Universal® Series DC Inverter Package Unit

Installation & Owner's Manual

MODELS:

MDPH180244
MDPH180364
MDPH180484
MDPH180604

Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: 08/27/2024
Please visit www.mrcool.com/documentation
to ensure you have the latest version of this manual.

MRCOOL®
COMFORT MADE SIMPLE

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This marking indicates that this product should not be disposed with other household wastes throughout the North America. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

Safety Precautions

Read Before Using

Incorrect usage may cause serious damage or injury.

The symbols below are used throughout this manual to indicate instructions that should be followed closely or actions that should be avoided to prevent death, injury, and/or property damage.

WARNING	Indicates that ignoring instructions may cause death or serious injury.
CAUTION	Indicates that ignoring instructions may cause bodily injury, damage to the unit, or other surrounding property.
	Indicates that you should NEVER perform the indicated action.

PROHIBITED

1. **The air conditioner should be grounded to avoid electric shock. Do not connect the ground wire to gas pipe, water pipe, lightning arrester or telephone wire.**
2. **The unit should be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.**
3. **The unit should be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).**
4. **According to federal/state/local laws and regulations, all packages and transportation materials, including nails, metal or wooden parts, and plastic packing material must be treated in a safe way.**
5. **The unit should be at least 5ft (1.5m) away from any inflammable surface.**
6. **The range of external static pressures at which the unit was tested measures 0-0.8 inches W.C. (those with add-on heat pumps and ducted units with supplementary heaters only).**

WARNING

1. **Please install according to this instruction manual. Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.**
2. **Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.**
3. **Servicing shall only be performed as recommended by the equipment manufacturer.**
4. **The appliance shall be installed in accordance with national wiring regulations.**
5. **The fixed wires connecting to the appliance must be configured with all-pole disconnection device under voltage grade III according to wiring rules.**
6. **Air conditioner should be stored with protective measures against mechanical damage caused by accident.**
7. **During installation, use the specialized accessories and components, otherwise water leakage, electric shock or fire hazard may occur.**
8. **Please install the air conditioner in a secure place that can withstand the weight of the air conditioner. Insecure installation may cause the air conditioner to fall down, leading to injury.**
9. **An independent power circuit must be utilized. If the power cord is damaged, it must be repaired by the manufacturer, service agent or other professional agents.**
10. **The unit can be cleaned only when turned off and power-disconnected, otherwise electric shock may occur.**
11. **The air conditioner is not intended to be cleaned or maintained by children without supervision.**
12. **Do not alter the setting of the pressure sensor or other protective devices. If the protective devices are short-circuited or changed against rules, fire hazard or even explosion may occur.**
13. **Do not operate the air conditioner with wet hands. Do not wash or sprinkle water on the air conditioner, otherwise malfunction or electric shock will occur.**
14. **Do not dry the filter with naked flame or an air blower; otherwise the filter will be out of shape.**
15. **If the unit is to be installed in a small space, adopt protective measures to prevent the concentration of refrigerant from exceeding the allowable safety limit; excessive refrigerant leakage may lead to explosion.**
16. **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.**

1 SAFETY

! CAUTION

1. Do not put a finger or other objects into the air inlet or return air grill.
2. Adopt safety protection measures before touching the refrigerant pipe; otherwise injury may occur.
3. Please arrange the drain pipe according to the instruction manual.
4. Never stop the air conditioner by directly cutting off the power.
5. Never install the air conditioner in the following places:
   A. Places with oil, smoke or volatile liquid: plastic parts may deteriorate & fall off or cause water leakage.
   B. Places with corrosive gas: copper pipe or welding parts may be corroded & cause refrigerant leakage.
6. Use measures to protect the unit from small animals as they may damage electrical components and cause malfunction of the air conditioner.
7. This product can't be installed in corrosive, flammable or explosive environments to prevent fire or injury.
8. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor for information or assistance.
9. The qualified installer or agency must use factory--authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.
10. Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available.

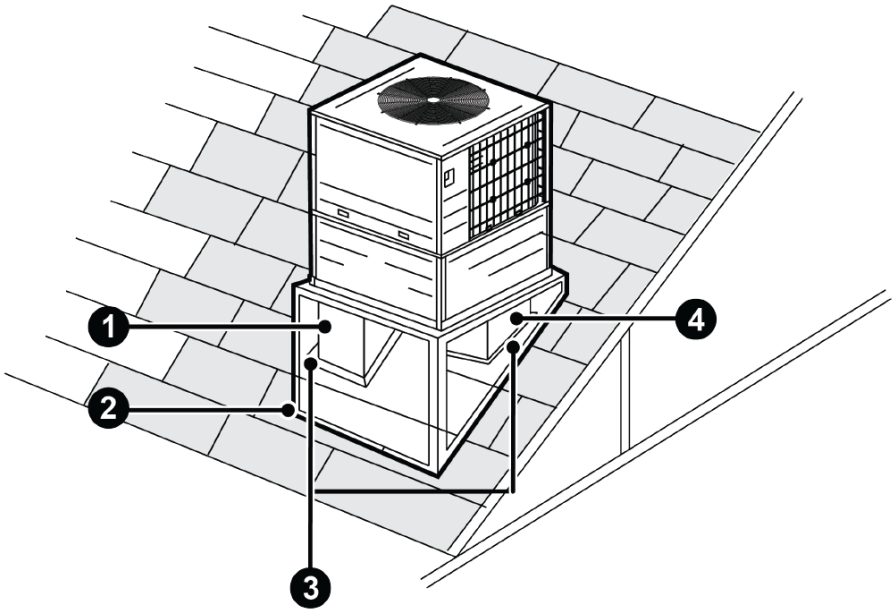
NOTE

1. If a thermostat is to be used, it should be connected first before powering up the unit, otherwise the thermostat may not work properly.
2. Only use a soft, dry cloth or slightly wet cloth with neutral detergent to clean the casing of the unit.
3. Before operating the unit under low temperature, connect it to power for 8 hours. If it is stopped for a short time, for example, one night, do not cut off the power (This is to protect the compressor).
4. In order to ensure the reliablility of the compressor, the unit forces the compressor to run for at least 6 minutes every time the compressor turns on, regardless of room temperature. Therefore, it is necessary to select a thermostat having the minimum run time for the compressor or delaying a few minutes to turn the indoor unit off after the outdoor unit shuts down or stops at the temperature point. This is to avoid the indoor unit being turned off by the thermostat while the outdoor unit is still running, which can result in equipment malfunction.
5. In order to ensure reliability of product, the product may consume some power under stand-by status for maintaining normal communication of the system and preheating refrigerant and lubricant. If the product is not to be used for long, cut off the power supply; please energize and preheat the unit in advance before reusing it.
6. Properly select the model according to the environment to be used, otherwise the performance may be affected.
7. If the product needs to be installed, moved, or maintained, please contact your designated dealer or local service center for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.
8. All the illustrations and information in the instruction manual are for reference only. In order to make the product better, we will continuously conduct improvements and innovations. If there are modifications to the product, refer to our online documentation for the most recent version of this manual.
9. Consult local building codes and National Electrical Code (NEC) for special requirements.
10. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit.

2.1 Unit Information & Features

The unit is completely assembled, piped and wired at the factory to provide one-piece shipment and rigging. Each unit is pressurized with a holding charge of R410A for storage and shipping.

The compact design, attractive appearance, outstanding anti-rust cabinet and quiet operation make these units suitable for homes, offices, restaurants, residences or similar places.



1. Return air
2. Angle iron frame
3. Roof flashing
4. Supply air

Fig. 2.1

2.2 Operating Range

Outdoor Ambient Temperature	Outdoor Temperatures
Cooling	23°F~125.6°F (-5°C~52°C)
Heating	-22°F~75.2°F (-30°C~24°C)

2.3 Codes & Regulations

This product is designed and manufactured to comply with national codes. It is the installer's responsibility to install the product in accordance with such codes and/or any prevailing local codes/regulations. The manufacturer assumes no responsibilities for equipment installed in violation of any codes or regulations.

2.4 Included Accessories

Name	Appearance	Qty.	Usage
Wired Controller		1	Temperature Control of the Unit

2.5 Physical Dimensions

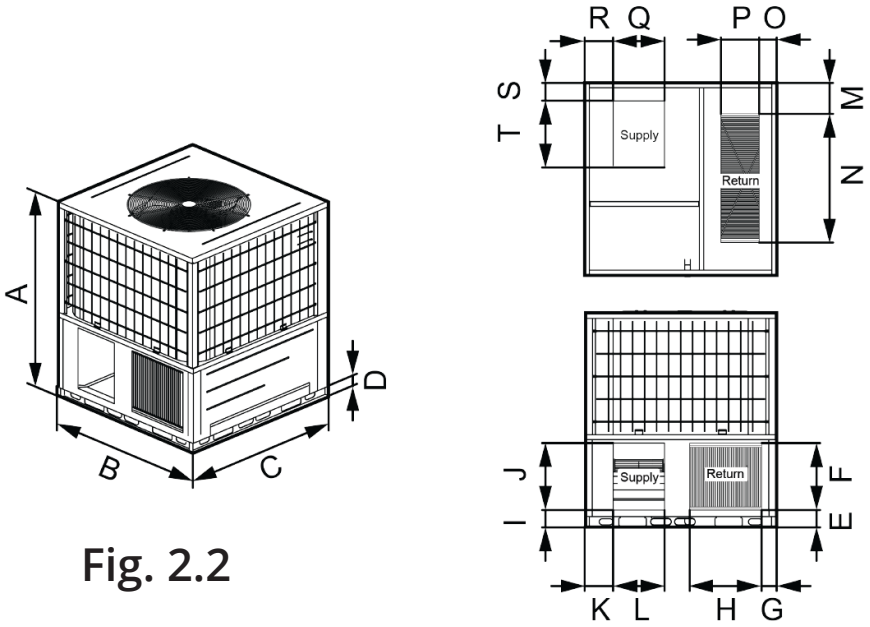


Fig. 2.2

	A	B	C	D
MDPH180484 MDPH180604	49-1/4 in. 1250 mm.	44 in. 1120 mm.	44 in. 1120 mm.	2-1/2 in. 65 mm.

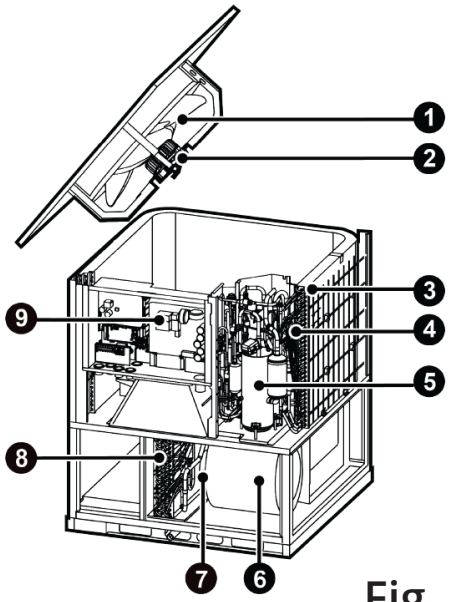
Models	Side Air Vents							
	E	Size of Air Return		G	I	Size of Air Supply		K
		F	H			J	L	
MDPH180484 MDPH180604	4 in. 101 mm.	15-3/8 in. 390 mm.	16-1/2 in. 420 mm.	3-3/8 in. 87 mm.	4 in. 101 mm.	15-3/8 in. 390 mm.	11-3/4 in. 300 mm.	6-1/2 in. 166 mm.
	Bottom Air Vents							
	M	Side of Air Return		O	R	Size of Air Supply		S
		N	P			Q	T	
	7-7/8 in. 199 mm.	28 in. 711 mm.	9 in. 228 mm.	3-3/4 in. 96 mm.	6-1/2 in. 166 mm.	11-3/4 in. 300 mm.	15-3/8 in. 390 mm.	4 in. 103 mm.

	A	B	C	D
MDPH180244 MDPH180364	49-1/4 in. 1250 mm.	44 in. 1120 mm.	35-7/16 in. 900 mm.	2-1/2 in. 65 mm.

Models	Side Air Vents							
	E	Size of Air Return		G	I	Size of Air Supply		K
		F	H			J	L	
MDPH180244 MDPH180364	4-7/16 in. 113 mm.	17-8/16 in. 445 mm.	16-9/16 in. 420 mm.	3-7/16 in. 87 mm.	3-15/16 in. 87 mm.	15-6/16 in. 390 mm.	11-13/16 in. 300 mm.	6-3/16 in. 157 mm.
	Bottom Air Vents							
	M	Side of Air Return		O	R	Size of Air Supply		S
		N	P			Q	T	
	5-14/16 in. 149 mm.	23-1/16 in. 586 mm.	8-10/16 in. 219 mm.	3-11/16 in. 93 mm.	6-3/16 in. 156 mm.	11-14/16 in. 302 mm.	13-12/16 in. 350 mm.	3-10/16 in. 92 mm.

Note: Above diagrams may be different from the actual model.

2.6 Main Parts



1. Condensate fan
2. Condensate motor
3. Condenser assy
4. Service valves
5. Compressor
6. Evaporation fan
7. Evaporation motor
8. Evaporator assy
9. Electric box assy

Fig. 2.3

3.1 Product Verification & Replacement Parts

Product Verification:

Upon receiving the product, check for any damage from transportation. Shipping damage is the responsibility of the carrier. Verify the model number, specifications and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

Replacement Parts:

When reporting shortages or damages, or ordering repair parts, give the complete product model and serial numbers as stamped on the product. Replacement parts for this product are available through your contractor or local distributor.

3.2 Location Selection Requirements

WARNING

1. **The unit must be installed where strong enough to withstand the weight of the unit and fixed securely, otherwise the unit may fall over.**
2. **Do not install where there is danger of combustible gas leakage.**
3. **Do not install the unit at a place with leakage of flammable gas.**

Select an installation location according to the following conditions:

1. Where noise and air flow produced by the air conditioner will not disturb the neighbors.
2. Select a location that is safe and away from animals and plants. If not, add safety fences to protect the unit.
3. Install in a place with good ventilation. Make sure the air conditioner stays in a well-ventilated place with no obstacles nearby that may obstruct the air inlet and outlet.
4. The installation location should be able to withstand the weight and vibration of the air conditioner and allow the installation to be carried out safely.
5. Avoid installing at a place with leakage of flammable gas, oil smoke or corrosive gas.

6. Keep it away from strong wind because strong wind may affect the condenser fan and lead to insufficient air flow volume and thus affect the unit's performance.
7. Away from any object that may cause the air conditioner to generate noise.
8. Install the air conditioner at a place where condensate can be easily drained.
9. Do not install the air conditioner near the bedroom, otherwise the noise of the unit may be disturbing to building occupants.
10. Do not install the unit where water, ice or snow from overhang or roof may damage or flood the unit.

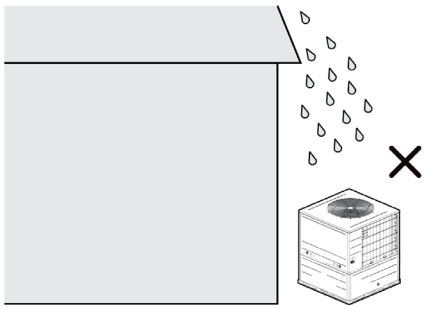
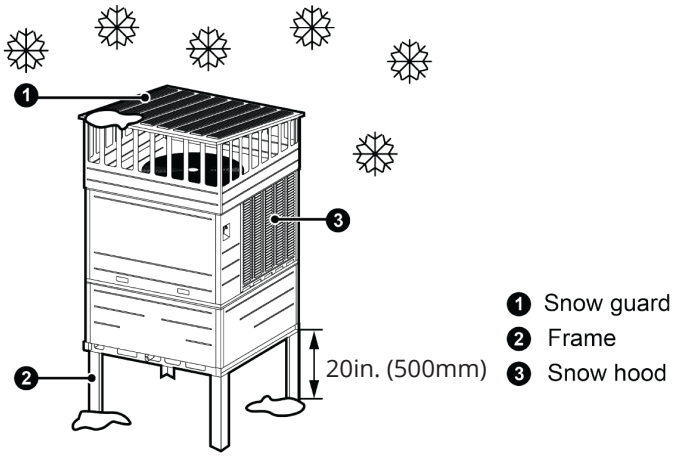


Fig.2

11. Do not install the unit in a corrosive environment, otherwise it may negatively affect its lifespan & performance.
12. Installation requirements in snowy areas:
    a. Install the air conditioner on a stand a minimum of 20 in. (500mm higher than the expected snow fall to prevent it from being covered by snow.
    b. Attach snow hood and snow guard.
    c. Do not install the air conditioner at a place where a snowdrift is likely.
    d. Remove the air inlet grille to prevent snow from accumulating on it.

Fig. 3.1



3.3 Installation Location Dimensions & Clearances

For best performance of the unit, ensure its installation space meets the following installation dimensions.

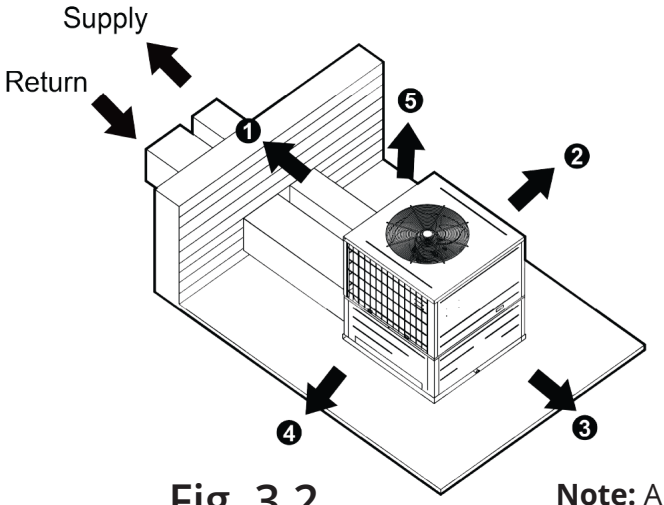


Fig. 3.2

Installation Clearances		
Dimensions (Minimum)	**inch**	**mm**
1	24	610
2	8	203
3	20	508
4	24	610
5	60	1524

Note: Refer to local code requirements for additional clearance requirements.

Note: Above diagram may be different from actual model.

4.1 Curb-Mounted Installation

1. Install curb. (Note: MRCOOL does not supply roof curb. Refer to the following figure for roof curb reference dimensions.) Prior to fabrication, confirm the reference dimensions meet the needs of the application.

Unit: in (mm)

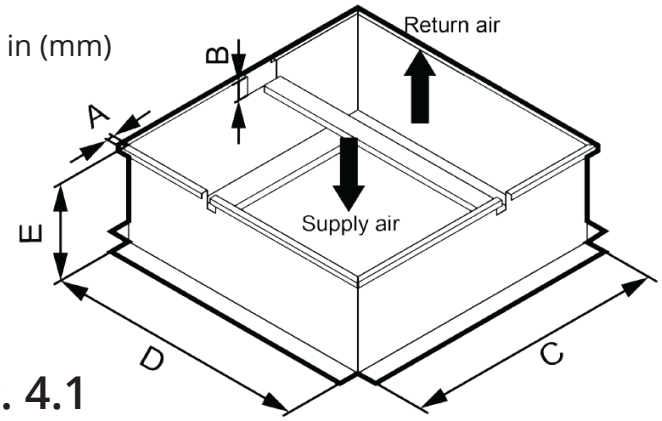


Fig. 4.1

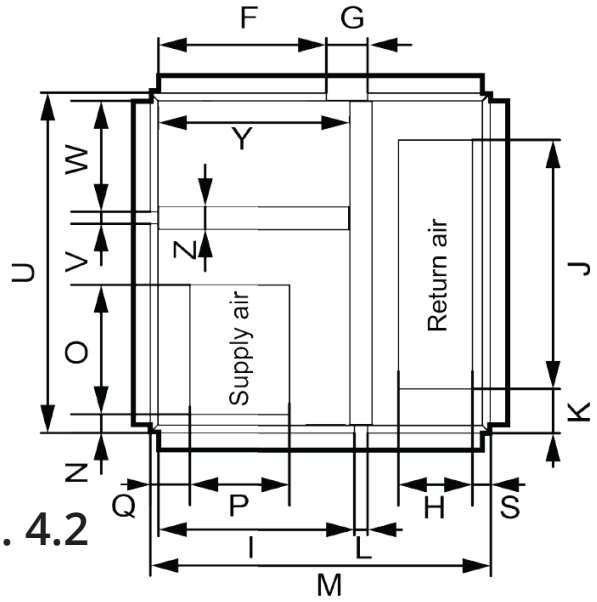


Fig. 4.2

in(mm)

Models	A	B	C	D	E	F
MDPH180484 MDPH180604	1 (25)	2-11/16 (68)	38-7/16 (976)	38-7/16 (976)	14 (356)	20 (506)
MDPH180244 MDPH180364	1 (25)	2-11/16 (68)	38-7/16 (976)	29-3/4 (756)	14 (356)	20 (506)
	G	H	I	J	K	L
MDPH180484 MDPH180604	5 (125)	8-3/4 (223)	23-1/4 (590)	29-1/2 (750)	5-1/4 (133)	1-9/16 (40)
MDPH180244 MDPH180364	5 (125)	8-5/8 (219)	23-1/4 (590)	23 (586)	4 (102)	1-9/16 (40)
	M	N	O	P	Q	S
MDPH180484 MDPH180604	40-3/8 (1026)	2-3/16 (56)	15-3/8 (390)	11-3/16 (300)	4-11/16 (119.5)	2-3/16 (55)
MDPH180244 MDPH180364	40-3/8 (1026)	1-3/4 (45)	13-3/4 (350)	11-7/8 (302)	4-1/4 (109)	1-3/4 (46)
	U	V	W	Z	Y	
MDPH180484 MDPH180604	40-3/8 (1026)	1-7/16 (36)	13-3/16 (335)	2-3/4 (70)	22-5/8 (575)	
MDPH180244 MDPH180364	31-1/4 (806)	1-7/16 (36)	11-1/4 (285)	2-3/4 (70)	22-5/8 (575)	

2. Field fabricate ductwork inside curb and secure supply and return ducts to roof curb and building structure.
3. Rig and place unit. (See 4.3 Rigging & Lifting)
4. Convert unit to vertical duct connection.
5. Install condensate drain piping.
6. Make electrical connections.

4.2 Pad-Mounted Installation

1. Prepare pad and unit supports.
2. Rig and place unit. (See section 4.3 Rigging & Lifting)
3. Convert unit to horizontal duct connection.
4. Field fabricate ductwork at unit duct openings.
5. Install condensate drain piping.
6. Make electrical connections.

4.3 Rigging & Lifting

Do not remove the unit's package materials before installation. Keep unit upright and do not drop. Rig the unit by attaching chain or cable slings to the lifting holes in base rails.

Place the unit on roof curb and maintain the clearance between the roof curb and the base rail inside at 1/4 inch. (6.4mm)

After unit is in position, remove rigging skids and package materials.

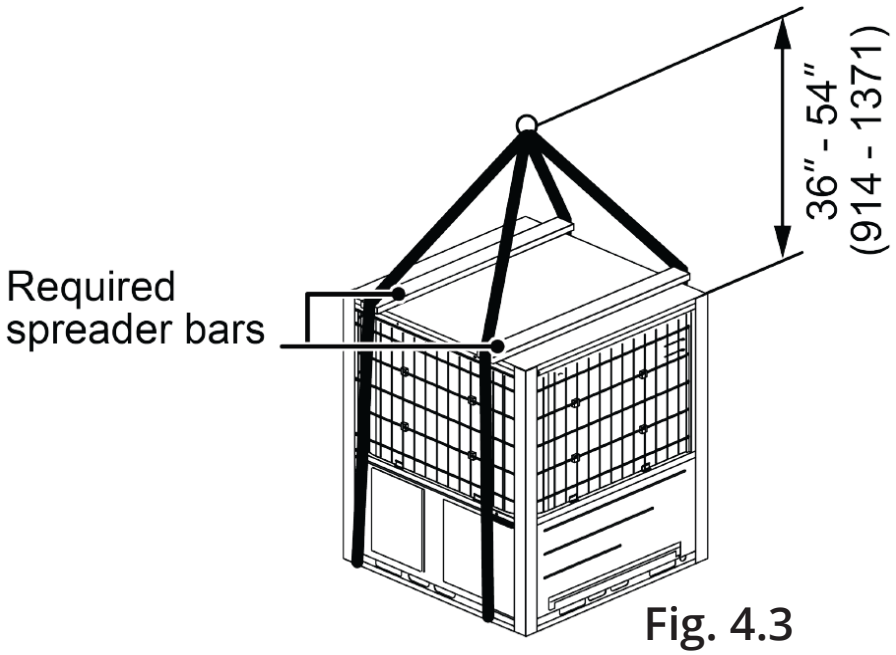


Fig. 4.3

NOTICE

1. **Spreader bars are required in order to prevent rigging straps from damaging the unit.**
2. **All panels must be in place when rigging.**
3. **The height between the top of the unit and the rigging cables' connection point should be 36-54 inches (914-1371mm)**

4.4 Horizontal Duct and Vertical Duct Conversion

- To convert to a horizontal duct configuration, remove the screws from the side duct opening covers (see Figure 4.4) and remove the covers.
- To convert to a vertical duct configuration, remove the screws from the basepan duct opening covers (see Figure 4.5) and remove the covers.

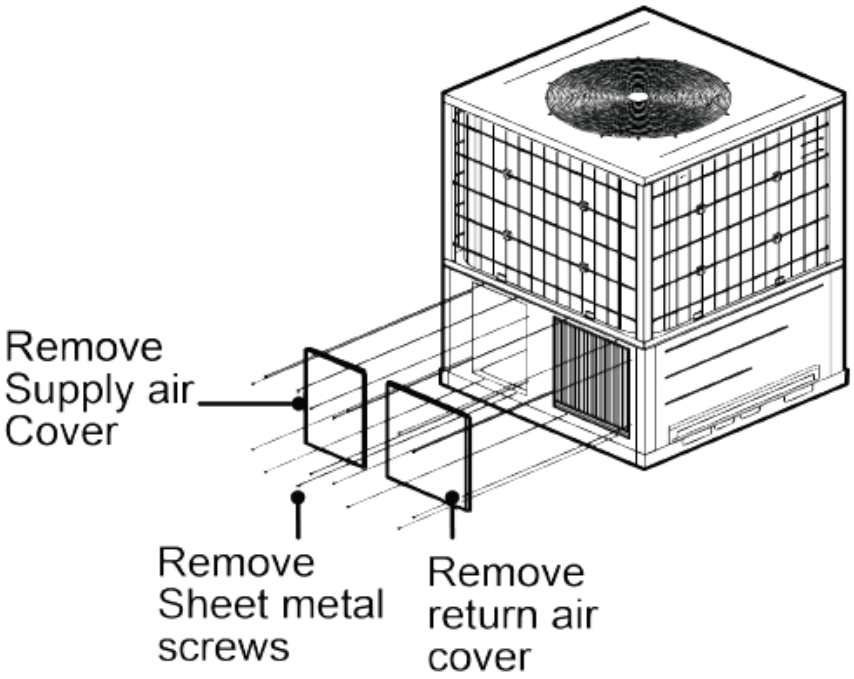


Fig. 4.4

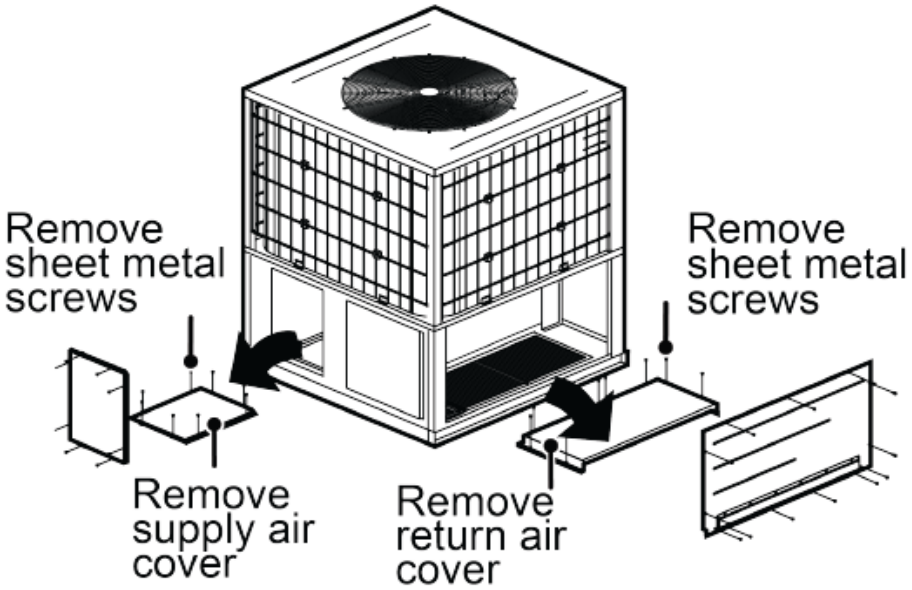


Fig. 4.5

4.5 Installation of Condensate Pipe

1. The condensate drain side is pitched lower than the opposite side. See figure below.
2. When shipped out from the factory, both the condensate outlets are blocked by a rubber plug. Remove the plug before installation.
3. Condensate removal is performed by attaching a PVC pipe to the drain pan and terminated in accordance with local or state Plumbing/HVAC codes.
4. The condensate pipe shall be installed with an inclining angle of 5~10°, so as to facilitate the drainage of condensate.
5. Since the inside of the unit is in a negative pressure status, it is required to set up a backwater elbow. The requirement is: A=B≥P/.4in+.8in (A=B≥P/10mm+20mm)
6. P is the absolute pressure inside the unit; in pascals (Pa).
7. After the electrical installation is completed, carry out the testing of the drainage system.
8. Do not connect the condensate drain pipe into a waste pipe or other pipelines which are likely to produce a corrosive or peculiar smell as the smell could enter indoors or corrupt the unit.
9. Do not connect the condensate drain pipe with a rain pipe as it may cause rain water to pour in and cause property loss or personal injury.
10. The condensate drain pipe should be connected to a special drain system for the unit.

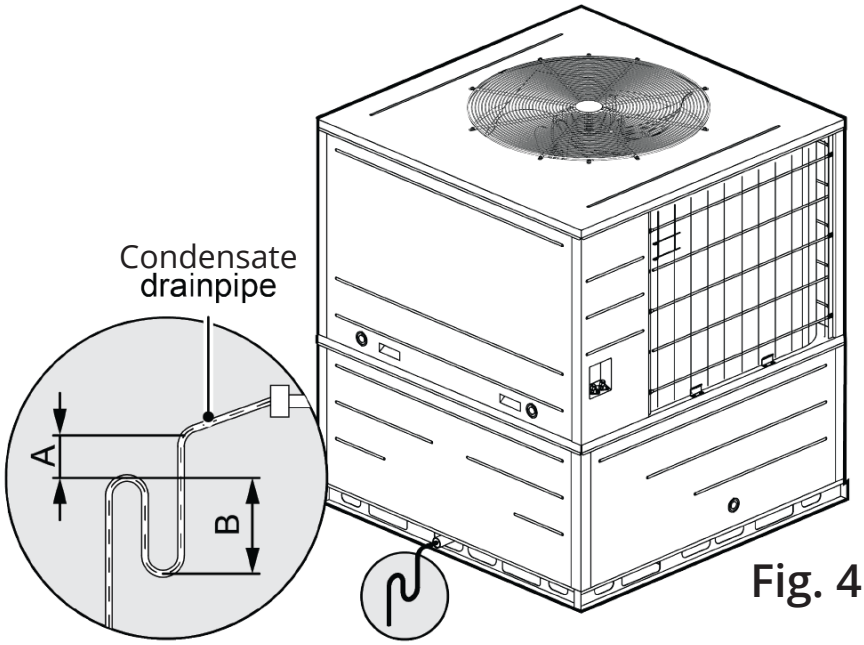


Fig. 4.6

Model	Drain Connection Size (inch/mm)
All Models	3/4 in / 19.05 mm (NPT)

4.6 Dip Switch Instruction

The unit can be connected to a wired controller or a thermostat, but only one can be connected. When the dip switch, SA1, is 0000, the operation command of the wired controller is valid for the unit. When the dip switch, SA1, is not 0000, the thermostat operation command is valid for the unit and it does not support the unit connected to the centralized controller.

The unit is equipped with a wired controller as standard, and the default setting of the dip switch SA1 is 0000. When it is necessary to replace the thermostat, the dip switch SA1 should be dialed according to the required speed when the air conditioner is powered off.

4.7 Fan Speed Adjustment Guidance

When the wired controller connected with the unit (dip switch SA1:0000) has different static pressure levels, they can be adjusted. The fan speeds of different static pressure levels are as follows:

Static Pressure Level	Super	High	Middle	Low
04	Speed 8	Speed 6	Speed 5	Speed 4
05	Speed 9	Speed 7	Speed 6	Speed 5
06	Speed 10	Speed 8	Speed 7	Speed 6
07	Speed 11	Speed 9	Speed 8	Speed 7
08	Speed 12	Speed 10	Speed 9	Speed 8
09	Speed 13	Speed 11	Speed 10	Speed 9

From the factory, the default static pressure level of the unit is 05, but different static pressure levels can be adjusted according to the need. When the unit is off , pressing the “FUNCTION” and “TIMER” buttons at the same time for 5 seconds will enter the system debugging function. Then, pressing the ”MODE” button adjusts the static pressure level to make the center of the wired controller’s display interface show 11. Pressing ▲ or ▼ button will show different numbers (01, 02, 03, 04, 05, 06, 07, 08, 09) on the lower right corner of the wired controller’s display interface.

After selecting the appropriate static pressure according to the required speed, confirm the setting by pressing the “SWING/ENTER” button.

When the unit is connected to the thermostat, the dip switch SA1 is not 0000. Different position settings of the dip switch correspond to different speeds. The relationship between combinations and speeds are as follows:

Level	Dip Switch SA1			
	4	3	2	1
Speed 4	0	1	0	0
Speed 5	0	1	0	1
Speed 6	0	1	1	0
Speed 7	0	1	1	1
Speed 8	1	0	0	0
Speed 9	1	0	0	1
Speed 10	1	0	1	0
Speed 11	1	0	1	1
Speed 12	1	1	0	0
Speed 13	1	1	0	1

NOTE: 0 means dip switch to ‘on’, 1 means dip switch equals number.

4.8 Fan Performance Data

External static pressure should stay within the minimum and maximum limits shown in the table below in order to ensure proper operation of both cooling, heating, and electric heating operation.

Model	MDPH 180484 / MDPH180604								
Level	Static Pressure: Inches W.C. (Pa)								
	0 (0)	0.1 (25)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)
Speed 4 (CFM)	1517	/	/	/	/	/	/	/	/
Speed 5 (CFM)	-	1464	/	/	/	/	/	/	/
Speed 6 (CFM)	-	1533	/	/	/	/	/	/	/
Speed 7 (CFM)	-	-	1517	/	/	/	/	/	/
Speed 8 (CFM)	-	-	1533	/	/	/	/	/	/
Speed 9 (CFM)	-	-	-	1525	/	/	/	/	/
Speed 10 (CFM)	-	-	-	-	1517	/	/	/	/
Speed 11 (CFM)	-	-	-	-	-	1558	1492	/	/
Speed 12 (CFM)	-	-	-	-	-	1566	1525	1480	/
Speed 13 (CFM)	-	-	-	-	-	1591	1538	1497	1470

Model	MDPH180244 / MDPH180364								
Level	Static Pressure: Inches W.C. (Pa)								
	0 (0)	0.1 (25)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)
Speed 4 (CFM)	1216	/	/	/	/	/	/	/	/
Speed 5 (CFM)	1293	/	/	/	/	/	/	/	/
Speed 6 (CFM)	1368	1264	/	/	/	/	/	/	/
Speed 7 (CFM)	1447	1348	1230	/	/	/	/	/	/
Speed 8 (CFM)	1501	1436	1327	1195	/	/	/	/	/
Speed 9 (CFM)	1506	1464	1417	1383	/	/	/	/	/
Speed 10 (CFM)	1498	1466	1423	1378	1280	/	/	/	/
Speed 11 (CFM)	1514	1472	1424	1385	1344	1303	/	/	/
Speed 12 (CFM)	1505	1467	1420	1375	1340	1303	1258	/	/
Speed 13 (CFM)	1510	1463	1424	1380	1340	1297	1258	1216	/

Note:

1) " / " denotes that the static pressure is out of range. Air volume drop may affect the performance and reliability.

2) " - " denotes that the air volume is out of range, may lead to overload, and cause unstable operation of the fan motor.

5.1 Ductwork Requirements

⚠ WARNING

1. Field ductwork must meet the National Fire Protection Association NFPA 90A, NFPA 90B, and any applicable local ordinance.
2. Sheet metal ductwork ran in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.
3. Duct system must be designed within the range of external static pressure that the unit is designed to operate against. It is important that the system airflow be adequate. Ensure supply and return ductwork, grills, special filters, accessories, etc. are accounted for in total resistance. See fan performance data in this manual.
4. Do not operate the unit without all ductwork completed.
5. Do not operate the unit without all ductwork attached.
6. Inadequate ductwork that restricts airflow can result in improper performance and compressor or heater failure. Ductwork is to be constructed in a manner that limites restrictions and maintains suitable air velocity. Ductwork is to be sealed to the unit in a manner that will prevent leakage.
7. Return Ductwork: Do not terminate the return ductwork in an area that can introduce toxic or objectionable fumes/odors into the ductwork. The return ductwork is to be introduced into the air handler bottom (upflow configuration).
8. Return Air Filters: Each installation must include a return air filter. This filtering may be performed at the air handler or externally such as a return air filter grille.

6.1 Electric Heater Safety

The unit does not offer a factory-installed electric heating function. Electric heat is available as an accessory. Refer to the installation instructions provided with the heat kit for the correct installation procedure.

⚠ WARNING

1. Refer to the “Electric Heat Kit Installation” section of this manual and the instructions provided with the heat kit for the correct installation procedure.
2. The electrical characteristics of the unit, the electric heat kit, and the supply power should be identical. If installing this option, the only heat kits that can be used are indicated below. Do not use an electric heat kit other than those recommended.
3. Pay attention to the switch order of the electric heating and indoor fan during installation and debugging. The fan must be turned on before electric heating is operating. Make sure to stop the indoor fan after the electric heating is turned off to avoid malfunctions.
4. Refer to the “Fan Performance Data” section of this manual on page 13, otherwise it may cause abnormal electric heating and increase the risk of dry burning.
5. There should be at least 5 feet between electric heating and the supply air duct, and at least 1 foot away from other combustible materials or walls.

6 ELECTRIC HEATER

6.2 Compatible Heat Kits

Heat Kit Model	Description	Unit Compatibility
MDPHK-05	5kW Heat Kit	2T/3T/4T/5T
MDPHK-10	10kW Heat Kit	2T/3T/4T/5T

Heat Kit Model	Description	Unit Compatibility
MDPHK-15	15kW Heat Kit	4T/5T
MDPHK-20	20kW Heat Kit	4T/5T

6.3 Heat Kit Installation Precautions

! CAUTION

1. Ensure that all power supply is disconnected prior to installing the heat kit.
2. Provide strain relief and conductor protection at the supply wire entrance into the cabinet.
3. Use copper conductors only.
4. Installation must follow national electric code and other applicable codes.
5. If the unit is installed in an enclosed area such as a garage or utility room with a carbon-monoxide producing appliance, ensure the area is properly ventilated.

6.4 Heat Kit Installation Steps

1. Refer to the table for the appropriate heat kit.
2. Check for any physical damage. Do not install a damaged heat kit.
3. Remove the access panel from the unit.
4. Remove the cover plate from the unit.
5. Slide the heater kit into the slot and secure the element plate with the previously removed screws.
6. Insert power leads into the circuit breaker lugs.
7. Connect the ground wire to the ground lug.
8. Knock out the hole in the stand column. If a circuit breaker is not installed, do not knock out the holes. It could negatively affect the unit's performance and reliability.
9. Replace the access panel and check operation.

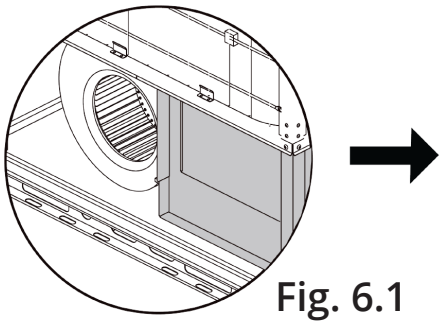


Fig. 6.1

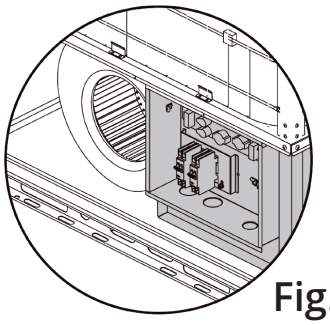


Fig. 6.2

10. Connect power cords and reserve lines.

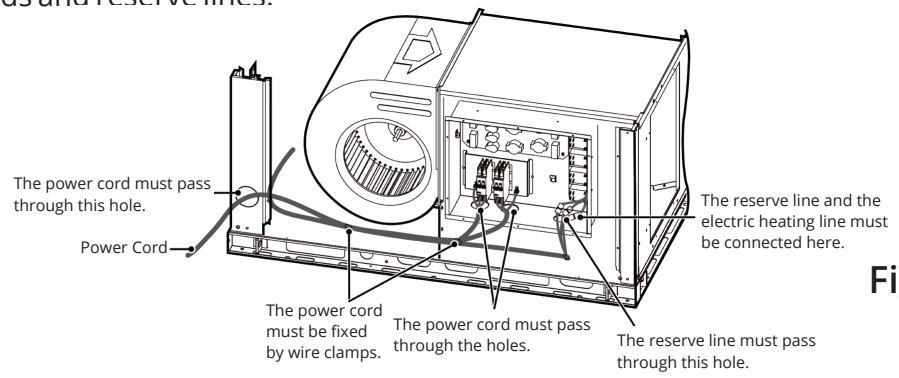


Fig. 6.3

7.1 Electrical Parameters

Unit Model	Power Supply	Fuse Capacity (A)	Max. Over-Current Prot. (A)	Min. Circuit Amp. (A)
MDPH180244 MDPH180364	208/230V-1Ph-60Hz	40	40	35
MDPH180484 MDPH180604	208/230V-1Ph-60Hz	45	45	39.1

WARNING

The electrical installation for the unit should observe the following requirements:

1. The electrical installation must be conducted by professionals in compliance with local laws, regulations, and the instructions in this manual. The electric circuit must be equipped with a circuit breaker and an air switch both with sufficient capacity.
2. The unit's operating power must be within the nominal range stated in the instruction manual. Use a specialized power circuit for the air conditioner. Do not draw power from another power circuit.
3. The air conditioner circuit should be at least 1.5m away from any flammable surfaces.
4. The external power cords, the wired controller wires (or thermostat wires) and unit must be effectively fixed.
5. The external power cords, the wired controller wires (or thermostat wires), and unit can't directly contact any hot objects. For example: they must not contact chimney pipes, warm gas pipes, or other hot objects.
6. The external power cords, the wired controller wires (or thermostat wires), and unit must not be squeezed. Never pull, stretch, or bend the wires.
7. The external power cords, the wired controller wires (or thermostat wires) and unit must not collide with any metal beam, edge on the ceiling, or touch any metal burrs or sharp metal edges.
8. Connect wires by referring to the circuit diagram labeled on the unit or electric box. Screws must be tightened. Slipped screws must be replaced by specialized flat-head screws.
9. Wiring terminals should be connected firmly to the terminal board. Loose connections are forbidden.
10. The wire gauge of power cords must be large enough. Damaged power cords or other wires must be replaced by specialized wires. Wiring must be done according to national wiring rules and regulations.
11. The unit has a heating four-way valve.

7.2 Terminal Connection

For solid wires (as shown below):

1) Use wire cutters to cut the wire end and peel away about 1in(25mm) of the insulation layer.

2) Use a screwdriver to unscrew the terminal screw on the terminal board.

3) Use pliers to bend the solid wire into a ring to fit the terminal screw.

4) Form a proper ring and attach it to the terminal board. Use a screwdriver to tighten the terminal screw.

For strand wires (as shown below):

1) Use wire cutters to cut the wire end and peel away about .5in(10mm) of the insulation layer.

2) Use a screwdriver to unscrew the terminal screw on the terminal board.

3) Use a round terminal fastener or clamp to fix the round terminal firmly on the peeled wire end.

4) Locate the round terminal conduit. Use a screwdriver to replace and tighten the terminal screw. (See fig. 7.2)

Unit:inch(mm)

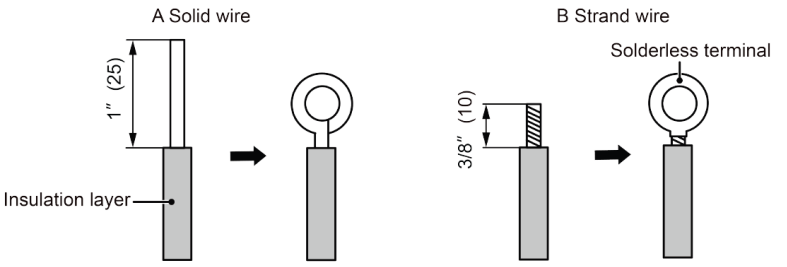


Fig. 7.1

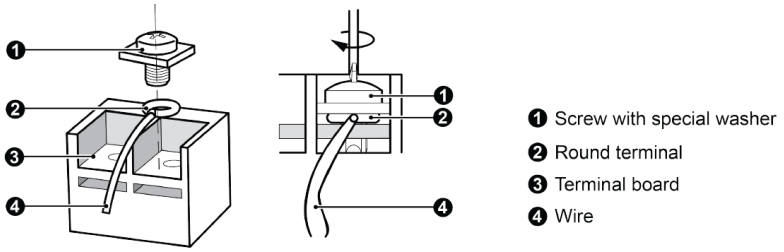


Fig. 7.2

7 ELECTRICAL INSTALLATION

How to connect the wired controller wires (or the thermostat wires) and power cords:

Lead the wired controller wires (or the thermostat wires) and power cords through the insulation tube. (As shown in the following figure.)

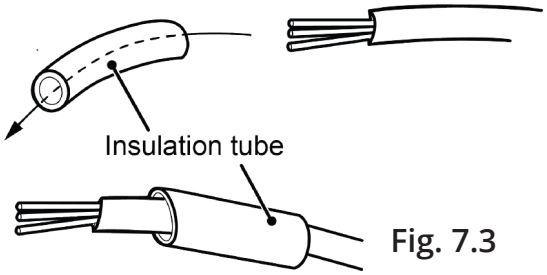


Fig. 7.3

⚠ WARNING
1. Before working, check whether the units are powered on.
2. An incorrect wire connection may burn the electrical components.
3. Connect the wires firmly to the wiring box. Incomplete installation may lead to fire hazard.
4. Ground wire should be connected.

7.3 Wiring Diagram

Note:

1. The unit has been short-circuited. When the emergency stop switch needs to be connected, remove the corresponding short-circuit wire.
2. The unit can only be connected to a thermostat or wired controller.

Note:

Y means compressor control signal

B is energized under the heating mode and means 4-way valve control signal

W1 means heater control signal

R means 24V AC power supply

C means 24V common

G means indoor side fan signal

Without Electric Heater

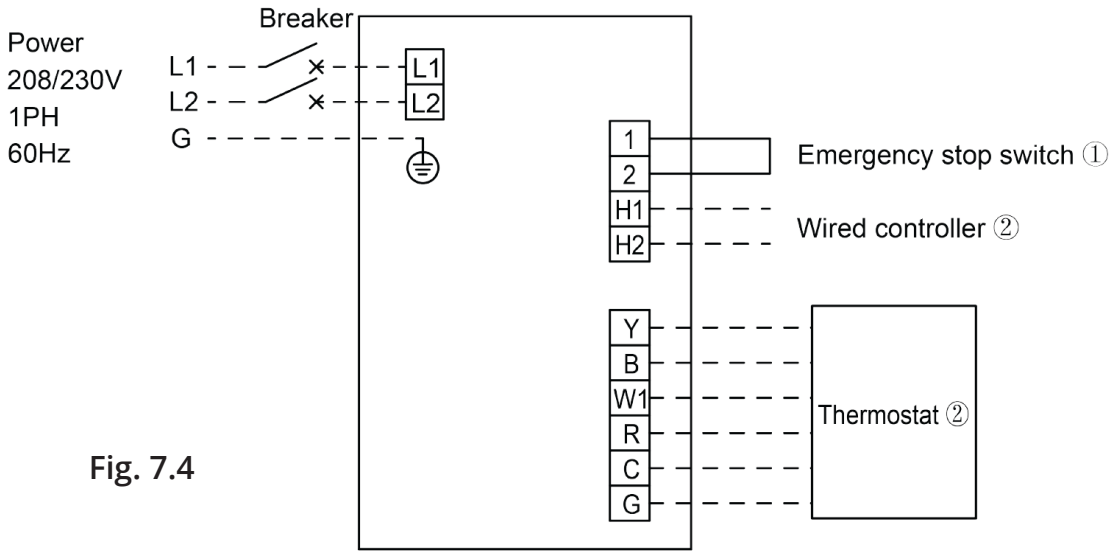


Fig. 7.4

With Electric Heater

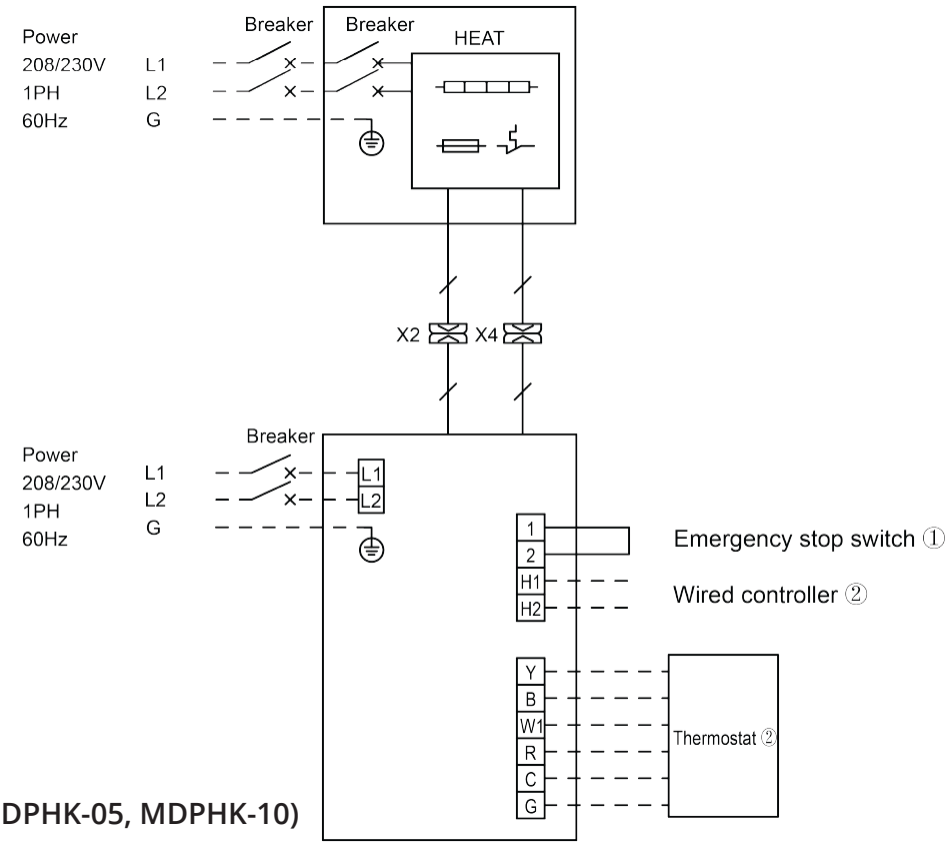


Fig. 7.5 (With MDPHK-05, MDPHK-10)

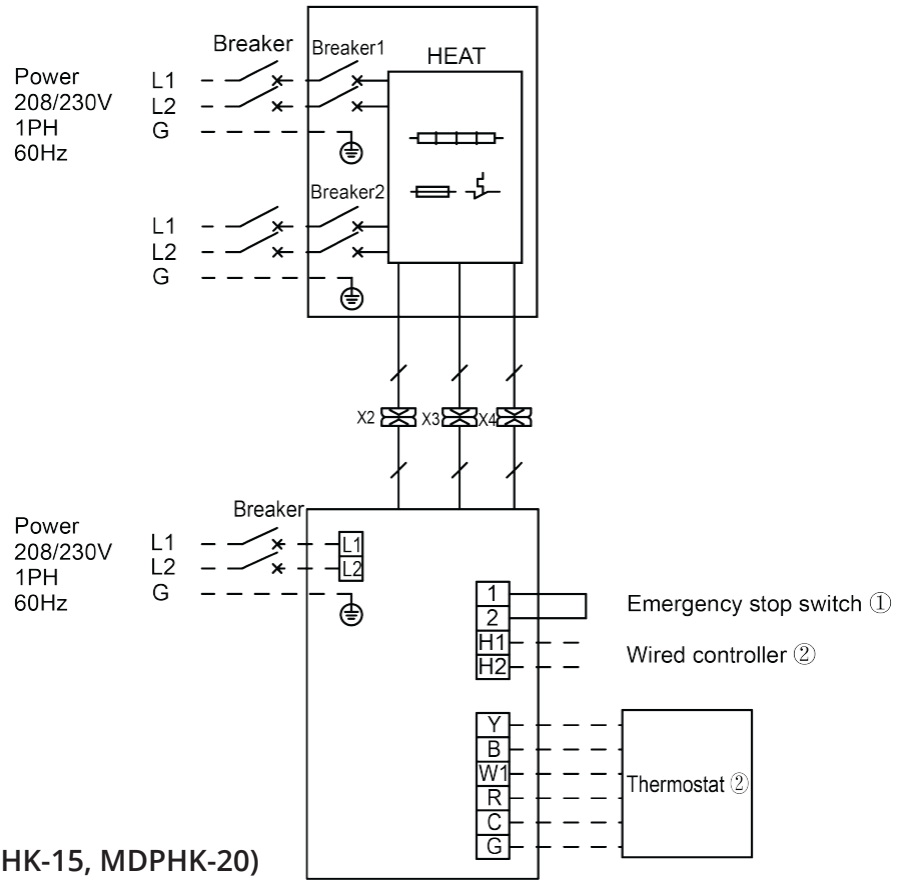
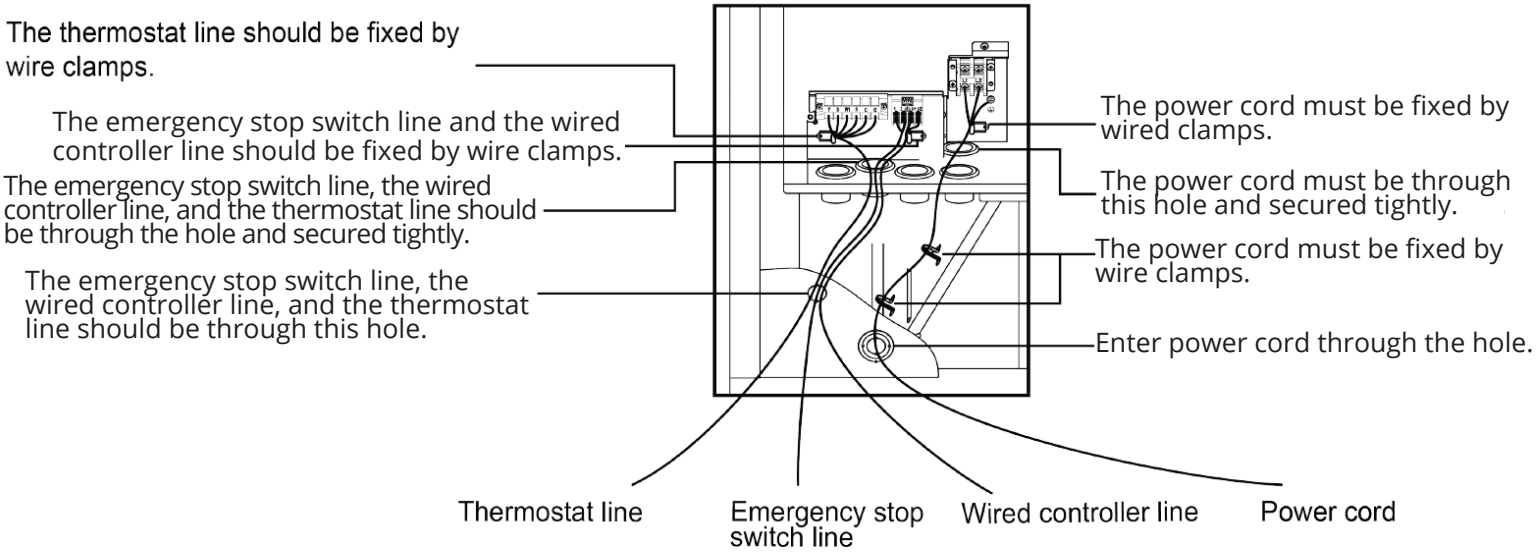


Fig. 7.6 (With MDPHK-15, MDPHK-20)

7.4 Engineering Wiring Diagram



Note: 1. If there is no emergency stop switch, ignore additional wiring.
2. The unit can only be connected to a thermostat or a wired controller.

Fig. 7.7

8.1 Post-Installation Check

Check Items	Possible Events due to Improper Installation
Is the main body installed securely?	The unit may fall down, vibrate or produce noise.
Was the water leakage test performed?	Cooling capacity may become unsatisfactory.
Is the unit well-insulated from the heat?	Condensation and water drops may occur.
Does water drain easily?	Condensation and water drops may occur.
Is the voltage consistent with that stated on the nameplate?	The unit may fail or its components burn.
Are the wires and pipes installed correctly?	The unit may fail or its components burn.
Has the unit been safely grounded?	There is a risk of electrical leakage.
Do the specifications of wires comply with the requirements?	The unit may fail or its components burn.
Are there any obstacles blocking the air inlet and outlet of the units?	Cooling capacity may become unsatisfactory.

8.2 Trial Run

Preparation before connecting the power:

1. Power must not be connected if the installation work is not completed.
2. Control circuit is correct and all the wires are firmly connected.
3. The inside of the unit should be clean. Take all irrelevant objects out, if there are any.

Operation after connecting the power:

1. If all the above works are finished, power on the unit.
2. If the outside temperature is more than 30°, heating mode can't be enabled.
3. Before test operation, make sure the unit is powered on and the compressor has been preheated for more than 8 hours. Touch the unit to check whether it's normally preheated. Start the test operation after unit is normally preheated, otherwise compressor might be damaged. Debugging must be performed by professional technicians or under the guide of professional technicians.
4. Make sure the unit can run normally.
5. If there's sound of liquid shock when the compressor is running, stop the air conditioner immediately. Wait until the electric heating belt is heated enough, and then restart the air conditioner.

NOTICE
1. If a thermostat is used to turn off the unit and immediately turned on again, the compressor unit will need 3 minutes to restart. Even if the "ON/OFF" button on the thermostat is pressed, the compressor will not start up right away.
2. If no display appears on the thermostat, check the connection wires between the unit and the thermostat to verify they are connected.

8.3 Troubleshooting

Failure	Possible Cause	Solution
The unit cannot be started.	The power supply does not connect or there is an improper phase sequence.	Connect the power supply or change to random phase.
	Electrical leakage of unit is causing the leakage switch to trip.	Contact the MRCOOL® Technical Department at (270) 366-0457
	The voltage is too low.	Contact the MRCOOL® Technical Department at (270) 366-0457
	The control loop has failure.	Contact the MRCOOL® Technical Department at (270) 366-0457
The unit operates for a while and then stops.	Air outlet port or intake port is blocked.	Remove the obstacles.
	There is an obstacle in front of the condenser.	Remove the obstacles.
	The control loop is abnormal.	Contact the MRCOOL® Technical Department at (270) 366-0457
Poor cooling effect.	Air filter is dirty.	Clean air filter.
	Air outlet port or intake port of indoor side or outdoor side is blocked.	Move the obstacles.
	Too many people or a heat source in the room.	If possible, clear heat sources.
	Doors or windows are open.	Close windows and doors.
	Refrigerant leakage.	Contact the MRCOOL® Technical Department at (270) 366-0457
	Some model units have a high pressure switch welded on the discharge pipe. When the switch goes into effect, the power supply of the compressor will be shut off.	Find and manually reset the high pressure switch welded on the discharge pipe.

NOTE: If after performing the check of items above and taking measures to resolve the problems, but the unit is still performing poorly, stop operation of the unit immediately and contact the MRCOOL® Technical Department at (270) 366-0457. Only ask professional servicemen to check and repair the unit.

Code List:

No.	Code	Error or Status
1	08	Defrosting
2	09	Oil Return
3	A0	Fan Drive Module Resetting
4	A1	Fan IPM Module Protection
5	A5	Inlet pipe temperature sensor of condenser error
6	A6	Malfunction from fan driving part to main-control communication
7	A8	Overheat protection from fan radiator
8	A9	Fan radiator sensor malfunction
9	AA	Fan AC current protection (input side)
10	Ac	Fan startup failure
11	Ad	Fan missing phase
12	AE	Fan current sensor malfunction
13	AF	Fan PFC abnormality
14	AH	Fan DC busbar over voltage protection
15	AJ	The fan motor in loss of synchronization
16	AL	Fan DC busbar under voltage protection
17	An	Fan drive storage chip malfunction
18	AP	Fan AC input voltage abnormality
19	Ar	Fan driver board environment temperature sensor malfunction
20	AU	Fan charge circuit malfunction
21	b2	Subcooler gas inlet temperature sensor error
22	b3	Subcooler gas outlet temperature sensor error
23	b4	Subcooler liquid outlet temperature sensor error
24	C4	Jumper failure (ODU)
25	C5	Jumper failure (IDU)
26	CA	Inlet pipe temperature sensor of evaporator error
27	Cb	Outlet pipe temperature sensor of evaporator error
28	CJ	Dip switch settings error
29	d1	DRED1 mode
30	d2	DRED2 mode

No.	Code	Error or Status
31	d3	DRED3 mode
32	dJ	Phase sequence protection
33	E1	Compressor low pressure protection
34	e1	High pressure sensor error
35	E2	Indoor anti-freeze protection
36	E3	Compressor low pressure protection
37	e3	Low pressure sensor error
38	E4	Compressor high discharge temperature protection
39	E6	Communication error
40	E8	Indoor fan motor error
41	EE	Outdoor memory chip error
42	ee	Drive memory chip error
43	EH	Electric heater operation error
44	EL	Emergency stop (Fire alarm)
45	F0	Indoor ambient temperature sensor error
46	F1	Air outlet temperature sensor error or mid-temperature sensor of evaporator error
47	F2	Outlet pipe temperature sensor of condenser error
48	F3	Outdoor ambient temperature sensor error
49	F4	Discharge temperature sensor error
50	F5	Temperature sensor error of wired controller
51	F6	Mid-temperature sensor error of wired controller
52	H3	Compressor overload protection
53	H4	Overloading
54	H5	IPM protection
55	H6	DC fan motor error
56	H7	Drive desynchronizing protection
57	HC	PFC Protection
58	Lc	Activation failure
59	Ld	Compressor phase sequence protection
60	LE	Compressor stalling protection

No.	Code	Error or Status
61	LF	Power protection
62	LP	Controllers incompatibility error
63	P0	Drive reset protection
64	P5	Over-current protection
65	P6	Communication error between main control and drive
66	P7	Drive module sensor error
67	P8	Drive module over temperature protection
68	P9	Zero passage protection
69	PA	AC current protection
70	Pc	Drive current error
71	Pd	Sensor connecting protection
72	PE	Temperature drift protection
73	PF	Electric box sensor error
74	PH	Bus high voltage protection
75	PL	Bus low voltage protection
76	PP	Input voltage abnormality
77	PU	Charge loop error
78	U9	Fan AC contractor protection or input zero crossing error
79	Ud	Intelligent converter settings error
80	UL	Fan current protection
81	UP	Fan power protection

NOTE:

If several errors happen at the same time, error codes will show on the display repeatedly.

9.1 Cleaning the Air Filter

1. Do not disassemble the air filter when cleaning it or unit failure can occur.
2. If the unit is used in a dusty environment, the air filter should be cleaned more frequently.

9.2 Drainage Pipe

Periodically check if the drainage pipe is blocked to allow for easy flow of the condensate water.

9.3 Cleaning the Heat Exchanger

- The heat exchanger should be cleaned regularly, at least every two months.
- Use a dust catcher with a nylon brush to clear the dust on the heat exchanger.
- If a compressed air source is available, it can also be used to clean the heat exchanger.
- Do not clean it with water.

9.4 Before Seasonal Use

- Check whether the air inlets and air outlets of the units are blocked.
- Check whether the ground connection is reliable or not.
- Check whether the air filter is properly installed.
- If the unit starts up after operating for a long time, it should be powered on for 8 hours before operation in order to preheat the outdoor compressor.
- Check whether the outdoor unit is securely installed. If there is any problem, contact the MRCOOL® Technical Department at (270) 366-0457.

9.5 After Seasonal Use

- Disconnect power of the entire system.
- Clean the air filter and outer case of both units.
- Clean away any dust and obstacles.
- If the unit has rust, apply rust resistant paint to prevent the rust from growing.

9.6 Parts Replacement

Parts and components can be obtained, contact the MRCOOL® Technical Department at (270) 366-0457.

9.7 After-Sale Service

If there's a quality defect or other problems in the product, contact the MRCOOL® Technical Department at (270) 366-0457.

MRCOOL®

COMFORT MADE SIMPLE

DC Inverter Rooftop Packaged Unit

Installation & Owner's Manual

The design and specifications of this product and/or manual are subject to change without prior notice.
Consult with the sales agency or manufacturer for details.