TEMPEFF

NORTH AMERICA

SELECTION GUIDE

TEMPEFF
NORTH AMERICA

The Company

Building on over 20 years of European innovation Tempeff North America is pleased to offer Dual Core® energy recovery ventilation equipment with the highest efficiency available. In these times of escalating energy costs, and concern over environmental impact, Tempeff Dual Core® Technology is an ideal solution for your building ventilation needs.

Ventilation

Any building owner or operator knows that due to the extreme North American climate, conditioning ventilation air is very expensive. However, that ventilation air is extremely important to ensure good building health, and in turn health of occupants, leading to increased comfort and productivity. Thanks to Tempeff Dual Core's high efficiencies, owners can meet or exceed minimum legislated ventilation requirements, without the usual high operating costs of traditional ventilation heating and cooling equipment.

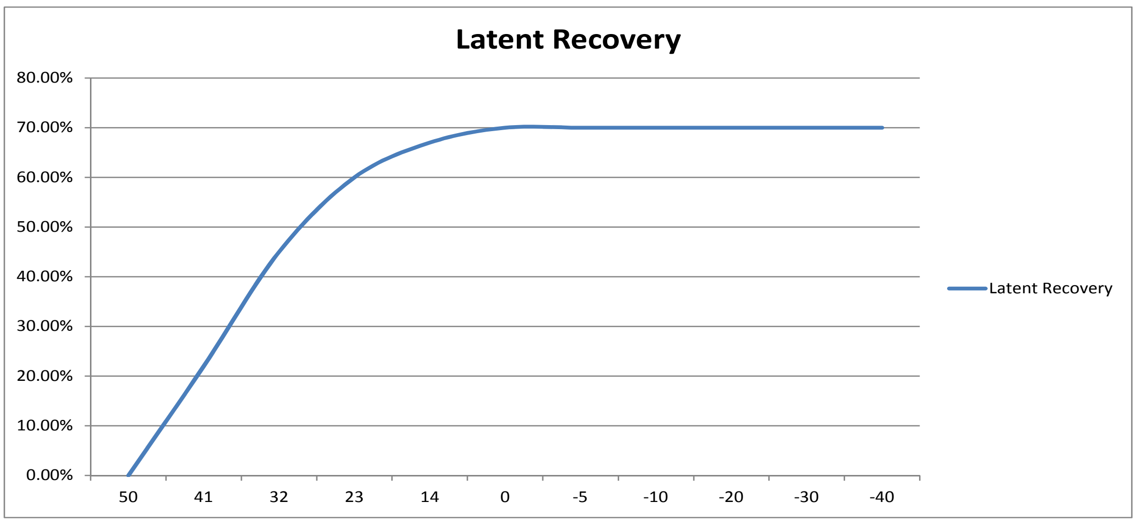
Dual Core® Energy Recovery

Sensible Effectiveness

Tempeff North America products employ Dual Core® regenerative technology that offers up to 95% sensible effectiveness. Other available technologies offer a maximum of approximately 50% to 75% effectiveness under ideal circumstances, and much lower real effectiveness in colder temperatures due to frost. The Dual Core® design is significantly more energy efficient in all conditions, thus payback periods are extremely attractive.

Latent Recovery

In winter modes condensation will form on the exhausting heat exchanger. When the cycle changes the outdoor air is passed over the heat exchanger, and that moisture is added back to the airstream. This reduces the need for adding humidity to the conditioned space. In many cases up to 70% latent recovery can be obtained.



Frost Resistant

Most heat recovery technologies suffer from the same basic drawback. In cold temperatures frost will form on the exhaust side of the heat exchanger, dramatically reducing the heat recovery effectiveness. If a defrost cycle is not employed, frost will build up until the entire heat recovery device becomes inoperable. During the defrost cycle the heat recovery device is usually bypassed, or put into a mode where effectiveness is significantly reduced so that the frost can melt. Thus in times where heat recovery is needed the most (ambient temperatures are coldest) the effectiveness of the device is the lowest. As a result, most technologies require additional heat capacity for these times, usually sized as if there is no heat recovery device at all to ensure the building does not experience periods where cold air is being introduced (during defrost cycles). In turn real effectiveness is greatly reduced increasing operating costs, equipment costs, and life cycle costs.

The Dual Core® design prevents frost build up in a typical application. With the Dual Core® heat exchanger, one heat exchanger is always delivering conditioned air to the space. In many cases additional heat is not necessary for the ventilation air, due to the real effectiveness of the system! As a result operating costs, equipment cost, installation cost and overall life cycle costs are significantly reduced compared to traditional heat recovery technology.

Low Maintenance

With few moving parts, maintenance of the system is very low. Due to cycling nature of the heat exchangers dust rarely builds up on the heat exchangers, thus frequent cleaning is not required.

Long Term performance

In a third party audit of a 17 year old installation, performed by CIT Energy Management AB, it was found that the efficiency of the equipment was the same as the day it was installed (90% measured temperature efficiency). Thus owners of Tempeff equipment can rest assured that they will enjoy the high performance of their system for a long time.

DUAL CORE® TECHNOLOGY

TEMPEFF


90% SENSIBLE EFFECTIVENESS
+/- 5%

Typical Applications:

Dual Core® units can be applied wherever ventilation air is required. Dual Core® units meet or exceed ASHRAE 62 – 2016 acceptable cross leakage rates, and are an excellent solution for energy recovery in ventilation applications.

Some common applications:

- Schools
- Apartment/condo complexes
- Office complexes
- Retail outlets
- Industrial settings
- Convention centers

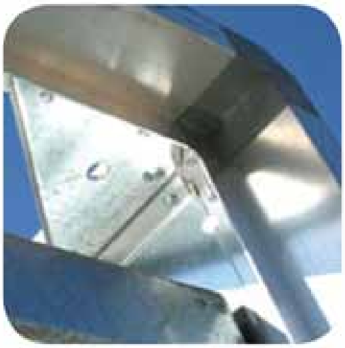
And so many more….

Standard Features:

- Extruded aluminum post and corner construction
- Galvanized exterior panels
- Galvanized liner
- Foam injected insulated panels
- All sections come with hinged access doors and locking latches
- Multi-Damper switchover section complete with actuators
- Internal damper section closes completely to isolate outdoor air from building when unit disabled. Eliminates the need for external shut-off dampers
- Galvanized damper blades, damper rods and axles
- Indoor or Outdoor construction
- Supply and Exhaust temperature sensors
- All controls to perform damper sequencing
- Dry contacts to allow damper control by BMS system
- Electric actuators are standard.
- Line voltage to control voltage transformer

TEMPEFF

An ideal solution.



Typical Options:

- Supply and exhaust blower sections with spring isolation
- Backward inclined and airfoil blowers
- Filter sections
- High efficiency filters
- Heating coil plenums
- Heating coils
- Cooling coil plenums
- Cooling coils
- Special coatings (epoxy, powder coat, enamel, heresite or prepainted panels)
- Storm louvers/hoods
- Service corridors
- Pressure gauge
- Direct/indirect burners
- VFD's
- Marine lights
- GFCI receptacle
- Viewing ports
- ECM Motors
- SS Hardware
- Aluminum or SS panel options
- Optional base rail heights
- Drain connection in heat exchanger sections
- Re-circulating mode contacts to allow air to bypass damper section. Used in off peak (unoccupied) modes, when outdoor air is not required, but system is being used to provide heating or cooling for building. Ancillary outdoor and exhaust air dampers recommended with this option.
- Contact your local Tempeff representative for more available options

Design Considerations

Due to the Dual Core's innovative damper design, outside air dampers are not necessary to isolate the atmosphere from the building when the unit is off.

Due to the Dual Core's fast acting damper design, cross leakage rates are less than 1-3% which is well under ASHRAE 62 -2016 prescribed acceptable cross leakage rates for energy recovery applications. Consult your local approval agency to ensure they will allow ASHRAE's recommendation.

When choosing a location for an indoor unit, ensure that the duct length for outside/exhaust air is as short as possible. When the cycles switch, the exhaust air in the duct will be drawn back into the outside air. Cross leakage is less than 1-3%, but will increase with longer outside air duct runs.

If the unit is located indoor, ensure ducting for outside/exhaust air is designed to handle the switching positive and negative pressures. These ducts will experience alternating positive and negative pressures every 60 seconds.

The supply air and exhaust air duct work (to the unit) must be well insulated to assure maximum heat recovery is attained. Insulating outside air ducts located in non-heated areas is not necessary.

Selection Guide

How to select a Tempeff Dual Core® unit

Before starting, establish the required airflow for the space this unit will be applied to. The selection guide and performance charts in this manual assume a balanced airflow system, where supply and exhaust air volumes are equal. If an unbalanced system is desired, contact your local Tempeff representative for design assistance.

Step 1

Consult the performance chart for desired series and select a model that is suitable for the air volume. Dual Core® models are sized based on required airflow. The models listed are in order of cost effectiveness, the first unit is the lowest cost, but will typically have a lower temperature efficiency. The other model options listed will progressively grow in initial cost, but will have a higher temperature efficiency. If the air volume needed is larger than the chart reflects, contact your local Tempeff representative for design assistance. Larger air volumes than catalogued are available.

Step 2

Calculate the leaving air temperature. First determine the outdoor (entering) air temperature and the exhaust air temperature. For winter mode calculation the temperature efficiency of the unit can be obtained from the performance chart on page 7 & 8. For summer mode the temperature efficiency can also be obtained from the performance chart on page 7 & 8.

Temperature Efficiency is calculated by:

$$Et = \frac{T2 - T3}{T1 - T3}$$

Et = Temperature efficiency
T1 = Temperature of Exhaust air (Dry Bulb)
T2 = Temperature of Supply air (Dry Bulb)
T3 = Temperature of Outdoor air (Dry Bulb)

Isolating for T2 (supply air) we find:

T2 = Et(T1-T3) + T3

This formula can be used for both winter and summer modes.

Using the calculated supply air temperature, it can now be determined whether supplementary heat or cooling is required to meet space conditions.

Step 3

Calculate regained sensible heating and cooling. Now that the supply air temperature has been calculated, it can be used to determine how much sensible heating and cooling has been regained.

The formula to accomplish this is:

BTUH = (T2-T3) x Airflow x 1.08

This can be used for both winter and summer, if the number is a negative that is the sensible BTUH cooling regained by the unit.

Step 4

Calculate the HP required for both supply and exhaust. If the supply and exhaust fans are existing or supplied by others, the static pressure drop added to the system can be obtained from the performance chart (Core Pressure Drop). This pressure drop will be added to both supply and exhaust air streams, thus the motor must be sized to account for this added pressure.

If the fans are to be included in the Tempeff unit, simply add the external static pressure (ESP), any additional heating or cooling coil pressure drops, and special filter pressure drops, to get your total ESP. Using the performance chart find the column that corresponds to your total ESP, and select the BHP that matches the model selected. This value will be used for both supply and exhaust HP requirements.

EXAMPLE:

A space requires 10,000 CFM of ventilation (outside) air to meet code requirements. A corresponding 10,000 CFM of exhaust air will be removed from the space. Both air streams have a static pressure loss or 0.75 "W.C. A Tempeff Dual Core® unit complete with fans has been selected to assure maximum energy recovery from the space. The winter outside design air temperature is -4 deg F, and exhaust temperature is 70 deg F. The summer outside design air temperature is 85 deg F, and exhaust temperature is 75 deg F. Desired winter supply temperature is 72 deg F, and desired summer leaving temperature is 77 deg F. The target winter temperature efficiency is 90%

Determine:

1. Desired Tempeff Dual Core® model
2. Supply air temperature in both Summer and winter modes
3. Regained sensible heating and cooling in BTUH
4. HP requirements for supply and exhaust fans

1. Consulting the performance charts on page 7 & 8 the following 3 options are available at 10,000 CFM.

1. RG 9500
2. RG 12000
3. RG 15000

The RG 12000 has a temperature efficiency of 89.6%, thus is very close to the target efficiency. The summer efficiency for the RG 12000 is 79.6%.

2. Supply air temperature is determined by:

T2 = Et(T1-T3) + T3

Where:

Et = Temperature efficiency
T1 = Temperature of Exhaust air (Dry Bulb)
T2 = Temperature of Supply air (Dry Bulb)
T3 = Temperature of Outdoor air (Dry Bulb)

Winter:
T2 = 0.896 (70 – (-4)) + (-4)
T2 = 62.3 deg F

Summer:
T2 = 0.796 (75-85) + 85
T2 = 77.0 deg F

Using these numbers it can now be determined whether additional heating or cooling is required. Since the desired winter supply temp is 72 deg F, a heating device is required to raise the supply temperature by 9.7 deg F. Cooling supply temperatures match desired, thus no additional cooling is required. Selecting a heating coil to accomplish the 9.7 deg F adds 0.1" W.C to the system.

3. Sensible Heating and cooling recovered determined by:

BTUH = (T2-T3) x Airflow x 1.08

Winter:

BTUH = (62.3 – (-4)) x 10,000 CFM x 1.08

BTUH = 716, 040

Thus at -4 deg F the system will recover 716,040 BTU per hour.

Summer:

BTUH = (77-85) x 10,000 CFM x 1.08

BTUH = - 86,400 BTUH

Thus at 85 deg F the system will regain 86,400 BTU per hour of cooling, or 7.2 tons.

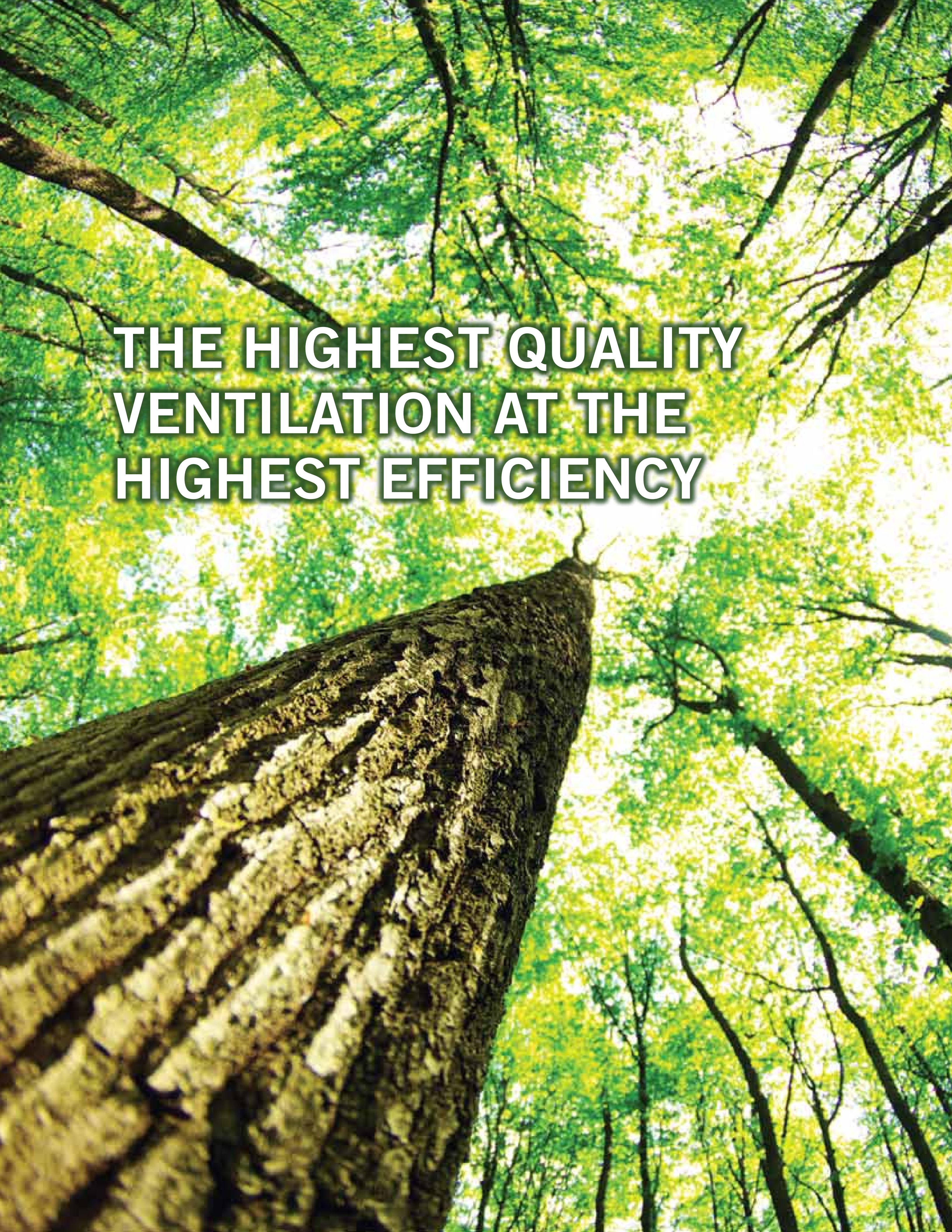
4. Determine HP required for supply and exhaust fans.

It has been given that the ESP for both supply and exhaust is 0.75" W.C. Since a heating coil has been added to the supply air stream, the pressure drop of the coil must be added. Thus the total ESP for the supply is 0.85" W.C, and total for the exhaust is 0.75" W.C. To be conservative on the supply air side, 1.0" W.C will be used.

Consulting the performance chart at 10,000 CFM and 1.0 "W.C ESP = 6.27 bhp

Consulting the performance chart at 10,000 CFM and 0.75 "W.C ESP = 5.71 bhp

Thus a 7.5 hp motor is the minimum allowable motor size for both supply and exhaust air fans.


THE HIGHEST QUALITY
VENTILATION AT THE
HIGHEST EFFICIENCY

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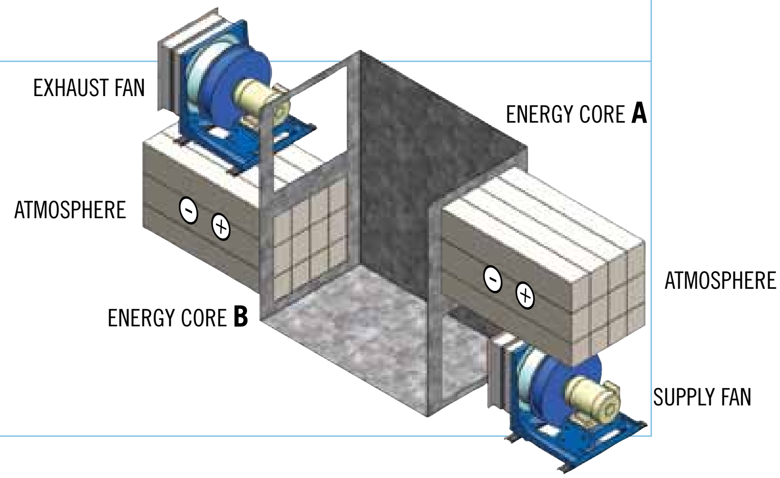
RG

SERIES

Tempeff Dual Core® Energy
Recovery Operation

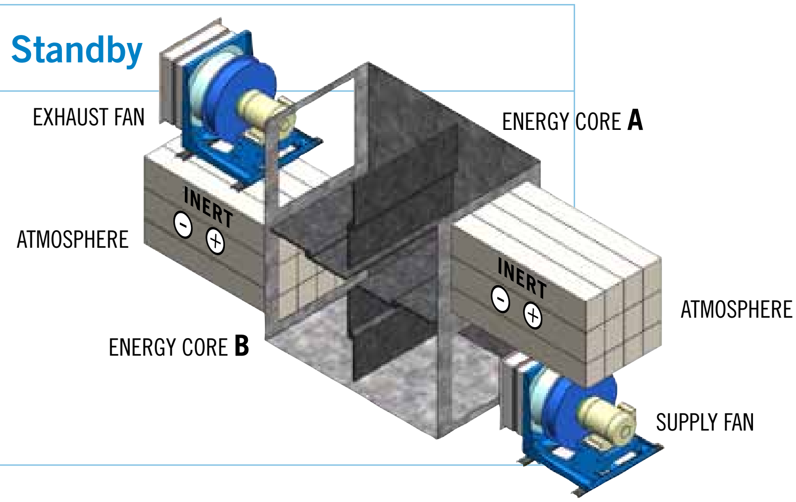
Simplest Form

A typical Tempeff Dual Core® unit contains 2 energy cores (A & B), special change over damper section, an exhaust fan, and a supply fan.



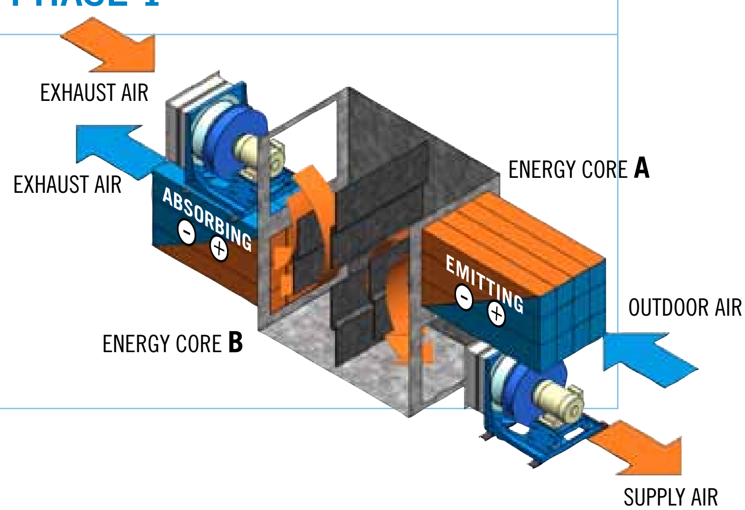
1 | Shut Off | Shut Down | Standby

When unit is shut down, the dampers close, isolating the building from the atmosphere.



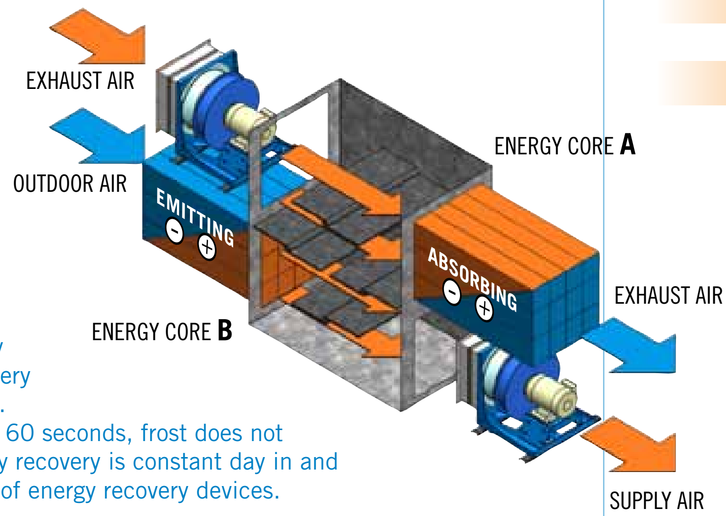
2 Cycling for Recovery PHASE 1

When energy recovery is called for, the dampers position so that Energy Core A will add energy to the supply air stream, heating up the air. Simultaneously Energy Core B is absorbing energy from the exhaust air stream.



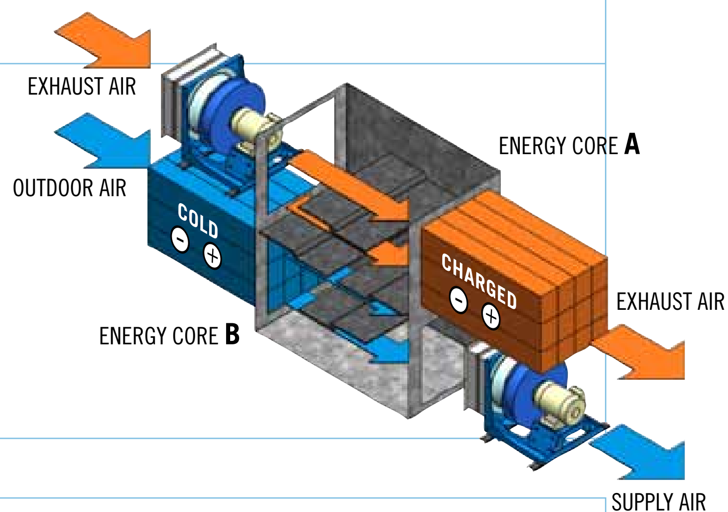
3 Cycling for Recovery PHASE 2

After 60 seconds, the dampers reposition. Now Energy Core B is adding the energy it reclaimed in Phase 1 to the supply air stream, heating it up. Simultaneously Energy Core A is "recharging" by absorbing energy from the exhaust air stream. Phase 1 and Phase 2 will alternate every 60 seconds, constantly delivering extremely high energy recovery regardless of outdoor air temperatures. Because the cores switch cycles every 60 seconds, frost does not have a chance to build up, thus energy recovery is constant day in and day out, unlike other traditional types of energy recovery devices.



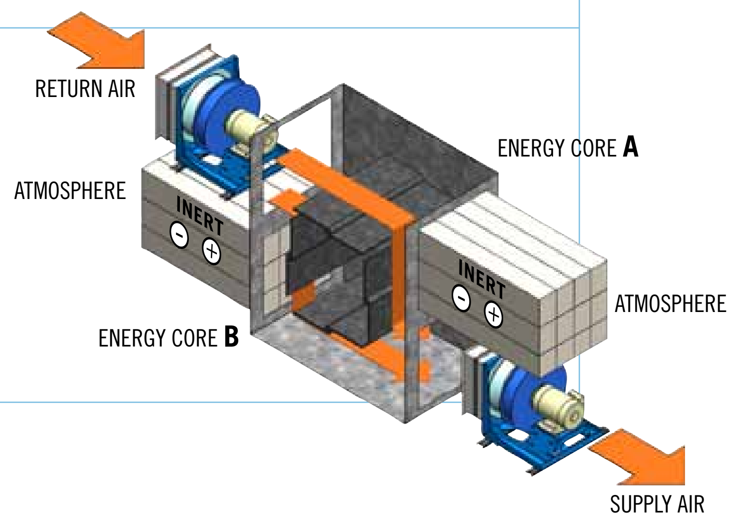
4 Free Cooling

If exhaust air and supply air are above set point, unit will revert to Free Cooling Mode. No energy recovery is taking place. Damper will switch every 3 hours to clean core faces.



5 Optional Recirculating Mode

In off peak or unoccupied mode, internal dampers can be bypassed so that 100% re-circulated air can be used to heat or cool the building through ancillary heating or cooling devices.
External shut off dampers recommended for this option.



PERFORMANCE DATA IMPERIAL

CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop "WC	BHP @ ESP ("W.C) 1.0 "
750	RG 1000	93.1	82.3	236	0.22	0.33
1000	RG 1000	92.8	80.1	315	0.38	0.6
	RG 1500	91.7	82.4	234	0.21	0.38
1250	RG 1000	92.9	77.9	394	0.55	0.97
	RG 1500	90.4	80.7	292	0.34	0.48
	RG 2000	91.8	83.2	207	0.16	0.42
1500	RG 1000	93.3	75.7	473	0.71	1.47
	RG 1500	89.3	79.1	351	0.46	0.65
	RG 2000	91.2	82	248	0.24	0.51
	RG 3000	92.2	83.3	200	0.14	0.46
1750	RG 1500	88.3	77.4	409	0.58	0.86
	RG 2000	90.7	80.8	290	0.33	0.68
	RG 3000	91.8	82.4	234	0.21	0.6
2000	RG 1500	87.4	75.8	468	0.7	1.11
	RG 2000	89.8	79.7	331	0.42	0.84
	RG 3000	91.4	81.5	267	0.28	0.78
	RG 4000	92.2	83.2	205	0.15	0.71
2500	RG 2000	88.4	77.3	414	0.59	1.27
	RG 3000	90.1	79.6	334	0.42	1.11
	RG 4000	91.7	81.8	257	0.26	0.96
3000	RG 2000	87.3	75	497	0.76	1.84
	RG 3000	89.4	77.7	400	0.56	1.62
	RG 4000	90.4	80.3	308	0.37	1.32
3500	RG 3000	87.3	75.8	467	0.7	1.95
	RG 4000	89.8	78.9	360	0.48	1.68
	RG 5500	92.5	82.7	222	0.19	1.39
	RG 6500	92.7	82.9	215	0.17	1.39
4000	RG 4000	89.3	77.4	411	0.58	2.22
	RG 5500	92.6	81.8	254	0.26	1.79
	RG 6500	92.7	82.1	246	0.24	1.77
	RG 7500	93.3	82.6	225	0.19	1.72
4500	RG 4000	87.5	76	462	0.69	2.68
	RG 5500	92.6	80.9	286	0.32	2.36
	RG 6500	92.8	81.2	276	0.3	2.34
	RG 7500	93.3	81.9	253	0.25	2.27
5000	RG 5500	91	80	318	0.39	2.59
	RG 6500	91.2	80.3	307	0.37	2.55
	RG 7500	91.7	81.1	281	0.31	2.48
	RG 9500	93.2	83	212	0.17	2.28
5500	RG 5500	90.8	79.1	349	0.46	2.99
	RG 6500	91	79.5	338	0.43	2.94
	RG 7500	91.7	80.3	309	0.37	2.84
	RG 9500	93.3	82.4	233	0.21	2.63
6000	RG 5500	90.7	78.2	381	0.52	3.63
	RG 6500	91	78.6	369	0.5	3.58
	RG 7500	91.6	79.5	338	0.43	3.45
	RG 9500	93.4	81.8	254	0.26	3.1
	RG 12000	92.4	83.2	207	0.16	2.2
6500	RG 5500	89	77.3	413	0.59	3.94
	RG 6500	89.3	77.7	399	0.56	3.89
	RG 7500	90	78.7	366	0.49	3.76
	RG 9500	93.6	81.2	275	0.3	3.75
	RG 12000	92.3	82.7	224	0.19	2.44
7000	RG 6500	89	76.9	430	0.62	4.32
	RG 7500	89.8	77.9	394	0.55	4.19
	RG 9500	92	80.6	296	0.34	3.84
	RG 12000	92.2	82.2	241	0.23	2.79
7500	RG 7500	89.7	77.1	422	0.61	4.69
	RG 9500	92	80	318	0.39	4.25
	RG 12000	92.1	81.7	259	0.26	3.23
	RG 15000	92.1	83.1	207	0.16	2.96
8000	RG 7500	89.4	76.3	450	0.67	5.44
	RG 9500	91.9	79.4	339	0.43	4.84
	RG 12000	92	81.2	276	0.3	3.72
	RG 15000	92	82.8	221	0.19	3.21
8500	RG 7500	89.3	75.5	478	0.73	6.27
	RG 9500	92	78.8	360	0.48	5.61
	RG 12000	92	80.7	293	0.34	4.26
	RG 15000	91.9	82.4	235	0.22	3.47
9000	RG 9500	92.1	78.2	381	0.52	6.45
	RG 12000	90.5	80.2	310	0.37	4.05
	RG 15000	91.1	82	249	0.24	4.31
	RG 18000	92	83.2	205	0.15	4.03
9500	RG 9500	90.2	77.6	402	0.57	6.72
	RG 12000	90.3	79.8	328	0.41	4.37
	RG 15000	91	81.6	263	0.27	4.62
	RG 18000	91.9	82.9	216	0.18	4.31
10000	RG 9500	90.1	77.1	423	0.61	7.27
	RG 12000	90.1	79.3	345	0.45	4.87
	RG 15000	90.8	81.2	276	0.3	4.95
	RG 18000	91.8	82.6	228	0.2	4.59
10500	RG 9500	90.1	76.5	445	0.66	7.83
	RG 12000	90	78.8	362	0.48	5.4
	RG 15000	90.6	80.8	290	0.33	5.26
	RG 18000	91.6	82.3	239	0.22	4.9

CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop “WC	BHP @ ESP (“W.C) 1.0 “
11000	RG 9500	90.1	75.9	466	0.7	8.46
	RG 12000	89.8	78.3	379	0.52	5.98
	RG 15000	90.4	80.4	304	0.36	5.58
	RG 18000	91.6	81.9	250	0.25	5.22
11500	RG 9500	90	75.3	487	0.74	9.41
	RG 12000	89.7	77.8	397	0.55	6.59
	RG 15000	90.3	80	318	0.39	5.93
	RG 18000	91.4	81.6	262	0.27	5.51
	RG 33000	92	83.2	205	0.15	5.8
12000	RG 12000	89.5	77.3	414	0.59	7.25
	RG 15000	90.1	79.6	332	0.42	6.27
	RG 18000	91.4	81.3	273	0.3	5.85
	RG 33000	91.9	82.9	214	0.17	6.13
12500	RG 12000	89.3	76.8	431	0.63	9.73
	RG 15000	90	79.2	346	0.45	6.63
	RG 18000	91.3	81	285	0.32	6.19
	RG 33000	91.8	82.7	223	0.19	6.46
13000	RG 12000	89.2	76.3	448	0.66	10.31
	RG 15000	89.9	78.9	359	0.48	7
	RG 18000	91.2	80.6	296	0.34	6.54
	RG 33000	91.8	82.4	232	0.21	6.77
13500	RG 12000	87.7	75.9	466	0.7	8.03
	RG 15000	89.7	78.5	373	0.51	7.38
	RG 18000	91.2	80.3	307	0.37	6.89
	RG 33000	91.6	82.2	241	0.23	7.11
14000	RG 12000	87.5	75.4	483	0.74	8.67
	RG 15000	89.6	78.1	387	0.53	7.76
	RG 18000	91.1	80	319	0.39	7.27
	RG 33000	91.6	81.9	250	0.25	7.47
14500	RG 15000	89.4	77.7	401	0.56	8.3
	RG 18000	91	79.7	330	0.41	7.66
	RG 33000	91.4	81.7	259	0.27	7.8
15000	RG 15000	89.3	77.3	415	0.59	8.96
	RG 18000	91	79.4	342	0.44	8.19
	RG 33000	91.4	81.4	268	0.28	8.17
16000	RG 15000	89.2	76.5	442	0.65	10.37
	RG 18000	90.9	78.7	364	0.49	9.54
	RG 33000	91.2	80.9	286	0.32	8.92
	RG 46000	91.6	83.2	206	0.16	9.86
17000	RG 15000	89.1	75.7	470	0.71	11.96
	RG 18000	89.3	78.1	387	0.53	10.62
	RG 33000	91.2	80.4	304	0.36	9.76
	RG 46000	91.4	82.8	219	0.18	10.56
18000	RG 15000	89	75	498	0.77	13.68
	RG 18000	89.2	77.4	410	0.58	11.52
	RG 33000	91.1	79.9	322	0.4	10.58
	RG 46000	91.1	82.4	232	0.21	11.09
	RG 56000	91.8	83.2	205	0.15	10.8
20000	RG 18000	88.8	76.1	455	0.68	13.4
	RG 33000	91	78.9	357	0.47	12.39
	RG 46000	90.9	81.7	258	0.26	12.89
	RG 56000	91.5	82.6	228	0.2	12.3
22000	RG 33000	89.1	77.9	393	0.55	15.1
	RG 46000	90.6	81	284	0.32	14.56
	RG 56000	91.3	81.9	250	0.25	13.93
24000	RG 33000	88.8	76.9	429	0.62	17.06
	RG 46000	90.3	80.3	310	0.37	16.34
	RG 56000	91.1	81.3	273	0.3	15.64
26000	RG 33000	88.5	75.9	465	0.7	19.19
	RG 46000	90	79.5	335	0.43	18.25
	RG 56000	90.2	80.6	296	0.34	20.05
28000	RG 46000	89.8	78.8	361	0.48	20.31
	RG 56000	90	80	319	0.39	22.15
30000	RG 46000	89.6	78.1	387	0.53	22.45
	RG 56000	89.7	79.4	342	0.44	24.3
32000	RG 46000	88.4	77.3	413	0.59	27.92
	RG 56000	89.5	78.7	364	0.49	26.67
34000	RG 46000	88.1	76.6	439	0.64	30.61
	RG 56000	88.4	78.1	387	0.53	33.35
36000	RG 46000	87.9	75.9	465	0.7	33.22
	RG 56000	88.1	77.4	410	0.58	36.1
38000	RG 46000	87.6	75.2	490	0.75	35.98
	RG 56000	87.8	76.8	433	0.63	38.85
40000	RG 56000	87.5	76.1	455	0.68	41.68
	RG 75000	92.1	83.1	207	0.16	35.29
96000	RG 75000	82.9	75	498	0.77	116.46

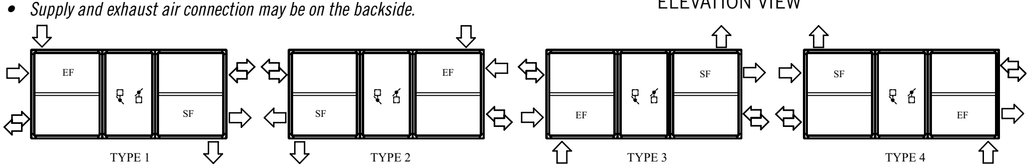
All winter effectiveness is calculated using Direct Drive fans and 35 deg F (1.67 deg C).
All Summer effectiveness is calculated using Direct Drive fans and 90 deg F
Efficiencies may vary depending on site conditions
All efficiencies are across entire base unit, including fans and motors

HP values shown include core pressure drop, standard 30% (MERV 10) SA filter and basic cabinet losses.
HP values for Direct Drive fans running slower than their respective motor rpm are calculated using the Formula “Actual HP=Required HP * Motor RPM/Fan RPM”
For unbalanced air streams, contact your local Tempeff representative
For larger ESP values, contact your local Tempeff representative

Available Configurations

- *The configurations differ based on locations of the fans.*
- *Supply and exhaust air connection may be on the backside.*

ELEVATION VIEW



PERFORMANCE DATA METRIC

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
354	0.35	RG 1000	93.1	82.3	1.20	55	0.25
472	0.47	RG 1000	92.8	80.1	1.60	95	0.45
		RG 1500	91.7	82.4	1.19	52	0.28
590	0.59	RG 1000	92.9	77.9	2.00	137	0.72
		RG 1500	90.4	80.7	1.49	85	0.36
		RG 2000	91.8	83.2	1.05	40	0.31
708	0.71	RG 1000	93.3	75.7	2.40	177	1.10
		RG 1500	89.3	79.1	1.78	114	0.48
		RG 2000	91.2	82	1.26	60	0.38
		RG 3000	92.2	83.3	1.02	35	0.34
826	0.83	RG 1500	88.3	77.4	2.08	144	0.64
		RG 2000	90.7	80.8	1.47	82	0.51
		RG 3000	91.8	82.4	1.19	52	0.45
944	0.94	RG 1500	87.4	75.8	2.38	174	0.83
		RG 2000	89.8	79.7	1.68	105	0.63
		RG 3000	91.4	81.5	1.36	70	0.58
		RG 4000	92.2	83.2	1.04	37	0.53
1180	1.18	RG 2000	88.4	77.3	2.10	147	0.95
		RG 3000	90.1	79.6	1.70	105	0.83
		RG 4000	91.7	81.8	1.30	65	0.72
1416	1.42	RG 2000	87.3	75	2.52	189	1.37
		RG 3000	89.4	77.7	2.03	139	1.21
		RG 4000	90.4	80.3	1.57	92	0.98
1652	1.65	RG 3000	87.3	75.8	2.37	174	1.45
		RG 4000	89.8	78.9	1.83	119	1.25
		RG 5500	92.5	82.7	1.13	47	1.04
		RG 6500	92.7	82.9	1.09	42	1.04
1888	1.89	RG 4000	89.3	77.4	2.09	144	1.66
		RG 5500	92.6	81.8	1.29	65	1.34
		RG 6500	92.7	82.1	1.25	60	1.32
		RG 7500	93.3	82.6	1.14	47	1.28
2124	2.12	RG 4000	87.5	76	2.35	172	2.00
		RG 5500	92.6	80.9	1.45	80	1.76
		RG 6500	92.8	81.2	1.40	75	1.75
		RG 7500	93.3	81.9	1.29	62	1.69
2360	2.36	RG 5500	91	80	1.61	97	1.93
		RG 6500	91.2	80.3	1.56	92	1.90
		RG 7500	91.7	81.1	1.43	77	1.85
		RG 9500	93.2	83	1.08	42	1.70
2596	2.60	RG 5500	90.8	79.1	1.78	114	2.23
		RG 6500	91	79.5	1.72	107	2.19
		RG 7500	91.7	80.3	1.57	92	2.12
		RG 9500	93.3	82.4	1.18	52	1.96
2832	2.83	RG 5500	90.7	78.2	1.94	129	2.71
		RG 6500	91	78.6	1.87	124	2.67
		RG 7500	91.6	79.5	1.71	107	2.57
		RG 9500	93.4	81.8	1.29	65	2.31
		RG 12000	92.4	83.2	1.05	40	1.64
3068	3.07	RG 5500	89	77.3	2.10	147	2.94
		RG 6500	89.3	77.7	2.03	139	2.90
		RG 7500	90	78.7	1.86	122	2.80
		RG 9500	93.6	81.2	1.40	75	2.80
		RG 12000	92.3	82.7	1.14	47	1.82
3304	3.30	RG 6500	89	76.9	2.18	154	3.22
		RG 7500	89.8	77.9	2.00	137	3.13
		RG 9500	92	80.6	1.51	85	2.86
		RG 12000	92.2	82.2	1.23	57	2.08
3540	3.54	RG 7500	89.7	77.1	2.14	152	3.50
		RG 9500	92	80	1.61	97	3.17
		RG 12000	92.1	81.7	1.31	65	2.41
		RG 15000	92.1	83.1	1.05	40	2.21
3776	3.78	RG 7500	89.4	76.3	2.29	167	4.06
		RG 9500	91.9	79.4	1.72	107	3.61
		RG 12000	92	81.2	1.40	75	2.78
		RG 15000	92	82.8	1.12	47	2.39
4012	4.01	RG 7500	89.3	75.5	2.43	182	4.68
		RG 9500	92	78.8	1.83	119	4.19
		RG 12000	92	80.7	1.49	85	3.18
		RG 15000	91.9	82.4	1.19	55	2.59
4248	4.25	RG 9500	92.1	78.2	1.94	129	4.81
		RG 12000	90.5	80.2	1.58	92	3.02
		RG 15000	91.1	82	1.26	60	3.22
		RG 18000	92	83.2	1.04	37	3.01
4484	4.48	RG 9500	90.2	77.6	2.04	142	5.01
		RG 12000	90.3	79.8	1.66	102	3.26
		RG 15000	91	81.6	1.33	67	3.45
		RG 18000	91.9	82.9	1.10	45	3.22
4719	4.72	RG 9500	90.1	77.1	2.15	152	5.42
		RG 12000	90.1	79.3	1.75	112	3.63
		RG 15000	90.8	81.2	1.40	75	3.69
		RG 18000	91.8	82.6	1.16	50	3.42
4955	4.96	RG 9500	90.1	76.5	2.26	164	5.84
		RG 12000	90	78.8	1.84	119	4.03
		RG 15000	90.6	80.8	1.47	82	3.92
		RG 18000	91.6	82.3	1.21	55	3.66

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
5191	5.19	RG 9500	90.1	75.9	2.37	174	6.31
		RG 12000	89.8	78.3	1.93	129	4.46
		RG 15000	90.4	80.4	1.55	90	4.16
		RG 18000	91.6	81.9	1.27	62	3.89
5427	5.43	RG 9500	90	75.3	2.47	184	7.02
		RG 12000	89.7	77.8	2.01	137	4.92
		RG 15000	90.3	80	1.62	97	4.42
		RG 18000	91.4	81.6	1.33	67	4.11
		RG 33000	92	83.2	1.04	37	4.33
5663	5.66	RG 12000	89.5	77.3	2.10	147	5.41
		RG 15000	90.1	79.6	1.69	105	4.68
		RG 18000	91.4	81.3	1.39	75	4.36
		RG 33000	91.9	82.9	1.09	42	4.57
5899	5.90	RG 12000	89.3	76.8	2.19	157	7.26
		RG 15000	90	79.2	1.76	112	4.95
		RG 18000	91.3	81	1.45	80	4.62
		RG 33000	91.8	82.7	1.13	47	4.82
6135	6.14	RG 12000	89.2	76.3	2.28	164	7.69
		RG 15000	89.9	78.9	1.83	119	5.22
		RG 18000	91.2	80.6	1.50	85	4.88
		RG 33000	91.8	82.4	1.18	52	5.05
6371	6.37	RG 12000	87.7	75.9	2.36	174	5.99
		RG 15000	89.7	78.5	1.90	127	5.51
		RG 18000	91.2	80.3	1.56	92	5.14
		RG 33000	91.6	82.2	1.23	57	5.30
6607	6.61	RG 12000	87.5	75.4	2.45	184	6.47
		RG 15000	89.6	78.1	1.97	132	5.79
		RG 18000	91.1	80	1.62	97	5.42
		RG 33000	91.6	81.9	1.27	62	5.57
6843	6.84	RG 15000	89.4	77.7	2.04	139	6.19
		RG 18000	91	79.7	1.68	102	5.71
		RG 33000	91.4	81.7	1.32	67	5.82
7079	7.08	RG 15000	89.3	77.3	2.11	147	6.68
		RG 18000	91	79.4	1.74	109	6.11
		RG 33000	91.4	81.4	1.36	70	6.09
7551	7.55	RG 15000	89.2	76.5	2.25	162	7.74
		RG 18000	90.9	78.7	1.85	122	7.12
		RG 33000	91.2	80.9	1.45	80	6.65
		RG 46000	91.6	83.2	1.05	40	7.36
8023	8.02	RG 15000	89.1	75.7	2.39	177	8.92
		RG 18000	89.3	78.1	1.97	132	7.92
		RG 33000	91.2	80.4	1.54	90	7.28
		RG 46000	91.4	82.8	1.11	45	7.88
8495	8.50	RG 15000	89	75	2.53	192	10.21
		RG 18000	89.2	77.4	2.08	144	8.59
		RG 33000	91.1	79.9	1.63	100	7.89
		RG 46000	91.1	82.4	1.18	52	8.27
		RG 56000	91.8	83.2	1.04	37	8.06
9439	9.44	RG 18000	88.8	76.1	2.31	169	10.00
		RG 33000	91	78.9	1.82	117	9.24
		RG 46000	90.9	81.7	1.31	65	9.62
		RG 56000	91.5	82.6	1.16	50	9.18
10383	10.38	RG 33000	89.1	77.9	2.00	137	11.26
		RG 46000	90.6	81	1.44	80	10.86
		RG 56000	91.3	81.9	1.27	62	10.39
11327	11.33	RG 33000	88.8	76.9	2.18	154	12.73
		RG 46000	90.3	80.3	1.57	92	12.19
		RG 56000	91.1	81.3	1.39	75	11.67
12271	12.27	RG 33000	88.5	75.9	2.36	174	14.32
		RG 46000	90	79.5	1.70	107	13.61
		RG 56000	90.2	80.6	1.50	85	14.96
13215	13.21	RG 46000	89.8	78.8	1.84	119	15.15
		RG 56000	90	80	1.62	97	16.52
14158	14.16	RG 46000	89.6	78.1	1.97	132	16.75
		RG 56000	89.7	79.4	1.74	109	18.13
15102	15.10	RG 46000	88.4	77.3	2.10	147	20.83
		RG 56000	89.5	78.7	1.85	122	19.90
16046	16.05	RG 46000	88.1	76.6	2.23	159	22.84
		RG 56000	88.4	78.1	1.97	132	24.88
16990	16.99	RG 46000	87.9	75.9	2.36	174	24.78
		RG 56000	88.1	77.4	2.08	144	26.93
17934	17.93	RG 46000	87.6	75.2	2.49	187	26.84
		RG 56000	87.8	76.8	2.20	157	28.98
18878	18.88	RG 56000	87.5	76.1	2.31	169	31.09
		RG 75000	92.1	83.1	1.05	40	26.33
45307	45.31	RG 75000	82.9	75	2.53	192	86.88

All winter effectiveness is calculated using Direct Drive fans and 35 deg F (1.67 deg C).
All Summer effectiveness is calculated using Direct Drive fans and 90 deg F
Efficiencies may vary depending on site conditions
All efficiencies are across entire base unit, including fans and motors

HP values shown include core pressure drop, standard 30% (MERV 10) SA filter and basic cabinet losses.
HP values for Direct Drive fans running slower than their respective motor rpm are calculated using the Formula "Actual HP=Required HP * Motor RPM/Fan RPM"
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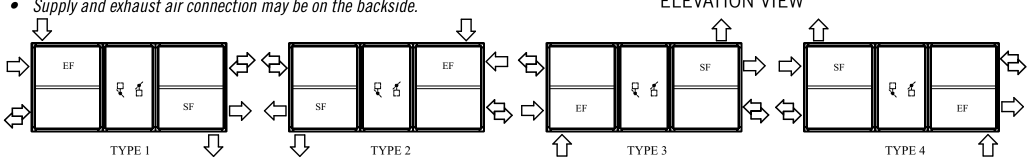
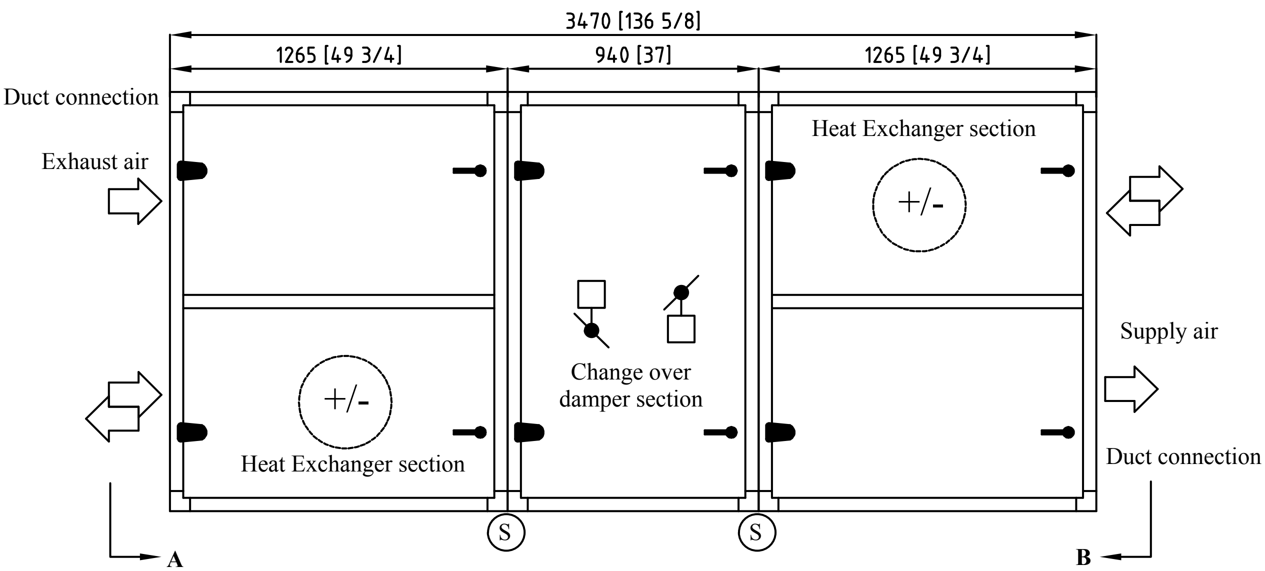
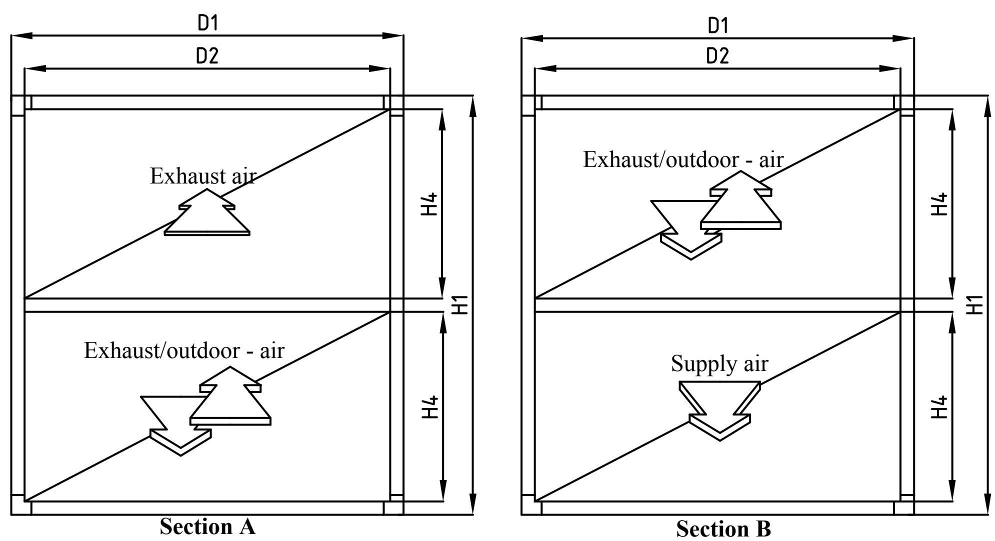
Available Configurations

- *The configurations differ based on locations of the fans.*
- *Supply and exhaust air connection may be on the backside.*

ELEVATION VIEW







Notes:

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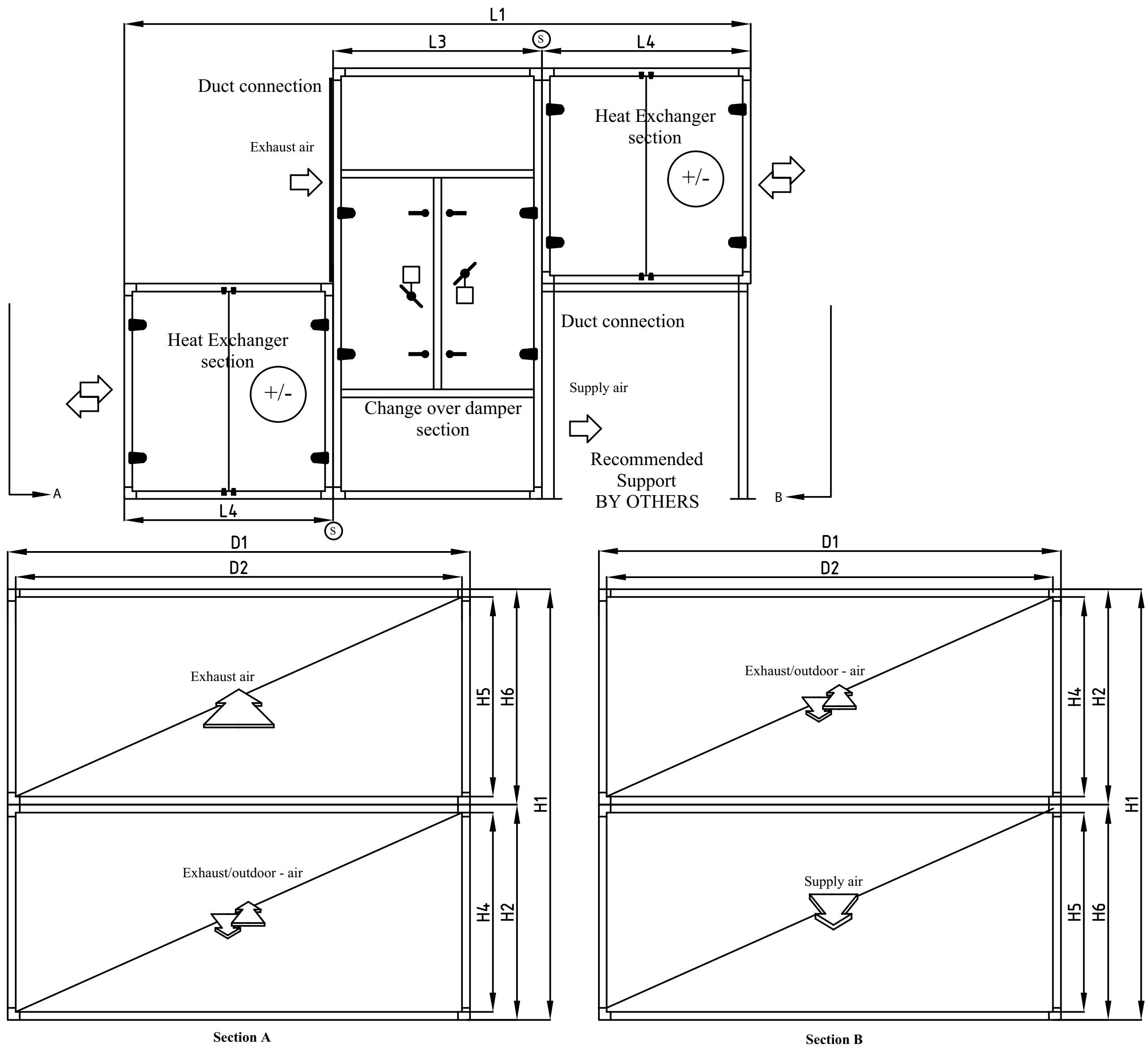
2) All units in this series have the same length, only height and width differ between the different sizes

IMPERIAL (inches)					Approx
Model	D1	D2	H1	H4	Weight (lbs)
RG 1000	30 3/8	26 3/8	42 7/8	18 1/2	1144
RG 1500	37 1/4	33 1/4	46 1/8	20 1/8	1364
RG 2000	44 1/8	40 1/8	50 3/4	22 1/2	1694
RG 3000	51 1/8	47 1/4	55 1/2	24 3/4	2200
RG 4000	57 7/8	53 7/8	61 3/4	28	2838

METRIC (mm)					Approx
Model	D1	D2	H1	H4	Weight (kg)
RG 1000	770	670	1090	470	520
RG 1500	945	845	1170	510	620
RG 2000	1120	1020	1290	570	770
RG 3000	1300	1200	1410	630	1000
RG 4000	1470	1370	1570	710	1290



Notes:

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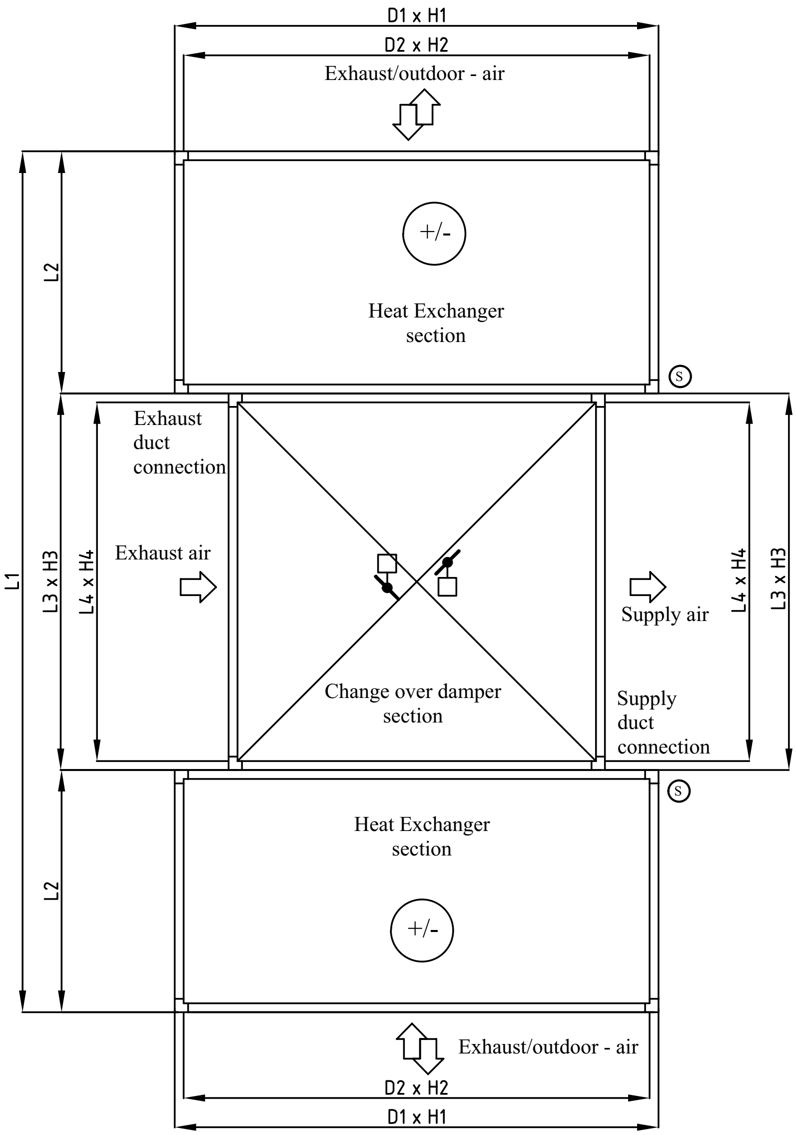
IMPERIAL (inches)											Approx
Model	L1	L3	L4	D1	D2	H1	H2	H4	H5	H6	Weight (lbs)
RG 5500	133 1/8	37	48	71 5/8	67 3/4	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	3800
RG 6500	133 1/8	37	48	74 3/4	70 7/8	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	4070
RG 7500	147 5/8	51 5/8	48	71 5/8	67 3/4	86 5/8	43 1/4	39 3/8	39 3/8	43 1/4	4620
RG 9500	154 3/4	51 5/8	51 5/8	85 3/8	81 1/2	94 1/2	47 1/4	43 1/4	43 1/4	47 1/4	5720
RG 12000	154 3/4	51 5/8	51 5/8	92 3/8	88 3/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	6600
RG 15000	154 3/4	51 5/8	51 5/8	114 1/8	110 1/4	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	8250
RG 18000	158	51 5/8	53 1/8	137 3/4	133 7/8	115 3/8	60 5/8	56 3/4	50 3/4	54 3/4	10967

METRIC (mm)											Approx
Model	L1	L3	L4	D1	D2	H1	H2	H4	H5	H6	Weight (kg)
RG 5500	3380	940	1220	1820	1720	2000	1000	900	900	1000	1730
RG 6500	3380	940	1220	1900	1800	2000	1000	900	900	1000	1850
RG 7500	3750	1310	1220	1820	1720	2200	1100	1000	1000	1100	2100
RG 9500	3930	1310	1310	2170	2070	2400	1200	1100	1100	1200	2600
RG 12000	3930	1310	1310	2345	2245	2700	1350	1250	1250	1350	3000
RG 15000	3930	1310	1310	2900	2800	2700	1350	1250	1250	1350	3750
RG 18000	4010	1310	1350	3500	3400	2930	1540	1440	1290	1390	4985



Notes:

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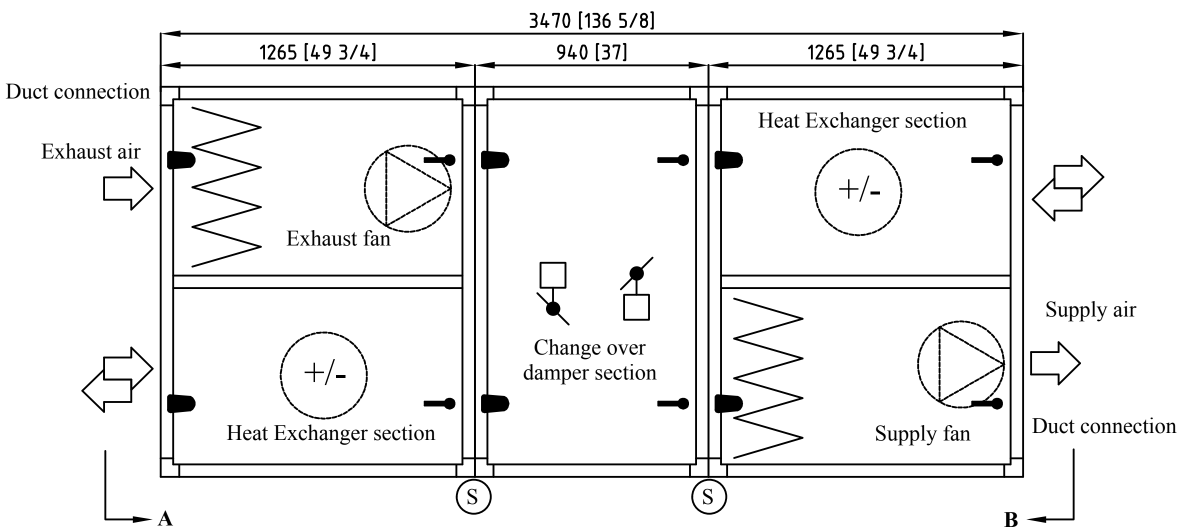
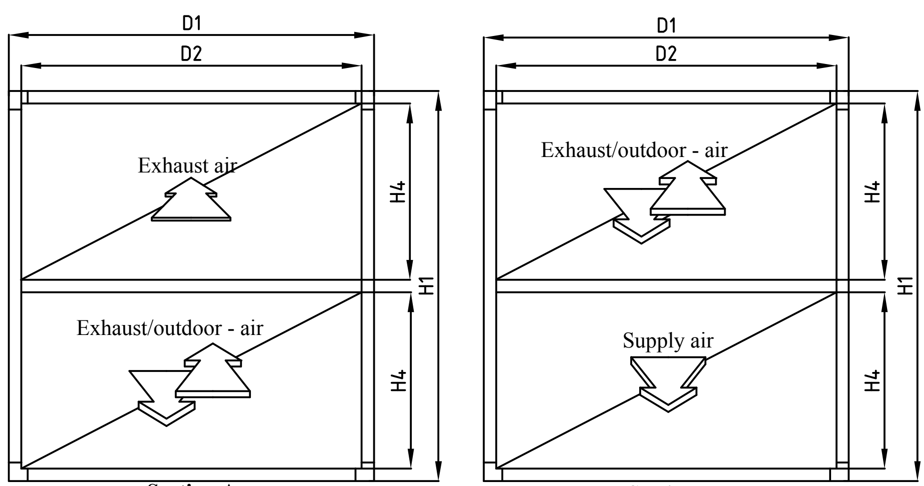
2) Plan view shown
3) Contact your local TEMPEFF Representative for job specific data

IMPERIAL (inches)												Approx Weight (lbs)
Model	L1	L2	L3	L4	D1	D2	H1	H2	H3	H4	H5	
RG 33000	212 5/8	65	82 5/8	78 3/4	106 1/4	102 3/8	92	88	92	88	92	11660
RG 46000	236 1/4	76 3/4	82 5/8	78 3/4	129 7/8	126	106 1/4	102 3/8	106 1/4	102 3/8	106 1/4	15840
RG 56000	263 3/4	90 1/2	82 5/8	78 3/4	157 1/2	153 1/2	124	120 1/8	124	120 1/8	124	19360
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS											

METRIC (mm)												Approx Weight (kg)
Model	L1	L2	L3	L4	D1	D2	H1	H2	H3	H4	H5	
RG 33000	5400	1650	2100	2000	2700	2600	2336	2236	2336	2236	2336	5300
RG 46000	6000	1950	2100	2000	3300	3200	2700	2600	2700	2600	2700	7200
RG 56000	6700	2300	2100	2000	4000	3900	3150	3050	3150	3050	3150	8800
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS											





Section A **Section B**

Notes:

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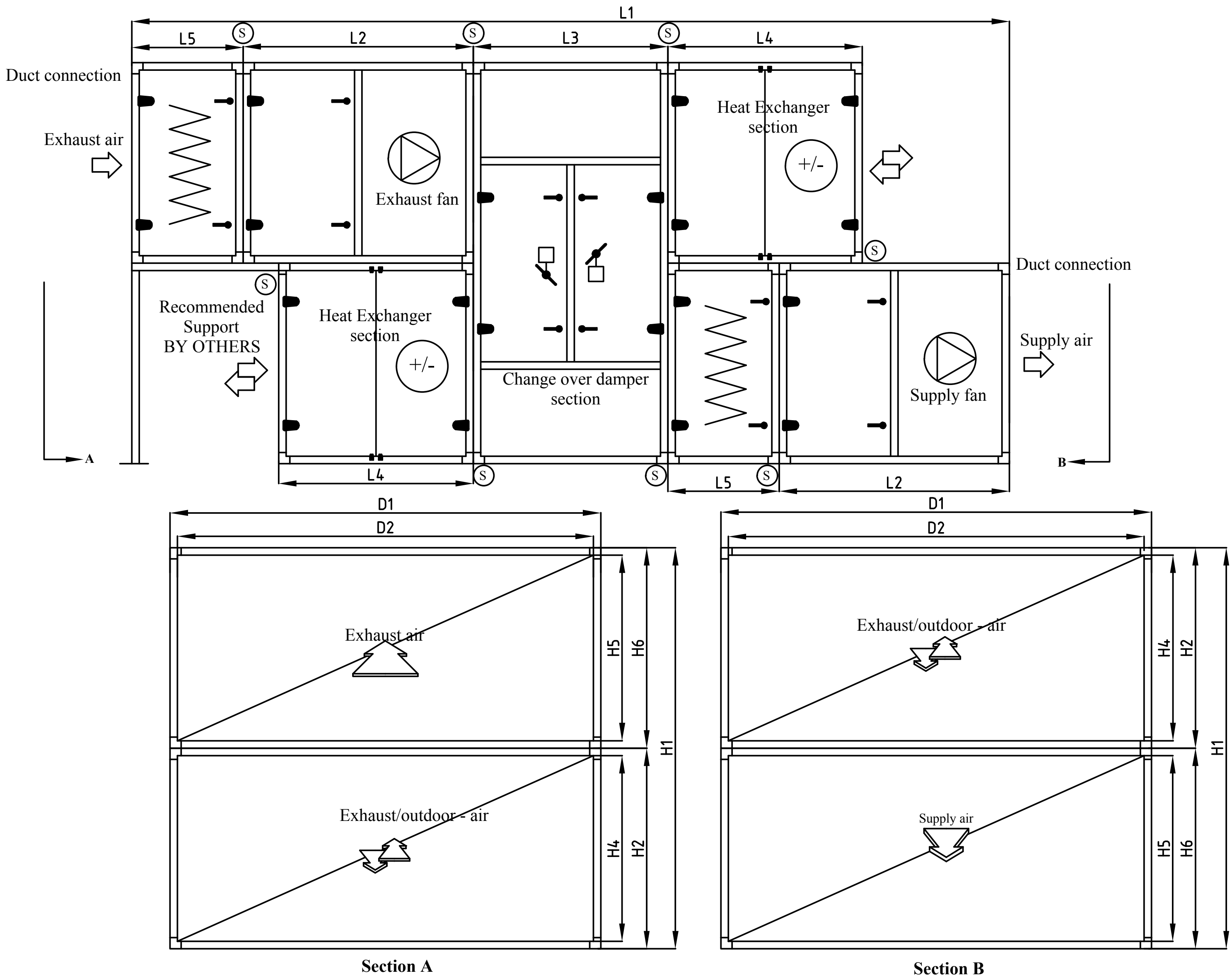
IMPERIAL (inches)					Approx Weight (lbs)
Model	D1	D2	H1	H4	
RG 1000	30 3/8	26 3/8	42 7/8	18 1/2	1298
RG 1500	37 1/4	33 1/4	46 1/8	20 1/8	1540
RG 2000	44 1/8	40 1/8	50 3/4	22 1/2	1870
RG 3000	51 1/8	47 1/4	55 1/2	24 3/4	2376
RG 4000	57 7/8	53 7/8	61 3/4	28	3058

METRIC (mm)					Approx Weight (kg)
Model	D1	D2	H1	H4	
RG 1000	770	670	1090	470	590
RG 1500	945	845	1170	510	700
RG 2000	1120	1020	1290	570	850
RG 3000	1300	1200	1410	630	1080
RG 4000	1470	1370	1570	710	1390

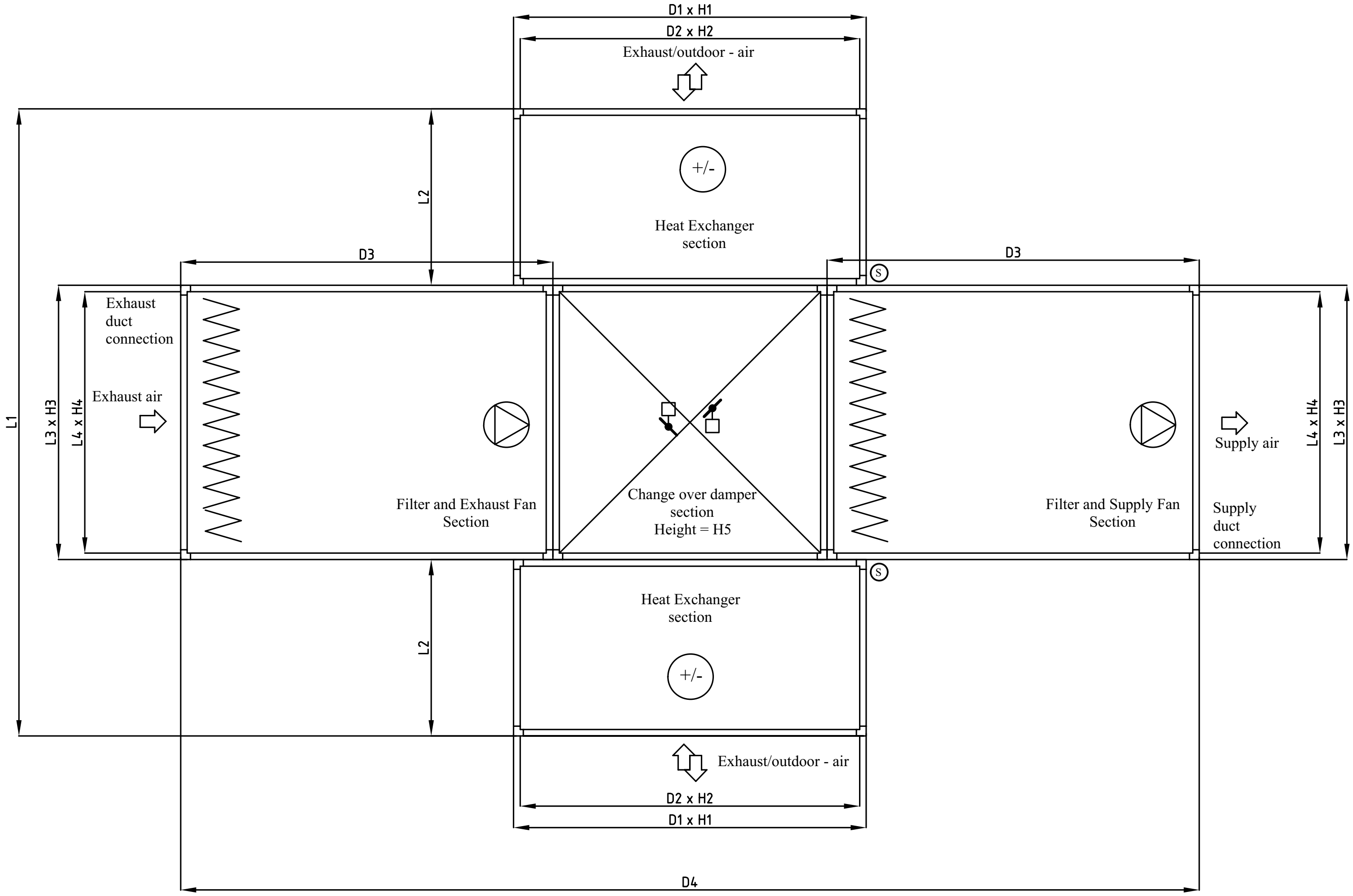


Notes:

1) For reference use only, all information subject to change without notice.

IMPERIAL (inches)													Approx Weight (lbs)
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	
RG 5500	166 1/8	49 3/4	37	48	29 1/2	71 5/8	67 3/4	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	4730
RG 6500	166 1/8	49 3/4	37	48	29 1/2	74 3/4	70 7/8	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	5060
RG 7500	180 3/4	49 3/4	51 5/8	48	29 1/2	71 5/8	67 3/4	86 5/8	43 1/4	39 3/8	39 3/8	43 1/4	5720
RG 9500	199 1/4	59	51 5/8	51 5/8	29 1/2	85 3/8	81 1/2	94 1/2	47 1/4	43 1/4	43 1/4	47 1/4	6820
RG 12000	203 1/8	61	51 5/8	51 5/8	29 1/2	92 3/8	88 3/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	8140
RG 15000	203 1/8	61	51 5/8	51 5/8	29 1/2	114 1/8	110 1/4	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	9240
RG 18000	207 1/8	63	51 5/8	53 1/8	29 1/2	137 3/4	133 7/8	115 3/8	60 5/8	56 3/4	50 3/4	54 3/4	14014

METRIC (mm)													Approx Weight (kg)
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	
RG 5500	4220	1265	940	1220	750	1820	1720	2000	1000	900	900	1000	2150
RG 6500	4220	1265	940	1220	750	1900	1800	2000	1000	900	900	1000	2300
RG 7500	4590	1265	1310	1220	750	1820	1720	2200	1100	1000	1000	1100	2600
RG 9500	5060	1500	1310	1310	750	2170	2070	2400	1200	1100	1100	1200	3100
RG 12000	5160	1550	1310	1310	750	2345	2245	2700	1350	1250	1250	1350	3700
RG 15000	5160	1550	1310	1310	750	2900	2800	2700	1350	1250	1250	1350	4200
RG 18000	5260	1600	1310	1350	750	3500	3400	2930	1540	1440	1290	1390	6370



Notes:

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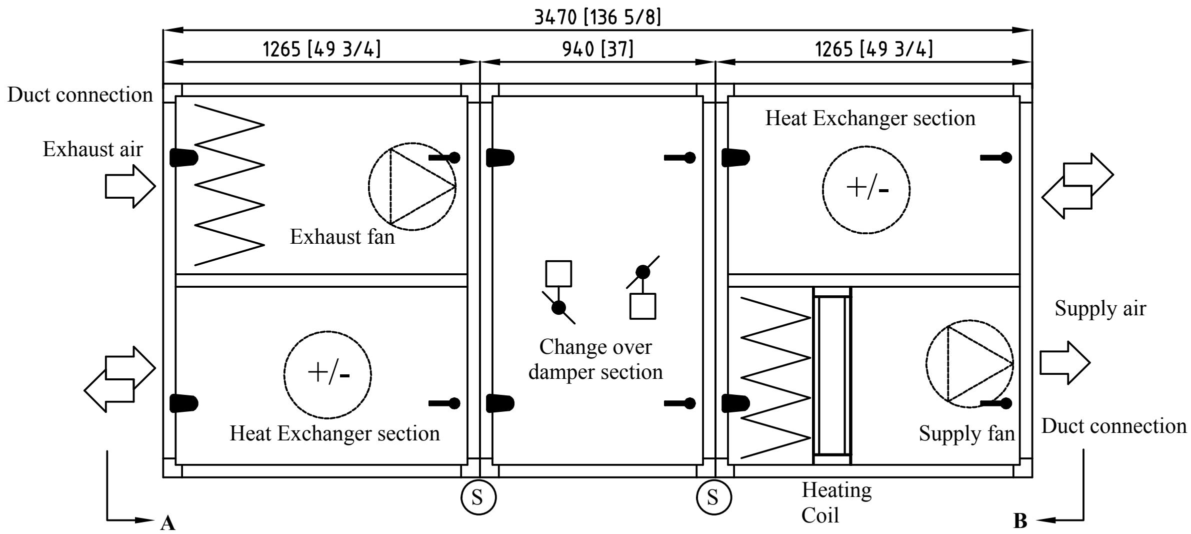
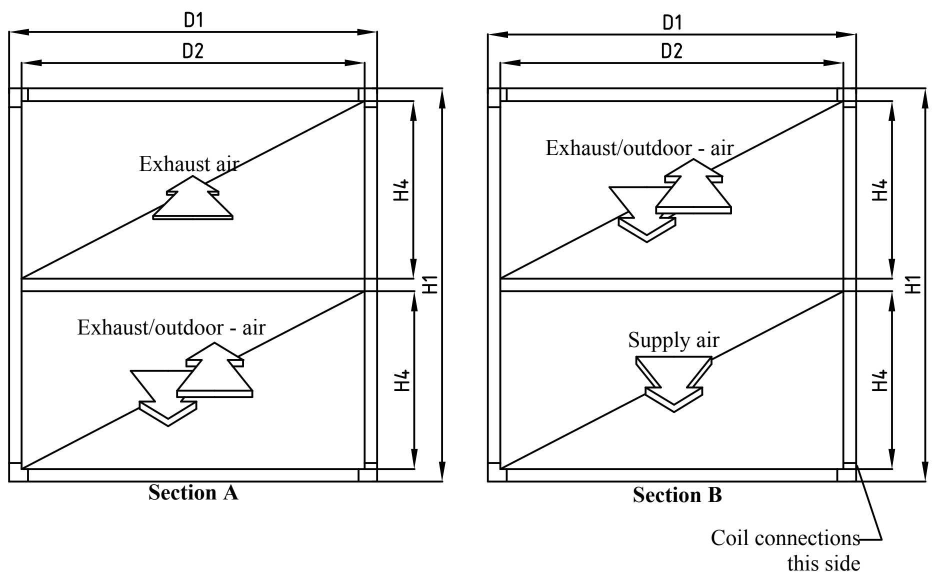
2) Plan view shown
3) Contact your local TEMPEFF Representative for job specific data

IMPERIAL (inches)															Approx Weight (lbs)
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	
RG 33000	212 5/8	65	82 5/8	78 3/4	106 1/4	102 3/8	112 1/4	85	279 7/8	92	88	92	88	92	19160
RG 46000	236 1/4	76 3/4	82 5/8	78 3/4	129 7/8	126	141 3/4	96 1/2	320 7/8	106 1/4	102 3/8	106 1/4	102 3/8	106 1/4	23090
RG 56000	263 3/4	90 1/2	82 5/8	78 3/4	157 1/2	153 1/2	159 1/2	106 1/4	348 3/8	124	120 1/8	124	120 1/8	124	28560
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS														

METRIC (mm)															Approx Weight (kg)
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	
RG 33000	5400	1650	2100	2000	2700	2600	2850	2160	7110	2336	2236	2336	2236	2336	8709
RG 46000	6000	1950	2100	2000	3300	3200	3600	2450	8150	2700	2600	2700	2600	2700	10495
RG 56000	6700	2300	2100	2000	4000	3900	4050	2700	8850	3150	3050	3150	3050	3150	12982
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS														





Notes:

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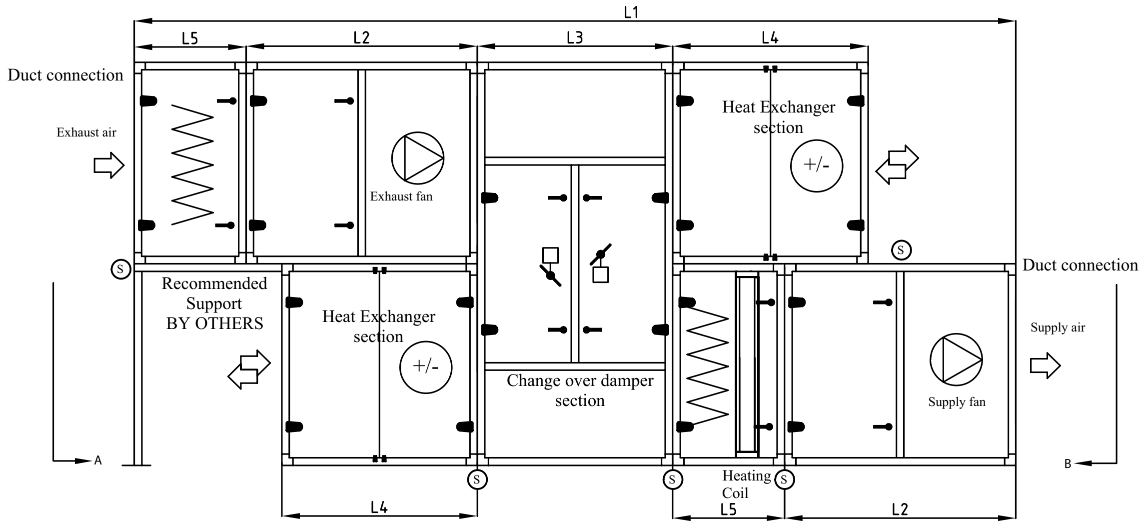
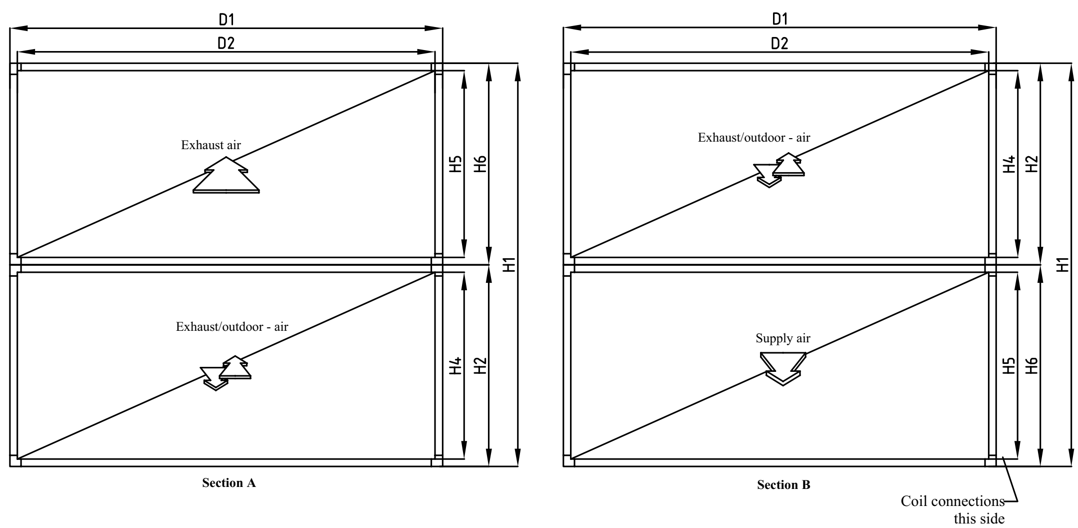
2) SA section length may vary depending on coil selection

IMPERIAL (inches)					Heating Coil		
Model	D1	D2	H1	H4	Max Fin Height	Max Fin Length	Approx. Weight (lbs)
RG 1000	30 3/8	26 3/8	42 7/8	18 1/2	13 1/2	15 3/8	1518
RG 1500	37 1/4	33 1/4	46 1/8	20 1/8	15 1/8	22 1/4	1815
RG 2000	44 1/8	40 1/8	50 3/4	22 1/2	17 1/2	29 1/8	1980
RG 3000	51 1/8	47 1/4	55 1/2	24 3/4	19 3/4	36 1/8	2728
RG 4000	57 7/8	53 7/8	61 3/4	28	23	42 7/8	3432

METRIC (mm)					Heating Coil		
Model	D1	D2	H1	H4	Max Fin Height	Max Fin Length	Approx. Weight (kg)
RG 1000	770	670	1090	470	343	389	690
RG 1500	945	845	1170	510	383	564	825
RG 2000	1120	1020	1290	570	443	739	900
RG 3000	1300	1200	1410	630	503	919	1240
RG 4000	1470	1370	1570	710	583	1089	1560

RG 5500 - 18000 *with heating coil*





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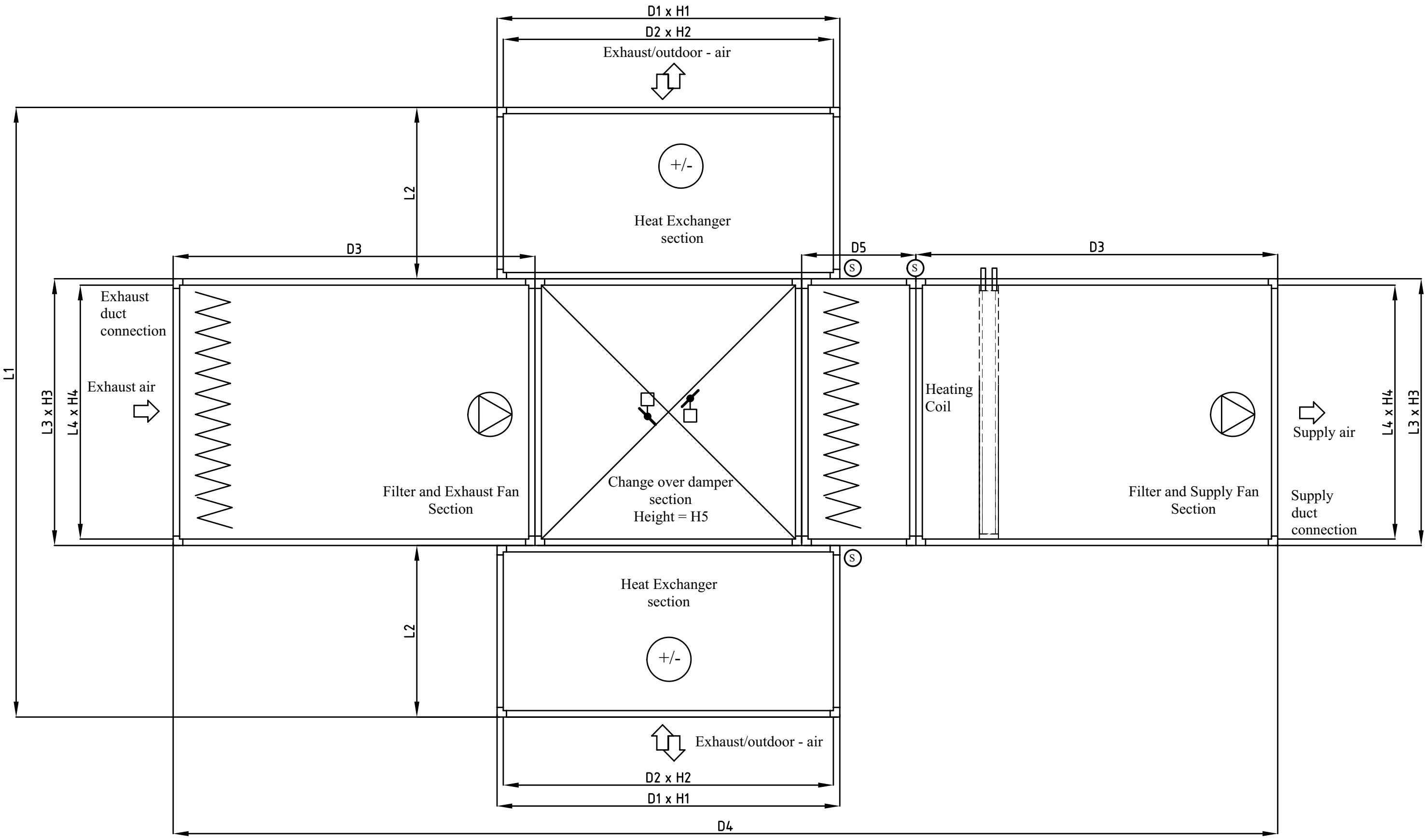
IMPERIAL (inches)													Heating Coil		
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	Max Fin Height	Max Fin Length	Approx Weight (lbs)
RG 5500	166 1/8	49 3/4	37	48	29 1/2	71 5/8	67 3/4	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	30 3/8	56 5/8	4930
RG 6500	166 1/8	49 3/4	37	48	29 1/2	74 3/4	70 7/8	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	30 3/8	59 3/4	5310
RG 7500	180 3/4	49 3/4	51 5/8	48	29 1/2	71 5/8	67 3/4	86 5/8	43 1/4	39 3/8	39 3/8	43 1/4	34 1/4	56 5/8	6020
RG 9500	199 1/4	59	51 5/8	51 5/8	29 1/2	85 3/8	81 1/2	94 1/2	47 1/4	43 1/4	43 1/4	47 1/4	38 1/4	70 3/8	7170
RG 12000	203 1/8	61	51 5/8	51 5/8	29 1/2	92 3/8	88 3/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	44 1/8	77 3/8	8540
RG 15000	203 1/8	61	51 5/8	51 5/8	29 1/2	114 1/8	110 1/4	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	44 1/8	99 1/8	9690
RG 18000	207	63	51 5/8	51 5/8	29 1/2	137 3/4	133 3/4	115 1/4	60 5/8	56 3/4	50 3/4	54 3/4	51 5/8	122 3/4	14014

METRIC (mm)													Heating Coil		
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	Max Fin Height	Max Fin Length	Approx Weight (kg)
RG 5500	4220	1265	940	1220	750	1820	1720	2000	1000	900	1000	900	771	1439	2240
RG 6500	4220	1265	940	1220	750	1900	1800	2000	1000	900	1000	900	771	1519	2415
RG 7500	4590	1265	1310	1220	750	1820	1720	2200	1100	1000	1100	1000	871	1439	2735
RG 9500	5060	1500	1310	1310	750	2170	2070	2400	1200	1100	1200	1100	971	1789	3250
RG 12000	5160	1550	1310	1310	750	2345	2245	2700	1350	1250	1350	1250	1121	1964	3885
RG 15000	5160	1550	1310	1310	750	2900	2800	2700	1350	1250	1350	1250	1121	2519	4405
RG 18000	5260	1600	1310	1310	750	3500	3400	2930	1540	1440	1290	1390	1311	3119	6370

RG 33000 - 75000 *with heating coil*



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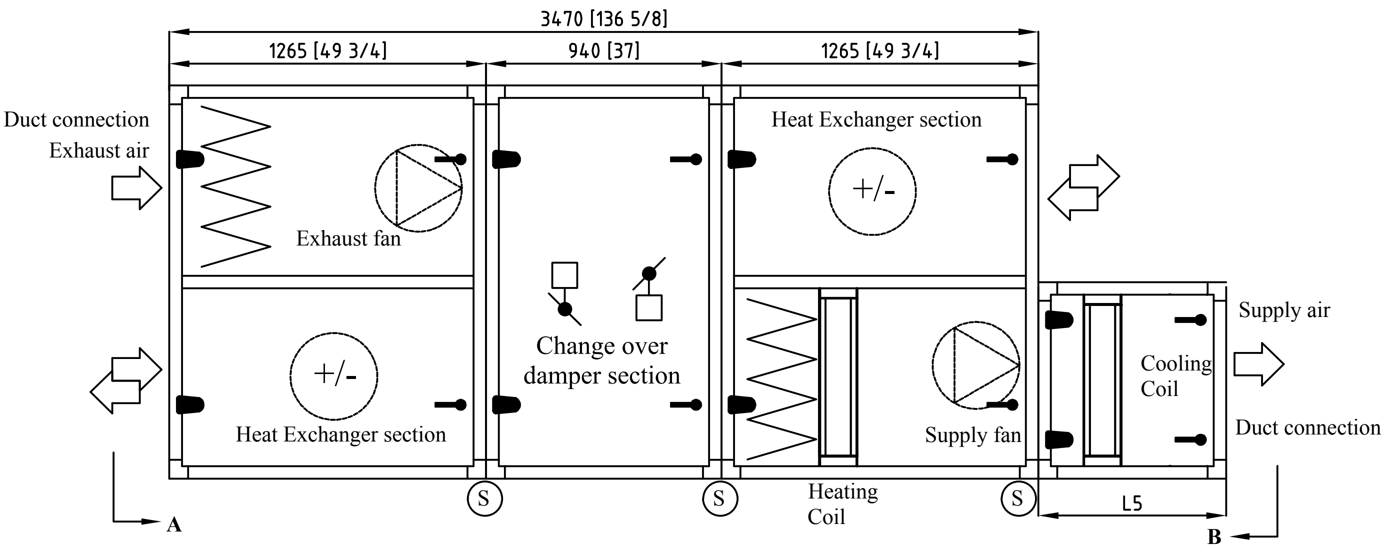
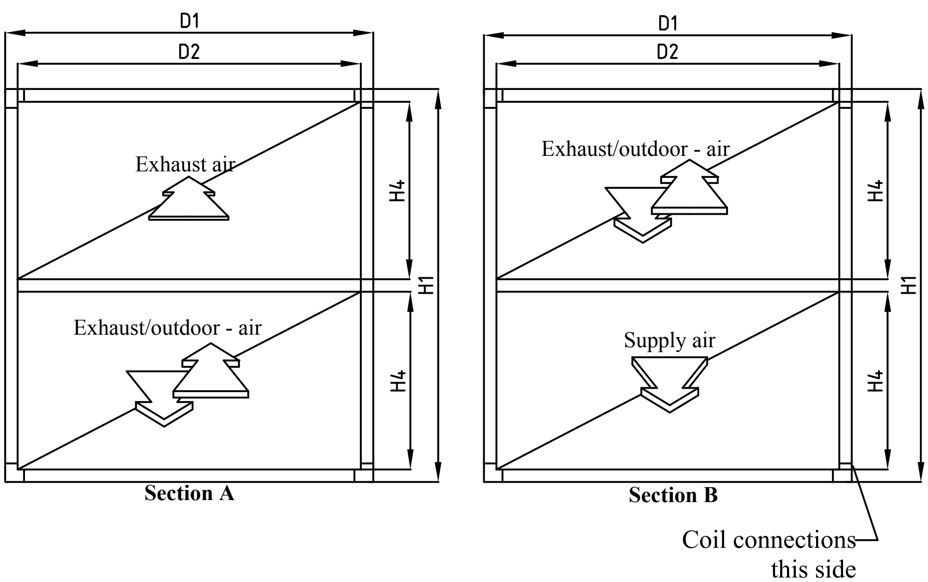
IMPERIAL (inches)																Heating Coil		
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	D6	H1	H2	H3	H4	H5	Max Fin Height	Max Fin Length	Approx Weight (lbs)
RG 33000	212 5/8	65	82 5/8	78 3/4	106 1/4	102 3/8	112 1/4	85	29 1/2	336 5/8	92	88	92	88	92	83	67 5/8	20260
RG 46000	236 1/4	76 3/4	82 5/8	78 3/4	129 7/8	126	141 3/4	96 1/2	35 3/8	401 5/8	106 1/4	102 3/8	106 1/4	102 3/8	106 1/4	97 1/4	67 5/8	24330
RG 56000	263 3/4	90 1/2	82 5/8	78 3/4	157 1/2	153 1/2	159 1/2	106 1/4	35 3/8	437	124	120 1/8	124	120 1/8	124	115	67 5/8	29900
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																	

METRIC (mm)																Heating Coil		
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	D6	H1	H2	H3	H4	H5	Max Fin Height	Max Fin Length	Approx Weight (kg)
RG 33000	5400	1650	2100	2000	2700	2600	2850	2160	750	8550	2336	2236	2336	2236	2336	2107	1719	9209
RG 46000	6000	1950	2100	2000	3300	3200	3600	2450	900	10200	2700	2600	2700	2600	2700	2471	1719	11059
RG 56000	6700	2300	2100	2000	4000	3900	4050	2700	900	11100	3150	3050	3150	3050	3150	2921	1719	13591
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																	





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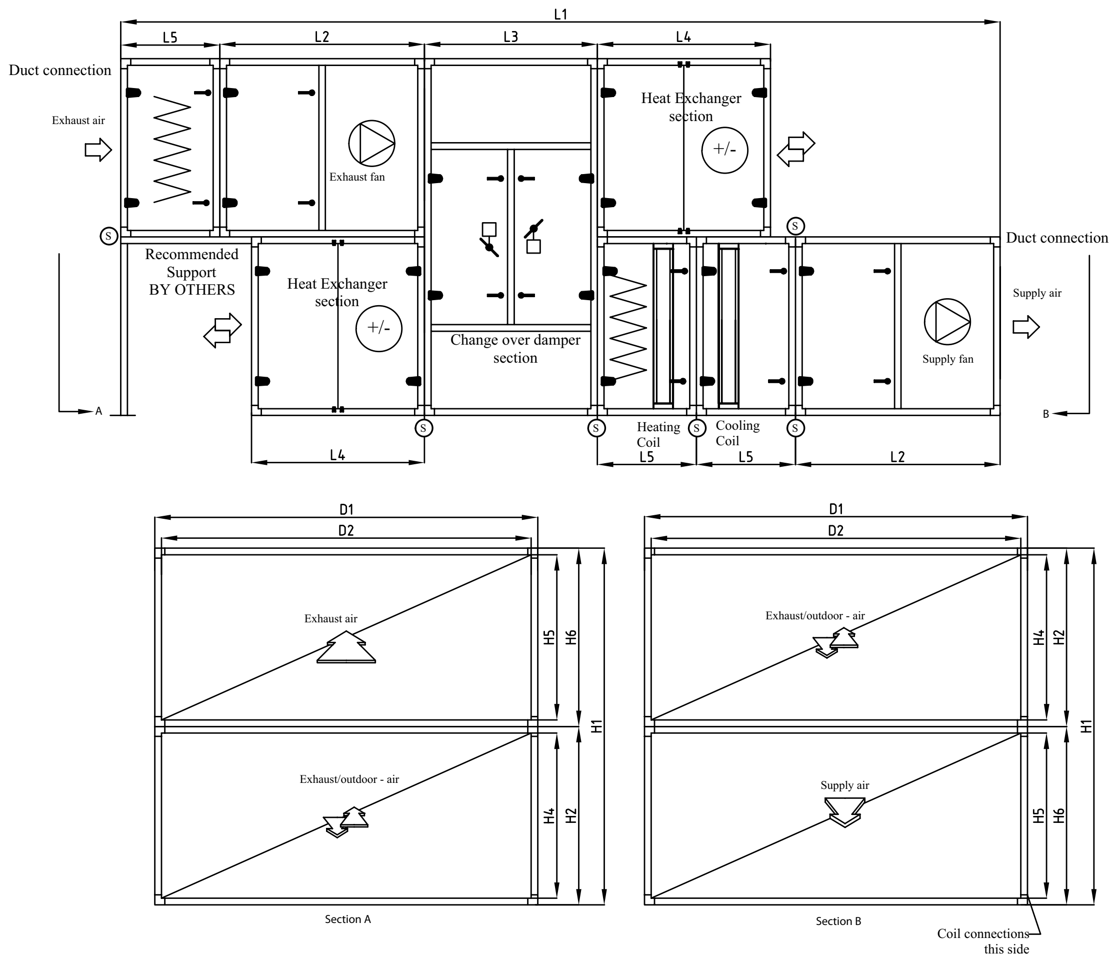
2) SA section length may vary depending on coil selection

IMPERIAL (inches)							Heating Coil		Cooling Coil	
Model	D1	D2	H1	H4	H5	L5	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx. Weight (lbs)
RG 1000	30 3/8	26 3/8	42 7/8	18 1/2	22 3/8	29 1/2	13 1/2	15 3/8	13 1/2	15 3/8	1838
RG 1500	37 1/4	33 1/4	46 1/8	20 1/8	23 7/8	29 1/2	15 1/8	22 1/4	15 1/8	22 1/4	2175
RG 2000	44 1/8	40 1/8	50 3/4	22 1/2	26 1/4	29 1/2	17 1/2	29 1/8	17 1/2	29 1/8	2430
RG 3000	51 1/8	47 1/4	55 1/2	24 3/4	28 5/8	29 1/2	19 3/4	36 1/8	19 3/4	36 1/8	3228
RG 4000	57 7/8	53 7/8	61 3/4	28	31 3/4	29 1/2	23	42 7/8	23	42 7/8	4032

METRIC (mm)							Heating Coil		Cooling Coil		
Model	D1	D2	H1	H4	H5	L5	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx. Weight (kg)
RG 1000	770	670	1090	470	568	750	343	389	343	389	835
RG 1500	945	845	1170	510	608	750	383	564	383	564	990
RG 2000	1120	1020	1290	570	668	750	443	739	443	739	1105
RG 3000	1300	1200	1410	630	728	750	503	919	503	919	1465
RG 4000	1470	1370	1570	710	808	750	583	1089	583	1089	1830

RG 5500 - 18000 *with heating and cooling coil*



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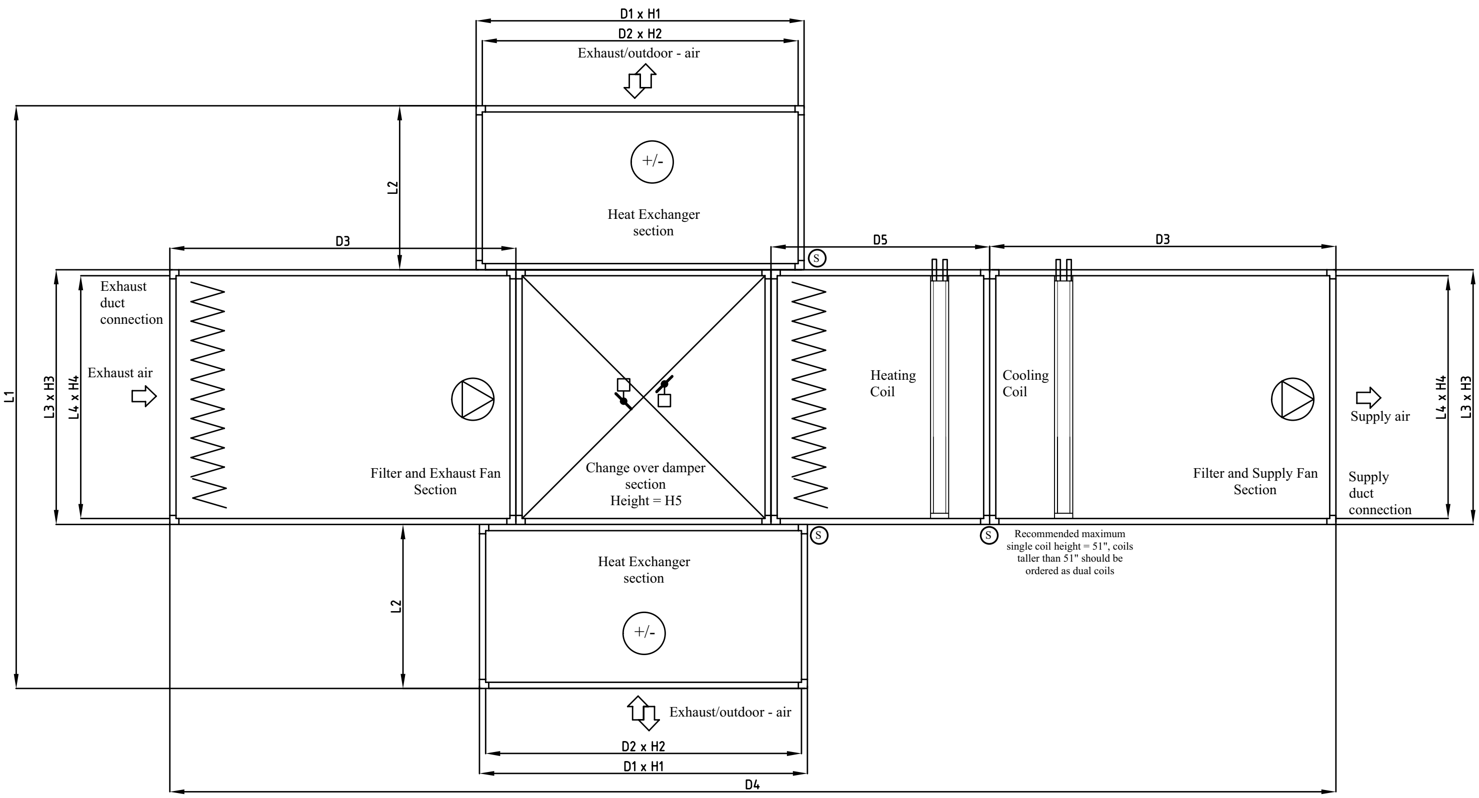
IMPERIAL (inches)													Heating Coil		Cooling Coil		
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx Weight (lbs)
RG 5500	195 5/8	49 3/4	37	48	29 1/2	71 5/8	67 3/4	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	30 3/8	56 5/8	30 3/8	56 5/8	5400
RG 6500	195 5/8	49 3/4	37	48	29 1/2	74 3/4	70 7/8	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	30 3/8	59 3/4	30 3/8	59 3/4	5830
RG 75000	210 1/4	49 3/4	51 5/8	48	29 1/2	71 5/8	67 3/4	86 5/8	43 1/4	39 3/8	39 3/8	43 1/4	34 1/4	56 5/8	34 1/4	56 5/8	6600
RG 9500	228 3/4	59	51 5/8	51 5/8	29 1/2	85 3/8	81 1/2	94 1/2	47 1/4	43 1/4	43 1/4	47 1/4	38 1/4	70 3/8	38 1/4	70 3/8	7830
RG 12000	232 5/8	61	51 5/8	51 5/8	29 1/2	92 3/8	88 3/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	44 1/8	77 3/8	44 1/8	77 3/8	9290
RG 15000	232 5/8	61	51 5/8	51 5/8	29 1/2	114 1/8	110 1/4	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	44 1/8	99 1/8	44 1/8	99 1/8	10540
RG 18000	236 5/8	63	51 5/8	53 1/8	29 1/2	137 3/4	133 7/8	115 3/8	60 5/8	56 3/4	50 3/4	54 3/4	45 3/4	122 3/4	45 3/4	122 3/4	14914

METRIC (mm)													Heating Coil		Cooling Coil		
Model	L1	L2	L3	L4	L5	D1	D2	H1	H2	H4	H5	H6	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx Weight (kg)
RG 5500	4970	1265	940	1220	750	1820	1720	2000	1000	900	1000	900	771	1439	771	1439	2455
RG 6500	4970	1265	940	1220	750	1900	1800	2000	1000	900	1000	900	771	1519	771	1519	2650
RG 75000	5340	1265	1310	1220	750	1820	1720	2200	1100	1000	1100	1000	871	1439	871	1439	3000
RG 9500	5810	1500	1310	1310	750	2170	2070	2400	1200	1100	1200	1100	971	1789	971	1789	3560
RG 12000	5910	1550	1310	1310	750	2345	2245	2700	1350	1250	1350	1250	1121	1964	1121	1964	4225
RG 15000	5910	1550	1310	1310	750	2900	2800	2700	1350	1250	1350	1250	1121	2519	1121	2519	4790
RG 18000	6010	1600	1310	1349	750	3500	3400	2930	1540	1440	1290	1390	1161	3119	1161	3119	6779



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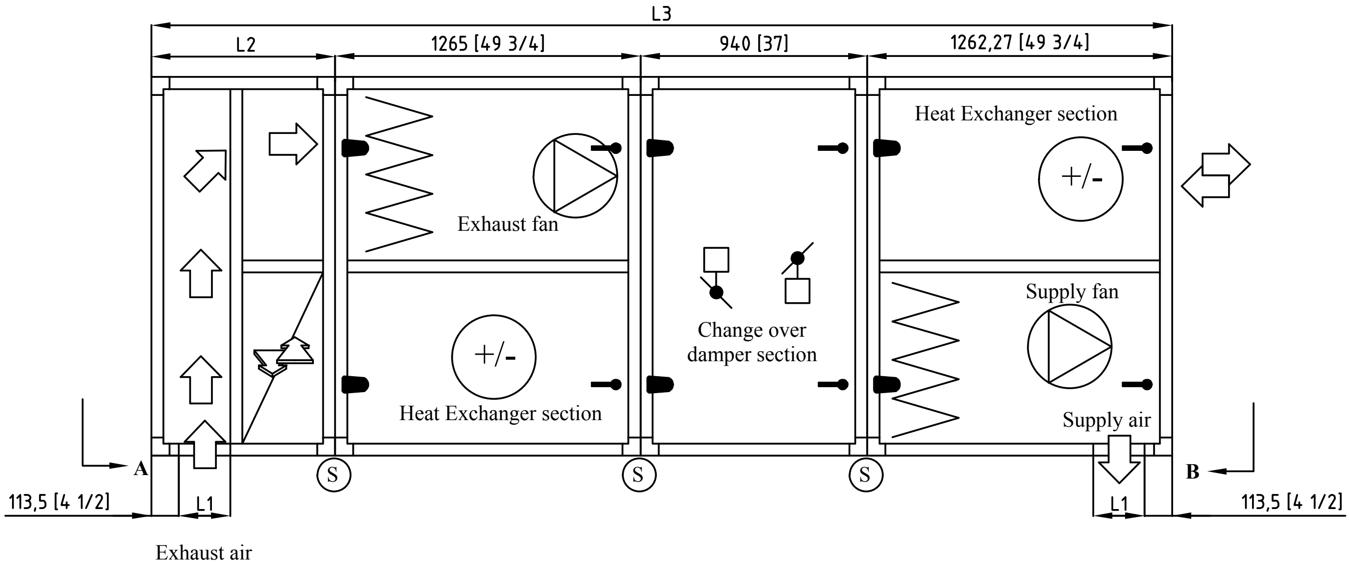
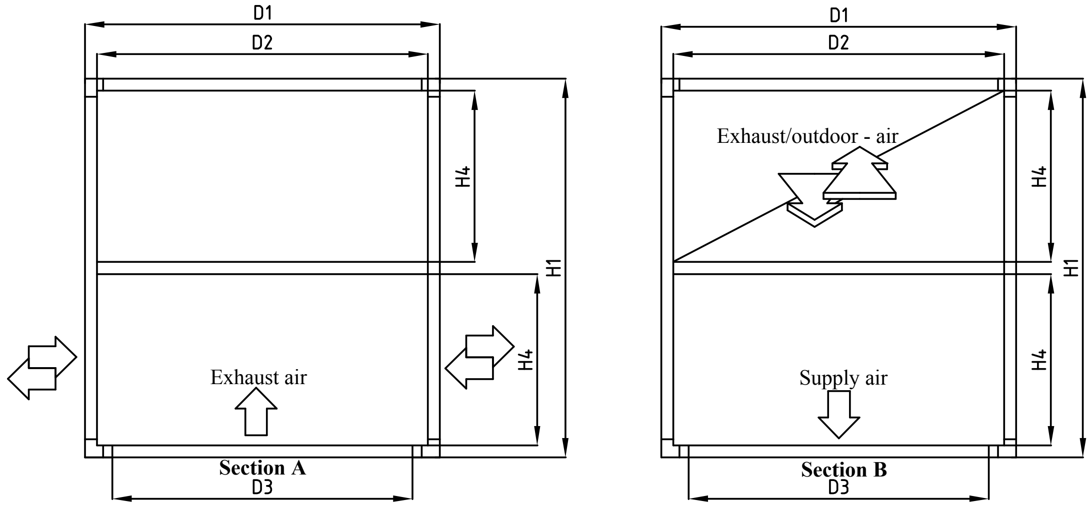
IMPERIAL (inches)															Heating Coil		Cooling Coil		
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx Weight (lbs)
RG 33000	212 5/8	65	82 5/8	78 3/4	106 1/4	102 3/8	112 1/4	366 1/8	59	92	88	92	88	92	83	67 5/8	83	67 5/8	21360
RG 46000	236 2/8	76 3/4	82 5/8	78 3/4	129 7/8	126	141 3/4	437	70 7/8	106 1/4	102 3/8	106 1/4	102 3/8	106 1/4	97 1/4	67 5/8	97 1/4	67 5/8	25570
RG 56000	263 6/8	90 1/2	82 5/8	78 3/4	157 1/2	153 1/2	159 1/2	472 1/2	70 7/8	124	120 1/8	124	120 1/8	124	115	67 5/8	115	67 5/8	31240
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																		

METRIC (mm)															Heating Coil		Cooling Coil		
Model	L1	L2	L3	L4	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	Max Fin Height	Max Fin Length	Max Fin Height	Max Fin Length	Approx Weight (kg)
RG 33000	5400	1650	2100	2000	2700	2600	2850	9300	1500	2336	2236	2336	2236	2336	2107	1719	2107	1719	9709
RG 46000	6000	1950	2100	2000	3300	3200	3600	11100	1800	2700	2600	2700	2600	2700	2471	1719	2471	1719	11623
RG 56000	6700	2300	2100	2000	4000	3900	4050	12000	1800	3150	3050	3150	3050	3150	2921	1719	2921	1719	14200
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																		





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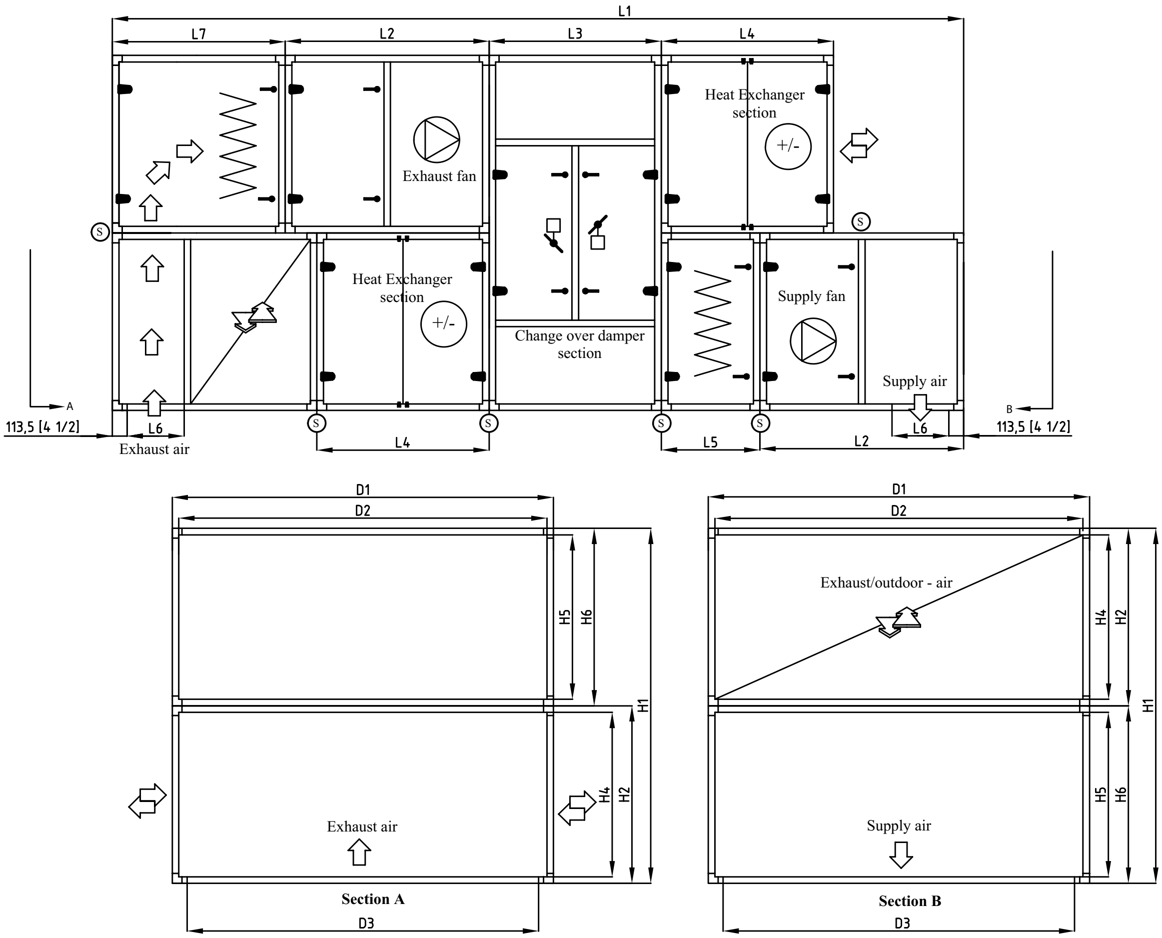
IMPERIAL (inches)									Approx. Weight (lbs)
Model	D1	D2	D3	H1	H4	L1	L2	L3	
RRG 1000	30 3/8	26 3/8	21 3/8	42 7/8	18 1/2	10 3/4	32 1/2	169	1604
RG 1500	37 1/4	33 1/4	28 1/4	46 1/8	20 1/8	11	36 1/8	172 5/8	2064
RG 2000	44 1/8	40 1/8	35 1/8	50 3/4	22 1/2	12 1/4	40 7/8	177 3/8	2431
RG 3000	51 1/8	47 1/4	42 1/8	55 1/2	24 3/4	13	45 1/8	181 5/8	2911
RG 4000	57 7/8	53 7/8	48 7/8	61 3/4	28	14 3/4	50 1/4	186 3/4	3443

METRIC (mm)									Approx. Weight (kg)
Model	D1	D2	D3	H1	H4	L1	L2	L3	
RG 1000	770	670	541	1090	470	274	825	4292	729
RG 1500	945	845	716	1170	510	278	916	4384	938
RG 2000	1120	1020	891	1290	570	312	1038	4505	1105
RG 3000	1300	1200	1071	1410	630	330	1146	4613	1323
RG 4000	1470	1370	1241	1570	710	374	1276	4743	1565



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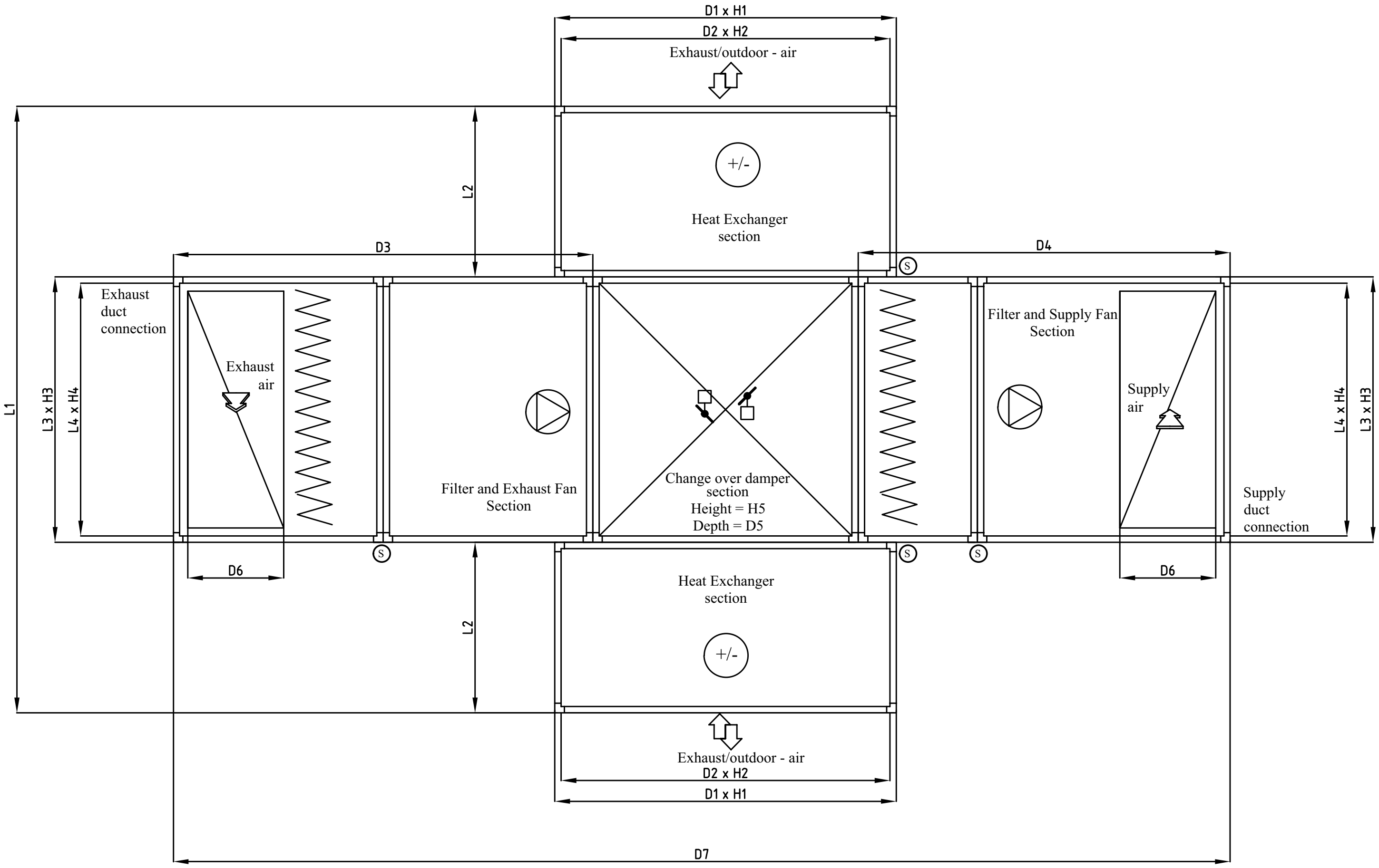
IMPERIAL (inches)																	Approx Weight (lbs)
Model	L1	L2	L3	L4	L5	L6	L7	L8	D1	D2	D3	H1	H2	H4	H5	H6	
RG 5500	195 5/8	49 3/4	37	48	29 1/2	15	47 3/8	60 3/4	71 5/8	67 3/4	62 5/8	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	5766
RG 6500	195 5/8	49 3/4	37	48	29 1/2	16	50	61 7/8	74 3/4	70 7/8	65 3/4	78 3/4	39 3/8	35 3/8	35 3/8	39 3/8	6241
RG 7500	210 1/4	49 3/4	51 5/8	48	29 1/2	20 1/2	52 7/8	63 1/8	71 5/8	67 3/4	62 5/8	86 5/8	43 1/4	39 3/8	39 3/8	43 1/4	6976
RG 9500	228 3/4	59	51 5/8	51 5/8	29 1/2	22 1/4	55 7/8	71 7/8	85 3/8	81 1/2	76 3/8	94 1/2	47 1/4	43 1/4	43 1/4	47 1/4	8840
RG 12000	232 5/8	61	51 5/8	51 5/8	29 1/2	25	60 1/8	77 3/4	92 3/8	88 3/8	83 3/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	10263
RG 15000	232 5/8	61	51 5/8	51 5/8	29 1/2	25	71	88 1/4	114 1/8	110 1/4	105 1/8	106 1/4	53 1/8	49 1/4	49 1/4	53 1/8	12250
RG 18000	236 3/4	63	51 5/8	53 1/8	29 1/2	25	82 3/8	100	137 3/4	133 7/8	128 3/4	115 3/8	60 5/8	56 3/4	50 3/4	54 3/4	15558

METRIC (mm)																	Approx Weight (kg)
Model	L1	L2	L3	L4	L5	L6	L7	L8	D1	D2	D3	H1	H2	H4	H5	H6	
RG 5500	4970	1263.65	940	1220	750	381	1205	1544	1820	1720	1591	2000	1000	900	900	1000	2621
RG 6500	4970	1263.65	940	1220	750	406	1270	1573	1900	1800	1671	2000	1000	900	900	1000	2837
RG 7500	5340	1263.65	1310	1220	750	521	1345	1602	1820	1720	1591	2200	1100	1000	1000	1100	3171
RG 9500	5810	1498.6	1310	1310	750	565	1419	1825	2170	2070	1941	2400	1200	1100	1100	1200	4018
RG 12000	5910	1549.4	1310	1310	750	635	1526	1975	2345	2245	2116	2700	1350	1250	1250	1350	4665
RG 15000	5908.8	1549.4	1310	1310	750	635	1803	2243	2900	2800	2671	2700	1350	1250	1250	1350	5568
RG 18000	6010.4	1600.2	1310	1350	750	635	2092	2541	3500	3400	3271	2930	1540	1440	1290	1390	7072

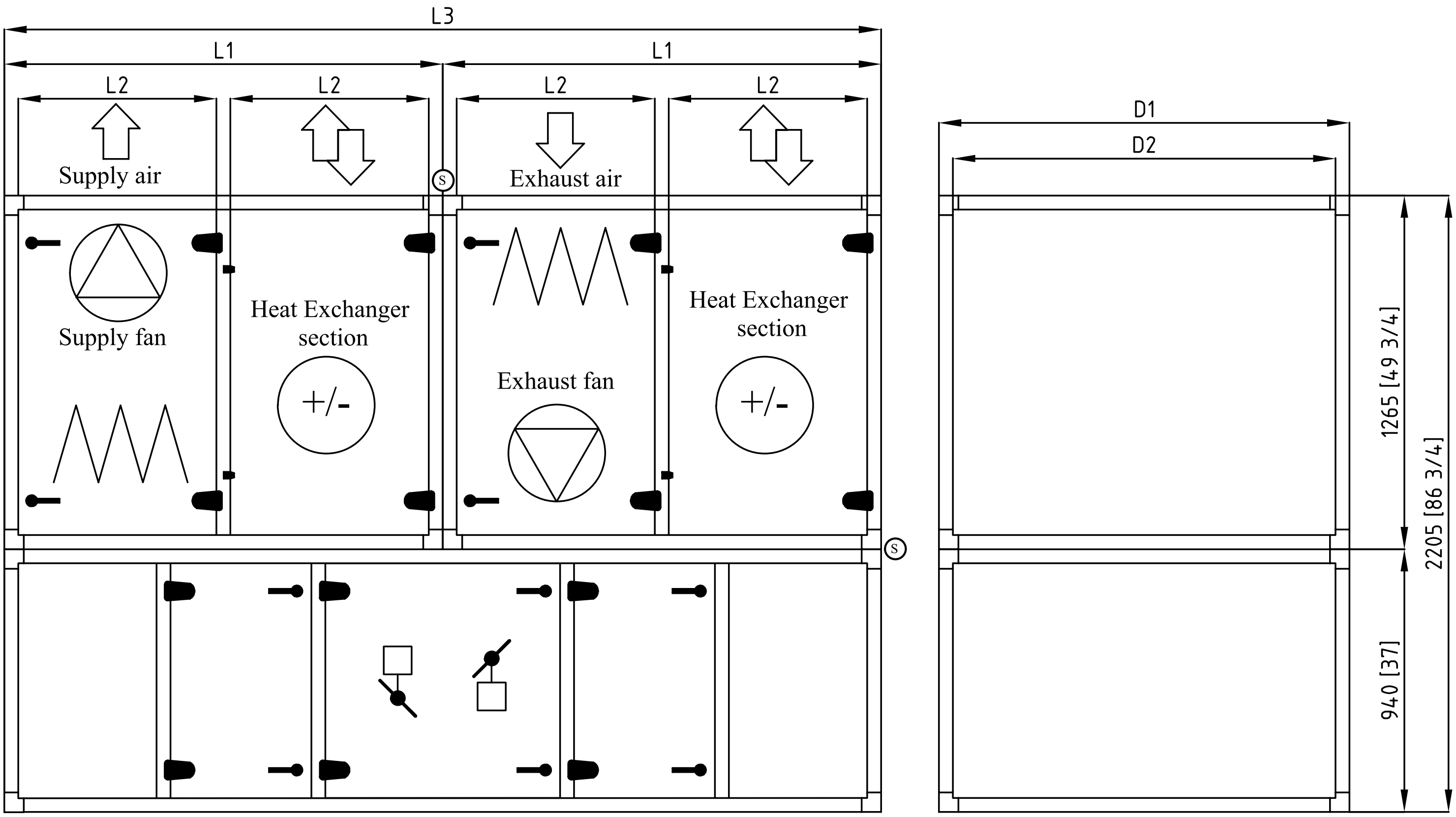


Notes:

1) For reference use only, all information subject to change without notice
2) Plan view shown
3) Contact your local TEMPEFF Representative for job specific data

IMPERIAL (inches)																		Approx Weight (lbs)
Model	L1	L2	L3	L4	L5	D1	D2	D3	D4	D5	D6	D7	H1	H2	H3	H4	H5	
RG 33000	212 5/8	65	82 5/8	78 3/4	11 3/4	106 1/4	102 3/8	173 3/4	112 1/4	82 5/8	55	368 5/8	92	88	92	88	92	20034
RG 46000	236 2/8	76 3/4	82 5/8	78 3/4	11 3/4	129 7/8	126	224	141 3/4	82 5/8	76	448 3/8	106 1/4	102 3/8	106 1/4	102 3/8	106 1/4	24174
RG 56000	263 6/8	90 1/2	82 5/8	78 3/4	11 3/4	157 1/2	153 1/2	251 1/2	159 1/2	82 5/8	86	493 1/2	124	120 1/8	124	120 1/8	124	29865
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																	

METRIC (mm)																		Approx Weight (kg)
Model	L1	L2	L3	L4	L5	D1	D2	D3	D4	D5	D6	D7	H1	H2	H3	H4	H5	
RG 33000	5400	1650	2100	2000	300	2700	2600	4412	2850	2100	1397	9362	2336	2236	2338	2236	2336	9106
RG 46000	6000	1950	2100	2000	300	3300	3200	5690	3600	2100	1924	11390	2700	2600	2700	2600	2700	10988
RG 56000	6700	2300	2100	2000	300	4000	3900	6385	4050	2100	2181	12535	3150	3050	3150	3050	3150	13575
RG 75000	CONTACT REPRESENTATIVE FOR DETAILS																	

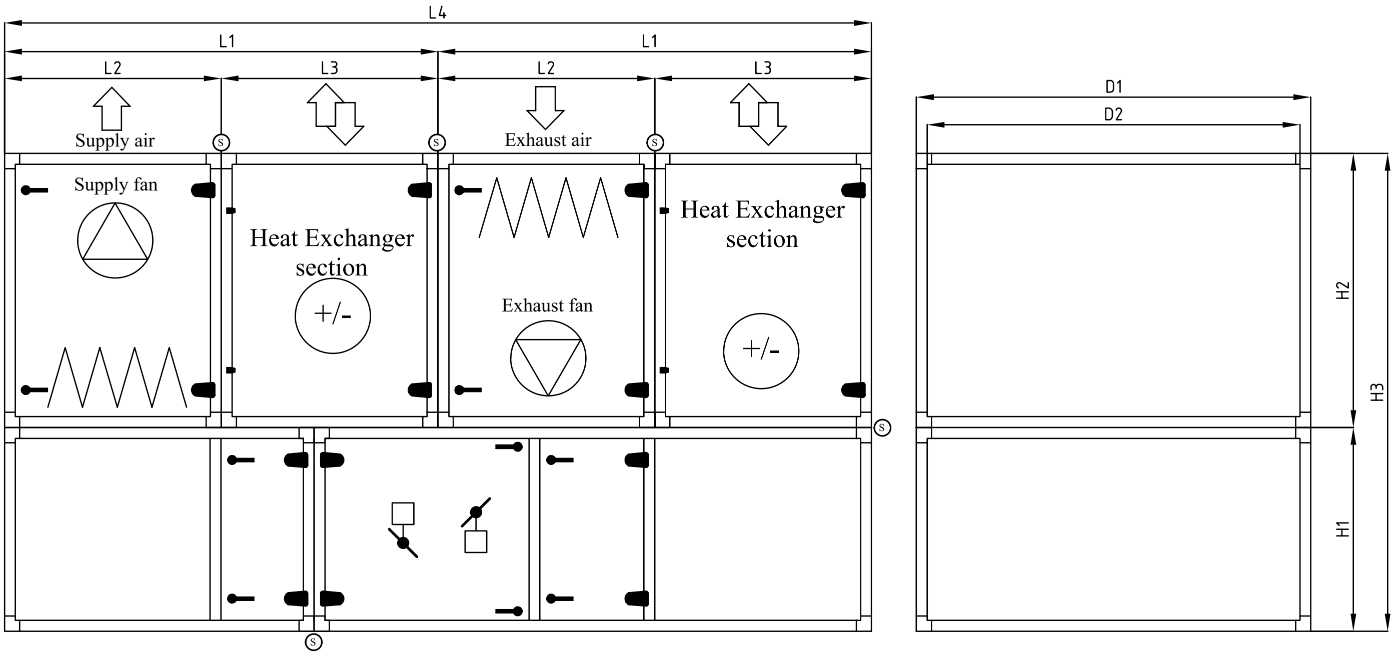


Notes:

1) For reference use only, all information subject to change without notice
2) All units in this series have the same length, only height and width differ between the different sizes
3) RGP performance and RG performance are the same

IMPERIAL (inches)						Approx. Weight (lbs)
Model	L1	L2	L3	D1	D2	
RGP 1000	42 7/8	18 1/2	85 7/8	30 3/8	26 3/8	1298
RGP 1500	46 1/8	20 1/8	92 1/8	37 1/4	33 1/4	1540
RGP 2000	50 3/4	22 1/2	101 5/8	44 1/8	40 1/8	1870
RGP 3000	55 1/2	24 3/8	111	51 1/8	47 1/4	2376
RGP 4000	61 3/4	28	123 5/8	57 7/8	53 7/8	3058

METRIC (mm)						Approx. Weight (kg)
Model	L1	L2	L3	D1	D2	
RGP 1000	1090	470	2180	770	670	590
RGP 1500	1170	510	2340	945	845	700
RGP 2000	1290	570	2580	1120	1020	850
RGP 3000	1410	620	2820	1300	1200	1080
RGP 4000	1570	710	3140	1470	1370	1390



Notes:

1) For reference use only, all information subject to change without notice.
2) Units in this series can also include heating and/or cooling coils.
3) Please contact your local TEMPEFF Representative for job specific data.

IMPERIAL (inches)										Approx Weight (lbs)
Model	L1	L2	L3	L4	D1	D2	H1	H2	H3	
RGP 5500	78 3/4	39 3/8	39 3/8	157 1/2	71 5/8	67 3/4	37	79 3/8	116 3/8	4730
RGP 6500	78 3/4	39 3/8	39 3/8	157 1/2	74 3/4	70 7/8	37	79 3/8	116 3/8	5060
RGP 7500	86 5/8	43 1/4	43 1/4	173 1/4	71 5/8	67 3/4	51 5/8	79 3/8	130 7/8	5720
RGP 9500	94 1/2	47 1/4	47 1/4	189	85 3/8	81 1/2	51 5/8	88 5/8	140 1/8	6820
RGP 12000	106 1/4	53 1/8	53 1/8	212 5/8	92 3/8	88 3/8	51 5/8	90 1/2	142 1/8	8140
RGP 15000	106 1/4	53 1/8	53 1/8	212 5/8	114 1/8	110 1/4	51 5/8	90 1/2	142 1/8	9240
RGP 18000	115 3/8	54 3/4	60 5/8	230 3/4	137 3/4	133 7/8	53 1/8	92 1/2	145 5/8	14014

METRIC (mm)										Approx Weight (kg)
Model	L1	L2	L3	L4	D1	D2	H1	H2	H3	
RGP 5500	2000	1000	1000	4000	1820	1720	940	2015	2955	2150
RGP 6500	2000	1000	1000	4000	1900	1800	940	2015	2955	2300
RGP 7500	2200	1100	1100	4400	1820	1720	1310	2015	3325	2600
RGP 9500	2400	1200	1200	4800	2170	2070	1310	2250	3560	3100
RGP 12000	2700	1350	1350	5400	2345	2245	1310	2300	3610	3700
RGP 15000	2700	1350	1350	5400	2900	2800	1310	2300	3610	4200
RGP 18000	2930	1390	1540	5860	3500	3400	1350	2350	3700	6370

PART 2: PRODUCTS

2.01 MANUFACTURERS

A. The following manufacturers are approved for use. No substitutions will be permitted.

1. Tempeff Dual Core® as basis of design

2.02 GENERAL DESCRIPTION

A. Configuration: Fabricate as detailed on drawings.

B. Performance:

C. Acoustics: Sound power levels (dB) for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required.

OCTAVE BAND AT CENTER FREQUENCY (Hz)								
	63	125	250	500	1000	2000	4000	8000
Radiated								
Discharge								
Return								

2.03 UNIT CONSTRUCTION

A. Fabricate unit with extruded aluminum channel posts and galvanized panels secured with mechanical fasteners. All access doors shall be sealed with permanently applied bulb-type gasket.

1. Panels and access doors shall be constructed as a 2-inch (50-mm) nominal thick; with injected polyurethane foam insulation. R value shall be 6.5 per inch of wall thickness. The outer panel shall be constructed of G90 galvanized steel. The inner liner shall be constructed of G90 galvanized steel. Module to module assembly shall be accomplished with self adhering foam gaskets. Manufacturer shall supply test data demonstrating less than 0.2” deflection for an unsupported 48x48 panel under 30” W.C pressure. Units that cannot demonstrate this deflection are unacceptable.

B. Access Doors shall be flush mounted to cabinetry, with minimum of two hinges, locking latch and full size handle assembly.

C. All outdoor units will have an 18 gauge roof and gutters. The gutters will cover the entire perimeter of the unit.

2.04 SUPPLY / RETURN FANS

A. Provide [DWDI forward-curved] [DWDI airfoil] [belt-drive airfoil plenum] [direct-drive airfoil plenum] [inline] [DWDI forward curved twin] supply [return] fan(s). Fan assemblies including fan, motor and sheaves shall be dynamically balanced by the manufacturer on all three planes and at all bearing supports. Manufacturer must ensure maximum fan RPM is below the first critical speed.

B. Bearings shall be self-aligning, grease lubricated, ball or roller bearings with extended copper lubrication lines to access side of unit. Grease fittings shall be attached to the fan base assembly near access door. If not supplied at the factory, contractor shall mount copper lube lines in the field.

C. Fan and motor shall be mounted internally on a steel base. Provide access to motor, drive, and bearings through hinged access door. Fan and motor assembly shall be mounted on [rubber-in-shear vibration type isolators inside cabinetry.] [2” deflection spring vibration type isolators inside cabinetry] [unit base, rigid mounted.] [Seismic snubbers shall be provided.]

2.05 BEARINGS AND DRIVES

A. Bearings: Basic load rating computed in accordance with AFBMA - ANSI Standards, [L-50 life at 200,000 hours – all DWDI fans] [L-50 life at 500,000 hours – DWDI fans on unit sizes 003 - 035], [L-50 life at 400,000 hours all belt-drive airfoil plenum fans and DWDI fans on unit sizes greater than 035] [L-50 life 1,000,000 hours – DWDI fans on unit sizes 003 – 035] [L-50 life at 600,000 hours – all inline fans], heavy duty pillow block type, self-aligning, grease-lubricated ball bearings.

B. Shafts shall be solid, hot rolled steel, ground and polished, keyed to shaft, and protectively coated with lubricating oil. Hollow shafts are not acceptable.

C. V-Belt drives shall be cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. [Fixed sheaves, matched belts, and drive rated based on motor horsepower] [Variable and adjustable pitch sheaves selected so required RPM is obtained with sheaves set at mid-position and rated based on motor horsepower. Contractor to furnish fixed sheaves at final RPM as determined by balancing contractor]. Minimum of 2 belts shall be provided on all fans with 10 HP motors and above. Standard drive service factor shall be [1.1 S.F. (for 1/4 HP – 7.5 HP)] [1.3 S.F. (for 10HP and larger)], calculated based on fan brake horsepower.

2.06 ELECTRICAL

A. The air handler(s) shall bear an ETL listing label for the entire assembly. Units with only components bearing third party safety listing are unacceptable.

B. On RG sizes 1000 through 18000 all controls shall be located on the side of the unit for ease of servicing. Alternate manufacturers who supply units with controls on roof must supply a permanently installed ladder to access controls, and appropriate safety rails on roof of unit, meeting all applicable OSHA standards.

C. Controls must include Self diagnostics with fault and PLC error Code. On board fault detection and diagnostics that senses and alerts when the damper is not operating correctly.

D. Wiring Termination: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. All wires shall be number tagged and cross-referenced to the wiring diagram for ease of troubleshooting.

E. Fan motors shall be [1800 rpm, open drip-proof (ODP)] [1800 rpm, totally enclosed fan-cooled (TEFC)] [1800/1200 rpm, 2 Speed/2 Winding (ODP) (TEFC)] [1800/900 rpm, 2 Speed/1 Winding (ODP)(TEFC)] type. Motors shall be [standard efficiency.] [high efficiency to meet EPAct requirements.] [premium efficiency.] Electrical characteristics shall be as shown in schedule.

F. [Supplier shall provide and mount [ABB] [Danfoss] variable speed drive with electrical characteristics as shown on project schedule. [A two-contactor type bypass switch shall be provided.] [A line reactor shall be provided.]

G. Air handler manufacturer shall provide and mount a damper hand-off-auto (HOA) switch.

2.07 COOLING AND HEATING COIL SECTIONS

A. Provide access to coils from [both sides] [connection side] [opposite side] of unit for service and cleaning. Enclose coil headers and return bends fully within unit casing. Unit shall be provided with coil connections that extend a minimum of 5" beyond unit casing for ease of installation. Drain and vent connections shall be provided exterior to unit casing. Coil connections must be factory sealed with grommets on interior and exterior and gasket sleeve between outer wall and liner where each pipe extends through the unit casing to minimize air leakage and condensation inside panel assembly. If not factory packaged, Contractor must supply all coil connection grommets and sleeves. Coils shall be removable through side and/or top panels of unit without the need to remove and disassemble the entire section from the unit.

1. Identify fin, tube & casing material type and thickness.
2. Show coil weights (shipping & operating).
3. State air and fluid flow amounts with its associated pressure drops. For steam coils, indicate steam pressure and condensate load.
4. Indicate entering & leaving air and water temperatures. For refrigerant coils, indicate saturated suction temperature (SST).

B. Water Coils

5. Certification - Acceptable water coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.

1. Headers shall consist of seamless copper tubing to assure compatibility with primary surface. Headers to have intruded tube holes to provide maximum brazing surface for tube to header joint, strength, and inherent flexibility. Header diameter should vary with fluid flow requirements.

2. Fins shall have a minimum thickness of [[0.0075"] [0.0095"] of aluminum] or [0.006"] [0.0075'] [0.0095"] copper]] plate construction. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.

3. Coil tubes shall be 5/8 inch (16mm) OD seamless copper, 0.020" [0.025"] [0.035"] [0.049"] nominal tube wall thickness, expanded into fins, brazed at joints. Soldered U-bends shall be provided to minimize the effects of erosion and premature failure having a minimum tube wall thickness of .025".

4. Coil connections shall be [N.P.T. threaded carbon steel] [butt weld carbon steel] [O.D. sweat copper] [threaded red brass] with connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent and drain fittings shall be furnished on the connections, exterior to the air handler. Vent connections provided at the highest point to assure proper venting. Drain connections shall be provided at the lowest point to insure complete drainage and prevent freeze-up.

5. Coil casings shall be a formed channel frame of [galvanized steel] [stainless steel]. Water heating coils, 1 & 2 row only (sans 5M type) shall be furnished as uncased to allow for thermal movement and slide into a pitched track for fluid drainage.

D. Refrigerant Coils:

1. Certification - Acceptable refrigerant coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.

2. Coils designed for use with Refrigerant [R-22] [R-134a] [other]. Fins shall have a minimum thickness of [[0.0075"] [0.0095"] of aluminum] or [0.006"] [0.0075'] [0.0095"] copper]] plate construction with full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins.

3. Refrigerant coils shall be provided with round seamless 5/8” O.D. copper tubes on 1-1/2” centers, staggered in the direction of airflow. All joints shall be brazed.

4. Sweat type copper suction connections located at the bottom of the suction headers for gravity oil drainage. Coils shall be uniformly circuited in a counterflow manner for [single circuit] [row] [face] [interlaced] [interlaced face split] capacity reduction. Pressure type liquid distributors used. Coils shall be tested with 315 pounds air pressure under warm water, and suitable for 250 psig working pressure.

E. Steam Coils

1. Certification - Acceptable steam coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.

2. Fins shall have a minimum thickness of [[0.0075”] [0.0095”] [0.012” (1” dia. tubes only)] of aluminum] or [0.006” (5/8” tube dia. only)] [0.0075’] [0.0095”] copper]] with full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.

3. Steam coils shall be provided with round seamless [5/8” O.D. copper [0.020”] [0.025”] [0.035”] [0.049”] or [1” O.D. copper [0.025”] [0.049”] tubes. Tubes on two-row coils are staggered in the direction of airflow. All joints shall be brazed.

3. Steam coil headers shall be made of nonferrous materials using seamless copper tubing with intruded tube holes to permit expansion and contraction without creating undue stress or strain. Both the supply and return headers shall be completely encased by the coil casing. Coil shall be pitched in the unit to assure positive condensate drainage. Steam coils shall be furnished as uncased to allow for thermal movement and slide into a pitched track for drainage. Orificed baffle plates shall be installed in the supply connection to ensure proper diffusion of entering steam.

4. Steam coils shall be tested with 315 pounds air pressure under warm water and suitable for 150 psig working pressures.

F. [Horizontal Tube Integral Face and Bypass Coil

1. Horizontal tube integral face and bypass coils shall consist of multiple alternating heating sections and bypass sections, with airflow distributed to each by interlocking wrap-a-round “clamshell” style dampers; linkage to be stainless steel. Coils shall be suitable for hot water or steam and continuous operation at 200 psig and 400 F degrees. Heating elements to consist of multi-row, multi-pass extended heat transfer surface; coil shall carry ARI 410 certification as to ratings. Welding and brazing shall be done by ASME qualified personnel.

2. Tubes shall be 5/8” diameter seamless copper, .035” average wall thickness. Fins shall be continuous patterned plate, .0075” thick aluminum with full fin collars. Joints shall be silver brazed.

3. Headers shall be single piece carbon steel, with no separate disks or caps welded or brazed into header ends. Connections shall be steel and shall be welded to header barrels.

4. Casings and dampers shall be minimum 16 gauge mill galvanized steel; top and bottom casing panels to be double flanged for stacking. End casings shall have smooth, embossed tube holes to provide adequate bearing surface for tubes to avoid abrasion during expansion and contraction. Flexible connectors shall not be required.]

G. [Vertical Tube Integral Face and Bypass Coil

1. Vertical tube integral face and bypass coils shall consist of multiple alternating heating sections and bypass sections, with airflow distributed to each by interlocking wrap-a-round “clamshell” style dampers; linkage to be stainless steel. Coils shall be suitable for hot water or steam and continuous operation at 200 psig and 400 F degrees. Heating elements to consist of multi-row, multi-pass extended heat transfer surface; coil shall carry ARI 410 certification as to ratings. Welding and brazing shall be done by ASME qualified personnel.

2. Hot water applications shall be furnished with 5/8” outside diameter tubes with .035” tube wall thickness. Steam applications shall be furnished with a non-freeze, tube-within-a-tube design that consists of an outer tube that is 5/8”outside diameter tubes with .035” tube wall thickness and an inner tube that is 3/8” outside diameter with .020” wall thickness. Fins shall be a helical fin design that is ½” high, .012” thick copper, solder coated.

3. Supply and Return headers shall be located at the base of the coil. Hot water coils shall employ return bends. Steam coils shall be capped to allow free thermal movement. Headers shall be carbon steel with male pipe thread connections.

4. The casing shall be 12 gauge galvanized steel. The dampers shall be 16 gauge galvanized steel with aluminum hinges, stainless steel pins, linkage & connecting bars with oilite bearings.]

2.08 PARTICULATE FILTERS

A. [Filter section with filter racks and guides with hinged and latching access doors on either, or both sides, for side loading and removal of filters] [Filter section with front loading frames and clips].

B. Filter media shall be UL 900 listed, Class I or Class II.

C. [Flat] [Angle] arrangement with [2”, 50mm] [4”, 100mm] deep [pleated] [disposable] panel filters.

D. [Bag] [Cartridge] type arrangement with holding frames suitable for [2” (50 mm)], [4” (100 mm)] prefilter and final filter media and blank-off sheets, extended surface [bag] [cartridge] media filters with [60-65] [80-85] [90-95] percent dust spot efficiency. Bag filter media [12” (305 mm)] [15” (381 mm)] [19” (483 mm)] [22” (559 mm)] [30” (762 mm)] [36” (914 mm)] deep. Cartridge filter media is [4” (50 mm)] [12” (305 mm)] deep. [Provide microbial resistant Intersept coating on all filters.] Designed for [side] [front] loading of filters.

2.09 ENERGY RECOVERY

A. Dual Core® Energy Recovery

1. Unit shall be equipped with Dual Core® energy recovery technology. The unit shall be 90% efficient (sensible +-5%) at equal airflow in winter and up to 80% sensible in summer. It shall also provide up to 70% latent recovery. Unit shall accomplish this recovery without a defrost cycle that will reduce the effectiveness of the device. Devices employing defrost cycles that bypass the energy recovery device, or reduce the effectiveness are not acceptable. Energy recovery device shall not require frost protection in applications down to -40 degrees.
2. Energy Cores shall be Generation 3, comprised of precisely corrugated high grade aluminum. Maximum allowable face velocity across heat exchangers shall be 450 fpm. Heat exchanger face velocities exceeding 500 fpm are not acceptable.
3. Switchover damper section shall be comprised of multi section low leakage dampers operated by fast acting electric actuators only. RG 1000-6500 shall have damper switching times of 0.75 seconds. RG 7500-18000 shall have damper switching times of 1.5 seconds. Dampers that do not switch within the specified times without objectionable noise are not acceptable. Single blade damper sections are not acceptable. Each damper shall control one of the 4 airways, upper-horizontal, lower-horizontal, forward-vertical and rear-vertical. Dampers shall be capable of orienting to close off outside air to the building without needing external shut off dampers. Dampers shall also be capable of orienting to allow 100% recirculation of air without using heat recovery device for off peak or unoccupied heating modes. During a Morning warm up cycle both energy core sections must be able to be charged at the same time using recirculation air. Units incapable of these operations without extra ductwork are not acceptable.
4. Recovery cycles shall be controlled by internal programmed thermostats measuring both supply and exhaust air, and optimizing performance of both heat recovery and free cooling modes.

2.11 EXTERNAL DAMPERS (OPTIONAL)

A. External Damper Leakage: Leakage rate shall be less than two tenths of one percent leakage at 2 inches static pressure differential. Leakage rate tested in accordance with AMCA Standard 500.

PART 3: EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's Installation & Maintenance instructions.

3.02 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

TEMPEFF

DUAL CORE® TECHNOLOGY

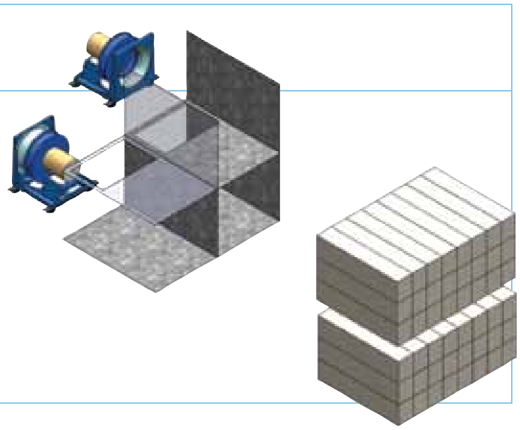
TEMPEFF NORTH AMERICA

RGN

SERIES

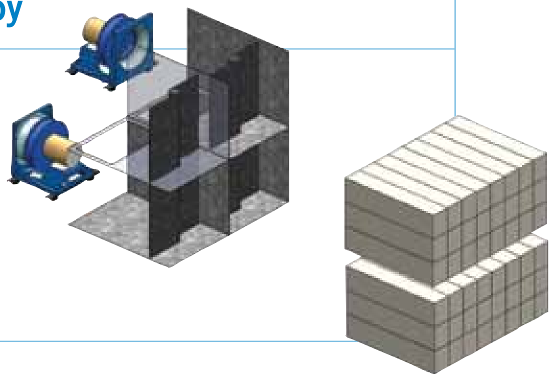
Tempeff Dual Core® Energy
Recovery Operation

Simplest Form



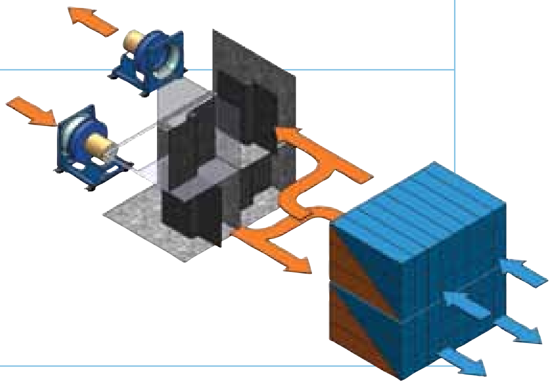
A typical Tempeff Dual Core® unit contains 2 energy cores (A & B), special change over damper section, an exhaust fan, and a supply fan.

1 Shut Off | Shut Down | Standby



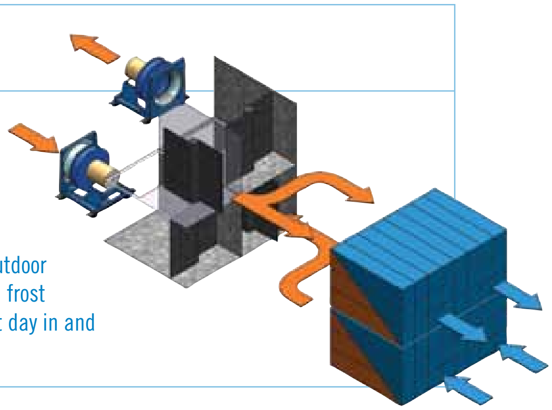
When unit is shut down, the dampers close, isolating the building from the atmosphere.

2 Cycling for Recovery PHASE 1



When energy recovery is called for, the dampers position so that Energy Core A will add energy to the supply air stream, heating up the air. Simultaneously Energy Core B is absorbing energy from the exhaust air stream.

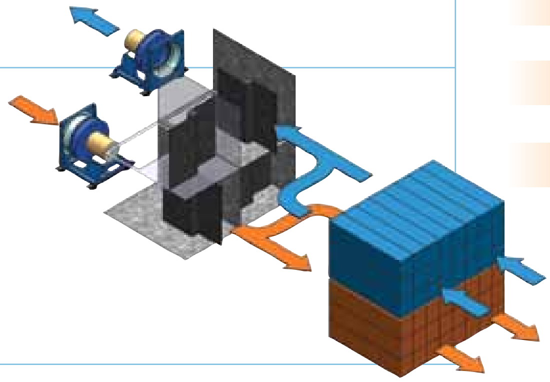
3 Cycling for Recovery PHASE 2



After 60 seconds, the dampers reposition. Now Energy Core B is adding the energy it reclaimed in Phase 1 to the supply air stream,heating it up. Simultaneously Energy Core A is “recharging” by absorbing energy from the exhaust air stream. Phase 1 and Phase 2 will alternate every 60 seconds, constantly delivering extremely high energy recovery regardless of outdoor air temperatures. Because the cores switch cycles every 60 seconds, frost does not have a chance to build up, thus energy recovery is constant day in and day out, unlike other traditional types of energy recovery devices.

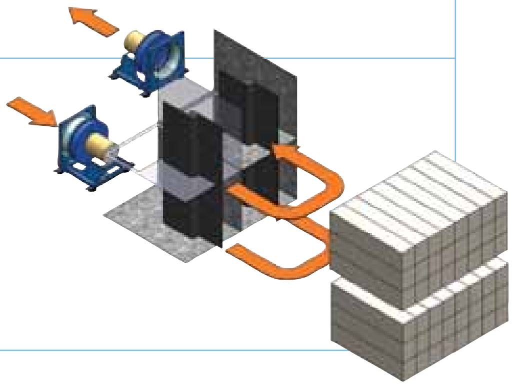
4 Free Cooling

If exhaust air and supply air are above set point, unit will revert to Free Cooling Mode. No energy recovery is taking place. Damper will switch every 3 hours to clean core faces.



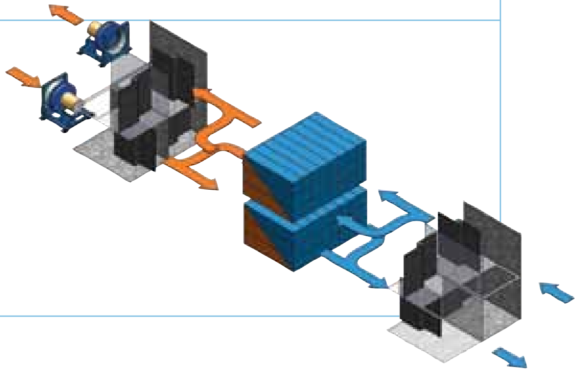
5 Optional Recirculating Mode

In off peak or unoccupied mode, internal dampers can be bypassed so that 100% re-circulated air can be used to heat or cool the building through ancillary heating or cooling devices. External shut off dampers recommended for this option.



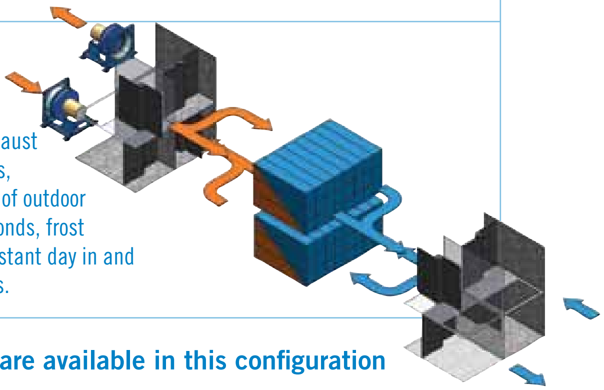
1 Cycling for Dedicated Recovery Phase 1

When energy recovery is called for, the dampers position so that Energy Core A will add energy to the supply air stream, heating up the air. Simultaneously Energy Core B is absorbing energy from the exhaust air stream.



2 Cycling for Dedicated Recovery Phase 2

After 60 seconds, the dampers reposition. Now Energy Core B is adding the energy it reclaimed in Phase 1 to the supply air stream,heating it up. Simultaneously Energy Core A is "recharging" by absorbing energy from the exhaust air stream. Phase 1 and Phase 2 will alternate every 60 seconds, constantly delivering extremely high energy recovery regardless of outdoor air temperatures. Because the cores switch cycles every 60 seconds, frost does not have a chance to build up, thus energy recovery is constant day in and day out, unlike other traditional types of energy recovery devices.



Shut off, Recirculating Mode and Free Cooling are available in this configuration

PERFORMANCE DATA **IMPERIAL**

CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop "WC	BHP @ ESP ("W.C) 1.0 "
2000	RGN 3000	92.9	82.6	225	0.19	0.84
2500	RGN 3000	92.2	81.1	282	0.31	1.2
	RGN 4000	93.7	83	212	0.17	1.07
3000	RGN 3000	90.8	79.5	338	0.43	1.52
	RGN 4000	93.4	81.8	255	0.26	1.5
3500	RGN 3000	89.9	77.9	394	0.55	2.02
	RGN 4000	92.1	80.6	297	0.35	1.76
	RGN 5500	93.6	82.9	217	0.18	1.56
4000	RGN 4000	91.6	79.4	339	0.43	2.3
	RGN 5500	93.5	82	248	0.24	2.04
	RGN 6500	93.9	82.6	225	0.19	1.97
4500	RGN 4000	91.3	78.2	382	0.52	2.94
	RGN 5500	93.6	81.1	279	0.31	2.62
	RGN 6500	94.1	81.8	253	0.25	2.55
	RGN 7500	95	83	211	0.16	2.43
5000	RGN 4000	89.7	77	424	0.61	3.18
	RGN 5500	92.1	80.3	310	0.37	2.81
	RGN 6500	92.6	81.1	282	0.31	2.75
	RGN 7500	93.7	82.4	235	0.21	2.62
5500	RGN 5500	92	79.4	341	0.44	3.34
	RGN 6500	92.5	80.3	310	0.37	3.21
	RGN 7500	93.7	81.7	258	0.26	3.01
	RGN 9000	94.7	83.2	206	0.15	2.83
6000	RGN 5500	91.8	78.5	372	0.5	4.01
	RGN 6500	92.5	79.5	338	0.43	3.86
	RGN 7500	93.8	81.1	282	0.31	3.62
	RGN 9000	94.8	82.7	225	0.19	3.38
6500	RGN 5500	91.7	77.6	403	0.57	4.77
	RGN 6500	92.5	78.7	366	0.49	4.6
	RGN 7500	93.9	80.4	305	0.36	4.31
	RGN 9000	95.3	82.1	243	0.23	4.04
7000	RGN 5500	89.8	76.8	434	0.63	4.7
	RGN 6500	90.7	77.9	394	0.55	4.56
	RGN 7500	92.2	79.7	328	0.41	4.31
	RGN 9000	93.7	81.6	262	0.27	4.07
7500	RGN 6500	90.5	77.1	422	0.61	5.2
	RGN 7500	91.9	79.1	352	0.46	4.83
	RGN 9000	93.6	81.1	281	0.31	4.49
	RGN 12000	94.1	83	211	0.16	3.46
8000	RGN 7500	91.9	78.4	375	0.51	5.55
	RGN 9000	93.6	80.5	300	0.35	5.15
	RGN 12000	94	82.6	225	0.19	3.94
8500	RGN 7500	91.9	77.7	399	0.56	6.36
	RGN 9000	93.7	80	318	0.39	5.91
	RGN 12000	94.1	82.2	239	0.22	4.5
	RGN 15000	94.7	83.1	211	0.16	4.34
9000	RGN 7500	92	77.1	422	0.61	7.26
	RGN 9000	93.9	79.5	337	0.43	6.76
	RGN 12000	94.2	81.8	253	0.25	5.1
	RGN 15000	94.9	82.7	223	0.19	4.9
9500	RGN 7500	92	76.4	446	0.66	8.21
	RGN 9000	94.1	79	356	0.47	7.67
	RGN 12000	92.8	81.5	267	0.28	5.14
	RGN 15000	93.5	82.4	235	0.22	4.98
10000	RGN 9000	92.1	78.4	375	0.51	7.52
	RGN 12000	92.7	81.1	282	0.31	5.48
	RGN 15000	93.4	82	248	0.24	5.3
	RGN 18000	94.3	83.2	206	0.16	5.08
10500	RGN 9000	92.1	77.9	393	0.55	8.08
	RGN 12000	92.7	80.7	296	0.34	5.84
	RGN 15000	93.4	81.7	260	0.27	5.66
	RGN 18000	94.4	82.9	217	0.18	5.4
11000	RGN 9000	92.2	77.4	412	0.59	8.79
	RGN 12000	92.6	70.3	310	0.37	6.42
	RGN 15000	93.4	81.3	273	0.29	6.14
	RGN 18000	94.4	82.6	227	0.2	5.76
11500	RGN 9000	92.2	76.8	431	0.63	9.72
	RGN 12000	92.6	79.9	324	0.4	7.06
	RGN 15000	93.4	81	285	0.32	6.72
	RGN 18000	94.5	82.3	237	0.22	6.34
12000	RGN 9000	92.2	76.3	450	0.67	10.72
	RGN 12000	92.6	79.5	338	0.43	7.72
	RGN 15000	93.5	80.6	297	0.35	7.38
	RGN 18000	94.5	82	248	0.24	6.96

CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop “WC	BHP @ ESP (“W.C) 1.0 “
12500	RGN 12000	92.6	79.1	352	0.46	4.88
	RGN 15000	93.5	80.3	310	0.37	8.06
	RGN 18000	94.6	81.7	258	0.26	7.6
13000	RGN 12000	92.6	78.7	366	0.49	9.2
	RGN 15000	93.5	79.9	322	0.4	8.78
	RGN 18000	94.7	81.4	268	0.29	8.3
13500	RGN 12000	90.9	78.3	380	0.52	8.66
	RGN 15000	91.9	79.6	344	0.42	8.34
	RGN 18000	94.8	81.1	279	0.31	9.02
	RGN 22000	93.9	83.2	204	0.15	6.84
14000	RGN 12000	90.8	77.9	394	0.55	9.1
	RGN 15000	91.8	79.2	347	0.45	8.74
	RGN 18000	93.1	80.8	289	0.33	8.34
	RGN 22000	93.9	83	211	0.17	7.14
14500	RGN 12000	90.5	77.5	408	0.58	9.68
	RGN 15000	91.7	78.9	359	0.48	9.2
	RGN 18000	93.1	80.6	299	0.35	8.74
	RGN 22000	93.9	82.8	219	0.18	7.47
15000	RGN 12000	90.4	77.1	422	0.61	10.4
	RGN 15000	91.6	78.5	372	0.5	9.86
	RGN 18000	93	80.3	310	0.37	9.22
	RGN 22000	93.9	82.6	227	0.2	7.77
16000	RGN 15000	91.4	77.8	396	0.55	11.34
	RGN 18000	92.9	79.7	330	0.42	10.64
	RGN 22000	93.9	82.2	242	0.23	8.46
17000	RGN 15000	91.4	77.1	421	0.61	12.98
	RGN 18000	93	79.1	351	0.46	12.18
	RGN 22000	93.9	81.8	257	0.26	9.48
	RGN 30000	95	83.4	200	0.14	8.56
18000	RGN 15000	91.4	76.4	446	0.66	14.8
	RGN 18000	93.1	78.5	372	0.5	13.9
	RGN 22000	94	81.3	272	0.29	10.74
	RGN 30000	95.1	83	211	0.16	9.72
20000	RGN 18000	91.3	77.3	413	0.59	15.48
	RGN 22000	94.2	80.5	302	0.36	13.56
	RGN 30000	93.7	82.4	235	0.21	10.48
	RGN 35000	94.3	83.2	207	0.16	10.16
22000	RGN 22000	92.3	79.6	332	0.42	13.68
	RGN 30000	93.7	81.7	258	0.26	12.04
	RGN 35000	94.4	82.6	228	0.2	11.52
24000	RGN 22000	92.2	78.8	363	0.48	16.47
	RGN 30000	93.8	81.1	282	0.31	14.48
	RGN 35000	94.5	82	248	0.24	13.92
26000	RGN 22000	92.3	77.9	393	0.55	19.74
	RGN 30000	93.9	80.4	305	0.36	17.24
	RGN 35000	94.7	81.4	269	0.29	16.6
28000	RGN 22000	92.4	77.1	423	0.61	23.4
	RGN 30000	92.2	79.7	328	0.41	17.24
	RGN 35000	93	80.8	290	0.33	16.68
30000	RGN 30000	92	79.1	352	0.46	19.32
	RGN 35000	93.1	80.2	311	0.37	18.48
32000	RGN 30000	91.9	78.4	375	0.51	22.16
	RGN 35000	92.9	79.7	331	0.42	21.28
34000	RGN 30000	91.9	77.7	399	0.56	25.44
	RGN 35000	93	79.1	352	0.46	24.4
36000	RGN 30000	92	77.1	422	0.61	29.04
	RGN 35000	93.1	78.5	373	0.5	27.8
38000	RGN 30000	90.2	76.4	446	0.66	29.88
	RGN 35000	91.3	77.9	393	0.55	28.72
40000	RGN 35000	91.2	77.3	414	0.59	30.96
42000	RGN 35000	90.8	76.7	435	0.63	32.28

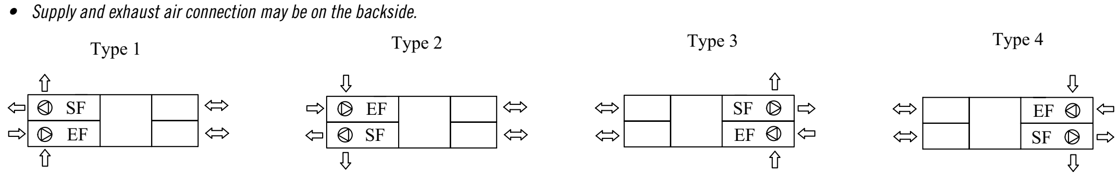
All winter effectiveness is calculated using Direct Drive fans and 35 deg F (1.67 deg C).
All Summer effectiveness is calculated using Direct Drive fans and 90 deg F
Efficiencies may vary depending on site conditions
All efficiencies are across entire base unit, including fans and motors

HP values shown include core pressure drop, standard 30% (MERV 10) SA filter and basic cabinet losses.
HP values for Direct Drive fans running slower than their respective motor rpm are calculated using the Formula “Actual HP=Required HP * Motor RPM/Fan RPM”
For unbalanced air streams, contact your local Tempeff representative
For larger ESP values, contact your local Tempeff representative

ELEVATION VIEW

Available Configurations

- *The configurations differ based on locations of the fans.*
- *Supply and exhaust air connection may be on the backside.*



PERFORMANCE DATA **METRIC**

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
944	0.94	RGN 3000	92.9	82.6	1.14	47	0.63
1180	1.18	RGN 3000	92.2	81.1	1.43	77	0.90
		RGN 4000	93.7	83	1.08	42	0.80
1416	1.42	RGN 3000	90.8	79.5	1.72	107	1.13
		RGN 4000	93.4	81.8	1.29	65	1.12
1652	1.65	RGN 3000	89.9	77.9	2.00	137	1.51
		RGN 4000	92.1	80.6	1.51	87	1.31
		RGN 5500	93.6	82.9	1.10	45	1.16
1888	1.89	RGN 4000	91.6	79.4	1.72	107	1.72
		RGN 5500	93.5	82	1.26	60	1.52
		RGN 6500	93.9	82.6	1.14	47	1.47
2124	2.12	RGN 4000	91.3	78.2	1.94	129	2.19
		RGN 5500	93.6	81.1	1.42	77	1.95
		RGN 6500	94.1	81.8	1.29	62	1.90
		RGN 7500	95	83	1.07	40	1.81
2360	2.36	RGN 4000	89.7	77	2.15	152	2.37
		RGN 5500	92.1	80.3	1.57	92	2.10
		RGN 6500	92.6	81.1	1.43	77	2.05
		RGN 7500	93.7	82.4	1.19	52	1.95
2596	2.60	RGN 5500	92	79.4	1.73	109	2.49
		RGN 6500	92.5	80.3	1.57	92	2.39
		RGN 7500	93.7	81.7	1.31	65	2.25
		RGN 9000	94.7	83.2	1.05	37	2.11
2832	2.83	RGN 5500	91.8	78.5	1.89	124	2.99
		RGN 6500	92.5	79.5	1.72	107	2.88
		RGN 7500	93.8	81.1	1.43	77	2.70
		RGN 9000	94.8	82.7	1.14	47	2.52
3068	3.07	RGN 5500	91.7	77.6	2.05	142	3.56
		RGN 6500	92.5	78.7	1.86	122	3.43
		RGN 7500	93.9	80.4	1.55	90	3.22
		RGN 9000	95.3	82.1	1.23	57	3.01
3304	3.30	RGN 5500	89.8	76.8	2.20	157	3.51
		RGN 6500	90.7	77.9	2.00	137	3.40
		RGN 7500	92.2	79.7	1.67	102	3.22
		RGN 9000	93.7	81.6	1.33	67	3.04
3540	3.54	RGN 6500	90.5	77.1	2.14	152	3.88
		RGN 7500	91.9	79.1	1.79	114	3.60
		RGN 9000	93.6	81.1	1.43	77	3.35
		RGN 12000	94.1	83	1.07	40	2.58
3776	3.78	RGN 7500	91.9	78.4	1.91	127	4.14
		RGN 9000	93.6	80.5	1.52	87	3.84
		RGN 12000	94	82.6	1.14	47	2.94
4012	4.01	RGN 7500	91.9	77.7	2.03	139	4.74
		RGN 9000	93.7	80	1.62	97	4.41
		RGN 12000	94.1	82.2	1.21	55	3.36
		RGN 15000	94.7	83.1	1.07	40	3.24
4248	4.25	RGN 7500	92	77.1	2.14	152	5.42
		RGN 9000	93.9	79.5	1.71	107	5.04
		RGN 12000	94.2	81.8	1.29	62	3.80
		RGN 15000	94.9	82.7	1.13	47	3.66
4484	4.48	RGN 7500	92	76.4	2.27	164	6.12
		RGN 9000	94.1	79	1.81	117	5.72
		RGN 12000	92.8	81.5	1.36	70	3.83
		RGN 15000	93.5	82.4	1.19	55	3.72
4719	4.72	RGN 9000	92.1	78.4	1.91	127	5.61
		RGN 12000	92.7	81.1	1.43	77	4.09
		RGN 15000	93.4	82	1.26	60	3.95
		RGN 18000	94.3	83.2	1.05	40	3.79
4955	4.96	RGN 9000	92.1	77.9	2.00	137	6.03
		RGN 12000	92.7	80.7	1.50	85	4.36
		RGN 15000	93.4	81.7	1.32	67	4.22
		RGN 18000	94.4	82.9	1.10	45	4.03
5191	5.19	RGN 9000	92.2	77.4	2.09	147	6.56
		RGN 12000	92.6	70.3	1.57	92	4.79
		RGN 15000	93.4	81.3	1.39	72	4.58
		RGN 18000	94.4	82.6	1.15	50	4.30
5427	5.43	RGN 9000	92.2	76.8	2.19	157	7.25
		RGN 12000	92.6	79.9	1.65	100	5.27
		RGN 15000	93.4	81	1.45	80	5.01
		RGN 18000	94.5	82.3	1.20	55	4.73
5663	5.66	RGN 9000	92.2	76.3	2.29	167	8.00
		RGN 12000	92.6	79.5	1.72	107	5.76
		RGN 15000	93.5	80.6	1.51	87	5.51
		RGN 18000	94.5	82	1.26	60	5.19

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
5899	5.90	RGN 12000	92.6	79.1	1.79	114	3.64
		RGN 15000	93.5	80.3	1.57	92	6.01
		RGN 18000	94.6	81.7	1.31	65	5.67
6135	6.14	RGN 12000	92.6	78.7	1.86	122	6.86
		RGN 15000	93.5	79.9	1.64	100	6.55
		RGN 18000	94.7	81.4	1.36	72	6.19
6371	6.37	RGN 12000	90.9	78.3	1.93	129	6.46
		RGN 15000	91.9	79.6	1.75	105	6.22
		RGN 18000	94.8	81.1	1.42	77	6.73
		RGN 22000	93.9	83.2	1.04	37	5.10
6607	6.61	RGN 12000	90.8	77.9	2.00	137	6.79
		RGN 15000	91.8	79.2	1.76	112	6.52
		RGN 18000	93.1	80.8	1.47	82	6.22
		RGN 22000	93.9	83	1.07	42	5.33
6843	6.84	RGN 12000	90.5	77.5	2.07	144	7.22
		RGN 15000	91.7	78.9	1.82	119	6.86
		RGN 18000	93.1	80.6	1.52	87	6.52
		RGN 22000	93.9	82.8	1.11	45	5.57
7079	7.08	RGN 12000	90.4	77.1	2.14	152	7.76
		RGN 15000	91.6	78.5	1.89	124	7.36
		RGN 18000	93	80.3	1.57	92	6.88
		RGN 22000	93.9	82.6	1.15	50	5.80
7551	7.55	RGN 15000	91.4	77.8	2.01	137	8.46
		RGN 18000	92.9	79.7	1.68	105	7.94
		RGN 22000	93.9	82.2	1.23	57	6.31
8023	8.02	RGN 15000	91.4	77.1	2.14	152	9.68
		RGN 18000	93	79.1	1.78	114	9.09
		RGN 22000	93.9	81.8	1.31	65	7.07
		RGN 30000	95	83.4	1.02	35	6.39
8495	8.50	RGN 15000	91.4	76.4	2.27	164	11.04
		RGN 18000	93.1	78.5	1.89	124	10.37
		RGN 22000	94	81.3	1.38	72	8.01
		RGN 30000	95.1	83	1.07	40	7.25
9439	9.44	RGN 18000	91.3	77.3	2.10	147	11.55
		RGN 22000	94.2	80.5	1.53	90	10.12
		RGN 30000	93.7	82.4	1.19	52	7.82
		RGN 35000	94.3	83.2	1.05	40	7.58
10383	10.38	RGN 22000	92.3	79.6	1.69	105	10.21
		RGN 30000	93.7	81.7	1.31	65	8.98
		RGN 35000	94.4	82.6	1.16	50	8.59
11327	11.33	RGN 22000	92.2	78.8	1.84	119	12.29
		RGN 30000	93.8	81.1	1.43	77	10.80
		RGN 35000	94.5	82	1.26	60	10.38
12271	12.27	RGN 22000	92.3	77.9	2.00	137	14.73
		RGN 30000	93.9	80.4	1.55	90	12.86
		RGN 35000	94.7	81.4	1.37	72	12.38
13215	13.21	RGN 22000	92.4	77.1	2.15	152	17.46
		RGN 30000	92.2	79.7	1.67	102	12.86
		RGN 35000	93	80.8	1.47	82	12.44
14158	14.16	RGN 30000	92	79.1	1.79	114	14.41
		RGN 35000	93.1	80.2	1.58	92	13.79
15102	15.10	RGN 30000	91.9	78.4	1.91	127	16.53
		RGN 35000	92.9	79.7	1.68	105	15.87
16046	16.05	RGN 30000	91.9	77.7	2.03	139	18.98
		RGN 35000	93	79.1	1.79	114	18.20
16990	16.99	RGN 30000	92	77.1	2.14	152	21.66
		RGN 35000	93.1	78.5	1.89	124	20.74
17934	17.93	RGN 30000	90.2	76.4	2.27	164	22.29
		RGN 35000	91.3	77.9	2.00	137	21.43
18878	18.88	RGN 35000	91.2	77.3	2.10	147	23.10
19822	19.82	RGN 35000	90.8	76.7	2.21	157	24.08

All winter effectiveness is calculated using Direct Drive fans and 35 deg F (1.67 deg C).
All Summer effectiveness is calculated using Direct Drive fans and 90 deg F
Efficiencies may vary depending on site conditions
All efficiencies are across entire base unit, including fans and motors

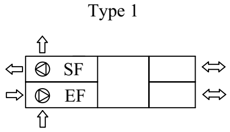
HP values shown include core pressure drop, standard 30% (MERV 10) SA filter and basic cabinet losses.
HP values for Direct Drive fans running slower than their respective motor rpm are calculated using the Formula “Actual HP=Required HP * Motor RPM/Fan RPM”
For unbalanced air streams, contact your local Tempeff representative
For larger ESP values, contact your local Tempeff representative

Available Configurations

- *The configurations differ based on locations of the fans.*
- *Supply and exhaust air connection may be on the backside.*

ELEVATION VIEW

Type 1



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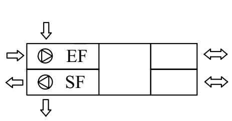

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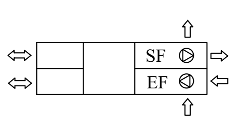

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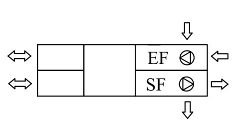
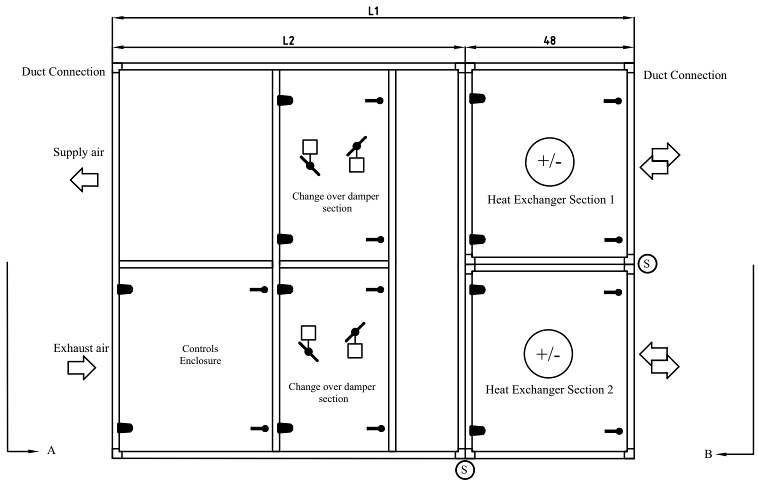
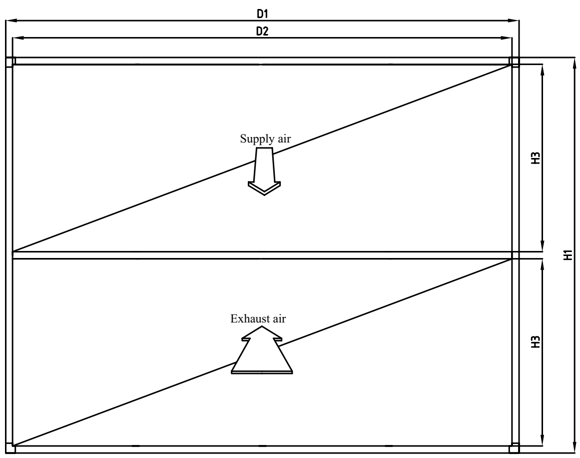
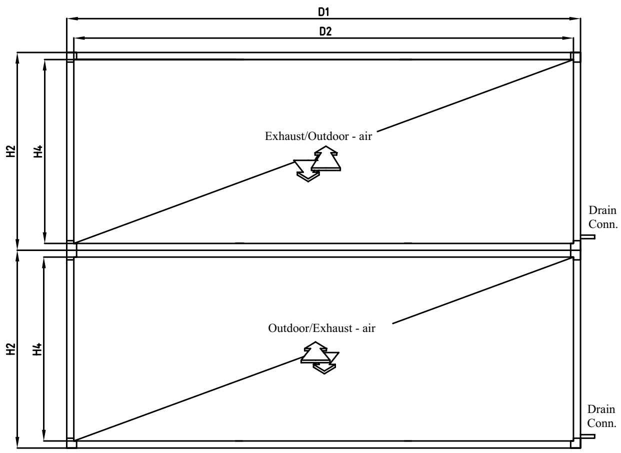






Section A



Section B

Notes:

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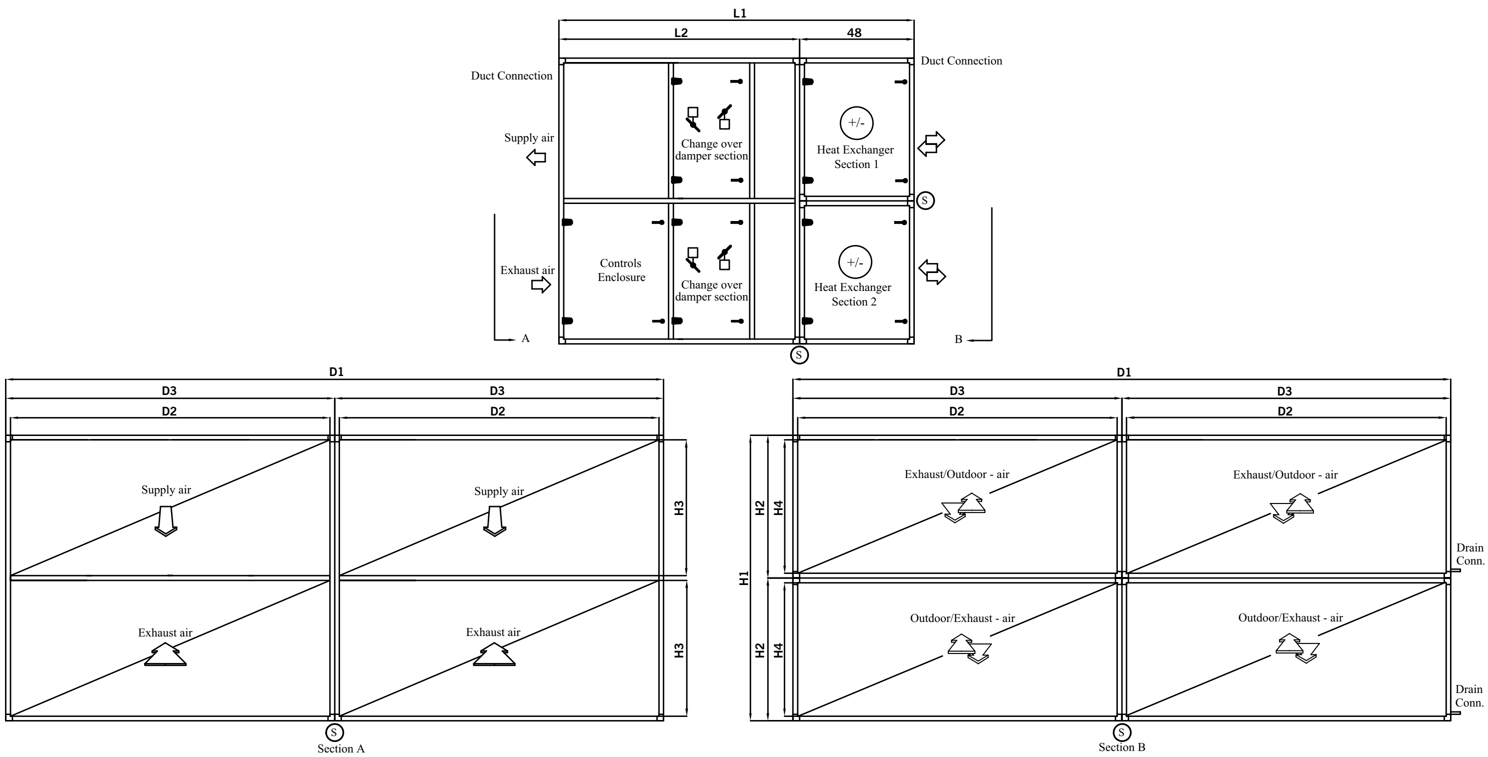
IMPERIAL (inches)									Approx.
Model	D1	D2	H1	H2	H3	H4	L1	L2	Weight (lbs)
RGN 3000	63 2/8	59 2/8	66 3/8	-	-	30 2/8	115 3/8	67 3/8	2672
RGN 4000	63 2/8	59 2/8	69 7/8	-	-	32	117 1/8	69 1/8	3133
RGN 5500	63 2/8	59 2/8	94 5/8	-	-	44 3/8	129 4/8	81 4/8	4236
RGN 6500	63 2/8	59 2/8	98 4/8	49 2/8	46 2/8	45 3/8	132 3/8	84 3/8	4367
RGN 7500	75	71 1/8	98 4/8	49 2/8	46 2/8	45 3/8	141 2/8	93 2/8	5599
RGN 9000	82 7/8	79	109 4/8	54 6/8	51 7/8	50 7/8	152 6/8	104 6/8	6846
RGN 12000	122 2/8	118 3/8	110 3/8	55 1/8	52 2/8	51 2/8	138 3/8	90 3/8	9245
RGN 15000	122 2/8	118 3/8	110 3/8	55 1/8	52 2/8	51 2/8	138 3/8	90 3/8	10004
RGN 18000	145 7/8	142	112 3/8	56 1/8	53 2/8	52 2/8	148 2/8	100 2/8	11747

METRIC (mm)									Approx.
Model	D1	D2	H1	H2	H3	H4	L1	L2	Weight (kg)
RGN 3000	1605	1505	1686	-	-	767	2929	1710	1215
RGN 4000	1605	1505	1775	-	-	813	2976	1754	1424
RGN 5500	1605	1505	2403	-	-	1127	3288	2069	1925
RGN 6500	1605	1505	2502	1251	1175	1151	3362	2143	1985
RGN 7500	1905	1805	2500	1251	1175	1151	3588	2369	2545
RGN 9000	2105	2005	2781	1391	1316	1291	3880	2661	3112
RGN 12000	3105	3005	2802	1400	1326	1300	3513	2294	4202
RGN 15000	3105	3005	2802	1400	1326	1300	3513	2294	4547
RGN 18000	3705	3605	2853	1426	1351	1326	3764	2545	5340



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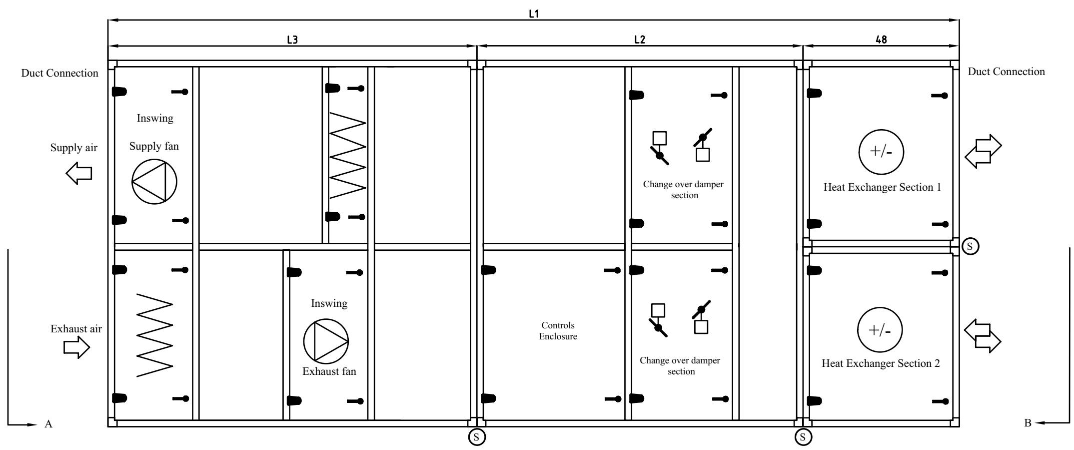
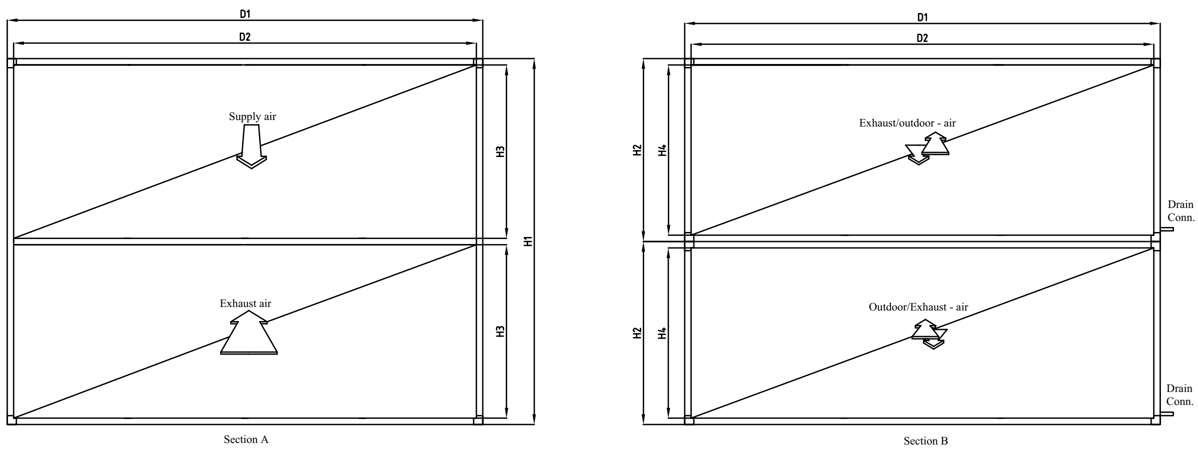
IMPERIAL (inches)										Approx Weight (lbs)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	
RGN 22000	201	197	-	110 3/4	55 3/8	52 3/8	51 1/2	143 1/2	95 1/2	15778
RGN 30000	244 3/8	118 1/4	122 1/4	177 7/8	58 7/8	56	55	142	94	20033
RGN 35000	275 7/8	134	138	119 7/8	59 7/8	57	56	149	101	22415

METRIC (mm)										Approx Weight (kg)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	
RGN 22000	5104	5004	-	2813	1407	1330	1307	3643	2424	7172
RGN 30000	6207	3004	122	4516	1495	1421	1395	3607	2388	9106
RGN 35000	7006	3404	138	3043	1521	1446	1421	3783	2564	10189

RGN 3000 - 18000 *with blowers*





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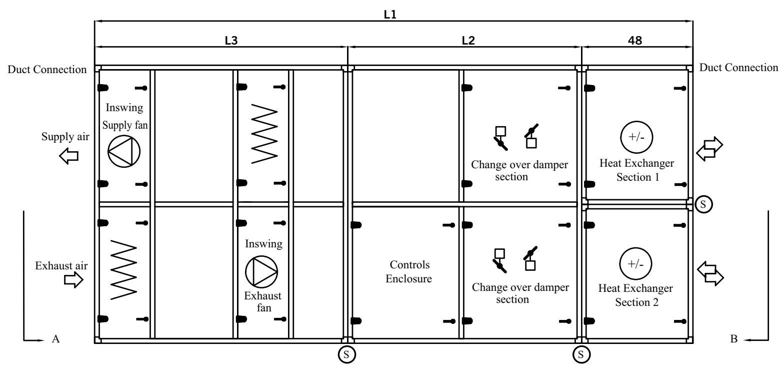
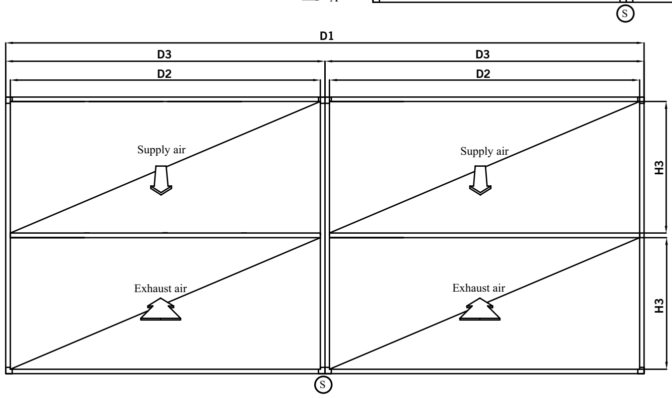
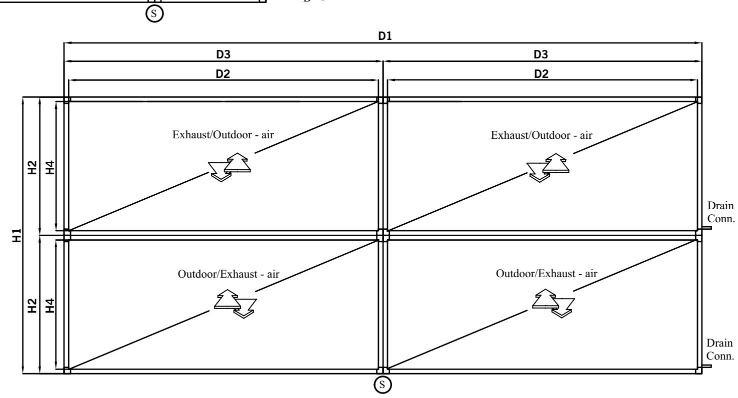
IMPERIAL (inches)										Approx Weight (lbs)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	63 1/4	59 1/4	66 3/8	-	-	30 1/4	207 5/8	67 3/8	92 1/4	3795
RGN 4000	63 1/4	59 1/4	69 7/8	-	-	32	209 5/8	69 1/8	92 1/2	4300
RGN 5500	63 1/4	59 1/4	94 5/8	-	-	44 3/8	222	81 1/2	92 1/2	5470
RGN 6500	63 1/4	59 1/4	98 1/2	49 1/4	46 1/4	45 3/8	225 3/8	84 3/8	92 7/8	5646
RGN 7500	75	71 1/8	98 1/2	49 1/4	46 1/4	45 3/8	246	93 1/4	104 3/4	7026
RGN 9000	82 7/8	79	109 1/2	54 3/4	51 7/8	50 7/8	274	104 3/4	121 1/4	9326
RGN 12000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	231 1/8	90 3/8	92 7/8	11363
RGN 15000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	231 1/8	90 3/8	92 7/8	12089
RGN 18000	145 7/8	142	112 3/8	56 1/8	53 1/4	52 1/4	261 1/2	100 1/4	113 1/4	15937

METRIC (mm)										Approx Weight (kg)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	1605	1505	1686	-	-	767	5274	1710	2343	1725
RGN 4000	1605	1505	1775	-	-	813	5323	1754	2350	1955
RGN 5500	1605	1505	2403	-	-	1127	5637	2069	2350	2486
RGN 6500	1605	1505	2502	1251	1175	1151	5723	2143	2359	2566
RGN 7500	1905	1805	2500	1251	1175	1151	6247	2369	2659	3194
RGN 9000	2105	2005	2781	1391	1316	1291	6958	2661	3078	4239
RGN 12000	3105	3005	2802	1400	1326	1300	5871	2294	2357	5165
RGN 15000	3105	3005	2802	1400	1326	1300	5871	2294	2357	5495
RGN 18000	3705	3605	2853	1426	1351	1326	6641	2545	2877	7244





Section A



Section B

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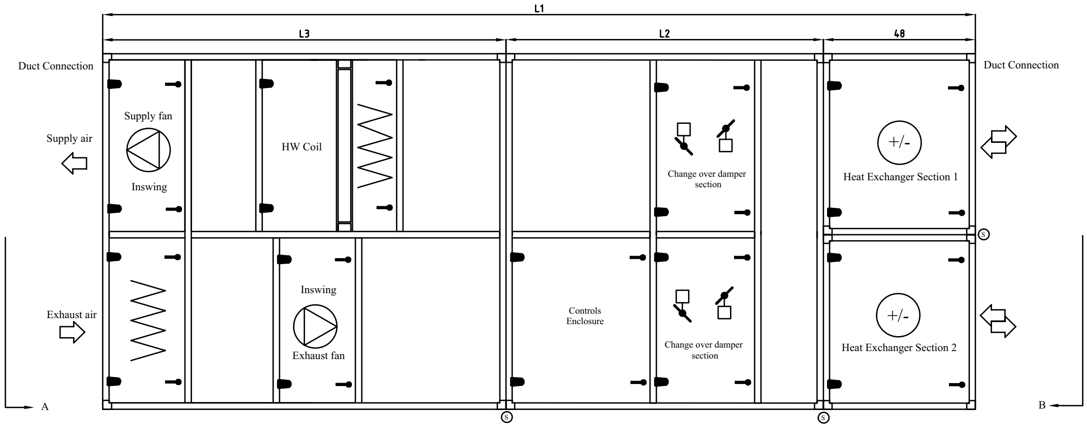
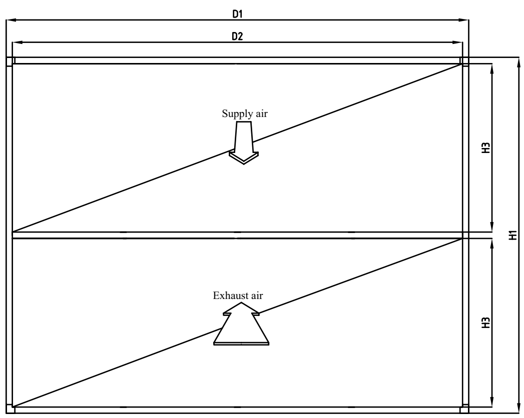
IMPERIAL (inches)											Approx Weight (lbs)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	201	197	-	110 3/4	55 3/8	52 3/8	51 1/2	242 7/8	95 1/2	99 3/8	18876
RGN 30000	244 3/8	118 1/4	122 1/4	177 7/8	58 7/8	56	55	234 7/8	94	92 7/8	23736
RGN 35000	275 7/8	134	138	119 7/8	59 7/8	57	56	258 1/4	101	109 3/8	30033

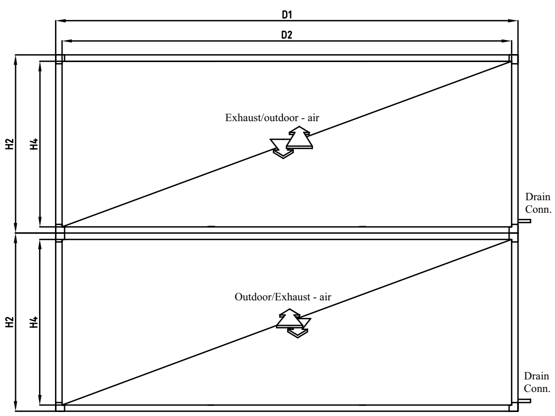
METRIC (mm)											Approx Weight (kg)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	5104	5004	-	2813	1407	1330	1307	6167	2424	2524	8580
RGN 30000	6207	3004	3104	4516	1495	1421	1395	5964	2388	2357	10789
RGN 35000	7006	3404	3504	3043	1521	1446	1421	6558	2564	2777	13651

RGN 3000 - 18000 *HW coil*





Section A



Section B

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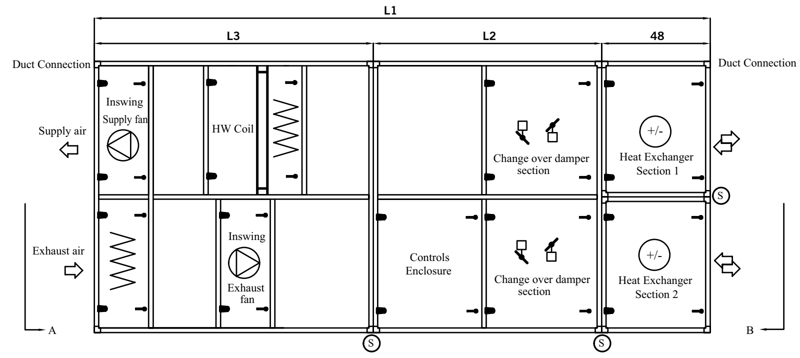
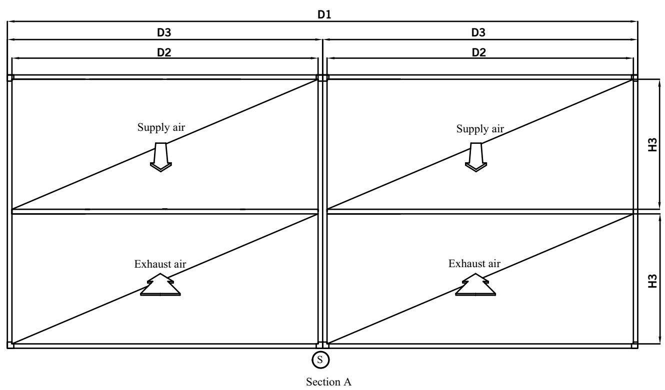
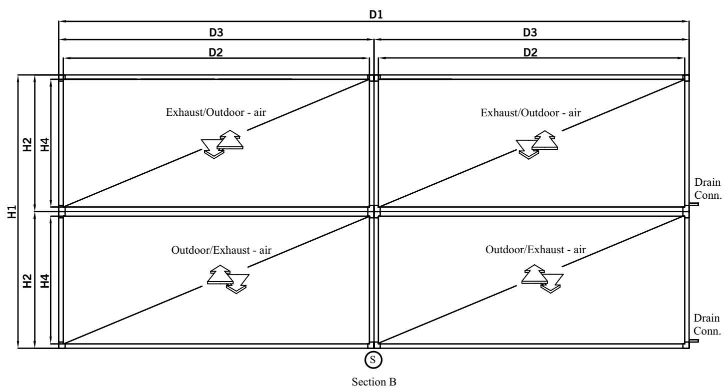
IMPERIAL (inches)										Approx Weight (lbs)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	63 1/4	59 1/4	66 3/8	-	-	30 1/4	221 5/8	67 3/8	106 1/4	3980
RGN 4000	63 1/4	59 1/4	69 7/8	-	-	32	223 5/8	69 1/8	106 1/2	4489
RGN 5500	63 1/4	59 1/4	94 5/8	-	-	44 3/8	236	81 1/2	106 1/2	5709
RGN 6500	63 1/4	59 1/4	98 1/2	49 1/4	46 1/4	45 3/8	239 3/8	84 3/8	106 7/8	5895
RGN 7500	75	71 1/8	98 1/2	49 1/4	46 1/4	45 3/8	260	93 1/4	118 3/4	7312
RGN 9000	82 7/8	79	109 1/2	54 3/4	51 7/8	50 7/8	288	104 3/4	135 1/4	9658
RGN 12000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	245 1/8	90 3/8	106 7/8	11826
RGN 15000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	245 1/8	90 3/8	106 7/8	12563
RGN 18000	145 7/8	142	112 3/8	56 1/8	53 1/4	52 1/4	275 1/2	100 1/4	127 1/4	16491

METRIC (mm)										Approx Weight (kg)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	1605	1505	1686	-	-	767	5629	1710	2699	1809
RGN 4000	1605	1505	1775	-	-	813	5678	1754	2705	2040
RGN 5500	1605	1505	2403	-	-	1127	5993	2069	2705	2595
RGN 6500	1605	1505	2502	1251	1175	1151	6079	2143	2715	2680
RGN 7500	1905	1805	2500	1251	1175	1151	6602	2369	3015	3324
RGN 9000	2105	2005	2781	1391	1316	1291	7314	2661	3434	4390
RGN 12000	3105	3005	2802	1400	1326	1300	6226	2294	2713	5375
RGN 15000	3105	3005	2802	1400	1326	1300	6226	2294	2713	5710
RGN 18000	3705	3605	2853	1426	1351	1326	6996	2545	3232	7496







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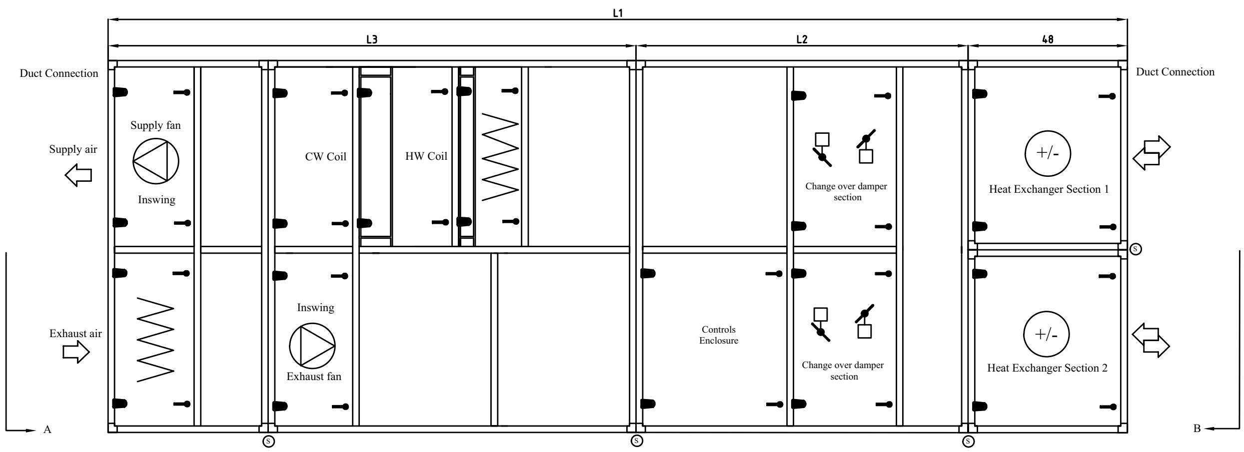
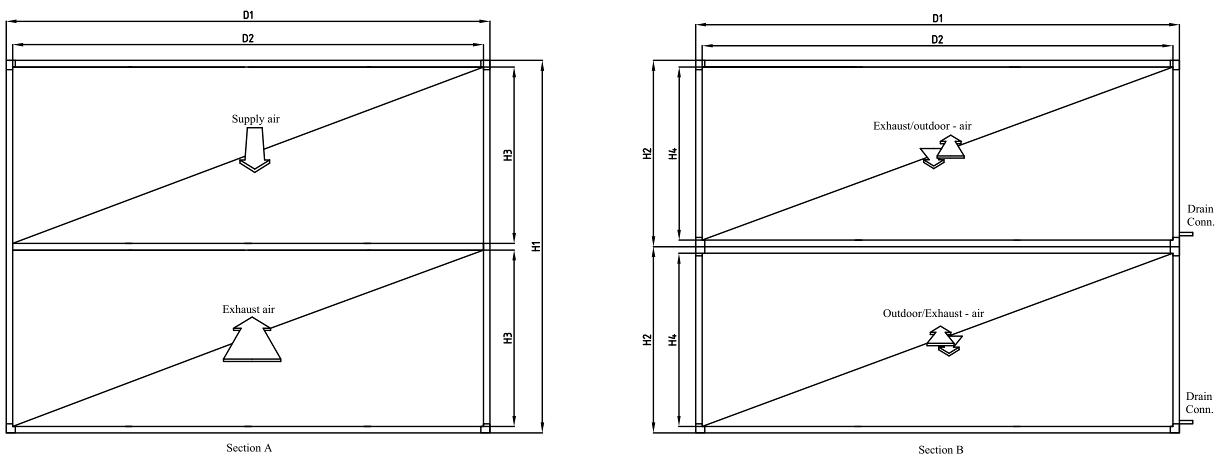
IMPERIAL (inches)											Approx Weight (lbs)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	201	197	-	110 3/4	55 3/8	52 3/8	51 1/2	256 7/8	95 1/2	113 3/8	19609
RGN 30000	244 3/8	118 1/4	122 1/4	177 7/8	58 7/8	56	55	248 7/8	94	106 7/8	24647
RGN 35000	275 7/8	134	138	119 7/8	59 7/8	57	56	272 1/4	101	123 3/8	31055

METRIC (mm)											Approx Weight (kg)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	5104	5004	-	2813	1407	1330	1307	6523	2424	2880	8913
RGN 30000	6207	3004	3104	4516	1495	1421	1395	6320	2388	2713	11203
RGN 35000	7006	3404	3504	3043	1521	1446	1421	6914	2564	3132	14116

RGN 3000 - 18000 *HW coil CW coil*





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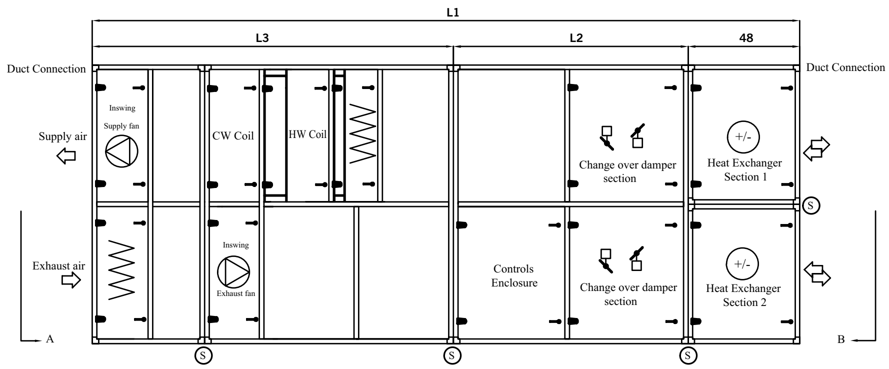
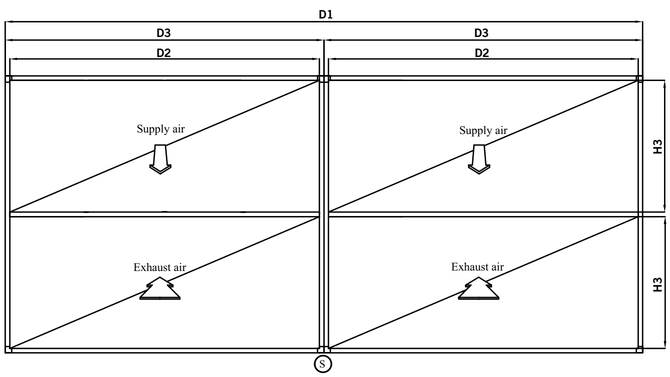
IMPERIAL (inches)										Approx Weight (lbs)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	63 1/4	59 1/4	66 3/8	-	-	30 1/4	253 5/8	67 3/8	138 1/4	4405
RGN 4000	63 1/4	59 1/4	69 7/8	-	-	32	255 5/8	69 1/8	138 1/2	4931
RGN 5500	63 1/4	59 1/4	94 5/8	-	-	44 3/8	268	81 1/2	138 1/2	6251
RGN 6500	63 1/4	59 1/4	98 1/2	49 1/4	46 1/4	45 3/8	271 3/8	84 3/8	138 7/8	6455
RGN 7500	75	71 1/8	98 1/2	49 1/4	46 1/4	45 3/8	292	93 1/4	150 3/4	7951
RGN 9000	82 7/8	79	109 1/2	54 3/4	51 7/8	50 7/8	320	104 3/4	167 1/4	10406
RGN 12000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	277 1/8	90 3/8	138 7/8	12882
RGN 15000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	277 1/8	90 3/8	138 7/8	13644
RGN 18000	145 7/8	142	112 3/8	56 1/8	53 1/4	52 1/4	307 1/2	100 1/4	159 1/4	17658

METRIC (mm)										Approx Weight (kg)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	1605	1505	1686	-	-	767	6442	1710	3512	2002
RGN 4000	1605	1505	1775	-	-	813	6491	1754	3518	2241
RGN 5500	1605	1505	2403	-	-	1127	6806	2069	3518	2841
RGN 6500	1605	1505	2502	1251	1175	1151	6891	2143	3527	2934
RGN 7500	1905	1805	2500	1251	1175	1151	7415	2369	3827	3614
RGN 9000	2105	2005	2781	1391	1316	1291	8126	2661	4247	4730
RGN 12000	3105	3005	2802	1400	1326	1300	7039	2294	3526	5855
RGN 15000	3105	3005	2802	1400	1326	1300	7039	2294	3526	6202
RGN 18000	3705	3605	2853	1426	1351	1326	7809	2545	4045	8026

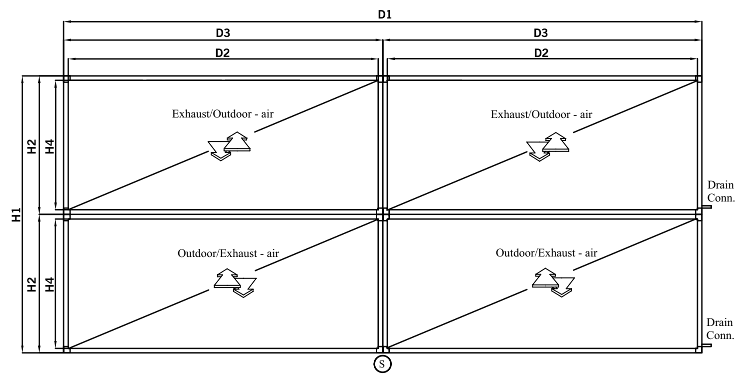
RGN 22000 - 35000 *HW coil CW coil*

TEMPEFF NORTH AMERICA





Section A



Section B

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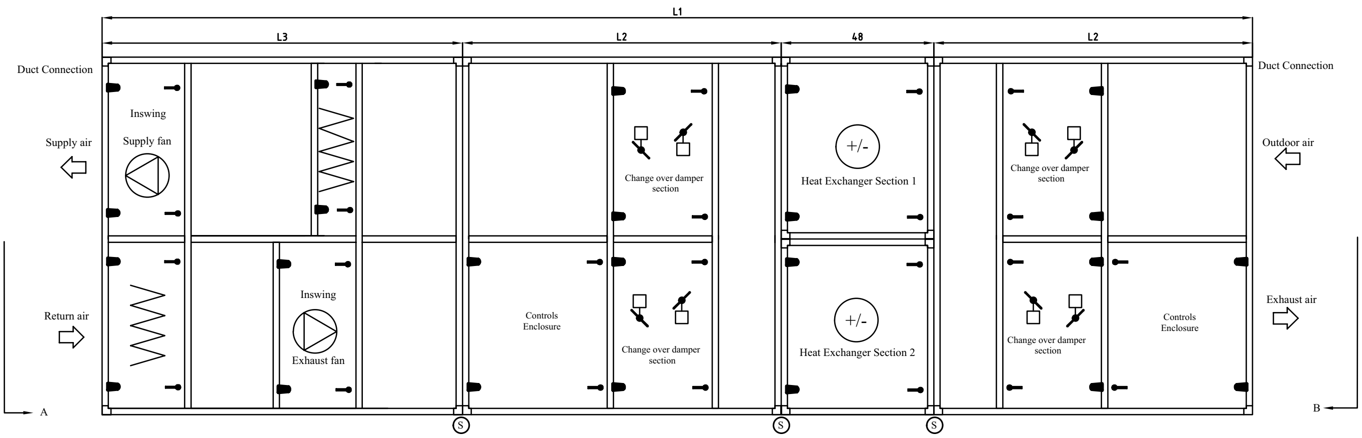
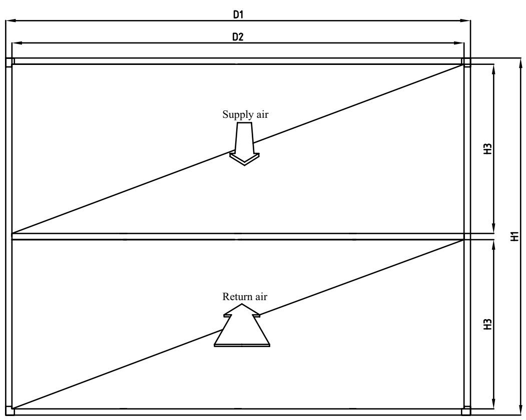
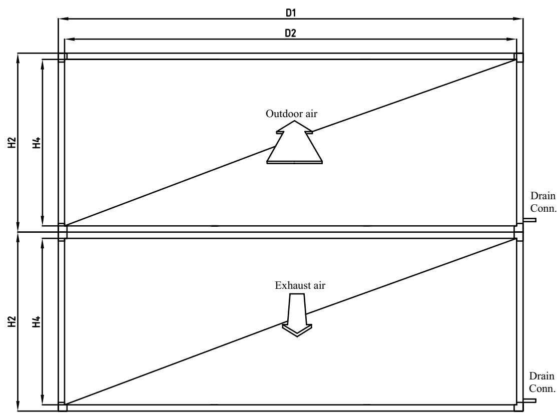
IMPERIAL (inches)											Approx Weight (lbs)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	201	197	-	110 3/4	55 3/8	52 3/8	51 1/2	288 7/8	95 1/2	145 3/8	21257
RGN 30000	244 3/8	118 1/4	122 1/4	177 7/8	58 7/8	56	55	280 7/8	94	138 7/8	26708
RGN 35000	275 7/8	134	138	119 7/8	59 7/8	57	56	304 1/4	101	155 3/8	33365

METRIC (mm)											Approx Weight (kg)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	5104	5004	-	2813	1407	1330	1307	7336	2424	3693	9662
RGN 30000	6207	3004	3104	4516	1495	1421	1395	7133	2388	3526	12140
RGN 35000	7006	3404	3504	3043	1521	1446	1421	7726	2564	3945	15166





Section A



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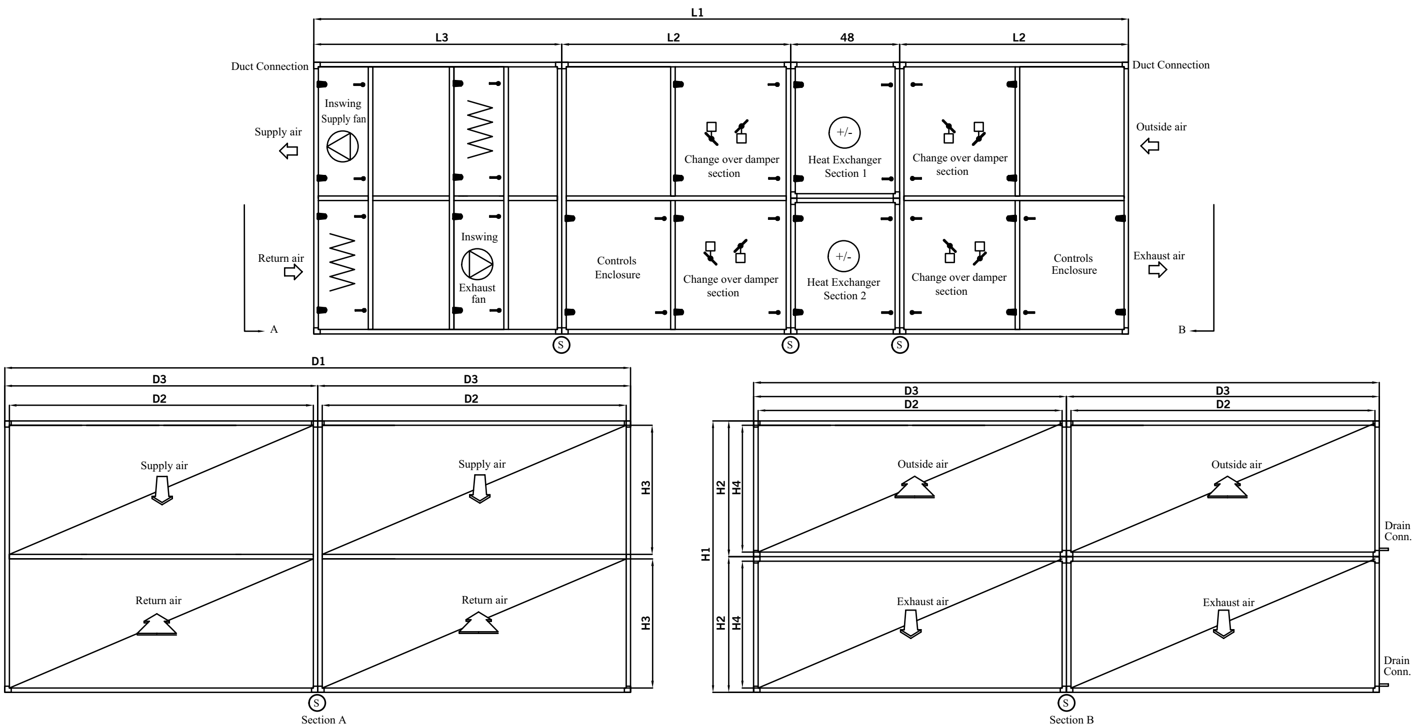
IMPERIAL (inches)										Approx Weight (lbs)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	63 1/4	59 1/4	66 3/8	-	-	30 1/4	275	67 3/8	92 1/4	4969
RGN 4000	63 1/4	59 1/4	69 7/8	-	-	32	278 5/8	69 1/8	92 1/2	5512
RGN 5500	63 1/4	59 1/4	94 5/8	-	-	44 3/8	303 3/8	81 1/2	92 1/2	7124
RGN 6500	63 1/4	59 1/4	98 1/2	49 1/4	46 1/4	45 3/8	309 3/4	84 3/8	92 7/8	7358
RGN 7500	75	71 1/8	98 1/2	49 1/4	46 1/4	45 3/8	339 1/4	93 1/4	104 3/4	8922
RGN 9000	82 7/8	79	109 1/2	54 3/4	51 7/8	50 7/8	378 3/4	104 3/4	121 1/4	11581
RGN 12000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	321 1/2	90 3/8	92 7/8	14420
RGN 15000	122 1/4	118 3/8	110 3/8	55 1/8	52 1/4	51 1/4	321 1/2	90 3/8	92 7/8	15146
RGN 18000	145 7/8	142	112 3/8	56 1/8	53 1/4	52 1/4	361 5/8	100 1/4	113 1/4	19469

METRIC (mm)										Approx Weight (kg)
Model	D1	D2	H1	H2	H3	H4	L1	L2	L3	
RGN 3000	1605	1505	1686	-	-	767	6983	1710	2343	2259
RGN 4000	1605	1505	1775	-	-	813	7077	1754	2350	2505
RGN 5500	1605	1505	2403	-	-	1127	7706	2069	2350	3238
RGN 6500	1605	1505	2502	1251	1175	1151	7866	2143	2359	3345
RGN 7500	1905	1805	2500	1251	1175	1151	8615	2369	2659	4055
RGN 9000	2105	2005	2781	1391	1316	1291	9619	2661	3078	5264
RGN 12000	3105	3005	2802	1400	1326	1300	8165	2294	2357	6555
RGN 15000	3105	3005	2802	1400	1326	1300	8165	2294	2357	6885
RGN 18000	3705	3605	2853	1426	1351	1326	9185	2545	2877	8850



Notes:

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IMPERIAL (inches)											Approx Weight (lbs)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	201	197	-	110 3/4	55 3/8	52 3/8	51 1/2	338 2/8	95 1/2	99 3/8	23368
RGN 30000	244 3/8	118 1/4	122 1/4	177 7/8	58 7/8	56	55	328 7/8	94	92 7/8	29410
RGN 35000	275 7/8	134	138	119 7/8	59 7/8	57	56	359 1/8	101	109 3/8	36227

METRIC (mm)											Approx Weight (kg)
Model	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	
RGN 22000	5104	5004	-	2813	1407	1330	1307	8592	2424	2524	10622
RGN 30000	6207	3004	3104	4516	1495	1421	1395	8352	2388	2357	13368
RGN 35000	7006	3404	3504	3043	1521	1446	1421	9122	2564	2777	16467

PART 2: PRODUCTS

2.01 MANUFACTURERS

A. The following manufacturers are approved for use. No substitutions will be permitted.

1. Tempeff Dual Core® as basis of design

2.02 GENERAL DESCRIPTION

A. Configuration: Fabricate as detailed on drawings.

B. Performance:

C. Acoustics: Sound power levels (dB) for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required.

OCTAVE BAND AT CENTER FREQUENCY (Hz)								
	63	125	250	500	1000	2000	4000	8000
Radiated								
Discharge								
Return								

2.03 UNIT CONSTRUCTION

A. Fabricate unit with extruded aluminum channel posts and galvanized panels secured with mechanical fasteners. All access doors shall be sealed with permanently applied bulb-type gasket.

1. Panels and access doors shall be constructed as a 2-inch (50-mm) nominal thick; with injected polyurethane foam insulation. R value shall be 6.5 per inch of wall thickness. The outer panel shall be constructed of G90 galvanized steel. The inner liner shall be constructed of G90 galvanized steel. Module to module assembly shall be accomplished with self adhering foam gaskets. Manufacturer shall supply test data demonstrating less than 0.2" deflection for an unsupported 48x48 panel under 30" W.C pressure. Units that cannot demonstrate this deflection are unacceptable.

B. Access Doors shall be flush mounted to cabinetry, with minimum of two hinges, locking latch and full size handle assembly.

C. All outdoor units will have an 18 gauge roof and gutters. The gutters will cover the entire perimeter of the unit

2.04 SUPPLY / RETURN FANS

A. Provide [belt-drive airfoil plenum] [direct-drive airfoil plenum] [inline] supply [return] fan(s). Fan assemblies including fan, motor and sheaves shall be dynamically balanced by the manufacturer on all three planes and at all bearing supports. Manufacturer must ensure maximum fan RPM is below the first critical speed.

B. Bearings shall be self-aligning, grease lubricated, ball or roller bearings with extended copper lubrication lines to access side of unit. Grease fittings shall be attached to the fan base assembly near access door. If not supplied at the factory, contractor shall mount copper lube lines in the field.

C. Fan and motor shall be mounted internally on a steel base. Provide access to motor, drive, and bearings through hinged access door. Fan and motor assembly shall be mounted on [rubber-in-shear vibration type isolators inside cabinetry.] [2" deflection spring vibration type isolators inside cabinetry] [unit base, rigid mounted.] [Seismic snubbers shall be provided.]

2.05 BEARINGS AND DRIVES

A. Bearings: Basic load rating computed in accordance with AFBMA - ANSI Standards, [L-50 life at 400,000 hours all belt-drive airfoil plenum fans], [L-50 life at 600,000 hours – all inline fans], heavy duty pillow block type, self-aligning, grease-lubricated ball bearings.

B. Shafts shall be solid, hot rolled steel, ground and polished, keyed to shaft, and protectively coated with lubricating oil. Hollow shafts are not acceptable.

C. V-Belt drives shall be cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. [Fixed sheaves, matched belts, and drive rated based on motor horsepower] [Variable and adjustable pitch sheaves selected so required RPM is obtained with sheaves set at mid-position and rated based on motor horsepower. Contractor to furnish fixed sheaves at final RPM as determined by balancing contractor]. Minimum of 2 belts shall be provided on all fans with 10 HP motors and above. Standard drive service factor shall be [1.1 S.F. (for 1/4 HP – 7.5 HP)] [1.3 S.F. (for 10HP and larger)], calculated based on fan brake horsepower

2.06 ELECTRICAL

A. The air handler(s) shall bear an ETL listing label for the entire assembly. Units with only components bearing third party safety listing are unacceptable.

B. On RGN sizes 3000 through 35000 all controls shall be located on the side of the unit for ease of servicing. Alternate manufacturers who supply units with controls on roof must supply a permanently installed ladder to access controls, and appropriate safety rails on roof of unit, meeting all applicable OSHA standards.

C. Wiring Termination: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. All wires shall be number tagged and cross-referenced to the wiring diagram for ease of troubleshooting.

D. Controls must include Self- Diagnostics with fault and PLC error code. On board fault detection and diagnostics that senses and alerts when the damper is not operating correctly.

E. Fan motors shall be [1800 rpm, open drip-proof (ODP)] [1800 rpm, totally enclosed fan-cooled (TEFC)] [1800/1200 rpm, 2 Speed/2 Winding (ODP) (TEFC)] [1800/900 rpm, 2 Speed/1 Winding (ODP)(TEFC)] type. Motors shall be [standard efficiency.] [high efficiency to meet EPAct requirements.] [premium efficiency.] Electrical characteristics shall be as shown in schedule.

F. [Supplier shall provide and mount [ABB] [Danfoss] variable speed drive with electrical characteristics as shown on project schedule. [A two-contactor type bypass switch shall be provided.] [A line reactor shall be provided.]

G. Air handler manufacturer shall provide and mount a damper hand-off-auto (HOA) switch.

2.07 COOLING AND HEATING COIL SECTIONS

A. Provide access to coils from [both sides] [connection side] [opposite side] of unit for service and cleaning. Enclose coil headers and return bends fully within unit casing. Unit shall be provided with coil connections that extend a minimum of 5" beyond unit casing for ease of installation. Drain and vent connections shall be provided exterior to unit casing. Coil connections must be factory sealed with grommets on interior and exterior and gasket sleeve between outer wall and liner where each pipe extends through the unit casing to minimize air leakage and condensation inside panel assembly. If not factory packaged, Contractor must supply all coil connection grommets and sleeves. Coils shall be removable through side and/or top panels of unit without the need to remove and disassemble the entire section from the unit.

1. Identify fin, tube & casing material type and thickness.
2. Show coil weights (shipping & operating).
3. State air and fluid flow amounts with its associated pressure drops. For steam coils, indicate steam pressure and condensate load.
4. Indicate entering & leaving air and water temperatures. For refrigerant coils, indicate saturated suction temperature (SST).

B. Water Coils

1. Certification - Acceptable water coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.
2. Headers shall consist of seamless copper tubing to assure compatibility with primary surface. Headers to have intruded tube holes to provide maximum brazing surface for tube to header joint, strength, and inherent flexibility. Header diameter should vary with fluid flow requirements.
3. Fins shall have a minimum thickness of [[0.0075"] [0.0095"] of aluminum] or [0.006"] [0.0075'] [0.0095"] copper]] plate construction. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.
4. Coil tubes shall be 5/8 inch (16mm) OD seamless copper, 0.020" [0.025"] [0.035"] [0.049"] nominal tube wall thickness, expanded into fins, brazed at joints. Soldered U-bends shall be provided to minimize the effects of erosion and premature failure having a minimum tube wall thickness of .025".
5. Coil connections shall be [N.P.T. threaded carbon steel] [butt weld carbon steel] [O.D. sweat copper] [threaded red brass] with connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent and drain fittings shall be furnished on the connections, exterior to the air handler. Vent connections provided at the highest point to assure proper venting. Drain connections shall be provided at the lowest point to insure complete drainage and prevent freeze-up.
6. Coil casings shall be a formed channel frame of [galvanized steel] [stainless steel]. Water heating coils, 1 & 2 row only (sans 5M type) shall be furnished as uncased to allow for thermal movement and slide into a pitched track for fluid drainage.

D. Refrigerant Coils:

1. Certification - Acceptable refrigerant coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.
2. Coils designed for use with Refrigerant [R-22] [R-134a] [other]. Fins shall have a minimum thickness of [[0.0075"] [0.0095"] of aluminum] or [0.006"] [0.0075'] [0.0095"] copper]] plate construction with full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins.

3. Refrigerant coils shall be provided with round seamless 5/8" O.D. copper tubes on 1-1/2" centers, staggered in the direction of airflow. All joints shall be brazed.

4. Sweat type copper suction connections located at the bottom of the suction headers for gravity oil drainage. Coils shall be uniformly circuited in a counterflow manner for [single circuit] [row] [face] [interlaced] [interlaced face split] capacity reduction. Pressure type liquid distributors used. Coils shall be tested with 315 pounds air pressure under warm water, and suitable for 250 psig working pressure.

E. Steam Coils

1. Certification - Acceptable steam coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.

2. Fins shall have a minimum thickness of [[0.0075"] [0.0095"] [0.012" (1" dia. tubes only)] of aluminum] or [0.006" (5/8" tube dia. only)] [0.0075'] [0.0095"] copper]] with full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.

3. Steam coils shall be provided with round seamless [5/8" O.D. copper [0.020"] [0.025"] [0.035"] [0.049"] or [1" O.D. copper [0.025"] [0.049"] tubes. Tubes on two-row coils are staggered in the direction of airflow. All joints shall be brazed.

4. Steam coil headers shall be made of nonferrous materials using seamless copper tubing with intruded tube holes to permit expansion and contraction without creating undue stress or strain. Both the supply and return headers shall be completely encased by the coil casing. Coil shall be pitched in the unit to assure positive condensate drainage. Steam coils shall be furnished as uncased to allow for thermal movement and slide into a pitched track for drainage. Orificed baffle plates shall be installed in the supply connection to ensure proper diffusion of entering steam.

5. Steam coils shall be tested with 315 pounds air pressure under warm water and suitable for 150 psig working pressures.

F. [Horizontal Tube Integral Face and Bypass Coil

1. Horizontal tube integral face and bypass coils shall consist of multiple alternating heating sections and bypass sections, with airflow distributed to each by interlocking wrap-a-round "clamshell" style dampers; linkage to be stainless steel. Coils shall be suitable for hot water or steam and continuous operation at 200 psig and 400 F degrees. Heating elements to consist of multi-row, multi-pass extended heat transfer surface; coil shall carry ARI 410 certification as to ratings. Welding and brazing shall be done by ASME qualified personnel.

2. Tubes shall be 5/8" diameter seamless copper, .035" average wall thickness. Fins shall be continuous patterned plate, .0075" thick aluminum with full fin collars. Joints shall be silver brazed.

3. Headers shall be single piece carbon steel, with no separate disks or caps welded or brazed into header ends. Connections shall be steel and shall be welded to header barrels.

4. Casings and dampers shall be minimum 16 gauge mill galvanized steel; top and bottom casing panels to be double flanged for stacking. End casings shall have smooth, embossed tube holes to provide adequate bearing surface for tubes to avoid abrasion during expansion and contraction. Flexible connectors shall not be required.]

G. [Vertical Tube Integral Face and Bypass Coil

1. Vertical tube integral face and bypass coils shall consist of multiple alternating heating sections and bypass sections, with airflow distributed to each by interlocking wrap-a-round "clamshell" style dampers; linkage to be stainless steel. Coils shall be suitable for hot water or steam and continuous operation at 200 psig and 400 F degrees. Heating elements to consist of multi-row, multi-pass extended heat transfer surface; coil shall carry ARI 410 certification as to ratings. Welding and brazing shall be done by ASME qualified personnel.

2. Hot water applications shall be furnished with 5/8" outside diameter tubes with .035" tube wall thickness. Steam applications shall be furnished with a non-freeze, tube-within-a-tube design that consists of an outer tube that is 5/8"outside diameter tubes with .035" tube wall thickness and an inner tube that is 3/8" outside diameter with .020" wall thickness. Fins shall be a helical fin design that is ½" high, .012" thick copper, solder coated.

3. Supply and Return headers shall be located at the base of the coil. Hot water coils shall employ return bends. Steam coils shall be capped to allow free thermal movement. Headers shall be carbon steel with male pipe thread connections.

4. The casing shall be 12 gauge galvanized steel. The dampers shall be 16 gauge galvanized steel with aluminum hinges, stainless steel pins, linkage & connecting bars with oilite bearings.]

2.08 PARTICULATE FILTERS

A. [Filter section with filter racks and guides with hinged and latching access doors on either, or both sides, for side loading and removal of filters] [Filter section with front loading frames and clips].

B. Filter media shall be UL 900 listed, Class I or Class II.

C. [Flat] [Angle] arrangement with [2", 50mm] [4", 100mm] deep [pleated] [disposable] panel filters.

D. [Bag] [Cartridge] type arrangement with holding frames suitable for [2" (50 mm)], [4" (100 mm)] prefilter and final filter media and blank-off sheets, extended surface [bag] [cartridge] media filters with [60-65] [80-85] [90-95] percent dust spot efficiency. Bag filter media [12" (305 mm)] [15" (381 mm)] [19" (483 mm)] [22" (559 mm)] [30" (762 mm)] [36" (914 mm)] deep. Cartridge filter media is [4" (50 mm)] [12" (305 mm)] deep. [Provide microbial resistant Intersept coating on all filters.] Designed for [side] [front] loading of filters.

2.09 ENERGY RECOVERY

A. Dual Core® Energy Recovery

1. Unit shall be equipped with Dual Core® energy recovery technology. The unit shall be 90% efficient (sensible +-5%) at equal airflow in winter and up to 80% sensible in summer. It shall also provide up to 70% latent recovery. Unit shall accomplish this recovery without a defrost cycle that will reduce the effectiveness of the device. Devices employing defrost cycles that bypass the energy recovery device, or reduce the effectiveness are not acceptable. Energy recovery device shall not require frost protection in applications down to -40 degrees.

2. Energy Cores shall be Generation 3, comprised of precisely corrugated high grade aluminum. Maximum allowable face velocity across heat exchangers shall be 450 fpm. Heat exchanger face velocities exceeding 450 fpm are not acceptable.

3. Switchover damper section shall be comprised of multi section low leakage dampers operated by fast acting electric actuators. RGN 3000-35000 shall have damper switching times of 0.75 seconds. Dampers that do not switch within the specified times without objectionable noise are not acceptable. Single blade damper sections are not acceptable. Each damper shall control one of the 4 airways, upper-front, lower-front, upper-rear and lower-rear. Dampers shall be capable of orienting to close off outside air to the building without needing external shut off dampers. Dampers shall also be capable of orienting to allow 100% recirculation of air without using heat recovery device for off peak or unoccupied heating modes or morning warm up. In morning warm up both energy cores must be able to be charged using recirculating air. Units incapable of these operations without extra ductwork are not acceptable.

4. Recovery cycles shall be controlled by internal programmed thermostats measuring both supply and exhaust air, and optimizing performance of both heat recovery and free cooling modes

2.10 EXTERNAL DAMPERS (OPTIONAL)

A. External Damper Leakage: Leakage rate shall be less than two tenths of one percent leakage at 2 inches static pressure differential. Leakage rate tested in accordance with AMCA Standard 500.

PART 3: EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's Installation & Maintenance instructions.

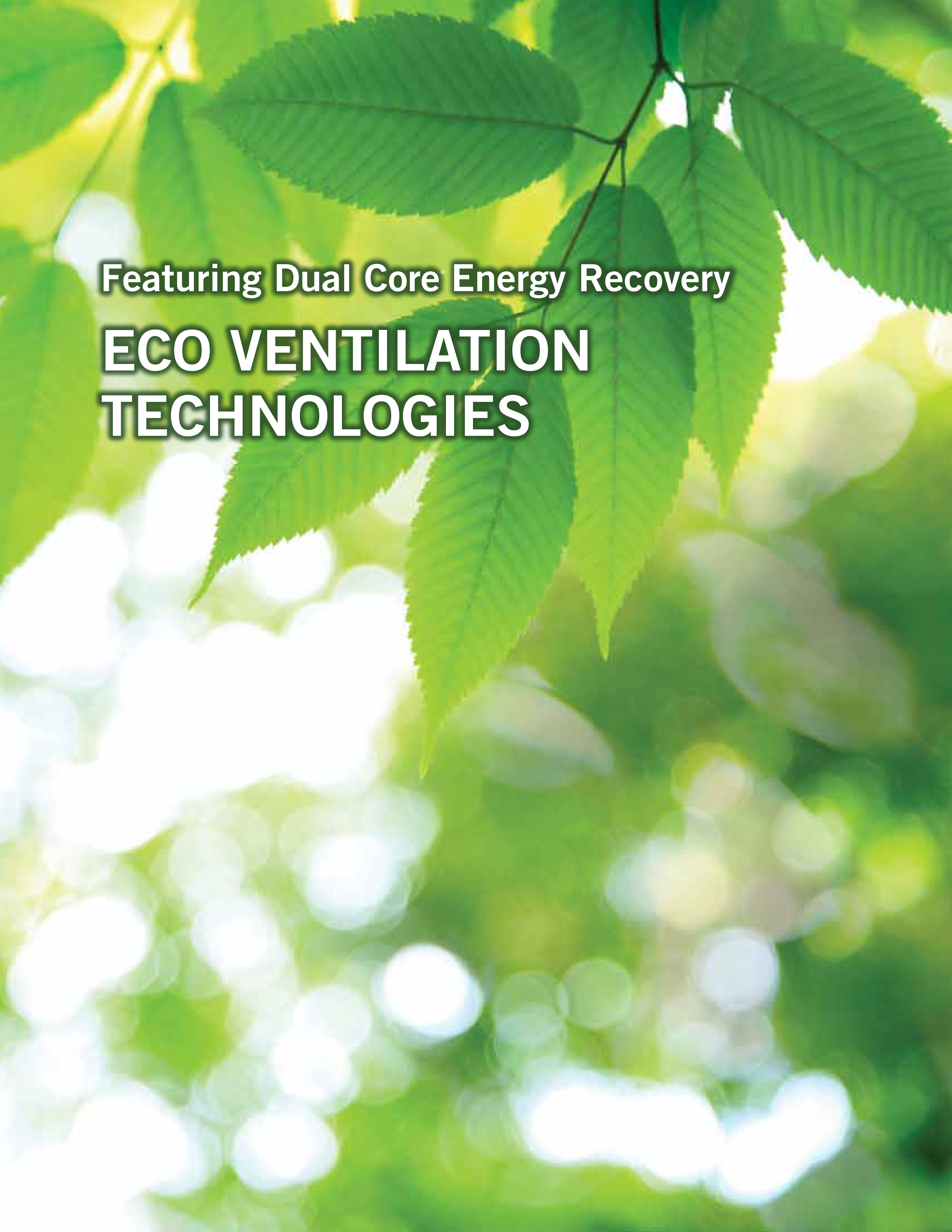
3.02 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

TEMPEFF

Featuring Dual Core® Energy Recovery

ECO VENTILATION TECHNOLOGIES



DUAL CORE® TECHNOLOGY

TEMPEFF
NORTH AMERICA

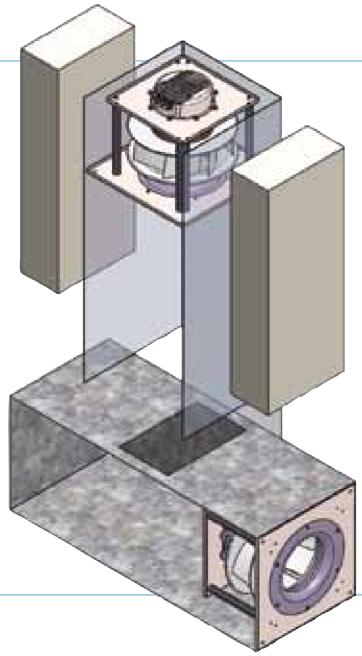
RGSP

SERIES

Tempeff Dual Core® Energy Recovery Operation

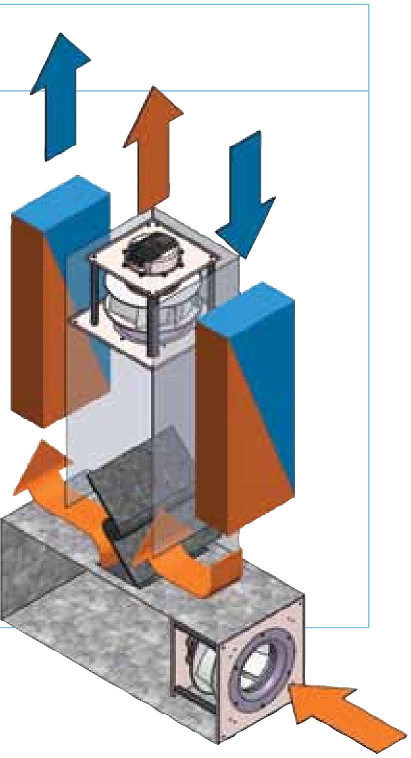
Simplest Form

A typical Tempeff Dual Core® unit contains 2 energy cores (A & B), special change over damper section, an exhaust fan, and a supply fan.



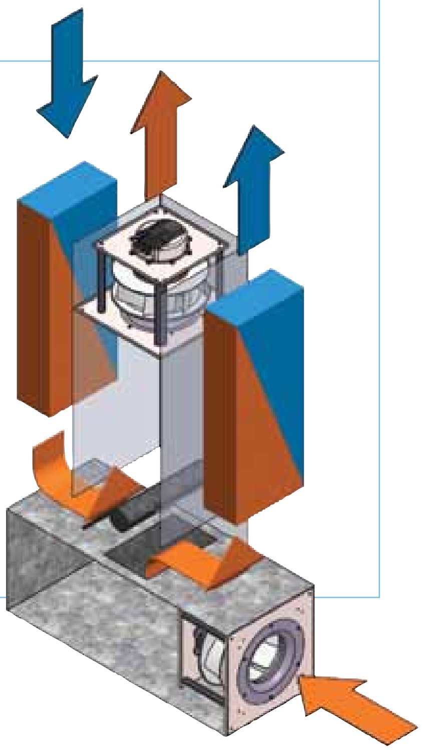
1 Cycling for Recovery PHASE 1

When energy recovery is called for, the dampers position so that Energy Core A will add energy to the supply air stream, heating up the air. Simultaneously Energy Core B is absorbing energy from the exhaust air stream.



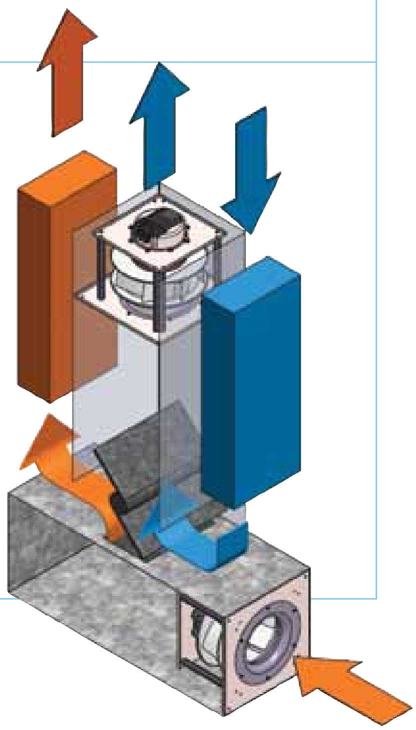
2 Cycling for Recovery PHASE 2

After 60 seconds, the dampers reposition. Now Energy Core B is adding the energy it reclaimed in Phase 1 to the supply air stream,heating it up. Simultaneously Energy Core A is "recharging" by absorbing energy from the exhaust air stream. Phase 1 and Phase 2 will alternate every 60 seconds, constantly delivering extremely high energy recovery regardless of outdoor air temperatures. Because the cores switch cycles every 60 seconds, frost does not have a chance to build up, thus energy recovery is constant day in and day out, unlike other traditional types of energy recovery devices.



3 Free Cooling

If exhaust air and supply air are above set point, unit will revert to Free Cooling Mode. No energy recovery is taking place. Damper will switch every 3 hours to clean core faces.



CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop "WC	BHP @ ESP ("W.C) 1.0 "
110	RGSP 300	91	83	213	0.17	0.1
150	RGSP 300	88.8	80.8	290	0.33	0.11
	RGSP 450	90.9	82.9	218	0.18	0.11
200	RGSP 300	86.1	78.1	387	0.53	0.39
	RGSP 450	88.8	80.8	290	0.33	0.14
250	RGSP 300	83.4	75.4	484	0.74	0.51
	RGSP 450	86.8	78.8	363	0.48	0.15
300	RGSP 450	84.7	76.7	435	0.64	0.49
	RGSP 600	90.5	82.5	231	0.21	0.25
	RGSP 900	91.3	83.3	203	0.15	0.21
350	RGSP 600	89.4	81.4	269	0.29	0.3
	RGSP 900	90.3	82.3	236	0.22	0.24
400	RGSP 600	88.3	80.3	308	0.37	0.35
	RGSP 900	89.4	81.4	270	0.29	0.28
	RGSP 1200	91.2	83.2	205	0.15	0.23
450	RGSP 600	87.2	79.2	346	0.45	0.41
	RGSP 900	88.4	80.4	304	0.36	0.33
	RGSP 1200	90.5	82.5	230	0.21	0.27
500	RGSP 600	86.1	78.1	385	0.53	0.47
	RGSP 900	87.5	79.5	338	0.43	0.38
	RGSP 1200	89.8	81.8	256	0.26	0.31
550	RGSP 600	85.1	77.1	423	0.61	0.59
	RGSP 900	86.5	78.5	372	0.5	0.44
	RGSP 1200	89.1	81.1	281	0.31	0.36
600	RGSP 600	84	76	462	0.69	0.66
	RGSP 900	85.6	77.6	405	0.57	0.49
	RGSP 1200	88.3	80.3	307	0.37	0.4
650	RGSP 600	82.9	74.9	500	0.77	0.73
	RGSP 900	84.6	76.6	439	0.64	0.66
	RGSP 1200	87.6	79.6	333	0.42	0.45
	RGSP 1800	91.3	83.3	201	0.14	0.33
700	RGSP 900	83.7	75.7	473	0.71	0.73
	RGSP 1200	86.9	78.9	358	0.47	0.5
	RGSP 1800	90.9	82.9	217	0.18	0.37
750	RGSP 1200	86.2	78.2	384	0.53	0.66
	RGSP 1800	90.4	82.4	232	0.21	0.41
800	RGSP 1200	85.4	77.4	409	0.58	0.72
	RGSP 1800	90	82	248	0.24	0.47
850	RGSP 1200	84.7	76.7	435	0.64	0.78
	RGSP 1800	89.6	81.6	263	0.27	0.52
	RGSP 2700	91.1	83.1	208	0.16	0.51
900	RGSP 1200	84	76	461	0.69	0.85
	RGSP 1800	89.1	81.1	279	0.31	0.63
	RGSP 2700	90.8	82.8	220	0.18	0.56

CFM	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity FPM	Core Pressure Drop “WC	BHP @ ESP (“W.C) 1.0 “
950	RGSP 1200	83.3	75.3	486	0.74	0.93
	RGSP 1800	88.7	80.7	294	0.34	0.69
	RGSP 2700	90.4	82.4	232	0.21	0.61
1000	RGSP 1800	88.3	80.3	310	0.37	0.74
	RGSP 2700	90.1	82.1	244	0.23	0.66
1200	RGSP 1800	86.5	78.5	372	0.5	1
	RGSP 2700	88.7	80.7	293	0.34	0.87
1400	RGSP 1800	84.8	76.8	433	0.63	1.34
	RGSP 2700	87.3	79.3	342	0.44	1.21
1600	RGSP 1800	83	75	495	0.76	1.73
	RGSP 2700	86	78	391	0.54	1.57
1800	RGSP 2700	84.6	76.6	440	0.65	2
2000	RGSP 2700	83.2	75.2	489	0.75	1.8

All winter effectiveness is calculated using ECM fans and 35 deg F (1.67 deg C).
All Summer effectiveness is calculated using ECM fans and 90 deg F
Efficiencies may vary depending on site conditions
All efficiencies are across entire base unit, including fans and motors
HP values shown include core pressure drop, standard 30% (MERV 10) SA filter and basic cabinet losses.
For unbalanced air streams, contact your local Tempeff representative
For larger ESP values, contact your local Tempeff representative

Available Configurations

- *The configurations differ based on locations of the fans.*
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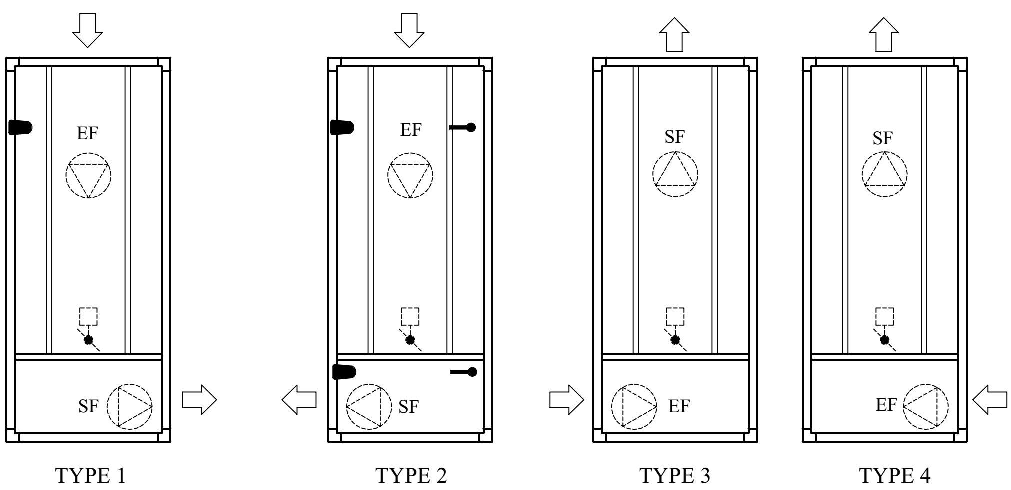

PERFORMANCE DATA **METRIC**

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
52	0.05	RGSP 300	91	83	1.08	42	0.07
71	0.07	RGSP 300	88.8	80.8	1.47	82	0.08
		RGSP 450	90.9	82.9	1.11	45	0.08
94	0.09	RGSP 300	86.1	78.1	1.97	132	0.29
		RGSP 450	88.8	80.8	1.47	82	0.10
118	0.12	RGSP 300	83.4	75.4	2.46	184	0.38
		RGSP 450	86.8	78.8	1.84	119	0.11
142	0.14	RGSP 450	84.7	76.7	2.21	159	0.37
		RGSP 600	90.5	82.5	1.17	52	0.19
		RGSP 900	91.3	83.3	1.03	37	0.16
165	0.17	RGSP 600	89.4	81.4	1.37	72	0.22
		RGSP 900	90.3	82.3	1.20	55	0.18
189	0.19	RGSP 600	88.3	80.3	1.56	92	0.26
		RGSP 900	89.4	81.4	1.37	72	0.21
		RGSP 1200	91.2	83.2	1.04	37	0.17
212	0.21	RGSP 600	87.2	79.2	1.76	112	0.31
		RGSP 900	88.4	80.4	1.54	90	0.25
		RGSP 1200	90.5	82.5	1.17	52	0.20
236	0.24	RGSP 600	86.1	78.1	1.96	132	0.35
		RGSP 900	87.5	79.5	1.72	107	0.28
		RGSP 1200	89.8	81.8	1.30	65	0.23
260	0.26	RGSP 600	85.1	77.1	2.15	152	0.44
		RGSP 900	86.5	78.5	1.89	124	0.33
		RGSP 1200	89.1	81.1	1.43	77	0.27
283	0.28	RGSP 600	84	76	2.35	172	0.49
		RGSP 900	85.6	77.6	2.06	142	0.37
		RGSP 1200	88.3	80.3	1.56	92	0.30
307	0.31	RGSP 600	82.9	74.9	2.54	192	0.54
		RGSP 900	84.6	76.6	2.23	159	0.49
		RGSP 1200	87.6	79.6	1.69	105	0.34
		RGSP 1800	91.3	83.3	1.02	35	0.25
330	0.33	RGSP 900	83.7	75.7	2.40	177	0.54
		RGSP 1200	86.9	78.9	1.82	117	0.37
		RGSP 1800	90.9	82.9	1.10	45	0.28
354	0.35	RGSP 1200	86.2	78.2	1.95	132	0.49
		RGSP 1800	90.4	82.4	1.18	52	0.31
378	0.38	RGSP 1200	85.4	77.4	2.08	144	0.54
		RGSP 1800	90	82	1.26	60	0.35
401	0.40	RGSP 1200	84.7	76.7	2.21	159	0.58
		RGSP 1800	89.6	81.6	1.34	67	0.39
		RGSP 2700	91.1	83.1	1.06	40	0.38
425	0.42	RGSP 1200	84	76	2.34	172	0.63
		RGSP 1800	89.1	81.1	1.42	77	0.47
		RGSP 2700	90.8	82.8	1.12	45	0.42

Air Volume l/s	Air Volume m3/s	Model	Winter Effectiveness %	Summer Effectiveness %	Velocity m/s	Core Pressure Drop Pa	Motor kW required @ ESP (Pa) 250
448	0.45	RGSP 1200	83.3	75.3	2.47	184	0.69
		RGSP 1800	88.7	80.7	1.49	85	0.51
		RGSP 2700	90.4	82.4	1.18	52	0.46
472	0.47	RGSP 1800	88.3	80.3	1.57	92	0.55
		RGSP 2700	90.1	82.1	1.24	57	0.49
566	0.57	RGSP 1800	86.5	78.5	1.89	124	0.75
		RGSP 2700	88.7	80.7	1.49	85	0.65
661	0.66	RGSP 1800	84.8	76.8	2.20	157	1.00
		RGSP 2700	87.3	79.3	1.74	109	0.90
755	0.76	RGSP 1800	83	75	2.51	189	1.29
		RGSP 2700	86	78	1.99	134	1.17
850	0.85	RGSP 2700	84.6	76.6	2.24	162	1.49
944	0.94	RGSP 2700	83.2	75.2	2.48	187	1.34

All winter effectiveness is calculated using ECM fans and 35 deg F (1.67 deg C).
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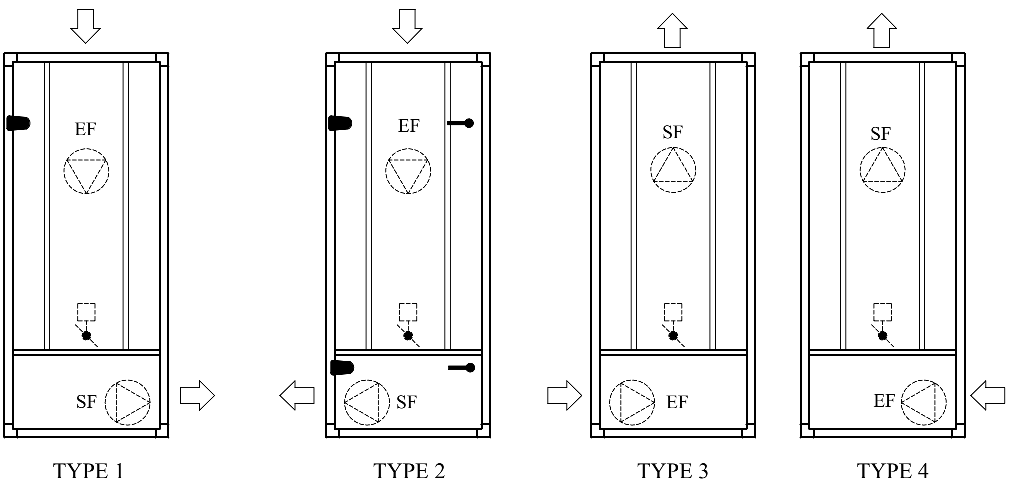
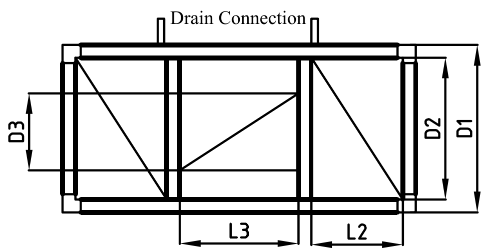
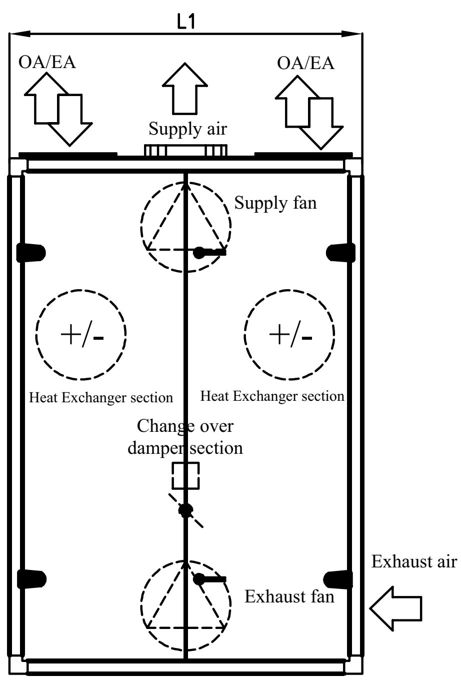
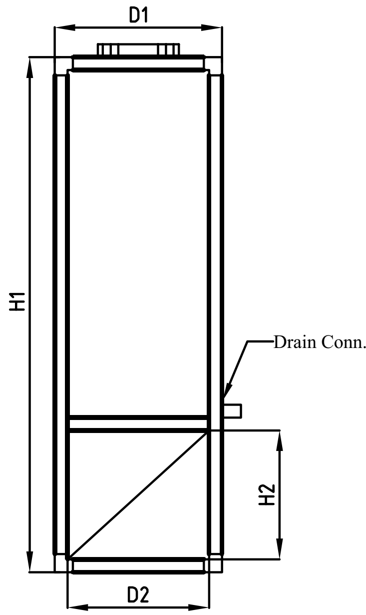




PLAN VIEW



ELEVATION VIEW



SIDE VIEW

Notes:

1) For reference use only, all information subject to change without notice
2) Units in this series can also include heating and/or cooling coils. Please contact your local TEMPEFF Representative for job specfic data
3) Units in this series are also available in several horizontal configurations. Please contact Rep for details

IMPERIAL (inches)									Approx. Weight (lbs)
Model	L1	L2	L3	D1	D2	D3	H1	H3	
RGSP 300	29 7/8	5 3/4	13 3/8	18 1/8	15	9	70 1/8	9	315
RGSP 450	35 3/8	8 7/8	11 3/8	22	18 7/8	10	72 7/8	15 1/2	363
RGSP 600	42 1/8	9 1/4	17 3/8	24	20 7/8	10 3/8	77 1/8	19 5/8	583
RGSP 900	47 5/8	10 7/8	18 1/8	25 5/8	21 5/8	10	78 3/4	19 5/8	660
RGSP 1200	53 7/8	14	18 1/8	25 5/8	21 5/8	11 3/4	78 3/4	19 5/8	770
RGSP 1800	59 1/2	17 1/8	17 3/8	33 1/2	29 1/2	16 3/4	82 5/8	19 5/8	1089
RGSP 2700	59 1/2	17 1/8	17 3/8	41 3/8	37 3/8	20 5/8	82 5/8	19 5/8	1287

METRIC (mm)									Approx. Weight (kg)
Model	L1	L2	L3	D1	D2	D3	H1	H3	
RGSP 300	760	145	340	460	380	230	1780	230	145
RGSP 450	900	225	290	560	480	254	1850	395	165
RGSP 600	1070	236	440	610	530	265	1960	500	265
RGSP 900	1210	275	460	650	550	254	2000	500	300
RGSP 1200	1370	356	460	650	550	300	2000	500	350
RGSP 1800	1510	435	440	850	750	425	2100	500	495
RGSP 2700	1510	435	440	1050	950	525	2100	500	585

PART 2: PRODUCTS

2.01 MANUFACTURERS

A. The following manufacturers are approved for use. No substitutions will be permitted.

1. Tempeff Dual Core® as basis of design

2.02 GENERAL DESCRIPTION

A. Configuration: Fabricate as detailed on drawings.

B. Performance:

C. Acoustics: Sound power levels (dB) for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required.

OCTAVE BAND AT CENTER FREQUENCY (Hz)								
	63	125	250	500	1000	2000	4000	8000
Radiated								
Discharge								
Return								

2.03 UNIT CONSTRUCTION

A. Fabricate unit with double wall galvanized panels secured with mechanical fasteners. All access doors shall be sealed with permanently applied bulb-type gasket.

1. Panels and access doors up to the RGSP 600 shall be constructed as a 1-inch (25-mm) nominal thick. The RGSP 900 to RGSP 2700 shall be constructed as 2 inch panels; with injected polyurethane foam insulation. R value shall be 6.5 per inch of wall thickness. The outer panel shall be constructed of G90 galvanized steel. The inner liner shall be constructed of G90 galvanized steel. Manufacturer shall supply test data demonstrating less than L/240 deflection for an unsupported 48x48 panel under 30" W.C pressure. Units that cannot demonstrate this deflection are unacceptable.

B. Access Doors shall be flush mounted to cabinetry, with minimum of two hinges, locking latch and full size handle assembly.

2.04 SUPPLY / RETURN FANS

A. Provide direct-drive plenum fan(s) with ECM motors. Fan assemblies including fan, motor and sheaves shall be dynamically balanced by the manufacturer on all three planes and at all bearing supports. Manufacturer must ensure maximum fan RPM is below the first critical speed.

2.05 ELECTRICAL

A. All electrical components shall bear a UL and CSA safety listing.

B. Wiring Termination: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. All wires shall be number tagged and cross-referenced to the wiring diagram for ease of troubleshooting.

C. Controls must include Self diagnostics and PLC error code. On board fault detection and diagnostics that senses and alerts when the damper is not operating correctly.

D. Air handler manufacturer shall provide and mount a damper controls for standalone operation of the ERV.

2.06 PARTICULATE FILTERS

A. Filter section with filter racks and guides with hinged access doors for side loading and removal of filters

B. Filter media shall be UL 900 listed, Class I or Class II.

C. Flat arrangement with 2", 50mm pleated MERV 10 panel filters.

2.09 ENERGY RECOVERY

A. Dual Core® Energy Recovery

1. Unit shall be equipped with Dual Core® energy recovery technology. The unit shall be 90% efficient (sensible +-5%) at equal airflow in winter and up to 80% sensible in summer. It shall also provide up to 70% latent recovery in winter mode. Unit shall accomplish this recovery without a defrost cycle that will reduce the effectiveness of the device. Devices employing defrost cycles that bypass the energy recovery device, or reduce the effectiveness are not acceptable. Energy recovery device shall not require frost protection in applications down to -40 degrees. Cores shall be Generation 3, comprised of precisely corrugated high grade aluminum.

2. Switchover damper section shall be comprised of low leakage dampers operated by fast acting electric actuators having damper switching times of 0.75 seconds. Dampers that do not switch within the specified times without objectionable noise are not acceptable.

3. Recovery cycles shall be controlled by internal programmed thermostats measuring both supply and exhaust air, and optimizing performance of both heat recovery and free cooling modes.

PART 3: EXECUTION

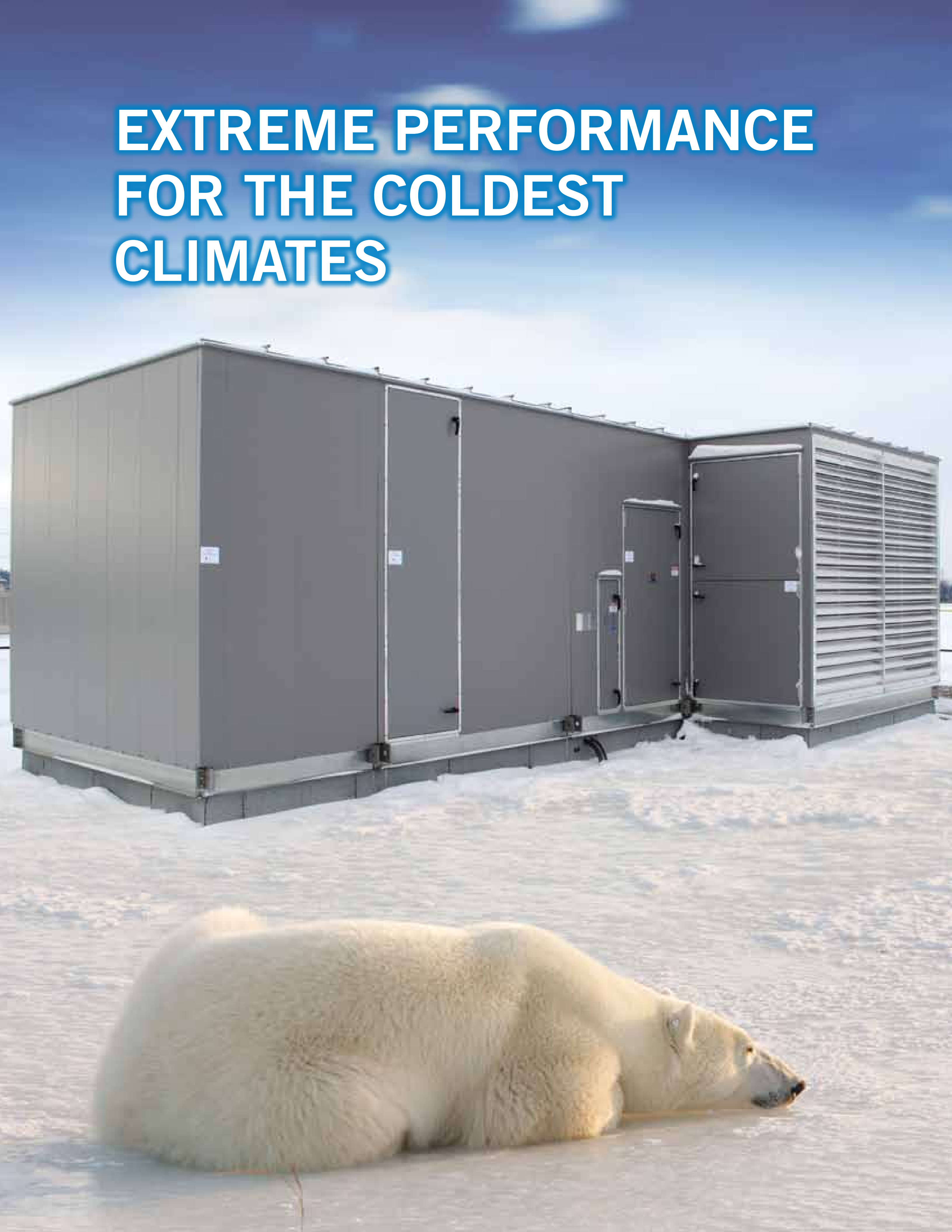
3.01 INSTALLATION

A. Install in accordance with manufacturer's Installation & Maintenance instructions.

3.02 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

TEMPEFF


EXTREME PERFORMANCE FOR THE COLDEST CLIMATES

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