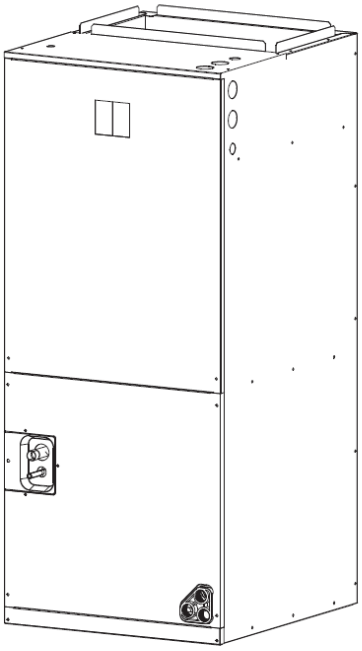
R32 60Hz Universal Outdoor 14.3 SEER2 Gold Scroll Series LUC17 Service Manual



Model

LUC17-18-15(475), LUC17-24-15(476), LUC17-30-15(477), LUC17-36-15(478), LUC17-42-15(479), LUC17-48-15(48C), LUC17-60-15(48D)

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Part 1. General Information

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1. Model Names of Indoor/Outdoor Units

1.1 Indoor Units

Model name	Dimension(W×H×D) (inch)	Power supply
LUC17-18-15	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
LUC17-24-15	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
LUC17-30-15	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
LUC17-36-15	19-5/8×45-3/4×22	208/230V-1Ph-60Hz
LUC17-42-15	22×53-1/8×24-1/2	208/230V-1Ph-60Hz
LUC17-48-15	22×53-1/8×24-1/2	208/230V-1Ph-60Hz
LUC17-60-15	22×53-1/8×24-1/2	208/230V-1Ph-60Hz

1.2 Outdoor Units

Model name	Dimension(W×H×D) (inch)	Power supply
CUC18-15-S	21-4/5×25×21-4/5	208/230V-1Ph-60Hz
CUC24-15-S	21-4/5×25×21-4/5	208/230V-1Ph-60Hz
CUC30-15-S	21-4/5×25×21-4/5	208/230V-1Ph-60Hz
CUC36-15-S	29-1/7×25×29-1/7	208/230V-1Ph-60Hz
CUC42-15-S	29-1/7×32-7/8×29-1/7	208/230V-1Ph-60Hz
CUC48-15-S	29-1/7×32-7/8×29-1/7	208/230V-1Ph-60Hz
CUC60-15-S	29-1/7×32-7/8×29-1/7	208/230V-1Ph-60Hz

2. External Appearance

		14.3 SEER2 TDU	
capacity	1.5/2/2.5 Ton	3 Ton	3.5/4/5 Ton
CUC-S			
14.3 SEER2 AHU			
capacity	1.5/2/2.5/3 Ton	3.5/4/5 Ton	
LUC17			

3. Features

3.1 Wide operation range. Cooling:57-118℉.

3.2 Well-known brand LG scroll compressor, reliable quality.

3.3 Condenser coils constructed with copper tubing and enhanced golden fins.

3.4 Use PISTON as expansion device

3.5 The outdoor unit features a no-PCB design, making it simple, reliable, and easy to maintain.

3.6 ECM fan motor for air handlers, higher efficiency, lower noise, constant speed.

3.7 24V control, time delay relay, fan relay and transformer included.

3.8 R32 environment friendly refrigerant.

3.9 The air handler unit has a refrigerant leakage sensor, providing safer protection.

3.10 AHRI certification, ETL certification.

3.11 Multiple defrosting modes are available.

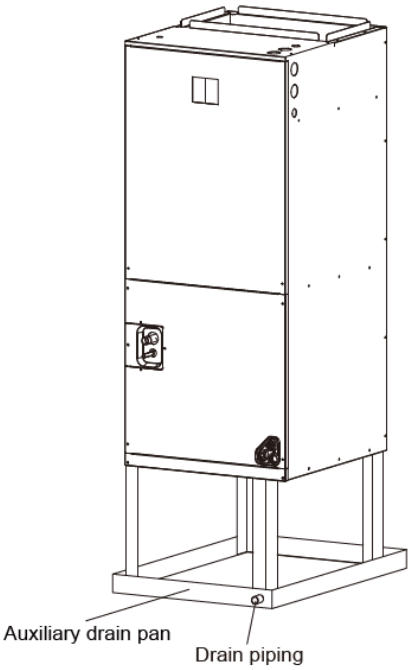
3.12 Refrigerant leakage sensor is configured to detect the refrigerant content in the air

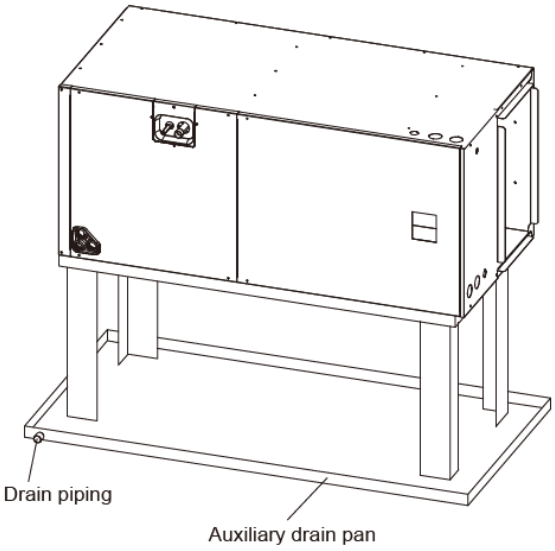
Intelligent oil return program to provide operating life

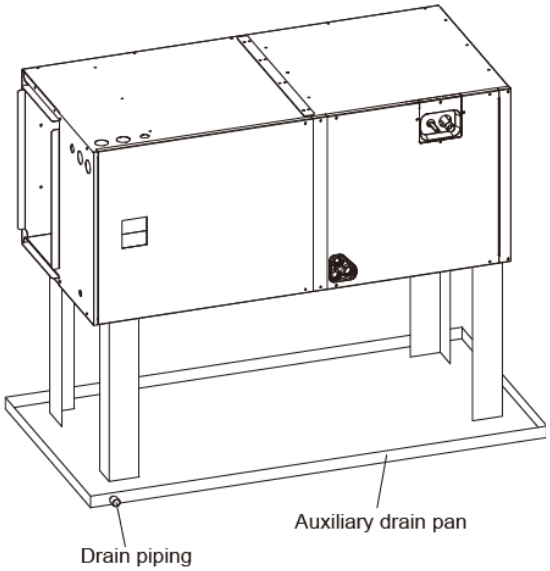
“A” shape coils, constructed with Oxygen-free copper tubing and enhanced aluminum fins

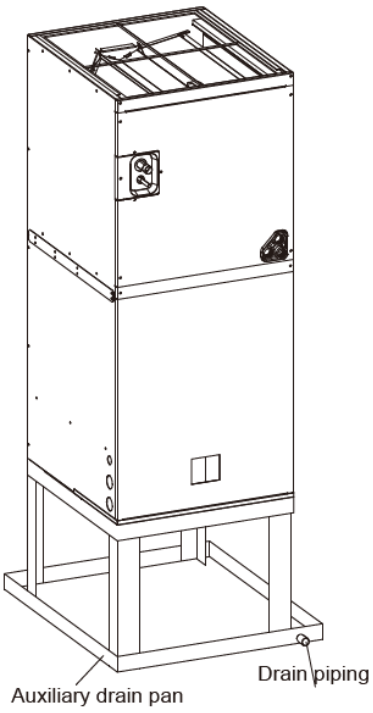
Detachable air filter for cleaning or renewal

Versatile 4-way convertible design. The air can be discharged from four directions.


Auxiliary drain pan
Drain piping


Drain piping
Auxiliary drain pan


Auxiliary drain pan
Drain piping


Drain piping
Auxiliary drain pan

Part 2. Indoor Unit

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1.Specification

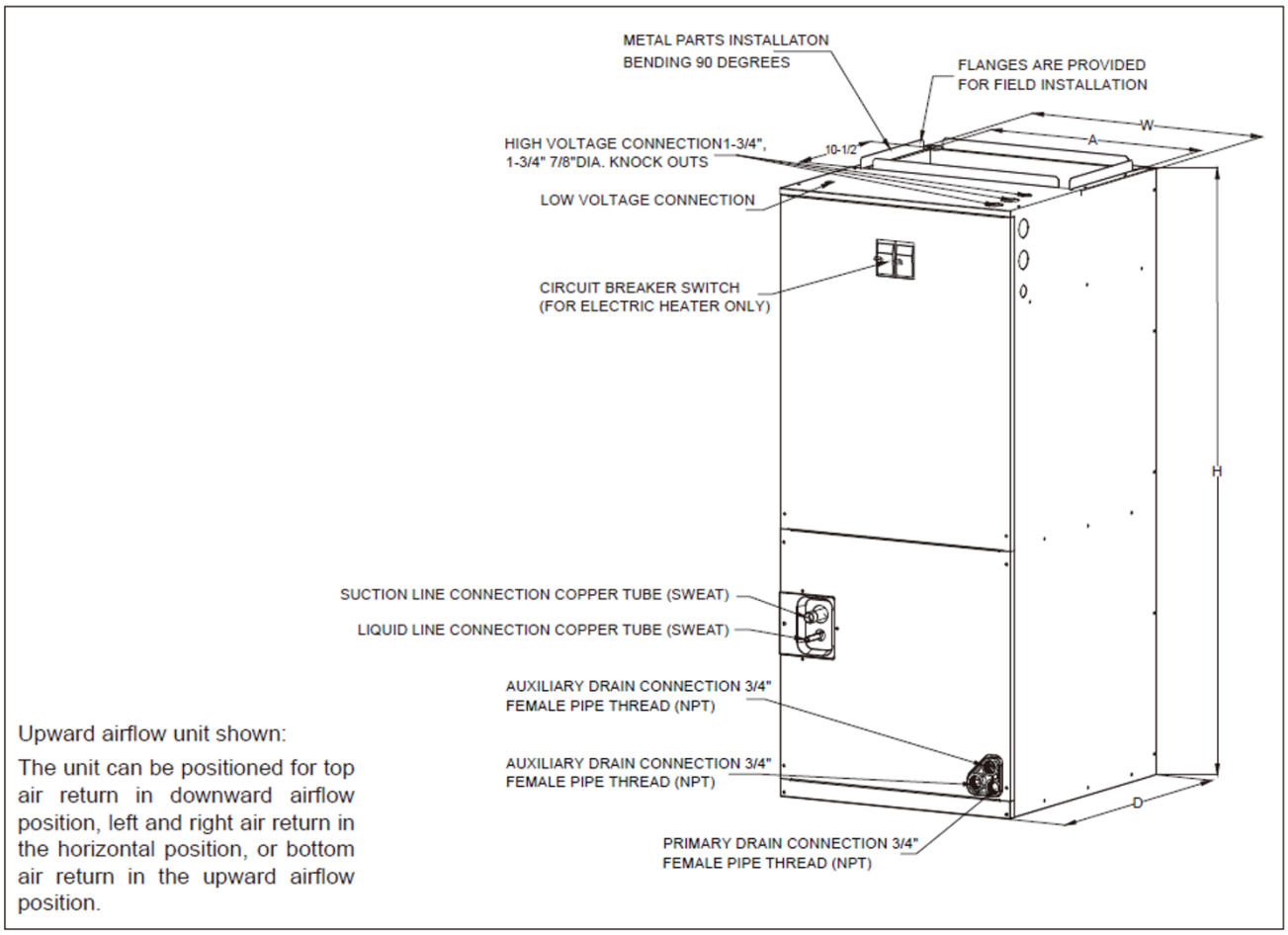
Model No.			LUC17-18-15 (475)	LUC17-24-15 (476)	LUC17-30-15 (477)	LUC17-36-15 (478)
Power supply		V/Ph/Hz	208~230V/1N/60Hz	208~230V/1N/60Hz	208~230V/1N/60Hz	208~230V/1N/60Hz
Cooling	Capacity	Btu/h	17600	22800	27000	33000
	EER2	Btu/h.W	11.7	11.7	11.7	11.7
	SEER2	Btu/h.W	14.3	14.3	14.3	14.3
Refer to Room Area	square feet		277.00	362.00	441.00	516.00
Indoor external static pressure		Pa	145	145	145	145
Throttle type			piston	piston	piston	piston
MCA		A	4	4	5	5
MOP		A	6	6	6	6
Circuit breaker selection		A	15	15	15	15
Indoor coil	Number of row		3(row)×2(piece)	3(row)×2(piece)	4(row)×2(piece)	4(row)×2(piece)
	Tube pitch(a)×row pitch(b)	in	0.83×0.53	0.83×0.53	0.83×0.53	0.83×0.53
	Fin spacing	in	0.059	0.059	0.059	0.059
	Fin material		Hydrophilic	Hydrophilic	Hydrophilic	Hydrophilic
	Tube outside diameter	in	Φ 0.276	Φ 0.276	Φ 0.276	Φ 0.276
	Number of circuit		6	6	8	8
	Tube material		inner grooved	inner grooved	inner grooved	inner grooved
Indoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN	Genteq	Genteq
	Type		ECM	ECM	ECM	ECM
	Model		DR-310-249-12-8	DR-310-249-12-8	DR-310-373-12-5	DR-310-373-12-5
	Rate current	A	2.6	2.6	3.8	3.8
	Input	W	142.4	142.4	245.9	245.9
	Output	W	249	249	373	373
	Speed (Hi/Me Hi/Me/Me lo/Lo), 5/4/3/2/1	RPM	643/593/556/476/412	643/593/556/476/412	760/718/662/610/548	760/718/662/610/548
Blower	diameter	in	12 19/67	12 19/67	12 19/67	12 19/67
	width	in	13 3/95	13 3/95	13 3/95	13 3/95
Indoor air flow		CFM	600	600	1000	1000
Indoor noise level		dB(A)	50	50	56	56
Indoor dimension	Unit (WxHxD)	in	19-5/8×45-3/4×22	19-5/8×45-3/4×22	19-5/8×45-3/4×22	19-5/8×45-3/4×22
		mm	500×1162×560	500×1162×560	500×1162×560	500×1162×560
	Packing (WxHxD)	in	22-5/6×47-5/8×25-3/5	22-5/6×47-5/8×25-3/5	22-5/6×47-5/8×25-3/5	22-5/6×47-5/8×25-3/5
		mm	580×1210×650	580×1210×650	580×1210×650	580×1210×650
	Net / Gross weight	kg	54/60	54/60	59.5/63.5	59.5/63.5
		lbs	119/133	119/133	131/140	131/140

Notes:
1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°C DB, 19°CWB; Outdoor temp: 35°C DB; Equivalent ref. piping: 5m (horizontal)
2.Actual noise level may differ, depending on the room structure, etc., since these noise values are from an anechoic room.

Model No.			LUC17-42-15 (479)	LUC17-48-15 (48C)	LUC17-60-15 (48D)
Power supply		V/Ph/Hz	208~230V/1N/60Hz	208~230V/1N/60Hz	208~230V/1N/60Hz
Cooling	Capacity	Btu/h	41000	46000	56000
	EER2	Btu/h.W	11.7	11.7	11.7
	SEER2	Btu/h.W	14.3	14.3	14.3
Refer to Room Area	square feet		651	730	889
Indoor external static pressure		Pa	145	145	145
Throttle type			piston/063	piston/063	piston/093
MCA		A	7	7	7
MOP		A	10	10	10
Circuit breaker selection		A	15	15	15
Indoor coil	Number of row		4(row)×2(piece)	4(row)×2(piece)	5(row)×2(piece)
	Tube pitch(a)×row pitch(b)	in	0.83×0.53	0.83×0.53	0.83×0.53
	Fin spacing	in	0.059	0.059	0.059
	Fin material		Hydrophilic	Hydrophilic	Hydrophilic
	Tube outside diameter	in	Φ 0.276	Φ 0.276	Φ 0.276
	Number of circuit		12	12	12
	Tube material		inner grooved	inner grooved	inner grooved
Indoor fan motor	Brand		Genteq	Genteq	Genteq
	Type		ECM	ECM	ECM
	Model		DR-310-560-12-8	DR-310-560-12-8	DR-310-560-12-8
	Rate current	A	5.4	5.4	5.4
	Input	W	249.3	249.3	249.3
	Output	W	560	560	560
	Speed (Hi/Me Hi/Me/Me lo/Lo) 5/4/3/2/1	RPM	977/833/760/683/610	977/833/760/683/610	977/833/760/683/610
Blower	Diameter	in	12 5/16	12 5/16	12 5/16
	Width	in	12 29/32	12 29/32	12 29/32
Indoor air flow		CFM	1490	1700	1700
Indoor noise level		dB(A)	68	68	68
Indoor dimension	Unit (WxHxD)	in	22×53-1/8×24-1/2	22×53-1/8×24-1/2	22×53-1/8×24-1/2
		mm	560×1350×623	560×1350×623	560×1350×623
	Packing (WxHxD)	in	28×54-3/4×25-1/5	28×54-3/4×25-1/5	28×54-3/4×25-1/5
		mm	710×1390×640	710×1390×640	710×1390×640
	Net / Gross weight	kg	74/80	74/80	79/85
		lbs	163/176	163/176	174/187

Notes:
1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°C DB, 19°CWB; Outdoor temp: 35°C DB; Equivalent ref. piping: 5m (horizontal)
2.Actual noise level may differ, depending on the room structure, etc., since these noise values are from an anechoic room.

2.Dimension



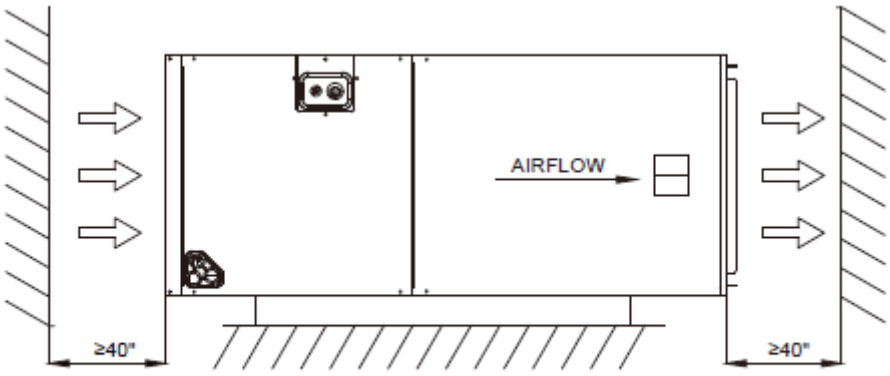
Upward airflow unit shown:

The unit can be positioned for top air return in downward airflow position, left and right air return in the horizontal position, or bottom air return in the upward airflow position.

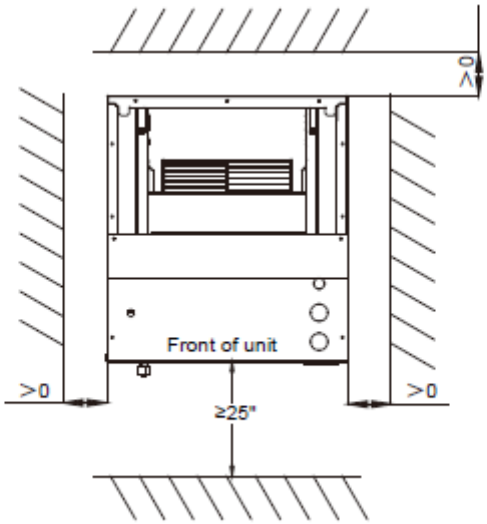
Model Size	Unit Height "H" in. [mm]	Unit Width "W" in. [mm]	Unit Length "D" in. [mm]	Supply Duct "A"	Unit Weight (lbs.[kg])
18	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	119 [54]
24	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	119 [54]
30	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	131 [59.5]
36	45-3/4 [1162]	19-5/8 [500]	22 [560]	17-7/8 [454]	131 [59.5]
42	53-1/8 [1350]	22'' [560]	24 -1/2[623]	19-1/2'' [496]	163 [74]
48	53-1/8 [1350]	22'' [560]	24 -1/2[623]	19-1/2'' [496]	163 [74]
60	53-1/8 [1350]	22'' [560]	24 -1/2[623]	19-1/2'' [496]	174 [79]

3.Service Space

The distance between the air outlet or return air and the wall must be at least 40 inches, and the front of the indoor unit must be at least 25 inches away from the wall.



Clearances in the Horizontal Position



4.Four-way installation

Horizontal right installation is the default factory configuration for all models. By removing the indoor coil assembly and reinstalling the coil, the vertical up flow position can be converted into a horizontal left position. Rotate the device by 90° to the horizontal left position, with the coil segment on the right and the blower segment on the left. Re-install the indoor coil by rotating 180° from the original position. Ensure that the fixing groove is fully engaged with the coil guide rail. When configured to be placed horizontally above the ceiling and/or living space, it is recommended to use an additional field supplied drain pan.

Steps to Change Cabinet Direction to Vertical Downward or Horizontal Left Direction

1. Remove the screws and the front panel, and disconnect the plug of TI sensor 、T2 sensor and leak
detection sensor wire from the circuit board (Figure 4.1, Step 1).
2. Pull out the coil with sensor wire (do not disconnect T1 sensor、 T2 sensor and leak detection sensor
from the coil). (Figure 4.2, Step 2)
3. Install the coil in the correct direction and fix it in place. Reinsert those sensor wire in PCBA through
the gap on the cabinet cover (Figure 4.3, Step 3).

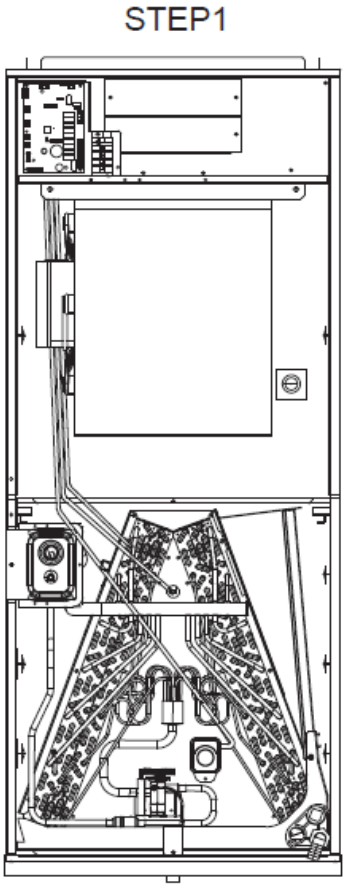


Figure 4.1

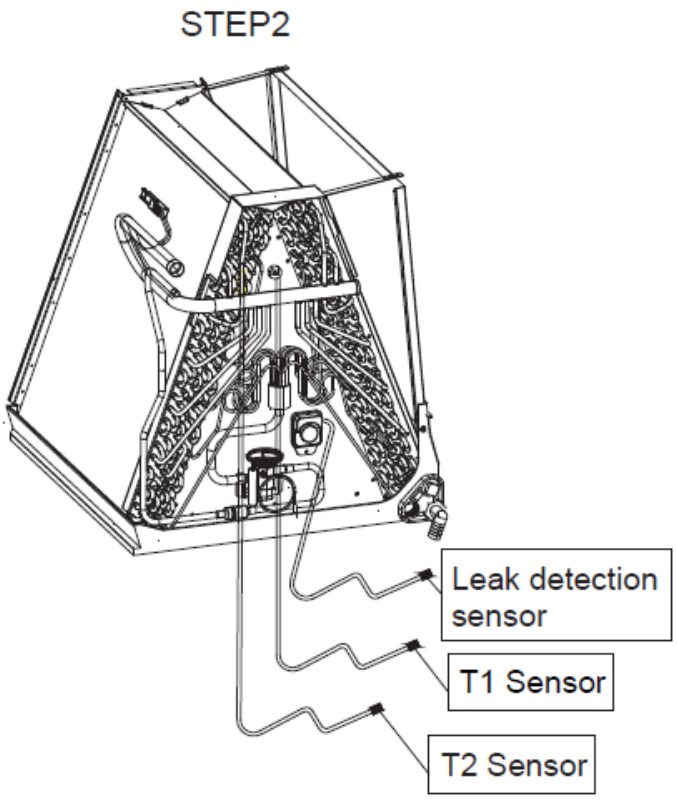


Figure 4.2

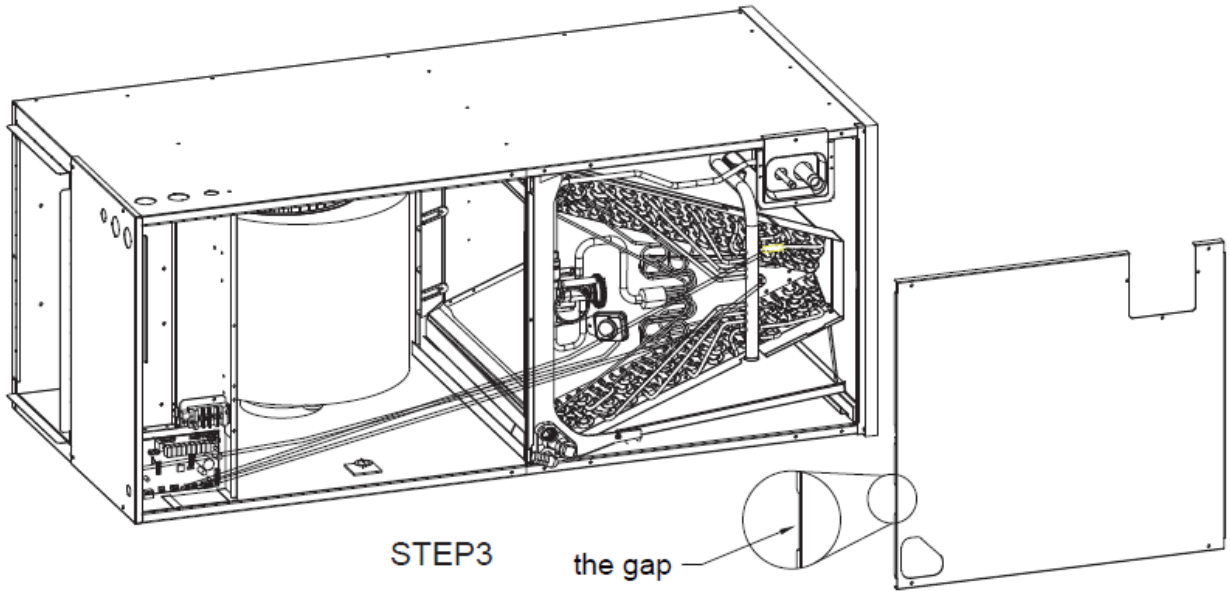


Figure 4.3

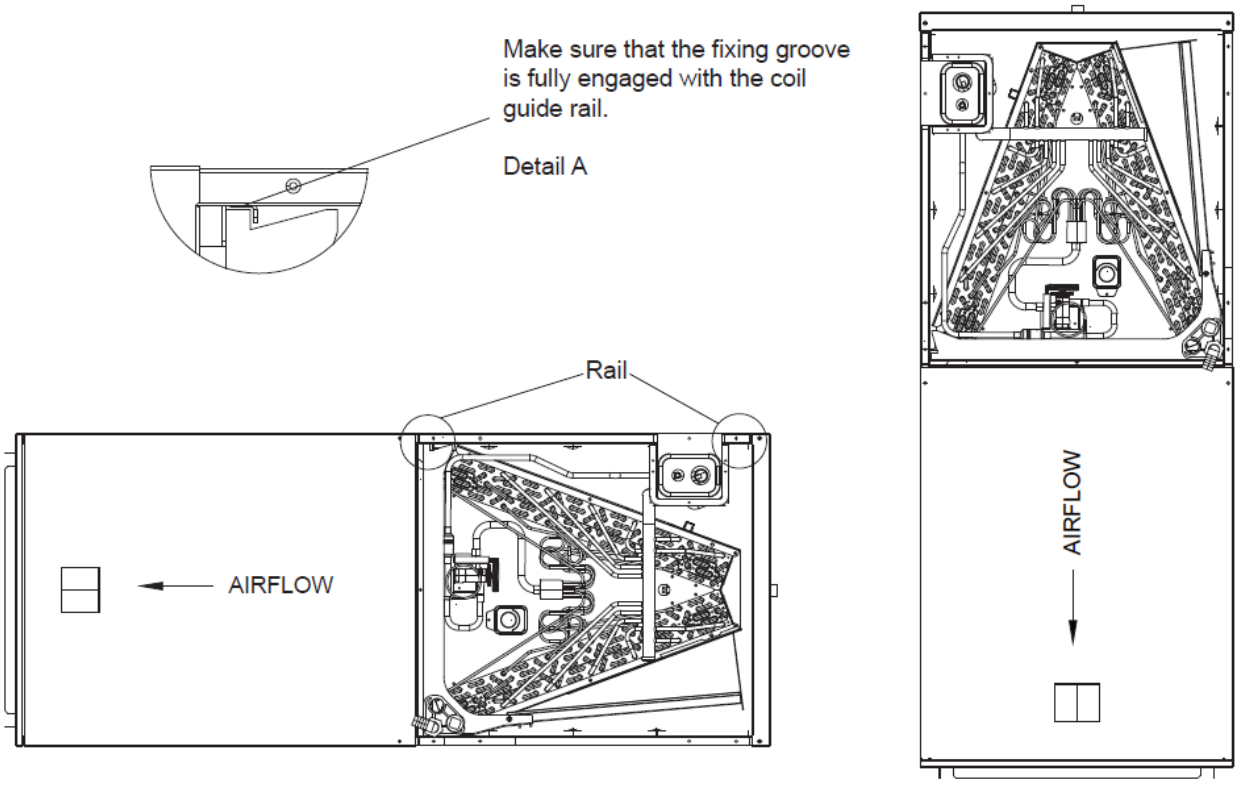
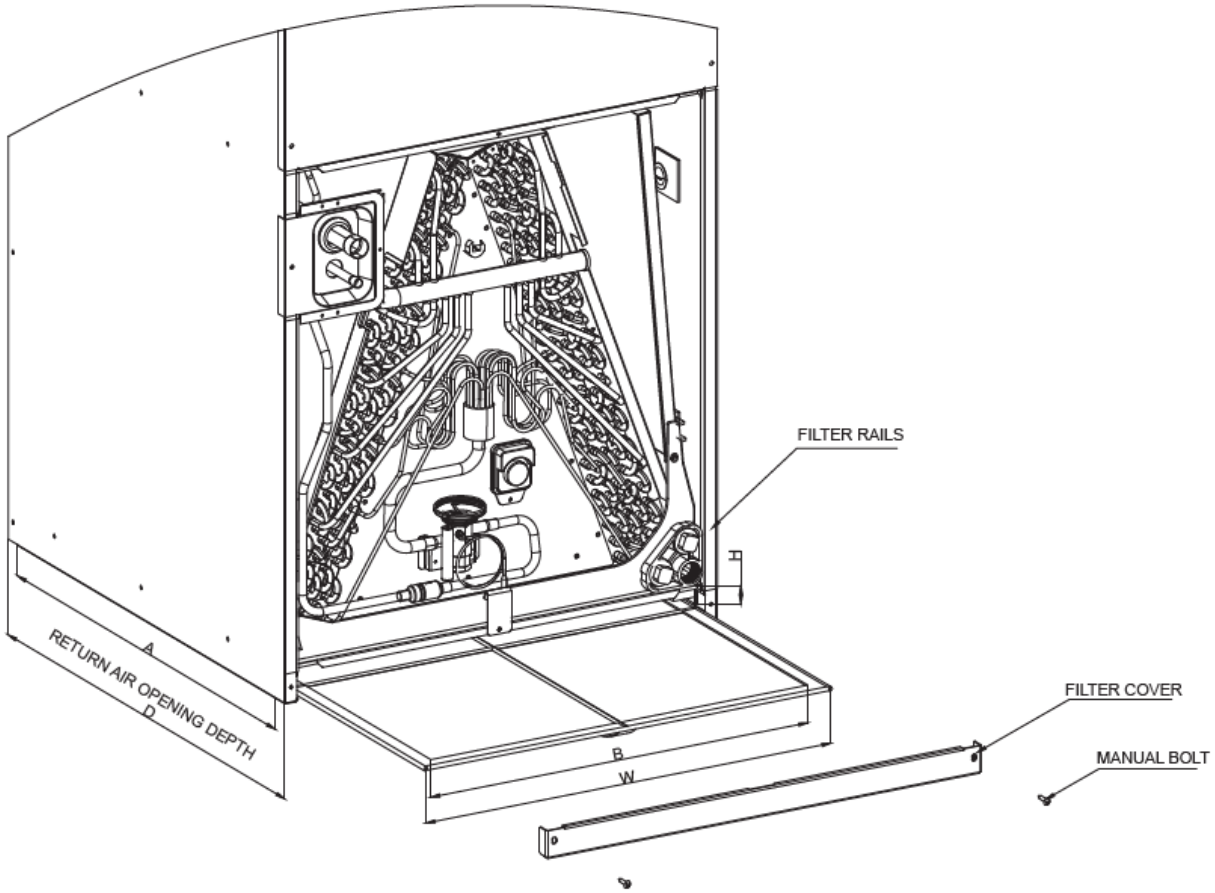


Figure 4.3

5.Air Filter (Not Factory Installed)

The filter is not included in the device and must be provided on site.
The size of external filters or other filtering devices must me et the maximum flow rate of 300ft/min or meet the recommended value of filter type.
The application and placement of filter is very important for airflow, which may affect the performance of heating and cooling system. Reduced airflow will shorten the life of the main components of the system, such as motors, components, thermal relays, evaporator coils or compressors. Therefore, we recommend that the return air duct system has only one filter position. For systems without return air filter grids, multiple filter grids can be installed at each return air opening.
If a high-efficiency filter screen or electronic air filtration system is used, it is very important that the air flow rate is not reduced. If the air flow decreases, the overall performance and efficiency of the device will decrease. It is strongly recommended to contact professional installation technicians to ensure the correct installation of such filtration systems.



Model	Filter size inches [mm]	"W" Inch [mm]	"D" Inch [mm]	"H" Inch [mm]	Return Width "A" inch [mm]	Return Length "B" inch [mm]
18K/24K/30K/36K	18.1×21.4[460×544]	18.3 [466]	21.6 [548]	1 [25.4]	20.8 [528]	16.3 [414]
42K/48K/60K	20.5×23.8[521×605]	20.7 [526]	23.9 [608]	1 [25.4]	23 [584]	18.8 [478]

6.Electric heater

AHU Model	Heat Kit Model	Electric Heat (kW) 208/230VAC	Current (A) 208/230VAC	MCA (A) 208/230VAC	Max Fuse/Breaker (HACR) 208VAC	Max Fuse/Breaker (HACR) 230VAC
LUC17-18-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
LUC17-24-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
LUC17-30-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
LUC17-36-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
	CHE6-15B	(5.6+5.6) / (7.5+7.5)	29.50+29.50 / 32.61+32.61	37+37 / 43+43	40 / 40	45 / 45
LUC17-42-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
	CHE6-15B	(5.6+5.6) / (7.5+7.5)	29.50+29.50 / 32.61+32.61	37+37 / 43+43	40 / 40	45 / 45
LUC17-48-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
	CHE6-15B	(5.6+5.6) / (7.5+7.5)	29.50+29.50 / 32.61+32.61	37+37 / 43+43	40 / 40	45 / 45
	CHE6-20B	(7.5+7.5) / (10+10)	39.32+39.32 / 43.48+43.48	50+50 / 57+57	60 / 60	60 / 60
LUC17-60-15	CHE6-05B	3.8 / 5.0	19.66 / 21.74	25 / 29	30	35
	CHE6-08B	5.6 / 7.5	29.50 / 32.61	37 / 43	40	45
	CHE6-10B	7.5 / 10.0	39.32 / 43.48	50 / 57	60	60
	CHE6-15B	(5.6+5.6) / (7.5+7.5)	29.50+29.50 / 32.61+32.61	37+37 / 43+43	40 / 40	45 / 45
	CHE6-20B	(7.5+7.5) / (10+10)	39.32+39.32 / 43.48+43.48	50+50 / 57+57	60 / 60	60 / 60

Fan Speed Limits

AHU Model	Heat Kit Model	Fan Speed 1	Fan Speed 2	Fan Speed 3	Fan Speed 4	Fan Speed 5
18K	21-4444-01	×	●	●	●	●
	21-4444-02	×	×	●	●	●
24K	21-4444-01	×	●	●	●	●
	21-4444-02	×	×	●	●	●
	21-4444-03	×	×	×	●	●
30K	21-4444-01	●	●	●	●	●
	21-4444-02	×	●	●	●	●
	21-4444-03	×	×	●	●	●
36K	21-4444-01	●	●	●	●	●
	21-4444-02	×	●	●	●	●
	21-4444-03	×	×	●	●	●
	21-4444-04	×	×	×	●	●
42K	21-4444-01	●	●	●	●	●
	21-4444-02	●	●	●	●	●

42K	21-4444-03	×	●	●	●	●
	21-4444-04	×	×	●	●	●
48K	21-4444-01	●	●	●	●	●
	21-4444-02	●	●	●	●	●
	21-4444-03	×	●	●	●	●
	21-4444-04	×	×	●	●	●
	21-4444-05	×	×	×	●	●
60K	21-4444-01	●	●	●	●	●
	21-4444-02	●	●	●	●	●
	21-4444-03	×	●	●	●	●
	21-4444-04	×	×	●	●	●
	21-4444-05	×	×	×	●	●

● indicates availability, and × indicates unavailability

7.Airflow performance

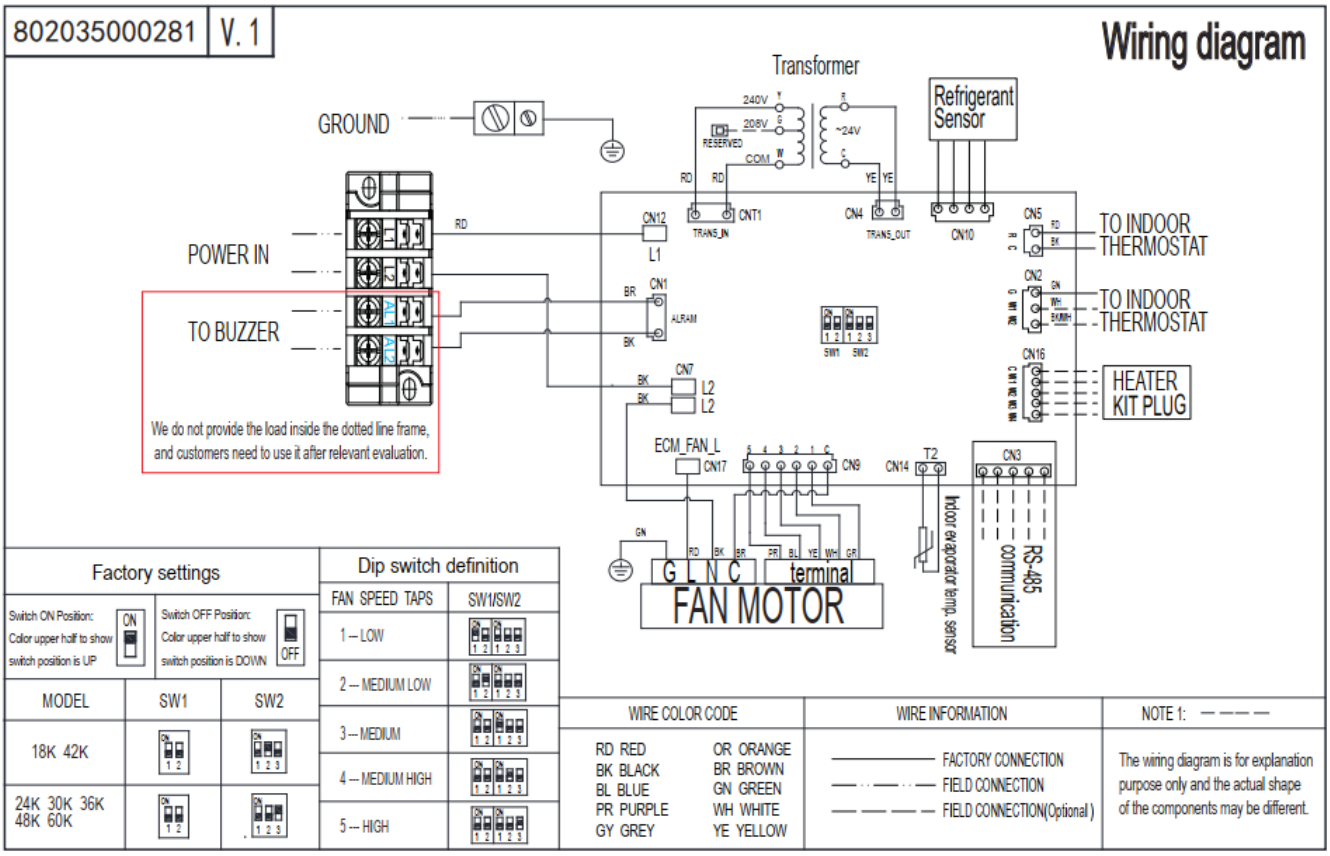
The air flow data is based on the cooling performance of coil and without filter. Performance table, select the appropriate product.
External static pressure ESP should be kept within the minimum and maximum limits shown in the following table to ensure the normal operation of cooling, heating, and electric heating.

Model size of air processor	Motor speed		SCFM								
			External Static Pressure-Inch Water Column [kPa]								
			0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[.100]	0.5[.125]	0.6[.150]	0.7[.175]	0.8[.200]
18K	Tap (1)	SCFM	669.9	571.8	490.9	394.3	269.5	-	-	-	-
		Watts	41	47	52	57	61	-	-	-	-
	Tap (2)	SCFM	792.2	708.6	615.9	548.5	474.2	371.5	265.1	-	-
		Watts	59	67	73	77	83	88	93	-	-
	Tap (3)	SCFM	948.8	887.5	809.6	723.6	671.6	597.0	504.2	410.2	-
		Watts	96	102	109	115	129	126	132	141	-
	Tap (4)	SCFM	1020.9	966.5	887.1	798.4	738.8	697.9	672.3	572.8	490.1
		Watts	118	127	136	144	150	156	160	167	177
	Tap (5)	SCFM	1115.2	1059.2	995.0	906.5	842.5	791.4	727.2	707.0	652.5
		Watts	148	157	167	178	186	191	198	205	211
24K	Tap (1)	SCFM	669.9	571.8	490.9	394.3	269.5	-	-	-	-
		Watts	41	47	52	57	61	-	-	-	-
	Tap (2)	SCFM	792.2	708.6	615.9	548.5	474.2	371.5	265.1	-	-
		Watts	59	67	73	77	83	88	93	-	-
	Tap (3)	SCFM	948.8	887.5	809.6	723.6	671.6	597.0	504.2	410.2	-
		Watts	96	102	109	115	129	126	132	141	-
	Tap (4)	SCFM	1020.9	966.5	887.1	798.4	738.8	697.9	672.3	572.8	490.1
		Watts	118	127	136	144	150	156	160	167	177
	Tap (5)	SCFM	1115.2	1059.2	995.0	906.5	842.5	791.4	727.2	707.0	652.5
		Watts	148	157	167	178	186	191	198	205	211
30K	Tap (1)	SCFM	955.3	897.8	839.5	739.4	655.3	575.9	511.5	432.4	392.2
		Watts	91	96	102	110	115	121	127	138	140
	Tap (2)	SCFM	1080.7	1031.5	977.4	925.6	819.4	743.8	675.5	608.7	547.1
		Watts	125	131	137	143	153	160	166	173	179
	Tap (3)	SCFM	1182.2	1138.1	1089.0	1042.9	986.9	879.5	811.4	749.5	689.2
		Watts	158	165	172	177	185	197	203	212	221
	Tap (4)	SCFM	1305.6	1261.8	1220.9	1179.5	1132.2	1086.1	984.1	914.5	856.6
		Watts	207	214	221	228	236	244	257	266	273
	Tap (5)	SCFM	1386.7	1350.0	1309.4	1274.6	1233.1	1186.6	1137.8	1031.5	970.0
		Watts	245	253	262	270	277	285	295	309	318
36K	Tap (1)	SCFM	955.3	897.8	839.5	739.4	655.3	575.9	511.5	432.4	392.2
		Watts	91	96	102	110	115	121	127	138	140
	Tap (2)	SCFM	1080.7	1031.5	977.4	925.6	819.4	743.8	675.5	608.7	547.1
		Watts	125	131	137	143	153	160	166	173	179
	Tap (3)	SCFM	1182.2	1138.1	1089.0	1042.9	986.9	879.5	811.4	749.5	689.2
		Watts	158	165	172	177	185	197	203	212	221
	Tap (4)	SCFM	1305.6	1261.8	1220.9	1179.5	1132.2	1086.1	984.1	914.5	856.6
		Watts	207	214	221	228	236	244	257	266	273
	Tap (5)	SCFM	1386.7	1350.0	1309.4	1274.6	1233.1	1186.6	1137.8	1031.5	970.0
		Watts	245	253	262	270	277	285	295	309	318

42K	Tap (1)	SCFM	1343.9	1271.9	1208.5	1150.9	1085.5	1042.0	899.4	839.6	777.6
		Watts	141.9	150.5	159.2	168	175	185	196	202	210
	Tap (2)	SCFM	1513.9	1451.5	1392.2	1320.2	1266.8	1211.4	1148.5	1036.2	975.4
		Watts	194.2	203.9	214	220.2	228.8	238.7	247.9	264.2	271.9
	Tap (3)	SCFM	1672.5	1620.5	1562.0	1522.0	1470.6	1422.7	1371.1	1309.8	1204.8
		Watts	259	271	282	293	303	312	323	333	353
	Tap (4)	SCFM	1807.3	1781.4	1731.6	1686.0	1640.4	1595.5	1547.1	1509.5	1460.8
		Watts	328.4	343.6	357.5	370.6	385.6	395.2	407	418	430
	Tap (5)	SCFM	2048.0	2000.5	1950.9	1905.3	1861.4	1819.2	1776.4	1729.9	1684.1
		Watts	447	462	476	491	507	520	525.6	538	550
48K	Tap (1)	SCFM	1343.9	1271.9	1208.5	1150.9	1085.5	1042.0	899.4	839.6	777.6
		Watts	141.9	150.5	159.2	168	175	185	196	202	210
	Tap (2)	SCFM	1513.9	1451.5	1392.2	1320.2	1266.8	1211.4	1148.5	1036.2	975.4
		Watts	194.2	203.9	214	220.2	228.8	238.7	247.9	264.2	271.9
	Tap (3)	SCFM	1672.5	1620.5	1562.0	1522.0	1470.6	1422.7	1371.1	1309.8	1204.8
		Watts	259	271	282	293	303	312	323	333	353
	Tap (4)	SCFM	1807.3	1781.4	1731.6	1686.0	1640.4	1595.5	1547.1	1509.5	1460.8
		Watts	328.4	343.6	357.5	370.6	385.6	395.2	407	418	430
	Tap (5)	SCFM	2048.0	2000.5	1950.9	1905.3	1861.4	1819.2	1776.4	1729.9	1684.1
		Watts	447	462	476	491	507	520	525.6	538	550
60K	Tap (1)	SCFM	1275.4	1220.3	1165.5	1115.8	1051.6	974.7	913.6	859.1	800.6
		Watts	153	163	173	183	194	203	212	220	231
	Tap (2)	SCFM	1435.1	1381.7	1335.1	1289.5	1243.6	1186.2	1113.6	1075.9	1016.2
		Watts	210	220	232	243	254	266	276	287	297
	Tap (3)	SCFM	1610.6	1567.1	1528.1	1482.2	1440.8	1396.1	1350.6	1261.8	1219.6
		Watts	287	301	313	325	336	355	361	381	391
	Tap (4)	SCFM	1756.8	1718.5	1674.5	1633.8	1601.1	1557.2	1519.5	1475.1	1426.2
		Watts	366	376	392	405	415	431	444	459	472
	Tap (5)	SCFM	1917.1	1882.9	1842.6	1798.9	1772.9	1734.2	1700.6	1662.9	1622.4
		Watts	467	482	496	512	525	542	553	569	584

The highlighted area indicates the airflow within the required range of 300-450cfm/ton.

8.Wiring Diagrams



9.Electric Characteristics

Model	Indoor Units					
	Hz	Voltage	Min.	Max.	MCA	MOP
18K	60	208-230V	187V	253V	4	6
24K	60	208-230V	187V	253V	4	6
30K	60	208-230V	187V	253V	5	6
36K	60	208-230V	187V	253V	5	6
42K	60	208-230V	187V	253V	7.0	10.0
48K	60	208-230V	187V	253V	7.0	10.0
60K	60	208-230V	187V	253V	7.0	10.0

10.The Specification of Wiring

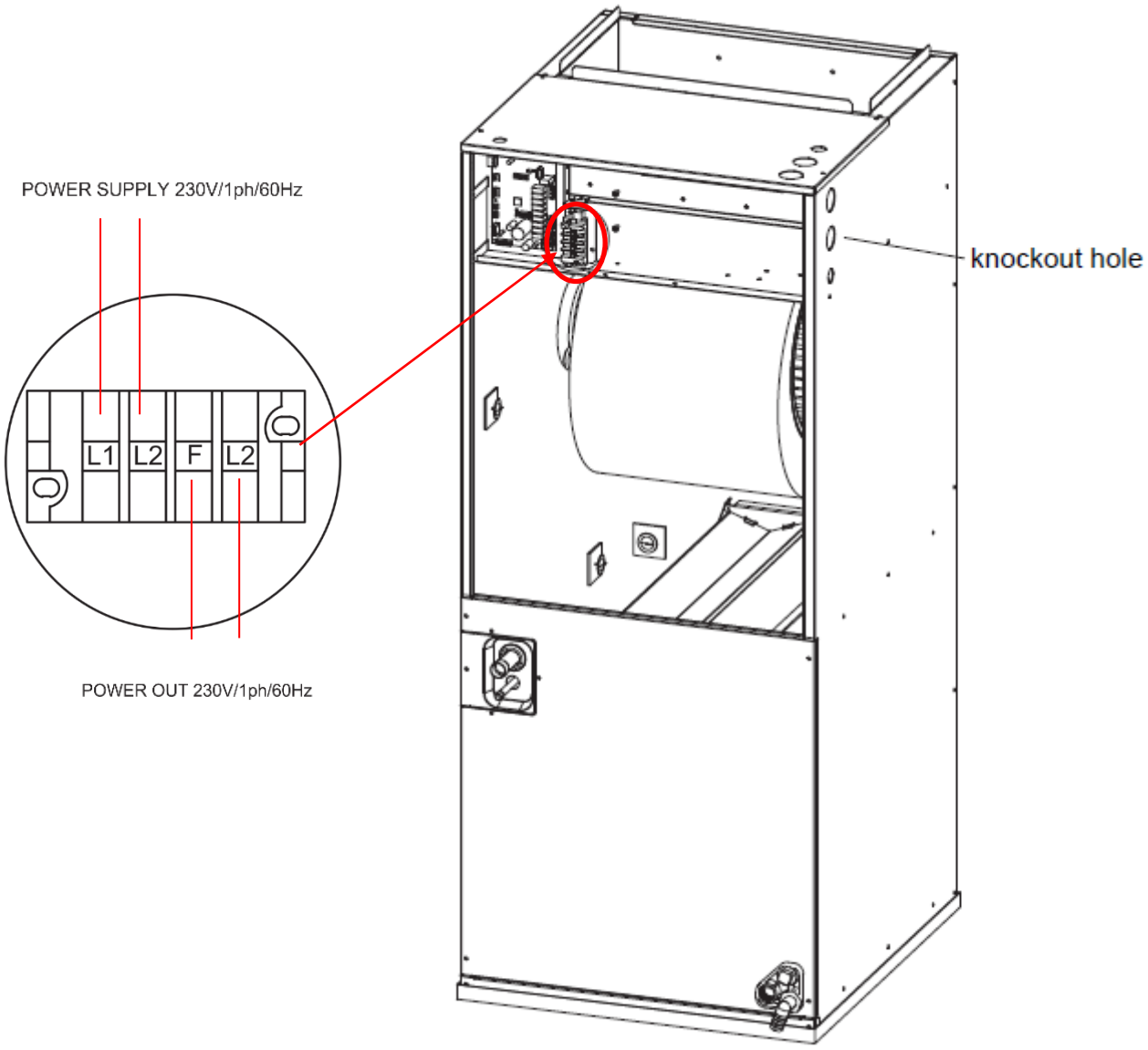
Note:
The cross-section areas of wires or lines should not be less than the corresponding ones listed in the table below; Besides, if the power wires is quite long from the unit, please choose the windings with larger cross-section guarantee the normal power supply.

Model	Indoor power wire /Diameter (AWG)	24V Signal wire Diameter (AWG)	Outdoor power wire /Diameter (AWG)
18K	3*16	18	3*14
24K	3*16	18	3*12
30K	3*16	18	3*12
36K	3*16	18	3*12
42K	3*16	18	3*10
48K	3*16	18	3*10
60K	3*16	18	3*8

11.Field Wiring

1. To avoid the electrical shock, please connect the air conditioner with the ground lug.
2. The main power plug in the air conditioner has been joined with the ground wiring, please don't change it freely.
3. The power socket is used as the air conditioner specially.
4. Don't pull the power wiring hard.
5. When connecting the air conditioner with the ground, observe the local codes.
6. If necessary, use the power fuse or the circuit, breaker or the corresponding scale ampere.

power supply wiring



During installation, a buzzer or alarm light needs to be installed and connected to the terminal of AHU F/L2. When the AHU detects refrigerant leakage, F/L2 will output 220V voltage. Therefore, the buzzer will receive the signal and respond in time. When the refrigerant concentration reaches the threshold, the indoor airflow will run at the highest gear and the outdoor unit will stop.

Thermostat wiring

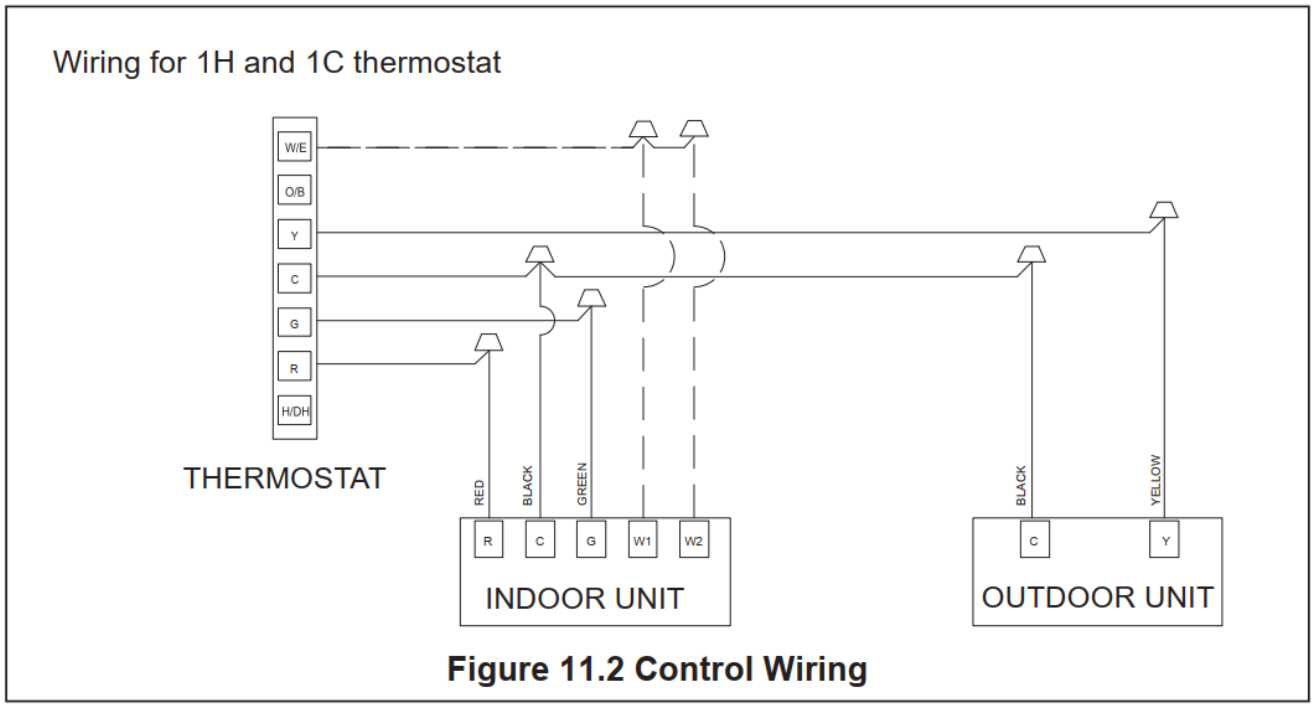


Figure 11.2 Control Wiring

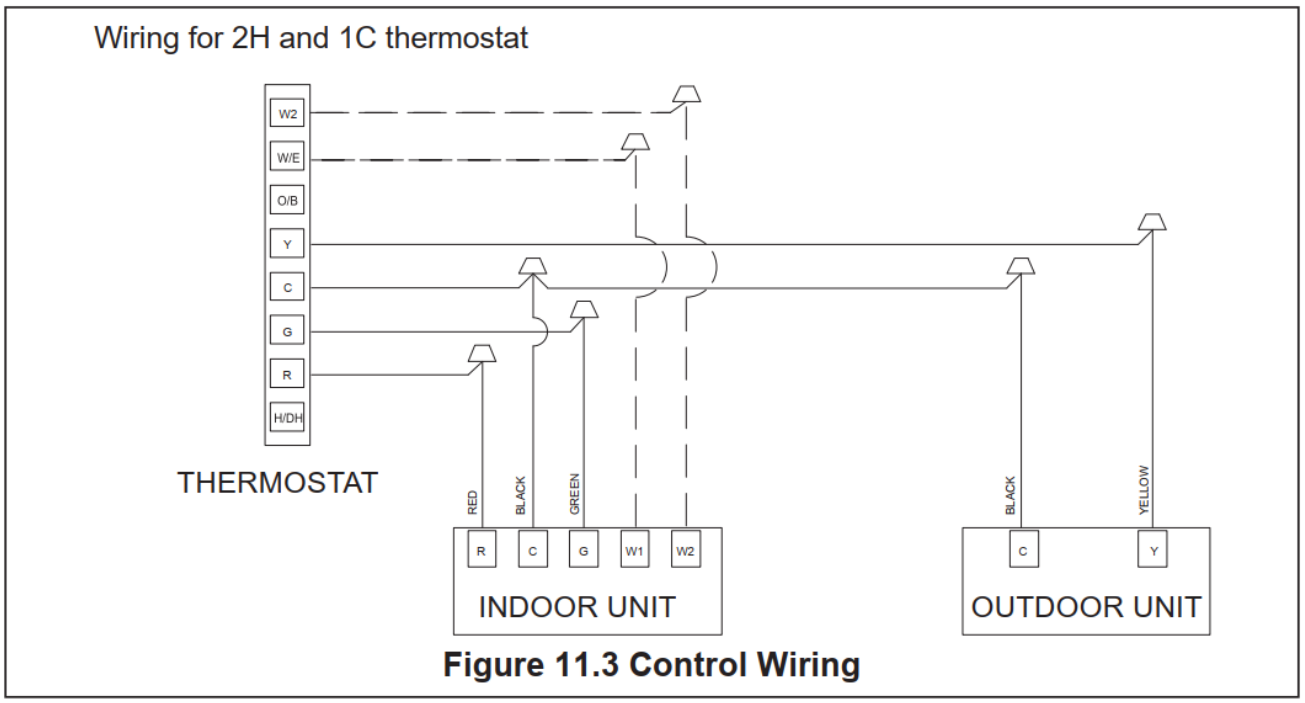
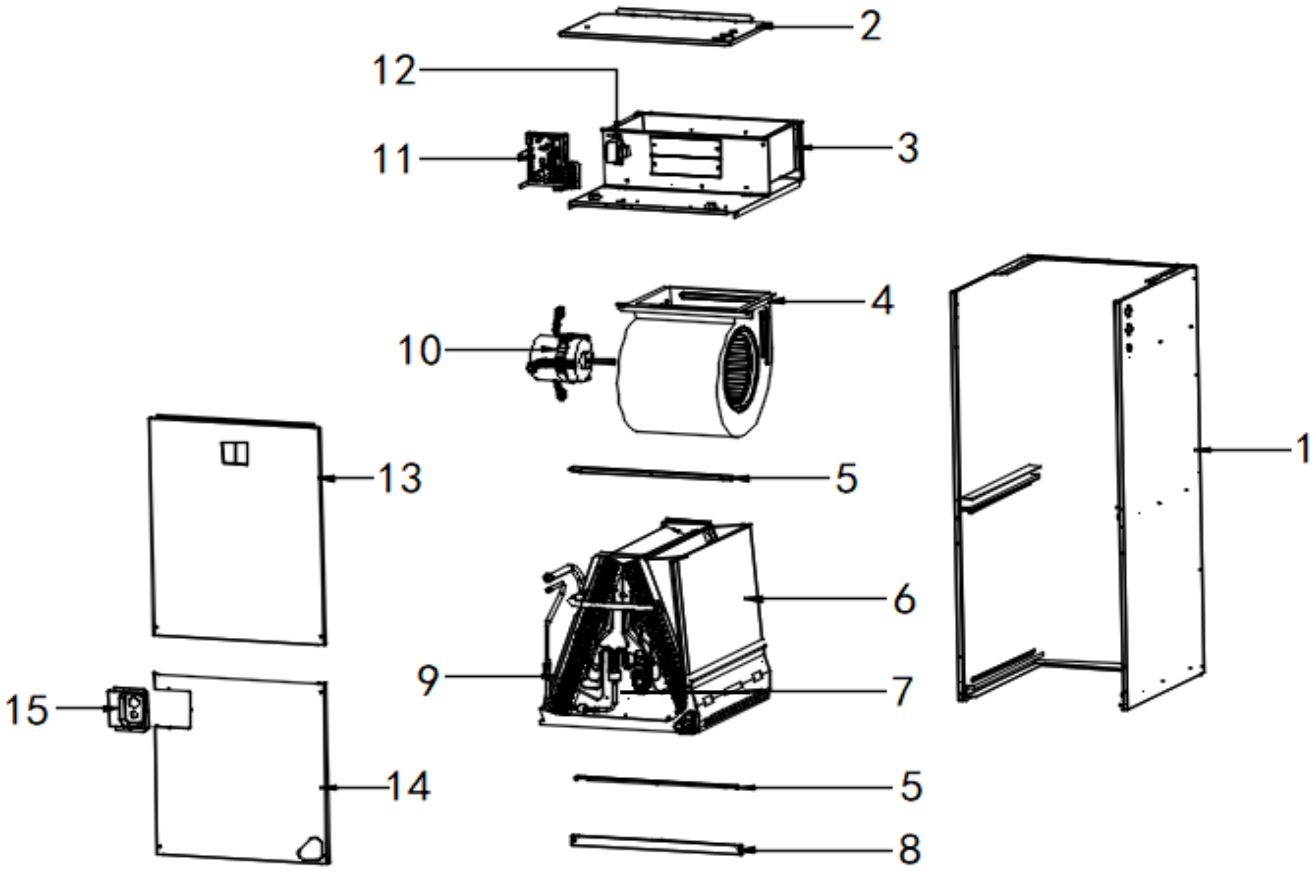


Figure 11.3 Control Wiring

12.Exploded View



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Rear Enclosure Assembly	1	**9.3**	Evaporator baffle	2
2	Control box cover assembly	1	**10**	DC Motor	1
3	Duct assembly	1	**11**	Indoor electric control box assembly	1
4	Right Volute Wind Wheel	1	**11.1**	Indoor main control board	1
5	Support bar	2	**11.2**	Ambient temperature sensor	1
6	Water pan components	1	**11.3**	Coil temperature sensor	1
7	Refrigerant leakage sensor	1	**12**	Transformers	1
8	Filter Cover plate	1	**13**	Upper side plate assembly	1
9	Evaporator components	1	**14**	Down side plate assembly	1
9.1	Evaporator output tube assembly	1	**15**	Pipe Cover plate assembly	1
9.2	Evaporator input tube assembly	1			

Part 3 Outdoor Unit

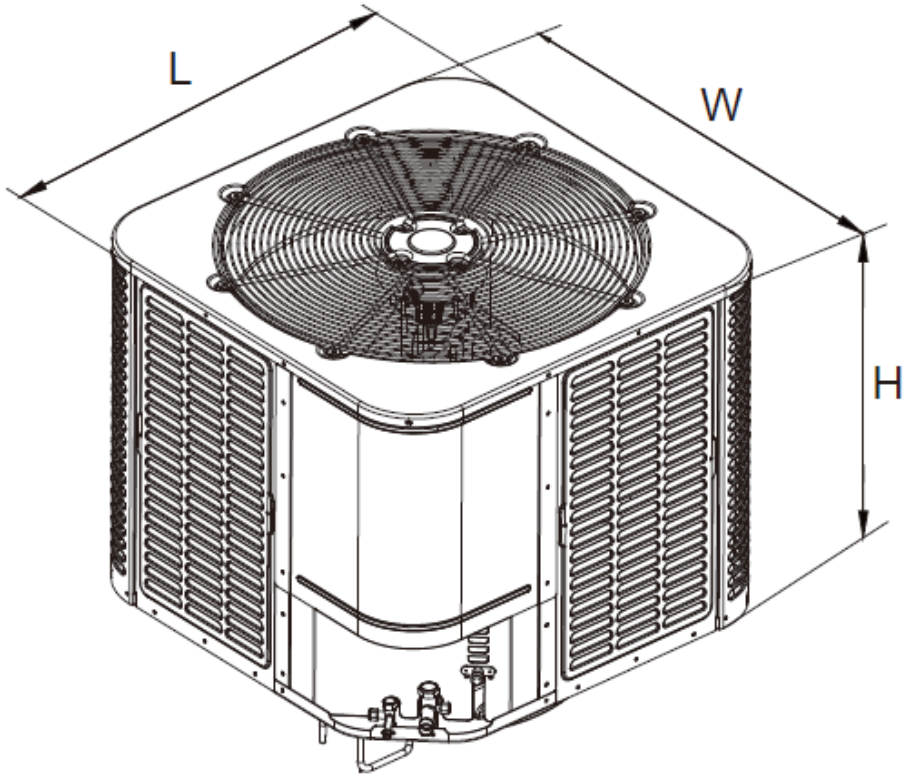
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5. Electric Characteristics.....29
6. Operation Limits.....27
7. Sound Levels.....27
8. Exploded View.....30
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1.Specification

COOL ONLY						
Model			CUC18-15-S (47X)	CUC24-15-S (47Y)	CUC30-15-S (47Z)	CUC36-15-S (471)
Outdoor power supply		V/Ph/Hz	230V/1N/60HZ	230V/1N/60HZ	230V/1N/60HZ	230V/1N/60HZ
MCA		A	12	15	18	20
MOP		A	20	25	30	35
Compressor	Brand		LG	LG	LG	LG
	Type		SCROLL	SCROLL	SCROLL	SCROLL
	MODEL		TPH014KAA	TPH020KAA	TPH024KAA	TPH029KAA
	Capacity	Btu/h	18500	25000	29500	35800
	Input	W	1180.00	1535.00	1830.00	2200.00
	Rated current(RLA)	A	11.30	15.10	15.10	21.00
	Locked rotor Amp(LRA)	A	47.00	65.00	57.00	86.00
Outdoor fan moto	Brand		BROAD-OCEAN	BROAD-OCEAN	BROAD-OCEAN	BROAD-OCEAN
	Type		PSC	PSC	PSC	PSC
	Model		YDK-70-6-AL	YDK-115-6-AL	YDK-115-6-AL	YDK-117-6-AL
	Rate current	A	0.70	0.90	0.90	0.90
	capacitor	μF	6uF/450V	6uF/450V	6uF/450V	6uF/450V
	Input	W	150	187	187	193
	Output	W	70	115	115	117
	Speed	rpm	870	990	990	850
Outdoor fan blad	Dimension	mm	Φ450×120×Φ12.7	Φ450×120×Φ12.7	Φ450×120×Φ12.7	Φ595×115×Φ12.7
Outdoor coil	Number of row		2	2	2	2
	Fin spacing	in	0.059	0.059	0.059	0.059
	Fin material		Hydrophilic Aluminium Fin	Hydrophilic Aluminium Fin	Hydrophilic Aluminium Fin	Hydrophilic Aluminium Fin
	Tube outside diameter	in	Φ 0.276	Φ 0.276	Φ 0.276	Φ 0.276
	Tube material		Inner Grooved	Inner Grooved	Inner Grooved	Inner Grooved
	Coil length x height x width	in	55.00×23.15×1.05	55.00×23.15×1.05	55.00×23.15×1.05	84.09×23.15×1.05
	Number of circuit		5	5	5	6
Outdoor dimensi	Unit (WxHxD)	in	21-4/5×25×21-4/5	21-4/5×25×21-4/5	21-4/5×25×21-4/5	29-1/7×25×29-1/7
		mm	554×635×554	554×635×554	554×635×554	740×635×740
	Packing (WxHxD)	in	22-3/5×26×22-3/5	22-3/5×26×22-3/5	22-3/5×26×22-3/5	30×266×30
		mm	575×660×575	575×660×575	575×660×575	760×660×760
	Net / Gross weight	kg	54.5/57.3	55.6/58.4	58/60.8	71.2/74
		lbs	120/126	123/129	128/134	157/163
Refrigerant	Type		R32	R32	R32	R32
	Pre-charge	kg	1. 96	1. 96	1. 96	2. 46
		ozs	69	69	69	86
	Default supported length	Ft	15	15	15	15
	Additional charge	ozs/ft	5. 09	5. 09	5. 09	5. 09
Refrigerant pipe	Liquid side	in	Φ3/8	Φ3/8	Φ3/8	Φ3/8
	Gas side	in	Φ3/4	Φ3/4	Φ3/4	Φ3/4
	Max. refrigerant pipe length	ft	130	130	130	130
	Max. difference in level	ft	65	65	65	65
Design pressure		MPa	4.15/1.63	4.15/1.63	4.15/1.63	4.15/1.63
Max pressure		MPa	4.30	4.30	4.30	4.30
Operation te	Cooling	°F	57-118	57-118	57-118	57-118

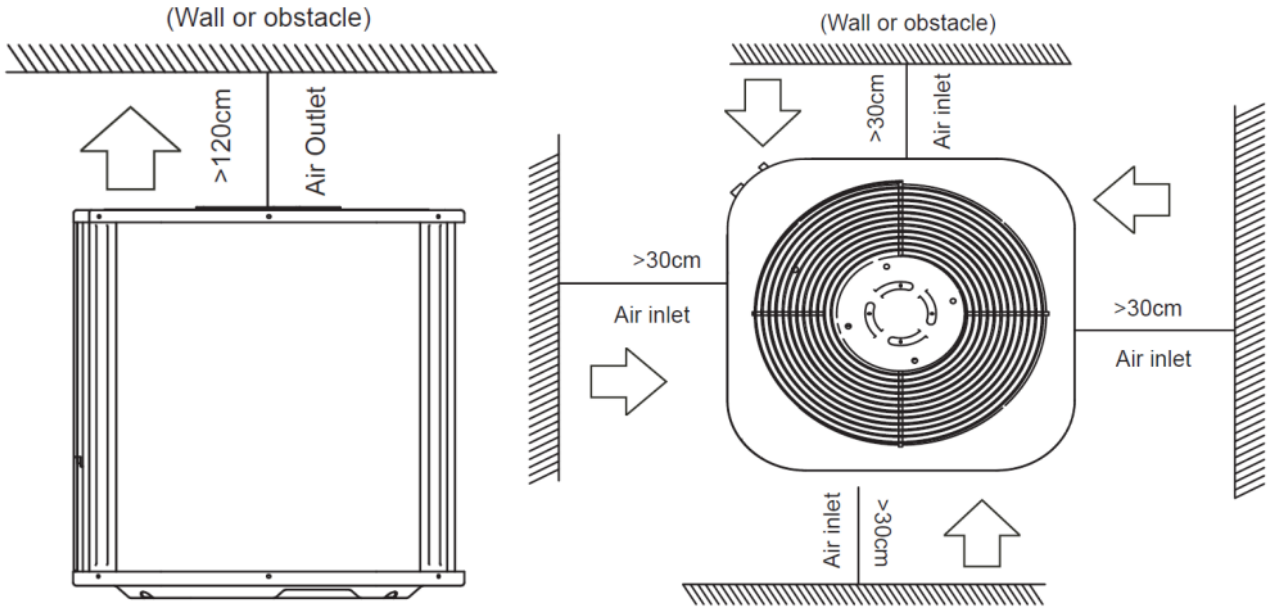
COOL ONLY					
Model			CUC42-15-S (472)	CUC48-15-S (473)	CUC60-15-S (474)
Outdoor power supply		V/Ph/Hz	208~230V/1N/60Hz	208~230V/1N/60Hz	208~230V/1N/60Hz
MCA		A	25	27	36
MOP		A	40	40	60
Compressor	Brand		LG	LG	LG
	Type		SCROLL	SCROLL	SCROLL
	MODEL		TPH034KAA	TBH039KAA	TBH051KAA
	Capacity	Btu/h	42300	47500	62500
	Input	W	2650.00	2980.00	3900.00
	Rated current(RLA)	A	20.80	27.30	31.60
	Locked rotor Amp(LRA)	A	96	102	134
Outdoor fan moto	Brand		LIFENG	LIFENG	LIFENG
	Type		PSC	PSC	PSC
	Model		YDK-230-6-AL-1	YDK-230-6-AL-1	YDK-230-6-AL-1
	Rate current	A	1.42	1.42	1.42
	capacitor	μF	12uF/450V	12uF/450V	12uF/450V
	Input	W	331	331	331
	Output	W	230	230	230
	Speed	rpm	1110	1110	1110
Outdoor fan blad	Dimension	mm	Φ595×115×Φ12.7	Φ595×115×Φ12.7	Φ595×115×Φ12.7
Outdoor coil	Number of row		2	2	3
	Fin spacing	in	0.051	0.051	0.051
	Fin material		Hydrophilic Aluminum Fin	Hydrophilic Aluminum Fin	Hydrophilic Aluminum Fin
	Tube outside diameter	in	Φ 0.276	Φ 0.276	Φ 0.276
	Tube material		Inner Grooved	Inner Grooved	Inner Grooved
	Coil length x height x width	in	84*31.4*1.05	84*31.4*1.05	84*31.4*1.58
	Number of circuit		12	12	9
Outdoor dimensi	Unit (WxHxD)	in	29-1/7×32-7/8×29-1/7	29-1/7×32-7/8×29-1/7	29-1/7×32-7/8×29-1/7
		mm	740×835×740	740×835×740	740×835×740
	Packing (WxHxD)	in	29-9/10×34-2/5×29-9/10	29-9/10×34-2/5×29-9/10	29-9/10×34-2/5×29-9/10
		mm	760×875×760	760×875×760	760×875×760
	Net / Gross weight	kg	78.6/83.4	89.5/94	91.6/96.1
		lbs	173.3/183.9	197.3/207.2	201.9/211.9
Refrigerant	Type		R32		
	Pre-charge	kg	3.01	3.26	3.26
		ozs	106	115	115
	Default supported length	Ft	15	15	15
	Additional charge	ozs/ft	5.09		
Refrigerant pipe	Liquid side	in	Φ3/8	Φ3/8	Φ3/8
	Gas side	in	Φ7/8	Φ7/8	Φ7/8
	Max. refrigerant pipe length	ft	130	130	130
	Max. difference in level	ft	65	65	65
Design pressure		MPa	4.15/1.63	4.15/1.63	4.15/1.63
Max pressure		MPa	4.30	4.30	4.30
Operation te	Cooling	°F	57-118	57-118	57-118

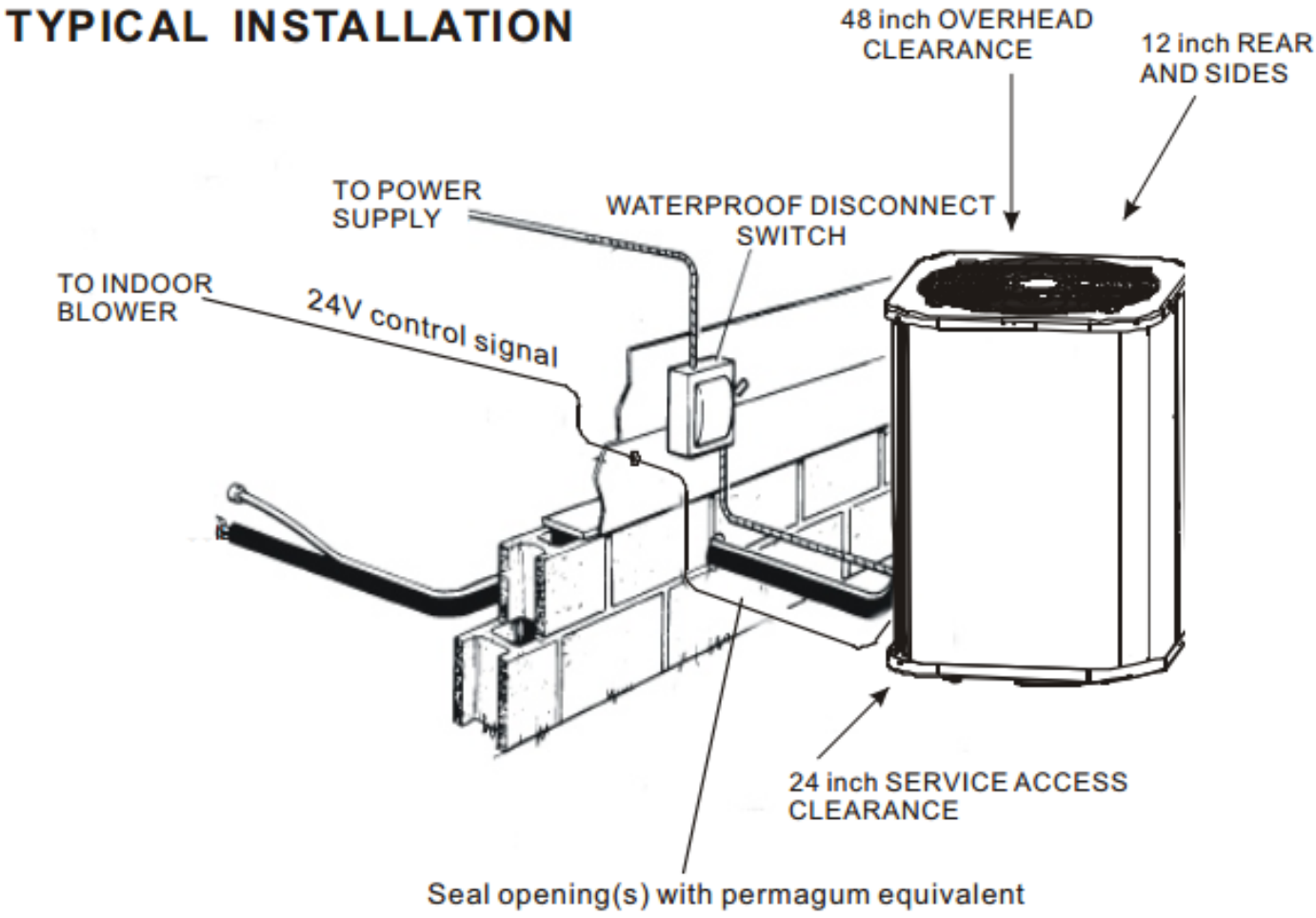
2.Dimensions



model	W×H×L (inches)
18/24/30K	21-4/5×25×21-4/5
36K	29-1/7×25×29-1/7
42K/48K/60K	29-1/7×32-7/8×29-1/7

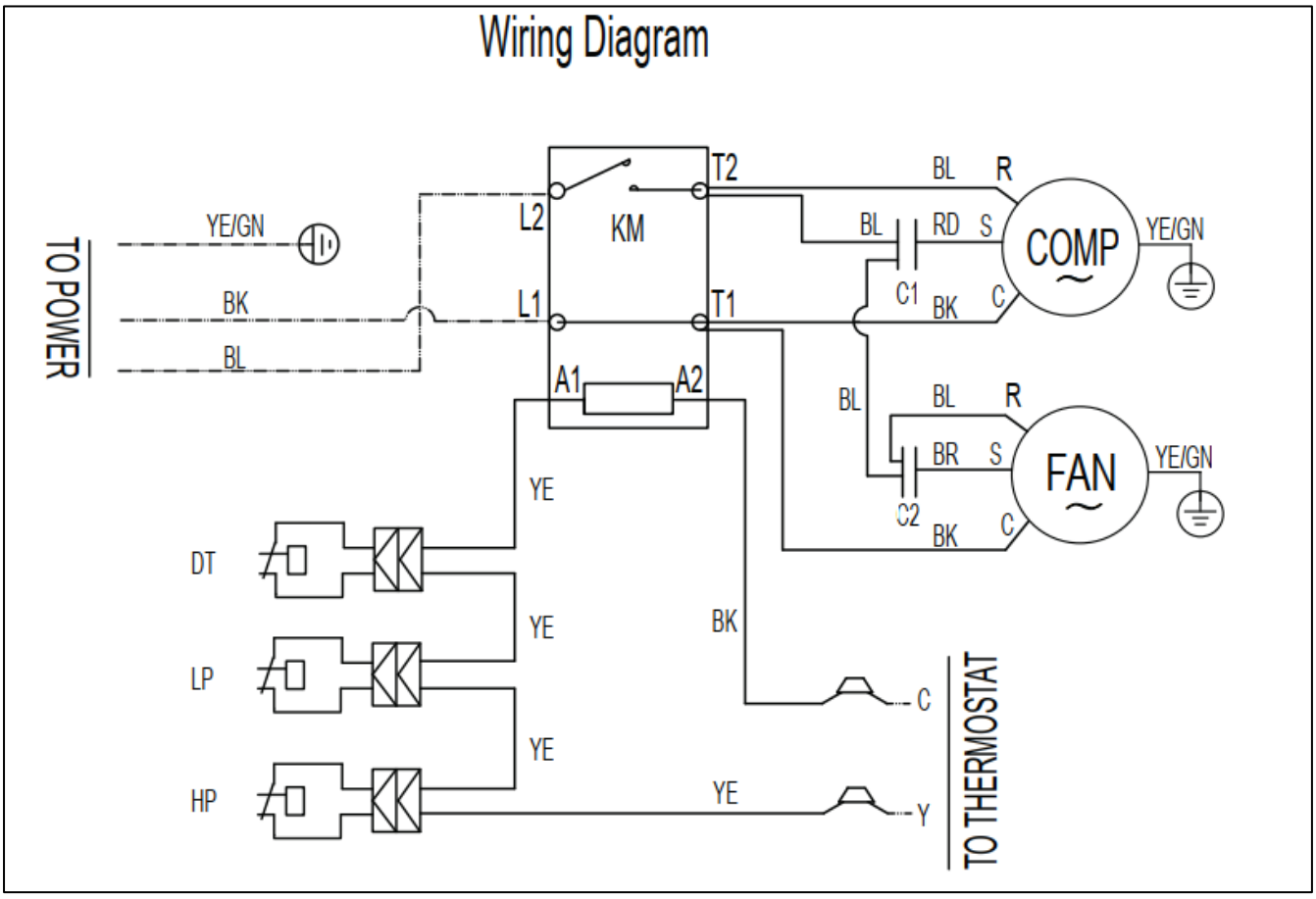
3.Service Space





4.Wiring Diagrams.

Cooling only unit



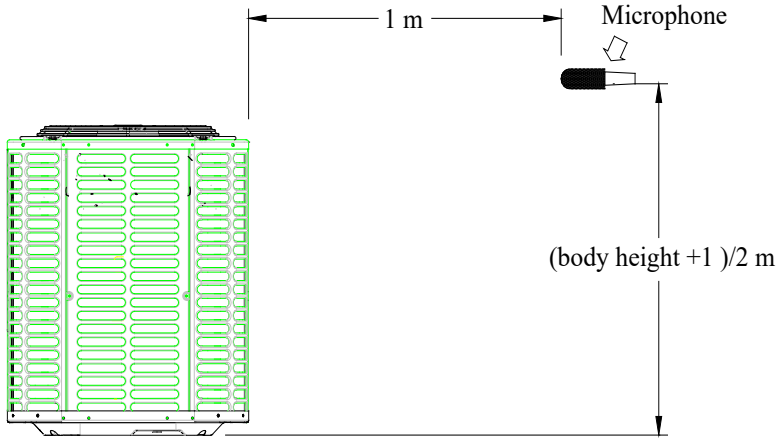
5.Electric Characteristics

Model	Outdoor Unit					
	Hz	Voltage	Min.	Max.	MCA	MOP
18K	60	208~230V	187V	253V	12	20
24K	60	208~230V	187V	253V	15	25
30K	60	208~230V	187V	253V	18	30
36K	60	208~230V	187V	253V	20	35
42K	60	208~230V	187V	253V	24	40
48K	60	208~230V	187V	253V	27	40
60K	60	208~230V	187V	253V	36	60

6.Operation Limits

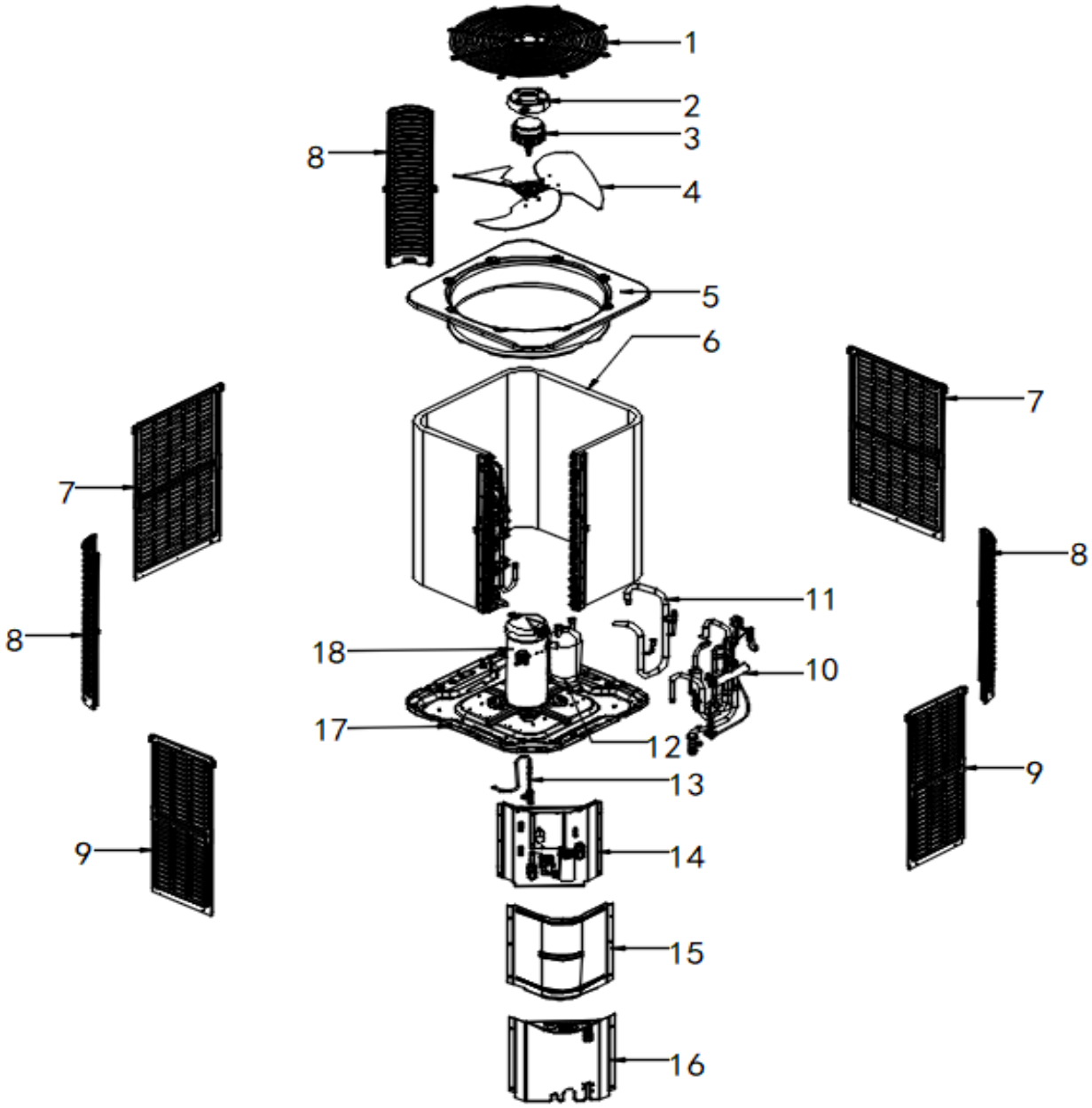
Operation mode	Outdoor temperature(℉)	Room temperature(℉)
Cooling operation	57—118	61—90

7.Sound Levels



Note: Sound level is measured at a point 1 m in front of the unit, at a height of (Unit body height +1)/2 m.

8.Exploded View



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Cover net	1	12	Gas-liquid separator	1
2	DC Motor Mount	1	13	High pressure valve assembly	1
3	Outdoor motor	1	14	electric control box components	1
4	Axial-flow fan	1	14.1	High pressure switch	
5	Top cover assembly	1	14.2	Low pressure switch	1
6	Condenser assembly	1	14.3	Exhaust temperature switch	1
6.1	Condenser inlet pipe assembly	1	14.4	AC contactor	1
6.2	Condenser output pipe assembly	1	14.5	Compressor capacitor	1
7	Rear side-panel	2	15	Top panel	1

8	Support board	3	16	Bottom side panel	1
9	Left side-panel	2	17	Chassis assembly	1
10	Four way valve assembly	1	18	Compressor	1
11	Suction air pipe weld assembly	1			

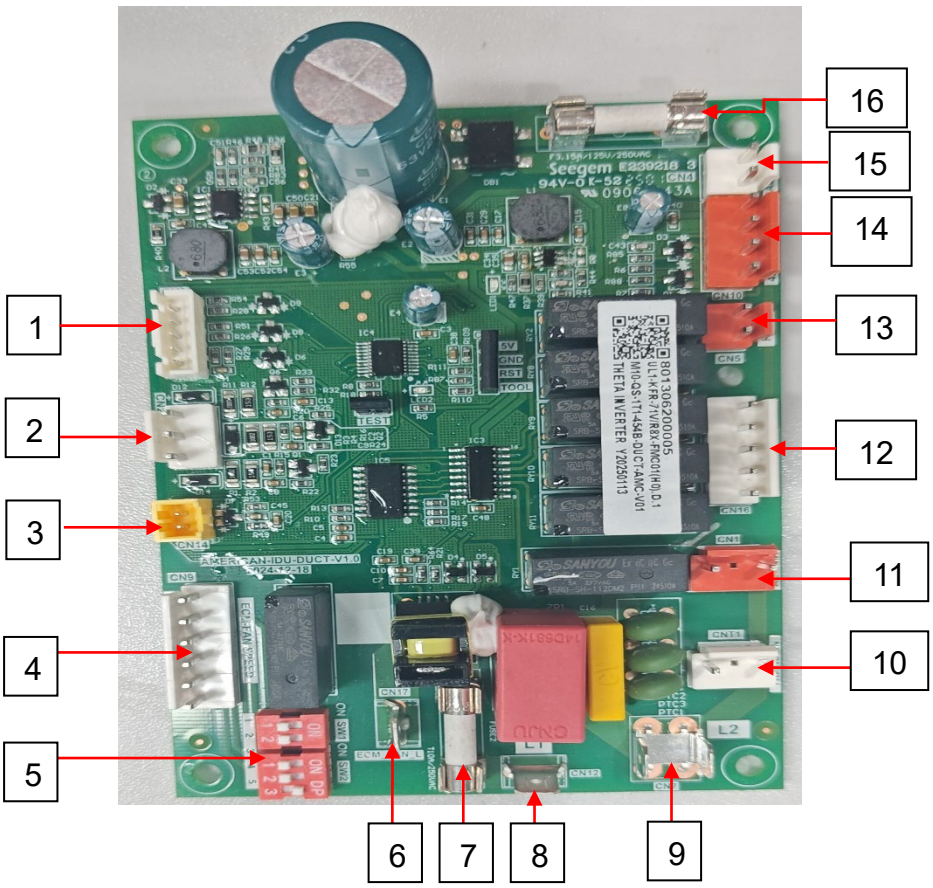
9.Troubleshooting

9.1 Error conde

Indoor unit

Number of green light flashes	Fault description
Always on	Running mode
1	Refrigerant leakage
2	Anti-freeze protection
3	T2 sensor fault
4	Refrigerant concentration sensor fault
5	Motor protection

9.2 Indoor unit control board

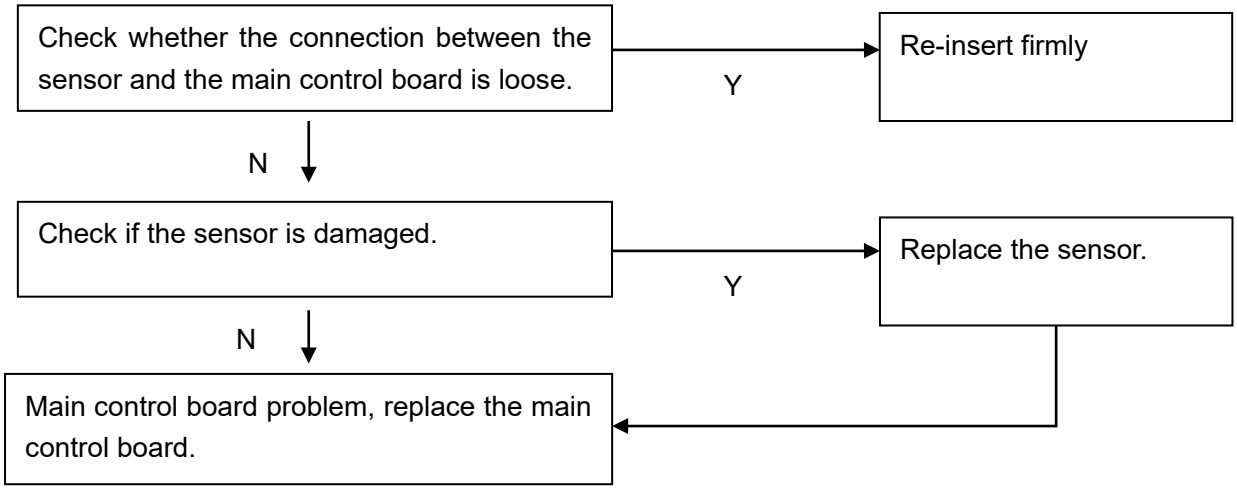


NUM	Port definition	NUM	Port definition
1	Reserve	9	Power supply L2
2	24V terminal connected to 24V thermostat	10	Transformer input(230v)
3	T2 sensor	11	Alarm output (230V)
4	ECM motor	12	Electric heater port (connected to electric heater)
5	Function switch	13	24V thermostat power supply R, C
6	Power supply of motor	14	Refrigerant leakage sensor
7	Fuse	15	Transformer output(24v)
8	Power supply L1	16	Fuse

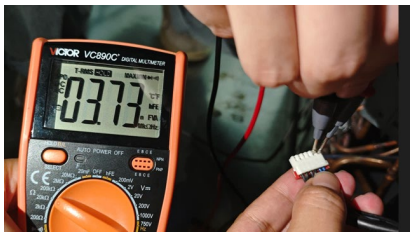
9.4 Troubleshooting guide

9.4.1 R32 sensor fault

Reason: Sensor reading error



- Confirm whether the sensor is firmly connected and check the sensor connector to ensure it is firmly connected.
- Unplug the sensor and use a multimeter to measure the resistance to check whether it is open circuit or short circuit. If so, replace the sensor; if not, replace the main control board.



- Sensor resistance table see Appendix 1

9.4.3 Refrigerant leakage fault

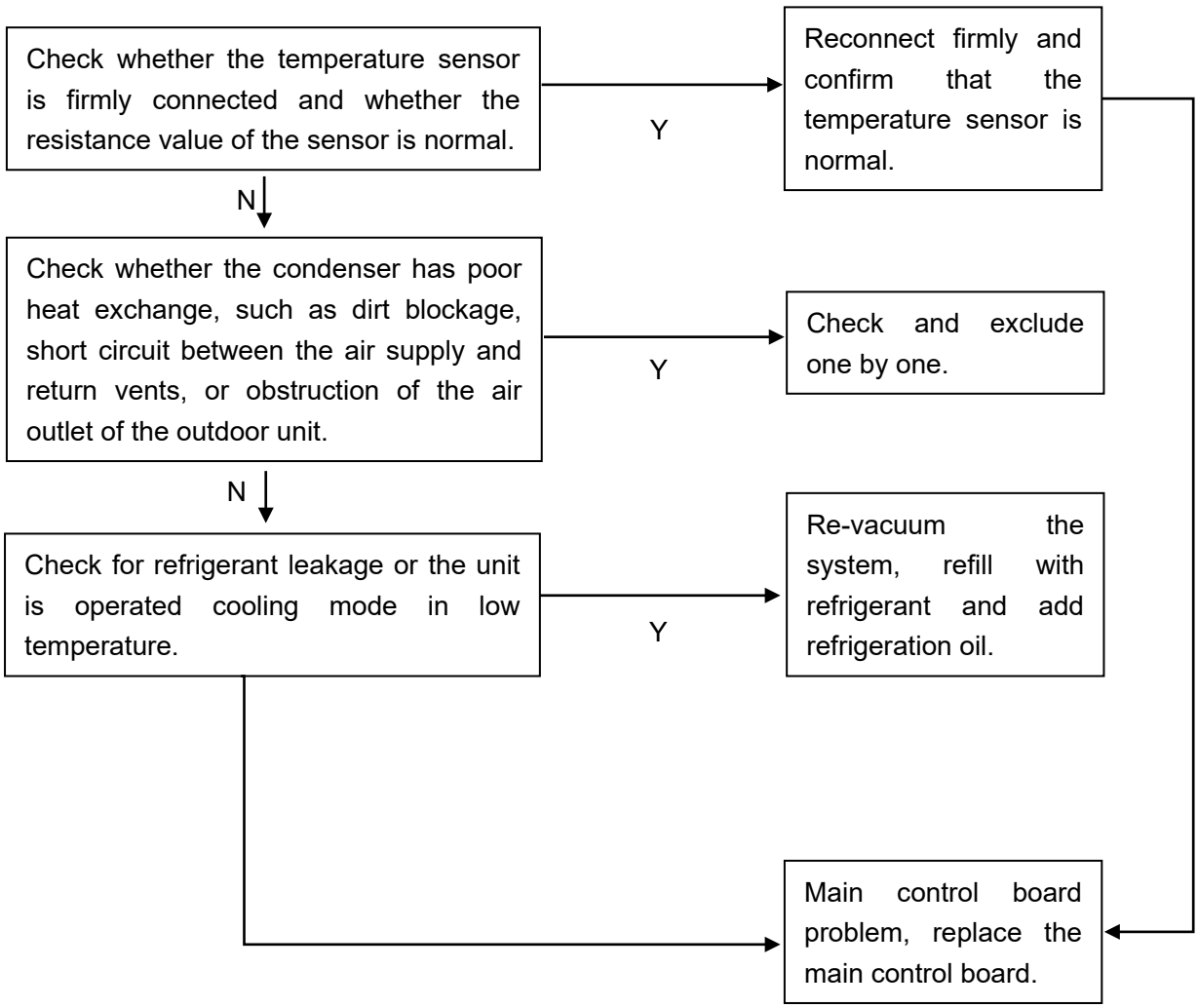
Reason: Refrigerant leakage detected

- Firstly, open windows for ventilation and extinguish indoor open flames.
- Then check if there is any leakage in the copper pipe. If it is confirmed to be leaking, the pipe needs to be repaired by welding.
- If no leakage is found, it may be a false alarm fault on the main control board. Replace the indoor board first. If the fault is not resolved, replace the refrigerant sensor.

9.4.5 Anti-freeze protection

Reason:

Indoor unit: The T2 sensor detects that the evaporator temperature is too low(T2＜0℃)



- Check if the actual temperature of the evaporator is very low or even frozen.
- If the evaporator is frozen, please check if the air conditioning system is blocked or if the refrigerant is leaking, etc. If no, then you need to clean the pipes, re-evacuate, and recharge refrigerant.
- If the evaporator is not frozen, use a multimeter to measure whether the resistance of the temperature sensor is normal (see the appendix for the R-T table). If it is not normal, you need to replace the sensor.
- If the sensor resistance is normal, then you need to replace the main control board of the indoor unit.

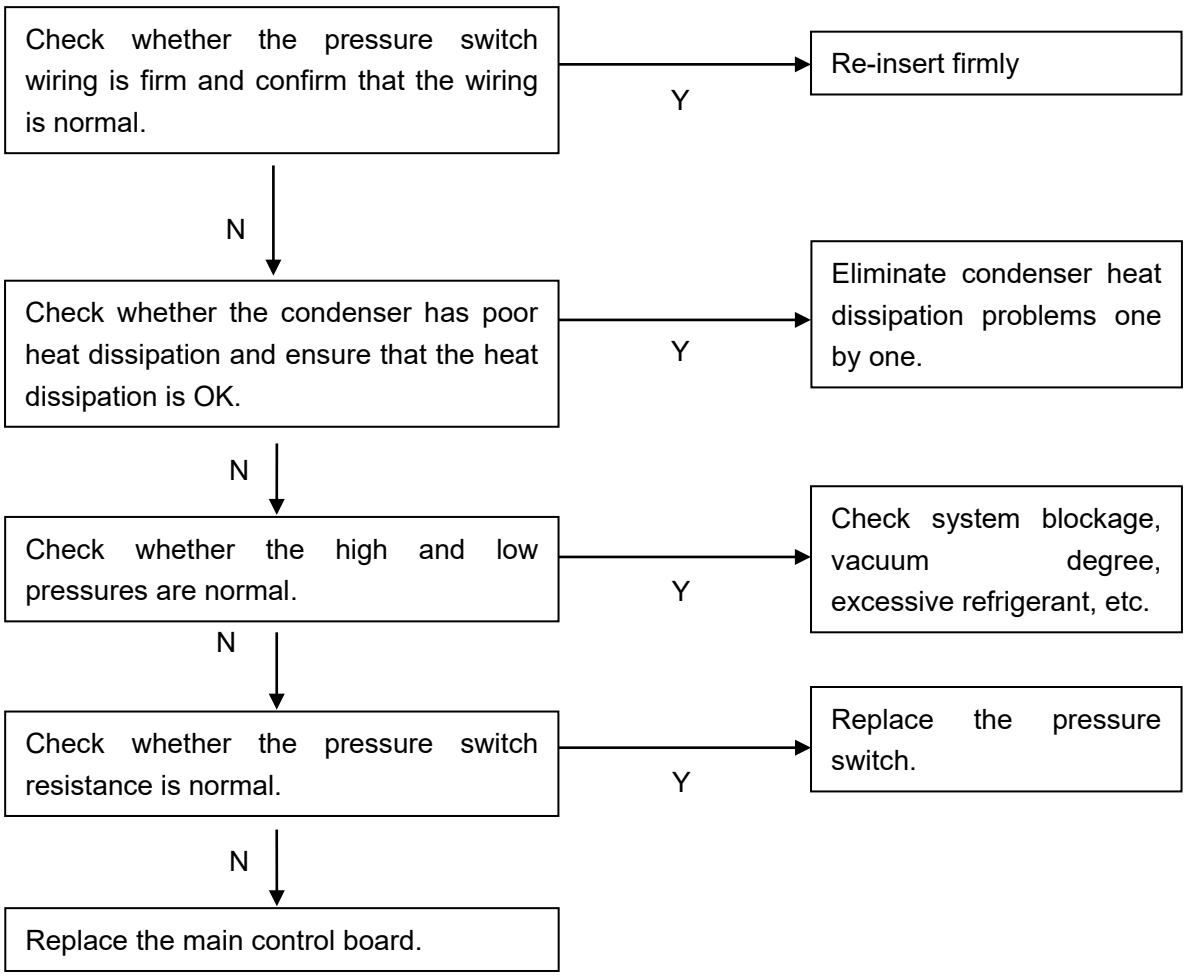
9.4.6 Indoor fan protection

Reason: The DC fan motor of the indoor unit has issue

- Replace the control board of the indoor unit.
- If not resolved, replace the motor.

9.4.7 High /Low pressure protection

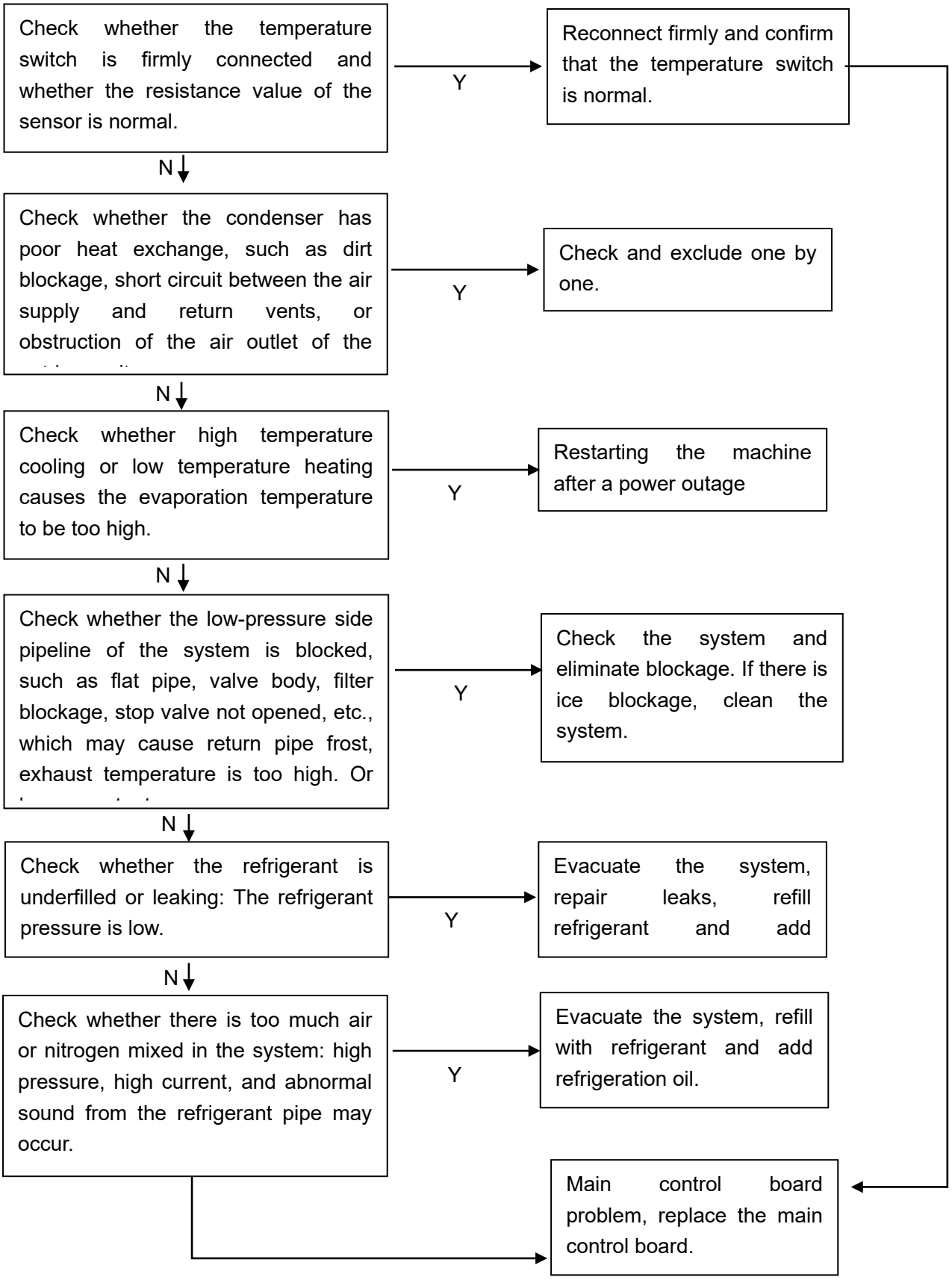
Cause: The high and low-pressure switch is continuously in the disconnected state



- Then turn off the power of the machine and then turn on the power, and use the controller to start the machine.
- If the machine fails after running for a while, there may be a problem with the refrigerant system and the system needs to be checked.
- If the machine fails as soon as it is powered on, there may be a problem with the pressure switch or the outdoor main board.
- Use a jump cap or metal short-circuit to connect the pressure switch port of the electronic control board, then turn off the power and restart the machine, and observe whether the fault disappears.
- If the fault is resolved, replace the pressure switch.
- If the fault is not resolved, replace the main control board.

9.4.10 Exhaust temperature too high protection ＞120℃

Cause: The exhaust temperature switch reads a temperature that is too high



- Connect a pressure gauge to measure whether the return gas pressure is too low (normally 0.7-0.9MPa). If the pressure is too low, add refrigerant.

- If the above steps are normal, check whether the refrigerant system is normal, such as return air blockage, poor evaporation, compressor wear, etc.

Part 4 Function introduction

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1.Electrical Components Description

Temperature Sensor

T2: Indoor Coil Temperature
— Anti-Cold Air Function (heating mode)
— Anti-Freezing Function

3.Indoor Coil Anti-Freezing Function

The function utilizes the indoor coil sensor(T2) to determine whether the indoor coil is freezing or not. The feature prevents the unit running at low evaporating temperature as well as low suction superheat.
When all the following conditions are met, the Anti-Freezing Function will activate，and the compressor will be turned off.
A. T2＜32℉ Duration exceeding 1 minute.
B. T2≤26.6℉ Duration exceeding 30 seconds.
when T2≥42.8℉, the Anti-Freezing Function will deactivate:

5.R32 Leakage Detection Function

The function utilizes a R32 refrigerant sensor to detect the R32 concentration. Terminal F/L2 is reserved for connecting buzzer if needed.
When R32 leakage occur in the indoor coil and the concentration is above 6.7%LEF, the unit will perform as the following:
A. Cut off power to the thermostat to stop the compressor from continuing operation, until the alarm is cleared.
B. The electric heat kit will be turned off.
C. High voltage 220V will be output between terminal F and terminal L2.
D. The indoor unit mainboard will flash the faulty indicator, and the indoor fan will be forced to run at high speed for 7 minutes.
E. The mainboard will read the refrigerant sensor value once. If the concentration returns to normal, the unit will resume normal operation automatically. If the concentration still exceeds the alarm threshold, actions A–D will continue, and the concentration will be rechecked at regular intervals.
F. If excessive concentration is detected 6 times within 70 minutes, the unit will remain in refrigerant leakage protection mode permanently and can only be excited by power-off restart.

When the R32 leakage sensor itself is abnormal or faulty:
A. Cut off power to the thermostat to stop the compressor from continuing operation, until the alarm is cleared.

B. The electric heat kit will be turned off.
C. High voltage 220V will be output between terminal F and terminal L2.
D. The indoor unit mainboard will flash the fault indicator, and the indoor fan will be forced to run at high speed continuously.
E. The mainboard will send a command to restart and calibrate the sensor.
F. If the fault is cleared, the unit will resume normal operation.
G. If the fault persists, the mainboard will send restart and calibration command again after 90 seconds.
H. If fault recovery fails three consecutive times, the unit will maintain status A–D continuously and can only be excited by power-off restart.

Part 5 Installation

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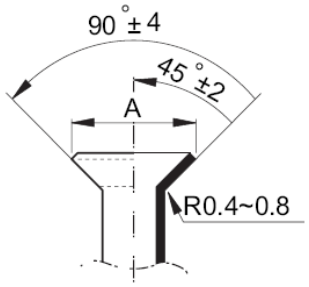
1.Precaution on Installation

1.1. Measure pipe length

Measure the necessary length of the connecting pipe and make it by the following way.
Connect the indoor unit at first, then the outdoor unit.
Bend the tubing in proper way.
Please refer to the table below for the length dimensions of the connection pipe

Table 1.1.1 In general mode

CAUTIONS:
Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
With hands before fasten the flare nuts.
Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A Min (mm) Max		Flare shape
Φ6.35	15～16N.m (153～163 kgf.cm)	8.3	8.7	
Φ9.52	25～26N.m (255～265kgf.cm)	12.0	12.4	
Φ12.7	35～36N.m (357～367kgf.cm)	15.4	15.8	
Φ15.9	45～47N.m (459～480 kgf.cm)	18.6	19.1	
Φ19.1	65～67N.m (663～684kgf.cm)	22.9	23.3	

The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.
Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

1.2. Locate The Pipe

Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.
Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.
Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

1.3. Connect the pipes.

1.4. Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

1.5. Be sure of no leakage by checking it with leak detector or soap water.

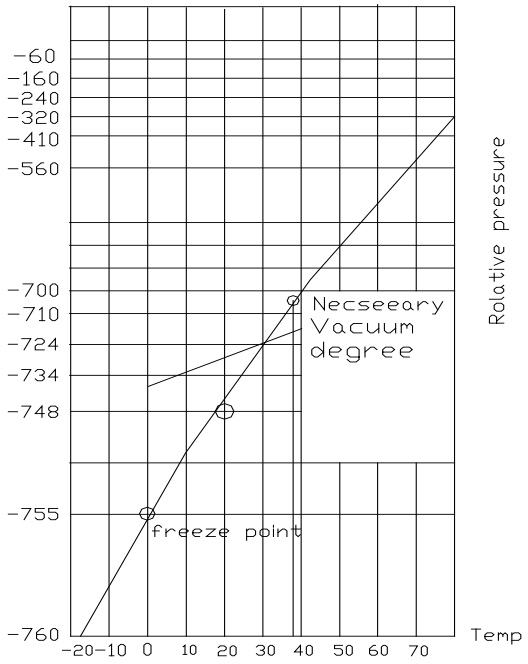
1.6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

2. Oil return bend installation

Oil return bends are not required within a 20m drop.

3.Vacuum Dry and Leakage Checking

3.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100℃. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.



3.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

①. Common vacuum dry procedure

Vacuum dry (for the first time) ---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)

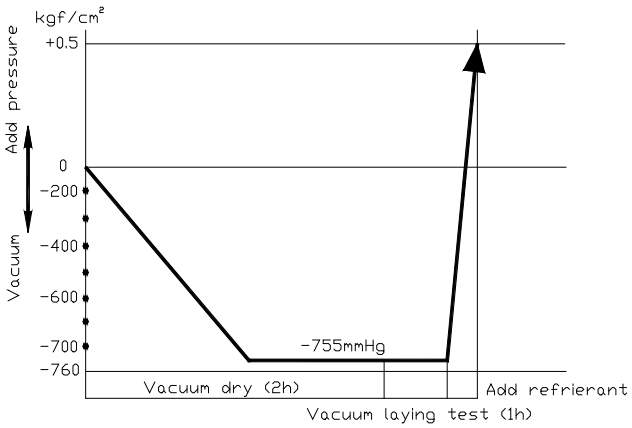
If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.

If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.

Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.

Vacuuming from liquid pipe and gas pipe at the same time.

Sketch map of common vacuum dry procedure.



② Special vacuum dry procedure

a. Vacuum dry for the first time 2h pumping

b. Fill nitrogen to 0.5Kgf/cm2

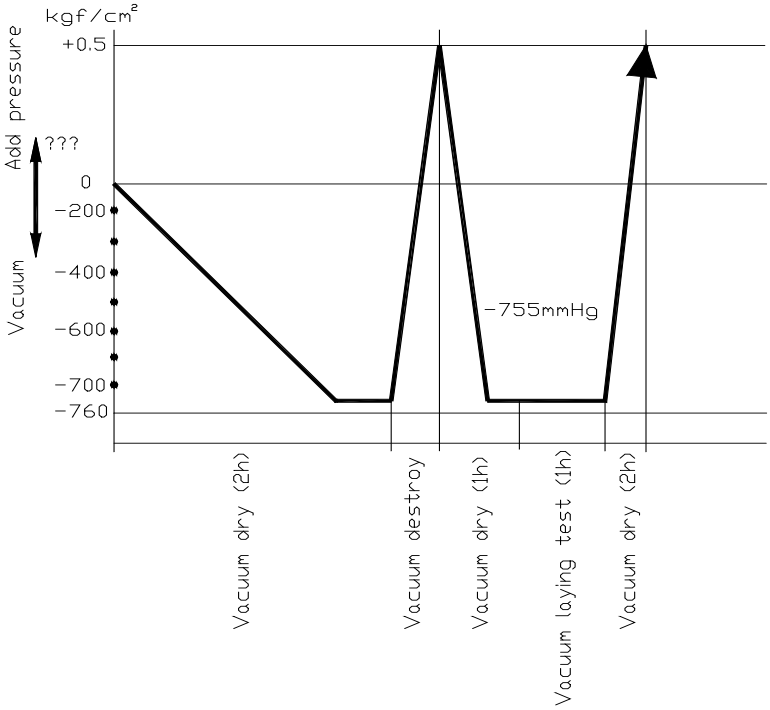
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

c. Vacuum dry for the second time for 1h pumping

If -755mmHg can't be achieved in 2h, repeat procedure "b" and "c".

d. Vacuum placing test …… 1h

e. Sketch map of special vacuum dry procedure



4.Additional Refrigerant Charge

Caution
● Refrigerant cannot be charged until field wiring has been completed.
● Refrigerant may only be charged after performing the leak test and the vacuum pumping.
● When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
● Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
● Refrigerant containers shall be opened slowly.
● Always use protective gloves and protect your eyes when charging refrigerant.

Weigh-In Method

The factory charge in the outdoor unit is sufficient for 15 feet of standard size interconnecting liquid line. Additional 0.47 oz/ft refrigerant is needed when length of pipe is more than 15 feet.
Additional Refrigerant Guidelines

Piping length (ft)/(m)	Additional charge (oz)/(kg)
15/4.57	0
25/7.62	4.73/0.13
75/22.86	28.39/0.80
100/30.48	40.21/1.14
131/39.93	54.88/1.56

Superheat Method

Check the ambient temperature. Superheat method (cooling mode) is only for outdoor temperature be-tween 68°Fand 113°F, and indoor temperature between 68°Fand 89°F. For temperature out of the range, use the weigh-in method mentioned above.
Calculate superheat value in Cooling for Piston Match-Ups. Calculate superheat value with measured vapor line temperature and pressure according to Table 4.1. If calculated superheat value is lower than the design superheat value of Table 4.2, refrigerant should be recovered. If calculated superheat value is higher than the value of Table 4.2, refrigerant should be added

Table 4.1

Suction Temp (°F)	Superheat Value (°F)								
	6	8	10	12	14	16	18	20	**22**
	Suction Gauge Pressure (PSI)								
40	107	103	99	95	91	87	84	80	77
42	112	107	103	99	95	91	87	84	80
44	116	112	107	103	99	95	91	87	84
46	121	116	112	107	103	99	95	91	87
48	126	121	116	112	107	103	99	95	91
50	131	126	121	116	112	107	103	99	95
52	136	131	126	121	116	112	107	103	99
54	141	136	131	126	121	116	112	107	103
56	146	141	136	131	126	121	116	112	107
58	151	146	141	136	131	126	121	116	112
60	157	151	146	141	136	131	126	121	116
62	162	157	151	146	141	136	131	126	121
64	168	162	157	151	146	141	136	131	126
66	174	168	162	157	151	146	141	136	131
68	180	174	168	162	157	151	146	141	136
70	186	180	174	168	162	157	151	146	141
72	193	186	180	174	168	162	157	151	146

Table 4.2

Outdoor DB (°F)	Indoor DB/WB (°F)				
	90/75	85/71	80/67	75/63	70/58
110	10±2	5±2	5±2	4±2	4±2
100	14±2	10±2	6±2	4±2	4±2
90	17±2	12±2	10±2	6±2	4±2
80	20±2	15±2	12±2	10±2	4±2
70	22±2	19±2	15±2	13±2	7±2
60	26±2	22±2	18±2	17±2	10±2

* For 18K/24K/30K/36K/42K/48K.

Outdoor DB (°F)	Indoor DB/WB (°F)				
	90/75	85/71	80/67	75/63	70/58
110	10±2	5±2	5±2	4±2	4±2
100	12±2	8±2	5±2	4±2	4±2
90	14±2	11±2	6±2	5±2	4±2
80	16±2	13±2	10±2	6±2	6±2
70	18±2	15±2	12±2	8±2	7±2
60	20±2	17±2	14±2	11±2	7±2

* For 60K.

5.Insulation Work

5.1 Insulation material and thickness

5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70℃ in the high-pressure side, no less than 120℃ in the low-pressure side(For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)

Cooling only type----Polyethylene foam (withstand above 100℃)

5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

5.2 Refrigerant pipe insulation

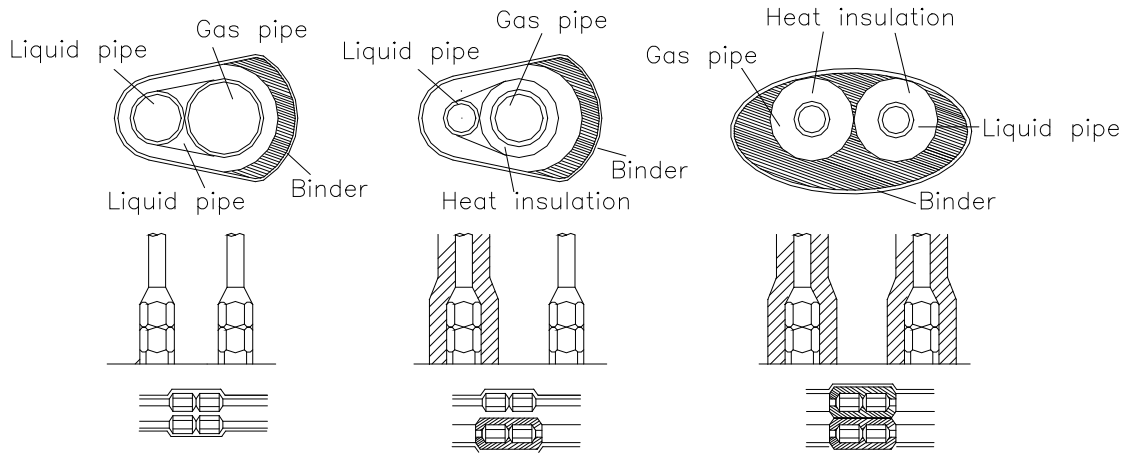
5.2.1. Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated.

5.2.2. Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

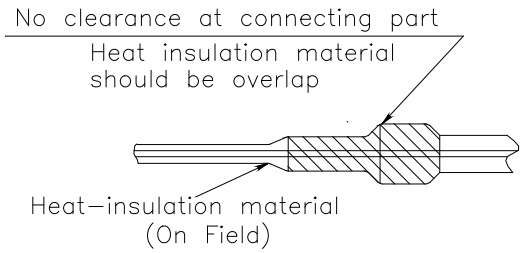


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

5.2.3. Insulate for the jointing area, expanding area and the flange area

① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test.

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in, expand nut) of the indoor unit.

6.Test Operation

(1) The test operation must be carried out after the entire installation has been completed.
(2) Please confirm the following points before the test operation.
The indoor unit and outdoor unit are installed properly.
Tubing and wiring are correctly completed.
The refrigerant pipe system is leakage-checked.
The drainage is unimpeded.
The ground wiring is connected correctly.
The length of the tubing and the added stow capacity of the refrigerant have been recorded.
The power voltage fits the rated voltage of the air conditioner.
There is no obstacle at the outlet and inlet of the outdoor and indoor units.
The gas-side and liquid-side stop values are both opened.
The air conditioner is pre-heated by turning on the power.
(3) According to the user's requirement, install the 24v thermostat
(4) Test operation
Set the air conditioner under the mode of "COOLING" with the thermostat.
, and check the following points.
Indoor unit
Whether the fan motor operate normally.
Whether the room temperature is adjusted well.
Whether the indicator lights of indoor board normally.
Whether the drainage is normal.
Whether there is vibration or abnormal noise during operation.
Outdoor unit
Whether there is vibration or abnormal noise during operation.
Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
Whether any of the refrigerant is leaked.

Appendix：R-T table

5K: Applicable T2 temperature sensor

T (ºC)	Rmin (KΩ)	Rnom (KΩ)	Rmax (KΩ)	T (ºC)	Rmin (KΩ)	Rnom (KΩ)	Rmax (KΩ)
-30	51.159	52.84	54.521	26	4.771	4.821	4.871
-29	48.659	50.232	51.805	27	4.599	4.649	4.699
-28	46.299	47.772	49.248	28	4.434	4.485	4.535
-27	44.071	45.452	46.832	29	4.277	4.327	4.377
-26	41.968	43.261	44.554	30	4.126	4.176	4.226
-25	39.981	41.193	42.405	31	3.981	4.031	4.081
-24	38.102	39.238	40.375	32	3.842	3.892	3.942
-23	36.326	37.391	38.457	33	3.709	3.759	3.808
-22	34.646	35.645	36.645	34	3.581	3.631	3.68
-21	33.055	33.993	34.931	35	3.495	3.508	3.557
-20	31.55	32.43	33.31	36	3.34	3.389	3.438
-19	30.097	30.923	31.748	37	3.226	3.275	3.323
-18	28.722	29.497	30.271	38	3.117	3.165	3.213
-17	27.42	28.147	28.873	39	3.012	3.06	3.107
-16	26.186	26.868	27.55	40	2.912	2.959	3.006
-15	25.017	25.657	26.297	41	2.815	2.861	2.908
-14	23.908	24.509	25.11	42	2.722	2.768	2.814
-13	22.857	23.421	23.985	43	2.633	2.678	2.724
-12	21.859	22.389	22.918	44	2.547	2.592	2.637
-11	20.912	21.409	21.907	45	2.464	2.509	2.553
-10	20.013	20.48	20.917	46	2.385	2.429	2.473
-9	19.116	19.584	20.023	47	2.308	2.352	2.395
-8	18.322	18.734	19.146	48	2.235	2.278	2.231
-7	17.54	17.927	18.314	49	2.164	2.207	2.249
-6	16.797	17.16	17.524	50	2.096	2.138	2.18
-5	16.09	16.431	16.733	51	2.03	2.071	2.112
-4	15.418	15.739	16.06	52	1.966	2.006	2.047
-3	14.779	15.08	15.382	53	1.904	1.944	1.984
-2	14.17	14.454	14.737	54	1.844	1.884	1.923
-1	13.591	13.857	14.124	55	1.787	1.826	1.865
0	13.04	13.29	13.54	56	1.732	1.77	1.809
1	12.505	12.739	12.974	57	1.679	1.717	1.754
2	11.995	12.215	12.436	58	1.628	1.665	1.702
3	11.509	11.717	11.924	59	1.579	1.615	1.652
4	11.047	11.241	11.436	60	1.531	1.567	1.603
5	10.606	10.789	10.971	61	1.485	1.521	1.556
6	10.186	10.357	10.529	62	1.441	1.476	1.511
7	9.785	9.945	10.107	63	1.399	1.433	1.467
8	9.403	9.554	9.705	64	1.357	1.391	1.425
9	9.038	9.18	9.322	65	1.318	1.351	1.384
10	8.69	8.823	8.956	66	1.279	1.312	1.344
11	8.357	8.482	8.607	67	1.242	1.274	1.306
12	8.04	8.157	8.274	68	1.206	1.237	1.269
13	7.736	7.816	7.957	69	1.171	1.202	1.233
14	7.446	7.55	7.653	70	1.137	1.168	1.199
15	7.169	7.266	7.363	71	1.105	1.135	1.165
16	6.9	6.991	7.082	72	1.074	1.103	1.133
17	6.644	6.729	6.814	73	1.043	1.072	1.101
18	6.398	6.478	6.558	74	1.014	1.043	1.071
19	6.163	6.238	6.313	75	0.986	1.014	1.042
20	5.938	6.008	6.078	76	0.959	0.986	1.014
21	5.723	5.789	5.854	77	0.932	0.959	0.986
22	5.517	5.578	5.64	78	0.907	0.933	0.96
23	5.32	5.377	5.484	79	0.882	0.908	0.934
24	5.131	5.185	5.238	80	0.858	0.884	0.91
25	4.95	5	5.05				