Item	Specification
Camshaft bearing outside diameter â€" intermediate journals	1.021 â€“1.022 in (25.937 â€“25.963 mm)
Camshaft journal-to-bearing clearance, 1st journal â€" service limit	0.0029 in (.0725 mm)
Camshaft journal-to-bearing clearance, intermediate journals â€" service limit	0.0030 in (.0755 mm)
Runout	0.0016 in (.04 mm)
End play - standard	0.0030 â€“0.0065 in (.075 â€“.165 mm)
End play - service limit	0.0075 in (.19 mm)

Cylinder Block

Item	Specification
Cylinder bore diameter	3.559 â€“3.560 in (90.4 â€“90.42 mm)
Cylinder bore roundness	0.0005 in (.013 mm)
Cylinder bore taper	0.0004 in (.01 mm)
Block main bore roundness	0.0003 in (.008 mm)
Main bearing bore inside diameter	2.850 â€“2.851 in (72.4 â€“72.424 mm)
Head gasket surface flatness	Flat within 0.150 mm (0.005 in) overall 0.050 mm (0.001 in) per 150 mm (5.905 in) x 150 mm (5.905 in) 0.025 mm (0.0009 in) per 25 mm (0.98 in) x 25 mm (0.98 in)

Crankshaft

Item	Specification
Main bearing journal diameter	2.657 â€“2.658 in (67.483 â€“67.503 mm)
Main bearing journal maximum taper	0.3150 in (.008 m)
Main bearing journal maximum out-of-round	0.0002 in (.006 mm)
Main bearing journal-to-main bearing clearance	0.0011 â€“0.0017 in (.028 â€“.043 mm)
Connecting rod journal diameter	2.204 â€“2.205 in (55.983 â€“56.003 mm)
Connecting rod journal maximum taper	0.0003 in (.008 mm)
Connecting rod journal maximum out-of-round	0.0002 in (.006 mm)
Crankshaft end play	0.0041 â€“0.0124 in (.105 â€“.315 mm)

Piston and Connecting Rod

Item	Specification
Piston diameter - single grade	3.5569 â€“3.5575 in (90.346 â€“90.36 mm)
Piston-to-cylinder bore clearance	0.0016 â€“0.0029 in (.04 â€“.074 mm)
Piston ring end gap - compression (top, gauge diameter)	0.0091 â€“0.0130 in (.23 â€“.33 mm)

Item	Specification
Piston ring end gap - compression (bottom, gauge diameter)	0.0157 â€“ 0.0236 in (.4 â€“ .6 mm)
Piston ring end gap â€” oil ring (steel rail, gauge diameter)	0.0059 â€“ 0.0177 in (.15 â€“ .45 mm)
Piston ring groove width - compression (top)	0.0406 â€“ 0.0413 in (1.03 â€“ 1.05 mm)
Piston ring groove width â€” compression (bottom)	0.0406 â€“ 0.0413 in (1.03 â€“ 1.05 mm)
Piston ring groove width - oil ring	0.0799 â€“ 0.0807 in (2.03 â€“ 2.05 mm)
Piston ring width - upper compression ring	0.0382 â€“ 0.0390 in (.97 â€“ .99 mm)
Piston ring width - lower compression ring	0.0382 â€“ 0.0390 in (.97 â€“ .99 mm)
Piston ring-to-groove clearance (upper and lower compression rings)	0.0016 â€“ 0.0031 in (.04 â€“ .08 mm)
Piston pin bore diameter	0.9057 â€“ 0.9059 in (23.004 â€“ 23.009 mm)
Piston pin diameter	0.9054 â€“ 0.9055 in (22.997 â€“ 23 mm)
Piston diameter (DN) height from top of the piston	1.398 in (35.5 mm)
Piston pin length	2.1654 â€“ 2.1772 in (55 â€“ 55.3 mm)
Piston pin-to-piston fit	0.0000 â€“ 0.0005 in (.0004 â€“ .012 mm)
Connecting rod-to-pin clearance - standard	0.0001 â€“ 0.0007 in (.003 â€“ .018 mm)
Connecting rod pin bore diameter	0.9056 â€“ 0.9061 in (23.003 â€“ 23.015 mm)
Connecting rod length (center-to-center)	6.01 in (152.68 mm)
Connecting rod maximum allowed bend	0.0015 in (.038 mm)
Connecting rod maximum allowed twist	0.0020 in (.05 mm)
Connecting rod bearing bore diameter - single grade	2.3570 â€“ 2.3576 in (59.869 â€“ 59.883 mm)
Connecting rod bearing-to-crankshaft clearance	0.0012 â€“ 0.0031 in (.031 â€“ .078 mm)
Connecting rod side clearance (assembled to crank) - standard	0.0118 in (.3 mm)
Connecting rod side clearance (assembled to crank) - service limit (max play)	0.0167 in (.425 mm)

Torque Specifications
Engine oil pan drain plug - 26 Nm (19 lb-ft)
Engine oil filter - 5 Nm (44 lb-in) - plus an additional 180 degrees

Description and Operation

Engine - Overview

Overview

The 3.3L engine which may also be described with these terms:

- DI - Direct injection
- PFI - Port Fuel Injection
- Ti-VCT - Twin independent Variable Camshaft Timing
- V6 - 6 cylinder engine
- 24V - 4 valves per cylinder
- 4V - 4 valves per cylinder, 24 valves total

The 3.3L DOHC Gas

- 3.3L - Engine displacement
- DOHC
- Gas/Petrol - Gasoline

The 3.3L (4V) is a V-6 engine with the following features:

- Dual overhead camshafts
- Four valves per cylinder
- Sequential Multi-Port Fuel Injection (SFI)
- Direct fuel Injection (DI)
- High-pressure fuel pump
- EGR valve
- Composite upper and lower intake manifold
- Variable displacement oil pump
- Aluminum cylinder head
- An aluminum, 60-degree V-cylinder block
- Twin independent Variable Camshaft Timing (Ti-VCT)
- An electronic ignition system with 6 ignition coil-on-plugs

Engine Identification

For quick identification, refer to the safety certification decal located on the LH front door lock face panel.

Engine Code Information Label

The engine code information label, located on the front side of the valve cover, contains the following:

Item	Description
1	Engine displacement
2	Engine plant (Lima)
3	Engine part number