Specifications

Materials

Name	Specification
Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil XO-5W30-Q1SP	WSS-M2C946-B1

Engine

Item	Specification
Bore	4.2205 in (107.2 mm)
Stroke	3.9764 in (101 mm)
Displacement	7.3L (445 CID)
No. of cylinders	8
Compression ratio	10.5:1
Engine weight (without accessory drive components and with flexplate)	580 lb (263 kg)
Firing order	1-5-4-8-6-3-7-2
Spark plug	12405

Engine Oil

Item	Specification
Material: Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil / XO-5W30-Q1SP (WSS-M2C946-B1)	WSS-M2C946-B1

Engine Oil Capacity

Item	Specification
Service fill including oil filter	8 qt (7.5 L)

Torque Specifications

Engine oil drain plug: 19 lb.ft (26 Nm)

Oil Pressure

Item	Specification

Item	Specification
Minimum oil pressure at idle (engine at normal operating temperature)	8.0 psi (55 kPa)

Cylinder Head

Item	Specification
Head gasket surface flatness	0.025 mm (0.001 in) in any 25 mm (1 in) x 25 mm (1 in) area; 0.05 mm (0.002 in) in any 150 mm (6 in) x 150 mm (6 in) area; 0.1 mm (0.004 in) overall
Combustion chamber volume	3.8718 inÂ³ (63.447 cmÂ³)
Rocker arm ratio	1.8:1
Valve arrangement (front to rear) â€" LH	I-E-I-E-I-E-I-E
Valve arrangement (front to rear) â€" RH	E-I-E-I-E-I-E-I
Valve face runout â€" intake	0.002 in (.05 mm)
Valve face runout â€" exhaust	0.002 in (.05 mm)
Valve face angle â€" intake	45.5 â€“46 Â°
Valve face angle â€" exhaust	50.5 â€“51 Â°
Valve guide bore diameter	0.314 â€“0.315 in (7.975 â€“8.005 mm)
Valve head diameter â€" intake	2.160 â€“2.170 in (54.87 â€“55.13 mm)
Valve head diameter â€" exhaust	1.664 â€“1.674 in (42.27 â€“42.53 mm)
Valve seat width â€" intake	0.067 â€“0.079 in (1.7 â€“2 mm)
Valve seat width â€" exhaust	0.051 â€“0.063 in (1.3 â€“1.6 mm)
Valve seat angle â€" intake	44.5 â€“45.5 Â°
Valve seat angle â€" exhaust	49.5 â€“50.5 Â°

Valve

Item	Specification
Valve stem diameter â€" intake	0.3123 â€“0.3131 in (7.933 â€“7.953 mm)
Valve stem diameter â€" exhaust	0.3119 â€“0.3126 in (7.921 â€“7.941 mm)
Valve stem-to-guide clearance â€" intake	0.0009 â€“0.0028 in (.022 â€“.072 mm)
Valve stem-to-guide clearance â€" exhaust	0.0013 â€“0.0033 in (.034 â€“.084 mm)

Valve Springs â€" Engine Code: LC3E-6007-KA

Item	Specification
Valve spring free length â€" intake	2.6197 in (66.54 mm)

Item	Specification
Valve spring free length â€" exhaust	2.7610 in (70.13 mm)
Valve spring installed height	2.3622 in (60 mm)
Valve spring installed pressure â€" intake	63.62 â€“70.37 lb (283 â€“313 N)
Valve spring installed pressure â€" exhaust	84.75 â€“93.75 lb (377 â€“417 N)
Valve spring compression pressure â€" intake	252.46 â€“276.29 lb (1,123 â€“1,229 N)
Valve spring compression pressure â€" exhaust	248.86 â€“272.24 lb (1,107 â€“1,211 N)

Valve Springs â€" Engine Code: LC3E-6007-JA

Item	Specification
Valve spring free length â€" intake	2.6791 in (68.05 mm)
Valve spring free length â€" exhaust	2.8209 in (71.65 mm)
Valve spring installed height	2.3622 in (60 mm)
Valve spring installed pressure â€" intake	78.46 â€“86.55 lb (349 â€“385 N)
Valve spring installed pressure â€" exhaust	98.02 â€“107.01 lb (436 â€“476 N)
Valve spring compression pressure â€" intake	274.27 â€“299.90 lb (1,220 â€“1,334 N)
Valve spring compression pressure â€" exhaust	265.72 â€“289.10 lb (1,182 â€“1,286 N)

Camshaft

Item	Specification
Camshaft journal bore inside diameter	2.3617 â€“2.3627 in (59.986 â€“60.013 mm)
Camshaft journal-to- bearing clearance	0.0010 â€“0.0030 in (.025 â€“.076 mm)
End play	0.0030 â€“0.0065 in (.075 â€“.165 mm)
Journal diameter	2.3597 â€“2.3607 in (59.937 â€“59.963 mm)
Lobe lift â€" intake	0.2990 in (7.595 mm)
Lobe lift â€" exhaust	0.3337 in (8.477 mm)
Runout	0.0010 in (.025 mm)
Theoretical valve lift @ 0 lash â€" intake	0.5433 in (13.8 mm)
Theoretical valve lift @ 0 lash â€" exhaust	0.6063 in (15.4 mm)

Cylinder Block

Item	Specification
Camshaft Bore Diameter â€" Journal 1 and 5	2.5428 â€“2.5438 in (64.588 â€“64.613 mm)
Camshaft Bore Diameter â€" Journal 2 and 4	2.5231 â€“2.5241 in (64.088 â€“64.113 mm)

Item	Specification
Camshaft Bore Diameter â€" Journal 3	2.5035 â€“2.5044 in (63.588 â€“63.613 mm)
Cylinder bore diameter	4.2205 â€“4.2212 in (107.2 â€“107.218 mm)
Cylinder bore maximum taper	0.0006 in (.016 mm)
Cylinder bore maximum out-of-round	0.0008 in (.02 mm)
Main bearing bore inside diameter	2.8504 â€“2.8513 in (72.4 â€“72.424 mm)
Head gasket surface flatness	0.025 mm (0.0009) in any 25 mm (0.984 in) x 25 mm (0.984 in) area; 0.05 mm (0.002 in) in any 150 mm (6 in) x 150 mm (6 in) area; 0.100 mm (0.004 in) overall

Crankshaft

Item	Specification
Connecting rod journal diameter	2.0859 â€“2.0867 in (52.983 â€“53.003 mm)
Connecting rod journal maximum taper	0.0002 in (.004 mm)
Connecting rod journal maximum out-of-round	0.0002 in (.006 mm)
Crankshaft end play	0.0079 â€“0.0157 in (.2 â€“.4 mm)
Main bearing journal diameter	2.6568 â€“2.6576 in (67.483 â€“67.503 mm)
Main bearing journal maximum out-of-round	0.0002 in (.006 mm)
Main bearing journal maximum taper	0.0002 in (.004 mm)
Main bearing journal-to-crankshaft clearance	0.0015 â€“0.0025 in (.037 â€“.064 mm)

Piston

Item	Specification
Piston diameter (at right angle to pin bore)	4.2181 â€“4.2187 in (107.141 â€“107.155 mm)
Piston-toâ€“cylinder bore clearance (at grade size)	0.0018 â€“0.0030 in (.045 â€“.077 mm)
Piston pin bore diameter	0.9844 â€“0.9846 in (25.005 â€“25.01 mm)

Rings

Item	Specification
Piston ring end gap â€" top	0.0157 â€“0.0197 in (.4 â€“.5 mm)
Piston ring end gap â€" intermediate	0.0315 â€“0.0394 in (.8 â€“1 mm)
Piston ring end gap â€" oil control	0.0059 â€“0.0177 in (.15 â€“.45 mm)
Piston ring groove width â€" top	0.0602 â€“0.0610 in (1.53 â€“1.55 mm)
Piston ring groove width â€" intermediate	0.0484 â€“0.0492 in (1.23 â€“1.25 mm)
Piston ring groove width â€" oil control	0.0996 â€“0.1004 in (2.53 â€“2.55 mm)

Item	Specification
Piston ring width â€” top	0.0579 â€“0.0591 in (1.47 â€“1.5 mm)
Piston ring width â€” intermediate	0.0461 â€–0.0472 in (1.17 â€–1.2 mm)
Piston ring width â€” oil control	0.0984 in (2.5 mm)
Piston ring-to-groove clearance â€” top	0.0012 â€–0.0031 in (.03 â€–.08 mm)
Piston ring-to-groove clearance â€” intermediate	0.0012 â€–0.0031 in (.03 â€–.08 mm)

Piston Pin

Item	Specification
Piston pin diameter	0.9841 â€–0.9843 in (24.997 â€–25 mm)
Piston pin length	2.3563 â€–2.3681 in (59.85 â€–60.15 mm)
Piston pin-to-piston clearance	0.0002 â€–0.0005 in (.005 â€–.013 mm)

Connecting Rod

Item	Specification
Connecting rod bearing-to-crankshaft clearance	0.0013 â€–0.0034 in (.033 â€–.086 mm)
Connecting rod length (center-to-center)	6.3189 in (160.5 mm)
Connecting rod maximum allowed bend	0.0008 in (.02 mm)
Connecting rod-to-pin clearance	0.0001 â€–0.0007 in (.003 â€–.018 mm)
Connecting rod pin bore diameter	0.9844 â€–0.9848 in (25.003 â€–25.015 mm)
Connecting rod side clearance	0.0049 â€–0.0187 in (.125 â€–.475 mm)