

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/18/039

Project No. CKL 1 - Flat 121 Cha Kwo Ling Village

Date: 3-Jul-26

Next Due Date: 3-Sep-26

Operator: SK

Equipment No.: A-01-18

Model No.: TE 5170

Serial No. 0723

Ambient Condition			
Temperature, Ta (K)	<u>301.8</u>	Pressure, Pa (mmHg)	<u>752.5</u>

Orifice Transfer Standard Information					
Serial No.	<u>3864</u>	Slope, mc	<u>0.05980</u>	Intercept, bc	<u>-0.04908</u>
Last Calibration Date:	<u>7-Jan-26</u>	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	<u>7-Jan-27</u>	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	<u>13.4</u>	<u>3.62</u>	<u>61.35</u>	<u>9.2</u>	<u>3.00</u>
2	<u>10.3</u>	<u>3.17</u>	<u>53.89</u>	<u>7.2</u>	<u>2.65</u>
3	<u>8.2</u>	<u>2.83</u>	<u>48.17</u>	<u>5.5</u>	<u>2.32</u>
4	<u>6.3</u>	<u>2.48</u>	<u>42.32</u>	<u>3.6</u>	<u>1.88</u>
5	<u>3.4</u>	<u>1.82</u>	<u>31.31</u>	<u>1.5</u>	<u>1.21</u>

By Linear Regression of Y on X

Slope, mw = 0.0608

Intercept, bw = -0.6710

Correlation coefficient* = 0.9972

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.86

Remarks:

Conducted by: Wong Shing Kwai

Signature:

Date: 3-Jul-26

Checked by: Henry Leung

Signature:

Date: 3-Jul-26

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/55/039

Project No. CKL 2 - Flat 103 Cha Kwo Ling Village

Date: 3-Jul-26 Next Due Date: 3-Sep-26 Operator: SK

Equipment No.: A-01-55 Model No.: TE 5170 Serial No. 1956

Ambient Condition			
Temperature, Ta (K)	301.8	Pressure, Pa (mmHg)	752.5

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05980	Intercept, bc	-0.04908
Last Calibration Date:	7-Jan-26	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	7-Jan-27	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.6	3.65	61.80	9.5	3.05
2	11.1	3.29	55.91	7.1	2.63
3	9.6	3.06	52.05	5.2	2.25
4	5.1	2.23	38.16	2.8	1.65
5	3.5	1.85	31.75	1.7	1.29

By Linear Regression of Y on X

Slope, mw = 0.0564 Intercept, bw = -0.5255

Correlation coefficient* = 0.9918

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.68</u>	

Remarks: _____

Conducted by: Wong Shing Kwai Signature: [Signature] Date: 3-Jul-26

Checked by: Henry Leung Signature: [Signature] Date: 3-Jul-26

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/44/0036

Project No. KTD1 - Centre of Excellence in Paediatrics (Children's Hospital)/AM7 – Hong Kong Children's Hospital
 Date: 8-Jul-26 Next Due Date: 8-Sep-26 Operator: SK
 Equipment No.: A-01-44 Model No.: TE-5170 Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	<u>303.1</u>	Pressure, Pa (mmHg)	<u>754.5</u>

Orifice Transfer Standard Information					
Serial No.	<u>3864</u>	Slope, mc	<u>0.05980</u>	Intercept, bc	<u>-0.04908</u>
Last Calibration Date:	<u>7-Jan-26</u>	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	<u>7-Jan-27</u>	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	<u>13.3</u>	<u>3.60</u>	<u>61.07</u>	<u>9.5</u>	<u>3.05</u>
2	<u>11.1</u>	<u>3.29</u>	<u>55.86</u>	<u>7.3</u>	<u>2.67</u>
3	<u>9.5</u>	<u>3.05</u>	<u>51.74</u>	<u>5.4</u>	<u>2.30</u>
4	<u>6.1</u>	<u>2.44</u>	<u>41.62</u>	<u>3.2</u>	<u>1.77</u>
5	<u>3.2</u>	<u>1.77</u>	<u>30.37</u>	<u>1.6</u>	<u>1.25</u>

By Linear Regression of Y on X

Slope, mw = 0.0579 Intercept, bw = -0.5801

Correlation coefficient* = 0.9922

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>3.73</u>	

Remarks: _____

Conducted by: Wong Shing Kwai Signature: [Signature] Date: 8-Jul-26

Checked by: Henry Leung Signature: [Signature] Date: 8-Jul-26

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/41/0036

Project No. KTD 2D - Next to the SOR Office of Trunk Road T2 in Kai Tak Area

Date: 8-Jul-26 Next Due Date: 8-Sep-26 Operator: SK

Equipment No.: A-01-41 Model No.: TE 5170 Serial No. 5280

Ambient Condition			
Temperature, Ta (K)	<u>303.1</u>	Pressure, Pa (mmHg)	<u>754.5</u>

Orifice Transfer Standard Information					
Serial No.	<u>3864</u>	Slope, mc	<u>0.05980</u>	Intercept, bc	<u>-0.04908</u>
Last Calibration Date:	<u>7-Jan-26</u>	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	<u>7-Jan-27</u>	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	<u>13.7</u>	3.66	61.97	<u>9.6</u>	3.06
2	<u>11.3</u>	3.32	56.36	<u>8.8</u>	2.93
3	<u>9.4</u>	3.03	51.47	<u>6.2</u>	2.46
4	<u>7.2</u>	2.65	45.15	<u>4.5</u>	2.10
5	<u>4.0</u>	1.98	33.86	<u>2.2</u>	1.47

By Linear Regression of Y on X

Slope, mw = 0.0595 Intercept, bw = -0.5583

Correlation coefficient* = 0.9922

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>4.10</u>	

Remarks: _____

Conducted by: Wong Shing Kwai Signature: [Signature] Date: 8-Jul-26

Checked by: Henry Leung Signature: [Signature] Date: 8-Jul-26

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/04/0038

Project No. Location KER1c - Site Boundary at Cheung Yip Street

Date: 30-Jul-26 Next Due Date: 30-Sep-26 Operator: SK

Equipment No.: A-01-04 Model No.: TE 5170 Serial No. 10595

Ambient Condition			
Temperature, Ta (K)	<u>301.5</u>	Pressure, Pa (mmHg)	<u>754.4</u>

Orifice Transfer Standard Information					
Serial No.	<u>3864</u>	Slope, mc	<u>0.05980</u>	Intercept, bc	<u>-0.04908</u>
Last Calibration Date:	<u>7-Jan-26</u>	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	<u>7-Jan-27</u>	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	<u>12.3</u>	<u>3.47</u>	<u>58.91</u>	<u>8.6</u>	<u>2.90</u>
2	<u>10.1</u>	<u>3.15</u>	<u>53.46</u>	<u>7.3</u>	<u>2.68</u>
3	<u>8.2</u>	<u>2.84</u>	<u>48.25</u>	<u>5.5</u>	<u>2.32</u>
4	<u>5.3</u>	<u>2.28</u>	<u>38.95</u>	<u>2.7</u>	<u>1.63</u>
5	<u>2.9</u>	<u>1.69</u>	<u>29.03</u>	<u>2.2</u>	<u>1.47</u>

By Linear Regression of Y on X

Slope, mw = 0.0520 Intercept, bw = -0.1773

Correlation coefficient* = 0.9768

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.32

Remarks: _____

Conducted by: Wong Shing Kwai Signature: [Signature] Date: 30-Jul-26

Checked by: Henry Leung Signature: [Signature] Date: 30-Jul-26



Certificate of Calibration

Calibration Certification Information

Cal. Date: January 7, 2026 **Rootsmer S/N:** 438320 **Ta:** 294 °K
Operator: Jim Tisch **Pa:** 749.0 mm Hg
Calibration Model #: TE-5025A **Calibrator S/N:** 3864

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4310	3.2	2.00
2	3	4	1	1.0260	6.4	4.00
3	5	6	1	0.9150	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7200	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9947	0.6951	1.4135	0.9957	0.6958	0.8860
0.9905	0.9654	1.9990	0.9915	0.9663	1.2530
0.9885	1.0803	2.2349	0.9895	1.0814	1.4009
0.9873	1.1309	2.3440	0.9883	1.1320	1.4693
0.9819	1.3638	2.8270	0.9829	1.3652	1.7720
QSTD	m=	2.11337	QA	m=	1.32336
	b=	-0.04919		b=	-0.03083
	r=	0.99993		r=	0.99993

Calculations

Vstd= $\Delta Vol / ((Pa - \Delta P) / Pstd) (Tstd / Ta)$	Va= $\Delta Vol / ((Pa - \Delta P) / Pa)$
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$
For subsequent flow rate calculations:	
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998
 40 Code of Federal Regulations Part 50 to 51,
 Appendix B to Part 50, Reference Method for the
 Determination of Suspended Particulate Matter in
 the Atmosphere, 9.2.17, page 30

Certificate of Calibration - Wind Monitoring Station

Description: Yau Lai Estate, Bik Lai House
Manufacturer: Davis Instruments
Model No.: Davis7440
Serial No.: MC01010A44
Equipment No.: SA-03-04
Date of Calibration 17-Feb-2026
Next Due Date 17-Aug-2026

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	$D = V1 - V2$
0.0	0.0	0.0
1.5	1.5	0.0
2.5	2.5	0.0
4.0	4.1	-0.1

2. Performance check of Wind Direction

Wind Direction (°)		Difference D (°)
Wind Direction Reading (W1)	Marine Compass Value (W2)	$D = W1 - W2$
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

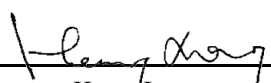
Test Specification:

- 1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer**
- 2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction**

Calibrated by:


Wong Shing Kwai

Approved by:


Henry Leung