clamping bosses have been cast into the valley just below the deck surfaces. Along with the eight corresponding bolt holes located along the lower edge of the deck face, they form a solidly sealing, evenly spaced six-bolt clamping pattern around each cylinder. Production blocks are now also cast in aluminum, and all have the Olds Rocket emblem cast right into the block.

would work, and then made extensive improvements from there.

What all this boils down to is that Oldsmobile has recently introduced the domestic auto industry's newest V8. Through the combined efforts of Pro racer Warren Johnson, Oldsmobile engineers, the talented crew at Cars & Concepts (the Brighton, Michigan

fabricators of the famous Hurst/Olds automobiles, among others) and a variety of enthusiastic individuals in both autosports and the aftermarket, the Rocket has truly been resurrected.

In effect, this team has redesigned its sister division's legendary Rat motor and eliminated all of the engine's built-in weaknesses that racers have had to live

with for years. With the less desirable features of the big-block Chevrolet motor eliminated and a host of competition-proven improvements built-in, Oldsmobile's newest and most powerful Rocket—now known as the Olds DRCE (Drag Racing Competition Engine)—comes very close to being a bulletproof piece.



Detroit Pro racer Andy Mannarino was too busy with his NASCAR Olds diesel development program to field a DRCE-powered Ciera last season (see our section on Total Engineering's approach to Grand National Oldsmobile race engines that appears elsewhere in this issue), but he's out there with some real Rocket power now. This is a look at the bottom end of Mannarino's DRCE in an early stage of preassembly.



Featuring a four-bolt bearing cap at each main journal, the Rocket block also offers fully machined, inch-thick main bearing bulkheads. Generous structural sections throughout serve to stiffen the block. To accommodate the extended reciprocating envelope of long-stroke crankshafts, the oil pan rails have been relocated one inch farther apart. This feature also makes room for creative oil pan configurations. In addition, the oil filter arrangements have been altered and the starter motor has been relocated to the left side of the block to clear the oil pan kickout. Since the factory is concerned with these engines' between-rounds serviceability rather than lube leaks after the warranty runs out, only five bolts are used along each lower rail to retain the oil pan.



Viewed from the exhaust side, the new Olds alloy cylinder heads reveal high, equally spaced, D-shaped outlet ports. All runners, from port mouth to valve seat, are cast with sufficient material around them to allow virtually unlimited contour and content customization. The heads accept either standard big-block Chevy valvetrain pieces or high-performance aftermarket parts.



The hefty new Olds maincap on the right practically dwarfs the visibly smaller, standard Chevrolet big-block bearing cap on its left. Provisions for stud threads extend nearly two inches into the block.



A close look at the head's intake side reveals large, uniformly spaced ports. According to expert sources, very little work is required to put these castings in shape to make maximum power. As far as potential goes, all we can say is that while the competition's Pro Stock powerplants are generally speed-limited below 9000 rpm, these pieces flow enough for Warren Johnson's DRCE to make horsepower well beyond 10-grand!

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All of these advances were accomplished by designing and manufacturing only two fresh castings: one new cylinder block and one new cylinder head. When you think about it, this approach makes perfect sense. Nobody is really ready to produce camshafts and crankshafts for an all-new engine, especially in a limited amount of time. So why not design a fresh block and heads around existing race-proven components?

Why not indeed! In what probably amounts to record time, Olds followed



In semi-finished form, rough production heads feature widely spaced valve guides to accept intake valves up to 2.350 inches in diameter and exhaust valves as large as 1.90 inches. Spark plug location is relatively high in the chamber to aid flame travel and to reduce the amount of spark lead needed for good power.



Fabricated by Dan Jesel for the new Olds DRCE, these rockertrain pieces serve as pivot platforms for individual Jesel intake and exhaust rockers that each have their own pivot shafts. Jesel aluminum rockers are available in ratios of 1.60, 1.65, 1.70, 1.75 and 1.80:1. Ratios of 1.50 and 1.55:1 are also available on special order. Pushrod guide provisions come built-in.

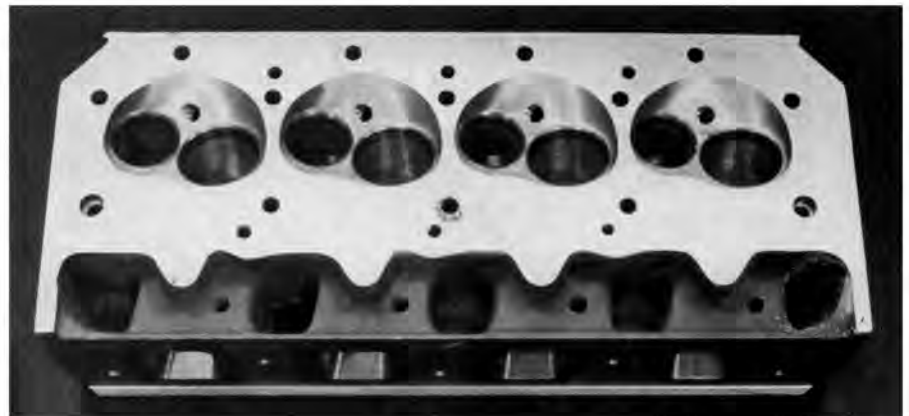
this unique production plan to come up with an all-new drag racing-oriented powerplant. Aside from the fresh block and heads, everything in the engine is straight off the shelf at GMPD (General Motors Parts Division). The limited-production Olds race motor directly accepts big-block Chevrolet connecting rods, pistons, crankshafts, camshafts, front covers, water pumps and a bunch of assorted hardware. With a sound and economical foundation like this to build on, the new engine's output could conceivably exceed everyone's performance expectations.

With a wide range of available stroke lengths, the new Rocket's cast-iron block has the capacity to displace between 350 and 650 cubic inches. The casting has siamesed cylinder walls for added rigidity and there are provisions for six head bolts around each bore to ensure firm, even cylinder head clamping. The block will accept a maximum bore of 4.625 inches and a maximum stroke dimension

of 4.750 inches. Using a stock-stroke 454-cubic-inch crankshaft (with four-inch throws), the Rocket engine's displacement can reach 570 cubic inches. Although it presents no particular problems in mating the engine to a variety of transmissions, the block's bellhousing face is drilled with an Oldsmobile bolt pattern.

Designed as pure racing pieces, the new aluminum Olds cylinder heads offer every practical performance advantage. Requiring only a moderate (under \$500) professional porting job to put them in top Pro Stock trim, the dense-metallurgy castings feature uniform port-spacing and equalized runner volumes. As cast, the combustion chamber volumes are 81cc, with a potential maximum displacement of more than 100cc. The deck surfaces are also cast extra-thick for both rigidity in design and flexibility in application.

In addition, all critical areas of the heads have been cast with generous volumes of material. This feature allows



Partially prepared and fully ported by Larry Olson at his EPD operation, this is what one of Andy Mannarino's staggered-valve DRCE aluminum cylinder heads looks like prior to assembly.

the cylinder heads to be modified for maximum potential. But it remains entirely up to the engine builder to modify them for individual requirements.

Since their introduction in the spring of 1983, these latest hardparts from the Lansing Rocket works have already stimulated the considerable interest of a wide variety of competitors. From offshore and lake race boats to indoor tractor pulls, the durable big-incher appears to be a mechanical natural. With the large number of street rods and machines out there cruising America's avenues, there may even be some over-the-road Rockets rolling soon.



Johnson's initial DRCE assembly included these raw alloy forgings from Forgedtrue (piston) and Bill Miller Engineering (rod). Of course the piston domes don't look anything like this when Warren gets finished with them. But as with most Pro racers' plans, the slugs' specific contours remain a top speed secret. Understandably, Johnson wouldn't let us anywhere near them. Warren also has his own modifications for the BME connecting rods.



Also from the aftermarket for the DRCE is this belt-driven camshaft system from Jesel. In addition to providing vastly improved camshaft accessibility and positive event phasing, this belt-drive arrangement frees up some horsepower, too. This is how the system fits on Andy Mannarino's DRCE.

Additional aftermarket equipment such as intake manifolds, oil pans and headers are either in the works or already in stock. (There's a list of Olds parts sources elsewhere in this edition of *Oldsmobile In Action*.) Believe it or not, second-stage Rocket parts are already being developed, as is a cast-aluminum block.

In service for only the second half of NHRA's competition season, the DRCE's early performances proved that the new Olds Pro Stock Rockets generated forces of acceleration to be reckoned with. California competitors Dyno Don Nicholson and Dave Smith, with a few short months of preparation, both clocked competitive numbers in qualifying their Oldsmobiles for the 1983 Winston World Finals. Nicholson emerged from retirement with a 7.822-second, 175-plus mph shakedown pass in his brand-new Olds Ciera, while Dave Smith was time-limited to some 8-flat familiarization blasts.

The big news at that final national event of the NHRA racing season was the race-winning performance of Warren Johnson's DRCE-powered '83 Hurst/Olds. Warren was instrumental in all stages of the new powerplant's

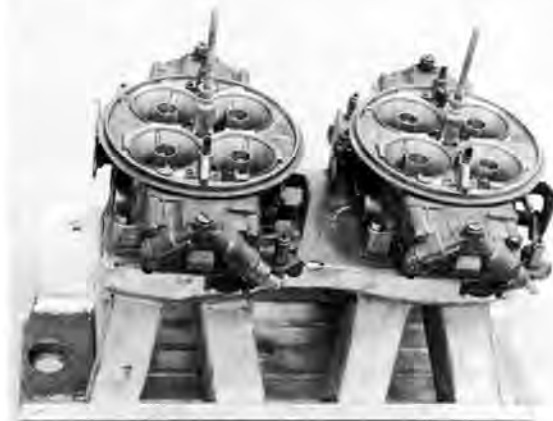
development and his expertise certainly showed. Overweight by nearly 50 pounds, Johnson's all-black Pro Hurst/Olds thundered into the OCIR winner's circle with an 8.65-second, 180-plus mph clocking.

With such promising premiere performances, the Olds Rocket attack has already been escalated to handle the '84 season's competition. At the recent NHRA Winternationals, a veritable fleet of Olds Pro Stock Rockets clocked some truly inspirational quarter-mile performances. In addition to the record-setting, crowd-pleasing Pro Stock efforts of Warren Johnson, Dyno Don Nicholson, Andy Mannarino and Dave and Karen Smith, other unlimited applications of the DRCE are either being fielded, constructed or considered by John Lingenfelter, Bubba Corzine and a number of other talents.

Since Warren Johnson was in on this project from its inception, and he's already convincingly demonstrated the new Olds motor's off-road potential, let's take a closer look at some of the hardware behind his latest Rocket ride. We'll also take a look inside Andy Mannarino's Total Performance Olds to see some of his secrets of speed.



Manufactured and marketed by Hurst, this distinctive cast-aluminum valve cover is available under part No. 1300040.



Although Warren now manufactures a fully finished magnesium intake manifold, this is one of his early experimental hand-fabricated versions. Each runner has been carefully tailored to match the uniform ports in the cylinder heads, but you really couldn't tell that from here. In this always-a-prototype form, it doesn't look much different from other custom-crafted designs commonly found on ever-evolving unlimited race engines. It looks a little rough on the outside because it's constantly being re-engineered. Judging from this engine's 180-plus mph performances, it's a part of this Rocket plan that definitely works.