

Engineering Data

Climastar Series

R290 COMMERCIAL HEAT PUMP



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Part 1

General Information

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R290 Climastar Series
















1 R290 Climastar System

1.1 System Schematic

Climastar Commercial R290 Heat Pump is a triple-function integrated system designed for space heating, cooling, and domestic hot water (DHW) supply. The outdoor unit extracts heat from the ambient air and transfers it via refrigerant piping to a plate heat exchanger in the hydronic system. For heating, the heated water circulates through low- temperature emitters like floor heating loops or radiators; for cooling, a 4-way valve reverses the refrigerant cycle to generate chilled water for fan coil units.

The system’s unique design also integrates domestic hot water production, allowing it to supply heated water for daily use. Notably, heat pump heating capacity decreases with lower ambient temperatures. To compensate, the Climastar Commercial R290 is equipped with an auxiliary electric heater control port, providing extra heating during extreme cold, serving as a backup during heat pump malfunctions, and offering anti-freeze protection for external water pipes in winter. This triple-function setup ensures year-round comfort and energy efficiency for commercial and residential applications.

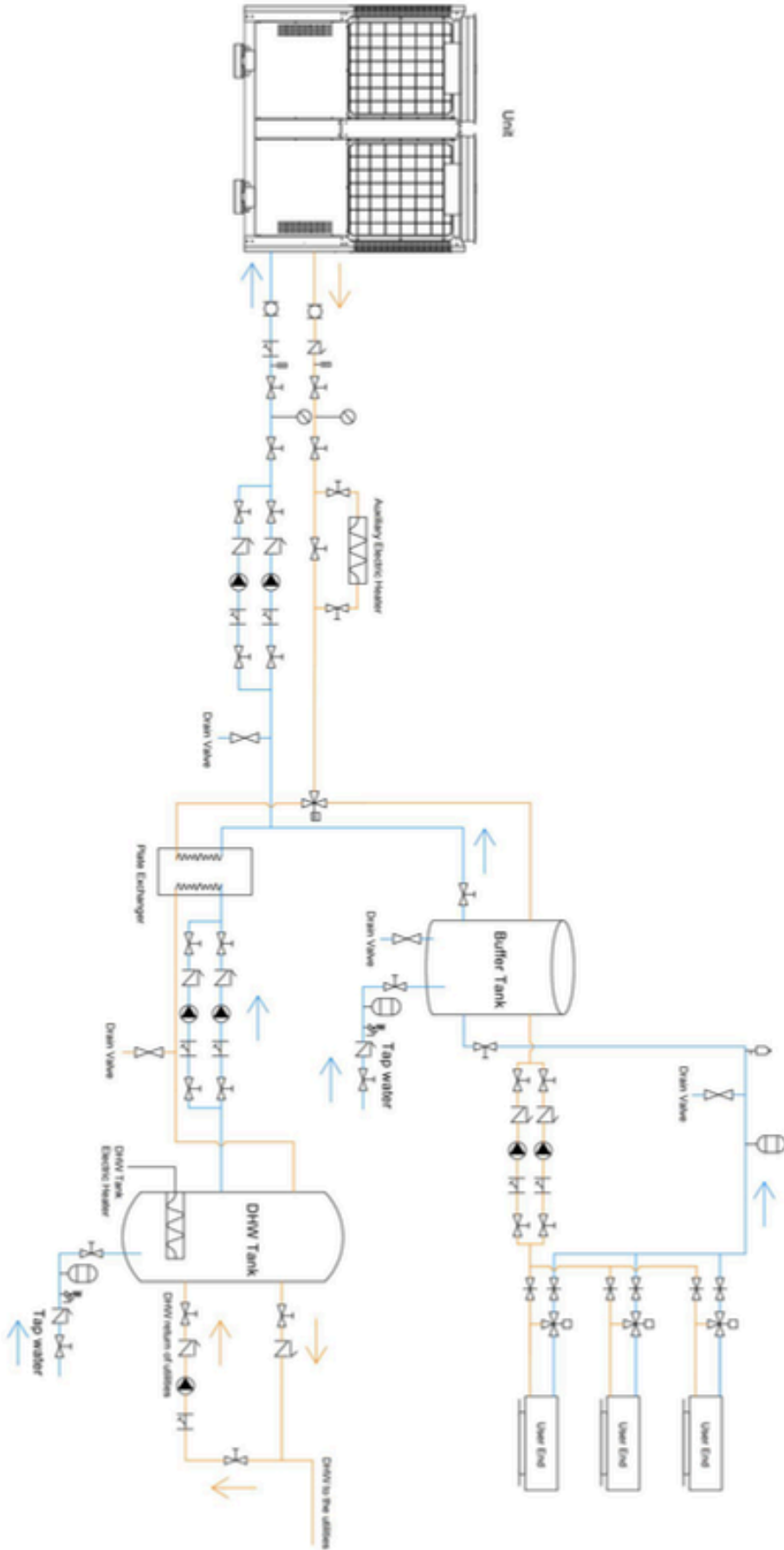
1.2 Typical Applications

 Soft joint	 Gate valve	 Expansion tank
 Check valve	 Water pump	 Safety valve
 Exhaust valve	 Drain valve	 Pressure meter
 Y-type filter	 Two way valve	
 3-way valve	 Thermometer	

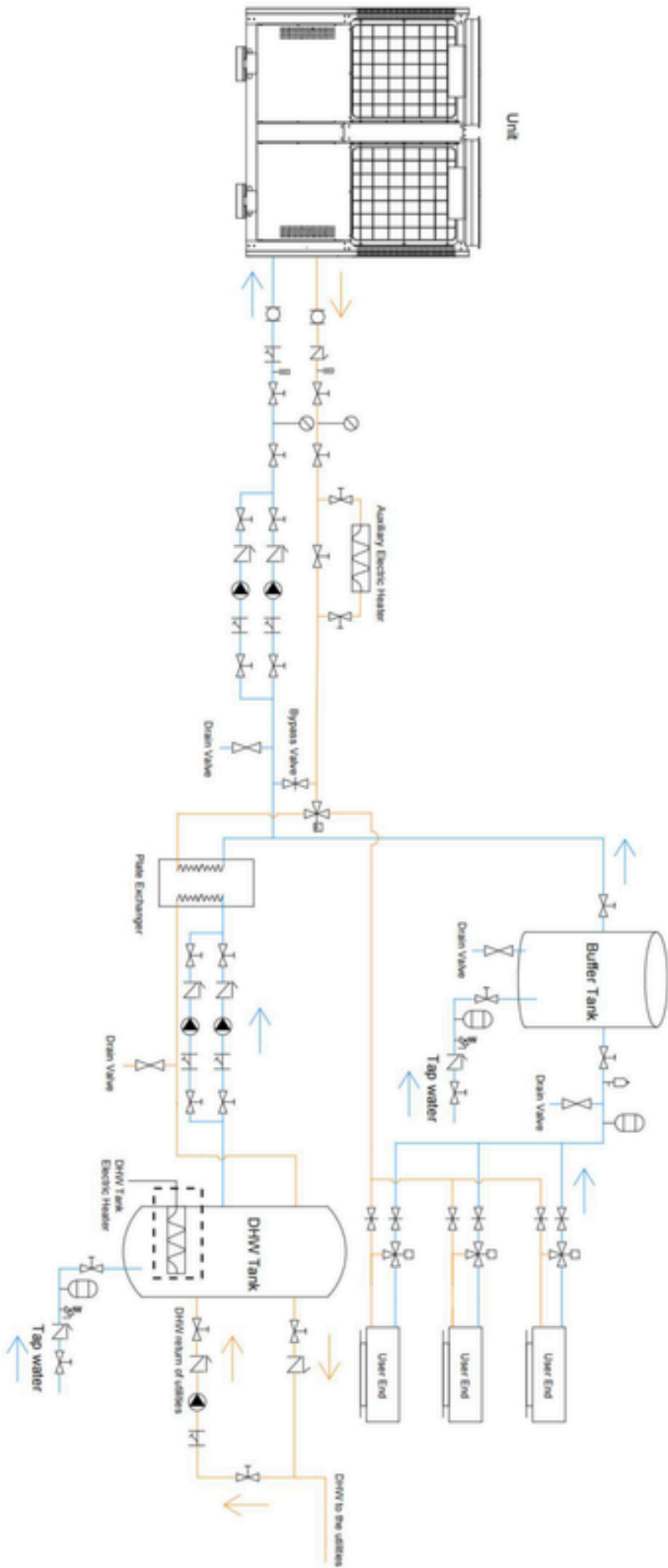
Note :

1. To avoid backsiphonage, it is required to install a non-return valve on the water inlet of the domestic hot water tank or water loop in accordance with the applicable legislation.
- 2.The installation diagrams below are for reference purposes only. For actual installation, please consult a certified professional installer.

Single Unit System

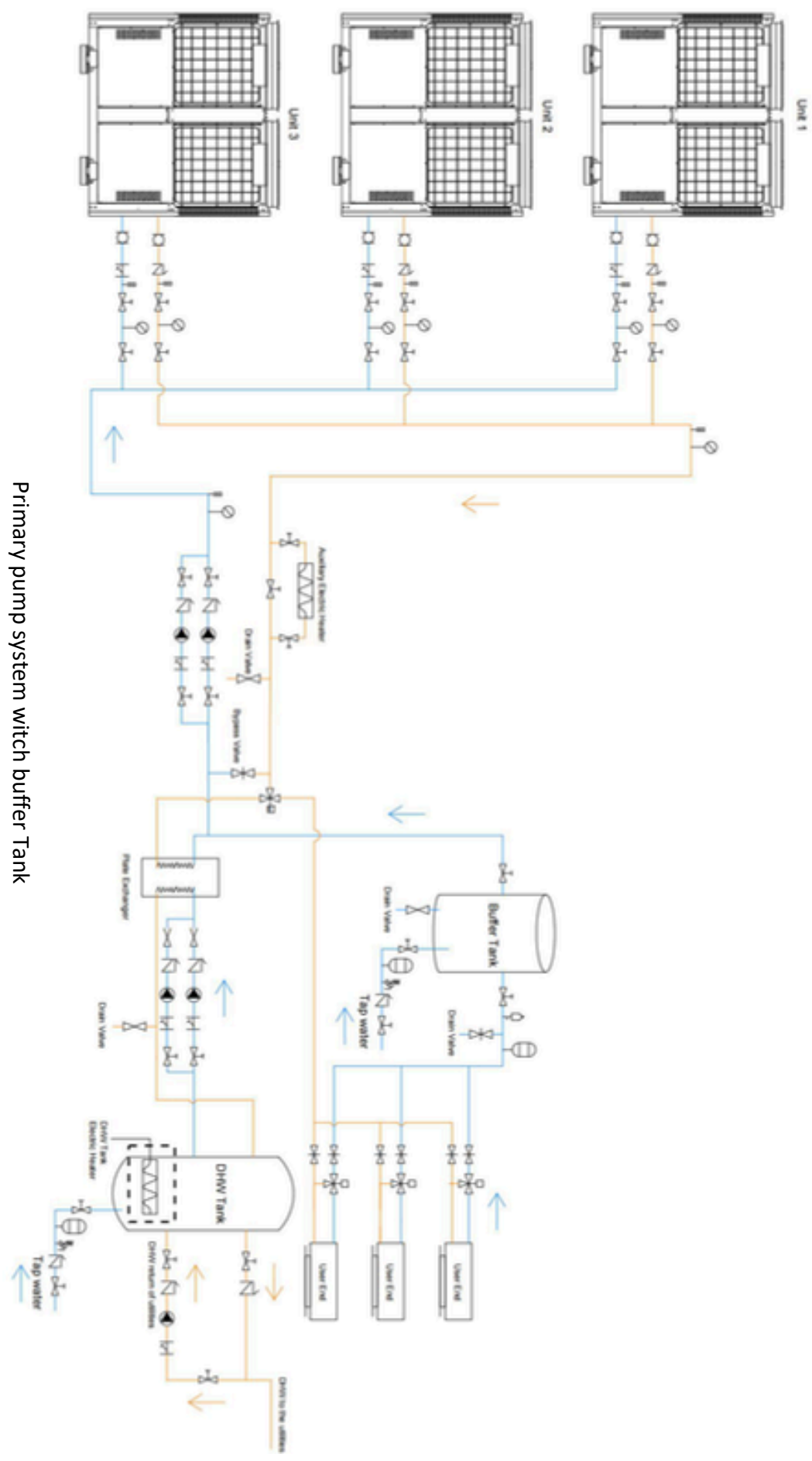


Secondary pump system with buffer Tank

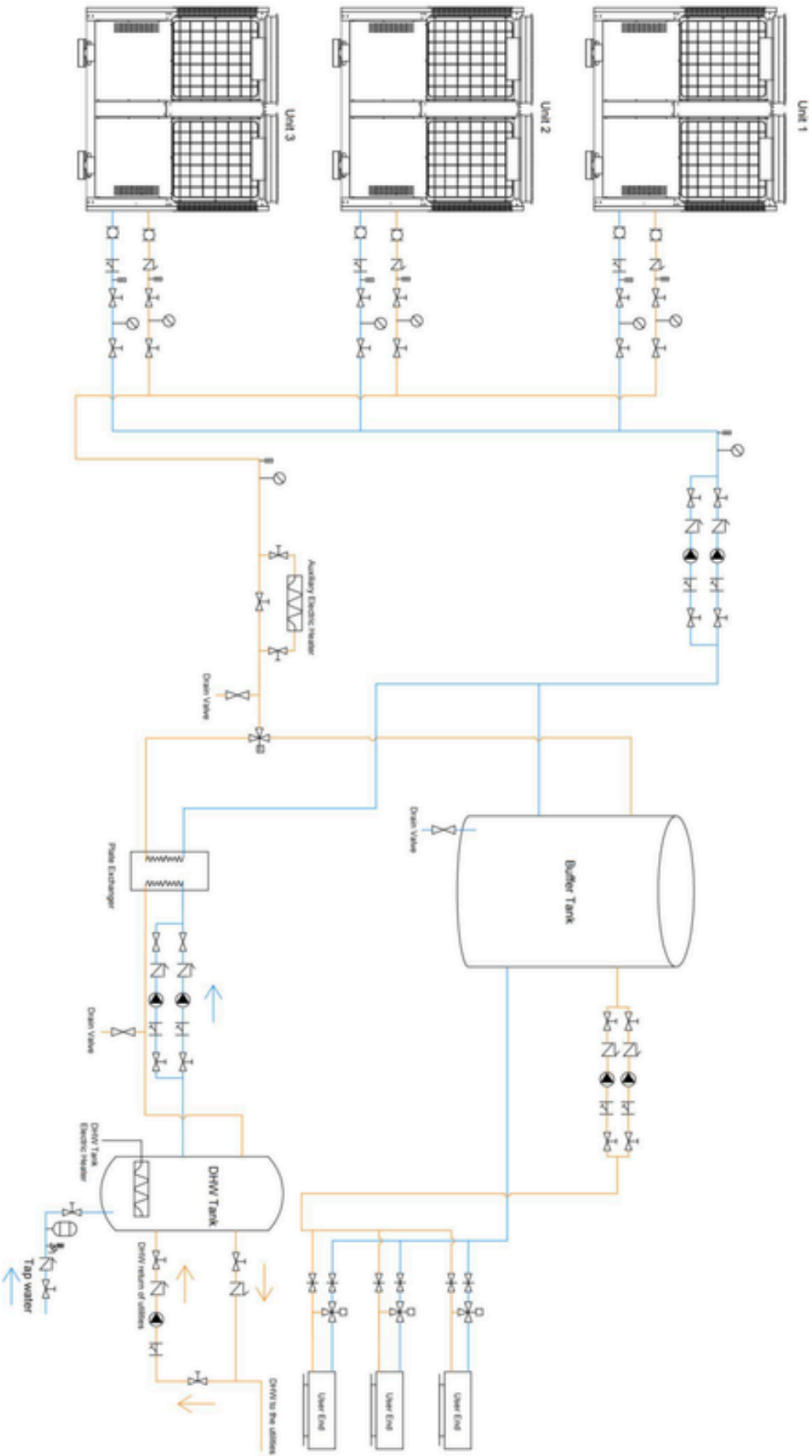


Primary pump system with buffer Tank

Cascade System




Primary pump system with buffer Tank



Secondary pump system with buffer Tank

2 Product Lineup

Power Supply	380-415V/3N~/ 50Hz
NE-F500HCR5TINVM-USC	
NE-F1000HCR5TINVM-USC	

R290 Climastar Series

3 Nomenclature

NE	-	F	500	HC	R5	T	INV	M	-	U	S	C
1		2	3	4	5	6	7	8		9	10	11

Legend		
No.	Code	Remarks
1	NE	Brand: NEWNT I DE
2	F	Sales code: F
3	500	Heating capacity of the machine: 60: 6kw 90: 9kw 130: 13kw 160: 16kw 500:50kW
4	HC	Product category: SP (Swimming pool) HC (Heating&Cooling) HW (Hot water)
5	R5	Refrigerant code: R1 : R407C, R2 : R134a, R3 :R410A, R4 :R32, R5: R290, R6 :R744, R7 :R454b
6	T	Power supply type of the machine: Omitted: 220-240V~/50Hz T:380-415V/3N~/50Hz 116:110-120V~/60Hz 216:208-230V~/60Hz 236:208-230V/3N~/60Hz 336:380-415V/3N~/60Hz
7	INV	Heat pump types (Inverter, ON/OFF, enthalpy increase): Omitted: Ordinary ON/OFF INV :Ordinary Inverter EVI : ON/OFF enthalpy increase INE : Inverter enthalpy increase:
8	M	Motor type: Omitted: AC motor M :DC motor
9	U	Air discharge type: Omitted: Side discharge U:Top discharge B:Back discharge
10	S	Heat pump appearance material: P : Plastic Model, S: Sheet Metal Model
11	C	Heat pump appearance type: A, B, C...means style A, style B, style C

4 System Design and Unit Selection

4.1 Selection Procedure

Step 1: Total heat load calculation

Calculate conditioned surface area
Select the heat emitters (type, quantity, water temperature and heat load)

Step 2: Selection of outdoor units

Determine the required total heat load on outdoor units.
Set capacity safety factor
Select power supply

Provisionally select the R290 Climastar unit capacity based on nominal capacity

Correct the outdoor unit's capacity based on the following items:
Ambient temperature / Outlet water temperature¹

Is corrected R290 Climastar unit capacity \geq Required total heat load on outdoor units² ?

Yes

No

R290 Climastar system selection is complete

Select a larger model

Notes:

1. If the required water temperatures of the heat emitters are not all the same, the R290 Climastar's outlet water temperature settings should be set at the highest of the heat emitter required water temperatures. If the water outlet design temperature falls between two temperatures listed in the outdoor unit's capacity table, calculate the corrected capacity by interpolation.
2. If the outdoor unit selection is to be based on total heating load and total cooling load, select commercial units which satisfy not only the total heating load requirements but also the total cooling load requirements.
3. The maximum number of heat pump cascades can reach 16.

R290 Climastar Series

4.2 R290 Climastar Outlet Water Temperature (TWout)

The recommended design TWout ranges for different types of heat emitter are :

For Underfloor heating: 30 to 35°C

For radiator: 30 to 45°C

For fan coil: 40 to 50°C

4.3 Optimizing System Design

To get the most comfort with the lowest energy consumption with R290 Climastar, it is important to take account of the following considerations:

Choose heat emitters that allow the heat pump system to operate at a temperature as low as possible whilst still providing sufficient heat.

4.4 System Design Notice

This product is a standalone heat pump unit, and does not include system-side components such as buffer tanks, circulation pumps, mixing valves, or terminal units.

Due to the diversity and complexity of commercial HVAC applications (e.g. floor heating, fan coil systems, domestic hot water, multi-zone control),

the complete system must be designed by qualified engineering professionals, in accordance with the project's heating/cooling load, operating conditions, and relevant regulations.

*Noted: A buffer tank is required for all installations. Improper or missing configuration may lead to poor system performance or equipment malfunction.

Part 2

Engineering Data

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1 Specifications

1.1 Performance

R290 Climastar Series			NE-F500HCR5TINVM-USC	NE-F1000HCR5TINVM-USC
Heating A7W35	Capacity	W	37490	74980
	Rated input	W	7500	15000
	COP		5.00	5.00
Heating A7W45	Capacity	W	35490	70970
	Rated input	W	9120	18240
	COP		3.89	3.89
Heating A7W55	Capacity	W	31240	62480
	Rated input	W	9860	19720
	COP		3.17	3.17
Heating A2W35	Capacity	W	33370	66730
	Rated input	W	8160	16320
	COP		4.09	4.09
Heating A2W45	Capacity	W	31420	62830
	Rated input	W	9410	18810
	COP		3.34	3.34
Heating A2W55	Capacity	W	27870	55740
	Rated input	W	9950	19900
	COP		2.80	2.80
Heating A-7W35	Capacity	W	32710	64520
	Rated input	W	10290	20580
	COP		3.18	3.18
Heating A-7W45	Capacity	W	31670	63340
	Rated input	W	11650	23300
	COP		2.72	2.72
Heating A-7W55	Capacity	W	31040	62080
	Rated input	W	12360	24720
	COP		2.51	2.51
Cooling A35W 15	Capacity	W	35630	71260
	Rated input	W	10050	20100
	EER		3.55	3.55
Cooling A35W7	Capacity	W	29300	58600
	Rated input	W	8950	17900
	EER		3.27	3.27

R290 Climastar Series

1.2 Genera

R290 Climastar Series		NE-F500HCR5TINVM-USC	NE-F1000HCR5TINVM-USC
Prated (Pdesignh@A-10°C/W35°C, averageclimate)	kW	34	69
Prated (Pdesignh@A-10°C/W55°C, averageclimate)	kW	32	65
SCOP(W35°C, averageclimate)	W/W	5.1	5.2
SCOP(W55°C, averageclimate)	W/W	4.0	4.0
ErPLLevel(W35°C, averageclimate)	/	A+++	
ErPLLevel(W55°C, averageclimate)	/	A+++	
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 30°C/35°C.			
Heating Capacity	kW	13.62~50.00	27.24~104.00
Power Input	kW	2.34~11.68	4.68~24.53
Heating Current Input Range	A	3.95~19.72	7.90~41.62
COP	W/W	5.82~4.28	5.82~4.24
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 50°C/55°C.			
Heating Capacity	kW	12.26~46.00	24.52~98.00
Power Input	kW	2.99~15.43	5.98~33.11
Heating Current Input Range	A	5.04~26.04	10.08~55.06
COP	W/W	4.10~2.98	4.10~2.86
[Space Cooling] Ambient Temp. (DB/WB): 35°C / -, Water Temp. (Inlet/Outlet): 12°C/7°C.			
Cooling Capacity	kW	7.60~35.00	15.20~80.00
Power Input	kW	1.76~12.36	3.52~28.37
Cooling Current Input Range	A	2.97~20.86	5.94~47.87
EER	W/W	4.30~2.83	4.30~2.82
[DHW heating] Ambient Temp. (DB/WB): 20°C / 15°C, Water Temp. (Inlet/Outlet): 15°C/55°C.			
Heating Capacity	kW	60.00	120.00
Power Input	kW	13.04	26.25
Heating Current Input Range	A	22.02	44.33
COP	W/W	4.60	4.57
Max. Power Input			
	kW	22.00	44.00
Max. Running Current			
	A	37.20	74.70
Max. Outlet Water Temperature			
	°C	75	
Operating Ambient Temperature			
	°C	-25~43	
Power Supply			
	V/Ph/Hz	380-415V/3N~/ 50Hz	
Display			
	/	7-inch Colored Touch Screen	
Refrigerant Type			
	/	R290	
Refrigerant Weight			
	kg	2.0×2	2.0×4
Sound Pressure Level at 1m			
	dB(A)	52	55
Sound Power Level			
	dB(A)	70	73
Rated Water Flow			
	m³/h	8.6	17.9
Water Pressure Drop			
	kPa	25	28
Water Pipe Connection			
	/	DN50	DN65
Direction of Air Discharge			
	/	Top	
Fan/Motor Type			
	/	Axial/DC	
Fan Quantity			
	PCS	1	2
Ingress Protection Rating			
	/	IPX4	
Electric Shock Protection Class			
	/		
Net Weight			
	kg	490	958
Net Dimensions (L×W×H)			
	mm	1095×1315×2435	2190×1315×2435

Notice:

1. The follow data is for reference only. The specs data is subject to actual product.

2 Electrical characteristics

System	Outdoor unit		Rated Current	Compressor		Fan			
	Power supply Min.(V)	Max.(V)	MFA (A)	Quantity	RLA(A) / Each compressor	Quantity	kW	FLA (A)	
NE-F500HCR5TINVM-USC	380~415/3N/50Hz	380	415	37.2	2	12.8	1	1.5	2.28
NE-F1000HCR5TINVM-USC	380~415/3N/50Hz	380	415	74.7	4	12.8	2	1.27	2.2

Electric heater

Material	Power supply	RATING	System	Quantity
Crankcase Heater	220V	40W	NE-F500HCR5TINVM-USC	2
			NE-F1000HCR5TINVM-USC	4
Chassis Heater Belt	220V	200W	NE-F500HCR5TINVM-USC	1
			NE-F1000HCR5TINVM-USC	2

Notes:

Name	Description	Explanation
Min. & Max.	Minimum & Maximum running voltage (V)	Required voltage range for system operation
MFA	Max. Fuse Amps. (A)	To determine air-break switch /circuit breaker/ Fuse
RLA	Rated Load Amps. (A)	The input Amps of compressor where MAX. Hz can operate for nominal cooling or heating test condition
kW	Rated Motor Output	/
FLA	Full Load Amps. (A)	The current measured by the motor at rated voltage and rated speed (usually the highest speed of Motor) underrated load.

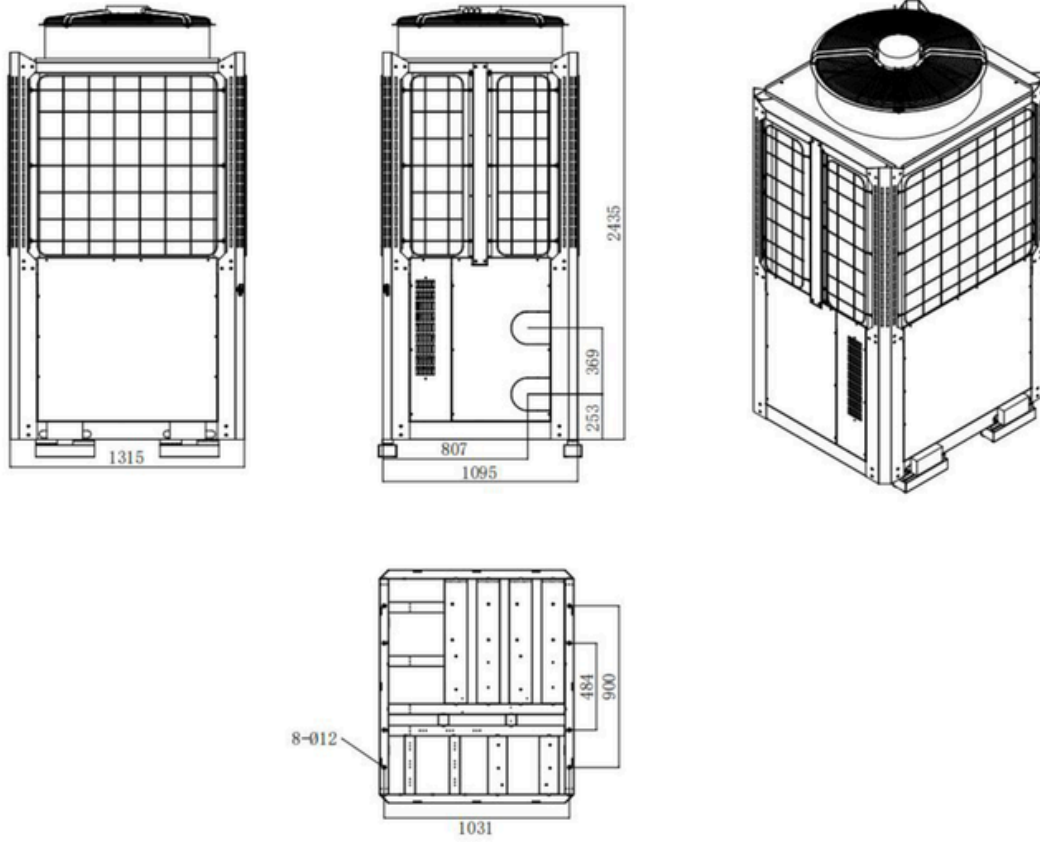
R290 Climastar Series



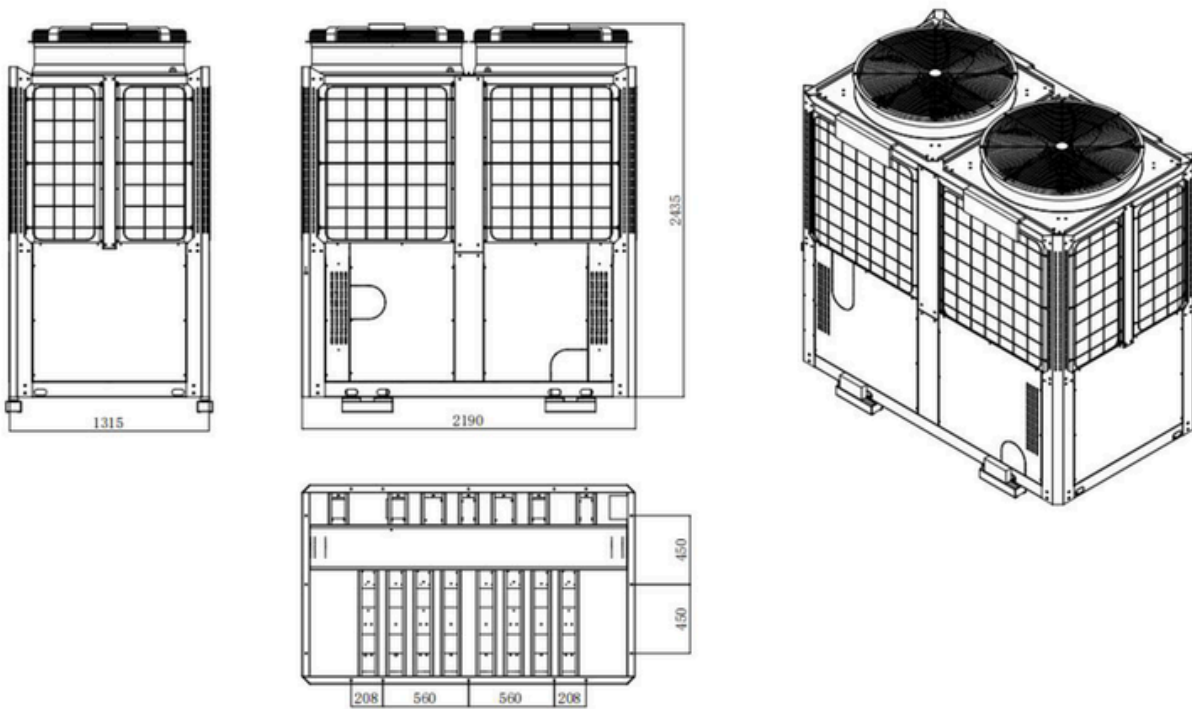
3 Dimensions

unit: mm

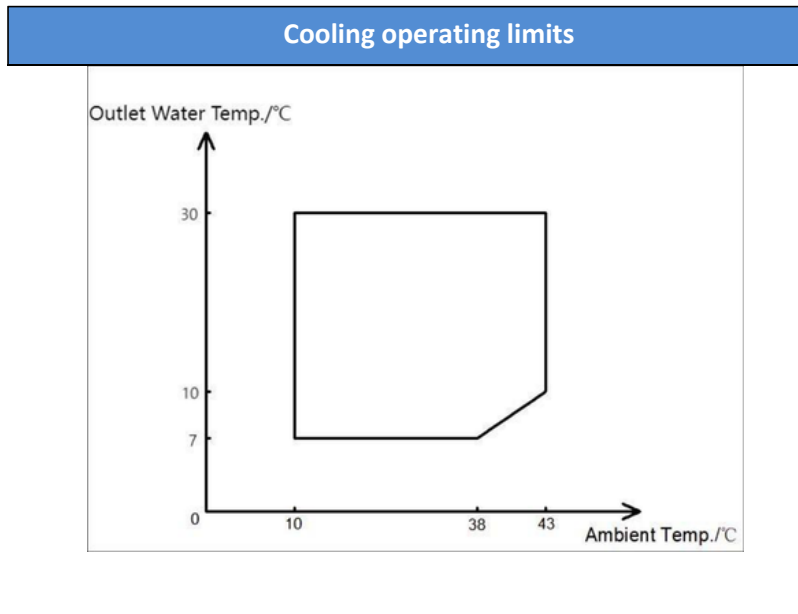
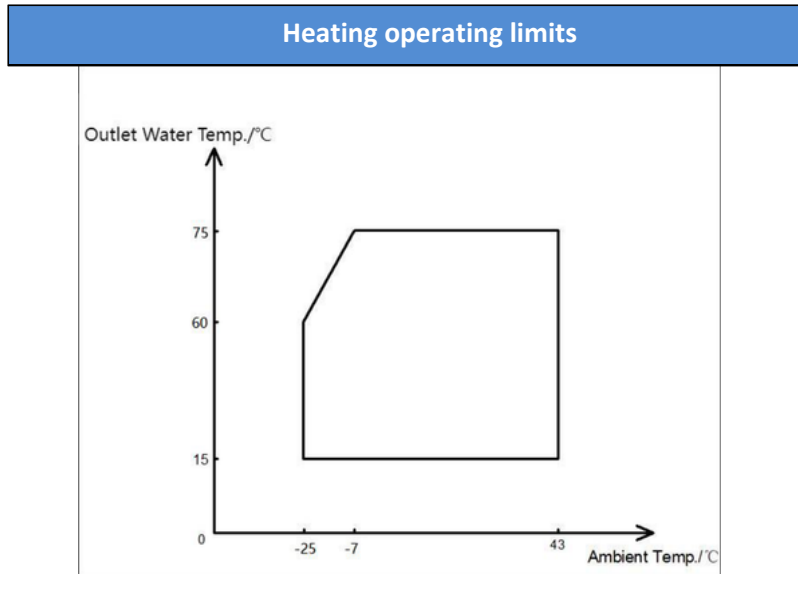
NE-F500HCR5TINVM-USC



NE-F1000HCR5TINVM-USC



4 Operating Limits



R290 Climastar Series



5 Capacity Tables

5.1 Heating Capacity Tables

NE-F500HCR5TINV-M-UCS

T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
20	-25	23.13	2.22	10.43	23.13	2.22	10.43	17.39	2.55	6.83	11.45	2.65	4.32	9.25	2.72	3.40	9.25	2.72	3.40
	-20	26.94	2.65	10.17	26.94	2.65	10.17	20.26	3.04	6.66	13.34	3.25	4.10	10.78	3.30	3.27	10.78	3.30	3.27
	-15	30.77	3.06	10.05	30.77	3.06	10.05	23.14	3.52	6.58	15.23	3.81	3.99	12.31	3.91	3.15	12.31	3.91	3.15
	-10	33.86	3.56	9.51	33.86	3.56	9.51	25.46	4.12	6.18	16.76	4.64	3.61	14.54	4.85	3.00	14.54	4.85	3.00
	-7	34.43	3.70	9.31	34.43	3.95	8.71	25.89	4.32	5.99	17.04	4.69	3.63	15.25	5.17	2.95	15.25	5.17	2.95
	0	36.90	4.04	9.14	35.14	4.90	7.17	26.43	5.36	4.93	17.39	5.82	2.99	16.50	6.07	2.72	16.50	6.07	2.72
	2	41.46	4.63	8.96	36.05	5.65	6.38	27.11	6.18	4.39	17.85	6.70	2.66	17.85	6.70	2.66	17.85	6.70	2.66
	5	43.66	4.92	8.87	37.97	6.18	6.14	28.55	6.76	4.22	18.79	7.33	2.56	18.79	7.33	2.56	18.79	7.33	2.56
	7	45.86	5.25	8.74	39.88	6.59	6.05	29.99	7.21	4.16	19.74	7.82	2.52	19.74	7.82	2.52	19.74	7.82	2.52
	10	50.16	5.86	8.56	41.80	7.24	5.77	31.43	7.92	3.97	20.69	8.59	2.41	20.69	8.59	2.41	20.69	8.59	2.41
	15	52.44	6.19	8.47	43.70	7.77	5.62	32.86	8.50	3.87	21.63	9.22	2.35	21.63	9.22	2.35	21.63	9.22	2.35
	20	57.06	6.85	8.33	47.55	8.75	5.43	35.76	9.57	3.74	23.54	10.38	2.27	23.54	10.38	2.27	23.54	10.38	2.27
	25	61.68	7.60	8.12	51.40	9.73	5.28	38.65	10.65	3.63	25.44	11.45	2.22	25.44	11.45	2.22	25.44	11.45	2.22
	30	69.05	8.71	7.93	55.24	10.70	5.16	41.54	11.71	3.55	27.34	12.76	2.14	27.34	12.76	2.14	27.34	12.76	2.14
	35	73.86	9.67	7.64	59.09	11.68	5.06	44.44	12.78	3.48	29.25	13.93	2.10	29.25	13.93	2.10	29.25	13.93	2.10
	40	81.82	11.13	7.35	62.94	12.66	4.97	47.33	13.85	3.42	31.16	15.10	2.06	31.16	15.10	2.06	31.16	15.10	2.06
45	86.83	12.32	7.05	66.79	13.64	4.90	50.23	14.92	3.37	33.06	16.27	2.03	33.06	16.27	2.03	33.06	16.27	2.03	
25	-25	22.74	2.17	10.50	22.74	2.17	10.50	17.10	2.49	6.87	11.26	2.52	4.47	10.05	2.88	3.49	10.05	2.88	3.49
	-20	26.43	2.53	10.44	26.43	2.53	10.44	19.88	2.91	6.83	13.08	3.15	4.15	11.57	3.45	3.35	11.57	3.45	3.35
	-15	30.14	2.95	10.22	30.14	2.95	10.22	22.66	3.39	6.69	14.92	3.67	4.06	12.05	3.69	3.27	12.05	3.69	3.27
	-10	31.57	3.15	10.02	31.57	3.15	10.02	23.74	3.60	6.59	15.63	3.92	3.99	12.63	3.97	3.18	12.63	3.97	3.18
	-7	33.82	3.69	9.16	33.82	3.69	9.16	25.43	4.04	6.30	16.74	4.38	3.82	14.98	4.83	3.10	14.98	4.83	3.10
	0	34.85	4.56	7.65	34.85	4.56	7.65	26.21	4.99	5.26	17.25	5.41	3.19	16.36	5.65	2.90	16.36	5.65	2.90
	2	35.16	5.13	6.85	35.16	5.13	6.85	26.44	5.61	4.71	17.40	6.09	2.86	17.40	6.09	2.86	17.40	6.09	2.86
	5	37.12	5.62	6.61	37.12	5.62	6.61	27.91	6.14	4.54	18.37	6.66	2.76	18.37	6.66	2.76	18.37	6.66	2.76
	7	39.08	5.98	6.54	39.08	5.98	6.54	29.39	6.54	4.49	19.35	7.10	2.73	19.35	7.10	2.73	19.35	7.10	2.73
	10	41.05	6.59	6.23	41.05	6.59	6.23	30.87	7.20	4.28	20.32	7.81	2.60	20.32	7.81	2.60	20.32	7.81	2.60
	15	43.01	7.08	6.08	43.01	7.08	6.08	32.34	7.74	4.18	21.29	8.39	2.54	21.29	8.39	2.54	21.29	8.39	2.54
	20	46.64	7.91	5.90	46.64	7.91	5.90	35.07	8.65	4.05	23.08	9.38	2.46	23.08	9.38	2.46	23.08	9.38	2.46
	25	50.27	8.74	5.75	50.27	8.74	5.75	37.80	9.56	3.96	24.88	10.28	2.42	24.88	10.28	2.42	24.88	10.28	2.42
	30	53.89	9.56	5.64	53.89	9.56	5.64	40.53	10.46	3.87	26.68	11.40	2.34	26.68	11.40	2.34	26.68	11.40	2.34
	35	57.52	10.39	5.54	57.52	10.39	5.54	43.26	11.37	3.81	28.47	12.40	2.30	28.47	12.40	2.30	28.47	12.40	2.30
	40	61.15	11.22	5.45	61.15	11.22	5.45	45.98	12.28	3.75	30.27	13.39	2.26	30.27	13.39	2.26	30.27	13.39	2.26
45	64.78	12.05	5.38	64.78	12.05	5.38	48.71	13.18	3.70	32.07	14.38	2.23	32.07	14.38	2.23	32.07	14.38	2.23	
30	-25	22.35	1.98	11.27	22.35	1.98	11.27	16.81	2.28	7.38	11.06	2.45	4.52	9.73	2.55	3.82	9.73	2.55	3.82
	-20	25.92	2.32	11.19	25.92	2.32	11.19	19.49	2.66	7.33	12.83	2.89	4.45	10.74	2.91	3.69	10.74	2.91	3.69
	-15	29.50	2.65	11.15	29.50	2.65	11.15	22.18	3.04	7.30	14.60	3.30	4.43	12.80	3.51	3.65	12.80	3.51	3.65
	-10	32.28	2.96	10.92	32.28	2.96	10.92	24.27	3.40	7.15	15.98	3.74	4.27	13.42	3.83	3.50	13.42	3.83	3.50
	-7	33.56	3.38	9.94	33.56	3.38	9.94	25.24	3.69	6.83	16.61	4.01	4.15	14.87	4.30	3.46	14.87	4.30	3.46
	0	39.26	3.97	9.88	34.14	4.15	8.23	25.67	4.54	5.66	16.90	4.92	3.43	16.03	5.14	3.12	16.03	5.14	3.12
	2	42.83	4.43	9.66	34.26	4.61	7.43	25.77	5.04	5.11	16.96	5.47	3.10	16.96	5.47	3.10	16.96	5.47	3.10
	5	45.34	4.75	9.55	36.27	5.05	7.18	27.28	5.53	4.94	17.96	5.99	3.00	17.96	5.99	3.00	17.96	5.99	3.00
	7	51.07	5.42	9.42	38.29	5.49	6.97	28.79	6.01	4.79	18.95	6.51	2.91	18.95	6.51	2.91	18.95	6.51	2.91
	10	53.60	5.72	9.38	40.30	5.93	6.80	30.30	6.49	4.67	19.95	7.04	2.83	19.95	7.04	2.83	19.95	7.04	2.83
	15	56.27	6.05	9.30	42.31	6.38	6.63	31.82	6.98	4.56	20.94	7.57	2.77	20.94	7.57	2.77	20.94	7.57	2.77
	20	60.81	6.58	9.24	45.72	7.06	6.48	34.38	7.72	4.45	22.63	8.38	2.70	22.63	8.38	2.70	22.63	8.38	2.70
	25	65.34	7.16	9.13	49.13	7.74	6.35	36.95	8.47	4.36	24.32	9.11	2.67	24.32	9.11	2.67	24.32	9.11	2.67
	30	70.93	7.84	9.05	52.54	8.42	6.24	39.51	9.21	4.29	26.01	10.04	2.59	26.01	10.04	2.59	26.01	10.04	2.59
	35	75.53	8.47	8.92	55.95	9.10	6.15	42.07	9.96	4.23	27.70	10.86	2.55	27.70	10.86	2.55	27.70	10.86	2.55
	40	80.14	9.11	8.80	59.36	9.78	6.07	44.64	10.70	4.17	29.38	11.67	2.52	29.38	11.67	2.52	29.38	11.67	2.52
45	84.74	9.74	8.70	62.77	10.46	6.00	47.20	11.44	4.12	31.07	12.48	2.49	31.07	12.48	2.49	31.07	12.48	2.49	
35	-25	21.96	1.81	12.12	21.96	1.81	12.12	16.51	1.97	8.40	10.87	2.27	4.79	9.73	2.31	4.22	9.73	2.31	4.22
	-20	25.41	2.12	11.96	25.41	2.12	11.96	19.11	2.31	8.26	12.58	2.65	4.75	11.50	2.74	4.20	11.50	2.74	4.20
	-15	28.87	2.43	11.88	28.87	2.43	11.88	21.71	2.66	8.15	14.29	3.03	4.72	12.75	3.07	4.15	12.75	3.07	4.15
	-10	32.02	2.90	11.03	32.02	2.90	11.03	24.08	2.98	8.07	15.55	3.38	4.60	14.12	3.44	4.10	14.12	3.44	4.10
	-7	32.71	2.89	11.33	32.71	3.02	10.84	24.60	3.30	7.45	16.19	3.58	4.52	14.97	3.68	4.07	14.97	3.68	4.07
	0	37.37	3.32	11.24	33.37	3.35	9.95	25.09	3.67	6.84	16.52	3.98	4.15	15.66	4.16	3.77	15.66	4.16	3.77
	2	45.07	3.80	11.86	34.67	3.94	8.80	26.07	4.31	6.05	17.16	4.67	3.67	17.16	4.67	3.67	17.16	4.67	3.67
	5	46.06	3.92	11.75	35.43	4.32	8.20	26.64	4.73	5.64	17.54	5.13	3.42	17.54	5.13	3.42	17.54	5.13	3.42
	7	50.00	4.28	11.69	37.49	5.00	7.50	28.19	5.47	5.15	18.62	5.82	3.20	18.62	5.82	3.20	18.62	5.82	3.20
	10	52.60	4.59	11.47	39.55	5.28	7.50	29.74	5.83	5.10	19.58	6.26	3.13	19.58	6.26	3.13	19.58	6.26	3.13
	15	55.35	5.13	10.78	41.62	5.69	7.32	31.29	6.22	5.03	20.60	6.75	3.05	20.60	6.75	3.05	20.60	6.75	3.05
	20	59.59	5.60	10.64	44.81	6.22	7.21	33.69	6.80	4.96	22.18	7.37	3.01	22.18	7.37	3.01	22.18	7.37	3.01
	25	63.83	6.19	10.31	48.00	6.74	7.12	36.09	7.38	4.89	23.76	7.94	2.99	23.76	7.94	2.99	23.76	7.94	2.99
	30	69.11	6.78	10.20	51.19	7.28	7.03	38.49	7.96	4.83	25.34	8.68	2.92	25.34	8.68	2.92	25.34	8.68	2.92
	35	73.41	7.27	10.10	54.38	7.81	6.												

R290 Climastar Series



T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
40	-25	21.57	1.74	12.39	21.57	1.74	12.39	16.22	1.88	8.61	10.68	2.28	4.69	9.33	2.39	3.90	9.33	2.39	3.90
	-20	24.90	2.03	12.27	24.90	2.03	12.27	18.72	2.20	8.53	12.33	2.70	4.57	10.96	2.82	3.88	10.96	2.82	3.88
	-15	28.23	2.31	12.20	28.23	2.31	12.20	21.23	2.52	8.44	13.97	3.12	4.48	12.29	3.19	3.85	12.29	3.19	3.85
	-10	31.72	2.62	12.12	31.72	2.62	12.12	23.85	2.86	8.33	15.70	3.60	4.36	13.69	3.68	3.72	13.69	3.68	3.72
	-7	31.94	2.66	11.99	31.94	2.66	11.99	24.02	2.91	8.24	15.81	3.84	4.12	14.15	3.88	3.65	14.15	3.88	3.65
	0	40.31	3.40	11.86	32.25	3.45	9.35	24.25	3.77	6.43	15.96	4.05	3.94	15.14	4.21	3.60	15.14	4.21	3.60
	2	42.21	3.60	11.74	32.47	3.66	8.86	24.42	4.01	6.09	16.07	4.35	3.70	16.07	4.40	3.65	16.07	4.40	3.65
	5	44.95	3.85	11.67	34.58	3.92	8.82	26.00	4.29	6.06	17.12	4.65	3.68	17.12	4.65	3.68	17.12	4.65	3.68
	7	50.22	4.35	11.55	36.69	4.36	8.42	27.59	4.77	5.79	18.16	5.07	3.58	18.16	5.07	3.58	18.16	5.07	3.58
	10	52.96	4.61	11.48	38.80	4.62	8.40	29.18	5.05	5.77	19.21	5.48	3.50	19.21	5.48	3.50	19.21	5.48	3.50
	15	55.86	4.91	11.37	40.92	4.99	8.20	30.77	5.46	5.64	20.26	5.92	3.42	20.26	5.92	3.42	20.26	5.92	3.42
	20	59.91	5.31	11.29	43.89	5.37	8.17	33.01	5.88	5.62	21.73	6.37	3.41	21.73	6.37	3.41	21.73	6.37	3.41
	25	63.96	5.73	11.17	46.86	5.75	8.15	35.24	6.29	5.60	23.20	6.77	3.43	23.20	6.77	3.43	23.20	6.77	3.43
	30	69.03	6.25	11.04	49.84	6.31	7.90	37.48	6.90	5.43	24.67	7.32	3.37	24.67	7.32	3.37	24.67	7.32	3.37
	35	73.14	6.68	10.95	52.81	6.83	7.73	39.71	7.47	5.31	26.14	7.78	3.36	26.14	7.78	3.36	26.14	7.78	3.36
	40	77.26	7.13	10.83	55.78	7.31	7.63	41.95	8.00	5.24	27.61	8.23	3.35	27.61	8.23	3.35	27.61	8.23	3.35
45	81.37	7.79	10.45	58.75	7.83	7.50	44.18	8.57	5.16	29.08	8.68	3.35	29.08	8.68	3.35	29.08	8.68	3.35	
45	-25	21.05	1.50	13.99	21.05	1.50	13.99	15.83	1.93	8.20	10.42	2.09	4.98	8.42	2.31	3.65	8.42	2.31	3.65
	-20	23.98	1.74	13.80	23.98	1.74	13.80	18.03	2.22	8.12	11.87	2.59	4.58	9.59	2.80	3.43	9.59	2.80	3.43
	-15	26.91	2.20	12.22	26.91	2.20	12.22	20.24	2.55	7.95	13.32	2.93	4.55	10.76	3.35	3.21	10.76	3.35	3.21
	-10	28.65	2.39	11.98	28.65	2.39	11.98	21.54	2.80	7.69	14.18	3.37	4.21	11.46	3.64	3.15	11.46	3.64	3.15
	-7	31.12	2.67	11.65	31.12	2.67	11.65	23.40	3.19	7.33	15.40	3.82	4.03	13.79	4.55	3.03	13.79	4.55	3.03
	0	39.16	2.96	13.23	31.33	3.11	10.09	23.56	3.40	6.93	15.51	3.90	3.98	14.71	4.99	2.95	14.71	4.99	2.95
	2	40.84	3.10	13.17	31.42	3.34	9.41	23.62	3.65	6.46	15.55	3.96	3.92	15.55	5.34	2.91	15.55	5.34	2.91
	5	44.79	3.41	13.15	34.45	3.72	9.25	25.91	4.07	6.36	17.05	4.42	3.86	17.05	5.92	2.88	17.05	5.92	2.88
	7	49.81	3.80	13.10	35.49	3.86	9.20	26.68	4.26	6.27	17.57	4.62	3.81	17.57	6.25	2.81	17.57	6.25	2.81
	10	52.53	4.06	12.93	37.52	4.17	9.01	28.22	4.56	6.19	18.57	4.94	3.76	18.57	6.68	2.78	18.57	6.68	2.78
	15	55.40	4.40	12.60	39.57	4.45	8.90	29.76	4.86	6.12	19.59	5.27	3.71	19.59	7.12	2.75	19.59	7.12	2.75
	20	59.39	4.76	12.48	42.42	4.80	8.85	31.90	5.25	6.08	21.00	5.69	3.69	21.00	7.69	2.73	21.00	7.69	2.73
	25	63.38	5.10	12.43	45.27	5.15	8.80	34.04	5.63	6.05	22.41	6.14	3.65	22.41	8.79	2.55	22.41	8.79	2.55
	30	67.93	5.48	12.39	48.14	5.50	8.75	36.20	6.02	6.02	23.83	6.56	3.63	23.83	9.49	2.51	23.83	9.49	2.51
	35	72.00	5.83	12.34	50.99	5.85	8.72	38.34	6.40	5.99	25.24	6.98	3.62	25.24	10.34	2.44	25.24	10.34	2.44
	40	76.45	6.22	12.30	53.84	6.77	7.95	40.48	7.41	5.46	26.65	8.08	3.30	26.65	11.49	2.32	26.65	11.49	2.32
45	80.49	6.59	12.21	56.69	7.41	7.65	42.63	8.10	5.26	28.06	8.83	3.18	28.06	12.25	2.29	28.06	12.25	2.29	
50	-25	20.53	1.54	13.32	20.53	1.54	13.32	15.44	1.77	8.72	10.16	1.99	5.10	8.21	2.26	3.63	8.21	2.26	3.63
	-20	23.06	1.79	12.89	23.06	1.79	12.89	17.34	2.06	8.44	11.41	2.23	5.12	9.22	2.56	3.61	9.22	2.56	3.61
	-15	25.14	1.99	12.65	25.14	1.99	12.65	19.42	2.34	8.28	12.78	2.54	5.03	10.33	2.93	3.53	10.33	2.93	3.53
	-10	27.14	2.24	12.11	27.14	2.24	12.11	23.48	2.82	8.32	15.45	3.06	5.05	12.49	3.63	3.44	12.49	3.63	3.44
	-7	29.13	2.49	11.68	29.13	2.49	11.68	23.75	2.96	8.03	15.63	3.21	4.87	13.99	4.09	3.42	13.99	4.09	3.42
	0	37.23	2.69	13.85	31.66	3.06	10.34	23.81	3.35	7.11	15.67	3.63	4.31	14.86	4.44	3.35	14.86	4.44	3.35
	2	40.75	2.98	13.66	31.93	3.26	9.79	24.01	3.57	6.73	15.81	3.87	4.08	15.81	4.75	3.33	15.81	4.75	3.33
	5	42.28	3.11	13.61	32.20	3.32	9.71	24.21	3.63	6.67	15.94	3.93	4.05	15.94	4.90	3.25	15.94	4.90	3.25
	7	46.32	3.42	13.55	34.28	3.55	9.65	25.78	3.89	6.63	16.97	4.21	4.03	16.97	5.29	3.21	16.97	5.29	3.21
	10	48.00	3.60	13.34	36.24	3.78	9.60	27.25	4.13	6.60	17.94	4.48	4.00	17.94	5.69	3.15	17.94	5.69	3.15
	15	50.24	3.80	13.21	38.22	4.01	9.54	28.74	4.38	6.56	18.92	4.75	3.98	18.92	6.08	3.11	18.92	6.08	3.11
	20	51.98	3.94	13.19	40.95	4.30	9.52	30.79	4.71	6.54	20.27	5.10	3.97	20.27	6.65	3.05	20.27	6.65	3.05
	25	53.76	4.09	13.15	43.68	4.60	9.50	32.85	5.03	6.53	21.62	5.57	3.88	21.62	7.18	3.01	21.62	7.18	3.01
	30	55.21	4.21	13.11	46.43	4.90	9.47	34.92	5.36	6.51	22.98	5.95	3.86	22.98	7.71	2.98	22.98	7.71	2.98
	35	57.43	4.39	13.09	49.16	5.21	9.43	36.97	5.70	6.48	24.33	6.49	3.75	24.33	8.31	2.93	24.33	8.31	2.93
	40	59.31	4.56	13.02	51.89	5.52	9.40	39.02	6.04	6.46	25.69	7.02	3.66	25.69	8.83	2.91	25.69	8.83	2.91
45	61.29	4.72	12.99	54.62	5.82	9.38	41.07	6.37	6.45	27.04	7.68	3.52	27.04	9.49	2.85	27.04	9.49	2.85	
55	-25	18.59	1.20	15.46	18.59	1.20	15.46	12.71	1.37	9.28	8.37	1.50	5.56	7.07	1.72	4.10	7.07	1.72	4.10
	-20	21.80	1.41	15.44	21.80	1.41	15.44	14.90	1.65	9.01	9.81	1.79	5.47	8.95	2.21	4.05	8.95	2.21	4.05
	-15	26.57	1.72	15.43	26.57	1.72	15.43	18.16	2.07	8.78	11.95	2.25	5.32	9.25	2.32	3.99	9.25	2.32	3.99
	-10	31.07	2.19	14.18	31.07	2.19	14.18	18.94	2.19	8.65	12.47	2.38	5.23	9.15	2.38	3.84	9.15	2.38	3.84
	-7	32.38	2.29	14.15	32.38	2.29	14.15	21.76	2.56	8.50	13.32	2.58	5.16	9.94	2.61	3.81	9.94	2.61	3.81
	0	35.80	2.33	15.35	33.83	2.65	12.78	22.43	3.11	7.22	13.77	2.82	4.88	10.83	2.89	3.75	10.83	2.89	3.75
	2	41.11	2.68	15.32	34.45	2.74	12.59	22.90	3.35	6.84	14.07	2.90	4.85	11.95	3.22	3.71	11.95	3.22	3.71
	5	44.14	2.90	15.23	36.53	2.96	12.35	23.71	3.48	6.81	14.61	3.22	4.53	12.18	3.36	3.62	12.18	3.36	3.62
	7	46.04	2.98	15.47	38.24	3.12	12.24	24.24	3.58	6.78	15.96	4.05	3.94	13.25	4.10	3.23	13.25	4.10	3.23
	10	47.16	3.12	15.10	39.44	3.30	11.95	25.15	3.72	6.76	16.55	4.27	3.88	14.95	4.53	3.30	14.95	4.53	3.30
	15	49.52	3.28	15.08	40.37	3.42	11.82	25.85	3.83	6.75	17.01	4.66	3.65	17.01	4.96	3.43	17.01	4.96	3.43
	20	51.37	3.43	14.97	41.37	3.84	10.78	28.10	4.18	6.72	18.50	5.21	3.55	18.50	5.46	3.39	18.50	5.46	3.39
	25	52.69	3.67	14.36	42.32	4.36	9.71	30.32	4.54	6.67	19.96	5.84	3.42	19.96	6.01	3.32	19.96	6.01	3.32
	30	53.77	3.79	14.18	43.34	4.65	9.32	32.59	4.90	6.65	21.45	6.44	3.33	21.45	6.62	3.24	21.45	6.62	3.24
	35	55.82	4.01	13.93	46.44	5.08	9.15	34.92	5.27	6.63	22.99	7.16	3.21	22.99	7.37	3.12	22.99	7.37	3.12
	40	57.63	4.22	13.65	49.														

R290 Climastar Series



T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
60	-25	/	/	/	13.27	0.94	14.15	9.98	1.08	9.26	6.57	1.12	5.86	6.20	1.42	4.36	6.20	1.42	4.36
	-20	18.24	1.14	15.97	16.58	1.21	13.71	12.47	1.39	8.97	8.21	1.51	5.45	6.63	1.52	4.35	6.63	1.52	4.35
	-15	21.88	1.37	15.94	19.89	1.47	13.55	14.96	1.69	8.87	9.85	1.83	5.38	7.96	1.86	4.28	7.96	1.86	4.28
	-10	26.66	1.68	15.84	25.39	1.91	13.32	19.09	2.19	8.71	11.77	2.20	5.35	10.06	2.39	4.21	10.06	2.39	4.21
	-7	28.14	1.80	15.63	26.80	2.14	12.51	20.15	2.34	8.60	12.27	2.35	5.22	10.87	2.62	4.15	10.87	2.62	4.15
	0	34.81	2.25	15.50	26.78	2.43	11.02	20.28	2.68	7.57	12.66	2.75	4.60	11.57	2.80	4.13	11.57	2.80	4.13
	2	36.40	2.36	15.41	26.96	2.58	10.43	20.43	2.85	7.17	13.35	2.87	4.65	12.35	3.05	4.05	12.35	3.05	4.05
	5	39.06	2.56	15.25	27.90	2.70	10.35	20.55	2.89	7.11	13.81	3.20	4.32	12.81	3.23	3.97	12.81	3.23	3.97
	7	42.92	2.84	15.13	29.12	2.84	10.25	21.90	3.11	7.05	14.41	3.37	4.28	13.41	3.40	3.95	13.41	3.40	3.95
	10	45.50	3.03	15.01	30.95	3.04	10.17	23.27	3.33	6.99	15.32	3.61	4.24	14.32	3.69	3.88	14.32	3.69	3.88
	15	46.72	3.12	14.98	31.78	3.15	10.09	23.90	3.45	6.94	15.73	3.74	4.21	14.73	3.85	3.83	14.73	3.85	3.83
	20	51.01	3.43	14.87	34.70	3.49	9.95	26.09	3.82	6.84	17.18	4.14	4.15	17.18	4.58	3.75	17.18	4.58	3.75
	25	55.30	3.74	14.79	37.62	3.81	9.87	28.29	4.17	6.78	18.62	4.55	4.09	18.62	5.02	3.71	18.62	5.02	3.71
	30	60.43	4.12	14.66	40.56	4.14	9.79	30.50	4.53	6.73	20.08	4.94	4.06	20.08	5.50	3.65	20.08	5.50	3.65
	35	64.79	4.43	14.63	43.48	4.47	9.72	32.70	4.89	6.68	21.52	5.34	4.03	21.52	5.96	3.61	21.52	5.96	3.61
	40	69.14	4.74	14.60	46.40	4.79	9.68	34.89	5.24	6.65	22.97	5.72	4.02	22.97	6.42	3.58	22.97	6.42	3.58
45	73.49	5.10	14.41	49.32	5.52	8.93	37.09	6.04	6.14	24.41	6.59	3.71	24.41	6.94	3.52	24.41	6.94	3.52	
65	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	18.74	1.13	16.65	17.04	1.20	14.23	14.81	1.44	10.25	8.43	1.45	5.83	7.51	1.51	4.99	7.51	1.51	4.99
	-10	22.89	1.38	16.56	21.80	1.56	13.98	16.65	1.73	9.61	10.79	1.90	5.69	9.72	2.00	4.85	9.72	2.00	4.85
	-7	28.96	1.76	16.42	23.77	1.89	12.59	17.28	2.00	8.65	11.77	2.24	5.25	10.83	2.28	4.75	10.83	2.28	4.75
	0	30.97	1.90	16.28	23.82	2.11	11.30	17.91	2.31	7.77	11.79	2.50	4.71	11.79	2.50	4.71	11.79	2.50	4.71
	2	32.37	1.99	16.23	23.98	2.23	10.75	18.03	2.44	7.39	11.87	2.65	4.48	11.87	2.65	4.48	11.87	2.65	4.48
	5	36.16	2.23	16.20	25.83	2.41	10.72	19.42	2.64	7.37	12.79	2.86	4.47	12.79	2.86	4.47	12.79	2.86	4.47
	7	40.55	2.52	16.09	27.51	2.60	10.58	20.69	2.84	7.27	13.62	3.09	4.41	13.62	3.09	4.41	13.62	3.09	4.41
	10	41.84	2.63	15.89	28.46	2.70	10.55	21.40	2.95	7.25	14.09	3.20	4.40	14.09	3.20	4.40	14.09	3.20	4.40
	15	42.91	2.72	15.77	29.19	2.79	10.46	21.95	3.05	7.19	14.45	3.31	4.36	14.45	3.31	4.36	14.45	3.31	4.36
	20	47.08	2.99	15.75	32.03	3.09	10.37	24.09	3.38	7.13	15.85	3.66	4.33	15.85	3.66	4.33	15.85	3.66	4.33
	25	51.33	3.27	15.71	34.92	3.38	10.32	26.26	3.70	7.09	17.29	4.06	4.26	17.29	4.06	4.26	17.29	4.06	4.26
	30	56.29	3.59	15.66	37.78	3.70	10.21	28.41	4.05	7.02	18.70	4.41	4.24	18.70	4.41	4.24	18.70	4.41	4.24
	35	60.37	3.87	15.61	40.52	4.00	10.12	30.47	4.38	6.96	20.06	4.78	4.20	20.06	4.78	4.20	20.06	4.78	4.20
	40	64.46	4.14	15.58	43.26	4.29	10.09	32.53	4.69	6.94	21.41	5.11	4.19	21.41	5.11	4.19	21.41	5.11	4.19
45	68.53	4.41	15.54	45.99	4.64	9.92	34.58	5.07	6.82	22.77	5.53	4.12	22.77	5.53	4.12	22.77	5.53	4.12	
70	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-10	21.11	1.26	16.76	20.10	1.39	14.42	15.12	1.53	9.91	9.95	1.65	6.02	8.04	1.70	4.72	8.04	1.73	4.65
	-7	21.77	1.31	16.63	20.73	1.61	12.85	15.59	1.76	8.83	10.26	1.91	5.36	9.18	1.98	4.63	9.18	1.99	4.61
	0	27.34	1.65	16.53	21.03	1.85	11.39	15.81	2.02	7.83	10.41	2.27	4.59	10.41	2.27	4.59	10.41	2.27	4.59
	2	30.01	1.82	16.46	22.23	2.05	10.85	16.72	2.24	7.46	11.00	2.43	4.53	11.00	2.43	4.53	11.00	2.43	4.53
	5	33.95	2.07	16.44	24.25	2.25	10.79	18.24	2.46	7.42	12.00	2.67	4.50	12.00	2.67	4.50	12.00	2.67	4.50
	7	38.07	2.33	16.36	25.83	2.43	10.65	19.42	2.65	7.32	12.79	2.88	4.44	12.79	2.88	4.44	12.79	2.88	4.44
	10	40.01	2.47	16.22	27.22	2.57	10.59	20.47	2.81	7.28	13.47	3.05	4.42	13.47	3.05	4.42	13.47	3.05	4.42
	15	41.20	2.55	16.19	28.03	2.66	10.53	21.08	2.91	7.24	13.87	3.16	4.39	13.87	3.16	4.39	13.87	3.16	4.39
	20	43.16	2.67	16.14	29.36	2.80	10.47	22.08	3.07	7.20	14.53	3.33	4.37	14.53	3.33	4.37	14.53	3.33	4.37
	25	47.36	2.96	15.98	32.22	3.09	10.42	24.23	3.38	7.16	15.95	3.64	4.38	15.95	3.68	4.33	15.95	3.68	4.33
	30	52.15	3.29	15.86	35.00	3.38	10.36	26.32	3.70	7.12	17.33	4.03	4.30	17.33	4.03	4.30	17.33	4.03	4.30
	35	55.96	3.56	15.73	37.56	3.68	10.20	28.25	4.03	7.01	18.59	4.39	4.23	18.59	4.39	4.23	18.59	4.39	4.23
	40	59.78	3.89	15.38	40.12	3.95	10.15	30.17	4.32	6.98	19.86	4.72	4.21	19.86	4.72	4.21	19.86	4.72	4.21
45	63.56	4.18	15.20	42.66	4.24	10.05	32.08	4.64	6.91	21.12	5.06	4.17	21.12	5.06	4.17	21.12	5.06	4.17	
75	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	0	23.45	1.36	17.19	18.04	1.54	11.72	13.57	1.68	8.06	8.93	1.83	4.89	8.93	1.83	4.89	8.93	1.83	4.89
	2	26.33	1.56	16.88	19.50	1.75	11.15	14.66	1.91	7.66	9.65	2.08	4.65	9.65	2.08	4.65	9.65	2.08	4.65
	5	30.84	1.84	16.77	22.03	1.99	11.06	16.57	2.18	7.60	10.90	2.36	4.61	10.90	2.36	4.61	10.90	2.36	4.61
	7	34.96	2.11	16.59	23.72	2.17	10.92	17.84	2.38	7.51	11.74	2.58	4.56	11.74	2.58	4.56	11.74	2.58	4.56
	10	36.54	2.20	16.59	24.86	2.31	10.75	18.69	2.53	7.39	12.31	2.74	4.48	12.31	2.74	4.48	12.31	2.74	4.48
	15	37.50	2.26	16.57	25.51	2.39	10.68	19.18	2.61	7.34	12.63	2.83	4.46	12.63	2.83	4.46	12.63	2.83	4.46
	20	39.23	2.38	16.49	26.69	2.53	10.57	20.07	2.76	7.27	13.21	3.00	4.41	13.21	3.00	4.41	13.21	3.00	4.41
	25	43.39	2.66	16.33	29.52	2.81	10.50	22.20	3.08	7.22	14.61	3.31	4.42	14.61	3.36	4.35	14.61	3.36	4.35
	30	48.01	2.95	16.25	32.22	3.09	10.42	24.23	3.38	7.16	15.95	3.69	4.32	15.95	3.69	4.32	15.95	3.69	4.32
	35	51.55	3.19	16.17	34.60	3.37	10.27	26.02	3.69	7.06	17.13	4.02	4.26	17.13	4.02	4.26	17.13	4.02	4.26
	40	55.10	3.48	15.82	36.98	3.62	10.22	27.81	3.96	7.02	18.31	4.32	4.24	18.31	4.32	4.24	18.31	4.32	4.24
45	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:

TWout: Outlet water temperature (°C)

DB: Dry-bulb temperature for Outdoor air temperature (°C)

HC: Total heating capacity (kW)

PI: Power input (kW)

R290 Climastar Series



NE-F1000HCR5TINVM-USC

T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
20	-25	46.26	2.22	20.86	46.26	2.22	20.86	34.79	2.55	13.66	22.90	2.65	8.64	18.50	2.72	6.80	18.50	2.72	6.80
	-20	53.88	2.65	20.34	53.88	2.65	20.34	40.52	3.04	13.31	26.67	3.25	8.20	21.55	3.30	6.54	21.55	3.30	6.54
	-15	61.54	3.06	20.10	61.54	3.06	20.10	46.28	3.52	13.16	30.46	3.81	7.99	24.62	3.91	6.30	24.62	3.91	6.30
	-10	67.72	3.56	19.02	67.72	3.56	19.02	50.93	4.12	12.36	33.52	4.64	7.23	29.08	4.85	6.00	29.08	4.85	6.00
	-7	68.85	3.70	18.62	68.85	3.95	17.42	51.78	4.32	11.97	34.08	4.69	7.27	30.50	5.17	5.90	30.50	5.17	5.90
	0	73.79	4.04	18.28	70.28	4.90	14.34	52.85	5.36	9.86	34.79	5.82	5.98	32.99	6.07	5.43	32.99	6.07	5.43
	2	82.92	4.63	17.92	72.11	5.65	12.76	54.23	6.18	8.77	35.69	6.70	5.32	35.69	6.70	5.32	35.69	6.70	5.32
	5	87.33	4.92	17.74	75.94	6.18	12.29	57.10	6.76	8.45	37.59	7.33	5.13	37.59	7.33	5.13	37.59	7.33	5.13
	7	91.73	5.25	17.48	79.76	6.59	12.10	59.98	7.21	8.32	39.48	7.82	5.05	39.48	7.82	5.05	39.48	7.82	5.05
	10	100.31	5.86	17.12	83.59	7.24	11.55	62.86	7.92	7.94	41.38	8.59	4.82	41.38	8.59	4.82	41.38	8.59	4.82
	15	104.88	6.19	16.94	87.40	7.77	11.25	65.72	8.50	7.73	43.26	9.22	4.69	43.26	9.22	4.69	43.26	9.22	4.69
	20	114.12	6.85	16.66	95.10	8.75	10.87	71.52	9.57	7.47	47.07	10.38	4.53	47.07	10.38	4.53	47.07	10.38	4.53
	25	123.36	7.60	16.24	102.80	9.73	10.57	77.31	10.65	7.26	50.89	11.45	4.44	50.89	11.45	4.44	50.89	11.45	4.44
	30	138.10	8.71	15.86	110.48	10.70	10.33	83.08	11.71	7.10	54.69	12.76	4.28	54.69	12.76	4.28	54.69	12.76	4.28
	35	147.73	9.67	15.28	118.18	11.68	10.12	88.87	12.78	6.95	58.50	13.93	4.20	58.50	13.93	4.20	58.50	13.93	4.20
40	163.64	11.13	14.70	125.88	12.66	9.94	94.66	13.85	6.83	62.31	15.10	4.13	62.31	15.10	4.13	62.31	15.10	4.13	
45	173.65	12.32	14.10	133.58	13.64	9.79	100.45	14.92	6.73	66.12	16.27	4.06	66.12	16.27	4.06	66.12	16.27	4.06	
25	-25	45.48	2.17	21.00	45.48	2.17	21.00	34.20	2.49	13.75	22.51	2.52	8.94	20.10	2.88	6.98	20.10	2.88	6.98
	-20	52.86	2.53	20.88	52.86	2.53	20.88	39.75	2.91	13.67	26.17	3.15	8.29	23.14	3.45	6.70	23.14	3.45	6.70
	-15	60.27	2.95	20.44	60.27	2.95	20.44	45.32	3.39	13.38	29.83	3.67	8.12	24.11	3.69	6.54	24.11	3.69	6.54
	-10	63.14	3.15	20.04	63.14	3.15	20.04	47.48	3.60	13.18	31.25	3.92	7.98	25.26	3.97	6.36	25.26	3.97	6.36
	-7	67.64	3.69	18.32	67.64	3.69	18.32	50.87	4.04	12.59	33.48	4.38	7.64	29.96	4.83	6.20	29.96	4.83	6.20
	0	69.70	4.56	15.29	69.70	4.56	15.29	52.41	4.99	10.51	34.50	5.41	6.38	32.72	5.65	5.79	32.72	5.65	5.79
	2	70.32	5.13	13.71	70.32	5.13	13.71	52.88	5.61	9.42	34.81	6.09	5.72	34.81	6.09	5.72	34.81	6.09	5.72
	5	74.24	5.62	13.22	74.24	5.62	13.22	55.83	6.14	9.09	36.75	6.66	5.52	36.75	6.66	5.52	36.75	6.66	5.52
	7	78.17	5.98	13.07	78.17	5.98	13.07	58.78	6.54	8.98	38.69	7.10	5.45	38.69	7.10	5.45	38.69	7.10	5.45
	10	82.09	6.59	12.47	82.09	6.59	12.47	61.73	7.20	8.57	40.64	7.81	5.20	40.64	7.81	5.20	40.64	7.81	5.20
	15	86.01	7.08	12.16	86.01	7.08	12.16	64.68	7.74	8.36	42.57	8.39	5.07	42.57	8.39	5.07	42.57	8.39	5.07
	20	93.27	7.91	11.80	93.27	7.91	11.80	70.14	8.65	8.11	46.17	9.38	4.92	46.17	9.38	4.92	46.17	9.38	4.92
	25	100.53	8.74	11.51	100.53	8.74	11.51	75.60	9.56	7.91	49.76	10.28	4.84	49.76	10.28	4.84	49.76	10.28	4.84
	30	107.78	9.56	11.27	107.78	9.56	11.27	81.05	10.46	7.75	53.35	11.40	4.68	53.35	11.40	4.68	53.35	11.40	4.68
	35	115.04	10.39	11.07	115.04	10.39	11.07	86.51	11.37	7.61	56.94	12.40	4.59	56.94	12.40	4.59	56.94	12.40	4.59
40	122.30	11.22	10.90	122.30	11.22	10.90	91.97	12.28	7.49	60.54	13.39	4.52	60.54	13.39	4.52	60.54	13.39	4.52	
45	129.56	12.05	10.75	129.56	12.05	10.75	97.43	13.18	7.39	64.13	14.38	4.46	64.13	14.38	4.46	64.13	14.38	4.46	
30	-25	44.70	1.98	22.54	44.70	1.98	22.54	33.61	2.28	14.75	22.13	2.45	9.04	19.46	2.55	7.64	19.46	2.55	7.64
	-20	51.84	2.32	22.38	51.84	2.32	22.38	38.98	2.66	14.65	25.66	2.89	8.89	21.48	2.91	7.38	21.48	2.91	7.38
	-15	59.00	2.65	22.30	59.00	2.65	22.30	44.37	3.04	14.59	29.21	3.30	8.86	25.60	3.51	7.30	25.60	3.51	7.30
	-10	64.56	2.96	21.84	64.56	2.96	21.84	48.55	3.40	14.30	31.96	3.74	8.54	26.84	3.83	7.00	26.84	3.83	7.00
	-7	67.12	3.38	19.88	67.12	3.38	19.88	50.47	3.69	13.66	33.22	4.01	8.29	29.73	4.30	6.91	29.73	4.30	6.91
	0	78.52	3.97	19.76	68.28	4.15	16.47	51.35	4.54	11.32	33.80	4.92	6.87	32.05	5.14	6.24	32.05	5.14	6.24
	2	85.66	4.43	19.32	68.52	4.61	14.86	51.53	5.04	10.22	33.92	5.47	6.20	33.92	5.47	6.20	33.92	5.47	6.20
	5	90.69	4.75	19.10	72.55	5.05	14.37	54.56	5.53	9.87	35.91	5.99	5.99	35.91	5.99	5.99	35.91	5.99	5.99
	7	102.15	5.42	18.84	76.57	5.49	13.95	57.58	6.01	9.59	37.90	6.51	5.82	37.90	6.51	5.82	37.90	6.51	5.82
	10	107.19	5.72	18.76	80.60	5.93	13.59	60.61	6.49	9.34	39.90	7.04	5.67	39.90	7.04	5.67	39.90	7.04	5.67
	15	112.54	6.05	18.60	84.62	6.38	13.26	63.63	6.98	9.12	41.89	7.57	5.53	41.89	7.57	5.53	41.89	7.57	5.53
	20	121.62	6.58	18.48	91.44	7.06	12.95	68.76	7.72	8.90	45.26	8.38	5.40	45.26	8.38	5.40	45.26	8.38	5.40
	25	130.69	7.16	18.26	98.26	7.74	12.70	73.89	8.47	8.73	48.64	9.11	5.34	48.64	9.11	5.34	48.64	9.11	5.34
	30	141.86	7.84	18.10	105.08	8.42	12.48	79.02	9.21	8.58	52.01	10.04	5.18	52.01	10.04	5.18	52.01	10.04	5.18
	35	151.07	8.47	17.83	111.90	9.10	12.30	84.15	9.96	8.45	55.39	10.86	5.10	55.39	10.86	5.10	55.39	10.86	5.10
40	160.27	9.11	17.60	118.72	9.78	12.14	89.28	10.70	8.34	58.77	11.67	5.04	58.77	11.67	5.04	58.77	11.67	5.04	
45	169.48	9.74	17.40	125.54	10.46	12.00	94.41	11.44	8.25	62.14	12.48	4.98	62.14	12.48	4.98	62.14	12.48	4.98	
35	-25	43.92	1.81	24.24	43.92	1.81	24.24	33.03	1.97	16.80	21.74	2.27	9.58	19.46	2.31	8.44	19.46	2.31	8.44
	-20	50.82	2.12	23.92	50.82	2.12	23.92	38.22	2.31	16.52	25.16	2.65	9.50	23.00	2.74	8.40	23.00	2.74	8.40
	-15	57.73	2.43	23.76	57.73	2.43	23.76	43.41	2.66	16.30	28.58	3.03	9.44	25.50	3.07	8.30	25.50	3.07	8.30
	-10	64.43	2.79	23.12	64.43	2.79	23.12	48.16	2.98	16.14	31.10	3.38	9.20	28.24	3.44	8.20	28.24	3.44	8.20
	-7	65.42	2.89	22.66	65.42	3.02	21.68	49.20	3.30	14.90	32.38	3.58	9.04	29.94	3.68	8.14	29.94	3.68	8.14
	0	74.74	3.32	22.48	66.74	3.35	19.90	50.19	3.67	13.68	33.04	3.98	8.30	31.33	4.16	7.54	31.33	4.16	7.54
	2	90.14	3.80	23.72	69.34	3.94	17.60	52.14	4.31	12.10	34.32	4.67	7.34	34.32	4.67	7.34	34.32	4.67	7.34
	5	92.11	3.92	23.50	70.85	4.32	16.40	53.28	4.73	11.27	35.07	5.13	6.84	35.07	5.13	6.84	35.07	5.13	6.84
	7	104.00	4.23	24.56	74.98	5.00	15.00	56.38	5.47	10.31	37.24	5.82	6.40	37.24	5.82	6.40	37.24	5.82	6.40
	10	105.20	4.59	22.94	79.10	5.28	14.99	59.48	5.83	10.20	39.15	6.26	6.26	39.15	6.26	6.26	39.15	6.26	6.26
	15	110.70	5.13	21.56	83.23	5.69	14.64	62.59	6.22	10.06	41.20	6.75	6.11	41.20	6.75	6.11	41.20	6.75	6.11
	20	119.18	5.60	21.28	89.61	6.22	14.42	67.39	6.80	9.91	44.36	7.37	6.02	44.36	7.37	6.02	44.36	7.37	6.02
	25	127.67	6.19	20.62	95.99	6.74	14.23	72.18	7.38	9.78	47.52	7.94	5.98	47.52	7.94	5.98	47.52	7.94	5.98
	30	138.21	6.78	20.39	102.38	7.28	14.06	76.99	7.96	9.67	50.68	8.68	5.84	50.68	8.68	5.84	50.68		

R290 Climastar Series



T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
40	-25	43.14	1.74	24.78	43.14	1.74	24.78	32.44	1.88	17.22	21.35	2.28	9.38	18.66	2.39	7.80	18.66	2.39	7.80
	-20	49.80	2.03	24.54	49.80	2.03	24.54	37.45	2.20	17.06	24.65	2.70	9.14	21.92	2.82	7.76	21.92	2.82	7.76
	-15	56.46	2.31	24.40	56.46	2.31	24.40	42.46	2.52	16.88	27.95	3.12	8.96	24.58	3.19	7.70	24.58	3.19	7.70
	-10	63.44	2.62	24.24	63.44	2.62	24.24	47.71	2.86	16.66	31.40	3.60	8.72	27.38	3.68	7.44	27.38	3.68	7.44
	-7	63.88	2.66	23.98	63.88	2.66	23.98	48.04	2.91	16.48	31.62	3.84	8.24	28.30	3.88	7.30	28.30	3.88	7.30
	0	80.63	3.40	23.72	64.50	3.45	18.70	48.50	3.77	12.85	31.93	4.05	7.88	30.28	4.21	7.20	30.28	4.21	7.20
	2	84.42	3.60	23.48	64.94	3.66	17.72	48.83	4.01	12.18	32.15	4.35	7.39	32.15	4.40	7.30	32.15	4.40	7.30
	5	89.91	3.85	23.34	69.16	3.92	17.64	52.01	4.29	12.13	34.23	4.65	7.36	34.23	4.65	7.36	34.23	4.65	7.36
	7	100.44	4.35	23.10	73.38	4.36	16.84	55.18	4.77	11.57	36.32	5.07	7.16	36.32	5.07	7.17	36.32	5.07	7.17
	10	105.92	4.61	22.96	77.60	4.62	16.80	58.36	5.05	11.54	38.41	5.48	7.01	38.41	5.48	7.01	38.41	5.48	7.01
	15	111.71	4.91	22.74	81.84	4.99	16.40	61.54	5.46	11.27	40.51	5.92	6.84	40.51	5.92	6.84	40.51	5.92	6.84
	20	119.82	5.31	22.58	87.78	5.37	16.35	66.01	5.88	11.24	43.45	6.37	6.82	43.45	6.37	6.82	43.45	6.37	6.82
	25	127.93	5.73	22.34	93.72	5.75	16.30	70.48	6.29	11.20	46.39	6.77	6.85	46.39	6.77	6.85	46.39	6.77	6.85
	30	138.06	6.25	22.08	99.68	6.31	15.80	74.96	6.90	10.86	49.34	7.32	6.74	49.34	7.32	6.74	49.34	7.32	6.74
	35	146.28	6.68	21.90	105.62	6.83	15.46	79.43	7.47	10.63	52.28	7.78	6.72	52.28	7.78	6.72	52.28	7.78	6.72
	40	154.51	7.13	21.66	111.56	7.31	15.26	83.89	8.00	10.49	55.22	8.23	6.71	55.22	8.23	6.71	55.22	8.23	6.71
45	162.74	7.79	20.90	117.50	7.83	15.00	88.36	8.57	10.31	58.16	8.68	6.70	58.16	8.68	6.70	58.16	8.68	6.70	
45	-25	42.10	1.50	27.98	42.10	1.50	27.98	31.66	1.93	16.40	20.84	2.09	9.96	16.84	2.31	7.30	16.84	2.31	7.30
	-20	47.96	1.74	27.60	47.96	1.74	27.60	36.07	2.22	16.24	23.74	2.59	9.16	19.18	2.80	6.86	19.18	2.80	6.86
	-15	53.82	2.20	24.44	53.82	2.20	24.44	40.47	2.55	15.90	26.64	2.93	9.10	21.53	3.35	6.42	21.53	3.35	6.42
	-10	57.30	2.39	23.96	57.30	2.39	23.96	43.09	2.80	15.38	28.36	3.37	8.42	22.92	3.64	6.30	22.92	3.64	6.30
	-7	62.24	2.67	23.30	62.24	2.67	23.30	46.80	3.19	14.66	30.81	3.82	8.06	27.57	4.55	6.06	27.57	4.55	6.06
	0	78.33	2.96	26.46	62.66	3.11	20.17	47.12	3.40	13.86	31.02	3.90	7.96	29.41	4.99	5.90	29.41	4.99	5.90
	2	81.68	3.10	26.34	62.83	3.34	18.81	47.25	3.65	12.93	31.10	3.96	7.85	31.10	5.34	5.82	31.10	5.34	5.82
	5	89.57	3.41	26.30	68.90	3.72	18.51	51.81	4.07	12.72	34.11	4.42	7.72	34.11	5.92	5.76	34.11	5.92	5.76
	7	99.62	3.80	26.20	70.97	3.86	18.40	53.37	4.26	12.54	35.13	4.62	7.61	35.13	6.25	5.62	35.13	6.25	5.62
	10	105.06	4.06	25.86	75.04	4.17	18.02	56.43	4.56	12.38	37.14	4.94	7.52	37.14	6.68	5.56	37.14	6.68	5.56
	15	110.80	4.40	25.20	79.14	4.45	17.80	59.51	4.86	12.24	39.17	5.27	7.43	39.17	7.12	5.50	39.17	7.12	5.50
	20	118.78	4.76	24.96	84.84	4.80	17.69	63.80	5.25	12.16	42.00	5.69	7.38	42.00	7.69	5.46	42.00	7.69	5.46
	25	126.76	5.10	24.86	90.54	5.15	17.60	68.09	5.63	12.10	44.82	6.14	7.30	44.82	8.79	5.10	44.82	8.79	5.10
	30	135.86	5.48	24.78	96.27	5.50	17.50	72.40	6.02	12.03	47.65	6.56	7.26	47.65	9.49	5.02	47.65	9.49	5.02
	35	144.00	5.83	24.68	101.97	5.85	17.43	76.68	6.40	11.98	50.48	6.98	7.23	50.48	10.34	4.88	50.48	10.34	4.88
	40	152.89	6.22	24.60	107.67	6.77	15.90	80.97	7.41	10.93	53.30	8.08	6.60	53.30	11.49	4.64	53.30	11.49	4.64
45	160.99	6.59	24.42	113.37	7.41	15.31	85.25	8.10	10.52	56.12	8.83	6.35	56.12	12.25	4.58	56.12	12.25	4.58	
50	-25	41.06	1.54	26.64	41.06	1.54	26.64	30.88	1.77	17.44	20.32	1.99	10.20	16.42	2.26	7.26	16.42	2.26	7.26
	-20	46.12	1.79	25.78	46.12	1.79	25.78	34.68	2.06	16.88	22.83	2.23	10.24	18.45	2.56	7.22	18.45	2.56	7.22
	-15	50.28	1.99	25.30	50.28	1.99	25.30	38.83	2.34	16.56	25.56	2.54	10.05	20.66	2.93	7.06	20.66	2.93	7.06
	-10	54.28	2.24	24.22	54.28	2.24	24.22	46.95	2.82	16.65	30.91	3.06	10.10	24.98	3.63	6.88	24.98	3.63	6.88
	-7	58.26	2.49	23.36	58.26	2.49	23.36	47.50	2.96	16.06	31.26	3.21	9.75	27.98	4.09	6.84	27.98	4.09	6.84
	0	74.46	2.69	27.70	63.32	3.06	20.68	47.62	3.35	14.21	31.34	3.63	8.63	29.72	4.44	6.70	29.72	4.44	6.70
	2	81.50	2.98	27.32	63.86	3.26	19.58	48.02	3.57	13.46	31.61	3.87	8.17	31.61	4.75	6.66	31.61	4.75	6.66
	5	84.56	3.11	27.22	64.40	3.32	19.42	48.43	3.63	13.35	31.88	3.93	8.10	31.88	4.90	6.50	31.88	4.90	6.50
	7	92.64	3.42	27.10	68.56	3.55	19.30	51.56	3.89	13.27	33.94	4.21	8.05	33.94	5.29	6.42	33.94	5.29	6.42
	10	96.01	3.60	26.68	72.48	3.78	19.20	54.50	4.13	13.20	35.88	4.48	8.01	35.88	5.69	6.30	35.88	5.69	6.30
	15	100.48	3.80	26.42	76.44	4.01	19.08	57.48	4.38	13.11	37.84	4.75	7.96	37.84	6.08	6.22	37.84	6.08	6.22
	20	103.96	3.94	26.38	81.90	4.30	19.04	61.59	4.71	13.09	40.54	5.10	7.94	40.54	6.65	6.10	40.54	6.65	6.10
	25	107.52	4.09	26.30	87.36	4.60	19.00	65.69	5.03	13.06	43.24	5.57	7.76	43.24	7.18	6.02	43.24	7.18	6.02
	30	110.42	4.21	26.22	92.86	4.90	18.94	69.83	5.36	13.02	45.97	5.95	7.72	45.97	7.71	5.96	45.97	7.71	5.96
	35	114.86	4.39	26.18	98.32	5.21	18.86	73.94	5.70	12.96	48.67	6.49	7.50	48.67	8.31	5.86	48.67	8.31	5.86
	40	118.62	4.56	26.04	103.78	5.52	18.80	78.04	6.04	12.92	51.37	7.02	7.32	51.37	8.83	5.82	51.37	8.83	5.82
45	122.58	4.72	25.98	109.24	5.82	18.77	82.15	6.37	12.90	54.07	7.68	7.04	54.07	9.49	5.70	54.07	9.49	5.70	
55	-25	37.18	1.20	30.92	37.18	1.20	30.92	25.42	1.37	18.56	16.73	1.50	11.12	14.14	1.72	8.20	14.14	1.72	8.20
	-20	43.60	1.41	30.88	43.60	1.41	30.88	29.81	1.65	18.02	19.62	1.79	10.94	17.90	2.21	8.10	17.90	2.21	8.10
	-15	53.13	1.72	30.86	53.13	1.72	30.86	36.32	2.07	17.56	23.91	2.25	10.64	18.50	2.32	7.98	18.50	2.32	7.98
	-10	65.11	2.21	29.50	65.11	2.21	29.50	37.89	2.19	17.30	24.94	2.38	10.46	18.30	2.38	7.68	18.30	2.38	7.68
	-7	66.76	2.36	28.30	66.76	2.36	28.30	43.51	2.56	16.99	26.64	2.58	10.31	19.88	2.61	7.62	19.88	2.61	7.62
	0	71.59	2.33	30.70	67.66	2.65	25.56	44.86	3.11	14.43	27.53	2.82	9.76	21.67	2.89	7.50	21.67	2.89	7.50
	2	82.22	2.68	30.64	68.90	2.74	25.18	45.80	3.35	13.68	28.15	2.90	9.70	23.90	3.22	7.42	23.90	3.22	7.42
	5	88.28	2.90	30.46	73.06	2.96	24.70	47.42	3.48	13.62	29.21	3.22	9.07	24.36	3.36	7.24	24.36	3.36	7.24
	7	98.00	2.96	33.11	76.48	3.12	24.48	48.49	3.58	13.55	31.92	4.05	7.89	26.50	4.10	6.46	26.50	4.10	6.46
	10	98.50	3.26	30.20	78.88	3.30	23.90	50.29	3.72	13.53	33.11	4.27	7.76	29.90	4.53	6.60	29.90	4.53	6.60
	15	99.04	3.28	30.16	80.74	3.42	23.64	51.69	3.83	13.50	34.03	4.66	7.30	34.03	4.96	6.86	34.03	4.96	6.86
	20	102.74	3.43	29.94	82.74	3.84	21.56	56.20	4.18	13.44	37.00	5.21	7.10	37.00	5.46	6.78	37.00	5.46	6.78
	25	105.38	3.67	28.72	84.64	4.36	19.42	60.64	4.54	13.35	39.92	5.84	6.84	39.92	6.01	6.64	39.92	6.01	6.64
	30	107.54	3.79	28.36	86.68	4.65	18.64	65.18	4.90	13.31	42.91	6.44	6.66	42.91	6.62	6.48	42.91	6.62	6.48
	35	111.64	4.01	27.86	92.88	5.08													

R290 Climastar Series

T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI	HC	COP	PI
60	-25	/	/	/	26.54	0.94	28.30	19.96	1.08	18.53	13.14	1.12	11.72	12.40	1.42	8.72	12.40	1.42	8.72
	-20	36.48	1.14	31.94	33.16	1.21	27.42	24.94	1.39	17.95	16.41	1.51	10.89	13.26	1.52	8.70	13.26	1.52	8.70
	-15	43.76	1.37	31.88	39.78	1.47	27.10	29.91	1.69	17.74	19.69	1.83	10.77	15.91	1.86	8.56	15.91	1.86	8.56
	-10	53.32	1.68	31.68	50.78	1.91	26.64	38.19	2.19	17.42	23.54	2.20	10.70	20.11	2.39	8.42	20.11	2.39	8.42
	-7	56.28	1.80	31.26	53.60	2.14	25.02	40.31	2.34	17.20	24.53	2.35	10.44	21.74	2.62	8.30	21.74	2.62	8.30
	0	69.63	2.25	31.00	53.56	2.43	22.04	40.56	2.68	15.15	25.31	2.75	9.19	23.14	2.80	8.26	23.14	2.80	8.26
	2	72.79	2.36	30.82	53.92	2.58	20.86	40.86	2.85	14.34	26.69	2.87	9.30	24.69	3.05	8.10	24.69	3.05	8.10
	5	78.12	2.56	30.50	55.80	2.70	20.70	41.10	2.89	14.23	27.62	3.20	8.64	25.62	3.23	7.94	25.62	3.23	7.94
	7	85.85	2.84	30.26	58.24	2.84	20.51	43.80	3.11	14.10	28.83	3.37	8.56	26.83	3.40	7.90	26.83	3.40	7.90
	10	90.99	3.03	30.02	61.90	3.04	20.34	46.55	3.33	13.98	30.64	3.61	8.49	28.64	3.69	7.76	28.64	3.69	7.76
	15	93.43	3.12	29.96	63.56	3.15	20.18	47.80	3.45	13.87	31.46	3.74	8.42	29.46	3.85	7.66	29.46	3.85	7.66
	20	102.02	3.43	29.74	69.40	3.49	19.90	52.19	3.82	13.68	34.35	4.14	8.30	34.35	4.58	7.50	34.35	4.58	7.50
	25	110.60	3.74	29.58	75.24	3.81	19.74	56.58	4.17	13.57	37.24	4.55	8.18	37.24	5.02	7.42	37.24	5.02	7.42
	30	120.87	4.12	29.32	81.12	4.14	19.58	61.00	4.53	13.46	40.15	4.94	8.12	40.15	5.50	7.30	40.15	5.50	7.30
	35	129.57	4.43	29.26	86.96	4.47	19.44	65.39	4.89	13.36	43.05	5.34	8.07	43.05	5.96	7.22	43.05	5.96	7.22
	40	138.27	4.74	29.20	92.80	4.79	19.36	69.79	5.24	13.31	45.94	5.72	8.03	45.94	6.42	7.16	45.94	6.42	7.16
45	146.97	5.10	28.82	98.64	5.52	17.86	74.18	6.04	12.28	48.83	6.59	7.41	48.83	6.94	7.04	48.83	6.94	7.04	
65	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	37.49	1.13	33.30	34.08	1.20	28.46	29.62	1.44	20.50	16.87	1.45	11.66	15.02	1.51	9.98	15.02	1.51	9.98
	-10	45.78	1.38	33.12	43.60	1.56	27.96	33.30	1.73	19.22	21.58	1.90	11.38	19.44	2.00	9.70	19.44	2.00	9.70
	-7	57.92	1.76	32.84	47.54	1.89	25.18	34.56	2.00	17.31	23.53	2.24	10.50	21.66	2.28	9.50	21.66	2.28	9.50
	0	61.93	1.90	32.56	47.64	2.11	22.60	35.83	2.31	15.53	23.58	2.50	9.43	23.58	2.50	9.43	23.58	2.50	9.43
	2	64.75	1.99	32.46	47.96	2.23	21.50	36.07	2.44	14.78	23.74	2.65	8.97	23.74	2.65	8.97	23.74	2.65	8.97
	5	72.32	2.23	32.40	51.66	2.41	21.44	38.85	2.64	14.74	25.57	2.86	8.94	25.57	2.86	8.94	25.57	2.86	8.94
	7	81.10	2.52	32.18	55.02	2.60	21.16	41.38	2.84	14.54	27.23	3.09	8.83	27.23	3.09	8.83	27.23	3.09	8.83
	10	83.67	2.63	31.78	56.92	2.70	21.10	42.80	2.95	14.50	28.18	3.20	8.80	28.18	3.20	8.80	28.18	3.20	8.80
	15	85.82	2.72	31.54	58.38	2.79	20.92	43.90	3.05	14.38	28.90	3.31	8.73	28.90	3.31	8.73	28.90	3.31	8.73
	20	94.17	2.99	31.50	64.06	3.09	20.74	48.17	3.38	14.26	31.71	3.66	8.65	31.71	3.66	8.65	31.71	3.66	8.65
	25	102.66	3.27	31.42	69.84	3.38	20.64	52.52	3.70	14.19	34.57	4.06	8.52	34.57	4.06	8.52	34.57	4.06	8.52
	30	112.58	3.59	31.32	75.56	3.70	20.42	56.82	4.05	14.04	37.40	4.41	8.47	37.40	4.41	8.47	37.40	4.41	8.47
	35	120.75	3.87	31.22	81.04	4.00	20.24	60.94	4.38	13.91	40.11	4.78	8.40	40.11	4.78	8.40	40.11	4.78	8.40
	40	128.91	4.14	31.16	86.52	4.29	20.18	65.06	4.69	13.87	42.83	5.11	8.37	42.83	5.11	8.37	42.83	5.11	8.37
45	137.05	4.41	31.08	91.98	4.64	19.84	69.17	5.07	13.64	45.53	5.53	8.23	45.53	5.53	8.23	45.53	5.53	8.23	
70	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-10	42.21	1.26	33.53	40.20	1.39	28.84	30.23	1.53	19.82	19.90	1.65	12.03	16.08	1.70	9.44	16.08	1.73	9.30
	-7	43.53	1.31	33.25	41.46	1.61	25.70	31.18	1.76	17.67	20.52	1.91	10.72	18.37	1.98	9.26	18.37	1.99	9.22
	0	54.68	1.65	33.06	42.06	1.85	22.78	31.63	2.02	15.66	20.82	2.27	9.18	20.82	2.27	9.18	20.82	2.27	9.18
	2	60.02	1.82	32.93	44.46	2.05	21.70	33.43	2.24	14.92	22.01	2.43	9.05	22.01	2.43	9.05	22.01	2.43	9.05
	5	67.90	2.07	32.88	48.50	2.25	21.58	36.47	2.46	14.83	24.01	2.67	9.00	24.01	2.67	9.00	24.01	2.67	9.00
	7	76.15	2.33	32.72	51.66	2.43	21.30	38.85	2.65	14.64	25.57	2.88	8.89	25.57	2.88	8.89	25.57	2.88	8.89
	10	80.03	2.47	32.44	54.44	2.57	21.18	40.94	2.81	14.56	26.95	3.05	8.84	26.95	3.05	8.84	26.95	3.05	8.84
	15	82.41	2.55	32.37	56.06	2.66	21.06	42.16	2.91	14.48	27.75	3.16	8.79	27.75	3.16	8.79	27.75	3.16	8.79
	20	86.32	2.67	32.28	58.72	2.80	20.94	44.16	3.07	14.39	29.07	3.33	8.74	29.07	3.33	8.74	29.07	3.33	8.74
	25	94.73	2.96	31.96	64.44	3.09	20.84	48.46	3.38	14.32	31.90	3.64	8.76	31.90	3.68	8.66	31.90	3.68	8.66
	30	104.30	3.29	31.72	70.00	3.38	20.71	52.64	3.70	14.23	34.65	4.03	8.59	34.65	4.03	8.59	34.65	4.03	8.59
	35	111.93	3.56	31.47	75.12	3.68	20.40	56.49	4.03	14.02	37.18	4.39	8.46	37.18	4.39	8.46	37.18	4.39	8.46
	40	119.56	3.89	30.75	80.24	3.95	20.30	60.34	4.32	13.95	39.72	4.72	8.42	39.72	4.72	8.42	39.72	4.72	8.42
45	127.13	4.18	30.40	85.32	4.24	20.10	64.16	4.64	13.82	42.23	5.06	8.34	42.23	5.06	8.34	42.23	5.06	8.34	
75	-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-20	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	-7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	0	46.90	1.36	34.38	36.08	1.54	23.44	27.13	1.68	16.11	17.86	1.83	9.78	17.86	1.83	9.78	17.86	1.83	9.78
	2	52.65	1.56	33.76	39.00	1.75	22.30	29.33	1.91	15.33	19.31	2.08	9.30	19.31	2.08	9.30	19.31	2.08	9.30
	5	61.68	1.84	33.54	44.06	1.99	22.12	33.13	2.18	15.20	21.81	2.36	9.23	21.81	2.36	9.23	21.81	2.36	9.23
	7	69.93	2.11	33.19	47.44	2.17	21.84	35.67	2.38	15.01	23.48	2.58	9.11	23.48	2.58	9.11	23.48	2.58	9.11
	10	73.09	2.20	33.18	49.72	2.31	21.50	37.39	2.53	14.78	24.61	2.74	8.97	24.61	2.74	8.97	24.61	2.74	8.97
	15	75.00	2.26	33.14	51.02	2.39	21.36	38.37	2.61	14.68	25.25	2.83	8.91	25.25	2.83	8.91	25.25	2.83	8.91
	20	78.47	2.38	32.97	53.38	2.53	21.14	40.14	2.76	14.53	26.42	3.00	8.82	26.42	3.00	8.82	26.42	3.00	8.82
	25	86.79	2.66	32.66	59.04	2.81	21.00	44.40	3.08	14.43	29.22	3.31	8.83	29.22	3.36	8.70	29.22	3.36	8.70
	30	96.02	2.95	32.50	64.44	3.09	20.84	48.46	3.38	14.32	31.90	3.69	8.65	31.90	3.69	8.65	31.90	3.69	8.65
	35	103.11	3.19	32.34	69.20	3.37	20.54	52.04	3.69	14.12	34.25	4.02	8.52	34.25	4.02	8.52	34.25	4.02	8.52
	40	110.20	3.48	31.64	73.96	3.62	20.44	55.62	3.96	14.05	36.61	4.32	8.48	36.61	4.32	8.48	36.61	4.32	8.48
45	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:

TWout: Outlet water temperature (°C)

DB: Dry-bulb temperature for Outdoor air temperature (°C)

HC: Total heating capacity (kW)

PI: Power input (kW)

R290 Climastar Series

5.2 Cooling Capacity Tables

NE-F500HCR5TINVM-USC

T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI
7	10	46.89	6.72	6.97	39.68	7.06	5.62	29.96	7.40	4.05	21.64	7.84	2.76	18.64	8.25	2.26	18.64	8.25	2.26
	20	38.68	4.83	8.01	33.15	5.07	6.54	25.03	5.32	4.71	16.58	5.63	2.94	15.13	6.38	2.37	15.13	6.38	2.37
	30	36.59	3.90	9.37	31.27	4.09	7.65	23.61	4.29	5.51	15.64	4.74	3.30	12.79	5.16	2.48	12.79	5.16	2.48
	35	35.00	2.83	12.36	29.30	3.56	8.24	22.12	3.84	5.77	14.65	4.26	3.44	11.11	4.30	2.58	11.11	4.30	2.58
	40	28.17	2.17	12.98	25.42	2.82	9.01	19.19	2.96	6.49	12.71	3.13	4.05	10.52	3.60	2.92	10.52	3.60	2.92
45	22.99	1.71	13.45	20.17	2.20	9.15	15.23	2.31	6.59	10.89	2.45	4.45	8.88	2.69	3.30	8.88	2.69	3.30	
15	10	54.48	8.05	6.76	46.10	8.46	5.45	34.81	8.87	3.93	25.15	9.40	2.68	20.73	9.64	2.15	20.73	9.64	2.15
	20	45.56	5.86	7.77	39.05	6.16	6.34	29.48	6.45	4.57	19.53	6.84	2.85	17.89	7.78	2.30	17.89	7.78	2.30
	30	39.67	4.36	9.09	36.84	4.96	7.42	27.81	5.21	5.34	18.42	5.75	3.20	16.66	6.48	2.57	16.66	6.48	2.57
	35	37.63	3.14	11.99	31.63	3.96	7.99	23.88	4.27	5.59	17.24	5.17	3.34	15.82	6.04	2.62	15.82	6.04	2.62
	40	34.57	2.75	12.59	31.19	3.57	8.74	23.55	3.74	6.29	16.60	4.22	3.93	15.60	5.51	2.83	15.60	5.51	2.83
45	29.31	2.25	13.05	25.71	2.90	8.88	19.41	3.04	6.39	15.24	3.53	4.31	13.88	4.34	3.20	13.88	4.34	3.20	
25	10	62.07	9.46	6.56	52.52	9.93	5.29	39.65	10.42	3.81	28.65	11.04	2.60	23.76	11.37	2.09	23.76	11.37	2.09
	20	54.37	7.21	7.54	46.60	7.57	6.15	35.18	7.94	4.43	23.30	8.41	2.77	21.98	9.86	2.23	21.98	9.86	2.23
	30	47.69	5.41	8.82	44.28	6.15	7.20	33.43	6.45	5.18	22.14	7.13	3.10	20.03	8.03	2.49	20.03	8.03	2.49
	35	41.96	3.61	11.63	37.26	4.81	7.75	28.13	5.18	5.43	18.63	5.76	3.24	16.77	6.60	2.54	16.77	6.60	2.54
	40	40.05	3.28	12.21	36.14	4.26	8.48	27.28	4.47	6.10	18.07	4.74	3.81	15.22	5.54	2.75	15.22	5.54	2.75
45	34.55	2.73	12.66	30.31	3.52	8.61	22.88	3.69	6.20	16.37	3.91	4.18	13.63	4.39	3.10	13.63	4.39	3.10	
35	10	69.66	10.94	6.36	58.94	11.49	5.13	44.50	12.05	3.69	32.15	12.77	2.52	25.15	13.59	1.85	25.15	13.59	1.85
	20	64.34	8.80	7.31	55.15	9.24	5.97	41.64	9.69	4.30	27.58	10.27	2.69	22.71	11.02	2.06	22.71	11.02	2.06
	30	55.70	6.51	8.55	51.72	7.41	6.98	39.05	7.77	5.03	25.86	8.59	3.01	21.76	9.00	2.42	21.76	9.00	2.42
	35	48.29	4.28	11.28	48.29	6.42	7.52	36.46	6.93	5.26	24.15	7.69	3.14	19.95	8.10	2.46	19.95	8.10	2.46
	40	47.36	4.00	11.85	42.73	5.20	8.22	32.26	5.45	5.92	21.37	5.77	3.70	18.71	7.02	2.67	18.71	7.02	2.67
45	39.73	3.24	12.28	34.85	4.17	8.35	26.31	4.38	6.01	18.82	4.64	4.06	15.21	5.05	3.01	15.21	5.05	3.01	

NE-F1000HCR5TINVM-USC

T Wout	DB	Maximum			100%(Normal)			75%			50%			25%			Minimum		
		CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI	CC	EER	PI
7	10	93.79	6.72	13.95	79.36	7.06	11.24	59.92	7.40	8.09	43.29	7.84	5.52	37.28	8.25	4.52	37.28	8.25	4.52
	20	77.35	4.83	16.02	66.30	5.07	13.08	50.06	5.32	9.42	33.15	5.63	5.89	30.26	6.38	4.74	30.26	6.38	4.74
	30	73.17	3.90	18.74	62.54	4.09	15.30	47.22	4.29	11.02	31.27	4.74	6.60	25.58	5.16	4.96	25.58	5.16	4.96
	35	70.00	2.83	24.72	58.60	3.56	16.48	44.24	3.84	11.54	29.30	4.26	6.88	22.22	4.30	5.16	22.22	4.31	5.16
	40	56.35	2.17	25.96	50.84	2.82	18.02	38.38	2.96	12.97	25.42	3.13	8.11	21.04	3.60	5.84	21.04	3.60	5.84
45	45.99	1.71	26.90	40.34	2.20	18.30	30.46	2.31	13.18	21.78	2.45	8.89	17.76	2.69	6.60	17.76	2.69	6.60	
15	10	108.96	8.05	13.53	92.20	8.46	10.90	69.61	8.87	7.85	50.29	9.40	5.35	41.46	9.64	4.30	41.46	9.64	4.30
	20	91.12	5.86	15.54	78.10	6.16	12.69	58.97	6.45	9.14	39.05	6.84	5.71	35.78	7.78	4.60	35.78	7.78	4.60
	30	79.35	4.36	18.18	73.68	4.96	14.84	55.63	5.21	10.69	36.84	5.75	6.40	33.32	6.48	5.14	33.32	6.48	5.14
	35	75.26	3.14	23.98	63.26	3.96	15.99	47.76	4.27	11.19	34.48	5.17	6.67	31.64	6.04	5.24	31.64	6.04	5.24
	40	69.14	2.75	25.18	62.38	3.57	17.48	47.10	3.74	12.59	33.20	4.22	7.87	31.19	5.51	5.66	31.20	5.51	5.66
45	58.62	2.25	26.09	51.42	2.90	17.75	38.82	3.04	12.78	30.48	3.53	8.63	27.77	4.34	6.40	27.76	4.34	6.40	
25	10	124.14	9.46	13.12	105.04	9.93	10.58	79.31	10.42	7.61	57.29	11.04	5.19	47.52	11.37	4.18	47.52	11.37	4.18
	20	108.73	7.21	15.08	93.20	7.57	12.31	70.37	7.94	8.86	46.60	8.41	5.54	43.96	9.86	4.46	43.96	9.86	4.46
	30	95.37	5.41	17.63	88.56	6.15	14.40	66.86	6.45	10.36	44.28	7.13	6.21	40.06	8.03	4.99	40.06	8.03	4.99
	35	83.92	3.61	23.26	74.52	4.81	15.51	56.26	5.18	10.85	37.26	5.76	6.47	33.53	6.60	5.08	33.53	6.60	5.08
	40	80.10	3.28	24.43	72.27	4.26	16.96	54.56	4.47	12.21	36.14	4.74	7.63	30.44	5.54	5.49	30.44	5.54	5.49
45	69.11	2.73	25.31	60.62	3.52	17.22	45.77	3.69	12.40	32.73	3.91	8.37	27.26	4.39	6.21	27.26	4.39	6.21	
35	10	139.31	10.94	12.73	117.88	11.49	10.26	89.00	12.05	7.39	64.30	12.77	5.04	50.30	13.59	3.70	50.30	13.59	3.70
	20	128.68	8.80	14.62	110.30	9.24	11.94	83.28	9.69	8.60	55.15	10.27	5.37	45.42	11.02	4.12	45.42	11.02	4.12
	30	111.40	6.51	17.11	103.44	7.41	13.96	78.10	7.77	10.05	51.72	8.59	6.02	43.52	9.00	4.84	43.52	9.00	4.84
	35	96.58	4.28	22.56	96.58	6.42	15.04	72.92	6.93	10.53	48.29	7.69	6.28	39.90	8.10	4.93	39.90	8.10	4.93
	40	94.72	4.00	23.69	85.46	5.20	16.45	64.52	5.45	11.84	42.73	5.77	7.40	37.42	7.02	5.33	37.42	7.02	5.33
45	79.46	3.24	24.55	69.70	4.17	16.70	52.62	4.38	12.03	37.64	4.64	8.12	30.42	5.05	6.02	30.42	5.05	6.02	

Abbreviations:

TWout: Outlet water temperature (°C)

DB: Dry-bulb temperature for Outdoor air temperature (°C) CC: Total cooling capacity (kW)

PI: Power input (kW)

6 Sound Levels

6.1 Overall

Sound power levels

Model name	/	Sound power levels
NE-F500HCR5TINVM-USC	dB(A)	75
NE-F1000HCR5TINVM-USC	dB(A)	77

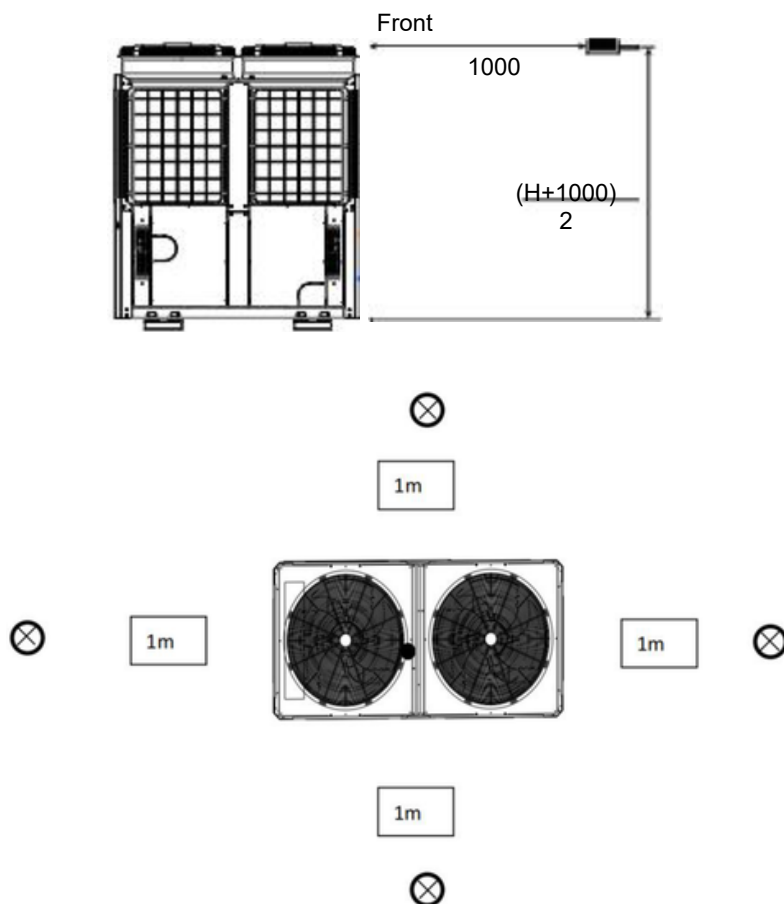
Sound pressure levels

Model name	/	Sound pressure levels in 1m
NE-F500HCR5TINVM-USC	dB(A)	58
NE-F1000HCR5TINVM-USC	dB(A)	60

Notes:

1. Sound pressure level is measured at a position 1m in front of the unit and $(1+H)/2$ m (where H is the height of the unit) above the floor in a semi-anechoic chamber. During on-site operation, sound pressure levels may be higher as a result of ambient noise.

Sound power level measurement (unit: mm)



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