



**FORD PERFORMANCE
PARTS**

TECHNICAL REFERENCE

2015-16 5.0L Coyote Improvements



For Technical assistance please call the Ford Performance Parts Techline at 800-367-3788



The 2015 model year marks the first major design changes for the 5.0L Coyote engine. To help distinguish between the “old and new” engines the Gen 1 and Gen 2 designations will be used

- **GEN 1** – 2011-2014 MY Mustang GT
- **GEN 2** – 2015- MY Mustang GT

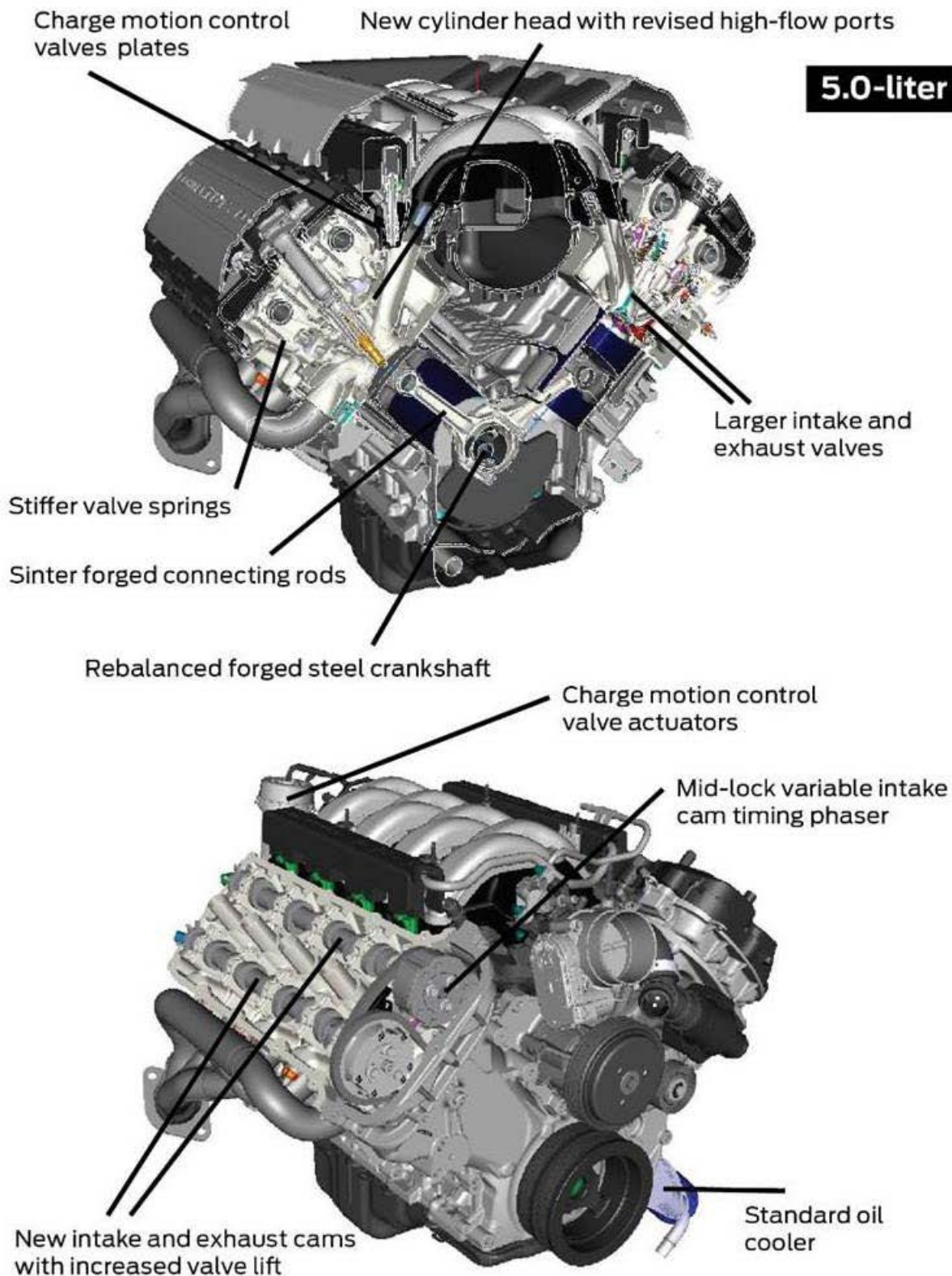
The improvements to 2015 Coyote (or Gen 2 Coyote) focus on allowing it to breathe better. The improvements, many of which are derived from the lessons learned in developing the special-edition 2012-13 Mustang Boss 302, allow for better breathing, especially at higher engine speeds.

Gen 2 Coyote improvements:

- Larger intake valves
- Larger exhaust valves
- Revised intake camshafts
- Revised exhaust camshafts
- Stiffer valve springs to ensure that the valves close completely at high rpm
- New cylinder-head casting, including revised ports that provide a straighter path to the valves for less-restrictive intake and exhaust flow and combustion chamber modifications to accommodate larger valves
- Sinter forged connecting rods that were used on the Boss 302 engine that are more durable for high-rpm operation
- Redesigned piston tops with deeper cutouts to clear the new larger valves
- Rebalanced forged crankshaft that supports higher-rpm operation
- A new intake manifold features charge motion control valves to partially close off port flow at lower engine speeds. This increases the air charge tumble and swirl for improved air-fuel mixing, resulting in better fuel economy, idle stability, and lower emissions.
- On the intake side, variable camshaft timing now has mid-lock phasers allowing better control of the valve timing over a broader range of engine.



Generation 2 Coyote





Cylinder Heads: The 2015-16 Coyote (Gen 2) cylinder heads have improved ports and larger valves – and flow as good as the 2012-2013 Boss 302 CNC ported heads. 2

The Gen 2 heads can be used on the Gen 1 Coyote block as long as the Gen 2 Head Gasket (included in PN M-6067-A50) is used due to the oil feed hole

- Gen 2 Cylinder Head PN – Left Side - M-6050-M50A
- Gen 2 Cylinder Head PN – Right Side – M-6049-M50A
- Head Gasket & Head Bolt Kit PN - M-6067-M50
- Gen 1 camshafts can be used in the Gen 2 heads on a Gen 1 block with Gen 1 timing chains and phasers

Camshafts: The Gen 2 camshafts are 13mm lift on the intake and exhaust, which is 1mm of added lift vs. the Gen 1 Coyote.

Gen 2 camshafts must be used with the Gen 2 chain-drive and phasers

Chain-drive: The Gen 2 phasers, primary chain, and crank-sprocket are a matched set and cannot be interchanged with Gen 1 chain-drive. Also, VCT bolts are new for Gen 2 chain-drive due to bolt clearance to VCT solenoids.

A calibration modification will be needed due to Gen 2 mid-lock phases

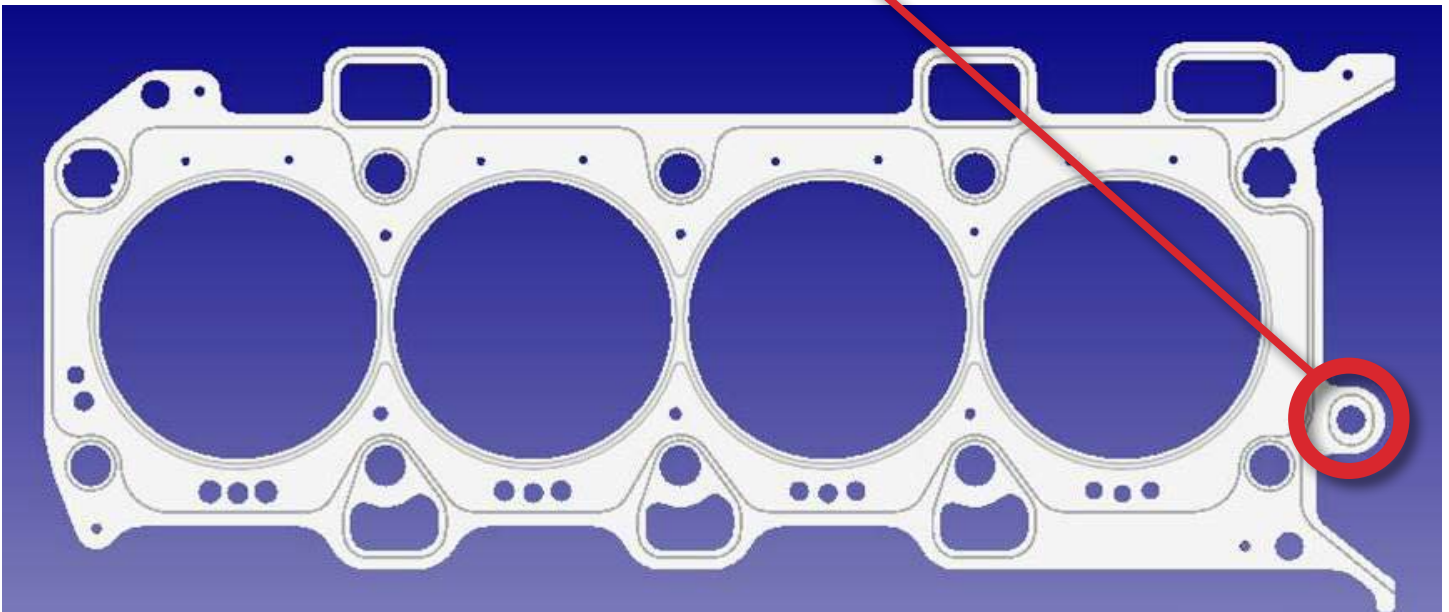
- Chain Drive Kit PN - M-6004-A5015

Valve Springs

GEN 2 valve springs are higher pressure than the standard Gen 1 spring - and are the same valve spring as used on the 2012-13 Boss 302 Coyote engines

- BOSS 302R Valve Springs PN – M-6513-M50BR

Gen 2 Head Gasket – unrestricted oil passage for VCT operation





Intake manifold: The Gen 2 intake manifold will fit Gen 1 engine, however no appreciable performance gains have been found

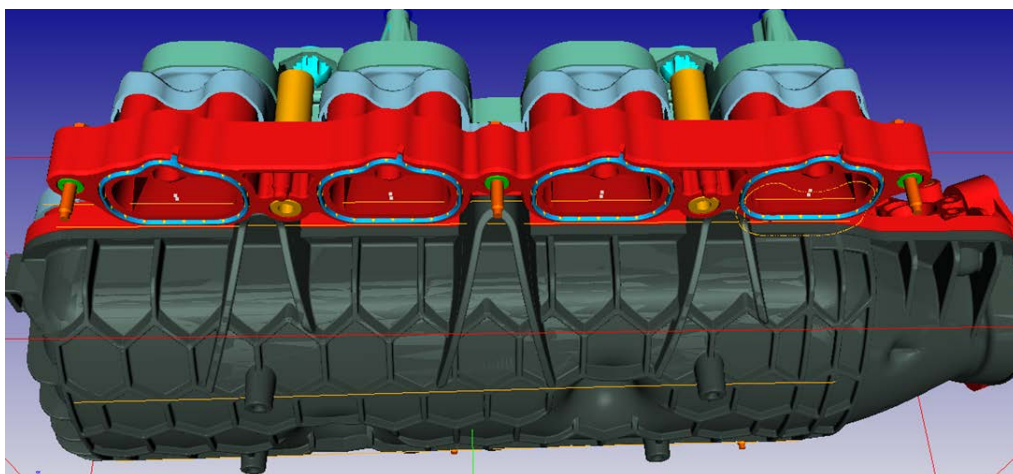
- The Gen 2 intake now has CMCV (charge motion control valves) for emissions and low speed idle quality

- Gen 1 intake manifolds can be used on the Gen 2 heads/engine with minor modifications to the manifold shown in *Figure 2*

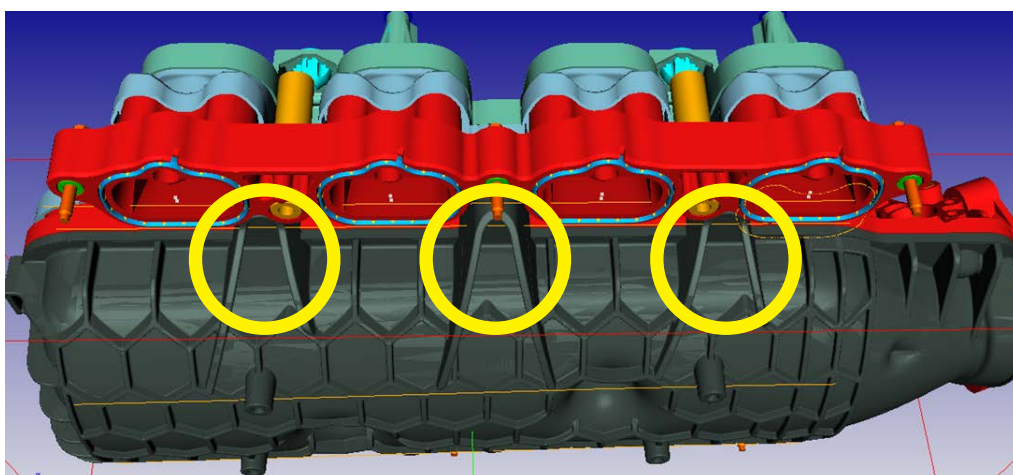
Figure 2



Gen 1 Intake interferes with Gen 2 head in these locations on each side. These can be removed.



Gen 2 Intake Manifold



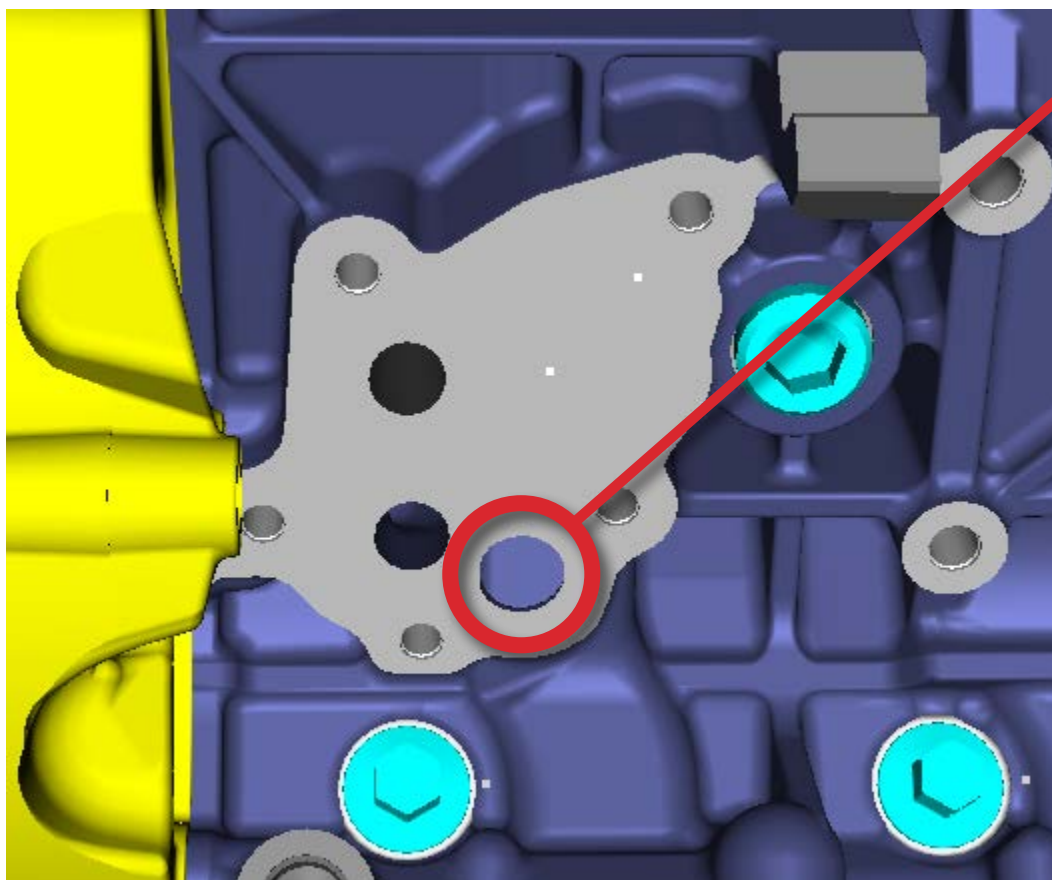
Gen 1 intake manifold ribbing will contact the Gen 2 cylinder head in the areas circled



Cylinder block: Gen 2 block has an added oil return and requires the matching Gen 2 OFA (oil filter adaptor).

Gen 2 block can be used for builds with Gen 1 or 2 components as long as the Gen 2 OFA is used.

- Gen 2 block PN - M-6010-M504VB
- Gen 2 block uses 11MM head bolts



Added return passage for diverted oil from oil filter adaptor

**5.0L Coyote General Engine Specifications**

| | Gen 1 5.0L Coyote | Gen 2 5.0L Coyote |
|-----------------------------------|---------------------------|-------------------------------|
| Bore Diameter (mm) | 92.2 | 92.2 |
| Stroke (mm) | 92.7 | 92.7 |
| Firing Order | 1 5 4 8 6 3 7 2 | 1 5 4 8 6 3 7 2 |
| Compression Ratio | 11:1 | 11:1 |
| Peak Torque (Lb-ft) | 390 @ 4250rpm | 400 @ 4250rpm |
| Peak Power (Hp) | 420 @ 6500rpm | 435 @ 6500rpm |
| Maximum RPM | 7,000 | 7,000 |
| Engine Weight (Lb) | 445 lbs. | 445 lbs. |
| Crankshaft | Forged cross-plane | Forged cross-plane |
| Pistons | Cast | Cast |
| Piston Dome CC Volume | 3.472cc | 4.451cc (deeper valve relief) |
| Connecting Rod Weight (g) | 621 | 621 |
| Connecting Rod Length (mm) | 150.7 | 150.7 |
| Cylinder Heads | Al319 material | Al319 material |
| Valve Material (int/exh) | Solid Chrome/Solid Chrome | Solid Chrome/Solid Chrome |
| Valve Diameter (mm) | Int - 37.0 Exh - 31.0 | Int - 37.3 Exh - 31.8 |
| Valve Lift (mm) | Int - 12.0 Exh - 12.0 | Int - 13.0 Exh - 13.0 |
| Valve Spring Load (closed/open N) | 265/650 | 300/760 |
| VCT phaser | | mid-lock intake |
| Intake Manifold | non-CMCV | added CMCV |
| Throttle Body Diameter (mm) | 80 | 80 |



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