



**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.

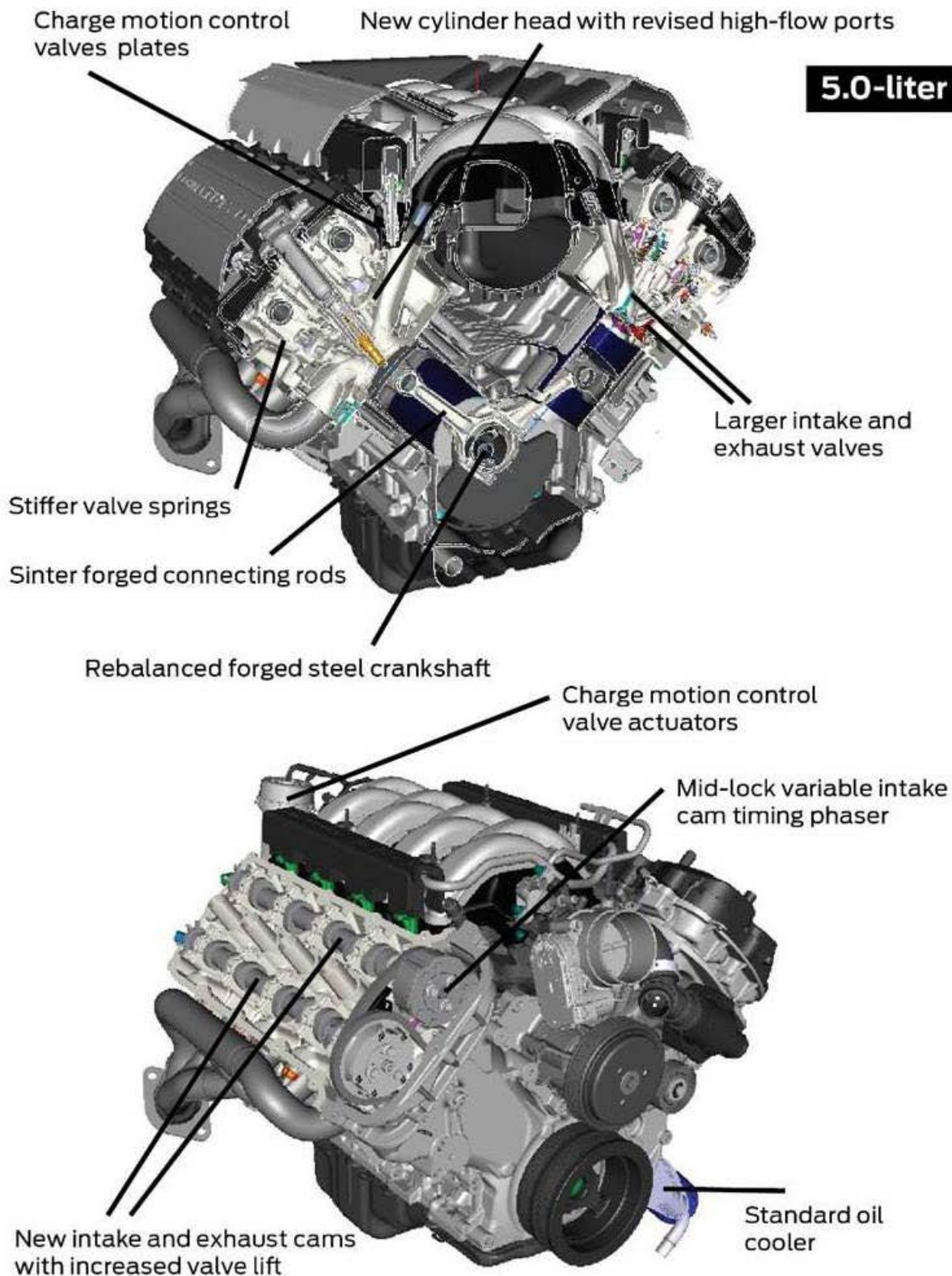
Gen 2 Coyote improvements:

- 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





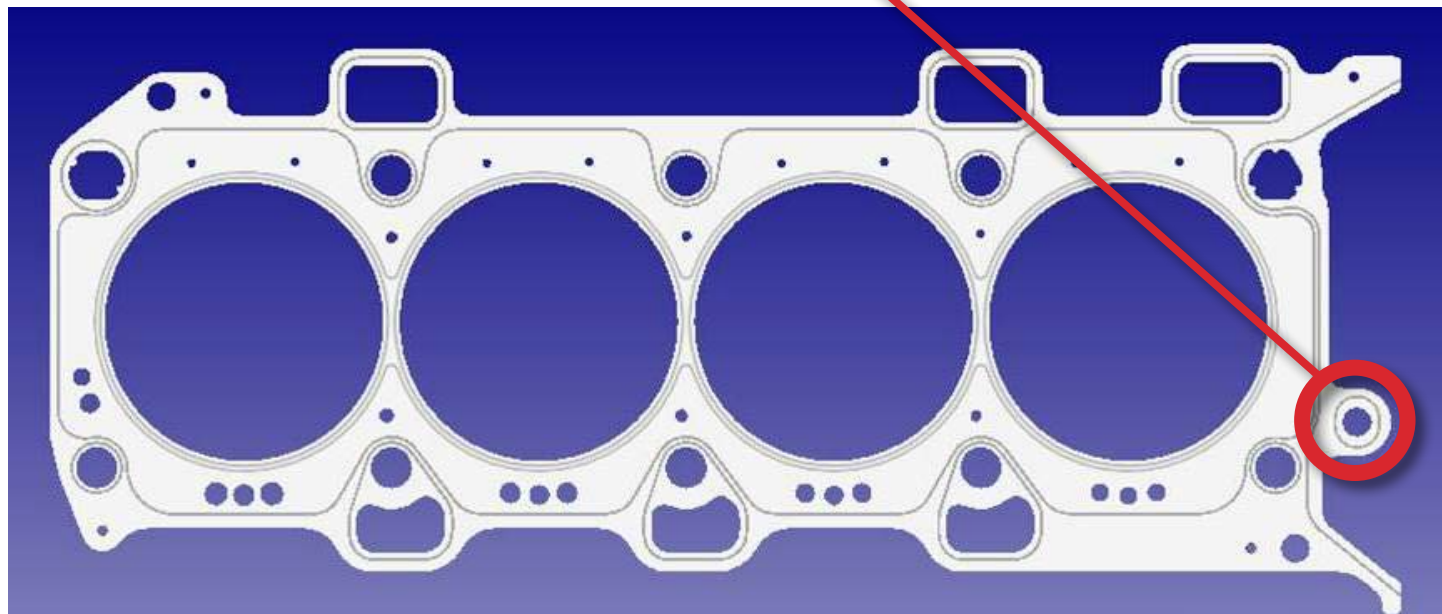
Cylinder Heads: The 2015-16 Coyote (Gen 2) cylinder heads have improved ports and larger valves – and flow as good as the 2012-2013 Boss 302 CNC ported heads. 2

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 Head Gasket – unrestricted oil passage for VCT operation



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



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

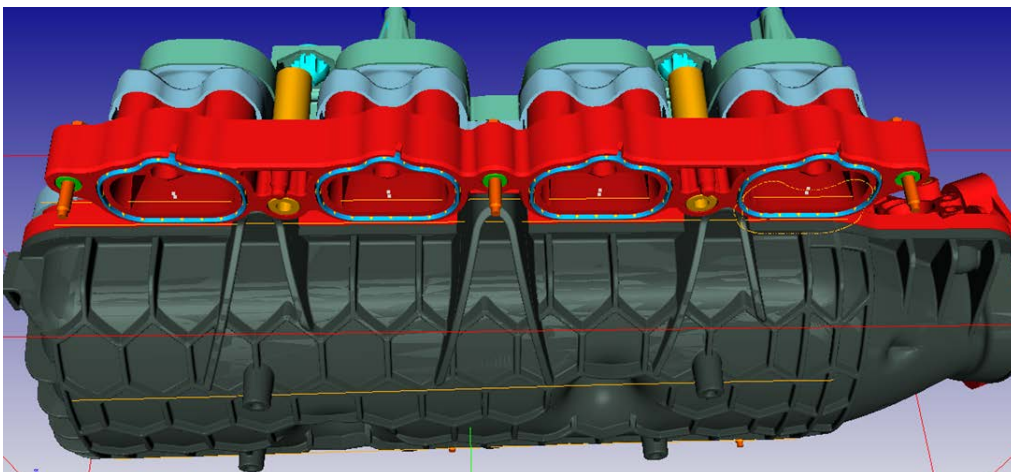
- The Gen 2 intake now has CMCV (charge motion control valves) for emissions and low speed idle quality

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

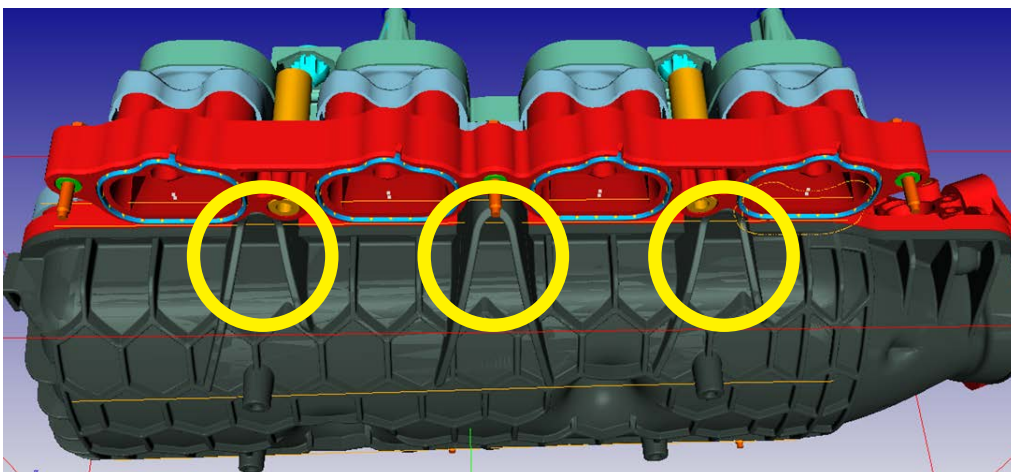
Figure 2



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



Gen 2 Intake Manifold



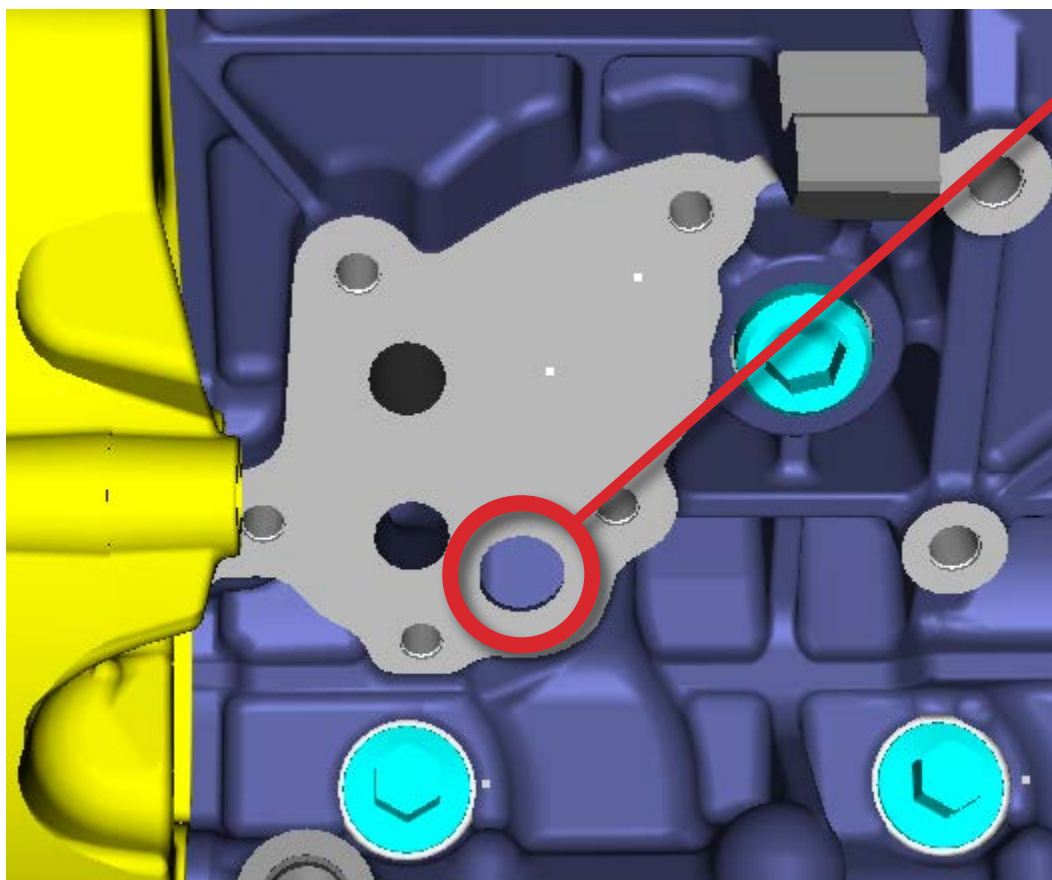
Gen 1 intake manifold ribbing will contact the Gen 2 cylinder head in the areas circled



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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