



DUCTLESS SPLIT-TYPE AIR CONDITIONERS

No. OB105

TECHNICAL & SERVICE MANUAL

Wireless type

Models

INDOOR UNIT

MS09EW

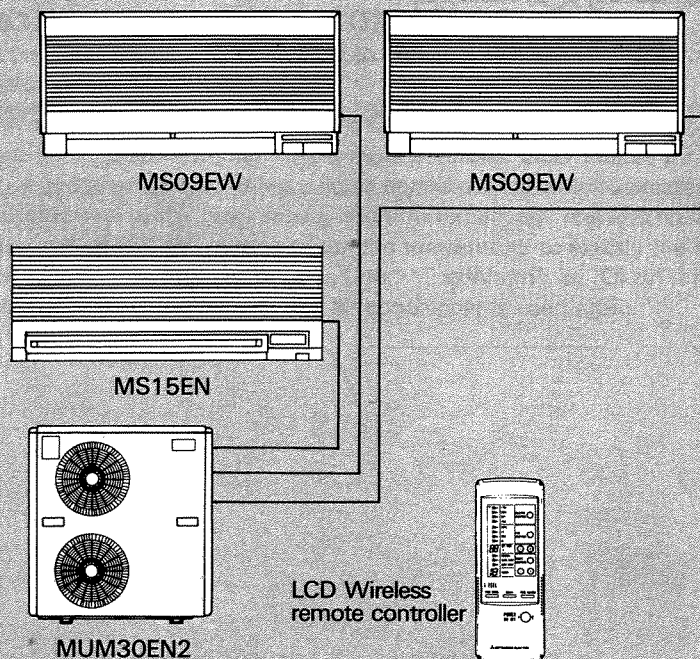
MS15EN

MF15EN

MF15EN2

OUTDOOR UNIT

MUM30EN2



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NOTE: For parts list, please refer to the following manuals.

MS09EW	→ No. OB-100
MS15EN	→ No. OB-100
MF15EN	→ No. OB-075 SECOND EDITION
MF15EN2	→ No. OB-075 SECOND EDITION
MUM30EN2	→ No. OB-106



The Slim Line.
From Mitsubishi Electric. TM



Mr. SLIM

1

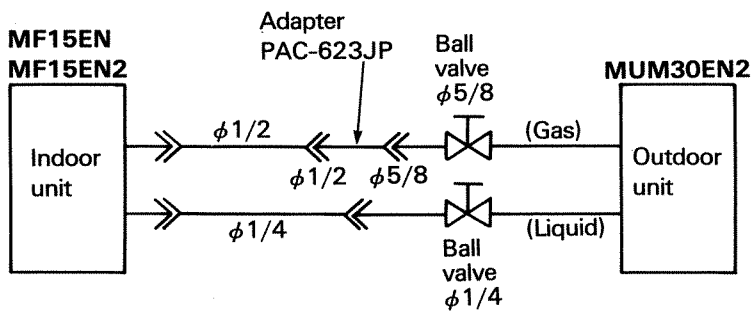
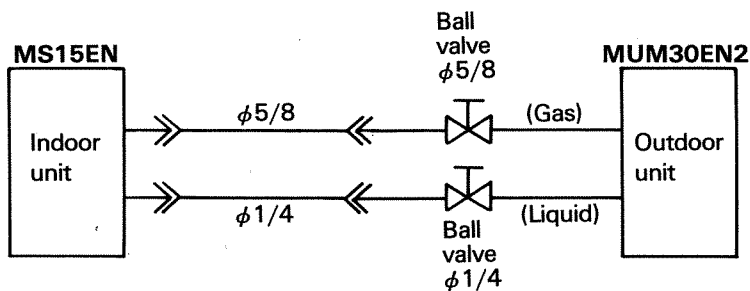
CHANGE POINTS

MUM30EN → MUM30EN2

1. With the change of MS15EN gas pipe O.D, the MUM30EN2 gas valve O.D changed from 1/2" to 5/8".

When connecting an MF15EN2 indoor unit to a MUM30EN2 outdoor unit, an adapter PAC-623JP must be used to connect the suction line to the outdoor unit.

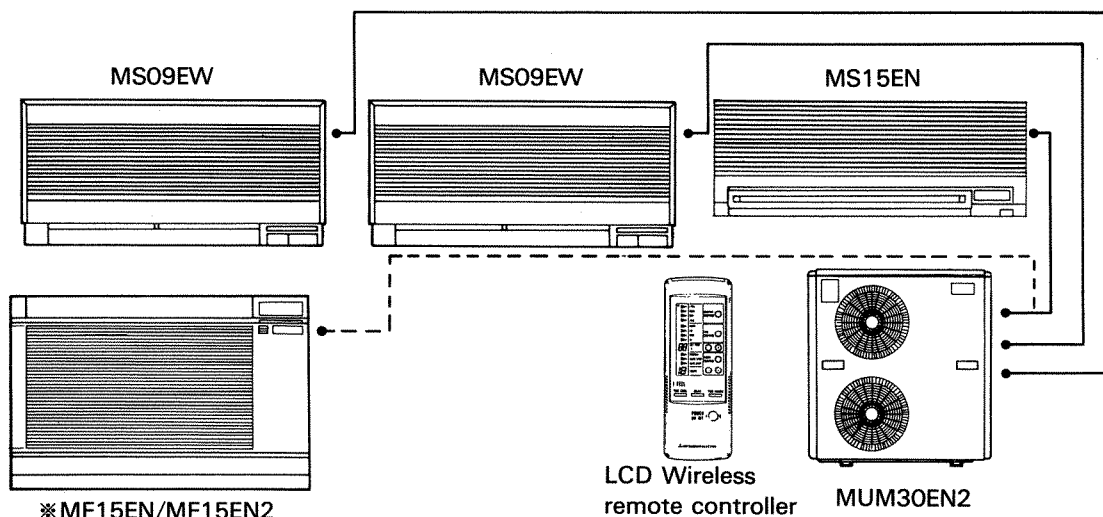
If you do not have this adapter available, contact your local Mitsubishi Electric distributor to order PAC-623JP.



2

FEATURES

This "3 to 1" Multi system (MSM30EN2) consists of a single outdoor unit with three compressors that permit up to three indoor units to be installed in separate rooms, each with its own controller.



Cooling Capacity (Btu/h)

Operation \ Indoor unit	MS09EW	MS09EW	※MS15EN or MF15EN/EN2
Single Unit Operation	8,200	—	—
	—	8,200	—
	—	—	12,400
Double Unit Operation	8,200	8,200	—
	8,200	—	12,400
	—	8,200	12,400
Triple Unit Operation	8,100	8,100	12,200

※MF15EN/EN2 can be connected instead of MS15EN. To connect MF15EN/EN2, use the adapter PAC-623JP.

1. SPACE-SAVING LAYOUT

Two or three indoor units are served by a single outdoor unit whose installation requires only minimum space. This allows equipment installed outside the house to be arranged in a neat, space-saving layout.

2. FLEXIBLE INSTALLATION OF INDOOR UNITS

Each indoor unit can be connected to piping up to 65 feet in length, providing plenty of freedom in determining the best locations for installation.

3. NEW "I FEEL CONTROL" ON OUR LCD WIRELESS REMOTE CONTROLLER

Mitsubishi Electric's new wireless remote controller incorporates a number of advanced features that provide even greater control and ease-of-use. It has a liquid crystal display which indicates such information as mode, fan speed and temperature selected as well as the timer setting and time remaining. It is also equipped with "I Feel Control", a unique Mitsubishi Electric feature that allows the user to adjust the temperature to exactly the level he or she wants simply by tapping the button that describes present conditions: "Too Cool", "Too Warm", or "Okay". The optimum temperature set this way is then memorized for immediate recall whenever the air conditioner is used again.

4. A VARIETY OF MICROPROCESSOR-CONTROLLED FUNCTION

Automatic ON/OFF Timer

Convenient timer function includes Auto Start, Auto Stop, and both can be set in 1 hour units for up to 12 hours.

Auto Stop (Night Setback) Mode.

This mode raises the temperature set by 1°F after one hour, and by another 1°F the next half hour. When 1-1/2 hours have passed, the air conditioner is running at a setting that is 2°F higher, thus preventing excessive cooling.

Automatic Fan Speed Control

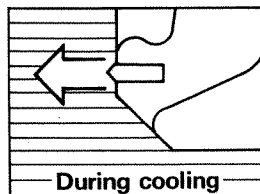
When there's a large difference between the set temperature and existing room temperature, the fan speed automatically adjusts to HI. As the temperature differential decreases, the Fan speed shifts down automatically to MED and LO. Operation is almost whisper quiet.

Adjustable Change Vane System

(MS09EW, MS15EN)

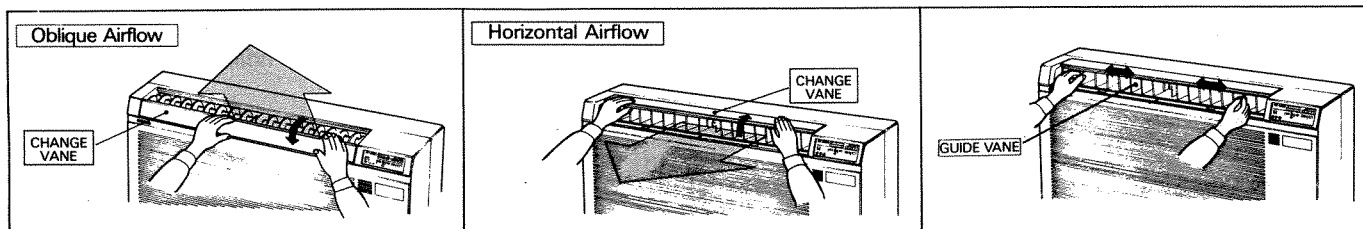
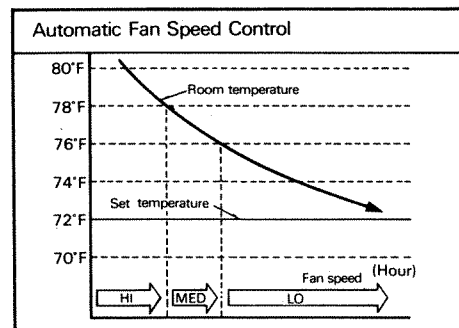
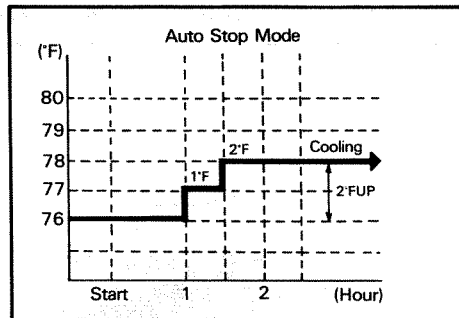
Choose the air direction that suits your needs.

Keep it in a horizontal position to achieve uniform airflow.



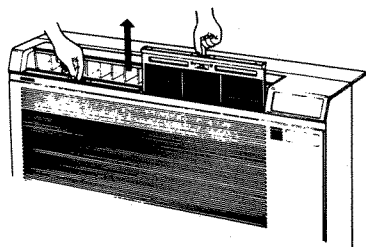
Four-Direction Airflow Adjustment (MF15EN/EN2)

Four-direction airflow adjustment is easy with CHANGE VANE and GUIDE VANE that allow you to direct an air stream into any area you choose.



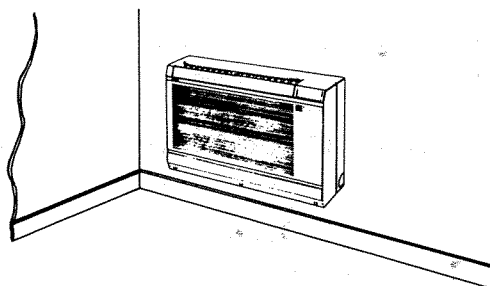
One-Step Air Filter Removal (MF15EN/EN2)

This convenient air filter slides out for easy rinse-and-shake cleaning to keep the airflow smooth.



Two-way Installation (On-the-wall installation) (MF15EN/EN2)

Indoor unit can be also installed on the wall using the optional WALL MOUNT. (Parts # MAC-761WS)

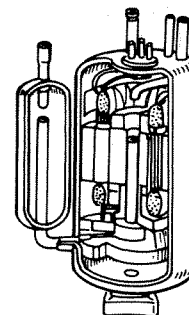


Auto Restart Function

The restart function restarts the equipment when power is restored following an outage. Operation resumes in the mode in which the equipment was running immediately before the outage.

High Performance Rotary Compressor

The advanced design of Mitsubishi Electric's powerful and energy-efficient rotary compressor results in lower operating costs and longer service life.

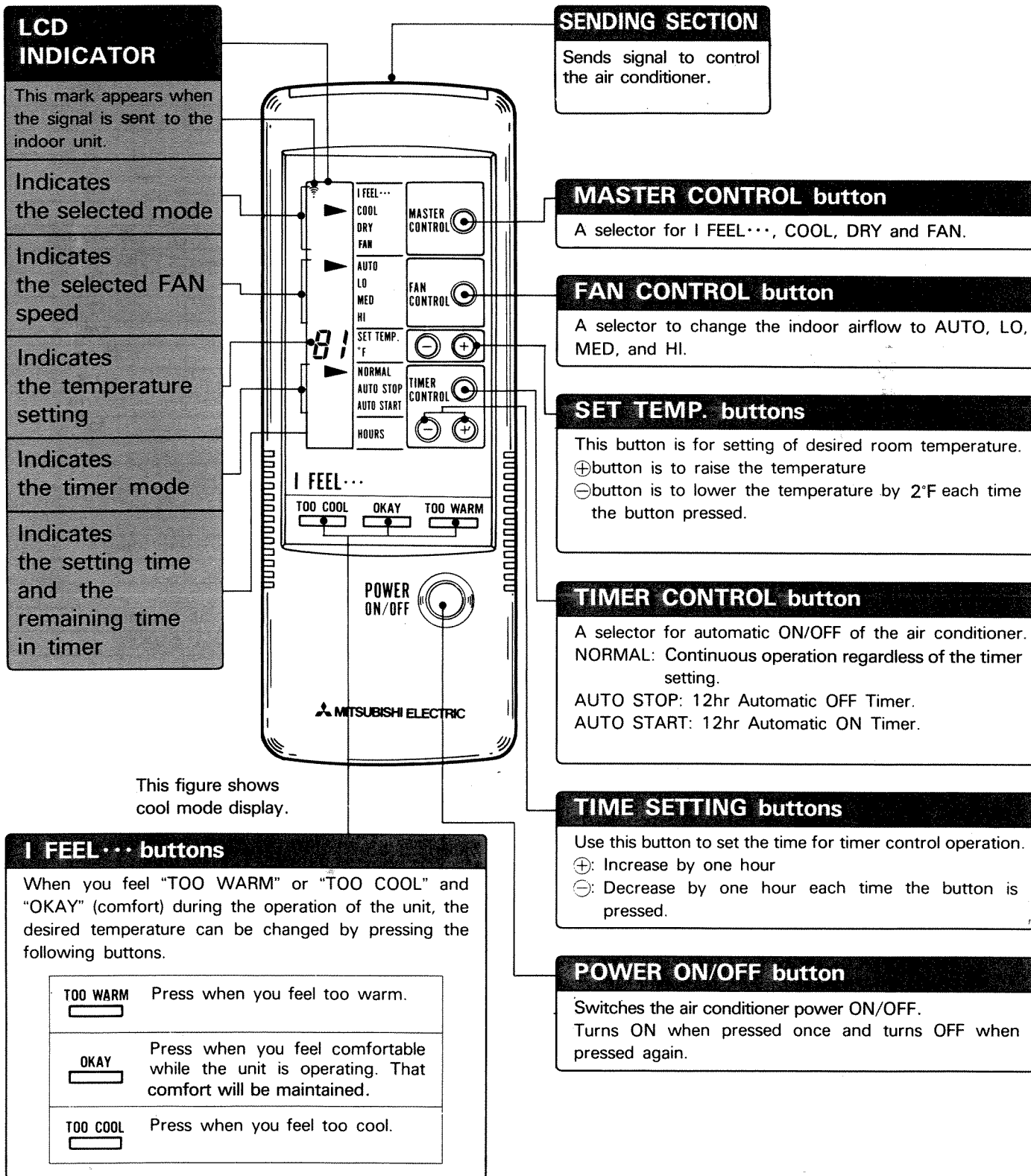


WIRELESS REMOTE CONTROLLER

MS09EW, MS15EN
MF15EN, MF15EN2

Once the controls are set, the same operation mode can be repeated by simply turning the POWER switch ON.

When batteries are replaced all of the settings memorized will be canceled, and 'I FEEL...' mode is automatically selected.



3

SPECIFICATIONS

Item	Model	MSM30EN2				
		Triple-Unit	Double-Unit		Single-Unit	
Unit combination		A+B+C	A+B	A+C or B+C	A or B	C
Cooling capacity	* 1 Btu/h	28,400	16,400	20,600	8,200	12,400
Power consumption	* 1 W	2,870	1,830	2,060	980	1,220
EER (Triple unit operation)		9.9				
SEER (Triple unit operation)		10.0				

			A	B	C	
INDOOR UNIT MODEL			MS09EW	MS09EW	MS15EN	MF15EN MF15EN2
External finish			White		White	White
Power Supply V, Hz, Phase			115, 6, 1			
Max. fuse size (time delay) A			15.0			
Min. ampacity			0.4	0.4	0.7	0.5
Fan motor F.L.A			0.3	0.3	0.5	0.4
Airflow	Dry	CFM	180-205-265	180-205-265	279-374-427	280-340-370
Lo-Me-Hi	Wet	CFM	159-184-237	159-184-237	265-357-406	250-300-330
Moisture removal (Pints/h)			2.5	2.5	3.8	3.8
Sound level dB(A)			41	41	48	47
Cond. drain connection O.D in.			5/8	5/8	5/8	5/8
Dimensions	W	in.	31-1/8	31-1/8	39-3/8	36-1/4
	D	in.	5-3/8	5-3/8	7	8-1/8
	H	in.	14-3/16	14-3/16	14-3/16	23-7/16
Weight lbs.			25	25	35	59
OUTDOOR UNIT MODEL			MUM30EN2			
External finish			Munsell 5Y 7/1			
Sound level dB(A)			Max. 57			
Power supply V, Hz, Phase			208/230, 60, 1(3-wire)			
Max. fuse size (time delay) A			30			
Min. ampacity			25			
Fan motor F.L.A			0.8+0.7			
Compressor	Model		KH122WEV<115V>	KH122WEV<115V>	RH167NAB<208/230V>	
	Winding resistance (at 68°F) Ω		C-R 0.97 C-S 4.81	C-R 0.97 C-S 4.81	C-R 2.47 C-S 4.62	
		R.L.A	10	10	8	
		L.R.A	37	37	29	
Refrigerant control			Capillary tube			
Dimensions	W	in.	37-7/16			
	D	in.	15-3/8			
	H	in.	45-5/16			
Weight lbs			240			
REMOTE CONTROLLER			Wireless type			
Control voltage (be built-in transformer)			12VDC			
REFRIGERANT PIPING			Not supplied (optional parts)			
Ball valve O.D	Liquid	in.	1/4	1/4	1/4	
	Gas	in.	3/8	3/8	5/8	
Connection method	Indoors		Flared	Flared	Flared	
	Outdoors		Flared	Flared	Flared	
Between the indoor& outdoor units	Height difference	ft	Max. 25	Max. 25	Max. 25	
	Piping length	ft	Max. 65	Max. 65	Max. 65	

Notes * 1. Rating conditions (cooling) — Indoor: 80°FDB, 67°FWB, Outdoor: 95°FDB, 75°FWB

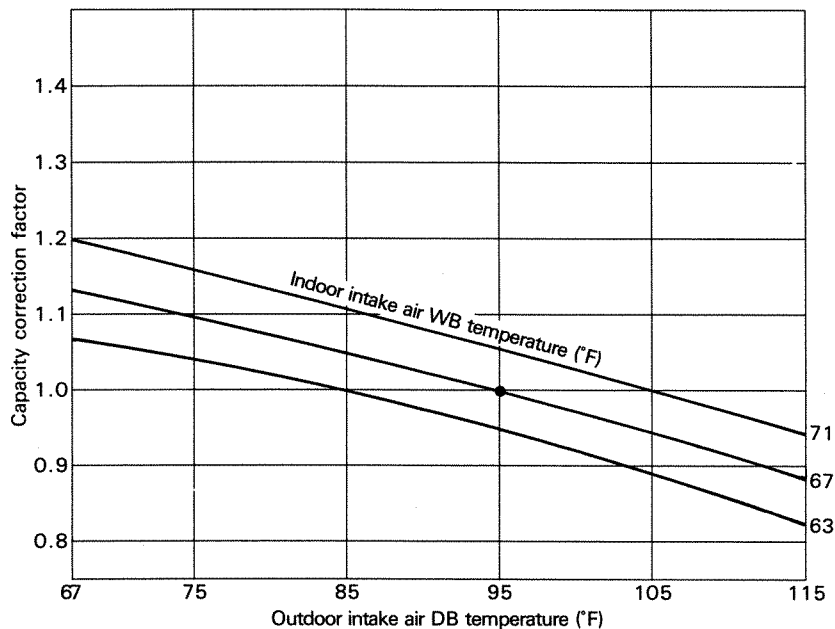
Operating Range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	90°FDB, 71°FWB	115°FDB
	Minimum	67°FDB, 57°FWB	67°FDB

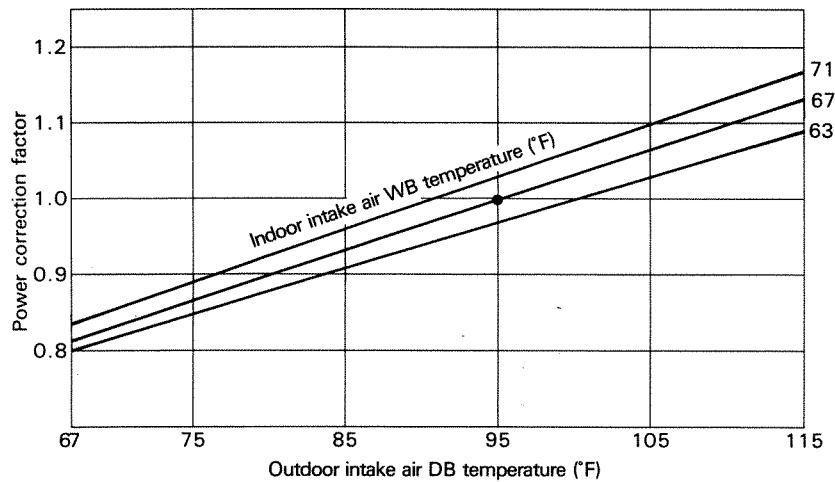
1. PERFORMANCE CURVE

A point on the curve shows the reference point.

MUM30EN2



Total input (cooling)



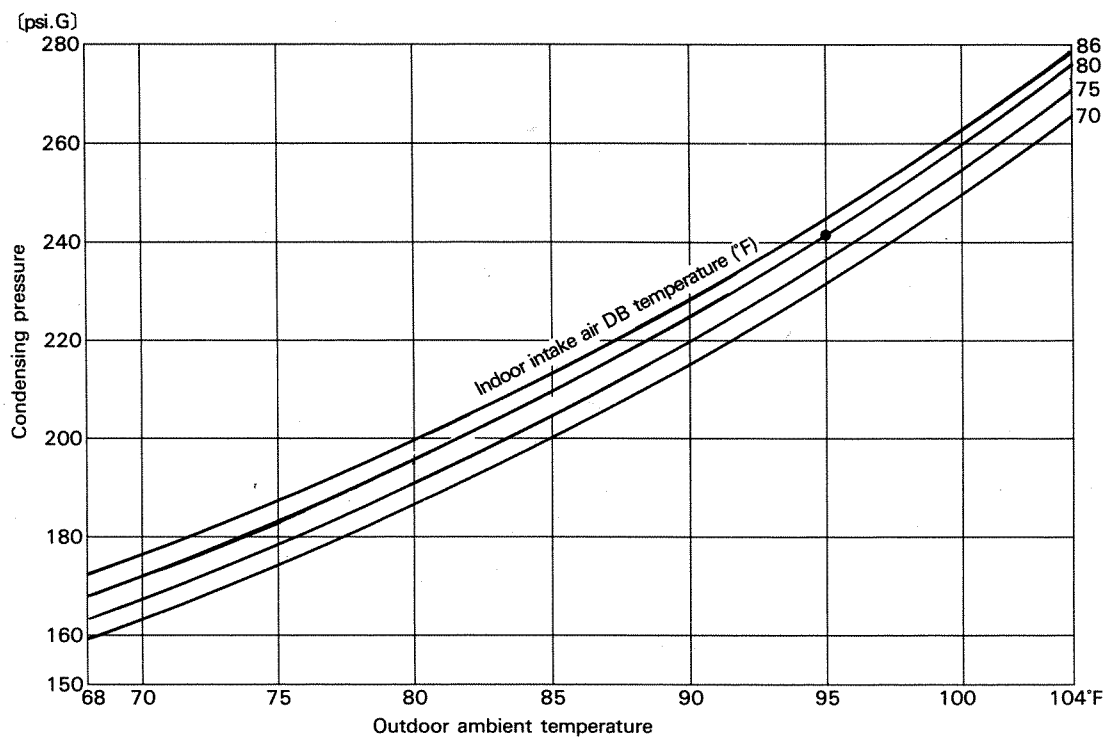
NOTE:

Total capacity = multiply cooling capacity in specifications table on page 5 by capacity correction factor on this page.
 Total power consumption = multiply power consumption in specifications table on page 5 by power correction factor on this page.

CONDENSING PRESSURE—Cooling mode

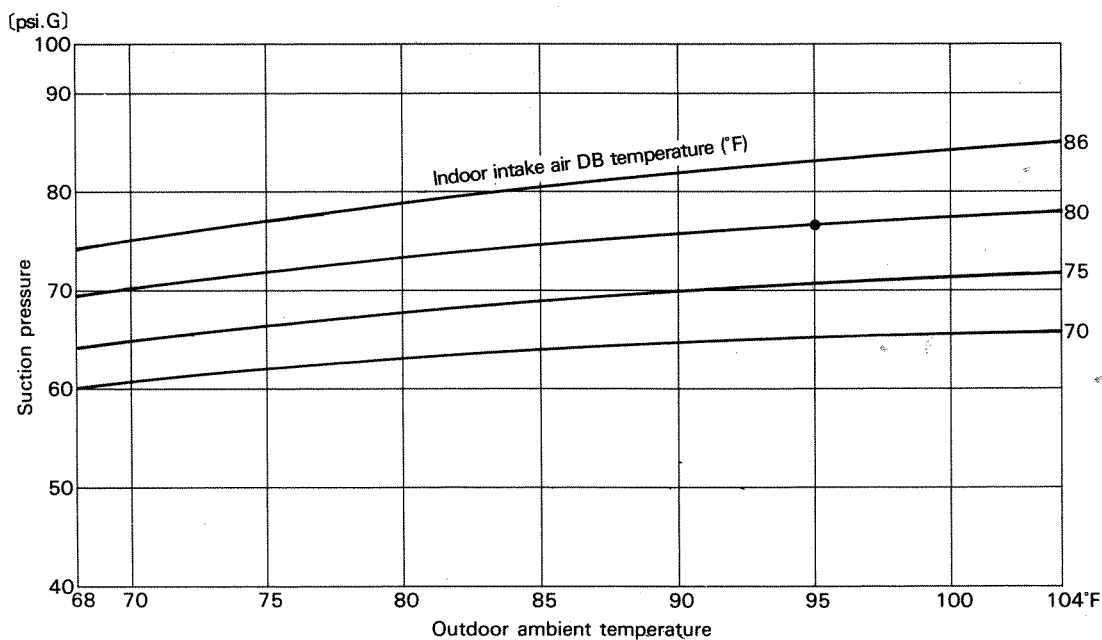
Data is based on the condition of indoor humidity 50%. Indoor air flow should be set at HI. A point on the curve shows the reference point.

MS09EW



SUCTION PRESSURE—Cooling mode

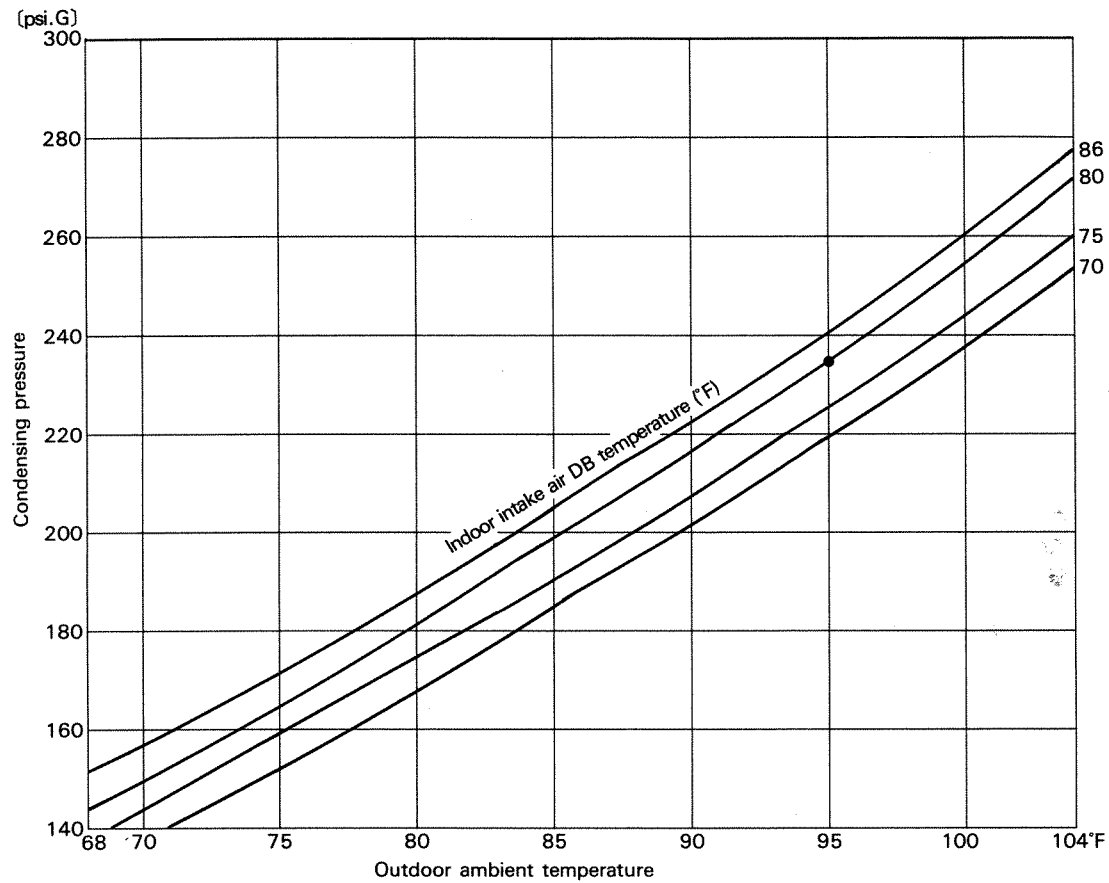
MS09EW



CONDENSING PRESSURE—Cooling mode

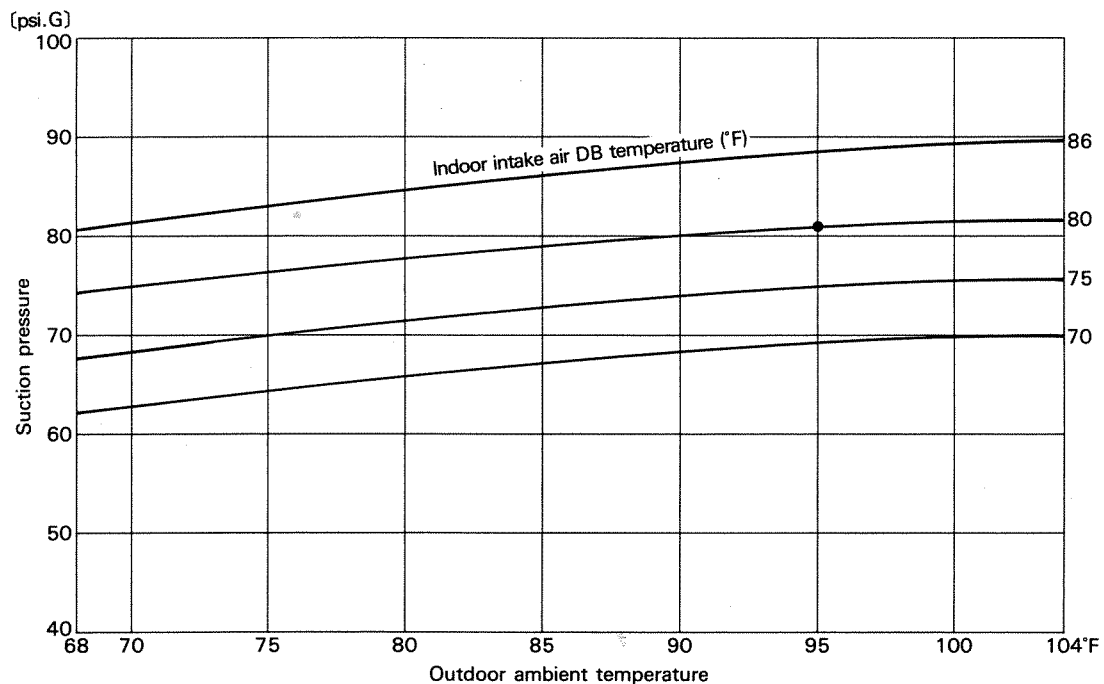
Data is based on the condition of indoor humidity 50%. Air flow should be set at HI. A point on the curve shows the reference point.

MS15EN



SUCTION PRESSURE—Cooling mode

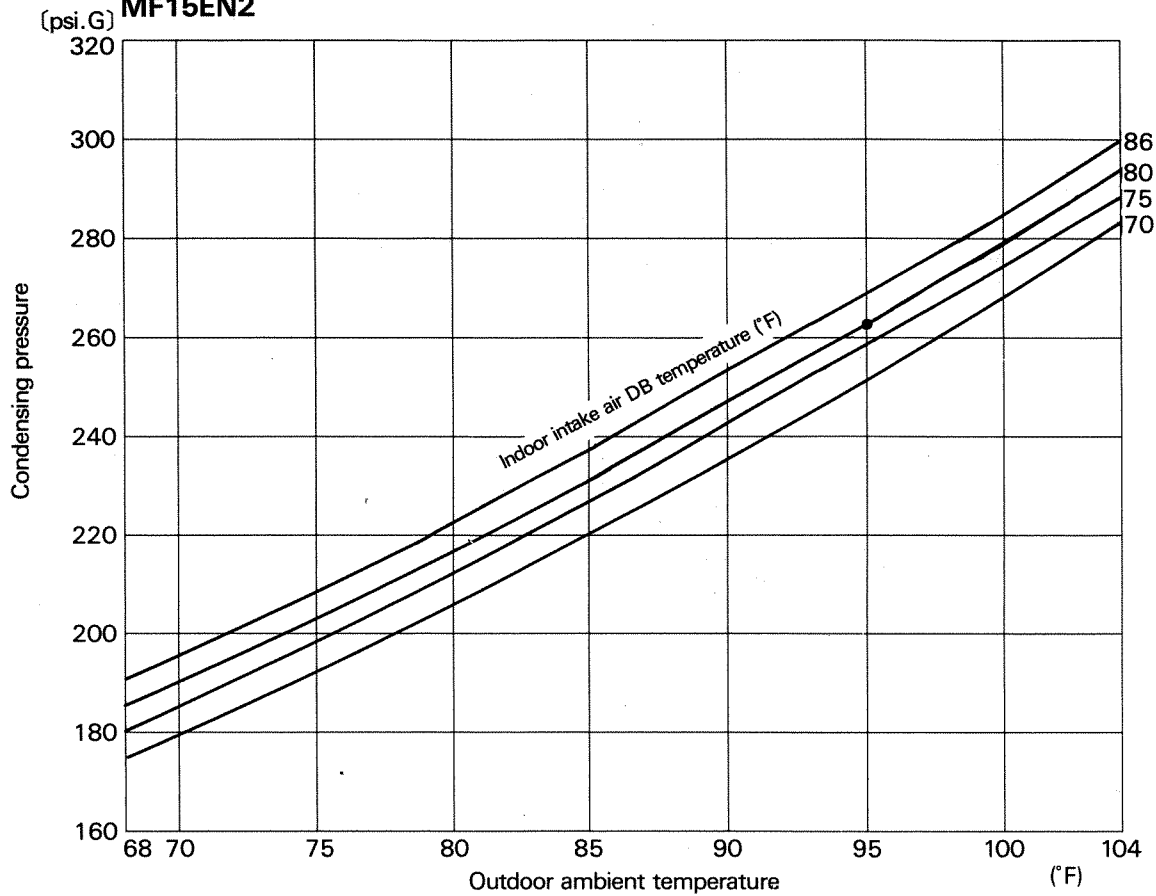
MS15EN



CONDENSING PRESSURE—Cooling mode

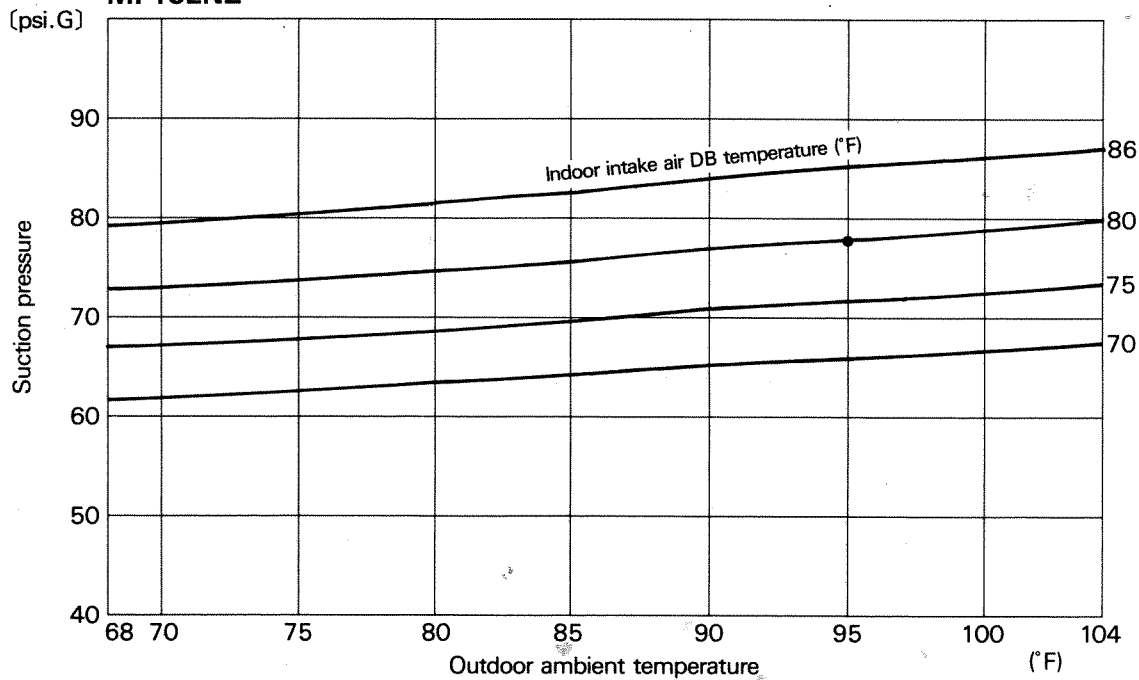
Data is based on the condition of indoor humidity 50%. Air flow should be set at HI. A point on the curve shows the reference point.

MF15EN
MF15EN2



SUCTION PRESSURE—Cooling mode

MF15EN
MF15EN2



2. OPERATING RANGE

(1)POWER SUPPLY

	Models	Rating	Guaranteed Voltage
Indoor unit	MS09EW MS15EN MF15EN MF15EN2	115V 60Hz 1 ϕ	Min. 103V—Max.127V
Outdoor unit	MUM30EN2	208/230V 60Hz 1 ϕ (3 wires)	Min.198V 208V 230V Max.253V

(2)OPERATION

Function	Intake air temperature	Indoor		Outdoor	
	Condition	DB(°F)	WB(°F)	DB(°F)	WB(°F)
Cooling	Standard temperature	80	67	95	—
	Maximum temperature	95	71	115	—
	Minimum temperature	67	57	67	—
	Maximum humidity	78%		—	

3. OUTLET AIR SPEED AND COVERAGE RANGE

Model	Function	Airflow (CFM)	Air speed (ft/sec)	Coverage range (ft)
MS09EW	Dry	265	12.4	18.8
	Wet	237	11.1	16.8
MS15EN	Dry	427	14.3	25.3
	Wet	406	13.6	24.1
MF15EN MF15EN2	Dry	370	13.4	22.9
	Wet	330	11.9	20.5

- The air coverage range is the value up to the position where the air speed is 1 ft/sec. when air is blown out horizontally from the unit properly at the High speed position.

The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture installed inside the room.

4. ADDITIONAL REFRIGERANT CHARGE (R-22(oz))

Model		Outdoor unit precharged (up to 25 ft)	Refrigerant piping length (one way)					
			25ft	30ft	33ft	40ft	45ft	49ft 65ft
MUM30EN2	MS09EW	2 lbs 12 oz	0	1oz	1oz	2oz	2oz	3oz 5oz
	MS09EW	2 lbs 12 oz						
	MS15EN MF15EN/EN2	3 lbs 10 oz						

5. STANDARD OPERATION DATA (A:MS09EW B:MS09EW C:MS15EN)

MODEL			MSM30EN2								
Unit combination			Triple			Double			Single		
			A+B+C			A+B		A+C or B+C		A or B	C
Item		Unit	Cooling								
Total	Capacity	Btu/h	28,400			16,400		20,600		8,200	12,400
	SHF	—	0.69			0.69		0.69		0.69	0.69
	Input	kW	2.87			1.83		2.06		0.98	1.22
Electrical circuit	Indoor unit model		MS09EW	MS09EW	MS15EN	MS09EW	MS09EW	MS09EW	MS15EN	MS09EW	MS15EN
	Power supply (V,H _z ,ϕ)		115,60,1			115,60,1			115,60,1		
	Input	kW	0.03	0.03	0.05	0.03	0.03	0.03	0.05	0.03	0.05
	Fan current	A	0.3	0.3	0.5	0.3	0.3	0.3	0.5	0.3	0.5
	Outdoor unit model		MUM30EN2								
	Power supply (V,H _z ,ϕ)		208/230,60,1(3-wire)								
	Input	kW	2.76			1.77		1.98		0.95	1.17
	Comp. current	A	7.0	7.0	3.8	7.0	7.0	7.0	3.8	7.0	3.8
	Fan current	A	0.7+0.8			0.65+0.75			0.6+0.7		
Refrigerant circuit	Condensing pressure	psi.G	247	244	235	237	233	242	235	226	233
	Suction pressure	psi.G	77	75	81	75	74	77	81	78	84
	Discharge temp.	°F	182	178	182	181	170	171	171	204	174
	Condensing temp.	°F	120	121	116	111	109	112	107	108	111
	Suction temp.	°F	47	69	69	53	68	47	57	72	62
	Comp. shell bottom temp.	°F	159	174	159	162	172	149	147	177	149
	Ref. pipe length	ft*	25	25	25	25	25	25	25	25	25
	Refrigerant charge	—	2 lbs 10oz	2 lbs 10 oz	3 lbs 10 oz	2 lbs 10 oz	2lbs 10 oz	2 lbs 10 oz	3 lbs 10 oz	2 lbs 10 oz	3 lbs 10 oz
Indoor side	Intake air temp.	DB	°F	80	80	80	80	80	80	80	80
		WB	°F	67	67	67	67	67	67	67	67
	Discharge air temp.	DB	°F	57	57	60	57	57	57	60	57
		WB	°F	56	56	57	56	56	56	57	56
	Fan speed	rpm	1,430	1,430	1,530	1,430	1,430	1,430	1,530	1,430	1,530
	Airflow (Hi)(Wet)	CFM	237	237	406	237	237	237	406	237	406
Outdoor side	Intake air temp.	DB	°F	95			95			95	
		WB	°F	—			—			—	
	Fan speed	rpm	850/940			750/840			640/700		
	Airflow	CFM	2,720			2,360			2,080		

STANDARD OPERATION DATA (A:MS09EW B:MS09EW C:MF15EN or MF15EN2)

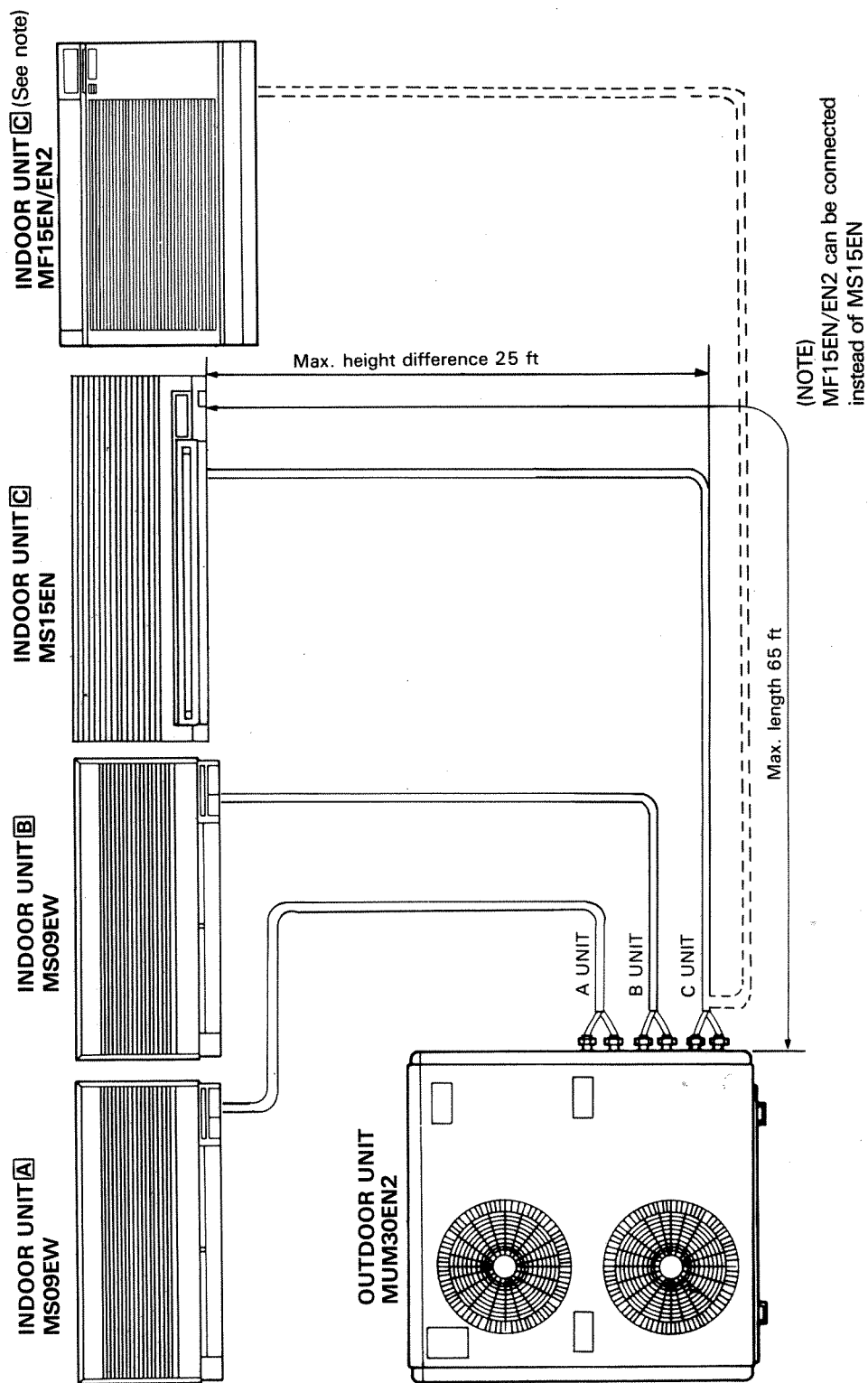
MODEL			MSM30EN2								
Unit combination			Triple			Double			Single		
			A + B + C			A + B		A + C or B + C		A or B	C
Item		Unit	Cooling								
Total	Capacity	Btu/h	28,400			16,400		20,600		8,200	12,400
	SHF	—	0.71			0.71		0.71		0.71	0.71
	Input	kW	2.87			1.83		2.06		0.98	1.22
Electrical circuit	Indoor unit model		MS09EW	MS09EW	MF15EN MF15EN2	MS09EW	MS09EW	MS09EW	MF15EN MF15EN2	MS09EW	MF15EN MF15EN2
	Power supply (V,Hz,φ)		115,60,1			115,60,1			115,60,1		
	Input	kW	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.04
	Fan current	A	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.4
	Outdoor unit model		MUM30EN2								
	Power supply (V,Hz,φ)		208/230,60,1(3-wire)								
	Input	kW	2.77			1.77		1.99		0.95	1.18
	Comp. current	A	7.0	7.0	3.8	7.0	7.0	7.0	3.8	7.0	3.8
	Fan current	A	0.7+0.8			0.65+0.75			0.6+0.7		
Refrigerant circuit	Condensing pressure	psi.G	247	244	235	237	233	242	235	226	233
	Suction pressure	psi.G	77	75	81	75	74	77	81	78	84
	Discharge temp.	°F	182	178	182	181	170	171	171	204	174
	Condensing temp.	°F	120	121	116	111	109	112	107	108	111
	Suction temp.	°F	47	69	69	53	68	47	57	72	62
	Comp. shell bottom temp.	°F	159	174	159	162	172	149	147	177	149
	Ref. pipe length	ft	25	25	25	25	25	25	25	25	25
	Refrigerant charge	—	2 lbs 10oz	2 lbs 10 oz	3 lbs 10 oz	2 lbs 10 oz	2lbs 10 oz	2 lbs 10 oz	3 lbs 10 oz	2 lbs 10 oz	3 lbs 10 oz
Indoor side	Intake air temp.	DB	°F	80	80	80	80	80	80	80	80
		WB	°F	67	67	67	67	67	67	67	67
	Discharge air temp.	DB	°F	57	57	55	57	57	57	55	57
		WB	°F	56	56	54	56	56	56	54	56
	Fan speed	rpm	1,430	1,430	1,370	1,430	1,430	1,430	1,370	1,430	1,370
	Airflow (Hi)(Wet)	CFM	237	237	330	237	237	237	330	237	330
Outdoor side	Intake air temp.	DB	°F	95			95			95	
		WB	°F	—			—			—	
	Fan speed	rpm	850/940			750/840			640/700		
	Airflow	CFM	2,720			2,360			2,080		

6. MAX. REFRIGERANT PIPING LENGTH/MAX. HEIGHT DIFFERENCE

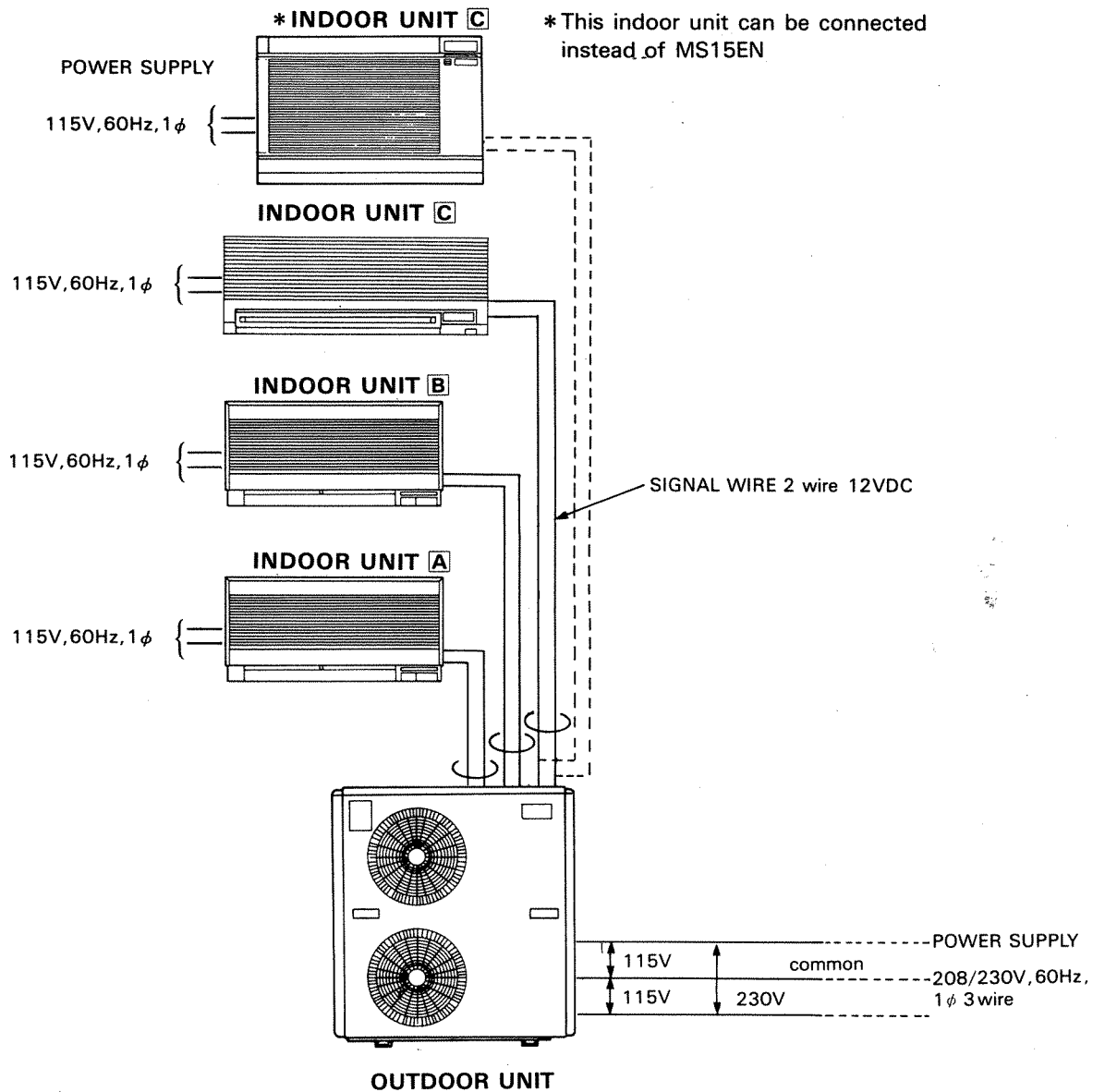
MSM30EN2

Between outdoor unit and each indoor unit, max. refrigerant piping length is 65ft and max. height differences is 25ft.

* It does not matter either unit is higher.

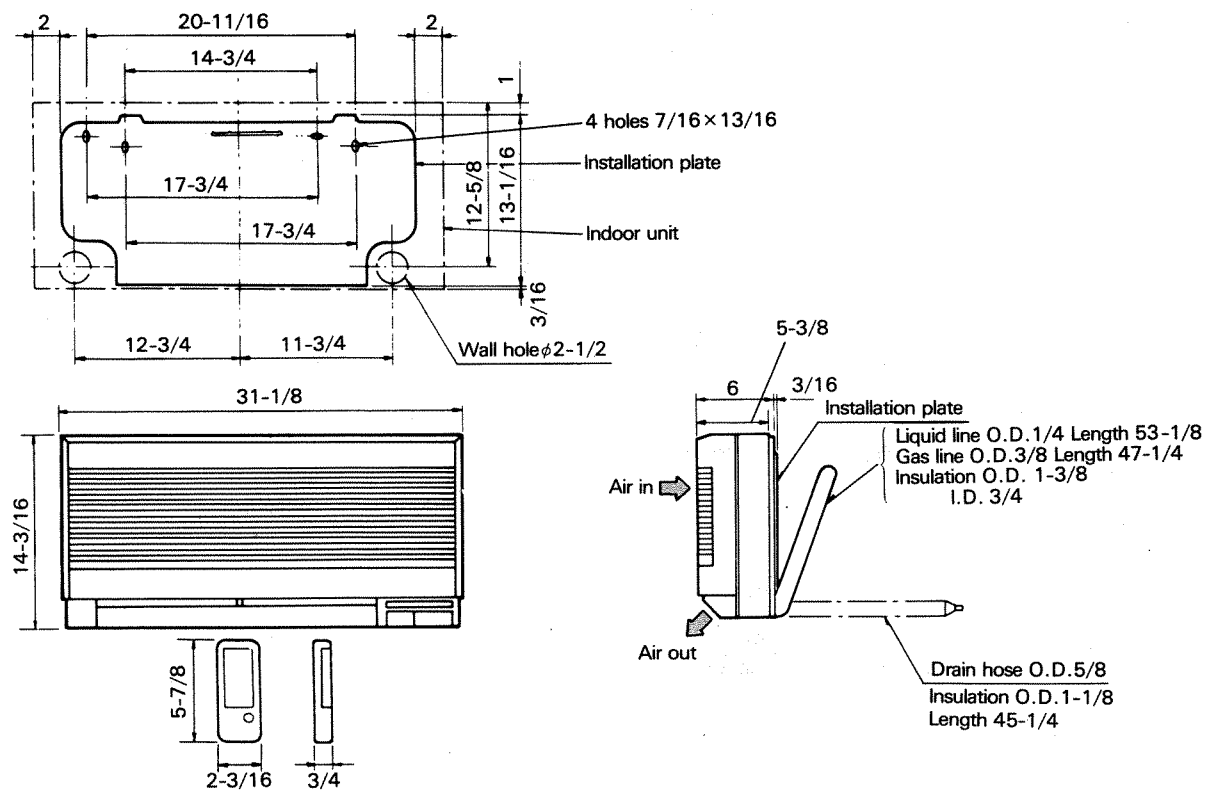


7. POWER SUPPLY MSM30EN2

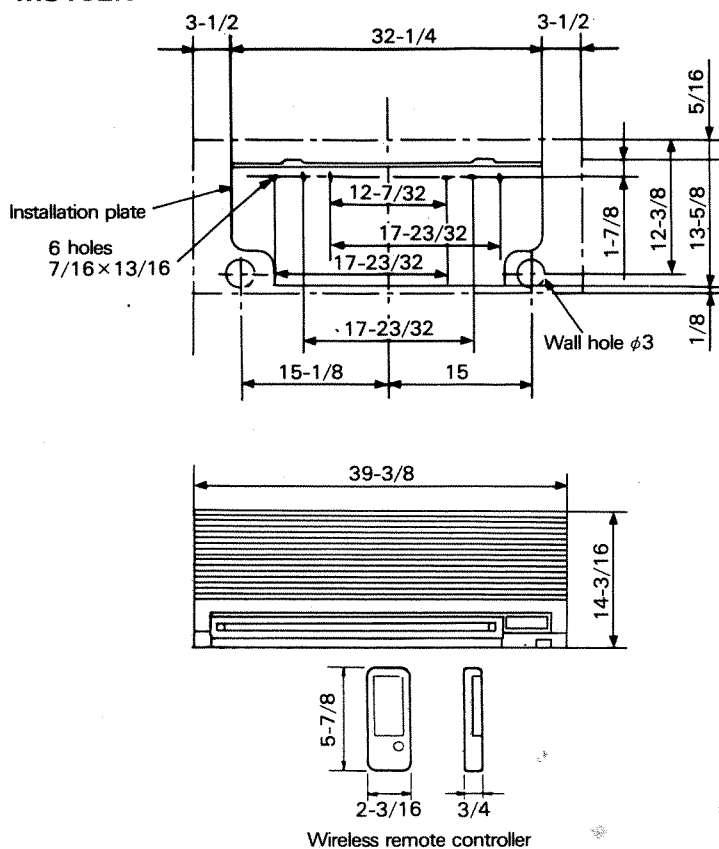
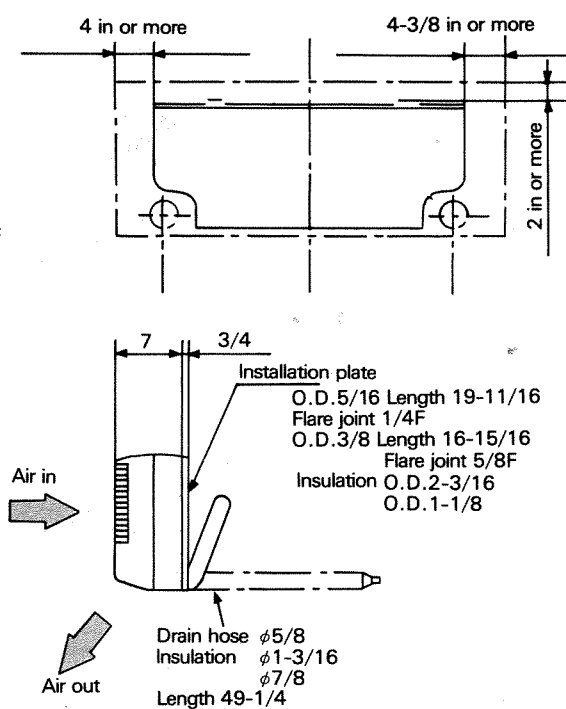


**INDOOR UNIT
MS09EW**

Unit : inch

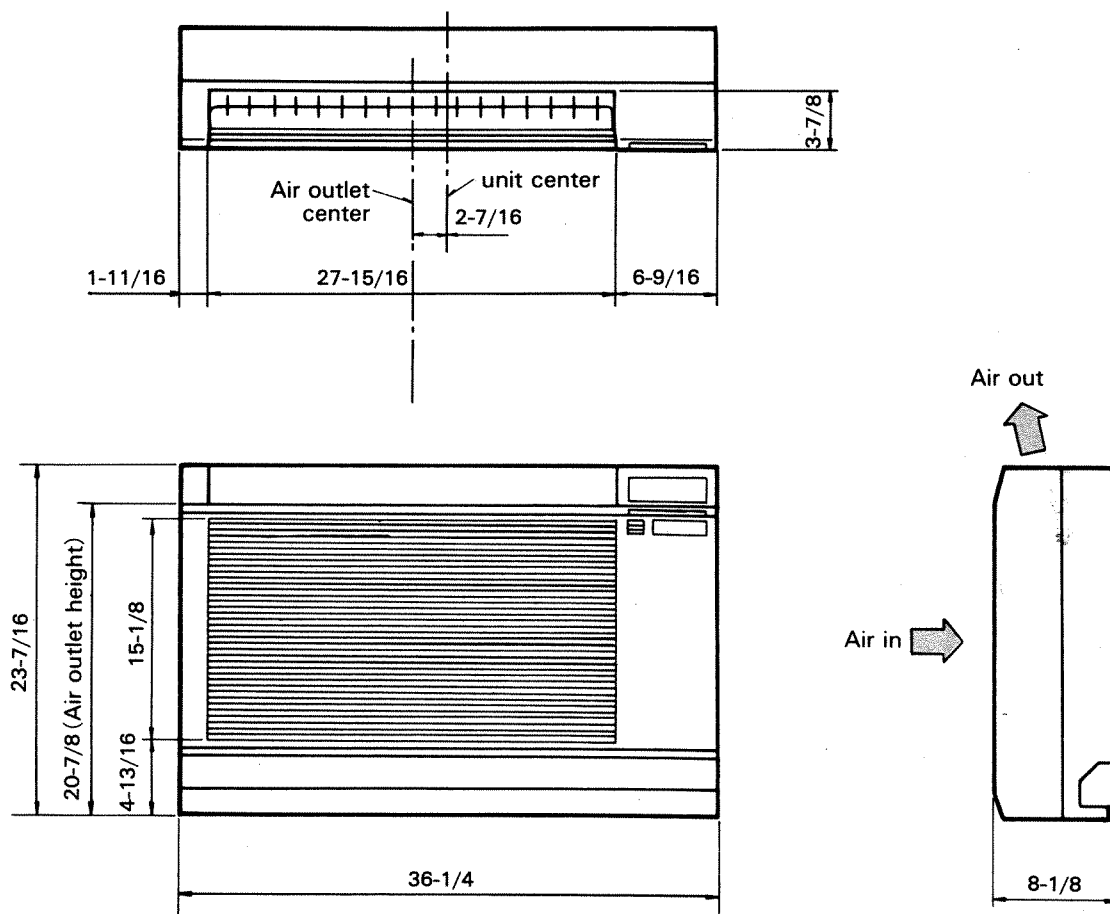

**INDOOR UNIT
MS15EN**

Wireless remote controller

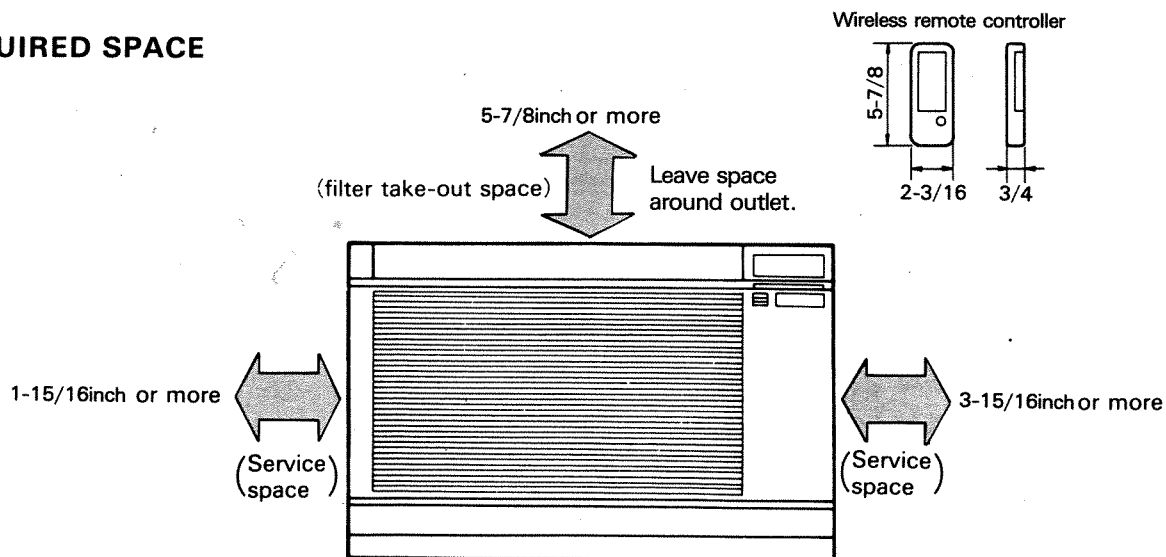

INDOOR UNIT REQUIRED SPACE


MF15EN/MF15EN2

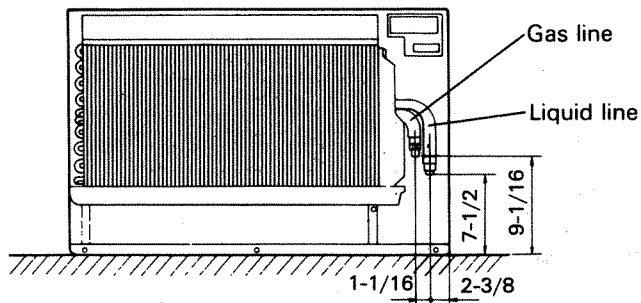
Unit : inch



REQUIRED SPACE

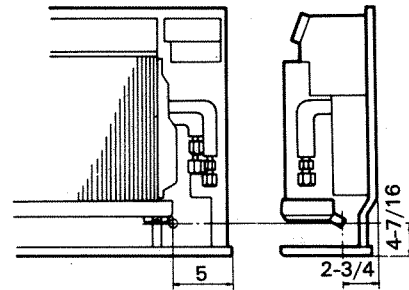


Piping position



Drain hose set position

Unit : inch

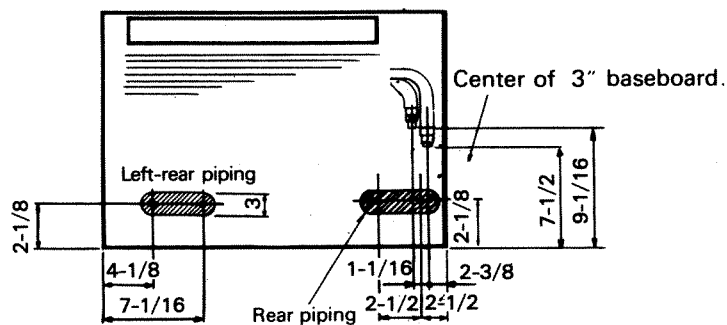


Drain hose O.D. $\phi 5/8$
Insulation O.D. $\phi 1-3/16$
Length 43-5/16

Models			MF15EN/MF15EN2
Indoor piping	Insulation O.D.		$\phi 2-1/2$
	Liquid line	O.D.	$\phi 5/16$
		Flare joint	1/4F
	Gas line	O.D.	$\phi 3/8$
		Flare joint	1/2F

For rear and left-rear piping

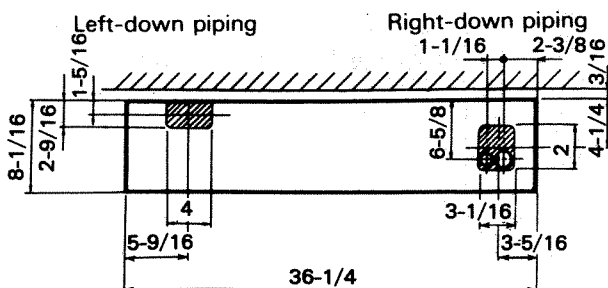
- Diagonally hatched sections in the figure below indicate where piping can be arranged. (Figure below is a frontview of the unit).



Rear piping installation is possible with 80 mm (3") height baseboard. If the baseboard is more than 3", use optional WALL MOUNT MAC-761WS for the wall installation, or arrange a platform in the field for floor standing.

For right-down and left-down piping

(Figure below is a bottom view of the unit)
Left-down piping Right-down piping



For left piping

For right piping

