

Models

Indoor		DONSR07A12		DONSR10A12		DONSR12A12		DONSR14A12
Outdoor		DINLR07A12		DINLR10A12		DINLR12A12		DINLR14A12

R410



Ducted Heat Pump Installation Manual

Rinnai

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1. PRECAUTIONS

- Please read "PRECAUTIONS" carefully before installation.
- Please ensure compliance with all local and national laws and regulations regarding this product.
- Please note that the following precautions include important safety items.
- Please retain this and the owners manual in a safe place for future reference.

The safety precautions listed here are divided into two categories. Important safety information is listed and must be read carefully



WARNING

Failure to observe a warning may result in death.



CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained regularly. Contact Rinnai the number is on the back of this manual for assistance.



WARNING

Please ensure that only trained and qualified service personnel install, repair or service this equipment

Improper installation, repair or maintenance may result in electric shock, electrical short-circuit, refrigerant or water leaks, fire, personal injury and/or other damage to the equipment.

Installation must be strictly in accordance with these installation instructions. If installation is incorrect, water leaks, electrical shock or fire may result.

When installing the system in smaller enclosed spaces, take all necessary measures to ensure that refrigerant concentration cannot exceed allowable safety limits in the event of a refrigerant leak.

Contact your installer or Rinnai for more information.

Use the appropriate attached accessories and parts for the installation.

Use of incorrect parts or accessories may result in personal injury and/or equipment damage.

Install the equipment at an appropriate site secure enough to withstand the full operating weight of the equipment.

Failure to install the equipment securely may result in personal injury and/or equipment damage.

The Fan Coil Unit must be installed at least 2.5m above floor.

The appliance must not be installed in inappropriate areas such as bathrooms, kitchens or laundries.

Before accessing the unit switchoverboard or electrical terminals ensure all power is disconnected and/or turned off

The appliance must be positioned so that all electrical connections or service areas are fully accessible.

When installing this equipment, all relevant local and national wiring and plumbing standards and regulations must be strictly adhered to. An independent circuit is required.

If the electrical circuit is insufficient or defective, personal injury and/or equipment damage may result.

Appropriately specified and sized cables must be used, ensure all connections are tight. Clamp all cables sufficiently so that they cannot be pulled loose or disconnected.

If the connections or fixings are not secure, the electrical terminals may overheat and fail.

Electrical cable routing must be properly arranged so that the control board cover is able to be fixed properly

If the control board cover is not fixed properly, it may cause the electrical connections to overheat and fail, resulting in personal injury or property damage.

If any electrical cables are damaged, they must be replaced by a suitably qualified and trained service person in order to avoid any potential hazards.

A correctly specified and sized circuit breaker must be installed in accordance with all local and national wiring standards.

A dedicated, independent electrical circuit is required for the system.

Interconnecting refrigerant pipe must be installed in strict accordance with good industry piping practices. New, clean and sealed refrigeration grade R410a certified copper pipe must be used. All refrigerant pipe must be insulated individually.

Do not modify the length of any power supply cord or use extension cords. Do not connect this equipment electrically via double adaptors or multi-outlet powerboards.

It may cause fire or electrical shock.

Carry out the specified installation work after taking into account the site specific conditions such as installation and service access, strong prevailing winds, physical obstructions and personal safety.

If a refrigerant leak occurs during installation, ventilate the area immediately.

Toxic gas may be produced if the refrigerant comes into contact with a naked flame.

Interconnecting refrigerant pipe cannot become very hot during operation, please ensure all electrical cables, drains and other items are kept clear of the refrigerant pipes.

After completing the installation works, thoroughly check the refrigerant circuit for leaks.

Toxic gas may be produced if the refrigerant leaks into the air conditioned space and comes into contact with a source of fire, such as a heater, cooktop or range.



CAUTION

Ground/Earth the air conditioner.

Incomplete or inappropriate grounding or earthing may result in equipment malfunction, damage or potential electrical shock.

An appropriately sized circuit breaker must be installed.

A separate and dedicated circuit is required. Failure to install in accordance with these requirements may result in electrical shock

Connect the outdoor unit wiring first, then connect the indoor unit. Do not connect the unit to the power source until all electrical wiring and refrigerant piping is complete.

Install the condensate drain to ensure proper drainage to waste. Condensate drain must be trapped and insulated as required to prevent condensation.

Ensure that an auxiliary, separately drained safety tray is installed under the indoor unit.

Improper condensate drain connection may result in water leaks, property damage and may void the manufacturers warranty.

Install the indoor and outdoor units, power supply wiring and interconnecting wiring away from televisions or radios in order to prevent interference and/or noise.

Depending on site specific conditions, the prescribed 1 metre separation may not be sufficient to eliminate interference.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or a lack of knowledge, unless they have been given supervision or instruction concerning the 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.

Don't install this air conditioner in the following locations:

- Overly corrosive environments i.e coastal or industrial
- Areas of insufficient or unstable power supply
- Areas where strong electromagnetic fields exist
- In transport applications, mobile homes, caravans, buses
boats or other vehicles
- Close to flammable materials or gases
- Other sites with specific adverse conditions

2.INSTALLATION INFORMATION

- Please read the entire Installation Manual prior to installation. This product must be installed by suitably qualified personnel.
- When installing the indoor unit and interconnecting refrigerant pipe, please strictly follow the instructions in this manual.
- If the air conditioner is installed in contact with metal parts, it must be electrically insulated in accordance with the relevant electrical standards.
- Only after a thorough check of the entire system should power to the equipment be switched on.
- Due to our policy of continuous improvement, details, data or specifications may change without notice.

INSTALLATION SEQUENCE

- Select the appropriate location for the indoor and outdoor units
- Install the indoor unit
- Install the outdoor unit
- Install the interconnecting refrigerant pipe
- Install and connect the condensate drain
- Install the indoor, outdoor and interconnecting wiring
- Thoroughly check of the entire system
- Test run and commissioning

3. SPECIFICATIONS

Rinnai - System Model No.		DSNR07A12	DSNR10A12	DSNR12A12	DSNR14A12	
Nominal Heating Capacity		kW	8	10.5	14.5	17.5
Power Supply (To Outdoor Unit)		V- Ph-Hz	220~240 - 1 - 50			
Maximum Input Power		W	3000	3900	5500	5500
Maximum Input Current		A	16.0	21.0	26.0	26.0
Recommended Circuit Breaker Size			20	25	32	32
Heating	Rated Capacity	kW	8.2	10.6	14.4	17.3
	Capacity Range		3.0 ~ 9.0	4.2 ~ 12.5	5.0 ~17.0	5.8 ~19.0
	Rated Input Power	W	2383	2809	3863	4427
	Rated Input Current	A	11.3	12.4	16.9	19.5
	AEER	W/W	3.40	3.63	3.70	3.87
Cooling	Rated Capacity	kW	7.0	9.9	12.7	14.2
	Capacity Range		2.8 ~ 8.4	4.0 ~ 12.5	5.0 ~ 15.0	5.6 ~ 16.1
	Rated Input Power	W	2066	3109	3821	4147
	Rated Input Current	A	10.0	13.7	16.9	18.5
	AEER	W/W	3.37	3.29	3.30	3.40




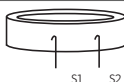
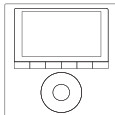




Indoor Unit			DINLR07A12	DINLR10A12	DINLR12A12	DINLR14A12
Rated Input		W	200	450	450	450
Rated Current		A	1.6	2.8	2.8	2.8
Air Flow	High Speed	L/s (ESP)	490 (100 Pa)	730(150pa)	1075 (150Pa)	1075 (150Pa)
Maximum External Static Pressure (ESP)		Pa	160	200	200	200
Noise Level	Sound Pressure @ 1.4m (Hi / Med / Lo)	dB(A)	45 / 41 / 38	47/43/40	49 / 46 / 42	49 / 45 / 42
Dimensions	Net (W × D × H)	mm	1100 x 720 x 248	1200 x 625 x 380	1200 x 625 x 380	1200 x 625 x 380
	Packing (W × D × H)		1305 x 805 x 305	1485 x 675 x 450	1485 x 675 x 450	1485 x 675 x 450
	Net / Gross weight	kg	31 / 38	53/60	54 / 60	54 / 60
Duct Connections	Supply Air (W × H)	mm	926 x 175	1186 x 175	1000 x 253	1000 x 253
	Return Air (W × H)		1001 x 228	1261 x 228	1145 x 334	1145 x 334
Condensate Drain Pipe Diameter			ODΦ25			
Refrigerant Piping	Liquid / Gas Connections		Φ9.52 / Φ15.9			
Moisture Removal		L/h	2.1	2.7	2.9	3.3
Controller		Type	Wired Programmable Controller plus Wi-Fi Module			
Operating Range		°C	Cooling: 17 ~ 32. Heating: 0 ~ 30			

Outdoor Unit			DONSR07A12	DONSR10A12	DONSR12A12	DONSR14A12
Power Supply		V-Ph-Hz	220~240 - 1 - 50			
Starting Current		A	2.5	3.0	3.5	4.0
Compressor		Type	Twin Rotary			
Sound Pressure Level @ 1m		dB(A)	58	61	62	62
Sound Power Level			69	70	71	71
Dimensions	Net (W × D × H)	mm	946 x 410 x 810	946 x 410 x 810	952 x 415 x 1333	952 x 415 x 1333
	Packing (W × D × H)		1090 x 500 x 865	1090 x 500 x 865	1095 x 495 x 1480	1095 x 495 x 1480
	Net / Gross weight	kg	61 / 66.5	68.5 / 74	100 / 114	116 / 130
Refrigerant Piping	Type		R410A			
	Pre-Charged Length	m	15	15	15	15
	Charge Adjustment (Add or Remove)	g/m	30	30	30	30
	Liquid / Gas Connections	mm	Φ9.52 / Φ15.9	Φ9.52 / Φ15.9	Φ9.52 / Φ15.9	Φ9.52 / Φ15.9
	Maximum Pipe Length	m	50	65	65	65
	Maximum Vertical Separation		25	30	30	30
Ambient Temperature Limits		°C	Cooling: -15 ~ 50. Heating -15 ~ 24			

4. ACCESSORIES

Please check that the following fittings are available.



The air conditioning system comes with the following accessories. Use all of the installation parts & accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock & fire, or cause the equipment to fail.

Table 4.1	Name	Shape	Quantity
Tubing & Fittings	1. Soundproof / insulation sheath		2
Drainpipe Fittings	3. Drain joint (some models)		1
	4. Seal ring (some models)		1
EMC & Its Fitting	5. Magnetic ring (twist the electric wires S1 and S2 around the magnetic ring to five circles)		1
Wired Controller	6. Wired Controller (with indoor unit)		1
	7. Wired Controller Screws		2
Others	8. Wired Controller Manual		1
	9. Owner's manual		1
	10. Installation manual		1

5.INSPECTING & HANDLING THE UNITS

Upon delivery, the packaging and equipment should be thoroughly checked, and any damage advised immediately to Rinnai.

When handling the equipment, please consider and take into account the follow:

-  Fragile, handle the unit with care.
-  Keep the units upright in the correct configuration to prevent any internal damage to the electrical or refrigeration circuits
- Before moving the units, decide upon the most appropriate path along which to take the equipment to their final installation position
- To prevent any unnecessary damage, keep the unit in its original packaging for as long as possible before removing
- Be careful when lifting the units, pay particular attention to the physical size and weight of the units, as well as the centre of gravity, and final installation position.

6. INDOOR UNIT INSTALLATION

6.1 Installation position

The indoor unit should be installed in a location that fulfills the following requirements:

- There is sufficient room for the installation and maintenance.
- The ceiling is horizontal, and its structure can support the full operating weight of the unit.
- The supply and return air positions are unimpeded, and the unit is not exposed to adverse ambient conditions.
- The airflow direction is as direct as possible.
- The interconnecting refrigerant pipe and condensate drain can be installed and routed correctly and easily.
- There is no direct radiation from any external heat sources

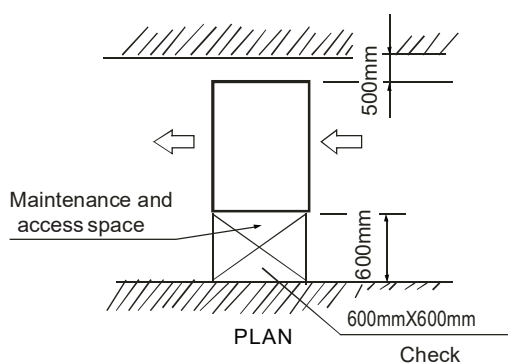


Fig. 6-1

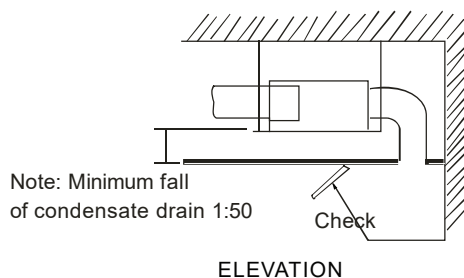


Fig. 6-2



CAUTION

- Always install a Safety Drain Tray (Field Supplied).
- The Safety Drain Tray should be independently drained.
- Terminate the Safety Drain Tray in a position so as not to cause a nuisance but where the home owner can see if water is dripping.
- Instruct owner to contact installer or Rinnai if Safety Drain Tray outlet drips water.

6.2 Installing the Indoor Unit

1 Installing ø10 hanging bolts. (4 bolts)

- Please refer to the following schematics for the measurement distances for the hanging arrangement.
- Please install with ø10 hanging screw bolts.
- If the ceiling configuration differs from the detail noted in this manual please ensure that the installation is suitable for the specific site.
 - Check the type of the ceiling being used, and isolate the roof mountings from possible vibration.
- When choosing where to site the unit, be careful to determine the position and direction of the refrigerant pipe and the drains. Make sure that the refrigerant pipe, drain pipes, indoor and outdoor wiring can be routed and positioned adequately before hanging the unit. Once the unit is successfully installed, fit of the refrigerant and connections.
- Installation of the hanging screw bolts
 - Mount off the roof beam.
 - Strengthen roof beams as required to support full operating weight of the machine.
- Securely mount the hanging screw bolts, and inspect for tightness. It is recommended the the indoor unit be installed with an incline towards the condensate drain of at least 10 - 20mm to assist proper drainage.



NOTE

Confirm the minimum drain fall is at least 1:50

5.3 Timber construction

Put the mounting timber transversely over the roof beams, and then install the hanging bolts (Refer to Fig. 6.3)

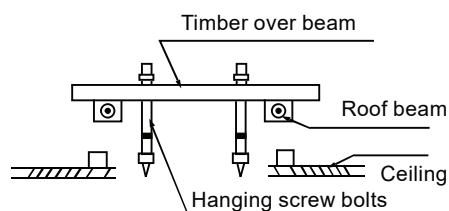


Fig. 6-3

6.4 New concrete bricks

Inlaying or embedding the screw bolts. (Refer to Fig. 6-4)

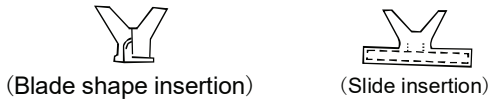


Fig. 6-4

6.5 For Original concrete bricks

Use embedding screw bolt, crook and thread harness. (Refer to Fig. 6-5)

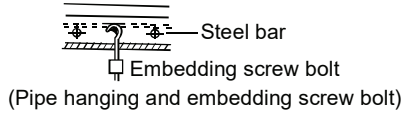


Fig. 6-5

6.6 Steel roof beam structure

Install and directly mount the supporting steel angle. (Refer to Fig. 6-6)

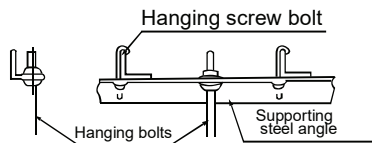


Fig. 6-6

Service Space

07 & 10 Models

Ensure enough space required for installation and maintenance.

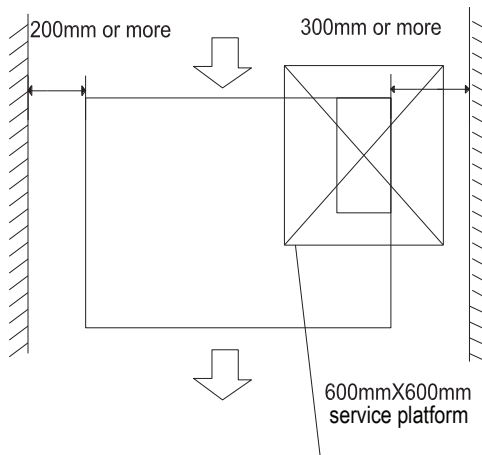


Fig. 6-7

Service Access

12 and 14 Models

- The unit can be opened from top or bottom.

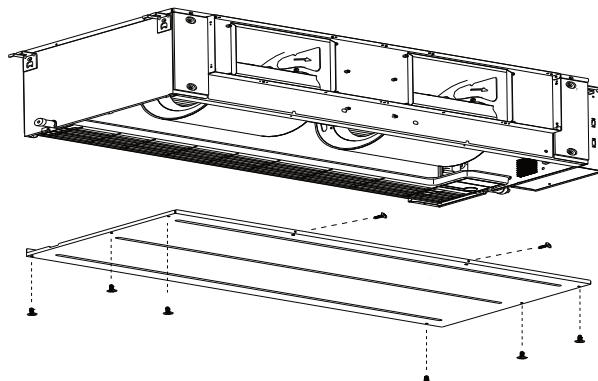
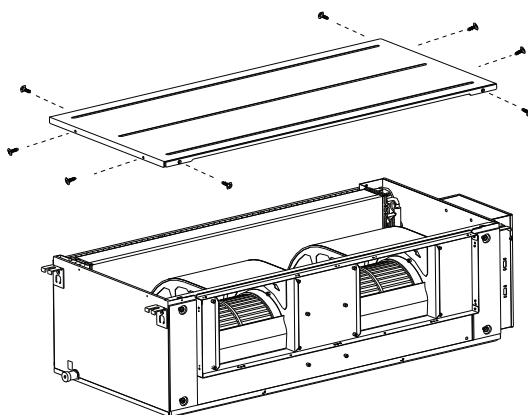


Fig. 6-10

- The air outlet flange is isolated from either top panel or base panel, which makes the maintenance much easier when ducting connected.

6.7 Hanging the Indoor Unit

- (1) Hang the indoor unit onto the hanging screw bolts as shown.
- (2) Install the indoor unit flat and level by using a spirit level: uneven installation may cause condensate leaks.

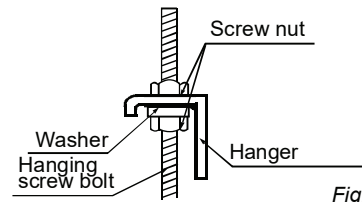


Fig. 6-8

6.8 Installation diagram for the Indoor Unit

Return Air screen and flexible duct connections

1. Install the return air screen according to the installation manual.
2. Install flexible connections to the supply and return air spigots.

Duct Connection

- The external static pressure of the unit varies according to the unit size, the length, type and configuration of the duct system, and supply air quantity.

Please refer to the specification tables for details.

12 & 14 Models

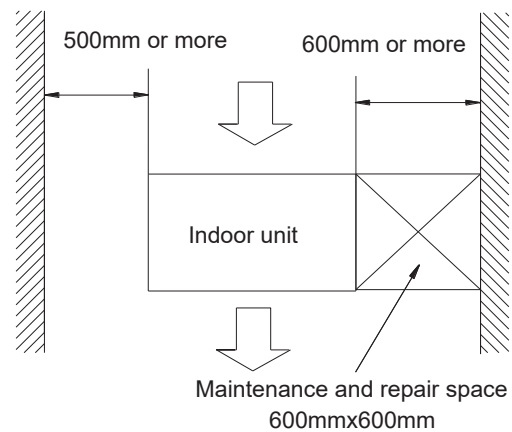


Fig. 6-9

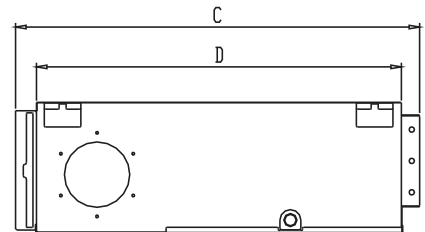
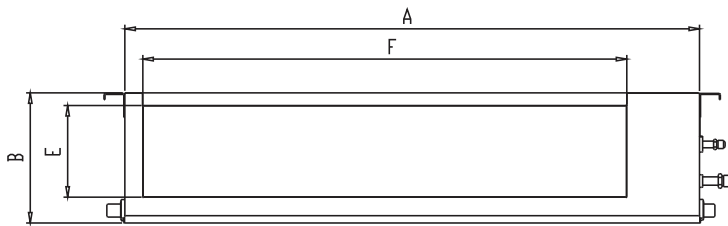
7. INDOOR UNIT DIMENSIONS

Ducted Indoor - Hanging rod position and unit dimension detail

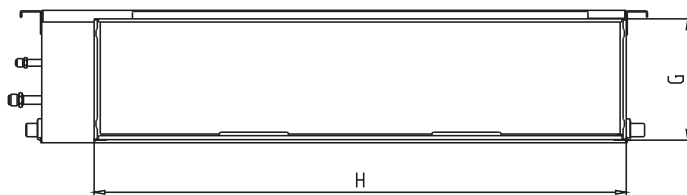
Indoor Unit Dimensions

Please refer to the following data to locate the four positioning screw bolt hole on the ceiling. Be sure to mark the areas where ceiling hook holes will be drilled.

Dimension and Air Outlet Size



Air Inlet Size



Position of ventilation opening and size of mounted hook

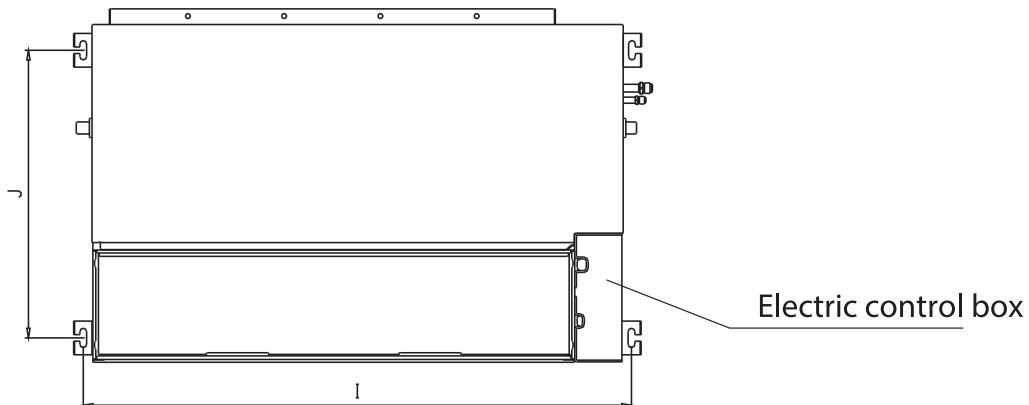


Table 7.1 Unit (mm)

Model (kW)	External Dimensions				Air Outlet Opening Size		Air Return Opening Size		Size of Mounted Lug	
	A	B	C	D	E	F	G	H	I	J
DINLR07A12	1100	248	774	700	175	926	228	1001	1140	600
DINLR10A12	1370	248	774	700	175	1186	228	1261	1416	600
DINLR12A12	1200	380	-	625	253	1000	334	1145	1236	495
DINLR14A12	1200	380	-	625	253	1000	334	1145	1236	495

DINLR07A12 & DINLR10A12

How to adjust the air inlet direction
(From rear side to under-side.)

1. Take off ventilation panel and flange

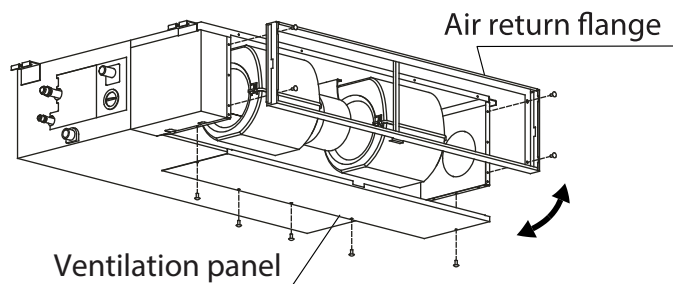


Fig. 7.2

2. Change the mounting positions of ventilation panel and air return flange.

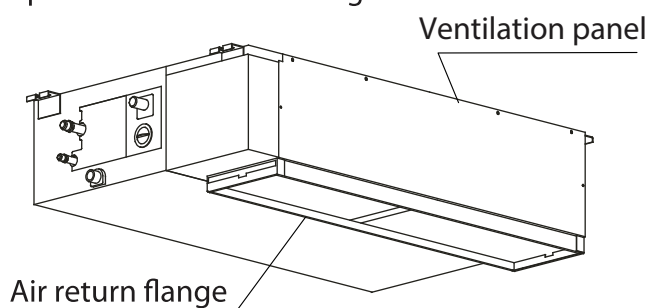


Fig. 7.3

3. When install the filter mesh, please plug it into flange as shown in figure below.

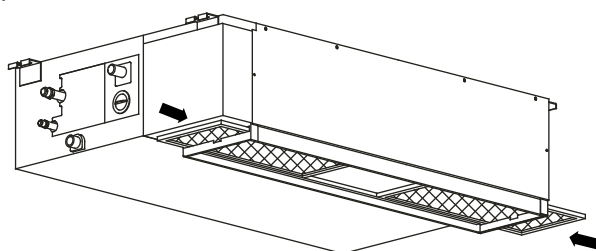


Fig. 7.4

NOTE: All the figures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased. The actual unit shall prevail.

Fresh air duct installation (where fitted)

Dimension :

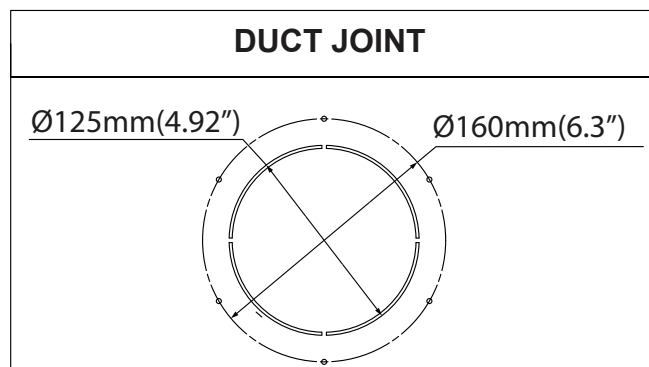
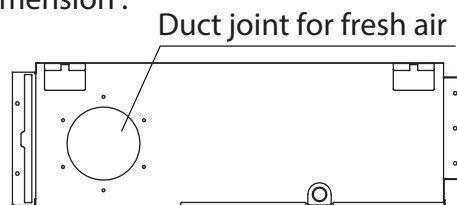


Fig. 7.5

Motor and drain pump maintenance

(Take rear ventilated as example)

Motor access

1. Take off the ventilated panel.
2. Take off the blower housing.
3. Take off the motor.

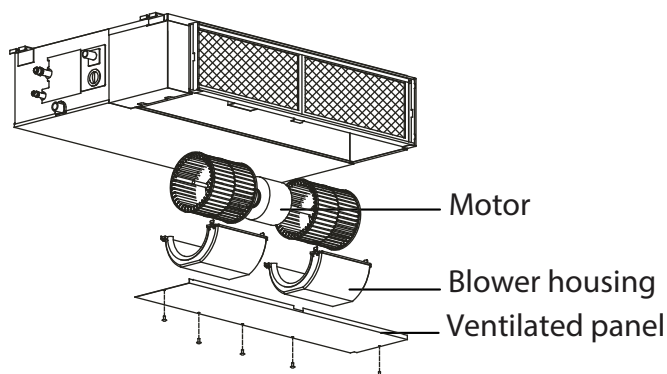


Fig. 7.6

Pump access

1. Remove four screws from drain pump cover.
2. Unplug pump power supply and water level switch cable.
3. Take pump out of unit.

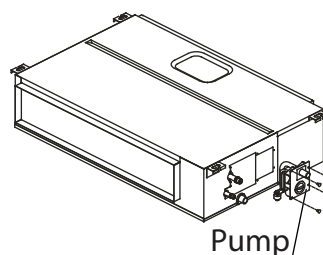


Fig. 7.7

7.3 Duct Design

1. Return and supply air grilles should be separated sufficiently to prevent air recirculation.
 2. The Return air screen if supplied with the unit is not a filter. Separate, adequate air filtration must be provided in addition to this screen in the duct work system. Inadequate or blocked filters may damage the system and void warranty
- Key points of the duct connection

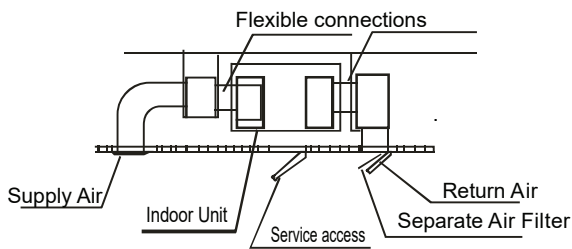


Fig. 7-8



NOTE

1. Ductwork must be supported independently of the indoor unit.
2. When connecting the ducts, use flexible connections to isolate any possible vibration.
3. When installing the indoor unit, ensure adequate space and access for service and maintenance.
4. Adjust fan motor speed to match supply air quantity and external static pressure requirements
5. Ensure adequate noise suppression in applications where acoustic performance is critical. Also, provide a minimum of 1m of straight duct from the unit before the first branch take off.



WARNING

The maximum external static pressure limits should not be exceeded. Condensate leaks may occur.



NOTE

All pictures and diagrams in this manual are indicative for explanatory purposes only. There may be differences between these and the products supplied, depending on the model. Actual unit specifications should be reviewed.

8. OUTDOOR UNIT INSTALLATION

8.1 Installation position

The outdoor unit shall be installed in a location that satisfies the following requirements:

- There is sufficient room for installation and maintenance.
- The condenser air path is not blocked or impeded, and cannot be adversely affected by strong prevailing winds.
- It must be in a dry and well ventilated place.
- The supporting structure is flat, horizontal and can withstand the full operating weight of the outdoor unit. The base must be free of vibration.
- Positioned so as to prevent operating noise interference to others.
- Easy installation of interconnecting refrigerant pipes and wiring.
- Arrange condenser air discharge to be free, unimpeded, and not blocked or obstructed.
- Away from any potential fire risks, or flammable materials.
- The refrigerant pipe length or height difference between outdoor and indoor does not exceed the maximum allowable limits.
- For installations prone or exposed to strong prevailing winds or breezes such as coastal areas, please ensure that the unit is sited appropriately, by placing it lengthwise along the wall to reduce any negative impact on the condenser fans (*Refer Fig. 8-1*)
- If possible, do not install the unit where it is exposed to direct sunlight, this will negatively impact cooling performance.
- In heating mode, the outdoor unit will produce condensate water. This condensate needs to be properly drained to waste in accordance with all applicable local and national plumbing regulations.
- Select unit location where it will not be subject to the accumulation of snow, leaves or other seasonal debris. This may negatively impact the performance and longevity of the units.
- Locate the outdoor unit as close as possible to the indoor unit to reduce performance losses.
- If possible, please remove and obstacles nearby to prevent the system performance being negatively impacted by compromised condenser air circulation.
- The minimum distance between the outdoor unit and walls/obstacles described in the installation chart does not correlate directly to installations in enclosed spaces. In these cases at least two of the three sides should remain open (M, N, P). (*Refer to Fig. 8-4*)

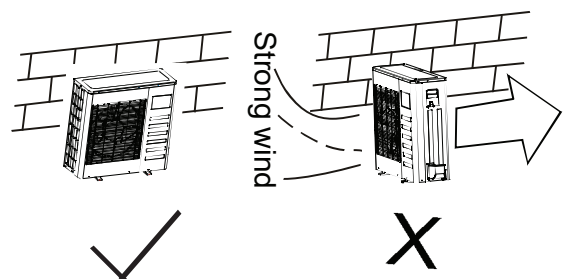


Fig. 8-1

8.1 Outdoor Unit Dimensions

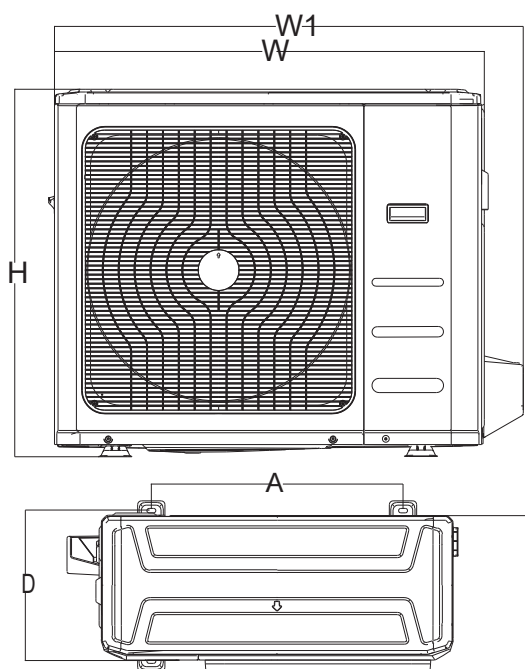


Fig. 8.2

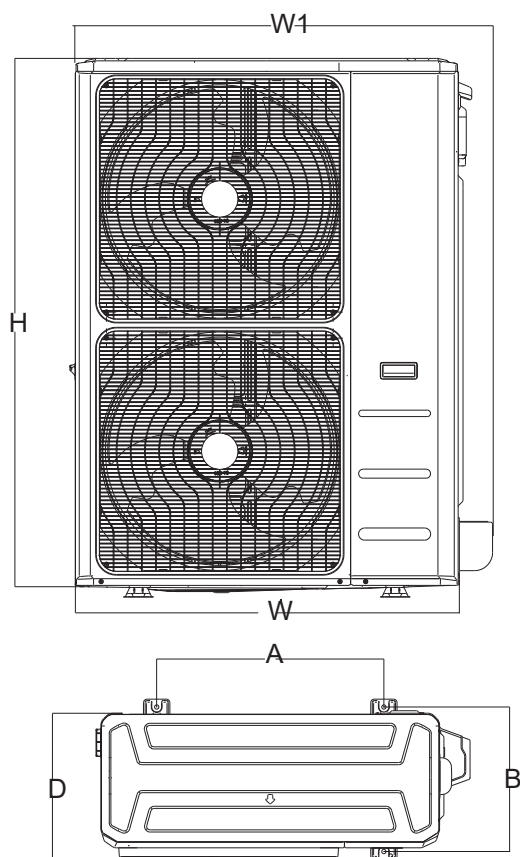


Fig. 8.3

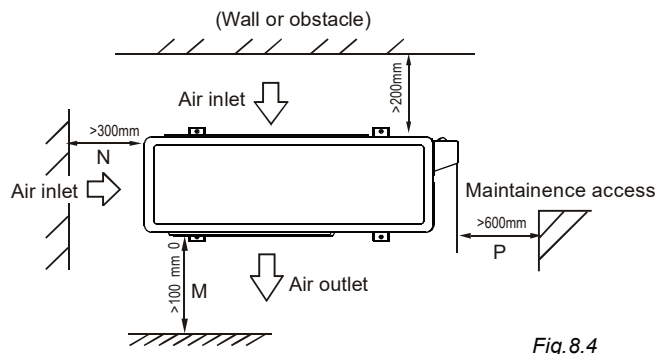


Fig. 8.4



NOTE

All pictures and diagrams in this manual are indicative for explanatory purposes only. There may be differences between these and the products supplied, depending on the model. Actual unit specifications should be reviewed.

8.2 Moving and installation

- The unit centre of gravity is offset, so please be careful when lifting unit by hand or with slings.
- Do not hold or lift the unit by the condenser grilles. Equipment damage or personal injury may result.
- Do not touch the condenser fans by hand or other objects.
- Do not lay the unit down, or lean over more than 45° from vertical.
- Mount on a firm, stable base in accordance with the specification of the outdoor units. (Refer to Fig. 8.5).
- Fasten the mounting feet securely with bolts to prevent the unit from moving, or falling in strong winds. (Refer to Fig. below).

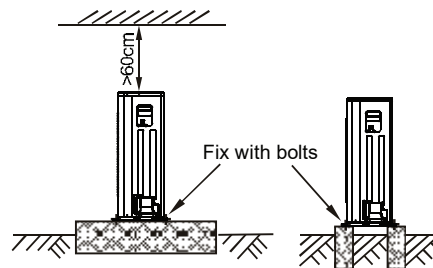


Fig. 8.5



NOTE

All pictures and diagrams in this manual are indicative for explanatory purposes only. There may be differences between these and the products supplied, depending on the model. Actual unit specifications should be reviewed.

Table 8.2 Outdoor Units - (Unit: mm)

Model	W	D	H	W1	A	B
DONSR07A12	946	410	810	1030	673	403
DONSR10A12						
DONSR12A12	952	415	1333	1045	634	404
DONSR14A12						

9. INSTALLING THE REFRIGERANT PIPE

Review the installation with reference to the height difference between the indoor and outdoor units, the length of refrigerant pipe, and the number of bends to meet the following requirements:

(Number of bends to be less than 10)

Table 9-1

MODEL	07	10	12	14
Maximum vertical separation between Indoor and Outdoor Units (m)	25	30	30	30
Maximum Pipe Length (m)	50	65	65	65
Pre-Charged Length (m)	15 m			

Refrigerant pipe connection procedure



CAUTION

All field piping must be provided by a licensed refrigeration mechanic and must comply with all of the relevant local and national codes.

Do not let air, dust or other impurities enter the refrigeration circuit during the installation.

The interconnecting pipe should not be installed until the indoor and outdoor units have been installed.

Keep the interconnecting refrigerant pipe dry, do not let moisture in during installation.

Be sure to fully insulate refrigeration liquid and suction lines. The electronic expansion device is housed in the outdoor unit, insulate both lines individually to prevent condensation.

- 1 Drill a hole in the wall suitable for the size of the pipes and wiring, then mount the necessary fittings such as wall brackets, conduits or their covers.
- 2 Bind the insulated refrigerant pipes and wiring cables together with tape.
Pass the insulated refrigerant pipes through the hole. Be careful to prevent damage to the refrigerant pipes and wiring.
- 3 Connect the refrigerant pipes to the indoor and outdoor units. Refer to "How to connect the refrigerant pipes" for details.
- 4 Evacuate the refrigeration system with a vacuum pump. Refer to "How to evacuate the refrigeration system" for details.
- 5 Open the isolation valves of the outdoor unit to allow the refrigerant to flow between the indoor and outdoor units through the refrigeration circuit.
- 6 Check the refrigeration circuit thoroughly for leaks. Check all joints with a leak detector or soapy water.
- 7 Be sure to cover any joints of the interconnecting pipe with insulation, and secure with tape to prevent any condensation.



CAUTION

Be sure to insulate all of the exposed pipe of the refrigeration circuit individually on the suction and liquid side. Incomplete or insufficient insulation will result in condensation and possible equipment and/or property damage.

How to connect the refrigerant pipes

1 Flaring

- Cut the pipe with an approved pipe cutter (Refer to Fig. 9-1)

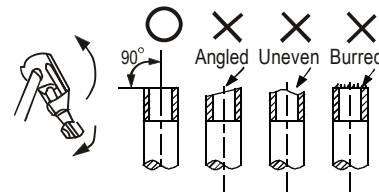


Fig. 9-1

- Place a flare nut onto the pipe and flare the pipe.
- Refer to Table 9-2 for the flare dimensions.

Table 9-2

Pipe size	Tightening torque	Flare dimension A		Flare shape
		min (mm)	max	
Ø6.35	14.2~17.2 N.m (144~176 kgf.cm)	8.3	8.7	
Ø9.53	32.7~39.9 N.m (333~407 kgf.cm)	12.0	12.4	
Ø12.7	49.5~60.3 N.m (504~616 kgf.cm)	15.4	15.8	
Ø15.88	61.8~75.4 N.m (630~770 kgf.cm)	18.6	19.0	

2 Connect the indoor unit first, then connect the outdoor unit

- Bend the refrigerant pipe correctly to prevent damage.

Bend the pipe with a bending spring or approved pipe bending tool



minimum radius 100mm

Fig. 9-2

- The bending angle should not exceed 90°
- The preference is to place any bends in the middle of the pipe. The larger the bending radius the better, as it reduces the internal pressure drop.
- Do not bend the pipe any more than is necessary.
- When connecting the flare nut, coat the flare internally and externally with an approved oil, and tighten by hand, 3-4 turns before tightening firmly.

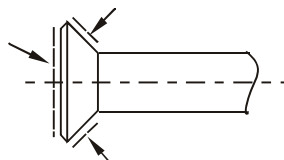


Fig. 9-3

Installing Refrigerant Pipe (Continued)

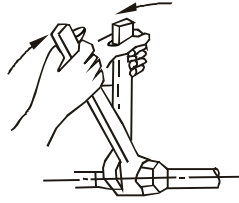


Fig. 9-4



CAUTION

Excessive tightening torque will damage the flare. Too little tightening torque may cause a refrigerant leak. Please determine the correct tightening torque in accordance with Table 9-2.

After the connection work is complete, be sure to check the system thoroughly for leaks.

■ How to evacuate the refrigeration system

• Isolation valve operation

1. Opening the isolation valves

1. Remove the cap with a spanner and turn the valve stem counter-clockwise with a correctly sized allen key.
2. Turn the valve until it stops. Do not apply excessive force to the isolation valve, doing so may damage the valve; it is not a back seat version. Always use the correct tools.
3. Replace the cap and tighten securely.

2. Closing the isolation valves

1. Remove the cap with a spanner and turn the valve stem clockwise with the correctly sized allen key.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Replace the cap and tighten securely.

For the correct tightening torque, refer to the table below.

Table 9-3

Tightening torque N•M (Turn clockwise to close)				
Stop Valve size	Shaft (valve body)		Cap (valve lid)	Maintenance nut
Ø6.35	5.4~6.6	Allen key 4 mm	13.5~16.5	11.5~13.9
Ø9.53			18~22	
Ø12.70	8.1~9.9	Allen key 6 mm	23~27	
Ø15.88	13.5~16.5		36~44	
Ø22.22	27~33	Allen key 10 mm		
Ø25.40				



CAUTION

Always use an appropriate charging hose for service port connection.

After tightening the cap, check that no refrigerant leaks are present.

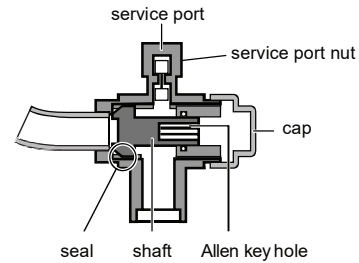


Fig. 9-6

• Using the vacuum pump

1. Loosen and remove the service port nuts of valves A and B, and connect the charging hose of the manifold valve to the service port of the isolation valve A. Ensure that the isolation valves A and B are both closed (Fig. 9-6).
2. Connect the charging hose to the vacuum pump.
3. Open the Lo-side valve of the manifold completely.
4. Turn the vacuum pump on. At the start of pumping, loosen the service valve nut of isolation valve B a little to check for air entering (the sound of the vacuum pump will change, and the manifold gauge reads below zero). Then close the service valve.
5. When evacuation is complete, close the Lo-side valve of the manifold gauge completely and turn off the vacuum pump. Let the system hold for 15 minutes or more, and check that the pressure does not rise, suggesting a system leak.
6. Loosen and remove the cap of the isolation valves A and B to open stop valve A and B completely, then fasten the cap.
7. Disassemble the charge hose from the service port of the isolation valve A, and fasten the nut.

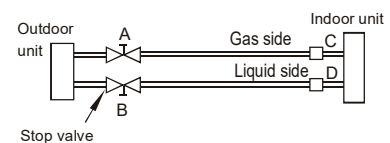


Fig. 9-6

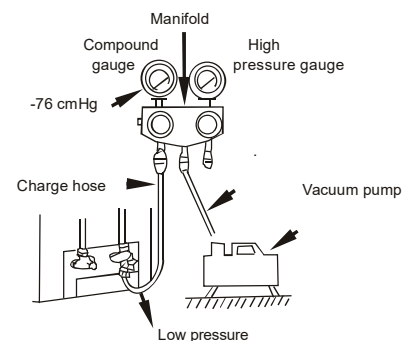



Fig. 9-7

Additional refrigerant charge



CAUTION

Refrigerant cannot be added until the field wiring has been completed.

Refrigerant may only be added after performing a leak test and system evacuation.

When charging the system, care must be taken to ensure that the maximum permissible charge is not exceeded. Excessive charge may lead to liquid slugging and equipment damage.

Ensure that appropriate refrigerant is used to charge the system. Inappropriate or contaminated substances may cause equipment damage.

Refrigerant containers should be opened slowly to avoid injury .

Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is pre-charged with refrigerant for a 15 m pipe run. Please calculate the additional refrigerant required according to the diameter and length of the **liquid line** pipe of the indoor/outdoor connection.

Table 9.4

System Refrigerant Adjustment		
Less than 15 m	REMOVE Refrigerant	30g/m for Ø9.52 liquid line
More than 15 m	ADD Refrigerant	

9.1 Leak testing

Check all the joints with a leak detector or soapy water. (See Fig. 9.8 as reference)

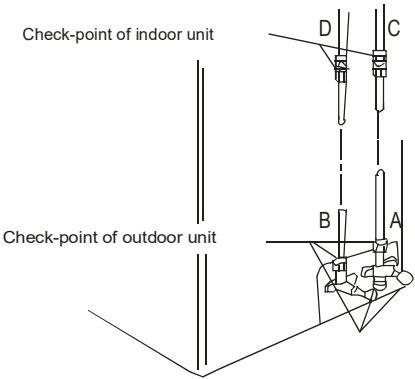



Fig.9-8



NOTE

In the figure above

A.....Low side isolation valve

B.....High side isolation valve

C,D..Joints of the interconnecting pipe to the indoor unit.

10. INSTALLING THE DRAIN PIPE

Indoor Drain Pipe Installation (unit has drain pump)

The drain pipe is used to drain water from the unit.
Improper installation may cause unit and property damage.

⚠ CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drain pipe is bent or installed incorrectly, water may leak and cause a malfunction of the water-level switch.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage due to frozen drain water.
- DO NOT pull the drainpipe forcefully as this could cause it to disconnect.
- Ensure that an auxiliary, separately drained safe tray is installed under Indoor unit

NOTE ON DRAIN PIPE INSTALLATION

- When using an extended drain pipe, tighten the indoor connection with an additional protection tube to prevent it from pulling loose.
- The drain pipe should slope downward to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 1-1.5m.
- If the outlet of the drainpipe is higher than the body's pump joint, provide a lift pipe for the exhaust outlet of the indoor unit. The lift pipe must be installed no higher than 55cm from the ceiling board and the distance between the unit and the lift pipe must be less than 20cm.
- Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly tilted up (<75mm).

Indoor Drain pipe Installation

Install the drain pipe as shown.

1. Cover the drain pipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.

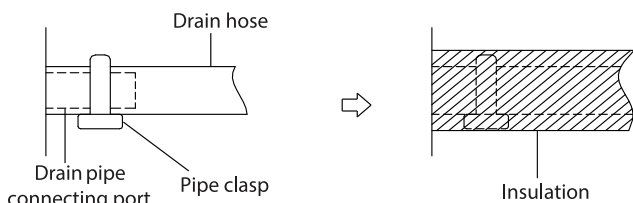


Fig. 10.1

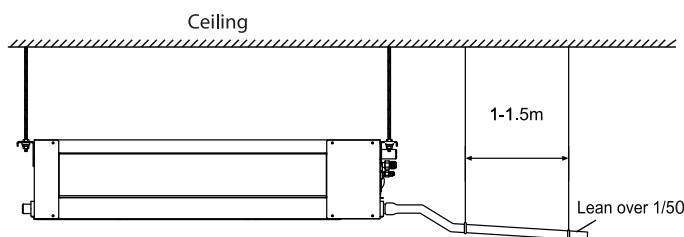


Fig. 10.2

NOTE: If condensate pump drain outlet is not used and one of the gravity drain outlets is used, fit the plug (from the gravity outlet) into the pump outlet and unplug the pump from the indoor PCB terminal CN13.

Installation for unit with drain pump

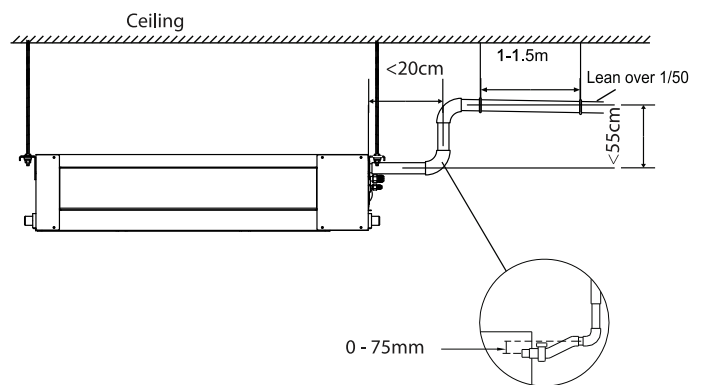


Fig. 10.3

NOTE

When connecting multiple drain pipes, install the pipes as shown below.

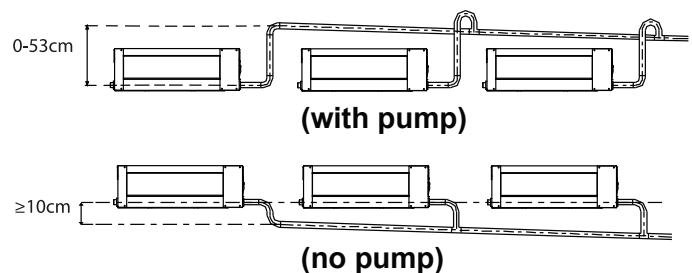


Fig.10.4

INSTALLING THE DRAIN PIPE (CONT).

Indoor Drain Pipe Installation (continued)

- Using a core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12mm. This will ensure proper water drainage. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

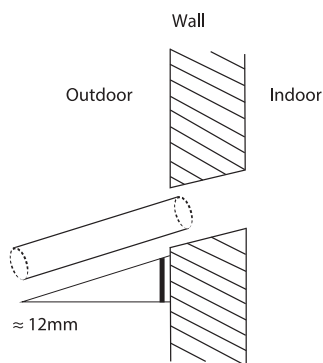


Fig. 10.5

NOTE

When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

- Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

NOTE

The drainpipe outlet should be at least 5cm above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odours that might otherwise come back into the house.

Drainage Test

Check whether the drain pipe is unhindered.

New built house should have this test done before lining the ceiling.

- Remove the test cover, and pour about 2000ml water to the water pan.

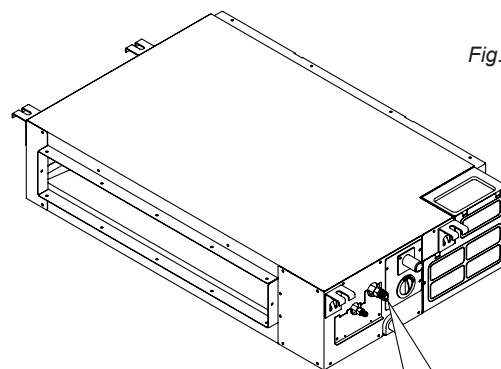
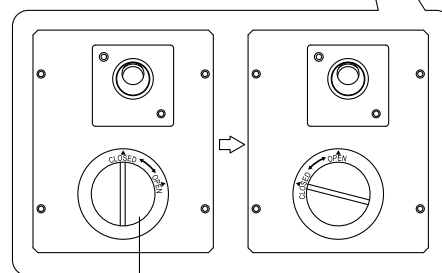
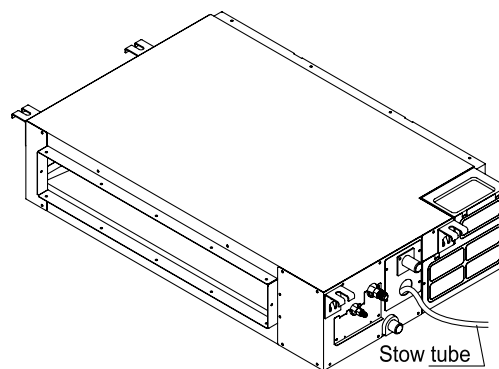


Fig. 10.6



Test cap



Stow tube

- Operate the air conditioner in "COOLING" mode. The sound of the drain pump shall be heard. Check whether the water is discharged well (1 min lag is possible, according to the length of the drain pipe), and check whether the water leaks from the joints.
- Power off the air conditioner and recover the cap.

Installing the outdoor unit drain

Fit the seal into the drain joint, then insert the drain joint into the base pan hole of the outdoor unit. Rotate it 90° to lock securely. Connect the drain joint to the drain pipe (field supplied). Drain to waste in accordance with local plumbing regulations. Drain is required to remove water produced during heating mode (Refer Fig. 10.7)

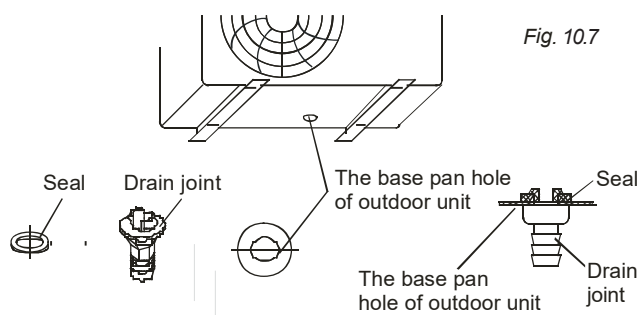


Fig. 10.7

11. SETTING STATIC PRESSURES

! ATTENTION INSTALLER

SYSTEM STATIC PRESURES ARE NOT FACTORY SET. THE INSTALLER MUST SET THE STATIC PRESSURE AS PER THE FOLLOWING PROCEDURE BEFORE LEAVING SITE.

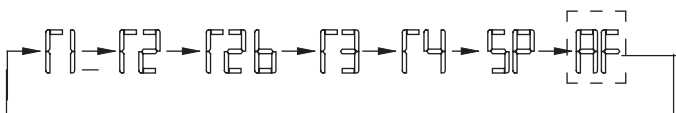
Setting the fan speed and or external static pressure settings can be done either manually or automatically, using the wired controller supplied with the Indoor unit.

Auto Fan Setting

The system will automatically adjust the fan setting based on the system static pressure.

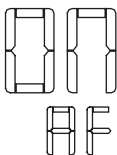
When the system is OFF, perform the following steps using the wired controller.

- Press the "COPY" button and hold for 3 seconds.
- Press the "+" button to select "AF".



- Press the "CONFIRM" button. Then the air conditioning unit will start the fan operation airflow automatic adjustment.

The ON mark will flash during the fan operation for airflow automatic adjustment.



! CAUTION

- DO NOT adjust the dampers during fan operation for airflow automatic adjustment.

After 3 to 6 minutes, the unit stops automatically when the automatic airflow adjustment has been carried out.

Manual Fan Setting

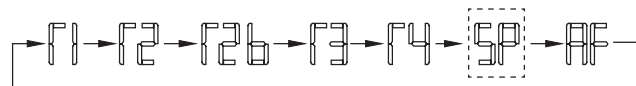
The system can be set manually based on four static pressure settings. Each setting has a Low, Medium and High speed range.

See fan performance curves next page.

External Static Pressure Parameters		
SP No.	DINLR07A12 DINLR10A12	DINLR12A12 DINLR14A12
SP0	Reserved – DO NOT USE	
SP1	0-40 pa	0-40 pa
SP2	40-80 pa	40-80 pa
SP3	80-120 pa	80-120 pa
SP4	120-160 pa	120-200 pa

When the system is OFF, perform the following steps using the wired controller.

- Press the "COPY" button and hold for 3 seconds
- Press the "+" or "-" to select "SP4" button



- Press the "CONFIRM" button. Allow to timeout to save setting.

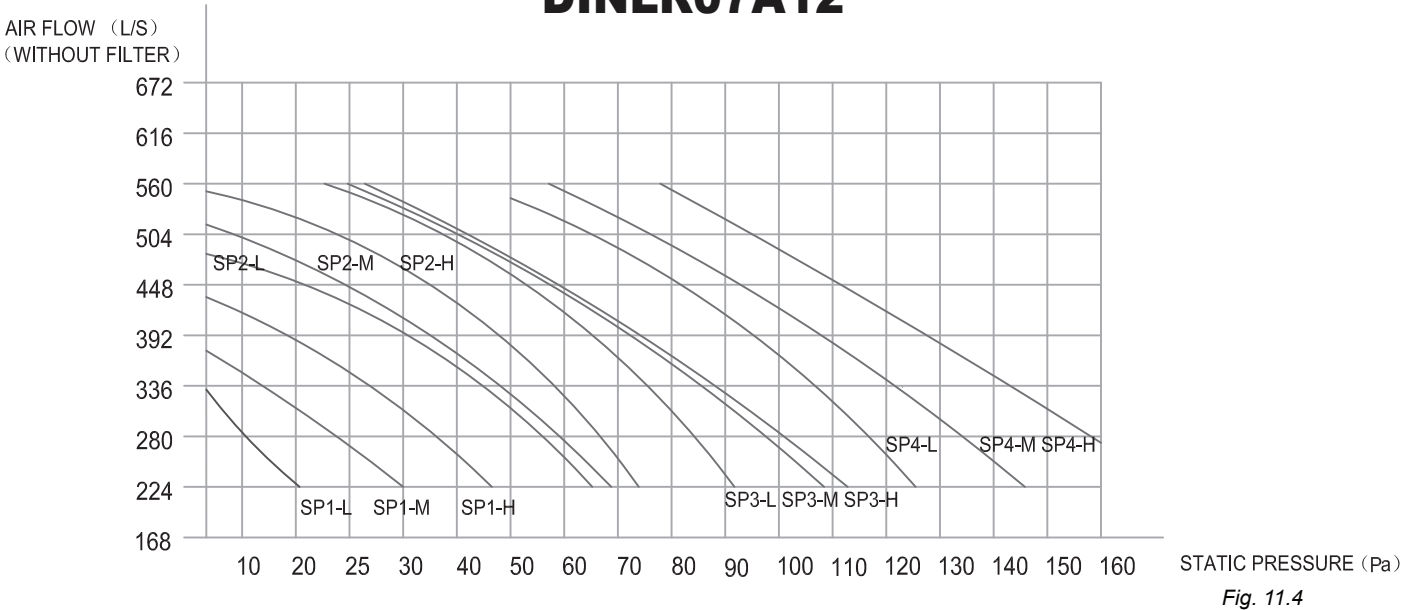


- Press the "CONFIRM" button to select "SP4"

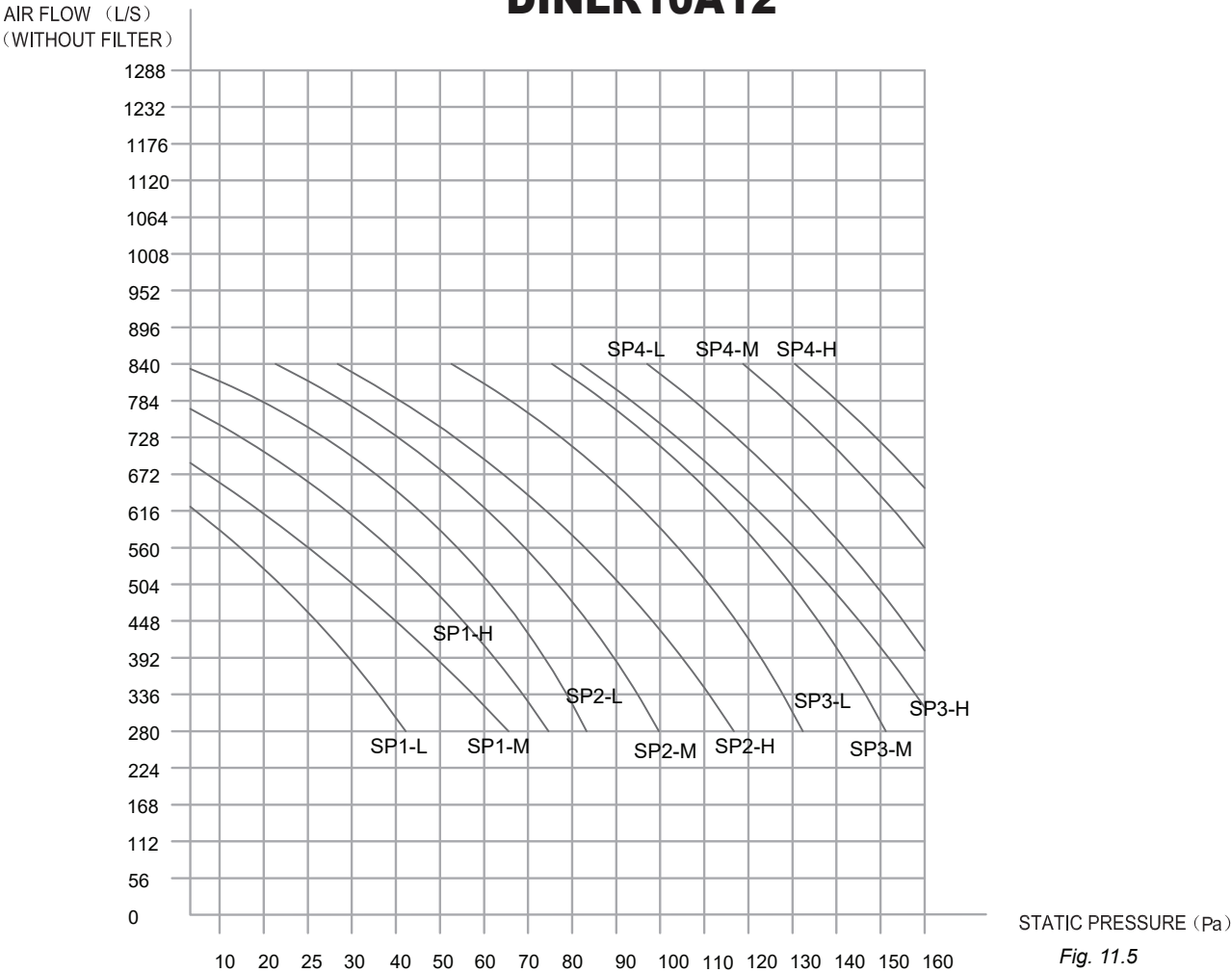
The External Static Pressure settings is now complete.

11.2 Fan performance charts

DINLR07A12

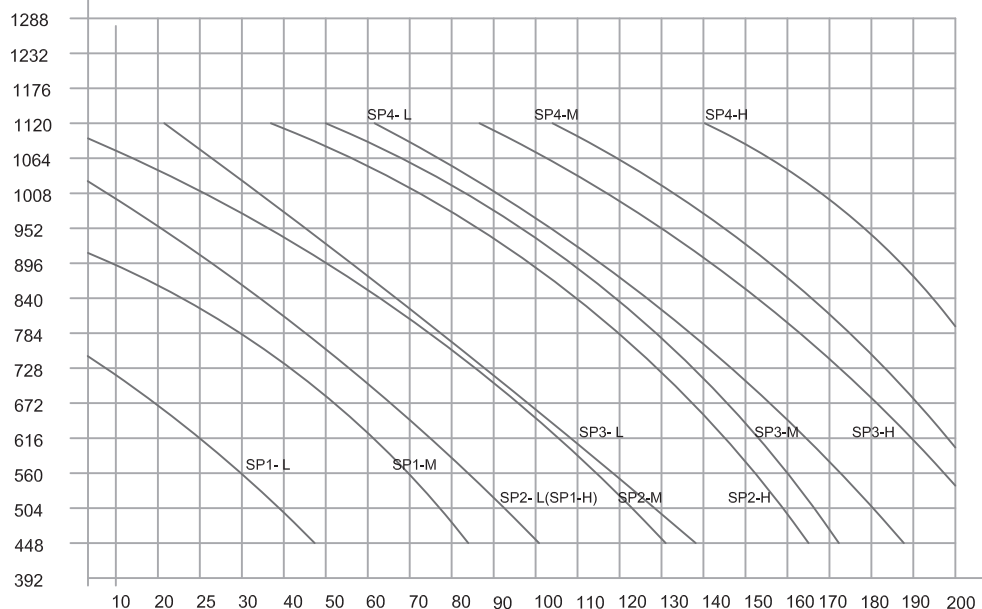


DINLR10A12



AIR FLOW (L/S)
(WITHOUT FILTER)

DINLR12A12

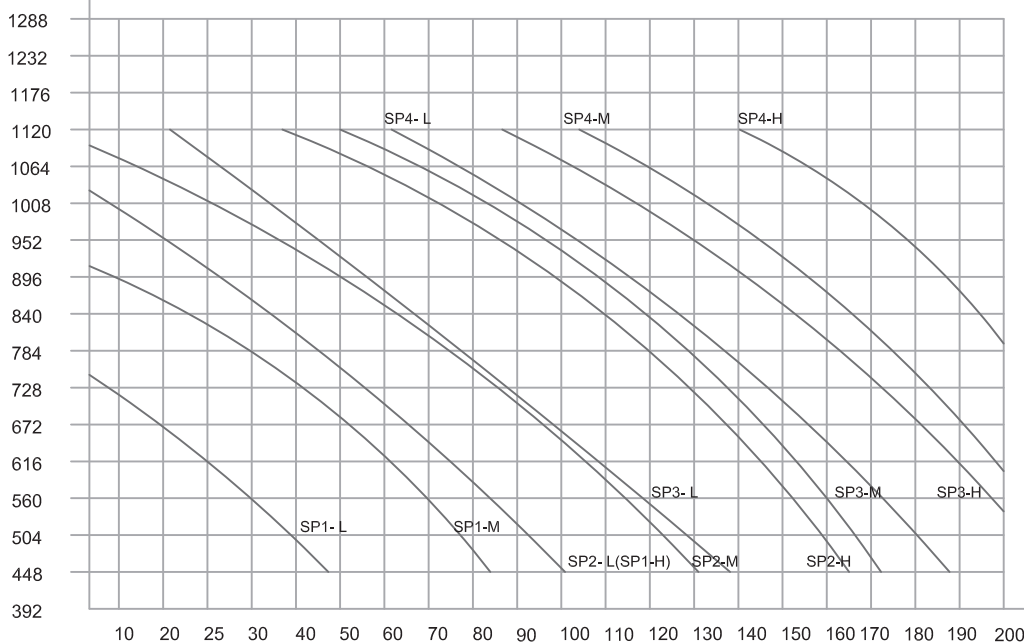


STATIC PRESSURE (Pa)

Fig. 11.6

AIR FLOW (L/S)
(WITHOUT FILTER)

DINLR14A12



STATIC PRESSURE (Pa)

Fig. 11.7

12. REFRIGERATION CIRCUIT SCHEMATIC DIAGRAM

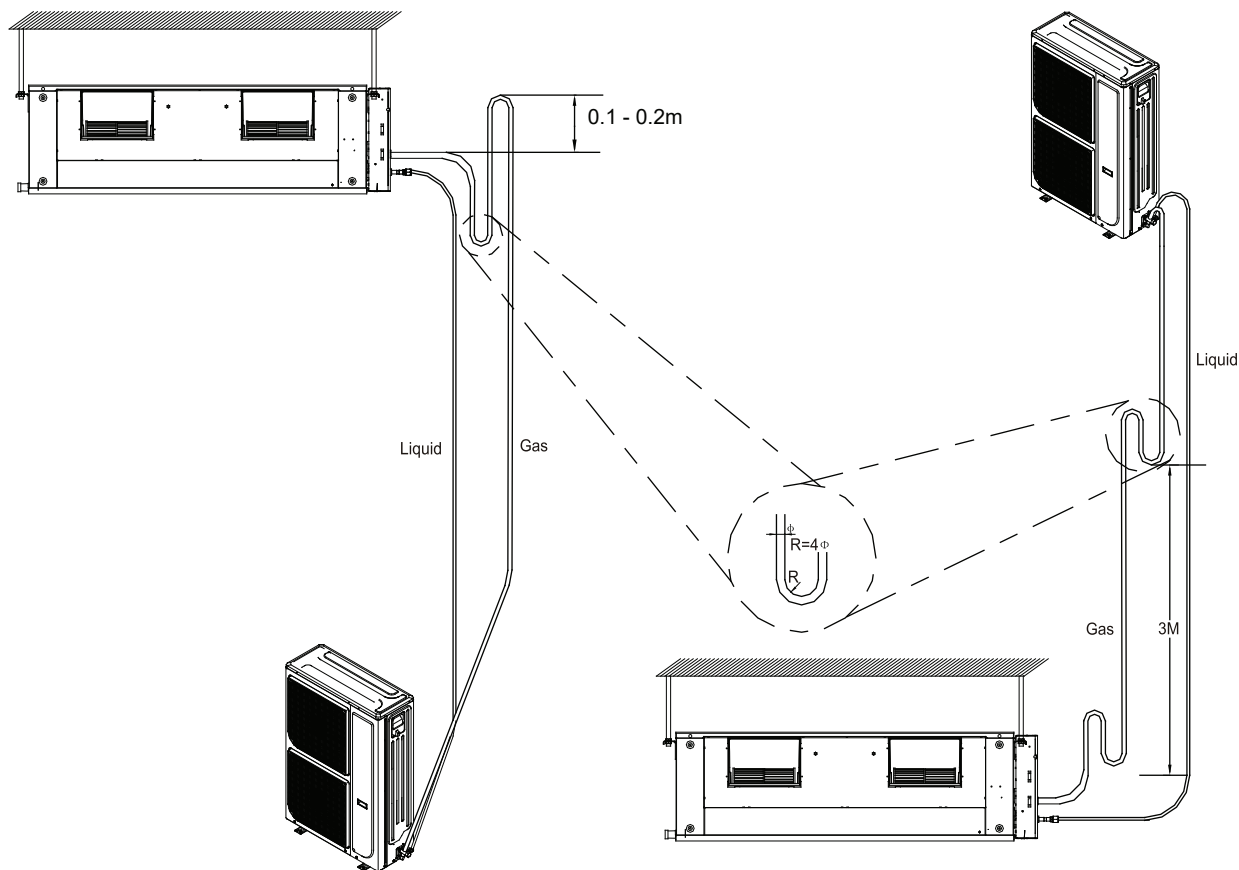


Fig. 12.1

13. WIRING



CAUTION

The system shall be installed in accordance with all local and national wiring regulations.

The air conditioner shall use a separate power supply with adequately rated voltage.

The external power supply to the air conditioner should be earthed appropriately. This earthing applies to both the indoor and outdoor units.

All wiring should be carried out by suitably qualified and trained personnel in accordance with the circuit diagrams.

A dedicated and appropriately sized circuit breaker must be used in accordance with local and national wiring standards.

Be sure to separate the power wiring and the control wiring sufficiently to avoid interference.

Do not turn on the mains power until you have checked the wiring circuit carefully after wiring.



NOTE

Remark per EMC Directive 89/336/EEC
To prevent wiring / control / interference issues during compressor start up, the following installation conditions apply.

- 1 The unit power supply must be connected directly to the mains power distribution board. The distribution supply must be of a low impedance, normally the required impedance requires a circuit breaker.
- 2 No other equipment can be connected to this power circuit.
- 3 For detailed installation compliance please refer to the local electricity supplier to see if there are any restrictions for this type of product.
- 4 For electrical details of the unit please refer to the rating plate on the product.
- 5 If you have any questions, please contact Rinnai Service.
- 6 If any wiring cables are damaged, they must be replaced by a suitably trained and qualified technician strictly in accordance with all local and national regulations.
- 7 The appliance must be installed in strict accordance with all local and national wiring regulations.

Wiring Continued

13.1 Connecting the wiring cables

- Undo the screws of the access panel cover of the of the outdoor unit.
Pull in the direction of the arrow to pull the access panel down and then out to remove the access panel. This allows access to the compressor compartment and electrical board. (Refer to Fig.13-1)
- Connect the appropriate cables to the terminals as identified with their respective matched numbers on the terminal blocks of indoor and outdoor units.
- Re-install the access panel.

13.2 Power Specifications (Refer to Table 13-1)

13.3 Wiring Diagrams (Refer to Fig.13-2~Fig.13-3)

13.4 Outdoor Units

Undo the screws of the access panel cover of the outdoor unit.
 Remove the access panel as required to gain access to electricals

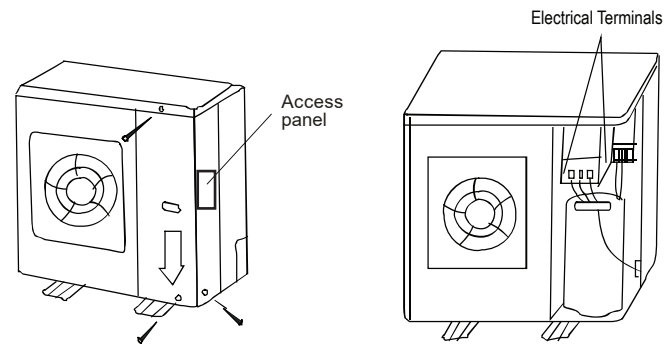


Fig.13-1

NOTE

Please be careful not to scratch the surface of the unit.

NOTE

All the pictures in this manual are indicative for explanation only. They may be different from the air conditioner supplied depending on the model. Actual dimensions should be reviewed.

Fig.13-1 is indicative only, based on one type of outdoor unit. Actual unit supplied may be different.

Power Specifications

Table 13-1

POWER		SYSTEMS			
		07	10	12	14
Power Supply	V-Ph-Hz	220~240 - 1-50			
System Maximum Input Power	W	3000	3900	5500	5500
Maximum Input Current	A	16.0	21.0	26.0	26.0
Minimum Circuit Breaker Size	A	20	25	32	32

Refer to Specification data for more information

CAUTION

An appropriately sized circuit breaker must be installed in accordance with all local and national wiring regulations

13.2. Wiring circuit schematic diagram

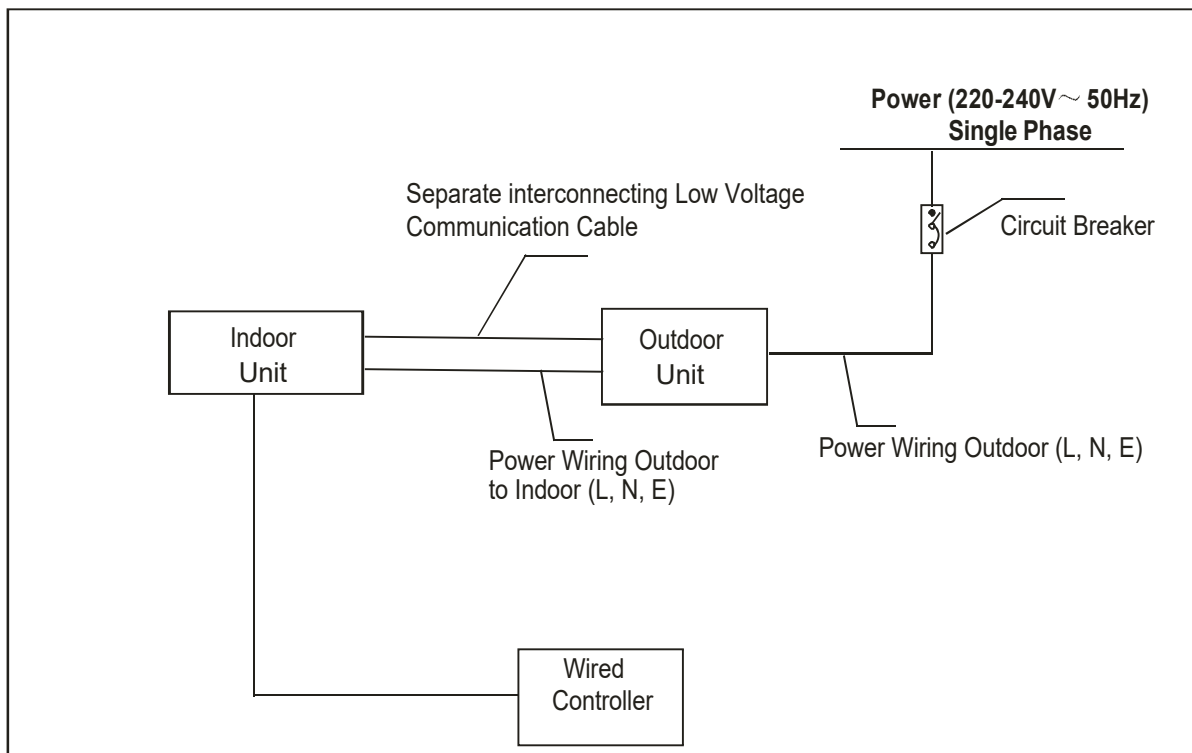


Fig. 13-2

■ Wired controller and interconnecting communication cables

! ATTENTION LOW VOLTAGE COMMS CABLE

DO NOT CONNECT MAINS POWER TO CN28 TERMINAL - this would burn out the IDU board!! A separate shielded cable must be supplied by the installer to connect terminal CN28 on the indoor indoor unit to the S1/S2 terminals on the Outdoor Unit.

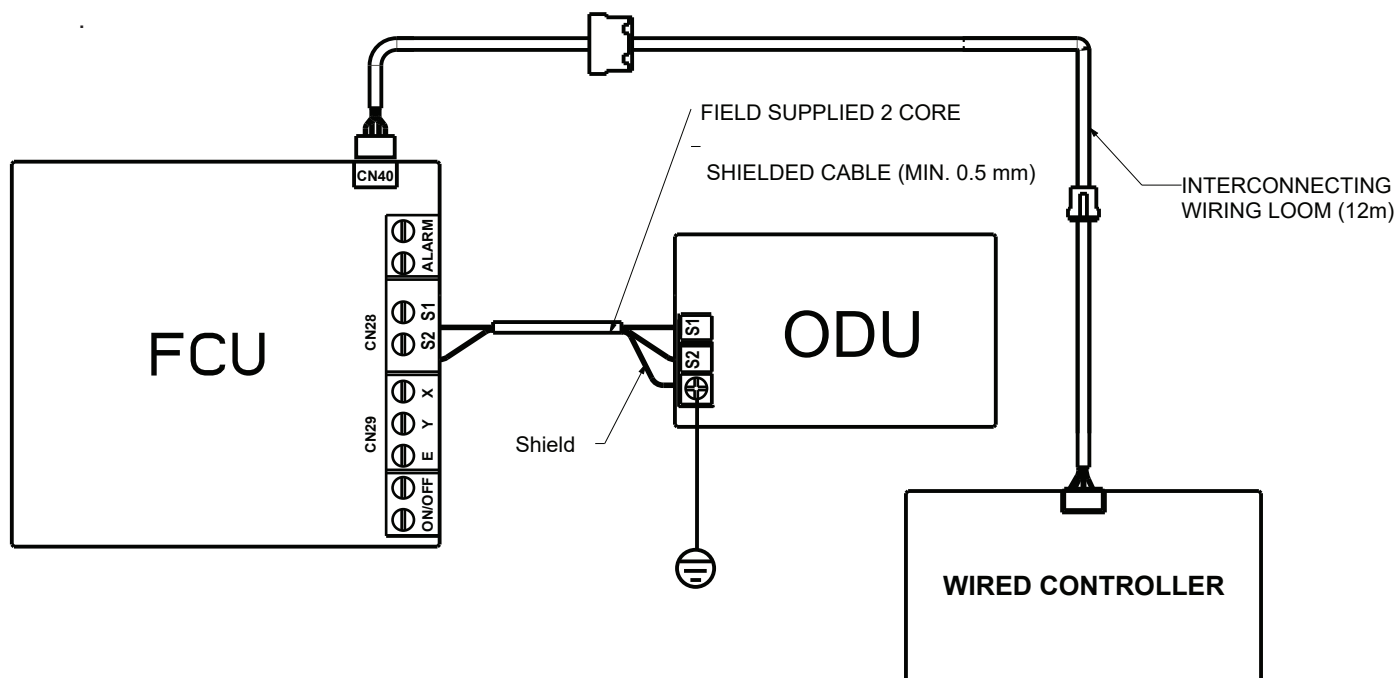


Fig. 13-3

14. TEST OPERATION

1. The test operation must be carried out after the entire installation has been completed.
2. Please confirm the following points before the test operation:
 - The indoor unit and outdoor unit are installed properly.
 - Refrigerant piping and wiring are correctly completed.
 - The refrigerant pipe system is leak tested.
 - Drains and drainage are clear and unimpeded.
 - Pipe insulation is complete.
 - The system has been earthed correctly.
 - The length of the refrigerant pipe and any added refrigerant quantities have been recorded.
 - The power and voltage of the site are aligned with the rating of the airconditioner.
 - There are no obstacles impeding inlets or outlets of the outdoor or indoor units.
 - The condensing unit suction and liquid isolation valves are both open.
 - The crankcase heaters have been energised prior to start up.

3. Test operation.

Set the air conditioner to "COOLING" mode with the controller, and check the following points of operation.

- 1) The indoor unit:
 - a. Whether the switch on the controller is operational
 - b. Whether the buttons on the controller work correctly.
 - c. Whether the air flow is evident from the outlets
 - d. Whether the room temperature is set correctly.
 - e. Whether the indicator lights are working normally.
 - f. Whether the temporary button works correctly.
 - g. Whether the condensate drain is running normally.
 - h. Whether there is any vibration or abnormal noise during operation.
 - i. Whether the air conditioner heats correctly in HEATING mode.
 - 2) The outdoor unit:
 - a. Whether there is any vibration or abnormal noise during operation.
 - b. Air pathways on the inlet and outlet sides are free and unimpeded by any foreign matter or any obstacles.
 - c. Whether any of the refrigerant has leaked.
4. Once the system is fully commissioned, please discuss and advise the user on all aspects of the system including:
 - a. Systems configuration and design conditions.
 - b. Thermostat and controls operation.
 - c. Maintenance requirements (filters, regular servicing)



CAUTION

An inbuilt protection feature prevents the unit from restarting for approximately 3 minutes immediately after it has been shut down.

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For Further Information visit:

www.rinnai.co.nz

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facebook.com/rinnainz

or email info@rinnai.co.nz

Rinnai has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance requires service, please call our National Help Line. Rinnai recommends that this appliance be serviced every 3 years.

With our policy of continuous improvement, we reserve the right to change, or discontinue at any time, specifications or designs without notice.

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