

1982 BMW 4 Tune-Up

TUNE-UP

320i

ENGINE IDENTIFICATION

Engine number is stamped into engine block on left side above starter. Engine can also be identified by first 4 numbers in chassis code, located on sill above right front wheel.

ENGINE CODE

Application	Code
Man. Trans.	1739
Auto. Trans.	1749

ENGINE COMPRESSION

Check compression with battery fully charged, throttle fully open and warm engine at cranking speed.

COMPRESSION SPECIFICATIONS

Compression Ratio	8.8:1
Compression Pressure	142 psi (9.9 kg/cm ²)
Max. Variation Between Cylinders	15%

VALVE CLEARANCE

Adjust valves with engine cold. Remove valve cover, loosen nut on rocker arm, and use a piece of wire to adjust eccentric cam. Adjust valves in firing order sequence at TDC of compression stroke.

VALVE ADJUSTMENT SEQUENCE

Adjust Cylinder @ TDC	When Valves of Cylinder Overlap
No. 1	No. 4
No. 3	No. 2
No. 4	No. 1
No. 2	No. 3

VALVE CLEARANCE SPECIFICATIONS

Application	Clearance In. (mm)
Intake & Exhaust (Cold)006-.008 (.15-.20)

VALVE ARRANGEMENT

Left Side — All Intake
Right Side — All Exhaust

SPARK PLUGS

SPARK PLUG TYPE

Application	Bosch No.
All Models	WR9DS

SPARK PLUG SPECIFICATIONS

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
All Models024 (.6)	18 (24)

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 incorrect or fluctuates from infinity to any value, replace wire.

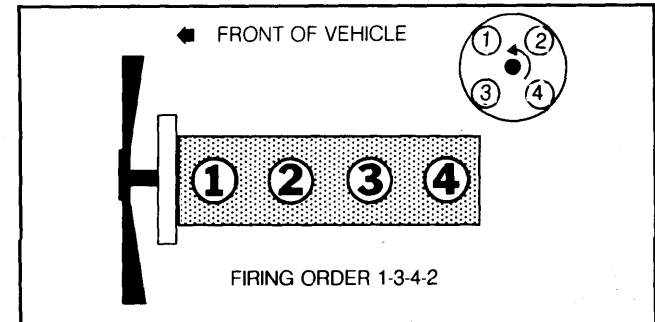
WIRE RESISTANCE

Application	Ohms
All Models	25,000-30,000

DISTRIBUTOR

All models are equipped with Bosch transistorized electronic ignition. No adjustments are necessary.

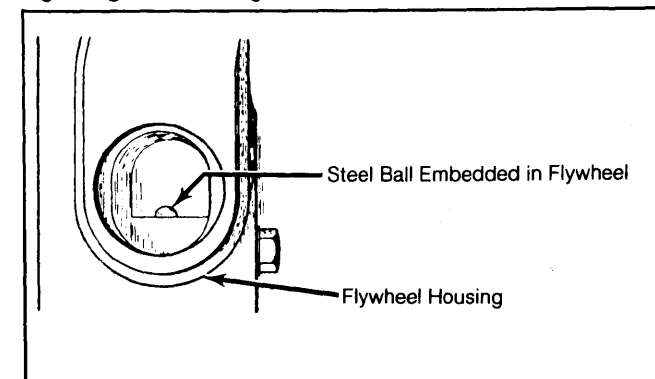
Fig. 1: Firing Order and Distributor Rotation



IGNITION TIMING

With engine at normal operating temperature, connect a timing light and tachometer to vehicle. Disconnect and plug distributor vacuum line. Start engine and adjust idle speed. To adjust ignition timing, rotate distributor until center of ball embedded in flywheel is visible at edge of inspection hole.

Fig. 2: Ignition Timing Mark Location



TUNE-UP (Cont.)

IGNITION TIMING (Degrees BTDC@RPM)

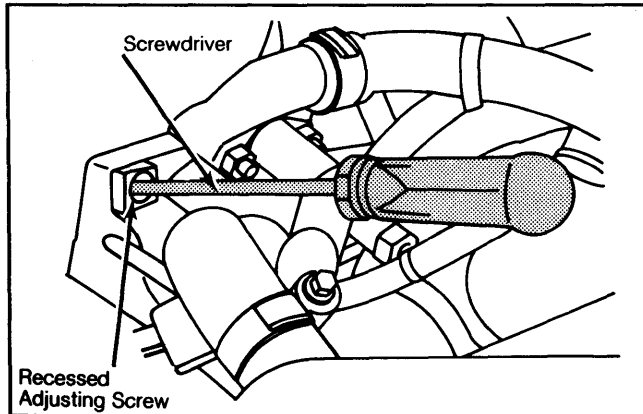
Application	Static ¹	Dynamic ²
All Models	4°	25°@2500

¹ — Reference value. Timing must be set dynamically.
² — Vacuum disconnected.

IDLE SPEED & MIXTURE

1) Connect tachometer to engine. Remove caps at exhaust manifold test points and connect CO meter. Warm engine to normal operating temperature and check ignition timing and idle speed. Adjust idle by turning idle air screw on throttle housing.

Fig. 3: Adjusting Idle Speed at Throttle Housing



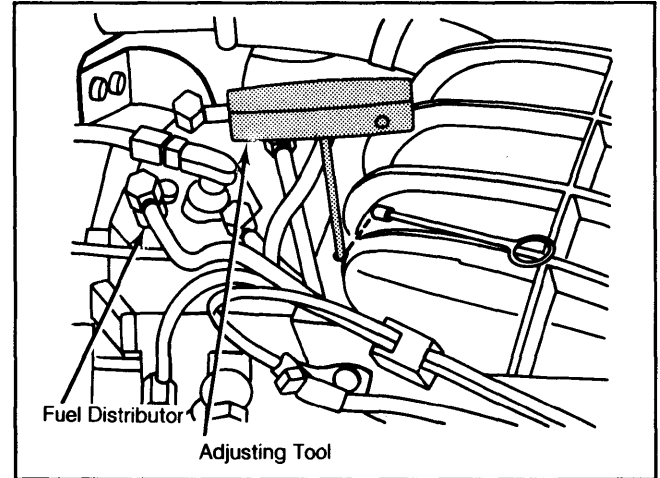
Make adjustment before setting CO adjustment.

2) Measure CO level with engine idling. Disconnect oxygen sensor (plug below distributor on fender panel) and note CO reading. If level changes, adjustment is necessary. Do not accelerate engine while adjusting CO level.

3) Adjust mixture with Allen wrench through opening in fuel distributor (remove plug). After adjustment, reconnect oxygen sensor and ensure CO level does not

change. Repeat procedure until both mixture and idle speed are correct.

Fig. 4: Adjusting CO Level at Fuel Distributor



Do not accelerate while making adjustments.

IDLE SPEED & CO LEVEL

Application	Idle RPM	CO%
Man. Trans.	800-900	¹ 0.2-1.2
Auto Trans.	900-1000	¹ 0.2-1.2

¹ - Oxygen sensor disconnected.

FUEL PUMP PERFORMANCE

Application	Pressure psi (kg/cm ²)	Volume in 30 sec. Pints (Liters)
All Models	64-74	1.6
	(4.5-5.2)	(.75)

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Bosch electronic ignition. Units are self-contained and require no adjustments.

IGNITION COIL

RESISTANCE (Ohms@68°F/20°C)

Application	Primary	Secondary
All Models	1.7-2.1

FUEL SYSTEMS

FUEL INJECTION

All models are equipped with Bosch Lambda CIS fuel injection with oxygen sensor.

ELECTRICAL

BATTERY

BATTERY SPECIFICATIONS

Application	Amp. Hr. Rating
All Models	55

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GENERAL SERVICING (Cont.)

STARTER

All models use Bosch starters.

ALTERNATORS

All models use Bosch alternators.

ALTERNATOR SPECIFICATIONS

Application	Rated Amp. Output
All Models	65

ALTERNATOR REGULATOR

All models are equipped with Bosch transistorized alternator regulators. No adjustments are possible.

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

Application	Voltage
All	13.9-14.5

SERVICE SPECIFICATIONS

BELT ADJUSTMENT

Application	¹ Deflection In. (mm)
Alternator Belt2-.4 (5-10)
Air Conditioning Belt5 (12)

¹ — Measured with moderate hand pressure applied midway between pulleys on longest belt run.

REPLACEMENT INTERVALS

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

FLUID CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	4.3 qts. (4.0L)
Cooling System (Includes Heater)	7.4 qts. (7.0L)
Man. Trans. (SAE 80)	3 pts. (1.4L)
Auto. Trans. (Dexron)	2.1 qts. (2.0L)
Rear Axle (SAE 90)	2.0 pts. (1.0L)
Fuel Tank	15.3 gals. (58.0L)