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## 1978 MAZDA RX-3 OEM Service and Repair Workshop Manual

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# SCHEDULED MAINTENANCE [2022-2024MY]

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## Scheduled Maintenance Table for U.S.A., Canada and Puerto Rico

Follow Schedule 1 if the vehicle is operated mainly where none of the following conditions (severe driving conditions) apply.
• Repeated short-distance driving
• Driving in dusty conditions
• Driving with extended use of brakes
• Driving in areas where salt or other corrosive materials are used
• Driving on rough or muddy roads
• Extended periods of idling or low-speed operation
• Driving for long periods in cold temperatures or extremely humid climates
• Driving in extremely hot conditions
• Driving in mountainous conditions continually
If any do apply, follow Schedule 2. (Canada residents follow Schedule 2.)

**Vehicles using Engine Oil Flexible Maintenance**

Engine Oil Flexible Maintenance is selected by default for U.S.A. and Puerto Rico residents.
If any following conditions do apply, follow Schedule 2 with engine oil fixed maintenance.

- Extended periods of idling or low-speed operation such as police car, taxi or driving school car
- Driving in dusty conditions

The vehicle calculates the remaining oil life based on engine operating conditions. The vehicle lets you know when an oil change is due by illuminating the wrench indicator light in the instrument cluster. Change the oil as soon as possible within the next 1000 km (600 mile) or 15 days. Refer to the Information section in the Mazda Connect Owner's Manual for the details.

**Note**

**• Please ensure that the Flexible Oil Maintenance Setting is reset after each Oil and Filter replacement.**
**• For maintenance guidelines beyond the miles/months listed, follow the maintenance intervals provided in the Scheduled Maintenance Tables.**

### Schedule 1: U.S.A. and Puerto Rico residents - Engine oil flexible maintenance interval

Use when the maintenance monitor for "Oil Change" is set to "Flexible". For the details, refer to the Information section in the Mazda Connect Owner's Manual.

| Maintenance Interval | | Number of months or kilometers (miles), whichever comes first. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Months | 12 | 24 | 36 | 48 | 60 | 72 | 84 |
| | ×1000 km | 12 | 24 | 36 | 48 | 60 | 72 | 84 |
| | ×1000 miles | 7.5 | 15 | 22.5 | 30 | 37.5 | 45 | 52.5 |
| Spark plugs | SKYACTIV-G 2.5 T | Replace every 64,000 km (40,000 miles). | | | | | | |
| | Except SKYACTIV-G 2.5T | Replace every 120,000 km (75,000 miles). | | | | | | |
| Air filter element | | | | R | | | R | |
| Drive belts | | | | I | | | I | |
| Engine oil & filter *1 | | Replace when wrench indicator light is ON. (Max interval: 12 months or 12,000 km (7,50 | | | | | | |
| Engine coolant *2 | | Replace at first 192,000 km (120,000 miles) or 10 years; after that, every 96,000 km (60,00 years. | | | | | | |
| Fuel lines and hoses *3 | | | I | | I | | I | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Spark plugs | SKYACTIV-G 2.5 T | Replace every 64,000 km (40,000 | | | | | | |
| | Except SKYACTIV-G 2.5T | Replace every 120,000 km (75,00 | | | | | | |
| Air filter element | | I | I | I | I | I | I | I |
| | | Replace every 56,000 km (35,000 mile | | | | | | |
| Drive belts | | | | | | | I | |
| Engine oil & filter *1 | | R | R | R | R | R | R | R |
| Engine coolant *2 | | Replace at first 192,000 km (120,000 miles) or 10 years; after that, | | | | | | |
| Engine coolant level | | I | I | I | I | I | I | I |
| Fuel lines and hoses *3 | | | | | I | | | |
| Hoses and tubes for emission *3 | | | | | | | | |
| Function of all lights | | I | I | I | I | I | I | I |
| Brake lines, hoses and connections | | | | | I | | | |
| Brake and clutch fluid level | | I | I | I | I | I | I | I |
| Disc brakes | | Inspect every 24,000 km (15,000 mil | | | | | | |
| Tire (Rotation) | | Rotate every 8,000 km (5,000 | | | | | | |
| Tire inflation pressure and tire wear | | I | I | I | I | I | I | I |
| Steering operation and linkages | | | | | I | | | |
| Front and rear suspension, ball joints and wheel bearing axial play | | | | | I | | | |
| Drive shaft dust boots | | | | | I | | | |
| Bolts and nuts on chassis and body | | | | | T | | | |
| Exhaust system and heat shields | | Inspect every 72,000 km (45,000 mile | | | | | | |
| All locks and hinges | | L | L | L | L | L | L | L |
| Washer fluid level | | I | I | I | I | I | I | I |
| Emergency flat tire repair kit (if equipped) *4 | | Inspect annually. | | | | | | |
| Cabin air filter | | | | | R | | | |



Chart symbols:

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.
R: Replace
L: Lubricate
C: Clean
T: Tighten
D: Drain

Remarks:

*1 Reset the engine oil data whenever replacing the engine oil regardless of the message/wrench indicator light display.
*2 Use of FL22 is recommended when replacing engine coolant. Using engine coolant other than FL22 may cause serious damage to the engine and cooling system.
*3 According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.
*4 Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

## Scheduled Maintenance Table for Mexico

Follow Schedule 1 if the vehicle is operated mainly where none of the following conditions (severe driving conditions) apply.
• Repeated short-distance driving
• Driving in dusty conditions
• Driving with extended use of brakes

| Maintenance Interval | Number of months or kilometers, whichever comes first | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Months | 3 | 6 | 9 | 12 | 15 | 18 | 21 |
| | ×1000 km | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| | ×1000 miles | 3.13 | 6.25 | 9.38 | 12.5 | 15.63 | 18.75 | 21.88 |
| Steering operation and linkages | | | I | | I | | I | |
| Front and rear suspension, ball joints and wheel bearing axial play | | | | | I | | | |
| Drive shaft dust boots | | | | | I | | | |
| Bolts and nuts on chassis and body | | | | | T | | | |
| Exhaust system and heat shields | | | | | I | | | |
| All locks and hinges | | | L | | L | | L | |
| Washer fluid level | | | I | | I | | I | |
| Emergency flat tire repair kit (if equipped) *4 | | | | | | | Inspect annually. | |
| Cabin air filter | | | | | R | | | |

**Chart symbols:**

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.
R: Replace
L: Lubricate
C: Clean
T: Tighten
D: Drain

**Remarks:**

*1 Reset the engine oil data whenever replacing the engine oil regardless of the message/wrench indicator light display.
*2 Use of FL22 is recommended when replacing engine coolant. Using engine coolant other than FL22 may cause serious damage to the engine and cooling system.
*3 According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or kilometer period to ensure long-term reliability.
*4 Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.



(Cont.)

| Maintenance Interval | Number of months or kilometers, whichever comes first | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Months | 39 | 42 | 45 | 48 | 51 | 54 | 57 |
| | ×1000 km | 65 | 70 | 75 | 80 | 85 | 90 | 95 |
| | ×1000 miles | 40.63 | 43.75 | 46.88 | 50 | 53.13 | 56.25 | 59.38 |
| Drive belts | | | | | I | | | |
| Engine oil & filter *1 | | R | R | R | R | R | R | R |
| Cooling system | | | | | I | | | |

*1 Also inspect the air conditioner drive belts, if equipped. If the vehicle is operated primarily under any of the following conditions, inspect the drive belts at every 10,000 km (6,250 miles) or shorter.

a. Driving in dusty conditions
b. Extended periods of idling or low speed operation
c. Driving for long periods in cold temperatures or driving regularly at short distance only
d. Driving in extremely hot conditions
e. Driving in mountainous conditions continually
f. Driving for long periods in extremely wet or heavy rain conditions

*2 If the vehicle is operated primarily under any of the following conditions, replace the engine oil and oil filter at every 10,000 km (6,250 miles) or shorter.

a. Purpose of vehicle use is police car, taxi or driving school car.
b. Driving in dusty conditions
c. Extended periods of idling or low speed operation
d. Driving for long periods in cold temperatures or driving regularly at short distance only
e. Driving in extremely hot conditions
f. Driving in mountainous conditions continually

*3 For US spec. SKYACTIV-G 2.5, manually set Next Service Distance of Vehicle Status Monitor to 15,000 km (9,375 miles) or shorter. Refer to the Information section in the Mazda Connect Owner's Manual for the details.
*4 If the vehicle is operated in very dusty or sandy areas, clean and if necessary, replace the air cleaner element more often than the recommended intervals.
*5 Use of FL22 is recommended when replacing engine coolant. Using engine coolant other than FL22 may cause serious damage to the engine and cooling system.
*6 Inspect the battery electrolyte level and outer appearance. The sealed battery only requires an outer appearance inspection.
*7 If the brakes are used extensively (for example, continuous hard driving or mountain driving) or if the vehicle is operated in extremely humid climates, replace the brake fluid annually.
*8 Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

# DTC U030F:00 [PCM (SKYACTIV-D 2.2)]

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| | |
|---|---|
| DTC U030F:00 | Software incompatibility with dosing control unit |
| DETECTION CONDITION | • Difference in values of inducement (laws and regulations requirement) received from the Dosing Control Unit for remaining distance to empty using the 2 CAN signal IDs sent to the PCM is more than 2 km {2 miles} for a continuous 15 s.<br>Diagnostic support note<br>• This is an intermittent monitor (CCM).<br>• The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle.<br>• FREEZE FRAME DATA/Snapshot data is available.<br>• DTC is stored in the PCM memory. |
| FAIL-SAFE FUNCTION | • Not applicable |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and dosing control unit<br>• PCM malfunction<br>• Dosing control unit malfunction |
| SYSTEM WIRING DIAGRAM | Not applicable |

Diagnostic Procedure

| STEP | INSPECTION | | ACTION |
|---|---|---|---|
| 1 | PURPOSE: RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION<br>Note<br>• Recording can be facilitated using the screen capture function of the PC.<br>• Record the FREEZE FRAME DATA/snapshot data on the repair order. | – | Go to the troubleshooting procedure to perform the procedure from Step 1. |
| 2 | VERIFY RELATED SERVICE INFORMATION AVAILABILITY<br>• Verify related Service Bulletins and/or on-line repair information availability.<br>• Is any related Service Information available? | Yes | Perform repair or diagnosis according to the available repair information.<br>• If the vehicle is not repaired, go to the next step. |
| | | No | Go to the next step. |
| 3 | VERIFY CAN COMMUNICATION LINE<br>• Inspect according to the diagnostic procedure in ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]. (See FOREWORD [TYPE-A (SKYACTIV-G 2.5T, SKYACTIV-D 2.2)].) (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-B].)<br>• Is there any malfunction? | Yes | Repair or replace the malfunctioning part according to the inspection results, then go to the next step. |
| | | No | If the malfunction recurs, replace the dosing control unit, then go to the next step.<br>(See DOSING CONTROL UNIT REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) |

| STEP | INSPECTION | | ACTION |
|---|---|---|---|
| 1 | **RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION**<br>**Note**<br>**• Recording can be facilitated using the screen capture function of the PC.**<br>• Record the snapshot data on the repair order. | – | Go to the next step. |
| 2 | **VERIFY RELATED REPAIR INFORMATION AVAILABILITY**<br>• Verify related Service Bulletins and/or on-line repair information availability.<br>• Is any related repair information available? | Yes | Perform repair or diagnosis according to the available repair information.<br>• If the vehicle is not repaired, go to the next step. |
| | | No | Go to the next step. |
| 3 | **INSPECT CHECK CONNECTOR CIRCUIT FOR SHORT TO GROUND**<br>• Switch the ignition off.<br>• Inspect for continuity between check connector terminal E (wiring harness-side) and body ground.<br>• Is there continuity? | Yes | If the short to ground circuit could be detected in the wiring harness:<br>• Refer to the wiring diagram and verify whether or not there is a common connector between check connector terminal E and PCM terminal 2E.<br>**If there is a common connector:**<br>— Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground.<br>— Repair or replace the malfunctioning part.<br>**If there is no common connector:**<br>— Repair or replace the wiring harness which has a short to ground.<br>If the short to ground circuit could not be detected in the wiring harness:<br>• Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)<br>Go to Step 5. |
| | | No | Go to the next step. |
| 4 | **INSPECT PCM CONNECTOR CONDITION**<br>• Disconnect the PCM connector.<br>• Inspect for poor connection (such as damaged/pulled-out pins, corrosion).<br>• Is there any malfunction? | Yes | Repair or replace the connector and/or terminals, then go to the next step. |
| | | No | Go to the next step. |
| 5 | **VERIFY DTC TROUBLESHOOTING COMPLETED**<br>• Always reconnect all disconnected connectors.<br>• Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-D 2.2)].)<br>• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-D 2.2)].)<br>• Is the same DTC present? | Yes | Repeat the inspection from Step 1.<br>• If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)<br>Go to the next step. |
| | | No | Go to the next step. |

| | |
|---|---|
| **DTC U0104:00** | **CAN communication: communication error to radar unit** |
| DETECTION CONDITION | • With the following conditions met, a communication error between the PCM and radar unit is continued for 5 s or more.<br>**MONITORING CONDITIONS**<br>• Battery voltage: 10 V or more<br>• 1.5 s have elapsed after the ignition was switched ON (engine off or on)<br>**Diagnostic support note**<br>• This is a continuous monitor (other).<br>• The check engine light does not illuminate.<br>• FREEZE FRAME DATA is not available.<br>• Snapshot data is available.<br>• DTC is stored in the PCM memory. |
| FAIL-SAFE FUNCTION | • Not applicable |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and radar unit<br>• Radar unit connector or terminals malfunction<br>• Radar unit malfunction<br>• PCM connector or terminals malfunction<br>• PCM malfunction |
| SYSTEM WIRING DIAGRAM | • Not applicable |

| | |
|---|---|
| **DTC U010E:00** | **CAN communication: communication error to dosing control unit** |
| DETECTION CONDITION | • With the following conditions met, a communication error between the PCM and dosing control unit is continued for 5 s or more.<br>**MONITORING CONDITIONS**<br>• 1.5 s have elapsed with all of the following conditions met:<br>— Battery voltage: above 10 V<br>— Ignition was switch is ON (engine off or on)<br>**Diagnostic support note**<br>• This is a continuous monitor (CCM).<br>• The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle.<br>• FREEZE FRAME DATA/Snapshot data is available.<br>• DTC is stored in the PCM memory.<br>**Note**<br>**• When this DTC is detected, inducement DTC P2BAF:00 is also detected.**<br>**• This DTC is established to record that the inducement warning has been activated with the remaining distance to empty at 402 km {250 miles} or less due to an inducement malfunction.** |
| FAIL-SAFE FUNCTION | • Restricts the maximum remaining distance to empty.<br>• Limits the upper limit of the engine speed. |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and dosing control unit<br>• Dosing control unit connector or terminals malfunction<br>• Dosing control unit malfunction<br>• PCM connector or terminals malfunction<br>• PCM malfunction |
| SYSTEM WIRING DIAGRAM | • Not applicable |

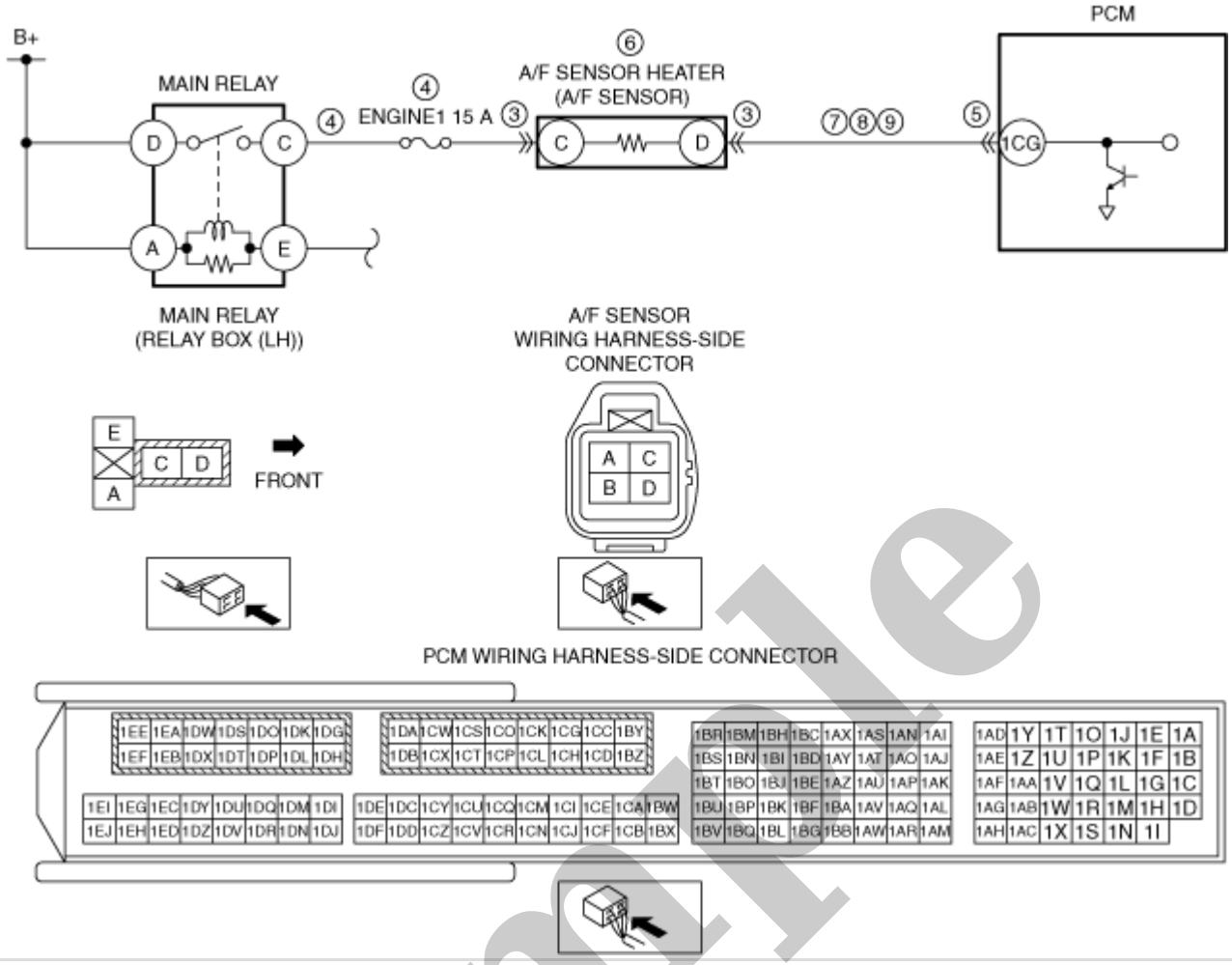
| | |
|---|---|
| DTC U0214:00 | CAN communication: communication error to start stop unit |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and start stop unit<br>• Start stop unit connector or terminals malfunction<br>• Start stop unit malfunction<br>• PCM connector or terminals malfunction<br>• PCM malfunction |
| SYSTEM WIRING DIAGRAM | • Not applicable |

| | |
|---|---|
| DTC U023A:00 | CAN communication: communication error to forward sensing camera (FSC) |
| DETECTION CONDITION | • With the following conditions met, a communication error between the PCM and forward sensing camera (FSC) is continued for 5 s or more.<br>MONITORING CONDITIONS<br>• Battery voltage: 10 V or more<br>• 1.5 s have elapsed after the ignition was switched ON (engine off or on)<br>Diagnostic support note<br>• This is a continuous monitor (other).<br>• The check engine light does not illuminate.<br>• FREEZE FRAME DATA is not available.<br>• Snapshot data is available.<br>• DTC is stored in the PCM memory. |
| FAIL-SAFE FUNCTION | • Not applicable |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and forward sensing camera (FSC)<br>• Forward sensing camera (FSC) connector or terminals malfunction<br>• Forward sensing camera (FSC) malfunction<br>• PCM connector or terminals malfunction<br>• PCM malfunction |
| SYSTEM WIRING DIAGRAM | • Not applicable |

| | |
|---|---|
| DTC U029D:00 | CAN communication: communication error to NOx sensor No.1 |
| DETECTION CONDITION | • With the following conditions met, a communication error between the PCM and NOx sensor No.1 is continued for 5 s or more.<br>MONITORING CONDITIONS<br>• The following conditions continue for 1.5 s<br>— Battery voltage: 10 V or more<br>— Ignition was switched ON (engine off or on)<br>Diagnostic support note<br>• This is a continuous monitor (CCM).<br>• The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle.<br>• FREEZE FRAME DATA is not available.<br>• Snapshot data is available.<br>• DTC is stored in the PCM memory. |
| FAIL-SAFE FUNCTION | • Inhibits the DENOx/DESOx control. |
| POSSIBLE CAUSE | • CAN communication line malfunction between PCM and NOx sensor No.1<br>• NOx sensor No.1 malfunction<br>• NOx sensor No.1 connector or terminals malfunction<br>• Dosing control unit connector or terminals malfunction<br>• Dosing control unit malfunction<br>• PCM connector or terminals malfunction<br>• PCM malfunction |
| SYSTEM WIRING DIAGRAM | • Not applicable |

## Diagnostic Procedure

| DTC P0053:00 | A/F sensor heater resistance |
|---|---|




Diagnostic Procedure

| STEP | INSPECTION | RESULTS | ACTION |
|---|---|---|---|
| 1 | **RECORD FREEZE FRAME DATA/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS TO UTILIZE WITH REPEATABILITY VERIFICATION**<br>**Note**<br>**• Recording can be facilitated using the screen capture function of the PC.**<br>• Record the FREEZE FRAME DATA/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater related) on the repair order. | – | Go to the next step. |
| 2 | **VERIFY RELATED REPAIR INFORMATION AVAILABILITY**<br>• Verify related Service Bulletins and/or on-line repair information availability.<br>• Is any related repair information available? | Yes | Perform repair or diagnosis according to the available repair information.<br>• If the vehicle is not repaired, go to the next step. |
| | | No | Go to the next step. |