



Morton & Gettys Office Upfit
 113 E. Main St., Ste 201
 Rock Hill, SC 29730

Architect Project No. 23000
 Owner Project No. _____
 Contractor Project No. 3399/170001

SUBMITTAL TRANSMITTAL **Number** **Data Info Submittal**

Submitted To: Vinyet Architecture 312 Pendleton Rock Hill, SC 29730 Attn: Lari McAbee-Meza	Submitted By: Southern Builders Representative: Mike Broome Subject: HVAC Reference Drawing Reference Spec Section 230000 Subcontractor Action Mechanical Representative: Billy Weaver
Reason for Substitution <input checked="" type="checkbox"/> Submittal If Substitution, Submit all information with a Request For Substitution Form <input type="checkbox"/> Resubmittal?	Reference Drawing Reference Spec Section 230000 Subcontractor Action Mechanical Representative: Billy Weaver

DESCRIPTION						(Please Attach Supporting Documentation)
Item No.	Type (see below)	Date	Spec Section	Description	Copies	
1	DATA	3/29/2024	230000	Air Distribution	1	
2	DATA	3/29/2024	230000	Fans	1	
3	DATA	3/29/2024	230000	Insulation	1	
4	DATA	3/29/2024	230000	Louver	1	
5	DATA	3/29/2024	230000	RTU & Split System Heat Pump	1	

TYPES SHOP Shop Drawing MATL Material Sample DATA Product Data	CAL Calculations MOCK Mock-Up QUAL Qualifications
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COMMENTS <div style="border: 1px solid black; padding: 5px; width: fit-content;"> EF-1,EF-2 PAGE 15 EF-3 PAGE 18 RTU-1 PAGE 64 </div>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; color: red; font-weight: bold;">SUBMITTAL REVIEW</p> <div style="display: flex; align-items: center;"> <div style="font-size: 8px;"> Vinyet Architecture 312 Pendleton Street Rock Hill, SC 29730 803.324.5531 </div> </div> <div style="margin-top: 5px;"> <input type="checkbox"/> NO EXCEPTION TAKEN <input checked="" type="checkbox"/> REVIEWED WITH CHANGES NOTED <input type="checkbox"/> REVISE AND RESUBMIT <input type="checkbox"/> REJECTED (SEE NOTE HEREWITH) </div> <div style="font-size: 8px; margin-top: 5px;"> REVIEWED FOR CONFORMITY WITH GENERAL INTENT OF CONTRACT DOCUMENTS ONLY. THE PROVISION OF NO EXCEPTION TAKEN TO A SUBSTITUTE OR SEPARATE ITEM DOES NOT IMPLY ACCEPTANCE OF AN ASSEMBLY IN WHICH IT FUNCTIONS NOR DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND COORDINATING ALL QUANTITIES, FIELD AND OTHER DIMENSIONS, ACCURACY, PERFORMANCE, SAFETY, STRUCTURAL ADEQUACY OF MANUFACTURED PRODUCTS, ASSEMBLIES OR COMPONENTS THEREOF FOR THEIR INTENDED PURPOSE, SELECTION OF FABRICATION AND CONSTRUCTION TECHNIQUES AND COORDINATION OF HIS/HER WORK WITH THAT OF ALL OTHER TRADES. </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> <div style="border: 1px solid red; padding: 2px; font-size: 8px; color: red; font-weight: bold;"> VYA: L1 LOUVER COLOR REVIEWED AND SELECTED. </div> <div style="font-size: 8px;"> BY: DATE: 04.09.24 Lari McAbee-Meza </div> </div> </div>
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Signed: Mike Broome Date: 3/29/2024

REVIEWED

By Mike Broome at 9:54 am, Mar 29, 2024

CONTRACTOR TO VERIFY ALL QUANTITIES AND ENSURE ALL SPECIFIED ACCESSORIES AND MOUNTING HARDWARE ARE PROVIDED

Date	March 28, 2024
Hoffman & Hoffman Order #	470.477.10212
Branch Office	Charlotte, NC
Salesman	Spencer Jones



PROJECT: Morton and Gettys Attorneys at Law
Rock Hill, SC

CONTRACTOR: Action Mechanical
Charlotte, NC

ENGINEER: Wilde Engineering
Charlotte, NC

EQUIPMENT: Air Distribution by Price Industries

PROJECT NAME
Morton and Gettys

SUBMITTAL



Wilde
engineering

NO EXCEPTIONS TAKEN
 APPROVED AS NOTED

REVISE & RESUBMIT
 REJECTED

REVIEW ONLY

REVIEWED BY Jacob Lytton
DATE 4/1/2024

This review is only for general compliance with the intent of the contract documents. Contractor shall assume responsibility for correctness, dimensions, details, quantities and all costs associated with substituted equipment, including maintenance access, clearances, building alterations, replacement of system components, etc.

APPROVED

By Billy Weaver at 6:57 am, Mar 29, 2024

PER LATEST DRAWINGS: 1/12/2024

General Notes:

Above per the attached data and cut sheets

- Surface mounting frames provided for diffusers mounted in hard ceiling.
- Plenum slot diffusers provided with aluminum plaster frames for mounting in hard ceiling. This model is not available with mudd-in frames. Tags D, E.
- We are not providing any OBDs or cable operated dampers. Dampers appear to be located in the runouts.
- All diffusers & grilles include neck sizes, panel sizes, finishes, accessories, and material of construction as per the attached schedule of devices and cut sheets.
- All quantities, sizes, frame types and finishes must be confirmed.
- We don't include any OBD's, manual volume dampers, insulated backpans, light shields, blank offs or special painted finishes.

SUBMITTAL

APPROVAL REQUIRED

HOFFMAN & HOFFMAN, INC.

HVAC Manufacturers Representative

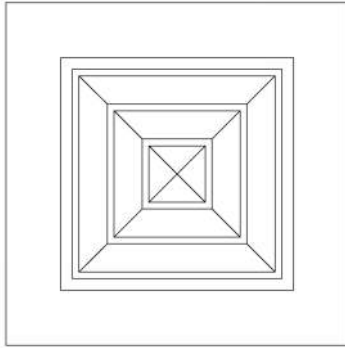
Website: www.hoffman-hoffman.com

Asheville, NC (828) 252-5782	Charleston, SC (843) 884-3201
Charlotte, NC (704) 364-4700	Columbia, SC (803) 765-9360
Raleigh, NC (919) 781-8011	Greenville, SC (864) 676-1888
Wilmington, NC (910) 791-4775	Chesapeake, VA (757) 548-1700
Chattanooga, TN (423) 693-2890	Richmond, VA (804) 272-1500
Knoxville, TN (865) 450-9770	Roanoke, VA (540) 725-8701
Corporate: Greensboro, NC (336) 292-8777	

We have exercised care in the preparation of this submittal. We believe it satisfies our interpretation of the designer's intent and scope. It contains the list of materials, quantities, sizes, style and the finish as we propose to furnish for this job. Please examine and check carefully that all items are exactly as required and that our interpretation of the applicable plans and/or specifications are consistent with the design. Approval by the engineer and purchaser will be required before release of this equipment for production. If any discrepancies are discovered, please notify us as soon as possible.

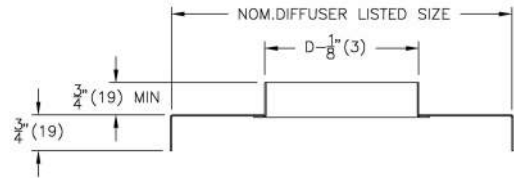
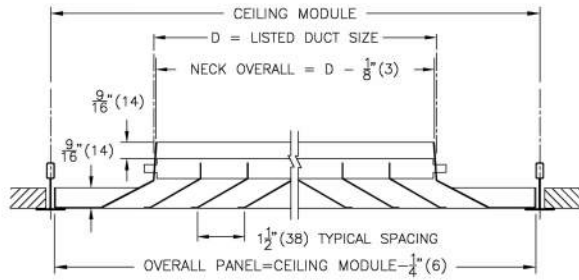
SMD Steel Modular Directional Diffuser

Core Style: 4A 4-Way, Style A for Square Inlet Neck



Border: 3P Steel T-Bar Panel Lay-In 1" (25)

Accessory: SR Square to Round Adapter



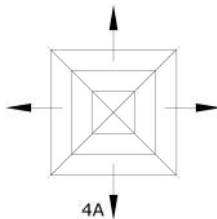
Notes:

- Cores sized in increments of 3" (76) in both directions
- Square to Round adapter shipped mounted
- Directional core removable at diffuser face
- Factory tolerance $\pm 1/32$ " (1)

Material:

- Steel Construction
- Panel: Steel
- SR Adapter: Steel

Plan View:



Finish:

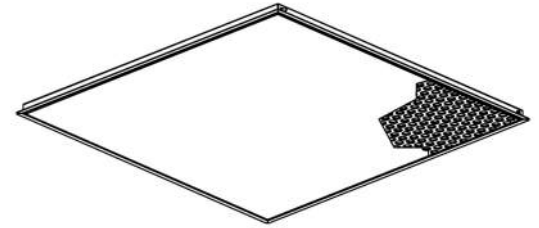
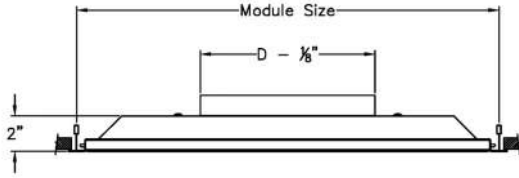
- B12: Standard White

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Steel Louvered Directional Diffuser
SMD//I/9,6/9,6/3P/4A/24/24/SR/8,6//B12

SUBMITTAL NO: 258515-C
CUSTOMER:

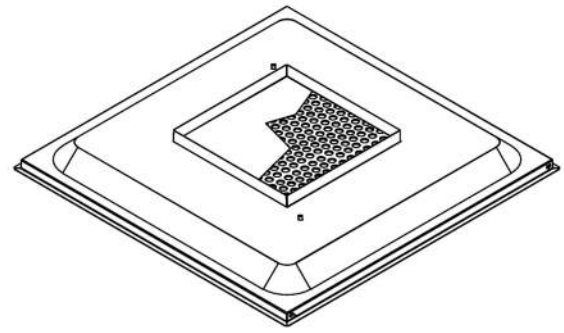
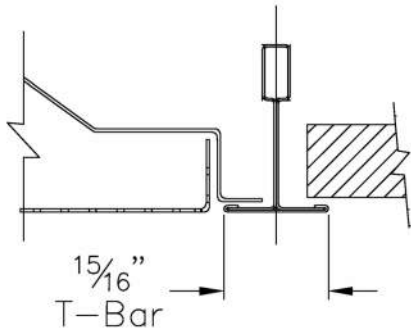
SUBMITTAL DATE: 3/28/2024

PDDR Perforated Return Diffuser



Module Size: 24"x24"
Inlet Size: 14"x14"

Frame Style: 3 - 15/16" T-Bar Lay-In



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Integral hanger loops
- Factory tolerance +/- 1/32"

Construction

- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches



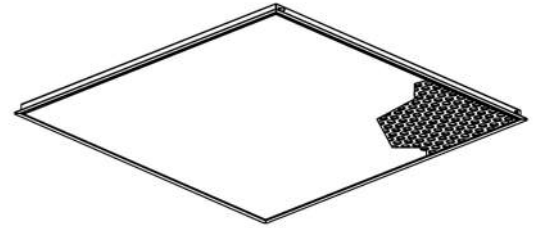
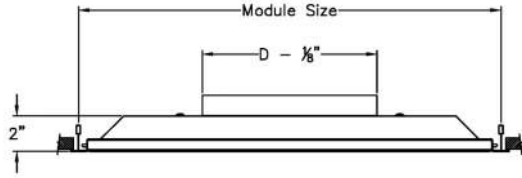
Scan for link to additional product information

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-2///IN/SQ/14x14//24x24/3/F-ST/PL-ST/A/////B12

SUBMITTAL NO: 271091-B
CUSTOMER:

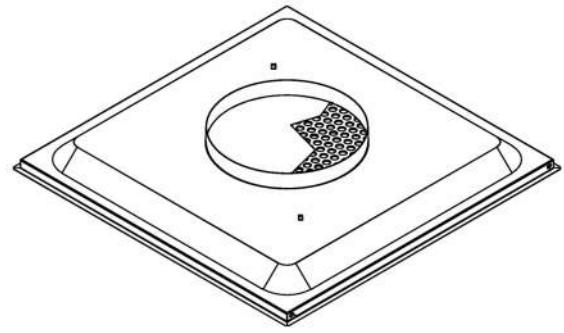
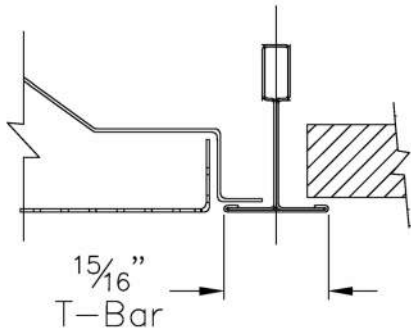
SUBMITTAL DATE: 3/28/2024

PDDR Perforated Return Diffuser



Module Size: 24"x24"
Inlet Size: 10" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Integral hanger loops
- Factory tolerance +/- 1/32"

Construction

- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches



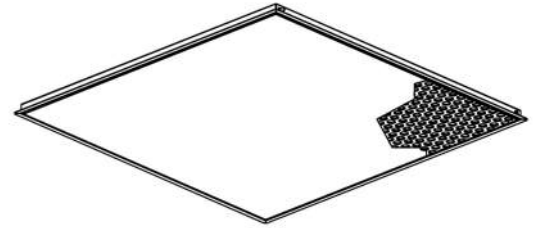
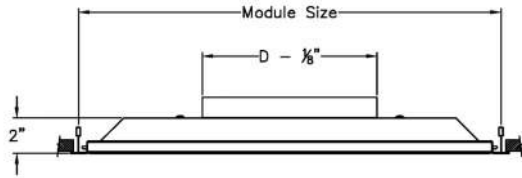
Scan for link to additional product information

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-2///IN/RD/10//24x24/3/F-ST/PL-ST/A/////B12

SUBMITTAL NO: 271091-B
CUSTOMER:

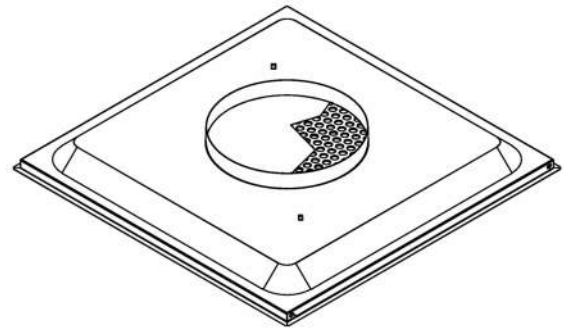
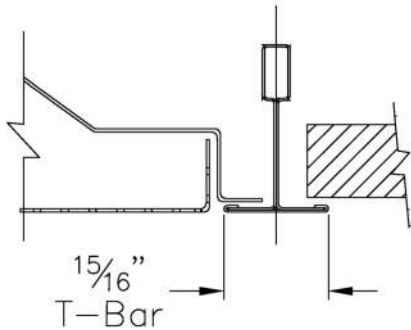
SUBMITTAL DATE: 3/28/2024

PDDR Perforated Return Diffuser



Module Size: 24"x24"
Inlet Size: 12" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Integral hanger loops
- Factory tolerance +/- 1/32"

Construction

- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches



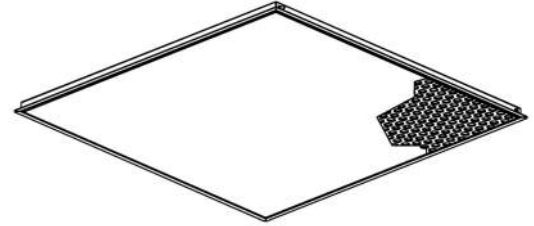
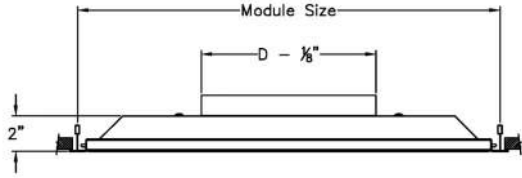
Scan for link to additional product information

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-2///IN/RD/12//24x24/3/F-ST/PL-ST/A/////B12

SUBMITTAL NO: 271091-B
CUSTOMER:

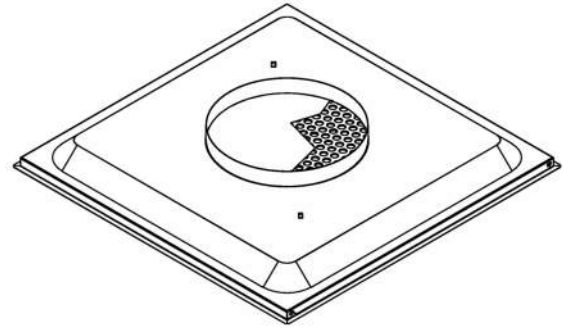
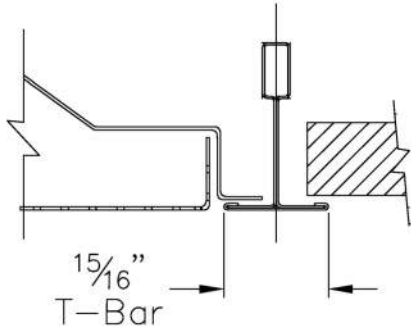
SUBMITTAL DATE: 3/28/2024

PDDR Perforated Return Diffuser



Module Size: 24"x24"
Inlet Size: 8" round

Frame Style: 3 - 15/16" T-Bar Lay-In



Finish

- B12 - Standard White

Notes

- Face panel is removable
- Integral hanger loops
- Factory tolerance +/- 1/32"

Construction

- Perforated face - 3/16" holes, 51% free area
- F-ST - Steel face
- Steel backpan and outer frame
- Steel spring latches



Scan for link to additional product information

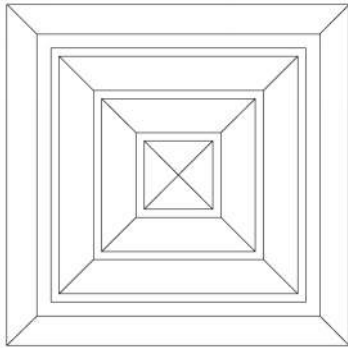
PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Perforated Return Diffuser
PDDR-1-2///IN/RD/8//24x24/3/F-ST/PL-ST/A/////B12

SUBMITTAL NO: 271091-B
CUSTOMER:

SUBMITTAL DATE: 3/28/2024

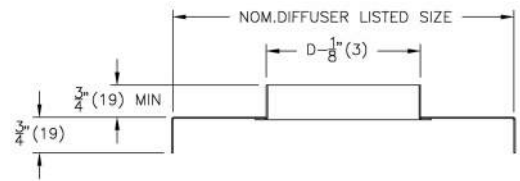
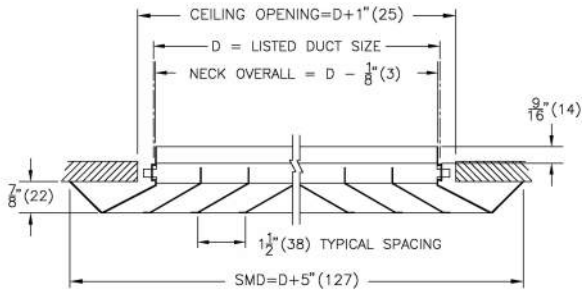
SMD Steel Modular Directional Diffuser

Core Style: 4A 4-Way, Style A for Square Inlet Neck



Border: 6 Bevelled Frame Surface Mount

Accessory: SR Square to Round Adapter



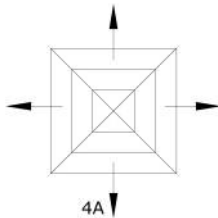
Notes:

- Cores sized in increments of 3" (76) in both directions
- Square to Round adapter shipped mounted
- Directional core removable at diffuser face
- Factory tolerance $\pm 1/32"$ (1)

Material:

- Steel Construction
- SR Adapter: Steel

Plan View:



Finish:

- B12: Standard White

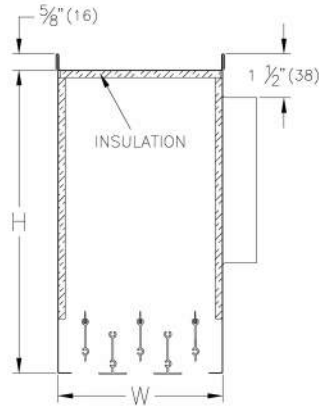
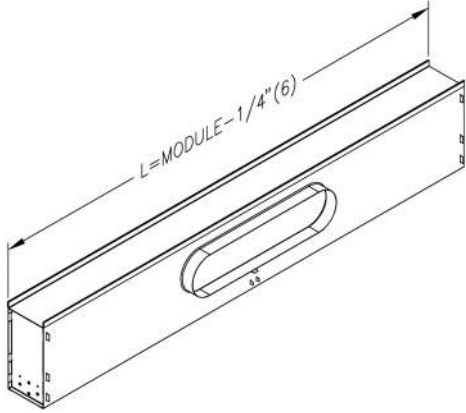
PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Steel Louvered Directional Diffuser
SMD//1/6/6/6/4A//SR/6//B12

SUBMITTAL NO: 258515-C
CUSTOMER:

SUBMITTAL DATE: 3/28/2024

TBDI475 3/4" Slot with Blade Pattern Controller

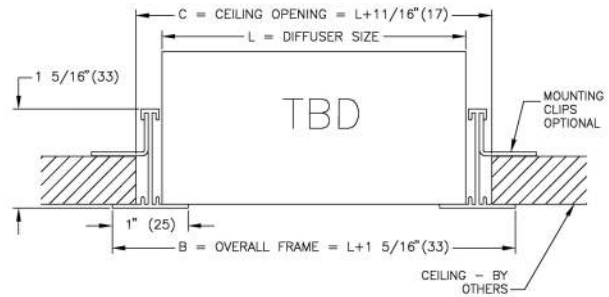
Module Length	Slot Quantity	Width (W)	Nom. Inlet	Height (H)
48"	3	5 1/4"	10" OVAL = 6" x 12 1/16"	11"



Options & Accessories:

- APF - Aluminum Plaster Frame

APF Detail:



Material:

- Plenum: Coated Steel
- Pattern Controllers: Extruded Aluminum
- Centre Tee: Extruded Aluminum
- Blades are supplied with Vinyl Blade Edge Seal

Insulation Options:

- FF - Fiber Free Foam Insulation

Notes:

- 3 Slot Diffuser
- 3/4" (19) Slot Width
- Blades are field adjustable toward or away from the diffuser inlet side
- For use with 1" (25) flat tee ceiling grid
- TBDI4 Endcaps are uninsulated
- Factory tolerance $\pm 1/32"$ (1)

Finish:

- Blades - B17: Black
- BFS: Black Face Surfaces
- Plaster Frame - B12: Standard White

PROJECT: Morton & Getty's Office

ENGINEER:

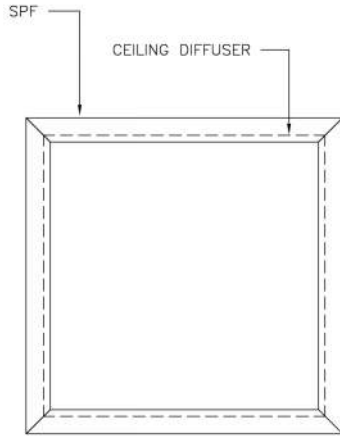
DESCRIPTION: Insul T-Bar Supp Diff, Straight Blades, 3/4" Slots
TBDI475//I/48/3//IMP/6x12.078//FF/BFS/APF/B12

SUBMITTAL NO: 258591-B

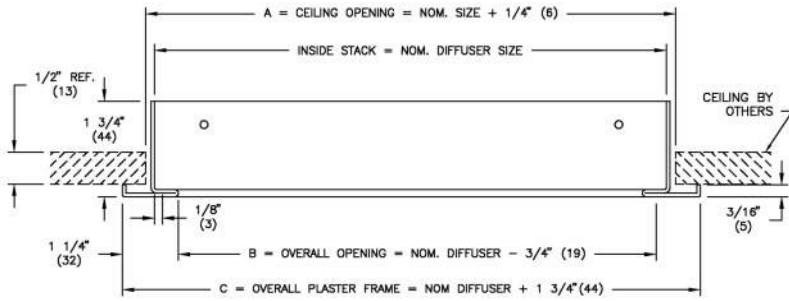
CUSTOMER:

SUBMITTAL DATE: 3/28/2024

SPF Steel Plaster Frame



Nom. Diffuser Size	A	B	C
12 x 12	12 1/4 x 12 1/4	11 1/4 x 11 1/4	13 3/4 x 13 3/4



Notes:

- Factory Tolerance $\pm 1/32$ " (1)

Material:

- Heavy Gauge Steel

Finish:

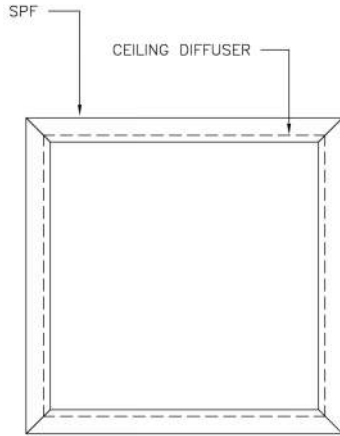
- B12: Standard White

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Steel Plaster Frame
SPF-1-1///12/12///B12

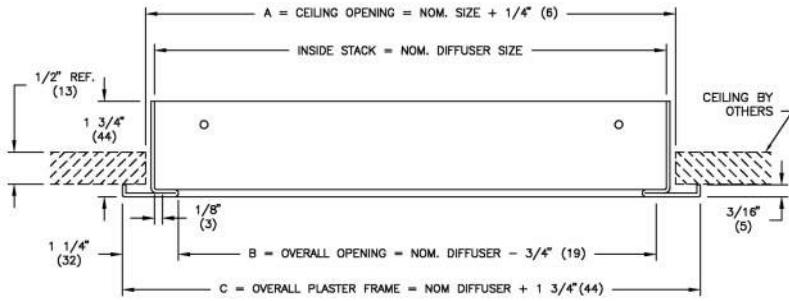
SUBMITTAL NO: 261535-C
CUSTOMER:

SUBMITTAL DATE: 3/28/2024

SPF Steel Plaster Frame



Nom. Diffuser Size	A	B	C
24 x 24	24 1/4 x 24 1/4	23 1/4 x 23 1/4	25 3/4 x 25 3/4



Notes:

- Factory Tolerance $\pm 1/32$ " (1)

Material:

- Heavy Gauge Steel

Finish:

- B12: Standard White

PROJECT: Morton & Getty's Office
ENGINEER:
DESCRIPTION: Steel Plaster Frame
SPF-1-1//1/24/24//B12

SUBMITTAL NO: 261535-C
CUSTOMER:

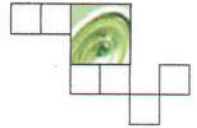
SUBMITTAL DATE: 3/28/2024

Price Industries, Inc.

2975 Shawnee Ridge Court / Suwanee, Georgia 30024 / 770-623-8050/Fax:770- 623-6537

PRICE[®]

www.price-hvac.com



Price Industries warrants and guarantees for a period limited to one (1) year from date of shipment that the products manufactured by Price Industries are manufactured in accordance with Price Industries' published catalog specifications and of specified material. Terminal units will be 18 months from date of shipment.

Since product improvement is a continuing endeavor at Price Industries, catalog specifications are subject to change without notice. Price Industries shall provide the Representative with current specifications. In the event the goods supplied do not comply with published catalog specifications and/or material quality standards within the warranty period, Price Industries will either repair the goods supplied or provide free replacement of such goods from their factory. This decision is made at the discretion of Price Industries. In either case, Price Industries will not be responsible for labor and freight charges incurred in replacing goods, nor will they be responsible for incidental, consequential or punitive damages. In the event Price Industries elects to repair the goods supplied, the Representative will assist by providing Price Industries 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 Price Industries, then the Representative will assist by coordinating and supervising the repair work.

Price Industries makes no warranty whatsoever with respect to components or items supplied which may be warranted separately by their manufacturer. Price Industries does not warrant factory mounted controls and components supplied and owned by a third party for mounting by Price. Back charges to Price Industries for equipment under warranty by others will only be accepted if prior written approval is given by Price Industries.

The warranties and liabilities set forth in the prior paragraphs are the only warranties or liabilities of Price Industries, and are in lieu of all other warranties and liabilities, express or implied, whether arising from contract or negligence, in law or in fact; Price Industries makes no warranties of merchantability or fitness for particular purpose or use. The foregoing warranty shall not take effect unless the Representative shall inform Price Industries in writing of any flaw, defect or deficiency in the product promptly after such flaw, defect or deficiency becomes apparent and, in any case, within one year from date of shipment. The Representative will be responsible for notifying its clients of this policy. Unauthorized repair by others of equipment claimed to be defective will void the warranty and/or guarantee of Price Industries.

Sincerely,

Jeff Rogers
Price Industries
Customer Service Manager

Date	March 28, 2024
Hoffman & Hoffman Order #	470.477.10212
Branch Office	Charlotte, NC
Salesman	Spencer Jones



PROJECT: Morton and Gettys Attorneys at Law
Rock Hill, SC

CONTRACTOR: Action Mechanical
Charlotte, NC

ENGINEER: Wilde Engineering
Charlotte, NC

EQUIPMENT: Fans by Greenheck

<p>PROJECT NAME Morton and Gettys SUBMITTAL</p> <p><input checked="" type="checkbox"/> NO EXCEPTIONS TAKEN <input type="checkbox"/> APPROVED AS NOTED</p> <p><input type="checkbox"/> REVISE & RESUBMIT <input type="checkbox"/> REJECTED</p> <p><input type="checkbox"/> REVIEW ONLY</p> <p>REVIEWED BY Jacob Lytton DATE 4/1/2024</p> <p><small>This review is only for general compliance with the intent of the contract documents. Contractor shall assume responsibility for correctness, dimensions, details, quantities and all costs associated with substituted equipment, including maintenance access, clearances, building alterations, replacement of system components, etc.</small></p>	
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APPROVED
By Billy Weaver at 6:57 am, Mar 29, 2024

PER LATEST DRAWINGS: 1/12/2024

General Notes:

Above per the attached data and cut sheets

- Model SP-VG ceiling exhaust fans provided with ECM Vari-Green motor with dial, integral backdraft damper, grille and isolation kit, tags EF-1, 2, 3.
- Model GRSR gravity relief vent with birdscreen, gravity damper and 18"high flat roof curb, tag H-1.
- Ceiling exhaust fans and hood include materials of construction, accessories and as per the attached cut sheets.
- Motor horsepower and electrical voltage must be confirmed.
- We don't include any controls, motor starters, dampers of any kind, shaft grounding seismic construction, high wind rated construction, painted finishes or coatings, pitched or metal building roof curbs, rigging, or wiring.

SUBMITTAL

APPROVAL REQUIRED

<p>HOFFMAN & HOFFMAN, INC. HVAC Manufacturers Representative Website: www.hoffman-hoffman.com</p>		<p>We have exercised care in the preparation of this submittal. We believe it satisfies our interpretation of the designer's intent and scope. It contains the list of materials, quantities, sizes, style and the finish as we propose to furnish for this job. Please examine and check carefully that all items are exactly as required and that our interpretation of the applicable plans and/or specifications are consistent with the design. Approval by the engineer and purchaser will be required before release of this equipment for production. If any discrepancies are discovered, please notify us as soon as possible.</p>
<p>Asheville, NC (828) 252-5782 Charleston, SC (843) 884-3201</p>	<p>Columbia, SC (803) 765-9360</p>	
<p>Charlotte, NC (704) 364-4700 Greenville, SC (864) 676-1888</p>	<p>Chesapeake, VA (757) 548-1700</p>	
<p>Raleigh, NC (919) 781-8011</p>	<p>Richmond, VA (804) 272-1500</p>	
<p>Wilmington, NC (910) 791-4775</p>	<p>Roanoke, VA (540) 725-8701</p>	
<p>Chattanooga, TN (423) 693-2890</p>	<p>Corporate: Greensboro, NC (336) 292-8777</p>	
<p>Knoxville, TN (865) 450-9770</p>		

Model: SP-A390-VG

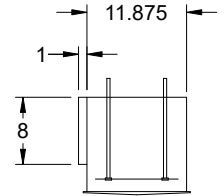
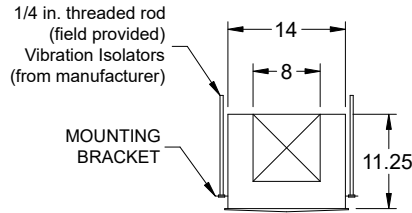
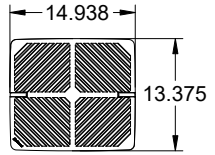
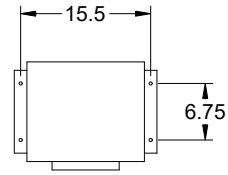
Ceiling Exhaust Fan

Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - Sound absorbing insulation - White designer non-yellowing grille - Rectangular outlet duct collar with integral spring loaded backdraft damper - Double inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets - Field rotatable discharge

Selected Options & Accessories:

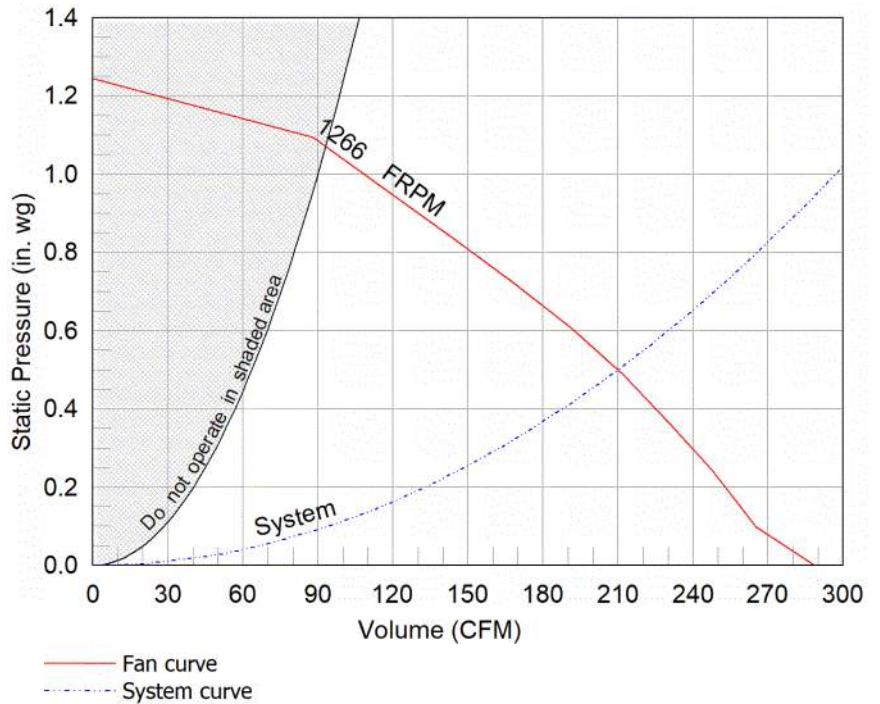
- Motor rated for continuous use
- Motor - Vari-Green EC motor w/Mounted Potentiometer Dial
- UL/cUL 507 Listed - Electric Fan
- Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose
- Adjustable easy installation mounting bracket
- Standard Grille
- Polypropylene Wheel Material



Dimensional	
Quantity	2
Weight w/o Acc's (lb)	24
Weight w/ Acc's (lb)	25

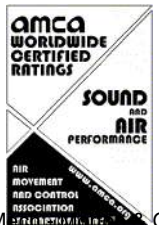
Performance	
Requested Volume (CFM)	210
Actual Volume (CFM)	210
Total External SP (in. wg)	0.5
Fan RPM	1266
* FLA (A)	1.5
Elevation (ft)	768
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Sones	4.0

Motor	
Motor Mounted	Yes
** Input Watts (W)	39
Voltage/Cycle/Phase	115/60/1
Enclosure	TENV
Control Input Voltage	6.3



Notes:

- All dimensions shown are in units of in.
- *FLA is approximate and will vary slightly with the motor.
- Sones - calculated using AMCA 301 at 5 ft
- ** Wattage is shown at free air.
- ** Wattage is approximate and may vary between motors.



Vari-Green Motor & Control Options

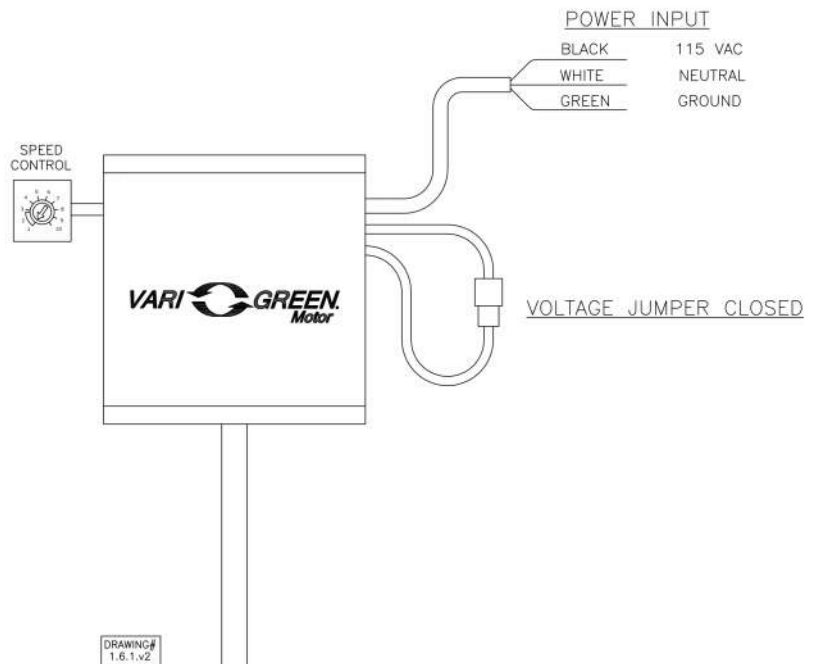
An EC motor that uses AC input power and internally converts it to DC power. Potentiometer (dial) mounted on the motor enclosure adjusts the speed (RPM) down 80%. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration

Input Voltage: 115
Speed Reference: Dial on Motor
Permanent Dial: Yes

Control Configuration

Control Type: N/A
Transformer: None

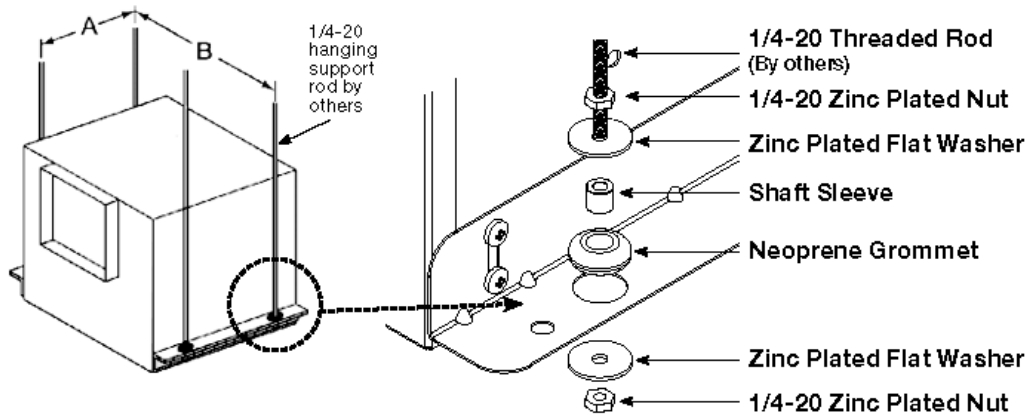


Isolation Kit

Type: Hanging

Standard Construction Features:

- Neoprene vibration isolation for hanging installation - Kit includes four isolators and all hardware necessary for mounting one unit except for the 0.25 in. x 20 in. threaded rod to be supplied by others - Fan mounting brackets include prepunched mounting holes for ease of installation



Unit Size	A	B
B50-B200	4 1/2 (114)	15 5/8 (397)
A50-A190	5 1/2 (140)	14 5/8 (371)
A200-A390	6 3/4 (171)	15 1/2 (394)
A410, A510, A710, A780	9 1/4 (235)	19 5/8 (498)
A700	5 1/2 (140)	25 1/8 (638)
A900 - A1050, A1410 - A1550	9 1/4 (235)	25 3/8 (645)
A1750, A2150	9 1/4 (235)	36 3/4 (933)
A3600	9 1/4 (235)	48 5/8 (1235)
All dimensions shown in inches (millimeters).		

Description	Qty
Neoprene Grommets	4
1 x 32 Zinc Plated Nuts	8
Zinc Plated Flat Washers	8
3/8 x 3/16 Shaft Sleeves	4

Model: SP-A90-130-VG

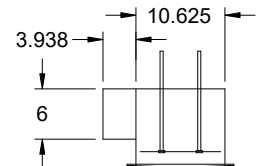
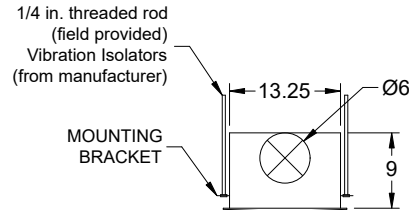
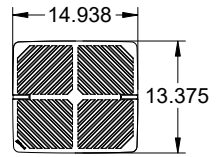
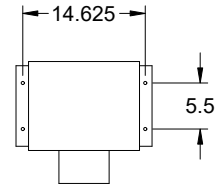
Ceiling Exhaust Fan

Standard Construction Features:

- Corrosion resistant galv steel scroll and housing - Sound absorbing insulation - White designer non-yellowing grille - Round outlet duct collar with integral backdraft damper - Double inlet forward curved wheel - Plug type disconnect - Adj. mounting brackets - Field rotatable discharge

Selected Options & Accessories:

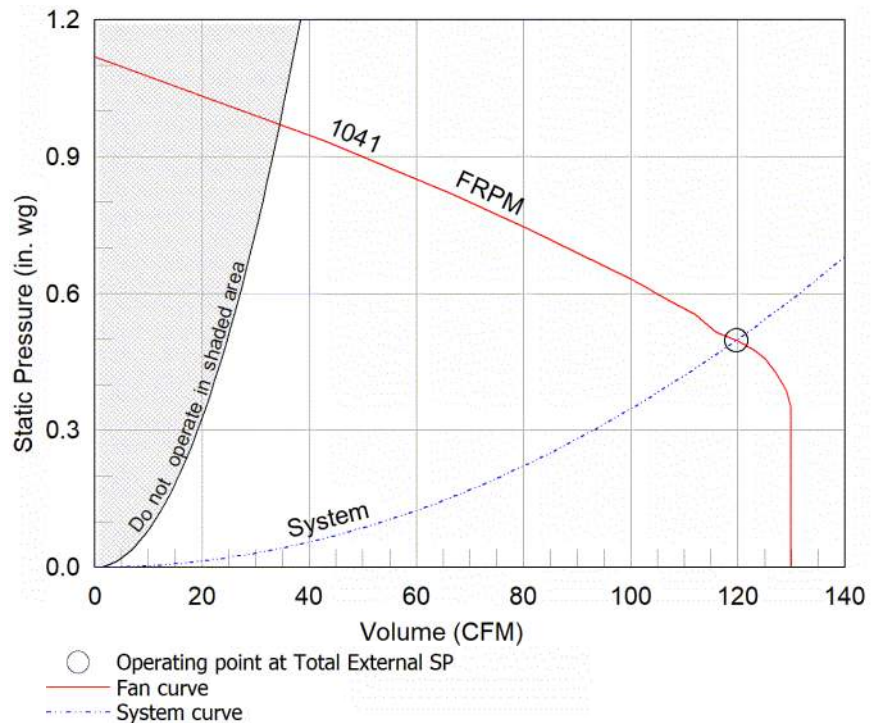
- Motor rated for continuous use
- Motor with Thermal Overload
- Motor with CSA Approval
- Motor with 40 Degree C Ambient Temperature
- UL/cUL 507 Listed - Electric Fan
- Round Duct Connection
- Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose
- Adjustable easy installation mounting bracket
- Energy Star Certified
- Standard Grille
- Polypropylene Wheel Material
- Can Be Used to Comply with: ASHRAE 62.2, California Title 24, and Washington State Energy Code



Dimensional	
Quantity	1
Weight w/o Acc's (lb)	12
Weight w/ Acc's (lb)	13

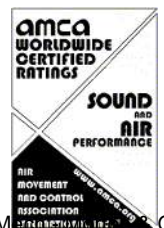
Performance	
Requested Volume (CFM)	120
Actual Volume (CFM)	120
Total External SP (in. wg)	0.497
Fan RPM	1041
* FLA (A)	0.29
Elevation (ft)	768
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Sones	3.5

Motor	
Motor Mounted	Yes
** Input Watts (W)	12
Voltage/Cycle/Phase	115/60/1
Enclosure	TEAO



Notes:

- All dimensions shown are in units of in.
- *FLA is approximate and will vary slightly with the motor.
- Sones - calculated using AMCA 301 at 5 ft
- ** Wattage is approximate and may vary between motors.

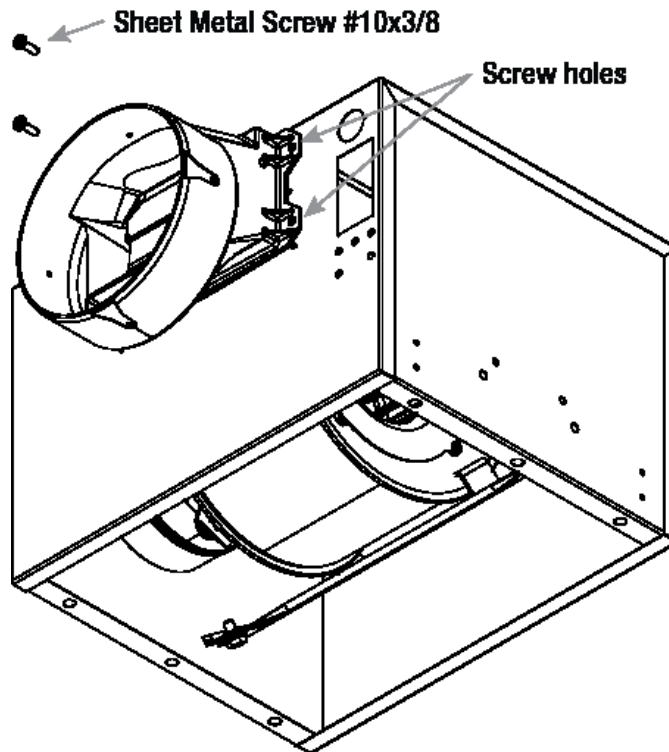


Round Duct Connector

Model: RDC

Standard Construction Features:

-Constructed of Polypropylene - Replaces the square discharge duct connector and damper using the existing mounting holes



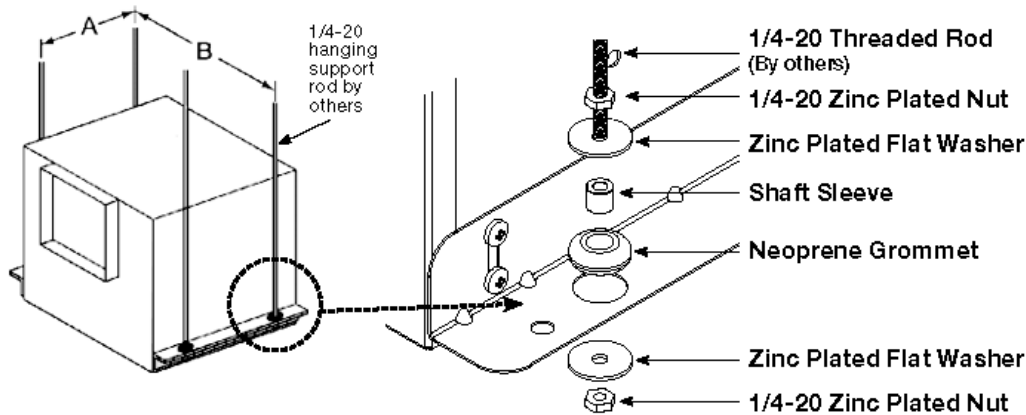
Notes: All dimensions shown are in units of in.

Isolation Kit

Type: Hanging

Standard Construction Features:

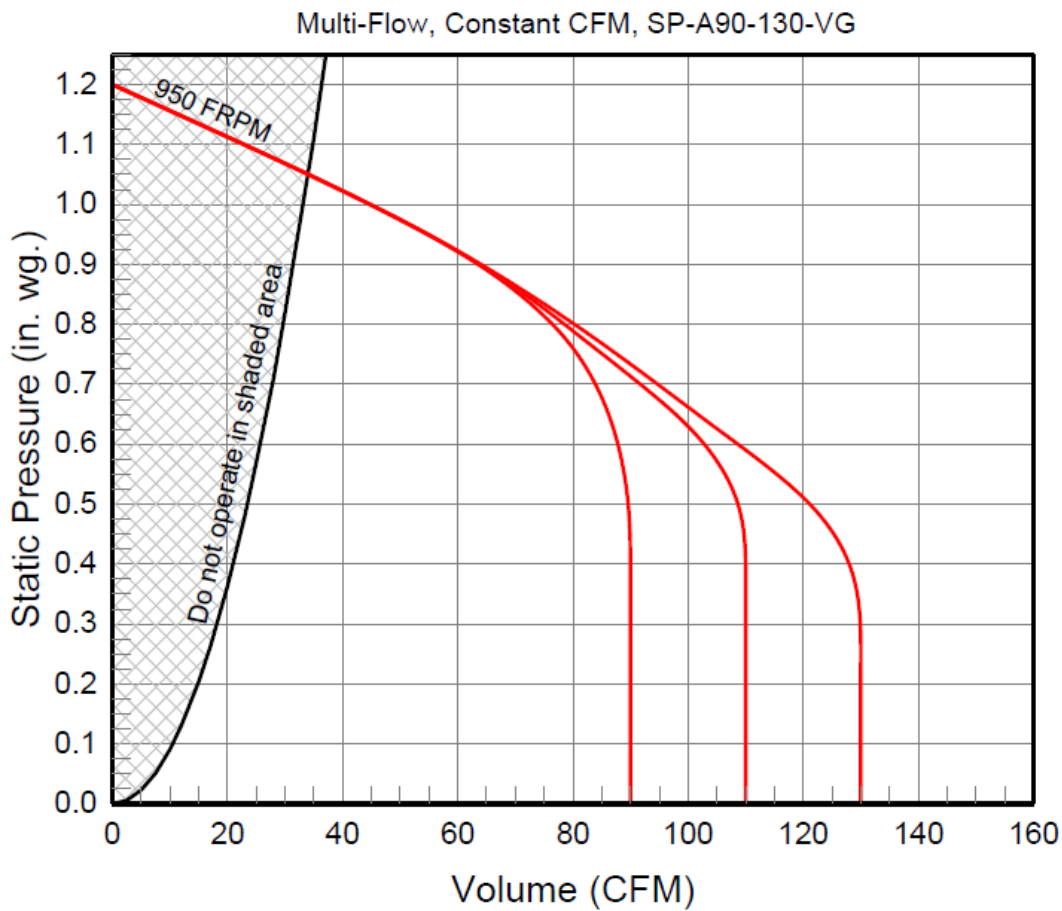
- Neoprene vibration isolation for hanging installation - Kit includes four isolators and all hardware necessary for mounting one unit except for the 0.25 in. x 20 in. threaded rod to be supplied by others - Fan mounting brackets include prepunched mounting holes for ease of installation

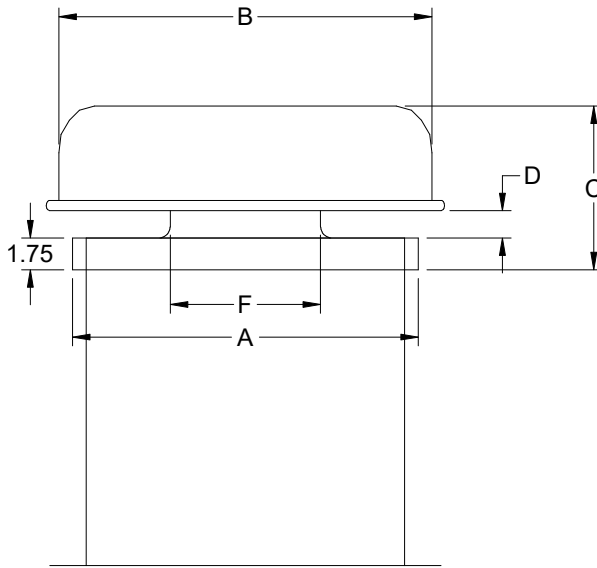


Unit Size	A	B
B50-B200	4 1/2 (114)	15 5/8 (397)
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A700	5 1/2 (140)	25 1/8 (638)
A900 - A1050, A1410 - A1550	9 1/4 (235)	25 3/8 (645)
A1750, A2150	9 1/4 (235)	36 3/4 (933)
A3600	9 1/4 (235)	48 5/8 (1235)
All dimensions shown in inches (millimeters).		

Description	Qty
Neoprene Grommets	4
1 x 32 Zinc Plated Nuts	8
Zinc Plated Flat Washers	8
3/8 x 3/16 Shaft Sleeves	4

This is a Constant Airflow fan which will hold a constant airflow as static pressure increases. This is also a Multi-Flow fan capable of three selectable speeds and will run at the user selected speed by the three position switch on the inside of the fan.





Model: GRSR

Standard Construction Features:

- Aluminum housing.
- Aluminum curb cap with prepunched mounting holes.
- Recommended roof opening dimension is at least 2.5 in. larger than the damper size.

Dimensions

ID#	Tag	Qty	Model	Model Size (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	Curb Cap Width (in.)	Curb Cap Length (in.)	Weight (lb)
1-2	H-1	1	GRSR-8	8	19	20.5	9	1.5	N/A	8.25	19	19	7

Construction

ID#	Flashing Flange	Installation Type	Insect Screen	Birdscreen Material	Unit Material
1-2	No	Ducted	No	Galvanized	Aluminum

Accessories

ID#	Hinged Curb Cap	Curb Seal	Hood Insulation (in.)	Tie Down Points
1-2	No	No	1	No

Roof Curbs

ID#	Model	Height (in.)	Width (in.)	Length (in.)
1-2	GPI	18	19	19

Dampers

ID#	Model	Width (in.)	Length (in.)	Blade Action	Frame Type	Actuator Type	Actuator Quantity	Actuator Mounting	End Switch	Damper Mounting
1-2	WD-100	8	8	Parallel	Channel	Gravity	0	N/A	N/A	Ship Separate

Horizontal Mount Exhaust Damper

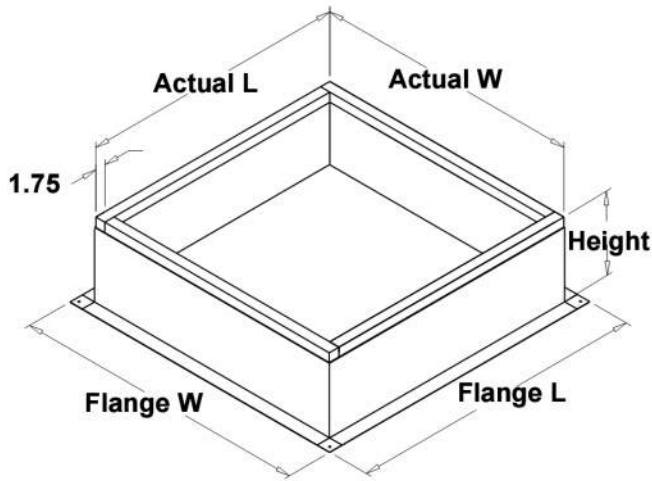
Line Number: 1-2

Model: WD-100

Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes - Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening - Steel axles are 0.188 in. diameter zinc plated mounted in nylon bushings - Synthetic axle bearings

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.125 in. undersize



Model: GPI

Roof Curb

Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. mounting flange - 3 lb density insulation - Height - Available from 12 in. to 42 in. as specified in 0.5 in. increments. Notes: - The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in.. - The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension. - Damper Tray is optional and must be specified. Tray size is same as damper size. - Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel.

General

ID#	Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Made
1-2		1	GPI-19-G18	Nominal	1.5	27	Yes	No Preference

Dimensions

ID#	Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)
1-2	18	19	19	17.5	17.5

*May not be applicable

Accessories

ID#	Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
1-2	Galvanized	No	No	1	R4.3



Warranty Statement

Warranty

Greenheck warrants its equipment to be free from defects in material and workmanship for a period of one year from the date of shipment. Many products carry a longer warranty period based on the type of product and components contained within each unit. For more specific information, all Greenheck product warranties are located on www.greenheck.com on the Warranty tab under each specific product page.

Any units or parts which prove defective during the warranty period will be replaced at our option. Under certain conditions, Greenheck may require the return of a complete unit or specific components for inspection.

Greenheck is not responsible for any installation or removal costs. Replacement equipment will be shipped ground freight at Greenheck's expense. Expedited freight is available at an additional cost.

To process a warranty claim, please contact us with your unit serial number:

parts@greenheck.com: Greenheck Reps

shop@greenheck.com: All other consumers

1-800-355-5354

Submittal Cover Sheet

Morton & Getty's Office

Submittal Dated: 11/03/2023.

Submitted By: R&F Insulation Group LLC

4341 Triple Crown DR SW

Concord, NC 28027

Products

Mechanical Insulation

PROJECT NAME Morton and Gettys	 Wilde engineering <small>MECHANICAL, ELECTRICAL & PLUMBING</small>
SUBMITTAL	
<hr/>	
<input type="checkbox"/> NO EXCEPTIONS TAKEN <input checked="" type="checkbox"/> APPROVED AS NOTED	
<input type="checkbox"/> REVISE & RESUBMIT <input type="checkbox"/> REJECTED	
<input type="checkbox"/> REVIEW ONLY	
<hr/>	
REVIEWED BY Jacob Lytton	
DATE 4/1/2024	
<small>This review is only for general compliance with the intent of the contract documents. Contractor shall assume responsibility for correctness, dimensions, details, quantities and all costs associated with substituted equipment, including maintenance access, clearances, building alterations, replacement of system components, etc.</small>	

CONTRACTOR TO ENSURE
INTALLED DUCTWORK
INSULATION R-VALUE MINIMUM
OF 6. ALL INSULATION EXPOSED
TO OUTDOORS SHALL BE
PAINTED/UV TREATED.

4341 Triple Crown DR SW Concord, NC 28027

Phone: (980) 224-8882

Emails: r.f.insulationgroup1@gmail.com

70andyramirez@gmail.com

Bramirez229@gmail.com

Concealed Supply duct and Return air duct Insulation Schedule

Systems:

Concealed Supply duct and Return air duct

Insulation Type:

Duct Wrap

Finishes:

FSK Finish

Fittings Insulation Type:

N/A

Thickness Schedule:

2" ³/₄ LB

Application:

Per Manufacturer's Recommendations

Manufacture's

Johns Manville

Avery Dennison

4341 Triple Crown DR SW Concord, NC 28027

Phone: (980) 224-8882

Emails: r.f.insulationgroup1@gmail.com

70andyramirez@gmail.com

Bramirez229@gmail.com



Air Handling Systems

Microlite® XG™
Formaldehyde-free™ Fiber Glass Duct Wrap Insulation

Description

Microlite XG Formaldehyde-free™ duct wrap insulation is a white, light weight, highly resilient, blanket-type thermal insulation. The insulation blanket is manufactured from rotary-process fiber glass bonded with a special thermosetting acrylic resin.

Available Forms

Microlite XG Formaldehyde-free™ insulation is available in a variety of densities, thicknesses, and roll lengths. It is supplied with an FSK (foil-scrim-kraft) vapor barrier facing to meet installed performance requirements, with a 2" (51 mm) stapling tab.

Uses

Microlite XG is recommended as thermal insulation for the exterior of HVAC systems or other spaces or surfaces where temperature control is required.

Facing Information

FSK Aluminum Foil
Reinforced with fiber glass scrim laminated to UL rated kraft.
Permeance: .02 perms*

* Per ASTM E 96, Procedure A for facing material prior to lamination. After lamination, permeance values may be higher.

General Properties

Temperature (max.) - ASTM C 411	250°F (121°C)
Water vapor sorption - ASTM C 1104	<5% by weight
Corrosivity with steel - ASTM C 665	Does not accelerate
Fungi resistance - ASTM C 1338	Does not breed or promote

Standard Thicknesses and Packaging

Type	100' Roll (31 m)	75' Roll (23 m)	50' Roll (15 m)
	Thickness, in (mm)		
75	1½ (38)	2, 2.3 (51, 58)	3 (76)
100	1½ (38)	2 (51)	—
150	—	1½ (38)	2 (51)

Note: Additional thicknesses, widths and other lengths available on special order. Contact Regional Sales Office for availability.



Surface Burning Characteristics

Microlite XG meets the Surface Burning Characteristics and Limited Combustibility of the following standards:

- Standard/Test Method
- ASTM E 84
- UL 723
- NFPA 90A and 90B
- UL Guide No. 40 U8.3. Card R3711
- CAN/ULC S102-1188
- UL Guide No. 40 U8.3. Card R3711

Maximum Flame Spread Index	25
Maximum Smoke Developed Index	50

Notes: Faced materials are tested as composite products (insulation, adhesive and facing). UL labels supplied on packages when requested on order.

Specification Compliance

ASTM C 1290	Type 75, 100 & 150
ASTM C 553*	
Type II	Type 75, 100 & 150
Type III	Type 150
* For faced material 250°F (121°C) maximum temperature.	
ASTM C 1136s	
Type II	FSK Facing
* Replaces HH-B-100B, Type II.	
Canada: CGSB 51-GP-11M	
NYC MEA 40-75-M	

Green Building Certifications

Recycled Content	SCS Certified
ES 1350	Meets Requirements
ENERGY STAR®	Yes
LEED® Credits	See JM.com/buildgreen
LEED®-NC	JM LEED® Credit Guide, HIG-1231

GREENGUARD®. This certification is proof that the product meets the Environmental Institute's indoor air quality standards for VOCs.



Microlite XG contains 20% post-consumer recycled glass.

AHS-331 10-08 (Replaces 8-08)

4341 Triple Crown DR SW Concord, NC 28027
Phone: (980) 224-8882
Emails: r.f.insulationgroup1@gmail.com
70andyramirez@gmail.com
Bramirez229@gmail.com

Microlite® XG™
Formaldehyde-free™ Fiber Glass Duct Wrap Insulation

Application Recommendations

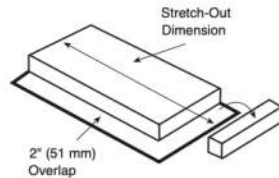
The R-Value will vary depending upon how much the insulation is compressed during installation. To obtain the published, installed R-Values, the insulation stretch-out should be determined using the following table.

Duct Wrap Stretch-Outs

Labeled Thick. (in)	Installed Compressed Thickness (in)	Stretch-Out Dimension		
		Round	Square	Rectangular
1.0	0.75	P+ 7.0"	P+ 6.0"	P+ 5.0"
1.5	1.125	P+ 9.5"	P+ 8.0"	P+ 7.0"
2.0	1.50	P+ 12.0"	P+ 10.0"	P+ 8.0"
2.3	1.75	P+ 13.0"	P+ 11.0"	P+ 8.5"
3.0	2.25	P+ 17.0"	P+ 14.5"	P+ 11.5"

Stretch-outs include 2" (51 mm) for overlap. P = Perimeter of duct to be insulated.

Prepare overlap by removing approximately 2" (51 mm) of insulation from facing.



Before applying duct wrap, sheet metal duct shall be clean, dry and tightly sealed at all joints and seams.

Wrap insulation around duct with facing to the outside so the 2" (51 mm) flap completely overlaps facing and insulation at the other end of stretch out. Insulation shall be snugly butted.

Secure seams with mechanical fasteners placed approximately 6" (152 mm) on center. If required, seal seam with pressure-sensitive tape designed for use with duct insulation. Insulation on the underside of ducts spanning 24" (610 mm) or greater shall be secured with mechanical fasteners and speed clips spaced approximately 18" (457 mm) on center. Fasteners should be cut off flush after the speed clips are installed, and when required, sealed with the same tape as specified above.

Adjacent sections of duct wrap insulation shall be snugly butted with the circumferential 2" (51 mm) tape flap overlapping and secured as recommended for the longitudinal seam. When a vapor seal is required, two coats of vapor retarder mastic reinforced with one layer of 4" (102 mm) wide, open weave glass fabric may be used in lieu of pressure-sensitive tape.

Guide Specifications

Insulation for Metal Ducts. All ducts shall be insulated on the outside with a Formaldehyde-free™, flexible glass fiber blanket. Microlite XG Formaldehyde-free™ Fiber Glass Duct Wrap Insulation should have a minimum installed R-Value* of _____, and a Type _____ facing. Insulation shall be furnished with a factory-applied facing with a composite UL FHC rating of 25/50.

* The minimum insulation installed R-Value should be determined in accordance to the duct operating and ambient conditions.

Thermal Conductivity (ASTM C 518)

Type	k*		k	
	Compressed Thickness	Labeled Thickness	Compressed Thickness	Labeled Thickness
	Btu·in/(hr·ft²·°F)	W/m²·°C	Btu·in/(hr·ft²·°F)	W/m²·°C
75	.27	.039	.29	.042
100	.25	.036	.27	.039
150	.24	.035	.25	.036

Conductivity at 75°F (24°C) mean temperature.
 *Tested with material thickness compressed 25%.

Installed R-Values

Type	Labeled Thickness	Installed "R"		Out-of-Package "R"	
		(hr·ft²·°F)/Btu	m²·°C/W	(hr·ft²·°F)/Btu	m²·°C/W
75	1½ 38	4.2	0.74	5.2	0.92
	2 51	5.6	0.99	6.9	1.22
	2.3 58	6.5	1.15	8.0	1.41
100	3 76	8.3	1.46	10.3	1.81
	2 51	6.0	1.06	7.4	1.30
	1½ 38	4.7	0.83	6.0	1.06
150	2 51	6.3	1.11	8.0	1.41

*Installed R-Value calculated with a material thickness compressed to a maximum of 25% following recommended duct wrap stretch-outs.

View MSDS



717 17th St.
 Denver, CO 80202
 (800) 654-3103
 specJM.com

AHS-331 10-08 (Replaces 8-08)

North American Sales Offices, Insulation Systems

Eastern Region
 P.O. Box 158
 Defiance, OH 43512
 (800) 334-2399
 Fax: (419) 784-7866

Western Region & Canada
 P.O. Box 5108
 Denver, CO 80217
 (800) 368-4431
 Fax: (303) 978-4661

The physical and chemical properties of Microlite® XG™ Formaldehyde-free™ Fiber Glass Duct Wrap Insulation listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread and smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you to assure current information. **All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions including Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions, Limited Warranty and Limitation of Remedy, and information on other Johns Manville thermal insulations and systems, call (800) 654-3103.**

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70andynamirez@gmail.com

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FASSON® 0827

Suitable for die-cut shapes, shielding, moisture and vapor barrier sealing components or lamination to insulation materials.

FEATURES:

- High-strength reinforced 6.5 mil FSK facestock
- Quick stick, cold-temperature rubber adhesive
- Exceptional cold environment adhesion

BENEFITS:

- Strong bond to a variety of substrates
- Tri-directional FSK reinforces seal
- Tested in accordance with UL 723
- Made in the USA



CONSTRUCTION:

- Carrier:**
Foil Laminate
- Adhesive:**
Rubber
- Liner:**
Densified Kraft



General Use Tape Surface Burning
Characteristics to

UL 723	Flame Spread	10
	Smoke Developed	15
		722S

FASSON® 0827

Adhesive Properties:		Typical Values		
Thickness	Test Method(s): PSTC-133	US MILs	MM's	Microns (µm)
Liner:		3.2	0.08	81
Adhesive:		2.0	0.05	51
Carrier:		8.0	0.20	203
Total Caliper:		13.2	0.34	335

PEEL ADHESION		Test Method(s): PSTC-101, ASTM D-3330, STD-10		
Product	180° 12" min	Lbf / in	US Oz / in	N / Meter
Substrate				
SS	Initial	5.0	80	878

LOOP TACK		Test Method(s): PSTC-16, STD-7		
Product	180° 20" / min	Lbf / in	US Oz / in	N / Meter
Substrate				
SS	Initial	12.0	192	2101

TENSILE		Test Method(s): PSTC-131, ASTM D-882, STD-3A,B,C		
Product	Substrate	Lbf / in	US Oz / in	N / Meter
Product	MD	40.0	640	7004
	CD	25.0	400	4378

ELONGATION		Test Method(s): PSTC-131, ASTM D-882, STD-3A,B,C		
Product	Substrate	%		
Product	MD	1		
	CD	1		

STATIC SHEAR		Test Method(s): PSTC-107, ASTM D 3854, STD-9		
Product	1" sq (6.5 cm ²)	2.2 lb (1.0 kg)	Min to Fail	
Substrate				
SS	Initial		> 10,000	

TEMPERATURES		*F	*C
Min Application Temp		10 °F	-12 °C
Max Continuous Operating Temp		120 °F	48 °C
Max Intermittent Operating Temp		175 °F	79 °C

THE LISTED VALUES ARE TYPICAL AND NOT INTENDED TO SERVE AS PRODUCT SPECIFICATIONS

APPLICATION TECHNIQUES

- It is essential, as with all pressure-sensitive tapes, that the surface to which the tape is applied be clean, dry, and free of grease or oil
- Bond strength is dependent upon the amount of adhesive-to-surface contact developed
- Note that different pressure, time and temperature on different (film / rigid) surface achieves different performance.

STORAGE / SHELF LIFE

- One year when stored at 64-72°F (18-22°C) / 30-70% relative humidity, out of direct sunlight and in original packaging.

Please refer to Tapes AveryDennison.com for complete terms and conditions, including warranty terms, relating to this product. You should periodically review the site as terms and conditions are subject to change without notice.

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 70andynamirez@gmail.com
 Bramirez229@gmail.com

Indoor Refrigerant Insulation Schedule

Systems:

Indoor Refrigerant pipe

Insulation Type:

Armaflex

Finishes:

Black

Fittings Insulation Type:

N/A

Thickness Schedule:

1 " Thick

Application:

Per Manufacturer's Recommendations

Manufacture's

Armacell


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armacell THE MAKERS OF **Armaflex**[®]
advanced insulation



AP/Armaflex[®]
AP/Armaflex[®] W
Tube Insulation

Superior Moisture Control, Mold-Resistant, Available Black or White



- Fiber Free, Closed Cell, Non-Wicking
- GREENGUARD Children & Schools Certified[®]
- Made with Microban[®] Antimicrobial Product Protection
- Thicknesses up to 2" Wall
- 25/50 Rated Through 2" Wall



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AP Armaflex and AP Armaflex W Pipe (Tube) Insulation

AP Armaflex Pipe (Tube) Insulation is the original closed cell, fiber-free elastomeric foam and the world's most recognized brand in flexible mechanical insulation.

- **Proven:** World's first choice for insulating chilled water and refrigeration lines
- **Mold resistant:** Made with Microban antimicrobial product protection
- **Indoor Air Quality-friendly:** Fiber-free, formaldehyde-free, low VOCs, nonparticulating. GREENGUARD Indoor Air Quality Certified®
- **Durable:** No fragile vapor retarder

Description

AP Armaflex Pipe (Tube) Insulation is a black or white flexible elastomeric thermal insulation. The expanded closed-cell structure makes it an efficient insulation. It is manufactured without the use of CFC's, HFC's or HCFC's. All AP Armaflex products are made with Microban® antimicrobial product protection for added defense against mold on the insulation.

- Nominal wall thicknesses of 3/8", 1/2", 3/4" 1", 1-1/2", 2" (10, 13, 19, 25, 38, 50mm)
- Popular sizes up to 8" IPS

Factory Mutual (FM) Approvals

AP Armaflex is approved through continuing supervision by Factory Mutual Approvals to consistently provide actual values on these key performance criteria for mechanical system insulation:

- **Thermal Conductivity:** 0.25 BTU-in/hr. ft² °F
- **Water Vapor Transmission:** 0.05 perm-inch
- **Fire Rating:** will not contribute significantly to fire (simulated end-use testing)

As tested by ASTM E 84 "Method of Test for Surface Burning Characteristics for Building Materials" AP Armaflex Pipe Insulation has a flame-spread index of less than 25 and a smoke-developed index of less than 50.

AP Armaflex meets CAN/UL S102 through 1" wall.

Note: Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

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AP Armaflex & AP Armaflex W Tube Insulation
www.armacell.us

For the latest document, please refer to our website.

Uses

- Retards heat gain and controls condensation drip from chilled-water and refrigeration systems. Efficiently reduces heat flow for hot-water plumbing, liquid-heating and dual-temperature piping
- Acceptable for use in air plenums and conforms to NFPA 90A and NFPA 90B requirements

The recommended temperature usage range for AP Armaflex Pipe Insulation is -297°F to +220°F (-183°C to +105°C). For use on cold pipes, thicknesses have been calculated to control condensation on the insulation outer surface, as shown in the table of thickness recommendations. AP Armaflex meets the energy code requirements of ASHRAE 90.1, International Energy Conservation Code (IECC) and other building codes.

Application

AP Armaflex Pipe Insulation in unslit tubular form can be slipped onto piping before it is connected, or it can be slit lengthwise and snapped over piping already connected. Fitting covers are fabricated from miter-cut tubular form. In all cases, butt joints and seams are to be sealed with one of our Armaflex adhesives: Armaflex 520, 520 Black or, where a low V.O.C. adhesive is required, 520 BLV. 520 Adhesives are contact adhesives; therefore, in all cases, both surfaces to be joined are coated with adhesive.

For pipes greater than 8" IPS*, use AP/Armaflex Sheet/Roll insulation (black only). For thicknesses greater than 2", sleeve the insulation. See technical bulletin #030 for additional information.

AP Armaflex normally requires no supplemental vapor-retarder protection but additional vapor-retarder protection may be necessary when installed on very-low-temperature piping or exposure to continually high humidity conditions.

AP Armaflex is designed for installation above or below ground. For below ground applications, contact Armacell or see our Technical Bulletin No. 7 on our website, www.armacell.com. Outdoors, a weather-resistant protective finish is to be applied and Armaflex WB Finish is recommended.

Armaflex insulation products must be installed according to "Installation of Armaflex Insulations" brochure. Proper installation is required to assure Armaflex insulation performance.

Specification Compliance

AP Armaflex Pipe Insulation developed to meet:

ASTM C 534, Type I — Tubular Grade 1	ASTM G-22 ASTM D 1056, 2B 1
ASTM E 84, NFPA 255, UL 723	MIL-P-15280J, FORM T (Black)
CAN/ULC S 102 through 1" wall	MIL-C-3133C (MIL STD 670B), Black
UL 94 5V-5A, V-O, File E 55798	Grade SBE 3
NFPA 90A, 90B	MEA 96-85-M
UL 181	City of LA – RR 7642
ASTM G-21/C1338,	

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Physical Properties

Specifications	Values		Test Method
Thermal Conductivity, Btu • in./h • ft² • °F (W/mK) 75°F Mean Temperature (24°C) 90°F Mean Temperature (32°C)	Through 1" 0.25 (0.036) 0.256 (0.037)	1-1/2" and 2" 0.28 (0.040) 0.286 (0.041)	ASTM C 177 or C 518
Water Vapor Permeability, Perm-in. [Kg/(s•m•Pa)]	0.05 (0.725 x 10 ⁻¹³)	0.08 (1.16 x 10 ⁻¹³)	ASTM E 96, Procedure A
Flame Spread and Smoke Developed Index	25/50*		ASTM E 84 CAN/ULC S102 ^③
Mold Growth Fungi Resistance Bacterial Resistance	Meets requirements		UL 181 ASTM G21/C1338 ASTM G22
Water Absorption, % by Volume	0.2%		ASTM C 209
Upper Use Limit^①	220°F (105°C)		—
Lower Use Limit^①	-297°F (-183°C)**		—
Ozone Resistance	GOOD		—
Sizes			
Wall Thickness, (nominal) Form	3/8", 1/2", 3/4", 1", 1-1/2", 2" (10, 13, 19 25 38, 50mm)		—
Inside Diameter, Tubular Form	3/8" ID to 8" ID (10mm ID to 203mm)		—
Length of Sections, Feet, Tubular Form	6 (1.8m)		—

Notes

- ① On the heating cycle, AP Armaflex Pipe Insulation will withstand temperatures as high as 220°F (105°C). 520, 520 Black or 520 BLV Adhesive may be used with pipe insulation applications up to 220°F (105°C).
 - ② At temperatures below -20°F (-29°C), elastomeric insulation starts to become less flexible. However, this characteristic does not affect thermal efficiency and resistance to water vapor permeability of Armaflex insulation.
 - ③ AP Armaflex Black tested for CAN/ULC S102, AP Armaflex White determined to be comparable through 1" walls.
- **For applications of -40°F to -297°F (-40°C to -183°C), contact Armacell.



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AP Armaflex	Tubes	Submittal	017	Eng/USA	3/2012
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Armaflex®
520 ADHESIVE

STRONGER BONDS, FOR TIGHTER SEAMS

Formulated for Armaflex Insulations

Air-drying contact adhesive

Years of on-the-job performance

Meets MIL-A-24179A and Amend-2



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Armaflex®
520 ADHESIVE

Description

Armaflex® 520 Adhesive is an air-drying contact adhesive that is excellent for joining seams and butt joints of Armaflex Pipe and Sheet Insulations for line temperatures up to 250°F (120°C). The adhesive may also be used to apply Armaflex Sheet Insulation to flat or curved metal surfaces that will operate at temperatures up to 180°F (82°C).

- Meets Military Specification MIL-A-24179A and Amend-2 as Type II, Class 1
- Dried film also meets 25/50 flame spread index and smoke developed index requirements of codes and specifications when tested by ASTM E 84 Test Method

Uses

520 Adhesive will make a resilient and heat-resistant bond with many materials where the use of a solvent-base neoprene contact adhesive is suitable and desirable.

It will make a strong resilient bond for sealing laminated aluminum foil and kraft paper vapor retarder jackets.

Properties

Color

Light tan

Net Weight

6.9 lb per gallon (828 g/l)

Composition

Synthetic rubber base with synthetic resins and fillers added; hydrocarbon- and ketone-type solvents. V.O.C. Content: 432 g/l, calculated SCAQMD 1168

Solids Content

Approximately 22% by weight.

Coverage

200 sq ft (5m²/l) per gallon max, single coat (depending upon porosity of materials bonded and air temperature)

Shelf Life

1-1/2 years in original sealed container; storage temperature 60°F to 80°F (16°C to 27°C)

Minimum Drying Time

3-5 minutes under normal conditions

Temperature Limits

250°F (120°C)—Armaflex Pipe Insulation seams and joints
180°F (82°C)—full-bonding Armaflex Sheet Insulation

Container Sizes

Half-pint and pint brush-top cans and pint, quart, and gallon containers

Fire Performance

Wet: Flash point below 20°F (-7°C) (TOC)

Dry: ASTM E 84 Method*

Applied on steel plate

Flame Spread Index5

Smoke Developed Index15



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INTERNET www.armacell.com

For any updates on this document, please refer to our website.

520	001	04	07	NA	NA
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DANGER—Extremely flammable mixture; vapors may cause flash fire; vapors may ignite explosively; prevent buildup of vapors—open all windows and doors—use only with cross ventilation; keep away from heat, sparks, and open flame; do not smoke; extinguish all flames and pilot lights; and turn off stoves, heaters, electric motors, and other sources of ignition during use and until all vapors are gone; close container after use; avoid prolonged breathing of vapor and prolonged contact with skin; do not take internally; keep away from children.

Not for consumer use. Sold only for professional or industrial application.

Application Instructions

Mix well, and apply only to clean, dry, oil-free surfaces. For best results, the adhesive should be brush-applied in a thin, uniform coat to both bonding surfaces. Allow the adhesive to tack prior to joining both surfaces. Avoid open time of more than 10 minutes. 520 Adhesive bonds instantly, so pieces must be positioned accurately as contact is made. Moderate pressure should then be applied to the entire bonding area to insure complete contact.

It is recommended that the adhesive be applied at temperatures above 40°F (4°C) and not on heated surfaces. Where application between 32°F and 40°F (0°C and 4°C) can not be avoided, exercise more care in applying the adhesive and closing the joint. Applications below 32°F (0°C) are not recommended.

Where lines and tanks that are insulated and will operate at hot temperatures, 520 Adhesive must cure a minimum of 36 hours at room temperature to attain heat resistance for insulated pipe to 250°F (120°C) and insulated tanks and equipment to 180°F (82°C).

Adhesive-bonded seams and joints of Armaflex Pipe Insulation must cure before finishes are applied. Where the insulation is installed by adhering seams and butt joints, the adhesive must cure 24 to 36 hours.

Adhesive-bonded seams and joints of Armaflex Sheet Insulation must cure before finishes are applied. Where the insulation is installed by adhering seams and butt joints only, the adhesive must cure 24 to 36 hours. Where the insulation is installed against surfaces with full adhesive coverage, requiring wet adhesive at joints, the adhesive must cure seven days.

Thinning is not recommended.

Either methyl ethyl ketone or most lacquer thinners can be used to clean fresh residue from tools and workpieces.

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R&F Insulation Group LLC

Indoor condensate drains Insulation Schedule

Systems:

Indoor condensate Drains

Insulation Type:

Armaflex

Finishes:

Black finish

Fittings Insulation Type:

Miter

Thickness Schedule:

1/2" thick

Application:

Per Manufacturer's Recommendations

Manufacture's

Armaflex



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AP/Armaflex[®]
AP/Armaflex[®] W
Tube Insulation

Superior Moisture Control, Mold-Resistant, Available Black or White



- Fiber Free, Closed Cell, Non-Wicking
- GREENGUARD Children & Schools Certified[®]
- Made with Microban[®] Antimicrobial Product Protection
- Thicknesses up to 2" Wall
- 25/50 Rated Through 2" Wall



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AP Armaflex and AP Armaflex W Pipe (Tube) Insulation

AP Armaflex Pipe (Tube) Insulation is the original closed cell, fiber-free elastomeric foam and the world's most recognized brand in flexible mechanical insulation.

- **Proven:** World's first choice for insulating chilled water and refrigeration lines
- **Mold resistant:** Made with Microban antimicrobial product protection
- **Indoor Air Quality-friendly:** Fiber-free, formaldehyde-free, low VOCs, nonparticulating. GREENGUARD Indoor Air Quality Certified®
- **Durable:** No fragile vapor retarder

Description

AP Armaflex Pipe (Tube) Insulation is a black or white flexible elastomeric thermal insulation. The expanded closed-cell structure makes it an efficient insulation. It is manufactured without the use of CFC's, HFC's or HCFC's. All AP Armaflex products are made with Microban® antimicrobial product protection for added defense against mold on the insulation.

- Nominal wall thicknesses of 3/8", 1/2", 3/4", 1", 1-1/2", 2" (10, 13, 19, 25, 38, 50mm)
- Popular sizes up to 8" IPS

Factory Mutual (FM) Approvals

AP Armaflex is approved through continuing supervision by Factory Mutual Approvals to consistently provide actual values on these key performance criteria for mechanical system insulation:

- **Thermal Conductivity:** 0.25 BTU-in/hr. ft² °F
- **Water Vapor Transmission:** 0.05 perm-inch
- **Fire Rating:** will not contribute significantly to fire (simulated end-use testing)

As tested by ASTM E 84 "Method of Test for Surface Burning Characteristics for Building Materials" AP Armaflex Pipe Insulation has a flame-spread index of less than 25 and a smoke-developed index of less than 50.

AP Armaflex meets CAN/UL S102 through 1" wall.

Note: Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

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AP Armaflex & AP Armaflex W Tube Insulation
www.armacell.us

For the latest document, please refer to our website.

Uses

- Retards heat gain and controls condensation drip from chilled-water and refrigeration systems. Efficiently reduces heat flow for hot-water plumbing, liquid-heating and dual-temperature piping
- Acceptable for use in air plenums and conforms to NFPA 90A and NFPA 90B requirements

The recommended temperature usage range for AP Armaflex Pipe Insulation is -297°F to +220°F (-183°C to +105°C). For use on cold pipes, thicknesses have been calculated to control condensation on the insulation outer surface, as shown in the table of thickness recommendations. AP Armaflex meets the energy code requirements of ASHRAE 90.1, International Energy Conservation Code (IECC) and other building codes.

Application

AP Armaflex Pipe Insulation in unslit tubular form can be slipped onto piping before it is connected, or it can be slit lengthwise and snapped over piping already connected. Fitting covers are fabricated from miter-cut tubular form. In all cases, butt joints and seams are to be sealed with one of our Armaflex adhesives: Armaflex 520, 520 Black or, where a low V.O.C. adhesive is required, 520 BLV. 520 Adhesives are contact adhesives; therefore, in all cases, both surfaces to be joined are coated with adhesive.

For pipes greater than 8" IPS*, use AP/Armaflex Sheet/Roll insulation (black only). For thicknesses greater than 2", sleeve the insulation. See technical bulletin #030 for additional information.

AP Armaflex normally requires no supplemental vapor-retarder protection but additional vapor-retarder protection may be necessary when installed on very-low-temperature piping or exposure to continually high humidity conditions.

AP Armaflex is designed for installation above or below ground. For below ground applications, contact Armacell or see our Technical Bulletin No. 7 on our website, www.armacell.com. Outdoors, a weather-resistant protective finish is to be applied and Armaflex WB Finish is recommended.

Armaflex insulation products must be installed according to "Installation of Armaflex Insulations" brochure. Proper installation is required to assure Armaflex insulation performance.

Specification Compliance

AP Armaflex Pipe Insulation developed to meet:

ASTM C 534, Type I — Tubular Grade 1	ASTM G-22 ASTM D 1056, 2B 1
ASTM E 84, NFPA 255, UL 723	MIL-P-15280J, FORM T (Black)
CAN/ULC S 102 through 1" wall	MIL-C-3133C (MIL STD 670B), Black
UL 94 5V-5A, V-O, File E 55798	Grade SBE 3
NFPA 90A, 90B	MEA 96-85-M
UL 181	City of LA – RR 7642
ASTM G-21/C1338,	

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Physical Properties

Specifications	Values		Test Method
Thermal Conductivity, Btu • in./h • ft² • °F (W/mK) 75°F Mean Temperature (24°C) 90°F Mean Temperature (32°C)	Through 1" 0.25 (0.036) 0.256 (0.037)	1-1/2" and 2" 0.28 (0.040) 0.286 (0.041)	ASTM C 177 or C 518
Water Vapor Permeability, Perm-in. [Kg/(s•m•Pa)]	0.05 (0.725 x 10 ⁻¹³)	0.08 (1.16 x 10 ⁻¹³)	ASTM E 96, Procedure A
Flame Spread and Smoke Developed Index	25/50*		ASTM E 84 CAN/ULC S102 ^③
Mold Growth Fungi Resistance Bacterial Resistance	Meets requirements		UL 181 ASTM G21/C1338 ASTM G22
Water Absorption, % by Volume	0.2%		ASTM C 209
Upper Use Limit^①	220°F (105°C)		—
Lower Use Limit^①	-297°F (-183°C)**		—
Ozone Resistance	GOOD		—
Sizes			
Wall Thickness, (nominal) Form	3/8", 1/2", 3/4", 1", 1-1/2", 2" (10, 13, 19 25 38, 50mm)		—
Inside Diameter, Tubular Form	3/8" ID to 8" ID (10mm ID to 203mm)		—
Length of Sections, Feet, Tubular Form	6 (1.8m)		—

Notes

- ① On the heating cycle, AP Armaflex Pipe Insulation will withstand temperatures as high as 220°F (105°C). 520, 520 Black or 520 BLV Adhesive may be used with pipe insulation applications up to 220°F (105°C).
 - ② At temperatures below -20°F (-29°C), elastomeric insulation starts to become less flexible. However, this characteristic does not affect thermal efficiency and resistance to water vapor permeability of Armaflex insulation.
 - ③ AP Armaflex Black tested for CAN/ULC S102, AP Armaflex White determined to be comparable through 1" walls.
- **For applications of -40°F to -297°F (-40°C to -183°C), contact Amacell.



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AP:Armaflex	Tubes	Submittal	017	Eng/USA	3/2012
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Armaflex®
520 ADHESIVE

- Tubes
- Sheets & Rolls
- Pipe Hangers
- Insulation Tape
- Sundries

STRONGER BONDS, FOR TIGHTER SEAMS

Formulated for Armaflex Insulations

Air-drying contact adhesive

Years of on-the-job performance

Meets MIL-A-24179A and Amend-2



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Armaflex® 520 ADHESIVE

Description

Armaflex® 520 Adhesive is an air-drying contact adhesive that is excellent for joining seams and butt joints of Armaflex Pipe and Sheet Insulations for line temperatures up to 250°F (120°C). The adhesive may also be used to apply Armaflex Sheet Insulation to flat or curved metal surfaces that will operate at temperatures up to 180°F (82°C).

- Meets Military Specification MIL-A-24179A and Amend-2 as Type II, Class 1
- Dried film also meets 25/50 flame spread index and smoke developed index requirements of codes and specifications when tested by ASTM E 84 Test Method

Uses

520 Adhesive will make a resilient and heat-resistant bond with many materials where the use of a solvent-base neoprene contact adhesive is suitable and desirable.

It will make a strong resilient bond for sealing laminated aluminum foil and kraft paper vapor retarder jackets.

Properties

Color

Light tan

Net Weight

6.9 lb per gallon (828 g/l)

Composition

Synthetic rubber base with synthetic resins and fillers added; hydrocarbon- and ketone-type solvents. V.O.C. Content: 432 g/l, calculated SCAQMD 1168

Solids Content

Approximately 22% by weight.

Coverage

200 sq ft (5m²/l) per gallon max, single coat (depending upon porosity of materials bonded and air temperature)

Shelf Life

1-1/2 years in original sealed container; storage temperature 60°F to 80°F (16°C to 27°C)

Minimum Drying Time

3-5 minutes under normal conditions

Temperature Limits

250°F (120°C)—Armaflex Pipe Insulation seams and joints
180°F (82°C)—full-bonding Armaflex Sheet Insulation

Container Sizes

Half-pint and pint brush-top cans and pint, quart, and gallon containers

Fire Performance

Wet: Flash point below 20°F (-7°C) (TOC)

Dry: ASTM E 84 Method*

Applied on steel plate

Flame Spread Index5

Smoke Developed Index15



ARMACELL LLC
7600 Oakwood Street Extension
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For any updates on this document, please refer to our website.

DANGER—Extremely flammable mixture; vapors may cause flash fire; vapors may ignite explosively; prevent buildup of vapors—open all windows and doors—use only with cross ventilation; keep away from heat, sparks, and open flame; do not smoke; extinguish all flames and pilot lights; and turn off stoves, heaters, electric motors, and other sources of ignition during use and until all vapors are gone; close container after use; avoid prolonged breathing of vapor and prolonged contact with skin; do not take internally; keep away from children.

Not for consumer use. Sold only for professional or industrial application.

Application Instructions

Mix well, and apply only to clean, dry, oil-free surfaces. For best results, the adhesive should be brush-applied in a thin, uniform coat to both bonding surfaces. Allow the adhesive to tack prior to joining both surfaces. Avoid open time of more than 10 minutes. 520 Adhesive bonds instantly, so pieces must be positioned accurately as contact is made. Moderate pressure should then be applied to the entire bonding area to insure complete contact.

It is recommended that the adhesive be applied at temperatures above 40°F (4°C) and not on heated surfaces. Where application between 32°F and 40°F (0°C and 4°C) can not be avoided, exercise more care in applying the adhesive and closing the joint. Applications below 32°F (0°C) are not recommended.

Where lines and tanks that are insulated and will operate at hot temperatures, 520 Adhesive must cure a minimum of 36 hours at room temperature to attain heat resistance for insulated pipe to 250°F (120°C) and insulated tanks and equipment to 180°F (82°C).

Adhesive-bonded seams and joints of Armaflex Pipe Insulation must cure before finishes are applied. Where the insulation is installed by adhering seams and butt joints, the adhesive must cure 24 to 36 hours.

Adhesive-bonded seams and joints of Armaflex Sheet Insulation must cure before finishes are applied. Where the insulation is installed by adhering seams and butt joints only, the adhesive must cure 24 to 36 hours. Where the insulation is installed against surfaces with full adhesive coverage, requiring wet adhesive at joints, the adhesive must cure seven days.

Thinning is not recommended.

Either methyl ethyl ketone or most lacquer thinners can be used to clean fresh residue from tools and workpieces.

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520	001	04	07	NA	NA
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Printed in United States of America

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Armaflex®
520 ADHESIVE

Description

Armaflex® 520 Adhesive is an air-drying contact adhesive that is excellent for joining seams and butt joints of Armaflex Pipe and Sheet Insulations for line temperatures up to 250°F (120°C). The adhesive may also be used to apply Armaflex Sheet Insulation to flat or curved metal surfaces that will operate at temperatures up to 180°F (82°C).

- Meets Military Specification MIL-A-24179A and Amend-2 as Type II, Class 1
- Dried film also meets 25/50 flame spread index and smoke developed index requirements of codes and specifications when tested by ASTM E 84 Test Method

Uses

520 Adhesive will make a resilient and heat-resistant bond with many materials where the use of a solvent-base neoprene contact adhesive is suitable and desirable.

It will make a strong resilient bond for sealing laminated aluminum foil and kraft paper vapor retarder jackets.

Properties

Color

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Net Weight

6.9 lb per gallon (828 g/l)

Composition

Synthetic rubber base with synthetic resins and fillers added; hydrocarbon- and ketone-type solvents. V.O.C. Content: 432 g/l, calculated SCAQMD 1168

Solids Content

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Outdoor Refrigerant pipe Insulation Schedule

Systems:

Outdoor Refrigerant pipe

Insulation Type:

Armaflex

Finishes:

.016 aluminum smooth

Fittings Insulation Type:

Aluminum fittings

Thickness Schedule:

1" Thick

Application:

Per Manufacturer's Recommendations

Manufacture's

Armacell

PABCO

Johns Manville


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armacell THE MAKERS OF **Armaflex**[®]
advanced insulation



AP/Armaflex[®]
AP/Armaflex[®] W
Tube Insulation

Superior Moisture Control, Mold-Resistant, Available Black or White



- Fiber Free, Closed Cell, Non-Wicking
- GREENGUARD Children & Schools Certified[®]
- Made with Microban[®] Antimicrobial Product Protection
- Thicknesses up to 2" Wall
- 25/50 Rated Through 2" Wall



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AP Armaflex and AP Armaflex W Pipe (Tube) Insulation

AP Armaflex Pipe (Tube) Insulation is the original closed cell, fiber-free elastomeric foam and the world's most recognized brand in flexible mechanical insulation.

- **Proven:** World's first choice for insulating chilled water and refrigeration lines
- **Mold resistant:** Made with Microban antimicrobial product protection
- **Indoor Air Quality-friendly:** Fiber-free, formaldehyde-free, low VOCs, nonparticulating. GREENGUARD Indoor Air Quality Certified®
- **Durable:** No fragile vapor retarder

Description

AP Armaflex Pipe (Tube) Insulation is a black or white flexible elastomeric thermal insulation. The expanded closed-cell structure makes it an efficient insulation. It is manufactured without the use of CFC's, HFC's or HCFC's. All AP Armaflex products are made with Microban® antimicrobial product protection for added defense against mold on the insulation.

- Nominal wall thicknesses of 3/8", 1/2", 3/4" 1", 1-1/2", 2" (10, 13, 19, 25, 38, 50mm)
- Popular sizes up to 8" IPS

Factory Mutual (FM) Approvals

AP Armaflex is approved through continuing supervision by Factory Mutual Approvals to consistently provide actual values on these key performance criteria for mechanical system insulation:

- **Thermal Conductivity:** 0.25 BTU-in/hr. ft² °F
- **Water Vapor Transmission:** 0.05 perm-inch
- **Fire Rating:** will not contribute significantly to fire (simulated end-use testing)

As tested by ASTM E 84 "Method of Test for Surface Burning Characteristics for Building Materials" AP Armaflex Pipe Insulation has a flame-spread index of less than 25 and a smoke-developed index of less than 50.

AP Armaflex meets CAN/UL S102 through 1" wall.

Note: Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

ALL ARMACELL FACILITIES
IN NORTH AMERICA ARE
ISO 9001:2008 CERTIFIED.

AP Armaflex & AP Armaflex W Tube Insulation
www.armacell.us

For the latest document, please refer to our website.

Uses

- Retards heat gain and controls condensation drip from chilled-water and refrigeration systems. Efficiently reduces heat flow for hot-water plumbing, liquid-heating and dual-temperature piping
- Acceptable for use in air plenums and conforms to NFPA 90A and NFPA 90B requirements

The recommended temperature usage range for AP Armaflex Pipe Insulation is -297°F to +220°F (-183°C to +105°C). For use on cold pipes, thicknesses have been calculated to control condensation on the insulation outer surface, as shown in the table of thickness recommendations. AP Armaflex meets the energy code requirements of ASHRAE 90.1, International Energy Conservation Code (IECC) and other building codes.

Application

AP Armaflex Pipe Insulation in unslit tubular form can be slipped onto piping before it is connected, or it can be slit lengthwise and snapped over piping already connected. Fitting covers are fabricated from miter-cut tubular form. In all cases, butt joints and seams are to be sealed with one of our Armaflex adhesives: Armaflex 520, 520 Black or, where a low V.O.C. adhesive is required, 520 BLV. 520 Adhesives are contact adhesives; therefore, in all cases, both surfaces to be joined are coated with adhesive.

For pipes greater than 8" IPS*, use AP/Armaflex Sheet/Roll insulation (black only). For thicknesses greater than 2", sleeve the insulation. See technical bulletin #030 for additional information.

AP Armaflex normally requires no supplemental vapor-retarder protection but additional vapor-retarder protection may be necessary when installed on very-low-temperature piping or exposure to continually high humidity conditions.

AP Armaflex is designed for installation above or below ground. For below ground applications, contact Armacell or see our Technical Bulletin No. 7 on our website, www.armacell.com. Outdoors, a weather-resistant protective finish is to be applied and Armaflex WB Finish is recommended.

Armaflex insulation products must be installed according to "Installation of Armaflex Insulations" brochure. Proper installation is required to assure Armaflex insulation performance.

Specification Compliance

AP Armaflex Pipe Insulation developed to meet:

ASTM C 534, Type I — Tubular Grade 1	ASTM G-22 ASTM D 1056, 2B 1
ASTM E 84, NFPA 255, UL 723	MIL-P-15280J, FORM T (Black)
CAN/ULC S 102 through 1" wall	MIL-C-3133C (MIL STD 670B), Black
UL 94 5V-5A, V-O, File E 55798	Grade SBE 3
NFPA 90A, 90B	MEA 96-85-M
UL 181	City of LA – RR 7642
ASTM G-21/C1338,	

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Physical Properties

Specifications	Values		Test Method
Thermal Conductivity, Btu • in./h • ft² • °F (W/mK) 75°F Mean Temperature (24°C) 90°F Mean Temperature (32°C)	Through 1" 0.25 (0.036) 0.256 (0.037)	1-1/2" and 2" 0.28 (0.040) 0.286 (0.041)	ASTM C 177 or C 518
Water Vapor Permeability, Perm-in. [Kg/(s•m•Pa)]	0.05 (0.725 x 10 ⁻¹³)	0.08 (1.16 x 10 ⁻¹³)	ASTM E 96, Procedure A
Flame Spread and Smoke Developed Index	25/50*		ASTM E 84 CAN/ULC S102 ^③
Mold Growth Fungi Resistance Bacterial Resistance	Meets requirements		UL 181 ASTM G21/C1338 ASTM G22
Water Absorption, % by Volume	0.2%		ASTM C 209
Upper Use Limit^①	220°F (105°C)		—
Lower Use Limit^①	-297°F (-183°C)**		—
Ozone Resistance	GOOD		—
Sizes			
Wall Thickness, (nominal) Form	3/8", 1/2", 3/4", 1", 1-1/2", 2" (10, 13, 19 25 38, 50mm)		—
Inside Diameter, Tubular Form	3/8" ID to 8" ID (10mm ID to 203mm)		—
Length of Sections, Feet, Tubular Form	6 (1.8m)		—

Notes

- ① On the heating cycle, AP Armaflex Pipe Insulation will withstand temperatures as high as 220°F (105°C). 520, 520 Black or 520 BLV Adhesive may be used with pipe insulation applications up to 220°F (105°C).
 - ② At temperatures below -20°F (-29°C), elastomeric insulation starts to become less flexible. However, this characteristic does not affect thermal efficiency and resistance to water vapor permeability of Armaflex insulation.
 - ③ AP Armaflex Black tested for CAN/ULC S102, AP Armaflex White determined to be comparable through 1" walls.
- **For applications of -40°F to -297°F (-40°C to -183°C), contact Armacell.



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The GREENGUARD Children & Schools Certified Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute. Microban is a registered trademark of Microban Products Company.

AP Armaflex	Tubes	Submittal	017	Eng/USA	3/2012
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Armaflex®
520 ADHESIVE

- Tubes
- Sheets & Rolls
- Pipe Hangers
- Insulation Tape
- Sundries

STRONGER BONDS, FOR TIGHTER SEAMS

Formulated for Armaflex Insulations

Air-drying contact adhesive

Years of on-the-job performance

Meets MIL-A-24179A and Amend-2



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- Dried film also meets 25/50 flame spread index and smoke developed index requirements of codes and specifications when tested by ASTM E 84 Test Method

Uses

520 Adhesive will make a resilient and heat-resistant bond with many materials where the use of a solvent-base neoprene contact adhesive is suitable and desirable.

It will make a strong resilient bond for sealing laminated aluminum foil and kraft paper vapor retarder jackets.

Properties

Color

Light tan

Net Weight

6.9 lb per gallon (828 g/l)

Composition

Synthetic rubber base with synthetic resins and fillers added; hydrocarbon- and ketone-type solvents. V.O.C. Content: 432 g/l, calculated SCAQMD 1168

Solids Content

Approximately 22% by weight.

Coverage

200 sq ft (6m²/l) per gallon max, single coat (depending upon porosity of materials bonded and air temperature)

Shelf Life

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Flame Spread Index5
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ITW Insulation Systems
PABCO - CHILDERS METALS

Aluminum Roll Jacketing

DESCRIPTION

ITW Pabco/Childers Aluminum Roll Jacketing is manufactured from alloys 3105 and 3003, conforming to ASTM B-209 designation, half-hard temper (H-14) and heavier gauges quarter-hard (H-12 lock-forming quality).

Commercially pure aluminum is relatively soft as structural material. Its strength can be greatly improved by alloying aluminum with small percentages of one or more other elements such as manganese, silicon, copper, magnesium or zinc. Additional strength can be achieved by cold working, such as cold rolling.

Standard alloys and nominal chemical composition

Alloy	Copper	Manganese	Magnesium
3105		.6	.50
3003	.12	1.2	~

ITW reserves the right to ship whichever alloy is in stock at time of order placement, unless advised a specific alloy is requested (may affect lead-time and/or price). Other alloys are special order and minimum quantities and extended lead-time required.

ITW's aluminum roll jacketing is available in smooth, stucco embossed or 3/16 corrugations (cross-crimped) finishes.

POLYSURLYN MOISTURE RETARDER

Polysurlyn consists of a 3 mil thickness of a co-extrusion of polyethylene and DuPont's Surlyn® which is heat laminated to the metal jacketing. Due to its superior performance characteristics, it replaces the old standard 1 mil and 3 mil polykraft moisture retarders. **For cold rooftop and hot work cyclical applications, refer to Technical Information for recommendations.**

THICKNESS & Suggested Applications

- .016"** (4mm) The standard for industrial use. Recommended over insulated lines up to 36" O.D. including insulation.
- &**
- .020"** (5mm)

- .024"** (.6mm) A heavier weight jacketing used on larger diameter lines and large equipment up to 8 feet in diameter.

- .032"** (.8mm) Used in special applications where extra thickness and protection is required, such as fabricated tank head covers and other special fabrications.

- .040"** (1.0mm) Available in rolls, where extra heavy gauges are required because of severe mechanical abuse or special fabricating requirements, such as flat ducts or precipitators. Also recommended for areas subject to high wind conditions.
- &**
- .050"** (1.2mm)

RECOMMENDED USES

Jacketing is recommended for insulated piping, tanks and vessels less than 8 feet in diameter. Deep corrugated sheets are recommended for diameters greater than 8 feet.



INDUSTRIAL INSULATION

ELL-JACS™ PLUS
POLYFILM LINED ALUMINUM ELBOW COVERS
DATA SHEET

DESCRIPTION

JM Polyfilm lined Aluminum Elbow Covers are made in two precision formed matching halves to cover and weatherproof insulated 45° and 90° pipe elbows. These elbow covers are called ELL-Jacs™ Plus by JM.

Like JM Aluminum Jacketing, ELL-Jacs™ Plus are a premier protective outer surface for insulation systems on pipe and are an excellent performing and critical accessory to complement the aluminum jacketing. ELL-Jacs™ Plus protect the insulation and underlying pipe from physical damage, UV exposure, corrosive atmospheres, and water. They also reduce the time and labor needed to install the metal jacketing system.

ELL-Jacs™ Plus have a 3 mil (76 micron) three-layer Polyfilm Moisture Barrier (PFMB) that is factory heat laminated to the interior surface. When coupled with the ultrapure 1100 alloy used in these elbows, this moisture barrier reduces pitting/crevice and galvanic corrosion potential of the interior surface of the elbow cover and the underlying pipe.

ELL-Jacs™ Plus have a factory applied and baked on finish of highly durable hard film clear acrylic or polyester paint on the exterior surface to help resist external corrosion and to raise the emittance. The special paint used on the exterior surface of ELL-Jacs™ Plus is chalk and fade resistant. It exhibits better resistance to oxidation and to the effects of various corrosive environments than bare aluminum jacketing. This painted surface also resists water, scratching, and fingerprint staining.

See the JM Polyfilm Technical Data Sheet for more information on this material.

ADVANTAGES

ELL-Jacs™ Plus provide key advantages over aluminum elbows with a painted moisture barrier:

- PFMB on the interior surface reduces corrosion propensity – three layers of film in the PFMB eliminate pinholes
- Allows for the presence of PFMB on all parts of the metal jacketing system
- Increased spacing between fingers/ribs, for easier banding in the middle of the elbow
- PFMB has a very low water vapor transmission rate, further reducing corrosion potential
- Tough and strong PFMB film to resist damage during handling and installation. Painted moisture barrier is more easily scratched
- Clear exterior coating helps resist unsightly metal scratches



INNOVATIVE PRODUCT

Using JM's innovation process, our team has developed an improved product that will enhance the performance of the overall insulation system.

ELL-Jacs™ Plus will benefit the facility owner and specifier, as the optimum performing PFMB is now available for the first time as a complete system without having to utilize gore sections on the elbows.

COMPOSITION

ELL-Jacs™ Plus are made from the commercially pure (>99% aluminum) and highly corrosion resistant 1100 aluminum alloy.

The performance of even commercially pure aluminum can be improved by alloying with small percentages of one or more other elements such as silicon, iron, copper, manganese, and zinc. JM carefully screens all potential aluminum coil suppliers to assure our products have the highest quality, are corrosion resistant, and comply with all relevant standards.

COMPOSITION OF ALUMINIUM 1100 ALLOY (MAX %)

Alloy	Si+Fe	Cu	Mn	Zn
1100	0.95	0.05-0.20	0.05	0.1

See the JM PFMB vs. Polykraft or Paint Data Sheet for more detailed information regarding key benefits of PFMB compared to painted moisture barrier.

SIZE SELECTION AND INSTALLATION

For details on ELL-Jacs™ Plus sizes, their fit on insulation, and installation, see the JM data sheet on Aluminum Elbow Sizes and Installation.

FIT

Ell-Jacs™ Plus are available to fit:

- 45° and 90° pipe elbows
- Long and short radius pipe elbows
- Butt weld, socket weld, and screwed elbows
- Insulated pipe from ½" to 12" NPS1

1Ell-Jacs™ Plus are available as quad sections for some insulation thicknesses at NPS > 12". Not all combinations of NPS and insulation thickness are available. See your JM sales representative for details.

THICKNESS

Ell-Jacs™ Plus are 0.024" (0.6 mm) in thickness to allow the elbows to be formed in the press. This thickness has proven acceptable in a vast number of installations and is adequate since elbows do not get the same abuse as straight jacketing and do not get walked on or ladders leaned on them.

RECOMMENDED USES

Ell-Jacs™ Plus are recommended for use anywhere aluminum jacketing is used on the associated straight sections of pipe but are especially critical when the straight pipe aluminum jacketing uses PFMB.

LIMITATIONS ON USE

Ell-Jacs™ Plus are not appropriate for the following applications:

- For applications where a maximum resistance to fire is required, JM stainless steel elbow covers should be used
- Where maximum resistance to exterior surface corrosion is required, JM stainless steel elbow covers should be used

EMITTANCE OF ALUMINUM ELBOWS

Ell-Jacs™ Plus have an outer surface emittance as measured by ASTM C1371 and specified by ASTM C1729 of:

- Standard clear coated = 0.5
- Bare aluminum (oxidized in service) for comparison = 0.1

FLAMMABILITY

Ell-Jacs™ Plus have been tested for flammability via the commonly used ASTM E84 test method. The results are shown below.

ASTM E84 Flame Spread Index = 0
ASTM E84 Smoke Developed Index = 5
(Tested with exterior metal surface exposed to the flame)

SURFACE FINISHES

Due to the pressing process during elbow formation, Ell-Jacs™ Plus have a smooth clear coated finish.

COMPLIANCE TO STANDARDS

Ell-Jacs™ Plus from JM complies with the applicable requirements of ASTM C1729 (Aluminum Jacketing Material Standard), Type III, Grade 3, Class A, which includes the strength and chemical composition requirements for compliance to ASTM B209 (Aluminum Alloy Standard).

SEALING OF JOINTS

For best insulation system performance and resistance to water infiltration, JM recommends that all joints in Ell-Jacs™ Plus be sealed with an appropriate joint sealant. This should be applied between the overlapping pieces of metal in the joint and not as a caulking bead on the exterior lip of the joint.

Formerly Pabco/Childers Metals



717 17th St.
Denver, CO 80202
(800) 866-3234
JM.com

Technical specifications as shown in this literature are intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product. The physical and chemical properties of the product listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you for current information.

All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions, which includes a Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions or for information on other Johns Manville thermal insulation and systems, visit www.jm.com/terms-conditions or call (800)654-3103.

Date	March 28, 2024
Hoffman & Hoffman Order #	470.477.10212
Branch Office	Charlotte, NC
Salesman	Spencer Jones




PROJECT: Morton and Gettys Attorneys at Law
Rock Hill, SC

CONTRACTOR: Action Mechanical
Charlotte, NC

ENGINEER: Wilde Engineering
Charlotte, NC

EQUIPMENT: Louver by Greenheck

<p>PROJECT NAME Morton and Gettys</p> <p>SUBMITTAL</p> <p><input checked="" type="checkbox"/> NO EXCEPTIONS TAKEN <input type="checkbox"/> APPROVED AS NOTED</p> <p><input type="checkbox"/> REVISE & RESUBMIT <input type="checkbox"/> REJECTED</p> <p><input type="checkbox"/> REVIEW ONLY</p> <p>REVIEWED BY Jacob Lytton DATE 4/1/2024</p> <p><small>This review is only for general compliance with the intent of the contract documents. Contractor shall assume responsibility for correctness, dimensions, details, quantities and all costs associated with substituted equipment, including maintenance access, clearances, building alterations, replacement of system components, etc.</small></p>	
--	---

APPROVED
By Billy Weaver at 6:58 am, Mar 29, 2024

PER LATEST DRAWINGS: 1/12/2024

General Notes:

Above per the attached data and cut sheets

- Model EDJ-401 aluminum stationary louver with J blades, channel frame, birdscreen and painted finish to match, size 20"x14", tag L1.
- Quantities, sizes, frame types and finish color must be confirmed.
- Architect to select color from the furnished louver color charts or provide a paint chip to match.
- We do not include any flanges, sleeves, plenums, drip caps, extended sills, flashing, sealants, fasteners, clip angles, filter racks, blank-offs, rigging or installation.

SUBMITTAL

APPROVAL REQUIRED

<p>HOFFMAN & HOFFMAN, INC. HVAC Manufacturers Representative Website: www.hoffman-hoffman.com</p>		<p>We have exercised care in the preparation of this submittal. We believe it satisfies our interpretation of the designer's intent and scope. It contains the list of materials, quantities, sizes, style and the finish as we propose to furnish for this job. Please examine and check carefully that all items are exactly as required and that our interpretation of the applicable plans and/or specifications are consistent with the design. Approval by the engineer and purchaser will be required before release of this equipment for production. If any discrepancies are discovered, please notify us as soon as possible.</p>
<p>Asheville, NC (828) 252-5782 Charlotte, NC (704) 364-4700 Raleigh, NC (919) 781-8011 Wilmington, NC (910) 791-4775 Chattanooga, TN (423) 693-2890 Knoxville, TN (865) 450-9770</p>	<p>Charleston, SC (843) 884-3201 Columbia, SC (803) 765-9360 Greenville, SC (864) 676-1888 Chesapeake, VA (757) 548-1700 Richmond, VA (804) 272-1500 Roanoke, VA (540) 725-8701</p> <p>Corporate: Greensboro, NC (336) 292-8777</p>	

Louvers Product Limited Warranty

Thank you for purchasing Greenheck louvers. Greenheck warrants this equipment to be free from defect in material and workmanship for a period of **1 year** from the date of product shipment. Any units or parts, which prove defective during the warranty period, will be repaired, or replaced at our option when returned to our factory, transportation prepaid. Unless agreed upon otherwise Greenheck will not be held responsible for costs associated with removal or installation of product(s).

The legal remedies described in this Limited Warranty are the sole exclusive remedy of Customer. This limited warranty will be void if payment from Customer is not received within a commercially reasonable time frame. GREENHECK MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This limited warranty is extended solely to the Customer. It is nontransferable and non-assignable, and the Customer shall not permit or authorize its employees, agents, representatives, or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Customer.

In the event of material breach by the Customer of any of the conditions of this warranty, Greenheck shall have no liability for and product failure claims.

Failure to pay Greenheck in full for original services will automatically make this warranty null and void.

Greenheck will not be held liable for incidental or consequential damages of any kind. The limited warranty of product(s) replaced or repaired under this limited warranty shall be limited to the remainder of the original warranty period. Greenheck reserves the right to reasonable field access to diagnose and repair any product alleged to be defective. This limited warranty may not be modified by anyone and may not be changed by such things as purchase order forms or acceptance forms, unless otherwise agreed upon by Greenheck.

This limited warranty is provided in lieu of any other warranty requirements or obligations, including, but not limited to, those within project specifications.

All notices and claims given under or pursuant to this agreement shall be in writing and sent by certified or registered mail, postage prepaid, return receipt requested to: Greenheck, Attn: Louver Sales, 525 Western Road, Schofield, WI 54476.

By proceeding to use our products and services on your project, you accept the terms of these limited warranties.

Louvers Architectural Finish Limited Warranty

70% Kynar / 100% Fluoropolymer Paint

Greenheck warrants the finish of 70% Kynar / 100% Fluoropolymer paint for a period of **10 years** from the date of product shipment when applied to aluminum louvers or aluminum architectural products. Greenheck warrants that for **10 years** after the date of product shipment the applied finish:

- A) Will not chip, crack, or peel (lose adhesion) but does not include minute fracturing, which may occur in proper fabrication of building parts.
- B) Will not chalk in excess of ASTM D-4214-89 number 8 rating, determined by the procedure outlined in ASTM D-4214-89 specification test.
- C) Will not change color more than five (5) Delta-E Hunter units (square root of the sum of Delta L, Delta A and Delta B) as determined by ASTM method D-2244. It is acknowledged that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.

Metallic and Mica colors are exempt in the warranty from item C but will hold the L value within 5 Delta E or the L scale of the Hunter E unit system.

Exotic colors will receive a full 10 year warranty if they have the recommended clear coat applied. However, Exotic colors are excluded from the 20 year warranty.

Any units or parts, which prove defective during the warranty period, will be repaired or replaced at our option when returned to the factory, transportation prepaid. Unless agreed upon otherwise Greenheck will not be held responsible for costs associated with installation or removal of product(s).

Greenheck limited warranties are not applicable when failure is caused by events that cannot be controlled by Greenheck. These include, but are not limited to, Acts of God, fire or other casualty or physical damage; Government restrictions; Acts of aggression; Harmful fumes or foreign substances in the atmosphere; Improper storage or packaging of the parts prior to installation; Product failure due to improper usage and/or application; Failure to provide reasonable and routine maintenance and/or improper maintenance, including, but not limited to the use of chemical cleaning agents not in accordance with AAMA recommendations or failure to use a systematic maintenance cleaning program in areas of high salt concentration; Corrosive atmosphere found in the interior of buildings, which effect the interior surface of material; Standing or ponding water on the metal; Excessive building movements; Work performed or materials supplied by others; Improper treatment of finished material; Corrosion of the metal substrate; Incompatibility between materials, including, but not limited to, Galvanic corrosion due to contact with adjacent dissimilar metals such as stainless steel; Damage to the painted metal occasioned by moisture or other contamination detrimental to the finish because of improper storage of the finished metal prior to installation as outlined in AAMA Publication 10, "Care and handling of Architectural Aluminum From Shop to Site."

The legal remedies described in this Limited Warranty are the sole exclusive remedy of Customer. This limited warranty will be void if payment from Customer is not received within a commercially reasonable time frame. GREENHECK MAKES NO OTHER WARRANTY, EITHER EXPRESS OR IMPLIED, REGARDING ITS PRODUCTS, OR ITS SELECTION AND APPLICATION, INCLUDING, BUT NOT LIMITED TO, COMPLIANCE WITH BUILDING CODES, SAFETY CODES, LAWS, MERCHANTABILITY OR FITNESS OR A PARTICULAR PURPOSE. This limited warranty is extended solely to the Customer. It is nontransferable and non-assignable, and the Customer shall not permit or authorize its employees, agents, representatives or customers to claim, represent or imply that this limited warranty extends or is available to anyone other than the Customer.

In the event of material breach by the Customer of any of the conditions of this warranty, Greenheck shall have no liability for and product failure claims.

Failure to pay Greenheck in full for original services will automatically make this warranty null and void.

Greenheck will not be held liable for incidental or consequential damages of any kind. The limited warranty of product(s) replaced or repaired under this limited warranty shall be limited to the remainder of the original warranty period. Greenheck reserves the right to reasonable field access to diagnose and repair any product alleged to be defective. This limited warranty may not be modified by anyone and may not be changed by such things as purchase order forms or acceptance forms, unless otherwise agreed upon by Greenheck.

This limited warranty is provided in lieu of any other warranty requirements or obligations, including, but not limited to, those within project specifications.

All notices and claims given under or pursuant to this agreement shall be in writing and sent by certified or registered mail, postage prepaid, return receipt requested to: Greenheck, Attn: Louver Sales, 525 Western Road, Schofield, WI 54476.

By proceeding to use our products and services on your project, you accept the terms of these limited warranties.

LOUVER FINISHES & COLORS

Standard Colors

Greenheck offers 27 standard colors available in AAMA 2605 compliant coatings (70% Kynar PVDF/100% Fluoropolymer FEVE), AAMA 2604 compliant coatings (50% Kynar/Acroflur) or AAMA 2603 compliant coatings (Baked Enamel).

		
Bone White GF102	Ivory 031	Ascot White GF120
		
Dover White AL202	Cambridge White GF110	Herring Bone GF107
		
Sandstone GF112	Pueblo Tan GF116	Rawhide AL215
		
Smoke GF104	Sierra Tan GF118	Lindie Bronze AL218
		
Hampton Brown GF105	Spartan Bronze GF113	Classic Bronze GF108
		
Statuary Bronze AL221	Dove Gray AL213	Stone Gray GF103
		
Charcoal AL214	Flat Black 044	Gloss Black 045
		
Coronado Red GF121	Terra Cotta AL217	Hartford Green AL208
		
Capri Blue GF106	Aegean Blue AL204	Patina Green GF114

LOUVER FINISHES & COLORS

Mica Colors

Greenheck offers six standard Mica colors available in AAMA 2605 compliant coatings (70% Kynar PVDF/100% Fluoropolymer FEVE). Mica colors are formulated to reproduce the low-gloss metallic luster of anodized aluminum in a wider range of dynamic colors. These colors offer many performance advantages over conventional anodic finishes including longer warranty duration, superior resistance to salt spray, greater color uniformity and better chemical resistance. Additionally, Mica coatings are easier to repair and touch-up than conventional anodic finishes. Organic micas are comprised of natural minerals and crushed pearlescent that are highly resistant to harmful environmental effects.



Clear Anodize Mica

GF209



Bright Silver

AL222



Sterling

GF201



Gun Barrel

AL239



Dark Bronze

AL238



Asti

AL236

Design Requirements

Cooling Capacity **5 Ton**
 Tap **T5**

Configuration **Downflow**

- R-410A chlorine-free refrigerant
- High-efficiency Copeland scroll compressor(s)
- Copper tube / aluminum fin coils
- High-capacity, steel-cased filter dryer
- High- and Low-pressure switches
- Lugged electrical contactor
- Single-point power
- Color Coded Wiring
- Foil Faced Internal Insulation
- Heavy-gauge, galvanized-steel cabinet
- UV-resistant powder-paint finish
- Full perimeter base rail

Unit Electrical Data

Power Supply **208-230/3/60 VOLT/PH**

Total Unit MCA **47.7/53.7 A**

Total Unit MOP **50/60 A**

Indoor Motor HP **1.0 HP**

Total Unit FLA **6.9 A**

SCCR **5 A**

Model Number: **DFC0603D000066C**

Code String: **DFC0603DXXXAXXXXACXXX**

Tag: **RTU-1**

Cooling Performance

Total Capacity **59,824 BTU/h**
 Sensible Capacity **45,302 BTU/h**
 Cooling Stages **One**
 Refrig Type **R410A**
 Compressor Type **Copeland Scroll**
 Pressure Switches **High & Low Pressure (std)**
 Outdoor Design Temp **95.0°F**
 Entering Air Temp(db) **80.0°F**
 Entering Air Temp(wb) **67.0°F**
 Leaving Air Temp(db) **59.4°F**
 Leaving Air Temp(wb) **57.5°F**
 Efficiency **14 SEER/11.5 EER**
 Efficiency (M1) **13.4 SEER2/11.0 EER2**

Heating Performance

Elect Htr KW **15kW Elect Htr**
 Heat Type **ELE**
 Entering Air Temp **55.0°F**
 Leaving Air Temp **81.8°F**

Supply Air Blower Performance

ACFM **2068 CFM**
SCFM **2002 CFM**
ESP **0.5 IWG**
 Low-Leak Downflow Economizer W/ Enthalpy Sensor **0.13 IWG**
Total ESP **0.63 IWG**
Blower Type **Direct Drive - Standard Static**
 Elevation **761 ft**

Physical Attributes

Base Unit Oper. Weight (lbs) **508**
Filter(s) **Qty (2) 20"x25"x2"**

Outdoor sound (db) at 60 Hz									
Model	A-Weighted	63	125	250	500	1000	2000	4000	8000
060	78.3	N/A	65.9	68.3	70.3	74.3	72.1	65.8	60.3

db - decibel

Notes:

1 Outdoor sound data is measured in accordance with AHRI standard 270.

2 Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environment factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.

3 A-weighted sound ratings filter out high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Daikin units are taken in accordance with AHRI standard 270.

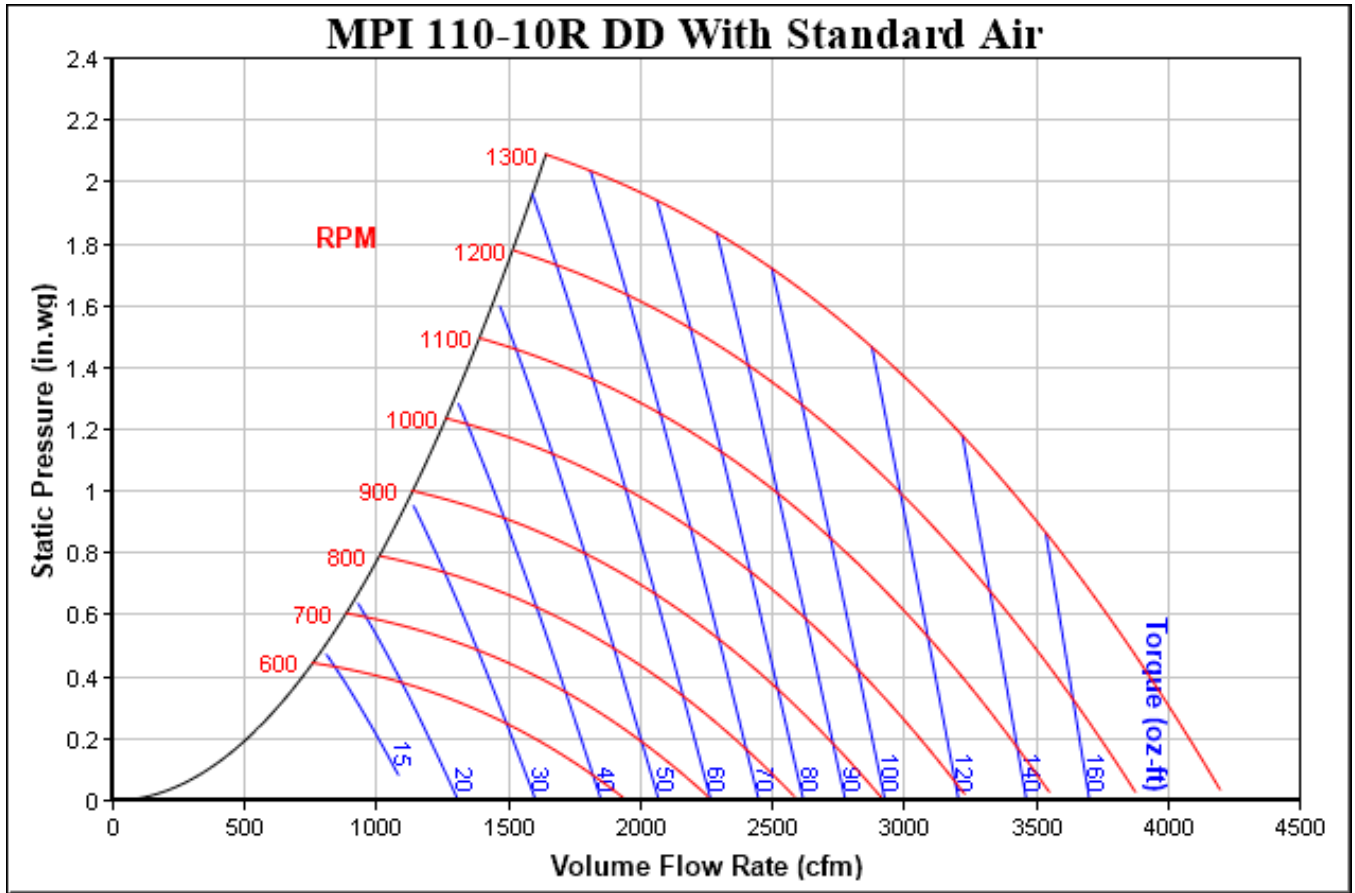
LIST OF ACCESSORIES

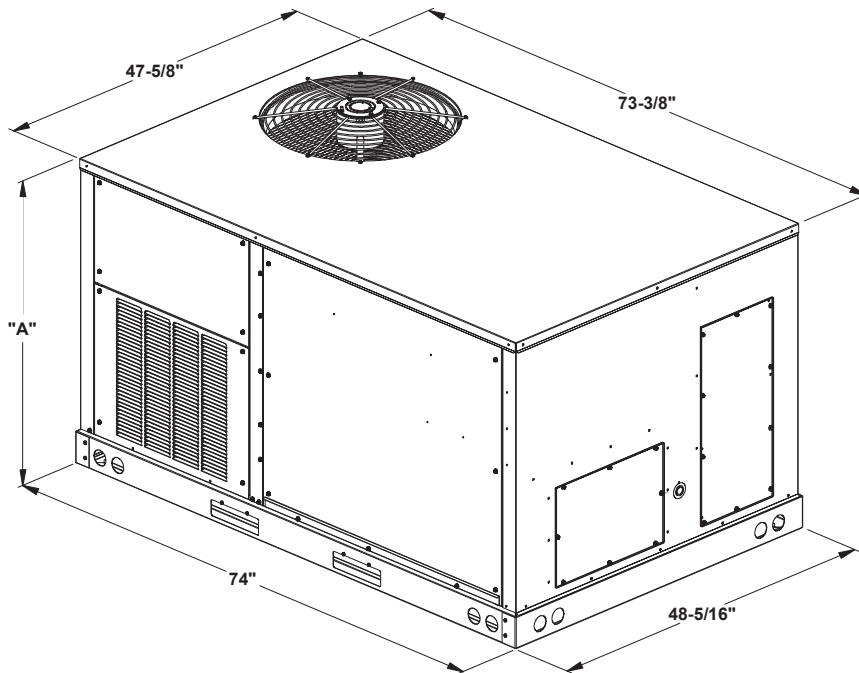
Model Number: DFC0603D000066C; Code String: DFC0603DXXXAXXXXACXXX; Tag: RTU-1;

Accessories					
Fld Inst	Fct Inst	Item #	Description	Dimensions	lbs
	Y	DSC060A54YH01FI	Non Fused Disconnect Switch	Fact Inst	5
	Y	HGDRSM01FI	Hinged Panels		34
Y		0270L01753	Low-Leak Downflow Economizer W/ Enthalpy Sensor		N/A
Y		0221L00015	24" Roof Curb		109
Y		TTBCKHE01	Thru-The-Base Connections		N/A
Y		D4271C	4h/2c Commercial 7day Programmable Wi-Fi Capable thermostat	1	1
Y		EHXD-3S17	15kW Elect Htr		
			Base Unit Oper. Weight		508
			Total Weight		657.0

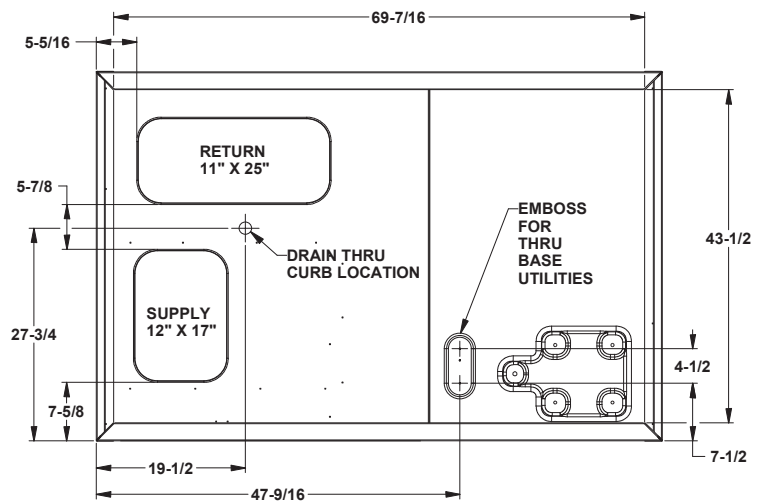
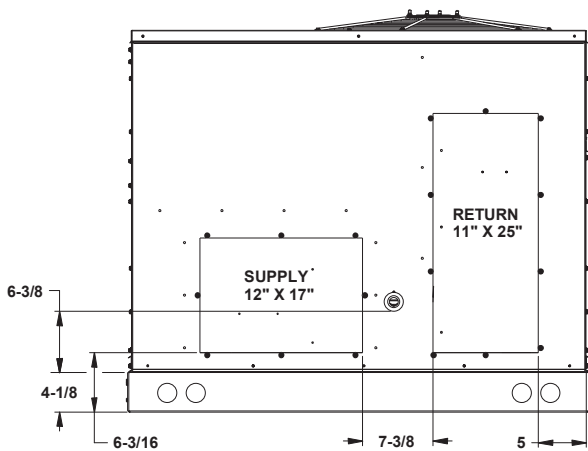


MPI 110-10R DD With Standard Air





MODEL SIZE	DIM "A"
3 ton AC	$39\text{ }7/8''$
4 ton AC	$39\text{ }7/8''$
5 ton AC	$39\text{ }7/8''$
6 ton AC	$43\text{ }1/2''$





Date:

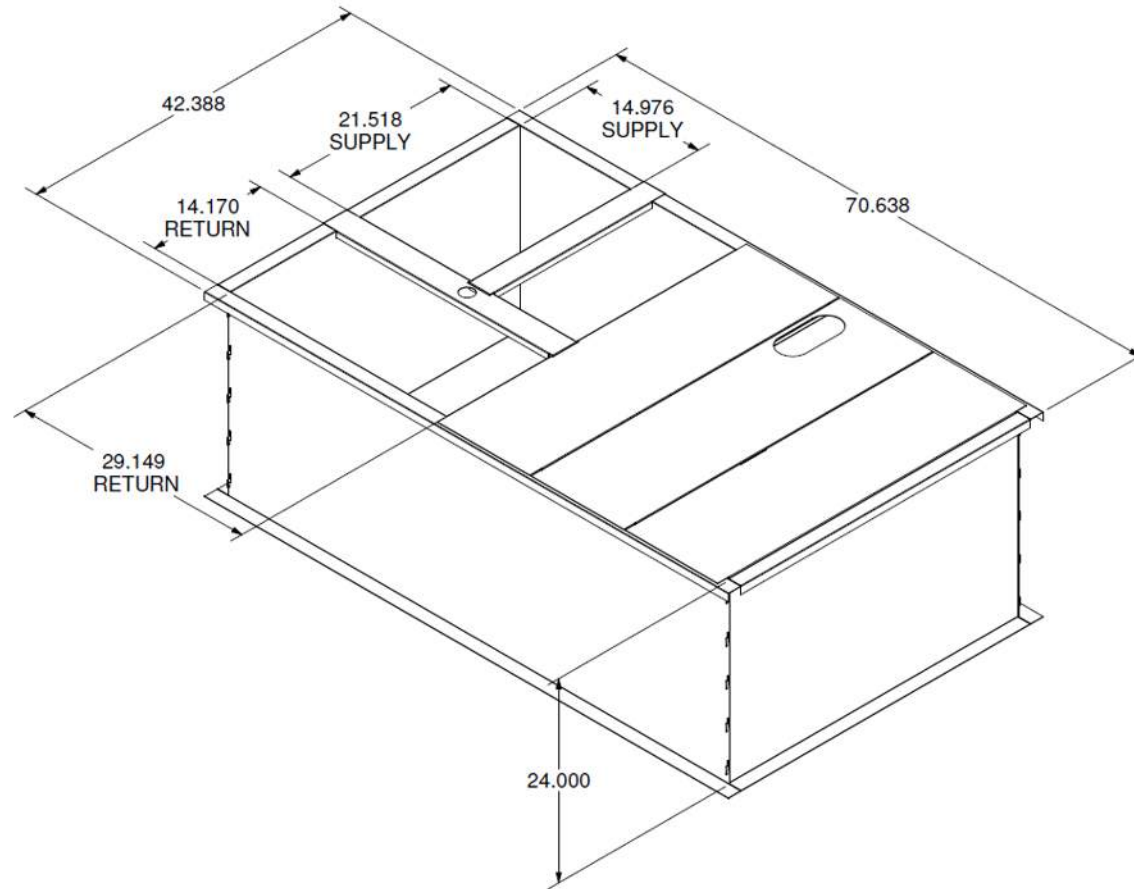
Specification Sheet for Daikin Small Cabinet 3 to 6 Ton
24" Roof Curb

Part Number:
Daikin PN: 0221L00015
MicroMetl PN: CRBK-DKN12SA-2411

Submitted To:

Job:

Notes:



Notes:

1. Roof curb ships knocked down for field assembly. Package includes plastic corrugated end caps.
2. Curb includes wood nailer, attached to curb sides and ends, and gasket package shipped inside of curb package.
3. Deck pans include 1" – 1.5 lb. density insulation.
4. Curb sides and ends are constructed of 18 gauge galvanized steel.

Product Operating Weight:

109 Lbs

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Date:

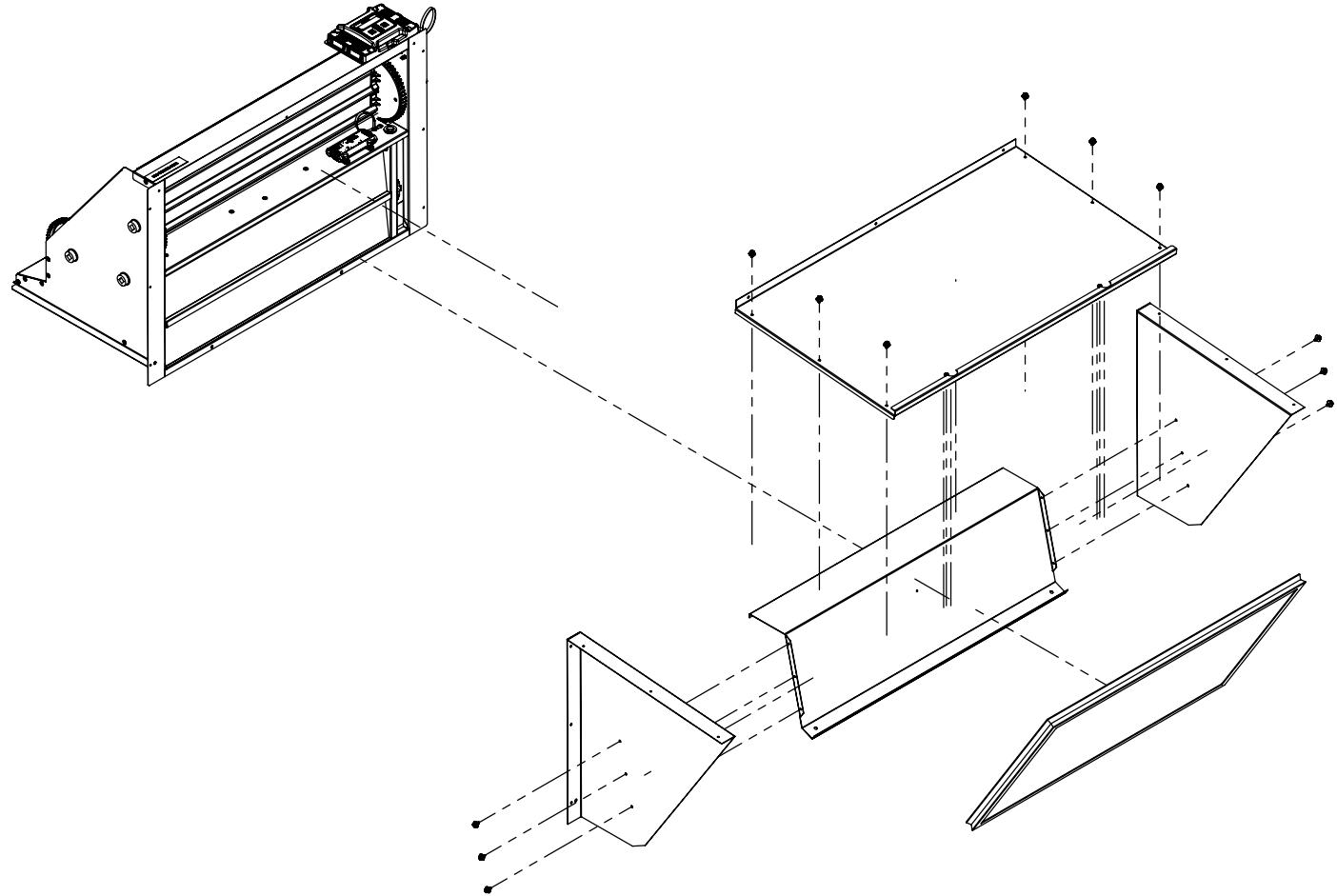
Specification Sheet for Daikin Small Cabinet 3 to 6 Ton
Low-Leak Downflow Economizer w/ Enthalpy Sensor

Part Number:
Daikin PN: 0270L01753, 0270L01749
MicroMetl PN: ECD-DKN12SA-W2EH

Submitted To:

Job:

Notes:



Notes:

1. Access panel and hood are painted to match the unit.
2. Economizer controls include: actuator, W7220 controller, C7400 outside air enthalpy sensor, and C7250 mixed air sensor.
3. Hood is shipped knocked down for field assembly. Hood top is shipped over front of economizer. Hood includes aluminum filter.
4. Access panel is insulated with 1"-1.5 lb density insulation.

Product Operating Weight:

65 Lbs


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**TTBCKHE01 & TTBCKHE02
THRU-THE-BOTTOM SERVICE CONNECTION
KIT (FOR 3-12.5 Ton)
LIGHT COMMERCIAL GAS UNITS
INSTALLATION INSTRUCTIONS**



© 2019 **DAIKIN MANUFACTURING COMPANY, L.P.**
19001 Kermier Rd. Waller, TX 77484
www.daikincomfort.com
P/N: IOD-7118 Date: October 2019

Safety Considerations

The following symbols and labels are used throughout this manual to indicate immediate or potential safety hazards. It is the owner's and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of personal injury, property damage, and/or product damage.

 WARNING
ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT. THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER INSTALLATION, ADJUSTMENT, SERVICING OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

PROP 65 WARNING FOR CALIFORNIA CONSUMERS
 WARNING
Cancer and Reproductive Harm - www.P65Warnings.ca.gov 0140M00517-A

 WARNING
HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.


ATTENTION INSTALLING PERSONNEL

As a professional installer, you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair, it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is your responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.

	PART NO.	DESCRIPTION	QTY
TTBCKHE01	0163L00152	½" Gas Adapter Fitting	1
	0163L00154	½" Elec. Bulkhead Connector	2
	0163L00196	1-½" Elec. Bulkhead Connector	1
	0121L02301	Bracket Thru the Base	1
	B1910010	Gas Line Grommet	1
	B1393561	#10 x ½" Self-Drilling Screw	2
TTBCKHE02	0163L00154	½" Elec. Bulkhead Connector	2
	0163L00197	2" Elec. Bulkhead Connector	1
	0121L02876	Bracket Thru the Base	1
	B1393561	#10 x ½" Self-Drilling Screw	2

Table 1 - Thru-the-Bottom Connection Parts

DESCRIPTION

Thru-the-bottom service connection kits reduce the number of penetrations in the roof. They provide a watertight way to connect power wiring, control wiring, and the gas supply line through the base of the unit in the condenser section. External connectors must be weatherproof. All holes in the unit base must be sealed (including those around conduit nuts) to prevent water leakage into the building.

When the thru-the-bottom power accessory package is purchased, one of two bulkhead connector sets may be selected for power connections (depending on unit size). Each set contains 3 to 4 bulkhead connectors, depending on unit tonnage (Table 1). The ½ in. diameter bulkhead connectors enable the low-voltage control, and optional convenience outlet, wires to pass through the basepan. The 1-½ or 2 in. bulkhead connector allows the high voltage power wires to pass through the basepan. The ½ in. gas adapter fitting allows the gas line to come up through the basepan (3 to 6 ton units only).

INSTALLATION

Disconnect all power before installing this kit.

Make sure the roof curb is installed and leveled in accordance with the instructions provided with kit.

The thru-the-bottom service connection accessory package must be used with a light commercial unit that has embossment in the outdoor section of the basepan. This opening allows high-voltage power, control wiring, and gas connections to pass through the roof curb and into the basepan of the rooftop unit.

PREPARING THE UNIT FOR INSTALLATION

The accessory thru-the-bottom power or gas connection package fittings must be installed before the unit is set on the roof curb. Gas and electrical connections to the unit must be field installed after the unit is installed on the roof curb.

INSTALL THE UNIT ON THE ROOF CURB

Follow all appropriate instructions required to install the rooftop unit on the roof curb. See installation instructions provided with the roof curb and unit for more specific information.

CREATING HOLES IN THE RAISED SURFACE OF THE UNIT BASEPAN

Each unit is equipped with a raised (embossed) surface in the basepan. This area is located in the compressor compartment (outdoor section) of the unit (see Figure 1). The embossment of the basepan contains three (3) dimples for locating cutouts. Holes can be field cut in the embossed surface so that high voltage power, control wires, and gas connection can be routed through the roof curb basepan

Drill holes for gas and power at the 3 dimples shown below.

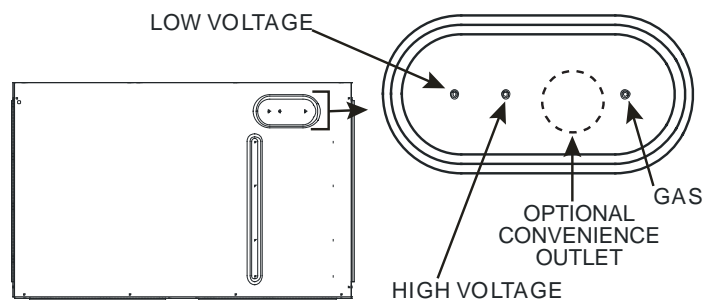


Fig. 1 - 3 - 6 Ton Basepan

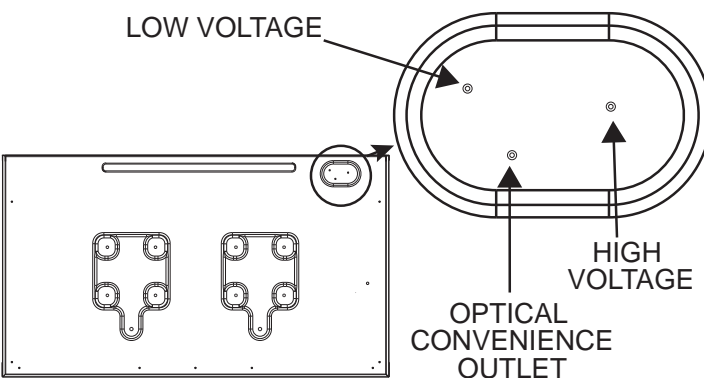


Fig. 2 - 7.5 - 12.5 Ton Basepan

Use a chassis punch or hole saw to create holes in the embossed surface of the basepan per Table 2.

CONNECTION SIZE	USE	REQ. HOLE SIZE
1/2"	Low Voltage	7/8"
1/2"	Gas	1"
3/4"	Gas	1-1/8"
1-1/2"	High Voltage	2"
2"	High Voltage	2-1/2"

Table 2 - Bottom Power Chart

MOUNTING ELECTRIC BULKHEAD CONNECTORS

Once the holes have been cut place electrical bulkhead connectors in basepan. Place gasket and lock ring end of connector beneath the basepan and mount the other end above the basepan.

When the electrical connectors are in place, field supplied and installed liquid tight conduit connectors and conduit may be attached to the connectors. Pull correctly rated high voltage and low voltage wires through appropriate conduits and connect to units per roof top units installation instructions.

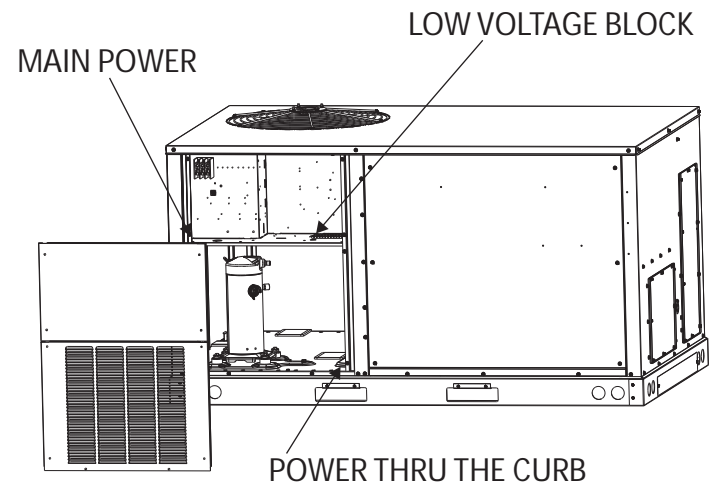


Fig. 3 - 3-6 Ton Power Connections

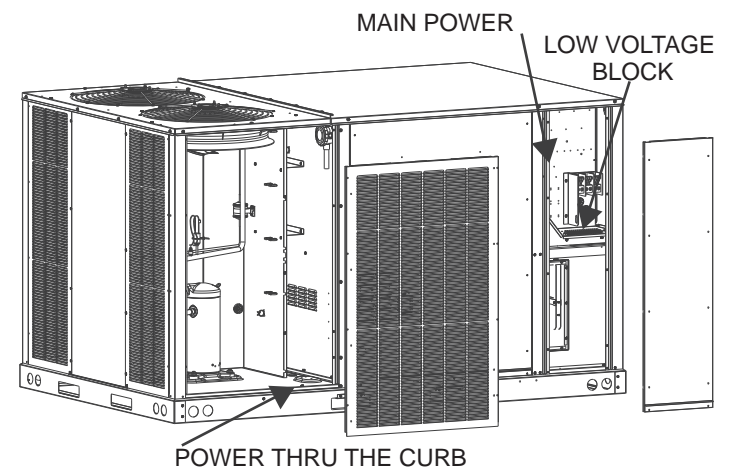


Fig. 4 - 7.5 - 12.5 Ton Power Connections

MAKING GAS CONNECTIONS (3 TO 6 TON UNITS ONLY)

The thru-the-bottom gas connection fitting has male and female threads. The gas fitting also contains two neoprene washers and two locking washers. One neoprene and one locking washer are installed below the unit basepan with the second set being installed on the top side of the basepan before the fitting is tightened. Tighten all fittings. The male threads protrude above the basepan of the unit, while the female threads protrude below the basepan.

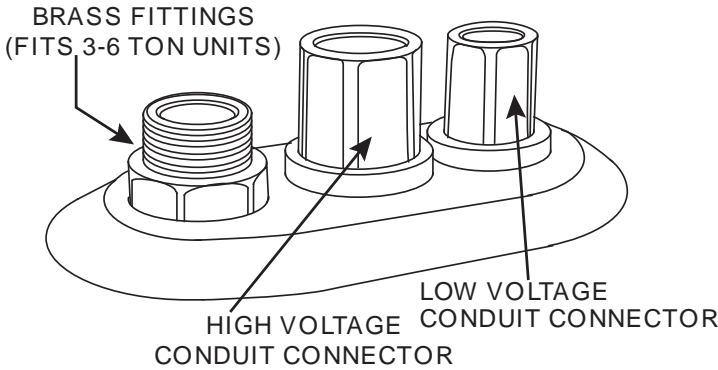


Fig. 5

Install a 5" black pipe nipple and an elbow on the through-the-basepan gas fitting (1/2-in. for 3-6 Ton kit).

If using 1/2-in. pipe, a minimum 12-in. nipple (field-supplied) is required to attach to the elbow and extends the gas piping through compressor access panel (if unit is so equipped). If using 3/4-in. pipe, a minimum 15-in. nipple (field-supplied) is required to extend the gas piping through compressor access panel (if unit is so equipped). Install the gas pipe support bracket to the inside of unit using provided screws. Remove the bottom right ten louvers from the right side of the louvered compressor access panel to allow gas line to exit the unit.



Fig. 6



Fig. 7



Fig. 8

INSTALLING GAS PIPING (3 TO 6 TON UNITS ONLY)

The rating plate is stamped with the model number, type of gas and gas input rating. Make sure the unit is equipped to operate on the type of gas available. Conversion to propane (LP) gas is permitted with the use of the factory authorized conversion kit (see the unit Technical Manual for the appropriate kit). For High Altitude derates, refer to the latest edition of the National Fuel Gas Code NFPA 54/ANSI Z223.1.

A manual gas shut off valve must be field installed external to the roof top unit. In addition, a drip leg must be installed near the inlet connection. A ground joint union connection is required between the external shut off valve and the unit connection to the gas valve to permit removal of the burner assembly for servicing.

NOTE: Inlet gas pressures must not exceed the maximum value shown in Table 3 below.

INLET GAS PRESSURE	
NATURAL	Min. 5.0" W.C., Max. 10.0" W.C.
PROPANE	Min. 11.0" W.C., Max. 14.0" W.C.

Table 3 - Inlet Gas Pressure

FACTORY INSTALLED ELECTRICAL DISCONNECTS INSTALLATION INSTRUCTIONS

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5151 San Felipe, Suite 500, Houston, TX 77056
www.daikinac.com
P/N: IOD-7002A Date: JULY 2019

DESCRIPTION

This Installation and Operation manual covers Factory Installed Electrical Disconnects for Daikin Commercial Package Units.

WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT. THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER INSTALLATION, ADJUSTMENT, SERVICING OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

ATTENTION INSTALLING PERSONNEL

As a professional installer, you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair, it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is your responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.

WARNING

HIGH VOLTAGE!

TO AVOID THE RISK OF ELECTRICAL SHOCK, WIRING TO THE UNIT MUST BE POLARIZED AND GROUNDED.



PANEL / HANDLE INSTALLATION INSTRUCTIONS

NOTE: All field wiring must be per the National Electric Code. Use Copper Conductors only.

WARNING

HIGH VOLTAGE!

DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



1. Remove disconnect panel from unit making sure to keep the panel mounting screws.
2. Remove "label" that is covering the Disconnect Shaft opening.
3. Route field wiring through the wire inlet and connect to the top lugs of the disconnect switch (Figure 1). **NOTE:** Disconnect switches are functional in any position. Some might be mounted "upside down". Field wiring should connect in the top as shown.

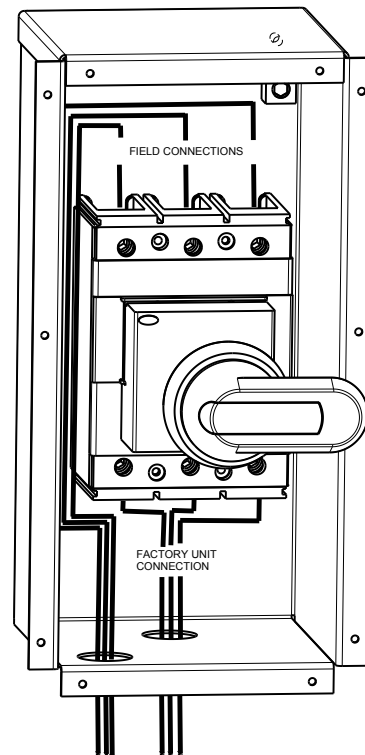


Figure 1

NOTE: For illustration purposes ONLY.
Unit may not be exactly as shown.

- Attach Handle Assembly to Disconnect Panel with handle oriented as shown in Figure 2. Make sure the handle is in the "OFF" position.

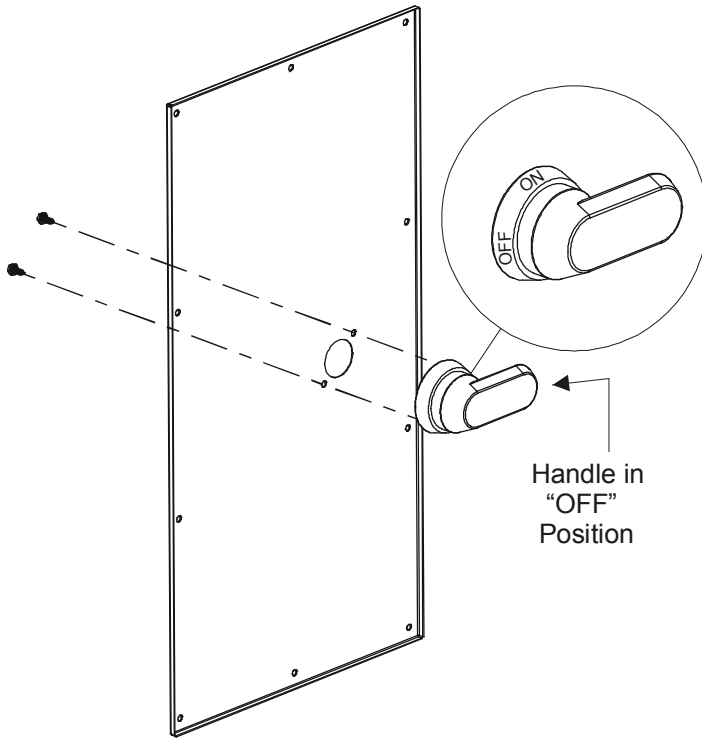


Figure 2

- Align shaft with the opening in the Handle Assembly and slide Panel/Handle Assembly into place.
- Secure the panel with the panel mounting screws (Figure 4).

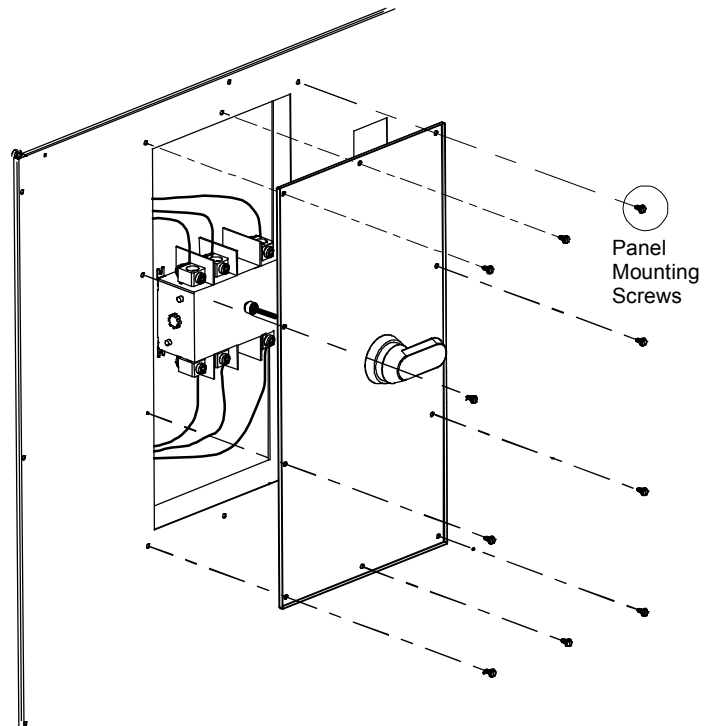


Figure 4

- Insert "shaft" into the opening on the DISCONNECT SWITCH (Figure 3). Make sure switch is in the "OFF" position (rotated fully counter-clockwise). The "pin" at the handle end of the shaft will be in the horizontal position.

NOTE: Some shafts have a "chamfer" along one edge. This chamfer should be oriented to the "bottom left" when the switch is in the "OFF" position.

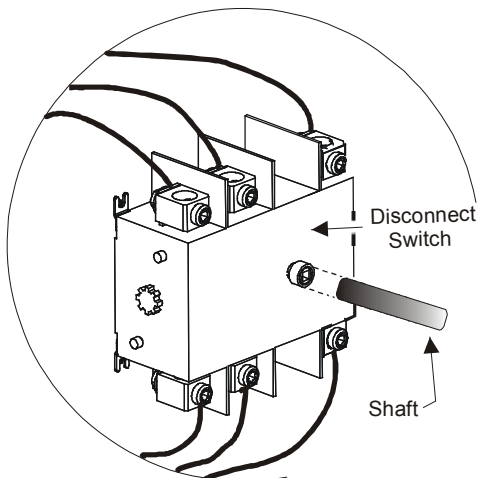
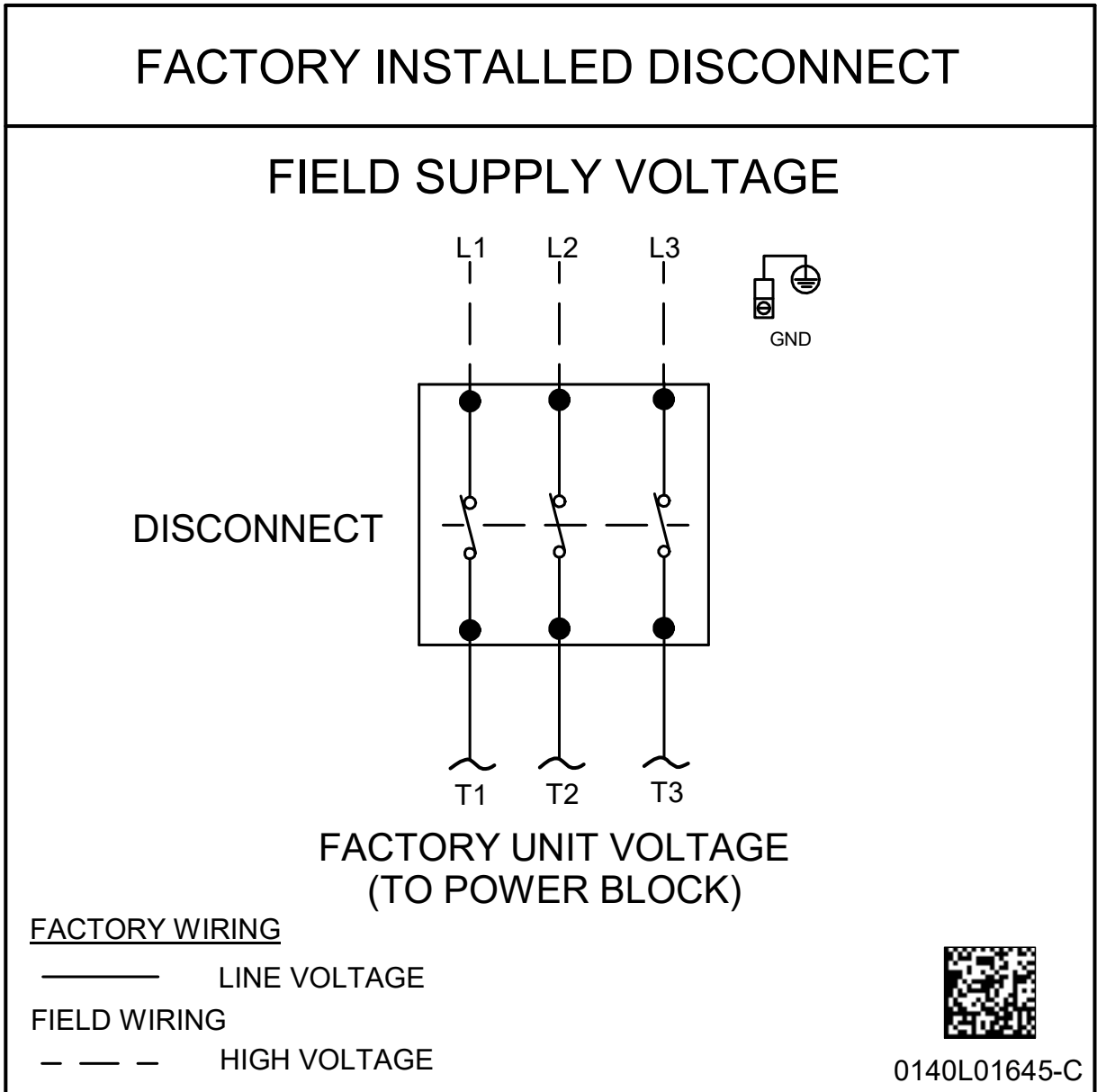


Figure 3

APPENDIX A WIRING DIAGRAM

HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

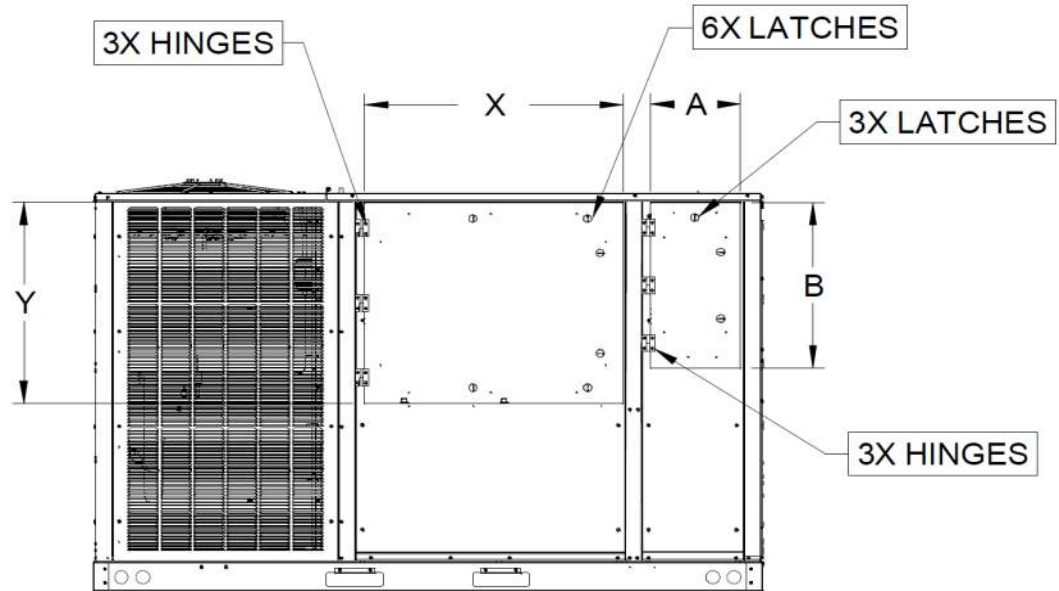
WARNING



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

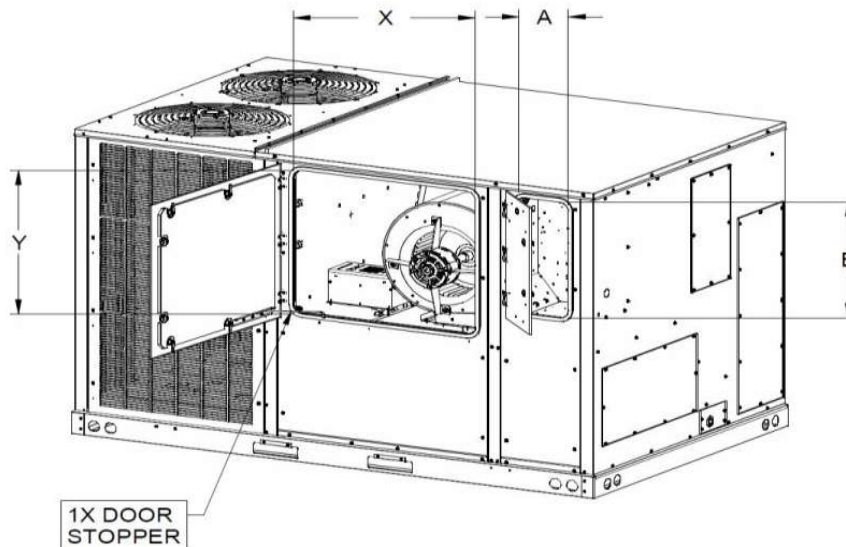
HINGED DOOR, 7.5-12.5 TON

Factory installed hinged door option for 7.5-12.5 ton light commercial models



➤ Hinged door size:

- 7.5/8.5/10Ton: A= 12.62, B= 24.46, X= 36.27, Y= 25.65
 - 12.5Ton: A= 12.62, B= 24.46, X= 36.27, Y= 29.63
- (All dimensions in inches)



➤ Blower and control box opening:

- 7.5/8.5/10Ton: A= 9.42, B= 22.40, X= 32.61, Y= 23.31
 - 12.5Ton: A= 9.42, B= 22.40, X= 32.61, Y= 27.49
- (All dimensions in inches)



Its sleek styling and white color blend beautifully into any decor.



5.2" w x 4.2" h x 1.1" d

Accessories:

TSTATGAC-LR Lock Ring, TSTATGAC-WP Wall Plate, TSTATGAC-WFS WiFi Sensor and the WiFi module below

Optional Wi-Fi Module available*



TSTATGAC-VWF



*Not included with thermostat



Apple, Android and Blackberry mobile apps available



COMMERCIAL models

PREMIUM Digital Thermostat

STANDARD FEATURES

- Gas/electric or heat pump – Multi-stage
- "Simple as you want Operation™"
 - Switchable: programmable or non-programmable
 - Switchable: auto changeover, or heat or cool only
- Large, easy to read display
- Scrolling display makes setup easy
- Adjustable backlight intensity
- Backlit, color coded buttons and legends
- Choice of English, French or Spanish for scrolling display
- Bi-color LED indicates a heating or cooling demand
- Dry contact input
- Outdoor sensor ready
- Random start
- Fahrenheit or Celsius display
- Service alert indicators
- Compatible with condensate overflow warning systems – lockout compressor with message on the display
- Keypad lock
- Non-volatile memory
- Wireless connectivity with optional accessory
- ADR (Automated Demand Response) ready
- FDD (Equipment Fault Protection) notification
- API for 3rd party monitor and control
- Night dimmer for brightness control in sensitive areas at night
- Configurator app to easily setup Wi-Fi and thermostat settings



model D2200C

All of the standard features plus:

- Non-programmable
- 2 heat, 2 cool stages
- Controls to, or monitors a 2nd sensor
- Setpoint limiting
- Up to 4 hours override
- Controls humidification, dehumidification

model D4271C

All of the standard features plus:

- 4 heat, 2 cool stages "Simple as you want Operation™" Choose 7-day, 5+1+1 day or 1-day programming. Up to 3 occupied periods per day
- Adjustable deadbands and timers between stages
- Outdoor sensor ready with high/low temps for the day
- Smart fan operation
- Holiday mode
- Smart recovery
- 365 day holiday programming (when connected to Skyport)
- Title 24 Compliant

model D4272C

All of the D4271C features plus:

- Control to or monitor a 2nd temperature sensor - Can also average 1 remote sensor with the thermostat sensor
- Controls humidification, dehumidification and reheat
- Pre-occupancy fan purge
- Programmable output
- Light activated
- Energy watch
- Title 24 Compliant



Industry Canada

Industrie Canada





FREE Services

... help you connect to your Premium thermostats (with Wi-Fi)



With our FREE app, access all these features remotely from your mobile device



View Thermostat Information

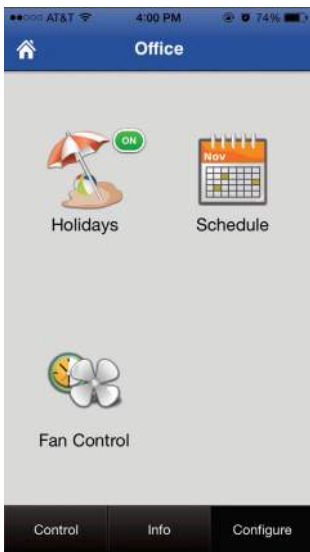
- Name & location of the thermostat
- Current weather & forecast
- Change heat & cool setpoints
- Change thermostat modes
- View equipment status: heating, cooling, off – including lockouts

Enable or Disable the Time Period Schedule

View Thermostat Alerts

- Supply air temperature**
- Time for service
- Air filter replacement
- Humidity pad replacement
- UV light bulb replacement

Send Text Messages to the Thermostat



View Current System Temperatures with High and Low Values for the Day

- Indoor temperature
- Indoor humidity
- Outdoor temperature
- Remote temperature**
- Supply air temperature**
- Return air temperature**

View Heating & Cooling Runtimes for the Day, Current Week, and Last Week

**Remote Sensor required for this feature

FREE Additional Features available from the Skyport web site:



View Daily, Weekly, and Monthly Runtime Graphs

Advanced Configuration

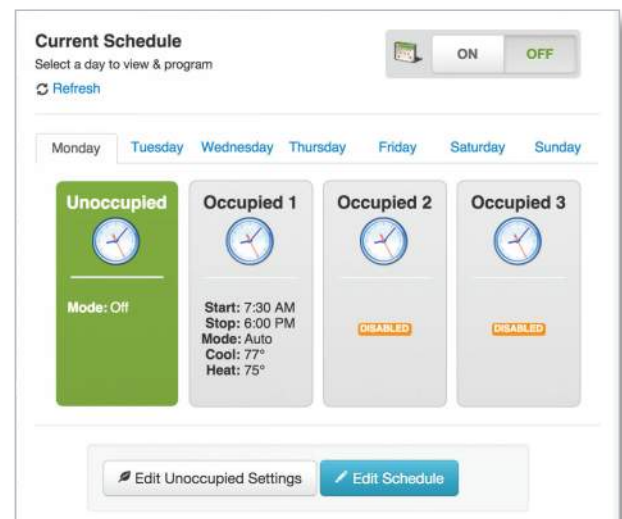
- Stage deadbands
- Stages of cooling & heating
- Hum/dehum setpoints*
- Thermostat language
- Readout in degrees F or C
- Display brightness

Program Time Period Schedules Security Settings

- Set view only access
- Disable mode changes
- Disable/enable override
- Enable setpoint limits

Enable Popular Holidays at the Touch of a Button

Program Custom Holidays up to 20 Years in Advance





Submittal Data Sheet

1.0-Ton Ceiling Mounted Cassette and Heat Pump

FFQ12W2VJU9RX12WMVJU9

		Indoor Unit		FFQ12W2VJU9	
		Outdoor Unit		RX12WMVJU9	
				Cooling	Heating
Power Supply		1 ϕ , 208 - 230 V, 60 Hz			
Capacity Rated (Min. - Max.)	Btu/h	10,800 (4,600 - 13,300)		13,500 (4,600 - 16,800)	
Running Current (Rated)	A	5.01 - 4.53		5.45 - 4.93	
Power Consumption (Rated)	W	939 - 939		1,081 - 1,081	
Power Factor (Rated)	%	90.1 - 90.1		95.4 - 95.4	
SEER2 / HSPF2		19.50		9.00	
EER2 (Rated)	Btu/h·W	11.50		—	
COP2 (Rated)	W/W	—		3.66	
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)		
	Gas	in. (mm)	ϕ 3/8 (9.5)		
	Drain	in. (mm)	VP20 (O.D. ϕ 1-1/32 (26))		
Heat Insulation		Both Liquid and Gas Pipes			
Max. Interunit Piping Length	ft (m)	65-5/8 (20)			
Max. Interunit Height Difference	ft (m)	49-1/4 (15)			
Chargeless	ft (m)	32-3/4 (10)			
Amount of Additional Charge of Refrigerant	oz/ft (g/m)	0.21 (20)			
Indoor Unit		FFQ12W2VJU9			
Decoration Panel (1)	Model (Color)		BYFQ60B3W1 (White)		
	Dimensions (H \times W \times D)	in. (mm)	2-3/16 \times 27-9/16 \times 27-9/16 (55 \times 700 \times 700)		
	Weight (Mass)	lbs (kg)	6.0 (2.7)		
Decoration Panel (2)	Model (Color)		BYFQ60C2W1W (White) / BYFQ60C2W1S (Silver)		
	Dimensions (H \times W \times D)	in. (mm)	1-13/16 \times 24-7/16 \times 24-7/16 (46 \times 620 \times 620)		
	Weight (Mass)	lbs (kg)	6.2 (2.8)		
Heat Exchanger	Rows \times Stages, Fin per Inch		2 \times 16, 21		
	Fin Spec / Tube		Slit Fin / ϕ 5 Hi-XA Tube		
Airflow Rate	H / M / L	cfm	406 / 353 / 268		427 / 371 / 282
		m3/min	11.5 / 10.0 / 7.6		12.1 / 10.5 / 8.0
Fan	Type / Speed		Turbo Fan / 3 Steps		

Daikin Comfort Technologies North America, Inc 19001 Kermier Rd Waller TX 77484
 Daikin City Generated Submittal Data www.daikincomfort.com or www.daikinac.com

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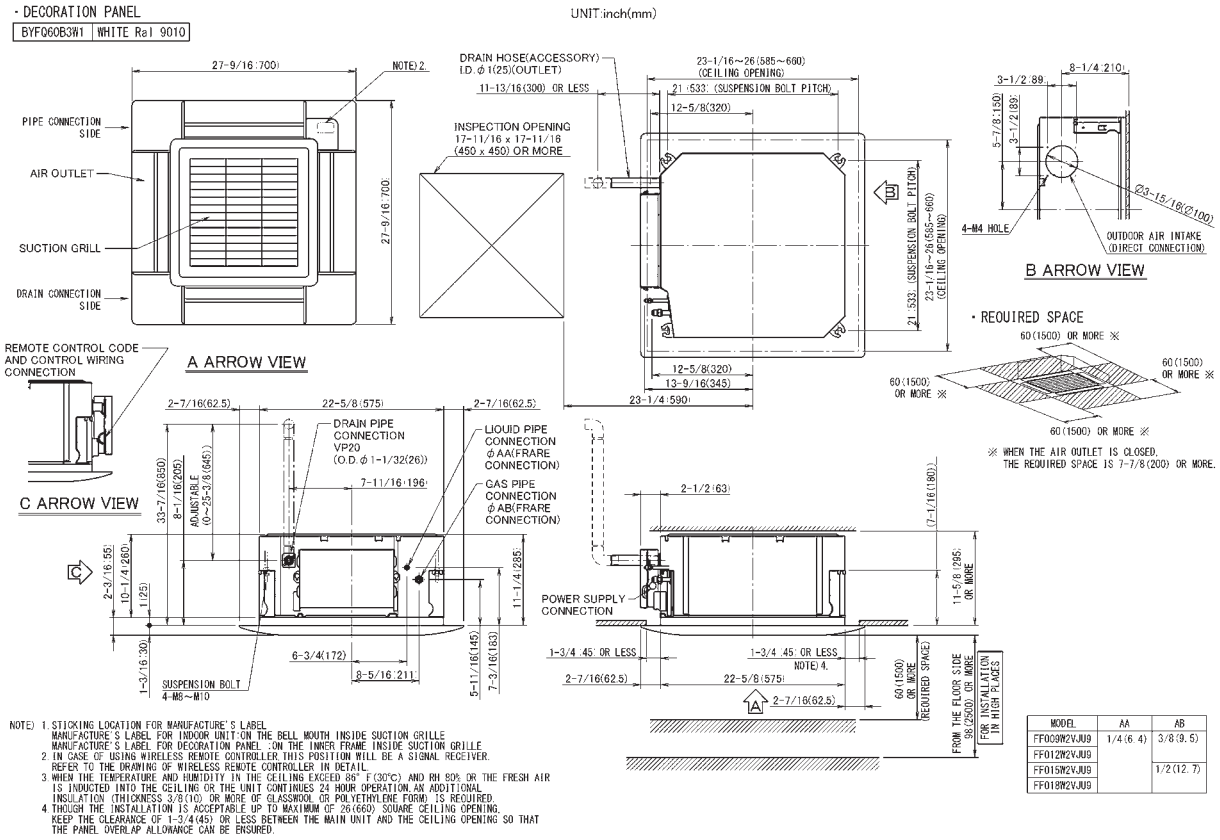
Submittal Data Sheet
 1.0-Ton Ceiling Mounted Cassette and Heat Pump
 FFQ12W2VJU9RX12WMVJU9

Running Current (Rated)		A	0.27 - 0.24	0.27 - 0.24
Power Consumption (Rated)		W	27 - 27	27 - 27
Power Factor (Rated)		%	48.1 - 48.9	48.1 - 48.9
Temperature Control		Microcomputer Control		
Dimensions (H × W × D)		in. (mm)	10-1/4 × 22-5/8 × 22-5/8 (260 × 575 × 575)	
Weight (Mass)		lbs (kg)	36 (16)	
Sound Pressure Level	H / M / L	dB(A)	39 / 36 / 30	39 / 36 / 30
Remote Controller (Option)		Wired	BRC1E73	
		Wireless	BRC082A41W / BRC082A42W / BRC082A42S	
Outdoor Unit		RX12WMVJU9		
Casing Color		Ivory White		
Heat Exchanger	Fin Spec / Tube		Waffle Fin (PE) / φ 7 Hi-XSL Tube	
Fan Motor	Motor Output	HP	0.03	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		1YC23AUXD	
Refrigerant Oil	Type		FVC50K	
	Charge	oz (L)	12.68 (0.375)	
Refrigerant	Type		R-410A	
	Charge	lbs (kg)	2.09 (0.95)	
Airflow Rate		cfm (m ³ /min)	1,105 (31.3)	1,144 (32.4)
Fan	Type		Propeller	
Running Current (Rated)		A	4.74 - 4.29	5.18 - 4.69
Power Consumption (Rated)		W	912 - 912	1,054 - 1,054
Power Factor (Rated)		%	92.5 - 92.4	97.8 - 97.7
Dimensions (H × W × D)		in. (mm)	21-5/8 × 26-9/16 × 11-3/16 (550 × 675 × 284)	
Weight (Mass)		lbs (kg)	63 (29)	
Sound Pressure Level		dB(A)	49	51
Conditions Based on	Indoor		80.0°FDB (26.7°CDB) / 67.0°FWB (19.4°CWB)	70.0°FDB (21.1°CDB) / 60.0°FWB (15.6°CWB)
	Outdoor		95.0°FDB (35.0°CDB) / 75.0°FWB (24.0°CWB)	47.0°FDB (8.3°CDB) / 43.0°FWB (6.1°CWB)
	Piping Length		25 ft (7.5 m)	
Note(s)		SL: The quiet fan level of the airflow rate setting.		

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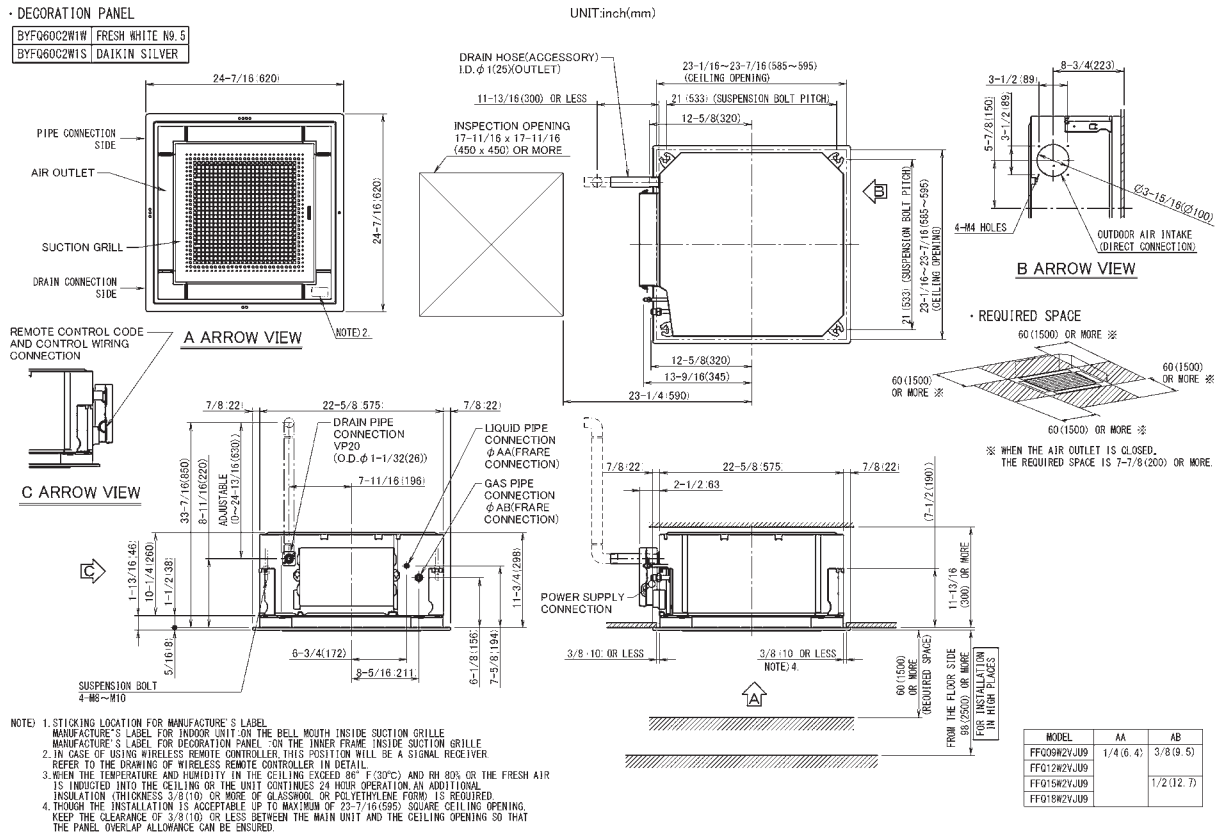
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FFQ09/12/15/18W2VJU9 with BYFQ60B3W1 (Decoration Panel)



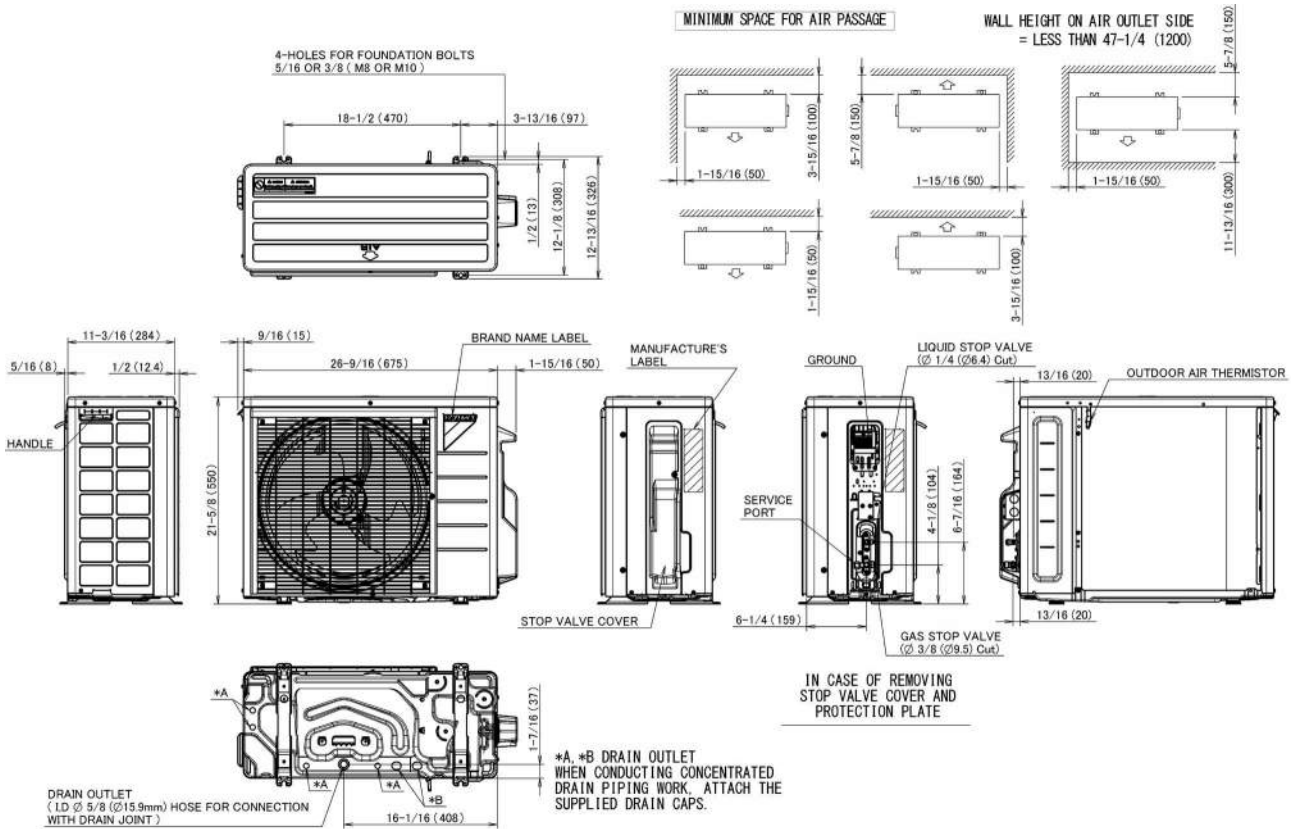
C: 3D106040A

FFQ09/12/15/18W2VJU9 with BYFQ60C2W1W(S) (Decoration Panel)



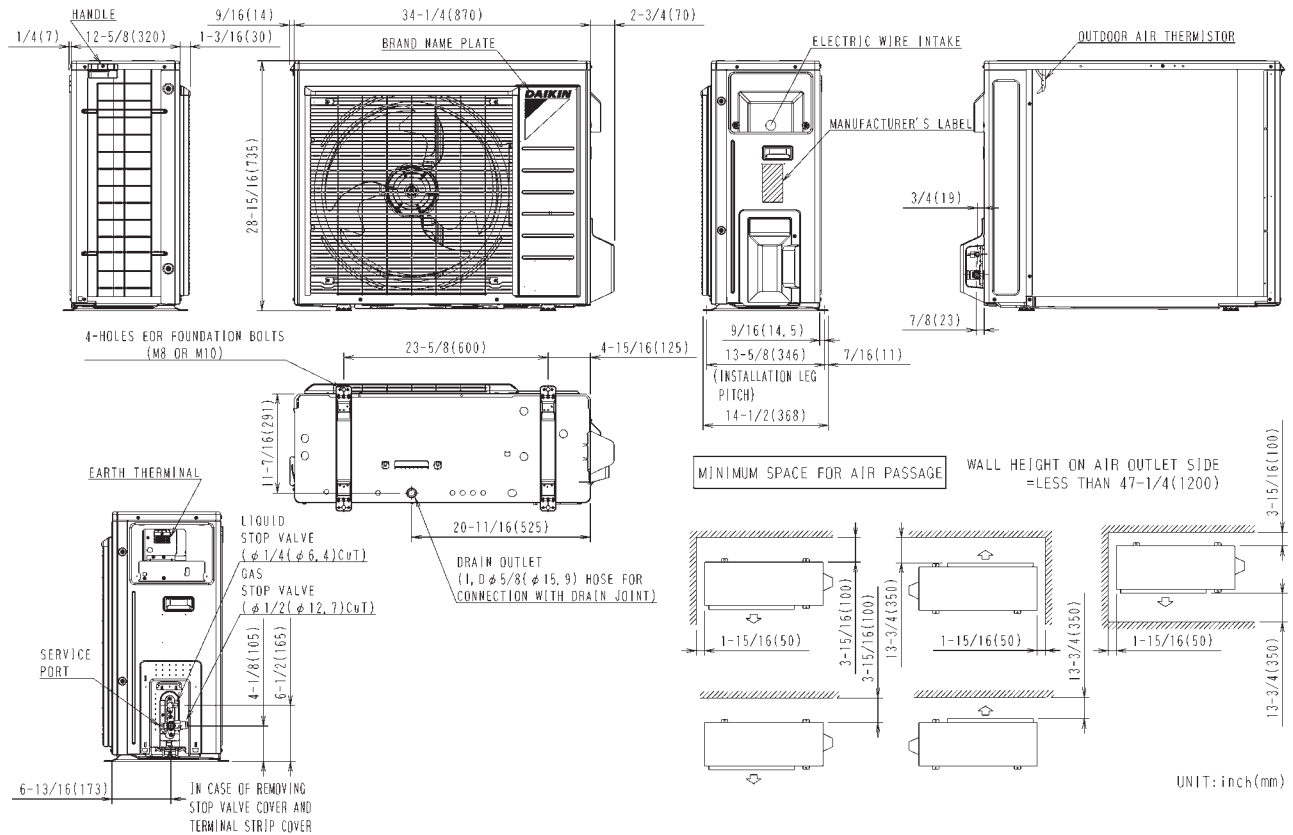
C: 3D106039A

4.2 Outdoor Unit RX09/12WMVJU9



3D136777

RX15/18WMVJU9



3D092224D

11. Electric Characteristics

Indoor Unit	Outdoor Unit	Power Supply				Compressor	OFM			IFM		
		Hz - Volts	Voltage Range	MCA	MFA		RLA	Hp	W	FLA	Hp	W
FTXR09WVJUW9 FTXR09WVJUS9	RX09WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	7.6	15	7.5	0.03	20	0.17	0.04	29	0.13
FTXR12WVJUW9 FTXR12WVJUS9	RX12WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	7.7	15	7.5	0.03	20	0.17	0.04	29	0.19
FTXR18WVJUW9 FTXR18WVJUS9	RX18WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	11.0	15	10.8	0.12	93	0.58	0.04	29	0.21
FDMQ09WVJU9	RX09WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	8.0	15	7.5	0.03	20	0.17	0.17	130	0.49
FDMQ12WVJU9	RX12WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	8.1	15	7.5	0.03	20	0.17	0.17	130	0.63
FDMQ15WVJU9	RX15WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	8.6	15	8.0	0.10	75	0.47	0.31	230	0.64
FDMQ18WVJU9	RX18WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	11.6	15	10.8	0.12	93	0.58	0.31	230	0.84
FDMQ24WVJU9	RX24WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	13.1	20	12.0	0.12	93	0.58	0.31	230	1.10
FFQ09W2VJU9	RX09WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	7.8	15	7.5	0.03	20	0.17	0.07	50	0.28
FFQ12W2VJU9	RX12WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	7.8	15	7.5	0.03	20	0.17	0.07	50	0.28
FFQ15W2VJU9	RX15WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	8.3	15	8.0	0.10	75	0.47	0.07	50	0.28
FFQ18W2VJU9	RX18WMVJU9	60 Hz - 208 V 60 Hz - 230 V	Max. 60 Hz, 253 V Min. 60 Hz, 187 V	11.0	15	10.8	0.12	93	0.58	0.07	50	0.28

Symbols:

- MCA : Min. circuit amps (A)
- MFA : Max. fuse amps (A)
- RLA : Rated load amps (A)
- OFM : Outdoor fan motor
- IFM : Indoor fan motor
- FLA : Full load amps (A)
- W / Hp : Fan motor rated output (W, Hp)

Notes:

1. RLA is the max current that comes in cooling operation and heating operation.
2. Maximum allowable voltage variation between phases is 2%.
3. Select wire size based on the larger value of MCA.

C: 3D143137

C: 3D143129

Project Name:	Approval:
Location:	Date:
Engineer:	Construction:
Submitted to:	Unit #:
Submitted by:	Drawing #:
Reference:	

MODEL COMPATIBILITY:

Compatible with VRV and VRV Life™ indoor unit models: FXAQ, FXDQ, FXEQ, FXFQ, FXHQ, FXLQ, FXMQ, FXMQ_MF, FXNQ, FXSQ, FXTQ, FXUQ, FXZQ, VAM, CXTQ
 Compatible with SkyAir indoor unit models: FAQ, FBQ, FCQ, FHQ, FTQ
 Compatible with Single and Multi-zone system indoor unit model: FFQ, FDMQ

SPECIFICATIONS:

Model	BRC1H71W
Description	Madoka Remote Controller
Maximum Connections	16 indoor units
Communication Wire	18AWG-2, No polarity Stranded, Non-shielded
Total Wiring Length	1,640 ft. (500 m)
Communication Protocol	Daikin proprietary P1P2 protocol
Power	16VDC supplied by indoor unit (1.58VA maximum)
Comfort Setpoint Range	60 to 90 °F (16 to 32 °C)
Setback Setpoint Range	40 to 95 °F (5 to 35°C)
Operating Humidity Range	75% or less (RH) (without condensation)
Dimensions	3.35 x 3.35 x 0.98 (inches) 85 x 85 x 25 (mm)
Weight	0.42 lbs. (0.19 kg)

PRODUCT IMAGE:



Text Display Mode



Icon Display Mode



Scale (Text) Display Mode



Scale (Icon) Display Mode

FEATURES:

- Compact and stylish design
 - Configurable LED light ring (Dimmable/Off) and LCD brightness
 - Simple and Intuitive touch buttons and a physical On/Off button
 - Selective Display Mode: Text display, Icon display, Scale (Text) display, and Scale (Icon) display
 - Display of Temperature and Setpoint in 1°F / °C increments
 - Customizable display to show selected information only
- Connectivity
 - Up to 16 indoor units can be controlled together within one remote controller group
 - Within one remote controller group, up to 2 Madoka Remote Controllers can be used, one as a main and one as a sub
- Leveled user authority
 - 3 levels at the controller: user, administrator/owner, and installer

Daikin North America LLC, 5151 San Felipe, Suite 500, Houston TX, 77056

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Project Name:	Approval:
Location:	Date:
Engineer:	Construction:
Submitted to:	Unit #:
Submitted by:	Drawing #:
Reference:	

- Configurable passwords to access administrator/owner and installer menu in the controller
 - 2 levels at the App: administrator/owner and installer
- Bluetooth quick configuration app available for both Administrator and Installer
 - Can manually set multiple settings at the same time
 - Can create and save pre-configuration files
- Advanced indoor unit control:
 - Temperature sensor built-in with configurable offset
 - Dual setpoints (independent cooling and heating setpoints) with configurable minimum setpoint differential or Single Setpoint (occupied period)
 - Setpoint range limit for cooling and heating modes
 - Independent cooling and heating setback setpoints (unoccupied period)
 - Auto changeover control with configurable primary and secondary changeover dead bands and guard timer
 - Airflow – Individual air flow direction, dual airflow and auto draft prevention (prevents air blowing directly on occupants) *
 - Automatic Setback by occupancy sensor*
 - Automatic Off by occupancy sensor*
 - Configuration for Self-cleaning filter panel**
 - Real-time monitoring of system malfunctions with immediate display of unit in error and error code
 - Remote controller function prohibition: mode (or prohibit specific modes), fan speed, setpoint
- Advanced features
 - Supported language: English, Spanish or French
 - Automatic adjustment for Daylight Savings Time (DST)
 - 48-hour clock/calendar battery backup
- Mounting
 - Can mount to a drywall or an electrical component box
 - Mounting plates and screws are included

* Available for FXFQ_TVJU, FXUQ_PVJU, and FXZQ_TA indoor units
 **Available for FXFQ_TVJU indoor units

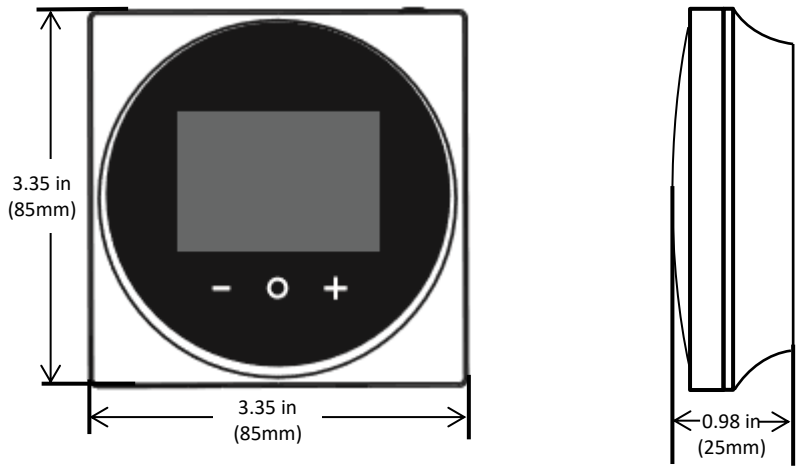
SYSTEM DIAGRAM:



Project Name: _____
Location: _____
Engineer: _____
Submitted to: _____
Submitted by: _____
Reference: _____

Approval: _____
Date: _____
Construction: _____
Unit #: _____
Drawing #: _____

DIMENSIONS:



DOCUMENTATION:

Documentation available on www.daikincity.com and/or www.daikinac.com:

- Installation Manual
- Operation Manual
- App User Manual
- Submittal
- Written Guide Specs
- Quick User Guide
- Field Setting Table



Submittal Data Sheet

Wind Baffle
KPW937F4

DESCRIPTION

Wind Baffle mounts over the standard air grille and allows adjustment in air blow-off direction.

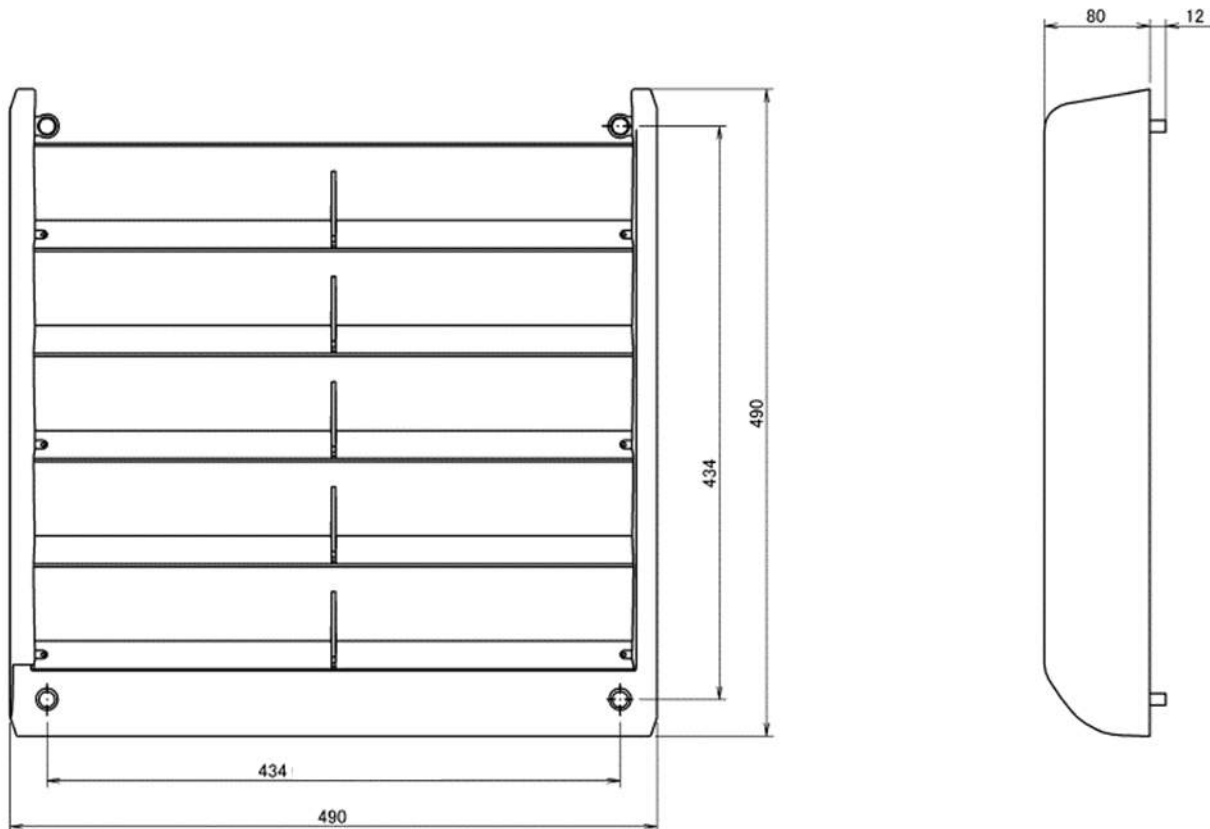


Image for REFERENCE ONLY

SPECIFICATIONS

Model No:	KPW937F4	
Unit Compatibility:	RK09NMVJU, RK12NMVJU, RX09NMVJU, RX12NMVJU, RX09RMVJU(9), RX12RMVJU(9), RXL09QMVJU, RXL12QMVJU(9), RXS09LVJU, RXS12LVJU, RXG09HVJU, RXG12HVJU, RXG15HVJU	Qty (1)
Unit Names:	Wind Baffle	
Dimensions (WxHxD):	19-5/16" x 19-5/16" x 3-5/8" (490mm x 490mm x 92mm)	
Shipping Unit Weight:	6.75 lb.	
Material:	Flame Retardant Grade UL94V-HB	

DIMENSIONAL DRAWING (mm)



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(Daikin's products are subject to continuous improvements. Daikin reserves the right to modify product design, specifications and information in this data sheet without notice and without incurring any obligations).



COMMERCIAL WARRANTY

Models: **DFC, DFG, DFH**

Who Is Providing The Warranty?

This warranty is provided to you by Daikin Manufacturing Company, L.P. ("Daikin"), which warrants all parts of this heat-ing or air conditioning unit, as described below.

To What Type Of Installations Does This Warranty Apply?

This warranty applies to heating and air conditioning units installed in buildings other than residences.

What Units Does This Warranty Not Cover?

This warranty does not apply to:

- Units that are ordered over the Internet, by telephone, or by other electronic means unless the unit is installed by a dealer adhering to all applicable federal, state, and local codes, policies, and licensing requirements.
- Units that are installed outside the United States, its territories, or Canada.
- Units that are operated in incomplete structures.
- Units that are installed in residential buildings.

What Problems Does This Warranty Cover?

This warranty covers defects in materials and workmanship that appear under normal use and maintenance.

Other Warranties

THIS WARRANTY IS PROVIDED IN LIEU OF ANY OTHER WARRANTIES, WHETHER BY DAIKIN OR ANY OF ITS AFFILIATES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

What Problems Does This Warranty Not Cover?

Daikin is not responsible for:

- Damage or repairs required as a consequence of faulty installation or application.
- Damage as a result of floods, fires, winds, lightning, accidents, corrosive atmosphere, or other conditions beyond Daikin's control.
- Damage or the need for repairs arising from the use of components or accessories not compatible with this unit.
- Normal maintenance as described in the installation and operating manual, such as cleaning of the coils, filter cleaning and/or replacement, and lubrication.
- Parts or accessories not supplied or designated by the manufacturer.

- Damage or the need for repairs resulting from any improper use, maintenance, operation, or servicing.
- Damage or failure of the unit to start due to interruption in electrical service or inadequate electrical service.
- Any damage, or the need for any repairs, caused by frozen or broken water pipes, water damage, moisture intrusion, mold or other biological growth.
- Changes in the appearance of the unit that do not affect its performance.
- Replacement of fuses and replacement or resetting of circuit breakers.
- Damage or the need for repairs resulting from the use of unapproved refrigerant types or used or recycled refrigerant.

When Does Warranty Coverage Begin?

Warranty coverage begins on the "installation date."

The installation date is one of two dates:

- (1) The installation date is the date that the unit is originally installed.
- (2) If the date the unit is originally installed cannot be verified, the installation date is three months after the manufacture date. The first four digits of the serial number (YMMM) on the unit indicate the manufacture date. For example, a serial number beginning with "2112" indicates the unit was manufactured in December 2021.

How Long Does Warranty Coverage Last?

The warranty lasts for a period up to (1) 20 years for the heat exchanger (only applicable to units containing a heat exchanger) and (2) 5 YEARS on all other parts.

This warranty period does not continue after the unit is removed from the location where it was originally installed.

The replacement of a part under this warranty does not extend the warranty period. In other words, Daikin warrants a replacement part only for the period remaining in the applicable warranty that commenced on the installation date.

www.daikincomfort.com

For further information about this warranty,
contact Homeowner Support by mail to
19001 Kermier Road, Waller, Texas 77484

Part No. PWDLCMEA

12/2021



COMMERCIAL WARRANTY

Models: DFC, DFG, DFH

What Will Daikin Do To Correct Problems?

Daikin will furnish a replacement part, without charge for the part only, to replace any part that is found to be defective due to workmanship or materials under normal use and maintenance. Furnishing of the replacement part is Daikin's only responsibility under this warranty.

THE OWNER AGREES THAT THESE REMEDIES ARE THE OWNER'S EXCLUSIVE REMEDIES FOR BREACH OF ALL WARRANTIES.

What Won't Daikin Do To Correct Problems?

Daikin will not pay for:

- Labor, freight, or any other cost associated with the service, repair, or operation of the unit.
- Electricity or fuel costs, or increases in electricity or fuel costs, for any reason, including additional or unusual use of supplemental electric heat.
- Lodging or transportation charges.
- Refrigerant.

WHETHER ANY CLAIM IS BASED ON NEGLIGENCE OR OTHER TORT, BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, OR ANY OTHER THEORY, NEITHER DAIKIN NOR ANY OF ITS AFFILIATES SHALL IN ANY EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOSS OF USE OF A UNIT, EXTRA UTILITY EXPENSES, OR DAMAGES TO PROPERTY.

How Can The Owner Receive Warranty Service?

If there is a problem with the unit, contact a licensed contractor.

To receive a replacement part, a licensed contractor must bring the defective part to a Daikin heating and air conditioning products distributor.

For more information about the warranty, write to Daikin, 19001 Kermier Road, Waller, Texas 77484.

Where Can Any Legal Remedies Be Pursued?

ARBITRATION CLAUSE. IMPORTANT. PLEASE REVIEW THIS ARBITRATION CLAUSE. IT AFFECTS YOUR LEGAL RIGHTS.

1. *Parties:* This arbitration clause affects your rights against Daikin and any of its affiliates or employees or agents, successors, or assigns, all of whom together are referred to below as "we" or "us" for ease of reference.

2. **ARBITRATION REQUIREMENT: EXCEPT AS STATED BELOW, ANY DISPUTE BETWEEN YOU AND ANY OF US SHALL BE DECIDED BY NEUTRAL, BINDING ARBITRATION RATHER THAN IN COURT OR BY JURY TRIAL.** "Dispute" will be given the broadest possible meaning allowable by law. It includes any dispute, claim, or controversy arising from or relating to your purchase of this heating or air conditioning unit, any warranty upon the unit, or the unit's condition. It also includes determination of the scope or applicability of this Arbitration Clause. The arbitration requirement applies to claims in contract and tort, pursuant to statute, or otherwise.
3. **CLASS-ARBITRATION WAIVER: ARBITRATION IS HANDLED ON AN INDIVIDUAL BASIS. IF A DISPUTE IS ARBITRATED, YOU AND WE EXPRESSLY WAIVE ANY RIGHT TO PARTICIPATE AS A CLASS REPRESENTATIVE OR CLASS MEMBER ON ANY CLASS CLAIM YOU MAY HAVE AGAINST US OR WE AGAINST YOU, OR AS A PRIVATE ATTORNEY GENERAL OR IN ANY OTHER REPRESENTATIVE CAPACITY, TO THE MAXIMUM EXTENT PERMITTED BY LAW. YOU AND WE ALSO WAIVE ANY RIGHT TO CLASS ARBITRATION OR ANY CONSOLIDATION OF INDIVIDUAL ARBITRATIONS.**
4. *Discovery and Other Rights:* Discovery and rights to appeal in arbitration are generally more limited than in a lawsuit. This applies to both you and us. Other rights that you or we would have in court may not be available in arbitration. Please read this Arbitration Clause and consult the rules of the arbitration organizations listed below for more information.
5. **SMALL CLAIMS COURT OPTION: YOU MAY CHOOSE TO LITIGATE ANY DISPUTE BETWEEN YOU AND ANY OF US IN SMALL CLAIMS COURT, RATHER THAN IN ARBITRATION, IF THE DISPUTE MEETS ALL REQUIREMENTS TO BE HEARD IN SMALL CLAIMS COURT.**
6. *Governing Law:* For residents of the United States, the procedures and effect of the arbitration will be governed by the Federal Arbitration Act (9 U.S.C. § 1 et seq.) rather than by state law concerning arbitration. For residents of Canada, the procedures and effect of the arbitration will be governed by the applicable arbitration law of the province in which you purchased your unit. The law governing your substantive warranty rights and other claims will be the law of the state or province in which you purchased your unit. Any court having jurisdiction may enter judgment on the arbitration award.



COMMERCIAL WARRANTY

Models: DFC, DFG, DFH

7. *Rules of the Arbitration:* If the amount in controversy is less than \$250,000, the arbitration will be decided by a single arbitrator. If the amount in controversy is greater than or equal to \$250,000, the arbitration will be decided by a panel of three arbitrators. The arbitrator(s) will be chosen pursuant to the rules of the administering arbitration organization. United States residents may choose JAMS (1920 Main Street, Ste. 300, Irvine, CA 92614, www.jamsadr.com), or, subject to our approval, any other arbitration organization. In addition, Canadian residents may choose the ADR Institute of Canada (234 Eglinton Ave. East, Suite 405, Toronto, Ontario, M4P 1K5, www.amic.org). These organizations' rules can be obtained by contacting the organization or visiting its website. If the chosen arbitration organization's rules conflict with this Arbitration Clause, the provisions of this Arbitration Clause control. The award of the arbitrator(s) shall be final and binding on all parties.
8. *Location of the Arbitration Hearing:* Unless applicable law provides otherwise, the arbitration hearing for United States residents will be conducted in the federal judicial district in which you reside (in your hometown area) or, for Canadian residents, in the province in which you reside, and, if you choose, will be in-person.
9. *Costs of the Arbitration:* Each party is responsible for its own attorney, expert, and other costs and fees unless applicable law requires otherwise. Each party is also responsible for one-half of any fees or costs charged by the arbitration organization to administer the arbitration to the maximum extent permitted by law or rule. Where permissible by law, the prevailing party may be required to reimburse the other party for the costs and fees of the arbitration organization and arbitrator(s) in whole or in part by decision of the arbitrator(s).
10. *Survival and Enforceability of this Arbitration Clause:* This Arbitration Clause shall survive the expiration or termination, or any transfer, of the warranty on your unit. If any part of this Arbitration Clause, except waivers of class-action rights, is found to be unenforceable for any reason, the remainder of this clause and the warranty shall remain enforceable. If, in a case in which class-action allegations have been made, the waiver of class-action rights under this warranty is found to be unenforceable with respect to any part of the dispute, the parts of the dispute as to which the waiver of class-action rights have been found unenforceable will be severed and will proceed in court without reference or application of this Arbitration Clause. Any remaining parts will proceed in arbitration.

Part No. PWDLCMEA
12/2021