# Warning – Power Running Boards Status – CGEA1.3

## Functional Description

The purpose of the warnings contained within this STSS is to inform the driver about the status of the running boards.

There are two warnings associated with this feature:

1. A fault warning indicating a malfunction in the running boards
2. A warning notifying the driver that the vehicle cannot be driven until the running boards have been stowed.

The second warning is required due to a regulation in EU countries (ECE 107) that prohibit a vehicle from being driven while the running boards are deployed. The vehicle can be driven only after the running boards have been stowed away for the drive cycle.

The Power Running Boards warnings function correlates the PwStepMsgTxt\_D\_Rq signals from the RBM and Operational\_Mode to either activate or deactivate the warning messages on the cluster display.

## Interfaces

### Interface Context Diagram (I/O Block Diagram)

Power Running Boards Status Warnings Context Diagram



### Inputs

#### IR-REQ-343856/A-INTERNAL:

Running\_Board\_Cfg

Operational\_Mode

#### MUX signal on CAN

##### SIG-REQ-343851/A-PwStepMsgTxt\_D\_Rq Signal

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Signal Name** | **Size**  **(bits)** | **Detail** | **Units** | **State Encoded** | **Min.** | **Max.** |
| PwStepMsgTxt\_D\_Rq | 2 |  | SED |  | 0 (0x0) | 3 (0x3) |
|  |  | No\_Message |  | 0x0 |  |  |
|  |  | Drive\_Inhibited |  | 0x1 |  |  |
|  |  | Malfunction |  | 0x2 |  |  |
|  |  | Reserved |  | 0x3 |  |  |

### IR-REQ-343863/A-Outputs

* + - * Power\_Step\_Fault\_MC\_Warn\_Status\_Flag, which is used to control the state of the warning message.
      * Drive\_Inhibited\_MC\_Warn\_Status\_Flag, which is used to control the state of the warning message.
      * Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag, which is used to control the state of the chime to the Chime Arbitrator.
      * Message\_Center\_Informational\_Chime\_Status\_Flag, which is used to control the state of the chime to the Chime Arbitrator.

## Function/Performance

### F-REQ-343862/A-Operational Modes

|  |  |
| --- | --- |
| **Mode** | **Operational Mode** |
| Sleep Mode | Power Running Boards Warnings Inactive |
| Limited Mode | Power Running Boards Warnings Inactive |
| Normal Mode | Power Running Boards Warnings Active / Inactive |
| Crank Mode | Power Running Boards Warnings Active / Inactive |

### Voltage Levels

Refer to the Cluster Features table located in the Operational Modes and Voltage Range Strategies section in this SPSS.

### Human-Machine Interface

#### Visual

##### Indicator Graphics / Display Format

Message Center Text Warning Messages as defined in section F-REQ-343854 of this document.

##### Indicator Color Coordinates

Reference section COLOR & ILLUMINATION REQUIREMENTS (GRAPHICS).

#### F-REQ-343857/A-Audio

As per F-REQ-343854 and Refer to Audio Section in Chimes & Chime Arbitrator SPSS Section.

#### Switch Control Logic

None.

### PFM-REQ-343861/A-System Accuracy

Within 100 msec of receiving a message that results in a change of state the cluster will update the output flag to the proper state.

### Operation: Performance and Functional

#### Subsystem Algorithm Flowchart / State Diagram

##### F-REQ-343852/A-Power Running Boards Diagnostic Routine Diagram



##### F-REQ-343853/A-State Matrix for Power Running Board Warnings MC Status Flags

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Running\_Board\_Cfg | Operational\_  Mode | PwStepMsgTxt\_D\_Rq  Signal | Drive\_Inhibited\_  MC\_Warn\_Status\_Flag | Power\_Step\_Fault\_  MC\_Warn\_Status\_Flag |
| Enabled (0x1) | Normal or Crank | Drive\_Inhibited (0x1) | Active | Inactive |
| Malfunction (0x2) | Inactive | Active |
| Declared Missing as per 1.4.1 | Inactive | Active |
| All Other Cases | | | Inactive | Inactive |

##### F-REQ-343854/A-Power Running Board Warning MC Status Flags to MC Message IDs

|  |  |  |
| --- | --- | --- |
| **MC Status Flag** | **Mc Warning Message ID** | **Active Chime\_Status\_Flag** |
| Drive\_Inhibited\_MC\_Warn\_Status\_Flag | W3407 | Message\_Center\_Informational\_  Chime\_Status\_Flag |
| Power\_Step\_Fault\_MC\_Warn\_Status\_Flag | W3406 | Message\_Center\_Soft\_Warning\_  Chime\_Status\_Flag |

#### Operation Description (supports algorithm flowchart /state diagram)

* For definition of how the Message Center arbitrates and displays Active warnings, see the Warning / Alert Display Logic Diagram, located in the Message Center – X Display with W Button Interface section of this SPSS (where X and W are appropriate values in this document).

* The warnings shall only be activated when Running\_Board\_Cfg is set to “Enabled” (0x1).

#### FS-REQ-343867/A-Function Safety Classification (EMC)

Class B

#### Memory Storage

##### NVM-REQ-343855/A-Parameters Table

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Description** | **Value at**  **Battery Connect** | **Value at**  **Module Wake-up** |
| Drive\_Inhibited\_MC\_Warn\_Status\_Flag | Output display status flag used to activate warning. | Inactive | Inactive |
| Power\_Step\_Fault\_MC\_  Warn\_Status\_Flag | Output display status flag used to activate warning. | Inactive | Inactive |
| PwStepMsgTxt\_D\_Rq Signal | CAN signal sent from the RBM module. | No\_Messages (0x0) | No\_Messages (0x0) |
| Running\_Board\_Cfg | State Indicator for feature presence controlled via CAN at EOL at VO plant. Defaulted to DISABLED at supplier manufacturing. | Use Stored Value | Use Stored Value |
| Message\_Center\_Informational\_Chime\_Status\_Flag | Used to control the state of the chime to the Chime Arbitrator | Inactive | Inactive |
| Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag | Used to control the state of the chime to the Chime Arbitrator | Inactive | Inactive |
| Operational\_Mode | 4 state indicator for cluster operational mode. | Limited | Limited, Normal or Crank |

#### Prove Out

None.

#### Reconfigurable Telltale

None

#### Message Center Message

See Section 1.3.5.1 for state tables and F-REQ-343854 for Warning Message ID #s.

## Error Handling

### Missing Message Strategy

The signals will be declared missing as per the Diagnostics section of this SPSS.

DTCs states and history will be determined as per the Diagnostics section of this SPSS.

#### SR-REQ-343858/A-Configuration

If Running\_Board\_Cfg = 0x0 (Disabled), the cluster shall never log a missing message DTC due to this feature.

## Diagnostics

### Self Test

None.

### Engineering Test Mode

None.

### Part II Performance

#### DCR-REQ-343859/A-DID $DExx

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Block**  **Num** | **Block Description** | **Size (bits)** | **Byte(s)** | **Bit(s)** | **State: Description** | **"0"** | **"1"** | **Default** | **Comments/**  **Information** |
| PACKETED BLOCKS | |  |  |  |  |  |  |  |  |
| $xx | Option Content (B&A) | 1 | \* | \* | Power Running Boards | Disabled | Enabled | Disabled | Disabled means the feature is not present in the vehicle. |
|  | \*Byte and bit location to be identified in Part II Specification for this cluster. | | | | |  |  |  |  |

#### DTC-REQ-343860/A-Supported Diagnostic Trouble Codes (DTCs)

DTCs shall be logged as per the diagnostics section of this SPSS.\*

|  |  |
| --- | --- |
| **DTC** | **Description** |
| C24400 | Lost Communication With RBM (PwStepMsgTxt\_D\_Rq missing for 5 seconds) |

## Reference Specifications

IS-0001 WARNINGS/INDICATORS/DISPLAYS PROVEOUT

IS-0046 INSTRUMENTATION MATERIAL RESISTANCE TO CLEANING

IS-0052 OPERATING VOLTAGES - FUNCTIONAL/PERFORMANCE

IS-0069 FUNCTIONAL IMPORTANCE CLASS

IS-0324 WINDSHIELD & OTHER REFLECTIONS

IS-0327 WARNING INDICATOR EVALUATION

IS-0379 NORTH AMERICAN WARNINGS AND INDICATORS STRATEGY

IL-0021 CRAFTSMANSHIP - DISPLAYS

IL-0023 CLARITY/LEGIBILITY/READABILITY

IL-0025 INTERIOR ILLUMINATION INTENSITY

IL-0027 VISUAL CONTRAST

IL-0043 OPERATIONAL ENVIRONMENT FUNCTIONALITY

IL-0045 COLOR

IL-0048 ILLUMINATION ACCEPTABILITY

03-0661  PLACEMENT: CONTROL AND DISPLAY LOCATIONS

03-0662  PLACEMENT: LOGICAL GROUPING FUNCTION AND USAGE

03-0664  PLACEMENT: DOWN VISION TO COMPONENTS WITH HIGH VISUAL DEMAND

03-0665  PLACEMENT: EXPECTED LOCATIONS OF CONTROLS AND DISPLAYS VDS

03-0670  INTERIOR VISIBILITY

03-0671  INTERIOR VISIBILITY: REFLECTIONS FROM COMPONENTS & SURFACES

03-0672  INTERIOR VISIBILITY: REFLECTIONS IN DISPLAYS

03-0673  INTERIOR VISIBILITY: VISUAL OBSCURATIONS

03-0674  INTERIOR VISIBILITY: ILLUMINATION CONTROLS / DISPLAYS

03-0675  INTERIOR VISIBILITY: VEILING GLARE

03-0677  INTERIOR VISIBILITY: SUNLIGHT WASHOUT

03-0681  IDENTIFICATION: CHARACTER AND SYMBOL SIZE

03-0682  IDENTIFICATION: LEGIBILITY

03-0685  IDENTIFICATION: SYMBOLS,  ABBREV FOR CONTROL

03-0721  LOGIC OF OPERATION: OPERATIONAL STEREOTYPES

03-0722  LOGIC OF OPERATION: INTERPRETATION

03-0723  LOGIC OF OPERATION: USE OF SYSTEMS WITH VISUAL DISPLAYS

## Revision History

**STSS Module Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision Level** | **Name** | **Change Description** | **Date** |
| 1.0 | V. Patel | Initial revision.  (Feature owners: Keith Jenkins, Ahmed Elkarim) | 7/15/2014 |
| 1.1 | ilopezla | This Update is to inform which Chime Status Flags are associated with this warning as per Global\_Msg\_List\_ver32\_Released\_6\_24\_2015 (all changes are highlighted in light blue)  **Section 1.2.1** Figure 1- Added-  Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag  Message\_Center\_Informational\_Chime\_Status\_Flag  **Section 1.2.3**  Added  Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag  Message\_Center\_Informational\_Chime\_Status\_Flag  **Section 1.3.5** Update Table 1.2  Changed column’s title from “Chime” to “Active Chime\_Status\_Flag”  Deleted “Per Global Message list” and  Added “Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag” or “Message\_Center\_Informational\_Chime\_Status\_Flag” as per Global Message List.  **Section 1.3.5.4** Added-  Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag  Message\_Center\_Informational\_Chime\_Status\_Flag  To Memory Storage Table | 1/11/2016 |
| 1.2 | V. Patel | Deleted the invalid data DTC as it is not required for this implementation. This new CAN signal does not have any embedded invalid data state. | 5/17/2016 |
| 1.3 | V. Patel | Initial release for VSEM requirements migration | 2/26/2019 |