

## 4.6L ENGINE MECHANICAL SPECIFICATIONS

Description	English Specifications	Metric Specifications
<b>Camshaft (cont'd)</b>		
Bearing journal inside diameter	1.063-1.0625 in. 0.002 in.	27.012-26.987mm 0.05mm
Run-out		
Cylinder bore diameter		
Out-of-round	0.0006 in.	0.015mm
Out-of-round (service limit)	0.00079 in.	0.020mm
Taper limit	0.00023 in.	0.006mm
Main bearing bore	2.85-2.851 in.	72.402-72.422mm
<b>Crankshaft</b>		
Main bearing journal diameter	2.65-2.657 in.	67.433-67.503mm
Main bearing journal taper	0.0007 in.	0.02mm
Main bearing journal run-out	0.002 in.	0.05mm
Main bearing-to-crankshaft clearance	0.0011-0.0026 in.	0.027-0.065mm
Bearing wall thickness	0.075-0.076 in.	1.920-1.928mm
Connecting rod bearing journal diameter	2.087-2.087 in.	52.988-53.003mm
Crankshaft free end play	0.130-0.301 in.	0.005-0.012mm
Crankshaft runout-to-heel face of the block	0.002 in.	0.05mm
<b>Connecting Rod</b>		
Connecting rod bearing-to-crankshaft clearance	0.001-0.0027 in.	0.027-0.068mm
Connecting rod bearing wall thickness	0.095-0.0965 in.	2.444-2.452mm
Connecting rod main bearing bore diameter	2.234-2.24 in.	56.756-56.876mm
Connecting rod length (center-to-center)	5.93 in.	150.7mm
Connecting rod-to-crank side clearance (standard)	0.0006-0.0177 in.	0.015-0.45mm
Connecting rod-to-crank side clearance (maximum)	0.02 in.	0.5mm
Connecting rod main bearing journal taper	0.0005 in.	0.015 mm
<b>Pistons</b>		
Piston diameter		
Coded red	3.550-3.551 in.	90.177-90.197mm
Coded blue	3.5507-3.55215 in.	90.190-90.210mm
Coded yellow	3.5513-3.5521 in.	90.203-90.223mm
Piston-to-bore clearance	0.0005-0.001 in.	0.012-0.026mm
Piston pin bore diameter	0.864-0.865 in.	21.959-21.979mm
Piston pin bore length	2.44-2.443 in.	61.93-62.05mm
Piston pin-to-rod clearance	0.0006-0.00157 in.	0.015-0.040mm
Piston pin-to-piston clearance	0.0002-0.0004 in.	0.005-0.010mm
Piston ring side clearance		
Upper compression ring	0.0016-0.0035 in.	0.040-0.090mm
Lower compression ring	0.0012-0.0031 in.	0.030-0.080mm
Oil control ring	0.05 in.	1.25mm
Piston ring groove width		
Upper compression ring	0.060-0.0610 in.	1.530-1.550mm
Lower compression ring	0.060-0.0602 in.	1.520-1.530mm
Oil control ring	0.2759-0.2844 in.	6.995-7.224mm
Piston ring gap		
Upper compression ring	0.01-0.02 in.	0.23-0.49mm
Lower compression ring	0.01-0.02 in.	0.23-0.49mm
Oil control ring	0.008-0.026 in.	0.15-0.65mm
<b>Oil Pumps</b>		
Oil pump gear radial clearance (idler and drive)	0.0055-0.002 in.	0.125-0.050mm
Oil pump gear end height (extends below the housing)	0.0033-0.0004 in.	0.085-0.010mm

## 5.0L ENGINE MECHANICAL SPECIFICATIONS

Description	English Specifications	Metric Specifications
<b>General Information</b>		
Type	302 cu. in.	90° V6 Overhead Valve Engine
Displacement		5.0L (49/gcc)
Number of Cylinders	6	
Bore	4.00 in.	101.6mm
Stroke	3.00 in.	76.2mm
Compression ratio	9.5:1	
Firing order	1-5-4-2-6-3-7-8	
Oil Pressure	40-60 psi @ 2000 RPM (engine hot)	
<b>Cylinder Head</b>		
Cylinder head-to-engine block surface warpage	0.003 in. (0.0762mm) in a 6.0 in. (152.4mm) span	
Valve seat width		
Inlet valve	0.060-0.080 in.	1.524-2.032mm
Exhaust valve	0.060-0.080 in.	1.524-2.032mm
Valve seat angle—inlet and exhaust valves	45°	
Valve guide bore diameter—inlet and exhaust valves	0.3433-0.3443	8.720-8.745mm

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## 5.0L ENGINE MECHANICAL SPECIFICATIONS

Description	English Specifications	Metric Specifications
<b>Valves, valve springs and camshaft</b>		
Camshaft journal diameter		
No. 1	2.0415 in.	52.8701mm
No. 2	2.0685 in.	52.4891mm
No. 3	2.0515 in.	52.1081mm
No. 4	2.0365 in.	51.7271mm
No. 5	2.0215 in.	51.3461mm
Camshaft-to-bearing clearance	0.001-0.003 in.	0.0254-0.0762mm
Camshaft thrust clearance	0.007 in. max	0.1778mm max
Camshaft lobe lift		
Inlet valve	0.2837 in.	6.69798mm
Exhaust valve	0.2801 in.	7.11494mm
Camshaft runout	0.005 in. max	0.127mm
Valve stem diameter		
Inlet valves	0.3415-0.3423 in.	8.6741-8.6944mm
Exhaust valves	0.3410-0.3418 in.	8.6614-8.6817mm
Valve guide-to-valve stem clearance		
Inlet valves	0.0010-0.0027 in.	0.0254-0.0686mm
Exhaust valves	0.0015-0.0032 in.	0.0381-0.0812mm
Valve face angle (inlet)		4°
Valve head diameter		
Inlet valve	1.837-1.847 in.	46.660-46.914mm
Exhaust valve	1.536-1.546 in.	39.01-39.27mm
Valve head radial runout	0.002 in.	0.0508mm
Valve spring free length (approximate)	1.84 in.	46.7mm
Inlet valve spring	2.06 in.	52.324mm
Exhaust valve spring	1.88 in.	47.752mm
Valve spring preload		
Inlet valve spring	74-82 lbs. @ 1.78 in.	33.5-37.2kg @ 45.21mm
Exhaust valve spring	76-84 lbs. @ 1.60 in.	34.5-38.1kg @ 40.64mm
Valve spring installed height		
Inlet valve spring	1.75-1.81 in.	44.45-45.974mm
Exhaust valve spring	1.58-1.64 in.	40.130-41.656mm
Valve spring out-of-square	0.078 in.	1.9812mm
Rocker arm ratio		1.62:1
<b>Engine block</b>		
Engine block-to-cylinder head surface warpage	0.003 in. (0.0762mm) in a 6.0 in. (152.4mm) span	
Standard cylinder bore	4.0000-4.0012 in.	101.6-101.6305mm
Cylinder bore out-of-round and taper	0.00150-0.010 in.	0.03810-0.254mm
Cylinder bore-to-piston clearance	0.0012-0.0020 in.	0.0305-0.0508mm
<b>Pistons</b>		
Standard piston diameter	3.9907-3.9993 in.	101.587-101.5622mm
Piston ring groove width		
Top compression ring	0.0602-0.0612 in.	1.530-1.555mm
Second compression ring	0.0602-0.0612 in.	1.530-1.555mm
Oil control ring	0.197-0.1968 in.	4.990-4.955mm
Piston pin diameter	0.9121-0.9122 in.	23.1873-23.1895mm
<b>Piston rings</b>		
Thickness		
Top compression ring	0.0575-0.0587 in.	1.460-1.490mm
Second compression ring	0.0575-0.0587 in.	1.460-1.490mm
Oil Control ring		
Side clearance		Side seat Snug fit
Top compression ring	0.0013-0.0033 in.	0.0330-0.0838mm
Second compression ring	0.0013-0.0033 in.	0.0330-0.0838mm
End gap		
Top compression ring	0.010-0.020 in.	0.25-0.50mm
Second compression ring	0.018-0.028 in.	0.4572-0.712mm
Oil ring	0.010-0.040 in.	0.25-1.016mm
<b>Crankshaft and connecting rods</b>		
Crankshaft main journal diameter	2.2482-2.2490 in.	57.1943-57.1946mm
Main bearing-to-journal clearance (oil clearance)	0.0008-0.0026 in.	0.0203-0.0660mm
Crankshaft journal out-of-round and taper	0.006 in.	0.1524mm
Crankshaft thrust play	0.004-0.008 in.	0.1016-0.2032mm
Crankshaft runout	0.002 in.	0.050mm
Connecting rod journal diameter	2.1288-2.1236 in.	53.9191-53.9191mm
Connecting rod journal-to-connecting rod taper	0.006 in.	0.1524mm
Connecting rod journal-to-connecting rod clearance	0.0007-0.0024 in.	0.0178-0.0608mm
Connecting rod small end bore inside diameter	0.9097-0.9112 in.	23.1864-23.1445mm
Connecting rod big end side clearance	0.010-0.020 in.	0.254-0.508mm
Connecting rod twist	0.015 in.	0.381mm
Connecting rod bend	0.012 in.	0.3048mm

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