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2020.0 DEFENDER (LE), 413-13

PARKING AID

## NEAR FIELD SENSING MODULE (G2604420)

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## PRINCIPLES OF OPERATION

For a detailed description of the parking aid system, refer to the relevant Description and Operation section of the workshop manual. REFER to: [Parking Aid](#) (413-13 Parking Aid, Description and Operation).

## INSPECTION AND VERIFICATION

 **CAUTIONS:**

- If the control module or a component is at fault and the vehicle remains under manufacturer warranty, refer to the warranty policy and procedures manual, or determine if any prior approval program is in operation, prior to the installation of a new module/component.
- Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and /or the donor vehicle
- Do not apply any grease based products to any parking aid system connector or pins

 **NOTE:**

Check JLR claims submission system for open campaigns. Refer to the corresponding bulletins and SSMS which may be valid for the specific customer complaint and complete the recommendations as required.

1. Verify the customer concern
2. Visually inspect for obvious signs of mechanical or electrical damage
3. Make sure that the parking aid sensor face is clear of contamination that could affect the performance of the sensor
4. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
5. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

**Visual Inspection**

| MECHANICAL                                                                                     | ELECTRICAL                                                                |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>■ Touchscreen</li><li>■ Front proximity camera</li></ul> | <ul style="list-style-type: none"><li>■ Fuses</li><li>■ Battery</li></ul> |

| MECHANICAL                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ELECTRICAL                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Left mirror proximity camera</li> <li>Right mirror proximity camera</li> <li>Rear proximity camera</li> <li>Parking aid sensor condition/damaged</li> <li>Parking aid sensor installation and holder</li> <li>Parking aid sensor alignment</li> <li>Parking aid sensor contamination</li> <li>Bumper cover(s)</li> <li>Vehicle ride height</li> <li>Non standard/non manufacturer approved accessories installed</li> </ul> | <ul style="list-style-type: none"> <li>Relays</li> <li>Wiring harnesses and connectors</li> <li>Touchscreen</li> <li>Infotainment compute control module</li> <li>Front proximity camera</li> <li>Left mirror proximity camera</li> <li>Right mirror proximity camera</li> <li>Rear proximity camera</li> <li>Front parking aid sensor(s)</li> <li>Rear parking aid sensor(s)</li> <li>Near field sensing module</li> <li>Audio system</li> </ul> |

## CAMERA SYSTEM SYMPTOM CHART

| SYMPTOM                                   | POSSIBLE CAUSE                                                                          | ACTION                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rear proximity camera image slow to react | <ul style="list-style-type: none"> <li>System operation within specification</li> </ul> | <div>  <b>NOTE:</b><br/>           After selecting reverse, it may take up to 2 seconds for the image to be displayed         </div> <ul style="list-style-type: none"> <li>No further action necessary</li> </ul> |
| Blank screen                              | <ul style="list-style-type: none"> <li>Rear proximity camera not functioning</li> </ul> | <ul style="list-style-type: none"> <li>GO to Pinpoint Test <a href="#">A</a>.</li> </ul>                                                                                                                                                                                                              |
| Camera system unavailable                 | <ul style="list-style-type: none"> <li>Video-in signal absent</li> </ul>                | <ul style="list-style-type: none"> <li>GO to Pinpoint Test <a href="#">B</a>.</li> </ul>                                                                                                                                                                                                              |

## CAMERA SYSTEM PINPOINT TESTS

| PINPOINT TEST A : PERMANENT BLANK SCREEN TESTS                                                                                                                                                                                          |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| A1: PERMANENT BLANK SCREEN TEST 1                                                                                                                                                                                                       |                         |
| TEST CONDITIONS                                                                                                                                                                                                                         | DETAILS/RESULTS/ACTIONS |
| <div>  <b>NOTE:</b><br/>           A blank screen is the default display when the rear proximity camera is not transmitting an image.         </div> |                         |

| PINPOINT TEST A : PERMANENT BLANK SCREEN TESTS                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A1: PERMANENT BLANK SCREEN TEST 1                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| TEST CONDITIONS                                                                                                                                                                                                                                                                  | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                  | 1 Refer to the electrical circuit diagrams and check the cable feed to the rear proximity camera.                                                                                                                  |
|                                                                                                                                                                                                                                                                                  | 2 Check the feed cable(s) for excessive bending, clamping and insulation damage                                                                                                                                    |
|                                                                                                                                                                                                                                                                                  | <p>Is the cable feed intact to the rear proximity camera?</p> <p><b>Yes</b><br/>GO to A2.</p> <p><b>No</b><br/>Replace the affected cable feed to the rear proximity camera.</p>                                   |
| A2: PERMANENT BLANK SCREEN TEST 2                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
| TEST CONDITIONS                                                                                                                                                                                                                                                                  | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                            |
| <p> <b>CAUTION:</b></p> <p>Do not probe the coaxial cable connectors as they are prone to damage.</p>                                                                                           |                                                                                                                                                                                                                    |
| <p> <b>NOTE:</b></p> <p>A Direct Current to Direct Current converter (DC/DC) resistance measurement is not a reliable test method as the system operates at low voltage and high frequency.</p> |                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                                  | 1 Check the integrity of the rear proximity camera coaxial cable connectors (at rear proximity camera, the touchscreen and in-line connectors).                                                                    |
|                                                                                                                                                                                                                                                                                  | 2 Check the coaxial cable for excessive bending, clamping and insulation damage.                                                                                                                                   |
|                                                                                                                                                                                                                                                                                  | <p>Is the rear proximity camera coaxial cable disconnected or damaged?</p> <p><b>Yes</b><br/>Reconnect or install a new coaxial cable(s) as necessary</p> <p><b>No</b><br/>Install a new rear proximity camera</p> |

| PINPOINT TEST B : CAMERA SYSTEM UNAVAILABLE                                                                                                                                                  |                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1: CAMERA SYSTEM UNAVAILABLE TEST 1                                                                                                                                                         |                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                                                                                                              | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                           |
| <p> <b>NOTE:</b></p> <p>A camera system unavailable message/icon will be displayed on the touchscreen</p> |                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                              | 1 Select reverse gear and observe the touchscreen                                                                                                                                                                                                                                 |
|                                                                                                                                                                                              | <p>Is a camera system unavailable message/icon displayed on the touchscreen?</p> <p><b>Yes</b><br/>Check the integrity of the rear proximity camera coaxial cable connectors (at rear proximity camera, the touchscreen and in-line connectors), and retest.</p> <p><b>No</b></p> |

| PINPOINT TEST B : CAMERA SYSTEM UNAVAILABLE |                                        |
|---------------------------------------------|----------------------------------------|
| B1: CAMERA SYSTEM UNAVAILABLE TEST 1        |                                        |
| TEST CONDITIONS                             | DETAILS/RESULTS/ACTIONS                |
|                                             | GO to Pinpoint Test <a href="#">A.</a> |

## PARKING AID SYSTEM ON-BOARD SELF-TEST

As part of the strategy of the system if any Diagnostic Trouble Code(s) are detected a parking aid warning message will be displayed on the touchscreen

- If a fault is present when the parking aid system is activated then the parking aid button on the touchscreen will be unavailable for selection indicating an issue with front or rear parking aid sensors, wiring, near field sensing module or the in car infotainment system

### Visual Warnings when Parking Aid System is in Error State

| PARKING AID SYSTEM INSTALLED                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A parking aid warning message will be displayed on the touchscreen and the parking aid button on the touchscreen will be unavailable for selection. Every time the parking aid system is activated within the same ignition cycle a parking aid warning message will be displayed on the touchscreen |

## PARKING AID SYSTEM

### Parking Aid Symptom Chart



#### NOTES:

- Make sure the in car infotainment system is fully functional and configured correctly
- Parking aid sensors that are painted incorrectly and not to the manufacturer standards, will not be considered in any warranty claim

| SYMPTOM                                                                                                                                                    | POSSIBLE CAUSES                                                                                                                                                                                                                                   | ACTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div> <b>NOTE:</b><br/>Permanent /Intermittent fault </div> <p>Parking aid system not functioning correctly. (No Diagnostic Trouble Code(s) displayed)</p> | <ul style="list-style-type: none"> <li>■ Front or rear parking aid sensors damaged by stone chipping or other impact</li> <li>■ Front or rear parking aid sensors dirty</li> <li>■ Front or rear parking aid sensor position incorrect</li> </ul> | <ul style="list-style-type: none"> <li>■ Replace the damaged parking aid sensor <ul style="list-style-type: none"> <li>■ <b>NOTE:</b> Parking aid sensor damage that has been caused by the impact of stones or any other object is regarded as wear and tear and will <b>NOT</b> be considered in any warranty claim - see guidance notes below</li> </ul> </li> <li>■ Clean front or rear parking aid sensors</li> <li>■ Check the front or parking aid rear sensor position</li> <li>■ Check the front or rear parking aid sensor are correctly installed</li> <li>■ Check front or rear parking aid sensor coupling rings are installed /installed correctly</li> </ul> |

| SYMPTOM                                                                                                                                                                                                                                                                                             | POSSIBLE CAUSES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ACTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>■ Front or rear parking aid sensor incorrectly installed</li> <li>■ Front or rear parking aid sensor coupling rings not installed /incorrectly installed</li> <li>■ Near field sensing module or parking aid sensor connector not fully latched</li> <li>■ Parking aid sensors painted without being removed from the bumper assembly or not painted to the manufacturer specification</li> </ul>                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>■ Make sure all parking aid system connectors are correctly latched</li> <li>■ Remove parking aid sensor and make sure correctly painted parking aid sensor is installed <ul style="list-style-type: none"> <li>■ Parking aid sensors that are painted incorrectly and not to the manufacturer standards, will not be considered in any warranty claim</li> </ul> </li> <li>■ GO to Pinpoint Test <a href="#">C</a>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <div>  <b>NOTE:</b><br/> Permanent<br/> /Intermittent fault </div> <p>Parking aid system not functioning correctly. (No Diagnostic Trouble Code(s) displayed). System characteristics or environmental effects</p> | <ul style="list-style-type: none"> <li>■ Parking aid sensors incorrectly mounted</li> <li>■ Incorrect vehicle ride height</li> <li>■ Dirty parking aid sensor face. Ice /snow covered sensor. Debris trapped between parking aid sensor and parking aid sensor body. Heavy rain or water splash from the ground</li> <li>■ Non standard, bumper, exhausts /tailpipes, tow bar or external spare wheel mounting</li> <li>■ Area around vehicle is not clear of obstacles such as channels, gutters or other items on the ground</li> <li>■ Exhaust gas and warm air clouds creating ghost echoes</li> <li>■ Vehicle not on level ground or next to a gradient</li> <li>■ Parking aid sensors painted without being removed from the bumper assembly or</li> </ul> | <ul style="list-style-type: none"> <li>■ Make sure the sensors are a tight fit in the holder and locked. Make sure the sensors are central in the holder and bumper and at the correct angle</li> <li>■ Make sure vehicle ride height is within the specified limits. Rectify as required</li> <li>■ Clean the sensor face as required. Defrost the sensor and dry as required. Clear any debris from the sensor and holder as required. Water flowing over the sensor is a system limitation. (no action required)</li> <li>■ Check for non standard, bumper, exhausts/tailpipe, tow bar or external spare wheel mounting that may be being detected by the parking aid system. Rectify as required</li> <li>■ Make sure the area around the vehicle is clear of any obstacles, move the vehicle to a suitable area before continuing diagnosis</li> <li>■ Make sure no exhaust gas or warm area clouds are in the area around the parking aid sensor detection range</li> <li>■ Make sure the vehicle is on level ground and clear of any ramps, potholes or speed bumps, move the vehicle to a suitable area before continuing diagnosis</li> <li>■ Remove parking aid sensor and make sure correctly painted parking aid sensor is installed <ul style="list-style-type: none"> <li>■ Parking aid sensors that are painted incorrectly and not to the manufacturer standards, will not be considered in any warranty claim</li> </ul> </li> <li>■ GO to Pinpoint Test <a href="#">D</a>.</li> </ul> |

| SYMPTOM                                                                                         | POSSIBLE CAUSES                                             | ACTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 | not painted to the manufacturer specification               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Parking aid sensors are being returned with no faults found or signs of water ingress/corrosion | Possible issue with sensor connectors not latched correctly | <ul style="list-style-type: none"> <li>■ When either no/intermittent operation has been reported the following action should be taken</li> <li>■ 1. Using the Jaguar Land Rover approved diagnostic equipment, check live data to identify the position of the faulty parking aid sensor within the bumper</li> <li>■ 2. Visually locate the position of the faulty parking aid sensor. Inspect and provide details in claim if the sensor has any sign of physical damage</li> <li>■ 3. Remove the bumper. Disconnect the wiring at the main harness connector. Inspect the main harness connectors and terminals for signs of damage, backed out pins, corrosion and water ingress, or damage to the seals. Provide details in claim if any of the above symptoms are present</li> <li>■ 4. Attempt to remove the harness connector from the faulty parking aid sensor without using the connector latch for example lightly pull back on <b>ALL</b> wires together, making sure the harness is held close to the back of the connector, not elsewhere on the wiring harness. <b>DO NOT</b> apply excessive force. If the connector can be removed without using the latch, provide details in claim if connector is loose. If the connector is fully latched, disconnect it from the sensor</li> <li>■ 5. Inspect and provide details in claim if the faulty sensor harness connector has any sign of water ingress/corrosion</li> <li>■ 6. Inspect and provide details in claim if the faulty parking aid sensor harness connector shows any sign that the terminals have backed-out of the connector or for any damage to the terminal seals. Replace /repair the harness as required and proceed</li> <li>■ 7. Remove the faulty parking aid sensor from the bumper. Inspect the parking aid sensor connector for signs of water ingress/corrosion. Provide details in claim if corrosion/water ingress is present</li> <li>■ 8. Exchange the faulty parking aid sensor with another parking aid sensor within the bumper that is performing correctly. Reconnect all sensors and reconnect the bumper main harness connector. Repeat step 1. Confirm if the original fault now appears at the new position of the faulty parking aid sensor, if so, proceed to step 10</li> <li>■ 9. If not, complete the appropriate open circuit and short circuit checks between the original faulty parking aid sensor harness connector and the near field sensing module</li> <li>■ 10. Refit the parking aid sensors to their original position in the bumper</li> <li>■ 11. Reconnect the parking aid sensor to the bumper harness connector. Reconnect main harness connector and refit the bumper</li> <li>■ 12. Repeat Step 1. If fault is still present, <b>replace only the faulty sensor</b></li> </ul> |

| PINPOINT TEST C : PARKING AID SYSTEM NOT FUNCTIONING CORRECTLY WITH NO DIAGNOSTIC TROUBLE CODE(S) SET |                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C1: PERMANENT FAULT                                                                                   |                                                                                                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                       | <p><b>1</b> When the parking aid system is activated, there is a vibration on the parking aid sensor membrane. This can be verified by touching the parking aid sensor face with a hard item such as a pencil, ball-pen, small screwdriver, or fingernail. <b>Make sure no damage is caused to sensor painted surface</b></p>                                     |
|                                                                                                       | <p>Are the parking aid sensor(s) vibrating?</p> <p><b>Yes</b><br/><b>GO toC2.</b></p> <p><b>No</b><br/><b>GO toC5.</b></p>                                                                                                                                                                                                                                        |
| C2: SENSORS VIBRATING WITH PARKING AID FAULT                                                          |                                                                                                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                       | <p><b>1</b> Clean the parking aid sensor face</p>                                                                                                                                                                                                                                                                                                                 |
|                                                                                                       | <p>Parking aid system functioning correctly?</p> <p><b>Yes</b><br/>No further action required</p> <p><b>No</b><br/><b>GO toC3.</b></p>                                                                                                                                                                                                                            |
| C3: SENSORS VIBRATING WITH PARKING AID FAULT                                                          |                                                                                                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                       | <p><b>1</b> Check parking aid sensors correctly mounted. Parking aid sensor holder correctly mounted. Parking aid sensor decoupler ring installed or installed correctly. Parking aid sensor positioning correct. Parking aid sensor painted without being removed from the bumper assembly or not painted to manufacturer specification. Rectify as required</p> |
|                                                                                                       | <p>Parking aid system functioning correctly?</p> <p><b>Yes</b><br/>No further action required</p> <p><b>No</b><br/><b>GO toC4.</b></p>                                                                                                                                                                                                                            |
| C4: SENSORS VIBRATING WITH PARKING AID FAULT                                                          |                                                                                                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                       | <p><b>1</b> Confirm audio system is functioning correctly. Refer to the relevant section of the workshop manual</p>                                                                                                                                                                                                                                               |
|                                                                                                       | <p>Parking aid system functioning correctly</p> <p><b>Yes</b><br/>No further action required</p>                                                                                                                                                                                                                                                                  |
| C5: SENSORS NOT VIBRATING WITH PARKING AID FAULT                                                      |                                                                                                                                                                                                                                                                                                                                                                   |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                       | <p><b>1</b> Isolate the fault to front or rear parking aid sensors by confirming if the audio is coming from the front or rear speaker.</p>                                                                                                                                                                                                                       |
|                                                                                                       | <p>Are all rear parking aid sensors vibrating?</p> <p><b>Yes</b><br/><b>GO toC6.</b></p> <p><b>No</b></p>                                                                                                                                                                                                                                                         |

| C5: SENSORS NOT VIBRATING WITH PARKING AID FAULT       |                                                                                                                                                                                                                                             |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <a href="#">GO to C10.</a>                                                                                                                                                                                                                  |
| C6: FRONT SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                             |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <b>1</b> Check the near field sensing module is correctly configured. Using the Jaguar Land Rover approved diagnostic equipment, check and update the car configuration file as required.                                                   |
|                                                        | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><a href="#">GO to C7.</a>                                                                                                             |
| C7: FRONT SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                             |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <b>1</b> Check the correct near field sensing module is installed to the vehicle                                                                                                                                                            |
|                                                        | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><a href="#">GO to C12.</a>                                                                                                            |
| C8: FRONT SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                             |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <b>1</b> If all front parking aid sensors are not vibrating, complete harness test on common ground, power supply. Check main parking aid harness connector to bumper harness connector. Rectify as required                                |
|                                                        | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><a href="#">GO to C9.</a>                                                                                                             |
| C9: FRONT SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                             |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <b>1</b> Check and install a new near field sensing module as required. Refer to the warranty policy and procedures manual, or determine if any prior approval program is in operation, prior to the installation of a new module/component |
|                                                        | Parking aid system functioning correctly<br><b>Yes</b><br>No further action required                                                                                                                                                        |
| C10: REAR SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                             |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                     |
|                                                        | <b>1</b> Check the near field sensing module is correctly configured. Using the Jaguar Land Rover approved diagnostic equipment, check and update the car configuration file as required                                                    |

| C10: REAR SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                  |
|                                                        | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><b>GO toC11.</b>                                                                                                                                                                                                   |
| C11: REAR SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                                                                                                          |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                  |
|                                                        | <b>1</b> If all rear parking aid sensors are not vibrating, complete harness test on common ground, power supply. Check main parking aid harness connector to bumper harness connector. Rectify as required                                                                                                              |
|                                                        | Parking aid system functioning correctly<br><b>Yes</b><br>No further action required<br><b>No</b><br><b>GO toC12.</b>                                                                                                                                                                                                    |
| C12: REAR SENSORS NOT VIBRATING WITH PARKING AID FAULT |                                                                                                                                                                                                                                                                                                                          |
| TEST CONDITIONS                                        | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                  |
|                                                        | <b>1</b> Install a new near field sensing module as required. Refer to the warranty policy and procedures manual, or determine if any prior approval program is in operation, prior to the installation of a new module/component                                                                                        |
|                                                        | Parking aid system functioning correctly<br><b>Yes</b><br>No further action required<br><b>No</b><br>For a detailed description of the parking aid system, refer to the relevant description and operation section in the workshop manual. REFER to: <b>Parking Aid</b> (413-13 Parking Aid, Description and Operation). |

| PINPOINT TEST D : PARKING AID SYSTEM NOT FUNCTIONING CORRECTLY WITH NO DIAGNOSTIC TROUBLE CODE(S) SET |                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D1: PARKING AID SYSTEM GIVES WARNING SIGNAL WITHOUT OBSTACLE                                          |                                                                                                                                                                                                                                                     |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                             |
|                                                                                                       | <b>1</b> Clean the parking aid sensor face. Check for any damage to the parking aid sensor face. Rectify as required. Snow, water or ice on sensor face. Parking aid sensor face has been repainted to the incorrect thickness. Rectify as required |
|                                                                                                       | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><b>GO toD2.</b>                                                                                                                               |
| D2: PARKING AID SYSTEM GIVES WARNING SIGNAL WITHOUT OBSTACLE                                          |                                                                                                                                                                                                                                                     |
| TEST CONDITIONS                                                                                       | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                             |
|                                                                                                       | <b>1</b> Make sure the vehicle ride height is within manufacturer specified limits. Rectify as required                                                                                                                                             |
|                                                                                                       | Parking aid system functioning correctly?<br><b>Yes</b>                                                                                                                                                                                             |

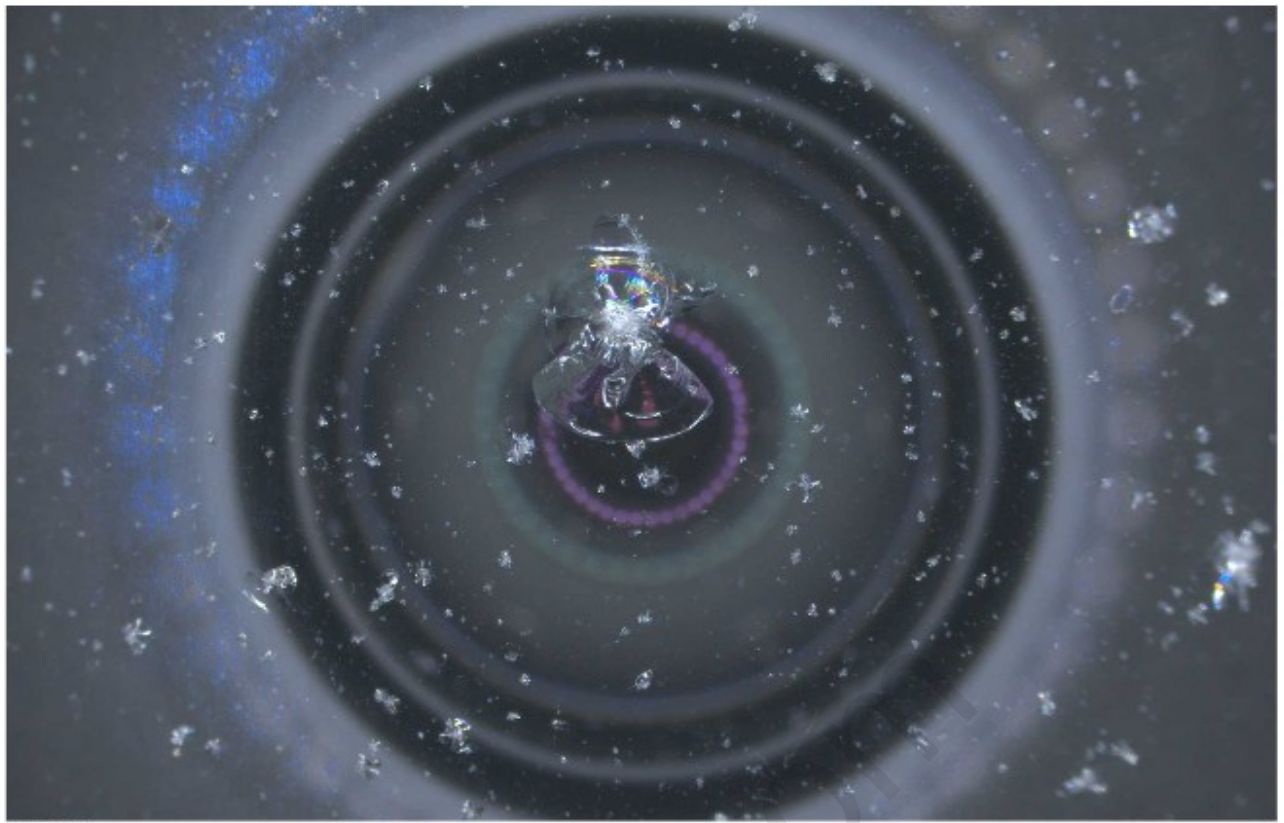
| D2: PARKING AID SYSTEM GIVES WARNING SIGNAL WITHOUT OBSTACLE |                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TEST CONDITIONS                                              | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                            |
|                                                              | No further action required<br><b>No</b><br><a href="#">GO toD3.</a>                                                                                                                                                                                                                                                                |
| D3: PARKING AID SYSTEM GIVES WARNING SIGNAL WITHOUT OBSTACLE |                                                                                                                                                                                                                                                                                                                                    |
| TEST CONDITIONS                                              | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                            |
|                                                              | 1 Check for any non standard accessories are not installed, such as tow bar, bike rack, body kit, modified exhaust, lighting or license plate holder                                                                                                                                                                               |
|                                                              | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br><a href="#">GO toD4.</a>                                                                                                                                                                                                     |
| D4: PARKING AID SYSTEM GIVES WARNING SIGNAL WITHOUT OBSTACLE |                                                                                                                                                                                                                                                                                                                                    |
| TEST CONDITIONS                                              | DETAILS/RESULTS/ACTIONS                                                                                                                                                                                                                                                                                                            |
|                                                              | 1 Check for limitations or characteristics of the parking aid system such as vehicle on a gradient, exhaust gas vapor, signal reflection                                                                                                                                                                                           |
|                                                              | Parking aid system functioning correctly?<br><b>Yes</b><br>No further action required<br><b>No</b><br>For a detailed description of the parking aid system, refer to the relevant description and operation section in the workshop manual. REFER to: <a href="#">Parking Aid</a> (413-13 Parking Aid, Description and Operation). |

## WARRANTY COMPLIANCE AND PROCEDURES IN RELATION TO CAMERAS SUFFERING FROM STONE CHIPPING

Where there is clear evidence that a camera lens has sustained damage due to stone chipping, abrasions or other impact damage that has resulted in poor or blurred/foggy image and similar symptoms, retailers should note that this form of damage is regarded as wear and tear and, therefore rectification of this damage is **NOT** claimable under any of the vehicle warranties. Retailers are referred to Section B1.45 (Guide To Warranty Terms And Conditions - General Items - Stone Chips/Paint Damage) in the Global Warranty Compliance And Procedures Manual, which can be found in the Warranty Manual section of the Retailer Standards and Training Documents on TOPIx. Further information can also be found in Section A1.7 (Warranty Terms And Conditions - Summary of Vehicle Warranty - What is Not Covered By The Vehicle Warranty).

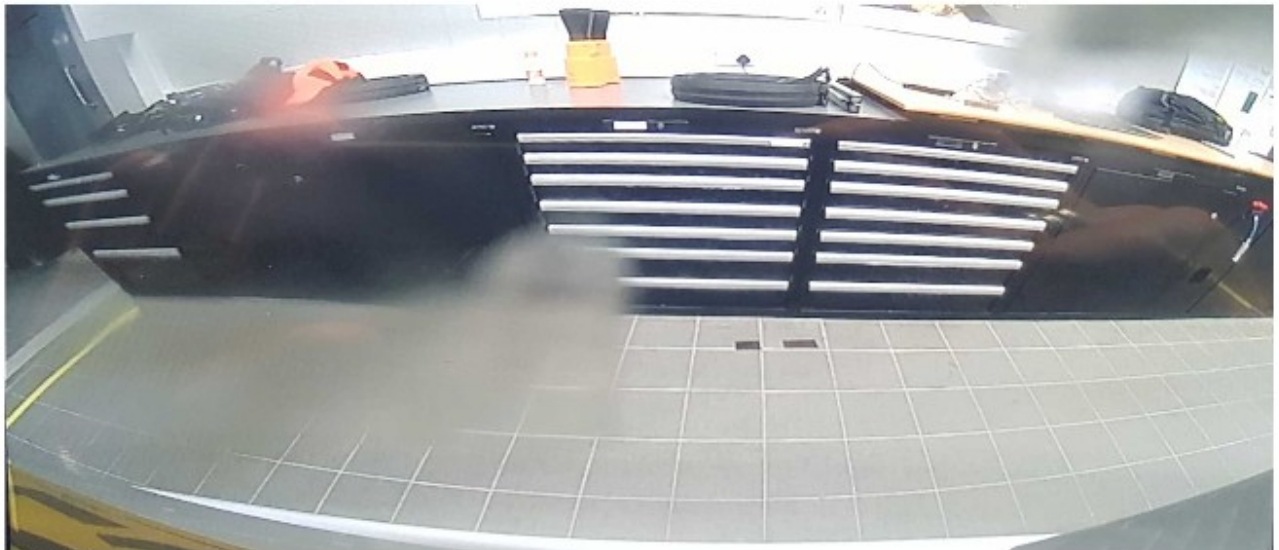
### GUIDANCE FOR CORRECT IDENTIFICATION OF STONE CHIP DAMAGE

The image below shows clearly that an impact from a stone chipping or another object has pitted the surface of the camera lens. The pits/indentations should also be detectable by feeling the surface of the lens and checking the surface profile for indentations. This kind of damage would **NOT** be covered by vehicle warranty.



E269491

The images below show the front and rear view camera images you would expect to see from a damaged camera lens. This kind of damage would **NOT** be covered by vehicle warranty.



E269492

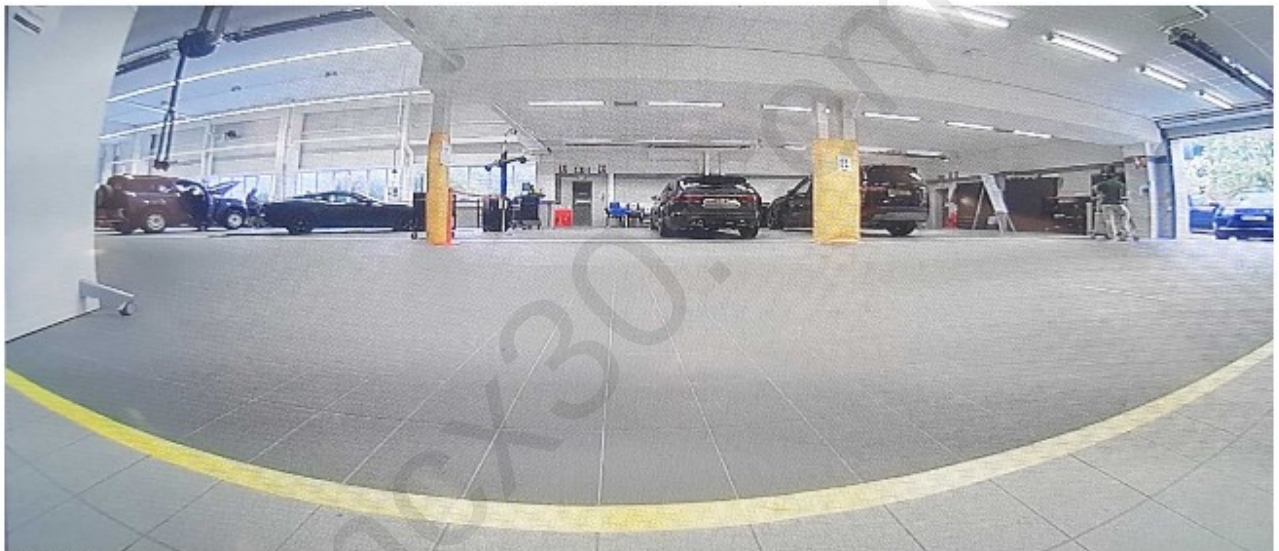


E269494

The images below show the front and rear view camera images you would expect to see from an undamaged camera lens.



E269493



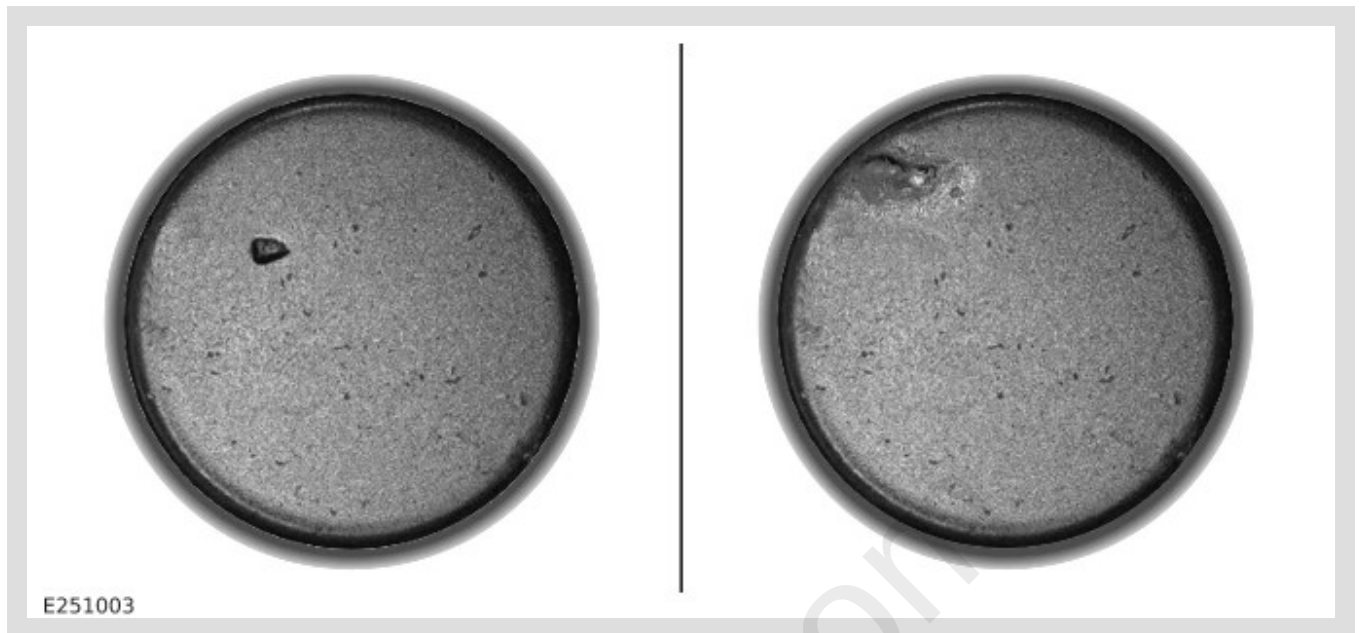
E269495

## WARRANTY COMPLIANCE AND PROCEDURES IN RELATION TO PARKING AID SENSORS SUFFERING FROM CORROSION DUE TO STONE CHIPPING

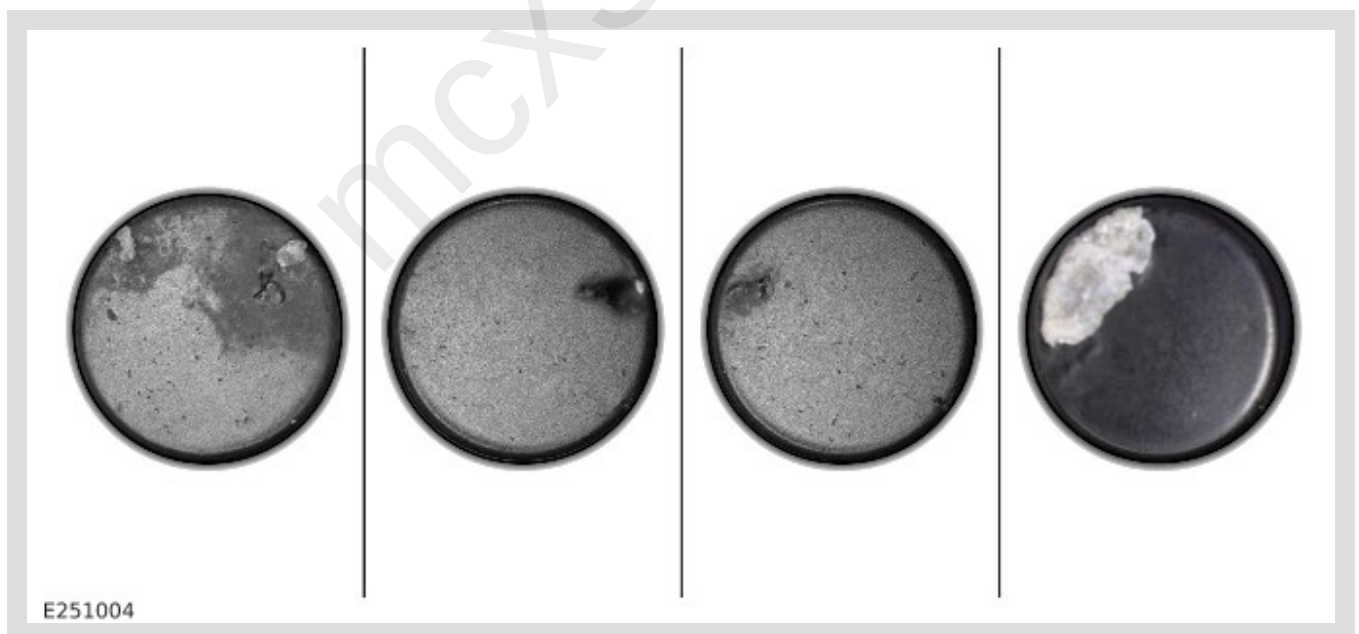
Where there is clear evidence that a parking aid sensor has sustained damage due to stone chipping or other impact damage that has resulted in corrosion and subsequent malfunction, retailers should note that this form of damage is regarded as wear and tear and, therefore rectification of this damage is **NOT** claimable under any of the vehicle warranties. Retailers are referred to Section B1.45 (Guide To Warranty Terms And Conditions - General Items - Stone Chips/Paint Damage) in the Global Warranty Compliance And Procedures Manual, which can be found in the Warranty Manual section of the Retailer Standards and Training Documents on TOPlx. Further information can also be found in Section A1.7 (Warranty Terms And Conditions - Summary of Vehicle Warranty - What is Not Covered By The Vehicle Warranty).

## GUIDANCE FOR CORRECT IDENTIFICATION OF STONE CHIP DAMAGE AND RESULTING CORROSION

The image below shows clearly that an impact from a stone chipping or another object has pitted the surface of the parking aid sensor. The pits/indentations should also be detectable by feeling the surface of the sensor and checking the surface profile for indentations. This kind of damage would **NOT** be covered by vehicle warranty.



If left untreated, the damage to the face of the sensors caused by stone chips can cause corrosion to the painted surface of the parking aid sensor. The image below shows four examples of this form of corrosion. Note how, if the surface of the sensor appears to look like a crater, then this indicates that the corrosion has occurred as a result of earlier damage from stone chipping. This kind of damage would **NOT** be covered by vehicle warranty.



| DIAGNOSTIC TROUBLE CODE(S) (DTC)<br>INDEX |  |
|-------------------------------------------|--|
|-------------------------------------------|--|

For a list of Diagnostic Trouble Code(s) that could be set on this vehicle, please refer to Section 100-00. REFER to: [Diagnostic Trouble Code Index - DTC: Near Field Sensing Module \(NFSM\)](#) (100-00 General Information, Description and Operation).

cmljaGFyZG1vcnRvbjsyMDIwLTA5LTE4VDA2OjQ0OjM0LjcwNFo7OTAuMTk5LjE5MS4xMTc7