

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-21330-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 25.05.2022

Date of issue: 30.05.2023

Holder of certificate:

**Ingenieurtechnische Dienstleistungen Gallus Lindner
Abteilung Prüftechnik
Im Hüttental 12, 85125 Kinding (Haunstetten)**

Tests in the fields:

Static and strength tests, hydraulic pressure swing tests, dynamic vibration tests and fatigue limit tests on parts, components and systems in vehicle construction and parts in general mechanical engineering.

Within the scope of accreditation marked with *), 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 procedures within the flexible scope of accreditation.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories. Laboratories that conform to the requirements of this standard, operate generally in accordance with the principles of DIN EN ISO 9001.

*The certificate together with the annex reflects the status as indicated by the date of issue.
The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de/en/content/accredited-bodies-dakks>.*

1 Static strength tests

1.1 Static strength tests according to standardised procedures *

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| DIN 73379 2014-07 | Road vehicles - Fuel hoses (here: <i>Section 8.5: Burst pressure</i>) |
| DIN SPEC 74106 2015-08 | Road vehicles - R744-Air-conditioning systems - Refrigerant lines and IHX in coaxial design (here: <i>Section 9.7.12: Burst pressure test</i>) |

1.2 Static strength tests according to works standards (without flexibilisation)

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| BMW QV 17006 2010-11 | Components of the cooling circuit (here: <i>Section 5.3.6: Long-term test 3000 hours</i>) |
| BMW QV 17004D 2010-08 | Coolant circuit expansion Tank (here: <i>Section 3.2.4: Leak test</i> <i>Section 3.2.5: Pressure pulse test</i> <i>Section 3.2.6: 3000 hour endurance test</i> <i>Section 3.2.7: Endurance test (collated)</i>) |
| GMW 14329 2016-06 | Performance Testing of Heater and Coolant Hoses (here: <i>Section 4.2: Burst Pressure – Heating and coolant hoses</i> <i>Section 4.3: Coolant Circulation – Flow test, Heating and Coolant hoses</i>) |
| VW TL 82316 2018-03 | R134a/R1234yf Refrigerant Lines (here: <i>Section 8.6.2: Burst pressure test</i> <i>Section 8.7: Pulse test</i> <i>Section 8.14: Vibration test</i>) |
| VW TL 52435 2016-08 | Fuel Line, Multi-Layer Pipe (here: <i>Section 6.4: Equivalent stress – fuel lines, multilayer pipe</i>) |
| VW TL 52682 2015-10 | PA66, Glass Fiber-Reinforced, for Finished Parts Carrying Coolant (here: <i>Section 6.12: Static long-term test, coolant-carrying finished parts</i>) |
| VW TL 82253 2017-09 | Fuel Line ASSYs (here: <i>Section 5.5.1: Pressure pulsation test</i>) |

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| VW TL 889 2011-05 | Coolant Expansion Tank (here: <i>Section 4: Testing - Life Test</i>) |
| VW TL 874 2014-08 | Radiator (here: <i>Section 4.7: Static temperature and pressure loading</i>) |
| VW TL 52361 2021-07 | Coolant Hoses with Aramid Reinforcement (here: <i>Section 3.9.1.2: Static long-term test</i>) |
| VW TL 52361 2016-11 | Coolant Hoses with Aramid Reinforcement (here: <i>Section 6.1.2: Static long-term test</i>) |
| VW TL 82001 2018-05 | Coolant Expansion Tank for Coolant in All-Electric Vehicles (here: <i>Section 5.2.: Service life testing</i>) |
| VW TL 82002 2018-05 | Radiator for All-Electric Vehicles (here: <i>Section 6.7.: Static temperature and pressure loads</i>) |
| Renault 32-02-017 2014-03 | Air conditioning pipes for fluids (here: <i>Section 10.2: Permeability to refrigerant fluids 134a and 1234YF</i>) |

2 Pressure tests and hydraulic pressure swing tests

2.1 Pressure tests and hydraulic pressure swing tests according to standardised procedures*

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| DIN 73411-2 1996-10 Warnvermerk 2018-07 | Cooling pipes in motor vehicles - Hoses and compounds - Part 2: Requirements, testing (here: <i>Section 3.12: Dynamic pressure test - cooling water hoses</i>) |
| DIN SPEC 74106 2015-08 | Road vehicles - R744-Air-conditioning systems – Refrigerant lines and IHX in coaxial design (here: <i>Section 9.8.5: Pulse test with temperature cycle Pressure test refrigerant hoses with oil</i>) |
| ISO 6803 2017-07 | Rubber or plastics hoses and hose assemblies - Hydraulic-pressure impulse test without flexing (here: <i>Pressure test refrigerant hoses with oil</i>) |

**2.2 Pressure tests and hydraulic pressure swing tests according to works standards
(without flexibilisation)**

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| VW TL 52682 2021-12 | PA66, Glass Fiber-Reinforced, for Finished Parts Carrying Coolant Material Requirements (here: <i>Section 5.3.1: Pressure pulse test</i>) |
| VW TL 52682 2015-10 | PA66, Glass Fiber-Reinforced, for Finished Parts Carrying Coolant Material Requirements (here: <i>Section 6.11: Pressure pulse test - coolant-carrying Finished parts</i>) |
| VW TL 82316 2018-03 | R134a/R1234yf Refrigerant Lines (here: <i>Section 8.7: Pulse test Air-conditioning lines</i>) |
| VW LAH.1EA.816.K 2019-01 | Refrigerant lines for R744 air conditioning systems (here: <i>Section 6.4.9.6: Impulse test with temperature change</i>) |
| VW TL 82002 2018-05 | Radiator for All-Electric Vehicles (here: <i>Section 6.5: Pressure pulsation resistance</i>) |
| VW TL 52361 2021-07 | Coolant Hoses with Aramid Reinforcement (here: <i>Section 3.9.1: Pressure pulsation strength</i>) |
| VW TL 52361 2016-11 | Coolant Hoses with Aramid Reinforcement (here: <i>Section 6.1.1: Pressure pulsation test</i>) |
| VW TL 874 2014-08 | Radiator (here: <i>Section 4.4: Pressure pulse resistance for quality assurance and build sample approval</i>) |
| VW LAH 1K0 130 2017-03 | Fuel Hose - Gasoline and Diesel Engine Applications (here: <i>Section 6.3.2. Durability testing</i>) |
| VW TL 52712 2016-08 | Thermoplastic Lines with Low Material Dissolution for Gasoline (here: <i>Section 6.8: Operational behavior</i>) |
| VW 96283 Porsche PTL 14052 2012-03 | Hose - Coolant hoses with reinforcement (here: <i>Section 7.1: Operating load simulation</i>) |
| BMW QV 17004 2010-08 | Coolant circuit expansion Tank (here: <i>Section 3.2.5: Pressure pulse test</i>) |
| BMW LH_11229184-000-03 2020-04 | Media line oil cooling eFTC Getr.Gen4 (here: <i>Section 5.2.2.3 Pressure threshold test</i>) |

GMW 14329 Performance Testing of Heater and Coolant Hoses
2016-06 (here: *Section 4.5: Pressure Impulse Test (PIT) - Heating and coolant hoses*)

3 Air pressure cycling tests (with superimposed movement)

VW TL 82253 Fuel Line ASSYs
2017-09 (here: *Section 5: Tests fuel line connections with air*)

VW 60562 Charge Air System - Hoses and Fittings for Use with Hose Clamps
2020-07 (here: *Section 5.2.2.1: Pressure pulsation test with components clamped in the test bed*)

VW TL 82132 Charge Air Coolers - Functional Requirements
2007-01 (here: *Section 4.1: Pressure pulse test*)

GMW 15803 Performance Test for Connections Used in Charge Air Systems
2015-04 (here: *Section 4.2.2: Pressure Vibration Temperature (PVT) Test*)

VW TL 870 Intake Manifold - Strength and Leak Tightness
2011-04 (here: *Section 3 Testing*)

4 Dynamic tests, Operational behaviour strength tests, incl. vibration tests

4.1 Dynamic tests, Operational behaviour strength tests, incl. vibration tests according to standardised procedures *

DIN SPEC 74106 Road vehicles - R744-Air-conditioning systems -
2015-08 Refrigerant lines and IHX in coaxial design
(here: *Section 9.8.1: Torsional test*
Section 9.8.2: Engine rock
Section 9.8.3: Resonance vibration test
Section 9.8.4: Low-temperature resistance at 20 000 load cycles)

4.2 Dynamic tests, Operational behaviour strength tests, incl. vibration tests according to works standards (without flexibilisation)

Renault 31-05-103-A HP and LP pipes of the air conditioning compressor system
2011-06 HP hose of hydraulic power steering
Characterisation and vibration endurance
(here: *Section 4: Operation procedure*)

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| Renault 32-02-028 2010-11 | High Pressure and Low Pressure Pipe Equipped with Air Conditioning Circuit Compressor High pressure pipe for hydraulic power assisted steering Endurance on pipes subjected to engine displacements (here: <i>Section 4: Procedure</i>) |
| Renault 32-02-017 2014-03 | Air conditioning pipes for fluids - 134A and 1234YF refrigerants (here: <i>Section 11.2: Tightness</i>) |
| Renault 37-06-097 2007-06 | Measurement of the stiffness matrix of air conditioning pipes on a bench (here: <i>Section 5: Realisation of the test</i>) |
| VW TL 82316 2018-03 | R134a/R1234yf Refrigerant Lines (here: <i>Section 8.14: Vibration test</i>) |
| BMW GS 97073-1 2015-07 | Environmental tests - Vibration test - Testing of body attachment parts (here: <i>Section 5: Testing requirements</i> <i>Section 6: Superimposition with temperature profile</i>) |
| BMW GS 97073-2 2012-07 | Environmental tests - Vibration test - Testing of engine attachment parts (here: <i>Section 4: Component tests</i>) |
| BMW QV64005 2018-03 | Refrigerant lines (here: <i>Section 3.25: fatigue limit tests during relative movement</i>) |
| Ford ES DG93-8260-AA 2016-11 | Engineering Specification - Coolant Hoses and Clamps (here: <i>Section 3.15: PVT/Durability (Pressure, Vibrations & Temperature)</i>) |
| MBN 10438 2015-01 | Road Vehicles Mechanical Vibration Requirements (Random) Vehicle Body Mounted Components on Passenger Cars (here: <i>Section 5: Testing</i>) |

Abbreviations used:

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| BMW QV | Works standard of BMW AG Bayerische Motorenwerke |
| DIN | German Institute for Standardisation |
| EN | European Standard |
| ES XXXX | Ford works standard |
| GMW | General Motors works standard |
| IEC | International Electrotechnical Commission |
| ISO | International Organization for Standardization |
| MBN | Works standard of Daimler AG - Mercedes Benz |
| Renault | Renault works standard |
| SPEC | DIN Technical Rule |
| VW TL | Works standard from VW AG Volkswagen |