

*YHAU-CW Double Effect Steam-Fired
Absorption* **Chiller**

150 TR to 2000 TR, 527 kW to 7033 kW

COP-1.48

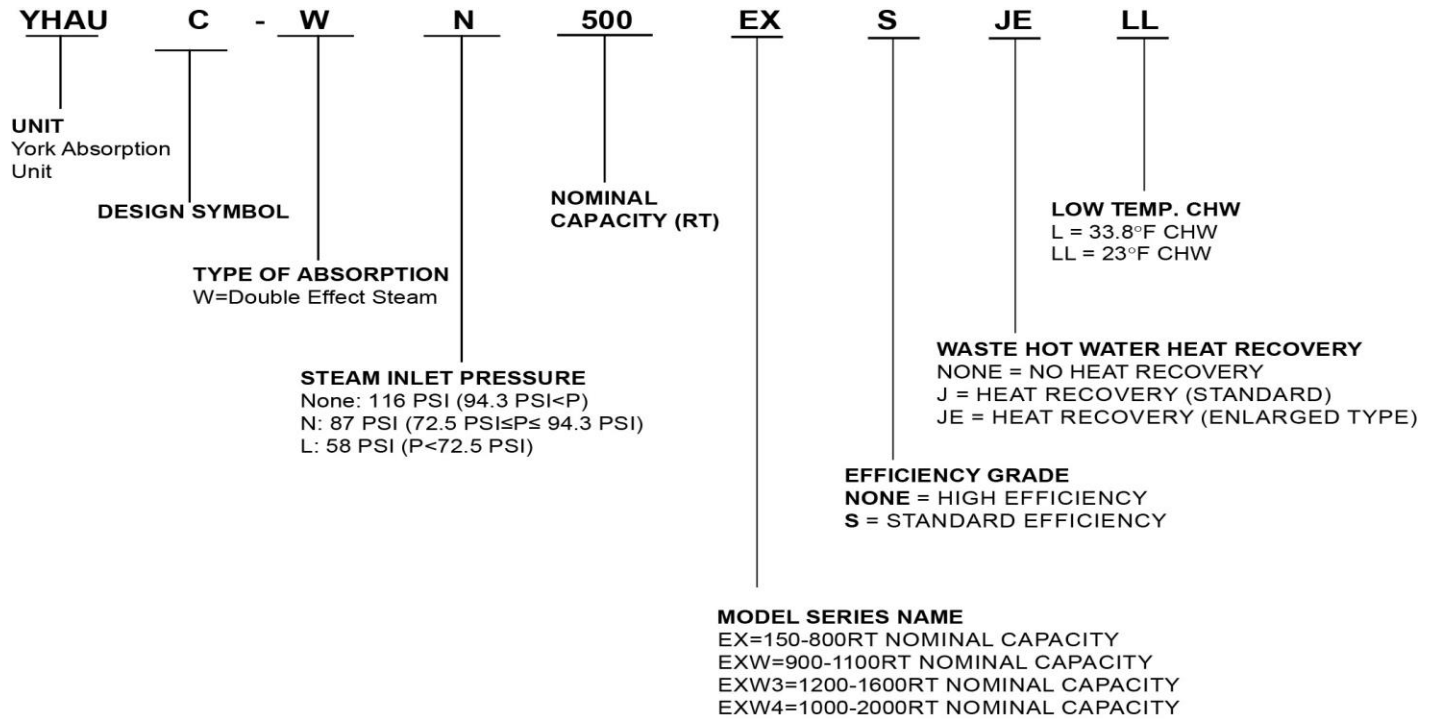


Install Confidence

WITH INNOVATIVE 2-STEP EVAPORATION AND ABSORPTION-CYCLE TECHNOLOGY

Driving heat source	Type	Model	Single unit capacity	Application
Low pressure steam	Single effect steam	YHAU-C 	105 - 7,034 kW 30 - 2,000 TR	Combined heat and power (CHP) Commercial cooling Industrial process cooling
Medium pressure steam	Double effect steam	YHAU-CW 	422 - 7,034 kW 120 - 2,000 TR	Combined heat and power (CHP) Commercial cooling Industrial process cooling

NOMENCLATURE



Absorption Cooling Technology Benefits



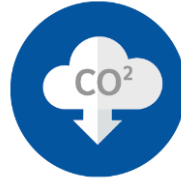
Driven by waste heat
(low cost thermal source)



Water as the refrigerant (zero ODP, GWP)



Reduced electric energy costs



Reduced emissions



Quiet and vibration free (low sound level)



Environmental Regulations



YORK ABSORPTION CHILLER

Double-Effect Steam Fired Type

Model YHAU-CW	Dimension ft. (m)				Weight kg (lb)		
	Length	Width	Height	Tube extracting space	Maximum shipping	Operation	Emergency (filled with water)
150EX(L)	9.8 (3.0)	7.5 (2.3)	8.2 (2.5)	6.6 (2.0)	5,700 (12,563)	7,200 (15,869)	10,500 (23,142)
180EX(L)	11.2 (3.4)	7.5 (2.3)	8.2 (2.5)	8.4 (2.6)	6,700 (14,767)	8,500 (18,734)	12,700 (27,991)
240EX(L)	13.2 (4.0)	7.5 (2.3)	8.2 (2.5)	10.5 (3.2)	7,800 (17,191)	9,900 (21,820)	15,200 (33,501)
300EX(L)	15.7 (4.8)	7.5 (2.3)	8.2 (2.5)	13.1 (4.0)	8,900 (19,616)	11,600 (25,566)	18,100 (39,892)
360EX(L)	19.0 (5.8)	7.9 (2.4)	8.2 (2.5)	16.4 (5.0)	12,100 (26,668)	15,800 (34,823)	26,100 (57,524)
400EX(L)	19.0 (5.8)	7.9 (2.4)	8.2 (2.5)	16.4 (5.0)	12,100 (26,668)	15,800 (34,823)	26,100 (57,524)
450EX(L)	15.8 (4.8)	8.0 (2.5)	10.2 (3.1)	13.1 (4.0)	13,700 (30,195)	17,100 (37,688)	27,000 (59,508)
500EX(L)	17.5 (5.3)	8.0 (2.5)	10.2 (3.1)	14.8 (4.5)	15,500 (34,162)	20,200 (44,521)	30,600 (67,442)
560EX(L)	19.1 (5.8)	8.0 (2.5)	10.2 (3.1)	16.4 (5.0)	16,700 (36,807)	21,800 (48,047)	34,200 (75,377)
600EX(L)	20.8 (6.4)	8.0 (2.5)	10.2 (3.1)	18.0 (5.5)	18,800 (41,435)	24,300 (53,557)	37,800 (83,311)
700EX(L)	23.5 (7.2)	8.0 (2.5)	10.2 (3.1)	20.7 (6.3)	20,600 (45,402)	26,900 (59,288)	42,400 (93,450)
800EX(L)	25.7 (7.9)	8.0 (2.5)	10.2 (3.1)	23.0 (7.0)	23,000 (50,692)	30,100 (66,340)	47,300 (104,249)
900EXW(L)	21.6 (6.6)	9.5 (2.9)	10.3 (3.2)	18.7 (5.7)	24,900 (54,880)	33,500 (73,834)	50,400 (111,082)
1000EXW(L)	23.6 (7.2)	9.5 (2.9)	10.3 (3.2)	20.7 (6.3)	27,100 (59,728)	36,500 (80,446)	55,100 (121,440)
1100EXW(L)	25.9 (7.9)	9.5 (2.9)	10.3 (3.2)	23.0 (7.0)	29,300 (64,577)	39,400 (86,838)	59,100 (130,256)
1200EXW3(L)	26.2 (8.0)	9.9 (3.0)	10.8 (3.3)	23.0 (7.0)	32,200 (70,969)	44,100 (97,196)	70,600 (155,602)
1300EXW3(L)	27.9 (8.5)	9.9 (3.0)	10.8 (3.3)	24.6 (7.5)	34,500 (76,038)	47,100 (103,808)	75,400 (166,182)
1400EXW3(L)	29.7 (9.1)	9.9 (3.0)	10.8 (3.3)	26.2 (8.0)	37,000 (81,548)	50,100 (110,420)	80,100 (176,540)
1500EXW3(L)	31.3 (9.6)	9.9 (3.0)	10.8 (3.3)	27.9 (8.5)	39,500 (87,058)	53,200 (117,253)	85,100 (187,560)
1600EXW3(L)	33.0 (10.1)	9.9 (3.0)	10.8 (3.3)	29.5 (9.0)	42,100 (92,788)	56,200 (123,865)	89,900 (198,140)
1000EXW4(L)	19.9 (6.1)	10.0 (3.1)	12.6 (3.8)	16.4 (5.0)	29,300 (64,577)	40,300 (88,821)	60,100 (132,460)
1120EXW4(L)	22.4 (6.8)	10.0 (3.1)	12.6 (3.8)	18.696 (5.7)	34,000 (74,936)	45,200 (99,621)	67,700 (149,211)
1250EXW4(L)	24.3 (7.4)	10.0 (3.1)	12.6 (3.8)	20.664 (6.3)	35,600 (78,462)	48,900 (107,776)	73,700 (162,435)
1400EXW4(L)	26.6 (8.1)	10.0 (3.1)	12.6 (3.8)	22.96 (7.0)	38,900 (85,736)	53,300 (117,473)	81,000 (178,524)
1500EXW4(L)	28.3 (8.6)	10.0 (3.1)	12.6 (3.8)	24.6 (7.5)	41,300 (91,025)	56,500 (124,526)	86,200 (189,985)
1600EXW4(L)	30.0 (9.1)	10.0 (3.1)	12.6 (3.8)	26.24 (8.0)	43,700 (96,315)	59,800 (131,799)	91,400 (201,446)
1680EXW4(L)	31.6 (9.6)	10.0 (3.1)	12.6 (3.8)	27.88 (8.5)	44,600 (98,298)	61,500 (135,546)	95,100 (209,600)
1800EXW4(L)	33.3 (10.1)	10.0 (3.1)	12.6 (3.8)	29.52 (9.0)	47,000 (103,588)	64,700 (142,599)	100,300 (221,061)
1900EXW4(L)	34.9 (10.7)	10.0 (3.1)	12.6 (3.8)	31.16 (9.5)	49,500 (109,098)	68,100 (150,092)	105,600 (232,742)
2000EXW4(L)	36.6 (11.2)	10.0 (3.1)	12.6 (3.8)	32.8 (10.0)	52,000 (114,608)	71,400 (157,366)	110,900 (244,424)

Technical Specifications For COP 1.48 Steam Fired Double Effect Vapour Absorption Chiller

Model Number	Units	YHAU-CW 150EX(L)	YHAU-CW 180EX(L)	YHAU-CW 240EX(L)	YHAU-CW 300EX(L)	YHAU-CW 400EX(L)	YHAU-CW 450EX(L)	YHAU-CW 500EX(L)	YHAU-CW 560EX(L)	YHAU-CW 600EX(L)	YHAU-CW 700EX(L)	
Cooling Capacity	TR	150	180	240	300	400	450	500	560	600	700	
Chilled Water Circuit	Flow Rate	m ³ /hr.	90.4	108.5	144.7	180.9	241.2	271.3	301.5	337.6	422	
	Connection Diameter	mm	125	125	150	150	200	200	200	200	250	
Cooling Water Circuit	Flow Rate	m ³ /hr.	152.6	183.1	244.1	305.1	406.8	457.7	508.8	569.5	711.9	
	Connection Diameter	mm	150	150	200	200	250	250	250	300	300	
Steam Circuit	Steam Consumption	Kg/hr.	525	630	840	1050	1400	1575	1750	1960	2450	
Overall Dimensions	Length	mm	3,000	3,400	4,000	4,800	5,800	4,800	5,300	5,800	6,400	
	Width	mm	2,300	2,300	2,300	2,300	2,400	2,500	2,500	2,500	2,500	
	Height	mm	2,500	2,500	2,500	2,500	2,500	3,100	3,100	3,100	3,100	
Weights	Operating	Ton	7.2	8.5	9.9	11.6	15.8	17.1	20.2	21.8	26.9	
	Shipping (Max.)	Ton	5.7	6.7	7.8	8.9	12.1	13.7	15.5	16.7	20.6	
Clearance	Tube Cleaning	mm	2,000	2,600	3,200	4,000	5,000	4,000	4,500	5,000	6,300	
Electricity Supply	Solution Circulation Pump	KW	2.2	2.2	3.0	3.0	5.5	5.5	5.5	5.5	5.5	
	Solution Spray Pump	KW	1.1	1.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
	Refrigerant Pump	KW	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
	Vacuum pump	KW	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
	Total Electric Input	KW	7.2	7.5	10.1	10.1	12.6	12.6	12.6	12.6	12.6	
Power Supply			208V(±10%) 50Hz(±5%),3Phase+N/ V(±10%) 50Hz(±5%),3Phase+N									

YHAU-CW Double Effect Steam Chiller

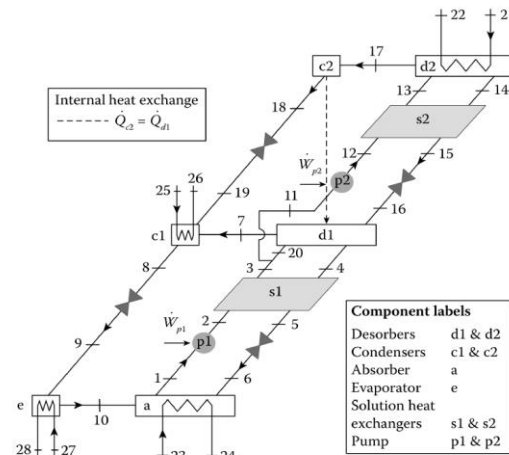
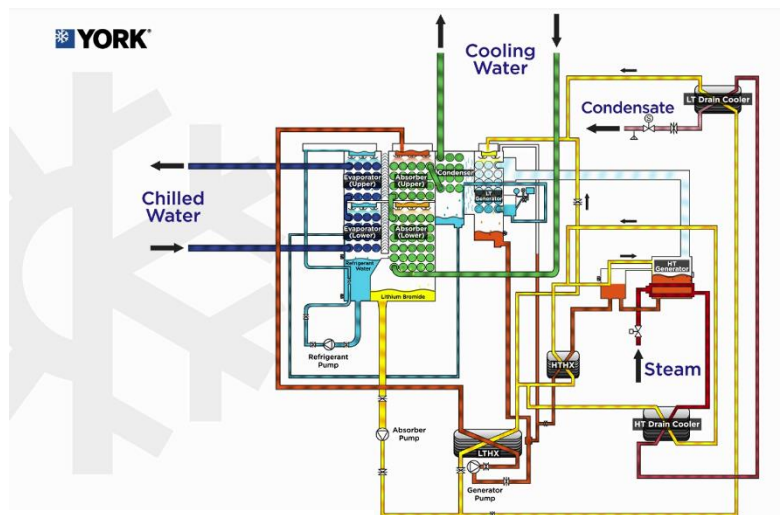


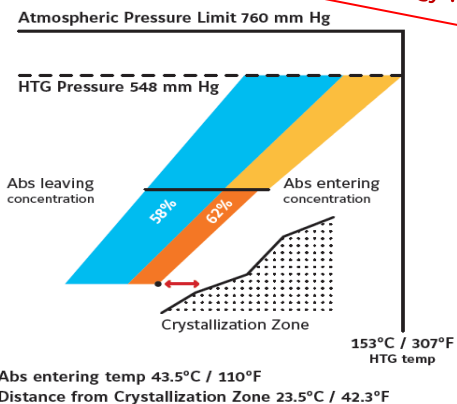
FIGURE 7.5 Parallel flow double-effect water/lithium bromide chiller Dühring chart schematic showing state points.

Condition Ranges

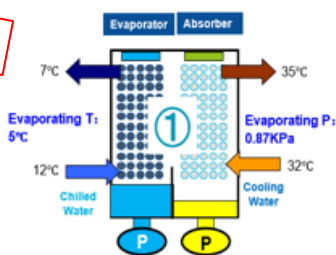
	TYPICAL CONDITIONS 1	TYPICAL CONDITIONS 2
Chilled Water In	12°C	12°C
Chilled Water Out	7°C	7°C
Cooling Water In	30°C	32°C
Cooling Water Out	35°C	37°C

2-Step Evaporator/Absorber Design

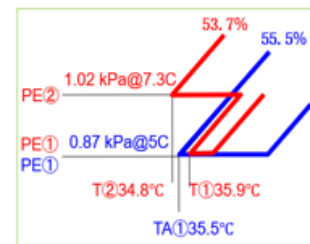
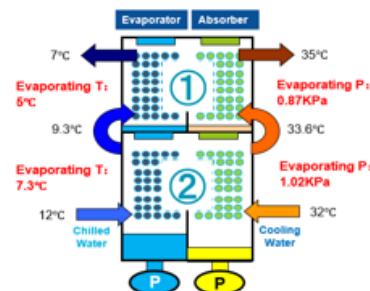
Parallel Flow



Conventional Single Step Design



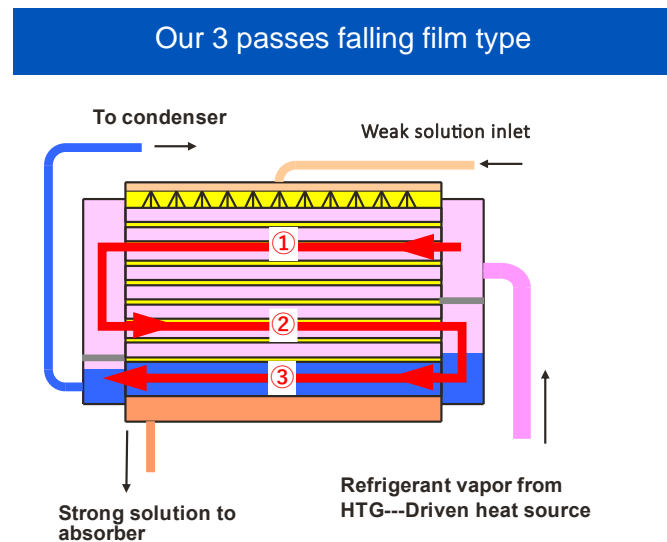
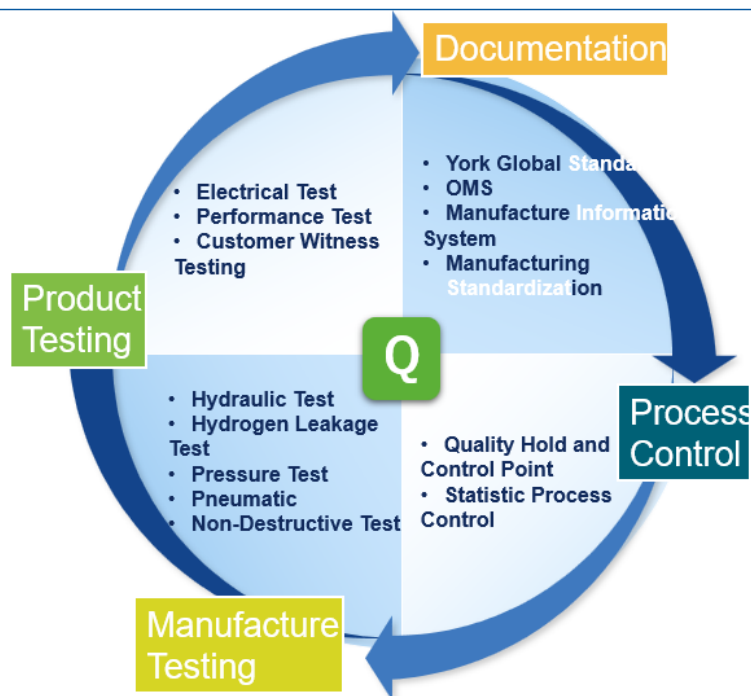
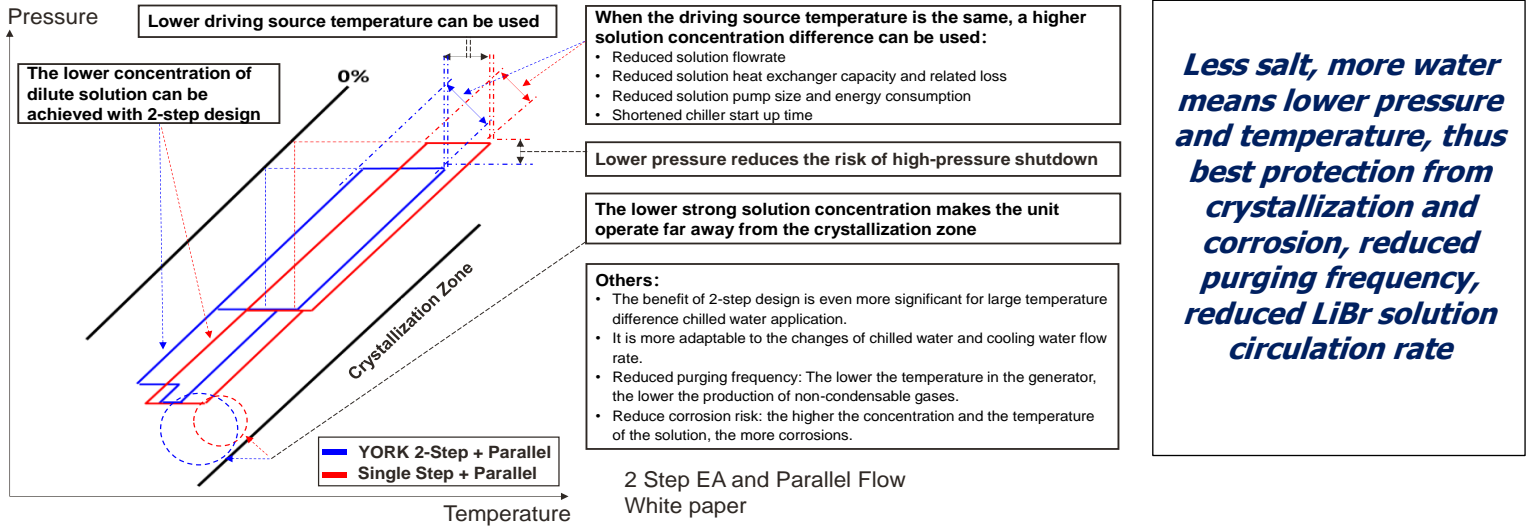
YORK 2-Step Evaporator/Absorber



- Compared with the single-step evaporation-absorption design, the concentration of dilute solution in the 2-step evaporator/absorber design can be reduced by around 2% (the typical concentration difference of single effect unit is around 4% and double effect unit is around 7%).
- Low concentration of dilute solution leaving absorber will result in lowest operation temperature, pressure and concentration in the refrigeration cycle thus significantly improve chiller reliability, flexibility and performance.

YHAU-CW 800EX(L)	YHAU-CW 900EXW(L)	YHAU-CW 1000EXW(L)	YHAU-CW 1100EXW(L)	YHAU-CW 1200EXW3(L)	YHAU-CW 1300EXW3(L)	YHAU-CW 1400EXW3(L)	YHAU-CW 1500EXW3(L)	YHAU-CW 1600EXW3(L)	YHAU-CW 1000EXW4(L)	YHAU-CW 1120EXW4(L)
800	900	1000	1100	1200	1300	1400	1500	1600	1000	1120
482.3	542.6	602.9	663.2	723.5	783.8	844.1	904.4	964.7	602.9	675.3
250	300	300	300	300	350	350	400	400	300	300
813.6	915.3	1017.0	1118.7	1220.4	1322.1	1423.9	1525.54	1627.3	1017.0	1139.1
350	400	400	400	450	450	450	500	500	400	400
2800	3150	3500	3850	4200	4550	4900	5250	5600	3500	3920
7,900	6,600	7,200	7,900	8,000	8,500	9,100	9,600	10,100	6,100	6,800
2,500	2,900	2,900	2,900	3,000	3,000	3,000	3,000	3,000	3,100	3,100
3,100	3,200	3,200	3,200	3,300	3,300	3,300	3,300	3,300	3,800	3,800
30.1	33.5	36.5	39.4	44.1	47.1	50.1	53.2	56.2	40.3	45.2
23.0	24.9	27.1	29.3	32.2	34.5	37.0	39.5	42.100	29.3	34.0
7,000	5,700	6,300	7,000	7,000	7,500	8,000	8,500	9,000	5,000	5,700
5.5	5.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
2.2	2.2	2.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
0.8	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
12.7	13.9	17.4	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
208V(±10%) 50Hz(±5%),3Phase+N/ V(±10%) 50Hz(±5%),3Phase+N										

YORK 2-Step & Parallel Flow Design: Customer Values for Double Effect Chillers



A HISTORY OF INNOVATION

In 2015, Johnson Controls and Hitachi Appliances created Johnson Controls-Hitachi Air Conditioning, which was comprised of the Hitachi Appliances' air-conditioning business, including absorption chillers and heat pumps.

In 2017, Johnson Controls completed the acquisition of the Johnson Controls – Hitachi Air Conditioning absorption chiller and heat pump business, gaining the design and engineering teams and all intellectual property related to absorption chillers and heat pumps.

The outcome is a portfolio of more than 450 YORK® absorption chillers and heat pumps featuring groundbreaking technology that has served global markets since 1960 – and continues to serve those global markets today. As a result, we've invested in our Johnson Controls Wuxi factory for multiple state-of-the-art test blocks. This gives us the ability to test chillers with a variety of driving heat sources and global test (rating) standards, supported by global engineering teams located in Japan, China, USA and Mexico.

