

40MFC / 38MFC
40MFQ / 38MFQ
High Wall Ductless System
Sizes 09 to 22



Product Data



INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT.

The 38/40MFC(Q) series ductless systems are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The fan coil is mounted on the wall, near the ceiling. This selection of fan coils permits creative solutions to design problems such as:

- Add-ons to current space (an office or family room addition)
- Special space requirements
- When changes in the load cannot be handled by the existing system.
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork.
- Historical renovations or any application where preserving the look of the original structure is essential.

The ideal compliment to your ducted system when it is impractical or prohibitively expensive to use ductwork.

These compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

LOW SOUND LEVELS

When noise is a concern, the ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

When sound ordinances and proximity to neighbors demand quiet operation, the 38MFC,MFQ unit is the right choice. The advanced, horizontal airflow design distributes air more evenly over the coil.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork. In addition, since 38MFC,MFQ units can be installed close to an outside wall, coils are protected from vandals and severe weather.

FAST INSTALLATION

This compact ductless system is simple to install. A mounting bracket is standard with the indoor units and only wire and piping need to be run between indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace. This makes the 38/40MFC,MFQ ductless systems the equipment of choice, especially in retrofit situations.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on outdoor units provides immediate access to the control compartment, providing a service technician access to check unit operation. In addition, the draw-through design of the outdoor section means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters. In addition, these high wall systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

The high wall indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units on heat pumps are protected by a three minute time delay before the compressor will start the over-current protection and the high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ductless system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The high wall units have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between user and the unit.

ACCESSORIES

Customizing these ductless systems to your application is easily accomplished.

Adding a condensate pump accessory to the high wall fan coil provides installation flexibility.

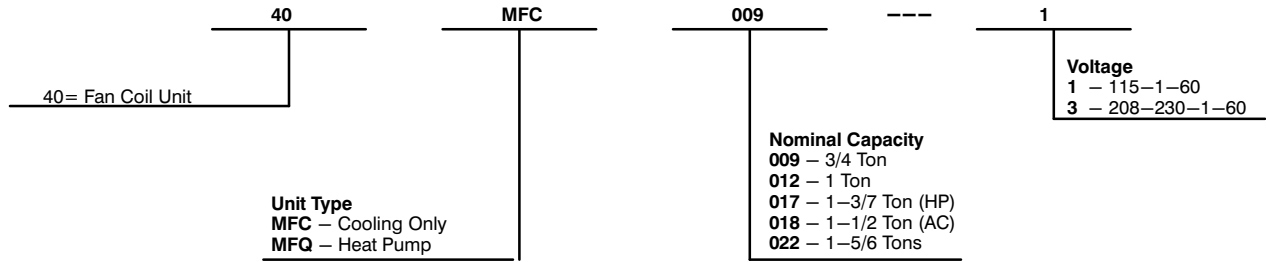
OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

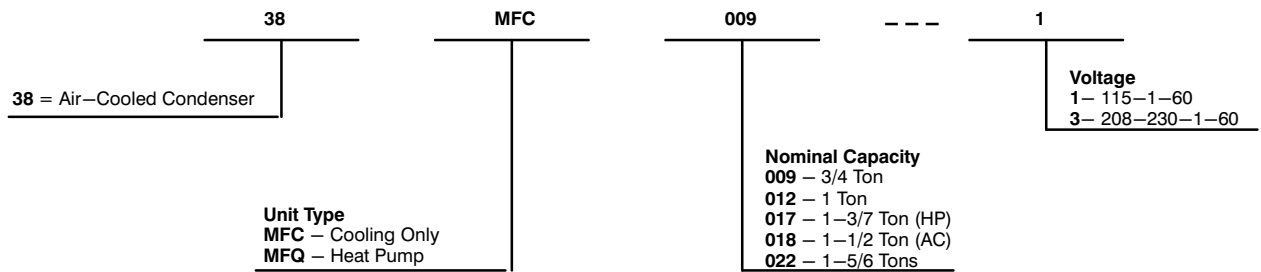
All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

MODEL NUMBER NOMENCLATURE

INDOOR UNIT



OUTDOOR UNIT



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

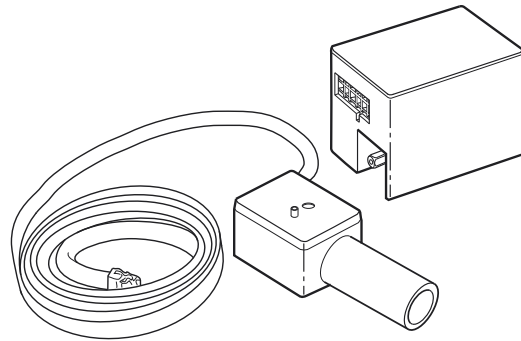


STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Mounting Brackets	S
Low Voltage Controls	S
Comfort Features	
Microprocessor Controls	S
Wired Remote Control	A
Wireless Remote Control	S
Automatic Horizontal Air Sweep	S
Air Direction Control	S
Auto Restart Function	S
Cold Blow Protection On Heat Pumps	S
Freeze Protection Mode On Heat Pumps	S
Turbo Mode	S
Silence Mode	S
Auto Changeover On Heat Pumps	S
Energy Saving Features	
Sleep Mode	S
Stop/Start Timer	S
Safety And Reliability	
3 Minute Time Delay For Compressor	S
Over Current Protection For Compressor	S
Indoor Coil Freeze Protection	S
Indoor Coil High Temp Protection in Heating Mode	S
Condenser High Temp Protection in Cooling Mode	S
Ease Of Service And Maintenance	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
Condensate Pumps	A
Crankcase Heater	S

Legend
 S Standard
 A Accessory

INDOOR UNITS



A07892

Fig. 1 – Condensate Pump Accessory

On high wall fan coils, the condensate pump has a lift capability of 12 ft. (3.6 m) on the discharge side with the pump mounted in the fan coil or 6 ft. (1.8 m) on the suction side if the pump is remote mounted. The pump is recommended when adequate drain line pitch cannot be provided, or when the condensate must move up to exit.

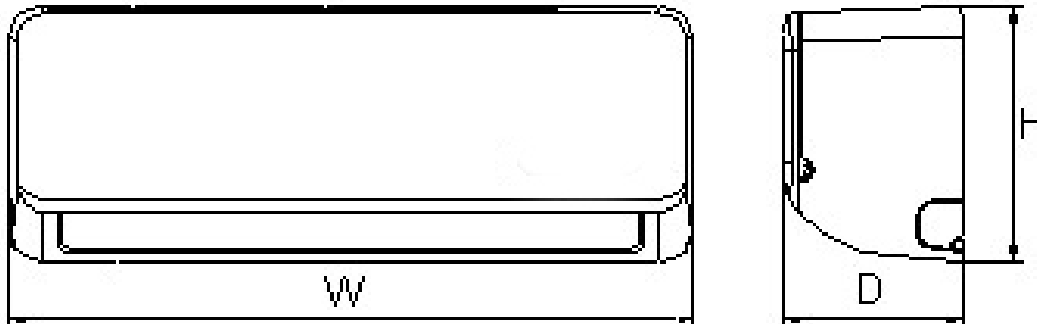
NOTE: An external 115v power source will be required to run the pump on unit sizes 9k and 12k.

OUTDOOR UNITS

Crankcase Heater

Standard on all unit sizes. Heater clamps around compressor oil stump.

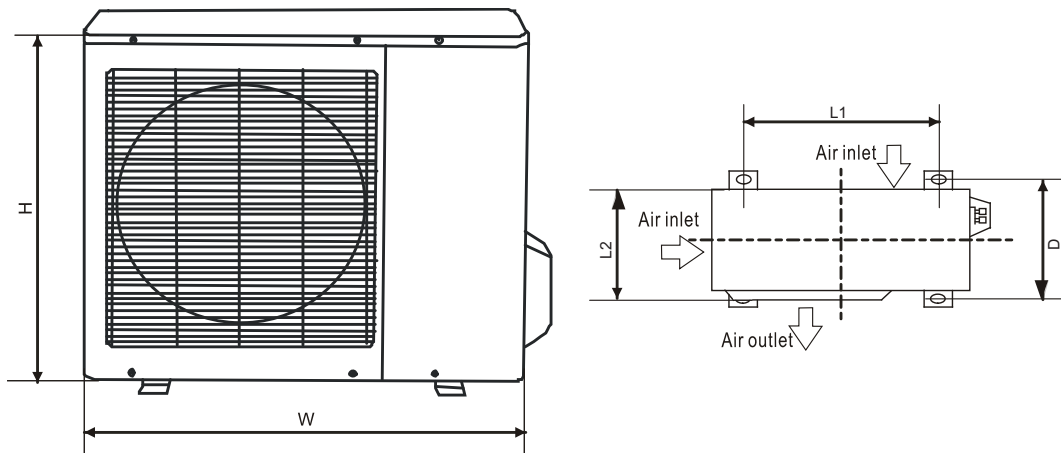
DIMENSIONS – INDOOR



A14343

Unit Size	W in (mm)	D in (mm)	H in (mm)	Operating Weight lb (kg)
9K	26.8 (680)	7.0 (178)	10.0 (255)	15.4 (7)
12K	30.3 (770)	7.4 (188)	10.0 (255)	16.5 (7.5)
17K HP / 18K AC	35.6 (905)	7.8 (198)	10.8 (275)	19.8 (9)
22K	40.6 (1030)	8.6 (218)	12.4 (315)	26.4 (12)

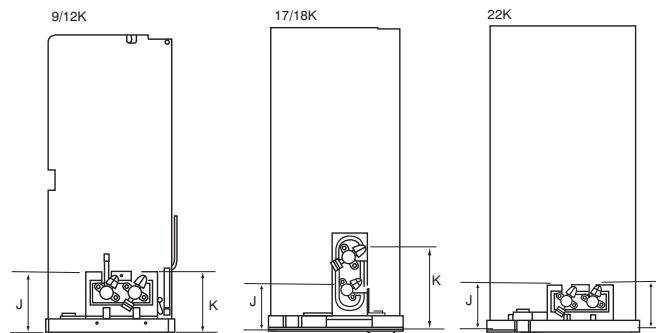
DIMENSIONS – OUTDOOR



A14344

Model	W in (mm)	D in (mm)	H in (mm)	L1 in (mm)	L2 in (mm)	HP Operating Weight lb (kg)	AC Operating Weight lb (kg)
9K	30.7 (780)	9.8 (250)	21.2 (540)	21.6 (549)	10.9 (276)	70.5 (32.0)	58.4 (26.5)
12K	30.7 (780)	9.8 (250)	21.2 (540)	21.6 (549)	10.9 (276)	70.5 (32.0)	61.7 (28.0)
17K HP / 18K AC	29.9 (760)	11.2 (285)	23.2 (590)	20.9 (530)	11.4 (290)	82.7 (37.5)	76.0 (47.0)
22K	33.3 (845)	12.6 (320)	27.6 (700)	22.0 (560)	13.2 (335)	103.6 (47.0)	98.1 (44.5)

SERVICE VALVE LOCATIONS



A14408

Service Valve Locations	9K in. (mm)	12K in. (mm)	18K in. (mm)	22K in. (mm)
J	4.37 (111)	4.37 (111)	4.09 (104)	4.13 (105)
K	4.61 (117)	4.61 (117)	6.34 (161)	4.13 (105)

CLEARANCES – INDOOR

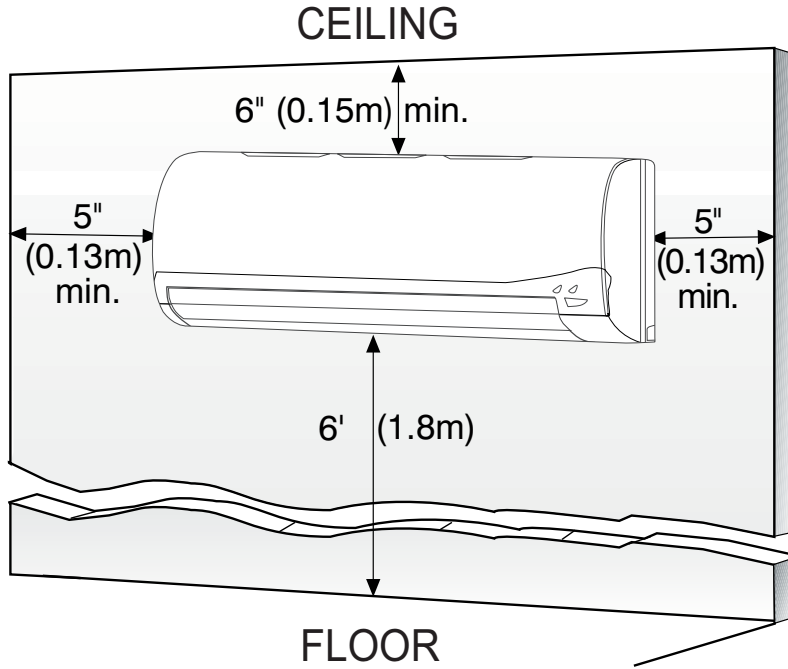


Fig. 2 – Indoor Unit Clearance

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CLEARANCES – OUTDOOR

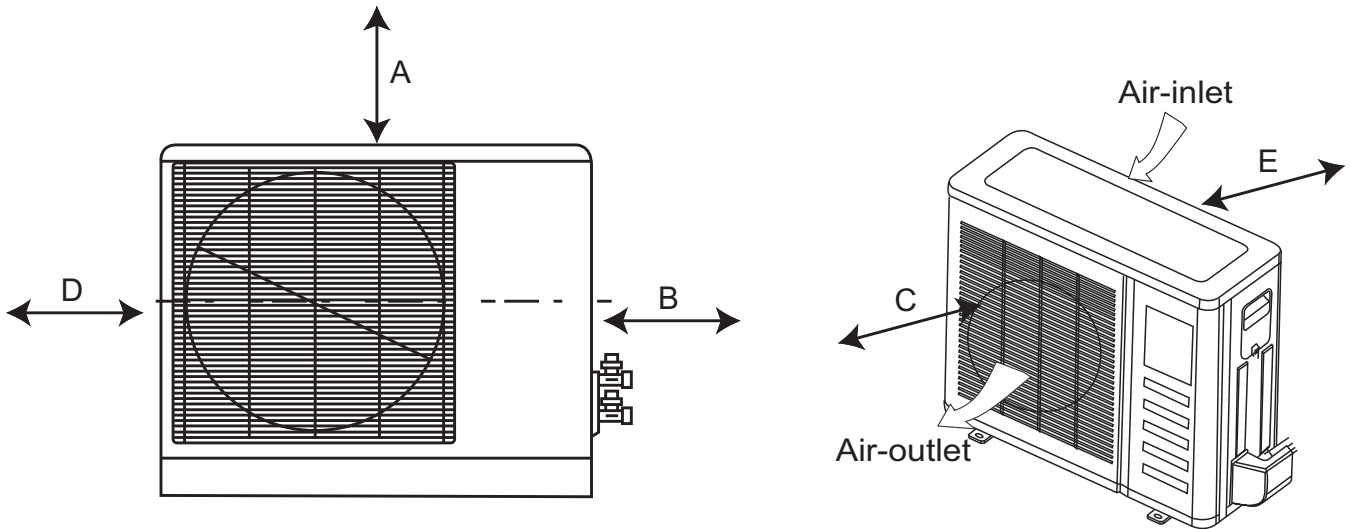


Fig. 3 – Outdoor Unit Clearance

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UNIT	Minimum Value in. (mm)
A	24 (609)
B	24 (609)
C	24 (609)
D	4 (101)
E	4 (101)

SPECIFICATIONS – COOLING ONLY UNITS (MFC SERIES)

SYSTEM					
Size (KBTU/Hr)	09	12	18	22	
Outdoor Model	38MFC009---1	38MFC012---1	38MFC012---3	38MFC018---3	38MFC022---3
Indoor Model	40MFC009---1	40MFC012---1	40MFC012---3	40MFC018---3	40MFC022---3
AHRI Performance Ratings*					
Cooling Rated Capacity Btu/h	9,000	12,000	18,000	22,000	
Cooling Cap. Range Min - Max Btu/h	4,000-10,000	4,500-13,000	5,500-19,000	6,500-24,000	
SEER	15				
EER	10	9	8.5	10	
Operating Range					
Cooling Outdoor DB Min - Max °F	14 - 115				
Cooling Indoor DB Min -Max °F	63 - 90				
Controls					
Wireless (°C, °F, Convertible)	Standard - Convertible				
Wired (°C, °F, Convertible)	Optional: KSACN0101AAA				
Electrical					
System Voltage-PH-Hz	115 -1 -60		208-230-1-60		
Control Voltage	0-15V DC				
Power Supply	Indoor unit powered from outdoor unit				
Outdoor - MCA	19	19	10	14	16
Outdoor - Fuse Rating (MOCP)	30	30	15	20	25
Outdoor Motor					
Rpm/CFM	1000 / 945		940 / 945	860 / 1050	930 / 1390
Diameter (in) ... No. of Blades	15.8 ... 3			16.7 ... 3	18.3 ... 3
Motor (hp)	0.31		0.33	0.68	0.72
Capacitor (µF) / voltage	6 / 250V		2.5 / 400 - 450v	2.5 / 450v	
Indoor Motor					
Motor Watts/ HP	15 / 0.02	15 / 0.02	20 / 0.027	28 / 0.038	45 / 0.061
Rpm/CFM (High)	1200 / 192	1200 / 230	1200 / 232	1200 / 348	1200 / 547
Rpm/CFM (Medium)	1050 / 160	1050 / 194	1050 / 193	1050 / 294	1050 / 458
Rpm/CFM (Low)	900 / 131	900 / 158	900 / 157	900 / 236	900 / 368
Blower Diameter / Length (in)	3.7 / 21.3			3.9 / 28.7	4.2 / 30.7
Capacitor (µF)	3		1.5	3	
Refrigerant					
Refrigerant Type	R410A				
Design Pressure (PSIG)	550				
Metering Device	Capillary Tube in Outdoor Unit				
Charge (lb)	1.34	1.43	1.87	2.60	
Refrigerant Lines					
Connection Type	Flare				
Pipe Connection Size - Liquid (In) OD	1/4			3/8	
Pipe Connection Size - Suction (In) OD	3/8	1/2		5/8	
Condensate Drain OD / ID (in)	0.65 / 0.63				
Maximum Piping Length ft (m)	82 (25)			98 (30)	
Max Lift (Fan Coil Above) ft (m)	32 (10)			65 (20)	
Max Drop (Fan Coil Below) ft (m)	32 (10)			65 (20)	
Compressor					
Type	Rotary				
Model	DA108X1C-20FZ3		DA130M1C-31FZ	DA150S1C-20FZ	
Oil Charge (POE –oz (g))	16.9 (480)			17.6 (500)	
Capacitor	45µF / 250VAC	6µF / 450VAC		None	
Rated Current (RLA)	5.3		3.95	9.7	
Locked Rotor Amp (LRA)	10		14	17	
Outdoor Coil					
Face Area (sq. ft.)	4.10	6.10	7.67	11.16	
No. Rows	1	1.5	2		
Fins per inch	21				
Circuits	2	4			
Indoor Coil					
Face Area (sq. ft.)	2.53	2.98	1.61	5.29	
No. Rows	1/2				
Fins per inch	20	21			
Circuits	2		4	5	
Dimensions - Outdoor					
Dimensions (W X H X D) In	35.8 x 23 x 13.2		34.9 x 25.4 x 14	38.0 x 29.7 x 15.6	
Net Weight (lbs.)	58.4	61.7	76.0	98.1	
Dimensions - Indoor					
Dimensions (W X H X D) In	26.8 x 10.0 x 7.0	30.3 x 10.0 x 7.4	35.6 x 10.8 x 7.8	40.6 x 12.4 x 8.6	
Net Weight (lbs.)	15.4	16.5	19.8	26.4	

***Air Conditioning, Heating & Refrigeration Institute**
 –Ratings are net values reflecting the effects of circulating fan heat. Ratings are based on: Cooling Standard: 80°F (26.67°C) db, 67°F (19.44°C) wb air entering indoor unit and 95°F (35°C) db air entering outdoor unit. High Temperature Heating Standard: 70°F (21.11°C) db air entering indoor unit and 47°F (8.33°C) db, 43°F (6.11°C) wb air entering outdoor unit.
 –Ratings are based on 25 ft. (7.62 m) of interconnecting refrigerant lines.
 –All system ratings are based on fan coil units operating at high fan speed. Consult Specification tables for airflows at all available fan speeds.

Legend
SEER – Seasonal Energy Efficiency Ratio
EER – Energy Efficiency Ratio
MCA – Minimum Circuit Amps
MOCP – Max. Over-Current Protection

SPECIFICATIONS – HEAT PUMP UNITS (MGQ SERIES)

SYSTEM					
Size (KBTU/Hr)	09	12	17	22	
Outdoor Model	38MFQ009---1	38MFQ012---1	38MFQ012---3	38MFQ017---3	38MFQ022---3
Indoor Model	40MFQ009---1	40MFQ012---1	40MFQ012---3	40MFQ017---3	40MFQ022---3
AHRI Performance Ratings*					
Cooling Rated Capacity Btu/h	9,000	12,000	17,000	22,000	
Cooling Cap. Range Min - Max Btu/h	4,000-10,000	4,500-13,000	5,500-19,000	6,500-24,000	
SEER	15				
EER	10.5	10	9	9.5	
Heating Rated Capacity Btu/h	9,000	12,000	18,000	22,000	
Heating Cap. Range Min - Max Btu/h	4,000-10,500	4,500-13,000	5,500-19,500	6,500-24,500	
HSPF	8.2				
COP Btu/h, W	8.1	8.0		9.7	
Operating Range					
Cooling Outdoor DB Min - Max °F	14 - 115				
Heating Outdoor DB Min - Max °F	5 - 75				
Cooling Indoor DB Min - Max °F	63 - 90				
Heating Indoor DB Min - Max °F	32 - 86				
Controls					
Wireless (°C, °F, Convertible)	Standard - Convertible				
Wired (°C, °F, Convertible)	Optional: KSACN0101AAA				
Electrical					
System Voltage-PH-Hz	115 -1 -60	208-230-1-60			
Control Voltage	0-15V DC				
Power Supply	Indoor unit powered from outdoor unit				
Outdoor - MCA	19	10	14	16	
Outdoor - Fuse Rating (MOCP)	30	15	20	25	
Outdoor Motor					
Rpm/CFM	1000 / 945	940 / 945	860 / 1050	930 / 1390	
Diameter (in) ... No. of Blades	15.8 ... 3		16.7 ... 3	18.3 ... 3	
Motor (hp)	0.31	0.33	0.68	0.72	
Capacitor (µF)	6	2.5			
Indoor Motor					
Motor Watts/ HP	15 / 0.02	15 / 0.02	20 / 0.027	28 / 0.038	45 / 0.061
Rpm/CFM (High)	1200 / 192	1200 / 230	1200 / 232	1200 / 348	1200 / 547
Rpm/CFM (Medium)	1050 / 160	1050 / 194	1050 / 193	1050 / 294	1050 / 458
Rpm/CFM (Low)	900 / 131	900 / 158	900 / 157	900 / 236	900 / 368
Blower Diameter / Length (in)	3.7 / 21.3		3.9 / 28.7	4.2 / 30.7	
Capacitor (µF)	3	1.5		3	
Refrigerant					
Refrigerant Type	R410A				
Design Pressure (PSIG)	550				
Metering Device	Capillary Tube in Outdoor Unit				
Charge (lb)	2.6	2.87		3.52	
Refrigerant Lines					
Connection Type	Flare				
Pipe Connection Size - Liquid (In) OD	1/4			3/8	
Pipe Connection Size - Suction (In) OD	3/8	1/2		5/8	
Condensate Drain OD / ID (in)	0.65 / 0.63				
Maximum Piping Length ft (m)	82 (25)			98 (30)	
Max Lift (Fan Coil Above) ft (m)	32 (10)			65 (20)	
Max Drop (Fan Coil Below) ft (m)	32 (10)			65 (20)	
Compressor					
Type	Rotary				
Model	DA108X1C-20FZ3		DA130M1C-31FZ	DA150S1C-20FZ	
Oil Charge (POE –oz (g))	16.9 (480)		17.6 (500)		
Capacitor	45µF / 250VAC	6µF / 450VAC		None	
Rated Load Amps (RLA)	5.3		3.95	9.7	
Locked Rotor Amp (LRA)	10		14	17	
Outdoor Coil					
Face Area (sq. ft.)	8.19		7.81	11	
No. Rows	2				
Fins per inch	17			18	
Circuits	3			4	
Indoor Coil					
Face Area (sq. ft.)	2.53	2.98	1.61	5.29	
No. Rows	1/2				
Fins per inch	20		21		
Circuits	2		4	5	
Dimensions - Outdoor					
Dimensions (W X H X D) In	35.8 x 23 x 13.2		34.9 x 25.4 x 14		38.0 x 29.7 x 15.6
Net Weight (lbs.)	70.5		82.7		103.6
Dimensions - Indoor					
Dimensions (W X H X D) In	26.8 x 10.0 x 7.0	30.3 x 10.0 x 7.4		35.6 x 10.8 x 7.8	40.6 x 12.4 x 8.6
Net Weight (lbs.)	15.4	16.5		19.8	26.4

***Air Conditioning, Heating & Refrigeration Institute**
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 –Ratings are based on 25 ft. (7.62 m) of interconnecting refrigerant lines.
 –All system ratings are based on fan coil units operating at high fan speed. Consult Specification tables for airflows at all available fan speeds.

Legend
SEER – Seasonal Energy Efficiency Ratio
EER – Energy Efficiency Ratio
HSPF – Heating Seasonal Performance Factor
COP – Coefficient of Performance
MCA – Minimum Circuit Amps
MOCP – Max. Over-Current Protection

COOLING PERFORMANCE DATA – 38/40MFC (COOLING ONLY)

MODEL 38–40MFC	COOLING		OUTDOOR CONDITIONS (DB) °F					
	Indoor Conditions DB/WB °F	(BTU/h)	77	86	95	104	113	122
009	69.8/59	TC	5.71	7.90	8.88	7.45	6.20	5.18
		SC	3.70	5.22	6.04	5.23	4.50	3.85
		Input	0.48	0.76	1.00	0.98	0.95	0.90
	75.2/62.6	TC	6.12	8.51	9.70	8.30	7.02	5.91
		SC	3.93	5.54	6.46	5.69	5.00	4.42
		Input	0.48	0.77	1.01	1.00	0.97	0.92
	80.6/66.2	TC	6.55	9.35	10.69	9.01	7.43	6.08
		SC	4.25	6.06	7.04	6.12	5.26	4.50
		Input	0.49	0.79	1.03	1.02	0.99	0.94
	89.6/73.4	TC	6.67	9.86	11.75	10.36	8.95	7.62
		SC	4.03	5.94	7.11	6.39	5.72	5.15
		Input	0.49	0.79	1.05	1.05	1.03	0.99
012 (115v)	69.8/59	TC	5.94	8.63	10.38	8.52	5.60	4.68
		SC	3.65	5.41	6.69	5.67	3.85	3.30
		Input	0.58	0.97	1.35	1.29	0.99	0.94
	75.2/62.6	TC	6.37	9.29	11.34	9.48	6.35	5.34
		SC	3.88	5.74	7.16	6.16	4.29	3.79
		Input	0.58	0.97	1.37	1.31	1.01	0.97
	80.6/66.2	TC	6.82	10.21	12.50	10.30	6.71	5.50
		SC	4.20	6.27	7.81	6.64	4.51	3.86
		Input	0.59	0.99	1.39	1.34	1.03	0.99
	89.6/73.4	TC	6.95	10.77	13.73	11.84	8.09	6.89
		SC	3.98	6.15	7.88	6.93	4.90	4.41
		Input	0.59	1.00	1.42	1.38	1.07	1.03
012 (208–230V)	69.8/59	TC	5.92	8.58	10.33	8.47	5.57	4.66
		SC	3.59	5.32	6.57	5.57	3.79	3.25
		Input	0.57	0.95	1.33	1.27	0.97	0.93
	75.2/62.6	TC	6.34	9.24	11.28	9.43	6.32	5.32
		SC	3.81	5.64	7.03	6.05	4.21	3.72
		Input	0.58	0.96	1.35	1.30	1.00	0.95
	80.6/66.2	TC	6.78	10.16	12.44	10.24	6.68	5.47
		SC	4.13	6.17	7.67	6.52	4.43	3.79
		Input	0.59	0.98	1.37	1.32	1.02	0.97
	89.6/73.4	TC	6.91	10.72	13.66	11.79	8.05	6.85
		SC	3.91	6.04	7.75	6.80	4.82	4.34
		Input	0.58	0.98	1.40	1.36	1.06	1.02
018	69.8/59	TC	12.34	14.95	14.96	10.83	8.16	6.65
		SC	7.90	9.77	10.05	7.52	5.85	4.89
		Input	1.25	1.73	2.01	1.70	1.49	1.38
	75.2/62.6	TC	13.22	16.10	16.34	12.06	9.25	7.59
		SC	8.38	10.37	10.75	8.17	6.51	5.60
		Input	1.25	1.74	2.03	1.73	1.52	1.42
	80.6/66.2	TC	14.15	17.70	18.02	13.10	9.79	7.80
		SC	9.08	11.33	11.73	8.80	6.85	5.71
		Input	1.28	1.78	2.08	1.76	1.55	1.45
	89.6/73.4	TC	14.42	18.66	19.80	15.07	11.79	9.78
		SC	8.61	11.10	11.85	9.18	7.44	6.53
		Input	1.26	1.79	2.12	1.82	1.62	1.52
022	69.8/59	TC	17.19	19.41	19.49	16.59	14.03	11.96
		SC	11.68	13.45	13.88	12.21	10.67	9.33
		Input	1.49	1.92	2.23	2.22	2.18	2.12
	75.2/62.6	TC	18.43	20.91	21.28	18.47	15.90	13.66
		SC	12.39	14.28	14.85	13.27	11.86	10.70
		Input	1.49	1.93	2.26	2.26	2.23	2.18
	80.6/66.2	TC	19.72	22.99	23.47	20.06	16.81	14.05
		SC	13.43	15.61	16.20	14.29	12.49	10.90
		Input	1.52	1.97	2.31	2.31	2.28	2.23
	89.6/73.4	TC	20.09	24.24	25.79	23.07	20.26	17.61
		SC	12.72	15.29	16.36	14.91	13.57	12.46
		Input	1.50	1.98	2.35	2.38	2.37	2.33

LEGEND

- DB – Dry Bulb
- WB – Wet Bulb
- TC – Total Net Cooling Capacity (1000 Btu/hour)
- SC – Sensible Capacity (1000 Btu/hour)
- Input – Total Power (kW)

COOLING PERFORMANCE DATA – 38/40MFQ (HEAT PUMP)

MODEL 38–40MFQ	COOLING		OUTDOOR CONDITIONS (DB) °F					
	Indoor Conditions DB/WB °F	(BTU/h)	77	86	95	104	113	122
009	69.8/59	TC	5.29	7.79	8.75	7.35	6.11	5.11
		SC	3.38	5.07	5.86	5.08	4.36	3.74
		Input	0.43	0.73	0.95	0.93	0.90	0.86
	75.2/62.6	TC	5.67	8.39	9.57	8.18	6.92	5.83
		SC	3.58	5.38	6.27	5.52	4.85	4.29
		Input	0.43	0.73	0.96	0.95	0.92	0.88
	80.6/66.2	TC	6.07	9.22	10.54	8.89	7.32	6.00
		SC	3.88	5.88	6.83	5.94	5.11	4.37
		Input	0.44	0.75	0.98	0.97	0.94	0.90
	89.6/73.4	TC	6.18	9.72	11.59	10.22	8.82	7.51
		SC	3.68	5.76	6.90	6.20	5.55	5.00
		Input	0.44	0.75	1.00	1.00	0.98	0.94
012 (115v)	69.8/59	TC	6.14	8.92	10.16	8.80	5.79	4.84
		SC	3.76	5.57	6.52	5.84	3.97	3.40
		Input	0.56	0.92	1.22	1.23	0.94	0.90
	75.2/62.6	TC	6.59	9.60	11.09	9.80	6.56	5.52
		SC	3.99	5.91	6.98	6.35	4.41	3.90
		Input	0.56	0.93	1.23	1.25	0.96	0.92
	80.6/66.2	TC	7.05	10.56	12.23	10.64	6.94	5.68
		SC	4.33	6.46	7.61	6.84	4.65	3.97
		Input	0.57	0.95	1.26	1.28	0.98	0.94
	89.6/73.4	TC	7.18	11.14	13.44	12.24	8.36	7.12
		SC	4.10	6.33	7.69	7.13	5.05	4.54
		Input	0.56	0.95	1.28	1.32	1.02	0.99
012 (208–230V)	69.8/59	TC	6.14	8.91	10.15	8.80	5.79	4.84
		SC	3.73	5.53	6.47	5.79	3.94	3.38
		Input	0.57	0.94	1.24	1.25	0.96	0.91
	75.2/62.6	TC	6.58	9.60	11.09	9.80	6.56	5.52
		SC	3.96	5.87	6.92	6.29	4.38	3.87
		Input	0.57	0.94	1.25	1.27	0.98	0.94
	80.6/66.2	TC	7.05	10.56	12.23	10.64	6.94	5.68
		SC	4.29	6.41	7.55	6.78	4.61	3.94
		Input	0.58	0.96	1.28	1.30	1.00	0.96
	89.6/73.4	TC	7.18	11.13	13.44	12.24	8.36	7.12
		SC	4.06	6.28	7.62	7.08	5.01	4.51
		Input	0.57	0.97	1.30	1.34	1.04	1.00
017	69.8/59	TC	12.58	15.24	15.25	11.04	8.32	6.78
		SC	8.34	10.30	10.60	7.93	6.18	5.16
		Input	1.19	1.65	1.92	1.62	1.42	1.32
	75.2/62.6	TC	13.48	16.41	16.66	12.30	9.43	7.74
		SC	8.85	10.94	11.35	8.62	6.87	5.91
		Input	1.19	1.66	1.94	1.65	1.45	1.35
	80.6/66.2	TC	14.43	18.04	18.37	13.35	9.97	7.96
		SC	9.59	11.95	12.37	9.28	7.23	6.02
		Input	1.22	1.70	1.98	1.68	1.48	1.38
	89.6/73.4	TC	14.70	19.03	20.18	15.36	12.02	9.97
		SC	9.08	11.72	12.50	9.69	7.85	6.89
		Input	1.21	1.71	2.02	1.73	1.54	1.45
022	69.8/59	TC	16.27	18.37	18.44	15.70	13.27	11.32
		SC	10.99	12.65	13.06	11.49	10.03	8.78
		Input	1.46	1.88	2.19	2.18	2.14	2.08
	75.2/62.6	TC	17.44	19.79	20.14	17.48	15.05	12.93
		SC	11.65	13.43	13.97	12.48	11.16	10.07
		Input	1.46	1.89	2.22	2.21	2.19	2.14
	80.6/66.2	TC	18.67	21.75	22.21	18.98	15.91	13.30
		SC	12.63	14.68	15.24	13.45	11.75	10.25
		Input	1.49	1.93	2.26	2.26	2.23	2.18
	89.6/73.4	TC	19.01	22.94	24.40	21.84	19.17	16.66
		SC	11.97	14.39	15.39	14.03	12.76	11.73
		Input	1.47	1.94	2.31	2.33	2.32	2.29

LEGEND

- DB – Dry Bulb
- WB – Wet Bulb
- TC – Total Net Cooling Capacity (1000 Btu/hour)
- SC – Sensible Capacity (1000 Btu/hour)
- Input – Total Power (kW)

HEATING PERFORMANCE DATA – 38/40MFQ (HEAT PUMP)

MODEL 38–40MFQ	HEATING		OUTDOOR CONDITIONS (DB) °F					
	Indoor Conditions DB °F	(BTU/h)	53.6	44.6	39.2	32.0	24.8	19.4
009	59	TC	11.30	11.00	11.91	7.70	6.44	6.20
		Input	1.20	1.17	1.28	1.11	1.03	1.08
	64.4	TC	10.64	10.44	11.53	7.32	6.76	5.97
		Input	1.23	1.17	1.30	1.18	1.14	1.19
	69	TC	10.58	10.55	11.43	6.95	6.25	6.10
		Input	1.26	1.21	1.34	1.18	1.11	1.17
71.6	TC	9.84	10.26	10.90	5.90	6.31	5.89	
	Input	1.16	1.20	1.34	1.17	1.12	1.23	
012 (115v)	59	TC	12.81	12.12	12.00	7.76	6.48	6.25
		Input	1.44	1.37	1.37	1.18	1.10	1.16
	64.4	TC	12.06	11.50	11.61	7.37	6.80	6.01
		Input	1.47	1.37	1.39	1.26	1.21	1.27
	69	TC	12.00	11.62	11.51	7.00	6.30	6.15
		Input	1.51	1.41	1.43	1.26	1.19	1.25
71.6	TC	11.15	11.30	10.98	5.94	6.36	5.94	
	Input	1.40	1.40	1.43	1.25	1.20	1.31	
012 (208–230v)	59	TC	12.79	12.11	11.98	7.75	6.48	6.24
		Input	1.44	1.37	1.37	1.18	1.10	1.16
	64.4	TC	12.05	11.49	11.59	7.36	6.80	6.00
		Input	1.47	1.37	1.40	1.26	1.22	1.27
	69	TC	11.98	11.61	11.49	6.99	6.29	6.14
		Input	1.51	1.42	1.43	1.26	1.19	1.25
71.6	TC	11.14	11.29	10.97	5.94	6.35	5.93	
	Input	1.40	1.41	1.43	1.26	1.20	1.31	
017	59	TC	20.22	19.47	18.52	11.97	10.01	9.65
		Input	2.19	2.12	2.04	1.76	1.64	1.73
	64.4	TC	19.04	18.48	17.92	11.38	10.51	9.28
		Input	2.24	2.12	2.08	1.87	1.81	1.90
	69	TC	18.94	18.66	17.77	10.81	9.72	9.49
		Input	2.30	2.19	2.13	1.87	1.77	1.87
71.6	TC	17.61	18.15	16.95	9.18	9.82	9.16	
	Input	2.13	2.18	2.13	1.87	1.79	1.96	
022	59	TC	24.12	23.15	21.97	14.20	11.87	11.44
		Input	2.19	2.11	2.03	1.74	1.62	1.71
	64.4	TC	22.71	21.97	21.26	13.50	12.46	11.01
		Input	2.24	2.11	2.06	1.86	1.79	1.88
	69	TC	22.59	22.19	21.07	12.82	11.53	11.26
		Input	2.30	2.18	2.11	1.86	1.76	1.85
71.6	TC	21.00	21.59	20.11	10.89	11.64	10.87	
	Input	2.13	2.16	2.12	1.85	1.77	1.94	

LEGEND

DB – Dry Bulb
 TC – Total Net Cooling Capacity (1000 Btu/hour)
 Input – Total Power (kW)

APPLICATION DATA

UNIT SELECTION

Select equipment to either match or be slightly less than anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on total anticipated load. Adjust for anticipated room wet bulb temperature to avoid under-sizing equipment.

UNIT MOUNTING (INDOOR)

Refer to unit Installation Instructions for further details.

Unit leveling – For reliable operation, units should be level in all planes.

Clearance – Provide adequate clearance for airflow as shown in Fig. 2.

Unit location – Select a location which will provide the best air circulation for the room.

These units should be positioned as high as possible on the wall for best air circulation. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. Place the unit in the middle of the selected wall (if possible). Use an outside wall, if available, to make piping easier, and place the unit so it faces the normal location of room occupants.

UNIT MOUNTING (OUTDOOR)

Refer to unit Installation Instructions for further details.

Unit leveling – For reliable operation, units should be level in all planes.

Clearance – Minimum clearance, as shown in Fig. 3, must be provided for airflow. The condensing units are designed for free-blow application. Air inlets and outlets should not be restricted.

Unit location – A location which is convenient to installation and not exposed to strong wind.

A location which can bear the weight of outdoor unit and where the outdoor unit can be mounted in a level position.

Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your Carrier representative.

MOUNTING TEMPLATE

Refer to unit Installation Instructions for further details.

The fan coil units are furnished with mounting to mark the location of the wiring, and refrigeration line hole locations.

SUPPORT

Adequate support must be provided to support the weight of all fan coils. Refer to the Physical Data section for fan coil weights, and the base unit dimensional drawings for the location of mounting brackets.

SYSTEM OPERATING CONDITIONS

Operating Range Min / Max °F (°C)		
	Cooling	Heating
Outdoor DB	14 / 115 (-10 / 46)	5 / 75 (-15 / 24)
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	4.1 / 70.7 (-15.5 / 21.5)

Non-Operating Temperature Range Min / Max °F (°C)	
Indoor/Outdoor DB	32 / 86 (0 / 30)

NOTE: Reference the Product Installation Instructions for more information.

METERING DEVICES

These units have capillary tube metering devices in the outdoor unit.

DRAIN CONNECTIONS

Install drains to meet local sanitation codes. If adequate gravity drainage cannot be provided, unit should be equipped with accessory condensate pump. High wall fan coil unit condensate pumps have a maximum lift of 10' (3.05 m) for 9k and 12k units and 25' (7.62 m) for 18k and 22k units.

See physical dimension tables for drain sizes.

NOTE: High wall fan coil units have internal condensate traps. A trap is not required.

Drain connections may be routed through alternate locations on most fan coils as shown in Fig. 4.

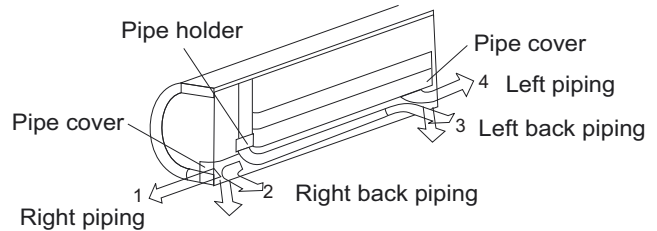


Fig. 4 – Piping Locations

A14349

REFRIGERANT LINES

General refrigerant line sizing:

- The 38MFC/MFQ units are shipped with a full charge of R410A refrigerant. All charges, line sizing, and capacities are based on runs of 25 ft. (7.6 m). For runs over 25 ft. (7.6 m), consult long-line section on this page for proper charge adjustments.
- Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36-in (914 mm) should be buried. Provide a minimum 6-in (152 mm) vertical rise to the service valves to prevent refrigerant migration.
- Both lines must be insulated. Use a minimum of 1/2-in. (12.7 mm) thick insulation. Closed-cell insulation is recommended in all long-line applications.
- Special consideration should be given to isolating interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.

Long Line Applications, 38MFC Units:

- No change in line sizing is required.
- Add refrigerant per the following table.

Unit Size	Total Line Length ft		Additional Charge, oz/ft. ft (m)		
	Min	Max	10–25 (3–8)	>25–82 (8–25)	>82–131 (25–40)
9K	10	65	None	0.16	0.32
12K					
18K AC 17K HP					
22K					

- Reduction in capacity due to long lines can be calculated from the chart below.

	Capacity, % Loss				
	Line Length ft (m)				
Cooling:	25 (7.5)	33 (10)	49 (15)	82 (25)	98(30)
9 and 12K	1%	2%	5%	8%	–
18 and 22K	1%	2%	4%	7%	8%
Heating:					
9 and 12K	1%	2%	7%	12%	–
17 and 22K	1%	2%	6%	11%	15%

WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively. Per the caution note, only stranded copper conductors with a 600 volt rating and double insulated copper wire must be used.

The use of BX cable is not recommended.

Recommended Connection Method for Power and Communication Wiring – Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power, one is communication wiring and the other is a ground wire.

Recommended Connection Method for Power and Communication Wiring (To minimize communication wiring interference)

Power Wiring:

The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire. To minimize voltage drop, the factory recommended wire size is 14/2 stranded with a ground.

Communication Wiring:

A separate shielded Stranded copper conductor only, with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit. Please use a separate shielded 16GA stranded control wire.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Wires should be sized based on NEC and local codes.
- Use copper conductors only with a 600 volt rating and double insulated copper wire.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Be sure to comply with local codes while running wire from indoor unit to outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.
- No wire should be allowed to touch refrigerant tubing, compressor or any moving parts.
- Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.
- Connecting cable with conduit shall be routed through hole in the conduit panel.

The main power is supplied to the outdoor unit. The field supplied connecting cable from the outdoor unit to indoor unit consists of four wires and provides the power for the indoor unit as well as the communication signal between the outdoor unit and indoor unit. Two wires are high voltage AC power (L1 and L2), one is a ground wire, and one is a DC communication wire.

CONTROL SYSTEM

The 40MFC/MFQ unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system
2. Control the system and provide optimum levels of comfort and efficiency

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor too) with thermistors located in the fan coil air inlet and on the indoor coil. Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system operation to maintain the unit within acceptable parameters and control the operating mode.

WIRELESS REMOTE CONTROL

1. A wireless remote control is supplied for system operation of all high-wall units.
2. Each battery-operated wireless (infrared) remote control may be used to control more than one unit.



WIRED REMOTE CONTROL (OPTIONAL)

P/N KSACN0101AAA



1. Optional wired remote controller used for system operation of all high wall units.
2. Kit includes a wired remote controller and a connecting cable.
3. Connect with wire terminal between remote controller and indoor unit.
4. Display in °F or °C and temperature increments every 1°F or every 1°C.

AIR THROW DATA

UNIT CAPACITY	APPROXIMATE AIR THROW ft. (m)		
	Low	Medium	High
009 115v	11 (3.5)	15 (4.5)	21 (6.5)
012 115v	14 (4.2)	17 (5.1)	23 (7.0)
012 208/230v	14 (4.2)	17 (5.1)	23 (7.0)
017/018 208/230v	16 (5.0)	20 (6.2)	28 (8.5)
022 208/230v	19 (5.7)	23 (7.0)	31 (9.5)

SOUND RATINGS

Outdoor Units

Model Number	Sound Power dBA	Sound Pressure dBA
38MFC(Q)009----1	67	57
38MFC(Q)012----1	67	58
38MFC(Q)012----3	67	58
38MFC017 / 38MFC018----3	70	60
38MFC(Q)022----3	72	61

Indoor Units

Model Number	High		Medium		Low	
	Sound Power dBA	Sound Pressure dBA	Sound Power dBA	Sound Pressure dBA	Sound Power dBA	Sound Pressure dBA
40MFC009----1	52	43	48	39	43	34
40MFC012----1	53	44	49	40	45	36
40MFC012----3	53	44	49	40	45	36
40MFC018----3	55	45	51	41	47	37
40MFC022----3	60	50	56	46	52	42
40MFQ009----1	52/49 (Clg/Htg)	43/40 (Clg/Htg)	48/44 (Clg/Htg)	39/35 (Clg/Htg)	43/39 (Clg/Htg)	34/30 (Clg/Htg)
40MFQ012----1	53/52 (Clg/Htg)	44/43 (Clg/Htg)	49/47 (Clg/Htg)	40/38 (Clg/Htg)	45/52 (Clg/Htg)	36/33 (Clg/Htg)
40MFQ012----3	53/51 (Clg/Htg)	44/42 (Clg/Htg)	49/45 (Clg/Htg)	40/36 (Clg/Htg)	45/40 (Clg/Htg)	36/31 (Clg/Htg)
40MFQ017----3	55/52 (Clg/Htg)	45/42 (Clg/Htg)	51/48 (Clg/Htg)	41/38 (Clg/Htg)	47/43 (Clg/Htg)	37/33 (Clg/Htg)
40MFQ022----3	60/56 (Clg/Htg)	50/46 (Clg/Htg)	56/52 (Clg/Htg)	46/42 (Clg/Htg)	52/48 (Clg/Htg)	42/38 (Clg/Htg)

NOTES:

1. Sound power ratings are per AHRI 270 and AHRI 350
2. Sound pressure ratings are estimated sound pressure, 3 feet (.91 m) from the unit, based on sound power data.

ELECTRICAL DATA

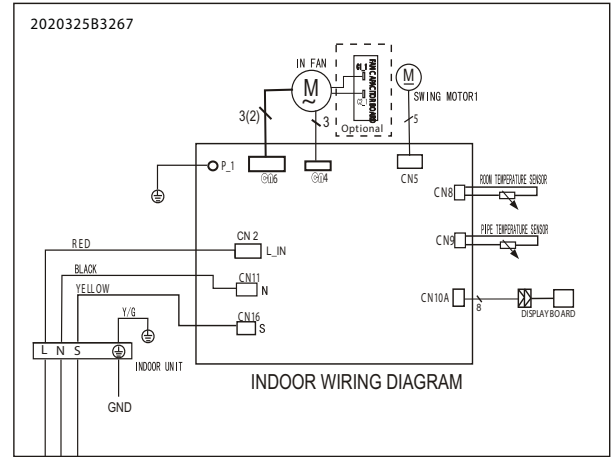
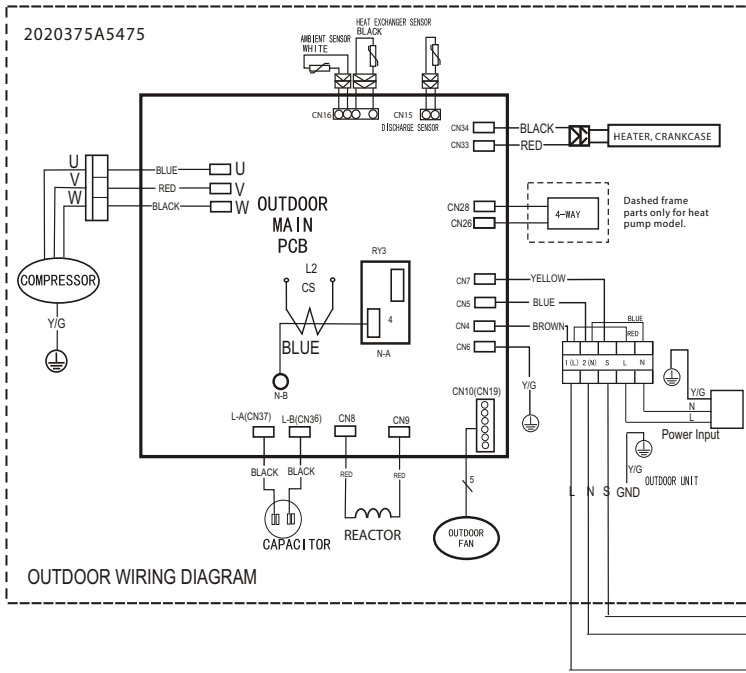
UNIT SIZE	OPER. VOLTAGE MAX / MIN*	COMPRESSOR			OUTDOOR FAN				INDOOR FAN				MCA	MAX FUSE CB AMP
		V-PH-HZ	RLA	LRA	V-PH-HZ	FLA	HP	W	V-PH-HZ	FLA	HP	W		
9K	127 / 104	115-1-60	5.3	10	115-1-60	0.7	0.31	23	115-1-60	0.3	0.020	15	19	30
12K														
12K	253 / 187	208-230-1-60	5.3	10	208-230-1-60	0.3	0.33	24	208-230-1-60	0.2	0.027	20	10	15
017K (HP) 018K (AC)			3.95	14		0.6	0.68	50		0.3	0.038	28	14	20
22K			9.7	17		0.6	0.72	53		0.4	0.061	45	16	25

*Permissible limits of the voltage range at which the unit will operate satisfactorily

LEGEND

- FLA** — Full Load Amps
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
RLA — Rated Load Amps

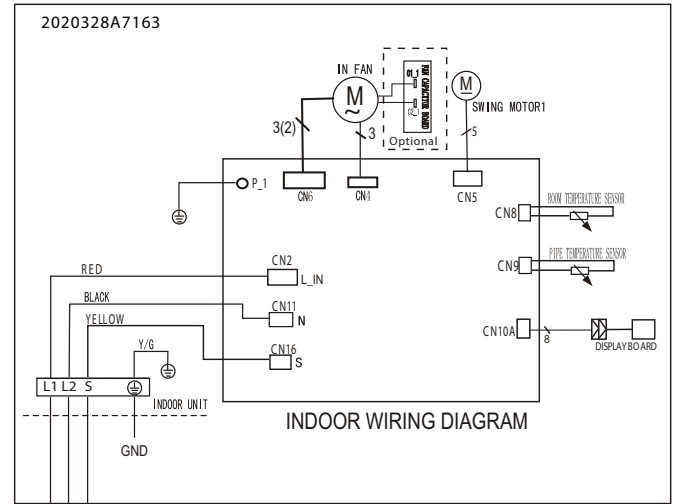
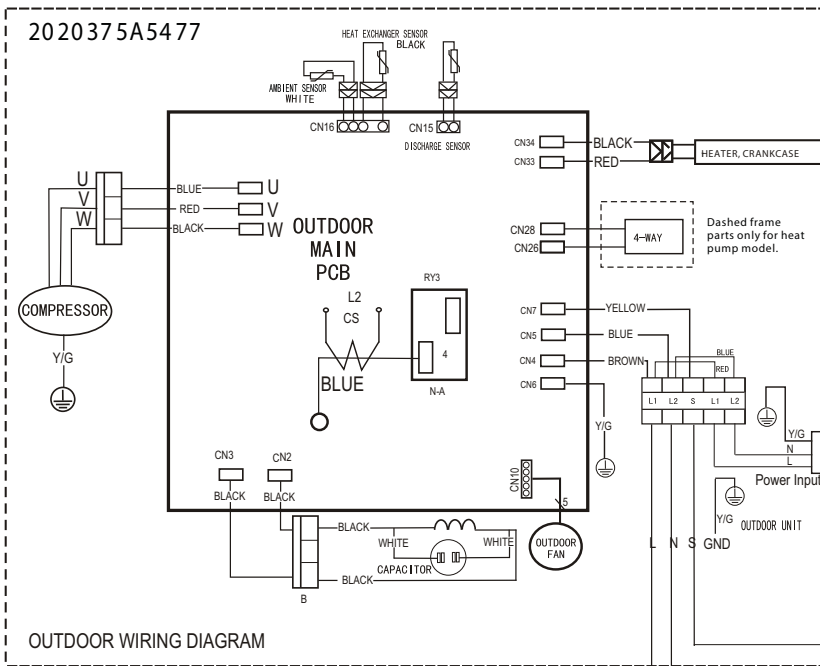
WIRING DIAGRAMS



CODE	PART NAME
L IN	FireWire L input terminal
CN11	Zero line N input terminal
CN16	Internal and external communication line interface
CN6	Indoor fan interface
CN4	Fan feedback interface
CN5	Stepper motor interface
P 1	Ground interface
CN8	Room temperature sensor interface
CN9	Pipe temperature sensor interface
CN10A	Display interface
CN1	Electronic expansion valve interface
CN14	Compressor top temperature sensor (optional)
CN15	Exhaust temperature sensor
CN16	Outdoor temperature & amp; condenser pipe temperature sensor
CN10	DC fan output port (no)
CN19	AC fan output port
CN33	Electric heating wire line N
CN34	Electric heating wire line L
CN26, CN28	Four way valve control port
CN4	Power L input terminal
CN5	Power N input terminal
CN6	Ground wire
CN7	Communication line
CN8, CN9	Reactor connected line port
CN36, CN37	PFC capacitor connected line port
N-B	Power L input terminal
CN17	Test panel interface
U V W	Compressor connection port

Fig. 5 – Wiring Diagram 38/40MFC/MFQ009 / 38/40MFC/MFQ012 (115V)

WIRING DIAGRAMS (CONT.)



CODE	PART NAME
L IN	FireWire L input terminal
CN11	Zero line N input terminal
CN16	Internal and external communication line interface
CN6	Indoor fan interface
CN4	Fan feedback interface
CN5	Stepper motor interface
P_1	Ground interface
CN8	Room temperature sensor interface
CN9	Pipe temperature sensor interface
CN10A	Display interface
CN14	Compressor top temperature sensor (optional)
CN15	Exhaust temperature sensor
CN16	Outdoor temperature & condenser pipe temperature sensor
CN26, CN28	Four way valve control port
CN10	AC fan output port
CN32, CN34	Electric heating wire line N
CN31, CN33	Electric heating wire line L
CN4	Power L input terminal
CN5	Power N input terminal
CN6	Ground wire
CN7	Communication line
N-B	Power L input terminal
CN2, CN3	Reactor connected line port
CN17	Test panel interface
U V W	Compressor connection port

Fig. 6 – Wiring Diagram 38/40MFC/MFQ012 (208–230V)

WIRING DIAGRAMS (CONT.)

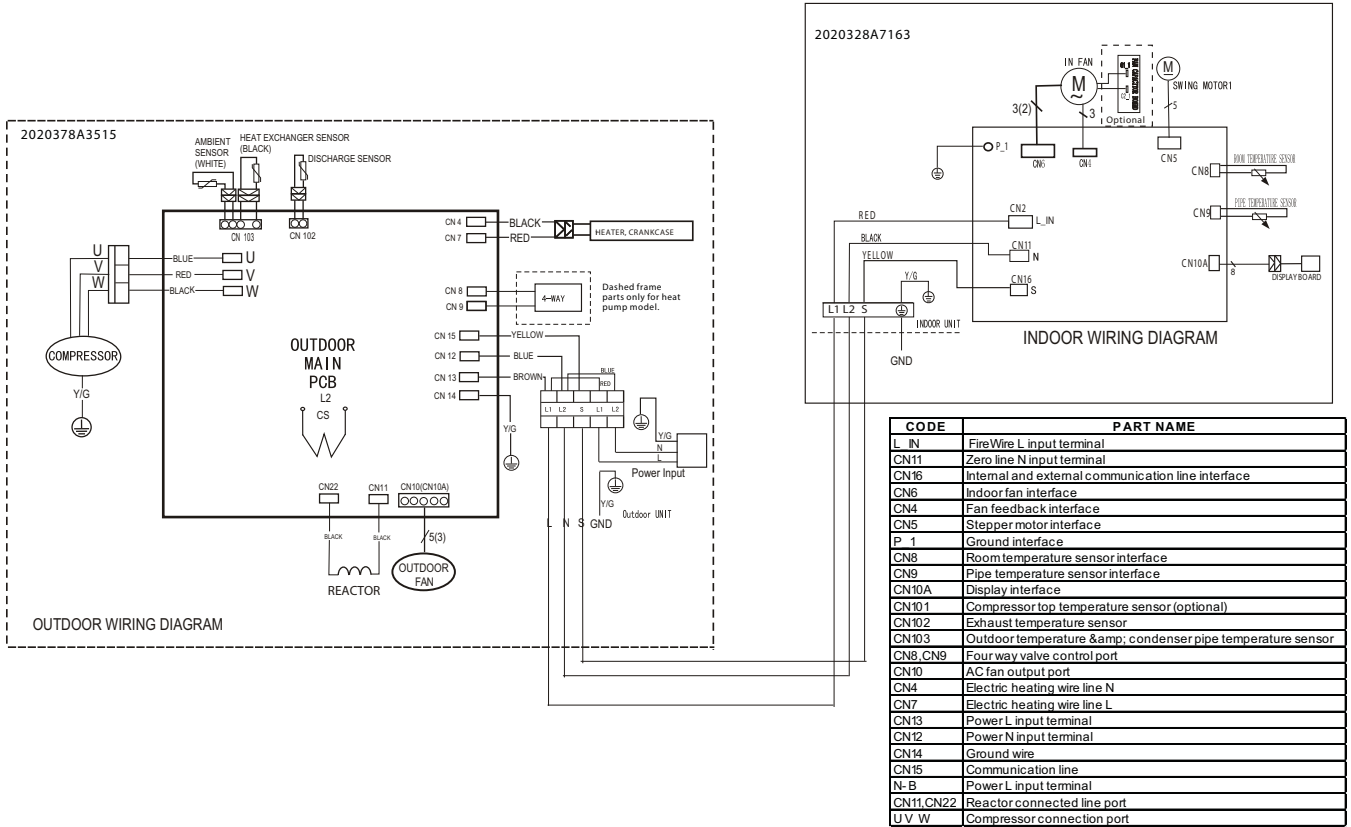
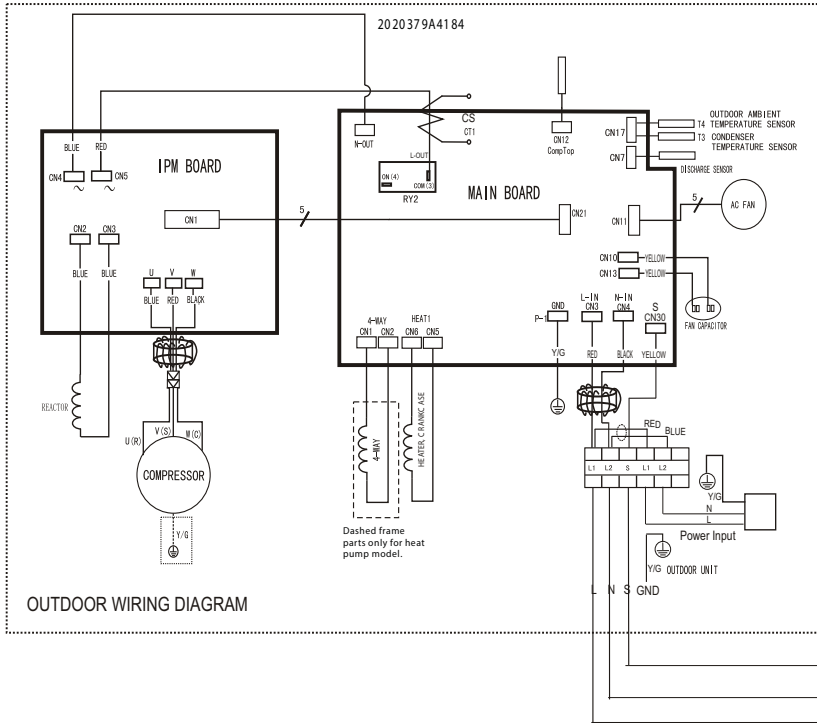
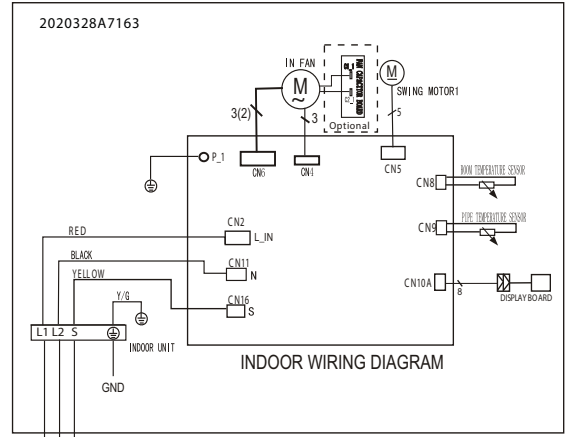


Fig. 7 – Wiring Diagram 38/40MFC018 – 38/40MFQ017 (208–230V)

WIRING DIAGRAMS (CONT.)



OUTDOOR WIRING DIAGRAM



INDOOR WIRING DIAGRAM

CODE	PART NAME
L IN	FireWire L input terminal
CN11	Zero line N input terminal
CN16	Internal and external communication line interface
CN6	Indoor fan interface
CN4	Fan feedback interface
CN5	Stepper motor interface
P 1	Ground interface
CN8	Room temperature sensor interface
CN9	Pipe temperature sensor interface
CN10A	Display interface
CN12	Compressor top temperature sensor (optional)
CN7	Exhaust temperature sensor
CN17	Outdoor temperature & condenser pipe temperature sensor
CN1,CN2	Four way valve control port
CN11,CN22	AC fan output port
CN10,CN13	Fan capacitor port
CN5	Electric heating wire line N
CN6	Electric heating wire line L
CN3	Power L input terminal
CN4	Power N input terminal
P 1	Ground wire
CN15	Communication line
N-OUT1	Power N Onput terminal
RY2 POWER	Power L Onput terminal
CN26	Test panel interface
CN4	Power L input terminal
CN5	Power N input terminal
CN2,CN3	Reactor connected line port
CN11	Bus voltage positive terminal
CN12	Bus voltage positive terminal
CN1	Main control board and power supply
CN6	Standby power interface
U V W	Compressor connection port

Fig. 8 – Wiring Diagram 38/40MFC(Q)022 (208–230V)

GUIDE SPECIFICATIONS

INDOOR WALL-MOUNTED DUCTLESS UNITS

Size Range: 3/4 to 1-5/6 Ton Nominal Cooling and Heating Capacity
Carrier Model Number: 40MFC/40MFQ

PART 1 – GENERAL

1.01 System Description

Indoor, wall-mounted, direct-expansion fan coils are matched with cooling only or heat pump outdoor unit.

1.02 Agency Listings

Unit shall be rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling

Units shall be stored and handled per unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

PART 2 – PRODUCTS

2.01 Equipment

A. General:

Indoor, direct-expansion, wall-mounted fan coil. Unit shall be complete with cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit shall be furnished with integral wall mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall be fully insulated for improved thermal and acoustic performance.

C. Fans:

1. Fan shall be tangential direct-drive blower type with air intake at the top of the unit and discharge at the bottom front. Automatic, motor-driven vertical air sweep shall be provided standard.
2. Air sweep operation shall be user selectable. The vertical sweep may be adjusted (using the remote control) and the horizontal air direction may be set manually.

D. Coil:

Coil shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins shall be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for hose attachment to remove condensate. Condensate pan shall have internal trap.

E. Motors:

Motors shall be open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors shall be 3-speed.

F. Controls:

Controls shall consist of a microprocessor-based control system which shall control space temperature, determine optimum fan speed, and run self diagnostics. The temperature control range shall be from 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C.

The unit shall have the following functions as a minimum:

- An automatic restart after power failure at the same operating conditions as at failure.
- A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
- Temperature-sensing controls shall sense return air temperature.
- Indoor coil freeze protection.
- Wireless infrared remote control to enter set points and operating conditions.
- Automatic air sweep control to provide on or off activation of air sweep louvers.
- Dehumidification mode shall provide increased latent removal capability by modulating system operation and set point temperature.
- Fan-only operation to provide room air circulation when no cooling is required.
- Diagnostics shall provide continuous checks of unit operation and warn of possible malfunctions. Error messages shall be displayed at the unit.
- Fan speed control shall be user-selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
- Automatic heating-to-cooling changeover in heat pump mode. Control shall include deadband to prevent rapid mode cycling between heating and cooling.
- Indoor coil high temperature protection shall be provided to detect excessive indoor discharge temperature when unit is in heat pump mode.

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Indoor fan motor to operate on 115V on model sizes 009-012 and on 208-230V on model sizes 012-022, power is supplied from outdoor unit.

I. Operating Characteristics:

The 40MFC, MFQ system shall have a minimum listed SEER (seasonal energy efficiency ratio) of 15 at AHRI conditions, and a minimum HSPF of 8.2.

J. Refrigerant Lines

All units should have refrigerant lines that can be oriented to connect from the left, right or back of unit. Both refrigerant lines need to be insulated.

K. Special Features (Field Installed):

Condensate Pump:

- The condensate pump shall remove condensate from the drain pan when gravity drainage cannot be used. Pump shall be designed for quiet operation. Pump shall consist of two parts: an internal reservoir/sensor assembly, and a remote sound-shielded pump assembly. A liquid level sensor in the reservoir shall stop cooling operation if the liquid level in the reservoir is unacceptable.

GUIDE SPECIFICATIONS

HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 3/4 to 1-5/6 Ton Nominal Cooling and Heating Capacity
Carrier Model Number: 38MFC/38MFQ

PART 1 – GENERAL

1.01 System Description

Outdoor air-cooled split system compressor sections suitable for on-the-ground, rooftop, wall hung or balcony mounting. Units shall consist of a rotary compressor, an air-cooled coil, propeller-type draw-through outdoor fan, reversing valve (HP), accumulator (HP units), metering device(s), and control box. Units shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air cooling only, or heat pump system.

Units shall be used in a refrigeration circuit matched to ductless cooling only or heat pump fan coil units.

1.02 Agency Listings

- Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with the NEC.
- Units shall be evaluated in accordance with UL standard 1995.
- Units shall be listed in the CEC directory.
- Unit cabinet shall be capable of withstanding 500-hour salt spray test per Federal Test Standard No. 141 (method 6061).
- Air-cooled condenser coils shall be leak tested at 550 psig.

1.03 Delivery, Storage, And Handling

Units shall be shipped in one piece and shall be stored and handled per unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

PART 2 – PRODUCTS

2.01 Equipment

A. General:

Factory assembled, single piece, air-cooled outdoor unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and the compressor.

B. Unit Cabinet:

- Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a baked-enamel finish on inside and outside.
- Unit access panels shall be removable with minimal screws and shall provide full access to the compressor, fan, and control components.
- Outdoor compartment shall be isolated and have an acoustic lining to assure quiet operation.

C. Fans:

- Outdoor fans shall be direct-drive propeller type, and shall discharge air horizontally. Fans shall draw air through the outdoor coil.
- Outdoor fan motors shall be totally-enclosed, single phase motors with class B insulation and permanently-lubricated ball bearings. Motor shall be protected by internal thermal overload protection.

- Shaft shall have inherent corrosion resistance.
- Fan blades shall be non metallic and shall be statically and dynamically balanced.
- Outdoor fan openings shall be equipped with PVC metal/mesh coated protection grille over fan.

D. Compressor:

- Compressor shall be fully hermetic rotary type.
- Compressor shall be equipped with oil system, operating oil charge, and motor. Internal overloads shall protect the compressor from over-temperature and over-current.
- Motor shall be NEMA rated class F, suitable for operation in a refrigerant atmosphere.
- Compressor assembly shall be installed on rubber vibration isolators.
- Compressors shall be single phase.

E. Outdoor Coil:

Coil shall be constructed of aluminum fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components shall include brass external liquid line service valve with service gage port connections, suction line service valve with service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader type fittings with brass caps, accumulator, reversing valve.

G. Controls and Safeties:

Operating controls and safeties shall be factory selected, assembled, and tested. The minimum control functions shall include the following:

1. Controls:
 - a. A time delay control sequence is provided standard through the fan coil board.
 - b. Automatic outdoor-fan motor protection.
2. Safeties:
 - a. System diagnostics.
 - b. Compressor motor current and temperature overload protection.
 - c. Outdoor fan failure protection.

H. Electrical Requirements:

- Unit shall operate on single-phase, 60 Hz power at 115 v for unit sizes 009-012 and 208-230v for unit sizes 012, 017, 018, and 022, as specified.
- Unit electrical power shall be a single point connection.
- Unit Control voltage to the indoor fan coil shall be 0-15V DC.
- All power and control wiring must be installed per NEC and all local electrical codes.
- Unit shall have high and low-voltage terminal block connections.