2002 ENGINE PERFORMANCE

On-Vehicle Adjustments

ENGINE MECHANICAL

Before performing any on-vehicle adjustments to fuel or ignition system, ensure engine mechanical condition is okay.

VALVE CLEARANCE

NOTE: 3.5RL is equipped with hydraulic lifters. Adjustment is not required.

MDX, 3.2CL & 3.2TL

1. Ensure cylinder head temperature is less than 100°F (38°C). On 3.2CL and 3.2TL, remove strut brace. On all models, remove ignition coil cover and intake manifold cover. On 3.2CL and 3.2TL Type S models, remove water bypass hoses. Disconnect Traction Control System (TCS) control valve actuator and TCS control valve angle sensor connector from TCS control valve assembly. Remove bolt securing TCS control valve bracket. On all models, remove Evaporative Emission (EVAP) control canister hose, breather tube, vacuum hose and intake air duct. Loosen lock nuts and remove throttle and cruise control cables.
2. Remove brake booster vacuum hose, vacuum hoses, and PCV hose. Remove breather pipe and water bypass hose. Remove power steering hose clamp. Disconnect intake manifold runner control (IMRC) actuator connector. Remove IMRC actuator. Remove 2 bolts from wire harness holder. Remove Intake Air Temperature (IAT), Idle Air Control (IAC), Throttle Position Sensor (TPS) and Manifold Absolute Pressure (MAP) sensor connectors. On MDX, also disconnect EVAP canister purge valve connector. On all models, remove wire harness clamps and holders. Move wire harness out of way. Remove ignition coils if necessary. Remove upper intake cover and intake manifold. Remove cylinder head covers.
3. Rotate crankshaft clockwise until cylinder No. 1 is at TDC. Cylinder No. 1 TDC mark on camshaft sprocket should be aligned with pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 1. See **VALVE CLEARANCE ADJUSTMENT** table. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary.
4. Rotate crankshaft clockwise until cylinder No. 4 is at TDC. Cylinder No. 4 TDC mark on camshaft sprocket should be aligned with pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 4. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary.
5. Rotate crankshaft clockwise until cylinder No. 2 is at TDC. Cylinder No. 2 TDC mark on camshaft sprocket should be aligned with pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 2. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary.
6. Rotate crankshaft clockwise until cylinder No. 5 is at TDC. Cylinder No. 5 TDC mark on camshaft sprocket should be aligned with pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 5. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m)

and recheck valve clearance. Repeat adjustment if necessary.

7. Rotate crankshaft clockwise until cylinder No. 3 is at TDC. Cylinder No. 3 TDC mark on camshaft sprocket should be aligned with pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 3. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary.
8. Rotate crankshaft clockwise until cylinder No. 6 is at TDC. Cylinder No. 6 TDC mark on camshaft sprocket should be aligned with TDC pointer on timing belt cover. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 6. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary. After adjusting valves, reinstall removed components and ensure crankshaft pulley bolt is tightened to 181 ft. lbs. (245 N.m).

VALVE CLEARANCE ADJUSTMENT (1)

Application	In. (mm)
MDX, 3.2CL & 3.2TL	
Intake	.008-.009 (0.20-0.24)
Exhaust	.011-.013 (0.28-0.32)
RSX	
Intake	.008-.010 (0.21-0.25)
Exhaust	.011-.013 (0.28-0.32)
3.5RL	(2)

(1) Adjust valves when engine is cold.

(2) Equipped with hydraulic lifters. No adjustment is necessary.

RSX

1. Ensure cylinder head temperature is less than 100°F (38°C). Remove cylinder head cover.
2. Rotate crankshaft clockwise until cylinder No. 1 is at TDC. Align TDC marks on Variable Valve Timing Control (VTC) actuator and exhaust camshaft sprocket. See **Fig. 1** . Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 1. See **VALVE CLEARANCE ADJUSTMENT** table. Tighten valve adjusting screw lock nut to 10 ft. lbs. (14 N.m) and recheck valve clearance. Repeat adjustment if necessary.

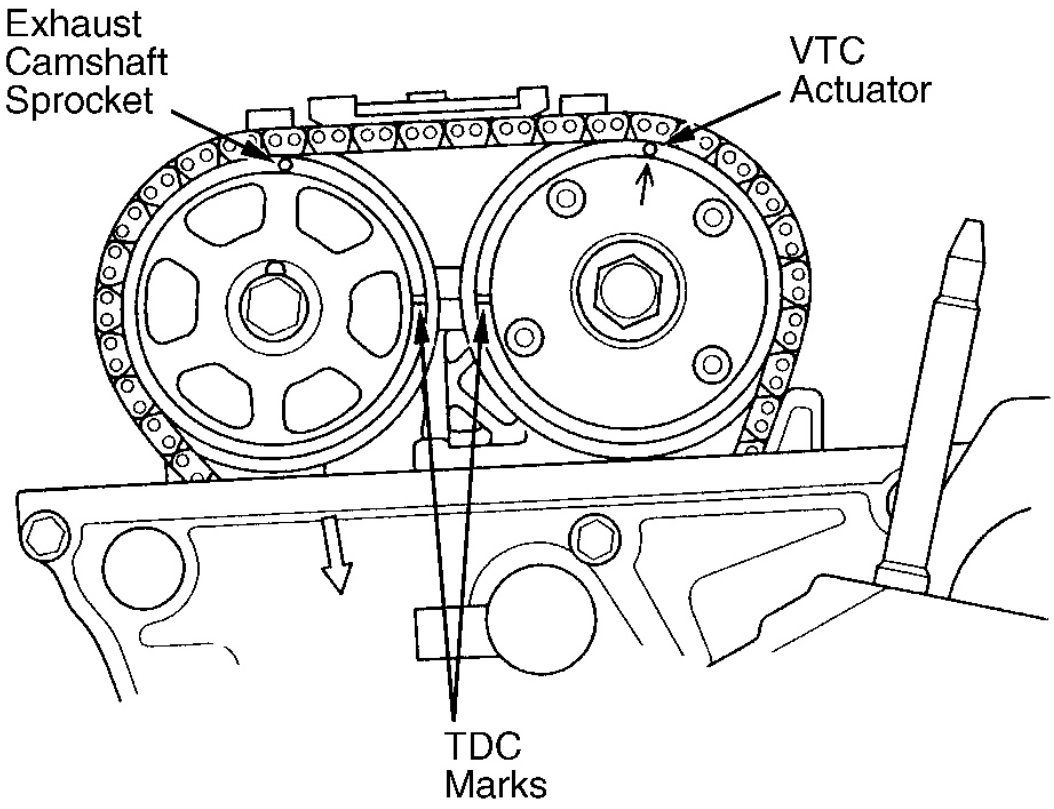

Fig. 1: Identifying Camshaft Timing Marks (RSX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Rotate crankshaft clockwise 180 degrees (camshaft sprockets will rotate 90 degrees). Adjust valves on cylinder No. 3. Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 3. Tighten valve adjusting screw lock nut to 10 ft. lbs. (14 N.m) and recheck valve clearance. Repeat adjustment if necessary.
4. Rotate crankshaft clockwise 180 degrees (camshaft sprockets will rotate 90 degrees). Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 4. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary.
5. Rotate crankshaft clockwise 180 degrees (camshaft sprockets will rotate 90 degrees). Loosen valve adjusting screw lock nuts and adjust valve clearances on cylinder No. 2. Tighten valve adjusting screw lock nut to 14 ft. lbs. (20 N.m) and recheck valve clearance. Repeat adjustment if necessary. Reinstall cylinder head cover and ensure crankshaft pulley bolt is tightened to 181 ft. lbs. (245 N.m).

IGNITION TIMING

MDX, 3.2CL & 3.2TL

1. Ensure idle speed is within specification. See **IDLE SPEED** under IDLE SPEED & MIXTURE. Connect Honda PGM tester to Data Link Connector (DLC). Select SCS menu option and follow scan tool instructions.
2. Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on. Allow engine to idle. Connect inductive timing light to test loop, located at No. 1 ignition coil (may be identified with White tape). Aim timing light toward pointer on timing belt cover. Red mark on crankshaft pulley should align with pointer on front of engine. See **Fig. 3** . If timing is not as specified (Red mark and pointer are not aligned), replace ECM/PCM. Timing is not adjustable.

RSX

1. Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on. Allow engine to idle. Locate Data Link Connector (DLC), located under drivers side of dash board. Connect Honda PGM tester to Data Link Connector (DLC). Select SCS menu option and follow scan tool instructions.
2. Connect inductive timing light to test loop, located at No. 1 ignition coil (may be identified with White tape). Ensure idle speed is within specification. See **IDLE SPEED** under IDLE SPEED & MIXTURE. Red mark on crankshaft pulley should align with pointer on timing belt cover. See **Fig. 4** and **IGNITION TIMING (DEGREES BTDC - RED MARK @ RPM)** table.
3. If timing is not as specified (Red mark and pointer are not aligned), replace ECM/PCM. Timing is not adjustable. Remove PGM tester from DLC.

3.5RL

1. Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on. Allow engine to idle. Locate 2-pin service check connector (under glove box). Install Service Check Connector Tool (07PAZ-0010100) into service check connector. See **Fig. 2** .
2. Ensure idle speed is within specification. See **IDLE SPEED** under IDLE SPEED & MIXTURE. Remove engine cover and connect inductive timing light to test loop, located at No. 1 ignition coil (may be identified with White tape). Aim timing light toward pointer on timing belt cover. Red mark on crankshaft pulley should align with pointer on front of engine. See **Fig. 5** . If timing is not as specified (Red mark and pointer are not aligned), replace ECM/PCM. Timing is not adjustable. Remove service check connector tool from service check connector.

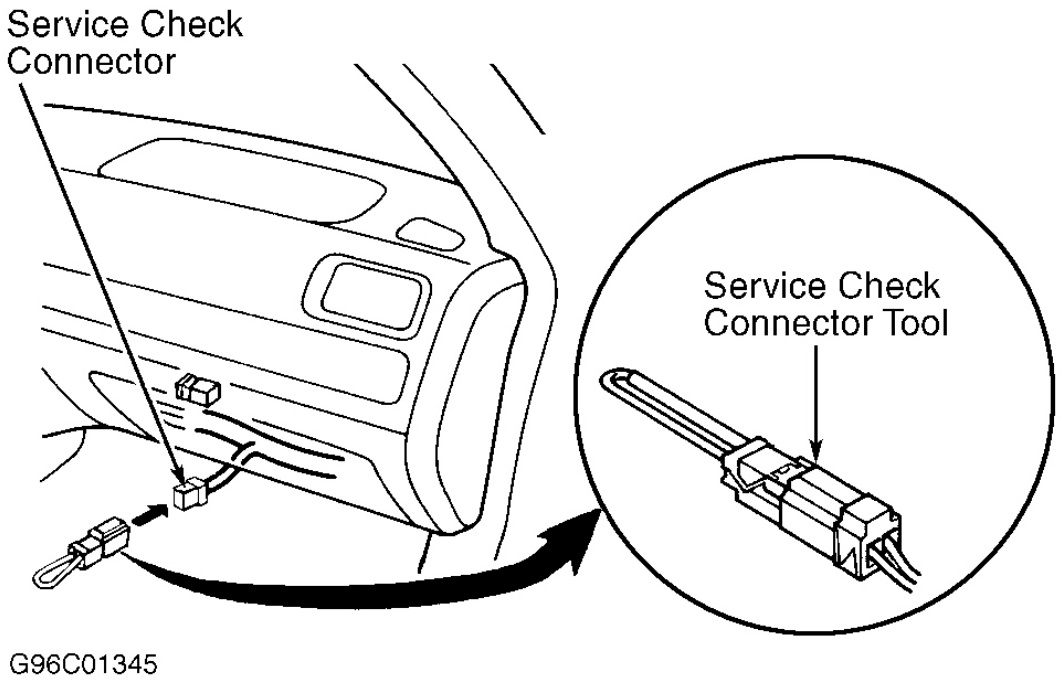

Fig. 2: Installing Service Check Connector Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

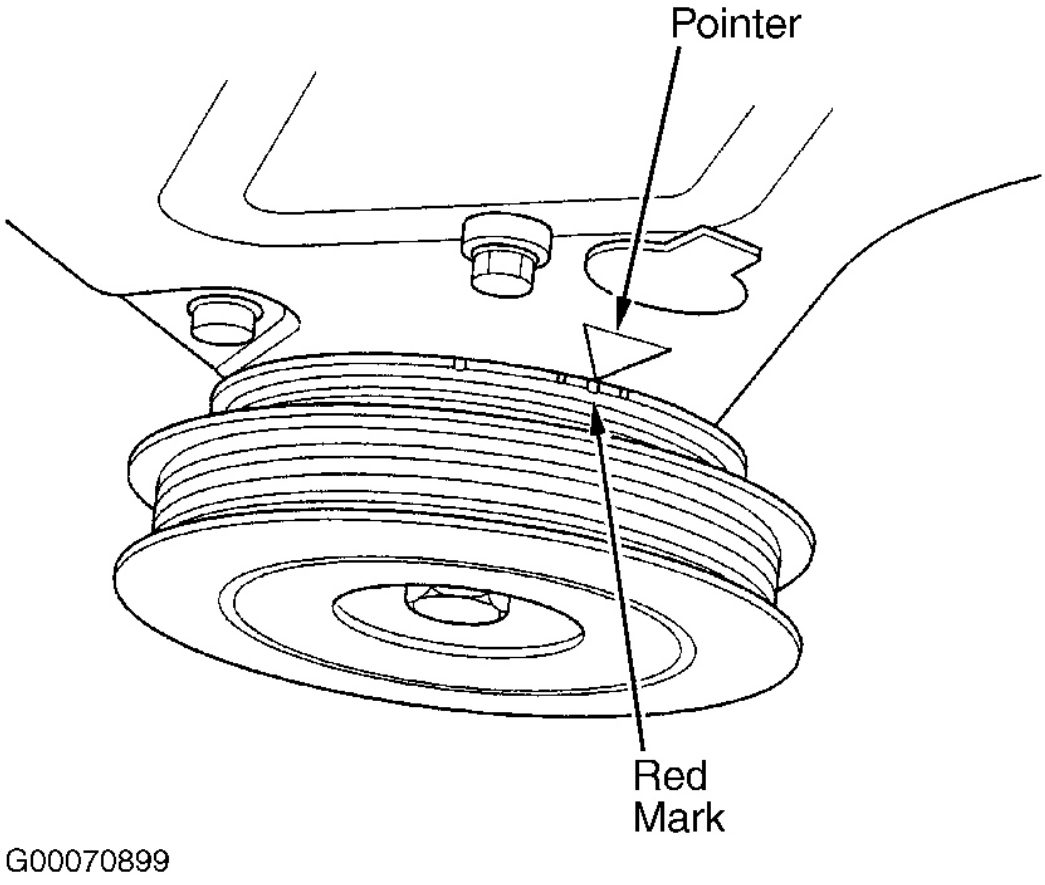

Fig. 3: Locating Ignition Timing Mark (MDX, 3.2CL & 3.2TL)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

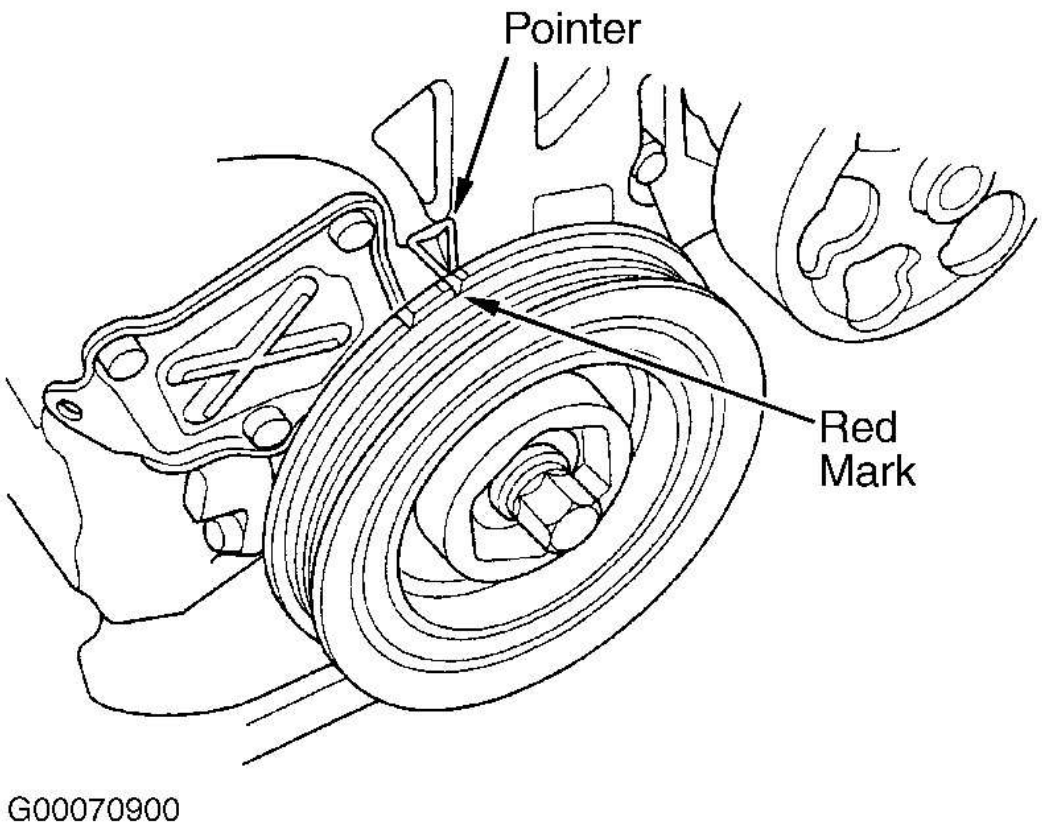

Fig. 4: Locating Ignition Timing Mark (RSX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

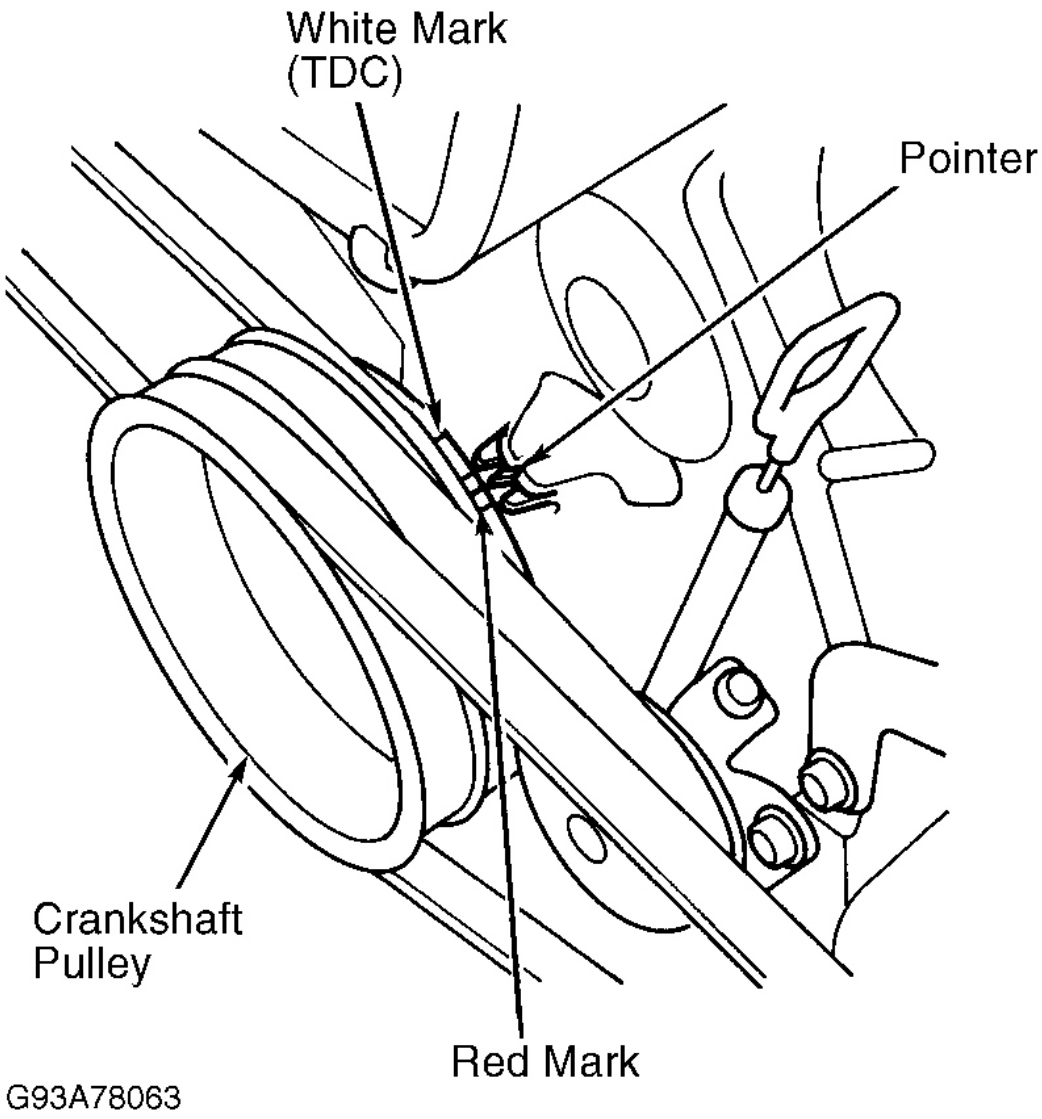

Fig. 5: Locating Ignition Timing Mark (3.5RL)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IGNITION TIMING (Degrees BTDC - RED MARK @ RPM)

Application	(1) Specification
MDX	8-12 @ 680-780
RSX	
A/T	6-10 @ 600-700
M/T	6-10 @ 650-750

3.2CL & 3.2TL	8-12 @ 630-730
3.5RL	13-17 @ 600-700
(1) With automatic transmission in Neutral or Park, manual transmission in Neutral.	

IDLE SPEED & MIXTURE

IDLE SPEED

NOTE: Before setting idle speed, ensure MIL is off, no DTCs are stored, ignition timing is correct, spark plugs and air cleaner are okay, and PCV system is operating properly.

NOTE: On models equipped with Daytime Running Lights (DRL), apply parking brake, and with engine running, ensure headlights are off.

NOTE: Adjust idle using PGM tester procedure if possible. If not use following procedure.

MDX, RSX, 3.2CL & 3.2TL

1. Disconnect EVAP canister purge valve 2-pin connector. DO NOT disconnect Idle Air Control (IAC) valve connector. Connect a tachometer to Natural 2-pin test connector. On all models except RSX, connector is located under hood at left strut tower. On RSX, connector is located forward of under-hood fuse-relay box. For connector view, see **Fig. 7** . Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on. Allow engine to idle.
2. Turn off all electrical loads and check idle speed. See **IDLE SPEED SPECIFICATIONS** table. If idle speed is incorrect on all models except RSX, turn idle adjusting screw to correct idle. Recheck idle speed after each 1/4-turn of idle adjusting screw. If idle speed is incorrect on RSX, idle speed is not adjustable. Reconnect EVAP purge control solenoid valve 2-pin connector and go to SYMPTOMS in TROUBLE SHOOTING - NO CODES article.
3. Turn blower motor switch to high and A/C on, then let engine idle for one minute. Recheck idle speed. If necessary, turn idle adjusting screw to correct idle. DO NOT turn idle adjusting screw when A/C is on. Recheck idle speed after each 1/4 turn of idle adjusting screw. If idle speed is not as specified, go to SYMPTOMS in TROUBLE SHOOTING - NO CODES article. Reconnect EVAP purge control solenoid valve 2-pin connector.

3.5RL

1. Connect scan tool to DLC or inductive tachometer to ignitor secondary loop (White taped). A tachometer signal can also be obtained from Natural 2-pin test connector, located at right rear corner of engine compartment. See **Fig. 6** -**Fig. 7** .

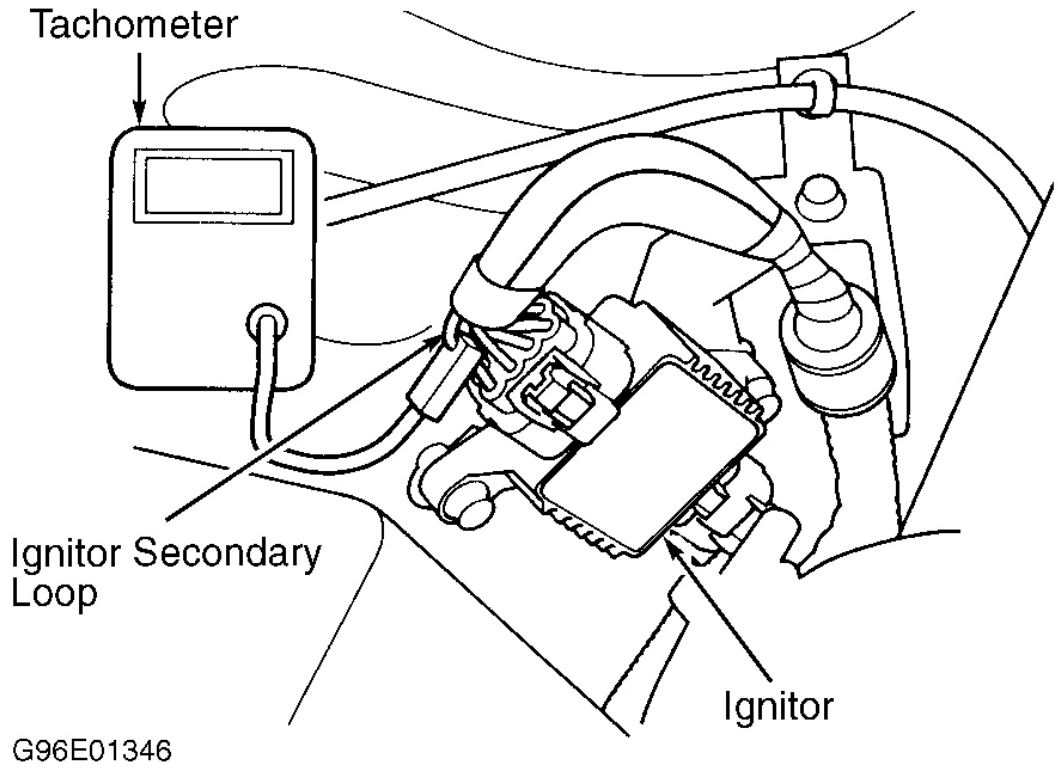

Fig. 6: Connecting Inductive Tachometer (3.5RL)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

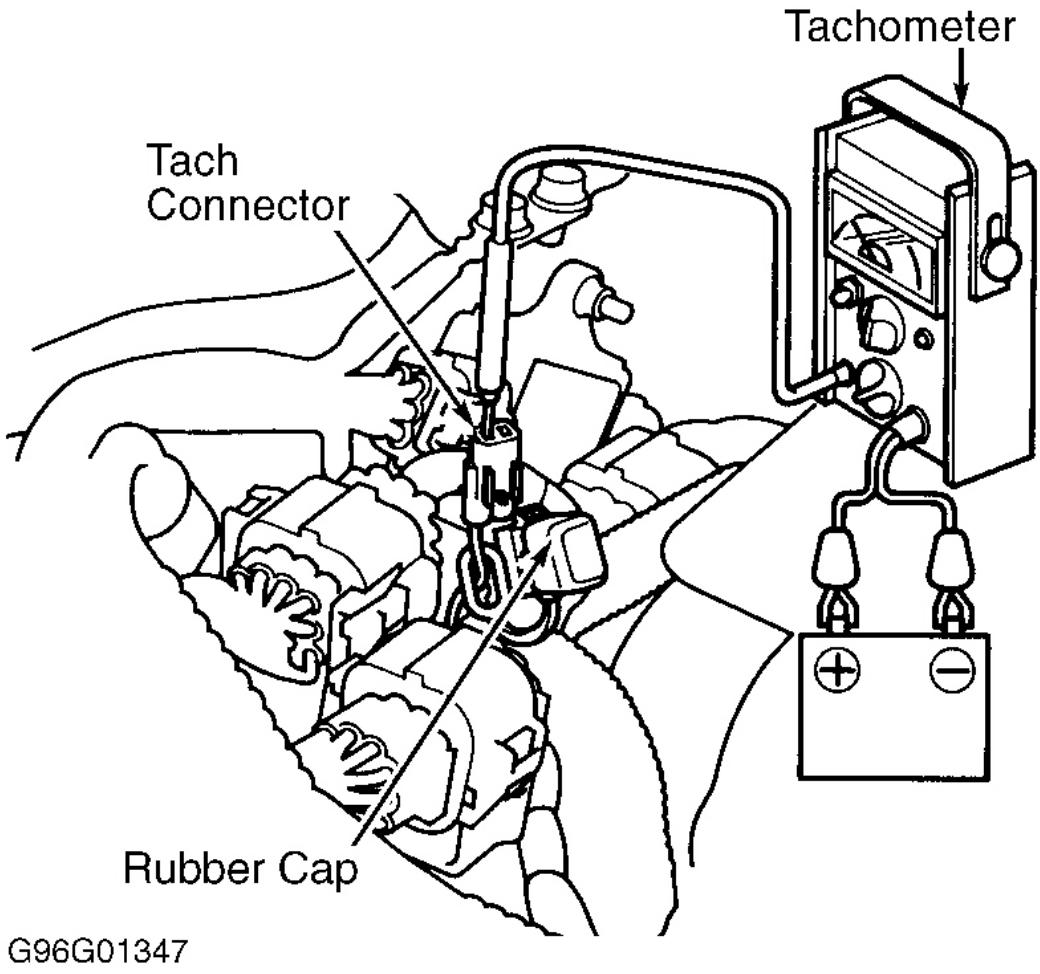

Fig. 7: Connecting Non-Inductive Tachometer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

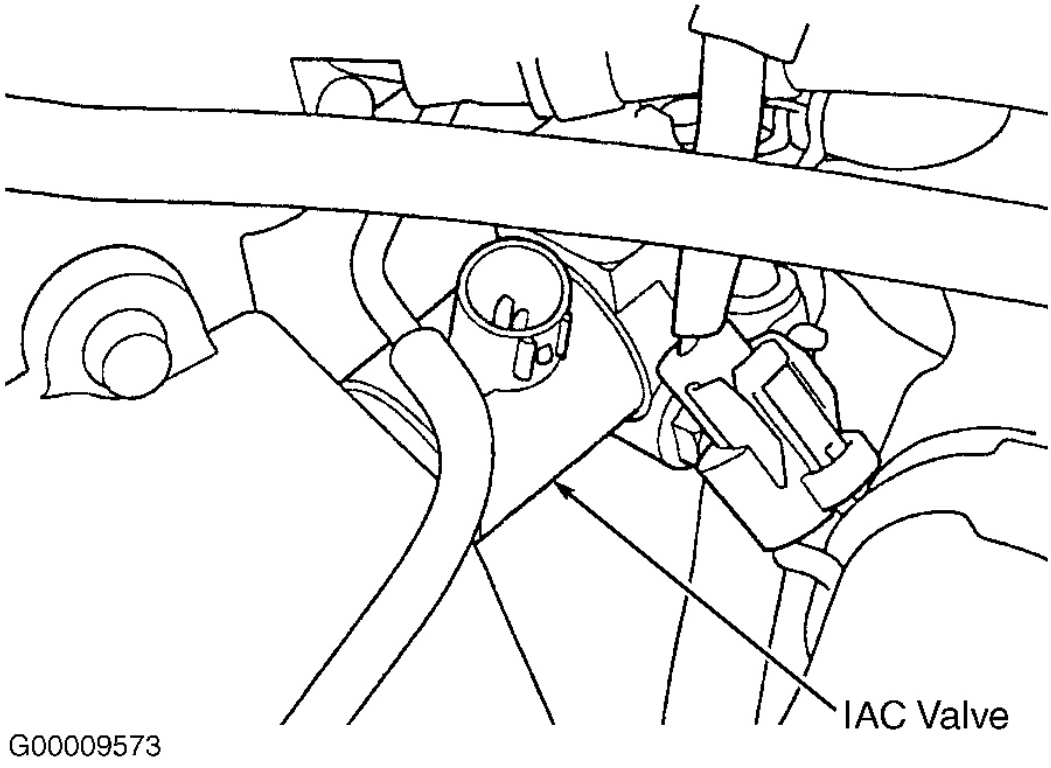

Fig. 8: Identifying Idle Air Control Valve (3.5RL)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on. Allow engine to idle. Disconnect Idle Air Control (IAC) valve connector. See **Fig. 8** . If engine stalls, restart engine with throttle slightly depressed. Stabilize RPM at 1000 and slowly release accelerator until engine idles. Turn headlights on HIGH and rear window defogger ON. Check base idle speed with transmission in Neutral or Park, with blower fan, cooling fan and A/C off. See **IDLE SPEED SPECIFICATIONS** table.
3. If necessary, turn idle adjusting screw to correct idle. See **Fig. 9** . If idle adjustement is required, recheck ignition timing. Turn ignition off and reconnect IAC valve 2-pin connector. Remove BACK-UP (RADIO) fuse (7.5-amp) in main underhood fuse box for 10 seconds to reset ECM/PCM. Start engine and run at 3000 RPM, with no loads and transmission in Park or Neutral, until radiator fan comes on.
4. Allow engine to idle for five minutes with A/C, headlights and rear window defogger off. Check curb idle speed with transmission in Neutral or Park, with no loads and cooling fan off. See **IDLE SPEED SPECIFICATIONS** table. If idle speed is not as specified, go to SYMPTOMS in TROUBLE SHOOTING - NO CODES article.

IDLE SPEED SPECIFICATIONS

Application	(1) Curb Idle RPM

MDX	680-780
RSX	
K20A2	650-750
K20A3 (A/T & M/T)	600-700
3.2CL & 3.2TL	700-800
3.5RL	600-700
(1) With A/T in Neutral or Park, or M/T in neutral with no accessory loads.	

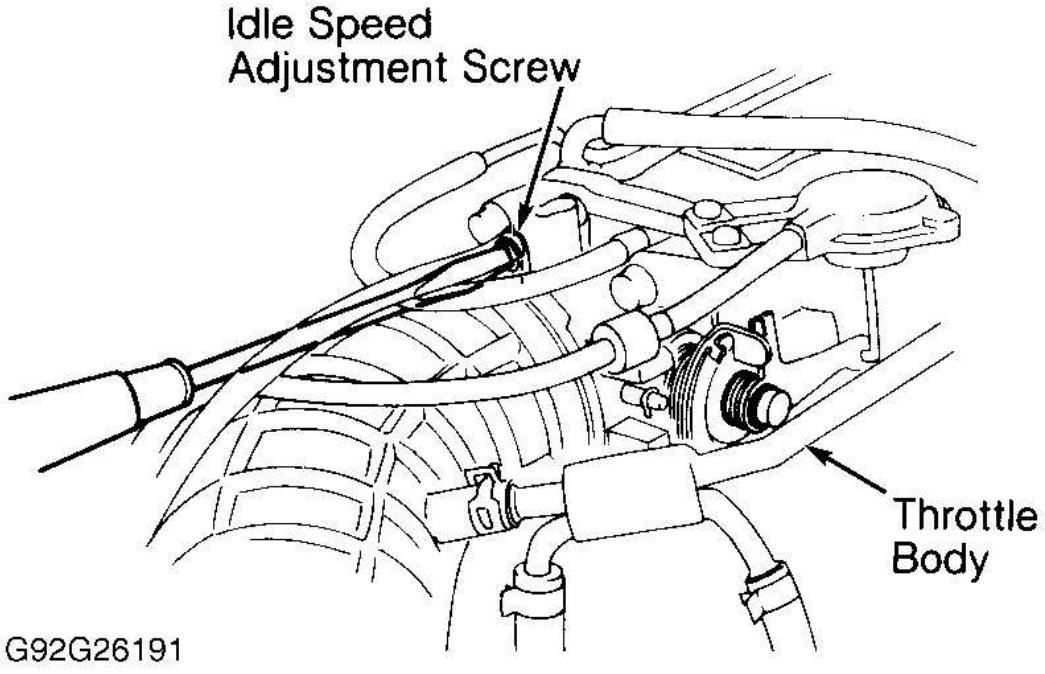

Fig. 9: Identifying Idle Speed Adjustment Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IDLE MIXTURE

NOTE: Idle mixture is computer controlled and is not adjustable.

IDLE CO LEVEL

Application	CO Level
All Models	0.1%