

# 1980 BMW 6 Tune-Up

## TUNE-UP

528i  
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 528i, and on firewall on 633CSi and 733i.

#### Engine Code

Application	Code
528i	
Man. Trans. ....	3995
Auto. Trans. ....	3997
633CSi	
Man. Trans. ....	5235
Auto. Trans. ....	5245
733i	
Man. Trans. ....	6633
Auto. Trans. ....	6643

### COMPRESSION PRESSURE

With battery fully charged, engine at normal operating temperature, throttle fully open and engine at cranking speed, compression pressure should be as follows:

**NOTE** — Deactivate fuel injection system by pulling off connection "1" at the coil prior to compression test.

#### Compression Pressure

Application	Pressure
528i	
Good .....	Above 156 psi (11 kg/cm <sup>2</sup> )
Normal .....	142-156 psi (10-11 kg/cm <sup>2</sup> )
Poor .....	Below 142 psi (10 kg/cm <sup>2</sup> )
633CSi & 733i	
Good .....	Above 142 psi (10 kg/cm <sup>2</sup> )
Normal .....	121-142 psi (8.5-10 kg/cm <sup>2</sup> )
Poor .....	Below 121 (8 kg/cm <sup>2</sup> )

### VALVE CLEARANCE

With engine cold, loosen nut on rocker arm and adjust position of eccentric cam to obtain proper clearance. Adjust valves in firing order sequence at TDC of compression stroke. Use feeler gauge to measure clearance between rocker arm eccentric and valve stem.

Adjust Cylinder at Top Dead Center	When Valves Of Cylinder Overlap
No. 1 .....	No. 6
No. 5 .....	No. 2
No. 3 .....	No. 4
No. 6 .....	No. 1
No. 2 .....	No. 5
No. 4 .....	No. 3

### Valve Clearance Specifications

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

### VALVE ARRANGEMENT

Left Side — All Intake.  
Right Side — All Exhaust.

### SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
All Models .....	.024 (.6)	18 (2.5)

#### Spark Plug Type

Application	Bosch No.
All Models .....	WR9DS

### HIGH TENSION WIRE RESISTANCE

Carefully remove ends of wire from spark plug and distributor. Using an ohmmeter, check resistance of wire while gently twisting wire. If resistance is not to specification, or fluctuates from infinity to any value, replace wire.

#### Resistance (Ohms) Per Wire

Application	Resistance
All Models .....	25,000-30,000

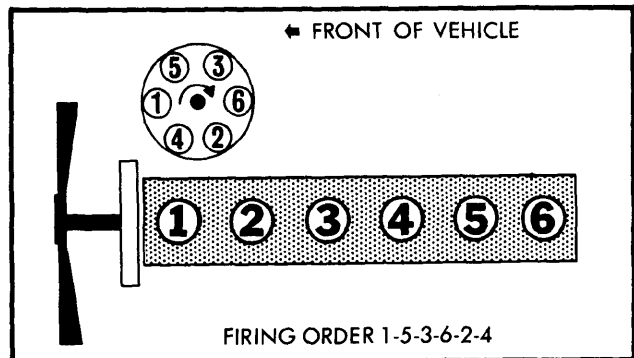


Fig. 1 Firing Order and Distributor Rotation (BMW 528i, 633CSi & 733i)

### DISTRIBUTOR

All models use a breakerless, transistorized ignition system.

## TUNE-UP (Cont.)

### IGNITION TIMING

- 1) Check and adjust timing with engine at normal operating temperature and distributor vacuum hoses disconnected. Connect timing light, start engine and increase engine speed to specified timing RPM. Steel ball embedded in flywheel (long pin on Auto. Trans. models) should line up with pointer attached to hole in flywheel housing.
- 2) Loosen distributor clamp, turn distributor until proper timing is achieved and tighten clamp. Connect distributor vacuum hoses and set idle speed to specified RPM.

#### Ignition Timing Specifications

Application	RPM	Dynamic Timing
528i .....	2100 .....	22° BTDC
633CSi & 733i .....	1650 .....	22° BTDC

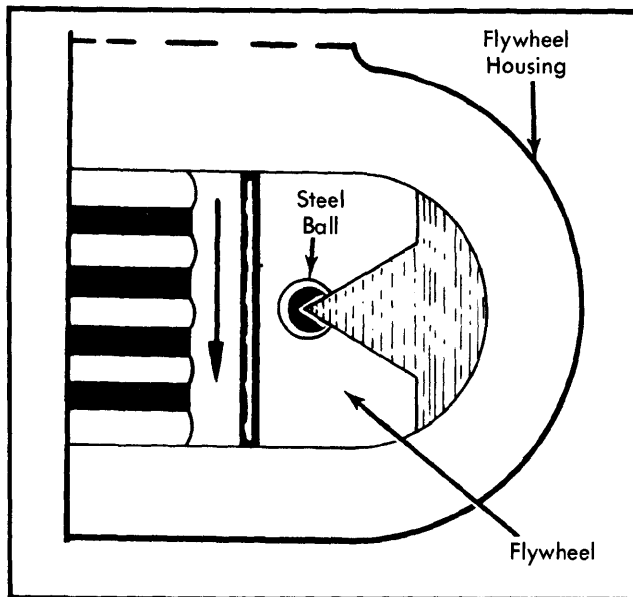


Fig. 2 Ignition Timing Mark In Window of Flywheel Housing

### IDLE SPEED & MIXTURE

**NOTE** — The following adjustments must be performed with the air filter in good condition, ignition timing and valve clearance adjusted to specifications and engine at normal operating temperature.

- 1) Disconnect charcoal canister-to-throttle housing hose at throttle housing, but do not plug port. Connect a tachometer to engine.
- 2) Connect a CO meter to test points in exhaust manifold. Set idle speed by turning idle adjusting screw (below throttle switch). Read and record CO level. Disconnect oxygen sensor wire in right rear corner of engine compartment. CO reading should not change.
- 3) If CO reading changes with sensor disconnected, level must be adjusted. Remove plug under left rear corner of air flow meter and adjust with short screwdriver.
- 4) Check CO readings and adjust until values are within specifications and do not change when sensor is disconnected or connected. Remove test equipment, replace manifold plugs, and connect hose to throttle housing.

#### Idle Speed & CO Level

Application	Idle RPM	CO%
All Models .....	850-950 .....	⓪0.2-0.8

⓪ — With oxygen sensor disconnected.

### FUEL PUMP PRESSURE & VOLUME

Pressure .....	33.4-39.2 psi (2.3-2.7 kg/cm <sup>2</sup> )
Volume .....	1.9 pints in 30 seconds

### EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

## GENERAL SERVICING

### IGNITION

#### DISTRIBUTOR

All models use a Bosch breakerless, transistorized ignition system.

**Other Data & Specifications** — See Tune-Up article and appropriate article in DISTRIBUTORS & IGNITION SYSTEMS section.

#### IGNITION COIL

##### Coil Resistance (Ohms@68° F)

Application	Primary	Secondary
All Models .....	0.4 .....	.....

### FUEL SYSTEMS

#### FUEL INJECTION

All models are equipped with Bosch AFC electronic fuel injection with oxygen sensor.

**Other Data & Specifications** — See Tune-Up & Bosch AFC Fuel Injection in FUEL SYSTEMS Section.

### ELECTRICAL

#### BATTERY

Application	Amp. Hr. Rating
All Models .....	66

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## GENERAL SERVICING (Cont.)

**Battery Location** — All models have battery in front left area of engine compartment.

### STARTER

All models are equipped with Bosch Starters.

### ALTERNATOR

Application	Rated Amp. Output
528i & 733i .....	65
633CSi .....	55

### ALTERNATOR REGULATOR

All models are equipped with Bosch Alternator Regulators with an operating voltage of 13.5-14.2 volts at 68°F (20°C).

### FILTERS

Filter	Service Interval (Miles)
Oil Filter .....	Replace every 7500
Air Filter .....	Replace every 30,000
Fuel Filter .....	Replace every 30,000

### BELT ADJUSTMENT

Application	⓪ Deflection
Air Conditioning Belt .....	.5" (12 mm)
All Others .....	.2-.4" (5-10 mm)

⓪ — When depressed with firm hand pressure midway between pulleys.

### CAPACITIES

Application	Quantity
Crankcase (Includes Filter) .....	6.1 qts.
Cooling System (Includes Heater) .....	12.7 qts.
Man. Trans. (SAE 90)	
528i & 633CSi .....	3.4 pts.
733i .....	2.4 pts.
Auto. Trans. (Dexron)	
528i & 633CSi .....	2.1 qts.
733i .....	2.4 qts.
Rear Axle (SAE 90)	
528i & 633CSi .....	3.4 pts.
733i .....	4.0 pts.
Fuel Tank	
528i & 633CSi .....	16.4 gals.
733i .....	22.5 gals.