

transmittal

HIXSON
659 Van Meter Street
Cincinnati, Ohio
45202-1568
513 241 1230
FAX 513 241 1287

TO: Ruscilli Construction Co. LLC
5815 Wall Street
Dublin, OH 43017

JOB NO. 10340.43

DATE: 09/23/22


SUBJECT: Marzetti
Columbus, OH – Old Cook Rm & Controls Upgrade

ENCLOSED

UNDER SEPARATE COVER

ATTENTION: Katie Fox

DELIVERED BY:
Procure

COPIES	DESCRIPTION																	
1	SUBMITTAL NO. 006 Product Data - Direct Fired Outdoor MAU Specification Section 237434 <input type="checkbox"/> Not Requested – Not Reviewed <input type="checkbox"/> Not Requested – Reviewed HIXSON 	<table border="1"><tr><td colspan="2" style="text-align: center;">SUBMITTAL REVIEW</td></tr><tr><td colspan="2" style="text-align: center;">HIXSON 659 VAN METER STREET CINCINNATI, OH 45202-4568</td></tr><tr><td colspan="2"><small>A/E review is for general conformance and compatibility with design concept and contract documents. It is not to determine the correctness or adequacy of this submittal. Markings, comments, or the absence of exceptions by the A/E shall not be construed as relieving the Contractor from compliance with the plans, specifications, and contract documents. The Contractor remains responsible for details and accuracy; for confirming and correlating quantities and dimensions; for selecting fabricators, processes, and systems; for techniques of assembly, construction, and installation; and for the performance of all work in a workmanlike and safe manner.</small></td></tr><tr><td><input type="checkbox"/> No Exceptions taken</td><td><input checked="" type="checkbox"/> Note Markings</td></tr><tr><td><input type="checkbox"/> Rejected</td><td><input type="checkbox"/> Resubmit</td></tr><tr><td colspan="2"><input type="checkbox"/> Comments attached</td></tr><tr><td>By: DWK/AJM</td><td>Date: 092222</td></tr><tr><td>JOB NO. 10340.43</td><td>SUBMITTAL NO. 006</td></tr></table>	SUBMITTAL REVIEW		HIXSON 659 VAN METER STREET CINCINNATI, OH 45202-4568		<small>A/E review is for general conformance and compatibility with design concept and contract documents. It is not to determine the correctness or adequacy of this submittal. Markings, comments, or the absence of exceptions by the A/E shall not be construed as relieving the Contractor from compliance with the plans, specifications, and contract documents. The Contractor remains responsible for details and accuracy; for confirming and correlating quantities and dimensions; for selecting fabricators, processes, and systems; for techniques of assembly, construction, and installation; and for the performance of all work in a workmanlike and safe manner.</small>		<input type="checkbox"/> No Exceptions taken	<input checked="" type="checkbox"/> Note Markings	<input type="checkbox"/> Rejected	<input type="checkbox"/> Resubmit	<input type="checkbox"/> Comments attached		By: DWK/AJM	Date: 092222	JOB NO. 10340.43	SUBMITTAL NO. 006
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JOB NO. 10340.43	SUBMITTAL NO. 006																	
	<p style="text-align: center;">Supply Diffuser not required.</p> <p style="text-align: center;">Drawings indicate disconnect to be provided by Division 26.</p> <p>Disregard comment, RCC and Hixson confirmed drawings indicate factory installed disconnect KRF 09/23/2022</p>																	



Ruscilli Construction Co
 5815 Wall Street
 Dublin, Ohio 43017
 P: (614) 876-9484
 F: 6148760253

Project: 22555 Marzetti Allen Dairy
 1709 Frank Road
 Columbus , Ohio 43223

Submittal #237434-1.0 - 237434 - DIRECT-FIRED, OUTDOOR MAKEUP-AIR UNITS 237434 - DIRECT-FIRED, OUTDOOR MAKEUP-AIR UNITS

Revision	0	Submittal Manager	Katie Fox (Ruscilli Construction Co)
Status	Open	Date Created	Sep 14, 2022
Issue Date		Spec Section	237434 - DIRECT-FIRED, OUTDOOR MAKEUP-AIR UNITS
Responsible Contractor	TP MECHANICAL	Received From	
Received Date		Submit By	
Final Due Date	Oct 11, 2022	Lead Time	
		Cost Code	
Location		Type	Product Data
Approvers	Katie Fox (Ruscilli Construction Co), Karen Blum (HIXSON ARCHITECTS)		
Ball in Court	Karen Blum (HIXSON ARCHITECTS)		
Distribution			
Description	<p>1. Product Data for each unit: a. Certified fan-performance curves with system operating conditions indicated. b. Certified coil-performance ratings with system operating conditions indicated. c. Furnace type, capacity, fuel pressure, burner type, materials of construction, control type, and options. d. Motor ratings, electrical characteristics, and wiring diagrams differentiating factory- and field-wiring. e. Material gages and finishes. f. Filters with performance characteristics. g. Dampers, including housings, linkages, and operators. h. Furnished options and accessories. i. Dimensions, weights, and structural loads, required clearances, method of field assembly, components, and location and size of each field connection. 2. Clearly indicate, by highlighting or itemized lists, all differences to "Design Basis" product features.</p>		

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					
Lindsey Ward		Sep 21, 2022	Sep 19, 2022	Submitted	23 74 34 - Make Up Air Unit.pdf
Katie Fox	Sep 19, 2022	Sep 26, 2022	Sep 20, 2022	Reviewed	23 74 34 - Make Up Air Unit.pdf (Current)
Karen Blum	Sep 20, 2022	Oct 11, 2022		Pending	

22555 - Marzetti Allen Dairy



1709 Frank Road
Columbus, Ohio 43223
United States

Ruscilli Construction Co
5815 Wall Street
Dublin, Ohio 43017
United States
(614) 876-9484

Title **Submittal Manager**
237434 - DIRECT-FIRED, OUTDOOR MAKEUP-AIR UNITS Katie Fox

Spec Section **Type**
237434 - DIRECT-FIRED, OUTDOOR MAKEUP-AIR UNITS Product Data

Number **Rev**
237434-1 0

Description

1. Product Data for each unit:
 - a. Certified fan-performance curves with system operating conditions indicated.
 - b. Certified coil-performance ratings with system operating conditions indicated.
 - c. Furnace type, capacity, fuel pressure, burner type, materials of construction, control type, and options.
 - d. Motor ratings, electrical characteristics, and wiring diagrams differentiating factory- and field-wiring.
 - e. Material gages and finishes.
 - f. Filters with performance characteristics.
 - g. Dampers, including housings, linkages, and operators.
 - h. Furnished options and accessories.
 - i. Dimensions, weights, and structural loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Clearly indicate, by highlighting or itemized lists, all differences to "Design Basis" product features.

REVIEWED

REVIEWED AS NOTED

RETURNED FOR CORRECTIONS

By Katie Fox Date 09/20/2022

Review of the drawings is for general conformance only and does not relieve the sub-contractor and/or vendor of responsibility to comply fully with all portions of the contract, drawings and specifications and changes there to.

Ruscilli Construction Co.

LLC CONTROL NO. 237434-1.0



SUBMITTAL DATA

Project: Marzetti Old Cook Room
Bid Category : Plumbing – HVAC
Project No.: E1000114
TP Tab No.: 222
Construction Manager: Ruscilli Construction Co, Inc.
Architect/Engineer: Hixson Architecture Engineering Interiors
Submittal For: Make-Up Air Unit
Specification #: 23 74 34
Manufacturer: Greenheck
Supplier: Air Control Products

The attached submittal data has been reviewed by TP Mechanical Contractors for compliance with the Architect/Engineer's specifications and plan schedule for this project.

In order to maintain the project schedule, we request that this submittal be returned to TP Mechanical Contractors **within 7 days**.

NOTE: Material cannot be released without Architect/Engineer's approval of submittal.

(Please place stamp of approval here)

<u> X </u>	PRODUCT DATA
<u> </u>	DRAWINGS
<u>8/25/22</u>	DATE SUBMITTED
<u> </u>	DATE RESUBMITTED
T. P. MECHANICAL CONTRACTORS	
BY	<u>Mark Rayney - LW</u>
<p>This drawing or brochure has been checked to quality or proper components only. Approval of this drawing or brochure shall not relieve the supplier of responsibility for accuracy or dimensions of full compliance with plans and specifications and purchase order.</p>	

SUBMITTAL DATA

Date: 8/24/2022

Job Name: T. Marzetti
Old Cook Room Utility & Controls Upgrades

Manufacturer: Greenheck

Product: Make-Up Air Unit

Spec Section: 23 74 34

Prepared For: TP Mechanical / Steve Blust

Prepared By: Mike Hoffa / Ray Pasquinelli

Notes:

- Curb provided by others.



DGX-P116-H12-MF

Unit Performance

Design Conditions					
Elevation (ft)	Summer		Winter (°F)	Supply (CFM)	Outdoor Air (CFM)
	DB (°F)	WB (°F)			
817	91.1	76.7	8.0	4,000	4,000

Unit Specifications					
Qty	Weight (lb)	Cooling Type	Heating Type	Unit Installation	Unit ETL Listing
1	788 (+/- 5%)	None	Direct Gas-Fired	Outdoor/Indoor	ANSI Z83.4 / CSA 3.7

Configuration				
Unit Orientation	Unit Configuration	Outdoor Air Intake	Return Air Intake	Supply Air Discharge
Horizontal	Constant Volume 100% OA	End	-	Bottom

Heating Specifications								
Type	Gas Type	Gas Pressure		Capacity (MBH)		Temperature Rise (°F)	Performance	
		Min (in. wg)	Max (Psi)	Input	Output		EAT (°F)	LAT (°F)
Direct Gas	Natural	12	0.5	338.1	311.0	72.0	8.0	80.0

Air Performance									
Type	Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Fan			
						Qty	Type	Size (in.)	Drive-Type
Supply	4,000	0.5	2	1909	2.47	1	Mixed Flow	20	Direct-Drive

Motor Specifications						
Motor	Qty	Size (HP)	Enclosure	Efficiency	RPM	
Supply Fan Motor	1	3	ODP	NEMA Premium	1725	

Electrical Specifications				
Power Supply	Rating (V/C/P)	MCA (A)	MOP (A)	SCCR
Unit	460/60/3	6.3	15	5kA



CONSTRUCTION FEATURES AND ACCESSORIES

Unit		Accessories	
Unit Installation - Indoor or Outdoor	Std	Factory Installed, Lockable, NEMA 3R Disconnect	Std
Unit Construction - Double Wall	X	Weatherhood - Birdscreen	X
Wall Insulation - 1in. fiberglass - Tempering on	X	Supply Air Filters - 2" MERV 8 and 2" MERV 13, 16x20x2 - (8)	X
Base Insulation - 1in. fiberglass - entire unit base pan	Std	Outdoor Air Inlet Damper	
Paneled Bottom - Sheet metal liner for base insulation		Supply Air Outlet Damper - Insulated, low leakage (Ships loose)	X
Corrosion Resistant Fasteners	Std	Return Air Damper	
Access and Connections - Left side when facing intake	X	Diffuser - 4-way supply air diffuser	X
Service Access - Hinged access doors	X	Roof Curb	
Unit Finish - Permatorc ASTM B117 salt spray 2500 hours	X	Combination Curb	
Finish Color - Concrete Gray (RAL 7023)	X	Electrofin Coil Coating	
Supply Fan - Direct-drive, mixed flow plenum	X	Fan Bearing Extended Lube Lines	
Supply Fan and Motor Vibration isolation - Neoprene	X	Inlet Damper Module	
Controls		Spare Belts	
Unit Controls - Terminal strip with remote panel	X	Spare Filters - 1 set(s)	X
Remote Panel - Industrial (NEMA-1)	X	Motor with Shaft Grounding	
BMS Communication		Service Outlet	
BMS Protocol		Service Lights	
Temperature Control - Discharge control with room override	X	Gas Heating Accessories	
Supply Fan VFD - VFD by factory	X	Pilot Ignition	Std
Supply Fan Control - Constant Volume	X	Flame Sensing - Flame rod	X
Unoccupied Mode (Night Setback)		Flame Safeguard Display	
Control Accessories		Agency Approval - ETL	Std
Remote display		FM Compliant	X
Heating Inlet Air Sensor	X	High Gas Pressure Switch	X
Cooling Inlet Air Sensor		Low Gas Pressure Switch	X
Dirty Filter Switch	X	Visual Indication Valves	
Fire Stat Type III (Ships loose)		Proof of Closure Valve	
120V/24V Smoke Detector (Ships loose)		External Gas Pressure Regulator (Ships loose)	X
Inlet Damper End Switch		Carbon Dioxide Sensor (Ships loose)	
External Cooling Lockout Relay		Warranty Options	
Freeze Protection (Supply Air Low Limit)	X	Unit Warranty - 18 months (std.)	X
Auxiliary Supply Starter Contacts		5 Year Compressor Warranty	
Auxiliary Exhaust Starter Contacts		5 Year Burner Warranty	X
Airflow Proving Monitoring Contact	X	10 Year Burner Warranty	

Standard Option	Std
Not Included	
Included	X

Notes

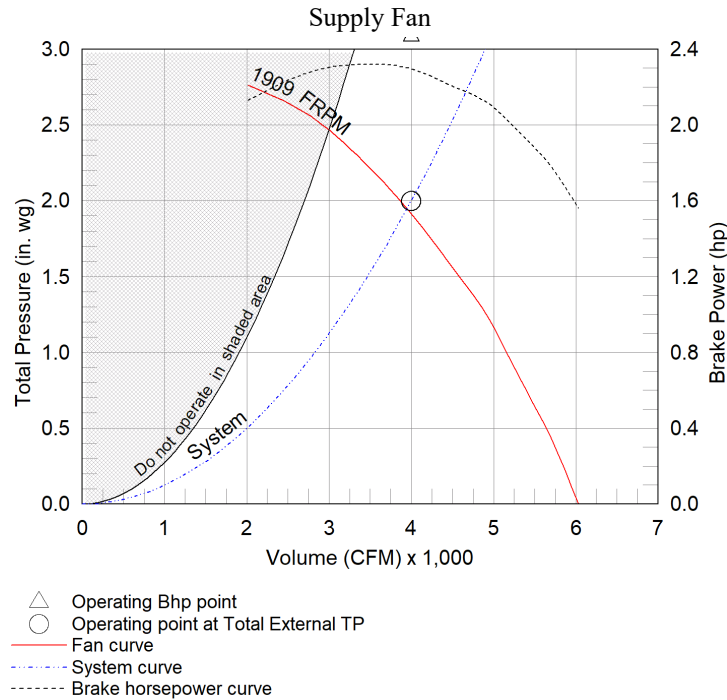
Birdscreen weatherhoods ship knocked down and require field installation.

Fan Charts And Performance

Supply Fan Performance									
Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor		Fan		
					Qty	Size (HP)	Qty	Type	Drive-Type
4,000	0.5	2	1909	2.47	1	3	1	Mixed Flow	Direct

Pressure Drop (in. wg)							
Diffuser	Weatherhood	Filter	Damper	Cooling	Heating	External	Total
0.019	0.035	0.79	0.03	-	0.625	0.5	2

Sound Performance in Accordance with AMCA										
Sound Power by Octave Band								Lwa	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
83	79	78	79	79	76	74	72	83	72	21



Heating Specifications

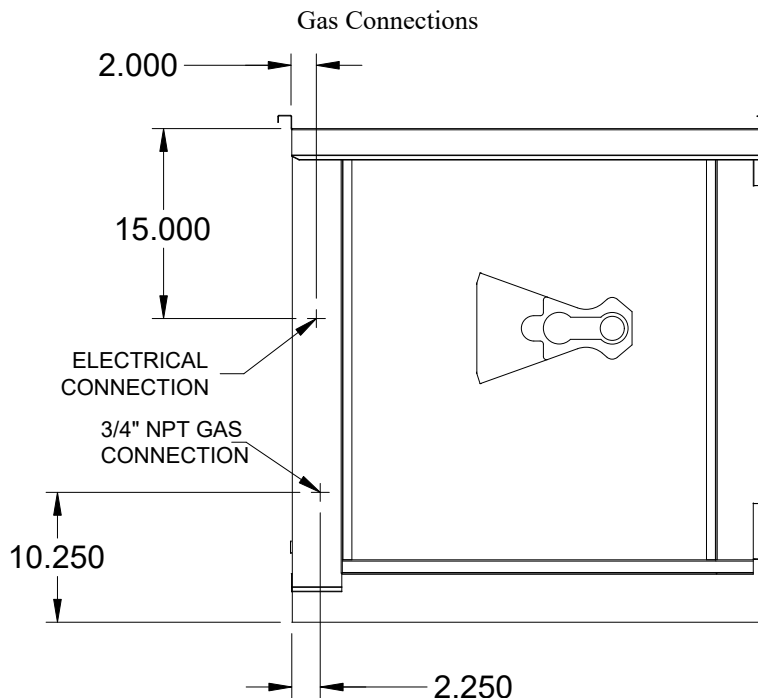
Heating Performance								
Type	Gas Type	Gas Pressure		Capacity (MBH)		Temperature Rise (°F)	Performance	
		Min (in. wg)	Max (Psi)	Input	Output		EAT (°F)	LAT (°F)
Direct Gas	Natural	12	0.5	338.1	311.0	72.0	8.0	80.0

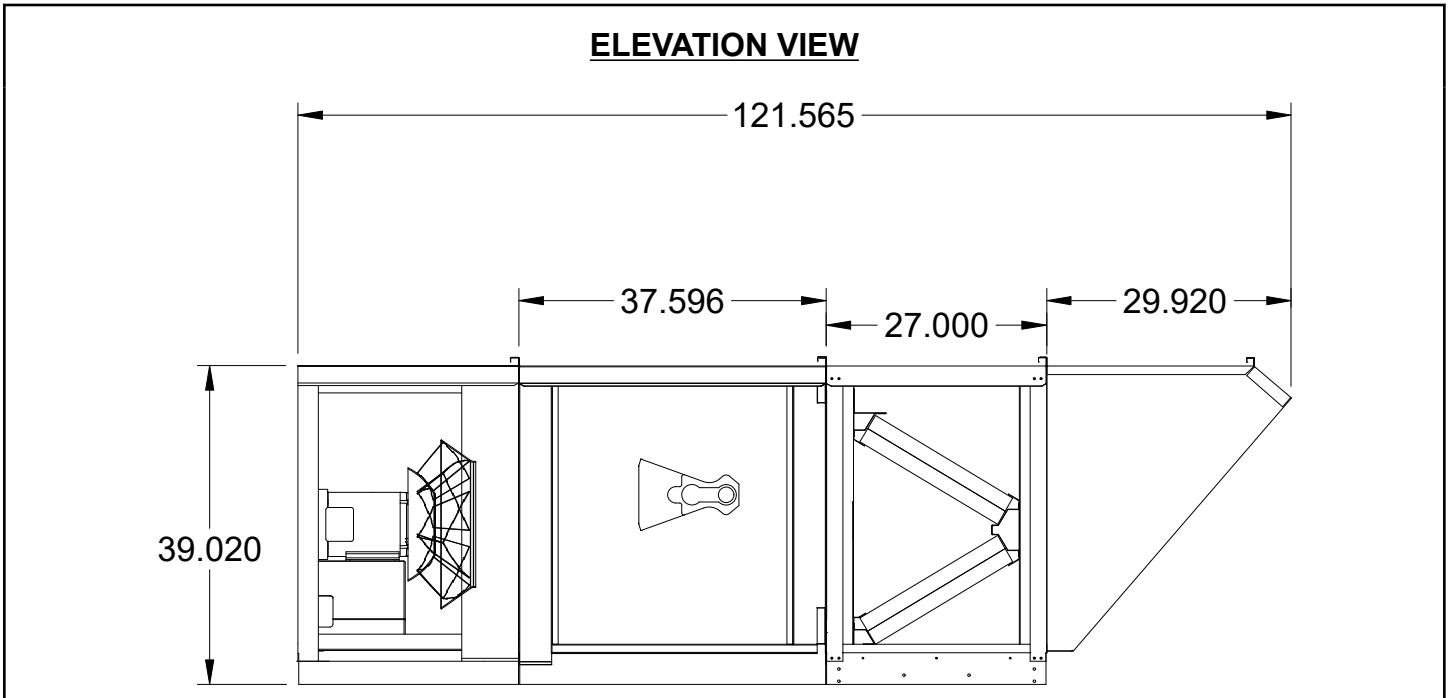
Gas Train Details							
Redundant Main Valves	Electronic Modulating Valve	Pilot Valve	Internal Regulator	Visual Indication Valve	Proof of Closure Valve	Gas Pressure Switch(es)	External Regulator
Std	Std	Std	Std	-	-	High & Low	10 PSI

Additional Heating Information						
ETL Approved	FM Compliant	Temperature Control	Flame Sensing	Ignition Control	CO2 Sensor	Flame Safeguard Display
Std	Yes	Discharge w/Room Override	Flame Rod	Economy Pilot	-	-

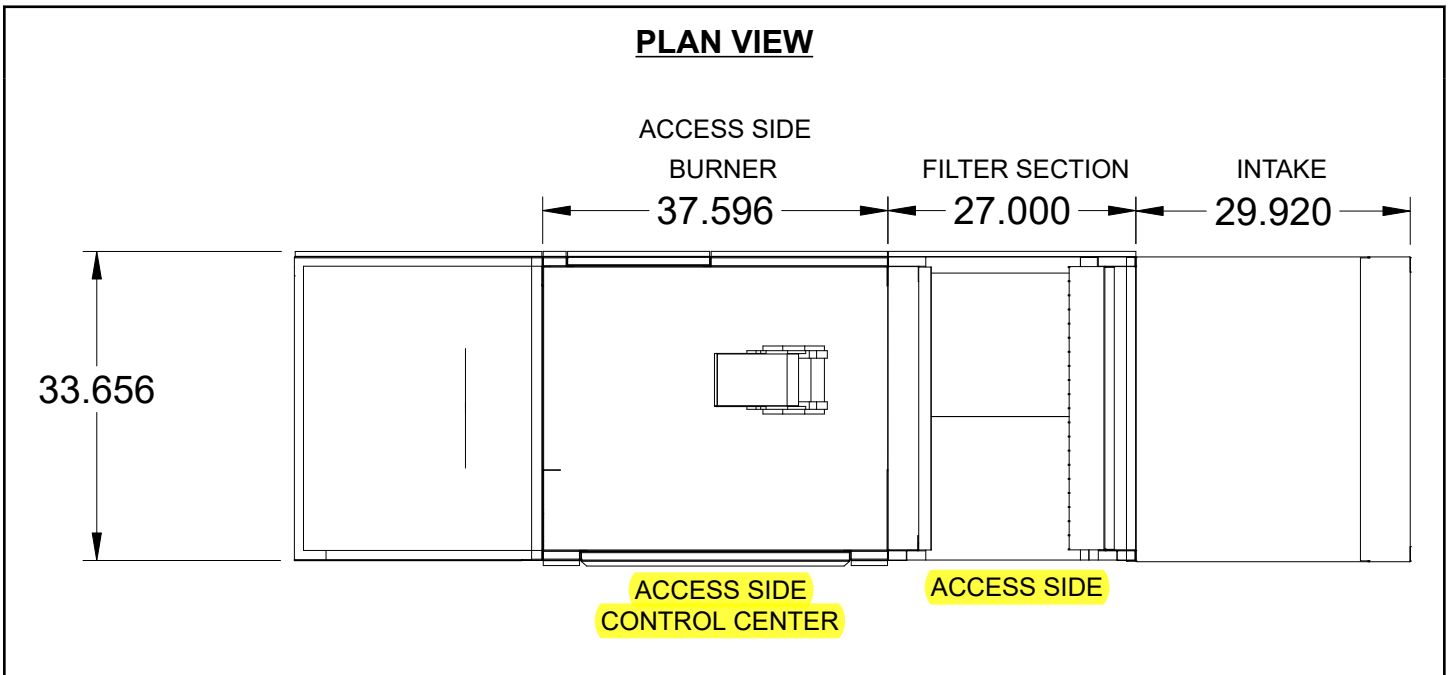
Unit Details
92% thermal efficiency
Cast aluminum burner manifold with stainless steel mixing plates
Electronic modulation burner control

10 second pre-purge sequence
Low fire start

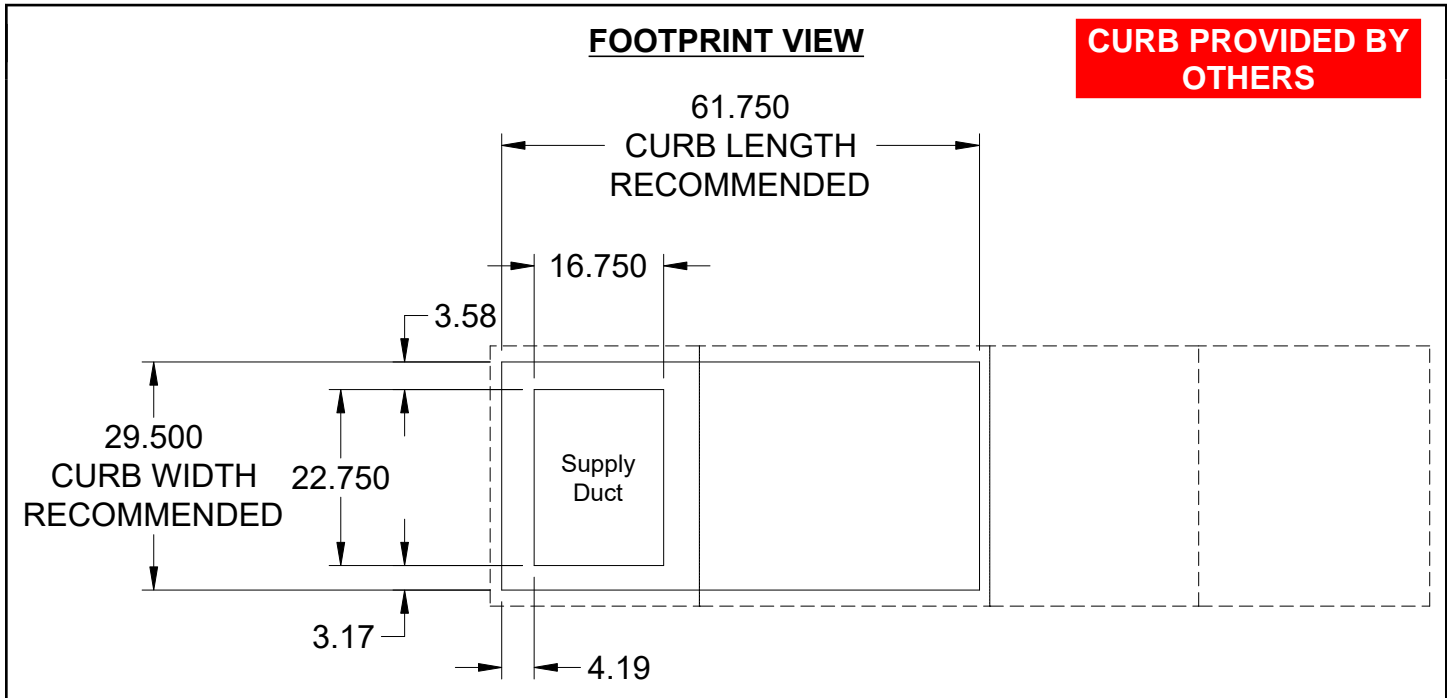
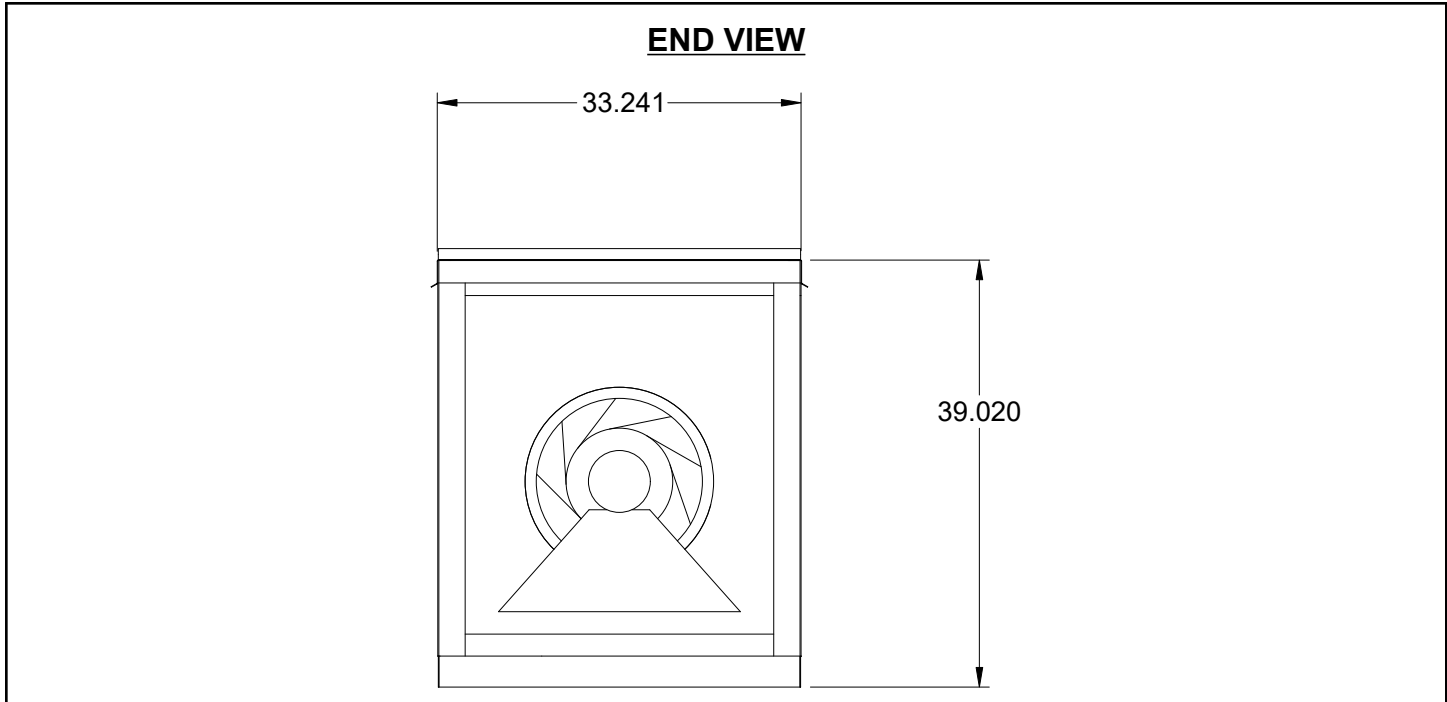




Notes - Elevation View
Standard configuration for unit access is on the left-hand side, when looking into the unit intake in the direction of airflow.
Order of unit sections is from intake of unit to discharge of unit.
Sections included on this unit: Weatherhood Section, Filter Section, Heating Section, Blower Section
Insulation: Double Wall, from Burner Section through end of unit.



Notes - Plan View
Standard configuration for unit access is on the left-hand side, when looking into the unit intake in the direction of airflow.



Notes - Footprint View

Minimum Roof Opening: The minimum roof opening size is the illustrated duct diameter plus 0.25 in. on all sides. For example: If the duct size is 14 x 14 in. square, the minimum roof opening size is 14.5 x 14.5 in. square.

Maximum Roof Opening: There must be a minimum perimeter of 1.75 in. between the roof opening and the roof curb. For example: If the roof curb is 75 x 30 in. square, the maximum roof opening is 71.5 x 26.5 in. inches square.

The weatherhood and filter sections of the make-up air unit extend beyond the curb. This is by design, to prevent water infiltration.

Clearance Specifications

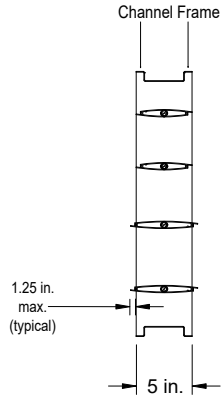
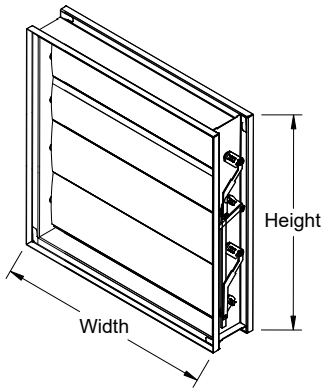
Recommended Minimum Combustible Clearances				
	Floor (in.)	Top (in.)	Sides (in.)	Ends (in.)
Insulated Units	0	0	0	0
Non-Insulated Units	0	6	6	6

Notes - Combustible Clearances
 Clearance to combustibles is defined as the minimum distance required between the heating source and the adjacent combustible surfaces to ensure the adjacent surface's temperature does not exceed 90 F above the ambient temperature.

Recommended Minimum Service Clearances	
Housing 32 and less (in.)	Housing 35 and higher (in.)
42 on the controls side of the unit	48 on the controls side of the unit

Notes - Service Clearances
 To ensure ample space for component removal (evaporative cooling media, coils, filters, etc.), service clearances should be 6 in. wider than the width of the module itself.

OUTLET DAMPER



Application & Design

The model VCD-34 is a low leakage control damper with thermally insulated blades. This model is intended for application in medium pressure and velocity systems. Non-jackshafted dampers will be supplied with a blade drive lever for internal actuator mounting. When external actuator mounting is specified, an extension pin with clip kit will be provided. Note: The extension pin with clip kit includes extension pin and clip.

Ratings

Pressure: Up to 10 in. wg pressure differential
Velocity: 4,000 ft/min
Leakage: Class 1A @ 1 in. wg, Class 1 @ up to 8 in. wg
Temperature: Up to 250F

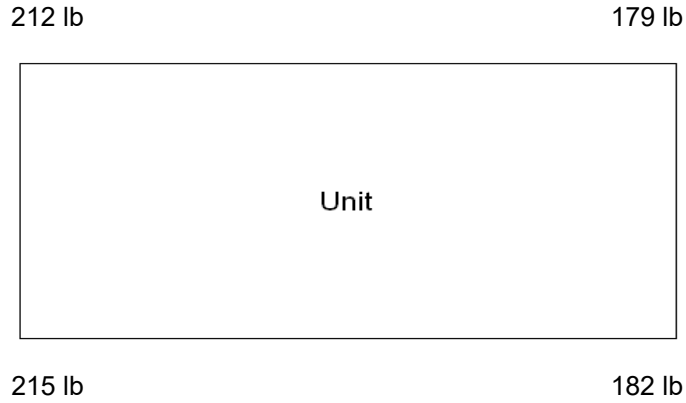
Notes: All dimensions shown are in units of inches. Width & Height furnished approximately 0.25 under size. Installation instructions available at www.greenheck.com. Customer supplied actuators configured with a jackshaft will be provided with a jackshaft this is one inch in diameter.

QTY	WIDTH	HEIGHT
1	22.75 in.	16.75 in.

NOTE: Width and Height are shown in nominal dimensions

Manufacturer reserves right to change, alter, or improve this product at any time.

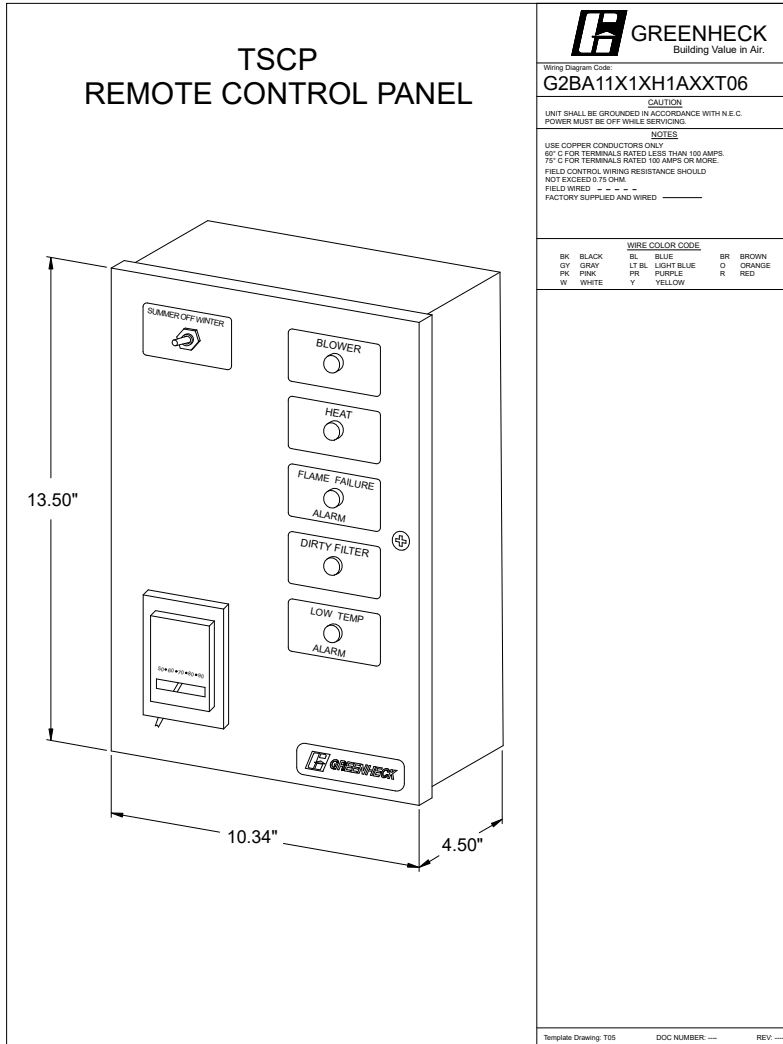
Corner Weights



Notes

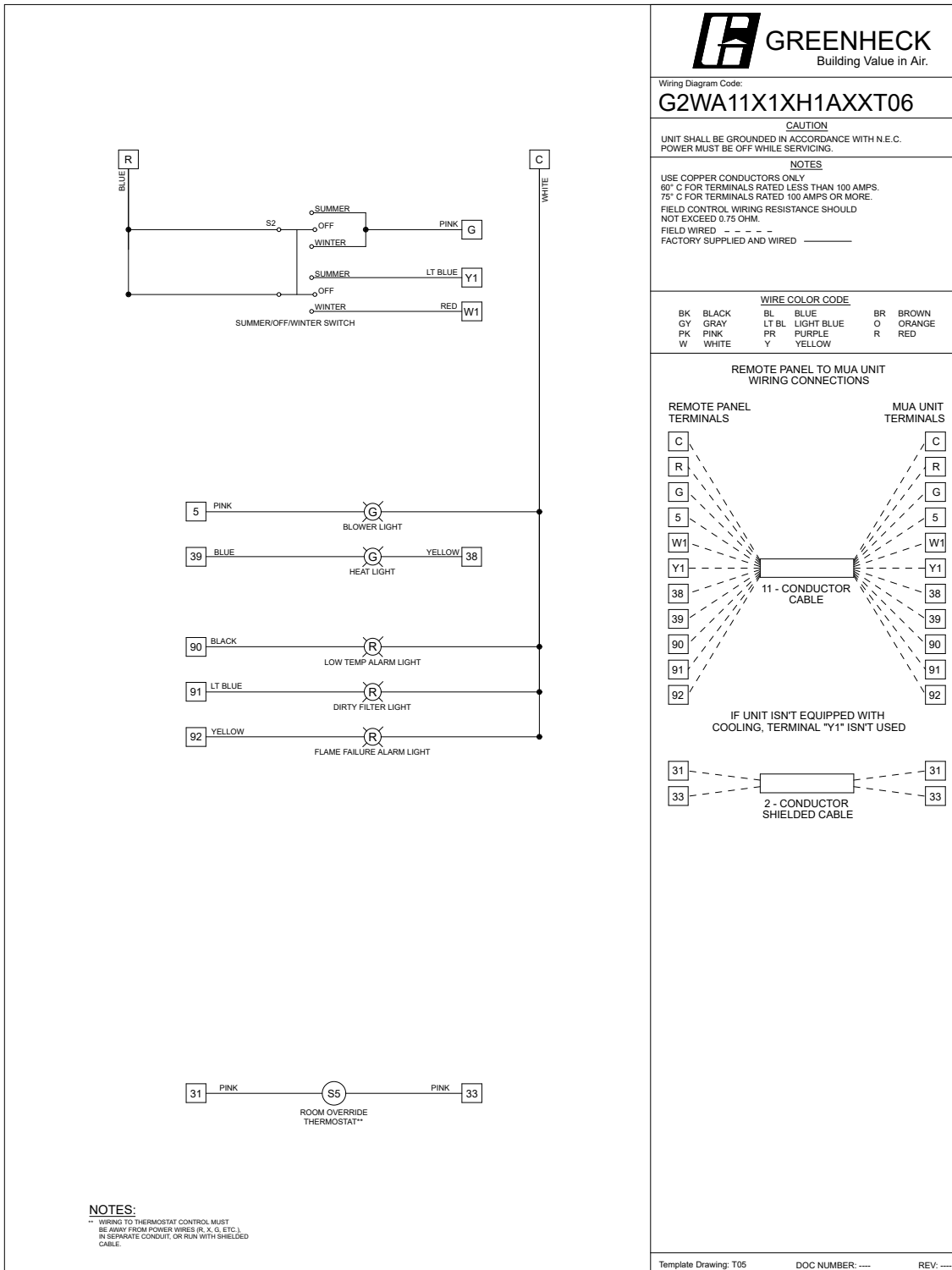
Estimated corner weights are shown looking down on unit and airflow from right to left. Weights are applied at the base of the unit. Images not drawn to scale.

TSCP - Remote Control Panel



Standard Construction Features And Notes
Location of switches, lights and controls may vary.
All dimensions shown are in units of inches.
Galvanized steel with baked enamel finish.
Numbered terminal strip to match unit wiring.

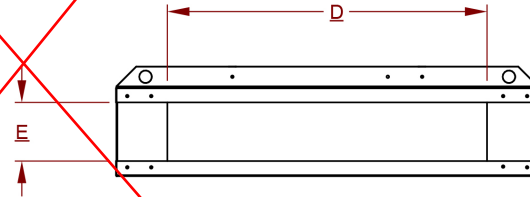
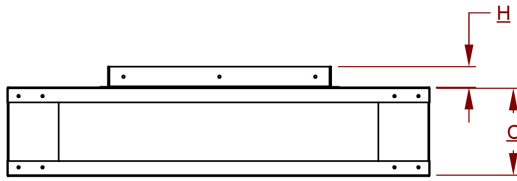
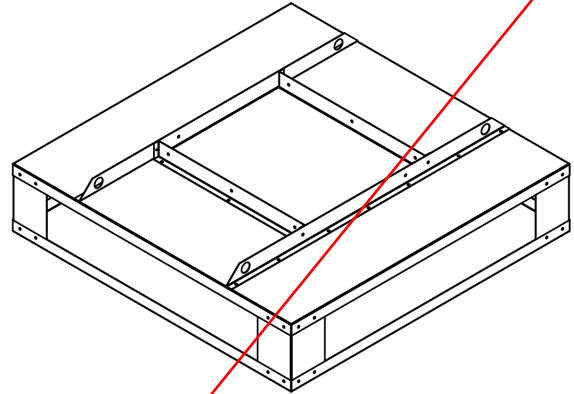
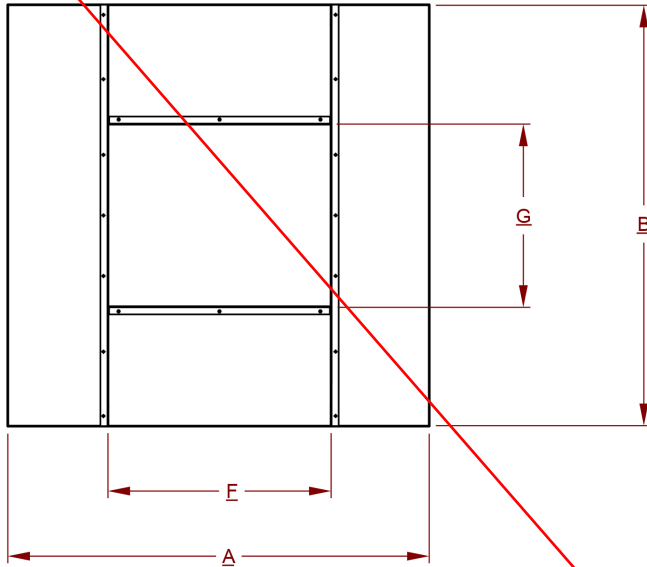
Remote Panel Wiring Requirements



Template Drawing: T05 DOC NUMBER: --- REV: ---

The wiring drawings details the number of the wires and the type of wire that needs to be run from the unit control center to the panel. A detailed wiring schematic will be provided with the panel when the unit ships.

Diffuser

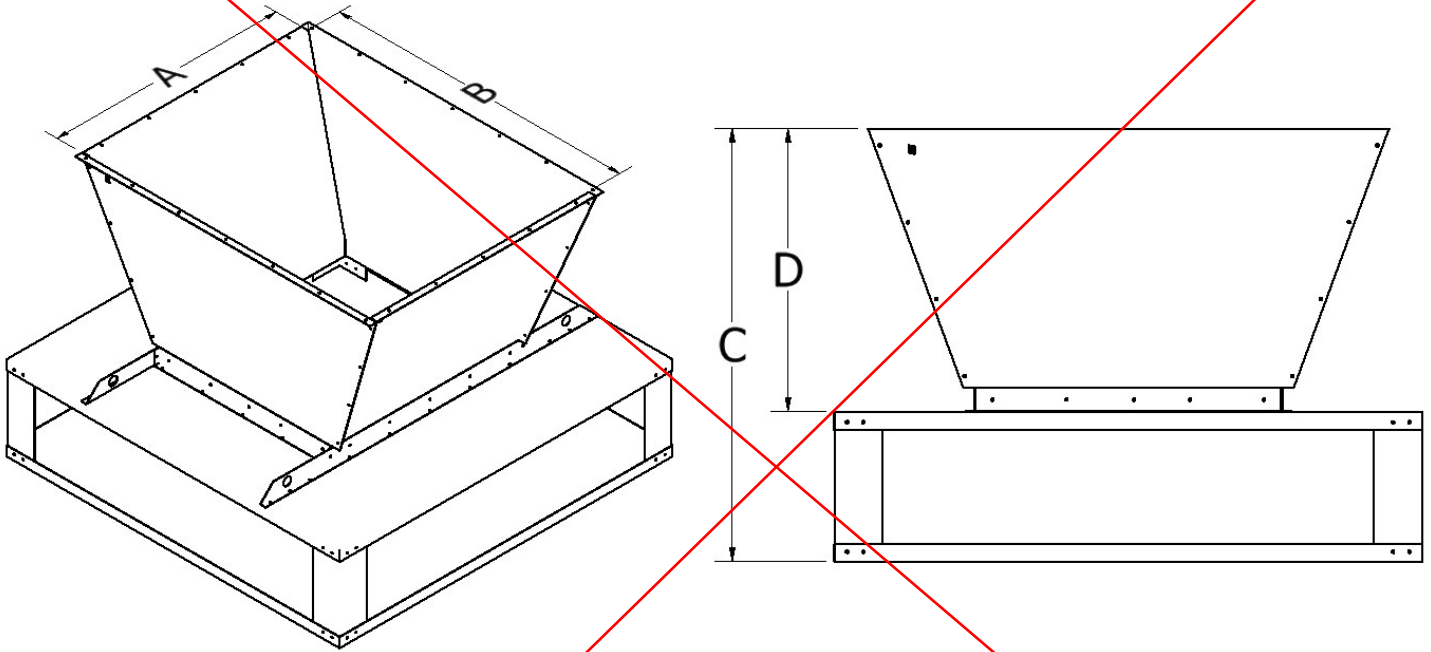


Diffuser Dimensions										
Housing Size	Blower Qty	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	Weight (lb)
H12	1	41.75	41.75	8.75	32	6	22	18	2.046	125

Construction Features and Notes										
All Dimensions shown represent actual sizing.										
4-Way Diffuser with housing constructed of G90 galvanized steel with mounting flanges and lifting holes. Grilles are double deflection with individually adjustable horizontal and vertical blades.										
Information on how to properly support the transition/elbow can be found in the units IOM.										
IGX units will not ship with a transition. Transition will need to be provided externally or contact the factory for other options.										
Units configured with the following discharge arrangements will not ship with a transition: Upblast, left, or right discharge.										

Not required

4-WAY DIFFUSER



Diffuser Dimensions				
Housing Size	A (in.)	B (in.)	C (in.)	D (in.)
H12	22.8	16.8	22.75	14

Construction Features and Notes
All Dimensions shown represent actual sizing.
3-Way Diffuser with housing constructed of G90 galvanized steel with mounting flanges and lifting holes. Grilles are single deflection with individually adjustable blades.
Duct flange is ~ 1 inch.

Not required

SEQUENCE OF OPERATIONS

Unit Controls

The unit shall be provided from the factory with:

- 24VAC Transformer
- Terminal Strip
- Supply fan VFD
- Factory provided, field installed supply air insulated outlet damper with actuator
- Remote Control Panel

Remote Control Panel

A Permatecor coated NEMA-1 rated remote control panel shall be shipped loose to control the basic operation of the unit. The panel shall contain the following:

- Summer / Off / Winter Switch
Summer: Supply fan is enabled, heat is disabled.
Off: Supply fan is disabled.
Winter: Supply fan is enabled, heat is enabled.
- Blower Light
- Main Valve Light
- Dirty Filter Light
- Supply temperature set point dial.
- Room override thermostat

Unit Start-Up Sequence

- Supply Fan Enable Is Received
- Supply air outlet damper actuator is energized
- Supply air outlet damper actuator limit switch is proven closed
- Supply Fan Is Enabled

Supply Fan Sequence

The unit has been provided with a factory mounted variable frequency drive (VFD). The variable frequency drive shall control the supply fan speed as indicated by the following sequence:

Constant Volume

The VFD shall be programmed from the factory for a constant supply fan speed. This is to be adjusted for air balancing only and is not to be modulated.

Heating Control

A heating enable signal must be present and the supply fan must be enabled before the unit will enable heating.

Heating Inlet Air Sensor (Heating Lockout)

The heating will be locked out when the outside air temperature is above the heating inlet air sensor set point (typical 65 F, adj.)

Direct Gas Fired Heating (Discharge Control)

The gas control amplifier located in the unit shall modulate the heating to maintain a supply temperature set point (55 F-90 F, adj.).

- A remote panel mounted set point dial shall control the supply temperature set point.

Room Override

A room override thermostat shall elevate the supply air temperature set point 5 F-40 F (adj.) upon a call for heat from the space.

Building Freeze Protection

If the supply air temperature drops below 35 F for 300s (adj.), the supply fan will be disabled. Cycling the fan enable will reset the timer. This sequence is intended to prevent the unit from supplying cold air into the building.

Warranty Statement for Make-Up Air

Unit Warranty

Greenheck warrants the equipment to be free from defects in material and workmanship for a period of 18 months from the date of shipment. Initial startup must be completed within six months of the shipment date, and a startup report must be submitted to Greenheck.

DG Burner Extended Warranty

Greenheck warrants the direct-fired gas burner to be free from defects in material and workmanship for a period of 5 years from the shipment date. The warranty does not include items deemed as consumable components, including, but not limited to: Igniters, Spark rods, Spark generator, Flame rods, Flame wires, UV eye components, and associated components.

Note: Rust, discoloration of the burner material and cracks or holes smaller than .75 in. is not qualification for a defective burner.

Warranty Notes

Any component which proves defective during the warranty period will be repaired or replaced at Greenheck's sole option when returned to our factory, transportation prepaid. All warranties do not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product. These warranties are exclusive and are in lieu of all other warranties, whether written, oral, or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose. No person (including any agent or salesperson) has authority to expand Seller's obligation beyond the terms of this warranty, or to state that the performance of the product is other than that published by Seller.

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.