DTC P0505: IAC MOTOR CIRCUIT

NOTE: For connector terminal identification, see CONNECTOR IDENTIFICATION . For circuit identification and wiring diagram, see DURANGO wiring diagram in WIRING DIAGRAMS article.

NOTE: DTC P0505: IAC MOTOR CIRCUIT is monitored immediately after ignition is turned on with battery voltage more than 11.5 volts. DTC may be stored in Powertrain Control Module (PCM) if PCM senses a short to ground or battery voltage on any of 4 IAC driver circuits for 2.75 seconds while IAC motor is active. Possible causes are: defective IAC motor, defective PCM, defective connector or defective wiring.

1. Start engine and allow it to idle for 20 seconds. If engine will not idle, hold throttle open slightly to keep engine running. Using scan tool, actuate IAC motor to 1400 RPM. Release throttle. If engine speed is 1300-1500 RPM, go to next step. If engine speed is not 1300-1500 RPM, go to step 22).
2. Ensure engine has been idling for 20 seconds. If engine will not idle, hold throttle open slightly to keep engine running. Using scan tool, actuate IAC motor to 900 RPM. If engine speed is 800-1000 RPM, go to next step. If engine speed is not 800-1000 RPM, go to step 14).
3. Ensure engine is still idling. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If idle speed does not raise and lower at any time while wiggling wiring harness, go to step 6). If idle speed raises and lowers at any time while wiggling wiring harness, go to next step.
4. Turn ignition off. Visually inspect related connectors and wiring harness for damage. Repair connectors and wiring harness as necessary. Perform TEST VER-5A. If connectors and wiring harness are okay, go to next step.
5. Start engine and allow it to idle. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If IAC motor stops operating at any time while wiggling wiring harness, repair wiring harness where wiggling caused IAC motor to stop operating. Perform TEST VER-5A. If IAC motor does not stop operating at any time while wiggling wiring harness, test is complete.
6. Turn ignition off. Visually inspect related connectors and wiring harness for damage. Repair connectors and wiring harness as necessary. Perform TEST VER-5A. If connectors and wiring harness are okay, go to next step.
7. Start engine and allow it to idle. Disconnect IAC motor connector. IAC motor is located on throttle body. Clean and/or repair connector as necessary. Using a voltmeter, check voltage on IAC motor connector, driver No. 1 circuit (Gray/Red wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505B: IAC MOTOR CIRCUIT test.
8. Turn ignition off. Ensure IAC motor is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 4 circuit (Violet/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 4 circuit for short to ground. Perform TEST VER-5A.
9. Ensure ignition is off. Ensure IAC motor connector is still disconnected. Using ohmmeter, check resistance between ground and IAC motor connector, driver No. 1 circuit (Gray/Red wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 1 circuit for short to

ground. Perform TEST VER-5A.

10. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505C: IAC MOTOR CIRCUIT test.
11. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 2 circuit for short to ground. Perform TEST VER-5A.
12. Ensure ignition is off. Ensure IAC motor connector is still disconnected. Using ohmmeter, check resistance between ground and IAC motor connector, driver No. 3 circuit (Brown/White wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 3 circuit for short to ground. Perform TEST VER-5A.
13. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 3 circuit (Brown/White wire). If voltage goes to more than 5 volts at any time, go to step 21). If voltage does not go to more than 5 volts at any time, perform DTC P0505D: IAC MOTOR CIRCUIT test.
14. Ensure engine is still idling Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 1 circuit (Gray/Red wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505B: IAC MOTOR CIRCUIT test.
15. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 4 circuit (Violet/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 4 circuit for short to ground. Perform TEST VER-5A.
16. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505C: IAC MOTOR CIRCUIT test.
17. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 1 circuit (Gray/Red wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 1 circuit for short to ground. Perform TEST VER-5A.
18. Ensure ignition is off. Ensure IAC motor connector is still disconnected. Using ohmmeter, check resistance between ground and IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 2 circuit for short to ground. Perform TEST VER-5A.
19. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 3 circuit (Brown/White wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505D: IAC MOTOR CIRCUIT test.
20. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 3 circuit (Brown/White wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 3 circuit for short to ground. Perform TEST VER-5A.

21. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 4 circuit (Violet/Black wire). If voltage goes to more than 5 volts at any time, go to step 39). If voltage does not go to more than 5 volts at any time, perform DTC P0505E: IAC MOTOR CIRCUIT test.
22. Ensure engine is still idling. Disconnect IAC motor connector. IAC motor is located on throttle body. Clean and/or repair connector as necessary. Using a voltmeter, check voltage on IAC motor connector, driver No. 1 circuit (Gray/Red wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505B: IAC MOTOR CIRCUIT test.
23. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 4 circuit (Violet/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 4 circuit for short to ground. Perform TEST VER-5A.
24. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505C: IAC MOTOR CIRCUIT test.
25. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 1 circuit (Gray/Red wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 1 circuit for short to ground. Perform TEST VER-5A.
26. Ensure ignition is off. Ensure IAC motor connector is still disconnected. Using ohmmeter, check resistance between ground and IAC motor connector, driver No. 2 circuit (Yellow/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 2 circuit for short to ground. Perform TEST VER-5A.
27. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 3 circuit (Brown/White wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505D: IAC MOTOR CIRCUIT test.
28. Turn ignition off. Ensure IAC motor connector is still disconnected. Using an ohmmeter, check resistance between ground and IAC motor connector, driver No. 3 circuit (Brown/White wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 3 circuit for short to ground. Perform TEST VER-5A.
29. Start engine and allow it to idle. Ensure IAC motor connector is still disconnected. Using a voltmeter, check voltage on IAC motor connector, driver No. 4 circuit (Violet/Black wire). If voltage goes to more than 5 volts at any time, go to next step. If voltage does not go to more than 5 volts at any time, perform DTC P0505E: IAC MOTOR CIRCUIT test.
30. Ensure engine has been idling for 20 seconds. If engine will not idle, hold throttle open slightly to keep engine running. Using scan tool, actuate IAC motor to 900 RPM. If engine speed is 800-1000 RPM, go to next step. If engine speed is not 800-1000 RPM, go to step 36).
31. Ensure engine is still idling. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If idle speed does not raise and lower at any time while wiggling wiring harness, go to step 35). If idle speed raises and lowers at any time while wiggling wiring harness, go to next step.
32. Turn ignition off. Disconnect PCM connectors. PCM is located in engine compartment. See PCM

LOCATION table under SYSTEM DIAGNOSTICS. Clean and/or repair connectors as necessary. Visually inspect connectors for corroded, damaged, pushed-out or miswired terminals. Repair connectors as necessary. Perform TEST VER-5A. If connectors are okay, go to next step.

33. Start engine and allow it to idle. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If IAC motor stops operating at any time while wiggling wiring harness, repair wiring harness where wiggling caused IAC motor to stop operating. Perform TEST VER-5A. If IAC motor does not stop operating at any time while wiggling wiring harness, go to next step.
34. Turn ignition off. Visually inspect related connectors and wiring harness for damage. Repair connectors and wiring harness as necessary. Perform TEST VER-5A. If connectors and wiring harness are okay, go to step 40).
35. Turn ignition off. Visually inspect related connectors and wiring harness for damage. Repair connectors and wiring harness as necessary. Perform TEST VER-5A. If connectors and wiring harness are okay, go to step 39).
36. Turn ignition off. Visually inspect related connectors and wiring harness for damage. Repair connectors and wiring harness as necessary. Perform TEST VER-5A. If connectors and wiring harness are okay, go to next step.
37. Start engine and allow it to idle. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If idle speed does not raise and lower at any time while wiggling wiring harness, go to step 39). If idle speed raises and lowers at any time while wiggling wiring harness, go to next step.
38. Ensure engine is still idling. Using scan tool, go to SYSTEM TESTS and select IAC WIGGLE TEST. While monitoring IAC motor operation, wiggle wiring harness from IAC motor to PCM. If IAC motor stops operating at any time while wiggling wiring harness, repair wiring harness where wiggling caused IAC motor to stop operating. Perform TEST VER-5A. If IAC motor does not stop operating at any time while wiggling wiring harness, go to next step.
39. Turn ignition off. Disconnect PCM connectors. PCM is located in engine compartment. See PCM LOCATION table under SYSTEM DIAGNOSTICS. Clean and/or repair connectors as necessary. Visually inspect connector for corroded, damaged, pushed-out or miswired terminals. Repair connectors as necessary. Perform TEST VER-5A. If connectors are okay, go to next step.
40. Ensure ignition is off. Ensure IAC motor and PCM connectors are still disconnected. Using an ohmmeter, check resistance between IAC motor connector, driver No. 1 circuit (Gray/Red wire) and each remaining driver circuit. If resistance is 5 ohms or more between all circuits, go to next step. If resistance is less than 5 ohms between any 2 circuits, repair driver circuits that are shorted together. Perform TEST VER-5A.
41. Ensure ignition is off. Ensure IAC motor and PCM connectors are still disconnected. Using ohmmeter, check resistance between IAC motor connector, driver No. 2 circuit (Yellow/Black wire), and driver No. 3 (Brown/Yellow wire) and driver No. 4 (Violet/Black wire) circuits. If resistance is 5 ohms or more between all circuits, go to next step. If resistance is less than 5 ohms between any 2 circuits, repair driver circuits that are shorted together. Perform TEST VER-5A.
42. Ensure ignition is off. Ensure IAC motor and PCM connectors are still disconnected. Using ohmmeter, check resistance between IAC motor connector, driver No. 3 circuit (Brown/White wire) and driver No. 4 circuit (Violet/Black wire). If resistance is 5 ohms or more, go to next step. If resistance is less than 5 ohms, repair driver No. 3 circuit for short to driver No. 4 circuit. Perform TEST VER-5A.
43. At this time, IAC motor is assumed to be defective. Replace IAC motor. Perform TEST VER-5A.