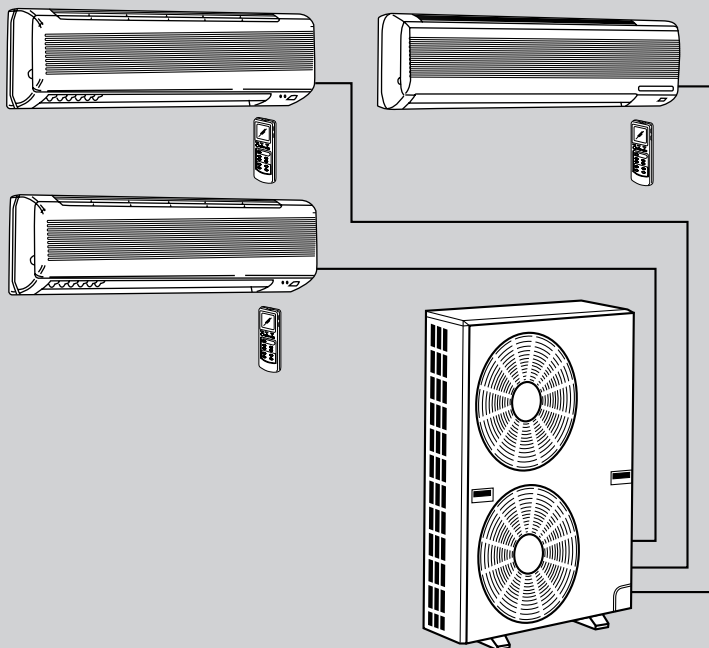


No.OB204

TECHNICAL & SERVICE MANUAL

Wireless type
Models

MS09NWX2 MS15NNX1 • MUM30NN



CONTENTS

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

MS09NW → OB192

MS15NN → OB192



The Slim Line.
From Mitsubishi Electric.

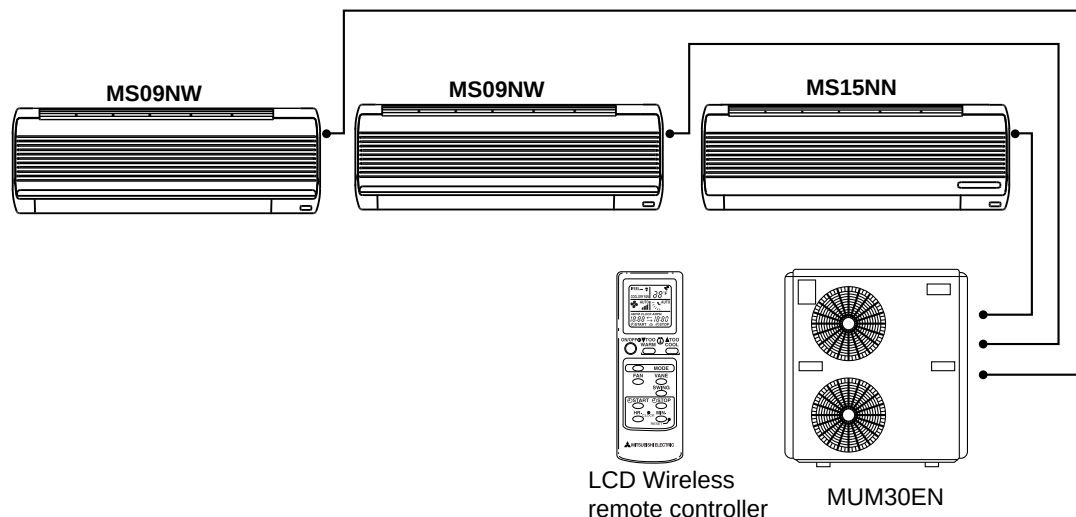


Mr. SLIM

1

FEATURES

This “3 to 1” Multi system (MSM30EN) consists of a single outdoor unit with three compressors that permit up to three indoor units to be installed separate rooms, each with its own controller.



Cooling Capacity (BTU/h)

Operation \ Indoor unit	MS09NW	MS09NW	MS15NN
1 Indoor Unit Operation	8,200	—	—
	—	8,200	—
	—	—	12,400
2 Indoor Unit Operatin	8,200	8,200	—
	8,200	—	12,400
	—	8,200	12,400
3 Indoor Unit Operation	8,100	8,100	12,200

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.AUTO-RESTART FUNCTION

The auto restart function restarts the equipment when power is restored following an outage automatically. 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.



2

TECHNICAL CHANGES

MSM30EW → MSM30NW

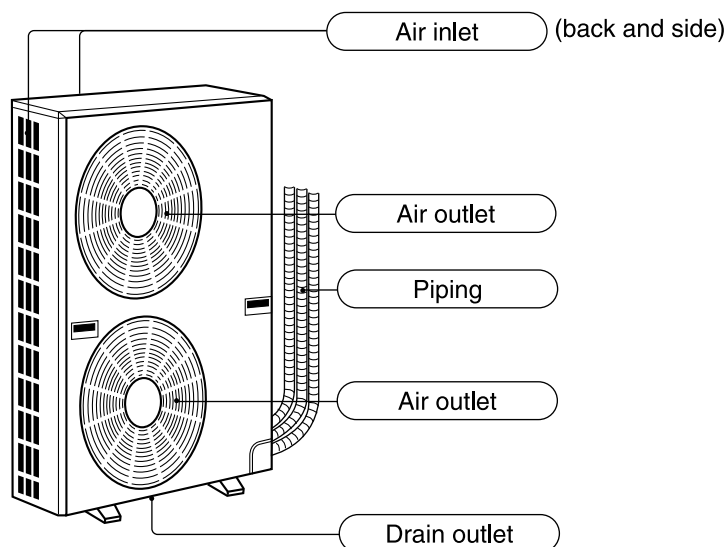
1. Indoor unit has been changed.
2. Outdoor unit has been changed.
3. Remote controller has been changed.
(The timer function has been changed to the clock timer function.)
4. Indoor auto vave has been adopted.
5. Fan speed control has changed.
(MF1/MF2 : 1.Lo/Lo→Stop/Hi 2.Me/Me→Me/Me 3.Hi/Hi→Hi/Hi)
6. The relay "X64" has been added to electric circuit.
7. Surge absorber has been added to electric circuit.

3

PART NAMES AND FUNCTIONS

OUTDOOR UNIT

MUM30NN



Model Items			MSM30NN				
			Triple-Unit	Double-Unit		Single-Unit	
			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	2,990	1,860	2,060	990	1,220	
EER (Triple unit operation)		9.9					
SEER (Triple unit operation)		10.0					
INDOOR UNIT MODEL		A & B: MS09NW		C: MS15NN			
Extenal finish		White		White			
Power Supply		V, Hz, Phase		115,60,1			
Max. fuse size (time delay)		A		15.0			
Min. ampacity		0.5		0.6			
Fan motor		F.L.A		0.43			
Airflow Lo-Me-Hi	Dry	CFM	208-265-328		360-395-452		
	Wet	CFM	177-226-279		314-342-392		
Moisture removal		(Pints/h)		1.5			
Cond. drain connection OD		in.		5/8			
Dimensions	W	in.	32-1/16		39-15/16		
	D	in.	7-3/16		7-1/2		
	H	in.	10-13/16		12-5/8		
Weight		lbs.		31			
OUTDOOR UNIT MODEL		MUM30NN					
External fnish		Munsell 5Y 7/1					
Power supply		V, Hz, Phase		208/230,60,1(3-wire)			
Max. fuse sizu (time delay)		A		30			
Min. ampacity		25					
Fan motor		F.L.A		0.8+0.7			
Compressor	Model	KH122WEV<115V>		RH167NAB<208/230V>			
	Winding resistance (at 68°F) Ω	C-R 0.97 C-S 4.81		C-R 2.47 C-S 4.62			
		R.L.A	10	8			
		L.R.A	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)		DC12V					
REFRIGERANT PIPING		Not supplied (optional parts)					
Pipe size	Liquid	in.	1/4		1/4		
	Gas	in.	3/8		5/8		
Connection method	Indoors	Flared		Flared			
	Outdoors	Flared		Flared			
Between the indoor & outdoor units	Height difference	ft	Max. 25		Max. 25		
	Piping length	ft	Max. 65		Max. 65		

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

Operating Range

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

MS09NW×2 MS15NN×1**MUM30NN****1.PERFORMANCE DATA(ONE INDOOR UNIT WITH ONE OUTDOOR UNIT)****1) COOLING CAPACITY**

Models	Indoor air	Outdoor intake air DB temperature(°F)														
	IWB (°F)	75			85			95			105			115		
		TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MS09NW	71	10.05	5.89	0.88	9.39	5.51	0.97	8.82	5.17	1.04	8.20	4.81	1.09	7.54	4.43	1.14
	67	9.51	6.85	0.83	8.86	6.38	0.92	8.20	5.90	0.99	7.63	5.49	1.05	7.01	5.05	1.10
	63	8.94	7.63	0.79	8.28	7.07	0.88	7.71	6.58	0.95	7.01	5.98	1.01	6.40	5.46	1.05
MS15NN	71	15.19	8.76	1.09	14.20	8.19	1.19	13.33	7.69	1.28	12.40	7.15	1.35	11.41	6.58	1.40
	67	14.38	10.21	1.03	13.39	9.51	1.13	12.40	8.80	1.22	11.53	8.19	1.29	10.60	7.53	1.35
	63	13.52	11.40	0.98	12.52	10.56	1.08	11.66	9.83	1.17	10.60	8.94	1.24	9.67	8.16	1.29

Notes 1. IWB : Intake air wet-bulb temperature

TC : Total Capacity (x10³ Btu/h), SHC : Sensible Heat Capacity (x10³ Btu/h)

TPC : Total Power Consumption (kW)

2. SHC is based on 80°F of indoor intake air DB temperature.

2) COOLING CAPACITY CORRECTIONS

MODEL	Refrigerant piping length (one way)		
	25ft (std)	40ft	49ft
MS-09NW	1.0	0.954	0.927

2.PERFORMANCE CURVE(ONE INDOOR UNIT WITH ONE OUTDOOR UNIT)

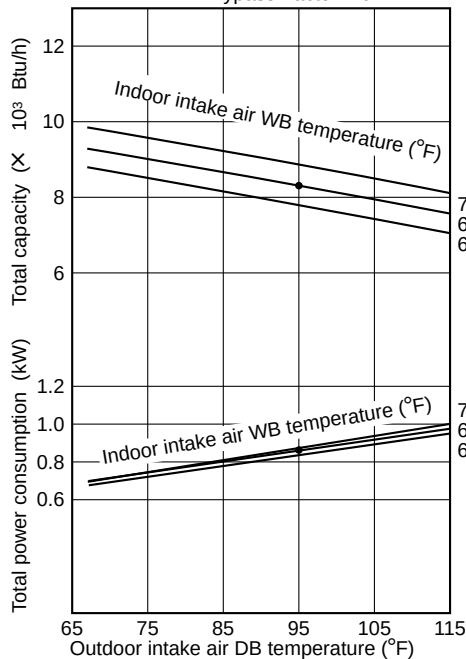
NOTE : A point on the curve shows the reference point.

MS09NW**Cooling capacity**

SHF at rating condition = 0.72

Airflow = 279CFM

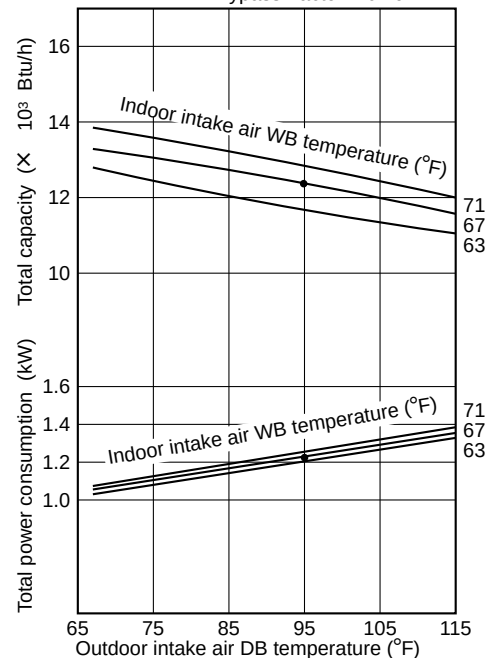
Bypass Factor = 0.24

MUM30NN**MS15NN****Cooling capacity**

SHF at rating condition = 0.71

Airflow = 392CFM

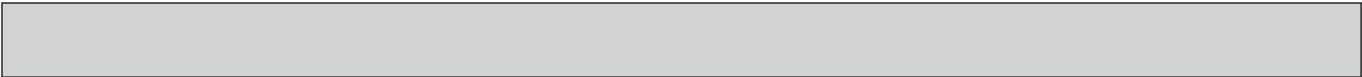
Bypass Factor = 0.19

MUM30NN

NOTE :

Total capacity = multiply cooling capacity in specifications table on page 4 by capacity correction factor on this page.

Total power consumption = multiply power consumption in specifications table on page 4 by power correction factor on this page.



3.CONDENSING PRESSURE AND SUCTION PRESURE
(ONE INDOOR UNIT WITH ONE OUTDOOR UNIT)

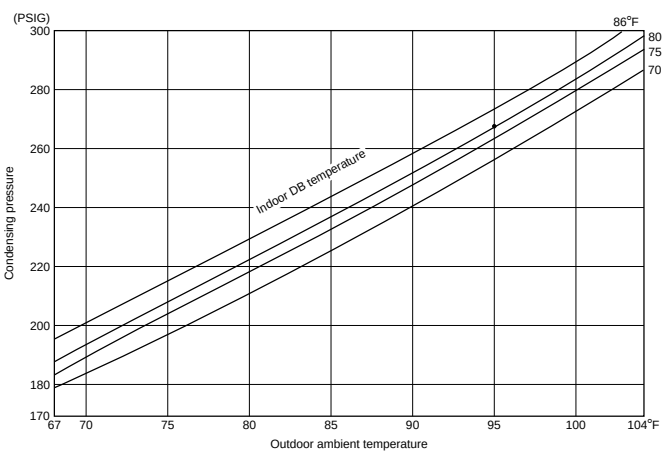
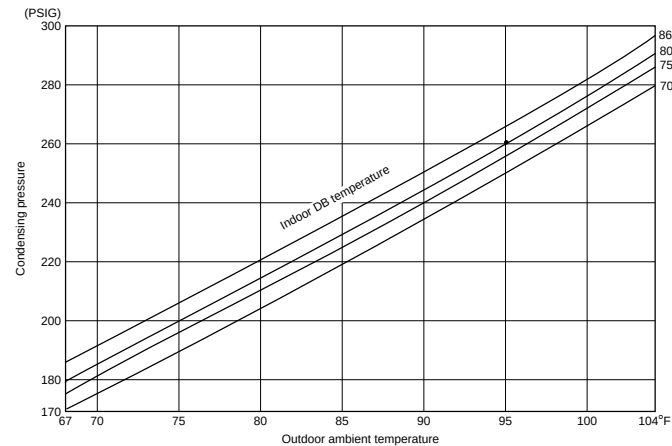
Data is based on the condition of indoor humidity 50%. Air flow should be set at HI. A point on the curve shows the reference point.

MS09NW

MUM30NN

MS15NN

MUM30NN

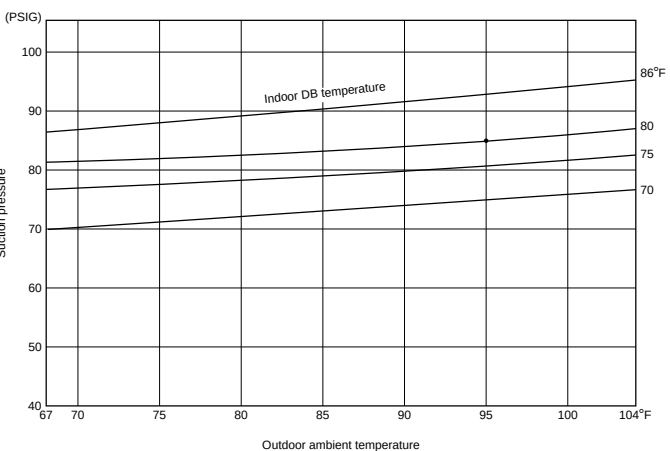
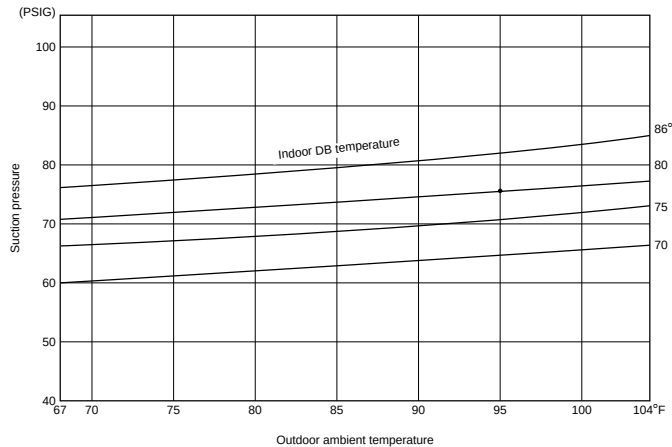


MS09NW

MUM30NN

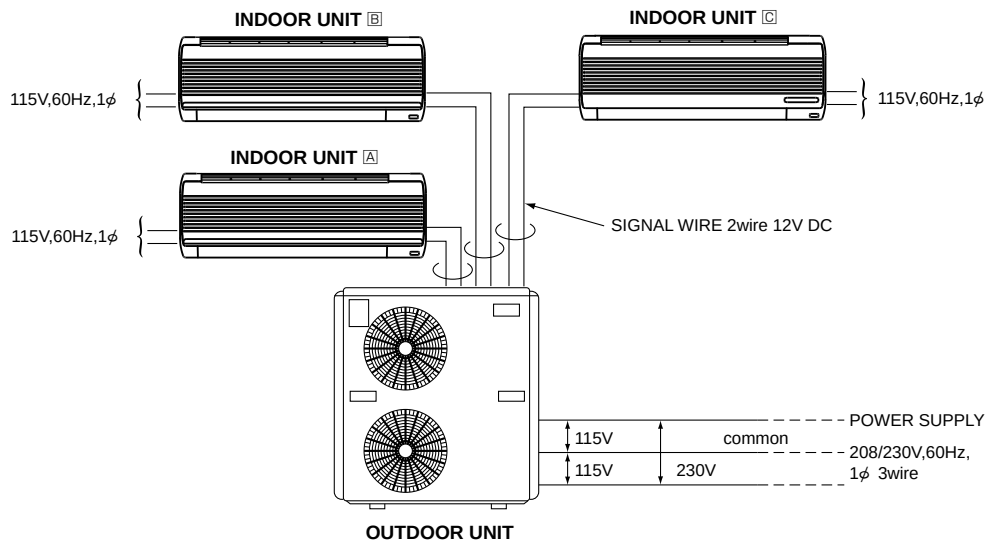
MS15NN

MUM30NN



2.STANDARD OPERATION DATA

MODEL			MSM30NN								
			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	—	0.72		0.71	0.72		0.72	0.71	0.71	0.72
	Input	kW	2.99			1.86		2.06		0.99	1.22
Electrical circuit	Indoor unit model		MS09NW	MS09NW	MS15NN	MS09NW	MS09NW	MS09NW	MS15NN	MS09NW	MS15NN
	Power supply (V,H _z ,ϕ)		115,60,1			115,60,1				115,60,1	
	Input	kW	0.035	0.035	0.047	0.035	0.035	0.035	0.047	0.035	0.047
	Fan current	A	0.34	0.34	0.41	0.34	0.34	0.34	0.41	0.34	0.41
	Outdoor unit model		MUM30NN								
	Power supply (V,H _z ,ϕ)		208/230,60,1(3-wire)								
	Input	kW	2.873			1.79		1.978		0.955	1.173
	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	PSIG	273	264	243	262	263	269	240	267	267
	Suction pressure	PSIG	80	80	82	78	79	78	82	80	85
	Discharge temp.	°F	154	157	169	197	171	151	169	143	141
	Condensing temp.	°F	122	118	111	118	116	118	110	121	118
	Suction temp.	°F	47	47	54	60	47	47	54	52	51
	Comp.shell botton temp.	°F	130	130	145	171	146	124	144	129	139
	Ref.pipe length	ft	25	25	25	25	25	25	25	25	25
	Refrigerant charge	—	3 lbs 3 oz	3 lbs 3 oz	3 lbs 8 oz	3 lbs 3 oz	3 lbs 3 oz	3 lbs 3 oz	3 lbs 8 oz	3 lbs 3 oz	3 lbs 8 oz
Indoor side	Entering 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	60	60	58	60	60	58	60	58
		WB	°F	57	57	57	57	57	57	57	57
	Fan speed	R.P.M.	1,230	1,230	1,200	1,230	1,230	1,230	1,200	1,230	1,200
	Airflow (Hi)	CFM	279	279	392	279	279	279	392	279	392
Outdoor side	Entering air temp.	DB	°F	95			95			95	
		WB	°F	—			—			—	
	Fan speed	R.P.M.	850/940			750/840			0/1030		
	Airflow	CFM	2,720			2,360			1,039		



4. OPERATING RANGE

(1) POWER SUPPLY

	Models	Rating	Guaranteed Voltage
Indoor unit	MS09NW MS15NN	115V 60Hz 1 ϕ	Min. 103v—Max. 127V
Outdoor unit	MUM 30NN	208/230V 60Hz 1 ϕ (3wires)	Min. 198V 208V 230V Max. 253V -----+-----+-----+-----

(2) OPERATION

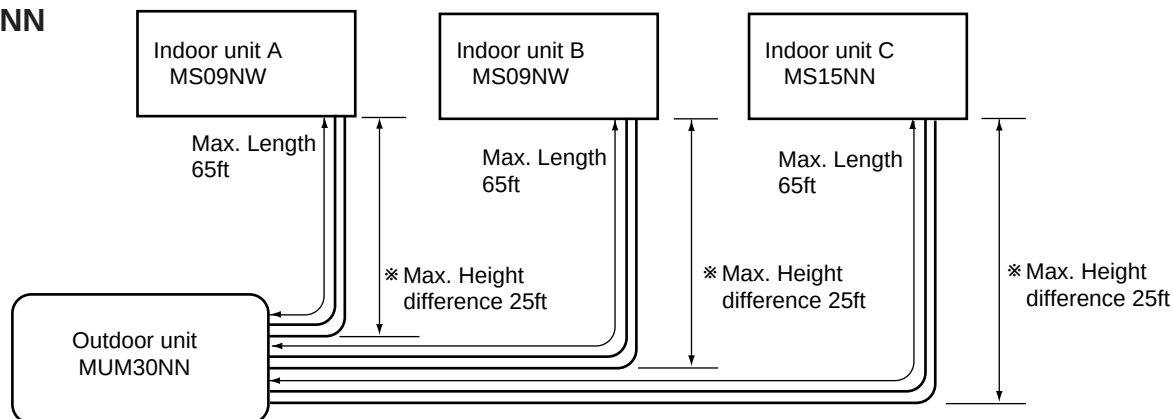
Function	Intake air temperature Condition	Indoor		Outdoor	
		DB (°F)	WB (°F)	DB (°F)	WB (°F)
Cooling	Standard temperature	80	67	95	—
	Maximum temperature	95	71	115	—
	Minimum temperature	67	57	67	—
	Maximum humidity	78%		—	

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

Model		Outdoor unit precharged (up to 25ft)	Refrigerant piping length (one way)						
			25ft	30ft	33ft	40ft	45ft	49ft	65ft
MUM	MS09NW	3 lbs 3 oz X2	0	1	1	2	2	3	5
	MS15NN	3 lbs 8 oz							

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

MSM30NN



7. PIPING PREPARATION

Model	Additional piping Max. length : ft A	Piping size O.D. : in.		Length of connecting pipe : in.	
		Gas	Liquid	Indoor unit	Outdoor unit
MS09NW	65	$\phi 3/8$	$\phi 1/4$	16-15/16	0
MS15NN		$\phi 5/8$			

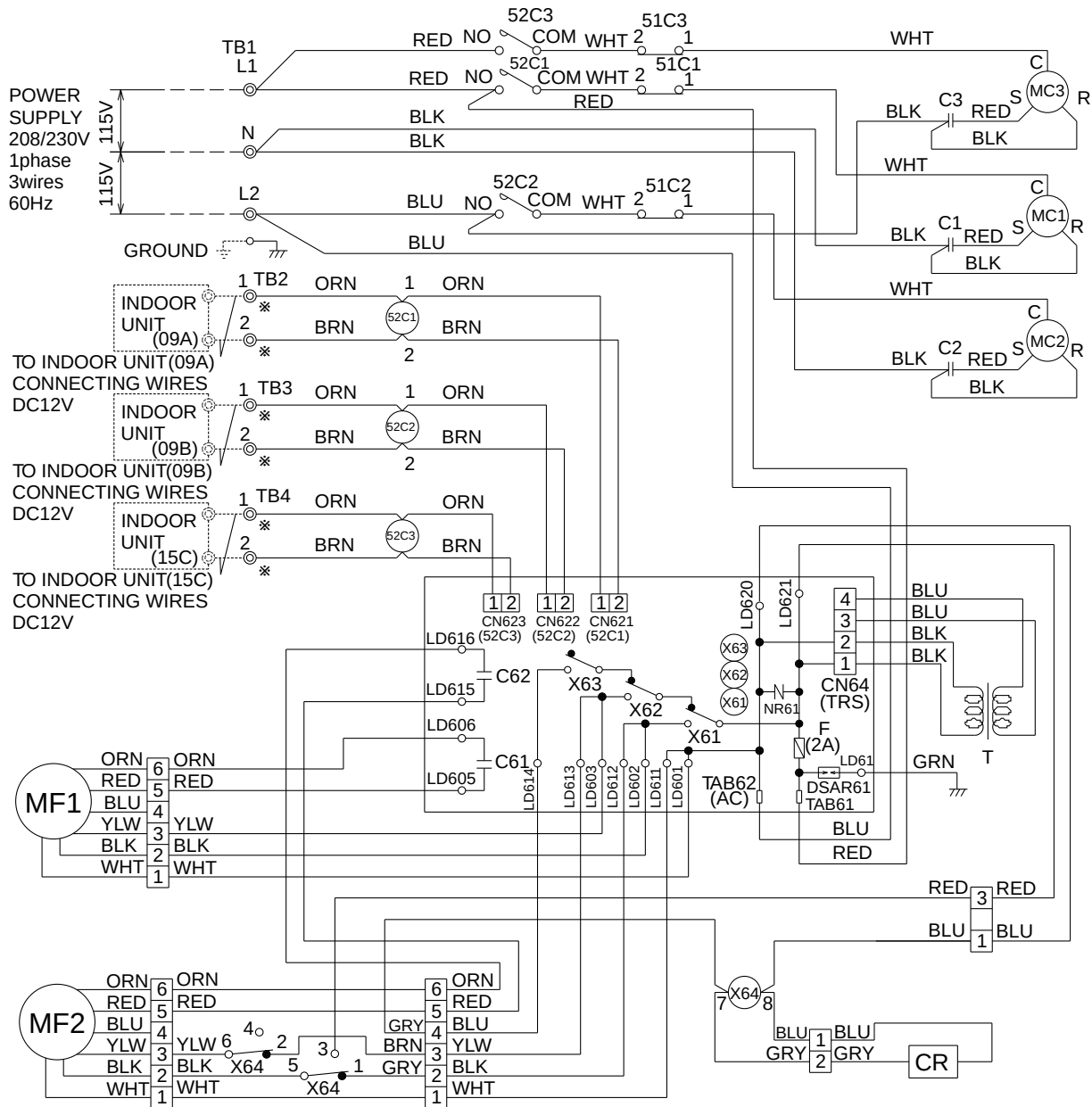
OUTLINES AND DIMENSIONS

Unit : inch



OUTDOOR

MODEL MUM30NN WIRING DIAGRAM



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C1~C3	COMPRESSOR CAPACITOR	MC1~MC3	COMPRESSOR(INNER THERMOSTAT)	TB1~TB4	TERMINAL BLOCK
C61,C62	FAN MOTOR CAPACITOR	MF1,2	FAN MOTOR(INNER THERMOSTAT)	X61~X63	FAN MOTOR RELAY
DSAR61	SURGE ABSORBER	NR61	VARIATOR	51C1,2	OVERCURRENT RELAY
F	FUSE (2A)	T	TRANSFORMER	52C1,2	COMPRESSOR CONTACTOR

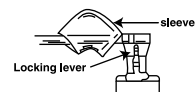
NOTE: 1. Use copper conductors only (For field wiring).

2. Symbols below indicate.

○: Terminal block, □: Connector

3. "*" shows the terminals with a lock mechanism, so they cannot be removed when you pull the lead wire.

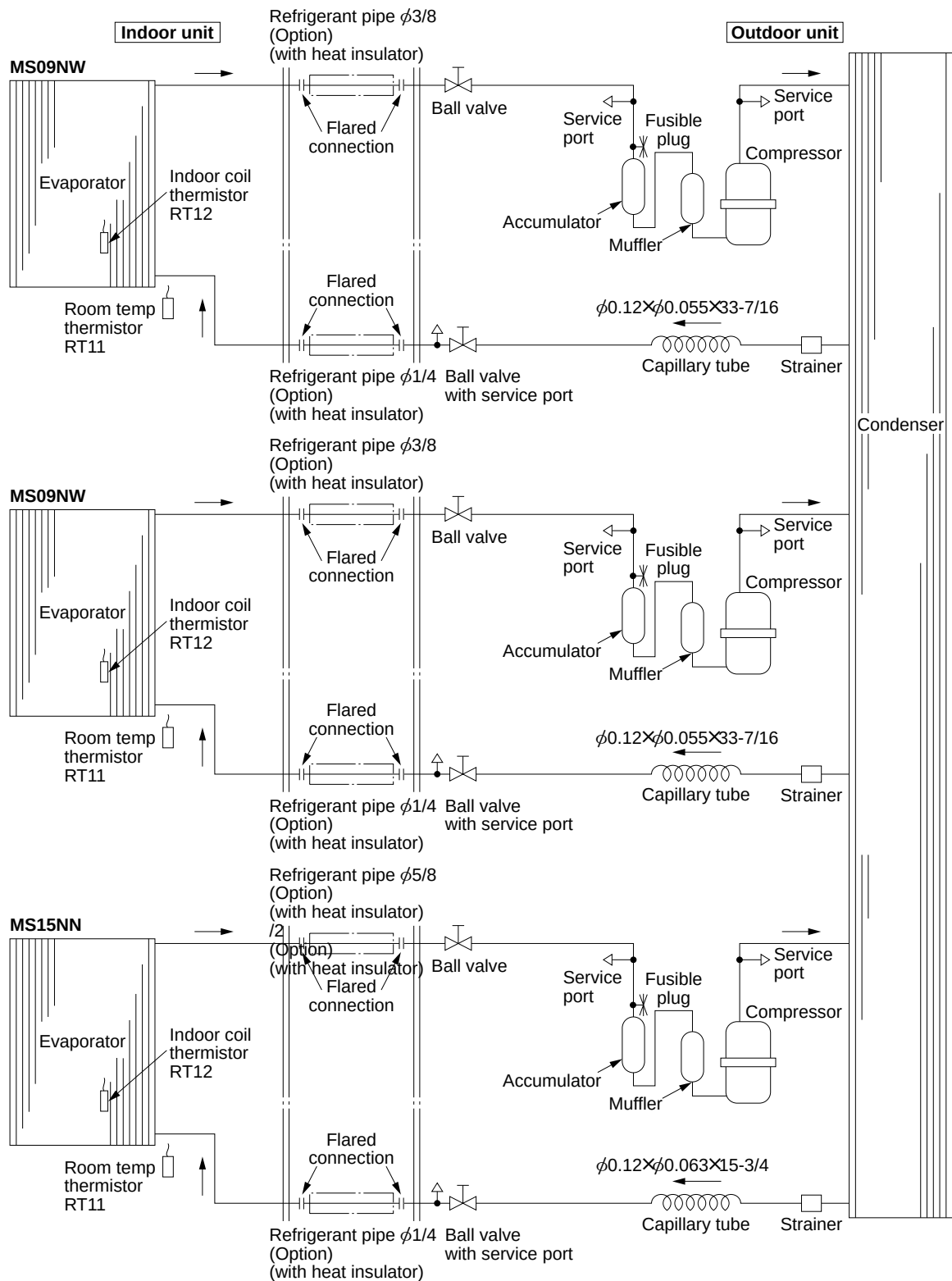
Be sure to pull the wire by pushing the locking lever (projected part) of the terminal with a finger.



1. Slide the sleeve.
2. Pull the wire while pushing the locking lever.

MS09NW×2 MS15NN×1/MUM30NN

Unit : inch



MUM30NN

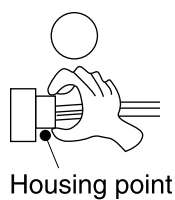
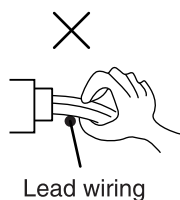
9-1 Cautions on troubleshooting

9-1-1 Before troubleshooting, check the followings:

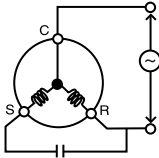
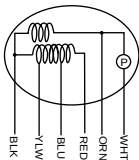
- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for mis-wiring.

9-1-2 Take care the followings during servicing.

- 1) Before servicing the air conditioner, be sure to first turn off the remote controller to stop the main unit, and then after confirming the horizontal vane is closed, disconnect the breaker.
- 2) When removing the P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 3) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



9-2 Trouble criterion of main parts

Part name	Check method and criterion	Figure																	
Compressor	Measure the resistance between the terminals with a tester. (Coil wiring temperature-10°C ~ 40°C) <table><tr><td></td><td>Normal(KH22WEV)</td><td>Normal(RH167NAB)</td><td>Abnormal</td></tr><tr><td>C-R</td><td>0.8~1.1Ω</td><td>2.1~2.7Ω</td><td rowspan="2">Opened or short-circuited</td></tr><tr><td>C-S</td><td>4.8~5.2Ω</td><td>4.0~5.0Ω</td></tr></table>		Normal(KH22WEV)	Normal(RH167NAB)	Abnormal	C-R	0.8~1.1Ω	2.1~2.7Ω	Opened or short-circuited	C-S	4.8~5.2Ω	4.0~5.0Ω							
	Normal(KH22WEV)	Normal(RH167NAB)	Abnormal																
C-R	0.8~1.1Ω	2.1~2.7Ω	Opened or short-circuited																
C-S	4.8~5.2Ω	4.0~5.0Ω																	
Outdoor fan motor	Measure the resistance between the terminals with a tester. (Coil wiring temperature-10°C ~ 40°C) <table><tr><td></td><td>Normal(Upper)</td><td>Normal(Lower)</td><td>Abnormal</td></tr><tr><td>WHT-BLK</td><td>60~75Ω</td><td>56~61Ω</td><td rowspan="4">Opened or short-circuited</td></tr><tr><td>BLK-YLW</td><td>15~20Ω</td><td>14~19Ω</td></tr><tr><td>YLW-BLU</td><td>12~16Ω</td><td>12~16Ω</td></tr><tr><td>BLU-RED</td><td>51~64Ω</td><td>54~67Ω</td></tr></table>		Normal(Upper)	Normal(Lower)	Abnormal	WHT-BLK	60~75Ω	56~61Ω	Opened or short-circuited	BLK-YLW	15~20Ω	14~19Ω	YLW-BLU	12~16Ω	12~16Ω	BLU-RED	51~64Ω	54~67Ω	
	Normal(Upper)	Normal(Lower)	Abnormal																
WHT-BLK	60~75Ω	56~61Ω	Opened or short-circuited																
BLK-YLW	15~20Ω	14~19Ω																	
YLW-BLU	12~16Ω	12~16Ω																	
BLU-RED	51~64Ω	54~67Ω																	

MUM30NN

SYSTEM	52C CONTACTOR	OUTDOOR FAN RELAY
Triple	All three : ON	Hi speed / Hi speed
Double	Two of them : ON	Me speed / Me speed
Single	One of them : ON	Stop / Hi speed

OPERATION OF 52C1, 52C2, 52C3, X61, X62, X63, x64

NOTE

1 : Compressor is on while 52C is on.

2 : Compressor is off while 52C is off.

3: Relay of X61~X63 can not turn on at the same time.

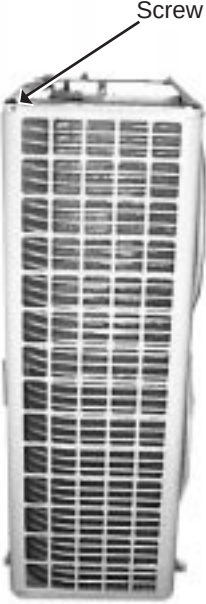
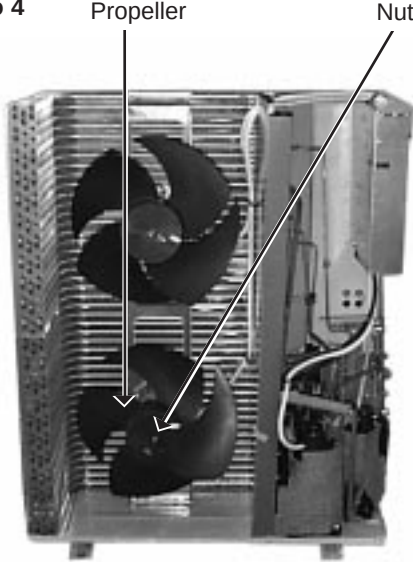
4: Relay "X64" is turned on only in a single operation.

52C1	52C2	52C3	X61	X62	X63	X64
OFF	OFF	OFF	OFF	OFF	OFF	OFF
OFF	OFF	ON	OFF	OFF	ON	ON
OFF	ON	OFF	OFF	OFF	ON	ON
OFF	ON	ON	OFF	ON	OFF	OFF
ON	OFF	OFF	OFF	OFF	ON	ON
ON	OFF	ON	OFF	ON	OFF	OFF
ON	ON	OFF	OFF	ON	OFF	OFF
ON	ON	ON	ON	OFF	OFF	OFF

FAN RELAY / FAN SPEED / APPLIED VOLTAGE

FAN MOTOR RELAY	OUTDOOR FAN SPEED	APPLIED VOLTAGE TO FAN
X61 is ON	Hi	230V AC between WHT and BLK
X62 is ON	Me	230V AC between WHT and YLW
X63 is ON	Lo	230V AC between WHT and BLK(Only MF2)

OUTDOOR UNIT MUM30NN

OPERATING PROCEDURE	PHOTOS
1. Removing of the cabinet (1) Remove the set screws of the valve cover to remove the valve cover as shown in Photo 2. (2) Remove the set screws of the side panel to remove the side panel and cabinet. 	Photo 1  Photo 3
2. Removing the propeller (1) Remove the propeller nut. (2) Loosen the propeller in the rotating direction. (3) Pull the propeller forward. Note: ● To set the propeller, fit the cut on the shaft to the mark on the propeller.	Photo 4 

OPERATING PROCEDURE

3. Removing the outdoor fan motor.

- (1) Remove the cabinet. (Refer to 1)
- (2) Remove the propeller. (Refer to 2)
- (3) Disconnect the connector remove the clamp of outdoor fan motor lead wire.
- (4) Remove the screws fixing the outdoor fan motor.

PHOTOS

Photo 5

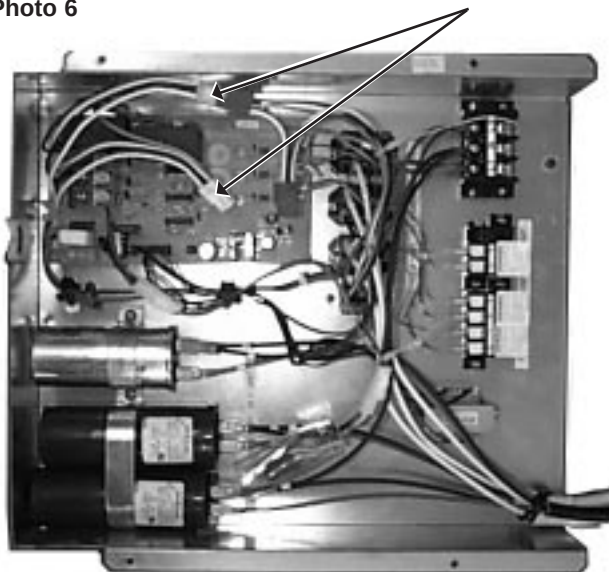
Set screws of the relay panel



Clamp

Photo 6

Connector



OPERATING PROCEDURE

4. Removing the compressor

- (1) Disconnect the cord connector. (See Phot 5)
- (2) Remove the set screws of the relay panel.
- (3) Remove the set nuts of the terminal cover.
- (4) Pull up the compressor.
- (5) Pull out the lead wires from the compressor terminal to remove overcurrent relay.
- (6) Remove set nuts of the compressor base.
- (7) Remove the low pressure side welded part and high pressure side welded part using a burner.

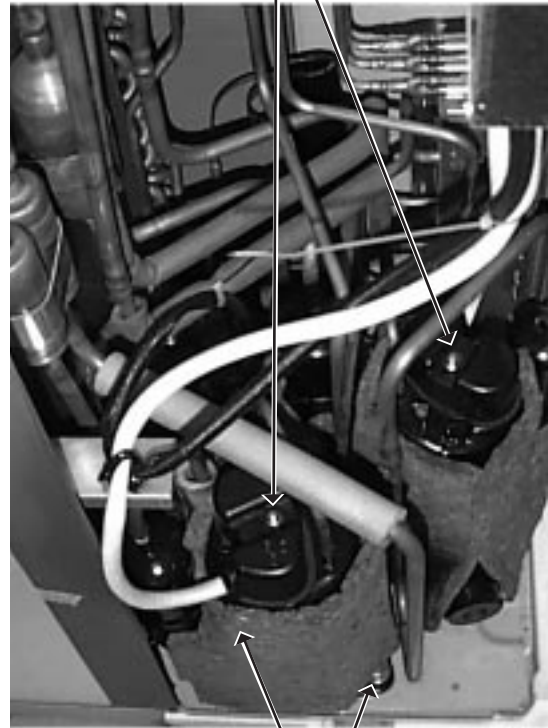
Note:

- Before using a welder, release gas inside the unit and make sure that the gauge pressure shows 0 kg/cm².
- During welding, open the charge plug because pressure rises due to expansion by heat

PHOTOS

Photo 7

Set nuts of the terminal cover

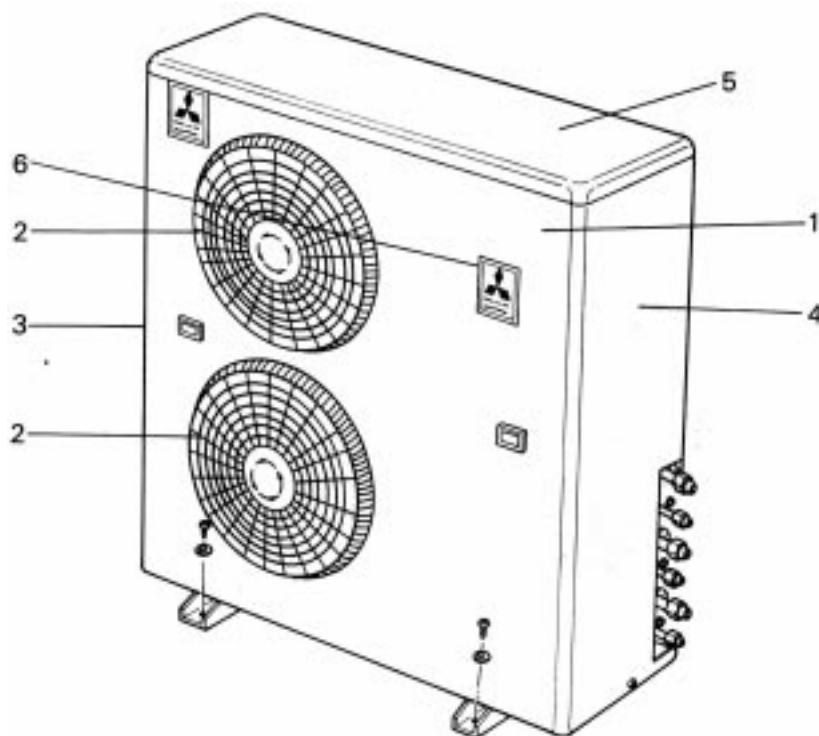


Nuts

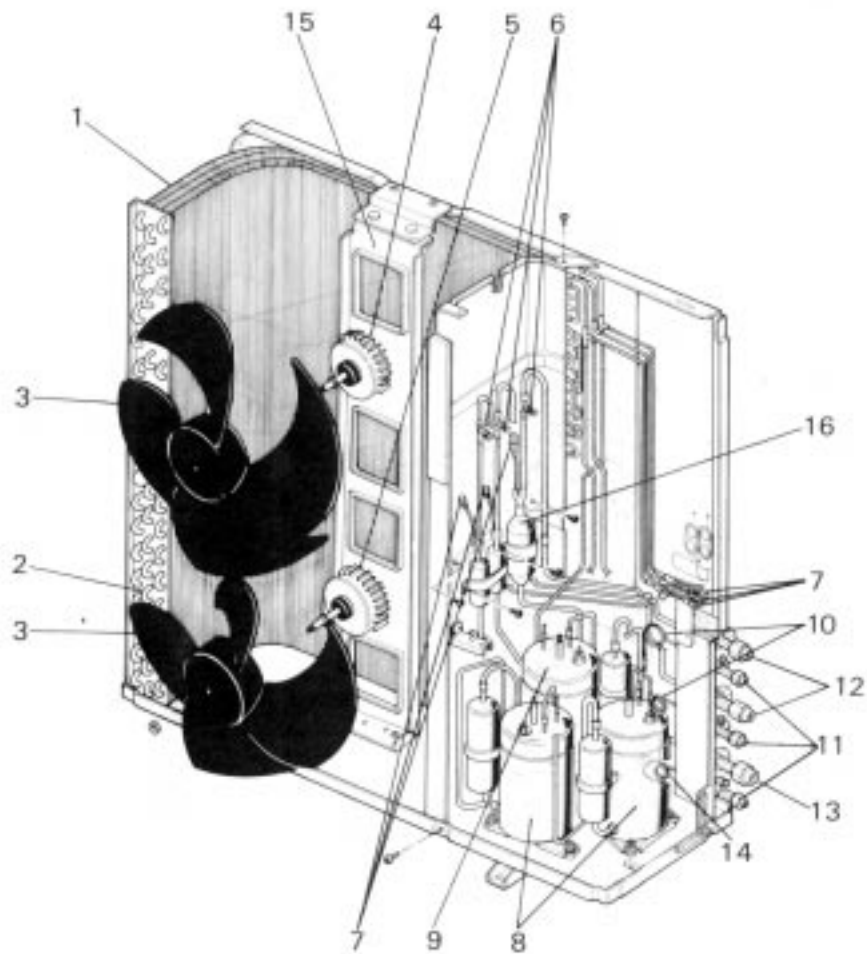
OUTDOOR UNIT PARTS

MUM30NN

Refer to MS09NW,MS15NN for indoor unit.

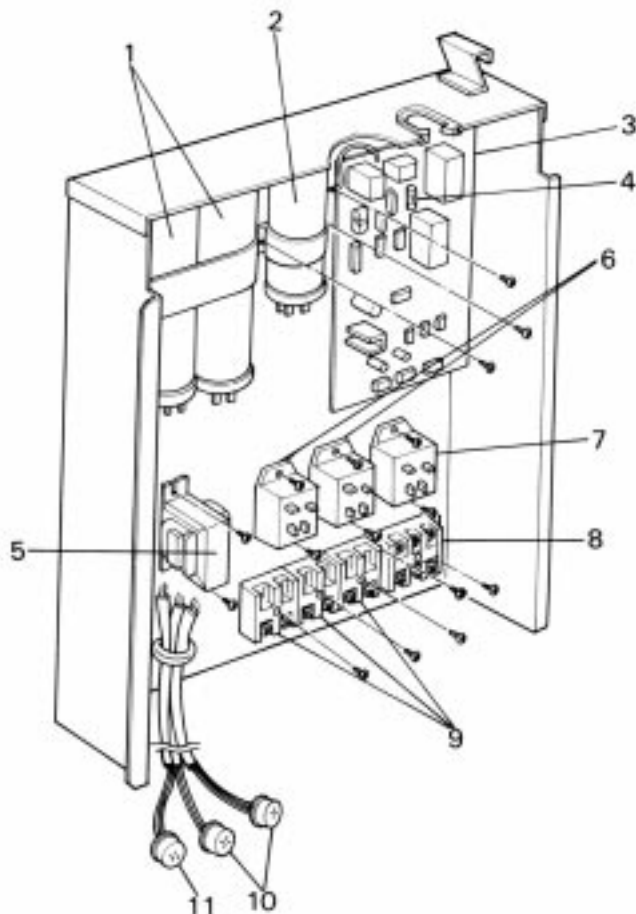


No.	Parts No.	Parts Name	Symbol in Skeleton Wiring Diagram	Q'ty/unit	Remarks
				MUM30NN	
1	R01 539 668	FRONT PANEL		1	See above NOTE.
2	T2W 510 509	OUTE NOZZLE		2	
3	R01 539 662	SIDE PANEL (L)		1	
4	T2W 800 662	SERVICE PANEL		1	
5	T2W E46 297	TOP PANEL		1	
6	T2W E46 001	LABEL		1	See above NOTE.



No.	Parts No.	Parts Name	Symbol in Skeleton Wiring Diagram	Q'ty/unit	Remarks
				MUM30NN	
1	T2W 800 630	HEAT EXCHANGER (UPPER)		1	
2	T2W 800 631	HEAT EXCHANGER (UPPER)		1	
3	R01 093 115	PROPELLER		2	
4	T2W 800 301	OUTDOOR FAN MOTOR (UPPER)	MF1	1	RA4N80-AC
5	T2W 800 302	OUTDOOR FAN MOTOR (LOWER)	MF2	1	RA4N55-AB
6	T2W 461 642	FUSIBLE PLUG		3	
7	M21 B90 641	CAHRGE PLUG		6	
8	T92 510 272	COMPRESSOR	MC1,MC2	2	KH-122WEV
9	T92 650 452	COMPRESSOR	MC3	1	RH-167NAB
→ 10	M21 463 936	VALVE (GAS) (for 09A, 09B)		2	$\phi 0.12 \times \phi 0.055 \times 25-9/16$
11	T2W 460 662	VALVE (LIQUID) (for 09A, 09B)		3	(1/4)
12	T2W 460 661	VALVE (GAS) (for 09A, 09B)		2	(3/8)
13	R01 L11 410	VALVE (GAS)		1	(1/2) 15C
→ 14	M21 987 936	CAPILLARY TUBE (for 15C)		1	$\phi 0.12 \times \phi 0.063 \times 15-3/4$
15	T2W 800 523	REAR PANEL		1	

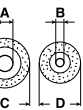
When servicing, cut the tube to the proper length as shown in the REFRIGERANT SYSTEM DIAGRAM see page 11.



No.	Parts No.	Parts Name	Symbol in Skeleton Wiring Diagram	Q'ty/unit	Remarks
				MUM30NN	
1	T2W 738 353	MC1. MC2. CAPACITOR	C1,C2	2	35 μ F 330V
2	T2W 500 353	MC3. CAPACITOR	C3	1	25 μ F 370V
3	T2W 800 451	OUTDOOR P. C. BOARD		1	
4	T2W 800 382	FUSE	F	1	2A 250V
5	T2W 800 339	TRANSFORMER	T	1	
6	T2W 382 342	MC1. MC2. CONTACTOR	52C1, 52C2	2	G4F-11123T
7	T2W 359 340	MC3 CONTACTOR	52C3	1	VF-12HU
8	T2W 800 375	TERMINAL BLOCK	TB1	1	
9	T2W E41 374	TERMINAL BLOCK	TB	1	UNIT 15C
10	T2W E42 375	TERMINAL BLOCK	TB	1	UNIT 09A.O9B
11	T2W 464 340	MC1. MC2. THERMAL SWTCH	51C1, 51C2	2	MRA98881
12	T2W 394 330	MC3 THERMAL SWITCH	51C3	1	MRA98921

1. REFRIGERANT PIPES

The air conditioner has flared connections its indoor and outdoor sides.
Please use the optional extension pipe as follows.

Model	Part No.	Pipe length	Pipe size O.D				Additional refrigerant charge R-22(Oz)
			Cross-section	A-Gas	B-Liquid	Insulation	
MS09NW	MAC - 440PI	10ft		3/8	1/4	C 13/16 D 1-1/16	0
	MAC - 441PI	16ft					
	MAC - 442PI	23ft					
	MAC - 443PI	33ft					
MS15NN	MAC - 670PI	10ft		5/8		C 1-7/32 D 1-1/16	0
	MAC - 671PI	16ft					
	MAC - 672PI	23ft					
	MAC - 673PI	33ft					
	MAC - 674PI	49ft					



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3400 Lawrenceville Suwanee Road • Suwanee, Georgia 30024
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Specifications are subject to change without notice.