



EBARA

CR9202E1

DIRECT-FIRED ABSORPTION CHILLER-HEATER

RCD SERIES

New Model





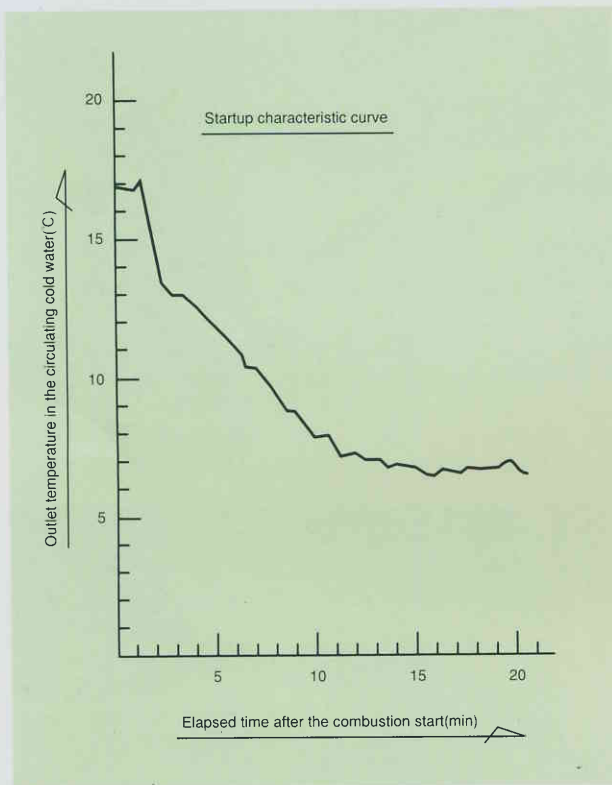
RCD series is a newly designed compact and high performance, and designed considering better

NEW UPGRADED MICROPROCESSOR

Using a newly developed microprocessor, high performance is realized in operating.

1. Energy saving with minimized startup.

Startup time of the system has been cut short with an optimized flow rate of circulating solution responsive to the startup operation quickly. This reduce fuel consumption.



2. Reducing dilution time at the time of operating interruption.

By checking the operating condition at shut down, minimum diluting time is determined automatically. Over dilution is avoided automatically, and this contribute to the energy saving.

3. Interlocking circuits of auxiliary devices are equipped as a standard.

An interlocking circuit are equipped for chilled/hot water, cooling water pumps and a fan of cooling tower as a standard.

The operating cost may be reduced with protective measures such as a start/stop circuit for the fan on the cooling tower for cooling water temperature control and a freeze-proof circuit with thermo-sensors for winter season are equipped as a standard.

4. Operating condition is displayed on the panel digitally.

Operating information such as the chilled/hot water temperature, the cooling water temperature, the solution temperature and the other followings listed hereunder are displayed on the control panel.

- Temperature in the high temperature generator.
- Outlet temp. of the high temperature generator.
- Inlet temp. of the high temperature generator.
- Dew point temp. of the high temperature generator.
- Inlet or Outlet temperature of the chilled/hot water.
- Inlet or Outlet temperature in the cooling water.
- Chiller-Heater operating time.
- Operating time of the refrigerant pump.
- Number of start/stop operations of the unit.

- Measurement in temperature.
- Temperature of the exhaust gas.
- Temperature of the evaporating refrigerant.
- Temperature of the refrigerant condensation.
- Temperature of the solution in absorber.
- Fuel control valve indicator.
- Combustion time
- Operating time of the solution pump.
- Number of combustion start/stop operations.

5. Prevention function for unusual shut down on failure are equipped.

With continuous monitoring operating conditions by sensors equipped in the unit, stoppage of the system on failures or fault is minimized in controlling system before the system goes to failures.

- Dew-point control of the high temperature generator.
- Solution temperature control of the high temperature generator.
- etc.

6. Pre-alarm system ensure preventive maintenance.

With pre-alarm systems, magnitude of scale/slime fouling in the cooling water tubes and timing for replacing some parts of the unit are informed well in advance.

- Temperature rising in the exhaust gas.
- Rising in the internal pressure.
- Replacement timing of the burner part.
- Fault in thermo-sensors.
- * Temperature rising in the inlet of cooling water.
- * Concentration rising in the high temperature generator.
- * Rising in dew point of the high temperature generator.

- Rising in LTD of cooling water.
- Overload in the purge pump.
- Replacement timing for respective parts.
- Abnormal in level control in high temperature generator.
- * Temperature rising of the cooling water at the inlet/outlet.
- * Temperature rising in the solution of the high temperature generator.

The * mark indicates that only counting is made without displaying any pre-alarm.

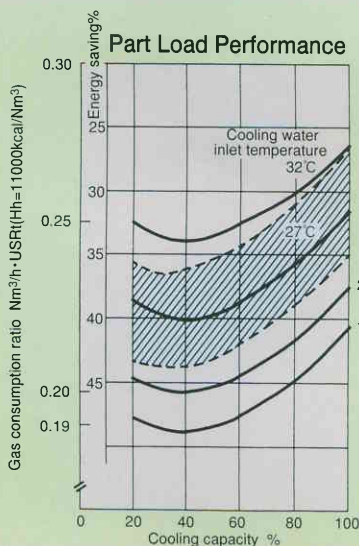
7. A circuit for power-failure is equipped with a standard.

For a power-failure within the minutes, the unit may start automatically after the power is recovered. The unit will shut down with alarm if the power failure lasts more than ten minutes.

Direct Fired Absorption Chiller-Heater of equipped with latest microprocessor environment.

ENERGY SAVING

In an application of inverter control of solution pump, saving energy has been realized in the whole range from partial loads to rated loads of cooling mode. Installation costs may be reduced at no control of cooling water temperature and further saving in energy consumptions, as operation is feasible as 15°C at the inlet of cooling water.



The graphic chart shows; Energy saving is 40% compared with original model when the refrigeration capacity is 40% and the inlet temperature of the cooling water is 27°C.

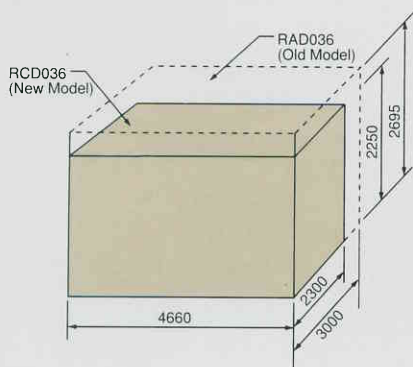
- Note 1** The combustion rates shown herein based on a gross calorific value 11,000kcal/m²(NTP) of gas.
- Note 2** This graphic chart is applicable to the model 015 through 050.
- Note 3** An area surrounded by the dotted lines is the area for available loads, which is derived from using respective average wet bulb.
- Note 4** The % of energy saving is based on the first developed unit.
- Note 5** 1m³/(h·USRt)(NTP)=0.2843m³/kW(NTP)

LOW NOx BURNER (AS STANDARD)

Equipped with a low Nox burner, 60ppm or less based on O₂ 0%, was attained at the fuel gas 13A.

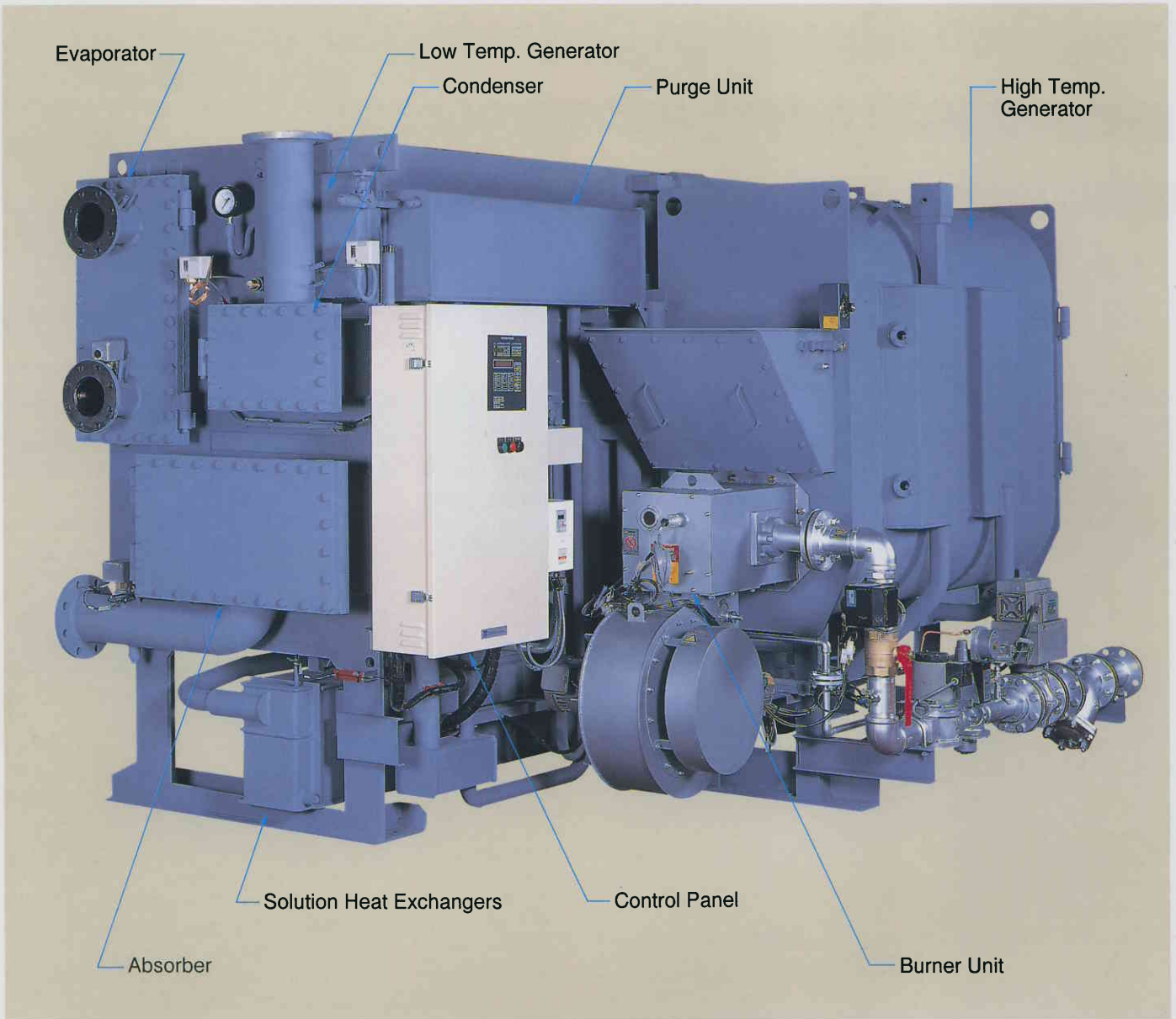
COMPACT DESIGN

Compared with the conventional type, reductions of 20% in width; 15% in height; 20% in setup space have been attained (Comparison reference in 360 tons class).



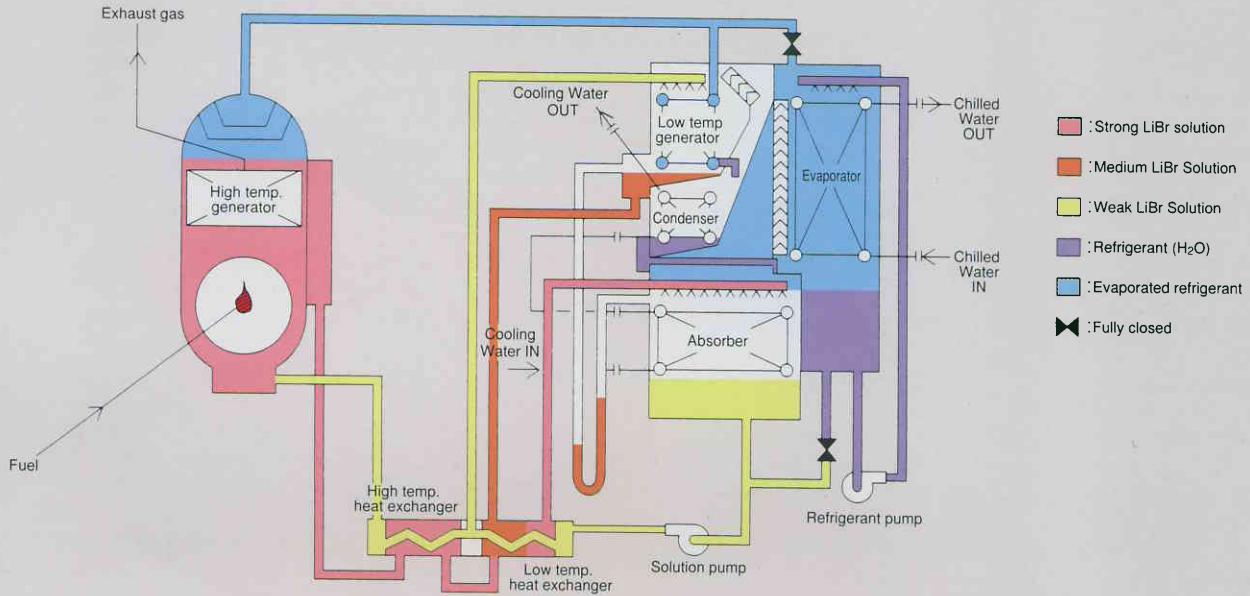
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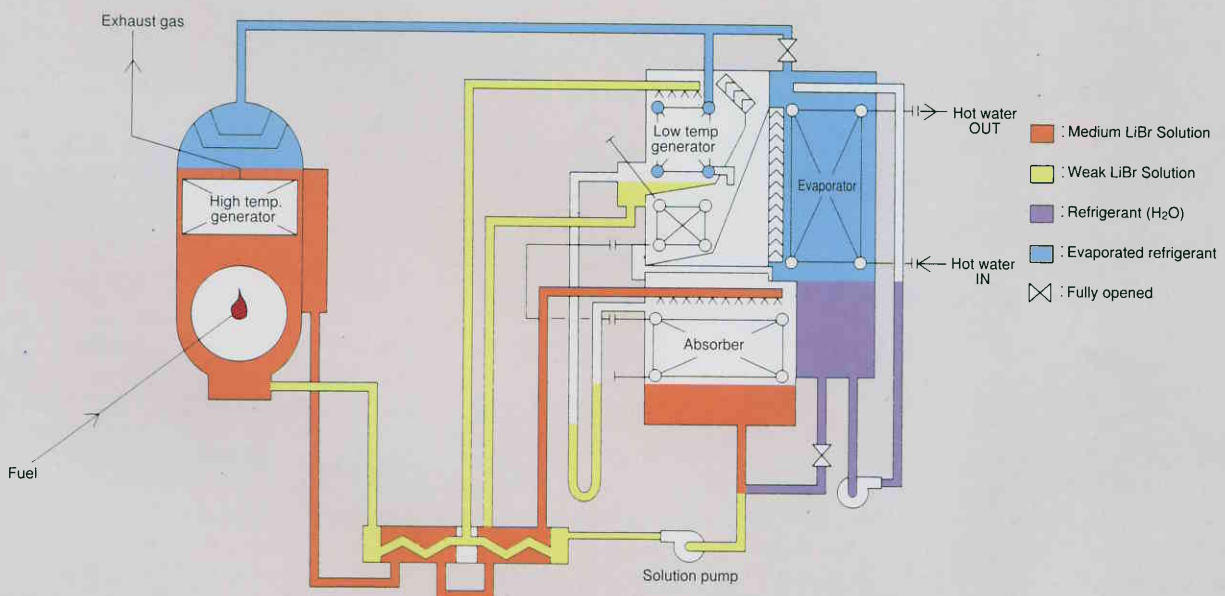
Absorption Cycle

Cooling Cycle



Refrigerant evaporates in an evaporator and cools down chilled water. The evaporated refrigerant is absorbed into the solution in the absorber. The solution absorbed the refrigerant become weak and sends to the high and low temperature generator respectively through the heat-exchangers pumped up by the solution pump. The weak solution turns to a concentrated (strong) solution after heating by the burner in the high temperature generator. The solution becomes medium strong solution in the low temperature generator heated by refrigerant (steam) generated in the high temperature generator. The strong solution in the high and medium strong solution in the low temperature are mixed together and back to absorber through the both solution heat-exchangers, in which absorbs the refrigerant evaporated from the evaporator. The generated refrigerant in the low temperature generator move to the condenser and condensed by the cooling water. Condensed refrigerant back to evaporator.

Heating Cycle



The high temperature steam (refrigerant) generated in the high temperature generator is moved through valve and condensed in the evaporator and heating up hot water for heating. The refrigerant is down to and mixed up with medium weak solution in the absorber. Then pump up to the high temperature generator by solution pump. The medium weak solution generates steam (refrigerant vapor) in the high temperature generator.

Rated Specification Table

Energy saving 26%-Series N

(Cooling operation per annual : 2,000

Model (RCD ₂)			N015	N018	N021	N025	N028	N032	N036	
Cooling Capacity		USRt{kW}	150{528}	180{633}	210{739}	250{879}	280{985}	320{1125}	360{1266}	
Heating Capacity		kcal/h{kW}	400,000{465}	480,000{558}	560,000{651}	666,000{774}	742,000{853}	854,000{993}	960,000{1117}	
Chilled Water	Flow Rate	ℓ /min	1510	1810	2120	2520	2820	3230	3630	
	Pressure Drop	mAq{kPa}	7.8{76}	8.2{80}	7.4{73}	7.7{75}	6.3{62}	6.3{62}	6.4{63}	
	No. of Pass	—	4	4	4	4	3	3	3	
	Pipe Connection Size	A(mm)	100	100	125	125	150	150	150	
Cooling Water	Flow Rate	ℓ /min	2500	3000	3500	4170	4670	5330	6000	
	Pressure Drop	mAq{kPa}	11.5{113}	12.5{123}	12{118}	12.5{123}	9.5{93}	10{98}	10{98}	
	No. of Pass	—	3+1	3+1	3+1	3+1	2+1	2+1	2+1	
	Pipe Connection Size	A(mm)	125	125	150	150	200	200	200	
Fuel	Gas Value (gross)	Supply Pressure	mmAq{kPa}	150{1.47}	150{1.47}	150{1.47}	150{1.47}	900{8.82}	900{8.82}	900{8.82}
		Pipe Connection	A(mm)	80	100	100	125	80	80	80
	4500 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	99.9	119.9	139.9	166.5	186.5	213.2	239.8
		Consumption (Heating)	Nm ³ /h	109.8	131.8	153.9	182.8	203.7	233.4	263.5
	Gas Value (gross)	Supply Pressure	mmAq{kPa}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}
		Pipe Connection	A(mm)	50	50	50	80	80	80	80
	(13A) 11000 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	40.9	49.1	57.2	68.1	76.3	87.2	98.1
		Consumption (Heating)	Nm ³ /h	44.9	53.9	62.9	74.8	83.3	95.9	107.8
	Kerosene	Consumption (Cooling)	ℓ /h	48.6	58.3	68.0	81.0	90.7	103.7	116.6
		Consumption (Heating)	ℓ /h	53.9	64.7	75.5	89.8	100.0	115.1	129.4
Voltage × Cycle		V × Hz	200 × 50/60, 220 × 60							
Refrigerant Pump		kW	0.15	0.15	0.3	0.3	0.3	0.3	0.4	
Solution Pump		kW	2.2+0.4	2.2+0.4	2.2+0.4	3.2+0.4	3.2+0.75	3.2+0.75	3.2+0.75	
Gas	Burner Fan	kW	1.5	1.5	1.5	2.2	2.2	3.7	3.7	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10.0(5.5)	10.0(5.5)	10.5(8)	13.0(8)	13.5(8)	15.0(14)	15.0(14)	
Kerosene	Burner Fan + Oil Pump	kW	1+0.25	1+0.25	1.5+0.25	1.5+0.25	2.2+0.4	2.2+0.4	2.2+0.4	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10.0(5.5)	10.0(5.5)	13.0(8)	12.0(8)	14.0(14)	14.0(14)	14.0(14)	
Connection Size of Exhaust Gas		mm	350 × 310	450 × 310	450 × 370	480 × 370	450 × 430	480 × 430	515 × 460	
Heat Transfer Area of Gh		m ²	9.7	11.7	13.8	16.1	19.6	21.4	23.6	

N040	N045	N050	N060	N070
400{1407}	450{1583}	500{1759}	600{2,110}	700{2,462}
1,067,000{1241}	1,201,000{1397}	1,334,000{1551}	1,604,000{1,865}	1,871,000{2,176}
4030	4540	5040	6,050	7,060
6.6{65}	6.1{60}	6.1{60}	7.6{74}	7.8{76}
3	3	3	3	3
150	200	200	200	200
6670	7500	8340	10,000	11,670
10{98}	9.5{93}	10{98}	9.8{96}	10.5{103}
2+1	2+1	2+1	2+1	2+1
200	250	250	250	250
900{8.82}	900{8.82}	900{8.82}	900{8.82}	900{8.82}
80	80	80	80	80
266.4	299.7	333.1	399.7	466.3
292.9	329.7	366.2	440.3	513.6
200{1.96}	200{1.96}	200{1.96}	900{8.82}	900{8.82}
80	80	80	65	80
109	122.6	136.3	163.5	190.8
119.8	134.9	149.8	180.1	210.1
129.6	145.8	162.0	194.4	226.8
143.8	161.9	179.8	216.3	252.2
200×50/60、220×60				
0.4	0.4	0.4	0.4	0.4
3.7+0.75	3.7+0.75	3.7+0.75	5.5+0.75	5.5+0.75
3.7	3.7	5.5	5.5	7.5
16.0(14)	16.0(14)	18.0(22)	20(22)	22.5(22)
3.7+0.4	3.7+0.4	3.7+0.75	5.5+0.75	5.5+0.75
16.5(14)	16.5(14)	17.0(14)	21.5(22)	21.5(22)
568×460	550×515	550×568	545×713	692×667
27.1	29.5	32.5	38.3	44.6

Model RCD _R ^G	Dimensions			Weight		Water Volume in Chiller-Heater	
	L	W	H	Shipping Weight (MAX)	Operating Weight	Chilled/Hot Water	Cooling Water
	mm	mm	mm	t	t	ℓ	ℓ
N015	3575	1825	1900	5.4	7.4	210	290
N018	3575	1870	1940	5.9	8.0	250	340
N021	3605	2020	2050	6.7	9.2	300	410
N025	3605	2150	2160	7.8	10.4	350	480
N028	4675	2105	2100	8.9	12.2	380	560
N032	4675	2280	2170	9.9	13.5	440	630
N036	4700	2340	2250	10.1	15.0	490	700
N040	4725	2350	2340	11.8	16.5	540	780
N045	4810	2415	2480	13.1	18.4	610	920
N050	4810	2465	2550	14.0	19.7	680	1010
N060	5860	2875	2750	15.7	23.0	820	1210
N070	5860	2975	2945	17.9	26.2	960	1410

- Note 1) The standard chilled water temperature is 12°C at the inlet and 7°C at the outlet, the cooling water temperature is 32°C at the inlet and 37.5°C at the outlet and the hot water temperature 60°C at the outlet.
- Note 2) The fouling factor of the chilled/hot water and the cooling water is assumed as 0.0001m²h°C/kcal (0.000086m²K/W).
- Note 3) The capacity of burner fan may be changed on the combustion volume and the gas specification.
- Note 4) The standard design pressure of the chilled/hot water and the cooling water is 8 kgf/cm² (gauge pressure) {0.78 MPa}
- Note 5) Chiller-Heater is designed in accordance with JIS B8622.
- Note 6) Standard delivery is one piece shipping as the standard.
- Note 7) The net calorific value of kerosene is defined as 8320Kcal/ℓ (Specific gravity 0.8).
- Note 8) Dimension in width may vary dependent on the gas specification. Please check the outline drawing in detail. The values shown herein is based on the supply specification at 200mmAq (060 and 070 are at the supply on 900mmAq).
- Note 9) The wiring size is used for reference.

Rated Specification Table

Energy saving 26%-Series L

(Cooling operation per annual : 4,000)

Model (RCD)			L015	L018	L021	L025	L028	L032	L036	
Cooling Capacity		USRT{kW}	150{528}	180{633}	210{739}	250{879}	280{985}	320{1125}	360{1266}	
Heating Capacity		kcal/h{kW}	400,000{465}	480,000{558}	560,000{651}	660,000{774}	742,000{863}	854,000{993}	960,000{1117}	
Chilled Water	Flow Rate	ℓ /min	1510	1810	2120	2520	2820	3230	3630	
	Pressure Drop	mAq{kPa}	7.8{76}	8.2{80}	7.4{73}	7.7{75}	6.3{62}	6.3{62}	6.4{63}	
	No. of Pass	—	4	4	4	4	3	3	3	
	Pipe Connection Size	A(mm)	100	100	125	125	150	150	150	
Cooling Water	Flow Rate	ℓ /min	2500	3000	3500	4170	4670	5330	6000	
	Pressure Drop	mAq{kPa}	11.5{113}	12.5{123}	12{118}	12.5{123}	9.5{93}	10{98}	10{98}	
	No. of Pass	—	3+1	3+1	3+1	3+1	2+1	2+1	2+1	
	Pipe Connection Size	A(mm)	125	125	150	150	200	200	200	
Fuel	Gas Value (gross)	Supply Pressure	mmAq{kPa}	150{1.47}	150{1.47}	150{1.47}	150{1.47}	900{8.82}	900{8.82}	900{8.82}
		Pipe Connection	A(mm)	80	100	100	125	80	80	80
	4500 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	99.9	119.9	139.9	166.5	186.5	213.2	239.8
		Consumption (Heating)	Nm ³ /h	109.8	131.8	153.7	182.8	203.7	233.4	263.5
	Gas Value (gross)	Supply Pressure	mmAq{kPa}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}
		Pipe Connection	A(mm)	50	50	50	80	80	80	80
	(13A) 11000 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	40.9	49.1	57.2	68.1	76.3	87.2	98.1
		Consumption (Heating)	Nm ³ /h	44.9	53.9	62.9	74.8	83.3	95.9	107.8
	Kerosene	Consumption (Cooling)	ℓ /h	48.6	58.3	68.0	81.0	90.7	103.7	116.6
		Consumption (Heating)	ℓ /h	53.9	64.7	75.5	89.8	100.0	115.1	129.4
Voltage×Cycle		V×Hz	200×50/60、220×60							
Refrigerant Pump		kW	0.15	0.15	0.3	0.3	0.3	0.3	0.4	
Solution Pump		kW	2.2+0.4	2.2+0.4	2.2+0.4	3.2+0.4	3.2+0.75	3.2+0.75	3.2+0.75	
Gas	Burner Fan	kW	1.5	1.5	1.5	2.2	2.2	3.7	3.7	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10(5.5)	10(5.5)	10.5(8)	13(8)	13.5(8)	15(14)	15(14)	
Kerosene	Burner Fan + Oil Pump	kW	1+0.25	1+0.25	1.5+0.25	1.5+0.25	2.2+0.4	2.2+0.4	2.2+0.4	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10(5.5)	10(5.5)	11(8)	12(8)	14(14)	14(14)	14(14)	
Connection Size of Exhaust Gas		mm	350×310	450×310	450×370	480×370	450×430	480×430	515×460	
Heat Transfer Area of Gh		m ²	9.7	11.7	13.8	16.1	19.6	21.4	23.6	

hours or less)

L040	L045	L050	L060	L070
400{1407}	450{1583}	500{1759}	600{2,110}	700{2,462}
1,067,000{1241}	1,201,000{1397}	1,334,000{1551}	1,604,000{1,865}	1,871,000{2,176}
4030	4540	5040	6,050	7,060
.6.6{65}	6.1{60}	6.1{60}	7.6{74}	7.8{76}
3	3	3	3	3
150	200	200	200	200
6670	7500	8340	10,000	11,670
10{98}	9.5{93}	10{98}	9.8{96}	10.5{103}
2+1	2+1	2+1	2+1	2+1
200	250	250	250	250
900{8.82}	900{8.82}	900{8.82}	900{8.82}	900{8.82}
80	80	80	80	80
266.4	299.7	333.1	399.7	466.3
292.9	329.7	366.2	440.3	513.6
200{1.96}	200{1.96}	200{1.96}	900{8.82}	900{8.82}
80	100	100	65	80
109	122.6	136.3	163.5	190.8
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129.6	145.8	162.0	194.4	226.8
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200×50/60、220×60				
0.4	0.4	0.4	0.4	0.4
3.7+0.75	3.7+0.75	3.7+0.75	5.5+0.75	5.5+0.75
3.7	3.7	5.5	5.5	5.5
16(14)	16(14)	18(22)	20(22)	22.5(22)
3.7+0.4	3.7+0.4	3.7+0.75	5.5+0.75	5.5+0.75
16.5(14)	16.5(14)	17(14)	21.5(22)	21.5(22)
568×460	550×515	550×568	545×713	692×667
27.1	29.5	32.5	38.3	44.6

Model RCD _K ^Q	Dimensions			Weight		Water Volume in Chiller-Heater	
	L	W	H	Shipping Weight (MAX)	Operating Weight	Chilled/Hot Water	Cooling Water
	mm	mm	mm	t	t	ℓ	ℓ
L015	3575	1825	1900	5.5	7.4	210	290
L018	3575	1870	1940	5.9	8.0	250	340
L021	3605	2020	2050	6.7	9.2	300	410
L025	3605	2150	2160	7.8	10.4	350	480
L028	4675	2150	2100	8.7	12.2	380	560
L032	4675	2280	2170	9.9	13.5	440	630
L036	4700	2340	2250	10.5	15.0	490	700
L040	4725	2350	2340	11.6	16.5	540	780
L045	4810	2415	2480	13.2	18.4	610	920
L050	4810	2465	2550	14.0	19.7	680	1010
L060	5860	2875	2750	15.7	23.0	820	1210
L070	5860	2975	2945	17.9	26.2	960	1410

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- Note 4) The standard design pressure of the chilled/hot water and the cooling water is 8 kgf/cm² (gauge pressure) {0.78 MPa}
- Note 5) Chiller-Heater is designed in accordance with JIS B8622.
- Note 6) Standard delivery is one piece shipping as the standard.
- Note 7) The net calorific value of kerosene is defined as 8320Kcal/ℓ (Specific gravity 0.8).
- Note 8) Dimension in width may vary dependent on the gas specification. Please check the outline drawing in detail. The values shown herein is based on the supply specification at 200mmAq (060 and 070 are at the supply on 900mmAq).
- Note 9) The wiring size is used for reference.

Rated Specification Table

Energy saving 26%-Series H

(Cooling operation per annual : More

Model (RCD ₂)			H015	H018	H021	H025	H028	H032	H036	
Cooling Capacity		USRt{kW}	135{475}	150{528}	180{633}	210{739}	250{879}	280{985}	320{1125}	
Heating Capacity		kcal/h{kW}	361,000{420}	400,000{465}	480,000{558}	566,000{651}	666,000{774}	742,000{863}	854,000{993}	
Chilled Water	Flow Rate	ℓ /min	1360	1510	1810	2120	2520	2820	3230	
	Pressure Drop	mAq{kPa}	6.3{62}	5.7{56}	5.5{54}	5.4{53}	5{49}	4.8{47}	5{49}	
	No. of Pass	—	4	4	4	4	3	3	3	
	Pipe Connection Size	A(mm)	100	100	125	125	150	150	150	
Cooling Water	Flow Rate	ℓ /min	2250	2500	3000	3500	4170	4670	5330	
	Pressure Drop	mAq{kPa}	9.5{93}	9{88}	9{88}	9{88}	8{78}	8{78}	8{78}	
	No. of Pass	—	3+1	3+1	3+1	3+1	2+1	2+1	2+1	
	Pipe Connection Size	A(mm)	125	125	150	150	200	200	200	
Fuel	Gas Value (gross)	Supply Pressure	mmAq{kPa}	100{0.98}	100{0.98}	100{0.98}	100{0.98}	900{8.82}	900{8.82}	900{8.82}
		Pipe Connection	A(mm)	80	100	100	125	80	80	50
	4500 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	89.9	99.9	119.9	139.9	166.5	186.5	213.2
		Consumption (Heating)	Nm ³ /h	98.8	109.8	131.8	153.7	182.8	203.7	234.4
	Gas Value (gross)	Supply Pressure	mmAq{kPa}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}	200{1.96}
		Pipe Connection	A(mm)	50	50	50	80	80	80	80
	(13A) 11000 kcal/Nm ³	Consumption (Cooling)	Nm ³ /h	36.8	40.9	49.1	57.2	68.1	76.3	87.2
		Consumption (Heating)	Nm ³ /h	40.5	44.9	53.9	62.9	74.8	83.3	95.9
	Kerosene	Consumption (Cooling)	ℓ /h	43.7	48.6	58.3	68.0	81.0	90.7	103.7
		Consumption (Heating)	ℓ /h	48.7	53.9	64.7	75.5	89.8	100.0	115.1
Voltage × Cycle		V × Hz	200 × 50/60、220 × 60							
Refrigerant Pump		kW	0.15	0.15	0.3	0.3	0.3	0.3	0.4	
Solution Pump		kW	2.2+0.4	2.2+0.4	2.2+0.4	3.2+0.4	3.2+0.75	3.2+0.75	3.2+0.75	
Gas	Burner Fan	kW	1.5	1.5	1.5	2.2	2.2	3.7	3.7	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10.5(5.5)	10.5(5.5)	10.5(8)	13(8)	13.5(8)	15(14)	15(14)	
Kerosene	Burner Fan + Oil Pump	kW	1+0.25	1+0.25	1.5+0.25	1.5+0.25	2.2+0.4	2.2+0.4	2.2+0.4	
	Power Supply Capacity (Wiring Size)	kVA(mm ²)	10(8)	10(8)	11(8)	12(8)	14(14)	14(14)	14(14)	
Connection Size of Exhaust Gas		mm	350 × 310	450 × 310	450 × 370	450 × 370	450 × 430	480 × 430	515 × 460	
Heat Transfer Area of Gh		m ²	9.7	11.7	13.8	16.1	19.6	21.4	23.6	

than 4,000 hours)

H040	H045	H050	H060	H070
360{1266}	400{1407}	450{1583}	540{1,899}	600{2,110}
960,000{1117}	1,067,000{1241}	1,201,000{1397}	1,467,000{1,706}	1,604,000{1,865}
3630	4030	4540	5,440	6,050
5.3{52}	4.8{47}	5{49}	6.5{64}	6{59}
3	3	3	3	3
150	200	200	200	200
6000	6670	7500	9,020	10,000
8.5{83}	8{78}	8.5{78}	8{78}	8{78}
2+1	2+1	2+1	2+1	2+1
200	250	250	250	250
900{8.82}	900{8.82}	900{8.82}	900	900
80	80	80	80	80
239.8	266.4	299.7	359.7	399.7
263.5	292.9	329.7	402.7	440.3
200{1.96}	200{1.96}	200{1.96}	900	900
80	80	80	65	80
98.1	109	122.6	147.2	163.5
107.8	119.8	134.9	164.7	180.1
116.6	129.6	145.8	175.0	194.4
129.4	143.8	161.9	197.8	216.3
200×50/60、220×60				
0.4	0.4	0.4	0.4	0.4
3.7+0.75	3.7+0.75	3.7+0.75	5.5+0.75	5.5+0.75
3.7	3.7	5.5	5.5	7.5
16(14)	16(14)	18(22)	20(22)	22.5(22)
3.7+0.4	3.7+0.4	3.7+0.75	5.5+0.75	5.5+0.75
16.5(14)	16.5(14)	17(14)	21.5(22)	21.5(22)
568×460	550×515	550×568	545×713	692×667
27.1	29.5	32.5	38.3	44.6

Model RCD _K ^G	Dimensions			Weight		Water Volume in Chiller-Heater	
	L	W	H	Shipping Weight (MAX)	Operating Weight	Chilled/Hot Water	Cooling Water
	mm	mm	mm	t	t	ℓ	ℓ
H015	3575	1825	1900	5.5	7.4	210	290
H018	3575	1870	1940	5.9	8.0	250	340
H021	3605	2020	2050	6.7	9.2	300	410
H025	3605	2150	2160	7.8	10.4	350	480
H028	4675	2105	2100	8.7	12.2	380	560
H032	4675	2280	2170	9.9	13.5	440	630
H036	4700	2340	2250	10.5	15.0	490	700
H040	4725	2350	2340	11.6	16.5	540	780
H045	4810	2415	2480	13.2	18.4	610	920
H050	4810	2465	2550	14.0	19.7	680	1010
H060	5860	2875	2750	15.7	23.0	820	1210
H070	5860	2975	2945	17.9	26.2	960	1410

Note 1) The standard chilled water temperature is 12°C at the inlet and 7°C at the outlet, the cooling water temperature is 32°C at the inlet and 37.5°C at the outlet and the hot water temperature 60°C at the outlet.

Note 2) The fouling factor of the chilled/hot water and the cooling water is assumed as 0.0001m²h°C/kcal (0.000086m²K/W).

Note 3) The capacity of burner fan may be changed on the combustion volume and the gas specification.

Note 4) The standard design pressure of the chilled/hot water and the cooling water is 8 kgf/cm² (gauge pressure) {0.78 MPa}

Note 5) Chiller-Heater is designed in accordance with JIS B8622.

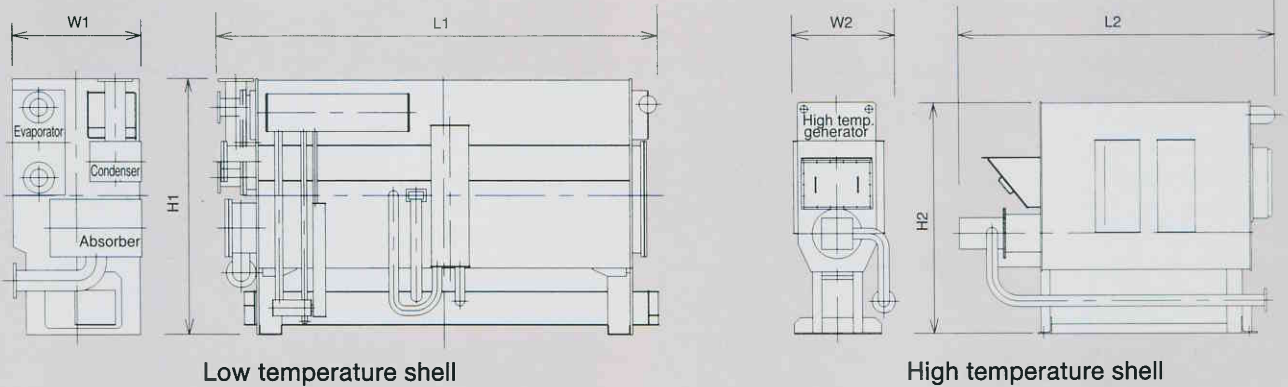
Note 6) Standard delivery is one piece shipping as the standard.

Note 7) The net calorific value of kerosene is defined as 8320Kcal/ℓ (Specific gravity 0.8).

Note 8) Dimension in width may vary dependent on the gas specification. Please check the outline drawing in detail. The values shown herein is based on the supply specification at 200mmAq (060 and 070 are at the supply on 900mmAq).

Note 9) The wiring size is used for reference.

Shipping Dimensions(2 pieces shipping is option)



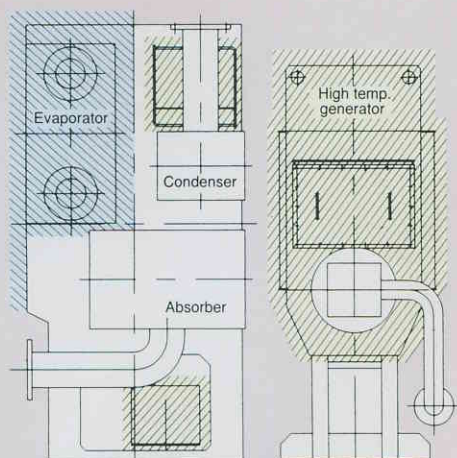
Model		N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070
Low temperature shell side	L1(mm)	3575	3575	3605	3605	4675	4675	4700	4725	4810	4810	5860	5860
	W1(mm)	1235	1275	1345	1415	1385	1425	1505	1545	1595	1645	1850	1910
	H1(mm)	1900	1940	2050	2160	2100	2170	2250	2340	2480	2550	2750	2945
	Max.shipping weight(t)	4.4	4.7	5.4	6.0	7.0	7.6	8.4	9.2	10.1	10.8	13	14.7
High temperature shell side	L2(mm)	2470	2470	2800	2980	2980	3220	3260	3300	3600	3690	3900	3900
	W2(mm)	965	965	1055	1115	1110	1165	1175	1145	1195	1190	1280	1300
	H2(mm)	1805	1885	1960	2070	2075	2100	2240	2330	2390	2430	2700	2900
	Max.shipping weight(t)	1.2	1.3	1.5	1.7	1.9	2.3	2.4	2.6	3.0	3.2	3.8	4.4
	Max.shipping weight(t)	1.3	1.4	1.7	1.9	2.2	2.6	2.7	2.9	3.4	3.6	4.2	4.8

Model		L015	L018	L021	L025	L028	L032	L036	L040	L045	L050	L060	L070
Low temperature shell side	L1(mm)	3575	3575	3605	3605	4675	4675	4700	4725	4810	4810	5860	5860
	W1(mm)	1235	1275	1345	1415	1385	1425	1505	1545	1595	1645	1850	1910
	H1(mm)	1900	1940	2050	2160	2100	2170	2250	2340	2480	2550	2750	2945
	Max.shipping weight(t)	4.4	4.7	5.4	6.0	7.0	7.6	8.4	9.2	10.1	10.8	13	14.7
High temperature shell side	L2(mm)	2470	2470	2800	2980	2980	3220	3260	3300	3660	3690	3900	3900
	W2(mm)	965	965	1055	1115	1110	1165	1175	1145	1195	1190	1280	1300
	H2(mm)	1805	1885	1960	2070	2075	2100	2240	2330	2390	2430	2700	2900
	Max.shipping weight(t)	1.2	1.3	1.5	1.7	1.9	2.3	2.4	2.6	3.0	3.2	3.8	4.4
	Max.shipping weight(t)	1.3	1.4	1.7	1.9	2.2	2.6	2.7	2.9	3.4	3.6	4.2	4.8

Model		H015	H018	H021	H025	H028	H032	H036	H040	H045	H050	H060	H070
Low temperature shell side	L1(mm)	3575	3575	3605	3605	4675	4675	4700	4725	4810	4810	5860	5860
	W1(mm)	1235	1275	1345	1415	1385	1425	1505	1545	1595	1645	1850	1910
	H1(mm)	1900	1940	2050	2160	2100	2170	2250	2340	2480	2550	2750	2945
	Max.shipping weight(t)	4.4	4.7	5.4	6.0	7.0	7.6	8.4	9.2	10.1	10.8	13	14.7
High temperature shell side	L2(mm)	2470	2470	2800	2980	2980	3220	3260	3300	3660	3690	3900	3900
	W2(mm)	965	965	1055	1115	1110	1165	1175	1145	1195	1190	1280	1300
	H2(mm)	1805	1885	1960	2070	2075	2100	2240	2330	2390	2430	2700	2900
	Max.shipping weight(t)	1.2	1.3	1.5	1.7	1.9	2.3	2.4	2.6	3.0	3.2	3.8	4.4
	Max.shipping weight(t)	1.3	1.4	1.7	1.9	2.2	2.6	2.7	2.9	3.4	3.6	4.2	4.8

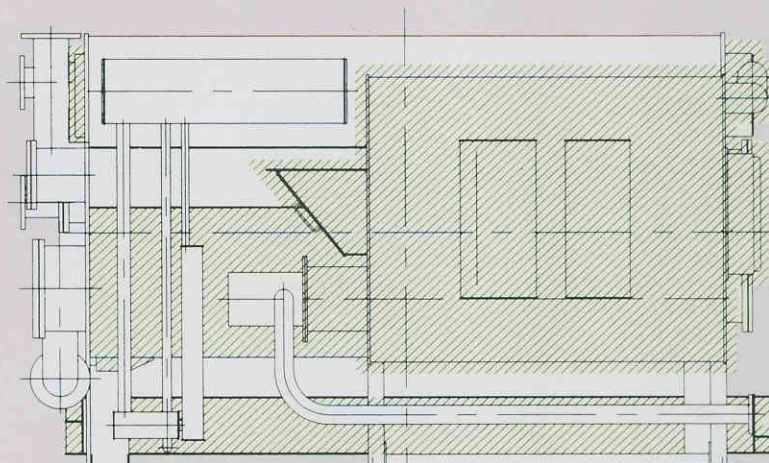
* For the excessive heating type(H type), the high temperature shell-side is upgraded to the class of one-step upper size and for the super excessive heating type(F type), the high temperature regenerator may be upgraded to the class of two-step upper size in dimensions and volume.

Thermal Insulation (hot surface, cold surface)



Low temperature shell

High temperature shell



 Cold insulation-work part
  Hot insulation-work part

Cold insulation-work part

- Evaporator shell
- Evaporator water box and box cover
- Refrigerant pump and piping

High temperature shell hot insulation-work part

- High temperature generator
- Front smoke chamber
- Rear smoke chamber
- Solution piping

Low temperature shell hot insulation-work part

- Solution heat exchanger
- Solution piping
- Steam header
- Refrigerant vapor piping
- Absorber shell

(unit m²)

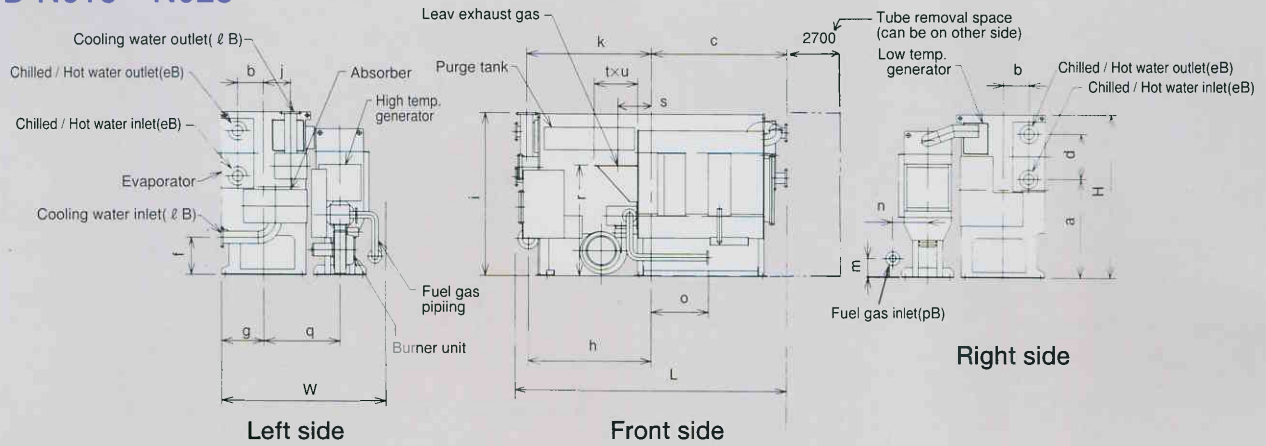
Model (RCD _K)	N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070	
Insulation area(Cold)	8	8.5	9	10	11	12	13	14.5	15.5	16.5	18.5	20	
Insulation area (Hot)	Low temperature shell	6.3	6.5	7.1	7.7	8.8	9.2	9.9	10.3	10.8	11.4	15.5	15.9
	High temperature shell	7.7	8.0	9.4	10.3	11.2	12.8	13.5	14.7	17.2	17.6	20.5	21.7
	Total	14	14.5	16.5	18	20	22	23.4	25	28	29	36	37.6

(unit m²)

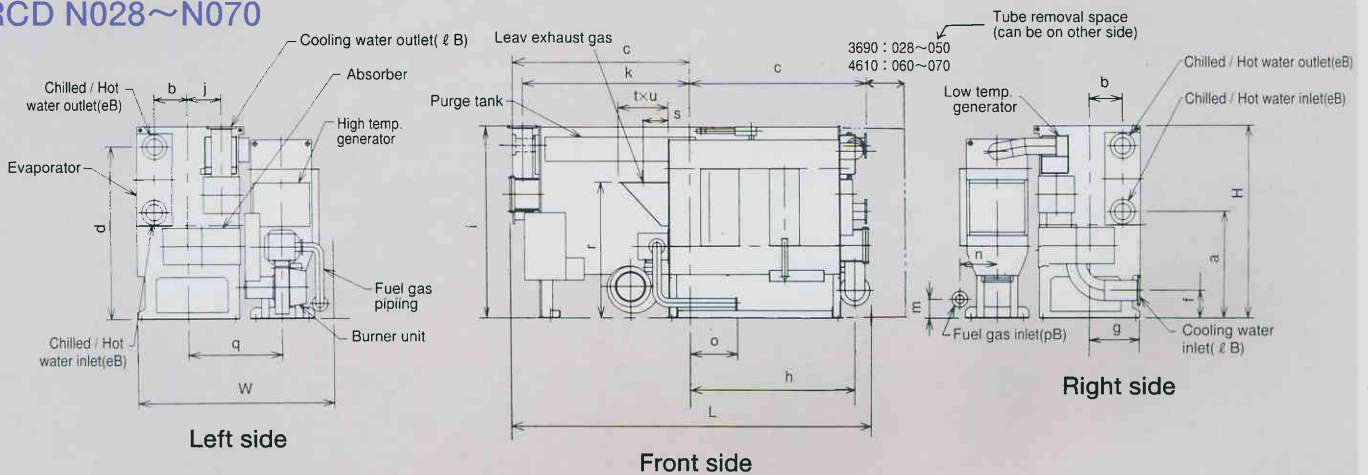
Model (RCD _K)	H015	H018	H021	H025	H028	H032	H036	H040	H045	H050	H060	H070	
Insulation area(Cold)	8	8.5	9	10	11	12	13	14.5	15.5	16.5	18.5	20	
Insulation area (Hot)	Low temperature shell	6.3	6.5	7.1	7.7	8.8	9.2	9.9	10.3	10.8	11.4	15.5	15.9
	High temperature shell	7.7	8.0	9.4	10.3	11.2	12.8	13.5	14.7	17.2	17.6	20.5	21.7
	Total	14	14.5	16.5	18	20	22	23.4	25	28	29	36	37.6

Dimensions

RCD N015~N025



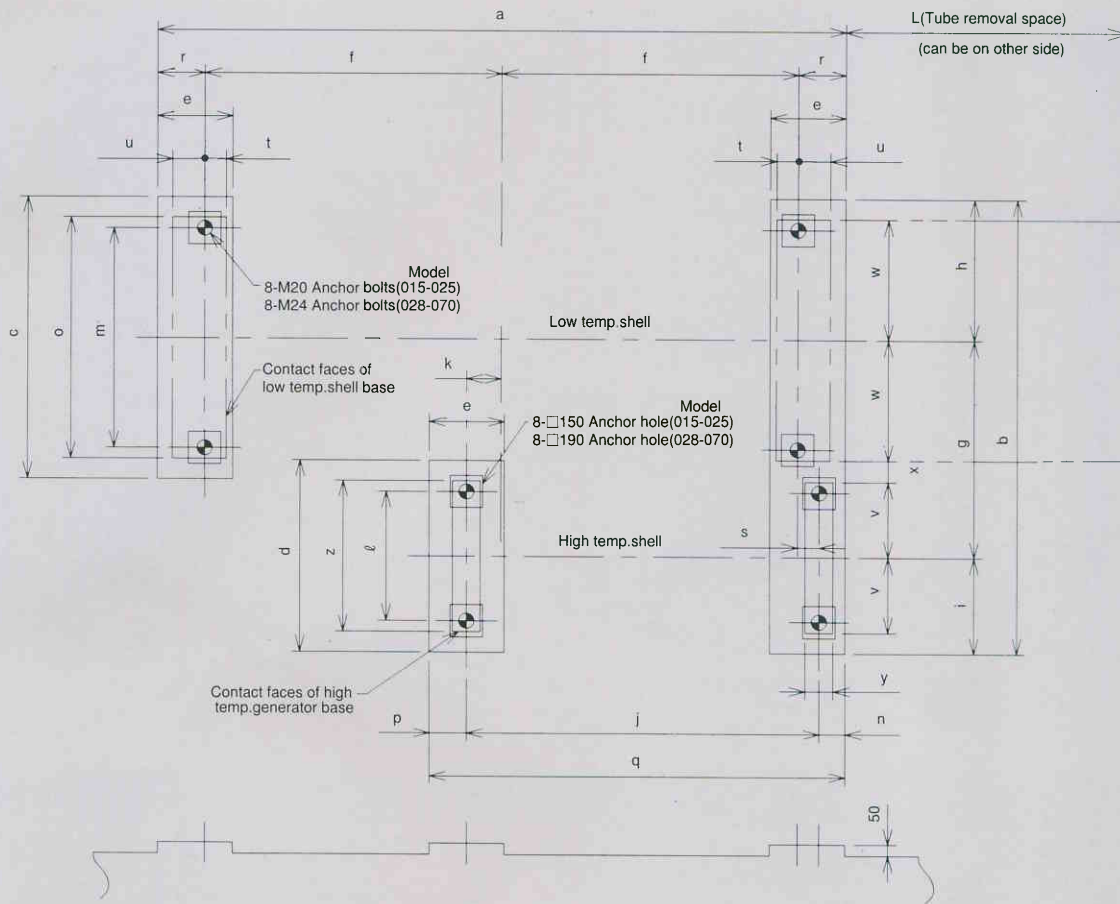
RCD N028~N070



Model(RCDG)		N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070
Chilled/hot water	a mm	1215	1215	1265	1310	1300	1320	1375	1390	1415	1415	1700	1775
	b mm	280	295	320	345	335	350	375	400	425	440	530	550
	c mm	1810	1810	1810	1810	2320	2320	2320	2320	2360	2360	2880	2880
	d mm	480	500	560	600	1870	1920	1995	2070	2215	2285	2450	2645
	e inch	4	4	5	5	6	6	6	6	8	8	8	8
Cooling water	f mm	560	560	515	495	530	540	550	450	370	365	500	530
	g mm	470	490	525	560	545	565	605	625	650	675	790	820
	h mm	1615	1615	1630	1630	2150	2150	2150	2150	2190	2190	2690	2690
	i mm	1900	1940	2050	2160	2100	2170	2250	2340	2480	2550	2750	2945
	j mm	285	300	335	360	335	350	380	400	435	450	530	540
	k mm	1640	1640	1655	1655	2180	2180	2180	2180	2220	2220	2720	2720
	l inch	5	5	6	6	8	8	8	8	10	10	10	10
Gas	m mm	165	165	165	250	250	250	250	250	250	250	250	250
	n mm	280	280	335	395	370	400	390	370	380	380	490	510
	o mm	1550	1550	1550	1550	2050	2040	2040	2040	2040	2040	2540	2540
	p inch	2	2	2	3	3	3	3	3	3	3	2	2
Exhaust gas	q mm	895	915	975	1010	1020	1130	1165	1190	1215	1240	1470	1520
	r mm	1375	1445	1410	1470	1605	1615	1720	1790	1755	1805	1900	2000
	s mm	125	175	505	520	5	260	280	305	640	665	475	470
	t mm	350	450	450	480	450	480	515	568	515	568	702	692
	u mm	310	310	370	370	430	430	460	460	550	550	545	667
Outline dimensions	L mm	3575	3575	3600	3606	4675	4675	4700	4725	4810	4810	5860	5860
	W mm	1825	1870	1975	2150	2105	2280	2340	2350	2415	2465	2875	2975
	H mm	1900	1940	2050	2160	2100	2170	2250	2340	2480	2550	2750	2945
Max shipping weight	t	6.9	7.4	7.7	9.7	11.3	12.5	13.9	15.3	16.9	18.0	20.8	23.5
Operation weight	t	7.4	8.0	8.4	10.4	12.2	13.5	15.0	16.5	18.4	19.7	23.0	26.2

Dimensions of gas piping, combustion volume, type of gas may vary by the supply pressure. In this table, standard requirements and values are based on the supply on the standard, 13A, or LNG, 200 mmAq (case of 015~050), 900mmAq (Case of 060 & 070).

Foundation Drawings

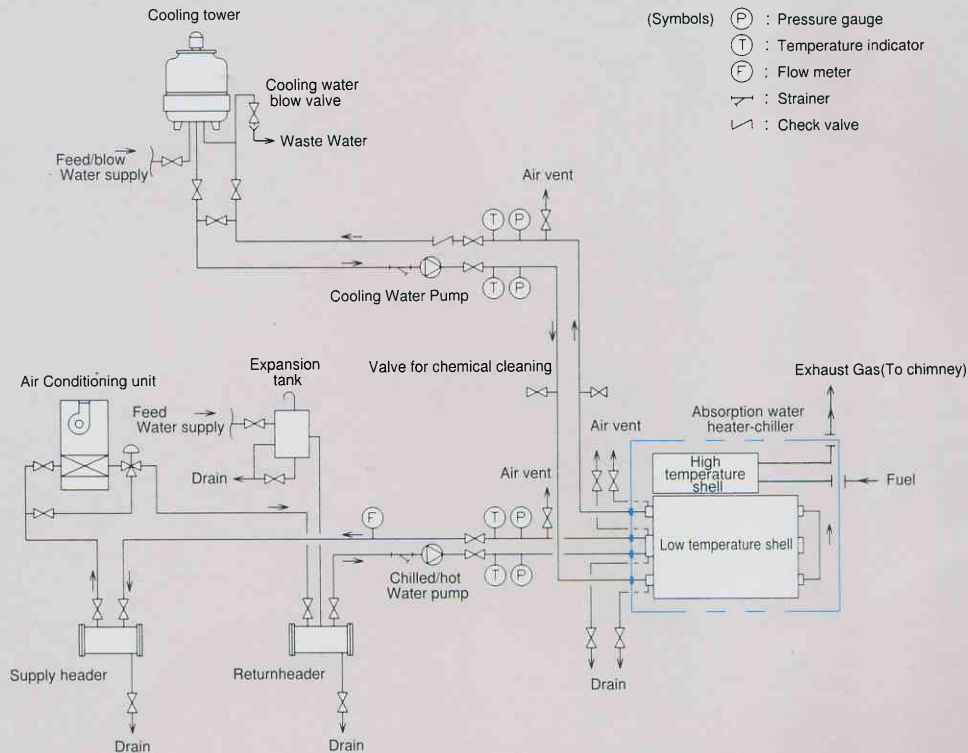


(unit mm)

Model	N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070
a	3200	3200	3200	3200	4180	4180	4180	4180	4180	4180	5180	5180
b	1880	1920	2040	2110	2130	2220	2320	2360	2480	2530	2900	3020
c	1130	1170	1240	1310	1280	1320	1400	1440	1490	1540	1800	1940
d	840	840	890	890	940	990	990	990	1040	1040	1160	1260
e	350	350	350	350	400	400	400	400	400	400	400	400
f	1380	1380	1380	1380	1860	1860	1860	1860	1860	1860	2340	2340
g	895	915	975	1010	1020	1130	1165	1190	1215	1240	1470	1520
h	565	585	620	655	640	660	700	720	745	770	900	970
i	420	420	445	445	470	495	495	495	520	520	580	630
j	1310	1310	1640	1640	1640	1845	1845	1845	2205	2205	2400	2400
k	-170	-170	160	160	-340	-115	-115	-115	245	2450	-40	-40
l	550	550	600	600	650	650	650	650	700	700	800	900
m	840	880	950	1020	990	1030	1110	1150	1200	1250	1500	1540
n	120	120	120	120	110	130	130	130	130	130	150	150
o	940	980	1050	1120	1090	1130	1210	1250	1300	1350	1600	1740
p	175	175	175	175	200	200	200	200	200	200	200	200
q	1605	1605	1935	1935	1950	2175	2175	2175	2535	2535	2750	2750
r	220	220	220	220	230	230	230	230	230	230	250	250
s	100	100	100	100	120	100	100	100	100	100	100	100
t	100	100	100	100	130	130	130	130	130	130	150	150
u	150	150	150	150	170	170	170	170	170	170	150	150
v	325	325	350	350	375	400	400	400	425	425	480	530
w	470	490	525	560	545	565	605	625	650	675	800	870
x	100	100	100	100	100	100	120	120	140	140	190	120
y	130	130	130	130	130	150	150	150	150	150	150	150
z	650	650	700	700	750	800	800	800	850	850	960	1060
L	2905	2905	2905	2905	3915	3915	3915	3915	3915	3915	5000	5000

Technical Information

Recommended Piping Flow Diagram



- *1 Unit encircled with the square dotted line are those equipment under the scope of our scope of supply.
- *2 When the temperature of cooling water is below 15°C, the temperature control of the cooling water is required. The start/stop control device for the fan of the cooling tower is provided as the standard.
- *3 The maximum operating pressure in the chilled/hot water cooling water is 8 kgf/cm²(0.78MPa). The using flange is the JIS 10 kg/cm² FF flange. Provide the comparison flanges by others.
- *4 Drainage plugs(PT 3/4) are arranged at the bottom of chilled/hot and cooling water box, therefore, install the stop valves as required and extend the piping up to the ditch as cases may require.

- *5 Install the drainage at the bottom of flue and chimney as required.
- *6 For the chimney and flue, care must be exercised in designing and planning not to allow chimney in common use with other incinerator or engine generator or other devices.
- *7 In design and planning, sharp corners or flue area must be avoided.
- *8 Cooling tower shall be located far from the outlet of chimney to avoid water pollution.
- *9 For chemical cleaning, install the stop valves for cleaning between the unit and each stop valve at the inlet or outlet.

WATER QUALITY STANDARD OF COOLING WATER

For efficient operation of the unit for a long time, it is necessary water quality control. The following table shows a quality guideline of the cooling water compiled by the Japan Refrigeration and Air conditioning Association(JRA).

Quality standard of cooling water

Items	Values of standard	Tendencies	
		Corrosion	Scale/Slime
pH(25°C)	6.5~8.2	○	○
Electric conductivity(25°C), (μS/cm)	800 or less	○	○
Chloride ions(mgCl ⁻ /ℓ)	200 or less	○	
Sulfate ions(mgSO ²⁻ ₄ /ℓ)	200 or less	○	
Acid consumption(pH4.8) (mgCaCO ₃ /ℓ)	100 or less		○
Total hardness(mgCaCO ₃ /ℓ)	200 or less		○
Calcium hardness(mgCaCO ₃ /ℓ)	150 or less		○
Ionized silica(mgSiO ₂ /ℓ)	50 or less		○

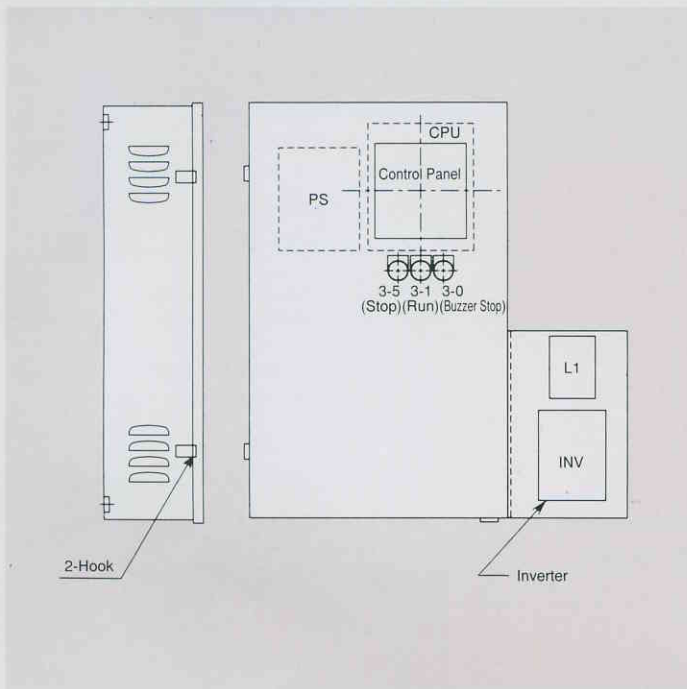
Note 1) As the JRA standard, other items are also listed for your reference.

Quality standard of feed water

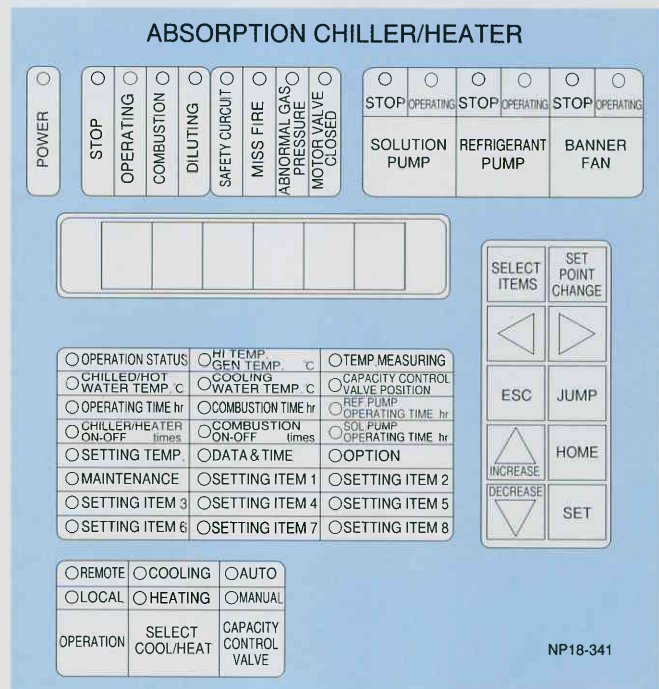
Item	Values of standard
pH(25°C)	6.0~8.0
Electric conductivity(25°C), (μS/cm)	300 or less
Chloride ions(mgCl ⁻ /ℓ)	50 or less
Sulfate ions(mgSO ²⁻ ₄ /ℓ)	50 or less
Acid consumption(pH4.8) (mgCaCO ₃ /ℓ)	50 or less
Total hardness(mgCaCO ₃ /ℓ)	70 or less
Calcium hardness(mgCaCO ₃ /ℓ)	50 or less
Ionized silica(mgSiO ₂ /ℓ)	30 or less

Control panel

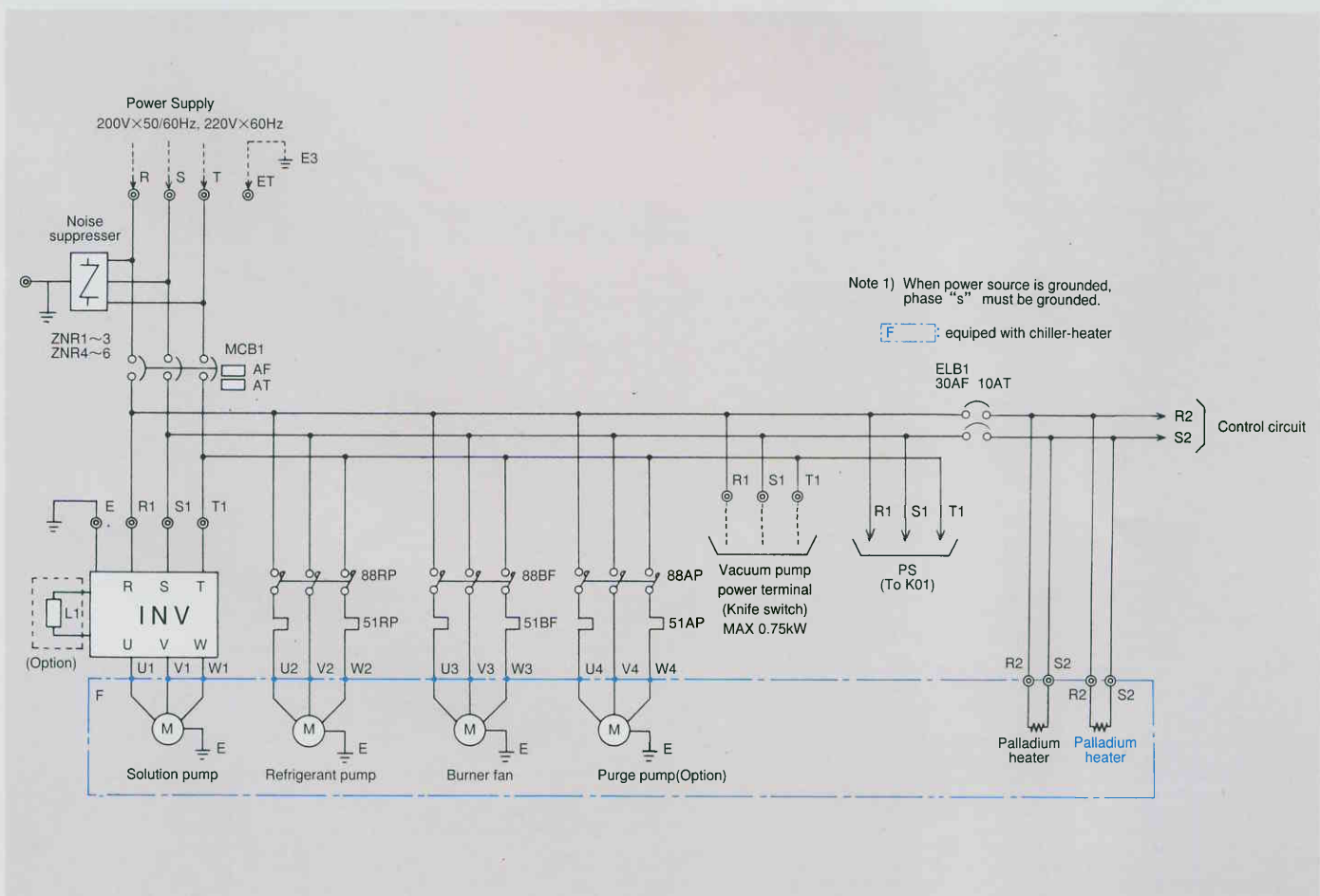
Appearance of Control panel, Front and side views



Control panel(Membrane Sheet)

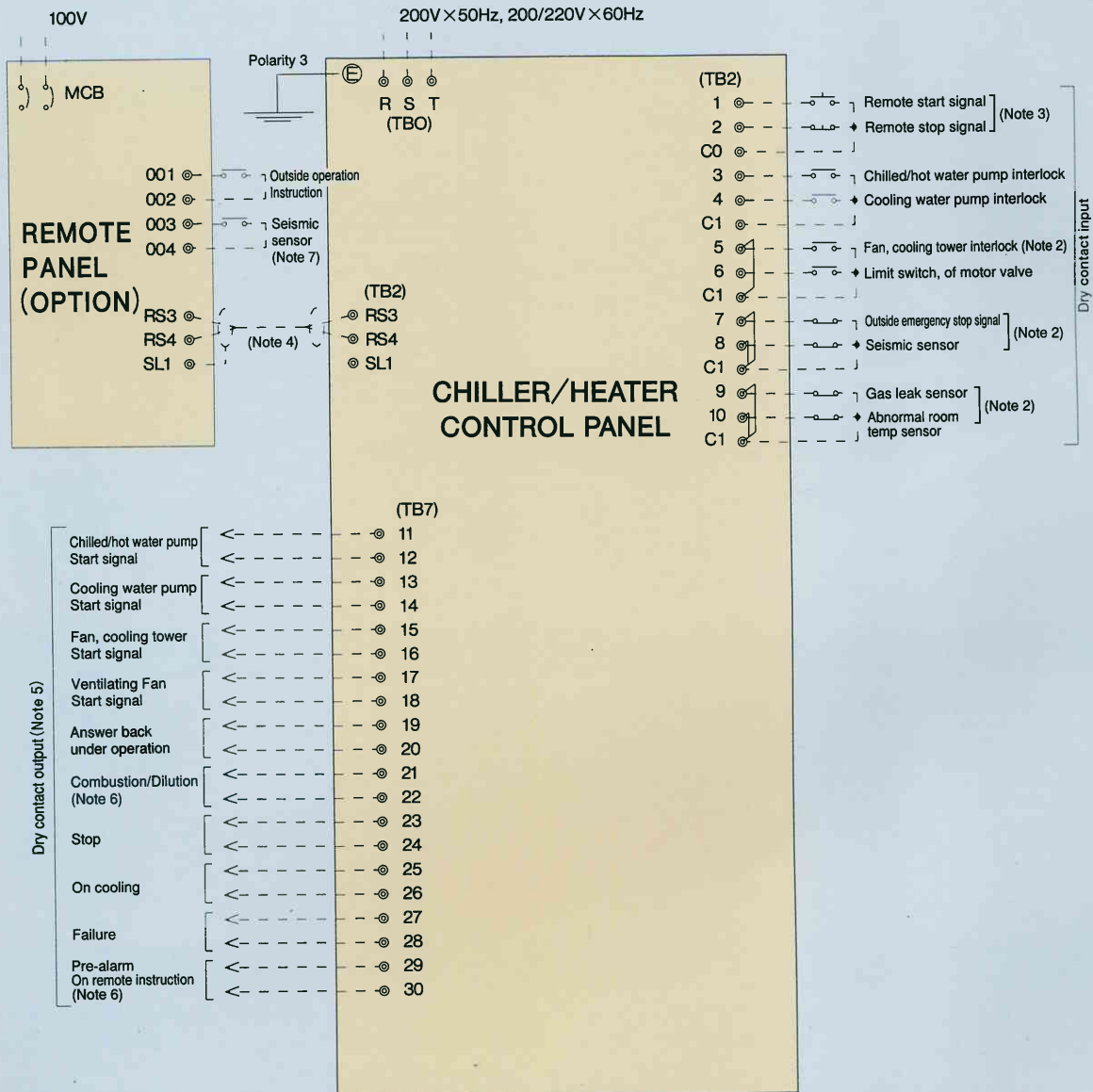


Three-wire Connection Diagram



Control panel

Interface Wiring Diagram



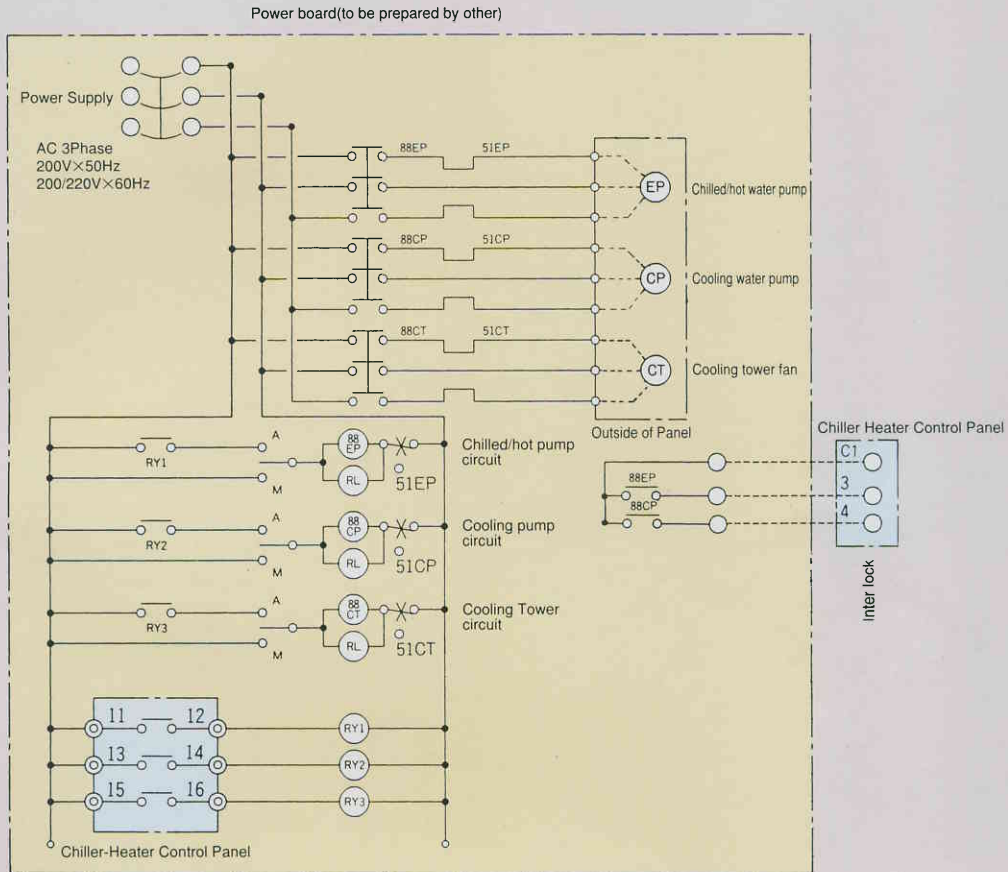
Note.

- This diagram illustrates connecting wiring to/from the chiller-heater, the remote panel (option) and auxiliary devices
- Among input signals, utilize any input signal you need after removing any short circuit in the panel (in-house work finished)
- Wiring may vary depending on the type of remote start/stop signals. Refer the circuit diagram of remote start/stop signals. When the remote panel (optional) is utilized, the remote start/stop signals is carried out on the communication cable, there is no need for this wiring.
- The communication cable may be used the weak current instrument cable (JCS no.364) JKEV-S0.9 x1P of the Japan cable industry association standard. Please remind the following points in the installation work.
 - * The maximum length of communication cable may be limited at 500 m or less.
 - * The cable holds polarity, therefore, handle it accordingly an example of recommended installation.
 - Terminal no. RS3 - To connect with the white cable.
 - Terminal no. RS4 - To connect with the black cable.
 - * The shield must be grounded with by either one of the earth terminals.

- For out-put signals, select any signal necessary.
- Please specify necessary signals for selecting among the preset keys on the control panel of the unit.
- It is possible to insert the switching of seismic sensor into the remote panel (optional).
- For connection wiring with auxiliary devices,
 - * The timer for starting the dilution is included in the control panel of the unit.
 - * During the heating operation, the circuits for cooling water pump and for the fan in the cooling tower are automatically deenergized.
 - * The start/stop control circuit for the fan in the cooling tower is installed as the standard (including a sensor).
 - * The freeze-proof operating circuit for winter is installed as the standard (including a sensor).
 - * For the pump interlock signal, 24 VDC is applied.
- Arrange wiring separately between 200V circuits and low voltage circuits.

Control panel

Sample Wiring Diagram for Chilled/Cooling Water Pump and Cooling Tower Fan Panel

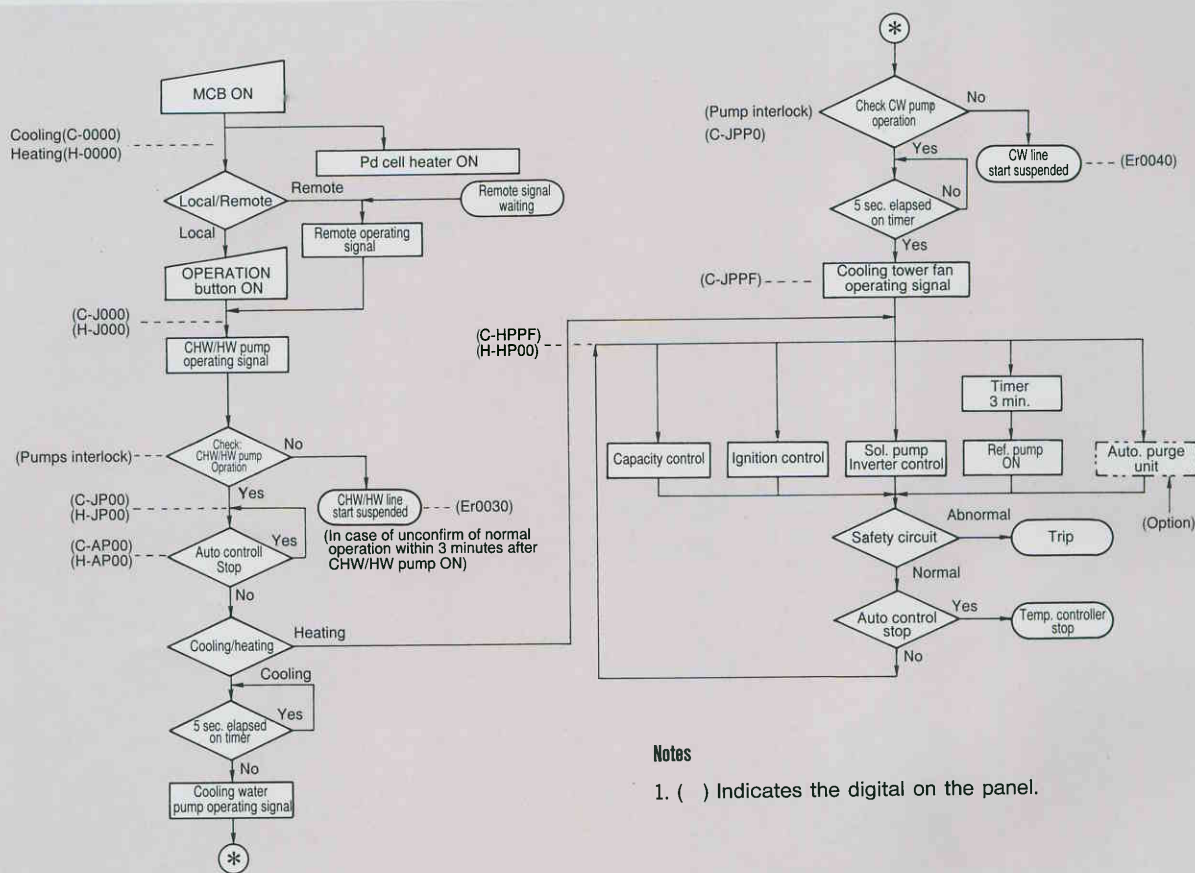


Remote Start/Stop Signal Circuit Diagram

Type	Standard equipment (selection using panel switch)		Optional equipment (installed at factory)			
	A Type	B Type	C Type	D Type	E Type	F Type
	Dry a+b contacts Pulse (momentary) signal	Dry a contact Hold (continuous) signal	DC24V a+a contacts Pulse (momentary) signal	DC24V a contacts Hold (continuous) signal	AC24V a+a contacts Pulse (momentary) signal	AC24V a contact Hold (continuous) signal
Center Control room	ON OFF	ON/OFF	ON OFF	ON/OFF	ON OFF	ON/OFF
Chiller-Heater Control Panel	1 2 C0	1 2 C0	1 2 C0 CX TX DC24V	1 2 C0 CX DC24V	1 2 C0 CX TX AC24V	1 2 C0 CX AC24V
	Terminal NO.					

Operation Flow Chart

Start-Up



Notes

1. () Indicates the digital on the panel.

Safety Device

This unit has various safety devices not only for safety operation but also for protecting the unit.

(1) Safety device for trip.

With activation of the following devices, the unit will stop automatically with closing the shutoff valve of fuel and sounding buzzer simultaneously. The error message number displayed on the control panel inform the fault.

(2) Safety device for automatic control.

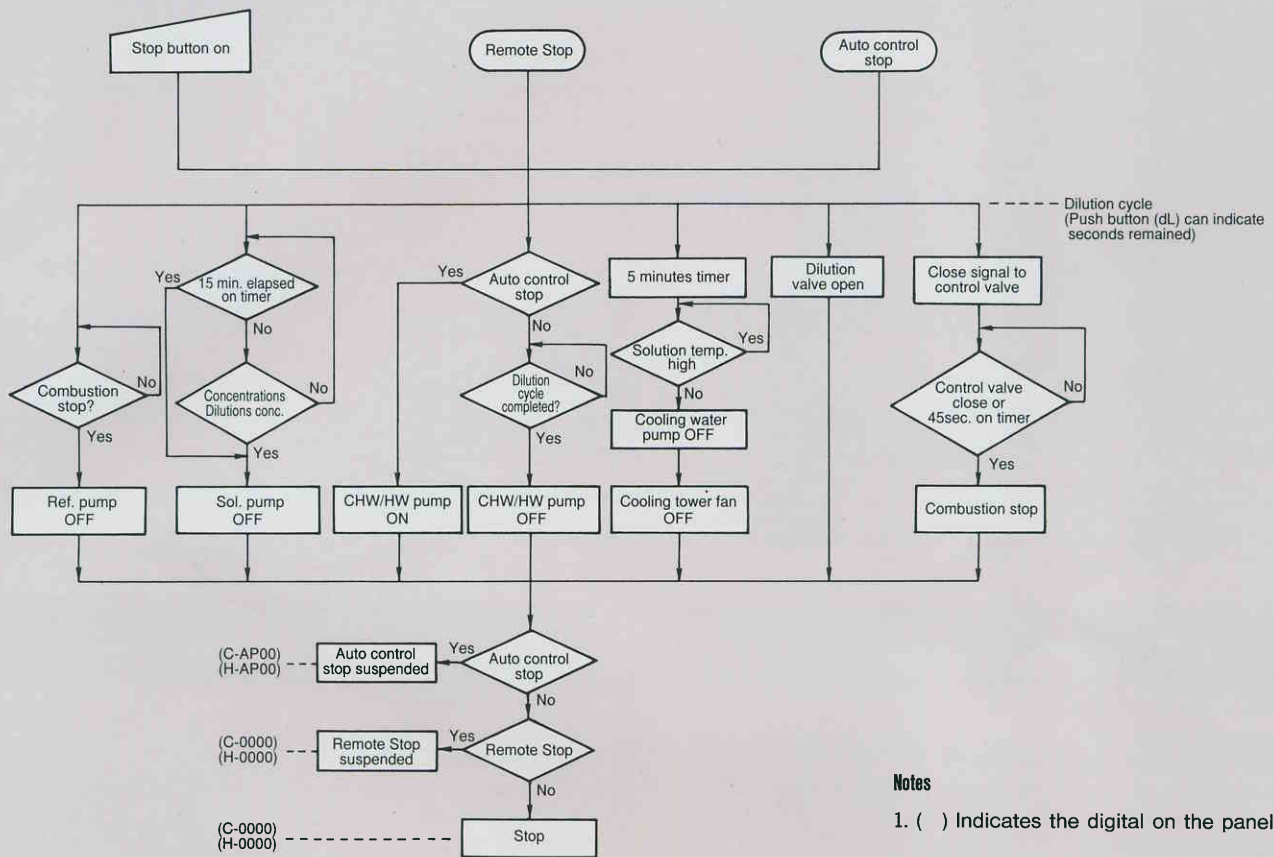
The following equipment and device will control automatically for a safety operation.

- ① Refrigerant overflow pipe To prevent abnormal concentration of solution.
- ② Overflow pipe To prevent crystallization of solution.

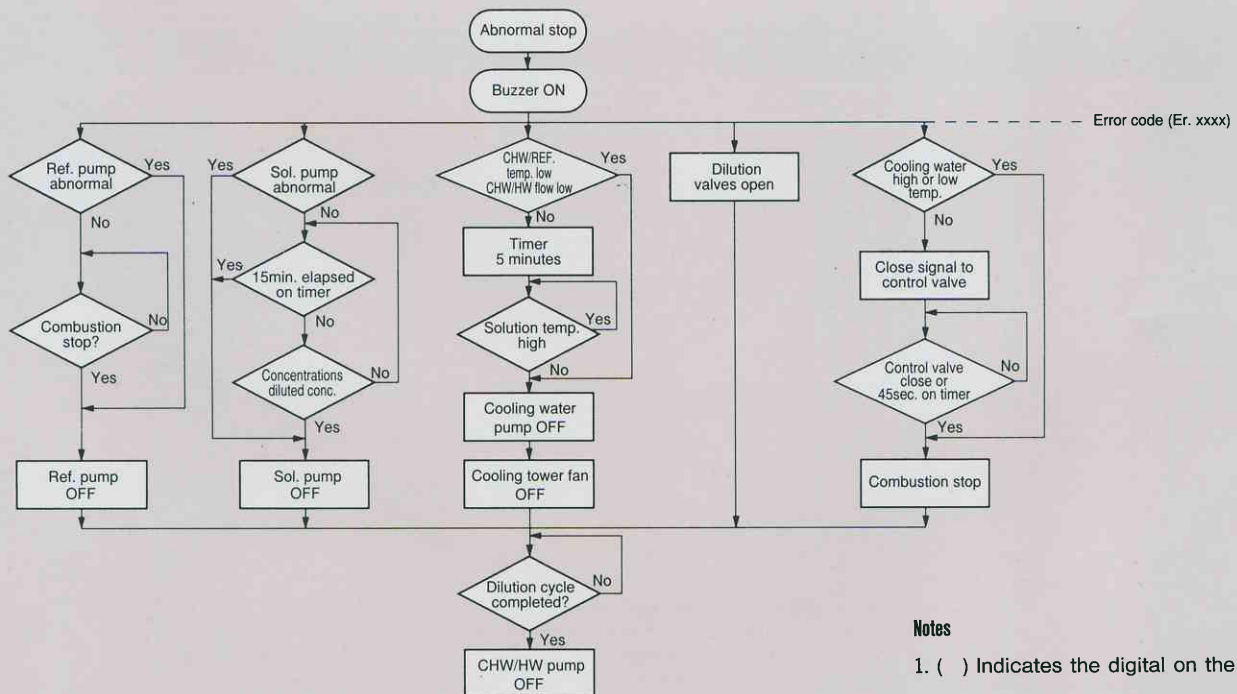
Error number	Sorts of safety device
ER0034	• Chilled water, Low temperature
ER0037	• Refrigerant, Low temperature.
ER0033	• Chilled water, low flow rate
ER0043	* Cooling water, low flow rate
ER0044	• Cooling water, high temperature
ER0045	• Cooling water, low temperature
ER0035	• Decreasing cooling capacity
ER0020	• Over current in the refrigerant pump
ER0021	• Over current in the solution pump
ER0022	• Over current in the burner fan
ER0056	• High temp generator, high pressure
ER0047	• Abnormal temperature of solution in the high temperature generator
ER0057	• Abnormal temperature of the exhaust gas
ER0058	• Abnormal temperature of smoke tube of the high temperature generator
ER0046	• Abnormal temperature of solution in the absorber
ER0031	• Chilled/hot water pump interlock
ER0041	• Cooling water pump interlock
ER0001	* Ventilation fan interlock
ER0003	* Seismic sensor
ER0004	* Abnormal room temperature
ER0005	* Gas leakage
ER0053	Miss ignition
ER0055	Miss fire
ER0051	Abnormal gas pressure(gas-fired only)

Mark * is optional

Normal Stop



Emergency Stop



Scope of Standard Delivery · Combustion Diagram

Summary of Standard Scope of Supply.

Items	Scope in the delivery	Remarks	Items	Scope in the delivery	Remarks
Base machine	○		External piping work	×	Companion-flanges are not included.
Control panel	○		External wiring work	×	No interlock wiring is included.
System wiring and piping	○	Connecting piping (A~C) for cooling water is not required.	Flue and chimney work	×	
Solution (LiBr)	○	Initial charging only.	Final painting over the unit	×	Control panel is painted at factory work.
Refrigerant	×	Note 3)	Insulation work for the unit	×	
Transport from factory to port Yokohama	○	FOB Yokohama	Witnessed test	×	
Transportation from Yokohama to the site	×		Cooling water temperature control	×	
Supervising installation at the site	×	Experts' attendance contract is required.	Thermometers, Pressure gauges	×	For chilled/hot water, for cooling water.
Mortaring anchor bolt	×		Flow meter	×	
Recuperation	×		Drain valve, Air vent valve	×	
Disposition of packing materials	×		Anchor bolts	×	
Nitrogen gas for storage	×		Instruction manual	○	Three(3) sets
Test operation and adjustment	×	Experts' attendance contract is required.	Fuse	○	Spares
Foundation	×				

Note 1) Supplies for water, electricity, gas and other consumed items are requested to provide at the time of installation, test operation and adjustment operation.

Note 2) Temperature control for the cooling water is required if the temperature at the inlet of the cooling water is 15C degrees or less. The start/stop circuit for the fan of cooling tower is provided as the standard equipment (including a thermal sensor).

Note 3) Pure water is required which shall be made in accordance with Ebara's requirement.

Optional Specifications

The following items are provided as optional.

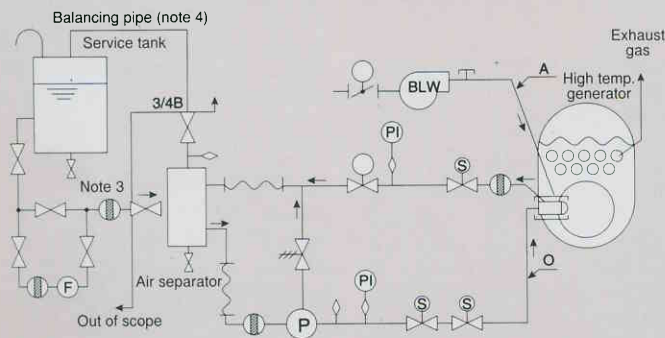
- Marine type water box
- Automatic purge unit
- Special water box design pressure
- Lower than 7 degrees at the outlet of chilled water.
- Low cooling water flow rate requirement.
- Exhaust gas silencer
- Remote panel
- Multi-unit control panel
- Automatic tube cleaning device(ETACS)
- Dual fuel burner
- Heating capacity increase

Inquiry

At inquiry following information are required.

- Cooling capacity.
- Temperature at the inlet and outlet of the chilled water and/or it's flow rate.
- Temperature at the inlet and outlet of the cooling water and/or it's flow rate.
- Heating capacity.
- Temperature at the inlet and outlet of the hot water and/or it's flow rate.
- Type of fuel, supply pressure, calorific value, specific gravity.
- Power/voltage, frequency.
- Type of service and average annual cooling operation time.

Combustion System Diagram (Oil-Fired)



Symbol		Symbol	
	Blower		Flow meter
	Fuel cut-off valve		Cock
	Oil volume adjusting valve		Air piping
	Pressure gauge		Nozzle tip
	Valve		Safety valve
	Oil distributing pipe		Oil filter
	Fuel injection pump		Pressure gauge plug
	Check valve		Flexible hose
	Air dumper		

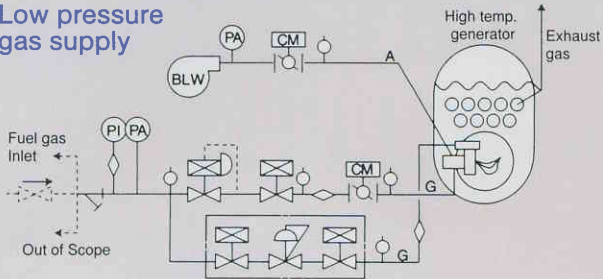
Note

1. Make sure the oil pressure at 0.1-0.35kg/cm²G at the tie point.
2. Make sure removing water with a drainage on the bottom of service tank
3. Install a oil filter (20microns) separating oil and water at the connection port of the unit and the oil supply side.
The oil filter is an accessory part of the unit(Kerosene-Fired type).
4. Balance pipe must be installed for preventing miss-fire. Make sure no stagnant oil or air in the piping.

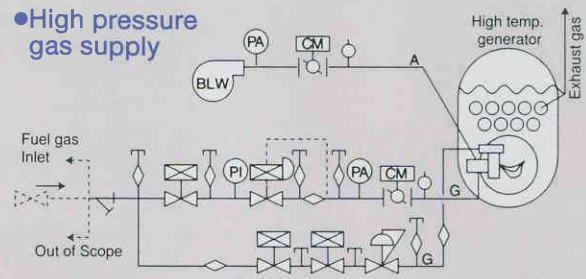
Combustion System Diagram Technical Relating to The Anti-Air Pollution Law

Combustion System Diagram(Gas-Fired)

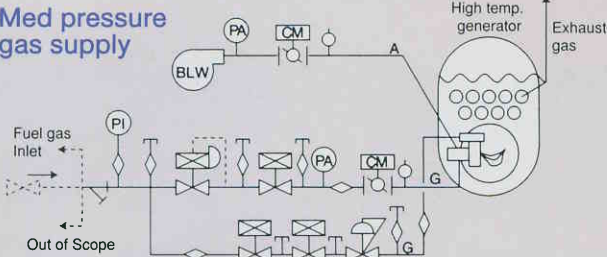
•Low pressure gas supply



•High pressure gas supply



•Med pressure gas supply



Symbol	Symbol	Symbol	Symbol
	Blower		Main burner
	Safety shut valve		Gas pressure adjuster
	Butterfly valve with control motor		Lower limit switch, gas pressure
	Upper limit switch, gas pressure		Switch, wind pressure
	Cock		Hose end cock, pressure gauge
	Gas piping		Air piping
	Pilot burner		Safety shut valve with gas pressure regulator
	Strainer		Pressure gauge
	Plug, pressure gauge		Cock with pressure gauge cock

Technical Information for Exhaust Gas.

Gas (13A) 26% energy saving type

Type	RCDG	N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070
Heat transfer area of Gh	m ²	9.7	11.7	13.8	16.1	19.6	21.4	23.6	27.1	29.5	32.5	38.3	44.6
Fuel consumption	Nm ³ /h	44.9	53.9	62.9	74.8	83.8	95.8	107.8	119.8	134.8	149.7	180.1	210.1
Exhaust gas temperature	°C	235											
Exhaust gas flow	Wet	679.3	815.5	951.7	1131.7	1267.9	1449.5	1631.0	1812.6	2039.5	2265.0	2725	3179
	Dry	580.6	696.9	813.3	967.2	1083.5	1238.7	1393.9	1549.0	1743.0	1935.6	2329	2717
Oxygen residue	%	5											
NOx	ppm	60(O ₂ =0%)											
Combustion air flow	m ³ /min(20°C)	11.5	14	16	19	21.5	24.5	27.5	30.5	34.5	38.5	46	53.8

Oil (Kerosene) 26% energy saving type

Type	RCDK	N015	N018	N021	N025	N028	N032	N036	N040	N045	N050	N060	N070
Heat transfer area of Gh	m ²	9.7	11.7	13.8	16.1	19.6	21.4	23.6	27.1	29.5	32.5	38.3	44.6
Fuel consumption	ℓ/h	53.9	64.7	75.4	89.8	100.6	115.0	129.3	143.7	161.7	179.6	216.3	252.2
Exhaust gas temperature	°C	235											
Exhaust gas flow	Wet	638	766	892	1063	1191	1361	1530	1701	1914	2126	2560	2985
	Dry	572	687	800	953	1068	1220	1372	1525	1716	1906	2295	2676
Oxygen residue	%	4											
NOx	ppm	MAX. 100											
Dust	g/Nm ³	MAX. 0.05											
SOx	Nm ³ /h	0	0	0	0	0	0	0	0	0	0	0	0



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