1974-79 TUNE-UP PROCEDURES
Saab 4-Cylinder

99, 900, Turbo

ENGINE IDENTIFICATION

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

1974-75 ENGINE CODES

Application	Code
1974 Models	
99	B
99E	BE
1975 Models	
Federal	
Man. Trans.	BI 20
Auto. Trans.	BI 20R
Calif.	BI 20MR

1976-78 ENGINE CODES

Application	Code
99	
Federal	
Man. Trans.	BI P06
Auto. Trans.	BI P03
Calif.	
Man. Trans.	BI P04
Auto. Trans.	BI P05
Turbo	BSI 20CA

1979 ENGINE CODES

Application	Code
99	
Federal	
Man. Trans.	BI 20 P06
Auto. Trans.	BI 20 P03
Calif.	BI 20 P04
900	
Federal	
Man. Trans.	BI 20 P13
Auto. Trans.	BI 20 P10
Calif.	
Man. Trans.	BI 20 P11
Auto. Trans.	BI 20 P12
Turbo	BSI 20 P02

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Chassis number is stamped on body under left side of rear seat. Vehicle Identification Number is stamped on a plate attached to upper left corner of instrument panel and visible through windshield.

VALVE CLEARANCE

1) Bring camshaft into correct position for checking valves. Using a go-no-go gauge, check that clearance between valve tappet and heel of cam is to preliminary check specifications.

2) If clearance is correct, no adjustment is necessary. If not, measure clearance of each valve using Special Tool (8391450) and a dial indicator. With measuring point of dial indicator resting on tip of cam, zero dial indicator.

3) Lift valve depressor and note movement of dial indicator, indicating present valve clearance. Any valve not within adjust limit specifications should be adjusted.

4) To adjust valves, remove camshaft, valve depressor 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 specifications.

5) Measured valve clearance plus adjusting pad thickness equals total distance between valve and cam. Total distance less the specified valve clearance, determines thickness of new adjusting pad to be installed.

6) Install new adjusting pad, valve depressor, and camshaft and recheck that clearances are correct.

VALVE CLEARANCE SPECIFICATIONS [1]

Application	Clearance In. (mm)
Preliminary Check	
Intake	.006-.012 (.15-.30)
Exhaust	
99, 99E & 900	.014-.020 (.35-.50)
Turbo	.016-.020 (.40-.50)
Adjustment Limit	
Intake	.008-.010 (.20-.25)
Exhaust	
99, 99E & 900	.016-.018 (.40-.45)
Turbo	.018-.020 (.45-.50)

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

VALVE ARRANGEMENT

E-I-I-E-E-I-I-E - Front-to-rear.

SPARK PLUGS

SPARK PLUG SPECIFICATIONS

Application	Specification
Gap	.024-.028" (.60-.70 mm)
Torque	18-22 ft. lbs. (24-30 N.m)

SPARK PLUG TYPE

Application	NGK No.
All Models	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).

HIGH TENSION WIRE RESISTANCE

Application	Resistance (Ohms)
Wires to Cylinders No. 1 & 2	2600-3900
Wires to Cylinders No. 3 & 4	2400-3600
Wire from Coil to Distributor	800-1200

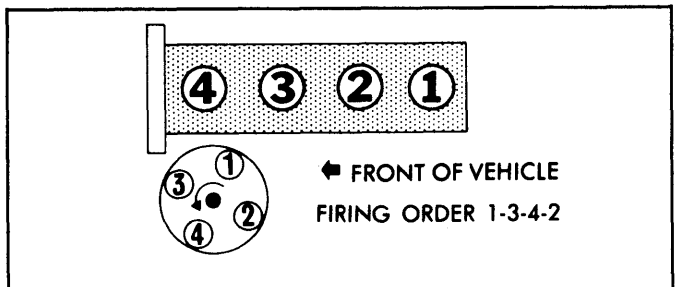

Fig. 1: Firing Order & Distributor Rotation

DISTRIBUTOR

Models are equipped with Bosch single-point distributors or Bosch electronic ignition system.

DISTRIBUTOR SPECIFICATIONS

Application	Specification
Point Gap	.016" (.40 mm)
Dwell Angle	47-53°
Breaker Arm Spring Tension	18-23 ozs. (510-652 g)
Condenser Capacity	.18-.23 mfd.

1974-79 TUNE-UP PROCEDURES
Saab 4-Cylinder (Cont.)

IGNITION TIMING

1974-76 Models - Set ignition timing with vacuum hoses disconnected and engine running at 800 RPM.

1977-79 Models - Connect tachometer and timing light to engine. Disconnect vacuum hose and place transmission in Neutral. Check timing at 2000 RPM. If not within specifications, loosen distributor retaining screw and rotate distributor housing. Reconnect vacuum hose and adjust engine idle speed.

IGNITION TIMING SPECIFICATIONS

Application	RPM	Timing
1974 Models		
99	800	14°BTDC
99E		
Federal	800	12°BTDC
Calif.	800	4°BTDC
1975-76 Models		
Federal	800	14°BTDC
Calif.	800	12°BTDC
1977-79 Models	2000	20°BTDC

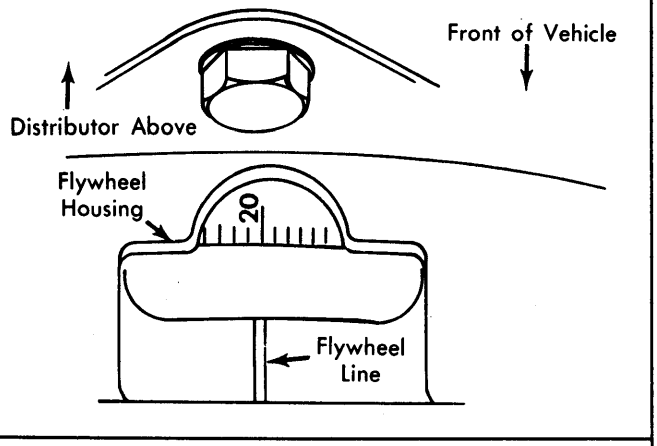

Fig. 2: Typical Ignition Timing Mark Location

IDLE SPEED & MIXTURE

1974 Models - 1) On 99E, adjust idle speed to specifications by turning by-pass screw on venturi control unit. Check that throttle valve switch is closed when throttle is closed and open when throttle is opened one degree. If necessary, loosen retaining screws and rotate switch. Set CO% level to specified value by rotating knob on injection control unit.

2) On 99, ensure oil level in carburetor damper is correct. Adjust idle speed to specifications. Adjust air screw to obtain smoothest possible idle. Set a gap of .02-.08" (0.5-2.0 mm) between fast idle cam and throttle adjusting screw.

3) Adjust throttle adjusting screw to eliminate free play in accelerator linkage. Check CO% level is within specifications. If not, turn air screw to bring CO% level to specifications.

1975-79 Models - 1) Remove thick hose at charcoal canister. On vehicles with air injection, remove and plug hose from air pump. On all models with Lambda system, disconnect oxygen sensor. DO NOT allow wire from oxygen sensor to touch an engine or chassis ground.

2) With engine at normal operating temperature, adjust idle speed to specifications by turning adjusting screw on throttle valve by-pass duct. *See Fig. 3.*

3) Check CO% level and, if necessary, turn adjustment screw in airflow sensor using Allen Wrench (8392482). Repeat idle speed and mixture adjustments until specified idle speed and CO% are obtained. Install hoses and oxygen sensor wire. Recheck idle speed and adjust if necessary.

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

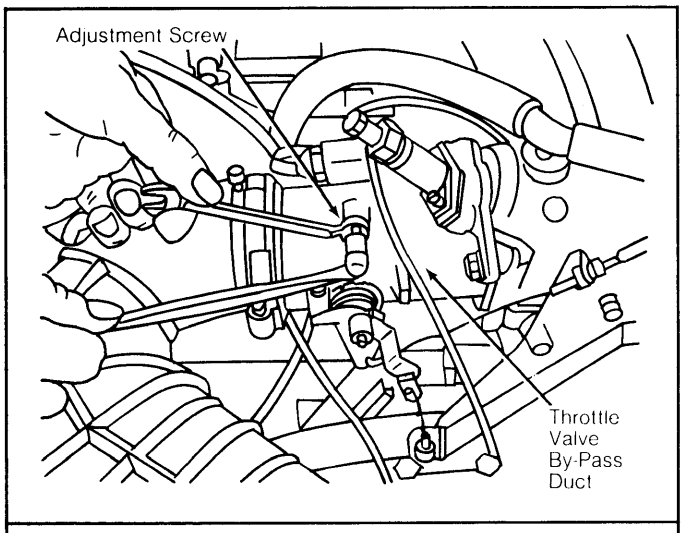

Fig. 3: Adjusting Idle Speed

1974-76 IDLE SPEED & CO% LEVEL SPECIFICATIONS [1]

Application	RPM	CO%
1974 Models		
Man. Trans.	850	2.5 Max.
Auto. Trans.	800	2.5 Max.
1975-76 Models	850-900	0.5-2.0

1977-79 IDLE SPEED & CO% LEVEL SPECIFICATIONS

Application	RPM	CO%
99 & 900		
Federal	825-925	0.5-1.0
Calif. & Hi. Alt.	825-925	[1] 0.75
Turbo	825-925	[1] 0.75

[1] - With oxygen sensor disconnected. With sensor connected, a maximum CO% level of 0.4 percent is permissible. Permissible deviation while checking is 0.25-1.0 percent.

COLD (FAST) IDLE SPEED

1974 Models - On 99, fast idle is set during idle speed adjustment procedure. If necessary, adjust gap between fast idle cam and throttle adjusting screw to .02-.08" (0.5-2.0 mm). Cold fast idle is not adjustable on 99E.

DECEL VALVE ADJUSTMENT

1975-76 Models - Remove rubber bellows between airflow sensor and throttle valve housing. Loosen lock nut and valve adjusting screw. Turn adjusting screw until engine coasts down from 3000 RPM to idle speed in 3-5 seconds. Tighten lock nut and install rubber bellows.

1977-79 Models - 1) Locate decel valve in inlet manifold, valve is connected by a hose to throttle housing. Connect tachometer and warm engine to normal operating temperature.

2) Turn adjusting screw until valve closes completely. Set specified idle speed by turning idle adjusting screw. Turn down adjusting screw until engine speed is 1600 RPM.

3) Now back off adjusting screw 2 turns. Set specified idling speed with the idle adjusting screw. Check deceleration time and make any necessary fine adjustments.

1974-79 TUNE-UP PROCEDURES
Saab 4-Cylinder (Cont.)

4) To check deceleration valve, increase engine speed to 3000 RPM. Release throttle and note how long it takes for engine to return to idle speed. See DECELERATION TIME REQUIREMENTS table.

NOTE: To prevent faulty deceleration readings, disconnect cooling fan cable from thermal switch during check.

DECELERATION TIME REQUIREMENTS

Application	Time Required
Federal & Calif.	4-6 seconds
High Altitude	3-4 seconds

FUEL PUMP

FUEL PUMP SPECIFICATIONS

Application	Specification
Pressure	64-72 psi (4.5-5.1 kg/cm²)
Volume	[1] 1.6 pts. in 30 sec.

[1] - Measured at return fuel line.

EXHAUST EMISSION SYSTEMS

See appropriate articles in EXHAUST EMISSION SYSTEMS section.

IGNITION SYSTEM

DISTRIBUTOR

Models are equipped with Bosch single-point distributors or Bosch electronic ignition system.

Other Data & Specifications - See appropriate Bosch ignition system article in DISTRIBUTORS & IGNITION SYSTEMS section.

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Resistance (Ohms)
Primary	
1974-77 Models	1.7-2.1
1978-79 Models	1.05-1.35
Secondary	
1978-79 Models	5500-8500

FUEL SYSTEMS

CARBURETORS

CARBURETORS

Application	Model
1974 Models	Zenith-Stromberg 1-Bbl.

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

FUEL INJECTION

The 1974 99E and all 1975-79 models are equipped with Bosch Continuous Injection System (CIS) or Lambda CIS Injection System (oxygen sensor feedback system with catalytic converter).

Other Data & Specifications - See Bosch CIS and Lambda CIS Injection Systems in FUEL SYSTEMS section.