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

NOTE – *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 Pressure Specifications

Application	Pressure
528i	
Good	Above 156 psi (11 kg/cm²)
Normal	142-156 psi (10-11 kgcm²)
Poor	Below 142 psi (10 kg/cm²)
633CSi & 733i	
Good	Above 142 psi (10 kg/cm²)
Normal	121-142 psi (8.5-10 kg/cm²)
Poor	Below 121 (8 kg/cm²)

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	.012-.014 (.30-.35)

VALVE ARRANGEMENT

Left Side – All Intake.
Right Side – All Exhaust.

SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (N·m)
All Models	.024 (.6)	18 (24)

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

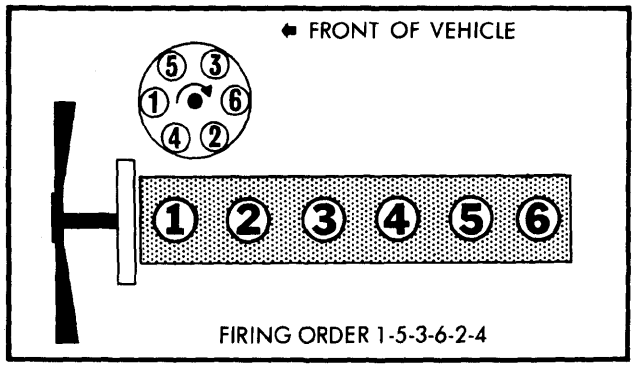

Fig. 1 Firing Order and Distributor Rotation (BMW 528i, 633CSi & 733i)

DISTRIBUTOR

All models use a Bosch 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

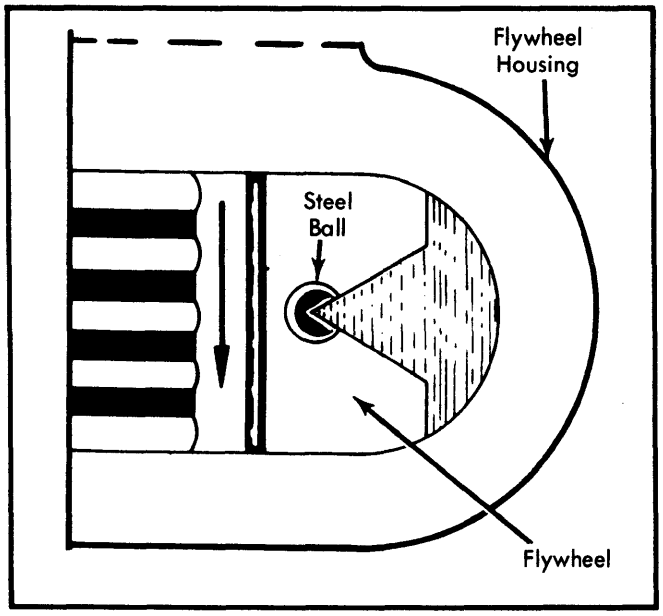

Fig. 2 Ignition Timing Mark In Window of Flywheel Housing

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	①0.2-0.8

① – With oxygen sensor disconnected.

FUEL PUMP PRESSURE & VOLUME

Pressure	33.4-39.2 psi (2.3-2.7 kg/cm²)
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.

IGNITION COIL

Resistance Specifications (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.

ELECTRICAL

BATTERY

Application	Amp. Hr. Rating
All Models	66

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
All Models	65

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).

BELT ADJUSTMENT

Application	①Deflection
Air Conditioning Belt	.5" (12 mm)
All Others	.2-.4" (5-10 mm)

① – When depressed with firm hand pressure midway between pulleys.

FILTERS

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

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	6.1 qts.
Cooling System (Includes Heater)	12.7 qts.
Man. Trans. (SAE 90)	
528i	3.4 pts.
633CSi & 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.