

General

Manufacturer	TOYOTA		
Model/Year	3L	8/1988 -	
L/(CID)	2,779cc DIESEL	No. of Cylinders	4
Bore & Stroke	96.0mm X 96.0mm		
Firing Order	1 – 3 – 4 – 2		
Compression Ratio	22.3 : 1	Idle Speed	700 rpm
Comp. Pressure @ RPM	3.2 MPa @ 250 rpm	2.0 MPa min.	<490 kPa diff.
Oil Pressure	29 kPa min at idle	Oil Capacity & Grade	6.5 ltr dry CC-CD
Injection Timing	Dial indicator and plunger stroke.		

Block

Bore Diameter Standard	96.000 – 96.030 mm
Maximum Overbore	1.00 mm
Liner Flange Height & Fit	N/A Repair sleeves are available.
Crankshaft Housing Bore	66.000 – 66.020 mm
Camshaft Housing Bore	No. 1: 38.015 – 38.027 mm Nos. 2 – 5: 31.015 – 31.027 mm
Block Deck Height	0.20 mm warp limit

Pistons & Rings

Piston to Bore Clearance	0.05 – 0.07 mm @ 56.27 – 56.33 mm from crown.
Piston Protrusion	0.68 – 0.97 mm (Graded head gaskets – refer notes.)
Gudgeon Pin Diameter	29.000 – 29.012 mm
Gudgeon Pin Clearance	0.004 – 0.012 mm Limit: 0.05 mm
Ring Equipment	Top: 2.0 mm (½K), 2 nd : 2.0 mm; Oil: 4.0 mm.
Piston Ring End Gap	Top: 0.35 – 0.65 mm; 2 nd : 0.30 – 0.60 mm; Oil: 0.20 – 0.50 mm.
Ring to Groove Clearance	Top: 0.028 – 0.077 mm; 2 nd : 0.06 – 0.10 mm; Oil: 0.03 – 0.07 mm.

Connecting Rods

Big End Bore	58.004 – 58.024 mm
Pin End Bore	32.000 – 32.030 mm
Centre to Centre	147 mm
Big End Width	
Bush ID Finished	29.008 – 29.020 mm
Rod Side Clearance	0.080 – 0.300 mm Limit: 0.35 mm
Bend/Twist	0.05 mm/100mm bend 0.15 mm/100 mm twist

Camshaft

Journal Diameters	1: 34.969 – 34.985 mm 2 – 5: 27.969 – 27.985 mm
End Play	0.08 – 0.28 mm Limit: 0.35 mm
Oil Clearance	0.022 – 0.074 mm Limit: 0.10 mm
Minimum Lobe Height	Inlet 54.30 mm Exhaust 55.00 mm Limit In 53.8 mm & Ex 54.5 mm
Bend Limit	0.10 mm circle runout

Crankshaft

Main Journal Standard	61.985 – 62.000 mm		
Conrod Journal Standard	54.988 – 55.000 mm		
Harmonic Balancer Diam.			
Crank Gear Diameter			
Seal Diameter			
Thrust Thickness	2.430 – 2.480 mm		
Main Bearing Clearance	0.034 – 0.065 mm std. Limit: 0.10 mm		
Conrod Bearing Clearance	0.036 – 0.064 mm std. Limit: 0.10 mm		
Crankshaft End Play	0.040 – 0.250 mm Limit: 0.30 mm		
Journal Radius	Main	Undercut	Conrod Undercut

Cylinder Head

Tappet Clearance	Inlet	0.20 – 0.30 mm Cold	Exhaust	0.40 – 0.50 mm Cold
Head Height	New	133 mm	Warp	0.20 mm Limit
Valve Seat Angle	Inlet	45°	Exhaust	45°
Valve Seat Width	Inlet	1.8 – 2.2 mm	Exhaust	1.8 – 2.2 mm
Valve Head Recess	Inlet	0.94 – 1.50 mm	Exhaust	0.94 – 1.50 mm
Valve Head Margin	Inlet	1.1 mm min.	Exhaust	1.2 mm min.
Valve Face Angle	Inlet	44.5°	Exhaust	44.5°
Valve Length	Inlet	103.29 – 103.69 mm	Exhaust	103.14 – 103.54 mm
Valve Stem Diameter	Inlet	7.975 – 7.990 mm	Exhaust	7.960 – 7.975 mm
Valve Guide Height	Inlet	10.8 – 11.2 mm	Exhaust	10.8 – 11.2 mm
Valve Guide Clear. Std.	Inlet	0.020 – 0.055 mm	Exhaust	0.035 – 0.070 mm
Valve Guide Clear. Limit	Inlet	0.08 mm	Exhaust	0.10 mm
Valve Spring Pressure	Yellow	30.7 – 33.9 kg	Blue	30.7 – 33.9 kg
Valve Spring Free Length	Yellow	46.20 mm	Blue	49.14 mm
Valve Spring Install. Height	Yellow	37.0 mm	Blue	37.0 mm
Precom. Chamber Protrus.	-0.03 - +0.03 mm			

Torque Specifications

Main Bolts	10.5 kgf.m OILED		
Conrod Bolts	5.5 kgf.m + 90° OILED		
Head Bolts	8.0 kgf.m + 90° + 90° OILED		
Cam Cap Bolts	2.55 kgf.m OILED		
Manifold Bolts	Inlet	2.4 kgf.m	Exhaust 5.3 kgf.m
Flywheel Bolts	12.5 kgf.m OILED		
Harmonic Balancer	17.0 kgf.m		

Torque Sequences

Head Gasket Selection from Piston Protrusion

Piston Protrusion	Gasket Size
0.68 – 0.77 mm	Grade B 1.40 – 1.50 mm
0.78 – 0.87 mm	Grade D 1.50 – 1.60 mm
0.88 – 0.97 mm	Grade F 1.60 – 1.70 mm

X bolts – 107 mm long
Y bolts – 127 mm long