

**JBW**

# CERTIFICATE OF CALIBRATION

FINAL DATA

**NIST\*-Traceable Certification for SAS Air Sampler**

**DUE 11/19**

\*National Institute of Standards and Technology

**Model:** SUPER " 100 "

**Date:** 11-13-18

**Serial No. :** 04-C-02947 w/ss head 26711

**Next Cal. Due:** 11-13-19

**Company:** Aerobiology Laboratory Associates

**Cal. Technician:** [Signature]

**Id:** Unit 5

**Checked by:** [Signature]

**Temperature, °F:** 70

**Barometric Pressure, in. Hg:** 30.2

**Temp. and Pressure Correction Factor:** 1.006

**Anemometer Reading, meters/second:** .285

**Corrected Air Velocity, meters/second:** .286

**Air Flow, liters/minute:** 100.0 \*

Display Setting (Sample Volume)	Sampling Time (Minutes)	
100 liters:	1.0	Minutes
500 liters:	5.0	Minutes
1000 liters:	10.0	Minutes

**Comments:** \* Heads 6163 and 26711 are within +/- 2%

- Accuracy = ± 5% Total
- Calibrated at battery output 9.7 volts. BBL TSA Petri
- Calibrated with contact plate in place. Lot 8248952 Exp. 1-4-19
- Anemometer serial number 66050014 (see attached certificate of calibration).

**JBW & Associates, Inc.**  
10242 Little Rock Lane  
Frederick, Maryland 21702

**Bioscience International**  
Telephone: 301-230-0072

**JBW**

# CERTIFICATE OF VALIDATION

AS FOUND DATA

EXPIRED  
UNCALIBRATED

**NIST\*-Traceable Certification for SAS Air Sampler**

\*National Institute of Standards and Technology

Model: SUPER " 100 "

Date: 11-13-18

Serial No.: 04-C-02947 w/ss head 26711

Val. Technician: [Signature]

Company: Aerobiology Laboratory Associates  
Id: Unit 5

Checked by: [Signature]

Temperature, °F: 70

Barometric Pressure, in. Hg: 30.2

Temp. and Pressure Correction Factor: 1.006

Anemometer Reading, meters/second: .289

Corrected Air Velocity, meters/second: .291

Air Flow, liters/minute: 101.5 \*

Display Setting (Sample Volume)	Sampling Time (Minutes)	
100 liters:	1.0	Minutes
500 liters:	5.0	Minutes
1000 liters:	10.0	Minutes

Comments: \* Heads 6163 and 26711 are within +/- 2%

1. Accuracy = ± 5% Total
2. Validated at battery output 10.0 volts.  
BBL TSA Petri
3. Validated with contact plate in place. Lot 8248952 Exp. 1-4-19
4. Anemometer serial number 66050014 (see attached certificate of calibration).

**JBW & Associates, Inc.**  
10242 Little Rock Lane  
Frederick, Maryland 21702

**Bioscience International**  
Telephone: 301-230-0072



# CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA  
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS			MODEL	8455-12
TEMPERATURE	73.9 (23.3)	°F (°C)	SERIAL NUMBER	66050014
RELATIVE HUMIDITY	52	%RH		
BAROMETRIC PRESSURE	29.11 (985.8)	inHg (hPa)		

<input checked="" type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input type="checkbox"/> AS FOUND	<input type="checkbox"/> OUT OF TOLERANCE

## - CALIBRATION VERIFICATION RESULTS -

VELOCITY VERIFICATION				SYSTEM V-110		Unit: ft/min (m/s)	
WITH RANGE = 0 - 200.0 STD FT/MIN, 0 - 1.0 STD M/S							
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0 (0.00)	0 (0.00)	-1~1 (-0.01~0.01)	5	72 (0.36)	71 (0.36)	69~74 (0.35~0.38)
2	25 (0.13)	25 (0.13)	23~26 (0.12~0.13)	6	112 (0.57)	112 (0.57)	109~116 (0.55~0.59)
3	37 (0.19)	38 (0.19)	36~39 (0.18~0.20)	7	170 (0.86)	169 (0.86)	165~174 (0.84~0.88)
4	53 (0.27)	53 (0.27)	51~55 (0.26~0.28)				

VELOCITY VERIFICATION				SYSTEM V-110		Unit: ft/min (m/s)	
WITH RANGE = 0 - 1000.0 STD FT/MIN, 0 - 5.0 STD M/S							
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	252 (1.28)	253 (1.28)	242~262 (1.23~1.33)	3	527 (2.68)	524 (2.66)	511~542 (2.60~2.75)
2	379 (1.93)	377 (1.92)	367~392 (1.86~1.99)	4	716 (3.63)	714 (3.63)	696~735 (3.54~3.73)

VELOCITY VERIFICATION				SYSTEM V-110		Unit: ft/min (m/s)	
WITH RANGE = 0 - 10000.0 STD FT/MIN, 0 - 50.0 STD M/S							
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	1119 (5.69)	1127 (5.72)	1047~1192 (5.32~6.05)	5	5279 (26.82)	5244 (26.64)	5123~5434 (26.03~27.61)
2	1679 (8.53)	1677 (8.52)	1596~1763 (8.11~8.95)	6	7198 (36.57)	7157 (36.36)	7004~7392 (35.58~37.55)
3	2526 (12.83)	2541 (12.91)	2425~2627 (12.32~13.34)	7	8985 (45.64)	8990 (45.67)	8755~9215 (44.48~46.81)
4	3785 (19.23)	3766 (19.13)	3659~3910 (18.59~19.86)				

Tolerance: ± 2.0% of reading, ± 0.5% of full scale of selected range  
 Std Conditions: Temperature: 21.1°C Barometric Pressure: 760.0 mmHg

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015

Measurement Variable	System ID	Last Cal	Cal. Due	Measurement Variable	System ID	Last Cal	Cal. Due
DC Voltage	E001658	02-01-18	08-31-19	Temperature	E004402	05-21-18	11-30-18
Pressure	E001719	04-11-18	10-31-18	Pressure	E001721	04-11-18	10-31-18
Velocity	E005916	08-14-17	08-31-20				

*Chao Vang*  
 \_\_\_\_\_  
 CALIBRATED

September 4, 2018  
 \_\_\_\_\_  
 DATE

TSI Form 0-109-01-08 Rev. 03/03



Calibration  
Certificate No. 1750.01

**Calibration complies with ISO 9001  
ISO/IEC 17025 AND ANSI/NCSL Z540-1**



**Cert. No.: 1015-8251747**

**Traceable® Certificate of Calibration for Stopwatch**

Manufactured for and distributed by: VWR International, LLC, Radnor Corporate Center, Bldg 1, Ste 200, 100 Matsonford Road, Radnor, PA 19087  
**Instrument Identification:**

Model: 62379-058      S/N: 170039029      Manufacturer: Control Company

**Standards/Equipment:**

Description	Serial Number	Due Date	NIST Traceable Reference
Non-Contact Frequency Counter	26.66879	6/27/17	1000394057

**Certificate Information:**

Technician: 353      Procedure: CAL-01      Cal Date: 1/19/17      Due Date: 1/19/19  
Test Conditions: 24.4°C      55.0 %RH      1014 mBar

**Calibration Data: (New Instrument)**

Unit(s)	Nominal	As Found	In Tol	Nominal	As Left	In Tol	Min	Max	±U	TUR
Sec/24hr		N.A.		0.000	-0.100	Y	-0.432	0.432	0.037	>4:1

**This instrument was calibrated using instruments traceable to National Institute of Standards and Technology.**

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ±U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min = Nominal(Rounded) - Tolerance; Max = Nominal(Rounded) + Tolerance; Date=MM/DD/YY

*Nicol Rodriguez*  
Nicol Rodriguez, Quality Manager

*Aaron Judice*  
Aaron Judice, Technical Manager

**Maintaining Accuracy:**

In our opinion once calibrated your stopwatch should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Stopwatches change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

**Recalibration:**

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

**CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598**  
Phone 281 482-1714 Fax 281 482-9448 service@control3.com www.control3.com

Control Company is an ISO/IEC 17025:2005 Calibration Laboratory Accredited by (A2LA) American Association for Laboratory Accreditation, Certificate No. 1750.01.  
Control Company is ISO 9001:2008 Quality Certified by DNV GL, Certificate No. CERT-01805-2006-AQ-HOU-RvA.  
International Laboratory Accreditation Cooperation (ILAC) - Multilateral Recognition Arrangement (MRA).