

CLIMATE 5000 VRF

Switch Box (RDCI Series)

SBOX01-1, SBOX02-1, SBOX04-1, SBOX06-1, SBOX02E-1, SBOX04E-1



BOSCH

Installation-user manual

6720844869 (2015/07) BD-en

Thank you very much for purchasing our air conditioner,
Before using your air conditioner, please read this manual carefully and keep it for future reference.

INSTALLATION MANUAL

Model Switch Device

For All DC Inverter Heat Recovery A/C

1. PRECAUTIONS

- Be sure to be in conformity with the local, national and ernational laws and regulations.
- Read "PRECAUTIONS" carefully before installation.
- The following precautions include important safety items. Observe them and never forget.
- Keep this manual with the owner's manual in a handy place for future reference.
- The model names in the manual are using acronyms, for example, SBOX02 is short for SBOX02-1.
- The A-weighted sound pressure level is below 70 dB.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which 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. Also, inform customers that they should store this installation manual along with the owner's manual for future reference.



WARNING

- Please entrust the distributor or professionals for installation. Installation personnel must own related professional knowledge. If installed by oneself, improper installation may lead to fire, electric shock, injury and water leakage etc.
- Local purchased components must use the products assigned by our company. Use the unassigned products may lead to fire, electric shock, injury and water leakage etc., please entrust the professionals to install Retail parts.
- When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.
- Contact the distributor for specific measures.
- For electrical work, follow the local national wiring standard, regulation. According to the law, that must install with the dependable grounding engineering. If electrical grounding is not enough or defect in electrical work, it will cause electrical shock.
- Please entrust the distributor or professionals for installation when the air-conditioner is needed to move or re-installation. Improper installation may lead to fire, electric shock, injury and water leakage etc.
- Never do the remodeling or repair by yourself.
- Improper repairing may lead to fire, electric shock, injury and water leakage etc., please entrust the distributor or professionals for repairing.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



CAUTION

- Do not install the SBOX near the strong electromagnetic interference environment, otherwise will cause the SBOX communication error.
- For the SBOX may produce refrigerant noise, please do not install it at the silent places, such as sleeping room, hospital sickroom, dedicated silent room etc., recommend installing it at the corridor or washing room etc.
- Be sure to install drain piping in order to ensure proper drainage.
- Improper drain piping may result in water leakage and bedewing furniture etc.
- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks.
- Do not install the SBOX at any place where flammable gas may leak out.
- If the gas leaks out and stays around the SBOX, a fire may break out.
- Be sure to install at a strong and firm foundation or ceiling base. If the foundation or ceiling base is not strong and firm enough, the set will drop to cause injury.
- Connect the electric cable correctly. If wrong connecting the electric cable, then it will damage the electrical components.
- Expose the unit to the water or other moisture before installation will lead to the short circuit of the electrical components.
- Don't store the unit in the humid basement or expose to the rain or water. If refrigerant leaks happen during installation, then ventilate the room immediately. If refrigerant leak and is exposed to the fire, then will produce toxic gas.
- After finishing the installation work, be sure to check whether the refrigerant leak or not. If refrigerant leak and is exposed to the fire source such as heater, fire pot or electric cooker etc., then will produce toxic gas.

2. INSTALLATION INFORMATION

2.1. SBOX installation location

1. A place can provide enough installation and maintenance space.
2. Horizontal ceiling and its building construction is able to withstand the set's weight.
3. A place where the connecting pipes and drain pipes can outlet easily.
4. The installation location should consider the length of the refrigerant pipe connected with the outdoor and indoor units, can not exceed the limited length range.



CAUTION

- Location in the following places may cause malfunction of the machine. (If can't avoid that, please consult the professionals):
 1. A place where is full of mineral oil like cutting oil etc.
 2. A place where salty air surrounding such as near the coast etc.
 3. A place where is full of caustic gas such as the sulfide in hot spring.
 4. A place with serious mains voltage fluctuation.
 5. A place inside the automobile or cabin etc.
 6. A place with oil gas, such as kitchen.
 7. A place where high-frequency electromagnetic waves are generated.
 8. A place with flammable gas or material.
 9. A place with acidic or alkaline gas.
 10. Other special conditions places.
- This series air-conditioner is comfort type air-conditioner, do not use for the machine room, precise machine, food, plants, animals, art-work etc. rooms.

2.2. SBOX Installation and maintenance needed space

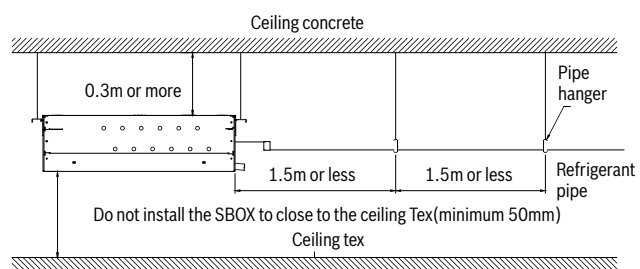


Fig. 2-1

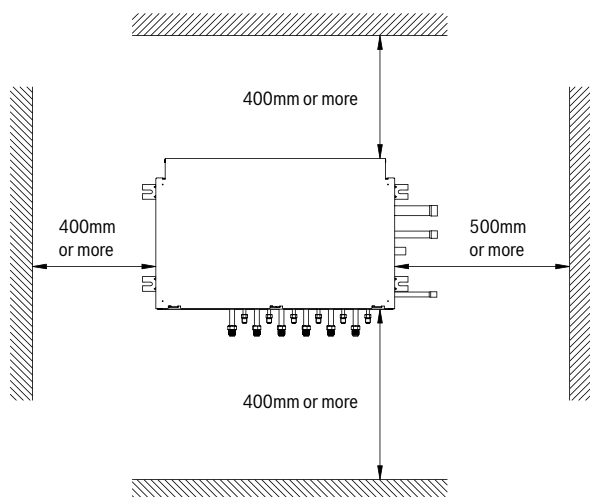


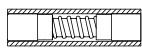
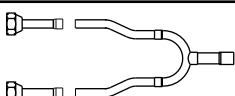
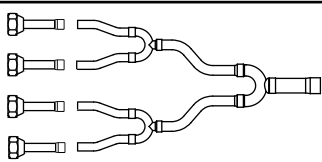
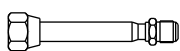
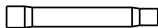
Fig. 2-2

3. SYSTEM WIRING SPECIFICATION

Please check whether the following fittings are of full scope. If there are some spare fittings, please restore them carefully.

ACCESSORIES

Table:3-1

NAME	QTY.	SHAPE	USE
Installation & operation manual	1		For the SBOX installation and operation instructions
Heat-insulated pipe	2-12 (Follow the SBOX model)		For heat insulation of pipe connectors
Flexible drainage pipe	1		Connect the drainage port of SBOX and the PVC water pipe.
Snapping	1		Fasten the connector between flexible drainage pipe and SBOX drainage port.
Three-way connector	1 pair (for SBOX02E)		Parallel connect the two groups of pipes, to enlarge the capacity output
Five-way connector	1 pair (for SBOX04E)		
Adapter pipe	1 pair (for SBOX01) 2 pairs(for SBOX02) 4 pairs(for SBOX04) 6 pairs(for SBOX06)		Use for the indoor unit capacity is 2.2~4.5kW
Copper nut	1-11 (Follow the SBOX model)		Use for connecting the pipes of the indoor unit
Adapter pipe	1 (for SBOX01)		Use for connecting the liquid side of the outdoor unit

LOCAL PURCHASED COMPONENTS

Table:3-2

Copper Pipes (Drawn copper pipes GB1527-1987)	Indoor unit capacity	2.2~4.5kW	5.6~16.0kW	Note
	Liquid side pipe	Φ6.4×0.8	Φ9.5×0.8	Use for the connection of SBOX and indoor unit refrigerant system, recommend using soft copper pipe (TP2M). The length selection is according to actual needs.
	Gas side pipe	Φ12.7×0.8	Φ15.9×1.0	
PVC drainage pipe	For drainage pipe of SBOX, according to the actual needs for the length.			
Heat-insulated pipe	The inner diameter should be same with the relative copper pipes and PVC pipes, the thickness should be (more than) 10mm, especially thicker for the closed wet area.			

4. SBOX INSTALLATION



WARNING

- Install at an enough strength location which is able to withstand the set's weight.
- If the strength is not enough or installation is not properly done, the set will drop to cause injury.
- Carry out special installation work to prevent strong wind or earthquake.
- If install by halves, the set will drop to cause accident.

4.1. Install the main body

4.1.1 Install the $\Phi 10$ hoisting screw

1. Please use $\Phi 10$ hoisting screw.
2. Remove the ceiling: For different architectural structure, details please contact with indoor decoration personnel.
 - a. Ceiling: For make sure the ceiling level and for avoiding to the ceiling vibration, it must be strengthened the ceilingplate base frame.
 - b. Do not cut off the ceiling plate base frame.
 - c. Strengthen the base frame on the both sides of the fixed ceiling.
 - d. After hoisting install the main body, it should do the piping and wiring work in the ceiling, decide the outlet directions of the pipes after selected the installation location. Especially for the position already has ceiling, please install pipe, drainage pipe, indoor and outdoor units connecting wires and wire controlling wire to the connecting positions before hoisting the unit.

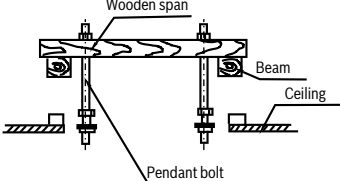
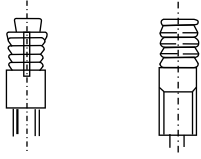
4.1.2 Hoisting install the SBOX

1. Please use the pulley to hoisting install the indoor unit on the hoisting bolt.
2. Please use the gradienter to adjust the indoor unit to be horizontal, if not, it may cause water leakage.

4.2. The installation of hanging screw bolts

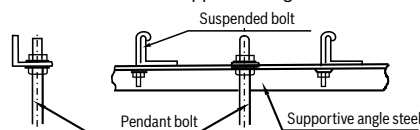
The installation situations of hanging screw bolts refer to the following (Table 4-1 and 4-2)

Table:3-2

Wooden structure	
Put rectangular sticks across the beams, and set pendant bolts.	
	
Old concrete roughcast	
Use embedded bolts and embedded pulling plugs.	
	

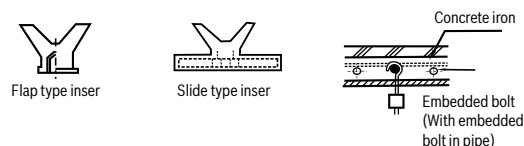
Steel beam and girder structure

Set and use supportive angle steel.



New concrete roughcast

Set it with embedded bushes or embedded bolts.



CAUTION

- The bolt material is the high quality carbon steel (galvanized or covered other rust preventive materials on the surface) or rustless steel.
- The ceiling rust prevention measure is conducted according to actual construction, for detail method please consult building engineer.
- Suspending bolts must be fixed, the fixing method as per to the actual situation.

4.3. Dimension Figure

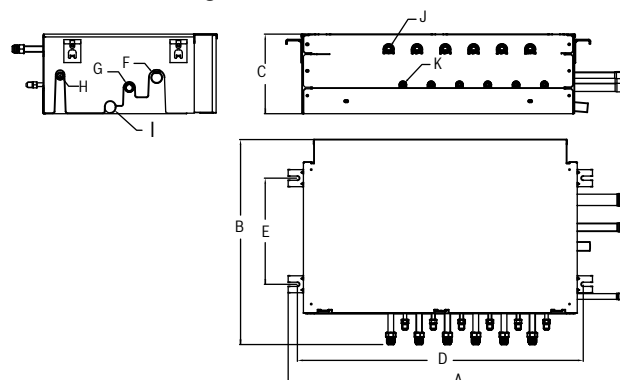


Fig.4-1

Table:4-3

Model	A	B	C	D	E
SBOX01	630	600	225	490	310
SBOX02 & SBOX02E	630	600	225	490	310
SBOX04 & SBOX04E	960	600	225	820	310
SBOX06	960	600	225	820	310

Model	F	G	H	I
SBOX01	$\Phi 19.1$	$\Phi 16$	$\Phi 9.52$	$\Phi 24.5$
SBOX02 & SBOX02E	$\Phi 25.4$	$\Phi 19.1$	$\Phi 12.7$	$\Phi 24.5$
SBOX04 & SBOX04E	$\Phi 32$	$\Phi 22$	$\Phi 16$	$\Phi 24.5$
SBOX06	$\Phi 32$	$\Phi 22$	$\Phi 16$	$\Phi 24.5$

Model	J	K
SBOX01	7/8"14UNF-2A	5/8"18UNF-3A
SBOX02 & SBOX02E	7/8"14UNF-2A	5/8"18UNF-3A
SBOX04 & SBOX04E	7/8"14UNF-2A	5/8"18UNF-3A
SBOX06	7/8"14UNF-2A	5/8"18UNF-3A

4.4. Hanging the SBOX

1. Adjust the nut's site, the interval between gasket (Down Side) and the ceiling should according to actual construction. See Fig.4-2
2. Hang the nut of hanging screw bolt into the slotted hole of the installing ear.
3. Use the level gauge to confirm the horizontality of the unit. (Prohibitfalling toward non-drainage side, better to fall a little toward the drainage side) See Fig. 4-3.

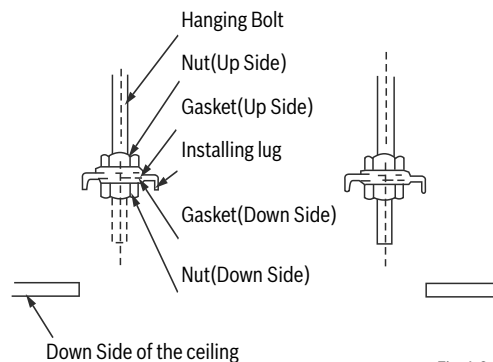


Fig.4-2

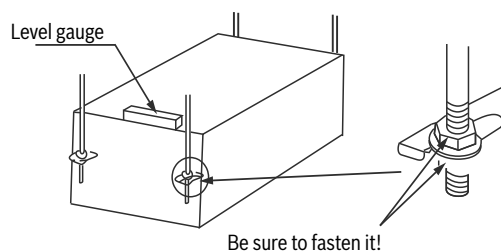


Fig.4-3

5. ARRANGEMENTS FOR DRAINAGE PIPE

5.1. SBOX drain pipes installation

1. Please use the flexible drainage pipe to connect the SBOX drainage port and the PVC pipes, and use the snap ring for fastening.
2. While connecting other drain pipes please use hard PVC binder and check whether leak or not.
3. The waterspout joints and drain pipes (especially the indoor parts) of the main unit have to wrap up evenly by insulated casing pipes, and tighten up with lacing belt, in order to prevent air admission and cause condensation.
4. For avoiding to the condensate water reflow to the air-conditioner inner, the drain pipes should incline toward the outdoor side (drainage side), the gradient should be over 1/100, and do not turn up defect as prominence and water absorb etc. (See Fig.5-2a)
5. While connecting the drain pipes, do not pull so hard for avoiding the main unit effect by force. The transverse pull-out of the drain pipes should be within 20m, meanwhile, set a supporting point every 0.8~1.0m, for avoiding the flexure of drain pipes (See Fig.5-1b); use hard polyethylene (PE)PE pipes to connect the drain pipes and the connecting pipes, and use the connecting pipes to fasten the drain pipes (See Fig.5-2b).
6. Central install the drain pipes please follow Fig.5-2 to match pipes.
7. The end of the drain pipe should leave the ground or the bottom of the drain tank more than 50mm, and should not put into the water. While directly pour the condensate water into foul sewer, must make the sparge pipe bend up to a U-shape water seal, in order to avoid the fetor come into the indoor through the drain pipe.



CAUTION

For avoiding water leakage, every joint of the drainage system must be sealed up.

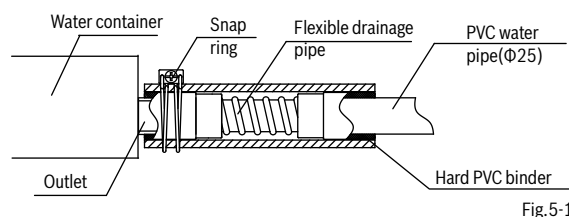
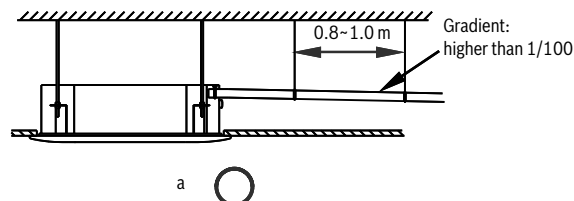
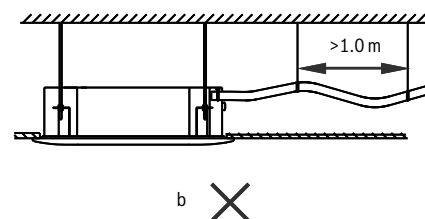


Fig.5-1



a



b

Fig.5-2

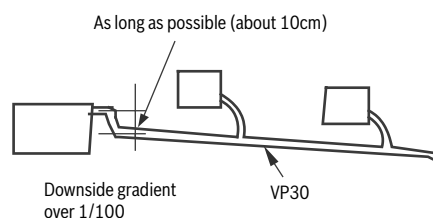


Fig.5-3

5.2. Drainage test

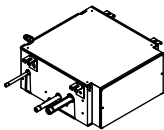
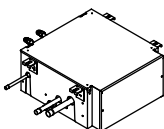
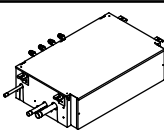
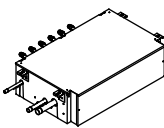
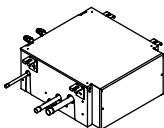
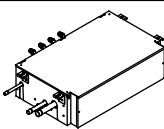
- 5.2.1 Before doing drainage test should keep the drainage piping smooth, and check every joint whether sealed up or not.
- 5.2.2 For newly built room, do the drainage test before paving the ceiling.

1. Use a water main to fill the water tank with 500~1000ml water.
2. Check whether drained water normally and whether has leakage on the connectors.

6. INSTALL THE CONNECTING PIPE

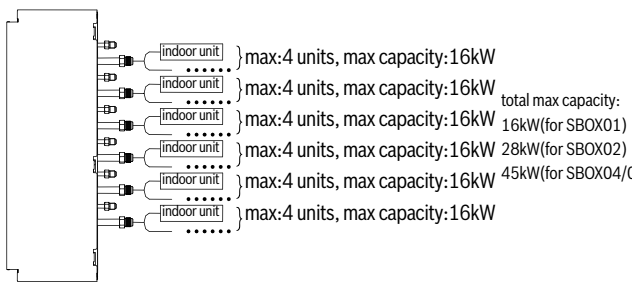
6.1. Range of SBOX application

Table: 6-1

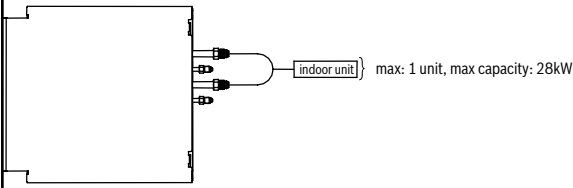
SBOX outside drawing	Model	Max. connecting indoor unit quantity	Max. total indoor unit capacity
	SBOX01	4×1=4	16kW
	SBOX02	4×2=8	28kW
	SBOX04	4×4=16	45kW
	SBOX06	4×6=24	45kW
	SBOX02E	1	28kW
	SBOX04E	1	56kW

6.2. Connecting diagram of SBOX and indoor unit

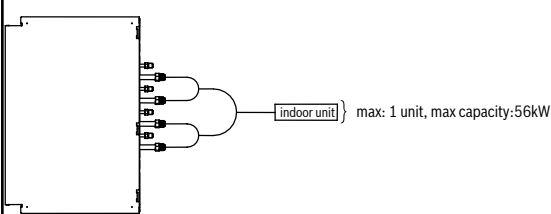
Table: 6-2

Connecting diagram 1 				
Suitable model	SBOX01	SBOX02	SBOX04	SBOX06
Note	1. Capacity matching with each indoor unit group is lower than 16kW. 2. If the indoor units do not have auto mode function, then each group of SBOX can be connected with four indoor units at most for one time; other wise, it can be connected with only one indoor unit at most. 3. Indoor units in the same group of SBOX can not be operated in cooling or heating mode at the same time, or operated in heating and air supplying mode at the same time, otherwise it will be mode conflict.			

Connecting diagram 2

	
Suitable model	SBOX02E
Note	Match with large capacity duct type unit (20.0kW~28.0kW)

Connecting diagram 3

	
Suitable model	SBOX04E
Note	Match with large capacity duct type unit (40.0kW~56.0kW)

6.3. Requests for the length of pipes connected indoor and outdoor units with the SBOX and altitude difference

- Allowable pipe length please refers to the outdoor unit instruction.
- Allowable pipe altitude difference please refers to the outdoor unit instruction.



CAUTION

- Do not let air, dust, or other impurities fall in the pipe system during the time of installation.
- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
- Keep the connecting pipe dry, and do not let moisture in during installation.
- The connecting copper pipes should be wrapped up by insulated materials (more than 10mm thick).

6.4. Pipe size (Unit: mm)

6.4.1 SBOX pipe size

Table: 6-3

Model		SBOX01	SBOX2 & SBOX02E	SBOX04 & SBOX04E	SBOX06
Connect the outdoor unit side	Liquid pipe	Φ9.5	Φ12.7	Φ15.9	Φ15.9
	High pressure gas pipe	Φ15.9	Φ19.1	Φ22.2	Φ22.2
	Low pressure gas pipe	Φ19.1	Φ25.4	Φ31.8	Φ31.8
Connect the indoor unit side	Liquid pipe	Φ9.5	Φ9.5	Φ9.5	Φ9.5
	Low pressure gas pipe	Φ15.9	Φ15.9	Φ15.9	Φ15.9
Note		Use for the connection of the indoor unit refrigerant system, recommend using soft copper pipe (TP2M). The length selection is according to actual needs.			

6.4.2 S Indoor unit pipe size

Table: 6-4

Lower side indoor unit capacity A (×100W)	Branch pipe side (mm)		Suitable branch pipe
	Gas pipe	Liquid side	
22≤A≤45	Φ12.7	Φ6.4	IDU-BJ01
45<A≤160	Φ15.9	Φ9.5	IDU-BJ01

6.5. The Procedure of Connecting Pipes

1. Measure the required length of the connective pipe, and make the connective pipes in the following procedure. (Refer to Pipeline Connection for details)

1) Connect the indoor unit first, and then connect the outdoor unit.

a. The pipe bend should be handled carefully, without damaging the pipe and insulation layer.

b. Before screwing up the flared nut, apply refrigerant oil at the outer surface of the pipeline flare and the taper surface of the connection nut. Screw up the nut for 3~4 circles beforehand (see Fig.6-1).

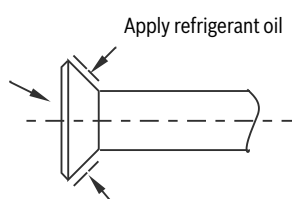


Fig.6-1

c. When connecting or disconnecting the pipeline, be sure to use two spanners concurrently.

d. Do not rest the weight of the connective pipe on the adapter of the indoor unit. Too heavy load on the adapter of the indoor unit may deform the pipe and thus affect the cooling/heating effect.

2) The valve of the outdoor unit should be closed completely (as in the factory status). Every time when connecting the pipe, screw off the nut at the valve, and connect the flared pipe (within 5 minutes). If the nut is put away for a long time after being screwed off the valve, dust and other foreign substance may intrude into the pipeline system and lead to fault.

3) After the refrigerant pipe is connected to the indoor and outdoor units, expel air as instructed in the "Expel air" section. After expelling the air, screw up the nut at the maintenance orifice.

a. Precautions for the flexible part of the pipeline

i. The bend angle shall not exceed 90°. (See Fig.6-2)

Use a thumb to bend the pipe



Minimum radius 100mm

Fig.6-2

ii. The bend shall be preferably in the middle of the pipe length, and higher bend radiuses are preferred.

iii. Do not bend the flexible pipe for over 3 times.

b. Bend the thin-wall connective pipe (See Fig.6-3)



→ Method of unleashing the spooled pipe
Straighten the pipe end

Fig.6-3

i. When bending the pipe, cut out a notch of the desired size at the bend of the adiabatic pipe, and then expose the pipe (wrap the pipe with the wrapping tape after bending it).

ii. The radio of the elbow pipe should be as large as possible to prevent flattening or crush.

iii. Use the pipe bender to make close elbow pipe.

c. Use purchased copper pipe

When the copper pipe is purchased from the market, be sure to use the heat insulation materials of the same type (with a thickness of over 9mm).

2. Deploy the pipelines

1) Drill a porthole on the wall, and put the hole sheath and hole cover through the wall.

2) Place the connective pipe together with the indoor & outdoor connection wires. Use wrapping tape to tie them tight. Do not let air penetrate into it lest condensation and drips of moist.

3) Pull the connective wrapped connective pipe from outdoor through the sheath, which gets through the wall, and lead it into the room.

3. Make a vacuum of connective pipeline.

4. After the above steps are completed, the spool of the valve of the outdoor unit should be completely open, and the refrigerant pipeline of the indoor unit and the outdoor unit should be smooth.

5. Use a leak detector or soap water detect leak carefully to prevent leakage.

6. Put on an adiabatic envelope (accessory) at connective pipe adapter of the indoor unit, and wrap it tight with the wrapping tape lest condensate and leakage.

6.6. Pipeline connection

1. Flare

1) Use a pipe cutter to cut off the pipe (See Fig.6-4)

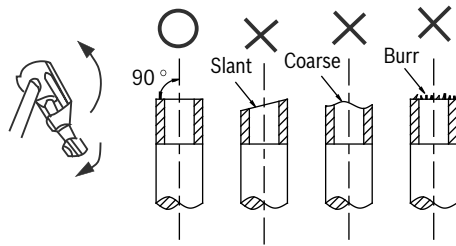


Fig.6-4

2) Pull the pipe into the rear flare of the connective nut. (Refer to Table: 6-5)

Table: 6-5

Outer diameter (mm)	A (mm)		
	Max.	Min.	
Φ6.4	8.7	8.3	
Φ9.5	12.4	12.0	
Φ12.7	15.8	15.4	
Φ15.9	19.0	18.6	
Φ19.1	23.3	22.9	

2. Tighten the nut

Align with the connective pipe, screw up the connection pipe nut manually, and use a spanner to tighten it as shown in Fig.6-5.

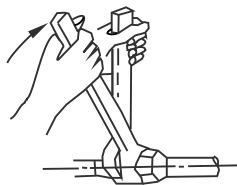


Fig.6-5



CAUTION

According to the installation conditions, too large torque will damage the flaring, and too small torque will lead to looseness and leakage. Determine the tightening torque by reference to Table: 6-6.

Liquid and gas pipes without connecting must be tightened with copper tube sealing piece.

Table: 6-6

Pipe size	Tightening torque N.m
Φ6.4	14.2~17.2
Φ9.5	32.7~39.9
Φ12.7	49.5~60.3
Φ15.9	61.8~75.4
Φ19.1	97.2~118.6



CAUTION

- Please beware when install connective pipe, do not let any air, dust or other foreign substance invading into system.
- Pipes connection could be conducted after the indoor and outdoor unit are be fixed.
- Connective pipe must keep in dry when installation, do not let water invade in it.
- Connective copper pipe must be wrapped insulation layer (at least 9 mm thickness)

6.7. Welding the copper pipe

Use braze-welding for the low pressure gas pipe, high pressure gas pipe, liquid pipe which connected with SBOX and the outdoor unit.



CAUTION

During welding, use wet cloth to pack the copper pipe which near the SBOX.

- During welding, use nitrogen gas to protect welding.

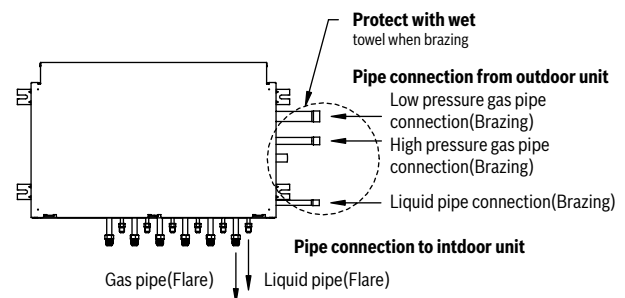


Fig.6-6

6.8. Airtight test

The refrigerant pipe after installation and before connect to the outdoor unit, it must undergo the airtight test with 3.92 MPa (40kgf/cm²) nitrogen for 24 hours from the low pressure gas pipe, high pressure gas pipe and liquid pipe.

6.9. Air Purging

Connect the refrigerant pipe with the low pressure gas pipe, high pressure gas pipe, and liquid pipe of the outdoor unit. Use a vacuum pump, to vacuum from the low pressure gas pipe, high pressure gas pipe, and liquid pipe of the outdoor unit.

6.10. Open/Close the valves

Open/Close the spools or the valves of outdoor unit with ainner hexagon spanner.



CAUTION

Don't use the refrigerant of the outdoor unit to do the vacuum.

6.11. Check the Leakage

Check all the joints with the leak detector or soap water.

6.12. Thermal insulation

To process the thermal insulation for air side and liquid side piping. Please insulated the air side and liquid side piping completely, in the reason of during operate cooling mode the ambient temperature is very low.

1. Thermal insulation at least 120 C material shall be apply for air side piping.
2. Apply attached thermal insulation material to wrap the connective part of indoor piping tightly without gap.

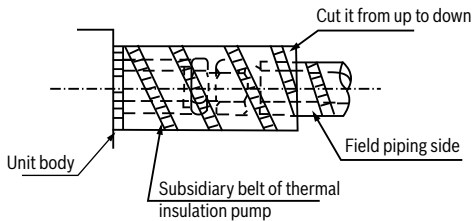


Fig.6-7

7. WIRING

7.1. Electrical wiring



CAUTION

1. Special power shall be applied within rated voltage range. External circuit of this air conditioner must be grounded that means power cable of outdoor unit shall be jointed with external grounding wire reliable.
2. Electric wiring must be done by professionals, and wiring according to the wiring label.
3. Fixing circuit must be wired with an a11-poledisconnection device at least 3mm switching distance of contact.
4. Setting the electrical leakage device according to national regulation.
5. Power cables and signal wires shall be arranged orderly and be wired rational without mutual interfere, and connective pipes and body of valves without mutual contact among them.
6. The attached connective wire is 10m, provided that the length were not long enough, you must replace it by an appropriate length connective wire in the same specification. In a normal circumstance, it is not allowed to overlapping the two wires, but welded fix and wrapped by insulation adhesive band is except.
7. All electric wiring is finished, you could input power as long as confirm that all wires connect are correct and fix tightly.

7.2. Power specification

The power cable specifications are as follows. If power capacity is too low, it may result in over-heating of piping that would be burned out the unit.

Table 7-1

Model	Item	SBOX Power	
		Power supply	Power switch
			Capacity Safety fuse
SBOX01/ SBOX02		220-240V~ 50Hz	5A 5A
SBOX04		220-240V~ 50Hz	5A 5A
SBOX06		220-240V~ 50Hz	5A 5A
SBOX02E		220-240V~ 50Hz	5A 5A
SBOX04E		220-240V~ 50Hz	5A 5A

Table 7-2

Model	Item	SBOX Power		Wires
		Power cable		Signal wire
		Power wire	Grounding wire	Wire diameter
SBOX01/ SBOX02		2*14AWG	1*14AWG	3-core shielded wire 20AWG
SBOX04		2*14AWG	1*14AWG	3-core shielded wire 20AWG
SBOX06		2*14AWG	1*14AWG	3-core shielded wire 20AWG
SBOX02E		2*14AWG	1*14AWG	3-core shielded wire 20AWG
SBOX04E		2*14AWG	1*14AWG	3-core shielded wire 20AWG



NOTE

Above parameters are only for reference, details refer to the specific model capacity and the relative national standards.

7.3. Wiring for the SBOX power wire and signal wire

1. Please use dedicated power supply different from the outdoor unit for the SBOX power.
2. The power, electrical leakage protectors and operation switches for each indoor unit connected to the same outdoor unit and the SBOX should be in common use.
3. The SBOX power wire should be connected to the terminals with the label "L, N", and the M SBOX S signal wire should be connected to the terminals with the label "P, Q, E" and correspond to the "P, Q, E" wiring terminals for the outdoor and indoor units, which can not be wrong connected. Please refer to the following figure 7-1.

7.4. Wiring figure of piping lines and signal wires

1. For SBOX01, SBOX02, SBOX04, SBOX06

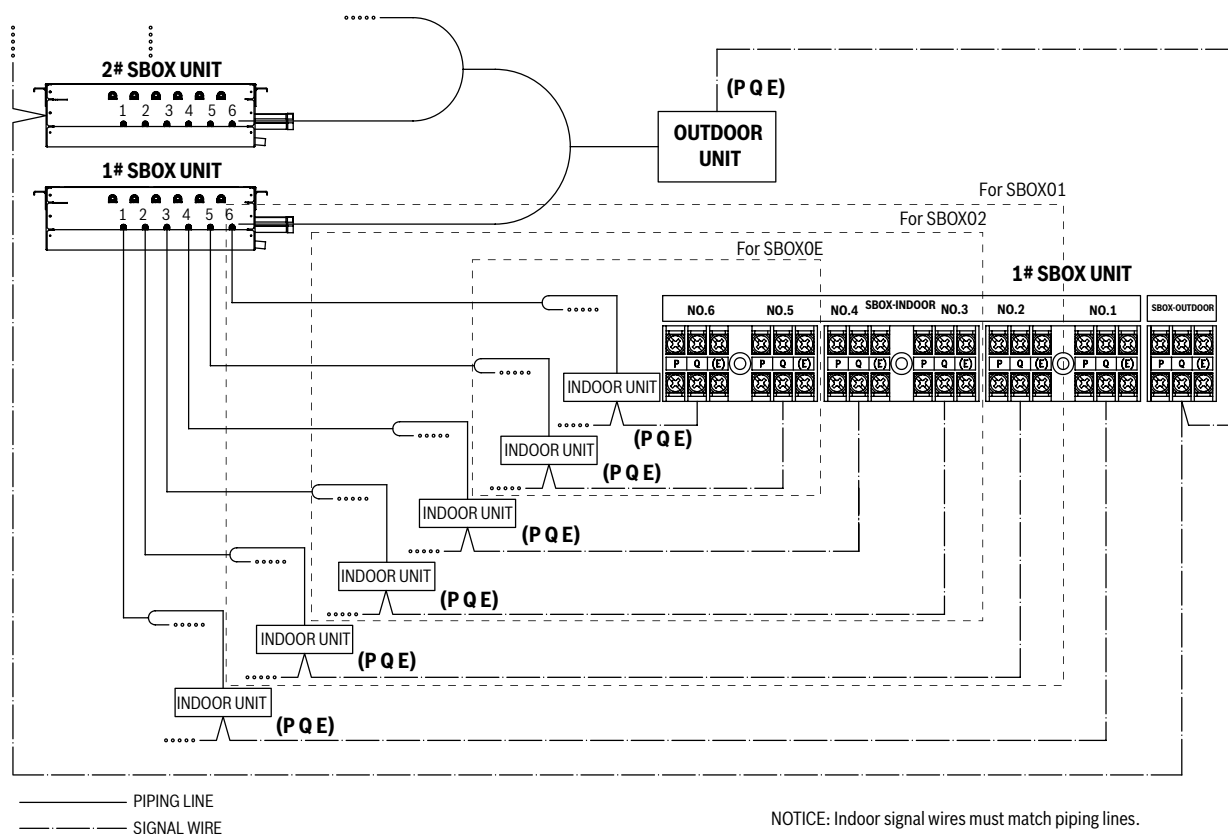
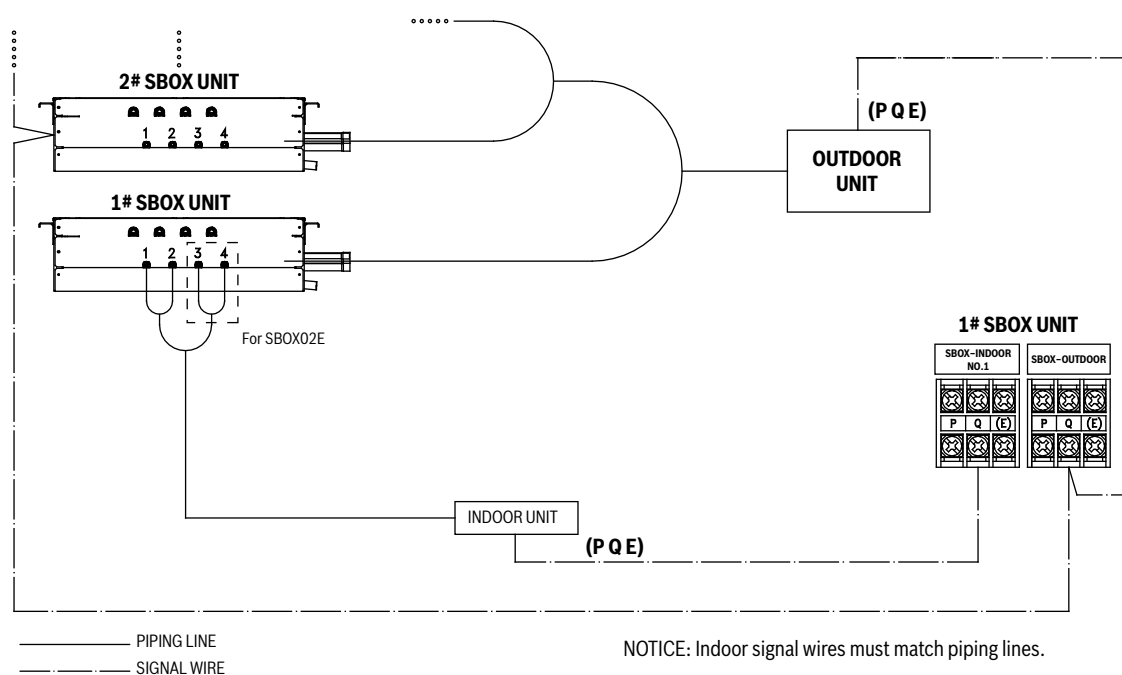


Fig.7-1

2. For SBOX02E, SBOX04E



7.5. Wiring requirements for signal wire

1. The control wire must use shielding wire. User other leads might cause signal interference and lead to malfunction.
2. All the shielding wires network should be interconnected, and finally connected together to the metal plate grounding.
3. Do not tie up the control wire together with the refrigerant pipes and power wires etc. When parallel layout the power wire and control wire, the distance should be over 300mm, in case signal source interference.
4. The control wire can not be a close loop.
5. The control wire has polarity, be careful during wiring.
6. The SBOX and indoor and outdoor unit signal wires please use 3-core shielding wire (greater than or equal to 0.75mm²), has polarity, needs correct connection, and the SBOX and outdoor signal wires only can be led out for connection from the outdoor main unit.

7.6. Handling the wiring connector

Please use the heat insulated materials to seal the wiring connector, otherwise will cause condensation.

7.7. Use SBOX spot check function to check the SBOX and indoor unit signal wires whether is wired correctly.

Enter spot check:

1. Only power on the indoor unit and SBOX correspond to No. n system;
2. Long press the SBOX spot check key which is correspond to No. n system for 6s, then No.n system will enter to spot check mode (SBOX01, SBOX02, SBOX04, SBOX06 separately has 1,2, 4, 6 spot check keys);
3. After enter spot check mode, the display panel will display "CH", when No. n system of SBOX detects the indoor unit communication signal, the No. n system will immediately operate the solenoidvalve under this system as the following sequence: "SV(n)" ON 10s → "SV(n)-B" ON 10s → repeat the above steps for 3 times → "SV(n)" and "SV(n)-B" OFF;
4. If the valve didn't follow step 3 operation then means the No. n system communication has error, please check the signal wire connection between No. n system and indoor unit, and then repeat the step 1~3 to check the No. n system; if the valve followed step 3 operation then means the No. n system communication is normal, and then can repeat the step 1~3 to check other systems;

Exit spot check:

1. No indoor unit signal is detected in 10 minutes;
2. SBOX power off;
3. Finish spot check operation.

8. APPLICATION CONTROL

8.1. Spot check instruction of main control panel

SBOX Spot check keys SW1-SW6 are separately corresponded to No.1-6 system

Table: 8-1

No.	Display
1	Connected indoor unit quantity under this SBOX
2	This SBOX operation mode
3	Subcooling inlet temp. T1C2
4	Subcooling outlet temp. T1C1
5	Total T2(B) average value back from outdoor unit
6	Indoor unit T2(B) value under this SBOX
7	Total ON status indoor unit quantity
8	Outdoor unit operation mode
9	Subcooling PMV opening
10	ON status indoor unit quantity under this SBOX
11	Chip version number
12	---

Operation mode:

- 0-Off
- 2-Cooling
- 3-Heating
- 4-Forceing cooling
- 5-Mixed cooling
- 6-Mixed Heating

8.2. LED indication lamp instruction

Table: 8-2

	Normally ON	Slow flash	Flash
LED1 lamp	Outdoor unit ON	Outdoor unit standby	Outdoor unit communication error
LED2 lamp	Indoor unit ON under this SBOX	Indoor unit OFF under this SBOX	Indoor unit communication error

9. TEST RUNNING

9.1. Confirm the following insure before operation

1. Whether the SBOX, indoor unit and outdoor unit are installed correctly;
2. Whether the tubing and wiring are correctly completed;
3. Whether check the leakage of refrigeration piping system;
4. Whether the drainage is unimpeded;
5. Whether the heating insulation works well;
6. Whether the ground wiring is connected correctly;
7. Whether recorded the pipe length and the refrigerant added amount;
8. Whether the power voltage fits the rated voltage of the unit;
9. Whether there is no obstacle at the air outlet and inlet;
10. Open the stop valves of low pressure gas pipe, high pressure gas pipe, and liquid pipe, air balance pipe and oil balance pipe;
11. Power on, pre-heat the unit;
12. Whether the connected indoor unit quantity is the same with the actual quantity under the spot check SBOX situation;
13. Whether the connected outdoor unit quantity is the same with the actual quantity.

9.2. Trial running

Use the wire controller (main unit matched) to control the operation of the unit, check the following items according to the instruction. If there is error, check the error according to the instruction and solve them.

9.2.1 Indoor unit

1. Check whether the switch of the wire/remote controller is normal;
2. Check whether the functional keys of the wire/remote controller are normal;
3. Check whether the indoor temperature adjusts normally;
4. Check whether the indication lamp is normal;
5. Check whether the manual operation button is normal.
6. Check whether water draining normally;
7. Check for excessively noise and vibration during operation.

9.2.2 SBOX

1. Check whether water draining normally;
2. Check for excessively noise and vibration during operation and mode shifting;

9.2.3 Outdoor unit

1. Check for excessively noise and vibration during operation;
2. Check whether the produced wind, noise and condensed water affect neighbors;
3. Check whether refrigerant leakage.



CAUTION

After power is supplied, the unit is started or restarted instantly, if the air conditioner has not protection function, the compressor will delay action until 12 minutes later.



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