

BOSS 289

by David Suesz

One of the few weaknesses of the 260/289, common to both the standard engines and the 289 High Performance is the alignment system on the flat tappet rocker arms. The tips of the rockers are held in place indirectly, by the pushrods riding in slotted openings where they pass through the cylinder head. This system was used on all 260 engines, on all 289 engines through mid 1966 (until Change Level 11), and on all 289 High Performance engines. The problem is the rocker arm, held square only by the accuracy of the valve tip, can wander to the “lower” side, wearing it down even more. This excess force on a very small area can wear through the case hardening on the rocker arm, rounding the valve tip, allowing the rocker to roll sideways on the ball fulcrum. This will cause the rocker to cut into the stud, contact the spring retainer, cause failure of the pushrod, or even pop the retainer off the valve, resulting in major engine damage.



Ford Motor Company’s answer to this was to change to the “rail” rockers, which were used from mid-1966 through 1978. This required “taller” valve tips, which in return called for “taller” valve covers

Ford’s second improvement on the smallblock valve train came in 1969, on the BOSS 302. The cast rocker arm, with “ball” fulcrum, was replaced with a stamped steel rocker, and was mounted on a fulcrum forming a partially cylindrical shape. This made the rocker self-aligning, forcing it to stay square in relation to the valve tip, and greatly reduced friction by spreading the rocker arm fulcrum load over a much larger area.



Our objective, for this 289 High Performance subject engine, was to upgrade the valve train, not just replace it, but with a catch: The stock chrome “low profile” 289 High Performance valve covers had to be retained, and the job should be done with, if possible, stock Ford or equivalent replacement parts. By mixing parts from several engines spanning two decades, we succeeded.

First, we eliminated the idea of using “rail” rockers, which would require replacing the valves, springs, retainers, rocker assemblies, and probably the valve covers.

Next we looked at the BOSS 302. There were two problems: The BOSS rocker was a different ratio (1.7:1), and the only fulcrum available was intended for the heavier BOSS 7/16” stud, which is great, but the 289 has a 3/8” (upper) stud. Ford used this same rocker on the 351C engine, but with a pedestal fulcrum. This pedestal fulcrum was also used on the 1979 and later 302/5.0 engines, but with a 1.6:1 rocker, as on the earlier 260/289.

Finally, we looked at the 5.0. This engine had the same style rocker arm fulcrum as the BOSS 302, and 351C, but the rocker arm was the same ratio as the 289, 1.6:1.

Now we had a match: The BOSS 302 stud and fulcrum, and the 5.0 rocker arm.

If you have a 260, 289 2V, or 289 4V, you have 3/8” press-in studs. If your valves are in good condition, you can avoid altering your heads by drilling out a set of pedestal fulcrums to 3/8”. The pedestals will need to be machined (or cut) off as well. If you prefer to convert to 7/16” BOSS studs, you will need to have the heads machined to accept screw-in studs. This is a very common conversion and any competent machine shop can provide it at a nominal cost. 289 HP owners already have these, of course. If your in-head pushrod guides are excessively worn, you will want to install pushrod guide plates, as well.

Naturally, if you have the heads out for work, they should be inspected for excessive wear of the valves, seats, and guides. If you need these, do it now. We recommend cast iron guides.

Some of these parts may still be available from Ford. Otherwise, you will need to source aftermarket items, which you might do anyway to reduce cost.



5.0 Rocker Arm	E0AZ-6564-B	G08499	(16)
BOSS 302 Rocker Stud	C9ZZ-6A527-A	G08861	(16)*
BOSS 302 Rocker Nut	C8AZ-6A529-A	G08497	(16)*
BOSS 302 Rocker Jam Nut	C9ZZ-6A529-B		(16)*
BOSS 302 Rocker Fulcrum**	D0OZ-6A528-C		(16)*

*If you plan to use existing press-in studs, do not use these items, and modify a set of 5.0 Rocker Arm Fulcrum E5TZ-6A588-A (16)

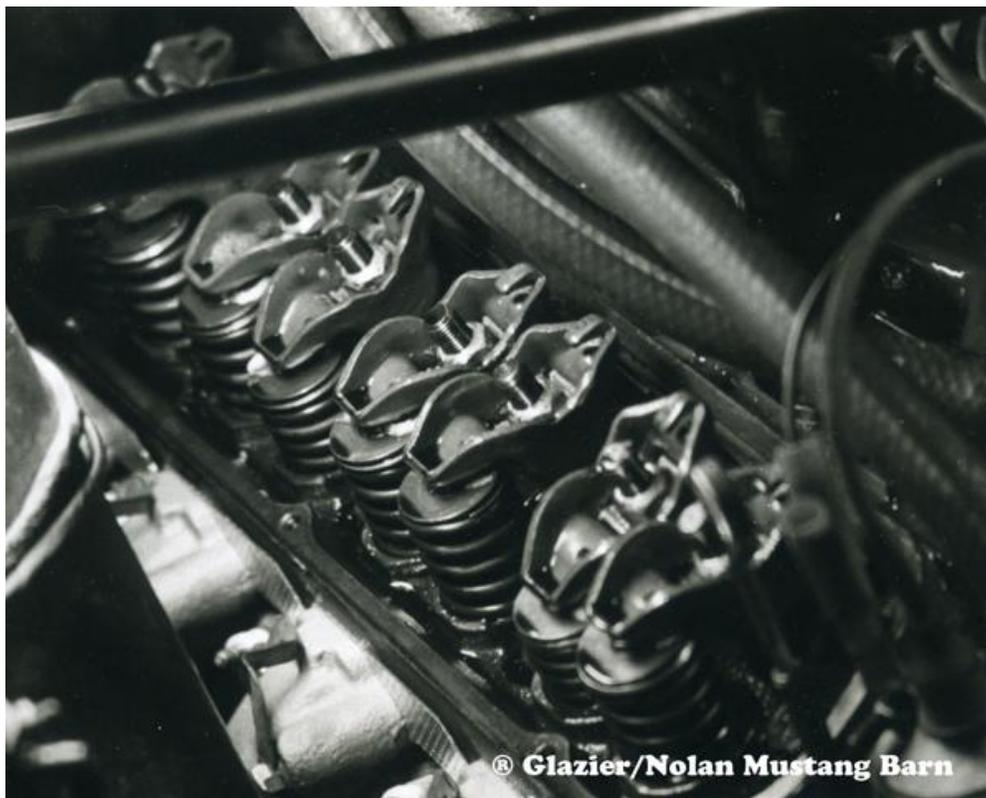
** The D0OZ-6A528-C fulcrum, OE or aftermarket equivalent, can be very difficult to find. A simple alternative is to drill the standard pedestal fulcrum to 3/8" or 7/16" as required, and cut off the square pedestal.

The C9ZZ-6A529-B jam nuts are not really necessary, but are a nice performance touch, and authentic to the BOSS 302.



If you have removed the heads, you will also need intake, valve cover, and head gaskets.

Installation is simple- the same procedures you would use for stock 260/289 parts. Even valve adjustment is the same.



We recommend when you have the heads worked on, to have the exhaust ports of 260, 289, and 302 stock iron heads port-matched to your exhaust. It's an inexpensive

upgrade, and the resulting improvement usually feels like a cam upgrade, and typically the newer they are, the more they need this, and especially heads with smog pump provisions.