

# Volkswagen Cruise Control

As cars get more and more complicated, the proper diagnosis of many of their electrical systems often requires new and sometimes expensive test equipment. But you shouldn't need any tools that you don't already have in your tool box to properly diagnose Volkswagen's cruise control system. It's a change to find something electrical that can still be diagnosed and repaired using just a volt-ohmmeter and some jumper leads.

The Volkswagen system has no self-diagnostic ability. You won't have any flashing lights or trouble codes to remember. There are two big advantages to this simple, basic approach:

- You can check all of the electrical functions of the system with a VOM right at the control unit connector.
- With a couple of jumper wires you can simulate actual cruise control operation and do output tests on individual components using the same control unit connector.

More often than not it will be something simple that's shutting the cruise control down. So don't dive



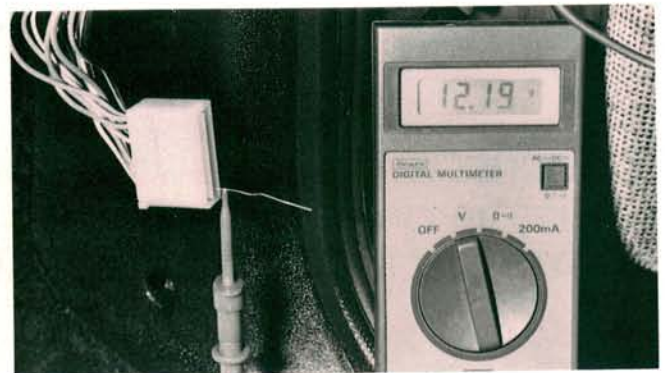
Remove the necessary trim panels and locate the control unit. It's mounted on the right kick panel of this 1987 Quantum. Disconnect the multi-pin connector from the control unit, then turn the ignition and column-mounted cruise switches on. The terminal numbers are marked on the control unit and should be read from the harness side of the connector.

into the electrical testing before checking these items first:

- The brake lights must all be working properly and have good ground connections.
- Brake and clutch pedal vent valve switches should both be properly adjusted.
- Look for cracked or leaking vacuum control hoses, especially in high heat areas.
- The improved Volkswagen vacuum hose, P/N N 018 046 3, should be used when replacing any cracked or heat-damaged hose.

If you don't find anything unusual during your visual inspection, go through the VOM and component output tests. The tests are pretty easy and don't take long to do.

If the system passes all of the VOM wire value tests, and all of the components in the system respond as they should, all that's left is the control unit. There aren't any diagnostic tests for the control unit, so make sure before you condemn it. You'll usually find your problem in another part of the system. Control units seldom fail.



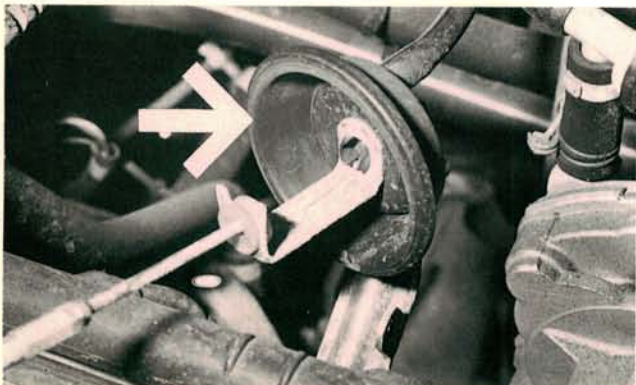
Connect the positive VOM lead to terminal number 1 and the negative VOM lead to a good body ground. The meter should read battery voltage. If not, check the column switch and wiring, also fuse number 9. Move the negative lead to terminal 8. This checks for a good ground through the cruise control wiring. The voltmeter should still read battery voltage.



Move the negative VOM lead to terminal 3. The VOM should continue to indicate battery voltage. If it doesn't, inspect the brake and clutch vent valve switches for proper adjustment, operation of the brake light bulbs, and the cruise control column switch and wiring.



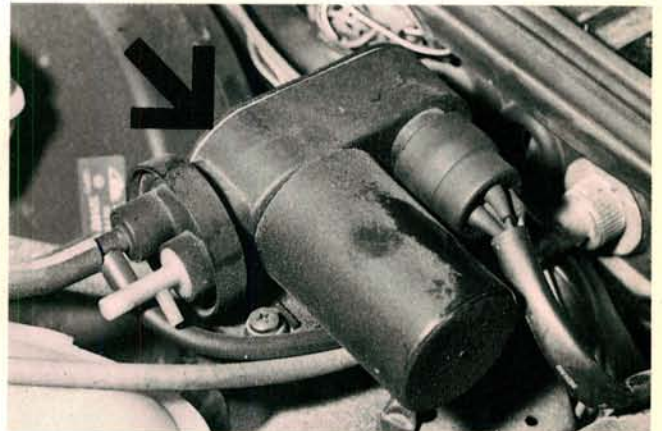
Move the positive VOM lead to terminal 6. Attach the negative lead to a body ground. The VOM should indicate battery voltage when the RESUME switch is pressed. Move the positive lead to terminal 2. The VOM should read battery voltage when the SET switch is pressed. Inspect the cruise control column switch and wiring if either test shows a problem.



Disconnect the jumper between terminals 4 and 8 (leave 7 and 8 connected). The vacuum pump should stop. The vacuum servo (arrow) should continue to hold vacuum, and keep the throttle open. If not, check for vacuum leaks. Remove the jumper between terminals 7 and 8 and the throttle should close.



Leave the VOM leads connected to terminals 1 and 3. Depress the brake pedal, then the clutch pedal, then turn off the cruise control switch one at a time. The VOM should drop to zero volts for each test. Inspect the pedal vent valves, cruise switch, and related wiring if the VOM continues to show battery voltage during any of the tests.



Check the vacuum motor. Run jumper wires from terminals 7 and 4 to terminal 8. The vacuum motor should open the throttle fully. If not, check for vacuum leaks. Depressing the brake or clutch pedals should vent the servo vacuum and close the throttle. If not, check the vacuum vent valves at the pedals.



The cruise control shouldn't engage below about 35 MPH. The control unit receives a signal from the vehicle speed sensor through terminals 5 and 8. Attach ohmmeter leads at both terminals to measure speed sensor circuit resistance. Resistance should be 1000 to 1300 ohms. Inspect the speed sensor and related wiring if the resistance is out of range.

## VOLKSWAGEN CRUISE CONTROL TEST VALUES

### Wiring Harness Tests

| Connect a voltmeter between terminals . . . | Conditions                    | Results | Possible problem cause  |
|---|-------------------------------|---------|---|
| #1 and ground                               |                               | 12v     | column switch, fuse #9  |
| #1 and #8                                   |                               | 12v     | poor ground   |
| #1 and #3                                   |                               | 12v     | brake or clutch vent valve switch, brake light bulbs, column switch |
| #1 and #3                                   | press brake pedal             | 0v      | brake vent valve switch   |
| #1 and #3                                   | press clutch pedal            | 0v      | clutch vent valve switch  |
| #1 and #3                                   | press off on column switch    | 0v      | column switch   |
| #1 and #3                                   | press resume on column switch | 12v     | column switch   |
| #6 and ground                               | press resume on column switch | 12v     | column switch   |
| #2 and ground                               | press set on column switch    | 12v     | column switch   |

### Output Tests

| Connect a jumper wire between terminals . . . | Conditions   | Results                         | Possible problem cause              |
|---|--|---------------------------------|-------------------------------------|
| #7 and #8, #4 and #8                          |  | throttle plates open fully      | servo motor system vacuum leaks     |
|   | press clutch pedal                                     | throttle plates close           | clutch valve switch                 |
|   | press brake pedal                                      | throttle plates close           | brake vent valve switch             |
|   | remove wire from #4 and #8 (#7 and #8 still connected) | throttle plates stay fully open | servo motor and system vacuum leaks |
|   | remove wire from #7 and #8                             | throttle plates close           | servo motor                         |

### Speed Sensor Test

| Turn ignition switch off. Connect an ohmmeter between terminals . . . | Conditions | Results                                   | Possible problem cause |
|---|------------|---|------------------------|
| #5 and #8   |            | ohmmeter reads between 1000 and 1300 ohms | speed sensor           |