

DTC P0421:00 [SKYACTIV-D 2.2]

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| DTC P0421:00 | Warm up catalyst system efficiency below threshold |
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| DETECTION CONDITION | <ul style="list-style-type: none"> The difference between the exhaust gas temperature before and after passing the catalytic converter is specified value or less for a continuous 60 to 80 s when the following conditions are met: MONITORING CONDITIONS <ul style="list-style-type: none"> Battery voltage: 8—20 V Exhaust gas temperature after passing catalytic converter after engine start: below 200 °C {392 °F} Ambient temperature: above -10 °C {14 °F} Engine coolant temperature: above 60 °C {140 °F} Vehicle speed: 20—140 km/h {13.0—86.9 mph} Engine speed: 1,200—2,000 rpm Fuel injection amount: 10—25 mm³/stroke Accumulated PM calculated from fuel: 0.8—4.0 g/l {0.05—0.25 lb/ft³} Accumulated PM calculated from pressure applied to diesel particulate filter: 0.06—4.0 g/l {0.004—0.25 lb/ft³} Traveled distance after diesel particulate filter regeneration: 36—400 km {23—248 mile} Catalytic converter monitor is not completed after diesel particulate filter regeneration After 60 s have elapsed since start the engine Exhaust gas temperature before passing catalytic converter: 140—200 °C {284—392 °F} Exhaust gas temperature after passing catalytic converter: 135—240 °C {275—464 °F} (if the exhaust gas temperature after passing the catalytic converter exceeds 240 °C {464 °F}, the temperature decreases to 140 °C {284 °F} or less one time) Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The check engine light illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. DTC is stored in the PCM memory. |
| FAIL-SAFE FUNCTION | <ul style="list-style-type: none"> Inhibits engine-stop by operating the i-stop function. |
| POSSIBLE CAUSE | <ul style="list-style-type: none"> Exhaust system leakage Exhaust gas temperature sensor No.2 malfunction Exhaust gas temperature sensor No.3 malfunction Catalytic converter deterioration or malfunction Fuel injector malfunction PCM malfunction |
| SYSTEM WIRING DIAGRAM | Not applicable |

Diagnostic Procedure

| STEP | INSPECTION | ACTION |
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| 1 | VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? | Yes Go to the next step. |
| | | No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step. |
| 2 | VERIFY RELATED SERVICE INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Information availability. Is any related Service Information available? | Yes Perform repair or diagnosis according to the available Service Information. • If the vehicle is not repaired, go to the next step. |
| | | No Go to the next step. |
| 3 | VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition off, then ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) Are any other PENDING CODEs and/or DTCs present? | Yes Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].) |
| | | No Go to the next step. |

| STEP | INSPECTION | | ACTION |
|------|--|-----|---|
| 4 | INSPECT EXHAUST SYSTEM FOR LEAKAGE <ul style="list-style-type: none"> Visually inspect for exhaust leakage in the exhaust system. Is there any leakage? | Yes | Repair or replace the malfunctioning part according to the inspection results, then go to Step 8. |
| | | No | Go to the next step. |
| 5 | INSPECT EXHAUST GAS TEMPERATURE SENSOR NO.2 <ul style="list-style-type: none"> Inspect the exhaust gas temperature sensor No. 2. (See EXHAUST GAS TEMPERATURE SENSOR INSPECTION [SKYACTIV-D 2.2].) Is there any malfunction? | Yes | Replace the exhaust gas temperature sensor No.2, then go to Step 8. (See EXHAUST GAS TEMPERATURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) |
| | | No | Go to the next step. |
| 6 | INSPECT EXHAUST GAS TEMPERATURE SENSOR NO.3 <ul style="list-style-type: none"> Inspect the exhaust gas temperature sensor No. 3. (See EXHAUST GAS TEMPERATURE SENSOR INSPECTION [SKYACTIV-D 2.2].) Is there any malfunction? | Yes | Replace the exhaust gas temperature sensor No.3, then go to Step 8. (See EXHAUST GAS TEMPERATURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) |
| | | No | Go to the next step. |
| 7 | INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> Perform the Fuel Injector Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [SKYACTIV-D 2.2].) Is there any malfunction? | Yes | Repair or replace the malfunctioning part according to the inspection results, then go to the next step. |
| | | No | Replace the catalytic converter, then go to the next step. (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) |
| 8 | VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Always reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) Is the PENDING CODE for this DTC present? | Yes | Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to the next step. |
| | | No | Go to the next step. |
| 9 | VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) Are any DTCs present? | Yes | Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].) |
| | | No | DTC troubleshooting completed. |