

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-18446-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 20.05.2020

Date of issue: 20.05.2020

Holder of certificate:

mg-sensor GmbH
Knorrstraße 147, EG-351 Messtechnik
80788 München

Tests in the fields:

Testing of Crash Test Dummies (ATD), used for passive vehicle safety dynamic testing

The testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standards or equivalent testing methods listed here with different issue dates. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

This document is a translation. The definitive version is the original German annex to the accreditation certificate.

Abbreviations used: see last page

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

Annex to the accreditation certificate D-PL-18446-01-00

1. Hybrid III Family

1.1. HIII Children

| | |
|--------------------------------------|---|
| 49 CFR Part 572 Subpart R 2001-10 | CRABI 12 Month (CRABI 12-Month-Old Infant, Alpha Version) 572.152 - Head drop front 572.152 - Head drop rear 572.153 - Neck pendulum flexion and extension 572.154 - Thorax impact |
| 49 CFR Part 572 Subpart P 2002-01 | HIII 3 Year Dummy (3-Year-old Child Crash Test Dummy, Alpha Version) 572.142 - Head drop 572.143 - Neck pendulum flexion and extension 572.144 - Thorax impact 572.145 - Torso flexion |
| 49 CFR Part 572 Subpart N 2011-06 | HIII 6 Year Dummy (Six-Year-old Child Test Dummy, Beta Version) 572.122 - Head drop 572.123 - Neck pendulum flexion and extension 572.124 - Thorax impact 572.125 - Torso flexion 572.126 - Knee impact (left and right) |

1.2. Hybrid III 5th Percentile Female

| | |
|---|---|
| 49 CFR Part 572 Subpart O 2002-09 | HIII 5th (Hybrid III 5th Percentile Female Test Dummy, Alpha Version) 572.132 - Head drop 572.133 - Neck pendulum flexion and extension 572.134 - Thorax impact 572.135 - Torso flexion 572.136 - Knee impact (left and right) |
| SAE Engineering AID 25 1999-07 SAE J2876 2010-01 | User's Manual for the Small Adult Female Hybrid III Test Dummy (Knee Slider Test) |
| SAE J2878 2010-01 | Low Speed Thorax Impact Test Procedure for the HIII 5F Dummy (3 m/s Thorax impact) |

-Translation-

Annex to the accreditation certificate D-PL-18446-01-00

1.3. Hybrid III 50th Percentile Male

| | |
|--|---|
| 49 CFR Part 572 Subpart E 2011-11 | HIII 50th Male Dummy 572.32 - Head drop 572.33 - Neck pendulum flexion and extension 572.34 - Thorax impact 572.35 - Knee impact (left and right) 572.35 - Hip range of motion |
| SAE J2779 2015-07 | Low Speed Thorax Impact Test Procedure for the HIII 50th Male Dummy (3 m/s Thorax impact) |
| SAE Engineering AID 23 1998-06; SAE J2856 2009-09 | User's Manual for the 50th percentile male hybrid III test dummy Section II - Knee Slider Test |
| ECE-R 94 Anhang 10 ÄS 02 2013-07 | Certification procedure for the dummy lower leg and foot (Foot impact) |

1.4. Hybrid III 95th Percentile Male

| | |
|-----------------------------------|--|
| SAE J2860 2012-09 | User's Manual for the Hybrid III Large Male Test Dummy" |
| SAE Engineering AID 26 2012-09 | HIII 95th 4.1 - Head drop 4.2 - Neck pendulum flexion and extension 4.3 - Thorax impact 4.4 - Knee impact left and right 4.5 - Knee impact left and right |

2. THOR Family

| | |
|---|--|
| THOR Qualification Procedures 2016-09 | THOR-M-50th (THOR 50th Percentile Male Qualification Procedures Manual) 4 - Head impact 5 - Face impact 6.6 - Neck pendulum (torsion) 6.7 - Neck pendulum flexion 6.8 - Neck pendulum extension 6.9 - Neck pendulum (torsion left + right) 7 - Upper thorax impact |
|---|--|

-Translation-

- 8 - Lower thorax impact
- 9 - Abdomen impact
- 10 - Knee impact (left + right)
- 11 - Knee slider impact (left+ right)
- 12 - Ankle eversion
- 13 - Ball of foot impact
- 14 - Heel impact

3. Side Impact Crash Test Dummy

3.1. EuroSID 2

ECE-R 95 Anhang 6 ÄS 03
2014-02

ES-2 50th Male Side Impact
5.5 - Face impact
5.6 - Neck pendulum
5.7 - Shoulder impact
5.9 - Rip drop (3tests)
5.10 - Lumbar flexion
5.11 - Abdomen impact
5.12 - Pelvis impact

49 CFR Part 572 Subpart U
2011-11

ES-2re Side Impact Crash Test Dummy, 50th Percentile Adult Male
572.182 - Head drop
572.183 - Neck pendulum
572.184 - Shoulder impact
572.185 - Rib drop (3 tests)
572.185 - Thorax without arm impact
572.186 - Abdomen impact
572.187 - Lumbar flexion
572.188 - Pelvis impact

3.2. WorldSID

W50-9900 User Manual
Rev. H
2016

WorldSID 50th (User's Manual for the Worldsid 50th percentile
Male Side Impact Dummy)
8.4 - Head drop
8.5 - Neck pendulum
8.7 - Shoulder impact
8.8 - Thorax without arm impact
8.9 - Abdomen impact
8.10 - Pelvis impact

-Translation-

Annex to the accreditation certificate D-PL-18446-01-00

3.3. SID-IIs

| | |
|--------------------------------------|---|
| 49 CFR Part 572 Subpart V 2009-08 | SID IIs BLD (SID-IIsD Side Impact Crash Test Dummy, Small Adult Female) 572.192 - Head drop 572.193 - Neck pendulum (flexion and extension) 572.194 - Shoulder impact (on certification bench) 572.195 - Thorax impact with arm (on certification bench) 572.196 - Thorax impact without arm (on certification bench) 572.197 - Abdomen impact (on certification bench) 572.198 - Pelvis impact (on certification bench) 572.199 - Iliac impact (without certification bench) |
|--------------------------------------|---|

4. Q-Dummies (Children (Q))

| | |
|---|--|
| 048-9900 User Manual Q1.5 Rev. G 2015 | Q 1.5 Years (Advanced 1.5 year old child User Manual) 8.1 - Head drop 8.2 - Neck flexion 8.3 - Lumbar flexion 8.4 - Abdomen impact 8.5 - Thorax impact frontal and lateral |
| 020-9905 User Manual Q3 Rev. G 2016 | Q 3 Years (Advanced 3 year old child User Manual) 8.1 - Head drop 8.2 - Neck flexion 8.3 - Lumbar flexion 8.4 - Abdomen impact 8.5 - Thorax impact |
| 033-9900 User Manual Q6 Rev. M 2016 | Q 6 Years (Advanced 6 year old child User Manual) 8.1 - Head drop 8.2 - Neck flexion 8.3 - Lumbar flexion 8.4 - Abdomen impact 8.5 - Thorax impact |
| 010-9900 User Manual Q 10 Rev. G 2016 | Q 10 Years (10.5 year old child User Manual) 14.1 - 14.3 - Head drop 14.4 - 14.7 - Neck flexion 14.8 - 14.10 - Lumbar flexion 14.11 - 14.13 - Thorax impact 14.14 - Shoulder impact frontal 14.15 - Pelvis impact 14.16 - Abdomen impact 14.17 - Shoulder impact lateral |

-Translation-

Annex to the accreditation certificate D-PL-18446-01-00

5. Pedestrian Safety (FMH)

| | |
|--------------------------------------|--|
| 49 CFR Part 572 Subpart L 1995-08 | FMH (Free Motion Headform) 572.102 - Head drop |
| 631/2009/EG Anlage I 2011-09 | Type-approval of motor vehicles with regard to the protection of pedestrians and other unprotected road users PART V: TEST SPECIMENS, Annex I: Certification of test specimens, Chapter 4- Head drop - D.F 4.5kg Headform Chapter 4- Head drop - D.G 3.5kg Headform |
| GTR9 2011-02 | Global Technical Regulation No. 9 "PEDESTRIAN SAFETY" Chapter 4 - Head drop (3x) |

Abbreviations used:

| | |
|-------------|---|
| ATD | Anthropomorphic Test Devices |
| CFR | Code of Federal Regulations (Office of the Federal Register, U.S. Government) |
| UN-R | Regulation of the Economic Commission for Europe |
| EG | Europäische Gemeinschaft |
| GTR | Global Technical Regulation (Arbeitsgruppe, die ISO zuarbeitet) |
| User Manual | Product documentation of ATD manufacturers (manufacturer specifications) |
| SAE | Society of Automotive Engineers |

-Translation-