



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

FIT Pacific, Inc. Tsukuba Technical Center
3-20-1 Tokodai Tsukuba-shi, Ibarakiken 300-2635

*(Hereinafter called the Organization) and hereby declares that Organization 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
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

***Calibration of displacement gauge, calibration of double axial and uniaxial load cells,
acceleration sensor on the basis of ISO16063-21(vibration type) and ISO16063-22(shock type)***
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Initial Accreditation Date:

May 28, 2011

Issue Date:

June 28, 2016

Expiration Date:

June 30, 2020

Accreditation No.:

69511

Certificate No.:

L18-296

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

*The validity of this certificate is maintained through ongoing assessments based
on a continuous accreditation cycle. The validity of this certificate should be
confirmed through the PJLA website: www.pjllabs.com*



Certificate of Accreditation: Supplement

FIT Pacific, Inc. Tsukuba Technical Center

3-20-1 Tokodai Tsukuba-shi, Ibarakiken 300-2635

Nobuo Edakawa Phone: 029-848-0331

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Linear Potentiometer ^F Calibration Fixed Points Fixture (Model 5245)	0 mm 72 mm	$(0.44 + 6.1 \times 10^{-3} L)$ mm $(6.1 \mu\text{m/mm} + 0.44 \text{ mm})$	SAE 2517 Chest/Linear Pot. Calibration Procedure (TT-ID-TM10005) Linear Pot. Cal. Fixture Calibration Procedure (TT-ID-TM10007)
Rotary Potentiometer ^F Calibration through 150° Rotational Displacement Fixed Points Fixture (Model 6790)	0° 150°	$(0.58 + 3.9 \times 10^{-3} D)^{\circ}$ $0.0039^{\circ}/^{\circ} + 0.59^{\circ}$	User's manual of Denton ATD, Inc. Rotary Pot. Calibration Procedure (TT-ID-TM10006) Rotary Pot. Cal. Fixture Calibration Procedure (TT-ID-TM10008)

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Load Cell ^F Axial Force Moment:	25 kN maximum	$(0.76 \times 10^{-3} F + 19)$ N	SAE J211-1 -Load Cell Calibration Procedure: NT-ID-TM001 -Output measurement for weight (mV/V) -Operating range of voltage: Tension: 4.153 69 mV/V Compression: -4.154 89 mV/V
Arm Length 50.8 mm		$(1.63 \times 10^{-3} F + 41)$ N	
Arm Length 38.1 mm		$(2.05 \times 10^{-3} F + 51)$ N	
Arm Length 31.75 mm		$(2.43 \times 10^{-3} F + 61)$ N	
Arm Length 25.4 mm		$(2.99 \times 10^{-3} F + 75)$ N	
Load Cell ^F Axial Force Moment:	10 kN maximum	$(0.76 \times 10^{-3} F + 8)$ N	SAE J211-1 -Load Cell Calibration Procedure: NT-ID-TM001 -Output measurement unit for weight: mV/V -Operating range of voltage: Tension: 3.190 14 mV/V Compression: -3.185 78 mV/V
Arm Length 50.8 mm		$(1.63 \times 10^{-3} F + 16)$ N	
Arm Length 38.1 mm		$(2.05 \times 10^{-3} F + 21)$ N	
Arm Length 31.75 mm		$(2.43 \times 10^{-3} F + 24)$ N	
Arm Length 25.4 mm		$(2.99 \times 10^{-3} F + 30)$ N	



Certificate of Accreditation: Supplement

FIT Pacific, Inc. Tsukuba Technical Center

3-20-1 Tokodai Tsukuba-shi, Ibarakiken 300-2635

Nobuo Edakawa Phone: 029-848-0331

Accreditation is granted to the facility to perform the following calibrations:

Acoustic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Acceleration sensor ^F	Voltage sensitivity: mV/(m/s ²) Acceleration meter output ≥ 0.01 mV		'Acceleration meter calibration procedure' (NT-IA-TM001) On basis of: ISO16063-21 (vibration type)
	5 Hz to 100 Hz	1.3 %	
	100 Hz	1.3 %	
	100 Hz to 2 kHz	1.7 %	
	2 kHz to 5 kHz	1.7 %	
	Charge sensitivity: pC/(m/s ²) Acceleration meter output ≥ 1 pC		Calibration device: CS18MF(SPEKTRA) PRBox (only voltage)
	5 Hz to 100 Hz	1.3 %	Calibration equipment: 301A10(PCB)
	100 Hz	1.3 %	
	100 Hz to 2 kHz	1.7 %	
	2 kHz to 5 kHz	1.7 %	
	Voltage sensitivity: mV/(m/s ²) Acceleration meter output ≥ 0.01 mV		'Acceleration meter calibration procedure' (NT-IA-TM001) On basis of: ISO16063-21 (vibration type)
	10 Hz to 100 Hz	1.3 %	
	100 Hz	1.3 %	
	100 Hz to 2 kHz	1.7 %	
	2 kHz to 5 kHz	1.7 %	
	Charge sensitivity: pC/(m/s ²) Acceleration meter output ≥ 1 pC		Calibration device: CS18MF(SPEKTRA) PRBox (only voltage)
	5 kHz to 10 kHz	3.1 %	Calibration equipment: 8305(B&K)
	10 Hz to 100 Hz	1.3 %	
	100 Hz	1.3 %	
	100 Hz to 2 kHz	1.7 %	
	2 kHz to 5 kHz	1.7 %	
	5 kHz to 10 kHz	3.1 %	



Certificate of Accreditation: Supplement

FIT Pacific, Inc. Tsukuba Technical Center

3-20-1 Tokodai Tsukuba-shi, Ibarakiken 300-2635

Nobuo Edakawa Phone: 029-848-0331

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Acceleration sensor ^F	Voltage sensitivity: mV/(m/s ²) Acceleration meter output ≥ 0.01 mV		'Acceleration meter calibration procedure' (NT-IA-TM001) On basis of: ISO16063-22 (Shock Type) Calibration device: CS18LS(SPEKTRA) PRBox (only voltage) Calibration equipment: 2270(ENDEVCO)
	98 m/s ² to 1960 m/s ²	0.9 %	
	Charge sensitivity: pC/(m/s ²) Acceleration meter output ≥ 1 pC		
	98 m/s ² to 1960 m/s ²	0.9 %	

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represent the smallest measurement uncertainties attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer ^F would mean that the laboratory performs this calibration at its fixed location.