





LIFE SAFETY CHECKSHEET

Review Date July 19, 2010

Application # 09-117825-REV-02-CO
IVR # 2962445

Table with 2 columns: To (APPLICANT) and contact information for Michael Bonn at Ankrom Moisan Architects.

Table with 2 columns: From (LIFE SAFETY PLANS EXAMINER) and contact information for Nauman Quraishi.

Table with 2 columns: cc (OWNER) and contact information for Nurture 247 Limited & Partnership.

PROJECT INFORMATION

Table containing project details: Street Address (1550 NW 14TH AVE), Description of Work (revision - eliminate two apartment units...), and a table of assumptions (Code Edition, Occupancy group, Construction Type, Building Area, Stories, Sprinklers, Alarms).

PLAN REVIEW

Table with 4 columns: Item #, Location on plans, Code Section, and Clarification / Correction Required. Lists two items regarding panic hardware and privacy locks.

End of Checksheet

To respond to this checksheet, come to Document Services (located at 1900 SW Fourth Ave, 2nd Floor, hours 8 00 a m - 3 00 p m on Monday and 8 00 a m - 4 00 p m Tuesday through Friday) and update all four sets of the originally submitted drawings...

Please complete the attached Checksheet Response Form and include it with your re-submittal

If you have specific questions concerning this Checksheet, please call me at (503) 823-7544 To check the status of your project, go to http://www.portlandonline.com/bds/index.cfm?c=34194 Or, you may request the status to be faxed to you by calling 503-823-7000 and selecting option 4...

You may receive separate Checksheets from other City agencies that will require separate responses

**Complete the table below and on the following page**

**Column 3** Enter the size (number of units) of your proposed development

**Column 4** If the project site has existing buildings or structures, enter the size (number of units) of the existing or most recent use

(1) Building Use Type	(2) Unit of Measure	(3) Units In Proposed Development	(4) Units In Existing or Most Recent Use
<b>Residential</b>			
Multi Family (number of Units/Buildings)	dwelling	(4) STUDIOS	(4) 1-BDRM
Senior Housing	dwelling		
Rowhouse	dwelling		
Nursing Home	beds		
Congregate Care/Assisted Living	dwelling		
<input type="checkbox"/> <b>Low-income housing?</b> (attach "Waiver Letter" from Portland Development Commission)			

**Commercial Services**

Bank	sq ft/GFA		
Walk-in Bank	sq ft/GFA		
Day Care	students		
Library COMMUNITY CTR	sq ft/GFA	1,592 SF	
Post Office	sq ft/GFA		
Hotel/Motel	rooms		
Service Station	Vehicle Fueling Position - VFP		
Movie Theater	screen		
Car Wash	wash stall		
Health Club	sq ft/GFA		
Marina	berth		

**Commercial Institutional**

School, K-12	student		
University/College	student		
Church	sq ft/GFA		
Hospital	Sq ft/GFA		
Park	acre		

**Commercial Restaurant**

Restaurant	sq ft/GFA		
Quick Service Restaurant (drive-through)	sq ft/GFA		



# CITY OF PORTLAND, OREGON Development Services Center

Effective January 1, 2008

1900 SW Fourth Avenue, Suite 1500 • Portland, Oregon 97201 • www.portlandonline.com/bds

## Systems Development Charge Form, Commercial Projects

**FOR INTAKE, STAFF USE ONLY**

Date Rec \_\_\_\_\_ by \_\_\_\_\_ Address 1550 NW 14th

Qtr Sec Map(s) \_\_\_\_\_

Building Permit # 09-117825 REV 02 CO Tax Account # \_\_\_\_\_

Systems Development Charges (SDCs) are collected by the bureaus of Environmental Services, Parks and Recreation, Water Works and the Portland Office of Transportation to help offset the impact your project will add to the City's infrastructure of storm and sanitary sewer systems, parks and recreation facilities, water and street systems. Commercial SDC fees for Parks will go in to effect January 1, 2009, please call 503-823-5705 for details. The Bureau of Development Services does not charge SDCs

- Complete for**
- new construction
  - change of use or occupancy
  - adding or removing plumbing fixtures
  - increase of impervious surfaces over 500 sq ft
  - building additions or tenant improvements that change the number of units
- (as indicated on pages 2 and 3)

Applicant Name MICHAEL BOHN

Address 6720 SW MACADAM AVE

City PORTLAND State OR Zip Code 97219

Day Phone 503-245-7100 FAX 503-245-7710 email MICHAELB@AMAA.COM

**Describe the scope of the project** If applicable, include detail on the existing use(s) of the structure. If a building has been demolished, provide the demolition permit number and not the previous use(s) of the building in column 4 in the following table (attach additional sheets as necessary)

FIRST FLOOR EXISTING USES (RESIDENTIAL & COMMON SPACE OFFICE) CONVERTED TO COMMUNITY CENTER ASSEMBLY USE.

FIFTH & SIXTH FLOOR 1-BDRM RESIDENTIAL USES (717 SF/EA. FLR) CONVERTED TO (2) STUDIOS EACH FLOOR (717 SF TOTAL EA. FLR).

What county is your project in?

Multnomah, inside Portland       Clackamas

Multnomah, outside Portland       Washington

09-117825 REV 02 CO

# Bureau of Environmental Services (BES)

## Fixture Worksheet and Stormwater Information Form

Residential/Multiple Dwellings (number of units) **4 (2 UNITS PREVIOUSLY ACCOUNTED FOR)**

NOTE Residential units for mixed-use developments will be charged 0.8 EDU per unit or \$2,616.40/unit  
The commercial spaces will be charged by Plumbing Fixture Unit (PFU)

Part I Calculation of Plumbing Fixture Units (PFUs) for Commercial, Retail and Office spaces only					
Fixture Type (for Commercial only)	Number of Fixtures to be Added [1]	Number of Fixtures to be Removed [2]	Net Change in Number of Fixtures [3]	Equivalency Factor [4]	Net Change in Number of PFUs
<i>Calculation</i>			[1] - [2]		[3] x [4]
Bathtub or combination bath/shower	0	2	-2	2.0	-4.0
Clothes washer	1	2	-1	6.0	-6.0
Dental unit or cuspidor	-	-	-	1.0	~
Dishwasher	1	2	-1	2.0	-2.0
Drinking fountain or water cooler	-	-	-	0.5	~
Laundry sink	0	0	0	2.0	~
Lavatory (wash basin) single	2	2	0	1.0	0
Lavatory (wash basin) sets of 2 or 3	-	-	-	2.0	~
Shower stall	0	0	0	2.0	0
Sink, commercial, food & service	0	0	0	3.0	0
Sink, general	3	4	-1	2.0	-2.0
Urinal	-	-	-	2.0	~
Water closet (toilet) private	2	2	0	4.0	0
Other*(floor sink / floor drain)	2	0	2	1.0	2.0
Other*(Specify)					
Other*(Specify)					
Other*(Specify)					
* For Other fixtures, use PFU values from Oregon Plumbing Specialty Code					
<b>Total of Net Changes in PFUs (if negative enter negative number) (if applicable show negative number for future credit)</b>					<b>-12.0</b>

### Storm Water Identification:

Are you increasing the impervious surface  yes  no

If yes, please note the Impervious Surface Area (i.e. hard surface such as roof, asphalt, concrete, building footprint, etc) as requested below

Total impervious area on site after completion \_\_\_\_\_ sq ft

Existing impervious area before construction \_\_\_\_\_ sq ft

New impervious area to be added to site \_\_\_\_\_ sq ft

Provide the amount of lineal footage of property fronting all public rights-of-way \_\_\_\_\_ ft

(1) Building Use Type	(2) Unit of Measure	(3) Units In Proposed Development	(4) Units In Existing or Most Recent Use
<b>Commercial Retail</b>			
Shopping Center	sq ft/GFA		
Supermarket	sq ft/GFA		
Convenience Market	sq ft/GFA		
Discount / Department Store	sq ft/GFA		
Miscellaneous Retail	sq ft/GFA		
Car Sales, New and Used	sq ft/GFA		

<b>Commercial Office</b>			
Administrative Office	sq ft/GFA		
Medical Office / Clinic	sq ft/GFA		

<b>Commercial Industrial</b>			
Light Industrial / Manufacturing	sq ft/GFA		
Self-storage	sq ft/GFA		
Warehouse / Storage	sq ft/GFA		
Truck Terminal	acre		

**PRIOR PAYMENT OF SDCs** (This information can be researched at the Records and Resources Counter)

Has the existing use paid a Transportation SDC since October 17, 1997?  yes  no

If yes, specify date paid \_\_\_\_\_ amount paid \$ \_\_\_\_\_ permit # on which it was paid \_\_\_\_\_

**Signature and Date** (to be completed by all development review customers)

I certify that the information presented throughout this document is current and accurate to the best of my knowledge

Signature  Date 6/22/10

Print name MICHAEL BONN

Company name and your position ANKROM MOISAN ARCH. ASSOCIATE

# Bureau of Environmental Services (BES)

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<i>Calculation</i>			[1] - [2]		[3] x [4]
Bathtub or combination bath/shower	0	2	-2	2.0	-4.0
Clothes washer	1	2	-1	6.0	-6.0
Dental unit or cuspidor	-	-	-	1.0	~
Dishwasher	1	2	-1	2.0	-2.0
Drinking fountain or water cooler	-	-	-	0.5	~
Laundry sink	0	0	0	2.0	~
Lavatory (wash basin) single	2	2	0	1.0	0
Lavatory (wash basin) sets of 2 or 3	-	-	-	2.0	~
Shower stall	0	0	0	2.0	0
Sink, commercial, food & service	0	0	0	3.0	0
Sink, general	3	4	-1	2.0	-2.0
Urinal	-	-	-	2.0	~
Water closet (toilet) private	2	2	0	4.0	0
Other*(floor sink / floor drain)	2	0	2	1.0	2.0
Other*(Specify)					
Other*(Specify)					
Other*(Specify)					
* For Other fixtures, use PFU values from Oregon Plumbing Specialty Code				<b>Total of Net Changes in PFUs (if negative enter negative number) (if applicable show negative number for future credit)</b>	
				<b>-12.0</b>	

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If yes, please note the Impervious Surface Area (i.e. hard surface such as roof, asphalt, concrete, building footprint, etc.) as requested below

Total impervious area on site after completion \_\_\_\_\_ sq ft

Existing impervious area before construction \_\_\_\_\_ sq ft

New impervious area to be added to site \_\_\_\_\_ sq ft

Provide the amount of lineal footage of property fronting all public rights-of-way \_\_\_\_\_ ft

# Portland Water Bureau

## Water Meter Sizing Worksheet - Commercial or Mixed Use

Revised May 2008 According to UPC-2005-Appendix A

Building Permit Number	Service Address
------------------------	-----------------

(1) Type of Fixture	(2) Fixtures in New Structure	+	(3) Fixtures in Existing Structure	--	(4) Fixtures Re- moved	=	(5) Total Fixtures	x	(6) Fixture Value	=	(7) Total Fixture Unit Value
Sink, Clinic	0		0		0		0		30		0
Sink, Kitchen	5		0		4		1		15		1.5
Sink, Service or Mop Basin	0		0		0		0		30		0
Sink, Laundry	0		0		0		0		15		0
Sink, Bar	0		0		0		0		20		0
Sink, Lavatory	6		0		4		2		10		2.0
Bathtub or Tub/Shower	0		0		4		-4		40		-16.0
Shower	4		0		0		4		20		8.0
Urinal 1 0 GPF	-		-		-		-		40		~
Urinal, > 1 0 GPF	-		-		-		-		50		~
Water Closet 1 6 GPF Gravity Tank	6		0		4		2		25		5.0
Water Closet, 1 6 GPF Flushometer Valve	-		-		-		-		50		~
Water Closet >1 6 GPF Flushometer Valve	-		-		-		-		80		~
Clothes Washer, domestic	1		0		0		1		40		4.0
Dishwasher	5		0		4		1		15		1.5
Drinking Fountain	0		0		0		0		0.5		0
Hose Bibb	-		-		-		-		25		~
Hose Bibb each additional	-		-		-		-		10		~
<b>Total Fixture Units =</b>											<b>6.0</b>

Note Fixture units for flushometers are approximate values Values may be adjusted by Portland Water Bureau Staff on a case by case basis

### Instructions

- Column 2 Enter the total number of each fixture type intended for the completed new structure
- Column 3 If the project has an existing structure that will be utilizing the same water meter enter the total number of each fixture type currently in the existing structure
- Column 4 Enter the number of fixture connections that will be permanently removed from the new structure
- Column 5 Sum of column 2 and 3 minus column 4
- Column 6 Per unit value of each fixture type
- Column 7 Enter the number of column 5 times Column 6

Fixture Unit Count (column 7 total)	Required Meter Size
0 – 22	5/8" meter
22 5 – 37	3/4" meter
37 5 – 89	1" meter
89 5 – 286	1 5" meter
286 5 – 532	2" meter
532 5 – 1,300	3" meter
1,300 5 – 3,600	4" meter
3,600 5 – 8,200	6" meter

**NOTE** There may be SDC credit if existing meters are utilized or removed SDC fees are not assessed to fire lines Fees are due at time water service installation is paid Call Portland Water Bureau Development Services, 503-823-7368 with any questions

## Definitions

from Institute of Transportation Engineers Trip Generation Manual

### Gross Floor Area (GFA)

The sum (in square feet) of the area of each floor level in the building, including cellars, basements, mezzanines, penthouses, corridors, lobbies, stores and offices, that are within the principal outside faces of exterior walls, not including architectural setbacks or projections. Included are all areas that have floor surfaces with clear standing head room (6 feet, 6 inches minimum) regardless of their use. If a ground-level area, or part thereof, within the principal outside faces of the exterior walls is not enclosed, this GFA is considered part of the overall square footage of the building. However, unroofed areas and unenclosed roofed-over spaces, except those contained within the principle outside faces of exterior walls, should be excluded from the area calculations. For purposes of trip generation and parking generation calculations, the GFA of any parking garages within the building should not be included within the GFA of the entire building. The unit of measurement for office buildings is currently GFA, however, it may be desirable to also obtain data related to gross rentable area and net rentable area. With the exception of buildings containing enclosed malls or atriums, GFA is equal to gross leasable area (GLA, explained next) and gross rentable area.

### Gross Leasable Area (GLA)

The total floor area designed for tenant occupancy and exclusive use, including any basements, mezzanines, or upper floors, expressed in square feet and measured from the centerline of joint partitions and from outside wall faces. For purposes of trip generation and parking generation calculations, the floor area of any parking garages within the building should not be included within the GLA of the entire building. GLA is the area for which tenants pay rent, it is the area that produces income. In the retail business, GLA lends itself to measurement and comparison, thus, it has been adopted by the shopping center industry as its standard for statistical comparison. Accordingly, GLA is used for shopping centers. For strip centers, discount stores and freestanding retail facilities, GLA usually equals GFA.

## Optional Alternate Rate and Fee Calculation

### Transportation

If you want us to use trip generation rates other than those used in the City's Transportation SDC Ordinance and Rate Study, you must submit data certified by a professional traffic engineer. Use *Request for Alternate Trip Generation Rate and SDC Calculation Form TSDC-3* to submit such data, and attach it to this application. Institutional development (educational and medical campuses) may elect to base SDC on annual changes in trip generation. Submit *Election by Institutional Development of Special Trip Generation Rate and SDC Calculation Form TSDC-4*.

### Parks

If you want us to use an alternate number of persons per Dwelling Unit than those used in the City's Parks SDC Methodology Study, you need to submit documentation, analyzed and certified by a suitable and competent

professional. Alternative SDC rate calculations must be based on analysis of occupancy of classes of structures, not on the intended occupancy of a particular New Development. Use Request for Alternative occupancy and SDC Calculation (Form PSDC-6) to submit such data, and attach it to this application.

## Optional Credit for Providing Qualified Public Improvements Transportation

If you want to reduce the amount of your Transportation SDC, you may make improvements to specific transportation facilities in the City of Portland. Use "Request for Credit for Qualified Public Improvement" Form TSDC-5 to submit such data, and attach it to this application.

### Parks

To reduce the amount of your Parks SDC, you may donate property or improvements to certain qualified park facilities in the City of Portland. Use "Request for Parks SDC Credit for Qualified Public Improvement" (Form PSDC-7) to submit a request, and attach it to this application.

## Timing and Method of Payment

The City will give you a Notification of SDC Fees if you are required to pay any charges for your development. At this point you will decide when and how to pay for the SDCs.

### For all SDCs

- Pay by cash, check or money order at the time the City issues a building permit.

### Or

- Request a City loan by completing and signing an installment contract to pay the SDCs in monthly installments over a number of years.\*

### For Transportation and Parks SDCs

- Defer payment for up to 180 days after the building permit is issued.\*
- Transfer SDC credits by completing and filing a special form for each SDC.

\*SPECIAL NOTE: The City secures a loan or deferral by recording a lien on the benefited property. The lien remains in effect until the SDCs are paid in full. The City charges a non-refundable processing fee to cover the expense of setting up a loan or deferral. The installment contract must be signed by the property owner of record before the City authorizes a loan for the SDCs.

### If you need help

If you need help with this form or have questions about your Systems Development Charge (SDC) please call

Portland Office of Transportation	503-823-7002
Bureau of Parks and Recreation	503-823-5105
Bureau of Environmental Services	503-823-7761
Bureau of Water Works	503-823-7368

### Portland Development Commission administers payment assistance programs for SDCs

E-mail [sdcc@pdc.us](mailto:sdcc@pdc.us)

Web site [www.pdc.us/sdc](http://www.pdc.us/sdc)

Phone 503-823-3270

Location 222 NW 5th Avenue, Portland, OR 97209

PDC Contact Call Marilyn Hurtley, SDC Exemption

Program Administrator



# MECHANICAL PERMIT APPLICATION

City of Portland, Oregon - Bureau of Development Services

1900 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7363 • FAX 503-823 3018 • TTY 503 823 6868 • www.portlandonline.com/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 **1550 NW 14th**  
 City/State/ZIP **PORTLAND, OR**  
 Suite/bldg /apt no \_\_\_\_\_ Project name **PEARL FAMILY HOUSING**  
 Cross street/directions to job site \_\_\_\_\_  
 Subdivision \_\_\_\_\_ Lot no \_\_\_\_\_ Tax map/parcel no \_\_\_\_\_

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

**- CUT OUT OF GROUND FLOOR SPACE FOR A COMMUNITY CENTER**  
**- CONVERSION OF TWO ONE BEDROOM APARTMENTS INTO FOUR STUDIO APTS.**

Reference RS / Combination  Permit no \_\_\_\_\_

### Property owner Tenant

Name **ED McNAMARA, NURTURE 247 LP**  
 Address **907 THOMPSON**  
 City/State/ZIP **PORTLAND, OR 97212**  
 Phone **503-244-6560** 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 **WALSH CONSTRUCTION CO.**  
 Address **2905 FIRST AVE.**  
 City/State/ZIP **PORTLAND, OR 97201**  
 Phone **503-222-4375** FAX \_\_\_\_\_  
 Lic no \_\_\_\_\_ CCB lic no **ORCCB 147267**

Authorized signature \_\_\_\_\_

Print name \_\_\_\_\_ Date \_\_\_\_\_

### Applicant Contact Person

Business name **ANKROM NOISAN ARCH**  
 Contact name **MICHAEL BONN**  
 Address **6720 SW MACADAM AVE**  
 City/State/ZIP **PORTLAND, OR 97214**  
 Phone **503-245-7100** FAX **503-245-7710**  
 E-mail **MICHAEL@AMAA.COM**

Credit Card  Trust  RS Permit/No Fees Due

### 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 \$ **7,200**

### Residential Equipment / Systems Fees\*

For special information use checklist

Description	Qty	Fee	Total
Heating / cooling			
Air conditioner (site plan required)		\$ 21	
Furnace / burner including duct work / vent / liner		\$ 44	
Heat pump (site plan required)		\$ 42	
Air handling unit		\$ 21	
Hydronic hot water system		\$ 26	
Residential boiler (radiator or hydronic) includes piping		\$ 26	
Unit heaters (fuel type not electric) in wall in-duct suspended etc		\$ 21	
Vent for appliance other than furnace		\$ 18	
Alteration of existing HVAC system		\$ 26	

### Other fuel appliances

Decorative gas fireplace		\$ 21	
Flue vent for water heater or gas fireplace		\$ 18	
Wood / pellet stove		\$ 46	
Gas or wood fireplace / insert		\$ 46	
Chimney / liner / flue / vent		\$ 18	
Other		\$ 26	

### Environmental exhaust and ventilation

Range hood / other kitchen equipment		\$ 11	
Clothes dryer exhaust		\$ 11	
Single-duct exhaust (bathrooms, toilet compartments utility rooms)		\$ 11	
Attic / crawl space fans		\$ 11	
Other		\$ 26	

### Gas fuel piping

\$12 for the first four \$2 20 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		\$ 26	
--	--	-------	--

### Mechanical permit fees

Subtotal	
Minimum permit fee (\$55)	
Commercial plan review (60% of permit fee)	
State surcharge (12% of permit fee)	
<b>TOTAL PERMIT FEE</b>	

\* 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

69-117825 REV 02 CO



**Building Permit Application**  
 City of Portland, Oregon - Bureau of Development Services  
 1900 SW 4th Avenue, Portland, Oregon 97201 • www.portlandonline.com/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: 1550 NW 14<sup>th</sup>

City/State/ZIP: PORTLAND, OR

Suite/bldg./apt. no.:      Project name: PEARL FAMILY HOUSING

Cross street/directions to job site:

Subdivision:      Lot no.      Tax map/parcel no.

**Description of work**

FIT OUT OF GROUND FLOOR SPACE FOR A COMMUNITY CENTER

CONVERSION OF TWO ONE BEDROOM APARTMENTS INTO FOUR STUDIO APTS

Reference RS / Combination      Permit no. 527 627

Property owner       Tenant

Name: ED MCNAMARA, NATURE 241 LE

Address: 907 NE THOMPSON

City/State/ZIP: PORTLAND, OR 97212

Phone: 503-244-6560      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: S. McNamara      Date: 6/17/10

Contractor

Business name: WALSH CONSTRUCTION CO.

Address: 2905 FIRST AVE.

City/State/ZIP: PORTLAND, OR 97201

Phone: 503-222-4375      FAX:

CCB lic. no.

Authorized signature: Bhavna Kumar

Print name: BHAVNA KUMAR      Date: 6/17/10

Applicant       Contact Person

Business name: ANKROM MOISAN ARCH

Contact name: MICHAEL BONN

Address: 6720 SW MACADAM AVE

City/State/ZIP: PORTLAND, OR 97219

Phone: 503-245-7100      FAX: 503-245-7100

E-mail: MICHAEL.B@AMAA.COM

Authorized signature: Michael Bonn

Print name: Michael Bonn      Date: 6/17/10

**Office Use Only**

Permit no:

Date received:

By:

**Required Data: One and Two Family Dwelling**

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation:	
Number of bedrooms:	
Number of bathrooms:	
Total number of floors:	
New dwelling area:	square feet
Garage/carport area:	square feet
Covered porch area:	square feet
Deck area:	square feet
Other structure area:	square feet

**Required Data: Commercial Use**

Permit fees\* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation:	<u>\$ 42,000</u>
Existing building area:	<u>230,762</u> square feet
New building area:	square feet
Number of stories:	<u>6</u>
Type of construction:	<u>11B OVER 1A</u>

Occupancy groups

Existing:	<u>R-2 / R-2</u>
New:	<u>A-3 / R-2</u>

**Notice**

All contractors and subcontractors are required to be licensed with the Oregon Construction Contractors Board under ORS 701 and may be required to be licensed in the jurisdiction in which work is being performed. If the applicant is exempt from licensing, the following reasons apply:

**Building Permit Fees\***

Please refer to fee schedule

Fees due upon application	
Amount received	
Date received	

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

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

503-245-7100



PORTLAND DEVELOPMENT COMMISSION

**WATER BUREAU  
AFFORDABLE HOUSING  
SDC EXEMPTION**

**PDC SDC EXEMPTION  
Case Number: 4185**

For-Profit  
September 30, 2009

**Permit #: 09-117825**

**PROJECT DESCRIPTION**

*Company Name* NURTURE 247 LIMITED PARTNERSHIP

*Project* PEARL FAMILY HOUSING

*Project Address* 1350 NW RALEIGH ST

*Tax ID Number* R141069

138 Total Unit(s) in Project

Mixed Use - YFS

**SDC EXEMPTION      138 Unit(s) Meet(s) Affordable Criteria**

The above mentioned project has unit(s) that meet(s) the 'affordable' criteria in accordance with the Water Bureau's SDC Affordable Housing Exemption Ordinance 173388

This letter only pertains to the Water Bureau's Residential SDC fee code #430. Only the total unit(s) listed above will be considered for exemption under this Affordable Housing Exemption Program. If this only constitutes a percentage of the total units in the project, your exemption will be calculated based upon that percentage.

This exemption does not include Transportation Parks or BES SDCs, OPDR fees (fee codes 100-299, 810, 817, 808), Transportation Plan Review, Turnaround Surcharge, Curb and Sidewalk fees (fee codes 303, 304, 305, 365 and 366), Parks Bureau Tree Inspection fees (fee code 601, 602) and the Fire Bureau's Fire Code Enforcement Fee (fee code 701), nor will it exempt any SDC's fees associated with any commercial development on the property.

This exemption approval does not waive the necessity of obtaining permits. The contractor may apply for your permits at the Permit Center on the first floor of the Development Services Building at 1900 SW Fourth Avenue. Please contact the Water Bureau (503) 823-7368 prior to purchasing your building permit or water service. This letter only exempts payment of the SDC; you are still responsible for the cost of the water service installation. It is your responsibility to show proof of the exemption to the bureau and confirm that the fee has been removed from your billing statement. Please also keep this letter for your records.

Sincerely,

Marilyn Hurlley / Dory Van Bockel  
Program Administrator (503) 823-3270

11/13/09  
Portland, OR

Scott Anderson  
Director

Bertha Ferrar  
Director

John C. Smith  
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SYSTEMS - GENERAL

Applicability

Discussion of qualifying exceptions on page 4-25

Plans/Specs

Show compliance by including a drawing sheet, detail number, specification section and subparagraph

1. Applicability (Section 1317)

Is this form required?

[X] Form Required Complete form if a new HVAC system is being installed, or components of an existing HVAC system are being replaced (I e , equipment, controls, ductwork, and insulation )

[ ] Exception The building or part of the building qualifies for an exception from HVAC code requirements Applicable code exception is Section 1317 1 Portions of the building that qualify

Area [ ] Exception [ ] 1 [ ] 2 [ ] 3

Area [ ] Exception [ ] 1 [ ] 2 [ ] 3

Area [ ] Exception [ ] 1 [ ] 2 [ ] 3

[ ] Form Not Required This project does not contain work required to comply with code

2. Simple or Complex Systems (Section 1317.9 or 1317.10)

[X] Simple System Building contains only Simple HVAC System(s) Complete this form (4a) and equipment efficiency worksheets as required Form 4b is not required

[ ] Complex System Project includes a Complex System Complete this form (4a), form 4b and equipment efficiency worksheets as required

3. Equipment Performance (Section 1317.5)

[ ] No New HVAC Equipment The building plans do not call for new electrical HVAC equipment, combustion heating equipment, or heat-operated cooling equipment

[X] Complies All new HVAC equipment have efficiencies not less than those required by code The following equipment efficiency worksheets are attached

- [ ] 4a [ ] 4b [ ] 4c [ ] 4d [ ] 4e [ ] 4f [ ] 4g [ ] 4h [ ] 4i [ ] 4j

4. Duct Insulation and Sealing (Sections 1317.7 & 1317.8)

[ ] No Ducts The building plans and specifications do not call for new HVAC ducts or plenums

[X] Complies The plans and specifications call for all air-handling ducts and plenums to be insulated and sealed as required by Sections 1317 7 & 1317 8

5. Distribution Transformers (Section 1316.1)

[ ] No Distribution Transformers The plans/specs do not call for new distribution transformers

[X] Complies All new distribution transformers comply with efficiency, testing, and labeling requirements of Section 1316 1 1

[ ] Exception The project qualifies for an exception per Section 1316 1 1, Exception

- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ] 11 [ ] 12 [ ] 13 [ ] 14

Attach relevant documentation for appropriate exception The plans/specs show compliance in the following locations

[ ]



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**SYSTEMS - GENERAL****6. HVAC Controls (Section 1317.4)****6.1 System Thermostat/Zone Controls (Section 1317.4.1)**

- Complies** All new HVAC systems include at least one temperature control device responding to temperatures within the zones
- Exception** HVAC system qualifies for an exception from zone control requirements  
The applicable code exception is Section 1317 4 2, Exception  1  2

Portions of the building that qualify

The plans/specs show compliance in the following locations

Mechanical plans M2 00-M20 40, Specification 230900

**6.2 Off-hour Controls - Auto Setback or Shutdown (Section 1317.4.3)**

- Complies** Systems must have at least one of the following features
- Control Setback Complies** Each system is equipped with automatic control capable of reducing energy through control setback during periods of non-use or alternate use of spaces
- Equipment Shutdown Complies** Each system is equipped with controls capable of reducing energy use through automatic shutdown during periods of non-use or alternate use of spaces  
HVAC systems with equipment shutdown are equipped with at least one of the following
- Programmable controls (1317 4 3 1 (1))
  - Occupant sensor (1317 4 3 1 (2))
  - Interlocked to a security system (1317 4 3 1 (3))
  - Manually activated timers with 2-hour operation max (1317 4 3 1 (4))
- Exception** The building qualifies for an exception to the requirement for automatic setback or shutdown controls The applicable code exception is Section 1317 4 3  
Exception  1  2

The plans/specs show compliance in the following locations

Specification 230993

**6.3 Control Capabilities (Sec. 1317.4.2.1)**

- Complies** Zone thermostats are capable of being set to the temperatures described in Sec 1317 4 2 1 Where used to control both heating and cooling, zone controls shall be capable of providing a temperature range or deadband of at least 5 degrees F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum
- Exception** The building qualifies for an exception to the deadband requirements  
The applicable code exception is Section 1317 4 2 1 Exception  1  2

Portions of the building that qualify

The plans/specs show compliance in the following locations

**6.4 Optimum Start Controls (Section 1317.4.3.2)**

- Complies** Separate HVAC systems have controls capable of varying start-up time of system to just meet temperature set point at time of occupancy
- Exception** HVAC systems have a design supply air capacity not exceeding 10,000 cfm  
The plans/specs show compliance in the following locations

**6.5 Heat Pump Controls (Section 1317.4.4)**

- No Heat Pump** The plans/specs do not call for a new heat pump
- Complies** All new heat pumps equipped with supplementary heaters are controlled to minimize the use of supplemental heat as defined in Section 1317 4 4

The plans/specs show compliance in the following locations

Specification 238100



**SYSTEMS - GENERAL**

**7. Economizer Cooling (Section 1317.3)**

- No Cooling** The building plans do not call for a new fan system with mechanical cooling
- Complies** Each new fan system has an air economizer capable of modulating outside-air and return-air dampers to provide up to 100 percent of the design supply air as outside air
- Exception** At least one new fan system qualifies for an exception. The applicable code exception is Section 1317.3, Exception -1  2  3  4  5  6  7

If Exception 3 is selected complete the following

(a) Total cooling capacity of exempt units (Btu/hr) 268000

(b) Total installed building cooling capacity (Btu/hr) 436,000

- Complies** Sum of exempt units rated at less than 54,000 Btu/hr is <240,000 Btu/hr or a/b

Unit Identifier of exempt units

The plans/specs show compliance in the following locations

P

**8. Economizer Pressure Relief & Integration (Section 1317.3.1 and 1317.3.2)**

- No Economizers Required** Project does not contain a new fan system requiring economizers
- Overpressurization Complies** The drawings specifically identify a pressure relief mechanism for each fan system that will relieve the extra air introduced by the economizer
- Integration Complies** Economizer is capable of providing partial cooling even when additional mechanical cooling is required to meet the remainder of the cooling load
- Exception** The applicable exception is Section 1317.3.2, Exception  1  2

The plans/specs show compliance in the following locations

Mechanical Plans M01 01

**9. Hot Gas Bypass (Section 1317.5)**

- No Hot Gas Bypass**
- Complies** See allowable amount of hot gas bypass as a percentage of total cooling capacity in table below

Unit ID	Rated Cooling Capacity	Hot Gas Bypass Capacity

Allowable Hot Gas Bypass	
Rated Cooling Capacity	Max Hot Gas Bypass
<240,000 Btu/hr	50%
>240,000 Btu/hr	25%

- Exception** Unitary packaged system with cooling capacity no greater than 90,000 Btu/h



**SYSTEMS - GENERAL**

**10. Shutoff Dampers (1317.4.3.3)**

- Not Required** Shutoff dampers are not required on this project
- Complies** Each outdoor air supply & exhaust system shall be equipped with motorized dampers
- Exception** The building qualifies for an exception to the motorized damper requirement The applicable code exception is Section 1317 4 3 3 Exception  1  2  3  4  5  6

The plans/specs show compliance in the following locations

**10.1. Shutoff Damper Controls (Section 1317.4.3.3.1)**

- Complies** Outdoor air supply and exhaust systems shall be provided dampers that automatically shut when systems or spaces served are not in use or during building warm-up, cooldown, or setback
- Complies** Stair and shaft vents are capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems

The plans/specs show compliance in the following locations

**10.2. Motorized Damper Leakage (1317.4.3.3.2)**

- Complies** Motorized outdoor air supply and exhaust air dampers have a maximum leakage rate of 4 cfm/ft<sup>2</sup> at 1 0 in w g when tested in accordance with AMCA Standard 500-1998
- Exception** Packaged HVAC equipment may have maximum leakage rate of 20 cfm/ft<sup>2</sup> at 1 0 in w g when tested in accordance with AMCA Standard 500-1998

The plans/specs show compliance in the following locations

**11. Piping Insulation (Section 1314)**

- No New Piping** The building plans and specifications do not call for new piping serving a heating or cooling system or part of a circulating service water heating system
- Complies** All new piping serving a heating or cooling system or part of a circulating service water heating system complies with the requirements of the Code, Section 1314 1
- Exception** New piping qualifies for exception Section 1314 1, Exception  1  2

**12. Occupancy Ventilation**

- Complies** Mechanical ventilation systems provide the required amount of ventilation is indicated in plans/specifications as specified in Chapter 4 of the Oregon Mechanical Specialty Code
- Complies** Natural ventilation systems provide required amount of ventilation as certified by a registered architect or engineer as specified by Section 1203 4 1, Exception Attach worksheet 4m

The plans/specs show compliance in the following locations

Mechanical Plans M0 01

The plans/specs show compliance on the following pages



**SYSTEMS - GENERAL**

**13. High Occupancy Ventilation (Section 1317.2.2)**

- Complies** HVAC systems with ventilation air capacities of 1,500 CFM or greater that serve areas having an average occupant load of 20 square feet per person or less from Table 1004 1 2 have a means to automatically reduce outside air intake

Identify applicable systems

Plans/specs indicate where equipment (i.e. carbon dioxide sensor) and sequence is specified

- Exception** HVAC systems are equipped with an energy recovery device with at least 50% recovery effectiveness
- No High Occupancy Systems** Project does not contain an HVAC system as described above

**14. Exhaust Air Heat Recovery (Section 1318.3)**

- Not Regulated** HVAC system does not have 1) design supply air cap of  $\geq 10,000$  cfm, and 2) min outside air supply  $\geq 70\%$ , and 3) at least 1 exhaust fan rated at 75% of min outside air
- Complies** Heat recovery system increases outside air temperature by 20°F (Climate Zone 1) or 30°F (Zone 2) and has provision to provide bypass during air economizer mode
- Exception** An HVAC system qualifies for an exception to this requirement Applicable exception from Section 1318  1  2  3  4  5  6  7

The plans/specs show compliance in the following locations

**15. Large Volume Fan Systems (Section 1318.4.2.4)**

- Not Regulated** The building plans or specifications do not call for fan systems over 15,000 CFM that serve a single zone and function for the purpose of temperature control
- Complies** Fan systems are equipped with variable frequency drive or two speed motor to reduce airflow as required by Section 1318 4 2 3

The plans/specs show compliance in the following locations

**16. Variable Speed Drives (Section 1317.10 3.1)**

- Not Regulated** The building plans or specifications do not call for fan and pump motors 10 horsepower and greater that serve variable-flow air or liquid systems
- Complies** All fan and pump motors 10 hp and greater which serve variable-flow air or liquid systems are controlled by a variable-speed drive
- Exception** The building qualifies for an exception to the variable-speed drive requirement

Portions of the building that qualify

Applicable code exception is Section 1317 10 3 1, Exception

The plans/specs show compliance in the following locations

**17. Service Water Heating (Sec. 1315)**

- No New Water Heating** The building plans and specifications do not call for new water heaters, hot water storage tanks or service hot water distribution systems
- Complies** All new water heaters, hot water storage tanks or service hot water distribution systems comply with the requirements of the Section 1315
- Exception** The applicable code exception is Section  Exception

Portions of the building that qualify

The plans/specs show compliance in the following locations



**SYSTEMS - GENERAL****18. Swimming Pools, Spas and Hot Tubs (Section 1315.5)**

- No New Pools** The building plans and specifications do not call for new, swimming pools, spas or hot tubs
- On/Off Controls Complies** Spa and hot tub heaters are equipped with a readily accessible ON/OFF switch as required by Section 1315 5 1
- Ventilation Controls Complies** Pool ventilation system is controlled based on humidity
- Cover Complies** All heated pools, hot tubs and spas are equipped with a cover
- Heat Recovery Complies** Pools, Spas, and hot tubs, over 200 ft<sup>2</sup> utilize recovered heat as required by Section 1315 5 3
  - Exception** Heat recovery is not necessary as pool is heated by renewable energy or waste heat recovery sources capable of providing at least 70 percent of the heating energy required over an operating season

**19. Fume Hoods (Section 1317.2.1.)**

- No Fume Hoods** The building plans do not call for fume hood systems that have a total exhaust rate greater than 15,000 cfm
- Complies** Fume hood systems have **at least one** of the following features
  - Variable air volume hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50% or less of design values
  - Direct makeup (auxiliary) air supply equal to at least 75% of the exhaust rate, heated no warmer than 2° F below room set point, cooled no cooler than 3° F above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control
  - Heat recovery systems to precondition makeup air from fume hood exhaust in accordance with 1318 3 - Exhaust Air Energy Recovery, without using any exception

The plans/specs show compliance in the following locations

**20. Parking Garage Ventilation (Section 1317.2.3)**

- No Enclosed Garages** The building plans and specifications do not call for enclosed Group S-2 parking garages with a ventilation exhaust rate greater than 30,000 CFM
- Complies** The plans and specifications call for carbon monoxide sensing devices as required by Section 1317 2 3
- Exception** Open parking garages

**21. Kitchen Hoods (Section 1317.11)**

- Not Regulated** The plans/specs do not call for any new kitchen hoods with exhaust capacity greater than 5,000 cfm each
- Complies** All new kitchen hoods with a total exhaust capacity greater than 5,000 cfm have at least 50 percent of the required makeup air, (a) unheated or heated to no more than 60°F, and (b) uncooled or evaporatively cooled

The plans/specs show compliance in the following locations

**22. Outside Heating Systems (Section 1317.12)**

- No Outside Heating Systems** The plans/specs do not call for new permanently installed heating systems outside the building
- Complies** All new permanently installed outside heating systems are radiant gas fired systems controlled by an occupancy sensor or timer switch as required by Section 1317 12



# COMPLEX HVAC SYSTEMS

### Applicability

Discussion of qualifying exceptions in instructions section

### Fan Motor Energy

See Section 1318.4.2 for maximum horsepower allowed

## 1. Simple or Complex Systems (Section 1317.9, 1317.10 and 1318)

**Note** This form is required for complex systems only. If your plans qualify as a simple system as defined by the code, this form is not required.

## 2. Air Transport Energy (Section 1318.4.2)

- Not Regulated** Each HVAC system does not have total fan nameplate horsepower of 7.5 HP or greater (include sum of all supply, return, & exhaust fans operating at design conditions)
- Brake Horsepower Complies** The energy demand of all HVAC fan systems meets code requirements. Complete and attach Worksheet 4I.
- Nameplate Horsepower Complies** Selected fan motors have nameplate ratings no larger than is allowed by Section 1218.4.2.3 (Complete Worksheet 4L.)
- Exception** Section 1318.4.2, Exception  1  2  3  4

Portions of the building that qualify

The plans/specs show compliance in the following locations

### Cooling Tower Fans

## 3. Cooling Tower Fans (Section 1317.5.4.1)

- No Cooling Tower** There is no cooling tower in this project
- Complies** Cooling tower fans have control devices that vary flow by controlling leaving fluid temperature or condenser temperature/pressure of the heat rejection device

The plans/specs show compliance in the following locations

## 4. Simultaneous Heating and Cooling (Section 1318.2.1)

- No Cooling** The building HVAC system has no cooling
- Complies** Controls prevent reheating, recooling or mixing of mechanically heated and mechanically cooled air
- Exception** Code exception is Section 1318.2.1, Exception  1  2  3  4  5  
If exception 1 is used, complete and attach Worksheet 4k

Portions of the building that qualify

The plans/specs show compliance in the following locations

### Exceptions

Discussion of qualifying exceptions in instructions section

## 5. Electric Motor Efficiency (Section 1317.10.3 & Table 13-T)

- Not Regulated** There are no NEMA Design A&B squirrel cage, T-frame induction, permanently wired polyphase motors of one horsepower or more which serve built up HVAC
- Complies** The efficiency of all regulated motors meets code requirements
- Exception** Section 1317.10.3, Exception  1  2

Portions of the building that qualify

The plans/specs show compliance in the following locations

## 6. VAV System Static Pressure Reset Controls (Section 1318.2.3)

- Not Regulated** The building plans or specifications do not call for a VAV system controlled by a static pressure sensor or direct digital control of individual zone boxes
- Complies** The system static pressure set point automatically resets to the lowest point possible while still providing the required air flow to the zones with the greatest demand
- Exception** Section 1318.2.3, Exception

The plans/specs show compliance in the following locations



### COMPLEX HVAC SYSTEMS

#### 7. VAV Terminal Units (Section 1317.4.2.1)

- Not Regulated** Project does not contain VAV terminal units
- Complies** VAV terminal units are programmed to operate at the minimum airflow setting without addition of reheat when the zone temperature is within the set deadband Complete Worksheet 4k
- Exception** Section 1317 4 2 1 Exception  1  2  
The plans/specs show compliance in the following locations

#### 8. Supply-Air Temperature Reset Controls (Section 1318.2.5)

- Not Regulated** The building plans or specifications do not call for multiple zone HVAC systems
- Complies** Multiple zone HVAC systems include controls that automatically reset the supply-air temperatures in response to building loads or outside air temperature
- Exception** The building qualifies for an exception to the supply-air reset controls requirement Applicable code exception is Section 1318 2 5, Exception  1  2  3  
Portions of the building that qualify   
The plans/specs show compliance in the following locations

#### 9. Chilled and Hot Water Temperature Reset Controls (Section 1318.2.4)

- Not Regulated** The building plans or specifications do not call for chilled or hot water systems with a design capacity exceeding 300,000 Btu/hr
- Complies** Chilled and hot water systems include controls that automatically reset supply water temperatures by representative building loads or by outside air temperature
- Exception** Section 1318 2 4, Exception  1  2  
Portions of the building that qualify   
The plans/specs show compliance in the following locations

#### 10. Separate Air Distribution Systems (Section 1318 2.7)

- Not Regulated** The building plans or specifications do not call for zones with special process temperature or humidity requirements
- Complies** Separate air distribution systems serve zones with special process temperature or humidity requirements from those zones serving only comfort conditions, or supplementary control provisions are included so primary systems are specifically controlled for comfort purposes only
- Exception** Section 1318 2 7, Exception  1  2  
Identify zones with special process requirements   
The plans/specs show compliance in the following locations

#### 11. Zone Isolation Controls (Section 1318.2.6)

- Not Regulated** Building plans or specifications do not call for HVAC systems serving multiple occupancies or floors with  $\geq 240,000$  Btu/hr cooling capacity, or  $\geq 300,000$  Btu/hr heating capacity
- Complies** HVAC systems serving multiple occupancies or floors with  $\geq 240,000$  Btu/hr cooling capacity, or  $\geq 300,000$  Btu/hr heating capacity are equipped with isolation devices capable of automatically shutting off supply air to and from each isolated area Each isolated area is controlled independently and satisfies temperature setback (Section 1317 4 2) and optimum start control requirements Central fan system air volume is reduced through fan speed reduction  
The plans/specs show compliance in the following locations



**COMPLEX HVAC SYSTEMS****12. Humidity Controls (Section 1318.2.2)**

- No Moisture Added to Building** The building plans do not call for means to add moisture to maintain specific humidity levels
- Complies** All new humidity control systems equipped with a humidistat when required All humidifier preheating devices have an automatic value to shut off preheat when humidification
- The plans/specs show compliance in   
the following locations

**13. Hydronic System Controls (Section 1318.2.8)**

- No Hydronic System** The building plans or specifications do not call for a new hydronic system
- Complies** The hydronic system complies as follows

**13 1 Variable Flow Controls (Section 1318 2 8 4)**

- System does not have a 10 hp or greater motor
- Complies** System has controls capable of varying pump flow

The plans/specs show compliance in   
the following locations

**13 2 Three-Pipe System (Section 1318 2 8 1)**

- System does not have a common return system (a three-pipe system) for both hot water and chilled water

**13 3 Two-Pipe Changeover System (Section 1318 2 8 2)**

- System is not a Two-Pipe Changeover System
- Complies** System is
- Designed to allow a deadband between changeover from one mode to the other of at least 15°F outside air temperature
  - Designed to operate and provided with controls that will allow operation in one mode for at least four hours before changing over to the other mode
  - Provided with reset controls that allow heating and cooling supply temperatures at the changeover point to be no more than 30°F apart

The plans/specs show compliance in   
the following locations

**13 4 Hydronic (Water Loop) Heat Pump System (Section 1318 2 8 3)**

- System is not a Hydronic (Water Loop) Heat Pump System
- Complies** Hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e g , cooling tower) and heat addition (e g , boiler) have the following
- Controls installed capable of providing a heat pump water supply temperature deadband of at least 20°F between initiation of heat rejection and heat addition by the central devices (e g , tower and boiler)
  - Closed-circuit tower (fluid cooler) has either an automatic valve installed to bypass all but a minimal flow of water around the tower (for freeze protection), or low-leakage positive closure dampers
  - Open-circuit tower installed directly in the heat pump loop has an automatic valve installed to bypass all heat pump water flow around the tower Open-circuit towers used in conjunction with a separate heat exchanger to isolate the tower from the heat pump loop are controlled by shutting down the circulation pump on the cooling tower loop
  - A two-position valve at each hydronic heat pump for hydronic systems having a total pump system power exceeding 10 hp

The plans/specs show compliance in the following locations



**UNITARY AIR CONDITIONER - AIR COOLED**

**Equipment**

Discussion of equipment ratings and equipment definitions on page 4 19

(a) Equip ID	(b) Model Designation	(c) Cooling Capacity	(d) Proposed Performance		(e) Compliance Schedule (A-)	(f) New or Replacemnt? *
			Steady State	Seasonal or Part Load		
ACCU-0-7	Mitsubishi PUY	12,000	13.8		B	New
HRU-7-1	Aaon RN Series	150,000	11		A	New
HRU-7-1	Aaon RN Series	150,000	11		A	New

**Required Documentation**

Indicate source of information

ARI Unitary Directory Section AC page

ARI Applied Products directory Section ULE page

Product data (Attach data furnished by the equipment supplier i.e. cut sheets)


**Code Required Efficiencies**

This schedule of equipment efficiencies was reformatted from code Table 13 L



Compliance Schedule	Equipment Type		Cooling Capacity (btu/hr)		Minimum Rating	
			Over	But not over	Steady State	Seasonal or Part Load
A	Single Package Without a Heating Section or With Electric Resistance Heat	New * Replacement *	0 0	65,000 65,000	na na	13 SEER 9.7 SEER
		All	65,000 135,000 240,000 760,000	135,000 240,000 760,000	10.3 EER 9.7 EER 9.5 EER 9.2 EER	n/a n/a 9.7 IPLV 9.4 IPLV
B	Split System Without a Heating Section or With Electric Resistance Heat	New * Replacement *	0 0	65,000 65,000	na na	13 SEER 10 SEER
		All	65,000 135,000 240,000 760,000	135,000 240,000 760,000	10.3 EER 9.7 EER 9.5 EER 9.2 EER	n/a n/a 9.5 IPLV 9.2 IPLV
C	Single Package With a Heating Section Other Than Electric Resistance	New * Replacement *	0 0	65,000 65,000	na na	13 SEER 9.7 SEER
		All	65,000 135,000 240,000 760,000	135,000 240,000 760,000	10.1 EER 9.5 EER 9.3 EER 9.0 EER	n/a n/a 9.5 IPLV 9.2 IPLV
D	Split System With a Heating Section Other Than Electric Resistance	New * Replacement *	0 0	65,000 65,000	na na	13 SEER 10 SEER
		All	65,000 135,000 240,000 760,000	135,000 240,000 760,000	10.1 EER 9.5 EER 9.3 EER 9.0 EER	n/a n/a 9.7 IPLV 9.4 IPLV
E	Condensing Unit Only	All	135,000		10.1 EER	11.2 IPLV

\* Equipment is a new installation or replaces existing equipment



**UNITARY HEAT PUMP - AIR COOLED**

**Equipment**

Discussion of equipment ratings and equipment definitions on page 4 19

(a) Equip ID	(b) Model Designation	(c) Cooling Capacity (Btu/h)	(d) Proposed Rating		(e) Proposed Heating Rating			(f) Compliance Schedule (A E)	(g) New or Replacmnt*
			SEER	EER	HSPF	COP (47°F)	COP (17°F)		
ACCU-0-1	Sanyo CH	24,000	14		9.7			C	New
ACCU-0-2	Sanyo CH	31,200	13.9		8.7			C	New
ACCU-0-3	Trane TWB	34	14		8			C	New
ACCU-0-4	Trane TWB	34	14		8			C	New
ACCU-0-5	Trane TWB	54,000		13			2.4		New
ACCU-0-6	Trane TWA	82,000		11.5			3.4	2.5	New
ACCU-0-8	Sanyo CH	12,000	13.9		8.7			C	New

**Required Documentation**

Indicate source of information

- ARI Unitary Directory, Section AC, page
- ARI Applied Products directory, Section ULE, Page
- Product data (Attach data furnished by the equipment supplier i.e., cut sheets)

**Code Required Efficiencies**

This schedule of equipment efficiencies was reformat ted from the code Table 13 M



Compliance Schedule	Equipment Type	Cooling Capacity (btu/hr)		Minimum Cooling Rating		Minimum Heating Rating			
		Over	But not over	EER	or Part Load	HSPF	COP (@ 47°F)	COP (@ 17°F)	
A	Single Package Without a Heating Section or With Electric Resistance Heat	New*	0	65,000		13 SEER	7.7		
		Replacmnt*	0	65,000		9.7 SEER	6.6		
		All	65,000	135,000	10.1	n/a		3.2	2.2
			135,000	240,000	9.3	n/a		3.1	2.0
B	Split System Without a Heating Section or With Electric Resistance Heat	New*	0	65,000		13 SEER	7.7		
		Replacmnt*	0	65,000		10 SEER	6.8		
		All	65,000	135,000	10.1	n/a		3.2	2.2
			135,000	240,000	9.3	n/a		3.1	2.0
C	Single Package With a Heating Section Other Than Electric Resistance	New*	0	65,000		13 SEER	7.7		
		Replacmnt*	0	65,000		9.7 SEER	6.6		
		All	65,000	135,000	9.9	n/a		3.2	2.2
			135,000	240,000	9.1	n/a		3.1	2.0
D	Split System With a Heating Section Other Than Electric Resistance	New*	0	65,000		13 SEER	7.7		
		Replacmnt*	0	65,000		10 SEER	6.8		
		All	65,000	135,000	9.9	n/a		3.2	2.2
			135,000	240,000	9.1	n/a		3.1	2.0
		240,000		8.8	9.0 IPLV		3.1	2.0	

\* Equipment is new installation or replaces existing equipment



**PACKAGED TERMINAL A.C. - AIR COOLED**

**Equipment**

Enter the cooling capacity in column (c) If capacity is less than 7,000 Btu/hr, use 7,000 If above 15,000, use 15,000

Discussion of equipment ratings and equipment definitions on page 4 19

Type of Equipment	(a) Equip ID	(b) Model Designation	(c) Cooling Capacity (Btu/hr)	(d)	(e)
				Proposed EER (95°F db)	Code Minimum EER (95°F db)
Units Installed in New Construction					
Replacement of Existing Units (installed prior to 10/01/03)					



**Required Documentation**

Indicate source of information

- ARI Unitary Directory, Section AC, page
- ARI Applied Products directory, Section ULE, Page
- Product data (Attach data furnished by the equipment supplier, i.e., 'cut sheets')

**Code Required Efficiencies**

Calculate the code minimum EERs from the formulas below using the cooling capacity in column (c)

Enter the results in column (e)

New Construction EER @ 95F Test Conditions =  $12.5 - (0.213 \times \text{Cap}/1000)$   
 Replacement Units EER @ 95F Test Conditions =  $10.9 - (0.213 \times \text{Cap}/1000)$

**PACKAGED TERMINAL HEAT PUMP - AIR COOLED**

**Equipment**

Enter the cooling capacity in column (c) If capacity is less than 7,000 Btu/hr, use 7,000 If above 15,000, use 15,000

Calculate the code minimum EER's from formulas below using cooling capacity in the column (c) Enter results in column (e)

Discussion of equipment ratings and equipment definitions on page 4 19

Type of Equipment	(a) Equip ID	(b) Model Designation	(c) Cooling Capacity (Btu/hr)	(d) Proposed		(e) Code Minimum	
				Cooling Rating	Heating	Cooling Rating	Heating
				EER (95°F db)		EER (95°F db)	
Units Installed in New Construction	HP-2-1	AMANA VTH	18,900	9 7	3 11	8 3	2 7
	HP-3-1	AMANA VTH	18,900	9 7	3 11	8 3	2 7
	HP-4-1	AMANA VTH	18,900	9 7	3 11	8 3	2 7
	HP-5-1	AMANA VTH	18,900	9 7	3 11	8 3	2 7
	HP-6-1	AMANA VTH	18,900	9 7	3 11	8 3	2 7
Replacement of Existing Units (installed prior to 10/01/03)							



**Required Documentation**

Indicate source of information

- ARI Unitary Directory, Section AC, page
- ARI Applied Products directory, Section ULE, Page
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")


**Code Required Efficiencies**

Calculate the code minimum EERs and COPs from the formulas below using the cooling capacity in column (c) Enter the results in column (e)

New Construction EER  $EER @ 95F \text{ Test Conditions} = 12.3 - (0.213 \times \text{Cap}/1000)$   
 New Construction COP  $COP = 3.2 - (0.026 \times \text{Cap}/1000)$   
 Replacement Units EER  $EER @ 95F \text{ Test Conditions} = 10.8 - (0.213 \times \text{Cap}/1000)$   
 Replacement Units COP  $COP = 2.9 - (0.026 \times \text{Cap}/1000)$



## HEAT REJECT. EQUIPMT. - COOLING TOWERS & AIR COOLED CONDENSERS

### Equipment-Cooling Towers

Discussion of equipment ratings and equipment definitions on page 4 19

<b>Cooling Tower - Equip ID</b>		<b>Design Entering Water Temperature (EWT)</b>				<b>Fan Type</b>	
<b>Compliance Schedule</b>		<b>Design Leaving Water Temperature (LWT)</b>					
<b>Design Wet Bulb Temperature (WB)</b>							
<b>Location of Equipment Schedule for EWT, LWT and WB</b>							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Tower Pump GPM at Design Conditions	Tower Fan HP at Design Conditions	GPM/HP ((b)/(c)) at Design Conditions	Tower Pump GPM at CTI Rated Conditions	Tower Fan HP at CTI Rated Conditions	GPM/HP ((e)/(f)) at CTI Rated Conditions	Complies <sup>1</sup>

<sup>1</sup> Column (g) is less than value stated in table below

<b>Cooling Tower - Equip ID</b>		<b>Design Entering Water Temperature (EWT)</b>				<b>Fan Type</b>	
<b>Compliance Schedule</b>		<b>Design Leaving Water Temperature (LWT)</b>					
<b>Design Wet Bulb Temperature (WB)</b>							
<b>Location of Equipment Schedule for EWT, LWT and WB</b>							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Tower Pump GPM at Design Conditions	Tower Fan HP at Design Conditions	GPM/HP ((b)/(c)) at Design Conditions	Tower Pump GPM at CTI Rated Conditions	Tower Fan HP at CTI Rated Conditions	GPM/HP ((e)/(f)) at CTI Rated Conditions	Complies <sup>1</sup>

<sup>1</sup> Column (g) is less than value stated in table below

### Equipment-Air Cooled Condensers

Discussion of equipment ratings and equipment definitions on page 4 19

<b>Air-Cooled Condenser-Equip ID</b>		<b>Condenser Temperature (CT)</b>					
<b>Compliance Schedule</b>		<b>Air Temp Entering Condenser (ATEC)</b>					
<b>Location of CT &amp; ATEC Schedule</b>							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Heat Rejected (Btu/h) at Design Conditions	Condenser Fan HP at Design Conditions	Btu/h HP ((b)/(c)) at Design Conditions	Heat Rejected (Btu/h) at ARI Rated Conditions	Condenser Fan HP at ARI Rated Conditions	Btu/h HP ((e)/(f)) at ARI Rated Conditions	Complies <sup>1</sup>

<sup>1</sup> Column (g) is greater than value stated in table below

<b>Air-Cooled Condenser-Equip ID</b>		<b>Condenser Temperature (CT)</b>					
<b>Compliance Schedule</b>		<b>Air Temp Entering Condenser (ATEC)</b>					
<b>Location of CT &amp; ATEC Schedule</b>							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Heat Rejected (Btu/h) at Design Conditions	Condenser Fan HP at Design Conditions	Btu/h HP ((b)/(c)) at Design Conditions	Heat Rejected (Btu/h) at ARI Rated Conditions	Condenser Fan HP at ARI Rated Conditions	Btu/h HP ((e)/(f)) at ARI Rated Conditions	Complies <sup>1</sup>

<sup>1</sup> Column (g) is greater than value stated in table below



### Required Documentation

Indicate source of information  ARI Directory Section Page (for air cooled condensers only)    
 Product data (Attach data furnished by the equipment supplier i.e. cut sheets)

### Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code Table 13 R

Compliance Schedule	Equipment Type	Total System Heat Rejection Capacity at Rated Conditions	Subcategory or Rating Conditions	Performance Required <sup>2 3</sup>	
				gpm/hp	Btu/h hp
A	Propeller or Axial Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	>38.2	
B	Centrifugal Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	>20.0	
C	Air Cooled Condensers	All	125°F Condenser Temp. R 22 Test Fluid 190°F Entering Gas Temperature 15°F Subcooling 95°F Entering db		>176.000

<sup>2</sup> For purposes of this table cooling tower performance is defined as maximum flow rating of tower divided by the fan nameplate rated motor horsepower

<sup>3</sup> For purposes of this table air cooled condenser performance is defined as heat rejected from refrigerant divided by the fan nameplate rated motor horsepower









# NATURAL VENTILATION

1 Fill in worksheet for all spaces that will be provided with natural ventilation

(a) Space (Room # or name from plans)	(b) Room Area (sqft)	(c) Occupant Load from OMSC Table 403.3 (persons/1000sqft )	(d) Check if Smoking Area <input type="checkbox"/>	(e) used to determine ventilation requirements (persons/1000sqft )	(f) Required CFM/person (from Table 403.3)	(g) Required CFM/Sqft (from Table 403.3) <sup>1</sup>	(h) Required Ventilation CFM	(i) Net Free Area of Outside Air Openings	(j) Opening Area / Floor Area	(k) Calculated Natural Ventilation to Space (design conditions) <sup>2</sup>
			<input type="checkbox"/>							
			<input type="checkbox"/>							
			<input type="checkbox"/>							
			<input type="checkbox"/>							
			<input type="checkbox"/>							
			<input type="checkbox"/>							
			<input type="checkbox"/>							

<sup>1</sup> Use this column when ventilation requirement is based on CFM/sq ft per OMSC Table 403.3

<sup>2</sup> Complete this column if net free opening is less than 5% of floor area or 20% of floor area for smoking areas, otherwise enter N/A Attach calculations

Number of Additional Worksheets 4m

2 Describe calculation method used to determine ventilation delivered Attach additional sheets as necessary

3 Attach manual calculations, spreadsheets, computer model input and outputs, and other technical documentation that verifies required ventilation will be provided to each space

4 I certify that to the best of my knowledge, the natural ventilation calculations provided are correct



This line to be signed and stamped by Architect or Engineer Registered in the State of Oregon

# SUBMITTAL SHEET



SYSTEM INDOOR/OUTDOOR  
**36UH72R UH3672R/CH3672R**  
 CONCEALED DUCT HEAT PUMP

**General Data (AT 230V)**

POWER (V/PH/Hz)	230/206 / 1 / 60
Circuit Ampacity Min (A)	15 35 Indoor - Outdoor
Fuse Size Max (A)	15 35 Indoor - Outdoor

COMPRESSOR	DC Rotary
No used	1
R L Amps - L R Amps (A)	16.4 17.5
Crankcase Heater (W)	

<b>OUTDOOR UNIT</b>	
Fan - Type	Propeller
Dia (in) - No used	18-7/64 1
Type Drive - No speeds	Direct Inverter
No Poles (RPM)	8 830
No Motors (W)	1 - 90
CFM (High)	1942
F.L. Amps (A)	17.3
Coil - Type	Aluminum Fin & Copper Pipe
Fin Type - Pipe Type	Slit Plate Inner Riffled
Rows - FPI	2 - 14.1
Face Area (sq ft)	7.26
Tube Size (in)	3/8

<b>INDOOR UNIT</b>	
Fan - Type	Centrifugal
Dia & Length (in) - No used	5-29/32 3
No Speeds	3 & Auto
No Poles (RPM High)	4 - 940
No Motors (W)	1 - 100
CFM (Hi/Mid/Low)	1060 / 920 / 750
F.L. Amps (A)	1.0
Coil - Type	Aluminum Fin & Copper Pipe
Fin Type - Pipe Type	Slit Plate - Inner Riffled
Rows - FPI	3 12.7
Face Area (sq ft)	3.32
Tube Size (in)	3/8
Drain Connection Size (in)	Max head 2 33/64 in above drain connection (1 17/64)

<b>REFRIGERANT</b>	
Lbs - R410A (outdoor unit)	R410A 6.17 - R410A
Control	Electric Expansion Valve
Connection	Flare
Line Length Max (ft)	165
Lift Difference Max (ft)	50 (Outdoor lower) 100 (Outdoor higher)
Line Size (in O D Discharge)	3/8
Line Size (in O D Suction)	5/8

<b>DIMENSIONS (in)</b>		H	x	W	x	D
Indoor Unit	Uncrated	12-7/32	x	58-9/32	x	24-13/16
	Crated	14-3/32	x	65-25/32	x	30-13/16
Outdoor Unit	Uncrated	30 23/32	x	37	x	13- 3/8
	Crated	34- 31/32	x	39- 31/32	x	16- 3/32

<b>WEIGHT</b>		Indoor	Outdoor
Net (lbs)		104	143
Shipping (lbs)		115	161

<b>SHIPPING VOLUME</b>		Indoor	Outdoor
(cu ft)		16.5	13.0

**Performance Data @ ARI Standard Conditions (230/208V)**

<b>COOLING</b>	
Total Capacity (BTU/H)	31 200 [9 500-31,200]
Sensible Capacity (BTU/H)	19 570
Latent Capacity (BTU/H)	11 630
SEER	13.9
Dehumidification (Pints/H)	10.0
Amps (A)	18.6 / 20.6
Power Inputs (W)	3 920 / 3 920
Outdoor Sound Rating (bels)	52

<b>HEATING</b>	
Total Capacity (BTU/H)	36 200 [8 000-36 200]
HSPF	8.7
Amps (A)	15.9 / 17.6
Max Amps (A)	15.9 / 17.6
Power Inputs (W)	3 340 / 3 340
Back up Snp Heater (kW)	0.00 / 0.00
Outdoor Sound Rating (bels)	52

<b>FEATURE</b>	
Controls	Microprocessor
Remote Controller	Optional (Wired or Wireless)
Temperature Control	IC Thermostat
Timer	ON/OFF 72hours
Night Setback	-
Air Louver (Horizontal)	Manual
(Vertical)	Automatic
Power Failure Automatic Restart	Built in
Heating/Cooling Automatic Changeover	Built in
Self Diagnosis	Built in

<b>OPTION</b>	
Refrigerant Line Set	AP3010BH AP3015BH
Remote Controller	RCS-SH80UA-WL RCS-BH80UA-WL RCS-TM80BG
Fresh Air Intake	N/A
Condensate Drain Pump	SI1730-2

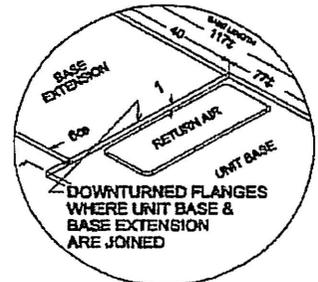
<b>OPERATING RANGE</b>			
Cooling	Maximum	Indoor Air Intake Tempo 95F DB / 71F WB	Outdoor Air Intake Tempo 109F DB
	Minimum	67F DB / 57F WB	0F DB
Heating	Maximum	80 F DB / 67 F WB	75 F DB / 65 F WB
	Minimum	- DB / - WB	5F DB



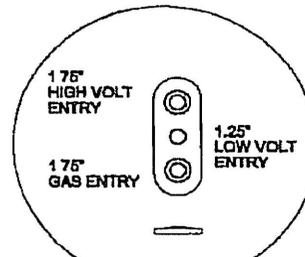
# B-CABINET WITH ECONOMIZER, HEAT RECOVERY & PLENUM FAN EXHAUST ~8-15 TON

**AIR COOLED**

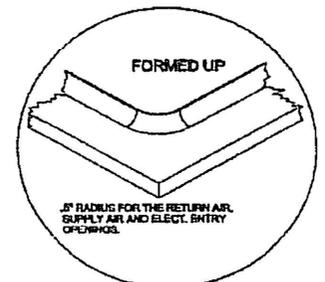
CLEARANCES	
LOCATION	UNIT SIZE
	8 • 10 • 13 • 15
RETURN AIR (BACK)	48
VENT SIDE (FRONT)	48
LEFT SIDE	6
RIGHT SIDE	60
TOP	UNOBSTRUCTED



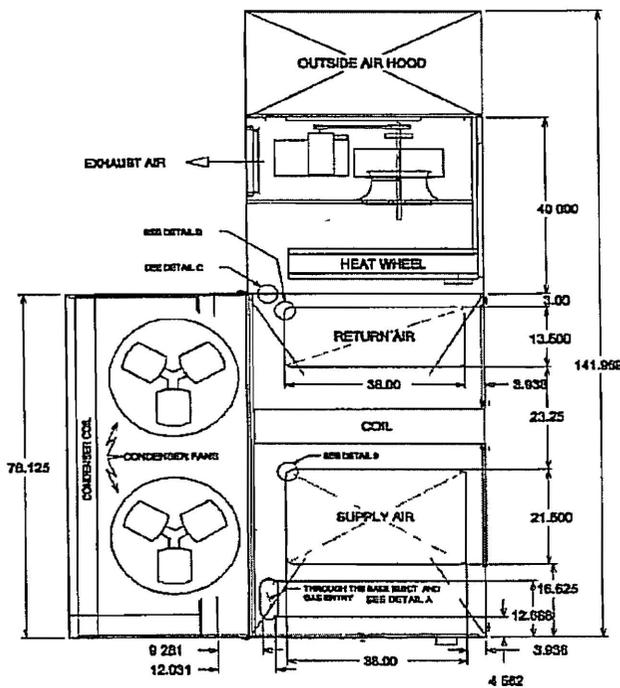
DETAIL C



DETAIL A



DETAIL B

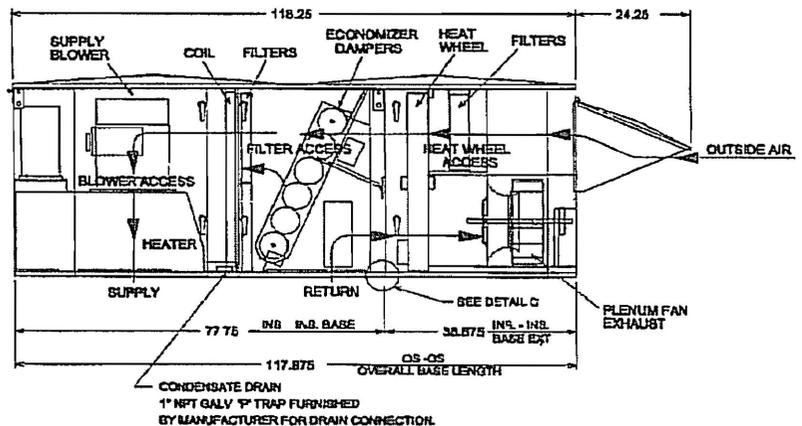
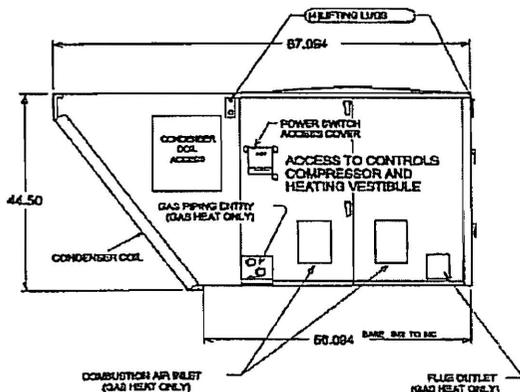


**NUMBER OF CONDENSER FANS**  
8-10 TON - 1 FAN  
13-15 TON - 2 FANS

**NOTES**

ALL DIMENSIONS ARE OUTSIDE TO OUTSIDE UNLESS NOTED OTHERWISE.

ALLOW .625" SCREW CLEARANCE AROUND UNDERSIDE OF BASE.





# Unit Rating

2425 South Yukon Ave - Tulsa Oklahoma 74107 2725 Ph. (918) 583 2266 Fax (918) 583-6094  
AAONLCat3.1 Ver 4 122 (SN 7050384-8YNQ479E)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23  
 RM-010-3-0-EA09-132 : GACE-D00-OCE-000-000000E-00-00000000AB  
 Tag RTU# 1

### Job Information

Job Name Pearl Housing  
 Job Number Job #168  
 Site Altitude 0 ft  
 Refrigerant R-410A

### Unit Information

Approx Op /Shup Weights 1855 / 1855 lbs  
 Supply CFM/ESP 3500 / 1 in ug  
 Final-Filter FV / Qty 262 50 fpm / 6  
 Exhaust CFM/ESP/TSP 3500 / 0 70 / 2 08 in wg  
 Outside CFM 3500  
 Ambient Temperature 92 °F DB / 68 °F WB  
 Return Temperature 75 °F DB / 62 °F WB

### Static Pressure

External 1 00 in wg  
 Evaporator 0 18 in wg  
 Filters Clean 0 09 in wg  
 Dirt Allowance 0 35 in wg

Economizer 0 14 in wg  
 Heating 0 08 in wg  
 Heatwheel 1 10 in ug  
 Total 2 95 in wg

### Cooling Section

	Gross	Net
Equivalent Total Capacity	148 76 MBH	139 57 MBH
Total Capacity	119 15	109 97 MBH
Sensible Capacity	113 00	103 81 MBH
Latent Capacity	6 15 MBH	
HW Total Cooling Capacity	29 61 MBH	
Mixed Air Tempo	84 33 °F DB	65 40 °F WB
Entering Air Temp	84 33 °F DB	65 40 °F WB
Lv Air Temp (Coil)	53 61 °F DB	53 52 °F WB
Lv Air Temp (Unit)	56 02 °F DB	54 51 °F WB
Digital Comp Capacity Ratio	100%	
Supply Air Fan	1 x 185 @ 2 80 BHP	
SA Fan RPM / Width	1712 / 6 290"	
Exhaust Air Fan	1 x RM1185 @ 1 96 BHP	
EA Fan RPM / Width	1501 / 6 290"	
Evaporator Coil	11 7 ft / 3 Rows / 14 FPI	
Evaporator Face Velocity	300 0 fpm	
Energy Recovery Wheel	1 x ERC-3623	

### Heating Section

PreHeat Type Std (No Preheat)  
 Heating Type Electric Heat  
 Heating CFM 4000  
 Total Capacity 102 4 MBH  
 OA Temp 10 0 DB / 9 0 °F WB  
 RA Temp 75 0 °F DB / 62 0 °F WB  
 Entering Air Temp 60 0 °F DB / 45 0 °F WB  
 Leaving Air Temp 83 7 °F DB / 55 4 °F WB  
 Bypass CFM 0  
 Input 30 0 kW  
 Heater Qty 3  
 Electric Heat FLA 36 I

### EER - ARI Listing Information

EER @ ARI Conditions 11 0 Application EER @ Op Conditions 10 1

### Electrical Data

Rating	460/3/60	Minimum Circuit Amp	58			
Unit FLA	46	Maximum Overcurrent	60			
Qty	HP	VAC	Phase	RPM	FLA	RLA
Compressor 1	1	460	3			8 1
Compressor 2	1	460	3			7 8
Condenser Fans	1	0 75	460	1	1075	2 3
Supply Fan	1	3 00	460	3	1760	4 8
Exhaust Fan	1	3 00	460	3	1760	4 8
Heatwheel	1	0 05	460	1	1760	0 3

### Cabinet Sound Power Levels\*

Octave Bands	63	125	250	500	1000	2000	4000	8000
Discharge LW(dB)	84	85	88	88	82	78	73	68
Return LW(dB)	86	85	81	75	74	72	69	64

\*Sound power levels are given for informational purposes only. The sound levels are not guaranteed.



# Energy Wheel Rating

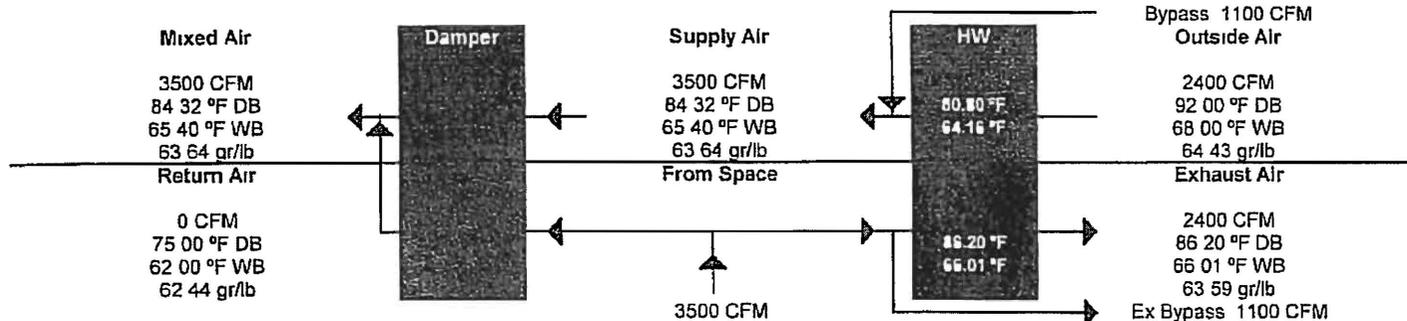
2425 South Yukon Ave Tulsa Oklahoma 74107 2728 Ph. (918) 589 2566 Fax (918) 589 6094  
 AADNEcatS2 Ver 4 122 (SN 7050361 8YNQ479R)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RM-010-3-0-EA09-132 : GACE-D00-0CE-000-000000E-00-0000000AB  
 Tag RTU# 1

Job Name	Pearl Housing	Heat Wheel Type	Total
Job Number	Job #168	Heat Wheel Model	ERC-3623
Site Altitude	0'	Heat Wheel Qty	1

### Summer Conditions



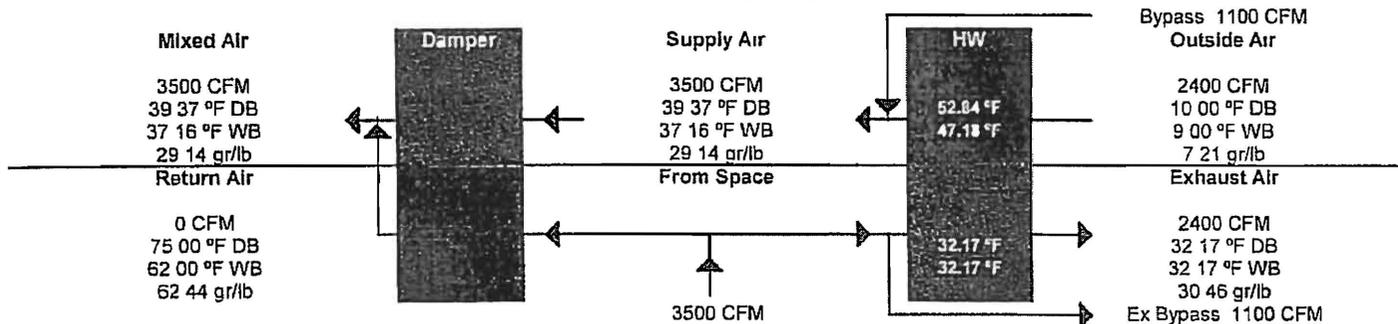
### Cooling/Dehumidification

Total Capacity	29.61 MBH
Sensible Capacity	29.47 MBH
Latent Capacity	0.14 MBH

### Heating/Humidification

0.00 MBH
0.00 MBH
0.00 MBH

### Winter Conditions



### Cooling/Dehumidification

Total Capacity	0.00 MBH
Sensible Capacity	0.00 MBH
Latent Capacity	0.00 MBH

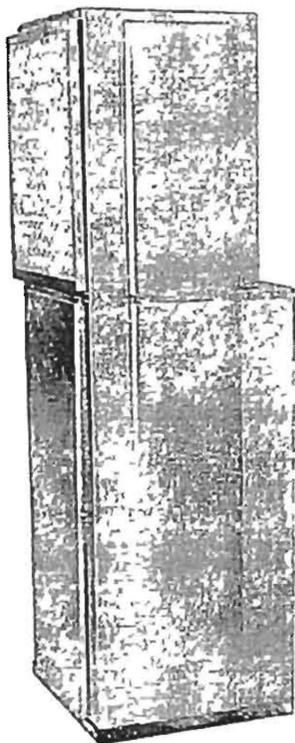
### Heating/Humidification

165.00 MBH
111.47 MBH
53.53 MBH

# Heating & Air Conditioning **Amana**<sup>®</sup>

## PRODUCT SPECIFICATIONS

**MEETS THE 2006  
DOE ENERGY EFFICIENCY  
REQUIREMENTS**



## VTC / VTH

### VERTICAL TERMINAL AIR CONDITIONER AND HEAT PUMP

No other unit in the industry offers so many extras already built in as standard on every unit. Don't settle for anything less than the Amana<sup>®</sup> brand Standard Advantage!

- Evaporator Coil Freeze Protection
- Compressor Restart Delay
- Low Ambient Lock-out
- Manual Outside Air Damper
- Wall-mount Thermostat
- Electrical Disconnect
- Random Unit Restart
- Front Desk Control
- Fan On/Off Delay
- High-efficiency Operation
- Quiet Operation
- Reliability and Durability

**COOLING: 8,350 - 23,800 BTU/H**

**HEAT PUMP: 8,120 - 22,800 BTU/H**

**ELECTRIC HEAT: 5,100 - 34,100 BTU/H**

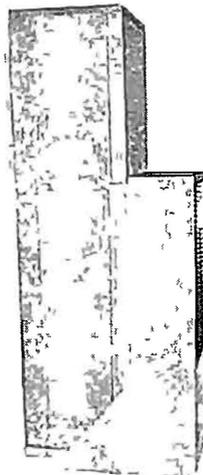
**UP TO 3.5 COP**

# SPECIFICATION SHEET

## FEATURES

- Front Desk Control**  
 Enable or disable each unit from the front desk to save energy used to condition unoccupied rooms
- Fan Delay**  
 Allows the evaporator blower to continue running for up to 45 sec after the thermostat is satisfied, maximizing cooling performance
- Random Restart**  
 Protects against damage to electrical circuits by preventing all units from starting at one time after power disruption. Random restart occurs in 3 to 4 min.
- Evaporator Coil Freeze Protection**  
 Prevents ice build-up on coils and compressor damage during the cooling mode. Attached to the coil, a temperature sensor will de-energize the compressor when freezing conditions are detected and re-energize the compressor when the coil warms up again.
- Ductable Return Air**  
 Permits the connection of return air ductwork using the provided tabs (usually not required) on the inlet of the evaporator coil (Figure 5, pg 9)  
 Note: Duct systems and registered sizes must be properly designed for the CFM and external static pressure rating of the unit.
- Adjustable Outside Air (manual)**  
 Meets code requirements for outside air introduction. The air vent (Figure 6, pg 9) allows up to 50 CFM of outside air to be introduced into the equipment closet. The air mixes with return air entering the closet through the return air grille.  
 Note: Negative pressure can be introduced through an external source to raise the 50 CFM level. Consult with the factory.
- Compressor Restart Delay - (3 min )**  
 Ensures that system pressure equalizes before the system restarts, so compressor life is extended
- Low Ambient Lockout**  
 Locks out compressor at 40°F and below, thus extending compressor life
- Electrical Disconnect (Factory-installed)**  
 Makes service and maintenance easier
- Filter Brackets (Field-installed)**  
 Installed over evaporator coil and shipped with throw-away filter (20" x 24" x 1", see Figure 5, pg 9)
- Unique "Sleeve Drain" Condensate System (Factory installed)** - Connects evaporator drain pan to a vertical pipe connection in the unit's base pan via a drain line. Evaporator condensate is delivered from the unit to a catch tray in the wall sleeve and exits the sleeve through the 3/4" male NPT fitting to allow complete piping of the drain to a condensate riser during the rough-in stage. This eliminates condensate connection problems when connecting the HVAC drain to the riser after the HVAC unit is installed in the closet. Unit can be removed for service without disconnecting the condensate piping. Additional closet space is not needed to connect the drain.
- Secondary Overflow**  
 Should the primary condensate riser become clogged, water will fill the catch tray and be diverted through the sleeve to the exterior of the building, ensuring no leakage into the interior area. Rain water entering the sleeve is automatically diverted to the building exterior.

## UNIT WITH INSTALLED REAR SLEEVE AND FLUSH-STYLE LOUVER



Note: Sleeve, louver, filter, and thermostat required for each general installation

## OPTIONAL EQUIPMENT

- Wall-mounted Low-voltage Thermostat**  
 Easily controls the unit. Low-voltage wires exit the left side of the cabinet (pg 8)
- "Flush Style" Architectural Louver**  
 Attaches to the outside of the wall sleeve for a flush appearance. Louvers recess into the wall sleeve, stock and custom colors available (pg 8)
- Architectural Grilles – Available in various colors**

AGKV01CBA	Anodized Aluminum (Clear)	
AGKV01DBA	Dark Bronze	
AGKV01TBA	Stone Wood	
AGKV01WBA	White	
AGKV01SBA	Custom Color	

OPTIONAL EQUIPMENT (CONT.)

• Wall Sleeves

Standard 22" width x 44" height Six sleeves (three rear installation, three side installation) available for varying wall widths, from 5" to 15" (See chart at right and Figure 7, page 9)

Shipped separately to allow installation during construction, each sleeve includes a factory installed "weather guard" to cover the sleeve opening during construction phase

Note Due to better access to unit, wall sleeves installed in the rear application are recommended over side installed wall sleeves whenever possible

Rear Wall Sleeves

Model	Wall Depth	Sleeve Depth
VWS90508B	5" - 8" Walls	26"
VWS90812B	8" - 12" Walls	30"
VWS91215B	12" - 15" Walls	33"

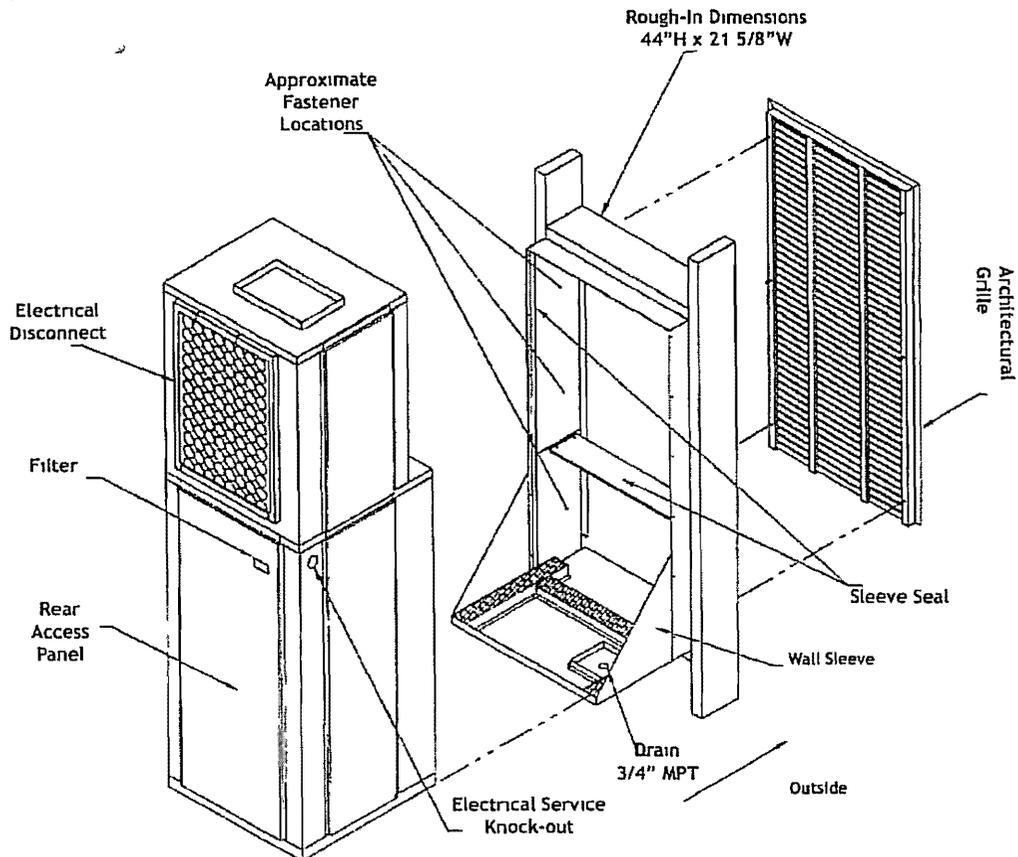
Note See sleeve installation for minimum clearances for air return

Side Wall Sleeves

Model	Wall Depth	Sleeve Depth
SVWS90508B	5" - 8" Walls	26"
SVWS90812B	8" - 12" Walls	30"
SVWS91215B	12" - 15" Walls	33"

Note Side installed wall sleeves require different closet sizes and configuration (pg 10)

GENERAL ASSEMBLY



# SPECIFICATION SHEET

## VTC MODEL SPECIFICATIONS—COOLING/ELECTRIC HEAT

### ELECTRICAL DATA (208/240V-1 PH-60HZ)

Model	Electric Heat Data						Blower Data		Condenser Data				Minimum Circuit Ampacity		Maximum Circuit Protection		Ship Weight
	kW		BTU/h		Total Heating Amps		Evaporator Motor	Compressor	Condenser Motor		208V	230V	208V	230V			
	240V	208V	240V	208V	240V	208V	AMPS	HP	RLA	LRA	FLA	HP					
VTC093B-0	0	0	0	0	0 0	0 0	0 72	1/8	3 7	21	0 5	1/15	7	7	15	15	245
VTC093B-2	2	1 5	6,800	5,100	9 0	7 9							10	12	15	15	
VTC09EB-3	3	2 25	10,200	7,700	13 2	11 5							15	18	20	20	
VTC093B-4	4	3 0	13,600	10,200	17 4	15 1							19	23	20	25	
VTC123B-0	0	0	0	0	0 0	0 0	0 72	1/8	5 0	24	0 5	1/15	10	10	15	15	245
VTC123B-2	2	1 5	6,800	5,100	9 0	7 9							10	12	15	15	
VTC123B-3	3	2 25	10,200	7,700	13 2	11 5							15	18	20	20	
VTC123B-4	4	3 0	13,600	10,200	17 4	15 1							19	23	20	25	
VTC123B-5	5	3 75	17,000	12,800	22 0	19 0							24	28	25	30	
VTC183B-0	0	0	0	0	0 0	0 0	0 87	1/8	9 0	48	0 72	1/10	13	13	15	15	255
VTC183B-2	2	1 5	6,800	5,100	9 2	8 1							13	13	15	15	
VTC183B-3	3	2 25	10,200	7,700	13 4	11 7							15	18	20	20	
VTC183B-4	4	3 0	13,600	10,200	17 5	15 3							19	23	25	25	
VTC183B-5	5	3 75	17,000	12,800	22 0	19 0							24	28	25	30	
VTC183B-6	6	4 5	20,500	15,350	26 0	23 0							28	34	30	35	
VTC183B-8	8	6 0	27,300	20,500	34 0	30 0							37	44	40	45	
VTC183B-10	10	7 5	34,100	25,600	43 0	37 0							47	54	50	60	
VTC243B-0	0	0	0	0	0 0	0 0	1 4	1/4	10 5	61	2 3	1/4	18	18	20	20	255
VTC243B-3	3	2 25	10,200	7,700	14 0	12 3							18	18	20	20	
VTC243B-4	4	3 0	13,600	10,200	18 2	15 9							21	24	25	25	
VTC243B-5	5	3 75	17,000	12,800	22 0	20 0							26	28	30	30	
VTC243B-6	6	4 5	20,500	15,350	27 0	23 0							30	34	35	35	
VTC243B-8	8	6 0	27,300	20,500	35 0	30 0							39	45	45	50	
VTC243B-10	10	7 5	34,100	25,600	43 0	38 0							48	55	50	60	

## COOLING PERFORMANCE DATA

Model	Standard Ratings <sup>1</sup>	
	BTU/h	EER
VTC093B	8,350	9 3
VTC123B	11,500	9 6
VTC183B	18,900	9 7
VTC243B	23,100	9 1

<sup>1</sup> Tested in accordance with ARI Standard 310/380 93 at 95 F DB/75 F WB outdoors and 80 F DB/67 F WB indoors

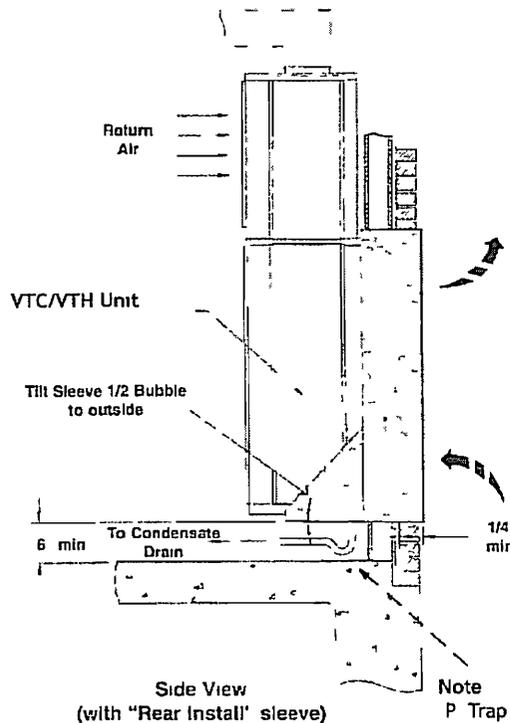
VTC MODEL SPECIFICATIONS—COOLING/ELECTRIC HEAT (CONT.)

BLOWER DATA

Model	Motor Speed Connection	CFM vs External Static Pressure							
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40
VTC093B	HIGH	490	475	460	450	435	420	400	--
	MED	375	360	350	340	330	315	300	---
	LOW	290	280	270	260	240	230	215	---
VTC123B	HIGH	490	475	460	450	435	420	400	---
	MED	375	360	350	340	330	315	300	---
	LOW	290	280	270	260	240	230	215	---
VTC183B	HIGH	660	655	650	645	640	635	625	610
	MED	580	578	575	570	565	560	550	540
	LOW	485	480	475	470	465	460	455	450
VTC243B	HIGH	1,030	1,000	980	950	920	890	860	820
	MED	880	860	840	820	790	760	730	710
	LOW	770	760	750	740	720	700	680	660

- (1) VTC12, 18- and 24-blower motors are factory wired for medium (cooling) and low (heating) fan operation  
VTC09 is low speed for both
- (2) VTH12, 18- and 24-blower motors are factory wired for medium (cooling/heat pump) and low (electric heat) speed operation  
VTH09 is low speed in all modes

DIMENSIONAL DATA



\*See Wall Sleeve Installation Instructions for complete details

# SPECIFICATION SHEET

## VTH MODEL SPECIFICATIONS—COOLING/ELECTRIC HEAT

### ELECTRICAL DATA (208/240V-1 PH-60HZ)

Model	Electric Heat Data						Blower Data		Condenser Data				Minimum Circuit Ampacity		Maximum Circuit Protection		Ship Wgt (lbs)
	kW		BTU/h		Total Heating Amps		Evaporator Motor	HP	Compressor		Motor		208V	230V	208V	230V	
	240V	208V	240V	208V	240V	208V			RLA	LRA	FLA	HP					
VTH093B	2	1.5	6800	5,100	9.0	7.9	0.72	1/8	3.7	21	0.5	1/15	10	12	15	15	245
	3	2.25	10,200	7,700	13.2	11.5							15	18	20	20	
	4	3.0	13,600	10,200	17.4	15.1							19	23	20	25	
VTH123B	2	1.5	6800	5,100	9.0	7.9	0.72	1/8	5.0	24	0.5	1/15	10	12	15	15	245
	3	2.25	10,200	7,700	13.2	11.5							15	18	20	20	
	4	3.0	13,600	10,200	17.4	15.1							19	23	20	25	
	5	3.75	17,000	12,800	22.0	19.0							24	28	25	30	
VTH183B	2	1.5	6,800	5,100	9.2	8.1	0.87	1/8	9.0	48	0.72	1/10	13	13	15	15	255
	3	2.25	10,200	7,700	13.4	11.7							15	18	20	20	
	4	3.0	13,600	10,200	17.5	15.3							19	23	25	25	
	5	3.75	17,000	12,800	22.0	19.0							24	28	25	30	
	6	4.5	20,500	15,350	26.0	23.0							28	34	30	35	
	8	6.0	27,300	20,500	34.0	30.0							37	44	40	45	
	10	7.5	34,100	25,600	43.0	37.0							47	54	50	60	
VTH243B	3	2.25	10,200	7,700	14.0	12.3	1.4	1/4	10.5	61	2.3	1/4	18	18	20	20	255
	4	3.0	13,600	10,200	18.2	15.9							21	24	25	25	
	5	3.75	17,000	12,800	22.0	20.0							26	28	30	30	
	6	4.5	20,500	15,350	27.0	23.0							30	34	35	35	
	8	6.0	27,300	20,500	35.0	30.0							39	45	45	50	
	10	7.5	34,100	25,600	43.0	38.0							48	55	50	60	

#### IMPORTANT

Heat pump does not operate simultaneously with electric heat

Electrical data in the above table only applies to units manufactured after 8/1/2000 (data code G08). Contact factory for electrical data for units manufactured prior to 8/1/2000. Compressors in these models (after 8/1/2000) do not operate simultaneously with heater elements. Models manufactured before 8/1/2000 (excluding the VTH24 HP) did feature simultaneous operation and therefore had higher circuit ampacities.

#### COOLING PERFORMANCE DATA

Model	Standard Ratings <sup>1</sup>	
	BTU/h	EER
VTH093B	8,350	9.3
VTH123B	11,500	9.6
VTH183B	18,900	9.7
VTH243B	23,100	9.1

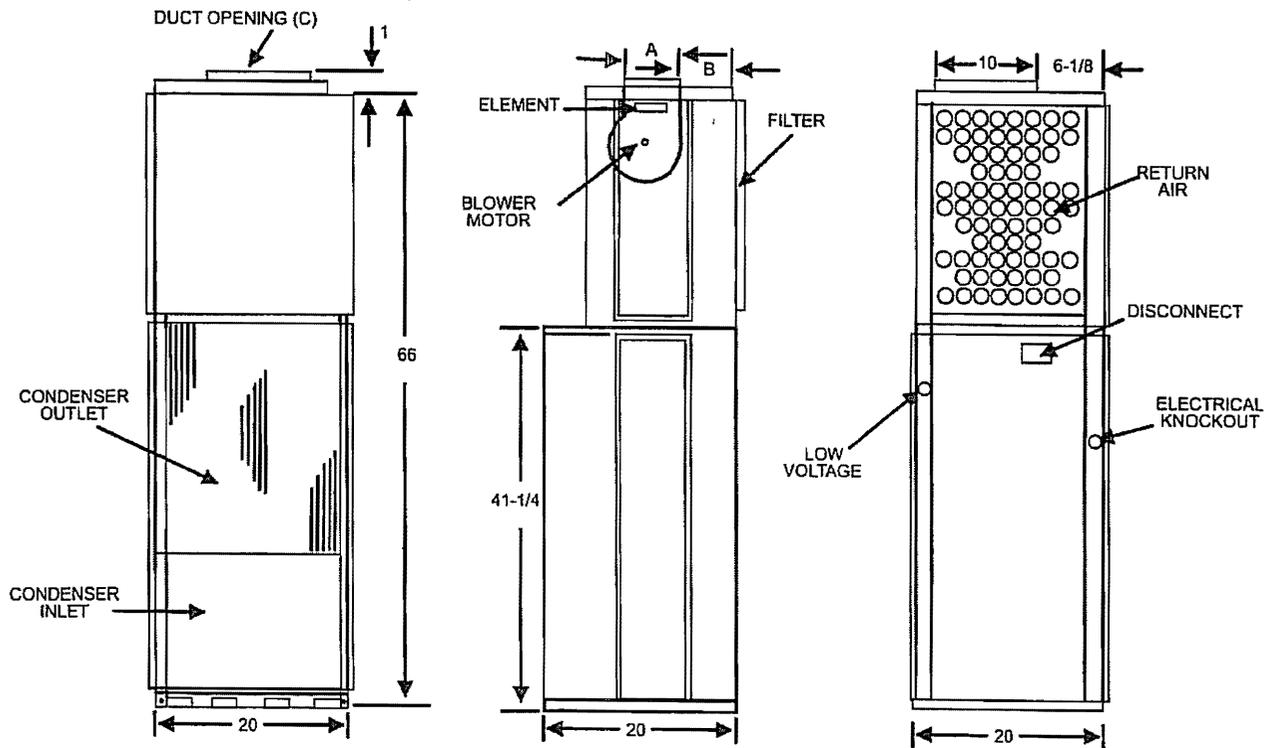
<sup>1</sup> Tested in accordance with ARI Standard 310/380-93 at 95°F DB/75°F WB outdoors and 80°F DB/67°F WB indoors

#### HEATING PERFORMANCE DATA

Model	BTU/h	WATTS	COP
VTH093B	7,600	795	2.8
VTH123B	10,600	1,001	3.1
VTH183B	16,800	1,582	3.11
VTH243B	23,500	1,967	3.5

<sup>1</sup> 47°F DB, 43°F WB Outdoor/70°F DB, 60°F WB Indoor

DIMENSIONAL DATA



	A	B	C
VTC/VTH 09, 12, 18	6½	6½	6½ x 10
VTC/VTH 24	10	3	10 x 10

# SPECIFICATION SHEET

## ACCESSORIES

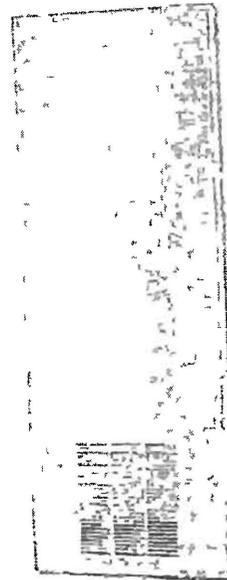
- Wall-mounted Low-voltage Thermostat\***  
 Easily controls the unit. Low-voltage wires exit the left side of the cabinet.  
 \* Available for straight cool/hydronic chassis and heat pump chassis
- Interior Wall Panels**  
 Panels (31" W x 82" H) are available in louvered or non-louvered and are insulated for sound reduction with tamper-proof screws. Louvered panel includes a 20" x 24" x 1" filter. Non-louvered panels require external return air grilles and unit mount filters.
- Unit Mounted Freeze Sensor (UMF01A)**  
 De-energizes the unit when reduced air flow or ice build-up are detected. Re-energizes the unit when normal operating conditions resume.
- Float Switch (FSE306A)\***  
 Opens the condensate pan automatically when water rises in the pan and shuts off the system by breaking low or line voltage current to the compressor. Switch is normally closed. By clipping the float switch to the side of the auxiliary drain pan, ceiling water damage is prevented. In some areas, this switch can replace an auxiliary drain pan. Local building codes should be checked for application.  
 Note: The float switch must be installed before unit is set in the sleeve. \*Applies to hydronic models only.
- Hydronic Flow Control Module (HFC01A)\***  
 Regulates the amount of hot water heat to the unit.  
 \*Applies to hydronic models only.

Wall sleeve, wall panel, filter, and thermostat are required for each installation.

WTSC3363	Straight Cool/ Hydronic Chassis	Digital cool - off - heat, auto on
WTHP600	Heat Pump Chassis	Digital cool - off - heat, auto - on

LWP01A	Louvered
NLWP01A	Non-louvered

Louver rough-in dimensions are 27 $\frac{7}{8}$ " (w) x 78 $\frac{3}{8}$ " (h)



Louvered Interior Wall Panel  
8 to 10 $\frac{1}{4}$  Frame

ACCESSORIES (CONT.)

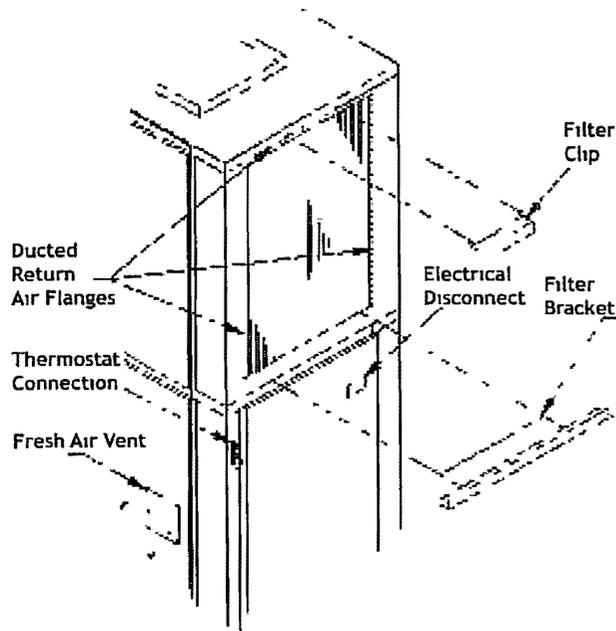


Figure 5—Filter Bracket Detail

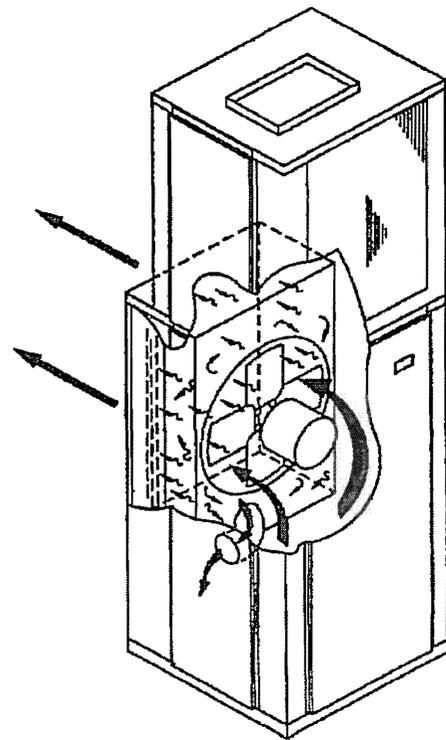


Figure 6

OUTDOOR AIR VENTILATION

One end of a 4" aluminum vent pipe is connected to the condenser venturi and the other end is connected to the side of the VTC/VTH cabinet. A mesh screen is installed inside the vent pipe, and a metal plate on the side of the cabinet covers the opening of the vent pipe. Up to 50 CFM of outside air is introduced into the equipment closet by removing the metal cover plate. The outside air then mixes with the return air and is pulled through the evaporator coil and into the supply duct. The cover plate can be re-installed to partially close the outside air opening if less than 50 CFM is desired. An external source of negative pressure (i.e., a bathroom fan) could be used to introduce more than 50 CFM of outside air. Consult with factory for further details.

**Note.** It is suggested that a minimum 24" door be used for access. Closet interior may be smaller than listed here as long as the door opening allows for removing the unit. Door opening must line up with unit to allow removal.

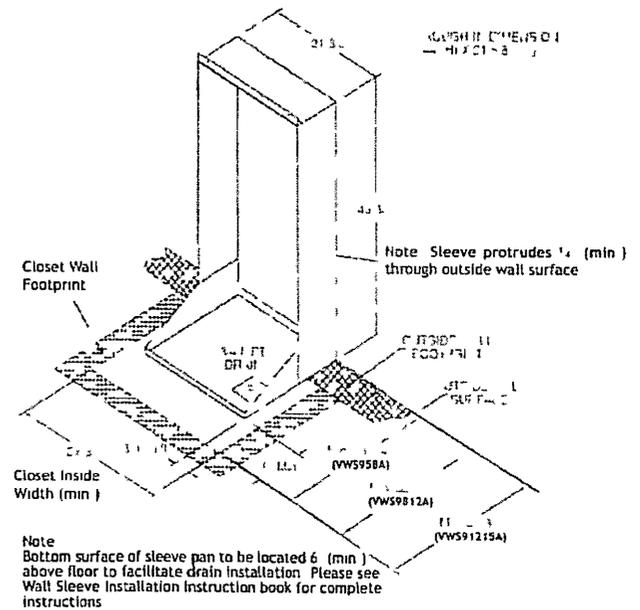
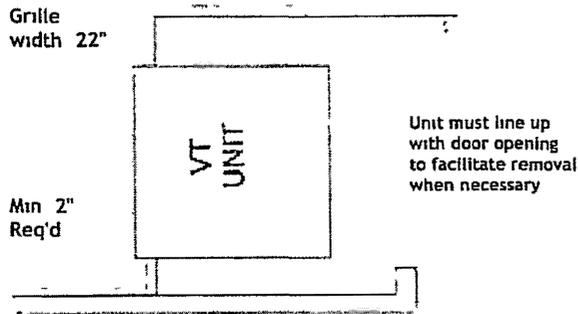


Figure 7

# SPECIFICATION SHEET

## INSTALLATION

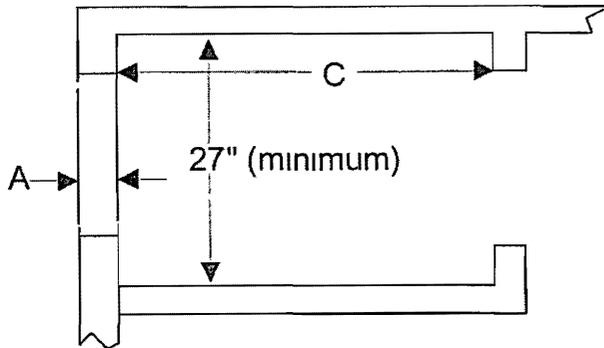
### REAR INSTALLATION



#### Notes:

- 1 Sleeve rough-in opening is 44" (H) x 21-5/8" (W)
- 2 Bottom of opening should be approximately 6" above floor level
- 3 Minimum 3" clearance is required on all sides of the unit

### REAR INSTALLATION—CLOSET DIMENSIONS



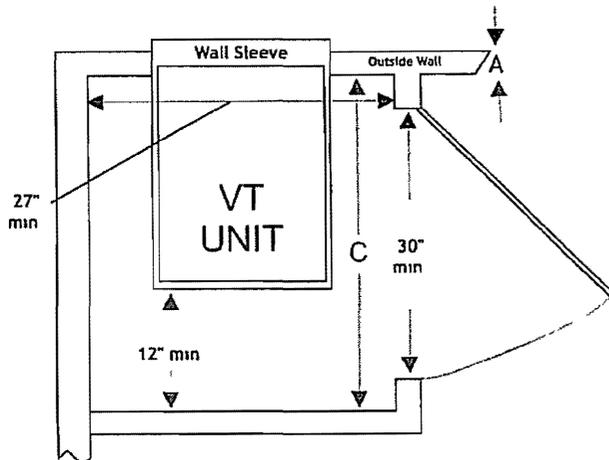
#### Instructions:

To find the minimum closet depth (dimension "C"), use the following method

Determine dimension "A" which is the total finished wall thickness

- \* For 5"-8" outside wall thickness, subtract "A" from 29" ( $C = 29 - "A"$ )
- \* For 8"-12" outside wall thickness, subtract "A" from 33" ( $C = 33 - "A"$ )
- \* For 12"-15" outside wall thickness, subtract "A" from 36" ( $C = 36 - "A"$ )

### SIDE INSTALLATION—CLOSET DIMENSIONS



#### Instructions

To find the minimum closet depth (dimension "C"), use the following method

Determine dimension "A", which is the total finished wall thickness

- \* For 5"-8" outside wall thickness, subtract "A" from 39" ( $C = 39 - "A"$ )
- \* For 8"-12" outside wall thickness, subtract "A" from 43" ( $C = 43 - "A"$ )
- \* For 12"-15" outside wall thickness, subtract "A" from 46" ( $C = 46 - "A"$ )

## GUIDE SPECIFICATIONS

**Ratings** - Each unit must meet the following specifications

ARI rating of \_\_\_\_\_ BTU/h cooling (and \_\_\_\_\_ BTU/h reverse cycle heating with a COP of \_\_\_\_\_ at 47 ° F O D )

Electric resistance heat of \_\_\_\_\_ BTU/h Total Amp draw must be of \_\_\_\_\_ and \_\_\_\_\_ Watts at \_\_\_\_\_ volts

The EER must be a minimum of \_\_\_\_\_ EER

**Unit Chassis** - Each unit must be slide-out design, ready for installation into closet space. Unit must fit into closet space not to exceed 24" x 24" with overhead duct connections designed to .25 ESP. Unit must be tested for conformance to ASTM E water infiltration specification ASTM E 331-86, which ensures no water infiltration when tested at 8' rain per hour at 63 mph wind for 15 min.

**Filter** - Filter provided with the unit. Installer must provide for easy accessibility.

**Heat Pumps** - Each unit must include a changeover thermostat that senses an outside coil switch-over temperature of 25° F, lock-open refrigerant-reversing valve during heat pump operation, temperature-activated defrost drain and automatic emergency heat operation to override the heat pump's change-over thermostat and bring on electric resistance heaters in the event of a sealed-system failure.

**Compressor** - The compressor must be hermetically sealed, internally isolated, rotary-type and permanently mounted on rubber isolators. No removal or adjustment of compressor hold-down bolts is to be required during installation.

**Unit Controls** - The unit must be controlled by a thermostat. Other unit controls must include a concealed ventilation control to allow the introduction of filtered air into the room, a concealed fan mode switch to allow the owner to preset for either continuous fan or thermostatically cycled fan operation. Additionally, the following controls are to be included as standard on all units:

- Compressor restart delay
- Random restart circuit
- Front desk control
- Evaporator coil freeze protection
- Fan delay
- Low ambient lock-out

**Evaporator/Condenser Fans** - Direct drive with a permanent split capacitor, two-speed motor. Must have a condenser fan and separate indoor evaporator motor. Condenser fan must be propeller type and evaporator fan must be blower type.

**Coils** - Unit's coils must have copper tubing expanded into rippled-edge louvered aluminum fins.

**Discharge and Return Air** - A unit must be able to discharge air through an overhead duct system with an external static pressure capability of 0.35" for 9,000 and 12,000 unit sizes and 0.40" for 18,000 and 24,000 unit sizes. The return air must be capable of a free return at the unit or a ducted return.

**Warranty** - Limited One-Year Warranty, Second-through Fifth-Year Limited Replacement Compressor Warranty.

**The Wall Sleeve** - The wall sleeve must be of industry-accepted dimensions from 21" [d] to 28" [d] (dependent upon wall width, from 5" to 15") x 22" [w] x 44" [h] and constructed of insulated galvanized steel for corrosion resistance. Sleeve must be shipped with weather-resistant rear closure panel installed.

**Condensate Drain** - The unit must have a condensate draining system. A vertical pipe connection in the base pan is connected to the evaporator drain pan via a drain line. Condensate passes from the unit to a catch tray, located in the wall sleeve, and exits the sleeve through a 3/4" male NPT fitting. (This allows piping to be done during construction stage.)

The unit must also have a secondary condensate draining system for overflow. If the primary condensate draining system becomes clogged, water will be directed from the catch tray, through the sleeve, to the outside of the building. Any external water source (rain, sleet, etc.) entering the sleeve will also be diverted to the building's exterior.

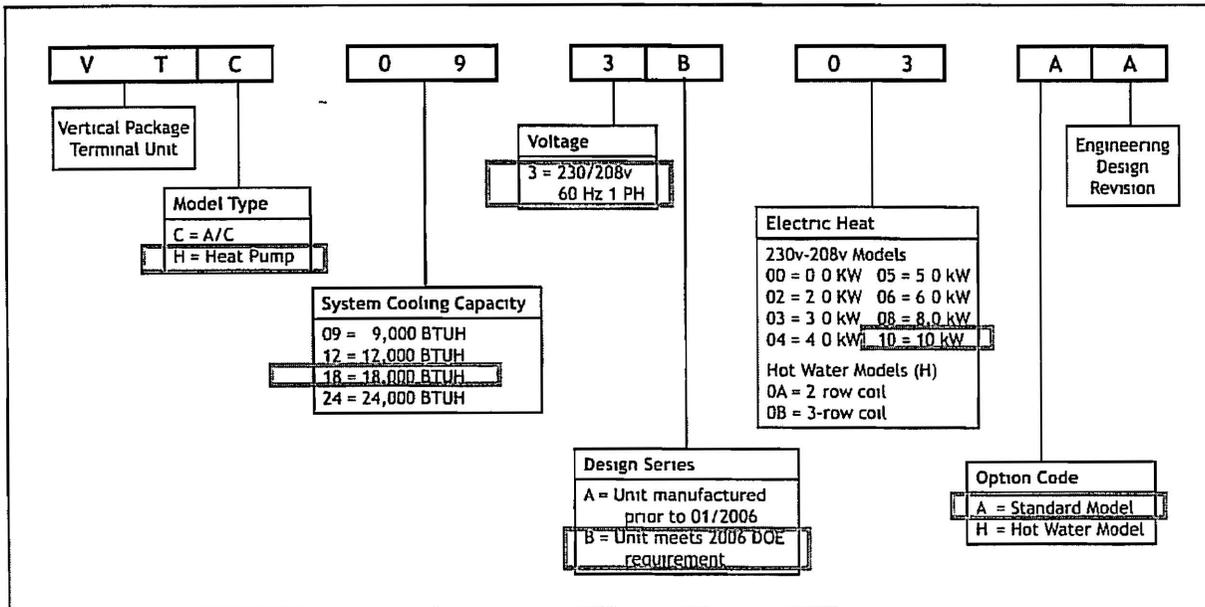
**Outdoor Grilles** - Must be architecturally extruded and made of anodized aluminum (AGKY\*\*\*A). All other grilles must be submitted to our company for feasibility, airflow characteristics and compliance with U.L. regulations, where necessary.

**Hydronic Heat Units** - Required for heating functions instead of electric resistance heaters. Unit must retain complete service access with the kit installed. Proper water or steam valves must be used, however, they are not included with the Hydronic Heat Unit.

**Thermostats** - A manual, auto-changeover or programmable thermostat must be installed to provide full remote operation of the chassis.

# SPECIFICATION SHEET

## NOMENCLATURE



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(PKA-A30FA MODEL SHOWN)

INVERTER



# PKA COOLING-ONLY

## P-SERIES Specifications

GA/FA = Wired controller  
GAL/FAL = Wireless controller  
BS = Seacoast Protection

Model Name	Indoor Unit		PKA-A12GA	PKA-A16GA	PKA-A24FA	PKA-A30FA	PKA-A36FA	
	Outdoor Unit		PUY-A12NHA	PUY-A16NHA	PUY-A24NHA	PUY-A30NHA	PUY-A36NHA	
			PKA-A12GAL	PKA-A16GAL	PKA-A24FAL	PKA-A30FAL	PKA-A36FAL	
			PUY-A12NHA-1S	PUY-A16NHA-1S	PUY-A24NHA-1S	PUY-A30NHA-1S	PUY-A36NHA-1S	
Cooling *1	Rated Capacity	Btu/h	12,000	18,000	24,000	30,000	34,200	
	Capacity Range	Btu/h	6,000-12,000	8,000-18,000	12,000-24,000	12,000-30,000	12,000-34,200	
	Total Input	W	1,210	2,240	2,650	4,400	5,030	
	Energy Efficiency	SEER	13.8	14.1	13.5	13.0	13.1	
	Moisture Removal	Pints/h	1.5	4.8	4.7	8.1	7.1	
	Sensible Heat Factor		0.86	0.70	0.78	0.70	0.77	
Power Supply	Phase, Cycle, Voltage		1 Phase, 60Hz, 208/230V *2					
Voltage	Indoor - Outdoor S1-S2		AC 208-230V					
	Indoor - Outdoor S2-S3		DC24V					
	Indoor - Remote Controller		DC12V Wired Type (GA/FA)					
	Indoor - Remote Controller		Wireless Type (GAL/FAL)					
Indoor Unit	MCA	A	1					
	Fan Motor	F.L.A.	0.33		0.43		0.52	
	Fan Motor Output	W	30		45		70	
	Airflow (Lo-M1-M2-Hi) or (Lo-Hi)	DRY (CFM)	320-350-390-425			530-705		780-990
		WET (CFM)	290-315-350-380			480-635		700-890
	Sound Pressure Level (Lo-M1-M2-Hi) or (Lo-Hi)	dB(A)	36-38-41-43			39-45		46-49
	External Finish Color		Munsell No 0 70Y 8 59/0 97			Munsell No 3 4Y 7 7/0 B		
	Dimension Unit	W In	39			55-1/8		66 1/8
		D In	9-1/4					
		H In	13-3/8					
Weight Unit	Lbs	35		53		62		
Field Drainpipe Size I D	In	13/16						
Outdoor Unit	MCA	A	13		18		25	
	MOCP	A	15		20		30	
	Fan Motor	F.L.A.	0.35		0.75		0.75	
	Fan Motor Output	W	40		75		75	
	Compressor	Model (Type)		DC INVERTER driven Twin Rotary				
		R.L.A.		12				
		L.R.A.		14		17.5		17.5
	Airflow	CFM	1,200			1,940		
	Refrigerant Control		Linear Expansion Valve					
	Sound Pressure Level (Cooling) *1	dB(A)	46			48		
	External Finish Color		Munsell No 3Y 7 8/1 1					
	Dimensions	W In	31-1/2			37-3/8		
		D In	13 + 7/8			13 + 1-3/16		
H In		23-5/8			37-1/8			
Weight	Lbs	90		97		163		
Remote Controller	Type		GA/FA = Wired, GAL/FAL = Wireless (Located with Indoor Unit)					
Refrigerant	Type		R410A					
	Charge	Lbs Oz	2, 14		3, 12		6	
	Oil	Type (Fl Oz)	MEL56 (20)			MEL56 (28)		
Refrigerant Pipe	Gas Side O D	In	1/2			5/8		
	Liquid Side O D	In	1/4			3/8		
	Height Difference (Max)	Ft	100					
	Length (Max)	Ft	100			165		
Connection Method	Indoor/Outdoor		Flared/Flared					

NOTES Test conditions are based on ARI 210/240

\*1 Rating conditions (cooling) Indoor D B 80° F (27° C), W B 67° F (19° C), Outdoor D B 95° F (35° C) W B 75° F (24° C)

\*2 Indoor units receive power from outdoor units through field-supplied Interconnected wiring

Specifications are subject to change without notice

LIMITED WARRANTY | Six-year warranty on compressor One-year warranty on parts

**Tag Data - Split System Air Conditioning Units (Small) (Qty: 1)**

Item	Tag(s)	Qty	Description	Model Number
B1	HP-1-5	1	1 - 6 Ton Unitary Split Systems ( SSC )	4TWB3060A1000-4TEH3F60B1000-0----00000--0

**Product Data - Split System Air Conditioning Units (Small)**

Item B1 Qty 1 Tag(s) HP-1-5  
 4TWB3 Heat Pump Outdoor Unit  
 5 Ton - Nominal Cooling Capacity  
 200 - 230 Volt 1 Phase 60 Hertz  
 1 5-5 Ton AH fully convertible R410  
 High efficiency  
 Non-bleed TXV  
 5 Ton nominal  
 200-230/1/60  
 Evaporator defrost control (Fld)  
 14 42/19 20 kW Electric Htr w/Ckt Brk for 208/240V 1 Phase 60 Hz (Fld)

**Performance Data - Split System Air Conditioning Units (Small)**

Tags	HP-1-5
Design clg EDB (F)	80 00
Design clg EWB (F)	64 00
Design clg outdoor DB (F)	95 00
Capacity @ ARI (Btuh)	56000 00
Clg net total capacity (Btuh)	54243 00
Clg net sensible capacity (Btuh)	45453 00
Clg net latent capacity (Btuh)	8789 00
Calc clg LDB (F)	56 20
Calc clg LWB (F)	53 40
SEER @ ARI (btuh/watt)	13 00
EER @ ARI (EER)	10 5
Cooling airflow (cfm)	1800
Min system airflow clg (cfm)	1750
Max system airflow clg (cfm)	2250
Min system airflow htg (cfm)	1750
Max system airflow htg (cfm)	2250
ARI airflow (cfm)	1680
ARI reference number ( )	1141735
Htg outdoor DB (F)	20 00
Heating airflow (cfm)	1800
Heating capacity @ 47F (Btuh)	57500 00
COP @ 47F ODDB (COP)	3 36
COP @ 17F ODDB (COP)	2 54
Heating capacity @ 17F (Btuh)	35000 00
HSPF (btuh/watt)	8 00
Heating EDB (F)	70 00
Htg system net capacity (Btuh)	36803 00
Htg system LDB (F)	88 90
Electric heat capacity @ 208 Volts (Btuh)	49200 00
Electric heat capacity @ 240 Volts (Btuh)	65500 00

**Tag Data - Split System Air Conditioning Units (Large) (Qty. 1)**

Item	Tag(s)	Qty	Description	Model Number
A1	HP-1-6	1	7 1/2 - 20 Ton Unitary Split Systems (	TWA0900400--TWE090A300

**Product Data - Split System Air Conditioning Units (Large)**

Item A1 Qty. 1 Tag(s) HP-1-6  
 TWA Heat Pump Outdoor Unit  
 7 1/2 Ton Nominal Cooling Capacity  
 Single Compressor - R-22  
 460 Volt 3 Phase 60 Hertz  
 TWE Air Handler Unit  
 7 1/2 Ton Nominal Cooling Capacity  
 Single Refrigerant Circuit - R22  
 208-230 Volt 3 Phase 60 Hertz  
 34 88 kw (460 volt 60 cycle) 3 phase heater (Fld)

**Performance Data - Split System Air Conditioning Units (Large)**

Tags	HP-1-6
MCA - heat pump (A)	18 10
MOP - heat pump (A)	25 00
Total power - heat (kW)	7 08
COP (COP)	2 36
Min H P operating weight (lb)	343 0
Max H P operating weight (lb)	387 0
Condensing unit type	Heat pump unit
Airflow (cfm)	2400
Cooling EDB (F)	80 00
Cooling EWB (F)	64 00
Ambient (F)	95 00
Relative humidity (%)	41 56
Heating EAT (F)	70 00
Heating ambient WB (F)	17 82
Heating ambient RH (%)	70 00
Heating ambient DB (F)	20 00
Gross total capacity (MBh)	82 01
Gross sensible capacity (MBh)	65 66
Latent capacity (MBh)	16 34
Net total capacity (MBh)	78 70
Net sensible capacity (MBh)	62 36
Cooling LDB (F)	56 40
Cooling LWB (F)	52 78
Saturated suction temp (F)	41 10
Discharge temperature (F)	119 70
Gross heating capacity (MBh)	54 37
Net heating capacity (MBh)	57 03
Heating LAT (F)	91 65
Heating delta T (F)	21 65
Electric Heat Capacity (MBh)	119 12
Electric heat delta T (F)	45 70
Line length - actual (ft)	50 00
Cond location to A H	Above air handler
Vertical rise (ft)	15 00
Suction line size od (per circuit)	1-3/8 in
Liquid line size od (per circuit)	1/2 in
Est refrig chrg / circuit (lb)	18 7
Solenoid valve part #	N/A
Sight glass part #	GLS00853

Tags	HP-1-6
Metering device	Expansion valve
External Static Pressure (in H2O)	1 00
External plus component static pressure (in H2O)	1 00
Oversized motor to be field installed	No
Indoor mtr operating power (bhp)	1 05
Indoor motor RPM (rpm)	811
Field applied voltage	460/3/60
MCA - A H (A)	56 00
MOP - A H (A)	60 00
MCA - A H for 230V w/elect heat (A)	0 00
MOP - A H for 230V w/elect heat (A)	0 00
Evaporator motor FLA (A)	2 50
Evaporator face area (sq ft)	8 07
Evaporator face velocity (ft/min)	297
Evaporator fin spacing (Each)	144 00
Evaporator rows (Each)	3 00
Indoor motor power (kW)	0 96
Outdoor motor power (kW)	0 54
Compressor power (kW)	7 10
Total power (kW)	8 59
EER @ ARI (with air handler) (EER)	10 1
EER @ ARI (cond unit only) (EER)	10 1
IPLV (system) (IPLV)	0 0
IPLV (cond unit only) (IPLV)	0 0
Compressor 1 RLA (A)	13 20
Compressor 2 RLA (A)	0 00
Condenser motor 1 FLA (A)	1 60
Condenser motor 2 FLA (A)	0 00
Min A H operating weight (lb)	317 0
Max A H operating weight (lb)	586 0
Fan motor heat (MBh)	3 31
Field supplied low static drive	Not required

# SUBMITTAL SHEET



SYSTEM INDOOR/OUTDOOR  
**26UH72R UH2672R/CH2672R**  
 CONCEALED DUCT HEAT PUMP

General Data (AT 230V)				Performance Data @ ARI Standard Conditions (230/208V)			
<b>POWER</b>				<b>COOLING</b>			
	(V/PH/Hz)	230/206 / 1 / 60		Total Capacity	(BTU/H)	24 000 [9 500-24 000]	
Circuit Ampacity Min	(A)	15	- 30	Sensible Capacity	(BTU/H)	14 390	
Fuse Size Max	(A)	15	- 30	Latent Capacity	(BTU/H)	9 610	
<b>COMPRESSOR</b>				<b>SEER</b>			
		DC Rotary				14	
No used		1		Dehumidification	(Pints/H)	7.7	
R L Amps	L R Amps (A)	12.9	- 17.5	Amps	(A)	13.6	/ 15.0
Crankcase Heater	(W)	-		Power Inputs	(W)	2,600	/ 2 600
<b>OUTDOOR UNIT</b>				<b>Outdoor Sound Rating</b>			
					(bels)	49	
Fan Type		Propeller		<b>HEATING</b>			
Dia (in) - No used		18-7/64 - 1		Total Capacity	(BTU/H)	28 600 [8 000-28 600]	
Type Drive	No speeds	Direct - Inverter		HSPF		9.7	
No Poles	(RPM)	8 - 800		Amps	(A)	12.5	/ 13.8
No Motors	(W)	1 - 90		Max Amps	(A)	12.5	/ 13.8
CFM	(High)	1765		Power Inputs	(W)	2 400	/ 2 400
F L Amps	(A)	13.8		Back up Strip Heater	(kW)	0.00	/ 0.00
Coil Type		Aluminum Fin & Copper Pipe		Outdoor Sound Rating	(bels)	49	
Fin Type - Pipe Type		Slit Plate - Inner Ruffled		<b>FEATURE</b>			
Rows - FPI		1 - 15.9		Controls		Microprocessor	
Face Area	(sq ft)	7.26		Remote Controller		Optional (Wired or Wireless)	
Tube Size	(in)	3/8"		Temperature Control		IC Thermostat	
<b>INDOOR UNIT</b>				Timer		ON/OFF 72hours	
Fan - Type		Centrifugal		Night Setback		-	
Dia & Length (in) - No used		5 29/32 - 2		Air Louver	(Horizontal)	Manual	
No Speeds		3 & Auto			(Vertical)	Automatic	
No Poles	(RPM High)	4 - 920		Power Failure Automatic Restart		Built in	
No Motors	(W)	1 - 70		Heating/Cooling Automatic Changeover		Built in	
CFM	(Hi/Me/Lo)	670 / 530 / 460		Self Diagnosis		Built in	
F L Amps	(A)	0.9		<b>OPTION</b>			
Coil Type		Aluminum Fin & Copper Pipe		Refrigerant Line Set		AP3010BH	
Fin Type - Pipe Type		Slit Plate - Inner Ruffled				AP3015BH	
Rows - FPI		3 - 14.9		Remote Controller		RCS SH80UA WL	
Face Area	(sq ft)	2.03				RCS BH80UA WL	
Tube Size	(inch)	9/32		Fresh Air Intake		RCS TM80BG	
Drain Connection Size	(in)	Max. head 2 33/64 in. above drain connection (1 17/64)		Condensate Drain Pump		SI1730-2	
<b>REFRIGERANT</b>				<b>OPERATING RANGE</b>			
Lbs - R410A (outdoor unit)		R410A		Cooling	Maximum	Indoor Air Intake Temp	Outdoor Air Intake Temp
Control		Electric Expansion Valve				95F DB / 71F WB	109F DB
Connection		Flare		Minimum		67F DB / 57F WB	0F DB
Line Length Max	(ft.)	165		Heating	Maximum	80 F DB / 67 F WB	75 F DB / 65 F WB
Lift Difference Max	(ft.)	50(Outdoor lower) 100(Outdoor higher)				Minimum	
Line Size	(in O D Discharge)	3/8		<b>CERTIFICATION</b>			
Line Size	(in O D Suction)	5/8"		  			
<b>DIMENSIONS</b>							
Indoor Unit	(in)	H	x	W	x	D	
	Uncrated	12-7/32	x	39-3/8	x	24-13/16	
Outdoor Unit	Crated	14-3/32	x	46-7/8	x	30-13/16	
	Uncrated	30 23/32	x	37	x	13 3/8	
	Crated	34 31/32	x	39 31/32	x	16- 3/32	
<b>WEIGHT</b>							
Net	(lbs)	Indoor	Outdoor				
Shipping	(lbs)	71	128				
<b>SHIPPING VOLUME</b>							
	(cu ft)	Indoor	Outdoor				
		11.8	13.0				

# 1 - 6 Ton Unitary Split Systems

## Job Information

PAE - Pearl Family Housing Heat Pump Portland OR (D70)Matt O'Banion			
Taa	<b>SSC-1</b>	Quantity	<b>1</b>
Model number	<b>4TWB3036A1000-4TEH3F36B1000-0-000-0-0</b>		

## Heat Pump Information

Heat pump units	<b>4TWB3</b>	Heat pump electrical characteristics	<b>200/230/1/60</b>
Heat pump nominal capacity	<b>036</b>		

## Air Handler Information

1 5 - 5 Ton air handler units	<b>4TEH</b>	Air handler electrical characteristics	<b>1</b>
Nominal capacity	<b>F36</b>	Air handler refrigerant control	<b>3</b>

## Cooling Information

Cooling EDB	<b>80 00 F</b>	Clg net latent capacity	<b>6209 00 Btuh</b>
Cooling EWB	<b>64 00 F</b>	Calc clg LDB	<b>55 70 F</b>
Cooling outdoor DB	<b>95 00 F</b>	Calc clg LWB	<b>52 80 F</b>
Cooling airflow	<b>1050 cfm</b>	Capacity @ ARI	<b>36000 00 Btuh</b>
Clg net total capacity	<b>33295 00 Btuh</b>	EER @ ARI	<b>11 2 EER</b>
Clg net sensible capacity	<b>27086 00 Btuh</b>	SEER @ ARI	<b>14 00 btuh/watt</b>

## Heating Information

Heating EDB	<b>60 00 F</b>	Heating capacity @ 47F	<b>34000 00 Btuh</b>
Hta outdoor DB	<b>47 00 F</b>	Heating capacity @ 17F	<b>20400 00 Btuh</b>
Heating airflow	<b>1050 cfm</b>	HSPF	<b>8 00 btuh/watt</b>
Hta system net capacity	<b>34155 00 Btuh</b>	COP @ 47F ODDB	<b>3 48 COP</b>
Hta system LDB	<b>90 10 F</b>	COP @ 17F ODDB	<b>2 42 COP</b>