

MINISPLIT FLOOR/CEILING AIR CONDITIONER

Installation Manual

MODELS

MCC-MCH/MOC-MOH 09 MCC-MCH/MOC-MOH 12 MCC-MCH/MOC-MOH 18 MCC-MCH/MOC-MOH 25 MCC-MCH/MOC-MOH 35 MCC-MCH/MOC-MOH 45 MCC-MCH/MOC-MOH 55





035T80012-000



Please read this installation manual carefully before starting the installation. It will tell you necessary information.

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Quality POLICY

We will continuously strive to satisfy our customers with consistent reliability in product, service and support.

REQUIRED TOOLS

- 1. Screw Driver
- 2. Hexagonal Wrench
- 3. Torque Wrench
- 4. Spanner
- 5. Reamer
- 6. Hole Core Drill
- 7. Tape Measure
- 8. Thermometer
- 9. Manifold Guage
- 10. Gas Leak Detector
- 11. Vacuum Pump
- 12. Pipe Clamp
- 13. Pipe Cutter
- 14. Flare Tool Set
- 15. Electrical Circuit Tester

EXTENDED PARTS

1. Refrigerant Pipe

Models	MCC-MCH/MOC-MOH							
	9	12	18,25,35	45,55				
Liquid size	1/4"	1/4"	3/8"	3/8"				
Gas size	3/8"	1/2"	5/8"	3/4"				

- Pipe Insulation Material (Polyethylene foam 9 mm thick)
- 3. Vinyl Tape
- 4. Putty

SAFETY PRECAUTIONS

- Please read this installation manual carefully before starting installation of the unit.
- This air conditioning system contains refrigerant under pressure, rotating parts and electrical connection which may be dangerous and can cause injury. Installation and maintenance of this air conditioning system should only be carried out by trained and qualified personnel.
- After unpacking, please check the unit carefully for possible damage.
- •Before undertaking any work on the unit, make sure that the power supply has been disconnected.

Do not store or unpack the unit in a wet area or expose Do not install in a place where flammable gas may leak. GAS It may cause fire. It may cause the unit to short circuit and may result electric This system is designed for domestic or residential shocks or fire. use only. Do not conduct installation in wet area or in the rain. It is a high risk to cause the electrical shocks. If used in certain envionments, such as a manufacturing workplace, the equipment may not function efficiently.

CAUTIONS FOR INSTALLATION

PART LIST

INDOOR UNIT

■ MCC-MCH 09-25



INSTALLATION ACCESSORIES

Description	Q'ty	USE	Description	Q'ty
	2		Drain Hose	1
Tapping Screw (Ø4x10)	2		Insulation (Drain hose)	1
Tapping Screw (⊘4x20)	6	For indoor side pipe joint (small pipe)	VT Wire	1
Wall Bracket	2	Bracket for wall installation	Remote Control	1
Coupler Heat Insulator	2	For indoor side pipe joint	Installation and Owner's manual	2
Nylon Fastener	1	For drain hose		

(continued)

USE

Adhesive type

For drain hose (280 mm)

■ MCC-MCH 35-55



Description Q'ty Bracket 2 Rubber, Screw and Bolt 0000 Image: Screw and Bolt 16

Description	Q'ty
Remote Control	1
Installation and Owner's manual	2

INSTALLATION ACCESSORIES

PREPARATION BEFORE INSTALLATION

- Before doing any work, check the interior power supply cord and the main breaker capacity are sufficient and the installation area is sufficient and complies with the requirements.
- Check that the power supply available agrees with nameplate voltage.
- Electrical work, wiring and cables must be performed in compliance with national and local wiring codes and standard.
- Do not use the extension cables. In the case extended cables are needed, use the terminal block.

SELECTION OF THE LOCATION

Select a place which provides the space around the units as shown in the diagram below.

Indoor Unit



Outdoor Unit



Dimension	мос-мон								
(cm)	09	12	18	25	35	45	55		
Α	40	40	40	40	40	40	40		
В	20	20	20	20	20	20	20		
С	20	20	20	20	20	20	20		
D	60	60	60	60	60	60	60		

Dimension	МСС-МСН								
(cm)	09	12	18	25	35	45	55		
А	50	50	50	50	50	50	50		
В	80	80	80	80	80	80	80		
С	5	5	5	5	5	5	5		
D	20	20	20	20	20	20	20		

DRILLING MEASUREMENT

Indoor Unit

Drill the hole to fixing unit follow the diagram below

Ceiling Installation Drilling





Dimensions	MCC-MCH							
(mm)	35	45	55					
A	1,402	1,402	1,692					
В	201	201	201					
С	145	145	145					
D	215	215	215					
E	115	115	115					
F	88	88	88					

Floor Installation Drilling

Model MCC-MCH 09, 12, 18, 25

Drain hose drilling measurment floor case.



Model MCC-MCH 35, 45, 55

Drain hose drilling measurment floor case.



Dimensions	МСС-МСН					
(mm)	35	45	55			
G	1,122	1,122	1,442			

Outdoor Unit



MO 09-12







REMOTE CONTROL RECEIVING TYPE SETTING

The Indoor Unit can set its remote control receiver into type-A and type-B.

1 Open front grille.



2 Adjust dip switch 1 No. 8 to desire receiver type.





Switch	No.	Setting	Remote Control receive
S\//1	SW/1 8 H	A	
3001	0	L	В

Notes

- 1. Default remote control receiving type setting is type-A.
- 2. Default remote control transmission type setting is type-A.
- 3. Remote control receiving type must be correct to Remote control transmission type.
- 4. Setting Remote control Transmission type see the Owner's manual.

INSTALLATION IN THE FOLLOWING PLACES MAY RESULT IN TROUBLE



INSTALLATION DIAGRAM



INSTALLATION PROCEDURE

Cautions

- Piping must be performed by qualified personnel according to good refrigeration system practices
- · Piping materials and insulation materials must be refrigerant quality
- Select the pipe diamerters according to the size of unit and cut the pipe to design length by pipe cutter
- Check that no foreign bodies are inside the pipe
- · Connect the pipe correctly
- Do not apply the excessive torque
- · Connect the electric cable correctly
- Use an appropriate bending tool to form curves and avoid over-tightening the refrigerant tubes

INDOOR UNIT

Bracket Fixing



Measure and mark the hole position.





Wall Bracket Fixing



Measure amd mark the hole position.

Drill a hole and mount bracket.



Drain Hose Drilling



Measure and mark the hole position.



Drill a hole at a slight downward slant toward the outdoor side.





Floor drain hose hole



<u>Note</u> : When installing the refrigerant pipes from others side. A hole must be place to allow fall towards the outdoor unit.



Indoor Unit Fixing

Ceiling Case



Lift the indoor unit to the bracket.

Push the indoor unit to lock at the bracket.



Floor Case



Tighten the bolt to lock indoor unit to bracket floor case.

Lift the indoor unit, and hang it to the wall bracket.

3 Make sure that the unit is correctly hung in place by sliding it to the left and the to the right.



Drain Hose

Drain hose can pass through the indoor unit follow figure below.



Floor case

After fixing the indoor unit, open front grille and then insert refrigerant pipe, drain hose and electric cable from outdoor through the wall into the unit case, then connect drain hose together and arrange it.



Note : Do not put the drain hose end into water.

Verification of condensate water drainage: Fill the drain pan with water and observe evacuation.



Unit Coupling



Connect electric cable to terminal box.



Connect refrigerant pipe to flare connector.



OUTDOOR UNIT

Unit Fixing

Measure and mark the hole position.





Unit Coupling

Connect electric cable to terminal box follow electric diagrame below.







MCH/MOH 35-55 Heat pump Units

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For further detail on wiring of these units, see the diagrams pasted inside each unit.

Cautions

- Never modify the unit by removing any of the safety guards or by bypassing any of the safety interlock swithces.
- Connect the connecting cable correctly and connect the connecting cable to terminal as identified with their respective marks.
- Do not scratch the conductive core & inner insulator of power supply cables and do not deform or smash on the surface of cables.

Wiring Sizes

Unit size			12	18	25	3	5	45	55
Power supply	mm²	3x2.5		3)	۷4	5x2	2.5	5>	‹ 4
Interconnection	Cooling mm ²	3x2.5 + Ground							
(Indoor/Outdoor)	Heating mm ²	4x2.5 + Ground							
Fuse (slow-Blow)	А	1	0	16	20) / ·	10	1	6

Or as required to meet national and local codes.

Notes

- Terminals N and 1 (see diagrams above) correspond to power supply to the indoor unit coming from the outdoor unit.
- Compressor power supply is established by teminal 2.
- Power supply to the 4-way valve is established by terminal 3.
- For further details on wiring of these units, see the diagrams pasted inside each unit.

Maximum Piping Lengths

Unit size	9	12	18	25	35	45	55
D (m)	12	15	15	22	20	24	20
L (m)	15	18	18	25	25	30	30
H (m)	10	12	12	20	22	26	26

<u>Note</u>: Where the difference in elevation between the indoor unit and the outdoor unit is greater than 5 meters, install an oil trap every 5 meters.

The suction line must have a 2% gradient up to the compressor on horizontal sections.

Where piping lengths are unusually long and include a large number of oil traps, it may be necessary to adjust to compressor charge.

Refrigerant charge to be added per extra metre of piping length when more than 7.5 meters.

Unit size	MCC-MCH/MOC-MOH						
01111 3126	9	12	18	25	35	45	55
g/m	15	15	40	40	40	40	40



Refrigerant Piping Connections (FLARE Connections)

To avoid alteration of unit capacities, check that piping lengths and changes in elevation are kept to a strict minimum.

Before connectiong the refrigerant lines, follow the procedures below (if pre-charged connection lines are not supplied):

- Select copper pipe diameters according to the size of unit to be installed.
- Install the refrigeration lines, checking that no foreign bodies get inside the piping.
- Install the flare connectors and flare the ends of the pipes.





This unit is shipped complete with a charge of R407C refrigerant that will be sufficient for an interconnecting piping length of 5 meters.

TEST OPERATION

CHECK THIS ITEM BEFORE START OPERATION

Outdoor

• Check the flare nut connections, valve stem cap connections and service cap connections for gas leak with a leak detector or soap water.

Indoor

- Check the unit is firmly fixed.
- Check the connecting pipes are tighten securely.
- Check the pipe insulation.
- · Check the drainage.
- Check the connection of the grounding wire.

SYSTEM TEST DIAGNOSTICS

Test Operation Mode

- This is a diagnostic mode to check the functioning of a unit. In installations with multiple units it is possible to start the Test Operation Mode in all the units sequenially and run the test mode in parallel, thus shortening the time for service calls. By consulting the status of each unit a diagnosis can be made of any problems or normal operation can be verified.
- 2) Test Operation mode carries out the following operational sequence and then returns to the normal mode after the Test operation is finished. In the case of Cool only systems the sequence will be completed after STEP 2. If a problem is encountered during Test Operation mode the unit will indicate this as shown in the chart below and the LED Display will flash according to the LED Diagnostic Codes. If an error occurs the reset shall be when the EMS switch is pressed for more than 1 second and less than 10 seconds. Upon release, the operation shall return to normal and the unit shall be off.
- 3) To start this mode, the emergency switch must be pressed for at least 10 seconds and released while in normal operation mode. To interrupt this mode, press the emergency switch again for at least 10 seconds.
- 4) If a failure occurs during the test mode operation the unit the board shall:-
 - Stop the operating of compressor
 - Indicate the error by the lamp out puts
 - Remain in that condition until reset

Test Operation Mode

In cool only mode STEP 1 STEP 2 STEP 3 STEP 4 STEP 5	loout	Operation time			
In cool only mode	Input	Minutes			
STEP 1	Fan only high	3			
STEP 2	Cool mode : fan high	4	Diagnostic		
	Cool mode : fan med	2			
	Cool mode : fan low	3			
STEP 3	Stop Waiting	3			
STEP 4	Heating mode : fan high	4	Diagnostic		
	Heating mode : fan med	2			
	Heating mode : fan low	3			
STEP 5	Waiting	3			

Any timer settings entered before the start of the Test Operation Mode will not be affected by the Test Operation Mode.

Failure display follows the conditions below.

Status	<u>Operation</u>
Low HP temp < 20°C	fan stop and louver full open
Coil temp > 40° C (cooling)	fan stop and louver full open
Overheat > $62^{\circ}C$ (heating)	louver full open
Anti Freeze	louver full open
Low voltage	halt
Sensor fail	stop
Cooling fail	stop
Heating fail	stop

 $\frac{\text{Terminating Condition}}{\text{Coil temp} \ge 20^{\circ}\text{C}}$ $\frac{\text{Coil temp} \le 40^{\circ}\text{C}}{\text{Coil temp} \le 50^{\circ}\text{C}}$ $\frac{\text{Coil temp} \ge 5^{\circ}\text{C}}{\text{return to normal range}}$ $\frac{\text{system reset}}{\text{system reset}}$ $\frac{\text{system reset}}{\text{system reset}}$

TROUBLE SHOOTING GUIDE

Problem	Probable cause	Remedy
A. The air conditioner does not run.	 Power Failure. Fuse blown or circuit breaker open. Voltage is too low. Faulty contactor or relay. Electrical connections loose. Thermostat adjustment too low (in heating mode) or too high (in cooling mode). Faulty Capacitor. Incorrect wiring, terminal loose. Pressure switch tripped. 	 Wait for Power resume. Replace the fuse or reset the breaker. Find the cause and fix it. Replace the faulty component. Retighten the connection. Check Thermostat setting. 7. Find the cause then replace Capacitor. 8. Check and retighten. 9. Find the cause before reset.
B.The outdoor fan runs but the compressor will not start.	 Motor winding cut or grounded. Faulty Capacitor. 	 Check the wiring and the compressor winding resistance. Find the cause then replace Capacitor.
C.There is insufficient heating or cooling.	 There is a gas leak. Liquid and gas line insulated together. The room was probably very hot (cool) when you started the system. 	 Remove charge, repair, evacuate and recharge. Insulate them separately. Wait while unit has enough time to cool the room.
D.The compressor run continuously.	 Thermostat adjustment too low (in heating mode) or too high (in cooling mode). Faulty fan. Refrigerant charge too low, leak. Air or incondensables in refrigerant circuit. 	 Check Thermostat setting. Check condenser air circulation. Find leak, repair and recharge. Remove charge, evacuate and recharge.
E. The compressor starts but shuts down quickly.	 Too much or too little refrigerant. Faulty compressor. Air or incondensables in refrigerant circuit. Changeover valve damaged or blocked open (heat pump unit) 	 Remove charge, evacuate and recharge. Determine the cause and replace compressor. Remove charge, evacuate and recharge. Replace it.
F. Clicking sound is heard from the air conditioner.	In heating or cooling operation any plastic parts may expand or shrink due to a sudden temperatue change in this event, a clicking sound may occur.	In heating or cooling operation any plastic parts may expand or shrink due to a sudden temperatue change in this event, a clicking sound may occur.

DIAGNOSTIC INFORMATION FUNCTION

Status	Power	Timer	Operation	Mode
OFF(with power on)	0	0	0	Normal Operation
ON (Temperature satisfied)	Х	0	0	Normal Operation
Waiting for delay	Х	F-1	0	Normal Operation
Compressor started	Х	0	Х	Normal Operation
Sleep mode	Х	Х	X/O	Normal Operation
Start timer set	Х	F-2	X/O	Normal Operation
Stop timer set	Х	F-3	X/O	Normal Operation
Low HP temp < 20°C	Х	0	F-1	Protection
Coil temp > 40°C (cooling)	Х	0	F-2	Protection
Overheat > 62°C (heating)	Х	F-1	F-1	Protection
Anti Freeze	Х	F-2	F-2	Protection
Low voltage	F-2	0	0	Protection
Sensor fail	F-1	0	F-1	Reset-Call Service Technician
Cooling fail	F-2	0	F-2	Reset-Call Service Technician
Heating fail	F-3	0	F-3	Reset-Call Service Technician
Emergency operation	F-3	Note 1	Note 1	Operational
Test operation	F-1	F-1	F-1	Operational
Filter	F-3	F-3	F-3	Protection

Notes

1) In emergency mode, the Power light will flash and the other lights will indicate the operation as above.

2) Lights will flash during the time that the units is held off, due to Low Voltage. If the voltage has passed through the reset voltage and the unit is waiting for the time delay, the lights will go to normal operation.

3) The lights will show the LED Diagnostic Code even when the unit is off.

TECHNICAL SPECIFICATION

		Indoor	МСС-МСН								
Mc	ndelo			Unit	09	12	18	25	35	45	55
	/uci	3		Outdoor		•		MOC-MOI	1		
Un				Unit	09	12	18	25	35	45	55
			Btu/h	7,500	10,200	14,700	19,800	28,000	42,000	50,000	
			Cooling	kW	2.2	3.0	4.3	5.8	8.2	12.3	14.7
No	mina	al Capacitie		kcal/h	1,849	2,576	3,700	4,990	7,056	10,584	12,600
		·		Btu/h	7,500	10,200	14,700	19,800	28,000	42,000	50,000
			Heating	kW	2.2	3.0	4.3	5.8	8.2	12.3	14.7
				kcal/h	1,849	2,576	3,700	4,990	7,056	10,584	12,600
Da		0		V/Ph/Hz			220-240/	1/50 or 380	0-415/3/50		
P0	wer	Supply		Ph	1	1	1	1	3	3	3
Po	wer	Consumpt	ion	kW	0.973	1.344	1.839	2.743	3.666	5.102	5.372
Ru	nnir	ng Current		A	4.48	6.33	8.42	12.8	7.91	11.44	13.88
Refrigerat Type				R-407C							
	Po	wer Supply	,	V/Ph/Hz	220-240/1/50						
	rower Suppry		Ph	1	1	1	1	1	1	1	
÷	⊑ Air Flow		m³/h	490	580	700	820	1,270	1,550	2,455	
Uni	Ë	Input Power		w	36	47	69	85	177	234	204
ŏ			Height	mm	655	655	655	655	658	658	658
pdq	Dir	nension	Width	mm	990	990	990	990	1,548	1,548	1,845
			Depth	mm	199	199	199	199	205	205	240
	We	eight		kg	26	26	27	29	46.5	46.5	62
	Sy	stem Opera	ation Contro	bl	Wired or Wireless Control with LCD Display						
	Со	mpressor	Qty	'	1	1 1 1 1		1	1	1	
	Compress		or Type	Rotary					Scroll		
			Height	mm	492	492	590	696	900	1,142	1,142
Jnit	Dir	nension	Width	mm	764	764	820	850	1,060	1,060	1,060
or			Depth	mm	230	230	280	287	345	345	345
tdo	We	ainth	Cooling	ka	38	42	62	68	107	127	127
0 n			Heating	e	40	43	63	69	109	129	129
	g		Туре				F	are and N	uts		
	ipir	Pipe Size	Suction	inch	3/8"	1/2"	5/8"	5/8"	5/8"	3/4"	3/4"
			Liquid	inch	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"

TECHNICAL SPECIFICATION

		Indoor	МСС-МСН									
Mc	dele			Unit	09	12	18	25	35	45	55	
	acit	•		Outdoor				MOC-MOI	1			
			Unit	09	12	18	25	35	45	55		
				Btu/h	7,500	10,200	14,700	19,800	28,000	42,000	50,000	
			Cooling	kW	2.2	3.0	4.3	5.8	8.2	12.3	14.7	
No	mina	I Capacitie	_	kcal/h	1,849	2,576	3,700	4,990	7,056	10,584	12,600	
		·		Btu/h	7,500	10,200	14,700	19,800	28,000	42,000	50,000	
			Heating	kW	2.2	3.0	4.3	5.8	8.2	12.3	14.7	
				kcal/h	1,849	2,576	3,700	4,990	7,056	10,584	12,600	
		0		V/Ph/Hz			220-240/	1/50 or 380	0-415/3/50			
	wer	Supply		Ph	1	1	1	1	3	3	3	
Ро	wer	Consumpt	ion	kW	0.973	1.344	1.839	2.743	3.666	5.102	5.372	
Ru	nnir	ng Current		Α	4.48	6.33	8.42	12.8	7.91	11.44	13.88	
Refrigerat Type			R-407C									
	De	war Sunnh		V/Ph/Hz	220-240/1/50							
	FU	wer Suppry		Ph	1	1	1	1	1	1	1	
+	u	⊊ Air Flow		m³/h	490	580	700	820	1,270	1,550	2,455	
Uni	щ	Input Power		w	36	47	69	85	177	234	204	
õ		Не		mm	655	655	655	655	658	658	658	
ppu	Dir	nension	Width	mm	990	990	990	990	1,548	1,548	1,845	
-			Depth	mm	199	199	199	199	205	205	240	
	We	eight		kg	26	26	27	29	46.5	46.5	62	
	Sy	stem Opera	ation Contro	bl		Wired	or Wireles	ss Control	with LCD I	Display		
	Co	mpressor	Qty	,	1	1	1	1	1	1	1	
	00	mpressor	Compress	or Type		Rotary				Scroll		
it			Height	mm	492	492	590	696	900	1,142	1,142	
5	Dir	nension	Width	mm	764	764	820	850	1,060	1,060	1,060	
oor			Depth	mm	230	230	280	287	345	345	345	
utd	We	igth		kg	40	42	64	68				
0	g		Туре				F	lare and N	uts			
	ipin	Pine Size	Suction	inch	3/8"	1/2"	5/8"	5/8"	5/8"	3/4"	3/4"	
			Liquid	inch	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"	

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DE - COMMISSIONING DISMANTLING & DISPOSAL

This product contains refrigerant under pressure, rotating parts, and electrical connections which may be a danger and cause injury!

All work must only be carried out by competent persons using suitable protective clothing and safety precautions.



Read the Manual





Risk of electric shock



Unit is remotely controlled and may start without warning

- 1. Isolate all sources of electrical supply to the unit including any control system supplies switched by the unit. Ensure that all points of electrical and gas isolation are secured in the OFF position. The supply cables and gas pipework may then be disconnected and removed. For points of connection refer to unit installation instructions.
- Remove all refrigerant from each system of the unit into a suitable container using a refrigerant reclaim or recovery unit. This refrigerant may then be re-used, if appropriate, or returned to the manufacturer for disposal. <u>Under No</u> <u>circumstances should refrigerant be vented to atmosphere.</u> Where appropriate, drain the refrigerant oil from each system into a suitable container and dispose of according to local laws and regulations governing disposal of oily wastes.
- 3. Packaged unit can generally be removed in one piece after disconnection as above. Any fixing down bolts should be removed and then unit lifted from position using the points provided and equipment of adequate lifting capacity. Reference MUST be made to the unit installation instructions for unit weight and correct methods of lifting. Note that any residual or spilt refrigerant oil should be mopped up and disposed of as described above.
- 4. After removal from position the unit parts may be disposed of according to local laws and regulations.

