SINKO

QUALITY

SERVICE

CREATIVE

AIR COOLED SCREW TYPE CHILLER

(R-134a)

E-SALS-2014B_R-134a

SINKO Product Characteristics

SINKO SALS Series represent the air cooled chiller with screw type compressor. With creating design, stiff structure, critical manufacturing requirement and quality control inspection, the chiller is highly efficiency and good for commercial office buildings, department stores, factories, hospitals, retails, theaters, etc.

- **Easy Installation**

With module component design it gives flexible order, simple piping, without cooling tower, convenient installation, and safer hanging process. It is suitable for outdoor installation and reduces indoor space needs.

- **Easy Operation**

With microcomputer automatic control system, it offers multiple intelligent control modes for easy operation and is able to interlock with central monitoring and control system.

- **Silence and Comfort**

With humanity design and special heat rejecting fan, it performs lower noise operation.

- **Energy Saving**

With automatic thermostat device, the compressor will automatically unload or stop at the time the chilled water temperature reaches preset point which offer energy saving.

Product Characteristics

• Compressor

The chiller uses the semi-hermetic screw compressor with the advanced rotor to perform high volume efficiency, lower vibration and noise, and longer life cycle. With multiple-staged capacity control to meet the various loads, and sequential starting mechanism to protect electric power supply stability, the chiller is able to save energy effectively.

• Water Side Heat Exchanger (Evaporator)

Adopting high efficient shell and tube type heat exchanger with internal spiral arranged seamless copper tube, the evaporator performs high heat conductivity. The evaporator is externally insulated with rubber foam material to prevent water condensing and heat loss.

• Air Side Heat Exchanger (Condenser)

Adopting tube and fin type heat exchanger, the condenser is made of the seamless internal spiral copper tubes and anti-rustic aluminum fins which are contacted firmly to each other through a mechanical expansion treatment that give the best heat conductivity.

• Electricity Panel and Control Panel

There are one electrical power panel with solenoid connectors and one control panel with microcomputer control system. Both the panels are equipped with latch door lock and simple to open either from the front or the side.

• Casing

The chiller casing is made of hot-dipped galvanized steel plate which are cut and formed via computer control that create beautiful appearance and stiff structure. The casing is coated with special static power baked painting and the seals between casing cover plates are tighten by PE foams for better air-tightness and lower vibration.

Product Characteristics

High-Tech Combination ------with microcomputer

PWW humanity and super performance microcomputer with user interface of PLC workstation window (PWW)

Functions of the user interface

- to display 256 pictures for analogue input and output by touching the monitor screen
- to operate via user interface window to display starting, stopping, communicating, a
- to edit catalogues and for reading page up and down via the interface monitor wind
- to show current date and time
- to set the schedule to start and stop chiller automatically
- to show the numbers of starting
- to show the numbers of operating
- to set and show the dates of maintenance and its arrival
- to show the latest date of starting chiller
- to show the latest date of malfunction
- to provide password setting for monitor screen
- to provide self-protection for monitor screen
- to monitor and control the chiller operation modes
- to show the chiller abnormal condition
- to show the temperature of the chilled water
- to show the duty cycle scheduling
- to show remote control or panel control
- to show other functions

Product Characteristics

Humanity Design

- All the controls, operation protectors, and the starting elements of the PWW are assembled on the PLC module to replace conventional relay control that provide simpler wiring and functions of monitoring and controlling operation and self-diagnosis. The module is easy for central management, local control, and modification.

Electronic Multi-Stage Temperature Control

- The chiller will unload to change its capacity in multi-stage by setting inlet and outlet temperature controls.
- With multiple-compressor design, the chiller will automatically shift the compressor to start operating by turn for each time starting.
- With temperature setting function of the PWW, the chiller is able to adjustment the setting point of chilled water by using analogue input to meet the job site needs.

The Module Management Control System

- The control capacity of the PLC is allowed up to 128 points.
- All the controls, operation protectors, and the starting elements of the PWW are assembled on the PLC module with functions of monitoring and controlling operation and self-diagnosis.

Remote and Local Control

- The PWW provides both local control manually via the user interface window, and central control of building control center via a connector and analogue input and RS-485 of communication interface to start, stop, or monitor error.

Specification

Item \ Model		SALS-040ES	SALS-050ES	SALS-060ES	SALS-070ES
Power supply		3 Ø / 380V / 50HZ			
Cooling capacity	(Kcal/Hr)	112000	151000	183000	210000
	(kW)	130	176	213	244
Total power consumption (kW)		51.9	65.5	81.6	90.4
Compressor	Type	Semi-hermetic screw type			
	Numbers	1	1	1	1
	Input (kW)	43.1	56.7	68.4	77.2
	Star way	Y-△start			
	Capacity control (%)	100%～75%~50%～25% start~0%			
Fan	Type	Axial type			
	Input (kW)	2.2x4	2.2x4	2.2x6	2.2x6
Evaporator	Type	High efficiency Shell and tube type			
	Head loss (M)	5	5	5.5	5.5
	Flow rate (M^3/H)	22.4	30.2	36.6	42
Condenser		High efficiency seamless internal spiral tube, Anti-corrosive aluminum fin			
Refrigerant	Type	R134a			
	Control method	Thermal expansion valve			
Control system		PLC Micro Computerized Program			
Lubricant	Type	Hbr-b04			
	Filling volume (L)	14	16	16	18
Protecting devices		Compressor overheat protector, High/low pressure switch, Temperature switch, Oil level switch, Loss of / converse phase protection, High/low voltage protector, Overloading protection, Fusible link, safety valve, Motor coil temperature overload controller, Flow rate switch protection			
Piping connection (mm)		80A	80A	80A	100A
Dimensions	Length (mm)	2260	2260	3230	3230
	Width (mm)	2150	2150	2150	2150
	Height (mm)	2400	2400	2400	2400
Weight (KG)		2200	2350	3200	3400

Notes:

◎ The cooling capactity base on above inlet chilled water temperature 12°C、outlet water temperature 7°C, the outdoor ambient temperature 35℃ (Range: 20℃~43℃).

◎ The SINKO reserve the right to modify product design. Any specifications given in this catalogue are subject to change without notice.

Specification

Item \ Model		SALS-080ED	SALS-100ED	SALS-110ED	SALS-120ED
Power supply		3 Ø / 380V / 50HZ			
Cooling capacity	(Kcal/Hr)	224000	302000	333000	366000
	(kW)	260	351	387	426
Total power consumption (kW)		103.8	131	144.4	163.2
Compressor	Type	Semi-hermetic screw type			
	Numbers	2	2	2	2
	Input (kW)	86.2	113.4	122.4	136.8
	Star way	Y-△start			
	Capacity control (%)	100%～75%~50%～25% start~0%			
Fan	Type	Axial type			
	Input (kW)	2.2x8	2.2x8	2.2x10	2.2x12
Evaporator	Type	High efficiency Shell and tube type			
	Head loss (M)	5.5	5.5	6	6
	Flow rate (M^3/H)	44.8	60.4	66.5	73.1
Condenser		High efficiency seamless internal spiral tube, Anti-corrosive aluminum fin			
Refrigerant	Type	R134a			
	Control method	Thermal expansion valve			
Control system		PLC Micro Computerized Program			
Lubricant	Type	Hbr-b04			
	Filling volume (L)	14x2	16x2	16x2	16x2
Protecting devices		Compressor overheat protector, High/low pressure switch, Temperature switch, Oil level switch, Loss of / converse phase protection, High/low voltage protector, Overloading protection, Fusible link, safety valve, Motor coil temperature overload controller, Flow rate switch protection			
Piping connection (mm)		100A	100A	100A	125A
Dimensions	Length (mm)	4200	4200	5170	6460
	Width (mm)	2150	2150	2150	2150
	Height (mm)	2400	2400	2400	2400
Weight (KG)		4400	4600	5100	6200

Notes:

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Specification

Item \ Model		SALS-160EF	SALS-200EF	SALS-220EF	SALS-240EF
Power supply		3 Ø / 380V / 50HZ			
Cooling capacity	(Kcal/Hr)	448000	604000	666000	732000
	(kW)	521	702	774	851
Total power consumption (kW)		207.6	262	288.8	326.4
Compressor	Type	Semi-hermetic screw type			
	Numbers	4	4	4	4
	Input (kW)	172.4	226.8	244.8	273.6
	Star way	Y-△start			
	Capacity control (%)	100%～75%~50%～25% start~0%			
Fan	Type	Axial type			
	Input (kW)	2.2x16	2.2x16	2.2x20	2.2x24
Evaporator	Type	High efficiency Shell and tube type			
	Head loss (M)	6	6	6	6
	Flow rate (M^3/H)	89.5	120.7	133.1	146.3
Condenser		High efficiency seamless internal spiral tube, Anti-corrosive aluminum fin			
Refrigerant	Type	R134a			
	Control method	Thermal expansion valve			
Control system		PLC Micro Computerized Program			
Lubricant	Type	Hbr-b04			
	Filling volume (L)	14x4	16x4	16x4	16x4
Protecting devices		Compressor overheat protector, High/low pressure switch, Temperature switch, Oil level switch, Loss of / converse phase protection, High/low voltage protector, Overloading protection, Fusible link, safety valve, Motor coil temperature overload controller, Flow rate switch protection			
Piping connection (mm)		125A	150A	150A	150A
Dimensions	Length (mm)	8400	8400	10340	12920
	Width (mm)	2150	2150	2150	2150
	Height (mm)	2400	2400	2400	2150
Weight (KG)		8800	9200	10200	12400

Notes:

◎ The cooling capactity base on above inlet chilled water temperature 12°C 、outlet water temperature 7°C, the outdoor ambient temperature 35℃ (Range: 20℃~43℃).

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Specification

Item \ Model		SALS-300EX	SALS-330EX	SALS-360EX
Power supply		3 Ø / 380V / 50HZ		
Cooling capacity	(Kcal/Hr)	906000	999000	1098000
	(kW)	1053.5	1161.6	1276.7
Total power consumption (kW)		393	433.2	489.6
Compressor	Type	Semi-hermetic screw type		
	Numbers	6	6	6
	Input (kW)	340.2	367.2	410.4
	Star way	Y-△start		
	Capacity control (%)	100%～75%~50%～25% start~0%		
Fan	Type	Axial type		
	Input (kW)	2.2x24	2.2x30	2.2x36
Evaporator	Type	High efficiency Shell and tube type		
	Head loss (M)	6.5	6.5	6.5
	Flow rate (M^3/H)	181.1	199.6	219.4
Condenser		High efficiency seamless internal spiral tube, Anti-corrosive aluminum fin		
Refrigerant	Type	R134a		
	Control method	Thermal expansion valve		
Control system		PLC Micro Computerized Program		
Lubricant	Type	Hbr-b04		
	Filling volume (L)	16x6	16x6	16x6
Protecting devices		Compressor overheat protector, High/low pressure switch, Temperature switch, Oil level switch, Loss of / converse phase protection, High/low voltage protector, Overloading protection, Fusible link, safety valve, Motor coil temperature overload controller, Flow rate switch protection		
Piping connection (mm)		200A	200A	200A
Dimensions	Length (mm)	12600	15510	19380
	Width (mm)	2150	2150	2150
	Height (mm)	2400	2400	2150
Weight (KG)		13800	15300	18600

Notes:

◎ The cooling capactity base on above inlet chilled water temperature 12℃、outlet water temperature 7℃, the outdoor ambient temperature 35℃ (Range: 20℃~43℃).

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Performance Parameters

The Outside Temperature ℃	Outlet Water Temperature ℃	SALS-40ES	SALS-50ES	SALS-60ES	SALS-70ES	SALS-80ED	SALS-100ED	SALS-110ED	SALS-120ED
30℃	5℃	108200	145800	176700	202800	233700	291700	321600	353500
	7℃	118600	159900	193800	222400	256300	319800	352600	387600
	9℃	127100	171400	207800	238400	274800	342800	378000	415500
32℃	5℃	106100	143000	173400	198900	229200	286100	315500	346700
	7℃	116300	156800	190100	218100	251300	313700	345900	380100
	9℃	124700	168100	203800	233800	269400	336300	370800	407500
35℃	5℃	102100	137700	166900	191500	220700	275400	303700	333800
	7℃	112000	151000	183000	210000	242000	302000	333000	366000
	9℃	120100	161900	196200	225100	259400	323700	357000	392400
37℃	5℃	96900	130800	158400	181800	209500	261500	288300	316900
	7℃	107700	145300	176000	202000	232800	290500	320300	352100
	9℃	113100	152600	184800	212100	244400	305000	336300	369700
40℃	5℃	90000	121300	147100	168800	194500	242700	267700	294100
	7℃	100000	134800	163400	187500	216100	269700	297400	326800
	9℃	105000	141500	171600	196900	226900	283200	312300	343100
43℃	5℃	81400	109800	133100	152700	176000	219600	242200	266200
	7℃	89600	120800	146400	168000	193600	241600	266400	292800
	9℃	89600	120800	146400	168000	193600	241600	266400	292800

Unit : kcal/h

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Performance Parameters

The Outside Temperature ℃	Outlet Water Temperature ℃	SALS-160EF	SALS-200EF	SALS-220EF	SALS-240EF	SALS-300EX	SALS-330EX	SALS-360EX
30℃	5℃	432700	583300	643200	707000	875100	964800	1060500
	7℃	474400	639600	705300	775200	959500	1057900	1162800
	9℃	508600	685700	756100	831000	1028600	1134100	1246500
32℃	5℃	424400	572100	630800	693400	858200	946300	1040000
	7℃	465300	627300	691700	760300	941000	1037600	1140400
	9℃	498800	672500	741500	815000	1008800	1112300	1222500
35℃	5℃	408600	550800	607400	667600	826300	911100	1001400
	7℃	448000	604000	666000	732000	906000	999000	1098000
	9℃	480300	647500	714000	784700	971200	1070900	1177100
37℃	5℃	387900	522900	576600	633800	784400	864900	950700
	7℃	431000	581000	640700	704200	871600	961000	1056300
	9℃	452600	610100	672700	739400	915200	1009100	1109100
40℃	5℃	360100	485500	535200	588300	728200	802900	882500
	7℃	400100	539400	594700	653700	809100	892100	980500
	9℃	420100	566400	624400	686400	849600	936700	1029500
43℃	5℃	325800	439200	484300	532300	658800	726500	798500
	7℃	358400	483200	532800	585600	724800	799200	878400
	9℃	358400	483200	532800	585600	724800	799200	878400

Unit : kcal/h

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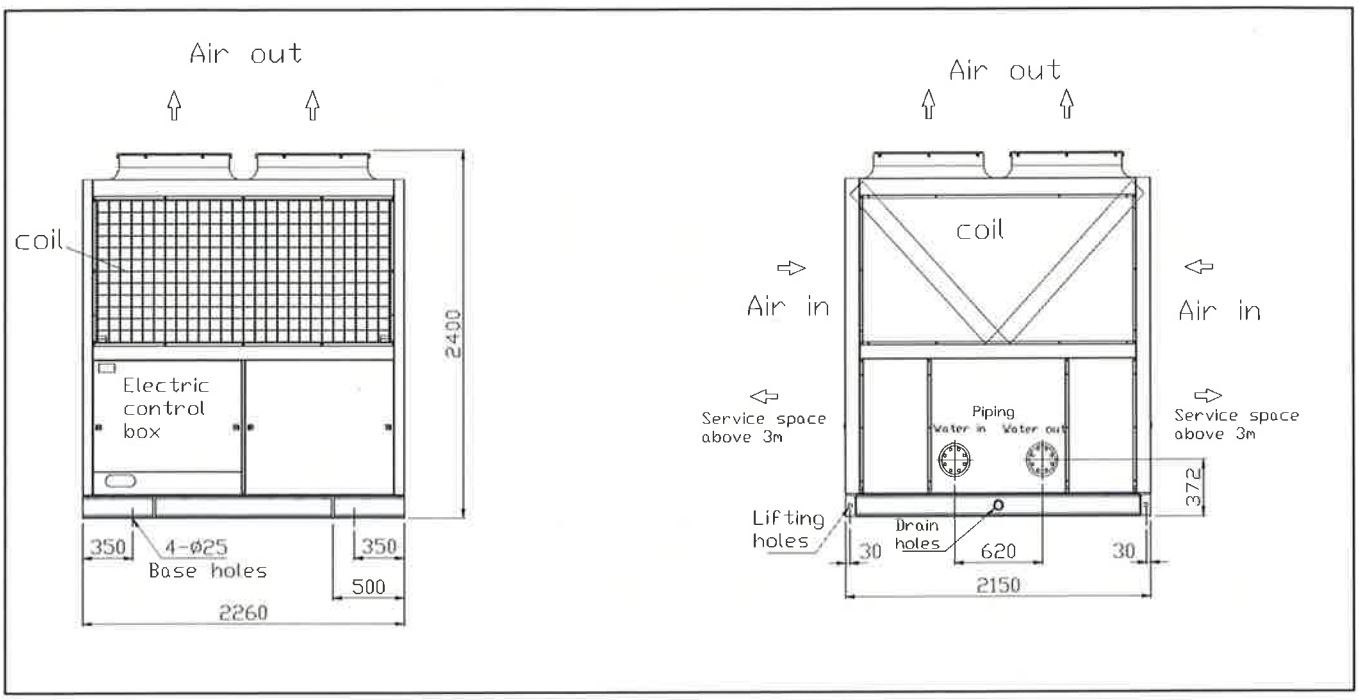
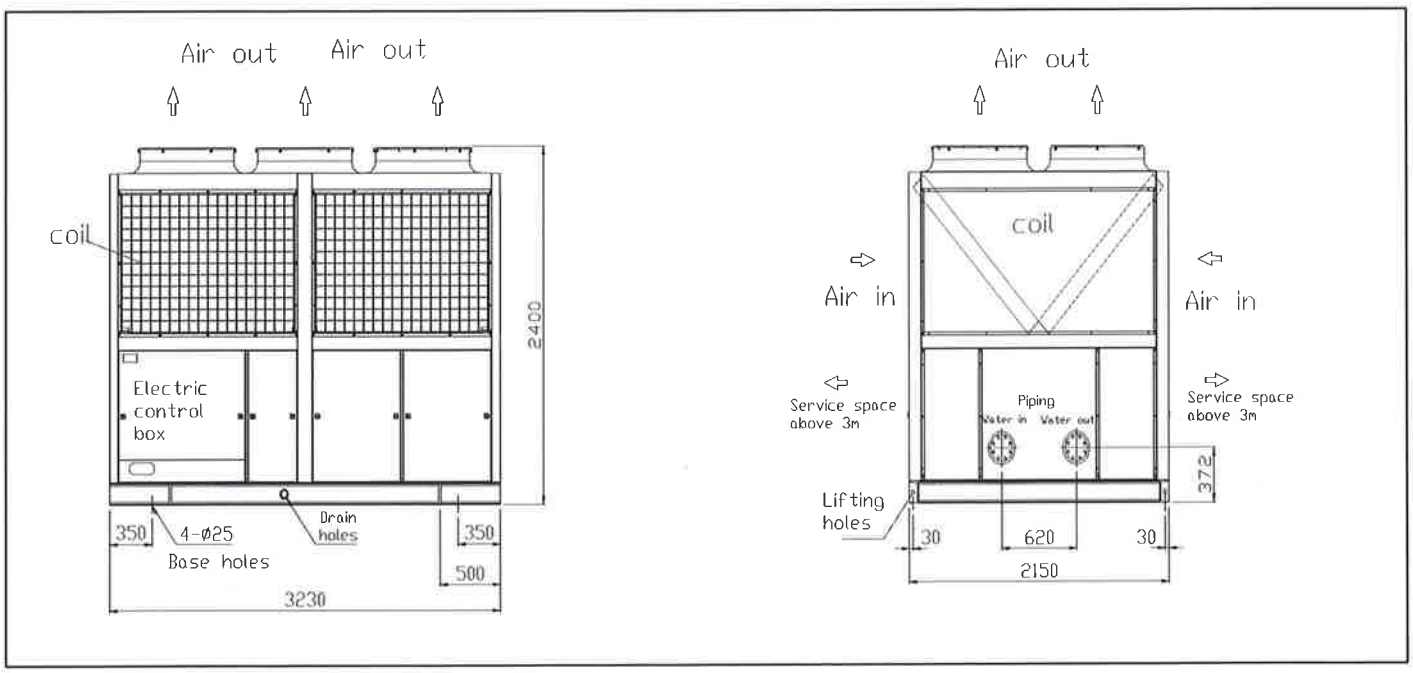
SALS-40/50 Single Compressor Dimeasion



SALS-60/70 Single Compressor



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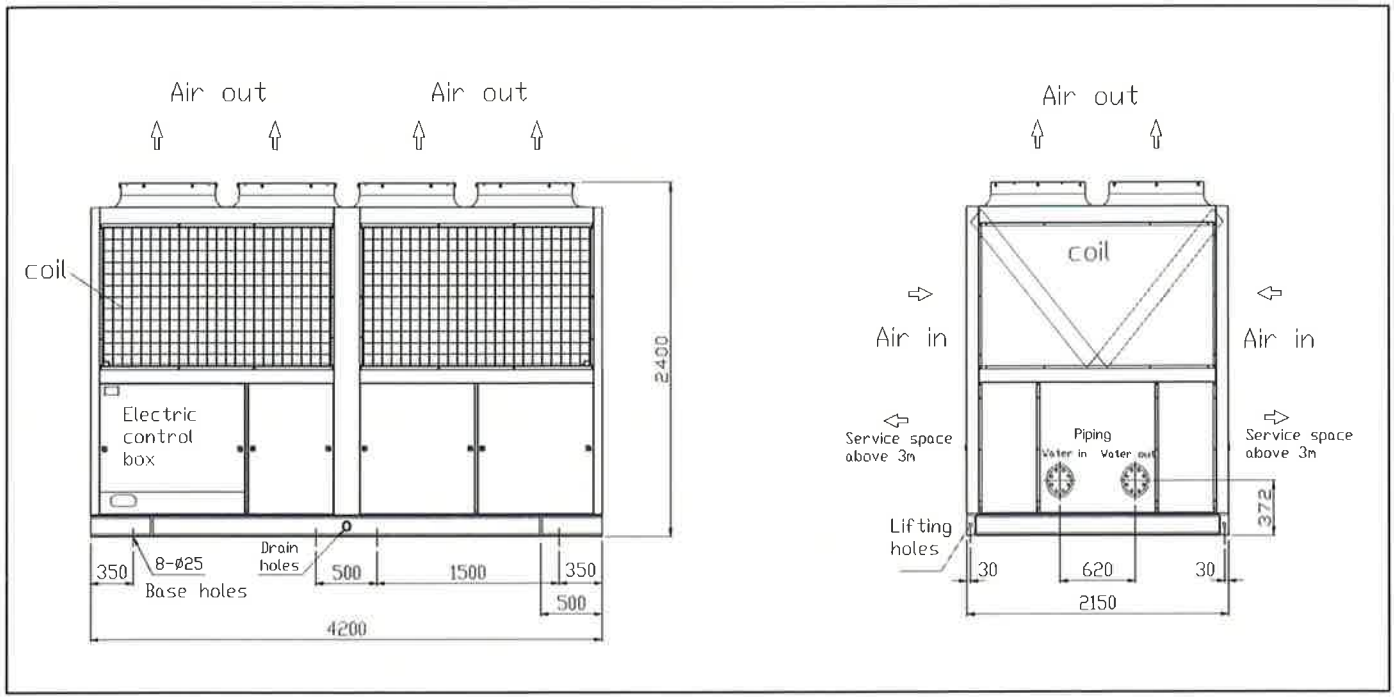
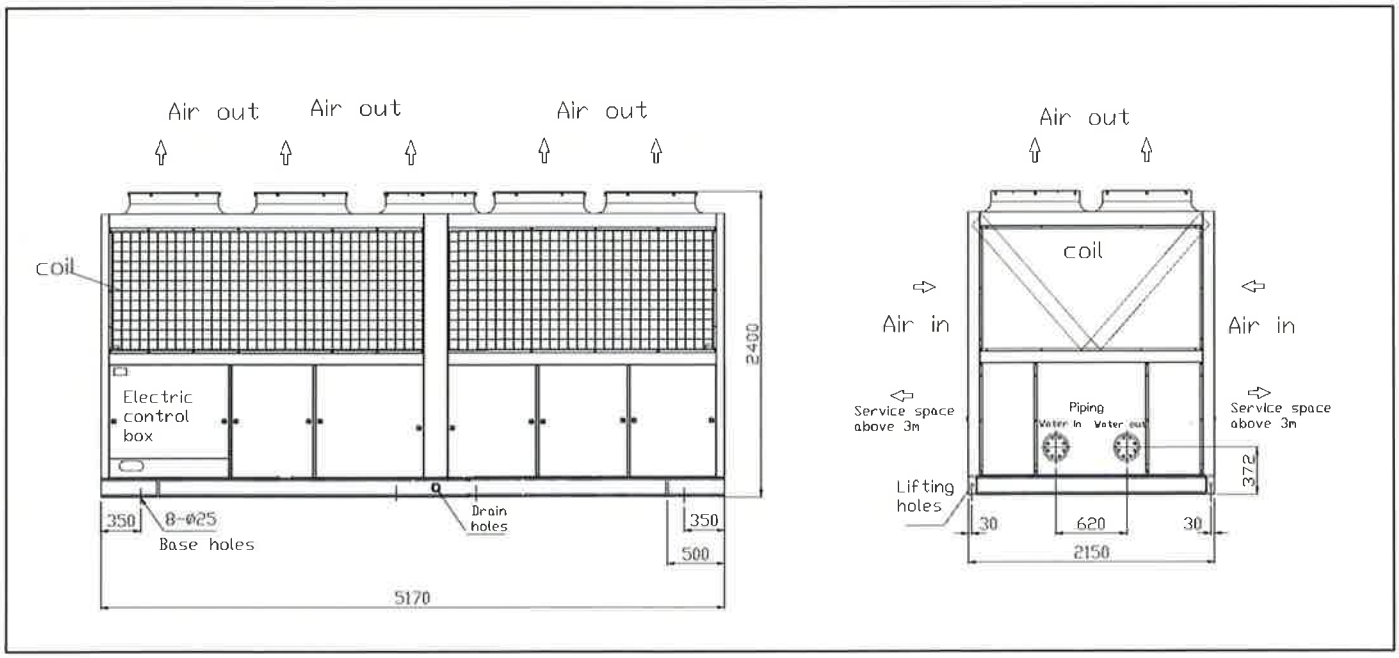
SALS-80/100 Double Compressor Dimeasion



SALS-110 Double Compressor



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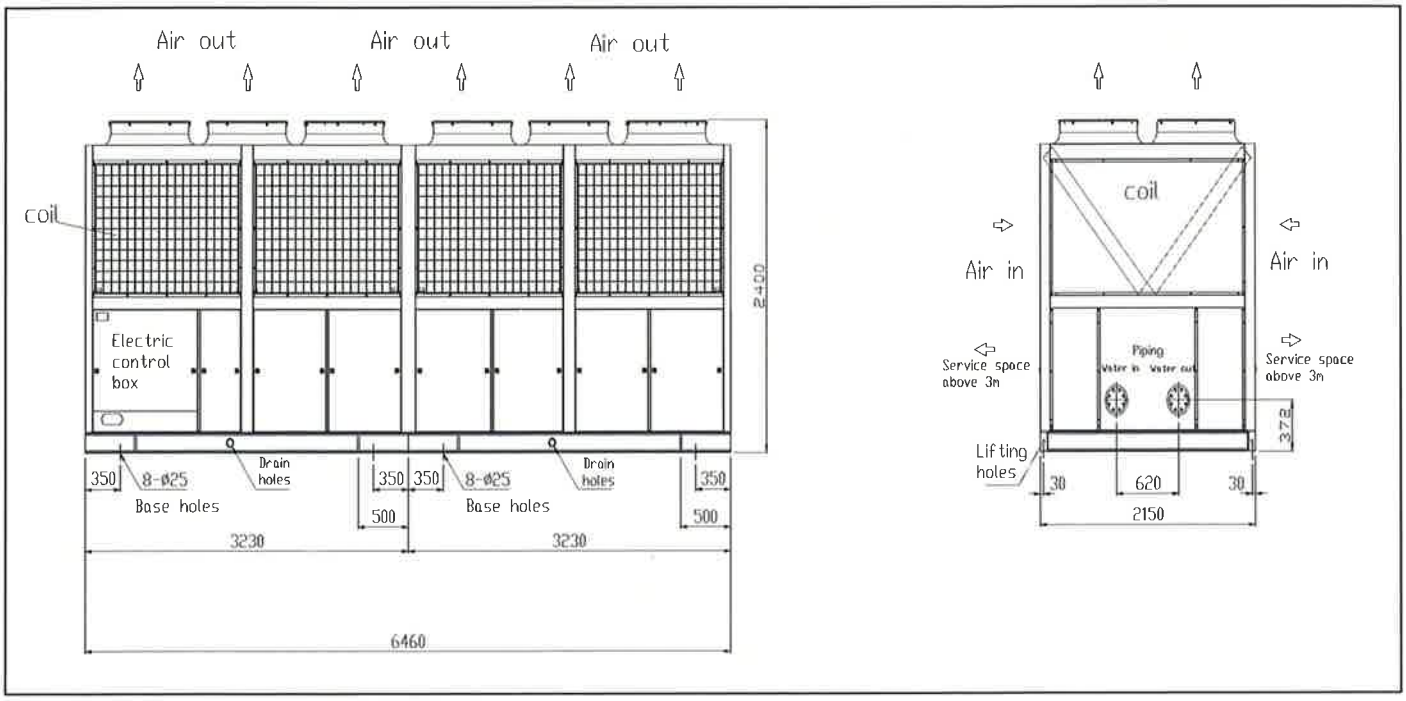
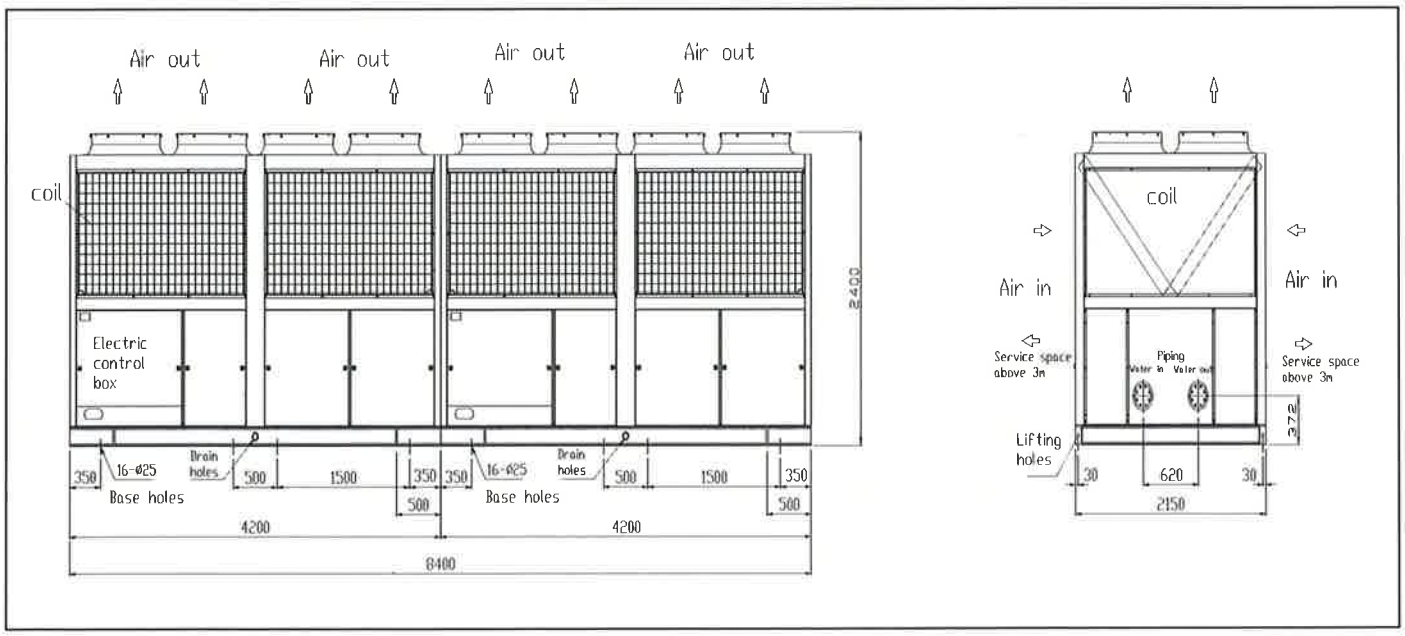
SALS-120 Double Compressor Dimeasion



SALS-160/200 Four Compressor



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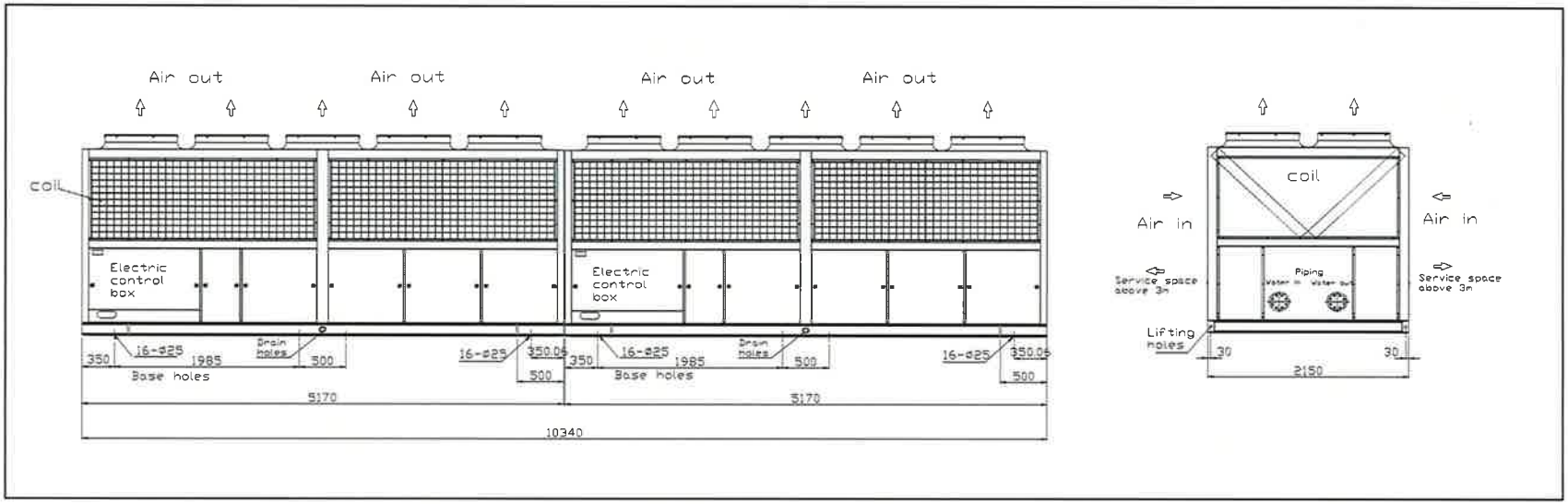
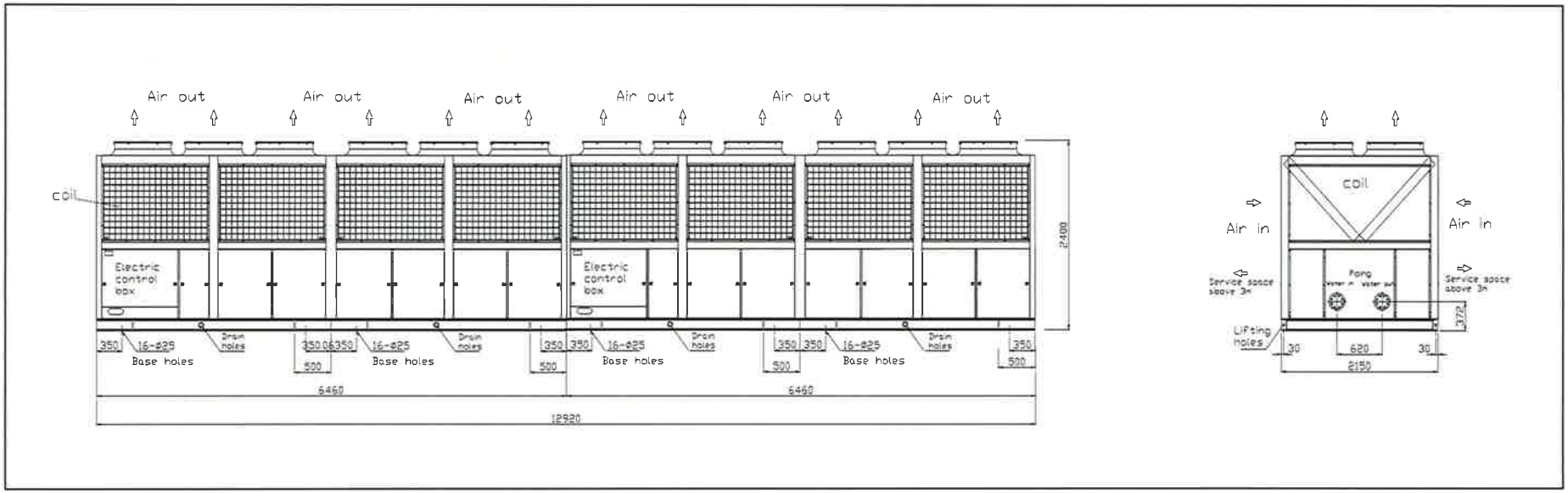
SALS-220 Four Compressor

Dimeasion



SALS-240 Four Compressor



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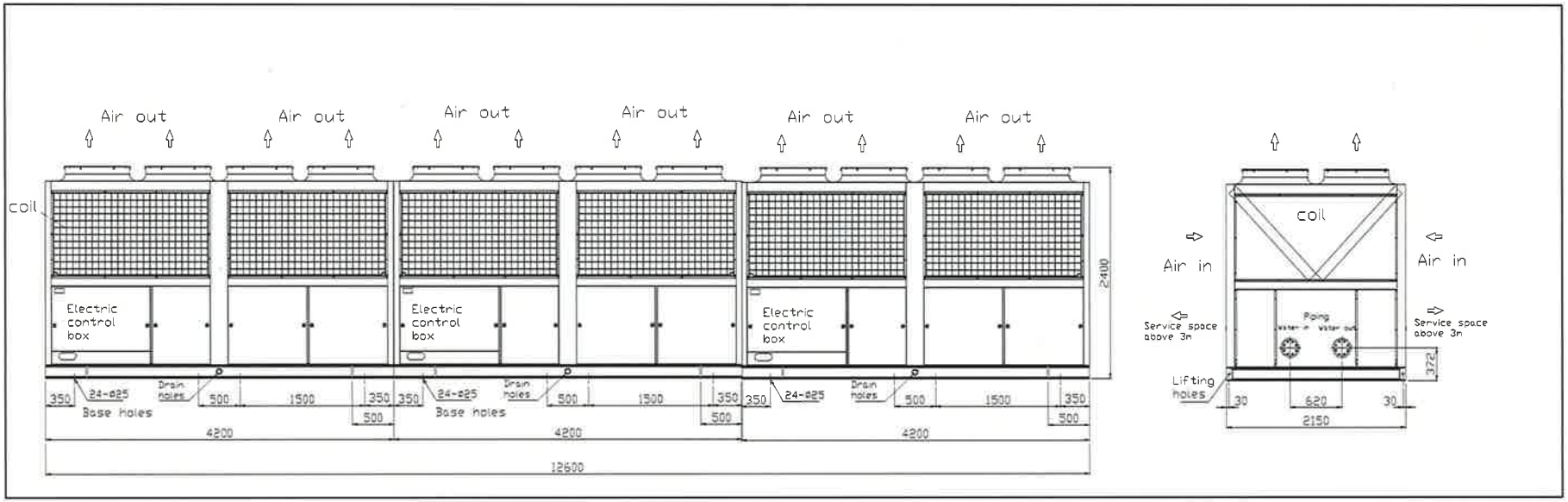
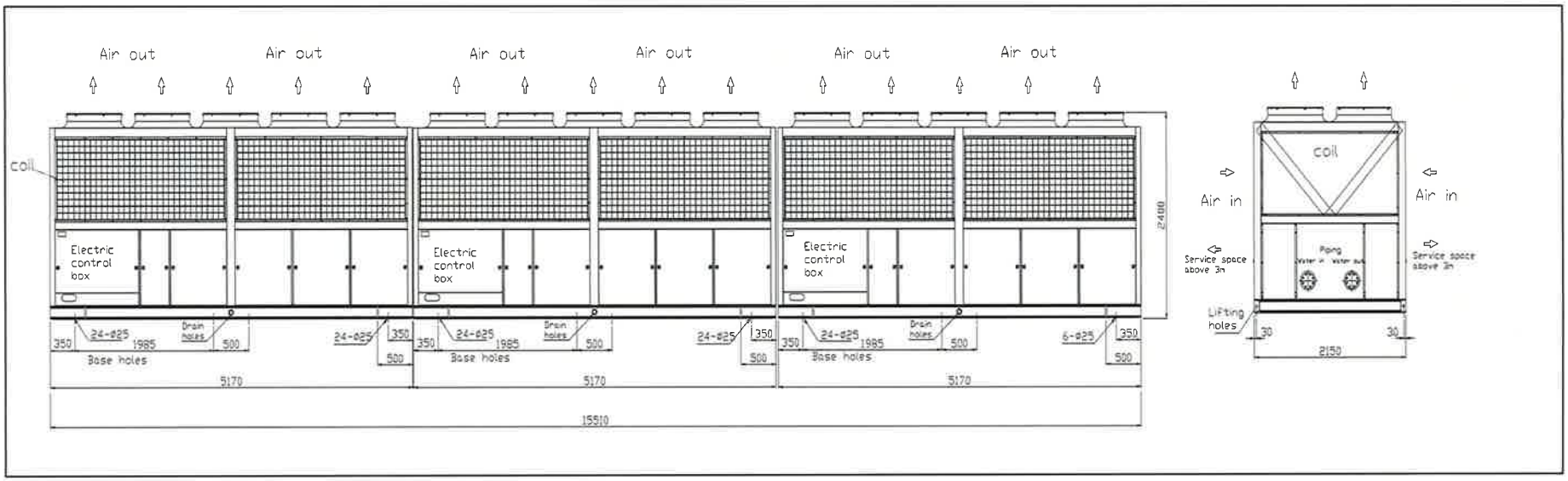
SALS-300 Six Compressor Dimeasion



SALS-330 Six Compressor



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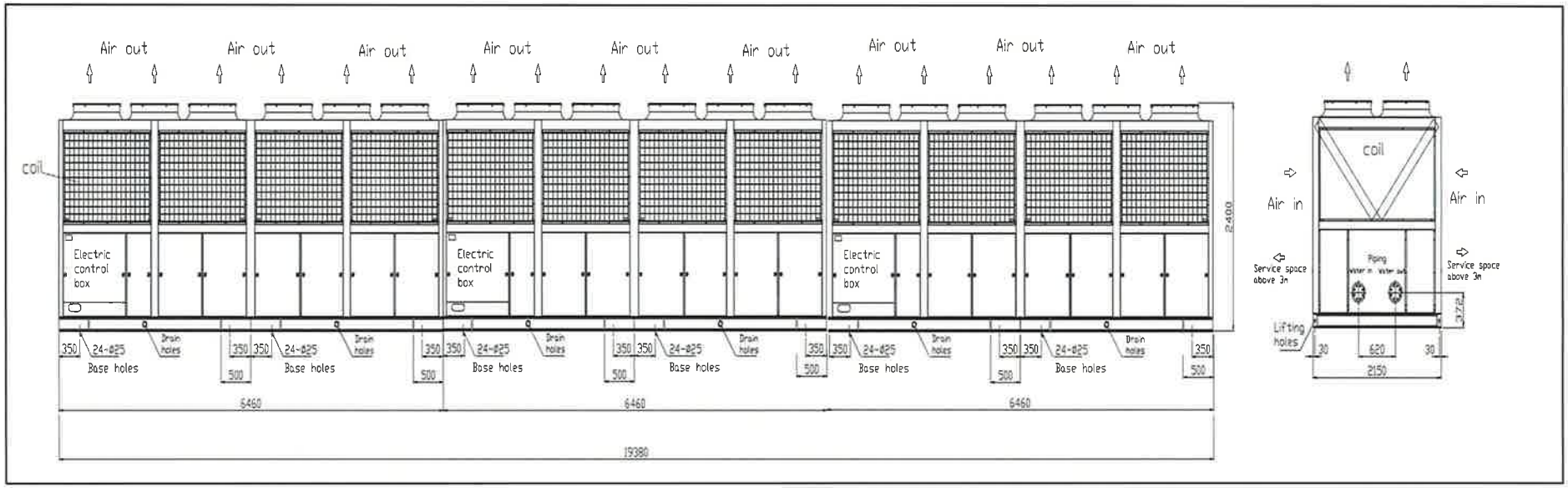
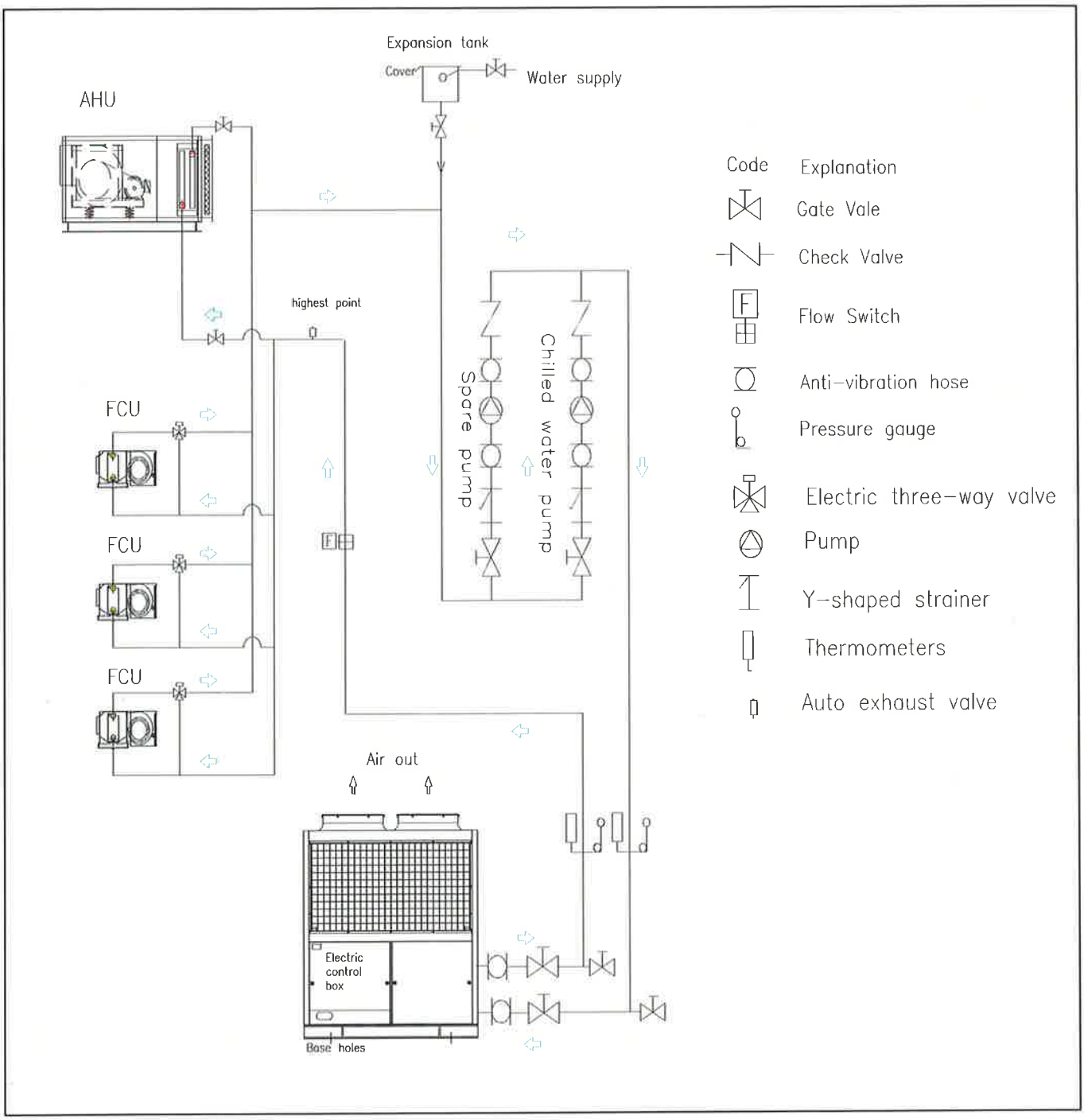
SALS-360 Six Compressor

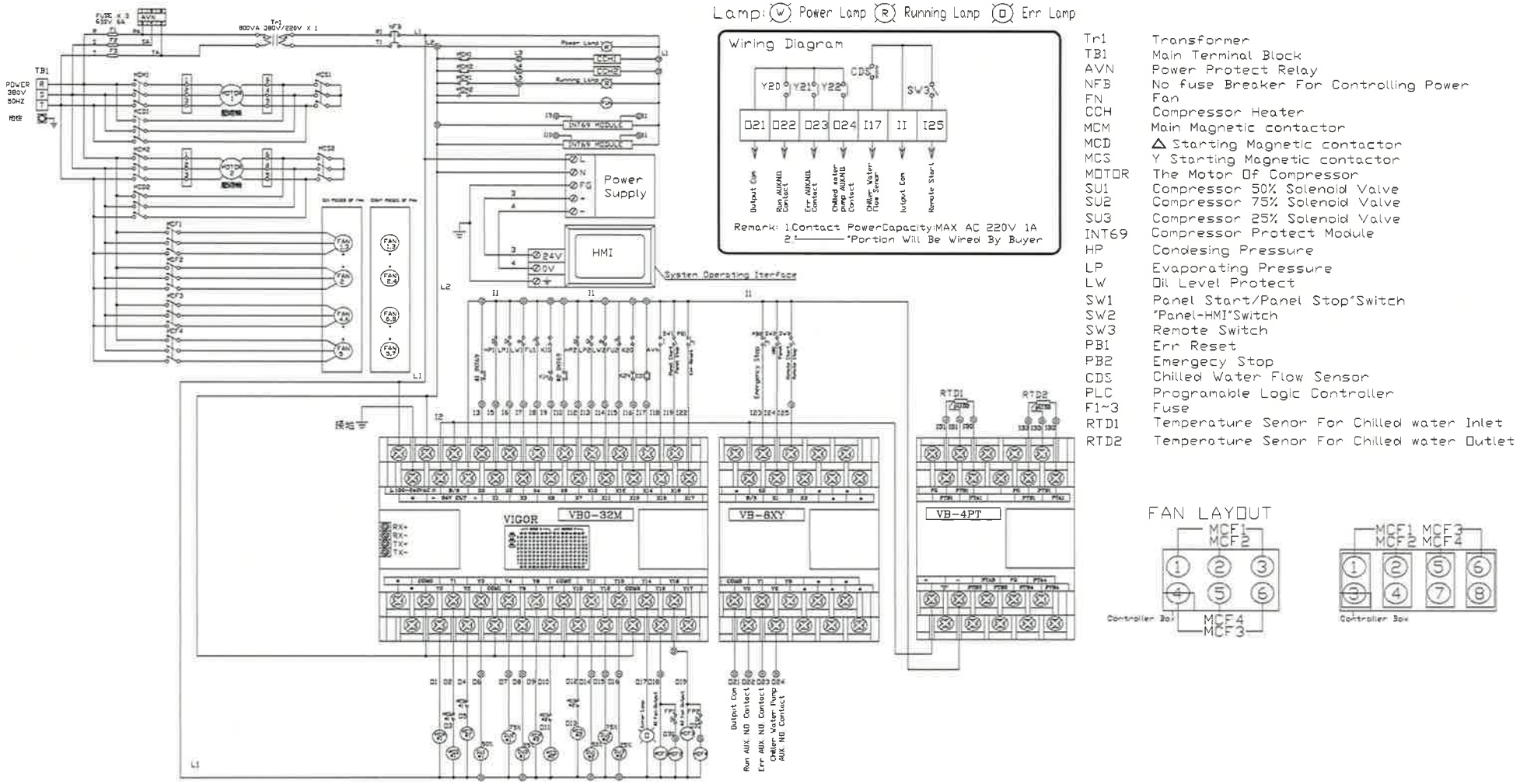
Dimeasion



SINKO Piping Diagram Reference



SINKO Electrical wiring diagram



Tr1	Transformer
TB1	Main Terminal Block
AVN	Power Protect Relay
NFB	No fuse Breaker For Controlling Power
FN	Fan
CCH	Compressor Heater
MCM	Main Magnetic contactor
MCD	△ Starting Magnetic contactor
MCS	Y Starting Magnetic contactor
MOTOR	The Motor Of Compressor
SU1	Compressor 50% Solenoid Valve
SU2	Compressor 75% Solenoid Valve
SU3	Compressor 25% Solenoid Valve
INT69	Compressor Protect Module
HP	Condesing Pressure
LP	Evaporating Pressure
LW	Oil Level Protect
SW1	Panel Start/Panel Stop"Switch
SW2	"Panel-HMI"Switch
SW3	Remote Switch
PB1	Err Reset
PB2	Emergecy Stop
CDS	Chilled Water Flow Sensor
PLC	Programable Logic Controller
F1~3	Fuse
RTD1	Temperature Senor For Chilled water Inlet
RTD2	Temperature Senor For Chilled water Outlet

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TAIWAN SINKO KOGYO CO., LTD.