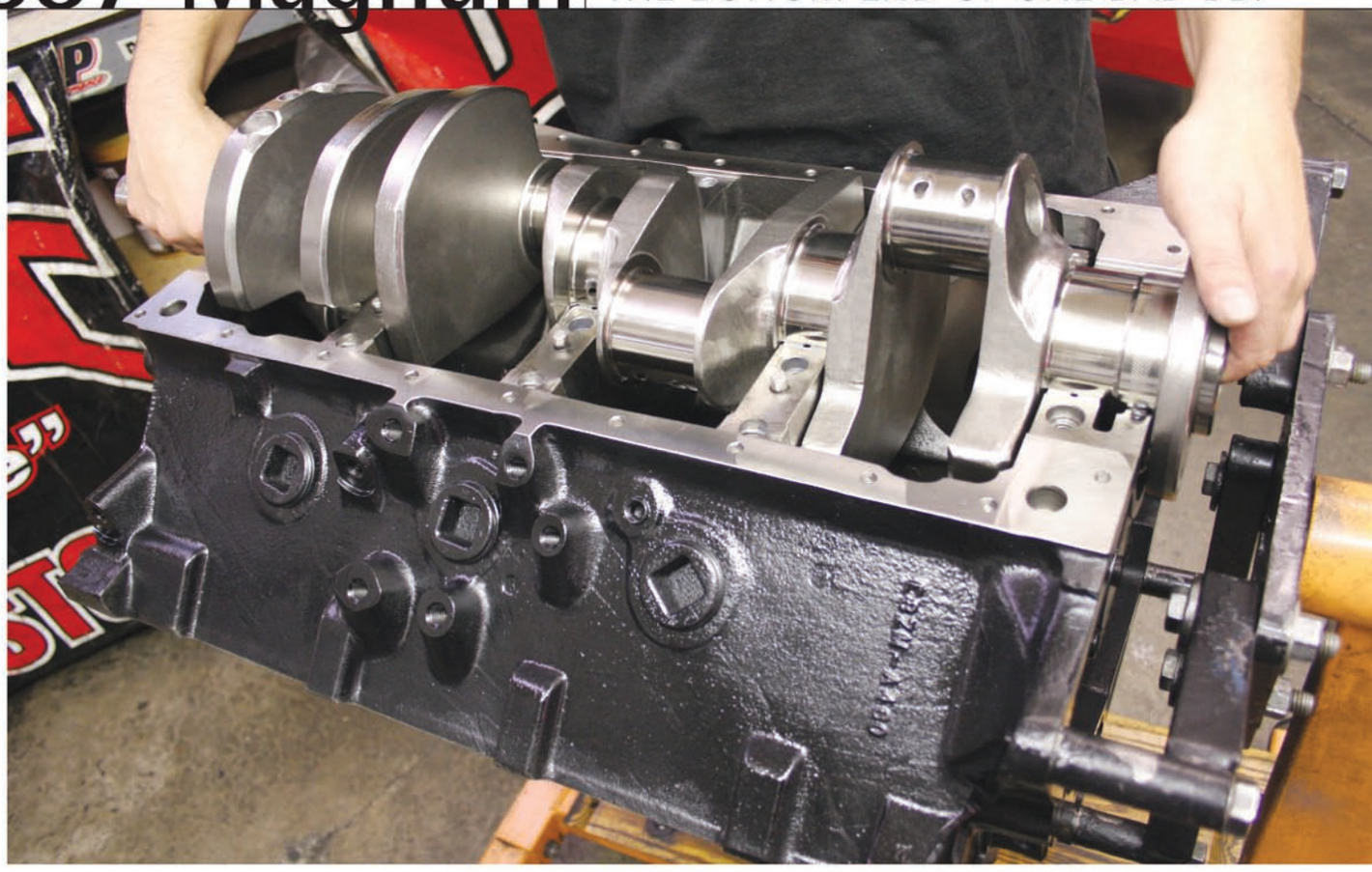
The 557 Magnum

THE BOTTOM END OF ONE BAD BBF



Written by Jake Amatisto
Behind the Lens: The Author

Big horsepower on pump gas from off-the-shelf parts is the goal with our newest engine project, a stroked 460 big-block Ford. How much power is big, you may ask? Judging by some similar combos we've researched, we're guesstimating this "Blue Oval beast" will peak somewhere in the 850 range, without having to really rev it high and hard either, which will be incredible considering this is a basic setup. In last year's October issue, we covered the block machining process of our Ford Racing big-block (M-6010-A460) at L&R Machine. In this installment of the build, we show off the parts we chose to assemble the shortblock of our big, bad Ford.

We turned to the experts at Coast High Performance for this build, and we're glad we did. With a knowledgeable staff who are all about making horsepower, CHP has been one of the industries most respected names when it comes to high-performing engines, and their fully-equipped, 30,000 square-foot facility in Torrance, California proves these guys are the real deal.

Going into it, we knew we wanted an engine that we could run 91-octane pump fuel, but with so many cubic options, we were unsure. "Because you have the Ford Racing block, we had a few options when it came to choosing overall cubic-inches for this

557 Quick Specs

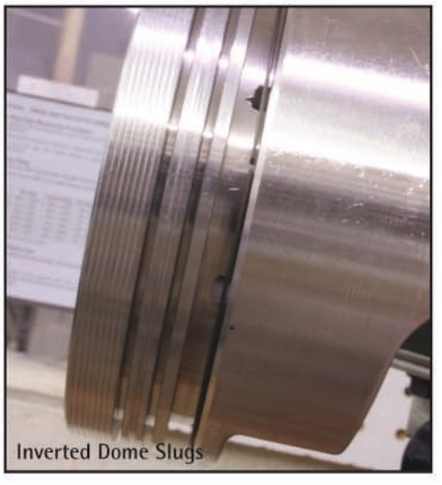
Block:	Ford Racing 460 Race Block [M-6010-A460]	**Rings:**	Total Seal Gapless Top with Heat-Treated Top
Pistons:	Probe Industries, 33 cc dish, 4.440-inch, 10.5:1 Compression	**Bearings:**	Clevite Race Series
Crank:	Eagle Specialties, 4.500-inch Stroke, ESP Armor	**Oil Pump:**	Kaase Racing
Rods:	Eagle Specialties, 6.700-inch Rod, ESP Armor	**Oil Pan:**	Ford Racing, Fully Baffled, Dual Sump

the 411

▶ We opted to go with Total Seal's **gapless rings** on this 557 Ford. The top ring features a heat-treatment which makes them super-tough, enough to withstand big boost and lots of nitrous, yet can also live on the street.

▶ The pistons we opted to use for this build-up are some off-the-shelf **inverted dome slugs** designed by Probe Industries. You may notice the top ring land is moved down a bit from it's stock position. That was done intentionally to keep that top ring away from the intense heat and pressure that this 557 will be pushing.

Gapless Rings



Inverted Dome Slugs

The 557 Magnum

THE BOTTOM END OF ONE BAD BBF

We're guesstimating this "Blue Oval beast" will peak somewhere in the 850 range.

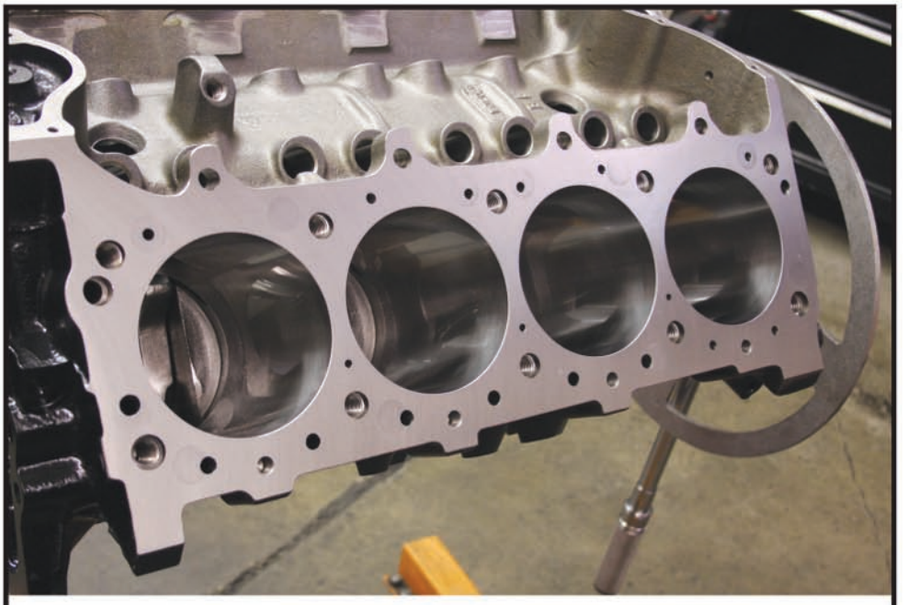

Eagle Specialties

project," said Coast High Performance's Engine Builder Shawn Mendenhall. "The block can support over 600 cubes, but we didn't want to do something that exotic for the street. I wanted to put something together that was fairly basic in terms of machine work and internal components," Mendenhall said. The three common stroker kits you can get for a big-block Ford start with the 501 (4.150" stroke), 532 (4.300" stroke), and the 557 (4.500" stroke), which is the maximum for a stock block. Mendehall said, "The 557 engine is a good option for the big-block Ford crowd. Everyone makes a crank for it, you don't have to clearance the block or run a small-base circle cam, so it's a good choice." This is a high-powered combination that doesn't need a lot of custom work, or time to build or source the parts, and with some high-flowing Super Cobra Jet cylinder heads from Kaase Racing on it, we should easily achieve our goals.

The pistons we used in the project are forged with a 33 cc dish, and at zero deck should provide around 10.5:1 compression. These pistons measure 4.440" and feature a lowered top ring land, which means you can hit it with boost or "a considerable amount" of nitrous oxide. Mendenhall explained, "We used a very common set of pistons, which are designed to work with the Super Cobra Jet heads we plan on running. There's a reversed dome in it that mimics the SCJ chambers and valve pockets, so a standard head will not work with these pistons, but we do offer some that will through Probe."

The crank and rods we chose for the BBF are from Eagle Specialties and both feature the ESP Armor treatment, a process that gives a mirror shine that helps combat windage and help oil drainback. The crank has a 4.500 stoke and the rods measure 6.700," and we even opted for the upgraded ARP 2000 rod bolts as well.

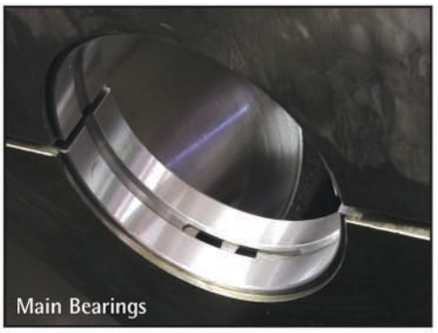
Other details of the shortblock include an upgraded oil pump from Jon Kaase Racing engines, Clevite's race bearings for the mains and rods, and a



Ford Racing's 460 Big-Block

Last year Ford Racing sent us their ultra-strong 460-based big-block [M-6010-A460] to be used to construct our pump gas terror. This block is a cool piece in that it features the extra bolt holes needed to run full-on race heads if we want, such as Blue Thunder's "Thor" heads (can flow as much as 588 cfm). In our application however, we're using Ford's Super Cobra Jet heads, which don't use the added bolts.


Crank End Play


Main Bearings


4-Bolt Main Caps


Hung

the 411

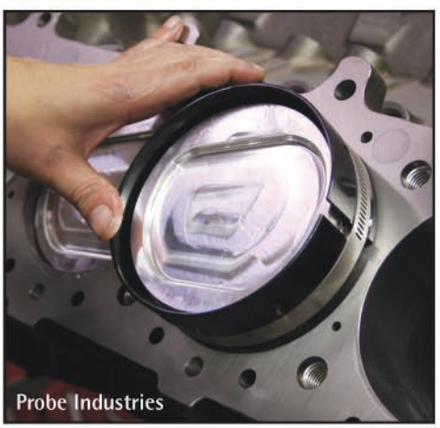
- **Eagle Specialties** sent a set of their very trick forged H-beam connecting rods, which also feature the ESP Armor. Eagle's Armor treatment helps oil drainback, and is a huge step above standard rod surface finishes, as it doesn't hold onto the oil as long during the crank's revolutions. These rods also came with the upgraded ARP 2000 rod bolts.
- The rod and **main bearings** we opted for were Clevite's H-Series race bearings with a full oil groove.
- The Ford Racing engine block is one stout unit, with it's billet steel, splayed, **4-bolt main caps**. They come with screw-in provisions that make it easier to remove.
- With the crank in place, Shawn Mendenhall checks the **crank end play** after a few swift smacks with a rubber mallet. This is an important step because if it isn't checked, you could have thrust bearing issues.
- With the Eagle rods **hung** on the Probe pistons, engine builder Shawn Mendenhall lines them up before dropping them in, making sure each rod bolt is lubed before torquing them.

The 557 Magnum

THE BOTTOM END OF ONE BAD BBF

Ford Racing's Trick BBF Oil Pan

With the bottom end buttoned up, the last step was to lower the oil pan into place. Although Ford Racing isn't known for their oil pans, this one is a trick unit. Besides having a built-in windage tray, it also features a full-length crank scraper, something that is not a common feature on other BBF pans.



Probe Industries

very trick double-hump oil pan (for a Fox-body) which includes baffle and a full-length crank scraper that you can get right from Ford. Total Seal provided a really trick set of gapless piston rings that feature a heat-treated top ring to withstand the occasional nitrous blast.

With quite a few project cars in the works here at *FSC*, some may wonder which jalopy this engine will end up in. We aren't really sure, but there have been talks of building a bitchin' tow rig utilizing the BBF, but then again, it could end up in some racey Fox-body, or possibly even a certain Ford Maverick if we ever get crazy enough. ■

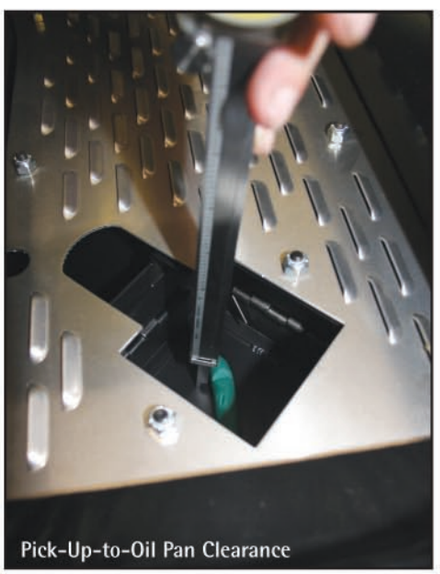
S O U R C E

Coast High Performance 866.249.9143 *coasthigh.com*	Probe Industries 866.718.6267 *probeindustries.com*	Kaase Racing Engines 770.307.0241 *jonkaaseracingengines.com*
Eagle Specialty Products 662.796.7373 *eaglerod.com*	Total Seal Piston Rings 800.874.2753 *totalseal.com*	Ford Racing *fordracingparts.com*
	Mahle/Clevite *mahleclevite.com*	

Total Seal provided a really trick set of gapless piston rings that feature a heat-treated top ring to withstand the occasional nitrous blast.

Kaase Racing Engines

Pump Pick-Up



Pick-Up-to-Oil Pan Clearance

the 411

- The pistons we're using in this article are off-the-shelf units from **Probe Industries** and feature a 33 cc inverted dome that provides 10.5:1 compression.
- Stock big-block Ford pumps are notorious for breaking at the base. This relatively new design from **Kaase Racing Engines** has a beefed-up base to ensure that never happens. It even came with studs.
- To go with the oil pan, Ford Racing also supplied a very high-quality, sturdy oil **pump pick-up**.
- The last thing Mendenhall checked before lowering the oil pan into place was the **pick-up-to-oil pan clearance**. We were good, with over a half-inch of clearance between the pick-up head and the bottom of the oil pan.