

**HOOD INFORMATION - Job#3320867**

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	EXHAUST PLENUM RISER(S)							TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.		
					TOTAL EXH. CFM	WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.			S.P.	END TO END	ROW
1	ITEM 6	5412 SND-2	9' 0"	600 Deg.	2322	10'	22'	4'		2322	1520	-0.735'	0	430 SS Where Exposed	ALONE	ALONE
2	ITEM 6 SUPPLY PLENUM	306 MISC-PSP	9' 0"	300 Deg.	0								2090	430 SS Where Exposed	ALONE	ALONE
3	ITEM 18	4812 VHB-G	4' 0"	700 Deg.	700			4'	10'	700	1283	-0.123'	0	430 SS 100%	ALONE	ALONE

**PATENT NUMBERS**

AC-PSP (United States) - US Patent 7963830 B2  
 AC-PSP Wall (Canada) - CA Patent 2820509  
 AC-PSP Island (Canada) - CA Patent 2520330  
 Exhaust Hoods ND-2/BD-2/SND-2 (Canada) - CA Patent 2520435 C

**HOOD INFORMATION**

HOOD NO.	TAG	FILTER(S)				LIGHT(S)			UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WGT		
		TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY.	TYPE	WIRE GUARD	LOCATION	SIZE	FIRE SYSTEM TYPE			ELECTRICAL MODEL #	SWITCHES QUANTITY
1	ITEM 6	Captrate Solo Filter	6	20'	16'	85% See Filter Spec.	3	Screw In Compact	NO						NO	529 LBS
2	ITEM 6 SUPPLY PLENUM						0								NO	160 LBS
3	ITEM 18						0								NO	118 LBS

**HOOD OPTIONS**

HOOD NO.	TAG	OPTION
1	ITEM 6	BACKSPLASH 80.00' High X 108.00' Long 430 SS Vertical
		INSULATION FOR TOP OF HOOD
		INSULATION FOR BACK OF HOOD
		LEFT VERTICAL END PANEL 27' Top Width, 21' Bottom Width, 68' High Insulated 430 SS
		RIGHT VERTICAL END PANEL 27' Top Width, 21' Bottom Width, 68' High Insulated 430 SS

**PERFORATED SUPPLY PLENUM(S)**

HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG.	DIA.	CFM	S.P.
2	ITEM 6 SUPPLY PLENUM	Front	108'	30'	6'	MUA	12"	28"		696	0.183'
						MUA	12"	28"		696	0.183'
						MUA	12"	28"		696	0.183'

**SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER**

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

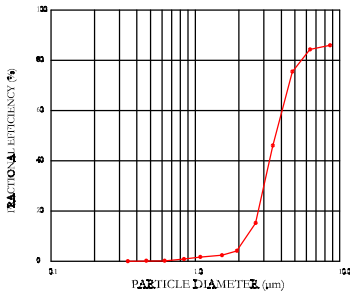
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

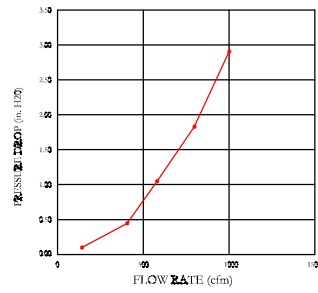
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05.

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:  
 NFPA #96  
 NSF STANDARD #2  
 UL STANDARD #1046  
 INT. MECH. CODE (IMC)  
 ULC-S649



**CUSTOMER APPROVAL TO MANUFACTURE:**

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

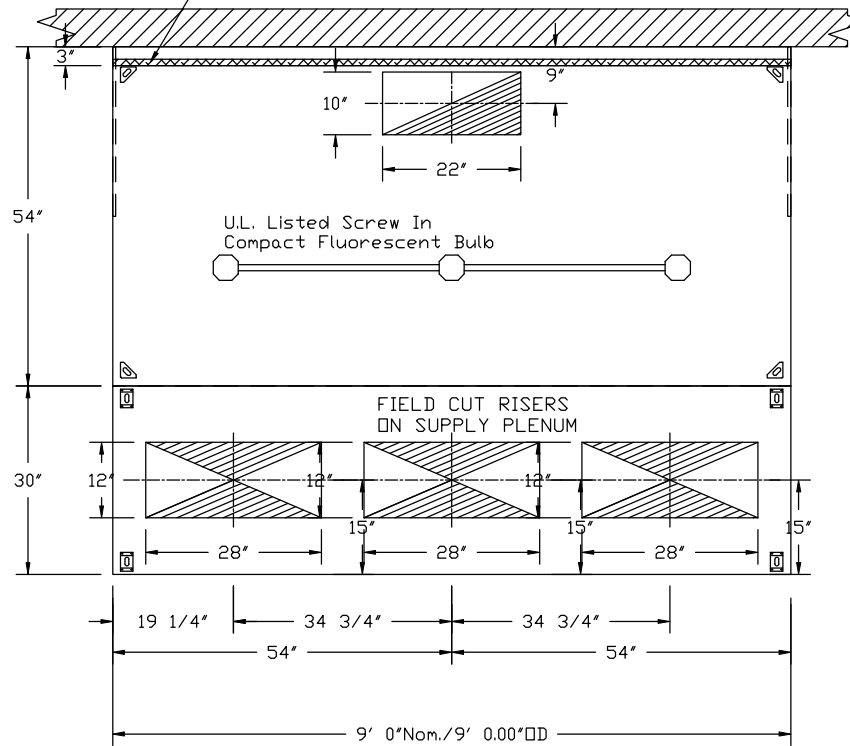
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Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 1	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

1" LAYER OF INSULATION FACTORY  
 INSTALLED IN INTERNAL BACK STANDOFF.  
 MEETS 0 INCH REQUIREMENTS FOR  
 CLEARANCE TO COMBUSTIBLE SURFACES.



PLAN VIEW - Hood #1 (ITEM 6)  
 9' 0.00" LONG 5412SND-2

PLAN VIEW - Hood #2 (ITEM 6 SUPPLY PLENUM)  
 9' 0.00" LONG 306MISC-PSP

CUSTOMER APPROVAL TO MANUFACTURE:

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Approved with NO Exception Taken

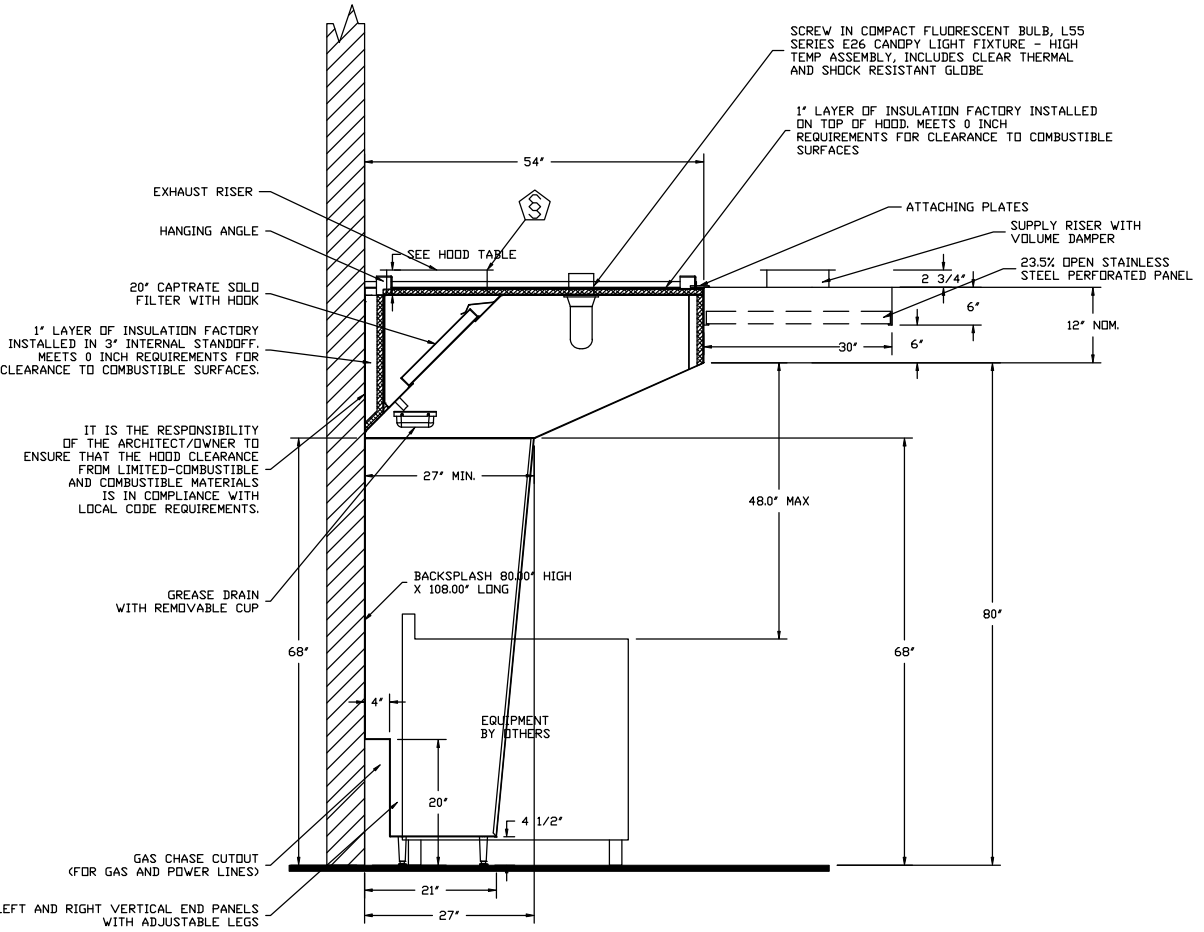
Revise and Resubmit

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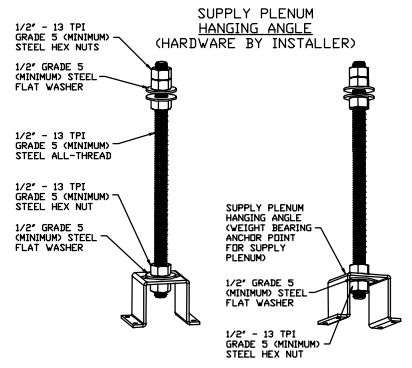
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JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 2	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

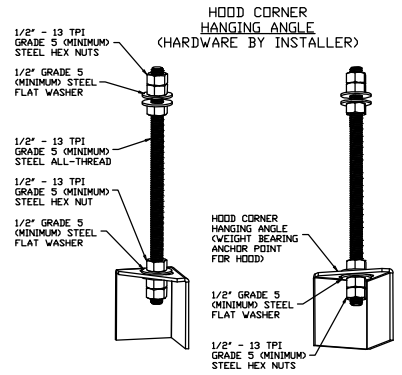


**SECTION VIEW - MODEL 5412SND-2-PSP-F  
HOOD - #1 (ITEM 6)**



**ASSEMBLY INSTRUCTIONS**

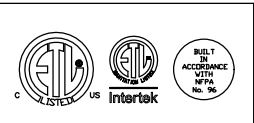
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



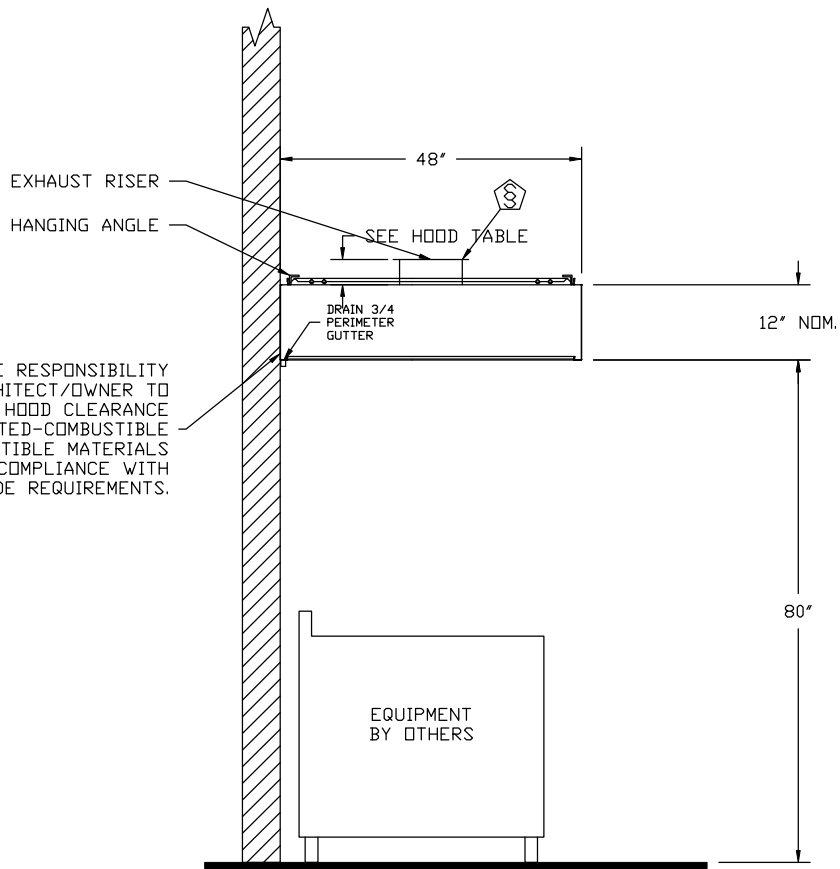
**ASSEMBLY INSTRUCTIONS**

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

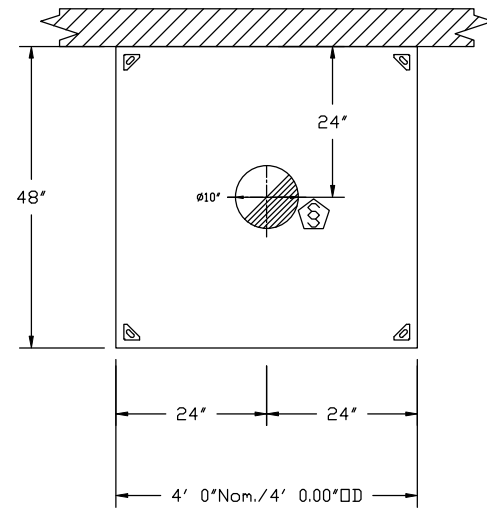
CUSTOMER APPROVAL TO MANUFACTURE:	
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Approved with NO Exception Taken	<input type="checkbox"/>
Revise and Resubmit	<input type="checkbox"/>
SIGNATURE _____	_____
Your Title _____	Date _____



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 3	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"



IT IS THE RESPONSIBILITY OF THE ARCHITECT/OWNER TO ENSURE THAT THE HOOD CLEARANCE FROM LIMITED-COMBUSTIBLE AND COMBUSTIBLE MATERIALS IS IN COMPLIANCE WITH LOCAL CODE REQUIREMENTS.



PLAN VIEW - Hood #3 (ITEM 18)  
4' 0.00" LONG 4812VHB-G

SECTION VIEW - MODEL 4812VHB-G  
HOOD - #3 (ITEM 18)

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 4	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

**EXHAUST FAN INFORMATION - Job#3320867**

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SDNES
1	ITEM 6 EXHAUST	DUI80HFA	2322	0.870	1007	1.000	0.5460	3	208	3.8	536 FPM	188	11.6
3	ITEM 18 EXHAUST	DU30HFA	700	0.250	1084	0.250	0.0640	1	115	3.8	347 FPM	105	6.2

**MUA FAN INFORMATION - Job#3320867**

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	WEIGHT (LBS.)	SDNES	BURNER EFFICIENCY(%)
2	ITEM 6 MAU	A1-D.250-G10	G10	A1-D.250	1000	2090	0.350	1024	1.500	0.8180	3	208	4.4	725	17.4	92

**GAS FIRED MAKE-UP AIR UNIT(S)**

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2	ITEM 6 MAU	174197	160261	71 deg F	7 in. w.c. - 14 in. w.c.	Natural

**FAN OPTIONS**

FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1	ITEM 6 EXHAUST	1 - Grease Box
		1 - Full Crating For Exhaust Fans
		1 - 3 Year Extended Motor Warranty
		1 - Fan Base Ceramic Seal - Ship Loose - For Grease Ducts
2	ITEM 6 MAU	1 - AC Interlock Relay - 24VAC Coil
		1 - Motorized Backdraft Damper For A1-D Housing
		1 - Full Crating For Commercial Heater
		1 - Low Fire Start
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, -5 to 15" wc
		1 - 3 Year Extended Motor Warranty
		1 - Extra Set of Belts
3	ITEM 18 EXHAUST	1 - Full Crating For Exhaust Fans
		1 - Fan Base Ceramic Seal - Ship Loose - For Grease Ducts
		1 - 3 Year Extended Motor Warranty
		1 - SCR-11 Bird Screen

**FAN ACCESSORIES**

FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	ITEM 6 EXHAUST	YES						
2	ITEM 6 MAU					YES		
3	ITEM 18 EXHAUST							

**CURB ASSEMBLIES**

NO.	DN FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	ITEM 6 EXHAUST	34 LBS	Curb	26.500"W x 26.500"L x 24.000"H Vented Hinged
2	# 2	ITEM 6 MAU	74 LBS	Curb	21.000"W x 71.000"L x 24.000"H Insulated
3	# 3	ITEM 18 EXHAUST	34 LBS	Curb	19.500"W x 19.500"L x 24.000"H Vented Hinged

**FAN SOUND INFORMATION**

FAN UNIT NO.	MOTOR	RPM	LWA	SDNES	DBA	DISTANCE FT	OCTAVE 1	OCTAVE 2	OCTAVE 3	OCTAVE 4	OCTAVE 5	OCTAVE 6	OCTAVE 7	OCTAVE 8
1	Exhaust	1007	73.3	11.6	61.8	5	73.1	81.6	76.3	67.8	65.5	63.4	57.3	51.1
2	Supply	1024	80	17.4	68.5	5	82.8	80.3	79.3	75.7	73.6	73.7	68.3	65.5
3	Exhaust	1084	64.7	6.2	53.2	5	64.6	70.8	65.9	60.9	58.3	56.4	48.1	38.1

**CUSTOMER APPROVAL TO MANUFACTURE:**

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

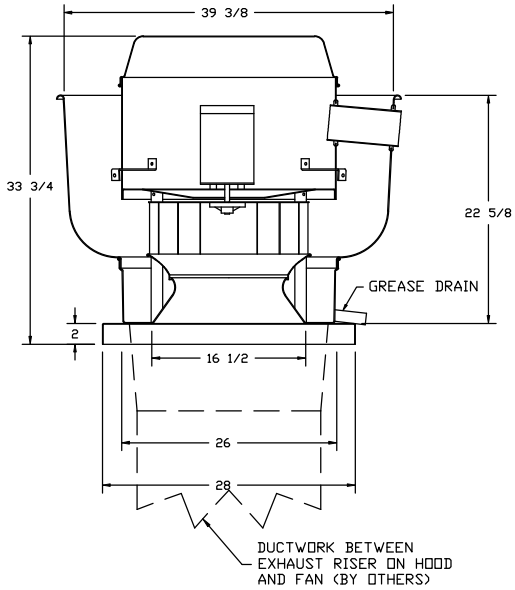
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Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 5	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

FAN #1 DU180HFA - EXHAUST FAN (ITEM 6 EXHAUST)



FEATURES:

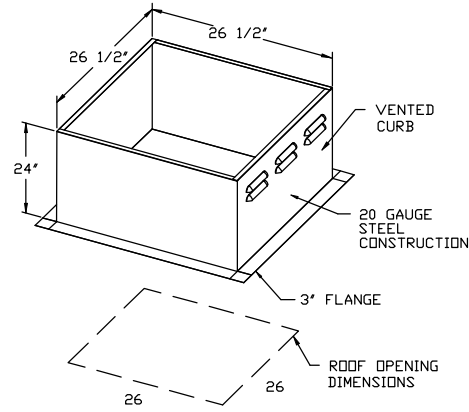
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST  
 EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST  
 EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

- GREASE BOX
- FULL CRATING FOR EXHAUST FANS
- 3 YEAR EXTENDED MOTOR WARRANTY
- FAN BASE CERAMIC SEAL - SHIP LOOSE - FOR GREASE DUCTS



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:  
 EXAMPLE: 7/12 PITCH = 30° SLOPE

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

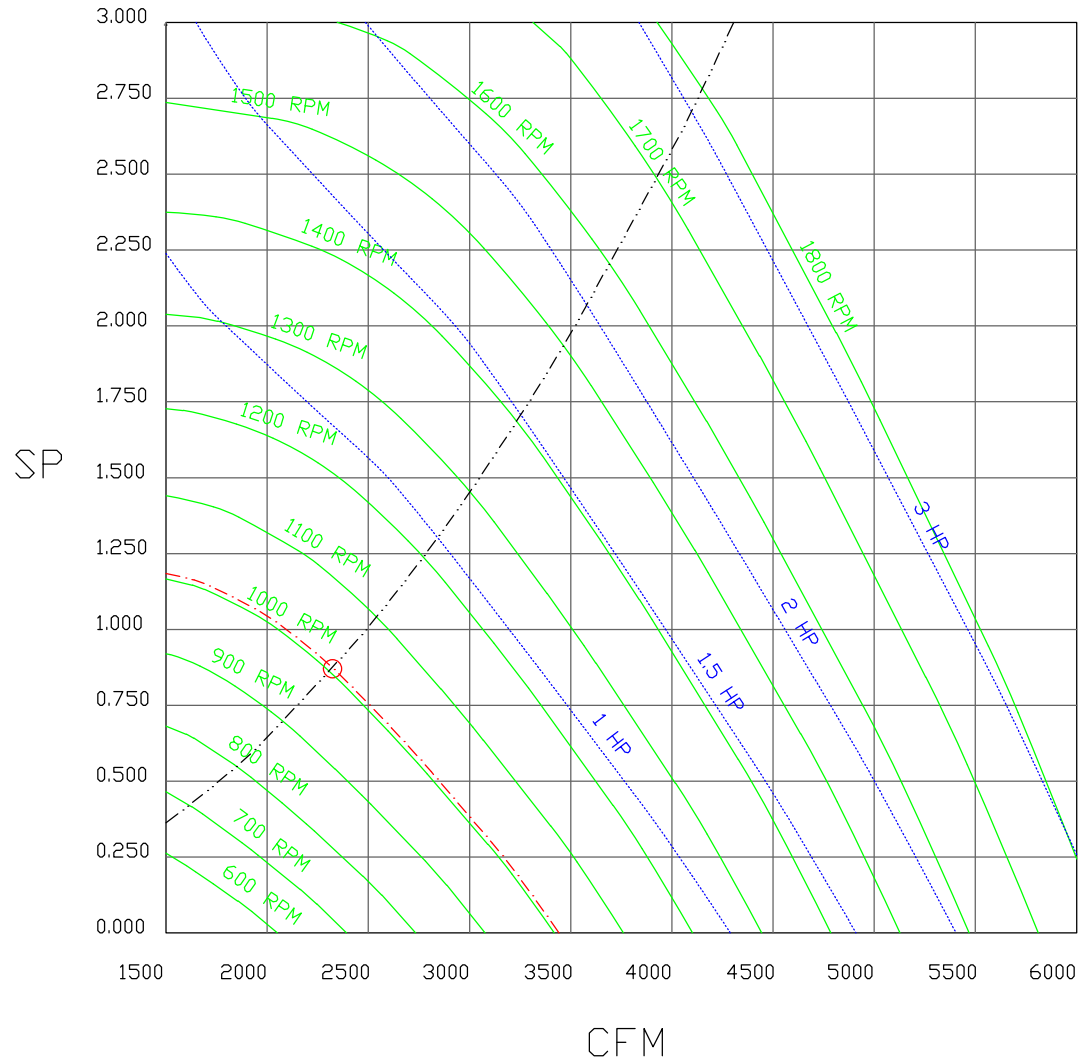
Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 6	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

FAN#1 (ITEM 6 EXHAUST) - EXHAUST PERFORMANCE CURVES.

2322 CFM, 0.87 SP @ 1007 RPM and 0.546 BHP at 25 feet and 70 deg F  
 \* Please note that these curves were adjusted for job specific temperature and altitude.



CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted	<input type="checkbox"/>
Approved with NO Exception Taken	<input type="checkbox"/>
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SIGNATURE _____	_____
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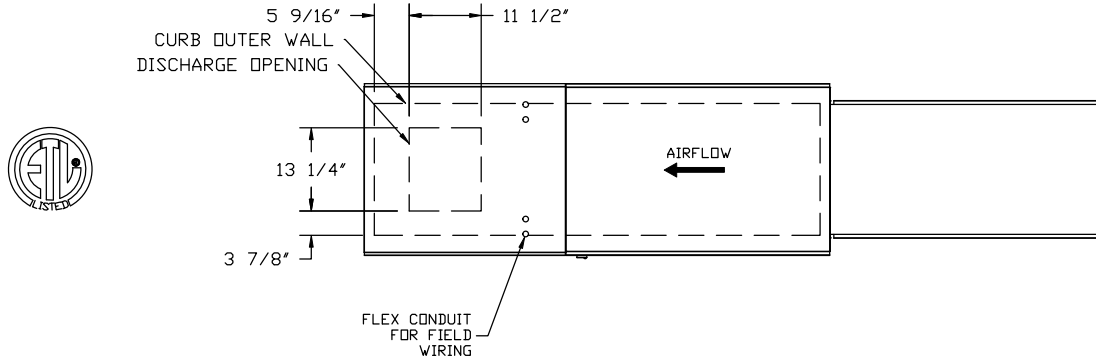


JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 7	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

FAN #2 A1-D.250-G10 - HEATER (ITEM 6 MAU)

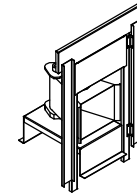
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 10" BLOWER
2. INTAKE HOOD WITH EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. COOLING INTERLOCK RELAY, 24VAC COIL, 120V CONTACTS. LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
5. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, TFB120S ACTUATOR INCLUDED
6. FULL CRATING FOR COMMERCIAL HEATERS FOR SHIPPING.
7. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
8. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE
9. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE
10. 3 YEAR EXTENDED WARRANTY FOR FAN MOTOR. PARTS ONLY; DOES NOT INCLUDE LABOR.
11. EXTRA SET OF V-BELTS. ONLY TO BE ORDERED AS FAN OPTION AT TIME FAN IS ORDERED.
12. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.

NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH EQUAL TO THREE TIMES THE SUPPLY DUCT EQUIVALENT DIAMETER MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE UNLESS OTHERWISE SPECIFIED. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY.



SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 4°F. TEMP. RISE = 71°F.  
 BTUs CALCULATED OFF STANDARD AIR DENSITY  
 OUTPUT BTUs AT ALTITUDE OF 0.0 Ft. = 160261  
 INPUT BTUs AT ALTITUDE OF 0.0 Ft. = 174197



Direct Fired (DF) Profile Plate Assembly

**Direct Fired Profile Plate Specifications:**

**Description:**

Direct fired burners shall have patented (US Patent No. US6629238B2), self-adjusting profile plates designed to ensure proper air velocity and pressure drop across the burner. Profile plates shall allow burners to achieve clean combustion by limiting by-product levels to a maximum of 5ppm of carbon monoxide (CO), and 0.5ppm of nitrogen dioxide (NO2).

**Application:**

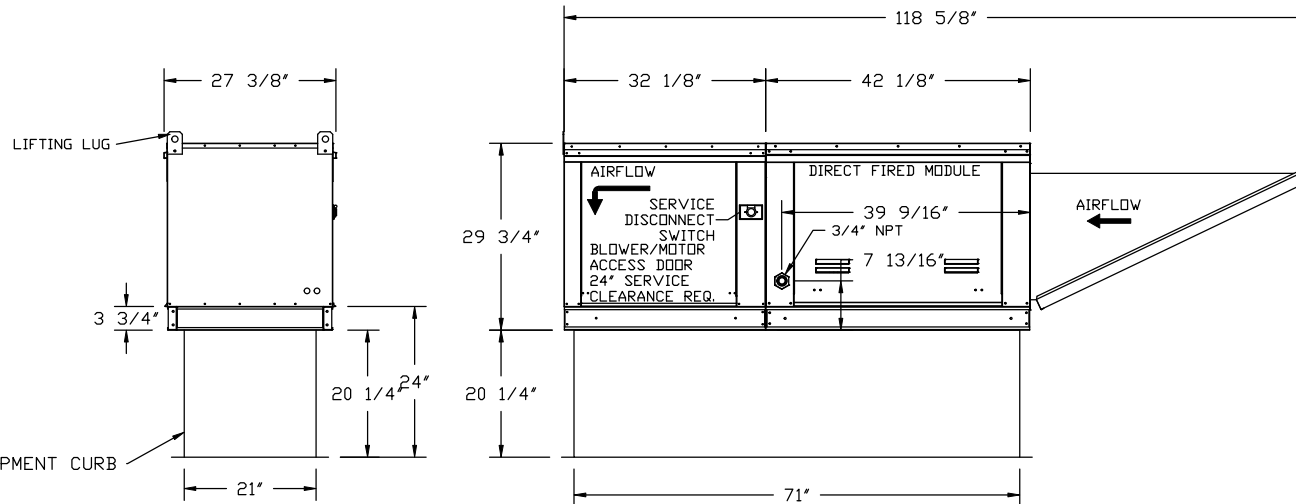
Spring-loaded burner profile plates are engineered to automatically react to the momentum of a fresh air stream, without the need for any motors or actuators to mechanically adjust them. With this feature, all DF units are designed for demand control ventilation (DCV) requirements.

**Certifications:**

All profile plate assemblies shall be included in the DF unit's ETL listing and comply with combined safety standards ANSI Z83.4 and CSA 3.7 (non-recirculating DF heaters) and ANSI Z83.18 (recirculating DF heaters).

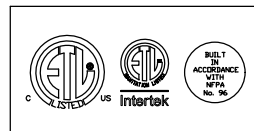
**General Construction:**

- Profile plates shall be formed from G90 galvanized steel.
- Profile plates shall vary in size per unit.
- Profile plates shall be mounted along the same plane as the discharge of the burner.
- Design shall incorporate properly torqued, permanently mounted spring hinges.
- Spring hinges shall be made from plated steel.



ROOF OPENING 2" SMALLER THAN CURB DIMENSION.  
 CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted	<input type="checkbox"/>
Approved with NO Exception Taken	<input type="checkbox"/>
Revise and Resubmit	<input type="checkbox"/>
SIGNATURE _____	
Your Title _____	Date _____

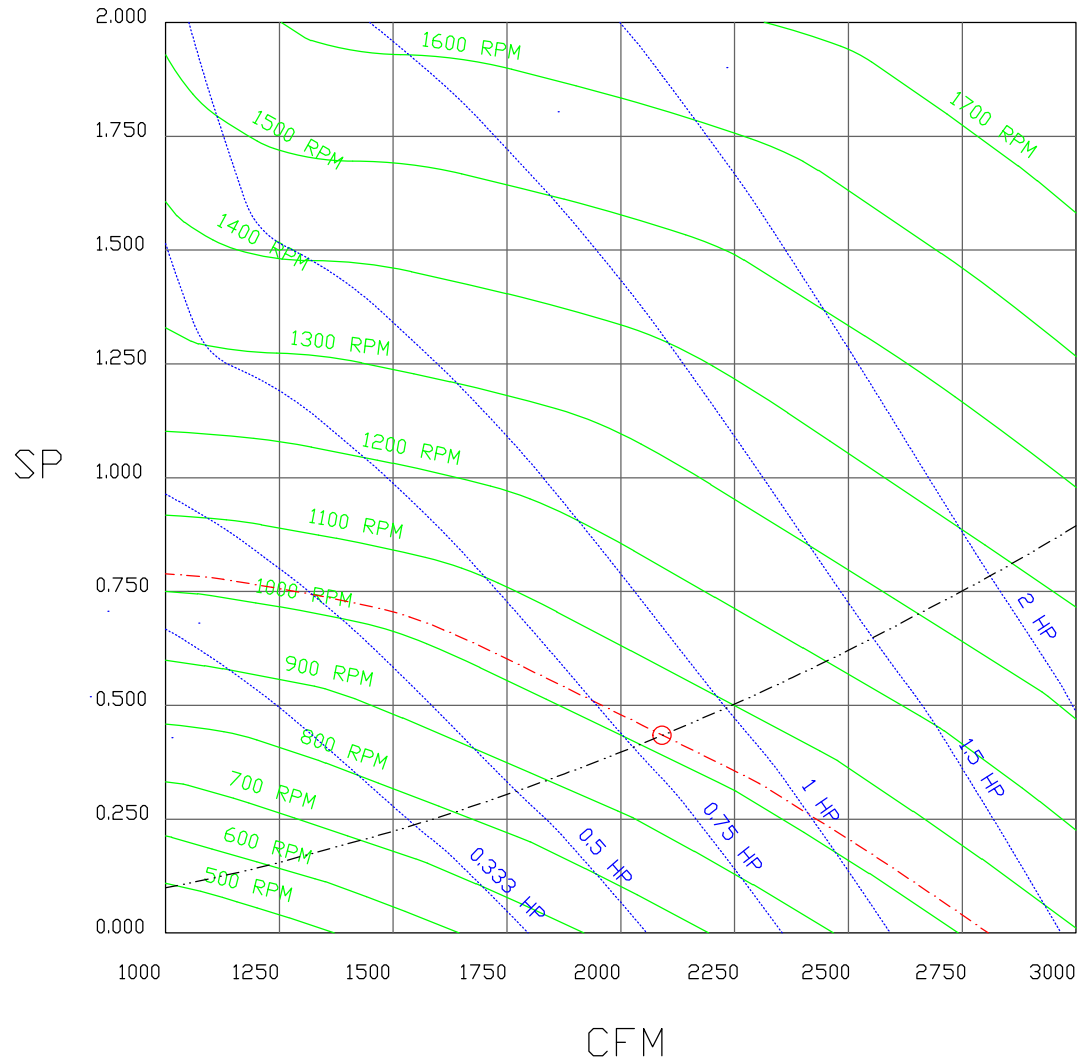


JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 8	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"



FAN#2 (ITEM 6 MAU) - HEATER PERFORMANCE CURVES.

2090 CFM, 0.434 SP @ 1024 RPM and 0.818 BHP at 25 feet and 75 deg F  
 \* Please note that these curves were adjusted for job specific temperature and altitude.



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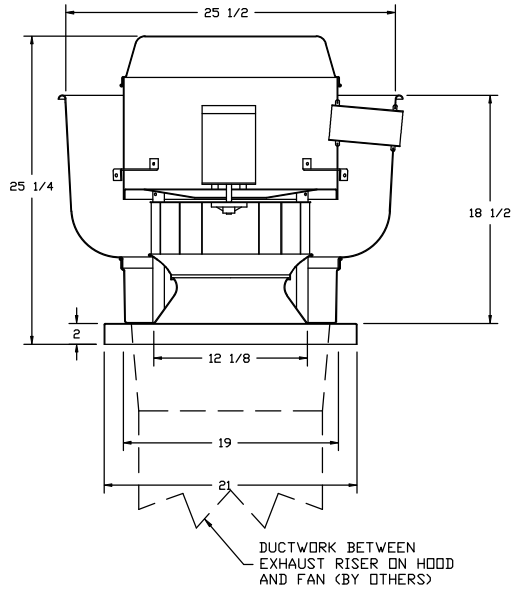
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JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 9	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

FAN #3 DU30HFA - EXHAUST FAN (ITEM 18 EXHAUST)



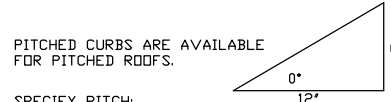
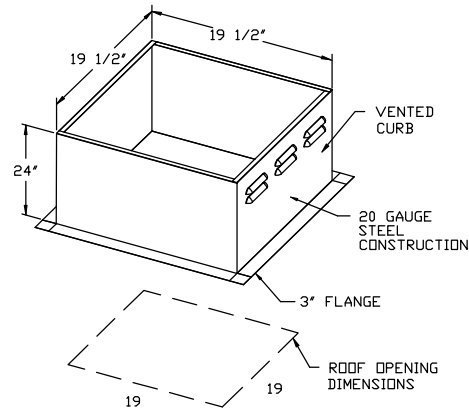
**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)

**NORMAL TEMPERATURE TEST**  
 EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

**OPTIONS**

- FULL CRATING FOR EXHAUST FANS
- FAN BASE CERAMIC SEAL - SHIP LOOSE - FOR GREASE DUCTS
- 3 YEAR EXTENDED MOTOR WARRANTY
- SCR-11 BIRD SCREEN



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:  
 EXAMPLE: 7/12 PITCH = 30° SLOPE

CUSTOMER APPROVAL TO MANUFACTURE:

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Revise and Resubmit

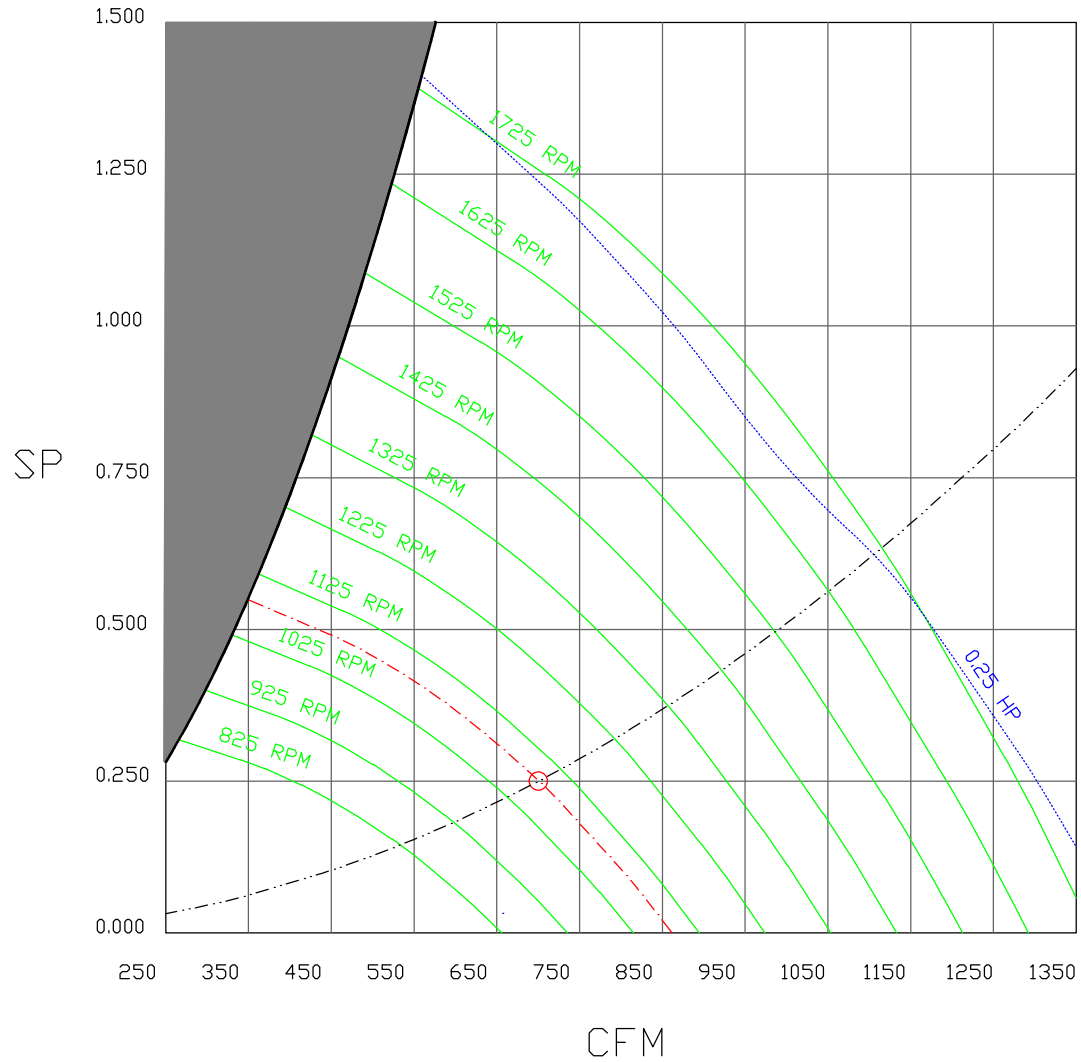
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JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 10	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

FAN#3 (ITEM 18 EXHAUST) - EXHAUST PERFORMANCE CURVES.

700 CFM, 0.25 SP @ 1084 RPM and 0.064 BHP at 25 feet and 70 deg F  
 \* Please note that these curves were adjusted for job specific temperature and altitude.



CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 11	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"



**GREASE DUCT & CHIMNEY SPECIFICATIONS:**

PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.

PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

**CUSTOMER APPROVAL TO MANUFACTURE:**

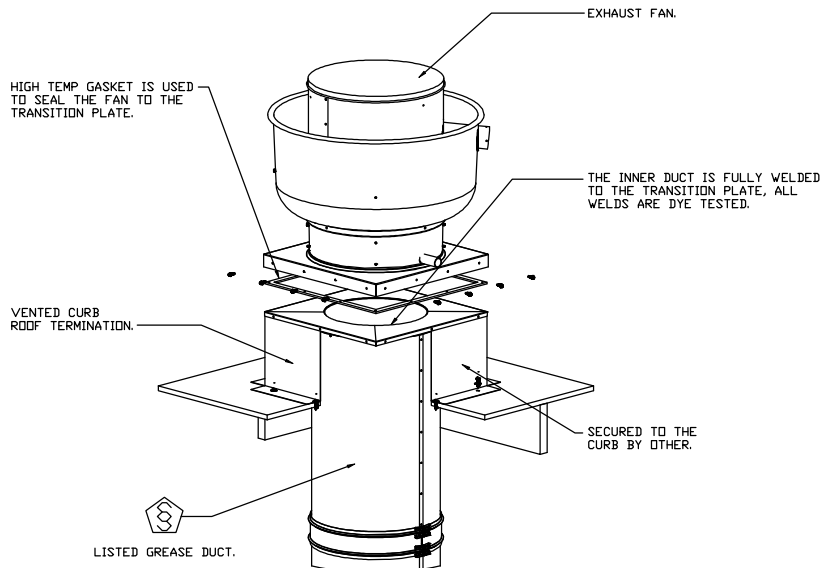
Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

Your Title \_\_\_\_\_ Date \_\_\_\_\_



**CUSTOMER APPROVAL TO MANUFACTURE:**

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 12	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

Exhaust Fan Wiring

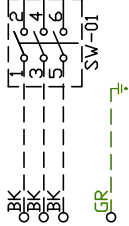
JOB 3320867 - Pinetree Recovery r2

DRAWING NUMBER EXH3320867-1

SHIP DATE 2/27/2018

MODEL DU180HFA

1



2



3

Component Identification Location

Label Description Location

MT-01 Fan Motor [2]

4

SW-01 Main disconnect switch [2]

5

6

7

8

9

10

11

12

13

14

15

16

EXHAUST MOTOR\_INFO  
1HP-208V-3P-3.8FLA

17

18

ELECTRICAL INFORMATION  
MOTOR/CTRL MCA: 4.8A  
MOTOR/CTRL MOP: 15A

19

20

NOTES  
--- DENOTES FIELD WIRING  
\_\_\_ DENOTES INTERNAL WIRING

21

WIRE COLOR

BK - BLACK YW - YELLOW  
BL - BLUE GR - GREEN  
BR - BROWN GY - GRAY  
OR - ORANGE PR - PURPLE  
RD - RED PK - PINK  
WH - WHITE

22

23

Installed Options

# Direct Fired Heater Wiring

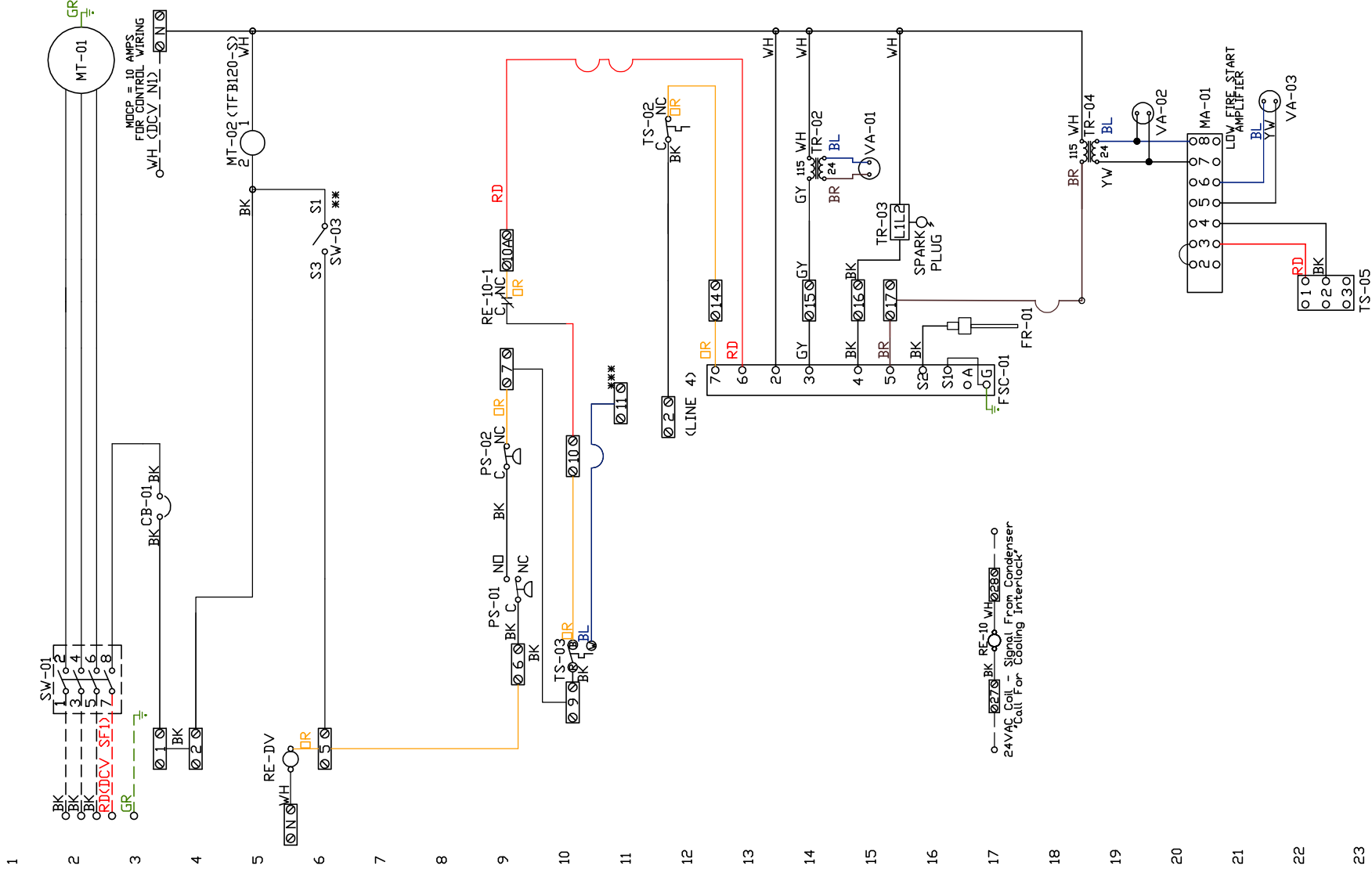
JOB 3320867 - Pinetree Recovery r2

DRAWING NUMBER DF3320867-2

SHIP DATE 2/27/2018

MODEL A1-D.250-G10

ATTENTION ELECTRICIAN!  
 DROP FOR DISCONNECT CONNECTION WIRE TO 0-YW 0230 YW C-1, NO  
 1L1A AND 1L1B RE-DV-1  
 IS FACTORY SUPPLIED  
 CONNECT POWER TO THE DROP  
 (D3&D7 IN  
 EMSPLUS)



Motorized Back Draft Damper  
 Discharge Temp. Control  
 DCV Wiring  
 24V AC Interlock Relay

Label	Component Description	Location
CB-01	Circuit breaker (2amp)	[3]
FR-01	Flame rod	[16]
FSC-01	Fireye FSC	[11-14]
MA-01	Modulating amplifier	[19]
MT-01	Supply motor	[2]
MT-02	Damper motor	[5]
PS-01	Low Airflow Switch	[9]
PS-02	High Airflow Switch	[9]
RE-DV	DCV Relay	[11S]
RE-10	AC Interlock Relay	[10][17]
SW-01	Main disconnect switch	[2]
SW-03	Damper end limit switch	[4]
TR-01	Power transformer(200V)	[2]
TR-02	Power transformer(200V)	[2]
TR-03	Ignition transformer	[14]
TR-04	Power transformer(200V)	[17]
TS-02	High temp. limit switch	[10]
TS-03	Intake Air Sensor	[10]
TS-05	Discharge Air Sensor	[21]
VA-01	Pilot gas valve	[13]
VA-02	Main gas valve	[18]
VA-03	Modulating gas valve	[20]

SUPPLY MOTOR INFO  
 1.5HP-208V-3P-4.4FLA

ELECTRICAL INFORMATION  
 MOTOR CIRCUIT MCA: 5.5A  
 CONTROL CIRCUIT MCA: 2.0A  
 MOTOR CIRCUIT MOP: 15A  
 CONTROL CIRCUIT MOP: 15A

NOTES  
 - - - DENOTES FIELD WIRING  
 --- DENOTES INTERNAL WIRING

\*\* TERMINALS S4 AND S6 USED ON NF & AF SERIES ACTUATORS  
 \*\*\* TERMINAL 11 PROVIDES COOLING CONNECTION

WIRE COLOR  
 BK-BLACK YW - YELLOW RD - RED  
 BL-BLUE GR - GREEN WH - WHITE  
 BR - BROWN GY - GRAY PK - PINK  
 OR - ORANGE PR - PURPLE

SOCKET STYLE	CLIMB RELAY	NO	NC	COM
4	1	2	1	1
4	1	2	1	1
4	1	2	1	1
4	1	2	1	1

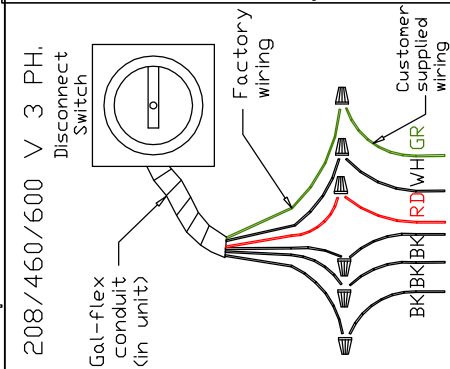
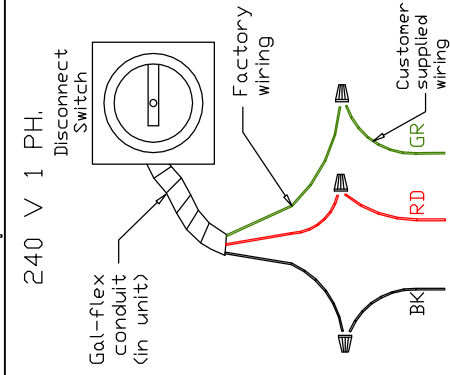
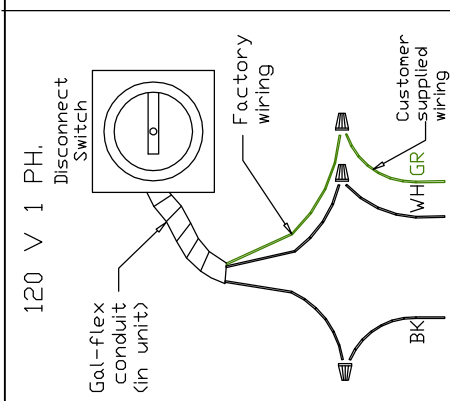
Installation Wiring

DRAWING NUMBER RP3320867-2

SHIP DATE 2/27/2018

MODEL A1-D.250-G10

JOB 3320867 - Pinetree Recovery r2



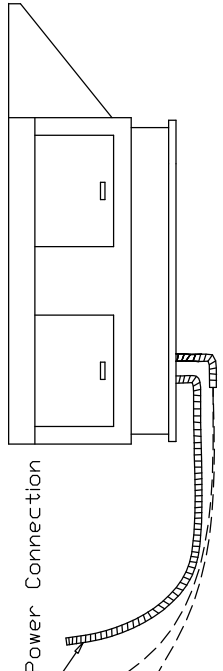
DCV Connections

Installed Options

POWER FROM DEDICATED BREAKER

See above details.

D3 IN HEATER TO IL1A IN DCV  
D7 IN HEATER TO IL1B IN DCV  
WIRE TO DCV



NOTES

- WIRE COLOR
- BK - BLACK
  - BL - BLUE
  - BR - BROWN
  - OR - ORANGE
  - RD - RED
  - WH - WHITE
  - YW - YELLOW
  - GR - GREEN
  - GY - GRAY
  - PR - PURPLE
  - PK - PINK

# Exhaust Fan Wiring

JOB 3320867 - Pinetree Recovery r2

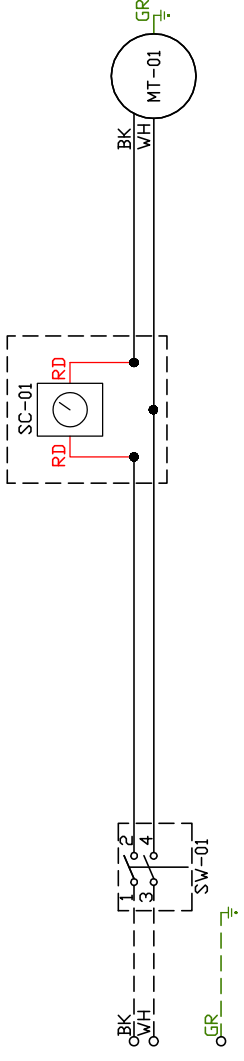
DRAWING NUMBER EXH3320867-3

SHIP DATE 2/27/2018

MODEL DU30HFA

## Installed Options

Speed Control



## Component Identification

Label	Description	Location
MT-01	Fan Motor	[2]
QD-01	Quick Disconnect	[2]
SC-01	Speed Control	[1]
SW-01	Main disconnect switch	[2]

MOTOR\_INF0  
EXHAUST 0.25HP-115V-1P-3.8FLA

ELECTRICAL\_INFORMATION  
MOTOR/CTRL MCA: 4.8A  
MOTOR/CTRL MOP: 15A

NOTES  
--- DENOTES FIELD WIRING  
\_\_\_ DENOTES INTERNAL WIRING

## WIRE COLOR

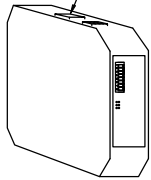
BK	-	BLACK	YW	-	YELLOW
BL	-	BLUE	GR	-	GREEN
BR	-	BROWN	GY	-	GRAY
OR	-	ORANGE	PR	-	PURPLE
RD	-	RED	PK	-	PINK
WH	-	WHITE		-	



**ELECTRICAL PACKAGES – Job#3320867**

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	H.P.	VOLTS	FLA
1		DCV-1111	Wall Mount In SS Box	05 – SS Wall Mount Box	1 Light 1 Fan	Smart Controls DCV	ITEM 6 EXHAUST	Exhaust	3	1.000	208	3.8
							ITEM 6 MAU	Supply	3	1.500	208	4.4

Field Connection to Router or Ethernet Switch  
OR Factory Wired Connection to Cellular Kit

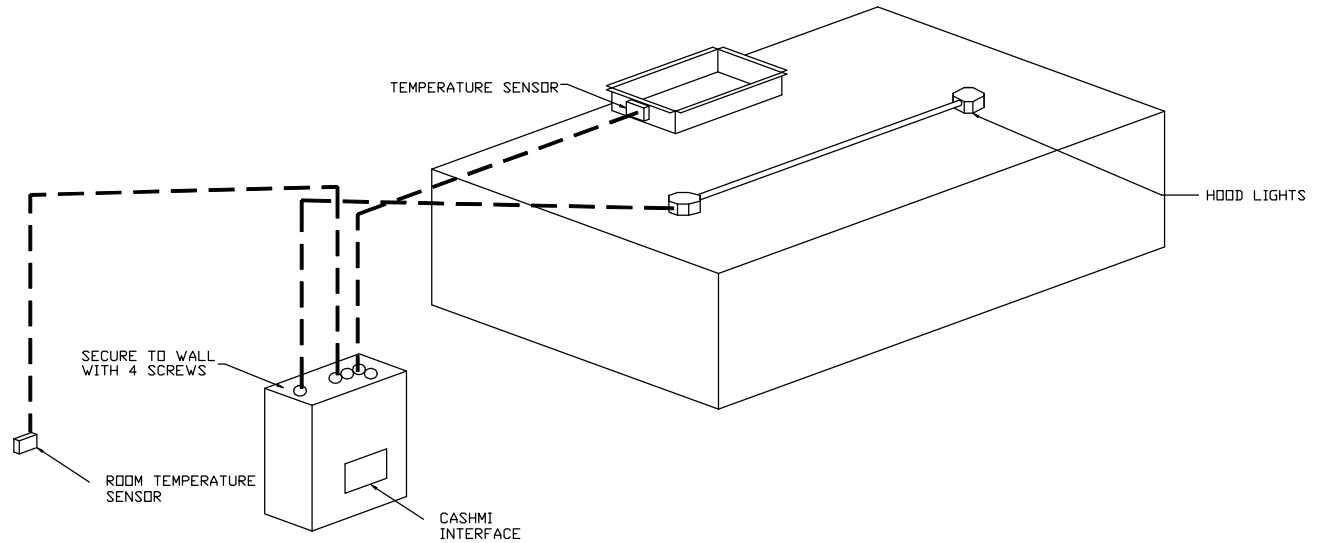


**CASlink Monitor and Control**

- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.
- Hood control panel to allow remote changes to system setting such as: VFD Frequencies, ECM speeds, temperature set points, fan and wash schedules, etc.

**MONITORING AND CONTROL POINTS LIST**

DCV Packages	Function	SC Packages	Function
Room Temperature	MONITOR	Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR	Duct Temperature(s)	MONITOR
MUA Discharge Temperature	MONITOR	MUA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR	Kitchen RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR	Controller Faults	MONITOR
Fan Amperage	MONITOR	Fan Faults	MONITOR
Fan Power	MONITOR	Fan Status	MONITOR
VFD Faults	MONITOR	PCU Faults	MONITOR
Controller Faults	MONITOR	PCU Filter Clog Percentages	MONITOR
Fan Faults	MONITOR	Fire Condition	MONITOR
Fan Status	MONITOR	CDRE Fire System	MONITOR
PCU Faults	MONITOR	Building Pressures	MONITOR
PCU Filter Clog Percentages	MONITOR	Fans Button(s)	MONITOR & CONTROL
Fire Condition	MONITOR	Lights Button(s)	MONITOR & CONTROL
CDRE Fire System	MONITOR	Wash Button	MONITOR & CONTROL
Building Pressures	MONITOR		
Prep Time Button	MONITOR & CONTROL		
Fans Button	MONITOR & CONTROL		
Lights Button	MONITOR & CONTROL		
Wash Button	MONITOR & CONTROL		



**WALL MOUNTED CONTROL CENTER**

**CUSTOMER APPROVAL TO MANUFACTURE:**

Approved as Noted

Approved with NO Exception Taken

Revise and Resubmit

SIGNATURE \_\_\_\_\_

Your Title \_\_\_\_\_ Date \_\_\_\_\_



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 17	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

Demand Control Ventilation Hood Control Panel Specifications:

- Controls shall be listed by ETL (UL 508A) and shall comply with demand ventilation system turndown requirements outlined in IECC 403.2.8 (2015).
- The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.
- Temperature probe(s) located in the exhaust duct riser(s) shall be constructed of stainless steel.
- A digital controller shall be provided to activate the hood exhaust fans dynamically based on a fixed differential between the ambient and duct temperatures sensors. This function shall meet the requirements of IMC 5.7.1.1.
- A digital controller shall provide adjustable hysteresis settings to prevent cycling of the fans after the cooking appliances have been turned off and/or the heat in the exhaust system is reduced.
- A digital controller shall provide an adjustable minimum fan run-time setting to prevent fan cycling.
- Variable Frequency Drives (VFDs) shall be provided for fans as required. The digital controller shall modulate the VFDs between a minimum setpoint and a maximum setpoint on demand. The duct temperature sensor input(s) to the digital controller shall be used to calculate the speed reference signal.
- The VFD speed range of operation shall be from 0% to 100% for the system, with the actual minimum speed set as required to meet minimum ventilation requirements.
- An internal algorithm to the digital controller shall modulate supply fan VFD speed proportional to all exhaust fans that are located in the same fan group as the supply fan.
- The system shall operate in PREP MODE during light cooking load or COOL DOWN MODE when sufficient heat remains underneath the hood system after cooking operations have completed. Operation during either of these periods will disable the supply fans and provide an exhaust fan speed that is equal to the minimum ventilation requirement.
- A digital controller shall disable the supply fan(s), activate the exhaust fan(s), activate the appliance shunt trip, and disable an electric gas valve automatically when fire condition is detected on a covered hood.
- A digital controller shall allow for external BMS fan control via Dry Contact (external control shall not override fan operation logic as required by code).
- An LCD interface shall be provided with the following features:
  - a. On/Off push button fan & light switch activation
  - b. Integrated gas valve reset for electronic gas valves (no reset relay required)
  - c. VFD Fault display with audible & visual alarm notification
  - d. Duct temperature sensor failure detection with audible & visual alarm notification
  - e. Mis-wired duct temperature sensor detection with audible & visual alarm notification
  - f. A single low voltage Cat-5 RJ45 wiring connection
  - g. An energy savings indicator that utilizes measured kWh from the VFDs

Sequence of Operations:

The hood control panel is capable of operating in one or more of the following states at any given time:

- Automatic: The system operates based on the differential between room temperature and the temperature at the hood cavity or exhaust duct collar. Fans activate at a configurable temperature differential threshold. Depending on the job configuration each fan zone can be configured as static or dynamic. These terms refer to whether a variable motor (such as EC Motors or VFD driven motors) modulate with temperature. If the panel is equipped with variable speed fans and the zone is defined as "dynamic", these will modulate within a user-defined range based on the temperature differential. Panels equipped with variable speed fans and a fan zone defined as "static", fans will run at a set speed calculated for the drive. Demand control ventilation systems are capable of modulating exhaust and make up air fan speeds per the requirements outlined in IECC 403.2.8.
- Manual: The system operates based on human input from an HMI.
- Schedule: A weekly schedule can be set to run fans for a specified period throughout the day. There are three occupied times per day to allow for the user to set up a time that is suitable to their needs. Any time that is within the defined occupied time, the system will run at modulation mode and follow the fan procedure algorithm based on temperature during this time. During unoccupied time, the system will have an extra offset to prevent unintended activation of the system during a time where the system is not being occupied.
- Other: The system operates based on the input from an external source (DDC, BMS or hard-wired interlock)

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted	<input type="checkbox"/>
Approved with NO Exception Taken	<input type="checkbox"/>
Revise and Resubmit	<input type="checkbox"/>
SIGNATURE _____	_____
Your Title _____	Date _____



JOB Pinetree Recovery r2	
LOCATION PORTLAND, ME, 04103	
DATE 2/27/2018	JOB # 3320867
DWG # 18	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

JOB NO  
3320867

MODEL NUMBER  
DCV-1111

DRAWN BY  
INSTALL

DESCRIPTION OF OPERATION:  
Demand Control Ventilation, w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation. Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.

JOB NAME  
Pinetree Recovery r2

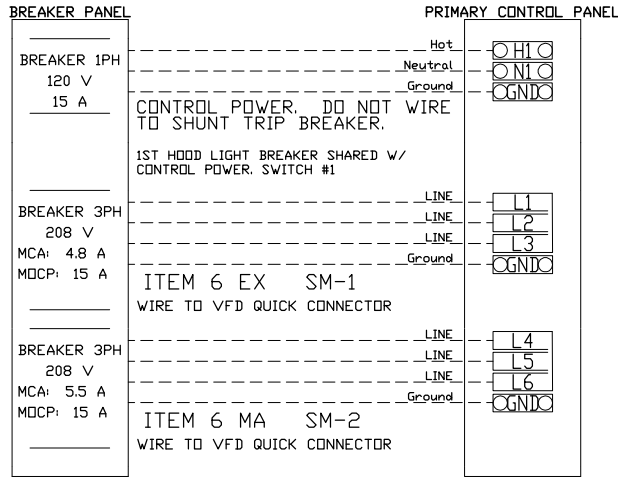
DATE  
2/27/2018

DWG NO  
ECP #1-1

**BREAKER PANEL TO PRIMARY CONTROL PANEL**

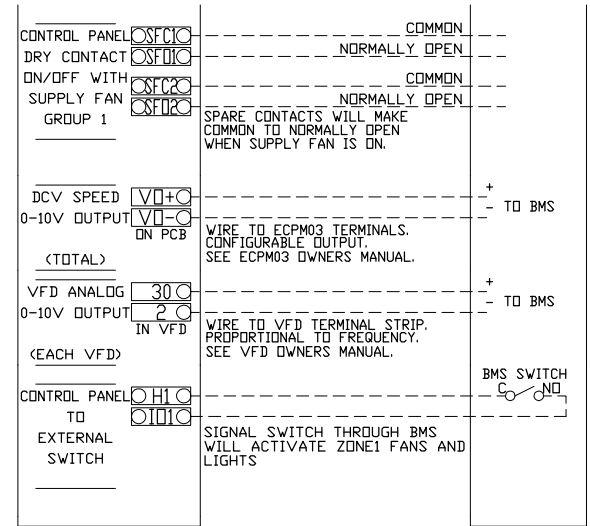
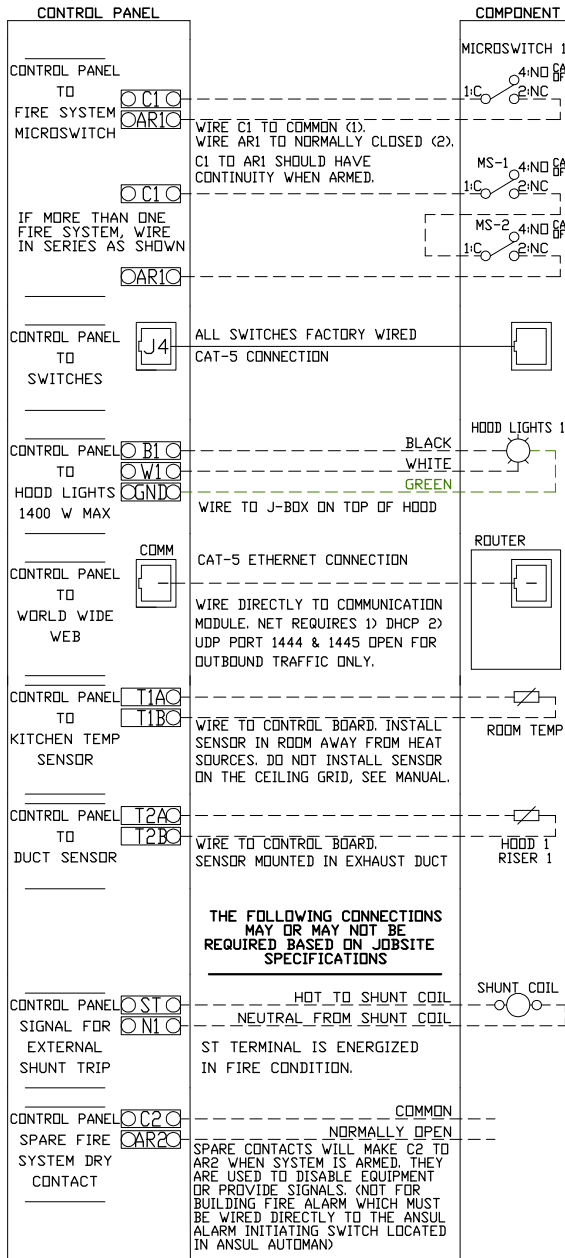
Responsibility: Electrician

BREAKER SIZE SHOWN IS THE MAXIMUM ALLOWED



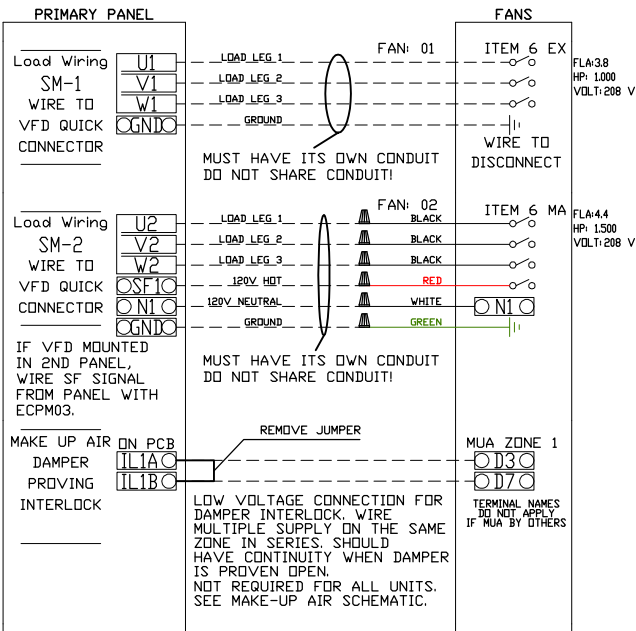
**CONTROL PANEL TO ACCESSORY ITEMS**

Responsibility: Electrician



**CONTROL PANEL TO FANS**

Responsibility: Electrician

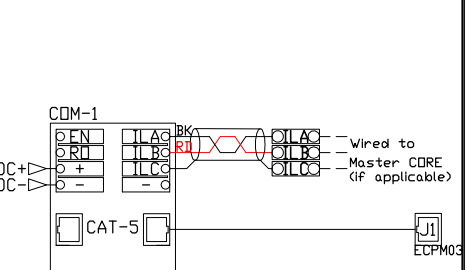
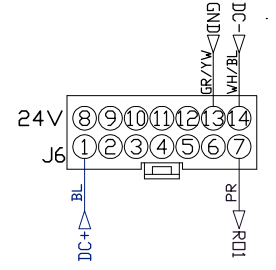
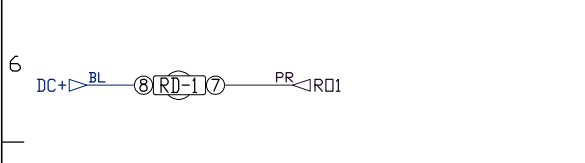
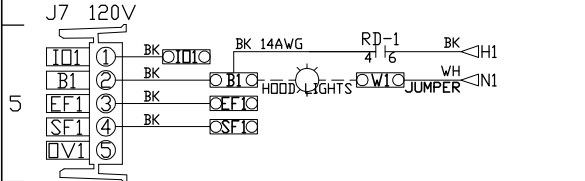
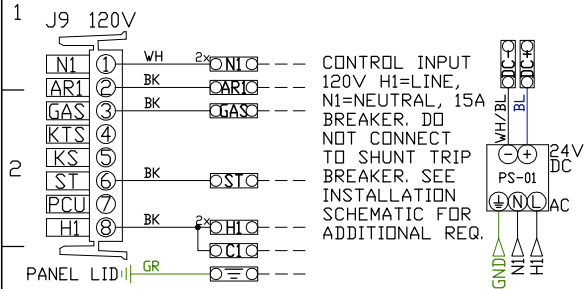


THE FOLLOWING CONNECTIONS MAY OR MAY NOT BE REQUIRED BASED ON JOBSITE SPECIFICATIONS

HOT TO SHUNT COIL  
NEUTRAL FROM SHUNT COIL  
ST TERMINAL IS ENERGIZED IN FIRE CONDITION.

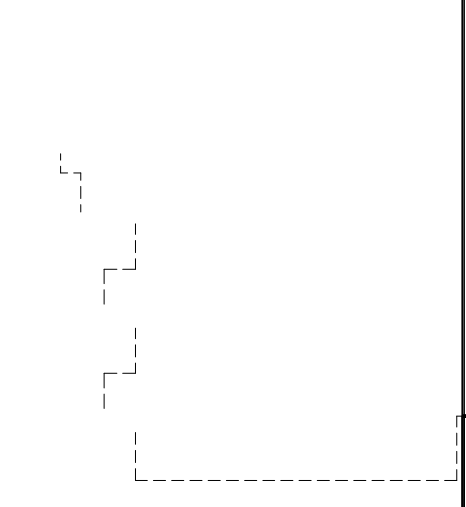
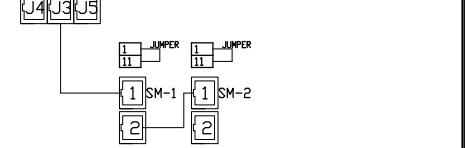
SPARE CONTACTS WILL MAKE C2 TO AR2 WHEN SYSTEM IS ARMED. THEY ARE USED TO DISABLE EQUIPMENT OR PROVIDE SIGNALS. (NOT FOR BUILDING FIRE ALARM WHICH MUST BE WIRED DIRECTLY TO THE ANSUL ALARM INITIATING SWITCH LOCATED IN ANSUL AUTOMAN)

UNLESS SPECIFIED OTHERWISE, ALL FACTORY AC WIRING 16 AWG. ALL FACTORY DC WIRING 18 AWG.



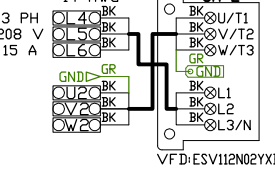
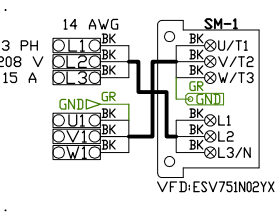
NOTE: All items on ECPM03 J3 line to be daisy chained from one component to the next, with EOL120A at end of line. Place PN: EOL120A in empty RJ45 port.

ECPM03/DAISY CHAIN



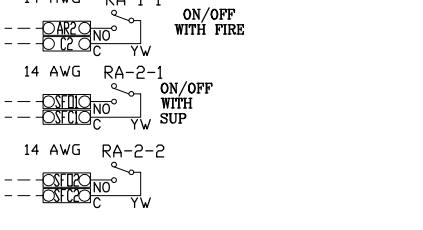
**MOTOR POWER CIRCUIT**

NOTE: IF VFD HAS 1PH 240V INPUT, USE L1 & L2 ONLY. IF VFD HAS 3PH 120V INPUT, USE L1 & N ONLY.



MTR:ITEM 6 EX
FLA:3.8
HP:1.000
P100:01
P101:N/A
P102:0.0
P103:80.0
P107:00
P108:90
P131:N/A
P150:01
P167:64.3
P194:225
P410:11
MTR:ITEM 6 MA
FLA:4.4
HP:1.500
P100:01
P101:N/A
P102:0.0
P103:80.0
P107:00
P108:73
P131:N/A
P150:01
P167:60.0
P194:225
P410:21

**DRY CONTACTS (SHOWN DE-ENERGIZED)**



**FACTORY WIRING SCHEMATIC CIRCUIT BOARDS ECPM03**

DCV Rev. 2.08.00
HMI Rev. 2.08.00
RA-x 24 VDC 120 VAC RELAY
RD-x 24 VDC RELAY
NO 4 3
NC 2 1
COIL 8 7
COM 6 5

**COMPONENT LIST**

LABEL	DESCRIPTION
ST-X	Starter PN-varies
OL-X	Overload PN-varies
C-X	Contactors PN-varies
PS-1	Power Sup. 24VDC PN:MDP18-24A-1C
RA-x	120V Relay DPDT PN:34.110.0184.0
RD-x	24VDC Light Relay PN:34.110.0188.0
RJC-x	RJ45 to Twist Pair PNR:J45.MDBUS.CONV
CDM-1	CASLink MODULE PN:CDM01

**LEGEND**

---	FIELD WIRING
---	FACTORY WIRING
BK-	BLACK
BL-	BLUE
BR-	BROWN
DR-	ORANGE
WH-	WHITE
DR/BL-	DR/BL STRIPE
BL/RD-	BL/RD STRIPE
RD/GN-	RD/GN STRIPE
WH/BL-	WH/BL STRIPE
YW-	YELLOW
GY-	GREY
PR-	PURPLE
GR-	GREEN

**JOB NAME**

**Pinetree Recover...**

**DCV-1111**

**DESCRIPTION OF OPERATION**  
Demand Control Ventilation, w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire. Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation. Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.

JOB NO	3320867	DRAWN BY	
TYPE	FACTORY	DATE	2/27/2018
DWG NO	ECP	#1-2	