TUNE-UP

200SX
210
310
510
Pickup

ENGINE IDENTIFICATION

Engine model number followed by engine serial number is stamped on left side of cylinder block for 200SX and 510 models and on right side of cylinder block for all other models, just below cylinder head mating surface. Model numbers are as follows:

Application	Model No.
200SX	Z20E
210	
Man. Trans.	A12A, A14
Auto. Trans.	A15
310	A14
510	Z20S
Pickup	L20B

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle identification number is stamped on a plate attached to instrument panel and is visible through windshield from outside of vehicle. Number on Pickup is on upper face of right side member. An identification plate also is found inside the engine compartment.

COMPRESSION PRESSURE

Check compression pressure with engine at normal operating temperature, all spark plugs disconnected, electrical lead to anti-dieseling solenoid disconnected, choke and throttle valves wide open and engine at cranking speed.

Lowest cylinder pressure should be at least 80% that of the highest cylinder pressure. Compression pressure should be as follows:

Compression Pressure @350 RPM

Application	Psi (kg/cm²)
A12A, A14 & A15	178-192 (12.5-13.5)
L20B, Z20E & Z20S	128-171 (9-12)

VALVE CLEARANCE

On all engines, start and run engine to normal operating temperature. Turn engine off, remove valve cover and adjust clearances immediately. Do not allow engine to cool before or during adjustment, or incorrect valve clearances may be obtained.

A12A, A14 & A15 ENGINES

1) Rotate crankshaft to bring No. 1 piston to TDC on compression stroke. Adjust intake valves on cylinders No. 1 and No. 2, and adjust exhaust valves on cylinders No. 1 and No. 3.

2) Rotate crankshaft 360° to bring No. 4 piston to TDC on compression stroke. Adjust intake valves on cylinders No. 3 and No. 4, and adjust exhaust valves on cylinders No. 2 and No. 4.

L20B ENGINES

1) Rotate crankshaft to bring the first cam lobe to a straight up position. Adjust intake valves on cylinders No. 2 and No. 4, and exhaust valves on cylinders No. 1 and No. 3.

2) Rotate crankshaft 360° to bring the first cam lobe to a straight down position. Adjust intake valves on cylinders No. 1 and No. 3, and exhaust valves on cylinders No. 2 and No. 4.

Z20E & Z20S ENGINES

1) Rotate crankshaft to bring first cam lobe to a straight down position. Adjust intake valves on cylinders No. 3 and No. 4, and exhaust valves on cylinders No. 1 and No. 2.
2) Rotate crankshaft 360° to bring first cam lobe to a straight up position. Adjust intake valves on cylinders No. 1 and No. 2, and exhaust valves on cylinders No. 3 and No. 4.

Valve Clearance Specifications

Application	Intake In. (mm)	Exhaust In. (mm)
A12A, A14 & A15	.014 (.35)	.014 (.35)
L20B	.010 (.25)	.012 (.30)
Z20E & Z20S	.012 (.30)	.012 (.30)

VALVE ARRANGEMENT

Z20E & Z20S
Right Side — All Intake.
Left Side — All Exhaust.
All Other Engines — E-I-I-E-E-I-I-E (front to rear).

SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
200SX & 510	.031-.035 (0.8-0.9)	11-14 (1.5-2.0)
210, 310 & Pickup	.039-.043 (1.0-1.1)	11-14 (1.5-2.0)

Spark Plug Type

Application	NGK No.
200SX & 510	BP6ES
210 & 310	BP5ES-11
Pickup	BPS-11

TUNE-UP (Cont.)

HIGH TENSION WIRE RESISTANCE

Remove distributor cap from distributor but do not disconnect high tension wires from cap. Disconnect high tension wires from spark plugs. Using an ohmmeter, check resistance from contact at spark plug end of wires to contact inside of distributor cap. Resistance should be less than 30,000 ohms. If resistance is more, disconnect wire from cap and recheck resistance. Replace wire if resistance still exceeds specification.

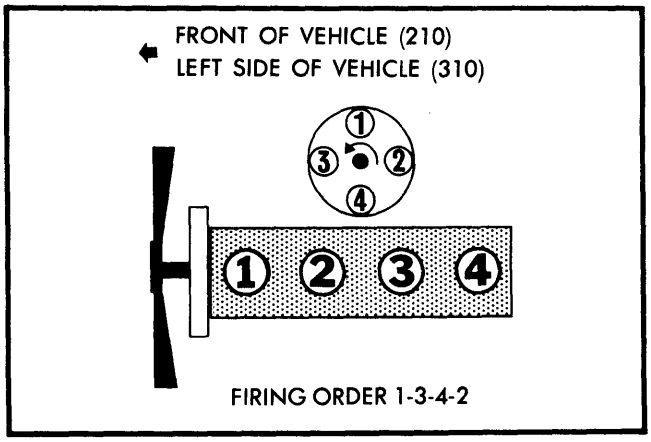

Fig. 1 Firing Order and Distributor Rotation (210 and 310 Models)

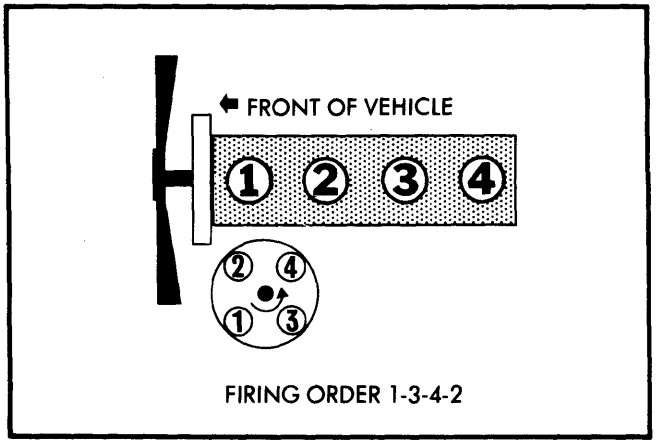

Fig. 2 Firing Order and Distributor Rotation (Federal 200SX and 510 Models and All Pickup Models)

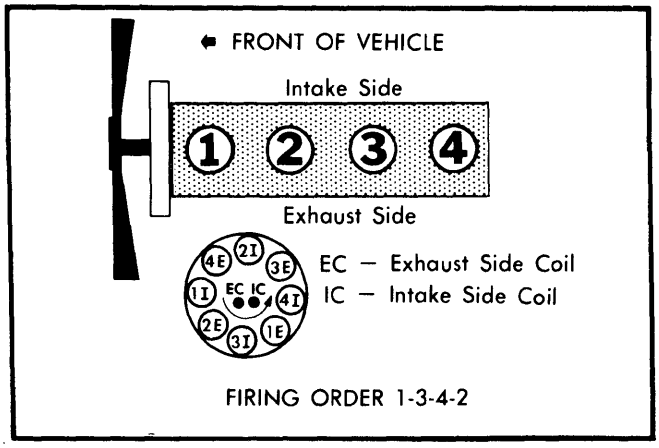

Fig. 3 Firing Order and Distributor Rotation (California 200SX and 510 Models)

DISTRIBUTOR

All models are equipped with breakerless, transistorized ignition systems. California 200SX and 510 models have 2 spark plugs per cylinder and the distributor is equipped with 8 secondary wires and a dual level rotor which fires both spark plugs at the same time.

Air Gap ..... .012-.020" (.3-.5 mm)

IGNITION TIMING

Check and adjust ignition timing with engine at normal operating temperature, air gap set within specifications and engine idle speed correct. On all models except 200SX and California Pickup, disconnect and plug distributor vacuum hose. To adjust, loosen distributor set screw and rotate distributor until correct timing is achieved. Tighten set screw, recheck timing and reconnect distributor vacuum hose (if removed).

Ignition Timing Specifications

Application	Man. Trans.	Auto. Trans.
200SX & 510		
Federal	8° BTDC	8° BTDC
California	6° BTDC	6° BTDC
210		
1200 cc Eng.	10° BTDC	.....
1400 cc Eng.	8° BTDC	.....
1500 cc Eng.	.....	8° BTDC
310	8° BTDC	.....
Pickup	①12° BTDC	12° BTDC

① — California Heavy Duty — 10° BTDC.

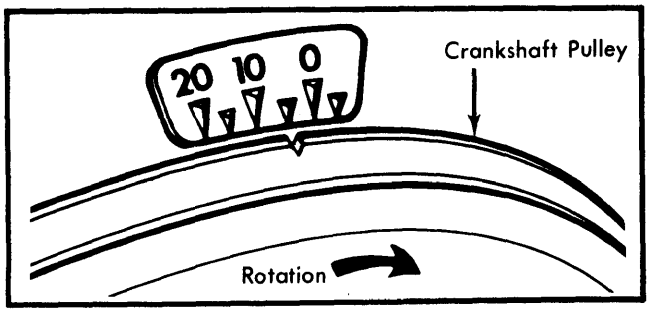

Fig. 4 Ignition Timing Mark Location (210 and 310 Models)

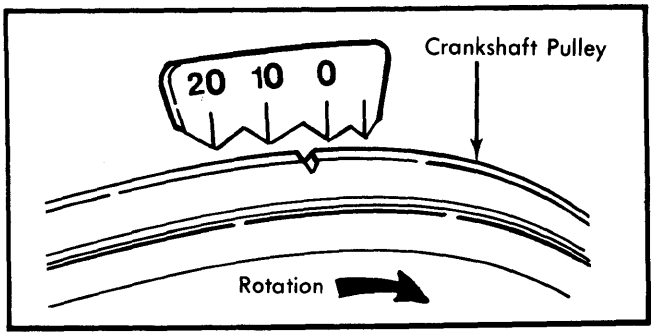

Fig. 5 Ignition Timing Mark Location (200SX, 510 and Pickup Models)

TUNE-UP (Cont.)

IDLE SPEED & MIXTURE

EXHAUST GAS ANALYZER METHOD

NOTE — *The following adjustment procedures should be performed with engine at normal operating temperature, air conditioning "OFF" (if equipped), ignition timing set to specifications and air cleaner installed. Set parking brake, block drive wheels and on models with automatic transmission, place gear selector in "D" position.*

All Models Except 200SX

NOTE — *CO meter probe must be inserted into tail pipe more than 8" on Pickups and 16" on all other models.*

1) Run engine at 2000 RPM for 2 minutes (5 minutes on Pickups) to stabilize engine condition, connect CO meter and tachometer and return engine to idle. On 510 models, disconnect and plug air induction and distributor hoses. On all other models, disconnect air injection hose (Calif.) or air induction and distributor hoses (Federal).

NOTE — *If air induction hose is removed, cap air induction pipe. If air injection hose is removed, cap check valve on air injector gallery.*

2) Accelerate engine to 2000-3000 RPM several times under no load, then run engine at idle for one minute and check ignition timing. Adjust to specifications if necessary.

3) On 210 and 310 models, reconnect distributor vacuum hose. Accelerate engine to 2000-3000 RPM several times and return to idle. On all models, check idle speed and adjust to specifications if necessary.

4) With idle speed correct, check CO level. Adjust idle mixture adjusting screw to obtain specified CO valve (if necessary).

5) After setting CO level, install new seal cap (California models). If limiter cap was removed (Federal and all Pickup models), reposition on adjusting screw to ensure screw can be rotated 1/8 turn counterclockwise and press cap onto screw.

NOTE — *California models (except Pickups) are equipped with a steel cup plug covering mixture screw. To remove, remove carburetor and drill a small hole in plug near side. DO NOT allow drill to contact mixture adjusting screw below plug. Install self-tapping screw into hole and pull plug from bore.*

Idle Speed & CO Level
(All Models Except 200SX)

Application	Idle RPM	CO%
210		
Federal	①700	2.0
California	①700	Less than 5.0
310		
Federal	750	2.0
California	750	Less than 5.0
510		
Federal	600	0.5-2.5
California	600	Less than 5.0
Pickup	600	0.3-2.7

① — Set Auto. Trans. models to 650 RPM.

6) Accelerate engine several times and recheck CO level. Reconnect all hoses and reset idle speed (if necessary).

200SX Models

NOTE — *CO meter probe must be installed into tail pipe more than 16".*

1) Run engine at 2000 RPM for 2 minutes to stabilize engine condition, then connect CO meter and tachometer.

2) Disconnect air induction hose and plug induction pipe. Accelerate engine 2-3 times under no-load and return engine to idle for 1 minute. Adjust idle speed and ignition timing (if necessary).

NOTE — *On California models, air by-pass screw in air flow meter is covered by a steel plug. To remove plug, remove air flow meter and drill a small hole in plug. DO NOT allow drill to contact by-pass screw. Install self-tapping screw into hole and pull plug from bore.*

3) With engine idling, check CO level. Adjust air by-pass screw in air flow meter to obtain specified CO level (if necessary). Turn by-pass screw clockwise to richen mixture and counterclockwise to lean mixture. On Federal models, adjust CO level according to altitude at which vehicle is to be operated.

Idle Speed & CO Level
(200SX Models)

Application	Idle RPM	CO%
200SX		
Federal		
To 2000 feet	700	0.3-2.3
2000-4000 feet	700	2.7
4000-6000 feet	700	3.8
Above 6000 feet	700	5.0
California	700	Less than 4

COLD (FAST) IDLE RPM

210, 310 & Pickup Models — Adjust fast idle speed with engine at normal operating temperature, transmission in neutral and fast idle speed screw on 2nd highest step of fast idle cam.

510 Models — Carburetor must be removed from vehicle to set fast idle. Place upper side of fast idle screw on 1st step of fast idle cam. Measure throttle valve clearance. Clearance should be .030-.035" (.76-.90 mm) on manual transmission models and .038-.043" (.96-1.1 mm) on automatic transmission models. If not, adjust clearance by turning fast idle screw.

Fast Idle RPM

Application	Man. Trans.	Auto. Trans.
210		
Federal	2400-3200	2700-3500
California	2300-3100	2600-3400
310		
Federal	2400-3200	.....
California	2300-3100	.....
Pickup	1900-2800	2200-3200

TUNE-UP (Cont.)

DASHPOT ADJUSTMENT

With engine at normal operating temperature and idle speed and mixture correctly set, turn throttle valve by hand and read engine speed when dashpot just contacts adjusting screw on stop lever. Turn adjusting screw on stop lever to obtain specified engine speed. Accelerate engine and release. When dashpot plunger contacts stop lever, engine should decelerate smoothly from 2000 RPM to 1000 RPM in about 3 seconds.

Dashpot Adusting Specifications

Application	Man. Trans. (RPM)	Auto. Trans. (RPM)
210 & 310	1900-2100	1900-2100
510	.....	1400-1600
Pickup	.....	1650-1850

FUEL PUMP PRESSURE & VOLUME

Pressure	
200SX	①30 psi (2.1 kg/cm²)
All Other Models	3.0-3.8 psi (.21-.27 kg/cm²)
Volume (at 1000 RPM)	
210 & 310	1 pt. per minute
510	3.7 pts. per minute
Pickup	2.2 pts. per minute

① – Measured between fuel filter and fuel delivery line at idle. Pressure should increase to 37 psi (2.2 kg/cm²) when accelerator pedal is fully depressed.

NOTE – *When performing tests on fuel pump output volume and output pressure, use a fuel line with an inside diameter of ¼" (6 mm). Improper size of test hose could cause incorrect delivery pressure and volume.*

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Hitachi breakerless, transistorized ignition systems.

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

IGNITION COIL

Coil Resistance (Ohm@68° F)

Application	Primary	Secondary
200SX & 510		
Federal	.84-1.02	8,200-12,400
California	1.04-1.27	7,400-11,000
All Other Models	.84-1.02	8,200-12,400

FUEL SYSTEMS

CARBURETORS

Application	Model
210 & 310	Hitachi DCH 306
510	Hitachi DCR 360
Pickup	Hitachi DCH 340

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

FUEL INJECTION

200SX models are equipped with Bosch AFC electronic fuel injection.

Other Data & Specifications – *See Tune-Up & Bosch Fuel Injection in FUEL SYSTEMS Section.*

ELECTRICAL

BATTERY

Application	Amp. Hr. Rating
All Models	60

Battery Location – Engine Compartment.

STARTER

Hitachi solenoid actuated with overrunning clutch.

Application	Volts	Amps	Test RPM
All Models	11.5	60	7000

ALTERNATOR

Application	Rated Amp. Output
200SX & 310	60
210 & 510	50
Pickup	
Standard	35
Heavy Duty	38

ALTERNATOR REGULATOR

All Models use a Hitachi alternator regulator with an operating voltage of 14.4-15.0 volts at 68°F (20°C).

GENERAL SERVICING (Cont.)

FILTERS

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

BELT ADJUSTMENT

Application	①Deflection
All Models	
All Belts	5/16-1/4" (8-12 mm)

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

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
200SX & 510	4.4 qts.
210 & 310	3.4 qts.
Pickup	4.5 qts.
Cooling System (Includes Heater)	
210 & 310	6.3 qts.
All Others	9.5 qts.
Man. Trans (SAE 80W-90/API GL-4)	
200X	4.3 pts.
210	
4-Speed	
1200 cc	2.5 pts.
1400 cc	2.8 pts.
5-Speed	2.5 pts.
310	4.9 pts.
510	
4-Speed	3.1 pts.
5-Speed	3.7 pts.
Pickup	
4-Speed	3.7 pts.
5-Speed	4.3 pts.
Auto. Trans. (Dexron)	
All Models	5.9 qts.
Rear Axle (SAE 80W-90/API GL-5)	
200SX & 510	2.4 pts.
210 & 310	1.9 pts.
Pickup	2.6 pts.
Fuel Tank	
200SX	
Hardtop	14.0 gals.
Hatchback	15.9 gals.
210, 310 & 510	13.3 gals.
Pickup	
Shortbed①	13.3 gals.
Longbed②	16.9 gals.

① — Includes King Cab model.
② — Includes Cab & Chassis model.