

# SPECIFICATIONS 6.4L

(ChallengerTalk.com)

## GENERAL DESCRIPTION

DESCRIPTION	SPECIFICATION
Engine Type	90° V-8 OHV
Displacement	6.4 Liters 392 (Cubic Inches)
Bore	103.9 mm (4.09 in.)
Stroke	94.6 mm (3.72 in.)
Compression Ratio	10.9:1
Firing Order	1-8-4-3-6-5-7-2
Lubrication	Pressure Feed - Full Flow Filtration
Cooling System	Liquid Cooled - Forced Circulation
Cylinder Block	Cast Iron
Cylinder Head	Aluminum
Crankshaft	Forged Steel
Camshaft	Cast Iron
Pistons	Aluminum Alloy
Connecting Rods	Powdered Metal

## CYLINDER BLOCK

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Cylinder Bore Diameter	103.9 mm	4.09 in.
Out of Round (MAX)	0.008 mm	0.0003 in.
Taper (MAX)	0.0127 mm	0.0005 in.
Lifter Bore Diameter	21.45 - 21.425 mm	0.8444 - 0.8435 in.

## PISTONS

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DESCRIPTION	SPECIFICATION	
	Metric	Standard
Clearance Measured at 38.0 mm (1.5 in.) Below Deck	0.0245 - 0.0515 mm	0.00096 - 0.0020 in.
Ring Groove Diameter	Groove #1	93.1 - 93.4 mm 3.665 - 3.677 in.
	Groove #2	91.6 - 91.8 mm 3.606 - 3.614 in.
Weight	435 grams	15.34 oz.
Piston Length	54.70 - 55.30 mm	2.153 - 2.177 in.
Ring Groove Width	No. 1	1.2 mm 0.0472 in.
	No. 2	1.2 mm 0.0472 in.
	No. 3	2.0 mm 0.0787 in.

### PISTON RINGS

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Ring Gap	Top Compression Ring	0.30 - 0.40 mm 0.0118 - 0.0157 in.
	Second Compression Ring	0.35 - 0.60 mm 0.0137 - 0.0236 in.
	Oil Control (Steel Rails)	0.20 - 0.71 mm 0.0079 - 0.028 in.
Side Clearance	Top Compression Ring	0.02 - 0.068 mm 0.0007 - 0.0026 in.
	Second Compression Ring	0.02 - 0.058 mm 0.0007 - 0.0022 in.
	Oil Ring (Steel Ring)	0.019 - 0.229 mm 0.0007 - 0.0091 in.
Ring Width	Top Compression Ring	1.472 - 1.490 mm 0.0579 - 0.0586 in.
	Second Compression Ring	1.472 - 1.490 mm 0.0579 - 0.0586 in.
	Oil Ring (Steel Rails)	0.447 - 0.473 mm 0.0175 - 0.0186 in.

## CONNECTING RODS

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Side Clearance	0.10 - 0.35 mm	0.003 - 0.0137 in.

## CRANKSHAFT

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Main Bearing Journal Diameter	65 mm	2.6 in.
Bearing Clearance	0.023 - 0.051 mm	0.0009 - 0.002 in.
Out of Round (MAX)	0.005 mm	0.0002 in.
Taper (MAX)	0.003 mm	0.0001 in.
End Play	0.052 - 0.282 mm	0.002 - 0.011 in.
End Play (MAX)	0.282 mm	0.011 in.
Connecting Rod Journal Diameter	54 mm	2.126 in.
Bearing Clearance	0.020 - 0.074 mm	0.0007 - 0.0029 in.
Out of Round (MAX)	0.005 mm	0.0002 in.
Taper (MAX)	0.003 mm	0.0001 in.

## CAMSHAFT

DESCRIPTION	SPECIFICATION		
	Metric	Standard	
Bearing Journal Diameter	No. 1	58.2 mm	2.29 in.
	No. 2	57.8 mm	2.27 in.
	No. 3	57.4 mm	2.26 in.
	No. 4	57.0 mm	2.24 in.
	No. 5	43.633 mm	1.72 in.

Bearing To Journal Clearance Standard	No. 1	0.040 - 0.080 mm	0.0015 - 0.003 in.
	No. 2	0.050 - 0.090 mm	0.0019 - 0.0035 in.
	No. 3	0.040 - 0.080 mm	0.0015 - 0.003 in.
	No. 4	0.050 - 0.090 mm	0.0019 - 0.0035 in.
	No. 5	0.040 - 0.080 mm	0.0015 - 0.003 in.
Camshaft End Play		.080 - 0.290 mm	0.0031 - 0.0114 in.

### VALVE TIMING

DESCRIPTION		SPECIFICATION
Intake	Opens (BTDC)	36.0°
	Closes (ATDC)	250.0°
	Duration	286.0°
Exhaust	Opens (BTDC)	278°
	Closes (ATDC)	10°
	Duration	288.0°
Valve Overlap		46°

### CYLINDER HEAD

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Valve Seat Angle	44.5° - 45.0°	
Valve Seat Runout (MAX)	0.04 mm	0.0016 in.
Valve Seat Width	Intake	0.94 - 1.04 mm 0.037 - 0.041 in.
	Exhaust	1.16 - 1.26 mm 0.046 - 0.050 in.
Guide Bore Diameter		

Intake	7.975 - 7.997 mm	0.314 - 0.315 in.
Exhaust	7.975 - 7.990 mm	0.314 - 0.315 in.

### HYDRAULIC TAPPETS

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Body Diameter	21.387 - 21.405 mm	0.8420 - 0.8427 in.
Clearance (To Bore)	0.020 - 0.063 mm	0.0007 - 0.0024 in.
Dry Lash (at the valve)	3.0 mm	0.1181 in.

### VALVES

DESCRIPTION	SPECIFICATION	
	Metric	Standard
Face Angle	Intake	45.5° - 46.0°
	Exhaust	45.0° - 45.5°
Head Diameter	Intake	54.14 - 54.46 mm 2.131 - 2.144 in.
	Exhaust	41.87 - 42.13 mm 1.648 - 1.659 in.
Length (Overall From Gage Line)	Intake	128.38 - 128.76 mm 5.054 - 5.069 in.
	Exhaust	126.975 - 127.355 mm 4.999 - 5.014 in.
Stem Diameter	Intake	7.934 - 7.954 mm 0.312 - 0.313 in.
	Exhaust	7.930 - 7.950 mm 0.312 - 0.313 in.
Stem - to - Guide Clearance	Intake	0.021 - 0.066 mm 0.0008 - 0.0025 in.
	Exhaust	0.025 - 0.070 mm 0.0010 - 0.0028 in.
Valve Lift (@ Zero Lash)		

Intake	14.65 mm	0.577 in.
Exhaust	13.65 mm	0.537 in.

### VALVE SPRING

DESCRIPTION		SPECIFICATION	
		Metric	Standard
Spring Force (Valve Closed)	Intake	510.0 N ± 26.0 N @ 52.1 mm	114.7 lbs. ± 5.8 lbs. @ 2.051 in.
	Exhaust	510.0 N ± 26.0 N @ 52.1 mm	114.7 lbs. ± 5.8 lbs. @ 2.051 in.
Spring Force (Valve Open)	Intake	1500.0 N ± 70.0 N @ 37.6 mm	337.2 lbs. ± 15.7 lbs. @ 1.480 in.
	Exhaust	1500.0 N ± 70.0 N @ 37.6 mm	337.2 lbs. ± 15.7 lbs. @ 1.480 in.
Free Length (approx.)	Intake	63.9 mm	2.516 in.
	Exhaust	63.9 mm	2.516 in.
Number of Coils	Intake	8.55	
	Exhaust	8.55	
Wire Diameter	Intake and Exhaust	5.65 × 4.51 mm	0.222 - 0.178 in.
Installed Height (Spring Seat to Bottom of Retainer)	Intake	52.1 mm	2.051 in.
	Exhaust	51.2 mm	2.016 in.

### OIL PUMP

DESCRIPTION	SPECIFICATION

	<b>Metric</b>	<b>Standard</b>
Clearance Over Rotors (MAX)	0.095 mm	0.0038 in.
Outer Rotor to Pump Body Clearance (MAX)	0.235 mm	0.009 in.
Tip Clearance Between Rotors (MAX)	0.150 mm	0.006 in.

### **OIL PRESSURE**

<b>SPECIFICATION</b>	<b>SPECIFICATION</b>
At Curb Idle Speed (min.)*	25 kPa (4 psi)
@ 3000 rpm	170 - 758 kPa (25 - 110 psi)
<b>* CAUTION: If pressure is zero at curb idle, DO NOT run engine</b>	