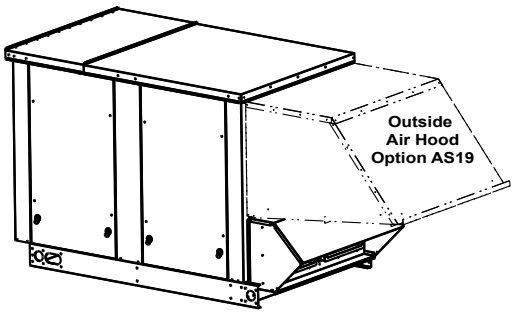
REZNOR®

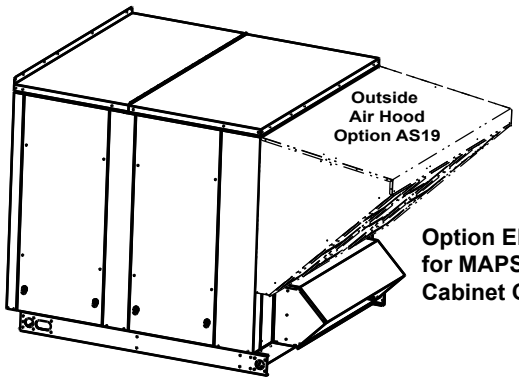
Form I-MAPSIII&IV-ER (Version .3)
Obsoletes I-MAPSIII&IV-ER (Version .2)

Installation, Operation, and Maintenance of Option ER1, Energy Recovery Module

Applies to: **MAPS® Series Models, Cabinet Sizes A, B, and C with Energy Recovery Module Option ER1**



Option ER1A or ER1B for MAPS® Cabinet A or B



Option ER1C for MAPS® Cabinet C

GENERAL

Installation of this energy recovery module should be done by a qualified agency in accordance with the instructions in this manual and in compliance with all codes and requirements of authorities having jurisdiction. The instructions in this manual apply to energy recovery modules Option ER1A, ER1B, and ER1C, for MAPS® III and IV units in Cabinet Sizes A, B, and C. Use this manual with the MAPS® unit installation manual, Form I-MAPS III&IV, and operation/maintenance manual, O-MAPS-A/B/C.

1.0 Hazard Labels and Warnings

There are warning labels on the module and throughout this manual. For your safety, read the definitions below and comply with all paragraphs labeled **CAUTION**, **WARNING**, and **DANGER** during installation, operation, maintenance, and service of this energy recovery module as well as any other part of the MAPS® system.

HAZARD INTENSITY LEVELS

1. **DANGER: Failure to comply will result in severe personal injury or death and/or property damage.**
2. **WARNING: Failure to comply could result in severe personal injury or death and/or property damage.**
3. **CAUTION: Failure to comply could result in minor personal injury and/or property damage.**

2.0 Receiving and Moving

Check for any damage that may have happened during shipment. If damage is found, document the damage with the transporting agency and immediately contact your Reznor distributor.

This module should be loaded and unloaded using all lifting points and spreader bars. Do not attempt to move this module with a fork lift.

Components

The energy recovery module is factory assembled for installation at the job site. It must match the cabinet size of the MAPS® unit and may have a variety of control options.

MAPS® Cabinet Size*	Option	Rating Plate Model
A	ER1A	ERMA
B	ER1B	ERMB
C	ER1C	ERMC

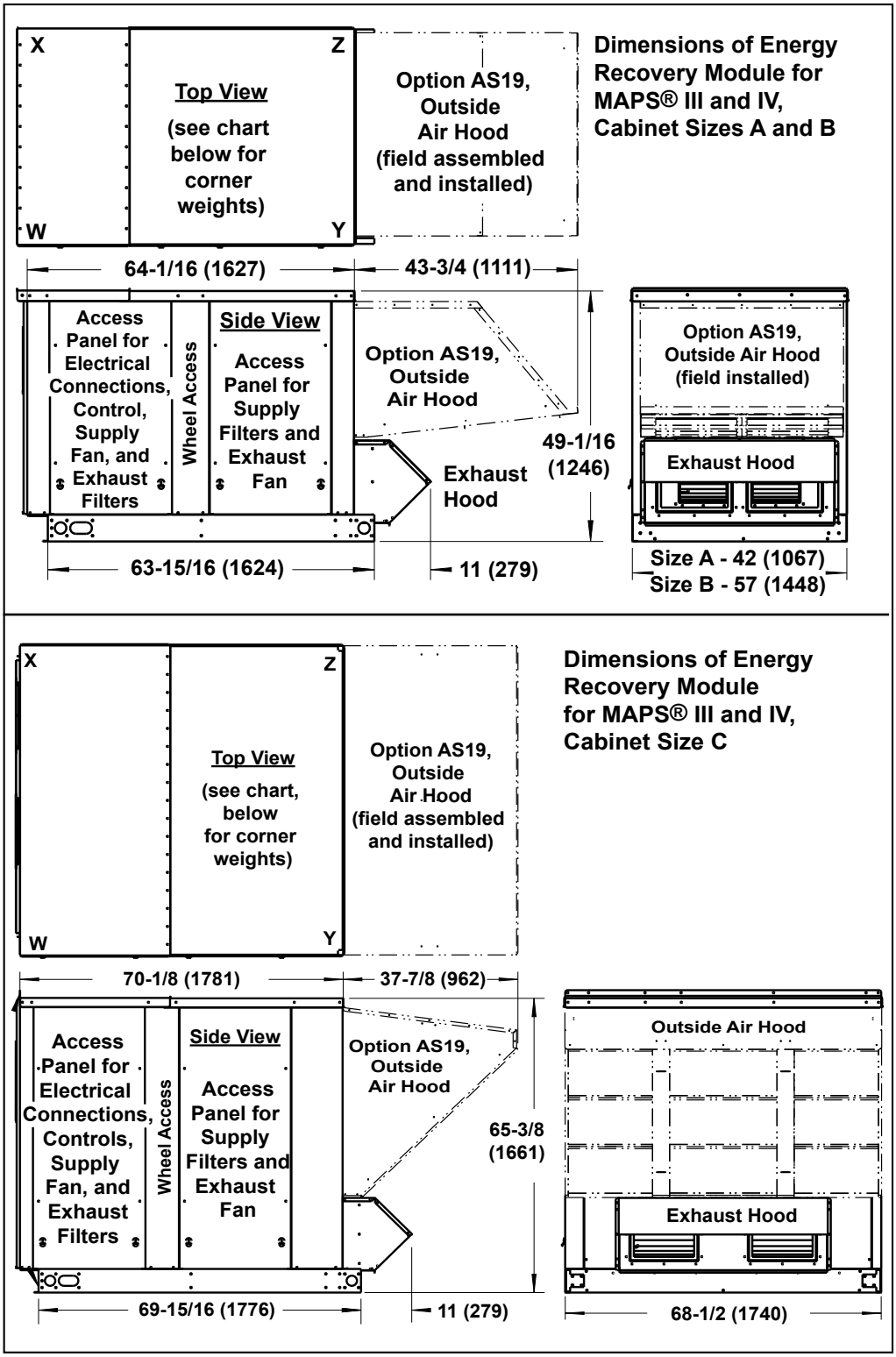
*See cross-reference of MAPS® Models by Cabinet Size A, B, or C on page 11.

A package of parts (P/N 262969) required for installation is Included with each energy recovery module:

Qty	P/N	Description
2	260995	Curb cap splice plates
20	114687	1/4-20, 3/4” Screws (for attaching splice plates)
40	11813	#10-1/2” Sheetmetal screws (for attaching cabinets)

3.0 Dimensions and Weights

Dimensions



Weights

Option		ER1A	ER1B	ER1C
Cabinet Size		A	B	C
Weight	lbs	767	1006	1334
	kg	348	456	605

IMPORTANT NOTE: Outside air hood is installed after the module is attached to the unit. It is not included in the weights.

Cabinet Size* and ER Configuration		W	X	Y	Z	W	X	Y	Z
		Corner Weights (lbs)				Corner Weights (kg)			
A	1 supply fan	201	191	192	182	91	87	87	83
B	1 supply fan	271	219	278	225	123	99	126	103
	2 supply fans	283	235	267	222	128	107	121	101
C	1 supply fan	370	313	349	296	168	142	158	134
	2 supply fans	368	319	347	301	167	145	157	137

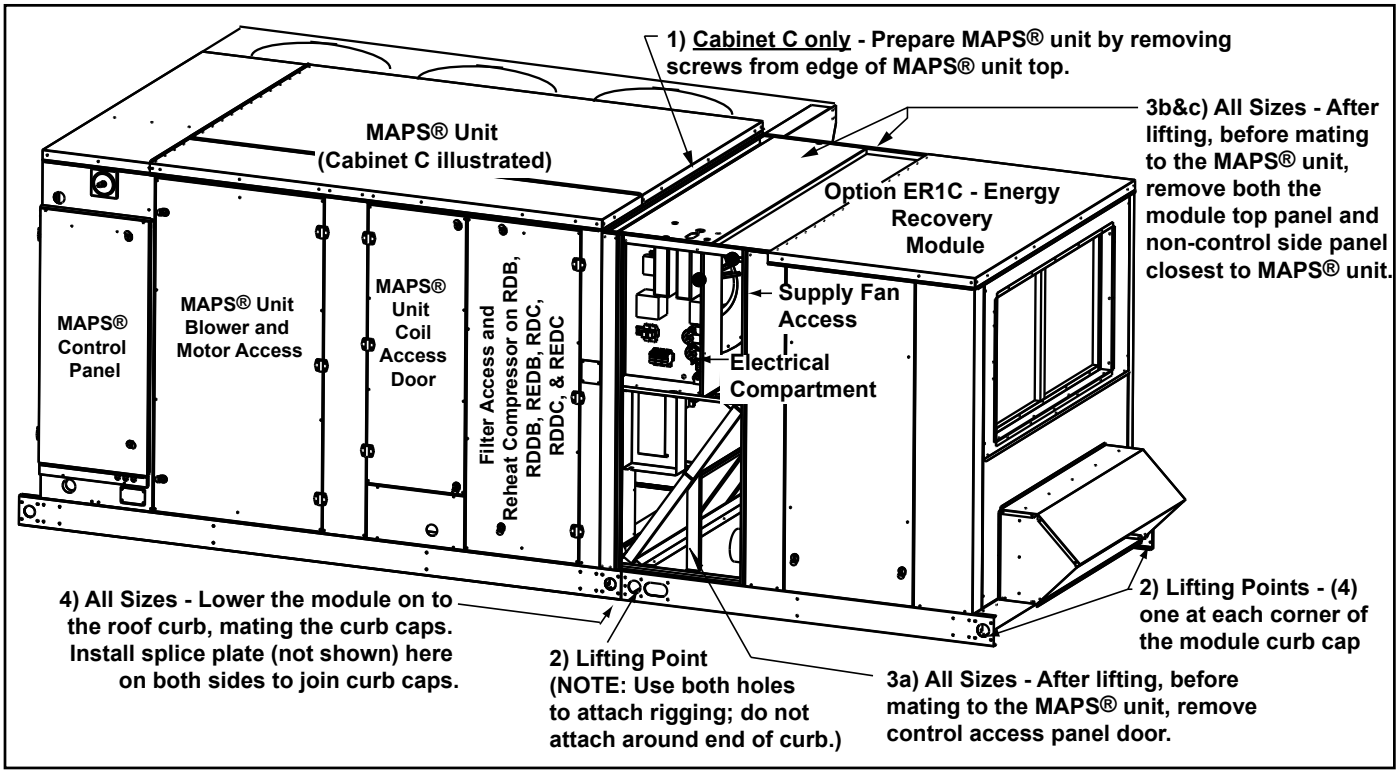
* See cross-reference of MAPS® Models by Cabinet Size on page 11.

4.0 Mounting on the Roof Curb with the MAPS® Unit

A MAPS® unit that includes an Optional ER1 energy recovery module requires an optional roof curb designed to include the field-attached energy recovery module. Roof curb Option CJ34, CJ53, or CJ54 must be installed and the MAPS® unit in place before the energy recovery module is lifted to the curb. Follow the instructions provided with the curb and the MAPS® unit.

Lifting and Mating the Energy Recovery Module and MAPS® Unit

The module is shipped separately and must be lifted to the roof curb AFTER the MAPS® unit is in place. Some preparation is required before the module can be mated to the MAPS® unit. Refer to the illustration and follow the instructions below.

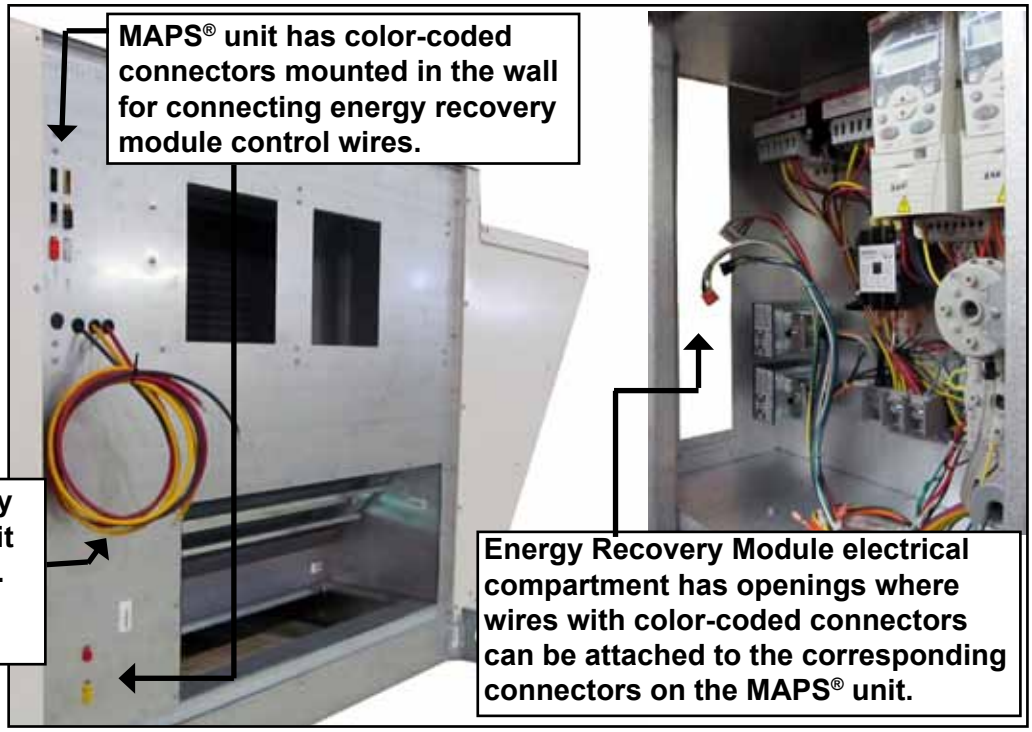


INSTRUCTIONS (Steps apply to all sizes except where noted.)

1. **Cabinet Size C (Option ER1C)** - Prepare the MAPS® Cabinet C unit by removing the screws from the edge of the top.
2. **Rig the module using all four lifting points and spreader bars.** When attaching rigging, attach from the sides being sure that there will be no interference with mating to the MAPS® unit.
   Carefully, lift and position the module but DO NOT set it on the roof curb.
3. **Prepare the Module** (BEFORE setting it on the curb)
   - **a)** On the control side of the module, remove the access panel.
   - **b)** On the top of the module, remove the section that is closest to the MAPS® unit.
   - **c)** On the non-control side, remove the panel that is closest to the MAPS® unit.
   - **d)** Remove the parts package shipped inside the cabinet and locate the splice plates and the 3/4" screws.
4. **Lower the module onto the roof curb**, mating the curb cap of the module to the curb cap of the unit. Use the 3/4" screws to attach a splice plate to each side connecting the curb caps.
5. **Cabinet Sizes A and B (Option ER1A or ER1B)** - With the curb caps joined, reposition the non-control side panel and the top panel section removed in Steps 3b) and 3c). The top of the module will extend over the MAPS® unit. Re-attach both panels to the module. Use sheetmetal screws to attach the module top to the unit top.
   Cabinet Size C (Option ER1C) - With the curb caps joined, replace the non-control side panel removed in Step 3c). Slide the lip of the module top section under the edge of the MAPS® cabinet top panel and replace the screws removed in Step 1.
   Re-attach the top section of the module.
6. **Before replacing the control access panel**, match the connector colors and join the energy recovery wires to the wires from the MAPS® unit. (See illustration on page 4.)
   Refer to the unit wiring diagram and connect the power supply wires to the distribution blocks.
   Replace the control access panel.

Lifting and Mating the Energy Recovery Module and MAPS® Unit (cont'd)

Match the connector colors on the wires in the energy recovery module electrical compartment to the connectors on the MAPS® unit.



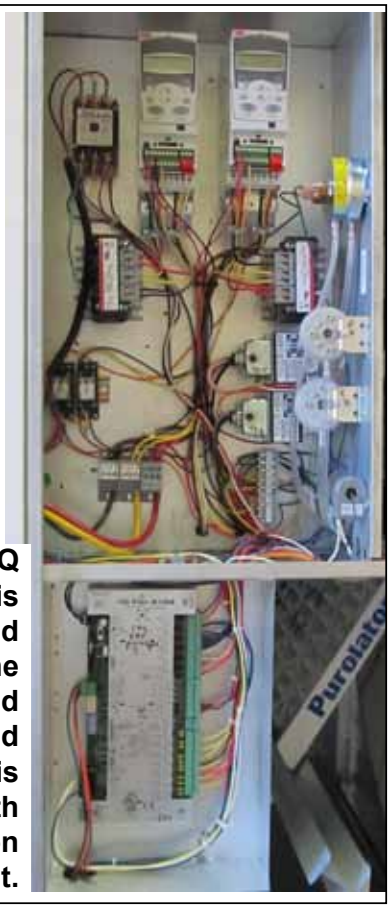
5.0 Electrical

The energy recovery module does not require a separate electrical supply. Supply and control wiring connections made when mating the module to the MAPS® unit (See illustration above.) are all that is required.

The electrical information on the MAPS® unit rating plate includes MOP and MCA requirements for the energy recovery module.

6.0 Controls

Energy Recovery Module Electrical Compartment and IQ Controller



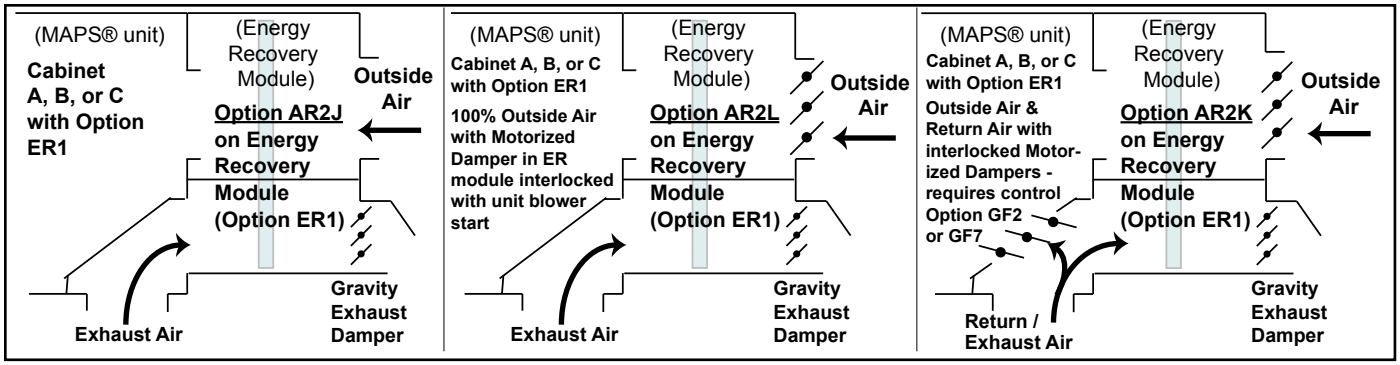
This IQ Controller is programmed to control the supply and exhaust fans and the wheel. It is integrated with the controller on the MAPS® unit.

Control NOTES:
A change in protocol or baud rate on the main MAPS® unit controller requires a matching change on the energy recovery module controller.
For more detailed information on controls, refer to the MAPS® system control manual. The IQ technical manual, Form CP-MAPS D15/16/17/18, is included with the MAPS® unit and is also available at www.RezSpec.com.

All energy recovery modules have a unit-mounted, IQ controller that is programmed to control all system components located in the energy recovery module. This includes the energy recovery supply fan, energy recovery exhaust fan, and the enthalpy wheel. The controller is programmed as an integrated section of the main MAPS® unit. Once the MAPS® unit and the energy recovery module are connected in the field, the controllers automatically connect and start sharing information between systems. All information from the energy recovery module is shared with the main MAPS® unit IQ controller. This allows for unit and the energy recovery module to act as a complete system and to respond to all sensors installed in both components. This also allows one access point for all information and operational data.

Outside Air or Outside and Return Air Dampers

There are three airflow configurations available on a MAPS® unit with an energy recovery module (see below). Options AR2L and AR2K with motorized dampers are identified on the unit wiring diagram. The outside air damper is always opened prior to operation of the MAPS® unit blower and the energy recovery module fans. The return air damper (AR2K) is interlocked with the outside air damper.



Frost Prevention Control

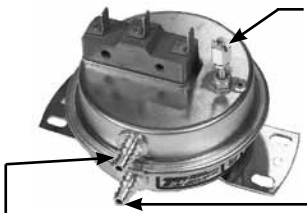
Frost Threshold Temperatures (°F)				
Indoor Air R.H. %	Indoor Air Dry Bulb Temperature			
	70° F	72° F	75° F	80° F
20	-14	-13	-11	-8
30	-3	-2	-1	3
40	5	7 (default without Opt BE6)	9	11
50	12	13	15	18
60	18	19	21	26
Frost Threshold Temperatures (°C)				
Indoor Air R.H. %	Indoor Air Dry Bulb Temperature			
	21° C	22° C	24° C	27° C
20	-26	-25	-24	-22
30	-19	-19	-18	-16
40	-15	-14 (default without Opt BE6)	-13	-12
50	-11	-11	-9	-8
60	-8	-7	-6	-3

All Option ER1 energy recovery modules have a built-in frost prevention sequence. The frost prevention sequence monitors the outside air temperature, and when the outside air temperature falls below 7°F (-14°C), the controller implements a wheel start/stop/jog sequence to prevent frost buildup. Frost will not damage the wheel but will plug the wheel reducing airflow. The default setpoint of 7°F (-14°C) assumes a return air design condition with a maximum temperature of 72°F (22°C) at 40% RH as shown in the table (left). If making a setpoint adjustment, the user must adjust based on the design conditions shown in the table. Once the outside air is 3°F (2°C) above the setpoint, wheel operation returns to normal.

If Option BE6 was ordered, in addition to monitoring the outside air temperature, a factory installed return air temperature and humidity sensor is used to calculate the frost threshold point and initiates the frost prevention sequence when the outside air falls below the calculated frost threshold temperature. (Frost threshold temperature is the point at which frost begins to accumulate on heat exchanger surfaces. It is a function of both outside air temperature, indoor temperature, and indoor relative humidity.) With Option BE6, the energy recovery wheel controller monitors the return air temperature, return air humidity, and outside air conditions and determines the frost threshold based on the chart (left). Frost prevention is not required until outdoor air temperature is below the threshold. When the outside air temperature is below the frost threshold, the controller implements a wheel start/stop/jog sequence to help prevent frost buildup. Once the outside air temperature is 3°F (2°C) above the calculated frost threshold, wheel operation returns to normal.

Dirty Filter Switch

If Option BE28 was ordered, a pressure switch (P/N 105507) senses pressure through the supply filters. When the setpoint is reached, a signal is sent to the IQ to provide a “dirty filter alert”.



Instructions for Setting Dirty Filter Switch (located in the control compartment) - With clean filters in place; all doors closed (except electrical compartment); and the blower operating, increase the pressure setting by adjusting the setscrew on the switch clockwise until the filter light is energized or the screw is bottomed out. At that point, adjust the setscrew three full turns counterclockwise or until the screw is top-ended. At that setpoint, the filter light will be activated at approximately 50% filter blockage.

7.0. Energy Recovery (enthalpy) Wheel

The energy recovery wheel rotates through both the inlet and exhaust airstreams. The function of the wheel is to transfer both sensible (temperature) and latent (moisture) energy from one airstream to the air in the other airstream. This allows the energy recovery module to both cool and dehumidify outdoor makeup air during the cooling season and heat and humidify outdoor makeup air in the heating season before that air enters the MAPS® unit.

The wheel is rotated by a motor and non-adjustable belt drive. The speed of the rotation is factory set to provide optimum energy transfer.

Bypass Air - Both the inlet and exhaust airstreams have a bypass opening. Depending on the requirements of the installation, a percentage of filtered outside air is allowed to enter the MAPS® unit without going through the wheel and a percentage of return air is

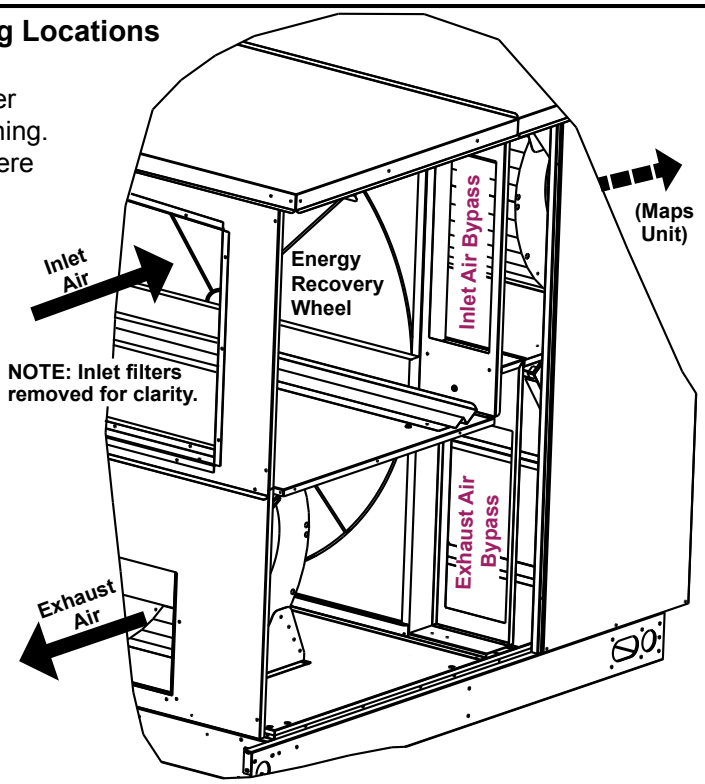
7.0. Energy Recovery (enthalpy) Wheel (cont'd)

exhausted without going through the wheel. The purpose of the bypass is to increase the load on the coils for improved coil performance and/or additional reheat capacity. On some units, the bypass adjustment also allows for a higher supply and exhaust air volume capacity.

Adjustable shutters allow the width of the bypass openings to be factory set to provide the percentage of bypass air needed as determined from the specifications provided on the order. If installation requirements change or if the bypass shutters are mistakenly moved, contact the factory or Reznor® representative for field adjustment. The original order information and any changes in specifications must be provided.

Bypass Air Opening Locations

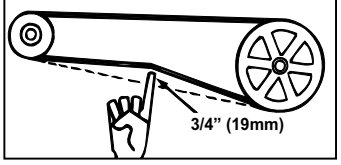
(Shutter is not shown, but if required, a shutter is vertical in each opening. Panels are removed here for visibility.)



NOTE: Option ER1 energy recovery modules manufactured prior to 4/12 do not have adjustable shutters on the bypass openings.

8.0 Blowers, Belts, and Drives

Belt Tension



WARNING: All setscrews and locking collars must be tightened before applying power.

Pulley/Shaft Setscrews - Wrench torque 110 in-lb minimum to 130 in-lb maximum.
Bearing Hub - Socket size 5/16"; Torque 165 in-lbs.

The energy recovery module has both a supply fan and an exhaust fan. The supply fan blower is matched to the airflow range through the energy recovery wheel and must be checked after the blower on the MAPS® unit is set. (Follow the instructions in Paragraph 9.0.) The exhaust fan is selected to match the MAPS® cabinet size.

Each fan system is equipped with a 1 to 5 HP motor and linked belt drive. Depending on motor type, motor size, and option selection, control may be by either contactor, starter, or factory-installed VFD.

Belts and Belt Tension - The supply and exhaust blower systems are equipped with Power Twist Plus linked blower belts. The linked belts are designed in sections allowing for easy sizing and adjustment. The belt is sized at the factory for the proper tension. Check belt tension. Proper belt tension is important to the long life of the belt and motor. A loose belt will cause wear and slippage. Too much tension will cause excessive motor and blower bearing wear. The belt tension should be checked after the first 24 hours of running at full load and at regular maintenance inspections.

If a linked belt needs tightening, the recommended method of tightening the belt length is to count the number of links and remove one link for every 24. (A link is made up of two joining sections of belt. For easier removal of links, turn the belt inside out. But be sure to turn it back before installing. If a belt is removed or replaced, be sure to align directional arrows on the belt to the proper drive rotation.)

Blower Rotation - Each blower housing is marked for proper rotation. Check blower rotation with the arrow on the housing. If actual rotation is not correct, interchange the two wires on the 3-phase supply connections at the terminal block. Do not change load side wiring.

Optional Variable Frequency Drive and Controls - When an optional variable frequency drive is ordered, the motor will operate on varying speeds as determined by the electrical frequency. The energy recovery module may have a factory-installed VFD on the supply fan and/or the exhaust fan.

Depending on which control was selected, the variable frequency drive on the supply fan is controlled by neutral pressure or constant volume (adjustable through the IQ controller).

On the exhaust fan, a VFD may be controlled by building pressure, proportionally based on the MAPS® unit blower, or a constant volume (adjustable through the IQ controller). For control information, refer to Form CP-MAPS D15/16/17/18.

9.0 Commissioning and Startup for Energy Recovery Module

Checks before Startup

☐ Check that the cabinets have been properly joined and all panels installed. See Paragraph 4.0.

☐ Verify that the electrical connections are all mated correctly and the power supply wires connected. See Paragraphs 4.0 and 5.0.

☐ Check belts, blowers, and setscrews. See Paragraph 8.0.

☐ Check the wheel; it should be aligned in the cassette and free to rotate.

Checks after Startup

☐ Setting the Supply and Exhaust Fans - If the energy recovery module is not equipped with optional variable frequency drives (Options EFD1 and SFD1), it is recommended that the air balance procedures outlined below be performed.

Instructions for MAPS® Unit with an Energy Recovery Module

1. Perform Air Balance Procedure on the MAPS® Unit

a) **In** order to measure airflow without the pressure drop of the energy recovery module, open the coil access door. (See illustration on page 3.)

b) Energize the MAPS® blower system circuit only. Balance the air to the specific air volume requirements for the application. (If blower speed requires adjustment, follow the instructions in Paragraph 6.6.2 in the MAPS® installation manual.)

c) De-energize the MAPS® blower system circuit. Close and lock the coil access door.

2. Perform Air Balance Procedure on the Energy Recovery Supply Fan

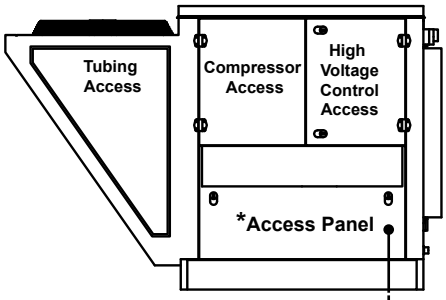
a) On the MAPS® unit, open the access panel (heat section access on units with heat) located below the high voltage control compartment (see illustration). On the wall next to the blower compartment, locate the pressure tap. Connect a manometer at the pressure tap.

b) Energize the energy recovery supply blower circuit. If the energy recovery module has an inlet damper, there will be a delay while the damper opens and closes the damper end switch that energizes the supply blower.

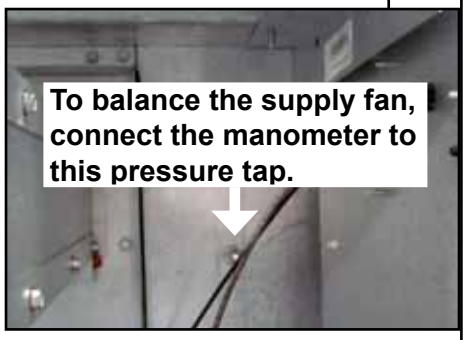
c) Energize the MAPS® blower system circuit.

d) On the manometer, check the pressure. If the measurement is between 0" and -.50" w.c., the supply fan does not need to be adjusted. If the measurement is not in that range, follow the instructions below:

1) De-energize the energy recovery module and the MAPS® unit. (If the MAPS unit has a gas heat section, turn off the gas.)
2) Loosen belt tension and remove the belt.
3) Loosen the set screw on the side of the pulley.
4) **To increase the blower speed,** turn the adjustable half of the pulley inward. **To decrease the blower speed,** turn the adjustable half of the pulley outward. One turn of the pulley will change the speed 8-10%.
5) Tighten the set screw on the flat portion of the pulley shaft.
6) Replace the belt and adjust the belt tension. (See Paragraph 8.0).
7) Energize the system and check the pressure reading. When the measurement on the manometer is between 0" and -.50" w.c., the supply fan is set. Disconnect the manometer and close the control panel door.



* On models with gas or electric heat, this is the heat section access panel.



3. Perform Air Balance procedure on the Energy Recovery Exhaust Fan

The exhaust blower system operates as an independent air system and can be adjusted using standard air balance procedures with no effect to the MAPS® or energy recovery supply air systems.

9.0 Commissioning and Startup (cont'd)

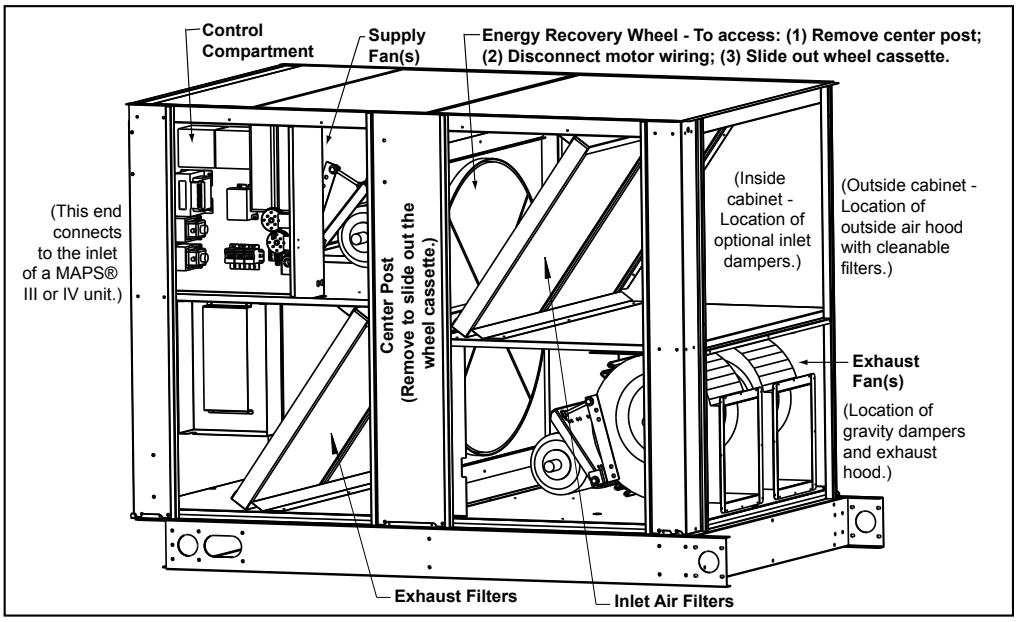
Checks after Startup (cont'd)

☐ If equipped with dirty filter switch (Option BE28), set the switch. See Paragraph 6.0.

☐ After at least 8 hours but no longer than a week of operation, recheck the supply and exhaust fan components -- blower wheels including all set screws, blower pulleys, motor pulleys, and belt tension. Make any required adjustments. See instructions and requirements in Paragraph 8.0.

10.0 Maintenance and Service

Energy Recovery Module with Panels and Hoods Removed



Inlet and Exhaust Components

Hoods and Dampers - Clean the filters in the outside air hood. If there is an inlet damper, carefully remove dirt from the damper blades. Clean gravity relief damper blades at the exhaust outlet.

Blowers and Drives - The blowers (supply and exhaust fans) have permanently lubricated cartridge ball bearings and do not require greasing.

Check the condition and tension of the belts. Belt tension should allow a 3/4" depression of the belt. See belt tension in Paragraph 8.0. If the belt needs to be replaced, use a factory-authorized replacement.

Check the setscrews; see Paragraph 8.0.

Filters - Check inlet and exhaust filters. Replace as needed.

*See cross-reference of MAPS® Models by Cabinet Size A, B, or C on page 11.

Cabinet Size *	Inlet Air Filters (Merv 8)			Exhaust Air Filters (Merv 8)		
	Filter Type & Size	Qty	P/N	Filter Type & Size	Qty	P/N
A	Pleated 20x25x2	2	104113	Pleated 20x25x2	2	104113
B	Pleated 16x25x2	2	104112	Pleated 16x25x2	2	104112
	Pleated 12x25x2	2	114320	Pleated 12x25x2	2	114320
C	Pleated 16x25x2	2	104112	Pleated 16x25x2	2	104112
	Pleated 20x25x2	2	104113	Pleated 20x25x2	2	104113
	Pleated 16x16x2	1	104109	Pleated 16x16x2	1	104109
	Pleated 16x20x2	1	104110	Pleated 16x20x2	1	104110

Energy Recovery Wheel

Check Wheel RPM - The wheel should rotate slowly at approximately 53 rpm. If rotation is not normal, see the wheel maintenance information that follows. Perform service as needed and/or replace any defective parts.

Wheel Maintenance - The energy recovery wheel cassette is designed to be slid out of the unit for inspection and cleaning. Follow the instructions in **the illustration on page 7** and the cleaning instructions below.

How often the wheel needs to be cleaned depends on its environment. Because the wheel rotates between two opposing airstreams, it is self-cleaning of most dry dirt and dust and will remain efficient for a long period of time. However, when the wheel is exposed to oils, tars, or greases in either the supply or exhaust airstream, the surface will become "sticky" and will hold the dirt and dust. Over time the air passages will become blocked causing loss of recovery, excessive pressure drop, and loss of energy savings.

According to the manufacturer, a wheel operating in a “clean” environment may not require annual cleaning, but a wheel in a “contaminated” environment may require multiple cleanings a year to maintain airflow and recovery. The segmented design of the wheel not only provides for easier cleaning but also allows for replacement of individual dirty segments. (See replacement P/N’s on page 10.).

Removing, Cleaning, and Replacing Wheel Segments - The segments are the “heat exchangers” of the energy recovery wheel. Segments must be handled with care and should never be dropped. Segments may require “slight” persuasion during installation and removal but NEVER be forced or banged with a hammer or similar tool.

Instructions:

1. Turn off power to the unit and lock the disconnect switch open.
2. Slide the wheel cassette out of the cabinet (refer to illustration, page 7).
   Remove the wheel segments (from the pulley side of the wheel)
   a) Rotate the wheel to position the first segment to be removed at the top. On both sides of the segment, unlock and open the two retaining straps.
   b) Using hand pressure only and supporting the segment, from the motor side push the wheel segment. On the pulley side, lift the segment out of the spokes. Lay, do not drop, the segment on a flat surface
   c) Rotate the wheel so that the segment on the opposite side is on the top. Repeat the procedure and remove the segment. Continue the procedure of keeping the balanced open and filled segments opposite each other and remove all of the segments.
3. **Clean the Wheel Segments**
   a) Gently brush off any loose dirt and dust.
   b) To wash the segments, use a non-acid based (evaporator) coil cleaner or alkaline detergent solution. Non-acid based coil cleaner concentrate in a 5% solution is recommended by the manufacturer. Do not use any of the following as they may cause damage to the wheel.
   DO NOT use an acid based cleaner.
   DO NOT use aromatic solvents.
   DO NOT use temperatures in excess of 170°F.
   DO NOT use a pressure washer.
   DO NOT use steam.
   Soak the segments in the cleaning solution until grease and tar deposits are loosened. An overnight soak may be required to adequately loosen heavy deposits of oil based contaminants.

CAUTION

DO NOT use acid based cleaner, aromatic solvent, steam, temperatures in excess of 170°F, or a pressure washer, as damage to the wheel may occur.

Rinse the dirty solution from each segment until the water runs clear. **NOTE:** Some staining of the desiccant may remain and is not harmful to performance. Allow excess water to drain from the segments before reinstalling them in the wheel. (**NOTE**: A small amount of water will dry out in the airflow.)

4. **Replace or Re-install Clean Wheel Segments** (from pulley side of wheel)
   a) Remove any dirt or dust from the wheel frame and cassette and the slide-in area of the cabinet.

WARNING

Weight of the installed segments will cause the wheel to accelerate in rotation. Failure to maintain control of the wheel rotation while re-installing all segments could cause severe injury to fingers or hand caught between revolving spokes and the bearing support beam. Insert the handle of a hammer or other such tool through the spokes above or below the bearing support as a stop to limit rotation of an unbalanced wheel.

b) Position one segment opening at the top of the cassette. Insert a “stop” (see warning above) to hold the wheel in place. Unlock and open the segment retaining brackets on both sides of the opening. Position a clean segment with the imbedded stiffeners toward the motor side of the wheel. Holding the segment as vertically as possible and centered between the spokes, insert the nose of the segment downward between the hub plates. Ease the segment down until its outer rim clears the inside of the wheel rim and press it inward against the spoke flanges. Close and latch the retaining brackets. Make sure each retaining bracket is fully engaged under the catch.

c) Remove the stop and slowly rotate the installed segment to the bottom of the wheel. Re-insert the stop and repeat the procedure to put a segment in the top position. Continue the procedure, balancing the wheel by installing opposite segments, until all of the segments are in place.

d) While the wheel cassette is out, follow the instructions below to check the seals and the drive components.

e) After all wheel maintenance is complete, slide the casette back into the cabinet. Re-connect the motor wire. Being sure the cassette is positioned properly, replace the center post.

10.0 Maintenance and Service (cont'd)

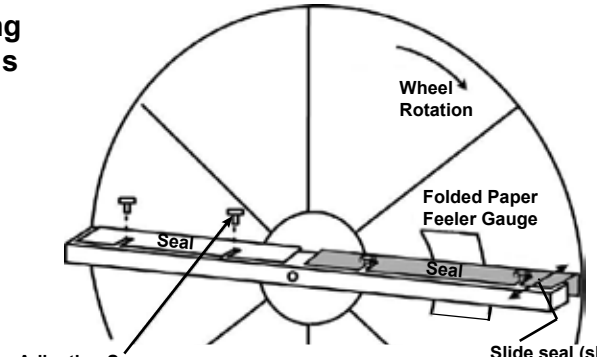
Energy Recovery Wheel (cont'd)

Checking the Wheel Seals - The seals are on the center support that goes across the diameter of the wheel. There are two seals on each side of the wheel with one seal on each side of the hub. Seals are metal strips with insulation on the surface closest to the wheel. The purpose of the seals is to minimize the transfer of air between the counter flowing airstreams.

After any wheel service and during maintenance, check the seal adjustment. Adjusting the seals will require a screwdriver and a piece of paper.

1. If the wheel has not been removed from the cabinet, follow the steps in the illustration on page 7 to remove the cassette.
   Each seal strip has adjustable retaining screws that allow the insulation to move toward or away from the wheel. Refer to the illustration below, and follow the instructions below to adjust the seals.
   a) On one seal, loosen the seal retaining screws just enough to slide the seal strip.
   b) Fold the piece of paper to use as a feeler gauge. Position the folded paper between the wheel surface and the seal. Turn the wheel so that the seal is lined up with a segment spoke.
   c) Adjust the seal toward the wheel surface and slide the feeler gauge (folded paper) along the length of the spoke. When a slight friction is detected on the feeler gauge (folded paper), tighten the screws. Recheck the clearance with the feeler gauge.

Checking the Seals



   d) Repeat the procedure on the other three seals.
2. When the unit is started, start and stop the wheel several times to verify seal adjustment and to confirm that the belt is tracking properly on the wheel rim. The belt should be approximately 1/4" from the outer edge of the rim.

Check Wheel Drive Components

Motor - The motor bearings are pre-lubricated and do not need additional lubrication. Clean any dirt from the air cooling ports in the motor housing.

Pulley - The pulley is secured to the drive motor shaft by a set screw. The set screw is secured with removable Locktite to prevent loosening. Confirm the set screw is secure.

Belt - The belt is of urethane stretch material and is designed to provide constant tension. There is no type of adjustment. Inspect the belt for proper tracking and tension. If a belt needs replaced, it must be replaced with a factory-authorized replacement (see P/N's below). Follow the wheel manufacturer's instructions.

NOTE: A properly tensioned belt will turn the wheel immediately after power is applied with no visible slippage during startup. The belt should track approximately 1/4" from the outer edge of the rim.

If the belt or any other component needs replaced, use only factory-authorized replacement designed for the purpose. Follow instructions provided by the wheel manufacturer.

Wheel Replacement Parts

*See cross-reference of MAPS® Models by Cabinet Size A, B, or C on page 11.

Part	Cabinet A *	Cabinet B *	Cabinet C *
Belt	**262488**	**262489**	**262490**
Wheel Motor	115V, 1050 rpm **- 262494**	200-230/480/3, 800 rpm **- 262491**	200-230/480/3, 1075 rpm **- 262492**
		575V, 1075 rpm - **262493**	575V, 1075 rpm - **262493**
Wheel Segment	(1) **262495**	(1) **262497**	(1) **262499**
	(4) **262496**	(6) **262498**	(6) **262500**

Cross Reference of MAPS® Models and Cabinet Sizes A, B, and C

DX Cooling Models RCB and RDB and DX Cooling with Reheat Models RCC and RDC

Model RCB	Model RCC	Cabinet Size
060		A
078	--	
090		
118	120	
136	--	
160		B
186	--	
200		
190		C
216	--	
298		
410		

Model RDB	Model RDC	Cabinet Size
084		A
102	--	
114		
142	144	
162	--	
184		B
--	196	
210	--	
222	--	
224	--	
236		
--	257	
248		C
262		
272	--	
288	--	
354		
370		
468		
482		

Models RDCB, RDDB, RDCC, and RDDC by Gas Heat Section Size

* RDCB, RDDB, RDCC and RDDC Cabinet B with Size 500 heat section and Cabinet C with Size 1000 heat section have a duct furnace in the curb and are not available with Option ER1.

Model RDCB	Model RDCC	Gas Heat Section Size										
		-100	-150	-200	-250	-300	-400	-500	-600	-700	-800	-1000
060		A	A	A	--	--	--	--	--	--	--	--
078	--	A	A	A	B	B		B*	--	--	--	--
090		A	A	A	B	B		B*	--	--	--	--
118	120	A	A	A	B	B		B*	--	--	--	--
136	--	A	A	A	B	B		B*	--	--	--	--
160		--	--	--	B	B		B*	--	--	--	--
186	--	--	--	--	B	B		B*	--	--	--	--
200		--	--	--	B	B		B*	--	--	--	--
190		--	--	--	--	--	C	C	C	C	--	C**
216	--	--	--	--	--	--	C	C	C	C	--	C**
298		--	--	--	--	--	C	C	C	C	--	C**
410		--	--	--	--	--	C	C	C	C	--	C**

Model RDDB	Model RDDC	Gas Heat Section Size										
		-100	-150	-200	-250	-300	-400	-500	-600	-700	-800	-1000
084		A	A	A	--	--	--	--	--	--	--	--
102	--	A	A	A	B	B	--	--	--	--	--	--
114		A	A	A	B	B	--	--	--	--	--	--
142	144	A	A	A	B	B	--	--	--	--	--	--
162	--	--	A	A	B	B	--	--	--	--	--	--
184		--	--	--	B	B	--	--	--	--	--	--
--	196				B	B						
210	--	--	--	--	B	B	--	--	--	--	--	--
222	--	--	--	--	B	B	--	--	--	--	--	--
224	--	--	--	--	B	B	--	--	--	--	--	--
236		--	--	--	B	B	--	--	--	--	--	--
--	257				B	B						
248		--	--	--	--	--	C	C	C	C	--	C*
262		--	--	--	--	--	C	C	C	C	--	C*
272	--	--	--	--	--	--	C	C	C	C	--	C*
288	--	--	--	--	--	--	C	C	C	C	--	C*
354		--	--	--	--	--	C	C	C	C	--	C*
370		--	--	--	--	--	C	C	C	C	--	C*
468		--	--	--	--	--	C	C	C	C	--	C*
482		--	--	--	--	--	C	C	C	C	--	C*

Models RECB, REDB, RECC, and REDC by Electric Heat Module

Model RECB	Model RECC	Electric Heat Section													
		-10S	-15S	-20S	-24S	-15	-20	-25	-30	-35	-39	-50	-60	-75	-88
060		A	A	A	A	A	A	A	A	A	A	--	--	--	--
078	--	--	A	A	A	A	B	A	A	B	A	B	B	B	--
090		--	A	A	A	A	B	A	A	B	A	B	B	B	B
118	120	--	A	A	A	A	B	A	A	B	A	B	B	B	B
136	--	--	A	A	A	A	B	A	A	B	A	B	B	B	B
160		--	--	--	--	B	B	B	B	B	B	B	B	B	B
186	--	--	--	--	--	B	B	B	B	B	B	B	B	B	B
200		--	--	--	--	--	B	B	B	B	B	B	B	B	B
190		--	--	--	--	--	--	--	--	--	C	C	C	C	C
216	--	--	--	--	--	--	--	--	--	--	C	C	C	C	C
298		--	--	--	--	--	--	--	--	--	C	C	C	C	C
410		--	--	--	--	--	--	--	--	--	C	C	C	C	C

Model REDB	Model REDC	Electric Heat Section													
		-10S	-15S	-20S	-24S	-15	-20	-25	-30	-35	-39	-50	-60	-75	-88
084		A	A	A	A	A	B	A	A	B	A	B	B	B	--
102	--	--	A	A	A	A	B	A	A	B	A	B	B	B	B
114		--	A	A	A	A	B	A	A	B	A	B	B	B	B
142	144	--	A	A	A	A	B	A	A	B	A	B	B	B	B
162	--	--	--	--	--	A	B	A	A	B	A	B	B	B	B
184		--	--	--	--	B	B	B	B	B	B	B	B	B	B
--	196	--	--	--	--	--	B	B	B	B	B	B	B	B	B
210	--	--	--	--	--	--	B	B	B	B	B	B	B	B	B
222	--	--	--	--	--	--	B	B	B	B	B	B	B	B	B
224	--	--	--	--	--	--	B	B	B	B	B	B	B	B	B
236		--	--	--	--	--	B	B	B	B	B	B	B	B	B
--	257	--	--	--	--	--	B	B	B	B	B	B	B	B	B
248		--	--	--	--	--	--	--	--	--	C	C	C	C	C
262		--	--	--	--	--	--	--	--	--	C	C	C	C	C
272	--	--	--	--	--	--	--	--	--	--	C	C	C	C	C
288	--	--	--	--	--	--	--	--	--	--	C	C	C	C	C
354		--	--	--	--	--	--	--	--	--	C	C	C	C	C
370		--	--	--	--	--	--	--	--	--	C	C	C	C	C
468		--	--	--	--	--	--	--	--	--	C	C	C	C	C
482		--	--	--	--	--	--	--	--	--	C	C	C	C	C

Option Codes for Energy Recovery Module Options listed on the Unit Wiring Diagram

Option Code	Description
AR2K	Outside Air w/3-position damper, Return/Exhaust Air w/3-position damper (MAPS® unit), gravity damper on exhaust outlet
AR2L	100% Outside Air - on/off inlet damper; gravity damper on exhaust outlet
BCH5	LON Card
BE6	Return Air Temperature & Humidity Sensors
BE28	Dirty Filter Switch
EFA_	Exhaust Fan Motor HP
EFC4	Building Pressure Control for EFD1
EFC7	Proportional to MAPS® Control for EFD1
EFC9	Adjustable Constant Volume Control for EFD1
EFD1	Exhaust Fan Motor Variable Frequency Drive
EL_	Exhaust Fan Motor Type

Option Code	Description
EM_	Exhaust Fan Drive
EN2	Exhaust Fan Contactor
EN10	Exhaust Fan Starter
ER1A	Energy Recovery Module - MAPS® Cabinet A
ER1B	Energy Recovery Module - MAPS® Cabinet B
ER1C	Energy Recovery Module - MAPS® Cabinet C
SFA_	Supply Fan Motor HP
SFC3	Neutral Pressure Control for SFD1
SFC9	Adjustable Constant Volume Control for SFD1
SFD1	Supply Fan Motor Variable Frequency Drive
SL_	Supply Fan Motor Type
SN2	Supply Fan Contactor
SN10	Supply Fan Starter

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