TUNE-UP

4000 Automatic
5000
5000 Turbo

ENGINE IDENTIFICATION

Engine number is stamped on left side of block near No. 3 cylinder.

Engine Code Numbers

Application	Code
4000 Automatic	WE
5000	
Federal	WD
Calif.	WE
5000 Turbo	WK

COMPRESSION PRESSURE

Check compression pressure with engine at normal operating temperature, all plugs removed, and throttle wide open. Maximum variation permitted between cylinders is 42 psi (3 kg/cm²) on standard engines and 28 psi (2 kg/cm²) on Turbo models.

Application	Standard Pressure psi (kg/cm²)	Minimum Pressure psi (kg/cm²)
All Except Turbo	128-185 (9-13)	100 (7)
Turbo	100-128 (7-9)	.....

VALVE CLEARANCE

1) Adjust valves with engine at normal operating temperature. Remove accelerator linkage and cylinder head cover. Clearance adjustments are to be checked and made according to firing order sequence (1-2-4-5-3). Rotate crankshaft until cam lobes for No. 1 cylinder valves point upward; then measure valve clearances of No. 1 cylinder.

NOTE – *When adjusting valves, turn engine CLOCKWISE only, or timing belt may slip.*

2) If adjustment is necessary, use special tools US 4476 (disc removal tool) and 2078 (tappet depressing tool) to remove and install adjusting discs. Turn tappet until notches are at 90° to camshaft. Insert tool 2078 and depress tappet. Using tool US 4476, grasp tappet disc and rotate it out from under camshaft.

3) Thickness is stamped on bottom side of disc. Using clearance measurement, determine thickness of adjusting disc necessary to bring valve clearance within specifications. Discs are available in .0019" (.05 mm) increments from .1181-.1673" (3.0-4.25 mm). Repeat procedure as required for remaining valves.

Valve Clearance Specifications①

Application	Clearance
All Models	
Intake	.008-.012" (.2-.3 mm)
Exhaust	.016-.020" (.4-.5 mm)

① – With engine hot.

VALVE ARRANGEMENT

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

SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
All Models	.028 (.7)	22 (3)

Spark Plug Type

Application	Bosch	Champion
4000 Automatic & 5000 Federal	W7D	N8Y
Calif.	WR7DS	N8GY
5000 Turbo	WR7DS	N8GY

HIGH TENSION WIRE RESISTANCE

Carefully remove ends of wire from spark plug and distributor. Using an ohmmeter, check resistance of wire while gently twisting wire. If resistance is not to specification, or fluctuates from infinity to any value, replace wire.

NOTE – *Wire resistance cannot be measured if the wires are marked with this symbol:*

Resistance (Ohms) Per Wire

Application	Resistance
Ignition Wire	4800-7400
Coil Wire	1600-2400

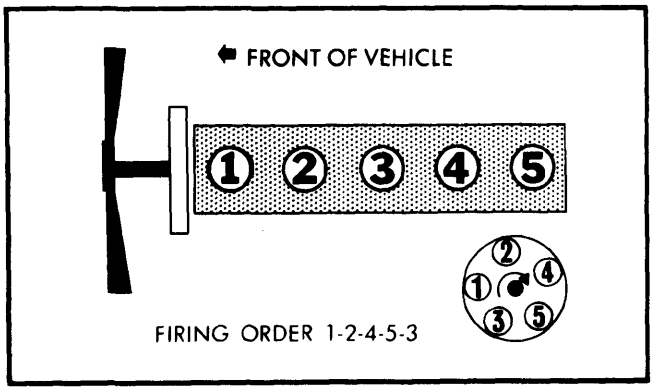

Fig. 1 Firing Order and Distributor Rotation

DISTRIBUTOR

All models are equipped with electronic, breakerless ignition systems. All California models and Federal Turbo models have an idle stabilizer unit which adjusts ignition timing to maintain a constant idle speed.

TUNE-UP (Cont.)

IGNITION TIMING

Turbo – Disconnect and plug both hoses at distributor. With engine at 3000 RPM, adjust timing by turning distributor.

All Except Turbo – Disconnect 2 plugs at idle stabilizer unit (if equipped) and connect them together. Leave vacuum hoses connected at distributor. With engine idling, adjust ignition timing by turning distributor. Reconnect idle stabilizer unit.

Ignition Timing Specifications

Application	RPM	Timing
4000 Automatic & 5000		
Federal	800-1000	3° ATDC
Calif.	880-1000	3° ATDC
5000 Turbo	3000	21° BTDC

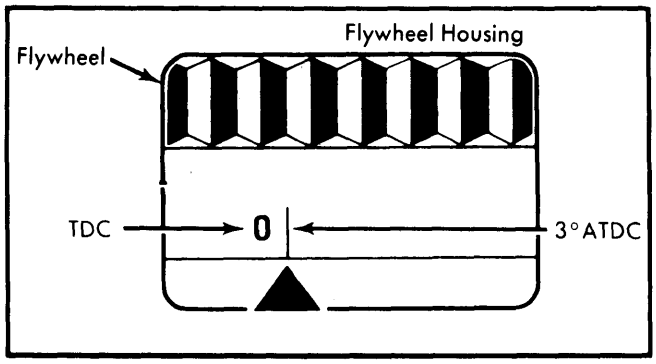

Fig. 2 Ignition Timing Mark Location

IDLE SPEED & MIXTURE

WITHOUT OXYGEN SENSOR

1) With engine at normal operating temperature, check and make sure that ignition timing, valve clearance, spark plug gap and compression pressures are within specifications. Turn headlights on high beam and, if equipped, turn air conditioning off. Disconnect and plug PCV valve hose, then connect CO meter at test port (if equipped) or tailpipe.

NOTE – *Engine cooling fan must not run while adjustments are being made.*

2) Adjust idle speed to specifications by means of the idle control screw at the throttle plate housing.

3) To adjust CO level, remove plug from mixture control unit between fuel distributor and venturi. Insert suitable adjusting tool (P 377) and turn clockwise to raise CO% or counterclockwise to decrease CO% until the specified CO level is obtained.

NOTE – *Engine will stall if pressure is exerted on adjusting tool. Use very small adjustments or CO level will be changed greatly.*

4) Remove adjusting wrench and accelerate engine briefly. Wait until CO meter has stabilized for idle speed reading. Check idle speed and CO level and adjust if necessary.

WITH OXYGEN SENSOR

1) With engine at normal operating temperature, turn all electrical accessories off. With engine stopped, disconnect both plugs from idle stabilizer unit and connect them together. Disconnect and plug PCV valve hose.

2) Check and adjust ignition timing as necessary. Adjust idle speed to specified RPM using adjusting screw on side of throttle valve housing.

NOTE – *Engine cooling fan must not run while adjustments are being made.*

3) Remove cap from CO test receptacle on exhaust manifold and connect CO tester hose directly to test receptacle. Connect a dwell meter to frequency valve electrical connector. Zero dwell meter and set it to the 4-cylinder scale.

4) Disconnect oxygen sensor wire at connector and check dwell meter reading. Meter reading must be constant between 40-50°.

5) Adjust CO level to specifications using adjusting tool (P377). Turn adjusting tool clockwise to increase CO and counterclockwise to decrease CO.

CAUTION – *Do not press down on adjusting tool when adjusting CO level. Also, do not accelerate engine with tool in place. Remove tool after each adjustment and accelerate engine briefly before reading CO level. Always adjust CO level from lean to rich.*

6) Reconnect oxygen sensor wire and check dwell meter reading. Meter reading should now pulsate. Reconnect all hoses and wiring at idle stabilizer, then recheck idle speed.

Idle Speed & CO Level

Application	Idle RPM	CO%
4000 Automatic & 5000		
Federal	800-1000	0.4-1.2
Calif.	880-1000	0.4-1.2
5000 Turbo	880-1000	0.4-1.2

FUEL PUMP PRESSURE & VOLUME

System Pressure	
4000 Automatic & 5000	65-75 psi (4.5-5.2 kg/cm)
5000 Turbo	72-82 psi (4.9-5.6 kg/cm²)
Volume	Approx. 1 quart in 40 sec.

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

1980 Audi 5 Tune-Up

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with electronic ignition. California 4000 and 5000 models, and all Turbo models use an idle stabilizer system in addition to the Hall generator ignition system.

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

IGNITION COIL

Coil Resistance (Ohms@68°F)

Application	Primary (Ohms)	Secondary (Ohms)
4000 Automatic & 5000		
Federal	1.7-2.1	7000-12,000
Calif.	.52-.76	2400-3500
5000 Turbo	.52-.76	2400-3500

FUEL SYSTEMS

FUEL INJECTION

All models are equipped with Bosch CIS Continuous Injection System. All California models and Federal Turbo models are equipped with an oxygen sensor feedback system.

Other Data & Specifications – See Tune-Up and Bosch CIS or CIS Lambda Fuel Injection in FUEL SYSTEMS Section.

ELECTRICAL

BATTERY

Application	Amp. Hr. Capacity
All Models	63

Battery Location – On models with factory-installed air conditioning, the battery is located under the left side of the rear seat. On all other models, the battery is located in the engine compartment.

STARTER

All models are equipped with Bosch Starters.

ALTERNATOR

Application	Rated Amp. Output
All Except Turbo	75
Turbo	90

ALTERNATOR REGULATOR

Bosch – Non-adjustable, integral with alternator.

Operating Voltage ..... 12.5-14.5 Volts

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
5000	5.3 qts.
4000 Automatic & 5000 Turbo	4.8 qts.
Cooling System	
4000 Automatic	7.4 qts.
5000	8.6 qts.
5000 Turbo	10.0 qts.
Man. Transaxle (SAE80W-90)	2.8 qts.
Auto. Trans. (Dexron)	3.2 qts.
Auto. Trans. Final Drive (SAE 90)	1.1 qts.
Fuel Tank	
4000 Automatic	15.9 gals.
5000 & 5000 Turbo	19.8 gals.

BELT ADJUSTMENT

All Models – With a 20 lbs. (9.1 kg) pressure, belt should be able to be depressed 3/8-9/16" (10-15 mm).

FILTERS

Filter	Service Interval (Miles)
Oil Filter①	15,000
Air Filter	30,000
Fuel Filter	15,000

① – Turbo models are equipped with 2 oil filters. Both should be changed at 15,000 mile intervals.