



U-MATCH Series Concealed Duct

Installation Manual





Models:

 Indoor Unit
 Outdoor Unit

 UMAT18HP230V1AD
 UMAT18HP230V1AO

 UMAT24HP230V1AD
 UMAT24HP230V1AO

 UMAT30HP230V1AD
 UMAT30HP230V1AO

 UMAT42HP230V1AD
 UMAT42HP230V1AO

 UMAT48HP230V1AD
 UMAT48HP230V1AO

- Thank you for choosing our air conditioners. Please read this owner's manual carefully before operation and retain for future reference.
- This Installation manual is subject to change without prior notice for product improvement.
- GREE Electric Appliances, Inc. of Zhuhai reserves the final right to interpret this manual.

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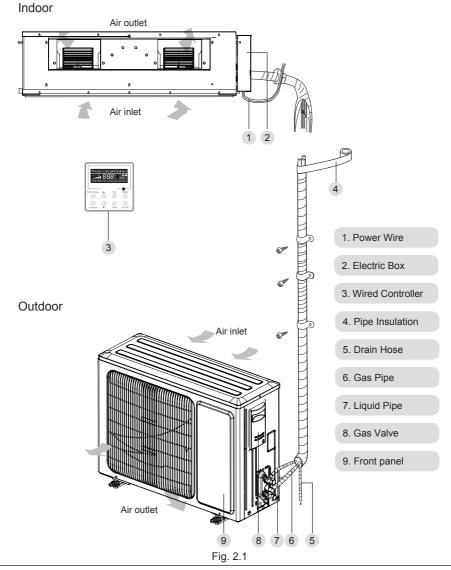
1 Safety Precautions

A	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
A WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
A CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
NOTICE	Notice is used to address practices not related to personal injury.

AWARNING

- (1). Instructions for installation and use of this product are provided by the manufacturer.
- Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.
- (3). For proper operation, system must be installed in accordance with this installation manual.
- (4). If refrigerant leaks while work is being carried out, ventilate the area. Do Not allow refrigerant to come in contact with a flame, it will produce toxic gases.
- (5). Disconnect all electrical power to the indoor and outdoor units until installation is complete.
- (6). During installation, make sure that the refrigerant pipe is attached before running the compressor. Do not operate the compressor with the refrigerant piping not attached properly and stop valve open. This may cause abnormal pressure in the refrigeration circuit that may lead to breakage and even injury.
- (7). During the vacuum pump operation, make sure that the compressor is turned off before you remove the refrigerant piping. Do not remove the connection pipe while the compressor is operating with stop valve open. This may cause abnormal pressure in the refrigeration circuit that may leads to breakage and even injury.
- (8). When installing and repairing the air conditioner, use only R410A refrigerant. Do not mix with other gases. If air or other gas enters the refrigerant circuit, the pressure inside the circuit may rise to an abnormally high value and cause breakage, injury, etc.
- (9). 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.

2 Outline of the Unit and Main Parts



NOTICE

 $\ensuremath{\textcircled{1}}$. The connection pipe, and electrical wiring should be done by a qualified technican.

3 Preparative for Installation

3.1 Standard Parts

The standard parts listed below are furnished and should be used as required.

Table 3.1

	Indoor Unit Accessories							
No.	Name	Appearance	Q'ty	Usage				
1	Wired Controller	## 100 100	1	To control the indoor unit				
2	Hanger	or O	4	For mounting indoor unit				
3	Nut with Washer		8	To fasten the hook on the cabinet of the unit.				
4	Nut with Washer		4	To fasten the hook on the cabinet of the unit.				
5	Nut		4	To be used together with the hanger bolt for installing the unit.				
6	Washer		4	To be used together with the hanger bolt for installing the unit.				
7	Pipe Insulation		1	To insulate the gas pipe				
8	Pipe Insulation		1	To insulate the liquid pipe				
9	Fastener		4	To fasten the insulation blanket				
10	Flare Nut		1	To connect liquid pipe				
11	Flare Nut		1	To connect gas pipe				

Table 3.2

	Outdoor Unit Accessories							
No.	Name	Appearance	Q'ty	Usage				
1	Drain Plug		2 or 3	To plug the unused drain hole.				
2	Drainage Connecter	or The second se	1	To connect with field supplied drain pipe				

3.2 Selection of the Installation Location

AWARNING

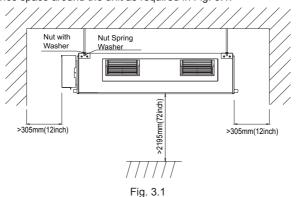
- ① . The unit must be installed on a mounting pad which can withstand the weight of the unit.

 Otherwise, the unit may fall off and cause damage.
- ② . Do not install the unit at a place where there is combustible gas stored.
- ③ . Do not install the unit near heat source, steam, or flammable gas.

Decide the installation location with the customer as follows:

3.2.1 Indoor Unit

- (1). The unit must be installed in a location where the ceiling can withstand 5 times the weight of the unit.
- (2). Air inlet and air outlet of the unit should not be blocked so that the airflow can reach every corner of the room.
- (3). Leave service space around the unit as required in Fig. 3.1.

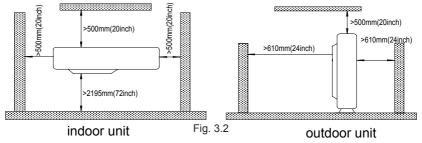


- (4). Install the unit in a location where the drain pipe can be installed properly.
- (5). The space between the unit and the ceiling should be as much as possible for for future maintenance and service.

3.2.2 Outdoor Unit

AWARNING

- ①. The unit should be installed level (right to left and front to back).
- During installation, if the outdoor unit will be exposed to strong winds, it must be properly secured.
 - (1). If possible, do not install the unit where it will be exposed to direct sunlight.
 - (2). Install the outdoor unit in a place where it will be free from dirt and debris.
 - (3). Install the outdoor unit where it is convenient to connect the indoor unit.
 - (4). Install the outdoor unit where the condensate water can be drained out freely during heating operation. Do not place animals and plants in the path of the warm discharge air.
 - (5). Take the air conditioner weight into account.
 - (6) Install the outdoor unit in a location where is capable of withstanding the weight of the unit.
 - (7). Provide the minimum installation clearance dimensions shown in Fig. 3.2, so that the air flow is not blocked.



3.3 Connection Pipe Requirement

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The maximum length of the connection pipe is listed in the table below. Do not install the unit in the location where the distance exceeds the maximum length of the connection pipe.

Table 3.3

Item	Pi	Fitting pe inch)	Max. Pipe Length	Max. Height Difference between Indoor Unit and	Drainage pipe(Outer Diameter × wall
Model	Liquid	Gas	m(feet)	Outdoor Unit m(feet)	thickness) mm(inch)
UMAT18HP230V1AD UMAT18HP230V1AO	6(1/4)	12.7(1/2)	20(66)	15(49)	Ф30X1.5 (Ф1-1/8 X 1/16)
UMAT24HP230V1AD UMAT24HP230V1AO	9.5(3/8)	16(5/8)	30(98)	15(49)	Ф20X1.2 (Ф3/4 X 1/16)
UMAT30HP230V1AD UMAT30HP230V1AO	9.5(3/8)	16(5/8)	30(98)	15(49)	Ф20X1.2 (Ф3/4 X 1/16)
UMAT36HP230V1AD UMAT36HP230V1AO	9.5(3/8)	16(5/8)	30(98)	15(49)	Ф20X1.2 (Ф3/4 X 1/16)
UMAT42HP230V1AD UMAT42HP230V1AO	9.5(3/8)	16(5/8)	50(164)	30(98)	Ф20X1.2 (Ф3/4 X 1/16)
UMAT48HP230V1AD UMAT48HP230V1AO	9.5(3/8)	16(5/8)	50(164)	30(98)	Ф20X1.2 (Ф3/4 X 1/16)

① . The connection pipe should be completely insulated with proper water-proof insulating material.

3.4 Electrical Requirement

Electric Wire Size and Fuse Capacity.

Table 3.4

Indoor Unit	Power Supply	Main PCB On-Board Fuse	Minimum Circuit Ampacity(MCA)	Max Overcurrect Protection (MOCP)
	V/Ph/Hz	Amp	Amp	Amp
UMAT18HP230V1AD	208V/230V 1 60Hz	5	1	15
UMAT24HP230V1AD	208V/230V 1 60Hz	5	2	15
UMAT30HP230V1AD	208V/230V 1 60Hz	5	2	15
UMAT36HP230V1AD	208V/230V 1 60Hz	5	3	15
UMAT42HP230V1AD	208V/230V 1 60Hz	5	4	15
UMAT48HP230V1AD	208V/230V 1 60Hz	5	5	15

②. The pipe wall thickness shall be (0.05 - 0.1inch) and the pipe wall shall be able to withstand the pressure of 6.0 MPa(870psig).Long pipe will reduce system performance.

Table 3.5

Outdoor Unit	Power Supply	Main PCB On-Board Fuse	Minimum Circuit Ampacity(MCA)	Max Overcurrect Protection (MOCP)
	V/Ph/Hz	Amp	Amp	Amp
UMAT18HP230V1AO	208V/230V 1 60Hz	5	17	25
UMAT24HP230V1AO	208V/230V 1 60Hz	5	24	40
UMAT30HP230V1AO	208V/230V 1 60Hz	5	24	40
UMAT36HP230V1AO	208V/230V 1 60Hz	5	29	45
UMAT42HP230V1AO	208V/230V 1 60Hz	5	31	50
UMAT48HP230V1AO	208V/230V 1 60Hz	5	45	70

Note:

- ① . Install electrical disconnect switches per NEC and local codes.
- ② . Use 2 pieces of 18 AWG wire for a communication line between indoor and outdoor unit, up to a maximum lenght of 50m(164feet). Select the appropriate line length as per the actual installation conditions. The communication wire can not be twisted together. For the smaller units (≤30K), it's recommended to use a maximum lenght of 20m(66feet) long communication wire.
- ③ . Use 2 pieces of 18 AWG wire for a communication lines between the wire controller and the indoor unit. Select the appropriate line length as per the actual installation conditions. The communication wires can not be twisted together. It's recommended to use a maximum length of 8m(26feet) long communication wire.

4 Installation of the Unit

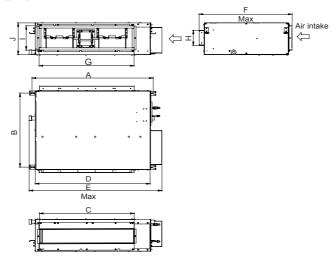
4.1 Installation of the Indoor Unit

4.1.1 Indoor unit dimension

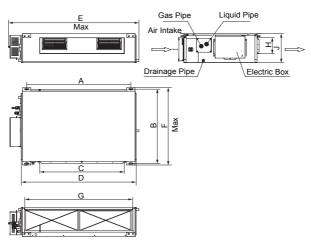
AWARNING

- ① . Install the indoor unit in a location which can withstand a load of at least five times the weight of the main unit and won't increase sound or vibration of the unit.
- $\ensuremath{\mathfrak{D}}$. If the installation location is not strong enough, the indoor unit may fall and cause injuries.

For the units: 18K



For the units: 24~42K



For the units: 48K

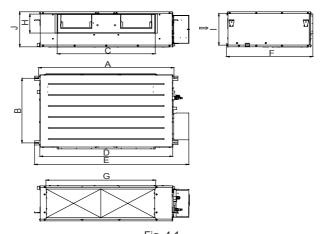


Fig. 4.1 Table 4.1

Unit: mm(inch)

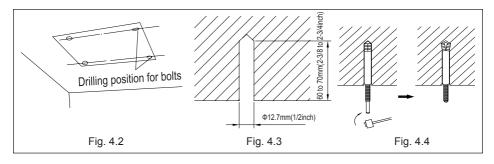
Item		D	_	_	_	F	_	- 11		
Model	A	В	С	D	Е	F	G	I	ı	J
	945	618	738	892	1037	721	738	125	203	266
UMAT18HP230V1AD	(37-1/4)	(24-3/8)	(29)	(35-1/8)	(40-7/8)	(28-3/8)	(29)	(4-7/8)	(8)	(10-1/2)
UMAT24HP230V1AD	1101	517	820	1159	1279	558	1002	160	235	268
UMAT30HP230V1AD	(43-3/8)	(20-3/8)	(32-1/4)	(45-5/8)	(50-3/8)	(22)	(39-1/2)	(6-1/4)	(9-1/4)	(10-1/2)
UMAT36HP230V1AD	1011	748	820	1115	1226	775	979	160	231	290
UMAT42HP230V1AD	(39-3/4)	(29-1/2)	(32-1/4)	(43-7/8)	(48-1/4)	(30-1/2)	(38-1/2)	(6-1/4)	(9-1/8)	(11-3/8)
UMAT48HP230V1AD	1177 (43-3/8)	646	852	1150 (45-1/4)	1340	750	953 (37-1/2)	190 (7-1/2)	316 (12-1/2)	350 (13-3/4)
	(43-3/0)	(20-3/0)	(33-1/2)	(45-1/4)	(52-3/4)	(29-1/2)	(31-1/2)	(1-1/2)	(12-1/2)	(13-3/4)

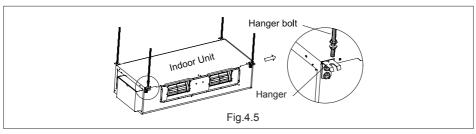
4.1.2 Drilling Holes for Bolts and Installing the Bolts

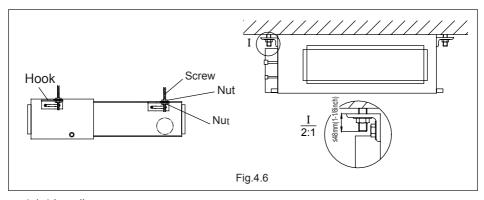
Using the installation template, drill holes for bolts (four holes). (Fig. 4.2)

4.1.3 Installing the Suspension Bolts

- (1). Install the bolts to the ceiling in a location which is strong enough to with stand five times the weight of the unit. Mark the bolt positions from the installation template. Drill a hole with diameters of 12.7mm(1/2 inch).
- (2). Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer. (Fig. 4.4)
- (3). Install the hanger to the unit. (Fig. 4.5)
- (4). Place the unit hangers over the bolts installed to the ceiling and install the unit with the special nut.(Fig. 4.6)

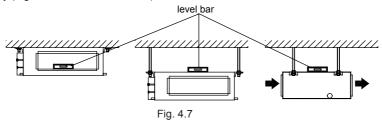






4.1.4 Leveling

After indoor unit is installed, the level test must be conducted to make sure that the unit is installed horizonally (right to left and front to back), as shown below.



4.2 Installation of the Outdoor Unit

AWARNING

- ① .The unit should be installed horizonally (right to left and front to back).
- ②. During installation, if the outdoor unit will be exposed to winds, it must be properly secured.

4.2.1 Outdoor unit dimension

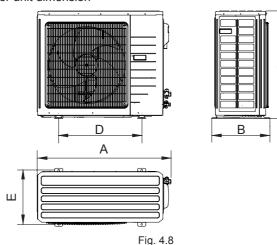


Table 4.2

Unit: mm(inch)

Item Model	А	В	С	D	E
UMAT18HP230V1AO	955(37-5/8)	396(15-5/8)	700(27-1/2)	560(22)	360(14-1/8)
UMAT24HP230V1AO	980(38-5/8)	427(16-3/4)	790	610	395(15-1/2)
UMAT30HP230V1AO	960(36-3/6)	427 (10-3/4)	(31-1/8)	(24)	393(10-1/2)
UMAT36HP230V1AO	1107(43-5/8)	440(17-3/8)	1100(43-1/4)	631(24-7/8)	400(15-3/4)
UMAT42HP230V1AO	958(37-3/4)	412(16-1/4)	1349(53-1/8)	572(22-1/2)	376(14-3/4)
UMAT48HP230V1AO	900(37-3/4)	412(10-1/4)	1049(33-1/0)	312(22-1/2)	370(14-3/4)

4.2.2 Condensate Drainage of the Outdoor Unit (Fig.4.9)

- (1). It's required to install the outdoor unit with a drain to drain out condensate water during heating operation. (only for the heat pump unit)
- (2). When installing the drain, all other holes must be blocked to avoid water leaks, except the selected drain joint mounting hole.
- (3). Installation Method: Insert the drain joint into the selected hole located at the base pan of the

unit and then connect the drain pipe to the drain joint.

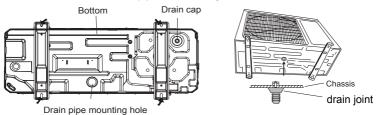
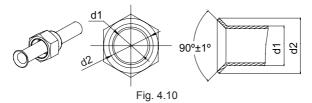


Fig. 4.9

4.3 Installation of the Connection Pipe

4.3.1 Flare Processing

- (1). Cut the connection pipe with the pipe cutter and remove the burrs.
- (2). Hold the pipe downward to prevent cuttings from entering the pipe.
- (3). Remove the flare nuts at the stop valve of the outdoor unit and inside the accessory bag of the indoor unit, then insert them on to connection pipe, then, flare the connection pipe end with a flaring tool.
- (4). Check if the flare end is spread evenly and there are no cracks (see Fig. 4.10).



4.3.2 Bending Pipes

(1). The pipes can be shaped by your hands. Be careful not to break or kink them.

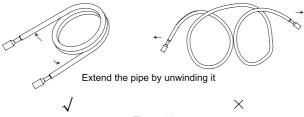


Fig. 4.11

- (2). Do not bend the pipes in an angle more than 90°.
- (3). When pipes are bent or stretched repeatedly, it may damaged them. Do not bend or stretch pipes more than three times.

(4). To avoid damaging the pipes. Use sharp cutter as shown in Fig 4.12 to cut the pipe insulation, and then bend the pipe with pipe bending tool. When the pipe is bent, be sure to

put the pipe insulation back on the pipe.

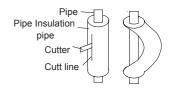


Fig. 4.12

ACAUTION

- ① . To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature larger than 150mm(6inch).
- ② . If the pipe is bent repeatedly at the same place, it may become damaged or broken.
 - 4.3.3 Connecting the Pipe at the Indoor Unit Side Remove the caps and plugs from the pipes.

A CAUTION

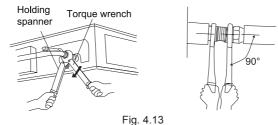
- ①. Be sure to point the connection pipe at the stop valve of indoor unit correctly.

 If the centering is improper, the flare nut cannot be tightened smoothly and the threads will be damaged.
- ②. For preventing dust and impurities getting into the pipe system, do not remove the flare nut until the connection pipe is connected.

ACAUTION

Center the pipe with the indoor unit port, then start the flare nut by hand.

When the flare nut is tightened properly by your hand, use a spanner and torque wrench to tighten to the recommended torque level.



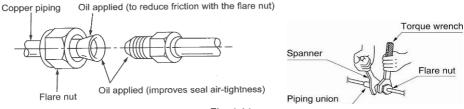


Fig. 4.14

Table 4.3 Flare nut tightening torque

Pipe Diameter	Tightening Torque
6mm(1/4inch)	15-30N·m(11-22ft1b.)
9.5mm(3/8 inch)	35-40N·m(26-29ft1b.)
12.7mm(1/2 inch)	45-50N·m(33-37ft1b.)
16mm(5/8 inch)	60-65N·m(44-48ft1b.)

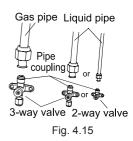
ACAUTION

Be sure to connect the gas pipe when liquid pipe is connected.

4.3.4 Connecting the Pipes at the Outdoor Side Unit

Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same torque method as used on the indoor side.

4.3.5 Checking the Pipe Connections for Gas Leaks
For both indoor and outdoor units, check for gas leaks
at the joints with gas leakage detector.



4.3.6 Insulation on the Pipe Joints (Indoor Side Only)

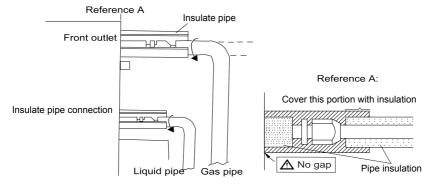


Fig. 4.16

4.3.7 Liquid Pipe and Drain Pipe

If the outdoor unit is installed lower than the indoor unit (See Fig. 4.17)

- (1). The drain pipe should be on the ground The end of the drain pipe can't be submerged in water. All pipes must be bundled to the wall with attaching clamp.
- (2). If taping pipe, it must be done from bottom to top.
- (3). All pipes are bound together with cable clamps and restrained to the wall with attaching clamp.

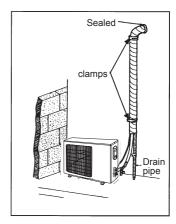


Fig. 4.17

If the outdoor unit is installed higher than the indoor unit (See Fig. 4.18)

- (1). If taping, it must be done from lower to the upper part.
- (2). All pipes are bound together with cable clamps. The drain hose must contain a trap to prevent water from returning to the indoor unit
- (3). Restraint all pipes to the wall with attaching clamp.

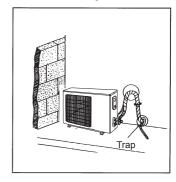


Fig. 4.18

4.4 Vacuum and Gas Leakage Inspection

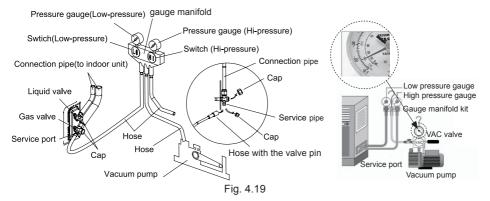
ACAUTION

Always use vacuum pump, rather than refrigerant, to discharge air when installing the unit.

4.4.1 Vacuum

- (1). Remove the caps of the liquid valve, gas valve and also the service port.
- (2). Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve, and meanwhile the gas and liquid valves should be kept closed in case of refrigerant leak.
- (3). Connect the hose used for evacuation to the vacuum pump.
- (4). Open the switch at the lower pressure side of the manifold valve assembly and start the vacuum pump. Meanwhile, the switch at the high pressure side of the manifold valve assembly should be kept closed, otherwise evacuation would fail.

- (5). The evacuation duration depends on the unit's capacity, generally, 20 minutes for the 18K units, 30 minutes for the 24/30/36K units, 45 minutes for the 42/48K units. And verify if the pressure gauge at the low pressure side of the manifold valve assembly reads -1.0Mp (145psig), if not, it indicates there is leak somewhere. Then, close the switch fully and then stop the vacuum pump.
- (6). Wait for some time to see if the system pressure can remain unchanged, 3 minutes for the units the 18/24K units, 10 minutes for the 30/36/42/48K units. During this time, the reading of the pressure gauge at the low pressure side can not be larger than 0.005Mp (0.72psig).
- (7). Slightly open the liquid valve and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. Note that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
- (8). Place back the caps of the liquid valve, gas valve and also the service port.



Note: For 24K above units, it has the service port for both the gas valve and the liquid valve. During evacuation, it is available to connect two hoses of the manifold valve assembly to two service ports to quicken the evacuating speed.

4.4.2 Additional Charge

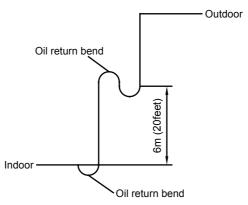
Refrigerant for the pipe length of 7.6m (25 feet) has been charged at the factory. When the piping is longer than 7.6m(25feet) additional charging is necessary.

For the additional amount, see Table 4.4.

Table 4.4

Model Item	Additional Refrigerant Amount for Extra Pipe
18K	45g per 1.5 m (1.6 ounce per 5 feet)
24~48K	90g per 1.5 m (3.2 ounce per 5 feet)

When height difference between indoor unit and outdoor unit is more than 10m(30feet), an oil return bend should be added for every 6m (20feet) connection pipe.



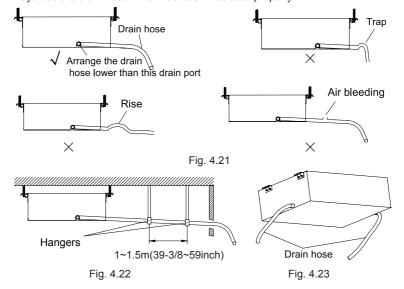
4.5 Installation of the Drain Hose

4.5.1 Installation of Drain Piping

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Install the drain hose in accordance with the instructions in this installation manual to prevent possible water leaks.

- (1). Install the drain pipe with downward gradient (1/50 to 1/100) with no risers or traps used .(Fig. 4.21)
- Be sure there is no crack or leak on the drain pipe to avoid the formation of air pocket. (Fig. 4.21)
- (3). Use hangers to support line pipe runs.(Fig. 4.22)
- (4). Always use the drain hose which has been insulated properly.



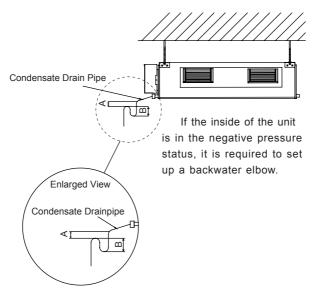
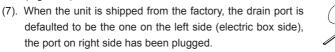
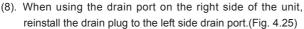


Fig. 4.24

- (5). Keep pipe size equal to or larger than the unit drain outlet/port size.
- (6). There is a drain port on both left and right sides. (Fig. 4.23)







Unit Drain Port

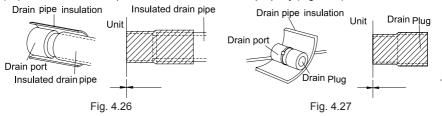
Fig. 4.25

Drain Plug

ACAUTION

Always check that the drain plug is installed in the unused drain port and is fastened with the nylon fastener. If the drain plug is not installed, or is not sufficiently fastened by the nylon fastener, water may leak during the cooling operation.

- (9). Be sure to completely insulate the drain port and the drain pipe. (Fig. 4.26)
- (10). The unused drain port also should be insulated properly.(Fig. 4.27)



- (11). Considerations for the unit with the condensate pump:
- For the unit with the condensate pump, only one drain port at the side close to the electric box is should be used.
- 2). See table 3.3 for the size of the drain port of the unit with the condensate pump, which is different from that of the unit without the condensate pump.
- For the unit with the condensate pump, two drain ports at the bottom are defaulted to be factory plugged. After the installation of the drain pipe, these two drain ports also need to be insulated properly.
- 4). The drain pipe for the unit with the condensate pump should be arranged as shown in the figure below.

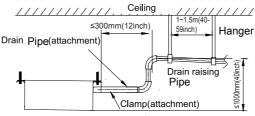


Fig. 4.28

a. The vertical height of the drain pipe should be 75mm(3inch) or less so that it is unnecessary for the drain port to withstand additional force.

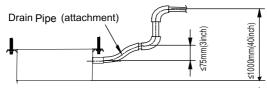
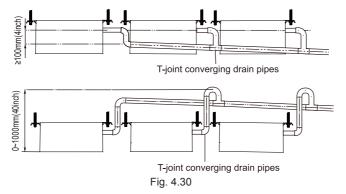


Fig. 4.29

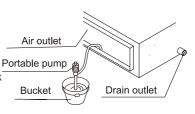
 When multiple drain pipes are used, their installation should be performed as shown in the figure below.



4.5.2 Testing of Drain Piping

After drainage system is complete, verify if water flows smoothly.

As shown in the figure 4.31, add approximately 1 liter or 1 quart of water slowly into the drain pan and check water drains during COOL Mode.



4.6 Installation of the Ductwork

Fig. 4.31

4.6.1 Dimensions of the Supply Air Outlet/Return Air Inlet

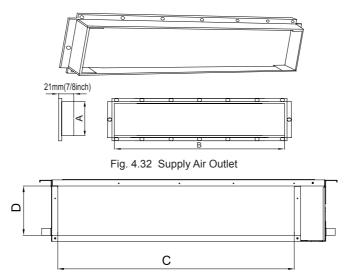


Fig. 4.33 Return Air Inlet

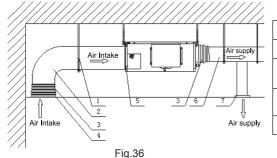
Table 4.5

Unit: mm(inch)

Item	Supply A	Air Outlet	Return	Air Inlet
Model	А	В	С	D
UMAT18HP230V1AD	123(4-7/8)	736(29)	710(28)	166(6-1/2)
UMAT24HP230V1AD	158(6-1/4)	818(32-1/4)	994(39-1/8)	195(7-5/8)
UMAT30HP230V1AD	158(6-1/4)	818(32-1/4)	994(39-1/8)	195(7-5/8)
UMAT36HP230V1AD	158(6-1/4)	818(32-1/4)	1000(39-3/8)	206(8-1/8)
UMAT42HP230V1AD	158(6-1/4)	818(32-1/4)	1000(39-3/8)	206(8-1/8)
UMAT48HP230V1AD	190(7-1/2)	850(33-1/2)	940(37)	286(11-1/4)

4.6.2 Installation of the Supply Air Duct

(1). Installation of the Rectangular Duct.



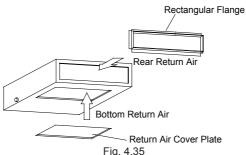
No.	Name	No.	Name
1	Hanger	5	Filter
2	Air Intake Duct	6	Main Air Supply Duct
3	Air supply Duct	7	Air Supply Outlet
4	Air Intake		

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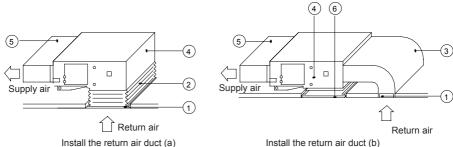
- ①. The maximum length of the duct means the maximum length of the supply air duct plus the maximum length of the return air duct.
- ②. The duct is rectangular and connected with the air inlet/outlet of the indoor unit.

Bottom Return Air Installation only for the 18K model.

The default installation location of the rectangular flange is at the rear, as shown in Fig. 4.35.



- (3). If the bottom return air is desired, change the location of the rectangular flange and the return air cover plate.
- (4). Connect one end of the return air duct to the return air outlet of the unit by screws and the other to the return air louver.
- (5). More noise is produced by a bottom return air than with a rear return air mode, it is suggested to install a silencer and a static pressure box to minimize the noise
- (6). The ductwork configeration should be based on the conditions of the building and maintenance etc., as shown in Fig. 4.36.



Install the return air duct (b)

Fig. 4.36 Install the return air duct

Table 4.6 Installation of the return air duct

No.	Name	No.	Name
1	Return Air Inlet (with filter)	4	Indoor unit
2	Canvas Duct	5	Supply Air Duct
3	Return Air Duct	6	Grille

4.7 Electrical Wiring

4.7.1 Wiring Precautions

AWARNING

- ①. Before accessing electrical terminals, disconnect all electrical power to indoor and outdoor units.
- ②. Before turning on the unit, verify that the voltage is within the 187~252V range(for single phase unit).
- ③. Always use an independent circuit and install an independent outlet to supply power to the air conditioner.
- (4). Use an independent circuit breaker and independent outlet for the electrical rating of the air conditioner.
- ⑤. A circuit breaker or fuse should be installed per NEC and local regulations.
- (6) . Electrical wiring should be performed according to national electrical (NEC) and local standards so that the air conditioner can operate properly.
- (7) . Install a leakage circuit or GFI breaker in accordance with the related laws and regulations and electric company standards.

ACAUTION

- ①. The air conditioner must be installed on a dedicated circuit.
- When the air conditioner can't be started up due to low voltage, contact a licensed electrician.

4.7.2 Electrical Wiring

- (1). For solid core wiring (Fig. 4.37)
- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 25 mm (1 inch).
- 2). Use a screwdriver to remove the terminal screw(s) on the terminal board.
- 3). Use pliers to bend the solid wire to form a loop suitable for the terminal screw.
- 4). Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.
- (2). For strand wiring (Fig. 4.37)
- 1). Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 10 mm (3/8 inch).
- 2). Use a screwdriver to remove the terminal screw(s) on the terminal board.
- Use a round terminal fastener or pliers to securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw with a screwdriver.(Fig.40)

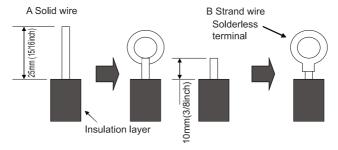
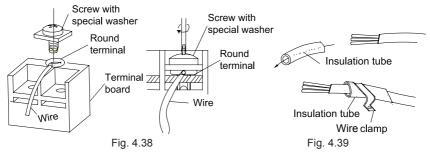


Fig. 4.37

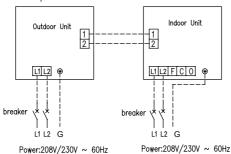


(3). How to fasten connection wire and power wire by wire clamp.

After passing the connection wire and power wire through the access hole, secure with the wire clamp. (Fig. 4.39)

AWARNING

- ① . verify electrical power is disconnected to the indoor and outdoor units.
- ②. Match the terminal block numbers and connection wire colors with those of the indoor unit.
- Incorrect wiring may damage electric parts.
- ④. Connect the connection wires firmly to the terminal block. Improper installation may cause a fire.
- Always fasten the connection wire with wire clamps. (If the insulator is not clamped, electric leakage may occur.)
- Always properly connect the ground wire.
 - (4). Electric wiring between indoor unit and outdoor unit Single-phase units (18K~30K)



Single-phase units (36K~48K)

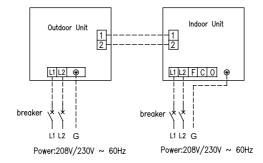


Fig. 4.40

(5). Electric wiring of indoor unit

Remove the electric box cover from the electric box sub-assy and then connect the wire.

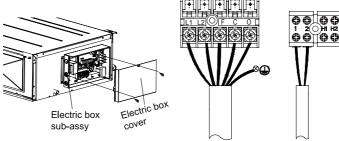


Fig. 4.41

The F, C, O connect to the COMMOM, CLOSE and OPEN terminal of the fresh air damper respectively.

ACAUTION

- ① . The fresh air damper and power wires are high-voltage, while the communication wire and wired controller are low-voltage. They should run separately to avoid electromagnetic interference.
- ②. High-voltage and low-voltage wires enter the electrical control box though separate access holes.
- ③ . Do not bundle wired controller and the communication wire together, or arrange them in parallel, otherwise improper operation would occur.
- ④ . High-voltage and low-voltage wires should be fastened separately and securely, with internal big clamps for the former and small clamps for the latter.
- ⑤ . Tighten the indoor/outdoor communication wires and power wire respectively on the terminal boards with screws. Faulty connections may cause a fire.

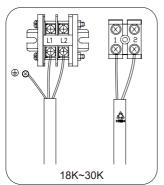
- ⑥ . If the indoor unit connection wire (to the outdoor unit) and power wire are connected incorrectly, the air conditioner may be damaged.
- ⑦. Connect the indoor unit connection wire properly based on the corresponding labels as shown in Fig. 4.40.
- Properly ground both indoor unit and outdoor units directly to an earth ground.
- (9). Unit shall be grounded in compliance with the applicable local and national codes.

(6). Electric wiring of outdoor unit

NOTICE! When connecting the power wire, make sure that the phase of the power supply matches with the exact terminal board. If not, the compressor will rotate reversely and run improperly.

Remove the big handle (18~30K) /front panel(36~48K) of the outdoor unit and insert the end of the connection wire and the power wire into the terminal board.

Single phase:



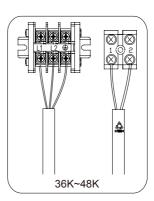


Fig. 4.42

Power lines should go along the right side plate. Communication wires between indoor unit and outdoor unit also should go along the right side plate and kept away from power lines.

5 Installation of Controllers

Refer to the Installation Manual of the controller for more details.

6 Test Running

6.1 Trial Operation and Testing

(1). The meaning of error codes as shown below:

Table 6.1

Number	Error code	Error	Remarks
1	E1	Compressor high pressure protection	
2	E2	Indoor anti-freeze protection	
3	E3	Compressor low pressure protection, refrigerant-lacking protection and refrigerant colleting mode	
4	E4	Compressor high discharge temperature protection	
5	E6	Communication error	
6	E8	Indoor fan motor error	
7	E9	Full water protection	
8	F0	Indoor ambient temperature sensor error	
9	F1	Evaporator temperature sensor error	
10	F2	Condenser temperature sensor error	
11	F3	Outdoor ambient temperature sensor error	
12	F4	Discharge temperature sensor error	
13	F5	Temperature sensor error of wired controller	
15	C5	Capacity code error	
16	EE	Outdoor memory chip error	
17	PF	Electric box sensor error	
18	H3	Compressor overload protection	
19	H4	Overloading	
20	H5	IPM protection	
21	H6	DC fan motor error	
22	H7	Drive desynchronizing protection	
23	HC	PFC protection	
25	Lc	Activation failure	
26	Ld	Compressor phase sequence protection	
27	LE	Compressor stalling protection	
28	LF	Power protection	
29	Lp	Mismatching between indoor unit and outdoor unit	
30	U7	4-way valve direction changing protection	
31	P0	Drive reset protection	
32	P5	Over-current protection	
33	P6	Communication error between main control and drive	
34	P7	Drive module sensor error	
35	P8	Overheating protection of drive module	
36	P9	Zero-crossing protection	
37	PA	AC current protection	

Pc	Drive current error	
Pd	Sensor connecting protection	
PE	Temperature drift protection	
PL	Busbar low voltage protection	
PH	Busbar high voltage protection	
PU	Charge loop error	
PP	Input voltage abnormality	
ee	Drive memory chip error	
	Pd PE PL PH PU PP	Pd Sensor connecting protection PE Temperature drift protection PL Busbar low voltage protection PH Busbar high voltage protection PU Charge loop error PP Input voltage abnormality

NOTICE! When the unit is connected with the wired controller, the error code will be simultaneously shown on it.

(2). Description of the Indicators on the Panel of the Duct Type Unit.

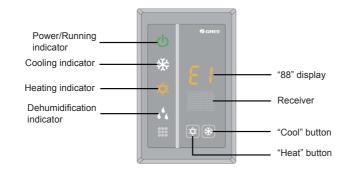


Fig. 6.1

6.2. Working Temperature Range

Table 6.2

Test Condition	Indoor Side		Outdoor Side	
	DB(°C/°F)	WB(°C/°F)	DB(°C/°F)	WB(°C/°F)
Nominal Cooling	26.7(80.0)	19.4(67.0)	35.0(95.0)	23.9(75.0)
Nominal Heating	21.1(70.0)	15.6(60.0)	8.33(47.0)	6.11(43.0)
Rated Cooling	26.7(80.0)	19.4(67.0)	46.1(115.0)	23.9(75.0)
Low Temp. Cooling	19.4(67.0)	13.9(57.0)	-18.0(0)	_
Rated Heating	26.7(80.0)	-	23.9(75.0)	18.3(65.0)
Low Temp. Heating	20.0(68.0)	-	-18.0(0)	-

Note:

- ① . The design of this unit conforms to the requirements of ARI 210/240-2008 standard.
- ②. The air volume is measured at the relevant standard external static pressure.
- ③ . Cooling (heating) capacity stated above is measured under nominal working conditions corresponding to standard external static pressure. The parameters are subject to change with the improvement of products, in which case the values on nameplate take precedence.
- ④ . In this table, there are two outside DB values under the low temp cooling conditions, and the one in the brackets is for the unit which can operate at extreme low temperature.

7 Unit Function

7.1 Setting of Double Indoor Room Sensors

This series of ducted air conditioner has two indoor room sensors. One is located at the air intake of the indoor unit and the other one is located inside the wire controller.

User can select one from the two indoor room sensors to control room temperature and comfort levels.

(Refer to the section of wire controller instructions for detailed operation.)

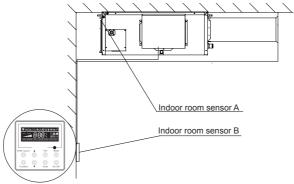
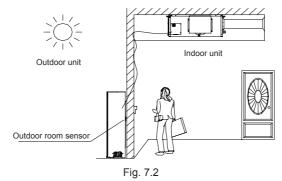


Fig. 7.1

7.2 Checking of Outdoor Ambient Temperature

The outdoor ambient temperature can be checked on the wire controller for the convenience of users before going out. (Refer to the section of wire controller instructions for detailed operation.)



7.3 Fresh Air Control

The fresh air control can be utilized for fresh air taken in. The function not only facilitates the healthy living, but also controls the electricity consumption because of taking in fresh air. This function is controlled by the wire controller. The function can set at any time, goes into effect at any time, and features very simple operation. (Refer to the section of wire controller instructions for detailed operation.)

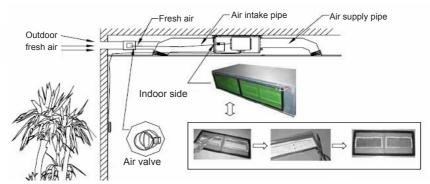


Fig. 7.3

8 Troubleshooting and Maintenance

8.1 Troubleshooting

If the air conditioner can't operate normally or there's malfunction, please check following points at first before asking for maintenance.

Failure	Possible Reasons
	① . The power wire is not connected.
	② . Electrical leakage of air-conditioning unit causes tripping of the leakage
The unit cannot be started.	or GFI breaker.
	③ . The operating buttons are locked.
	④ . The control loop has failure.
	① . There is obstacle in front of the condenser.
The unit operates for a	② . The control loop is abnormal.
while and then stops.	$\ensuremath{\Im}$. Cooling operation is selected when the outdoor ambient temperature is
	above 46°C(115°F).
	① . The air filter is dirty or blocked.
	$\ensuremath{ @}$. There is heat source or too many people inside the room.
	③ . The door or window is open.
Poor cooling effect.	④ . There is obstacle at air inlet or air outlet.
	⑤ . The set temperature is too high.
	⑥ . There is refrigerant leakage.
	$\ensuremath{{\ensuremath{\bigcirc}}}$. The performance of room temperature sensor becomes worse
	① . The air filter is dirty or blocked.
	② . The door or window is not firmly closed.
Poor hooting offset	$\ensuremath{\Im}$. The set room temperature is too low .
Poor heating effect	④ . There is refrigerant leakage.
	⑤ . The outdoor ambient temperature is lower than -5°C(20°F).
	⑥ . Control loop is abnormal.

After checking above items and taking relevant measures to deal it them, if the air conditioner is not properly operating, please stop operation immediately and contact a qualified service technician Only have qualified service technicians check and repair the unit.

8.2 Routine Maintenance

Before accessing to terminal devices, disconnect main electrical power to the indoor and outdoor units. Do not use water or air of 50°C(122°F) or higher for cleaning air filters and outside panels.

NOTICE

- ①. Filter should be installed before operating the air conditioner, otherwise dust will come into the unit.
- Do not remove the air filter except for cleaning. Unnecessary handling may damage the filter
- ③ . Do not clean the unit with gasolene, benzene, thinner, polishing powder or liquid insecticide, otherwise it would cause discoloration and deformation of the unit.

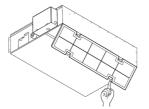
WARNING! Do not wet the indoor unit in case of electric shock or fire hazard.

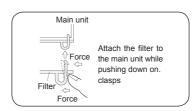
Cleaning frequency will increased if the unit is installed in a room where there's a lot of dirt and dust (in general, the cleaning frequency of every 3 months).

- (1). Removing the air filter from the duct.
- (2). Cleaning the air filter

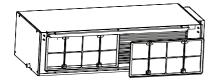
Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning the filter, dry it in the shade.

18k:





2.4~48k:



Press the return air inlet filter downward against the guide groove and take it off along the arrow direction. There are two return air inlet filters.

(3). Replacing the air filter Reinstall the filter as before.

Cat No: UMATCH-DUC-10M

Version 0.0

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