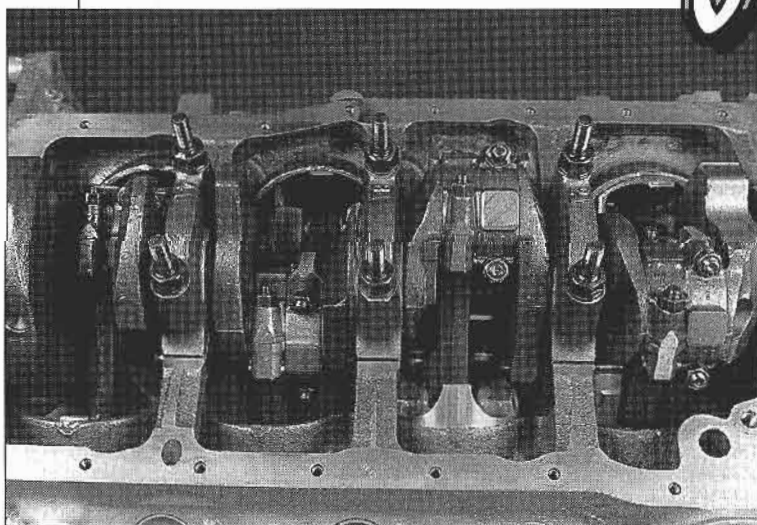
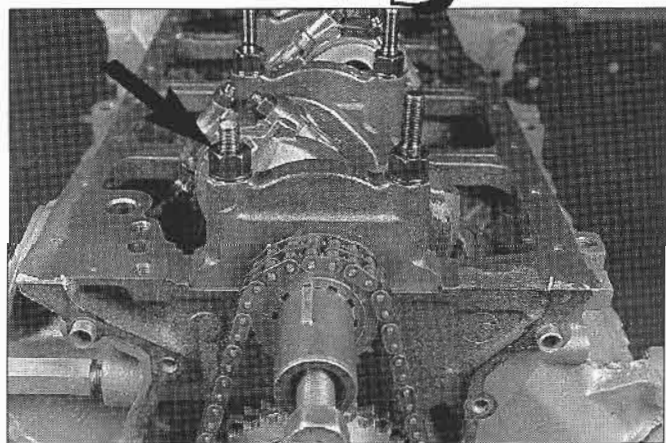


A D.S.S. Main Support System consists of a grid cut from a block of 6061-T8 aluminum bolted to the loose ends of the main bearing studs. The support adds rigidity and virtually eliminates bearing cap walk.

Bound for Glory



Installing a D.S.S. main cap support begins by installing the unique double-shanked ARP main bearing studs. Make sure the bolt holes are deburred and cleaned before threading the hardened steel studs into the main webs.



Install the short stud (ARROW) in the left front bolt hole (closest to the oil pump mounting flange). Install the oil pump and ensure there is clearance between the stud and the pump body. If there is not, thread the stud deeper into the main web. In some cases, it may be necessary to notch the oil pump body to gain adequate clearance. In either case, the stud must not touch the oil pump body. Once clearance is obtained, follow the instructions provided by ARP to the letter, lubricate the threads on the studs with ARP Moly Lube and torque the main cap nuts to 70 lb ft.

D.S.S.' main-cap girdle provides rigidity in big-power small-blocks

text and photography by Earl Davis

A new Main Support System engineered and manufactured by D.S.S. Competition Engines in Lombard, Illinois, is a welcome relief to economy-minded performance engine builders striving for optimum durability. The one-piece, aluminum brace can be used to upgrade a two-bolt 302 or 351W block to nearly equal the strength of a four-bolt-main block. Tying the loose ends of the main bearing cap studs together to create a rectangular cage surrounding the crankshaft is the key.

Force feeding a small-block with nitrous oxide, a supercharger or turbo is efficient and effective, but can be tough on durability. A stock 5.0 blown with 9 lbs of boost will generate 325 horsepower if complemented with accurate fuel metering, and the power levels soar when the latest high-output blowers are used. Impressive nitrous-induced results are even easier to obtain and can be lethal to an unprepared engine. N₂O kits are rated from 50 to 500 horsepower.

Additional stresses generated by these power adders are transferred to the pistons, rods and crankshaft which reduce their built-in durability margin. For example, the reciprocating force acting on the crankshaft can overwhelm the main bearing caps and the bolts that hold them in place. Under extreme loads, the caps will shift from side to side or "walk" as described by a grass-roots machining term.

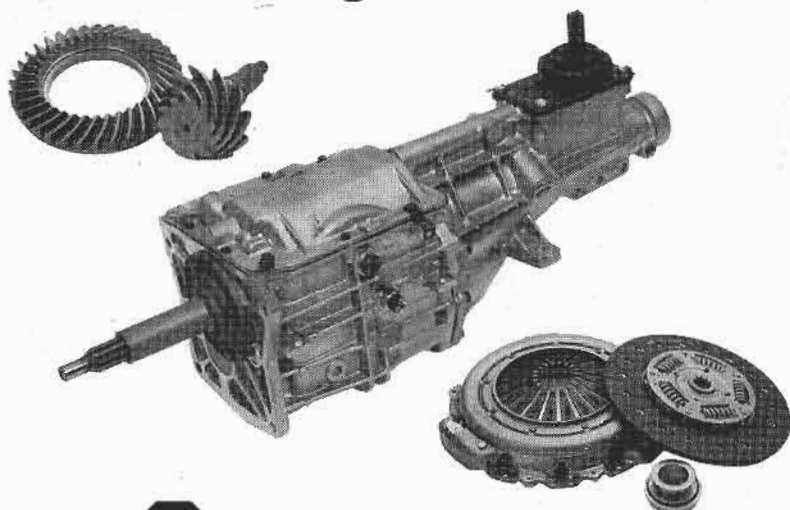
No matter what the name, the movement is transferred to the free end of the main bearing bolts or studs which is the end farthest from the bolt hole in the main web. An exaggerated analogy would be the free end of a radio antenna whipping from side to side while the base remains stable. The movement causes the threads in the main bearing web to weaken and become fatigued. Eventually, the main web cracks through the bolt holes. At that point, partial or total destruction can occur at any second.

Under such extreme loads, the vertical main bearing bolts or studs can not hold the main bearing caps because the clamp load is linear and the stress is angular. Securing each main cap with two extra bolts is a factory fix designed to prevent bearing walk. The best designs angle the bolts away from the centerline of the crankshaft.

So, that's why Ford SVO uses four-bolt main bearing caps. The trouble is, SVO blocks, while excellent parts, have been in short supply lately and are always a bit pricey. The D.S.S. alternative is relatively cost effective at around \$300, and always available. Once bolted to the main bearing caps using a special set of ARP studs, a lightweight D.S.S. Main Support System evenly distributes the reciprocating

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HD 10.5" Kit	\$149
Adj. Clutch Cable Kit	\$ 89
Cable Fork Kit	\$ 39
Flywheel (Cast Iron)	\$ 89
Flywheel (Billet)	\$219

8.8 Axle Parts

3.55/3.73 Ring & Pinion	\$169**
4.10/4.30/4.56 Ring & Pinion	\$179**
Auburn Hi-Po Diff.	\$249
Auburn Pro Diff.	\$319
Spools	\$199
C-Clip Eliminators	\$139
31T Axle Shafts (Small Brg.)	\$229
31T Axle Shafts (Big Brg.)	\$249
Aluminum D/S	\$159

**Includes pinion seal, nut, shims and crush collar.

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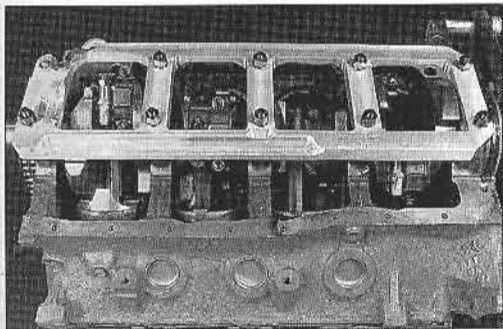
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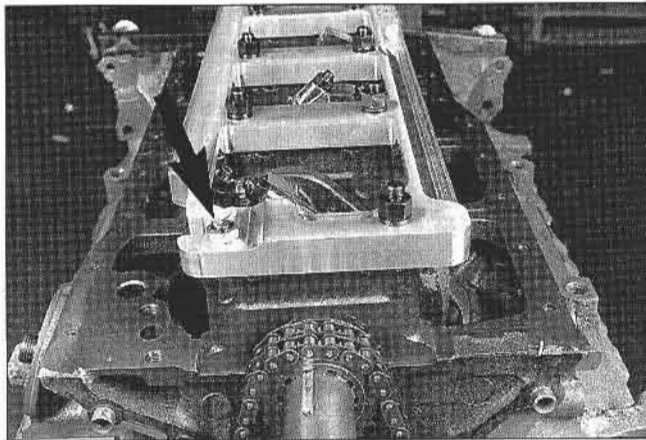
Position the support over the main bearing studs. Install the hardened steel washers and thread the nine tall nuts onto the nine tall studs.

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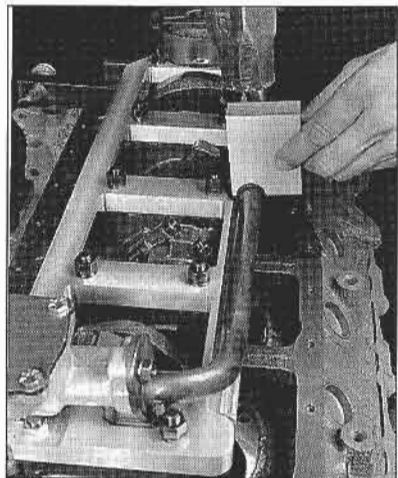
ing load and dampens damaging harmonics, virtually eliminating bearing walk.

Thanks to the never ending development of Ford power, durability of the strongest small-blocks has become a

Thread the shallow nut on the short stud (ARROW) and torque all nuts to 45 lb ft. No washer is required under the shallow nut. Rotate the crankshaft and make sure all the rods clear the support. Mark any and all points of contact, then remove the support before clearancing. Only long stroked crankshafts or aftermarket connecting rods will require additional clearance.



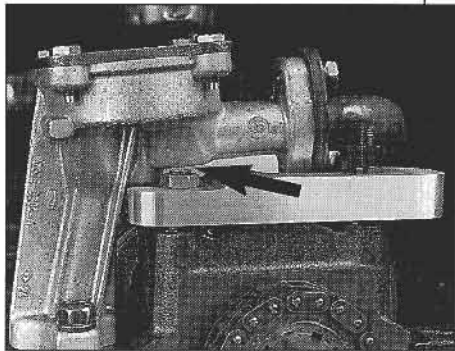
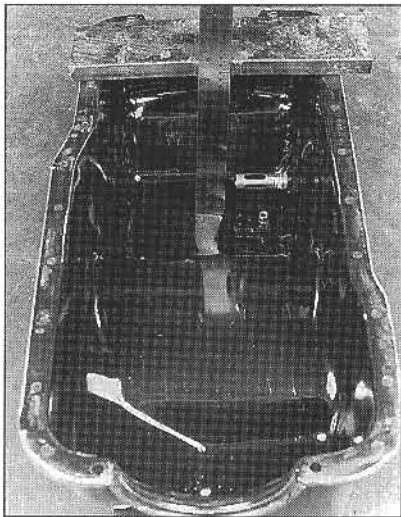
vital issue. Little pleasure is gained from an engine requiring a crank and bearings every other year; the fun of high performance is soon displaced by the gloom of impending engine and



Remove the right side nut and washer from the number three main stud, then install the oil pump and pickup tube. Reinstall the nut and washer, then carefully seat the oil pump pickup tube into the relief slot in the support using the mandrel provided in the kit. The process will bend the pickup tube hold-down strap. Do not use excess force. The pickup tube and strap will bend easily.

Bound for Glory

wallet disaster. The D.S.S. Main Support System can add considerable security to a bracket or all-out race engine using a Ford small-block.



Double check that there is sufficient clearance between the short stud and the pump body (ARROW).

Compare the depth of the oil pan to the height of the pickup tube screen to ensure there is at least 1/4 inch, but not more than 1/2-inch clearance. Rotate the crankshaft to make sure nothing contacts the support. Finally, check the dipstick routing before installing the oil pan

Source:

D.S.S. Competition Engines
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Lombard, IL 60148
(708) 268-1630

SF