Carrier

turn to the experts

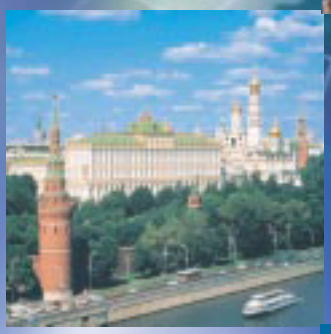
30HXY/HXC (High COP)

Water-Cooled Screw Chiller

30HXY/HXC

Different histories, cultures, and values influence different places of the world in different ways, But one thing remains in common: Carrier Air-conditioning systems are installed in all these places.

The Great Hall of the People, Beijing, China



Kremlin, Moscow, Russia

White House, Washington DC, USA

Imperial Palace, Tokyo, Japan

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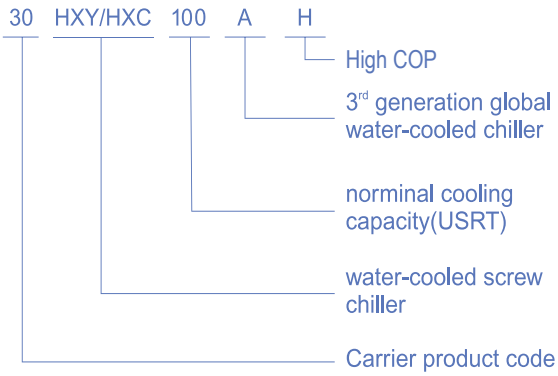


Introduction

The 30HXC units are water-cooled chillers, designed from the ground up to meet the needs of today and tomorrow. It is distinguished for its chlorine-free refrigerant, high efficiency, high reliability, easy maintenance and low running cost. Born in 1990s, 30HXC is widely applied in all kinds of buildings such as hotels, offices, restaurants, schools, hospitals, enterprises, etc.

Designed exclusively for R134a

- R134a has zero ozone depletion potential.
- R134a production is annually increasing, and has no expire date.

Full/part load mode is more cost saving

- 06N twin-screw compressor achieves high efficiency.
- Carrier patent high efficiency flood evaporator increase heat transfer efficiency.
- Multiple compressors allow flexible adjustment according to user's load, ensuring higher part-load efficiency.
- Electronic expansion valve ensures high control precision.

High reliability

- Two independent refrigerant circuits minimize unit shut down.
- Multiple compressors provide back up for each other.
- Complete protection function ensures the unit running smooth.
- Each unit has a trial run in the factory.

Easy installation

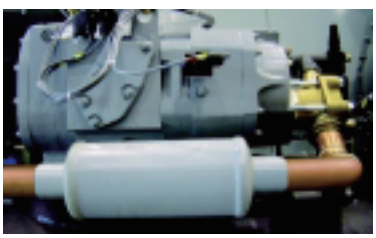
- Compact design requires minimal indoor space.
- The maximum width reaches only 1015mm, which allows the unit to fit through a standard door opening without disassembly.
- Evaporator and condenser short steel pipes and flanges are supplied by factory.
- Refrigeration and lubrication is filled ex-factory.
- The on-site installation requires only connection to water and power supply.

Simple to service

- Graphical operational interface makes it clear and easy to operate.
- Screw compressor with few components requires low maintenance cost.

Triple Sound Reduction

- Built-in sound reduction device can effectively reduce noises as result of high pressure air discharge fluttering by diverting the air in an appropriate way.
- New external muffler installed on the discharge pipe on the compressor can transform part of acoustic energy into heat and greatly reduce noise. (See the picture below)
- Sound reduction cabinet provides another sound-proofing barrier, and reduces the noise transferring to the machine room. (See the picture below)



Muffler on Discharge Pipe

2nd Generation Sound Reduction Cabinet

PRO-DIALOG Plus Control

PRO-DIALOG Plus is an advanced numeric control system that combines intelligence with great operating simplicity. The PID control algorithm with permanent compensation for the difference between the heat exchanger entering and leaving temperature, anticipates load variations, guarantees leaving water temperature stability and prevent unnecessary compressor cycling.

PRO-DIALOG offers extended communications capabilities

- Graphical interface, LED numeric displays make it clear and easy to understand.
- Touch keys are well-positioned on the schematic chiller diagram, providing clear view of operation flow. All operating parameters such as pressures, temperatures, operating hours etc are easy to use.
- Operating menus provide direct access to acquiring and modifying parameters.

PRO-DIALOG has advanced control functions

- Allows local mode, remote mode and CCN mode to start/stop the unit.
- The long-stroke electronic expansion valve (EXV), allows a significant energy efficiency improvement at part load conditions, and faultless chiller operation in a wider temperature range.
- Automatic control of refrigerant circuits and compressors on/off status and loading sequence, thus equalizing compressor operating hours.
- Interlock control between the unit, chilled water pump and cooling water pump, contributing to safe and high efficiency performance.
- "Demand Limit" limits the maximum chiller capacity to a predefined value. This function is specially designed for multi-compressor management, it aims to achieve the best running efficiency by imposing different chiller capacity limit to different compressors.
- Evaporator leaving water temperature drop speed is controlled within the adjustable range (0.1~1.1°C/min) so as to avoid energy waste, improve ERR and increase unit life.
- Provides a negative revision to cooling water leaving temperature according to outdoor temperature or return water tempera ture trend, so as to save energy and improve ERR by quickly fitting the wave trend of external load decrease.

Safety Protection Function

- Protection on low cooling water leaving temperature, low oil pressure, high refrigerant pressure, electric leak, compressor overload, high/low electrical voltage and phase lack.

Multiple remote control

- The communication bus between RS485 port of 30HXC and the Carrier Comfort Net (need purchase) offers multiple remote control; the communication bus between 30HXC and DATAPORT communication module provided by Carrier (need purchase) realizes the connection with other building automatics.

Physical data

		30HXY	30HXC						
		100AH	155AH	190AH	230AH	260AH	285AH	345AH	375AH
Net nominal cooling capacity	KW	333	552	643	819	879	973	1180	1285
Compressors									
Quantity-Circuit A		1	1	1	2	2	2	2	2
Quantity-Circuit B			1	1	1	1	1	2	2
No. of control steps		3	6	6	8	8	8	10	10
Minimum step capacity	%	40	19	21	14	14	14	10	10
Evaporator									
Entering water temperature	℃	12							
Leaving water temperature	℃	7							
Net water volume	l	61	75	88	170	170	170	208	208
Inlet/outlet	in	4	5	5	6	6	6	8	8
Max. water side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Shell and tube with internally finned copper tubes							
Entering water temperature	℃	32							
Leaving water temperature	℃	37							
Net water volume	l	70	124	126	255	255	255	302	302
Inlet/outlet	in	5	6	6	8	8	8	8	8
Max. water side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Refrigerant charge		HFC-134a							
Circuit A	kg	83	54	70	115	117	132	96	119
Circuit B	kg		57	70	63	75	80	109	137
Dimensions									
Length	mm	2794	4278	4278	4521	4521	4521	5427	5427
Width	mm	950	980	980	1015	1015	1015	1015	1015
High	mm	1930	1941	1941	2060	2060	2060	2112	2112
Net weight	kg	2200	2870	3133	4421	4475	4595	5277	5445
Operating weight	kg	2360	3087	3360	4817	4871	4991	5784	5952

Electrical data

		30HXY	30HXC						
30HXC		100AH	155AH	190AH	230AH	260AH	285AH	345AH	375AH
Power circuit									
Nominal power supply	V-ph-Hz	400-3-50							
Voltage range	V	360-440							
Nominal power input*	kW	66	108	130	160	187	194	248	261
Nominal current drawn*	A	108	179	233	265	325	343	428	460
Max. starting current	A	328	355	442	683	1027	1200	1184	1373

*** Based on condition: Evaporator entering/leaving water tempture 12℃ and 7℃. Condenser entering/leaving water tempture 32℃ and 37℃. Fouling factor=0.000044m^{2}K/W.**

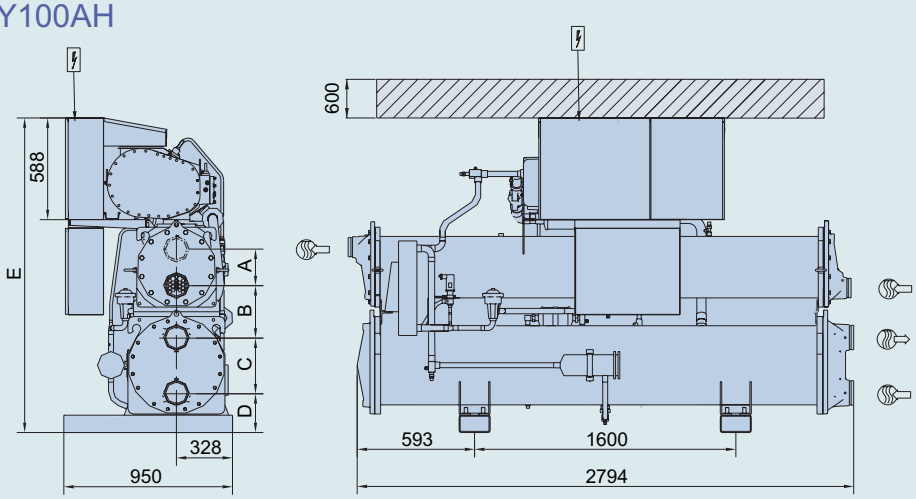
*** Effective power input = power input of the compressors + the control circuit + the power input of the pump to overcome the evaporator pressure drop.**

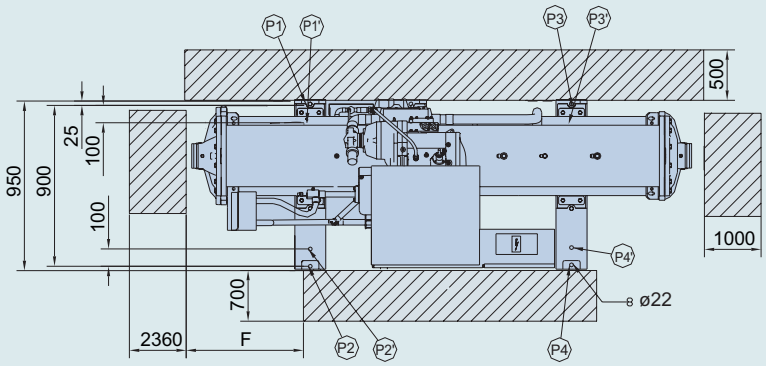
*** Net cooling capacity=gross cooling capacity minus the water pump heat against the internal evaporator pressure drop.**

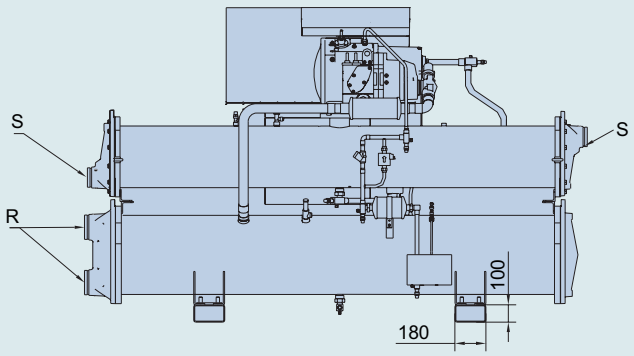
*** Short steel pipes factory-supplied, to be installed on site for evaporator and condenser water connections.**

Dimensions/Clearance

30HXY100AH







	A	B	C	D	E	F	S	R
30HXY100AH	236	325	304	283	1930	496	Dg100	Dg125

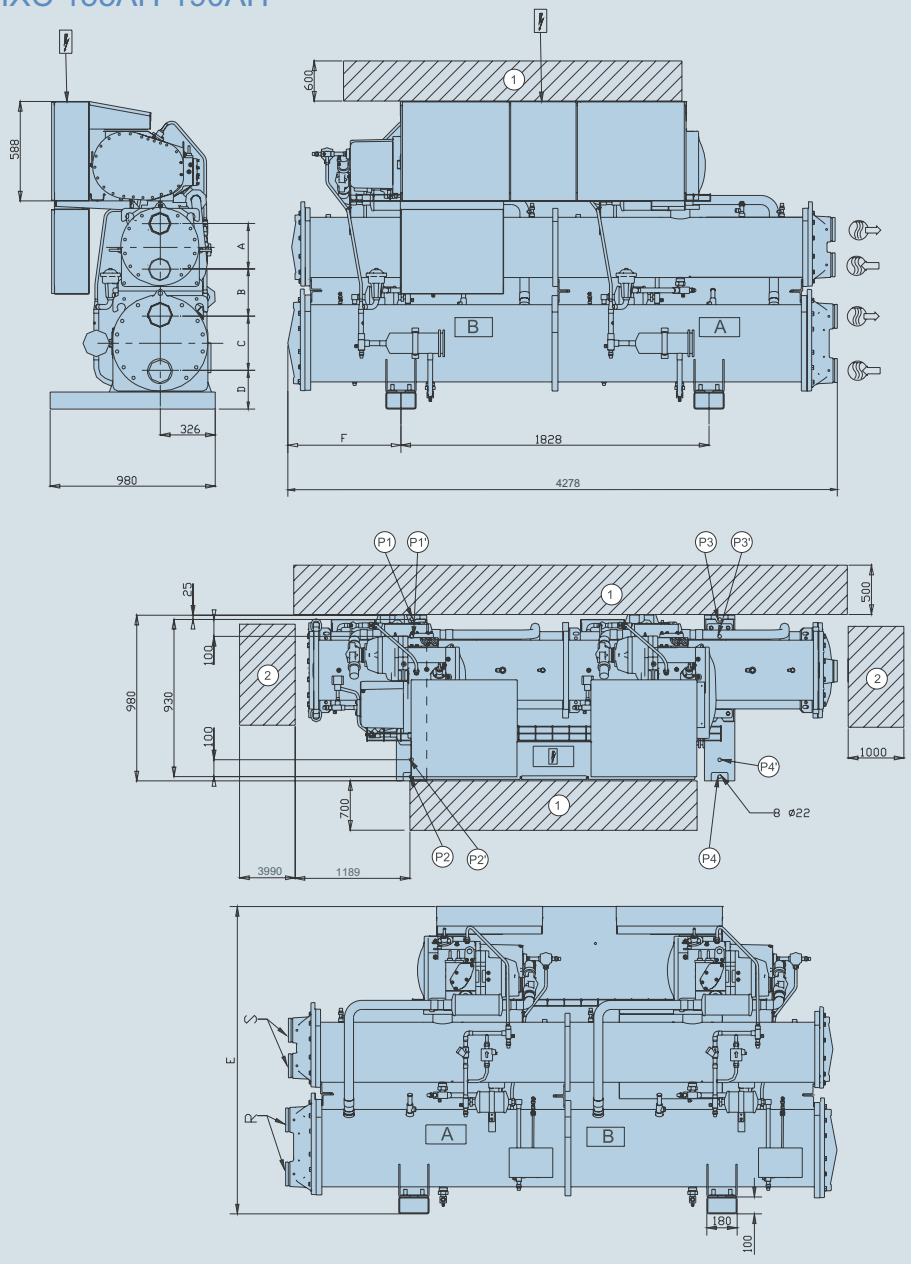
③ Required clearances for maintenance

④ Recommended space for tube removal (clearance 2360 and 1000 can be either on the right or the left side).

Water outlet Water inlet Power supply

Dimensions/Clearance

30HXC 155AH-190AH



	A	B	C	D	E	F	S	R
30HXC155AH	272	332	304	283	1941	1166	Dg125	Dg150
30HXC190AH	272	332	304	283	1941	1166	Dg125	Dg150

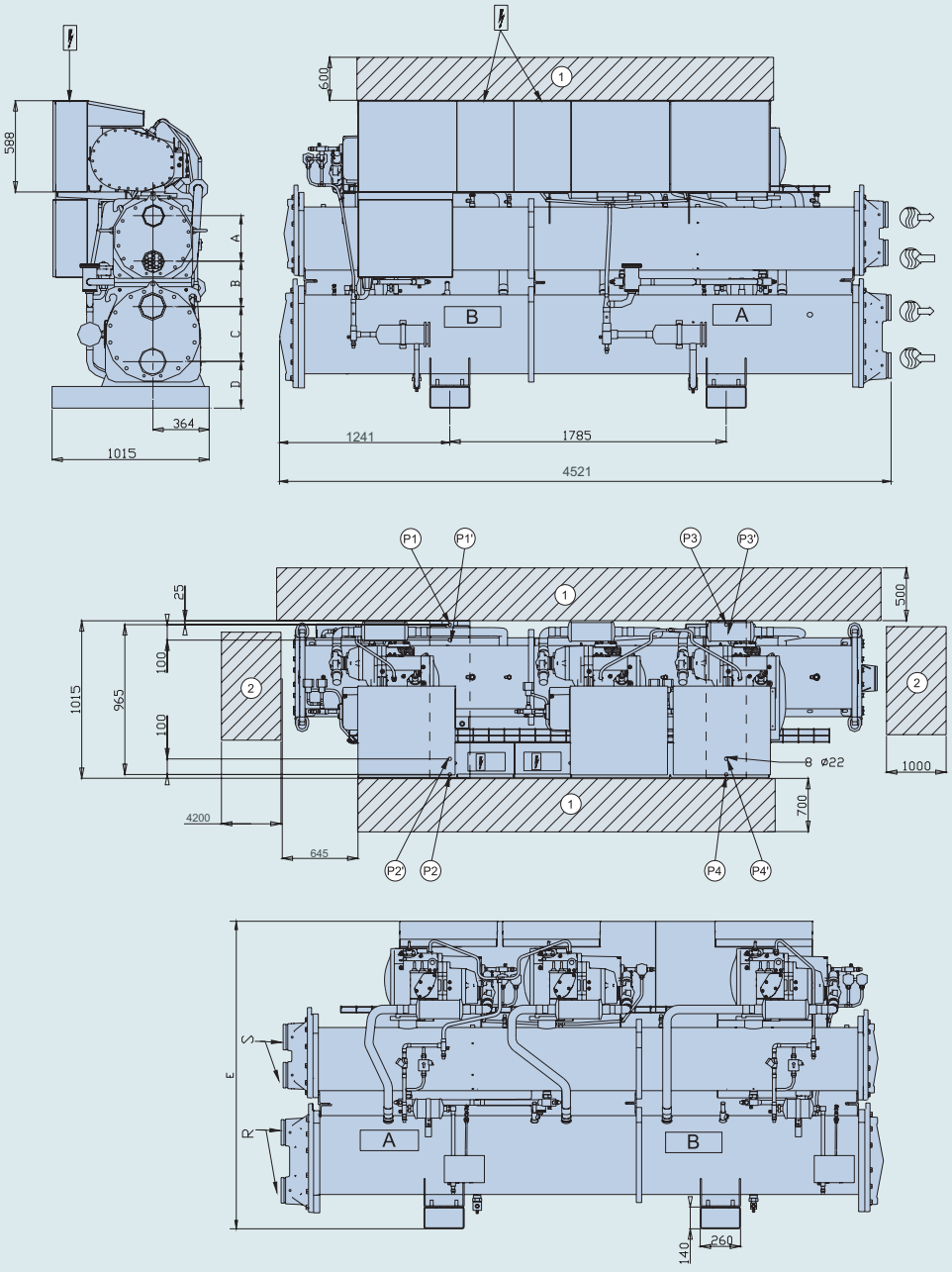
⑤ Required clearances for maintenance

⑥ Recommended space for tube removal (clearance 3990 and 1000 can be either on the right or the left side).

Water outlet Water inlet Power supply

Dimensions/Clearance

30HXC 230AH-285AH



	A	B	C	D	E	R	S
30HXC230AH 30HXC260AH 30HXC285AH	284	356.5	340	309	2060	Dg200	Dg150

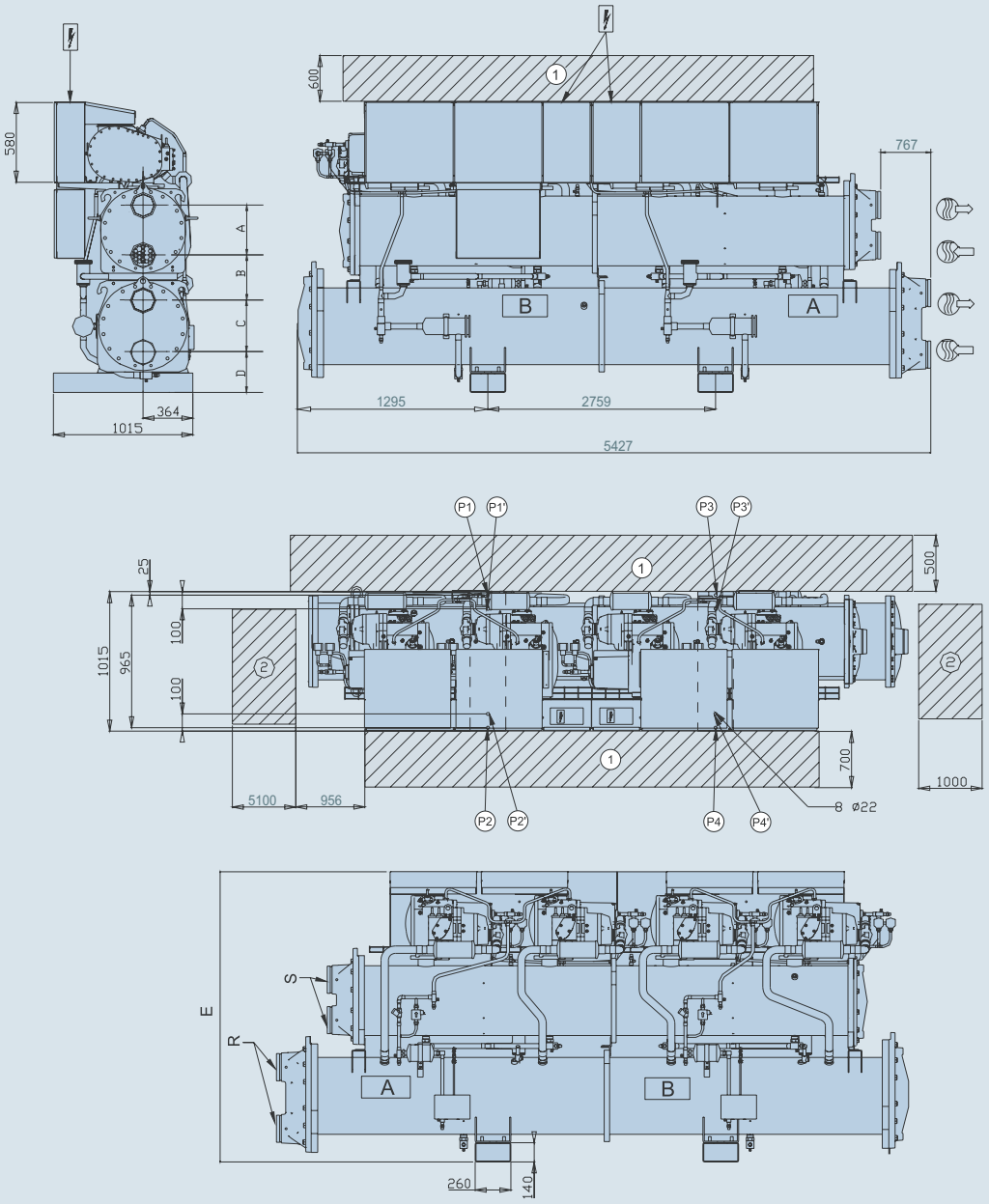
① Required clearances for maintenance

② Recommended space for tube removal (clearance 4200 and 1000 can be either on the right or the left side).

Water outlet Water inlet Power supply

Dimensions/Clearance

30HXC 345AH-375AH



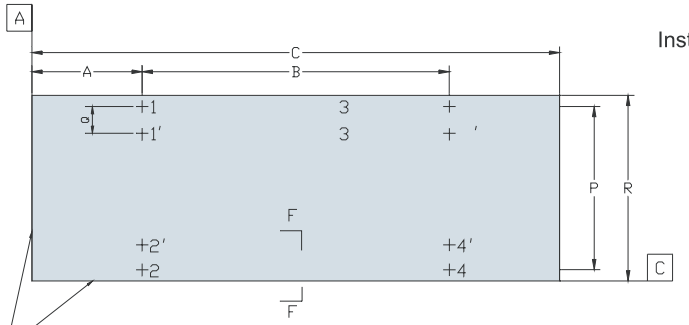
	A	B	C	D	E	R	S
30HXC345AH 30HXC375AH	290	379	340	309	2112	Dg200	Dg200

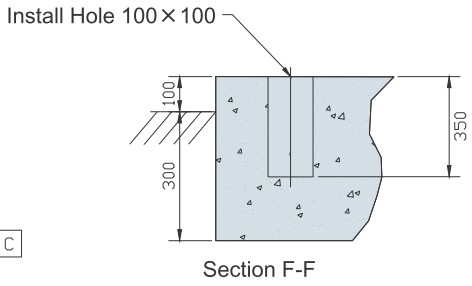
① Required clearances for maintenance

② Recommended space for tube removal (clearance 5100 and 1000 can be either on the right or the left side).

Water outlet Water inlet Power supply

Chiller Footprint



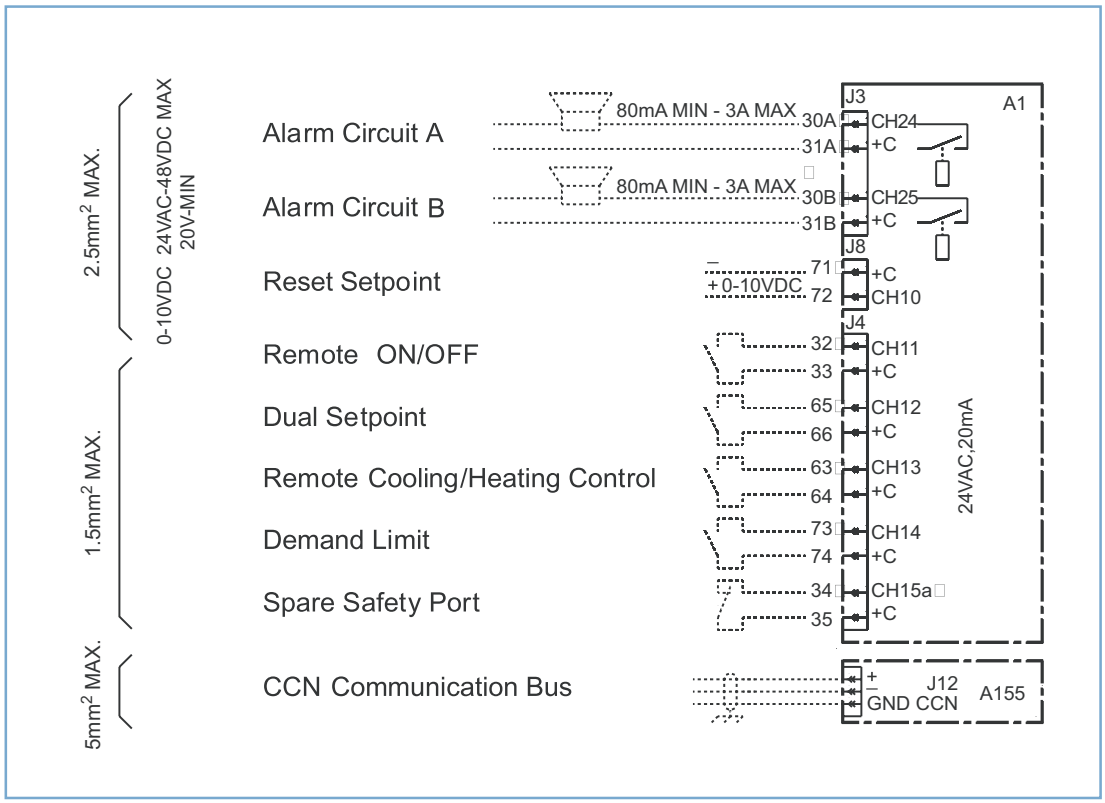


Machine figure dimension, basement need additional clearance.

Dimension(mm)	A	B	C	P	Q	R
30HXY100AH	560	1600	2794	900	100	950
30HXC155AH 30HXC190AH	1185	1828	4278	930	100	980
30HXC230AH 30HXC260AH 30HXC285AH	1248	1785	4533	965	100	1015
30HXC345AH 30HXC375AH	1302	2759	5439	965	100	1015

Load(kg)	1	2	3	4	1'	2'	3'	4'	Operating Weight
30HXY100AH	669	518	659	514	687	540	637	496	2360
30HXC155AH	1037	721	781	548	1080	678	813	516	3087
30HXC190AH	1173	775	850	560	1228	720	890	522	3360
30HXC230AH	1569	1088	1276	884	1631	1025	1328	833	4817
30HXC260AH	1582	1101	1290	898	1644	1038	1342	847	4871
30HXC285AH	1621	1128	1322	920	1685	1063	1375	868	4991
30HXC345AH	1801	1297	1561	1125	1867	1231	1618	1068	5784
30HXC375AH	1850	1367	1573	1162	1913	1304	1627	1108	5952

Field Wiring



Standard Accessories

Item	Description	Quantity
a	Flow monitor switch for evaporator	1
b	Plug 3/4"NPT	2
c	M20×300 hex screw	4
d	Cable fixture	6
e	Tie, Wire	6
f	Couplings	4
g	Short steel pipes	4

Main Options

Option	Description	Remark
104	Evaporator maximum water-side operating pressure of 21 bar	
107	Reversed evaporator water inlet/outlet	
104C	Condenser maximum water-side operating pressure of 21 bar	
107C	Reversed condenser water inlet/outlet	
	RS485 communications interface with open protocol	
5	Brine unit for leaving brine < +4° C to > -6°C	
150A	Water-to-water heat pump	Condenser leaving water < 47° C to > 60° C
150	High condensing temperature unit and non-reversible heat pump	Condenser leaving water < 40° C to > 47° C

Carrier Corporation identified six specific areas of concentration that directly impact how we, as a world manufacturer, balance our customers' needs for comfort with the environment's needs for responsible consumption.