

## TUNE-UP

900

### ENGINE IDENTIFICATION

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

Application	Engine Code	Code
Non-Turbocharged		
Man. Trans. ....	BI 20 P11	
Auto. Trans. ....	BI 20 P12	
Turbocharged	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 micrometer (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 Clearance Specifications

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

### VALVE ARRANGEMENT

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

### SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (N·m)
All Models .....	.024-.028 (.6-.7)	18-22 (24-30)

### Spark Plug Type

Application	Bosch No.	NGK No.
Non-Turbo .....	W-175-T30	BP-6ES
Turbo .....		BP-7ES

### 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

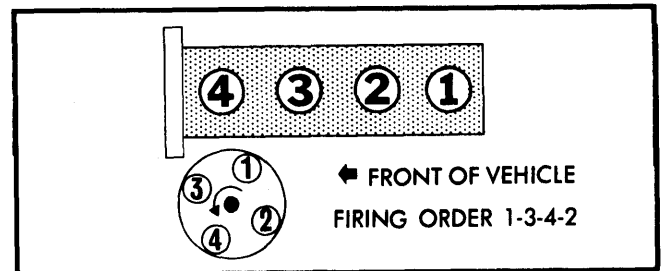


Fig. 1 Firing Order and Distributor Rotation

### 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 (Degrees BTDC @ RPM)

Application	Timing
All Models .....	20@2000

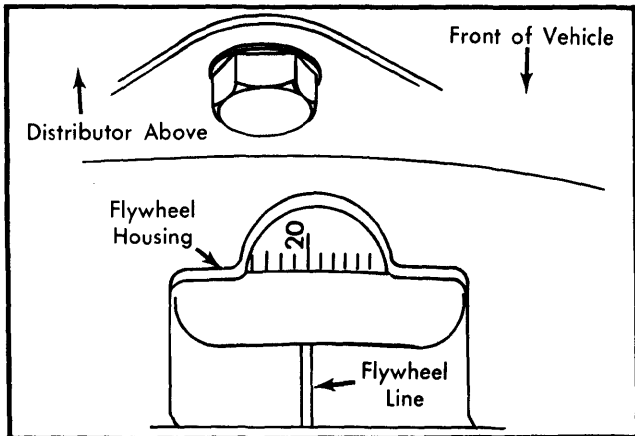


Fig. 2 Saab Timing Mark Location

### IDLE SPEED & MIXTURE

1) Warm engine to operating temperature and set ignition timing. Check and adjust engine idling speed, using idle adjusting screw on throttle valve housing.

**NOTE** — Mixture adjustment is not part of a normal tune-up procedure. Adjustment should be made only if mixture control unit is replaced or vehicle fails emissions testing.

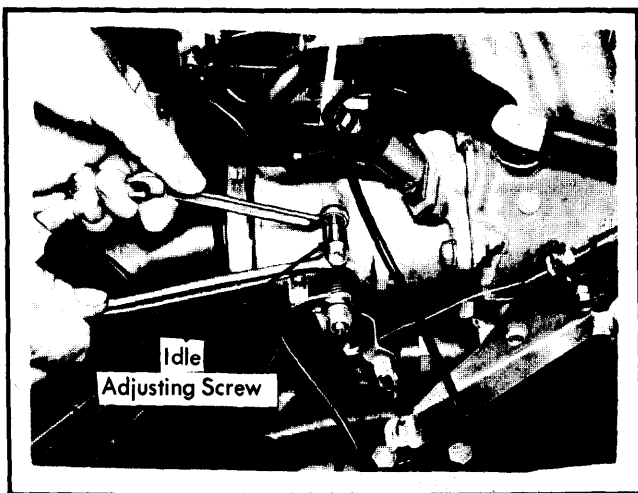


Fig. 3 Adjusting Idle Speed

2) Connect Bosch tester (KDJE 7453) or dwell meter to test connector in front of fuse box. See Fig. 4. Start engine and observe scale on tester. If needle fluctuates between 10-90% on Bosch tester or 10-80° on dwell meter (4 cyl. scale), no adjustment is needed.

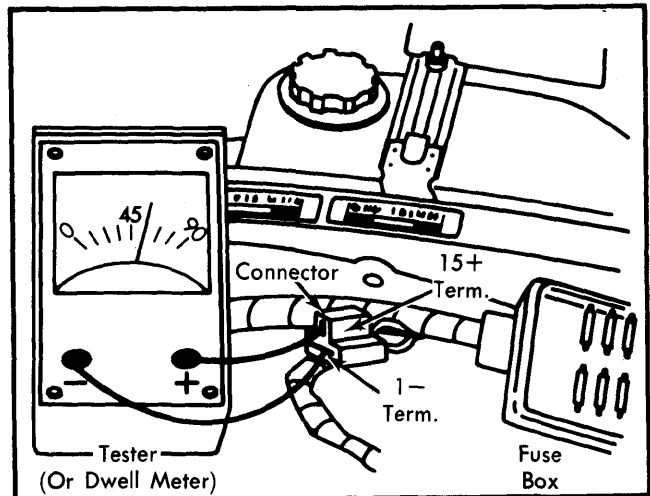


Fig. 4 Mixture Adjustment Tester Connections

3) If adjustment is necessary, remove mixture control unit from vehicle. Disassemble sensor plate and lever, then drive out mixture adjustment opening plug with punch. Reassemble mixture control unit and install on vehicle.

4) With engine idling, adjust mixture with hex head wrench until tester indicates 55-65% operation. Dwell meter will show 50-60° on 4 cyl. scale. Accelerate engine and recheck adjustment, then reinstall plug. Remove test equipment.

### Idle Speed

Application	Idle RPM
All Models .....	875

### DASHPOT ADJUSTMENT

1) Bring engine to normal operating temperature. On Turbo models, disconnect and plug EGR hose. On all other models, disconnect and plug vacuum advance. Connect tachometer and check idle speed. Adjust if necessary.

2) Rotate throttle lever and check that dashpot rod strikes the stop at 2100-2300 RPM on Turbo models, or 2400-2600 RPM on all others. If not, adjust by turning dashpot.

3) 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 <sup>2</sup> )
Volume .....	① 1.9 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.

#### IGNITION COIL

##### Coil Resistance Specifications (Ohms @ 75°F)

Application	Primary	Secondary
All Models .....	1.05-1.35 .....	5500-8500

### FUEL SYSTEMS

#### FUEL INJECTION

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

### 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

All models are equipped with Motorola or Bosch alternators.

Application	Rated Amp. Output
All Models .....	72

### ALTERNATOR REGULATOR

All alternators have built-in regulators which require no adjustment.

### BELT ADJUSTMENT

Application	① Deflection
Alternator Belt .....	.2" (5 mm)
① — Deflection is with 3.3 lbs. (1.5 kg) pressure applied midway on longest belt run.	

### 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

### CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
Turbo .....	4.5 qts.
All Other Models .....	4.0 qts.
Cooling System	
All Models .....	10.5 qts.
Man. Trans. (SAE 10W-30)① .....	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.

① — Including Final Drive.