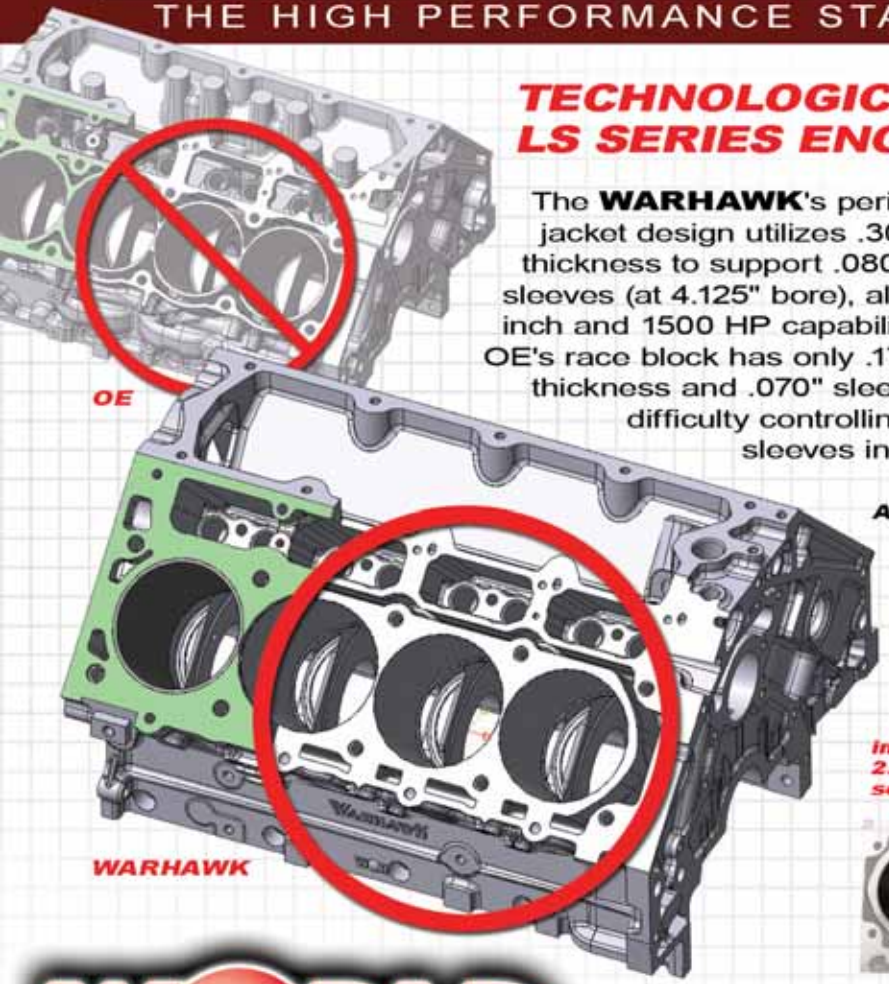
TECHNICAL BULLETIN Water Jacket File #WHTB100208

WARHAWK LS7X

THE HIGH PERFORMANCE STANDARD IN LS ENGINE BLOCKS

TECHNOLOGICALLY, THE MOST ADVANCED LS SERIES ENGINE BLOCK AVAILABLE TODAY!



The **WARHAWK**'s perimeter-based water jacket design utilizes .300" plus aluminum wall thickness to support .080" thick ductile iron sleeves (at 4.125" bore), allowing for 480+ cubic inch and 1500 HP capabilities. In comparison, the OE's race block has only .170" aluminum wall thickness and .070" sleeves that can have difficulty controlling the ballooning of the sleeves in hi-boost applications.

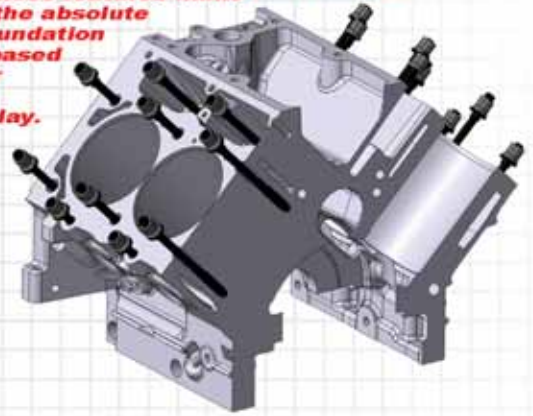
A. ***WARHAWK's perimeter-based water jackets provide thicker casting areas around the cylinder bores to prevent ballooning compared to the OEs.***

B. ***6 head bolts are located in solid material measuring 2.75" thick forming a virtual solid.***

Six 7/16" head studs per cylinder will clamp down on head gaskets to manage the ultra-high cylinder pressures of nitrous injection or forced induction.

In addition, the stud holes are counterbored to eliminate cylinder bore distortion, perfect for high combustion pressures.

C. ***Six head bolts per cylinder ensure maximum sealing under the most extreme conditions, as well as the counterbore location, deep into the deck were all made possible by the water jacket design. Combined, these features make WARHAWK the absolute strongest foundation for any LS- based power adder application available today.***



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WARHAWK

TECHNICAL BULLETIN Oiling System File #WHTB102208

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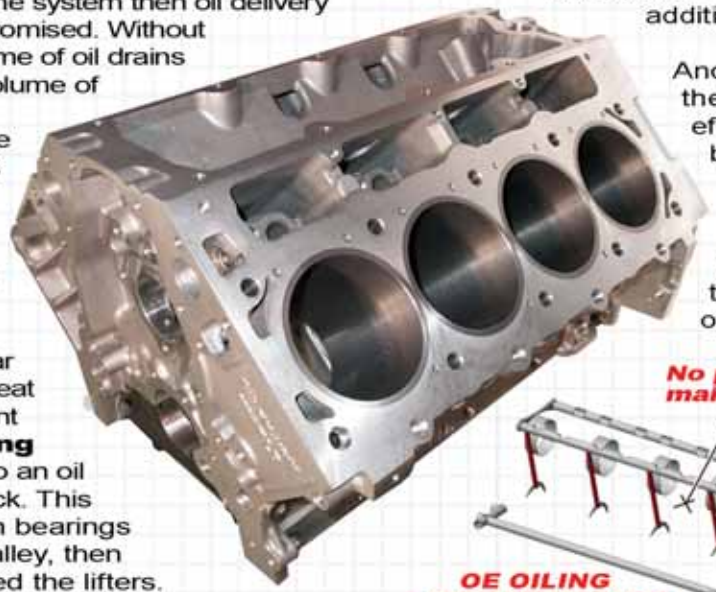
AN INSIDE LOOK AT THE LS OILING SYSTEM...

The inherent problem with previous designs is that too much oil is directed to the top end components (lifters, rocker arms and pushrods). If restrictors are placed in the system then oil delivery to the rod and main bearings is compromised. Without restrictors in place a tremendous volume of oil drains down into the crankcase. This large volume of oil produces a parasitic drag on the crankshaft and a great deal of windage that robs horsepower. One company's solution was to add a dry sump oiling system, a very expensive fix that involves custom fabrication which creates a packaging problem in some vehicles.

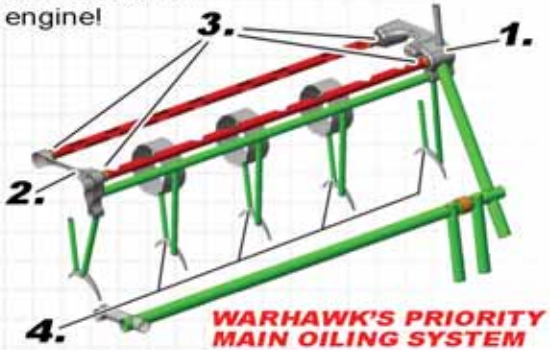
The **WARHAWK**'s oiling system is far superior to any of its competition. A great deal of research and development went into its design. A **priority main oiling system** is employed that directs oil to an oil reservoir located at the rear of the block. This reservoir **(1)** feeds the rod and main bearings first, thru their own designated oil galley, then upward to the two oil galleys that feed the lifters.



These three oil galleys travel forward to another oil reservoir **(2)** located at the front of the block. These two reservoirs provide a perfect location to insert four restrictor plugs **(3)** to decrease the oil to the top end, and have no effect on the delivery of oil to the crankshaft. This feature increases horsepower with no additional cost to the consumer.

Another feature of the Warhawk oiling system is that the cam tunnel can be enlarged to 60mm with no ill effects on oiling. This is possible because the cam bearings are fed from below by small reservoirs **(4)** located in the main bearing saddles. Try this with earlier designs that are fed from small holes drilled through the cam tunnel into the lifter galley and you will completely stop oil flow. This results in the immediate destruction of the entire engine!

OE OILING SYSTEM DESIGN



WARHAWK'S PRIORITY MAIN OILING SYSTEM

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TECHNICAL BULLETIN Crankcase File #WHTB102208

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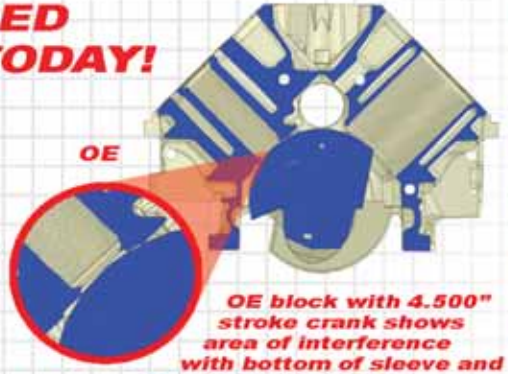
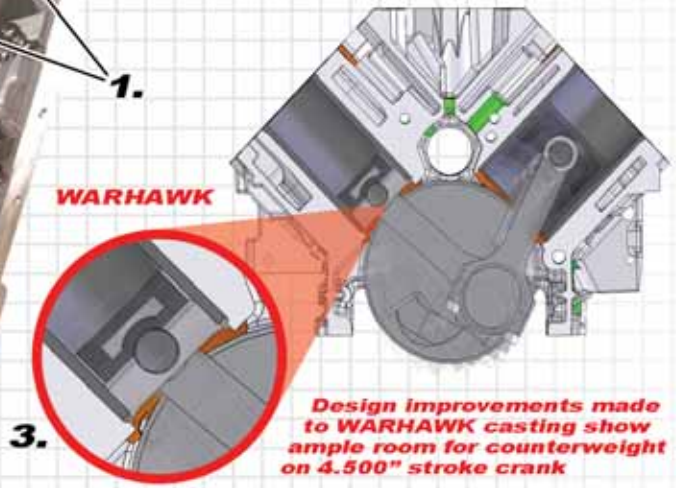
WORLD PRODUCTS REDEFINES THE LS SERIES ENGINE

When the LS series engine was first released it was widely acclaimed for its innovative design and advanced engineering. **WORLD PRODUCTS** engineers took a close look at the new design and immediately noticed several key areas that needed changes and improvements.

The first area that needed improvement was controlling the oil windage, a common concern among "Y" block designs. WORLD's solution was to increase the area inside the block by relocating the strengthening ribs and the oil galleys to the outer most areas of the casting's walls. This also provided more clearance for the counterweights of the crankshaft **(1)**. The second area they addressed was to increase the size of the windows in the bulkheads **(2)**. Along with newfound clearance WORLD engineers found by shortening the cylinder sleeves .125" the block could now accommodate a 4.500" stroke crank. This change also had no effect on shorter stroke combinations due to less piston travel. Now a 481 cubic inch displacement capability was attainable **(3)**, the largest cubic inch for an LS series block available today!



OE block with 4.500" stroke crank shows area of interference with bottom of sleeve and crank counterweight



Design improvements made to WARHAWK casting show ample room for counterweight on 4.500" stroke crank

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