

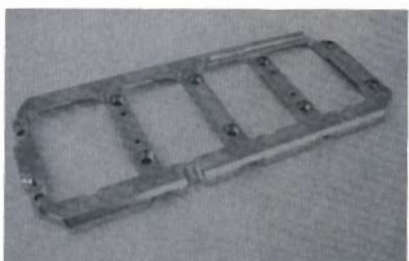
Supporting Cast

D.S.S.' MODular Main Support System will help keep your 4.6 or 5.4 together through the rough stuff

Text by Mark Houlahan
Photos by Steve Turner

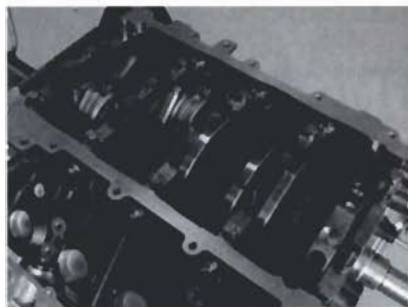
Give a racer a part and he'll figure out a way to break it. Then, he'll figure out a way to make it stronger and try to break it again. It's the burden of evil that a racer carries, but it means stronger and better parts for guys down on the street level. Whether it's a valvetrain, transmissions, blowers, or engine blocks, manufacturers

Horse Sense: While you've got your sparkling fresh modular strapped to an engine stand for the installation of a main support, you might want to invest in a high-volume oil pump to keep everything lubricated and cool in your investment. If you do, however, be sure to add a seven-quart oil pan because at high rpm, the high-volume oil pump will suck every drop of oil out of a stock pan, and the oil drains in the cylinder heads will not be able to drain the top of the cylinder heads fast enough. That's bad, mmm-kay.



1. The MODular Main Support is machined to work with most 4.6 or 5.4 blocks and any stroker crank and rod combination. Made from 3/4-inch thick 6061 T6 aluminum and CNC cut to exacting specifications, the main support comes ready to install with quality ARP fasteners and full instructions. D.S.S. prefers the aluminum for its ability to dampen engine harmonics better than steel, and it is lighter. The two pairs of smaller, inboard, threaded holes you see in the pictures are where a Pro-Tray windage tray would bolt to the main support. The Pro-Tray windage tray is optional, but well worth the extra money to control oil aeration and keep oil away from the fast spinning crankshaft and rods, where it would rob the engine of horsepower.

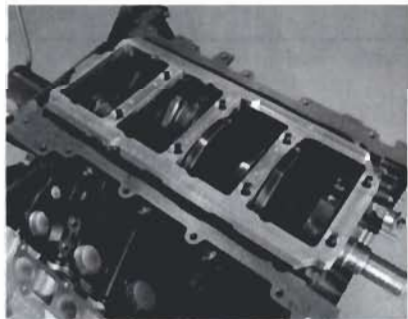
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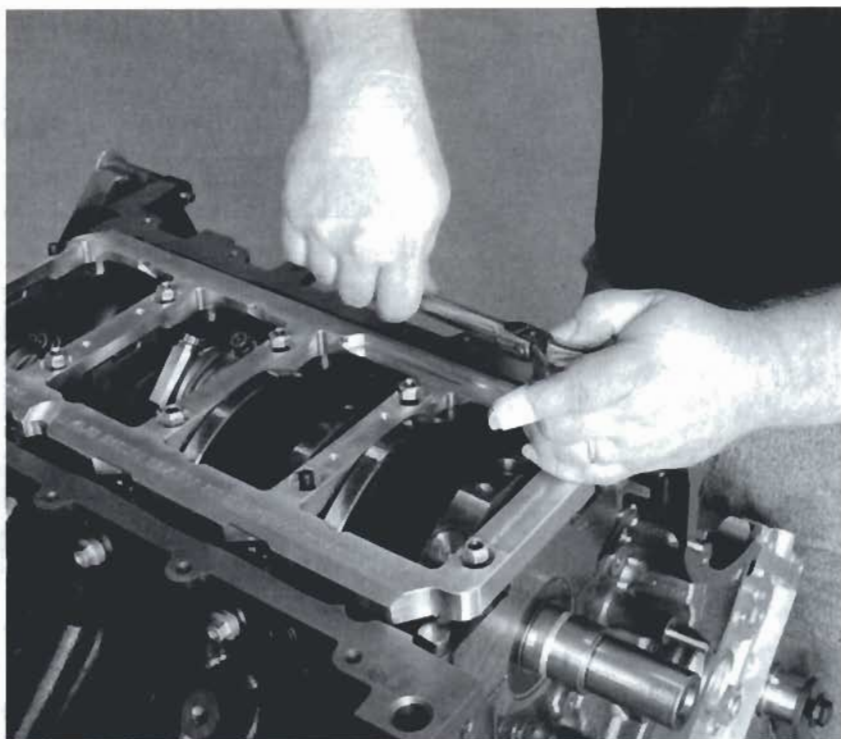
2. So you've just finished putting together a stout Two-Valve modular with ported PI heads and some nice internals. You're ready to bolt on the oil pan, right? Slow down there, junior! If you want to add more to your engine's safety margin, then pick up the phone and call D.S.S. for its main support before going any further. Here, the longer ARP studs have already been installed per their included instructions.



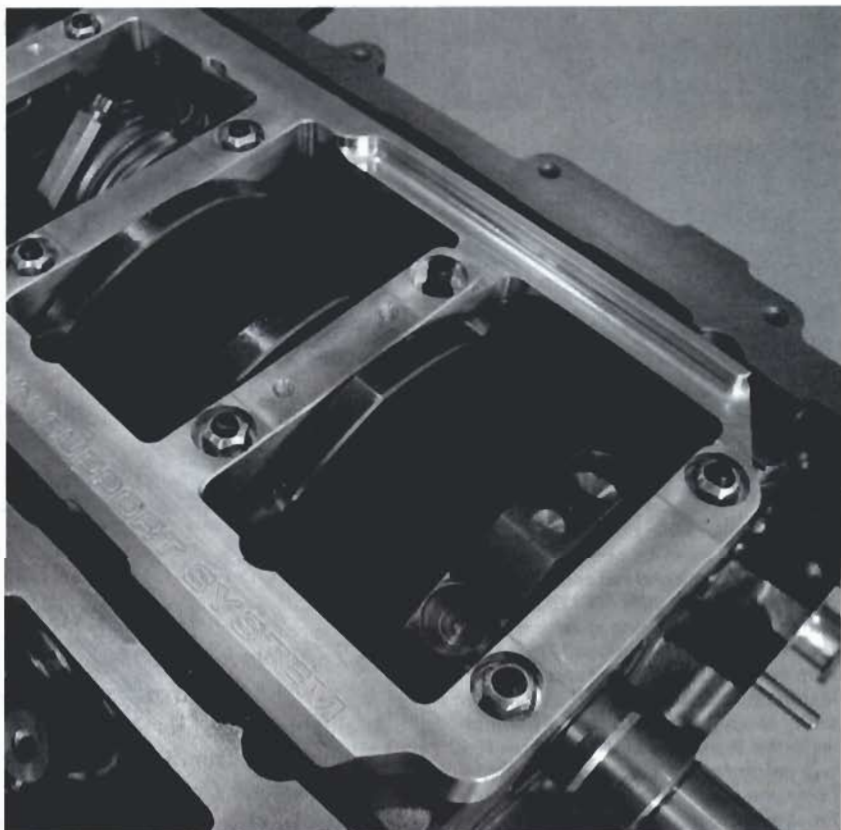
3. The main support simply lies over the longer ARP studs. Check the clearance between the main caps and the support plate—they should not be touching. Clearance of the main support is needed to ensure this.



4. Once you've verified the clearance between the main caps and the support plate is good, you can proceed with installing the retaining hardware. There are seven tall metric nuts and two short metric nuts. The short nuts will be used on the rear main studs.



5. Tom Naegle of D.S.S. grabbed the tools to help us with the installation. Tom tightens the retaining hardware so he can check for any interference with the reciprocating assembly.



6. With the main support plate secured, Tom carefully rotates the crankshaft, checking each crank throw and connecting rod for proper clearance between themselves and the main support. If there's a tight spot, the main support will have to be removed and clearance made. Do not grind on the main support while it is installed (we hope this is common sense).

are constantly field testing their wares via product sponsorships and sometimes even their own race cars.

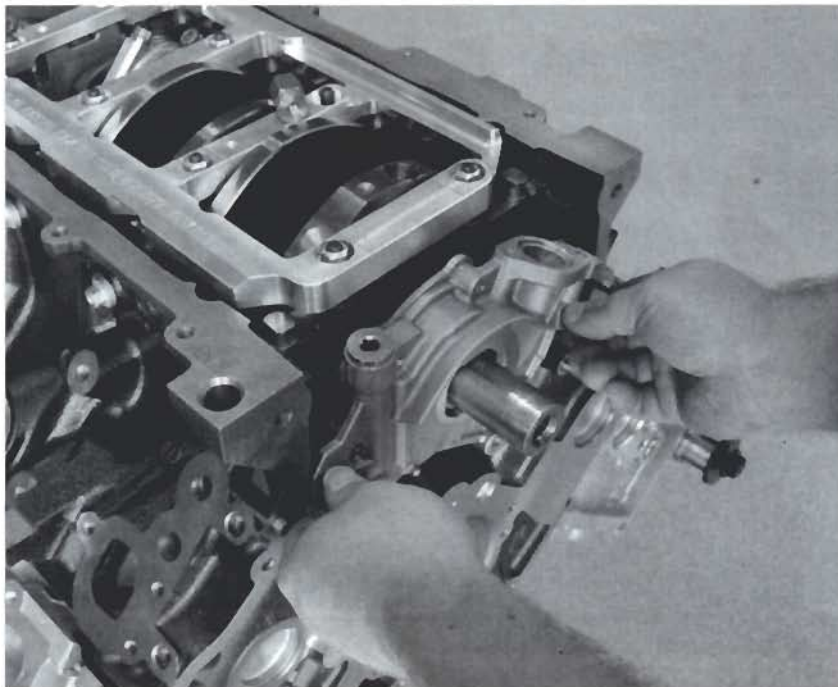
While Ford's modular engine has been around for 12 years now, the push to make big power out of these engines has only been coming on strong in the past couple years. It used to be if you owned a 4.6 Mustang you could stick a blower on it, run the boost at sane levels, and keep a lot of fuel in it, and the engine would (usually) stay together. Then companies started throwing out beefy connecting rods, CNC ported heads, new intakes, big-bore and stroker kits, and the list goes on. It's now not unheard of to talk about 500-800hp modulars, many of which are built for the street!

To make that kind of power takes a strong foundation, and to help the modular block tackle the kind of power output we're talking about, a main bearing cap support system is essential. Tying the main caps together for strength via an aluminum or steel support bolted on top of the main caps by studs and lock nuts has been popular on small-block Fords—especially strokers—for many years. The modular engine family is recently getting the same help. Marrying the main caps reduces the tremendous stress the engine block receives during power output through the block webbing, main caps, and fasteners.

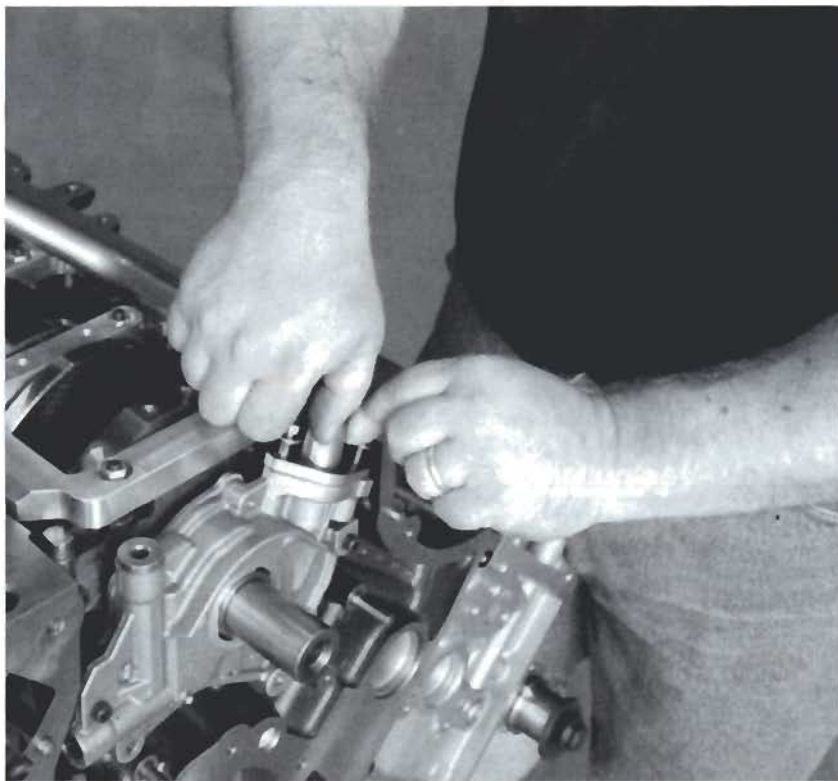


7. Once everything checks out, Tom breaks out the torque wrench and sets the torque on the metric retaining nuts to 30 lb-ft. Notice if you add up the nuts we mentioned earlier, the total comes to nine. We'll show you the 10th retaining nut shortly.

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8. Now that the main support is in place, Tom can continue with the final build-up of this modular for one of his customers. The oil pump is driven off the crankshaft on the moduls and slides over the crank snout before being bolted to the block (similar to a transmission front pump).



9. The pickup tube on a high-volume oil pump requires a bit of modification before making its way back to the crankcase area of the modular. The crank scraper must be removed from the pickup tube. You can cut this scraper off with a cutoff wheel or hacksaw, but be sure not to cut into the pickup tube. Also, don't forget the O-ring between the pickup tube and the oil pump.



10. Remember that 10th retaining nut we mentioned? It's actually the original oil pickup spacer found on the modular from the factory, though it must be made shorter and the end diameter reduced to clear the main support. The included instructions show the proper dimensions, but it isn't rocket science to modify the spacer.



11. Sometimes, the pickup tube bracket will need a light twist to align the hole in it with the pump spacer. Do this gently. Once the mounting bracket and pickup spacer are in alignment, the retaining bolt can be reinstalled as shown.

D.S.S. Competition Products, known for years in its efforts to build a vast array of performance engine products, has developed the MODular Main Support System to help with the stress levels high horsepower modulares are now seeing. CNC-cut from 6061 T6 aluminum on D.S.S.' own in-house CNC machines, the MODular Main Support (PN MSS1030; \$359.95) fits both 4.6 and 5.4 blocks, including those fitted with stroker crank kits. The support is a simple installation during the buildup of a stout modular program. We caught Tom Naegle, owner of D.S.S., on film as he installed one of his new main supports during a recent visit to his shop. Check it out. **5.0**



12. Finally, check for any interference between the oil pump pickup and the main support plate and set the pickup-to-oil-pan clearance. This measurement is often easily accomplished with a machinist square. Simply measure from the pan rail of the block to the bottom of the pickup tube. The gap should be set at $\frac{1}{8}$ to $\frac{3}{16}$ inch. To adjust the gap, either add shims or trim material from the pump spacer. Your last check is to fit the dipstick and tube and the oil pan, determining any clearance issues and tweaking as needed.

SOURCE

D.S.S. COMPETITION PRODUCTS

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