

3.4L (DOHC) Engine Mechanical Specifications

Application	Millimeters	Inches
General Data		
Engine Type	--	60° V-6
Displacement	--	240 Cu In
Liter (VIN)	--	3.4 (X)
RPO	--	LQ1
Bore	92	3.622
Stroke	84	3.307
Deck Height	224	8.818
Compression Ratio	--	9.50:1
Firing Order	--	1-2-3-4-5-6
Oil Pressure @ Operating Temperature	103 kPa @ 1100 RPM	15 psi min @ 1100 RPM
Cylinder Bore		
Diameter	92.020-92.038	3.6228-3.6235
Out Of Round Maximum	0.010	0.0004
Taper -- Thrust Side Maximum	0.013	0.00051
Center Distance	111.76	4.4
Piston		
Diameter-gauged at skirt 10.44 mm (0.413 in) below centerline of piston pin bore	91.985-92.000	3.6215-3.6220
Clearance	0.020-0.052	0.0008-0.0020
Pin Bore	23.003-23.010	0.9056-0.9059
Piston Ring		
Compression Groove Clearance 1st and 2nd	0.033-0.079	0.0013-0.0031
Gap (at gauge diameter) 1st	0.20-0.45	0.008-0.018

Gap (at gauge diameter) 2nd	0.56-0.81	0.022-0.032
Oil Groove Clearance	0.028-0.206	0.0011-0.0081
Gap (segment at gauge diameter)	0.25-0.76	0.0098-0.0299
Tension 1st	27.6 N	6.2 lbs
Tension 2nd	19.8 N	4.5 lbs
Tension Oil	31.2 N	7.0 lbs
Piston Pin		
Diameter	22.9915-22.9964	0.9052-0.9054
Clearance	0.0066-0.0185	0.00026-0.00073
Fit In Rod	0.0165-0.0464	0.0006-0.0018
Crankshaft		
Main Journal Diameter-All	67.239-67.257	2.6472-2.6479
Taper-Maximum	0.005	0.0002
Out Of Round-Maximum	0.005	0.0002
Cylinder Block Main Bearing Bore Diameter	72.155-72.168	2.8407-2.8412
Crankshaft Main Bearing Inner Diameter	67.289-67.316	2.6492-2.6502
Main Bearing Clearance	0.019-0.064	0.0008-0.0025
Main Thrust Bearing Clearance	0.032-0.077	0.0013-0.0030
Crankshaft End Play	0.06-0.21	0.002-0.008
Crankpin		
Diameter	50.768-50.784	1.9987-1.9994
Taper-Maximum	0.005	0.0002
Out Of Round-Maximum	0.005	0.0002
Rod Bearing Bore Diameter	53.962-53.984	2.124-2.125
Rod Inner Bearing Diameter	50.812-50.850	2.000-2.002
Rod Bearing Clearance	0.018-0.062	0.0007-0.0024
Rod Side Clearance	0.18-0.44	0.0071-0.0173
Camshaft		
Lobe Lift (Intake)	9.398 @ 108° Crank ATDC	0.370 @ 108° Crank ATDC

Lobe Lift (Exhaust)	9.389 @ 115° Crank BTDC	0.370 @ 115° Crank BTDC
Timing Reference Set Position with Camshaft Timing Flats in Clamped Position-Right Bank	--	TDC-1Piston Exhaust Stroke +/- 2° of Crankshaft
Timing Reference Set Position with Camshaft Timing Flats in Clamped Position-Left Bank	--	TDC-4 Piston Exhaust Stroke +/- 2° of Crankshaft
Journal Diameter	54.973-55.001	2.1643-2.1654
Bore Inside Diameter	55.050-55.075	2.1673-2.1683
Journal Clearance	0.049-0.102	0.0019-0.0040
Valve System		
Lifter	--	Hydraulic
Face Angle	--	45°
Seat Angle	--	46°
Seat Runout-Maximum	0.075	0.0030
Seat Width Intake	1.25-1.50	0.0492-0.0591
Exhaust	1.60-1.90	0.063-0.0748
Valve Margin-Minimum	0.75	0.029
Stem Clearance Intake	0.028-0.066	0.0011-0.0026
Stem Clearance Exhaust	0.046-0.084	0.0018-0.0033
Valve Spring		
Free Length	42.04	1.6551
Load (Closed)-All	289 N @ 35.56	65 lb @ 1.400
Load (Open)-All	711 N @ 26.16	160 lb @ 1.030
Approximate Number of Active Coils	--	4
Oil Pump		
Valve to Bore Clearance	0.038-0.089	0.0015-0.0035
Gear Lash	0.094-0.195	0.0037-0.0077
Gear Pocket Depth	30.53-30.61	1.202-1.205
Diameter	38.202-38.252	1.504-1.506
Gear Length	30.45-30.48	1.199-1.20
Diameter	38.05-38.10	1.498-1.50

Side Clearance	0.08-0.10	0.003-0.004
End Clearance	0.05-0.152	0.002-0.006

3.4L (DOHC) Fastener Tightening Specifications

Application	N·m	Lb Ft	Lb In
Accelerator Control Cable Bracket Bolt	10	--	89
Accelerator Control Cable Bracket Nut	10	--	89
Camshaft Carrier Cover Bolt	11	--	97
Camshaft Carrier Thrust Plate Bolt	10	--	89
Camshaft Carrier Thrust Plate Cover Bolt	10	--	89
Camshaft Drive Belt Cover Bolt	10	--	89
Camshaft Drive Sprocket Bolt	130	96	--
Camshaft Housing Assembly Bolt	27	20	--
Camshaft Position Sensor Bolt	50	37	--
Connecting Rod Cap Nut	20 +75°	15 +75°	--
Coolant By-Pass Nut	25	18	--
Coolant Inlet Housing Bolt	25	18	--
Coolant Outlet Bolt	27	20	--
Coolant Pump Bolt	11	--	97
Coolant Pump Pulley Bolt	25	18	--
Crankshaft Balancer Mounting Bolt	107	79	--
Crankshaft Main Bearing Cap Bolt	50+75°	37+75°	--
Crankshaft Main Bearing Cap Stud	50+75°	37+75°	--
Crankshaft Oil Deflector Nut	25	18	--
Crankshaft Pulley-to-Crankshaft Damper Bolt	60	44	--
Crankshaft Position Sensor Bolt-Front of Engine	8	--	71
Crankshaft Position Sensor Bolt-Side of Engine	8	--	71
Crankshaft Position Sensor Harness Retaining Bracket Bolt	5	--	45
Cylinder Head Bolt	60 +90°	44 +90°	--

Drive Belt Tensioner Bolt	50	37	--
EGR Valve Adapter Brace Nut	25	18	--
EGR Valve Adapter Stud	10	--	89
EGR Tube Assembly	25	18	--
EGR Valve Assembly Nut	25	18	--
Electronic Ignition Control Module Assemble Bolt/Stud	25	18	--
Electronic Ignition Control Assembly Nut	25	18	--
Engine Block Coolant Drain Plug	19	14	--
Engine Block Oil Gallery Plug-Center Rear	16	12	--
Engine Block Oil Gallery Plug-Rear	33	24	--
Engine Block Oil Gallery Plug-Side of Block	19	14	--
Engine Coolant Temperature Sensor	18	13	--
Engine Motor Mount Frame Nut-Engine Left Side	43	32	--
Engine Motor Mount Bracket Nut-Engine Left Side	43	32	--
Engine Motor Mount Frame Nut-Engine Right Side	43	32	--
Engine Motor Mount Bracket Nut-Engine Right Side	47	35	--
Engine Motor Mount Bracket -Front of Block Bolt-Engine Left Side	103	76	--
Engine Motor Mount Bracket-Side of Block Bolts-Engine Left Side	58	43	--
Engine Motor Mount Bracket-Front of Block Bolts-Engine Right Side	102	75	--
Engine Motor Mount Bracket-Side of Block Bolt-Engine Right Side	58	43	--
Engine Motor Mount Bracket-Transaxle Bolts-Engine Right Side	75	55	--
Engine Mount Strut Bracket Bolt	80	59	--
Engine Oil Cooler Connector	40	30	--
Engine Oil Level Sensor	22	16	--
Evaporator Emission Canister Purge Solenoid Mounting Bracket Bolt	10	--	89
Exhaust Manifold Crossover Stud	9	--	80
Exhaust Manifold Nut	13	--	116
Exhaust Manifold Stud	17	13	--

Flywheel Bolt	82	60	--
Front Cover Coolant Drain Plug	25	18	--
Front Cover Bolts- Large	47	35	--
Front Cover Bolts - Small	27	20	--
Front Cover-to-Front Engine Lift Hook Bolt	25	18	--
Front Engine Lift Hook-to-Right Camshaft Carrier Bolt	50	37	--
Front Engine Lift Hook-to-Right Cylinder Head Bolt (Access through Front Cover)	50	37	--
Fuel Pipe Clip Bolt	7	--	62
Fuel Pipe Retainer Screw	3	--	27
Fuel Rail Assembly Bolt	10	--	89
Ignition Coil Bolt	25	18	--
Ignition Coil Nut	25	18	--
Intermediate Drive Shaft Retainer Screw	10	--	89
Intermediate Shaft Belt Sprocket Bolt	130	96	--
Knock Sensor	21	15	--
Lower Intake Manifold Mounting Bolt	13	--	116
Manifold Absolute Pressure Sensor Bracket Bolt	8	--	71
Oil Cooler Connector	40	30	--
Oil Cooler Hose Fitting	25	18	--
Oil Distribution Cover Bolt	27	20	--
Oil Filter	16	12	--
Oil Filter Fitting	67	49	--
Oil Level Indicator Bolt	10	--	89
Oil Pan Bolt-Except Rear	11	--	97
Oil Pan Bolt-Rear (2)	27	20	--
Oil Pan Drain Plug	25	18	--
Oil Pan Nut	11	--	97
Oil Pan Stud-to-Cylinder Block	10	--	89
Oil Pressure Switch	32	24	--
Oil Pump Cover Bolt	10	--	89
Oil Pump Drive Clamp Bolt	36	27	--
Oil Pump-to-Rear Main Cap Bolt	54	40	--

Power Brake Booster Vacuum Pipe Fitting	18	13	--
Rear Engine Mount Strut Bracket Bolt	82	60	--
Secondary Air Injection Pipe	25	18	--
Secondary Air Injection Pipe Nut-Left Side	25	18	--
Secondary Air Injection Pipe Support Bolt	10	--	89
Secondary Air Injection Pipe Nut-Right Side	10	--	89
Serpentine Drive belt tensioner bolt	50	37	--
Spark Plug	20	15	--
Throttle Body Adapter Bolt	25	18	--
Throttle Body Adapter Nut	25	18	--
Throttle Body Heater Outlet Hose Nipple	18	13	--
Throttle Body Stud	4	--	36
Throttle Body Bolt	10	--	89
Tie Bar Bracket	26	19	--
Timing Belt Cover Bolt	10	--	89
Timing Belt Idler Pulley Bolt	50	37	--
Timing Belt Tensioner Actuator Bracket Bolt	50	37	--
Timing Belt Tensioner Actuator Pulley Pivot Bolt	50	37	--
Timing Belt Tensioner Actuator Side Plate Bolt	27	20	--
Timing Chain Tensioner Bolt	27	20	--
Engine Mount Strut and Engine Lift Bracket Bolt	70	52	--
Upper Intake Manifold Retaining Bolt	26	19	--
Water Inlet Fitting to Front Cover	27	20	--
Vacuum Source Manifold Mounting Bolt	7	--	62