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.
2015-16 5.0L Coyote Improvements

- Charge motion control valves plates
- New cylinder head with revised high-flow ports
- Larger intake and exhaust valves
- Stiffer valve springs
- Sinter forged connecting rods
- Rebalanced forged steel crankshaft
- Charge motion control valve actuators
- Mid-lock variable intake cam timing phaser
- New intake and exhaust cams with increased valve lift
- Standard oil cooler
**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.

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
# 5.0L Coyote General Engine Specifications

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