



Project: Carver Food Enterprises Center Phase 2

Architect: Sanders Architecture

Submittal Number: 27-R1

Submittal Title: VRF Equipment Split System

Specification Section: 150160

Date: 9/25/26

Submittal Prepared By: Eldon Sonifrank

Notes:

This submittal was reviewed for design conformity and general conformance to the contract documents. The subcontractor is responsible for confirming and correlating dimensions at the job site for tolerance, clearance, quantities, fabrication, processes and techniques of construction, coordination of his work with other trades and full compliance with the contract documents.

This submittal has been reviewed for compliance with requirements of work and of Contract Documents. This review does not relieve the sub-contractor/supplier of their responsibility to comply with the contract documents. The sub/supplier is responsible for details and accuracy for confirming and correlating all quantities, dimensions and clearances. The sub/supplier shall call to the attention of the General Contractor all items or conditions which have been omitted in this review.

Reviewed by: Eldon Sonifrank

Date: 09/25/2026





Submittal

26007 — Carver Food Enterprise Center PH II

Subject : Split System Heat Pumps

To Eldon Sonifrank
Lantz Construction Company
539 South Main Street
Broadway, VA 22815
Mobile: 540-830-2672
esonifrank@lantzcc.com

Number : 238143-01R1
Spec Section No : 238143
Submittal Rev No: 1
Submittal Number: 238143-01R1
Date Sent : 9/21/2026
Type : Submittal Revision
Method Sent : Email
Reason For Sending : For Approval
Status : Pending

Return To Mary Rose Rubin
ACME Mechanical Contractors of
VA
Mobile: 703-898-4947
mrubin@acmemechanical.com

Copy To

Details

none

Notes

Please return submitted items by 10/5/2026.

Signed By: _____

Dated: 9/21/2026

[illegible]

Reviewed By: Roger Stoner



TRANE®

Submittal

Prepared For:
MEI Engineering, Inc

Date: September 17th, 2026

Sold To:
ACME MECHANICAL CONTRACTORS

Job Name:
George Washington Carver Agricultural Research Center

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

2 Multi Zone Heat Pump Split Systems

Coordination Notes:

-Please see clarification notes on next page

Steve Sawa
Trane U.S. Inc.
30 West Watkins Mill Road
Gaithersburg, MD 20878
Office Phone: (240) 306-3213

The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.

Tag Data - Multi Zone Heat Pump Split Systems (Qty: 2)

Item	Tag(s)	Qty
A1	OHP-1, OHP-2	2

Product Data - Multi Zone Heat Pump Split Systems

Qty (8) TAR-43MAAUB Wired Programmable Thermostat

Qty (6) CMY-Y62-G-E Joint Pipe Tee Adapters

OHP-1 System:

Qty (1) MXZ-SM48NL Heat Pump CU

Qty (4) PKFY-L12NLMU-A High Wall IDU

Qty (4) COMBI Condensate Pump (Field Installed)

OHP-2 System:

Qty (1) MXZ-SM36NL-U1 Heat Pump CU

Qty (3) PLFY-L08NFMU-A 4way Cassette IDU

Qty (1) PLFY-L18NFMU-A 4way Cassette IDU

Qty (4) SLP-18FAU 4way Cassette Decoration Panel

Clarifications and Exclusions:

-Indoor units require separate power circuits each.

-4-way cassette style indoor units have built in condensate pump. High wall units provided with loose condensate pump for field installation by contractor.

-Disconnect switch not provided.

-Refrigerant / refrigerant piping not provided.

-Outdoor unit mounting pad / rails / vibration isolation not provided.

-Start up or labor warranty is not provided.

Equipment Bill Of Material

Quantities

Qty	Model	Description	Tag
8	TAR-43MAAUB	MA remote controller	CTR1-FCU-1D,CTR2-FCU-1C,CTR3-FCU-1B,CTR4-FCU-1A,CTR1-FCU-2D,CTR2-FCU-2C,CTR3-FCU-2B,CTR4-FCU-2A
1	MXZ-SM48NL	R454B MXZSM Series Outdoor Unit	OHP-1
1	MXZ-SM36NL	R454B MXZSM Series Outdoor Unit	OHP-2
4	PKFY-L12NLMU-A	Wall -Mounted Indoor Unit	FCU-1D,FCU-1C,FCU-1B,FCU-1A
3	PLFY-L08NFMU-A	Ceiling-Cassette (Four-Way) Indoor Unit	FCU-2D,FCU-2C,FCU-2A
1	PLFY-L18NFMU-A	Ceiling-Cassette (Four-Way) Indoor Unit	FCU-2B
6	CMY-Y62-G-E	Branch Joint	
4	COMBI	Condensate Pump	FCU-1D,FCU-1C,FCU-1B,FCU-1A
4	SLP-18FAU	Decoration Panel	FCU-2D,FCU-2C,FCU-2B,FCU-2A

Equipment Schedules

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF OUTDOOR UNIT SCHEDULE

System Tag	Tag Reference	M-NET Address	Model Number	Modules	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Design Cooling Outdoor Temp DB (°F)	Design Heating Outdoor Temp WB (°F)	Altitude (feet)	Corrected Cooling Total Capacity (BTU/h)	Corrected Heating Capacity (BTU/h)	Electrical-Per Module				Notes / Options
												208/230 or [460V]				
												Voltage / Phase	MCA 208/230 or [460V]	RFS	MOCP	
OHP-1	OHP-1	51	MXZ-SM48NL	P48	48,000	50,000	95.0	43.0	0.0	43,927.3	48,830.0	208/230V / 1-phase	36	30	64	1, 2, 3, 5, 6
OHP-2	OHP-2	55	MXZ-SM36NL	P36	36,000	41,000	95.0	43.0	0.0	35,887.7	41,187.4	208/230V / 1-phase	36	30	64	1, 2, 3, 5, 6

Notes & Options:

- 1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
- 2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
- 3 Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.
- 4 Efficiency values for EER2, SEER2, COP are based on AHRI 210/240 test method for mixture of ducted & non-ducted indoor units.
- 5 For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning.
- 6 Added field charge listed is in addition to factory charge, this must be updated based upon final as-built piping layout.

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

System Tag	Room Name	Tag Reference	Model	Type	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	Altitude (feet)	Corrected Capacity				Refrig Pipe Dim Liquid/Suction (inch)	Fan Speed Setting	Peak Fan Airflow (cfm) / [Design gpm G(US)/min]	Max Fan ESP Setting 208V/230V (IN WG)	Voltage / Phase	Electrical MCA/MFS	Notes / Options	
										Cooling Diversity Full/Partial (See Note 5, 6)	Cooling Total Capacity (BTU/h)	Cooling Sensible Capacity (BTU/h)	Heating Diversity Full/Partial (See Note 5, 6)								Heating Capacity (BTU/h)
OHP-1		FCU-1D	PKFY-L12NLMU-A	Wall -Mounted	12,000	13,500	80.0/67.0	70	0.0	FULL DEMAND	10,981.8	7,664.2	FULL DEMAND	12,207.5	1/4 / 1/2	HIGH	297		208/230V/1-phase	0.24/0.24/15	1, 2, 3, 4
OHP-1		FCU-1C	PKFY-L12NLMU-A	Wall -Mounted	12,000	13,500	80.0/67.0	70	0.0	FULL DEMAND	10,981.8	7,664.2	FULL DEMAND	12,207.5	1/4 / 1/2	HIGH	297		208/230V/1-phase	0.24/0.24/15	1, 2, 3, 4
OHP-1		FCU-1B	PKFY-L12NLMU-A	Wall -Mounted	12,000	13,500	80.0/67.0	70	0.0	FULL DEMAND	10,981.8	7,664.2	FULL DEMAND	12,207.5	1/4 / 1/2	HIGH	297		208/230V/1-phase	0.24/0.24/15	1, 2, 3, 4
OHP-1		FCU-1A	PKFY-L12NLMU-A	Wall -Mounted	12,000	13,500	80.0/67.0	70	0.0	FULL DEMAND	10,981.8	7,664.2	FULL DEMAND	12,207.5	1/4 / 1/2	HIGH	297		208/230V/1-phase	0.24/0.24/15	1, 2, 3, 4
OHP-2		FCU-2D	PLFY-L08NFMU-A	Ceiling-Cassette (Four-Way)	8,000	9,000	80.0/67.0	70	0.0	FULL DEMAND	6,835.7	5,770.3	FULL DEMAND	7,886.9	1/4 / 1/2	HIGH	315		208/230V/1-phase	0.36/0.36/15	1, 2, 3, 4
OHP-2		FCU-2C	PLFY-L08NFMU-A	Ceiling-Cassette (Four-Way)	8,000	9,000	80.0/67.0	70	0.0	FULL DEMAND	6,835.7	5,770.3	FULL DEMAND	7,886.9	1/4 / 1/2	HIGH	315		208/230V/1-phase	0.36/0.36/15	1, 2, 3, 4
OHP-2		FCU-2B	PLFY-L18NFMU-A	Ceiling-Cassette (Four-Way)	18,000	20,000	80.0/67.0	70	0.0	FULL DEMAND	15,380.4	10,798.8	FULL DEMAND	17,526.5	1/4 / 1/2	HIGH	460		208/230V/1-phase	0.36/0.36/15	1, 2, 3, 4
OHP-2		FCU-2A	PLFY-L08NFMU-A	Ceiling-Cassette (Four-Way)	8,000	9,000	80.0/67.0	70	0.0	FULL DEMAND	6,835.7	5,770.3	FULL DEMAND	7,886.9	1/4 / 1/2	HIGH	315		208/230V/1-phase	0.36/0.36/15	1, 2, 3, 4

Notes & Options:

- 1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
- 2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
- 3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
- 4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices.
- 5 Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system.
Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply.
It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
- 6 It is recommended to always base heating corrected capacity on full demand.

Design View Piping Diagrams

Connection Summary

Indoor Units:

4 / 1 to 12

Capacity:

48 / 24 to 62 (100.0%)

* Connectable capacity is not actual capacity.

Total Pipe Length:

168/787

feet

Furthest Actual:

118/262

feet

Furthest Equiv.:

127.8/262

feet

After 1st Branch Actual:

78/98

feet

After 1st Branch Equiv.:

82.9/98

feet

Refrigerant

System Refrigerant:

R454B

Additional Field-Charge:

15.24 lbs

Total System Charge:

17.89 lbs

Min. Required Floor Area:

96.9 ft²

Max System Charge:

31.75 lbs

Correction Factors

Cooling

Heating

Outdoor Unit Capacity:

1.00

1.00

Outdoor Temperature:

1.00

1.00

Piping Length:

0.91

0.98

Defrosting:

-

1.00

User Derate:

1.00

1.00

Outdoor Altitude:

1.00

1.00

(0.0 ft)

0.92

0.98

Conditions

Cooling

Heating

Indoor Dry Bulb

80.0 °F

Indoor Dry Bulb

70.0 °F

Indoor Wet Bulb

67.0 °F

Indoor Humidity

51.8 %

Outdoor Dry Bulb

47.0 °F

Outdoor Wet Bulb

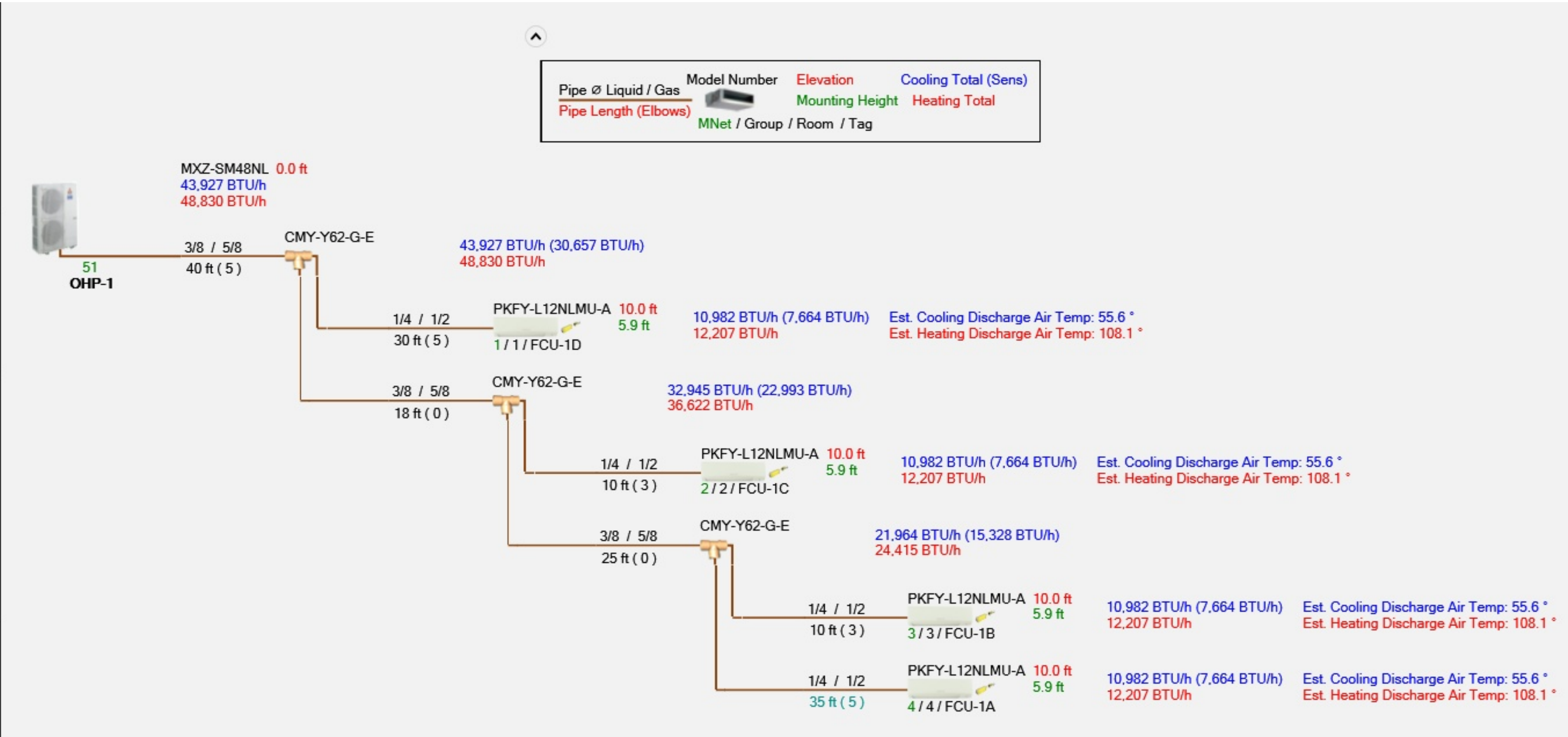
43.0 °F

Outdoor Dry Bulb

95.0 °F

Outdoor Humidity

72.8 %



Connection Summary

Indoor Units:

4 / 1 to 11

Capacity:

42 / 18 to 46 (116.7%)

* Connectable capacity is not actual capacity.

Total Pipe Length:

83/787

feet

Furthest Actual:

63/262

feet

Furthest Equiv.:

72.8/262

feet

After 1st Branch Actual:

38/98

feet

After 1st Branch Equiv.:

42.9/98

feet

Refrigerant

System Refrigerant:

R454B

Additional Field-Charge:

13.28 lbs

Total System Charge:

15.93 lbs

Min. Required Floor Area:

96.9 ft²

Max System Charge:

31.75 lbs

Correction Factors

Cooling

Heating

Outdoor Unit Capacity:

1.03

1.02

Outdoor Temperature:

1.00

1.00

Piping Length:

0.96

0.99

Defrosting:

-

1.00

User Derate:

1.00

1.00

Outdoor Altitude:

1.00

1.00

(0.0 ft)

1.00

1.00

Conditions

Cooling

Heating

Indoor Dry Bulb

80.0 °F

Indoor Dry Bulb

70.0 °F

Indoor Wet Bulb

67.0 °F

Indoor Humidity

51.8 %

Outdoor Dry Bulb

47.0 °F

Outdoor Wet Bulb

43.0 °F

Outdoor Dry Bulb

95.0 °F

Outdoor Humidity

72.8 %

MXZ-SM36NL

0.0 ft

35,888 BTU/h

41,187 BTU/h

55

OHP-2

3/8 / 5/8

25 ft (5)

CMY-Y62-G-E

35,888 BTU/h (28,110 BTU/h)

41,187 BTU/h

1/4 / 1/2

5 ft (2)

PLFY-L08NFMU-A

10.0 ft

8.2 ft

5 / 5 / FCU-2D

6,836 BTU/h (5,770 BTU/h)

7,887 BTU/h

Est. Cooling Discharge Air Temp: 62.7 °

Est. Heating Discharge Air Temp: 93.2 °

3/8 / 5/8

8 ft (0)

CMY-Y62-G-E

29,052 BTU/h (22,339 BTU/h)

33,300 BTU/h

1/4 / 1/2

10 ft (2)

PLFY-L08NFMU-A

10.0 ft

8.2 ft

6 / 6 / FCU-2C

6,836 BTU/h (5,770 BTU/h)

7,887 BTU/h

Est. Cooling Discharge Air Temp: 62.7 °

Est. Heating Discharge Air Temp: 93.2 °

3/8 / 5/8

15 ft (2)

CMY-Y62-G-E

22,216 BTU/h (16,569 BTU/h)

25,413 BTU/h

1/4 / 1/2

5 ft (2)

PLFY-L18NFMU-A

10.0 ft

8.2 ft

7 / 7 / FCU-2B

15,380 BTU/h (10,799 BTU/h)

17,527 BTU/h

Est. Cooling Discharge Air Temp: 57.8 °

Est. Heating Discharge Air Temp: 105.3 °

1/4 / 1/2

15 ft (3)

PLFY-L08NFMU-A

10.0 ft

8.2 ft

8 / 8 / FCU-2A

6,836 BTU/h (5,770 BTU/h)

7,887 BTU/h

Est. Cooling Discharge Air Temp: 62.7 °

Est. Heating Discharge Air Temp: 93.2 °

Page 7 of 36

AutoCAD Piping & Wiring Diagrams

DIAGRAM SYMBOL LEGEND		CONT.No		PAGE	
DISPLAY	DESCRIPTION				
—##—	POWER WIRE				
—	CONTROL WIRE				
—	REF. PIPE				

CITY MULTI

SYSTEM SCHEMATIC DWG.

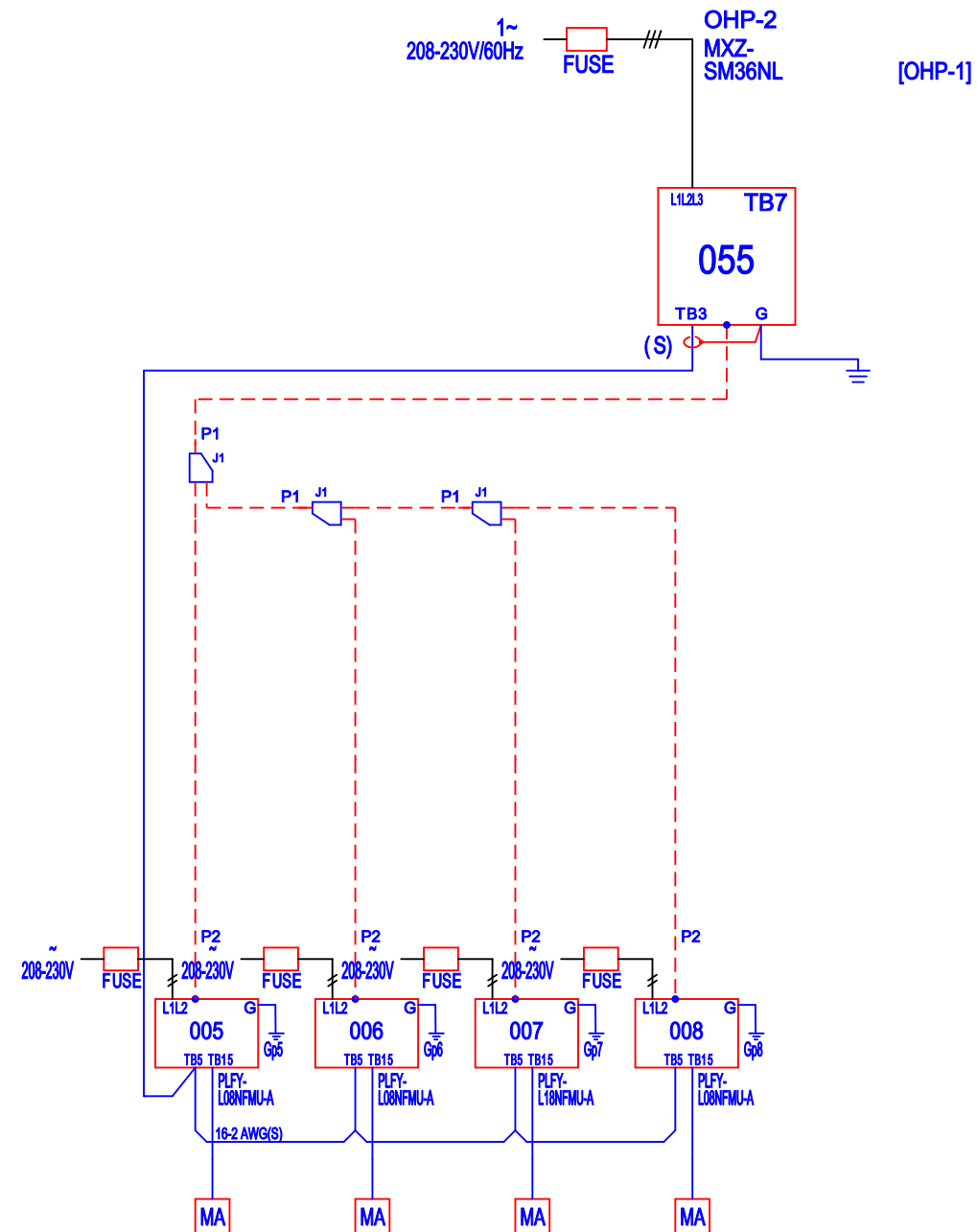
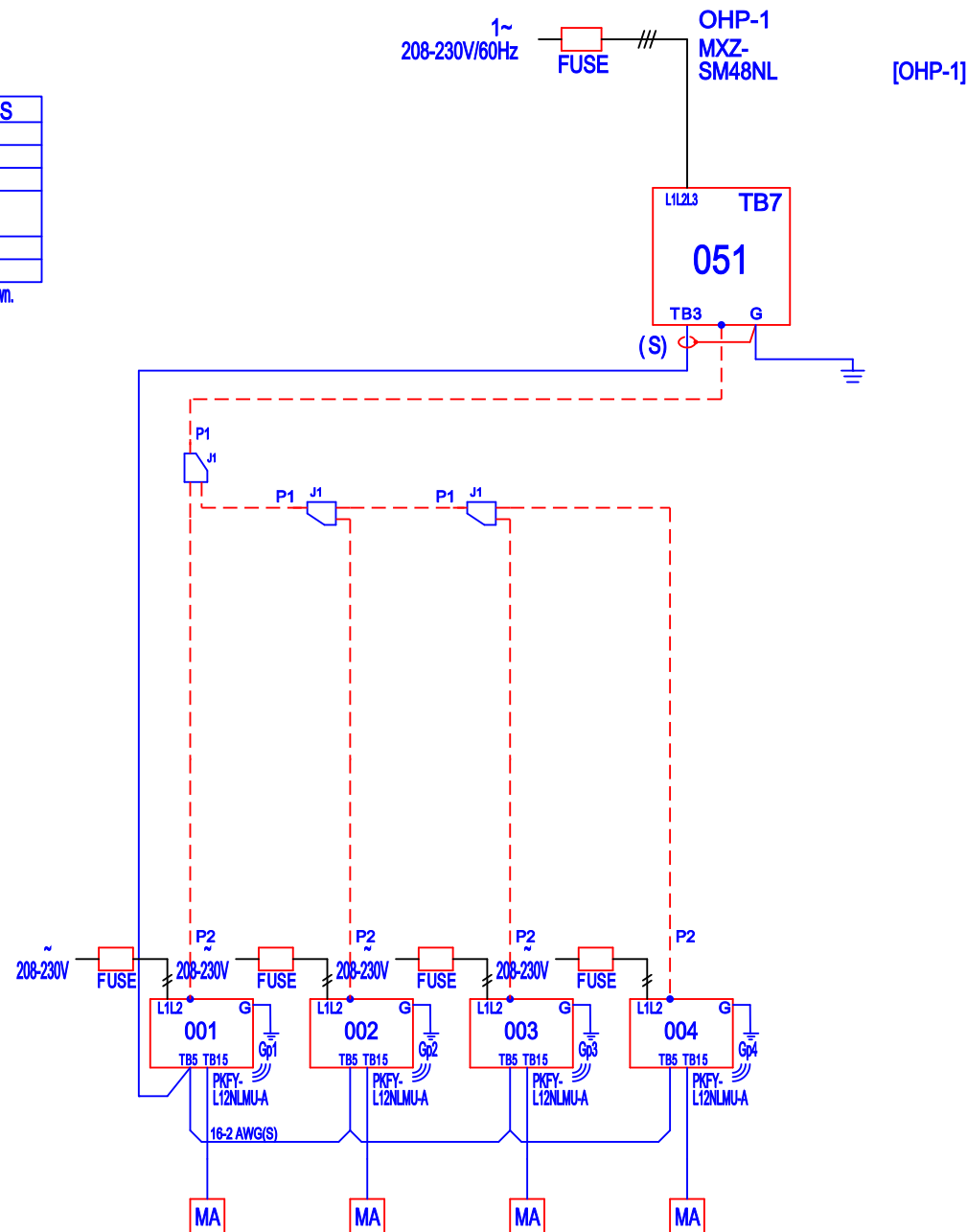
This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

PIPING AND CONTROLS	
SYMBOL BRANCH PIPE MODEL NAME	
J1	CMY-Y62-G-E
SYMBOL LIQUID PIPE/GAS PIPE SIZE	
P1	3/8 / 5/8
P2	1/4 / 1/2
SYMBOL MODEL NUMBER	
MA	TAR-43MAAUB

- Factory installed controllers are not drawn.



Diamond System Builder

sw: 5.14.0.37
db: 5.14.0.17

09/17/2026
12:55 PM

REMARKS

Originator: Sarah Brewster
Comments:

MXZ-SM48NL

48,000 BTU/H HEAT PUMP OUTDOOR UNIT



Job Name:

System Reference:

Date:

OHP-1



GENERAL FEATURES

- Compatible with M- and P-Series and CITY MULTI® indoor units (branch box required for connection with M- and P-Series)
- Compressor overcurrent detection
- Compressor thermal protection
- Fan motor overheating/voltage protection
- High pressure protection
- INVERTER-driven compressor: Compressor generates the precise capacity needed to maintain a temperature set point.
- Quiet operation: Outdoor units are as quiet as a typical conversation, and most indoor units are whisper quiet.
- Seacoast protection: Seacoast protection on heat exchanger and base panel (rated for 2,000 hrs. in accordance with ASTM B117 testing)
- Thermal Differential 1°F

Specifications			System
Unit Type			MXZ-SM48NL
Cooling at 95F ¹ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	48,000 // 48,000 // 48,000
	Rated Capacity	Btu/h	48,000 // 48,000 // 48,000
	Minimum Capacity	Btu/h	15,000 // 15,000 // 15,000
	Maximum Power Input	W	4,000 // 4,710 // 5,715
	Rated Power Input	W	4,000 // 4,710 // 5,715
	Power Factor (208V)	%	98.60 // 98.60 // 98.60
	Power Factor (230V)	%	98.60 // 98.60 // 98.60
Heating at 47F ² (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	50,000 // 50,000 // 50,000
	Rated Capacity	Btu/h	50,000 // 50,000 // 50,000
	Minimum Capacity	Btu/h	13,000 // 13,000 // 13,000
	Maximum Power Input	W	3,665 // 4,140 // 4,730
	Rated Power Input	W	3,665 // 4,140 // 4,730
	Power Factor (208V)	%	98.60 // 98.60 // 98.60
	Power Factor (230V)	%	98.60 // 98.60 // 98.60
Heating at 17F ³ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	43,000 // 43,000 // 43,000
	Rated Capacity	Btu/h	31,400 // 32,400 // 33,400
	Maximum Power Input	W	6,305 // 6,705 // 7,160
	Rated Power Input	W	3,410 // 3,740 // 4,080
Heating at 5F ⁴ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	35,400 // 35,400 // 35,400
	Maximum Power Input	W	4,940 // 5,140 // 5,295
Heating at -13F ⁵ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	22,800 // 22,800 // 22,800
	Maximum Power Input	W	4,455 // 4,455 // 4,455
Efficiency (Non-Ducted // Mixed // Ducted)	SEER ² ¹		23 // 20 // 17
	EER ² ¹		12 // 10.20 // 8.40
	HSPF ² (IV) ²		10.40 // 9.95 // 9.50
	COP at 47°F ²		4 // 3.55 // 3.10
	COP at 17°F at Maximum Capacity ³		2 // 1.88 // 1.76
	COP at 5°F at Maximum Capacity ⁴		2.10 // 2.02 // 1.96
	ENERGY STAR® Certified		Yes // No // No

NOTES

¹Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)

²Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)

³Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)

⁴Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)

⁵Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)

• Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.

• A Maximum connected units reduced when PLA connected. Refer to manual for details

• B Branch box should be placed within the level between the outdoor unit and indoor units

• C 5°F DB - 115°F DB when optional wind baffles are installed

For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.

Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.

Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):

• System cuts out in heating mode and automatically restarts at these temperatures.

SPECIFICATIONS: MXZ-SM48NL

Specifications			System
Unit Type			MXZ-SM48NL
Electrical	Electrical Power Requirements	V AC / V AC, , Hz	208 / 230, 1, 60
	Guaranteed Voltage Range	V AC	198 - 253
	Voltage: Indoor - Outdoor, S1-S2	V AC	230
	Short-circuit Current Rating (SCCR)	kA	5
	Recommended Fuse/Breaker Size if Branch Box Powered by Outdoor Unit	A	40
	Recommended Fuse/Breaker Size without Branch Box or Branch Box Powered Separate	A	30
	MCA if Branch Box Powered by Outdoor Unit	A	42
	MOCP if Branch Box Powered by Outdoor Unit	A	70
	MCA without Branch Box or Branch Box Powered Separate	A	36
	MOCP without Branch Box or Branch Box Powered Separate	A	64
Outdoor Unit	Fan Motor Output	W	70+70
	Defrost Method		Reverse Cycle
	Blue Fin Heat Exchanger Coating		Yes
	Sound Pressure Level, Cooling ¹	dB (A)	51
	Sound Pressure Level, Heating ²	dB (A)	54
	Compressor Type		Twin Rotary
	Compressor Model		MRB36FEGMC-L
	Compressor Motor Output	kW	3.4
	Compressor Oil Type // Charge	Type // oz	RM68EH // 78
	External Finish Color		Munsell 3Y 7.8/1.1
	Base Pan Heater		Optional
	Unit Dimensions (W x D x H)	inch [mm] inch [mm] inch [mm]	41-11/32 [1,050] 13 [330] 52-11/16 [1,338]
	Package Dimensions (W x D x H)	inch [mm] inch [mm] inch [mm]	43 [1,090] 18 [450] 58-5/16 [1,480]
	Unit Weight	lbs [kg]	250 [113]
	Package Weight	lbs [kg]	276 [125]
ODU Operating Temp. Range	Cooling Intake Air Temp (Maximum / Minimum ^c)	°FDB	115 / 23
	Cooling Thermal Lock-out / Re-start Temperatures	°FDB	N/A / N/A
	Heating Intake Air Temp (Maximum / Minimum)	°FDB	70 / -13
	Heating Thermal Lock-out / Re-start Temperatures**	°FDB	-24 / -14
Refrigerant	Type		R454B
	Pre-Charged Refrigerant Amount	lbs, oz	2, 11
IDU Connection	Maximum Number of Connected IDU with Branch Box ^A		8
	Maximum Number of Connected IDU without Branch Box		12
	Minimum Connected Capacity with Branch Box	Btu/h	12,000
	Minimum Connected Capacity without Branch Box	Btu/h	24,000
	Maximum connected capacity	Btu/h	62,400
Piping	Liquid Pipe Size O.D. (Flared)	inch [mm]	3/8 [9.52]
	Gas Pipe Size O.D. (Flared)	inch [mm]	5/8 [15.88]
	Total Piping Length when using Branch Box	ft [m]	492 [150]
	Total Piping Length without Branch Box	ft [m]	787 [240]
	Maximum Height Difference ^B , ODU above IDU	ft [m]	164 [50]
	Maximum Height Difference ^B , ODU below IDU	ft [m]	131 [40]
	Maximum Height Difference ^B , between branch boxes	ft [m]	39 [12]
	Maximum Height Difference between IDU and IDU without branch box	ft [m]	49 [15]
	Maximum Piping Length between ODU and Branch Box	ft [m]	180 [55]
	Farthest Piping Length from ODU to IDU with Branch Box	ft [m]	262 [80]
	Farthest Piping Length from ODU to IDU without Branch Box	ft [m]	262 [80]
	Farthest Piping Length after Branch Box	ft [m]	82 [25]
	Total Piping Length between Branch Boxes and IDU	ft [m]	312 [95]
	Maximum Number of Bends for IDU		15

NOTES

¹Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)

²Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)

³Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)

⁴Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)

⁵Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)

• Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.

• A Maximum connected units reduced when PLA connected. Refer to manual for details

• B Branch box should be placed within the level between the outdoor unit and indoor units

• C 5°F DB - 115°F DB when optional wind baffles are installed

For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.

Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.

Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):

• System cuts out in heating mode and automatically restarts at these temperatures.

OUTDOOR UNIT ACCESSORIES: MXZ-SM48NL

Hail Guards	Hail Guard	HG-A2
Snow/Rain Diverter	SnowRain Diverter	SRD-5
Ball Valve	Refrigeration Ball Valve - 1/2	BV12FFSI2
	Refrigeration Ball Valve - 1/4	BV14FFSI2
	Refrigeration Ball Valve - 3/8	BV38FFSI2
	Refrigeration Ball Valve - 5/8	BV58FFSI2
Mini-Split Wire	14 Gauge 4 wire Armored MiniSplit Cable250 ft roll	SW144-250
	14 Gauge 4 wire Armored MiniSplit Cable50 ft roll	SW144-50
	14 Gauge 4 wire MiniSplit Cable250 ft roll	S144-250
	14 Gauge 4 wire MiniSplit Cable50 ft roll	S144-50
	16 Gauge 4 wire Armored MiniSplit Cable250 ft roll	SW164-250
	16 Gauge 4 wire Armored MiniSplit Cable50 ft roll	SW164-50
	16 Gauge 4 wire MiniSplit Cable250 ft roll	S164-250
Control Wire	M-Net Control Wire 1000 Roll 16-AWG Standard Twisted Pair Shielded Jacketed- Plenum rated	CW162S-1000
	M-Net Control Wire 250 Roll 16-AWG Standard Twisted Pair Shielded Jacketed- Plenum rated	CW162S-250
Port Adaptor	Adaptor 1/4 x 3/8	PAC-SJ87RJ-E
	Adaptor 12 x 38	PAC-SK88RJ-E
	Adaptor 12 x 58	PAC-SK89RJ-E
	Adaptor 38 x 12	ADP3812
	Adaptor 38 x 58	PAC-SK90RJ-E
Stand	18 Dual Fan Stand	QSMS1802M
	24 Dual Fan Stand	QSMS2402M
	Condenser Wall Bracket	QSWB2000M-1
	Condenser Wall Bracket - Stainless Steel Finish	QSWBSS
	Outdoor Unit 3-14 inch Mounting Base Pair - Plastic	DSD-400P
	Outdoor Unit Stand 12 High	QSMS1202M
Wind Baffle	Front Wind Baffle	WB-PA3 (two pieces are required)
Branch Box	3 Port Branch Box	PAC-LMA30BC
	5 Port Branch Box	PAC-LMA50BC
	Branch Box Enclosure	BBE-1
Power Supplies & Auxiliary Components	3-Pin Wiring Harness	PAC-715AD
	5-Pin Wiring Harness	PAC-725AD
Control/Service Tool	Maintenance Tool Interface	PAC-USCMS-MN-1
Drain Socket	Drain Socket	PAC-SG60DS-E
Centralized Drain Pan	Centralized Drain Pan	PAC-SH97DP-E
Optional Defrost Heater	Optional Defrost Heater	PAC-SJ20BH-E
Mounting Pad	Condensing Unit Mounting Pad 24 x 42 x 3	ULTRILITE2
Distribution pipe	Brazed Connection	MSDD-50BR-E
	Flare Connection	MSDD-50AR2-E
Air Deflector	Vertical Air Deflector	ADV-1
Alarm Kit	Alarm Kit	PAC-SL54AL-E
	Alarm Kit Interface	PAC-IF55AL-E
Air Outlet Guide	Air Outlet Guide 1 Piece	PAC-SH96SG-E (two pieces are required)
NOTES		

METUS 2025-02 PROPIN

Submittal Documents

FCU-1A, 1B, 1C, 1D

CITY MULTI™

PKFY-L12NLMU-A
12,000 BTU/H WALL-MOUNTED INDOOR UNIT



Job Name:

System Reference:

Date:



GENERAL FEATURES

- Swing Mode: An indoor unit with this capability can move air throughout the room like an oscillating fan.
- Quiet: Our indoor units offer whisper-quiet operation as low as 19 dB(A). Our outdoor units are design for ultra quiet operation.
- Horizontal Vane Control: Horizontal Vane Control allows the indoor unit vanes to be moved left right to provide even temperatures throughout a space.
- Four Speed Fan: Adjust the fan between four speed settings to optimal comfort.
- Dual Set Point: The controller can be used to program two different set points. The unit will automatically adjust between the set points for optimum comfort.

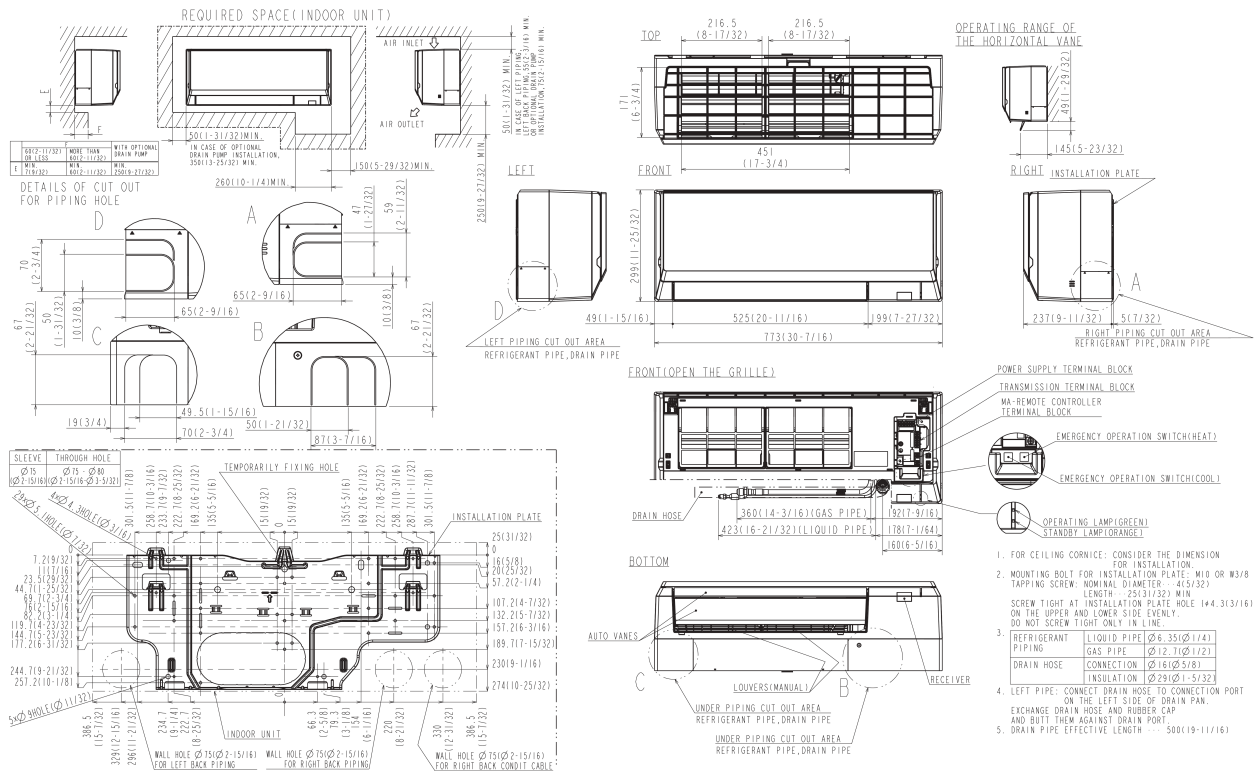
SPECIFICATIONS			SYSTEM
UNIT TYPE			PKFY-L12NLMU-A
Cooling Capacity (Nominal) ¹	Cooling Capacity (Nominal)	Btu/h	12000
Heating Capacity (Nominal) ¹	Heating Capacity (Nominal)	Btu/h	13500
Electrical	Voltage, Phase, Frequency	V AC / V AC , ø , Hz	208 / 230 , 1 , 60
	Power Consumption Cooling		0.04
	Power Consumption Heating		0.03
	Current Cooling		0.35
	Current Heating		0.3
	MCA	A	0.24
	MOCP	A	15
Indoor Unit	External Finish Color		MUNSELL (0.7PB 9.2/0.4)
	Unit Dimensions (W x D x H)	inch x inch x inch [mm x mm x mm]	30-7/16 x 9-11/32 x 11-25/32 [773 x 237 x 299]
	Unit Weight	lbs [kg]	24.5 [11.10]
	Heat Exchanger		Cross fin (Aluminum fin and Copper Tube)
	Dual Barrier Coating on HEX		No
	Dual Barrier Coating on Fan		No
Refrigerant	Type		R454B
Fan	Motor Type		DC Motor
	Motor Output	W	30
	Airflow Rate	CFM	152 , 191 , 244 , 297
Sound Pressure Level (Measured in anechoic room)	Cooling	dB (A)	24 , 31 , 37 , 41
	Heating	dB (A)	24 , 31 , 37 , 41
Piping	Liquid Pipe Size O.D.	inch [mm]	1/4 [6.35]
	Gas Pipe Size O.D.	inch [mm]	1/2 [12.72]
Notes			
¹ Cooling (Indoor // Outdoor) °F 80 DB, 67 WB // 95 DB, 75 WB - test			
² Heating at 47°F (Indoor // Outdoor) °F 70 DB, 60 WB // 47 DB, 43 WB			
³ Nominal capacity only. Actual capacity output varies based on the system specific configuration			
¹ Cooling / Heating capacity indicated at operation under the following conditions: Cooling Indoor: 81° F (27° C) DB / 68° F (19° C) WB; Outdoor 95° F (35° C) DB Heating Indoor: 68° F (20° C) DB; Outdoor 45° F (7° C) DB / 43° F (6° C) WB			

INDOOR UNIT ACCESSORIES: PKFY-L12NLMU-A

Condensate	Blue Diamond MegaBlue Condensate Pump with Reservoir Sensor 115-230V up to 170k BTU/h	☐ X87-835
	Blue Diamond Sensor Extension Cable 15 Ft	☐ C13-103
	Blue Diamond (MaxiBlue Advanced) Mini Condensate Pump w/ Reservoir & Sensor (110V) up to 48,000 BTU/H [recommended]	☐ X87-711
	Drain Pan Level Sensor/Control	☐ SS610E
	Sauermann Condensate Pump 120-230V up to 60k BTU/h	☐ SI30-230
	Blue Diamond MultiTank collection tank for use with MegaBlue	☐ C21-014
	Blue Diamond MicroBlue Condensate Pump with Fascia Kit 115-230V up to 18k BTU/h	☐ X86-011
	Refco Condensate Pump 100-240V up to 120k BTU/h	☐ COMBI
	Refco Condensate Removal Pump with Wall Mount Enclosure 120-240V up to 120k BTU/h	☐ GOBI-II
	Blue Diamond MaxiBlue Condensate Pump with Reservoir Sensor 115-230V up to 48k BTU/h	☐ X88-721
Control Interface	Thermostat Interface for 3rd Party Thermostats	☐ PAC-US445CN-1
	Airzone Wireless Lite Controller Black	☐ AZZBSLITERN
	Airzone Wired Blueface Controller Black	☐ AZZBSBLUEZEROCN
	Airzone Wireless Lite Controller White	☐ AZZBSLITERB
	kumo station® for Comfort app	☐ PAC-WHS01HC-E
	Airzone Wired Blueface Controller White	☐ AZZBSBLUEZEROCB
	Procon BACnet® and Modbus® Interface	☐ PAC-UKPRC001-CN-1
	Airzone Wireless Think Controller White	☐ AZZBSTHINKRB
	IT Extender	☐ PAC-WHS01IE-E
	Airzone Wireless Think Controller Black	☐ AZZBSTHINKRN
	Wireless Interface 2 for Comfrot app	☐ PAC-USWHS002-WF-2
Drain Hose	Flexible Mini-Split Drain Hose	☐ DRX-16
N/A		☐ Unknown
Remote Sensor	Wireless temperature and humidity sensor for Comfort app	☐ PAC-USWHS003-TH-1
	Wall Mounted Remote Temperature Sensor	☐ PAC-SE41TS-E
	Flush Mount Remote Temperature Sensor for SEZ SLZ SVZ and all P-Series models	☐ PAC-USSEN002-FM-1
Terminal Signal Adapter	3-Pin Wiring Harness	☐ PAC-715AD
	5-Pin Wiring Harness	☐ PAC-725AD
	Backup Heat Relay Kit	☐ CN24RELAY-KIT-CM3
Wired Remote Controller	Touch MA Remote Controller	☐ PAR-CT01MAU-SB
	Deluxe MA Wired Remote Controller	☐ PAR-43MAAUB
	Simple MA Remote Controller	☐ PAC-YT53CRAU-J
	Simple Direct Wired Remote Controller	☐ PAC-SDW01RC-1
Wireless Remote Controller	Lockdown Bracket for Wireless Handheld Remote Controllers	☐ RCMKP1CB
	Wireless RedLINK™ Remote Controller	☐ MHK2
Notes		

INDOOR UNIT DIMENSIONS: PKFY-L12NLMU-A

名称
PKFY-L04/06/08/12NLMU
TPKFYP004/006/008/012LML0A



1340 Satellite Boulevard Suwanee, GA 30024
Toll Free: 800-433-4822 · mitsubishicomfort.com

FCU-1A, 1B, 1C, and 1D Only



COMBI

Item Number 3004146

The COMBI condensate pump is designed for systems from 6 000 BTU/h (1.75kW) up to 120 000 BTU/h (35kW). The digital water sensor, the universal voltage range and the individually configurable flow rate are features that help make the COMBI the most powerful and quietest air conditioning condensate pump on the market today. The variable range of applications allows the trade as well as the installer to cover almost all needs with only one pump.

- Universal use due to wide range of applications
- Warranty period starts only after commissioning (readable via USB)
- 11 gallon pumping capacity per hour
- 65 ft delivery head
- <19 dB noise level
- No float problems thanks to digital sensor
- Water sensor can be used horizontally or vertically
- Control of the pumping capacity according to requirements
- Spare parts available

Technical Data

Color	grey (RAL 7040) yellow (RAL 1023)
Standards	EN 60335-1, EN 60335-2-41, UL778 CSA C22.2 #68
RoHS Conformity	1
RoHS Conformity	Yes
Type	Diaphragm type
Operating Temperature Range	37.5 - 104 °F
Storage Temperature Range	-4 - 122 °F

Water Temperature Range	41 - 77 °F
Voltage	100 - 240 VAC
Frequency	50 / 60 Hz
Protection Class	I
Ingression Protection	IP44
Energy Consumption	8 W
Cable Length	5 ft
Max. Flow Capacity	11 GPH
Max. Suction Head	10 ft
Max. Delivery Head	65.6 ft
Noise Level	19 dB(A)
Alarm Relay	Interchangeable NO or NC, rated 250VAC, 6.3A or 28VDC, 6.3A
Tube Diameter	1/4 "
Packaging	Blister
Scope of Supply	Power cable, Alarm cable, Sensor cable, Star tube and anti-siphon device, Suction tube, Vent tube, Factory-installed alarm fuse, Cable ties, Instruction manual

Accessories

4678597	IN-LINE FILTER	Filter for condensate water
4679160	PVC-TUBE	Plastic tube 6 mm, 30 meters, 1/4"
4678741	AQUASWITCH	Electronic water switch 95-254 V, 50 Hz
4678546	AQUASWITCH-24	Electronic water switch 24 V AC/DC

Spare Parts

3004113	COMBI-SEN	Spare sensor for COMBI
3004063	FIL-4063/4	Spare filter for COMBI, 4 pieces
3004087	KIT-4087	Star tube with Siphon device
4687950	CAB-4007	Replacement water sensor cable
3004180	FUS-4180/10	Spare fuses for COMBI and GOBI II 6.3A, pack of 10 pieces
3004050	FUS-4050/10	Spare fuse, 10 pieces
3004065	HSG-4065/4	Siphon Device, 4 pieces

MXZ-SM36NL

36,000 BTU/H HEAT PUMP OUTDOOR UNIT



Job Name:

System Reference:

Date:

OHP-2



GENERAL FEATURES

- Compatible with M- and P-Series and CITY MULTI® indoor units (branch box required for connection with M- and P-Series)
- Compressor overcurrent detection
- Compressor thermal protection
- Fan motor overheating/voltage protection
- High pressure protection
- INVERTER-driven compressor: Compressor generates the precise capacity needed to maintain a temperature set point.
- Quiet operation: Outdoor units are as quiet as a typical conversation, and most indoor units are whisper quiet.
- Seacoast protection: Seacoast protection on heat exchanger and base panel (rated for 2,000 hrs. in accordance with ASTM B117 testing)
- Thermal Differential 1°F

Specifications			System
Unit Type			MXZ-SM36NL
Cooling at 95F ¹ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	36,000 // 36,000 // 36,000
	Rated Capacity	Btu/h	36,000 // 36,000 // 36,000
	Minimum Capacity	Btu/h	13,000 // 13,000 // 13,000
	Maximum Power Input	W	2,555 // 2,900 // 3,600
	Rated Power Input	W	2,555 // 2,900 // 3,600
	Power Factor (208V)	%	98.60 // 98.60 // 98.60
	Power Factor (230V)	%	98.60 // 98.60 // 98.60
Heating at 47F ² (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	41,000 // 41,000 // 41,000
	Rated Capacity	Btu/h	41,000 // 41,000 // 41,000
	Minimum Capacity	Btu/h	12,600 // 12,600 // 12,600
	Maximum Power Input	W	3,005 // 3,395 // 3,880
	Rated Power Input	W	3,005 // 3,395 // 3,880
	Power Factor (208V)	%	98.60 // 98.60 // 98.60
	Power Factor (230V)	%	98.60 // 98.60 // 98.60
Heating at 17F ³ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	36,000 // 36,000 // 36,000
	Rated Capacity	Btu/h	26,400 // 26,400 // 26,600
	Maximum Power Input	W	5,175 // 5,495 // 5,865
	Rated Power Input	W	2,765 // 2,870 // 3,000
Heating at 5F ⁴ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	29,000 // 29,000 // 29,000
	Maximum Power Input	W	3,865 // 4,090 // 4,295
Heating at -13F ⁵ (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	18,600 // 18,600 // 18,600
	Maximum Power Input	W	3,840 // 3,840 // 3,840
Efficiency (Non-Ducted // Mixed // Ducted)	SEER ² ¹		23 // 20.60 // 18.20
	EER ² ¹		14.10 // 12.05 // 10
	HSPF ² (IV) ²		11 // 10.50 // 10
	COP at 47°F ²		4 // 3.55 // 3.10
	COP at 17°F at Maximum Capacity ³		2.04 // 1.92 // 1.80
	COP at 5°F at Maximum Capacity ⁴		2.20 // 2.08 // 1.98
	ENERGY STAR® Certified		Yes // Yes // No

NOTES

¹Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)

²Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)

³Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)

⁴Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)

⁵Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)

• Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.

• A Maximum connected units reduced when PLA connected. Refer to manual for details

• B Branch box should be placed within the level between the outdoor unit and indoor units

• C 5°F DB - 115°F DB when optional wind baffles are installed

For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.

Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.

Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):

• System cuts out in heating mode and automatically restarts at these temperatures.

SPECIFICATIONS: MXZ-SM36NL

Specifications			System
	Unit Type		MXZ-SM36NL
Electrical	Electrical Power Requirements	V AC / V AC, , Hz	208 / 230, 1, 60
	Guaranteed Voltage Range	V AC	198 - 253
	Voltage: Indoor - Outdoor, S1-S2	V AC	230
	Short-circuit Current Rating (SCCR)	kA	5
	Recommended Fuse/Breaker Size if Branch Box Powered by Outdoor Unit	A	40
	Recommended Fuse/Breaker Size without Branch Box or Branch Box Powered Separate	A	30
	MCA if Branch Box Powered by Outdoor Unit	A	42
	MOCP if Branch Box Powered by Outdoor Unit	A	70
	MCA without Branch Box or Branch Box Powered Separate	A	36
	MOCP without Branch Box or Branch Box Powered Separate	A	64
Outdoor Unit	Fan Motor Output	W	70+70
	Defrost Method		Reverse Cycle
	Blue Fin Heat Exchanger Coating		Yes
	Sound Pressure Level, Cooling ¹	dB (A)	49
	Sound Pressure Level, Heating ²	dB (A)	53
	Compressor Type		Twin Rotary
	Compressor Model		MRB36FEGMC-L
	Compressor Motor Output	kW	2.7
	Compressor Oil Type // Charge	Type // oz	RM68EH // 78
	External Finish Color		Munsell 3Y 7.8/1.1
	Base Pan Heater		Optional
	Unit Dimensions (W x D x H)	inch [mm] inch [mm] inch [mm]	41-11/32 [1,050] 13 [330] 52-11/16 [1,338]
	Package Dimensions (W x D x H)	inch [mm] inch [mm] inch [mm]	43 [1,090] 18 [450] 58-5/16 [1,480]
	Unit Weight	lbs [kg]	250 [113]
	Package Weight	lbs [kg]	276 [125]
ODU Operating Temp. Range	Cooling Intake Air Temp (Maximum / Minimum ^c)	°FDB	115 / 23
	Cooling Thermal Lock-out / Re-start Temperatures	°FDB	N/A / N/A
	Heating Intake Air Temp (Maximum / Minimum)	°FDB	70 / -13
	Heating Thermal Lock-out / Re-start Temperatures**	°FDB	-24 / -14
Refrigerant	Type		R454B
	Pre-Charged Refrigerant Amount	lbs, oz	2, 11
IDU Connection	Maximum Number of Connected IDU with Branch Box ^A		4
	Maximum Number of Connected IDU without Branch Box		11
	Minimum Connected Capacity with Branch Box	Btu/h	12,000
	Minimum Connected Capacity without Branch Box	Btu/h	18,000
	Maximum connected capacity	Btu/h	46,800
Piping	Liquid Pipe Size O.D. (Flared)	inch [mm]	3/8 [9.52]
	Gas Pipe Size O.D. (Flared)	inch [mm]	5/8 [15.88]
	Total Piping Length when using Branch Box	ft [m]	492 [150]
	Total Piping Length without Branch Box	ft [m]	787 [240]
	Maximum Height Difference ^B , ODU above IDU	ft [m]	164 [50]
	Maximum Height Difference ^B , ODU below IDU	ft [m]	131 [40]
	Maximum Height Difference ^B , between branch boxes	ft [m]	39 [12]
	Maximum Height Difference between IDU and IDU without branch box	ft [m]	49 [15]
	Maximum Piping Length between ODU and Branch Box	ft [m]	180 [55]
	Farthest Piping Length from ODU to IDU with Branch Box	ft [m]	262 [80]
	Farthest Piping Length from ODU to IDU without Branch Box	ft [m]	262 [80]
	Farthest Piping Length after Branch Box	ft [m]	82 [25]
	Total Piping Length between Branch Boxes and IDU	ft [m]	312 [95]
	Maximum Number of Bends for IDU		15

NOTES

¹Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)

²Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)

³Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)

⁴Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)

⁵Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)

* Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.

• A Maximum connected units reduced when PLA connected. Refer to manual for details

• B Branch box should be placed within the level between the outdoor unit and indoor units

• C 5°F DB - 115°F DB when optional wind baffles are installed

For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.

Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.

Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):

• System cuts out in heating mode and automatically restarts at these temperatures.

OUTDOOR UNIT ACCESSORIES: MXZ-SM36NL

Drain Socket	Drain Socket	☐ PAC-SG60DS-E
Control Wire	M-Net Control Wire 1000 Roll 16-AWG Standard Twisted Pair Shielded Jacketed- Plenum rated	☐ CW162S-1000
	M-Net Control Wire 250 Roll 16-AWG Standard Twisted Pair Shielded Jacketed- Plenum rated	☐ CW162S-250
Mini-Split Wire	14 Gauge 4 wire Armored MiniSplit Cable250 ft roll	☐ SW144-250
	14 Gauge 4 wire Armored MiniSplit Cable50 ft roll	☐ SW144-50
	14 Gauge 4 wire MiniSplit Cable250 ft roll	☐ S144-250
	14 Gauge 4 wire MiniSplit Cable50 ft roll	☐ S144-50
	16 Gauge 4 wire Armored MiniSplit Cable250 ft roll	☐ SW164-250
	16 Gauge 4 wire Armored MiniSplit Cable50 ft roll	☐ SW164-50
	16 Gauge 4 wire MiniSplit Cable250 ft roll	☐ S164-250
Centralized Drain Pan	Centralized Drain Pan	☐ PAC-SH97DP-E
Stand	18 Dual Fan Stand	☐ QSMS1802M
	24 Dual Fan Stand	☐ QSMS2402M
	Condenser Wall Bracket	☐ QSWB2000M-1
	Condenser Wall Bracket - Stainless Steel Finish	☐ QSWBSS
	Outdoor Unit 3-14 inch Mounting Base Pair - Plastic	☐ DSD-400P
	Outdoor Unit Stand 12 High	☐ QSMS1202M
Air Deflector	Vertical Air Deflector	☐ ADV-1
Control/Service Tool	Maintenance Tool Interface	☐ PAC-USCMS-MN-1
Alarm Kit	Alarm Kit	☐ PAC-SL54AL-E
	Alarm Kit Interface	☐ PAC-IF55AL-E
Branch Box	3 Port Branch Box	☐ PAC-LMA30BC
	5 Port Branch Box	☐ PAC-LMA50BC
	Branch Box Enclosure	☐ BBE-1
Snow/Rain Diverter	SnowRain Diverter	☐ SRD-5
Ball Valve	Refrigeration Ball Valve - 1/2	☐ BV12FFSI2
	Refrigeration Ball Valve - 1/4	☐ BV14FFSI2
	Refrigeration Ball Valve - 3/8	☐ BV38FFSI2
	Refrigeration Ball Valve - 5/8	☐ BV58FFSI2
Optional Defrost Heater	Optional Defrost Heater	☐ PAC-SJ20BH-E
Port Adaptor	Adaptor 1/4 x 3/8	☐ PAC-SJ87RJ-E
	Adaptor 12 x 38	☐ PAC-SK88RJ-E
	Adaptor 12 x 58	☐ PAC-SK89RJ-E
	Adaptor 38 x 12	☐ ADP3812
	Adaptor 38 x 58	☐ PAC-SK90RJ-E
Distribution pipe	Brazed Connection	☐ MSDD-50BR-E
	Flare Connection	☐ MSDD-50AR2-E
Power Supplies & Auxiliary Components	3-Pin Wiring Harness	☐ PAC-715AD
	5-Pin Wiring Harness	☐ PAC-725AD
Wind Baffle	Front Wind Baffle	☐ WB-PA3 (two pieces are required)
Hail Guards	Hail Guard	☐ HG-A2
Air Outlet Guide	Air Outlet Guide 1 Piece	☐ PAC-SH96SG-E (two pieces are required)
Mounting Pad	Condensing Unit Mounting Pad 24 x 42 x 3	☐ ULTRILITE2
NOTES		

METUS 2025-02 PROPIN

Job Name:

System Reference:

Date:

FCU-2A, 2B, and 2D



GENERAL FEATURES

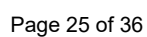
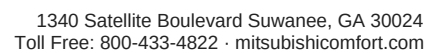
- 3D i-see Sensor® (Built-in): This advanced sensor scans the room for occupancy, then adjusts temperature and airflow based on user preferences, and saves energy when a room is empty.
- Horizontal Vane Control: Horizontal Vane Control allows the indoor unit vanes to be moved left right to provide even temperatures throughout a space.
- Three Speed Fan: Adjust the fan between three speed settings to optimal comfort.
- Ventilation Air Intake: A duct opening is provided, which allows outside air to be brought inside so it can be heated or cooled.
- Dual Set Point: The controller can be used to program two different set points. The unit will automatically adjust between the set points for optimum comfort.
- Condensate Lift Mechanism: A built-in condensate lift mechanism removes water that is collected during operation and reduces the need for an additional pump to remove condensate water.

SPECIFICATIONS			SYSTEM
UNIT TYPE			PLFY-L08NFMU-A
Cooling Capacity (Nominal) ¹	Cooling Capacity (Nominal)	Btu/h	8000
Heating Capacity (Nominal) ¹	Heating Capacity (Nominal)	Btu/h	9000
Electrical	Voltage, Phase, Frequency	V AC / V AC , ø , Hz	208 / 230 , 1 , 60
	Power Consumption Cooling		0.02
	Power Consumption Heating		0.02
	Current Cooling		0.22
	Current Heating		0.17
	MCA	A	0.36
	MOCP	A	15
Indoor Unit	External Finish Color		Galvanized Steel MUNSELL (1.0Y 9.2/0.2)
	Unit Dimensions (W x D x H)	inch x inch x inch [mm x mm x mm]	22-7/16 x 22-7/16 x 9-21/32 [570 x 570 x 245]
	Unit Weight	lbs [kg]	28.9 [13.10]
	Heat Exchanger		Cross fin (Aluminum fin and Copper Tube)
	Dual Barrier Coating on HEX		No
	Dual Barrier Coating on Fan		No
Refrigerant	Type		R454B
Fan	Motor Type		DC Motor
	Motor Output	W	50
	Airflow Rate	CFM	230 , 280 , 315
Sound Pressure Level (Measured in anechoic room)	Heating	dB (A)	26 , 30 , 33
Piping	Liquid Pipe Size O.D.	inch [mm]	1/4 [6.35]
	Gas Pipe Size O.D.	inch [mm]	1/2 [12.7]
Notes			
¹ Cooling (Indoor // Outdoor) °F 80 DB, 67 WB // 95 DB, 75 WB - test			
² Heating at 47°F (Indoor // Outdoor) °F 70 DB, 60 WB // 47 DB, 43 WB			
³ Nominal capacity only. Actual capacity output varies based on the system specific configuration			
¹ Cooling / Heating capacity indicated at operation under the following conditions: Cooling Indoor: 81° F (27° C) DB / 68° F (19° C) WB; Outdoor 95° F (35° C) DB Heating Indoor: 68° F (20° C) DB; Outdoor 45° F (7° C) DB / 43° F (6° C) WB			

INDOOR UNIT ACCESSORIES: PLFY-L08NFMU-A

Condensate	Refco Condensate Pump 100-240V up to 120k BTU/h	☐ COMBI
	Blue Diamond (MaxiBlue Advanced) Mini Condensate Pump w/ Reservoir & Sensor (110V) up to 48,000 BTU/H [recommended]	☐ X87-711
	Blue Diamond MegaBlue Condensate Pump with Reservoir Sensor 115-230V up to 170k BTU/h	☐ X87-835
	Blue Diamond MaxiBlue Condensate Pump with Reservoir Sensor 115-230V up to 48k BTU/h	☐ X88-721
	Blue Diamond MicroBlue Condensate Pump 115-230V up to 18k BTU/h	☐ X86-003
	Blue Diamond Sensor Extension Cable 15 Ft	☐ C13-103
Control Interface	Airzone Wireless Lite Controller White	☐ AZZBSLITERB
	Airzone Wireless Think Controller Black	☐ AZZBSTHINKRN
	Airzone Wired Blueface Controller Black	☐ AZZBSBLUEZEROCN
	Airzone Wireless Think Controller White	☐ AZZBSTHINKRB
	Airzone Wired Blueface Controller White	☐ AZZBSBLUEZEROCB
	Wireless Interface 2 for Comfort app	☐ PAC-USWHS002-WF-2
	kumo station® for Comfort app	☐ PAC-WHS01HC-E
	Procon BACnet® and Modbus® Interface	☐ PAC-UKPRC001-CN-1
	IT Extender	☐ PAC-WHS01IE-E
	Thermostat Interface for 3rd Party Thermostats	☐ PAC-US445CN-1
	Airzone Wireless Lite Controller Black	☐ AZZBSLITERN
Grille	Grille (Decoration panel)	☒ SLP-18FAU
	Grille (3D i-see Sensor panel)	☐ SLP-18FAEU
N/A		☐ Unknown
Remote Sensor	Wireless temperature and humidity sensor for Comfort app	☐ PAC-USWHS003-TH-1
	Flush Mount Remote Temperature Sensor for SEZ SLZ SVZ and all P-Series models	☐ PAC-USSEN002-FM-1
	Wall Mounted Remote Temperature Sensor	☐ PAC-SE41TS-E
Terminal Signal Adapter	3-Pin Wiring Harness	☐ PAC-715AD
	Backup Heat Relay Kit	☐ CN24RELAY-KIT-CM3
	5-Pin Wiring Harness	☐ PAC-725AD
Wired Remote Controller	Simple Direct Wired Remote Controller	☐ PAC-SDW01RC-1
	Simple MA Remote Controller	☐ PAC-YT53CRAU-J
	Deluxe MA Wired Remote Controller	☐ PAR-43MAAUB
	Touch MA Remote Controller	☐ PAR-CT01MAU-SB
Wireless Remote Controller	Wireless RedLINK™ Remote Controller	☐ MHK2
	Wireless Remote Controller	☐ PAR-SL101A-E
	Wireless signal receiver (corner panel) (for PAR-SL101A-E / PAR-FL32MA)	☐ PAR-SR4LU-E
	Universal Wireless Receiver for PAR-FL32MA-E	☐ PAR-FA32MA-W
	Wireless MA Handheld Remote Controller (requires PAR-FA32MA-E)	☐ PAR-FL32MA-E
	Lockdown Bracket for Wireless Handheld Remote Controllers	☐ RCMKP1CB
	Wireless Signal Receiver for PAR-SL101A-E on SLZ-AF and PLFY-NFMU models	☐ PAR-SF9FA-E
i-see Sensor® Panel	3D i-see sensor corner panel	☐ PAC-SF1ME-E
Notes		

METUS_2026-04_PROPIN



Job Name:

System Reference:

Date:

FCU-2B



GENERAL FEATURES

- **3D i-see Sensor® (Built-in):** This advanced sensor scans the room for occupancy, then adjusts temperature and airflow based on user preferences, and saves energy when a room is empty.
- **Horizontal Vane Control:** Horizontal Vane Control allows the indoor unit vanes to be moved left right to provide even temperatures throughout a space.
- **Three Speed Fan:** Adjust the fan between three speed settings to optimal comfort.
- **Ventilation Air Intake:** A duct opening is provided, which allows outside air to be brought inside so it can be heated or cooled.
- **Dual Set Point:** The controller can be used to program two different set points. The unit will automatically adjust between the set points for optimum comfort.
- **Condensate Lift Mechanism:** A built-in condensate lift mechanism removes water that is collected during operation and reduces the need for an additional pump to remove condensate water.

SPECIFICATIONS			SYSTEM
UNIT TYPE			PLFY-L18NFMU-A
Cooling Capacity (Nominal) ¹	Cooling Capacity (Nominal)	Btu/h	18000
Heating Capacity (Nominal) ¹	Heating Capacity (Nominal)	Btu/h	20000
Electrical	Voltage, Phase, Frequency	V AC / V AC , ø , Hz	208 / 230 , 1 , 60
	Power Consumption Cooling		0.04
	Power Consumption Heating		0.04
	Current Cooling		0.40
	Current Heating		0.35
	MCA	A	0.36
	MOCP	A	15
Indoor Unit	External Finish Color		Galvanized Steel MUNSELL (1.0Y 9.2/0.2)
	Unit Dimensions (W x D x H)	inch x inch x inch [mm x mm x mm]	22-7/16 x 22-7/16 x 9-21/32 [570 x 570 x 245]
	Unit Weight	lbs [kg]	31.3 [14.20]
	Heat Exchanger		Cross fin (Aluminum fin and Copper Tube)
	Dual Barrier Coating on HEX		No
	Dual Barrier Coating on Fan		No
Refrigerant	Type		R454B
Fan	Motor Type		DC Motor
	Motor Output	W	50
	Airflow Rate	CFM	315 , 390 , 460
Sound Pressure Level (Measured in anechoic room)	Heating	dB (A)	33 , 39 , 43
Piping	Liquid Pipe Size O.D.	inch [mm]	1/4 [6.35]
	Gas Pipe Size O.D.	inch [mm]	1/2 [12.7]

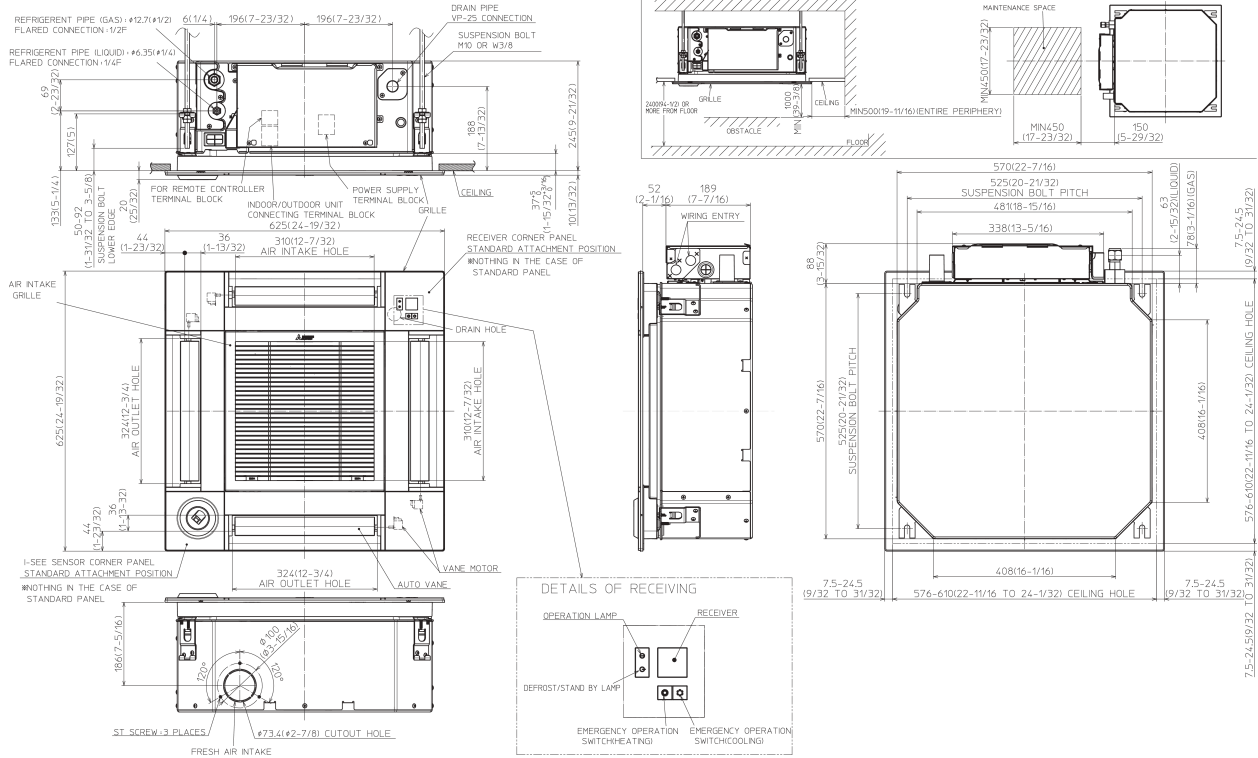
Notes

¹Cooling (Indoor // Outdoor) °F 80 DB, 67 WB // 95 DB, 75 WB - test²Heating at 47°F (Indoor // Outdoor) °F 70 DB, 60 WB // 47 DB, 43 WB³Nominal capacity only. Actual capacity output varies based on the system specific configuration¹Cooling / Heating capacity indicated at operation under the following conditions: Cooling | Indoor: 81° F (27° C) DB / 68° F (19° C) WB; Outdoor 95° F (35° C) DB Heating | Indoor: 68° F (20° C) DB; Outdoor 45° F (7° C) DB / 43° F (6° C) WB

INDOOR UNIT ACCESSORIES: PLFY-L18NFMU-A

Condensate	Refco Condensate Pump 100-240V up to 120k BTU/h	☐ COMBI
	Blue Diamond MaxiBlue Condensate Pump with Reservoir Sensor 115-230V up to 48k BTU/h	☐ X88-721
	Blue Diamond Sensor Extension Cable 15 Ft	☐ C13-103
	Blue Diamond MicroBlue Condensate Pump 115-230V up to 18k BTU/h	☐ X86-003
	Blue Diamond (MaxiBlue Advanced) Mini Condensate Pump w/ Reservoir & Sensor (110V) up to 48,000 BTU/H [recommended]	☐ X87-711
	Blue Diamond MegaBlue Condensate Pump with Reservoir Sensor 115-230V up to 170k BTU/h	☐ X87-835
Control Interface	Procon BACnet® and Modbus® Interface	☐ PAC-UKPRC001-CN-1
	Airzone Wired Blueface Controller Black	☐ AZZBSBLUEZEROCN
	IT Extender	☐ PAC-WHS01IE-E
	kumo station® for Comfort app	☐ PAC-WHS01HC-E
	Wireless Interface 2 for Comfrot app	☐ PAC-USWHS002-WF-2
	Airzone Wireless Lite Controller Black	☐ AZZBSLITERN
	Airzone Wired Blueface Controller White	☐ AZZBSBLUEZEROCB
	Airzone Wireless Lite Controller White	☐ AZZBSLITERB
	Thermostat Interface for 3rd Party Thermostats	☐ PAC-US445CN-1
	Airzone Wireless Think Controller White	☐ AZZBSTHINKRB
	Airzone Wireless Think Controller Black	☐ AZZBSTHINKRN
Grille	Grille (3D i-see Sensor panel)	☐ SLP-18FAEU
	Grille (Decoration panel)	☒ SLP-18FAU
N/A		☐ Unknown
Remote Sensor	Wall Mounted Remote Temperature Sensor	☐ PAC-SE41TS-E
	Wireless temperature and humidity sensor for Comfort app	☐ PAC-USWHS003-TH-1
	Flush Mount Remote Temperature Sensor for SEZ SLZ SVZ and all P-Series models	☐ PAC-USSEN002-FM-1
Terminal Signal Adapter	5-Pin Wiring Harness	☐ PAC-725AD
	3-Pin Wiring Harness	☐ PAC-715AD
	Backup Heat Relay Kit	☐ CN24RELAY-KIT-CM3
Wired Remote Controller	Deluxe MA Wired Remote Controller	☐ PAR-43MAAUB
	Simple MA Remote Controller	☐ PAC-YT53CRAU-J
	Simple Direct Wired Remote Controller	☐ PAC-SDW01RC-1
	Touch MA Remote Controller	☐ PAR-CT01MAU-SB
Wireless Remote Controller	Wireless Remote Controller	☐ PAR-SL101A-E
	Lockdown Bracket for Wireless Handheld Remote Controllers	☐ RCMKP1CB
	Wireless MA Handheld Remote Controller (requires PAR-FA32MA-E)	☐ PAR-FL32MA-E
	Wireless Signal Receiver for PAR-SL101A-E on SLZ-AF and PLFY-NFMU models	☐ PAR-SF9FA-E
	Wireless RedLINK™ Remote Controller	☐ MHK2
	Universal Wireless Receiver for PAR-FL32MA-E	☐ PAR-FA32MA-W
	Wireless signal receiver (corner panel) (for PAR-SL101A-E / PAR-FL32MA)	☐ PAR-SR4LU-E
i-see Sensor® Panel	3D i-see sensor corner panel	☐ PAC-SF1ME-E
Notes		

INDOOR UNIT DIMENSIONS: PLFY-L18NFMU-A



1340 Satellite Boulevard Suwanee, GA 30024
Toll Free: 800-433-4822 · mitsubishicomfort.com

Deluxe MA Wired Remote Controller

TAR-43MAAUB



Job Name:

System Reference:

Date:

1 Per Indoor Unit



FULL VIEW



BASIC VIEW

Operation & Display

ON/OFF

- Switches between ON and OFF.

Operation mode switching

- Switches between Cool/Dry/Fan/Auto/Setback/Heat.

Hold

- Switches between enable and disable the Hold function.
- If the Hold function is enabled, the following functions will be prohibited:
 - ON/OFF timer/Schedule (Weekly timer)/Auto return/Auto-OFF timer

Temperature setting

- Changes the set temperature.
- Set temperature range varies depending on the indoor unit model.

Fan speed setting

- Changes fan speed.
- Available fan speeds vary depending on the model.

Air flow direction setting ^{*1}

- Changes airflow direction.
- Available airflow directions vary depending on the model.

Louver setting ^{*1}

- Switches between louver ON/OFF.

Ventilation equipment control

- Interlocked setting and interlocked operation setting with City Multi Lossnay units can be performed.
- The Stop/Low/High settings of the ventilation equipment can be controlled.

Main display mode setting

- The Main display can be displayed in two different modes: "Full" and "Basic."

B&W inversion

- The colors of the display can be inverted, turning white background to black and black characters to white.

Leak sensor test for R32 CITY-MULTI indoor units

- Run a leak sensor test to verify that all sensors are operational
- Leak sensor test not available with R410A or R454B models
- Refer to the outdoor unit service manual for detailed instructions on performing a leak sensor test.

View Energy Consumption Data for M- & P-Series ^{*1}

- Hourly: Displays the hourly energy consumption for the last 31-day period.
- Daily/Monthly: Displays the Daily or Monthly energy consumption for the last 14-month period.

MASS Save Function ^{*1}

- Select the outdoor air temperatures at which outdoor unit and backup heater operation will be enabled and disabled.

Clock ^{*2}

- Date (year/month/day) and time (hour/minute) can be set.
- The set time as well as the day of the week will be displayed on the Main display.
- The clock can be displayed in 12-hour format (AM/PM before or after the time) and 24-hour format.

Daylight saving time

- The start/end time for daylight saving time can be set.
- The daylight-saving time function will be activated based on the setting contents.

Room temp. display

- The room temperature display can be enabled or disabled.

Error information

- When an error occurs, an error code and the unit address appear.
- The air-conditioning unit model, serial number, and contact number can be set to appear when an error occurs.

Filter information

- A filter sign will appear when it is time to clean the filter.

^{*1} This function is active only for the units that support the function.

^{*2} The clock is accurate within 45 seconds per month (at the temperature of 77°F [25°C]). The clock is backed up for 3 days.

Features & Specifications

Scheduling & Timer

- ON/OFF timer
 - Turns ON and OFF daily at a set time.
 - Time can be set in 5-minute increments.
 - It is also possible to set the ON time only or the OFF time only.
- Auto-OFF timer
 - Turns off the unit after a certain period of operation.
 - Operation time can be set to a value from 30 to 240 minutes in 10-minute increments.
- Weekly timer
 - Weekly ON/OFF times and set temperatures can be set.
 - Time can be set in 5-minute increments. Up to 8 schedule patterns can be set per day of the week.
 - Not valid when the ON/OFF timer is set.

Miscellaneous

- Language Selection
 - Select the display language from the following 3 languages: English, French, Spanish
- Brightness Contrast
 - The brightness of the LCD can be adjusted. The contrast of the LCD can be adjusted.
- Manual Vane Angle *1
 - Fixes the vane position for each air outlet.
- Service *1
 - Contains Test run, Function setting, Request code, and Error history.
- 3D i-see Sensor® *1
 - Settings for 3D i-see Sensor® can be made.

Energy Saving Options

- No occupancy energy save
 - Requires 3D i-see Sensor® on applicable indoor units
- Room Occupancy energy save
 - Requires 3D i-see Sensor® on applicable indoor units
- No occupancy Auto-OFF
 - Requires 3D i-see Sensor® on applicable indoor units
- Setback Mode

Lock & prohibit local operation

- The following operation can be prohibited by applying certain settings on the centralized controller: ON/OFF, operation mode, set temperature, filter sign reset, air direction, fan speed and timer.
- While an operation is prohibited, the operation icon lights up (only on the Main display in the "Full" mode).

Operation lock

- The following operations can be prohibited: Sensing Location, ON/OFF, Mode, Set temp., Menu, Fan, Louver, Vane, or Hold

Temperature range restriction

- The room temperature range for each operation mode can be restricted.

Auto return

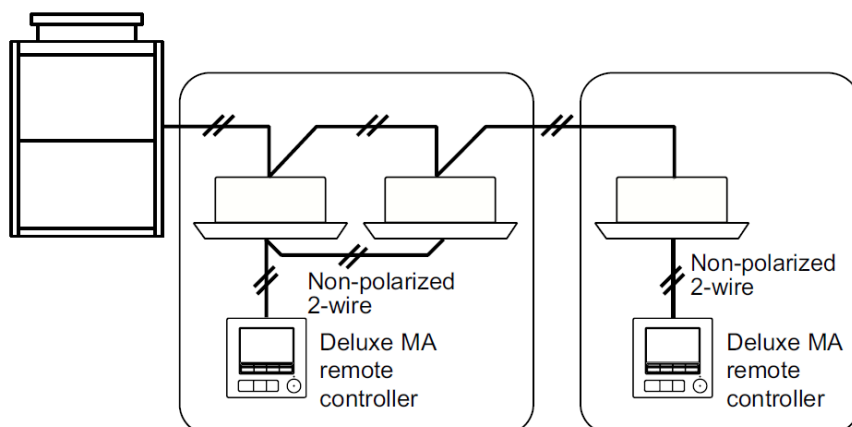
- The units operate at the preset temperature after a designated period. Time can be set to a value from 30 to 120 minutes in 10-minute increments.
- Not valid when the temperature setting range is restricted.

Password

- Administrator password (required for schedule setting etc.) and Maintenance password (required for test run and function setting etc.) can be set.

SYSTEM EXAMPLE

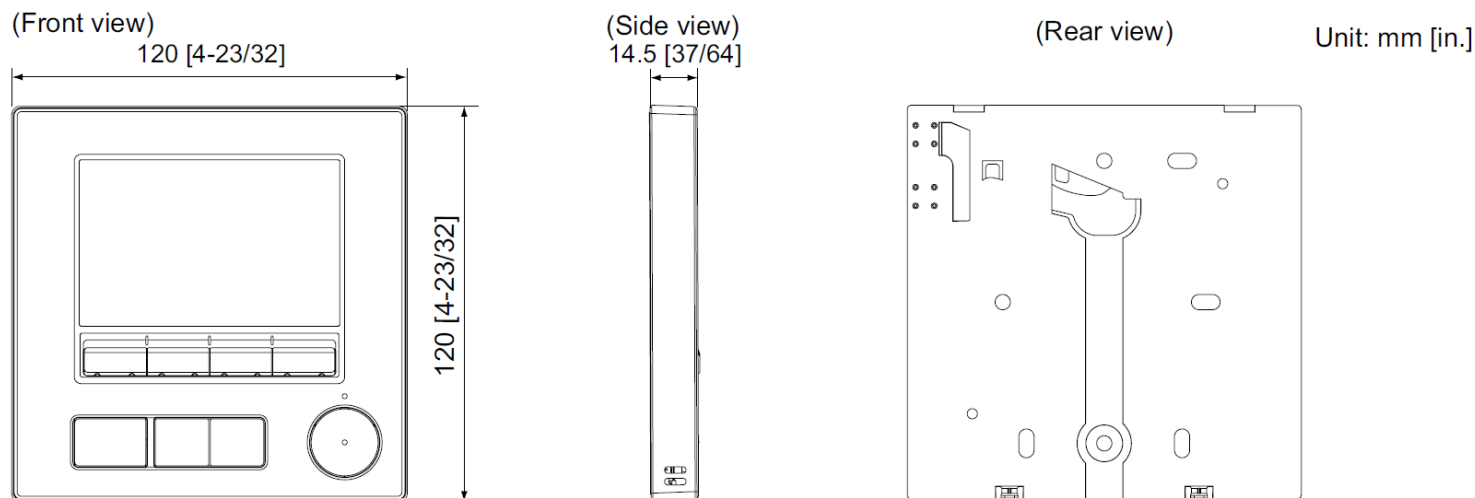
* When a TAR-43MAAU is connected to a group, no other remote controllers can be connected to the same group.



Deluxe MA Wired Remote Controller TAR-43MAAUB



DIMENSIONS



COMPATIBILITY

- Compatible with P-Series indoor units
- Compatible with SEZ, SLZ and SVZ indoor units
- Compatible with M-Series indoor units
 - Requires a MAC-334IF-E

SPECIFICATIONS

Product size (W x H x D)	In. (mm)	4 3/4 x 4 3/4 x 0.57 (120 x 120 x 14.5)
Net Weight	Lbs. (kg)	9/16 (0.25)
Rated Power Supply Voltage		12 VDC (supplied from indoor units)
Power Consumption	W	0.3
Usage Environment		Temperature: 0 to 40° C (32 to 104° F) Humidity: 30 to 90%RH (with no condensation)
Material	Panel	PMMA
	Main body	PC + ABS
Sound Pressure Level	dB(A)	<70 [A-weighted sound pressure level]

JOINT KITS - DIMENSIONS

CMY-Y62-G

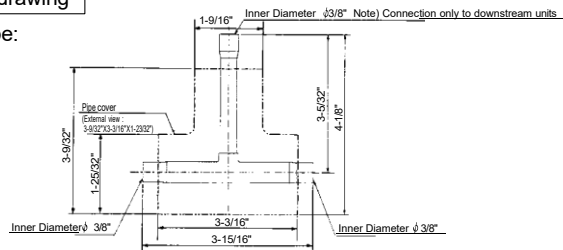
Ref.: 7FAGFA
in.

1. Specification

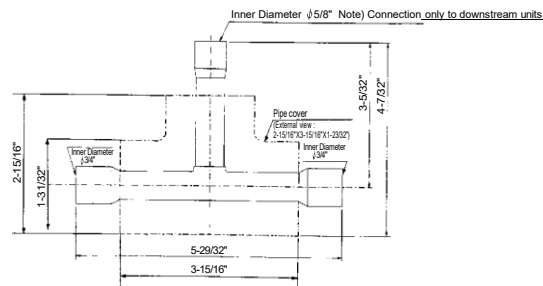
	Items	Details
Main	Number of ports	2 ports
	Number of branch joints	One for each liquid and gas pipe
	Pipe material	Phosphorus deoxidized copper C1220T-OL (JIS H3300)
Accessory	Insulation material	Foamed polyethylene (one for each liquid and gas pipe)
	Reducer	10 reducers of 7 types (Refer to the external drawing for details.)

2. External drawing

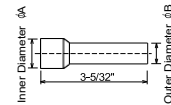
For liquid pipe:



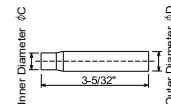
For gas pipe:



Reducer (Accessory):



A (Inner Diameter)	B (Outer Diameter)	Number of reducers
φ 1/2"	φ 3/8"	2
φ 3/4"	φ 5/8"	1
φ 7/8"	φ 3/4"	1



C (Inner Diameter)	D (Outer Diameter)	Number of reducers
φ 1/4"	φ 3/8"	2
φ 1/2"	φ 5/8"	1
φ 1/2"	φ 3/4"	1
φ 5/8"	φ 3/4"	2

Warranty Document

MITSUBISHI ELECTRIC TRANE HVAC US LLC

1340 Satellite Boulevard
Suwanee, GA 30024

Applicable Outdoor Models: MXZ-SM*NAM* and MXZ-SM*TAM*

Applicable Indoor Models: All compatible M-Series, P-Series, and City Multi indoor models. See model compatibility charts for additional detail.

LIMITED WARRANTY STATEMENT

Mitsubishi Electric Trane SMART MULTI™ Split-ductless Air-conditioner and Heat Pump Systems

Subject to the terms and conditions of this Limited Warranty Statement (the "Limited Warranty"), MITSUBISHI ELECTRIC TRANE HVAC US LLC ("METUS") warrants to the owner of the original site of installation this SMART MULTI™ system (as used herein "System" shall mean SMART MULTI™ outdoor and indoor components connected via refrigerant piping, and electrical wiring) purchased on or after **February 1, 2022** from a licensed HVAC contractor and installed by such contractor in the continental United States, Alaska and Hawaii, that:

- A. The parts are warranted to the owner for a period of five (5) years from the date of installation by a licensed contractor.** If it should prove defective due to improper workmanship and/or material for a period of five (5) year from the date of installation, METUS will provide a replacement for any defective part without charge for the part. Replacement parts are warranted for the remainder of the original 5-year warranty period. Parts used for replacement may be of like kind and quality and may be remanufactured. Defective parts must be made available to METUS in exchange for the replacement part and become the property of METUS.
- B. The compressor is warranted to the owner for a period of seven (7) years from the date of installation by a licensed contractor.** If the compressor should prove defective due to improper workmanship and/or material for a period of seven (7) years from the date of installation, METUS will replace the defective compressor without charge for the compressor. Replacement compressors are warranted for the remainder of the original 7-year warranty period. Compressors used for replacement may be of like kind and quality and me be new or remanufactured. Defective compressors must be made available to METUS in exchange for the replacement compressor and become the property of METUS.
- C. Notwithstanding Sections A and B above, if the System is installed in a residential single-family home and registered within 90 days from installation, the parts and compressor will be warranted for a period of 10 years, to the original owner, so long as the original owner resides in the home.** Specifically, if any parts and/or the compressor should prove defective due to improper workmanship and/or material for a period of ten (10) years from the date of installation, METUS will replace any defective parts or compressor without charge for the part or compressor. The replacement parts and/or compressor are warranted for the remainder of the original 10-year warranty period. Parts and/or compressors used for replacement may be of like kind and quality and may be new or remanufactured. Defective parts and/or compressors must be made available to METUS in exchange for the replacement parts and become the property of METUS.
- D. Notwithstanding Sections A, B, and C above, if the System is installed in a residential single-family home by a DIAMOND CONTRACTOR and registered within 90 days from installation, the parts and compressor will be warranted for a period of 12 years, to the original owner, so long as the original owner resides in the home.** Specifically, if any parts and/or the compressor should prove defective due to improper workmanship and/or material for a period of twelve (12) years from the date of installation, METUS will replace any defective parts or compressor without charge for the part or compressor. The replacement parts and/or compressor are warranted for the remainder of the original 12-year warranty period. Parts and/or compressors used for replacement may be of like kind and quality and may be new or remanufactured. Defective parts and/or compressors must be made available to METUS in exchange for the replacement parts and become the property of METUS.
- E. Notwithstanding Sections A, B, C, and D above, if the System is installed in a non-residential, non-single-family home site, the parts and compressor will be warranted for a period of ten (10) years to the original owner if: (1) the System is designed using Diamond System Builder™ (2) the installing contractor has successfully completed the METUS SMART MULTI™ Essentials training course, and (3) the contractor has submitted within 45 days of startup a completed Diamond System Builder™ file for review per the METUS SMART MULTI™ Extended Warranty Process.** Specifically, if any parts and/or the compressor should prove defective due to improper workmanship and/or material for a period of ten (10) years from the date of installation, METUS will replace any defective parts or compressor without charge for the part or compressor. The replacement parts and/or compressor are warranted for the remainder of the original 10-year warranty period. Parts and/or

compressors used for replacement may be of like kind and quality and may be new or remanufactured. Defective parts and/or compressors must be made available to METUS in exchange for the replacement parts and become the property of METUS.

- F. NO LABOR.** This Limited Warranty does NOT include labor, or any other costs incurred for service, maintenance, repair, removing, replacing, installing, complying with local building and electrical codes, shipping or handling of defective or replacement SMART MULTI™ product, compressor or parts. The owner is solely responsible for all labor and other costs of maintaining, installing, replacing, disconnecting, or dismantling the System and any parts (such as filters) in connection with owner-required maintenance, including but not limited to cleaning and/or replacing air filters, for each indoor unit of the System, and the Limited Warranty does not cover labor or other costs associated with such owner-required maintenance. Please refer to the associated indoor unit's Operation Manual for air filter cleaning procedures.
- G. PROPER INSTALLATION; PROOF OF PURCHASE.** This Limited Warranty applies only to Systems that are installed by licensed HVAC contractors who have completed any required METUS training classes and who install the Systems in accordance with (i) all applicable building codes and permits; (ii) METUS installation and operation instructions; and (iii) good trade practices. METUS may require satisfactory proof of purchase, installation and start-up of the System as a condition to providing replacement parts under this Limited Warranty.

BEFORE REQUESTING SERVICE, please review the Installation, Technical Service, and Operation Manuals to insure proper installation and correct customer control adjustment for the SMART MULTI™ System.

1) TO OBTAIN WARRANTY PARTS:

- a. Contact the licensed HVAC Contractor who installed the SMART MULTI™ system (SMART MULTI™ model outdoor unit, METUS indoor units, and Controllers) or another licensed HVAC contractor or servicer, or an authorized SMART MULTI™ Distributor (whose name and address may be obtained by referencing our website at www.mehvac.com) within the applicable warranty time period.
- b. Proof of installation date is required when requesting warranty parts. Present your sales receipt or other document which establishes proof and date of installation. In the absence of acceptable proof, the effective warranty date shall be considered 120 days after the date of manufacture stamped on the SMART MULTI™ product.
- c. This Limited Warranty applies only to Systems purchased on or after **February 1, 2022**, only while the SMART MULTI™ system (SMART MULTI™ model outdoor unit, METUS indoor units, and Controllers) remains at the site of the original installation, and only to locations within the continental United States, Alaska and Hawaii.

- 2) THIS LIMITED WARRANTY DOES NOT COVER:** property damages, malfunction or failure of the System, or personal injury caused by or resulting from: (a) accident, abuse, negligence or misuse (b) operating the System in a corrosive or wet environment, including those containing chlorine, fluorine or any other hazardous or harmful chemicals or environmental factors, including sea- or salt-water; (c) installation, alteration, repair or service by anyone other than a licensed contractor or other than pursuant to the manufacturer's instructions; (d) improper matching of System components; (e) improper sizing of the System; (f) improper or deferred maintenance contrary to the manufacturer's instructions; (g) physical abuse to or misuse of the System (including failure to perform any maintenance as described in the Operation manual such as air filter cleaning, or any System damaged by excessive physical or electrical stress; (h) Systems that have had a serial number or any part thereof altered, defaced or removed; (i) System used in any manner contrary to the Operation Manual; (j) freight damage; or (k) events of force majeure or damage caused by other external factors such as lightning, power surges, fluctuations in or interruptions of electrical power, rodents, vermin, insects, or other animal- or pest-related issues.

- 3) THIS LIMITED WARRANTY ALSO EXCLUDES:** (a) SERVICE CALLS WHERE NO DEFECT IN THE SYSTEM COVERED UNDER THIS WARRANTY IS FOUND; (b) System installation or set-ups; (c) Third party accessories such as condensate pumps, safety switches, etc.; (d) Adjustments of user controls; (e) Systems purchased or installed outside the continental United States, Alaska and Hawaii; or (f) Systems purchased or installed prior to **February 1, 2022**. Consult the operating instructions for information regarding user controls.

- 4)** This Limited Warranty shall not be enlarged, extended or affected by, and no obligation or liability shall arise or grow out of, METUS providing, directly or indirectly, any technical advice, information and/or service to original owner in connection with the System.

- 5) EXCEPT AS OTHERWISE PROVIDED IN THIS LIMITED WARRANTY, METUS MAKES NO OTHER WARRANTIES OF ANY KIND WHATSOEVER REGARDING THE SYSTEM. METUS DISCLAIMS AND EXCLUDES ALL WARRANTIES NOT EXPRESSLY PROVIDED HEREIN AND ALL REMEDIES WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT OF THIRD PARTY RIGHTS, AND OF FITNESS FOR ANY PARTICULAR PURPOSE. NO ONE IS AUTHORIZED TO CHANGE THIS LIMITED WARRANTY IN ANY RESPECT OR TO CREATE ANY OTHER OBLIGATION OR LIABILITY FOR METUS IN CONNECTION WITH THE SYSTEM. METUS DISCLAIMS ALL LIABILITY FOR THE ACTS, OMISSIONS AND CONDUCT OF ALL THIRD PARTIES (INCLUDING, WITHOUT LIMITATION, THE INSTALLING CONTRACTOR) IN CONNECTION WITH OR RELATED TO THE SYSTEM.
- 6) UNDER NO CIRCUMSTANCES SHALL METUS BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES INCLUDING, WITHOUT LIMITATION, INFRINGEMENT OF THIRD PARTY RIGHTS, LOST GOODWILL, LOST REVENUES OR PROFITS, WORK STOPPAGE, SYSTEM FAILURE, IMPAIRMENT OF OTHER GOODS, COSTS OF REMOVAL AND REINSTALLATION OF THE SYSTEM, LOSS OF USE, INJURY TO PERSONS OR PROPERTY ARISING OUT OF OR RELATED TO THE SYSTEM WHETHER BASED ON BREACH OF WARRANTY, BREACH OF CONTRACT, TORT OR OTHERWISE, EVEN IF METUS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. IN NO EVENT SHALL METUS LIABILITY EXCEED THE ACTUAL PURCHASE PRICE OF THE SYSTEM WITH RESPECT TO WHICH ANY CLAIM IS MADE.
- 7) SOME STATES DO NOT ALLOW LIMITATIONS ON WARRANTIES OR EXCLUSIONS OR LIMITATION OF DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY.
- 8) **DISPUTE RESOLUTION.** For any dispute with METUS, you agree to first contact METUS by phone (800-433-4822) or e-mail (CustomerCare@hvac.mea.com) or U.S. Mail at MITSUBISHI ELECTRIC TRANE HVAC US LLC ATTN: Customer Care, 1340 Satellite Blvd., Suwanee, GA 30024, and attempt to resolve the dispute informally by providing your name, address, and contact information and describing the nature of the dispute. In the unlikely event that METUS has not been able to resolve a dispute with you within 60 days of your original informal claim (or sooner if, in METUS opinion, a dispute is not likely to be resolved within 60 days), we each agree to resolve any claim, dispute, or controversy arising out of or in connection with or relating to this Limited Warranty, or the breach or alleged breach thereof (collectively, "Claims"), by binding arbitration before an arbitrator from Judicial Mediation and Arbitration Services ("JAMS") located in Gwinnett County, Georgia. JAMS may be contacted at www.jamsadr.com and will require you to pay an initial filing fee set by JAMS (unless you successfully apply for a waiver of this fee from JAMS). All other JAMS costs associated with the arbitration will be borne by METUS. The arbitration will be conducted in Gwinnett County, Georgia, unless you request an in-person hearing where you live, or if you and METUS agree otherwise. If the arbitrator decides in your favor, the award may include your costs of arbitration, your reasonable attorneys' fees and your reasonable costs for any expert and other witnesses, and any judgment on the award rendered by the arbitrator may be entered in any court of competent jurisdiction. If the arbitrator makes an award in your favor greater than METUS last written offer, METUS will pay you the greater of the award or \$500, plus your reasonable attorney's fees, if any, and reimburse any reasonable expenses (including reasonable expert witness fees and costs) that are reasonably accrued for investigating, preparing, and pursuing your claim in arbitration, as determined by the arbitrator or as agreed to by you and METUS. Any judgment on the award rendered by the arbitrator may be entered in any court of competent jurisdiction. You may sue under state law in a small claims court of competent jurisdiction without first engaging in arbitration, but you must engage in arbitration before suing under the Federal Magnuson-Moss Act.
- 9) All claims must be brought in the parties' individual capacity, and not as a plaintiff or class member in any purported class or representative proceeding. This waiver applies to class arbitration unless such arbitration is necessary to effectuate the enforcement of the court class action waiver or in the event that class arbitration is expressly agreed to by METUS. You agree that you and METUS are each waiving the right to a trial by jury or to participate in a class action.
- 10) You may opt-out of the foregoing arbitration and class action/jury trial waiver provision of this Limited Warranty by notifying METUS in writing within 30 days of purchase. Such written notification must be sent to MITSUBISHI ELECTRIC TRANE HVAC US LLC ATTN: Legal, 5900-A Katella Avenue, Cypress, CA 90630, and must include (1) your name, (2) your address, (3) your warranted product's serial number, and (4) a clear statement indicating that you do not wish to resolve disputes through arbitration and demonstrating compliance with the 30-day time limit to opt-out.
- 11) If any clause herein is found to be illegal or unenforceable, that clause will be severed from this Limited Warranty and the remainder of the Limited Warranty will be given full force and effect. As noted above, if a class action waiver of both court and arbitration class actions is found unenforceable, class arbitration will be expressly allowed under the Limited Warranty.

- 12) Residents of California and Quebec do not need to register the product in order to get all of the rights and remedies of registered original owners under this warranty.
- 13) This Limited Warranty gives the original owner specific legal rights and the original owner may also have other rights that vary from state to state.
- 14) This Limited Warranty is valid only in the continental United States, Alaska and Hawaii, and it is not transferable.



DURAGUARD UV LINE SETS – COATED ELASTOMERIC

UW CELS1019r

Effective February 12, 2020
(Supersedes UW CELS1019)



The issuance of this price list is not an offer to sell the goods listed herein at the prices stated.

LL = Liquid Line SL = Suction Line IN = Insulation

STANDARD									
Series No.	LL	SL	INS	25'		35'		50'	
				Price	MC Qty	Price	MC Qty	Price	MC Qty
610	3/8	5/8	1/2	112.03	12	154.88	8	200.90	7
			3/4	139.20	7	167.89	5	219.94	5
			1	156.00	5	203.09	4	276.34	4
612	3/8	3/4	1/2	125.15	8	168.32	7	226.57	5
			3/4	135.03	8	197.74	5	259.95	4
			1	165.99	5	227.59	4	296.44	4
614	3/8	7/8	1/2	162.30	8	218.27	7	293.83	5
			3/4	179.08	7	238.88	5	321.10	4
			1	206.44	5	270.28	4	390.35	4

Liquid Line & Suction Line Insulated - Plain Ends (B6)											
Series No.	LL	SL	INS	15'		25'		35'		50'	
				Price	MC Qty	Price	MC Qty	Price	Qty	Price	MC Qty
406	1/4	3/8	1/2	73.19	14	103.89	12	133.82	8	190.07	7
			3/4	82.99	8	120.83	7	155.41	7	220.64	5
			1	107.38	8	160.75	5	210.76	4	299.64	4
408	1/4	1/2	1/2	75.69	14	107.39	12	139.90	8	196.42	5
			3/4	85.56	8	124.42	7	164.68	7	234.64	4
			1	110.05	8	164.47	5	217.25	4	306.40	4
410	1/4	5/8	1/2	78.97	14	126.77	8	159.27	8	221.51	7
			3/4	89.25	8	143.86	7	201.69	7	278.61	4
			1	113.90	8	174.32	5	234.60	4	331.73	4
610	3/8	5/8	1/2	85.15	14	123.40	12	170.72	8	222.83	7
			3/4	105.59	8	152.84	7	191.58	5	257.90	5
			1	122.44	8	187.78	5	314.83	4	338.91	4
612	3/8	3/4	1/2	96.50	14	136.94	8	183.47	7	249.36	5
			3/4	109.76	14	152.59	8	225.32	5	302.27	4
			1	136.76	12	205.83	5	282.21	4	374.64	4
614	3/8	7/8	1/2	122.88	14	176.42	8	237.69	7	350.75	5
			3/4	141.67	14	202.36	7	272.32	5	368.77	4
			1	174.16	12	253.93	5	335.15	4	488.99	4

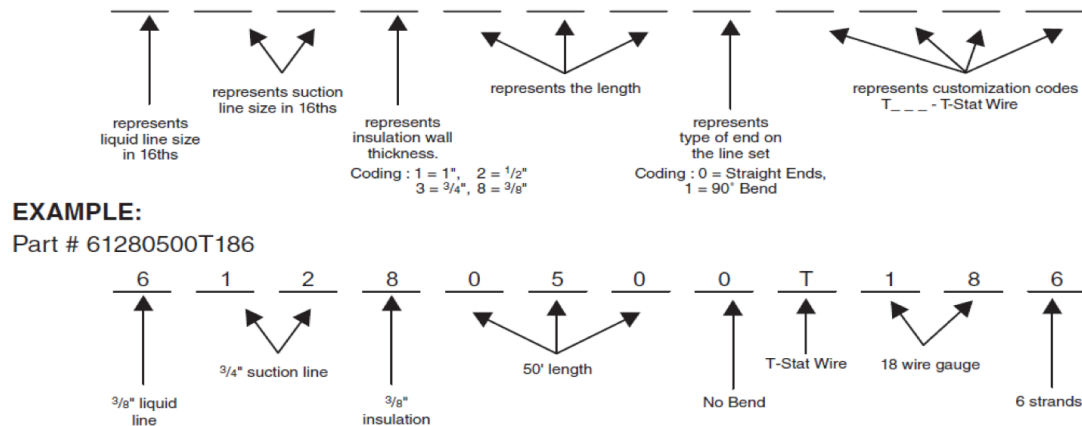
Liquid Line & Suction Line Insulated - Flare Fittings (B3B6)

				15'		25'		35'		50'	
Series No.	LL	SL	INS	Price	Qty	Price	Qty	Price	Qty	Price	Qty
406	1/4	3/8	1/2	91.25	14	121.94	12	151.88	8	208.14	8
			3/4	101.05	8	138.90	12	173.47	7	238.69	5
			1	125.44	8	178.81	5	228.83	4	317.70	4
408	1/4	1/2	1/2	96.31	14	128.00	12	160.51	8	217.05	5
			3/4	106.18	8	145.03	8	185.31	7	255.26	5
			1	130.67	8	185.09	5	237.88	4	327.02	4
410	1/4	5/8	1/2	104.48	14	152.28	8	184.78	8	247.02	7
			3/4	114.76	8	169.38	7	227.20	7	304.13	4
			1	139.41	8	199.83	5	260.11	4	351.57	4
610	3/8	5/8	1/2	111.50	14	149.74	12	197.07	8	249.18	7
			3/4	131.94	8	179.18	7	217.93	5	284.25	5
			1	148.80	8	208.16	5	341.18	4	365.26	4

Suction Line Only

				15'		50'		100'	
Series No.	LL	SL	INS	Price	MC Qty	Price	MC Qty	Price	MC Qty
0042_OC	-	1/4	1/2	30.97	14	78.17	12	172.57	5
0043_OC			3/4	36.55	14	96.10	8	217.32	4
0041_OC			1	46.49	8	142.64	5	303.61	1
0062_OC	-	3/8	1/2	47.08	14	112.45	8	254.26	5
0063_OC			3/4	53.05	14	130.09	5	291.05	4
0061_OC			1	67.85	8	198.92	5	425.09	1
0082_OC	-	1/2	1/2	51.18	14	128.38	7	303.11	5
0083_OC			3/4	57.44	14	149.18	5	346.17	1
0081_OC			1	71.93	8	205.81	4	440.38	1
0102_OC	-	5/8	1/2	57.90	14	151.72	7	397.82	4
0103_OC			3/4	66.80	12	176.01	5	452.09	1
0101_OC			1	83.22	8	220.68	4	482.06	1
0122_OC	-	3/4	1/2	70.17	14	192.24	5	477.50	4
0123_OC			3/4	76.11	8	230.70	4	531.64	1
0121_OC			1	93.78	8	256.23	4	556.17	1
0142_OC	-	7/8	1/2	-	-	254.86	5	670.44	4
0143_OC			3/4	-	-	297.91	4	665.20	1
0141_OC			1	-	-	340.77	4	769.83	1

Standard Line Sets Part Number Coding



HVAC & Refrigeration Offering



- Copper Tube
- Line Sets
- Copper Fittings
- Brass 45° Flare Fittings
- Refrigeration Valves
- Filter Driers
- Sight Glasses
- Accumulators
- Receivers
- PVC Sch. 40 Fittings
- PVC DWV Fittings
- ABS DWV Pipe / Fittings

See your sales representative for more information.

► NITROGENIZED ACR TUBE

Streamline® ACR Copper Tube provides the strength, precision and cleanliness needed for the demanding conditions of HVAC and refrigeration applications. Following precision manufacturing, Streamline ACR is cleaned in a five step, proprietary process and dried with filtered hot air. Then Streamline ACR is pressurized with dry nitrogen gas and sealed under pressure with a positive plug. These measures provide maximum protection against harmful oxides that can form during brazing operations. Reduction of these oxides greatly reduces system contamination, ensuring a long life for system devices and equipment.



- s Available in 10' & 20' straight lengths from 3/8" – 8 1/8"
- s Type K ACR (heavy wall) and plastic coated options are available by request
- s Blue ink markings indicate nitrogen charge and ACR/Medical Gas use
- s Cleaned in proprietary, multi-stage process, charged with 99.9% nitrogen and sealed under low pressure
- s Plugs extend slightly beyond tube ends to protect against damage
- s Plugs designed to maintain internal pressure from -20°F to 150°F
- s Cut ACR can be immediately re-plugged for later use
- s Made to ASTM standard B280
- s Made in USA



A BRAND OF MUELLER INDUSTRIES 

Here's How It Works

When unplugged for use, internal pressure is reduced to atmospheric pressure. As the tube is heated for brazing, internal nitrogen expands and flows to the open end reducing the amount of oxygen that reaches the hot inside surface. This reduces oxidation and naturally results in a cleaner ACR system.



Compare the Difference

The photographs below illustrate the difference in the amount of oxides formed inside a single joint when Streamline ACR tube is brazed, as opposed to the amount formed in a single joint made with other uncharged tube.

Uncharged NITROGEN CHARGED



cUL[®] 700 PSI R410A

Another Industry First: UL Recognized Copper Tube & Fittings

MUELLER STREAMLINE® IS NOW ABLE TO OFFER THESE PRESTIGIOUS PEER-TO-BEER QUALITY IN ORDER TO PROVIDE THE HIGHEST LEVEL OF DATA SECURITY AND TO OUR CUSTOMERS. In order to meet the pressure demands of modern refrigerants, we have taken the additional step of implementing third-party verification — THROUGH UNDERWRITERS LABORATORIES PROGRAM. THIS EXCELLENCE IN SERVICE AND VALIDATES PERFORMANCE OF THESE PRODUCTS UP TO OPERATING PRESSURE.

Other HVACR Tube Offerings

LINE SET



Refrigeration Coils



Plastic Coated



LEVEL 70UND



STANDARD AND MINI SPLIT LINE SETS FOR HVACR APPLICATIONS

Job Name	Contractor
Job Location	Wholesaler
Engineer	Streamline® Rep

Product Description:

Streamline® Standard and Mini Split Line Sets are available in either an elastomeric or coated elastomeric insulation for use in HVACR applications. All line sets will be manufactured in the United States.

Material:

Streamline® Standard and Mini Split Line Sets copper tube shall be made from C12200 grade of copper. Insulation is choice of elastomeric or coated elastomeric material. Elastomeric insulation has a UV retardant added but it is recommended to cover or apply a coating for long term exposure. Coated elastomeric insulation utilizes a co-extruded jacket that requires no additional cover or coating.

Key Specifications:

Streamline® Standard and Mini Split Line Sets are made to meet the requirements of ASTM B1003.

Streamline® Standard and Mini Split Line Sets are third party verified in select sizes through Underwriters Laboratories (UL) for operating pressure of 700psi at 250°F. This rating includes fully annealed and brazed copper tubing.

Installation:

Installations and insulation material shall comply with the latest applicable building codes for the local jurisdiction. For elastomeric insulation, it is recommended, at minimum, to coat insulation on exterior applications with 2 coats of WB Finish a (recoat every 2-4 years). For more substantial protection, place in a protective jacket or protective channel. In accordance with ASTM instructions, insulation ends must be sealed to prevent air/moisture intrusion. Both ends of the tube should be taped with 2" wide 3M™ Scotchrap™ Tape 50, Shurtape® PW100 or equivalent (high U.V. Resistant/High tack joint wrap tape). Reference local building codes for additional details.

References:

Product Line	Product Type	Outer Diameter
	Streamline® Refrigeration Service Coils	1/8" – 1-1/8"
	Streamline® Line Sets & Mini-Splits	1/4" – 1-1/8"
	Streamline® ACR - Type L (Hard Lengths)	1/4" – 1-3/8"
	Streamline® ACR - Type K (Hard Lengths)	1/4" – 2-5/8"



STANDARD AND MINI SPLIT LINE SET DATA

LINE SETS WITH ELASTOMERIC INSULATION

Copper Tube Sizes		Lengths	Insulation Thickness	Optional Finishes
Liquid Line	Suction Line			
1/4" - 1/2"	1/4" - 1-1/8"	10' - 50' using 5' intervals; 60', 100', 150', 164' (other lengths are available upon customer request)	3/8" - 1"	Insulated liquid and suction lines and twin tube system, flare nuts, 90-degree bends, mini-split wire or control cable

DURAGUARD UV™ LINE SETS WITH COATED ELASTOMERIC INSULATION

Copper Tube Sizes		Lengths	Insulation Thickness	Optional Finishes
Liquid Line	Suction Line			
1/4" - 1/2"	1/4" - 1-1/8"	10' - 50' using 5' intervals; 60', 100', 150', 164' (other lengths are available upon customer request)	1/2" - 1"	Insulated liquid and suction lines, flare nuts, 90-degree bends, mini-split wire or control cable

ELASTOMERIC INSULATION SPECIFICATION*

INSULATION:

"R" Values

Pipe Insulation ID Size	Nom. 3/8"	Nom. 1/2"	Nom. 3/4"	Nom. 1"
1/4"	2.8	3.8	6.4	8.3
3/8"	2.8	3.3	5.9	7.2
1/2"	2.6	3.3	5.5	7.2
5/8"	2.6	3.4	5.6	7.0
3/4"	2.4	3.3	5.5	7.0
7/8"	2.4	3.3	5.4	7.0
1-1/8"	2.2	3.3	5.4	7.2

SPECIFICATION COMPLIANCE

- ASTM B1003
- ASTM C 534, Type II — Sheet Grade I
- ASTM C 1534
- ASTM E 84, NFPA 255, UL 723
- CAN/ULC S102
- NFPA 90A, 90B
- ASTM G21/C1338
- ASTM G22
- ASTM D 1056, 2B1
- MIL-P-15280J, FORM S
- MIL-C-3133C (MIL STD 670B),
- Grade SBE 3
- MEA 107-89M
- UL 181
- UL 94 5V-A, V-0, File E 55798
- City of Los Angeles – RR 7642
- ASTM D 1149

PHYSICAL PROPERTIES

Specifications	Values	Test Method
Thermal Conductivity, Btu • in./h • ft ² • °F (W/mK) 75°F Mean Temperature (24°C) 90°F Mean Temperature (32°C)	0.245 (0.035) 0.254 (0.037)	ASTM C 177 or C 518
Water Vapor Permeability, Perm-in. [Kg/(s•m•Pa)]	0.05 (0.725 x 10 ⁻¹³)	ASTM E 96, Procedure A
Flame Spread and Smoke Developed Index through 1" (25mm)*	25/50*	ASTM E 84 CAN/ULC S102
Mold Growth Fungi Resistance Bacterial Resistance	UL181 ASTM G21/C1338 ASTM G22	Meets requirements Meets requirements Meets requirements
Water Absorption, % by Volume	0.2%	ASTM C 209
Upper Use Limit	220°F (105°C)**	ASTM C 534
Lower Use Limit	-297°F (-183°C)**	ASTM C 534
Ozone Resistance	GOOD	Ozone Chamber Test

Refer to specification
230700.2.3.B for refrigerant
piping insulation requirements.

Insulation density not indicated.
Confirm insulation density is within
the acceptable range as defined by
the specification (3 to 6 lb/cu.ft.)

*Mueller Streamline does not independently verify the following information provided by its vendors and makes no representation to the accuracy or completeness of information.

COATED ELASTOMERIC INSULATION SPECIFICATION*

INSULATION:

"R" Values

Pipe Insulation ID Size	Nom. 1/2"	Nom. 3/4"	Nom. 1"
1/4"	4.0	6.1	9.6
3/8"	3.6	5.6	8.5
1/2"	3.4	5.4	7.9
5/8"	3.3	5.4	7.5
3/4"	3.1	5.4	7.5
7/8"	3.2	5.4	7.2
1-1/8"	3.1	5.5	7.1

SPECIFICATION COMPLIANCE

- ASTM B1003
- ASTM C 534, Type I — Tubular, Grade I
- ASTM E 84, NFPA 255, UL 723
- NFPA 90A, 90B
- ASTM G21/C1338
- ASTM G22
- ASTM D 1056, 2BI
- MIL-P-15280J, FORM S
- MIL-C-3133C (MIL STD 670B),
- UL 94 5V-A, V-0, HF-I (File E 300774)
- 2012, 2015, 2018 IECC, IMC, IRC
- 2016 CA Title 24, Part 6, Subchapter 3, Section 120.3
- RoHS Compliant

PHYSICAL PROPERTIES

Specifications	Values	Test Method
Thermal Conductivity, Btu • in./h • ft ² • °F (W/mK) 75°F Mean Temperature (24°C)	0.242 (0.035)	ASTM C 177 or C 518
Water Vapor Permeability,	<0.01 perm-in. insulation ≤0.05 perms jacket	ASTM E 96
Flame Spread and Smoke Developed Index through 1-1/2" (37.5mm)	25/50	ASTM E 84
Mold Growth	UL181	Meets requirements
Fungi Resistance	ASTM G21/C1338	Meets requirements
Bacterial Resistance	ASTM G22	Meets requirements
Water Absorption, % by Volume	0%	ASTM C 209
Upper Use Limit	220°F (104°C)**	ASTM C 534
Lower Use Limit	-70°F (-57°C)**	ASTM C 534
Hot Surface Performance 250°F	ASTM C411, NFPA 90A	Meets requirements
UV Resistance (Artificial Aging)	ASTM G153	Meets requirements

*Mueller Streamline does not independently verify the following information provided by its vendors and makes no representation to the accuracy or completeness of information.

COPPER FITTINGS FOR HVACR APPLICATIONS

Job Name	Contractor
Job Location	Wholesaler
Engineer	Streamline® Rep

Product Description:

Streamline® Wrot Copper fittings for use in refrigeration applications. Available sizes ranging from 1/8" to 8-1/8" in outside diameter. Product is designed to join ASTM B280 and ASTM B88 seamless copper tube.

Material:

Streamline® Wrot Copper fittings shall be made from material in compliance with UNS C12200 grade of copper.

Key Specifications:

Streamline® Wrot Copper pressure fittings shall conform to ASME B16.22 and MSS SP104. Streamline® Wrot Copper pressure fittings are third party verified in select sizes¹ through Underwriters Laboratories (UL) for operating pressure of 700psi at 250°F.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

Product Line	Product Type	Outer Diameter
¹ Copper Fittings 	Streamline® Wrot Solder-Joint Pressure	1/8" – 2-5/8"

*700PSI at 250°F in select patterns

C12200	99.9% Pure Copper
ASME B16.22	Wrot Copper and Copper Alloy Solder Joint Pressure Fittings
MSS SP104	Wrot Copper Solder and Joint Pressure Fittings

Other Applicable Standards

ASTM B88	Seamless Copper Water and Gas Tube (Types K, L, M)
ASTM B280	Seamless Copper Tube for Air Conditioning and Refrigeration

COPPER FITTINGS – HVACR

SOLDER/BRAZE JOINT PRESSURE WROT & CAST

NOTE: ALL SIZES ARE OD

ADAPTER

FEMALE WC-402 C x F

Part	Size	Box	Ctn	Wt
W 01204	1/4 x 1/2	100	300	0.1
W 01205	x 3/8	100	700	0.05
W 01206	x 1/4	100	900	0.04
W 01207	x 1/8	100	1,500	0.04
W 01214	3/8 x 3/8	50	750	0.06
W 01215	x 1/4	50	750	0.04
W 01216	x 1/8	100	1,500	0.03
W 01223	1/2 x 3/4	50	300	0.16
W 01224	x 1/2	50	500	0.1
W 01225	x 3/8	50	750	0.07
W 01226	x 1/4	50	750	0.06
W 01230	5/8 x 3/4	25	250	0.16
W 01231	x 1/2	50	500	0.1
W 01232	x 3/8	50	500	0.07
W 01233	x 1/4	50	500	0.06
W 01238	3/4 x 3/4	50	500	0.15
W 01239	x 1/2	50	500	0.09
W 01245	7/8 x 1	25	250	0.27
W 01246	x 3/4	25	250	0.14
W 01247	x 1/2	25	250	0.11
W 01261	1-1/8 x 1-1/4	10	100	0.28
W 01263	x 1	25	250	0.25
W 01264	x 3/4	25	250	0.22
W 01265	x 1/2	20	200	0.25
W 01270	1-3/8 x 1-1/2	10	100	0.5
W 01271	x 1-1/4	10	100	0.45
W 01272	x 1	10	100	0.33
W 01278	1-5/8 x 2	–	60	0.74
W 01279	x 1-1/2	10	100	0.53
W 01280	x 1-1/4	5	50	0.39
W 01287	2-1/8 x 2	–	50	0.57
W 01288	x 1-1/2	5	50	0.74
W 01296	2-5/8 x 2-1/2	–	25	1.22
W 01297	3-1/8 x 3	–	15	

ADAPTER

FITTING WC-405 FTG x F

Part	Size	Box	Ctn	Wt
W 01514	3/8 x 3/8	50	750	0.06
W 01524	1/2 x 1/2	50	350	0.1
W 01525	x 3/8	50	750	0.05
W 01526	x 1/4	50	750	0.06
W 01531	5/8 x 1/2	50	450	0.11
W 01532	x 3/8	50	750	0.07
W 01546	7/8 x 3/4	25	250	0.17
W 01547	x 1/2	50	500	0.11
W 01563	1-1/8 x 1	25	250	0.24
W 01564	x 3/4	25	250	0.18
W 01571	1-3/8 x 1-1/4	10	100	0.4
W 01579	1-5/8 x 1-1/2	10	100	0.46
W 01587	2-1/8 x 2	–	50	0.65
W 01596	2-5/8 x 2-1/2	–	25	1.2

ADAPTER

MALE WC-401 C x M

Part	Size	Box	Ctn	Wt
W 01105 †	1/4 x 3/8	50	750	0.06
W 01106 †	x 1/4	50	1,200	0.03
W 01107 †	x 1/8	50	2,400	0.02
W 01109 †	5/16 x 3/8	50	800	0.07
W 01110 †	x 1/4	50	1,200	0.03
W 01113 †	3/8 x 1/2	50	500	0.08
W 01114 †	x 3/8	50	750	0.06
W 01115 †	x 1/4	50	1,200	0.03
W 01116 †	x 1/8	50	2,000	0.02
W 01123 †	1/2 x 3/4	25	250	0.17
W 01124 †	x 1/2	50	500	0.09
W 01125 †	x 3/8	50	500	0.06

ADAPTER CONT.

W 01126 †	x 1/4	50	750	0.05
W 01129 †	5/8 x 1	15	150	0.3
W 01130 †	x 3/4	25	250	0.17
W 01131 †	x 1/2	50	500	0.06
W 01132 †	x 3/8	50	500	0.07
W 01133 †	x 1/4	25	600	0.06
W 01138 †	3/4 x 3/4	25	250	0.14
W 01139 †	x 1/2	25	250	0.12
W 01145 †	7/8 x 1	10	100	0.29
W 01146 †	x 3/4	25	250	0.13
W 01147 †	x 1/2	25	250	0.12
W 01161 †	1-1/8 x 1-1/2	10	100	0.48
W 01162 †	x 11/4	10	100	0.39
W 01163 †	x 1	10	100	0.24
W 01164 †	x 3/4	10	100	0.17
W 01165 †	x 1/2	10	100	0.18
W 01170 †	1-3/8 x 1-1/2	10	100	0.48
W 01171 †	x 1-1/4	10	100	0.41
W 01172 †	x 1	10	100	0.24
W 01173 †	x 3/4	10	100	0.21
W 01178 †	1-5/8 x 2	–	50	0.78
W 01179 †	x 1-1/2	10	100	0.51
W 01180 †	x 1-1/4	10	100	0.37
W 01181 †	x 1	10	100	0.38
W 01187 †	2-1/8 x 2	5	50	0.57
W 01188 †	x 1-1/2	–	50	0.64
W 01189 †	x 1-1/4	–	50	0.57
W 01196 †	2-5/8 x 2-1/2	–	20	1.26
W 01197 †	x 2	–	20	0.98
W 01198 †	x 1-1/2	–	22	0.98
W 01199	3-1/8 x 3	–	20	1.7
W 01150	4-1/8 x 4	–	16	3.71

ADAPTER

FITTING WC-404 FTG x M

Part	Size	Box	Ctn	Wt
W 01425 †	1/2 x 3/8	50	750	0.05
W 01431 †	5/8 x 1/2	50	500	0.09
W 01432 †	x 3/8	50	750	0.06
W 01446 †	7/8 x 3/4	50	500	0.15
W 01447 †	x 1/2	50	500	0.13
W 01463 †	1-1/8 x 1	25	250	0.23
W 01464 †	x 3/4	25	250	0.19
W 01471 †	1-3/8 x 1-1/4	10	100	0.41
W 01479 †	1-5/8 x 1-1/2	10	100	0.49
W 01487 †	2 1/8 x 2	–	50	0.76
W 01496 †	2-5/8 x 2-1/2	–	20	1.95

BUSHING

FLUSH WC-106 FTG x C

Part	Size	Box	Ctn	Wt
W 01706 †	3/8 x 1/4	100	4,000	0.01
W 01712 †	1/2 x 3/8	100	4,000	0.01
W 01714 †	x 1/4	100	2,400	0.02
W 01715 †	5/8 x 1/2	100	1,500	0.02
W 01717 †	x 3/8	100	1,500	0.04
W 01720 †	3/4 x 5/8	50	750	0.03
W 01721 †	x 1/2	50	750	0.06
W 01722 †	x 3/8	50	750	0.08
W 01725 †	7/8x 3/4	50	500	0.04
W 01726 †	x 5/8	50	500	0.07
W 01727 †	x 1/2	50	500	0.11
W 01737 †	1-1/8 x 7/8	50	500	0.12
W 01738 †	x 3/4	50	500	0.18
W 01739 †	x 5/8	25	250	0.22
W 01743 †	1-3/8 x 1-1/8	10	200	0.16
W 01745 †	x 7/8	10	200	0.3
W 01750 †	1-5/8 x 1-3/8	10	100	0.22
W 01751 †	x 1-1/8	10	100	0.41
W 01758 †	2-1/8 x 1-5/8	10	100	0.68
W 01759 †	x 1-3/8	5	50	0.94
W 01767 †	2-5/8 x 2-1/8	–	50	0.92

BUSHING

FLUSH WC-417 FTG x F

Part	Size	Box	Ctn	Wt
A 07812	5/8 x 1/8	100	1,600	0.04
A 07813	x 1/4	50	1,200	0.02
A 07814	7/8 x 3/8	50	450	0.08
A 07815	1-1/8 x 1/2	50	300	0.17
A 07816	1-3/8 x 3/4	10	160	0.25
A 07817	1-5/8 x 1	10	90	0.34
A 07819	2-1/8 x 1-1/2	10	90	0.48

CAP

FLUSH WC-415 C

Part	Size	Box	Ctn	Wt
W 07002	1/4	50	2,000	0
W 07004	3/8	50	2,000	0.01
W 07006	1/2	50	1,000	0.01
W 07007	5/8	100	1,000	0.02
W 07008	3/4	50	2,000	0.03
W 07009	7/8	50	500	0.04
W 07011	1-1/8	50	500	0.08
W 07012	1-3/8	25	250	0.11
W 07013	1-5/8	25	250	0.18
W 07014	2-1/8	–	100	0.3
W 07015	2-5/8	–	50	0.48
W 07016	3-1/8	–	50	0.73
W 07017	3-5/8	–	25	1.15
W 07018	4-1/8	–	20	1.5

COUPLING

NO STOP WC-400NS C x C

Part	Size	Box	Ctn	Wt
W 01900 †	1/4	100	4,000	0
W 01901 †	3/8	50	2,000	0.01
W 01902 †	1/2	50	1,700	0.01
W 01903 †	5/8	100	1,000	0.03
W 01904 †	3/4	25	375	0.04
W 01905 †	7/8	50	500	0.06
W 01906 †	1-1/8	25	250	0.11
W 01907 †	1-3/8	25	250	0.15
W 01908 †	1-5/8	10	100	0.25
W 01909 †	2-1/8	–	75	0.4
W 01910 †	2-5/8	–	50	0.66
W 01911	3-1/8	–	25	1.03
W 01913	4-1/8	–	15	2.15

COUPLING

ROLLED STOP WC-400 C x C

Part	Size	Box	Ctn	Wt
W 01000 †	1/8	100	4,000	0
W 01001 †	3/16	100	4,000	0
W 01003 †	1/4	100	4,000	0
W 01009 †	3/8	50	2,000	0.01
W 01017 †	1/2	50	1,700	0.01
W 01022 †	5/8	100	1,000	0.03
W 01028 †	3/4	50	500	0.05
W 01034 †	7/8	50	500	0.06
W 01040 †	1	25	250	0.09
W 01047 †	1-1/8	25	250	0.11
W 01055 †	1-3/8	25	250	0.15
W 01062 †	1-1/2	–	150	0.22
W 01063 †	1-5/8	10	100	0.21
W 01072 †	2-1/8	–	75	0.4
W 01082 †	2-5/8	–	50	0.66
W 01092	3-1/8	–	25	1.03
W 10100	3-5/8	–	20	1.18
W 10107	4-1/8	–	15	2.11

† UL Recognized to 700 PSI (select sizes)

COUPLING

STACKED STOP WC-400S

C x C

Part	Size	Box	Ctn	Wt
W 10141 †	1/4	100	3,400	0
W 10142 †	5/16	100	5,600	0.01
W 10143 †	3/8	50	2,000	0.01
W 10144 †	1/2	50	1,700	0.01
W 10145 †	5/8	100	1,000	0.03
W 10157 †	3/4	25	500	0.04
W 10146 †	7/8	50	500	0.06
W 10147 †	1-1/8	25	250	0.11
W 10148 †	1-3/8	25	250	0.15
W 10149 †	1-5/8	10	100	0.22
W 10150 †	2-1/8	—	75	0.41
W 10151 †	2-5/8	—	50	0.66
W 10152	3-1/8	—	25	1.02
W 10153	3-5/8	—	20	1.03
W 10154	4-1/8	—	15	2.15
W 10155	5-1/8	—	8	3.34
W 10156	6-1/8	—	3	4.61
W 10130	8-1/8	—	1	14.13

COUPLING

REDUCING WC-400R

C x C

Part	Size	Box	Ctn	Wt
W 01004 †	1/4 x 3/16	50	2,000	0.01
W 01005 †	x 1/8	50	2,000	0
W 01010 †	3/8 x 5/16	50	1,700	0.01
W 01011 †	x 1/4	50	2,000	0.01
W 01019 †	1/2 x 3/8	50	1,700	0.01
W 01021 †	x 1/4	50	1,200	0.02
W 01023 †	5/8 x 1/2	100	1,000	0.03
W 01025 †	x 3/8	100	1,000	0.03
W 01027 †	x 1/4	100	1,000	0.03
W 01029 †	3/4 x 5/8	100	600	0.05
W 01030 †	x 1/2	100	600	0.04
W 01031 †	x 3/8	100	600	0.04
W 01035 †	7/8 x 3/4	100	1,000	0.06
W 01036 †	x 5/8	50	500	0.08
W 01037 †	7/8 x 1/2	50	500	0.06
W 01038 †	x 3/8	50	500	0.06
W 01049 †	1-1/8 x 7/8	25	250	0.13
W 01050 †	x 3/4	25	250	0.11
W 01051 †	x 5/8	25	250	0.11
W 01052 †	x 1/2	25	250	0.11
W 01056 †	1-3/8 x 1-1/8	10	100	0.2
W 01058 †	x 7/8	10	100	0.17
W 01060 †	x 5/8	10	100	0.17
W 01064 †	1-5/8 x 1-3/8	10	100	0.23
W 01065 †	x 1-1/8	10	100	0.23
W 01067 †	x 7/8	10	100	0.24
W 01069 †	x 5/8	10	100	0.22
W 01073 †	2-1/8 x 1-5/8	—	100	0.43
W 01074 †	x 1-3/8	—	100	0.43
W 01075 †	x 1-1/8	—	100	0.46
W 01077 †	x 7/8	—	100	0.4
W 01079 †	x 5/8	—	75	0.41
W 01083 †	2-5/8 x 2-1/8	—	50	0.65
W 01084 †	x 1-5/8	—	50	0.75
W 01085 †	x 1-3/8	—	50	0.7
W 01086 †	x 1-1/8	—	50	0.71
W 01093	3-1/8 x 2-5/8	—	25	1.06
W 01094	x 2-1/8	—	25	1.1
W 01095	x 1-5/8	—	25	1.01
W 10101	3-5/8 x 3-1/8	—	25	1.22
W 10108	4-1/8 x 3-5/8	—	20	1.87
W 10109	x 3-1/8	—	20	0.76
W 10110	x 2-5/8	—	15	1.88
W 10111	x 2-1/8	—	20	1.97

45° ELBOW

WE-504

C x C

Part	Size	Box	Ctn	Wt
W 03005 †	1/4	50	2,000	0.01
W 03012 †	3/8	50	2,800	0.01
W 03021 †	1/2	50	850	0.03
W 03026 †	5/8	50	500	0.04
W 03030 †	3/4	50	500	0.06
W 03034 †	7/8	25	250	0.09
W 03044 †	1-1/8	25	250	0.16
W 03050 †	1-3/8	10	100	0.25
W 03055 †	1-5/8	10	100	0.36
W 03059 †	2-1/8	10	50	0.6
W 03063 †	2-5/8	5	25	1
W 03067	3-1/8	2	20	1.53
W 03070	3-5/8	2	10	2.81
W 03073	4-1/8	—	5	3.14

45° ELBOW

STREET
WE-505

FTG x C

Part	Size	Box	Ctn	Wt
W 03312 †	3/8	100	3,400	0.01
W 03321 †	1/2	100	1,500	0.03
W 03326 †	5/8	50	500	0.03
W 03330 †	3/4	50	500	0.06
W 03334 †	7/8	25	250	0.09
W 03344 †	1-1/8	25	250	0.15
W 03350 †	1-3/8	10	100	0.24
W 03355 †	1-5/8	10	100	0.33
W 03359 †	2-1/8	5	50	0.61
W 03363 †	2-5/8	2	20	1.05
W 03368	3-1/8	2	10	1.52
W 03373	4-1/8	—	5	3.11

45° ELBOW

WE-507

FTG x FTG

Part	Size	Box	Ctn	Wt
W 03621 †	1/2	50	1,700	0.02
W 03626 †	5/8	50	750	0.04
W 03634 †	7/8	25	250	0.1
W 03644 †	1-1/8	10	100	0.18

90° ELBOW

SHORT RADIUS
WE-500

C x C

Part	Size	Box	Ctn	Wt
W 02003 †	1/4	50	2,000	0.01
W 02009 †	3/8	50	1,700	0.02
W 02017 †	1/2	50	1,000	0.03
W 02022 †	5/8	100	1,000	0.05
W 02028 †	3/4	50	500	0.08
W 02034 †	7/8	50	500	0.11
W 02040 †	1	20	200	0.22
W 02047 †	1-1/8	25	250	0.24
W 02084 †	1-3/8	10	100	0.3
W 02085 †	1-5/8	10	100	0.42
W 02086 †	2-1/8	10	50	0.76
W 02087 †	2-5/8	5	25	1.19
W 02088	3-1/8	5	25	1.88
W 02089	3-5/8	2	10	2.77
W 02090	4-1/8	2	10	4
W 02097	6-1/8	—	1	13.73

REDUCING

W 02011 †	3/8 x 1/4	50	750	0.02
W 02019 †	1/2 x 3/8	50	750	0.03
W 02023 †	5/8 x 1/2	50	500	0.05
W 02025 †	x 3/8	50	500	0.05
W 02029 †	3/4 x 5/8	50	500	0.06
W 02030 †	x 1/2	50	500	0.07
W 02035 †	7/8 x 3/4	50	500	0.11
W 02036 †	x 5/8	50	500	0.11
W 02037 †	x 1/2	50	500	0.11
W 02049 †	1-1/8 x 7/8	25	250	0.17
W 02050 †	x 3/4	25	250	0.16
W 02051 †	x 5/8	25	250	0.18
W 02052 †	x 1/2	25	150	0.2
W 02056 †	1-3/8 x 1-1/8	20	200	0.32
W 02077 †	1-5/8 x 1-3/8	5	100	0.33
W 02078 †	2-1/8 x 1-5/8	5	50	0.6

90° ELBOW

LONG RADIUS
WE-500L

C x C

Part	Size	Box	Ctn	Wt
W 02701 †	3/16	50	1,000	0
W 02715 †	1/4	50	2,000	0.01
W 02710 †	5/16	50	1,700	0.01
W 02716 †	3/8	50	1,700	0.02
W 02717 †	1/2	50	500	0.04
W 02722 †	5/8	50	500	0.06
W 02728 †	3/4	50	500	0.09
W 02734 †	7/8	25	250	0.13
W 02747 †	1-1/8	10	100	0.27
W 02055 †	1-3/8	10	100	0.42
W 02063 †	1-5/8	5	50	0.6
W 02072 †	2-1/8	5	25	1.23
W 02082 †	2-5/8	5	25	2.05
W 02092	3-1/8	2	10	3.13
W 02093	3-5/8	1	5	5.53
W 02095	4-1/8	—	1	7.98

REDUCING

W 02711 †	3/8 x 1/4	50	3,000	0.01
W 02719 †	1/2 x 3/8	50	2,000	0.03
W 02723 †	5/8 x 1/2	50	1,000	0.04
W 02725 †	x 3/8	50	1,000	0.03
W 02735 †	7/8 x 3/4	25	250	0.12
W 02736 †	x 5/8	50	500	0.09
W 02749 †	1-1/8 x 7/8	10	100	0.17
W 02756 †	1-3/8 x 1-1/8	10	100	0.31
W 02058 †	x 7/8	10	100	0.37
W 02060 †	x 5/8	10	100	0.37
W 02064 †	1-5/8 x 1-3/8	5	50	0.44
W 02065 †	x 1-1/8	5	50	0.52
W 02067 †	x 7/8	5	50	0.51
W 02073 †	2-1/8 x 1-5/8	2	20	0.98
W 02074 †	x 1-3/8	2	20	0.94
W 02075 †	x 1-1/8	2	20	0.97
W 02083 †	2-5/8 x 2-1/8	2	20	1.53

90° ELBOW

STREET SHORT RADIUS
WE-503

FTG x C

Part	Size	Box	Ctn	Wt
W 02305 †	1/4	50	2,000	0.01
W 02312 †	3/8	50	1,700	0.02
W 02321 †	1/2	50	750	0.03
W 02326 †	5/8	50	500	0.05
W 02330 †	3/4	25	250	0.09
W 02334 †	7/8	25	250	0.11
W 02344 †	1-1/8	25	250	0.22
W 02384 †	1-3/8	25	125	0.29
W 02385 †	1-5/8	10	100	0.44
W 02386 †	2-1/8	10	50	0.77
W 02387 †	2-5/8	5	25	1.23
W 02388	3-1/8	2	20	1.94
W 02389	3-5/8	1	10	2.78
W 02390	4-1/8	2	10	4.03

90° ELBOW

STREET LONG RADIUS
WE-503L

FTG x C

Part	Size	Box	Ctn	Wt
W 02809 †	3/8	50	1,700	0.02
W 02817 †	1/2	50	500	0.04
W 02822 †	5/8	50	500	0.06
W 02828 †	3/4	25	250	0.09
W 02834 †	7/8	25	250	0.13
W 02847 †	1-1/8	10	100	0.26
W 02350 †	1-3/8	10	100	0.42
W 02355 †	1-5/8	5	50	0.6
W 02359 †	2-1/8	5	25	1.23
W 02363 †	2-5/8	5	25	2.08
W 02368	3-1/8	2	10	3.12
W 02393	3-5/8	1	5	5.52
W 02395	4-1/8	—	1	8.07

† UL Recognized to 700 PSI (select sizes)

90° ELBOW

SHORT RADIUS WE-506

FTG x FTG



Part	Size	Box	Ctn	Wt
W 02612 †	3/8	50	2,800	0.02
W 02621 †	1/2	50	750	0.03
W 02626 †	5/8	50	500	0.05
W 02634 †	7/8	25	250	0.11
W 02644 †	1-1/8	10	100	0.22
W 02684 †	1-3/8	10	100	0.31
W 02685 †	1-5/8	5	50	0.43
W 02686 †	2-1/8	1	10	0.79
W 02687 †	2-5/8	1	10	1.25
W 02688 †	3-1/8	1	10	2.08
W 02689 †	3-5/8	1	10	2.63
W 02690	4-1/8	1	5	3.88

90° ELBOW

LONG RADIUS WE-506L

FTG x FTG



Part	Size	Box	Ctn	Wt
W 02650 †	1-3/8	5	50	0.44
W 02655 †	1-5/8	5	50	0.63
W 02659 †	2-1/8	1	10	1.23

90° ELBOW

FORGED BRASS WE-502

C x F



Part	Size	Box	Ctn	Wt
W 02206	1/4 x 1/4	50	450	0.1
W 02207	x 1/8	50	800	0.07
W 02214	3/8 x 3/8	50	600	0.1
W 02216	x 1/8	50	700	0.08
W 02225	x 3/8	25	300	0.11
W 02226	x 1/4	25	350	0.1

90° ELBOW

FORGED BRASS WE-501

C x M



Part	Size	Box	Ctn	Wt
W 02106	x 1/4	50	700	0.07
W 02107	x 1/8	50	1,200	0.04
W 02115	x 1/4	50	800	0.06
W 02116	x 1/8	50	800	0.06
W 02125	x 3/8	25	400	0.1
W 02132	x 3/8	10	240	0.16

FITTING REDUCER

WC-403

FTG x C



Part	Size	Box	Ctn	Wt
REDUCING				
W 01302 †	1/4 x 1/8	50	2,000	0
W 01306 †	3/8 x 1/4	50	2,000	0.01
W 01312 †	1/2 x 3/8	50	2,000	0.02
W 01314 †	x 1/4	50	2,800	0.01
W 01315 †	5/8 x 1/2	50	750	0.03
W 01317 †	x 3/8	50	1,700	0.02
W 01320 †	3/4 x 5/8	100	1,000	0.04
W 01321 †	x 1/2	100	900	0.04
W 01322 †	x 3/8	100	900	0.04
W 01325 †	7/8 x 3/4	50	500	0.06
W 01326 †	x 5/8	50	500	0.06
W 01327 †	x 1/2	50	500	0.06
W 01337 †	1-1/8 x 7/8	25	250	0.11
W 01338 †	x 3/4	25	250	0.1
W 01339 †	x 5/8	25	250	0.1
W 01340 †	x 1/2	20	200	0.1
W 01343 †	1-3/8 x 1-1/8	10	100	0.17
W 01345 †	x 7/8	10	100	0.17
W 01347 †	x 5/8	10	100	0.16
W 01350 †	1-5/8 x 1-3/8	10	100	0.23
W 01351 †	x 1-1/8	10	100	0.24
W 01353 †	x 7/8	10	100	0.23
W 01355 †	x 5/8	10	100	0.22
W 01358 †	2-1/8 x 1-5/8	—	100	0.44
W 01359 †	x 1-3/8	—	100	0.43
W 01360 †	x 1-1/8	—	100	0.45
W 01362 †	x 7/8	—	100	0.43
W 01364 †	x 5/8	—	100	0.42

FITTING REDUCER (CONT.)

Part	Size	Box	Ctn	Wt
W 01367 †	2-5/8 x 2-1/8	—	50	0.62
W 01368 †	x 1-5/8	—	50	0.57
W 01369 †	x 1-3/8	—	50	0.62
W 01370 †	x 1-1/8	—	50	0.63
W 01376 †	3-1/8 x 2-5/8	—	25	1
W 01377	x 2-1/8	—	25	0.89
W 01379	x 1-3/8	—	50	1.01
W 01381	3-5/8 x 3-1/8	—	20	1.28
W 01382	x 2-5/8	—	20	1.37
W 01383	x 2-1/8	—	20	1.47
W 01386	4-1/8 x 3-5/8	—	20	1.74
W 01387	x 3-1/8	—	15	1.77
W 01388	x 2-5/8	—	15	1.83
W 01389	x 2-1/8	—	15	1.86

HANGER

HI-EAR W-124

C



Part	Size	Box	Ctn	Wt
A 03167	5/8	100	10,000	0.03
A 03168	7/8	25	500	0.04
A 03171	1-1/8	25	250	0.04

P-TRAP

SUCTION LINE WE-554P

C x C



Part	Size	Box	Ctn	Wt
W 60999	5/8	10	50	0.38
W 61008	3/4	10	50	0.51
W 61000	7/8	5	25	0.63
W 61001	1-1/8	3	15	0.87
W 61002	1-3/8	4	20	1.16
W 61003	1-5/8	4	4	2.28
W 61009	2-1/8	—	3	3.87

P-TRAP

SUCTION LINE LONG RADIUS WE-554PL

C x C



Part	Size	Box	Ctn	Wt
W 60998	5/8	30	150	0.15
W 60997	3/4	20	100	0.3
W 60996	7/8	15	75	0.36
W 60995	1-1/8	15	75	0.58
W 60994	1-3/8	5	25	0.97
W 60993	1-5/8	—	5	1.84
W 60992	2-1/8	—	3	3.61

PLUG

FITTING WC-416

FTG



(SIZES 1/8 THRU 1 1/2 BRASS ROD)

Part	Size	Box	Ctn	Wt
A 01402	1/4	50	500	0.01
A 01422	3/8	100	4,000	0.01
A 01392	1/2	50	2,000	0.02
A 01504	5/8	50	1,200	0.03
A 01529	7/8	50	600	0.07
A 01556	1-1/8	25	375	0.12
A 01590	1-3/8	15	180	0.2
A 01628	1-5/8	10	120	0.28

RETURN BEND

WE-512

C x C



Part	Size	Box	Ctn	Wt
W 06025	3/8 x 4-1/2	25	150	0.1
W 06020	x 1-1/2	25	850	0.02
W 06048	1/2 x 6	—	100	0.21
W 06045	x 4	—	200	0.14
W 06041	x 3	25	250	0.11
W 06036	x 2	50	300	0.06
W 06035	x 12-9/32	50	300	0.08
W 06032	x 1-1/2	50	500	0.06
W 06069	5/8 x 6	5	30	0.3
W 06062	x 3-3/8	10	100	0.18
W 06060	x 3	25	150	0.16

RETURN BEND (CONT.)

Part	Size	Box	Ctn	Wt
W 06058	x 2-1/2	25	250	0.14
W 06056	x 2-1/4	25	250	0.13
W 06053	x 1-7/8	25	250	0.11
W 06051	x 19/16	25	250	0.1
W 06084	3/4 x 4	—	120	0.25
W 06081	x 3-3/8	10	90	0.24
W 06077	x 2-1/2	10	100	0.17
W 06074	x 2-1/8	10	100	0.16
W 06073	x 2	10	100	0.15
W 06099	7/8 x 12	—	15	0.88
W 06095	x 3-3/8	10	100	0.29
W 06092	x 2-1/2	10	100	0.23
W 60111	1-1/8 x 3-1/4	5	50	0.49
W 60110	x 3	5	50	0.47
W 60121	1-3/8 x 3-3/4	5	50	0.65
W 60131	1-5/8 x 4-1/2	5	25	1
W 60140	2-1/8 x 5-1/2	5	25	1.92

TEE

WT-600

C x C x C



Part	Size	Box	Ctn	Wt
W 40302 †	3/16	50	1,700	0.01
W 40306 †	1/4	100	2,400	0.01
W 40313 †	5/16	50	1,700	0.01
W 04000 †	3/8	50	1,700	0.02
W 04001 †	1/2	50	500	0.04
W 04006 †	5/8	50	500	0.07
W 04017 †	3/4	25	250	0.12
W 04031 †	7/8	25	250	0.16
W 04048 †	1-1/8	10	100	0.29
W 04068 †	1-3/8	5	50	0.42
W 04084 †	1-5/8	5	50	0.6
W 40102 †	2-1/8	5	25	1.14
W 40123 †	2-5/8	2	20	1.72
W 40152	3-1/8	2	10	2.77
W 40190	3-5/8	1	5	5.66
W 40200	4-1/8	1	5	5.99
W 40400	5-1/8	—	1	12.38
W 40500	6-1/8	—	1	20.85

REDUCING

Part	Size	Box	Ctn	Wt
W 40368 †	1/4x1/4x3/8	50	750	0.03
W 40308 †	x 3/16	50	2,000	0.01
W 40334 †	5/16x5/16x3/8	50	750	0.03
W 04016 †	3/8x3/8x5/8	50	500	0.08
W 04005 †	x 1/2	50	500	0.04
W 40324 †	x 1/4	50	1,700	0.02
W 40330 †	x 1/4 x 3/8	50	500	0.02
W 40332 †	x 1/4	50	1,700	0.02
W 04015 †	1/2x1/2x5/8	50	500	0.09
W 04002 †	x 3/8	50	500	0.04
W 40350 †	x 1/4	50	500	0.04
W 04003 †	x 3/8x1/2	50	500	0.05
W 04004 †	x 3/8	50	500	0.04
W 40358 †	x 1/4	50	750	0.04
W 40363 †	x 1/4x1/2	50	750	0.05
W 40364 †	x 3/8	50	750	0.04
W 40366 †	x 1/4	50	450	0.05
W 04067 †	5/8x5/8x1-1/8	10	100	0.35
W 04047 †	x 7/8	25	250	0.11
W 04029 †	x 3/4	25	250	0.1
W 04007 †	x 1/2	50	500	0.08
W 04008 †	x 3/8	50	500	0.06
W 04014 †	x 1/4	50	500	0.08
W 04009 †	x 1/2x5/8	50	500	0.09
W 04010 †	x 1/2	50	500	0.08
W 04011 †	x 3/8	50	500	0.08
W 04012 †	x 3/8x5/8	50	500	0.09
W 40367 †	x 1/2	50	500	0.08
W 04013 †	x 3/8	50	500	0.09
W 04046 †	3/4x3/4x7/8	25	250	0.15
W 04018 †	x 5/8	25	250	0.1</

TEE (CONT.)

Part	Size	Box	Ctn	Wt
W 04032 †	x 3/4	25	250	0.17
W 04033 †	x 5/8	25	250	0.12
W 04034 †	7/8x7/8x1/2	25	250	0.11
W 04035 †	x 3/8	25	250	0.11
W 04036 †	x 3/4 x 7/8	25	250	0.19
W 04037 †	x 3/4	25	250	0.17
W 04041 †	x 5/8 x 7/8	25	250	0.16
W 04042 †	x 3/4	25	150	0.17
W 04043 †	x 5/8	25	250	0.13
W 04044 †	x 1/2	25	250	0.12
W 04045 †	x 3/8	25	225	0.15
W 40101 †	1-1/8x1-1/8x1-5/8	5	50	0.47
W 04082 †	x 1-3/8	5	50	0.31
W 04049 †	x 7/8	10	100	0.24
W 04050 †	x 3/4	10	100	0.27
W 04051 †	x 5/8	10	100	0.21
W 04052 †	x 1/2	10	100	0.19
W 04055 †	x 7/8x1-1/8	10	100	0.3
W 04056 †	x 7/8	10	100	0.25
W 04057 †	x 3/4	10	90	0.43
W 04058 †	x 5/8	10	100	0.23
W 04059 †	x 1/2	10	100	0.21
W 40233 †	x 3/4x11/8	10	100	0.33
W 40234 †	x 7/8	10	90	0.3
W 40235 †	x 3/4	10	100	0.31
W 40236 †	x 5/8	10	90	0.35
W 40461 †	x 5/8x1-1/8	10	100	0.3
W 04062 †	x 7/8	10	100	0.28
W 04063 †	x 5/8	10	100	0.21
W 40122 †	1-3/8x1-3/8x2-1/8	2	20	0.89
W 40100 †	x 1-5/8	5	50	0.49
W 04069 †	x 1-1/8	5	50	0.41
W 04070 †	x 7/8	5	50	0.35
W 04071 †	x 5/8	5	50	0.32
W 04072 †	x 1/2	5	50	0.29
W 04073 †	x 1-1/8 x1-3/8	5	50	0.48
W 04074 †	x 1-1/8	5	50	0.46
W 04075 †	x 7/8	5	50	0.38
W 04076 †	x 5/8	5	50	0.36
W 04078 †	x 7/8 x 1-3/8	5	50	0.45
W 04079 †	x 1-1/8	5	50	0.46
W 04080 †	x 7/8	5	50	0.37
W 04081 †	x 5/8	5	50	0.34
W 04083 †	x 5/8 x 1-3/8	5	50	0.57
W 40121 †	1-5/8x1-5/8x2-1/8	2	20	1.21
W 04085 †	x 1-3/8	5	50	0.57
W 04086 †	x 1-1/8	5	50	0.52
W 04087 †	x 7/8	5	50	0.47
W 04088 †	x 5/8	5	50	0.42
W 04089 †	x 1/2	5	50	0.41
W 04090 †	x 1-3/8x1-5/8	5	50	0.68
W 04091 †	x 1-3/8	5	50	0.69
W 04092 †	x 1-1/8	5	50	0.57
W 04093 †	x 7/8	5	50	0.57
W 04094 †	x 5/8	5	50	0.45
W 04095 †	x 1-1/8x1-5/8	5	50	0.68
W 04096 †	x 1-3/8	5	50	0.65
W 04097 †	x 1-1/8	5	50	0.61
W 04098 †	x 7/8	5	50	0.56
W 40237 †	x 5/8	5	30	0.45
W 04099 †	x 7/8 x 1-5/8	5	50	0.67
W 40239 †	x 1-3/8	5	50	0.75
W 40240 †	x 1-1/8	5	50	0.52
W 40238 †	x 7/8	5	50	0.55
W 40243 †	x 5/8	5	50	0.47
W 40244 †	x 5/8 x 15/8	5	50	0.66
W 40153 †	2-1/8x2-1/8x3-1/8	1	10	2.55
W 40144 †	x 2-5/8	1	10	1.46
W 40103 †	x 1-5/8	5	50	0.99
W 40104 †	x 1-3/8	5	50	0.85
W 40105 †	x 1-1/8	5	50	0.88
W 40106 †	x 7/8	5	50	0.83
W 40107 †	x 5/8	5	50	0.67
W 40108 †	x 1/2	2	20	0.68
W 40109 †	x 1-5/8x2-1/8	2	20	1.31
W 40110 †	x 1-5/8	2	20	1.15
W 40111 †	x 1-3/8	2	20	0.86
W 40112 †	x 1-1/8	2	20	1.06
W 40113 †	x 7/8	2	20	0.75
W 40114 †	x 5/8	5	50	0.77
W 40115 †	x 1-3/8x2-1/8	2	20	1.3
W 40116 †	x 1-5/8	2	20	1.14
W 40117 †	x 1-3/8	2	20	1.09

TEE (CONT.)

Part	Size	Box	Ctn	Wt
W 40118 †	x 1-1/8	2	20	0.95
W 40119 †	x 7/8	5	50	0.76
W 40120 †	x 5/8	5	20	0.78
W 40245 †	x 1-1/8x2-1/8	5	25	1.64
W 40247 †	x 1-1/8	5	50	1.06
W 40248 †	x 7/8 x 2-1/8	5	25	1.71
W 40249 †	x 5/8 x 2-1/8	5	25	1.66
W 40124 †	2-5/8x2-5/8x2-1/8	2	20	1.59
W 40125 †	x 1-5/8	2	20	1.49
W 40126 †	x 1-3/8	2	20	1.87
W 40127 †	x 1-1/8	2	20	1.83
W 40128 †	x 7/8	1	10	1.83
W 40129 †	x 5/8	1	10	2.05
W 40130 †	x 21/8x2-5/8	4	20	2.3
W 40131 †	x2-1/8	2	20	1.84
W 40132 †	x 1-5/8	4	20	2.09
W 40133 †	x 1-3/8	4	20	2.12
W 40134 †	x 1-1/8	4	20	2.1
W 40135 †	x 7/8	4	20	2.06
W 40136 †	x 5/8	4	20	2.2
W 40137 †	x 1-5/8x2-5/8	4	20	2.32
W 40138 †	x 2-1/8	4	20	1.84
W 40139 †	x 1-5/8	4	20	2.11
W 40140 †	x 1-3/8	4	20	2.17
W 40141 †	x 1-1/8	4	20	1.83
W 40142 †	x 7/8	4	20	2.36
W 40143 †	x 5/8	4	20	2.36
W 40220 †	x 1-3/8x2-5/8	4	20	2.35
W 40250 †	x 2-1/8	4	20	1.82
W 40251 †	x 1-5/8	4	20	2.47
W 40252 †	x 1-3/8	4	20	1.96
W 40253 †	x 1-1/8	4	20	2.47
W 40254 †	x 7/8	4	20	2.18
W 40255 †	x 5/8	4	20	2.47
W 40221 †	x 1-1/8x2-5/8	4	20	2.39
W 40256 †	x 2-1/8	4	20	1.97
W 40257 †	x 1-5/8	4	20	2.15
W 40258 †	x 1-3/8	4	20	2.04
W 40259 †	x 1-1/8	4	20	2.27
W 40222 †	x 7/8x2-5/8	4	20	2.41
W 40151	3-1/8x3-1/8x2-5/8	2	10	2.45
W 40150	x 2-1/8	2	20	2.3
W 40149	x 1-5/8	2	10	2.18
W 40148	x 1-3/8	2	10	2.38
W 40147	x 1-1/8	2	20	1.96
W 40146	x 7/8	2	20	1.49
W 40145	x 5/8	2	20	1.38
W 40159	x 2-5/8x3-1/8	2	10	2.96
W 40158	x 2-5/8	2	10	4.52
W 40157	x 2-1/8	2	10	2.68
W 40156	x 1-5/8	2	10	2.63
W 40155	x 1-3/8	2	10	2.62
W 40154	x 1-1/8	2	20	2.02
W 40167	x 2-1/8x3-1/8	2	10	3.07
W 40165	x 2-5/8	2	10	4.64
W 40164	x 2-1/8	2	10	2.75
W 40163	x 1-5/8	2	10	2.57
W 40162	x 1-3/8	2	10	2.61
W 40161	x 1-1/8	2	20	2.04
W 40174	x 1-5/8x3-1/8	2	10	2.97
W 40181	x 1-3/8x3-1/8	2	10	3.14
W 40178	x 1-1/8x3-1/8	2	10	3.02
W 40179	x 7/8x3-1/8	2	10	3.03
W 40198	4-1/8x4-1/8x3-1/8	1	5	4.94
W 40197	x 2-5/8	1	5	5.16
W 40196	x 2-1/8	1	10	4.52
W 40195	x 1-5/8	1	10	4.47
W 40194	x 1-3/8	1	10	4.55
W 40193	x 1-1/8	1	10	3.05
W 40192	x 7/8	1	10	2.89
W 40191	x 5/8	1	10	2.89
W 40208	x 3-1/8x4-1/8	1	5	8.66
W 40206	x 3-1/8	1	5	5.12
W 40205	x 2-5/8	1	5	5.61
W 40204	x 2-1/8	1	5	4.76
W 40212	x 2-5/8x4-1/8	1	5	7.79
W 40216	x 2-1/8x4-1/8	1	5	8.95
W 40215	x 1-5/8x4-1/8	1	5	8.51
W 40214	4-1/8x1-3/8x4-1/8	1	5	8.57
W 40213	x 1-1/8x4-1/8	1	5	9.33
W 40503	6-1/8x6-1/8x3-1/8	—	1	11
W 40504	x 2-5/8	—	1	11.1
W 40505	x 2-1/8	—	1	9.54

TEE

FORGED BRASS WT-602

C x C x C



Part	Size	Box	Ctn	Wt
W 04208	1/4x1/4x1/4	50	450	0.09
W 04209	x 1/8	50	1,200	0.04
W 04228	3/8x3/8x3/8	25	350	0.15
W 04229	x 1/4	25	400	0.1
W 04230	x 1/8	10	400	0.11
W 04259	1/2x1/2x3/8	10	240	0.15
W 04283	5/8x5/8x1/2	10	150	0.33

TEE

FITTING WT-600F

C x FTG x C



Part	Size	Box	Ctn	Wt
W 04106 †	5/8	50	300	0.1
W 04131 †	7/8	25	150	0.19

UNION

WC-407

C x C



Part	Size	Box	Ctn	Wt
W 08001	3/8	25	250	0.12
W 08002	1/2	25	250	0.11
W 08003	5/8	25	250	0.16
W 08004	7/8	25	150	0.37
W 08005	1-1/8	10	100	0.52

COPPER TUBE STRAP

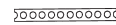
2-HOLE WS-1100



Part	Size	Box	Ctn	Wt
A 01203	1/4	100	4,000	0.01
A 01278	3/8	100	5,600	0.01
A 01366	1/2	100	3,400	0.01
A 02529	5/8	100	1,500	0.01
A 01467	3/4	100	2,000	0.01
A 02574	7/8	50	750	0.01
A 02614	1-1/8	50	750	0.02
A 02650	1-3/8	50	500	0.04
A 02675	1-5/8	50	500	0.05
A 02708	2-1/8	50	500	0.06

PERFORATED COPPER STRAP

WS-1101



Part	Size	Box	Ctn	Wt
A 01211	25 Ft. Roll	1	10	1.63

† UL Recognized to 700 PSI (select sizes)

COPPER FITTING DATA

TEMPERATURE - PRESSURE RATINGS OF SOLDER/BRAZE JOINTS					
ALLOYS USED FOR JOINTS	SERVICE TEMPERATURE °F	STANDARD TUBE SIZE, TYPES K, L, AND M			
		WATER AND NON-CORROSIVE LIQUIDS & GASES			
		1/4 to 1	1-1/4 to 2	2-1/2 to 4	5 to 8
50 / 50 Tin Lead Solder Not to be used in potable water systems	100	200	175	150	135
	150	150	125	100	90
	200	100	90	75	70
	250	85	75	50	45
95 / 5 Tin-Antimony Solder	100	1090	850	705	660
	150	625	485	405	375
	200	505	395	325	305
	250	270	210	175	165
Alloy E Solder	100	710	555	460	430
	150	475	370	305	285
	200	375	290	240	225
	250	320	250	205	195
Alloy HB Solder	100	1035	805	670	625
	150	710	555	460	430
	200	440	345	285	265
	250	430	335	275	260
Brazing Alloys (melting at or above 1000°F)	Pressure-temperature ratings is that of the tubing being used				

Note: Ratings are those given in ASME B 16.22 "Wrought Copper and Copper Alloy Solder Joint Pressure Fittings." (a) Solder alloys are covered by ASTM Standard Specification B32. The Safe Drinking Water Act Amendment of 1986 prohibits the use of any solder having a lead content in excess of 0.2% for potable water systems.

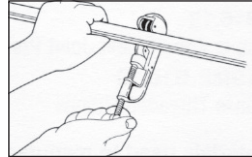
We believe HVACR connections should be made by brazing (using filler metals that melt above 800° F), which is primarily because solder alloys may not be suitable to high vibration and aggressive thermal-cycling environments.

PRESSURE LOSS IN FITTINGS EXPRESSED AS EQUIVALENT LENGTH OF TUBE, FEET						
Outer Diameter in Inches	Wrot Copper Fittings					
	90 Degree Ell	45 Degree Ell	Tee Straight Run	Tee Side Branch	Coupling	180 Degree Bend
1/2	0.5	0.5	0.5	1	-	0.5
5/8	0.5	0.5	0.5	1	-	1
3/4	0.5	0.5	0.5	2	-	1
7/8	1	0.5	0.5	2	-	2
1-1/8	1	1	0.5	3	-	2
1-3/8	2	1	0.5	4	0.5	3
1-7/8	2	2	1	5	0.5	4
2-1/8	2	2	1	7	0.5	8
2-5/8	2	3	2	9	0.5	16
3-1/8	3	4	-	-	1	20

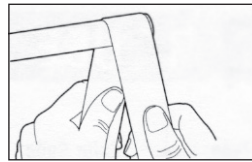
COPPER TUBE AND SOLDER/BRAZE TYPE FITTINGS

1. Cut tube square with the cutter and remove burrs.
2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.
3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.
4. Using a brush, apply light uniform coat of flux to the outside of the tube and inside of the fitting.
5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.
6. Apply heat uniformly around the fitting with torch. When filler metal melts upon contact with heated fitting, the proper brazing temperature has been reached. Remove flame and feed filler metal slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the filler metal. Wipe off surplus with a piece of cloth.

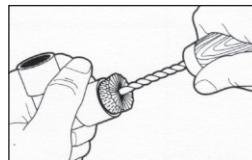
CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the filler metal will not enter the joint properly.



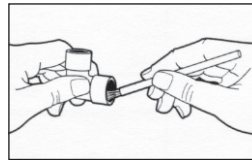
1. Cut tube to length & remove burrs.



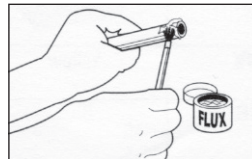
2. Clean outside of tube with sandpaper or sand cloth.



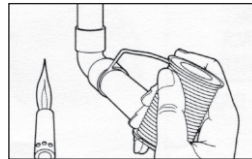
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.



4. Apply flux thoroughly to inside of fitting.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.



6. Apply heat with torch. When filler metal melts upon contact with heated fitting, the proper temp for brazing has been reached. Remove flame & feed filler metal to the joint at one or two points until a ring of filler metal appears at the end of the fitting.

MATERIAL SAFETY DATA SHEET

CODE: M/L 1133

This Material Safety Data Sheet complies with
the U.S. OSHA Hazard Communication
Standard, 29 CFR 1910.1200

PRODUCT: COPPER PHOSPHORUS (15% Silver) BRAZING ROD



COMMON NAME OR SYNONYMS: Includes trade name products: LENOX® Brazing Rods

NFPA/HMIS HAZARD CODES: HEALTH: 2/2* FIRE: 0/0 REACTIVITY: 0/0 SPECIAL: N/A

0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMMON NAME: Silver-Copper-Phosphorus Brazing Alloy
CHEMICAL NAME: Silver-Copper-Phosphorus Brazing Alloy
FORMULA: Ag-Cu-P
PRODUCT CAS No: Chemical Mixture
PRODUCT USE: Welding/Brazing
SUPPLIER: LENOX®
ADDRESS: 1690 Lowery Street, Winston-Salem, NC 27101
PHONE: (336) 777-8600

ISSUE DATE: October, 2007

Ensure brazing filler complies with
AWS 5.8/A5.8M in accordance with
specification 232300.2.2.B.3.

SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	WEIGHT %
Phosphorous	7723-14-0	5
Silver	7440-22-4	15
Copper	7440-50-8	80

NOTE: The percentage by weight values reported for the ingredients in this product represent approximate formulation values.

NOTE: See Section VIII for the Exposure Limits and Section XI for the Toxicological Information.

SECTION III HAZARDOUS INFORMATION

EMERGENCY OVERVIEW: Metallic wire, rod or strip. Odorless. Flash point: not applicable. Overexposure may cause kidney and liver damage and blood disorders. May cause skin and eye irritation. May cause severe respiratory tract irritation. Overexposure to freshly formed fumes may cause flu-like illness called "metal fume fever". Harmful if swallowed. Causes gastrointestinal irritation, abdominal pain, nausea, vomiting and diarrhea. Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

ROUTES OF ENTRY:

EYES: Yes
SKIN: Yes
INHALATION: Yes
INGESTION: Yes

POTENTIAL HEALTH EFFECTS: Eye contact may cause irritation. Skin contact may cause irritation. Inhalation causes irritation and may cause systemic toxicity. Ingestion may cause **Copper** poisoning. Short-term overexposure may cause a flu-like illness called "metal fume fever". May cause a flu-like illness called metal fume fever. Typically begins four to twelve hours after sufficient exposure to freshly formed fumes. The first symptoms are a metallic taste, dryness and irritation of the throat. Cough and shortness of breath may occur along with headache, fatigue, nausea, vomiting, muscle and joint pain, fever and chills. The syndrome runs its course in 24-48 hours. Ingestion is harmful. May cause abdominal pain, nausea, vomiting and diarrhea. **Copper** poisoning can result in hemolytic anemia and kidney, liver and spleen damage. Overexposure to **Copper** poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage. Prolonged overexposure to **Phosphorus** can cause gastrointestinal distress, garlic breath, necrosis and deformity of the jaw. Systemic effects such as cardiac, liver and kidney dysfunction may result due to prolonged inhalation of fumes. The absorption of **Silver** compounds into the circulation and the subsequent deposition of reduced silver in various tissues of the body may result in the production of a generalized grayish pigmentation of the skin and mucous membrane (argyria). There are no systemic effects or symptoms and no physical disability. Once deposited, there is no known means by which this **Silver** can be eliminated; the pigmentation is permanent.

NOTE: Health effects only apply if dust or fume is formed.

CARCINOGENICITY: Not listed by NTP, IARC or OSHA. Refer to Potential Health Effects.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

May adversely affect existing medical conditions, such as eye, skin, respiratory, blood, liver and/or kidney ailments.
Individuals with Wilson's Disease are at increased risk of Copper poisoning.

NOTE: See Section VIII for Exposure Limits, Section XI for Toxicological Information and Section XII for Ecological Information.

SECTION IV FIRST AID MEASURES

EYE CONTACT: Flush eyes with plenty of water. If irritation develops, call a physician.
SKIN CONTACT: Flush with plenty of water. If irritation persists, call a physician.
INHALATION: If exposed to excessive levels of metal fumes, remove to fresh air and seek medical attention.
INGESTION: Procedures normally are not needed. If large quantities are ingested, seek medical advice.

SECTION V FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable
AUTO-IGNITION: Not applicable
LEL: Not applicable
UEL: Not applicable

HAZARD CLASSIFICATION

NFPA
HMIS

HEALTH

2
2*

FLAMMABLE

0
0

REACTIVITY

0
0

*Indicates the possibility of chronic health effects. See Chronic Health Effects Hazards in Section III for more information.

EXTINGUISHING MEDIA:

Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing gas specified in 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

SECTION VI ACCIDENTAL RELEASE MEASURES

Contain spillage and scoop up or vacuum. Notification of the National Response Center (800-424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (See Section XI: Disposal Considerations).

NOTE: In the event of an accidental release of this material, the above procedures should be followed. Additionally proper exposure controls and personal protection equipment should be used (see Section VIII: Exposure Controls/Personal Protection) and disposal of the material should be in accordance with Section XI: Disposal Considerations.

SECTION VII HANDLING AND STORAGE

Wash thoroughly after handling. Store in cool, dry location away from incompatible materials. Avoid contact with any dusts, mists or fumes resulting from the use of this product. Do not eat, drink or smoke in work area. Use only with adequate ventilation.

SECTION VIII EXPOSURE CONTROLS & PERSONAL PROTECTION**INGREDIENTS**

Copper

CAS NO.

7440-50-8

PEL-OSHA

0.1 MG.M3 (Fume)
1 MG.M3 (Dust)

TLV-ACGIH

0.2 MG.M3 (Fume)
1 MG M3 (Dust)

Silver

7440-22-4

0.1/MG/M3

0.1/MG/M3

Phosphorus

7723-14-0

0.1MG M3

0.1 MG/M3

AS PHOSPHOROUS YELLOW

AS PHOSPHOROUS YELLOW

NOTE: The hazards of all ingredients of this product are not known, however exposure is not expected as the product is in solid form. The threshold limit values (TLV's) and the potential health effects statements are listed for the ingredients of the product for which data is available. However, these statements may not be applicable as the ingredients are in solid form. If dust, powder, or fume is generated then TLV's and effects of overexposure statements will be applicable. Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWA's) and total dust (particulate only). All ACGIH TLV's refer to the 1992-93 Standards. All OSHA PEL's refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

NOTE: As a result of the July 7, 1992 decision by the U.S. Circuit Court of Appeals (AFL-CIO v. OSHA) to vacate the 1989 PEL's, OSHA will no longer enforce these new limits and will return to the pre-1989 PEL's. Engelhard, however, will continue to list the more protective 1989 levels.

RESPIRATORY PROTECTION: A NIOSH/MSHA-approved respirator is recommended if dust is generated.

VENTILATION: General or local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLV's during the use this product.

PROTECTION EQUIPMENT: Refer to the ANSI/ASC Z49.1-88 (Safety in Welding and Cutting) published by The American Welding Society for further information of the selection of personal protective equipment. Safety glasses with side shields; gloves; body protection as necessary to prevent skin contact.

PERSONNEL SAMPLING PROCEDURE:

For Copper (dust & fume): Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7029.
For Phosphorus: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7905.
For Metallic Components: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7300.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not determined
SPECIFIC GRAVITY: (H₂O=1):7.75
MELTING POINT: 636.9 °C
VAPOR PRESSURE: (mm Hg) Not applicable
EVAPORATION RATE: (Butyl Acetate=1) Not applicable
% SOLUBILITY IN WATER: Insoluble
APPEARANCE: Metallic wire, rod or strip
ODOR: Odorless
PH: Not available

SECTION X STABILITY AND REACTIVITY

STABILITY: Generally considered stable
AVOID: None expected
INCOMPATIBILITY: Strong acids and bases, oxidizing agents, acetylene, magnesium metal, ammonium nitrate, and hydrogen sulfide.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.
POLYMERIZATION: Is not expected to occur.
AVOID: Not applicable

SECTION XI TOXICOLOGICAL INFORMATION

<u>CHEMICAL NAME</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>	<u>LC50</u>
Copper	7440-50-8	80 3.5 (mg/kg MOUSE, intraperitoneal)	Not Available
Silver	7440-22-4	15(Not Available)	Not Available
Phosphorus	7723-14-0	5(Not Available)	Not Available

NOTE: See Section III, VIII and XII for additional information.

SECTION XII ECOLOGICAL INFORMATION

ECOTOXICITY: No data available
ENVIRONMENTAL FATE: No data available

SECTION XIII DISPOSAL CONSIDERATIONS

U.S. EPA WASTE NUMBER: D011

This product contains Silver or Silver compounds and disposal may be regulated under the EPA hazardous waste regulations, waste number D011. Before disposal, this product or mixtures containing this product should be tested for the toxicity characteristics (TC) under the current EPA Waste Regulations TCLP testing procedures, 40 CFR Part 261 et seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

NOTE: Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary, all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

SECTION XIV TRANSPORT INFORMATION

INTERNATIONAL: Not regulated
UNITED STATES: Not regulated
EPA WASTE NUMBER: D011
DOT CLASSIFICATION: Not regulated
CANADA: Not regulated
PIN NUMBER: Not regulated
TDG CLASS: Not regulated
EC:
DGL: Not determined

SECTION XV REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA: Listed in TSCA

SARA 311 AND 312 HAZARD CATEGORIES

Immediate (Acute) Health Hazard: Yes
Delayed (Chronic) Health Hazard: Yes
Fire Hazard: No
Reactivity Hazard: No
Sudden Release of Pressure: No

SARA SECTION 313 NOTIFICATION:

This product contains a toxic chemical (or chemicals) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<u>INGREDIENT</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>
Phosphorous	7723-14-0	5
Silver	7440-22-4	15
Copper	7440-50-8	80

OZONE DEPLETING SUBSTANCES (ODs)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1190 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (CARB): Not determined
CANADIAN REGULATIONS: DSL/NDL: Not determined
WHMIS CLASSIFICATION: Class D Division 2 Subdivision B
EUROPEAN REGULATIONS: Not determined
OTHER REGULATIONS: Not determined
EINECS: Yes
MITI: Yes
AICS: Yes

SECTION XVI OTHER INFORMATION

VOC CONTENT: None

This Material Safety Data Sheet is offered solely for your information, consideration and investigation. LENOX® provides no warranties, either express or implied, and assumes no responsibilities for the accuracy or completeness of the data contained in this document. The data in this Material Safety Data Sheet relates only to this product and does not relate to use in combination with any other material or in any process.

NATIONAL[®]

454B

DIFLUOROMETHANE
2,3,3,3 - TETRAFLUOROPROPENE

BENEFITS / FEATURES

- Eco-Friendly: 78% lower GWP than R-410A
- High Performance: Excels in normal and high ambient conditions
- Energy Efficient: Superior efficiency over R-410A
- User-Friendly: Low-temp glide allows easy top-offs
- Durable: High critical temp excels in hot conditions

PRIMARY USES

National 454B (R-454B) is the ideal replacement for R-410A, offering superior energy efficiency and eco-friendliness.

Applications:

- Chillers
- Industrial Air Conditioning
- Residential & Commercial Air Conditioning and Heat Pumps
- Commercial Ice Machines
- Industrial Refrigeration
- Resedential Dehumidifiers

AVAILABLE SIZES

Cylinder	20 lb
Cylinder	90 lb
Cylinder	750 lb
Cylinder	1250 lb

HFC-HFO REFRIGERANT

Replaces: R-410A

Compatible Oil(s): Polyolester Oil (POE)

Retrofitting R410a or R22 systems with this refrigerant is strictly prohibited.



TRY OUT THE P/T MOBILE APP TODAY



android



apple

Physical Properties of Refrigerants

Refrigerant Classification	HFC-HFO
Molecular Weight (lb/lbmol)	62.614
Boiling Point (1atm, °F)	-58.9
Critical Pressure (psia)	763.9
Critical Temperature (°F)	172.59
Critical Density (lb./ft ³)	27.658
Liquid Density (77°F, lb./ft ³)	61.468
Vapor Density (77°F, lb./ft ³)	3.1666
Heat of Vaporization (bp, BTU/lb.)	143.7971
Specific Heat Liquid (77°F, BTU/lb.°F)	0.42998
Specific Heat Vapor (1atm, 77°F, BTU/lb.°F)	0.20674
Ozone Depletion Potential (CFC11 = 1.0)	0
Global Warming Potential (CO ₂ = 1.0)	466
ASHRAE Standard 34 Safety Rating	A2L

Temperature Glide (°F)

National R-454B

1.7

PRESSURE-TEMPERATURE CHART

TEMP (°F)	National R-454B	
	Liquid Pressure (psig)	Vapor Pressure (psig)
-60	-0.91	-2.34
-55	1.66	0.9
-50	4.02	3.1
-45	6.64	5.6
-40	9.53	8.4
-35	12.72	11.4
-30	16.24	14.8
-25	20.09	18.5
-20	24.31	22.6
-15	28.92	27.0
-10	33.93	31.8
-5	39.37	37.0
0	45.27	42.7
5	51.66	48.8
10	58.54	55.4
15	65.96	62.6
20	73.94	70.3
25	82.50	78.5
30	91.68	87.4
35	101.49	96.9
40	111.97	107.0
45	123.14	117.8
50	135.04	129.3
55	147.70	141.6
60	161.14	154.6
65	175.40	168.5
70	190.50	183.1
75	206.48	198.7
80	223.38	215.2
85	241.22	232.6
90	260.05	251.0
95	279.88	270.4
100	300.78	290.9
105	322.76	312.5
110	345.88	335.2
115	370.16	359.1
120	395.66	384.3
125	422.42	410.8
130	450.48	438.7
135	479.89	468.0
140	510.72	498.8
145	543.01	531.3
150	576.83	565.4
155	612.25	601.4
160	649.34	639.3
165	688.20	679.7
170	728.85	723.1

Values from NIST Refprop 10.0

* Represented in Hg



454B

DIFLUOROMETHANE
2,3,3,3 - TETRAFLUOROPROPENE

National R-454B Thermal Dynamic Properties

Temp (°F)	Pressure Liquid Phase (psia)	Pressure Vapor Phase (psia)	Density Liquid (lbm/ft ³)	Density Vapor (lbm/ft ³)	Enthalpy Liquid (BTU/lbm)	Enthalpy Vapor (BTU/lbm)	Entropy Vapor (BTU/lbm)	Entropy Vapor (BTU/lbm-°R)
-60	14.25	13.55	77.43	0.21	-7.08	129.0	-0.017	0.324
-55	16.36	15.57	76.95	0.23	-5.32	129.7	-0.013	0.322
-50	18.72	17.82	76.46	0.27	-3.55	130.3	-0.009	0.319
-45	21.33	20.32	75.96	0.30	-1.78	130.9	-0.004	0.317
-40	24.23	23.09	75.46	0.34	0.00	131.5	0.000	0.314
-35	27.42	26.15	74.95	0.38	1.79	132.2	0.004	0.312
-30	30.93	29.51	74.44	0.43	3.58	132.8	0.008	0.310
-25	34.79	33.21	73.92	0.48	5.38	133.3	0.013	0.308
-20	39.01	37.25	73.40	0.54	7.19	133.9	0.017	0.306
-15	43.61	41.67	72.87	0.60	9.01	134.5	0.021	0.304
-10	48.62	46.48	72.33	0.66	10.84	135.0	0.025	0.302
-5	54.07	51.71	71.79	0.73	12.68	135.5	0.029	0.300
0	59.97	57.38	71.24	0.81	14.53	136.1	0.033	0.298
5	66.35	63.52	70.68	0.90	16.39	136.6	0.037	0.296
10	73.24	70.14	70.11	0.99	18.26	137.0	0.041	0.294
15	80.66	77.29	69.54	1.09	20.15	137.5	0.045	0.293
20	88.64	84.97	68.95	1.19	22.05	137.9	0.049	0.291
25	97.20	93.23	68.36	1.31	23.96	138.4	0.053	0.289
30	106.37	102.08	67.76	1.43	25.89	138.8	0.057	0.288
35	116.18	111.55	67.14	1.56	27.83	139.1	0.060	0.286
40	126.66	121.68	66.52	1.71	29.79	139.5	0.064	0.284
45	137.84	132.49	65.88	1.86	31.77	139.8	0.068	0.283
50	149.74	144.01	65.23	2.03	33.76	140.1	0.072	0.281
55	162.40	156.28	64.57	2.20	35.78	140.4	0.076	0.280
60	175.84	169.31	63.90	2.40	37.81	140.6	0.080	0.278
65	190.09	183.16	63.20	2.60	39.87	140.8	0.084	0.277
70	205.20	197.84	62.49	2.83	41.95	141.0	0.087	0.275
75	221.18	213.39	61.77	3.07	44.06	141.2	0.091	0.273
80	238.08	229.86	61.02	3.32	46.19	141.2	0.095	0.272
85	255.92	247.27	60.25	3.60	48.35	141.3	0.099	0.270
90	274.74	265.66	59.46	3.91	50.54	141.3	0.103	0.269
95	294.58	285.08	58.64	4.23	52.77	141.2	0.107	0.267
100	315.47	305.56	57.79	4.59	55.04	141.1	0.111	0.265
105	337.46	327.15	56.91	4.97	57.35	141.0	0.115	0.263
110	360.57	349.89	55.99	5.40	59.70	140.7	0.119	0.261
115	384.86	373.83	55.03	5.86	62.11	140.4	0.123	0.260
120	410.36	399.03	54.02	6.36	64.57	140.0	0.127	0.258
125	437.11	425.53	52.96	6.92	67.11	139.5	0.131	0.255
130	465.17	453.41	51.83	7.54	69.72	138.8	0.136	0.253
135	494.59	482.72	50.62	8.24	72.43	138.1	0.140	0.251
140	525.41	513.54	49.31	9.03	75.26	137.1	0.144	0.248
145	557.70	545.96	47.88	9.93	78.23	135.9	0.149	0.245
150	591.52	580.09	46.29	10.99	81.38	134.5	0.154	0.242
155	626.94	616.05	44.48	12.26	84.79	132.7	0.160	0.238
160	664.04	654.04	42.34	13.86	88.57	130.3	0.165	0.233
165	702.90	694.36	39.63	16.03	93.01	127.0	0.172	0.227
170	743.54	737.80	35.43	19.75	99.19	121.2	0.182	0.217

One atmosphere = 14.696 psia

Reference point for enthalpy and entropy:

0.0 Btu/lb at -40°F

0.0 Btu/lb °R at -40°F



National Refrigerants, Inc.

11401 Roosevelt Boulevard

Philadelphia, PA 19154

Tel: 800.262.0012

fax: 215.698.7466

e-mail: info@refrigerants.com