

1974-79 TUNE-UP PROCEDURES BMW 4-Cylinder

2002, 2002A, 2002 tii, 320i

ENGINE IDENTIFICATION

The engine number is located on rear of left side of engine block, above starter.

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The chassis number is located on a label attached to the upper steering column and on the support plate of the right-hand wheel arch in the engine compartment.

ENGINE COMPRESSION

Check compression pressure with battery fully charged, engine at normal operating temperature, throttle fully open, and engine at cranking speed.

COMPRESSION PRESSURE SPECIFICATIONS

Condition	Pressure
Good	Above 149 psi (10.5 kg/cm ²)
Normal	135-149 psi (9.5-10.5 kg/cm ²)
Poor	Below 128 psi (9.0 kg/cm ²)

VALVE CLEARANCE

With engine either cold or at normal operating temperature, 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.

VALVE ADJUSTMENT SEQUENCE

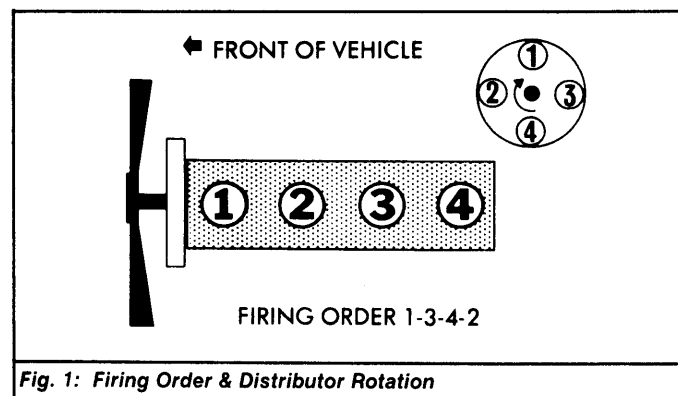
Adjust Valves Of Cylinder Number	When Valves Overlap At Cylinder Number
1	4
3	2
4	1
2	3

VALVE CLEARANCE

Application	Clearance in. (mm)
Cold	
Intake & Exhaust	.006-.008 (.15-.20)
Hot	
Intake & Exhaust	.008-.010 (.20-.25)

VALVE ARRANGEMENT

Right Side - All Exhaust.
Left Side - All Intake.



SPARK PLUGS

SPARK PLUG SPECIFICATIONS

Application	Specification
Gap	.024-.028" (.6-.7 mm)
Torque	18-22 ft. lbs. (24-30 N.m)

SPARK PLUG TYPE

Application	Champion No.
2002 Series	N9Y
320i	N10Y

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.

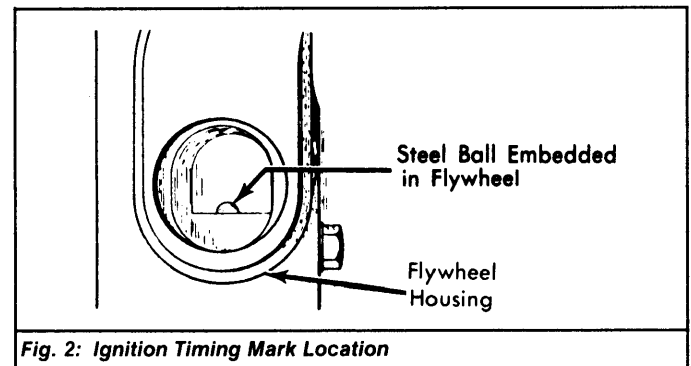
HIGH TENSION WIRE RESISTANCE

Application	Resistance (Ohms)
All Models	25,000-30,000

DISTRIBUTOR

DISTRIBUTOR SPECIFICATIONS

Application	Specification
Point Gap	
2002 Series	.014" (.35 mm)
320i	.016" (.41 mm)
Dwell Angle	59-65°
Breaker Arm Spring Tension	
2002 Series	16-18 oz. (450-500 g)
320i	17-22 oz. (475-620 g)
Condenser Capacity	.20 mfd.



IGNITION TIMING

IGNITION TIMING SPECIFICATIONS

Application	RPM	Specification
1974		
2002 & 2002A	1500	25°BTDC
2002 tii	2700	25°BTDC
1975		
2002 Series	2800	25°BTDC
1976		
2002 Series		
California	2800	25°BTDC
Federal	2400	27°BTDC
1977-79		
320i		
California	2400	25°BTDC
Federal	2200	25°BTDC

1974-79 TUNE-UP PROCEDURES

BMW 4-Cylinder (Cont.)

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

IDLE SPEED & MIXTURE

NOTE: DO NOT accelerate engine while adjusting CO% level.

1974-76 2002 & 2002A – 1) With engine at normal operating temperature, check and adjust ignition timing and valve clearance. Disconnect injection pump hose. Connect tachometer and exhaust gas analyzer to vehicle.

2) Adjust idle speed to specification by means of idle speed adjustment screw. Adjust mixture screw to obtain specified CO% level. Continue adjustments until specified idle speed and CO% level is obtained. Reconnect air injection hose.

1974 2002 tii – 1) With engine at normal operating temperature, check that clearance "A" is .35-.39" (9-10 mm) and clearance "B" is .16" (4 mm). Also check that threaded pin on enrichment lever just touches stop screw. See Fig. 3.

2) Turn idle adjustment screw to obtain specified idle speed. Turn throttle stop screw to obtain specified idle CO% level. Accelerate engine 1 or 2 times and check RPM. If RPM changes, readjust idle speed and CO% level. Repeat until idle speed and CO% level are correct and stable.

1977-79 320i Models – 1) With air cleaner element in good condition, engine at normal operating temperature, ignition timing and valve clearance to specifications, disconnect air injection pump hose and plug check valve. Connect tachometer and exhaust gas analyzer to vehicle.

2) Adjust idle speed to specifications by adjusting idle air screw on throttle valve housing. Remove access plug, located next to fuel distributor. Insert Allen wrench into hole and adjust to specified CO% level. Reinstall plug and reconnect air pump hose.

IDLE SPEED & CO% LEVEL SPECIFICATIONS

Application	Idle RPM	CO% Level
1974		
2002 & 2002A	850-950	.8-1.2
2002 tii	850-1000	1
1975-76 ²		
2002 Series		
Federal	800-1000	1.0-1.5
Calif.	800-1000	1.5-3.0
1977-79		
320i		
Federal	850-1050	2.0 Max.
Calif.	850-1050	2.5-3.0

¹ – Adjust mixture to lean best idle.

² – Set idle speed to 800-1000 RPM and CO% level to 1.5-3.0 percent on 1975 models.

COLD (FAST) IDLE RPM

1974-76 2002 & 2002A – 1) With engine at normal operating temperature, disconnect and plug distributor vacuum line. Close choke valve until clearance between choke valve and carburetor air horn is .118" (3 mm).

2) Start engine and check fast idle speed. If fast idle speed is not 1850-1950 RPM, correct by loosening lock nuts and adjusting choke linkage. Reconnect distributor vacuum line.

AUTOMATIC CHOKE SETTING

1974 2002 & 2002A – Notch on spring housing must be aligned with projection on choke housing.

DASHPOT ADJUSTMENT

1975-76 2002 & 2002A – With engine at normal operating temperature, disconnect and plug dashpot vacuum hose. Loose lock nut and

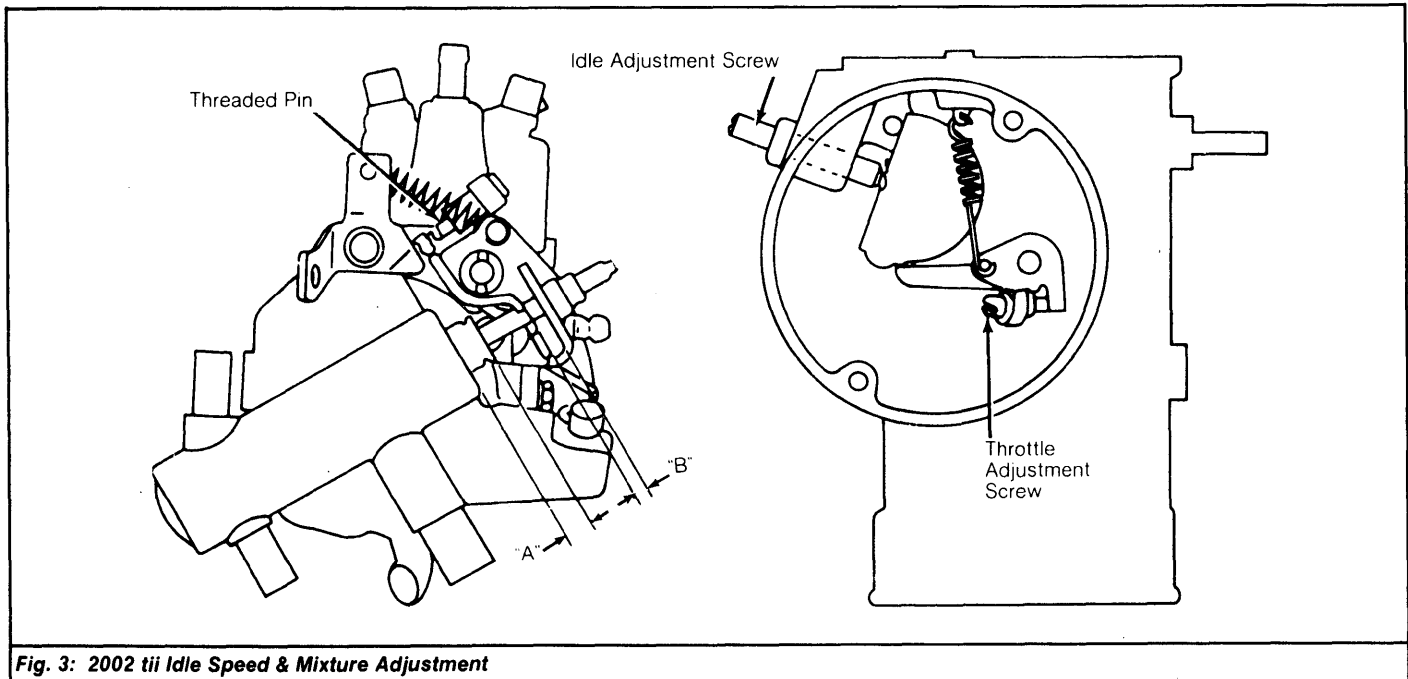


Fig. 3: 2002 tii Idle Speed & Mixture Adjustment

1974-79 TUNE-UP PROCEDURES

BMW 4-Cylinder (Cont.)

adjust dashpot until 1550-1650 RPM is obtained. Reconnect vacuum hose.

FUEL PUMP

FUEL PUMP SPECIFICATIONS

Application	Specification
2002 & 2002A	3.0-4.3 psi (.21-.30 kg/cm ²)
2002 tii	28-45 (2.0-3.2 kg/cm ²)
320i	64-74 psi (4.5-5.2 kg/cm ²)

EXHAUST EMISSION SYSTEMS

See appropriate articles in EXHAUST EMISSION SYSTEMS section.

IGNITION SYSTEM

DISTRIBUTOR

All models are equipped with Bosch single point distributors.

Other Data & Specifications - See Bosch Single Point Distributor article in DISTRIBUTORS & IGNITION SYSTEMS section.

IGNITION COIL

IGNITION COIL SPECIFICATIONS @ 68°F (20°C)

Application	Resistance (Ohms)
Primary	
2002 Series	1.75-1.85
320i	1.7-2.1

FUEL SYSTEMS

CARBURETORS

CARBURETORS

Application	Model
2002	Solex 40 PDSI
2002A	
1974	Solex 40 PDSIT
1975-76	Solex 32 DIDTA

Other Data & Specifications - See appropriate Solex Carburetor article in FUEL SYSTEMS section.

FUEL INJECTION

The 2002 tii is equipped with Kugelfischer Mechanical Fuel Injection system. All 320i models are equipped with Bosch CIS Fuel Injection system.

Other Data & Specifications - See Bosch CIS Fuel Injection System or Kugelfischer Mechanical Fuel Injection article in FUEL SYSTEMS section.