TUNE-UP

1600
1800

ENGINE IDENTIFICATION

Engine can be identified by a letter-number combination stamped on machined pad on side of engine, near distributor (below carburetor). Engine codes are as follows:

Application	Code
2-WD	
Federal	
Man. Trans.	E71AA3, E71GA3A
Auto. Trans.	E81TA
Calif.	
Man. Trans.	E71AC3
Auto. Trans.	E81TC
4-WD	
Federal	E71WA3, E71WA4
Calif.	E71WC3, E71WC4

COMPRESSION PRESSURE

Check pressure with engine warm, plugs removed, throttle valve wide open and engine at cranking speed. Pressure should be as specified with a variation of 7 psi (.5 kg/cm²) maximum between cylinders.

Compression Pressure @350 RPM

Application	Pressure psi (kg/cm²)
All Models	156 (11)

VALVE CLEARANCE

With engine cold, bring piston to be checked to top dead center of compression stroke. Loosen lock nuts and turn adjusting screws to proper clearance. Adjust valves in firing order sequence (1-3-2-4) using valve clearance adjusting tool 398760100 (or equivalent).

Valve Clearance Specifications

Application	Clearance
Intake	.010" (.25 mm)
Exhaust	.014" (.35 mm)

VALVE ARRANGEMENT

I-E-E-I (both banks, front to rear).

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
All Models	.032 (.8)	18 (2.1)

Spark Plug Type

Application	NKG	Nippondenso
All Models	BP6ES	W20EP

HIGH TENSION WIRE RESISTANCE

Carefully remove high tension wires from spark plugs and ignition coil. Remove distributor cap with wires still in place. Using an ohmmeter, check high tension wire resistance between free end of wire and distributor cap electrode. 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	25,000

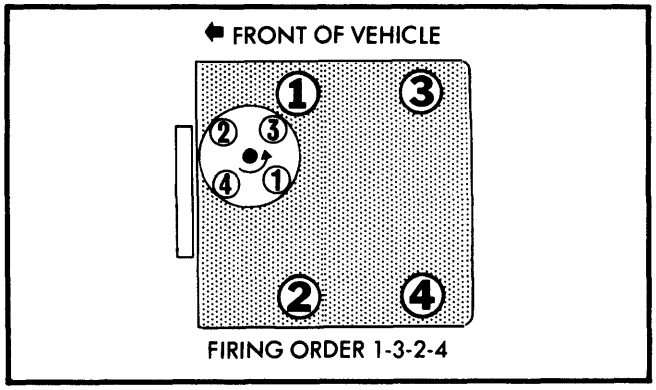

Fig. 1 Firing Order and Distributor Rotation

DISTRIBUTOR

All models are equipped with breakerless, electronic ignition systems.

Air Gap	
Nippondenso	.008-.016" (.2-.4 mm)
Hitachi	.012-.016" (.3-.4 mm)

IGNITION TIMING

Adjust timing with engine at normal operating temperature and transmission in neutral. Disconnect and plug vacuum hoses at distributor. With engine at idle, check timing and turn distributor to adjust.

Ignition Timing Specifications

Application	Timing
All Models	8° BTDC

TUNE-UP (Cont.)

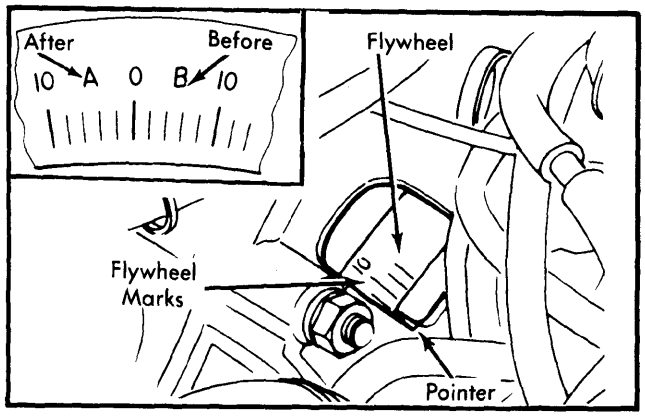

Fig. 2 Subaru Timing Mark Location

IDLE SPEED & MIXTURE

NOTE – *Ignition timing and valve clearances must be correct and engine must be at normal operating temperature prior to adjusting idle speed and mixture.*

1) Disconnect fuel evaporation purge hose at purge check valve and plug manifold hose. Start engine and allow to warm up for 5 minutes.

NOTE – *If engine stalls and is restarted during adjustment, always wait for 5 minutes after starting to perform adjustment, as timer of ignition control system is in operation.*

2) Check idle speed and CO level with air injection (AIR) connected. Next, disconnect hose between air suction valve and secondary air filter assembly and plug hose. Again check idle speed and CO level.

3) If necessary, adjust idle speed and CO level to specifications, with air injection disconnected, using both the throttle adusting screw and the idle mixture adjusting screw.

NOTE – *On California models only, spring pin in throttle body must be removed to gain access to idle mixture adjusting screw. After adjustment is completed, spring pin must be reinstalled.*

4) Reconnect air suction valve-to-secondary air filter hose. Recheck idle speed and CO level with air injection connected and adjust as necessary to obtain specified settings with air injection connected.

Idle Speed & CO Level

Application	RPM	CO%
W/Cat. Converter		
AIR Connected	750-850	0-1.0
AIR Disconnected	750-850	1.0-3.0
W/O Cat. Converter		
AIR Connected	850-950	0-2.0
AIR Disconnected	850-950	3.5-5.5

COLD (FAST) IDLE RPM

With cam adjusting lever on first step of fast idle cam, primary throttle valve opening angle and clearance should be as follows. If not, adjust fast idle screw.

Fast Idle Specifications

Application	Throttle Valve Opening Angle	Clearance Valve-to-Body
Man. Trans.		
Fed. W/Converter	14°	.041" (1.05 mm)
Fed. W/O Converter	16°	.050" (1.27 mm)
Calif.	17°	.051" (1.31 mm)
Auto. Trans.	19°	.060" (1.53 mm)

FUEL PUMP PRESSURE & VOLUME

Pressure	1.9-2.6 psi (.13-.18 kg/cm^2)
Volume	0.9 pts./min.

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTORS

Breakerless, electronic ignition systems are used on all models. Hitachi systems are used on four-wheel-drive models, and Nippondenso systems are used on all other models.

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

IGNITION COIL

Coil Resistance (Ohms@68°F)

Application	Primary	Secondary
Hitachi	1.17-1.43	7800-11,600
Nippondenso	1.33-1.63	12,600-15,400

FUEL SYSTEMS

CARBURETORS

Application	Model
W/Cat. Converter	Hitachi DCJ 2-Bbl.
W/O Cat. Converter	Hitachi DCP 2-Bbl.

Other Data & Specifications – *See Tune-Up and Hitachi Carburetors in FUEL SYSTEMS Section.*

ELECTRICAL

BATTERY

Application	Amp. Hr. Capacity
Federal 1800	65
All Other Models	60

GENERAL SERVICING (Cont.)

Battery Location – Engine compartment; front.

STARTER

Nippondenso..... Magnetic Switch Type

Starter Test Specifications

Application	Volts	Amps	Test RPM
Federal 1800	11.5	90	4100
All Others	11.0	50	5000

ALTERNATOR

Application	Rated Amp. Output
4-WD Station Wagon	55
All Other Models	50

ALTERNATOR REGULATOR

All models are equipped with Hitachi alternator regulators with an operating voltage of 14.0-14.5 volts.

ENGINE

BELT ADJUSTMENT

Application	①Deflection
All Belts	.51-.55" (13-14 mm)

① – Deflection is with 22 lbs. (10 kg) pressure applied midway on longest belt run.

FILTERS

Filter	Service Interval (Miles)
Oil Filter	Replace every 7500
Air Filter	Replace every 30,000
Fuel Filter	Replace every 15,000

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
1600	3.7 qts.
1800	4.2 qts.
Man. Transaxle (SAE 85W-90)	
2-WD	2.9 pts.
4-WD	3.2 pts.
Rear Differential (4-WD)	1.6 pts.
Auto. Trans. (Dexron)	5.9-6.3 qts.
Front Differential (SAE 85W-90)	2.6 pts.
Fuel Tank	
2-WD	13.2 gals.
4-WD	11.9 gals.