

Report By:

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



Report: TAB Report
Function: Test, Adjust, & Balance
Date: 10/27/2023

PROJECT

10-23-23 WALGREENS #11134 - SMYRNA, DE

700 JIMMY DR

SMYRNA, DE 19977

Client

Walgreens

200 WILMOT RD

DEERFIELD, IL 60015

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

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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.

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. . Any EF's that fell outside of this tolerance is noted throughout the report.

MUA (Make Up Air Unit) w/ PSP

Total flow for the MAU (Make-up Air Unit) unit was measured by readings taken at the discharge of the hood's perforated supply plenum. Readings taken with a velocity matrix were averaged and multiplied by a manufacturer's corrected area. Adjustments to the fan speed were made in order to bring the unit to within design tolerance. Any MUA's that fell outside of this 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.

Issue List

- CONTROLLER: Baud rate setting
- CONTROLS: Baudrate
- CONTROLS: EconFitDetectEn
- CONTROLS: Enthalpy reference
- CONTROLS: HtgAdapTunEn
- CONTROLS: RTU Addresses/IDs
- DIFFUSER 1-1 Neck size
- EH-1 Not running correctly
- RTU's 2, 4, 5: COMMUNICATION ERROR
- RTU-1 Diffuser 3 No damper
- RTU-1, 5, & 6 require pulley changes
- RTU-5 programmed for fan Auto
- RTU-6 Belt condition

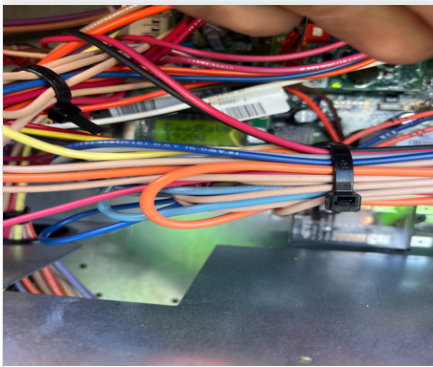


10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : CONTROLLER: Baud rate setting
Description : Baudrate setting not set to auto. All units set to 19200
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



Baudrate
10/25/2023



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : CONTROLS: Baudrate
Description : Rtu Baudrate a have not been changed to auto, they are all set to 19200
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



Baudrate
10/25/2023

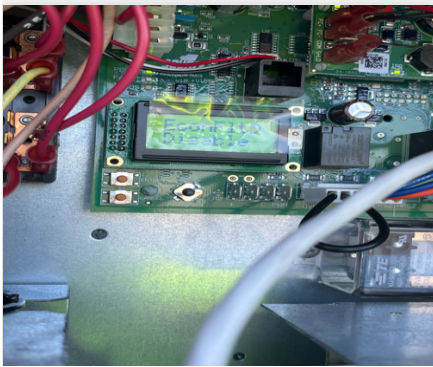


10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : CONTROLS: EconFitDetectEn
Description : Econ fit detect En is set to disabled when it should be enabled.
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



**Econfitdetect
10/25/2023**

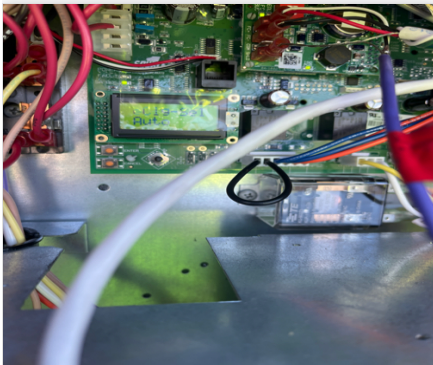


10-23-23 WALGREENS #11134 - SMYRNA, DE

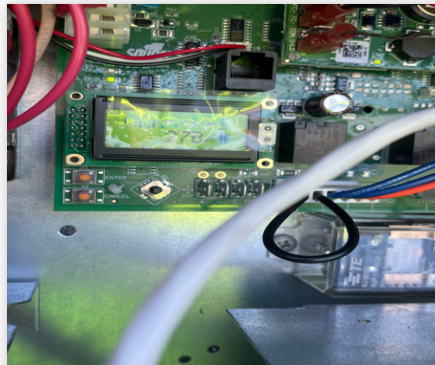
Project Issue Information

Issue Name : CONTROLS: Enthalpy reference
Description : Under Econ free cooling selection it is set to auto for all units when it should be set to single enthalpy. All enthalpy engage setpoints are 27B/# when they should be 24B/#
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



Selection auto
10/25/2023



Enthalpy engage setpoint..
10/25/2023

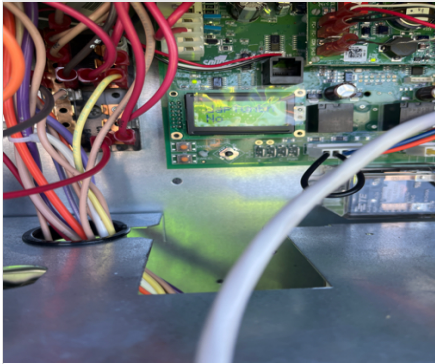


10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : CONTROLS: HtgAdapTunEn
Description : Heating adap Tun En has not been set to yes for all units
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



**Htgadaptunen
10/25/2023**



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : CONTROLS: RTU Addresses/IDs
Description : Rtu addresses and IDs are all set to rtu# +4
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : DIFFUSER 1-1 Neck size
Description : Diffuser 1-1 has a smaller neck size compared to other diffusers on RTU-1 700 CFM is not obtainable through current neck size
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/26/2023 - Tyler Youells - National TAB

Project Issue File Details



Diff1rtu1neck
10/26/2023



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : EH-1 Not running correctly
Description : Found flow was extremely low and blower rotation incorrect. Flipped phases and confirmed correct rotation now blower will kick on for two seconds then shut off, back on then off. Unable to balance unit
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/26/2023 - Tyler Youells - National TAB

Project Issue File Details



**Blowerwontstayon
10/26/2023**

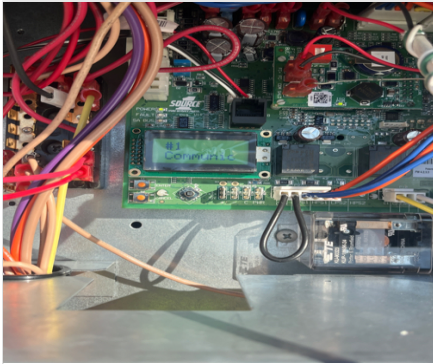


10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : RTU's 2, 4, 5: COMMUNICATION ERROR
Description : Rtu-2, 4, &5 have a stage 4 communication error alarm.
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

Project Issue File Details



**Communicationerror.jp..
10/25/2023**



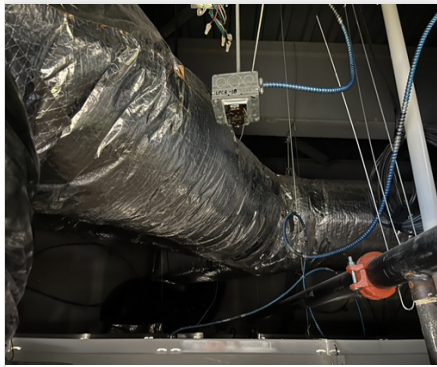
10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : RTU-1 Diffuser 3 No damper
Description : Diffusers is attached to the termination of the main trunkline and there is no visible damper. Flow is high above prescribed 700CFM (851/700cfm). Diffuser is located in front of vestibule, so higher airflow may be preferred. Walgreens/Sevan to advise.

Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/26/2023 - Tyler Youells - National TAB

Project Issue File Details



Nodamper(1)
10/26/2023



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : RTU-1, 5, & 6 require pulley changes
Description : RTU's 1, 5, & 6 require pulley changes. Unable to source parts in time while on site. Will need to change pulleys during return trip.
Created By : National TAB **Assigned To :** National TAB - Will Turnbough
Status : Open
Originated Date : 10/27/2023 - Will Turnbough - National TAB



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : RTU-5 programmed for fan Auto
Description : Rtu-5 is programmed to be fan auto.
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB



10-23-23 WALGREENS #11134 - SMYRNA, DE

Project Issue Information

Issue Name : RTU-6 Belt condition
Description : Rtu-6 belt is in bad condition. Recommend replacing. It has multiple cracks along the length of the belt
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Originated Date : 10/25/2023 - Tyler Youells - National TAB

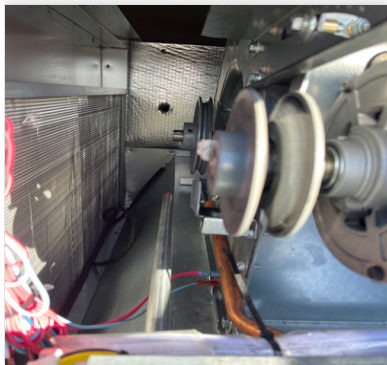
Project Issue File Details



Rtu6belt
10/25/2023

Project Issue Response Details

- **10/26/2023 National TAB - Tyler Youells**
 - Belt snapped prior to end of TAB, unable to finish balance on unit. Turned unit off. Unable to source belt nearby



Rtu6beltsnapped
10/26/2023

CheckList List

- TECH - SITE PICTURES



Rtu1
10/27/2023

RTU-2

Comment:



Rtu2(1)
10/27/2023

RTU-3

Comment:



Rtu3(1)
10/27/2023

RTU-4

Comment:



Rtu4
10/27/2023

RTU-5

Comment:



Rtu5(2)
10/27/2023

RTU-6

Comment:



Rtu6
10/27/2023

EF-1

Comment:



Ef1
10/27/2023

EF-2

Comment:



Ef2
10/27/2023

EH-1

Comment:



Eh1
10/27/2023

CheckList List

- TECH - 01 RTU INSTALLATION CHECKLIST
- TECH - 02 EXHAUST FANS INSPECTIONS
- TECH - 03 START-UP CONTROLS PROGRAMMING
- TECH - 04 EMS/SENSOR VALIDATION
- TECH - 05 TAB CHECKLIST
- TECH - 06 FUNCTIONAL TESTS
- TECH - 07 TEMPERATURE SETPOINTS
- TECH - 08 ENTRANCE HEATERS



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 01 RTU INSTALLATION CHECKLIST **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

General / Exterior Inspections

Verify all required equipment has been replaced per TA and BOM. Pass

Comment:

All roof equipment has been replaced, no drawings provided.

All units are installed in the proper locations Pass

Comment:

Unable to verify units in correct location since no drawings were provided.

Units are labeled correctly Pass

Comment:

Unit labels match model numbers provided

Asset tag installed Pass

Comment:

Roof is clear of debris. Pass

Comment:

Maintenance access for all unit access panels is acceptable and panels open freely. Pass

Comment:

Cabinet and general installation is complete.

Pass

Comment:

Unit is secure to curb and level horizontally and vertically.

Pass

Comment:

Access doors close tightly with no leaks

Pass

Comment:

Condensate and gas piping is properly supported.

Pass

Comment:

Costguard is installed per scope of work and piping unions are cemented.

Pass

Comment:

Additional Comments

Comment:

Interior Inspections

Fan rotation is correct

Pass

Comment:

Pulleys are correctly aligned and both motor and fan sheave pins are tightened in place.

Pass

Comment:

Return air and outside air dampers close tightly with no gaps

Pass

Comment:

Cabinet and coils are not damaged and in like new condition.

Pass

Comment:

Inside of unit is clean and clear of debris.

Pass

Comment:

Validate condensate is piped to splash block, draing, or roof drain per code requirements

Pass

Comment:

Verify filters are installed, clean and of proper size. Verify there is no air by-pass around filters.

Pass

Comment:

Curb is sealed with no air leakage.

Pass

Comment:

Additional Comments:

Comment:

Fire/Smoke Alarm Systems

In duct smoke detectors are installed

Pass

Comment:

Fire alarm panel status (visual inspection where possible)

Comment:

states-"all systems normal"

Additional Comments:

Comment:

Electrical

Electrical wiring is complete with no visible damage

Pass

Comment:

Electrical connections are tight with sealtight around any unit penetrations.

Pass

Comment:

Disconnect switch is installed in accessible location near or on unit.

Pass

Comment:

Verify overcurrent protection is HACR type, installed and sized correctly and labeled in panel.

Pass

Comment:

Maintenance electrical outlet is installed and functional.

Pass

Comment:

Main distribution panel is labeled correctly.

Pass

Comment:

Unit ground wire is secured.

Pass

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 02 EXHAUST FANS INSPECTIONS **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Fan rotation is correct Pass

Comment:

Pulleys are aligned and belts are tensioned properly

Comment:

N/A

Speed controller installed and functional (direct drive)

Comment:

Yes

Fan is secured to the curb Pass

Comment:

Back draft damper is installed and functional Pass

Comment:

No exterior damage to the fan Pass

Comment:

No unusual noise or vibration Pass

Comment:

Controls are functional

Pass

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 03 START-UP CONTROLS PROGRAMMING **Status :** Not Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Programming: SE 3.3, 3.4, 4.0

Controller-Network-Address: RTU number + 3	Fail
--	------

Comment:

No, Rtus address' are all RTU#+4

Controller-Network-FCBusMode = Wired Field Bus	Pass
--	------

Comment:

Controller-Network-BaudRate = Auto	Fail
------------------------------------	------

Comment:

rtus 5,4,3,2,1,6

Controller-Network-Device ID = RTU number + 3	Fail
---	------

Comment:

rtus, 5,4,3,2,1,6

Details-Occ-OffDurUnocc = No	Pass
------------------------------	------

Comment:

Details-Clg-Setup-Clg-En = Yes	Pass
--------------------------------	------

Comment:

Details-Clg-Setup-ClgAdapTunEn = Yes

Fail

Comment:

rtu5,4,3,2,1 no

Details-Htg-Setup-Htg-En = Yes

Pass

Comment:

Details-Htg-Setup-#HtgStgs = 2 Stages

Pass

Comment:

Details-Htg-Setup-HtgAdapTunEn = Yes

Fail

Comment:

rtu5,4,3,2,1,6 no

Details-Htg-Setup-#GasVlvs = 1 (Set to 0 for Hp and Elect Heat)

Pass

Comment:

Details-Fan-Setup-Fan Ctl-Type = No VFD select "Single Speed", W/VFD select "Fixed Variable"

Pass

Comment:

Details-Fan-Setup-FanOnOcc = Yes

Fail

Comment:

rtu5,no

Details-Fan-Setup-FanOnDlyHeat = 30s (Set to 0 for HP or Electric Heat)

Pass

Comment:

Details-Fan-Setup-FanOnly-%Cmd = 50%

Pass

Comment:

rtu-1,3 50%

Details-Fan-Setup-1ClgStg-%Cmd = 70%

Comment:

rtu-3 48% rtu-1 66%

Details-Fan-Setup-2ClgStg-%Cmd = 100% (2stage Unit) or 80% (3 and 4 stage)

Comment:

rtu-3 66% rtu-1 100%

Details-Fan-Setup-3ClStg-%Cmd = 100% (3 stage unit) or 90% (4 stage)

Pass

Comment:

rtu-3 100%

Details-Fan-Setup-4ClStg-%Cmd = 100% (4 Stage unit)

N/A

Comment:

Details-Fan-Setup-1HtgStg-%Cmd = 100%

Comment:

Details-Fan-Setup-2HtgStg-%Cmd = 100%

Comment:

Details-Econ-Setup-Econ-En = Yes

Pass

Comment:

Details-Econ-Setup-Econ-MinPos = Set to minimum outside air requirements.

Pass

Comment:

Details-Econ-Setup-LowSpdFan-MinPos = Set minimum 1% above EconMinPos

Pass

Comment:

Details-Econ-Setup-FreeClg-Sel = Single Enthalpy

Fail

Comment:

auto1,2,3,4,5,6

Details-Econ-Setup-EconOAEth-Sp 4= 24 Btu/lb

Fail

Comment:

4 27b 3, 2,1

Details-Econ-Setup-Dvent-Mode = Enable

Pass

Comment:

Details-Econ-Setup-DventMaxEconPos = 50%

Pass

Comment:

Details-Econ-Setup-DventIAP-Sp = 1000

Pass

Comment:

Details-Econ-Setup-EconFltDetectEn = Enable

Fail

Comment:

rtu5,4,3 disabled 2,1

Additional Comments:

Comment:

Non ZR Units only:

Details-HGR-Setup-HGR-En = No

Comment:

HGR not an option under details 5,4,3

Details-HGR-Setup-HGRAlt-En = No

Comment:

Details - HGR-Setup-HGRUnocc-En = No

Comment:

Details-HGR-Setup-Mode = No

Comment:

Additional Comments:

Comment:

ZR Units - Reheat Units only:

Details-HGR-Setup-HGR-En = Yes

Comment:

Details-HGR-Setup-HGRAIt-En = Yes

Comment:

Details - HGR-Setup-HGRUnocc-En = Yes

Comment:

Details-HGR-Setup-Mode = No

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 04 EMS/SENSOR VALIDATION **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

RTU supply air temp sensor location located per start-up binder. Pass

Comment:

RTU return air temp sensor location located per start-up binder. Pass

Comment:

RTU return air smoke detector (when applicable) is located per start-up binder. Pass

Comment:

Space temperature sensor has been replaced and location meets requirements. Pass

Comment:

Space humidity sensor has been replaced and location meets requirements. Pass

Comment:

Unit is being controlled by a space temperature sensor or thermostat. Pass

Comment:

EMS has been connected and validated with TOC or Gridpoint. Screen shot is available. Pass

Comment:

No splicing of EMS/Sensor/Thermostat wiring is visible

Pass

Comment:

(If Applicable) 2 Stage Thermostat to SE Board Control Wiring meets detail in start-up binder.

Comment:

yes

(If Applicable) 2 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.

Comment:

n/a

(If Applicable) 4 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.

Comment:

n/a

(If Applicable) 3 Stage Thermostat wiring meets detail in start-up binder.

Comment:

n/a

(If Applicable) 3 Stage Thermostat with Humidity sensor wiring meets detail in start-up binder.

Comment:

n/a

(If Applicable) EH Thermostat with SCR control wiring meets detail in start-up binder.

Comment:

Yes

Temperature setpoints are set for correction region and space (see ASHRAE / temperature setpoint chart in procedure)

Pass

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 05 TAB CHECKLIST **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Outside air damper set to minimum air flow requirement and damper position marked.

Comment:

Total Supply, return, and outside air volumes meet design tolerances (+/-10%)

Comment:

Enclosed area diffusers (Pharmacies, manager office, employee room, restrooms, electrical rooms) balanced within +/-10%?

Comment:

Open area diffusers (Sales floor and stock room) balanced within +/-25% of design?

Comment:

Store pressure meets tolerances (see formula in balance schedule). Make sure to account for existing exhaust fans airflows as shown on original drawings that are non-functioning.

Comment:

Outside air and return air dampers modulate freely.

Comment:

Start-up report from the installing contractor is reviewed and all information if filled out. All required measurements are within typical ranges.

Comment:

(If Applicable) VFD is set-up and operational. (N/A = not applicable)

Comment:

Verify amp draw of motor is within unit specification, not operating in overramped condition.

Comment:

Sales floor temperature and humidity measurement

Comment:

Pharmacy temperature and humidity measurement

Comment:

Stock Room temperature and humidity measurement

Comment:

Outdoor air temperature and humidity measurement

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 06 FUNCTIONAL TESTS **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Cooling Functional Test

Overwrite the thermostat or sensor to put the unit into cooling mode.

Comment:

Compressors enable.

Comment:

If fan has VFD, the fan increases speed.

Comment:

Document the discharge air temperature.

Comment:

After 10 minutes, Discharge air temperature is below 55 degrees.

Comment:

Cooling mode is operational

Comment:

Additional Comments:

Comment:

Heating Functional Test

Overwrite the thermostat or sensor to put the unit into heating mode.

Comment:

Heat exchanger enables.

Comment:

If fan has VFD, the fan increases speed.

Comment:

Document the discharge air temperature.

Comment:

After 10 minutes, Discharge air temperature is above 85 degrees.

Comment:

Heating mode is operational

Comment:

Additional Comments

Comment:

Dehumidification Functional Test

Overwrite the humidistat to put the unit into dehumidification mode.

Comment:

Compressors enable.

Comment:

Hot Gas Reheat Valve opens

Comment:

If fan has VFD, the fan increases speed.

Comment:

Document the discharge air temperature.

Comment:

Dehumidification Mode is operational. (Pass/Fail/NA)

Comment:

Additional Comments:

Comment:

Economizer Functional Test

Overwrite the humidistat to put the unit into economizer mode.

Comment:

Economizer modulates from minimum position to 100% open. (Pass/Fail/NA)

Comment:

Additional Comments:

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 07 TEMPERATURE SETPOINTS **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Temperature setpoints must be set using provided charts are based on state and space that each RTU serves. Confirm with controls company that these are set correctly

Comment:



10-23-23 WALGREENS #11134 - SMYRNA, DE

CheckList Information

Name : TECH - 08 ENTRANCE HEATERS **Status :** Not Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 10/19/2023 - Brianna Biggs - National TAB

CheckList Item Details

Sensor is located within 15' of entrance area

Comment:

Confirm proper operation of entrance heater and associated controls

Comment:

Balance supply air quantity to manufacturer recommended supply airflow.

Comment:

Confirm listed temperature rise and discharge air temperature based on approved BOM/submittal

Comment:

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU1

AREA:

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	3500	3252
Serial Num	-	N2D3585523	SF RPM	-	1118
Model Num	ZJ120N18R2B5HAE2A3	ZJ120N18R2B5GCE2R3	RA CFM	2800	2518
Type	RTU	RTU	OA CFM	700	734
Configuration	VERTICAL	VERTICAL	RL Voltage	-	282 VFD
Num OA Filters 1	-	1	RL Amperage	-	7.2 VFD
OA Filter Size 1	-	30X22	SF Rotation	-	CW
Num Final Filter 1	-	2	RA Damper Position	-	80%
Final Filter Size 1	-	20X48" CUSTOM CUT	Min OA Damper Position	-	20%
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	8.3

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.83"
Fan Suction SP	-	-1.19"
Fan Discharge SP	-	0.81"
Total ESP	0.6"	1.64
Fan Total SP	-	2.00"

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VM50
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	0 TURNS OUT
Fan Sheave Size	-	AK74
Fan Sheave Bore	-	1"
Belt CL Distance	-	19"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	GOOD

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

Completed By: Tyler Youells on 10/27/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU1/

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU1-SGRD1	SALES	NA	na	10	na	328	1	252	307	307	93.6
RTU1-SGRD2	SALES (WINDOW)	NA	na	14	na	744	1	572	717	717	96.4
RTU1-SGRD3	SALES (ENTRY)	NA	na	16	na	940	1	723	851	851	90.5
RTU1-SGRD4	CHECKOUT	NA	na	14	na	744	1	564	665	665	89.4
RTU1-SGRD5	CHECKOUT	NA	na	14	na	744	1	597	712	712	95.7
Total						3500		2708	3252	3252	92.91%

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU2

AREA:

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1400	1526
Serial Num	-	N2E3682109	SF RPM	1099	995
Model Num	ZJ049N08D2B5HAA2A3	ZJ049N08D2B5GCA2R3	RA CFM	1120	1207
Type	RTU	RTU	OA CFM	280	319
Configuration	VERTICAL	VERTICAL	RL Voltage	-	208.7/208.2/209.2
Num OA Filters 1	-	1	RL Amperage	-	3.44/3.40/3.39
OA Filter Size 1	-	30X22"	SF Rotation	-	CW
Num Final Filter 1	-	2	RA Damper Position	-	86%
Final Filter Size 1	-	16X48" CUSTOM CUT	Min OA Damper Position	-	14%
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	56HZ
Horsepower	1.50	1.5
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	5.0

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.35"
Fan Suction SP	-	-0.44"
Fan Discharge SP	-	0.99"
Total ESP	1.5"	1.34"
Fan Total SP	-	1.43"

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL44
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	5.0 TURNS OUT
Fan Sheave Size	-	AK56
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	A46
Belt Alignment	-	GOOD

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

Completed By: Tyler Youells on 10/27/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU2/

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU2-SGRD1	SALES	NA	na	10	na	350	1	677	561	472	134.9
RTU2-SGRD2	OFFICE	NA	na	12	na	525	1	680	588	593	113.0
RTU2-SGRD3	LOUNGE	NA	na	10	na	350	1	219	193	227	64.9
RTU2-SGRD4	HEALTH CLINIC	NA	na	10	na	175	1	331	290	234	133.7
Total						1400		1907	1632	1526	109%

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU3

AREA:MAIN SALES

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	2975	2855
Serial Num	-	N2C3559493	SF RPM	1039	969
Model Num	ZT102N12R2B5HAA2A2	ZT102N12R2B5GCA2R2	RA CFM	2380	2250
Type	RTU	RTU	OA CFM	595	605
Configuration	VERTICAL	VERTICAL	RL Voltage	-	268 VFD
Num OA Filters 1	-	1	RL Amperage	-	5.98 VFD
OA Filter Size 1	-	30X22	SF Rotation	-	CW
Num Final Filter 1	-	2	RA Damper Position	-	82%
Final Filter Size 1	-	20X48" CUSTOM CUT	Min OA Damper Position	-	18%
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	8.3

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.69"
Fan Suction SP	-	-0.85"
Fan Discharge SP	-	0.81"
Total ESP	1.0"	1.50"
Fan Total SP	-	1.66"

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VM50
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	2.5 TURNS OUT
Fan Sheave Size	-	AK74
Fan Sheave Bore	-	1"
Belt CL Distance	-	19"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	GOOD

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

Completed By: Tyler Youells on 10/27/2023

Notes:
[1] DIFFUSERS BALANCED BASED ON NECK SIZE AND COMFORT

Written By: Tyler Youells on 10/26/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU3/MAIN SALES

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU3-SGRD1	RESTROOM VESTIBULE	NA	na	8	na	175	1	177	177	177	101.1
RTU3-SGRD2	SALES (WINDOW)	NA	na	12	na	744	1	655	655	655	88.0
RTU3-SGRD3	SALES	NA	na	10	na	328	1	356	356	356	108.5
RTU3-SGRD4	SALES	NA	na	10	na	328	1	333	333	333	101.5
RTU3-SGRD5	SALES	NA	na	10	na	328	1	307	307	307	93.6
RTU3-SGRD6	SALES	NA	na	10	na	328	1	340	340	340	103.7
RTU3-SGRD7	SALES (WINDOW)	NA	na	12	na	744	1	687	687	687	92.3
Total						2975		2855	2855	2855	95.97%

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU4

AREA:PHARMACY

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1780	1898
Serial Num	-	N2E3653909	SF RPM	1122	1059
Model Num	ZJ061N08D2B5HAA2A4	ZJ061N08D2B5GCA2R4	RA CFM	1780	1898
Type	RTU	RTU	OA CFM	0	0
Configuration	VERTICAL	VERTICAL	RL Voltage	-	209.7/209.1/209.7
Num OA Filters 1	-	1	RL Amperage	-	5.31/5.03/5.41
OA Filter Size 1	-	30X22	SF Rotation	-	CW
Num Final Filter 1	-	2	RA Damper Position	-	100%
Final Filter Size 1	-	48X16" CUSTOM CUT	Min OA Damper Position	-	0%
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	2	2
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	6.6

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.75"
Fan Suction SP	-	-0.86"
Fan Discharge SP	-	0.71"
Total ESP	1.5"	1.46"
Fan Total SP	-	1.57"

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP56
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	4.5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	A51
Belt Alignment	-	GOOD

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

Completed By: Tyler Youells on 10/27/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU4/PHARMACY

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU4-SGRD1	ELECTRICAL PANELS	NA	na	NA	na	296	1	255	239	265	89.5
RTU4-SGRD2	PHARMACY WAITING	NA	na	NA	na	296	1	340	326	345	116.6
RTU4-SGRD3	PHARM DRIVE THRU	NA	na	NA	na	296	1	360	346	311	105.1
RTU4-SGRD4	PHARMACY	NA	na	NA	na	296	1	342	337	346	116.9
RTU4-SGRD5	PHARMACY	NA	na	NA	na	296	1	336	308	311	105.1
RTU4-SGRD6	PHARMACY	NA	na	NA	na	296	1	317	303	320	108.1
Total						1776		1950	1859	1898	106.87%

Asset	Notes	Date	Written By
RTU4-SGRD1	NO DAMPER	10/27/2023	Tyler Youells

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU5

AREA:BOH

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1080	1238
Serial Num	-	N2C3531931	SF RPM	933	793
Model Num	ZJ037N08D2B5HAA2A4	ZJ037N08D2B5GCA2R4	RA CFM	870	986
Type	RTU	RTU	OA CFM	210	252
Configuration	VERTICAL	VERTICAL	RL Voltage	-	209.6/209/209.8
Num OA Filters 1	-	1	RL Amperage	-	2.93/2.90/2.98
OA Filter Size 1	-	30X22	RF Rotation	-	CW
Num Final Filter 1	-	2	SA Damper Position	-	84%
Final Filter Size 1	-	16x48" CUSTOM CUT	Min OA Damper Position	-	16%
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	56HZ
Horsepower	1.50	1.50
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	5.0

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.26"
Fan Suction SP	-	-0.38"
Fan Discharge SP	-	0.43"
Total ESP	1.2"	0.69"
Fan Total SP	-	0.81"

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VP44
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	AK69
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	A47
Belt Alignment	-	CORRECTED BY NTAB

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

Completed By: Tyler Youells on 10/27/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU5/BOH

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU5-SGRD1	BOH	NA	na	NA	na	180	1	285	255	255	141.7
RTU5-SGRD2	BOH	NA	na	NA	na	180	0.35	205	182	182	101.1
RTU5-SGRD3	BOH	NA	na	NA	na	180	14"	229	205	205	113.9
RTU5-SGRD4	BOH	NA	na	NA	na	180		222	199	199	110.6
RTU5-SGRD5	BOH	NA	na	NA	na	180		209	187	187	103.9
RTU5-SGRD6	BOH	NA	na	NA	na	180		235	210	210	116.7
Total						1080		1385	1238	1238	114.63%

Asset	Notes	Date	Written By
RTU5-SGRD1	Will balance diffuser during return trip	10/27/2023	Will Turnbough

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: AHU/RTU



Asset: RTU6

AREA:

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1050	1196
Serial Num	-	N2C3531909	SF RPM	933	799
Model Num	ZJ037N08D2B5HAA2A4	ZJ037N08D2B5GCA2R4	RA CFM	840	-
Type	RTU	RTU	OA CFM	210	-
Configuration	VERTICAL	VERTICAL	RL Voltage	-	-
Num OA Filters 1	-	1	RL Amperage	-	-
OA Filter Size 1	-	30X22	SF Rotation	-	-
Num Final Filter 1	-	2	RA Damper Position	-	-
Final Filter Size 1	-	16X48" CUSTOM CUT	Min OA Damper Position	-	-
			Min OA Damper Type	-	ECONOMIZER
			OA Enthalpy Setpt	-	27B/#

Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	56HZ
Horsepower	1.50	1.5
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	208
Rated Amperage	-	5.0

Performance Data		
	Design	Actual
MA Plenum SP	-	-
Fan Suction SP	-	-
Fan Discharge SP	-	-
Total ESP	1.2"	-
Fan Total SP	-	-

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL44
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	5.0 TURNS OUT
Fan Sheave Size	-	AK69
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	A47
Belt Alignment	-	GOOD

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

Completed By: Tyler Youells on 10/27/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

AHU/RTU



Diffuser Supply (GRD)

RTU6/

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU6-SGRD1	PICTURES	NA	NA	NA	NA	525	1	668	558	558	106.3
RTU6-SGRD2	PICUTRE	NA	NA	NA	NA	525	1	740	638	638	121.5
Total						1050		1408	1196	1196	113.9%

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: FAN - Exhaust



Asset: EF1

AREA:EMPLOYEE LOUNGE

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	G-095-VG-1-17-X
Serial Num	-	22715636
Type	-	CRE
Configuration	-	DOWNBLAST

Motor Data		
	Design	Actual
Motor MFG	-	VARIGREEN
Frame	-	NL
Horsepower	-	1/6
Motor Rpm	-	1750
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	2.2
Service Factor	-	1

Test Data		
	Design	Actual
CFM	450	380
Fan RPM	-	SETTING 5
Fan Rotation	-	CW
Motor RPM	-	NA
RL Voltage	-	NOT ACCESSIBLE
RL Amperage	-	0.51
Suction ESP	-	-0.12"
Discharge ESP	-	ATM
Total ESP	-	0.12"

Completed By: Tyler Youells on 10/26/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

FAN - Exhaust



Diffuser Ret/Exh (GRD)

EF1/EMPLOYEE LOUNGE

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EF1-EGRD1	LOUNGE	EXHAUST	NA	450	1	766	578	380	84.4
Total				450		766	578	380	84.44%

Completed By: Tyler Youells on 10/26/2023

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: FAN - Exhaust



Asset: EF2

AREA:RESTROOMS

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	G-095-VG-1-17-X
Serial Num	-	22715631
Type	-	CRE
Configuration	-	DOWNBLAST

Motor Data		
	Design	Actual
Motor MFG	-	VARIGREEN
Frame	-	NL
Horsepower	-	1/6
Motor Rpm	-	1
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	2.2
Service Factor	-	1

Test Data		
	Design	Actual
CFM	-	346
Fan RPM	-	SETTING 6.3
Fan Rotation	-	CW
Motor RPM	-	NA
RL Voltage	-	NOT ACCESSIBLE
RL Amperage	-	0.93
Suction ESP	-	-0.37"
Discharge ESP	-	ATM
Total ESP	-	0.37"

Completed By: Tyler Youells on 10/26/2023

National TAB

Project:10-23-23 WALGREENS #11134 - SMYRNA, DE

FAN - Exhaust



Diffuser Ret/Exh (GRD)

EF2/RESTROOMS

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EF2-EGRD1	MENS RR	NA	NA	150	1	224	160	146	97.3
EF2-EGRD2	WOMENS RR	NA	NA	150	1	226	156	147	98.0
EF2-EGRD3	MOP SINK	NA	NA	50	1	50	40	53	106.0
Total				350		500	356	346	98.86%

National TAB

Project: 10-23-23 WALGREENS #11134 - SMYRNA, DE

System/Unit: FAN - Supply



Asset: EH1

AREA:FRONT ENTRANCE

Unit Data		
	Design	Actual
MFG	na	MESTEK
Model Num	na	PV15
Serial Num	-	G2301931221001001

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	-	0.75
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	230
Amperage (rated)	-	3
Service Factor	-	1.25

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL44
Motor Bore Size	-	0.625"
Fan Sheave Size	-	AL64
Fan Sheave Bore	-	1"
Belt CL Distance	-	12"
Num of Belts	-	1
Belt Size	-	A37

Test Data		
	Design	Actual
CFM	-	0
SF RPM	-	0
RL Voltage	-	0
RL Amperage	-	0
Suction ESP	-	0
Discharge ESP	-	0
Total ESP	-	0

Completed By: Tyler Youells on 10/27/2023

