TUNE-UP

200SX
210
310
510
Pickup

ENGINE IDENTIFICATION

Engine code number followed by engine serial number is stamped on left side of cylinder block for 200SX and Pickup models and on right side of cylinder block for all other models, just below cylinder head mating surface.

Engine Code

Application	Code
200SX	Z20E
210	
1237 cc	A12A
1397 cc	A14
1488 cc	A15

COMPRESSION PRESSURE

Check compression pressure with engine at normal operating temperature, all spark plugs removed, electrical lead to anti-dieseling solenoid disconnected, choke and throttle valves wide open and engine at cranking speed. Crank engine at least 6 "puffs" per cylinder to determine engine compression. Lowest cylinder pressure should be at least 80% that of the highest cylinder pressure.

Compression Pressure Specifications
Reading@350 RPM

Application	Pressure psi (kg/cm²)
200SX, 510 & Pickup	128-171 (9.0-12.0)
210 & 310	178-192 (12.5-13.5)

VALVE CLEARANCE

NOTE — *On all models, 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.*

200SX, 510 & Pickup — 1) Rotate crankshaft to bring the first cam lobe to a straight down position. Adjust intake valves on cylinders No. 1 and No. 2, and exhaust valves on cylinders No. 3 and No. 4.

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

210 & 310 — 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.

Valve Clearance Specifications①

Application	Intake In. (mm)	Exhaust In. (mm)
200SX, 510 & Pickup	.012 (.30)	.012 (.30)
210 & 310	.014 (.35)	.014 (.35)

① — Set with engine warm.

VALVE ARRANGEMENT

200SX, 510 & Pickup
Right Side — All Intake.
Left Side — All Exhaust.
210 & 310 — E-I-I-E-E-I-I-E (front-to-rear).

SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (N·m)
200SX, 510 & Pickup	.033 (0.8)	14 (19)
210 & 310	.041 (1.0)	14 (19)

Spark Plug Type

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

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.

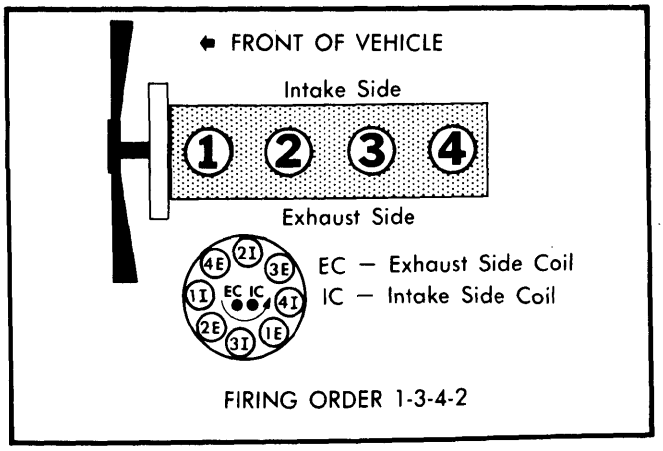

Fig. 1 Firing Order and Distributor Rotation (200SX, 510 and Pickup Models)

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TUNE-UP (Cont.)

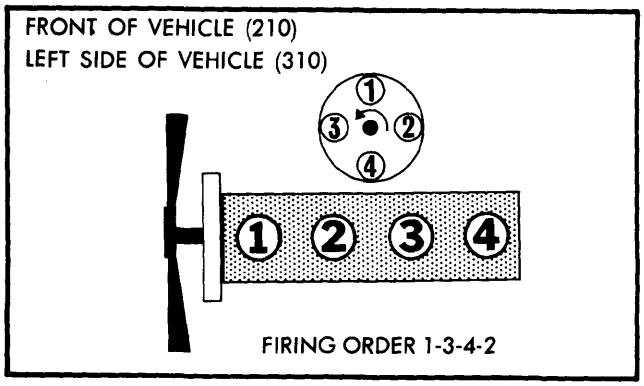

Fig. 2 Firing Order and Distributor Rotation (210 and 310 Models)

DISTRIBUTOR

All models are equipped with breakerless, transistorized ignition systems. 200SX, 510 and Pickup 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. 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.

Ignition Timing Specifications (Degrees BTDC@RPM)

Application	Man. Trans.	Auto. Trans.
200SX	6@650-850	6@600-800
210		
1200 cc Eng.	7@650-750	.....
1400 cc Eng.	5@600-700	.....
1500 cc Eng.	5@650-750	5@600-700
310	5@700-800	.....
510	6@500-700	6@500-700
Pickup	① 5@550-750	5@550-750

① – 4-WD – 5@700-900.

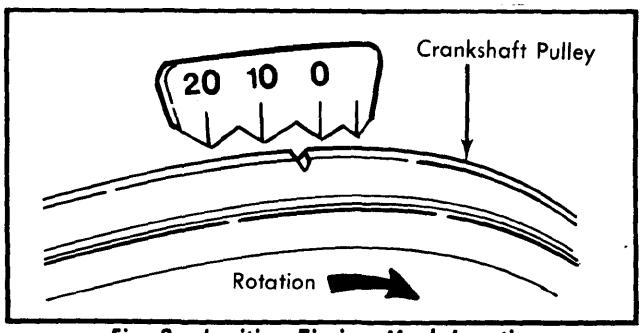

Fig. 3 Ignition Timing Mark Location (200SX, 510 and Pickup Models)

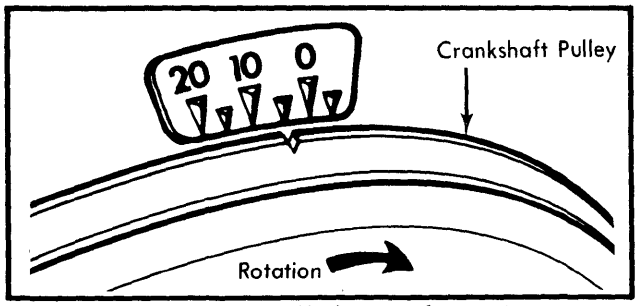

Fig. 4 Ignition Timing Mark Location (210 and 310 Models)

IDLE SPEED & MIXTURE

NOTE – *Mixture adjustment is NOT a part of normal tune-up procedure and should not be performed unless mixture control unit is replaced, carburetor overhauled or vehicle fails emissions testing.*

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.*

200SX – 1) Connect a tachometer to engine and run at 2000 RPM for 5 minutes to stabilize operating condition. Accelerate engine 2-3 times and return to idle. Turn idle speed adjusting screw to obtain specified idle RPM.

2) Turn ignition switch off and disconnect throttle valve switch harness connector. Position harness connector at least 4" away from any secondary ignition wires. Disconnect and plug distributor vacuum hose. Disconnect oxygen sensor.

3) Check and, if necessary, adjust ignition timing. Connect a jumper wire between throttle valve switch harness connector terminals No. 24 and No. 30. Insert CO meter probe into tail pipe at least 16".

NOTE – *Connecting jumper wire between connector terminals signals the control unit of a full throttle condition which allows the idle mixture to run at full load enrichment. This step is necessary to enrichen the CO% level at idle enough to be read by the CO meter.*

4) With engine idling, check CO level. If necessary to adjust CO, remove air flow meter and drill a small hole in plug covering air by-pass screw. DO NOT allow drill to contact screw. Clean up metal shavings. Install self-tapping screw into hole and pull plug from bore. Install air flow meter.

5) Adjust CO level by turning air by-pass screw clockwise to richen mixture and counterclockwise to lean mixture. Remove air flow meter. Tap new seal plug, with convex side up, into air by-pass screw bore. Install air flow meter.

6) Stop engine and remove jumper wire from throttle valve switch harness connector. Reconnect harness and all hoses. Reset idle speed to specified RPM.

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TUNE-UP (Cont.)

210, 310, 510 & Pickup – 1) Connect a tachometer to engine. Run engine at idle speed on 210 and 310 models or at 2000 RPM on 510 and Pickup models for 2 minutes. Disconnect and plug distributor vacuum and air induction hoses.

2) Accelerate engine to 2000-3000 RPM several times under no load. Return engine to idle speed for 1 minute. Check and, if necessary, adjust ignition timing. Insert CO meter probe 16" or more into tail pipe.

3) On 210 and 310 models, reconnect distributor vacuum hoses. Accelerate engine to 2000-3000 RPM several times under no load and return to idle speed. On all models, check and, if necessary, adjust idle speed. Again accelerate engine several times and return to idle. Check CO level.

4) If necessary to adjust CO, remove carburetor and drill a small hole in plug covering mixture adjusting screw. DO NOT allow drill to contact screw or metal shavings to enter carburetor. Reinstall carburetor.

5) Adjust CO level by turning mixture adjusting screw clockwise to richen mixture and counter-clockwise to lean mixture. Reconnect all hoses and install new plug in mixture adjusting screw bore.

Idle Speed & CO Level

Application	Idle RPM	CO%
200SX		
Man. Trans.	750	Less than 6.0
Auto. Trans.	700	Less than 6.0
210		
1200 cc Eng.	700	Less than 4.0
1400 cc Eng.	650	Less than 4.0
1500 cc Eng.		
Man. Trans.	700	Less than 4.0
Auto. Trans.	650	Less than 4.0
310	750	Less than 4.0
510	600	Less than 5.0
Pickup		
Man. Trans.		
2-WD	650	Less than 5.0
4-WD	800	Less than 5.0
Auto. Trans.	650	Less than 5.0

COLD (FAST) IDLE RPM

210 & 310 – Adjust fast idle speed with engine at normal operating temperature, transmission in neutral and fast idle speed screw on 2nd higest step of fast idle cam. Adjust Man. Trans. models to 2300-3200 RPM or Auto. Trans. models to 2600-3500 RPM.

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	.....

510 & Pickup – 1) 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.

2) Clearance should be .030-.035" (.76-.90 mm) on 510 Man. Trans. models and .038-.043" (.96-1.1 mm) on 510 Auto. Trans. models. Clearance should be .032-.038" (.81-.95 mm) on Pickup Man. Trans. models and .039-.044" (.98-1.12 mm) on Pickup Auto. Trans. models. If not, adjust clearance by turning fast idle screw.

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

Application①	RPM
210	1900-2100
510 & Pickup	1400-1600

① – Auto. Trans. models only.

FUEL PUMP PRESSURE & VOLUME

Pressure	3.0-3.8 psi (.21.27 kg/cm²)
Volume (at 1000 RPM)	
210 & 310	1 pt. per minute
510 & Pickup	3.7 pts. per minute

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

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

IGNITION COIL

Resistance Specifications (Ohms@68°F)

Application	Primary	Secondary
200SX, 510 & Pickup	1.04-1.27	7300-11,000
210 & 310	0.84-1.02	8200-12,400

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GENERAL SERVICING (Cont.)

FUEL SYSTEMS

CARBURETORS

Application	Model
210 & 310	Hitachi DCR 306
510 & Pickup	Hitachi DCR 342

FUEL INJECTION

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

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	①7000

① – 510 & Pickup Auto. Trans. models, 6000 RPM.

ALTERNATOR

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

ALTERNATOR REGULATOR

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

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.

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

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
200SX & 510	4.6 qts.
210 & 310	3.4 qts.
Pickup	
2-WD	4.6 qts.
4-WD	4.5 qts.
Cooling System (Includes Heater)	
200SX	10.0 qts.
510	9.3 qts.
210	
Man. Trans.	6.3 qts.
Auto. Trans.	6.0 qts.
Pickup	
Man. Trans.	10.7 qts.
Auto. Trans.	10.6 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.
Front Axle (SAE 80W-90/API GL-5)	2.1 pts.
Transfer Case	3.0 pts.
Rear Axle (SAE 80W-90/API GL-5)	
200SX & 510	2.4 pts.
210	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	
2-WD	13.3 gals.
4-WD	15.9 gals.
Longbed	
2-WD	16.9 gals.
4-WD	19.9 gals.

① – Includes King Cab model.

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