



MECHANICAL PERMIT APPLICATION
 City of Portland, Oregon - Bureau of Development Services
 1000 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7363 • TTY 503-823-6868 • www.portlandoregon.gov/bds

OK TO ISSUE WILL 2 Scott 1
 Jeff Ball 2
 Wes
 This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.

Type of work
 New construction
 Addition/alteration/replacement
 Demolition
 Other:

Category of construction
 1 & 2 family dwelling
 Commercial/industrial
 Multifamily
 Master builder
 Accessory building
 Other:

Job site information and location
 Job no.: 3871 Job address: 700 SW 5TH
 City/State/ZIP: PORTLAND OR 97204
 Suite/bldg./apt. no.: 2065 Project name: LOUIS VUITTON
 Cross street/directions to job site:
 Subdivision: 5-TON Lot no. Tax map/parcel no.

Description of work (example: upstairs bath fan/dryer exhaust)
 REPLACE WATER SOURCE HEAT PUMP, RE-USE WATER LINES, NETWORK AND CONTROLS

Reference RS / Combination Permit no.
 Property owner Tenant
 Name: LOUIS VUITTON
 Address: 700 SW 5TH SUITE 2065
 City/State/ZIP: PORTLAND OR 97204
 Phone: 503-226-3277 FAX: 503-226-3281
 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: ARROW MECHANICAL
 Address: 10330 SW TUALATIN RD
 City/State/ZIP: TUALATIN OR 97062
 Phone: 503-692-1565 FAX: 503-691-1879
 Lic. no. 2476 CCB lic. no. 5193
 Authorized signature: DEREK WEAVER Date: 3/7/2012
 Applicant Contact Person
 Business name: ARROW MECHANICAL
 Contact name: JEFF MELADY 3477917
 Address: 10330 SW TUALATIN RD
 City/State/ZIP: TUALATIN OR 97062
 Phone: 503-692-1565 FAX: 503-691-1879
 E-mail:

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: \$ 5438.00

Residential Equipment / Systems Fees
 For special information use checklist

Description	Qty.	Fee	Total
Heating / cooling			
Air conditioner (site plan required)		\$ 23	
Furnace / burner including duct work / vent / liner		\$ 48	
Heat pump (site plan required)		\$ 45	
Air handling unit		\$ 23	
Hydronic hot water system		\$ 28	
Residential boiler (radiator or hydronic) includes piping		\$ 28	
Unit heaters (fuel type, not electric) in-wall, in-duct, suspended, etc.		\$ 2	
Vent for appliance other than furnace		\$ 1	
Alteration of existing HVAC system		\$ 2	
Other fuel appliances			
Decorative gas fireplace		\$ 23	
Flue vent for water heater or gas fireplace		\$ 1	
Wood / pellet stove		\$ 50	
Gas or wood fireplace / insert		\$ 1	
Chimney / liner / flue / vent		\$ 1	
Other:			
Environmental exhaust and ventilation			
Range hood / other kitchen equipment			
Clothes dryer exhaust			
Single-duct exhaust (bathrooms, toilet compartments, utility rooms)		\$ 12	
Attic / crawl space fans		\$	
Other:		\$	
Gas fuel piping			
\$13 for the first four, \$2.38 for each additional. Please indicate number of fuel gas piping outlets below:			
Furnace, etc.			
Gas heat pump			
Wall / suspended / unit heater			
Water heater / boiler			
Fireplace			
Range			
Barbecue			
Clothes dryer			
Other:			
Other appliances			
Including oil tanks, gas and diesel generators, gas and electric kilns, gas appliances / equipment not included above			
		\$ 28	
Mechanical permit fees			
			Subtotal
			Minimum permit fee (\$70)
			Commercial plan review (60% of permit fee)
			State surcharge (12% of permit fee)
			TOTAL PERMIT FEE

12-119941-FA
 BEST MAKE

RS Permit/No Fees Due

Sub-contractor information can be faxed to 503-823-7693.

City of Portland
 REVIEWED FOR CODE COMPLIANCE
 JUL 25 2012
 12-119941-FA
 Permit Number

insp_permitapp_mechanical 09/15/10
 B1

OID UNIT

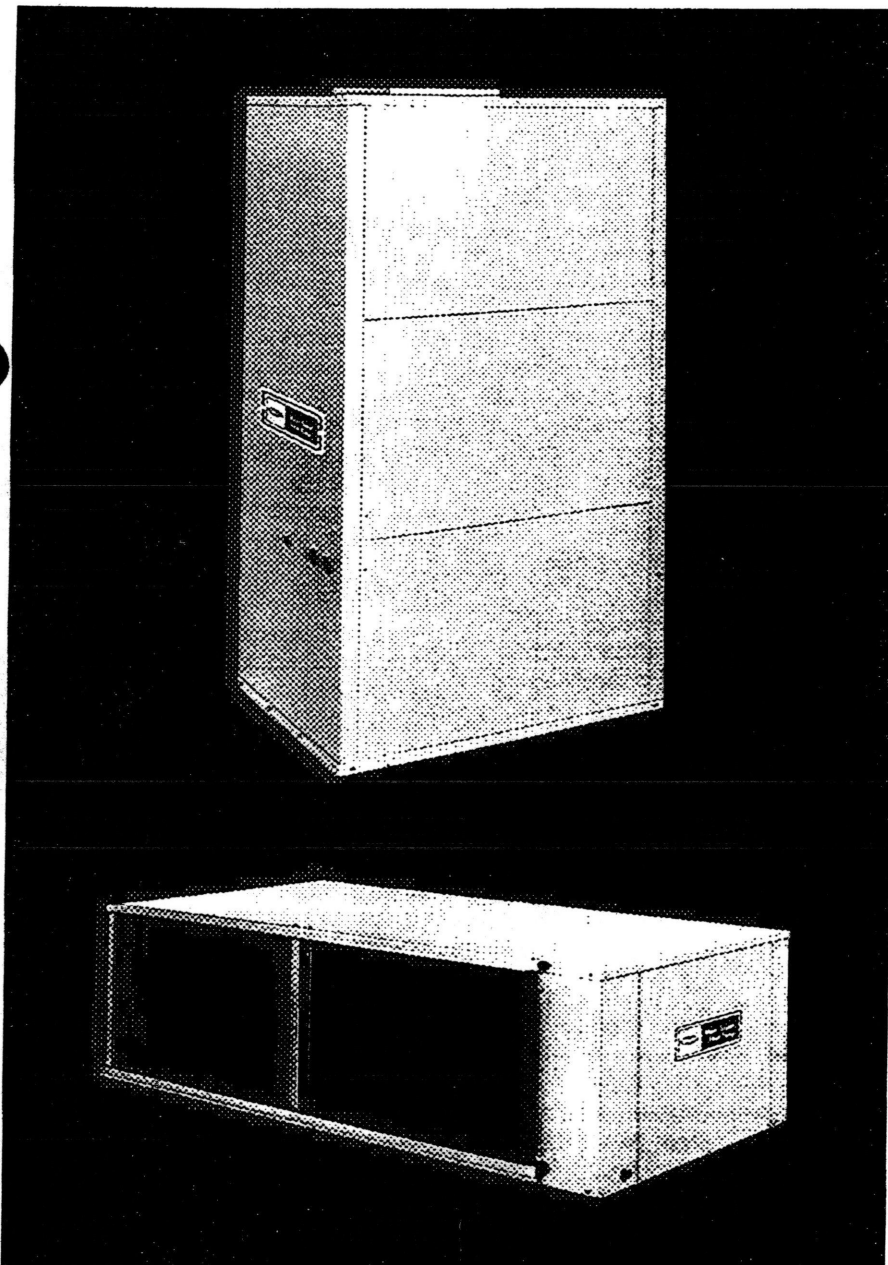


Product Data

**50HQA, HQD, HQK, HQN,
VQA, VQD, VQK, VQN**
**Horizontal and Vertical
Standard, Low-Temperature, and
Cooling Only**

Water Source Heat Pumps

Horizontal — ½ to 10 Nominal Tons
Vertical — ¾ to 25 Nominal Tons



Single-Package Horizontally and Vertically Mounted Water Source Heat Pumps with WeatherSource or WeatherSource E (units up to 5 tons only) unit controls.

- system is designed for high-efficiency year-round cooling and heating
- ideal for schools, offices, apartments, hotels/motels, and condominiums
- utilizes decentralized concept, which allows individual tenant metering, low initial cost, and control flexibility
- choices in heat exchangers allow use in closed-loop or open-loop applications

Features/Benefits

Operating efficiency

The Carrier water source heat pumps (WSHP) are designed for quality and performance excellence over their lifetime. Models offer cooling EERs (Energy Efficiency Ratio) to 12.2, and heating COPs (Coefficient of Performance) to 4.5, which are among the highest in the industry.

Quiet operation

Fan motors and compressors are sound isolated, and the insulated cabinet makes unit operation even quieter.

Design flexibility

The WSHP units are offered in 14 horizontal and 17 vertical sizes and in various voltages to meet individual zone needs efficiently and effectively. Standard range, low temperature, and cooling only units are available to

JUL 25 2012

12-119941-FA

Permit Number

Form 50H,V-3PD

ARI* capacities



HORIZONTAL UNITS

UNIT	COOLING					HEATING				CFM	ESP	GPM	PD
	TC	TSC	THR	KW	EER	TC	THA	KW	COP				
006	7,400	5,280	9,453	.63	11.8	8,800	6,555	.65	4.0	265	.10	1.9	3.3
009	9,800	7,400	12,500	.85	11.6	12,000	9,350	.83	4.2	340	.10	2.5	5.8
012	12,200	8,030	16,000	1.09	11.2	16,200	12,208	1.19	4.0	385	.10	3.2	9.5
015	14,100	11,150	18,610	1.34	10.5	18,800	14,497	1.38	4.0	530	.10	3.8	3.9
019	20,600	15,200	26,500	1.72	12.0	23,600	17,728	1.78	3.9	650	.10	5.3	9.0
024	23,400	17,600	30,000	1.92	12.2	30,000	23,400	1.96	4.5	800	.10	6.0	11.3
030	29,000	21,700	37,500	2.47	11.7	39,000	29,250	2.68	4.3	1000	.15	7.5	6.5
036	35,000	26,900	45,600	3.19	11.0	42,500	36,660	3.20	3.9	1250	.15	9.4	9.4
042	41,500	29,500	53,500	3.71	11.2	52,500	40,821	3.85	4.0	1500	.15	10.7	11.7
048	47,500	34,600	62,620	4.32	11.0	57,000	41,974	4.40	3.8	1700	.20	12.4	17.0
060	62,000	46,295	80,919	5.54	11.2	75,000	55,323	5.79	3.8	2000	.20	16.2	17.0
072	70,000	49,975	91,712	6.36	11.0	91,000	67,676	6.84	4.0	2400	.25	18.3	10.2
096	95,000	69,200	123,876	8.64	11.0	114,000	83,948	8.80	3.8	3400	.25	24.8	19.3
120	124,000	91,000	161,838	11.08	11.2	150,000	110,848	11.58	3.8	4000	.30	32.4	23.6

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VERTICAL UNITS

UNIT	COOLING					HEATING				CFM	ESP	GPM	PD
	TC	TSC	THR	KW	EER	TC	THA	KW	COP				
009	9,800	7,400	12,500	.85	11.6	12,000	9,350	.83	4.2	340	.10	2.5	5.8
012	12,200	8,030	16,000	1.09	11.2	16,200	12,208	1.19	4.0	385	.10	3.2	9.5
015	14,100	11,150	18,610	1.34	10.5	18,800	14,497	1.38	4.0	530	.10	3.8	3.9
019	20,600	15,200	26,500	1.72	12.0	23,600	17,728	1.78	3.9	650	.10	5.3	9.0
024	23,400	17,600	30,000	1.92	12.2	30,000	23,400	1.96	4.5	800	.10	6.0	11.3
030	29,000	21,700	37,500	2.47	11.7	39,000	29,250	2.68	4.3	1000	.15	7.5	6.5
036	35,000	26,900	45,600	3.19	11.0	42,500	36,660	3.20	3.9	1250	.15	9.4	9.4
042	41,500	29,500	53,500	3.71	11.2	52,500	40,821	3.85	4.0	1500	.15	10.7	11.7
048	47,500	34,600	62,620	4.32	11.0	57,000	41,974	4.40	3.8	1700	.20	12.4	17.0
060	62,000	46,295	80,919	5.54	11.2	75,000	55,323	5.79	3.8	2000	.20	16.2	17.0
080	77,000	59,700	103,300	7.70	10.0	80,000	55,800	7.10	3.3	2900	.25	20.7	13.9
100	101,000	74,200	130,980	8.78	10.4	109,000	80,315	8.40	3.4	3600	.40	26.8	21.0
120	120,000	90,900	156,000	10.52	10.0	135,000	100,600	10.08	3.5	4100	.30	31.2	26.5
160	154,000	119,400	206,500	15.41	10.0	160,000	111,600	14.20	3.3	5800	.35	41.3	13.9
200	202,000	148,300	262,000	17.56	10.4	218,000	160,600	16.80	3.4	7200	.35	52.4	21.0
240	224,200	169,900	303,600	23.22	10.0	262,000	187,200	21.94	3.5	8200	.40	62.4	27.7
300	274,500	206,800	404,300	38.07	8.6	320,000	215,400	30.68	3.1	9000	.45	83.0	41.6

LEGEND

- CFM — Cubic Feet Per Minute
- COP — Coefficient of Performance
- db — Dry Bulb
- EER — Energy Efficiency Ratio
- ESP — External Static Pressure (in wg)
- GPM — Gallons Per Minute
- PD — Pressure Drop (ft wg)
- TC — Total Capacity (Btuh)
- THA — Total Heat of Absorption (Btuh)
- THR — Total Heat of Rejection (Btuh)
- TSC — Total Sensible Capacity (Btuh)
- W — Total Power Input (Watts)
- wb — Wet Bulb



*Air Conditioning and Refrigeration Institute.

NOTES:

1. Ratings are in accordance with ARI Standard 320-93.
2. Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature, 85 F entering water and 95 F leaving water temperatures.
3. Heating Standard: 70 F db indoor entering-air temperature, and 70 F entering water temperature.

Physical data (horizontal units)



010

BASE UNIT 50HQA,HQD,HQK,HQN	006	009	012	015	019	024	030	036	042	048	060	
NOMINAL CAPACITY (tons)	½	¾	1	1¼	1½	2	2½	3	3½	4	5	
SHIPPING WEIGHT (lb)	HQA HQD	118	118	123	160	180	235	235	235	240	300	357
	HQK HQN	116	116	121	158	178	233	233	233	238	298	355
OPERATING WEIGHT (lb)	HQA HQD	108	108	117	150	173	215	215	225	230	290	347
	HQK HQN	106	106	115	148	171	213	213	223	228	288	345
REFRIGERANT-TO-AIR HEAT EXCHANGER	Aluminum Fins, Copper Tubes											
Face Area (sq ft)	0.97	0.97	0.97	2.22	2.22	2.50	2.50	3.33	3.33	4.17	4.17	
No. of Rows	2	2	2	3	3	3	3	2	3	2	3	
Copper Tube Size (OD in.)	¾											
No. of Fins/in.	11	12	12	12	12	13	13	14	12	14	14	
REFRIGERANT CHARGE R-22/Ckt (oz)	12	17	17	25	32	38	51	36	44	42	82	
NO. OF CIRCUITS	1	1	1	1	1	1	1	1	1	1	1	
HIGH-VOLTAGE BUSHING (in.)	⅞, 1½										⅞	
FAN												
Diameter (in.)	5.5	5.5	6.0	6.0	7.6	9.0	9.0	9.0	9.0	10.0	12.0	
Width (in.)	5.0	5.0	4.0	5.0	7.0	7.0	7.0	7.0	8.0	10.0	10.0	
Motor (hp)	⅓	⅓*	⅓	⅓	⅓	¼	¼	½	½	¾	1	
WATER-TO-REFRIGERANT HEAT EXCHANGER	Steel-Copper or Steel-Cupronickel Tube-in-Tube											
Water Connection (FPT) (in. ...TPI)	½ . 14				¾.. 14				1...11½			
CONDENSATE DRAIN CONNECTION (FPT) (in. ...TPI)	¾...14											
FILTER	1-in. Throwaway (2-in. optional)											
Size (Height x Width) (in.)	10x16			16x22		18x22		20x25		16x20 (2)		

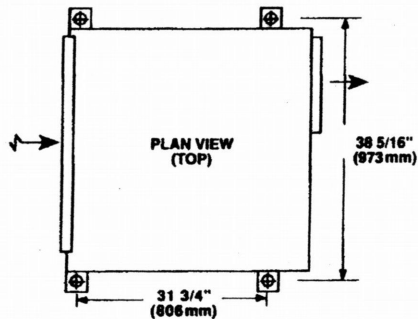
BASE UNIT 50HQA,HQD,HQK,HQN	072	096	120	
NOMINAL CAPACITY (tons)	6	8	10	
SHIPPING WEIGHT (lb)	HQA HQD	635	665	675
	HQK HQN	633	663	673
OPERATING WEIGHT (lb)	HQA HQD	615	645	655
	HQK HQN	613	643	653
REFRIGERANT-TO-AIR HEAT EXCHANGER	Aluminum Fins, Copper Tubes			
Face Area (sq ft)	6.66	8.33	8.33	
No. of Rows	2	2	3	
Copper Tube Size (OD in.)	¾	¾	¾	
No. of Fins/in.	14	14	14	
REFRIGERANT CHARGE R-22/Ckt (oz)	38	46	82	
NO. OF CIRCUITS	2	2	2	
HIGH-VOLTAGE BUSHING (in.)	1¾	1¾	1¾	
FAN				
Diameter (in.)	12.0	10.0	11.0	
Width (in.)	11.0	10.0	15.0	
Motor (hp)	1.5	1.5	2.0	
Range (rpm)	765-1030	1023-1322	1009-1321	
WATER-TO-REFRIGERANT HEAT EXCHANGER	Steel-Copper or Steel-Cupronickel Tube-in-Tube			
Water Connection (FPT) (in. ...TPI)	1¼...11½	1¼...11½	1¼...11½	
CONDENSATE DRAIN CONNECTION (FPT) (in. ...TPI)	¾..14	¾...14	¾...14	
FILTER	1-in. Throwaway (2-in. optional)			
Size (Height x Width) (in.)	20x26½	16x20 (4)	16x20 (4)	

LEGEND

TPI - Threads per inch
 *208/230 v - ⅓ hp, 265 v - ½ hp.

50HQA, HQD, HQK, HQN048, 060

HANGER BRACKET DIMENSIONS

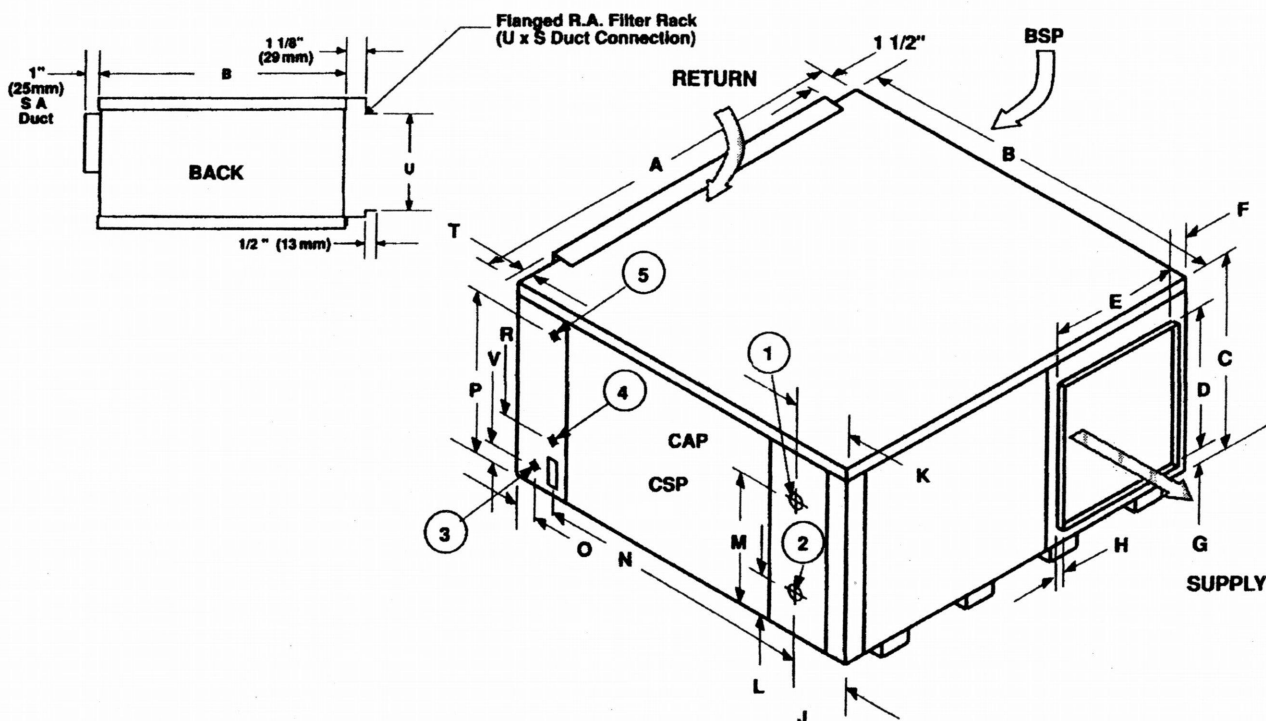


LEGEND

- BSP — Blower Service Panel
- CAP — Control Access Panel
- CSP — Compressor Service Panel
- KO — Knockout
- RA — Return Air
- SA — Supply Air

CONNECTIONS

- ① Water Outlet 1" FPT
- ② Water Inlet 1" FPT
- ③ Condensate Drain 3/4" FPT
- ④ High Voltage Access 7/8" x 1 1/8" DIA. (22 mm x 29 mm DIA.)
- ⑤ Low Voltage Access (Elec-Mech Controls) 1/2" DIA. (13 mm DIA.)



NOTES:

1. Available only in left return and right supply as shown.
2. Return Air Duct Size: 18 1/4" High x 29 3/4" Wide (464 mm High x 756 mm Wide).
3. Nominal Filter Size: 16 x 20 x 1 (406 mm x 508 mm x 25 mm) two required.
4. All side panels are removable.
5. Clearances are 2'-6" on the compressor, control box, and return air sides of the unit.

UNIT	DIMENSIONS																				
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V	
048	in.	36 1/4	36 1/4	21	15	15	1 3/4	2 5/8	1	4 7/8	3 3/8	3 7/8	18	7 1/2	5 3/8	17 1/2	3 1/8	32	1	18 1/4	1 1/2
	mm	921	921	533	381	381	44	67	25	124	86	98	457	191	137	445	79	813	25	464	38
060	in.	36 1/4	36 1/4	21	15	15	1 3/4	2 5/8	1	5 1/8	1 7/8	2 5/8	18 1/2	7 1/2	5 3/8	17 1/2	3 1/8	32	1	18 1/4	1 1/2
	mm	921	921	533	381	381	44	67	25	130	48	67	470	191	137	445	79	813	25	464	38

OLD →

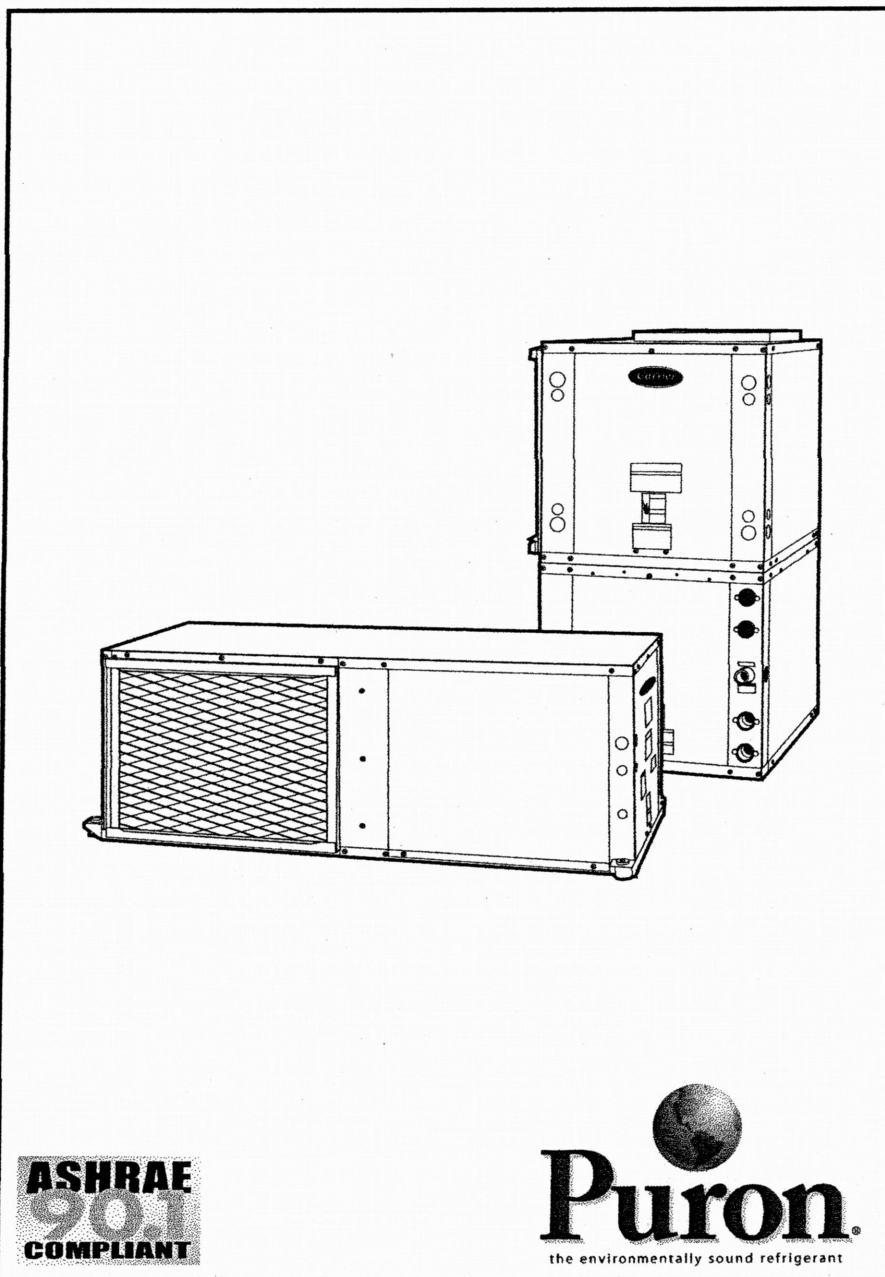
NEW UNIT



Product Data

AQUAZONE™ 50PCH006-060, 50PCV006-060 Compact Water Source Heat Pumps with PURON® Refrigerant (R-410A)

1/2 to 5 Nominal Tons



Single-package horizontally and vertically mounted water source heat pumps (WSHPs) with solid-state controls.

- Compact cabinet design
- Performance certified to AHRI/ISO/ASHRAE 13256-1
- Suitable for geothermal (with extended range option) and boiler/tower use with an operating temperature range of 20 to 120 F
- Three service panels for compressor section
- Meets new ASHRAE 90.1 performance requirements
- Backward compatibility for replacing older units from various manufacturers
- Puron® refrigerant (R-410A)
- Flexible and reliable multiple protocol WSHP Open controller can use BACnet*, Modbus†, and N2 protocols for integrating energy efficiency and precise unit control
- Mute package for quiet operation

Features/Benefits

Carrier's Aquazone WSHPs are an efficient, compact alternative for all boiler/tower and retrofit applications

Operating efficiency

Aquazone WSHP units offer cooling EERs (energy efficiency ratios) to 24.5 and heating COPs (coefficients of performance) to 5.

**ASHRAE
90.1
COMPLIANT**


Puron.
the environmentally sound refrigerant

Physical data



PHYSICAL DATA — 50PCH,PCV UNITS

NGW

50PCH,PCV UNIT	006	009	012	015	018	024	030	036	042	048	060
COMPRESSOR (1 each)	Rotary					Scroll					
REFRIGERANT TYPE	R-410A										
Factory Charge (oz)	17	18.5	23	32	43	43	47	50	70	74	82
FAN MOTOR AND BLOWER	PSC/3										
Fan Motor Type/Speeds											
Fan Motor (hp)											
Blower Wheel Size (Dia x W) (in.)	1/25 5 x 5	1/10 6 x 5	1/6 8 x 7	1/6 8 x 7	1/6 8 x 7	1/4 9 x 7	3/4 9 x 7	1/2 9 x 8	3/4 9 x 8	3/4 10 x 10	1 11 x 10
COAX VOLUME (gal.)	0.123	0.143	0.167	0.286	0.450	0.286	0.323	0.323	0.890	0.738	0.939
WATER CONNECTION SIZE IPT (in.)	1/2					3/4				1	
HORIZONTAL											
Air Coil Dimensions (H x W)(in.)	10 x 15			16 x 22			20 x 25		20 x 35		
Standard Filter - (Qty)	(1) 10 x 18			(1) 16 x 25			(1) 18 x 25		(1) 20 x 28 or (2) 20 x 14		(1) 20 x 24, (1) 20 x 14
1 in. Throwaway											
Weight (lb)											
Operating	103	105	114	153	158	174	182	203	218	263	278
Packaged	113	115	124	158	163	179	187	209	224	270	285
Corner Weight (lb)*											
Left-Front	37	38	42	53	55	62	67	75	81	98	103
Right-Front	24	24	26	36	37	40	41	47	50	60	64
Left-Back	23	23	25	34	35	39	40	44	48	58	61
Right-Back	19	20	21	30	31	33	34	37	39	47	75
VERTICAL											
Air Coil Dimensions (H x W)(in.)	10 x 15			20 x 17.25			24 x 17.75		24 x 28.25		
Standard Filter - (Qty)	(1) 10 x 18			(1) 20 x 20			(1) 24 x 24		(1) 14 x 24, (1) 18 x 24		
1 in. Throwaway											
Weight (lb)											
Operating	103	105	114	153	158	189	197	203	218	263	278
Packaged	113	115	124	158	163	194	202	209	224	270	285

LEGEND

FPT — Female Pipe Thread
PSC — Permanent Split Capacitor

*Front is located at control box end.

NOTE: All units have grommet compressor mountings, and 1/2-in. and 3/4-in. electrical knockouts.

Options and accessories

ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
Aquazone™ System Control Panel		X
Aquazone Thermostats		X
Ball Valves		X
Cupronickel Heat Exchangers	X	
Deluxe D Control System	X	
E-Coated Airside Coil	X	
Extended Range Units	X	
Filter Rack		X
Full Filter Frame		X
Fire-Rated Hoses		X
High-Static Blower (available on sizes 015-060)	X	
Hose Kit Assemblies		X
LONMark Compliant Controller	X	
UC Open XP Loop Controller		X
PremierLink™ Controller	X	
PremierLink Accessories		X
Remote Sensors (SPT, CO ₂ , Humidity Sensors)		X
Solenoid Valves		X
Sound Attenuation (Mute) Package	X	
Y Strainers		X
WSHP Open Multiple Protocol Controller	X	

Dimensions



50PCH UNIT

LEFT RETURN

2 FT [610 MM] SERVICE ACCESS
FRONT
CSP
LEFT RETURN
RIGHT/STRAIGHT DISCHARGE
BACK CONDENSATE DISCHARGE 3/4" FPT
NOTE: CHOOSE EITHER BACK OR STRAIGHT DISCHARGE

LEGEND

BSP — Blower Service Panel
CAP — Control Access Panel
CSP — Compressor Service Panel
FPT — Female Pipe Thread

RIGHT RETURN

2 FT [610 MM] SERVICE ACCESS
FRONT
CSP
RIGHT RETURN
LEFT/STRAIGHT DISCHARGE
CONDENSATE DISCHARGE 3/4" FPT
NOTE: CHOOSE EITHER BACK OR STRAIGHT DISCHARGE

UNIT HANGER DETAIL

MODEL	U	V	W
006-012	34.1 [86.6]	21.1 [53.6]	18.9 [42.9]
015-030	43.1 [109.5]	22.2 [56.4]	18.0 [45.7]
036-042	47.1 [119.6]	22.2 [56.4]	18.0 [45.7]
048-060	54.1 [137.4]	26.2 [66.5]	22.0 [55.9]

NOTE: BLOWER SERVICE PANEL REQUIRES 2 FT SERVICE ACCESS

LEFT RETURN BACK DISCHARGE

FRONT
LEFT RETURN STRAIGHT DISCHARGE

RIGHT RETURN BACK DISCHARGE

FRONT
RIGHT RETURN STRAIGHT DISCHARGE

LEFT RETURN LEFT VIEW - AIR COIL OPENING

RIGHT RETURN RIGHT VIEW - AIR COIL OPENING

50PCH006-060 UNITS

50PCH UNIT SIZE	OVERALL CABINET			WATER CONNECTIONS				ELECTRICAL KNOCKOUTS			DISCHARGE CONNECTIONS DUCT FLANGE (+ 0.10 in., ± 2.5 mm)					RETURN CONNECTION USING RETURN AIR OPENING				
	A Width	B Depth	C Height	1 Loop In		3 Loop Out		Size (IPT)	H 1/2-in. Low Voltage	J 1/2-in. Low Voltage	K 3/4-in. Power Supply	L	M Supply Height	N Supply Width	O	P	Q Return Depth	R Return Height	S	T
				D	E	F	G													
006-012	in. 19.1	in. 34.1	in. 11.1	in. 9.6	in. 1.1	in. 1.5	in. 1.1	in. 1/2	in. 8.1	in. 5.1	in. 2.1	in. 0.8	in. 8.9	in. 6.7	in. 8.2	in. 1.3	in. 16.1	in. 9.8	in. 1.1	in. 0.6
	cm 48.5	cm 86.6	cm 28.2	cm 24.3	cm 2.7	cm 3.8	cm 2.7		cm 20.6	cm 13.0	cm 5.4	cm 1.9	cm 22.7	cm 17.0	cm 13.3	cm 3.3	cm 41.0	cm 25.0	cm 2.7	cm 1.5
015	in. 20.1	in. 43.1	in. 17.0	in. 15.1	in. 1.4	in. 3.2	in. 1.4	in. 1/2	in. 12.1	in. 9.1	in. 6.1	in. 2.6	in. 13.3	in. 9.9	in. 4.1	in. 1.3	in. 23.0	in. 15.0	in. 1.1	in. 1.0
	cm 51.1	cm 109.5	cm 43.2	cm 38.4	cm 3.4	cm 8.1	cm 3.5		cm 30.8	cm 23.2	cm 15.6	cm 6.6	cm 33.8	cm 25.1	cm 10.5	cm 3.3	cm 58.4	cm 38.1	cm 2.8	cm 2.5
018	in. 20.1	in. 43.1	in. 17.0	in. 15.1	in. 1.4	in. 4.1	in. 1.4	in. 1/2	in. 12.1	in. 9.1	in. 6.1	in. 2.6	in. 13.3	in. 9.9	in. 4.1	in. 1.3	in. 23.0	in. 15.0	in. 1.1	in. 1.0
	cm 51.1	cm 109.5	cm 43.2	cm 38.4	cm 3.4	cm 10.4	cm 3.5		cm 30.8	cm 23.2	cm 15.6	cm 6.6	cm 33.8	cm 25.1	cm 10.5	cm 3.3	cm 58.4	cm 38.1	cm 2.8	cm 2.5
024	in. 20.1	in. 43.1	in. 18.3	in. 15.1	in. 1.4	in. 4.4	in. 1.4	in. 3/4	in. 12.1	in. 9.1	in. 6.1	in. 2.6	in. 13.3	in. 9.9	in. 4.1	in. 1.3	in. 23.0	in. 16.3	in. 1.1	in. 1.0
	cm 51.1	cm 109.5	cm 46.5	cm 38.4	cm 3.4	cm 11.3	cm 3.5		cm 30.8	cm 23.2	cm 15.6	cm 6.6	cm 33.8	cm 25.1	cm 10.5	cm 3.3	cm 58.4	cm 41.4	cm 2.8	cm 2.5
030	in. 20.1	in. 43.1	in. 18.3	in. 15.1	in. 1.4	in. 3.1	in. 1.4	in. 3/4	in. 12.1	in. 9.1	in. 6.1	in. 2.6	in. 13.3	in. 9.9	in. 4.1	in. 1.3	in. 23.0	in. 16.3	in. 1.1	in. 1.0
	cm 51.1	cm 109.5	cm 46.5	cm 38.4	cm 3.4	cm 7.8	cm 3.5		cm 30.8	cm 23.2	cm 15.6	cm 6.6	cm 33.8	cm 25.1	cm 10.5	cm 3.3	cm 58.4	cm 41.4	cm 2.8	cm 2.5
036	in. 20.1	in. 47.1	in. 21.0	in. 15.1	in. 1.4	in. 5.3	in. 1.4	in. 3/4	in. 16.1	in. 13.1	in. 10.1	in. 2.5	in. 16.1	in. 11.0	in. 3.0	in. 2.5	in. 25.9	in. 19.0	in. 1.1	in. 1.0
	cm 51.1	cm 119.6	cm 53.3	cm 38.4	cm 3.4	cm 13.4	cm 3.5		cm 41.0	cm 33.3	cm 25.7	cm 6.3	cm 40.9	cm 27.9	cm 7.7	cm 6.4	cm 65.8	cm 48.3	cm 2.8	cm 2.5
042	in. 20.1	in. 47.1	in. 21.0	in. 15.1	in. 1.4	in. 4.4	in. 1.4	in. 3/4	in. 16.1	in. 13.1	in. 10.1	in. 2.5	in. 16.1	in. 11.0	in. 3.0	in. 2.5	in. 25.9	in. 19.0	in. 1.1	in. 1.0
	cm 51.1	cm 119.6	cm 53.3	cm 38.4	cm 3.4	cm 11.3	cm 3.5		cm 41.0	cm 33.3	cm 25.7	cm 6.3	cm 40.9	cm 27.9	cm 7.7	cm 6.4	cm 65.8	cm 48.3	cm 2.8	cm 2.5
048	in. 24.1	in. 54.1	in. 21.0	in. 15.1	in. 1.4	in. 4.4	in. 1.4	in. 1	in. 16.1	in. 13.1	in. 10.1	in. 3.7	in. 16.1	in. 13.7	in. 4.1	in. 1.3	in. 35.9	in. 19.0	in. 1.1	in. 1.0
	cm 61.2	cm 137.4	cm 53.3	cm 38.4	cm 3.4	cm 11.1	cm 3.5		cm 41.0	cm 33.3	cm 25.7	cm 9.5	cm 41.0	cm 34.8	cm 10.3	cm 3.2	cm 91.2	cm 48.3	cm 2.8	cm 2.5
060	in. 24.1	in. 54.1	in. 21.0	in. 15.1	in. 1.4	in. 3.8	in. 1.4	in. 1	in. 16.1	in. 13.1	in. 10.1	in. 1.7	in. 18.1	in. 13.7	in. 4.1	in. 1.3	in. 35.9	in. 19.0	in. 1.1	in. 1.0
	cm 61.2	cm 137.4	cm 53.3	cm 38.4	cm 3.4	cm 9.7	cm 3.5		cm 41.0	cm 33.3	cm 25.7	cm 4.4	cm 46.0	cm 34.8	cm 10.3	cm 3.2	cm 91.2	cm 48.3	cm 2.8	cm 2.5

NOTES:

- While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
- Horizontal units shipped with filter bracket only. This bracket should be removed for return duct connection.
- Discharge flange and hanger brackets are factory installed.
- Condensate is 3/4-in. (19.1 mm) FPT copper.
- Blower service panel requires 2 ft (610 mm) service access.
- Blower service access is through back panel on left or right discharge units or through panel opposite air coil on back discharge units.

NEW →

GRUMMEL ENGINEERING, L.L.C.

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Portland, OR 97206
Phone: (503) 244-7014
Fax: (503) 246-2011
bgrummel@msn.com

Jeff Melady
Arrow Mechanical
10330 S.W. Tualatin Rd.
Tualatin, OR 97062

July 2nd, 2012

Reference: Louis Vuitton Mechanical Unit
700 SW 5th Ave. #2065
Portland, OR 97204

Project #: 212089

Dear Jeff,

I am writing to follow up on our meeting at Louis Vuitton to review the recently installed mechanical unit. The unit replaced an existing unit which hangs by threaded rod attached to P1000 unistruts.

Our review found that the unit is structurally supported in an adequate manner. No further improvements are needed at this time. See attached detail for description of work.

The limitation of liability for this review is strictly limited to the fees charged for services of this review.

Please call me at 503-244-7014 if you have any questions regarding the information in this review.

Sincerely,

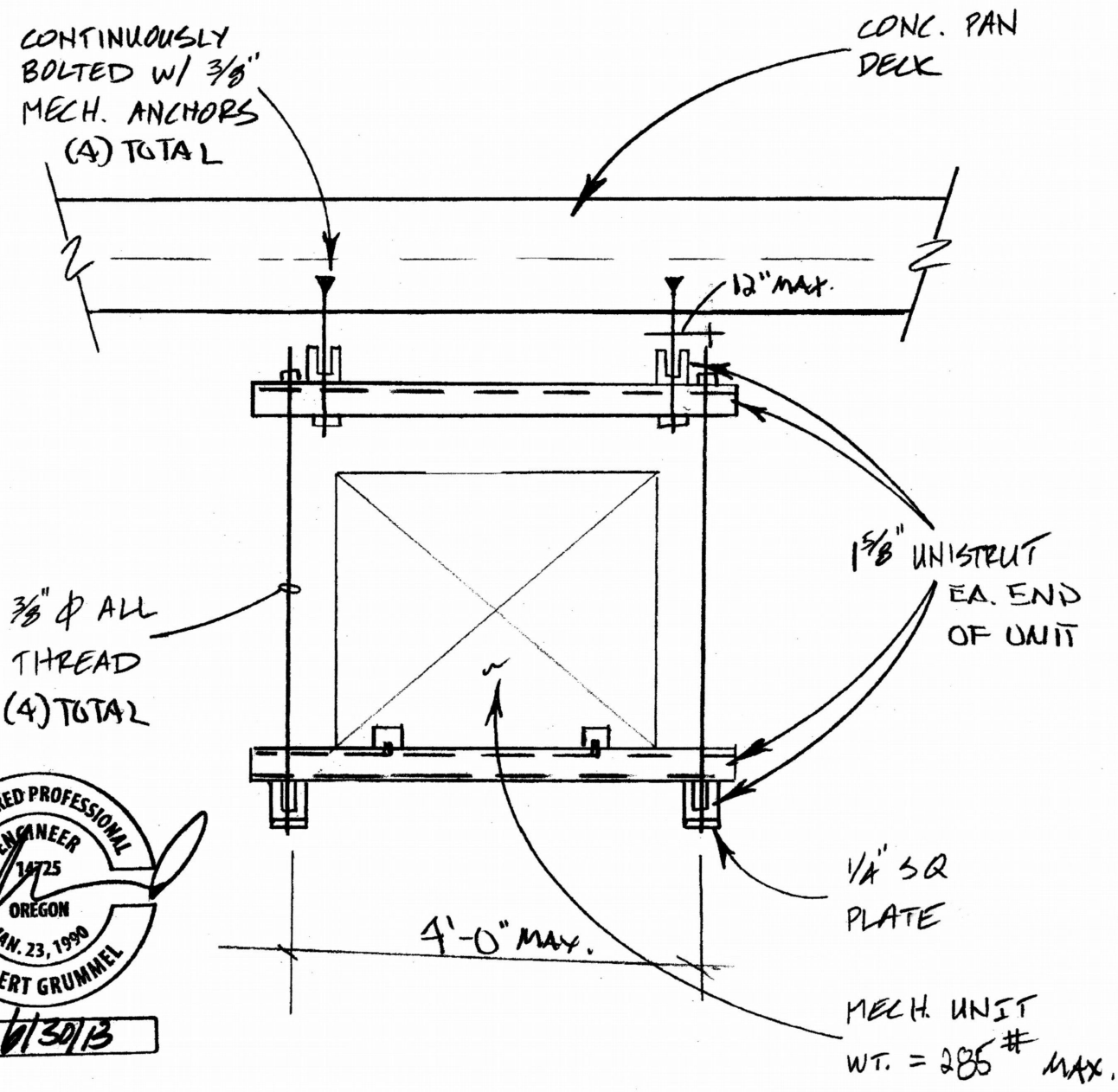
Jesse Wolfe, PE
Grummel Engineering, LLC



12-119941-FA

Project: Louis Vuitton Mech. Unit
700 SW 5th Ave #2065, Portland, OR
Portland, OR 97204
Client: Arrow Mechanical Co. - Jeff Melady

Date: 7/2/12
Page: 1
By:
Job # 212089



1
MECHANICAL SUPPORT
1" = 1'-0"