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 field of

TESTING & CALIBRATION

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

ACT-1997.02
Certificate Number

ANAB Approval

Certificate Valid: 09/22/2016-10/21/2017
Version No. 001 Issued: 09/22/2016

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 January 2009).

ANSI-ASQ National Accreditation Board

ANAB

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Link Engineering Company

20715 West Happy Valley Road Wittmann, AZ 85361
Phone: 313-625-4000 www.linkeng.com
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TESTING and CALIBRATION

Valid to: October 21, 2017 Certificate Number: ACT-1997.02

I. Mechanical Testing

Items, Materials or Products Tested	Specific Tests or Properties Measured	Specification, Standard Method or Technique Used	Key Equipment or Technology
Friction Materials/ Brake Hardware/ Full Vehicle	Full Brake System	ECE-R13, ECE-R13H, ECE-R78-1, ECE R90-02, FMVSS 105, FMVSS 122, FMVSS 135	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Friction Materials/ Brake Hardware/ Full Vehicle	Performance	Thermal Capacity, High Speed Fade, AMS Fade Test, Vacuum Boosted, Trailer Tow, Death Valley, Link Brake Balance, N.C.A.P., Customer Specification	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Friction Materials/ Brake Hardware/ Full Vehicle	Durability	Detroit City Traffic, Phoenix City Traffic, Detroit Suburban Traffic, Phoenix Suburban Traffic, Huron Detroit Metropolitan Traffic, Customer Specification	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Friction Materials/ Brake Hardware/ Full Vehicle	Brake Wear	Los Angeles City Traffic, Detroit City Traffic, Phoenix City Traffic, Detroit Suburban Traffic, Phoenix Suburban Traffic, Huron Detroit Metropolitan Traffic, Customer Specification	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Friction Materials/ Brake Hardware/ Full Vehicle	Noise	Los Angeles City Traffic, Marquette City Traffic, Customer Specification	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing
Friction Materials/ Brake Hardware/ Full Vehicle	Thermal Failure	Fluid Boil, Death Valley	Vehicle, In-Vehicle Data Acquisition System, Proving Grounds Field Testing

ilac-MRA ANAB

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

II. Mechanical Calibration

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Pressure Sensors	(0.1 to 20684.27) kPa	(0.0207+0.00043P) kPa	Fluke Pressure Calibration System	C-5.5-L3-057
Vacuum Sensors	(0.5 to711.2) mmHg	(0.117 + 0.00002V) mmHg	Fluke Pressure Calibration System	C-5.5-L3-051
Force Sensors	(4.448 to 1 338.92) N	(0.09 + 0.00029*F*) N	Rice Lake Weight Set	C-5.5-L3-005
Accelerometers	(-1 to 1) g	(0.0025 + 0.0008*A*) g	Digital Protractor Angle Gage	C-5.5-L3-004

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III. Dimensional Calibration

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Distance Sensors	(0.025 to 508) mm	(0.005 + 0.00039*L*) mm	Mitutoyo Digital Height Gage	C-5.5-L3-006
* Non-Contact Displacement Probes	0.01 mm to 25.4 mm	0.002 mm	1338 Boeckeler Micrometer	C-5.5-L3-084

Notes:

1. Calibration and Measurement Capabilities (CMC) (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of k=2.
2. This laboratory's capabilities include in-laboratory and on-site calibrations performed at customer-designated locations. 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

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