Report By:

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

NATIONAL TAB

Comfort. Under control.

Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 03/05/2023

PROJECT

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

2415 HWY 14 EAST

RICHLAND CENTER, WA 53581

Client

Culvers Franchising System Inc
1240 Water Street

Prairie du Sac, WI 53578

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Table Of Contents

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Project Issue Information

Issue Name : EF-1 is not ducted.

Description : EF-1 (mop room) is not ducted and is exhausting air into ceiling space. Recommend fan is ducted to outside.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 01/24/2023 - Michael McDonnell - National TAB

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Project Issue Information

Issue Name : PRV-2 and PRV-3 (hood fans) need cleaning.

Description : Both hood exhaust fans have significant grease and dirt build up. Recommend Fans are cleaned.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 01/24/2023 - Michael McDonnell - National TAB

Project Issue File Details

PRV-2-.jpeg

PRV-2.jpeg

PRV-3.jpeg

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Project Issue Information

Issue Name : RTU Humidity sensor wiring

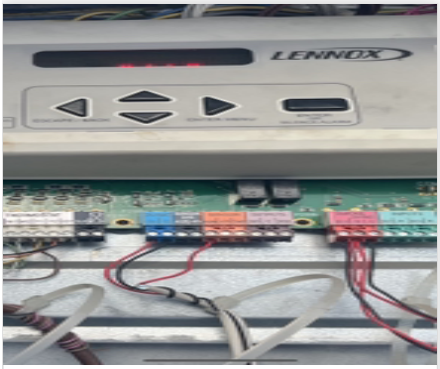
Description : Drain wires for humidity sensor are not connected. Recommend drain wires are connected per humidity sensor wiring schematic attached.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 01/24/2023 - Michael McDonnell - National TAB

Project Issue File Details



Wiring.jpeg

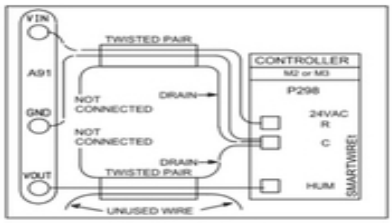


Figure 1. Field Wiring
(150' [46m] or shorter runs)

Wire runs of 150' (46m) or less:
Use two separate shielded cables containing 18AWG minimum, twisted pair conductors with overall shield. Belden type 8760 or 88760 (plenum) or equivalent. Connect both cable shield drain wires as shown in figure 1.

Schematic.jpeg

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01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Project Issue Information

Issue Name : RTU-2 (Kitchen) Tension Pulley

Description : Belt tension pulley on RTU-2 is creating a significant amount of noise. Recommend pulley is serviced or replaced to prevent drive failure.

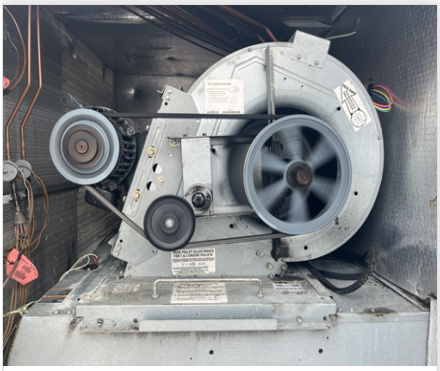
Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 01/24/2023 - Michael McDonnell - National TAB

Project Issue File Details

1. Open Tensioner.MOV



Tensionpulley.jpeg

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

Project Issue Information

Issue Name : RTUs jumpered for occupancy.

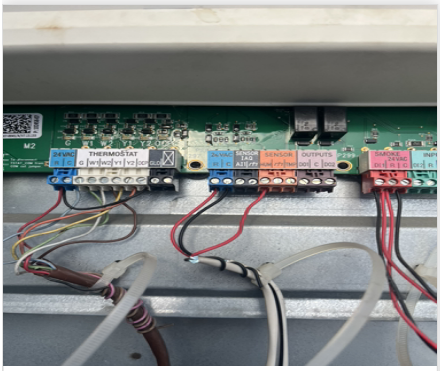
Description : Both RTU-1 and RTU-2 are jumpered for occupancy (wire from R to OCP). When OCP is energized, the outside air damper opens. Recommend the jumper is removed and a wire is run from OCP to each RTUs thermostat. This will allow the outside damper to modulate based on scheduled occupancy at the thermostat.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 01/24/2023 - Michael McDonnell - National TAB

Project Issue File Details



RTU-2.jpeg

RTU-1.jpeg

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name :	TECH - SITE PICTURES	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

STORE FRONT

RichlandCenterWI.jpeg

RTU-1

RTU1Dining.jpeg

RTU-2

RTU2Kitchen.jpeg

PRV-1

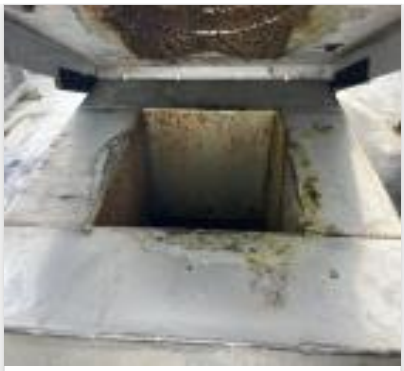
PRV-1RR.jpeg

PRV-1Motor.jpeg

PRV-1Duct.jpeg

PRV-2

PRV-2Griddle.jpeg



PRV-2Greaseduct.jpeg

PRV-3

PRV-3Fryer.jpeg

PRV-3Greaseduct.jpeg

HD-1

HD-1Griddle.jpeg

HD-2

HD-2Fryer.jpeg

EF-1

EF-1Mop.jpeg

Notes/Comments :

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name : TECH - STEP 1: INITIAL READINGS **Status :** NotSubmitted

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

CheckList Item Details

INITIAL BUILDING REVIEW:	
What is the initial building pressure before making any changes?	-0.054"
Are thermostats programmed?	Yes
Are building pressure relief working properly?	RTU-1 OA damper closed, set to 0%. RTU-2 damper slightly open.
INITIAL AIRFLOWS:	
SUPPLY RTU-1	
OA RTU-1	0 cfm
SUPPLY RTU-2	
OA RTU-2	466 cfm
SUPPLY RTU-3	
OA RTU-3	
EF-1	
EF-2	
EF-3	
EF-4	
MAU-1	

Notes/Comments :

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name :	TECH - STEP 2: INITIAL WALKTHROUGH	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

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

Notes/Comments :

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name :	TECH - STEP 3: UNIT DATA AND EVAL	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	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, some play in actuator gears on RTU-2 (kitchen).
DCV Max damper opening position is set to minimum?	Yes
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes
Motors are all operating below the FLA rating?	Yes
Are belts tight?	Yes
If direct drive unit is the speed controller working.	NA
Is gas piping installed and valves turned on?	Yes
Unit free of noticeable noise and vibration	Some tension pulley noise on RTU-2, see issue.
EF's	
Rotation is correct?	Yes
Belts are tight?	Yes
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes

Flex conduit is long enough so that fan can be completely tilted back?	Yes
There is no major leakage around base of fan?	Yes
Is the motor operating below the motor FLA rating?	Unable to safely measure.
For restroom fan(s) is the back draft damper installed and can it fully open?	No backdraft damper installed.

PRV-1.jpeg

Unit free of noticeable noise and vibration?	Yes
MUA	
Rotation is correct?	
Gas piping is installed and valves are in on position?	
Heater tested and is functional?	
Internal motorized damper is fully opening?	
Motor is operating below the FLA rating?	
Unit free of noticeable noise and vibration?	
HOODS	
Kitchen equipment installed in proper places?	Yes
Can kitchen equipment be turned on for final smoke test?	Yes
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

Notes/Comments :

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name :	TECH - STEP 4: TEST, ADJUST AND BALANCE	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?	Yes
Is space comfortable in all areas?	Yes
Is the space free of ventilation noise?	Yes
If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	NA

Notes/Comments :

Comfort. Under control.

01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

CheckList Information

Name :	TECH - STEP 5: FINAL TESTS	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	Fryer, Griddle
List smoke candle type used	45 second smoke emitter.
Smoke test capture - Perimeter of hood	100%
Smoke test capture - Top of cooking surface	98%-slight loss on left side of fryer.
WITNESS	
Date test was completed	01/24/2023
TAB tech name / Firm	Michael McDonnell / National TAB
Site super name / Firm	NA
Owner representative name / Firm (if Applicable)	NA
Building pressure at front & back doors (All Systems On)	-0.006”
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	Yes
Thermostats are programmed?	Yes

Notes/Comments :

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU1 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	CARRIER	LENNOX
Serial Num	-	5615E07209
Model Num	48TJD-016	LGH180H4BS3Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	23.25X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERLINK
Frame	-	56HZ
Horsepower	-	3.0
Motor Rpm	-	1745
Phase	3	3
Rated Voltage	230	200-230
Rated Amperage	-	7.8-7.4

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP50
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	ESTIMATED 2 TURNS OPEN
Fan Sheave Size	-	BK95H
Fan Sheave Bore	-	1-7/16"
Belt CL Distance	-	20.5"
Num of Belts	-	1
Belt Size	-	BX61
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	6000	5966
SF RPM	-	789
RA CFM	4200	4051
OA CFM	1800	1915
RL Voltage	-	210/210/209
RL Amperage	-	7.0/7.2/7.3
SF Rotation	-	CCW, CORRECT
RA Damper Position	-	69%
Min OA Damper Position	-	31%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	15.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.47"
Fan Suction SP	-	-0.72"
Fan Discharge SP	-	0.41"
Total ESP	-	0.88"
Fan Total SP	-	1.13"

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

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU2 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	CARRIER	LENNOX
Serial Num	-	5614K13832
Model Num	48TJD-020	LGH210H4BS2Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	23.25X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NIDEC
Frame	-	184TZ
Horsepower	-	5.0
Motor Rpm	-	1765
Phase	3	3
Rated Voltage	230	208-230
Rated Amperage	-	13.80-13.0

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP65B
Motor Bore Size	-	1-1/8"
Motor Sheave SetPt	-	ESTIMATED 2 TURNS OPEN
Fan Sheave Size	-	BK110H
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	21"
Num of Belts	-	1
Belt Size	-	BX66
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	6500	6796
SF RPM	-	912
RA CFM	4225	4748
OA CFM	2275	2048
RL Voltage	-	209/209/209
RL Amperage	-	12.2/12.4/12.5
SF Rotation	-	CCW, CORRET
RA Damper Position	-	55%
Min OA Damper Position	-	45%
Min OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.34"
Fan Suction SP	-	-0.62"
Fan Discharge SP	-	0.54"
Total ESP	-	0.88"
Fan Total SP	-	1.16"

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

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF1 AREA:OFFICE

Unit Data		
	Design	**Actual**
MFG	BROAN	NL
Model Num	NA	NL
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Horsepower	-	NL
Motor Rpm	-	NL
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	NL

Test Data		
	Design	**Actual**
CFM	50	74
Fan RPM	-	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	SINGLE SPEED
RL Voltage	-	119
RL Amperage	-	0.6

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV1 AREA:RESTROOMS

Unit Data		
	Design	**Actual**
MFG	CARNES	COOK
Model Num	VEDK-08-J2	100C15DH
Serial Num	-	190S5939490100007010100
Type	UPBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	EMERSON
Frame	-	48Y
Horsepower	-	NL
Motor Rpm	-	1600
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	1.7

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

Test Data		
	Design	**Actual**
CFM	375	469
Fan RPM	-	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
RL Voltage	-	119
RL Amperage	-	1.1
Suction ESP	-	-0.33"
Discharge ESP	-	ATM
Total ESP	0.5"	0.33"

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV2 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	GREENHECK	COOK
Model Num	CUBE 140-7	NL
Serial Num	-	NL
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NA
Horsepower	-	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	208	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	0 TURNS OPEN
Fan Sheave Size	-	3.5"
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	5.75"
Num of Belts	-	1
Belt Size	-	4L220

Test Data		
	Design	**Actual**
CFM	1750	2136
Fan RPM	-	1365
Fan Rotation	-	CCW
Motor RPM	-	1766
RL Voltage	-	NR [1]
RL Amperage	-	NR [1]
Suction ESP	-	-0.66"
Discharge ESP	-	ATM
Total ESP	0.651"	0.66"

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV 3 AREA:HOOD 2

Unit Data		
	Design	**Actual**
MFG	GREENHECK	COOK
Model Num	CUBE 140-7	NL
Serial Num	-	NL
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	LEESON
Horsepower	-	NL
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	12.4
Service Factor	-	NL

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	0 TURNS OPEN
Fan Sheave Size	-	3.75"
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	6"
Num of Belts	-	1
Belt Size	-	4L230

Test Data		
	Design	**Actual**
CFM	2336	1744
Fan RPM	-	1382
Fan Rotation	-	CCW
Motor RPM	-	1733
RL Voltage	-	NR [1]
RL Amperage	-	N4 [1]
Suction ESP	-	-1.03"
Discharge ESP	-	ATM
Total ESP	0.656"	1.03"

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	NL
Job / Serial Num	-	NL
Type	-	CANOPY
Hood length	-	84
Hood Width	-	48

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	XTRACTOR
Filter Size 1	-	20X20
Filter Qty 1	-	4
Filter AK factor size 1	-	3.0
Filter Total AK Area	-	12.00
Filter1 FPM	-	186
Filter2 FPM	-	182
Filter3 FPM	-	179
Filter4 FPM	-	184
Filter Ave FPM(corr)	-	178
CFM	1750	2136

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE

Test Data Supply		
	Design	**Actual**

Completed By: Michael McDonnell

Notes:

National TAB

Project: 01-23-23 CULVERS - RICHLAND CENTER, WI (REVIVE)

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	NL
Job / Serial Num	-	NA
Type	-	TYPE II
Hood length	-	66
Hood Width	-	32

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	XTRACTOR
Filter Size 1	-	16X16
Filter Qty 1	-	4
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	6.12
Filter1 FPM	-	288
Filter2 FPM	-	292
Filter3 FPM	-	281
Filter4 FPM	-	277
Filter Ave FPM(corr)	-	285
CFM	-	1744

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER

Completed By: Michael McDonnell

Notes: