

Report By:

National TAB
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Comfort. Under control.

Report: FINAL TAB REPORT
Function: Test, Adjust, & Balance
Date: 09/21/2022

PROJECT

08-29 CARMAX #7159 MODESTO, CA

4300 MCHENRY AVE

MODESTO, CA

Client

Comfort Systems USA

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Project: 08-29 CARMAX #7159 MODESTO, CA

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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.

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 particular 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 made to the motor sheave in order to get airflow within tolerance of design. The bypass damper is then adjusted so that bypass and OA flows are within tolerance.

ERV RTU's

The supply air portion of the ERV is 100% OA that is supplied to the space via two fans in series. The airflow was measured by reading the intake air filter with a velgrid and multiplying by the free area of the filter. Adjustments were made to the airflow by adjusting the motor sheaves to balance airflow within design tolerances. The exhaust system has one fan and was measured via either traverse or by reading the inlets with a velgrid and multiplying by the free area of the filter.

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.

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU1

AREA:SHOWROOM

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09457
Model Num	LGH180H4M	LGH180H4M
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	23X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184ZT
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP65B
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	4 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX65
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	6750	7205
SF RPM	-	887
RA CFM	6100	6582
OA CFM	650	623
RL Voltage	-	470/471/470
RL Amperage	-	5.8/5.9/5.9
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.25"
Fan Suction SP	-	-1.05"
Fan Discharge SP	-	0.25"
Total ESP	0.80"	0.5"
Fan Total SP	-	1.3"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU2

AREA:SHOWROOM

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09455
Model Num	LGH180H4M	LGH180H4M
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	23X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	185TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP65B
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	5 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX65
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	6750	7151
SF RPM	-	816
RA CFM	6100	6498
OA CFM	650	653
RL Voltage	-	471/472/471
RL Amperage	-	5.5/5.9/5.6
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.61"
Fan Suction SP	-	-0.95"
Fan Discharge SP	-	0.20"
Total ESP	0.80"	0.92"
Fan Total SP	-	1.33"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU3

AREA: CUSTOMER

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09730
Model Num	LGH048H4E	LGH048H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	3/4	0.75
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.1

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1300	1388
SF RPM	-	60%
RA CFM	1100	1176
OA CFM	200	212
RL Voltage	-	469/471/472
RL Amperage	-	2.6/2.7
SF Rotation	-	CCW
RA Damper Position	-	85%
Min OA Damper Position	-	15% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.14"
Fan Suction SP	-	-0.40"
Fan Discharge SP	-	0.51"
Total ESP	0.60"	0.65"
Fan Total SP	-	0.91"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU4

AREA:BUSINESS

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09714
Model Num	LGH060H4E	LGH060H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	1	1
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.7

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	2050	2246
SF RPM	-	70%
RA CFM	1850	2049
OA CFM	200	197
RL Voltage	-	472/473/471
RL Amperage	-	3.1/3.2
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.21"
Fan Suction SP	-	-0.42"
Fan Discharge SP	-	0.29"
Total ESP	0.60"	0.5"
Fan Total SP	-	0.71"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU5

AREA:BUYERS

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09732
Model Num	LGH048H4E	LGH048H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	3/4	3/4
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	3.1

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1150	1211
SF RPM	-	48%
RA CFM	950	1000
OA CFM	200	211
RL Voltage	-	471/472/470
RL Amperage	-	2.7/2.8
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.21"
Fan Suction SP	-	-0.42"
Fan Discharge SP	-	0.40"
Total ESP	0.60"	0.61"
Fan Total SP	-	0.82"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU6

AREA:DATA/PBX

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09870
Model Num	LCH036H4E	LCH036H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	1/2	0.5
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	2.2

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	960	1037
SF RPM	-	44%
RA CFM	960	1037
OA CFM	0	0
RL Voltage	-	471/472/472
RL Amperage	-	1.48/1.46
SF Rotation	-	CCW
RA Damper Position	-	100%
Min OA Damper Position	-	0% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.15"
Fan Suction SP	-	-0.3"
Fan Discharge SP	-	0.23"
Total ESP	0.60"	0.38"
Fan Total SP	-	0.53"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU7

AREA: BREAK/CONF

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09746
Model Num	LGH048H4E	LGH048H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	3/4	0.75
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.1

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1300	1382
SF RPM	-	58%
RA CFM	1100	1093
OA CFM	300	289
RL Voltage	-	472/470/471
RL Amperage	-	2.9/2.9
SF Rotation	-	CCW
RA Damper Position	-	75%
Min OA Damper Position	-	25% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.33"
Fan Suction SP	-	-0.58"
Fan Discharge SP	-	0.31"
Total ESP	0.60"	0.64"
Fan Total SP	-	0.89"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU8

AREA:SERVICE WRITER

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09724
Model Num	LGH048H4E	LGH048H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	3/4	0.75
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.1

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1700	1676
SF RPM	-	60%
RA CFM	1520	1493
OA CFM	180	183
RL Voltage	-	470/469/470
RL Amperage	-	3.2/3.1/3.2
SF Rotation	-	CCW
RA Damper Position	-	85%
Min OA Damper Position	-	15%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.29"
Fan Suction SP	-	-0.49"
Fan Discharge SP	-	0.27"
Total ESP	0.60"	0.56"
Fan Total SP	-	0.76"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU9

AREA:PARTS

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09739
Model Num	LGH048H4E	LGH048H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	3/4	0.75
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.1

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1200	1257
SF RPM	-	50%
RA CFM	930	975
OA CFM	270	282
RL Voltage	-	470/471/471
RL Amperage	-	2.5/2.6
SF Rotation	-	CCW
RA Damper Position	-	80% OPEN
Min OA Damper Position	-	20% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.22"
Fan Suction SP	-	-0.44"
Fan Discharge SP	-	0.26"
Total ESP	0.60"	0.48"
Fan Total SP	-	0.7"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU10

AREA:SERVICE AREA (ERV)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C08689
Model Num	LGH240H4B	LGH240H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	38.4X24
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	185TZ
Horsepower	-	5
Motor Rpm	-	1765
Phase	-	3
Rated Voltage	-	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP65B
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX65
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	6000	6538
SF RPM	-	944
RA CFM	0	0
OA CFM	6000	6538
RL Voltage	-	465/466/466
RL Amperage	-	6.46.1/6.2/6.1
SF Rotation	-	CCW
RA Damper Position	-	0
Min OA Damper Position	-	100%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.85

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.68"
Fan Suction SP	-	-1.24"
Fan Discharge SP	-	0.23"
Total ESP	1.0"	0.91"
Fan Total SP	-	1.47"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



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Diffuser Supply (GRD)

RTU10/SERVICE AREA (ERV)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE AREA	1500	1.73	1824	1619	1619	107.9
SGRD2	SERVICE AREA	1500	1.73	1745	1645	1645	109.7
SGRD3	SERVICE AREA	1500	1.73	1469	1625	1625	108.3
SGRD4	SERVICE AREA	1500	1.73	1504	1649	1649	109.9

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



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Asset: RTU11

AREA:SERVICE AREA (BP)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621D00629
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38X11
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	1-3/16"
Fan Sheave Bore	-	11"
Belt CL Distance	-	23.5"
Num of Belts	-	1
Belt Size	-	BX71
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	7000	6528
SF RPM	-	762
RA CFM	1000	958
OA CFM	6000	5623
RL Voltage	-	469/470/468
RL Amperage	-	5.7/5.8/6.1
SF Rotation	-	CCW
RA Damper Position	-	15%
Min OA Damper Position	-	100% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.48"
Fan Suction SP	-	-1.22"
Fan Discharge SP	-	0.65"
Total ESP	1.0"	1.13"
Fan Total SP	-	1.87"

General		
	Design	Actual
Fan Rotation Correct	-	VERIFIED
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU11/SERVICE AREA (BP)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE AREA	1500	2.34	1702	1642	1642	109.5
SGRD2	SERVICE AREA	1500	2.34	1738	1623	1623	108.2
SGRD3	SERVICE AREA	1500	2.34	1656	1636	1636	109.1
SGRD4	SERVICE AREA	1500	2.34	1485	1627	1627	108.5

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Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU12

AREA:SERVICE AREA (BP)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621D00631
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38X11
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	2 TURNS OPEN
Fan Sheave Size	-	1-3/16"
Fan Sheave Bore	-	11"
Belt CL Distance	-	24"
Num of Belts	-	1
Belt Size	-	BX71
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	7000	6838
SF RPM	-	749
RA CFM	1000	1053
OA CFM	6000	5785
RL Voltage	-	469/469/471
RL Amperage	-	5.7/5.8/5.6
SF Rotation	-	CCW
RA Damper Position	-	30%
Min OA Damper Position	-	100% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.4

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.46"
Fan Suction SP	-	-0.86"
Fan Discharge SP	-	0.16"
Total ESP	1.0"	0.62"
Fan Total SP	-	1.02"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Notes:

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU12/SERVICE AREA (BP)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE AREA	1320	3.21	1402	1272	1272	96.4
SGRD2	SERVICE AREA	1320	3.21	1258	1272	1272	96.4
SGRD3	SERVICE AREA	1320	3.21	1398	1301	1301	98.6
SGRD4	SERVICE AREA	1320	3.21	1378	1282	1282	97.1
SGRD5	MENS RR	125	1	102	137	137	109.6
SGRD6	WOMENS RR	50	1	43	54	54	108.0
SGRD7	COMPUTER	450	0.785	203	467	467	103.8

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National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU13

AREA:SERVICE AREA (BP)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621D00635
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38X11
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	2 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	24"
Num of Belts	-	1
Belt Size	-	BX71
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	7000	7265
SF RPM	-	759
RA CFM	1000	1078
OA CFM	6000	6187
RL Voltage	-	471/471/472
RL Amperage	-	5.98/5.82/5.9
SF Rotation	-	CCW
RA Damper Position	-	30% OPEN
Min OA Damper Position	-	100% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.37"
Fan Suction SP	-	0.88"
Fan Discharge SP	-	-0.12"
Total ESP	1.0"	0.49"
Fan Total SP	-	1"

General		
	Design	Actual
Fan Rotation Correct	-	VERIFIED
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES, NOT FUNCTIONAL

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Notes:

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU13/SERVICE AREA (BP)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE AREA	1465	2.68	1510	1510	1510	103.1
SGRD2	SERVICE AREA	1465	2.68	1500	1500	1500	102.4
SGRD3	SERVICE AREA	1465	2.68	1517	1517	1517	103.5
SGRD4	SERVICE AREA	1465	2.68	1521	1521	1521	103.8
SGRD5	CORRIDOR	150	0.35	139	139	139	92.7

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National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU14

AREA:SERVICE AREA (BP)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C08694
Model Num	LGH240H4B	LGH240H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	38X24
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP65B
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX65
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	6000	6568
SF RPM	-	943
RA CFM	0	0
OA CFM	6000	6568
RL Voltage	-	472/474/471
RL Amperage	-	6.5/6.1/6.1
SF Rotation	-	CCW
RA Damper Position	-	0%
Min OA Damper Position	-	100%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.8

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.61"
Fan Suction SP	-	-1.18"
Fan Discharge SP	-	0.55"
Total ESP	1.0"	1.16"
Fan Total SP	-	1.73"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Notes:

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU14/SERVICE AREA (BP)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE AREA	1500	2.22	1642	1642	1642	109.5
SGRD2	SERVICE AREA	1500	2.22	1637	1637	1637	109.1
SGRD3	SERVICE AREA	1500	2.22	1647	1647	1647	109.8
SGRD4	SERVICE AREA	1500	2.22	1642	1642	1642	109.5

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National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU15

AREA:FQC

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621D02973
Model Num	LGH120H4B	LGH120H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14X23
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	Actual
Motor MFG	-	US MOTORS
Frame	-	56HZ
Horsepower	2	2
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	2.9

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP34
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	4 TURNS OPEN
Fan Sheave Size	-	6"
Fan Sheave Bore	-	7/8"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	AX54
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	3200	3315
SF RPM	-	846
RA CFM	2300	2366
OA CFM	900	949
RL Voltage	-	469/468/470
RL Amperage	-	2.4/2.5/2.5
SF Rotation	-	CCW
RA Damper Position	-	75%
Min OA Damper Position	-	25%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	1.72

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.41"
Fan Suction SP	-	-0.59"
Fan Discharge SP	-	0.033"
Total ESP	0.60"	0.44"
Fan Total SP	-	0.62"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Notes:

National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU16

AREA:FQC

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621D00633
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38X11
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	2 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	24"
Num of Belts	-	1
Belt Size	-	BX71
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	7300	6682
SF RPM	-	766
RA CFM	1000	971
OA CFM	6300	5711
RL Voltage	-	470/468/469
RL Amperage	-	5.7/5.2/5.3
SF Rotation	-	CCW
RA Damper Position	-	20% OPEN
Min OA Damper Position	-	100% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.2

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.55"
Fan Suction SP	-	-0.95"
Fan Discharge SP	-	0.12"
Total ESP	1.0"	0.67"
Fan Total SP	-	1.07"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Notes: .

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU16/FQC

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	FQC	1250	2.3	1197	1197	1197	95.8
SGRD2	FQC	1250	2.38	1195	1195	1195	95.6
SGRD3	FQC	1250	2.38	1213	1213	1213	97.0
SGRD4	FQC	1250	2.38	1167	1167	1167	93.4
SGRD5	FQC	550	1	503	503	503	91.5
SGRD6	FQC	550	1	521	521	521	94.7
SGRD7	FQC	200	1	220	220	220	110.0

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National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU17

AREA:PAINT AREA (BP)

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09421
Model Num	LGH300H4B	LGH300H4B
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	38X11
Num Final Filter 1	-	12
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	184TZ
Horsepower	5	5
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	6.5

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56BB
Motor Bore Size	-	1-3/16"
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	11"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	24"
Num of Belts	-	1
Belt Size	-	BX71
Belt Alignment	-	VERIFIED

Test Data		
	Design	Actual
SF CFM	7300	6767
SF RPM	-	759
RA CFM	1000	948
OA CFM	6300	5823
RL Voltage	-	470/469/471
RL Amperage	-	5.4/5.6/5.7
SF Rotation	-	CCW
RA Damper Position	-	15% OPEN
Min OA Damper Position	-	100% OPEN
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	4.23

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.58"
Fan Suction SP	-	-0.91"
Fan Discharge SP	-	0.31"
Total ESP	1.0"	0.89"
Fan Total SP	-	1.22"

General		
	Design	Actual
Fan Rotation Correct	-	VERIFIED
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

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Notes:

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

AHU/RTU



Comfort. Under control.

Diffuser Supply (GRD)

RTU17/PAINT AREA (BP)

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	PAINT AREA (BP)	1260	2.33	1289	1140	1140	90.5
SGRD2	PAINT AREA (BP)	1260	2.33	933	1136	1136	90.2
SGRD3	PAINT AREA (BP)	1260	2.33	1469	1222	1222	97.0
SGRD4	PAINT AREA (BP)	1260	2.33	1723	1258	1258	99.8
SGRD5	PAINT AREA (BP)	1260	2.33	1353	1163	1163	92.3

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National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU18

AREA: BREAK TRAIN

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5621C09717
Model Num	LGH060H4E	LGH060H4E
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X14
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	1	1
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	480	460
Rated Amperage	-	3.7

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1800	1793
SF RPM	-	60%
RA CFM	1320	1282
OA CFM	480	511
RL Voltage	-	470/469/470
RL Amperage	-	3.1/3.3/3.2
SF Rotation	-	CCW
RA Damper Position	-	70%
Min OA Damper Position	-	30%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	NA
Brake Horse Power	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.49"
Fan Suction SP	-	-0.56"
Fan Discharge SP	-	0.26"
Total ESP	0.60"	0.75"
Fan Total SP	-	0.82"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

Completed By: Dan Hertenstein

Notes:

National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: Energy Recovery Unit



Comfort. Under control.

Asset: ERV1

AREA:RTU10

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Model Num	50RG252	50R6252
Serial Num	-	20212400106
Num Exh-Filters 1	-	1
Exh-Filter Size 1	-	15X15
Num OA-Filters 1	-	1
OA-Supply Size 1	-	38X24

Exhaust Fan Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	184T
Horsepower	5.0	5
Motor Rpm	-	1765
Phase	3	3
Voltage (rated)	480	230/460
Amperage (rated)	-	13.2/6.6
Service Factor	-	1.15

Exhaust Fan Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP75B
Motor Bore Size	-	1-3/16"
Fan Sheave Size	-	MA100
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	4L-610

OA Fan Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	Y56Y
Horsepower	5.0	5
Motor Rpm	-	1725
Phase	3	3
Voltage (rated)	480	230/460
Amperage (rated)	-	14.4/7.2
Service Factor	-	1.15
Efficiency	-	NL
Power Factor	-	NL
Brake Horse Power	-	4.7

Exhaust Fan Test Data		
	Design	Actual
Exh-ERU CFM	5600	5082
Exh-ERU RPM	-	1234
Exh-ERU System SetPt	-	1 TURN OPEN
RL Voltage	-	462/465/467
RL Amperage	-	6.4/6.3/6.2
Brake Horse Power	-	4.85

Exhaust Fan Performance Data		
	Design	Actual
Exh-ERU Filter Delta SP	-	-0.79"
Exh-ERU Wheel Delta SP	-	-1.35"
Exh-ERU Delta T	-	1.1°

OA Fan Test Data		
	Design	Actual
OA-ERU CFM	6000	6542
OA-ERU RPM	400	1136
Motor Frequency	-	NL
RL Voltage	-	468/466/465
RL Amperage	-	6.9/6.7/6.8

OA Fan Performance Data		
	Design	Actual
OA-ERU Filter Delta SP	-	-0.34"
OA-ERU Wheel Delta SP	-	-1.34"
OA-ERU Delta T	-	0.6°

OA Fan Drive Data

	Design	Actual
Motor Sheave Size	-	7"
Motor Bore Size	-	7/8"
Fan Sheave Size	-	MA100
Fan Sheave Bore	-	1"
Belt CL Distance	-	16"
Num of Belts	-	1
Belt Size	-	4L-590

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Notes:

National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: Energy Recovery Unit



Comfort. Under control.

Asset: ERV2

AREA:

Unit Data		
	Design	Actual
MFG	NA	LENNOX
Model Num	NA	50R6252XH
Serial Num	-	20212400105
Num Exh-Filters 1	-	1
Exh-Filter Size 1	-	15X15
Num OA-Filters 1	-	1
OA-Supply Size 1	-	38X24

Exhaust Fan Test Data		
	Design	Actual
Exh-ERU CFM	-	5037
Exh-ERU RPM	-	1233
Exh-ERU System SetPt	-	1 TURN OPEN
RL Voltage	-	463/465/463
RL Amperage	-	6.5/6.4/6.3
Brake Horse Power	-	4.9

Exhaust Fan Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	184T
Horsepower	-	5
Motor Rpm	-	1765
Phase	-	3
Voltage (rated)	-	230/460
Amperage (rated)	-	13.2/6.6
Service Factor	-	1.15

Exhaust Fan Performance Data		
	Design	Actual
Exh-ERU Filter Delta SP	-	-0.81"
Exh-ERU Wheel Delta SP	-	-1.38"
Exh-ERU Delta T	-	1.2

Exhaust Fan Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP75B
Motor Bore Size	-	1-3/16"
Fan Sheave Size	-	MA100
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	4L-610

OA Fan Test Data		
	Design	Actual
OA-ERU CFM	-	6498
OA-ERU RPM	-	1137
Motor Frequency	-	NL
RL Voltage	-	467/466/466
RL Amperage	-	6.9/6.7/6.8

OA Fan Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	Y56Y
Horsepower	-	5
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	230/460
Amperage (rated)	-	14.4/7.2
Service Factor	-	1.15
Efficiency	-	NL
Power Factor	-	NL
Brake Horse Power	-	4.8

OA Fan Performance Data		
	Design	Actual
OA-ERU Filter Delta SP	-	-0.33"
OA-ERU Wheel Delta SP	-	-1.34"
OA-ERU Delta T	-	0.6"

OA Fan Drive Data

	Design	Actual
Motor Sheave Size	-	7"
Motor Bore Size	-	7/8"
Fan Sheave Size	-	MA100
Fan Sheave Bore	-	1"
Belt CL Distance	-	16"
Num of Belts	-	1
Belt Size	-	4L-590

Completed By: Dan Hertenstein

Notes:

National TAB

Project: 08-29 CARMAX #7159 MODESTO, CA

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF1

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	CUBE-180	CUBE-180HP-10-1-30-X
Serial Num	-	19905824
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	US MOTOR
Frame	-	56H
Horsepower	3/4	1
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	120	115/230
Amperage (rated)	-	15/7.5
Service Factor	-	1.25

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP3458
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	FIXED
Fan Sheave Size	-	AK39
Fan Sheave Bore	-	1"
Belt CL Distance	-	6.5"
Num of Belts	-	1
Belt Size	-	AK21

Test Data		
	Design	Actual
CFM	3400	3117
Fan RPM	1055	1157
Fan Rotation	-	CCW
Motor RPM	-	1738
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	-0.34"
Discharge ESP	-	ATM
Total ESP	0.5"	0.34"

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Notes: FAN DESIGNED FOR 3400 CFM BUT GRILLES ARE DESIGNED FOR 3800 CFM TOTAL. BALANCED PROPORTIONALLY LOW.

National TAB

Project:08-29 CARMAX #7159 MODESTO, CA

FAN - Exhaust



Comfort. Under control.

Diffuser Ret/Exh (GRD)

EF1/

Asset							
Asset Name	Location	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	EF1	1900	2.55	1625	1625	1625	85.5
EGRD2	EF1	1900	2.41	1492	1492	1492	78.5

Completed By: Dan Hertenstein on