Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/05/2023

PROJECT

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

1448 RICHMOND RD

CHARLOTTESVILLE,, VA

Client

Comfort Systems USA

9450 W Wingfoot Rd

Houston, TX 77041

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.

Facility Identification and TAB Requirements
The mechanical equipment to be tested, adjusted, and balanced includes all RTU's and EF's on the Test and Balance Scope on the mechanical drawings.

Standard RTU’s
Each of the RTU’s were measured at their terminal devices utilizing a flow hood or via total traverse. The sum of these readings is equal to the total flow for that unit. The total flow of each RTU was then adjusted to within tolerance of the specified design. Outside airflow was measured by reading the inlet with a velocity grid times the area of the filter. Any equipment that fell outside of this tolerance is noted throughout the report.

Bypass RTU's
The Bypass RTU's were measured by first closing the bypass damper completely. By doing this, the outside airflow is equal to the total flow for the unit. The airflow was measured using a velgrid at the outdoor air intake and multiplying by the free area of the filters. Adjustments were made to the motor sheave to get airflow within tolerance of design. The bypass damper was then adjusted so that bypass and OA flows are within tolerance.

Exhaust Fans
The exhaust fans were measured by reading each air device with a flow hood or via a velgrid reading times the free area of the inlets. 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. Any equipment that fell outside of this tolerance is noted throughout the report.

Issue List

- EF-10 Low Flow
- RTU-8 Motor Sheave Seized
- RTU8-SGRD1 Low Flow

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

Project Issue Information

Issue Name : EF-10 Low Flow

Description : Fan is running at 86% of design. Motor sheave is 1 Turn Out.

Created By : National TAB

Assigned To : National TAB - Antonio Flores-De La Cruz

Status : Closed

Originated Date : 10/05/2023 - Antonio Flores-De La Cruz - National TAB

Project Issue File Details

EF10
10/05/2023

EF10PULLEYS
10/05/2023

Project Issue Response Details

- **10/05/2023 National TAB - Stephen Tassinaro**
  - Discussed with Comfort Systems & Engineering team. It was determined it is best to leave this fan as-is at this time.

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

Project Issue Information

Issue Name : RTU-8 Motor Sheave Seized

Description : Unit is operating 11% above design (111%). Motor sheave is seized and unable to adjust. Recommended to loosen or replace, and reduce fan speed by 10%. Unit is operating below FLA. Outside air set proportionally high to accommodate. Design OA: 5000CFM / Actual: 5556CFM

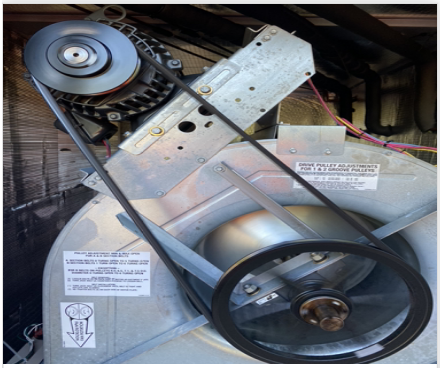
Created By : National TAB

Assigned To : National TAB - Antonio Flores-De La Cruz

Status : Open

Originated Date : 10/05/2023 - Antonio Flores-De La Cruz - National TAB

Project Issue File Details



RTU8PULLEY
10/05/2023

RTU8MOTORSHEAVE
10/05/2023

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

Project Issue Information

Issue Name : RTU8-SGRD1 Low Flow

Description : SGRD8-1 is unable to be set to design. After the ductwork was checked, flex duct position was adjusted and small openings were patched and only 50 CFM was added to finish at 111 CFM. Damper is 100% open as well. Dampers in Garage area were attempted to close, but rust did not allow for them to work properly. SGRD8-1 is located in a Storage/Data room

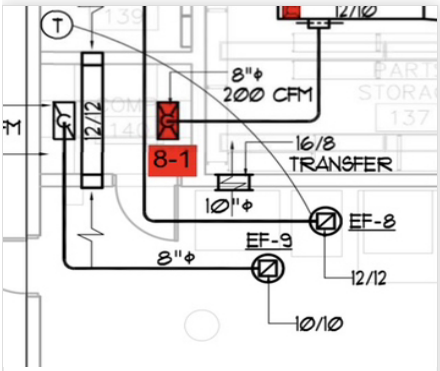
Created By : National TAB

Assigned To : National TAB - Antonio Flores-De La Cruz

Status : Open

Originated Date : 10/05/2023 - Antonio Flores-De La Cruz - National TAB

Project Issue File Details



SGRD81
10/05/2023

SGRD8-1-DUCT
10/05/2023

CheckList List

- TECH - SITE PICTURES
- TECH - STEP 1: INITIAL SITE WALKTHROUGH
- TECH - STEP 2: UNIT DATA AND EVAL
- TECH - STEP 3: TEST, ADJUST AND BALANCE
- TECH - STEP 4: FINAL TESTS

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

CheckList Information

Name :	TECH - SITE PICTURES	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/02/2023 - Brian Turnbough - National TAB		
Completed Date :	10/05/2023 - Antonio Flores-De La Cruz - National TAB		

CheckList Item Details

STORE FRONT

Comment:

STOREFRONT
10/05/2023

RTU-1

Comment:

RTU1
10/05/2023

RTU-2

Comment:

RTU2(1)
10/05/2023

RTU-3

Comment:

RTU_3
10/05/2023

RTU-4

Comment:

RTU4
10/05/2023

RTU-5

Comment:

RTU_5
10/05/2023

RTU-6

Comment:

RTU6
10/05/2023

RTU-7

Comment:

RTU7
10/05/2023

RTU-8

Comment:

RTU8
10/05/2023

EF-7

Comment:

EF-7
10/05/2023

EF-8

Comment:

EF8
10/05/2023

EF-9

Comment:

EF9(1)
10/05/2023

EF-10

Comment:

EF10
10/05/2023

EF-11

Comment:

EF11
10/05/2023

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

CheckList Information

Name :	TECH - STEP 1: INITIAL SITE WALKTHROUGH	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/02/2023 - Brian Turnbough - National TAB		
Completed Date :	10/05/2023 - Antonio Flores-De La Cruz - National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	Yes
Comment:	
All hood filters installed and accounted for?	N/A
Comment:	
Hoods are wired and have power?	N/A
Comment:	
Hood is free of alarms?	N/A
Comment:	
Thermostats have power?	Yes
Comment:	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	

Comment:

Yes

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

CheckList Information

Name :	TECH - STEP 2: UNIT DATA AND EVAL	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/02/2023 - Brian Turnbough - National TAB		
Completed Date :	10/05/2023 - Antonio Flores-De La Cruz - National TAB		

CheckList Item Details

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:

RTU's/AHU's

Economizers are assembled and functional?	Yes
Comment:	
DCV Max damper opening position is set to minimum?	Yes
Comment:	
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes
Comment:	
Motors are all operating below the FLA rating?	Yes
Comment:	
Are belts tight?	
Comment:	
Yes	
If direct drive unit is the speed controller working.	

Comment:

Yes

Is gas piping installed and valves turned on?	Yes

Comment:

Unit free of noticeable noise and vibration	Yes

Comment:

EF's

Rotation is correct?	Yes

Comment:

Belts are tight?

Comment:

Yes

Grease cup installed on hood fan?	N/A

Comment:

Hinge kit installed installed on hood fan?	N/A

Comment:

Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	N/A

Comment:

Flex conduit is long enough so that fan can be completely tilted back?	N/A

Comment:

There is no major leakage around base of fan?	Yes

Comment:

Is the motor operating below the motor FLA rating?	Yes

Comment:

For restroom fan(s) is the back draft damper installed and can it fully open?	N/A

Comment:

Unit free of noticeable noise and vibration?	Yes

Comment:

MUA

Rotation is correct?	N/A

Comment:

Gas piping is installed and valves are in on position?	N/A

Comment:

Heater tested and is functional?	N/A

Comment:

Internal motorized damper is fully opening?	N/A

Comment:

Motor is operating below the FLA rating?	N/A

Comment:

Unit free of noticeable noise and vibration?	N/A

Comment:

HOODS

Kitchen equipment installed in proper places?	N/A

Comment:

Can kitchen equipment be turned on for final smoke test?	N/A

Comment:

DOCUMENTATION

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

Comment:

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/02/2023 - Brian Turnbough - National TAB		
Completed Date :	10/04/2023 - Antonio Flores-De La Cruz - National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?	Yes

Comment:

Is space comfortable in all areas?	Yes

Comment:

Is the space free of ventilation noise?	Yes

Comment:

If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".

Comment:

N/A

10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

CheckList Information

Name :	TECH - STEP 4: FINAL TESTS	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/02/2023 - Brian Turnbough - National TAB		
Completed Date :	10/05/2023 - Antonio Flores-De La Cruz - National TAB		

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing

Comment:

N/A

List smoke candle type used

Comment:

N/A

Smoke test capture - Perimeter of hood

Comment:

N/A

Smoke test capture - Top of cooking surface

Comment:

N/A

WITNESS

Date test was completed

Comment:

N/A

TAB tech name / Firm

Comment:

N/A

Site super name / Firm

Comment:

N/A

Owner representative name / Firm (if Applicable)

Comment:

N/A

Building pressure at front & back doors (All Systems On)

Comment:

N/A

ADDITIONAL

Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)

Comment:

N/A

Thermostats are programmed?	Yes

Comment:

ON BACNET

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU1 AREA:SHOWROOM

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622G09759
Model Num	LGH300H4B	LGH120H4M
Type	RTU	RTU
Configuration	Vertical	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14.125x23.125
Num Final Filter 1	-	4
Final Filter Size 1	-	20x25x2

Motor Data		
	Design	**Actual**
Motor MFG	-	US MOTORS
Frame	-	184TZ
Horsepower	3	3
Motor Rpm	1765	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	7.3	7.3

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5"
Motor Bore Size	-	1.125"
Motor Sheave SetPt	-	2 TO
Fan Sheave Size	-	7.5"
Fan Sheave Bore	-	0.875"
Belt CL Distance	-	21.5"
Num of Belts	-	1
Belt Size	-	BX59
Belt Alignment	-	CORRECT

Test Data		
	Design	**Actual**
SF CFM	4500	4573
SF RPM	-	1006
RA CFM	3950	4006
OA CFM	550	567
RL Voltage	-	488/488/490
RL Amperage	-	4.7/4.7/4.9
SF Rotation	-	CCW
RA Damper Position	-	72%
Min OA Damper Position	-	28%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.64"
Fan Suction SP	-	-1.09"
Fan Discharge SP	-	1.18"
Total ESP	0.8"	1.82"
Fan Total SP	-	2.27"

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

Completed By: Antonio Flores-De La Cruz on 10/02/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU2 AREA:SHOWROOM

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5623H02562
Model Num	LGH300H4B	LGT120H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14.125x23.125
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	EBMPAPST
Frame	-	NL
Horsepower	3.0	3
Motor Rpm	-	2240
Phase	3	3
Rated Voltage	480	480
Rated Amperage	7.5	7.5

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	
Fan Sheave Size	-	DD
Fan Sheave Bore	-	DD
Belt CL Distance	-	DD
Num of Belts	-	DD
Belt Size	-	DD
Belt Alignment	-	DD

Test Data		
	Design	**Actual**
SF CFM	4500	4338
SF RPM	-	DD
RA CFM	3950	3776
OA CFM	550	562
RL Voltage	-	488/488/486
RL Amperage	-	2.6/2.6/2.7
SF Rotation	-	CCW
RA Damper Position	-	76%
Min OA Damper Position	-	24%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.57"
Fan Suction SP	-	-0.99"
Fan Discharge SP	-	0.50"
Total ESP	0.8"	1.07"
Fan Total SP	-	1.49"

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

Completed By: Antonio Flores-De La Cruz on 10/03/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU3 AREA:BUYERS

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622G11299
Model Num	LGH300H4B	LGH036H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29.125X14.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	GENTEQ
Frame	-	NA
Horsepower	0.5	0.5
Motor Rpm	-	NA
Phase	1	1
Rated Voltage	115	115
Rated Amperage	-	2.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	
Fan Sheave Size	-	DD
Fan Sheave Bore	-	DD
Belt CL Distance	-	DD
Num of Belts	-	DD
Belt Size	-	DD
Belt Alignment	-	DD

Test Data		
	Design	**Actual**
SF CFM	1051	1096
SF RPM	-	DD
RA CFM	951	988
OA CFM	100	108
RL Voltage	-	488
RL Amperage	-	0.8
SF Rotation	-	CW
RA Damper Position	-	80%
Min OA Damper Position	-	20%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.10"
Fan Suction SP	-	-0.20"
Fan Discharge SP	-	0.21"
Total ESP	0.6"	0.31"
Fan Total SP	-	0.41"

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

Completed By: Antonio Flores-De La Cruz on 10/03/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU4 AREA:BUSINESS

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622H01320
Model Num	LGH300H4B	LGH036H4E
Type	RTU	RTU
Configuration	Vertical	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29.125X14.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	GENTEQ
Frame	-	NA
Horsepower	0.5	0.5
Motor Rpm	-	NA
Phase	1	1
Rated Voltage	115	115
Rated Amperage	-	2.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD

Test Data		
	Design	**Actual**
SF CFM	1100	1135
SF RPM	-	DD
RA CFM	1000	1036
OA CFM	100	99
RL Voltage	-	493
RL Amperage	-	0.8
SF Rotation	-	CW
RA Damper Position	-	77%
Min OA Damper Position	-	23%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.09"
Fan Suction SP	-	-0.20"
Fan Discharge SP	-	0.23"
Total ESP	0.6"	0.32"
Fan Total SP	-	0.43"

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

Completed By: Antonio Flores-De La Cruz on 10/03/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU5 AREA:CUSTOMER LOUNGE

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622G11304
Model Num	LGH300H4B	LGH036H4E
Type	RTU	RTU
Configuration	Vertical	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29.125X14.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	GENTEQ
Frame	-	NA
Horsepower	0.5	0.5
Motor Rpm	-	NA
Phase	1	1
Rated Voltage	115	115
Rated Amperage	-	2.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD

Test Data		
	Design	**Actual**
SF CFM	1100	1181
SF RPM	-	DD
RA CFM	980	1058
OA CFM	120	123
RL Voltage	-	493
RL Amperage	-	0.8
SF Rotation	-	CCW
RA Damper Position	-	87%
Min OA Damper Position	-	13%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.11"
Fan Suction SP	-	-0.22"
Fan Discharge SP	-	0.33"
Total ESP	0.6"	0.44"
Fan Total SP	-	0.55"

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

Completed By: Antonio Flores-De La Cruz on 10/02/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU6 AREA:PBX

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622G10922
Model Num	LGH300H4B	LGH036H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	GENTEQ
Frame	-	NA
Horsepower	0.5	0.5
Motor Rpm	-	NA
Phase	1	1
Rated Voltage	115	115
Rated Amperage	-	2.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD

Test Data		
	Design	**Actual**
SF CFM	960	920
SF RPM	-	DD
RA CFM	960	920
OA CFM	-	0
RL Voltage	-	488
RL Amperage	-	2.1
SF Rotation	-	CW
RA Damper Position	-	100%
Min OA Damper Position	-	0%
Min OA Damper Type	-	NONE
OA Enthalpy Setpt	-	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.19"
Fan Suction SP	-	-0.28"
Fan Discharge SP	-	0.57"
Total ESP	0.6"	0.76"
Fan Total SP	-	0.85"

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

Completed By: Antonio Flores-De La Cruz on 10/03/2023

Notes:
NO OA HOOD INSTALLED

Written By: Antonio Flores-De La Cruz on 10/03/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU7 AREA:BREAK/CONFERENCE ROOM

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622G09684
Model Num	LGH300H4B	LGH048H4E
Type	RTU	RTU
Configuration	Vertical	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29.125X14.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	GENTEQ
Frame	-	NA
Horsepower	0.75	0.75
Motor Rpm	-	NA
Phase	1	1
Rated Voltage	115	115
Rated Amperage	-	2.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD

Test Data		
	Design	**Actual**
SF CFM	1200	1279
SF RPM	-	DD
RA CFM	940	1028
OA CFM	260	251
RL Voltage	-	490
RL Amperage	-	1.7
SF Rotation	-	CW
RA Damper Position	-	79%
Min OA Damper Position	-	21%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.34"
Fan Suction SP	-	-0.52"
Fan Discharge SP	-	0.38"
Total ESP	0.6"	0.72"
Fan Total SP	-	0.90"

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

Completed By: Antonio Flores-De La Cruz on 10/03/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: AHU/RTU

Asset: RTU8 AREA:SERVICE AREA (BP)

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5622H03183
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38.125X11.875
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	US MOTORS
Frame	-	184TZ
Horsepower	5.0	5.0
Motor Rpm	1765	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	7.3	7.3

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1.125"
Motor Sheave SetPt	-	2 TO
Fan Sheave Size	-	BK120H
Fan Sheave Bore	-	1.187"
Belt CL Distance	-	23.5"
Num of Belts	-	1
Belt Size	-	BK71
Belt Alignment	-	CORRECT

Test Data		
	Design	**Actual**
SF CFM	7000	7776
SF RPM	-	761
RA CFM	2000	2200
OA CFM	5000	5556
RL Voltage	-	486/485/487
RL Amperage	-	6.5/6.5/6.6
SF Rotation	-	CCW
RA Damper Position	-	75%
Min OA Damper Position	-	100%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	1 mA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.38"
Fan Suction SP	-	-0.84"
Fan Discharge SP	-	1.02"
Total ESP	0.8"	1.40"
Fan Total SP	-	1.86"

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

Completed By: Antonio Flores-De La Cruz on 10/05/2023

Notes:
[1] UNIT AT 111% OF DESIGN, MOTOR SHEAVE FROZEN, UNABLE TO ADJUST. RECOMMEND SHEAVE IS BROKEN LOOSE SO FAN CAN BE SLOWED IN TO DESIGN.

Written By: Michael McDonnell on 11/02/2023

National TAB

Project:10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

AHU/RTU

Diffuser Supply (GRD)

RTU8/SERVICE AREA (BP)

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
RTU8-SGRD1	COMPUTER	12/10	8"	200	1	56	105	111	55.5
RTU8-SGRD2	PARTS STORAGE	12/10 NK		200	1	200	204	217	108.5
RTU8-SGRD3	PARTS STORAGE	12/10 NK		200	1	200	207	218	109.0
RTU8-SGRD4	SERVICE AREA	24/14 NK		725	1	864	826	826	113.9
RTU8-SGRD5	SERVICE AREA	24/14 NK		725	1	834	826	826	113.9
RTU8-SGRD6	SERVICE AREA	24/14 NK		725	1	834	826	826	113.9
RTU8-SGRD7	SERVICE AREA	24/14 NK		725	1	834	826	826	113.9
RTU8-SGRD8	SERVICE AREA	24/14 NK		725	1	834	826	826	113.9
RTU8-SGRD9	SERVICE AREA	24/14 NK		725	1	834	826	826	113.9
RTU8-SGRD10	TOILET		6"	50	1	37	54	54	108.0
Total				5000		5527	5526	5556	111.12%

Asset	Notes	Date	Written By
RTU8-SGRD1	[1] LOW ON AIRFLOW, UNABLE TO PUSH AIR TO DIFFUSER, SEE ISSUE.	11/02/2023	Michael McDonnell

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: FAN - Exhaust

Asset: EF7 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-D-X	SP-A110-QD
Serial Num	-	10617996
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MCMILLAN
Frame	-	NA
Horsepower	-	NA
Motor Rpm	-	NA
Phase	-	1
Voltage (rated)	115	115
Amperage (rated)	-	NA
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	110	104
Fan RPM	DD	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	DIAL
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.08"
Fan Inlet SP	-	-0.08"
Fan Discharge SP	-	ATM

Completed By: Antonio Flores-De La Cruz on 10/04/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: FAN - Exhaust

Asset: EF8 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-D-X	G-080-D-X
Serial Num	-	106044990610
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MCMILLAN
Frame	-	NL
Horsepower	0.07	0.07
Motor Rpm	1550	1550
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	1.2
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	300	323
Fan RPM	-	DD
Fan Rotation	-	CW
Motor RPM	-	DD
System SetPt	-	MED SPEED
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.13"
Fan Inlet SP	-	-0.13"
Fan Discharge SP	-	ATM

Completed By: Antonio Flores-De La Cruz on 10/04/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: FAN - Exhaust

Asset: EF9 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-D-X	G-080-D-X
Serial Num	-	106044980610
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MCMILLAN
Frame	-	NL
Horsepower	0.07	0.07
Motor Rpm	1550	1550
Phase	1	1
Voltage (rated)	1.2	115
Amperage (rated)	-	1.2
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	200	211
Fan RPM	DD	DD
Fan Rotation	-	CW
Motor RPM	-	DD
System SetPt	-	LOW SPEED
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.11"
Fan Inlet SP	-	-0.11"
Fan Discharge SP	-	ATM

Completed By: Antonio Flores-De La Cruz on 10/04/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: FAN - Exhaust

Asset: EF10 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SWB-212-20-CW-UB-X	SWB-212-20-CW-UB-X
Serial Num	-	06J04140
Type	UTILITY	UTILITY
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR
Frame	-	56H
Horsepower	2	2
Motor Rpm	1750	1750
Phase	3	3
Voltage (rated)	208	460
Amperage (rated)	-	5.9
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP56
Motor Bore Size	-	0.6875"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	3"
Fan Sheave Bore	-	1"
Belt CL Distance	-	8.5"
Num of Belts	-	1
Belt Size	-	AX28

Test Data		
	Design	**Actual**
CFM	1800	1545
Fan RPM	-	NA
Fan Rotation	-	CW
Motor RPM	-	1770
RL Voltage	-	488/488/486
RL Amperage	-	2.5/2.5/2.6
Suction ESP	-	-4.08"
Discharge ESP	-	ATM
Total ESP	-	4.08"

Completed By: Antonio Flores-De La Cruz on 10/05/2023

Notes:
[1] FAN PERFORMING AT 85.8% OF DESIGN. DISCUSSED WITH ENGINEERING TEAM; AIRFLOW DETERMINED TO BE SUFFICIENT AND LEFT FAN AT THIS SETPOINT BASED ON STATIC PRESSURE.

Written By: Michael McDonnell on 11/02/2023

National TAB

Project: 10-02-23 CARMAX #7290 - CHARLOTTESVILLE, VA

System/Unit: FAN - Exhaust

Asset: EF11 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SWB-212-20-CW-UB-X	CUBE-161-5-X
Serial Num	-	106045010610
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	48Z
Horsepower	0.5	0.5
Motor Rpm	1725	1725
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	7.2
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP34S
Motor Bore Size	-	0.56"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	AK5134
Fan Sheave Bore	-	0.75"
Belt CL Distance	-	5.5"
Num of Belts	-	1
Belt Size	-	AX21

Test Data		
	Design	**Actual**
CFM	2500	2548
Fan RPM	-	1056
Fan Rotation	-	CCW
Motor RPM	-	1727
RL Voltage	-	120
RL Amperage	-	NA
Suction ESP	-	-0.28"
Discharge ESP	-	ATM
Total ESP	-	0.28"

Completed By: Antonio Flores-De La Cruz on 10/03/2023