



THE WALL-MOUNT™ “QUIET-CLIMATE” HEAT PUMPS

Models: SH261, SH311, SH381, SH431, SH491, SH612
Heating Capacities: 21,000 to 55,000 BTUH
Cooling Capacities: 23,600 to 55,000 BTUH
Refrigerant 22

- High Efficiency
- Ultra Low Sound Level

The Bard Wall-Mount Heat Pump is a self-contained energy efficient heating and cooling system, which is designed to offer maximum indoor comfort at a minimal cost without using valuable indoor floor space or outside ground space. This unit is the ideal product for versatile applications such as: new construction, modular offices, school modernization, telecommunication structures, portable structures or correctional facilities. Factory or field installed accessories are available to meet specific job requirements.

Engineered Features

Aluminum Finned Copper Coils:
Grooved tubing and enhanced louvered fin for maximum heat transfer and energy efficiency.

Twin Blowers:
Move air quietly. All models feature multispeed blower motors providing airflow adjustment for low static or free blow (non-ducted) operation at a very low sound level or ducted installations (low pressure duct systems not to exceed .20" W.C.). Units are shipped connected for ducted installations. Motor overload protection is standard on all models.

Heat Pump Compressor:
Scroll compressor designed for increased efficiency, quieter operation and improved reliability for longer life. Eliminates need for a suction accumulator.

Phase Rotation Monitor:
Standard on all 3 phase scroll compressors. Protects against reverse rotation if power supply is not properly connected.

Galvanized 20 Gauge Zinc Coated Steel Cabinet:
Cleaned, rinsed, sealed and dried before the polyurethane primer is applied. The cabinet is handsomely finished with a baked on, beige textured enamel, which allows it to withstand 1000 hours of salt spray tests per ASTM B117-03.

Electrical Components:
Are easily accessible for routine inspection and maintenance through a right side, service panel opening. Features a lockable, hinged access cover to the circuit breaker.

Electric Heat Strips:
Features an automatic limit and thermal cut-off safety control. Heater packages are factory or field installed. Features easy slide-in field assembly with various BTUH outputs.

Condenser Fan and Motor Shroud Assembly:
Slide out for easy access.

One Inch, Disposable Air Filters:
Are standard equipment. Optional 1" washable filters available and filter racks permit the addition of 2" pleated filter. Factory or field installed.

Solid State Electronic Heat Pump Control:
Provides efficient 30, 60 or 90-minute defrost cycle. A thermistor sensor, speed up terminal for service and 10 minute defrost override are standard on the electronic heat pump control.

High Pressure Switch:
Is built-in with a lockout circuit that resets from the room thermostat.

Five Minute Compressor Time Delay:
Short cycle protection is standard. Built into the heat pump control.

Emergency Heat Circuit:
Permits continuous operation of the system.

Barometric Fresh Air Damper:
Standard on all units. Allows up to 25% outside fresh air.

Built-in Circuit Breakers:
Standard on all 230/208V models. Toggle disconnect on 460V models

Slope Top:
Standard feature for water run-off.

Full Length Mounting Brackets:
Built into cabinet for improved appearance and easy installation.
NOTE: Bottom mounting bracket included to assist in installation.

Top Rain Flashing:
Standard feature on all models.



Ventilation System Packages

All packages are designed to meet your specific ventilation requirements utilizing one of six ventilation options for the product. The ventilation package is mounted within the unit eliminating the need for an exterior mounted hood or damper assembly on the unit. All assemblies can be factory installed, installed in the field at time of installation or as a retrofit system after installation.

- Standard - Barometric Fresh Air Damper
- Optional - Motorized Fresh Air Damper
- Optional - Blank Off Plate
- Optional - Commercial Room Ventilator With Exhaust
 - CRV - Spring Return
 - CRVP - Power Return
- Optional - Economizer With Exhaust
- Optional - Energy Recovery Ventilator With Built-in Exhaust

- Complies with efficiency requirements of ANSI/ASHRAE/IESNA 90.1-2007.
- Certified to ANSI/ARI Standard 390-2003 for SPVU (Single Package Vertical Units).
- Commercial Product - Not intended for Residential application.



Capacity and Efficiency Ratings

MODELS	SH261	SH311	SH381	SH431	SH491	SH612
Cooling BTUH ①	24,000	26,400	35,400	42,000	46,500	55,000
EER ②	11.00	10.00	10.30	10.30	10.20	9.60
High Temp Heating (47F) BTUH ①	21,000	25,000	33,000	37,400	45,000	54,000
COP ②	3.00	3.00	3.10	3.00	3.00	3.00
Low Temp Heating (17F) BTUH ①	12,400	15,000	18,500	22,000	28,000	32,000
COP ②	2.00	2.00	1.90	2.00	2.10	2.00

① Capacity is certified in accordance with ANSI/ARI Standard 390-2003.

② EER = Energy Efficiency Ratio, COP = Coefficient of Performance and are certified in accordance with ANSI/ARI Standard 390-2003.
All ratings based on fresh air intake being 100% closed (no outside air introduction).

Specifications 2 through 3 Ton

MODELS	SH261-A	SH261-B	SH261-C	SH311-A	SH311-B	SH311-C	SH381-A	SH381-B	SH381-C
Electrical Rating -- 60 HZ	230/208-1	230/208-3	460-3	230/208-1	230/208-3	460-3	230/208-1	230/208-3	460-3
Operating Voltage Range	197-253	197-253	414-506	197-253	197-253	414-506	197-253	197-253	414-506
Compressor -- Circuit A									
Voltage	230/208	230/208	460	203/208	230/208	460	230/208	230/208	460
Rated Load Amps	10.8/13.5	7.5/9.3	4.7	13.9/16.7	9.6/11.5	5.3	15.3/19.5	10.3/13.0	6.2
Branch Circuit Selection Current	13.5	9.3	4.7	16.7	11.5	5.3	19.5	13.0	6.2
Lock Rotor Amps	56/56	45/45	22.4	67/67	55/55	27.0	88/88	77/77	39
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Fan Motor & Condenser									
Fan Motor -- HP - RPM - SPD	1/5-1050-1	1/5-1050-1	1/5-1050-1	1/5-1050-1	1/5-1050-1	1/5-1050-1	1/3-825-2	1/3-825-2	1/3-825-2
Fan Motor -- Amps	1.5	1.5	1.1	1.5	1.5	1.1	2.5	2.5	1.1
Fan -- DIA - CFM	20"-1900	20"-1900	20"-1900	20"-1900	20"-1900	20"-1900	24"-2900	24"-2900	24"-2900
Motor & Evaporator									
Blower Motor -- HP - RPM - SPD	1/5-850-2	1/5-850-2	1/5-850-2	1/5-850-2	1/5-850-2	1/5-850-2	1/4-800-3	1/4-800-3	1/4-800-3
Blower Motor -- Amps	1.4	1.4	.65	1.4	1.4	.65	1.9	1.9	1.3
CFM Cooling & E.S.P. w/Filter (Rated - Wet Coil)	800 - .10	800 - .10	800 - .10	800 - .10	800 - .10	800 - .10	1100 - .15	1100 - .15	1100 - .15
Filter Sizes (inches) STD	16 x 30 x 1	16 x 30 x 1	16 x 30 x 1	16 x 30 x 1	16 x 30 x 1	16 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1
Shipping Weight -- LBS.	365	365	365	380	380	380	510	510	510

Specifications 3-1/2 through 5 Ton

MODELS	SH431-A	SH431-B	SH431-C	SH491-A	SH491-B	SH491-C	SH612-A	SH612-B	SH612-C
Electrical Rating -- 60 HZ	230/208-1	230/208-3	460-3	230/208-1	230/208-3	460-3	230/208-1	230/208-3	460-3
Operating Voltage Range	197-253	197-253	414-506	197-253	197-253	414-506	197-253	197-253	414-506
Compressor -- Circuit A									
Voltage	230/208	230/208	460	230/208	230/208	460	230/208	230/208	460
Rated Load Amps	18.2/21.7	12.7/15.1	7.0	21.5/26.7	14.4/17.9	9.0	25.8/30.4	16.9/19.7	8.7
Branch Circuit Selection Current	21.7	15.1	7.0	26.7	17.9	9.0	30.4	19.7	9.0
Lock Rotor Amps	104/104	88/88	44	129/129	91/91	46	148/148	123/123	62
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Fan Motor & Condenser									
Fan Motor -- HP - RPM - SPD	1/3-825-2	1/3-825-2	1/3-825-1	1/3-825-2	1/3-825-2	1/3-825-1	1/3-825-2	1/3-825-2	1/3-825-1
Fan Motor -- Amps	2.5	2.5	1.1	2.5	2.5	1.1	2.5	2.5	1.1
Fan -- DIA - CFM	24"-2900	24"-2900	24"-2900	24"-2900	24"-2900	24"-2900	24"-2900	24"-2900	24"-2900
Motor & Evaporator									
Blower Motor -- HP - RPM - SPD	1/4-800-3	1/4-800-3	1/4-800-3	1/4-800-3	1/4-800-3	1/4-800-3	1/2-1075-3	1/2-1075-3	1/2-1075-3
Blower Motor -- Amps	1.9	1.9	1.3	1.9	1.9	1.3	2.9	2.9	1.9
CFM Cooling & E.S.P. w/Filter (Rated - Wet Coil)	1300 - .15	1300 - .15	1300 - .15	1250 - .20	1250 - .20	1250 - .20	1350 - .20	1350 - .20	1350 - .20
Filter Sizes (inches) STD	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1	20 x 30 x 1
Shipping Weight -- LBS.	510	510	510	510	510	510	520	520	520

Ventilation System Packages

Bard Wall-Mounts are designed to provide optional ventilation packages to meet all of your ventilation and indoor air quality requirements. All units are equipped with a barometric fresh air damper as the standard ventilation package. All ventilation packages can be built-in at the factory, or field-installed at a later date.

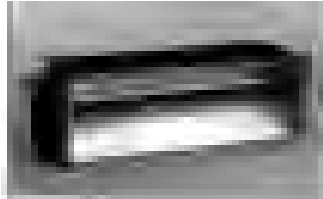


Barometric Fresh Air Damper

BAROMETRIC FRESH AIR DAMPER - BFAD

The barometric fresh air damper is a standard feature on all models. It is installed on the inside of the service door and allows outside ventilation air, up to 25% of the total airflow rating of the unit, to be introduced through the air inlet openings and to be mixed with the conditioned air. The damper opens during blower operation and closes when the blower is off. Adjustable blade stops allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.

STANDARD



Motorized Fresh Air Damper

BLANK OFF PLATE - BOP

A blank off plate is installed on the inside of the service door. It covers the air inlet openings which restricts any outside air from entering into the unit. The blank off plate should be utilized in applications where outside air is not required to be mixed with the conditioned air.

OPTIONAL

MOTORIZED FRESH AIR DAMPER - MFAD

The motorized fresh air damper is internally mounted behind the service door and allows outside ventilation air, up to 25% of the total airflow rating of the unit, to be introduced through the air inlet openings and to be mixed with the conditioned air. The two position damper can be fully open or closed. The damper blade is powered open by a 24VAC motor with spring return on power loss. The damper can be controlled by indoor blower operation or can be field connected to be managed based on building occupancy.

OPTIONAL

NOTE: The above vent systems are intake only without built-in exhaust capability. Building will likely require separate field installed barometric relief or mechanical exhaust elsewhere within the conditioned space. Balancing dampers in the return air grille may be required to achieve specified amount of outdoor air intake.



Commercial Room Ventilator

COMMERCIAL ROOM VENTILATOR - CRV

The built-in commercial room ventilator is internally mounted behind the service door and allows outside ventilation air, up to 50% of the total airflow rating of the unit, to be introduced through the air inlet openings. It includes a built-in exhaust air damper.

OPTIONAL

The commercial room ventilator (CRV) is a simple and innovative approach to improving the indoor air quality by providing fresh air intake and exhaust capability through the CRV. The damper can be easily adjusted to control the amount of fresh air supplied into the building. The CRV can be controlled by indoor blower operation or field controlled based on room occupancy. The CRV is power open - spring return on power loss. Complies with ANSI/ASHRAE Standard 62.1 "Ventilation for Acceptable Indoor Air Quality."

Two Models Available: CRVS - spring return on power loss or deactivation
CRVP - power return (will not close on power loss)



Economizer

ECONOMIZER - EIFM

The built-in economizer system is internally mounted behind the service door and allows outdoor air to be introduced through the air inlet openings. The amount of outdoor air varies in response to the system controls and settings defined by the end user. It includes a built-in exhaust air damper. The economizer is designed to provide "free cooling" when outside air conditions are cool and dry enough to satisfy cooling requirements without running the compressor. This in turn provides lower operating costs, while extending the life of the compressor.

OPTIONAL

Standard Features:

- One Piece Construction - Easy to install with no mechanical linkage adjustment required.
- Exhaust Air Damper - Built in with positive closed position. Provides exhaust air capability to prevent pressurization of tight buildings.
- Actuator Motor - 24 volt, power open, spring return with built in torque limiting switch.
- Proportioning Type Control - for maximum "free cooling" economy and comfort.
- Moisture Eliminator & Prefilter - permanent, washable aluminum construction.
- Enthalpy Control - adjustable to monitor outdoor temperature and humidity.
- Minimum Position Potentiometer - adjustable to control minimum damper blade position for ventilation purposes.
- Mixed Air Sensor - to monitor outside and return air to automatically modulate damper position.



Energy Recovery Ventilator

WALL-MOUNT ENERGY RECOVERY VENTILATOR - WERV

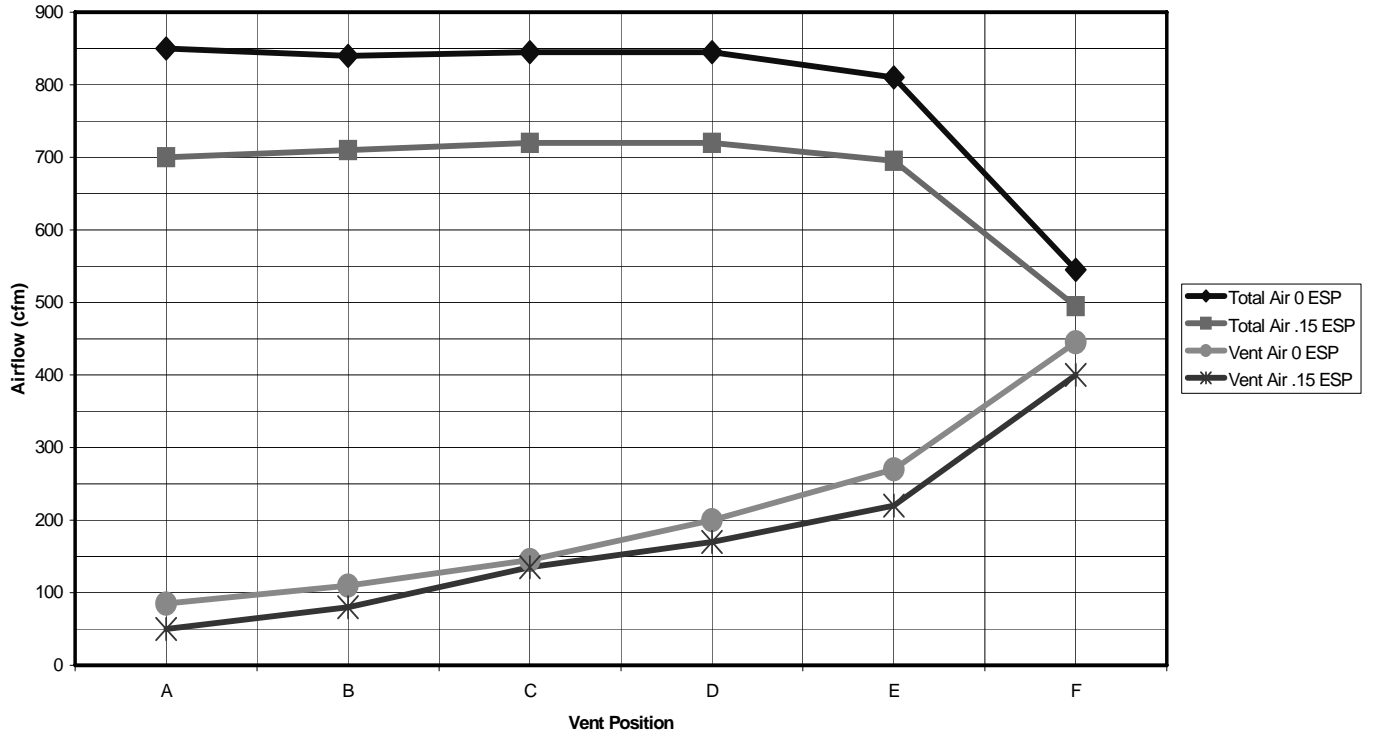
The wall-mount energy recovery ventilator (WERV) is a highly innovative approach to meeting indoor air quality ventilation requirements as established by ANSI/ASHRAE Standard 62.1. The WERV allows from 200 to 450 CFM (depending upon model) of fresh air and exhaust through the unit while maintaining superior indoor comfort and humidity levels. In most cases this can be accomplished without increasing equipment sizing or operating costs. Heat transfer efficiency is up to 67% during summer and 75% during winter conditions.

OPTIONAL

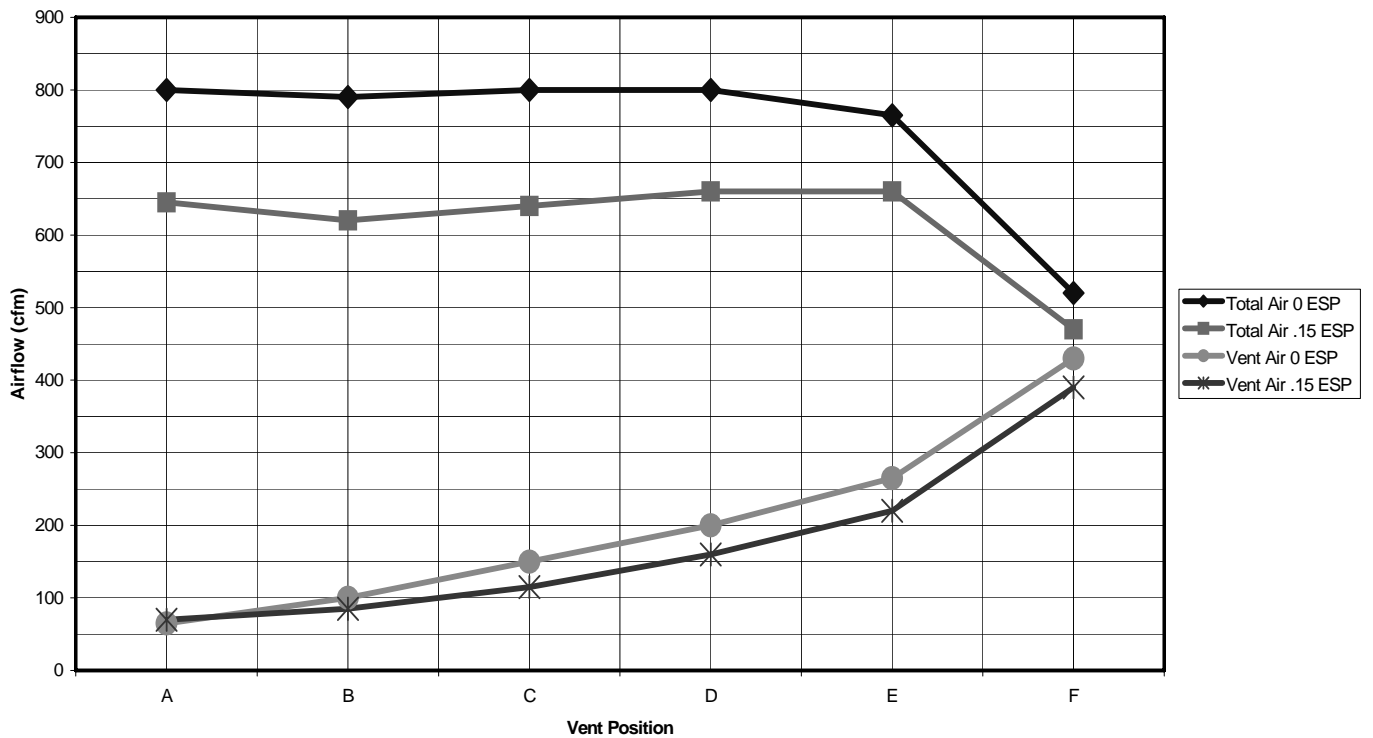
The WERV consists of a unique "rotary energy recovery cassette" that provides effective sensible and latent heat transfer capabilities during summer and winter conditions. Various control schemes are addressed including limiting ventilation during building occupancy only.

The WERV is designed to be internally mounted behind the service door in the WA, WH or WL model wall-mount units. It can be built-in at the factory or field installed as an option. WERV-*3C and WERV-*5C can be independently adjusted for intake and exhaust rates.

SH261 & SH311 High Speed Total and Ventilation Airflow

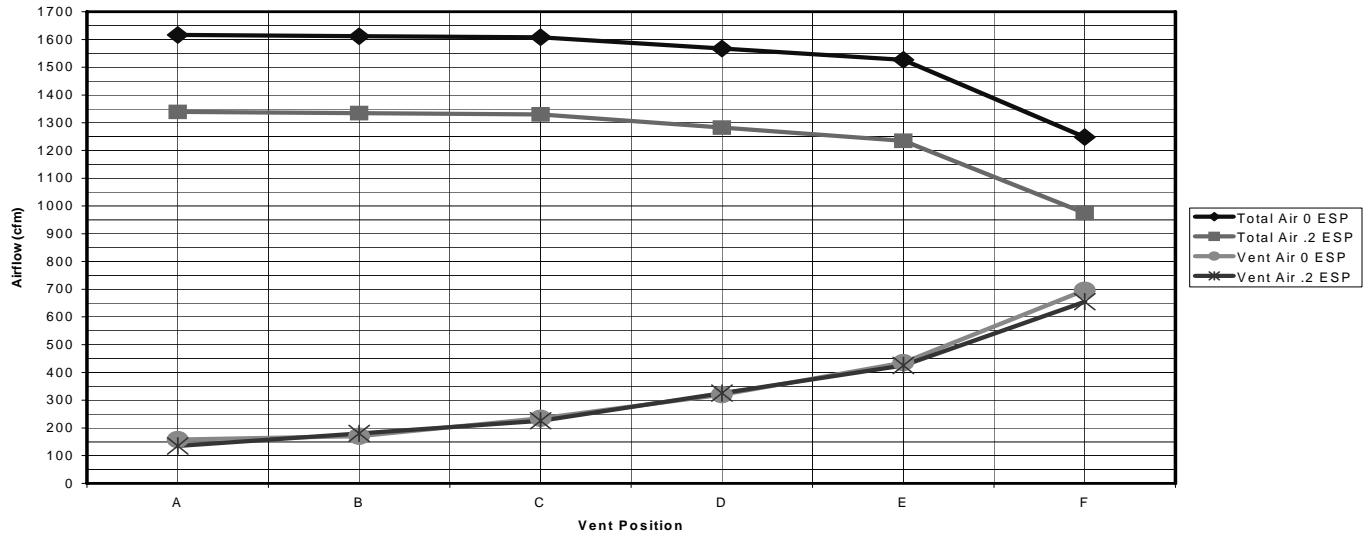


SH261 & SH311 Low Speed Total and Ventilation Airflow

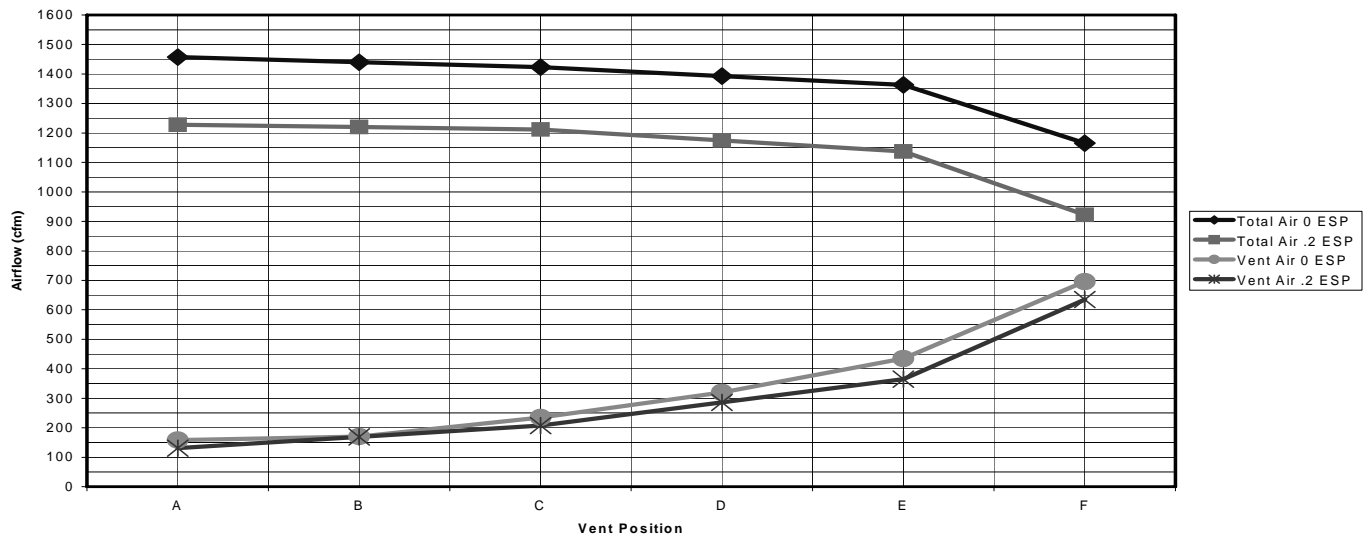


Commercial Room Ventilator Performance Data : CRVS-5 and CRVP-5

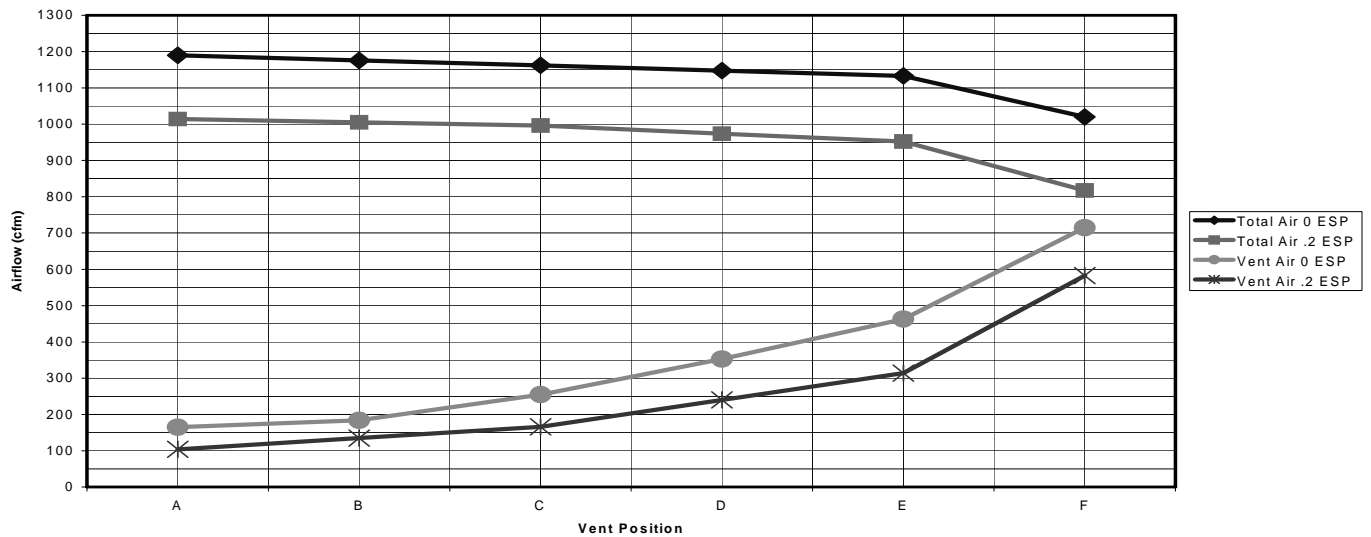
SH381 High Speed Total and Ventilation Airflow



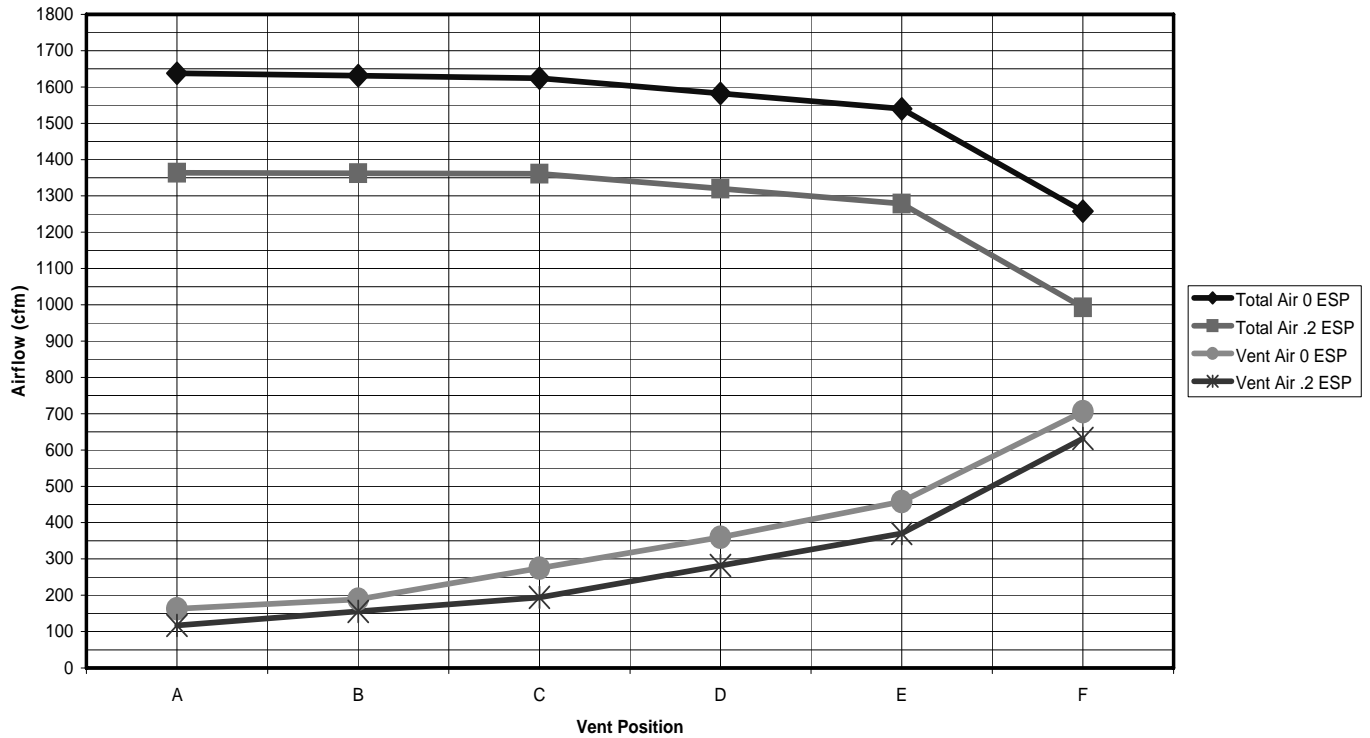
SH381 Medium Speed Total and Ventilation Airflow



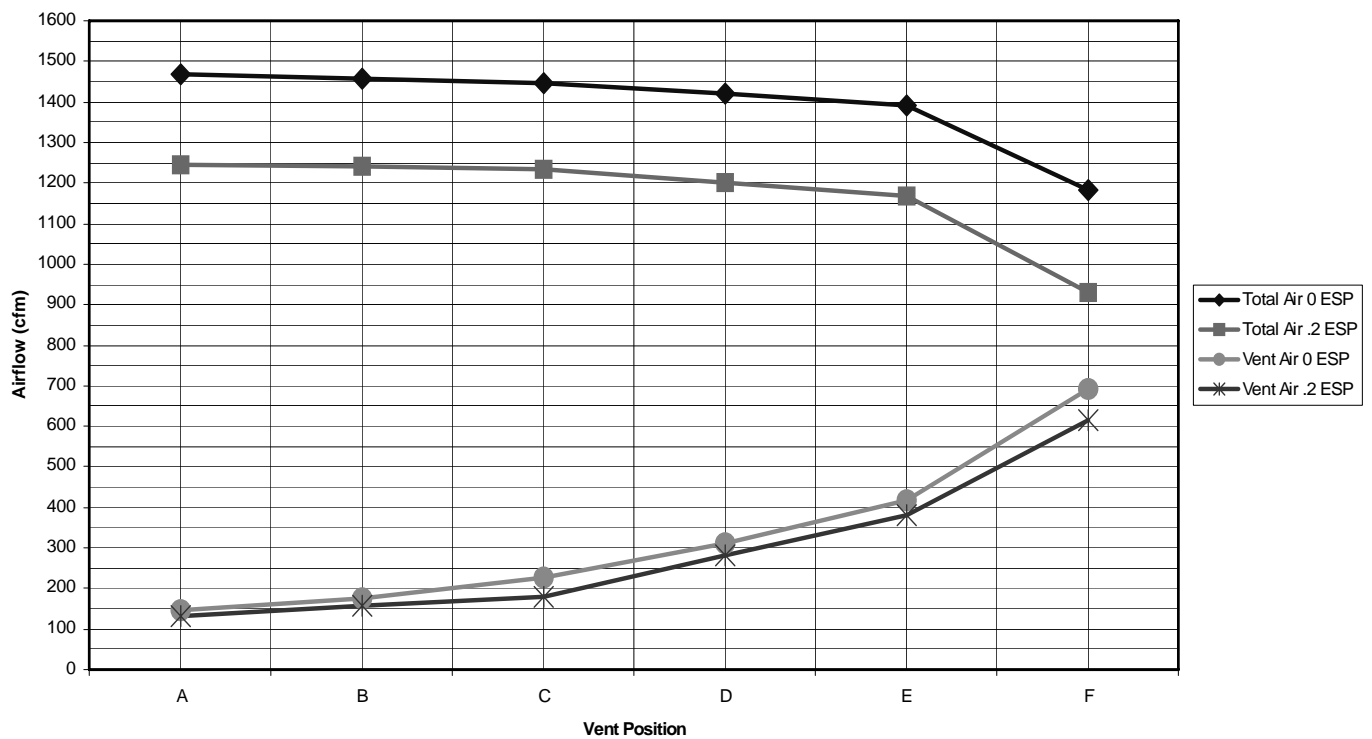
SH381 Low Speed Total and Ventilation Airflow



SH431/SH491/SH612 High Speed Total and Ventilation Airflow



SH431/SH491/SH612 Medium Speed Total and Ventilation Airflow



Performance and Application Data - WERV-3C (SH261 & SH311)

SUMMER COOLING PERFORMANCE
(INDOOR DESIGN CONDITIONS 75°DB/65°WB)

Ambient O.D. DB/°F	VENTILATION RATE -- 400CFM 63% EFFICIENCY												VENTILATION RATE -- 325 CFM 64% EFFICIENCY												VENTILATION RATE -- 250 CFM 65% EFFICIENCY											
	VLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT											
75	19080	12960	8120	12020	8164	3855	15502	10530	4972	9921	6739	3182	8100	3825	7751	5285	2486																			
105	70	12960	10980	8164	0	10530	10530	0	6739	6739	0	8100	8100	0	5285	5285	0																			
65	12960	12960	0	8164	8164	0	10530	10530	0	6739	6739	0	8100	8100	0	5285	5285	0																		
80	28080	10980	17280	10980	6804	10886	22815	8775	14040	14601	8985	17550	10800	10800	11407	4387	7019																			
75	19080	10980	8280	12020	6804	5216	15502	8775	6727	9921	5616	4305	8100	5175	7751	4387	3363																			
100	70	10980	10980	180	6717	6804	0	8921	8775	5709	5616	93	6862	6750	4460	4387	75																			
65	10980	10980	0	6804	6804	0	8775	8775	0	5616	5616	0	6750	6750	0	4387	4387	0																		
60	10980	10980	0	6804	6804	0	8775	8775	0	5616	5616	0	6750	6750	0	4387	4387	0																		
80	28080	8640	19440	17690	5443	12247	22815	7020	15795	14801	4492	10108	17550	5400	12150	11407	3510	7897																		
75	19080	8640	10440	12020	5443	6577	15502	7020	8482	9921	4492	5428	5400	6525	7751	3510	4241																			
95	70	10980	8640	2340	6917	5443	1474	8921	7020	1901	5709	4492	1216	6862	5400	4460	3510	950																		
65	8640	8640	0	5443	5443	0	7020	7020	0	4492	4492	0	5400	5400	0	3510	3510	0																		
60	8640	8640	0	5443	5443	0	7020	7020	0	4492	4492	0	5400	5400	0	3510	3510	0																		
80	28080	4320	23760	17690	2721	14968	22815	5285	17550	14601	3369	11232	17550	4050	14850	11407	2632	8774																		
75	19080	6480	12600	12020	4082	7938	15502	5285	10237	9921	3369	6652	11925	4050	7875	7751	5118																			
90	70	10980	6480	4500	6917	4082	2835	8921	5285	3656	5709	3369	2340	6862	4050	2812	4460	2632	1828																	
65	6480	6480	0	4082	4082	0	5285	5285	0	3369	3369	0	4050	4050	0	2632	2632	0																		
60	6480	6480	0	4082	4082	0	5285	5285	0	3369	3369	0	4050	4050	0	2632	2632	0																		
80	28080	4320	23760	17690	2721	14968	22815	3510	19305	14601	2246	12355	17550	2700	14850	11407	1755	9652																		
75	19080	4320	14760	12020	2721	9298	15502	3510	11992	9921	2246	7675	11925	2700	9225	7751	1755	5996																		
85	70	10980	4320	6660	6917	2721	4196	8921	3510	5411	5709	2246	3463	6862	2700	4162	4460	1755	2705																	
65	4320	4320	0	2721	2721	0	3510	3510	0	2246	2246	0	2700	2700	0	1755	1755	0																		
60	4320	4320	0	2721	2721	0	3510	3510	0	2246	2246	0	2700	2700	0	1755	1755	0																		
75	19080	2160	16920	12020	1360	10659	15502	1755	13747	9921	1123	8798	11925	1350	10575	7751	877	6873																		
80	28080	2160	8820	6917	1360	5556	8921	1755	7166	5709	1123	4586	6862	1350	5512	4460	877	3563																		
65	3780	2160	1620	2381	1360	1020	3071	1755	1316	1965	1123	842	2362	1350	1012	1535	877	658																		
60	2160	2160	0	1360	1360	0	1755	1755	0	1123	1123	0	1350	1350	0	877	877	0																		
70	10980	0	10980	6917	0	6917	8921	0	8921	5709	0	5709	6862	0	6862	4460	0	4460																		
75	65	3780	0	3780	2381	0	2380	3071	0	3071	1965	0	1965	2362	0	2362	1535	0	1535																	
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																	

LEGEND:

VLT = Ventilation Load - Total
VLS = Ventilation Load - Sensible
VLL = Ventilation Load - Latent
HRT = Heat Recovery - Total
HRS = Heat Recovery - Sensible
HRL = Heat Recovery - Latent
WHL = Winter Ventilation Load
WHR = Winter Heat Recovery

Performance and Application Data - WERV-5C (SH381, SH431, SH491 & SH612)

SUMMER COOLING PERFORMANCE
(INDOOR DESIGN CONDITIONS 75°DB/62°WB)

Ambient O.D. DB/°F	VENTILATION RATE -- 450 CFM												VENTILATION RATE -- 375 CFM												VENTILATION RATE -- 300 CFM											
	VLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT											
75	21465	14580	14580	6884	13952	9477	4475	17887	12150	5737	11805	8018	3786	14310	9720	4590	9587	6512	3075																	
105	70	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0																	
65	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0																		
80	31590	12150	19440	20533	7897	12635	15794	26325	10125	16200	17374	6682	10692	21060	8100	12860	14110	5427	8683																	
75	21465	12150	9314	13952	7897	6054	17887	10125	7762	11805	6682	5123	14310	8100	6210	9587	5427	4160																		
100	70	12352	12150	202	8029	7897	131	10293	10125	168	6793	6682	111	8235	8100	135	5517	5427	90																	
65	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0																		
60	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0																		
80	31590	9720	21870	20533	6318	14215	15794	26325	6075	20250	17374	4009	13365	21060	4860	16200	14110	3256	10854																	
75	21465	7290	14175	13952	4738	9213	17887	6075	11812	11805	4009	2786	14310	4860	9450	9587	3256	6331																		
90	70	12352	7290	5062	8029	4738	3290	10293	6075	4216	6793	4009	7786	8235	4860	3375	5517	3256	2261																	
65	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0																		
60	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0																		
80	31590	4860	26730	20533	3159	17374	26325	4050	22275	20250	17374	2672	14701	21060	3240	17820	14110	2170	11939																	
75	21465	4860	16605	13952	3159	10793	17887	4050	13837	11805	2672	9132	14310	3240	11070	9587	2170	7416																		
85	70	12352	4860	7492	8029	3159	4870	10293	4050	6243	6793	2672	4120	8235	3240	4895	5517	2170	3346																	
65	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0																		
60	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0																		
75	21465	2430	19035	13952	1579	12572	17887	2025	15862	11805	1336	10469	14310	1620	12890	9587	1085	8502																		
80	28080	2430	9922	8029	1579	1184	10293	2025	8268	6793	1336	5457	8235	1620	8615	1620	1085	4432																		
65	4252	2430	1822	2764	1579	1184	3543	2025	1518	2338	1336	1002	2835	1620	1215	1899	1085	814																		
60	2430	2430	0	1579	1579	0	2025	2025	0	1336	1336	0	1620	1620	0	1085	1085	0																		
75	65	4252	0	12352	8029	0	8029	10293	0	10293	6793	0	6793	8235	0	8235	5517	0	5517																	
60	0	0	0	4252	2764	0	2764	3543	0	3543	2338	0	2338	2835	0	2835	1899	0	1899																	

LEGEND:

VLT = Ventilation Load - Total
VLS = Ventilation Load - Sensible
VLL = Ventilation Load - Latent
HRT = Heat Recovery - Total
HRS = Heat Recovery - Sensible
HRL = Heat Recovery - Latent
WHL = Winter Ventilation Load
WHR = Winter Heat Recovery

Performance and Application Data - WERV-3C (SH261 & SH311)

SUMMER COOLING PERFORMANCE
(INDOOR DESIGN CONDITIONS 75°DB/62°WB)

Ambient O.D. DB/°F	VENTILATION RATE -- 400CFM 63% EFFICIENCY												VENTILATION RATE -- 325 CFM 64% EFFICIENCY												VENTILATION RATE -- 250 CFM 65% EFFICIENCY											
	VLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT	VLS	VLL	HRT	HRS	HRL	HLT											
75	19080	12960	8120	12020	8164	3855	15502	10530	497																											

Electrical Specifications

Models	Rated Volts, HZ and Phase	No. of Field Power Circuits	Single Circuit				Dual Circuit							
			Minimum Circuit Ampacity ①	Maximum External Fuse or Circuit Breaker ②	Field Power Wire Size ③	Ground Wire Size ④	Min. Circuit Ampacity①		Max. Circuit Exterior Fuse or Crt. Bkr.⑤		Field Power Wire Size③		Ground Wire Size④	
							Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B
SH261-A00, A0Z	230/208-60-1	1	22	30	10	10								
-A04		1	43	50	8	10								
Ⓞ -A08 *		1	48	50	8	10								
SH261-B00, B0Z	230/208-60-3	1	17	25	10	10								
-B06 *		1	35	40	8	10								
SH261-C00, C0Z	460-60-3	1	10	15	14	14								
-C06 *		1	18	20	12	12								
SH311-A00, A0Z	230/208-60-1	1	26	35	8	10								
-A04		1	48	50	8	10								
Ⓞ -A08 *		1	48	50	6	10								
SH311-B00, B0Z	230/208-60-3	1	20	30	10	10								
-B06 *		1	38	45	8	10								
SH311-C00, C0Z	460-60-3	1	11	15	14	14								
-C06 *		1	19	20	12	12								
SH381-A00, A0Z	230/208-60-1	1	31	45	8	10								
-A05		1 or 2	57	70	6	8	31	26	50	30	8	10	10	10
-A08		1 or 2	73	80	4	8	31	42	50	45	8	8	10	10
-A10		1 or 2	83	90	4	8	31	52	50	60	8	6	10	10
Ⓞ DA10 *		1 or 2	58	70	6	8	31	52	45	60	8	6	10	10
SH381-B00, B0Z	230/208-60-3	1	23	35	10	10								
-B06 *		1	41	45	8	10								
-B09 *		1	50	50	6	10								
SH381-C00, C0Z	460-60-3	1	13	15	14	14								
-C06 *		1	21	25	10	10								
-C09 *		1	25	30	10	10								
SH431-A00, A0Z	230/208-60-1	1	34	50	8	10								
-A05		1 or 2	60	70	6	8	34	26	50	30	8	10	10	10
-A08		1 or 2	76	80	4	8	34	42	50	45	8	8	10	10
-A10		1 or 2	86	90	3	8	34	52	50	60	8	6	10	10
Ⓞ DA10 *		1 or 2	60	70	6	8	34	52	50	60	8	6	10	10
SH431-B00, B0Z	230/208-60-3	1	25	35	8	10								
-B06 *		1	43	50	8	10								
-B09 *		1	52	60	6	10								
SH431-C00, C0Z	460-60-3	1	14	20	12	12								
-C06		1	22	25	10	10								
-C09 *		1	26	30	10	10								
SH491-A00, A0Z	230/208-60-1	1	40	60	8	10								
-A05		1 or 2	66	70	4	8	40	26	50	30	8	10	10	10
-A08		1 or 2	82	90	4	8	40	42	50	45	8	8	10	10
-A10		1 or 2	92	100	3	8	40	52	50	60	8	6	10	10
Ⓞ DA10 *		1 or 2	66	80	4	8	40	52	50	60	8	6	10	10
SH491-B00, B0Z	230/208-60-3	1	29	45	10	10								
-B06 *		1	47	60	8	10								
-B09 *		1	57	60	6	10								
SH491-C00, C0Z	460-60-3	1	16	20	12	12								
-C06		1	24	30	10	10								
-C09 *		1	29	30	10	10								
SH612-A00, A0Z	230/208-60-1	1	46	60	8	10								
-A05		1 or 2	72	90	4	8	46	26	60	30	8	10	10	10
-A08		1 or 2	88	90	3	6	46	42	60	50	8	8	10	10
-A10 *		1 or 2	98	100	3	8	46	52	60	60	8	6	10	10
Ⓞ -A20 *		1 or 2	111	120	2	8	46	52	60	60	8	6	10	10
SH612-B00, B0Z	230/208-60-3	1	33	45	8	10								
-B09 *		1	59	60	8	8								
SH612-C00, C0Z	460-60-3	1	15	20	12	10								
-C09 *		1	29	30	10	10								

* These heater KW sizes available in dehumidification models. These electrical ratings also apply to dehumidification models unless listed separately and marked with footnote ⑥.

① These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical Code (latest version), Article 310 for power conductor sizing.

Caution: When more than one field power circuit is run through one conduit, the conductors must be derated. Pay special attention to note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three (3) conductors are in a raceway.

② Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.

③ Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.

④ Maximum KW that can operate with the heat pump on is 10KW.

⑤ Maximum KW that can operate with the heat pump on is 5KW.

⑥ Maximum KW that can operate with the heat pump on is 4KW.

IMPORTANT: While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes.

Indoor Blower Performance - CFM at 230 or 460 Volts

ESP in Inches Water Column	SH261, SH311		SH381			SH431, SH491		SH612	
	High Speed Dry/Wet Coil	Low Speed Dry/Wet Coil	High Speed Dry/Wet Coil	Med. Speed Dry/Wet Coil	Low Speed Dry/Wet Coil	High Speed Dry/Wet Coil	Med. Speed Dry/Wet Coil	High Speed Dry/Wet Coil	Low Speed Dry/Wet Coil
.0	1050/1000	950/900	1625/1475	1425/1325	1125/1100	1700/1550	1475/1375	1800/1550	1600/1350
.1	900/850	840/800	1475/1350	1325/1200	1100/1000	1550/1400	1375/1250	1700/1450	1500/1250
.2	750/700	700/650	1350/1150	1200/1025	1000/850	1400/1250	1250/1100	1600/1350	1400/1150

- Above data is with 1" standard disposable or 1" washable filter
- For optional 2" pleated filter - reduce ESP by 0.08 in.
- Recommended (factory connected) motor speed for ducted installation:
SH261, SH311, SH381: Medium Speed SH431, SH491, SH612: High Speed
- Reconnect to next lower speed for free blow (non-ducted) installation.

Electric Heat Table - Refer to Electrical Specifications for Availability by Unit Model

Nominal KW	At 240V (1)				At 208V (1)				At 480V (2)			At 460V (2)		
	Kw	1-Ph Amps	3-Ph Amps	Btuh	Kw	1-Ph Amps	3-Ph Amps	Btuh	Kw	3-Ph Amps	Btuh	Kw	3-Ph Amps	Btuh
4.0	4.0	16.7		13,652	3.00	14.4		10,239						
5.0	5.0	20.8		17,065	3.75	18.0		12,799						
6.0	6.0		14.4	20,478	4.50		12.5	15,359	6.0	7.2	20,478	5.52	6.9	18,840
8.0	8.0	33.3		27,304	6.00	28.8		20,478						
9.0	9.0		21.7	30,717	6.75		18.7	23,038	9.0	10.8	30,717	8.28	10.4	28,260
10.0	10.0	41.7		34,130	7.50	36.1		25,598						
20.0	20.0	83.3		68,260	15.00	72.1		51,195						

- (1) These electric heaters are available in 230/208V units only.
 (2) These electric heaters are available in 480V units only.

Heater Packages - Field Installed, For Standard (Non-Dehumidification) Models

- Designed for adding Electric Heat to 0 KW Units
- Circuit Breaker Standard on All Models
- UL Listed
- CUL Listed

Heat Pump Models	-A00 Models 230/208-1		-B00 Models 230/208-3		-C00 Models 460-3	
	Heater Model #	KW	Heater Model #	KW	Heater Model #	KW
SH261	EHS31-A04	4	EHS31-B06	6	EHS31-C06	6
	EHS31-A08	8				
SH311	EHS31-A04	4	EHS31-B06	6	EHS31-C06	6
	EHS31-A08	8				
SH381	EHWH38-A05	5	EHWH38-B06 EHWH38-B09	6 9	EHWH42-C06 EHWH05A-C09	6 9
	EHWH49-A08	8				
	EHWH49-A10	10				
SH431 SH491	EHWH49-A05	5	EHWH49-B06 EHWH49-B09	6 9	EHWH42-C06 EHWH05A-C09	6 9
	EHWH49-A08	8				
	EHWH49-A10	10				
SH612	EHWH61-A05	5	EHWH49-B09	9	EHWH05A-C09	9
	EHWH61-A08	8				
	EHWH61-A10	10				
	EHWH61A-A20	20				

Heater Packages - Field Installed, For Dehumidification Models Only

- Designed for adding Electric Heat to 0 KW Units
- Circuit Breaker Standard on All Models
- UL Listed
- CUL Listed

Heat Pump Models	-A00 Models 230/208-1		-B00 Models 230/208-3		-C00 Models 460-3	
	Heater Model #	KW	Heater Model #	KW	Heater Model #	KW
SH261D	EHS31-A04	4	EHS31-B06	6	EHS31-C06	6
	EHS31-A08	8				
SH311D	EHS31-A04	4	EHS31-B06	6	EHS31-C06	6
	EHS31-A08	8				
SH381D	EHWH38DA10	10	EHWH38DB06	6	EHWH42-C06 EHWH38DC09	6 9
			EHWH38DB09	9		
SH431D, SH491D	EHWH49DA10	10	EHWH49DB06	9	EHWH49DC09	9
SH612D	EHWH61DA10	10	EHWH61DB09	9	EHWH61DC09	9

Cooling Application Data - Outdoor Temperature °F ①

Model	D.B./W.B. ②	Cooling Capacity	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F
SH261	75/ 62	Total Cooling	23,800	23,200	22,500	21,700	20,900	20,200	19,500	18,700	18,000
		Sensible Cooling	19,200	18,700	18,300	17,800	17,400	16,900	16,500	16,000	15,600
	80/ 67	Total Cooling	25,400	25,200	24,900	24,500	24,000	23,500	23,000	22,300	21,600
		Sensible Cooling	18,600	18,300	18,100	17,800	17,500	17,200	16,900	16,500	16,200
SH311	75/ 62	Total Cooling	27,900	26,600	25,400	24,300	23,100	22,100	21,100	20,200	19,400
		Sensible Cooling	20,400	20,000	19,500	19,000	18,500	17,900	17,300	16,700	16,000
	80/ 67	Total Cooling	29,800	29,000	28,200	27,400	26,500	25,700	24,900	24,100	23,300
		Sensible Cooling	19,800	19,600	19,300	19,000	18,600	18,200	17,700	17,200	16,600
SH381	75/ 62	Total Cooling	38,700	36,500	34,400	32,600	30,900	29,500	28,400	27,400	26,500
		Sensible Cooling	30,000	29,200	28,300	27,500	26,800	26,100	25,500	24,800	24,200
	80/ 67	Total Cooling	41,300	39,700	38,200	36,800	35,400	34,400	33,500	32,600	31,900
		Sensible Cooling	29,100	28,600	28,000	27,500	27,000	26,500	26,100	25,600	25,200
SH431	75/ 62	Total Cooling	44,000	42,200	40,400	38,500	36,600	34,700	32,700	30,700	28,700
		Sensible Cooling	35,600	34,300	33,000	31,900	30,900	30,000	29,100	28,300	27,600
	80/ 67	Total Cooling	47,000	46,000	44,800	43,500	42,000	40,400	38,600	36,600	34,500
		Sensible Cooling	34,500	33,600	32,700	31,900	31,200	30,500	29,800	29,200	28,700
SH491	75/ 62	Total Cooling	48,900	46,900	44,800	42,700	40,500	38,400	36,200	34,000	31,800
		Sensible Cooling	36,000	35,000	34,000	33,100	32,100	31,300	30,200	29,300	28,500
	80/ 67	Total Cooling	52,200	51,100	49,700	48,200	46,500	44,700	42,700	40,500	38,200
		Sensible Cooling	34,900	34,300	33,700	33,100	32,400	31,800	31,000	30,300	29,600
SH612	75/ 62	Total Cooling	56,000	54,200	52,100	50,100	48,000	45,800	43,600	41,300	39,000
		Sensible Cooling	40,100	39,400	38,600	37,700	36,800	35,800	34,600	33,500	32,200
	80/ 67	Total Cooling	59,800	59,000	57,900	56,600	55,000	53,300	51,400	49,200	46,900
		Sensible Cooling	38,900	38,600	38,200	37,700	37,100	36,400	35,500	34,600	33,500
SH612	85/ 72	Total Cooling	71,200	69,000	66,500	63,900	61,200	58,300	55,400	52,400	49,300
		Sensible Cooling	39,900	39,200	38,400	37,500	36,400	35,200	33,800	32,500	30,900

① Below 65°F, unit requires a factory or field installed low ambient control.

② Return air temperature °F.

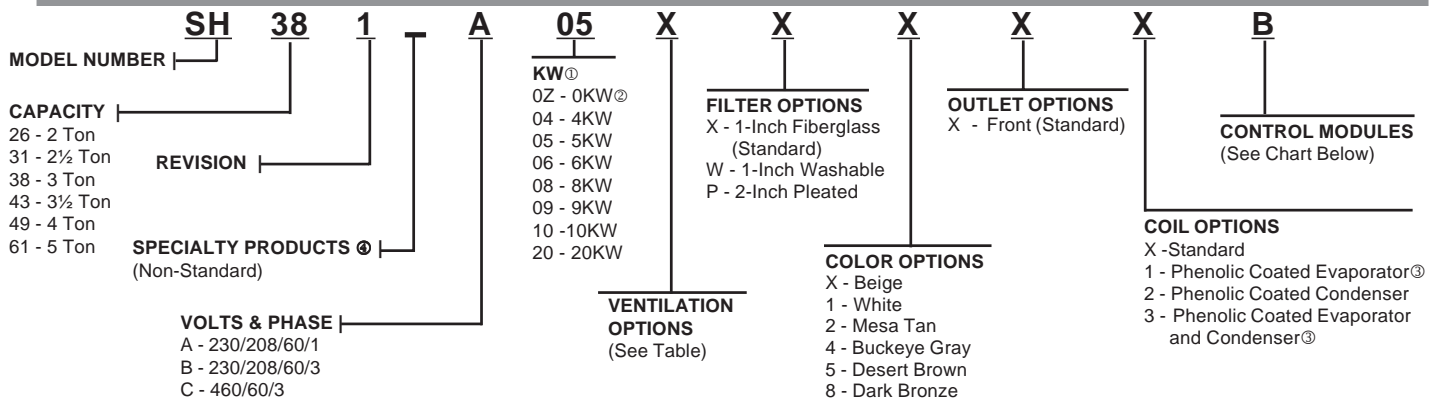
Capacity Multiplier Factors			
% of Rated Airflow	-10	Rated	+10
Total BTUH	0.975	1.0	1.02
Sensible BTUH	0.950	1.0	1.05

Heating Application Rating & Outdoor Temperature °F*

Model		0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F	60°F
SH261	BTUH	7,600	9,000	10,400	11,900	13,000	14,000	15,000	15,900	18,100	20,200	21,900	23,300	24,800
	WATTS	1690	1730	1770	1810	1850	1900	1950	2000	2030	2050	2080	2120	2160
	COP	1.32	1.53	1.73	1.93	2.06	2.16	2.26	2.33	2.62	2.89	3.09	3.23	3.37
SH311	BTUH	9,400	11,000	12,700	14,400	15,300	15,700	16,100	16,600	20,100	23,600	26,000	27,700	29,400
	WATTS	2060	2100	2150	2190	2220	2240	2270	2290	2360	2420	2470	2510	2550
	COP	1.34	1.54	1.74	1.93	2.02	2.06	2.08	2.13	2.50	2.86	3.09	3.24	3.38
SH381	BTUH	10,300	12,700	15,200	17,600	19,400	20,800	22,200	23,600	27,500	31,500	34,500	36,900	39,300
	WATTS	2710	2750	2800	2850	2870	2890	2900	2910	3010	3110	3180	3230	3270
	COP	1.12	1.36	1.60	1.81	2.00	2.11	2.25	2.38	2.68	2.97	3.18	3.35	3.53
SH431	BTUH	13,300	15,900	18,400	21,000	23,600	26,200	28,800	31,400	33,900	36,500	39,100	41,700	44,300
	WATTS	3010	3070	3130	3180	3240	3300	3360	3420	3470	3530	3590	3650	3710
	COP	1.30	1.52	1.73	1.94	2.14	2.33	2.52	2.70	2.87	2.95	3.15	3.35	3.50
SH491	BTUH	18,400	21,300	24,100	26,700	29,600	32,600	34,400	38,300	41,100	43,900	46,800	49,600	52,400
	WATTS	3500	3590	3690	3780	3880	3970	4070	4160	4260	4350	4450	4540	4640
	COP	1.55	1.74	1.92	2.09	2.26	2.41	2.55	2.70	2.83	2.96	3.09	3.21	3.31
SH612	BTUH	19,600	23,200	26,900	30,600	32,600	33,400	34,200	35,100	43,000	50,900	56,200	59,900	63,600
	WATTS	4140	4260	4380	4490	4570	4610	4650	4690	4920	5160	5320	5440	5560
	COP	1.39	1.60	1.80	2.00	2.10	2.13	2.16	2.20	2.57	2.90	3.10	3.23	3.36

* 70°F DB indoor return air at rated CFM includes defrost operation below 45°.

Heat Pump Wall-Mount Model Nomenclature



- ① Not all KW available on all models. See pages 9 & 10 for details.
- ② 0Z is 0KW and circuit breaker (230/208V) or toggle disconnect (460V). Use 00 for 0KW and no circuit breaker or disconnect.
- ③ Includes reheat coil on dehumidification models, if applicable.
- ④ Insert "D" for dehumidification with hot gas reheat. Reference Form F1761 for complete details.

Ventilation Options

MODELS	SH261, SH311		SH381, SH431, SH491, SH612	
	DESCRIPTION	Factory Installed Code No.	Field Installed Part No.	Factory Installed Code No.
Barometric Fresh Air Damper - No Exhaust ^① - Standard	X	BFAD-3	X	BFAD-5
Blank-Off Plate	B	BOP-3	B	BOP-5
Motorized Fresh Air Damper - No Exhaust ^①	M	MFAD-3	M	MFAD-5
Commercial Ventilator - Spring Return w/Exhaust	V	CRVS-3	V	CRVS-5
Commercial Ventilator - Power Return w/Exhaust	P	CRVP-3	P	CRVP-5
Economizer (Internal) - Fully Modulating w/Exhaust	E	EIFM-3C	E	EIFM-5C
Energy Recovery Ventilator w/Built-in Exhaust 230V	R	WERV-A3C-* ^②	R	WERV-A5C-* ^②
Energy Recovery Ventilator w/Built-in Exhaust 460V	R	WERV-C3C-* ^②	R	WERV-C5C-* ^②

- ① These vents are without exhaust capability and may require separate field installed barometric relief elsewhere within the conditioned space.
 - ② Intake and exhaust can be independently adjusted.
- * Color option must be specified to match unit (X = Beige, 4 = Buckeye Gray)

Heat Pump Control Modules

Factory Installed Code Number	Field Installed Part Number	Description				
		Low Pressure Control ^①	Low Ambient Control and Relay ^②	Start Kit ^③	Start Kit ^④	Outdoor Thermostat ^⑤
B	CMH-3	●				
E	CMH-7		●			
O	CMH-9	●	●			
Field Installed Only	CMH-14A					●
Field Installed Only	CMC-15 ^③			●		
Field Installed Only All Models Except SH612-A	SK111 ^④				●	
Field Installed Only SH612-A Only	SK113 ^④				●	

- ① The low pressure control is auto reset. It includes a lockout feature and is resettable from the wall thermostat. All low pressure controls use a timed bypass circuit to prevent nuisance tripping during low temperature start-up.
- ② The low ambient control includes an 8201-008 (fan relay) and permits cooling operation down to 0°F.
- ③ PTCR start kit can be used with all -A single phase models. Increases starting torque 2-3x. Not used for -B or -C three phase models. Do not use if SK111 or SK113 is used.
- ④ Start capacitor and potential relay start kit can be used with all -A single phase models. Increases starting torque 9x. Not used for -B or -C three phase models. Do not use if CMC-15 is used.
- ⑤ The outdoor thermostat is adjustable from 0°F to 50°F. It is suitable for use as a compressor cut-off thermostat.

NOTE: Standard heat pump control board has a 5-minute compressor anti-short cycle timer.



Bard Manufacturing Company, Inc.
Bryan, Ohio 43506
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Due to our continuous product improvement policy, all specifications subject to change without notice.

Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

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S3359
February, 2009**

Supersedes S3359-1208