



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

**Universal Air Repair, LLC
1334 Rebel Road
Cordova, TN 38018**

(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 January 2009):*

**Electrical, Mechanical, Force, Time & Frequency, RF, and Dimensional Calibration
(As detailed in the supplement)**

Such testing and/or calibration services shall only be offered at or from the address given above. 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:

The validity of this certificate is mandated through ongoing surveillance.

Tracy Szeszen
President/Operations Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
26555 Evergreen, Suite 1325
Southfield, Michigan 48076

Initial Accreditation Date:
December 09, 2009

Issue Date:
December 09, 2009

Expiration Date:
December 08, 2011

Accreditation No.:
66366

Certificate No.:
L09-121

Page No.:
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Certificate of Accreditation: Supplement

Universal Air Repair, LLC
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Accreditation is granted to this facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	REMARKS
Calipers	0 in to 12 in	7.1×10^{-4} in	Gage Block Set 81 pc
Feeler Gages	0.001 in to 0.1 in	7.9×10^{-5} in	Fowler 0-1 in Digital Micrometer
Height Gages	0 in to 12 in	1.3×10^{-3} in	Gage Block Set 81 pc
Indicators	0 in to 6 in	1.5×10^{-3} in	
Length Standards	0.001 in to 6 in	5.3×10^{-3} in	Fowler 0-6 in Digital Caliper
Levels	0° to 359.9°	0.1°	Mitutoyo PRO360
Micrometers	0 in to 12 in	9.5×10^{-4} in	Gage Block Set 81 pc

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	REMARKS
Vacuum Gauge	0 inHg to 12 mmHg	1.1 mmHg	Omega DVG64
Vacuum Source	0 inHg to 12 mmHg	1.2 mmHg	
Pressure Source	0 psi to 10 000 psi	100 psi	Meriam 3800
Pressure Measure	0 psi to 10 000 psi	100 psi	

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	REMARKS
Electrical Simulation of Thermocouples TC Type J	-210 °C to 0 °C	0.6 °C	Fluke 726
	0.0 °C to 800 °C	0.4 °C	
	800 °C to 1 200 °C	0.5 °C	
Electrical Simulation of Thermocouples TC Type K	-200 °C to 0 °C	0.8 °C	
	0 °C to 1 000 °C	0.5 °C	
	1 000 °C to 1 372 °C	0.7 °C	
Electrical Simulation of Thermocouples TC Type L	-200 °C to 0 °C	0.45 °C	
	0 °C to 900 °C	0.4 °C	
Electrical Simulation of Thermocouples TC Type E	-250 °C to -100 °C	0.8 °C	
	-100 °C to 1 000 °C	0.4 °C	



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Electrical Simulation of Thermocouples TC Type B	600 °C to 800 °C	1.4 °C	Fluke 726
	800 °C to 1 000 °C	1.5 °C	
	1 000 °C to 1 820 °C	1.7 °C	
Electrical Simulation of Thermocouples TC Type N	-200 °C to 0 °C	1.0 °C	
	0 °C to 1 300 °C	0.6 °C	
Electrical Simulation of Thermocouples TC Type C	0 ° to 1 000 °C	0.8 °C	
	1 000 °C to 2 316 °C	2.5 °C	
Electrical Simulation of Thermocouples TC Type R	-20 °C to 0 °C	2 °C	
	0 °C to 1 767 °C	1.4 °C	
Electrical Simulation of Thermocouples TC Type S	-20 °C to 0 °C	2 °C	
	0 °C to 1 767 °C	1.4 °C	
Electrical Simulation of Thermocouples TC Type T	-250 °C to 0 °C	0.8 °C	
	0 °C to 400 °C	0.4 °C	
Electrical Simulation of Thermocouples TC Type U	-200 °C to 0 °C	0.7 °C	
	0 °C to 900 °C	0.45 °C	
DCV Source	0 V to 20 V	0.01 % + 2 mV	
Dc Voltage Measure	0 mV to 50 mV	0.05 % + 20 μ V	Fluke 289
	50 mV to 500 mV	0.025 % + 20 μ V	
	500 mV to 3 000 mV	0.025 % + 200 μ V	
	3 V to 5 V	0.025 % + 200 μ V	
	5 V to 50 V	0.025 % + 2 mV	
	50 V to 500 V	0.03 % + 20 mV	
	500 V to 1 000 V	0.03 % + 0.2 V	



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AC Voltage Measure at the listed frequencies			Fluke 289
20 Hz to 45 Hz	0 mV to 50 mV	1.5 % + 0.06 mV	
	50 mV to 500 mV	1.5 % + 0.6 mV	
	0.5 V to 5 V	1.5 % + 6 mV	
	5 V to 50 V	1.5 % + 60 mV	
	50 V to 500 V	1.5 % + 0.6 V	
	500 V to 1 000 V	1.5 % + 6V	
45 Hz to 65 Hz	0 mV to 50 mV	0.3 % + 0.025 mV	
	50 mV to 500 mV	0.3 % + 0.25 mV	
	0.5 V to 5 V	0.3 % + 2.5 mV	
	5 V to 50 V	0.3 % + 25 mV	
	50 V to 500 V	0.3 % + 250 mV	
	500 V to 1 000 V	0.3 % + 2.5 V	
65 Hz to 10 kHz	0 mV to 50 mV	0.4 % + 0.25 mV	
	50 mV to 500 mV	0.4 % + 2.5 mV	
	0.5 V to 5 V	0.4 % + 25 mV	
	5 V to 50 V	0.4 % + 250 mV	
	50 V to 500 V	0.4 % + 2.5 V	
	500 V to 1 000 V	0.4 % + 0.25 mV	
10 kHz to 20 kHz	0 mV to 50 mV	0.7 % + 0.04 mV	
	50 mV to 500 mV	0.7 % + 0.04 mV	
	0.5 V to 5 V	0.7 % + 0.4 mV	
	5 V to 50 V	0.7 % + 4 mV	
20 kHz to 100 kHz	0 mV to 50 mV	3.5 % + 0.04 mV	
	50 mV to 500 mV	3.5 % + 0.04 mV	
	0.5 V to 5 V	3.5 % + 0.4 mV	
	5 V to 50 V	5.5 % + 4 mV	



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AC Voltage Measure at the listed frequencies			Fluke 289
Resistance Measure	0 Ω to 50 Ω	0.15 % + 0.02 Ω	
	50 Ω to 500 Ω	0.05 % + 0.1 Ω	
	0.5 k Ω to 5 k Ω	0.05 % + 0.2 Ω	
	5 k Ω to 50 k Ω	0.05 % + 2 Ω	
	50 k Ω to 500 k Ω	0.05 % + 20 Ω	
	0.5 M Ω to 5 M Ω	0.15 % 400 Ω	
	5 M Ω to 30 M Ω	1.5 % + 4 k Ω	
	30 M Ω to 50 M Ω	1.5 % + 40 k Ω	
	50 M Ω to 100 M Ω	3 % + 0.2 M Ω	
100 M Ω to 500 M Ω	8 % + 0.2 M Ω		
DC Current Measure			Fluke 289
	0 μ A to 500 μ A	0.075 % + 0.2 μ A	
	500 μ A to 5 000 μ A	0.075 % + 0.2 μ A	
	5 mA to 50 mA	0.05 % + 0.01 mA	
	50 mA to 400 mA	0.15 % + 0.02 mA	
	0.4 A to 5 A	0.3 % + 1 mA	
	5 A to 10 A	0.3 % + 2 mA	
AC Current Measure at the listed frequencies			
20 Hz to 45 Hz	0 μ A to 500 μ A	1 % + 0.2 μ A	
	500 μ A to 5 000 μ A	1 % + 0.5 μ A	
	5 mA to 50 mA	1 % + 0.02 mA	
	50 mA to 400 mA	1 % + 0.05 mA	
	0.4 A to 5 A	1.5 % + 2 mA	
	5 A to 10 A	1.5 % + 10 mA	
45 Hz to 1 kHz	0 μ A to 500 μ A	0.6 % + 0.2 μ A	
	500 μ A to 5 000 μ A	0.6 % + 0.5 μ A	
	5 mA to 50 mA	0.6 % + 0.02 mA	
	50 mA to 400 mA	0.6 % + 0.05 mA	
	0.4 A to 5 A	0.8 % + 2 mA	
	5 A to 10 A	0.8 % + 10 mA	



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AC Current Measure at the listed frequencies			Fluke 289
1 kHz to 20 kHz	0 μ A to 500 μ A	0.6 % + 0.2 μ A	
	500 μ A to 5 000 μ A	0.6 % + 1 μ A	
	5 mA to 50 mA	0.6 % + 0.02 mA	
	50 mA to 400 mA	1.5 % + 0.1 mA	
	0.4 A to 5 A	3 % + 4 mA	
	5 A to 10 A	3 % + 10 mA	
20 kHz to 100 kHz	0 μ A to 500 μ A	5 % + 0.4 μ A	
	500 μ A to 5 000 μ A	5 % + 4 μ A	
	5 mA to 50 mA	5 % + 0.04 mA	
	50 mA to 400 mA	5 % + 0.4 mA	
Conductance Measure	50 nS	1 % + 0.1 nsS	
Capacitance Measure	0 nF to 1 nF	1 % + 0.005 nF	
	1 nF to 10 nF	1 % + 0.05 nF	
	10 nF to 100 nF	1 % + 0.5 nF	
	0.1 μ F to 1 μ F	1 % + 0.005 μ F	
	1 μ F to 10 μ F	1 % + 0.05 μ F	
	10 μ F to 100 μ F	1 % + 0.5 μ F	
	0.1 mF to 1 mF	1 % + 0.005 mF	
	1 mF to 10 mF	1 % + 0.05 mF	
10 mF to 100 mF	1 % + 0.5 mF		

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	REMARKS
Tension / Strain	0 lbs to 10 000 lbs	0.03 %	Omega LC101-10 K with DP41S
Torque Measure	0 ft·lbs to 150 ft·lbs	1 %	Wilson W61150



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Time and Frequency

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RF Frequency Generation	100 kHz to 150 MHz	3 %	Tenma 72-585
RF Level Measure	150 MHz to 650 MHz	2 dB	HP 8901 A

1. This laboratory offers commercial calibration service and on-site calibration service.
2. Remarks: This column shall include pertinent information about the calibration of the Measured Instrument or parameter. The information should include the type of standards used and any pertinent information about the measurement method. This column is not to be used for commercial advertisement of laboratory services.