

Nissan

Chokeless

Hitachi

PART TWO

Last month, we acquainted you with the basic layout and operation of the Nissan Chokeless Carburetor. Overhauling this carburetor isn't much more difficult than doing an earlier Hitachi. There are a few things to be aware of, however.

The idle mixture passages in this carburetor are easily clogged. Often this can be remedied simply by removing the idle mixture screw and anti-diesel solenoid, then blowing compressed air through both passages. Revving the engine, then placing a "helping hand" over the air horn opening may also dislodge the dirt. (See *Import Service*, April 1988, page 38.) If you still have problems, you can assure your customer that a complete carburetor overhaul is needed.

Opinions vary as to the wisdom of soaking recent electronic carburetors in submersion-type carburetor cleaning tanks. There are many delicate electronic parts and rubber diaphragms which *absolutely* must be removed before the carburetor can be soaked. Even after these parts are removed, several easily damaged o-rings, plastic parts, and prelubricated pivot points remain. A thorough cleaning with a quality aerosol carburetor cleaner and compressed air should remove

all but the most stubborn dirt. A shiny, dip-cleaned carburetor may look cleaner, but it may not run better.

Last month, we touched briefly on the function of the Vacuum Control Module. After problems caused by dirt in the carburetor, VCM failures rank a close second. The VCM converts a digital signal from the ECU into a vacuum signal to control the engine idle speed at all operating temperatures. VCM failures will have a direct effect on idle speed control.

Inspect the VCM's operation carefully. Moisture in the VCM circuit may cause the VCM to stick, especially when the car is cold. As the VCM warms up, it may begin to work. A sticking VCM can often be revived by tapping it gently. This should only be considered a temporary repair until the VCM can be replaced.

Determine whether the car has been converted to the newer style VCM and larger air filter cannister. Always replace sticking VCMs with the improved design to prevent any further problems. The VCM is considered part of the vehicle's emission control system and is covered by the factory emission warranty for five years or 50,000 miles.

IDLE SPEED CONTROL ACTUATOR ADJUSTMENT

The Idle Speed Control Actuator (ISCA) shouldn't normally require adjustment. You may find that someone before you has tried to adjust it, thinking he was setting the idle speed. Use the following procedure to properly adjust both the full stroke setting and the (ISCA) adjusting screw setting:

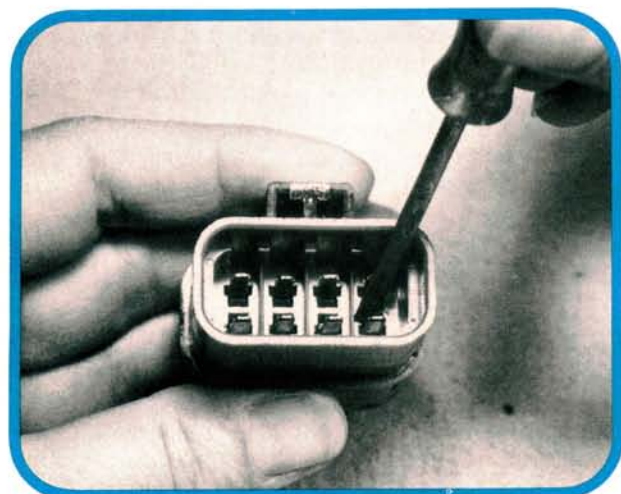
- Warm up the engine, then run it at idle speed.
- Disconnect the vacuum hose from the vacuum sensor and plug the hose.
- Disconnect the vacuum hose from one of the two vacuum switches. Leave this hose unplugged.
- Disconnect the vacuum hose leading to the air filter from one of the two vacuum cut solenoids on the intake manifold. Plug the hose.

- Adjust the small screw at the bottom of the throttle shaft bellcrank to obtain an idle speed of 2800-3200 RPM for manual transmissions and 3200-3600 RPM in neutral for automatics.
- Reconnect all vacuum hoses, then turn the diagnostic switch on the ECU on.
- Locate the water temperature sensor at the right rear of the intake manifold.
- Disconnect the sensor's harness connector and bridge the connector terminals with a jumper wire.
- Remove the rubber plug from the top of the ISCA and adjust the screw to obtain an idle speed of 1500-1900 RPM for both manual and automatic transmissions in neutral.
- Reconnect the water temperature sensor and turn the ECU diagnostic switch off.

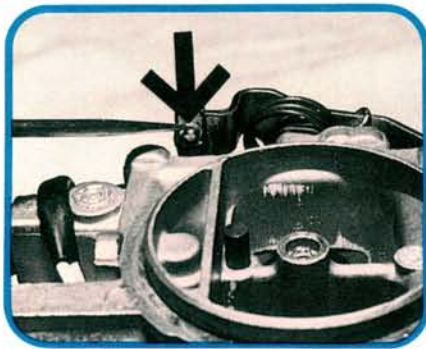
—By Karl Seyfert



- 1** Check the operation of the Throttle Switch with an ohmmeter. Back-probe the carburetor connector with two paper clips. Work the throttle shaft open and closed several times by hand. The Throttle Switch should make and break continuity cleanly. Check for sticking switch contacts.

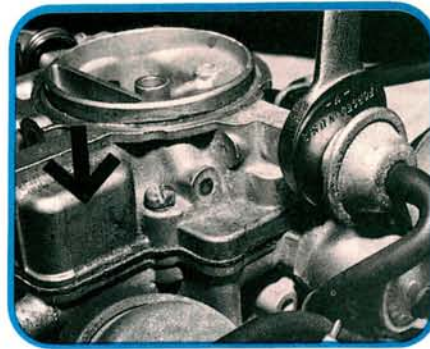


- 2** Removing the terminals from the carburetor connector makes it much easier to remove individual components during disassembly. Remove the black plastic retainer from the back of the connector. Pry gently on the plastic latches inside the connector to release each terminal. Note terminal locations for reinstallation.



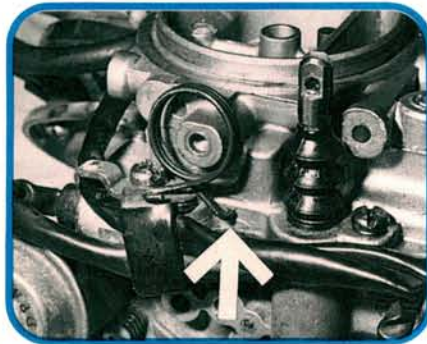
3

Don't let this little devil take a flier! This e-clip (arrow) holds the whole accelerator pump linkage together. I don't know about you, but I'm sure there's a black hole just below my workbench that swallows any part this small as soon as it's dropped. Remove the accelerator pump linkage.



4

It takes a narrow wrench such as this tappet wrench to remove the Vacuum Piston. The carburetor number is etched in this area (arrow). It's too faint to see here, and not much better in person. Carburetor parts are different for manual and automatic transmission models. Check the number before you soak the carburetor.



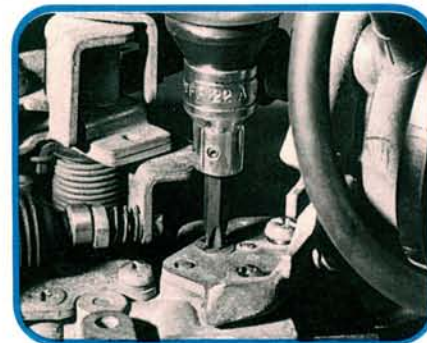
5

Remove the five air horn screws. Note their locations, they're all different. Remove the wiring retaining tabs and cut the wire ties. Lift the air horn straight up to remove it. Don't use force or the Air-Fuel Ratio (AFR) Solenoid may be damaged. Note the locating hole (arrow) for the pump linkage return spring.



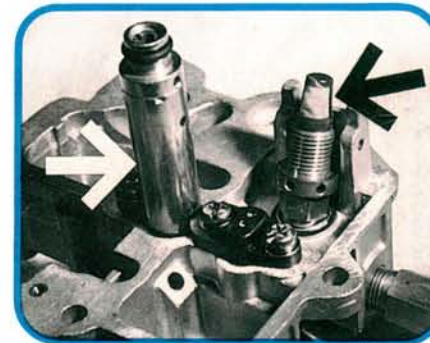
6

There may be thread lock compound on the Enrichment Solenoid threads. When you remove the solenoid, be sure to get all of the dried compound out of the passage before reinstalling the solenoid. A bottoming-type tap works well. Any leftover flakes will play havoc with solenoid operation.



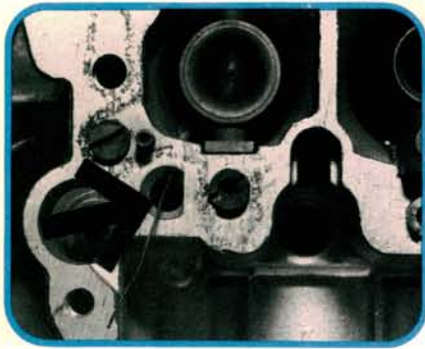
7

The guys who put this carburetor together wanted to make sure that it never came apart. Thread locker everywhere! The hardware is soft and you only get one chance to get things loose before the screw heads start to round out. If you must use an impact driver, support the carburetor properly to avoid damage.



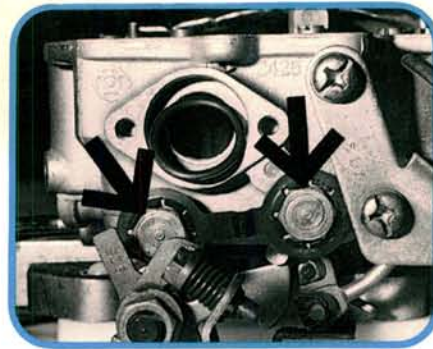
8

The AFR Solenoid mounts in the area where the power valve was located on earlier Hitachi carburetors (white arrow). Apply lubrication to the solenoid o-ring to prevent damage during reinstallation. To prevent damage, remove the filter screen (black arrow) and AFR Solenoid before soaking.



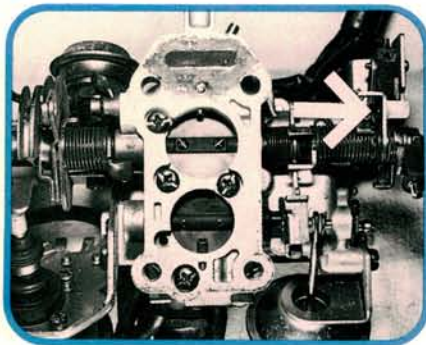
9

Slide a thin piece of copper wire (arrow) through the accelerator pump discharge port. Dirt has a nasty habit of blocking this passage. Remove the primary and secondary air bleed jets and clean their passages. The panhead screws cover smaller passages for the Enrichment Solenoid and fuel cut-off circuits.



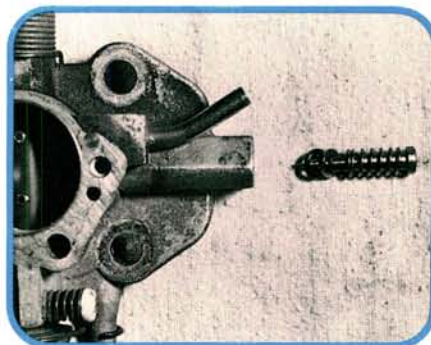
10

Remove the retaining clip and main jet access plugs (arrows) at the bottom of the bowl. Use a screwdriver that's thick enough to fit snugly in the jet slots but narrow enough to fit through the access holes to remove the main jets. Remove the bowl window and o-ring. Use thread lock on the jets during assembly.



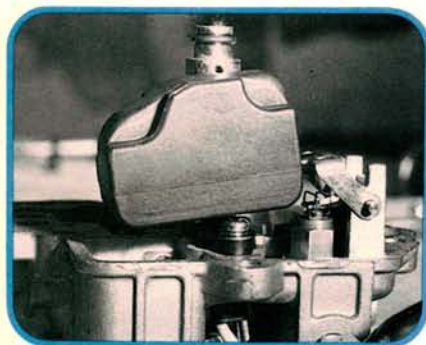
11

The four throttle base screws are installed with thread locker. An impact driver or a hot soldering iron may be necessary to get them turning. Note their locations, they're different. This carburetor has the world's longest throttle shaft. Notice how far the throttle switch (arrow) is from the cable bellcrank.



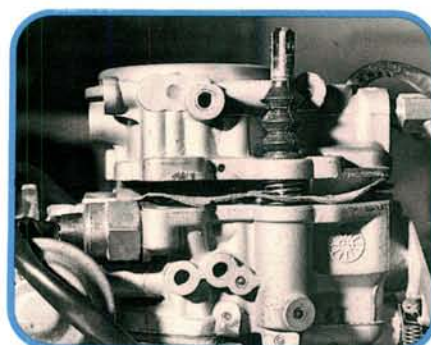
12

Drill a small hole in the concealment plug. Use a self-tapping screw and a slide hammer to remove it. Remove the idle mixture screw, spring, o-ring, and back-up washer. This is the circuit that most often gets clogged with dirt. Clean it thoroughly with compressed air and spray carburetor cleaner.



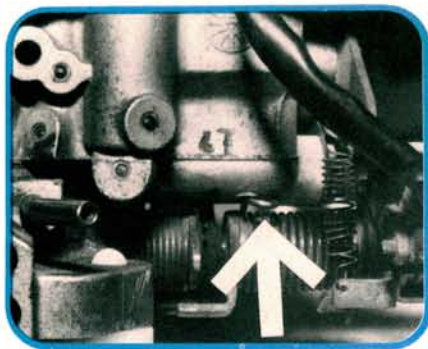
13

Measure float height with the float resting lightly on the needle. The tab on the float goes under the wire clip on the float needle. After reinstallation, check for proper adjustment through the window on the side of the carburetor. Fuel should be level with the dot at the center of the window.



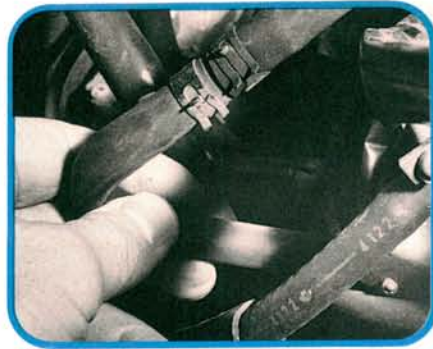
14

You have to talk to it just right to get the air horn back in position. Install the new gasket, float needle, float, and accelerator pump. Position the air horn over the bowl and gently push it into position. If you force it, you risk damaging the AFR o-ring. You'll have a very rich running car!



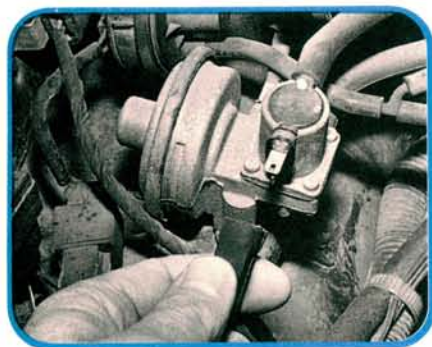
15

Reinstall the accelerator pump linkage and all rubber diaphragms. Reinstall all metal straps and install new wire ties to prevent wire chafing around the accelerator pump linkage. Route the wires carefully to prevent future problems. Note the position of the throttle switch return spring (arrow) below the bowl.



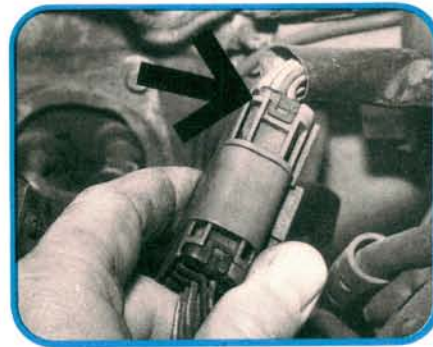
16

Before you reinstall the carburetor, inspect the hoses at the back of the intake manifold carefully. Oil contamination can make this hose from the valve cover soggy near the PCV valve. Check the hose in this area if the air cleaner housing fills with oil. A leaking PCV hose will also affect VCM operation.



17

To adjust base idle speed, disconnect this two wire connector at the VCM. The ISCA plunger will retract. Adjust the base idle screw to a base idle speed 100 RPM lower than the ISCA-controlled idle speed with a warm engine. Turn off all electrical loads, and turn wheels straight ahead. Adjust in drive on automatics.



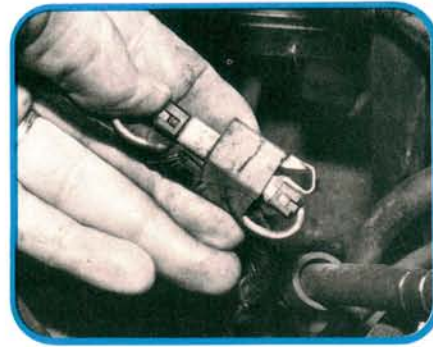
18

Connect a voltmeter to this wire (green with white tracer) on the carburetor side (arrow) of this connector. To simulate actual vehicle operation, have an assistant raise the engine idle speed to 2000 RPM using the gas pedal. Slowly lower the engine RPM. Voltage should drop to zero at 1200 RPM.



19

Bend this tab (arrow) to adjust the throttle switch on earlier carburetors. There's plenty of room for play because of the extremely long throttle shaft. It's very touchy, so check your adjustment several times. Later carburetors have an easier to use screw-type adjuster.



20

Adjust CO with the air cleaner, all hoses, and wiring connected to the carburetor. Remove and plug the air induction hose at the air cleaner. Disconnect this blue taped connector. Warm up the engine, rev it several times, then let it idle. Let the reading stabilize, then adjust CO to specs. Reconnect the wiring and hose.