

**2006 MINI Cooper**

2002-08 ENGINE Engine - Tightening Torques - Cooper (W10) &amp; Cooper S (W11)

**2002-08 ENGINE****Engine - Tightening Torques - Cooper (W10) & Cooper S (W11)****ENGINE BLOCK****11 11 ENGINE BLOCK****ENGINE BLOCK - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 3AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Main bearing bolts, inner	W10 / W11	M10	Replace, wash and oil screws	60 N.m.
2AZ Main bearing bolts, outer	W10 / W11	M8	Replace, wash and oil screws	35 N.m.
3AZ Coolant plug to crankcase	W10 / W11			23 N.m.

**CYLINDER HEAD WITH COVER****11 12 CYLINDER HEAD AND CYLINDER HEAD COVER****CYLINDER HEAD AND CYLINDER HEAD COVER - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 13AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Cylinder head cover to cylinder head	W10/W11			12 N.m.
2AZ Thermostat to cylinder head	W10/W11	M6		12 N.m.
3AZ Cylinder head bolts to crankcase	W10/W11		Jointing torque	40 N.m.
			Torque angle	90 °
4AZ Cylinder head bolts to crankcase	W10/W11	M8		28 N.m.
5AZ Camshaft gear to camshaft	W10/W11	M12		102 N.m.
6AZ Seal plug, chain tensioner	W10/W11			63 N.m.
7AZ Seal plug to cylinder head	W10/W11			18 N.m.
8AZ Intake manifold to cylinder head	W10/W11	M8		26 N.m.
9AZ Engine carrier to cylinder block	W10/W11			100 N.m.
10AZ Hydro-mount to body (screw)	W10/W11	M10 x 110	Jointing torque	56 N.m.
			Torque angle	90 °
11AZ Hydraulic-mount to body	W10/W11			100 N.m.
12AZ Guide and tensioning rail to cylinder head	W10/W11	M8		28 N.m.
13AZ Engine mounting to engine mount	W10/W11			68 N.m.

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### 11 12 CYLINDER HEAD AND CYLINDER HEAD COVER

#### CYLINDER HEAD AND CYLINDER HEAD COVER - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (14AZ - 21AZ)

	Type	Thread	Tightening specification	Measure
14AZ Upper stabilizer bracket to body mounting	W10/W11			100 N.m.
15AZ Upper stabilizer bracket to engine mounting	W10/W11			100 N.m.
16AZ Lower stabilizer to oil sump holder	W10/W11			100 N.m.
17AZ Lower stabilizer to front axle	W10/W11			100 N.m.
18AZ Engine vent valve to cylinder head cover	W10/W11			7 N.m.
19AZ Stabilizer bracket to oil sump	W10/W11			45 N.m.
20AZ Mounting screws for mounting (left) of intercooler to intake manifold	W11 M6			9 N.m.
21AZ Mounting screws for mounting (right) of intercooler to intake manifold	W11 M6			9 N.m.

### OIL SUMP

#### 11 13 OIL PAN

#### OIL PAN - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 6AZ)

	Type	Thread	Tightening specification	Measure
1AZ Oil drain plug to oil sump	W10/W11	M14 x 16		25 N.m.
2AZ Oil sump to bearing support	W10/W11	M8		31 N.m.
3AZ Oil strainer to bearing bracket	W10/W11	M6		12 N.m.
4AZ Oil sump to crankcase	W10/W11	M8		31 N.m.
5AZ Oil sump to crankcase, transmission side	W10/W11	M8		31 N.m.
6AZ Oil sump to crankcase, exhaust side	W10/W11	M8		31 N.m.

### HOUSING COVER

#### CASE COVERS

#### CASE COVERS - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 4AZ)

	Type	Thread	Tightening specification	Measure
1AZ Timing case cover to crankcase (Torx)	W10/W11	M6		12 N.m.
2AZ Deflection pulley to timing case cover	W11	M8		45 N.m.
3AZ Timing case cover to crankcase (oval head)	W10/W11	M8		18 N.m.

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4AZ Timing case to crankcase		M6		12 N.m.
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**CRANKSHAFT WITH BEARING****11 11 ENGINE BLOCK****ENGINE BLOCK - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 3AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Main bearing bolts, inner	W10 / W11	M10	Replace, wash and oil screws	60 N.m.
2AZ Main bearing bolts, outer	W10 / W11	M8	Replace, wash and oil screws	35 N.m.
3AZ Coolant plug to crankcase	W10 / W11			23 N.m.

**11 21 CRANKSHAFT****CRANKSHAFT - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Increment wheel on crankshaft	W10/W11	M6		12 N.m.

**FLYWHEEL****11 21 CRANKSHAFT****CRANKSHAFT - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Increment wheel on crankshaft	W10/W11	M6		12 N.m.

**11 22 FLYWHEEL****FLYWHEEL - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 2AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Flywheel screws	W10 M10			80 N.m.
2AZ Dual-mass flywheel to crankshaft	W11 M10			90 N.m.

**VIBRATION DAMPER****11 31 CAMSHAFT****CAMSHAFT - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 4AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Sprocket to camshaft	W10/W11	M12	Replace screw	100 N.m.
2AZ Guide rail to cylinder head	W10/W11	M8		30 N.m.

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3AZ Tensioning rail to cylinder head	W10/W11	M8		30 N.m.
4AZ Seal plug (chain tensioning piston) to cylinder head	W10/W11			65 N.m.

**11 24 CONNECTING RODS AND BEARINGS****CONNECTING RODS AND BEARINGS - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Connecting rod bolts	W10/W11	M8	Replace screw	
			Jointing torque	20 N.m.
			Torque angle	90 °

**11 43 OIL FILLING****OIL FILLING - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 2AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Oil dipstick to crankcase	W10/W11	M10		50 N.m.
2AZ Oil dipstick to crankcase	W10/W11	M8		25 N.m.

**11 42 OIL FILTER AND PIPES****OIL FILTER AND PIPES - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 5AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Oil filter to crankcase	W10	M8		30 N.m.
2AZ Oil pressure switch to oil filter	W10/W11	3/8"		20 N.m.
3AZ Oil filter cover to oil filter	W10/W11	3 1/4"		25 N.m.
4AZ Oil suction pipe to crankcase	W10	M6		12 N.m.
5AZ Oil filter to crankcase	W11	M8		25 N.m.

**11 23 VIBRATION DAMPER****VIBRATION DAMPER - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Vibration damper to crankshaft	W10/W11	M12	Replace screw	115 N.m.

**CONNECTING RODS AND BEARING****11 11 ENGINE BLOCK****ENGINE BLOCK - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 3AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Main bearing bolts, inner	W10 / W11	M10	Replace, wash and oil screws	60 N.m.

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2AZ Main bearing bolts, outer	W10 / W11	M8	Replace, wash and oil screws	35 N.m.
3AZ Coolant plug to crankcase	W10 / W11			23 N.m.

### 11 24 CONNECTING RODS AND BEARINGS

#### CONNECTING RODS AND BEARINGS - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 3AZ)

	Type	Thread	Tightening specification	Measure
1AZ Connecting rod bolts	W10/W11	M8	Replace screw	
			Jointing torque	20 N.m.
			Torque angle	90 °

### V RIBBED BELT W/TENS. DEFLECT ELEMENT

#### 11 28 RIBBED V-BELT WITH TENSION AND GUIDE ELEMENT

#### RIBBED V-BELT WITH TENSION AND GUIDE ELEMENT - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 4AZ)

	Type	Thread	Tightening specification	Measure
1AZ Belt tensioner to crankcase	W10	M6		9 N.m.
2AZ Belt tensioner to crankcase	W11	M10		45 N.m.
3AZ Belt tensioner to compressor	W11	M10		45 N.m.
4AZ Tension pulley to oil sump	W11	M10		45 N.m.

### CAMSHAFT

#### 11 31 CAMSHAFT

#### CAMSHAFT - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 4AZ)

	Type	Thread	Tightening specification	Measure
1AZ Sprocket to camshaft	W10/W11	M12	Replace screw	100 N.m.
2AZ Guide rail to cylinder head	W10/W11	M8		30 N.m.
3AZ Tensioning rail to cylinder head	W10/W11	M8		30 N.m.
4AZ Seal plug (chain tensioning piston) to cylinder head	W10/W11			65 N.m.

### ROCKER ARMS WITH BEARING MOUNT

#### 11 33 ROCKER ARMS/DRAG ARMS AND BEARINGS

#### ROCKER ARMS/DRAG ARMS AND BEARINGS - TIGHTENING TORQUES - COOPER (1.6L)

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### R50/W10 (1AZ)

	Type	Thread	Tightening specification	Measure
1AZ Rocker arm shaft to bearing cap	W10/W11	M8		30 N.m.

## OIL PUMP WITH FILTER AND DRIVE

### 11 41 OIL PUMP WITH SUCTION ELEMENT AND DRIVE

### OIL PUMP WITH SUCTION ELEMENT AND DRIVE - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ)

	Type	Thread	Tightening specification	Measure
1AZ Oil pump cover to timing case cover, inner	W10/W11	M8		18 N.m.

## OIL FILTER AND LINES

### 11 42 OIL FILTER AND PIPES

### OIL FILTER AND PIPES - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 5AZ)

	Type	Thread	Tightening specification	Measure
1AZ Oil filter to crankcase	W10	M8		30 N.m.
2AZ Oil pressure switch to oil filter	W10/W11	3/8"		20 N.m.
3AZ Oil filter cover to oil filter	W10/W11	3 1/4"		25 N.m.
4AZ Oil suction pipe to crankcase	W10	M6		12 N.m.
5AZ Oil filter to crankcase	W11	M8		25 N.m.

## OIL FILLING, DIPSTICK

### 11 43 OIL FILLING

### OIL FILLING - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 2AZ)

	Type	Thread	Tightening specification	Measure
1AZ Oil dipstick to crankcase	W10/W11	M10		50 N.m.
2AZ Oil dipstick to crankcase	W10/W11	M8		25 N.m.

## WATER PUMP WITH DRIVE

### 11 51 WATER PUMP WITH DRIVE

### WATER PUMP WITH DRIVE - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 7AZ)

	Type	Thread	Tightening specification	Measure
1AZ Water pump to crankcase	W10	M8		30 N.m.
2AZ Water pump to compressor	W11	M8		25 N.m.

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3AZ Water pump cover to water pump	W10	M5		6 N.m.
4AZ Water connecting piece to crankcase	W10	M6		8 N.m.
5AZ Water pump to pump shaft mounting	W10	M8		30 N.m.
6AZ Water pipe to crankcase	W10	M6		12 N.m.
7AZ Water pump elbow to crankcase	W11	M6		8 N.m.

## THERMOSTAT AND CONNECTIONS

### 11 53 THERMOSTAT AND CONNECTIONS

#### THERMOSTAT AND CONNECTIONS - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 2AZ)

	Type	Thread	Tightening specification	Measure
1AZ Coolant line to cylinder head	W10/W11	M8		25 N.m.
2AZ Thermostat to cylinder head	W10/W11	M6		12 N.m.

## INTAKE MANIFOLD

### 11 61 INTAKE MANIFOLD

#### INTAKE MANIFOLD - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 5AZ)

	Type	Thread	Tightening specification	Measure
1AZ Tighten down guide tube retaining screw	W10	M10		55 N.m.
2AZ Intake manifold to cylinder head	W10	M8		26 N.m.
3AZ Bypass valve to intake manifold	W11	M6		8 N.m.
4AZ Intake manifold to cylinder head	W11	M8		25 N.m.
5AZ Bypass valve to intercooler	W11	M6		8 N.m.

## EXHAUST MANIFOLD

### 11 62 EXHAUST MANIFOLD

#### EXHAUST MANIFOLD - TIGHTENING TORQUES - COOPER (1.6L) R50/W10 (1AZ - 2AZ)

	Type	Thread	Tightening specification	Measure
1AZ Tightening torque, heat shield to cylinder head	W10 / W11	M8 x 20		13 N.m.
2AZ Tightening torque, manifold screws	W10 / W11	M8 x 30		24 N.m.

## EMISSION CONTROL, OXYGEN SENSOR

### 11 78 EXHAUST TREATMENT. LAMBDA OXYGEN SENSOR

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**EXHAUST TREATMENT, LAMBDA OXYGEN SENSOR - TIGHTENING TORQUES - COOPER  
(1.6L) R50/W10 (1AZ - 2AZ)**

	Type	Thread	Tightening specification	Measure
1AZ Oxygen sensor before cat.; oxygen sensor after cat.	W10 / W11	M18 x 1.5		39 N.m.
2AZ Holder for oxygen sensor to cylinder head	W10 / W11	M8		10 N.m.