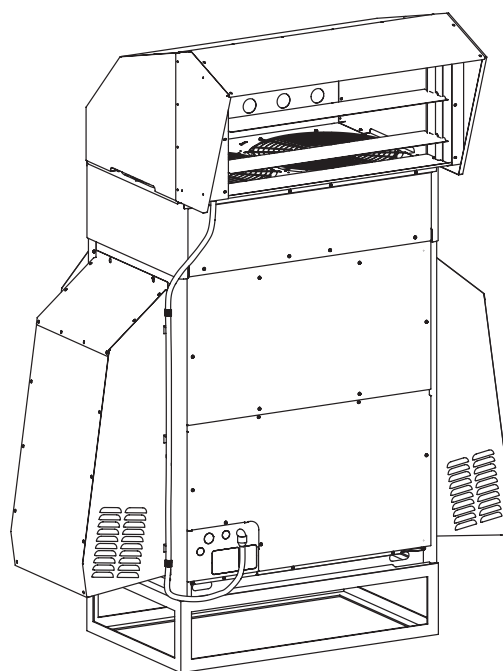


Installation Manual

*for
Low Ambient Kit
(for Outdoor Unit)*

Name	Model
Upper Hood with Damper	LAK-DAMPER-S-01 LAK-DAMPER-M-01 LAK-DAMPER-L-01
Left Hood	LAK-6T-LEFT-01
Right (or Left) Hood	LAK-SIDE-01
Back Hood	LAK-BACK-S-01 LAK-BACK-M-01 LAK-BACK-L-01



IMPORTANT:

***READ AND UNDERSTAND
THIS MANUAL BEFORE
INSTALLING THIS LOW
AMBIENT KIT.
KEEP THIS MANUAL FOR
FUTURE REFERENCE.***

P5417043

This low ambient kit allows the outdoor unit to operate in cooling mode at 23°F (-5°C) down to -10°F (-23°C) low ambient temperature condition.

Low ambient kit comprises the upper hood with damper, left hood, right hood, and back hood.

All components of the low ambient kit must be installed for proper operation at the stated temperature ranges. Read the following sections carefully and follow directions when installing this low ambient kit.

IMPORTANT NOTICE

- The applicable outdoor unit for the low ambient kit depends on the product series.
An improper combination of low ambient kit and outdoor unit cause malfunction, and an alarm is triggered.
Be sure to confirm with the product catalogue before installation.
- Johnson Controls pursues a policy of continuous improvement in design and performance of products.
We reserve the right to vary specifications without notice.
- Johnson Controls cannot anticipate every possible circumstance that might involve a potential hazard.
- No part of this manual may be reproduced without Johnson Controls' written permission.
- Keep this manual for future reference.
- Do not use this kit by itself or in combination with other companies' air conditioners. This kit is designed for a combination of Johnson Control VRF air conditioners only.
- Use the field-supplied safety wire rope to prevent the outdoor unit from overturning. Use a stay or safety wire rope to reinforce the installation and hold the low ambient kit securely to the outdoor unit in a strong wind or earthquake.
- Perform a test run after installation to check for abnormalities.

CHECKING PRODUCT RECEIVED

- Upon receiving this product, inspect it for any shipping damage.
Inspect all electrical connections. Connections must be clean and tight at the terminals.
Claims for damage either apparent or concealed, should be filed immediately with the shipping company.
NOTE: Rough handling may dislocate internal components.
- Check the model number, electrical characteristics (power supply, voltage, and frequency) and accessories to determine if they are correct with the ordering and shipping information, to ensure the correct unit has been shipped.
To minimize the possibility of damage after inspection, the units should be installed as soon as possible.

The standard installation and general use of this unit is explained in this manual.

Although common processes and procedures for installing units are presented in this manual, its use for installation of units other than those indicated in this manual is not recommended. Please contact your local agent, as the need arises.

Our liability shall not cover defects arising from an alteration performed by a customer without our consent in a written form.

SAFETY SUMMARY

Signal Words

- Signal words are used to identify the severity of hazard levels.
Definitions for identifying hazard levels are provided below with their respective signal words.



: DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



: WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



: CAUTION used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



: NOTICE is used to address practices not related to personal injury.

NOTE

: NOTE is useful information for operation or maintenance.

SAFETY SUMMARY

⚠ DANGER

- Do not perform installation work, and electrical wiring connection without referring to the Installation Manual. If the instructions are not followed, it may result in electric shock or a fire.
- Do not open the service cover or access panel for the indoor or outdoor units without turning OFF the main power supply.
- Do not touch or adjust safety devices inside the indoor unit or outdoor units. If these devices are touched or readjusted, it may cause a serious injury.

⚠ WARNING

- If the circuit breaker or fuse is blown, stop the system and contact your service contractor.
- Electrical shock may occur if unit is not grounded correctly. Ensure a secure ground connection. Do not connect the ground wiring to gas piping, condensate piping, lightning conductor or ground wiring for telephones.
- Insulate wiring and electrical components from extreme temperatures and burrowing animals. Failure to do so can, over time, deteriorate system performance.
- Secure all wire connections outside forces on the terminals may cause fire. Unauthorized modifications to this unit are prohibited for the following reasons:
 1. Modifications may create hazards which could result in death, serious injury or equipment damage.
 2. Modifications will void product warranties.
 3. Modifications may invalidate product regulatory certifications. Johnson Controls Inc. has conducted both internal and coordinated Agency testing to ensure product compliance with applicable Product Safety and Regulatory standards. Product certification is designated either on the product itself or in the product literature. The certification mark identifies the applicable standards as well as the Agency or Nationally Recognized Test Lab (NRTL) involved. If changes are made to the product, an engineering review will be needed to assess the impact to the product certification. In some instances, the changes may be such that the Agency or NRTL will require reapproval of the product by means of a field or site inspection and certification. Any person or entity making changes to the product is responsible for obtaining any necessary engineering review and reapproval.
 4. Modifications may violate OSHA standards. OSHA standards may require that only certified products be used in certain applications and modifications that result in the loss of product certification may violate those OSHA standards:

“If a product does not have NRTL approval as required by an OSHA standard, or if the product no longer meets NRTL approval requirements because of changes made to it, the product must be

 - (1) replaced with a properly approved product,
 - (2) approved by an NRTL that is recognized for testing this type of product, or
 - (3) reinspected and reapproved by an NRTL, if it was properly approved but the user has changed it.”
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause serious injury or death.
- Perform all electrical work in strict accordance with this Installation and Maintenance Manual and all relevant regulatory standards.
- Use specified cables between units.

SAFETY SUMMARY

⚠ WARNING

- Clamp electrical wires securely with a cable clamp after all wiring is connected to the terminal block. In addition, run wires securely through the wiring access channel.
- When installing the main power lines, do not apply tension to the cables. Secure the suspended cables at regular intervals according to local codes, but not too tightly.
- After stopping operation, be sure to wait at least five minutes before turning off the main power switch. Otherwise, water leakage or electrical breakdown may result. Disconnect the power supply completely before attempting any maintenance for electrical parts. Check with a voltage meter to ensure that no residual voltage is present after disconnecting the power supply.
- Be sure to attach the cover so that it fits securely on the electrical box without any gaps. Secure the cover with screws.

⚠ CAUTION

- Do not step on the unit.
- Do not put any foreign material on the unit or inside the unit.
- Provide a strong and correct foundation so that:
 - The outdoor unit is not on an incline.
 - Abnormal sound does not occur.
 - The outdoor unit will not fall down due to a strong wind or earthquake.

NOTICE

- After a long shutdown, apply power to the outdoor unit(s) at least 12 hours prior to operation of the system for preheating of the compressor oil.

NOTE

- The heating capacity of the heat pump unit will decrease according to the outdoor air temperature. Therefore, it is recommended that another heating source be available when the unit is installed in a low temperature region.

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1. Applicable Unit

NOTICE:

The applicable outdoor unit may be different depending on the product series.

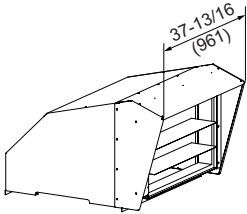
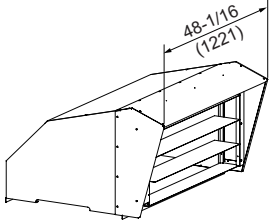
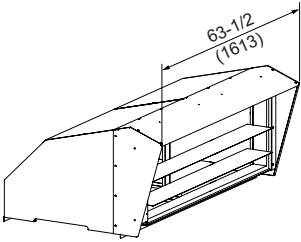


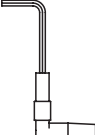
Applicable Outdoor Unit (Representative Model)	Model		
	(H,Y)VAH(P,R)072B32S	(H,Y)VAH(P,R)096 - 144B32S	(H,Y)VAH(P,R)168, 192B32S
	(H,Y)VAH(P,R)072B42S	(H,Y)VAH(P,R)096 - 144B42S	(H,Y)VAH(P,R)168, 192B42S
	(H,Y)VAH(P,R)072B52S	(H,Y)VAH(P,R)096 - 144B52S	(H,Y)VAH(P,R)168, 192B52S
Upper Hood with Damper	LAK-DAMPER-S-01	LAK-DAMPER-M-01	LAK-DAMPER-L-01
Left Hood	LAK-6T-LEFT-01	LAK-SIDE-01	
Right Hood	LAK-SIDE-01		
Back Hood	LAK-BACK-S-01	LAK-BACK-M-01	LAK-BACK-L-01

2. Before Installation

Check that all the following accessories are packed with the kit before installation.








Upper Hood with Damper

Unit: inch (mm)

No.	Accessory	Qty.			Remarks
		LAK-DAMPER-S-01	LAK-DAMPER-M-01	LAK-DAMPER-L-01	
D1	Upper Hood with Damper 	1	-	-	
D2	Upper Hood with Damper 	-	1	-	
D3	Upper Hood with Damper 	-	-	1	
D4	Screw (for Installation)  #10-16 x 1/2" (Hex Washer Head)	-	-	4 (1)	Use for installation. Use with a burred, threaded hole. (1): Spare
D5	Conduit Clamp 	4	4	4	Use for securing conduit tube.
D6	Hexagon Wrench 	1	1	1	Use for manual override to reposition the actuator.








Left Hood

Unit: inch (mm)

No.	Accessory		Qty.	Remarks
			LAK-6T-LEFT-01	
L1	Right Side Plate		1	
L2	Left Side Plate		1	
L3	Faceplate (Top Side)		1	
L4	Faceplate (Bottom Side)		1	
L5	Screw (for Installation)	 #10-16 x 1/2" (Hex Washer Head)	10 (1)	Use for installation. Use with a burred, threaded hole. (1): Spare
L6	Screw (for Assembling)	 #10-16 x 1/2" (Hex Washer Head)	15 (1)	Use for assembling. Use with a burred, threaded hole. (1): Spare
L7	Self-Drilling Screw	 #8-18 x 1/2" (Hex Washer Head)	3	Use for preparing holes.




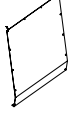




Right (or Left) Hood

Unit: inch (mm)

No.	Accessory		Qty.	Remarks
			LAK-SIDE-01	
(R1)	Right Side Plate		1	
(R2)	Left Side Plate		1	
(R3)	Faceplate (Top Side)		1	
(R4)	Faceplate (Bottom Side)		1	
(R5)	Screw (for Installation)	 #10-16 x 1/2" (Hex Washer Head)	10 (1)	Use for installation. Use with a burred, threaded hole. (1): Spare
(R6)	Screw (for Assembling)	 #10-16 x 1/2" (Hex Washer Head)	16 (1)	Use for assembling. Use with a burred, threaded hole. (1): Spare
(R7)	Self-Drilling Screw	 #8-18 x 1/2" (Hex Washer Head)	3	Use for preparing holes.

Back Hood

Unit: inch (mm)

No.	Accessory		Qty.			Remarks
			LAK- BACK-S-01	LAK- BACK-M-01	LAK- BACK-L-01	
(B1)	Right Side Plate		1	1	1	
(B2)	Left Side Plate		1	1	1	
(B3)	Faceplate (Top Side)		1	1	2	
(B4)	Faceplate (Bottom Side)		1	1	2	
(B5)	Center Support		-	-	1	
(B6)	Screw (for Installation)	 #10-16 x 1/2" (Hex Washer Head)	10 (1)	10 (1)	20 (2)	Use for installation. Use with a burred, threaded hole. (1 or 2): Spare
(B7)	Screw (for Assembling)	 #10-16 x 1/2" (Hex Washer Head)	17 (1)	17 (1)	32 (2)	Use for assembling. Use with a burred, threaded hole. (1 or 2): Spare
(B8)	Self-Drilling Screw	 #8-18 x 1/2" (Hex Washer Head)	2	2	3	Use for preparing holes.

3. Transportation and Hanging

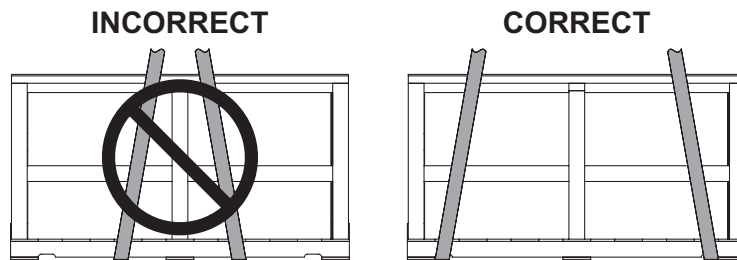
Transport the product as close to the installation location as practicable before unpacking.

CAUTION

Do not put any material on the product.

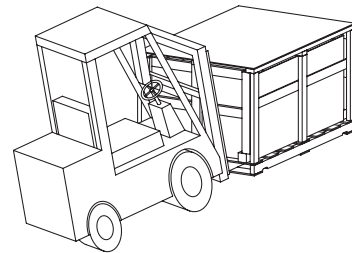
3.1 Hanging the Package (for Upper Hood)

Be sure to insert the sling belts through the notches on both sides of the wooden base when hanging the package as its center of gravity is off-center and unbalanced.



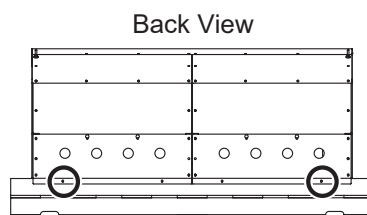
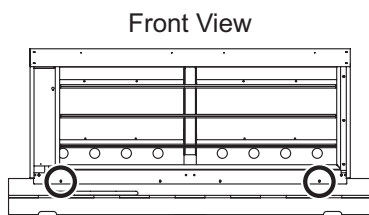
3.2 Transportation by Forklift (for Upper Hood)

The unit may fall over due to sudden starting or stopping. It is strongly recommended to transport the unit by securing it with a rope.



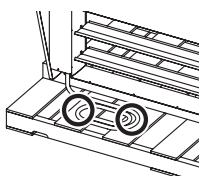
3.3 How to Hang the Kit (for Upper Hood)

- (1) Remove the wooden frame and the corrugated cardboard packaging from the kit.
- (2) Remove the screws securing the kit to the wooden base (4 screws total on the front and back sides).



○ : Location of Screw

- (3) Cut the cable clamp securing the conduit to the wooden base (2 places).

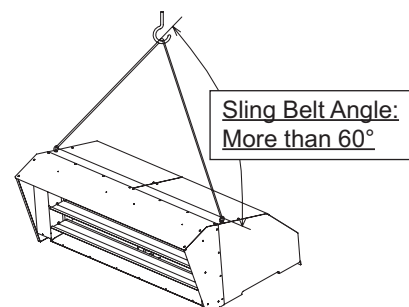


○ : Location of Cut Part

NOTE:

Secure the conduit to the kit so that it does not interfere with installation to the outdoor unit.

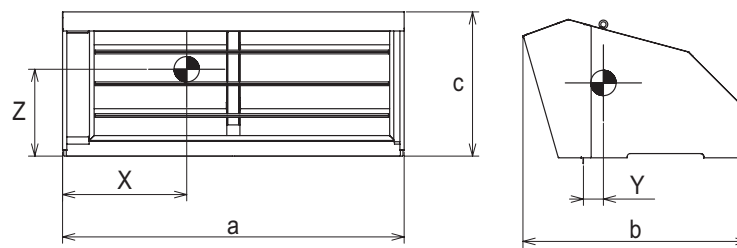
- (4) Hang the suspension bolt on top of the kit by maintaining the sling belt angle of more than 60°.



When hanging the kit, ensure to keep balance of the kit, check safety and lift up smoothly.

- Center of Gravity

Pay attention to the center of gravity.



Model	Weight [lbs (kg)]		Center of Gravity [inch (mm)]					
	Net	Gross	X	Y	Z	a	b	c
LAK-DAMPER-S-01	93 (42)	234 (106)	13-1/16 (332)	3-7/16 (87)	14-1/8 (358)	37-13/16 (961)	41-7/8 (1063)	25-3/4 (654)
LAK-DAMPER-M-01	108 (49)	265 (120)	16-13/16 (427)	4-1/8 (104)	14-1/2 (368)	48-1/16 (1221)	41-7/8 (1063)	25-3/4 (654)
LAK-DAMPER-L-01	148 (67)	320 (145)	24-9/16 (624)	4-1/8 (105)	13-15/16 (354)	63-1/2 (1613)	41-7/8 (1063)	25-3/4 (654)

4. Installation Work

- (1) After the low ambient kit is installed, noise at the air outlet side may increase slightly. Carefully consider the direction of air discharge when installing.
- (2) Securely tighten the low ambient kit to the top panel and side panel of the outdoor unit with the removed screws from outdoor unit and the supplied screws (accessory). Not doing so may cause vibration or abnormal noise.
- (3) Avoid obstacles in the direction of air discharge to prevent air recirculation or a reduction in the airflow rate.
- (4) Do not install other outdoor units in the direction of the air outlet. If the air blown out of the low ambient kit is drawn into the other outdoor unit, it may cause a malfunction of the unit.
- (5) Install the outdoor unit at a location where snow accumulating on the building would not fall on it.
- (6) Ensure adequate service space in consideration of snow accumulation height and snow removal operation.
- (7) Double-check the strength of the outdoor unit anchor bolts. The wind loads on the outdoor unit increase with the installation of the low ambient kit.
- (8) After installing the low ambient kit, cooling/heating performance may be slightly affected depending on usage.

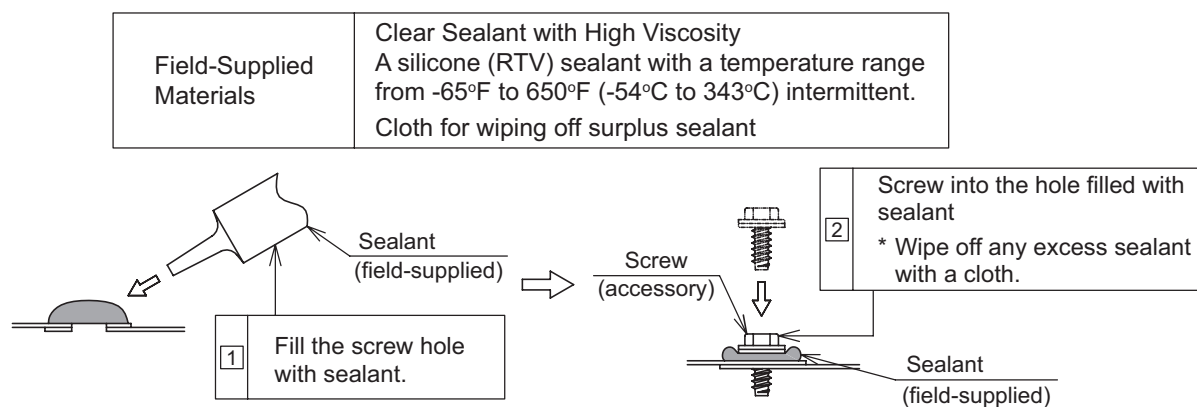
⚠ WARNING

Use safety wire rope to reinforce installation. The wire rope holds the low ambient kit onto the outdoor unit and prevents it from turning over in a strong wind or earthquake.

⚠ CAUTION

- During heating operation, icicles that form on the air outlet part of low ambient kit may fall down. If the unit is installed in places where people walk nearby, provide sufficient space and consider the direction of the air outlet.
- Install the low ambient kit so as to avoid facing into seasonal or strong wind.
- Protect the screws and the low ambient kit from scratches or scrapes that may cause rust. Handle the low ambient kit with care during assembly and installation.
- Apply touch-up coating or sealant (field-supplied) at the screw holes of the outdoor unit in order to prevent rusting.
- The low ambient kit is heavy-weight. More than two people are required for installation. Be sure to wear personal protective equipment (PPE).

Sealing Procedures (Example)



5. Selection of Installation Location

5.1 Installation Location and Precautions

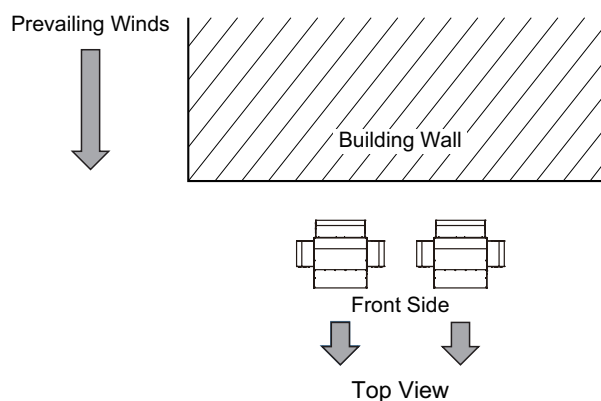
WARNING

To reduce the risk of serious injury or death, the following installation precautions must be followed.

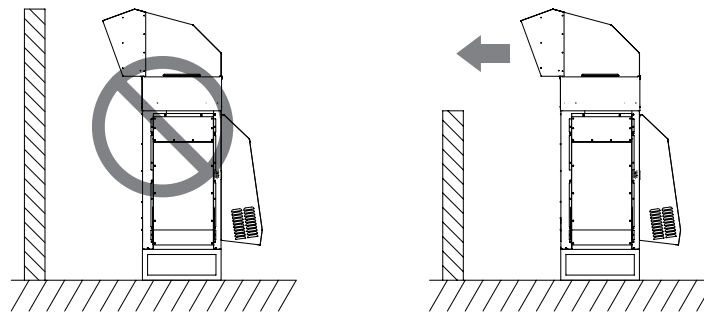
- Install the optional screen (model name: LAK-NET-(S,M,L)-01) to prevent serious injury from accidental contact to the damper.
- When installing the unit into...
 - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
 - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable wind baffle (field-supplied).
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
 - Explosive or flammable atmosphere
 - Where a fire, oil, steam or powder can directly enter the unit, such as nearby or above a kitchen stove.
 - Where oil (including machinery oil) may be present.
 - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or hot spring.
 - Where dense, salt-laden airflow is heavy, such as in coastal regions.
 - Where the air quality is of high acidity.
 - Where harmful gases can be generated from decomposition.
- During heating or defrosting operation, condensate water is discharged. Provide adequate drainage around the foundation. If installing the unit on a roof or a balcony, provide additional drainage around the foundation to prevent water from dripping on walkways, people, and property, and to prevent ice from forming during freezing temperatures and creating slip hazards.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no tools, metal scraps, or bits of wiring have been left behind inside the unit being installed.

After installation work for the system is completed, explain the “Safety Precautions,” the proper use and maintenance of the unit to the customer according to the information in all manuals that come with the system. Be sure to give all manuals and warranty information to the customer, or leave the documents near the unit.

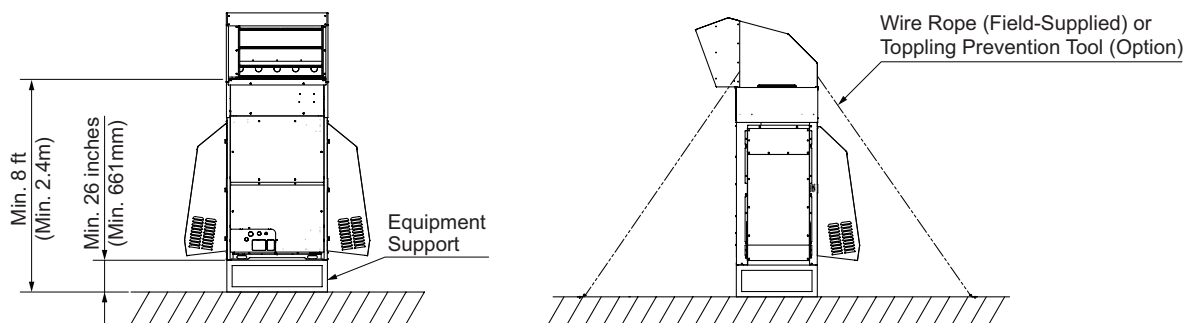
Locate outdoor units in an area protected from prevailing wind.
Never install the direction of the outlet air toward the windward side.



The wall in front of the outlet hood must be short enough to allow the hood to discharge the air out and over the enclosure walls to prevent air recirculation.



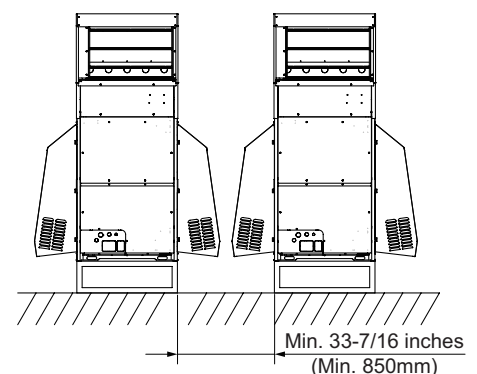
When the low ambient kit is used, the equipment support must elevate the unit at least 12 inches (305mm) above the maximum expected snow accumulation depth or 26 inches (661mm) above floor or grade level, whichever is higher. If the optional screen is attached to the low ambient kit, the equipment support must elevate the unit at least 12 inches (305mm) above floor, grade level or the maximum expected snow accumulation depth.



NOTES:

- The equipment support must be an open construction to minimize snow drifting and/or ice formation during defrost.
- The wire rope (field-supplied) or toppling prevention tool (optional: ASG-SW20A) must be attached to the low ambient kit for prevention of outdoor unit from overturning.

When installing outdoor modules side by side with sufficient spacing, attach the left and right hood to each outdoor unit as shown in the right figure.

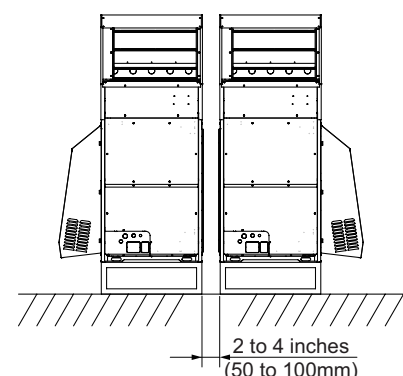


■ Limited Space Installation

When the installation space of the outdoor unit is limited and the outdoor unit is located in an area with no seasonal or strong wind, it is possible to set space between the units 2 to 4 inches (50 to 100mm) without attaching a hood between the units as shown in the right figure.

In this case, the service of the damper actuator must be carried out by removing the upper hood of the unit on the left side of the unit to be serviced.

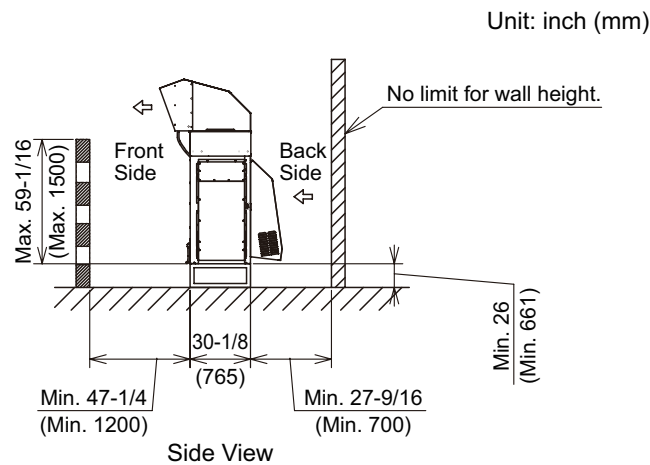
Space between the units must not exceed 4 inches (100mm) for this installation.



5.2 Service Space

When installing an outdoor unit, allow sufficient clearance as follows:

- Insufficient clearance for air inlets and outlets may result in a performance drop-off and mechanical issues due to insufficient air intake.
- Additionally, adequate clearance is required for service maintenance access.



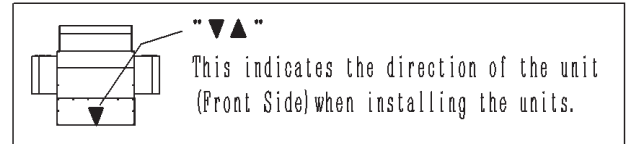
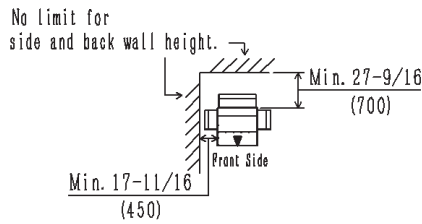
- If there are no walls on the front and back sides, clearance for service access is required as follows:
 - * Front Side: Minimum 47-1/4 inches (1200mm)
 - * Back Side: Minimum 27-9/16 inches (700mm)
 - * Right and Left Sides: Minimum 17-11/16 inches (450mm)
 - * Upper Side: Installation must be conducted where there are no obstacles.
- When the wall in front of the unit is taller than 59-1/16 inches (1500mm), the clearance (distance) from the wall must be more than 157-1/2 inches (4000mm).

1) Walls on Two Sides

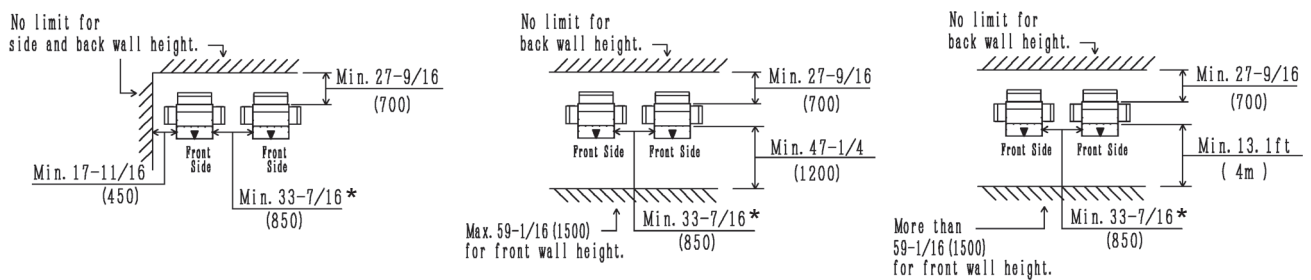
If units are installed adjacent to tall buildings where there are two open sides, the minimum back side clearance must be at least 27-9/16 inches (700mm).

• Single Installation

Unit: inch (mm)



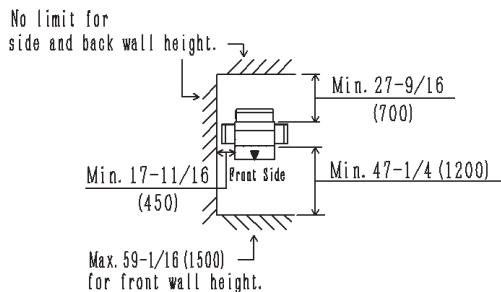
• Multiple / Serial Installation



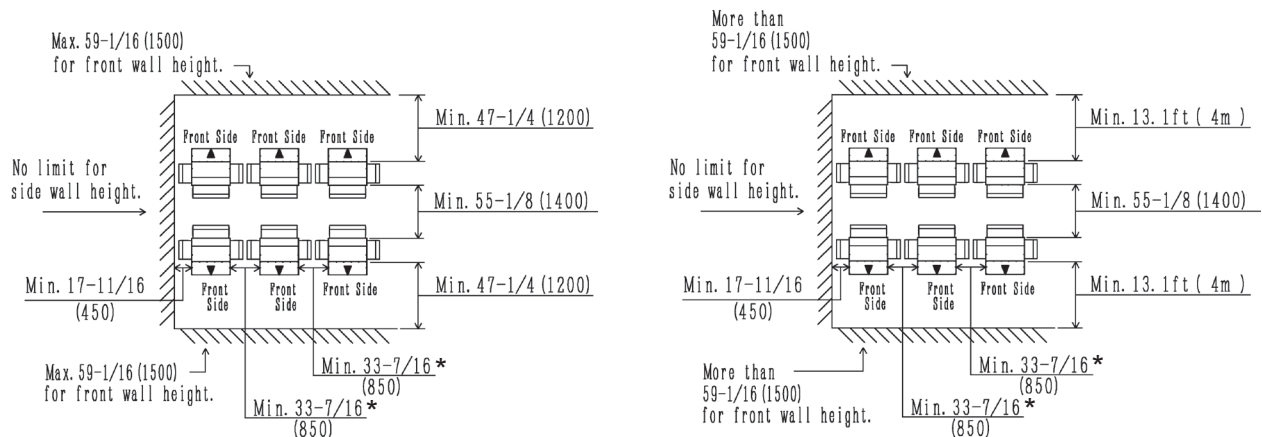
2) Walls on Three Sides

• Single Installation

Unit: inch (mm)



• Multiple / Serial Installation

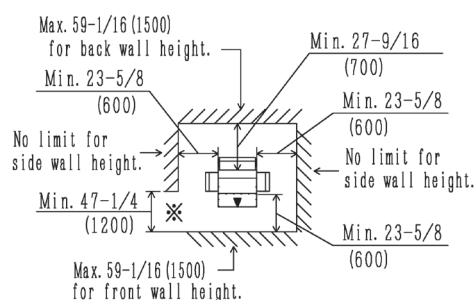


* Limited space installation rule can be applied.
Refer to "Limited Space Installation" on page 10 in this manual.

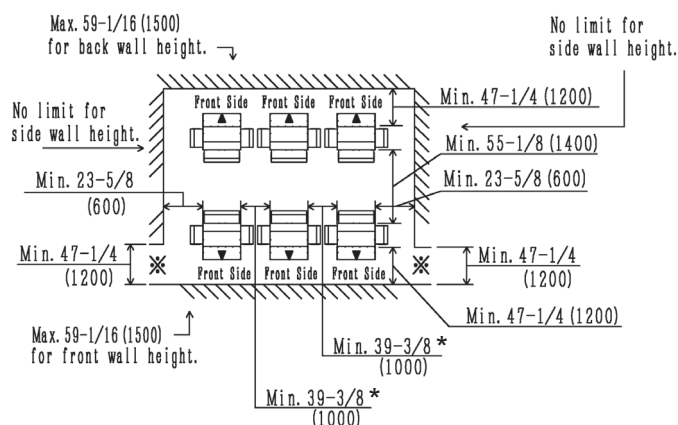
3) Walls on Four Sides

• Single Installation

Unit: inch (mm)



• Multiple / Serial Installation



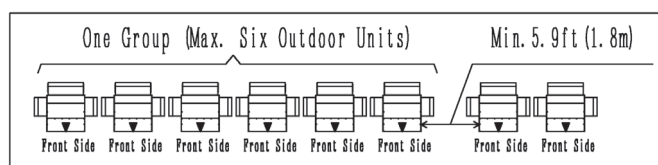
※ Create wall openings when outdoor units are surrounded by walls on four sides.

* Limited space installation rule can be applied.

Refer to "Limited Space Installation" on page 10 in this manual.

NOTICE:

1. Keep the upper side open to prevent mutual interference between the inlet and outlet air of each outdoor unit.
2. The figure indicates sufficient clearance around the outdoor units for operation and maintenance at typical installation conditions as follows.
[Operation Mode: Cooling Operation, Outside Temp.: 95°F (35°C)]
In the following situations when compared to the installation condition, an appropriate clearance dimension is required by calculating air flow current when
 - * the outdoor unit ambient temperature is higher
 - * a short circuit is likely to occur
3. For the multiple installation of units, one group will consist of a maximum of six outdoor units. Maintain a minimum distance of 5.9 ft (1.8m) between each unit group.



6. Installation Procedures

6.1 Upper Hood with Damper

WARNING

- The upper hood is heavy-weight. More than two people are required for installation. Be sure to wear personal protective equipment (PPE).
- Be sure to prepare a solid base before installation.

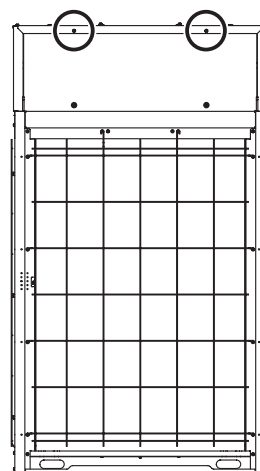
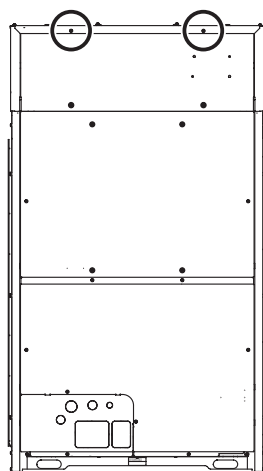
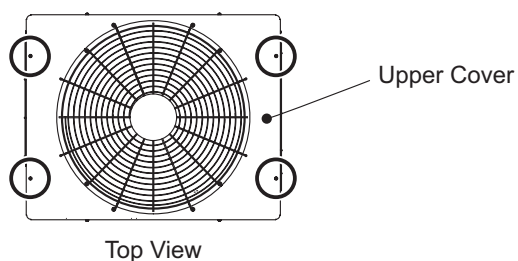
- (1) Remove the screws for securing the outdoor unit upper cover. Do not lose them as these removed screws are reused to secure the upper hood.

Screws for Securing Upper Cover

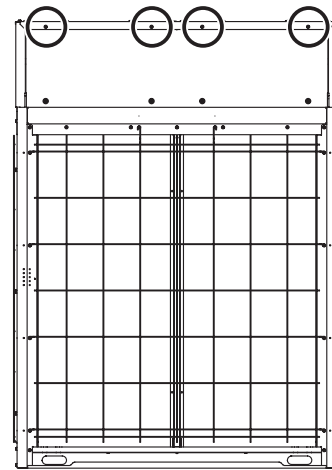
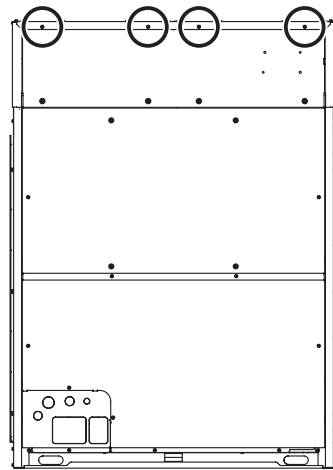
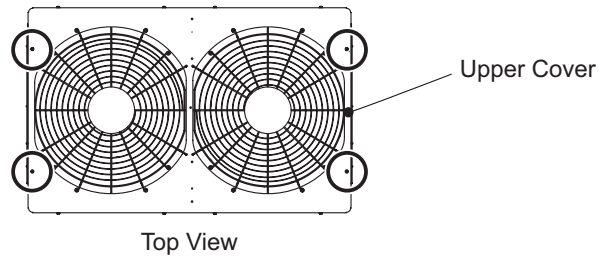
* (H,Y)VAH(P,R)072B(3,4,5)2S: 8 places

* (H,Y)VAH(P,R)096-192B(3,4,5)2S: 12 places

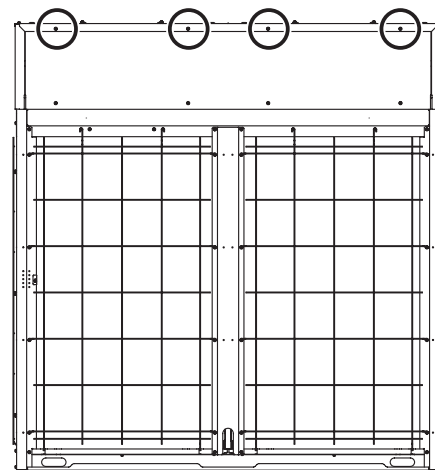
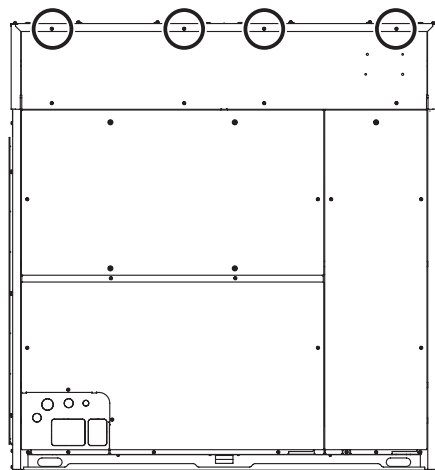
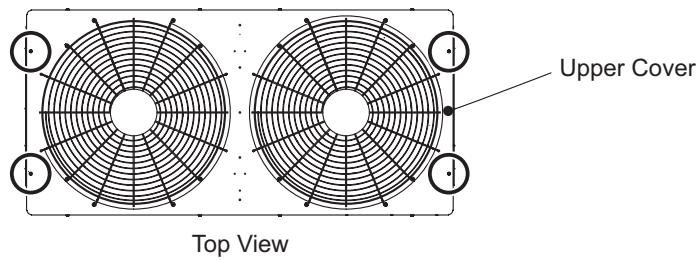
(H,Y)VAH(P,R)072B(3,4,5)2S



(H,Y)VAH(P,R)096 - 144B(3,4,5)2S

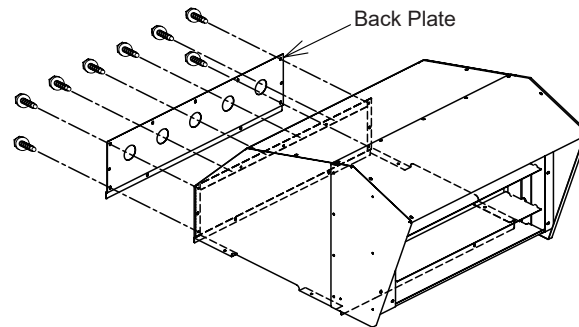


(H,Y)VAH(P,R)168, 192B(3,4,5)2S

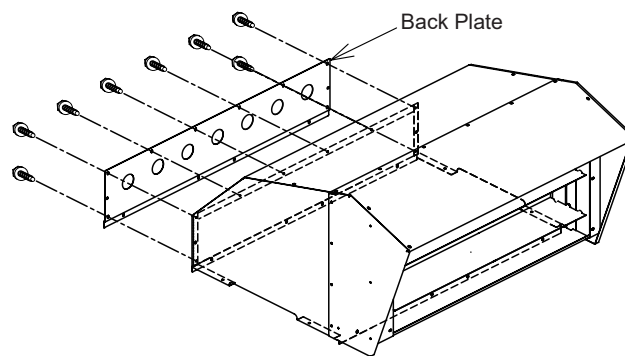


- (2) Remove the back plate from the upper hood. Do not lose the removed screws as these are reused. Screws for Securing Back Plate
- * LAK-DAMPER-S-01: 8 places
 - * LAK-DAMPER-M-01: 8 places
 - * LAK-DAMPER-L-01: 12 places

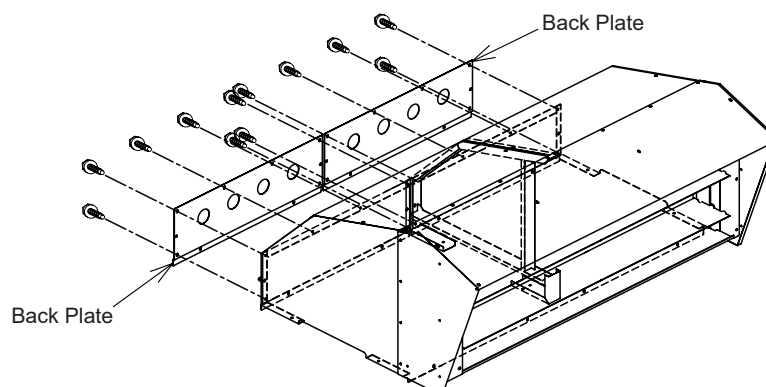
LAK-DAMPER-S-01



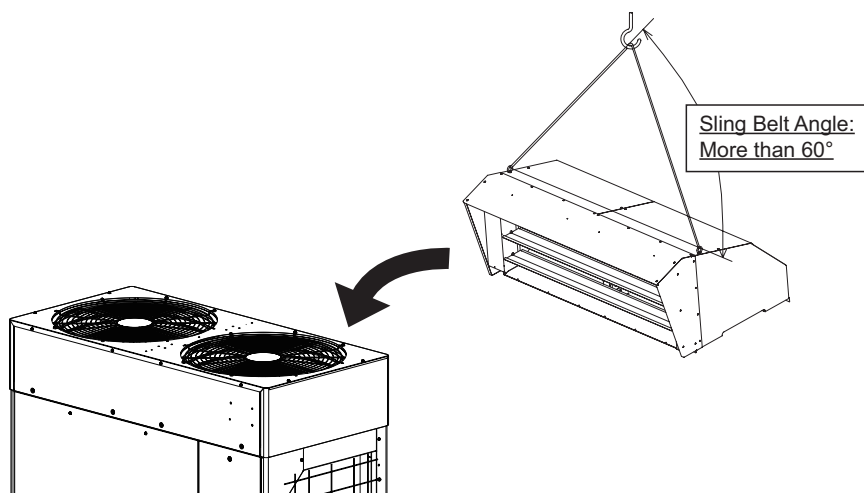
LAK-DAMPER-M-01



LAK-DAMPER-L-01



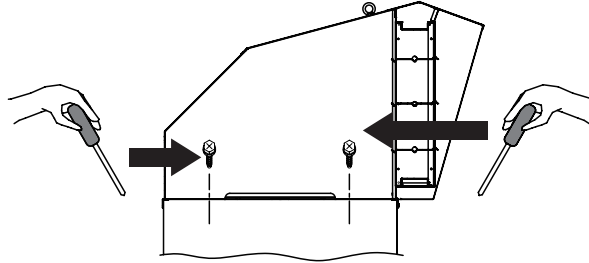
- (3) Hang the suspension bolt on top of the upper hood by maintaining the sling belt angle of more than 60°. Then, move the upper hood on top of the outdoor unit.



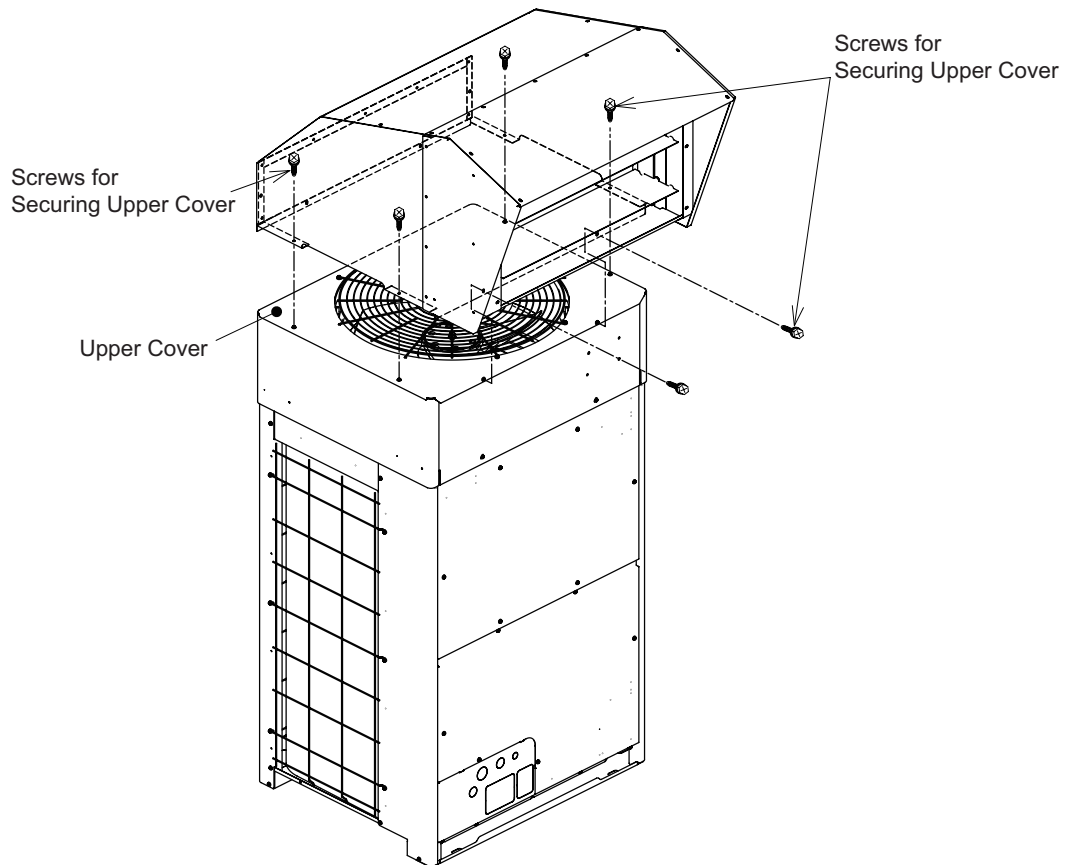
- (4) Place the upper hood on top of the outdoor unit as shown below and secure with the screws.
Secure the screws on the top of outdoor unit from front and back side.

Screws for Securing Upper Hood

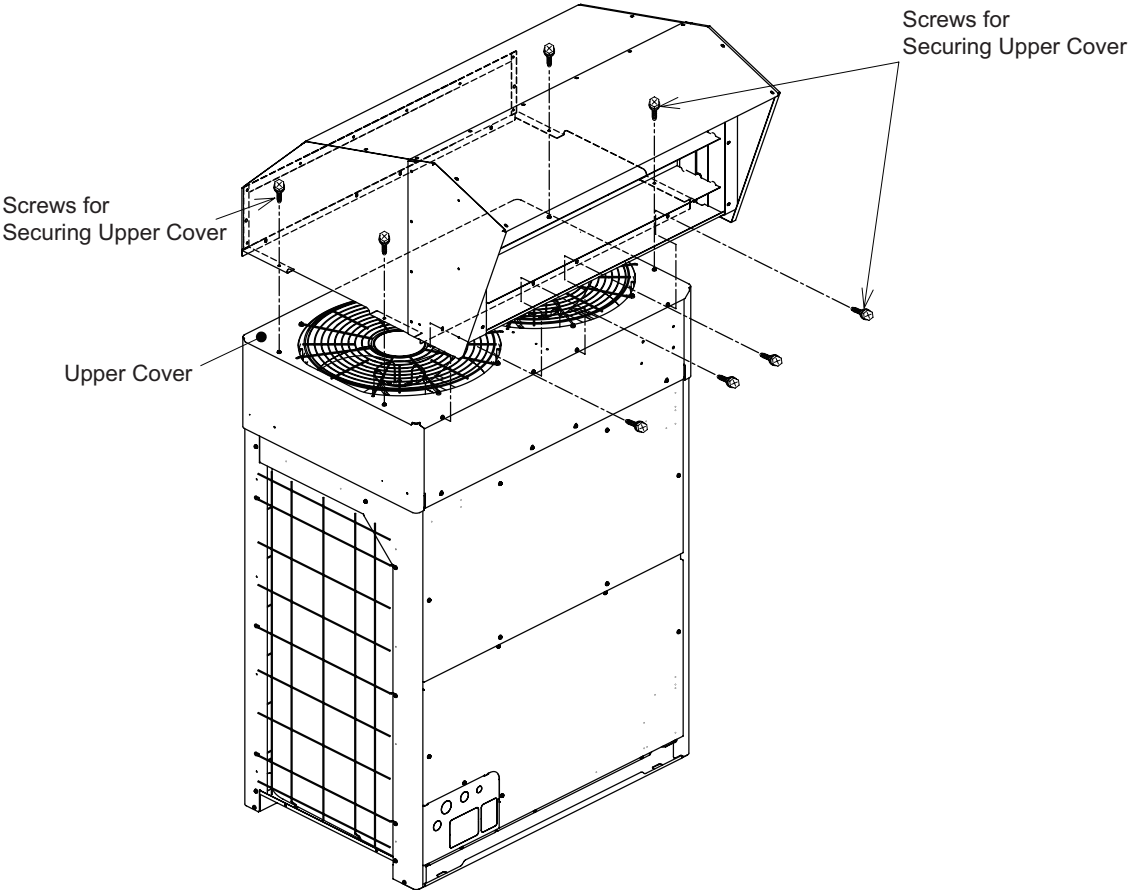
- * LAK-DAMPER-S-01: 6 places
- * LAK-DAMPER-M-01: 8 places
- * LAK-DAMPER-L-01: 12 places



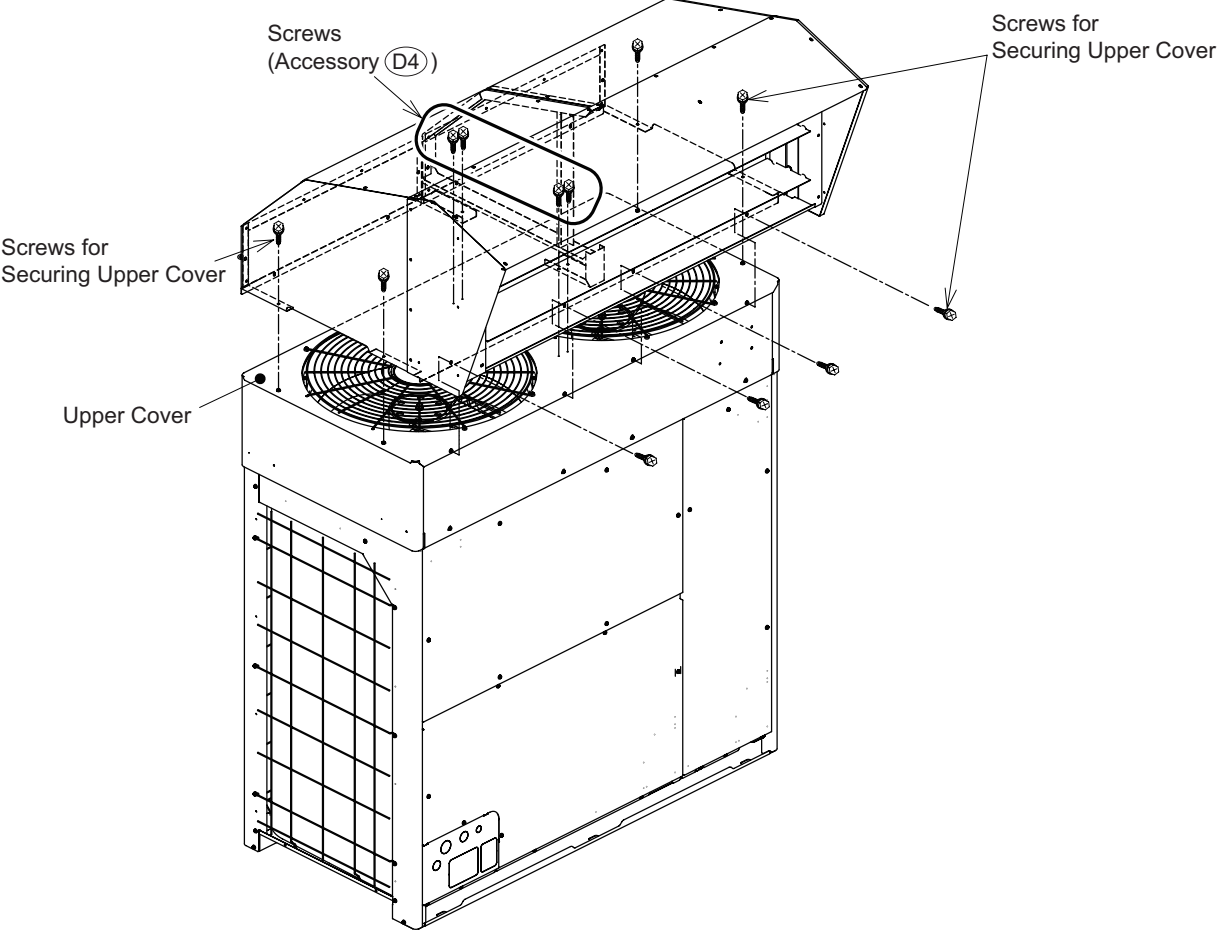
LAK-DAMPER-S-01



LAK-DAMPER-M-01

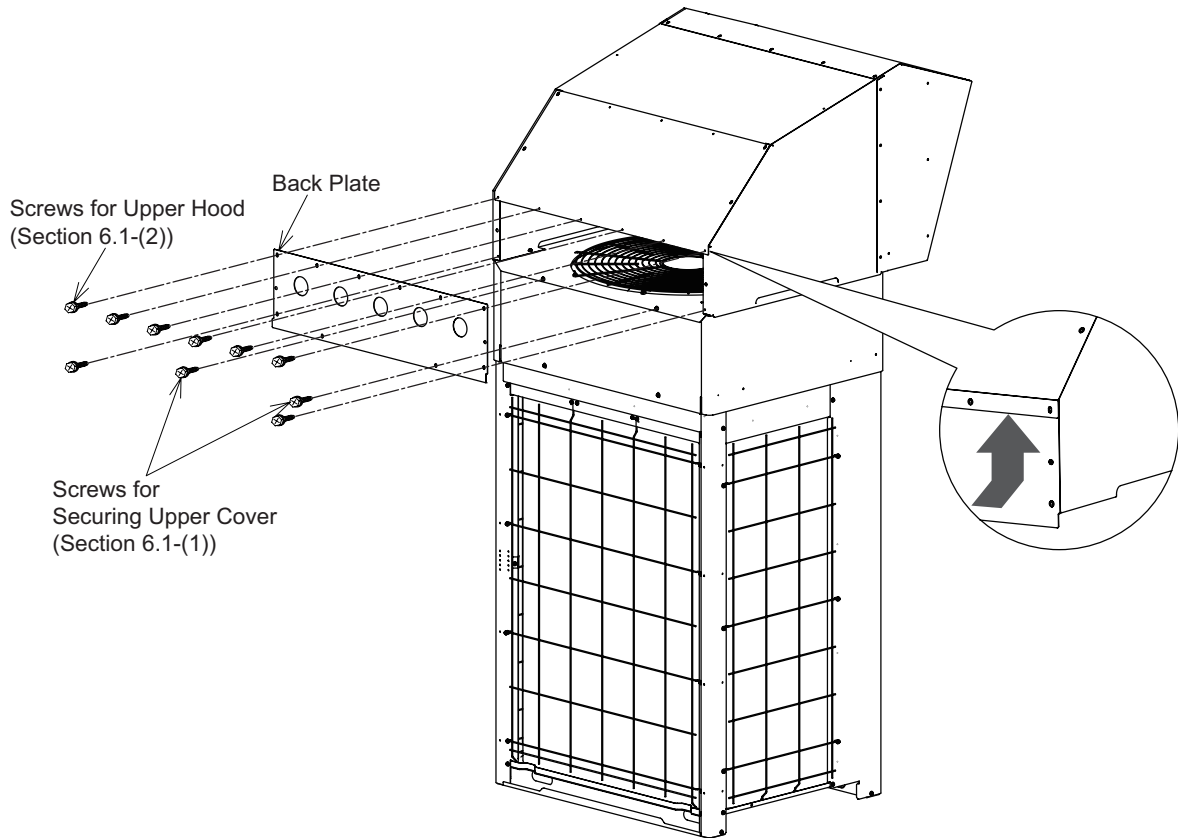


LAK-DAMPER-L-01

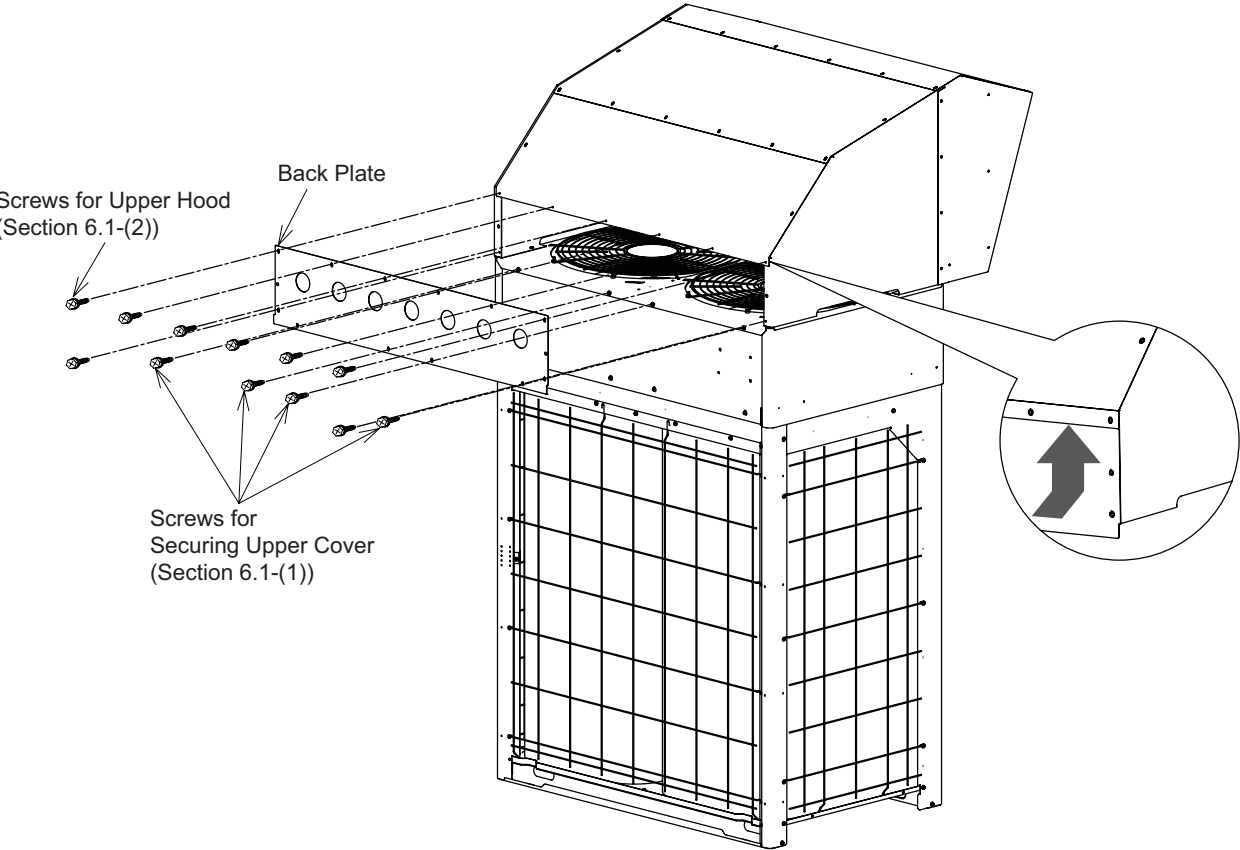


- (5) Secure the back plate to the upper hood using the removed screws. Screws for Securing Back Plate
- * LAK-DAMPER-S-01: 10 places
 - * LAK-DAMPER-M-01: 12 places
 - * LAK-DAMPER-L-01: 16 places

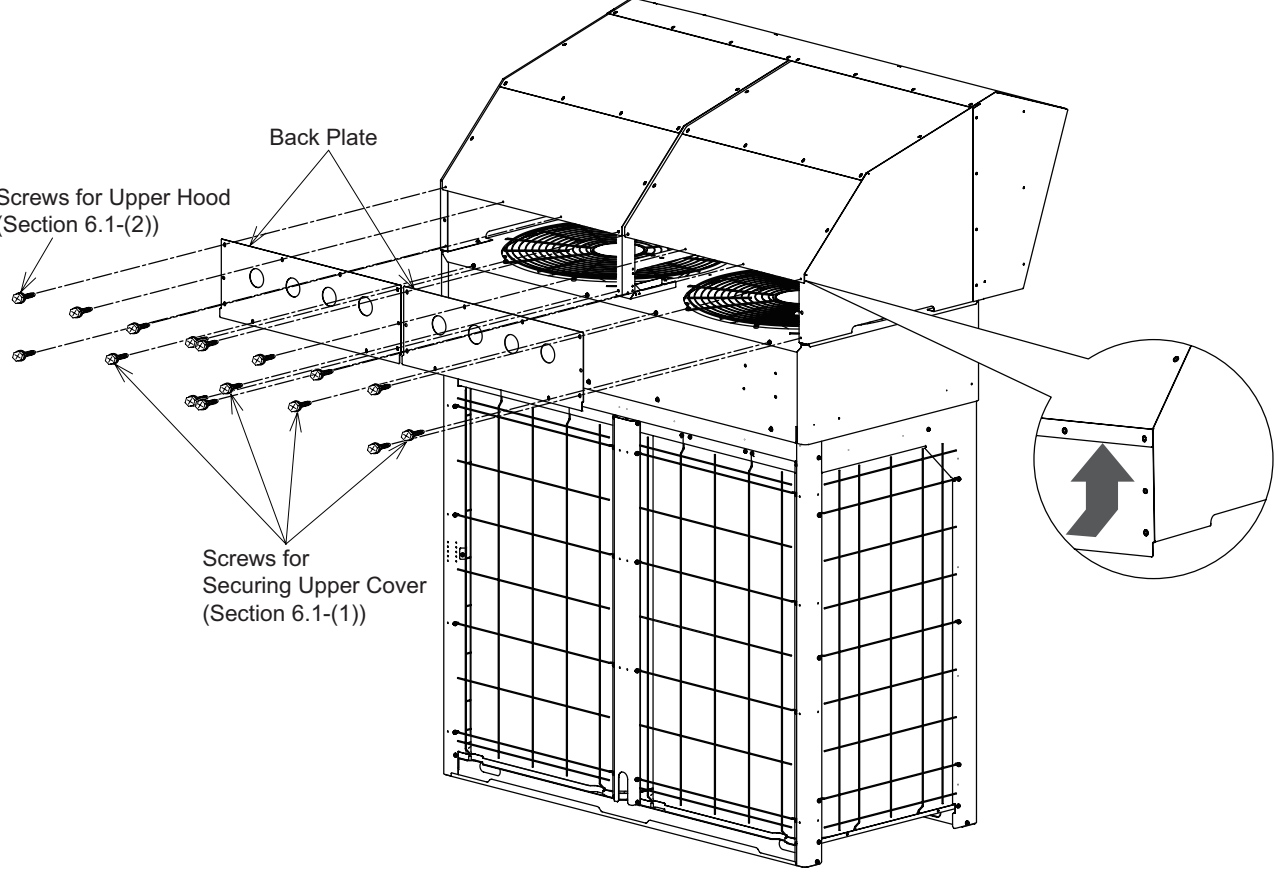
LAK-DAMPER-S-01



LAK-DAMPER-M-01

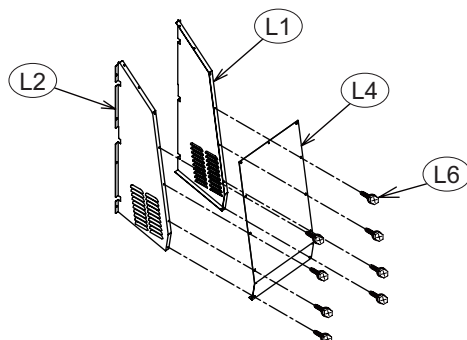


LAK-DAMPER-L-01

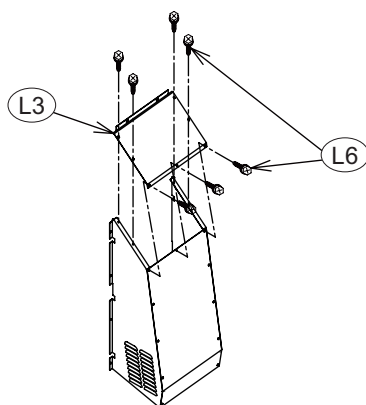


6.2 Left Hood

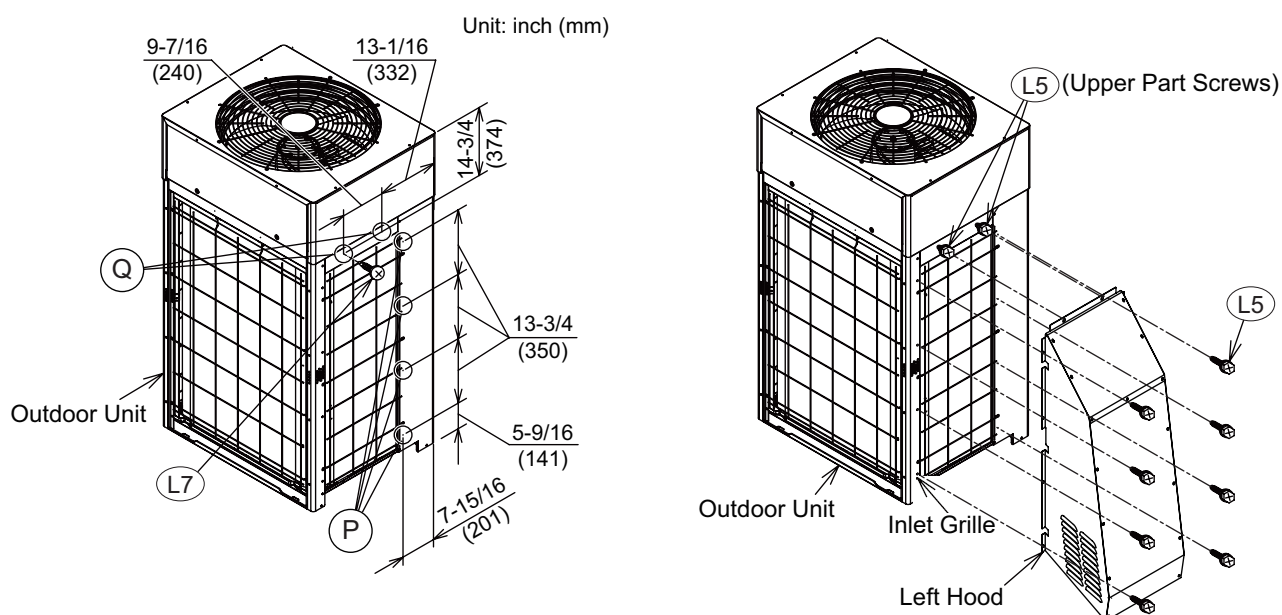
- (1) Tighten the faceplate (bottom side) ((L4)) with the right side plate ((L1)) and left side plate ((L2)) together (eight places) by using the assembly screws ((L6)).



- (2) Tighten the faceplate (top side) ((L3)) (seven places) by using the assembly screws ((L6)).



- (3) Prepare holes using self-drilling screw ((L7)) at the indentations (P) (four places) and part (Q) (two places) as shown in the bottom left figure.
- (4) Tighten two installation screws ((L5)) into the holes made at part (Q) but not all the way down. After hooking the left hood for low ambient kit, securely tighten the other eight installation screws ((L5)). Finally, tighten the upper two screws securely.

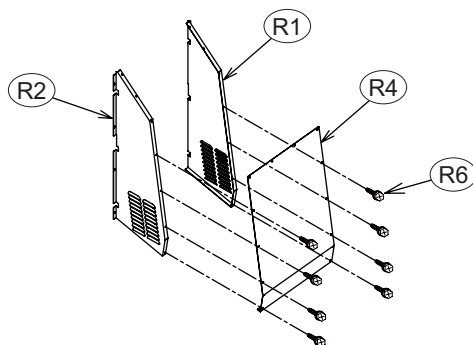


NOTE: Please don't remove the screws for the inlet grille.
The hood can be installed without removing the screws for the inlet grille.

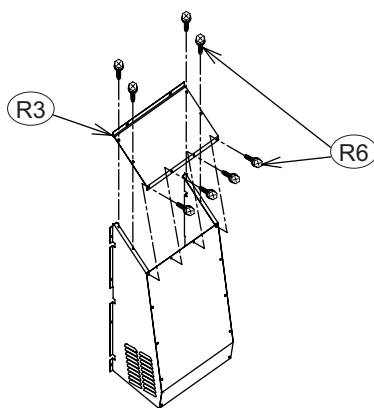
6.3 Right (or Left) Hood

The followings are procedures when the right (or left) hood for low ambient kit is used for right side installation.

- (1) Tighten the faceplate (bottom side) ((R4)) with the right side plate ((R1)) and left side plate ((R2)) together (eight places) by using the assembly screws ((R6)).



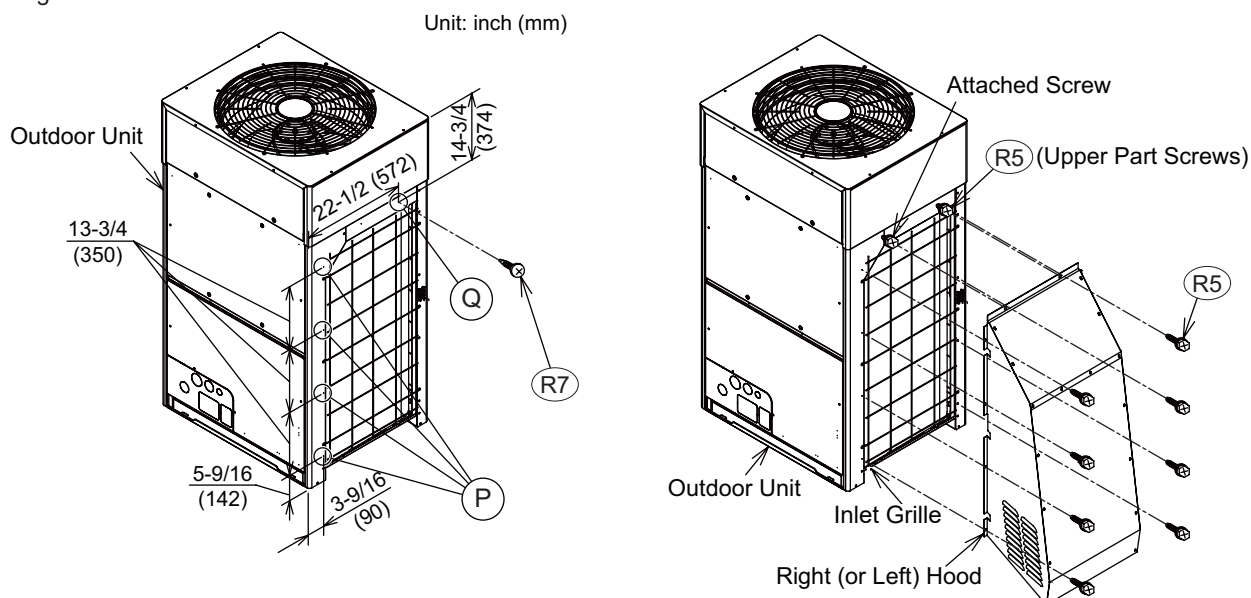
- (2) Tighten the faceplate (top side) ((R3)) (eight places) by using the assembly screws ((R6)).



- (3) Prepare holes using self-drilling screw ((R7)) at the indentations (P) (four places) and part (Q) (one place) as shown in the bottom left figure.
- (4) Tighten one installation screw ((R5)) into the hole made at part (Q) but not all the way down. Loosen the attached screw but not completely.
After hooking the right (or left) hood for low ambient kit, securely tighten the other eight installation screws ((R5)). Finally, tighten the upper two screws securely.

NOTES:

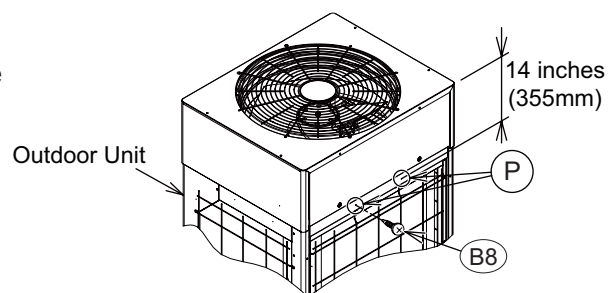
1. Same procedure is applied when the right (or left) hood for low ambient kit is used for left side installation.
(Applicable Model: (H,Y)VAH(P,R)096 - 192B(3,4,5)2S)
2. Please don't remove the screws for the inlet grille. The hood can be installed without removing the screws of the grille.



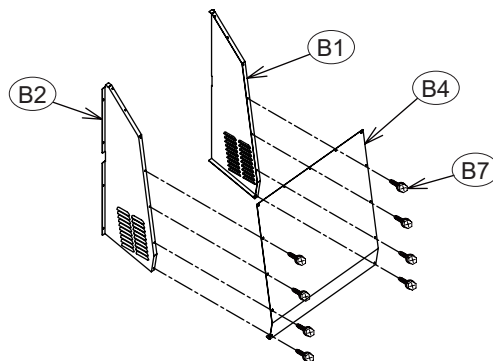
6.4 Back Hood

LAK-BACK-S-01, LAK-BACK-M-01

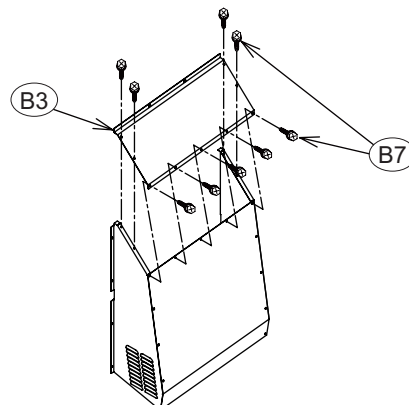
- (1) Prepare holes using self-drilling screw (B8) at the indentations P (two places) on the back upper side of the outdoor unit.



- (2) Assemble the faceplate for the bottom side (B4) with the right side plate (B1) and left side plate (B2), and tighten by using eight assembly screws (B7).

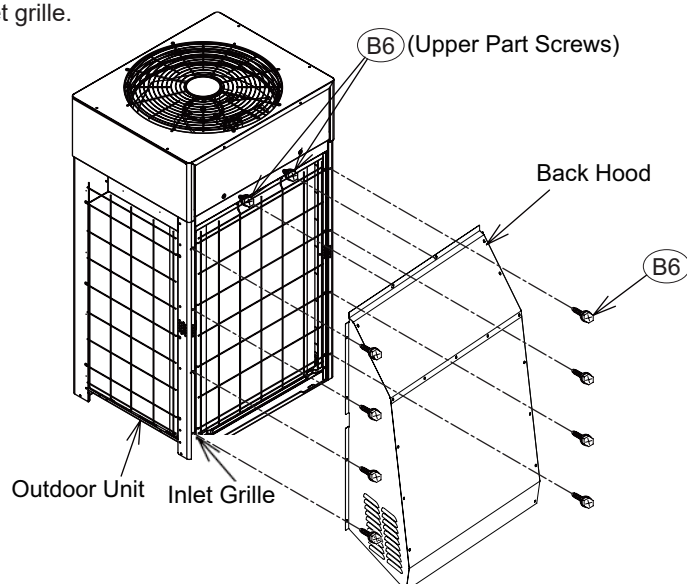


- (3) Secure the faceplate for the top side (B3) by tightening with nine assembly screws (B7).

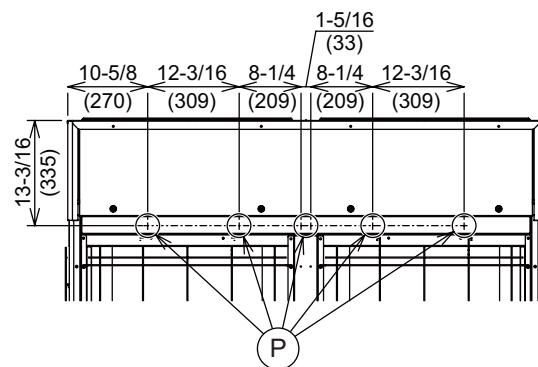


- (4) Tighten the installation screws (B6) into the hole made at part P (two places) in step (1) but not all the way down. After hooking the back hood of the low ambient kit, securely tighten the other eight installation screws (B6). Finally, tighten the upper two screws securely.

NOTE: Please don't remove the screws for the inlet grille. The hood can be installed without removing the screws for the inlet grille.

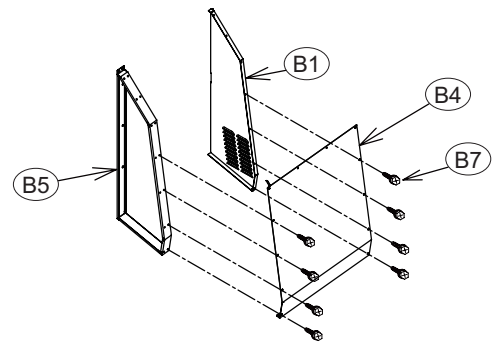


- (1) Prepare holes using the self-drilling screw ((B8)) at the indentations (P) (six places) on the back upper side of the outdoor unit.

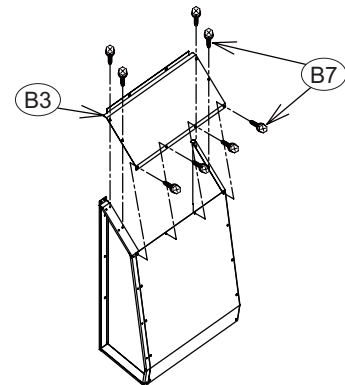


Unit: inch (mm)

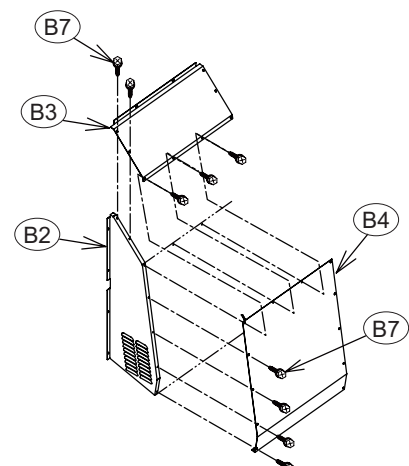
- (2) Assemble the faceplate for the bottom side ((B4)) with the right side plate ((B1)) and center support ((B5)), and tighten by using eight assembly screws ((B7)).



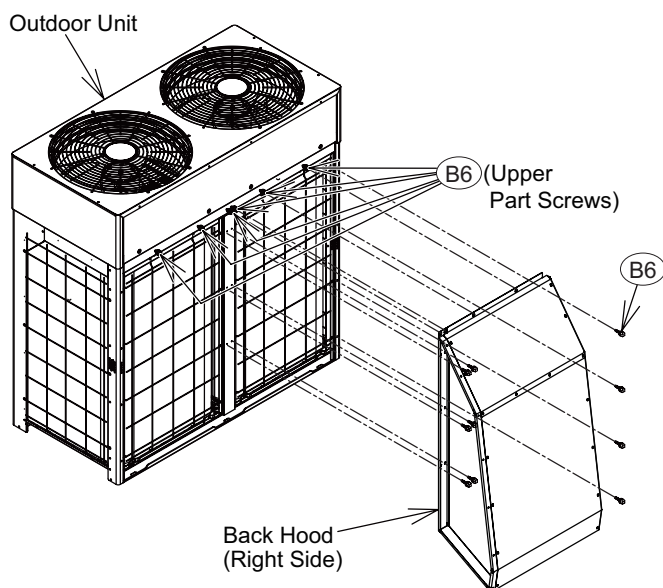
- (3) Secure the faceplate for the top side ((B3)) by tightening with eight assembly screws ((B7)).



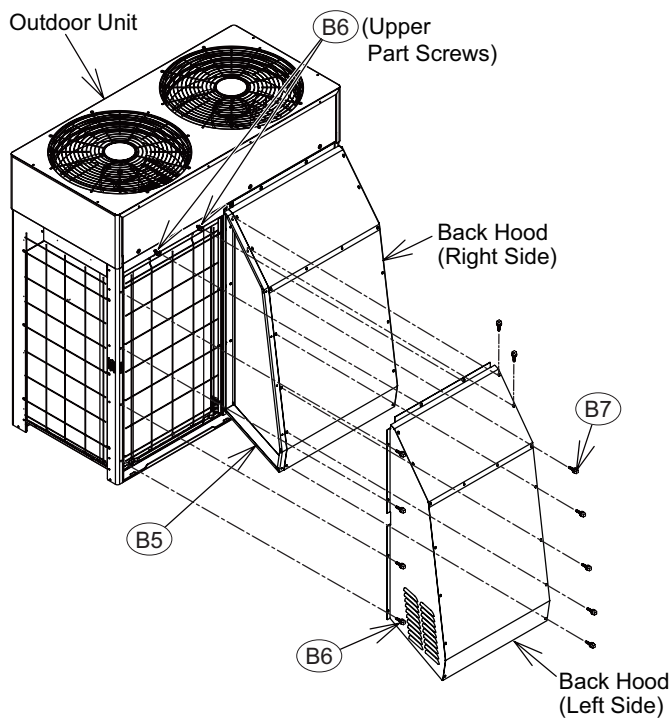
- (4) Secure the faceplate for the bottom side ((B4)) with the left side plate ((B2)) then the faceplate for the top side ((B3)), and tighten by using nine assembly screws ((B7)).



- (5) Tighten the installation screws (B6) into the holes made at part P (six places) in step (1) but not all the way down. After hooking the back hood (right side) for low ambient kit, securely tighten the other four installation screws (B6) and the other six places for center stay using installation screws (B6).



- (6) Hooking the back hood (left side) for low ambient kit to two installation screws (B6) in step (5). Securely tighten the other four installation screws (B6) and the other seven places for center support (B5) using assembly screws (B7). Finally, tighten the upper six screws securely.

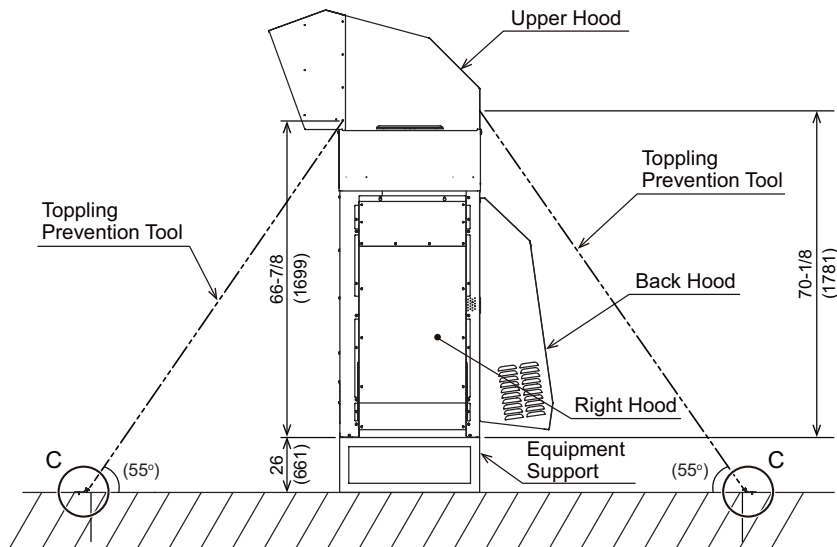


NOTE: Please don't remove the screws for the inlet grille.
The hood can be installed without removing the screws for the inlet grille.

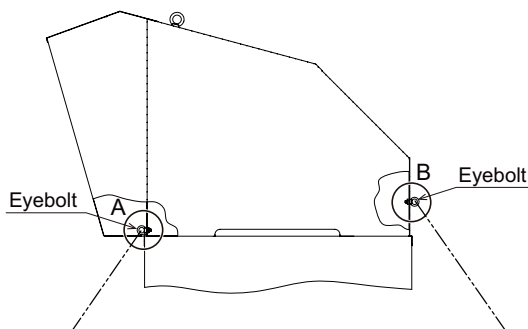
6.5 Toppling Prevention Tool (ASG-SW20A)

When attaching the toppling prevention tool (option) instead of the wire rope (field-supplied), attach the toppling prevention tool to the low ambient kit as shown below.
Refer to the installation manual for details of attaching the toppling prevention tool.

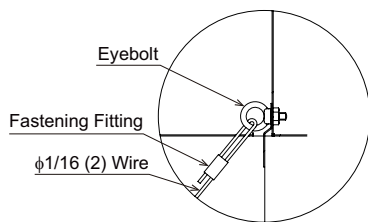
Unit: inch (mm)



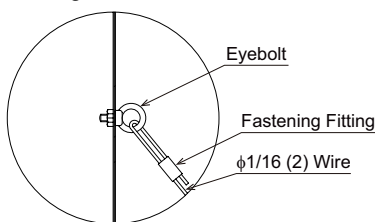
Position of Eyebolt (4 places)



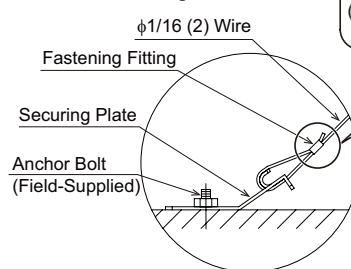
Enlarged View of A



Enlarged View of B



Enlarged View of C



The arrow indicates the insert direction of the wire.

Pull the lever to disengage locking mechanism to adjust wire tension.
Re-engage lever after proper tension.

Caution for Installation

- (1) To prevent split wire edge, wrap up the wire with plastic tape when cutting for length adjustment.
- (2) It may be difficult to unlock the fastening fitting while applying tension to the wire.
Pay attention for sudden change in wire tension when unlock the fastening fitting.
- (3) Wrap the fastening fitting with plastic tape to prevent unexpected unlocking after securing the wire position.

7. Electrical Wiring

WARNING

- LOCK ALL ELECTRICAL POWER SUPPLY SWITCHES IN THE OFF POSITION BEFORE INSTALLING THE UNIT.
FAILURE TO DISCONNECT POWER SUPPLY MAY RESULT IN ELECTRICAL SHOCK OR DEATH.
- Turn off the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.
- Insulate all wiring, condensate piping and electrical components from extreme temperatures and burring animals. Failure to do so can over time, deteriorate system performance.
- Power wiring to the equipment must conform to National Electrical Codes (NEC) state and local codes, and be installed by a professional electrician. Provide each unit with its own separate electrical circuit, means of circuit protection, and electrical disconnect switch. Follow current National Electrical Code ANSI/NFPA 70, CSA C22.1 C.E.C. Part 1, and state and local codes. Failure to provide these shut-off means could cause electrical shock or fire, resulting in damage, injury or death.
- Secure all wire connections, outside forces on the terminals may cause fire.

CAUTION

- Wrap the field-supplied insulation around the wires, and seal the wiring connection opening with sealing material to protect the product from any condensate water or insects.
- Do not connect the ground wiring to a gas pipe, condensate pipe or lightning conductor.
Gas Pipe: An explosion and ignition may occur when gas leaks.
Water Pipe: There is no ground when a hard vinyl pipe is used.
Lightning Conductor: The ground potential abnormally increases when a lightning conductor is used.

7.1 Method of Changing Voltage

CAUTION

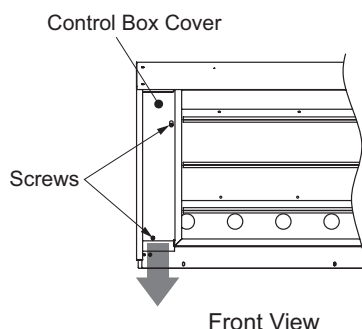
Check the item below before turning ON the main switch.

Power supply for the damper motor is provided by an internally wired low voltage transformer.

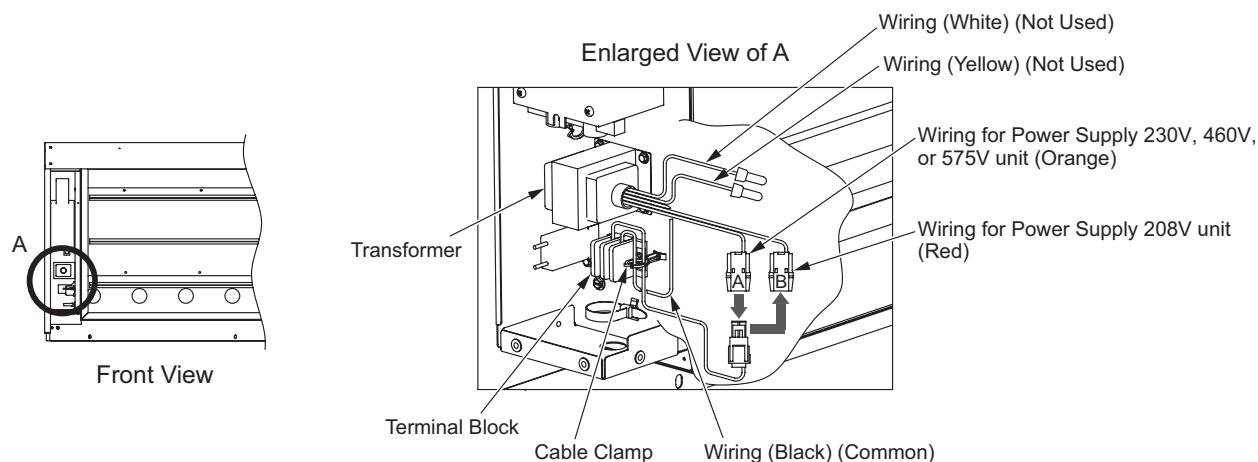
Damper motor is set to 230V before shipment.

If the outdoor unit is connected to a 208V power supply, the transformer must be rewired to the 208V in the control box.

- Remove the screws attached to the control box cover.
- Remove the control box cover by pulling in the downward direction.

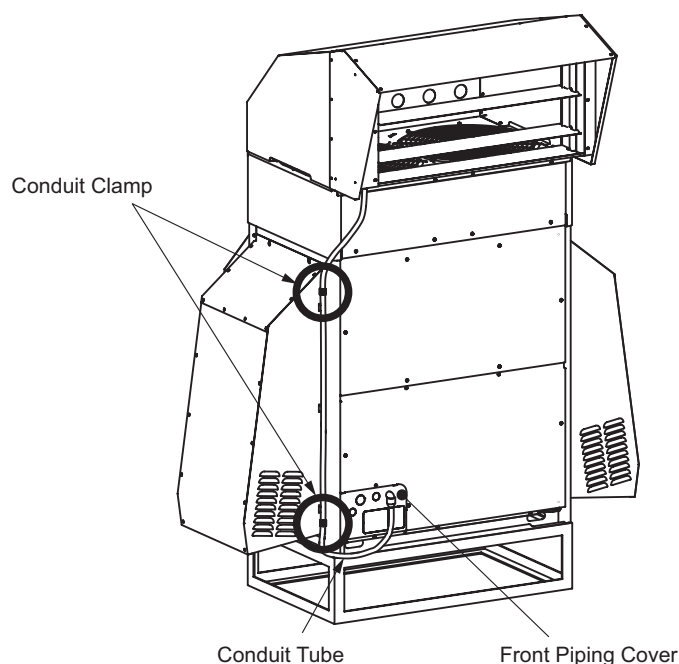


- Remove the connector between the transformer and terminal block and reconnect the transformer wiring from orange side to red side.
- After rewiring is complete, be sure to secure the wiring using the cable clamp and exercise caution when reinstalling the control box cover.



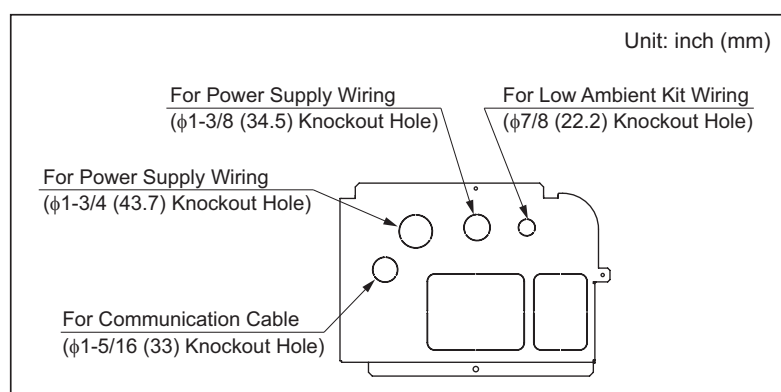
7.2 Wiring Connection between Low Ambient Kit and Outdoor Unit

- (1) Secure the conduit tube using the conduit clamp (accessory) and fastened together the left side hood with screws (2 places).
- (2) Open $\phi 7/8$ inch ($\phi 22.2\text{mm}$) knockout hole for the power supply wiring outlet on the front piping cover. Attach the conduit tube to the knockout hole and secure with nut.



NOTE:

Secure the conduit tube using the cable band (field-supplied) to inlet grille when the conduit clamp is not used (e.g., where there is no space to use tool).

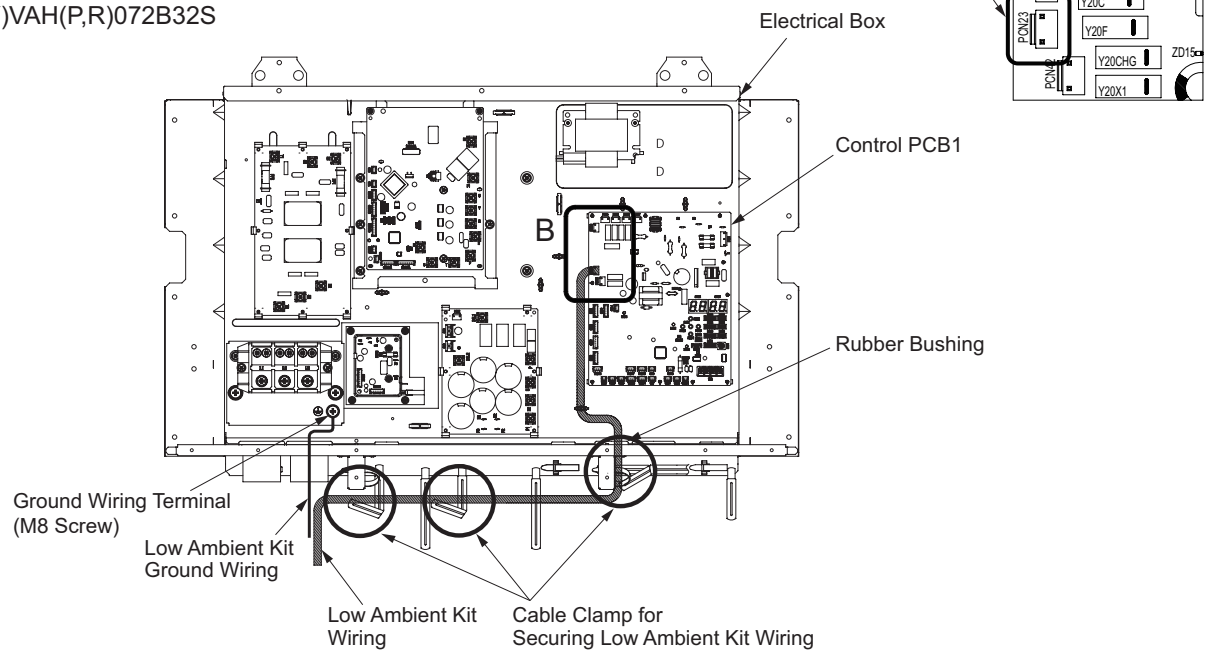


- (3) Run the cable with connector on the end through the rubber bushing on the bottom side of electrical box and attach to the PCN23 connector on the control PCB1.
Remove the PCN23 empty connector from the PCB1 beforehand.
Attach the ground wiring to ground wiring terminal of the outdoor unit electrical box.

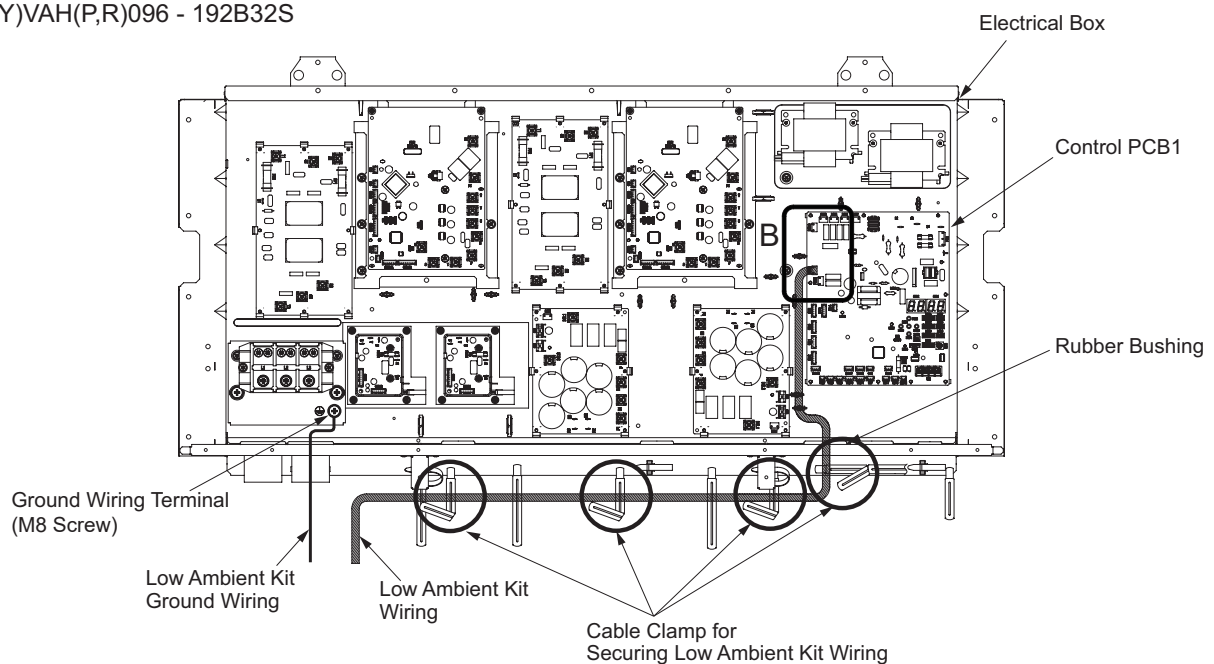
NOTES:

1. Secure wiring using the cable clamps as shown below.
Be sure that the wiring does not touch sharp edges and refrigerant piping.
Do not apply tension to the wires.
Properly gather any extra wiring together using the cable band (field-supplied).
2. Silk print for PCN23 connector on the control PCB1 of 575V unit shows BK (black), and the PCN23 connector color is white. There is a mismatch, but this is correct.

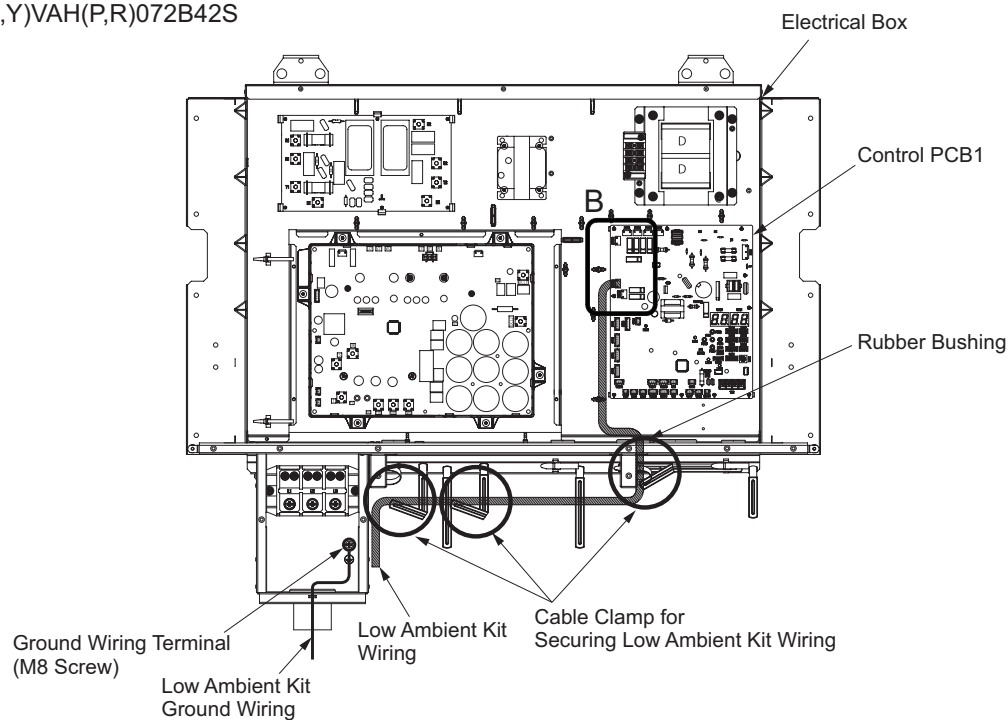
(H,Y)VAH(P,R)072B32S



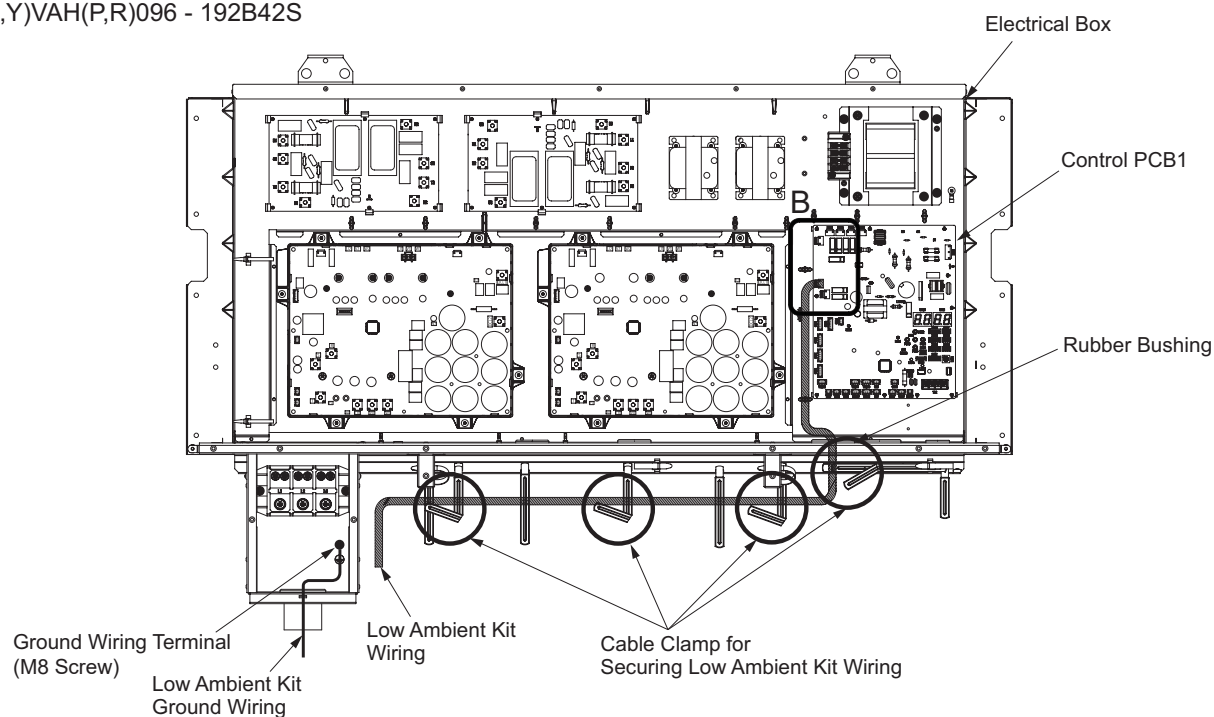
(H,Y)VAH(P,R)096 - 192B32S



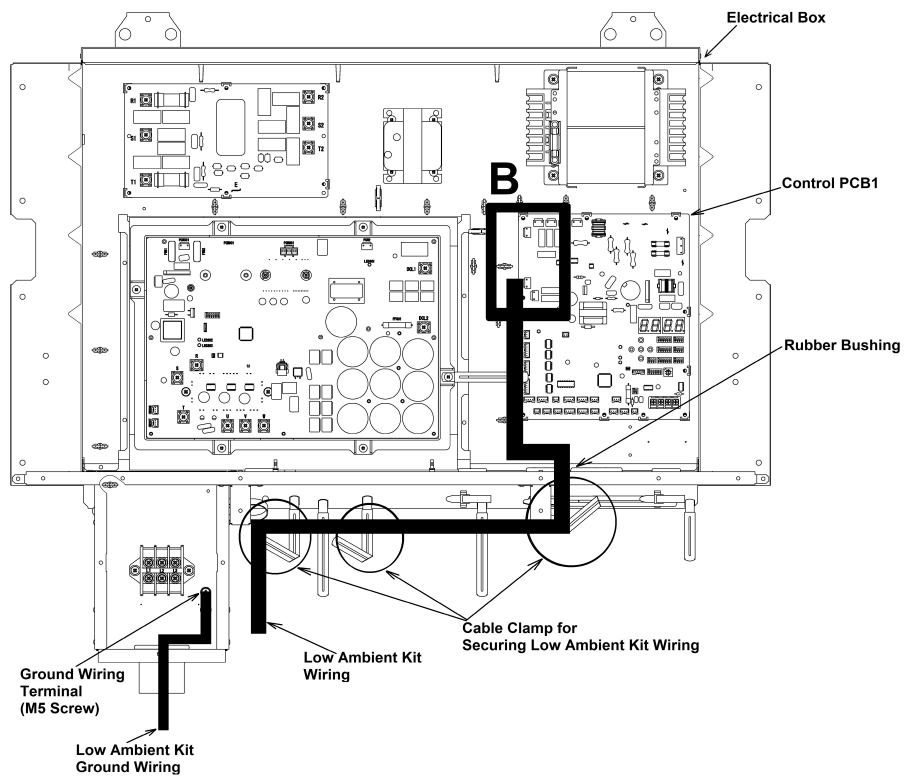
(H,Y)VAH(P,R)072B42S



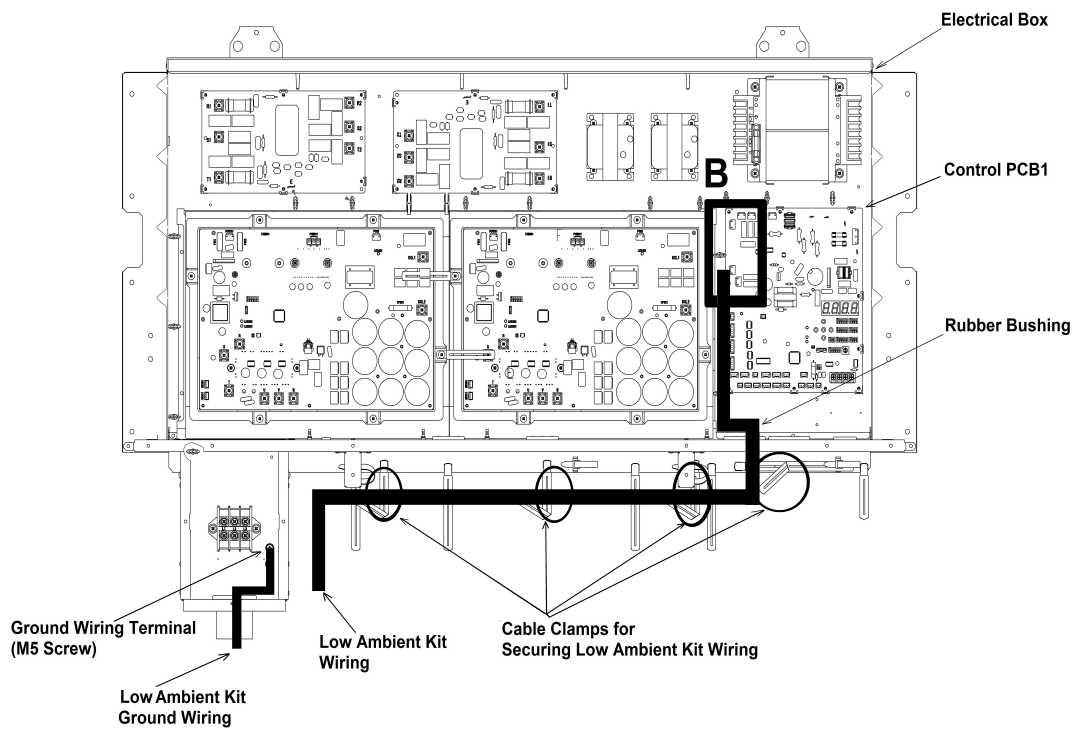
(H,Y)VAH(P,R)096 - 192B42S



(H,Y)VAH(P,R)072B52S



(H,Y)VAH(P,R)096 - 192B52S



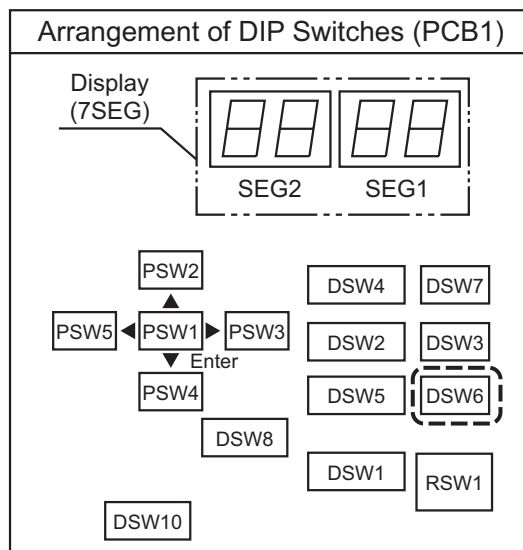
NOTE:

Size of ground wiring terminal (M5 screw) of 575V unit and crimp terminal (M8 screw) of Low Ambient Kit is mismatched. Field modification of crimp terminal from M8 to M5 is required before attaching the ground wiring to the ground wiring terminal of the 575V unit.

7.3 DIP Switch Setting of Outdoor Unit

Be sure to set DIP switch DSW6 on the control PCB1 of outdoor unit for using the low ambient kit.

- Turn OFF all power supplies before performing settings.
DIP switch settings cannot be set without first disconnecting the power supply.



- **DSW6 Setting**

Turn ON DSW6-No.4 pin on PCB1.

The darkened square “■” indicates the position of DIP switches.

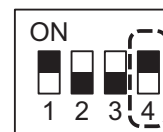
NOTE:

Refer to the “Installation and Maintenance Manual” for the outdoor unit for details on DSW6-No.1 to 3 setting.

Factory Setting



After Setting



8. Test Run

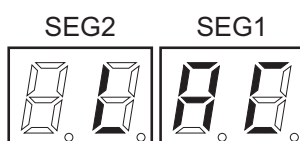
Perform the test run after all installation is complete.

Test run is performed while the outdoor unit electrical box cover open.

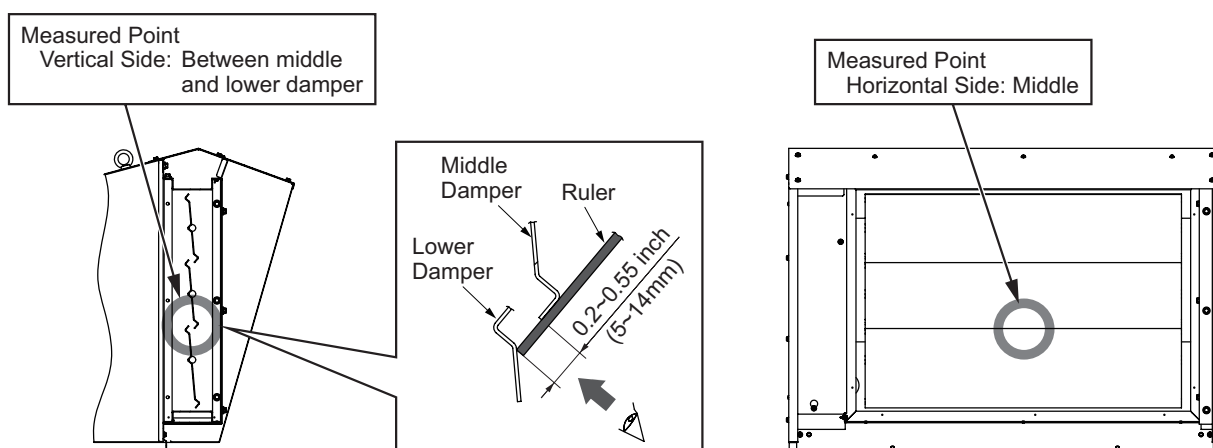
CAUTION

Before Test Run, check to ensure that there are no obstacles between the dampers and the installers are safeguarded against any danger.

- (1) Turn ON the power supply for the outdoor unit.
- (2) Perform the test run according to the following procedure.
 - (a) Press PSW3 on the control PCB1 of outdoor unit for at least 3 seconds.
 - (b) "LAC (Low Ambient Cooling)" is displayed on the 7-segment displays during the Test Run.



- (c) The damper begins to close. It will remain closed for approximately 60 seconds.
- (d) During this time, check to ensure that the damper closes to the position as shown in the figure below. In case the damper angle is not as shown in the figure below, damper angle adjustment is required. Refer to the "Service Manual" for the outdoor unit for details.



- (e) The damper opens approximately 35 seconds after the spring return function begins.
 - (f) The 7-segment displays turn off approximately 60 seconds after the damper opens.
- (3) Be sure to perform a test run on all outdoor units in multiple module installation.

NOTES:

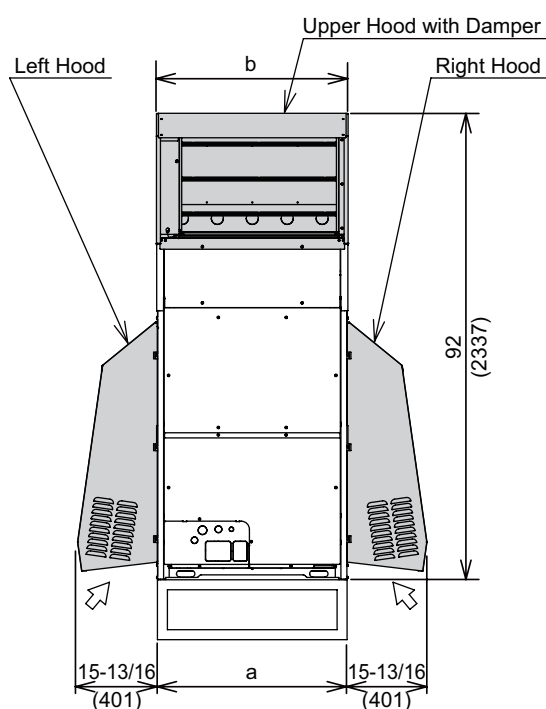
- Test Run of damper can not be performed during outdoor unit operation.
(The outdoor unit can be stopped forcibly by DSW4-No.4=ON of main outdoor unit.)
- In case the Test Run does not start even if during stoppage, the DSW setting may be incorrect.
Verify that all DIP switch settings are correct.

9. Installation Appearance

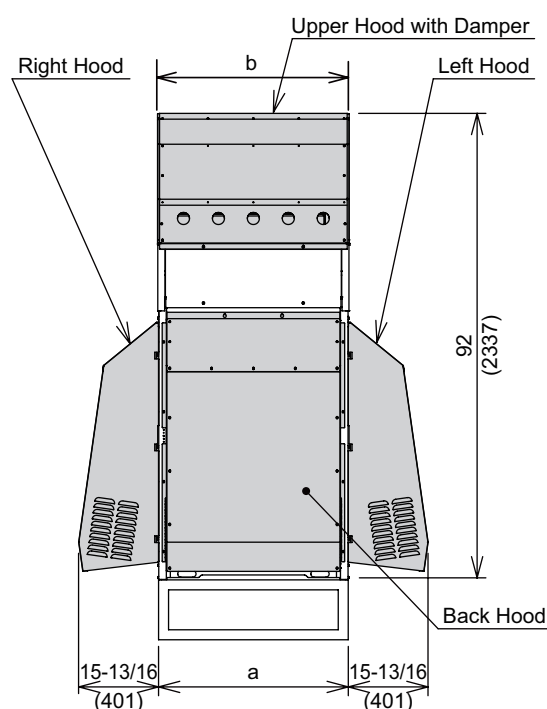
The following examples illustrate a small cabinet.

Applicable Outdoor Unit (Representative Model)	Dimension a	Dimension b
(H,Y)VAH(P,R)072B32S (H,Y)VAH(P,R)072B42S (H,Y)VAH(P,R)072B52S	37-3/8 (950)	37-13/16 (961)
(H,Y)VAH(P,R)096 - 144B32S (H,Y)VAH(P,R)096 - 144B42S (H,Y)VAH(P,R)096 - 144B52S	47-5/8 (1210)	48-1/16 (1221)
(H,Y)VAH(P,R)168, 192B32S (H,Y)VAH(P,R)168, 192B42S (H,Y)VAH(P,R)168, 192B52S	62-15/16 (1598)	63-1/2 (1613)

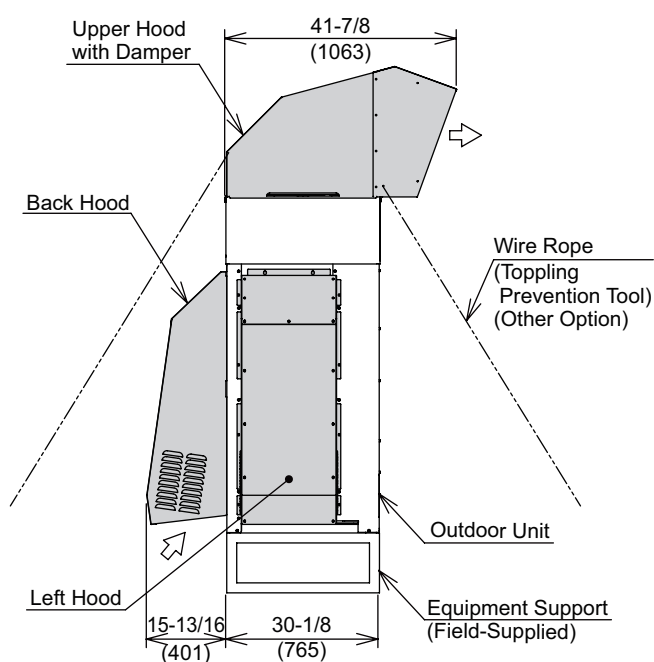
Unit: inch (mm)



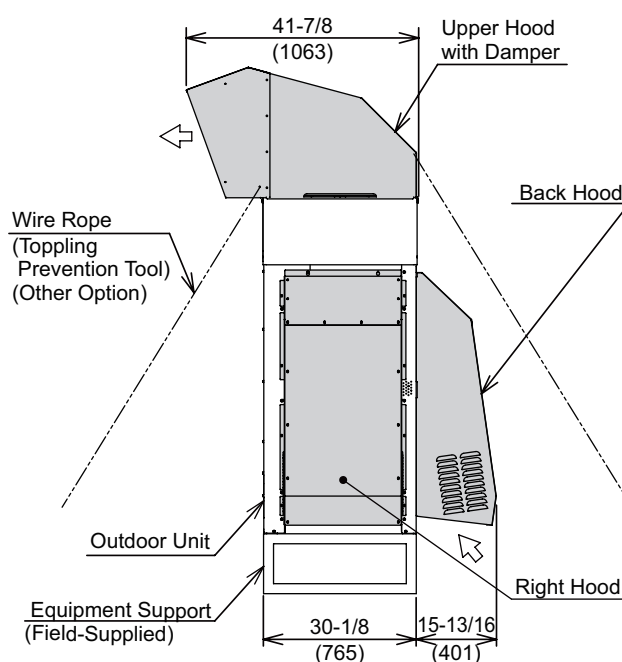
Front View



Back View



Left View



Right View

Available Combinations

Applicable Outdoor Unit (Representative Model)	Model		
	(H,Y)VAH(P,R)072B32S	(H,Y)VAH(P,R)096 - 144B32S	(H,Y)VAH(P,R)168, 192B32S
	(H,Y)VAH(P,R)072B42S	(H,Y)VAH(P,R)096 - 144B42S	(H,Y)VAH(P,R)168, 192B42S
	(H,Y)VAH(P,R)072B52S	(H,Y)VAH(P,R)096 - 144B52S	(H,Y)VAH(P,R)168, 192B52S
Upper Hood with Damper	LAK-DAMPER-S-01	LAK-DAMPER-M-01	LAK-DAMPER-L-01
Left Hood	LAK-6T-LEFT-01	LAK-SIDE-01	
Right Hood	LAK-SIDE-01		
Back Hood	LAK-BACK-S-01	LAK-BACK-M-01	LAK-BACK-L-01
Wire Rope (Toppling Prevention Tool)	ASG-SW20A		

10. Maintenance and Servicing

Refer to the “Service Manual” for outdoor unit for maintenance and servicing of low ambient kit.

