

TUNE-UP

99
900

ENGINE IDENTIFICATION

Engine number is stamped on a machined pad on engine block below CIS throttle housing.

Application	Code
99	BI 20 P04
900	
Man. Trans.	BI 20 P11
Auto. Trans.	BI 20 P12
Turbo	BSI 20 P02

VALVE CLEARANCE

Bring camshaft into correct position for checking valves. Using a suitable go and no-go feeler gauge, check that clearance between valve tappet and heel of cam is to specifications given under "Preliminary Check." If within specifications, no further adjustment is necessary. If not, proceed as follows:

NOTE - Turbo valve clearances are critical. Use only specifications listed for Turbo.

- Using special tool (8391450) and a dial indicator, measure clearance of each valve. With measuring point of dial indicator resting on tip of cam, zero dial indicator.
- Lift valve depressor with special tool and note movement of dial indicator, indicating present valve clearance. Any valve not within "Adjustment Limit" specifications should be adjusted as follows:
- Remove camshaft, valve depressors and adjusting pads of valves needing adjustment. Measure thickness of adjusting pad with special tool (8391633) and calculate thickness of new pad required to bring valve clearance within "Adjustment Limit" specifications.
- Measured valve clearance plus adjusting pad thickness equals total distance between valve and cam. This total distance less the specified valve clearance, determines thickness of new adjusting pad to be installed.
- Install new adjusting pad, valve depressors, and camshaft and recheck that clearances are correct.

Valve Clearances^①

Application	Clearance
Preliminary Check	
Intake	.006-.012" (.15-.30 mm)
Exhaust	
All Exc. Turbo	.014-.020" (.35-.50 mm)
Turbo	.016-.020" (.40-.50 mm)
Adjustment Limit	
Intake	.008-.010" (.20-.25 mm)
Exhaust	
All Exc. Turbo	.016-.018" (.40-.45 mm)
Turbo	.018-.020" (.45-.50 mm)

① - When checked 30 minutes after driving vehicle at normal operating temperature.

VALVE ARRANGEMENT

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

SPARK PLUGS

Gap024-.028" (.6-.7 mm)
Torque 18-22 ft. lbs. (2.5-3.0 mkg)

Spark Plug Type

Application	Bosch No.	NGK No.
All	W 175 T 30	BP-6ES

HIGH TENSION WIRE RESISTANCE

Carefully remove high tension wires from spark plugs and distributor cap. Using an ohmmeter, check high tension wire resistance while gently twisting wires. If resistance is not to specifications, or fluctuates from infinity to any value, replace high tension wire(s).

Resistance (Ohms) Per Wire

Application	Ohms
All Models	
Wires to Cylinder 1 & 2	2600-3900
Wires to Cylinder 3 & 4	2400-3600
Wire from Coil to Distributor	800-1200

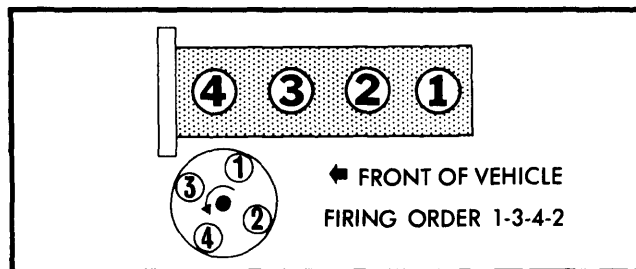


Fig. 1 Firing Order and Distributor Rotation

DISTRIBUTOR

All models are equipped with Bosch breakerless electronic ignition systems. No adjustments are required for distributor.

IGNITION TIMING

- Connect tachometer and timing light. Disconnect vacuum hose and place transmission in neutral position. Check timing at 2000 RPM.
- If not within specifications, loosen distributor retaining screw and rotate distributor housing. Turn clockwise for earlier ignition; counterclockwise for later.
- Reconnect vacuum hose and adjust engine idle speed.

TUNE-UP (Cont.)

Ignition Timing Specifications

Application	RPM	Timing
All Models	2000	20° BTDC

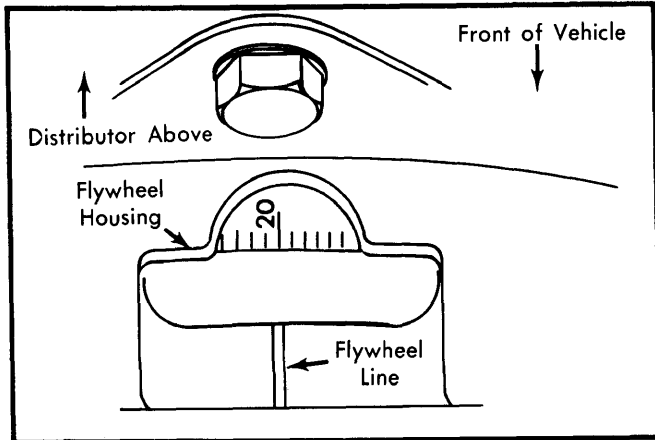


Fig. 2 Saab Timing Mark Location

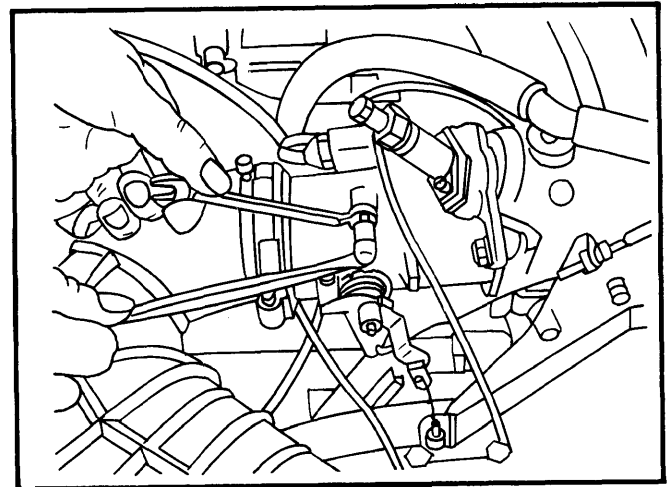


Fig. 3 Adjusting Idle Speed

IDLE SPEED & MIXTURE

1) Warm engine to normal operating temperature. Connect a CO meter to the plug in exhaust manifold pipe. Disconnect wire to oxygen sensor.

CAUTION — Do not allow disconnected wire from Lambda oxygen sensor to touch an engine or chassis ground.

2) Check and adjust engine idling speed by turning idle adjusting screw on throttle valve housing. Accelerate engine, then return to idle. Recheck idle speed.

3) Check CO level. Accelerate engine, then allow to run at stable idle for 30 seconds before reading CO level. Adjust with Allen wrench, using screw underneath plug in fuel distributor. Turn clockwise to richen mixture, counter clockwise to lean mixture.

CAUTION — Remove Allen "T" wrench from adjustment screw after each adjustment. If key is left in screw and engine is accelerated, lever could be damaged.

4) When mixture and idle adjustments are correct, remove CO probe, replace plug in manifold, and connect oxygen sensor wire. Insert CO meter probe into tailpipe and check CO with oxygen sensor connected. CO level should be less than 0.4%.

Idle Speed & CO Level

Application	RPM	CO%
All Models	825-925	①.75-1.25

① — With oxygen sensor disconnected. With sensor connected, maximum level is 0.4%.

DASHPOT

1) With engine at normal operating temperature, connect tachometer and check idle speed. Adjust if necessary. Rotate throttle lever and check that dashpot rod strikes the stop at 2400-2600 RPM. If not, adjust by turning dashpot.

2) Accelerate engine to 3000 RPM and measure time from release of throttle until engine reaches idle speed. Deceleration time should be 3-6 seconds. If not, turn dashpot in towards stop to lengthen delay, or away from stop to shorten delay time.

FUEL PUMP PRESSURE & VOLUME

Pressure	64-72 psi (4.5-5.1 kg/cm ²)
Volume	①1.9 pts. in 30 sec.

① — Measured in return fuel line

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Bosch electronic breakerless distributors.

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

IGNITION COIL

Coil Resistance (Ohms@75°F)

Application	Primary	Secondary
All Models	1.05-1.35	5500-8500

1980 Saab 4 Tune-Up

TUNE-UP (Cont.)

FUEL SYSTEMS

FUEL INJECTION

All models are equipped with Bosch Lambda Continuous Injection System (CIS) with oxygen sensor and catalytic converter.

Other Data & Specifications — See *Tune-Up and Bosch Lambda CIS Injection System* in **FUEL SYSTEMS** Section.

ELECTRICAL

BATTERY

Application	Amp. Hr. Rating
All Models.....	60

Battery Location — In engine compartment on right side.

STARTER

Bosch..... Overrunning Clutch

Starter Specifications

Application	Volts	Amps	Test RPM
All Models	11.5	35-55	6500-8500

ALTERNATOR

99 models are equipped with Marchal or Bosch alternators.
900 models are equipped with Motorola or Bosch alternators.

Application	Rated Amp. Output
99	55
900	70

ALTERNATOR REGULATOR

All models are equipped with Bosch, Motorola, or S.E.V. Marchal alternator regulators.

FILTERS

Filter	Service Interval (Miles)
Oil Filter	
Turbo	Replace every 5000
All Other Models	Replace every 7500
Air Filter	Replace every 30,000
Fuel Filter	Replace every 30,000

BELT ADJUSTMENT

Application	⓪Deflection
Alternator Belt4" (10 mm)
⓪ — Deflection is with 3.3 lbs. (1.5 kg) pressure applied midway on longest belt run.	

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
Turbo	4.5 qts.
All Other Models	4.0 qts.
Cooling System	
99	8.5 qts.
900 & Turbo	10.5 qts.
Man. Trans. (SAE 10W-30)⓪	3.0 qts.
Auto. Trans. (ATF Type F)	8.5 qts.
Auto. Trans. Final Drive (SAE 80)	1.3 qts.
Fuel Tank	14.5 gals.
⓪ — Including Final Drive.	