LG HVAC Solution

AIR-COOLED SCREW CHILLER

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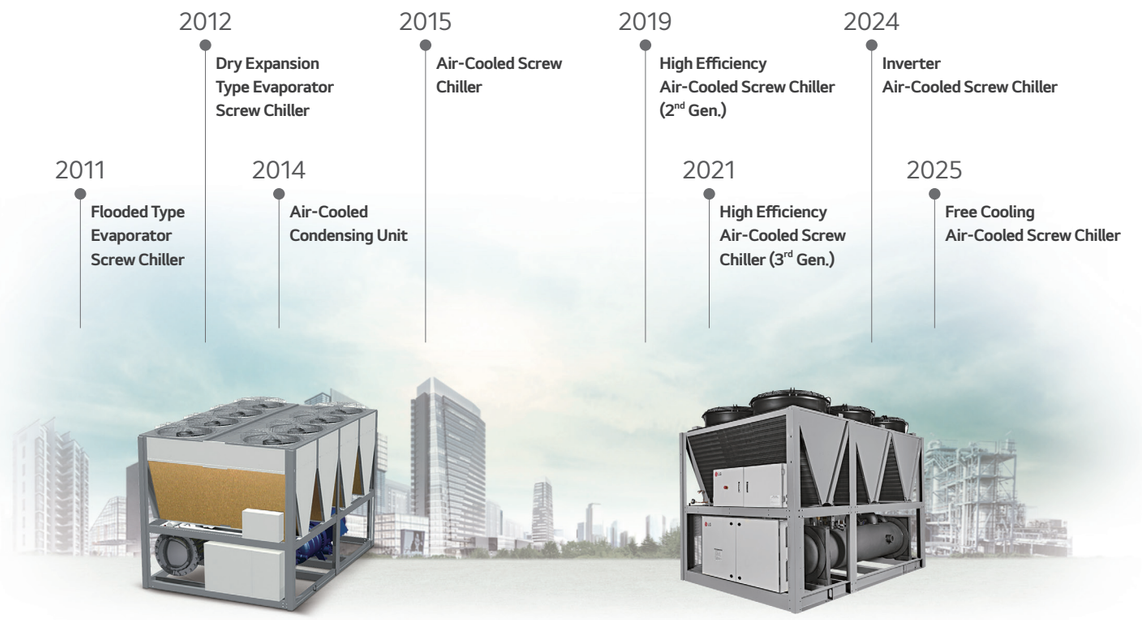
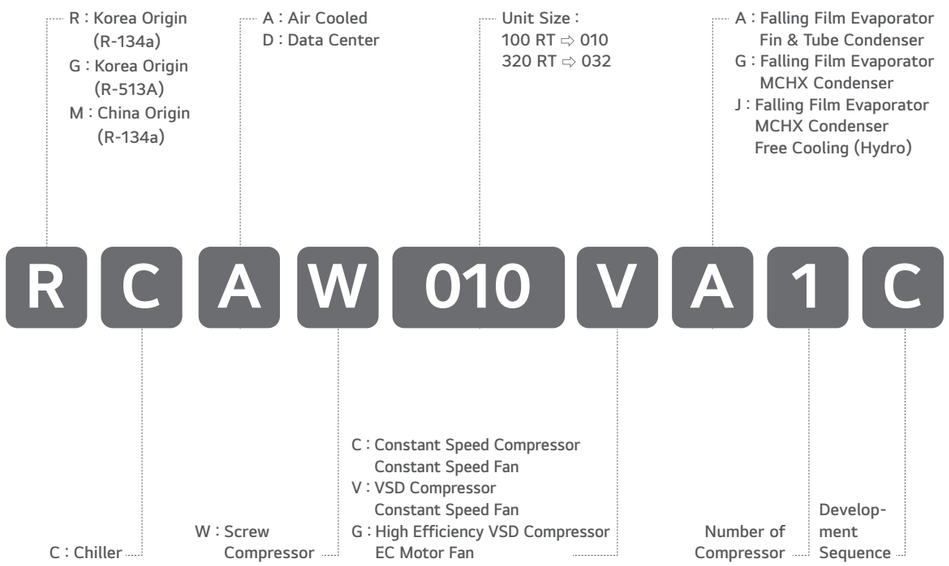
LG History

LG is a one of leading chiller manufacturer with long experience of manufacturing chillers and advanced technology.

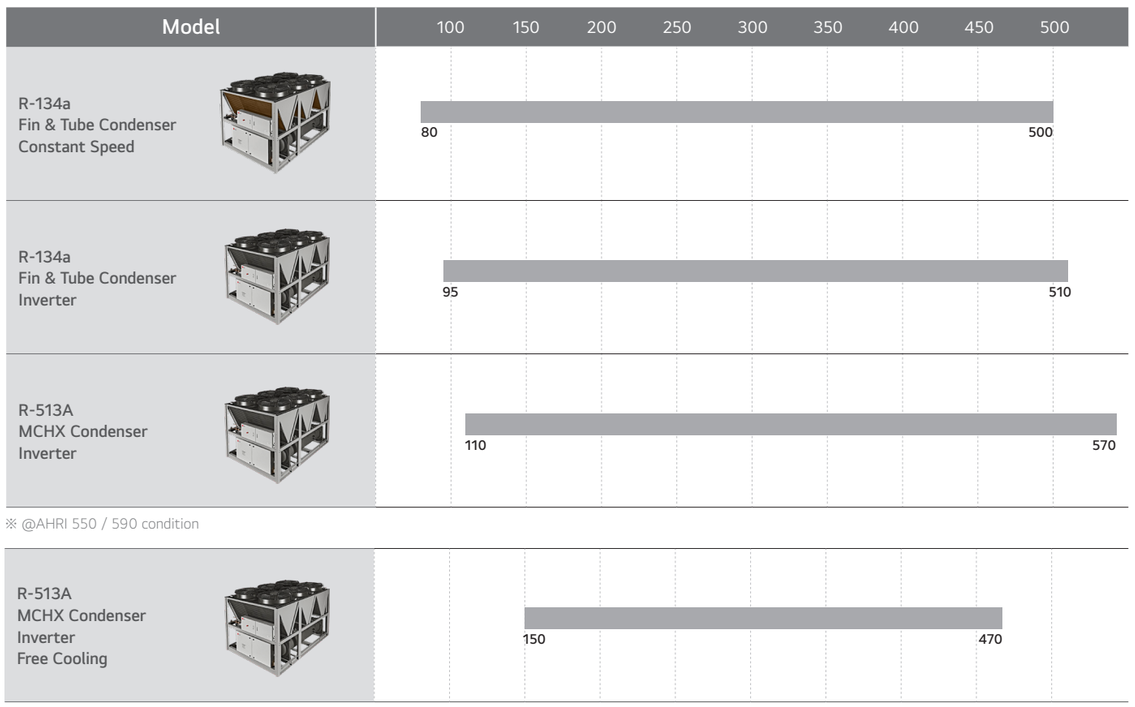


Nomenclature



Line-up

[usRT]



※ @AHRI 550 / 590 condition

※ @Chilled water 28 / 20°C Ambient 40°C Condition

※ @Chilled water 82.4 / 68°F Ambient 104°F Condition

※ The above range is based on the nominal tonnage.

LG Air-Cooled Screw Chiller Features

Economical Maintenance Costs

- High efficiency V-shape heat exchanger
- High efficiency wide louver fin (Fin & Tube type Chiller)
- High efficiency Micro-channel (MCHX type Chiller)

High Reliability

- Fin & Tube type chiller applies anti-corrosion Gold Fin, Black Fin, and Blygold coating (option).
- MCHX type chiller applies anti-corrosion TCP coating, and E-coating (option).
- Back-up operation available with Multi-circuit
- Low noise fan module applied
- Variety safety device with high performance digital sensors

User-friendly

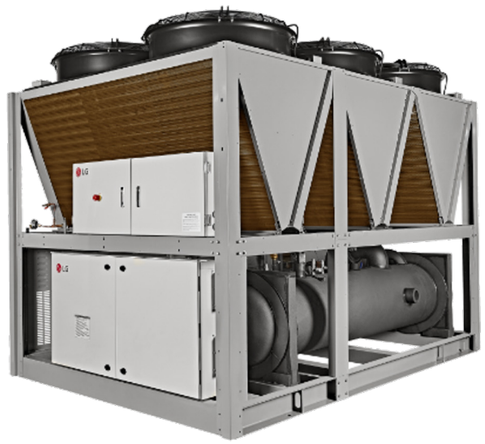
- Wide 15 inch touch screen with variety information
- Convenience use for checking ongoing status, and control & maintance
- Energy saving solution and intelligence building managing available (with LG BMS / BEMS)

Eco-friendly

- ODP[1] Zero R-134a applied
- ODP Zero & Low GWP[2] R-513A applied

1) ODP : Ozone Depletion Potential
2) GWP : Global Warming Potential

LG Constant Speed Screw Chiller Achieve High COP

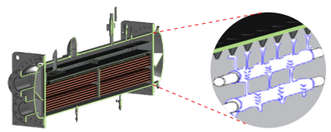


Gen1

Flooded Type

Gen2

High Efficiency
Falling Film Type Evaporator



Gen3

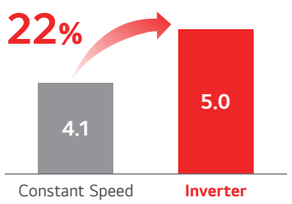
High Efficiency
Compressor & Evaporator

Efficiency ↑

LG Inverter Screw Chiller

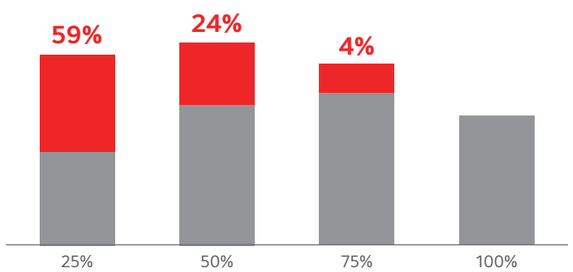
Inverter compressor has strength in partial load. IPLV improved 22%.

- **Higher IPLV**



- **Compressor Performance**

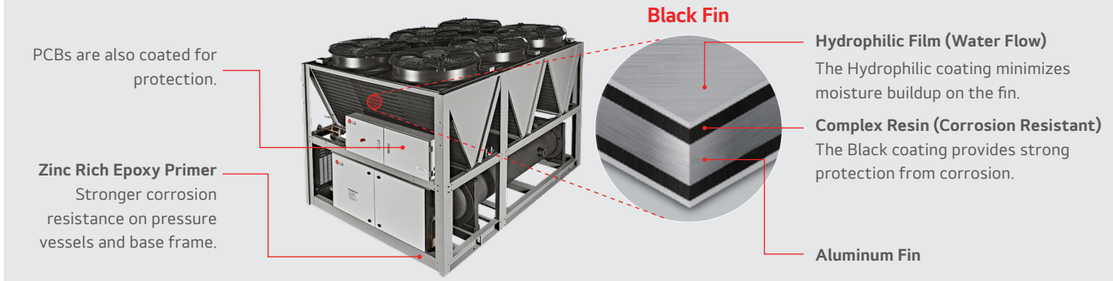
Compared to previous model, compressor has higher efficiency part load conditions.



※ 100 RT model internal test with AHRI 551 / 591 condition

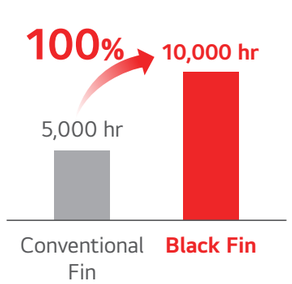
Corrosion Resistance

The black fin is applied for strong protection from various corrosive external conditions such as salt contamination and air pollution including fumes.



- **Salt Spray Test (SST)**

Less than 0.05% Area of defects compared to initial condition



※ Verification of corrosion resistance performance
- ASTM B117 : 10,000 hours (Last updated : Dec. 2020)
- Test Method B of ISO 9227

- **Black Fin ⊕ Blygold Coating (Option)**

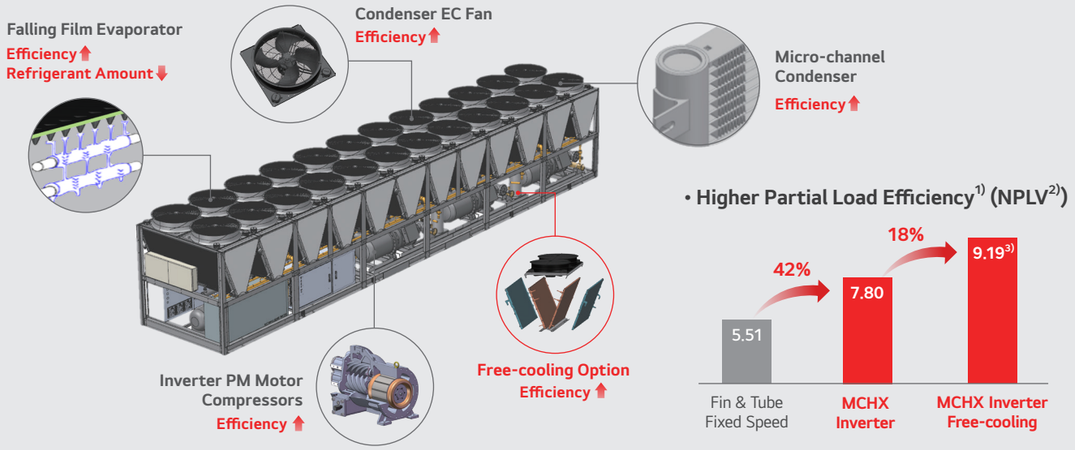
Longer life span with Blygold coating option

Apply polyurethane coating contained aluminum fin powder

※ The product is not fully treated for anti-corrosion. To install near the sea, additional treatment must be required.
※ Results may vary depending on the environment.
※ Black Fin is standard for inverter model and Gold Fin is standard for constant speed model.

Advanced Inverter Performance (Integrated Free-cooling)

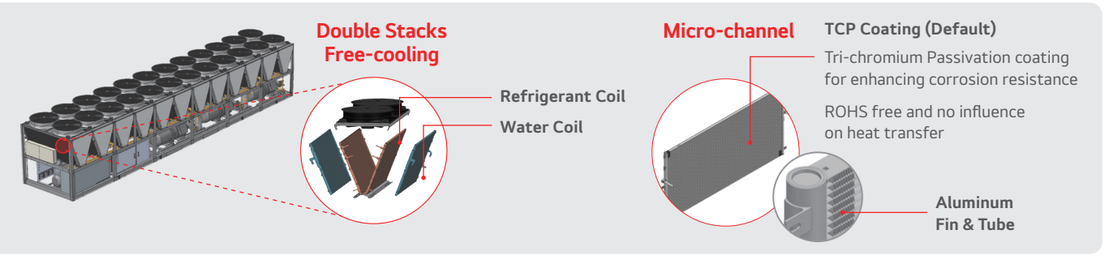
New main feature including free-cooling option can provide customer high efficiency with less cost.



1) Partial load data based on EWT28°C LWT20°C OAT40°C 3comp. model
Partial load data based on EWT82.4°F LWT68°F OAT104°F 3comp. Model
2) NPLV = 0.01A + 0.42B + 0.45C + 0.12D (A : 100% COP, B : 75% COP, C : 50% COP, D : 25% COP)
3) Hybrid operation at 25% partial load

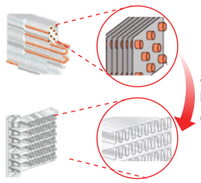
Micro-Channel Heat Exchanger Condenser (with E-coating Option)

Micro-channel Heat Exchanger (MCHX) provides high efficiency with less cost. Default TCP coating provides corrosion resistance and E-coating option available for more corrosive area. Additional separate water coils are applied for free-cooling option.



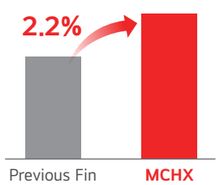
• Micro-channel Comparison

Higher Heat Transfer Rate



Improved design achieves higher heat exchange efficiency

COP

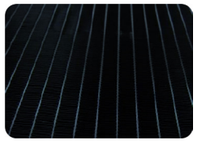


1) Compared to the TCP Coating. Based on manufacturer's SST result.
※ The product is not fully treated for anti-corrosion. To install near the sea, additional treatment must be required.
※ Results may vary depending on the environment.

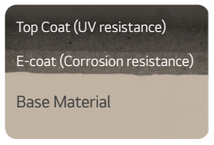
• E-coating Option

Process

❶ Degreasing → ❷ Rinse → ❸ E-coat Base Coat → ❹ Rinse → ❺ Oven Bake → ❻ UV Top Coat → ❼ Oven Bake



Longer life span 200% improvement1)



Apply coating for enhancing UV & corrosion resistance

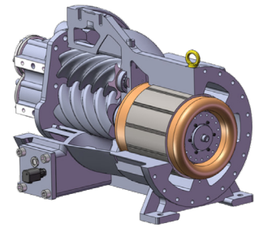
PM Motor Inverter Compressor

Compare to Induction Motor, Permanent Magnet Motor compressor can provide more efficient chiller performance by no rotation slip and less suction superheat.

• Permanent Magnet Motor

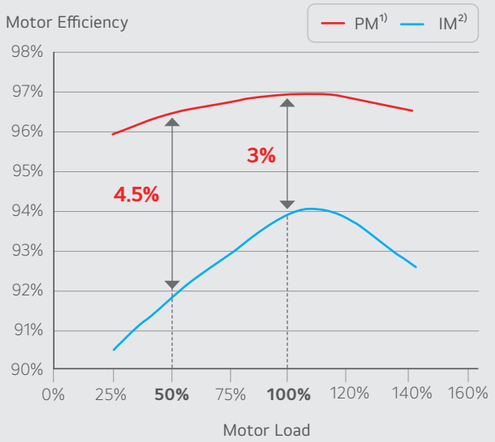
Less Heat Generate by Motor → Less Non-useful Suction Superheat

No Rotation Slip → No Loss of Work



1) PM : Permanent Magnet Motor
2) IM : Induction Motor

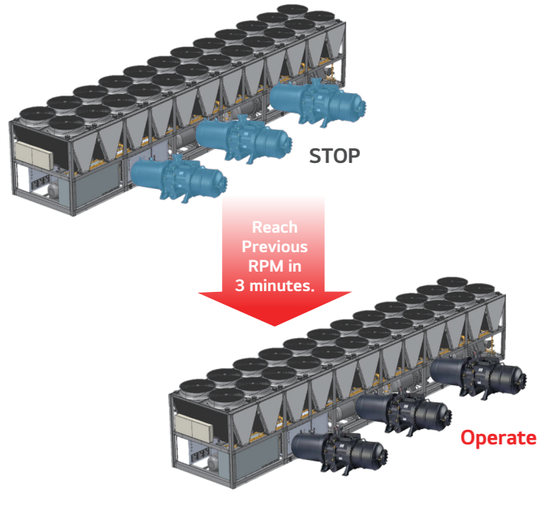
• Motor Efficiency Comparison

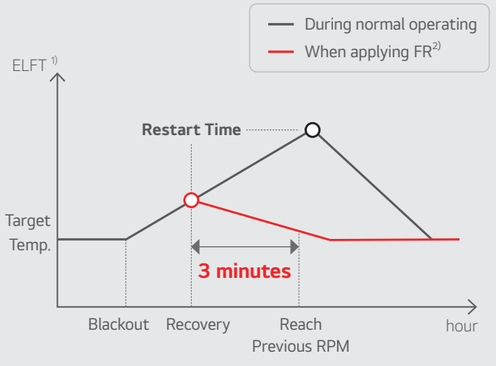


Fast Recovery

By using compressor rotation startup technology and rapid startup technology, the target temperature value before power outage is quickly recovered and stabilized. For sites that require quick load recovery in the event of a power outage (e.g. IDC).

• Fast Recovery



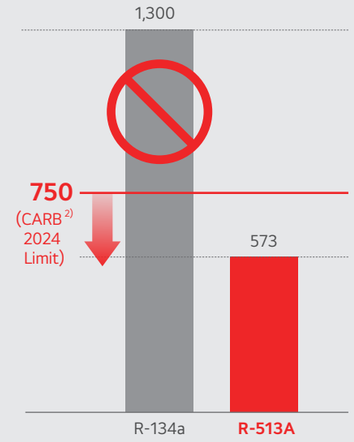


1) ELFT : Evaporator Leaving Fluid Temperature
2) FR : Fast Recovery

A1 Safety Grade Low GWP Refrigerant

To satisfy the refrigerant regulation worldwide, LG chillers apply R-513A blend refrigerant GWP under 573.
R-513A refrigerant is A1 Grade with low toxicity and no flame propagation.

• GWP[1] Comparison



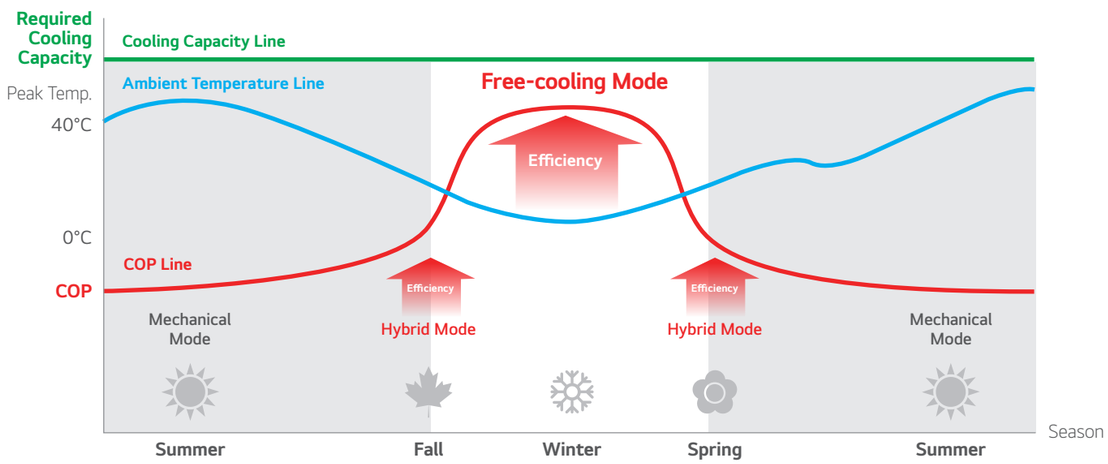
	HFCs		HFOs
	ODP=0, But high GWP		ODP=0 GWP Low or Ultra Low
High Pressure	R-134a	R-513A ✓ Blended	R-1234ze
Low Pressure	R-123	R-514A Blended	R-1233zd

Higher Flammability	A3	B3
Lower Flammability	A2	B2
	A2L R-1234ze	
No Flame Propagation	A1 R-1233zd, R-134a, R-513A ✓	B1 R-123, R-514A
	Lower Toxicity	⚠ Higher Toxicity

1) GWP : Global Warming Potential
2) CARB : California Air Resources Board

Annual Free-cooling Chiller Operation

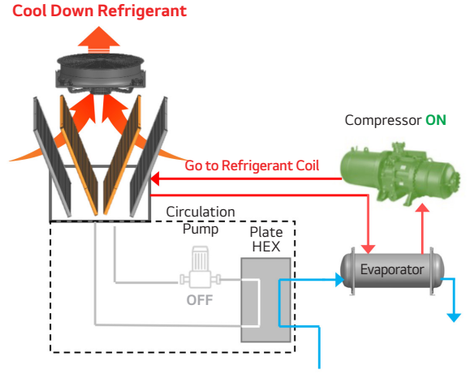
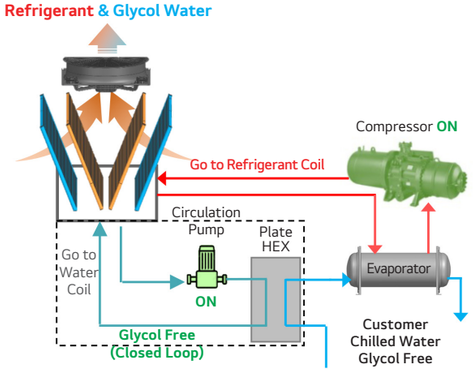
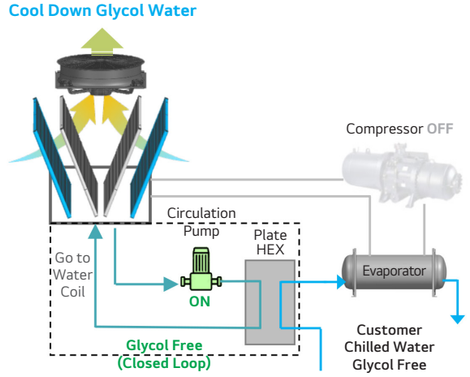
Three mode operations change by outdoor temperature. For example, as the temperature changes,
the chiller operates in proper mode to maintain constant cooling capacity with the best efficiency condition.



※ The COP can be changed by customer condition.
※ Simulation condition : Chilled water inlet / outlet 28 / 20°C ambient temperature : 1 ~ 40°C

Free-cooling Mode Introduction

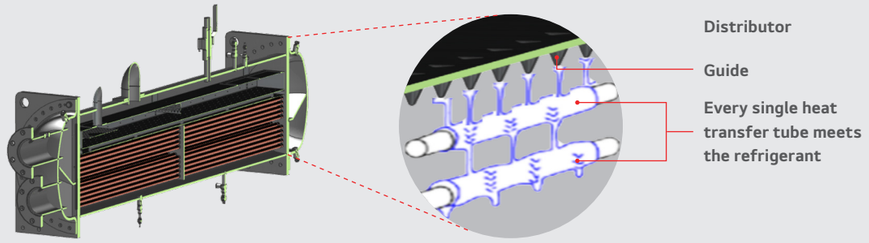
Free-cooling Chiller has 3 modes to provide the best efficiency under given condition.

	Mode	Condition	Operation Parts	Operation
Mechanical Mode	Cool Down Refrigerant 	EWT[1] – OAT[2] ❮ 3°C (5.4°F)	Fan / Compressor	General chiller operation
Hybrid Mode	Cool Down Refrigerant & Glycol Water 	Free Cooling Operation Starts at EWT – OAT ❯ 3°C (5.4°F)	Fan / Compressor / Circulation Pump	Fan operation lowers EEFT[3] and helps compressors work less to get higher efficiency.
Full Free-cooling Mode[4]	Cool Down Glycol Water 		Fan / Circulation Pump	Without compressor, only fan operation lowers medium glycol water temperature and exchange heat with chilled water in plate HEX.

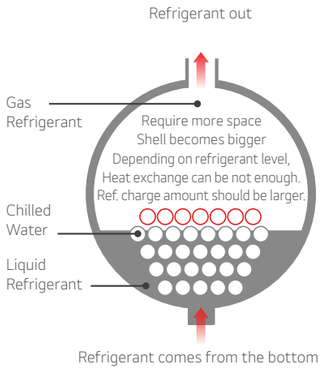
1) EWT : Entering Water Temperature
2) OAT : Outdoor Air Temperature
3) EEFT : Evaporator Entering Fluid Temperature
4) Full Free-cooling Mode starting temperature varies depending on customer condition.

Falling Film Evaporator

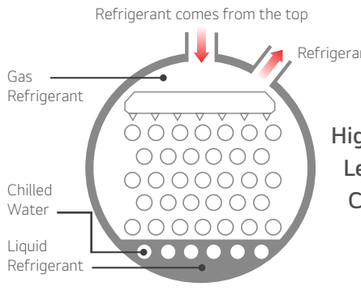
Falling Film Type Evaporator offers more stable distribution with low amount of refrigerant.



• Flooded



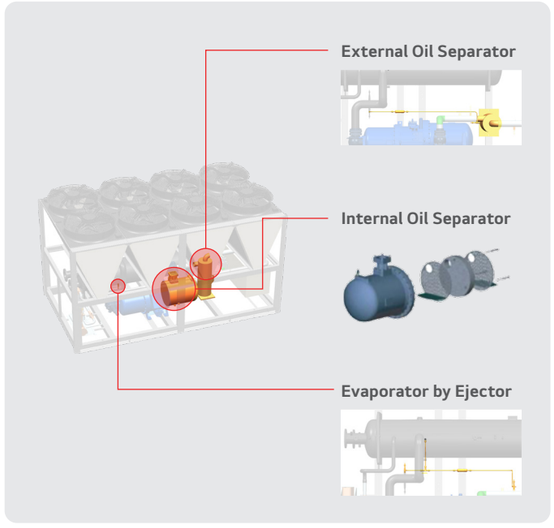
• Falling Film

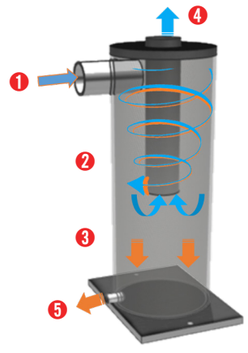


Higher Efficiency & Less Refrigerant Charge Amount

Oil Reclaim System

Total 3 ways to reclaim oil to run cycle & compressor smoothly.



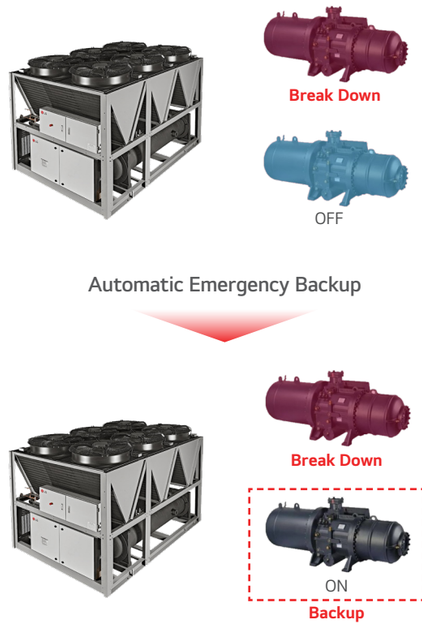


❶ Refrigerant Gas & Oil from the Compressor
❷ Separate Refrigerant Gas & Oil by Making Cyclone Flow
❸ Heavier Oil Falls Down to Bottom of Oil Separator
❹ Refrigerant Gas Goes to Condenser
❺ Oil Goes to Compressor Suction

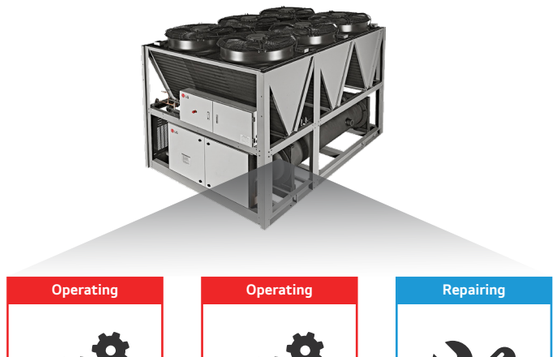
Multi Circuit Back-up Operation

If one compressor or one cycle has a trouble or needs to be repaired, backup operation helps the whole system to operate continuously.

• Compressor Back-up

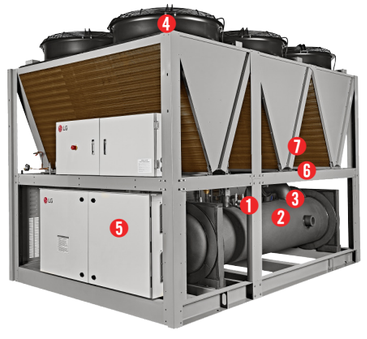


• Cycle Back-up



Product Protection & Safety Devices

High performance sensor and variety safety devices prevent damage to chiller and minimize the malfunction.



❶ Safety Device for Compressor Motor
- Compressor discharge & motor winding temperature detection
- Reverse phase and phase loss detection

❷ Anti-freezing Device
- Chilled water temperature sensor
- Low pressure sensor

❸ Chilled Water Flow Detection
- Flow switch

❹ Fan Motor Safety Device
- Overcurrent relay

❺ Power Fault Detection Device
- Reverse phase detection
- Phase loss detection
- Over current detection
- Low current detection

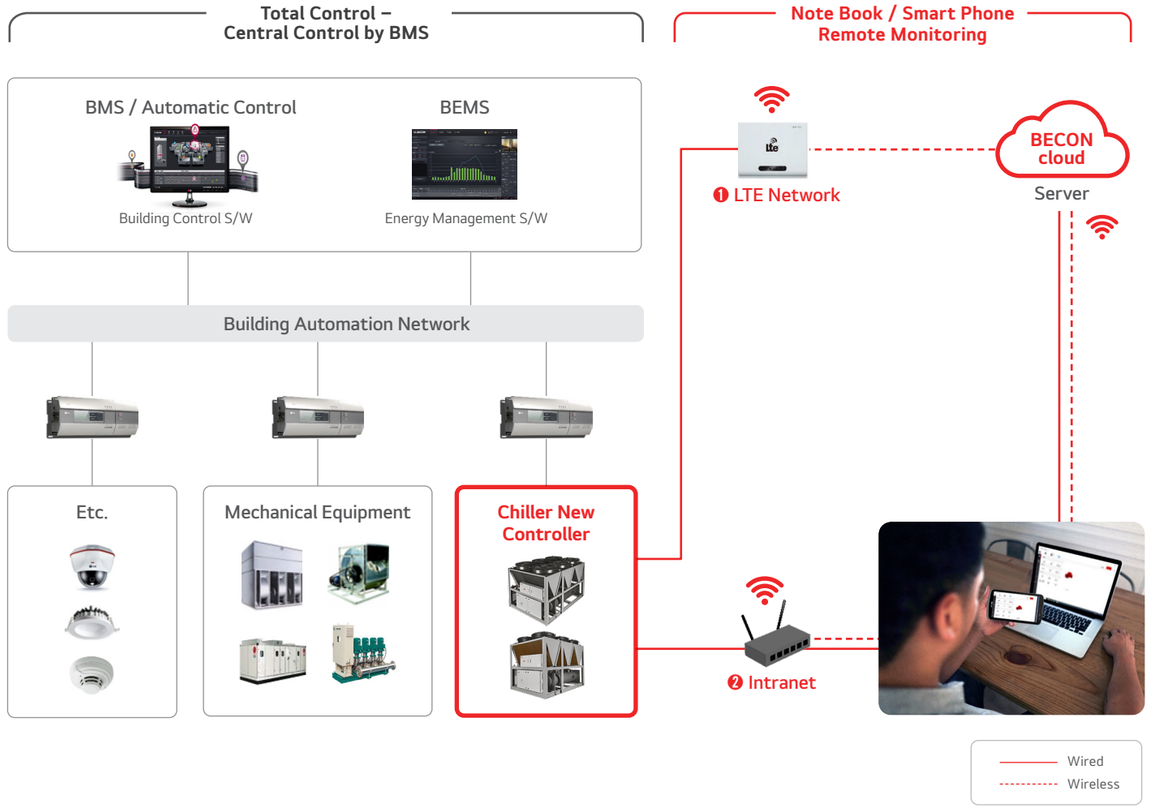
❻ Compressor Bearing Safety Device
- Oil level switch
- Oil heater

❼ Pressure Control & Pressure Block
- High / Low pressure sensor
- Pressure switch

Safety Valve
- High / Low pressure relief valve

Various Control Scalability

Provide a control and monitoring environment optimized for customer needs.



❶ LTE Network Remote Monitoring & Maintenance

Remote Monitoring is possible by transmitting operating data using the LTE network.

BECON cloud monitoring through a separate web screen app push when an alarm occurs (Customer and HIM Solutek)

❷ Remote Monitoring and Control (Intranet)[1)]

Remote Monitoring can be configured with just wiring without adding separate equipment.

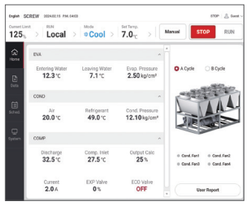
Same display with HMI

1) Applied LG Chiller New Controller
2) Chiller TMS application varies by countries.

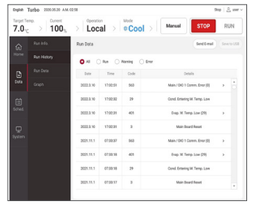
LG Chiller New Controller

The 15-inch large screen has improved visibility, operability and supports various functions such as report functions.

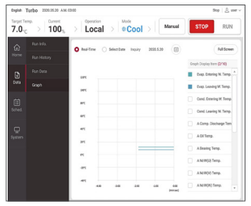
❶



❷



❸



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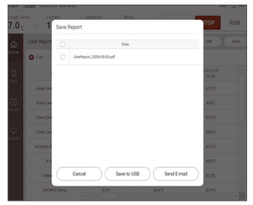


Chiller New Controller

❶ 15-inch Touch Screen

Visibility has been improved by applying a 15-inch large screen. The pressure-sensitive touch method allows operation even while wearing gloves.

❷ History Management

Displays operating / alarm / abnormal messages. You can check the message occurrence date / error code / detailed information.

❸ Operating Graph

Chiller operation data is displayed as a graph. You can easily understand operation trends by graphing the chiller's operation data in real time and on specific dates.

❹ User Report

Users can conveniently check the data they want (20 selected) on one screen and send it via email[1)] to create a operation log without having to write it down individually on site. (SD card storage is also possible.)

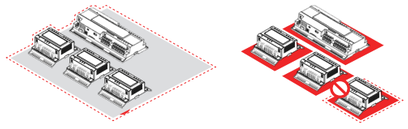
※ Please refer to manual for detailed instructions.

1) Need to connect network.

By upgrading the parts that make up the controller, you can maintain it quickly and conveniently at low cost.

• Modular Controller

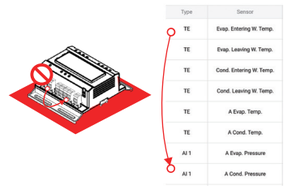
The main controller and IO module are separated, saving repair costs and time by replacing only the broken parts in the event of a breakdown.



Replace / Repair range

• Site Engineering the Sensors

If one IO port breaks down, normal operation is possible immediately by changing the port settings in the control panel without replacing parts, and there is no replacement cost.



• Easy Firmware Update

X30

- Requires cable connection between computer and control panel

Direct | Manual

Chiller New Controller

- Only replace SD card

Direct | Manual | Simple

- Remote Firmware Update (BECON cloud)

Remote | Auto | Simple

※ SD cards are not provided to customers for service use, and only service personnel certified by our company are authorized to use them.
※ LG Chiller New Controller application varies by countries.

AHRI Certified Test Facility

Ensure the reliability of chiller performance with the AHRI certified test facility in Korea Chiller Factory.

Test Chamber

- AHRI Certified Facility
- Cooling Capacity : Maximum 550 RT
- Chiller Size : 15,000 x 2,500 x 2,800 mm
- Chilled Water Flow : 48 ~ 301 m^3/h
- Temp. Range : 0 ~ 58°C
- Voltage Range : 220 V ~ 480 V, 50/60 Hz

Test System

- Performance Test : Rated Load, Part Load, Power Consumption - Leakage Test & Hydrophilic Test
- Performance Test before Delivery
- Witness Performance Test (Option)

AHRI Certificates

LG chiller performance and test facilities has been certified according to international certification agency standards.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

AHRI 550 / 590 (AHRI 551 / 591) Standard

Performance Evaluation for Vapor Compression Chiller (50/60 Hz)

"AHRI performance AWARD" award for 7 consecutive years.

※ Qualification : Pass the 1st round of follow-up test for 3 years

ASME (America Society of Mechanical Engineers)

- ASME Section VIII Boiler and Pressure Vessel code.
  ASME Section VIII is the section of the ASME Boiler & Pressure Vessel Code (BPVC) that covers pressure vessels. It specifically refers to the pressure vessels that operate at pressures, either internal or external, that exceed 15 psig.

ETL (Electrical Testing Laboratory)

- Safety certification mark in the Americas.
  ETL is approved by the U.S. federal government, each state government, and each city to provide comprehensive safety testing services, and is a safety mark for electrical and electronic products commonly used in the U.S. with a certification equivalent to the UL certification mark.

CE (Conformité Européenne)

- Safety certification mark in the Europe.
  The CE marking means that the product complies with the conditions of European standards related to safety, health, environment and consumer protection.

※ The certification acquisition varies by models.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW008CA1C	RCAW010CA1C	RCAW012CA1C	RCAW014CA1C	RCAW016CA1C
Unit Capacity		usRT	85.61	101.3	121.1	135.6	154.4
		kW	301.1	356.1	426.0	476.8	542.9
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	150	178	215	238	279
	RLA (400 V / 50 Hz)	A	142	169	204	226	266
	Starting Current (380 V / 50 Hz)	A	398	483	550	558	663
	Starting Current (400 V / 50 Hz)	A	420	508	578	588	698
	Independent Refrigerant Circuits	EA	1	1	1	1	1
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	51.69	61.13	73.14	81.86	93.20
		gpm	228	269	322	360	410
	Pressure Drop	mAq	12.2	14.4	13.7	6.20	6.03
		ftH_2O	40.0	47.2	44.9	20.3	19.8
	Pass Num	-	4	4	4	2	2
	Connection	Inch	4	4	5	5	5
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	6	6	8	8	10
Weight	Shipping Weight	kg	3,200	3,300	3,700	4,700	5,200
		lb	7,055	7,275	8,157	10,362	11,464
	Operating Weight	kg	3,368	3,503	3,925	4,955	5,486
		lb	7,425	7,723	8,653	10,924	12,095
Dimension	Length	mm	3,020	3,020	4,010	4,010	4,990
		Inch	118.9	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90	110	120	160	170
		lb	198	243	265	353	375
Oil		L	17	23	26	28	28
		gallon	4.5	6.1	6.9	7.4	7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW016CA2C	RCAW018CA2C	RCAW020CA2C	RCAW022CA2C	RCAW024CA2C
Unit Capacity		usRT	162.2	181.3	205.4	220.7	237.1
		kW	570.5	637.6	722.4	776.2	834.0
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	146 / 146	158 / 158	185 / 185	213 / 189	217 / 217
	RLA (400 V / 50 Hz)	A	138 / 138	150 / 150	176 / 176	202 / 179	206 / 206
	Starting Current (380 V / 50 Hz)	A	398 / 398	447 / 447	483 / 483	550 / 483	550 / 550
	Starting Current (400 V / 50 Hz)	A	420 / 420	470 / 470	508 / 508	578 / 508	578 / 578
	Independent Refrigerant Circuits	EA	2	2	2	2	2
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	97.95	109.5	124.0	133.3	143.2
		gpm	431	482	546	587	630
	Pressure Drop	mAq	6.61	6.23	6.97	6.92	6.61
		ftH_2O	21.7	20.4	22.9	22.7	21.7
	Pass Num	-	2	2	2	2	2
	Connection	Inch	5	5	5	6	6
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	6 / 6	6 / 6	6 / 6	8 / 6	8 / 8
Weight	Shipping Weight	kg	5,200	5,800	5,900	6,300	6,600
		lb	11,464	12,787	13,007	13,889	14,550
	Operating Weight	kg	5,496	6,105	6,210	6,659	6,981
		lb	12,117	13,459	13,691	14,681	15,390
Dimension	Length	mm	5,980	5,980	5,980	6,970	6,970
		Inch	235.4	235.4	235.4	274.4	274.4
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90 / 90	90 / 90	90 / 90	110 / 110	110 / 110
		lb	198 / 198	198 / 198	198 / 198	243 / 243	243 / 243
Oil		L	17 / 17	19 / 19	23 / 23	26 / 23	26 / 26
		gallon	4.5 / 4.5	5.0 / 5.0	6.1 / 6.1	6.9 / 6.1	6.9 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW026CA2C	RCAW028CA2C	RCAW030CA2C	RCAW032CA2C	RCAW036CA3C
Unit Capacity		usRT	252.3	274.2	293.9	311.7	365.9
		kW	887.2	964.4	1,034	1,096	1,287
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	239 / 214	241 / 241	280 / 247	283 / 283	223 / 223 / 223
	RLA (400 V / 50 Hz)	A	227 / 203	229 / 229	266 / 234	269 / 269	212 / 212 / 212
	Starting Current (380 V / 50 Hz)	A	558 / 550	558 / 558	663 / 558	663 / 663	550 / 550 / 550
	Starting Current (400 V / 50 Hz)	A	588 / 578	588 / 588	698 / 588	698 / 698	578 / 578 / 578
	Independent Refrigerant Circuits	EA	2	2	2	2	3
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	152.3	165.6	177.5	188.2	220.9
		gpm	671	729	782	829	973
	Pressure Drop	mAq	11.2	10.9	10.1	11.3	11.4
		ftH_2O	36.7	35.8	33.1	37.1	37.4
	Pass Num	-	2	2	2	2	2
	Connection	Inch	6	6	6	6	8
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	8 / 8	8 / 8	10 / 8	10 / 10	8 / 8 / 8
Weight	Shipping Weight	kg	7,200	7,900	8,400	8,400	10,100
		lb	15,873	17,416	18,519	18,519	22,267
	Operating Weight	kg	7,605	8,371	8,885	8,885	10,742
		lb	16,766	18,455	19,588	19,588	23,682
Dimension	Length	mm	7,950	7,950	8,940	9,920	11,900
		Inch	313.0	313.0	352.0	390.6	468.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120	140 / 140	140 / 140	140 / 140	120 / 120 / 120
		lb	265 / 265	309 / 309	309 / 309	309 / 309	265 / 265 / 265
Oil		L	28 / 26	28 / 28	28 / 28	28 / 28	26 / 26 / 26
		gallon	7.4 / 6.9	7.4 / 7.4	7.4 / 7.4	7.4 / 7.4	6.9 / 6.9 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW040CA3C	RCAW044CA4C	RCAW048CA4C	RCAW052CA4C
Unit Capacity		usRT	399.3	441.4	474.6	504.3
		kW	1,404	1,552	1,669	1,773
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	246 / 246 / 220	213 / 189 / 213 / 189	217 / 217 / 217 / 217	239 / 213 / 239 / 213
	RLA (400 V / 50 Hz)	A	234 / 234 / 209	202 / 179 / 202 / 179	206 / 206 / 206 / 206	227 / 203 / 227 / 203
	Starting Current (380 V / 50 Hz)	A	558 / 558 / 550	550 / 483 / 550 / 483	550 / 550 / 550 / 550	558 / 550 / 558 / 550
	Starting Current (400 V / 50 Hz)	A	588 / 588 / 578	578 / 508 / 578 / 508	578 / 578 / 578 / 578	588 / 578 / 588 / 578
	Independent Refrigerant Circuits	EA	3	4	4	4
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	241.1	266.5	286.5	304.4
		gpm	1,062	1,173	1,261	1,340
	Pressure Drop	mAq	11.7	6.92	6.62	11.2
		ftH_2O	38.4	22.7	21.7	36.7
	Pass Num	-	2	2	2	2
	Connection	Inch	8	6	6	6
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA	A	4.7			
	Number	EA	8 / 8 / 8	8 / 6 / 8 / 6	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	10,700	12,600	13,200	14,400
		lb	23,589	27,778	29,101	31,747
	Operating Weight	kg	11,356	13,317	13,963	15,211
		lb	25,036	29,359	30,783	33,534
Dimension	Length	mm	11,900	13,940	13,940	15,900
		Inch	468.5	548.8	548.8	626.0
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120 / 120	110 / 110 / 110 / 110	110 / 110 / 110 / 110	120 / 120 / 120 / 120
		lb	265 / 265 / 265	243 / 243 / 243 / 243	243 / 243 / 243 / 243	265 / 265 / 265 / 265
Oil		L	28 / 28 / 26	26 / 23 / 26 / 23	26 / 26 / 26 / 26	28 / 26 / 28 / 26
		gallon	7.4 / 7.4 / 6.9	6.9 / 6.1 / 6.9 / 6.1	6.9 / 6.9 / 6.9 / 6.9	7.4 / 6.9 / 7.4 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW008CA1C	RCAW010CA1C	RCAW012CA1C	RCAW014CA1C	RCAW016CA1C
Unit Capacity		usRT	72.31	85.79	102.9	114.1	132.0
		kW	254.3	301.7	362.1	401.1	464.3
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	177	208	254	281	326
	RLA (400 V / 50 Hz)	A	168	197	241	267	310
	Starting Current (380 V / 50 Hz)	A	398	483	550	558	663
	Starting Current (400 V / 50 Hz)	A	420	508	578	588	698
	Independent Refrigerant Circuits	EA	1	1	1	1	1
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	43.66	51.79	62.16	68.87	79.70
		gpm	192	228	274	303	351
	Pressure Drop	mAq	8.93	10.6	10.1	4.51	4.52
		ftH_2O	29.3	34.8	33.1	14.8	14.8
	Pass Num	-	4	4	4	2	2
	Connection	Inch	4	4	5	5	5
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	6	6	8	8	10
Weight	Shipping Weight	kg	3,200	3,300	3,700	4,700	5,200
		lb	7,055	7,275	8,157	10,362	11,464
	Operating Weight	kg	3,368	3,503	3,925	4,955	5,486
		lb	7,425	7,723	8,653	10,924	12,095
Dimension	Length	mm	3,020	3,020	4,010	4,010	4,990
		Inch	118.9	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90	110	120	160	170
		lb	198	243	265	353	375
Oil		L	17	23	26	28	28
		gallon	4.5	6.1	6.9	7.4	7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW016CA2C	RCAW018CA2C	RCAW020CA2C	RCAW022CA2C	RCAW024CA2C
Unit Capacity		usRT	136.9	153.0	174.0	187.2	201.4
		kW	481.3	538.0	611.8	658.3	708.2
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	173 / 173	187 / 187	216 / 216	252 / 221	257 / 257
	RLA (400 V / 50 Hz)	A	164 / 164	177 / 177	205 / 205	239 / 210	244 / 244
	Starting Current (380 V / 50 Hz)	A	398 / 398	447 / 447	483 / 483	550 / 483	550 / 550
	Starting Current (400 V / 50 Hz)	A	420 / 420	470 / 470	508 / 508	578 / 508	578 / 578
	Independent Refrigerant Circuits	EA	2	2	2	2	2
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	82.63	92.36	105.0	113.0	121.6
		gpm	364	407	462	498	535
	Pressure Drop	mAq	4.83	4.55	5.13	5.11	4.89
		ftH_2O	15.8	14.9	16.8	16.8	16.0
	Pass Num	-	2	2	2	2	2
	Connection	Inch	5	5	5	6	6
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	6 / 6	6 / 6	6 / 6	8 / 6	8 / 8
Weight	Shipping Weight	kg	5,200	5,800	5,900	6,300	6,600
		lb	11,464	12,787	13,007	13,889	14,550
	Operating Weight	kg	5,496	6,105	6,210	6,659	6,981
		lb	12,117	13,459	13,691	14,681	15,390
Dimension	Length	mm	5,980	5,980	5,980	6,970	6,970
		Inch	235.4	235.4	235.4	274.4	274.4
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90 / 90	90 / 90	90 / 90	110 / 110	110 / 110
		lb	198 / 198	198 / 198	198 / 198	243 / 243	243 / 243
Oil		L	17 / 17	19 / 19	23 / 23	26 / 23	26 / 26
		gallon	4.5 / 4.5	5.0 / 5.0	6.1 / 6.1	6.9 / 6.1	6.9 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW026CA2C	RCAW028CA2C	RCAW030CA2C	RCAW032CA2C	RCAW036CA3C
Unit Capacity		usRT	213.3	230.9	249.6	266.6	311.1
		kW	750.2	812.0	877.9	937.6	1,094
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	282 / 252	285 / 285	327 / 291	330 / 330	263 / 263 / 263
	RLA (400 V / 50 Hz)	A	268 / 240	271 / 271	311 / 277	314 / 314	250 / 250 / 250
	Starting Current (380 V / 50 Hz)	A	558 / 550	558 / 558	663 / 558	663 / 663	550 / 550 / 550
	Starting Current (400 V / 50 Hz)	A	588 / 578	588 / 588	698 / 588	698 / 698	578 / 578 / 578
	Independent Refrigerant Circuits	EA	2	2	2	2	3
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	128.8	139.4	150.7	161.0	187.8
		gpm	567	614	664	709	827
	Pressure Drop	mAq	8.22	7.96	7.48	8.44	8.44
		ftH_2O	27.0	26.1	24.5	27.7	27.7
	Pass Num	-	2	2	2	2	2
	Connection	Inch	6	6	6	6	8
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.7				
	Number	EA	8 / 8	8 / 8	10 / 8	10 / 10	8 / 8 / 8
Weight	Shipping Weight	kg	7,200	7,900	8,400	8,400	10,100
		lb	15,873	17,416	18,519	18,519	22,267
	Operating Weight	kg	7,605	8,371	8,885	8,885	10,742
		lb	16,766	18,455	19,588	19,588	23,682
Dimension	Length	mm	7,950	7,950	8,940	9,920	11,900
		Inch	313.0	313.0	352.0	390.6	468.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120	140 / 140	140 / 140	140 / 140	120 / 120 / 120
		lb	265 / 265	309 / 309	309 / 309	309 / 309	265 / 265 / 265
Oil		L	28 / 26	28 / 28	28 / 28	28 / 28	26 / 26 / 26
		gallon	7.4 / 6.9	7.4 / 7.4	7.4 / 7.4	7.4 / 7.4	6.9 / 6.9 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 50 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW040CA3C	RCAW044CA4C	RCAW048CA4C	RCAW052CA4C
Unit Capacity		usRT	337.3	374.3	403.0	426.4
		kW	1,186	1,317	1,417	1,500
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 50 Hz)	A	291 / 291 / 260	252 / 221 / 252 / 221	257 / 257 / 257 / 257	282 / 252 / 282 / 252
	RLA (400 V / 50 Hz)	A	276 / 276 / 247	239 / 210 / 239 / 210	244 / 244 / 244 / 244	268 / 240 / 268 / 240
	Starting Current (380 V / 50 Hz)	A	558 / 558 / 550	550 / 483 / 550 / 483	550 / 550 / 550 / 550	558 / 550 / 558 / 550
	Starting Current (400 V / 50 Hz)	A	588 / 588 / 578	578 / 508 / 578 / 508	578 / 578 / 578 / 578	588 / 578 / 588 / 578
	Independent Refrigerant Circuits	EA	3	4	4	4
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	203.7	226.0	243.3	257.4
		gpm	897	995	1,071	1,133
	Pressure Drop	mAq	8.55	5.11	4.89	8.21
		ftH_2O	28.0	16.8	16.0	26.9
	Pass Num	-	2	2	2	2
	Connection	Inch	8	6	6	6
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA	A	4.7			
	Number	EA	8 / 8 / 8	8 / 6 / 8 / 6	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	10,700	12,600	13,200	14,400
		lb	23,589	27,778	29,101	31,747
	Operating Weight	kg	11,356	13,317	13,963	15,211
		lb	25,036	29,359	30,783	33,534
Dimension	Length	mm	11,900	13,940	13,940	15,900
		Inch	468.5	548.8	548.8	626.0
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120 / 120	110 / 110 / 110 / 110	110 / 110 / 110 / 110	120 / 120 / 120 / 120
		lb	265 / 265 / 265	243 / 243 / 243 / 243	243 / 243 / 243 / 243	265 / 265 / 265 / 265
Oil		L	28 / 28 / 26	26 / 23 / 26 / 23	26 / 26 / 26 / 26	28 / 26 / 28 / 26
		gallon	7.4 / 7.4 / 6.9	6.9 / 6.1 / 6.9 / 6.1	6.9 / 6.9 / 6.9 / 6.9	7.4 / 6.9 / 7.4 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW008CA1C	RCAW010CA1C	RCAW012CA1C	RCAW014CA1C	RCAW016CA1C
Unit Capacity		usRT	85.29	95.32	122.3	136.2	155.4
		kW	300.0	335.2	430.0	479.1	546.4
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	139	160	202	237	256
	RLA (460 V / 60 Hz)	A	115	132	167	195	212
	Starting Current (380 V / 60 Hz)	A	458	498	600	622	675
	Starting Current (460 V / 60 Hz)	A	393	420	508	578	588
	Independent Refrigerant Circuits	EA	1	1	1	1	1
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	51.49	57.55	73.82	82.25	93.80
		gpm	227	253	325	362	413
	Pressure Drop	mAq	12.1	12.9	13.9	6.25	6.10
		ftH_2O	39.7	42.3	45.6	20.5	20.0
	Pass Num	-	4	4	4	2	2
	Connection	Inch	4	4	5	5	5
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	6	6	8	8	10
Weight	Shipping Weight	kg	3,000	3,200	3,700	4,500	4,900
		lb	6,614	7,055	8,157	9,921	10,803
	Operating Weight	kg	3,168	3,403	3,925	4,755	5,186
		lb	6,984	7,502	8,653	10,483	11,433
Dimension	Length	mm	3,020	3,020	4,010	4,010	4,990
		Inch	118.9	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90	110	120	160	170
		lb	198	243	265	353	375
Oil		L	16	17	23	26	28
		gallon	4.2	4.5	6.1	6.9	7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW016CA2C	RCAW018CA2C	RCAW020CA2C	RCAW022CA2C	RCAW024CA2C
Unit Capacity		usRT	160.8	173.1	196.2	210.8	240.0
		kW	565.5	608.9	690.1	741.5	844.1
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	134 / 134	157 / 135	176 / 153	202 / 156	201 / 201
	RLA (460 V / 60 Hz)	A	110 / 110	129 / 112	145 / 127	167 / 129	166 / 166
	Starting Current (380 V / 60 Hz)	A	458 / 458	498 / 458	552 / 498	600 / 498	600 / 600
	Starting Current (460 V / 60 Hz)	A	393 / 393	420 / 393	470 / 420	508 / 420	508 / 508
	Independent Refrigerant Circuits	EA	2	2	2	2	2
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	97.08	104.5	118.5	127.3	144.9
		gpm	427	460	522	560	638
	Pressure Drop	mAq	6.50	5.72	6.40	6.36	6.76
		ftH_2O	21.3	18.8	21	20.9	22.2
	Pass Num	-	2	2	2	2	2
	Connection	Inch	5	5	5	6	6
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	6 / 6	6 / 6	6 / 6	8 / 6	8 / 8
Weight	Shipping Weight	kg	4,900	5,600	5,800	6,100	6,400
		lb	10,803	12,346	12,787	13,448	14,110
	Operating Weight	kg	5,196	5,905	6,110	6,459	6,781
		lb	11,455	13,018	13,470	14,240	14,950
Dimension	Length	mm	5,980	5,980	5,980	6,970	6,970
		Inch	235.4	235.4	235.4	274.4	274.4
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90 / 90	90 / 90	90 / 90	110 / 110	110 / 110
		lb	198 / 198	198 / 198	198 / 198	243 / 243	243 / 243
Oil		L	16 / 16	17 / 16	19 / 17	23 / 17	23 / 23
		gallon	4.2 / 4.2	4.5 / 4.2	5.0 / 4.5	6.1 / 4.5	6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW026CA2C	RCAW028CA2C	RCAW030CA2C	RCAW032CA2C	RCAW036CA3C
Unit Capacity		usRT	253.8	275.4	294.9	311.0	367.1
		kW	892.7	968.5	1,037	1,094	1,291
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	237 / 198	240 / 240	260 / 243	257 / 257	207 / 207 / 207
	RLA (460 V / 60 Hz)	A	196 / 164	198 / 198	215 / 201	212 / 212	171 / 171 / 171
	Starting Current (380 V / 60 Hz)	A	622 / 600	622 / 622	675 / 622	675 / 675	600 / 600 / 600
	Starting Current (460 V / 60 Hz)	A	578 / 508	578 / 578	588 / 578	588 / 588	508 / 508 / 508
	Independent Refrigerant Circuits	EA	2	2	2	2	3
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	153.3	166.3	178.0	187.8	221.7
		gpm	675	732	784	827	976
	Pressure Drop	mAq	11.3	11.0	10.2	11.2	11.4
		ftH_2O	37.1	36.1	33.5	36.7	37.4
	Pass Num	-	2	2	2	2	2
	Connection	Inch	6	6	6	6	8
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	8 / 8	8 / 8	10 / 8	10 / 10	8 / 8 / 8
Weight	Shipping Weight	kg	6,700	7,500	8,100	8,100	9,500
		lb	14,771	16,535	17,857	17,857	20,944
	Operating Weight	kg	7,105	7,971	8,585	8,585	10,142
		lb	15,664	17,573	18,927	18,927	22,359
Dimension	Length	mm	7,950	7,950	8,940	9,920	11,900
		Inch	313.0	313.0	352.0	390.6	468.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120	140 / 140	140 / 140	140 / 140	120 / 120 / 120
		lb	265 / 265	309 / 309	309 / 309	309 / 309	265 / 265 / 265
Oil		L	26 / 23	26 / 26	28 / 26	28 / 28	23 / 23 / 23
		gallon	6.9 / 6.1	6.9 / 6.9	7.4 / 6.9	7.4 / 7.4	6.1 / 6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW040CA3C	RCAW044CA4C	RCAW048CA4C	RCAW052CA4C
Unit Capacity		usRT	404.3	422.0	480.6	508.0
		kW	1,422	1,484	1,690	1,786
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	233 / 233 / 233	202 / 156 / 202 / 156	202 / 202 / 202 / 202	237 / 198 / 237 / 198
	RLA (460 V / 60 Hz)	A	193 / 193 / 193	167 / 129 / 167 / 129	166 / 166 / 166 / 166	196 / 163 / 196 / 163
	Starting Current (380 V / 60 Hz)	A	622 / 622 / 622	600 / 498 / 600 / 498	600 / 600 / 600 / 600	622 / 600 / 622 / 600
	Starting Current (460 V / 60 Hz)	A	578 / 578 / 578	508 / 420 / 508 / 420	508 / 508 / 508 / 508	578 / 508 / 578 / 508
	Independent Refrigerant Circuits	EA	3	4	4	4
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	244.1	254.8	290.2	306.7
		gpm	1,075	1,122	1,278	1,350
	Pressure Drop	mAq	11.9	6.37	6.78	11.3
		ftH_2O	39.0	20.9	22.2	37.1
	Pass Num	-	2	2	2	2
	Connection	Inch	8	6	6	6
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA	A	4.2			
	Number	EA	8 / 8 / 8	8 / 6 / 8 / 6	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	10,000	12,200	12,800	13,400
		lb	22,046	26,896	28,219	29,542
	Operating Weight	kg	10,656	12,917	13,563	14,211
		lb	23,492	28,477	29,901	31,330
Dimension	Length	mm	11,900	13,940	13,940	15,900
		Inch	468.5	548.8	548.8	626.0
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120 / 120	110 / 110 / 110 / 110	110 / 110 / 110 / 110	120 / 120 / 120 / 120
		lb	265 / 265 / 265	243 / 243 / 243 / 243	243 / 243 / 243 / 243	265 / 265 / 265 / 265
Oil		L	26 / 26 / 26	23 / 17 / 23 / 17	23 / 23 / 23 / 23	26 / 23 / 26 / 23
		gallon	6.9 / 6.9 / 6.9	6.1 / 4.5 / 6.1 / 4.5	6.1 / 6.1 / 6.1 / 6.1	6.9 / 6.1 / 6.9 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW008CA1C	RCAW010CA1C	RCAW012CA1C	RCAW014CA1C	RCAW016CA1C
Unit Capacity		usRT	72.30	80.40	103.90	115.3	130.9
		kW	254.3	282.8	365.3	405.5	460.2
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	167	190	239	278	307
	RLA (460 V / 60 Hz)	A	138	157	197	230	253
	Starting Current (380 V / 60 Hz)	A	458	498	600	622	675
	Starting Current (460 V / 60 Hz)	A	393	420	508	578	588
	Independent Refrigerant Circuits	EA	1	1	1	1	1
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	43.65	48.54	62.72	69.61	79.01
		gpm	192	214	276	306	348
	Pressure Drop	mAq	8.93	9.38	10.3	4.6	4.45
		ftH_2O	29.3	30.8	33.8	15.1	14.6
	Pass Num	-	4	4	4	2	2
	Connection	Inch	4	4	5	5	5
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	6	6	8	8	10
Weight	Shipping Weight	kg	3,000	3,200	3,700	4,500	4,900
		lb	6,614	7,055	8,157	9,921	10,803
	Operating Weight	kg	3,168	3,403	3,925	4,755	5,186
		lb	6,984	7,502	8,653	10,483	11,433
Dimension	Length	mm	3,020	3,020	4,010	4,010	4,990
		Inch	118.9	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90	110	120	160	170
		lb	198	243	265	353	375
Oil		L	16	17	23	26	28
		gallon	4.2	4.5	6.1	6.9	7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW016CA2C	RCAW018CA2C	RCAW020CA2C	RCAW022CA2C	RCAW024CA2C
Unit Capacity		usRT	136.2	146.3	165.2	178.4	203.8
		kW	479.0	514.5	581.1	627.5	716.6
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	160 / 160	186 / 162	208 / 182	239 / 185	239 / 239
	RLA (460 V / 60 Hz)	A	132 / 132	153 / 134	171 / 150	198 / 153	197 / 197
	Starting Current (380 V / 60 Hz)	A	458 / 458	498 / 458	552 / 498	600 / 498	600 / 600
	Starting Current (460 V / 60 Hz)	A	393 / 393	420 / 393	470 / 420	508 / 420	508 / 508
	Independent Refrigerant Circuits	EA	2	2	2	2	2
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	82.23	88.32	99.77	107.7	123.0
		gpm	362	389	439	474	542
	Pressure Drop	mAq	4.79	4.19	4.66	4.68	5.00
		ftH_2O	15.7	13.7	15.3	15.4	16.4
	Pass Num	-	2	2	2	2	2
	Connection	Inch	5	5	5	6	6
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	6 / 6	6 / 6	6 / 6	8 / 6	8 / 8
Weight	Shipping Weight	kg	4,900	5,600	5,800	6,100	6,400
		lb	10,803	12,346	12,787	13,448	14,110
	Operating Weight	kg	5,196	5,905	6,110	6,459	6,781
		lb	11,455	13,018	13,470	14,240	14,950
Dimension	Length	mm	5,980	5,980	5,980	6,970	6,970
		Inch	235.4	235.4	235.4	274.4	274.4
	Width	mm	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	90 / 90	90 / 90	90 / 90	110 / 110	110 / 110
		lb	198 / 198	198 / 198	198 / 198	243 / 243	243 / 243
Oil		L	16 / 16	17 / 16	19 / 17	23 / 17	23 / 23
		gallon	4.2 / 4.2	4.5 / 4.2	5.0 / 4.5	6.1 / 4.5	6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW026CA2C	RCAW028CA2C	RCAW030CA2C	RCAW032CA2C	RCAW036CA3C
Unit Capacity		usRT	215.2	233.1	248.9	262.0	311.9
		kW	757.0	819.8	875.4	921.3	1,097
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	279 / 235	282 / 282	312 / 285	308 / 308	246 / 246 / 246
	RLA (460 V / 60 Hz)	A	230 / 194	233 / 233	257 / 236	254 / 254	203 / 203 / 203
	Starting Current (380 V / 60 Hz)	A	622 / 600	622 / 622	675 / 622	675 / 675	600 / 600 / 600
	Starting Current (460 V / 60 Hz)	A	578 / 508	578 / 578	588 / 578	588 / 588	508 / 508 / 508
	Independent Refrigerant Circuits	EA	2	2	2	2	3
Evaporator	Type	-	Falling Film Type				
	Flow Rate	m^3/h	130.0	140.7	150.3	158.2	188.3
		gpm	572	619	662	697	829
	Pressure Drop	mAq	8.36	8.1	7.44	8.17	8.48
		ftH_2O	27.4	26.6	24.4	26.8	27.8
	Pass Num	-	2	2	2	2	2
	Connection	Inch	6	6	6	6	8
Condenser	Type	-	Fin & Tube Type				
Fan	Type	-	Constant Speed Motor				
	One Fan RLA	A	4.2				
	Number	EA	8 / 8	8 / 8	10 / 8	10 / 10	8 / 8 / 8
Weight	Shipping Weight	kg	6,700	7,500	8,100	8,100	9,500
		lb	14,771	16,535	17,857	17,857	20,944
	Operating Weight	kg	7,105	7,971	8,585	8,585	10,142
		lb	15,664	17,573	18,927	18,927	22,359
Dimension	Length	mm	7,950	7,950	8,940	9,920	11,900
		Inch	313.0	313.0	352.0	390.6	468.5
	Width	mm	2,150	2,150	2,150	2,150	2150
		Inch	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120	140 / 140	140 / 140	140 / 140	120 / 120 / 120
		lb	265 / 265	309 / 309	309 / 309	309 / 309	265 / 265 / 265
Oil		L	26 / 23	26 / 26	28 / 26	28 / 28	23 / 23 / 23
		gallon	6.9 / 6.1	6.9 / 6.9	7.4 / 6.9	7.4 / 7.4	6.1 / 6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Constant Speed 60 Hz

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW040CA3C	RCAW044CA4C	RCAW048CA4C	RCAW052CA4C
Unit Capacity		usRT	342.2	357.1	408	430.7
		kW	1,204	1,256	1,435	1,515
Compressor	Starter Type	-	Y-DELTA	Y-DELTA	Y-DELTA	Y-DELTA
	RLA (380 V / 60 Hz)	A	274 / 274 / 274	239 / 185 / 239 / 185	239 / 239 / 239 / 239	278 / 234 / 278 / 234
	RLA (460 V / 60 Hz)	A	226 / 226 / 226	198 / 153 / 198 / 153	197 / 197 / 197 / 197	230 / 194 / 230 / 194
	Starting Current (380 V / 60 Hz)	A	622 / 622 / 622	600 / 498 / 600 / 498	600 / 600 / 600 / 600	622 / 600 / 622 / 600
	Starting Current (460 V / 60 Hz)	A	578 / 578 / 578	508 / 420 / 508 / 420	508 / 508 / 508 / 508	578 / 508 / 578 / 508
	Independent Refrigerant Circuits	EA	3	4	4	4
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	206.6	215.6	246.3	260.1
		gpm	910	949	1,084	1,145
	Pressure Drop	mAq	8.78	4.68	5.01	8.36
		ftH_2O	28.8	15.4	16.4	27.4
	Pass Num	-	2	2	2	2
	Connection	Inch	8	6	6	6
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA	A	4.2			
	Number	EA	8 / 8 / 8	8 / 6 / 8 / 6	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	10,000	12,200	12,800	13,400
		lb	22,046	26,896	28,219	29,542
	Operating Weight	kg	10,656	12,917	13,563	14,211
		lb	23,492	28,477	29,901	31,330
Dimension	Length	mm	11,900	13,940	13,940	15,900
		Inch	468.5	548.8	548.8	626.0
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	120 / 120 / 120	110 / 110 / 110 / 110	110 / 110 / 110 / 110	120 / 120 / 120 / 120
		lb	265 / 265 / 265	243 / 243 / 243 / 243	243 / 243 / 243 / 243	265 / 265 / 265 / 265
Oil		L	26 / 26 / 26	23 / 17 / 23 / 17	23 / 23 / 23 / 23	26 / 23 / 26 / 23
		gallon	6.9 / 6.9 / 6.9	6.1 / 4.5 / 6.1 / 4.5	6.1 / 6.1 / 6.1 / 6.1	6.9 / 6.1 / 6.9 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW010VA1C	RCAW012VA1C	RCAW014VA1C	RCAW015VA1C
Unit Capacity		usRT	97.39	112.5	132.2	149.9
		kW	342.5	395.5	464.9	527.1
Compressor	Starter Type	-	VSD	VSD	VSD	VSD
	RLA (380 V)	A	179	199	243	278
	RLA (400 V)	A	170	189	231	264
	RLA (460 V)	A	148	165	201	230
	Starting Current	A	0	0	0	0
	Independent Refrigerant Circuits	EA	1	1	1	1
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	58.80	67.89	79.82	90.50
		gpm	259	299	351	398
	Pressure Drop	mAq	13.4	11.9	2.69	3.39
		ftH_2O	44.0	39.0	8.8	11.1
	Pass Num	-	4	4	2	2
	Connection	Inch	4	5	5	5
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA (50 Hz)	A	4.7			
	One Fan RLA (60 Hz)	A	4.2			
	Number	EA	6	8	8	10
Weight	Shipping Weight	kg	3,140	3,540	4,010	4,420
		lb	6,923	7,804	8,841	9,744
	Operating Weight	kg	3,333	3,765	4,286	4,706
		lb	7,348	8,300	9,449	10,375
Dimension	Length	mm	3,020	4,010	4,010	4,990
		Inch	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	100	120	140	150
		lb	220	265	309	331
Oil		L	17	19	23	26
		gallon	4.5	5.0	6.1	6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW017VA1C	RCAW020VA2C	RCAW023VA2C
Unit Capacity		usRT	172.9	192.6	225.1
		kW	608.2	677.4	791.6
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	308	178 / 178	193 / 193
	RLA (400 V)	A	292	169 / 169	183 / 183
	RLA (460 V)	A	254	147 / 147	159 / 159
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	1	2	2
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	104.4	116.3	135.9
		gpm	460	512	598
	Pressure Drop	mAq	4.41	5.38	4.88
		ftH_2O	14.5	17.6	16.0
	Pass Num	-	2	2	2
	Connection	Inch	5	5	6
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	10	6 / 6	8 / 8
Weight	Shipping Weight	kg	4,550	5,780	6,510
		lb	10,031	12,743	14,352
	Operating Weight	kg	4,866	6,116	6,922
		lb	10,728	13,483	15,260
Dimension	Length	mm	4,990	5,980	7,950
		Inch	196.5	235.4	313.0
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	180	100 / 100	120 / 120
		lb	397	220 / 220	265 / 265
Oil		L	28	17 / 17	19 / 19
		gallon	7.4	4.5 / 4.5	5.0 / 5.0

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW027VA2C	RCAW030VA2C	RCAW034VA2C
Unit Capacity		usRT	258.8	300.7	349.9
		kW	910.1	1,058	1,231
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	238 / 238	278 / 278	309 / 309
	RLA (400 V)	A	226 / 226	264 / 264	294 / 294
	RLA (460 V)	A	196 / 196	230 / 230	256 / 256
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	2	2	2
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	156.2	181.6	211.3
		gpm	688	800	930
	Pressure Drop	mAq	6.32	10.5	8.24
		ftH_2O	20.7	34.4	27.0
	Pass Num	-	2	2	2
	Connection	Inch	6	6	8
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	8 / 8	10 / 10	10 / 10
Weight	Shipping Weight	kg	6,950	8,030	8,560
		lb	15,322	17,703	18,872
	Operating Weight	kg	7,402	8,535	9,193
		lb	16,319	18,816	20,267
Dimension	Length	mm	7,950	9,920	9,920
		Inch	313.0	390.6	390.6
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	140 / 140	150 / 150	180 / 180
		lb	309 / 309	331 / 331	397 / 397
Oil		L	23 / 23	26 / 26	28 / 28
		gallon	6.1 / 6.1	6.9 / 6.9	7.4 / 7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	RCAW040VA3C	RCAW046VA4C	RCAW054VA4C
Unit Capacity		usRT	398.4	449.8	517.3
		kW	1,401	1,582	1,819
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	245 / 245 / 245	193 / 193 / 193 / 193	238 / 238 / 238 / 238
	RLA (400 V)	A	233 / 233 / 233	183 / 183 / 183 / 183	226 / 226 / 226 / 226
	RLA (460 V)	A	202 / 202 / 202	159 / 159 / 159 / 159	196 / 196 / 196 / 196
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	3	4	4
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	240.5	271.6	312.3
		gpm	1,059	1,196	1,375
	Pressure Drop	mAq	11.6	4.88	6.31
		ftH_2O	38.0	16.0	20.7
	Pass Num	-	2	2	2
	Connection	Inch	8	6	6
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	8 / 8 / 8	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	9,570	13,020	13,900
		lb	21,098	28,704	30,644
	Operating Weight	kg	10,286	13,844	14,804
		lb	22,677	30,521	32,637
Dimension	Length	mm	11,900	15,900	15,900
		Inch	468.5	626.0	626.0
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	140 / 140 / 140	120 / 120 / 120 / 120	140 / 140 / 140 / 140
		lb	309 / 309 / 309	265 / 265 / 265 / 265	309 / 309 / 309 / 309
Oil		L	23 / 23 / 23	19 / 19 / 19 / 19	23 / 23 / 23 / 23
		gallon	6.1 / 6.1 / 6.1	5.0 / 5.0 / 5.0 / 5.0	6.1 / 6.1 / 6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW010VA1C	RCAW012VA1C	RCAW014VA1C	RCAW015VA1C
Unit Capacity		usRT	84.59	97.85	114.4	129.8
		kW	297.5	344.1	402.4	456.6
Compressor	Starter Type	-	VSD	VSD	VSD	VSD
	RLA (380 V)	A	213	240	288	325
	RLA (400 V)	A	203	228	273	308
	RLA (460 V)	A	176	199	238	268
	Starting Current	A	0	0	0	0
	Independent Refrigerant Circuits	EA	1	1	1	1
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	51.07	59.08	69.08	78.39
		gpm	225	260	304	345
	Pressure Drop	mAq	10.3	9.18	2.06	2.60
		ftH_2O	33.8	30.1	6.8	8.5
	Pass Num	-	4	4	2	2
	Connection	Inch	4	5	5	5
Condenser	Type	-	Fin & Tube Type			
Fan	Type	-	Constant Speed Motor			
	One Fan RLA (50 Hz)	A	4.7			
	One Fan RLA (60 Hz)	A	4.2			
	Number	EA	6	8	8	10
Weight	Shipping Weight	kg	3,140	3,540	4,010	4,420
		lb	6,923	7,804	8,841	9,744
	Operating Weight	kg	3,333	3,765	4,286	4,706
		lb	7,348	8,300	9,449	10,375
Dimension	Length	mm	3,020	4,010	4,010	4,990
		Inch	118.9	157.9	157.9	196.5
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	100	120	140	150
		lb	220	265	309	331
Oil		L	17	19	23	26
		gallon	4.5	5.0	6.1	6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW017VA1C	RCAW020VA2C	RCAW023VA2C
Unit Capacity		usRT	148.6	167.3	195.8
		kW	522.4	588.3	688.7
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	367	213 / 213	232 / 232
	RLA (400 V)	A	349	202 / 202	221 / 221
	RLA (460 V)	A	303	176 / 176	192 / 192
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	1	2	2
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	89.69	101.0	118.2
		gpm	395	445	520
	Pressure Drop	mAq	3.33	4.15	3.78
		ftH_2O	10.9	13.6	12.4
	Pass Num	-	2	2	2
	Connection	Inch	5	5	6
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	10	6 / 6	8 / 8
Weight	Shipping Weight	kg	4,550	5,780	6,510
		lb	10,031	12,743	14,352
	Operating Weight	kg	4,866	6,116	6,922
		lb	10,728	13,483	15,260
Dimension	Length	mm	4,990	5,980	7,950
		Inch	196.5	235.4	313.0
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	180	100 / 100	120 / 120
		lb	397	220 / 220	265 / 265
Oil		L	28	17 / 17	19 / 19
		gallon	7.4	4.5 / 4.5	5.0 / 5.0

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW027VA2C	RCAW030VA2C	RCAW034VA2C
Unit Capacity		usRT	223.9	260.5	300.6
		kW	787.6	916.1	1,057
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	281 / 281	325 / 325	369 / 369
	RLA (400 V)	A	267 / 267	309 / 309	351 / 351
	RLA (460 V)	A	232 / 232	269 / 268	305 / 305
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	2	2	2
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	135.2	157.3	181.5
		gpm	595	693	799
	Pressure Drop	mAq	4.84	8.09	6.23
		ftH_2O	15.9	26.5	20.4
	Pass Num	-	2	2	2
	Connection	Inch	6	6	8
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	8 / 8	10 / 10	10 / 10
Weight	Shipping Weight	kg	6,950	8,030	8,560
		lb	15,322	17,703	18,872
	Operating Weight	kg	7,402	8,535	9,193
		lb	16,319	18,816	20,267
Dimension	Length	mm	7,950	9,920	9,920
		Inch	313.0	390.6	390.6
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	140 / 140	150 / 150	180 / 180
		lb	309 / 309	331 / 331	397 / 397
Oil		L	23 / 23	26 / 26	28 / 28
		gallon	6.1 / 6.1	6.9 / 6.9	7.4 / 7.4

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-134a, Fin & Tube Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 46°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 114.8°F**

Model		Units	RCAW040VA3C	RCAW046VA4C	RCAW054VA4C
Unit Capacity		usRT	344.8	391.3	447.7
		kW	1,213	1,376	1,574
Compressor	Starter Type	-	VSD	VSD	VSD
	RLA (380 V)	A	290 / 290 / 290	232 / 232 / 232 / 232	281 / 281 / 281 / 281
	RLA (400 V)	A	275 / 275 / 275	221 / 221 / 221 / 221	267 / 267 / 267 / 267
	RLA (460 V)	A	239 / 239 / 239	192 / 192 / 192 / 192	232 / 232 / 232 / 232
	Starting Current	A	0	0	0
	Independent Refrigerant Circuits	EA	3	4	4
Evaporator	Type	-	Falling Film Type		
	Flow Rate	m^3/h	208.2	236.3	270.3
		gpm	917	1,040	1,190
	Pressure Drop	mAq	8.90	3.77	4.83
		ftH_2O	29.2	12.4	15.8
	Pass Num	-	2	2	2
	Connection	Inch	8	6	6
Condenser	Type	-	Fin & Tube Type		
Fan	Type	-	Constant Speed Motor		
	One Fan RLA (50 Hz)	A	4.7		
	One Fan RLA (60 Hz)	A	4.2		
	Number	EA	8 / 8 / 8	8 / 8 / 8 / 8	8 / 8 / 8 / 8
Weight	Shipping Weight	kg	9,570	13,020	13,900
		lb	21,098	28,704	30,644
	Operating Weight	kg	10,286	13,844	14,804
		lb	22,677	30,521	32,637
Dimension	Length	mm	11,900	15,900	15,900
		Inch	468.5	626.0	626.0
	Width	mm	2,150	2,150	2,150
		Inch	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320
		Inch	91.3	91.3	91.3
Refrigerant		kg	140 / 140 / 140	120 / 120 / 120 / 120	140 / 140 / 140 / 140
		lb	309 / 309 / 309	265 / 265 / 265 / 265	309 / 309 / 309 / 309
Oil		L	23 / 23 / 23	19 / 19 / 19 / 19	23 / 23 / 23 / 23
		gallon	6.1 / 6.1 / 6.1	5.0 / 5.0 / 5.0 / 5.0	6.1 / 6.1 / 6.1 / 6.1

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-513A, Micro-channel Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	GCAW011GG1A	GCAW012GG1A	GCAW014GG1A	GCAW018GG2A	GCAW022GG2A	GCAW024GG2A	GCAW028GG2A
Unit Capacity		usRT	111.5	124.7	143.2	196.7	219.9	249.2	285.9
		kW	392.0	438.5	503.5	691.8	773.2	876.4	1,005
Compressor	Starter Type	-	VSD	VSD	VSD	VSD	VSD	VSD	VSD
	RLA (380 V)	A	191	226	253	162 / 162	190 / 190	226 / 225	253 / 253
	RLA (460 V)	A	158	186	209	134 / 134	157 / 157	186 / 186	209 / 209
	Starting Current	A	0	0	0	0	0	0	0
	Independent Refrigerant Circuits	EA	1	1	1	2	2	2	2
Evaporator	Type	-	Falling Film Type						
	Flow Rate	m^3/h	67.29	75.28	86.43	118.8	132.7	150.5	172.6
		gpm	296	331	381	523	584	663	760
	Pressure Drop	mAq	9.90	12.2	3.11	5.60	4.68	10.9	9.60
		ftH_2O	32.5	40.0	10.2	18.4	15.4	35.8	31.5
	Pass Num	-	4	4	2	2	2	2	2
	Connection	Inch	5	5	5	5	6	6	6
Condenser	Type	-	Micro Channel Type						
Fan	Type	-	EC Motor						
	One Fan RLA	A	4.0						
	Number	EA	8	8	10	8 / 8	8 / 8	8 / 8	10 / 10
Weight	Shipping Weight	kg	3,600	3,600	4,300	5,500	6,400	6,900	8,000
		lb	7,937	7,937	9,480	12,125	14,110	15,212	17,637
	Operating Weight	kg	3,854	3,854	4,606	5,836	6,812	7,345	8,505
		lb	8,497	8,497	10,154	12,866	15,018	16,193	18,750
Dimension	Length	mm	4,010	4,010	4,990	7,950	7,950	7,950	9,920
		Inch	157.9	157.9	196.5	313.0	313.0	313.0	390.6
	Width	mm	2,150	2,150	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	130	130	170	100 / 100	120 / 120	140 / 140	150 / 150
		lb	287	287	375	220 / 220	265 / 265	309 / 309	331 / 331
Oil		L	23	23	26	17 / 17	19 / 19	23 / 23	26 / 26
		gallon	6.1	6.1	6.9	4.5 / 4.5	5.0 / 5.0	6.1 / 6.1	6.9 / 6.9

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-513A, Micro-channel Condenser, Inverter

(SI) EWT 12°C / LWT 7°C / **ODT 35°C**

(IP) EWT 53.6°F / LWT 44.6°F / **ODT 95°F**

Model		Units	GCAW030GG3A	GCAW033GG3A	GCAW036GG3A	GCAW040GG3A	GCAW044GG4A	GCAW048GG4A	GCAW056GG4A
Unit Capacity		usRT	301.7	337.0	378.4	412.5	439.7	498.4	571.8
		kW	1,061	1,185	1,331	1,451	1,546	1,753	2,011
Compressor	Starter Type	-	VSD	VSD	VSD	VSD	VSD	VSD	VSD
	RLA (380 V)	A	163 / 163 / 163	192 / 192 / 192	227 / 227 / 227	266 / 266 / 266	190 / 190 / 190 / 190	226 / 225 / 226 / 225	253 / 253 / 253 / 253
	RLA (460 V)	A	135 / 135 / 135	158 / 158 / 158	187 / 187 / 187	220 / 220 / 220	157 / 157 / 157 / 157	186 / 186 / 186 / 186	209 / 209 / 209 / 209
	Starting Current	A	0	0	0	0	0	0	0
	Independent Refrigerant Circuits	EA	3	3	3	3	4	4	4
Evaporator	Type	-	Falling Film Type						
	Flow Rate	m^3/h	182.1	203.5	228.5	249.0	265.5	300.9	345.2
		gpm	802	896	1,006	1,096	1,169	1,325	1,520
	Pressure Drop	mAq	9.77	9.77	10.6	12.4	4.68	10.9	9.60
		ftH_2O	32.0	32.0	34.8	40.7	15.4	35.8	31.5
	Pass Num	-	2	2	2	2	2	2	2
	Connection	Inch	8	8	8	8	6	6	6
Condenser	Type	-	Micro Channel Type						
Fan	Type	-	EC Motor						
	One Fan RLA	A	4.0						
	Number	EA	8 / 8 / 8	8 / 8 / 8	8 / 8 / 8	8 / 8 / 8	8 / 8 / 8 / 8	8 / 8 / 8 / 8	10 / 10 / 10 / 10
Weight	Shipping Weight	kg	9,600	9,700	10,000	11,000	25,600	27,600	27,600
		lb	21,164	21,385	22,046	24,251	56,438	60,848	60,848
	Operating Weight	kg	10,282	10,432	10,776	11,776	26,424	28,571	28,650
		lb	22,668	22,999	23,757	25,962	58,255	62,988	63,162
Dimension	Length	mm	11,900	11,900	11,900	11,900	15,900	15,900	19,850
		Inch	468.5	468.5	468.5	468.5	626.0	626.0	781.5
	Width	mm	2,150	2,150	2,150	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3	91.3	91.3	91.3
Refrigerant		kg	140 / 140 / 140	150 / 150 / 150	160 / 160 / 160	160 / 160 / 160	120 / 120 / 120 / 120	160 / 160 / 160 / 160	160 / 160 / 160 / 160
		lb	309 / 309 / 309	331 / 331 / 331	353 / 353 / 353	353 / 353 / 353	265 / 265 / 265 / 265	353 / 353 / 353 / 353	353 / 353 / 353 / 353
Oil		L	17 / 17 / 17	19 / 19 / 19	23 / 23 / 23	26 / 26 / 26	19 / 19 / 19 / 19	23 / 23 / 23 / 23	26 / 26 / 26 / 26
		gallon	4.5 / 4.5 / 4.5	5.0 / 5.0 / 5.0	6.1 / 6.1 / 6.1	6.9 / 6.9 / 6.9	42 / 42 / 42 / 42	51 / 51 / 51 / 51	57 / 57 / 57 / 57

Note :

1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. The 4-compressor circuit models feature a modular design, consisting of two units of 2-compressor models, managed by a single controller.

R-513A, Free Cooling, Micro-channel Condenser, Inverter

(SI) EWT 28°C / LWT 20°C / **ODT 40°C**
(IP) EWT 82.4°F / LWT 68°F / **ODT 104°F**

Model		Units	GCDW011GJ1A	GCDW012GJ1A	GCDW014GJ1A	GCDW022GJ2A
Unit Capacity		usRT	153.6	183.3	209.2	300.6
		kW	540.0	644.5	735.6	1,057
Compressor	Starter Type	-	VSD	VSD	VSD	VSD
	RLA (380 V)	A	248	280	314	245 / 245
	RLA (460 V)	A	205	231	259	202 / 202
	Starting Current	A	0	0	0	0
	Independent Refrigerant Circuits	EA	1	1	1	2
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	58.29	69.57	79.41	114.1
		gpm	257	306	350	502
	Pressure Drop	mAq	10.3	6.20	7.38	9.31
		ftH_2O	33.8	20.3	24.2	30.5
	Pass Num	-	4	2	2	2
	Connection	Inch	4	5	5	6
Condenser Free Cooling	Type	-	Micro Channel Type			
	Coil Type	-	Micro Channel Type			
	Pump input power (Closed Type)	kW	5.0	5.4	7.5	10.3
Fans	Type	-	EC Motor			
	One Fan RLA	A	4			
	Number	EA	8	10	12	8 / 8
Weight	Shipping Weight	kg	4,606	5,458	6,227	8997,
		lb	10,154	12,033	13,728	19,835
	Operating Weight	kg	5,123	6,062	6,908	9,936
		lb	11,294	13,364	15,230	21,905
Dimension	Length	mm	4,010	4,990	5,980	7,950
		Inch	157.9	196.5	235.4	313.0
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	140	170	190	140 / 140
		lb	309	375	419	309 / 309
Oil		L	19	23	26	19 / 19
		gallon	5.0	6.1	6.9	5.0 / 5.0

Note :
1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. Free cooling circulation fluid (Closed Loop) : Prophylene Glycol 25%.

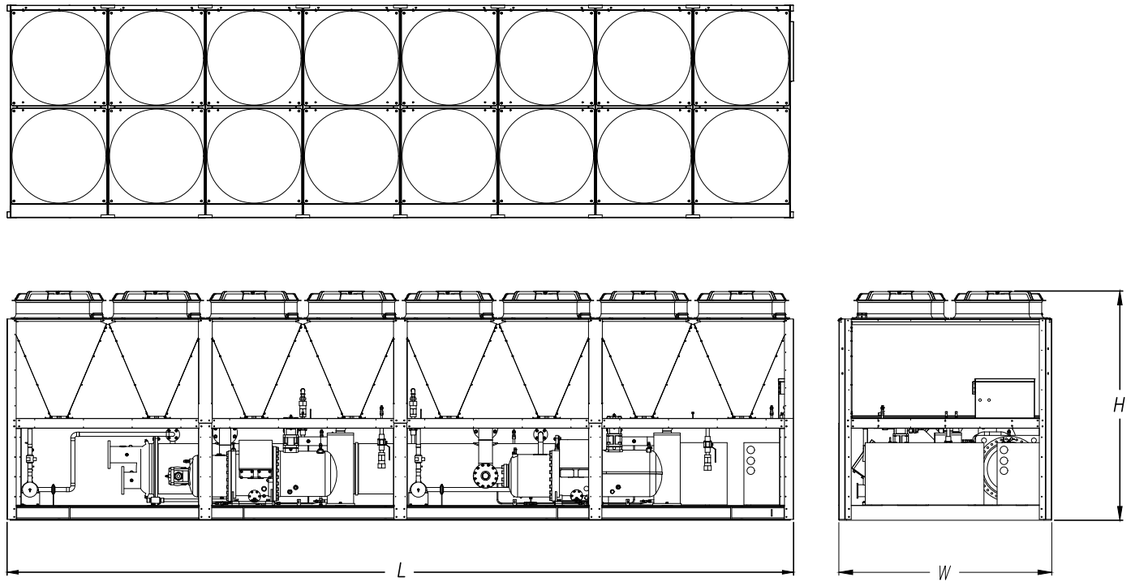
R-513A, Free Cooling, Micro-channel Condenser, Inverter

(SI) EWT 28°C / LWT 20°C / **ODT 40°C**
(IP) EWT 82.4°F / LWT 68°F / **ODT 104°F**

Model		Units	GCDW024GJ2A	GCDW028GJ2A	GCDW030GJ3A	GCDW033GJ3A
Unit Capacity		usRT	369.0	421.0	426.9	451.9
		kW	1,298	1,481	1,501	1,589
Compressor	Starter Type	-	VSD	VSD	VSD	VSD
	RLA (380 V)	A	280 / 280	314 / 314	211 / 211 / 211	245 / 245 / 245
	RLA (460 V)	A	232 / 232	260 / 260	174 / 174 / 174	202 / 202 / 202
	Starting Current	A	0	0	0	0
	Independent Refrigerant Circuits	EA	2	2	3	3
Evaporator	Type	-	Falling Film Type			
	Flow Rate	m^3/h	140.1	159.8	162.1	171.6
		gpm	617	704	714	756
	Pressure Drop	mAq	8.69	10.1	11.9	11.3
		ftH_2O	28.5	33.1	39.0	37.1
	Pass Num	-	2	2	2	2
	Connection	Inch	6	8	8	8
Condenser Free Cooling	Type	-	Micro Channel Type			
	Coil Type	-	Micro Channel Type			
	Pump input power (Closed Type)	kW	11	13.6	13.6	13.6
Fans	Type	-	EC Motor			
	One Fan RLA	A	4			
	Number	EA	10 / 10	12 / 12	8 / 8 / 8	8 / 8 / 8
Weight	Shipping Weight	kg	10,626	12,104	12,879	13,330
		lb	23,426	26,685	28,393	29,388
	Operating Weight	kg	11,771	13,396	14,167	14,716
		lb	25,951	29,533	31,233	32,443
Dimension	Length	mm	9,920	11,900	11,900	11,900
		Inch	390.6	468.5	468.5	468.5
	Width	mm	2,150	2,150	2,150	2,150
		Inch	84.6	84.6	84.6	84.6
	Height	mm	2,320	2,320	2,320	2,320
		Inch	91.3	91.3	91.3	91.3
Refrigerant		kg	170 / 170	190 / 190	130 / 130 / 130	140 / 140 / 140
		lb	375 / 375	419 / 419	287 / 287 / 287	309 / 309 / 309
Oil		L	23 / 23	26 / 26	17 / 17 / 17	19 / 19 / 19
		gallon	6.1 / 6.1	6.9 / 6.9	4.5 / 4.5 / 4.5	5.0 / 5.0 / 5.0

Note :
1. 1 usRT = 3,024 kcal/hr = 3.517 kW, 1 mH_2O = 9.8 kPa
2. Fouling factor of water in evaporator is 0.0176 $m^2 \cdot °C/kW$
3. Specifications may be changed without prior notification.
4. Please contact LG for any inquiries regarding additional voltages or specification requirements.
5. Free cooling circulation fluid (Closed Loop) : Prophylene Glycol 25%.

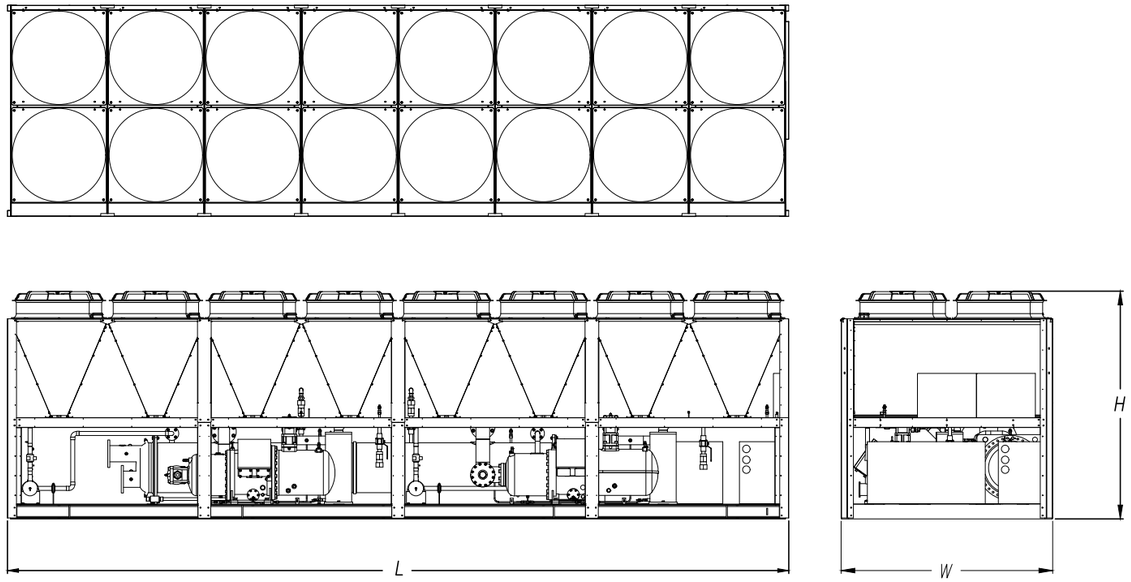
Fin & Tube Condenser, Constant Speed



[Tolerance : Chiller Dimension (SI) ± 50 mm (IP) ± 2 inch]

Model	Chiller Dimension						Fan Number
	L		W		H		
	mm	Inch	mm	Inch	mm	Inch	EA
R(M)CAW008CA1C	3,020	118.9	2,150	84.6	2,320	91.3	6
R(M)CAW010CA1C	3,020	118.9					6
R(M)CAW012CA1C	4,010	157.9					8
R(M)CAW014CA1C	4,010	157.9					8
R(M)CAW016CA1C	4,990	196.5					10
R(M)CAW016CA2C	5,980	235.4					6 / 6
R(M)CAW018CA2C	5,980	235.4					6 / 6
R(M)CAW020CA2C	5,980	235.4					6 / 6
R(M)CAW022CA2C	6,970	274.4					8 / 6
R(M)CAW024CA2C	7,950	313.0					8 / 8
R(M)CAW026CA2C	7,950	313.0					8 / 8
R(M)CAW028CA2C	7,950	313.0					8 / 8
R(M)CAW030CA2C	8,940	352.0					10 / 8
R(M)CAW032CA2C	9,920	390.6					10 / 10
R(M)CAW036CA3C	11,900	468.5					8 / 8 / 8
R(M)CAW040CA3C	11,900	468.5					8 / 8 / 8
R(M)CAW044CA4C	13,940	548.8					8 / 6 / 8 / 6
R(M)CAW048CA4C	15,900	626.0					8 / 8 / 8 / 8
R(M)CAW052CA4C	15,900	626.0					8 / 8 / 8 / 8

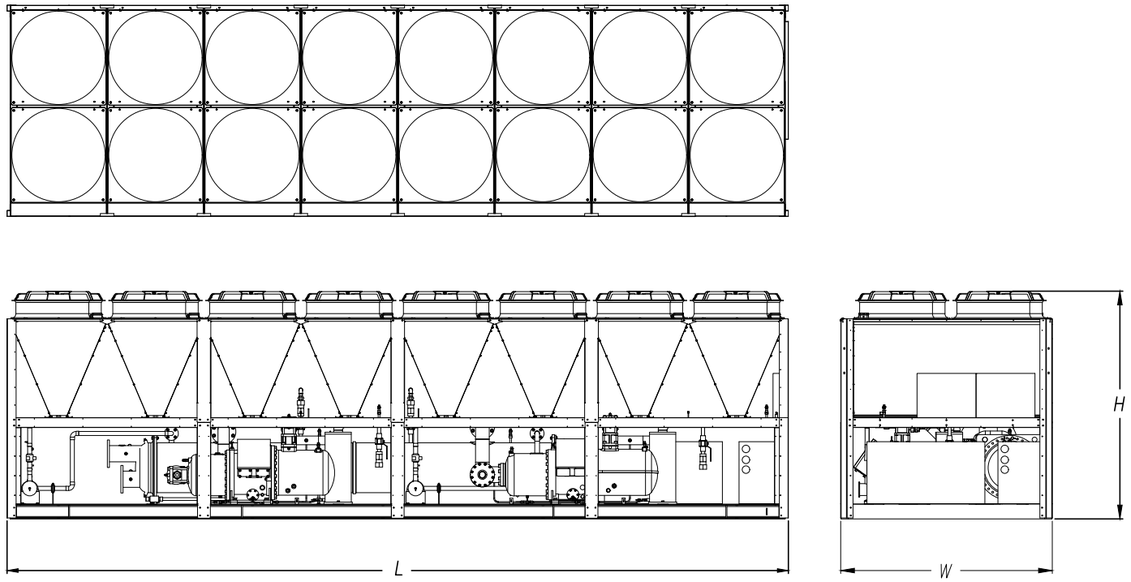
Fin & Tube Condenser, Inverter



[Tolerance : Chiller Dimension (SI) ± 50 mm (IP) ± 2 inch]

Model	Chiller Dimension						Fan Number
	L		W		H		
	mm	Inch	mm	Inch	mm	Inch	EA
RCAW010VA1C	3,020	118.9	2,150	84.6	2,320	91.3	6
RCAW012VA1C	4,010	157.9					8
RCAW014VA1C	4,010	157.9					8
RCAW015VA1C	4,990	196.5					10
RCAW017VA1C	4,990	196.5					10
RCAW020VA2C	5,980	235.4					6 / 6
RCAW023VA2C	7,950	313.0					8 / 8
RCAW027VA2C	7,950	313.0					8 / 8
RCAW030VA2C	9,920	390.6					10 / 10
RCAW034VA2C	9,920	390.6					10 / 10
RCAW040VA3C	11,900	468.5					8 / 8 / 8
RCAW046VA4C	15,900	626.0					8 / 8 / 8 / 8
RCAW054VA4C	15,900	626.0					8 / 8 / 8 / 8

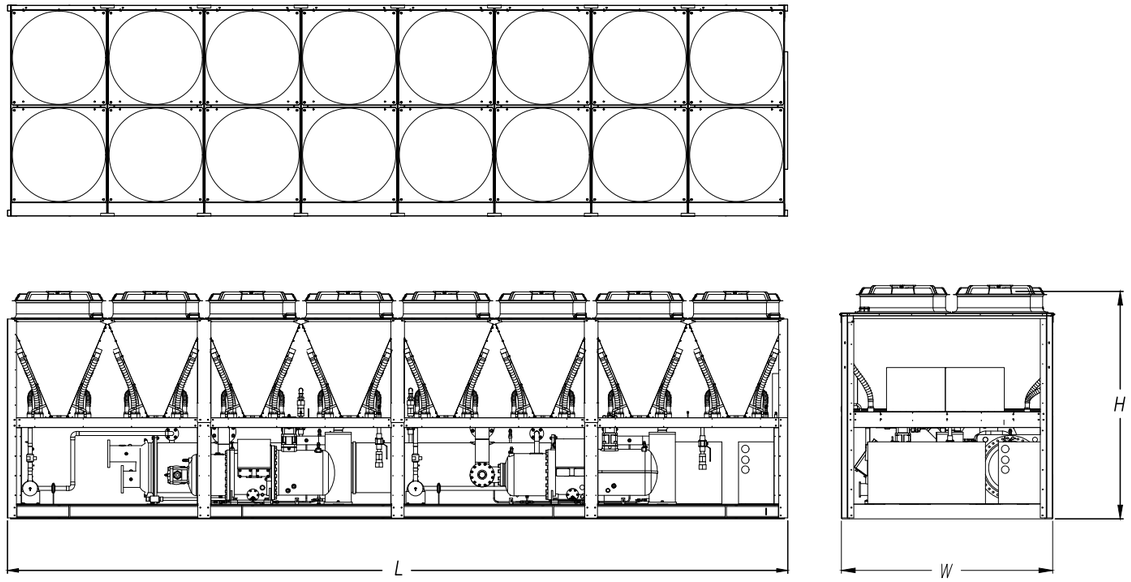
Micro-channel Condenser, Inverter



[Tolerance : Chiller Dimension (SI) ± 50 mm (IP) ± 2 inch]

Model	Chiller Dimension						Fan Number
MCHX All Inverter	L		W		H		
	mm	Inch	mm	Inch	mm	Inch	EA
GCAW011GG1A	4,010	157.9	2,150	84.6	2,320	91.3	8
GCAW012GG1A	4,010	157.9					8
GCAW014GG1A	4,990	196.5					10
GCAW018GG2A	7,950	313.0					8 / 8
GCAW022GG2A	7,950	313.0					8 / 8
GCAW024GG2A	7,950	313.0					8 / 8
GCAW028GG2A	9,920	390.6					10 / 10
GCAW030GG3A	11,900	468.5					8 / 8 / 8
GCAW033GG3A	11,900	468.5					8 / 8 / 8
GCAW036GG3A	11,900	468.5					8 / 8 / 8
GCAW040GG3A	11,900	468.5					8 / 8 / 8
GCAW044GG4A	15,900	626.0					8 / 8 / 8 / 8
GCAW048GG4A	15,900	626.0					8 / 8 / 8 / 8
GCAW056GG4A	19,850	781.5					10 / 10 / 10 /10

Free Cooling, Micro-channel Condenser, Inverter



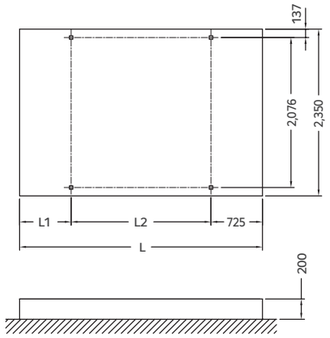
[Tolerance : Chiller Dimension (SI) ± 50 mm (IP) ± 2 inch]

Model	Chiller Dimension						Fan Number
MCHX All Inverter Free Cooling	L		W		H		
	mm	Inch	mm	Inch	mm	Inch	EA
GCDW011GJ1A	4,010	157.9	2,150	84.6	2,320	91.3	8
GCDW012GJ1A	4,990	196.5					10
GCDW014GJ1A	5,980	235.4					12
GCDW022GJ2A	7,950	313.0					8 / 8
GCDW024GJ2A	9,920	390.6					10 / 10
GCDW028GJ2A	11,900	468.5					12 / 12
GCDW030GJ3A	11,900	468.5					8 / 8 / 8
GCDW033GJ3A	11,900	468.5					8 / 8 / 8

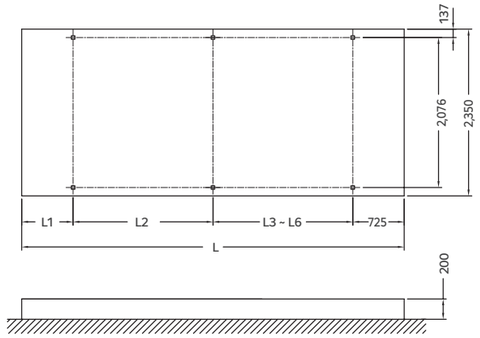
Fin & Tube Condenser, Constant Speed

Korea Manufactured Model, SI Unit (mm)

RCAW008CA1C ~ 014CA1C



RCAW016CA1C ~ 040CA3C



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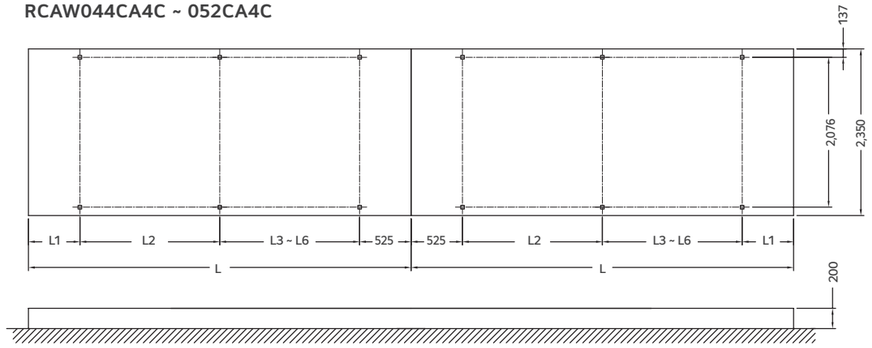


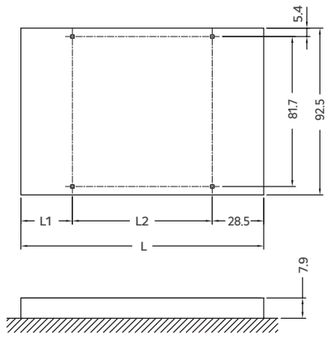
[Unit : mm]

Model	L	L1	L2	L3	L4	L5	L6
RCAW008CA1C	3,422	725	1,972				
RCAW010CA1C	3,422	725	1,972				
RCAW012CA1C	4,408	725	2,958				
RCAW014CA1C	4,408	725	2,958				
RCAW016CA1C	5,394	725	1,972	1,972			
RCAW016CA2C	6,380	725	1,972	2,958			
RCAW018CA2C	6,380	725	1,972	2,958			
RCAW020CA2C	6,380	725	1,972	2,958			
RCAW022CA2C	7,366	725	1,972	1,972	1,972		
RCAW024CA2C	8,352	725	1,972	1,329	1,629	1,972	
RCAW026CA2C	8,352	725	1,972	1,329	1,629	1,972	
RCAW028CA2C	8,352	725	1,972	1,329	1,629	1,972	
RCAW030CA2C	9,338	725	1,972	1,972	1,972	1,972	
RCAW032CA2C	10,324	725	1,972	1,972	2,958	1,972	
RCAW036CA3C	12,296	725	1,972	1,972	2,958	1,972	1,972
RCAW040CA3C	12,296	725	1,972	1,972	2,958	1,972	1,972
RCAW044CA4C	7,166	725	1,972	1,972	1,972		
RCAW048CA4C	8,152	725	1,972	1,329	1,629	1,972	
RCAW052CA4C	8,152	725	1,972	1,329	1,629	1,972	

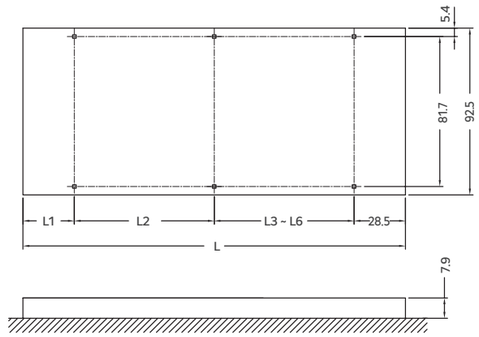
Fin & Tube Condenser, Constant Speed

Korea Manufactured Model, IP Unit (inch)

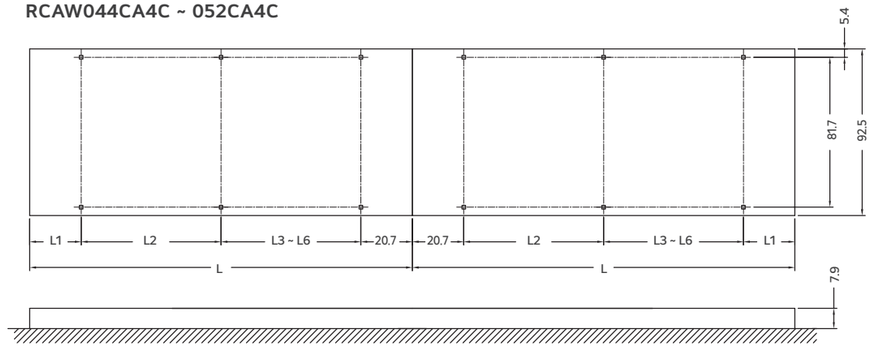
RCAW008CA1C ~ 014CA1C



RCAW016CA1C ~ 040CA3C



RCAW044CA4C ~ 052CA4C



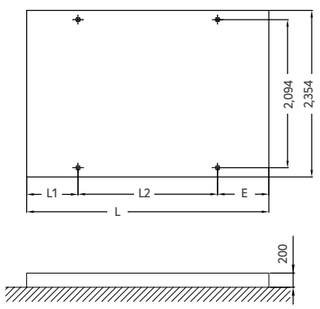
[Unit : inch]

Model	L	L1	L2	L3	L4	L5	L6
RCAW008CA1C	134.7	28.5	77.6				
RCAW010CA1C	134.7	28.5	77.6				
RCAW012CA1C	173.5	28.5	116.5				
RCAW014CA1C	173.5	28.5	116.5				
RCAW016CA1C	212.4	28.5	77.6	77.6			
RCAW016CA2C	251.2	28.5	77.6	116.5			
RCAW018CA2C	251.2	28.5	77.6	116.5			
RCAW020CA2C	251.2	28.5	77.6	116.5			
RCAW022CA2C	290.0	28.5	77.6	77.6	77.6		
RCAW024CA2C	328.8	28.5	77.6	52.3	64.1	77.6	
RCAW026CA2C	328.8	28.5	77.6	52.3	64.1	77.6	
RCAW028CA2C	328.8	28.5	77.6	52.3	64.1	77.6	
RCAW030CA2C	367.6	28.5	77.6	77.6	77.6	77.6	
RCAW032CA2C	406.5	28.5	77.6	77.6	116.5	77.6	
RCAW036CA3C	484.1	28.5	77.6	77.6	116.5	77.6	77.6
RCAW040CA3C	484.1	28.5	77.6	77.6	116.5	77.6	77.6
RCAW044CA4C	282.1	28.5	77.6	77.6	77.6		
RCAW048CA4C	320.9	28.5	77.6	52.3	64.1	77.6	
RCAW052CA4C	320.9	28.5	77.6	52.3	64.1	77.6	

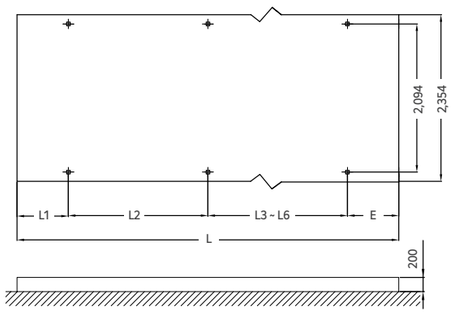
Fin & Tube Condenser, Constant Speed

China Manufactured Model, SI Unit (mm)

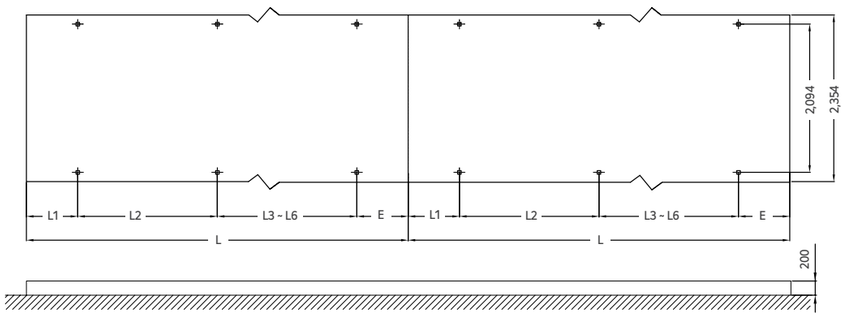
MCAW008CA1C, MCAW010CA1C



MCAW012CA1C ~ 040CA3C



MCAW044CA4C ~ 052CA4C



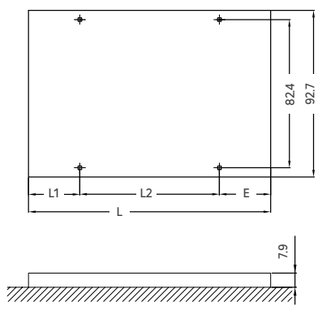
[Unit : mm]

Model	L	L1	L2	L3	L4	L5	L6	E
MCAW008CA1C	3,422	725	1,972					725
MCAW010CA1C	3,422	725	1,972					725
MCAW012CA1C	4,408	725	1,985	1,015				683
MCAW014CA1C	4,408	725	1,985	1,015				683
MCAW016CA1C	5,394	725	1,972	1,972				725
MCAW016CA2C	6,380	565	1,750	1,750	1,750			565
MCAW018CA2C	6,380	565	1,750	1,750	1,750			565
MCAW020CA2C	6,380	565	1,750	1,750	1,750			565
MCAW022CA2C	7,366	725	1,972	1,972	1,972			725
MCAW024CA2C	8,352	565	1,750	1,750	1,750	1,750		787
MCAW026CA2C	8,352	565	1,750	1,750	1,750	1,750		787
MCAW028CA2C	8,352	565	1,750	1,750	1,750	1,750		787
MCAW030CA2C	9,338	725	1,972	1,972	1,972	1,972		725
MCAW032CA2C	10,800	1,456	1,972	1,972	1,972	1,972		1,456
MCAW036CA3C	12,296	1,218	1,972	1,972	1,972	1,972	1,972	1,218
MCAW040CA3C	12,296	1,218	1,972	1,972	1,972	1,972	1,972	1,218
MCAW044CA4C	7,366	725	1,972	1,972	1,972			725
MCAW048CA4C	8,352	565	1,750	1,750	1,750	1,750		787
MCAW052CA4C	8,352	565	1,750	1,750	1,750	1,750		787

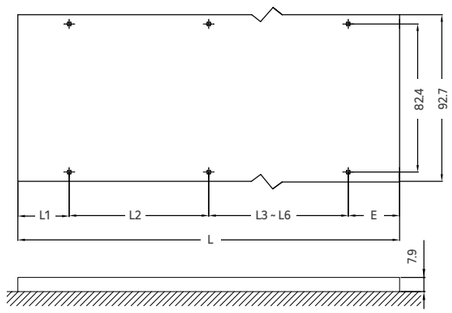
Fin & Tube Condenser, Constant Speed

China Manufactured Model, IP Unit (inch)

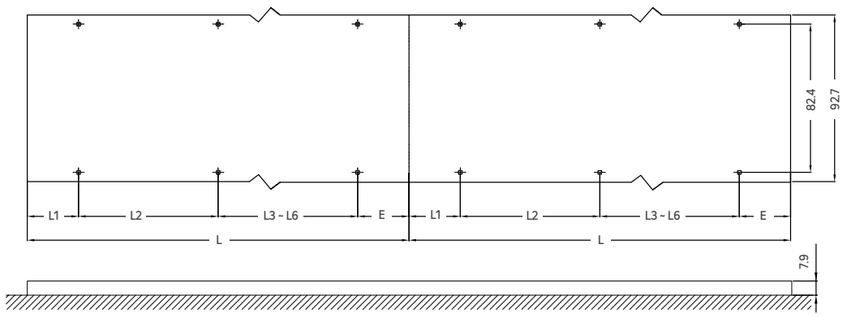
MCAW008CA1C, MCAW010CA1C



MCAW012CA1C ~ 040CA3C



MCAW044CA4C ~ 052CA4C



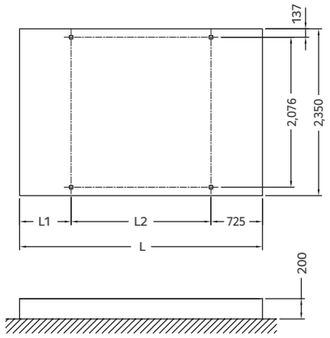
[Unit : inch]

Model	L	L1	L2	L3	L4	L5	L6	E
MCAW008CA1C	134.7	28.5	77.6					28.5
MCAW010CA1C	134.7	28.5	77.6					28.5
MCAW012CA1C	173.5	28.5	78.1	40.0				26.9
MCAW014CA1C	173.5	28.5	78.1	40.0				26.9
MCAW016CA1C	212.4	28.5	77.6	77.6				28.5
MCAW016CA2C	251.2	22.2	68.9	68.9	68.9			22.2
MCAW018CA2C	251.2	22.2	68.9	68.9	68.9			22.2
MCAW020CA2C	251.2	22.2	68.9	68.9	68.9			22.2
MCAW022CA2C	290.0	28.5	77.6	77.6	77.6			28.5
MCAW024CA2C	328.8	22.2	68.9	68.9	68.9	68.9		31.0
MCAW026CA2C	328.8	22.2	68.9	68.9	68.9	68.9		31.0
MCAW028CA2C	328.8	22.2	68.9	68.9	68.9	68.9		31.0
MCAW030CA2C	367.6	28.5	77.6	77.6	77.6	77.6		28.5
MCAW032CA2C	425.2	57.3	77.6	77.6	77.6	77.6		57.3
MCAW036CA3C	484.1	48.0	77.6	77.6	77.6	77.6	77.6	48.0
MCAW040CA3C	484.1	48.0	77.6	77.6	77.6	77.6	77.6	48.0
MCAW044CA4C	290.0	28.5	77.6	77.6	77.6			28.5
MCAW048CA4C	328.8	22.2	68.9	68.9	68.9	68.9		31.0
MCAW052CA4C	328.8	22.2	68.9	68.9	68.9	68.9		31.0

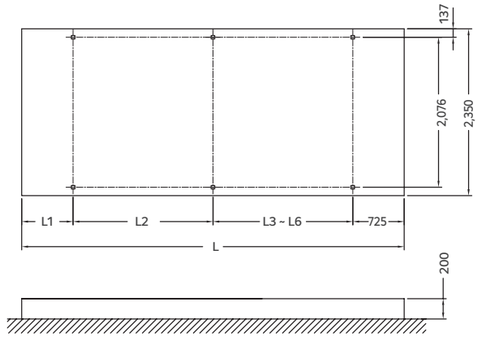
Fin & Tube Condenser, Inverter

SI Unit (mm)

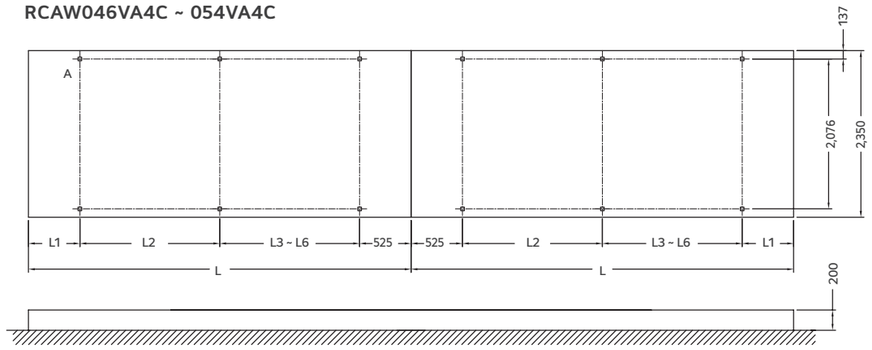
RCAW010VA1C ~ 014VA1C



RCAW015VA1C ~ 040VA3C



RCAW046VA4C ~ 054VA4C



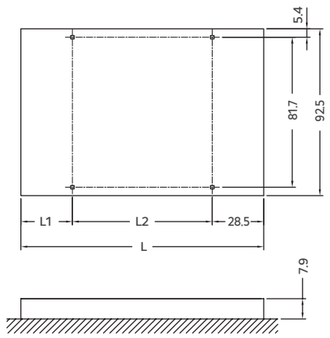
[Unit : mm]

Model	L	L1	L2	L3	L4	L5	L6
RCAW010VA1C	3,422	725	1,972				
RCAW012VA1C	4,408	725	2,958				
RCAW014VA1C	4,408	725	2,958				
RCAW015VA1C	5,394	725	1,972	1,972			
RCAW017VA1C	5,394	725	1,972	1,972			
RCAW020VA2C	6,380	725	1,972	2,958			
RCAW023VA2C	8,352	725	1,972	1,329	1,629	1,972	
RCAW027VA2C	8,352	725	1,972	1,329	1,629	1,972	
RCAW030VA2C	10,324	725	1,972	1,972	2,958	1,972	
RCAW034VA2C	10,324	725	1,972	1,972	2,958	1,972	
RCAW040VA3C	12,296	725	1,972	1,972	2,958	1,972	1,972
RCAW046VA4C	8,152	725	1,972	1,329	1,629	1,972	
RCAW054VA4C	8,152	725	1,972	1,329	1,629	1,972	

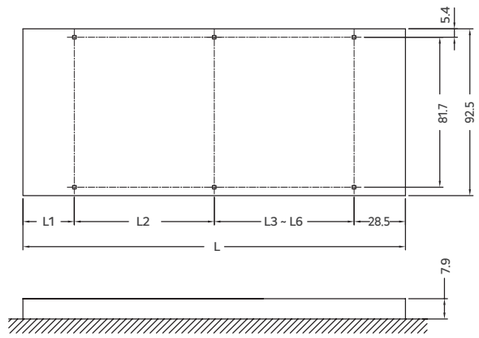
Fin & Tube Condenser, Inverter

IP Unit (inch)

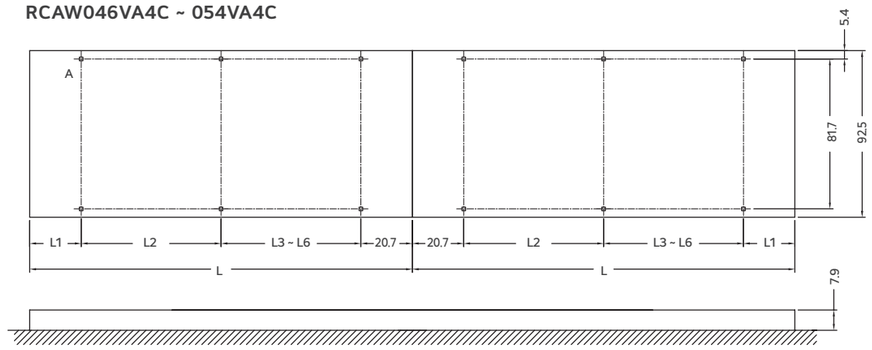
RCAW010VA1C ~ 014VA1C



RCAW015VA1C ~ 040VA3C



RCAW046VA4C ~ 054VA4C



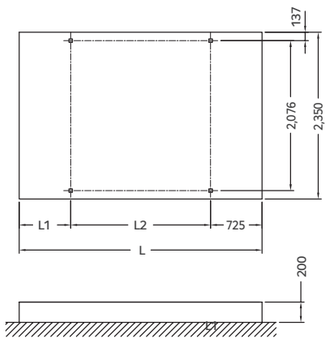
[Unit : inch]

Model	L	L1	L2	L3	L4	L5	L6
RCAW010VA1C	134.7	28.5	77.6				
RCAW012VA1C	173.5	28.5	116.5				
RCAW014VA1C	173.5	28.5	116.5				
RCAW015VA1C	212.4	28.5	77.6	77.6			
RCAW017VA1C	212.4	28.5	77.6	77.6			
RCAW020VA2C	251.2	28.5	77.6	116.5			
RCAW023VA2C	328.8	28.5	77.6	52.3	64.1	77.6	
RCAW027VA2C	328.8	28.5	77.6	52.3	64.1	77.6	
RCAW030VA2C	406.5	28.5	77.6	77.6	116.5	77.6	
RCAW034VA2C	406.5	28.5	77.6	77.6	116.5	77.6	
RCAW040VA3C	484.1	28.5	77.6	77.6	116.5	77.6	77.6
RCAW046VA4C	320.9	28.5	77.6	52.3	64.1	77.6	
RCAW054VA4C	320.9	28.5	77.6	52.3	64.1	77.6	

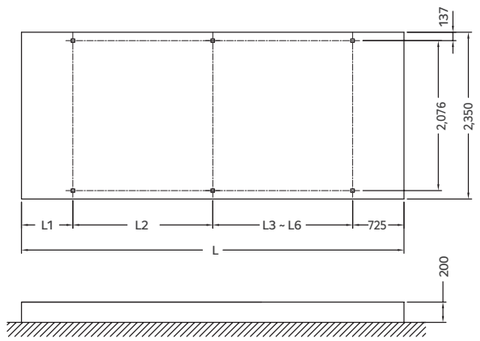
Micro-channel Condenser, Inverter

SI Unit (mm)

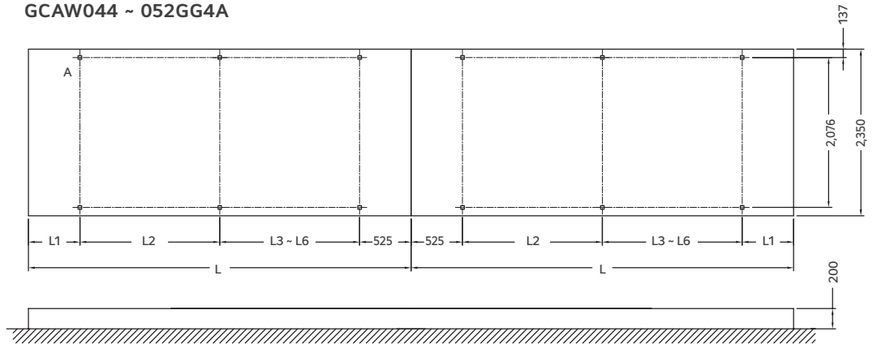
GCAW011 ~ 012GG1A



GCAW014 ~ 036GG3A



GCAW044 ~ 052GG4A



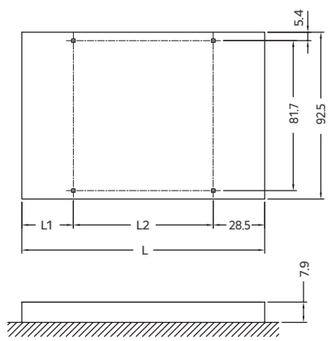
[Unit : mm]

Model	L	L1	L2	L3	L4	L5	L6
GCAW011GG1A	4,408	725	2,958				
GCAW012GG1A	4,408	725	2,958				
GCAW014GG1A	5,394	725	1,972	1,972			
GCAW018GG2A	8,352	725	1,972	1,329	1,629	1,972	
GCAW022GG2A	8,352	725	1,972	1,329	1,629	1,972	
GCAW024GG2A	8,352	725	1,972	1,329	1,629	1,972	
GCAW028GG2A	10,324	725	1,972	1,972	2,958	1,972	
GCAW030GG3A	12,296	725	1,972	1,972	2,958	1,972	1,972
GCAW033GG3A	12,296	725	1,972	1,972	2,958	1,972	1,972
GCAW036GG3A	12,296	725	1,972	1,972	2,958	1,972	1,972
GCAW040GG3A	12,296	725	1,972	1,972	2,958	1,972	1,972
GCAW044GG4A	8,152	725	1,972	1,329	1,629	1,972	
GCAW048GG4A	8,152	725	1,972	1,329	1,629	1,972	
GCAW056GG4A	10,124	725	1,972	1,972	2,958	1,972	

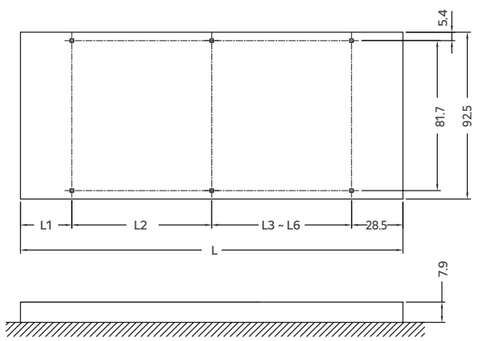
Micro-channel Condenser, Inverter

IP Unit (inch)

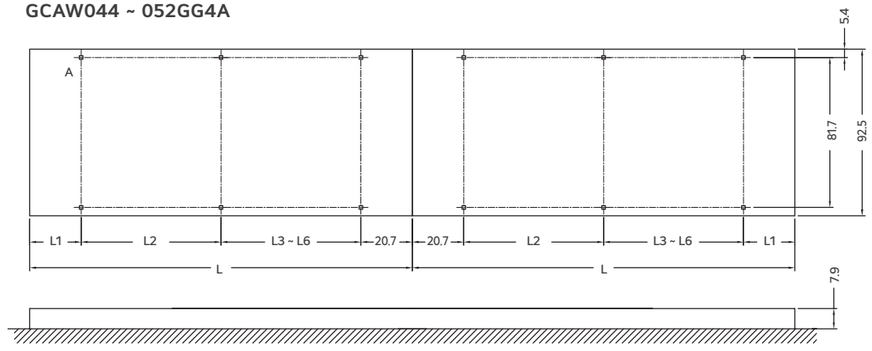
GCAW011 ~ 012GG1A



GCAW014 ~ 036GG3A



GCAW044 ~ 052GG4A

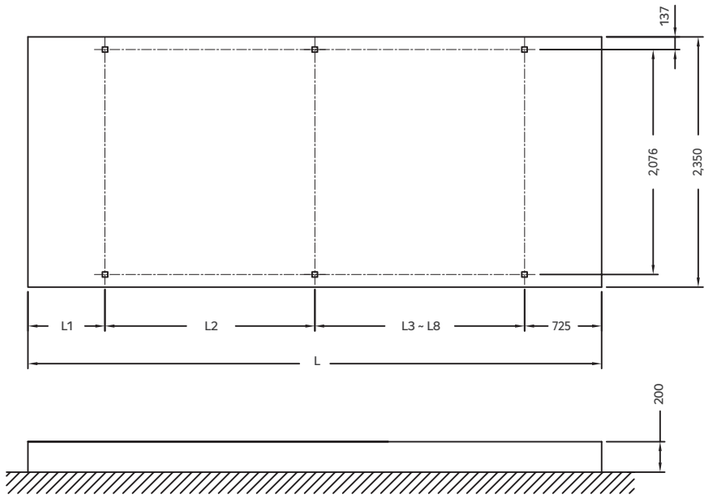


[Unit : inch]

Model	L	L1	L2	L3	L4	L5	L6
GCAW011GG1A	173.5	28.5	116.5				
GCAW012GG1A	173.5	28.5	116.5				
GCAW014GG1A	212.4	28.5	77.6	77.6			
GCAW018GG2A	328.8	28.5	77.6	52.3	64.1	77.6	
GCAW022GG2A	328.8	28.5	77.6	52.3	64.1	77.6	
GCAW024GG2A	328.8	28.5	77.6	52.3	64.1	77.6	
GCAW028GG2A	406.5	28.5	77.6	77.6	116.5	77.6	
GCAW030GG3A	484.1	28.5	77.6	77.6	116.5	77.6	77.6
GCAW033GG3A	484.1	28.5	77.6	77.6	116.5	77.6	77.6
GCAW036GG3A	484.1	28.5	77.6	77.6	116.5	77.6	77.6
GCAW040GG3A	484.1	28.5	77.6	77.6	116.5	77.6	77.6
GCAW044GG4A	320.9	28.5	77.6	52.3	64.1	77.6	
GCAW048GG4A	320.9	28.5	77.6	52.3	64.1	77.6	
GCAW056GG4A	398.6	28.5	77.6	77.6	116.5	77.6	

Free Cooling, Micro-channel Condenser, Inverter

SI Unit (mm)

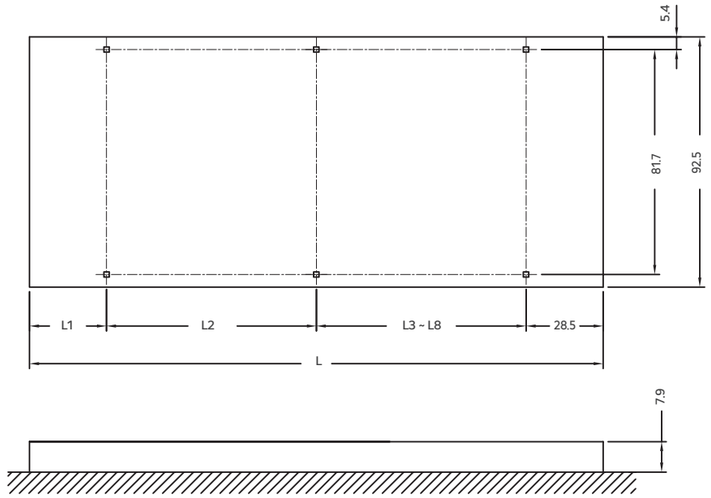


[Unit : mm]

Model	L	L1	L2	L3	L4	L5	L6	L7	L8
GCDW011GJ1A	4,408	725	1,479	1,479					
GCDW012GJ1A	5,394	725	1,233	1,479	1,233				
GCDW014GJ1A	6,380	725	1,233	1,233	1,233	1,233			
GCDW022GJ2A	8,352	725	1,972	1,233	1,233	1,233	1,233		
GCDW024GJ2A	10,324	725	1,972	1,233	1,233	1,233	1,233	1,972	
GCDW028GJ2A	12,296	725	1,479	1,233	1,233	1,233	1,479	1,972	2,219
GCDW030GJ3A	12,296	725	1,479	1,233	1,233	1,233	1,479	1,972	2,219
GCDW033GJ3A	12,296	725	1,479	1,233	1,233	1,233	1,479	1,972	2,219

Free Cooling, Micro-channel Condenser, Inverter

IP Unit (inch)



[Unit : inch]

Model	L	L1	L2	L3	L4	L5	L6	L7	L8
GCDW011GJ1A	173.5	28.5	58.2	58.2					
GCDW012GJ1A	212.4	28.5	48.5	58.2	48.5				
GCDW014GJ1A	251.2	28.5	48.5	48.5	48.5	48.5			
GCDW022GJ2A	328.8	28.5	77.6	48.5	48.5	48.5	48.5		
GCDW024GJ2A	406.5	28.5	77.6	48.5	48.5	48.5	48.5	77.6	
GCDW028GJ2A	484.1	28.5	58.2	48.5	48.5	48.5	58.2	77.6	87.3
GCDW030GJ3A	484.1	28.5	58.2	48.5	48.5	48.5	58.2	77.6	87.3
GCDW033GJ3A	484.1	28.5	58.2	48.5	48.5	48.5	58.2	77.6	87.3

Select Installation Location

Precaution when selecting the installation location

Select space for installation air-cooled unit, which will meet the following conditions

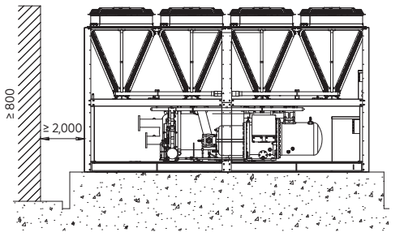
- With strength which bears weight of unit.
- With space for air passage and service work, don't install the unit at the space where generation, inflow, stagnation and leak of combustible gas is expected.
- Avoid unit installation in a place where acidic solution and spray (sulfur) are often used.
- Location with no leakage of combustible gas.
- Location with installation or service work space. (refer to required space)
- Do not use the air-cooled unit under any special environment where oil, steam and sulfuric gas exist.
- In order to prevent freezing, establish an anti-freeze plan for the water supply when the product is stopped during the winter. Use appropriate brine solutions in cooler fluid loops to prevent the freezing of heat exchangers when the equipment is exposed to temperatures below 32°F (0°C). In areas where the piping or unit is exposed to 32°F (0°C) or lower ambient temperatures, freeze-up protection is required. If there is no freeze-up protection, water in system (in chiller and all pipes) must be drained out.
- The floor of the machine room must be water proof.
- In order to prevent the condensed water from being produced, both the evaporator and the pipe connected to it should be insulated. Install a floor slope to make the drainage smooth.
- Avoid installing the air-cooled unit in the location with following conditions.
- Location where corrosive gas such as acidic gas is generated.
  (It may cause the refrigerant leakage by corrosion of the pipe)
- Location where electromagnetic waves happen.
  (It may cause the abnormal operation by control parts disorder)
- Location to be able to leak the combustible gas.
- Location with carbon fiber or combustible dust.
- Location with the combustible material like thinner or gasoline.
  (It may cause a fire by leaking the gas near the product)

Installation Space

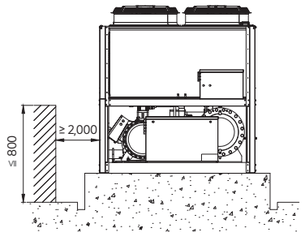
Air-cooled chiller should be installed on sufficient space for airflow ventilation and product repair.

The Distance Between Unit and Wall

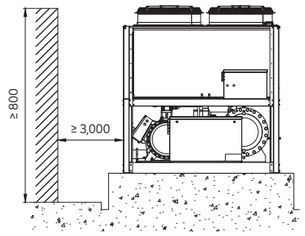
General



Wall height : under 800 mm

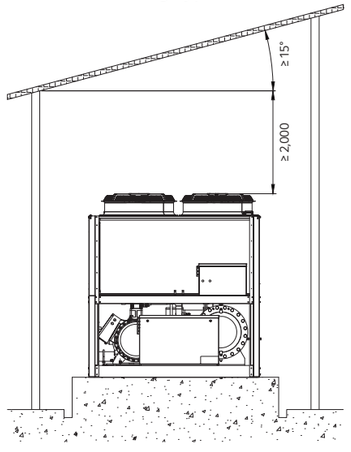


Wall height : over 800 mm

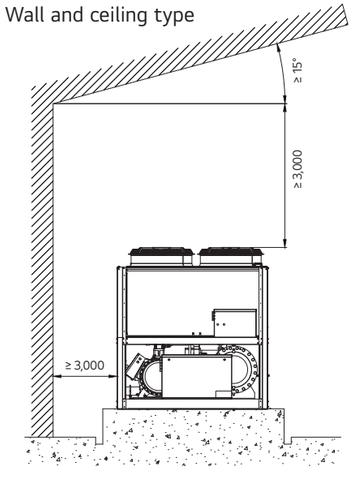


The Distance Between Unit and Ceiling

Pillars and ceiling type



Wall and ceiling type



A/C SCREW CHILLER Doc. No : Date : 2025.

PJT Name			Country / Agent		Marketer	
Model / RT	/		Q'ty		FE	
Ex-Factory Day			INCO Terms	☐ Ex-Work ☐ FOB ☐ CIF ☐ DDP		
Construction Type	☐ New ☐ Retrofit				Contract amount	k$
Application Type	☐ Commercial ☐ Industrial ☐ Process ☐ Data Center ☐ Nuclear Plant					
Installation Place	☐ Rooftop ☐ Floors ☐ Machine room ☐ Seaside					
Coastal Area	☐ Within 1 km ☐ 1 ~ 10 km ☐ Exceed 10 km					
Service Condition	Chilled Inlet (℃) Chilled Outlet (℃) Operating Outside Tem. (summer : ℃)					

Dvision		Standard	Option
Refrigerant		R-134a	☐ R-513A
Comp.	Power Supply (3 Ph)	☐ 380 V	☐ 400 V ☐ 415 V ☐ 440 V ☐ 460 V ☐ 480 V ☐ 220 V
	Hertz	☐ 50 Hz	☐ 60 Hz
	Capacity Control Type	☐ Step	☐ VSD (Inverter)
Control Panel	Communication	☐ Modbus RTU	☐ BACnet ☐ Modbus TCP ☐ etc. ( )
	Protection Grade	☐ IP54	☐ etc. ( )
Power Connection		☐ Standard (Multi, 2 ~ comp.)	☐ Single Power Connection ☐ Single Power Connection (Including Main C.B)
Factory Wiring		☐ Open Wiring	☐ Flexible Wiring
Harmonic Filter		☐ N/A	☐ Yes
Starter Panel	Supplied by	☐ Factory	☐ Supplied by Customer
	Starter Type	☐ Y-Delta (Open)	☐ VSD Starter ☐ etc. ( )
	Mounted Type	☐ Unit Mounted	☐ etc. ( )
	Misc. Options	☐ N/A	☐ Ground Fault Protection ☐ Integrating Watt-meter
	Protection Grade	☐ IP54	☐ etc. ( )
	Internal Inspection Lamp	☐ N/A	☐ Yes
EVAP.	Waterbox Pressure	☐ 150 psig (10 kg/cm^2)	☐ 230 psig (16 kg/cm^2) ☐ 300 psig (20 kg/cm^2)
	Safety Valve Type (Ref.)	☐ Relief V/V (Single)	☐ Relief V/V (Dual)
	Nozzle Type	☐ ANSI - Flange	☐ ANSI - Victaulic ☐ KS - Flange ☐ etc. ( )
	Flow Proof Type (Water)	☐ Flow Switch	☐ DP Switch
COND.	Fan Type	☐ Fixed Speed Fan	☐ EC Fan
	Condenser Type	☐ Gold Fin (Step Standard)	☐ Black Fin (F&T VSD Standard) ☐ Gold Fin + Blygold ☐ Black Fin + Blygold
		☐ MCHX (TCP Coating)	☐ MCHX (E-Coating)
	Free Cooling	☐ N/A	☐ Refrigerant Free-cooling ☐ Hydronic Free-cooling (Open Loop) ☐ Hydronic Free-cooling (Closed Loop)
Refrigerant Charge		☐ Separated Shipping	☐ Factory Charge ☐ Customer Supplied ☐ Local Supplied
Packing		☐ Shrink Film	☐ Wooden Packing
Insulation		☐ 19 mm	☐ 38 mm ☐ N/A
Casing (Shell)		☐ N/A	☐ Yes
Protection Guard		☐ N/A	☐ Lower Grills ☐ Lower + Upper Grills ☐ Lower + Upper Grills
Sound Attenuator		☐ N/A	☐ Yes
Isolation		☐ Neoprene PAD	☐ Spring 1 Inch
Anchor Bolt for Foundation		☐ N/A	☐ Yes
Counter Pipe Flange		☐ N/A	☐ Yes
Certification		☐ Standard (KGS)	☐ ASME Ⅷ Only ☐ CE (PED) ☐ PED ☐ (C)UL(ETL) ☐ GB (China Standard)
Factory Performance Test		☐ Possible	☐ Out of Range
Factory Test Procedure		☐ N/A	☐ Witness Test (unit)
Factory Test Report		☐ N/A	☐ Peformance Test Report (unit) ☐ Dry Test Report (unit) ☐ Process Inspection Report (unit)
Factory Performance Test (Condition)		☐ N/A	☐ 100% ☐ 75% ☐ 50% ☐ 25% ☐ etc. ( )
Startup Commissioning		☐ N/A	☐ Supervising Only ☐ Startup Commissioning
Operating Training		☐ N/A	☐ Yes
Warranty - Compressor		☐ 1 yr	☐ etc. ( )
Labor Warranty - Comp.		☐ N/A	☐ etc. ( )
Warranty - Ass'y		☐ 1 yr	☐ etc. ( )
Labor Warranty - Ass'y		☐ N/A	☐ etc. ( )

Guide Specification

Air-Cooled Screw Chiller
RCAW(CA) Series

Contents

1. General

1.1. Scope

Requirements of the General Conditions, Supplementary Conditions and Drawings apply to all work here in.

1.2. System Descriptions

Factory packaged air cooled water chillers incorporating low noise twin screw compressor(s) and low noise fans.

1.3. Quality Assurance

- ANSI/ASHRAE 34 - number designation and safety classification of refrigerants.
- ANSI/ASHRAE standard 15 safety code
- Manufactured in an EN ISO 9001 accredited organization
- CE: Conform to CE testing services for construction of chillers and provide CE listed mark[Option]
- ASME Boiler and Pressure Vessel Code, Section VIII, Division 1[Option]
- OSHA - Occupational Safety and Health Act
- Conform to Intertek Testing Services for construction of chillers and provide ETL/cETL Listed Mark[Option]
- The packaged chiller shall be pressure and leak tested.
- Manufacturer shall warrant all equipment and material of its supply against defects in workmanship and material for a period of eighteen(18) months from date of shipment or twelve(12) months from initial start-up, whichever comes first.

1.4. Delivery and Handling

Unit shall be delivered to jobsite fully assembled, charged with oil by manufacturer or manufacturer's authorized agent. Refrigerant is charged at job site by manufacturer's appointed local agent.
Unit shall be handled, transported and stored in accordance with manufacturer's instructions.

2. Products

2.1. General

The equipment shown on the drawings is based on the model RCAW series air cooled water chiller as manufactured by the LG Electronics.

2.2. Equipment Description

Supply and install and commission as shown on the drawings and schedules completely factory assembled, charged and operationally tested air cooled screw compressor chiller(s) as specified herein. Chiller shall include one or more independent refrigeration circuits, semi hermetic twin screw compressors(s), shell and tube water cooler, air cooled condenser, refrigerant R-134a, lubrication system and oil, interconnecting piping and wiring and lockable control center housing safety, operating and capacity controls necessary for the safe automatic operation of the water chiller.

2.3. Operating Characteristics

- Unit shall be capable of starting-up and running in outdoor ambient temperatures from 5 to 54°C.
- Unit shall be capable of starting up with fluid entering temperature to the cooler maximum 35°C.

2.4. Unit Construction

Unit base frame shall be constructed of 100 to 200 mm steel channel sections welded and bolted to form rigid load bearing framework to support all major unit components and safe lifting platform. Frame shall be shot blasted after welding and finished with corrosion resistant primer and air drying epoxy based enamel.
Condenser coil frameworks, cabinet and control center cabinet shall be of heavy gauge galvanized sheet steel with oven baked powder coating capable of withstanding salt spray test.

2.5. Compressor

Compressor shall comprise semi-hermetic rotary twin screw directly driven by suction gas cooled semi-hermetic motor at rated RPM. Motor shall have inherent overload protection buried in windings and external current overloads.
Capacity control can be modulated by slide valve, which is factory set to provide 3 or 4 capacity steps(per compressor).
Compressor housing is precisely machined cast iron incorporating and oil separator, lubricating oil level switch, oil heater are installed.

2.6. Evaporator

Evaporator shall be of the falling film shell and tube type with removable heads and mechanically cleanable tubes of seamless copper with internally and externally enhanced surface. Distributer located on the top side of inside shell, which makes uniform flow of refrigerant. Through distributer refrigerant flows downward by gravity as a uniform and continuous film. Tubes shall be mechanically expanded into multiple grooves in tube sheets. Evaporator will incorporate one, two independent refrigerant circuits with a common chilled liquid multi-pass circuit arrangement.
[Standard] Evaporators will be factory insulated with NBR(Nitrile-Butadiene Rubber) of 19 mm black colored with all joints vapor sealed and water drain and vent taps in water box heads.

2.7. Air-cooled Condenser(s)

Coil structure is to be of internally enhanced seamless copper tubes mechanically bonded to louvered aluminum alloy fins.
Because high-efficiency wide louver fin is applied, heat transfer efficiency is greatly improved compared to the conventional one.
Gold Fin(Corrosion-resistant fin) is applied as a standard to improve corrosion protection.
[Option] Black Fin can be applied to improve corrosion protection.
[Option] Blygold coating can be applied tp improve corrosion protection.
Inner hydraulic pressure test of refrigerant side is done at 1.3 times (1.1 times for pneumatic test) of design pressure, which should not make any leakage or deformation. Condenser channel which has been passed the inner pressure test is charged with nitrogen.
To increase product life cycle, high corrosion resistant Al-alloy is adopted and tested for 5,000 hours(Sea Water Acetic Acid Test) to ensure the reliability
- pH 2.8 ~ 3.0 sea water acetic acid spray test
- 4.5 MPa leakage test

Propeller type fan is applied, which should have proper airflow. Also it should have proper strength for rotational speed and be operated stably through balance test.

2.8. Expansion Devices

Expansion devices should be installed between condenser and evaporator to enable refrigerant to evaporate from evaporator by decreasing refrigerant pressure. EXV(Electric Expansion Valve) is applied to control refrigerant flow by electric signal.

2.9. Oil Separator

Oil which is supplied to compressor shall be circulated by differential pressure of high and low pressure side without extra oil pump.
Oil separator should be installed between compressor discharge and condenser inlet for better heat transfer and stable operation.

2.10. Ejector for Oil Return

To reclaim oil from evaporator to compressor, ejector shall be installed for oil return.

2.11. Refrigeration System Components

Shall include replaceable filter drier, electronic expansion valve, suction/discharge/liquid line service valves and charge of refrigerant R-134a and lubricating oil. Each refrigeration circuit in the evaporator shall have relief valves with changeover cock
[Option] Dual relief valve with three way valve type as an option
[Option] Dual relief valve with direct type as an option.

2.12. Chilled Water Circuit

a. Chilled water circuit shall be rated for 150 psig(1,034 kPa)
[Option] 300 psig can be applied as an option
b. Electronic flow switch shall be factory installed and wired.(Standard)
[Option] Differential pressure switch can be applied as an option

2.13. Control Center

1) Structure
The control panel shall consist of Micom module(HMI/MASTER/SLAVE), a power supply for supplying stable power, breakers for controlling and safety, an electronic contact, and relays for controlling.

2) HMI/MASTER/SLAVE module
The module shall use the high-performance microprocessor to perform the control function optimized for the equipment. The high-precision analog/digital(A/D) converter shall monitor the values of the temperature sensors to display the values on the screen, and apply them to the controlling. The RS-485 communication port is embedded by default to support the remote monitoring and controlling by customers. Customers can simply select RS-485 for their building automation.

3) Indication and operation key module
The indication and operation key module consists of a display indicating operating data, set points required for the equipment operation, and data of abnormality in characters; a key input section for entering data or selecting menus; and a LED lamp indicator section showing the equipment operation shutdown conditions for operation of the equipment, operation of compressor, flow of chilled/cooling water, alarms status. In particular, the module allows operators to directly access the frequently used keys, and select other operations from the menu for improving convenience of operators. If the operation keys are inoperable, operators shall be able to use character display and menu selection keys to operate the equipment from the menu. The display shall show the following operation conditions in Korean, Chinese or English: the temperature of the inlet and the outlet of the chilled water and the cooling water, the compressor discharge temperature, the condenser pressure, the evaporator pressure and operating current. The I/O is composed of a digital input section for monitoring the operating conditions of the switches and a digital output section for controlling the operation of the equipment. A photo coupler is mounted on the I/O section for preventing noises, and receives/transmits all the data through communication with the main module to prevent malfunctions caused by electronic waves generated from the data transmission through the cables.

2.14. Features of Controller

1) Convenient operation data management
A wide 7 inch color graphic LCD(800 x 480) is used to display various pieces of operation information on a single screen, and stores the analog data(e.g., temperature data) up to over 200 cases per channel in the intervals defined by customers for keeping daily operation logs. The real-time display also shows the temperature of the chilled water outlet and the operating current of the compressor motor in graphics for easily identifying the trends of the changes to the temperature and operating current.

2) Self-diagnosis and failure history storing
The Micom monitors the conditions of the equipment during shutdown and operation, and notifies operators of the conditions of the equipment by displaying characters, alarm lamps and buzzers, and stores the time and the log of failures for maintenance. In particular, the Micom classifies failures into minor failures and major failures. If a minor failure takes place, the micom displays the details of the failure in characters and continues the operation of the equipment to minimize the shutdown of the equipment.

3) Optimized artificial intelligence control algorithm for chiller control
- Digital PID control
  When the manual mode is changed to the auto mode, the digital PID control integrated with the flexible startup shall recognize the optimal PID control points automatically to minimize the unnecessary shutdown of the equipment and reflect them to the control equation to control the temperature stably and precisely.
- Preventive operation
  The temperature and the pressure of the components are measured in real-time during operation and the primary and secondary preventive operations are performed in accordance with the measurement results to prevent the shutdown of the chiller caused by the overload, the high pressure of the condenser, the low pressure of the evaporation.
- Scheduled operation
  The scheduled operation function is provided for the convenient operation of the equipment, which allows the selection of the operation/shutdown and the setting of the control temperature per day of the week, per holiday or 11 times a day.
- Service functions
  The following service functions are supported for easy maintenance:
  ※ Displaying the count of startups and the total operation hours of the motors mounted on the body
  ※ Printing the operation and the trouble data(Optional)

4) Powerful customer support functions
- Help
  The help function memorizes the details of failures and shows the descriptions for corrective actions when the operator selects a particular failure from the menu, in order to improve the convenience for operators.
- Communication for building automation and remote monitoring and control The communication function is embedded by default (RS485/MODBUS RTU) for connecting the equipment with the monitoring system of customers. The zero-voltage I/O function is provided for remote operation and shutdown by using an simple electric wiring, or for monitoring the operating conditions of the equipment. In addition, BACnet or MODBUS/TCP is optionally mounted for improving the operation of the equipment for the convenience of customers.

5) Indicator lamp
All indications are displayed in characters on the LCD which turns on in the following 8 cases.
- Chiller RUN/STOP
- Compressor operates
- Chilled water flow normal
- Capacity control Valve manual
- LEAD/LAG manual

2.15. Starter

1) The starter is equipped with the embedded EOCR(Electric Over Current Relay) protective relay for over-current. The starter is mounted with the following components: magnetic contactors, a power indicator lamp, a breaker for protecting circuits.

2) Protective relay
EOCR(Electric Over Current Relay) protective relay should be installed.
※ The Ground fault circuit interrupter is optional and will be installed as required by customers.

3) Operation and instrument panel
Indicator lamps, breaker for protecting circuits

2.16. Safety Devices

1) Chilled water low temperature[Temperature sensor at chilled water outlet]_Protect the evaporator from freeze
2) Evaporator low pressure[Evaporator pressure sensor]_Protect evaporator from abnormal low pressure
3) Condenser high pressure[Condenser pressure sensor]_Protect chiller from abnormal high pressure condenser
4) Oil level low[Interlock with oil level switch]_Protect compressor from abnormal oil level status.
5) Chilled water pump abnormal[Interlock with chilled water pump]_Protect chiller from chilled water pump
6) Chilled water flow rate abnormal[Chilled water flow switch]_Protect chiller from abnormal chilled water flow rate
7) Motor reverse phase/phase loss/over-current_Protect chiller from motor reverse phase/phase loss/over-current(optional)
8) Safety valve control[Evaporator/condenser]_Discharge chiller protective refrigerant when the pressure is abnormally high
9) Current limiting function[Control panel]_Operation current limited operation, compressor protection/user convenience

2.17. Special Features

2.17.1. Modbus Translator Control [Standard]

Unit shall be supplied with field-installed interface between the chiller and MODBUS local area network.
[Option] Bacnet can be applied as an option.

2.18. Accessary and Option

2.18.1. Sound Attenuator [Option]

Sound attenuator can be provided as an option to reduce compressor and discharge pipe line sound level. The sound absorbing material is attached to the rear part of compressor and some parts of compressor discharge pipeline. Some galvanized sheets cover sound absorbing materials to protect sound absorbing material from damaging. The sound insulation foam provide sound damping effect. The sound attenuator factory installed is optional.

2.18.2. Pre Coating for Condenser [Option]

The condenser coil shall be made of aluminum fins and copper tubes with pre-treated polyurethane coating.

2.18.3. Protection Grills (Lower / Upper / Lower + Upper / Lower Panel + Upper Grill) [Option]

Protect the exposed condenser from particles or debris and also prevent unpermitted access to internal components.

2.18.4. Double Thickness Insulation [Option]

As a standard, the evaporator shell is insulated with NBR(Nitrile-Butadiene Rubber) of 3/4"(19 mm) thickness and black colored. As an option, it can be with NBR(Nitrile-Butadiene Rubber) of 1-1/2"(38 mm) and black colored.

2.18.5. Flow Switch Accessory [Standard]

Water flow detection switch is shall be installed to detect water flow. The water flow switch comes with SPDT(Single Pole Double Throw) output function, 1.6 MPa(232 psi) working pressure, -10°C to 120°C(-14°F to 248°F) with 1"NPT connection for upright mounting in horizontal pipe(This flow switch or equivalent must be furnished with each unit), which is field installed.

2.18.6. Vibration Isolation [Option]

For installation on building roofs or in sensitive noise areas(Hospitals, studios and some residential areas) pre-selected spring type isolators with 1" or 2" deflection are available as an option - related parts can be shipped for field installation.

2.18.7. Power Factor Correction [Option]

Provide equipment with power factor correction capacitors as required to maintain the power factor of 95% at all load conditions(Optional).

2.18.8. MCCB(Molded Case Circuit Breaker) Power Disconnect Switch [Option]

A MCCB is available as a factory-installed option for all units with single /multi point power connection units. For this option, power supply is disconnected during service & repair work.

2.18.9. Suction Service Isolation Valve [Standard]

Suction isolation valves are installed in unit for each refrigerant circuit as a standard.

2.18.10. Single Power Point Connection [Option]

For models installed with 2, and 3 compressors to minimize job site installation cost and time, single point power connection can be provided as an option. If optional single point power connection is required, terminal block connections will be supplied at the point of incoming single point connection.

Guide Specification

Air-Cooled Screw Chiller
RCAW(VA) Series

Contents

1. General

1.1. Scope

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1.2. System Descriptions

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- ANSI/ASHRAE 34 - number designation and safety classification of refrigerants.
- ANSI/ASHRAE standard 15 safety code
- Manufactured in an EN ISO 9001 accredited organization
- OSHA - Occupational Safety and Health Act
- CE: Conform to CE testing services for construction of chillers and provide CE listed mark[Option]
- The packaged chiller shall be pressure and leak tested.
- Manufacturer shall warrant all equipment and material of its supply against defects in workmanship and material for a period of eighteen (18) months from date of shipment or twelve(12) months from initial start-up, whichever comes first.

1.4. Delivery and Handling

Unit shall be delivered to jobsite fully assembled, charged with oil by manufacturer or manufacturer's authorized agent. Refrigerant is charged at job site by manufacturer's appointed local agent.
Unit shall be handled, transported and stored in accordance with manufacturer's instructions.

2. Products

2.1. General

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- Unit shall be capable of starting-up and running in outdoor ambient temperatures from 5 to 54°C.
- Unit shall be capable of starting up with fluid entering temperature to the cooler maximum 35°C.

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Unit base frame shall be constructed of 100 to 200 mm steel channel sections welded and bolted to form rigid load bearing framework to support all major unit components and safe lifting platform. Frame shall be shot blasted after welding and finished with corrosion resistant primer and air drying epoxy based enamel.
Condenser coil frameworks, cabinet and control center cabinet shall be of heavy gauge galvanized sheet steel with oven baked powder coating capable of withstanding salt spray test.

2.5. Compressor

Compressor shall comprise semi-hermetic rotary twin screw directly driven by suction gas cooled semi-hermetic motor at rated RPM. Motor shall have inherent overload protection buried in windings and external current overloads.
Capacity is controlled by variable speed frequency(20 ~ 60 Hz).
Compressor housing is precisely machined cast iron incorporating and oil separator, lubricating oil level switch, oil heater are installed.

2.6. Evaporator

Evaporator shall be of the falling film shell and tube type with removable heads and mechanically cleanable tubes of seamless copper with internally and externally enhanced surface. Distributer located on the top side of inside shell, which makes uniform flow of refrigerant. Through distributer refrigerant flows downward by gravity as a uniform and continuous film. Tubes shall be mechanically expanded into multiple grooves in tube sheets. Evaporator will incorporate one, two independent refrigerant circuits with a common chilled liquid multi-pass circuit arrangement.
[Standard] Evaporators will be factory insulated with NBR(Nitrile-Butadiene Rubber) of 19 mm black colored with all joints vapor sealed and water drain and vent taps in water box heads.

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Coil structure is to be of internally enhanced seamless copper tubes mechanically bonded to louvered aluminum alloy fins.
Because high-efficiency wide louver fin is applied, heat transfer efficiency is greatly improved compared to the conventional one.
Black Fin(Corrosion-resistant fin) is applied as a standard to improve corrosion protection.
[Option] Blygold coating can be applied tp improve corrosion protection.
Inner hydraulic pressure test of refrigerant side is done at 1.3 times(1.1 times for pneumatic test) of design pressure, which should not make any leakage or deformation. Condenser channel which has been passed the inner pressure test is charged with nitrogen.
To increase product life cycle, high corrosion resistant Al-alloy is adopted and tested for 10,000 hours(Sea Water Acetic Acid Test) to ensure the reliability
- pH 2.8 ~ 3.0 sea water acetic acid spray test
- 4.5 MPa leakage test

Propeller type fan is applied, which should have proper airflow. Also it should have proper strength for rotational speed and be operated stably through balance test.

2.8. Expansion Devices

Expansion devices should be installed between condenser and evaporator to enable refrigerant to evaporate from evaporator by decreasing refrigerant pressure. EXV(Electric Expansion Valve) is applied to control refrigerant flow by electric signal.

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Oil which is supplied to compressor shall be circulated by differential pressure of high and low pressure side without extra oil pump. Oil separator should be installed between compressor discharge and condenser inlet for better heat transfer and stable operation.

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To reclaim oil from evaporator to compressor, ejector shall be installed for oil return.

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Shall include replaceable filter drier, electronic expansion valve, suction /discharge/liquid line service valves and charge of refrigerant R-134a and lubricating oil. Each refrigeration circuit in the evaporator shall have relief valves with changeover cock.
[Option] Dual relief valve with three way valve type as an option
[Option] Dual relief valve with direct type as an option

2.12. Chilled Water Circuit

a. Chilled water circuit shall be rated for 150 psig(1,034 kPa).
[Option] 300 psig can be applied as an option.
b. Electronic flow switch shall be factory installed and wired.(Standard)
[Option] Differential pressure switch can be applied as an option.

2.13. Control Center

1) Structure
The control panel shall consist of Micom module(HMI/MASTER/SLAVE), a power supply for supplying stable power, breakers for controlling and safety, an electronic contact, and relays for controlling.

2) HMI/MASTER/SLAVE module
The module shall use the high-performance microprocessor to perform the control function optimized for the equipment. The high-precision analog/digital(A/D) converter shall monitor the values of the temperature sensors to display the values on the screen, and apply them to the controlling. The RS-485 communication port is embedded by default to support the remote monitoring and controlling by customers. Customers can simply select RS-485 for their building automation.

3) Indication and operation key module
The indication and operation key module consists of a display indicating operating data, set points required for the equipment operation, and data of abnormality in characters; a key input section for entering data or selecting menus; and a LED lamp indicator section showing the equipment operation shutdown conditions for operation of the equipment, operation of compressor, flow of chilled/cooling water, alarms status. In particular, the module allows operators to directly access the frequently used keys, and select other operations from the menu for improving convenience of operators. If the operation keys are inoperable, operators shall be able to use character display and menu selection keys to operate the equipment from the menu. The display shall show the following operation conditions in Korean, Chinese or English: the temperature of the inlet and the outlet of the chilled water and the cooling water, the compressor discharge temperature, the condenser pressure, the evaporator pressure and operating current. The I/O is composed of a digital input section for monitoring the operating conditions of the switches and a digital output section for controlling the operation of the equipment. A photo coupler is mounted on the I/O section for preventing noises, and receives/transmits all the data through communication with the main module to prevent malfunctions caused by electronic waves generated from the data transmission through the cables.

2.14. Features of Controller

1) Convenient operation data management
A wide 15 inch color graphic LCD(1,024 x 768) is used to display various pieces of operation information on a single screen, and stores the analog data(e.g., temperature data) up to over 200 cases per channel in the intervals defined by customers for keeping daily operation logs. The real-time display also shows the temperature of the chilled water outlet and the operating current of the compressor motor in graphics for easily identifying the trends of the changes to the temperature and operating current.

2) Self-diagnosis and failure history storing
The Micom monitors the conditions of the equipment during shutdown and operation, and notifies operators of the conditions of the equipment by displaying characters, alarm lamps and buzzers, and stores the time and the log of failures for maintenance. In particular, the Micom classifies failures into minor failures and major failures. If a minor failure takes place, the micom displays the details of the failure in characters and continues the operation of the equipment to minimize the shutdown of the equipment.

3) Optimized artificial intelligence control algorithm for chiller control
- Digital PID control
  When the manual mode is changed to the auto mode, the digital PID control integrated with the flexible startup shall recognize the optimal PID control points automatically to minimize the unnecessary shutdown of the equipment and reflect them to the control equation to control the temperature stably and precisely.
- Preventive operation
  The temperature and the pressure of the components are measured in real-time during operation and the primary and secondary preventive operations are performed in accordance with the measurement results to prevent the shutdown of the chiller caused by the overload, the high pressure of the condenser, the low pressure of the evaporation.
- Scheduled operation
  The scheduled operation function is provided for the convenient operation of the equipment, which allows the selection of the operation/shutdown and the setting of the control temperature per day of the week, per holiday or 11 times a day.
- Service functions
  The following service functions are supported for easy maintenance:
  ※ Displaying the count of startups and the total operation hours of the motors mounted on the body
  ※ Printing the operation and the trouble data(Optional)

4) Powerful customer support functions
- Help
  The help function memorizes the details of failures and shows the descriptions for corrective actions when the operator selects a particular failure from the menu, in order to improve the convenience for operators.
- Communication for building automation and remote monitoring and control The communication function is embedded by default (RS485/MODBUS RTU) for connecting the equipment with the monitoring system of customers. The zero-voltage I/O function is provided for remote operation and shutdown by using an simple electric wiring, or for monitoring the operating conditions of the equipment. In addition, BACnet or MODBUS/TCP is optionally mounted for improving the operation of the equipment for the convenience of customers.

5) Indicator lamp
All indications are displayed in characters on the LCD which turns on in the following 8 cases.
- Chiller RUN/STOP
- Compressor operates
- Chilled water flow normal
- Capacity control Valve manual
- LEAD/LAG manual

2.15. Starter

1) The starter is equipped with the embedded EOCR(Electric Over Current Relay) protective relay for over-current. The starter is mounted with the following components: magnetic contactors, a power indicator lamp, a breaker for protecting circuits.

2) Protective relay
EOCR(Electric Over Current Relay) protective relay should be installed.
※ The Ground fault circuit interrupter is optional and will be installed as required by customers.

3) Operation and instrument panel
Indicator lamps, breaker for protecting circuits

2.16. Safety Devices

1) Chilled water low temperature[Temperature sensor at chilled water outlet]_Protect the evaporator from freeze
2) Evaporator low pressure[Evaporator pressure sensor]_Protect evaporator from abnormal low pressure
3) Condenser high pressure[Condenser pressure sensor]_Protect chiller from abnormal high pressure condenser
4) Oil level low[Interlock with oil level switch]_Protect compressor from abnormal oil level status
5) Chilled water pump abnormal[Interlock with chilled water pump]_Protect chiller from chilled water pump
6) Chilled water flow rate abnormal[Chilled water flow switch]_Protect chiller from abnormal chilled water flow rate
7) Motor reverse phase/phase loss/over-current_Protect chiller from motor reverse phase/phase loss/over-current(optional)
8) Safety valve control[Evaporator/condenser]_Discharge chiller protective refrigerant when the pressure is abnormally high
9) Current limiting function[Control panel]_Operation current limited operation, compressor protection/user convenience

2.17. Special Features

2.17.1. Modbus Translator Control[Standard]

Unit shall be supplied with field-installed interface between the chiller and MODBUS local area network.
[Option] Bacnet can be applied as an option.

2.18. Accessary and Option

2.18.1. Sound Attenuator[Option]

Sound attenuator can be provided as an option to reduce compressor and discharge pipe line sound level. The sound absorbing material is attached to the rear part of compressor and some parts of compressor discharge pipeline. Some galvanized sheets cover sound absorbing materials to protect sound absorbing material from damaging. The sound insulation foam provide sound damping effect. The sound attenuator factory installed is optional.

2.18.2. Pre Coating for Condenser[Option]

The condenser coil shall be made of aluminum fins and copper tubes with pre-treated polyurethane coating.

2.18.3. Protection Grills (Lower / Upper / Lower + Upper / Lower Panel + Upper Grill) [Option]

Protect the exposed condenser from particles or debris and also prevent unpermitted access to internal components.

2.18.4. Double Thickness Insulation[Option]

As a standard, the evaporator shell is insulated with NBR(Nitrile-Butadiene Rubber) of 3/4"(19 mm) thickness and black colored. As an option, it can be with NBR(Nitrile-Butadiene Rubber) of 1-1/2"(38 mm) and black colored.

2.18.5. Flow Switch Accessory[Standard]

Water flow detection switch is shall be installed to detect water flow. The water flow switch comes with SPDT(Single Pole Double Throw) output function, 1.6 MPa(232 psi) working pressure, -10°C to 120°C(-14°F to 248°F) with 1"NPT connection for upright mounting in horizontal pipe(this flow switch or equivalent must be furnished with each unit), which is field installed.

2.18.6. Vibration Isolation[Option]

For installation on building roofs or in sensitive noise areas(Hospitals, studios and some residential areas) pre-selected spring type isolators with 1" or 2" deflection are available as an option – related parts can be shipped for field installation.

2.18.7. MCCB(Molded Case Circuit Breaker) Power Disconnect Switch [Option]

A MCCB is available as a factory-installed option for all units with single /multi point power connection units. For this option, power supply is disconnected during service & repair work.

2.18.8. Suction Service Isolation Valve[Standard]

Suction isolation valves are installed in unit for each refrigerant circuit as a standard.

2.18.9. Single Power Point Connection[Option]

For models installed with 2 and 3 compressors, to minimize job site installation cost and time, single point power connection can be provided as an option. If optional single point power connection is required, terminal block connections will be supplied at the point of incoming single point connection.

Guide Specification

Air Cooled Screw Chiller
MCAW Series

Contents

1. Range of Application

This specification applies to all the model line-up of Air-cooled SCREW MCAW(C) producing and selling at LG Electronics.

2. Equipment Features

1) To improve the performance of heat exchange, a falling film device is installed inside falling film type evaporator, and the structure of being able to drip the separated liquid refrigerant uniformly on tube bundle.
2) Chiller is applied the electronic expansion valve to electrically control the flow of refrigerant.
3) Cyclone type oil separator with structure that separates oil and refrigerant using vortex and gravity shall be installed.
4) To keep oil concentration inside evaporator at the below standard, oil reclaim system shall be applied.
5) Limit control is implemented to prevent unit stop due to abnormal condition. A control algorithm should be applied to minimize manual reset and restart.
6) This items shall be applied
   - Evaporator pressure transmitter
   - Condenser pressure transmitter
   - High pressure switch
   - Chilled water inlet/outlet temperature sensor
   - Compressor discharge temperature sensor
   - Compressor suction temperature sensor
   - Ambient temperature sensor
7) It is designed to be able to check and set the data with 7 inches touch screen controller.
8) An oil level switch should be applied to prevent damage to the compressor in case of insufficient oil.
9) The product shall satisfy the performance requirements of AHRI(Air Conditioning, Heating And Refrigeration Institute) Latest Standard 550 - 590/551 - 591, the international authorized certified institute, and applies the product getting the certification.

3. Eqipment Specifications

3.1. System Composition

1) The chiller uses the Semi-hermetic, rotary twin screw type compressor, to compressing the refrigerant for cooling and chilled water outlet temperature is PID controlled by microprocessor controller.
2) Steel plate and pipe are performed the surface treat-ment to prevent corrosion.
3) Before shipping and start-up commissioning, the nitrogen gas shall be charged with a pressure of 0.3 ~ 0.5 kg/cm²G to check whether the product is leaked and prevent the air inflow.
4) Air-cooled screw chiller is all-in-one and produced for convenient installation, operation and maintenance ma-nagement and compactly to minimize the area of in-stallation and space.
5) The customer supplies each power wire for each com-pressor, depending on the compressor quantity.
6) The open wiring method is applied for wiring between the chiller main body and the control panel.

3.2. Performance and Quality

1) The product performance should be evaluated com-plying with the standard of AHRI(Air Conditioning, Heating And Refrigeration Institute) Standard 550-590/551-591, the international authorized certified institute.
2) The refrigerant, R-134a, environmental refrigerant with Ozone Depleting Potential(ODP) of zero, shall be applied.

3.3. Equipment Specification

3.3.1. Equipment Composition

1) Screw compressor
2) Evaporator
3) Condenser
4) Expansion devices
5) Oil separator
6) Oil reclaim system
7) Ref. piping
8) Safety devices
9) Control panel
10) Starter panel : The starter panel is supplied by the manufacturer with the chiller. The starter panel is attached and installed to the chiller unit.

3.3.2. Screw Compressor

1) The twin rotor/semi-hermetic type compressor and refrigerant-cooled motor shall be used.
2) A differential pressure type oil lubrication and embedded type filter shall be applied.
3) The compressor embedded type oil separator shall be used and the check valve to prevent the refrigerant from flowing backward on the discharge side shall be installed.
4) By using the slide valve for control the capacity, chiller is used 3 ~ 4 step type controllable for 25(35)% - 100%.
5) Attaches the Discharge/Suction Shut Off V/V.
6) Install the oil differential pressure switch(For filter)
7) Install the oil level switch(For oil)
8) The power specifications of the motor for compressor is three-phase, 380 V, 50 Hz.
9) The starter type of compressor motor is Y-D.

3.3.3. Evaporator

1) The heat exchanger is manufactured in Shell & Tube type.
2) To improve the performance of heat exchange, a falling film device is installed inside falling film type evaporator, and the structure of being able to drip the separated liquid refrigerant uniformly on tube bundle.
3) The high-efficiency heat-transfer tubes with seamless phosphorus deoxidized Copper shall be used, and the steel plate or steel pipe are used for Shell.
4) The tubes shall be combined with mechanical expansion on the tube sheet so that it can be replaced.
5) The flow detection switch is installed to prevent the chilled water from freezing on the chilled water side.
6) Install oil reclaim tube from evaporator to compressor, to keep oil concentration inside evaporator at the below standard.
7) The heat-transfer tubes shall be machined to improve heat transfer performance inside and outside the tube and parts in contact with tube sheets and tube support plates shall not be machined. The tube support plates for heat-transfer tubes shall be designed for stable support of heat-transfer tubes in accordance with GB standards.
8) On the top of evaporator, the safety valve should be in-stalled according to GB Code.
9) The design pressure of the evaporator water box is 10 kg/cm²(150 psig).
10) It should be a structure available to do air vent on top of the water box and drain at the bottom of the water box.

3.3.4. Condenser

1) The condenser heat-transfer tubes use the seamless phosphorus deoxidized copper tubes, and aluminum fin was attached to copper tube to increase the heat transfer area.(Cross fin & tube type)
2) For efficient heat exchange, aluminum fins must be in contact with the copper tube through mechanical expansion.
3) It should cleaning after complete production.
4) The pressure test on the refrigerant side of high-pressure should be implemented at 1.1 times of design pressure and there should be no abnormalities such as leakage, deformation, etc.
5) The condenser coil passed at the pressure test removes the moisture entirely inside by vacuum drying.
6) The stop valve for refrigerant pump down and the safety valve protecting chillers by discharging refrigerant in case of temperature rising extremely due to fire should be installed on pressure vessel.
7) The fan should use the propeller(Propeller type) and should be able to generate enough air volume needed to condense. Also, it shall be had enough strength to the number of rotations and shall be operated at low noise level through the balance test.
8) The fan motor should have F grade of insulation, waterproof grade IP55.
9) The fan and motor should be direct drive type.
10) The Gold Fin applies to improve the corrosion-proof performance of the heat exchange pin.

3.3.5. Expansion Device

1) Chiller is applied the electronic expansion valve to electrically control the flow of refrigerant.

3.3.6. Oil Separator

1) A vertical type of pressure vessel shall be manufactured.
2) The material of shell shall be steel pipe.
3) Cyclone type oil separator with structure that separates oil and refrigerant using vortex and gravity shall be installed.

3.3.7. Oil Reclaim System

1) To reclaim oil mixed with the refrigerant from the evaporator to compressor, it should be installed the ejector(Spray ejector) available of oil return without consuming the additional energy.

3.3.8. Refrigerant Pipe

1) The refrigerant pipes are installed for refrigerant flow between each composition to be smooth, using the carbon steel pipe for pressure pipe and seamless phosphorus deoxidized copper pipe of more than 99.9% purity.
2) Check valve should be installed in the compressor dis-charge so that discharged refrigerant flow cannot flow backward.
3) By installing the filter dryer at the pipe, It should be absorbed the moisture in the internal pipe and filtered the foreign substance.
4) From the expansion valve to the evaporator, pipe should be applied insulation to prevent the moisture of the pipe surface from condensing and the occurring of flash gas of refrigerant liquid at the same time.
5) After production and run a leak test, vacuuming should be done completely not to have any moisture inside.

3.3.9. Automatic Control Panel

1) Control device
   a. The composition of control panel
      The Protection grade of the control panel is IP54.
      The control panel consists of microprocessor controller(Main controller and display), power supply system to supply the stable power, breaker to perform the other control or secure the safety, magnetic contactor, and control relay, and a primary feature of each module is as below.
   b. Main controller
      It is implemented the control feature optimized to the mechanical device by applying the high-performance microprocessor, the high resolution A/D convertor(Analogue/Digital) shall be applied to display on screen or control by measuring each kind of temperature sensor value in real time.
      Also, it makes the customer's building automation ease response because the RS-485 communication port to support the customer's remote surveillance control is embedded in a standard.
      It consists of the digital input part to check each kind of operation state of the switch and the digital output part to control the operation of chiller.
      Also, the input/output port has a photocoupler blocking each kind of noise. Since all data is trans-mitted and received with the main module through communication, it secures high reliability by preventing the malfunction caused by electromagnetic wave to happen when transmitting and receiving the data of general cable.
   c. Display
      The machine run/stop state important for operation, abnormal state, operation data can be checked on the display, and input setting needed to equipment operating.
      Also, it made the operator's operation convenience by choosing and displaying the operation state(Temperature, run/stop and save of the peripheral device) into Korean, Chinese and English on the display part.
2) The feature of control device
   a. The convenient operating data management
      It makes much operation information checked on one screen simul-taneously by applying the 7 inches color graphic liquid crystal display. In addition, It also makes analog data(ex: temperature data) used when recording drive operation reports and managing the maintenance by saving 300 cases for each channel in the time interval set by the customer. Also, it makes the trend of temperature change easily identified by displaying the chilled water outlet temperature on a graph in real-time.
   b. The safety control algorism
      It implement the preventive operation without an abnormal stop in advance by detecting the high/low-pressure sensor, discharge temperature sensor, current sensor, which are the safety device of digital output. It is possible to continuous operate without chiller stop because the algorism that removing the inconvenience of manual reset work to restart by minimizing the number of abnormality occurring is implemented.

c. Self-diagnosis and save of abnormality history
Micom makes monitor the chiller state during chiller stop or running, making a notice to operator using a me-ssage or buzzer making an auto-saving of failure data and occurring time which can be utilized in repairing conveniently.
Especially, as there is help function on the on the abnormality history, it is possible to respond and make an action promptly because the content about cause of occurrence, inspection and how to react are displayed.
In addition, it is also possible to check the operation/abnormality history on the control device because the history is saved up to 300 in order.
d. Optimized AI type control algorism
Soft start
It makes the input current gradually control to pre-vent machinery shock caused by sudden increase in load when starting.
- Advanced digital PID control
When starting or changing the operating mode from manual to automation, by perceiving the optimized PID control point automatically and reflecting it in the control equation, compared with the conventional analog control, the digital PID control that combined with soft start makes unnecessary machinery stop minimize and makes more stable and precised temperature control.
* The digital transmitter for evaporator pressure/con-denser pressure monitoring.
* The Digital Transmitter for current display/monitoring.
* Installation of PT 100 Sensor for chilled water/cooling water temperature.
- Scheduled operating function(Reserved operation)
It makes the convenience on chiller operation by applying the schedule operation function available to choose the run/stop and control temperature setting for each day, particular holiday, or 11 times a day.
e. Strong customer support function
- Communication function for building automation and remote monitoring control.
It is equipped with the Modbus communication function available to conveniently connected with the customer's monitoring system. The zero voltage input/output shall be provided to run/stop in the remote or to monitor the run state of the machine using the simple electric wiring.
- Help function
If the breakdown occurs, it promote the operator's convenience by recording failure details, and showing clarification of how to respond if the operator selects the type of failure from the menu.
- Available for support of three languages
It is supported that the function to select/use Korean, Chinese, and English in the operation menu.
f. To operate at partial load condition, the step com-pressor capacity control method is applied.

3.3.10. Starter Panel

1) The protection grade of starter panel is IP54.

3.3.11. Safety Devices

1) The complete compressor protective function from ex-ternal electric shock shall be provided by embedding the dual protective device about reverse phase/phase loss/overcurrent.

2) Safety device for chilled water
a. Chilled water pump Interlock point of contact
b. Chilled water differential pressure switch
c. Chilled water temperature(low) : below 2.9°C of chilled water outlet temperature
d. The run/stop signal and interlock point of contact of the chilled water pump is the important safety device for protecting chilled water freezing and safety accidents, so chiller and chilled water pump should be linked in operation by wiring connection.
e. For the details, it should be discussed with LG Electronics in advance.

3) The chiller protective device
a. [The low-pressure sensor] for protection of the chiller in case of abnormal low pressure of evaporator.
b. [The high-pressure sensor] for protection of the chiller in case of abnormal high pressure of condenser.
c. [The oil differential pressure switch] for protection of the com-pressor in case of abnormal oil differential pressure.
d. [The oil level switch] for protection of the compressor in case of abnormal oil level.
e. [The chilled water differential pressure switch] for protection of the chiller in case of abnormal chilled water flow.
f. [The temperature sensor of chilled water inlet/outlet] to protect the chiller in case of abnormal temperature of chilled water inlet/outlet.
g. [The temperature sensor of compressor discharge] to protect the overheat of the chiller in case of abnormal high discharge temperature.
h. [The protective relay] to protect the overcurrent.

4) Motor/compressor protective device
a. Reverse phase/phase loss protective relay
b. Temperature switch for monitoring of motor winding temperature
c. Temperature sensor for monitoring of compressor discharge tem-perature
d. The overcurrent protective relay of fan motor

5) The safety valve[Evaporator]_In case of abnormal high pressure, refrigerant is discharged to protect the chiller.

3.3.12. Isolator

1) The vibration proof pad for vibration isolator device is supplied.

4. Scope of Construction

Item	Supplied by	Note
Painting	LG Electronics	Main body: Dawn Gray Starter panel, Control panel: Warm gray
Cold insulation	LG Electronics	Cold-insulate the external side of evaporator, chilled water box, and compressor motor Material: NBR 19 mm
External piping	Consumer	Mean the external pipe construction such as chilled water and drain
Building and basis	Consumer	Prepare the basis construction for chiller installation before its installation
Interlock wiring work for chilled water, cooling water pump	Consumer	Wiring between control panel and pump control panel
Nitrogen gas filling up	Consumer	The gas filling up for local keep (If chiller won't be operated for a long time after start-up commissioning)

5. Supply Range

Item	Whether if supply or not	Note
Chiller body	LG Electronics	Refer to the body components
Refrigerant(R-134a)	LG Electronics	Separate delivery
The chiller instruction manual	LG Electronics	Installation and operation manual
Starter panel	LG Electronics	Starter system of compressor motor
Vibration proof pad	LG Electronics	The pad for vibrational absorption
Packing	LG Electronics	Shrink film

6. The Warranty and Service

6.1. Standard warranty period is 12 months from date of commissioning or 18 Months from the date of shipment(STD) from factory whichever comes first. It's valid only if start up & commissioning work is carried out by certified LG Electronics service. Also, warranty shall not apply, if the Products have been subjected to misuse, abuse, negligence, improper installation, improper maintenance, improper transportation, accident, alteration or design change by anyone other than LGE.

6.2. Failure, caused by a defect in the parts, material, or operation during the warranty period, will be inspected by LG ELECTRONICS and fixed free of charge if it is agreed that it is defective.

6.3. For the following, LG ELECTRONICS don't fix free of charge.
1) If a failure occurs after the product is repaired at the shop that is not designated by LG ELECTRONICS.
2) If the failure is caused by user's mistakes in using and handling the equipment.
3) The monopoly or handover to other places during the warranty period
4) If a failure is caused by a fire or a natural disaster.

7. General Details

7.1. Before producing the chillers, getting the approval is required by submitting all the details about production to the customer and the production should be implemented after getting a permit in the negotiation with the customer, as for the details not included marked in these specifications.

7.2. Before the disposal of the product, if you monopoly or hand it over to others, you should inform LG electronics.

8. Caution Details

8.1. In case of drain work is progressed after completing the hydraulic pressure test or the circulation test of chilled/cooling water before the start-up and commissioning of the chiller, the chiller should be kept with opening each drain valve of pipe because the freeze and burst can occur by remaining water under the environmental condition of below 0°C outdoor temperature.(Until filling up the make-up water)

Guide Specification

Air-cooled Screw Chiller
GCAW(GG) Series

Contents

1. General

1.1. Scope

Requirements of the General Conditions, Supplementary Conditions and Drawings apply to all work here in.

1.2. System Descriptions

Factory packaged air cooled water chillers incorporating low noise twin screw compressor(s) and low noise fans.

1.3. Quality Assurance

- ANSI/ASHRAE 34 - number designation and safety classification of refrigerants
- ANSI/ASHRAE standard 15 safety code
- Manufactured in an EN ISO 9001 accredited organization
- OSHA - Occupational Safety and Health Act
- [Option] CE(PED): Conform to CE testing services for construction of chillers and provide CE listed mark
  [Option] ETL(ASME): Conform to ETL testing services for construction of chillers.
- The packaged chiller shall be pressure and leak tested.
- Manufacturer shall warrant all equipment and material of its supply against defects in workmanship and material for a period of eighteen(18) months from date of shipment or twelve(12) months from initial start-up, whichever comes first.

1.4 Delivery and Handling

Unit shall be delivered to jobsite fully assembled, charged with oil by manufacturer or manufacturer's authorized agent. Refrigerant is charged at job site by manufacturer's appointed local agent.
Unit shall be handled, transported and stored in accordance with manufacturer's instructions.

2. Products

2.1. General

The equipment shown on the drawings is based on the model GCAW(GG) series air cooled water chiller as manufactured by the LG Electronics.

2.2. Equipment Description

Supply and install and commission as shown on the drawings and schedules completely factory assembled, charged and operationally tested air cooled screw compressor chiller(s) as specified herein. Chiller shall include one or more independent refrigeration circuits, semi hermetic twin screw compressors(s), shell and tube water cooler, air cooled condenser, refrigerant R-513A, lubrication system and oil, interconnecting piping and wiring and lockable control center housing safety, operating and capacity controls necessary for the safe automatic operation of the water chiller.

2.3. Operating Characteristics

- Unit shall be capable of starting-up and running in outdoor ambient temperatures from 5 to 54°C.
- Unit shall be capable of starting up with fluid entering temperature to the cooler maximum 35°C.

2.4. Unit Construction

Unit base frame shall be constructed of 100 to 200 mm steel channel sections welded and bolted to form rigid load bearing framework to support all major unit components and safe lifting platform. Frame shall be shot blasted after welding and finished with corrosion resistant primer and air drying epoxy based enamel.
Control center cabinet shall be of heavy gauge galvanized sheet steel with oven baked powder coating capable of withstanding salt spray test.
Micro Channel Heat Exchanger(MCHX) type condenser should be applied TCP(Tri-chromium Passivation) coating to enhance corrosion resistance.

2.5. Compressor

Compressor shall comprise semi-hermetic rotary twin screw directly driven by suction gas cooled semi-hermetic motor at rated RPM. Motor shall have inherent overload protection buried in windings and external current overloads.
Capacity is controlled by variable speed frequency.
Compressor housing is precisely machined cast iron incorporating and oil separator, lubricating oil level switch, oil heater are installed.

2.6. Evaporator

Evaporator shall be of the falling film shell and tube type with removable heads and mechanically cleanable tubes of seamless copper with internally and externally enhanced surface. Distributer located on the top side of inside shell, which makes uniform flow of refrigerant. Through distributer refrigerant flows downward by gravity as a uniform and continuous film. Tubes shall be mechanically expanded into multiple grooves in tube sheets. Evaporator will incorporate one, two independent refrigerant circuits with a common chilled liquid multi-pass circuit arrangement.
[Standard] Evaporators will be factory insulated with NBR(Nitrile-Butadiene Rubber) of 19mm black colored with all joints vapor sealed and water drain and vent taps in water box heads.

2.7. Air-cooled Condenser(s)

1) Micro channel heat exchanger Condenser(MCC) should be applied to provide higher heat transfer efficiency than existing heat exchangers.
2) Micro channel heat exchanger is composed of three main components: flat tube, fin, and header. Flat tubes have a number of small flow channels inside a flat tube made of aluminum, and the refrigerant flows along the channel to exchange heat. The fins are attached with thin aluminum fins between the tubes, and they come into contact with air to increase the heat transfer area. The header is responsible for distributing or returning the refrigerant to several microchannel tubes.
3) EC motor fans with variable speed control shall be used.
4) Fan motors should have insulation class F and IP54 waterproof grade.
5) The condenser coil shall be pre-treated with Tri-chromium Passivation coating for enhancing corrosion resistance.
   [Option] E-coating can be applied as an option for more enhanced corrosion resistance.

2.8. Expansion Devices

Expansion devices should be installed between condenser and evaporator to enable refrigerant to evaporate from evaporator by decreasing refrigerant pressure. EXV(Electric Expansion Valve) is applied to control refrigerant flow by electric signal.

2.9. Oil Separator

Oil which is supplied to compressor shall be circulated by differential pressure of high and low pressure side without extra oil pump. Oil separator should be installed between compressor discharge and condenser inlet for better heat transfer and stable operation.

2.10. Ejector for Oil Return

To reclaim oil from evaporator to compressor, ejector shall be installed for oil return.

2.11. Refrigeration System Components

Shall include replaceable filter drier, electronic expansion valve, suction /discharge/liquid line service valves and charge of refrigerant R-513A and lubricating oil. Each refrigeration circuit in the evaporator shall have relief valves with changeover cock.
[Option] Dual relief valve with three way valve type as an option
[Option] Dual relief valve with direct type as an option.

2.12. Chilled Water Circuit

a. Chilled water circuit shall be rated for 150 psig(1,034 kPa).
[Option] 300 psig can be applied as an option.
b. Electronic flow switch shall be factory installed and wired. (Standard)
[Option] Differential pressure switch can be applied as an option.

2.13. Control Center

1) Structure
The control panel shall consist of Micom module(HMI/MASTER/SLAVE), a power supply for supplying stable power, breakers for controlling and safety, an electronic contact, and relays for controlling.

2) HMI/MASTER/SLAVE module
The module shall use the high-performance microprocessor to perform the control function optimized for the equipment. The high-precision analog/digital(A/D) converter shall monitor the values of the temperature sensors to display the values on the screen, and apply them to the controlling. The RS-485 communication port is embedded by default to support the remote monitoring and controlling by customers. Customers can simply select RS-485 for their building automation.

3) Indication and operation key module
The indication and operation key module consists of a display indicating operating data, set points required for the equipment operation, and data of abnormality in characters; a key input section for entering data or selecting menus; and a LED lamp indicator section showing the equipment operation shutdown conditions for operation of the equipment, operation of compressor, flow of chilled/cooling water, alarms status. In particular, the module allows operators to directly access the frequently used keys, and select other operations from the menu for improving convenience of operators. If the operation keys are inoperable, operators shall be able to use character display and menu selection keys to operate the equipment from the menu. The display shall show the following operation conditions in Korean, Chinese or English: the temperature of the inlet and the outlet of the chilled water and the cooling water, the compressor discharge temperature, the condenser pressure, the evaporator pressure and operating current. The I/O is composed of a digital input section for monitoring the operating conditions of the switches and a digital output section for controlling the operation of the equipment. A photo coupler is mounted on the I/O section for preventing noises, and receives/transmits all the data through communication with the main module to prevent malfunctions caused by electronic waves generated from the data transmission through the cables.

2.14. Features of Controller

1) Convenient operation data management
A wide 15inch Color Graphic LCD(1,024 x 768) is used to display various pieces of operation information on a single screen, and stores the analog data(e.g., temperature data) up to over 200 cases per channel in the intervals defined by customers for keeping daily operation logs. The real-time display also shows the temperature of the chilled water outlet and the operating current of the compressor motor in graphics for easily identifying the trends of the changes to the temperature and operating current.

2) Self-diagnosis and failure history storing
The Micom monitors the conditions of the equipment during shutdown and operation, and notifies operators of the conditions of the equipment by displaying characters, alarm lamps and buzzers, and stores the time and the log of failures for maintenance. In particular, the Micom classifies failures into minor failures and major failures. If a minor failure takes place, the micom displays the details of the failure in characters and continues the operation of the equipment to minimize the shutdown of the equipment.

3) Optimized artificial intelligence control algorithm for chiller control
- Digital PID control
When the manual mode is changed to the auto mode, the digital PID control integrated with the flexible startup shall recognize the optimal PID control points automatically to minimize the unnecessary shutdown of the equipment and reflect them to the control equation to control the temperature stably and precisely.
- Preventive operation
The temperature and the pressure of the components are measured in real-time during operation and the primary and secondary preventive operations are performed in accordance with the measurement results to prevent the shutdown of the chiller caused by the overload, the high pressure of the condenser, the low pressure of the evaporation.
- Scheduled operation
The scheduled operation function is provided for the convenient operation of the equipment, which allows the selection of the operation/shutdown and the setting of the control temperature per day of the week, per holiday or 11 times a day
- Service functions
The following service functions are supported for easy maintenance:
※ Displaying the count of startups and the total operation hours of the motors mounted on the body.
※ Printing the operation and the trouble data.(Optional)

4) Powerful customer support functions
- Help
The help function memorizes the details of failures and shows the descriptions for corrective actions when the operator selects a particular failure from the menu, in order to improve the convenience for operators.
- Communication for building automation and remote monitoring and control The communication function is embedded by default (RS485/MODBUS RTU) for connecting the equipment with the monitoring system of customers. The zero-voltage I/O function is provided for remote operation and shutdown by using an simple electric wiring, or for monitoring the operating conditions of the equipment. In addition, BACnet or MODBUS/TCP is optionally mounted for improving the operation of the equipment for the convenience of customers.

5) Indicator lamp
All indications are displayed in characters on the LCD which turns on in the following 8 cases.
- Chiller RUN/STOP
- Compressor operates
- Chilled water flow normal
- Capacity control Valve manual
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2.15. Starter

1) The starter is equipped with the embedded EOCR(Electric Over Current Relay) protective relay for over-current. The starter is mounted with the following components: magnetic contactors, a power indicator lamp, a breaker for protecting circuits.

2) Protective relay
EOCR(Electric Over Current Relay) protective relay should be installed.
※ The ground fault circuit interrupter is optional and will be installed as required by customers.

3) Operation and instrument panel
Indicator lamps, breaker for protecting circuits

2.16. Safety Devices

1) Chilled water low temperature[Temperature sensor at chilled water outlet]_Protect the evaporator from freeze.

2) Evaporator low pressure[Evaporator pressure sensor]_Protect evaporator from abnormal low pressure

3) Condenser high pressure[Condenser pressure sensor]_Protect chiller from abnormal high pressure condenser

4) Oil level low[Interlock with oil level switch]_Protect compressor from abnormal oil level status.

5) Chilled water pump abnormal[Interlock with chilled water pump]_ Protect chiller from chilled water pump

6) Chilled water flow rate abnormal[Chilled water flow switch]_ Protect chiller from abnormal chilled water flow rate

7) Motor reverse phase/phase loss/over-current_Protect chiller from motor reverse phase/phase loss/over-current(Optional)

8) Safety valve control[Evaporator/condenser]_Discharge chiller protective refrigerant when the pressure is abnormally high

9) Current limiting function[Control panel]_Operation current limited operation, compressor protection/user convenience

2.17. Special Features

2.17.1. Modbus Translator Control[Standard]

Unit shall be supplied with field-installed interface between the chiller and MODBUS Local Area Network.
[Option] Bacnet can be applied as an option.

2.18. Accessary and Option

2.18.1. Sound Attenuator[Option]

Sound attenuator can be provided as an option to reduce compressor and discharge pipe line sound level. The sound absorbing material is attached to the rear part of compressor and some parts of compressor discharge pipeline. Some galvanized sheets cover sound absorbing materials to protect sound absorbing material from damaging. The sound insulation foam provide sound damping effect. The sound attenuator factory installed is optional.

2.18.2. E Coating for Condenser[Option]

E-coating can be applied as an option for more enhanced corrosion resistance.

2.18.3. Protection Grills (Lower/Upper/Lower + Upper/Lower Panel + Upper Grill)[Option]

Protect the exposed condenser from particles or debris and also prevent unpermitted access to internal components.

2.18.4. Double Thickness Insulation[Option]

As a standard, the evaporator shell is insulated with NBR(Nitrile-Butadiene Rubber) of 3/4"(19 mm) thickness and black colored. As an option, it can be with NBR(Nitrile-Butadiene Rubber) of 1-1/2"(38 mm) and black colored.

2.18.5. Flow Switch Accessory[Standard]

Water flow detection switch is shall be installed to detect water flow. The water flow switch comes with SPDT(Single Pole Double Throw) output function, 1.6 MPa(232 psi) working pressure, -10°C to 120°C (-14°F to 248°F) with 1"NPT connection for upright mounting in horizontal pipe (This flow switch or equivalent must be furnished with each unit), which is field installed.

2.18.6. Vibration Isolation[Option]

For installation on building roofs or in sensitive noise areas(Hospitals, studios and some residential areas) pre-selected spring type isolators with 1" or 2" deflection are available as an option – related parts can be shipped for field installation.

2.18.7. MCCB(Molded Case Circuit Breaker) Power Disconnect Switch [Option]

A MCCB is available as a factory-installed option for all units with single/multi point power connection units. For this option, power supply is disconnected during service & repair work.

2.18.8. Suction Service Isolation Calve[Standard]

Suction isolation valves are installed in unit for each refrigerant circuit as a standard.

2.18.9. Single Power Point Connection[Option]

For models installed with 2 and 3 compressors, to minimize job site installation cost and time, single point power connection can be provided as an option. If optional single point power connection is required, terminal block connections will be supplied at the point of incoming single point connection.

Guide Specification

Air-cooled All Inverter Screw
Free-cooling Chiller
GCDW Series

Contents

1. General

1.1. Scope

Requirements of the General Conditions, Supplementary Conditions and Drawings apply to all work here in.

1.2. System Descriptions

Factory packaged air cooled water chillers incorporating low noise twin screw compressor(s) and low noise fans.

1.3. Quality Assurance

- ANSI/ASHRAE 34 - number designation and safety classification of refrigerants.
- ANSI/ASHRAE standard 15 safety code
- Manufactured in an EN ISO 9001 accredited organization
- OSHA - Occupational Safety and Health Act
- [Option] CE(PED): Conform to CE testing services for construction of chillers and provide CE listed mark
  [Option] ETL(ASME): Conform to ETL testing services for construction of chillers.
- The packaged chiller shall be pressure and leak tested.
- Manufacturer shall warrant all equipment and material of its supply against defects in workmanship and material for a period of eighteen (18) months from date of shipment or twelve(12) months from initial start-up, whichever comes first.

1.4 Delivery and Handling

Unit shall be delivered to jobsite fully assembled, charged with oil by manufacturer or manufacturer's authorized agent. Refrigerant is charged at job site by manufacturer's appointed local agent. Unit shall be handled, transported and stored in accordance with manufacturer's instructions.

2. Products

2.1. General

The equipment shown on the drawings is based on the model GCDW series air cooled water chiller as manufactured by the LG Electronics.

2.2. Equipment Description

Supply and install and commission as shown on the drawings and schedules completely factory assembled, charged and operationally tested air cooled screw compressor chiller(s) as specified herein. Chiller shall include one or more independent refrigeration circuits, semi hermetic twin screw compressors(s), shell and tube water cooler, air-cooled condenser and free-cooling coil, brine circulation pump, plate heat exchanger, expansion tank, refrigerant R-513A, lubrication system and oil, interconnecting piping and wiring and lockable control center housing safety, operating and capacity controls necessary for the safe automatic operation of the water chiller.

2.3. Operating Characteristics

- Unit shall be capable of starting-up and running in outdoor ambient temperatures from -10 to 54°C.
- Unit shall be capable of starting up with maximum cooler entering fluid temperature of 35°C.

2.4. Unit Construction

Unit base frame shall be constructed of 100 to 200 mm steel channel sections welded and bolted to form rigid load bearing framework to support all major unit components and safe lifting platform. Frame shall be shot blasted after welding and finished with corrosion resistant primer and air-drying epoxy-based enamel.

Control center cabinet shall be of heavy gauge galvanized sheet steel with oven baked powder coating capable of withstanding salt spray test.
Micro Channel Heat Exchanger(MCHX) type condenser should be applied TCP(Tri-Chromium Passivation) coating to enhance corrosion resistance.

2.5. Compressor

Compressor shall comprise semi-hermetic rotary twin screw directly driven by suction gas cooled semi-hermetic motor at rated RPM. Motor shall have inherent overload protection buried in windings and external current overloads.
Capacity is controlled by variable speed frequency.
Compressor housing is precisely machined cast iron incorporating and oil separator, lubricating oil level switch, oil heater are installed.

2.6. Evaporator

Evaporator shall be of the falling film shell and tube type with removable heads and mechanically cleanable tubes of seamless copper with internally and externally enhanced surface. Distributor located on the top side of inside shell, which makes uniform flow of refrigerant. Through distributor, refrigerant flows downward by gravity as a uniform and continuous film. Tubes shall be mechanically expanded into multiple grooves in tube sheets. Evaporator will incorporate one or more independent refrigerant circuits with a common chilled liquid multi-pass circuit arrangement.
[Standard] Evaporators will be factory insulated with NBR(Nitrile-Butadiene Rubber) of 19mm black colored with all joints vapor sealed and water drain and vent taps in water box heads.

2.7. Air Cooled Condenser(s) and Free-cooling Coil(s)

1) Microchannel heat exchanger Condenser should be applied to provide high heat transfer efficiency.
2) Micro channel heat exchanger is composed of three main components: flat tube, fin, and header. Flat tubes have several small flow channels inside a flat tube made of aluminum, and the refrigerant flows along the channel to exchange heat. The fins are attached with thin aluminum fins between the tubes, and they encounter air to increase the heat transfer area. The header is responsible for distributing or returning the refrigerant to several microchannel tubes.
3) EC motor fans with variable speed control shall be used.
4) Fan motors should have insulation class F and IP54 waterproof grade.
5) The condenser coil shall be pre-treated with Tri-Chromium Passivation coating for enhancing corrosion resistance.
6) The free-cooling coil should be positioned externally to the condenser V-module.
   [Option] E-coating can be applied as an option for more enhanced corrosion resistance.

2.8. Expansion Devices

Expansion devices should be installed between condenser and evaporator to enable refrigerant to evaporate from evaporator by decreasing refrigerant pressure. EXV(Electric Expansion Valve) is applied to control refrigerant flow by electric signal.

2.9. Oil Separator

Oil which is supplied to compressor shall be circulated by differential pressure of high and low pressure side without extra oil pump. Oil separator should be installed between compressor discharge and condenser inlet for better heat transfer and stable operation.

2.10. Ejector for Oil Return

To reclaim oil from evaporator to compressor, ejector shall be installed for oil return.

2.11. Refrigeration System Components

Refrigeration system shall include replaceable filter drier, electronic expansion valve, suction/discharge/liquid line service valves and charge of refrigerant R-513A and lubricating oil. Each refrigeration circuit in the evaporator shall have relief valves with changeover cock.
[Option] Dual relief valve with three-way valve type as an option
[Option] Dual relief valve with direct type as an option.

2.12 Free-cooling System Components

Free-cooling system shall include brine circulation pump, plate heat exchanger, expansion tank, free-cooling coil and brine(Ethylene glycol, propylene glycol, etc.). Components shall be of integrated design, enabling continuous chilled water production without compressor operation under low ambient temperature conditions.(Free Cooling mode). When the ambient temperature isn't sufficiently low, the compressor can operate under partial load(Hybrid mode) or full load (Mechanical Cooling mode).
[Option] Chilled water separation valve between evaporator and plate heat exchanger for free-cooling circuit can be applied as an option

2.12.1 Brine Circulation Pump

Brine circulation pump with high efficiency shall be installed between free-cooling coil and intermediate plate heat exchanger to make brine circulation under closed-loop system. The pump must meet the pressure drop requirements for the closed-loop system of chiller The pump and valves shall be constructed of materials compatible with low-temperature fluids and brine, ensuring resistance to deformation, leakage, and corrosion.

2.12.2 Plate Heat Exchanger

The intermediate heat exchanger shall be a plate type made of stainless steel for enhanced corrosion resistance.

2.12.3 Expansion Tank

Expansion tank shall be sized for required flow, temperature fluctuations, and maximum pressure. Expansion tank shall be of materials compatible with low-temperature fluids and brine, resistant to deformation, leakage, and corrosion.

2.13. Chilled Water Circuit

a. Chilled water circuit shall be rated for 150 psig(1,034 kPa).
   [Option] 300 psig can be applied as an option.
b. Electronic flow switch shall be factory installed and wired.(Standard)
   [Option] Differential pressure switch can be applied as an option.

2.14. Control Center

1) Structure
The control panel shall consist of Micom module(HMI/MASTER/SLAVE), a power supply for supplying stable power, breakers for controlling and safety, an electronic contact, and relays for controlling.

2) HMI/MASTER/SLAVE module
The module shall use the high-performance microprocessor to perform the control function optimized for the equipment. The high-precision analog/digital (A/D) converter shall monitor the values of the temperature sensors to display the values on the screen and apply them to the controlling. The RS-485 communication port is embedded by default to support the remote monitoring and controlling by customers. Customers can simply select RS-485 for their building automation.

3) Indication and operation key module
The indication and operation key module consist of a display indicating operating data, set points required for the equipment operation, and data of abnormality in characters; a key input section for entering data or selecting menus; and a LED lamp indicator section showing the equipment operation shutdown conditions for operation of the equipment, operation of compressor, flow of chilled/cooling water, alarms status. In particular, the module allows operators to directly access the frequently used keys and select other operations from the menu for improving convenience of operators. If the operation keys are inoperable, operators shall be able to use character display and menu selection keys to operate the equipment from the menu. The display shall show the following operation conditions in Korean, Chinese or English: the temperature of the inlet and the outlet of the chilled water and the cooling water, the compressor discharge temperature, the condenser pressure, the evaporator pressure and operating current. The I/O is composed of a digital input section for monitoring the operating conditions of the switches and a digital output section for controlling the operation of the equipment. A photo coupler is mounted on the I/O section for preventing noises and receives/transmits all the data through communication with the main module to prevent malfunctions caused by electronic waves generated from the data transmission through the cables.

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1) Convenient operation data management
A wide 15inch Color Graphic LCD(1,024x768) is used to display various pieces of operation information on a single screen, and stores the analog data(e.g., temperature data) up to over 200 cases per channel in the intervals defined by customers for keeping daily operation logs. The real-time display also shows the temperature of the chilled water outlet and the operating current of the compressor motor in graphics for easily identifying the trends of the changes to the temperature and operating current.

2) Self-diagnosis and failure history storing
The Micom monitors the conditions of the equipment during shutdown and operation and notifies operators of the conditions of the equipment by displaying characters, alarm lamps and buzzers, and stores the time and the log of failures for maintenance. In particular, the Micom classifies failures into minor failures and major failures. If a minor failure takes place, the Micom displays the details of the failure in characters and continues the operation of the equipment to minimize the shutdown of the equipment.

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• Digital PID control
  When the manual mode is changed to the auto mode, the digital PID control integrated with the flexible startup shall recognize the optimal PID control points automatically to minimize the unnecessary shutdown of the equipment and reflect them to the control equation to control the temperature stably and precisely.
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  The temperature and the pressure of the components are measured in real-time during operation and the primary and secondary preventive operations are performed in accordance with the measurement results to prevent the shutdown of the chiller caused by the overload, the high pressure of the condenser, the low pressure of the evaporation.
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  The scheduled operation function is provided for the convenient operation of the equipment, which allows the selection of the operation/shutdown and the setting of the control temperature per day of the week, per holiday or 11 times a day.
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  The following service functions are supported for easy maintenance:
  ※ Displaying the count of startups and the total operation hours of the motors mounted on the body.
  ※ Printing the operation and the trouble data.(Optional)
• Fast recovery
  Fast recovery after power restoration is essential for ensuring reliable equipment performance and stable operation. In the event of a power outage, the chiller's fast recovery function will quickly restore the previous chilled water temperature difference. Under optimal conditions, it can return to its previous RPM within 3 minutes, ensuring uninterrupted operation.

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• Help
  The help function memorizes the details of failures and shows the descriptions for corrective actions when the operator selects a particular failure from the menu, to improve the convenience for operators.
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※ The Ground fault circuit interrupter is optional and will be installed as required by customers.

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Indicator lamps, breaker for protecting circuits

4) Harmonic filter
The harmonics of the starter panel shall satisfy a TDDi of less than 5%.

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Unit shall be supplied with field-installed interface between the chiller and MODBUS Local Area Network.
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