

GRW

Precision Environmental Control Unit

MANUAL – INSTALLATION

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NOTE: This document is customer property and must be retained by the unit's owner for use by maintenance personnel.



WARNING ▾

Fire or Explosion Hazard

Failure to follow safety warning exactly could result in serious injury, death or property damage.

Be sure to read and understand the installation, operation and service instructions in the manual.

Improper installation, adjustment alteration, service or maintenance can cause serious injury, death or property damage.

MANUFACTURED BY ▾

SolutionAir Group

404 Egesz Street
Winnipeg, MB R2R 1X5

Product Overview

Description

The GRW unit is a precision air conditioning and dehumidifying system specifically designed for the indoor horticultural environment. Each unit is precisely sized for the specific application to energy efficiently provide precision temperature and control over a wide range of space and plant loads over the entire year.

SolutionAir is pleased that you have put your faith in the GRW and we look forward to it providing years of trouble free performance.

General Safety Information

This manual provides information on installation, start-up and maintenance for an indoor horticultural unit. Improper installation can lead to unsatisfactory operation or dangerous situations. This unit should only be installed and maintained by qualified personnel.

Qualified personnel should have a clear understanding of the contents of this manual prior to installation. Improper installation may lead to electric shock, possible injury from contact with moving parts and/or possible burns from contact with heating components. Additional safety concerns can arise from unit location such as a roof or inclement weather (outdoor installations). Additional safety precautions may be required.

Installer shall follow this manual and project submittals. If these instructions conflict with any applicable national or local code requirements such as, but not limited to: the National Electrical Code (NEC); the Canadian Electrical Code (CEC) in Canada; or, local building codes, those codes shall supersede the factory directions.



WARNING ▾

Fire or Explosion Hazard

The manufacturer's warranty does not cover any damage or defect caused by modifications to the unit including unauthorized attachments of other components. Such activity may lead to unsatisfactory performance and may endanger life and property.

Submittal Documents

Detailed submittals are available for this and all related units. These submittals contain pertinent information required to properly install the equipment. Please review them thoroughly before commencing the installation.

Product Overview

Unit Nameplate

Figure 1 shows a typical nameplate for a GRW. The nameplate is generally located near the main electrical connection. The nameplate includes model number, serial number, electrical characteristics and other pertinent data.

Unit Inspection

This unit has been inspected and tested prior to shipment to make sure the unit is free from manufacturer defects. It is possible that damage may occur during shipping, rigging and installation.

Upon receiving the unit, check that all items have been delivered by comparing the Bill of Lading to the equipment received. If anything is missing or damaged, notify the carrier immediately. The carrier should note this on the packing slip or other form of documentation and provide a copy.

NOTE: it is a good idea to take a photograph of any possible damage for record purposes.

Check the unit model number to make sure that it is correct. If there are any issues, do not proceed with the installation. Contact your sales representative.

Storage

If the unit is to be stored, take precautions to prevent condensate from forming inside the unit's electrical compartments. Make sure the equipment is protected from weather and dust from site conditions by temporarily sealing all openings to the air tunnel for outdoor units and completely covering indoor units.

Do not use the unit for temporary conditioning without first completing the full start-up procedure. If the unit is used for conditioning during construction, protect evaporators from construction dust. SolutionAir will not assume any responsibility for equipment damage resulting from condensate accumulation on the unit's electrical and / or mechanical components nor from any damage that results from improper coil protection during operation during construction.

FIGURE 1 - TYPICAL NAMEPLATE ▼

1295302						
404 Egesz Street Winnipeg, MB, R2R 1X5						
INDOOR INSTALLATION ONLY Made In Canada						
Type of Unit Type d'unité	<input type="text"/>					
Model Number Numero du modele	<input type="text"/>					
Serial Number Numero de serie	<input type="text"/>					
Wiring Drawing No. No diagramme cablage	<input type="text"/>					
Unit FLA Unité de FLA	<input type="text"/>	Unit MCA Unité de MCA	<input type="text"/>	Unit MOCP Unité de MOCP	<input type="text"/>	
Line Voltage Regulation de Tension	<input type="text"/>	Phase	<input type="text"/>	Hertz	<input type="text"/>	
Control Voltage Regulation de Tension	<input type="text"/>	Phase	<input type="text"/>	Hertz	<input type="text"/>	Amps Ampères <input type="text"/>
Motors	Quantity	HP	Voltage	Phase	FLA	LRA
Supply	1					
Return	1					

Installation

Mechanical Installation

Location

GRW units are approved for both indoor and outdoor installations.

The GRW unit is designed for complete field serviceability including the removal of evaporator and condenser coils. Also, the air-cooled condensers, if equipped, require clear unfettered airflow for proper operation. The submittals include recommended service areas for these features, these areas should be accessible, open, and free of other equipment.

In addition, for roof top installations, consideration should be made to ensure that normal service traffic to the unit will not cause damage to the roof system. If the equipment is located on a sloped roof or a raised structure, the platform should be sufficiently large to allow for the unit to be safely serviced.

Clearances

The GRW unit is designed to be field-serviceable, which includes the coils, filters, fans/motors, dampers, and electronics. Refer to the submittal engineering drawings for the locations of access doors and safety/service areas, and ensure there is sufficient clearance for safety, inspection, and service.

Roof Curb or Base

GRW units can be installed on a concrete housekeeping pad, sleepers or a roof curb. The unit must be adequately supported with either field supplied sleepers or structural metal. Details of the required support can be found in the submittals. Make sure that the unit supports are the correct dimensions and that they are flat and level.

Check that the housekeeping pad is the correct dimensions for the unit and that it is flat and level. If there is an external condensate drain check that there is enough height for the required condensate traps and that a means of removing the condensate is located nearby.

Generally the curb is shipped in advance of the unit delivery. It should be installed along with any required ductwork prior to unit installation. Where a roof curb has been supplied in knocked-down condition, absolute care must be taken to make sure that all corners are square, and that finished dimensions exactly match those provided on the drawings. If this is not done, problems could arise with the installation and seal of the unit to the curb.

First insure that the top of the curb is level and flat, shim the curb to the roof deck as required. Then, check diagonal dimensions prior to securing the curb to ensure that dimensional integrity has been maintained during shipping. Finally, complete roofing in accordance with accepted roofing practices.

Prior to the installation of the unit, check that the curb is the correct dimensions for the unit and that the curb profile is correct (this is especially important if the curb is not supplied by SolutionAir). Curb ductwork and condensate drains that pass down through the curb must be installed by installing contractor prior to unit placement. Gasketing or other forms of sealant must be used around the curb perimeter and at the duct connections. When the curb is supplied by SolutionAir, a neoprene gasket is included. Prior to the installation of the unit, secure the gasket to the mating surface of the curb by peeling the backing off the gasket material and applying adhesive-side down.

NOTE: To minimize sound transmission, only cut openings in roof deck for ductwork penetrations. Do not cut out the entire roof deck within in the curb perimeter.

Installation

Roof Curb Supports and Levelling

To ensure the roof curb and GRW unit is properly braced, the curb must be supported at all indicated roof curb beam intersection points, as shown in Figures 2 and 3. The red circles indicate intersections that must be supported. The support structure is to be determined at the discretion of the unit's owner.

Figure 2 depicts the required roof curb support points for units 180" wide and less. Figure 3 depicts the required roof curb support points for units over 180" wide. Refer to submittal drawings for the exact width of the unit.

To ensure proper drainage, the roof curb must be installed more level or equal to 1/100" per 1', measured from corner to corner of the curb as shown in Figure 4. The maximum deviation in height between any two corners is 1/4".

Unit Width	Number of Roof Curb Support Points
180" or less	8
Over 180"	12

FIGURE 2 – ROOF CURB SUPPORT POINTS FOR UNITS 180" WIDE AND LESS ▼

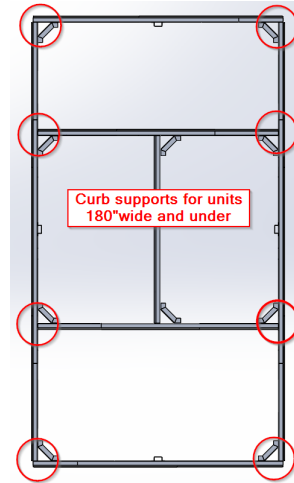


FIGURE 3 – ROOF CURB SUPPORT POINTS FOR UNITS OVER 180" WIDE ▼

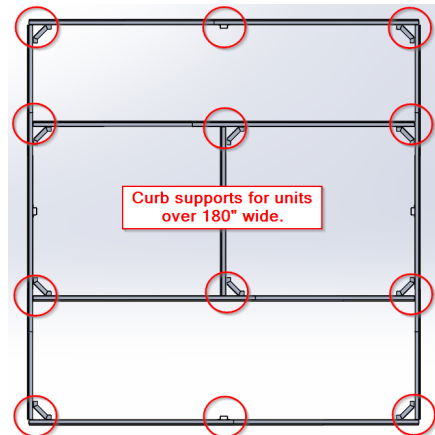
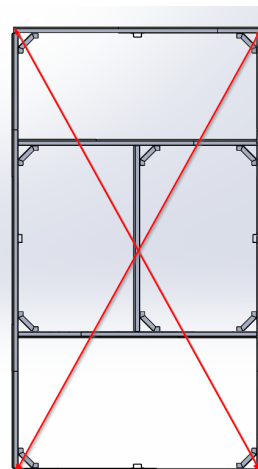


FIGURE 4 – CORNER TO CORNER MEASUREMENTS FOR CURB LEVELING ▼



Installation

Rigging



WARNING ▼

Never lift in windy conditions. Use properly-sized cables, chains, or slings only as shown. Each cable, chain, or sling must be capable of supporting the weight of the entire unit or component. Adjust cable, chain, or sling length for an even lift. Other lifting arrangements may damage unit or component. Failure to properly lift unit or component may result in death or serious injury.

NOTE: All GRW units are designed to be lifted from the base. Each section of the unit is provided with lifting points at each corner and sometimes at intermediate points.

Duct Connections

On outdoor units with ducting passing down through the curb, the ducting will be installed prior to unit placement and attached to the curb. For all other duct connections, the ductwork will be connected to the unit casing using sheet metal screws by the installing contractor. Unless indicated on the submittal drawings, the weight of the ducting should not be placed directly on the unit. The installing contractor should provide an external means to carry the duct weight.

Access panels in the ducting near the unit are recommended. Where no access to the unit inlet or discharge section is provided as part of the unit (for example an access door in the unit), access panels are strongly recommended for inspection and service.

Blower or Fan

GRW units include direct plenum fans. The motor, fan, frame, and mounts should be visually inspected before initial start-up and at every fan service.

The blower/fan and motor are aligned before shipping from the factory, shipping and or mounting may result in misalignment, proper motor fan alignment should be checked and adjustments should be made, if required, prior to unit start up.

GRW units come equipped with variable frequency drives for speed adjustment. The unit controller allows a broad range of blower speeds to accommodate necessary field balancing, see the controller manual for directions on adjustment.

If the blower can not be properly balanced using the controller settings, please contact SolutionAir for further instructions.

Variable Frequency Drive (VFD)

Variable frequency drives are used to control the speed of the motor and fan. Fan speed is controlled either with a set point, or with a controlling signal. Refer to the submittal for control and wiring specifics. For specifics regarding the VFD supplied with this unit, refer to the attached documentation.

Final Assembly

Before proceeding with the electrical installation, remove all shipping braces (such as fan shipping brackets), packing, etc.

Electrical Installation

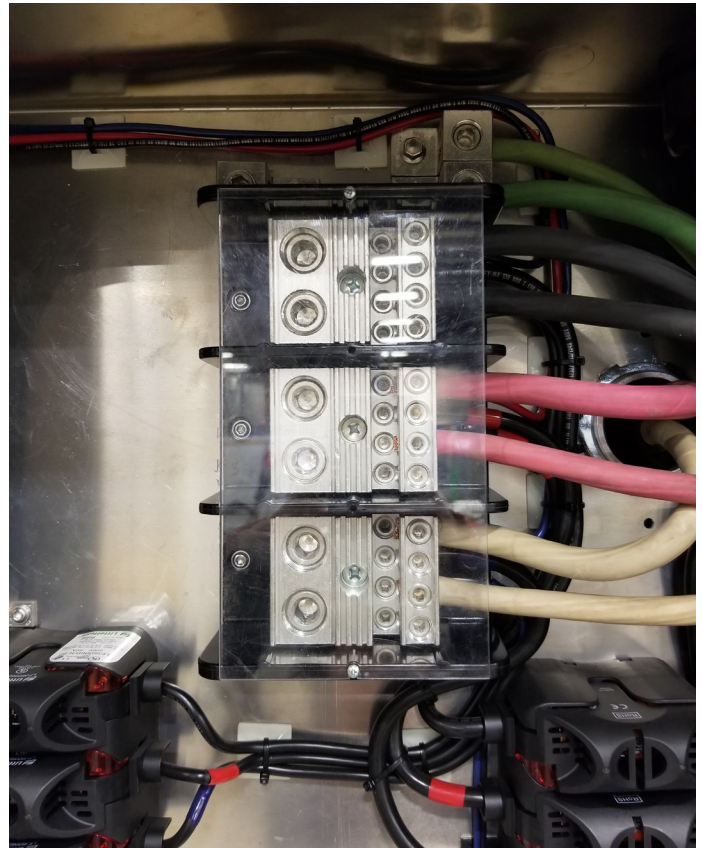
NOTE: Use Copper Conductors Only: Unit terminals are designed for copper conductors only. Failure to use copper conductors may result in unit damage.

Main Power Connection

All connections to the unit and the main disconnect switch must conform to the applicable Electrical Codes

1. Before proceeding, ensure that the electrical connections on the unit and supply match. The proper voltage for connection is listed on the rating plate attached to the unit.
2. Unit must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and/or the Canadian Electrical Code, CSA C22.1, if an external electrical source is utilized.
3. Refer to the unit submittal drawing to determine the suggested location of the field wired power supply. Where a disconnect is supplied as part of the unit, the main power connection will be the line side of the disconnect.
4. If the unit is not supplied with a factory mounted disconnect, a field supplied disconnect must be installed in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and /or the Canadian Electrical Code, CSA C22.1. Where a disconnect is supplied by others, the main power connection to the unit will be the line side of the main splitter block. Refer to unit electrical wiring diagrams for details.
5. Ensure that the routing of the power supply wiring does not interfere with removal of any unit access door, or in any way hinder servicing of the unit.
6. Refer to the submittals for electrical service routing. Unless indicated on the submittals, DO NOT penetrate the floor of the unit to route electrical conduits to the unit control panel. Provide a pitch pocket in accordance with standard roofing practice.
7. For units that are shipped in multiple sections, some electrical connections may have to be made by the installer in the field. Field wiring to be done by the installer appears as a dotted line on the wiring diagram. Wiring to connect two sections of a unit will be marked by the factory and a terminal block will be provided for such connections (as shown in Figure 5).

FIGURE 5 – TYPICAL SPLITTER/TERMINAL BLOCK ▼



Installation

8. Fuses are furnished and installed by the factory in accordance with the National Electrical Code, ANSI/NFPA 70, and /or the Canadian Electrical Code, CSA C22.1. If replacement of any fusing is necessary, the replacement **MUST** be of the same amperage as the original. Failure to use equivalent replacement fuses may result in damage to components within the electrical system of the unit and/or the building. If any of the original wires need to be replaced, they must be replaced with type TEW 105° or equivalent except where noted.
9. On units with three-phase power supplies, make sure that motor rotation is correct as connected.

Auxiliary Power Connections

A separate 120/1/60 power supply may be required on units with convenience outlets and lights. Refer to unit wiring diagrams for wiring sizing details and connection points.

Control Installation

All field wiring must be in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and/or the Canadian Electrical Code, CSA C22.1.

Control wiring will depend on the controls provided with the unit. A controller is provided with the unit unless otherwise specified in the submittal documents. Refer to unit electrical wiring diagrams for details.

Control Connections

Units supplied with controllers may require field-wiring to a remote sensor or control panel. Refer to unit electrical wiring diagrams for details.

An optional space thermostat or sensor may be shipped loose for field installation. The sensor may be duct mounted and/or wall mounted.

1. Locate space sensors or thermostats where they will provide a representative reading of the space condition.
2. Avoid areas with cold drafts or in the warm supply-air stream of the unit.
3. On indoor units, do not mount the thermostat or sensor on the unit casing, as it may be affected by heat radiating off the unit.
4. Do not place near other sources of warmth, such as lamps, appliances, etc.
5. Refer to unit electrical wiring diagrams for details on how to wire the sensor to the control panel.

6. Ensure that all remote wiring is equivalent to factory installed wiring and that voltage drop does not exceed 10 percent.

An optional duct mounted discharge air temperature sensor may be shipped loose for field installation.

1. The sensor strip must be parallel to the flow of air.
2. The sensor must be mounted as close to the center of the duct as possible.
3. The sensor must be located in a straight section of the duct and must be 8-10 feet (2.4 to 3m) downstream from the supply air connection.
4. Do not install temperature sensors near any elbows or transitions.
5. Refer to unit electrical wiring diagrams for details on how to wire the sensor to the control panel.
6. Ensure that all remote wiring is equivalent to factory installed wiring and that voltage drop does not exceed 10 percent.

An optional remote control panel may be shipped loose for field installation.

7. Locate the indoor panel where operation and maintenance personnel have ready access.
8. Follow the manufacturer's installation instructions.
9. Refer to unit electrical wiring diagrams for details on how to wire the sensor to the control panel.
10. Ensure that all remote wiring is equivalent to factory installed wiring and that voltage drop does not exceed 10 percent.

Where possible, the low limit temperature sensor is factory mounted. Some unit configurations require the sensor to be field mounted in the supply air ductwork. In this situation, the sensor and field wiring will be coiled up in the weather housing. The installing contractor shall install the sensor approximately 10 ft. (3 m) down the supply air duct.

Installation

Split Roof-Seam Installation and Sealing

Inspection:

1. Check for visual damage on the exterior of all sections.
2. Closely inspect the lifting-lugs, ensure there is no visual distortion or cracking of the welds.
3. Remove wrapping and plywood (ensure all fasteners are accounted for).
4. Remove installation materials from the unit prior to lifting (see Materials List below). You will require these to prepare the curb/unit for installation.
5. Check for visual damage on the interior of all sections.
6. Clean any debris accumulated during shipping from air-tunnels as required.

Materials List

7. Remove shipped-loose components from the filter/blower sections that are necessary for unit installation, including:
 - a) Curb acoustic sealant (if included)
 - b) Unit-split sealing materials:
 - i) Foam gasket (Emseal or similar)
 - ii) Outdoor-rated polyurethane sealant (3M 550 or similar)
 - iii) Foam backer-rod (if included)
 - iv) Stainless steel fasteners (bolts, washers, nuts)

FIGURE 6: TOP VIEW OF ACOUSTIC SEALANT PATTERN ▼

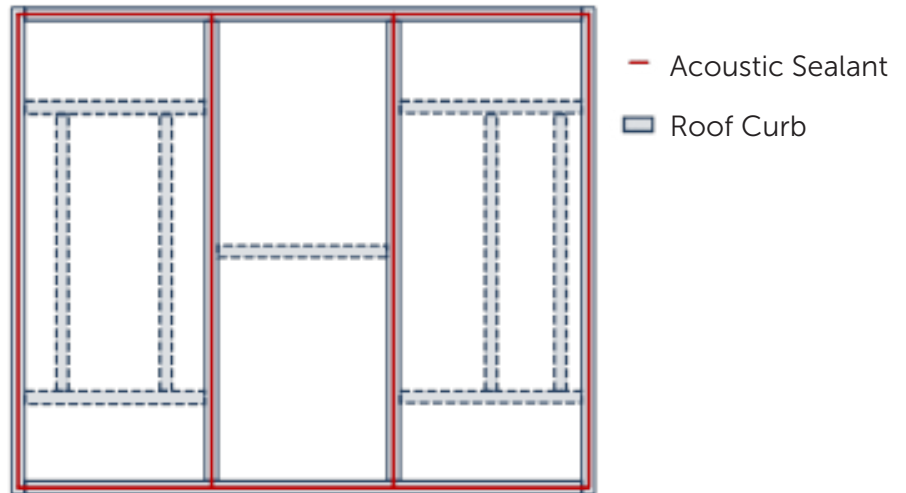
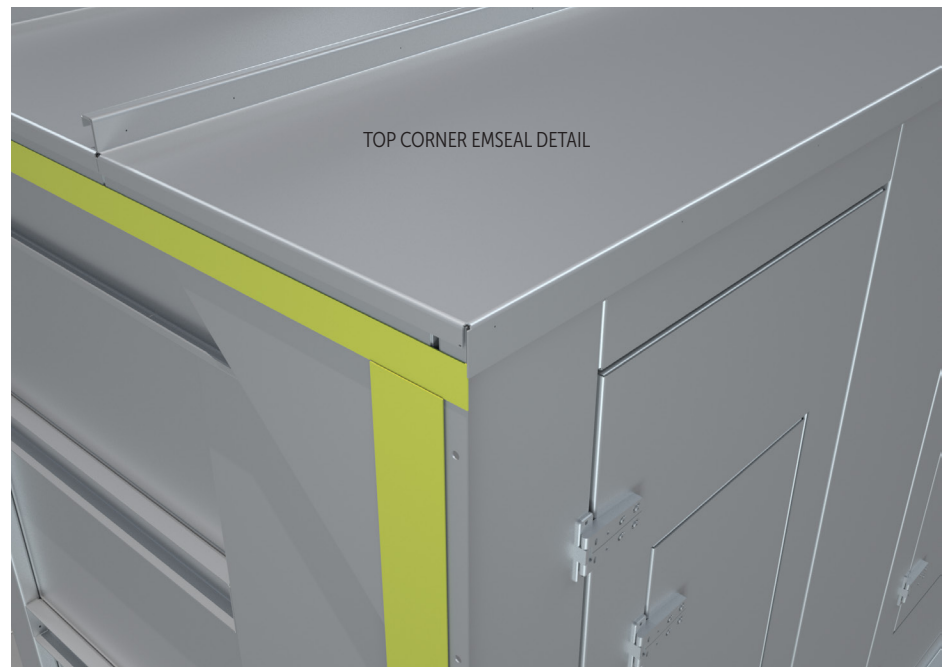


FIGURE 7: EMSEAL PATTERN TOP CORNER VIEW ▼



Installation

Roof-Curb Preparation:

8. Prior to lifting, prepare the roof-curb.
 - a) With the roof-curb in place, check that the curb is square and the dimensions/orientation match the provided curb drawing(s).
 - b) Ensure the upper flange of the roof-curb is dry and free of dust/debris.
9. Apply a generous (~1/2" wide) bead of acoustic sealant, centered on the top flange of the curb as illustrated in Figure 6.
 - a) Ensure no gaps/breaks in the sealant bead(s).
 - b) Sealant is only necessary on the parts of the curb which come in contact with the unit. Duct supports and cross-members (if present) do not require sealant as illustrated in Figure 6.
10. Proceed with installation of the unit sections.

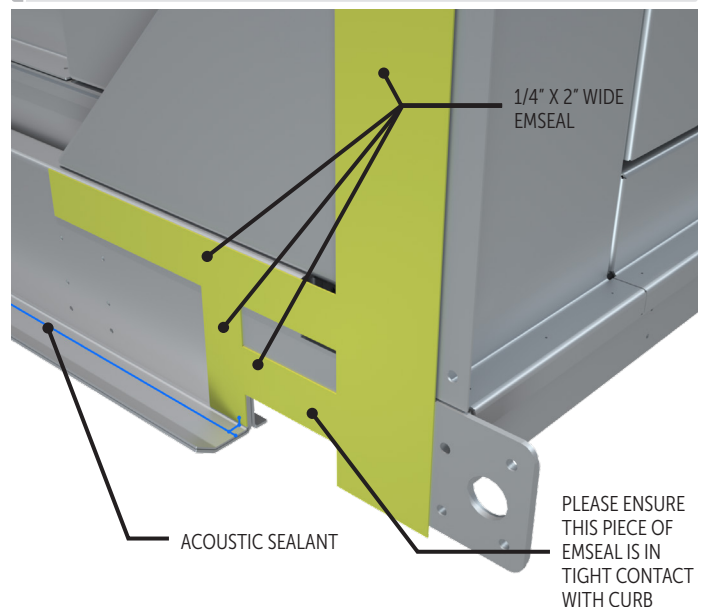
Coil-Section Installation:

11. Lift the coil section into place, ensuring that orientation and placement on the roof-curb match the provided curb drawing(s).

Blower-Section:

12. Apply supplied Emseal (sealing strips) to the coil-section on the blower-side, as indicated on the drawing (see Figure 7 and Figure 8 and submittal drawings).
 - a) Ensure no overlapping Emseal sections.
13. Clean the coil-section receiver-flange on the blower-side, then apply a generous amount of acoustic sealant (see Figure 9).

FIGURE 8: EMSEAL PATTERN BOTTOM CORNER DETAIL ▼



Installation

14. Install the blower-section, by lowering it down within 1" of the coil-section.

NOTE: the blower-section must be lowered into the coil-section receiver flange, which will aid in guiding the sections together. If the gap between the sections is more than 1.0", the blower section cannot be pulled into place without damaging the coil-section receiver.

- a) A centering-punch shall be used (through the lifting-lug bolt-holes) to guide and align the sections together.
- b) Ensure less than a 1.0" gap between the blower and coil sections (Figure 9).
- c) Fasten the blower and coil sections together (with the provided stainless steel hardware).
 - i) Insert 2" stainless steel bolts (with washers) into the holes on the coil-section lifting lug, through to the matching blower section holes (Figure 10).
 - ii) Finger-tighten a stainless steel nut (backed by a washer) onto the 4 bolts, as illustrated above.
 - iii) Apply a light bead of outdoor-rated polyurethane caulking to the side-seams, ensuring the caulking covers the Emseal and touches the aluminum on both sections (Figure 11).
 - iv) Install and finger-tighten the supplied side-flange bolts (stainless steel 1" bolts, washers, and nuts), starting at the base on both sides, moving towards the top of the unit.
 - v) Gradually bring the units together by tightening the 4 lifting-lug nuts (2 on each side), until there is less than a 1/8" gap between the lifting lugs.
 - vi) Once the four lifting-lug nuts are tight, tighten the side-flange bolts from bottom to top.
 - l) Clean off any sealant squeeze-out with a dry disposable rag.
15. Once complete, repeat the above steps for the filter-section.

FIGURE 9: SECTION PLACEMENT ▼

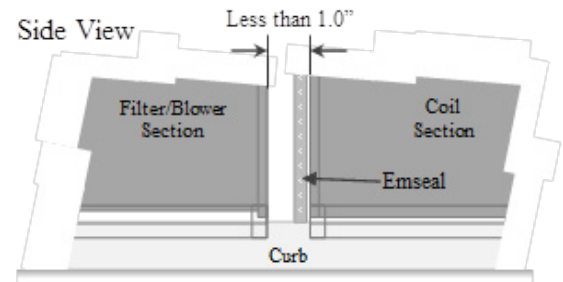


FIGURE 10: POSITIONED SECTION FASTENING BOLTS ▼

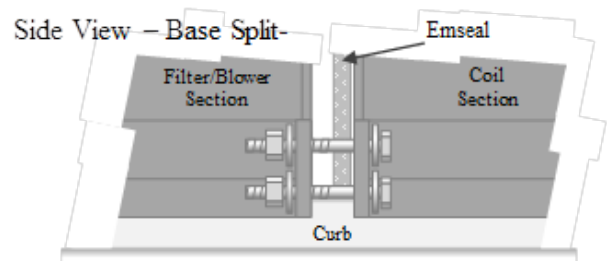
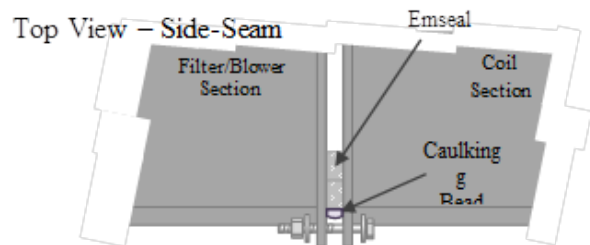


FIGURE 11: TIGHTENED SECTION FASTENING BOLTS ▼



Split Roof-Seam Sealing Procedure

Sealing Roof Seams at GRW Splits:

1. Seal ends of roof-seam at GRW unit splits with Emseal end-dams.
 - a) Cut Emseal strips roughly 1" longer than the distance from the existing Emseal to the blower/coil roof flange. Do not remove backing.
 - b) Cut black Emseal sponge back by roughly 1.25", without cutting the clear backing (Figure 12).
 - c) Dog-ear the top of the Emseal strip (partially remove the clear plastic backing), enough to be able to firmly grasp from the edge.
 - d) Place Emseal strip firmly against existing Emseal (spanning the split between the sections) and 1/4" from edge of coil/blower roof (Figure 13).
 - e) Once satisfied with the placement, carefully remove clear backing. Let Emseal strip expand into place (may take 5-60 minutes, depending on outdoor temperature and humidity).
 - f) Repeat the above steps for each roof-seam end (four total for each unit).
2. Firmly apply sealing tape (such as 3" wide 3M 8777) over the **interior** roof-seams between the coil and blower/filter sections, to prevent any sealant drips from entering the unit.
3. Firmly apply removable tape (painters tape) along the blower/filter roof flange (Figure 14), to help prevent any sealant drips.

FIGURE 12: DOG EARRING INSTRUCTIONS ▼

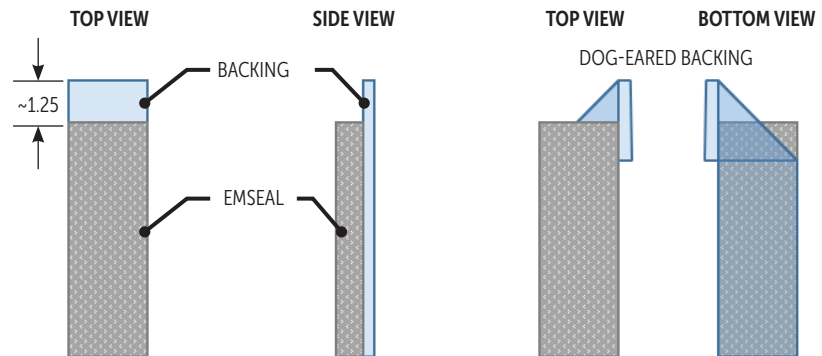


FIGURE 13: EMSEAL BACKING PLACEMENT ▼

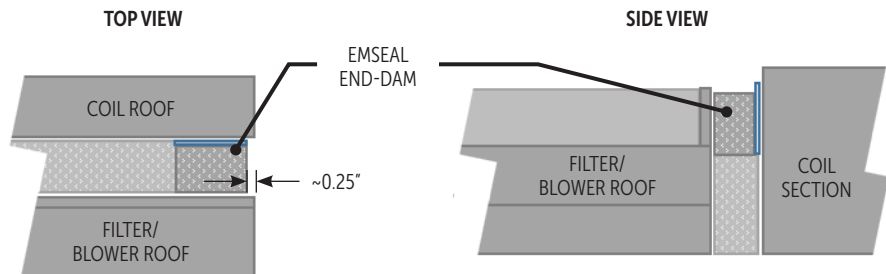
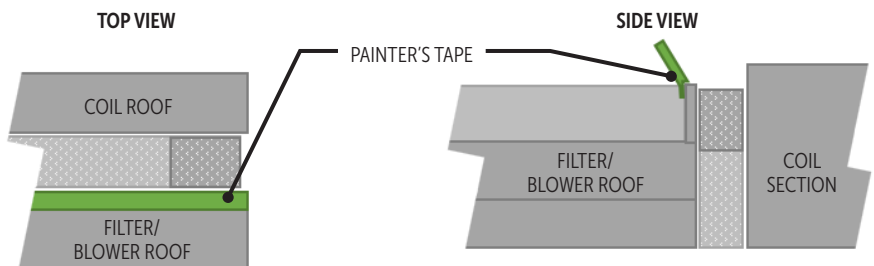


FIGURE 14: REMOVABLE TAPE PLACEMENT ▼



Installation

4. Seal and adhere Emseal into roof seam.
 - a) Ensure the Emseal has completely expanded into the unit split.
 - b) Apply a weather resistant polyurethane adhesive (such as 3M 550) around all edges of the Emseal end-pieces (Figure 15). Tool sealant along the top and side to be smooth/flush with adjacent pieces.
 - c) Repeat for each Emseal end-piece.
5. Inspect the blower/filter roof flange.
 - a) Caulk any gaps/cracks/holes with weather-resistant polyurethane adhesive sealant (such as 3M 550) on the split-side, inspection points (Figure 16). Best applied with finger while wearing disposable gloves.
 - b) Ensure Emseal is fully expanded along the bottom and sides of the roof-seam. If not, please contact SolutionAir engineering for further instructions.
6. Apply bottom of seam with weather-resistant polyurethane adhesive sealant (such as 3M 550 [with accelerator if ambient temperature is below 10°C]).
 - a) Apply a layer of polyurethane adhesive sealant to a depth of about $\frac{1}{2}$ " the entire length of the roof-seam, back-filling to ensure there are no bubbles or gaps in the sealant (Figure 17).

FIGURE 15: EMSEAL POLYURETHANE ADHESIVE PLACEMENT ▼

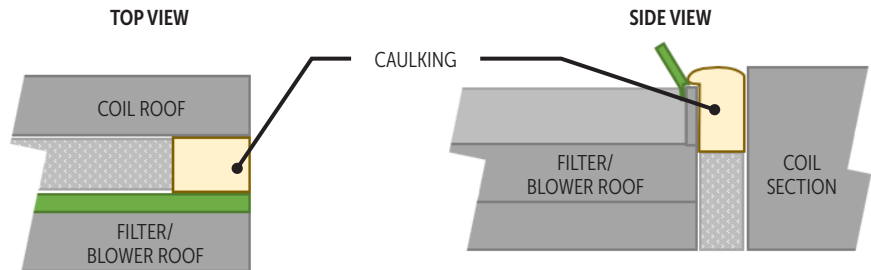


FIGURE 16: GAP/CRACK VOID FILLING WITH POLYURETHANE ADHESIVE ▼

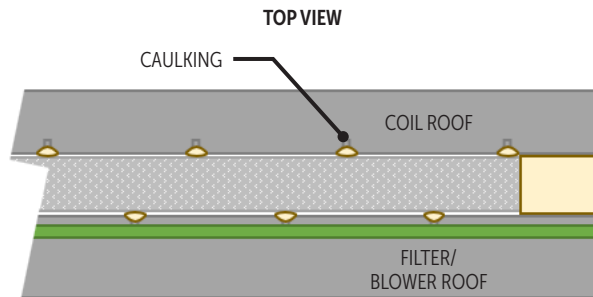
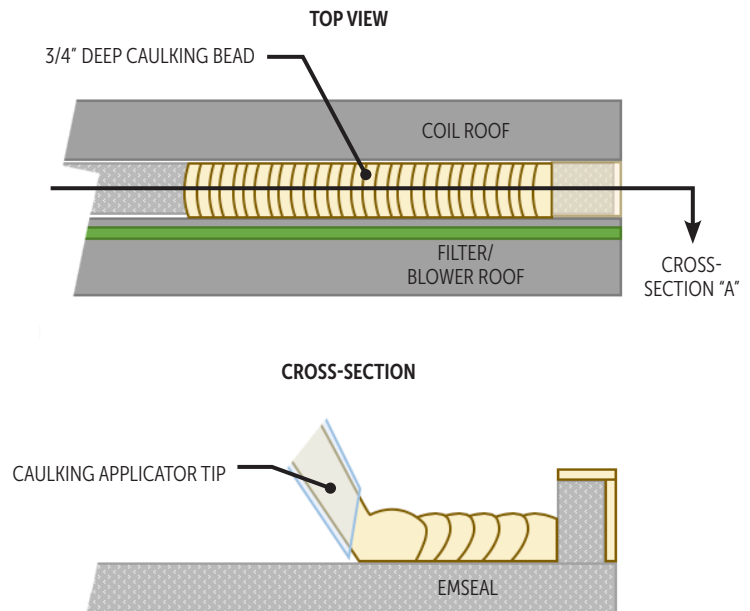


FIGURE 17: APPLICATION OF BOTTOM LAYER WEATHER RESISTANT POLYURETHANE ADHESIVE SEALANT ▼



Installation

7. Add a backer-rod (shipped with unit).
 - a) Stuff a backer rod into the gap, ensuring no air-gap between the backer rod and previous layer of polyurethane adhesive (by looking for squeeze-out around backer-rod, for example) (Figure 18).

NOTE: if using accelerated (fast-curing) polyurethane sealants, **backer-rod must be added within ~1 minute of sealant being applied.**

- b) Repeat for each roof split (between the blower/filter and coil sections).
 - c) Let cure for at least 1-hour to ensure sufficient skin-over (longer if very cold/dry).
8. Apply a second layer of weather-resistant polyurethane adhesive sealant (such as 3M 550).
 - a) Apply a second 1/2" layer of polyurethane adhesive sealant (Figure 19). Back-fill along the entire length of the roof-seam to ensure there are no bubbles or gaps in the sealant, and there is full coverage over the backer-rod.
 - b) Repeat for each roof split (between the blower/filter and coil sections).
 - c) Let cure for at least 1-hour to ensure sufficient skin-over (longer if very cold/dry).
9. Repeat steps 7 and 8 until roof split gap is filled to within 1/2" of the blower/filler roof flange (likely between one and three backer-rods, depending on the unit).

FIGURE 18: BACKER ROD PLACEMENT ▼

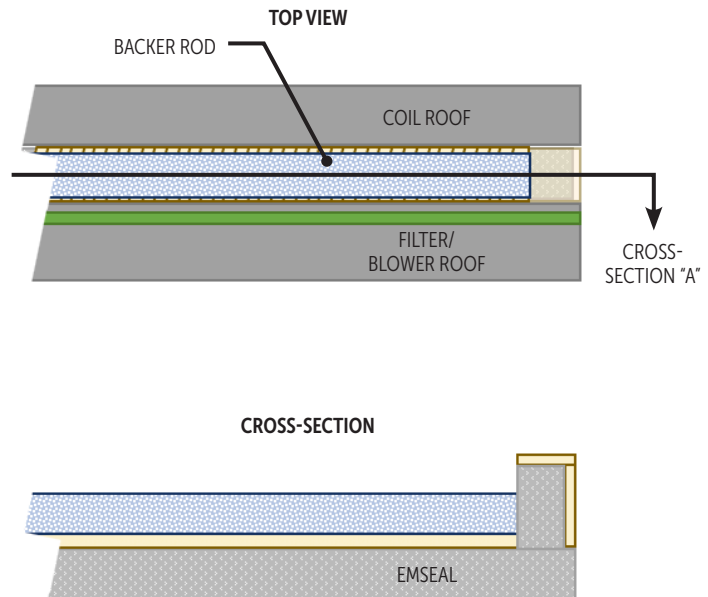
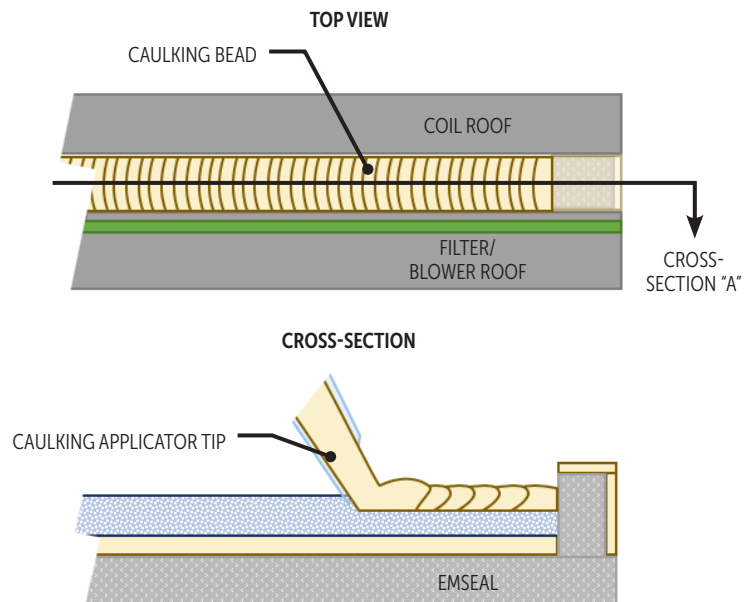


FIGURE 19: APPLICATION OF TOP LAYER WEATHER RESISTANT POLYURETHANE ADHESIVE SEALANT ▼



Installation

10. Apply a **final** layer of weather-resistant **self-leveling** sealant (such as NovaLink SL).
 - a) Fill the last ½" of the roof-split gap with self-leveling sealant until it is level with the top of the blower/filter roof flange. Back-fill along the entire length of the roof-seam to ensure there are no bubbles or gaps in the sealant. The final outcome should look similar to what is shown in Figure 20.
 - b) Repeat for each roof split gap (between the blower/filter and coil sections).
 - c) Let cure for at least 3-hours to ensure sufficient skin-over (longer if very cold/dry).
11. Prepare the roof-split covers.
 - a) Clean the roof-split cover angles with isopropyl alcohol, on the side to which the VHB tape will be applied.
 - b) Apply 1" VHB tape to the entire back of the roof-split angles as shown below.
 - c) Dog-ear the tape on each end of the roof-split cover angles (Figure 21).
 - d) Prep all roof-split cover angles.
12. Install the roof-split covers.
 - a) Starting from one side of the unit, install the roof-split covers as shown in the attached drawing (removing VHB tape backing by pulling on the previously-prepared "dog-ears").
 - b) Press the roof-split covers firmly into place, ensuring no gaps between the tape and coil section.
 - c) Caulk the gap between the roof-split covers and coil section as shown on the attached drawing.

FIGURE 20: APPLICATION OF FINAL LAYER WEATHER RESISTANT SELF-LEVELLING SEALANT ▼

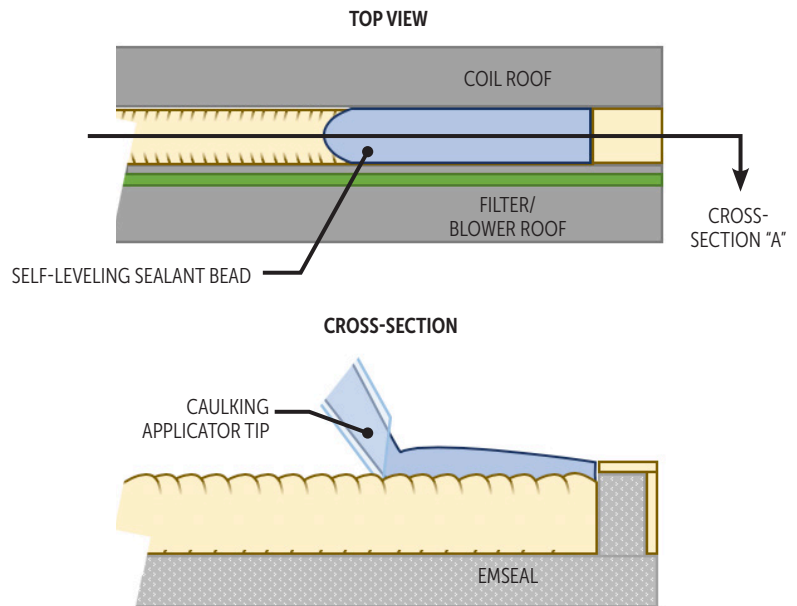
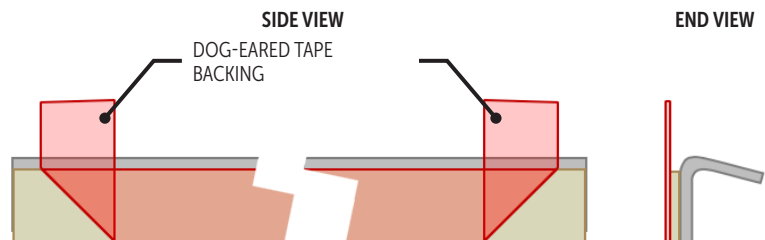


FIGURE 21: ROOF SPLIT ANGLE TAPE PLACEMENT ▼



Installation

Installation Checklist

The following checklist is a summary of all the steps necessary for a successful start-up. This is not intended to replace the detailed information in the applicable sections of this manual.

General Installation	Date Completed	Signed
Inspect unit for freight damage or missing items on the Bill of Lading.		
Confirm the installation location meets the necessary clearances.		
Assemble, square, and level the roof curb if required.		
Install ductwork and attach to curb (for units with bottom supply/return).		
Install pitch pocket for electrical supply if required.		
Set unit on curb or housekeeping pad.		
Ensure unit is level.		
Seal, bolt, and cap all split joints as required.		
Remove shipping hold downs, shipping braces etc. from unit.		
Check all fan isolators for proper adjustment and operation.		
Install filters as required.		
Electrical Connections		
Confirm that main electrical supply matches the name plate requirements.		
Inspect control cabinets and tighten any loose connections.		
Provide a disconnect if one is not factory supplied.		
Connect power to factory or field-supplied disconnect.		
Properly ground the unit.		
Interlock unit to exhaust system		
Control Wiring Connections		
Complete controls wiring as per the wiring diagrams.		
DX Coils & Condensing Sections		
Visual inspections for damaged coils, condenser fan guards and condenser fans.		

**Hazardous Service Procedures**

During installation, testing, servicing and troubleshooting of this product it may be necessary to work with live electrical components and moving mechanical components. Have a qualified technician who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical and mechanical components could result in death or serious injury.

Regular maintenance is the best way to avoid untimely and expensive repairs, and it extends the useful life of the equipment. Maintenance should only be performed by qualified service personnel familiar with air-handling equipment and the local codes and requirements.

Filters

It is important to replace filters with the same efficiency filters as used when the air balance is done. Filters with different efficiencies may cause a change in airflow.

A regular filter maintenance schedule should be set-up and followed. The controller (if equipped with this option) allows the user to set the run hours between filter changes and the controller will notify the user when the desired interval has been reached.

The filters are located close to the fans; therefore, it is recommended that the unit be shut down while the filters are being changed.

When replacing the filters, inspect the louvers and clean if necessary.

Fan and Motor Assembly

The fan/motor access panel should only be opened if the power has been shut off and locked off for the unit.

Review the blower service label on the blower for the recommended service frequency. The controller (if equipped with this option) allows the user to set up blower service notifications when a desired interval has been reached.

Blower service includes:

1. Greasing the bearings on the fan as well as the on the blower motor, as required.

The controller (if equipped with this option) allows the user to set the run hours for belt replacement and the controller will notify the user when the desired interval has been reached.

Service and Warranty Procedure**Replacement Parts**

Replacement parts can be obtained from SolutionAir at mech-parts@solutionairgroup.com or 1-866-797-0760. When contacting SolutionAir for replacement parts, refer to the model number and serial number on the name plate.

Warranty Parts

See limited warranty below for what is covered. Contact SolutionAir at mech-parts@solutionairgroup.com or 1-866-797-0760 for warranty parts instructions. Please have the unit model and serial numbers available. The warranty part may need to be returned to SolutionAir to obtain a new warranty part. SolutionAir reserves the right to repair or replace a part under warranty.

*Maintenance***Maintenance Checklist**

General Maintenance	Quarterly	Annually
Inspect inside of unit for water leaks, foreign material etc.	X	
Clean or replace filters with equivalent to those supplied by manufacturer.	X	
Check cooling device drain pans and traps for cleanliness and blockage – ensure chemical cleaner is compatible with aluminum.	X	
Check all dampers and damper actuators, adjust and tighten as required.	X	
Check cooling coils for cleanliness and clean as necessary.		X
Inspect for worn compressor contactors annually and replace every 5 years		X
Inspect door seals and clean as necessary	X	
Check condensate pump screens	X	
Clean drain pans	X	
Check evaporator and condenser coils for damage and cleanliness	X	
Check/clean cO2 purge screen	X	
Inspect UV lamps	X	
Blower/Fan Maintenance		
Check all bearings and lubricate as necessary.	X	
Inspect fan wheel and housing. Clean as necessary.		X
Electrical Maintenance		
Check for loose wire connections in control panel.	X	
Check motor amp draw against name plate.	X	
Inspect all contactors to ensure they are clean and making good contact.	X	
Check all safeties.	X	

Troubleshooting

Symptom	Possible Cause	Corrective Action
Blower/Fan fails to turn	Blown fuse or tripped circuit breaker.	Reset breaker or replace fuse. Check current draw.
	Electrical circuit problem.	Check supply voltage. Check VFD status. Check control wiring.
	Motor overloaded.	Reset VFD and check current draw.
	Problem with motor.	Repair or replace.
Low airflow	Dirty filters.	Replace filters.
	Supply and/or return static pressure is higher than design.	Replace filters if clogged. Reduce pressure-drops within ductwork. Increase fan size.
	Ductwork losses too high.	Ensure proper ducting practices are followed. Remove elbows and/or restrictions near the blower/fan.
	Leaks in ductwork.	Repair as required.
Excessive noise/vibration	Fan/Wheel rubbing.	Align/adjust inlet cone. Check bearing/shaft alignment. Tighten shaft collars.
	Bearings.	Lubricate bearings. Replace worn bearings.
	Motor-frame dampers loose/ineffective.	Tighten mounting bolts. Check springs/dampers, replace as required.
	Dampers loose.	Check damper blades, if moving in airstream, tighten linkages as required.
High temperature fault	Low refrigerant charge.	Will require mechanical service.
	Faulty expansion valve.	Service or replace valve motor.
	Faulty temperature sensor.	Service or replace sensor.
High head pressure fault	Condenser VFD fault.	Contact SolutionAir.
	Plugged condenser coil.	Clean.
	Faulty condenser fans.	Service or replace.
Low head pressure fault	Condenser VFD fault.	Contact SolutionAir.
	Condenser damper fault.	Service or replace.
Low suction pressure fault	Digital scroll controller fault.	Contact SolutionAir.
	Plugged air filters or dirty evaporator coil.	Clean.
	Faulty blower motor.	Service or replace motor.
	Faulty electronic expansion valve.	Service or replace valve motor.
	Low refrigerant charge.	Will require mechanical service
Controller fault/error	Problem with controller/software.	Contact SolutionAir. Describe error number.

SolutionAir Mechanical Support:

1-866-797-0760

mechsupport@solutionairgroup.com

Start-up Instructions**Electric Shock Hazard**

Disconnect all electric power, including remote disconnects before servicing. Follow proper lookout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

**Hazardous Service Procedures**

During installation, testing, servicing and troubleshooting of this product it may be necessary to work with live electrical components and moving mechanical components. Have a qualified technician who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical and mechanical components could result in death or serious injury.

Pre-Start-Up Checklist

Prior to starting up the unit, make sure the following work is complete:

Task	Complete
General	
All steps in installation check list are complete.	
Fan Inspection	
Shipping bolts (under fan isolators) and materials have been removed from the unit. Manually rotate fans and confirm they move freely.	
All bearing, drive, and blower set-screws have been checked for tightness.	
Electrical	
Electrical power is acceptable (see below).	

Prior to powering the unit, it is crucial to check the incoming electrical power:

1. Check that the electrical power matches what is stated on the nameplate.
2. Check that the voltage on each leg is within the stated voltage range and/or does not deviate in excess of 10% of name plate value.
3. Check that the voltage difference between all three phases is within 2%.

If any of these conditions are not met, do not continue commissioning the unit. Arrange to have the power issue resolved.

Fan Start-up**Hazardous ROTATING EQUIPMENT**

Contact with the rotating fan, belts or motor can lead to death or severe injury. Follow proper lockout/tag-out procedures to ensure the power cannot be inadvertently energized.

Once the power has been checked, proper fan rotation must be confirmed:

1. Turn on the disconnect.
2. Fans are controlled by the VFD. To bump fans, override the VFD to the on position or have remote support enable fans. There is typically an arrow on the fan housing to indicate rotation direction.
3. If the fan rotation is not correct, shut down the unit and turn off the power. Switch any two of the power leads at the load side of the disconnect.
4. Check the fan motor amp draw and compare it to the name plate rating. If amp draw is too high, correct the air flow and/or duct static pressure drop to reduce amp draw. If the fan speed is adjusted, make sure not to exceed the maximum fan speed rating.
5. The fan thermal overloads must be set to the appropriate motor performance after all adjustments have been made.

Typical Unit Sequence of Operation

1. Set points
 - Lights on
 - i) Dry bulb temperature
 - ii) Relative Humidity (operates on calculated dew point)
 - Lights off
 - i) Dry bulb temperature
 - ii) Relative Humidity (operates on calculated dew point)
2. Multiple room measurement stations
 - If the unit is connected to multiple room measuring stations logic can be chosen for either average or peak conditions.
3. Control strategy
 - Humidity Control: humidity control is based on absolute humidity set points. Dehumidification capacities of the unit are adjusted to maintain the absolute humidity set point.
 - Temperature control is controlled by adjusting the reheat capacity to maintain the set point temperature in the space independent of humidity control.
4. Plant Safe controls prevent excessive RH conditions during light transitions. Transitions between temperature and humidity settings are done in such a manner that the space doesn't exceed the greater of the 2 RH settings.
5. Start signal or return from power outage
 - Unit establishes light cycle based on light sensor light on/off.
 - Unit checks blower faults and if clear starts blower(s) at default setting for light cycle.
 - The unit modulates refrigeration capacity, reheat capacity and airflow to bring the space to the user set points for the light cycle.
6. Steady state operation
 - Unit establishes operating conditions based on light sensor.
 - Unit modulates refrigeration capacity, reheat capacity, airflow and air paths to match the dehumidification and cooling requirements of the space for the detected light condition.
7. Transition between Lights On to Lights Off
 - BMS notification of pending transition
 - Change in light cycle is detected by the light sensor.
 - Unit modulates refrigeration capacity, reheat, and airflow to transition the space conditions to lights off conditions maintaining Plant Safe conditions.
8. Transition from Lights Off to Lights On
 - BMS notification of pending light transition.
 - Change in light cycle is detected by the light sensor.
 - Unit modulates refrigeration capacity, reheat, and airflow to transition the space conditions to lights on conditions maintaining Plant Safe conditions.
9. Pressurization
 - Based on room and outdoor absolute pressures the independent pressurization unit within the GRW modulates outdoor airflow to maintain the desired pressurization level.
10. CO2 Purge
 - On a signal from an external control, the CO2 purge damper is opened to provide relief air for CO2 purge exhaust fans, supplied and installed by others.
11. Electric Heat
 - In the event of the failure of heat reclaim refrigeration, the system, if necessary, will modulate the remote electric heater to maintain design space temperatures.

GRW START- UP REQUEST FORM AND PRE-STARTUP CHECKLIST

This form and checklist must be completed and submitted to SolutionAir before the first startup of the listed unit. Limited warranty will be enabled upon the completion and submittal of this document. Please submit this completed document to mechsupport@solutionairgroup.com

General

Job Name

Order Number

Installation Address

City

State/Prov.

Start-up Request

Requested Start-up Date

Contractor Information

Installing Contractor Company

Job Site Contact Name

Job Site Contact Number

Manager's Name

Manager's Number

Controls Company Name

Job Site Contact Name

Job Site Contact Number

Manager's Name

Manager's Number

Test and Balance Company Name

Job Site Contact Name

Job Site Contact Number

Manager's Name

Manager's Number

Unit Information

Serial Number

INSTRUCTIONS: Check off boxes (Yes, No, N/A). Not all units contain each option listed in this form. Check off N/A if the statement/question is not relevant to this product. Fill in blank spaces with required information, when applicable. If the statement/question is not relevant to this unit, mark N/A in the blank space.

Please make note of any issues that you encounter in the inside the "Comments" section.

CAUTION: High voltage may be present.

Disconnect all power supplies prior to performing initial inspection.

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Pre-Start-up Checklist

General

600V power connected to the unit	Yes	No	N/A
120V power connected to the unit	Yes	No	N/A
Shipping brackets removed from blower fans	Yes	No	N/A
Return filter(s) installed	Yes	No	N/A
Electrical connections between blower/coil sections confirmed	Yes	No	N/A
Electrical connections between filter/coil sections confirmed	Yes	No	N/A

Comments

Positive Pressurization System

Fan Filter Unit pre-filter installed	Yes	No	N/A
Fan Filter Unit ULPA filter installed	Yes	No	N/A

Comments

Ultraviolet Germicidal Irradiation (UVGI) System

UVGI bulbs installed	Yes	No	N/A
UVGI bulbs connected to power	Yes	No	N/A

Comments

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Network

Ethernet cable – Connected from building switch to main controller		Yes	No	N/A
Ethernet cable – Connected from building switch to circuit controllers	3 total	Yes	No	N/A
Wiring for remote panel from main unit connected and tested		Yes	No	N/A

Comments

Sensors

Wiring for SA temperature/humidity sensor connected and tested		Yes	No	N/A
Settings for SA temperature/humidity sensor designated		Yes	No	N/A
Wiring for SA pressure sensor connected and tested		Yes	No	N/A
Settings for SA pressure sensor designated		Yes	No	N/A
Wiring for light status sensor connected and tested		Yes	No	N/A
Wiring for space pressure sensor connected and tested		Yes	No	N/A
Settings for space pressure sensor designated		Yes	No	N/A
Wiring for SA airflow sensor connected and tested		Yes	No	N/A
Settings for SA airflow sensor designated		Yes	No	N/A
Wiring for Modbus space pressure sensor connected and tested	3 total	Yes	No	N/A
Settings for Modbus space pressure sensor designated	3 total	Yes	No	N/A

Comments

GRW START- UP REQUEST FORM AND PRE-STARTUP CHECKLIST

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Remote Dampers

Wiring for SA damper(s) connected and tested	Yes	No	N/A
Settings for SA damper(s) designated	Yes	No	N/A
Wiring for RA damper(s) connected and tested	Yes	No	N/A
Settings for RA damper(s) designated	Yes	No	N/A

Comments

Condensate Management System

Confirm inlet screens on pumps are inspected, cleaned and installed with the cover re-secured	Yes	No	N/A
Pump discharge connected to disposal	Yes	No	N/A
Confirm all water pump and hose fittings are tight	Yes	No	N/A
Confirm sump suction tubes are sitting along the bottom of the drain pan trough	Yes	No	N/A

Comments

CO₂ Augmentation system

CO ₂ room instruments are connected	Yes	No	N/A
Fire alarm connected and tested	Yes	No	N/A

Comments



GRW START- UP REQUEST FORM AND PRE-STARTUP CHECKLIST

*This form and checklist must be completed and submitted to SolutionAir before the first startup of the listed unit. Limited warranty will be enabled upon the completion and submittal of this document. Please submit this completed document to **mechsupport@solutionairgroup.com***

For assistance please contact SolutionAir by phone at **204-633-4808** or by e-mail at **mechsupport@solutionairgroup.com**.

I agree that the items on the above checklist have been completed as of (date)

Installing Contractor Name

Date

Installing Contractor Signature

Please submit this completed form to mechsupport@solutionairgroup.com

Maintenance

Limited Warranty

1. SolutionAir warrants and guarantees for a period limited to twelve (12) months from date of installation / commissioning or eighteen (18) from date of shipment - whichever comes first, that the Products are manufactured in accordance with SolutionAir's quotation and submittal drawing specifications and of specified material unless otherwise expressly stated.
2. SolutionAir will manufacture the goods to be supplied in accordance with the product specifications supplied by Purchaser. SolutionAir shall not be liable for any loss or damages of any kind resulting from errors, omissions or untimely notification of changes to the specifications that have been provided. In the event that changes to the product specifications arise, SolutionAir must be notified immediately and in writing. The Purchaser will assume liability for the cost of all material and resources, work-in-progress and finished goods that have become obsolete or that can no longer be used due to any such changes in the specifications supplied.
3. In the event the Products supplied do not comply with quotation and submittal drawing specifications and/or material quality standards within the warranty period, SolutionAir will either repair the Products supplied or provide replacement of such Products that conform to the quotation and submittal drawing specifications. This decision is made at the sole discretion of SolutionAir. In either case, SolutionAir will not be responsible for labor and freight charges incurred in replacing Products except as agreed to by SolutionAir in writing, nor will SolutionAir be responsible for incidental, consequential or punitive damages. In the event SolutionAir elects to repair the Products supplied, Purchaser will assist by providing SolutionAir with all details of the problem and a written quotation for the costs of such work to be carried out. If the repair is authorized by SolutionAir, then Purchaser will assist by coordinating and supervising the repair work. In the event SolutionAir elects to replace the Products, SolutionAir may either (i) direct the Purchaser to return such Products to SolutionAir or (ii) provide replacement Products to the Purchaser without the return of the original Products, in which case Purchaser will be responsible for the disposal of such original Products. Such election is at the sole discretion of SolutionAir, and all returns of Products to SolutionAir must be approved in advance by SolutionAir. In the event SolutionAir directs Purchaser to return the Products to SolutionAir for repair or replacement, Purchaser agrees to return such Products to SolutionAir in a manner consistent with the original packaging in order to prevent damage. All freight back to SolutionAir's factory and return freight to Purchaser must be agreed upon prior to return of the Products.
4. SolutionAir makes no warranty whatsoever with respect to components or items supplied which may be warranted separately by their manufacturer. SolutionAir does not warrant factory mounted controls and components of Products supplied and owned by a third party for mounting by SolutionAir. Back charges to SolutionAir for Products under warranty by others will only be accepted if prior written approval is given by SolutionAir.
5. THE WARRANTIES AND LIABILITIES SET FORTH IN THE PRIOR PARAGRAPHS ARE THE ONLY WARRANTIES OR LIABILITIES OF SOLUTIONAIR. ALL OTHER GUARANTEES, WARRANTS, CONDITIONS AND REPRESENTATIONS, EITHER EXPRESS OR IMPLIED, WHETHER ARISING UNDER ANY STATUTE, LAW, COMMERCIAL USAGE OR OTHERWISE, INCLUDING IMPLIED WARRANTIES FOR FITNESS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED.
6. The foregoing warranty shall not take effect unless Purchaser shall inform SolutionAir in writing of any flaw, defect or deficiency in the Products promptly after such flaw, defect or deficiency becomes apparent and, in any case, not later than one (1) year from date of shipment. The warranty provided for under these Terms shall be void upon the following:

(i) the unauthorized repair or modification by any person other than SolutionAir of Products claimed to be defective; or (ii) the improper installation, maintenance or operation of the Products other than in strict accordance with standard industry practices and compliance with the specific recommendations of SolutionAir respecting the Products; or (iii) the misuse, negligence, or operation of the Products other than for their intended purpose.

Limitations

This warranty is given in lieu of all other warranties. Anything in the warranty notwithstanding, any implied warranties of fitness for a particular purpose and merchantability shall be limited to the duration of the express warranty. SolutionAir expressly disclaims and excludes any liability for consequential or incidental damage for breach of any express or implied warranty.

Where a jurisdiction does not allow limitations or exclusions in a warranty, the foregoing limitations and exclusions shall not apply to the extent of the legislation, in such case the balance of the above warranty shall remain in full force and effect.

This warranty gives specific legal rights. Other rights may vary according to local legislation.

The SolutionAir warranty is void if:

1. **The unit is not installed and serviced in accordance with manufacturer's recommendations.**
2. **Operation, maintenance, start-up and shut down are not in accordance with manufacturer's instructions.**
3. **Unit is operated in conditions not specified by the manufacturer.**
4. **The unit is operated while the building is under construction.**
5. **Unit is used for application which it was not intended.**

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This document contains the most current product information as of this printing.
For the most up-to-date product information, please go to SolutionAirGroup.com