Table b. Ignition System Troubleshooting (continued)

Symptom	Probable cause	Corrective action
4. Knocking or pinging noise while accelerating (cont'd)	b. Faulty centrifugal advance mechanism (TCI-h only)	b. Test and replace as needed. 4.2
	c. Faulty ignition control unit	c. Test and replace as needed. 3.4
	d. Faulty knock sensor and/or control unit	d. Test knock sensor system. 4.4, 4.6
	e. Faulty control unit	e. Test and replace as needed. 4.
	f. Pre-ignition due to carbon buildup or burned valves in engine combustion chambers	f. Overhaul or replace cylinder head. See [illegible]
5. Engine starts hard or fails to start when cold (PL engine)	a. Inadequate ignition system ground	a. Install additional ground strap (Volkswagen part no. [illegible] 235) from battery negative (–) post to upper rear engine-to-saxle mounting bolt.

2 Ignition System Visual Inspection

The spark plug wires, the distributor cap, and the distributor r are subject to wear and electrical breakdown. This will im- their ability to deliver a crisply timed and powerful spark. y of these conditions are most easily detected by a thor- h visual inspection. Dirt and moisture on these components also potential causes of poor spark at the spark plugs.

To check the distributor cap and rotor, remove the cap as ribed in **5. Distributor**. Inspect the contacts inside the ibutor cap and at the tip of the rotor for corrosion, wear, or g. Corroded contacts can be cleaned and reused, but for , pitting, or heavy corrosion, replacement is recommend- The center black carbon brush inside the cap should g back when compressed.

Cracks or carbon tracks in the distributor cap may cause s to ground. The cracks may be fine and difficult to see. on tracks are faint black lines, usually running between contacts or to ground, left over from high-voltage arcing. lace a cap that shows any sign of cracks or carbon track- For a thorough inspection, be sure also to check under the k radio-suppression shield on the outside of the cap.

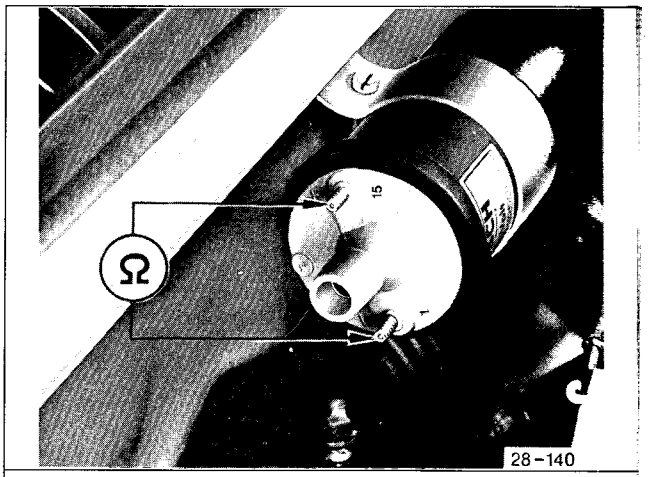
To check the spark plug wires, gently bend them in several es to expose cracks in the insulation which may cause k "leaks." Remove the rubber boots and check them for cy and the ability to seal out dirt and moisture. Replace wire that is cracked, oil-soaked, or dry and brittle.

For a quick-check of the distributor cap and spark plug s, listen for the sound of the arcing or watch while the en- runs at night. The arc of high voltage to ground because crack in the cap or a poorly insulated wire may be visible blue spark. Also, use a spray bottle to spray a fine mist of r around the cap and wires while the engine runs. If the and wires are in good condition and insulated properly, added moisture should have no effect. If their condition is inal, the added moisture may promote arcing and cause ngine to run roughly.

The coil should be examined for cracks, burns, carbon ks, and for any leaking fluid. The coil tower, terminal 4, ld be clean and dry. If necessary, remove the coil for g and closer examination.

3.3 Testing Coil and Spark Plug Wires

Use an ohmmeter to test the ignition coil primary and ondary resistance as shown in Fig. 3-1. Resistance v given in **Table c**. Replace any coil which has higher p secondary resistance.



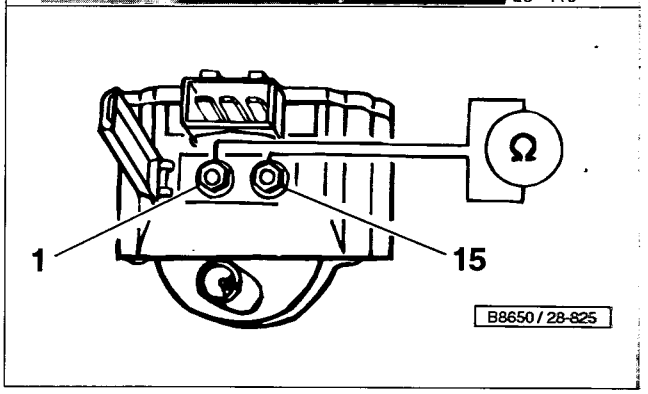


Fig. 3-1. Primary coil resistance being measured with an ohmmeter (shown schematically) between terminals 1 and 15. All except Digifant I shown at top. Digifant I shown at bottom. Measurement of secondary resistance is similar.