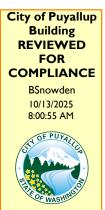
SHBTC BLDG HP-1 - 7325-7921

PRMH20251340

Full-Sized legible color report must be on site and made available by the Permittee for all inspections.







COMMENTS:

- 1. INFORMATION FOR ELECTRIC HEATER SPECIFICATIONS ARE INCOMPLETE. UNIT IS APPROVED, HOWEVER ELECTRIC INFORMATION INCLUDING MCA AND MOCP REQUIRE CONFIRMATION. PROVIDE DETAILS FOR ELECTRIC HEATER SPECS.
- 2. INFORMATION FOR EXISTING UNIT ELECTRICAL CONFIGURATION IS INCOMPLETE. SPECIFIC MCA AND MOCP FOR THE NEW UNIT ARE UNCLEAR, AS WELL AS HOW THEY COMPARE TO THE EXISTING CONFIGURATION. UPGRADE ELECTRICAL CONFIGURATION IF NECESSARY.



Submittal

Prepared For:

Macdonald-miller Facility Solution

Date: April 23, 2025

Job Name:

SHBTC Bldg 1015 HP-1

Opportunity ID: 8186084

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

- 1 3 25 Ton PKGD Precedent Unitary Rooftop
- 1 Economizer with PC Damper

Stephen Forner Trane U.S. Inc.

2333 158th Court NE Bellevue, WA 98008

E-mail: stephen.forner@trane.com Office Phone: (425) 200-8929

Cell: (425) 200-8929

The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within <u>14 days</u> of submittal date.

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.



Table of Contents

Product Summary	
3 - 25 Ton PKGD Precedent Unitary Rooftop (Item A1)	
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Mechanical Specifications	
Dimensional Drawings	-
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Field Wiring	1(
Economizer with PC Damper (Item B1)	
Tag Data	1′
Product Data	1 ²
Other	

Tag Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	HP-1	1	PKGD Precedent Unitary Rooftop	WSK240A4S0N**00B0000100A

Product Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop Item: A1 Qty: 1 Tag(s): HP-1

Heat Pump

Standard Efficiency

R-454B Refrigerant

20 Ton

460/60/3

Symbio 700

36 kW Electric Heat

Standard Panels with 2-in MERV 8 Filter

Advanced Controls and BACnet BAS

Return Air Smoke Detector

3-year parts, coils & controls warranty

5-year compressor parts only warranty

1st Yr Labor Whole Unit



Performance Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Performance Data - 3 - 25 Ton PKGD Preceden	
Tags	HP-1
Design Airflow (cfm)	8020
Max Available ESP (in H2O)	1.868
Total SP (in H2O)	1.632
Supply RPM (rpm)	1453
Total Supply Operating Horsepower (hp)	3.990
Supply Motor Horsepower (hp)	2.900
Airflow Application	Downflow
Gross Total Capacity (MBh)	241.01
Gross Sensible Capacity (MBh)	215.62
Cooling Entering Dry Bulb (F)	78.00
Cooling Entering Wet Bulb (F)	63.00
Coil LAT DB (F)	53.17
Coil LAT WB (F)	52.37
Cooling Leaving Unit Dry Bulb (F)	54.93
Cooling Leaving Unit WB (F)	53.18
Summer Ambient (F)	86.00
Output Heating Capacity (MBh)	122.94
Heat pump Heating Capacity (MBh)	157.45
Heating Entering Air Temperature (F)	70.00
Heat pump leaving air temperature (F)	91.14
Heating Leaving Air Temperature (F)	83.83
Heat pump heating ambient temperature (F)	26.00
Refrigerant charge - Ckt 1 (lb)	38.0
EER @ AHRI (Number)	9.50
IEER @ AHRI (Number)	12.50
AHRI COP @ 47 F (Number)	3.20
AHRI COP @ 17 F (Number)	2.05
MCA (A)	109.00
MOP (A)	110.00
Height (ft)	5.50
Width (ft)	7.25
Length (ft)	10.25
Approx Installed Weight (lb)	2188.0
Outdoor Noise - 63 Hz (dB)	95
Outdoor Noise - 125 Hz (dB)	91
Outdoor Noise - 250 Hz (dB)	93
Outdoor Noise - 500 Hz (dB)	91
Outdoor Noise - 1 kHz (dB)	88
Outdoor Noise - 2 kHz (dB)	83
Outdoor Noise - 4 kHz (dB)	80
Outdoor Noise - 8 kHz (dB)	74
Supply Fan Count (Number)	2.00
Indoor Fan Type	BC Plenum
Indoor Fan Drive Type	Variable Direct



Mechanical Specifications - 3 - 25 Ton PKGD Precedent Unitary Rooftop Item: A1 Qty: 1 Tag(s): HP-1

Heatpump - General

- Packaged rooftop units cooling, heating capacities, and efficiencies are AHRI Certified within scope of AHRI Standard 210-240 for 12.5 to 25 Tons and ANSIZ21.47 and 10 CFR Part 431 pertaining to Commercial Warm Air Furnaces (all gas heating units).
- Convertible airflow.
- Symbio controls operating range between 40.0 F and 125.0 F in cooling mode standard from thefactory. Factory or field-installed low ambient kit extended operating range down to 0°F.
- Factory assembled, internally wired, fully charged with R-454B, and 100 percent run tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory.
- Colored and numbered wiring internal to the unit for simplified identification.
- Units cULus listed and labeled, classified in accordance for Central Cooling Air Conditioners.
- Unit shall be furnished with a leak detection system from the factory. The leak detection system shall consist of one or more refrigerant detection sensors. When the system detects a leak, the unit controller shall initiate mitigation actions.

Heatpump - Casing

- Zinc coated, heavy gauge, galvanized steel.
- Weather resistant pre-painted metal with galvanized substrate.
- Meets ASTM B117, 672 hour salt spray test.
- Removable single side maintenance access panels.
- Lifting handles in maintenance access panels (can be removed and reinstalled by removing fasteners while providing a water and air tight seal).
- Exposed vertical panels and top covers in the indoor air section insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material.
- Base pan shall have no penetrations within the perimeter of the curb other than the raised 1 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.
- Base of the unit insulated with 1/8 inch, foil-faced, closed-cell insulation.
- Unit base provisions for forklift and/or crane lifting on three sides of unit.

Heatpump - Coils Evaporator and Condenser

- Internally finned, 5/16" copper tubes mechanically bonded to a configured aluminum plate fin are standard.
- Coils are leak tested at the factory to ensure integrity.
- Evaporator coil and condenser coil are leak tested to 600 psig.
- Assembled unit is leak tested to 465 psig.
- Condenser coil is patent pending 1+1+1 hybrid coil, designed with slight gaps for cleaning ease.
- Composite, dual-sloped, removable condensate drain pan is standard.

Heatpump - Coil Guards

- Provides condenser coil protection.

Heatpump - Compressors

- All units have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps.
- Suction gas-cooled motor with voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads standard with scroll compressors.
- Crankcase heaters are standard on all compressors.
- All units have dual compressors.
- Three stages of cooling available on 12.5 to 17.5 tons units and four stages of cooling available on 20 and 25 tons units.

Heatpump - Filters

- Standard throwaway filters
- Optional 2 inch MERV 8 and MERV 13 filters

Heatpump - Frostat

- Utilized as a safety device.



- Opens to prevent freezing temperatures on evaporator coil.
- Temperature will need to rise to 50.0 F before closing.
- Utilized in low airflow or high outside air applications (cooling only).

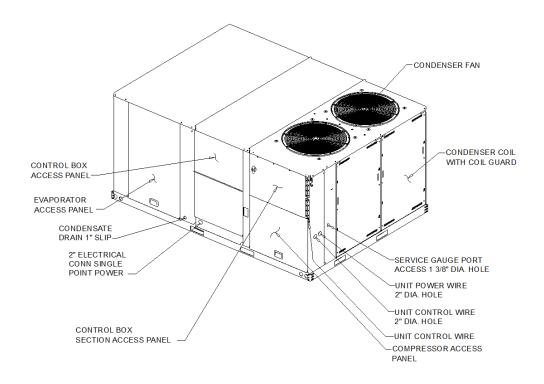
Heatpump - Indoor Fan

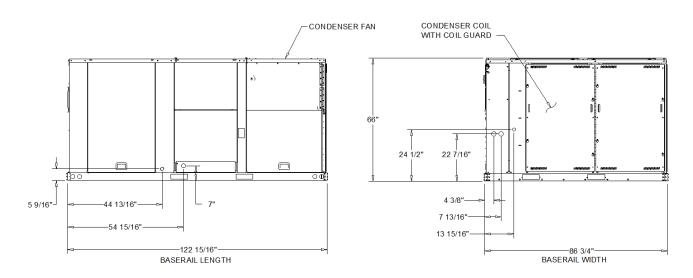
- Direct drive plenum fan design 12.5 to 25 tons units.
- Plenum fan design- backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor.
- Supply fan speed adjustments can be made using the Symbio 700 or Mobile App.
- Motors are thermally protected.
- Variable speed direct drive motors are high efficiency 12.5 to 25 tons.



Dimensional Drawings - 3 - 25 Ton PKGD Precedent Unitary Rooftop Item: A1 Qty: 1 Tag(s): HP-1

- 1. THRU -THE -BASE ELECTRICAL IS NOT STANDARD ON ALL UNITS.
 2. VERIFY WEIGHTS, CONNECTIONS, AND ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



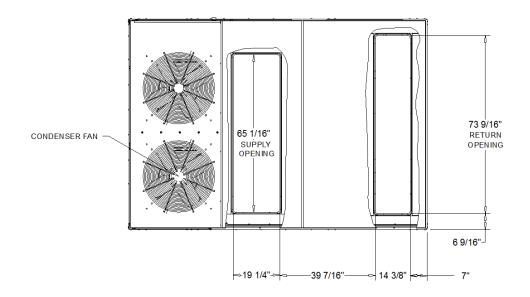


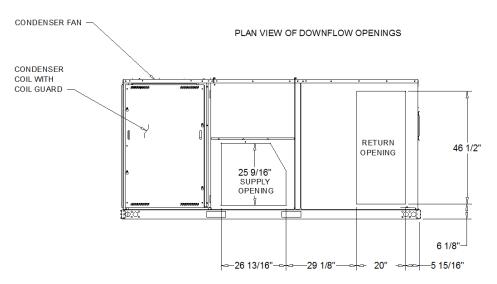
HEAT PUMP / ELECTRIC HEAT STANDARD EFFICIENCY

DIMENSION DRAWING



Dimensional Drawings - 3 - 25 Ton PKGD Precedent Unitary Rooftop Item: A1 Qty: 1 Tag(s): HP-1





HORIZONTAL AIR FLOW OPENING

HEAT PUMP / ELECTRIC HEAT STANDARD EFFICIENCY

DIMENSION DRAWING



Weight, Clearance & Rigging - 3 - 25 Ton PKGD Precedent Unitary Rooftop Item: A1 Qty: 1 Tag(s): HP-1

NOTES: 1. APPROX. INSTALLED WEIGHT INCLUDES ALL SELECTED OPTIONS AND ACCESSORIES. 2. CORNER WEIGHTS ARE FOR BASE UNIT ONLY AND DO NOT INCLUDE OPTIONS OR ACCESSORIES. 3. WEIGHT INCLUDES BOTH FACTORY AND FIELD INSTALLED ACCESSORY. Approximate Installed Weight: 2,188.0 lb CLEARANCE 36" (A) Corner Weight: 680.0 lb (C) Corner Weight: 426.0 lb (B) Corner Weight: 550.0 lb (D) Corner Weight: 527.0 lb (C) CLEARANCE 68" CLEARANCE 48" 3.17 ft A (B) 4.58 ft CLEARANCE 60" CLEARANCE 72" CLEARANCE 68" CLEARANCE 48"

HEAT PUMP / ELECTRIC HEAT STANDARD EFFICIENCY

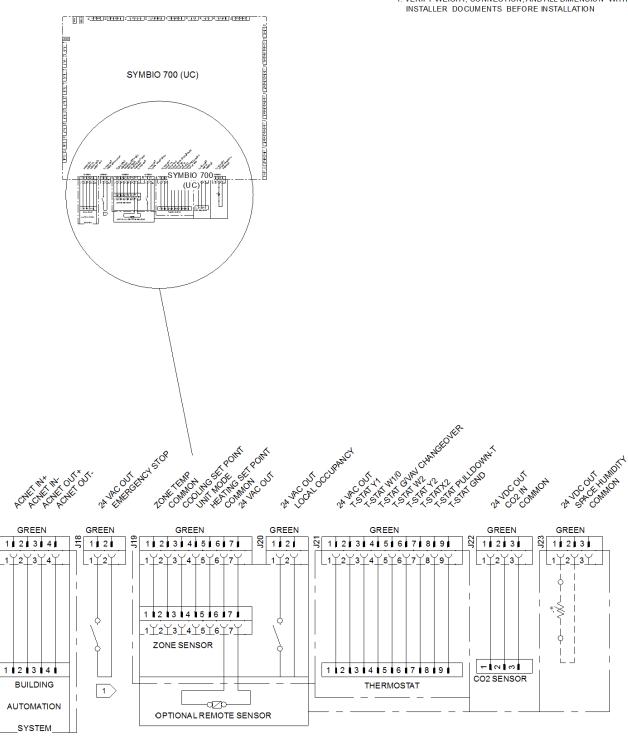
WEIGHTS AND CLEARANCES



Field Wiring - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Item: A1 Qty: 1 Tag(s): HP-1

1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH



SYMBIO 700 (J17, j18, J19, J20, J21, J22, AND J23)

FIELD WIRING DRAWING



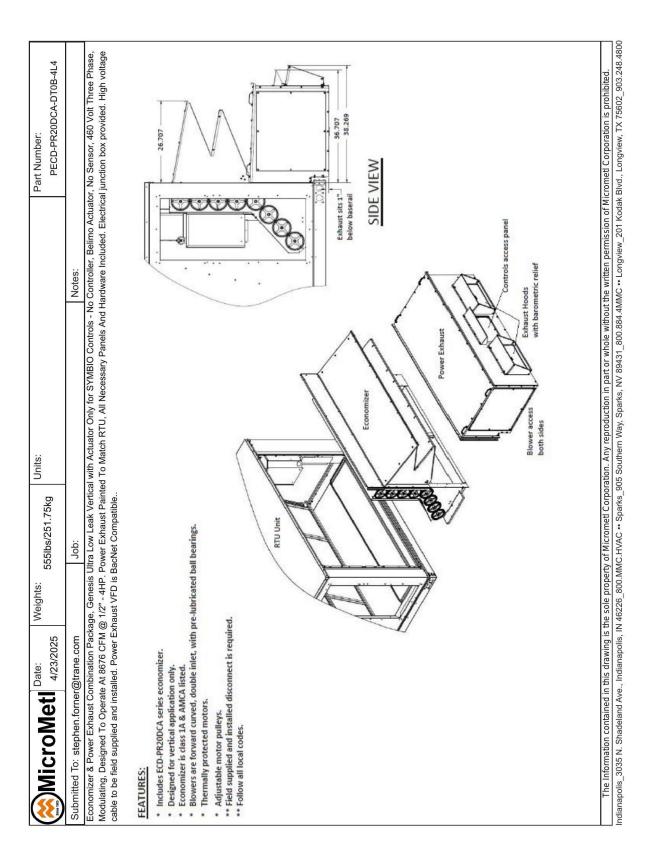
Tag Data - Economizer with PC Damper (Qty: 1)

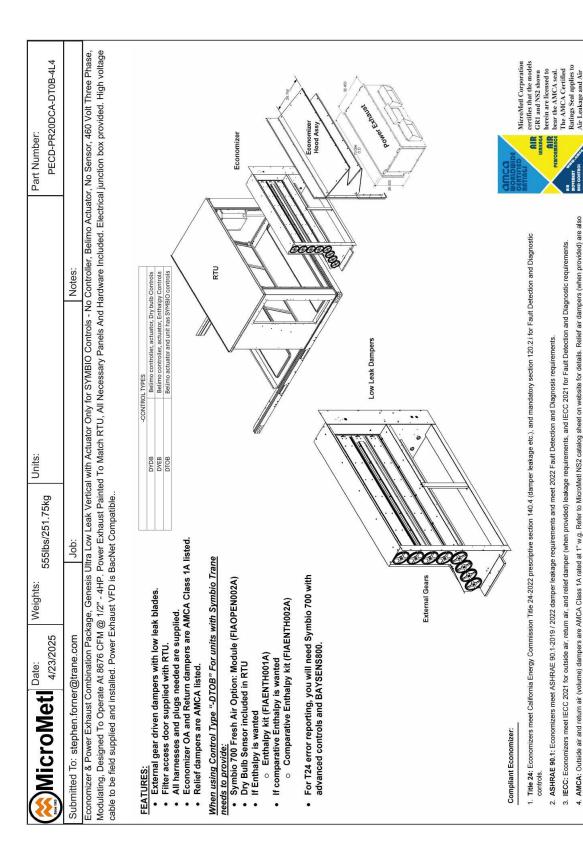
Item	Tag(s)	Qty
B1	MAT-1-1	1

Product Data - Economizer with PC Damper Item: B1 Qty: 1 Tag(s): MAT-1-1



Other -







AMCA rated. Refer to GR1 series catalog sheet on website for details.

MicroMeti 4/23/2025	Weights:	555lbs/251.75kg	Units:		Part Number: PECD-PR20DCA-DT0B-4L4
Submitted To: stephen.forner@trane.com	L	Job:		Notes:	
Economizer & Power Exhaust Combination Package, Genesis Ultra Low Leak Vertic Modulating, Designed To Operate At 8676 CFM @ 1/2" - 4HP. Power Exhaust Paint cable to be field supplied and installed. Power Exhaust VFD is BacNet Compatible	ackage, Genesis U ⁻ M @ 1/2" - 4HP. P r Exhaust VFD is B	Itra Low Leak Vertica ower Exhaust Painte acNet Compatible	Economizer & Power Exhaust Combination Package, Genesis Ultra Low Leak Vertical with Actuator Only for SYMBIO Controls - No Controller, Belimo Actuator, No Sensor, 460 Volt Three Phase, Modulating, Designed To Operate At 8676 CFM @ 1/2" - 4HP. Power Exhaust Painted To Match RTU, All Necessary Panels And Hardware Included. Electrical junction box provided. High voltage cable to be field supplied and installed. Power Exhaust VFD is BacNet Compatible	Controller, Belimo Actuato rdware Included. Electrica	, No Sensor, 460 Volt Three Phase, junction box provided. High voltage

		ī	L		i			Internally
Suttix	Voltage	Phase	Description		FLA	MCA	MOCE	Provided Fuses
2V2	208-230/240	3	Constant Volume	2.0	7.6-7.2	9.5-9.0	9.5-9.0 12.4-11.7	N/A
2L2 or 2T2	2L2 or 2T2 208-230/240	3	Modulating	2.0	13.6*	17	30.6	25 Amp
4V2	460/480	က	Constant Volume	2.0	3.8	4.8	6.2	N/A
4L2 or 4T2	460/480	က	Modulating	2.0	6.5*	8.1	14.6	10 Amp

		- 4PF	 4 III Power Exhaust Configurations and Electrical Data 	onfigu	irations and	Electrical	Data	
Suffix	Voltage	Phase	Description	Η	FLA	MCA	MOCP	Internally Provided Fuse
2V4	208-230/240	3	Constant Volume 4.0	4.0	11.2-10.8 14.0-13.5 18.2-13.1	14.0-13.5	18.2-13.1	N/A
2L4 or 2T4	208-230/240	3	Modulating	4.0	20.6*	25.8	46.4	40 Amp
4\4	460/480	3	Constant Volume	4.0	5.4	6.8	8.8	N/A
4L4 or 4T4	460/480	3	Modulating	4.0	10.5*	13.1	23.6	20 Amp

	•	6HP P	- 6HP Power Exhaust Configurations and Electrical Data	nfigur	ations and	d Electrica,	l Data	
Suffix	Voltage	Phase	Description	ᇁ	FLA	MCA	MOCP	Internally Provided Fuses
2V6	208-230/240	3	Constant Volume 6.0 18.4-17.2 23.0-21.5 29.9-28.0	0.9	18.4-17.2	23.0-21.5	29.9-28.0	N/A
2L6 or 2T6	2L6 or 2T6 208-230/240	က	Modulating	0.9	28.8*	36	64.8	40 Amp
4V6	460/480	3	Constant Volume 6.0	6.0	9.8	10.8	14.0	N/A
4L6 or 4T6	460/480	3	Modulating	6.0	14.3*	17.9	32.2	25 Amp

*VFD Input Current

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Economizer & Power Exhaust Combination Package, Genesis Ultra Low Leak Vertical with Actuator Only for SYMBIO Controls - No Controller, Belimo Actuator, No Sensor, 460 Volt Three Phase, PECD-PR20DCA-DT0B-4L4 Part Number: Notes: Units: 555lbs/251.75kg Job: Weights: 4/23/2025 Submitted To: stephen.forner@trane.com MicroMetI Date:

Modulating, Designed To Operate At 8676 CFM @ 1/2" - 4HP. Power Exhaust Painted To Match RTU, All Necessary Panels And Hardware Included. Electrical junction box provided. High voltage cable to be field supplied and installed. Power Exhaust VFD is BacNet Compatible..

Data provided by blower manufacturer

		7 7 7		5	A CONTROL OF THE PROPERTY OF T							
CFM	ESP	RPM	Freq. (Hz)	63	125	250	200	1000	2000	4000	8000	Blower Outlet dBA @ 5ft.
6916	0.1	712		84.0	80.0	75.0	73.0	71.0	0.69	0.99	63.0	0.99
6652	.25	756		0.98	80.0	0.97	74.0	72.0	70.0	0.99	63.0	67.0
6548	3.	775	ģ	87.0	81.0	0.77	75.0	73.0	70.0	0.79	64.0	67.0
6358	4.	804	dbA	88.0	82.0	0.77	75.0	73.0	70.0	0.79	64.0	68.0
6136	5.	837		89.0	84.0	79.0	0.77	74.0	72.0	0.69	0.99	0.69
5884	9.	698		89.0	87.0	81.0	79.0	75.0	74.0	71.0	68.0	71.0

CFM	ESP	RPM	Freq. (Hz)	63	125	250	200	1000	2000	4000	8000	Blower Outlet dBA @ 5ft.
9188	0.1	836		90.0	89.0	83.0	80.0	77.0	0.97	72.0	0.69	73.0
9010	.25	859		0.06	88.0	83.0	80.0	0.97	76.0	72.0	0.69	72.0
8942	33	898		90.0	88.0	83.0	80.0	0.97	75.0	72.0	0.69	72.0
8814	4.	988	2	0.06	88.0	83.0	80.0	0.97	75.0	72.0	0.69	72.0
9298	5;	206	dbA	91.0	88.0	83.0	80.0	0.97	75.0	72.0	0.69	72.0
8272	.75	970		92.0	89.0	84.0	81.0	77.0	76.0	73.0	70.0	73.0
7880	1.0	1033		92.0	91.0	86.0	82.0	78.0	0.77	74.0	71.0	74.0
7594	1.1	1055		93.0	93.0	87.0	84.0	78.0	78.0	75.0	72.0	76.0

CLM	Len	MOO	Fred.	00	100	010	200	0007	Fred, on the rot took took took	2000	0000	0 401
CLM	LSF	KFIN	(Hz)	63	C71	007	000	0001	7000	4000	8000	Blower Outlet dBA @ 5ff.
10732	0.1	939		93.0	93.0	88.0	85.0	80.0	80.0	77.0	73.0	77.0
10574	.25	954		92.0	93.0	88.0	84.0	79.0	80.0	0.97	73.0	76.0
10506	.3	656		92.0	93.0	88.0	84.0	79.0	79.0	0.97	73.0	76.0
10428	4.	973		92.0	93.0	88.0	84.0	79.0	79.0	0.97	73.0	76.0
10318	.5	286	dBA	92.0	93.0	87.0	84.0	79.0	79.0	0.97	72.0	76.0
9964	.75	1027		93.0	93.0	87.0	84.0	79.0	79.0	75.0	72.0	76.0
0296	1.00	1080		93.0	94.0	88.0	85.0	80.0	79.0	0.97	73.0	0.77
9394	1.25	1137		94.0	95.0	89.0	85.0	81.0	80.0	77.0	74.0	78.0
8800	1.50	1186		95.0	96.0	91.0	87.0	82.0	81.0	78.0	75.0	79.0

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