

Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
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Report: TAB Report
Function: Test, Adjust, & Balance
Date: 09/11/2025
Completed By: National TAB

PROJECT
Seven Hills School (Cincinnati, OH)

5400 Red Bank Rd

Cincinnati, OH 45227

Client

KW Mechanical
25 East 32nd Street
Covington, KY 41015

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Project: Seven Hills School (Cincinnati, OH)

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CERTIFICATION



PROJECT: Seven Hills School (Cincinnati, OH)

The data presented in this report is a record of system measurements and final adjustments that have been obtained in accordance with the current edition of the NEBB *Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems*. Any variances from design quantities, which exceed NEBB tolerances, are noted in the Test-Adjust-Balance Report Project Summary.

The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB

REGISTRATION NO: 3629

CERTIFIED BY: Joe Hertenstein

DATE: 9/11/2025

The hydronic distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB

REGISTRATION NO: 3629


CERTIFIED BY: Joe Hertenstein

DATE: _____

Submitted and Certified by:

NEBB TAB FIRM: National TAB

TAB PROFESSIONAL: Joe Hertenstein

SIGNATURE: 

REGISTRATION NO: 3629

CERTIFICATION EXP: 12/31/2025





National TAB

Testing, Adjusting, and Balancing Equipment



Function		Range	Minimum Accuracy	Instrument Information	Calibration Date	Date Due
AIR	AIR PRESSURE	0 in wg to 10 in wg	2% +/- 0.001 in wg	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 5 % +/- 7 cfm	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
	AMPERAGE MEASUREMENT	0 Amperes to 100 Amperes	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Shimpo DT 207Lp S/N D1690029R	9/18/2024	9/18/2025
HYDRONIC	PRESSURE MEASUREMENT	-30 in Hg to 200 psi	±2% of reading +/- 1 psi	Hydronic Manometer - Dwyer 490W-6-HKIT S/N: 359515093207912	10/17/2024	10/17/2025
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Hydronic Manometer - Dwyer 490W-6-HKIT S/N: 359515093207912	10/17/2024	10/17/2025

Abbreviation List

A = Area (ft ²)	S.F. = Service Factor
AHU = Air Handling Unit	SF = Supply Fan
A _k = Effective Area	SP = Static Pressure
BHP = Brake Horsepower (IP) HP	SR = Supply Register
Btu = British Thermal Unit	T = Temperature
Btu/h = Btuh = BTUH = BTU/Hour	T _{ma} = Mixed Air Temperature
CL = Center Distance (used in belt formula)	T _{oa} = Outside Air Temperature
CD = Ceiling Diffuser	T _{ra} = Return Air Temperature
CF = Correction Factor	H = Head (in wc, ft wc, psi)
CFM = Volumetric Flow: Cubic Feet Per Minute	h = Enthalpy
CO ₂ = Carbon Dioxide	HP = Horsepower
CO = Carbon Monoxide	hr = Hour
C _v = Flow Constant	K _v = Flow constant (SI)
d = Diameter (in.) IP	kW = Kilowatt = 1000 Watts
Δ = Difference or Change (Final - Initial)	LAT = Leaving Air Temperature
DB = Dry Bulb	lb = Pounds
EA = Exhaust Air	LWT = Leaving Water Temperature
EAT = Entering Air Temperature	ma = Mixed Air
EF = Exhaust Fan	MIN = Minimum
Eff = Efficiency	MAX = Maximum
EG = Exhaust Grille	N/A = Not Applicable
ESP = External Static Pressure	NA = No Access
EWT = Entering Water Temperature	NL = Not Listed
°F = Degrees Fahrenheit, °F	NPSHA = Net Positive Suction Head Available
FPB = Fan Powered Box	NS = Not Specified
FLA = Full Load Amps	OA = Outside Air
fpm = Feet per Minute (fpm)	OAT = Outside Air Temperature
ft = Foot	PD = Sheave Pitch Diameter
gal = Gallons	P.D. = Pressure Drop
GPM = Gallons Per Minute (GPM)	PF = Power Factor
h = Enthalpy (BTU/lb dry air)	SG = Supply Grille
P = Pressure	SR = Supply Register
ppm = parts per million	TP = Total Pressure
psi = Pounds Per Square Inch	T _{ra} = Return Air Temperature
psid = PSI Differential	TS = Tip Speed (fpm) IP, (m/s) SI
r = Radius (in)	TSP = Total Static Pressure
% _{ra} = % of Return Air	V = Velocity
RA = Return Air	VAV = Variable Air Volume
RAT = Return Air Temperature	VD = Volume Damper
RF = Return Fan	VFD = Variable Frequency Drive
RG = Return Grille	W = Watt
RH = Relative Humidity	WB = Wet Bulb
RPM = Revolutions Per Minute	wg = wc = water gauge = water column
RTU = Roof Top Unit	WHP = Water Horsepower (IP)
SA = Supply Air	ω = Humidity Ratio

National TAB

Project: Seven Hills School (Cincinnati, OH)

System/Unit: AHU/RTU



Asset: AHU-1

AREA:

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Serial Num	-	1213A25719
Model Num	NA	58STA070-12
Configuration	-	VERTICAL
Num PreFilter 1	-	2
PreFilter Size 1	-	15"X13"X.25"
Num Final Filter 1	-	6
Final Filter Size 1	-	15"x5"x.25"

Motor Data		
	Design	Actual
Horsepower	-	0.33
Phase	1	1
Rated Voltage	115	115
Rated Amperage	7.2	7.2

Test Data		
	Design	Actual
SF CFM	950	966
RA CFM	800	809
OA CFM	150	157
RL Voltage	115	112.2
RL Amperage	7.2	4.7 UNIT
SF System SetPt	-	HIGH
OA Damper Position	-	60%

Performance Data		
	Design	Actual
Fan Suction SP	-	-0.17"
Fan Discharge SP	-	0.17"
Total ESP	1.0	0.34"

Completed By: Gabe Merk on 10/28/2025

Notes:

Dirty electrostatic filters, removed for testing.
Some backwards zone dampers manually bypassed for testing.

Written By: Gabe Merk on 10/28/2025

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Project: Seven Hills School (Cincinnati, OH)

AHU/RTU



Diffuser Supply (GRD)

AHU-1/

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	CORR	SD-7	6	50	53	93	186.0
SGRD2	108	SG-5	12X6	275	116	279	101.5
SGRD3	108	SG-5	12X6	275	105	264	96.0
SGRD4	122	SD-7	6	100	97		-
SGRD5	104	SD-7	6	125	125	114	91.2
SGRD6	106	SD-7	6	125	124	118	94.4
Total				950	620	868	91.37%

Completed By: Gabe Merk on 10/28/2025

Asset	Notes	Date	Written By
SGRD1	NO ACCESSIBLE DAMPER INSTALLED. UNABLE TO REDUCE FLOW TO DESIGN.	10/28/2025	Gabe Merk

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Project: Seven Hills School (Cincinnati, OH)

System/Unit: AHU/RTU



Asset: AHU-2

AREA:

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Serial Num	-	3712A19222
Model Num	NA	58STA135-22
Configuration	-	VERTICAL
Num PreFilter 1	-	1
PreFilter Size 1	-	20"X13"

Motor Data		
	Design	Actual
Horsepower	-	0.75
Phase	1	1
Rated Voltage	115	115
Rated Amperage	14.4	14.4

Test Data		
	Design	Actual
SF CFM	1575	1368
RA CFM	1275	1053
OA CFM	300	315
RL Voltage	115	122
RL Amperage	14.4	7.7 UNIT
SF System SetPt	-	HIGH
OA Damper Position	-	OPEN
Brake Horse Power	-	0.42

Performance Data		
	Design	Actual
Fan Suction SP	-	-0.43"
Fan Discharge SP	-	0.18"
Total ESP	0.5	0.61"

Completed By: Gabe Merk on 10/29/2025

Notes:

DIFFUSER 1 LOW FLOW DUE TO RESTRICTIVE DUCTWORK. SEE ATTACHED IMAGE. CAUSING UNIT TOTAL TO BE BELOW DESIGN.

Written By: Gabe Merk on 10/29/2025

Unit Data - PHOTO LOG



10/29/2025

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Project: Seven Hills School (Cincinnati, OH)

AHU/RTU



Diffuser Supply (GRD)

AHU-2/

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	109	SG-3	12X8	400	167	220	55.0
SGRD2	109	SG-3	12X8	400	334	367	91.8
SGRD3	121	SD-7	6	150	127	144	96.0
SGRD4	119	SD-7	6	150	117	149	99.3
SGRD5	107	SD-7	6	25	78	52	208.0
SGRD6	105	SD-7	6	150	121	159	106.0
SGRD7	103	SD-7	6	150	167	136	90.7
SGRD8	102	SD-7	6	150	169	141	94.0
Total				1575	1280	1368	86.86%

Asset	Notes	Date	Written By
SGRD5	balance damper fully shut. unable to reduce flow to design.	10/29/2025	Gabe Merk

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Project: Seven Hills School (Cincinnati, OH)

System/Unit: AHU/RTU



Asset: AHU-3

AREA:

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Serial Num	-	0925A61629
Model Num	NA	59SC2E060M17-14
Configuration	-	VERTICAL
Num PreFilter 1	-	1
PreFilter Size 1	-	16"X25X1"

Motor Data		
	Design	Actual
Horsepower	-	0.5
Phase	1	1
Rated Voltage	115	115
Rated Amperage	7.5	7.5

Test Data		
	Design	Actual
SF CFM	1300	1109
RA CFM	1100	920
OA CFM	200	189
RL Voltage	115	122.8
RL Amperage	7.5	6.37
SF System SetPt	-	18 (HIGHEST SPEED)
OA Damper Position	-	OPEN
Brake Horse Power	-	0.42

Performance Data		
	Design	Actual
Fan Suction SP	-	-0.48"
Fan Discharge SP	-	0.17"
Total ESP	0.5	0.65"

Notes:

Diffusers 3 and 8 below design, damper fully open.

Dirty filters, removed for testing.

ZONE DAMPERS NOT OPERATING AS EXPECTED. 10/28

Written By: Gabe Merk on 10/29/2025

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Project: Seven Hills School (Cincinnati, OH)

AHU/RTU



Diffuser Supply (GRD)

AHU-3/

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	118	SG-5	12X6	200	400	184	92.0
SGRD2	118	SG-5	12X6	200	370	198	99.0
SGRD3	126	SD-7	6	170	52	131	77.1
SGRD4	128	SD-7	6	140	46	130	92.9
SGRD5	129	SD-7	6	140	50	134	95.7
SGRD6	127	SD-7	6	140	56	138	98.6
SGRD7	125	SD-7	6	140	53	134	95.7
SGRD8	123	SD-7	6	170	35	135	79.4
Total				1300	1062	1184	91.08%

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Project: Seven Hills School (Cincinnati, OH)

System/Unit: FAN - Exhaust



Asset: EF-1

AREA:112 - TLT

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A200-QD
Serial Num	-	26391635
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	50	50

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Horsepower	27W	0.025
Motor Rpm	745	900
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.5

Completed By: Gabe Merk on 08/18/2025

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Project: Seven Hills School (Cincinnati, OH)

System/Unit: FAN - Exhaust



Asset: EF-2

AREA:114 - TLT

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A200-QD
Serial Num	-	26391647
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	50	101

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Horsepower	27W	0.025
Motor Rpm	745	900
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.5

Completed By: Gabe Merk on 08/18/2025

Notes:

Unit above design, not equipped with speed controller.

Return: unit has speed controller Installed and flow is reduced to 101 CFM at min speed.

Written By: Gabe Merk on 08/18/2025

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Project: Seven Hills School (Cincinnati, OH)

System/Unit: FAN - Exhaust



Asset: EF-3

AREA:116 - JAN

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A200-QD
Serial Num	-	26391634
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	50	52

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Horsepower	27W	0.025
Motor Rpm	745	900
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.5

Completed By: Gabe Merk on 08/18/2025