1982 BMW 6 Tune-Up

TUNE-UP

528e, 633CSi, 733i

ENGINE IDENTIFICATION

All engines have a serial number stamped on block on left side above starter motor. Engines can also be identified by first 4 numbers in chassis code, stamped on sill above right front wheel on 528e, and on firewall on 633CSi and 733i.

ENGINE CODE

Application	Code
528e	
Man. Trans.	4073
Auto. Trans.	4083
633CSi	
Man.Trans	5235
Auto. Trans.	5245
733i	
Man. Trans.	6634
Auto.Trans.	6644

ENGINE COMPRESSION

Deactivate fuel injection system by pulling off connection "1" at the coil prior to compression test. With battery fully charged, engine at normal operating temperature, throttle fully open and engine at cranking speed, compression pressure should be as follows:

COMPRESSION SPECIFICATIONS

Compression Ratio	
528e	9.0:1
633CSi	
Man. Trans.	8.4:1
Auto. Trans.	8.0:1
733i	8.0:1
Compression Pressure	
528e	142-156 psi (10.0-11.0 kg/cm²)
633CSi & 733i	
Good	Above 142-185 psi (10.0-13.0 kg/cm²)
Normal	121-142 psi (8.5-13.0 kg/cm²)
Poor	Below 114 psi (8.0 kg/cm²)

VALVE CLEARANCE

Adjust valves with engine cold. Remove valve cover. Loosen nut on rocker arm and adjust position of eccentric cam to obtain proper clearance . Adjust valves in same sequence as firing order (153624) with valve being adjusted at TDC of compression stroke. Use a feeler gauge to measure clearance between rocker arm eccentric and valve stem.

VALVE CLEARANCE SPECIFICATIONS

Application	Clearance In. (mm)
All Models	
Intake	.010-.012 (.25-.30)
Exhaust	.010-.012 (.25-.30)

VALVE ARRANGEMENT

Left Side — All Intake
Right Side — All Exhaust.

SPARK PLUGS

SPARK PLUG TYPE

Application	Bosch	Champion
528e	WR9LS	
633CSi & 733i	WR9DS	N10Y

SPARK PLUG SPECIFICATIONS

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
528e	.026 (.66)	18-22 (24-30)
633CS		
Bosch	.026 (.66)	18-22 (24-30)
Champion	.025 (.64)	18-22 (24-30)
733i	.026 (.66)	17-21 (23-28)

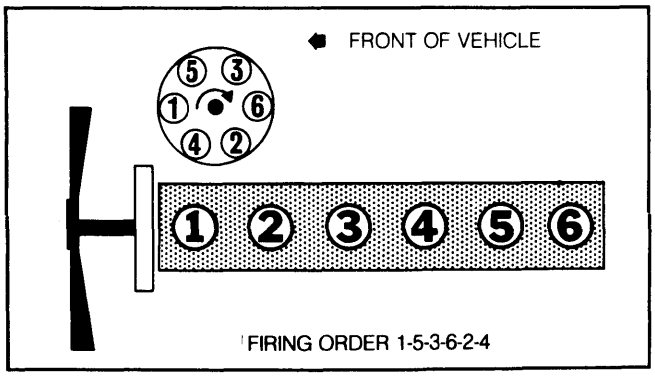
HIGH TENSION WIRE RESISTANCE

Carefully remove ends of wire from spark plug and distributor. Check resistance by connecting ohmmeter leads to each end of wire. Check resistance of wire while gently twisting wire. Resistance reading should be 25,000-30,000 ohms. If resistance is not to specification, or fluctuates from infinity to any value, replace wire.

DISTRIBUTOR

All models use a breakerless distributor, which consists only of a rotor, cap and dust protection cover, and is computer controlled by the Motronic system. No maintenance or adjustments to the distributor are necessary.

Fig. 1: Firing Order and Distributor Rotation (All Models)



IGNITION TIMING

Ignition timing is controlled by the preprogrammed Motronic Control System control module. No ignition timing adjustment is possible.

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TUNE-UP (Cont.)

IDLE SPEED & MIXTURE

1) Idle speed is controlled by an idle speed control unit. Connect dwell/tachometer to engine. Check idle speed. If idle speed is not as specified on emission control decal, check idle speed control unit and replace if required.

2) Remove hose from collector to carbon canister. Connect CO tester fitting (13 0 070) with adapter (13 0 100) to exhaust manifold. Connect CO tester. CO value should be 0.2-1.2% by volume.

3) CO level at idle speed should not change when oxygen sensor is disconnected. To adjust CO level, drill a hole in plug on air flow sensor using drilling tool (13 11 092).

4) Screw slide hammer tool (13 1 094) into plug. Knock tool and plug out of air flow sensor with sharp impact. Insert idle speed adjusting tool (13 1 060) into plug hole and adjust engine speed by turning control screw. After completion, install new plug.

IDLE SPEED & CO LEVEL

Application	Idle RPM	CO%
All Models	[1]	0.2-1.2

[1] — Idle speed is electronically controlled.

FUEL PUMP

FUEL PUMP PERFORMANCE

Application	Pressure psi (kg/cm²)	Volume in 30 sec. Pints (liters)
528e	43 (3.0)	1.6 (.75)
633CSi	43 (3.0)	2.3 (1.1)
733i	40 (2.8)	1.6 (.75)

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models use a Bosch breakerless distributor that is controlled by the Motronic system. No maintenance or adjustment is possible.

IGNITION COIL

RESISTANCE OHMS @ 68°F (20°C)

Application	Primary	Secondary
528e	.5	6000
633CSi	.4	[1]
733i	.4	9500

[1] — Specification not available from manufacturer.

FUEL SYSTEM

All models are equipped with Bosch L-Jetronic fuel injection which is controlled by the Motronic Control Unit.

ELECTRICAL

BATTERY

BATTERY SPECIFICATIONS

Application	Amp. Hr. Rating
528e	55
633CSi & 733i	66

STARTER

Bosch starters are used on all models. Starter specifications not available from manufaturer.

ALTERNATOR

Bosch alternators are used on all models.

ALTERNATOR SPECIFICATIONS

Application	Rated Amp. Output
All Models	65

ALTERNATOR REGULATOR

All BMW models are equipped with Bosch alternator regulators.

REGULATOR OPERATING VOLTAGE @ 68°F (20°C)

Application	Voltage
All Models	13.5-14.6

SERVICE SPECIFICATIONS

BELT ADJUSTMENT

Application	[1] Deflection In. (mm)
Air Conditioning Belt	.5 (13)
All Other Belts	.2-.4 (5-10)

[1] — When depressed with firm hand pressure midway between pulleys.

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GENERAL SERVICING (Cont.)

REPLACEMENT INTERVALS

Component	Miles
Oil Filter	7500
Air Filter	30,000
Fuel Filter	30,000
Oxygen Sensor	30,000
Spark Plugs	30,000

FLUID CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
528e	4.5 qts. (4.3L)
633CSi & 733i	6.1 qts. (5.8L)
Cooling System	12.7 qts. (12.0L)
Man. Trans. (SAE 80)	
528e	3.4 pts. (1.6L)
633CSi & 733i	2.4 pts. (1.1L)
Auto. Trans. (Dexron)	4.2 pts. (2.0L)
Rear Axle (SAE 90)	3.8 pts. (1.8L)
Fuel Tank	
528e & 633CSi	16.6 gals. (62.8L)
733i	22.5 gals. (85.2L)