



# ROOM AIR CONDITIONER

## INDOOR UNIT

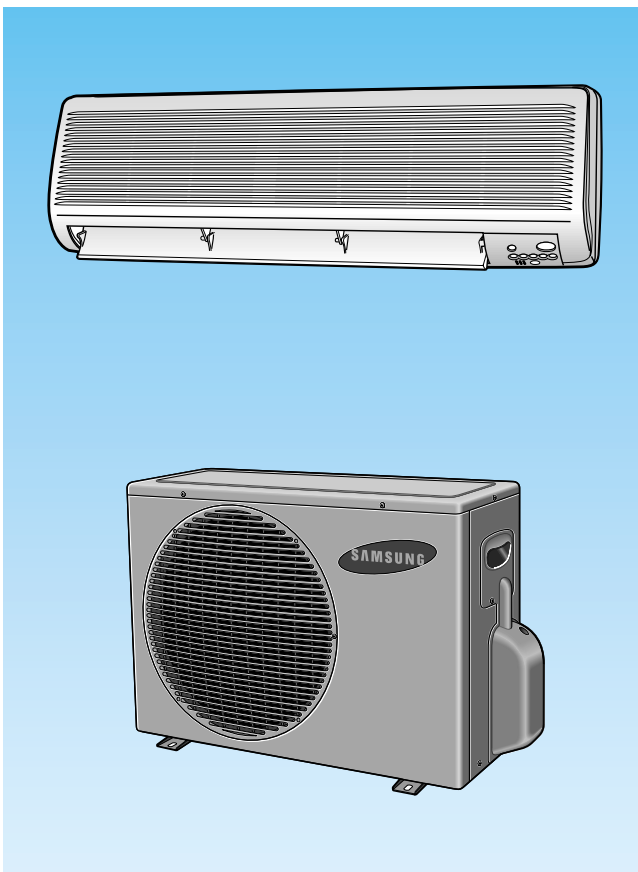
AQ12\*5(6)MB AQ12\*A(B)ME  
AQ12\*5(6)ME AQ09\*5(6)MED  
AQ09\*5(6)ME AQ07\*5(6)MED  
SH09Z\*5(6) SH12Z\*A(B)  
AQ07\*5(6)ME SH09Z\*5(6)D  
SH07Z\*5(6) SH07Z\*5(6)D  
AQ09\*7(8)ME  
SH09Z\*7(8)  
AQ07\*7(8)ME  
SH07Z\*7(8)  
AQ12\*9(0)ME  
SH12Z\*9(0)

## OUTDOOR UNIT

UQ12\*5(6)MB UQ12\*A(B)ME  
UQ12\*5(6)ME UQ09\*5(6)MED  
UQ09\*5(6)ME UQ07\*5(6)MED  
SH09Z\*5(6)X SH12Z\*A(B)X  
UQ07\*5(6)ME SH09Z\*5(6)DX  
SH07Z\*5(6)X SH07Z\*5(6)DX  
UQ09\*7(8)ME  
SH09Z\*7(8)X  
UQ07\*7(8)ME  
SH07Z\*7(8)X  
UQ12\*9(0)ME  
SH12Z\*9(0)X

# SERVICE *Manual*

## AIR CONDITIONER



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# 1. Precautions

1. **Warning:** Prior to repair, disconnect the power cord from the circuit breaker.
2. **Use proper parts:** Use only exact replacement parts. (Also, we recommend replacing parts rather than repairing them.)
3. **Use the proper tools:** Use the proper tools and test equipment, and know how to use them. Using defective tools or test equipment may cause problems later-intermittent contact, for example.
4. **Power Cord:** Prior to repair, check the power cord and replace it if necessary.
5. **Avoid using an extension cord, and avoid tapping into a power cord.** This practice may result in malfunction or fire.
6. **After completing repairs and reassembly, check the insulation resistance.**  
Procedure: Prior to applying power, measure the resistance between the power cord and the ground terminal. The resistance must be greater than 30 megaohms.
7. **Make sure that the grounds are adequate.**
8. **Make sure that the installation conditions are satisfactory.**  
Relocate the unit if necessary.
9. **Keep children away from the unit while it is being repaired.**
10. **Be sure to clean the unit and its surrounding area.**

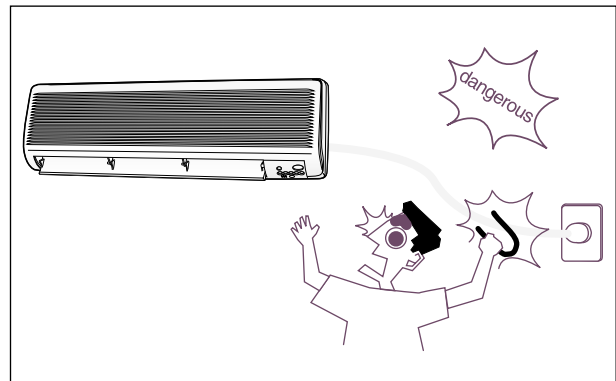


Fig. 1-1 Avoid Dangerous Contact

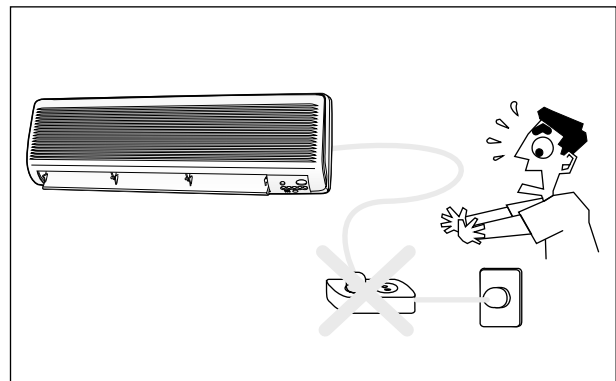


Fig. 1-2 No Tapping and No Extension Cords

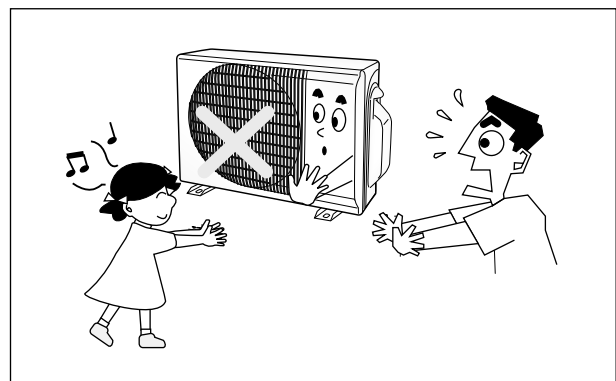


Fig. 1-3 No Kids Nearby!

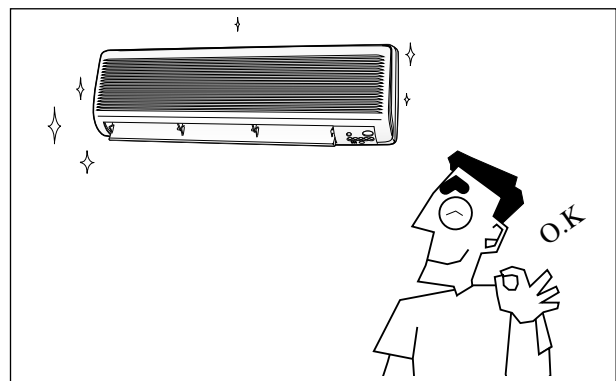


Fig. 1-4 Clean the Unit

## 2. Product Specifications

### 2-1 Table

Item			Model	AQ12*5(6)MB		AQ12*5(6)ME		AQ09*5(6)ME/SH09Z*5(6)	
				Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
Type			Wall-mounting		Wall-mounting		Wall-mounting		
Performance	Cooling		BTU/h(KW)	12000		12000 (3.4)		9000 (2.72)	
	Heating		BTU/h(KW)	13000		13000 (3.7)		10000 (2.95)	
	Dehumidifying		l/h	1.9		1.9		1.4	
	Air volume	Cooling	m <sup>3</sup> /min	7.4	19	7.4	19	6.0	18
		Heating		8.1	19	8.1	19	6.7	18
	Noise	Cooling	dB	41	53	41	53	38	51
		Heating		41	53	41	53	38	51
	Energy efficiency ratio	Cooling	BTU/h•W (W/W)	9.375		10.0		9.375	
Heating		10.0		10.6		10.752			
Power		V-Hz	1-220 -60		1-220 / 240-50		1-220 / 240-50		
Power	Power Consumption	Cooling	W	1280		1200		960	
		Heating		1300		1230		930	
	Operating Current	Cooling	A	6.0		5.4		4.4	
		Heating		6.2		5.5		4.2	
	Power factor	Cooling	%	97		96.6		94.9	
		Heating		95.3		97.2		96.3	
	Starting current		A	30		30		30	
	Power cord	Length	m	-		-		-	
Number of core wire		-		-		-			
Fuse capacity		A	250V-10 / 16A		250V-10 / 16A		250V-10 / 16A		
Size	Outer Dimension	Width x Height	mm	790 x 245 x 165	762 x 532 x 280	790 x 245 x 165	762 x 532 x 280	790 x 245 x 165	660 x 497 x 235
		x Depth	inch	31.1 x 9.6 x 6.5	30 x 20.9 x 11	31.1 x 9.6 x 6.5	30 x 20.9 x 11	31.1 x 9.6 x 6.5	26 x 19.6 x 9.3
	Weight			7.7	35	7.7	35	7.7	29
	Refrigerant pipe	Liquid	mm x L(MT)	ø6.35 x 5		ø6.35 x 5		ø6.35 x 5	
		GAS	mm x L(MT)	ø12.7 x 5		ø12.7 x 5		ø9.52 x 5	
	Drain hose		D x L(mm)	ø18 x 2000		ø18 x 2000		ø18 x 2000	
	Compressor	Type		Rotary		Rotary		Rotary	
		Motor	Type	-	-	-	-	-	-
			Rated output		-	-	-	-	-
	Blower	Type		Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller
Motor		Type	Resin	steel	Resin	steel	Resin	steel	
		Rated output	W	15	25	15	25	15	25
Heat exchanger			2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 18STEP	
Refrigerant control unit			CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		
Freezer oil capacity			410		410		360		
Refrigerant to change(R-22)			800		820		670		
Protection device			MRA 12002-9200/MRA 12002-12008		MRA 12030-12008/RAC12030-9622		RAC 12054-9622		
Cooling test Condition			INDOOR UNIT : DB27°C WB19°C			OUTDOOR UNIT : DB35°C WB24°C			
Maximum operation Condition			INDOOR UNIT : DB32°C WB23°C			OUTDOOR UNIT : DB43°C WB26°C			

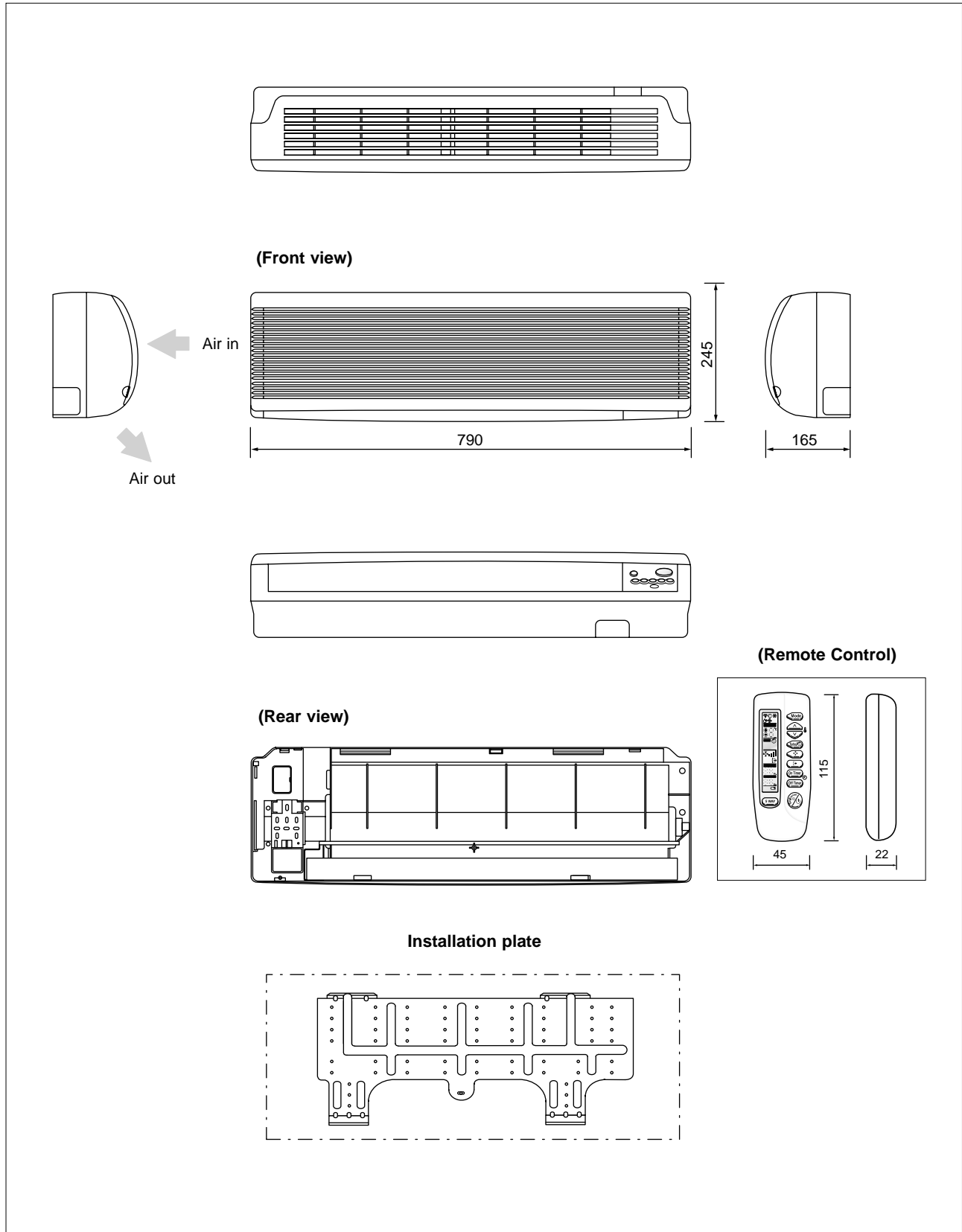
AQ07*5(6)ME/SH07Z*5(6)		AQ09*7(8)ME/SH09Z*7(8)		AQ07*7(8)ME/SH07Z*7(8)		AQ12*9(0)ME/SH12Z*9(0)	
Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting	
7500 (2.3)		9000 (2.64)		7500 (2.2)		12000 (3.5)	
8000 (2.38)		10000 (2.93)		8000 (2.34)		13000 (3.8)	
0.9		1.4		0.9		1.9	
5.6	18	6.0	20.5	5.6	20.5	7.4	19
5.5	18	6.7	20.5	5.5	20.5	8.1	19
35	50	38	51	35	50	41	53
35	50	38	51	35	50	41	53
10.0		9.47		10.0		10.3	
10.959		10.75		10.96		10.2	
1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50	
750		950		750		1170	
730		930		730		1270	
3.3		4.2		3.3		5.0	
3.3		3.9		3.2		5.4	
98.8		98.3		98.8		101.7	
96.7		10.37		99.2		102.3	
30		30		30		30	
-		-		-		-	
-		-		-		-	
250V-10 / 16A		250V-10 / 16A		250V-10 / 16A		250V-10 / 16A	
790 x 245 x 165	660 x 497 x 235	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	720 x 532 x 245
31.1 x 9.6 x 6.5	26 x 19.6 x 9.3	31.1 x 9.6 x 6.5	26 x 18.5 x 9.5	31.1 x 9.6 x 6.5	26 x 18.5 x 9.5	31.1 x 9.6 x 6.5	28.3 x 20.9 x 9.6
7.7	29	7.7	2.5	7.7	25	7.7	39
ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5	
ø9.52 x 5		ø9.52 x 5		ø9.52 x 5		ø12.7 x 5	
ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000	
Rotary		Rotary		Rotary		Rotary	
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller
Resin	steel	Resin	steel	Resin	steel	Resin	steel
15	25	15	25	15	25	15	25
2ROW 12STEP	1ROW 18STEP	2ROW 12STEP	1ROW 18STEP	2ROW 12STEP	1ROW 18STEP	2ROW 12STEP	2ROW 20STEP
CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE	
360		360		360		410	
630		600		620		970	
RAC 12086-9622		MRA 12110-12008/RAC12054-9622		MRA 12086-12008/RAC12086-9622		MRA 12030-12008/RAC12030-9622	
INDOOR UNIT : DB27°C WB19°C				OUTDOOR UNIT : DB35°C WB24°C			
INDOOR UNIT : DB32°C WB23°C				OUTDOOR UNIT : DB43°C WB26°C			

**Table (Cont.)**

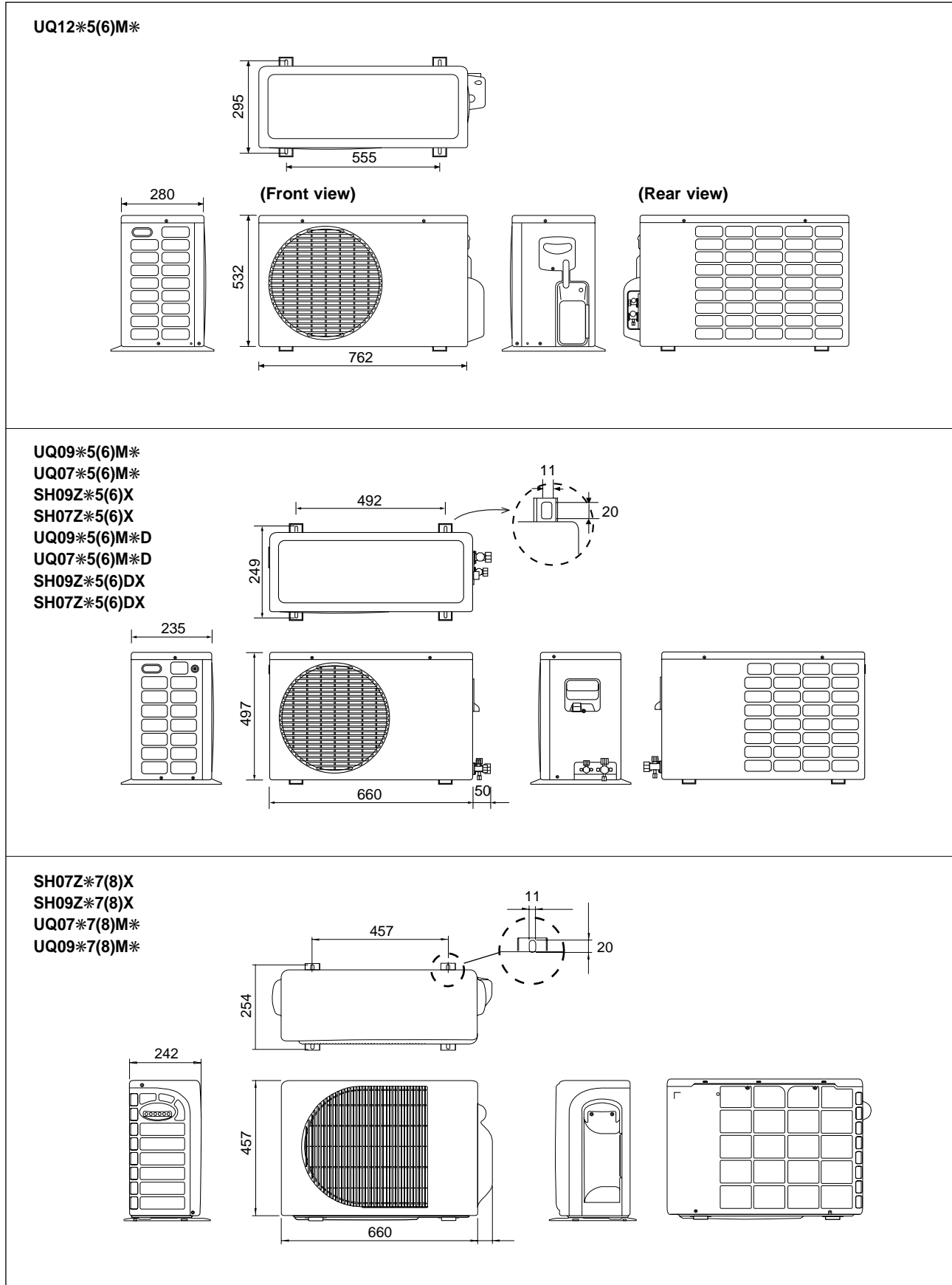
Item			Model	AQ12*A(B)ME / SH12Z*A(B)		AQ09*5(6)MED/SH09Z*5(6)D		AQ07*5(6)MED / SH07Z*5(6)D	
				Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
<b>Type</b>				Wall-mounting		Wall-mounting		Wall-mounting	
<b>Performance</b>	Cooling	BTU/h(KW)	12000 (3.5)		9000 (2.64)		7500 (2.20)		
	Heating	BTU/h(KW)	13000 (3.8)		10000 (2.85)		8000 (2.34)		
	Dehumidifying	ℓ/h	1.9		1.4		0.9		
	Air volume	Cooling	m <sup>3</sup> /min	7.4	23.0	6.0	18	5.6	18
		Heating		7.9	23.0	6.7	18	5.5	18
	Noise	Cooling	dB	41	53	38	51	35	50
		Heating		41	53	38	51	35	50
	Energy efficiency ratio	Cooling	BTU/h•W	(2.99)		8.91		9.74	
Heating		(W/W)	(2.99)		10.87		10.959		
Power		V-Hz	1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		
<b>Power</b>	Power Consumption	Cooling	W	1170		1010		770	
		Heating		1270		920		730	
	Operating Current	Cooling	A	5.4		4.4		3.4	
		Heating		5.5		4.0		3.2	
	Power factor	Cooling	%	96.0		99.8		94.4	
		Heating		96.0		99.8		95.0	
	Starting current		A	30		30		30	
	Power cord	Length	m	-		-		-	
Number of core wire			-		-		-		
Fuse capacity		A	250V-10 / 16A		250V-10 / 16A		250V-10 / 16A		
<b>Size</b>	Outer Dimension	Width x Height x Depth	mm	790 x 245 x 165	740 x 530 x 230	790 x 245 x 165	660 x 497 x 235	790 x 245 x 165	660 x 497 x 235
			inch	31.1 x 9.6 x 6.5	29.1 x 20.6 x 9.1	31.1 x 9.6 x 6.5	26 x 19.6 x 9.3	31.1 x 9.6 x 6.5	26 x 19.6 x 9.3
	Weight		7.7	35.0	7.7	29	7.7	29	
	Refrigerant pipe	Liquid	mm x L(MT)	ø6.35 x 5		ø6.35 x 5		ø6.35 x 5	
		GAS	mm x L(MT)	ø12.7 x 5		ø9.52 x 5		ø9.52 x 5	
	Drain hose		D x L(mm)	ø18 x 2000		ø18 x 2000		ø18 x 2000	
	Compressor	Type		Rotary		Rotary		Rotary	
		Motor	Type	-	-	-	-	-	-
			Rated output		-	-	-	-	-
	Blower	Type		Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller
Motor		Type	Resin	steel	Resin	steel	Resin	steel	
		Rated output	W	15	25	15	25	15	25
Heat exchanger			2ROW 12STEP	1ROW 24STEP	2ROW 12STEP	1ROW 22STEP	2ROW 12STEP	1ROW 22STEP	
Refrigerant control unit			CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		
Freezer oil capacity			410		360		360		
Refrigerant to change(R-22)			1000		610		520		
Protection device			RAC12030-9622		RAC 12054-9622		RAC 12086-9622		
Cooling test Condition			INDOOR UNIT : DB27°C WB19°C				OUTDOOR UNIT : DB35°C WB24°C		
Maximum operation Condition			INDOOR UNIT : DB32°C WB23°C				OUTDOOR UNIT : DB43°C WB26°C		

## 2-2 Dimensions

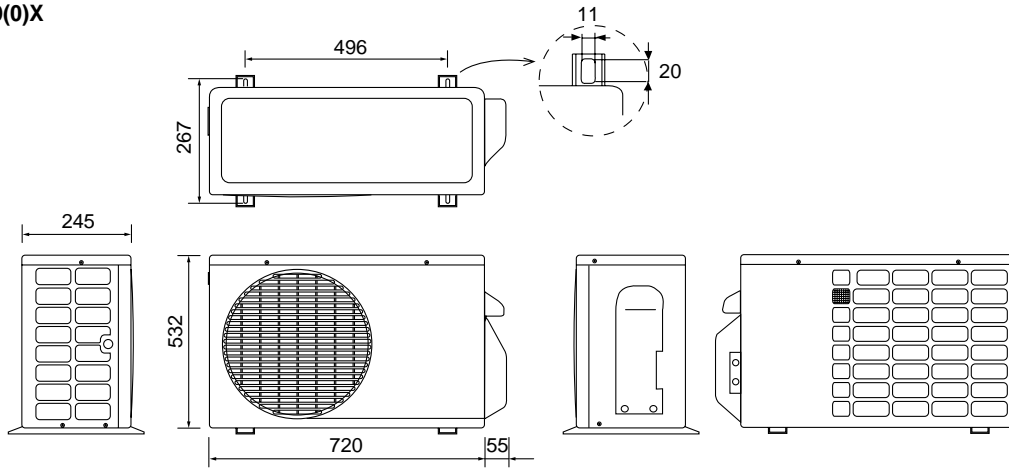
### 2-2-1 Indoor Unit



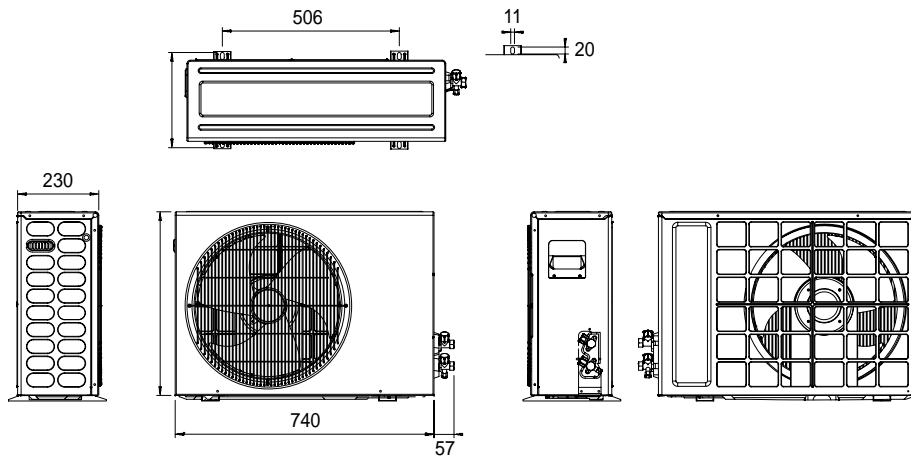
## 2-2-2 Outdoor Unit



**UQ12\*9(0)M\***  
**SH12Z\*9(0)X**



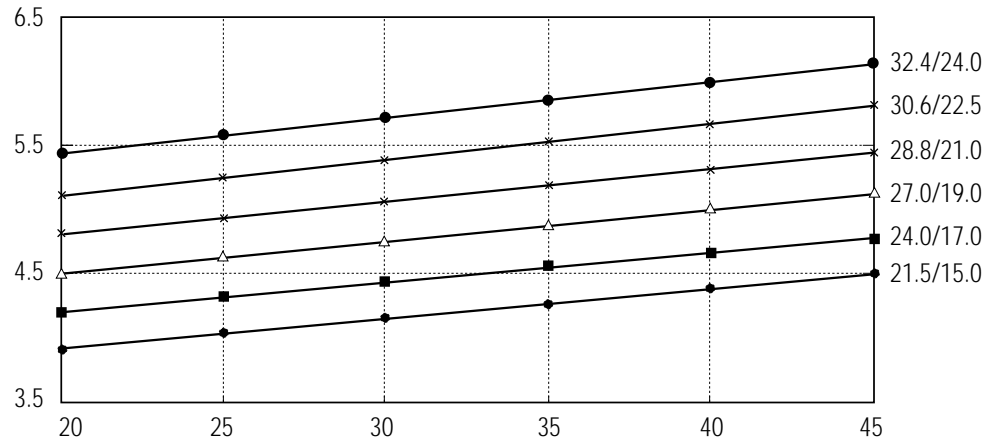
**UQ12\*A(B)ME**  
**SH12Z\*A(B)X**



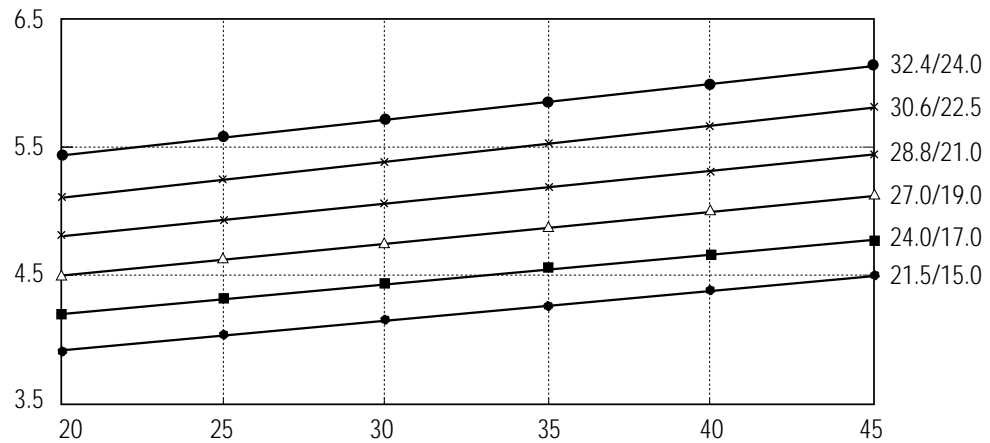


## 2-3 Pressure Graph

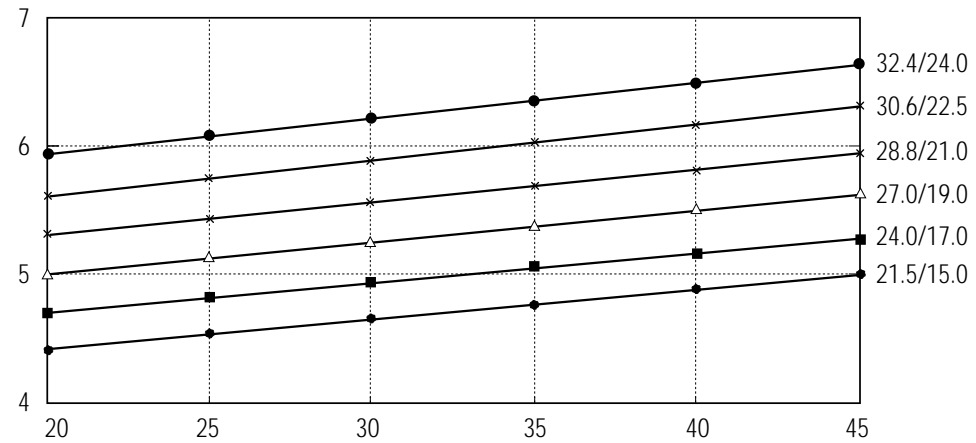
12K BTU



9K BTU







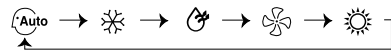
















7K BTU



## 3. Operating Instructions and Installation

### 3-1 Operating Instructions

#### 3-1-1 Name & Function of Key in remote controller

NO	NAMED OF KEY	FUNCTION OF KEY
1		Power On/Off button to start and stop airconditioner or timer set up.
2	 (UP)	Temp. up button. To increase the temperature by the pressing the temperature button.
	 (DOWN)	Temp. down button. To decrease the temperature by the pressing the temperature button.
3		Each time you press this button Mode is changed in the following order   : Auto Mode  : Fan Only  : Cool Mode  : Heat Mode  : Dry Mode
4		Press <b>TURBO</b> until the appearance. the air condition cools or heats the room as quickly as possible. after 30minutes, the air, the airconditioner is reset automatically to the previous mode.
		Press  until the appearance. the sleep timer can be used when you are cooling or heating your room to switch the air conditioner off automatically after a perriod of six hours.
5		Each time you press this button, FAN SPEED is changed in the following order. 
6		Adjust air flow vertically.
7		The ON Timer enables you to <b>switch on</b> the air conditioner automatically after a given period of time that is from 30 minutes to 24 hours. To cancel, press the  (Set/Cancel) button.
8		The Off Timer enables you to <b>switch off</b> the air conditioner automatically after a given period of time that is from 30 minutes to 24 hours. To cancel, press the  (Set/Cancel) button.
9		To select the 5 way function with the remote control, press the 5 way button one or more times until the desired mode is selected. Each time you press the 5 way button.  Each 5 way indicator on the indoor unit comes on in order.

### 3-1-1 Name & Function of Key in remote controller

1. **AUTO MODE** : In this mode, operation mode(COOL, HEAT) is selected automatically by the room temperature of initial operation.

Room Temp	Operation Type
$Tr \geq 21^{\circ}\text{C} + \Delta T$	Cool Operation (Set Temp: $24^{\circ}\text{C} + \Delta T$ )
$21^{\circ}\text{C} + \Delta T > Tr$	Heat Operation (Set Temp: $22^{\circ}\text{C} + \Delta T$ )

$\Delta T = -1^{\circ}\text{C}, -2^{\circ}\text{C}, 0^{\circ}\text{C} + 1^{\circ}\text{C} + 2^{\circ}\text{C}$

$\Delta T$  is controlled by setting temperature up/down key of remote controller

2. **COOL MODE** : The unit operates according to the difference between the setting and room temperature. ( $18^{\circ}\text{C} \sim 30^{\circ}\text{C}$ )
3. **HEAT MODE** : The unit operates according to the difference between the setting and room temperature. ( $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$ )
  - \*Prevention against cold wind : For about 3~5 minutes after initial operation, thermo control or "de-ice", the indoor fan will either not operate or operate very slowly, then switch to the selected fan speed. This period is to allow the indoor unit's heat-exchanger to prewarm before emitting warm air.
  - \*High temperature release function : The outdoor unit for and compressor ON/OFF control for safety operation, when the over-heat is heat exchanger of indoor unit.
  - \*De-ice : Deicing operation is controlled by indoor unit's heat exchanger temperature and accumulating time of compressor's operation.  
De-ice ends by sensing of the processing time by de-ice Condition.


4. **DRY MODE** : Has 3 states, each determined by room temperature.  
The unit operates in DRY mode.
  - \*Compressor ON/OFF Time is controlled compulsorily (can not set up the fan speed, always breeze).
  - \*Protective function : Low temperature release. (Prevention against freeze)
5. **TURBO MODE** : This mode is available in AUTO, COOL, HEAT, DRY, FAN MODE.  
When this button is pressed at first, the air conditioner is operated "powerful" state for 30 minutes regardless of the set temperature, room temperature.  
When this button is pressed again, or when the operating time is 30 minutes, turbo operation mode is canceled and returned to the previous mode.
  - \*But, if you press the TURBO button in DRY or FAN mode that is changed with AUTO mode automatically.
6. **SLEEP MODE** : Sleep mode is available only in COOL or HEAT mode.  
The operation will stop after 6 hours.
  - \*In COOL mode : The setting temperature is automatically raised by  $1^{\circ}\text{C}$  each 1hour  
When the temperature has been raised by total of  $2^{\circ}\text{C}$ , that temperature is maintained.
  - \*In HEAT mode : The setting temperature is automatically dropped by  $1^{\circ}\text{C}$  each 1hour.  
When the temperature has been dropped by total of  $2^{\circ}\text{C}$ , that temperature is maintained.
7. **FAN SPEED** : Manual (3 step), Auto (4 step)  
Fan speed automatically varies depending on both the difference between setting and the room temperature.


8. COMPULSORY OPERATION :


For operating the air conditioner without the remote controller.


\*AUTO : The operating is the same function that AUTO MODE in the remote controller. And each time you press the button the 5WAY function is changed as follow.  
 STD → NATURE → POWER → SAVING → SILENCE → POWER OFF


Each time you press This button, 5WAY function is changed in the following order  
 STD(standard) → NATURE → POWER(High-speed) → Saving(Power-Saving) → SILENCE → POWER OFF

\* STD(standard) (  ) : General operation Mode

\* NATURE (  ) : The unit is operated according to health pattern control




\* POWER (  ) : The unit is operated in powerful state


\* SAVING (  ) : The unit is operated in power saving state


\* SILENCE (  ) : The unit is operated quietly

Each mode has Auto, Cool and SLEEP operation designed in advance.

9. SWING : BLADE-H is rotated vertically by the stepping motor.

\*Swing Set : Press the  button under the remote control is displayed on LCD the  and the blades move up and down. If the one more time press the  button, blades location is stop.







10. 24-Hour ON/OFF Real Setting Timer. : The air conditioner is turned ON at a specified time using  .

OFF TIMER : The air Conditioner is turned OFF at a specified time using  .

\*ON TIMER : Only timer LED lights on.

\*OFF TIMER : Both timer and operation LED lights on.

11. SELF Diagnosis

Check Point	LED DISPLAY					
	TIMER	STD	NATURE	POWER	SAVING	SILENCE
						
Indoor unit room temperature sensor error(open or short)	●	○	○	○	○	○
Indoor unit heat exchanger temperature sensor error(open or short)	●	●	○	○	○	○
Indoor fan malfunction	○	○	●	○	○	○
EEPROM error	●	●	●	○	○	○
Option error(option wasn't set up or option data error)	●	●	●	●	●	●

● : LED blinking  
 ○ : LED off

12. BUZZER SOUND : Whenever the ON/OFF button is pressed or whenever change occurs to the condition which is set up or select, the compulsory operation mode, buzzer is sounded "beep".

# MEMO