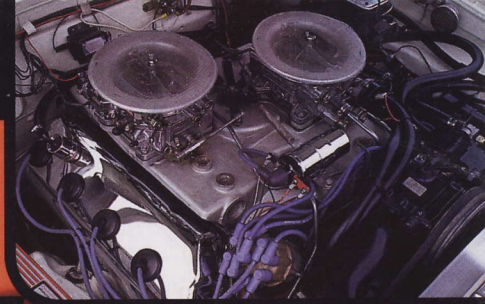


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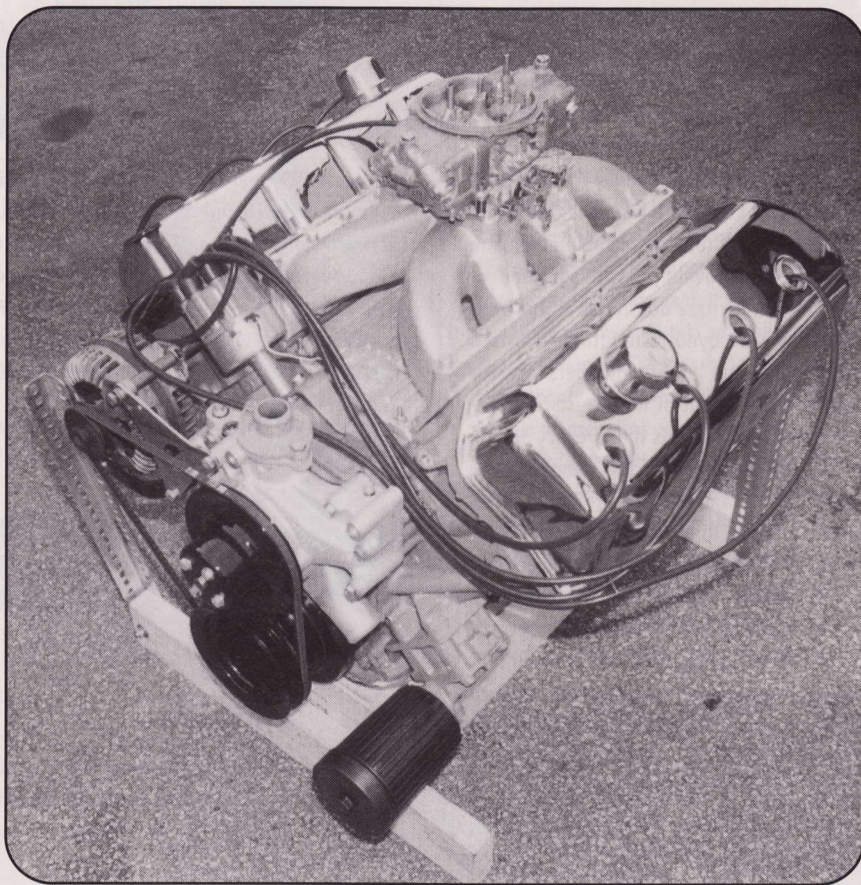
# Torque Monster

## Street or strip—the Arruzza 511 Hemi Crate Motor delivers all the right numbers

BY GREG RAGER

**T**here was a time, not so very long ago, when you couldn't beg, borrow, or steal Hemi parts. The engine last saw production status in 1971 and, once the supply of "in stock" parts dried up, that was pretty much the end of it. If you were lucky enough to score some parts at a swap meet, or through word of mouth, those parts were probably well-used-and-abused pieces some Hemi racer had discarded, and they may or may not have been serviceable any longer. And thus, Chrysler's Elephant Motor, in addition to becoming an endangered species, was headed for the land of the dinosaurs.

But then help came from the last place most of us would have expected it—Mother Mopar herself. When Mopar Performance reissued the Hemi block, followed by cylinder heads, crankshafts, pistons, rods, etc., there was now newfound hope and a fresh supply of pieces. In addition to racers and restorers alike now having a source for all the parts needed to build a brand new Hemi (or restore existing engines), a whole new industry popped up as professional engine builders began taking advantage of the



parts availability to produce turnkey Hemi Crate Motors. And one of the premier companies to do so is Arruzza High Performance.

Arruzza High Performance takes a somewhat different approach to building Hemi Crate Motors. Their 511 cubic-inch crate Hemi delivers 625 horsepower and 650 lb-ft of torque—more than enough of each to play in the big leagues—and it's designed to run all day on unleaded pump gas. But unlike some crate Hemis out there, Arruzza's Mopar Performance block is kept at near-standard bore size (4.253) to allow for any future rebuilds. It all runs with a fairly mild .572-lift

solid tappet cam, a single four-barrel carburetor, and has outstanding street manners and driveability. The company has shipped over 350 crate Hemis in its 10 years in business with customers in Spain, England, Germany, Australia, Mexico, and Canada. Noted customers include Bud Moore, Humpy Wheeler, and "King" Richard Petty.

Extensive research and development work went into arriving at just the right combination for the Arruzza 511. Well-known Mopar engine expert, Herb McCandless, played a key role in helping Arruzza HP choose just the right pieces, internal specifi-

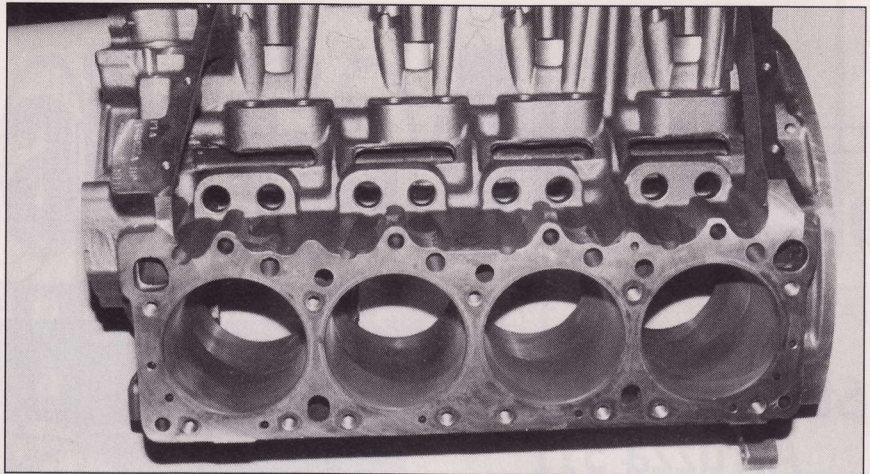
## TORQUE MONSTER

cations, and machining processes to produce an engine that's powerful, low maintenance, and excels in both durability and reliability. It's not just the components that make up a good engine build; it's the combination of those pieces and how the machining processes are performed that separates the rockets from the slugs. Lightweight connecting rods, pistons, and valvetrain allow the Arruzza 511 to rev quickly and freely. The goal is to have a customer who is not just satisfied with the brute horsepower and torque the engine produces, but to be happy with the engine over the long haul.

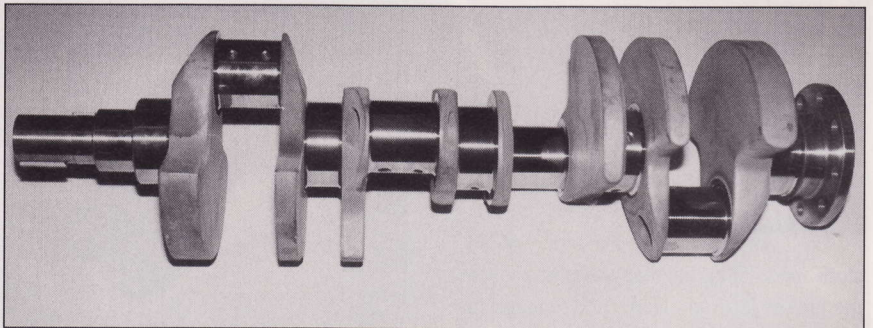
Another aspect to the way Arruzza High Performance sells crate Hemis is that while most others will run your completed engine on a dyno and provide you with a printout of its numbers, Arruzza doesn't do it that way. Early 511s were dyno-tested (the advertised horsepower and torque numbers are for real) and a printout of those tests is available. John Arruzza feels that if every engine is built and machined to the same exacting specifications, and all parts are blueprinted, there's no need to put undue wear and tear on your engine before you take delivery of it just to provide a dyno sheet. With the precise standards used to build the 511, horsepower won't vary by more than three or four between any two engines. Instead, Arruzza runs the engine on a test stand just long enough to break the cam in. Then, the oil and filter are changed, the heads are retorqued, valves are adjusted, and a leak-down test is performed, making it ready to boogie right out of the box. Using this procedure, your engine is *broken* in, not *worn* in. Every part used is brand new and the out-the-door price is just \$13,995. A full list of optional equipment (including aluminum heads, etc.) is offered for even more horsepower and torque and for specialized applications.

If you should want a little less bang for fewer bucks, Arruzza HP also offers a 426-cube crate Hemi at 475 horsepower and 500-plus lb-ft of torque for \$10,995. They don't build small-blocks and they don't build Wedges. Hemis are their business—their only business.

Let's have a look at what makes the Arruzza 511 tick. ◆



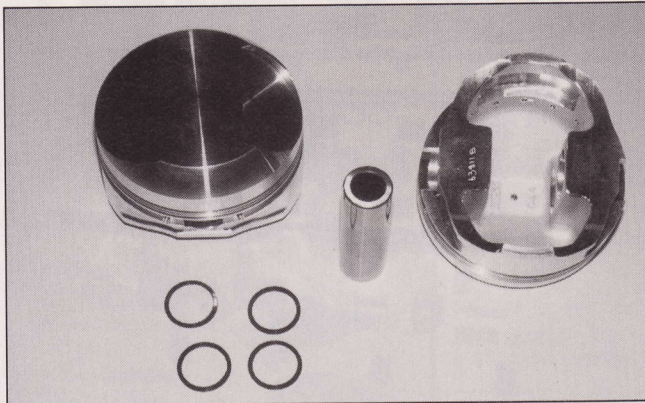
The Arruzza 426 and 511 crate Hemis use the MP non-siamesed (P4529850) block. All blocks are pressure-checked before any work is performed. Cylinders are finished to a 4.253 bore size (.003-over) with honing plates. All decks are squared utilizing a BHJ fixture and the mains are line-honed to minimum factory spec for maximum bearing crush. Bores are notched to un-shroud the intake valve and all casting flash is removed before MP cam bearings are installed. Lifter bores are honed for cleanup and smoothness. Cylinder bottoms are notched for rod clearance on the 511. MP main cap bolts are used but washers are hardened ARP pieces.



Callies full-radius 4340 premium forged steel crankshafts are used exclusively. Stroke is 3.75 on a 426 and 4.50 on the 511. Both use the eight-bolt Hemi flange and the counterweights are wing-tipped on the leading edge for aerodynamics and oil windage control.



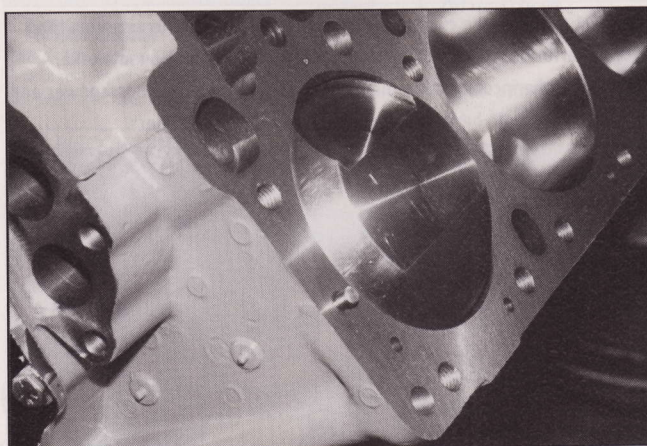
Eagle #CRS7100C3D rods are used with ARP #8740, 190,000-psi cap screws. Rod length is 7.100-inch with a 2.325 big end diameter and bushed for a .990 pin. This is the longest steel H-beam rod available, making it very desirable in a stroker motor. Rod weight is 835 grams compared to 1052 for a stock Street Hemi rod.



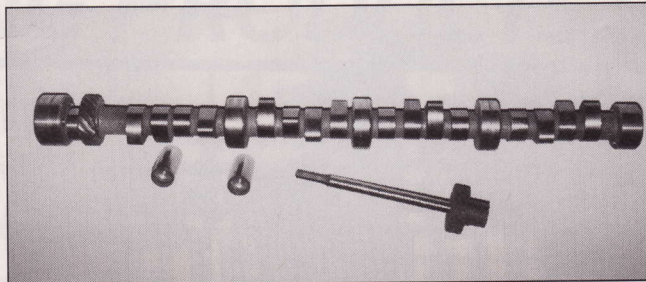
Ross custom-made forged pistons are an exclusive design to Arruzza specs. Extra deep valve reliefs are incorporated to accommodate potential future customer changes to higher lift camshafts. Tool steel .990 pins are retained by spiral locks—no “C” or “E” clips here.



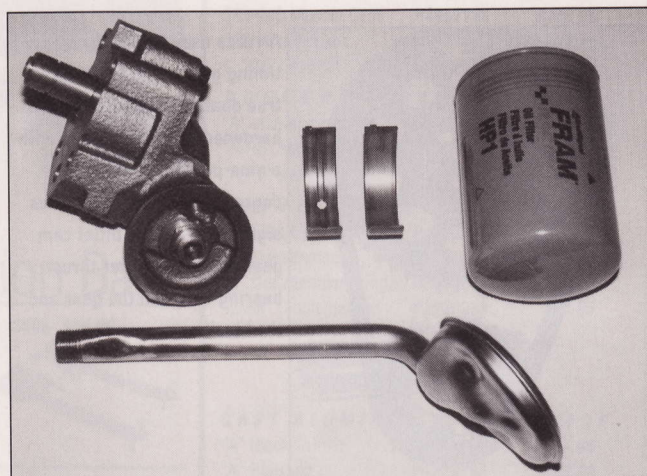
The stock Street Hemi piston (left) weighs 840 grams, while the Arruzza/Ross piston weighs a scant 675 grams. The pistons are designed for maximum pin oiling.



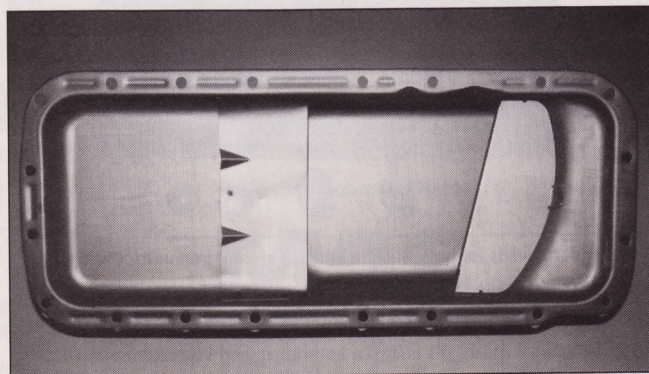
On a stroker motor, a shorter piston dome will yield the same compression. The dome on the 511 is .480 above the deck. A stock Street Hemi piston dome height is close, but the difference is in the size, shape, and valve relief configuration. Actual compression ratio on the 511 is 9.6:1 on iron head engines and 10.25:1 on aluminum head engines.



On an Arruzza 426, camshaft choice varies depending on what the buyer is looking for and ranges from a factory hydraulic to a .600-lift solid. The standard 511 cam is an MP P4529344, right out of the catalog. Advertised duration is .296 and lift is .572/.557 on 104-degree centers. All other camshafts are Comp Cams as are the hydraulic lifters. Solid lifters are from MP as is the hardened tip intermediate shaft.

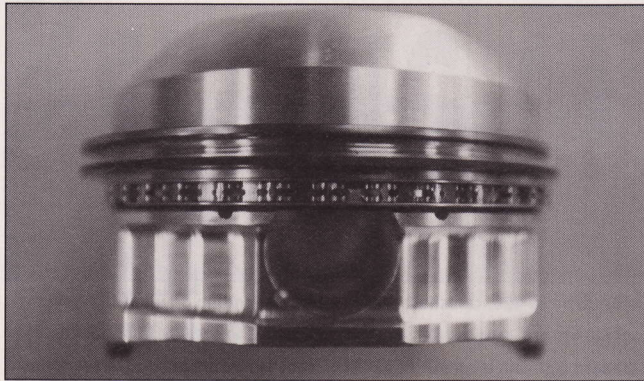


The heart of any engine is its oiling system. Arruzza uses a Speed Pro high-volume pump and an MP 1/2-inch pickup, which has to be modified slightly for clearance on 511 stroker motors. All engines are shipped with a Fram HP1 filter installed. Federal Mogul/Clevite 77, 3/4-groove main bearings are used for strength and to reduce oil accumulation in the valve covers. Fully grooved bearings allow too much oil flow to the top of the engine and their reduced surface area weakens the bearing.

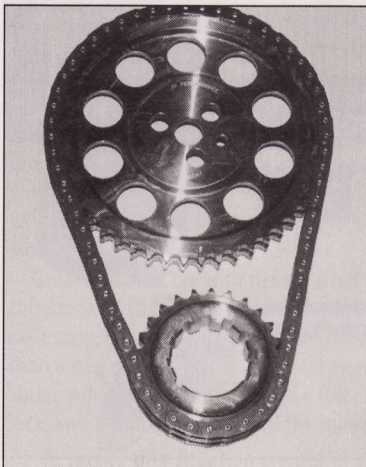


Nothing really trick here—an MP P4529884 Street Hemi oil pan with baffles does just fine. A crank scrapper is optional but Arruzza doesn't feel it's needed on a stroker motor that won't see much more than 6,500 rpm. ▶

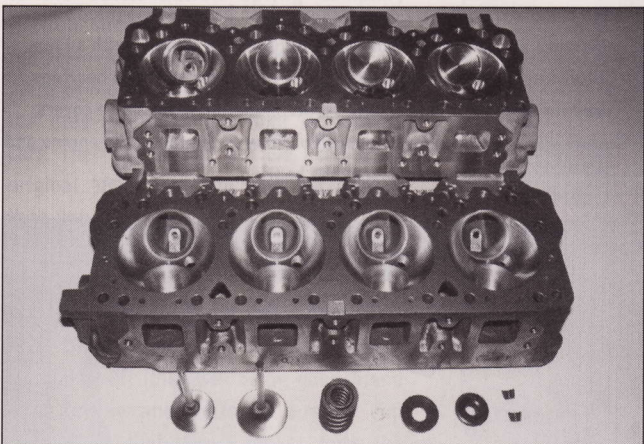
# TORQUE MONSTER



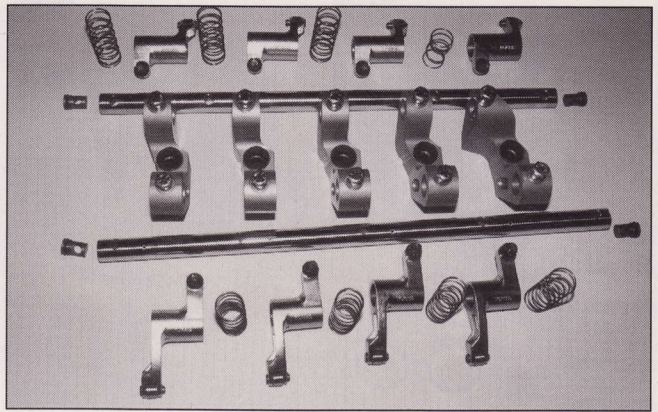
As you can see, the wrist pin actually sits higher in the piston than the lower oil control ring. This requires an oil ring support rail be used to bridge the gap in the piston oil ring land. Childs and Albert Dura-Moly high performance rings are used and hand-filed to a .015 top gap/.014 second with standard tension oil rings. Top and second rings are both 1/16-inch thick.



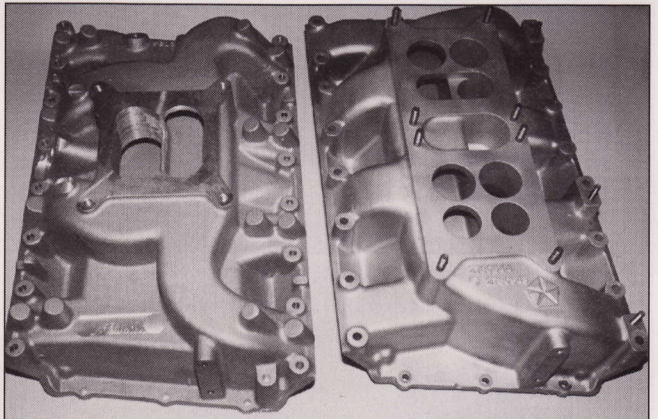
Arruzza uses a JP Performance timing gear set. It features a true double-roller chain and a hardened steel crank gear with a nine-position keyway to degree the cam plus-or-minus eight degrees. The billet cam gear features a roller thrust bearing between the gear and the block.



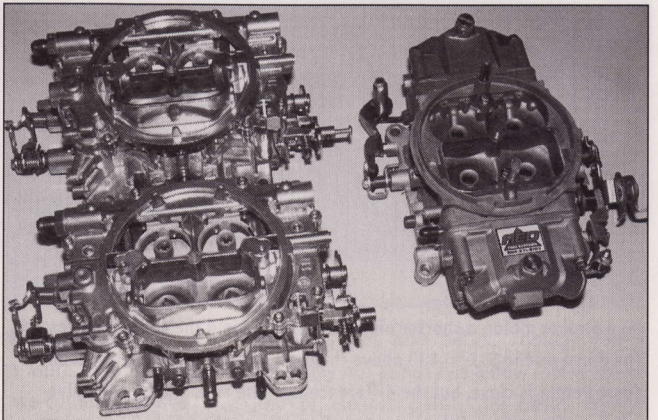
The standard heads for both the 426 and 511 are MP iron units. Optional for both are either Stage IV Engineering aluminum, or Indy aluminum (customer preference) heads. Both feature 2.25 int/1.94 exh valves. At \$300 to upgrade to the aluminum heads, it's almost a no-brainer, and 90 percent of Arruzza's customers go the aluminum route. Valves are MP stainless while springs, retainers, and 10-degree locks are all Comp Cams. All heads get full-radiused valve jobs, bowl porting and blending, bronze guides, Teflon valve seals, and spring cups. All head work is performed on a Sunnen VGS-20.



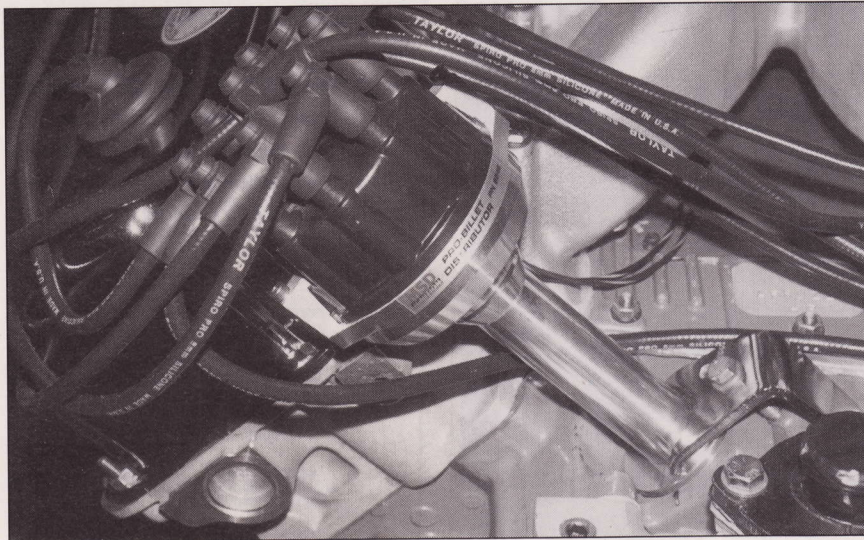
There is no production engine ever built with a more complicated rocker system than the Chrysler Hemi—and it's heavy. Arruzza uses all state-of-the-art, lightweight components. Rocker stands are Keith Black extruded aluminum, as are the hard-chromed rocker shafts with aluminum end plugs. Norris stainless steel, bronze bushed, roller rocker arms (1.6 int/1.55 exh), Smith Brothers adjusters, and ARP 12-point lock nuts are used. 1.6 exhaust rockers are available on request with Indy Cylinder Head roller rockers as an option. Smith Brothers pushrods are of a custom length for each and every engine built.



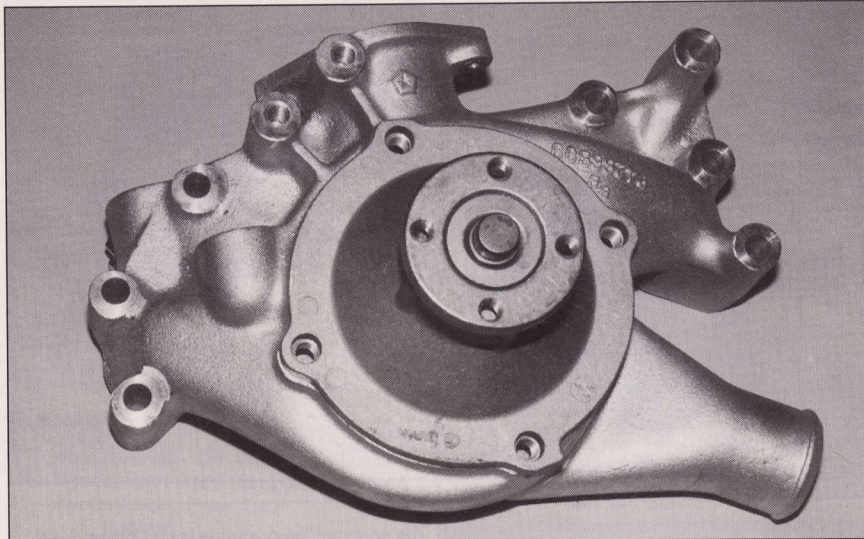
On a 511 package, the customer can choose between an Arruzza-modified Mopar Performance M1 and an original Street Hemi dual-quad intake. Optional is the incomparable Indy single-plane that makes horsepower and torque from idle to beyond the numbers on most tachometers.



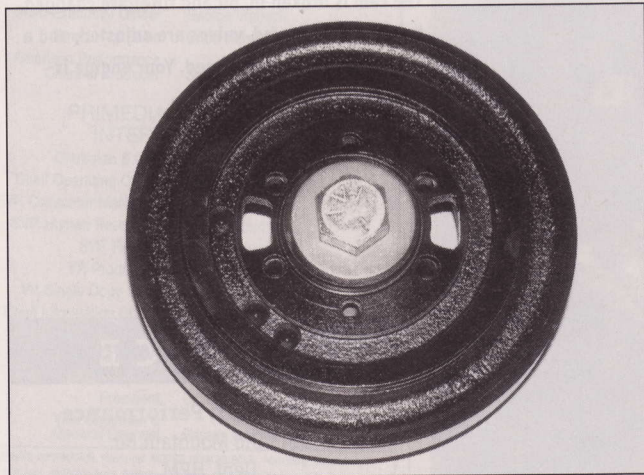
On dual-quad motors, Arruzza can provide Carter Comp Series 600 or 750-cfm carbs. Single four-barrel applications are available with a 900-cfm blueprinted 850 double pumper from Advanced Engine Design.



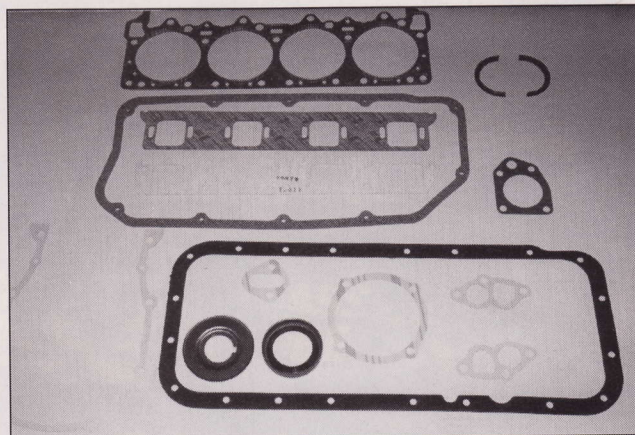
Ignition consists of an MSD Pro Billet distributor, an MSD-6 box, and a Blaster II coil. Taylor 8mm wires are recommended as are Autolite 64 spark plugs. All are optional from Arruzza HP.



Your 426 or 511 can be equipped with an MP aluminum water pump housing and a Milodon high-flow aluminum water pump. The Hemi is inherently a cool-running engine and Arruzza engines are no exception—especially with aluminum heads. A high-flow 160-degree thermostat is available and recommended.

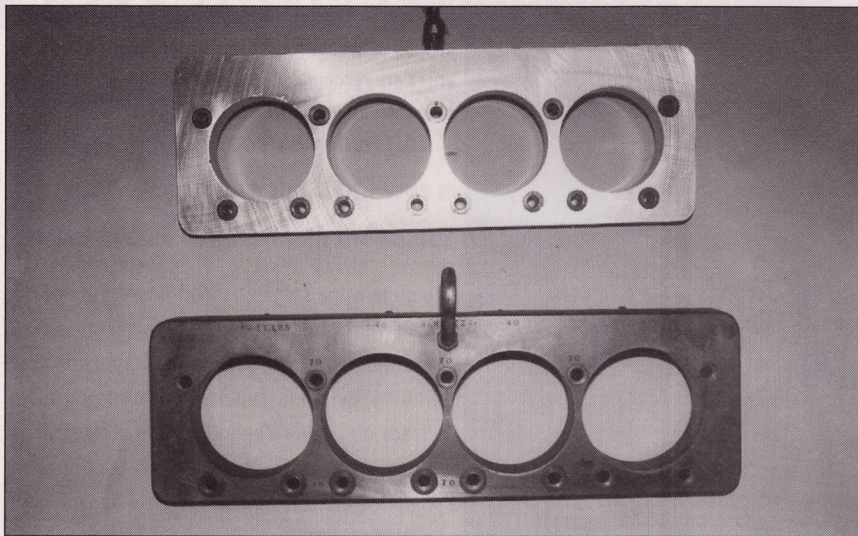


Again, nothing trick here. The P3830183 Mopar damper does just fine, thank you. A Fluidampr is optional and is more popular with the racers than the street guys.



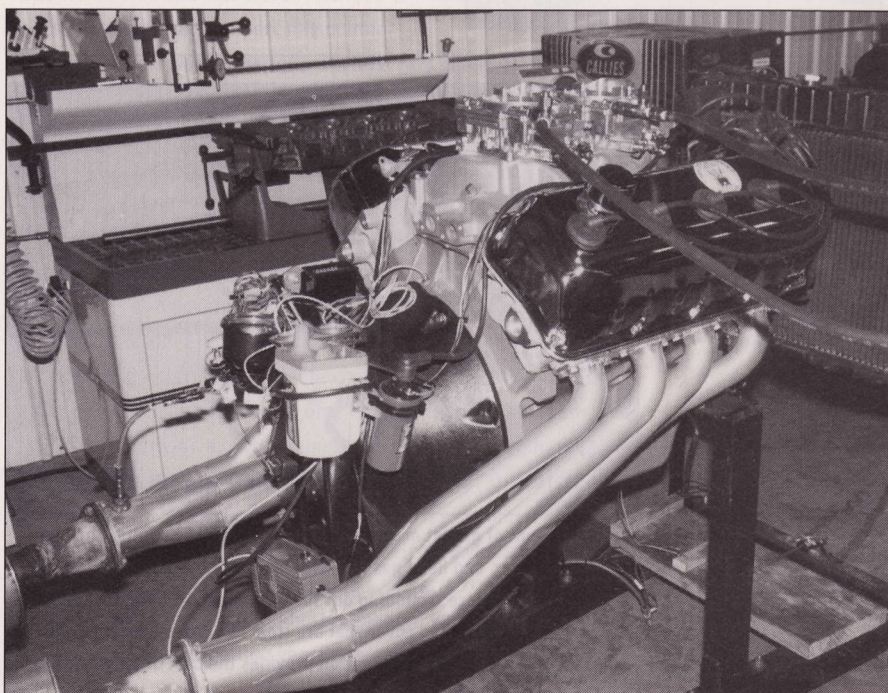
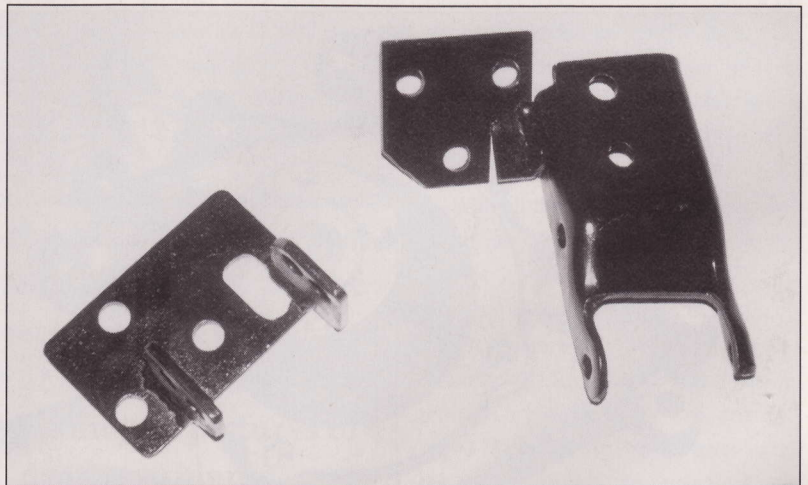
An assortment of gasket manufacturers are used. MP supplies the oil pan, valve cover, and head gaskets with Mr. Gasket intakes and Hooker exhaust/header pieces rounding out the ensemble. All others, including the rear main and timing cover seal are from Fel-Pro. Experience has taught Arruzza that this combination provides the best of all worlds for proper and long lasting engine sealing. ▣

# TORQUE MONSTER



All Arruzza engines are honed using deck plates. Aluminum plates are used for aluminum head motors and steel plates are used for iron heads. John Arruzza feels proper ring seal is the single most important factor in engine building. Finish honing is done with plateau brushes (to provide instant ring seal) to a .003-overbore for perfectly round bores.

Arruzza HP offers their conversion mounts to mate a Hemi to a big-block Wedge K-member. The solid driver-side mount eliminates the need for a torque strap while the rubber in the right side and trans mounts provide enough insulation to keep vibration to a minimum.



The un-dyno! Every engine is test run on Arruzza's test stand before it goes out the door. The cam is broken in, oil and filter are changed, heads are retorqued, valves are adjusted, and a leak-down test is performed. Your engine is *broken in*—not *worn in*.

## SOURCE

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