

## IGNITION SYSTEM

### TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  - Faulty spark plug
  - Loose direct ignition coil and spark plug connection
  - Loose direct ignition coil connectors
  - Water got into the direct ignition coil (shorting the ignition coil secondary voltage)
- If there is no spark at any cylinder, temporarily exchange the direct ignition coil with the other good one and perform the spark test. If there is spark, the exchanged direct ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch turned ON and engine stop switch turned "  $\curvearrowright$  " (The engine is not cranked by the starter motor).

#### No spark at all plugs

|                               | Unusual condition   | Probable cause (Check in numerical order)   |
|-------------------------------|---|---|
| Ignition coil primary voltage | No initial voltage with the ignition ON and engine stop switches turned " $\curvearrowright$ " (other electrical components are normal) | <ol style="list-style-type: none"> <li>1. Faulty engine stop switch.</li> <li>2. An open circuit in Black/white wire between the direct ignition coil and ECM.</li> <li>3. Loose or poor connect of the direct ignition coil primary wire terminal, or an open circuit in primary coil (Check at the ECM connector).</li> <li>4. Faulty ECM (in case when the initial voltage is normal while disconnecting ECM connector)</li> </ol>   |
|                               | Initial voltage is normal, but it drops down to 2 – 4 V while cranking the engine.  | <ol style="list-style-type: none"> <li>1. Incorrect peak voltage adaptor connections.</li> <li>2. Undercharged battery.</li> <li>3. No voltage between the Black/white (+) and body ground (-) at the ECM multi-connector or loosen ECM connection.</li> <li>4. An open circuit or loose connection in Green wire.</li> <li>5. An open circuit or loose connection in Blue/black, Yellow/white, Red/blue and Red/yellow wires between the direct ignition coils and ECM.</li> <li>6. Faulty side stand switch or neutral switch.</li> <li>7. An open circuit or loose connection in No.7 related circuit wires.                             <ul style="list-style-type: none"> <li>– Side stand switch line: Green/white wire</li> <li>– Neutral switch line: Light Green wire</li> </ul> </li> <li>8. Faulty ignition pulse generator (measure the peak voltage).</li> <li>9. Faulty ECM (in case when above No. 1 – 8 are normal).</li> </ol> |
|                               | Initial voltage is normal, but no peak voltage while cranking the engine.   | <ol style="list-style-type: none"> <li>1. Faulty peak voltage adaptor connections.</li> <li>2. Faulty peak voltage adaptor.</li> <li>3. Faulty ECM (in case when above No.1, 2 are normal).</li> </ol>  |
|                               | Initial voltage is normal, but peak voltage is lower than standard value.   | <ol style="list-style-type: none"> <li>1. The multimeter impedance is too low; below 10 M<math>\Omega</math>/DCV.</li> <li>2. Cranking speed is too low (battery under charged).</li> <li>3. The sampling timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once).</li> <li>4. Faulty ECM (in case when above No. 1 – 3 are normal).</li> </ol>   |
|                               | Initial and peak voltage are normal, but does not spark.  | <ol style="list-style-type: none"> <li>1. Faulty spark plug or leaking ignition coil secondary current ampere.</li> <li>2. Faulty direct ignition coil (s).</li> </ol>  |
| Ignition pulse generator      | Peak voltage is lower than standard value.  | <ol style="list-style-type: none"> <li>1. The multimeter impedance is too low; below 10 M<math>\Omega</math>/DCV.</li> <li>2. Cranking speed is too low (battery under charged).</li> <li>3. The sampling timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once).</li> <li>4. Faulty ECM (in case when above No. 1 – 3 are normal).</li> </ol>   |
|                               | No peak voltage.  | <ol style="list-style-type: none"> <li>1. Faulty peak voltage adaptor.</li> <li>2. Faulty ignition pulse generator.</li> </ol>  |