



MECHANICAL PERMIT APPLICATION

City of Portland, Oregon - Bureau of Development Services
1900 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7363 • TTY 503-823-6868 • www.portlandoregon.gov/bds

Type of work

New construction Addition/alteration/replacement

Demolition Other:

Category of construction

1 & 2 family dwelling Commercial/industrial Accessory building

Multifamily Master builder Other:

Job site information and location

Job no.: Job address: 208 SW 1st

City/State/ZIP: Portland 97204

Suite/bldg./apt. no.: Project name: 208 Bldg RTU Replacement

Cross street/directions to job site:

Subdivision: Lot no. Tax map/parcel no.

Description of work (example: upstairs bath fan/dryer exhaust)

Replace like for like 2.5 ton RTU

2.5

Reference RS / Combination Permit no.

Property owner Tenant

Name:

Address:

City/State/ZIP:

Phone: FAX:

Owner installation: This installation is being made on property that I own, which is not intended for sale, lease, rent, or exchange.

Owner signature: Date:

Contractor Subcontractor

Business name: American Heating Inc.

Address: 1339 SE Gideon St

City/State/ZIP: Portland, OR

Phone: 503-239-4600 FAX: 503-239-7038

Lic. no. CCB lic. no. 33135

Authorized signature: Emma J Gordon

Print name: Emma J Gordon Date: 10-2-12

Applicant Contact Person

Business name: American Heating Inc.

Contact name: Ryan Haggerty

Address: 1339 SE Gideon St

City/State/ZIP: Portland 97202

Phone: 503-239-4600 FAX: 503-239-7038

E-mail:

RS Permit/No Fees Due

Contractor information can be faxed to 503-823-7693.

Commercial Fee* Schedule - Use Checklist

Mechanical permit fees* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar of all mechanical materials, equipment, labor, overhead and profit.)

Value: \$ 9,589

Residential Equipment / Systems Fees*

For special information use checklist

Description	Qty.	Fee	Total
Heating / cooling			
Air conditioner (site plan required)		\$ 23	
Furnace / burner including duct work / vent / liner		\$ 48	
Heat pump (site plan required)		\$ 45	
Air handling unit		\$ 23	
Hydronic hot water system		\$ 28	
Residential boiler (radiator or hydronic) includes piping		\$ 28	
Unit heaters (fuel type, not electric) in-wall, in-duct, suspended, etc.		\$ 23	
Vent for appliance other than furnace		\$ 19	
Alteration of existing HVAC system		\$ 28	

Other fuel appliances			
Decorative gas fireplace		\$ 23	
Flue vent for water heater or gas fireplace		\$ 19	
Wood / pellet stove		\$ 50	
Gas or wood fireplace / insert		\$ 50	
Chimney / liner / flue / vent		\$ 19	
Other:		\$ 28	

Environmental exhaust and ventilation			
Range hood / other kitchen equipment		\$ 12	
Clothes dryer exhaust		\$ 12	
Single-duct exhaust (bathrooms, toilet compartments, utility rooms)		\$ 12	
Attic / crawl space fans		\$ 12	
Other:		\$ 28	

Gas fuel piping

\$13 for the first four, \$2.38 for each additional. Please indicate number of fuel gas piping outlets below:

Furnace, etc.			
Gas heat pump			
Wall / suspended / unit heater			
Water heater / boiler			
Fireplace			
Range			
Barbecue			
Clothes dryer			
Other:			

Other appliances			
Including oil tanks, gas and diesel generators, gas and electric kilns, gas appliances / equipment not included above		\$ 28	

Mechanical permit fees	
Subtotal	
Minimum permit fee (\$70)	
Commercial plan review (60% of permit fee)	
State surcharge (12% of permit fee)	
TOTAL PERMIT FEE	

* Fee methodology set by Tri-County Building Industry Service Board

This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete



Google earth



City of Portland
REVIEWED FOR CODE
COMPLIANCE
OCT 02 2012
Permit Number _____

12-189279 MT

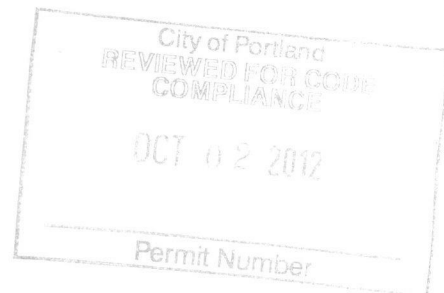
8.5T

Project: ~Untitled70
Prepared By:

08/31/2012
02:08PM

8.5T

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report
Spec Sheet
Unit Feature Sheet



Unit Report For 8.5T

Project: ~Untitled70
Prepared By:

08/31/2012
02:08PM

Unit Parameters

Unit Model:.....48TCED09A2A5-0A0A0
Unit Size:.....09 (8.5 Tons)
Volts-Phase-Hertz:.....208-3-60
Heating Type:.....Gas
Duct Cfg:.....Vertical Supply / Vertical Return
Medium Heat
Round Tube Plate Fin Coils

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length:.....7' 4.125"
Unit Width:.....4' 11.5"
Unit Height:.....4' 1.375"
*** Total Operating Weight:.....960 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size:.....3/4
Condensate Drain Line Size:.....3/4
Return Air Filter Type:.....Throwaway
Return Air Filter Quantity:.....4
Return Air Filter Size:.....16 x 20 x 2

Unit Configuration

Medium Static Option
Al/Cu - Al/Cu
Base Electromechanical Controls
Standard Packaging

Warranty Information

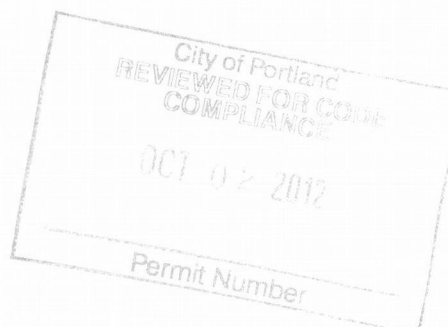
1-Year parts(std.)
5-Year compressor parts(std.)
10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48TCED09A2A5-0A0A0	Rooftop Unit	1
	Base Unit	
	Electromechanical control, No intake or exhaust option	
	None	



Certified Drawing for 8.5T

Project: ~Untitled70
Prepared By:

08/31/2012
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NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN () ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW

UNIT	OUTDOOR COIL TYPE	J	K	H
48TC-A08	RTPF	41 1/4 [1048]	33 [658]	15 7/8 [403]
48TC-A09	RTPF	49 3/8 [1253]	37 1/4 [946]	27 7/8 [708]
48TC-A12	RTPF	49 3/8 [1253]	37 1/4 [946]	15 7/8 [403]
48TC-D08	RTPF	41 1/4 [1048]	33 [658]	15 7/8 [403]
48TC-D09	RTPF	49 3/8 [1253]	37 1/4 [946]	15 7/8 [403]
48TC-D12	RTPF	49 3/8 [1253]	37 1/4 [946]	15 7/8 [403]
48TC-D08	MCHX	41 1/4 [1048]	33 [658]	23 [584.2]
48TC-D12	MCHX	49 3/8 [1253]	37 1/4 [946]	11 [279.4]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)
MCHX - NOVATION (ALUM/ALUM)

UNITED TECHNOLOGIES
CARRIER

P.O. BOX 4808
SYRACUSE, NY 13221

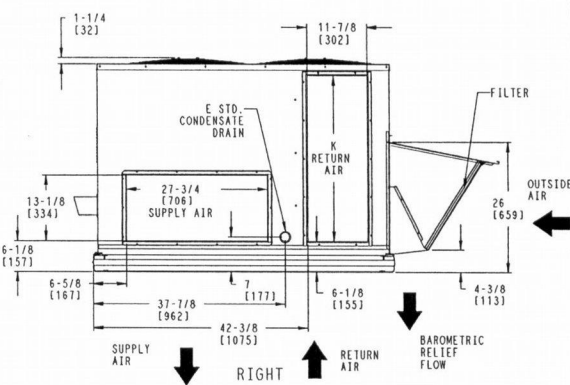
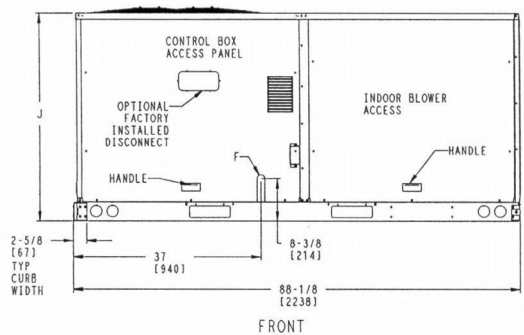
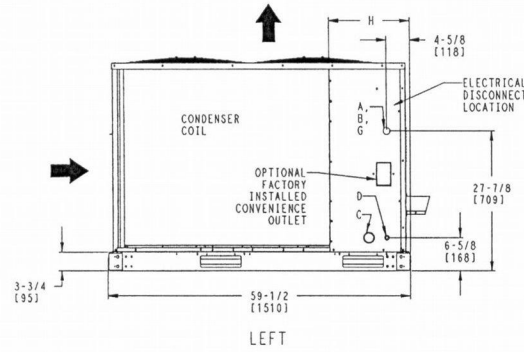
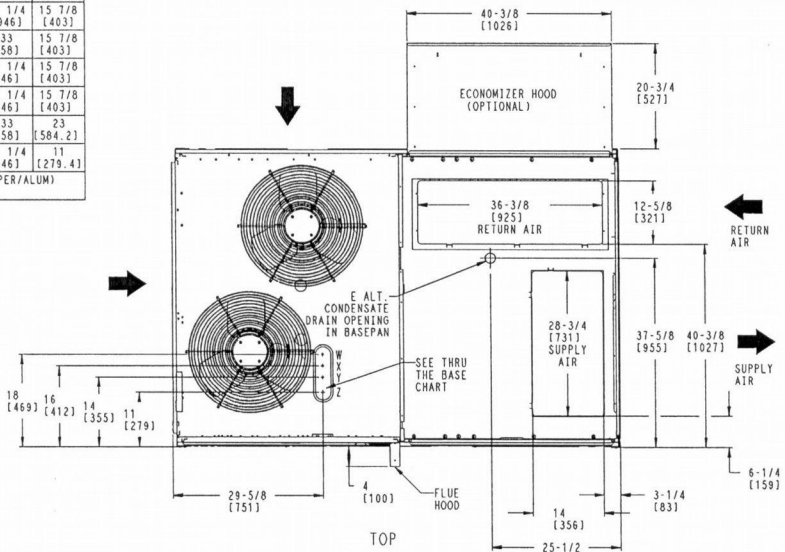
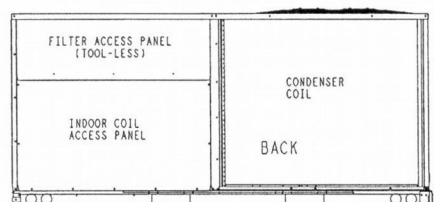
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CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION
G	2" [51] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART (FIELD INST)			
THESE HOLES REQUIRED FOR USE WITH ACCY KITS: CRBTMPR002A01: GAS THRU CURB CRBTMPR004A01: GAS THRU BASEPAN			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002,004)	POWER	1 3/4" [44.4]
Z *	(004) 3/4" FPT	GAS	1 3/4" [44.4]
* (002) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING. HOLE SIZE: 2" [50.8]			

THRU-THE-BASE CHART (FIOP)
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED. **
FOR BELOW LISTED MODELS, A FIELD SUPPLIED 1/2" ADAPTER IS REQUIRED BETWEEN BASE PAN FITTING AND GAS VALVE:
48HCD, S+08



SHEET 1 OF 2	DATE 03-08-10	SUPERCEDES 11-24-08	48TC 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM500985	REV F
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Certified Drawing for 8.5T

Project: ~Untitled70
Prepared By:

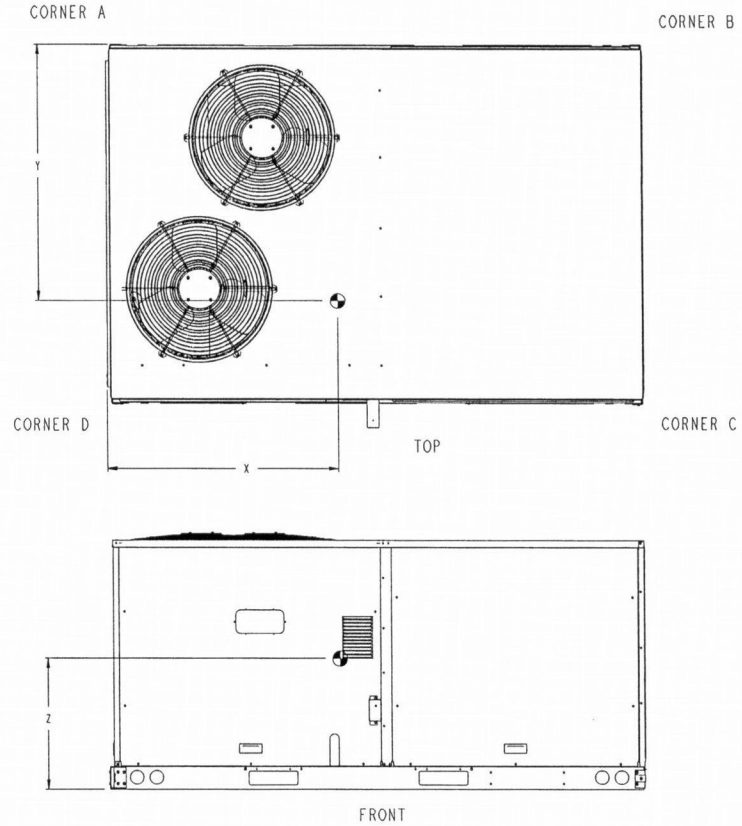
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UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48TC-A08	RTPF	780	354	178	81	158	72	209	95	236	107	41 1/2 [1054]	33 7/8 [860]	20 1/2 [521]
48TC-A09	RTPF	920	418	212	96	183	83	243	110	282	128	40 7/8 [1038]	34 [864]	23 1/8 [587]
48TC-A12	RTPF	930	422	216	98	196	89	247	112	272	123.5	42 [1067]	33 1/8 [841]	24 1/4 [616]
48TC-D08	RTPF	835	379	164	74.5	170	77.2	255	115.8	245	111.7	44 7/8 [1140]	35 5/8 [905]	19 3/8 [492]
48TC-D09	RTPF	930	422	228	103.5	187	85	232	105.3	283	128.5	39 3/4 [1010]	32 7/8 [835]	18 5/8 [473]
48TC-D12	RTPF	940	427	231	104.9	189	85.8	234	106.2	286	129.8	39 3/4 [1010]	33 [838]	18 1/2 [470]
48TC-D08	MCHX	805	365.5	160	72.6	153	69.5	240	109	260	118	43 [1092]	36 3/8 [924]	20 3/8 [517.7]
48TC-D12	MCHX	895	406.3	185	84	176	79.9	260	118	274	124.4	42 7/8 [1089]	35 1/2 [902]	22 7/8 [581]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)
MCHX - NOVATION (ALUM/ALUM)

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*** STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING. FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



City of Portland
 REVIEWED FOR CODE COMPLIANCE
 OCT 02 2012
 Permit Number

SHEET 2 OF 2	DATE 03-08-10	SUPERCEDES 11-24-08	48TC 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM500985	REV F
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Performance Summary For 8.5T

Project: ~Untitled70
Prepared By:

08/31/2012
02:08PM

Part Number:48TCED09A2A5-0A0A0

ARI EER:..... 11.00
IEER:..... 11.7

Base Unit Dimensions

Unit Length:..... 88.1 in
Unit Width:..... 59.5 in
Unit Height:..... 49.4 in

Operating Weight

Base Unit Weight:..... 930 lb
Medium Heat:..... 15 lb
Medium Static Option:..... 15 lb

Total Operating Weight:..... 960 lb

Unit

Unit Voltage-Phase-Hertz:..... 208-3-60
Air Discharge:..... Vertical
Fan Drive Type:..... Belt
Actual Airflow:..... 3400 CFM
Site Altitude:..... 0 ft

Cooling Performance

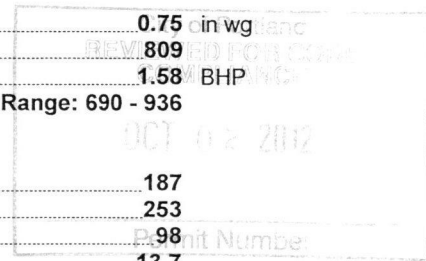
Condenser Entering Air DB:..... 95.0 F
Evaporator Entering Air DB:..... 80.0 F
Evaporator Entering Air WB:..... 67.0 F
Entering Air Enthalpy:..... 31.44 BTU/lb
Evaporator Leaving Air DB:..... 57.8 F
Evaporator Leaving Air WB:..... 57.3 F
Evaporator Leaving Air Enthalpy:..... 24.57 BTU/lb
Gross Cooling Capacity:..... 105.14 MBH
Gross Sensible Capacity:..... 81.59 MBH
Compressor Power Input:..... 7.28 kW
Coil Bypass Factor:..... 0.198

Heating Performance

Heating Airflow:..... 3400 CFM
Entering Air Temp:..... 70.0 F
Leaving Air Temp:..... 110.2 F
Gas Input Capacity:..... 120.0 / 180.0 MBH
Gas Heating Capacity:..... 147.60 MBH
Temperature Rise:..... 40.2 F
NOTE:..... Second Stage

Supply Fan

External Static Pressure:..... 0.75 in wg
Fan RPM:..... 809
Fan Power:..... 1.58 BHP
NOTE:..... Selected IFM RPM Range: 690 - 936



Electrical Data (Before July 30, 2012)

Minimum Voltage:..... 187
Maximum Voltage:..... 253
Compressor #1 LRA:..... 98
Compressor #2 RLA:..... 13.7
Compressor #2 LRA:..... 83
Outdoor Fan Motor Qty:..... 2
Outdoor Fan FLA (ea):..... 1.5
Indoor Fan Motor Type:..... MED

Performance Summary For 8.5T

Project: ~Untitled70
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Indoor Fan Motor FLA:	5.2
Combustion Fan Motor FLA (ea):	0.48
Power Supply MCA:	40
Power Supply MOCP (Fuse or HACR):	50
Min. Unit Disconnect FLA:	42
Min. Unit Disconnect LRA:	219
Electrical Convenience Outlet:	None

Electrical Data (July 30, 2012 and Beyond)

Indoor Fan Motor FLA:	6.9
Power Supply MCA:	42
Power Supply MOCP:	50
Disconnect Size FLA:	44
Disconnect Size LRA:	246

July 30th and beyond units can be identified by serial number 3112XXXXXXXXX and higher

Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

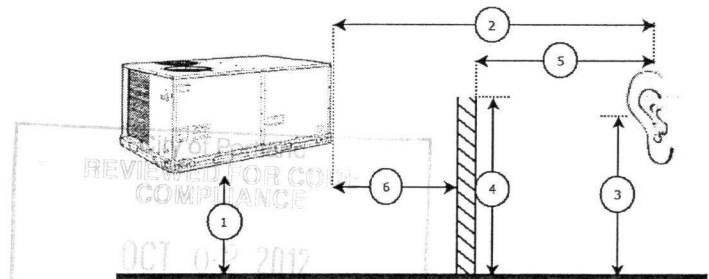
Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	96.9	93.9	88.6
125 Hz	92.1	85.2	85.0
250 Hz	77.1	69.0	81.6
500 Hz	71.1	65.1	79.5
1000 Hz	66.5	62.5	77.4
2000 Hz	64.2	58.0	74.1
4000 Hz	67.5	57.7	71.0
8000 Hz	68.0	56.7	66.3
A-Weighted	79.3	73.1	82.0

Advanced Acoustics

Advanced Acoustics Parameters

1. Unit height above ground:..... 30.0 ft
2. Horizontal distance from unit to receiver:..... 50.0 ft
3. Receiver height above ground:..... 5.7 ft
4. Height of obstruction:..... 0.0 ft
5. Horizontal distance from obstruction to receiver:..... 0.0 ft
6. Horizontal distance from unit to obstruction:..... 0.0 ft



Detailed Acoustics Information

Octave Band Center Frequency, Hz	63	125	250	500	1k	2k	4k	8k	Overall
1. Sound Power Levels at Unit's Acoustic Center, Lw	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3	91.4 Lw
2. A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA	62.4	68.9	73.0	76.3	77.4	75.3	72.0	65.2	82.6 LwA
3. Sound Pressure Levels at Specific Distance from Unit, Lp	56.2	52.6	49.2	47.1	45.0	41.7	38.6	33.9	59.0 Lp
4. A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA	56.2	52.6	49.2	47.1	45.0	41.7	38.6	33.9	59.0 LpA

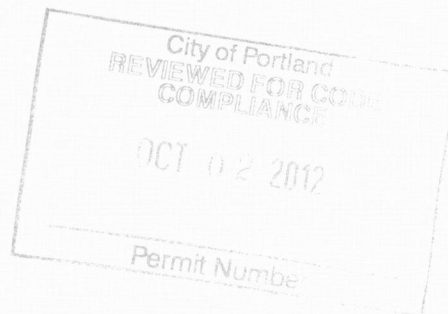
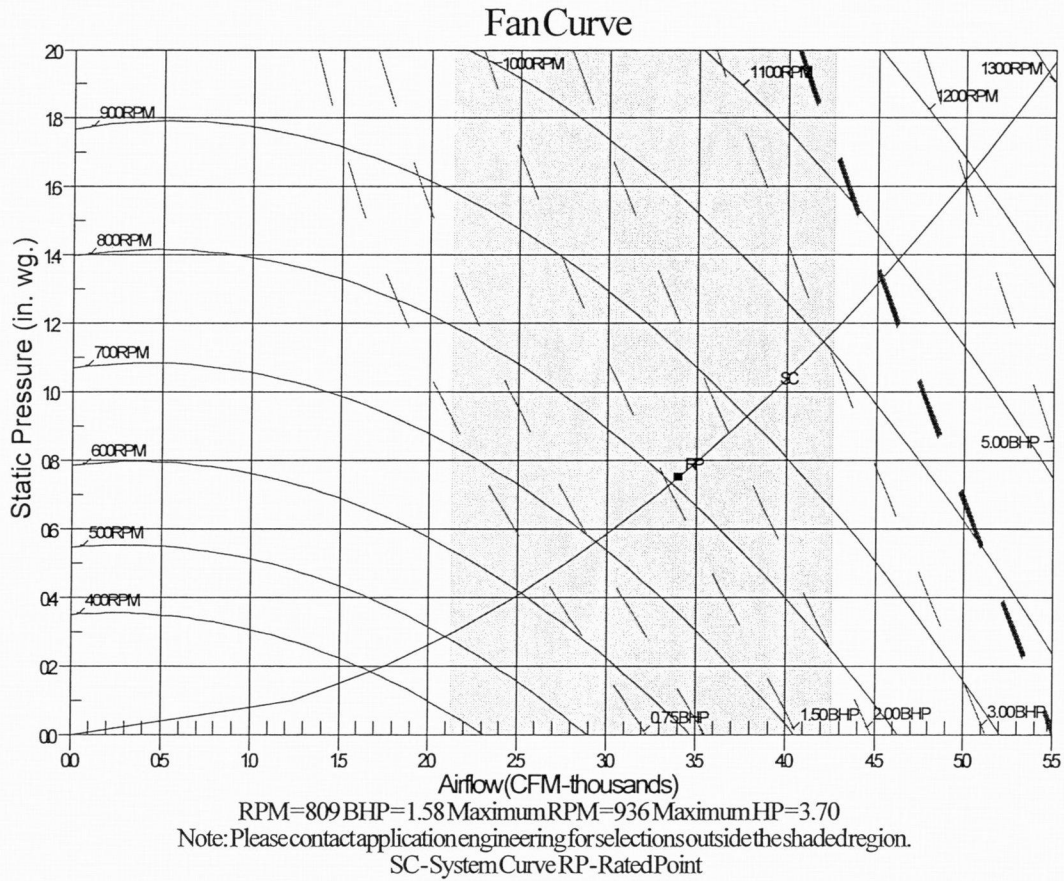
Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed

Performance Summary For 8.5T

Project: ~Untitled70
 Prepared By:

08/31/2012
 02:08PM

that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for 8.5T

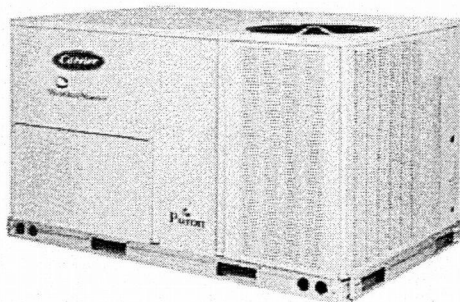
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Prepared By:

08/31/2012
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WeatherMaker® – 48TC

PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS
3, 4, 5, 6, 7.5, 8.5, 10, 12.5, 15 TONS



Optional Louvered Hail Guard Shown



WEATHERMAKER SERIES

WeatherMaker (48TC) units are one-piece gas heating, electric cooling units that are pre-wired and charged with Puron (R-410A) refrigerant. They are factory tested in both heating and cooling modes, and rated in accordance with AHRI Standards 210/240 (04-06 sizes) and 340/360 (07-16 sizes). WeatherMaker units are designed in accordance with UL Standard 1995, and listed by the Underwriters' Laboratories.

Approved and certified by:



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahri-certification.org.

Certified to ISO 9001

STANDARD FEATURES INCLUDE:

- Puron (R-410A) HFC refrigerant
- ASHRAE 90.1 energy compliant
- Scroll compressors with internal line break and overload protection
- Single-stage cooling capacity control on 04-12 models
- Two-stage cooling capacity control on 08-16 models
- SEER's up to 13.0, EER's up to 11.1 and IEEER's up to 11.8
- Acuro™ refrigerant metering system
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE Standard 62, sloping design, side or center drain
- Standard cooling operation up to 115°F (46°C) and down to 40°F (4°C) - down to 25°F (4°C) with winter start kit
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Fully insulated cabinet
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay
- Low NOx models that meet California Air Quality Management
- Induced draft gas heat combustion design
- Redundant gas valves with up to two stages of heating
- Low pressure and high pressure switch protected.

MAINTENANCE FEATURES:

- Access panels with easy grip handles
- Innovative easy-starting, no-strip screws on unit access panels
- Two-inch disposable return air filters and Tool-less filter access door
- Belt drive evaporator-fan motor and pulley combinations
- New terminal board facilitating simple safety about troubleshooting and simplified control box arrangement
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay.

INSTALLATION FEATURES:

- Thru-the-bottom power entry capability
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging adapters and fork slots
- Field convertible from vertical to horizontal airflow for slab mounting. (15 size models require field installed supply duct cover).

STANDARD WARRANTY:

- 10-year heat exchanger – 15-year stainless steel option
- 5-year compressor
- 1-year parts
- 3-year parts on Novation Condenser coils – where available
- Many optional upgrades also available

OPTIONS INCLUDE BUT ARE NOT LIMITED TO:

- PremierLink™ and RTU Open Multi Protocol DDC Controls
- Supply and Return Air Smoke Detectors, high static motors
- Louvered condenser coil guards
- Economizer, disconnect and convenience outlet options
- Stainless Steel heat exchanger option
- Corrosion resistant coil coating
- Humid-Mizer™ adaptive dehumidification system available on all models with RTPF condenser coils – Motor Master I controller included
- Hinged access panels

For a complete list of options and accessories refer to the Product Data Catalog for this unit.



MicroMetl

**Propeller Power Exhaust for
48/50 TF, TFQ, HJQ,TJ, HJ, TJQ, TM 004-014
(Down Discharge)**

**Part Number:
1686 / 4686 / 5686
Series**

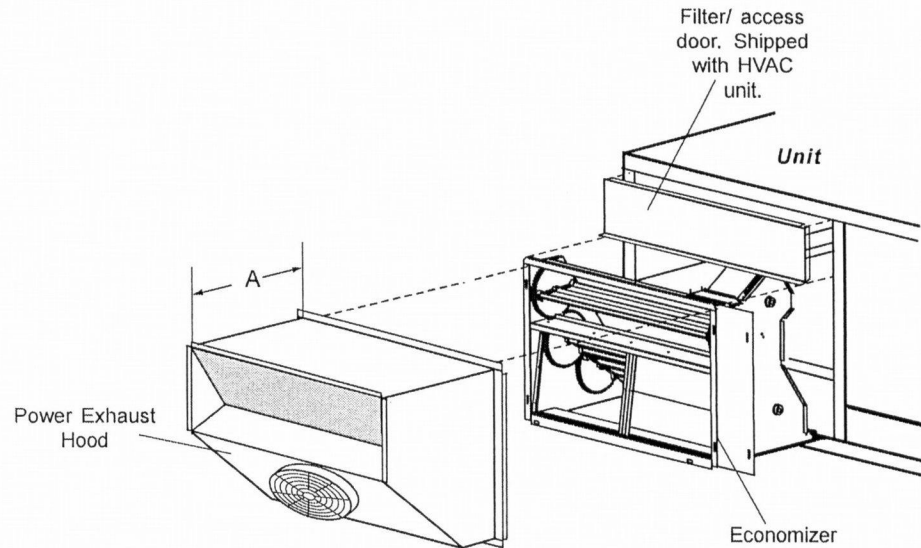
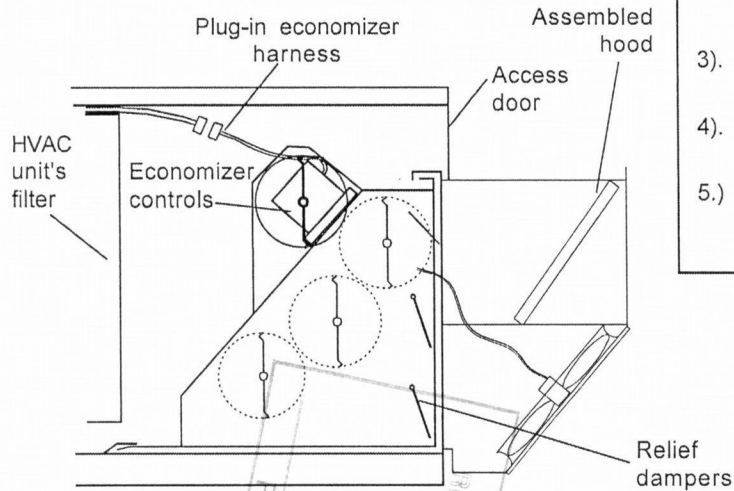
FORM NO. 2190-6P

DATE: 1 / 02

SUBMITTED TO _____
 COMPANY: _____
 DRAWN BY: M. HARGIS
 JOB NAME: _____
 EQUIPMENT: _____
 NOTES: _____

Features

- 1.) Fan is a dynamically balanced, intergal assembly using maintenance free ball bearings. Fans are UL and CSA approved.
- 2.) Fan blades are mounted directly to the exterior rotor of motor assuring superior heat dissipation.
- 3.) End switch provided to activate fan when outside air is completely open.
- 4.) Contactor and 24V transformer provided. Factory mounted in NEMA box.
- 5.) Includes economizer and extra large relief. (outside air intake and barometric relief are equal.)
- 6.) Includes modulating economizer controls with plug-in harness.
- 7.) Ships fully assembled.
- 8.) Low leak outside air dampers.
- 9.) 100% shut down upon loss of power.
- 11.) Works with filter rack, and filter access door shipped with HVAC unit.
- 12.) Gear driven damper blades for smooth operation.



Unit Size	MMC Part No.	Electric	F.L.A.	A	CFM Performance			
					1/8"	1/4"	3/8"	1/2"
3 to 6 Tons	1686-0101	208/230V 1ph	.50	22 1/4"	1210	1100	1000	870
	4686-0101	460V 3ph	.20					
	5686-0101	575V 3ph	.20					
7 1/2 to 8 1/2 Tons	1686-0201	208/230V 3ph	.90	26 1/2"	1670	1500	1345	1168
	4686-0201	460V 3ph	.50					
	5686-0201	575V 3ph	.36					
10 to 12 1/2 Tons	1686-0301	208/230V 3ph	1.1	26 1/2"	2200	2000	1810	1574
	4686-0301	460V 3ph	.50					
	5686-0301	575V 3ph	.44					

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