

Pontiac 2.5 Engine Build Information

140-HP STOCK BLOCK ENGINE BUILD

2.5L, 151cid, 9.5:1 CR

Pontiac cast iron head without EGR part #10031322 OR

Pontiac cast iron head with EGR part #10031323

Edelbrock intake manifold 2982 4-V

Ultradyne flat tappet cam (blocks thru 1985) part #272-H8

Ultradyne hydraulic roller cam (1986 block and up) part #282-HR-8

205-HP (195 ft lbs torque) Pontiac Super Duty Engine Build 2.7L, 165cid, 9.5:1 CR

Pontiac Super Duty Engine Block part #10027633

Pontiac Super Duty Crankshaft part #10027779

Pontiac Super Duty Alum Head part #10038433

Pontiac Super Duty Intake Valve part #10031339

Pontiac Super Duty Exhaust Valve part #10031325

Pontiac Super Duty Engine Build Pkg part #10031328

Pontiac Super Duty Head Gasket part #10038952

Pontiac Super Duty Intake Manifold (made by Edelbrock but only available from GM part #10038470

Pontiac Super Duty Intake Gasket part #10039904

Pontiac Super Duty Valve Cover with removable top part #10031327

Pontiac Super Duty Valve Cover Gasket part #1007770

Pontiac Super Duty Timing Gear set part #10037684

Pontiac Super Duty Water Pump part #10004073

Pontiac Super Duty Oil Pump part #10031329

Pontiac Super Duty flywheel part #1004031

Pontiac Super Duty Clutch Cover part#10038434

Cosworth Engineering Piston #PA0865/1

Connecting Rod #ZA-8056

Speed Pro Ring set #R-9771

Hooker Header #4703

Felpro oil pan gasket part #91164

ARP Main Cap part #RMS-17

ARP Head Studs part #RHS-35

Moroso Cam Gear Retaining Pin part#37710

Jesel Shaft Mount Rocker System part #SD4

Isky pushrod part#203HG

Ultradyne Camshaft part #288-HR10

Isky Roller lifter part #1241XL

Crane Cams Rev Spring Kit part #99864-8

Note: these part numbers were originally compiled in 1986 and vendors love to change part numbers.

Pontiac 2.5L Heads

Stock heads "swirl-port" intake ports are restrictive. Either port the stock intake ports or use a Super Duty head. If your rule book requires a stock head with no porting or polishing, consider the Super Duty head. It has a GM casting number. All Super Duty heads use 1/2 head bolts. All production heads use 11mm. You need to drill and re-tap production blocks if you run a Super Duty head. Super Duty blocks already have 1/2 head bolt holes. ARP offers head bolts for use with the Super Duty head. A Super Duty head on a production block is a far better match than a production head on a Super Duty block

Pontiac 2.5 Cam Information

1984-87 cams have the oil pump drive gear. The 1988 and later cams have no distributor or oil pump drive gears.

Comp Cams, Isky, and Ultradyne offer a good variety of camshafts for the 2.5

Ultradyne flat tappet cam (blocks thru 1985) part #272-H8

Ultradyne hydraulic roller cam (1986 block and up) part #282-HR-8

Pontiac 2.5 Rocker Info

Your best solution is Crane Aluminum Roller Rockers:

Ratio: 1.71 Stud Diameter: 7/16" Part Number: 22750-8

Stock Ratio for the 2.5 L is 1.75

These will reduce valve lift a small amount accordingly. These are the same parts used in big block chevy engines only eight of them instead of sixteen.

Studs: You must have the stud bosses on your head tapped by a machine shop to accept the larger rocker studs. Not a big deal but a machine shop will be able to set them at the proper angle and depth.

Top Stud Dia/Thrd: 7/16" -20 Bottom Stud Dia/Thrd: 7/16" -14

Dim A, B, C, D: 2.560, .800, 1.760, .860

Part number: 99157-2 sets of two

Pushrod Guide Plates: The guide plates must be drilled out to fit the new studs. However, they are made of very hard material and are difficult to drill. The machinist made the holes larger with a burr tool.

Pushrods: Stock pushrods are 8.3996" long which are too short to reach the rocker arms. It was necessary to install longer custom pushrods +.2000". Chevy big block pushrods at 8.6" length are readily available. Since guide plates are used in the engine, the push rods must be heat treated.

Valve cover clearance: The stock valve cover is tall enough to clear the rockers. It is a close fit particularly at the oil filling hole.

Super Duty Valve Cover

Super Duty Valve Cover (from GM) offers the ability to take the top off the valve cover while leaving the main body of the valve cover on the head. This is a really nice option for adjusting valves without slinging oil all over the place. The Super Duty valve cover uses the same bolt pattern as the stock cover but is taller, so it won't fit under the stock breather and it does NOT have a provision for a PCV valve.

Pontiac 2.5L Crankshafts

The Super Duty-4 cranks have 2.10 rod journals (SBC). The stock crank is 2.00. If you run a SD crank you need to change the rods. The rod length and crank stroke influence the compression height spec of the piston. If you increase stroke or change rod length, new pistons are required.

The stock crank is cast and weighs 30-35 lbs. The best cast crank is the 1988 S-10 crank as it is slightly beefier and it will fit the earlier blocks.

The Super Duty crank is forged 4340 and weighs 50 lbs.

SCAT offers a crank for \$1,800.

Fisher and Fluidamper sell high performance balancers for the Iron Duke/Tech IV.

Pontiac 2.5L Iron Duke Intake Options

Stock intakes are restrictive. The GM Super Duty aluminum intake is built by Edelbrock but available only thru GM. It allows using a Holley 350 or 500 cfm carburetor.

Pontiac 2.5 Transmission Info

The 2.5 Iron Duke has the same bell housing bolt pattern as a Chevy small block. The bell housing is basically Ford on the transmission side and Chevy on the engine side. A regular Chevy bell housing will bolt to the Iron Duke. My suggestion is use a small block Chevy bellhousing and an aluminum Muncie 4-speed transmission.

GM25 Header Info

Header's by ED offers exhaust pieces for the 2.5 - [2.5 Header parts](#)

[Hooker offers a header part #4703-1](#)

Pontiac 2.5 Pistons

Keith Black (Silv-o-lite) makes a flat top piston to replace the dished piston used in most 2.5 engines.

Part # is 1539 (1978 Pontiac 151 Iron duke) (all same dimensions as Pontiac 301 v8 pistons).

Standard 4 inch bore
1.57 compression height
Pin Diameter 0.9273

Rings:

2 – 5/64

1 – 3/16

[KB-silvolite](#)

_ Pontiac 2.5 Engine Block Information

2.5L 151 c.u.i. 92-hp 4 cylinder "Iron Duke" - Pontiac 4.00 inch bore x 3.00 inch stroke.

This is NOT the same as the 153 c.u.i. Chevrolet 4-cylinder which was 3.875 inch bore x 3.25 inch stroke.

Production began in 1978. Base engine in Pontiac Astras, Sunbirds, and other GM compacts like the Chevrolet Monza, Buick Skyhawk, and the Oldsmobile Starfire. Typically mated with an automatic transmission. In the 1980's it was the base engine duty in Camaros, Firebirds, Fieros, Grand Ams, S-10 pickup trucks, and the Jeep

Cherokee. When it was updated to a roller cam, throttle body fuel injection and ECM, it was renamed the Tech IV. The Tech IV has no provisions for driving a distributor.

With a stock production block and rods, You can approach our 180 hp with a normally aspirated, modified engine, but its durability is questionable. Point of failure is usually the rods. There are two basic methods of rodding a Pontiac 2.5L 4-cylinder: (1) bolt-on parts to upgrade the stock engine to the 140-hp range max 5000 RPMs (2) construction of a complete Super Duty engine that will produce over 200 hp.

Super Duty Engine Block

Kansas Racing Products took over production of the SD block when GM dropped production. Cost is around \$2,500. KRP's block is stronger than the original SD block and can accept a variety of cylinder heads.

[KRP Products](#)

Aries pistons makes an aluminum SD block for \$4,000.

A Super Duty head on a production block is a far better match than a production head on a Super Duty block.

All Super Duty heads use 1/2 head bolts. All production heads use 11mm. You need to drill and re-tap production blocks if you run a Super Duty head. Super Duty blocks already have 1/2 head bolt holes.

ARP offers head bolts for use with the Super Duty head.

All Super Duty blocks have all the stock mounting bosses, so you can bolt up all the stock accessories.

Pontiac 2.5 VIN – Engine Information

Vin V 1977-1980 Carb, non cross-flow head (intake & exhaust manifold on same side)

Vin 1 1978-1979 Carb, non cross-flow head

Vin 9 1979 Carb, non cross-flow head

Vin F 1980-1983 Carb, export only

Vin 5 1982-1983 Carb, cross-flow heads from 1982 on

Vin 2 1982-1986 TBI, Thrust brg length 1.009, Head bolt spacing 3.75

Vin R 1982-1992 TBI, FWD/RWD/Fiero, Thrust brg length 1.009, Head bolt spacing 3.75

Vin U 1985-1991 TBI, N-car FWD Only. Thrust brg length 0.940, Head bolt spacing 3.67

Vin E 1985-1991 TBI, S-10, Astro Van. Thrust brg length 1.009, Head bolt spacing 3.75

Vin A 1991-1993 TBI, S-10. Thrust brg length 1.009, Head bolt spacing 3.75

The VIN E and A truck motors were also used in postal vehicles.

The FWD only VIN U motor has many parts that are different compared to all other 2.5 motors. It was used only in FWD N-cars, Grand Am, Calais, etc. Crank thrust bearing and cylinder head bolt pattern are just a few of the differences.

The VIN R (Fiero included) motors were used in both larger FWD cars (X and A body cars) and RWD applications with no special modifications.

The S-10 truck block is good because it has solid main webs like the Super Duty block. It is cast from average grade iron though, whereas, the Super Duty block uses 40,000 psi high nickel iron. The Super Duty blocks come drilled for a starter mount on both sides.

The Vin E 2.5 liter truck motor was used in both Astro/Safari vans and the S-10/S-15 trucks.

The later model 1991+ VIN A was only used in the pick-up trucks. The pick-up trucks have the starter on the right side. The Vans and Fieros have the starter on the left side. Starter location can be changed.