

SMALL BLOCK PARTS INTERCHANGEABILITY

by Lee Wilmot & Don Wilmot

We receive numerous calls at our shop from Mustang enthusiasts asking questions about the interchangeability of Ford small block parts. In this multi-part article we will discuss some of the most common engine parts swaps, their benefits and feasibility. As in our last engine article, we will try to keep it simple and will again remind you that if you have any doubt as to "what goes where" or "if it will fit" be sure to consult a reputable machine shop or speed shop.

The Ford small blocks can be divided into two groups; the Windsors and the Cleveland, with the Boss engines as part of the Cleveland group. Since we are dealing with Mustang engines, we will discuss only the following designs: 260W, 289W, 302W, 351W, 302 Boss, 351C and the 351 Boss.

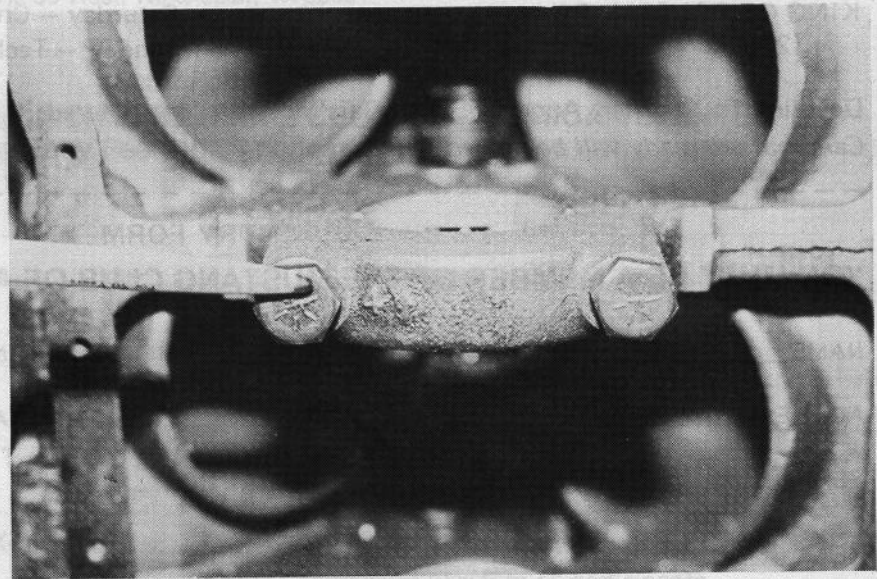
We are furnishing several charts which will make the different parts that will and will not interchange easy to understand. In this first article, we will talk about the connecting rods, cylinder blocks and crankshafts.

The first small block for the Mustang was the 260 cubic inch engine. This was a very limited production engine for the Mustang and left a lot to be desired as far as horsepower and performance. And, after all, performance and horsepower are the two primary reasons for interchanging parts. For the most part, you do not want any 260 parts on any engine other than a 260. Most of these parts are smaller and weaker than any later engine parts. The block cannot be bored to accommodate the 289 pistons. The crank and rods are the same as a 289. All of these blocks carry a 5 bolt bellhousing pattern. This should be enough said about the 260. It served its purpose but not as a performance engine.

The most common parts interchanged are the 289 parts with the Boss 302 parts. The Boss 302 was equipped with a steel crankshaft versus

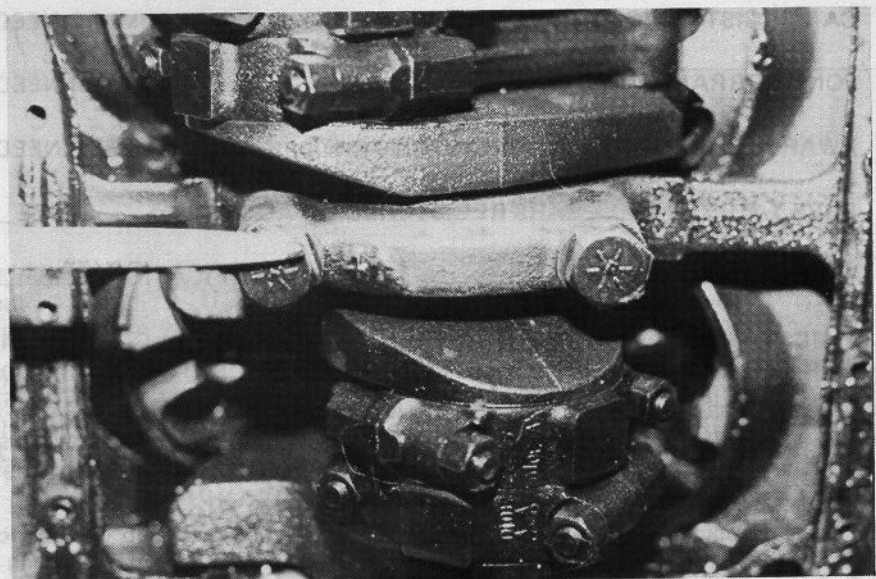
an iron crank in the Windsors. The block was 4 bolt main set-up as compared to the 2 bolt main caps of the Windsors. Most people believe that the 289 hi-po had 4 bolt main caps. This

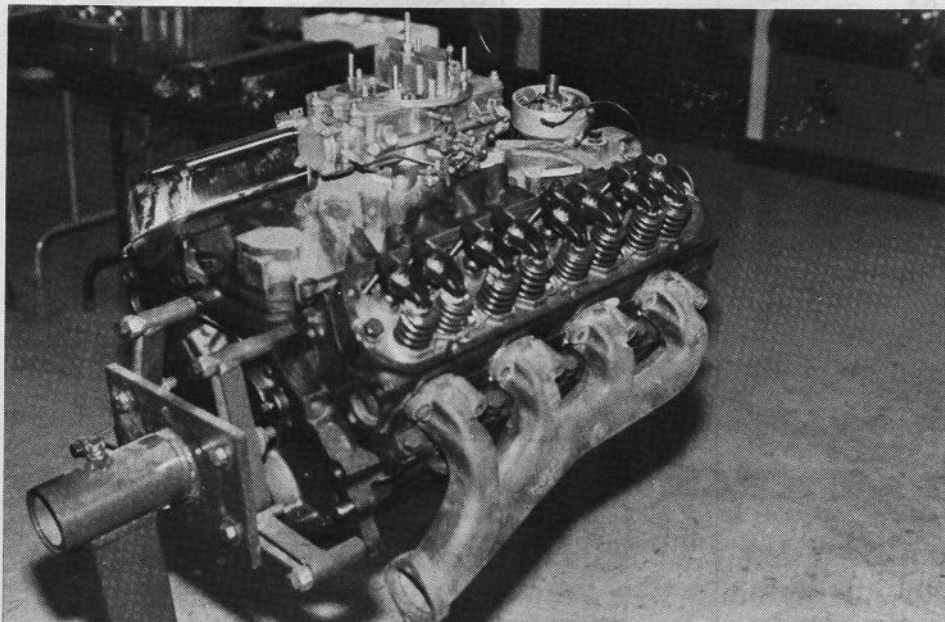
is not true. The 289 hi-po did have larger main caps, but they were only 2 bolt caps. These same hi-po main caps will fit on the 289 standard engine and the 302 Windsor engine.



High performance main cap.

Standard main cap.





Typical 289 hi-po.

The 260, 289 and Boss 302 crankshaft will interchange. The 302 Windsor crank will fit only the 302 Windsor because of the different stroke. The 289 block and the 302 Windsor block are identical other than the casting numbers. Boss 302 blocks have a completely different casting with screw-in freeze plugs instead of press-in plugs, but will swap with the 289 and 302 Windsor.

351 Windsor, 351 Cleveland and Boss 351 blocks, cranks and rods will not interchange with any of the other Windsor engines.

The most common swap is utilizing the 289 hi-po rod or Boss 302 rod in place of the 289 standard rod. All three rods are the same length and will bolt into the 289 or 289 hi-po. The difference is that the 289 hi-po and the Boss 302 rods have more metal in the large end of the rod to accommodate larger rod bolts and larger nuts. This swap is a must for any high rpm 289 engine. But remember, the 302 Windsor rod will not interchange with anything, nor will any other rod fit into the 302 Windsor.

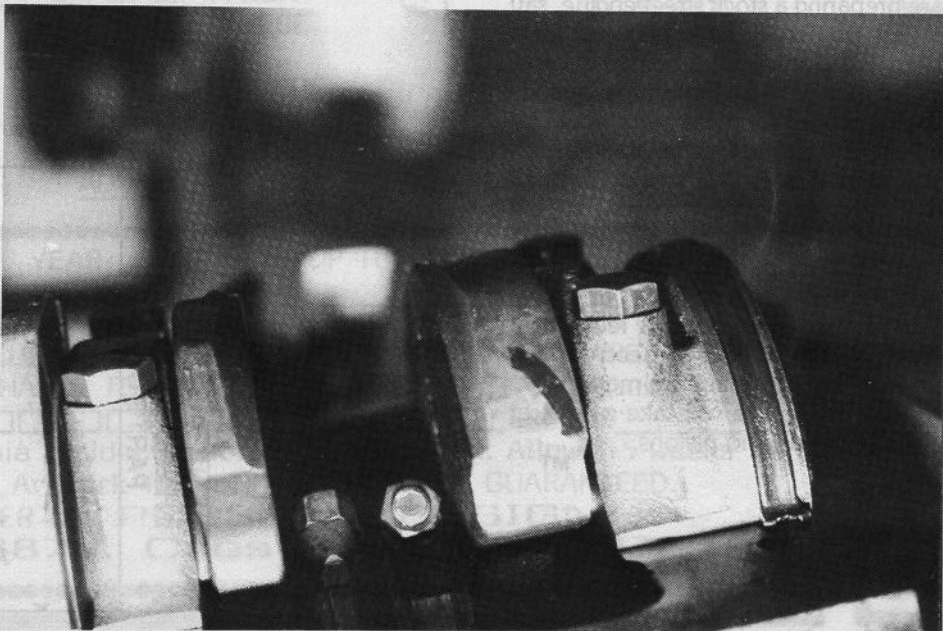
The Boss 302 rod has a "football" shaped head on the bolt while the 289 hi-po rod has a square head. For the most part, the Boss rod is stronger and more desirable than the 289 hi-po rod.

When purchasing any used set of rods, always figure on having to re-condition the rods before installation. The rods should be checked for straightness and re-conditioned by a machine shop. If you have other choices in rods, stay away from rods that are discolored or blue on the large or small end where the bearing and piston pin run. If this has happened to the rod, it means it has either spun a bearing or has been run low on oil, either of which could cause serious damage to the rod.

Small block Ford engines, including Cleavelands, and Bosses, are low torque, high rpm engines. The lack of torque is made up by making the engines tum more rpm, thus increasing the horsepower. In order for the engine to stay together at high rpm, stronger parts must be used, mainly rods, in the case of the Windsor engines. This is the main reason for interchanging parts.

For street use and Sunday drag racing, most Cleveland engines that are prepared and assembled properly should be relatively reliable and should not need any parts interchanged. However, to make a standard 289 reliable, attention should be given to the rods. To be 100% safe, hi-po main caps or block should be used. The 289 hi-po

Shiny spot on 289 hi-po crankshaft is a hardness test.



should be left alone. All of its parts are more than adequate, strengthwise.

The biggest drawback for the 302 Windsor is that there are no performance rods or cranks that are readily available to insure durability. No other Ford family parts interchange, other than the block. As for the Boss 302, the rods, mains, crank and block are more than strong enough.

The 351 Windsor presents the same problems as the 302 Windsor. Nothing interchanges, though after-market performance parts can be purchased. The 351-Cleveland and the Boss 351 are plenty strong and very trouble-free.

Crankshaft weakness has never been a real problem for any of the small block engines. Most failures are due to rod related problems, oiling problems or connecting rod bolts. Whenever an engine is being rebuilt or major moving parts are replaced or interchanged, the engine should be re-balanced. This is very critical in small block engines due to the high rpm capabilities. A modified small block has the ability to turn between 8,000 and 10,000 rpm. This, of course, would be a fully prepared race engine.

Before interchanging any parts, you must decide whether it is necessary and will the benefit outweigh the cost. If you are preparing a stock street engine, say a 289, you really have no need for a Boss 302 crankshaft, 4 bolt main caps, larger rods or hi-po main caps. Spending the money for these parts would be a complete waste. On the other hand, if you have a Boss 302 you don't need any other kind of parts in your engine because of the strength already built into the Boss parts. The prices being paid for the hi-po and Boss parts have skyrocketed over the past few years. Make sure you have a need for the parts before dropping the money.

Next month we will take a look at cylinder heads and pistons.

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SMALL BLOCK FORD INTERCHANGEABLE PARTS CHART	260	289	289 Hi-Po	302W	Boss 302	351W	Boss 351	351C
RODS	289 Hi-Po Boss 302	260 289 Hi-Po Boss 302	260 289 Boss 302		260 289 289 Hi-Po			
MAIN CAPS	289 289 Hi-Po 302W	260 289 Hi-Po 302W	260 289 302W		260 289 298 Hi-Po			
BLOCK		289 Hi-Po 302W Boss 302	289 302W Boss 302	289 289 Hi-Po Boss 302			351C	Boss 351
CRANKSHAFT	289 289 Hi-Po Boss 302	260 289 Hi-Po Boss 302	260 289 Boss 302		260 289 289 Hi-Po		351C	Boss 351