



No.1 HVAC & Total solution provider to the world

CHP Solution Inc.,

CENTION CHILLER

Steam Driven Absorption Chiller



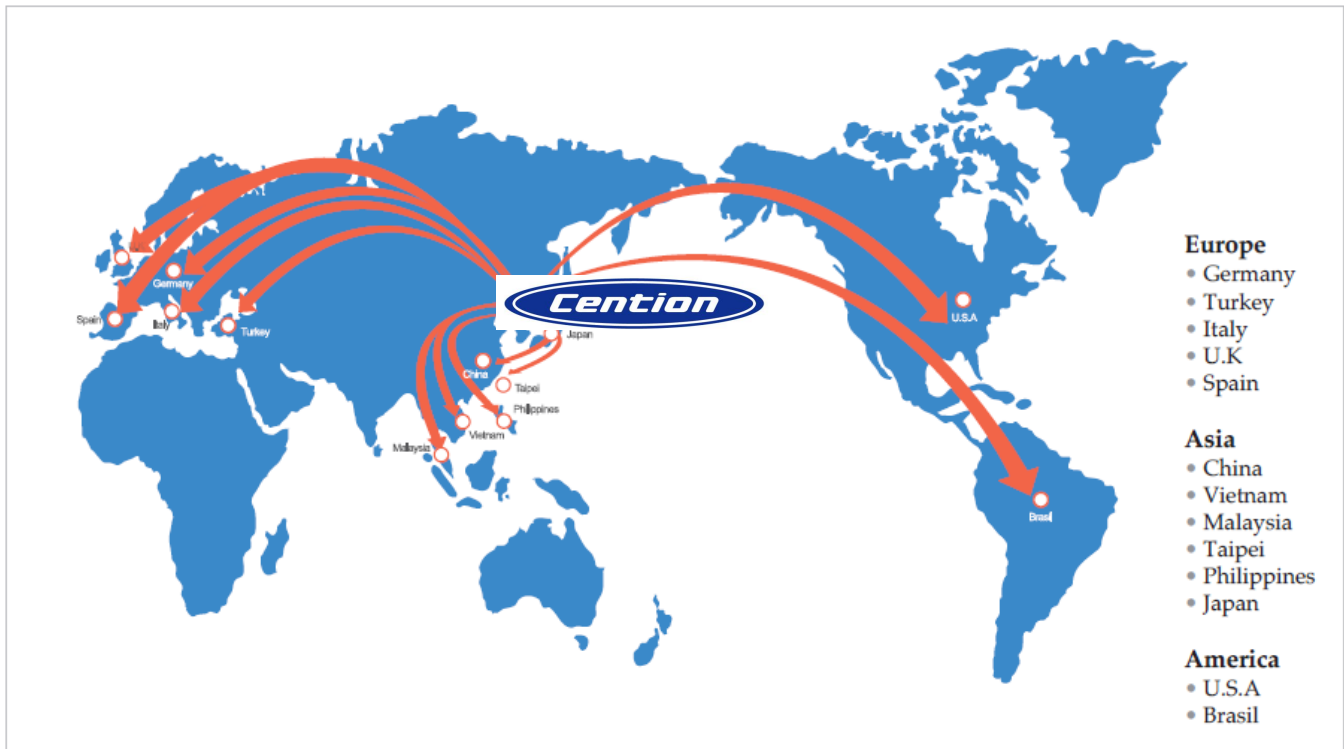
GREEN ENERGY TECHNOLOGY

No.1 HVAC & Total solution Provider to the world

CHP Solution Inc., prepare the better future to the No.1 HVAC & R provider to the world through the green energy technology, continuous R&D education program and HVAC infrastructure.

Global business infrastructure

Sales Network



We provide you with total HVAC solutions, through the proposal of building air conditioning system and industrial cooling/heating system.

By supply our products based on lots of experience and sales in reliability, we and our sales partners of all of the world served to change your life style.

Contents

4 About Products

10 Engineering Data

29 Guide Specification

Nomenclature

Identification Rule

SAB-SF050G1

SAB = CHP Solution Inc., Absorption chiller

SF = Steam Driven Absorption chiller

DF = Direct Fired Absorption chiller & heater

HW = Hot water driven Absorption chiller

LW = Single Effect Double Lift Hot water driven Absorption chiller




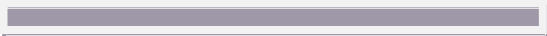







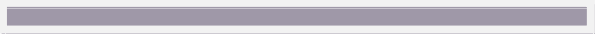


050 = Cooling Capacity x 10

G = General Efficiency (Steam consumption ratio is 3.9kg/h.RT)

E = High Efficiency(Steam consumption ratio is 3.6kg/h.RT)

1 = Model Version number, 0,1,2,3...

Line Up

Model	0	250	500	750	1000	1250	1500
SAB-DF-G SERIES 	 <p>120usRT 1250usRT</p> <p>Direct Fired Absorption Chiller & Heater(COP based on 1.2 at HHV)</p>						
SAB-DF-E SERIES 	 <p>120usRT 1000usRT</p> <p>Direct Fired Absorption Chiller & Heater(COP based on 1.32 at HHV)</p>						
SAB-DF-E0J SERIES 	 <p>120usRT 1000usRT</p> <p>Waste Heat(Hybrid) Absorption Chiller & Heater(Gas+Hot water)</p>						
SAB-SF-G SERIES 	 <p>120usRT 1250usRT</p> <p>Steam Driven Absorption Chiller(Steam consumption ratio is 3.9kg/h.RT)</p>						
SAB-SF-E SERIES 	 <p>120usRT 1000usRT</p> <p>Steam Driven Absorption Chiller(Steam consumption ratio is 3.6kg/h.RT)</p>						
SAB-HW-G SERIES 	 <p>15usRT 1000usRT</p> <p>Hot water Driven Absorption Chiller(Hot water in/out temp. is 95-80°C)</p>						
SAB-LW-G SERIES 	 <p>65usRT 1300usRT</p> <p>Single Effect-Double Lift Hot water Driven Absorption Chiller (Hot water in/out temp. is 95-55°C)</p>						

Product Feature

Excellent Performance with More Energy Savings.

At CHP Solution Inc, basing ourselves on cooling technology and know-how acquired over many years, we put into practice our latest proprietary technology. Through the use of large chilled water/cooling water temperature differential adaptability and provision of a high-functionality microcomputer as a standard control panel, superior reliability and durability are realized, while achieving running efficiency. As an item of new-age cooling equipment CHP Solution Inc's one step advanced chiller contributes to the realization of total energy-saving and low cost in air-conditioning system.

High Reliability

A high functionality microcomputer control panel with a complete set of preventive maintenance and abnormality forecast functions is a standard feature. Standard cooling capability realizing up to 4,000 hrs/yr operation.

Superior Operability and Easy Maintenance

Operating condition or abnormalities are quickly shown on easy-to-see liquid crystal digital and LED displays. Compatible with air conditioning system interfaces and supports introduction of remote supervision system.

Large-Temperature-Differential System.

By using the large-temperature-differential system, the circulating volumes of chilled and cooling water can be reduced. The large-temperature-differential system reduces power needed for circulating air and water, because of reduced volumes of the draught from the air conditioner fan and of the circulating water from the

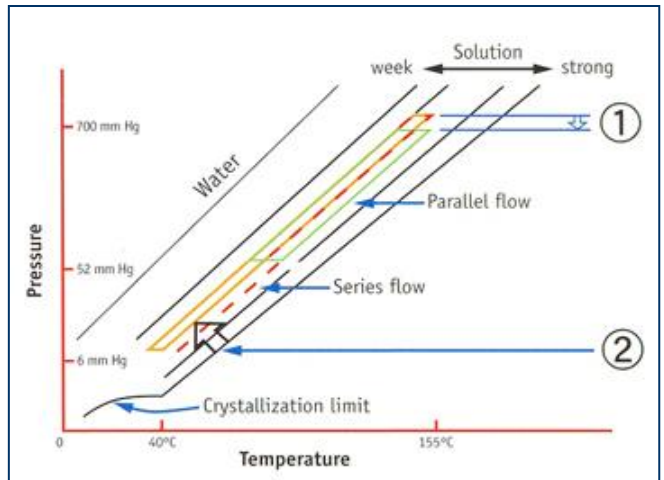
chilled and cooling water pumps. In addition, it makes such facilities as air ducts and chilled/cooling water pipes smaller, and also reduces the initial cost for them.

Relationships between temperature differentials and circulating water volumes (when the water volume at standard temperature differential is taken as 100)

		Cooling water	
		Standard	Large temperature differentials
Chilled water	Standard	32°C → 37.5°C Δt=5.5°C (1.0m³/h·RT)	32°C → 39.4°C Δt=7.4°C (0.75m³/h·RT)
	Large temperature differentials	12°C → 7°C (Δt=5°C)	15°C → 7°C*3 (Δt=8°C)
Standard	Chilled water	100*1	100
	Cooling water	100	75*2
Large temperature differentials	Chilled water	63	63*1
	Cooling water	100	75

*1 In this brochure, only standard [*1] and large temperature differential system both of chilled and cooling water condition [*2] specifications are listed.
 *2 On such standard machines as adaptable only to cooling water temperature differentials, cooling capacity is reduced by approx. 10% below standard.
 An option is available for not reducing cooling capacity while using such adaptability.
 *3 Chilled water inlet temperatures of up to 14°C - 17°C (7°C at outlet) are possible on standard-size machines with on options provided.

Stable and reliable operation with crystallization free



In the parallel flow system, the diluted solution coming out of the absorber is divided into two flows. These two flows of solution are sent to the high-temperature and low-temperature generators separately. The system holds the flow pressure of the high-temperature generator lower than the series flow(indicated by “①” in the figure), while keeping an enough margin for crystallization in a low-temperature condition (indicated by “②” in the figure). In addition, the performance of absorption cycle is increased because the rate of

CENTION CHILLER

solution flow into the high-temperature generator is made lower than that of series flow.

Control

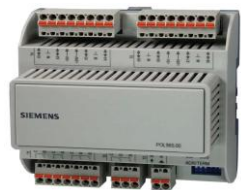
Control Algorithm

PLC Controller

Climatix Controller [POL-63x.xx]



15 I/O module [POL-965]



The controllers offer the following features:

- POL63x Controller
- Freely programmable
- Object-oriented programming by graphic editor SAPRO
- Expandability via peripheral bus for local or remote I/O extension modules
- Power supply AC 24 V or DC 24 V
- 8 universal I/Os (configurable inputs / outputs, for analog or digital signals)
- DC 24 V onboard power supply for active sensors
- 5 digital inputs (potential-free contacts)

- 2 analog outputs (DC 0...10 V outputs)
- 6 relay outputs (NO contacts)
- RS-485 in Modbus RTU model for third-party bus
- Full modem RS-232 port for remote service
- Process bus for connecting room units and remote HMI (DPSU)
- Up to 3 additional communication modules for BACS integration
- Local service connector for user interface (RJ45) and PC tools (USB)
- SD card for application and operating system upgrade
- LON field bus (POL636.00 only)
- Ethernet port for remote or local servicing using standard browsers (POL638.00 only)
- Operating temperature -20...60 °C (without LCD – 40...70 °C)

■ POL-965

- 8 universal I/Os
- AC 24 V and DC 5 V power supply for active sensors on board
- 4 relay outputs
- 2 triac outputs (AC 24 V...230 V)
- 1 digital input galvanically isolated for AC 115/230 V
- * POL-945
- 4 analog inputs (can be configured separately as digital inputs)

CENTION CHILLER

- 4 relay outputs
- POL-925
- 4 digital inputs for potential-free contacts
- 2 digital inputs galvanically isolated for AC 115/230 V

Touch screen



■ XT07CD-7

- Panel size : 7" color display
- OS : Window CE 6.0
- Memory : 128Mb DDR2
- Storage : 128Mb SLC NAND FLASH
- Pixel : WVGA 800x480
- Touch type : Analog
- Font : Korea, Chinese, Japan, English image font
- Comm. : RS-232/422/485
- USB Host. : 1 Port
- Power supply DC 24 V

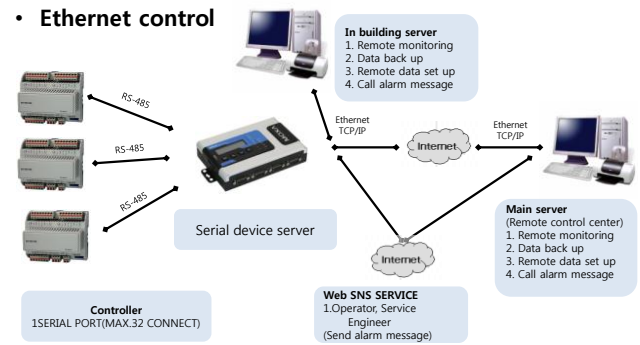
Ethernet Monitoring & Control System

We provide remote control system with Ethernet based protocol for chiller operating data monitoring. Moreover remote start/stop, change setting value of chiller operating.

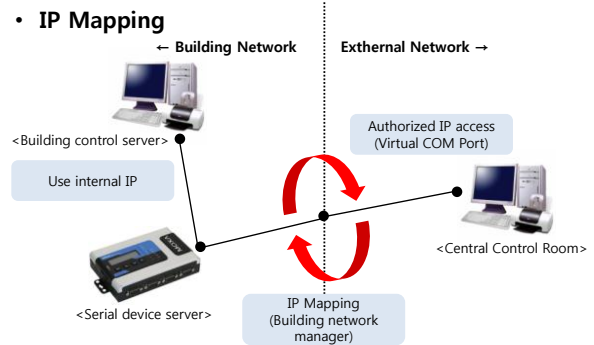
And we can inspect and control all operating data and forecast the alarm or malfunction.

So, we recommend better setting data and how to take action.

Ethernet Control System



IP Mapping



Central Monitoring System

Remote monitoring and control system allow operators to check and control ZEPHYRUS CHILLER remotely via internet or direct connection.

- Easily accessible to user's interface
- Operational data acquisition
- Graphical display of monitoring & control status
- Real time graphical display of trend data
- Various graphic display for analog data

2013 / 2 / 4 / 월 14 : 24 : 0

Shinsung Engineering **삼익패션타운-400RT #1 냉동기 상태화면**

< 상태 입력 >

냉온수 출구온도	0.0	고온회생기온도	0.0
냉온수 입구온도	0.0	회색온도	0.0
냉각수 출구온도	0.0	메가가스온도	0.0
냉각수 입구온도	0.0	중속냉매온도	0.0
중발기 냉매온도	0.0	원격온전도	로컬
고온재생기압력	0.0	냉방운전시간	0 H
버너압력계도	0.0	난방운전시간	0 H
스캐폴드온도	로컬	원격운전입력	정지

< 원격 제어 >

운전/정지	정지	냉수설정온도	0.0	기타 설정	
냉방/난방	난방	온수설정온도	0.0		

< 출력상태 >

용액펌프	정지	냉각탑연동	정지	냉동기온전상태	정지
용액수펌프	정지	버너온전신호	정지	냉수펌프연동	정지
냉매펌프	정지	ALARM	정상	냉각수펌프연동	정지
냉/난방모드	난방	원격모드출력	정지	회색온전상태	정지

메인화면
경향화면
계통도
경보화면
SAB-DF018
SAB-DF040_#2

Shinsung Engineering 냉동기 원격감시시스템

터보 냉동기 흡수식 냉동기 스크류 냉동기

터보 경향 화면 1

SAB:TR_ALARM#1	0.0	냉수설정온도	0.0
SAB:TR_SH#1	91.0	온수설정온도	0.0
SAB:TR_CHU_I#1	9.0	냉동기온전상태	정지
SAB:TR_CHU_O#1	5.0	냉수펌프연동	정지
SAB:TR_CIND_P#1	016.0	온수펌프연동	정지
SAB:TR_CDU_I#1	28.7	냉각수펌프연동	정지
SAB:TR_CDU_O#1	33.0	회색온전상태	정지
SAB:TR_OIL_I#1	39.0		
SAB:TR_OIL_T#0#1	58.0		
SAB:TR_OIL_T#0#2	67.0		

상태화면
메러화면

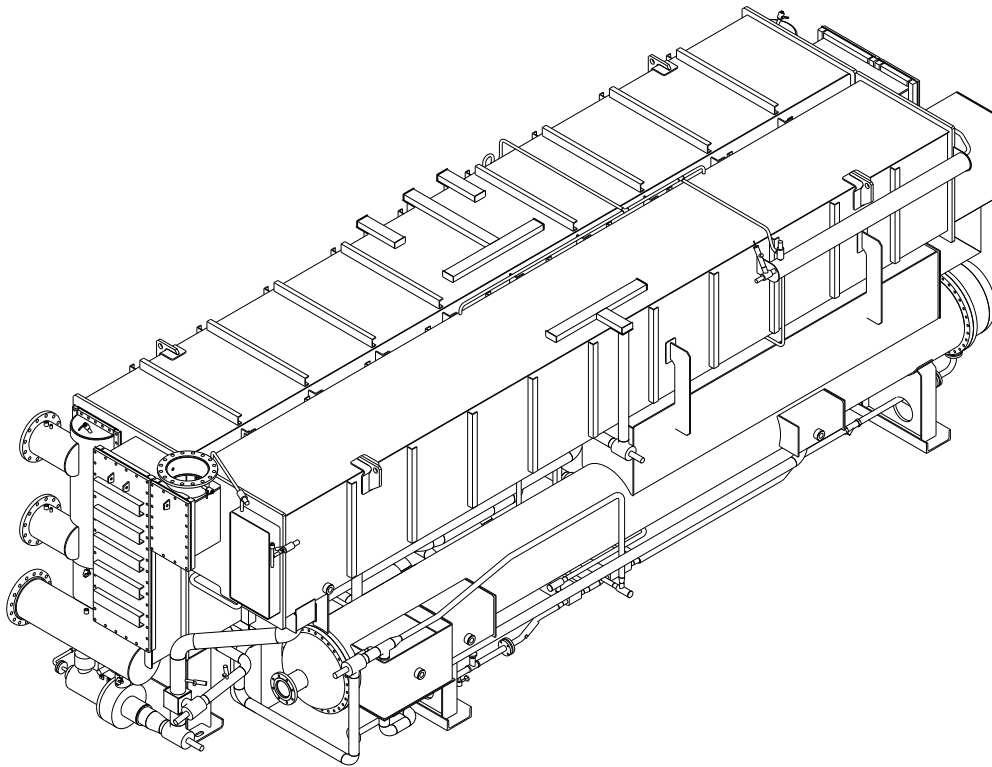
2013 / 2 / 4 / 월 14 : 25 : 10

SAB-DF040 #1 냉동기 CYCLE DIAGRAM

정지 중
난방
냉수설정온도 0.0 °C
온수설정온도 0.0 °C
메인화면
상태화면
경향화면
경보화면
SAB-DF018
SAB-DF040_#2

ENGINEERING DATA

All products are qualified of reliability at factory test facility before shipments, and the products are upgraded continuously through the records of test and field experiences.



Specifications

Double Effect Steam Driven Absorption chiller

Item		Model	SAB-SF						
			012G1	015G1	018G1	021G1	024G1	028G1	032G1
Cooling capacity		usRT	120	150	180	210	240	280	320
		kW	422	527	633	738	844	985	1,125
Chilled water	Temperature	°C	12 → 7						
	Flow rate	m ³ /h	72.6	90.7	108.9	127.0	145.2	169.3	193.5
	Pressure Drop	kPa	54	65	58	52	53	110	112
	Connection	DN	100	100	125	125	125	150	150
	PASS		5	5	4	3	3	3	3
Cooling water	Temperature	°C	32 → 37.2						
	Flow rate	m ³ /h	123	154	184	215	246	287	328
	Pressure drop	kPa	72	86	82	90	90	99	99
	Connection	DN	125	125	150	150	200	200	200
	PASS		6	6	5	4	4	3	3
Electrical data	Source	V	3ø 220/380/440						
	Power	kVA	10.3	10.3	13	13	13	13	13
	Sol. Pump	kW	2.4+1.5	2.4+1.5	3.2+1.5	3.4+2.2	3.4+2.2	3.7+2.2	3.7+2.2
	Ref. Pump	kW	0.4	0.4	0.4	0.6	0.6	0.6	0.6
	Purge Pump	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Steam	Steam flow rate	kg/h	468	585	702	819	936	1,092	1,248
	Steam connection	DN	65	65	65	65	65	65	65
	Drain connection	DN	20	20	20	20	20	20	20
	Steam pressure	barG	8						
	Drain pressure	kPaG	100						
	Steam control valve	DN	25	40	40	32	40	40	40
Dimension	Length	mm	2,685	2,685	3,264	3,930	3,930	4,714	4,714
	Width	mm	2,216	2,216	2,282	2,320	2,320	2,238	2,238
	Height	mm	2,082	2,082	2,090	2,090	2,090	2,090	2,090
Rigging	Operating	Ton	6.4	6.8	7.9	8.6	9.4	11.9	12.2
	Shipping	Ton	6.0	6.4	7.4	8.1	8.8	11.2	11.5
Clearance for tube removal		mm	2,000	2,000	2,600	3,200	3,200	4,000	4,000

- 1 usRT = 3.52kW(3,024kcal/h)
2. Standard tube and waterside pressure(Chilled&Cooling water circuit) : 8kgf/cm²(785kPa)
3. Standard steam inlet pressure is 8 barG, more than 3barG is available, if request.
4. Electrical data is based on 3ph/380V/60Hz
5. The specifications are subject to change without prior notice.
6. For other than above this table, contact nearest ZEPHYRUS agent.

Item		Model	SAB-SF						
			036G0	040G0	045G0	050G0	056G0	060G0	070G0
Cooling capacity		usRT	360	400	450	500	560	600	700
		kW	1,226	1,407	1,582	1,758	1,969	2,110	2,461
Chilled water	Temperature	°C	12 → 7						
	Flow rate	m ³ /h	217.7	241.9	272.2	302.4	338.7	362.9	423.4
	Pressure Drop	kPa	64	64	114	114	160	183	59
	Connection	DN	200	200	200	200	200	200	250
	PASS		3	3	3	3	3	3	2
Cooling water	Temperature	°C	32 → 37.2						
	Flow rate	m ³ /h	369	410	461	512	574	615	717
	Pressure drop	kPa	91	97	74	79	109	126	73
	Connection	DN	250	250	250	300	300	300	300
	PASS		4	4	3	3	3	3	2
Electrical data	Source	V	3ø 220/380/440						
	Power	kVA	13.8	13.8	26.2	26.2	26.2	26.2	26.2
	Sol. Pump	kW	4.5+2.2	4.5+2.2	5.5+3.4	5.5+3.4	5.5+3.4	5.5+3.4	5.5+3.4
	Ref. Pump	kW	0.75	0.75	1.5	1.5	1.5	1.5	1.5
	Purge Pump	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Steam	Steam flow rate	kg/h	1,404	1,560	1,755	1,950	2,184	2,340	2,730
	Steam connection	DN	80	80	80	80	100	100	100
	Drain connection	DN	20	20	20	20	25	25	32
	Steam pressure	barG	8						
	Drain pressure	kPaG	100						
	Steam control valve	DN	40	50	50	50	50	65	65
Dimension	Length	mm	4,819	4,819	5,601	5,601	6,250	6,250	7,450
	Width	mm	2,460	2,460	2,460	2,460	2,439	2,439	2,715
	Height	mm	2,685	2,685	2,685	2,685	2,768	2,768	2,715
Rigging	Operating	Ton	13.7	13.9	16.2	16.5	17.5	17.5	26.4
	Shipping	Ton	12.2	12.4	14.5	14.7	15.6	15.6	23.2
Clearance for tube removal		mm	4,000	4,000	4,700	4,700	5,400	5,400	6,200

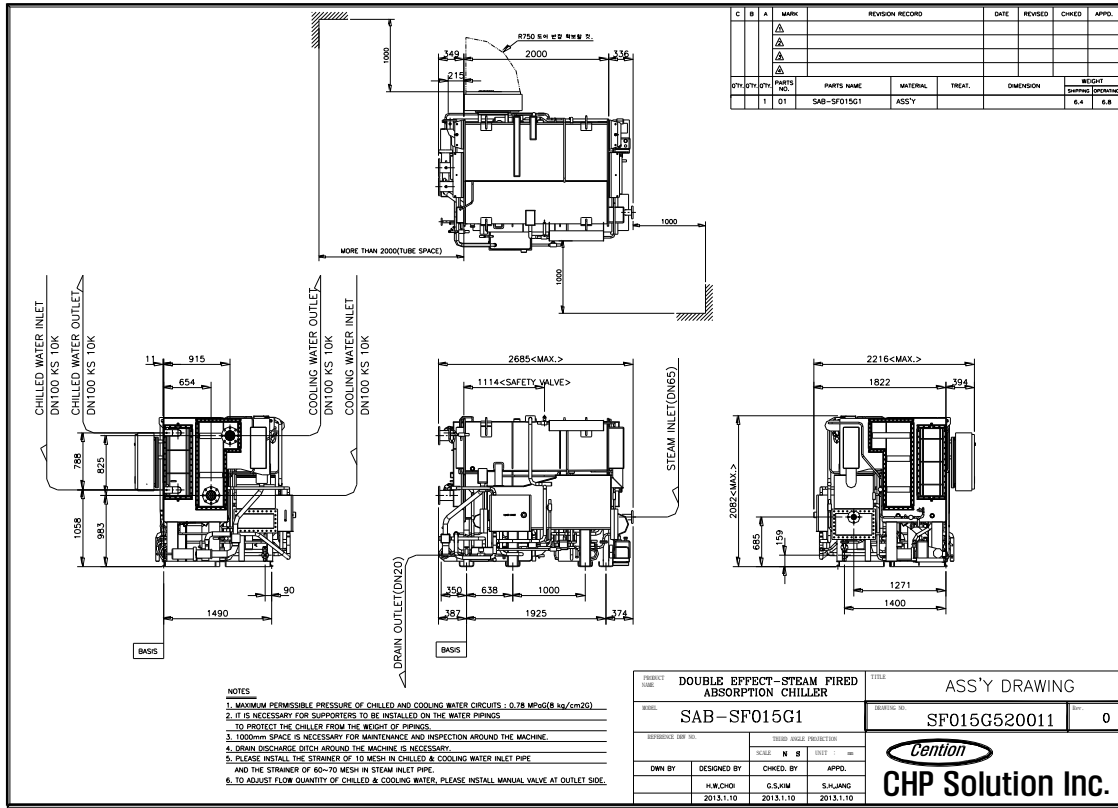
- 1 usRT = 3.52kW(3,024kcal/h)
2. Standard tube and waterside pressure(Chilled&Cooling water circuit) : 8kgf/cm²(785kPa)
3. Standard steam inlet pressure is 8 barG, more than 3barG is available, if request.
4. Electrical data is based on 3ph/380V/60Hz
5. The specifications are subject to change without prior notice.
6. For other than above this table, contact nearest ZEPHYRUS agent.

Item		Model	SAB-SF			
			080G0	090G0	100G0	125G0
Cooling capacity		usRT	800	900	1000	1250
		kW	2,813	3,165	3,516	4,395
Chilled water	Temperature	°C	12 → 7			
	Flow rate	m ³ /h	483.8	544.3	604.8	756
	Pressure Drop	kPa	64	109	110	162
	Connection	DN	250	300	300	300
	PASS		2	2	2	2
Cooling water	Temperature	°C	32 → 37.2			
	Flow rate	m ³ /h	819	922	1,024	1,280
	Pressure drop	kPa	78	133	133	181
	Connection	DN	350	350	350	400
	PASS		2	2	2	2
Electrical data	Source	V	3ø 220/380/440			
	Power	kVA	26.2	34.9	34.9	40.9
	Sol. Pump	kW	5.5+3.4	7.5+3.7	7.5+3.7	10+5.5
	Ref. Pump	kW	1.5	3.0	3.0	3.7
	Purge Pump	kW	0.4	0.4	0.4	0.4
Steam	Steam flow rate	kg/h	3,120	3,510	3,900	4,875
	Steam connection	DN	125	125	125	125
	Drain connection	DN	32	32	32	32
	Steam pressure	barG	8			
	Drain pressure	kPaG	100			
	Steam control valve	DN	65	65	80	100
Dimension	Length	mm	7,450	8,001	8,001	9,104
	Width	mm	2,715	2,887	2,887	3,011
	Height	mm	2,715	2,735	2,735	3,113
Rigging	Operating	Ton	26.7	29.7	30.1	34.4
	Shipping	Ton	23.5	26.1	26.5	30.2
Clearance for tube removal		mm	6,200	7,000	7,000	8,000

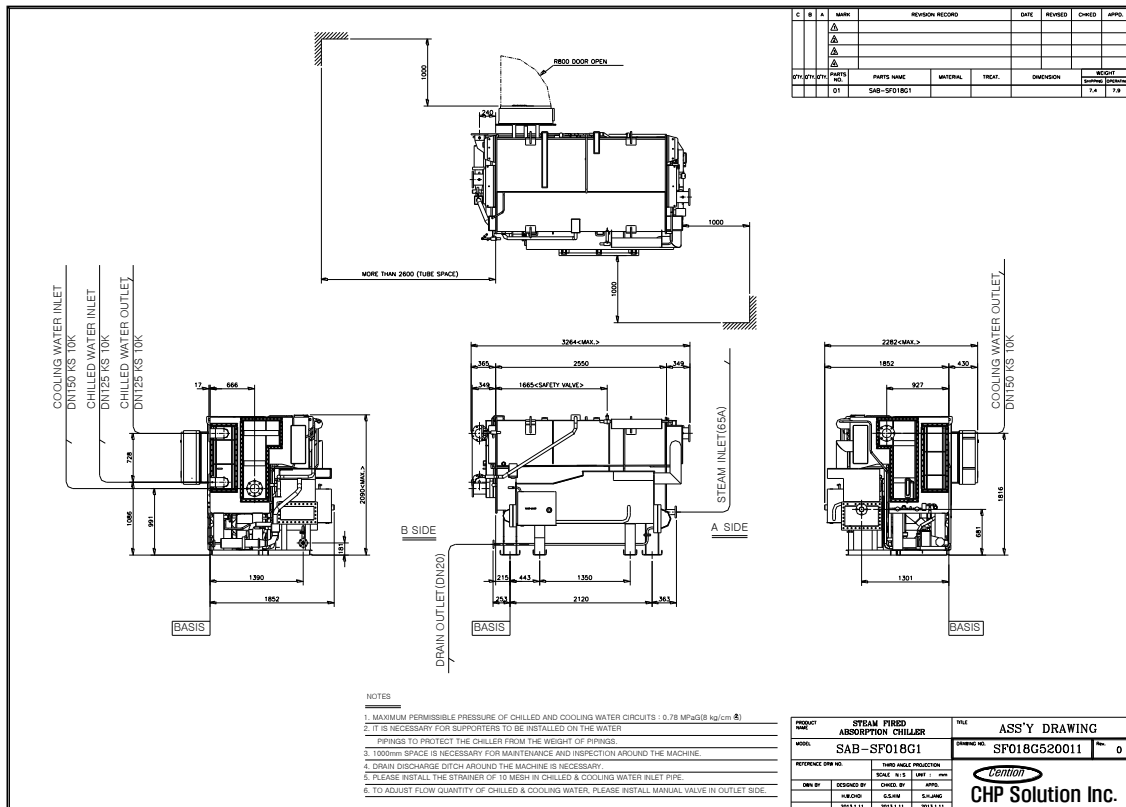
- 1 usRT = 3.52kW(3,024kcal/h)
2. Standard tube and waterside pressure(Chilled&Cooling water circuit) : 8kgf/cm²(785kPa)
3. Standard steam inlet pressure is 8 barG, more than 3barG is available, if request.
4. Electrical data is based on 3ph/380V/60Hz
5. The specifications are subject to change without prior notice.
6. For other than above this table, contact nearest ZEPHYRUS agent.

Outline Dimension

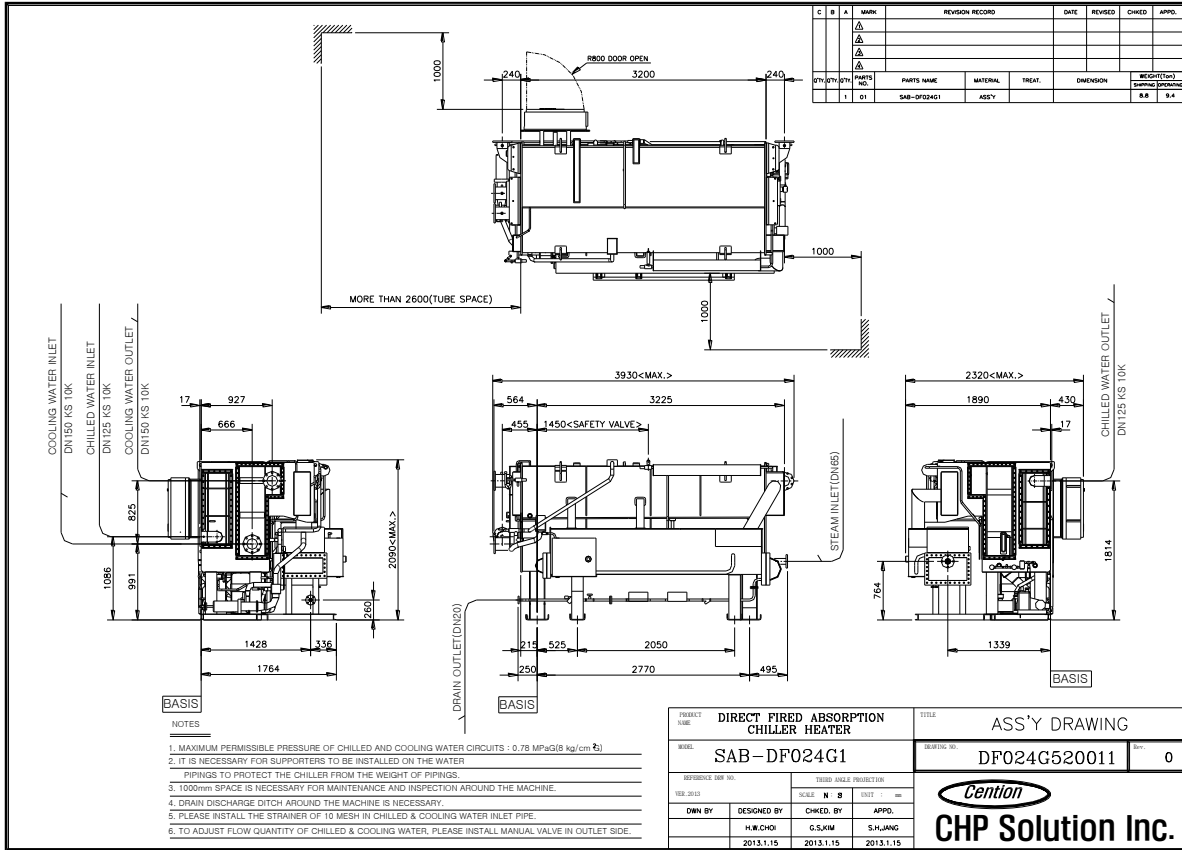
SAB-SF012,015G1



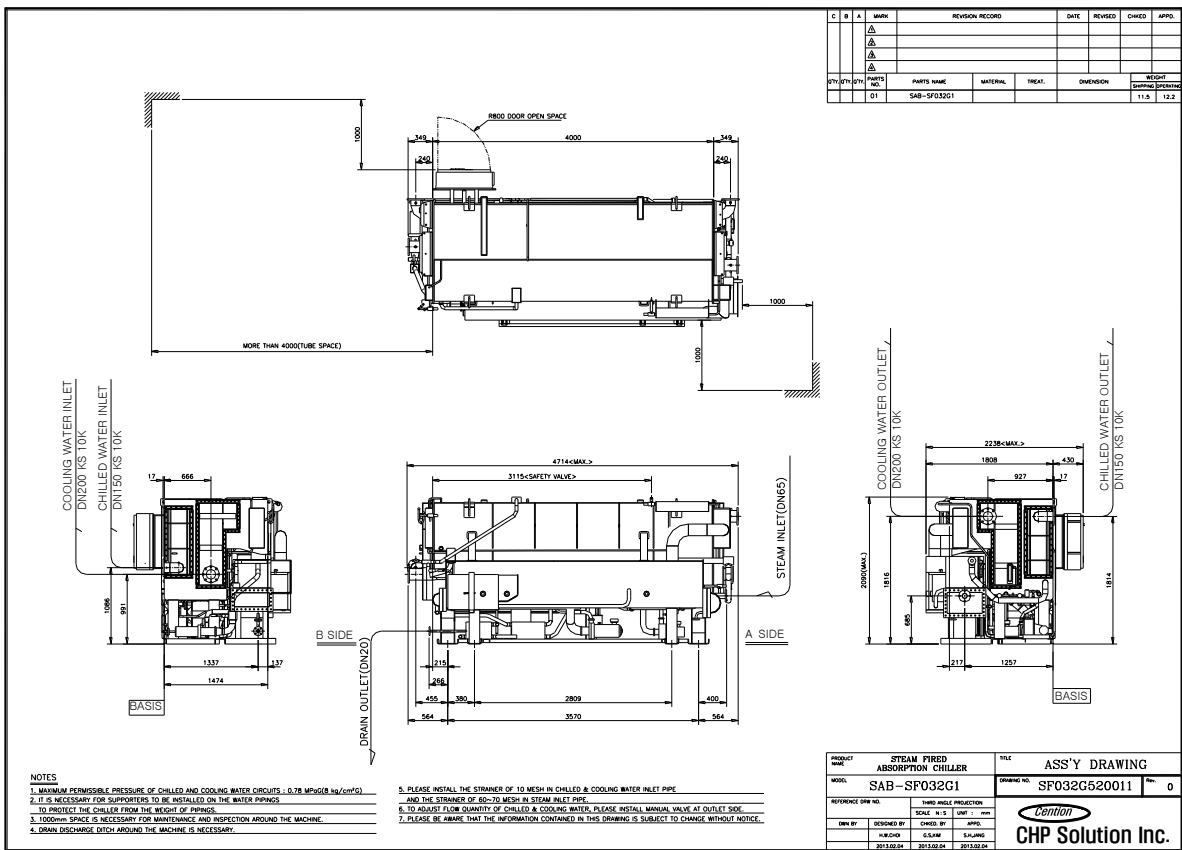
SAB-SF018G1



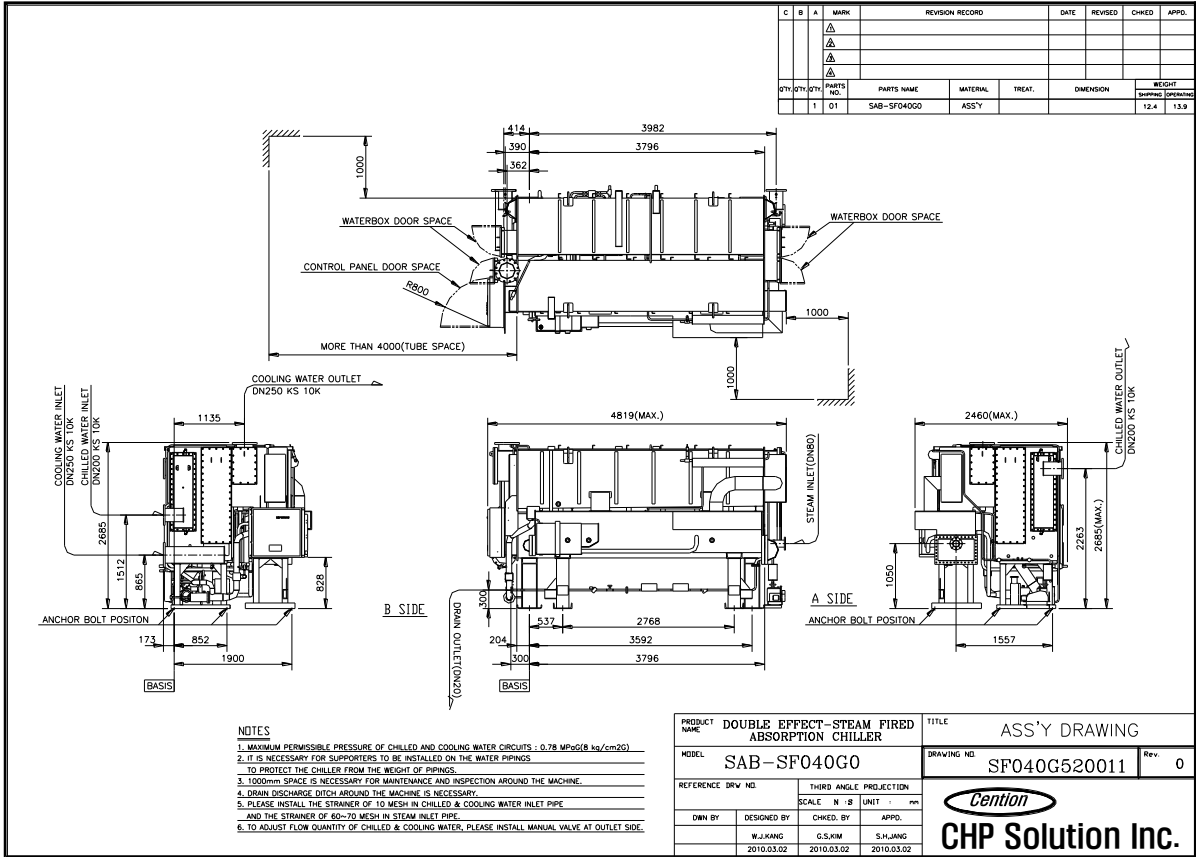
SAB-SF021,024G1



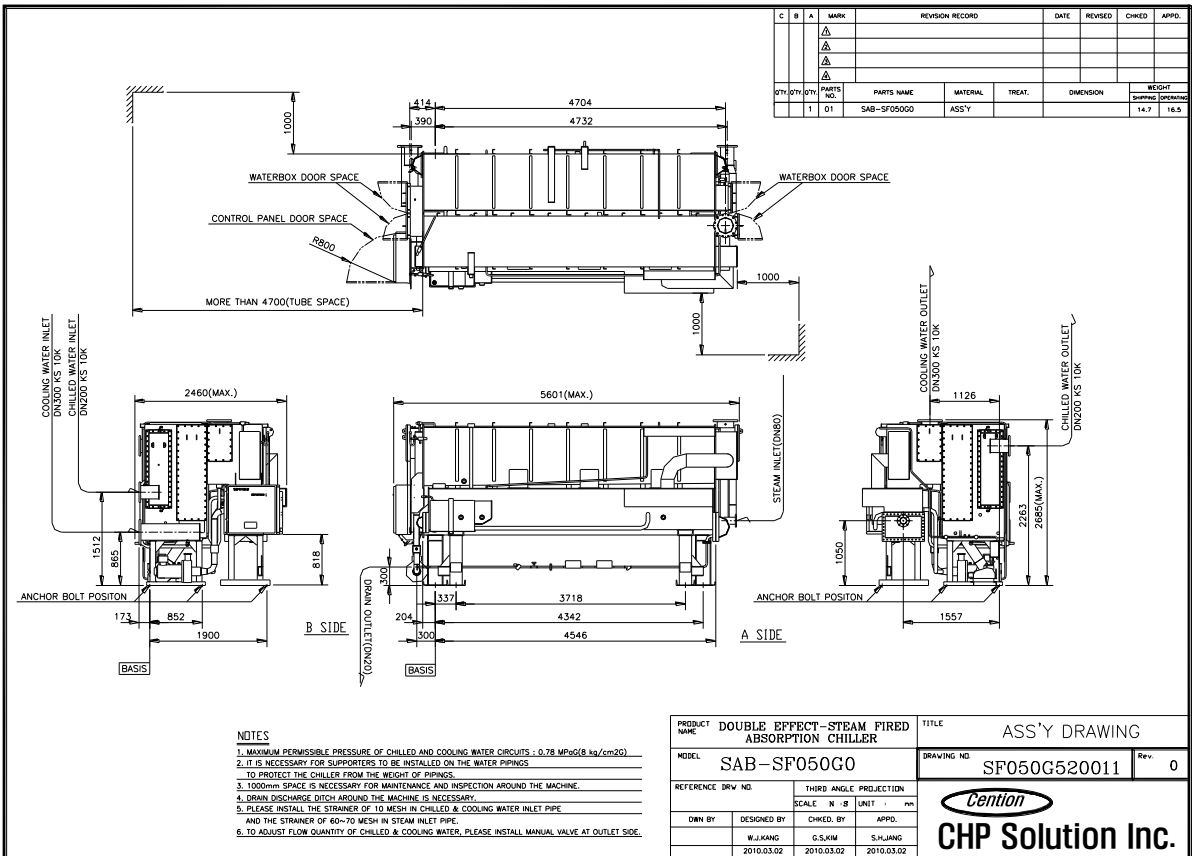
SAB-SF028,032G1



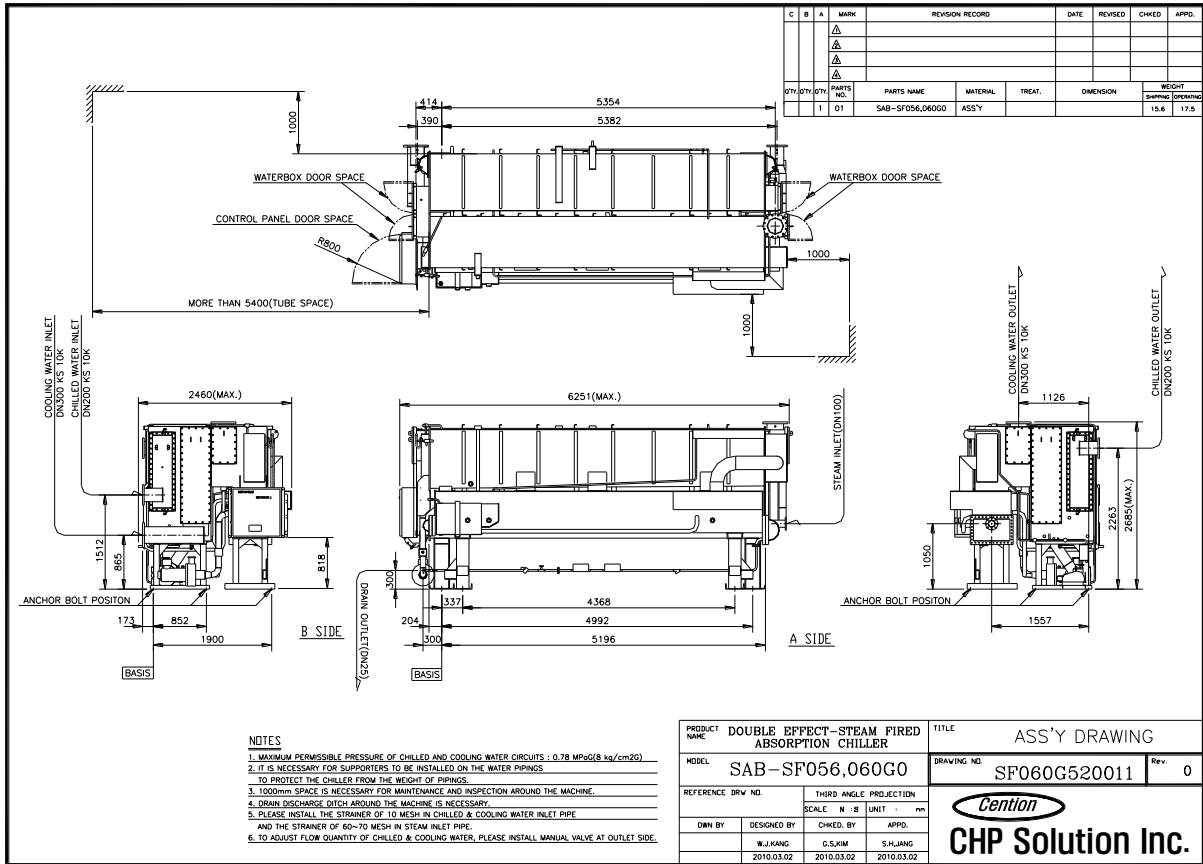
SAB-SF036,040G0



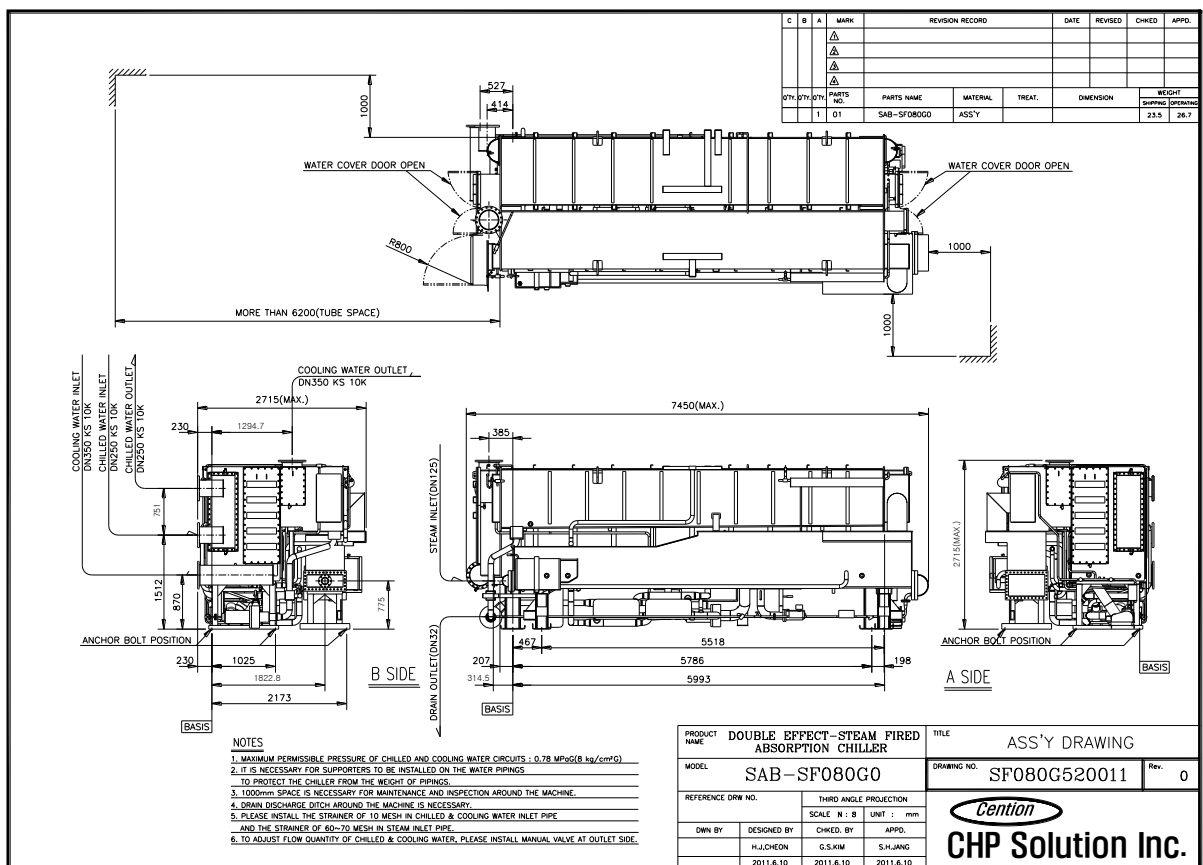
SAB-SF045,050G0



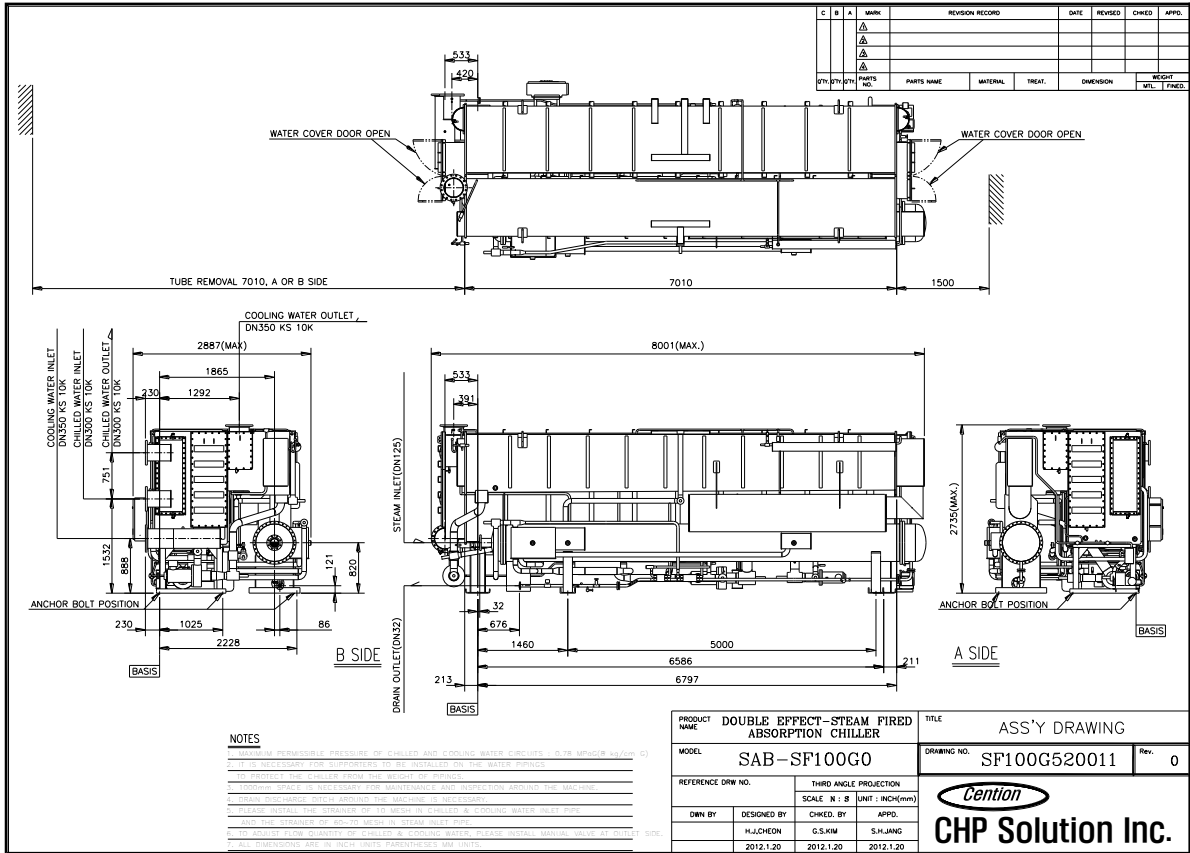
SAB-SF056,060G0



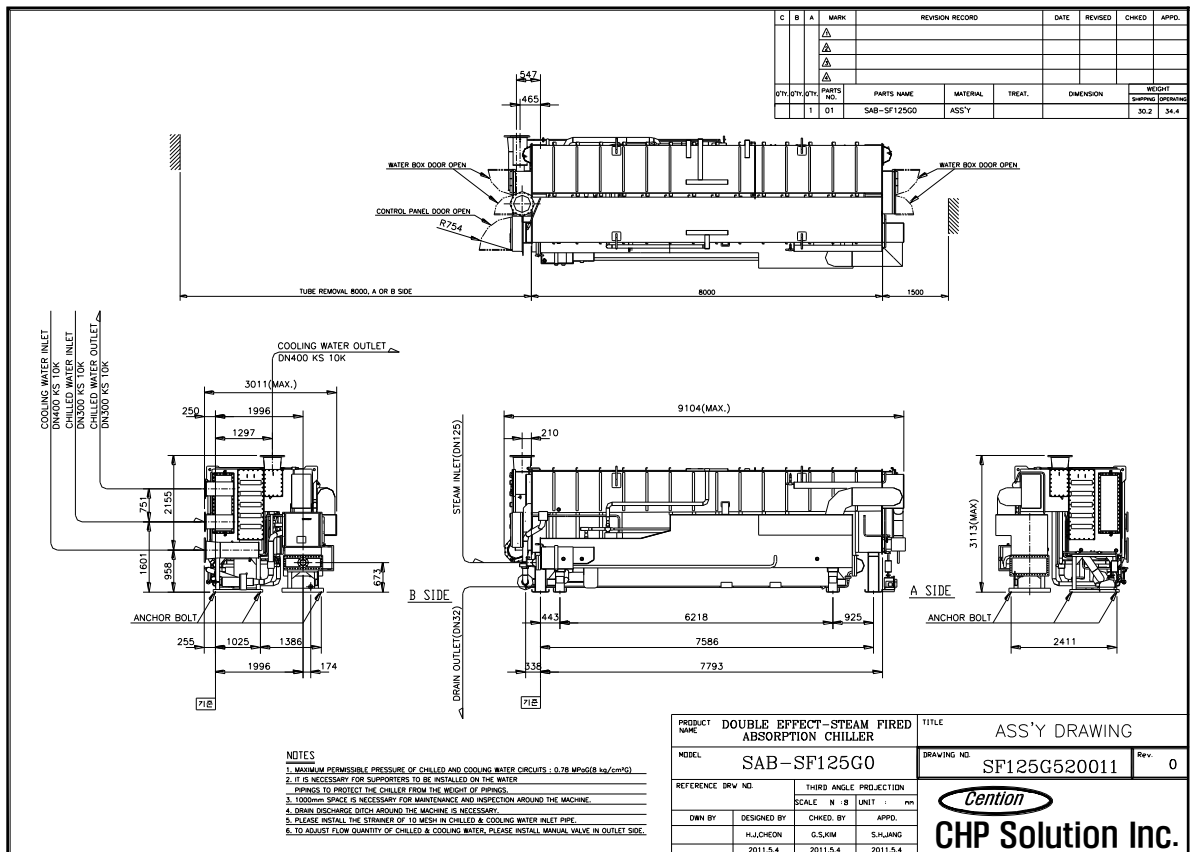
SAB-SF070,080G0



SAB-SF090,100G0



SAB-SF125G0

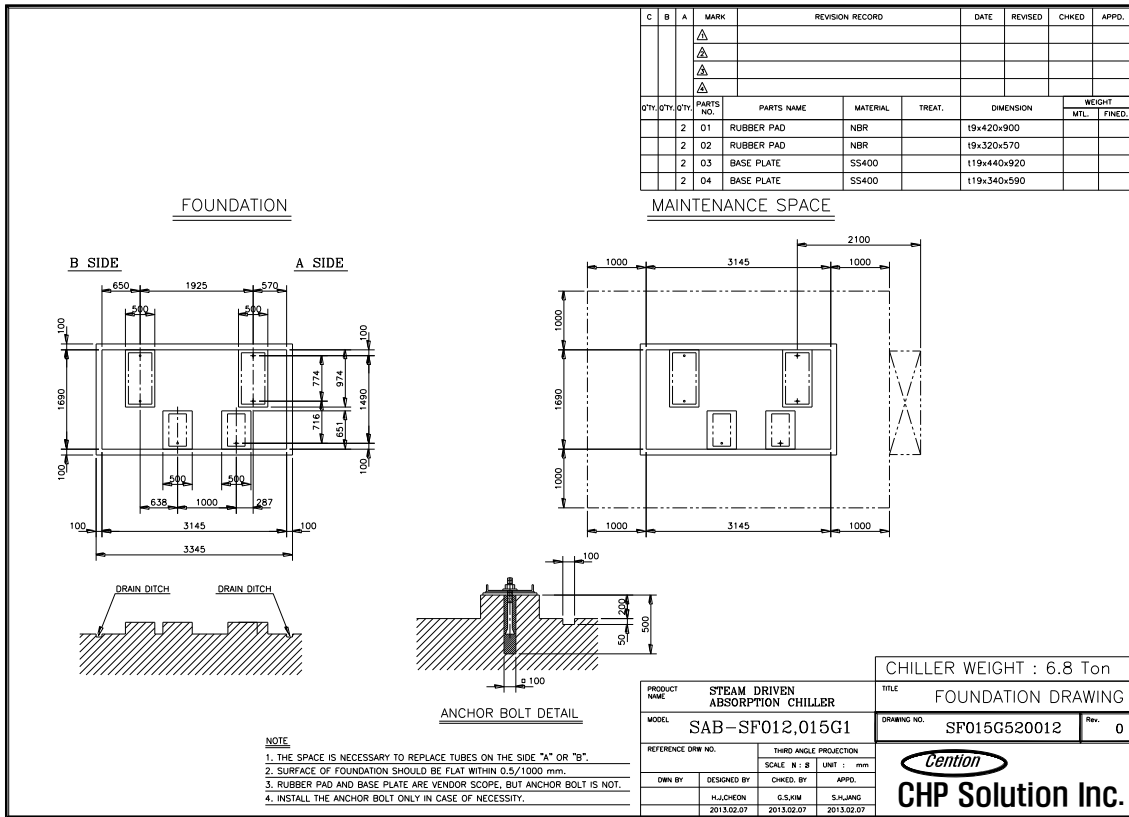


Notes

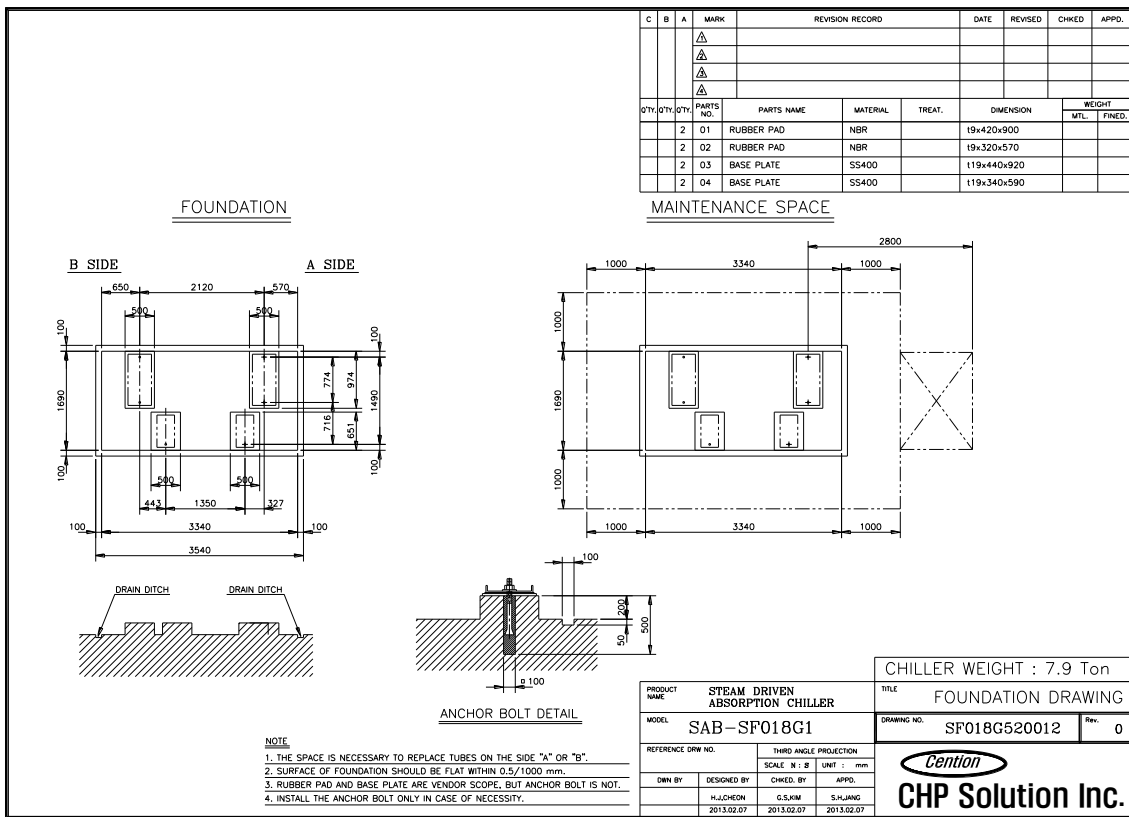
1. All external water piping to be provided with welded KS 10K RF Flanges to the customers.
2. Installation and service clearance as follows :
Longitudinal distance : 1000mm
Top : 200mm
Control panel side : 1200mm
Others : 1000mm
3. Please refer to the ZEPHYRUS drawing for the piping direction.

Installation

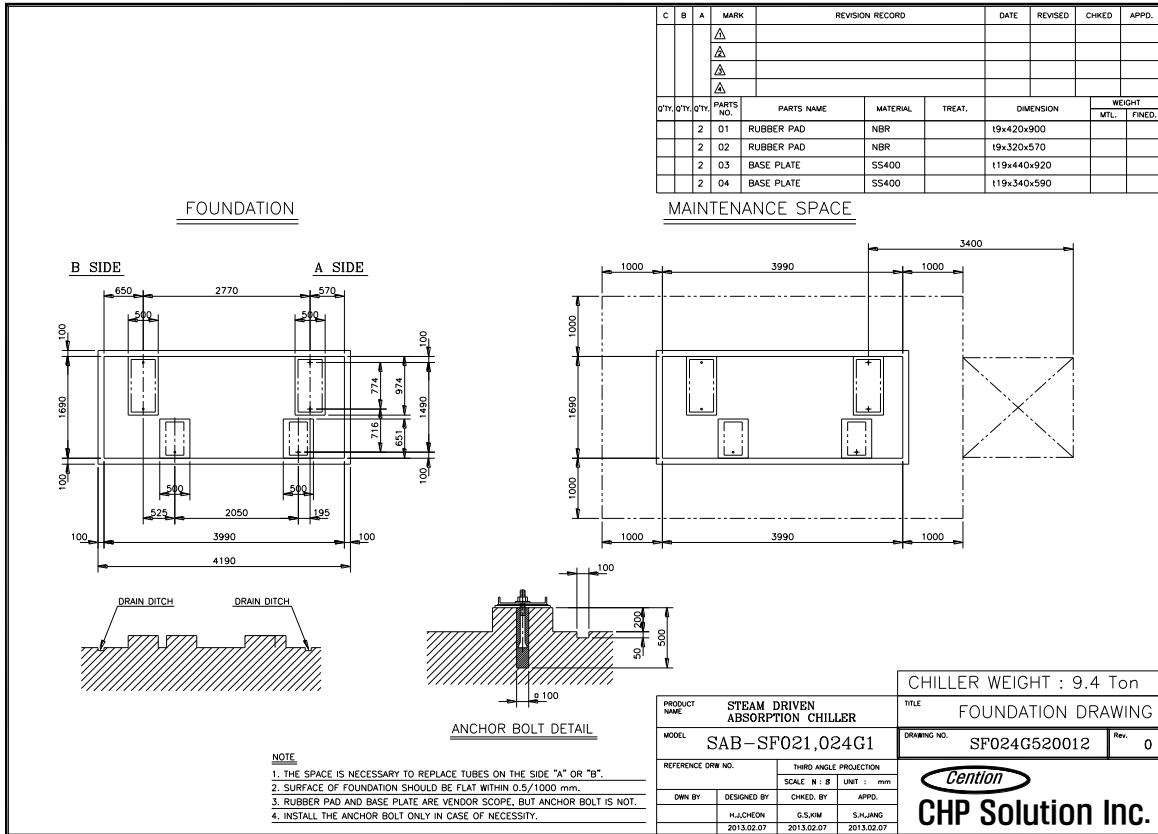
SAB-SF012,015G1



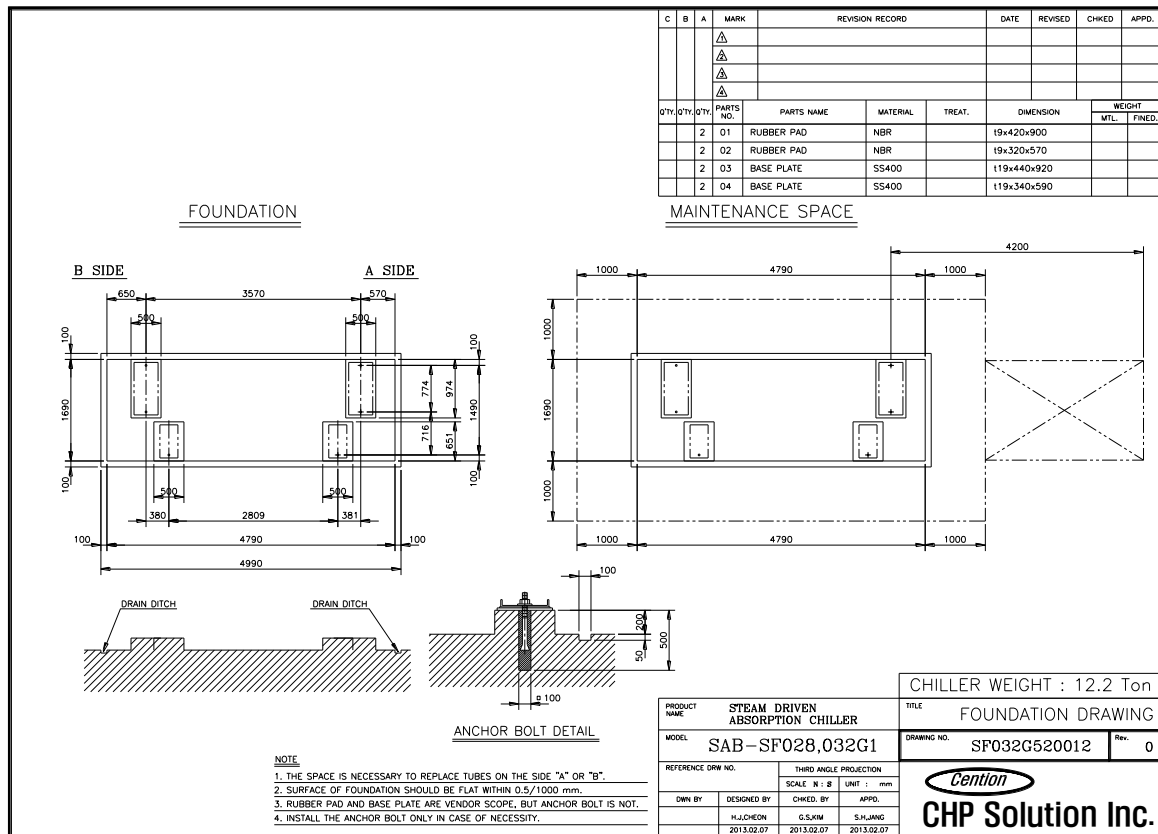
SAB-SF018G1



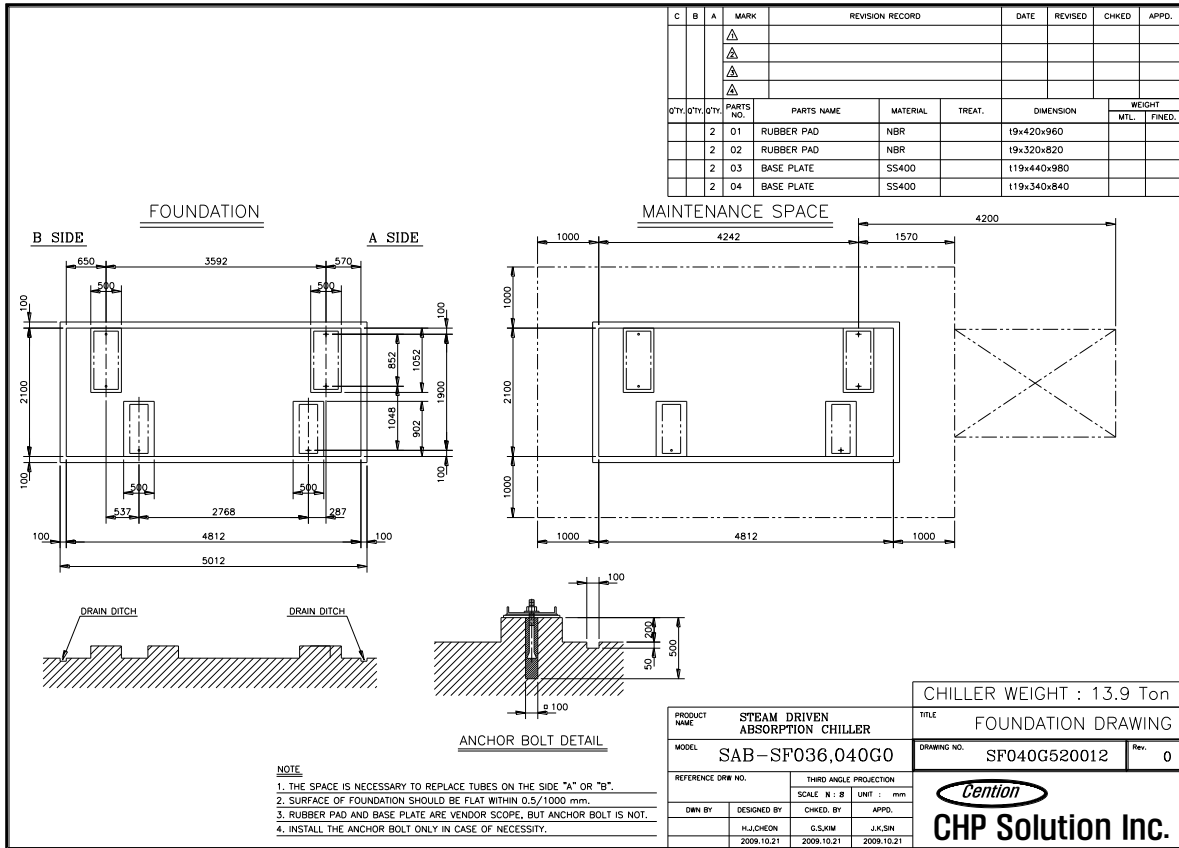
SAB-SF021,024G1



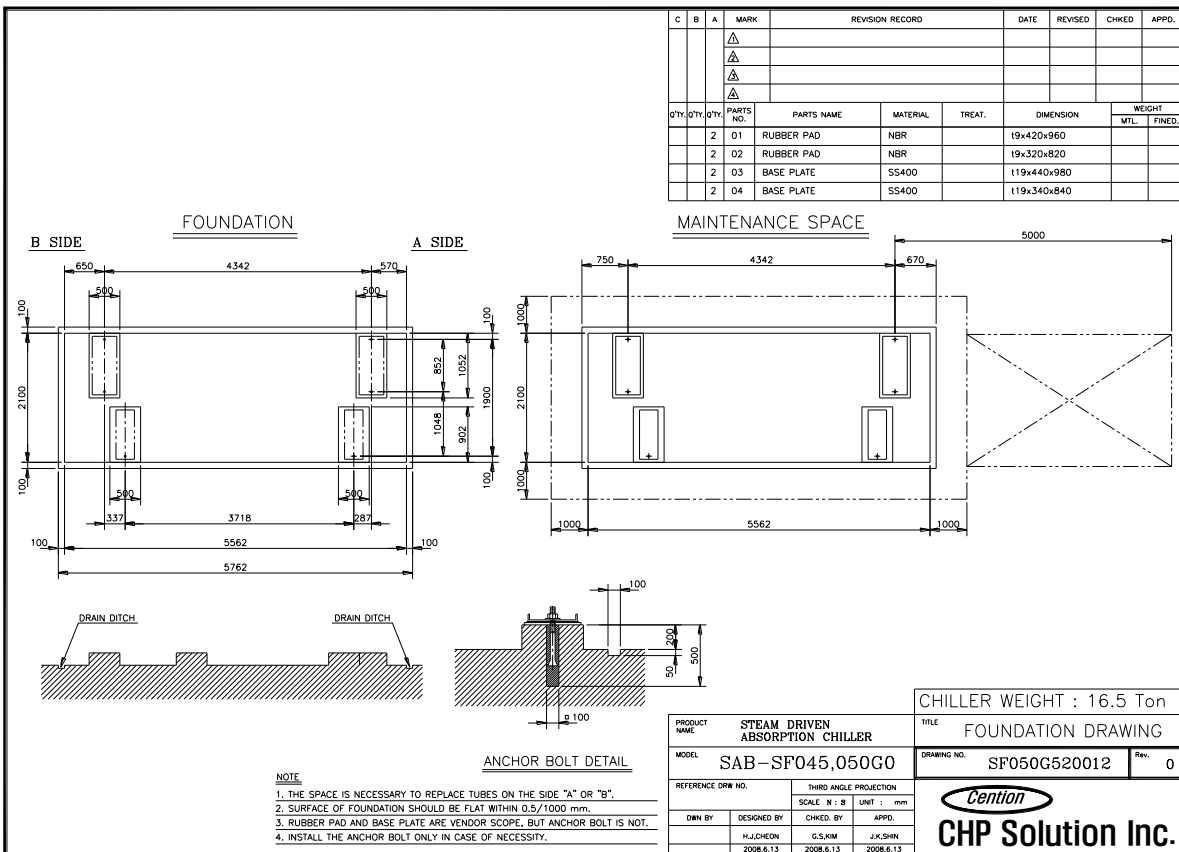
SAB-SF028,032G1



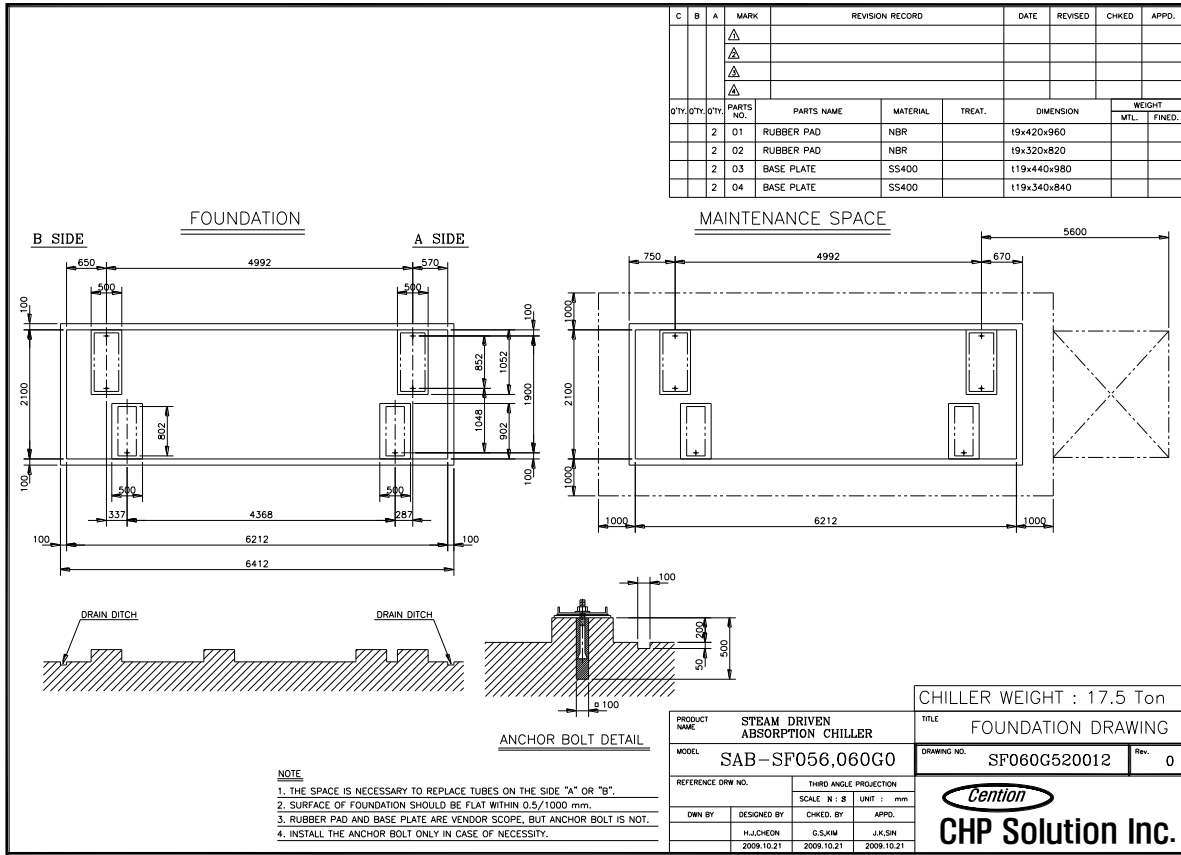
SAB-SF036,040G0



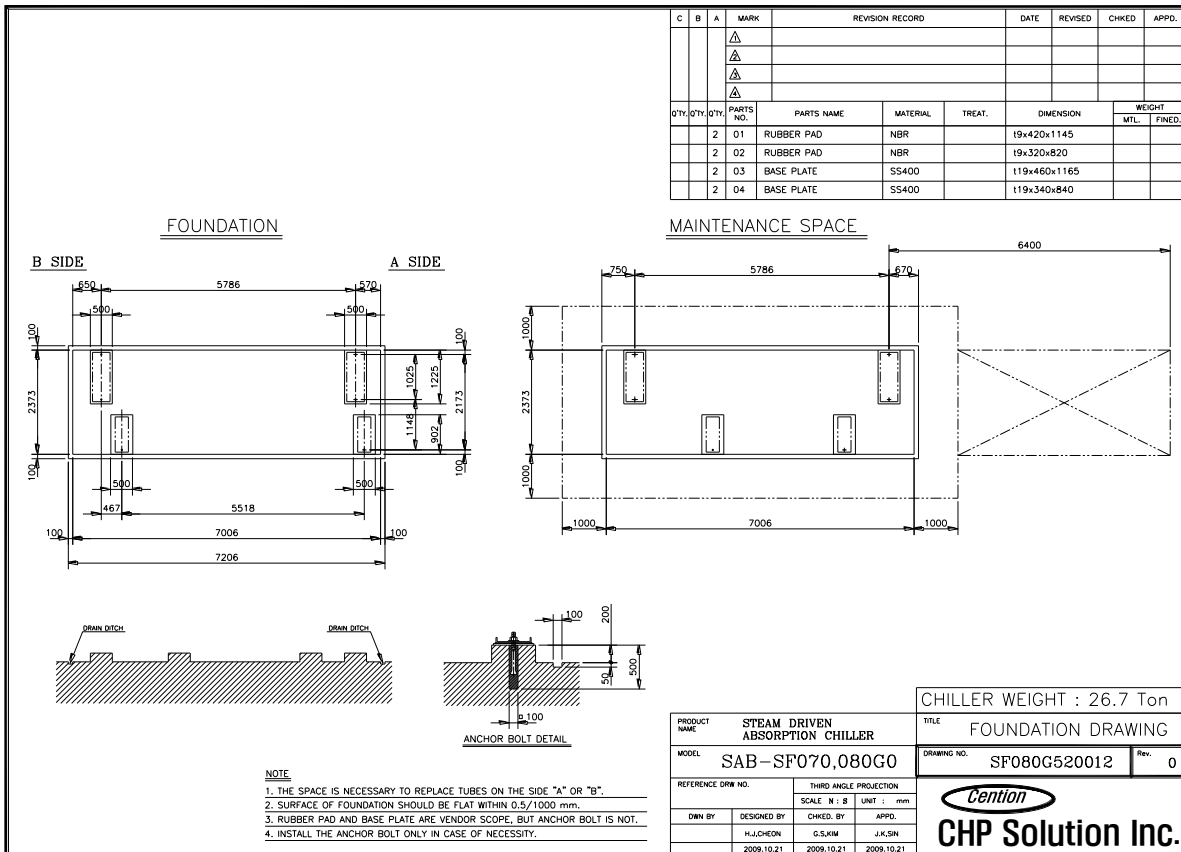
SAB-SF045,050G0



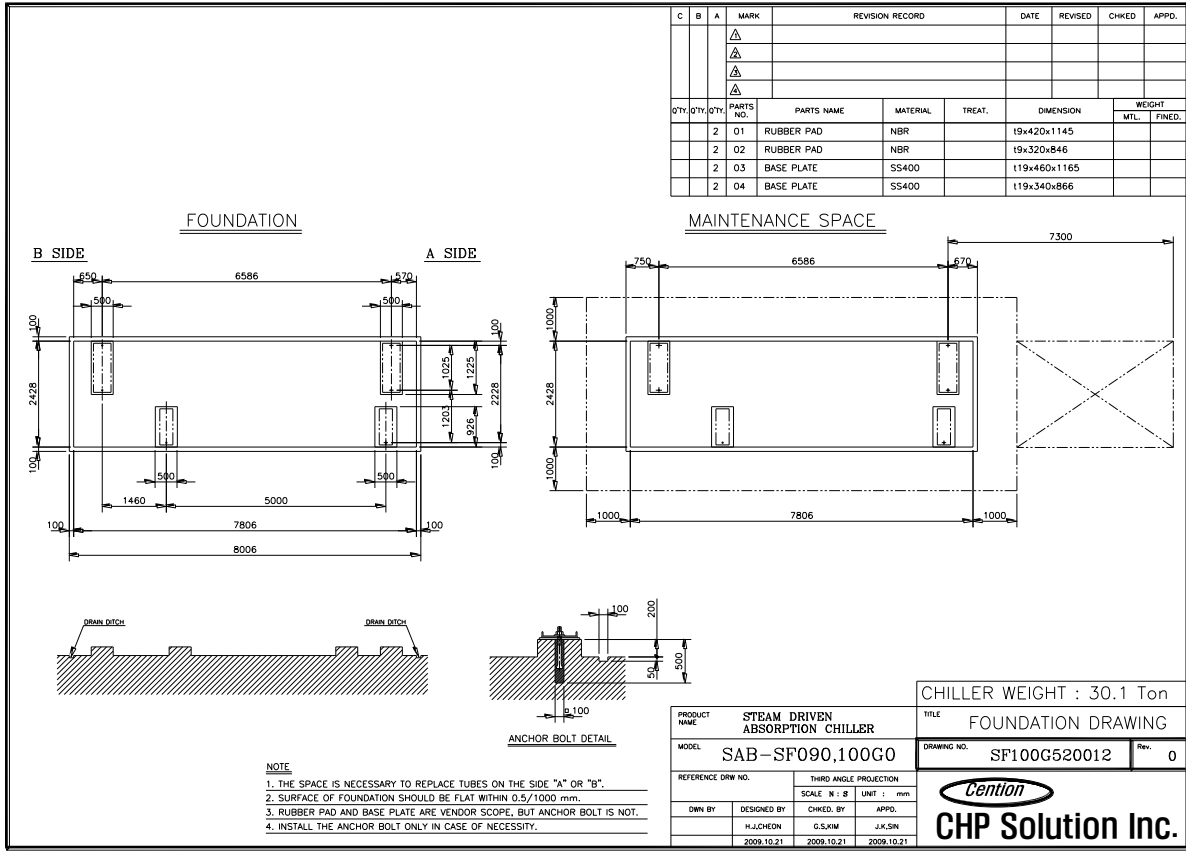
SAB-SF056,060G0



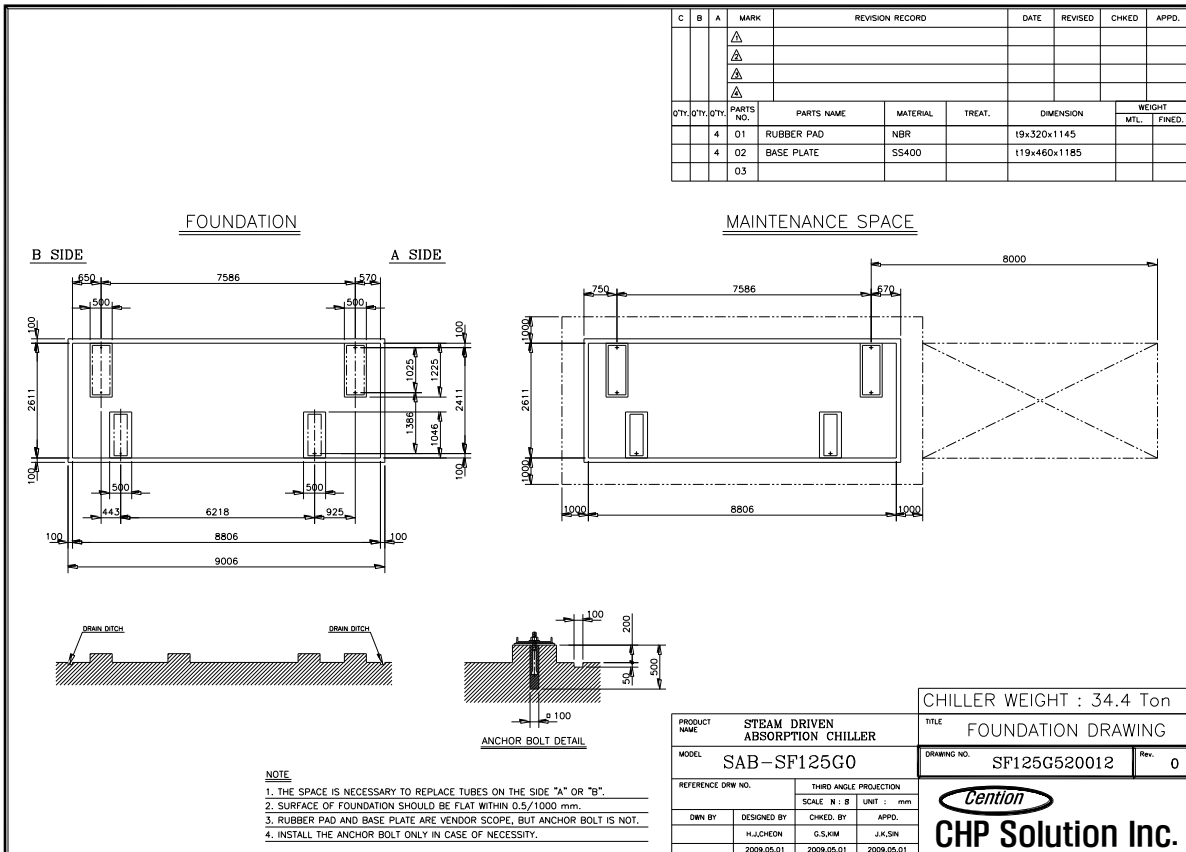
SAB-SF070,080G0



SAB-SF090,100G0



SAB-SF125G0



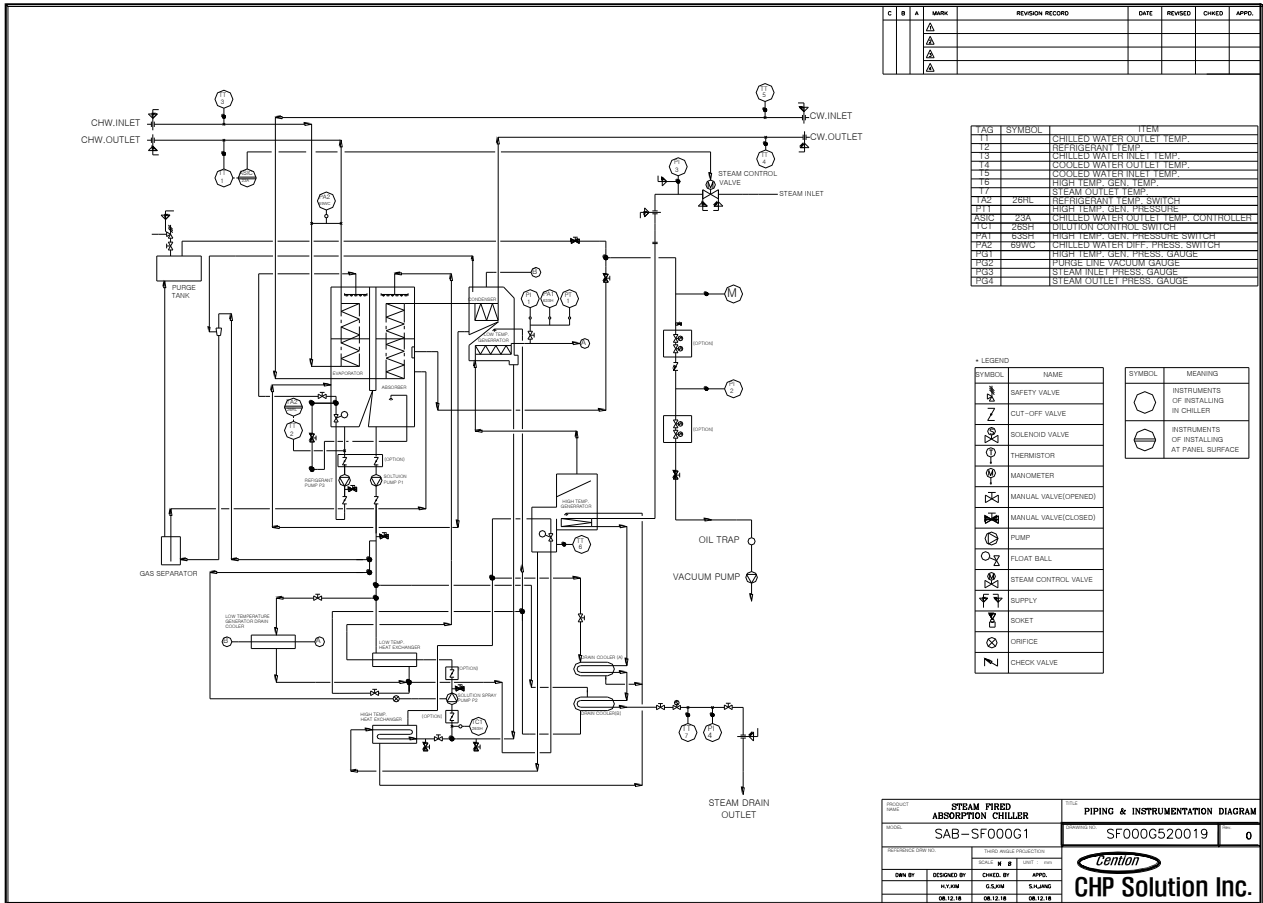
Notes

1. The space is necessary to replace tubes on the side "A" or "B"
2. Surface of foundation should be flat within 0.5/1000mm.
3. Rubber pad and base plate are vendor scope, but anchor bolt is not.
4. Please Install the anchor bolt only in case of necessity.

Notes

1. Installation materials
Hot surface : Glass wool or equivalent with galvanized steel plate
Cold surface : Polyethylene form or equivalent.
2. Installation thickness as follows
Hot surface :
High temp. Generator : 50mm
Heat Exchangers : 50mm
Drain Heat Exchanger : 30mm
Cold surface :
Evaporator, water box and ref.pump etc : 25mm
3. Use flame resisting material for insulation.
4. Do not insulate motor of refrigerant pump.

Piping and Instrument Diagram

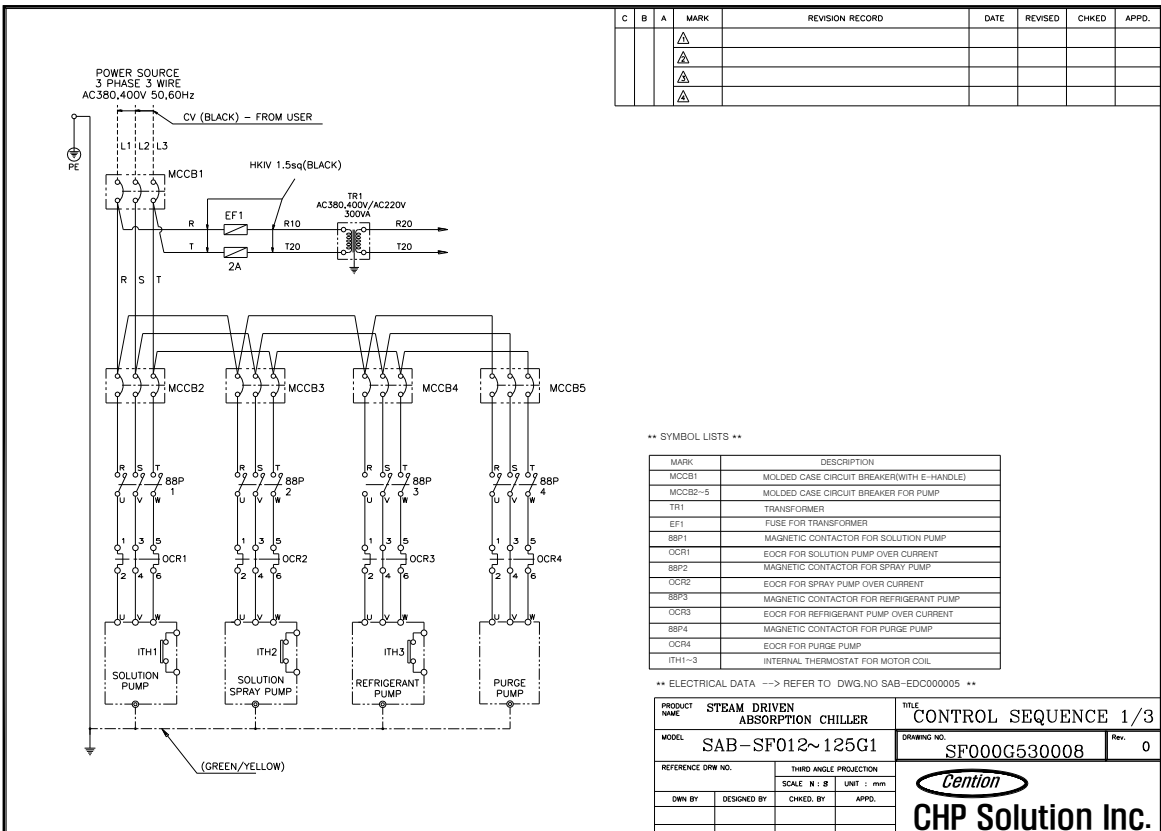
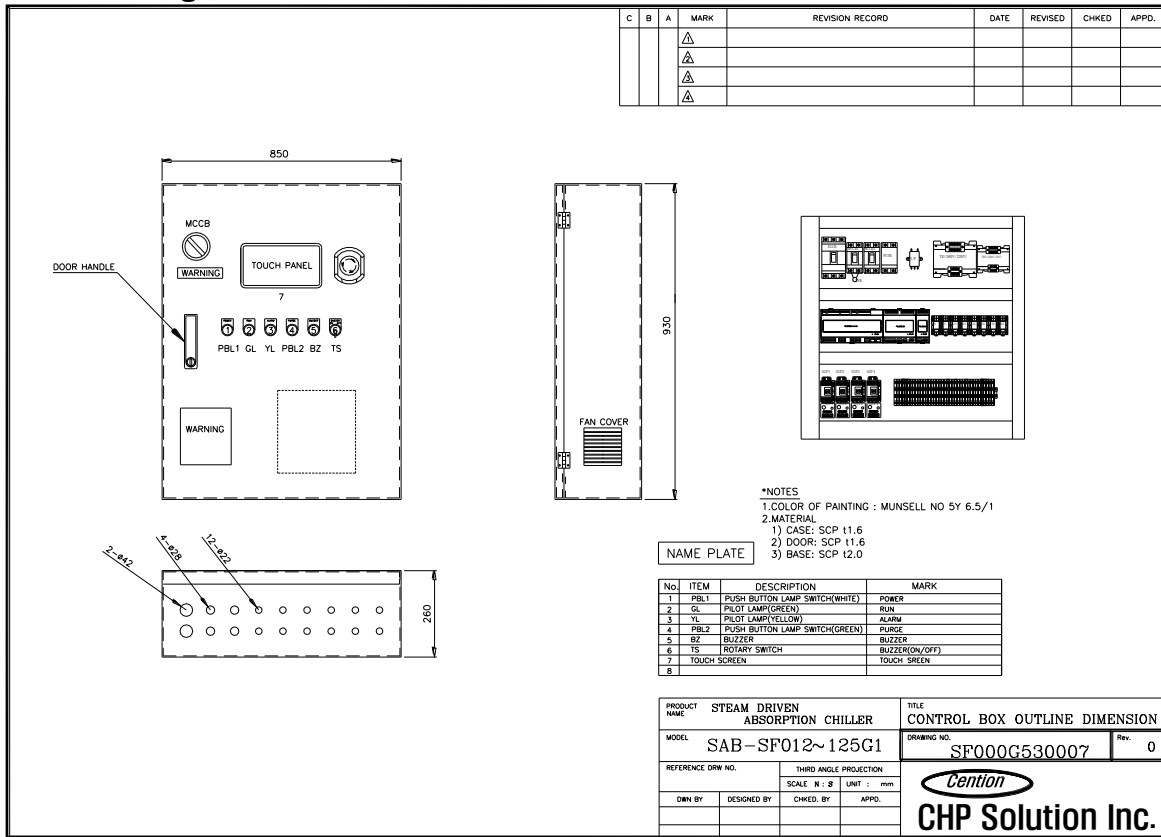


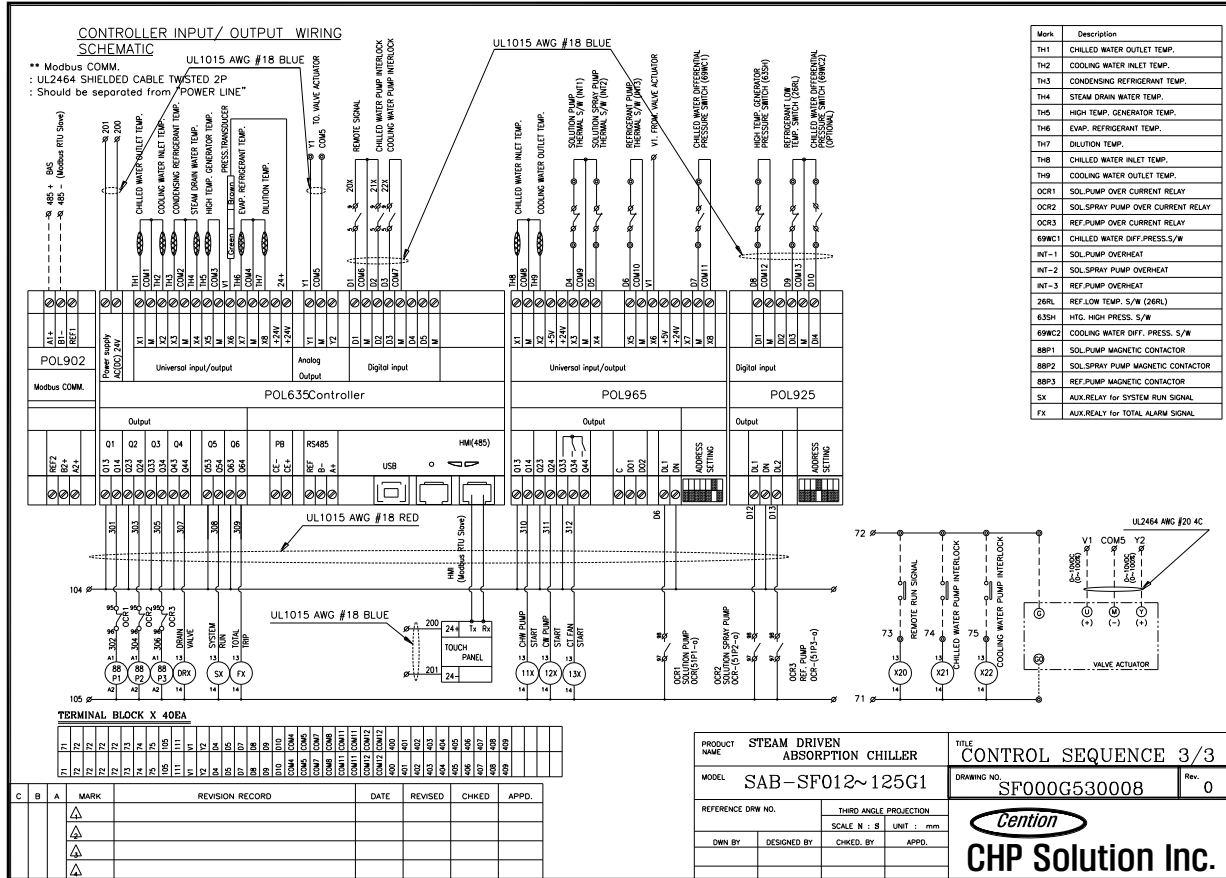
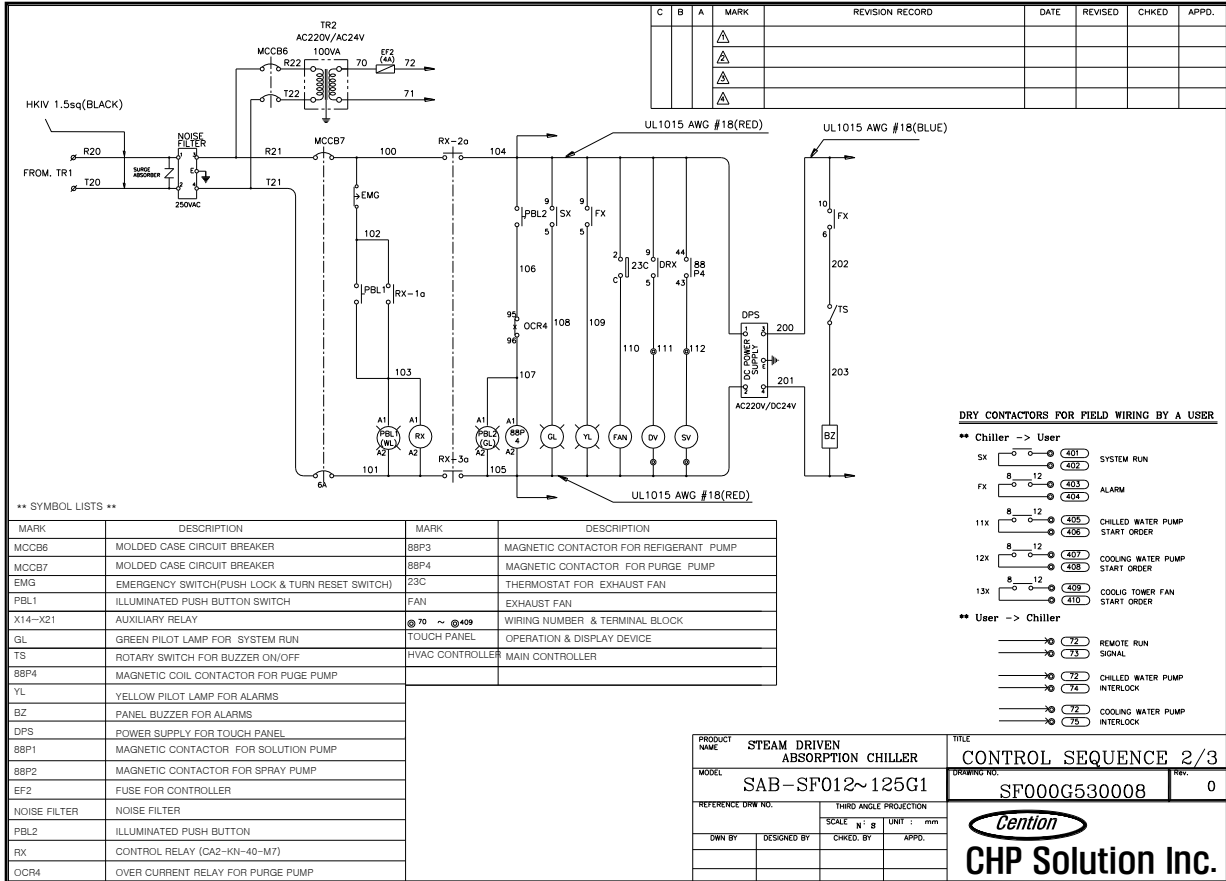
Notes

1. All items are factory mounted and packaged.
2. The above items may be subject to change depending on customer demand.
3. The operation test of all sensors and instruments are checked after installation. And please do not change factory setting values.
4. Sensor pocket is charged with thermal oil in order to improve sensing sensitivity.
5. For in detail, please refer to the drawing for P&ID we submit.

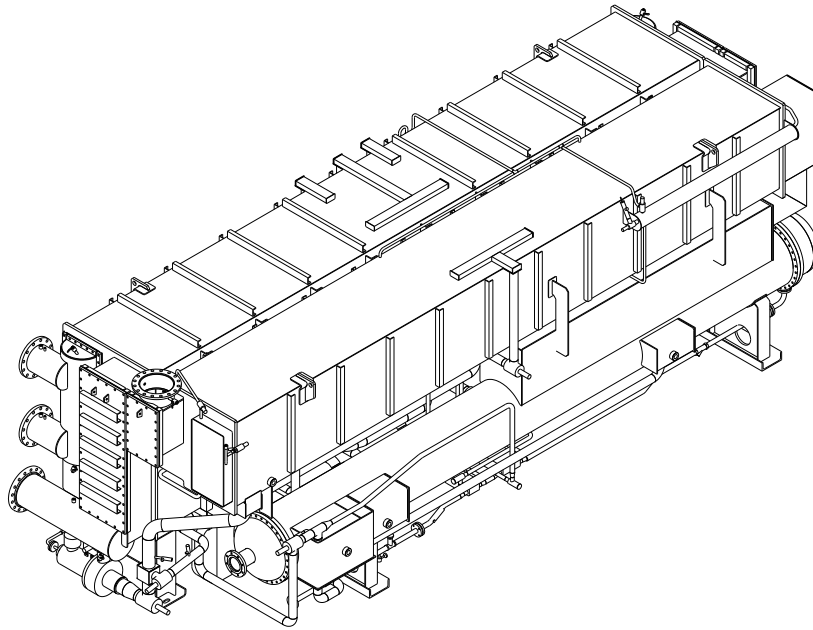
Electric Diagram

Schematic Diagram





GUIDE SPECIFICATIONS



Guide Specifications

1. Application scope

This production specification is applied to double effect steam driven absorption chiller manufactured by CHP Solution Inc.,

2. General specifications

2.1 Double effect steam driven absorption chiller uses saturated steam 3~8barG. The cooling capacity is controlled by PLC in PID.

2.2 To use LiBr solution(55 wt%) with anti-corrosion agents($\text{Li}_2\text{M}_2\text{O}_4$) added as absorbent and distilled water(H_2O) as refrigerant.

2.3 Iron plate and pipe items have surface treatment for prevention of corrosion.

2.4 To check for leaks and to prevent inflow air while shipment is completed or put to commissioning, to refill nitrogen gas until 0.3 kg/cm²G pressure.

3. Components and Materials

3.1 Lower Shell

Shell and tube type heat exchanger are consist of evaporator and absorber.

Tube sheet, shell plate, tube, eliminator and dispersion tray are inside lower shell.

3.1.1 Tube sheet and shell plate : Plain carbon steel(SS400)

3.1.2 Tube : Phosphorus Deoxidized Copper

3.1.3 Dispersion tray : Stainless steel(STS316L)

3.1.4 Eliminator : Cold rolled steel sheet(SPCC)

3.2 Upper Shell

Shell and tube type heat exchanger are consist of condenser and low temperature generator.

Tube sheet, shell plate, tube and dispersion tray for only low temperature generator are inside upper shell.

3.2.1 Tube sheet and shell plate : Plain carbon steel(SS400)

3.2.2 Tube : Phosphorus Deoxidized Copper

3.2.3 Dispersion tray : Stainless steel(STS316L)

3.3 High temperature generator and steam drain heat exchanger.

Shell and tube type heat exchanger for high temperature generator, and behind steam drain heat exchanger is installed.

To control the solution flow on part load operation, weir and float box are installed in the solution inlet/outlet. Steam drain heat exchanger is responsible for heat exchange steam drain with LiBr solution, so increase efficiency of absorption cycle.

3.3.1 Shell plate : Plain carbon steel(SS400)

3.3.2 Tube : Cupro-nickel Copper(C70600)

- 3.3.3 Steam drain heat exchanger : Plate type(stainless steel plate)
- 3.3.4 Float box and weir : Floating solution control valve

3.4 Absorbent Heat Exchanger

To increase efficiency of absorption cycle, three heat exchangers are installed except exhaust gas heat exchanger. All heat exchangers are composed of plate type heat exchanger.

- 3.4.1 High-temperature, low-temperature and drain heat exchanger : stainless steel plate

3.5 Pumps

Three pumps are installed for cycle circulation, solution pump is from absorber to high and low-temperature generator, solution spray pump is from high and low-temperature generator to absorber. And refrigerant pump is to spray for refrigerant at the top of tray in the evaporator. And vacuum pump has been installed for vacuum inside of unit.

- 3.5.1 Solution and refrigerant pump type : Non-seal canned motor pump.
- 3.5.2 Vacuum pump : Rotary vane pump
- 3.5.3 All pumps with isolating valves.

3.6 Unit Controller

PID controller is equipped with an easy and precise control. And Mod-bus and internet remote control is available. Furthermore central control communications should be readily available.

- 3.6.1 Model : PLC-Climatix series, Siemens
- 3.6.2 Type : Micro Processor Control
- 3.6.3 Display : Touch Screen LCD(7" color)
- 3.6.4 Communication Port: RS-485, Mod-bus

3.7 Safety Devices and Function

- 3.7.1 Chilled water differential pressure switch
- 3.7.2 Cooling water differential pressure switch(Optional)
- 3.7.3 Chilled water freeze protection
- 3.7.4 Generator high temperature switch
- 3.7.5 Generator high pressure switch
- 3.7.6 Digital PID control
 - Optimum dilution operation
 - Customer support function
 - User communication function
 - Sequential operation of peripheral equipment
 - Remote RUN/STOP and remote temperature setting function
 - Crystallization prevention function
 - Maximum input control

- Sensor burn-out detection function
- Set point auto limiting function
- Absorbent pump operation / Stop control
- Refrigeration pump operation / Stop control
- Steam control valve open / close Control
- Operation data storage function
- Fault data storage function
- Operation time storage function

3.8 Steam Control Valve

- 3.8.1 2-port valve with flanged connections glove valves with stainless steel trim
- 3.8.2 Design pressure : PN16~25
- 3.8.3 Located at the steam Inlet
- 3.8.4 Electrical actuator for capacity control and spring return type actuator is applied.

3.9 Locally mounted controls and Instruments

- 3.9.1 Chilled water differential pressure switch
- 3.9.2 Thermostat for absorbent and spray pump
- 3.9.3 Thermostat for refrigerant pump
- 3.9.4 Over-current protections for absorbent, spray, refrigerant and purge pump.

3.10 Temperature sensors for followings;

- 3.10.1 Chilled water inlet / outlet
- 3.10.2 Cooling water inlet / outlet
- 3.10.3 Driving steam Inlet / drain Outlet
- 3.10.4 Evaporator refrigerant
- 3.10.5 Condensed refrigerant
- 3.10.6 Generator absorbent

3.11 Purge Unit

- 3.11.1 Storage tank
- 3.11.2 Ejector device
- 3.11.3 Liquid/gas separator
- 3.11.4 Diaphragm valves
- 3.11.5 Pressure gauge for vacuum
- 3.11.6 Piping & various manual valves

3.12 Interconnecting Piping And Wiring

- 3.12.1 Refrigerant and absorbent piping

- 3.12.2 Automatic de-crystallization circuit
- 3.12.3 Internal power and control wiring

3.13 Initial charges

- 3.13.1 Refrigerant : Distilled water (H₂O)
- 3.13.2 Absorbent : Lithium bromide (LiBr 55 wt%)
- 3.13.3 Inhibitor : Lithium molybdate (Li₂MoO₄)
- 3.13.4 Octyl alcohol : 2 Ethyl hexanol

3.14 Pressure

- 3.14.1 Working pressure of chilled & cooling water side : 8 barg / 0.8MPa / 116 psig
- 3.14.2 Design pressure of chilled & cooling water side : 9.2barg / 0.92MPa / 134 psig
- 3.14.3 Test pressure of chilled & cooling water side : 12barg / 1.2MPa / 174 psig

3.15 Standard spares

- 3.15.1 Vacuum Pump Oil : 2 Liter
- 3.15.2 O & M Manual : 1 Copy

4. Painting Color

- 4.1 Body : Munsell No. 3.2PB 3.3/4.0
- 4.2 Controller : Yellow gray

5. Thermal Insulation (Option)

- 5.1 Hot Surface : Glass wool+ galvanized steel cover
- 5.2 Cool Surface : Non-inflammable polymer sponge

6. Capacity Control

Cooling capacity is adjusted between 25%~100% of the load by the leaving chilled water temperature.

7. Factory Testing

Following test shall be carried out during the manufacturing;

- 7.1 Check of external dimensions
- 7.2 Hydraulic pressure test for water headers
- 7.3 Electric insulation resistance test
- 7.4 Leak test of vacuum sides
- 7.5 Safety device function test
- 7.6 Performance test (Option)

8. Scope of Limits

The scope of supplier shall limit the followings;

- 8.1 Inlet/Outlet flanges of evaporator water boxes
- 8.2 Inlet flange of absorber water boxes
- 8.3 Outlet flange of condenser water boxes
- 8.4 Inlet/Outlet flanges of steam connections
- 8.5 The following scopes shall be supplied by the Buyer;
 - 8.5.1 Unloading, unpacking & wasted materials management.
 - 8.5.2 Any transportation not specified in the contract condition.
 - 8.5.3 Sectional joining works between semi-knocked down parts and insulation work.
 - 8.5.4 Building & foundations.
 - 8.5.5 Supply of utilities including electricity, waters and any other driving energy at rated conditions.
 - 8.5.6 External wiring & piping for the Chiller.
 - 8.5.7 Insulation for the chiller including necessary parts.
 - 8.5.7 Cooling tower, chilled water pumps and cooling water pumps.
 - 8.5.8 Matching flanges, gasket, bolts and nuts
 - 8.5.9 In/out nozzle flanges of chilled Water side
 - 8.5.10 In/out nozzle flanges of cooling Water side
 - 8.5.11 In/out nozzle flanges of steam side
 - 8.5.12 Cooling water inlet temp. control devices
 - 8.5.13 Necessary tools, workers and materials for site test, if necessary
 - 8.5.14 Any other item not specially mentioned in the supplier's scope of supply

9. Site Test (Option)

Performance trials will be carried out commissioning of the chiller under the available load. In case the load or rated utilities are not available, the chiller shall be deemed as handed over after the performance trials on the any available parameter.

10. Performance Criteria at site (Option)

Performance trails of the Chiller shall be carried out to demonstrate the capacity of the Chiller.

The following inputs to be provided by the Buyer;

- Steady Load(cooling load for the room)
- Input Parameters

- 10.1 Chilled water inlet temperature is not below the rated temperature.
- 10.2 Chilled water and cooling water as per the specification mentioned.
- 10.3 Water flow rate;

Chilled water flow rate within +/- 5%

Cooling water flow rate within + 5%,

- 0% of the nominal flow rate



CHP Solution Inc.,

<http://www.centioncorp.com>

For continual development, CHP Solutions Inc., reserves the right to change specifications without notice

Copyright © 2013 CHP Solution Inc., All rights reserved.