Engine Mechanical Specifications (RPO LMG VIN 0)

| Application | Specification | |
|---|---|---|
| | Metric | English |
| **General** | | |
| Engine Type | V8 | |
| Displacement | 5.3L | 325 CID |
| RPO | LMG | |
| VIN | 0 | |
| Bore | 96.0-96.018 mm | 3.779-3.78 in |
| Stroke | 92.0 mm | 3.622 in |
| Compression Ratio | 9.95:1 | |
| Firing Order | 1-8-7-2-6-5-4-3 | |
| Active Fuel Management Cylinders | 1-4-6-7 | |
| Spark Plug Gap | 1.02 mm | 0.04 in |
| **Block** | | |
| Camshaft Bearing Bore 1 and 5 Diameter | 59.58-59.63 mm | 2.345-2.347 in |
| Camshaft Bearing Bore 2 and 4 Diameter | 59.08-59.13 mm | 2.325-2.327 in |
| Camshaft Bearing Bore 3 Diameter | 58.58-58.63 mm | 2.306-2.308 in |
| Crankshaft Main Bearing Bore Diameter | 69.871-69.889 mm | 2.75-2.751 in |
| Crankshaft Main Bearing Bore Out-of-Round | 0.006 mm | 0.0002 in |
| Cylinder Bore Diameter | 96.0-96.018 | 3.779-3.78 |

| | mm | in |
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| Cylinder Head Deck Height - Measuring from the Centerline of Crankshaft to the Deck Face | 234.57-234.82 mm | 9.235-9.245 in |
| Cylinder Head Deck Surface Flatness - Measured Within a 152.4 mm (6.0 in) Area | 0.11 mm | 0.004 in |
| Cylinder Head Deck Surface Flatness - Measuring the Overall Length of the Block Deck | 0.22 mm | 0.008 in |
| Valve Lifter Bore Diameter | 21.417-21.443 mm | 0.843-0.844 in |
| **Camshaft** | | |
| Camshaft End Play | 0.025-0.305 mm | 0.001-0.012 in |
| Camshaft Journal Diameter | 54.99-55.04 mm | 2.164-2.166 in |
| Camshaft Bearing Diameter | 55.063-55.088 mm | 2.1678-2.1688 in |
| Camshaft Journal-to-Bearing Clearance | 0.023-0.098 mm | 0.0009-0.0038 in |
| Camshaft Journal Out-of-Round | 0.025 mm | 0.001 in |
| Camshaft Lobe Lift - Exhaust - Non Active Fuel Management Cylinders | 7.2 mm | 0.283 in |
| Camshaft Lobe Lift - Exhaust - Active Fuel Management Cylinders | 7.33 mm | 0.289 in |
| Camshaft Lobe Lift - Intake - Non Active Fuel Management Cylinders | 7.2 mm | 0.283 in |
| Camshaft Lobe Lift - Intake - Active Fuel Management Cylinders | 7.33 mm | 0.289 in |
| Camshaft Runout - Measured at the Intermediate Journals | 0.05 mm | 0.002 in |
| **Connecting Rod** | | |
| Connecting Rod Bearing Clearance - Production | 0.023-0.065 mm | 0.0009-0.0025 in |

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| Connecting Rod Bearing Clearance - Service | 0.023-0.076 mm | 0.0009-0.003 in |
| Connecting Rod Bore Diameter - Bearing End | 56.505-56.525 mm | 2.224-2.225 in |
| Connecting Rod Bore Out-of-Round - Bearing End - Production | 0.004-0.008 mm | 0.00015-0.0003 in |
| Connecting Rod Bore Out-of-Round - Bearing End - Service | 0.004-0.008 mm | 0.00015-0.0003 in |
| Connecting Rod Side Clearance | 0.11-0.51 mm | 0.00433-0.02 in |
| **Crankshaft** | | |
| Connecting Rod Journal Diameter - Production | 53.318-53.338 mm | 2.0991-2.0999 in |
| Connecting Rod Journal Diameter - Service | 53.308 mm | 2.0987 in |
| Connecting Rod Journal Out-of-Round - Production | 0.005 mm | 0.0002 in |
| Connecting Rod Journal Out-of-Round - Service | 0.01 mm | 0.0004 in |
| Connecting Rod Journal Taper - Maximum for 1/2 of Journal Length - Production | 0.005 mm | 0.0002 in |
| Connecting Rod Journal Taper - Maximum for 1/2 of Journal Length - Service | 0.02 mm | 0.00078 in |
| Crankshaft End Play | 0.04-0.2 mm | 0.0015-0.0078 in |
| Crankshaft Main Bearing Clearance - Production | 0.02-0.052 mm | 0.0008-0.0021 in |
| Crankshaft Main Bearing Clearance - Service | 0.02-0.065 mm | 0.0008-0.0025 in |
| Crankshaft Main Journal Diameter - Production | 64.992-65.008 mm | 2.558-2.559 in |
| Crankshaft Main Journal Diameter - Service | 64.992 mm | 2.558 in |
| Crankshaft Main Journal Out-of-Round - Production | 0.003 mm | 0.000118 in |

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| Crankshaft Main Journal Out-of-Round - Service | 0.008 mm | 0.0003 in |
| Crankshaft Main Journal Taper - Production | 0.01 mm | 0.0004 in |
| Crankshaft Main Journal Taper - Service | 0.02 mm | 0.00078 in |
| Crankshaft Rear Flange Runout | 0.05 mm | 0.002 in |
| Crankshaft Reluctor Ring Runout - Measured 1.0 mm (0.04 in) Below Tooth Diameter | 0.7 mm | 0.028 in |
| Crankshaft Thrust Surface - Production | 26.14-26.22 mm | 1.029-1.0315 in |
| Crankshaft Thrust Surface - Service | 26.22 mm | 1.0315 in |
| Crankshaft Thrust Surface Runout | 0.025 mm | 0.001 in |
| **Cylinder Head** | | |
| Cylinder Head Height/Thickness - Measured from the Cylinder Head Deck to the Valve Rocker Arm Cover Seal Surface | 120.2 mm | 4.732 in |
| Surface Flatness - Block Deck - Measured Within a 152.4 mm (6.0 in) Area | 0.08 mm | 0.003 in |
| Surface Flatness - Block Deck - Measuring the Overall Length of the Cylinder Head | 0.1 mm | 0.004 in |
| Surface Flatness - Exhaust Manifold Deck | 0.13 mm | 0.005 in |
| Surface Flatness - Intake Manifold Deck | 0.08 mm | 0.0031 in |
| Valve Guide Installed Height - Measured from the Spring Seat Surface to the Top of the Guide | 17.32 mm | 0.682 in |
| **Intake Manifold** | | |
| Surface Flatness - Measured at Gasket Sealing Surfaces and Measured Within a 200 mm (7.87 in) Area that Includes 2 Runner Port Openings | 0.3 mm | 0.118 in |
| Lubrication System | | |
| Oil Capacity - with Filter | 5.68 liters | 6.0 quarts |
| Oil Capacity - without Filter | 5.2 liters | 5.5 quarts |

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| Oil Pressure - Minimum - Hot | 41 kPa at 1,000 engine RPM<br>124 kPa at 2,000 engine RPM<br>165 kPa at 4,000 engine RPM | 6 psig at 1,000 engine RPM<br>18 psig at 2,000 engine RPM<br>24 psig at 4,000 engine RPM |
| Active Fuel Management Relief Valve Oil Pressure - as Measured at Oil Pressure Sensor Location | 379-517 kPa<br>Maximum | 55-75 psig<br>Maximum |
| **Oil Pan** | | |
| Front Cover Alignment - at Oil Pan Surface | 0.0-0.5 mm | 0.0-0.02 in |
| Crankshaft Rear Oil Seal Housing Alignment - at Oil Pan Surface | 0.0-0.5 mm | 0.0-0.02 in |
| Oil Pan Alignment - to Rear of Engine Block at Transmission Bell Housing Mounting Surface | 0.0-0.1 mm | 0.0-0.004 in |
| Piston Rings | | |
| Piston Ring End Gap - First Compression Ring - Measured in Cylinder Bore - Production | 0.23-0.44 mm | 0.009-0.017 in |
| Piston Ring End Gap - First Compression Ring - Measured in Cylinder Bore - Service | 0.23-0.5 mm | 0.009-0.0196 in |
| Piston Ring End Gap - Second Compression Ring - Measured in Cylinder Bore - Production | 0.44-0.7 mm | 0.017-0.027 in |
| Piston Ring End Gap - Second Compression Ring - Measured in Cylinder Bore - Service | 0.44-0.76 mm | 0.0173-0.03 in |
| Piston Ring End Gap - Oil Control Ring - Measured in Cylinder Bore - Production | 0.18-0.75 mm | 0.007-0.029 in |
| Piston Ring End Gap - Oil Control Ring - Measured in Cylinder Bore - Service | 0.18-0.81 mm | 0.007-0.032 in |

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| Piston Ring-to-Groove Clearance - First Compression Ring - Production | 0.04-0.085 mm | 0.00157-0.00335 in |
| Piston Ring-to-Groove Clearance - First Compression Ring - Service | 0.04-0.085 mm | 0.00157-0.00335 in |
| Piston Ring-to-Groove Clearance - Second Compression Ring - Production | 0.04-0.078 mm | 0.00157-0.0031 in |
| Piston Ring-to-Groove Clearance - Second Compression Ring - Service | 0.04-0.078 mm | 0.00157-0.0031 in |
| Piston Ring-to-Groove Clearance - Oil Control Ring - Production | 0.012-0.2 mm | 0.0005-0.0078 in |
| Piston Ring-to-Groove Clearance - Oil Control Ring - Service | 0.012-0.2 mm | 0.0005-0.0078 in |
| **Pistons and Pins** | | |
| Pin - Piston Pin Clearance-to-Piston Pin Bore - Production | 0.002-0.01 mm | 0.00008-0.0004 in |
| Pin - Piston Pin Clearance-to-Piston Pin Bore - Service | 0.002-0.015 mm | 0.00008-0.0006 in |
| Pin - Piston Pin Diameter | 23.952-23.955 mm | 0.943-0.943 in |
| Pin - Piston Pin Fit in Connecting Rod Bore - Production | 0.007-0.02 mm | 0.00027-0.00078 in |
| Pin - Piston Pin Fit in Connecting Rod Bore - Service | 0.007-0.022 mm | 0.00027-0.00086 in |
| Piston - Piston Diameter - Measured Over Skirt Coating | 96.002-96.036 mm | 3.779-3.78 in |
| Piston - Piston to Bore Clearance - Production | -0.036 to +0.016 mm | -0.0014 to +0.0006 in |
| Piston - Piston to Bore Clearance - Service Limit with Skirt Coating Worn Off | 0.071 mm | 0.0028 in |
| **Valve System** | | |
| Valves - Valve Face Angle | 45 degrees | |

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| Valves - Valve Face Width | 1.25 mm | 0.05 in |
| Valves - Valve Lash | Net Lash - No Adjustment | |
| Valve Lift - Exhaust - Non Active Fuel Management | 12.24 mm | 0.488 in |
| Valve Lift - Exhaust - Active Fuel Management | 12.46 mm | 0.491 in |
| Valve Lift - Intake - Non Active Fuel Management | 12.24 mm | 0.488 in |
| Valve Lift - Intake - Active Fuel Management | 12.46 mm | 0.491 in |
| Valves - Valve Seat Angle | 46 degrees | |
| Valves - Valve Seat Runout | 0.05 mm | 0.002 in |
| Valves - Valve Seat Width - Exhaust | 1.78 mm | 0.07 in |
| Valves - Seat Width - Intake | 1.02 mm | 0.04 in |
| Valves - Valve Stem Diameter - Production | 7.955-7.976 mm | 0.313-0.314 in |
| Valves - Valve Stem Diameter - Service | 7.95 mm | 0.313 in |
| Valves - Valve Stem-to-Guide Clearance - Production - Exhaust | 0.025-0.066 mm | 0.001-0.0026 in |
| Valves - Valve Stem-to-Guide Clearance - Service - Exhaust | 0.093 mm | 0.0037 in |
| Valves - Valve Stem-to-Guide Clearance - Production - Intake | 0.025-0.066 mm | 0.001-0.0026 in |
| Valves - Valve Stem-to-Guide Clearance - Service - Intake | 0.093 mm | 0.0037 in |
| Rocker Arms - Valve Rocker Arm Ratio | 1.70:1 | |
| Valve Springs - Valve Spring Free Length | 52.9 mm | 2.08 in |
| Valve Springs - Valve Spring Installed Height | 45.75 mm | 1.8 in |
| Valve Springs - Valve Spring Load - Closed | 340 N at 45.75 mm | 76 lb at 1.8 in |
| Valve Springs - Valve Spring Load - Open | 980 N at 33.55 mm | 220 lb at 1.32 in |