

Report By:

**National TAB
1329 E. KEMPER ROAD
SUITE 4210
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**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

National TAB

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.



STOREFRONT



ROOFTOP



RTU1
Unit picture



RTU2
Unit picture



RTU3
Unit picture



RTU4

Unit picture



EF1

Unit picture



EF2

Unit picture

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:

National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU



Comfort. Under control.

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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Project:06-27 FAMILY DOLLAR - JASPER, AR

AHU/RTU



Diffuser Supply (GRD)

RTU1/STORAGE

Asset	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
SGRD1	STORAGE	D	14X6	275	0.785	369	341
	FINAL CFM	% to design					
	265	96.4					
SGRD2	STORAGE	D	14X6	275	0.785	259	309
	FINAL CFM	% to design					
	248	90.2					
SGRD3	STORAGE	D	14X6	275	0.785	234	258
	FINAL CFM	% to design					
	203	73.8					
SGRD4	STORAGE	D	14X6	275	0.785	241	349
	FINAL CFM	% to design					
	271	98.5					
SGRD5	OFFICE	A	8"	100	1	198	134
	FINAL CFM	% to design					
	104	104.0					
SGRD6	RESTROOM	C	8"	50	1	212	73
	FINAL CFM	% to design					
	54	108.0					
SGRD7	RESTROOM HALL	A	8"	100	1	196	120
	FINAL CFM	% to design					
	93	93.0					
SGRD8	RESTROOM	C	8"	50	1	182	71
	FINAL CFM	% to design					
	53	106.0					

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Asset	Notes
RTU1	[1] MOTOR LABEL NOT ACCESSIBLE. INFORMATION TAKEN FROM UNIT LABEL MOTOR SPEED SET AT POSITION A 6.9DCV 90%

National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU



Comfort. Under control.

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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Project:06-27 FAMILY DOLLAR - JASPER, AR

AHU/RTU



Diffuser Supply (GRD)

RTU2/WEST SALES

Asset	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK
SGRD1	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		400		388	367	104.9	
SGRD2	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		317		366	346	98.9	
SGRD3	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		472		412	384	109.7	
SGRD4	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		452		394	373	106.6	
SGRD5	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		432		405	383	109.4	
SGRD6	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		353		384	363	103.7	
SGRD7	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		412		412	384	109.7	
SGRD8	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		389		391	370	105.7	

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Asset	Notes
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National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU



Comfort. Under control.

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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Project:06-27 FAMILY DOLLAR - JASPER, AR

AHU/RTU



Diffuser Supply (GRD)

RTU3/EAST SALES

Asset	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK
SGRD1	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		383		381	360	102.9	
SGRD2	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		385		386	364	104.0	
SGRD3	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		382		382	361	103.1	
SGRD4	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		385		384	363	103.7	
SGRD5	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		364		366	346	98.9	
SGRD6	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		376		376	355	101.4	
SGRD7	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		392		388	367	104.9	
SGRD8	SALES	B	SUPPLY	12"	NA	350	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		373		371	351	100.3	

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Asset	Notes
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National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: AHU/RTU



Comfort. Under control.

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:

National TAB

Project:06-27 FAMILY DOLLAR - JASPER, AR

AHU/RTU



Diffuser Supply (GRD)

RTU4/SOUTH SALES

Asset	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK
SGRD1	SALES	B	SUPPLY	12"	NA	440	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		431		490	467	106.1	
SGRD2	SALES	B	SUPPLY	12"	NA	440	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		440		507	484	110.0	
SGRD3	SALES	B	SUPPLY	12"	NA	435	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		557		493	470	108.0	
SGRD4	SALES	B	SUPPLY	12"	NA	435	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		589		504	481	110.6	
SGRD5	SALES	B	SUPPLY	12"	NA	435	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		546		490	467	107.4	
SGRD6	SALES	B	SUPPLY	12"	NA	435	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		539		501	478	109.9	
SGRD7	SALES	B	SUPPLY	12"	NA	440	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		441		497	474	107.7	
SGRD8	SALES	B	SUPPLY	12"	NA	440	1
	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design	
		440		504	481	109.3	

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Asset	Notes
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National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: FAN - Exhaust



Comfort. Under control.

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

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

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

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Notes:HARD CEILING MOUNTED SINGLE SPEED FAN

Asset	Notes
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National TAB

Project: 06-27 FAMILY DOLLAR - JASPER, AR

System/Unit: FAN - Exhaust



Comfort. Under control.

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

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

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

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Notes:HARD CEILING MOUNTED SINGLE SPEED FAN

Asset	Notes
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