

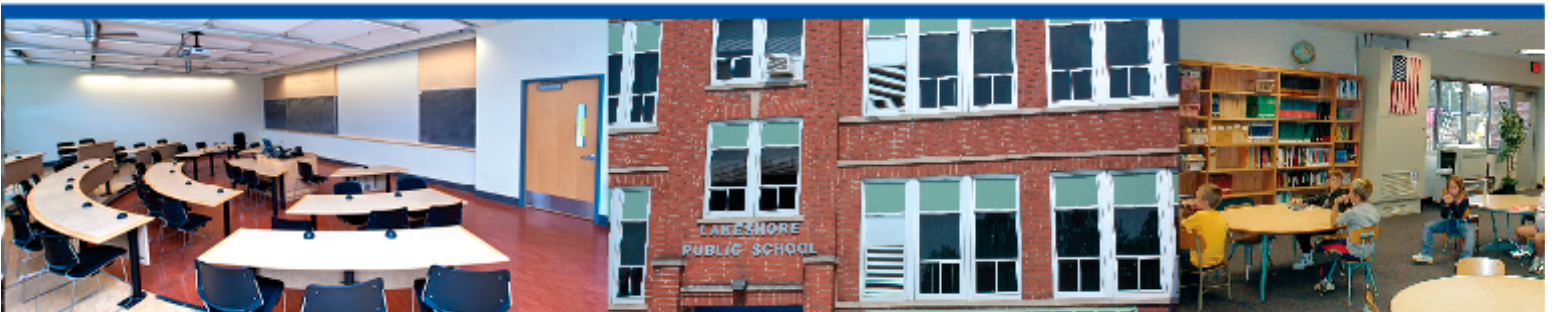
# Change'Air Product Catalog Version 1.10

## Senior Series

For a complete catalog  
contact your local representative.



Engineered Excellence for Greener Classrooms



NOTE: Change'Air reserves the right to make changes to Unit specifications without prior notice. The performance of each Unit may vary based on site conditions and installation.

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# Senior Series

## WATER SOURCE HEAT PUMP

### 5.1 Features

The Change'Air Senior Series classroom air handler has a wide range of features. It is available in one cabinet size (B) with supply air capacities ranging from 1000 to 1800 cfm.

In addition to the standard features the Senior Series include:

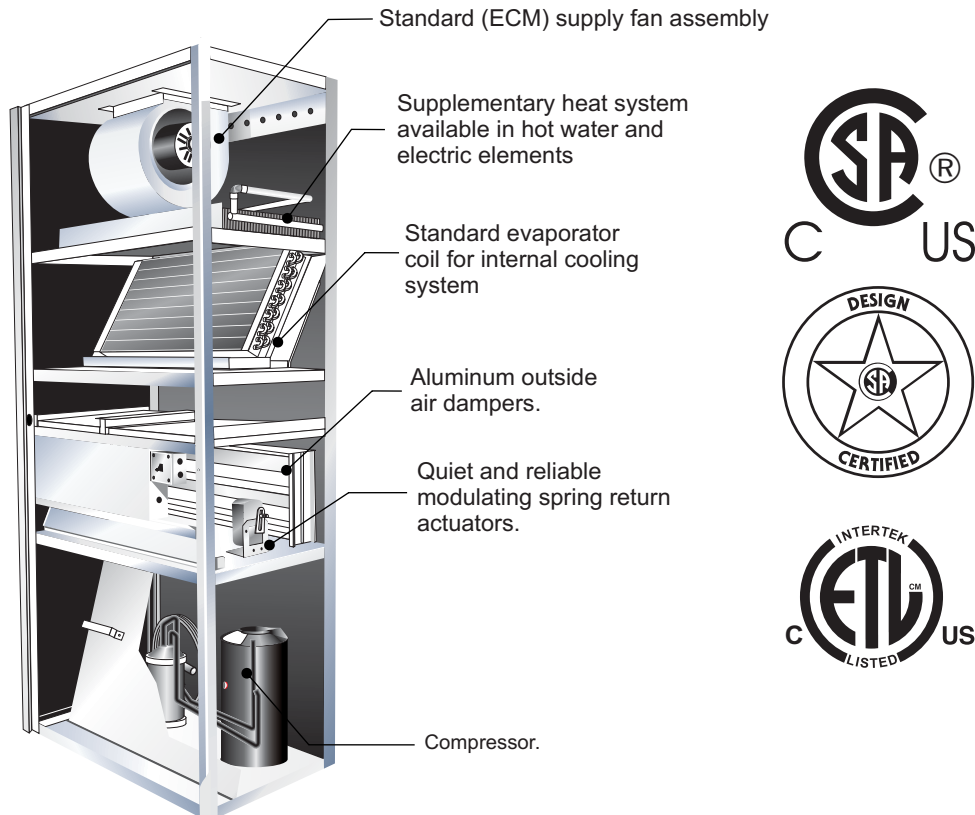
- Water source heat pump.
- Two step scroll compressors
- 2.5 ton to 5 ton capacities.

Optional features include such upgrades as:

- Energy recovery wheel (ERW)
- Available with one or two relief fan(s) 450 to 600 CFM.
- The economizer is separate from the wheel.
- Supplementary heat
- Hot gas reheat

The Change'Air water source heat pumps deliver economical comfort. The compressor not only cools but through a reversing valve can also supply heat. Based on design requirements the heat pump may require a supplementary heat source (hot water or electric). When in heating mode, if the temperature falls below the second stage heat set point the supplementary heat, when available, will be energized. An optional energy recovery wheel (ERW) along with the economizer damper is available.

A single wall penetration using a standard louver accommodates the outside air requirement. The louver can be supplied either by Change'Air or another louver supplier.



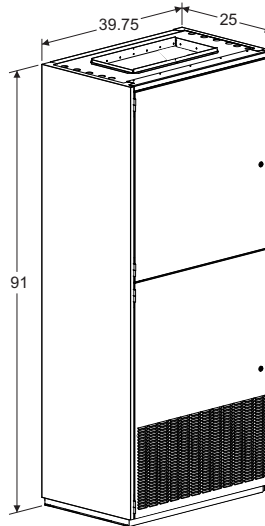
## 5.0 Senior Series

### 5.2 Senior Series Cabinet Size Selection

#### “B” Cabinet

##### Basic Features, Design Options and Capacities.

- Cabinet (39.75" x 25" x 91")
- Supply air up to 1800 CFM
- Water source heating capacity is between nominal 30-60 Mbtuh. (Actual performances will depend on site conditions)
- Supplementary heating capacity (Hot water up to 100 Mbtuh, and two stage electric up to 15KW.
- Water source cooling capacity is between nominal 30-66 Mbtuh. (Actual performances will depend on site conditions)
- Optional Energy Recovery Wheel (ERW)



##### Cabinet Construction

Each cabinet is manufactured using galvanized steel with a powder coat baked enamel-textured finish. The internal frame supports all the internal metal pans and components so that the external panels do not carry any of the weight. The external cabinet panels are attached so that there are no visible screws, rivets or fasteners.

##### Insulation and Acoustics

The cabinet front incorporates two fully insulated full size access panels. The cabinet panels are thermally and acoustically insulated with 1"(2.54 cm) thick flexible acoustic insulation. This insulation is covered in the air stream with a black coated mat. The flexible, thermal and acoustical liner includes the specification compliance ASTM C1071, HN-1545B, NFPA 90A and NFPA 90B.

##### Enamel Finishes

Each cabinet has the highest quality, powder coat baked enamel finish. For architectural and design purposes, Change'Air provides three colors: white, antique white, and gray.

**5.3 Physical Data Table - Cabinet "B"**

<b>2.5, 3.0 - 3.5, 4 &amp; 5 Ton</b>				
<b>SENIOR "B" CABINET</b>			<b>COMPATIBILITY TABLE</b>	
OPTIONS		VALUE OR CAPACITY	DESIGNATION	DESIGNATION
<b>HEATING</b>	ELECTRIC HEAT (E)	10KW	Low Capacity (LC)	
		12KW	Standard Capacity (SC)	
		15KW	High Capacity (HC)	
<b>HEATING</b>	HOT WATER COIL (H)	17" X 30", 1 row 48 Mbtuh		Low Capacity (LC)
		17" X 30", 2 row 102 Mbtuh		Standard Capacity (SC)
<b>HEATING</b>	WATER SOURCE HEATING (WHP)	2.5 Ton	Heating (22-28 Mbtuh)	
		3.0 Ton	Heating (34-43 Mbtuh)	
		4.0 Ton	Heating (46-61 Mbtuh)	
		5.0 Ton	Heating (60-68 Mbtuh)	
<b>COOLING</b>	WATER SOURCE COOLING (WHP)	2.5 Ton	Cooling (20-30 Mbtuh)	
		3.0 Ton	Cooling (36-46 Mbtuh)	
		4.0 Ton	Cooling (48-54 Mbtuh)	
		5.0 Ton	Cooling (66-72 Mbtuh)	
<b>SUPPLY FANS</b>	ECM	1050 cfm	Low Capacity LC-S - 1/3 hp (1 fan body)	
		1100 cfm	Low Capacity LC-D - 1/3 hp (2 fan bodies)	
		1300 cfm	Standard Capacity SC-S - 1/2 hp (1 fan body)	
		1400 cfm	Standard Capacity SC-D - 1/2 hp (2 fan bodies)	
		1600 cfm	High Capacity HC-S - 3/4 hp (1 fan body)	
		1800 cfm	High Capacity HC-D - 3/4 hp (2 fan bodies)	
<b>SUPPLY VOLTAGES</b>	208/3/60 "B"		YES	
	208-230/1/60 "C"		YES	
	277/1/60 "D"		YES	
	460/3/60 "E"		YES	
<b>AIR FLOW DESIGN</b>	Draw Through Heating		YES	YES
<b>FILTERS</b>	(2) 1" Disposable		16" x 20"	
	(2) 2" Disposable		16" x 20"	
	(2) Permanent Washable		16" x 20"	
<b>HOT GAS REHEAT</b>	All Models		YES	
<b>ENERGY RECOVERY WHEEL</b>	All Models		YES	
<b>WEIGHT</b>	All Models		750 lb	780 lb

All weights are calculated on the maximum available options.

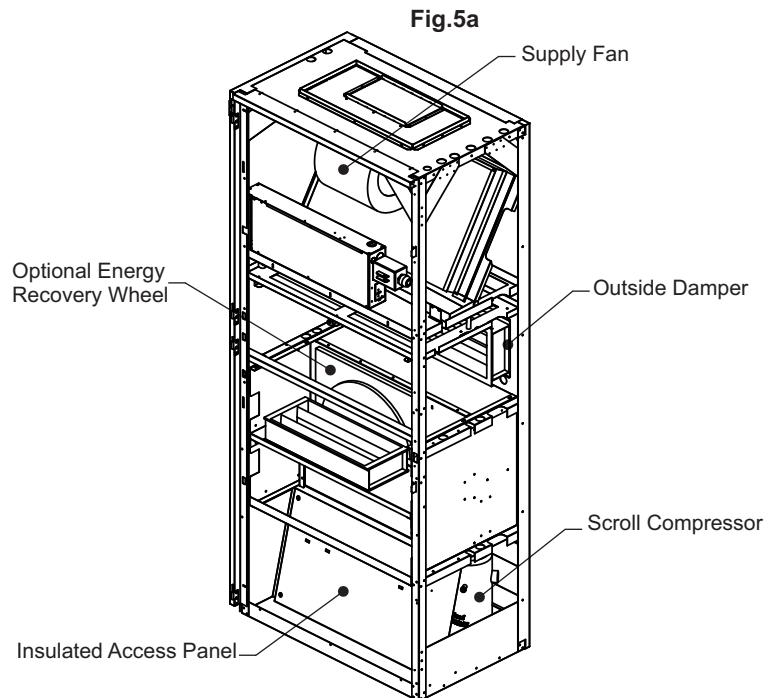
NOTE: Change'Air reserves the right to make changes to air handler specifications without prior notice. The performance of each air handler may vary based on site conditions and installation.

## 5.0 Senior Series

### 5.4 Senior Series Water Source Heat Pump Classroom Air Handler

The Change'Air Senior Series consists of a direct expansion cooling system, reversing valve coaxial water to refrigerant coil and staged scroll compressor that are carefully matched to provide peak performance. Free cooling can be achieved through dampers which are standard on all units.

Leave out the reversing valve and you have a self contained water source condensing unit. Heat can be supplied by either one of the supplementary heating options (5.5 Heating Options)



### 5.5 Heating Options

The Senior Series classroom air handler can be equipped with any one of the following supplementary heat options.

#### HOT WATER HEAT SOURCE:

The hot water heat source is constructed in an air over water configuration and provides heat by way of a hydronic coil. Built to dependable, design conscious standards, these units are an efficient complement to your existing hot water heating system. Our hydronic heating coils are comprised of corrugated aluminum fins individually bonded to bright copper tubing to prevent electrolytic action. They are then brazed onto headers and are pressure tested to meet industry standards. All our coils have a self closing bleeder to facilitate start-up.

#### ELECTRIC HEAT SOURCE:

Electric heat source consists of multi-stage electric resistance elements offered in several voltage/phase and kilowatt configurations.

### 5.6 Cooling Options

All air handlers in the Senior Series have water source conditioning built in to achieve efficient cooling.

Change'Air uses R410A as the standard refrigerant.

A full range of capacities have been designed to accommodate a range of spaces from a small classroom to a high load computer lab or cafeteria. All capacities include a thermal expansion valve on the evaporator for efficient operation within a wide range of load conditions.

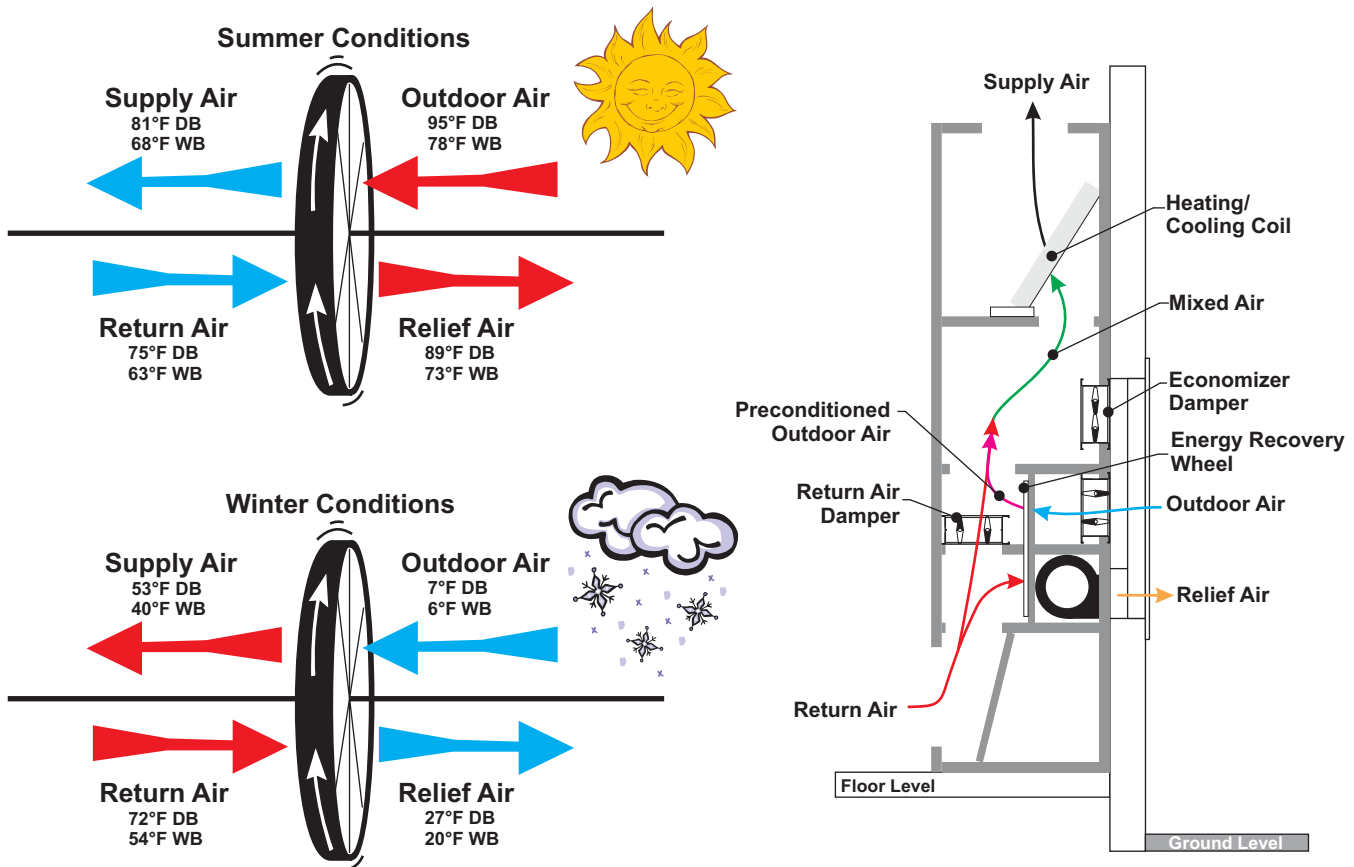
All air handlers include safety features such as high pressure cut outs, evaporator freeze protection and line dryers to ensure a long operating life. Quality scroll compressors are standard equipment on all Senior Series classroom air handlers.

### 5.7 Energy Recovery

The ERW is 19" diameter, 1" or 2" thick and is combined together with an outside air damper providing additional unrecovered outside air or economizer when applicable. A typical application of 450 cfm would have an effective recovery rate of 65.7% in cooling season and 67.2 % in heating season.

5.8 Energy Recovery Wheel

Energy recovery wheels (ERW) rotate through both the fresh incoming air stream and the relief air stream. As the wheel rotates, it transfers a portion of the sensible and latent energy from one air stream to the other. As a result the incoming air stream is pre-conditioned reducing the thermal gradient across the conditioning equipment thereby reducing energy consumption.



SCFM	Effectiveness (%)				ΔP (in.w.c)
	S	L	T Clg	T Htg	
450	70.1	62.1	65.7	67.2	0.54
500	68.1	60.1	63.7	65.2	0.60
550	66.1	58.1	61.7	63.2	0.66
600	64.1	56.1	59.7	61.2	0.72

Rated in accordance with ARI Standards 1060

Manufactures Recommended Cleaning

Wash the segments or small wheels with a non-acid based (evaporator) coil cleaner or alkaline detergent solution. Non-acid based coil cleaner such as KMP Acti-Clean AK-1 concentrate in a 5% solution has been demonstrated to provide excellent results. Do not use acid based cleaners, aromatic solvents, temperatures in excess of 170 °F or steam; damage to the wheel may result. Soak in the cleaning solution until grease and tar deposits are loosened. An overnight soak may be required to adequately loosen heavy deposits of tar and oil based contaminants.

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