| Technical Service Bulletin |
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| GROUP | NUMBER |
|------------------------|---------------------------------|
| Body Electrical | 20-BE-006H-1 |
| DATE | MODEL(S) |
| September, 2020 | Elantra (ADa) Santa Fe (TMa) |

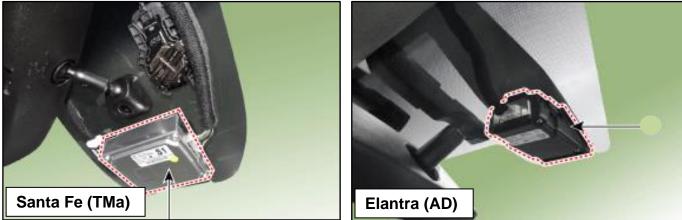
FRONT VIEW CAMERA REPLACEMENT

This TSB supersedes TSB# 20-BE-006H to expand the affected vehicles date range.

Description: Certain 2019-2020MY Santa Fe and 2018-2020MY Elantra equipped with the front multifunction camera may exhibit one or more of the following warnings on the instrument cluster; Lane Keep Assist System (LKAS), Front Collision Avoidance Assist (FCA), High Beam Assist (HBA), Smart Cruise Control (SCC), and Autonomous Emergency Braking (AEB). This bulletin describes the procedure to replace the front camera/ multi-function camera.

NOTE: When the Warning Indicator Message turns ON, the diagnostic code C1604 (ECU Hardware Error) or C1606 (CAN Time out - BCM & ADM or ECU Software – Error) will be triggered.





Applicable Vehicles: Certain 2018-2020 MY Elantra (ADa) produced from 8/31/18 - 9/15/20 and 2019-2020 MY Santa Fe (TMa) produced from 5/23/18 - 9/14/20 equipped with the front view camera.

FRONT VIEW CAMERA REPLACEMENT

Parts Information:

| Model | PART NAME | PART NUMBER | QTY |
|----------------------|--------------------------|-------------|-----|
| Elantra (ADa) | UNIT ASSY-FR VIEW CAMERA | 99211-F2000 | 1 |
| Santa Fe (TMa) | UNIT ASSY-FR VIEW CAMERA | 99211-S2000 | 1 |

Special Service Tools:

| Special Service 100 | | | |
|-------------------------|-------------|---|-------|
| SPECIAL SERVICE TOOL | PART NUMBER | DESCRIPTION | РНОТО |
| Calibration Target | 09964-C1100 | The calibration target provides front camera alignment verification. Additonal calibration target tool can be order through Bosch at (866) 539-4248. | |

Warranty Information:

| MODEL | OP CODE | OPERATION | OP TIME | CAUSAL PART | NATURE CODE | CAUSE CODE |
|----------------------|----------|--|---------|----------------|----------------|---------------|
| Elantra (ADa) | 00DA06R2 | Camera Replacement + Recalibration | 0.4 M/H | 99211-F2000 | I3N | ZZ1 |
| Santa Fe (TMa) | 00DA06R1 | Camera Replacement + Recalibration | 0.5 M/H | 99211-S2000 | I3N | ZZ1 |

NOTE 1: Submit Claim on Campaign Claim Entry Screen. **NOTE 2:** If a part is found in need of replacement while performing the repair for this TSB, and the affected part is still under warranty, submit a separate claim using the same Repair Order. If the affected part is out of warranty, submit a prior approval request for goodwill consideration prior to performing the work.

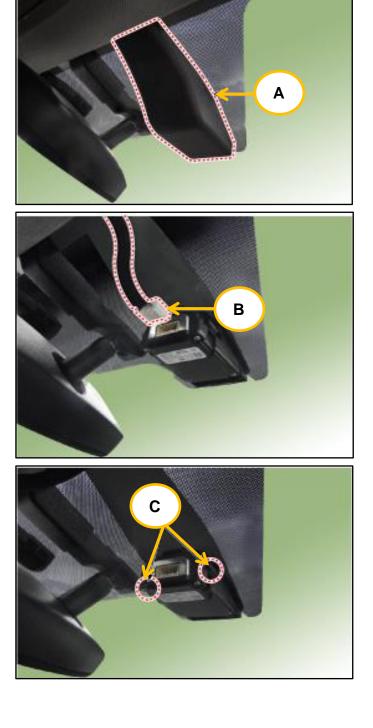
Service Procedure:

A. Elantra (ADa) Front Camera Disconnection

1. Remove the front view camera unit cover (A).

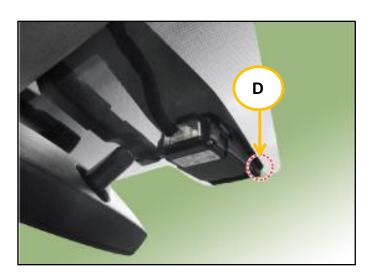
2. Disconnect the front view camera unit connector (B).

3. Disengage the mounting bracket, and remove the front view camera unit (C).



B. Elantra (ADa) Front Camera Installation

 Align the front view camera with the mounting bracket using the forward edge point (D). Re-engage the mounting bracket.

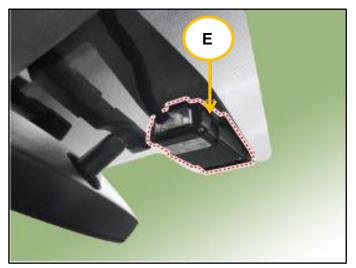


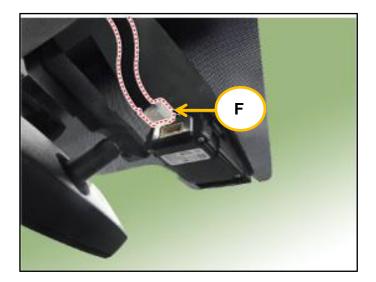
2. Engage the snaps and pivot the camera upwards to lock the camera in place (E).



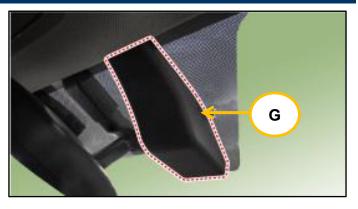
A 'clicking' sound will signal that the camera is fully seated.

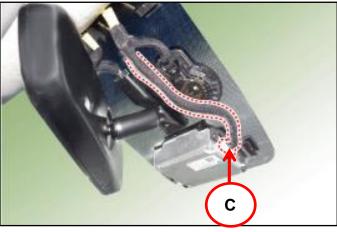
3. Connect the front view camera unit connector (F).

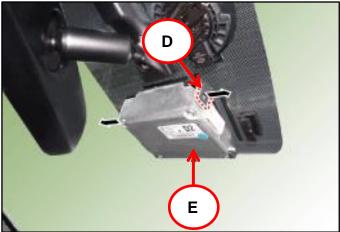




4. Attach the front view camera unit cover (G).







- C. Santa Fe (TMa) Front Camera Disconnection
- 1. Remove the mirror wiring cover (A) and rain sensor cover (B).

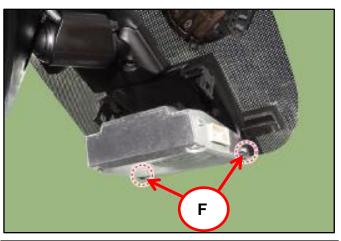
2. Disconnect the front view camera connector (C).

3. Separate the fixed points of the coupler (D) and remove the front view camera (E).

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D. Santa Fe (TMa) Front Camera Installation

1. Align the front view camera to the reference points (F).



- G
- 2. Apply force to lock the camera in place (G).

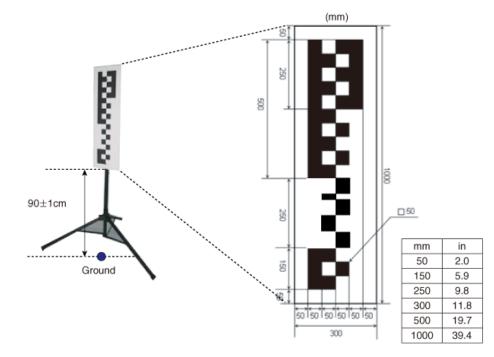


A 'clicking' sound will signal that the camera is fully seated.

3. Reassemble all parts in reverse order of removal.

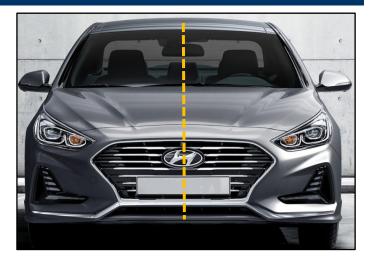
E. Service Point Target Auto Calibration

1. Install the calibration target as displayed in the reference picture.

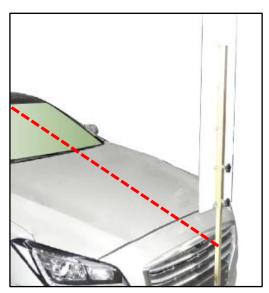


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2. Use the Hyundai emblem to determine the vehicle centerline.







3. Place the calibration target in front of the vehicle centerline.

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4. Access the Hyundai GDS-M.

Select S/W Management.



| S/W Management | |
|--|------------|
| Systems Components | Unfold All |
| = variant county | 9 |
| Radar Sensor Alignment (SCC/AEB) | |
| Airbag(Event #1) | |
| Airbag(Event #2) | |
| Occupant Classification System | |
| Air Conditioner | |
| Motor Driven Power Steering | |
| Rear View Monitor | |
| Blind-Spot Collision Warning | |
| Front View Camera | • |
| System Identification | |
| Variant Coding | E |
| SPTAC Calibration | |

5. Select Front View Camera

Select STPAC Calibration.

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6. Verify the steps listed in the **Procedure** section have been performed.

Select OK.

7. Close Range Target Position Setting

Use a tape measure to align the calibration target with the vehicle. The target must be aligned to the GDS-M specifications.

Select **OK** when complete.

| SPT/ | AC Calibration] |
|---|---|
| 1 391/ | |
| | ervice calibration is required when the: windshield and, or, Front Ca s/LDWS) have been removed or replaced. |
| | ront View Camera (LDWS/LKAS) module should be programmed w hicle variant coding information before service calibration. |
| Proce | dure |
| press | ke sure the vehicle is unloaded, steering wheel is centered, tire ures and front end alignment have been set to proper specification e proceeding with calibration. |
| | ify the correct windshield is installed and cleaned with no blockage mera's field-of-view (FOV). |
| 3) Loc | cate the centerline of the vehicle on a level surface. |
| 4) Wh | en all conditions are met, select [OK] to continue. |
| | |
| | |
| | |
| | OK Cancel |
| | |
| | S/W Management |
| | S/W Management |
| I SPTAC | C Calibration |
| I SPTAC | |
| SPTA | C Calibration |
| SPTAC | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the |
| SPTA(SPTA) Close r 1. The l ground | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the |
| SPTAC SPTAC Close r 1. The I ground 2. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the |
| SPTAC SPTAC Close r 1. The I ground 2. The S 3. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the SST should be within ± 1.96" (± 5cm) of the vehicle's centerline. |
| SPTAC SPTAC Close r 1. The I ground 2. The S 3. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the SST should be within ± 1.96" (± 5cm) of the vehicle's centerline. SST should be 3.94" (10cm) from the center of the front bumpe |
| SPTAC SPTAC Close r 1. The I ground 2. The S 3. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the SST should be within ± 1.96" (± 5cm) of the vehicle's centerline. SST should be 3.94" (10cm) from the center of the front bumpe |
| [SPTA Close r 1. The I ground 2. The S 3. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the SST should be within ± 1.96" (± 5cm) of the vehicle's centerline. SST should be 3.94" (10cm) from the center of the front bumpe |
| SPTAC SPTAC Close r 1. The I ground 2. The S 3. The S | C Calibration C Calibration] ange target position setting bottom of the SST should be 35.4" ±.39" (90cm ± 1cm) from the SST should be within ± 1.96" (± 5cm) of the vehicle's centerline. SST should be 3.94" (10cm) from the center of the front bumpe |

ок

S/W Management

Cancel

8.



Far Range Target Positioning Setting

Use a tape measure to align the calibration target with the vehicle. The target must be aligned to the GDS-M specifications.

Select **OK** when complete.

| | S/W M | anagement |
|------------------|--------------------------------|---|
| SPTA | C Calibration | |
| [SPTA | C Calibration] | |
| Far ran | ge target position setting | |
| 1. The ground | | 35.4" ±.39" (90cm ± 1cm) from the |
| 2. The | SST should be within ± 1.96" | (± 5cm) of the vehicle's centerline. |
| 3. The bumpe | | $1m \pm 5cm$) from the center of the front |
| 4. Whe | n all conditions are met, sele | ct [OK] to begin calibration. |
| | | |
| | | |
| | | |
| | | |
| | | |
| | ОК | Cancel |
| | | |

FRONT VIEW CAMERA REPLACEMENT



Far Range Target Position Setting

| l | S/W Management |
|---|--|
| | SPTAC Calibration |
| | • [SPTAC Calibration] |
| | Correction has been completed. |
| | Camera Horizon Calibration Result : 8 Pixel |
| | Camera Yaw Calibration Result : -7 Pixel |
| | Camera Grabbing Shift Calibration Result : 0 Pixel |
| | Camera Roll Calibration Result : 0 rad |
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9. If the calibration was performed correctly, a confirmation screen will appear.

Select OK.

If the calibration was not performed correctly, perform the procedure again until the target position is aligned properly.

- 10. Please verify that LKAS, FCA, HBA, SCC, AEB warnings and function conditions do not exist on the instrument cluster.
- 11. The service procedure is now complete.