

Report By:

**National TAB
1329 E. KEMPER ROAD
SUITE 4210
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**Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 04/13/2023**

**PROJECT
04-10-23 CULVERS - WASHINGTON, MI**

66233 VAN DYKE

WASHINGTON, MI 48095

Client

Accurex
PO Box 410
Schofield, WI 54476

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Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units)

Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

Kitchen Exhaust Hood & Associated Fans

Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow.

General Exhaust Fans

The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of $-0.02''$ wc to $+0.02''$ wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF1

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XCR-B80	XCR-B80
Serial Num	-	22002135
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	75	73
Fan Rotation	-	CCW
System SetPt	-	5
RL Voltage	-	NA
RL Amperage	-	0.13
Fan Discharge SP	-	ATM

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	60HZ
Horsepower	-	NA
Motor Rpm	900	900
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.16
Service Factor	-	NA

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: PRV1

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XRED-095-D	XRED-090
Serial Num	-	21051685
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	VARI GREEN
Frame	-	50/60HZ
Horsepower	0.0667	0.0667"
Motor Rpm	1550	1750
Phase	1	1
Voltage (rated)	115	115-208
Amperage (rated)	-	2.1
Service Factor	-	NA

Drive Data		
	Design	Actual

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Notes:

Test Data		
	Design	Actual
CFM	300	282
Fan RPM	1479	881
Fan Rotation	-	CW
Motor RPM	-	881
RL Voltage	-	120.6
RL Amperage	-	0.33
Suction ESP	-	-0.13"
Discharge ESP	-	ATM
Total ESP	0.5"	-0.13"

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: PRV2

AREA:HOOD 1

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XCUE-140-VG	XCUE-140-VG
Serial Num	-	21051710
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	VERI GREEN
Frame	-	50/60HZ
Horsepower	0.83	1
Motor Rpm	1725	1750
Phase	1	1
Voltage (rated)	115	115-208
Amperage (rated)	-	11.5
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	1500	1559
Fan RPM	1702	1157
Fan Rotation	-	CW
Motor RPM	-	1157
System SetPt	-	6.5 VDC
RL Voltage	-	123.8
RL Amperage	-	3.84
Total ESP	1.8"	0.67"
Fan Inlet SP	-	0.67"
Fan Discharge SP	-	ATM

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: PRV3

AREA:HOOD 2

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XCUE-140-VG	XCUE-140-VG
Serial Num	-	21051717
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VEFRTICAL

Motor Data		
	Design	Actual
Motor MFG	-	VARI GREEN
Frame	-	50/60HZ
Horsepower	0.46	1
Motor Rpm	1725	1750
Phase	1	1
Voltage (rated)	115	115-208
Amperage (rated)	-	11.5
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	1500	1652
Fan RPM	1349	864
Fan Rotation	-	CW
Motor RPM	-	864
System SetPt	-	5 VDC
RL Voltage	-	123.8
RL Amperage	-	1.98
Total ESP	1.0"	0.30"
Fan Inlet SP	-	0.30"
Fan Discharge SP	-	ATM

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Notes:FAN 2 CFM OUT OF TOLERANCE, SET AT LOWEST POSSIBLE VCD SETTING

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: PRV4

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XRED-095-D	XRED-095
Serial Num	-	21051720
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	VARI GREEN
Frame	-	50/60HZ
Horsepower	0.0667"	0.0667"
Motor Rpm	1550	1750
Phase	1	1
Voltage (rated)	115	115-208
Amperage (rated)	-	2.1
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	350	317
Fan Rotation	-	CW
System SetPt	-	4.5
RL Voltage	-	122.9
RL Amperage	-	0.38
Total ESP	0.6"	0.15"
Fan Inlet SP	-	0.15"
Fan Discharge SP	-	ATM

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Project: 04-10-23 CULVERS - WASHINGTON, MI
System/Unit: Kitchen Hood Type I



Comfort. Under control.

Asset: HD1

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XGEP-5.33S	XGEP-64.00-S
Job / Serial Num	-	21102299
Type	TYPE I	I
Hood length	64	64"
Hood Width	23	26"

Test Data Exhaust		
	Design	Actual
Filter Type	GREASE GRABBER	X-TRACTOR
Filter Size 1	16X16	16"X16"
Filter Qty 1	4	4
Filter AK factor size 1	1.53	1.53
Filter Total AK Area	6.12	6.12
Filter1 FPM	-	258
Filter2 FPM	-	255
Filter3 FPM	-	247
Filter4 FPM	-	259
Filter Ave FPM(corr)	-	254
CFM	1500	1559

Cooking Equipment		
	Design	Actual
Item 1	-	GRIDDLE

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Project: 04-10-23 CULVERS - WASHINGTON, MI
System/Unit: Kitchen Hood Type I



Comfort. Under control.

Asset: HD2

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XXEP-FB-6.92-S	XXEP-FB-6.92-S
Job / Serial Num	-	21102294
Type	TYPE I	TYPE I
Hood length	83"	83"
Hood Width	23"	23"

Test Data Exhaust		
	Design	Actual
Filter Type	X-TRACTOR	X-TRACTOR
Filter Size 1	16X16	16"X16"
Filter Qty 1	5	5
Filter AK factor size 1	1.53	1.53
Filter Total AK Area	7.65	7.65
Filter1 FPM	-	224
Filter2 FPM	-	221
Filter3 FPM	-	211
Filter4 FPM	-	205
Filter5 FPM	-	219
Filter Ave FPM(corr)	-	216
CFM	1500	1652

Cooking Equipment		
	Design	Actual
Item 1	-	FRYER

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: Kitchen Hood Type II



Comfort. Under control.

Asset: HD3

AREA:

Unit Data		
	Design	Actual
MFG	ACCUREX	ACCUREX
Model Num	XD3-3.5.S	XD3-42-.S
Serial Num	-	21102303
Type	TYPE II	TYPEII
Hood length	42	42"
Hood Width	42	42"

Test Data		
	Design	Actual
Exhaust CFM	350	317

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU1

AREA:

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5622F06872
Model Num	13H15	LGH180H4BS4Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	24"X16"
Num Final Filter 1	-	6
Final Filter Size 1	-	24"X24"2"

Motor Data		
	Design	Actual
Motor MFG	-	INTERLINK
Frame	-	184TZ
Horsepower	-	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	208	208-230
Rated Amperage	-	15.8-14.6

Drive Data		
	Design	Actual
Motor Sheave Size	-	4"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	7"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX55
Belt Alignment	-	GOOD

Test Data		
	Design	Actual
SF CFM	6150	6264
SF RPM	-	734
RA CFM	4250	4329
OA CFM	1900	1974
RL Voltage	-	214.9/216.9/212.7
RL Amperage	-	6.85/7.27/7.88
SF Rotation	-	CCW
RA Damper Position	-	54%
Min OA Damper Position	-	46%
Min OA Damper Type	-	ECON
OA Enthalpy Setpt	-	12

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.45"
Fan Suction SP	-	-0.72"
Fan Discharge SP	-	0.87"
Total ESP	-	1.32"
Fan Total SP	-	1.59"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	MILDLY DIRTY
Condensate Drain Installed	-	YES

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Project: 04-10-23 CULVERS - WASHINGTON, MI

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU2

AREA:

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5622F07240
Model Num	13H15	LGH210H4BS3Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	24"X16"
Num Final Filter 1	-	6
Final Filter Size 1	-	24"X24"X2

Motor Data		
	Design	Actual
Motor MFG	-	NIDEC MOTOR CORP
Frame	-	184TZ
Horsepower	-	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	208	208-230
Rated Amperage	-	15.8-14.6

Drive Data		
	Design	Actual
Motor Sheave Size	-	5"
Motor Sheave SetPt	-	6 TURNS OUT
Fan Sheave Size	-	9.5"
Fan Sheave Bore	-	1"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX61
Belt Alignment	-	GOOD

Test Data		
	Design	Actual
SF CFM	6150	5963
SF RPM	-	687.8
RA CFM	4250	4107
OA CFM	1900	1856
RL Voltage	-	212.6/214.9/217.1
RL Amperage	-	7.22/7.33/8.63
SF Rotation	-	CCW
RA Damper Position	-	52%
Min OA Damper Position	-	48%
Min OA Damper Type	-	ECON
OA Enthalpy Setpt	-	12

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.36"
Fan Suction SP	-	-0.58"
Fan Discharge SP	-	0.67"
Total ESP	-	1.03"
Fan Total SP	-	1.25"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	MILDLY DIRTY
Condensate Drain Installed	-	YES

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Notes:

Area #	Area	Required OA (CM/SC FT)	# of People (P)	Required OA (CM/Person)	Air Distribution Efficiency (E)	Ventilation System Eff. (V)	Required Outside Air (VAV)	Design Outside Air	COMMENTS
CDM-101	1048	0.18	104	1.75	0.8	0.9	968.64	970	1
CDM-102	135	0.06	2	0.5	0.8	0.9	19.3	20	1
CDM-103	45	0.06	0	0	0.8	0.9	2.7	5	1

ASHRAE STANDARD 62.1 VENTILATION REQUIREMENT SCHEDULE

CO2 SUPPLY & WALLER BY ELECT. CONT. SEE SHEET M-2 FOR SPECS

