

TUNE-UP

DL
Standard Engine
MPG Engine
GL
GLT Turbo

ENGINE IDENTIFICATION

B21F type engine identification number is stamped on left side of engine block near the distributor.

Application	Engine Code	Code
Standard Engine		
Federal		
Man. Trans.		498-920
Auto. Trans.		498-921
Calif.		
Man. Trans.		498-892
Auto. Trans.		498-893
MPG Engine		
Man. Trans.		498-896
Auto. Trans.		498-897
Turbo Engine		498-898

COMPRESSION PRESSURE

Check compression with engine at normal operating temperature, all spark plugs removed, throttle valve wide open and at normal cranking speed (250-300 RPM). Crank engine at least 6 "puffs" per cylinder.

Compression Pressure Specifications

Application	Pressure psi (kg/cm ²)
All Models	128-156 (9-11)

VALVE CLEARANCE

- 1) Valve clearance is adjusted with engine shut off and either warm or cold. Remove valve cover. Turn crankshaft center bolt until camshaft is in position for firing No. 1 cylinder. Both cam lobes should point up at equally large angles. Pulley timing mark should be at 0°.
- 2) Check valve clearance of No. 1 cylinder, using a feeler gauge between camshaft lobe and adjusting discs. Intake and exhaust valves have same clearances.
- 3) If clearances are incorrect adjust by changing thickness of discs, which are available in .05 mm increments from 3.30 to 4.50 mm. Use tools 5022 and 5026 to depress and remove discs.
- 4) After valves for No. 1 cylinder are properly adjusted, rotate crankshaft to firing position for No. 3, No. 4, and No. 2 cylinders in sequence and complete adjustment.

Valve Clearance Specifications

Application	Cold In. (mm)	Hot In. (mm)
Intake and Exhaust		
Checking	.010-.018 (.30-.45)	.012-.020 (.35-.50)
Setting	.014-.016 (.35-.40)	.016-.018 (.40-.45)

VALVE ARRANGEMENT

E-I-E-I-E-I-E-I (front to rear).

SPARK PLUGS

Application	Gap In. (mm)	Torque Fr. Lbs. (N·m)
All Models	.030 (.75)	19 (26)

Spark Plug Type

Application	Bosch No.
All Models	WR7DS

DISTRIBUTOR

All models except the GL with the MPG engine are equipped with Bosch Electronic Ignition Systems and no adjustments are required. The MPG engine is equipped with a Volvo Breakerless Ignition System, featuring computer-controlled spark advance and a Hall Effect distributor.

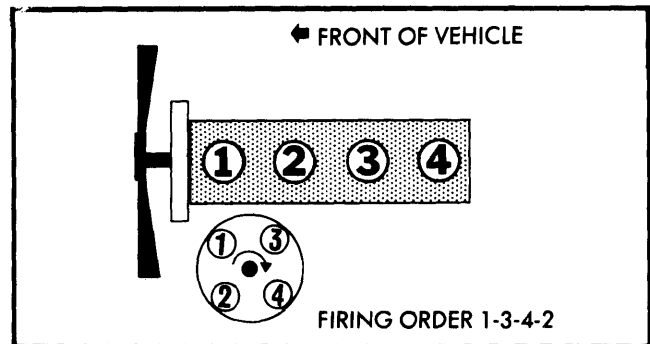


Fig. 1 Firing Order and Distributor Rotation

IGNITION TIMING

Connect timing light and tachometer. Disconnect and plug vacuum hose at distributor. Use idle air adjusting screw to set idle speed to specified timing RPM. Rotate distributor to set timing, then reconnect vacuum hose and reset idle.

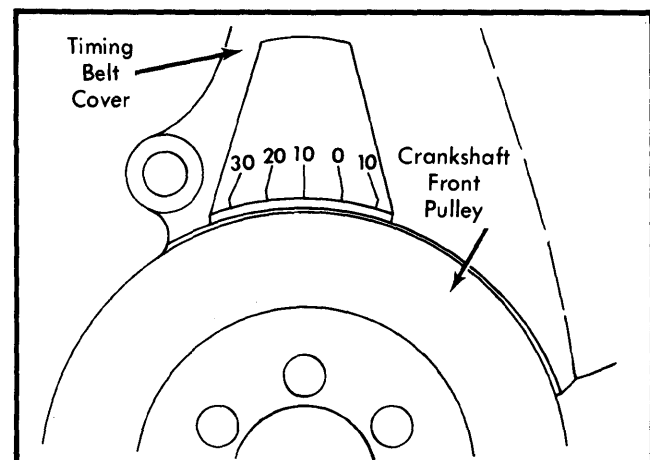


Fig. 2 Timing Mark Location

TUNE-UP (Cont.)

Ignition Timing Specifications (Degrees BTDC @ RPM)

Application	① Timing
Standard Engine	
Federal	8@750
Calif.	8@900
MPG Engine	12@750
Turbo Engine	12@900

① — With distributor vacuum hose connected and plugged.

IDLE SPEED & MIXTURE

NOTE — Mixture control adjustment screw opening is plugged to prevent tampering. Adjustment is not a normal maintenance procedure and should not be performed unless mixture control unit is replaced or vehicle fails emissions testing.

1) Remove mixture control unit, separate control unit and drive out mixture plug (steel ball) with a punch. Reassemble control unit and reinstall.

2) Disconnect oxygen sensor electrical connector. Remove plug in exhaust pipe in front of catalytic converter and insert CO probe. Connect tachometer. Start engine and run to normal operating temperature. Adjust idle speed to specification.

NOTE — Idle speed cannot be adjusted on vehicles with constant idle speed system (all except DL and GL models with standard engine). Idle adjustment is factory-sealed and no adjustment is required.

3) If CO reading is not within specifications, insert adjusting wrench (5015) into adjustment hole and adjust CO reading to specifications. Reconnect oxygen sensor electrical connector and check CO reading. Repeat adjustment procedure if necessary. See Fig. 3.

NOTE — After each adjustment, the adjusting wrench must be removed and the hole covered to prevent a lean mixture while taking a CO reading.

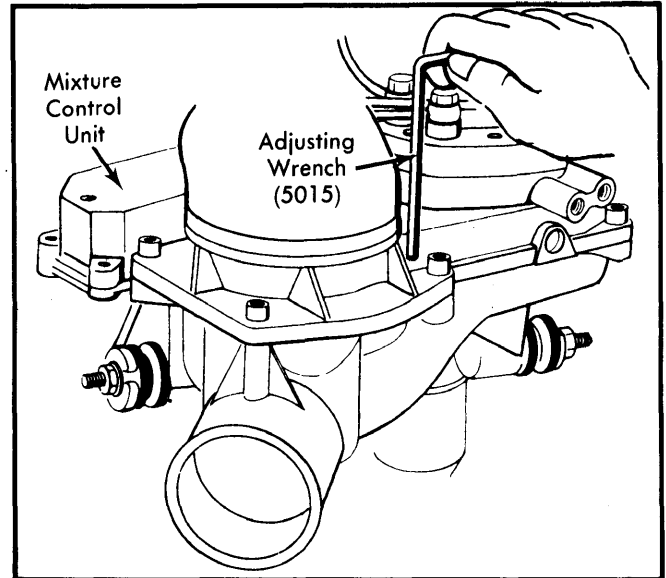


Fig. 3 Idle Mixture Adjustment

4) After CO adjustment, adjust idle speed as necessary on vehicles without constant idle speed system. Remove test equipment, insert exhaust pipe plug and seal mixture adjustment hole.

Idle Speed & CO Level

Application	Idle RPM	CO%
MPG Engine	750	① 0.7-1.3
All Other Models	900	① 0.7-1.3

① — With sensor disconnected. With sensor connected, level should be below 1%.

FUEL PUMP PRESSURE

Pressure 64-74 psi (4.5-5.2 kg/cm²)

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

DISTRIBUTOR

All models except those with the MPG engine are equipped with Bosch Electronic Ignition Systems. The MPG engine has a Volvo Breakerless Ignition System with computer-controlled spark advance and a Hall Effect distributor.

FUEL SYSTEM

FUEL INJECTION

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

ELECTRICAL

BATTERY

Battery Location — Battery is located in left front of engine compartment.

Application	Amp. Hour Rating
All Models	60

STARTER

Bosch..... Overrunning Clutch

Starter Specifications

Application	Volts	Amps	Test RPM
All Models	11.5	30-50	5500-7500

1981 Volvo 4 Tune-Up

TUNE-UP (Cont.)

ALTERNATOR

All models are equipped with Bosch alternators.

Application	Rated Amp. Output
All Models	55

ALTERNATOR REGULATOR

All models are equipped with Bosch alternator regulators with an operating voltage of 13.0-15.0 volts.

BELT ADJUSTMENT

Application	① Deflection
All Belts2-.4" (5-10 mm)

① — Deflection is with thumb pressure applied midway on longest belt run.

FILTERS

Filter	Service Interval (Miles)
Oil Filter	
Exc. Turbo	Replace every 7500
Turbo	Replace every 3750
Air Filter	Replace every 30,000
Fuel Filter	Replace every 45,000
Fuel Tank Filter	Replace every 60,000

CAPACITIES

Application	Quantity
Crankcase (Including Filter)	
Exc. Turbo	4.0 qts.
Turbo	4.7 qts.
Cooling System (Includes Heater)	10.0 qts.
Man. Trans. (ATF Type F)	
With Overdrive	2.4 qts.
Without Overdrive	1.6 pts.
Auto. Trans. (ATF Type F)	7.3 qts.
Rear Axle (SAE 90)	3.4 pts.
Fuel Tank	15.8 gals.