## Creep Groan Evaluation

**Pre-conditioning:**
- New setup: [ ]
- Mixed: [ ]
- Mixed: [ ]

**Mileage (active driver assistance systems, opening of side windows, ...)**

**May 2016**

**Start**
- Fully loaded
- Setup Km: [ ]

**Prototype VDA 314 Caliper Pre-conditioning:**
- Brake Disc Pad

**Optional Requirements**
- Minimum Requirements
- Wheel Rim
- Disc
- Caliper
- Other: (active driver assistance systems, opening of side windows, ...)

**Minimum Requirements**

### 4.2 Cold Brake*: directly after rest period
- Level road (automatic gear, only)
- at a slope [%]
- Shim: [ ]
- Chamfer: [ ]
- Compress: [ ]
- Visual assessment:

### 4.3 Warm brake*: T_Disc 50–100°C
- Level road (automatic gear, only)
- at a slope [%]
- Shim: [ ]
- Chamfer: [ ]
- Compress: [ ]
- Visual assessment:

**Module**

<table>
<thead>
<tr>
<th>Pre-cond.</th>
<th>Test conditions</th>
<th>Vehicle and noise data</th>
<th>Assessment:</th>
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**Pre-cond.**
- T_ambient (°C)
- RH [%]
- Rest period (h)

**Test conditions**
- T_ambient (°C)
- RH [%]
- Weather cond.
- Backgro nd noise level: (dBA)
- Idle speed (1/min)**
- Axle
- T_Disc (°C)
- P_max (bar)
- Sound pressure (dBA)
- Subj. rating overall [1–10]
- Loudness:
- Ductility: (especially: tonal noise, drumming noise, rim howl, ...)

**Assessment:**
- Severe pressure application*:
- p = 80 – 100bar prior to the test
- T_Disc < 50°C, like minimum requirements, however, brake applied for 10 bis 15s
- T_Disc = 200 – 300°C
- T_Disc < 50°C, outer friction ring of each brake disc fully covered with tab water
- T_Disc < 50°C, outer friction ring of each brake disc fully covered with tab water + rest period of 6h
- T_Disc < 50°C, as 5.12, however, with salt water (5 mass-% NaCl)

**Optional Requirements**
- 19.5 Early-Morning**: T_Disc < 10°C
- 19.2 Gear set to "D" at a slope*: T_Disc < 50°C, gear set to "D" at a slope
- 19.3 Warm engine in *D***: T_Disc < 50°C, gear set to "D", level road, engine running for 20min
- 19.4 Reverse*: T_Disc < 50°C, vehicle backwards oriented
- 19.5 Quick pedal release*:
- 19.6 With axle switch-off*:
- 19.7 Automated brake release*:

*5 tests per module; **fully electric mode = 0

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**Test conditions**

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- **Weather cond.**
  - Level road (automatic gear, only)
  - at a slope %

- **Background noise level (dBA)**
  - at a slope %

- **Idle speed [1/min]**
  - at a slope %

- **Vehicle (Avie)**
  - FA
  - RA

- **T<sub>max</sub> [°C]**
  - 5
  - 10
  - 15

- **P<sub>rep</sub> [bar]**
  - at a slope %

- **Sound pressure [dB<sub>A</sub>]**
  - at a slope %

- **Loudness:**
  - Loud
  - Audible
  - Hardly audible
  - Barely present

- **Ductility:**
  - Loud
  - Audible
  - Hardly audible
  - Barely present

- **Subject rating overall [1-10]:**
  - at a slope %

**Optional Requirements**

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- **Weather cond.**
  - Level road (automatic gear, only)
  - at a slope %

- **Background noise level (dBA)**
  - at a slope %

- **Idle speed [1/min]**
  - at a slope %

- **Vehicle (Avie)**
  - FA
  - RA

- **T<sub>max</sub> [°C]**
  - 5
  - 10
  - 15

- **P<sub>rep</sub> [bar]**
  - at a slope %

- **Sound pressure [dB<sub>A</sub>]**
  - at a slope %

- **Loudness:**
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- **Ductility:**
  - Loud
  - Audible
  - Hardly audible
  - Barely present

- **Subject rating overall [1-10]:**
  - at a slope %

**Measurement Equipment Minimum Requirements**

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<th>Sound level meter</th>
<th>Vehicle center position</th>
<th>Inv. no.:</th>
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- **Thermocouple:** min. one per axle
  - FA
  - FL
  - RA
  - RL

**Comment:**

- (especially: tonal noise, drumming noise, rim howl, ...)

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