ORDER NO. MAC9611046C3

Service Manual

Room Air Conditioner

CS-SC181KS / CU-SC181KS
CS-SC241KS / CU-SC241KS

Contents

National

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Functions

Indoor Unit and Remote Control

Remote Control

Wired

Length of remote control wire is 1.55 meter.

Operation Indicator LED

Light up during air conditioner is in operation.

Operation & Fan Speed Indicator

Shown selected operation.

Simple & Easy to Operate

1) Slide the Operation switch to:
   OFF – Stops all operations.
   LOW FAN – Operation with low fan speed.
   HIGH FAN – Operation with high fan speed.

2) Slide the lever of Cooling Temperature Setting Control to:
   LOW direction – Low temperature (more cool).
   HIGH direction – High temperature (less cool).
   Cooling temperature setting:-
   LOW (16°C) ~ HIGH (30°C)

Indoor Unit

Power Switch ON/OFF

O – OFF, I – ON.

Operation

Cooling only.

Fan Speed

High and Low.

Anti-freezing Control

1) Piping Temperature Sensor.
2) Intake Temperature Sensor.

Time Delay Safety Control

Restarting is inhibited for approximately 3 minutes.

Horizontal & Vertical Airflow Direction Louver

Manual adjustment.

Starting Current Control

Indoor fan is delayed for 1.6 second at the starting circuit.

Circuit Protection Control

60 seconds forced operation of the compressor.

Power Resume Control

Restart previous operation mode when power supply resume after power failure.

7 Minutes Time Saved

To prevent raising of the humidity.

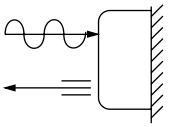
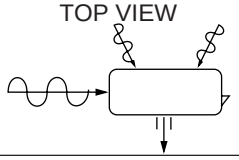
Outdoor Unit

Outdoor Unit

- Overload Protector
- Safety Protection

Current fuse to protect fan motor.

Product Specifications

			Unit	CS-SC181KS	CU-SC181KS
Cooling Capacity			kW Btu/h	3.8 12,960	
Moisture Removal			ℓ/h Pint/h	0.5 1.1	
Power Source			Phase V Cycle	Single 220 60	
Airflow Method			OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (Low Fan)		m^3/min (cfm)	11.2 (395)	–
	Indoor Air (High Fan)		m^3/min (cfm)	(494)	–
	Outdoor Air		m^3/min (cfm)	–	31.7 (1,119)
Noise Level			dB (A)	High 46, Low 39	53
Electrical Data	Input		W	2,390	
	Running Current		A	12.1	
	COP		W/W.h	1.6	
	Starting Current		A	40	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way valve 1/2” L ; 3-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G (gas side) ; 1/2” L (liquid side) ; 1/4”	G (gas side) ; 1/2” L (liquid side) ; 1/4”
Drain Hose	Inner diameter		mm	20.0	–
	Length		m	1.35	–
Power Cord Length Number of core-wire			m	1.8 3 core-wires	–
Dimensions		Height	inch (mm)	14 - 3/16” (360)	26 - 31/32” (685)
		Width	inch (mm)	39 - 25/32” (1,010)	31 - 1/2” (800)
		Depth	inch (mm)	6 - 5/8” (168)	11 - 13/16” (300)
Net Weight			lb (kg)	29 (13)	119 (54)
Compressor		Type		–	Rotary (1 cylinder) rolling piston type
	Motor	Type		–	Induction (2-pole)
		Rated Output	W	–	1,400
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		ASG	AES + GF
	Motor	Type		Induction (4-pole)	Induction (6-pole)
		Input	W	44.5 - 33.8	93.6 - 56.0
		Rated Output	W	20	30
	Fan Speed	At Low Fan	rpm	1,085	–
		At High Fan	rpm	1,355	755

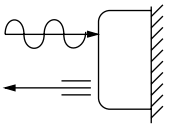
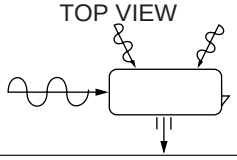
• Specifications are subject to change without notice for further improvement.

Product Specifications

		Unit	CS-SC181KS	CU-SC181KS
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium
	Row / Stage		(Plate fin configuration, forced draft) 2/13	2/26
	FPI		21	14
	Size (W × H × L)	mm	800 × 273 × 25.4	796 × 660.4 × 44
Refrigerant Control Device			–	Capillary Tube
Refrigeration Oil		(c.c)	–	SUNISO 4GDID or ATMOS M60 (670)
Refrigerant (R-22)		g (oz)	–	1,460 (51.5)
Thermostat			Electronic Control	–
Protection Device			–	Overload Protector
Capillary Tube	Length	mm	–	1,170
	Flow Rate	ℓ/min	–	21.1
	Inner Diameter	mm	–	2.4 (ATM 1/2)
Air Filter	Material		P.P.	–
	Style		Honeycomb	–
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	–	40, 370
Fan Motor Capacitor		μF, VAC	1.0, 400	3.0, 400

• Specifications are subject to change without notice for further improvement.

Product Specifications

			Unit	CS-SC241KS	CU-SC241KS
Cooling Capacity			kW Btu/h	5.0 17,060	
Moisture Removal			ℓ/h Pint/h	1.0 2.1	
Power Source			Phase V Cycle	Single 220 60	
Airflow Method			OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (Low Fan)		m^3/min (cfm)	11.3 (399)	–
	Indoor Air (High Fan)		m^3/min (cfm)	15.0 (530)	–
	Outdoor Air		m^3/min (cfm)	–	37.5 (1,324)
Noise Level			dB (A)	High 48, Low 42	56
Electrical Data	Input		W	3,320	
	Running Current		A	16.6	
	COP		W/W.h	1.5	
	Starting Current		A	61	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 5/8” L ; Half Union 1/4”	G ; 3-way valve 5/8” L ; 3-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G (gas side) ; 5/8” L (liquid side) ; 1/4”	G (gas side) ; 5/8” L (liquid side) ; 1/4”
Drain Hose	Inner diameter		mm	20.0	–
	Length		m	1.35	–
Power Cord Length Number of core-wire			m	1.8 3 core-wires	–
Dimensions		Height	inch (mm)	14 - 3/16” (360)	26 - 31/32” (685)
		Width	inch (mm)	39 - 25/32” (1,010)	31 -1/2” (800)
		Depth	inch (mm)	6 - 5/8” (168)	11 - 13/16” (300)
Net Weight			lb (kg)	29 (13)	128 (58)
Compressor		Type		–	Rotary (1 cylinder) rolling piston type
	Motor	Type		–	Induction (2-pole)
		Rated Output	W	–	1,800
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		ASG	AES + GF
	Motor	Type		Induction (4-pole)	Induction (6-pole)
		Input	W	50 - 38	108.30 - 69.2
		Rated Output	W	20	45
	Fan Speed	At Low Fan	rpm	1,105	–
		At High Fan	rpm	1,465	880

• Specifications are subject to change without notice for further improvement.

Product Specifications

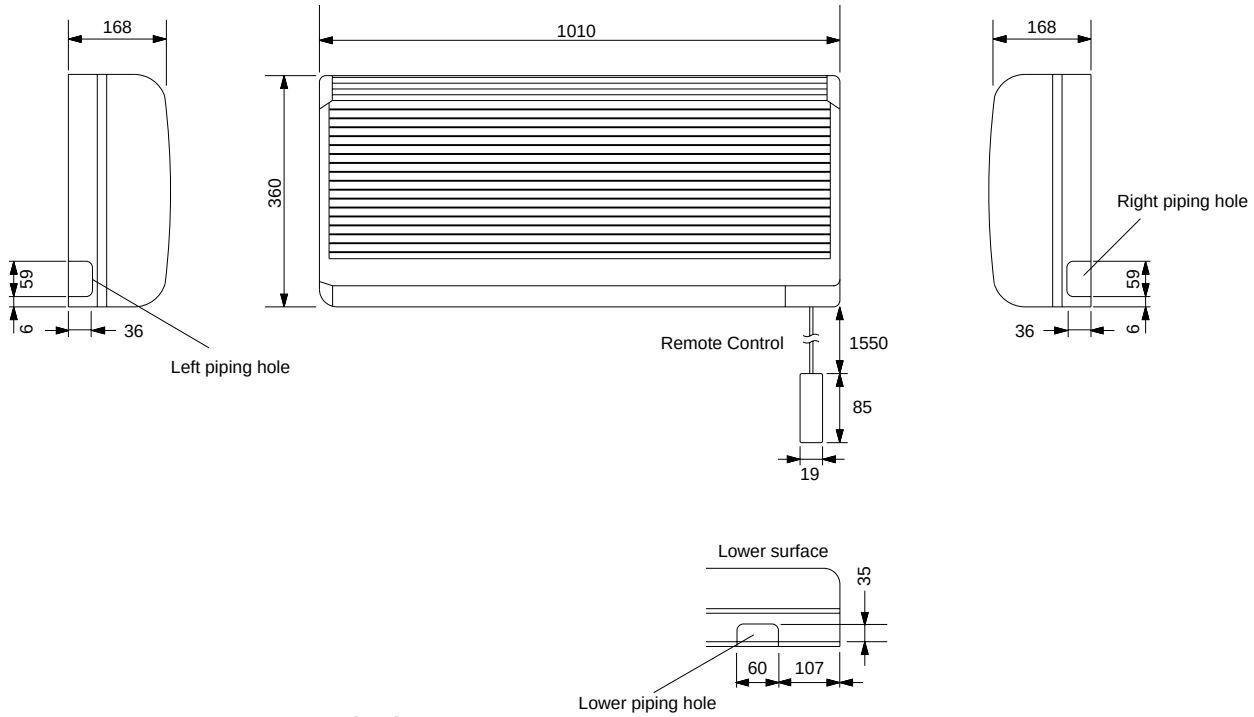
		Unit	CS-SC241KS	CU-SC241KS
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium
	Row / Stage		(Plate fin configuration, forced draft) 2/13	2/26
	FPI		21	14
	Size (W × H × L)	mm	800 × 273 × 25.4	796 × 660.4 × 44
Refrigerant Control Device			–	Capillary Tube
Refrigeration Oil		(c.c)	–	SUNISO 4GDID or ATMOS M60 (700)
Refrigerant (R-22)		g (oz)	–	1,780 (62.8)
Thermostat			Electronic Control	–
Protection Device			–	Overload Protector
Capillary Tube	Length	mm	–	960
	Flow Rate	ℓ/min	–	23
	Inner Diameter	mm	–	2.4 (ATM 1/2)
Air Filter	Material		P.P.	–
	Style		Honeycomb	–
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	–	45, 370
Fan Motor Capacitor		μF, VAC	1.0, 400	3.0, 400

• Specifications are subject to change without notice for further improvement.

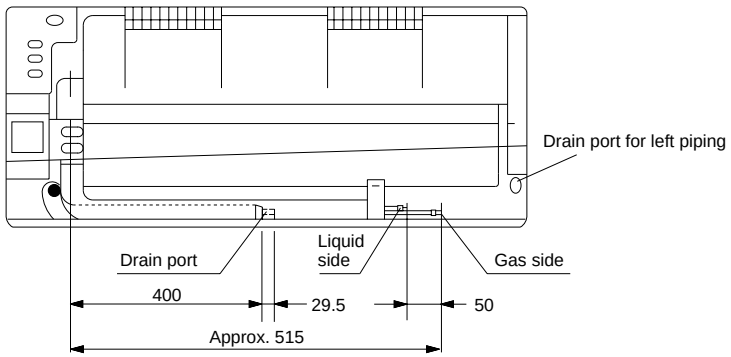
Dimensions

CS-SC181KS
CS-SC241KS

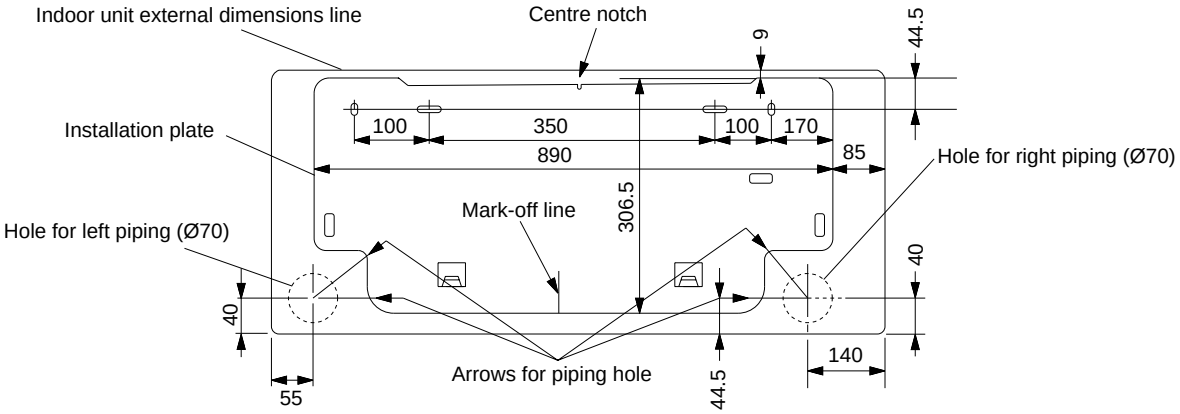
<Front View>



<Back View>

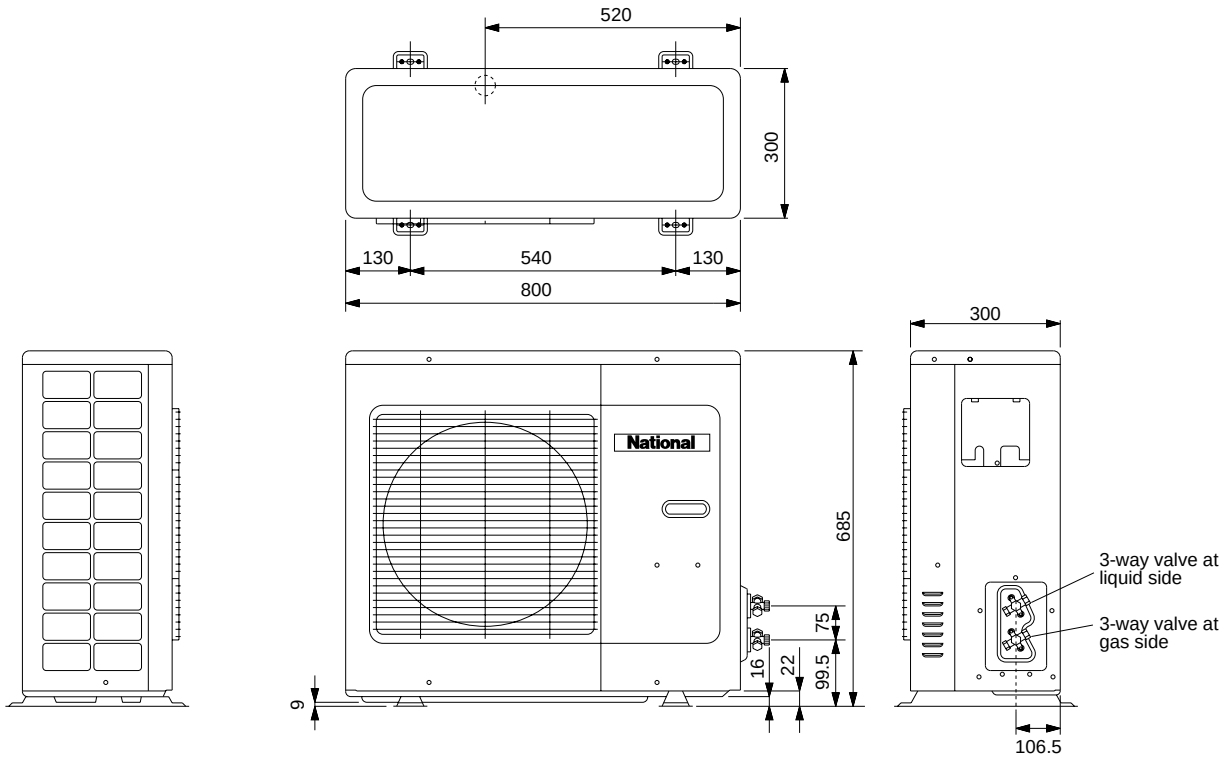


Relative position between the indoor unit and the installation plate



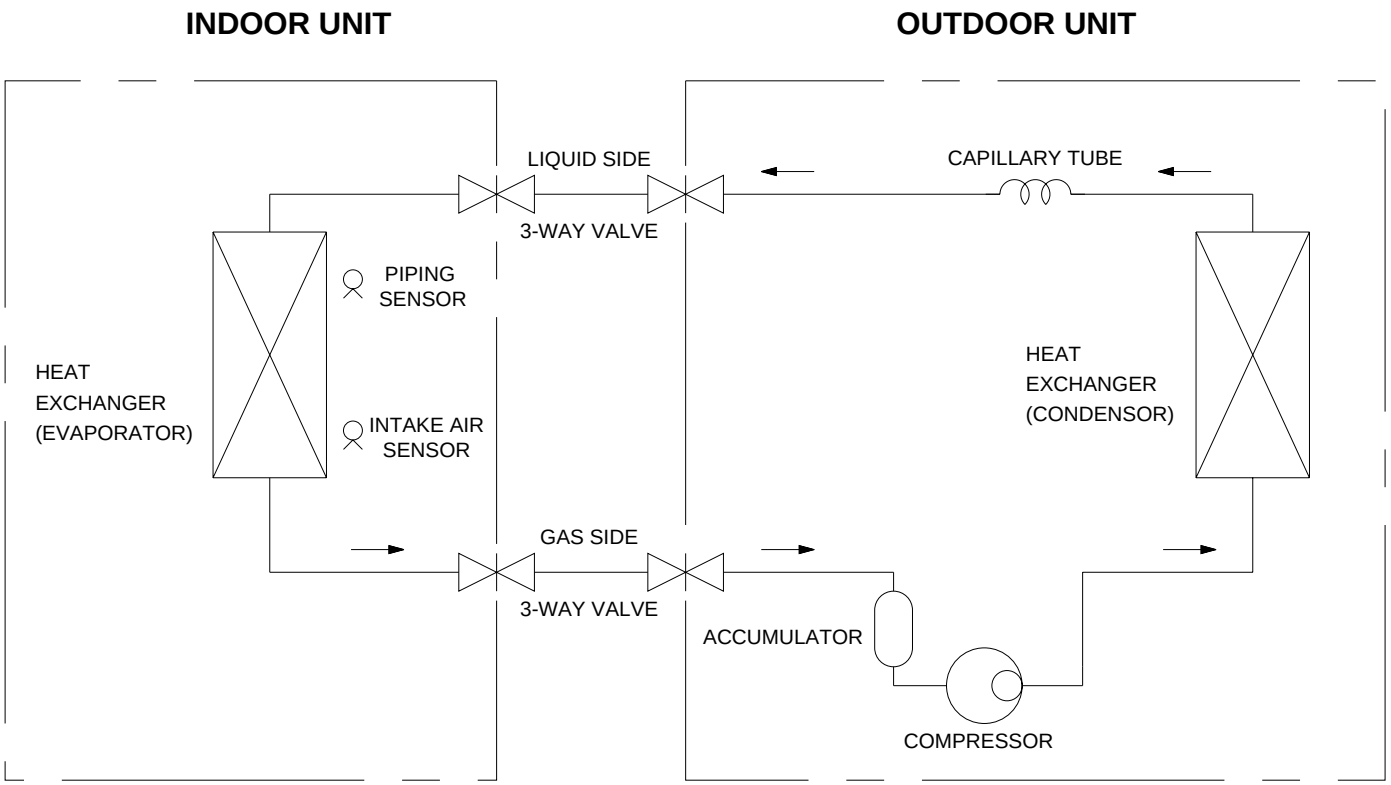
Dimensions

CU-SC181KS
CU-SC241KS



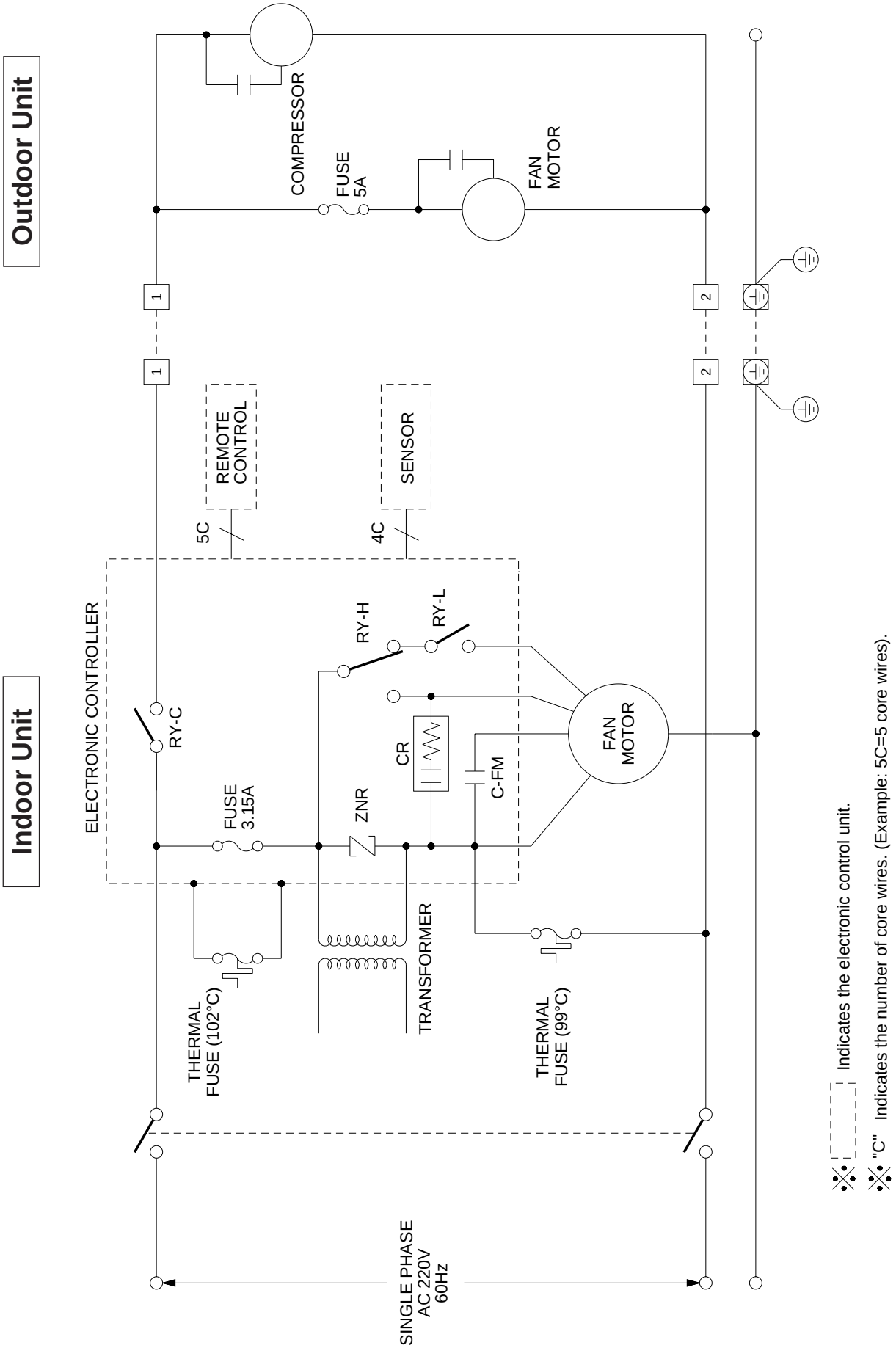
Refrigeration Cycle Diagram

CS-SC181KS / CU-SC181KS
CS-SC241KS / CU-SC241KS



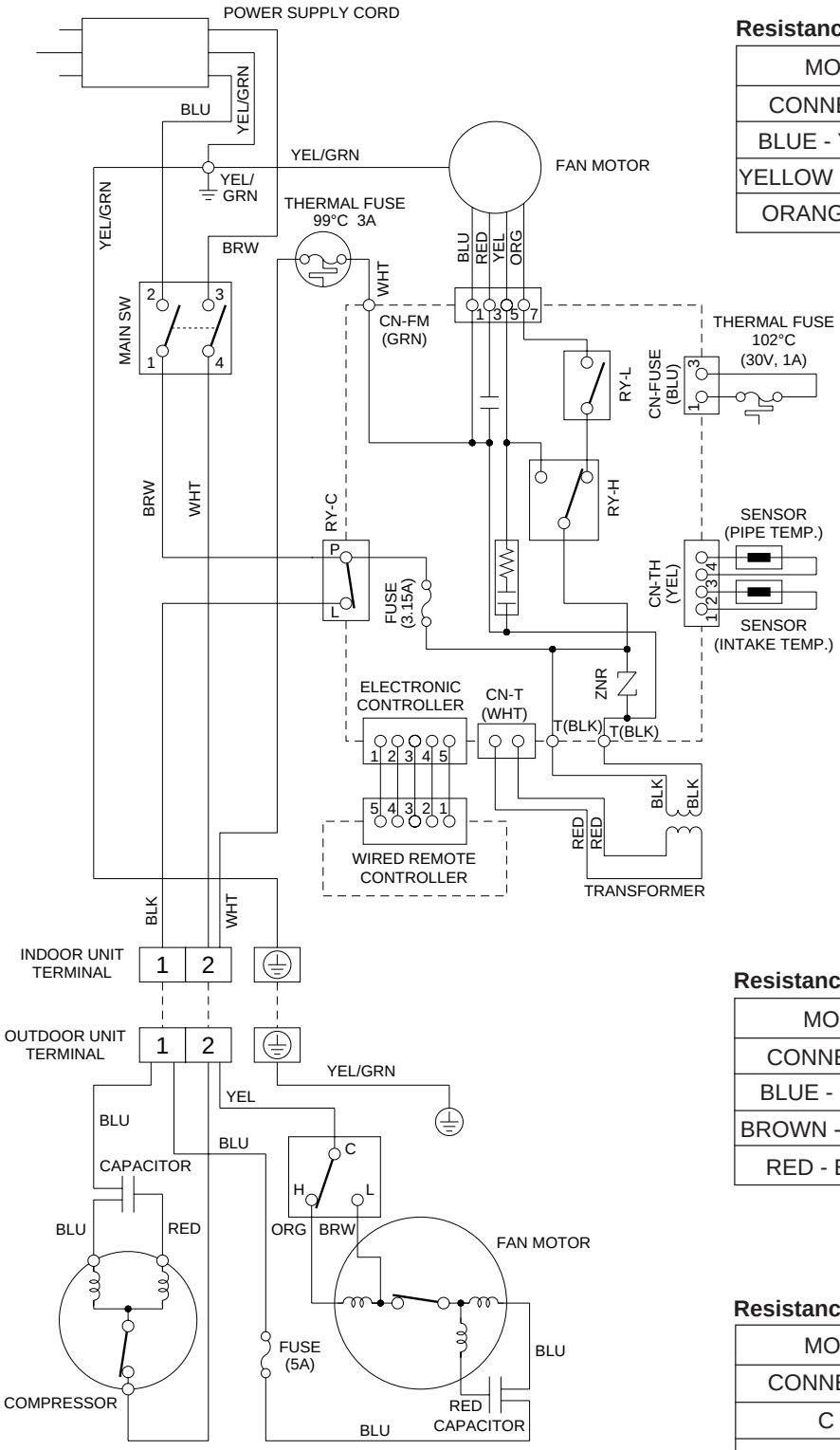
Block Diagram

CS-SC181KS / CU-SC181KS
CS-SC241KS / CU-SC241KS



Wiring Diagram

CS-SC181KS / CU-SC181KS
CS-SC241KS / CU-SC241KS



Resistance of Indoor Fan Motor Windings.

MODEL	CS-SC181KS	CS-SC241KS
CONNECTION	CWA92229	CWA92230
BLUE - YELLOW	232.4	198.2
YELLOW - ORANGE	165.7	161.3
ORANGE - RED	279.5	191.5

REMARKS:

BLU	:	BLUE
BRW	:	BROWN
BLK	:	BLACK
WHT	:	WHITE
RED	:	RED
ORG	:	ORANGE
GRY	:	GRAY
YEL/GRN	:	YELLOW/GREEN

Resistance of Outdoor Fan Motor Windings.

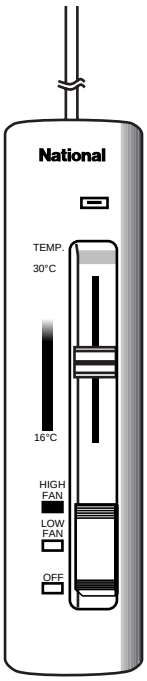
MODEL	CU-SC181KS	CU-SC241KS
CONNECTION	CWA95272	CWA95273
BLUE - BROWN	165.6	128.7
BROWN - ORANGE	64.6	55.6
RED - BROWN	145.1	119.6

Resistance of Compressor Windings.

MODEL	CU-SC181KS	CU-SC241KS
CONNECTION	2KS282H5BA01	2JS394H3BA01
C - R	1.260	0.740
C - S	2.791	2.477

Details Of Functions

Remote Control



Wired

Length of the remote control wire is 1.55 m.

Operation Indication LED

LED – Red colour.
Light up during air conditioner is in operation.

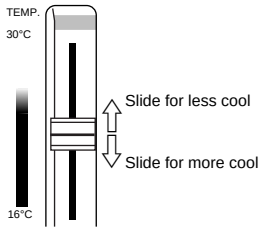
Operation & Fan Speed Indicator

Red colour Indicator.
It will be shifted to the respective position when the operation mode is changed.

Simple & Easy To Operate

Cooling Temperature Setting Control

Slide the lever to:



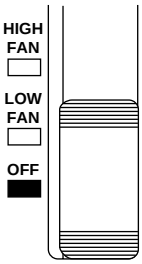
- Recommended position for cooling operation is at the centre.

Cooling Temperature Setting
Slide Variable resistor.
To set the desirable room temperature from the range of 16°C ~ 30°C.

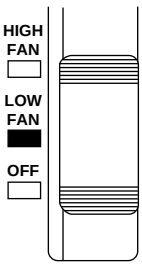
Operation Switch

Slide the Operation Switch to:

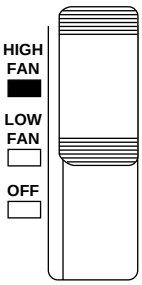
OFF — To turn “OFF” the power supply of the air conditioner.



LOW FAN —To turn “ON” the power supply of air conditioner and operate in low fan speed.



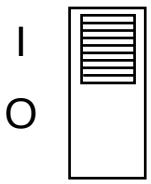
HIGH FAN — To turn “ON” the power supply of air conditioner and operate in high fan speed.



Details Of Functions

Indoor Unit

Power Switch ON/OFF



Switch to turn ON/OFF the power supplied to air conditioner main body.
If this switch is at ON position and thermostat is set below the room temperature, the power supply of outdoor unit will be ON at the same time after wired remote control operation switch is at "LOW FAN" or "HIGH FAN" condition.
I : To "ON" power supply.
O : To "OFF" power supply.

Circuit Protection Control

60 second forced operation of compressor when OFF point is detected instantly by thermostat right after compressor start, the compressor is kept "ON" for 60 seconds in order to protect the compressor.

Starting Current Control

When the compressor, outdoor fan motor & indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

Time Delay Safety Control

Compressor will not restart within a period of 2 minutes 58 seconds after stop.
Including: Thermostat ON/OFF
Wired remote control ON/OFF

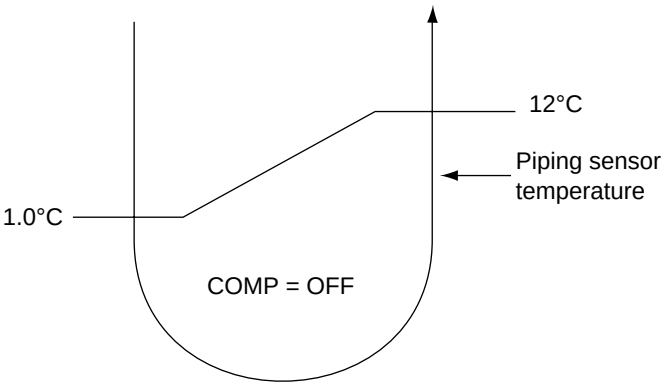
Fan Speed

When selecting the airflow volume by the Operation Switch, the following indoor fan speed control is executed:
LOW FAN — Indoor fan is operated in low fan speed.
HIGH FAN — Indoor fan is operated in high fan speed.

7 minutes Time Saved

When intake air temperature is somewhere between ON and OFF points, and also the compressor is at OFF state for 7 minutes or more, then the compressor shall be turned ON.
(To prevent raising of the humidity.)

Anti-Freezing Control



1) Piping Temperature Sensor
– When the piping temperature is lower than 1.0°C for 3 minutes or more, the compressor shall be turned OFF.

– Compressor will be turned ON again when the piping temperature reaches 12°C or above. However, 3 minutes waiting is effective.

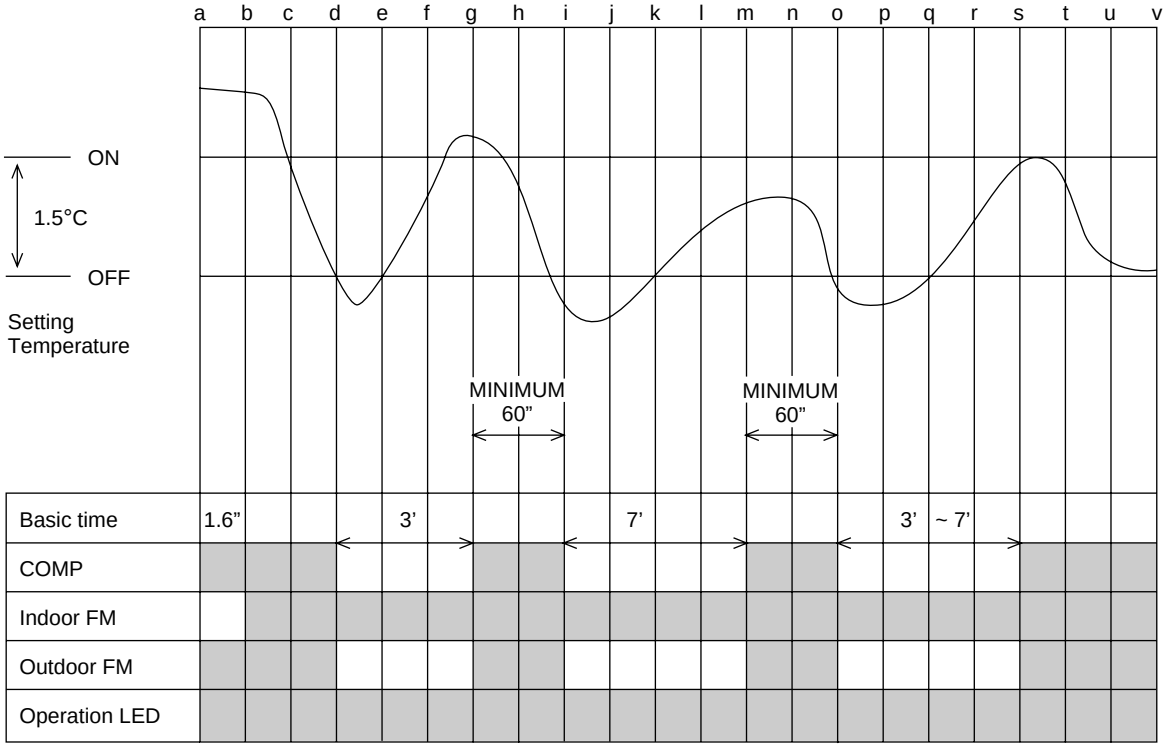
2) Intake Air Temperature Sensor
– When intake air temperature is 18°C or less and the compressor has operated continuously for 16 minutes, the compressor shall be turned OFF, and 3 minutes waiting is performed.

Details Of Functions

Indoor Unit

Operation

Cooling operation only.
Cooling operation time chart:



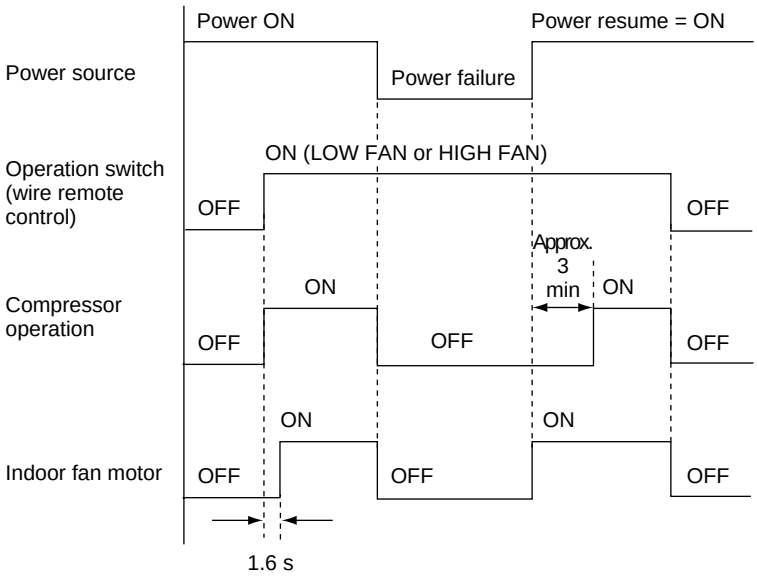
<Description of operation>

a – b : Starting current control (1.6 second delay)
d – g : Restart control (Approx. 3 minutes waiting)
g – i : 60 seconds forced operation
i – m : 7 minutes time saved

In operation
Stop

Power Resume Control

The air conditioner will restart automatically at the previous operation mode when the power supply is resumed after power failure. The approx. 3 minutes waiting is valid if operation switch is at “ON” position during power supply resume.



Power resume control time chart

Details Of Functions

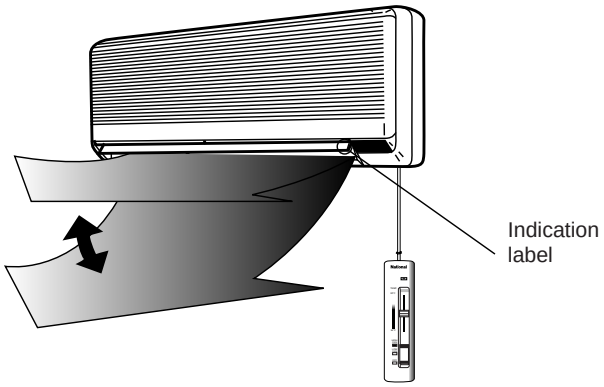
Indoor Unit

Vertical & Horizontal Airflow Direction Louver

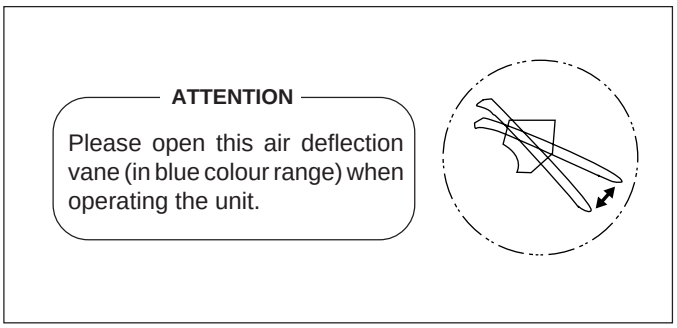
It is intended to adjust the airflow to improve the comfort of the living environment.

1) Vertical airflow direction adjustment louver.

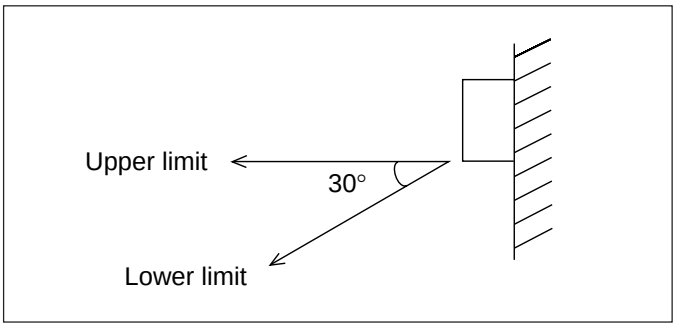
– To blow the discharge air upwards, downwards or straight out.
– Adjust the louver directly by hand.
– Adjustable angle range, refer to the indication label which attached at right side of discharge grille.



Example of Indication label:

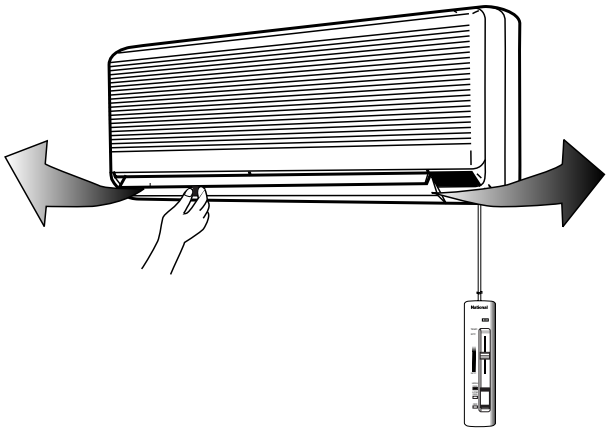


Angle of the louver:



2) Horizontal airflow direction adjustment louver.

– To blow the discharge air to the right, left or straight out.
– Adjust the louver directly by hand.



Details Of Functions

Outdoor Unit

Overload Protector

Inner overload protector to protect the compressor.

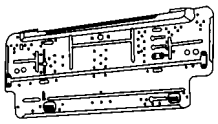
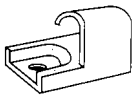
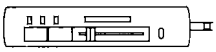
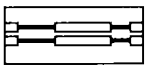
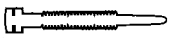
Safety Protection

A current fuse is being used to protect the fan motor.
The fan motor will turn OFF if the current flow into the fan motor exceeds 5.0 Amp.
This is to protect the fan motor from burnt-out.

Installation Information

Accessories

Accessories packed together with indoor unit.

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	5	Remote control holder and wire holder fixing screw 	7
2	Installation plate fixing screw 	4	6	Remote control wire holder 	5
3	Wire remote control complete 	1	7	Insulation material 	1
4	Remote control holder 	1	8	Plastic Band 	2

Accessories: Flaring piping kit (CZ-4F5, 7, 10AN, CZ-52F5,7,10AN)

SELECT THE BEST LOCATION

INDOOR UNIT

- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Indoor unit of this room air conditioner shall be installed on the wall in a height of at least 2.3 m.

OUTDOOR UNIT

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the rated length, additional refrigerant should be added as shown in the table.

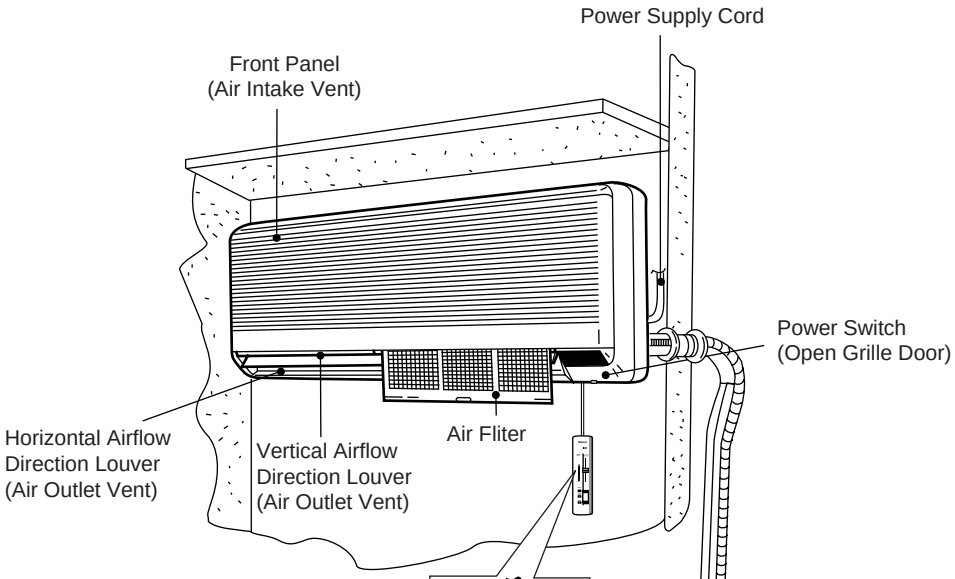
Model	Pipe size		Max.Piping Length Ⓐ (m)	Max. Elevation Ⓑ (m)	Rated		Additional Refrigerant (g/m)
	Gas	Liquid			Length (m)	Elevation (m)	
SC181K	1/2"	1/4"	15	8	7	5	40
SC241K	5/8"	1/4"	15	8	7	5	40

REMOTE CONTROL

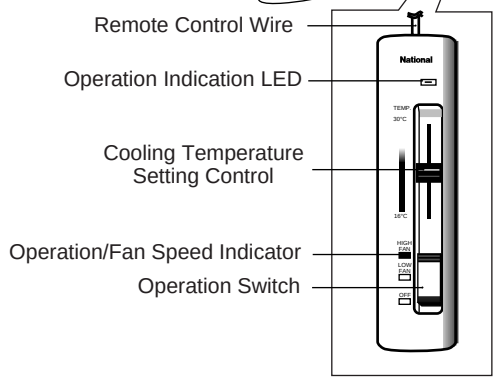
- Do not install at places where there is direct sunlight or near any heat source.

Installation Information

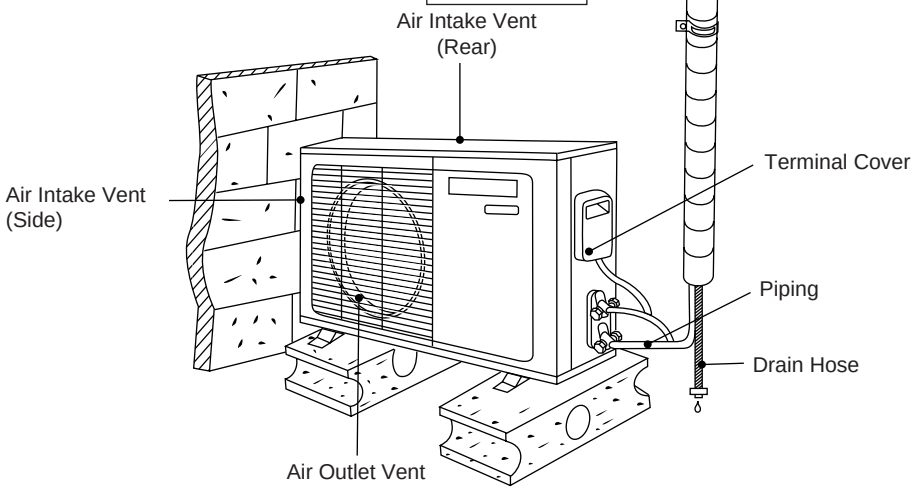
Indoor Unit



Remote Control

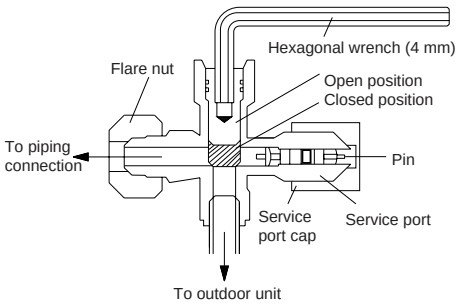
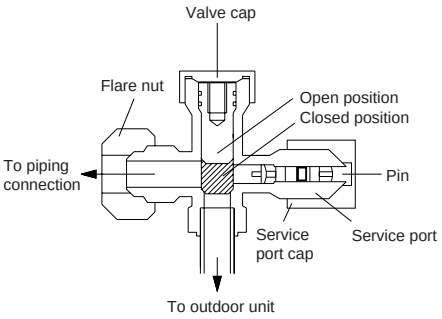


Outdoor Unit



- This illustration is for explanation purposes only.
  The indoor unit will actually face a different way.

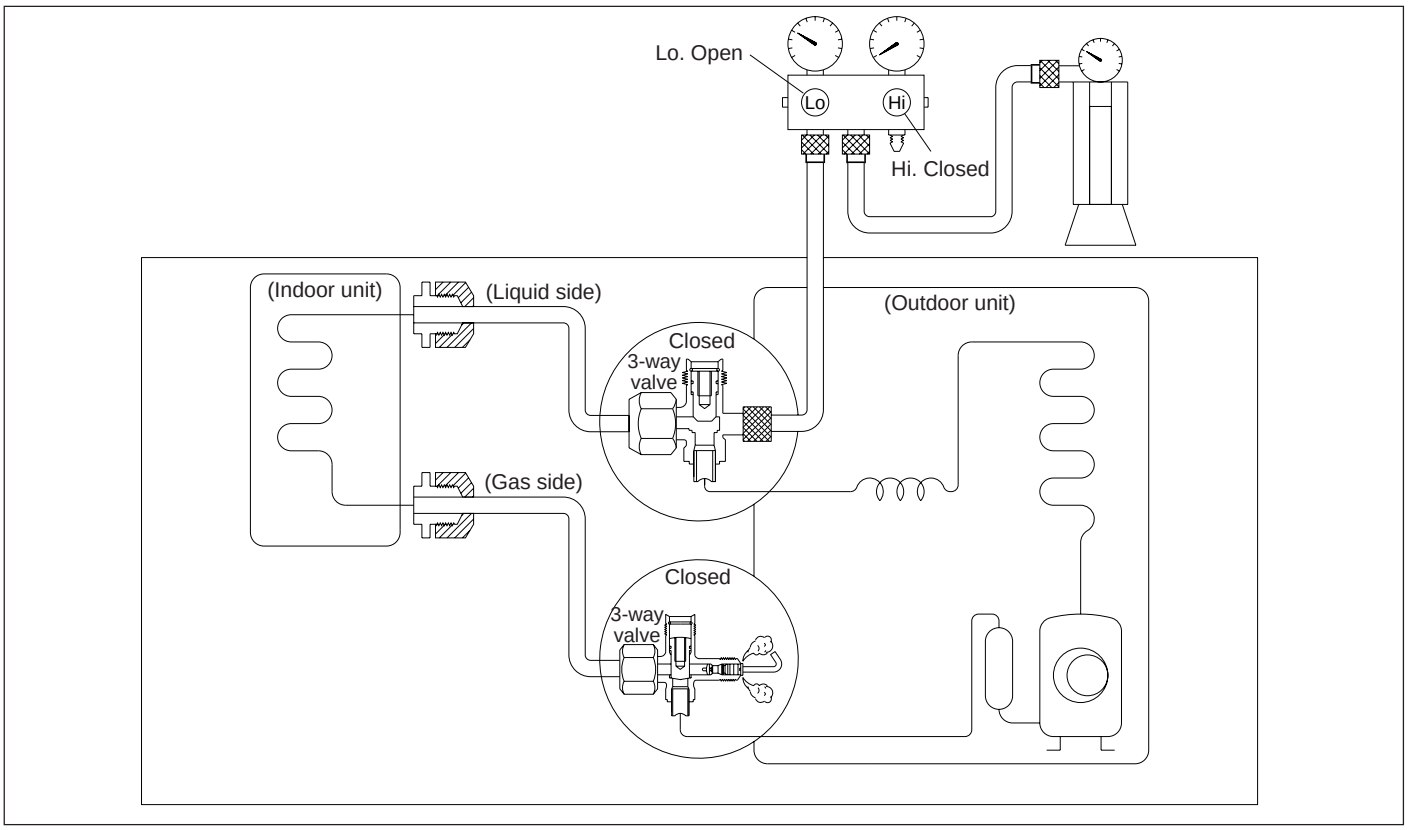
3-way Valve • 3-way Valve

	3-way Valve (Liquid Side)		3-way Valve (Gas Side)	
				
Works	Shaft Position	Service Port	Shaft Position	Service Port
Shipping	Closed (With valve cap)	Closed (With cap)	Closed (With valve cap)	Closed (With cap)
Air purging (Installation)	Closed (Clockwise)	Open (Connected manifold gauge w/charging cylinder)	Closed (Clockwise)	Open (Push-pin)
Operation	Open (With valve cap)	Closed (With cap)	Open (With valve cap)	Closed (With cap)
Pumping down (Transferring)	Closed (Clockwise)	Closed (With cap)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Gas charging (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Pressure check (Servicing)	Open (Counter-clockwise)	Closed (With cap)	Open (Counter-clockwise)	Open (Connected manifold gauge)
Gas releasing (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Open (Connected manifold gauge)

1 Air purging

Required tools: Hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, and charging set.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.



Service port cap
Be sure, using a torque wrench to tighten the service port nut (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

(1) Recheck the piping connections.

(2) Open the valve of the low pressure side of Manifold gauge counterclockwise for 10 seconds, and then close it.

(3) Check for gas leakage.
- Check the flare connections for gas leakage.

(4) Purge the air from the system.
- Open the Low pressure side valve of the manifold gauge.
- Press the valve core pin with the hexagonal wrench to purge the air for three seconds and then wait for one minute.
  Repeat this three times or more.

(5) Balance the refrigerant in the pipings and the indoor unit.
- Close the Low pressure side valve of the manifold gauge.
- Press the valve core pin with the hexagonal wrench to release the refrigerant until the gauge indicates.

(6) Use torque wrench CWH AD-9211 to tighten the service port nut to a torque of 1.8kg-cm.

(7) Set both 3-way valve to the open position

(8) Mount the valve stem nuts to the 3-way valves.

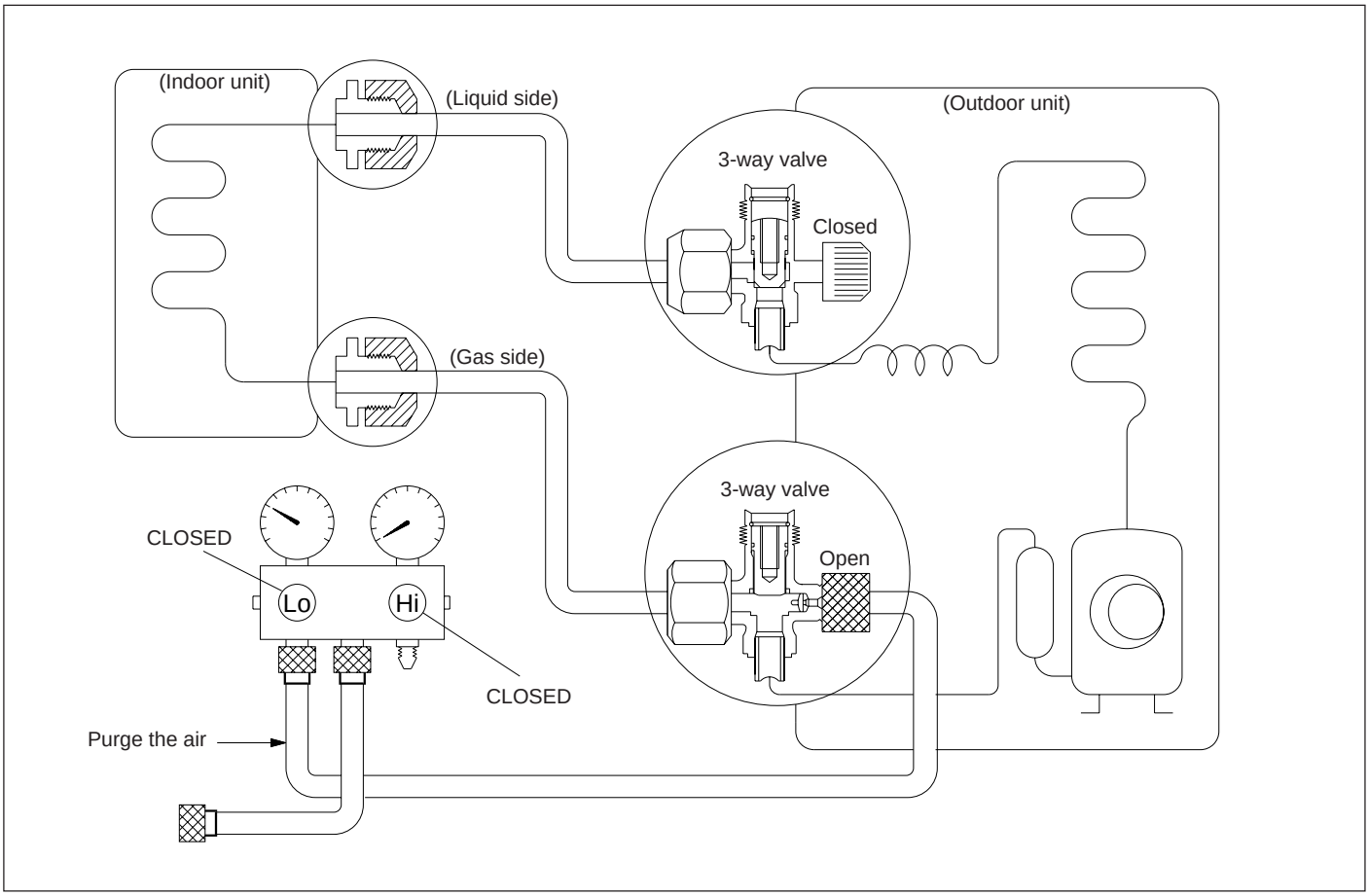
(9) Check for gas leakage.
- At this time, especially check for gas leakage from the both 3-way valve's stem nuts, and from the service port caps.

Caution

If gas leakage is discovered in step (3) above, take the following procedures:

1. Re-tighten the connecting portion with torque wrenches.
   If the leakage ceases, continue the works from step (4).
2. Locate and repair the leak. (Gas leak detector)
   Repeat the works from step (1).

2 Pumping down



Procedure:

(1) Confirm that both the 3-way valve are set to the open position.
- Remove the valve stem caps and confirm that the valve stems are in the raised position.
- Be sure to use a hexagonal wrench to operate the valve stems.

(2) Operate the unit for 10 to 15 minutes.

(3) Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valves.
- Connect the charge hose with the push pin to the gas side service port.

(4) Air purging of the charge hose.
- Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

(5) Set the Liquid side 3-way valve to the closed position.

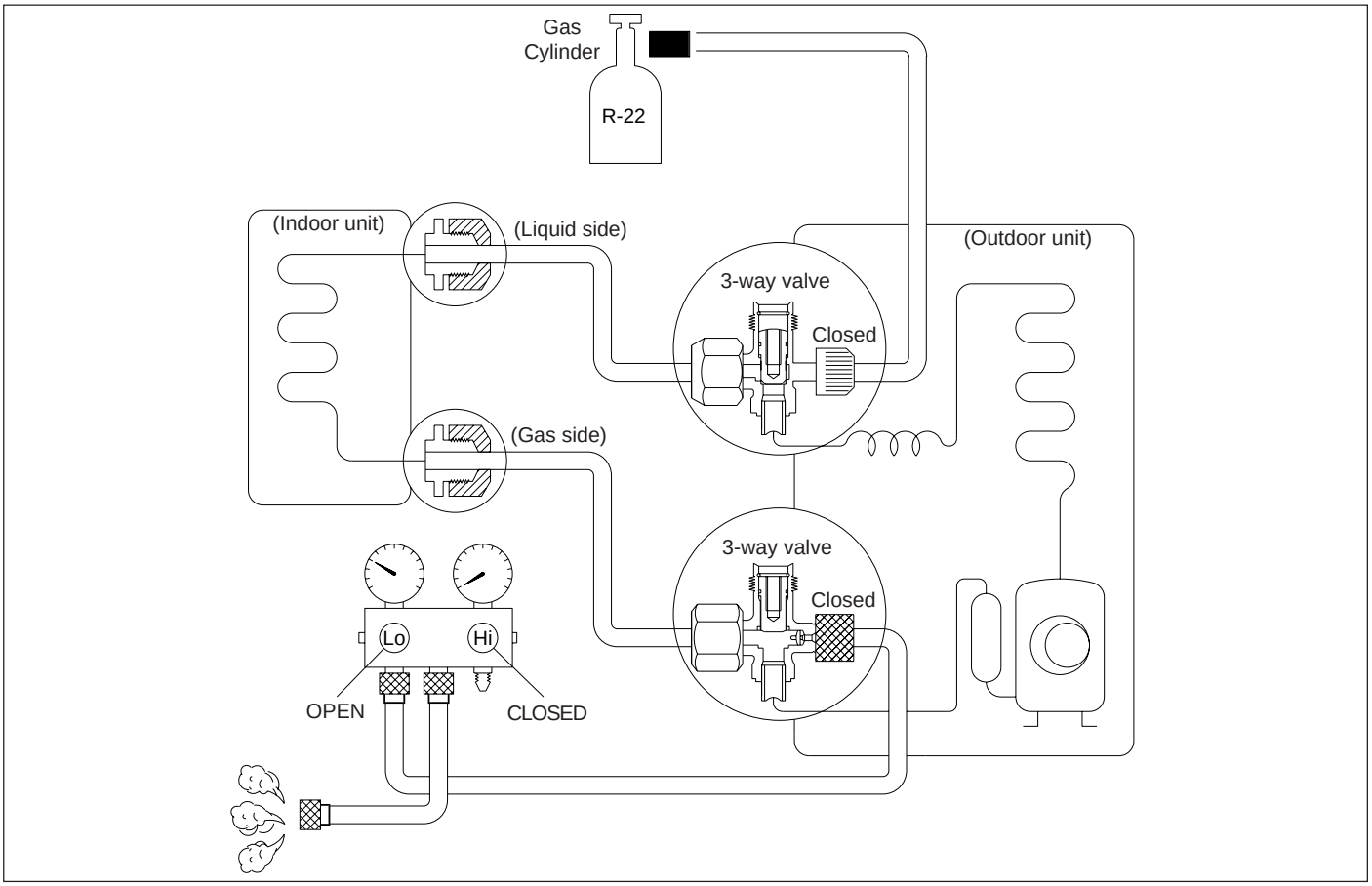
(6) Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1 kg/cm²G.
- If the unit cannot be operated at the cooling (weather is rather cool), short the Pumping Down pins (BLUE) on the Main Control P.C.B.
- So that the unit can be operated.

(7) Immediately set the 3-way valve to the close position.
- Do this quickly so that the gauge ends up indicating 3 to 5kg/cm²G.

(8) Disconnect the charge set, and mount both the 3-way valve's stem nuts and the service port cap.
- Use torque wrench CWHAD-9211 to tighten the service port nut to a torque of 1.8kg•m.
- Be sure to check for gas leakage.

2-1 Re-air purging

(Re-installation)



Procedure:

(1) Remove the cap nut from 3-way valves.
- Remove the cap nut from 3-way valves after carefully checked whether the piping connection was properly and certainly done.

(2) Confirm that the valve in both 3-way valve are set to the CLOSED.

(3) Connect the charging cylinder to the liquid-side (high-pressure) 3-way valve and the charge set to the gas side (low-pressure) 3-way valve.
- Remove the flare nut from the service port to connect the charge set and gas cylinder.
- Close the valves on the gas cylinder and charge set.

(4) Air purging.
- Open the valve on the gas cylinder.
- Open the valve on the charge set, discharge for three seconds and wait for one minute. Repeat this three times.

(5) Check for gas leakage.
- Check the flare connections for gas leakage.

(6) Discharge the refrigerant.
- Close the valve on the gas cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm^{2}G.

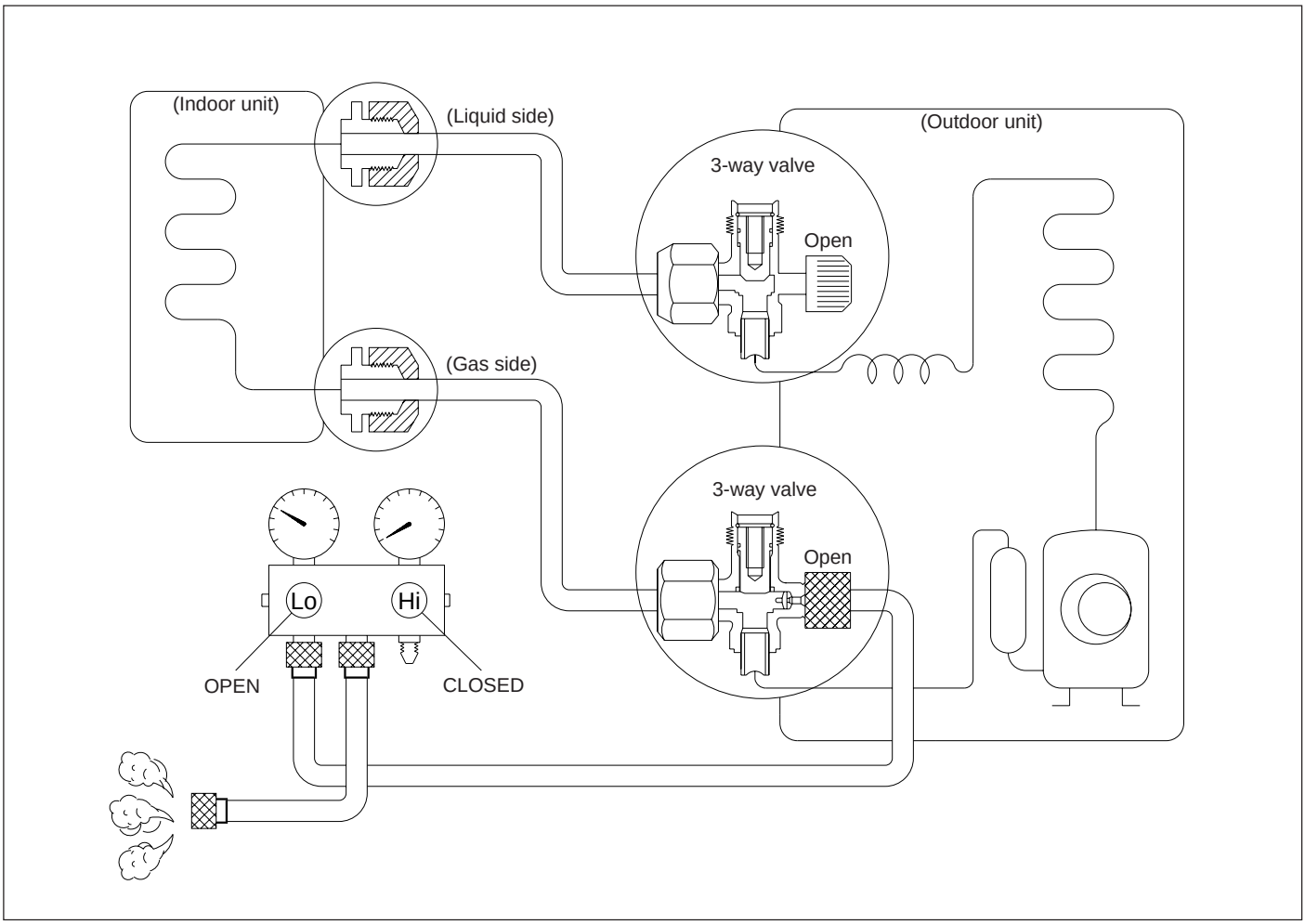
(7) Disconnect the charge set and the gas cylinder.

(8) Mount the valve stem cap nuts and the flare nuts for service port onto the 3-way valves.

(9) Mount the cap nut and service port nut onto the 3-way valves.
- Be sure to use a torque wrench (CWHAD-9211) to tighten the service port nut.
- Be sure to check for gas leakage.

2-2 Balance refrigerant of the 3-way valves

(Gas leakage)



Procedure:

(1) Confirm that both the 3-way valve are set to the open position.

(2) Connect the charge set to the Gas side 3-way valve's service port.

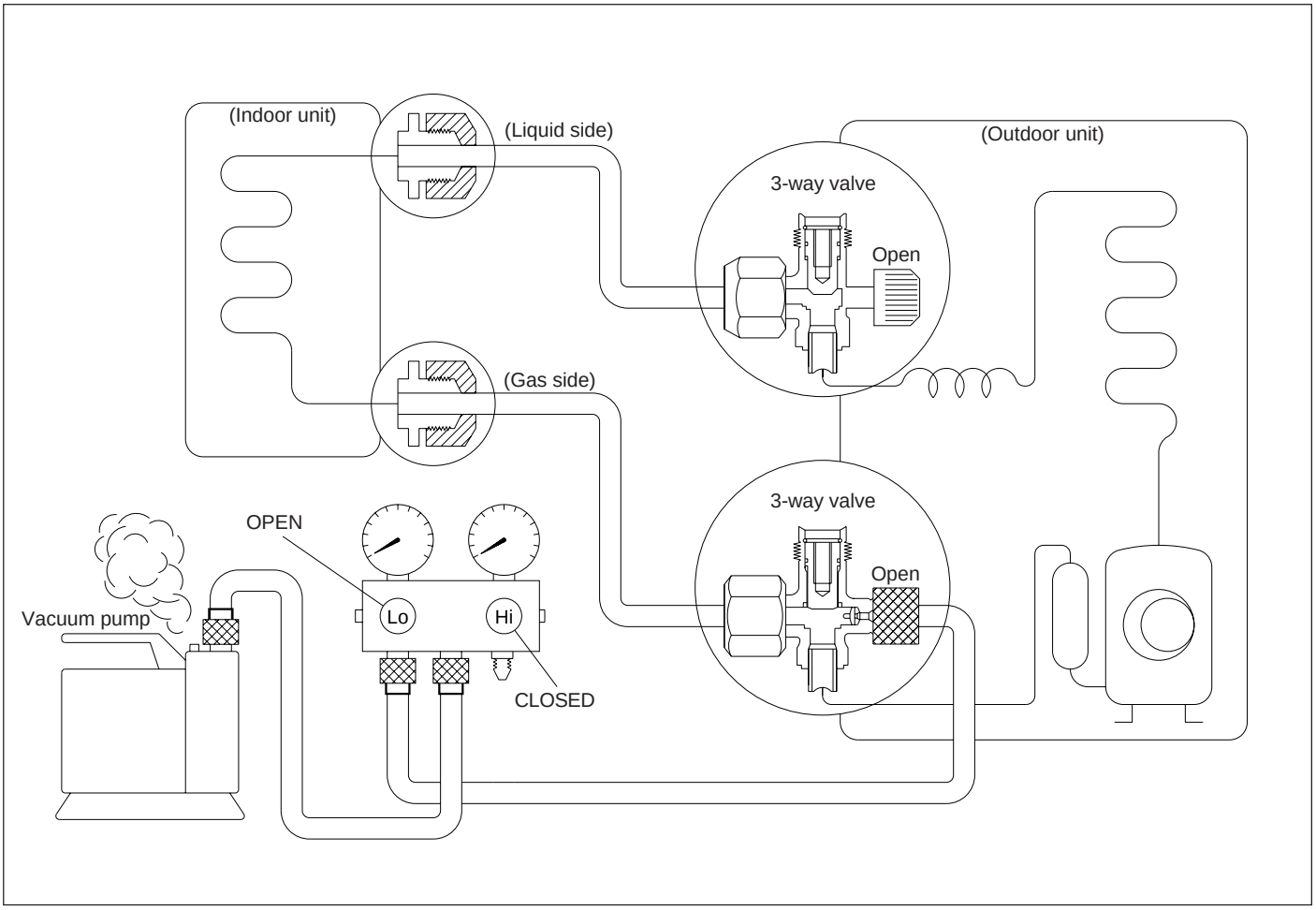
- Leave the valve on the charge set closed.
- Connect the charge hose with the push pin to the service port.

(3) Open the valves (Lo side) on the charge set and discharge the refrigerant until the gauge indicates 0kg/cm²G.

- If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1kg/cm²G), discharge the refrigerant until the gauge indicates 0.5 to 1kg/cm²G. If this is the case, it will not be necessary to apply a evacuation.
- Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

3 Evacuation

(All amount of refrigerant leaked)



Procedure:

(1) Connect the vacuum pump to the charge set's centre hose.

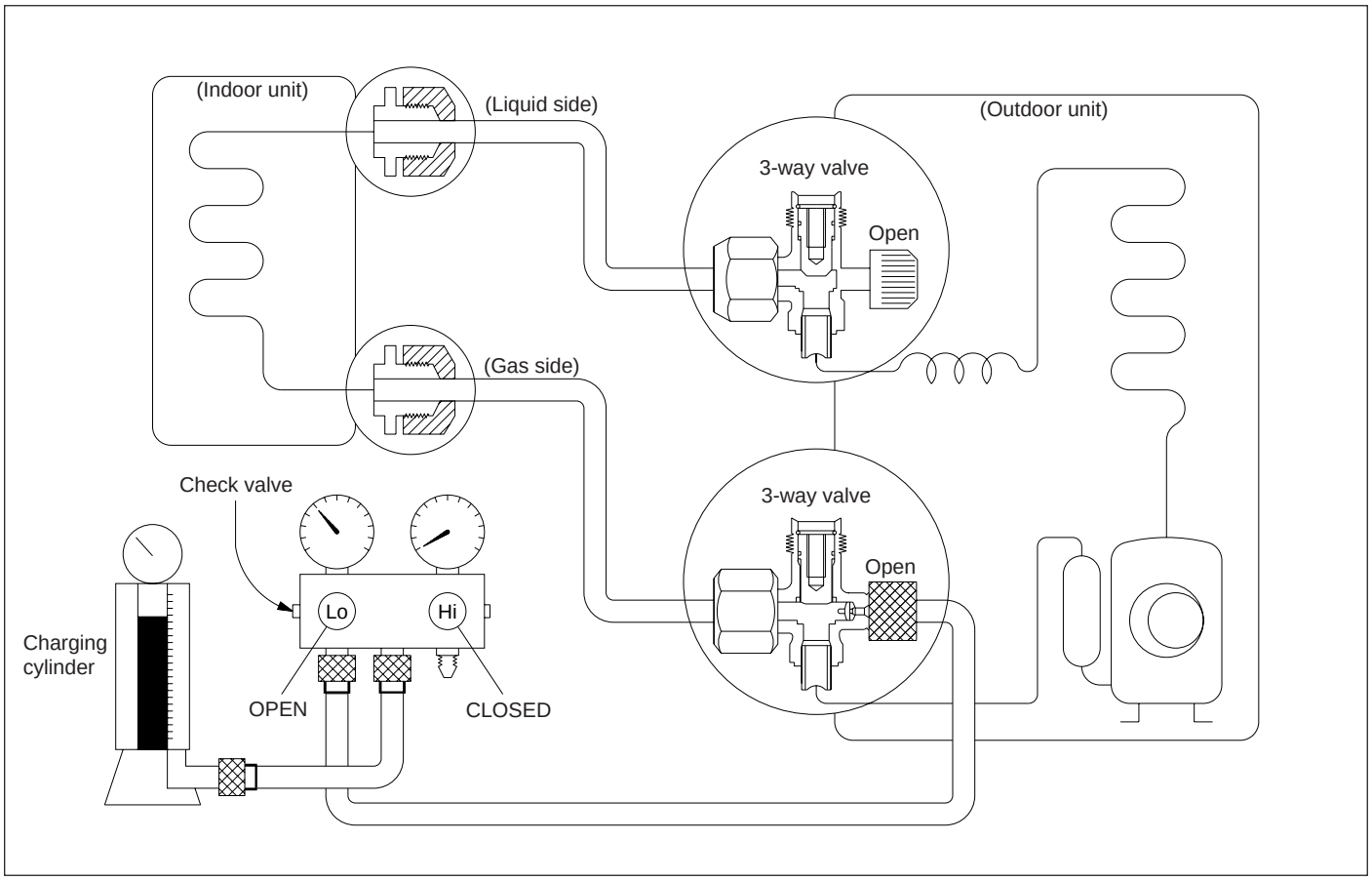
(2) Evacuation for approximately one hour.
- Confirm that the gauge needle has moved toward –76 cmHg [vacuum of 4 mmHg or less].

(3) Close the valve (Lo side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

(4) Disconnect the charge hose from the vacuum pump.
- Vacuum pump oil.
  If the vacuum pump oil becomes dirty or depleted, replenish as needed.

4 Gas charging

(After Evacuation)



Procedure:

(1) Connect the charge hose to the charging cylinder.

- Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
- If you are using a gas cylinder, also use a scale and reverse the cylinder so that the system can be charged with liquid.

(2) Purge the air from the charge hose.

- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant). The procedure is the same if using a gas cylinder.

(3) Open the valve (Lo side) on the charge set and charge the system with liquid refrigerant.

- If the system can not be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin).

This is different from previous procedures. Because you are charging with liquid refrigerant fom the gas side, absolutely do not attempt to charge with large amounts of liquid refrigerant while operating the air conditioner.

(4) Immediately disconnect the charge hoses from the 3-way valve's service ports.

- Stopping partway will allow the refrigerant to be discharged
- If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

(5) Mount the valve stem nuts and the service port cap.

- Use a torque wrench CWHAD-9211 to tighten the service port nut to a torque of 1.8kg•m.
- Be sure to check for gas leakage.

Disassembly of the Parts

■ Electronic Controller Removal Procedure.

1. Remove Front Grille.
2. Remove the Electronic Controller. Pull forward (towards you) by releasing the tab which clamps the Electronic Controller (Refer Figure 1).

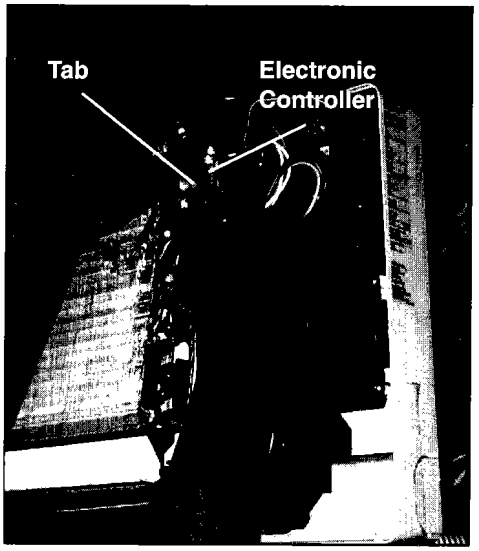


Fig. 1

■ Indoor Fan Motor and Cross Flow Fan Removal Procedure.

1. Remove the connector of:-
   - CN - FM (Green)
   - CN - RMT (Remote Control)
   - CN - TH (YLW) - for sensor.
     (Refer Figure 2)

2. Remove the Control Board.
   As shown in figure at right, this can be done by the below steps:-
   - Remove 2 screws at left and 2 screws at right of the Control Board. (Refer Figure 3)
   - Remove 2 earth wire screws.
     – 1 earth wire screw connected to evaporator (Refer Figure 3).
     – 1 earth wire screw connected to Fan Motor (Refer Figure 4).
   - To remove the CN - FM connector, disconnect the Terminal Board and then remove the CN - FM connector from the Control Board (Refer Figure 5).

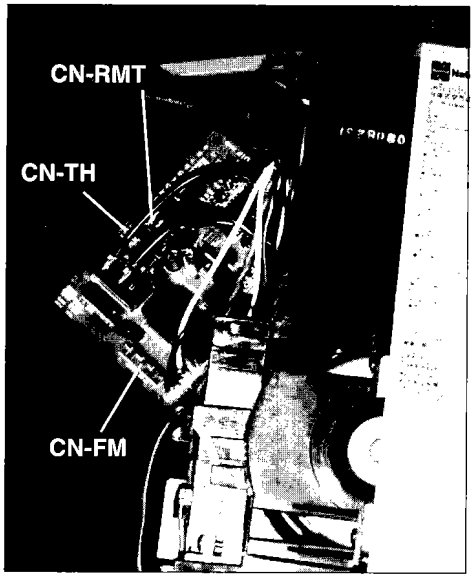


Fig. 2

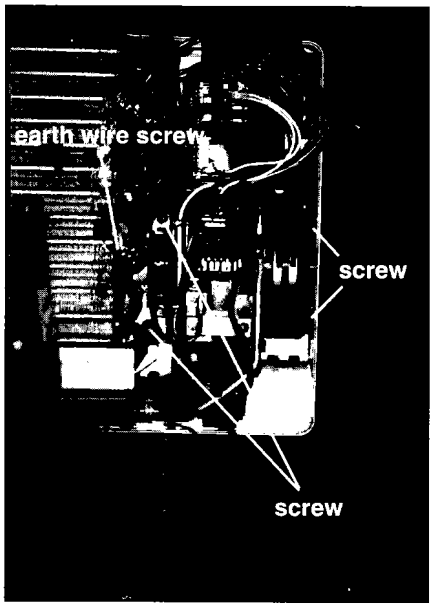


Fig. 3

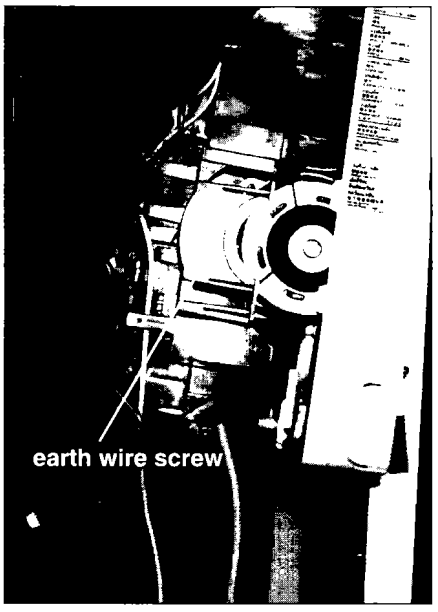


Fig. 4

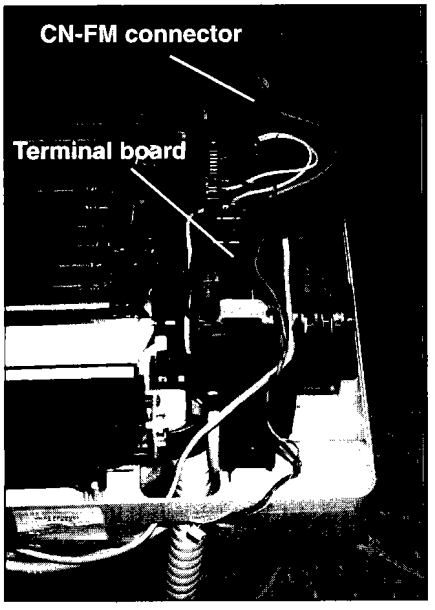


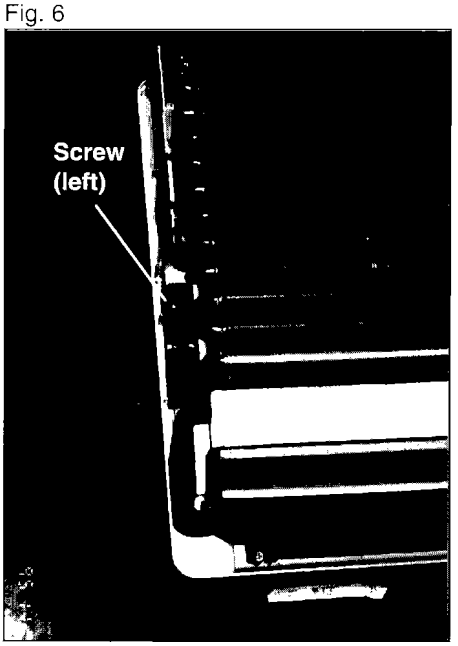
Fig. 5

Disassembly of the Parts

3. Remove the Air Discharge Grille.
   - Remove the Air Discharge Grille by removing the 2 screws (at right and left) that holds the Air Discharge Grille and then pull it in a down and forward direction (Refer Figure 6).

   Note:
   Ensure that the drain hose is disconnected (Refer Figure 7).

Fig. 6



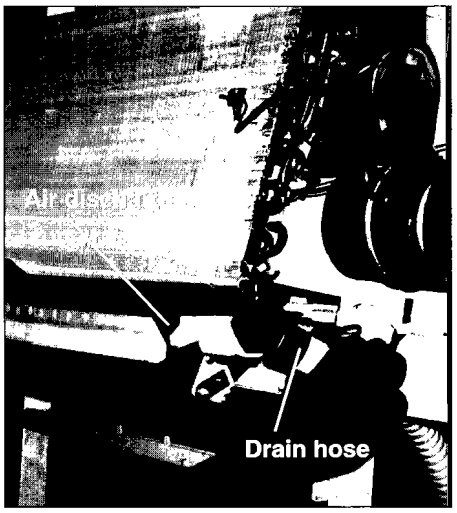


Fig. 7

4. Remove the Fan Motor.
   - Loosen the fan securing screw at the junction with the Cross Flow Fan.

   Note:
   The fan securing screw can be seen from the bottom of the air-conditioner. (Refer Figure 8).
   - Push the Cross Flow Fan to the right and remove the bearing (Refer Figure 9).
   - Remove the Fan Motor by slightly pull the Fan Motor forward (toward you) and pull it to the right.

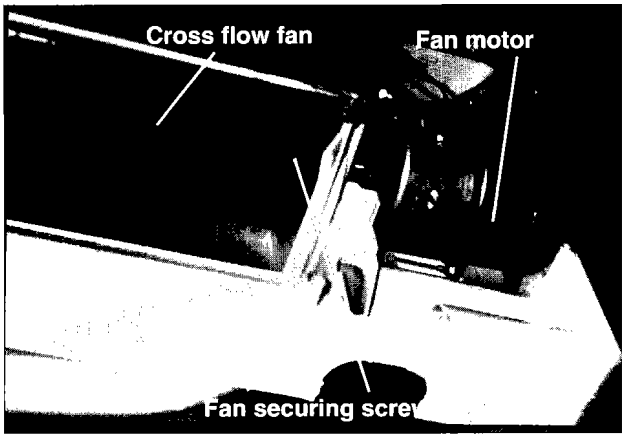


Fig. 8

5. Remove the Cross Flow Fan.
   - Release the securing tab (at the left of the evaporator).
   - Hold the Cross Flow Fan.
   - Pull the left side of the evaporator forward (toward you).
   - Then remove the Cross Flow Fan (Refer Figure 10).

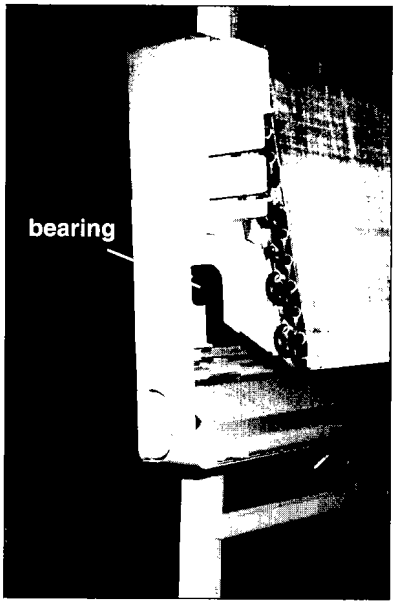


Fig. 9

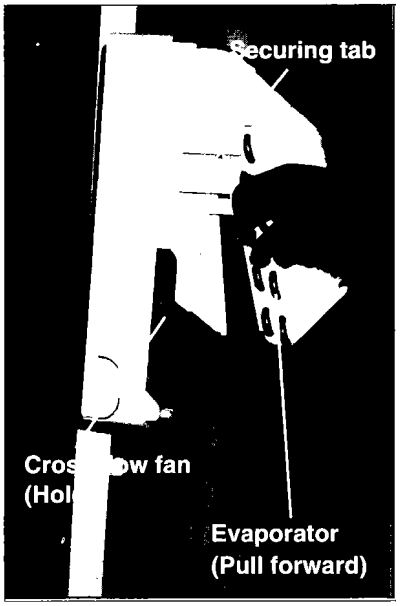


Fig. 10

Care and Maintenance

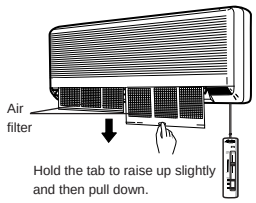
Always turn off the air conditioner and main power supply before cleaning to ensure safety.

CLEANING THE AIR FILTER

- The air filter behind the air intake vent should be washed at least every two weeks or as it needs cleaning.
- If the air filter become clogged with dust, the cooling capacity will drop, and 6% of the electricity used to operate the air conditioner will be wasted.

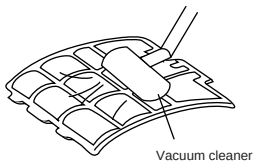
HOW TO CLEAN THE AIR FILTER

1



- Remove the air filters.

2

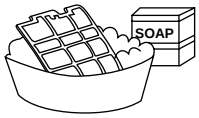


- Vacuum the filter on the dusty side to remove light dust.

3

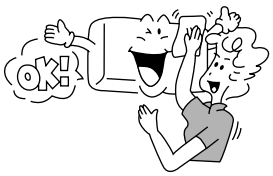
- Wash the filter, cleaner side up under gently flowing water to wash out accumulated dust and lint.

4



- If the filter is very dirty, use a mild household detergent in the wash water.
- Let the filter dry thoroughly before reinstalling it.
  When reinstalling the filter, be sure the word “FRONT” is facing you as you slide the filter back into place.

CLEANING



- **Cleaning the air conditioner and the remote control**
  – Wipe gently with a soft, dry cloth.
  – Use vacuum cleaner with a thin nozzle fitted to clean the dust from the louvers and the front panel.

- **Caution**
  Do not use water or volatile liquids.
  – Do not make the air conditioner wet, as there is the danger that it could cause electric shocks.
  Be sure not to apply water when cleaning or at any other time.
  – Using water above 40°C could cause deformation and/or discolouration.
  – Volatile liquids such as thinner or benzene may damage the air conditioner.

ANNUAL CHECK

- After long-term usage of room air conditioners, dust and dirt will accumulate inside, lowering the performance.
  This may cause the generation of odour or may impede the drainage of the dehumidifying water.
- Besides regular cleaning of the air conditioner, a separate annual check is also recommended. (Chargeable).
  Please request your dealer to carry out these checks.

Troubleshooting Guide

Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor or a fan.
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions; the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

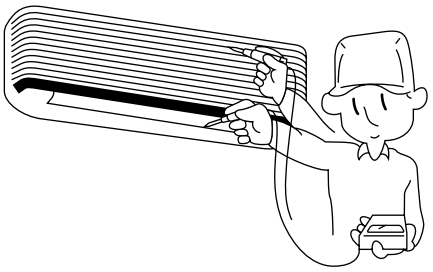
	Gas side pressure MPa (kgf/cm^2G)	Outlet air temperature (°C)
Cooling mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16

★ Condition: Indoor fan speed; High
Outdoor temperature is 35°C

Difference in the intake and outlet air temperatures

- Above 8°C (15 minutes after an operation is started.) → Normal
- Less than 8°C

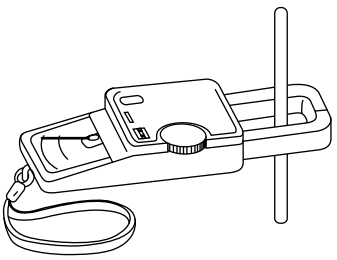
● **Measure the air temperature difference**



Value of electric current during operation

- Higher than specified → Dusty condenser preventing heat radiation
- Higher than specified → Excessive amount of refrigerant
- Lower than specified

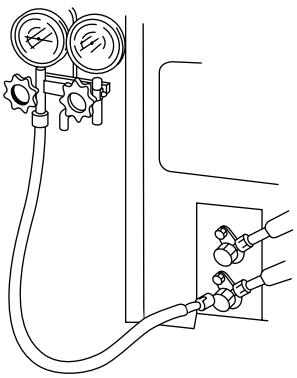
● **Measure the electric current during operation**



Gas side pressure

- Cooling Mode High → Inefficient compressor
- Low → Insufficient refrigerant
- Low → Clogged strainer or capillary tube

● **Measure the gas side pressure**



Troubleshooting Guide

1. Relationship between the condition of the air conditioner, pressure and electric current

Condition of the air conditioner	Cooling Mode		
	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘
Clogged capillary tube	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘
Heat radiation deficiency of the outdoor unit	↗	↗	↗
Insufficient compression	↗	↘	↘

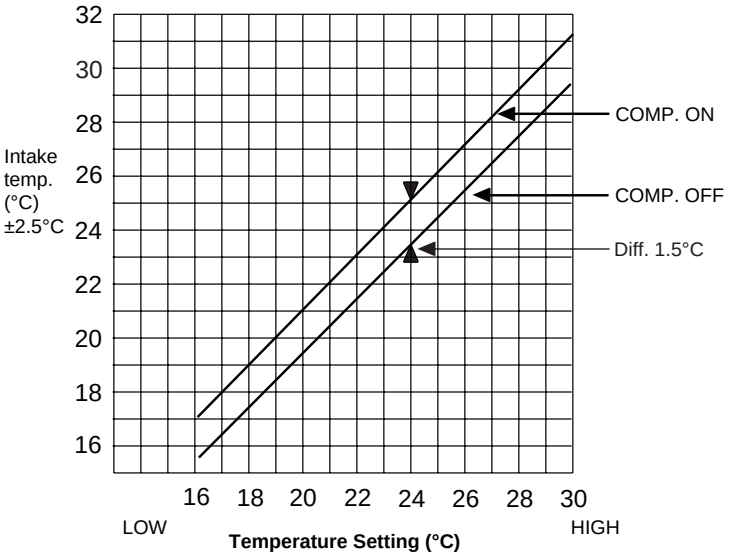
- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

2. Diagnosis methods of a malfunction of a compressor

Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	• Electric current reaches an abnormally high level, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off. • The compressor has a humming sound.

Technical Data

■ Thermostat Characteristics



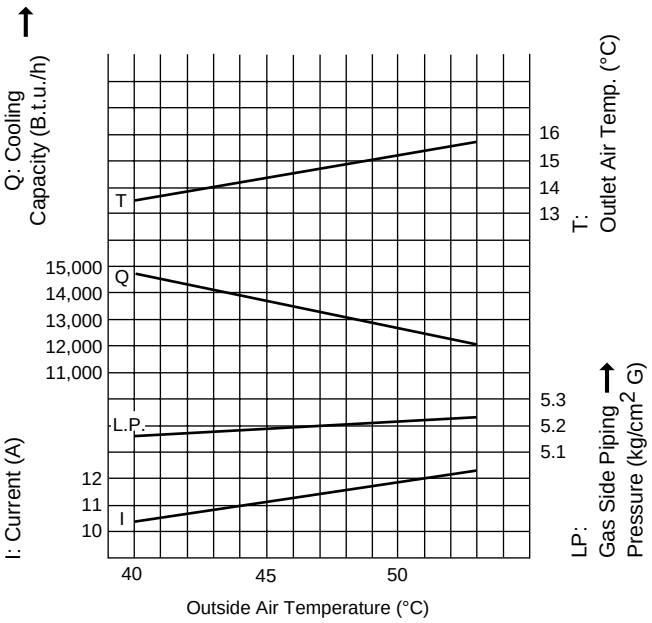
■ Cooling Capacity at Condition

Cooling capacity at condition:

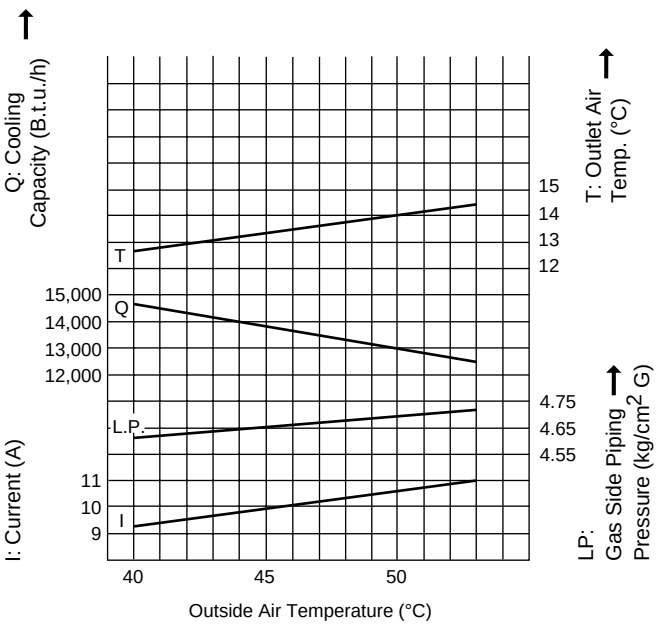
– Outdoor Ambient Temperature 46°C.
– Indoor Temperature 29°C (D.B.)
19°C (W.B.)

High Fan	Intake Air	29°C
	Outlet Air	14.5°C

• **CS-SC181KS**

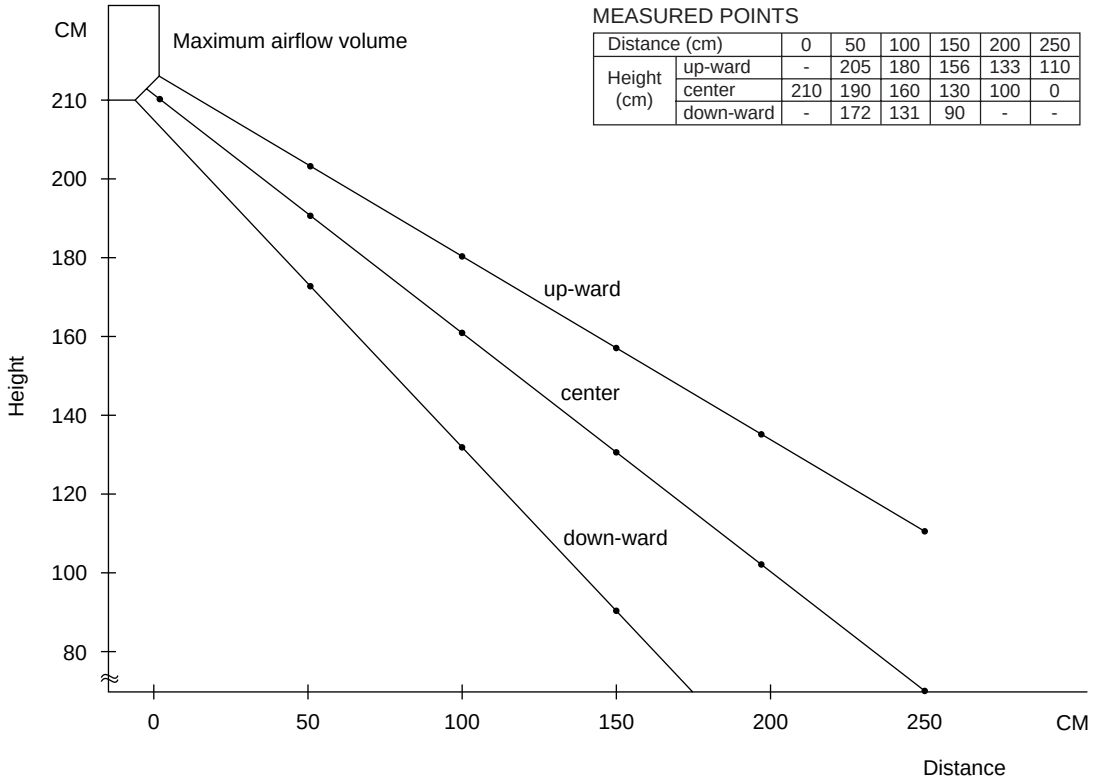


• **CS-SC241KS**



Technical Data

■ Air Throw



MEASURED POINTS

Distance (cm)		0	50	100	150	200	250
Height (cm)	up-ward	-	205	180	156	133	110
	center	210	190	160	130	100	0
	down-ward	-	172	131	90	-	-

■ Air Throw Measurement Results

- **CS-SC181KS**

(Unit in : m/sec)

Hi	up-ward	-	1.89	1.13	0.70	0.60	0.40
	center	5.13	3.47	2.12	1.31	0.77	0.48
	down-ward	-	2.41	1.57	0.97	-	-
Lo	up-ward	-	1.01	0.65	0.41	0.35	0.23
	center	2.94	1.98	1.23	0.75	0.44	0.31
	down-ward	-	1.38	0.96	0.59	-	-

- **CS-SC241KS**

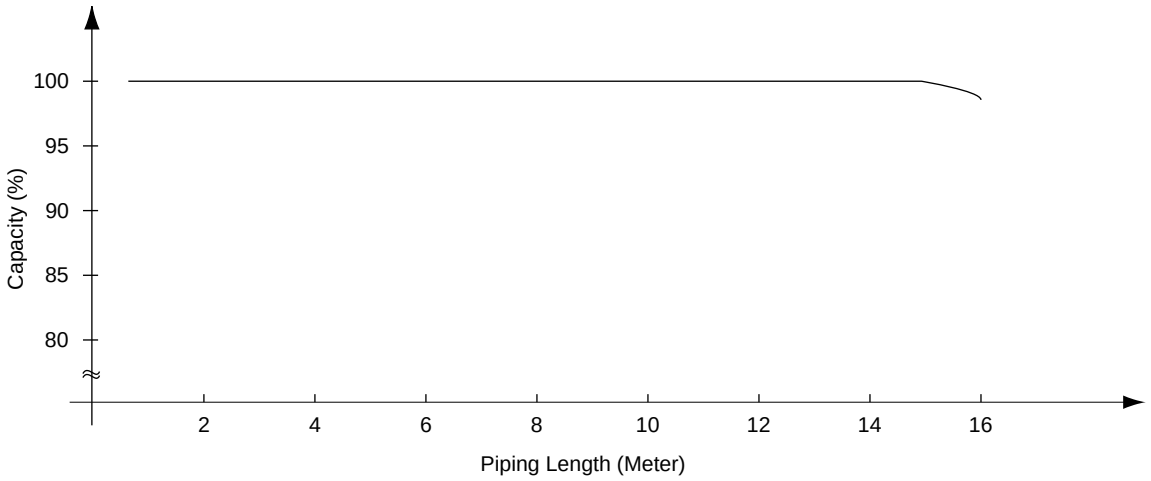
(Unit in : m/sec)

Hi	up-ward	-	2.03	1.21	0.75	0.64	0.42
	center	5.5	3.72	2.27	1.40	0.82	0.51
	down-ward	-	2.58	1.68	1.04	-	-
Lo	up-ward	-	1.25	0.81	0.50	0.43	0.28
	center	3.6	2.43	1.51	0.92	0.54	0.38
	down-ward	-	1.69	1.18	0.73	-	-

Technical Data

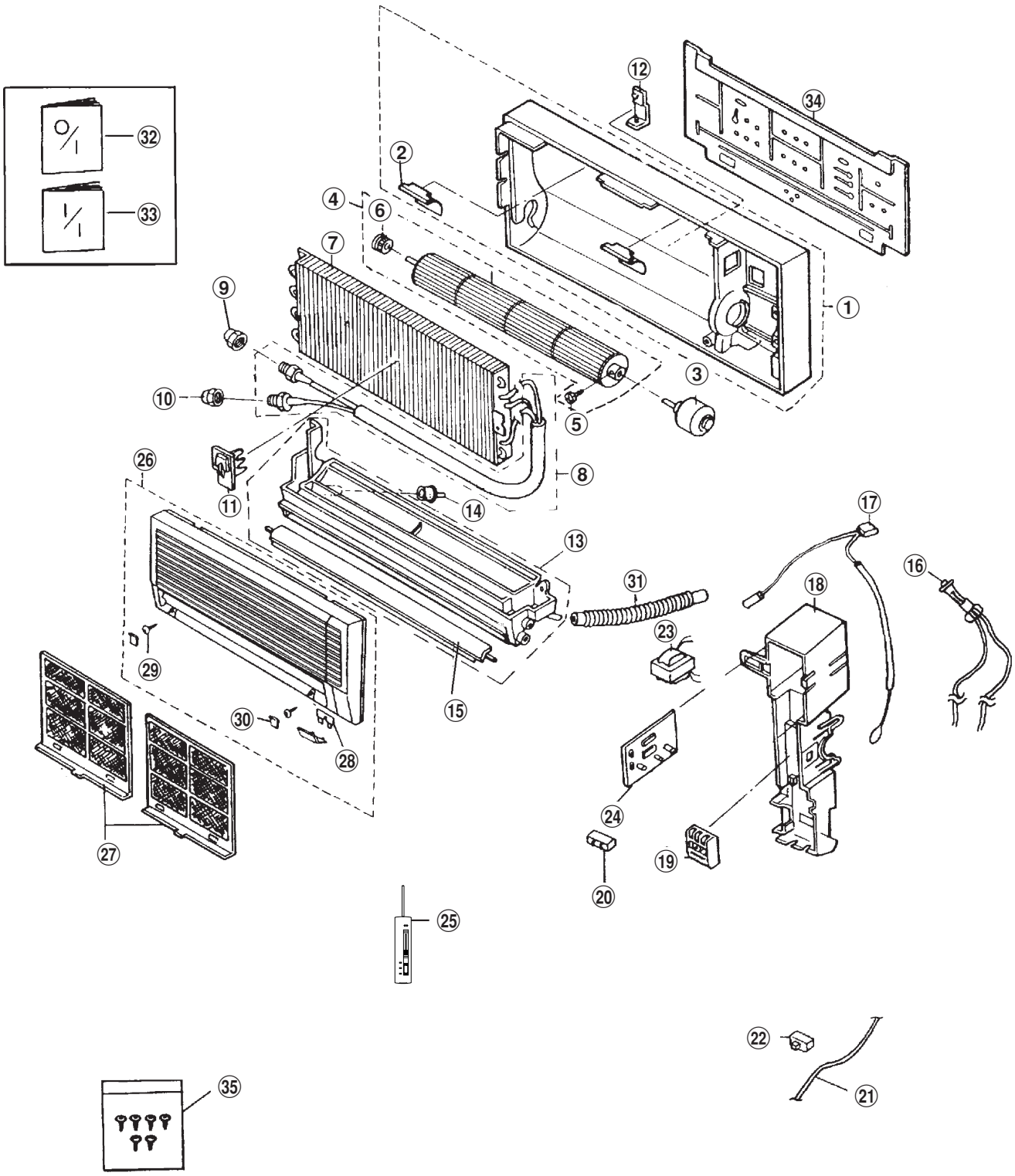
■ Piping Length Vs Capacity

- **CS-SC181KS, CU-SC181KS**
  CS-SC241KS, CU-SC241KS



Exploded View

CS-SC181KS
CS-SC241KS



* The above exploded view is for the purpose of parts disassembly and replacement. The non-numbered parts are not kept as standard service parts.

Replacement Parts List

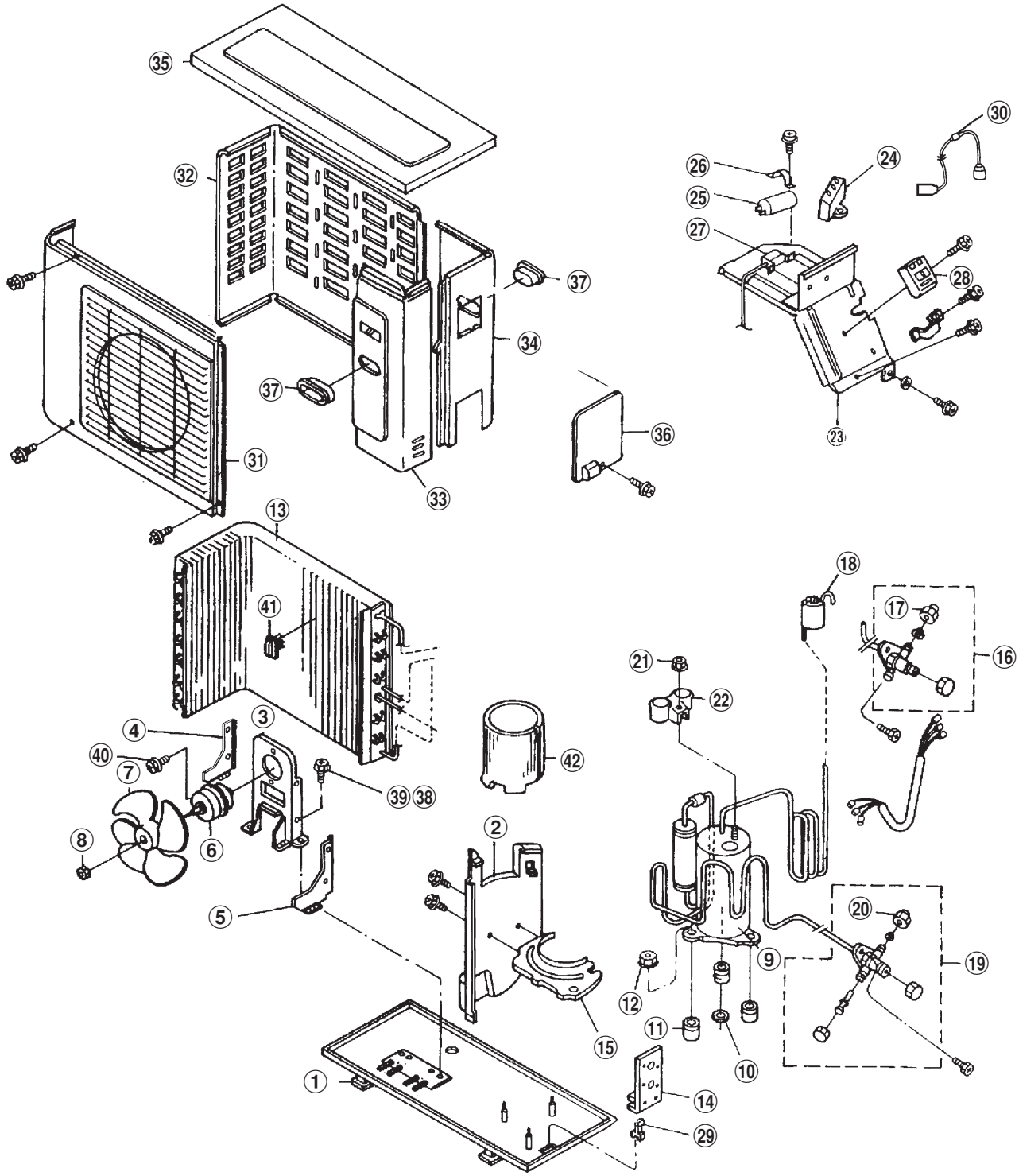
<Model: CS-SC181KS, CS-SC241KS>

NO.	DESCRIPTION & NAME	QTY	CS-SC181KS	CS-SC241KS
1	CHASSY COMPLETE	1	CWD50C203	←
2	PLUG	2	CWB82026	←
3	FAN MOTOR	1	CWA92229	CWA92230
4	CROSS FLOW FAN COMPLETE	1	CWH02K056	←
5	SCREW – CROSS FLOW FAN	1	CWH4580304	←
6	BEARING ASS'Y	1	CWH64K009	←
7	EVAPORATOR	1	CWB30C155	←
8	TUBE ASS'Y COMPLETE	1	CWT00C723	CWT00C724
9	UNION NUT (1/4")	1	CWH6002140	←
10	UNION NUT (1/2", 5/8")	1	CWT25007 (1/2")	CWT25004 (5/8")
11	HOLDER – SENSOR	1	CWH32050	←
12	PIPE HOLDER	1	CWD93447F	←
13	DISCHARGE GRILLE COMPLETE	1	CWE20C483	←
14	SOFT CAP	1	CWH4612103	←
15	VANE (UP / DOWN)	1	CWE24213B	←
16	THERMAL FUSE	1	CWA16C127	←
17	SENSOR	1	CWA50C538	←
18	CONTROL BOARD	1	CWH10662	←
19	TERMINAL BOARD COMPLETE	1	CWA28C374	←
20	TERMINAL BOARD	1	CWA4711012	←
21	POWER SUPPLY CORD COMPLETE	1	CWA20C405	←
22	SLIDE SWITCH	1	CWA04088	←
23	TRANSFORMER COMPLETE	1	CWA40C193	←
24	ELECTRONIC CONTROLLER	1	CWA74897	←
25	REMOTE CONTROL (WIRED)	1	CWA75C591	←
26	FRONT GRILLE COMPLETE	1	CWE11C584	←
27	AIR FILTER	2	CWD00101B	←
28	CONTROL PANEL	1	CWE311055	←
29	SELF TAPPING SCREW – FRONT GRILLE	3	XTN4+16C	←
30	CAP	3	CWH52101B	←
31	DRAIN HOSE	1	CWH5880253	←
32	OPERATING INSTRUCTIONS	1	CWF561244	←
33	INSTALLATION INSTRUCTIONS	1	CWF61478	←
34	INSTALLATION PLATE	1	CWH36055	←
35	BAG COMPLETE – INSTALLATION	1	CWH82C145	←

(Note)
- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.

Exploded View

CU-SC181KS
CU-SC241KS



* The above exploded view is for the purpose of parts disassembly and replacement. The non-numbered parts are not kept as standard service parts.

Replacement Parts List

<Model: CU-SC181KS, CU-SC241KS>

NO.	DESCRIPTION & NAME	QTY	CU-SC181KS	CU-SC241KS
1	CHASSY ASS'Y	1	CWD50K515B	CWD50K514B
2	SOUND PROOF BOARD	1	CWH15223	←
3	FAN MOTOR BRACKET	1	CWD54145	←
4	SUPPORTOR-F.M. BRACKET (LEFT)	1	CWD90835	←
5	SUPPORTOR-F.M. BRACKET (RIGHT)	1	CWD90836	←
6	FAN MOTOR	1	CWA95272	CWA95273
7	PROPELLER FAN	1	CWH00K049	←
8	NUT-P.FAN	1	CWH56060	←
9	COMPRESSOR	1	2KS282H5BA01	2JS394H3BA01
10	PACKING-COMP. MOUNT.	1	CWB81047	←
11	BUSHING-COMP. MOUNT.	3	CWH50055	←
12	NUT-COMP. MOUNT	3	CWH4582065	←
13	CONDENSER	1	CWB32C157	←
14	HOLDER-COUPLING	1	CWH35113B	CWH35114B
15	GUIDER-COMP.	1	CWD90830	←
16	3-WAY VALVE (LIQUID SIDE)	1	CWB01363	←
17	FLARE NUT (1/4")	1	CWH6002140	←
18	TUBE ASSY (STRAINER, CAPILLARY)	1	CWT01531	CWT01560
19	3-WAY VALVE (GAS SIDE)	1	CWB01364	CWB01377
20	FLARE NUT (1/2", 5/8")	1	CWT25007 (1/2")	CWT25004 (5/8")
21	NUT-TERMINAL COVER	1	CWH7080300	←
22	TERMINAL COVER-COMP.	1	CWH17006	←
23	CONTROL BOARD	1	CWH10K331	←
24	CAPACITOR-F.MOTOR	1	CWA31244 (3.0μF, 400V)	←
25	CAPACITOR-COMP.	1	CWA31505 (40μF, 370V)	CWA31506 (45μF, 370V)
26	HOLDER CAPACITOR	1	CWH30060	←
27	THERMOSTAT	1	CWA15129	←
28	TERMINAL BOARD	1	CWA28C381	←
29	HOLDER-SENSOR	1	CWH32002	←
30	CURRENT FUSE	1	CWA16C132	←
31	AIR DISCHARGING PANEL	1	CWE06K024B	←
32	CABINET REAR PLATE	1	CWE02096B	←
33	CABINET FRONT PLATE	1	CWE06075B	←
34	CABINET SIDE PLATE	1	CWE04111B	←
35	CABINET TOP PLATE	1	CWE03049B	←
36	CONTROL BOARD COVER	1	CWH13331A	←
37	HANDLE	2	CWE16000E	←
38	SCREW-FAN MOTOR BRACKET	6	CWH55101	←
39	SCREW C. LOCKING BRACKET	10	CWH4580345	←
40	SCREW-FAN MOTOR MOUNT	4	CWH55252	←
41	HOLDER-F.M. LEAD WIRES	1	CWH31043	←
42	SOUND PROOF MATERIAL (COMP.)	1	CWG30563	←

(Note)
- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.

Electronic Parts List

<Model: CS-SC181KS, CS-SC241KS>

CWA74897 - Electronic Controller

SYMBOL	DESCRIPTION & NAME	PART NO.
Q1	TRANSISTOR	A55C1741ASTR
Q2	TRANSISTOR	A55DTC113ZST
Q3	TRANSISTOR	A55DTC113ZST
Q4	TRANSISTOR	A55C1740STPQ
Q5	TRANSISTOR	A55C1740STPQ
IC1	INTERGRATED CIRCUIT	A52C094
IC2	INTERGRATED CIRCUIT	A52C040
IC3	INTERGRATED CIRCUIT	A52C405722CP
D1	DIODE	A54RA15-01V3
D2	DIODE	A54MA165TA5
D3	DIODE	A54MA165TA5
RY-C	RELAY	A00106
RY-L	RELAY	A00161
RY-H	RELAY	A00160
ZD-1	ZENOR DIODE	A54D7.5EL1TB
DB-1	DIODE COMPLETE	A54CS1VB10E
ZNR-1	ZENOR DIODE	A54C036
X1	RESONATOR	A45ST4.0MGWT
C-FM	SELF HEALING CAPACITOR (FAN MOTOR)	A31499
FUSE	FUSE	XBA2C31TR0

(Note) ● All parts are supplied from MACC, Malaysia (Vendor Code: 086).

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