

Report By:

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Comfort. Under control.

Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 6/30/2022

PROJECT
06-27 FAMILY DOLLAR - JASPER, AR

409 COURT ST

JASPER, AR

Client

Oliphant Heating
208 WOLLARD BLVD
RICHMOND, MO

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Project: 06-27 FAMILY DOLLAR - JASPER, AR

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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) w/ Diffusers

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.

General Exhaust Fans w/ Grilles

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.

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	STORAGE	1400	1291	1250	1139	150	152	10.7%	11.8%						
RTU-2	WEST SALES	2800	2970	2150	2317	650	653	23.2%	22.0%						
RTU-3	EAST SALES	2800	2867	2150	2216	650	651	23.2%	22.7%						
RTU-4	SOUTH SALES	3500	3802	2725	3021	775	781	22.1%	20.5%						
EF-1	RESTROOM													75	72
EF-2	RESTROOM													75	81
TOTALS		10500	10930	8275	8693	2225	2237			0	0	0	0	150	153

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2225	2237
TOTAL EXHAUST	150	153
NET AIRFLOW	2075	2084

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.012
SIDE	NA
REAR	0.015
AVERAGE	0.0135

FINAL CHECKS

- ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✔

- MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✔

- PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✔

NOTES:



STOREFRONT



ROOFTOP



RTU1

Unit picture



RTU2

Unit picture



RTU3

Unit picture



RTU4
Unit picture



EF1
Unit picture



EF2
Unit picture



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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU

Asset: RTU1

AREA:STORAGE

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	1522C09728
Model Num	HC	48GCEM05F2M5A6F0C0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1 METAL MESH
OA Filter Size 1	-	14X28
Num Final Filter 1	-	2
Final Filter Size 1	-	16X25X2

Motor Data		
	Design	Actual
Motor MFG	-	[1]
Frame	-	[1]
Horsepower	-	[1]
Motor Rpm	-	[1]
Phase	3	[1] 1
Rated Voltage	208	[1] 208/230
Rated Amperage	-	[1] 7.1

Drive Data		
	Design	Actual

Test Data		
	Design	Actual
SF CFM	1400	1291
SF RPM	-	1534
RA CFM	1250	1139
OA CFM	150	152
RL Voltage	-	210/210/211
RL Amperage	-	2.9/3.4/3.5
SF Rotation	-	CCW
RA Damper Position	-	3.15V
Min OA Damper Position	-	14%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.27"
Fan Suction SP	-	-0.40"
Fan Discharge SP	-	0.15
Total ESP	1.0"	0.37"
Fan Total SP	-	0.55"

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

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Notes:[1] MOTOR LABEL NOT ACCESSIBLE. INFORMATION TAKEN FROM UNIT LABEL MOTOR SPEED SET AT POSITION A 6.9DCV 90%



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Diffuser Supply (GRD)

RTU1/STORAGE

Asset	Location	Size	DESIGN CFM	AK	CFM(1)	FINAL CFM	% to design
SGRD1	STORAGE	14X6	275	0.785	369	265	96.4
	STORAGE	14X6	275	0.785	259	248	90.2
SGRD2	STORAGE	14X6	275	0.785	234	203	73.8
	STORAGE	14X6	275	0.785	241	271	98.5
SGRD3	OFFICE	8"	100	1	198	104	104.0
	RESTROOM	8"	50	1	212	54	108.0
SGRD4	RESTROOM HALL	8"	100	1	196	93	93.0
	RESTROOM	8"	50	1	182	53	106.0
SGRD5	RESTROOM	8"	50	1	182	53	106.0
	RESTROOM	8"	50	1	182	53	106.0
SGRD6	RESTROOM	8"	50	1	182	53	106.0
	RESTROOM	8"	50	1	182	53	106.0
SGRD7	RESTROOM	8"	50	1	182	53	106.0
	RESTROOM	8"	50	1	182	53	106.0
SGRD8	RESTROOM	8"	50	1	182	53	106.0
	RESTROOM	8"	50	1	182	53	106.0

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Asset	Notes
SGRD3	DIFFUSER IS CLOSE TO THE MAIN DROP WHERE AIR IS TURBULENT. UNABLE TO PUSH MORE AIR TO DIFFUSER WITHOUT BEING A DETRIMENT TO OVERALL UNIT PERFORMANCE. TOTAL AIRFLOW IS WITHIN DESIGN. NOT ANTICIPATED TO BE AN ISSUE.



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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU

Asset: RTU2

AREA:WEST SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	1622P80757
Model Num	HC	48HCED08F2M5A6F0J0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	19.25X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NL
Motor Rpm	-	1670
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	6.7-6.6/3.3

Drive Data		
	Design	Actual
Motor Sheave Size	-	4"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.75"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	2800	2970
SF RPM	-	722
RA CFM	2150	2317
OA CFM	650	653
RL Voltage	-	208/209/209
RL Amperage	-	3.2/3.5/3.9
SF Rotation	-	CCW
RA Damper Position	-	4.0V HIGH 4.85V LOW
Min OA Damper Position	-	25% HIGH 35% LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.43"
Fan Suction SP	-	-0.56"
Fan Discharge SP	-	0.39"
Total ESP	1.0"	0.82"
Fan Total SP	-	0.95"

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

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Diffuser Supply (GRD)

RTU2/WEST SALES

Asset	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	SALES	B	12"	350	400	367	104.9
	SALES	B	12"	350	317	346	98.9
SGRD2	SALES	B	12"	350	472	384	109.7
	SALES	B	12"	350	452	373	106.6
SGRD3	SALES	B	12"	350	432	383	109.4
	SALES	B	12"	350	353	363	103.7
SGRD4	SALES	B	12"	350	412	384	109.7
	SALES	B	12"	350	389	370	105.7
SGRD5	SALES	B	12"	350			
	SALES	B	12"	350			
SGRD6	SALES	B	12"	350			
	SALES	B	12"	350			
SGRD7	SALES	B	12"	350			
	SALES	B	12"	350			
SGRD8	SALES	B	12"	350			
	SALES	B	12"	350			

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Asset	Notes



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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU

Asset: RTU3

AREA:EAST SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	1622P80758
Model Num	HC	48HCED08F2M5A6F0J0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	19.25X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NL
Motor Rpm	-	1670
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	6.7-6.6/3.3

Drive Data		
	Design	Actual
Motor Sheave Size	-	4"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.75"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	2800	2867
SF RPM	-	721
RA CFM	2150	2216
OA CFM	650	651
RL Voltage	-	209/209/210
RL Amperage	-	3.0/3.2/3.6
SF Rotation	-	CCW
RA Damper Position	-	3.4V HIGH 4.3V LOW
Min OA Damper Position	-	17% HIGH 28% LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.44"
Fan Suction SP	-	-0.69"
Fan Discharge SP	-	0.37"
Total ESP	1.0"	0.81"
Fan Total SP	-	1.06"

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

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Notes:



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Diffuser Supply (GRD)

RTU3/EAST SALES

Asset	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	SALES	B	12"	350	383	360	102.9
	SALES	B	12"	350	385	364	104.0
SGRD2	SALES	B	12"	350	382	361	103.1
	SALES	B	12"	350	385	363	103.7
SGRD3	SALES	B	12"	350	364	346	98.9
	SALES	B	12"	350	376	355	101.4
SGRD4	SALES	B	12"	350	392	367	104.9
	SALES	B	12"	350	373	351	100.3
SGRD5	SALES	B	12"	350	373	351	100.3
	SALES	B	12"	350	373	351	100.3
SGRD6	SALES	B	12"	350	373	351	100.3
	SALES	B	12"	350	373	351	100.3
SGRD7	SALES	B	12"	350	373	351	100.3
	SALES	B	12"	350	373	351	100.3
SGRD8	SALES	B	12"	350	373	351	100.3
	SALES	B	12"	350	373	351	100.3

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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU

Asset: RTU4

AREA:SOUTH SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	1622P80628
Model Num	HC	48HCED11F2M5A6F0J0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1 METAL MESH
OA Filter Size 1	-	19.25X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NL
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	208	230/460
Rated Amperage	-	9.2/4.6

Drive Data		
	Design	Actual
Motor Sheave Size	-	4.75"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	AX49
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	3500	3802
SF RPM	-	848
RA CFM	2725	3021
OA CFM	775	781
RL Voltage	-	204/204/205
RL Amperage	-	4.9/5.4/6.0
SF Rotation	-	CCW
RA Damper Position	-	4.1V HIGH 5.1V LOW
Min OA Damper Position	-	26% HIGH 38% LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.68"
Fan Suction SP	-	-0.89"
Fan Discharge SP	-	0.34"
Total ESP	1.0"	1.02"
Fan Total SP	-	1.23"

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

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Notes:



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Project:06-27 FAMILY DOLLAR - JASPER, AR

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Diffuser Supply (GRD)

RTU4/SOUTH SALES

Asset	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	SALES	B	12"	440	431	467	106.1
	SALES	B	12"	440	440	484	110.0
SGRD2	SALES	B	12"	440	440	484	110.0
	SALES	B	12"	435	557	470	108.0
SGRD3	SALES	B	12"	435	557	470	108.0
	SALES	B	12"	435	589	481	110.6
SGRD4	SALES	B	12"	435	589	481	110.6
	SALES	B	12"	435	546	467	107.4
SGRD5	SALES	B	12"	435	546	467	107.4
	SALES	B	12"	435	539	478	109.9
SGRD6	SALES	B	12"	435	539	478	109.9
	SALES	B	12"	440	441	474	107.7
SGRD7	SALES	B	12"	440	441	474	107.7
	SALES	B	12"	440	440	481	109.3
SGRD8	SALES	B	12"	440	440	481	109.3
	SALES	B	12"	440	440	481	109.3

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Asset	Notes

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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: FAN - Exhaust



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Asset: EF1

AREA:RESTROOM

Unit Data		
	Design	Actual
MFG	GREENHECK	BROAN
Model Num	SP-B110	LP80-B
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	75	72
Fan RPM	-	UTO
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	123
RL Amperage	-	0.19
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Motor Data		
	Design	Actual
Motor MFG	-	BROAN
Frame	-	NL
Horsepower	80W	NL
Motor Rpm	-	NL
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	0.3
Service Factor	-	1

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Notes:HARD CEILING MOUNTED SINGLE SPEED FAN

Asset	Notes

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Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: FAN - Exhaust



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Asset: EF2

AREA:RESTROOM

Unit Data		
	Design	Actual
MFG	GREENHECK	BROAN
Model Num	SP-B110	LP80-B
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	75	81
Fan RPM	-	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	122
RL Amperage	-	0.19
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Motor Data		
	Design	Actual
Motor MFG	-	BROAN
Frame	-	NL
Horsepower	-	NL
Motor Rpm	-	NL
Phase	3	1
Voltage (rated)	120	120
Amperage (rated)	-	0.30
Service Factor	-	1

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Notes:HARD CEILING MOUNTED SINGLE SPEED FAN

Asset	Notes

