



O X Y G E N 8

# NOVA

Installation, Operation, and Maintenance

135002-002

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# 1.0 GENERAL INFORMATION

This manual includes important instructions for safe connection of the Energy Recovery Ventilator (ERV). Before connecting the unit, please read carefully and follow the instructions.

The manufacturer reserves the right to make changes, including changes in the technical documentation, without previous notification. Please keep this manual for future reference. Consider this manual a permanent part of the product.

This manual will show the manufacturers' recommended installation method. Please note that local codes and regulations may override these recommendations. The installation must follow local codes and standards.

The National Electric Code (NEC), the National Fire Protection Agency (NFPA), and the Canadian Electrical Code (CEC) must be followed. Installation of this product must be performed by a qualified and accredited professional in conformance with local and national codes, standards and licensing requirements.



**Caution:** This sign indicates a potentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.



**Warning:** This sign indicates a situation that may result in equipment or property damage accidents.

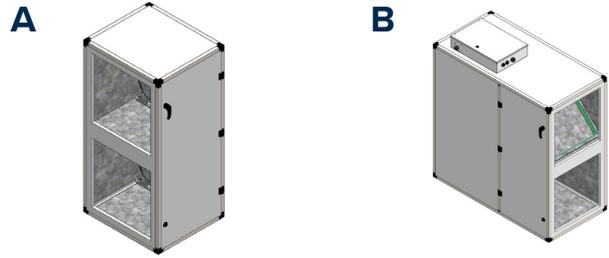


**Danger:** This sign indicates a potentially hazardous situation, which could result in death or serious injury if not avoided.

## 2.0 PRODUCT INFORMATION

### 2.1 Weights

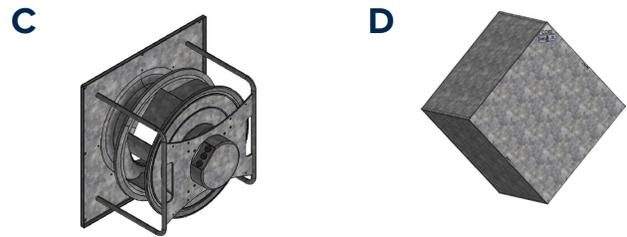
For special indoor unit orders requiring the fan cabinet to be split from the core cabinet, some sample weights are as follows. For these and other model sizes, weights will be provided with the submittal.



Model	Specials Only	
	Fan Section (A) Lbs.	Core Section (B) Lbs.
C20	215	360
C20 - BYPASS	260	470
C24	255	390
C30	325	450

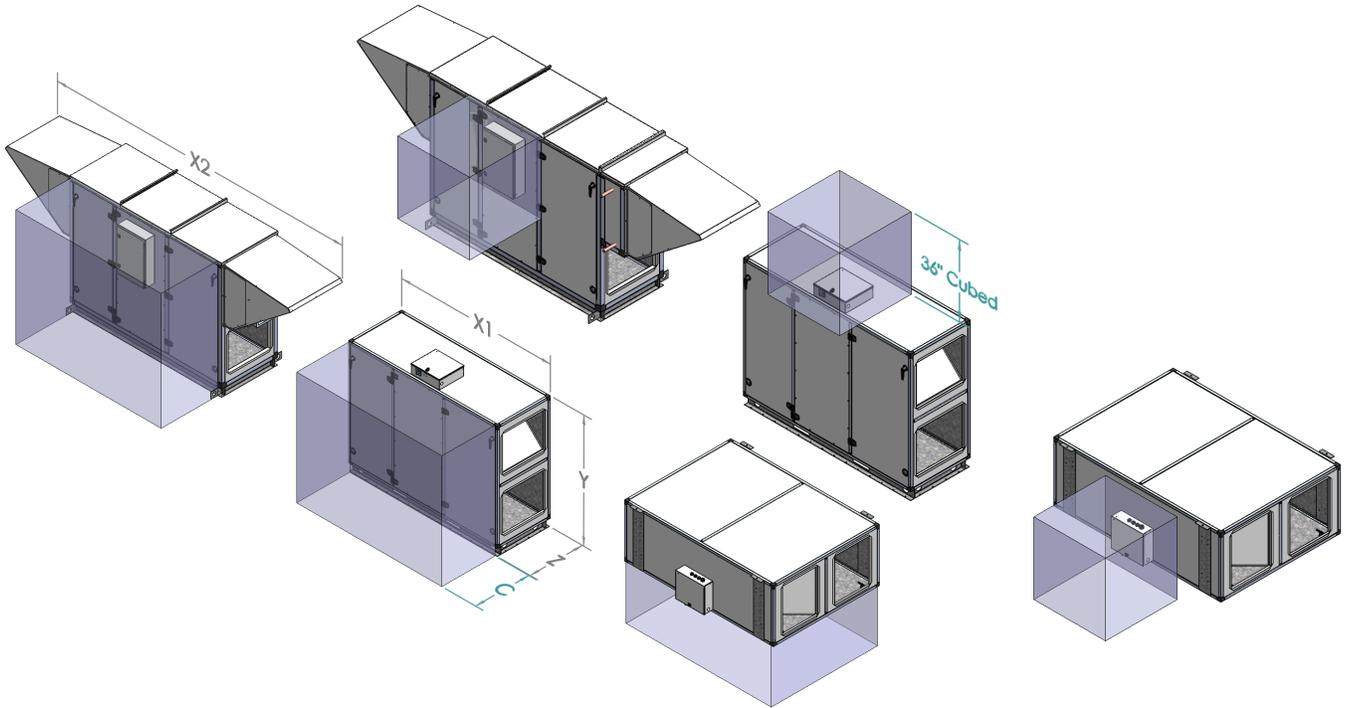
\*Outdoor total weights exclude coils and coil casings

\*\*\*"H" includes horizontal installations with hanging brackets; "V" includes floor-mounted vertical installations with a baseframe.



Model	Fan Section (C) Lbs.	Core Section (D) Lbs.	Indoor Total Weight (H/V) Lbs.	Core Section (B) Lbs.
A16	27 X 2	28	320/330	
A18	27 X 2	28		490
B20	29 X 2	45	425/435	
B22	29 X 2	45		610
C20	38 X 2	72	550/575	
C20 - BYPASS	38 X 2	72	695	
C22	38 X 2	72		770
C22 - BYPASS	38 X 2	72		960
C24	51 X 2	88	630/645	
C26	51 X 2	88		860
C26 - BYPASS	51 X 2	88	880	1100
C30	75 X 2	55 X 2		
C32	75 X 2	55 X 2		1000
C32 - BYPASS	75 X 2	55 X 2	1030	1275
C40	38 X 4	72 X 2	905	1120
C40 - BYPASS	38 X 4	72 X 2	1225	1490
C48	51 X 4	88 X 2	1055	1300
C48 - BYPASS	51 X 4	88 X 2	1395	1690
C58	38 X 6	72 X 3	1265	1530
C70	51 X 6	88 X 3	1495	1790

## 2.2 Dimensions



	<b>X1</b> Indoor Width	<b>X2</b> Outdoor Width	<b>Y</b> Height	<b>Z</b> Depth	<b>C</b> Door Clearance
<b>A16</b>	60		40	16	21
<b>A18</b>	62	109	42	18	22
<b>B20</b>	72		48	20	25
<b>B22</b>	74	136	50	22	26
<b>C20</b>	84		60	20	29
<b>C20 - BYPASS</b>	84		60	30	29
<b>C22</b>	86	162	62	22	30
<b>C22 - BYPASS</b>	86		62	32	30
<b>C24</b>	84		60	24	29
<b>C26</b>	86	162	62	26	30
<b>C26 - BYPASS</b>	86		62	40	30
<b>C30</b>	84		60	30	29
<b>C32</b>	86	162	62	32	30
<b>C32 - BYPASS</b>	86	162	62	48	30
<b>C40</b>	86	162	62	40	30
<b>C40 - BYPASS</b>	86	162	62	58	30
<b>C48</b>	86	162	62	48	30
<b>C48 - BYPASS</b>	86	162	62	70	30
<b>C58</b>	86	162	62	58	30
<b>C70</b>	86	162	62	70	30

\* All dimensions are in inches

\*\* If a unit has a baserail, add 4 inches to Y (Overall Height)

## 2.3 Electrical Information

Model	Max Airflow	Nom. V.	Phase	Motor kW	SA Fan Qty.	SA Fan FLA	Tsnfmr Fuse Size	Total FLA	MCA	MOP/Rcmd Fuse
<b>A16/A18</b>	775	240 / 208	1	0.5	1	2.50	3/10	5.29	5.91	15A
<b>B20/B22</b>	1300	240 / 208	1	0.78	1	3.90	3/10	8.09	9.06	15A
<b>B20/B22</b>	1300	208	3	2.00	1	6.00	4/10	12.33	13.83	15A
<b>B20/B22</b>	1300	460	3	2.50	1	4.00	3/16	8.14	9.14	15A
<b>C20/C22</b>	2200	208	3	2.00	1	6.00	4/10	12.33	13.83	15A
<b>C20/C22</b>	2200	460	3	2.50	1	4.00	3/16	8.14	9.14	15A
<b>C24/C26</b>	2700	208	3	2.7	1	8.60	4/10	17.53	19.68	25A
<b>C24/C26</b>	2700	460	3	3.7	1	5.80	3/16	11.74	13.19	15A
<b>C30/C32</b>	3500	208	3	3	1	9.00	4/10	18.33	20.58	25A
<b>C30/C32</b>	3500	460	3	3.3	1	5.40	3/16	10.94	12.29	15A
<b>C40</b>	4400	208	3	2.00	2	6.00	4/10	24.33	27.33	35A
<b>C40</b>	4400	460	3	2.50	2	4.00	3/16	16.14	18.14	25A
<b>C48</b>	5400	208	3	2.7	2	8.60	4/10	34.73	39.03	50A
<b>C48</b>	5400	460	3	3.7	2	5.80	3/16	23.34	26.24	35A
<b>C58</b>	6600	208	3	2.00	3	6.00	4/10	36.33	40.83	50A
<b>C58</b>	6600	460	3	2.50	3	4.00	3/16	24.14	27.14	35A
<b>C70</b>	8100	208	3	2.7	3	8.60	4/10	51.93	58.38	80A
<b>C70</b>	8100	460	3	3.7	3	5.80	3/16	34.94	39.29	50A

## 2.4 Filters

After dirty filter alarm has been initiated, check filter for obstructions. If there are no obstructions than the filter high limit pressure has been reach and the filter is considered to have reached the end of life and needs to be replaced.

### Filter Sizing

Nova Unit Model(s)	Width (in)	Height (in)	QTY OA (MERV 13)	QTY RA (MERV 8)	Face Area Velocity
A16, A18	13.500	21.375	1	1	387
B20, B22	17.500	26.625	1	1	402
C20, C22	17.375	17.375	2	2	525
C20B, C22B	17 3/8	27 3/8	2	2	333
C24, C26	17.375	21.375	2	2	523
C26B	17.375	17.375	4	4	322
C30, C32	17.375	27.375	2	2	530
C32B	17.375	21.375	4	4	339
C40	17.375	17.375	4	4	525
C40B	17.375	17.375	6	6	350
C48	17.375	21.375	4	4	523
C48B	17.375	21.375	6	6	349
C58	17.375	17.375	6	6	525
C70	17.375	21.375	6	6	523
<b>Specials</b>					
C58B	17.375	17.375	6	6	525
C70B	17.375	21.375	6	6	523
C90	17.375	21.375	10	10	419
C90B	17.375	21.375	10	10	419

All Nova filters are 2" thickness.

## 2.5 Fuse Replacement

The table on the right summarizes the low voltage transformer protection and current based on unit voltage and phases.

24V Transformer Ratings		
Fan power [V/Ph]	Fuse Size	FLA
208/1	3/4	0.29
240/1	3/4	0.29
208/3	3/4	0.33
460/3	3/10	0.14

## 3.0 INSTALLATION

### 3.1 Unwrapping the Product

When removing the shrink wrap, be cautious with knives and sharp tools to prevent scratching the paint. The HMI, temperature + humidity sensor, external duct pressure sensor and all other optional field components will be found in the electrical box or fan compartment. They are secured there for transport and to easily find them on the job site. Pallets are two-way entry; therefore, fork extenders or 8-foot forks must be used when moving a palletized unit.

Units are palletized and protected by a skeletal crate of heat-treated wood. These crates are constructed using nails; therefore, to unpack the unit, carefully use a crowbar or reciprocating saw to detach each panel. Additional bracing used to prevent the unit from sliding on the pallet must also be removed.

Once external packaging is removed, carefully remove the stretch wrap and cardboard covering the unit. It is better to use scissors rather than a knife to avoid scratching the unit.

External Pipes are protected by wood boxes that are secured with Poly Strapping and must also be removed. If a unit has a baserail, it will be screwed down directly to the pallet.



Packaged Unit



External Pipes Protected by Wood Boxes

## 3.2 Split-unit Assembly (Specials Only)

On the C-Series cabinets, by special request only for a premium, removing the fan section from the core section is possible for ease of installation and maneuverability in tight locations.

Use the following steps to disassemble the fan section from the core section:

**1.** Before bolting the split modules together, locate the matching quick connects and pair them up, observing the condition to ensure they haven't been damaged in transit.

**2.** Connect all quick connects and hand-tighten the threaded locking sheath fully on each.

**3.** Insert bolts into angle brackets for each corner and top shelf and fully tighten into hex nut.

**4.** Unravel the coiled pressure tube in the upper half of the Heat Exchanger module.

**5.** Route the tube through the open grommet on fan wall and zip ties on inner fan cabinet walls up to the nozzle port on the fan bell mouth.

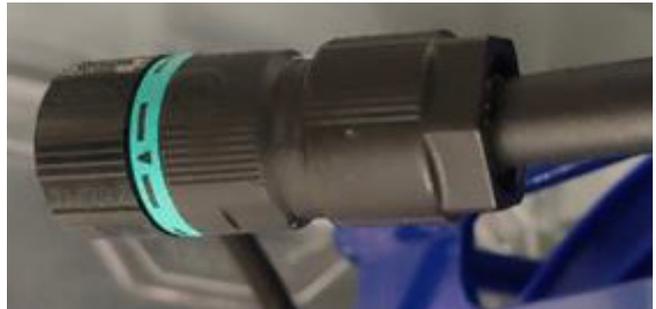
**6.** Connect press tube onto the nozzle port, ensuring a snug fit and that the tube is free from the fan blades.

**7.** Tighten zip ties to secure tube.  
**DO NOT COMPRESS TUBING**

**8.** Repeat steps 2-5 for the tubing in the bottom half of the unit.



Steps 1 & 2: Communications quick connect



Steps 1 & 2: Power quick connect



Steps 3, 4, 5, 7



Step 6

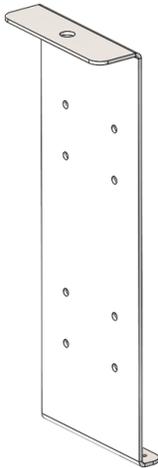
### 3.3 Ceiling Hung Installation

The hanging brackets are supplied loose with the necessary hardware to install them. They are not shipped assembled due to the variability of installation access on job sites.

Each hanging bracket is composed of two pieces: an inner component and an outer component. The units are designed to have four sets of brackets to support the unit.



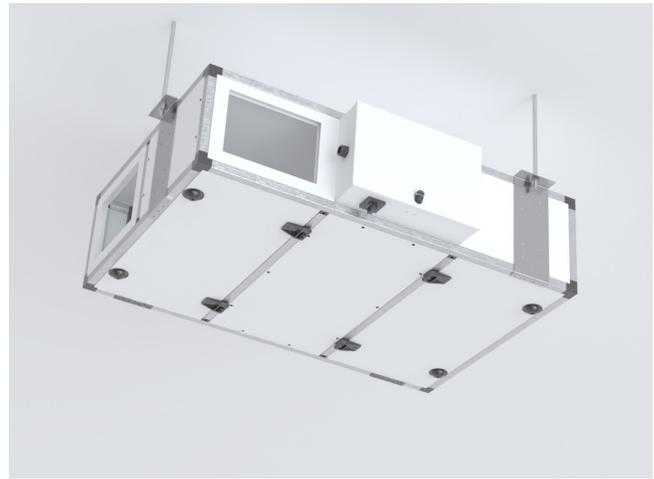
**Caution:** The unit must be installed with both the inner and outer bracket. Each unit must also have all four brackets installed to meet these guidelines.



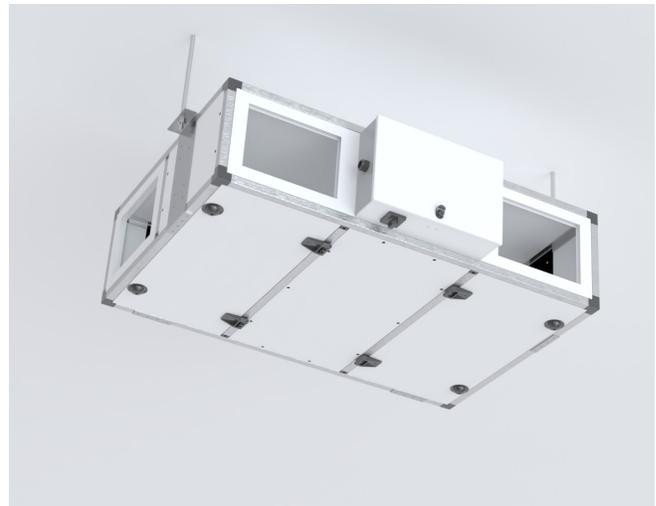
Outer Bracket



Inner Bracket



Unit with 1A Opening



Unit with 1A and 3A Openings

**Note:** Depending on the ducted opening location selected during the design phase, the location of the brackets will vary. Please consult your submittal drawings for specific locations.

## Assembly of Hanging Brackets

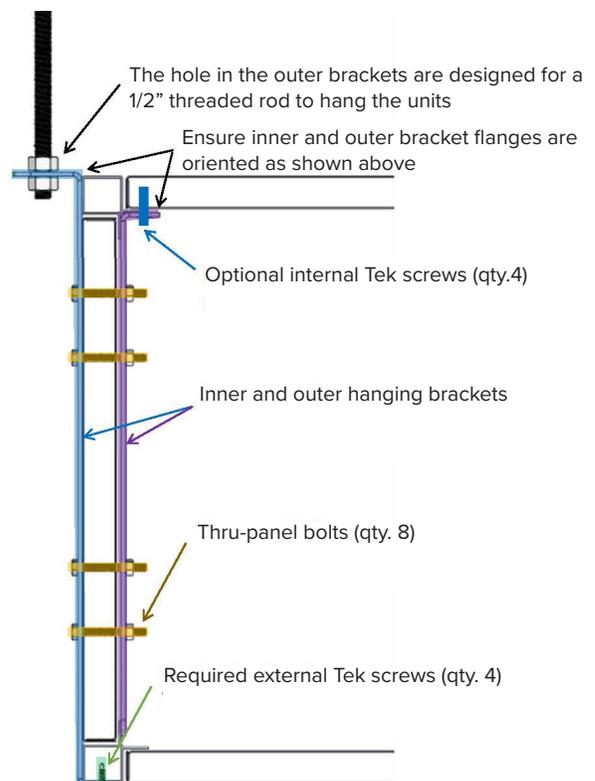
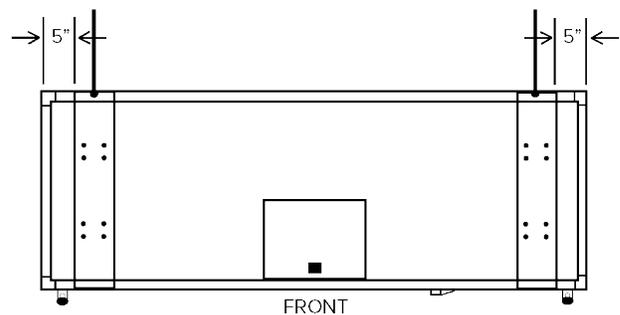
1. Locate the position of the brackets on the outside of the unit.
2. Mark the 8 hole locations and drill to allow for the 1/4" bolt.
3. Assemble the hanging bracket by aligning the 8 holes of the outer bracket through the unit and with the inner bracket.
4. Install the 8 bolts.
5. Install 4 tek-screws in the flange portion of the inner bracket and secure it to the top casing of the unit.
6. Install 4 tek-screws in the lower flange of the outer bracket to secure it to the bottom frame of the unit.
7. Repeat steps 1 through 6 for the remainder of the brackets.
8. The hole in the outer brackets are designed for a 1/2" threaded rod to hang the units.



**Caution:** Do not over tighten and crush the panel.

**Note:** 32 x 1/4" bolts, 32 x 1/4" lock nut, 32 x 1/4" washers and 64 x 1/4" washers have been provided with the unit.

**Note:** The inner component should be oriented so that its flange is pointing to the ceiling, and the outer bracket has the single hole pointing to the ceiling.



### 3.4 Vertical Installation

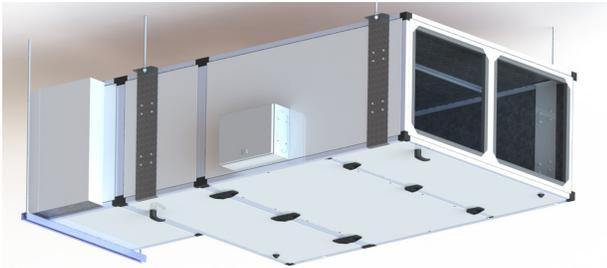
A floor mounted Nova unit will ship with an installed base rail. These units can be installed directly on the floor or a housekeeping pad.



Left: Vertical Unit with Base Rails

### 3.5 Installation of Accessories

#### 3.5.1 Horizontal Coupled Accessories



#### 3.5.2 Vertical Coupled Accessories

Base mounted accessories that are connected to a duct connection in the lower position of the unit will come with matching base rails. Accessories that are to be connected to a duct connection in the upper position will need to be supported externally. This can also be done with Unistrut or similar.

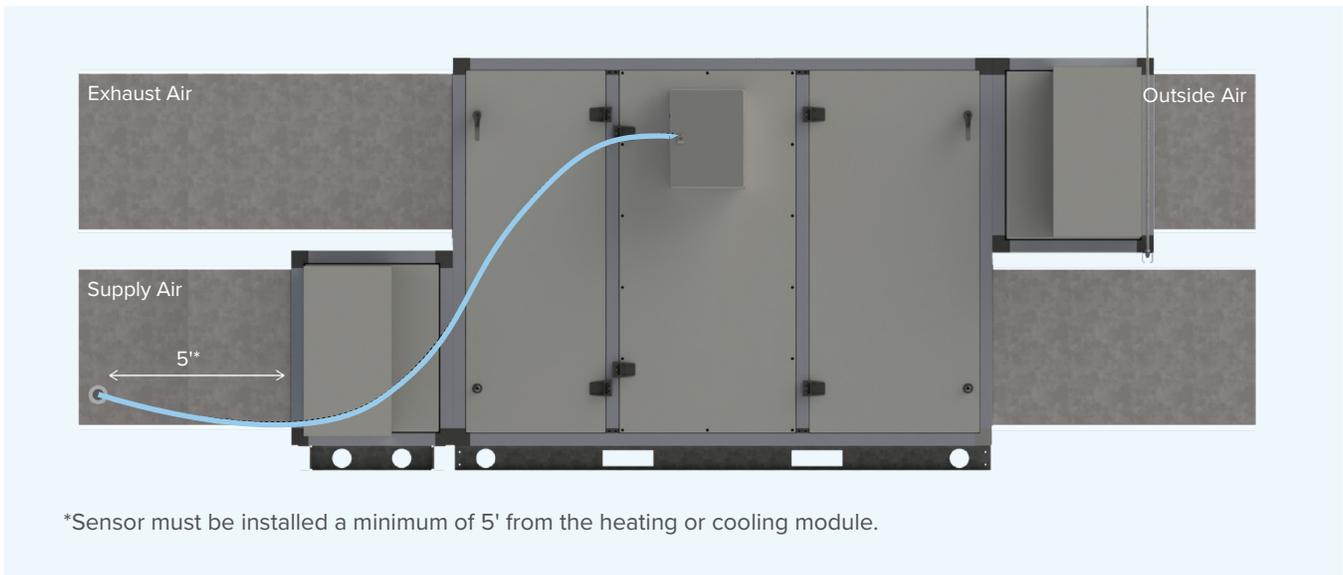
#### 3.5.3 Decoupled Accessories

Ceiling hung decoupled accessories will not come with hanging brackets and can be supported in the ceiling with Unistrut and threaded rod or equivalent. Accessory modules can come with base rails for floor mounting.



\*Special configuration

## 3.6 External Sensors



### 3.6.1 Combination Temperature + Humidity Sensor

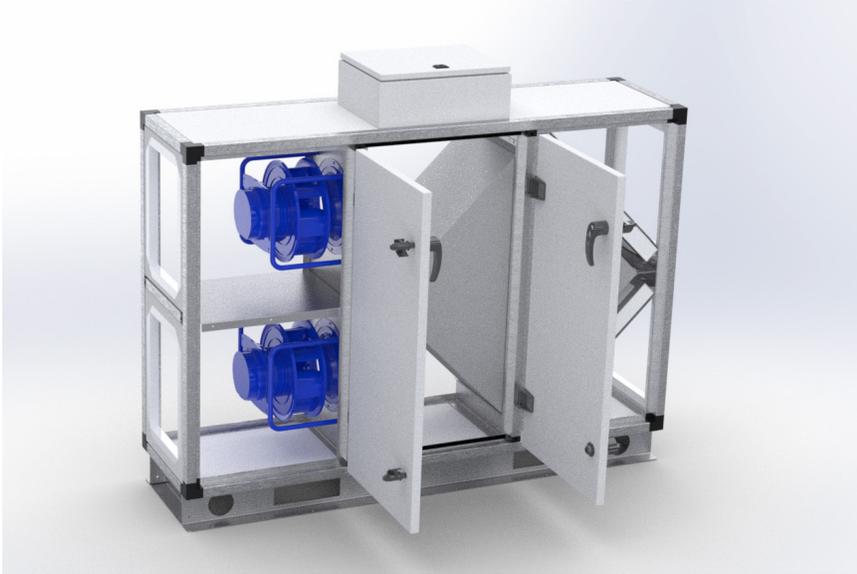
Temperature + Humidity sensors (Tasseron THHDEY2D-C) are also used when only temperature sensing is required. Temperature + Humidity sensors may be installed in the ventilation duct. The supply voltage is provided via the Modbus RS485 connection. The sensor has a pre-fitted cable and may be extended up to 50 m using a Category 3 extension cable. The sensor is adjustable and must be mounted according to manufacturer instructions and the probe must be aligned parallel to the air flow in the center of the duct. .



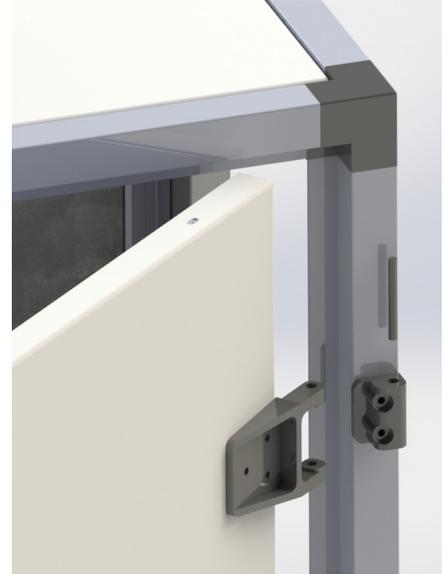
**Note:** Even when only Temperature sensing is required, the Tasseron THHDEY2D-C (T+H) sensor is used.

## 4.0 ACCESSING THE UNIT

### 4.1 Access Requirements



Unit with doors open



Door with removed hinge pin

#### Top of Unit

The National Electrical Code (NEC) stipulates that there must be a minimum of 36 inches of clearance from an electrical connection. The installing contractor must ensure there is at least 36 inches of clearance perpendicular to the top of the electrical box.

#### Front of Unit

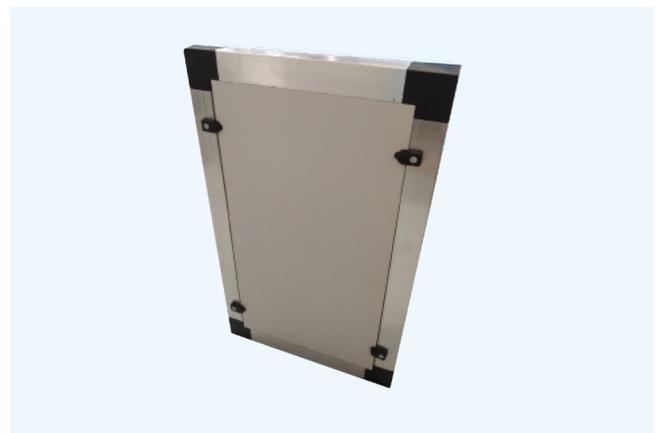
In order to open the doors of the unit, the installing contractor must leave 48 inches perpendicular to the doors. If there is no intention to open the doors fully, they can be removed for servicing, by removing the hinge pins and lifting off the doors.

### 4.2 Removable Panel Option

As a special option, hinged access doors can be replaced with panel blocks.

When removing a panel, loosen the bolts on each block so they can be rotated out of the way.

When replacing the panel, rotate the blocks back into place and tighten the bolts once again to ensure a good seal.



## 5.0 LIFTING REQUIREMENTS

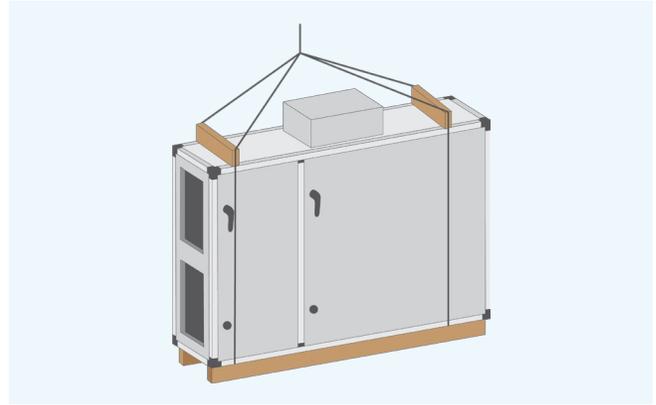
### Horizontally Installed Units

Once the mounting brackets have been installed, the unit can be lifted by the brackets.

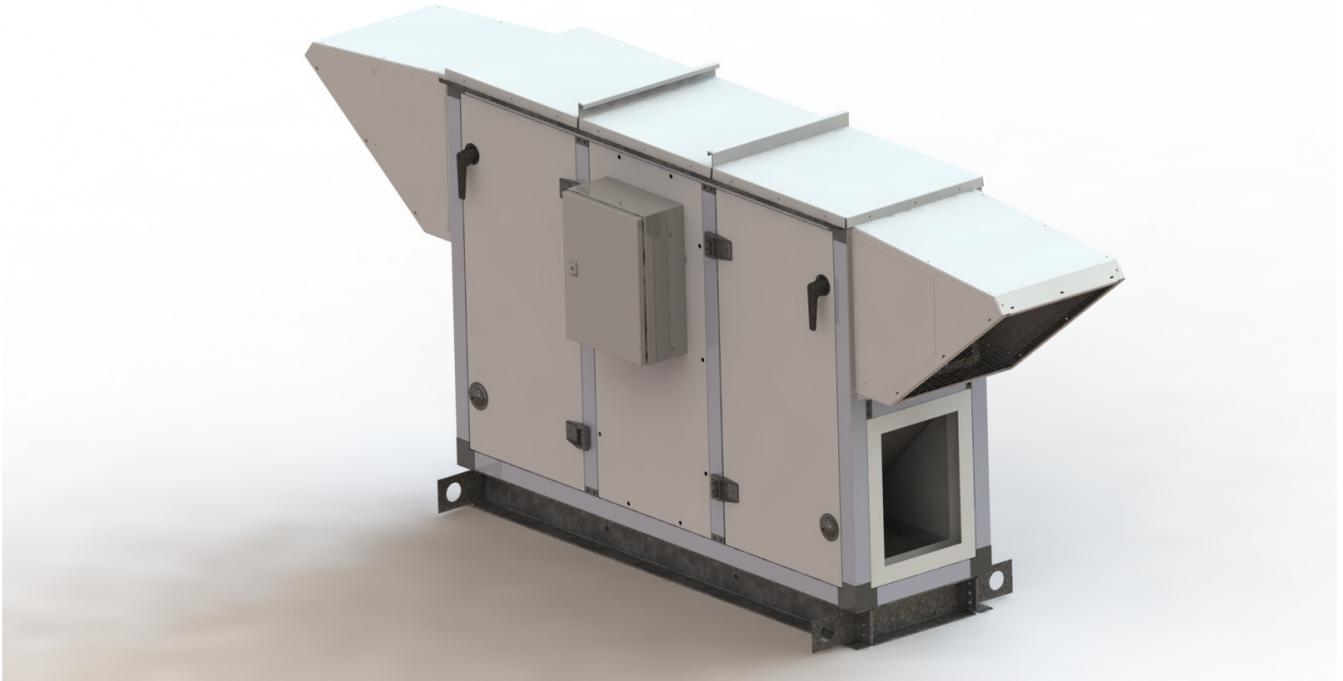
### Vertically Installed Units

A vertically installed unit that is delivered with base rails and lifting lugs can be lifted from the base rail with the use of a spreader bar to prevent damage to the unit.

Right: Unit with Spreader Bars



## 6.0 NOVA OUTDOOR



### 6.1 General Notes

Motorized shutoff dampers come factory-installed to the unit. For special requests to have the dampers shipped loose, dampers shall be face-mounted over the labeled exhaust air and outdoor air openings. Actuators are accessed through removable access panels built into the hoods.

## 6.2 Hood Installation

1. Hoods should come prepared with continuous 1" W x 1/8" T foam gaskets along the length of the mounting flanges. If not, apply it to the hood prior to installation.
2. Align the top hood flange under the roof flange, as shown.
3. Fasten the hood centered over the damper onto the outside of the unit using the roofing screws provided. Screw into the roof flange and top hood flange together as shown below. All precut holes in the hood should be screwed with the provided roofing screws.
4. Apply a thick bead of outdoor-rated caulking around the perimeter flanges of the installed hood to provide a continuous seal. Repeat the same steps for the second damper and hood combination.
5. Repeat the same steps for the second damper and hood combination.
6. Shutoff dampers can be accessed through a removable panel on the hood.

**Note:** If optional shipped-loose hoods for on-site assembly are required, see the steps below. The same steps would be followed for hoods attached to preheater casing modules.



Hood Installation



Sealing of Hoods

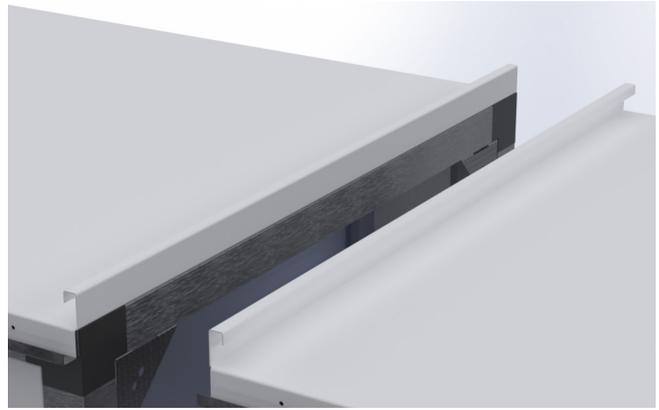


Shutoff Damper Access

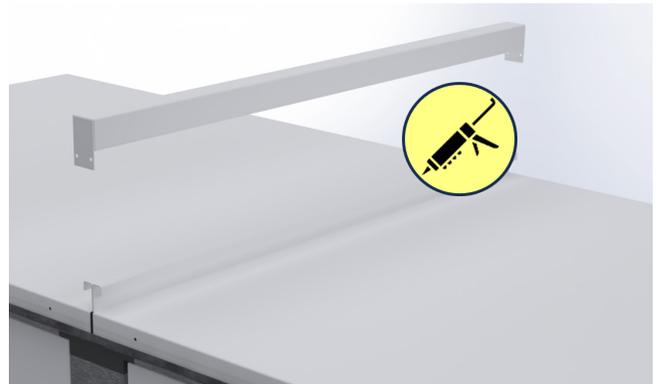
## 6.2.1 Installing Cap Between Split Modules

For pre-heaters and decoupled combo coils in outdoor applications, the following instructions shall be followed for sealing the split connection.

1. Prior to installing the split roof cap, bolt the split modules together by referring to the general Nova Installation Manual.
2. Once connected, the roof cap can be placed over the seam, and screwed into the front and back pre-cut holes using the roofing screws provided.



Sealing of roofs



## 6.3 Preheater Installation

Hydronic and electric preheat coils are mounted to the Outdoor Air connection on Nova outdoor units as a supported cantilever depicted below. One single preheat casing consists of a shutoff damper and filter upstream of the heating coil. Filters are accessible from the front access door, and the electric coil control boxes are typically mounted on the rear of the casing, opposite the access door.

**Note:** The cantilevered electric preheater design may not include an access door as depicted to the right, and the heater control panel may be on the front instead of the back of the unit.

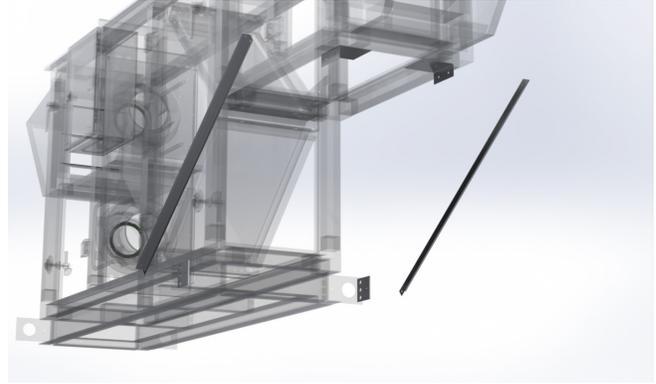


Cantilever supports not included on smaller units or Hot Water Preheat Coils.

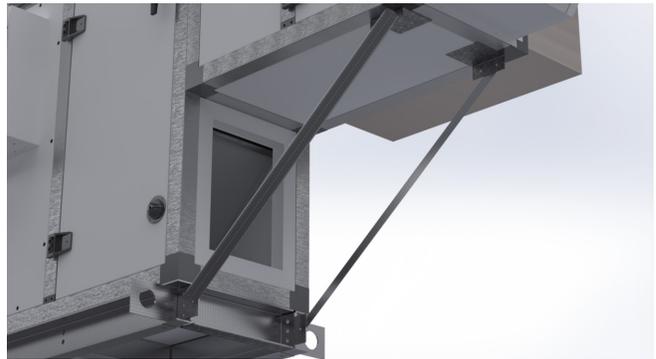
### 6.3.1 Preheater Roof Installation: Factory-Installed Roof

The following steps shall be adhered to when mounting an outdoor unit preheater with factory-installed roofs when the preheater is shipped separately:

1. Assemble the preheater per coupled accessory installation procedure. Lift the preheater into position from below as per the following images. Refer to Coupled Coil installation instructions for bolted connections using the corner angle brackets.
2. Support the coil by bolting the pre-heat coil into position at the corner brackets and assemble the cantilever support beams, if provided, as depicted below.
3. Install the split seam cap as previously described.



Overall / exploded views of cantilever support assembly



## 6.4 Decoupled Accessory Installation

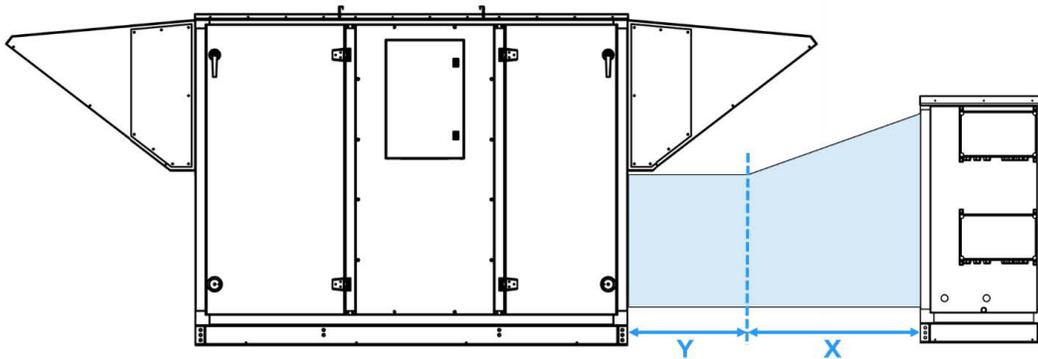
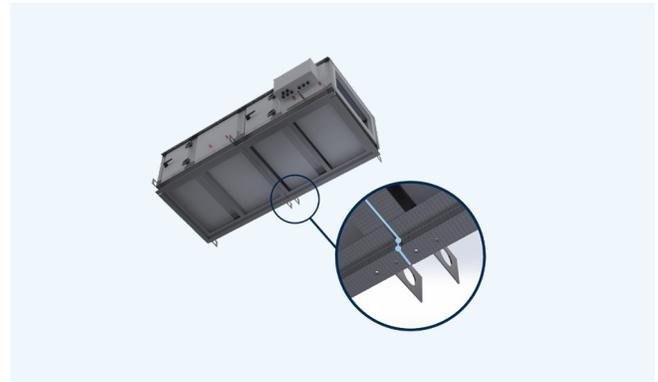
If optional decoupled outdoor accessories are shipped in multiple pieces, such as is common for Hot Gas Reheat applications, bolt the two modules together with the provided hardware at each of the four corner brackets pairs, and install the split module seam cap as previously described.

After placing the unit on top of the gasket-sealed surface of the roof curb, seal the baseframe seam with silicone from the outside to create a sealed environment within the roof curb.

For outdoor installations involving an outdoor-mounted heating and/or cooling module in the supply air stream, a field-installed duct transition is required. Design and installation of the duct transition is not provided by the manufacturer. A minimum separation of 6' is recommended from the supply fan cabinet to the coil module as depicted in the figure.



Split decoupled outdoor accessory



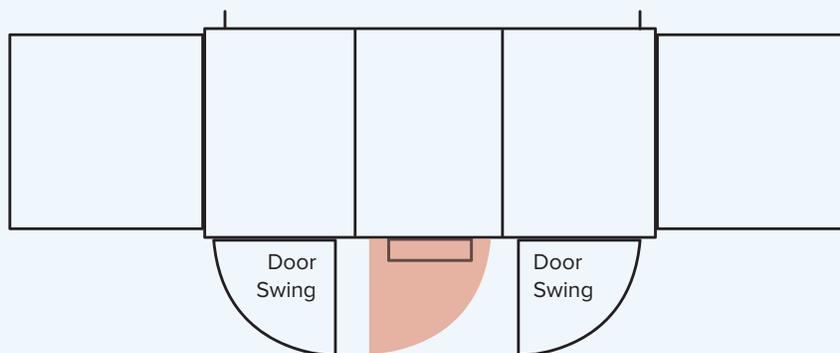
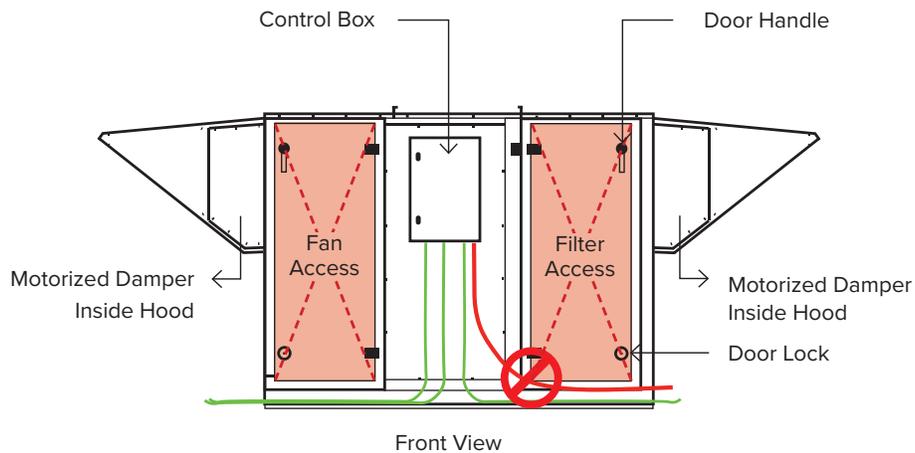
Model	Coil Opening		ODU Opening		Transition		Rec. Spacing	
	H (in)	W (in)	H (in)	W (in)	$\Delta H/2$	$\Delta W/2$	Y (in)	X (in)
A18	14	28	14	10	0	9	0	66
B22	18	32	18	14	0	9	0	66
C22	20	44	20	14	0	15	0	114
C26	22	48	20	18	1	15	0	114
C32	24	54	20	24	2	15	6	114
C40	26	56	20	32	3	12	6	90
C48	30	58	20	40	5	9	12	66
C58	34	62	20	50	7	6	18	54
C70	38	68	20	62	9	3	18	66

15° Total duct divergence angle recommended for minimum spacing.

## 6.5 Outdoor Unit Control Panel Field Connections

Field connections to the control panel must not obstruct the door swing of the Filter Access or Fan Access. It is recommended that electrical connections are made through the bottom of the panel. Flexible conduit must be used to allow for access to the heat exchanger for low-frequency maintenance. Enough slack must be provided to flexible electrical connections for heat exchanger access and to not obstruct the Filter Access or Fan Access, as depicted below. The middle panel is hinged to allow for access to the heat exchanger, as shown below. Fasteners around the perimeter of this panel must be unscrewed to allow access.

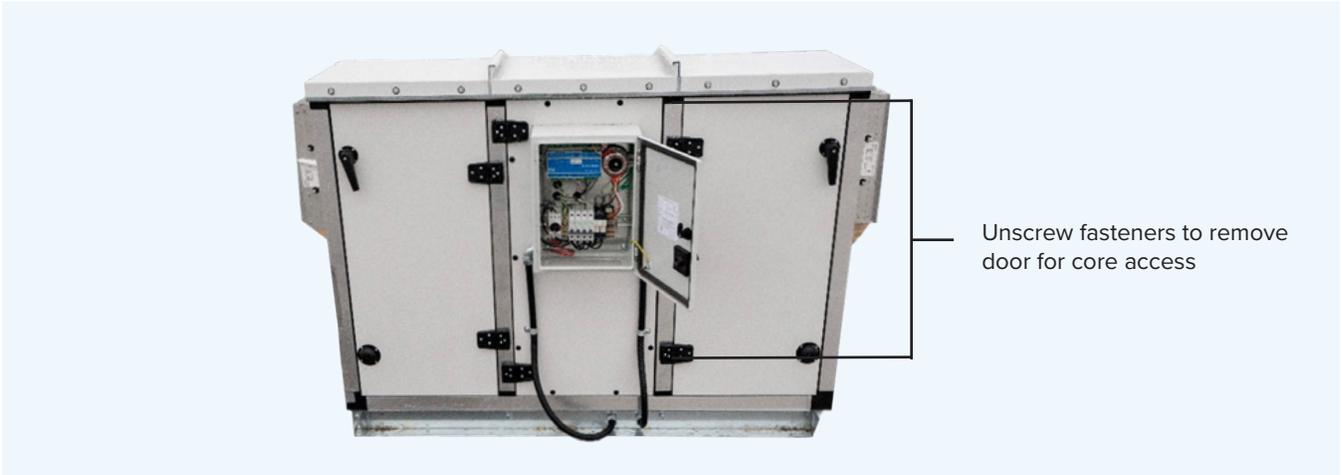
**It is recommended to disconnect the unit power prior to accessing the heat exchanger.**



The following are examples of outdoor unit installations:



Nova Outdoor with pre-heater during commissioning process. The final assembly will not include any wiring outside conduit.



Nova Outdoor unit prior to installation of hoods. More slack must be provided in the flexible conduit than what is shown, to hinge the middle panel to access the heat exchanger.

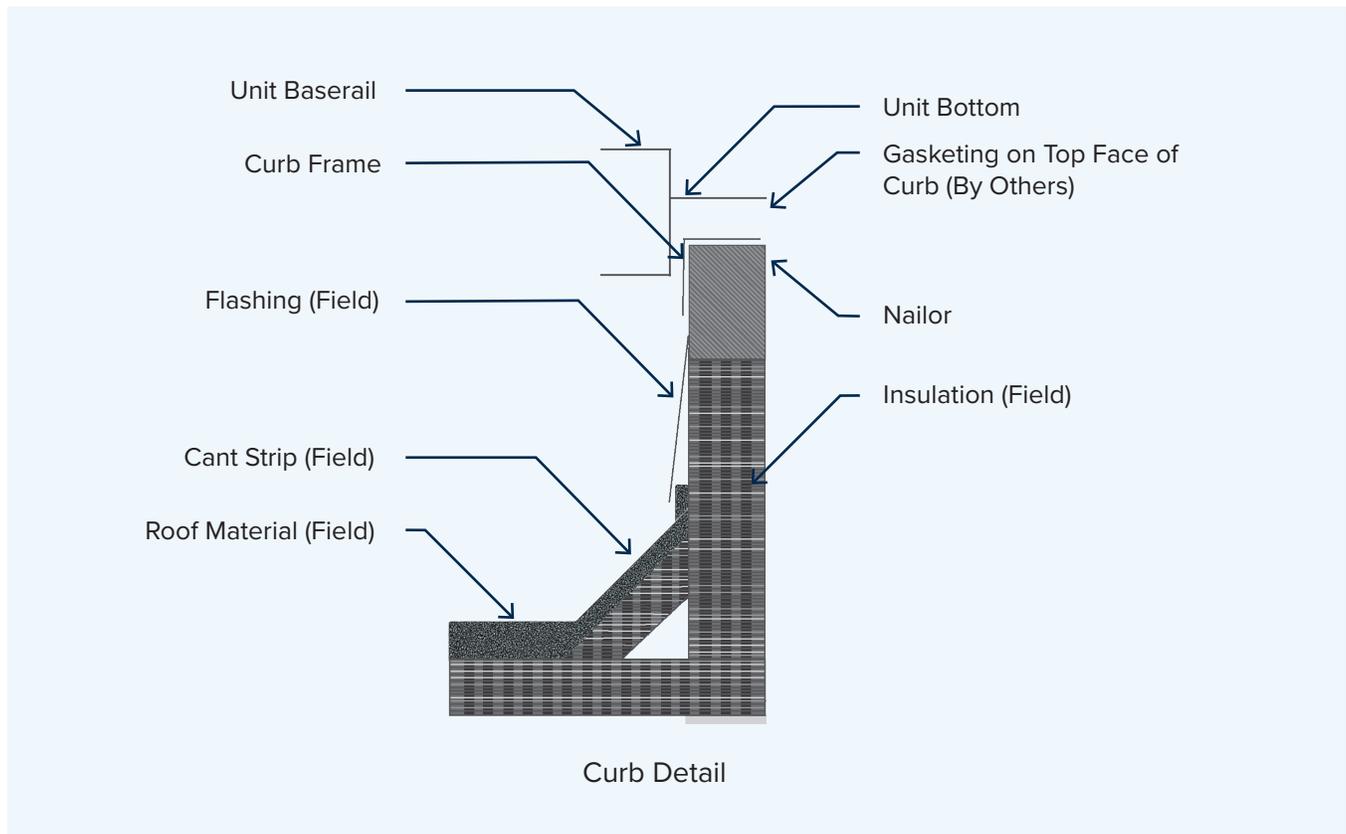
Cleaning of the heat exchanger(s) may be required depending on the maintenance of the filters and temperature and humidity conditions. It is recommended to inspect the heat exchanger(s) yearly. If cleaning is required, blowing low-pressure air and vacuuming is recommended; if additional cleaning is required, the heat exchanger(s) can be removed by sliding them out the front of the unit. Please refer to the cleaning procedure outlined in the O&M manual.

## 6.6 Outdoor Unit with Down Discharge On Roof Curb Installation

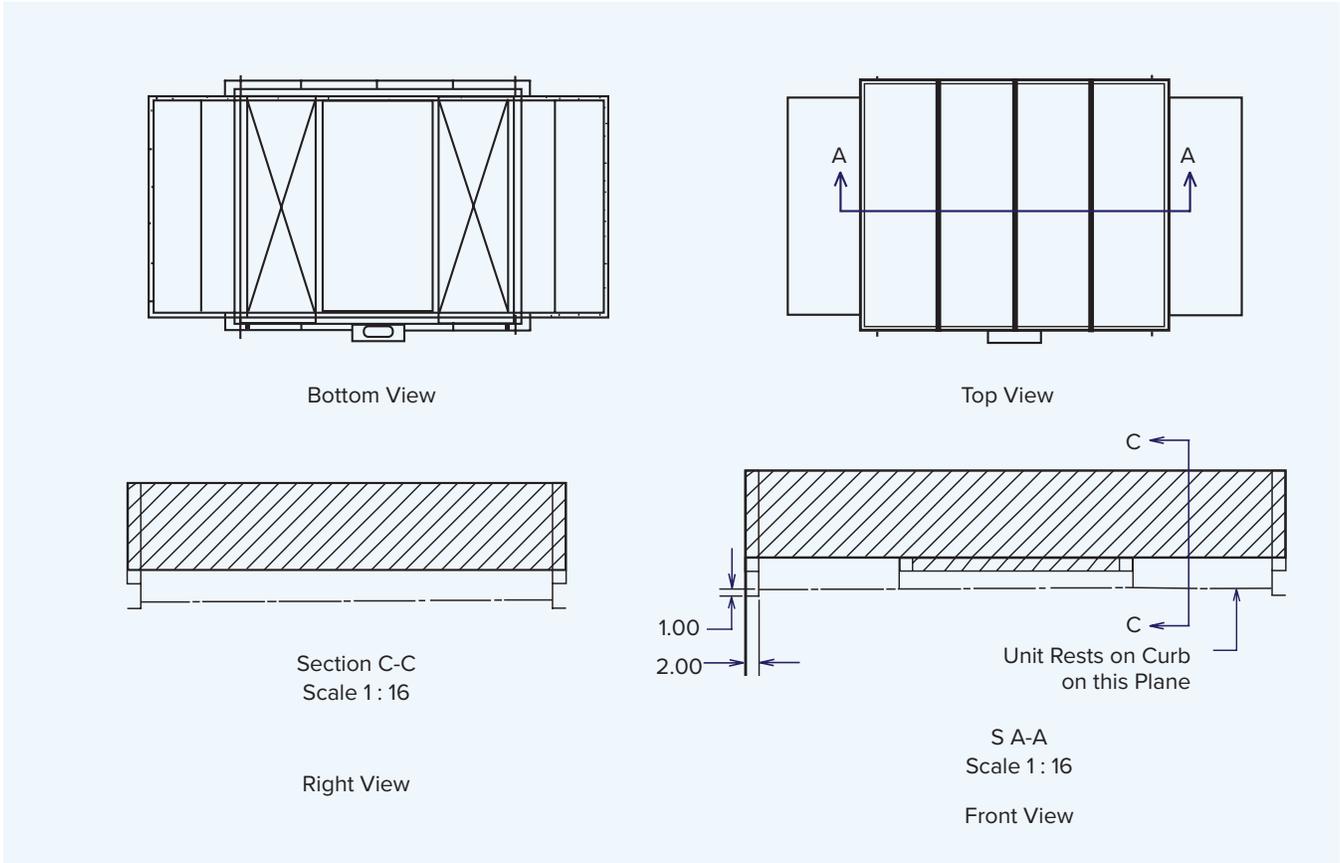
The Nova unit, complete with base frame (or baserail), is provided by Oxygen8. Curb engineering and construction, including gasketing (optional) between the roof curb and unit baserail, is provided by others. CDI Curbs (Crystal Distributions Inc.) provides Nova models in their selection software. It is recommended to select tie-down clips for a secure connection to the curb, and for A18-C32, it is strongly advised as they are tall and narrow. Visit their website for a quote: <https://www.cdicurbs.com>

CDI also has engineered seismic curbs at an additional fee: <https://www.cdicurbs.com/conforming>

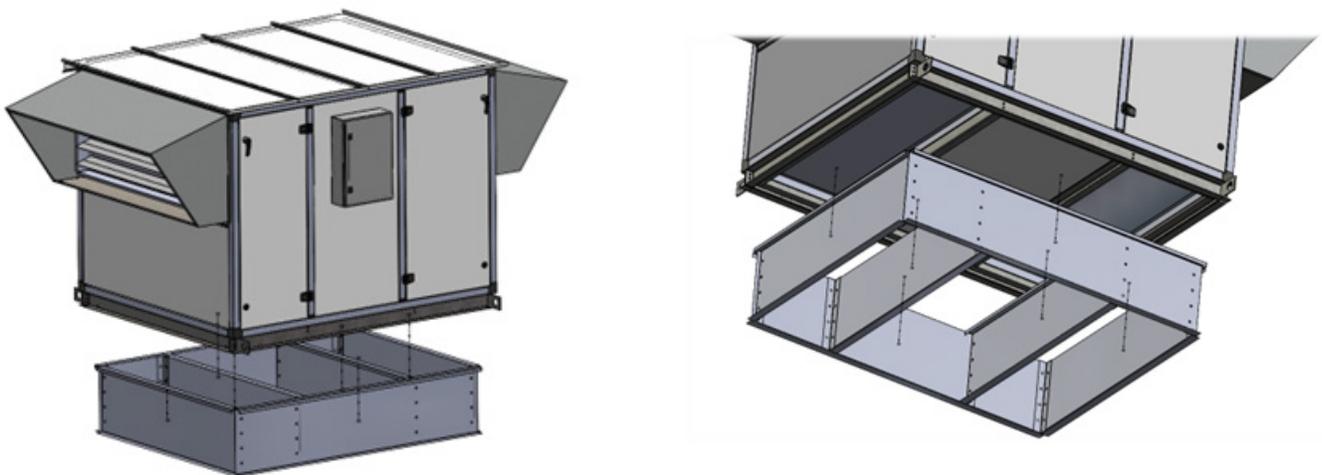
The detail below depicts example details of how a roof curb assembly would interface with the “Unit Baserail”. For curb installation, refer to the specific curb manufacturer installation manual.



For reference, the following images show details of the unit's baserail and where the roof curb aligns with the unit.



Referring to the following images, the unit is lowered onto a layer of gasketing on the top surface of the roof curb, creating three separate sealed channels where the outer two are active Supply Air and Return Air channels.



## 6.7 Electrical Control Box Connection Guides



**Note:** Flex conduit provided is not plenum rated.

### 1. Verification of Unit Compatibility

Prior to installation, ensure that the information on the unit's nameplate matches the power supply specifications. In cases where single-point power wiring connections are specified, the power source for the external control box shall originate from the electrical heater. Make all necessary connection terminations to the primary terminal block. Detailed wiring diagrams, specific to the unit, can be found in this manual, illustrating both factory and field wiring configurations.

### 2. Overcurrent and Short Circuit Protection

All units require the provision of field-supplied electrical overcurrent and short circuit protection. Ensure that the selected protective device does not exceed the Maximum Overcurrent Protection (MOP) specified on the unit's nameplate. Local electrical codes may also mandate the presence of a disconnect switch within visible range of the unit. However, it is advisable not to install field-supplied overcurrent protection or disconnect switches on the unit itself.

### 3. External Control Panel

In cases where an external control box is utilized, properly route the conduit away from potential hazards, sharp edges, or occupied areas, and ensure it is securely fastened at intervals not exceeding 3 feet unless otherwise specified by local codes and standards. Use the appropriate hardware for the conduit diameter and appropriate fasteners for anchoring into the wall material.

### 4. Compliance with Electrical Codes

It is imperative to adhere to the access clearance, mounting height, and other installation requirements stipulated by the National Electrical Code (NEC) and any applicable local codes and standards for safety and ease of maintenance.

### 5. Flex Conduit

The unit is equipped with the necessary length of flexible conduit for connecting the external control box to the unit. It is crucial not to modify or extend this conduit.



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