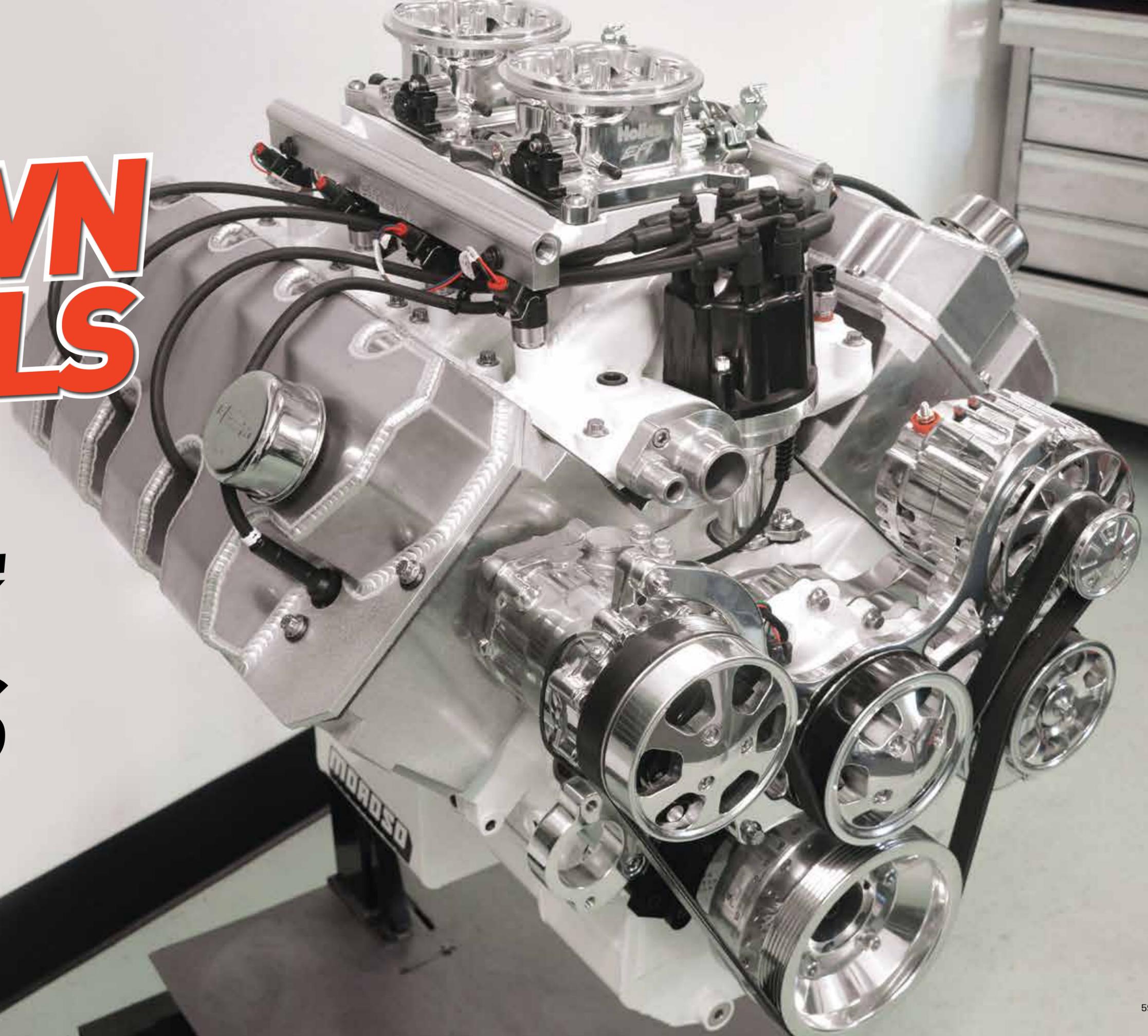


CROWN JEWELS

FOR SMALL BLOCK FORDS

WE CHECK OUT HAMMERHEAD'S
NEW HEMI HEADS
STORY BY SAM LOGAN



Hemispherical-style combustion chambers have earned a formidable reputation for power generation. The Hemi head broke fresh ground in several areas, including skilfully uniting superior airflow with larger valves.

Generally, Hemi head valves are placed across the head compared to Wedge head valves, which are placed more longitudinally along the head. As a result, the Hemi air flow route is easier, it has fewer bends, and the transfer of incoming and outgoing gases is more efficient. Also, the Hemi head usually employs larger valves and because they are naturally inclined in their hemisphere open toward the centre of the cylinder. Their operation, therefore, generates freer air flow—not shrouded—resulting in easier cylinder filling.



Here in the following sequence of photographs are Hammerhead's new Hemi heads being installed for dyno-testing.



1

What's the allure of the Hemi? Well, they've enjoyed an evocative and winning formula for decades and for small-block Ford engines they are unique. These feature raised ports for direct air flow, they also accept traditional intake manifolds and attach directly to 289, 302, 351W and, with some alterations, 351C engine blocks. They boast full water jacket capacity for proper cooling and accept standard intake gaskets. The exhaust flanges use Yates C3 bolt pattern and Felpro 1433 gaskets.



2

Induction flow of almost 400cfm is delivered via 2.200in stainless steel valves while exhaust ports flow 275cfm through valves of 1.650in diameter. Combustion chambers of 62cc easily facilitate pump gas compression ratios. Adopting a deck thickness of 0.700in provides a safe margin for power-adder applications.



3

Applying silicon sealer for the lifter valley cover, which is supplied with the kit. Because this Hemi uses raised ports and thus raises the standard intake manifold, it employs a special cover. The 427ci cast-iron block is produced by World Products.



4

Note original prototype one-piece lifter valley cover depicted. However, production items are of two-piece construction, which will feature a removable inspection panel, accessing the lifter valley and lifters. Hammerhead Hemi kits accommodate many commonly available parts, including virtually any make of Windsor head gasket – always an appealing prospect.



7

Using a valve-installed height of 1.950 inches, the formula behind the calculation is as follows: add the height of the spring when coil bound to the amount of valve lift, plus a working clearance of 0.050 to 0.080in. In addition, the heads accept valve springs to a maximum of 1.5in OD. Both intake and exhaust valves operate at angle of 15 x 6 degrees.

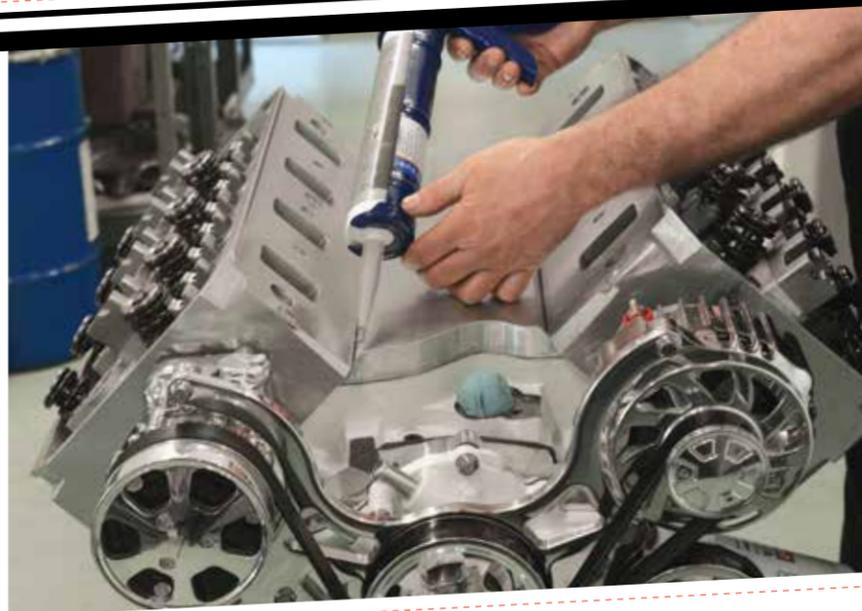


5

Appropriate head stud or bolt kits are provided to suit your block. Interestingly, bolts are half the price of studs and probably the best option if heads are to be removed within the tight confines of an engine bay. But each time they're removed they cause thread wear, which is more concerning if they are engaging in aluminium blocks. Whether bolt or stud, torque them to 100lbs-ft and use a thread lube.

8

These push rods maintain better posture than those found in most Hemi engines, particularly those operating the exhaust valves. In fact, the purpose of Hammerhead's long exhaust rocker design is to overcome the need to grind larger clearance holes in the block. Straighter push rods also eliminate unwelcome side loads inflicted on the lifters.

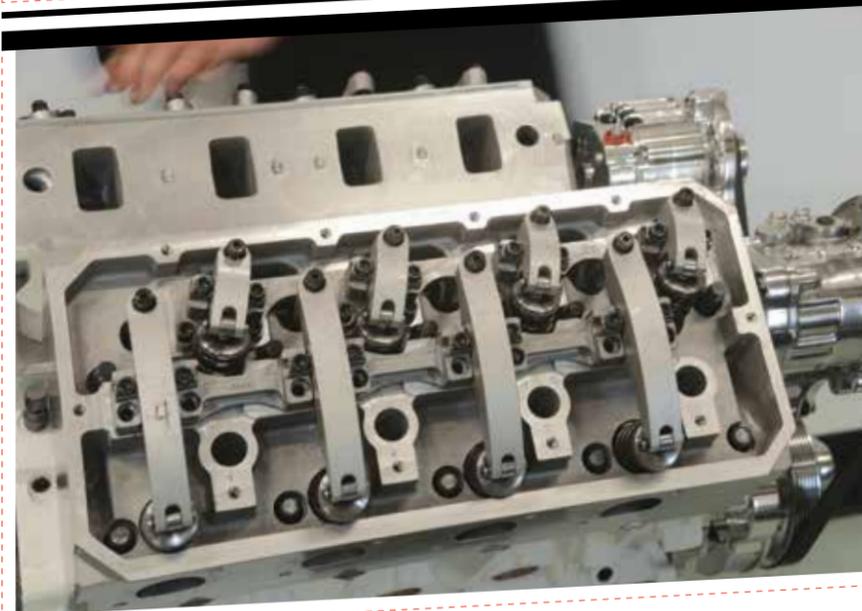


6

Hemi heads from Hammerhead Performance Engines: an imaginative approach to achieving power gains from Ford's most successful small blocks.

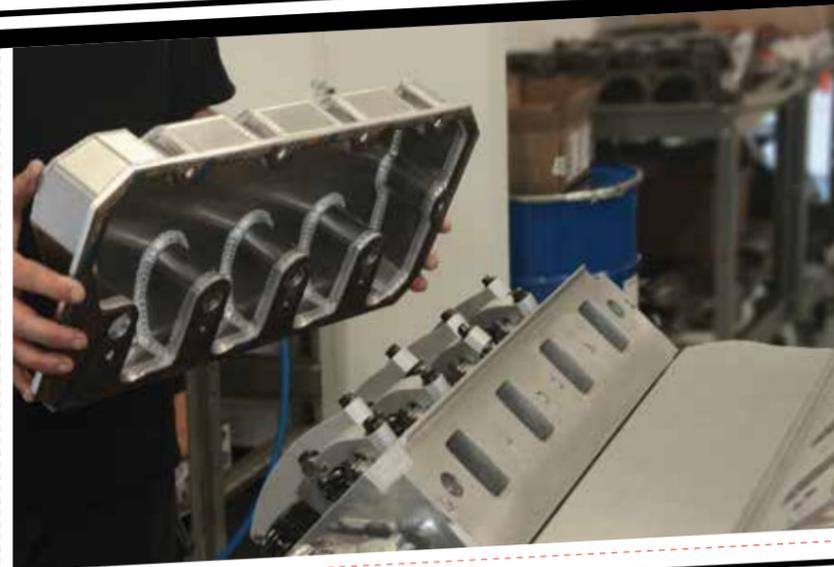
9

Made by Jesel, the shaft-mounted rockers operate on a ratio of 1.7:1. However, optional ratios ranging from 1.6:1 to 1.85:1 can be provided. With regard to their mountings, the chief benefit of solid one-piece rocker stands lies in their rigidity.



Now, a new company, Hammerhead Performance Engines, headed by Greg Brown, is producing unique Hemi heads for the small-block Ford. With an emphasis on completeness, the innovative head kits include cast aluminium Hemi-style valve covers, Jesel 1.7:1 ratio rockers complete with rocker stand system and all the necessary valve and spring assemblies as well as gaskets.

The aluminium head kits can be directly installed on all small-block Fords: 289, 302, 351W and, with some modifications, even 351C engine blocks. If you were asked about the single cleverest aspect of this new Hemi head kit, you might point not



10

Ford enthusiasts hold deep admiration for cast aluminium Boss-style valve covers, which are supplied as standard with Flatout gaskets. But racers, who desire the sheet metal expression, can opt for a lightweight fabricated style, as depicted, available for an additional \$300 charge.

11

With common 1262R Felpro gaskets in place, use any single- or dual-plane intake manifold that suits the block: a 351W intake mates with the 351W block.

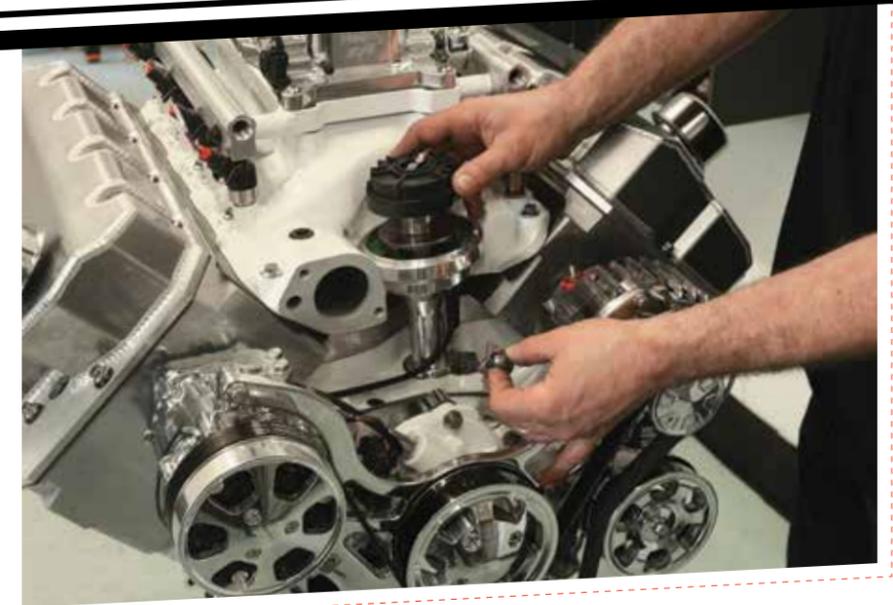


12

Bizarre? Hemi plug wires penetrating the tops of the valve covers of a small-block Ford. Once implausible but now reality.

13

Because the intake manifold is raised, a distributor extension is required with most conventional intake manifolds.



to its deck thickness of 0.700in to encourage safe use of power-adders or its full water jackets for proper cooling. You might also bypass its accessory bolt holes for the provision of factory components and its use of ARP 254-4311 head studs and point instead to its price: US\$5,995 for the complete kit.

When the inaugural dynamometer test of the new heads, which were attached to a 427ci World Products block, was eventually undertaken in January 2017, the results were astounding: 604hp and 601lb-ft torque. Astounding because the initial setup was meant to deliver 10.5:1 compression ratio. However, final valve changes were made, which entailed moving the intake valve seats to slightly higher territory in the combustion chamber. As a result, the original 62cc chambers had now gained 6 or 7 cubic centimetres of volume and valuable compression properties were reduced to a meagre 9.8:1.

Furthermore, an out-of-the-box Edelbrock Victor Jr. intake manifold had been employed, its ports much too small when attached to the new Hemi heads. Why? "I wanted to ascertain the power output of un-ported heads when combined with an untouched intake, said Brown. A third factor

14

Use a distributor extension kit (\$115) to facilitate the distributor.



15

Greg Brown, a 45-year-old who originated from a small town in Vermont and moved with his parents in his teenage years to Atlanta, Georgia has now based his fledgling company in the Atlanta suburb of Snellville. Twelve years ago he took employment at Jon Kaase Racing Engines, perhaps reflecting his youthful admiration for the man who has shown such versatility in a long career devoted to the development of racing engines.

that influenced the dyno sheets was the humble camshaft with duration values of 242 intake / 248 exhaust. “Getting it to 500hp is easy,” declares Brown, but generating over 600hp with low compression, un-ported heads, untouched intake and a modest camshaft is a triumph—I’m very pleased with its maiden performance”

So, what’s next? “Currently, I’m busy fulfilling cylinder head orders, which include the supply of rockers, rocker stands, gaskets, etc., but have graduated to offering pistons, rings, distributor extension and cylinder head stud or bolt kits. The first competition version – which I’m working on – will feature different compression ratio, induction system and camshaft,” says Brown.

Importantly, for this new Hemi concept to realise its full potential, it’s crucial to install it in a race car as soon as possible. This will broaden its appeal and prove its merits. Racing lives on the edge of the competition precipice and an impressive quarter-mile time slip reveals all. ■

SOURCE:

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