



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Link Engineering Company
20715 West Happy Valley Road
Wittmann, AZ 85361

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the fields of

TESTING & CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of tests and calibrations to which this accreditation applies.

ACT-1997.02
Certificate Number



ANAB Approval

Certificate Valid: 11/30/2017 - 10/21/2019
Version No. 002 Issued: 11/30/2017



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Link Engineering Company

20715 West Happy Valley Road
Wittmann, AZ 85361

Jerry Shavrnoch j.shavrnoch@linkeng.com

Valid to: **October 21, 2019**

Certificate Number: **ACT-1997.02**

TESTING

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Full Brake System	ECE-R13, ECE-R13H, ECE-R78, ECE R90, FMVSS 105, FMVSS 122, FMVSS 135	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Performance	Thermal, High Speed, AMS Fade Test, Vacuum Boosted, Trailer Testing, Death Valley, Link Brake Balance, N.C.A.P., Customer Specification	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Durability	Detroit City Traffic, Phoenix City Traffic, Detroit Suburban Traffic, Phoenix Suburban Traffic, Huron Detroit Metropolitan Traffic, Customer Specification	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Brake Wear	Los Angeles City Traffic, Detroit City Traffic, Phoenix City Traffic, Detroit Suburban Traffic, Phoenix Suburban Traffic, Huron Detroit Metropolitan Traffic, Customer Specification	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Noise	Los Angeles City Traffic, Phoenix City Suburban Traffic, Marquette City Traffic, Customer Specification	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Thermal Failure	Fluid Boil, Death Valley	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing



Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Stopping Distance, Brake Line Pressure, Pedal Force, Pedal Travel, Deceleration, Brake Pad Temperature, Rotor Temperature	Customer Specification	Friction Materials/ Brake Hardware/ Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Fuel Economy, Coast-down, Fuel Consumption	SAE J1321, SAE J2263	Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
NVH Vehicle Testing, Interior/Exterior Noise Studies, Pass by Noise	SAE J986	Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Thermal HVAC, Cooling Systems, Cold Chamber, Performance, Durability	Customer Specification	Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Wheel and Tire, Tire Blow-out, Structural Integrity	FMVSS 110	Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Stability Control System	FMVSS 126	Full Vehicle	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing

CALIBRATION

Calibration - Mass

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure Sensors	(0.1 to 206 84.27) kPa	(0.020 7+0.000 43P) kPa	Procedure C-5.5-L3-057 Fluke Pressure Calibration System
Vacuum Sensors	(0.5 to 711.2) mmHg	(0.117 + 0.000 02V) mmHg	Procedure C-5.5-L3-051 Fluke Pressure Calibration System



CALIBRATION

Calibration - Mass

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Force Sensors	(4.448 to 1 338.92) N	$(0.09 + 0.000\ 29F)$ N	Procedure C-5.5-L3-005 Rice Lake Weight Set
Accelerometers	(-1 to 1) g	$(0.0025 + 0.000\ 8A)$ g	Procedure C-5.5-L3-004 Digital Protractor Angle Gage

Calibration - Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
* Non-Contact Displacement Probes	(0.01 to 25.4) mm	0.002 mm	Procedure C-5.5-L3-084 1338 Boeckeler Micrometer
Distance Sensors	(0.025 to 508) mm	$(0.005 + 0.000\ 39L)$ mm	Procedure C-5.5-L3-006 Mitutoyo Digital Height Gage

Notes:

1. Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.
2. On-site service is available for calibration parameters, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
3. Parameters identified with an asterisk (*) are available for on-site testing or calibration.
4. The term P represents Pressure in units appropriate to the uncertainty statement.
5. The term F represents Force in units appropriate to the uncertainty statement.
6. The term L represents Length in units appropriate to the uncertainty statement.
7. The term A represents Acceleration/Deceleration in units appropriate to the uncertainty statement.
8. This scope is part of and must be included with the Certificate of Accreditation No. ACT-1997.02


 Vice President