

**GREEN COLD CHAIN·PROTECTS FOOD SAFETY**



## MEDIUM/LOW TEMPERATURE PARALLEL SCREW RACK

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**Qingdao Haier–Carrier Refrigeration Equipment Co., Ltd.**

## Qingdao Haier-Carrier Refrigeration Equipment Co., Ltd.

Qingdao Haier Carrier Refrigeration Equipment Co., Ltd. was established by Haier Group and Carrier in 2001. After more than ten years of development, it has become a world-class facility. Its products include supermarket display cabinets (more than 1,000 models), compressor rack and condensing units(scroll, reciprocating and screw), and heat exchangers (condenser and air cooler). It can provide customers with integrated refrigeration turnkey solutions. With the support of Carrier's R&D centers in Mainz, Germany and Shanghai China, the company now has many government certified labs, leading products and technologies in the world. The company is committed to provide advanced energy-saving solutions, e.g CO<sub>2</sub> systems, for customer.

In the past ten years, with abundant resources of two parent companies, Haier Carrier has become a world-class facility that owns the ISO9001, ISO14001 certification and the ACE certification of United Technologies (Carrier's parent company). With strong R&D strength, we are able to provide world-class system solutions like D2D hot gas defrosting (Refrigerating defrosting system - China patent), Supermarket cold chain and HVAC system, SPI (Semi Plug-in Integrated system), HybridCO<sub>2</sub>OL (carbon dioxide cascade refrigeration technology), and CO<sub>2</sub>OLtec (carbon dioxide trans-critical refrigeration technology).

### Green Energy Saving and Lower-carbon Environmental Friendly

#### Carrier/UTC

The world's leader in heating, air-conditioning and refrigeration solutions. Carrier is a part of UTC Climate, Controls & Security, a unit of United Technologies Corp., a leading provider to the aerospace and building systems industries worldwide.

In 2015, UTC global revenue volume is \$56.1 billion.



When Dr. Willis Carrier invented the first modern air conditioning, he was on the list of 100 most influential people in the 20th century.

#### Haier Group

Since its establishment in 1984, Haier Group has expanded its business from the single production of refrigerators to areas such as household appliance, communication, IT digital products, home furnishing, logistics, finance, real estate and bio-pharmaceutical, becoming a world leading life solution provider.

Committed to building a local brand popular among global consumers, Haier has long been practicing an overseas market strategy of localized research and development, production and marketing, and great results have been achieved. Up to now, Haier has 5 research and development centers, 21 industrial parks, 66 trading companies and users across 100 countries and regions.

In 2015, Haier achieved a global turnover of RMB188.7 billion.

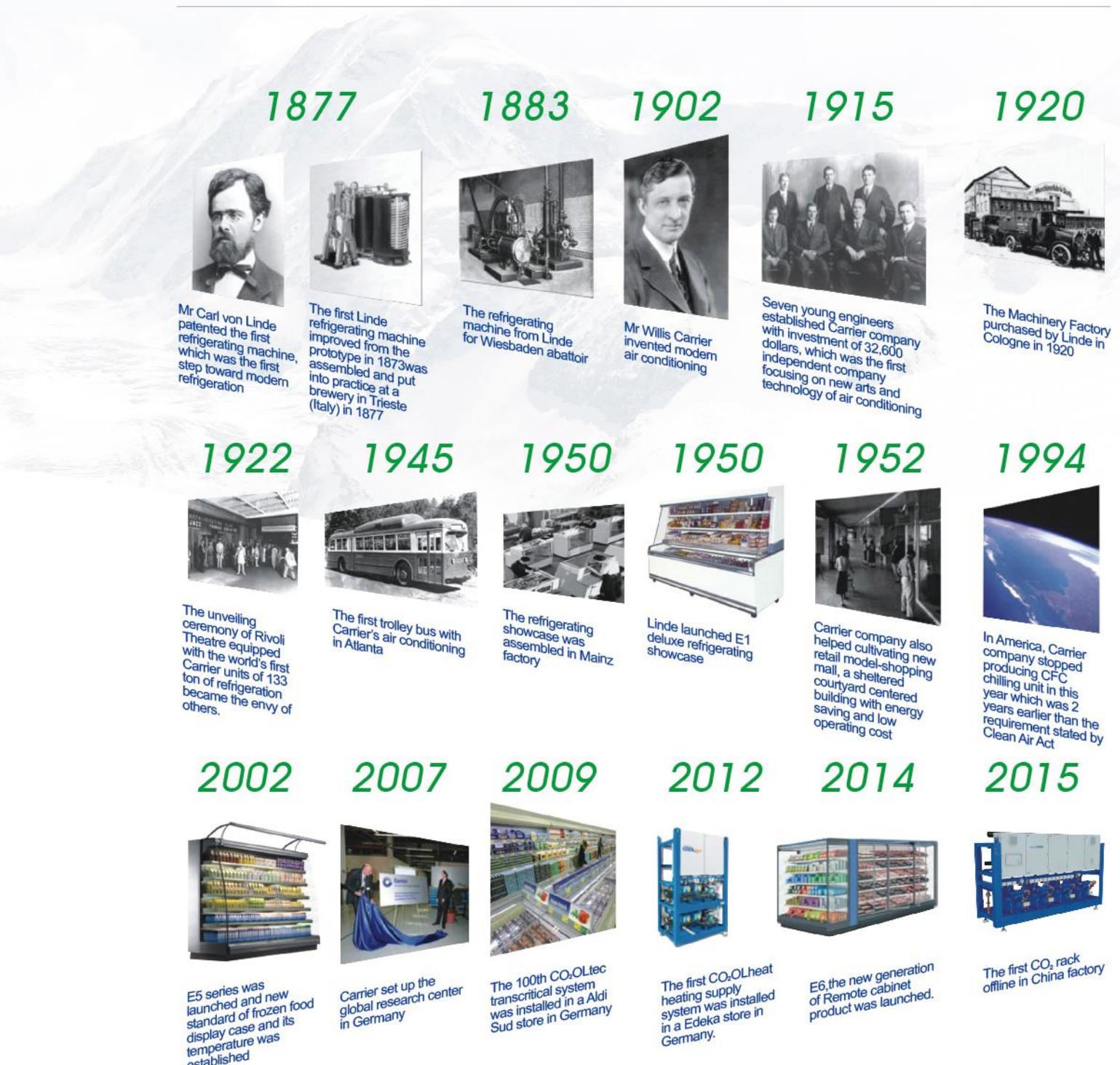


In 1877, Mr. Carl von Linde patented the technology of cold storage, creating its application in scientific research, industry and commerce, and domestic use.



Certification: GCCA (General Product Certification of Credit Alliance), EEL (Energy Efficiency Label), SAA (Standards Association of Australian), MEPS (Minimum Energy Performance Standards), UL (Underwriter Laboratories) / NSF (National Sanitation Foundation)

## Innovation Roadmap



**Haier–Carrier**  
Integrated Commercial Refrigeration Solution



## Product Overview



## Product Features

- Unit horse power range: 150~500HP
- Parallel compressor designing, unit cooling capacity regulate range: 7.5%~100%
- PHX economizer designing, high efficiency
- Integrated framework designing, compact structure
- Fully automatic control system, remote control
- Optimum quality supplier for quality assurance

## Customer Value

- Wide cooling capacity range for -40°C to 10°C
- High reliability to keep cold room temperature steady
- High efficiency, up to 20% power consumption saving benchmark with no economizer designing.
- User-friendly control, unattended operation, reducing costs for operation staff
- High quality accessories

## Wide Application



Medium temperature screw rack

Refrigerant: R22/R404a  
Cooling capacity: 213~1342kW  
Evaporating temperature: -20°C~+10°C



Low temperature screw rack

Refrigerant: R22/R404a  
Refrigerant: 84~815kW(R22) 96~925kW(R404a)  
Evaporating temperature: -50°C~-10°C



High temperature cold storage  
Room temperature: 0°C~10°C  
Capacity: 1000~3500 ton  
Stored goods: fruits, vegetables, etc



Medium temperature cold storage  
Room temperature: -20°C~0°C  
Capacity: 2000~8000 ton  
Stored goods: meat, fish, etc



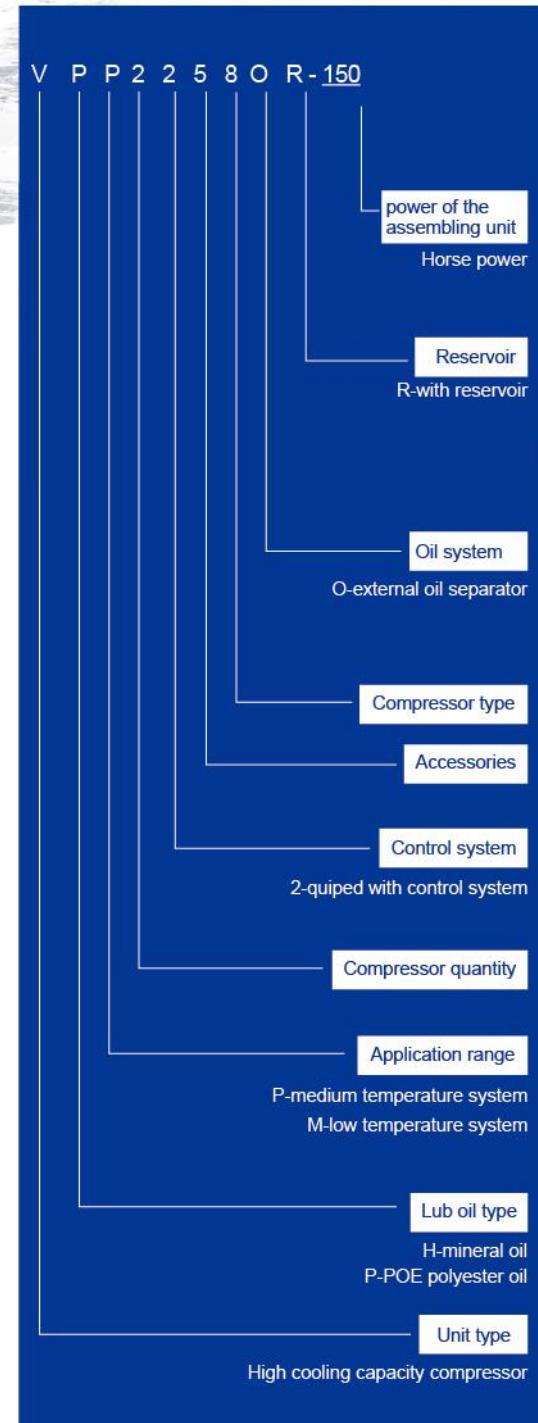
Low temperature cold storage  
Room temperature: -40°C~20°C  
Capacity: 2000~8000 ton  
Stored goods: seafood, meat, ice cream, etc



Quick Freeze  
Temperature: -28°C~32°C  
Capacity: 0.5 ton per hour~2 ton per hour  
Stored goods: seafood, quick freeze food, etc

\* The main comparison data in this catalog comes from the contrast with Carrier's last-generation products.

## Screw Rack Nomenclature

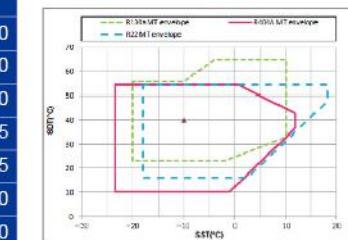


## Medium temperature screw rack configuration table

### MT Screw Rack Models

No.	Refrigerant	MT Screw Rack Model	HP
1	R404A	VPP2258OR-150	150
2		VPP2258OR-200	200
3		VPP2258OR-250	250
4		VPP3258OR-325	325
5		VPP3258OR-375	375
6		VPP4258OR-450	450
7		VPP4258OR-500	500

### MT Screw Rack Operating Envelop



## Medium temperature screw rack specifications (R22、404a)

### Refrigerant: R22, SDT: 15°C, SH: 10K, SBC: 0K, unit of capacity and power: KW

serial number	HP	Evaporating temperature: -20°C Refrigerating capacity	Power	Cop	Evaporating temperature: -15°C Refrigerating capacity	Power	Cop	Evaporating temperature: -10°C Refrigerating capacity	Power	Cop	Evaporating temperature: -5°C Refrigerating capacity	Power	Cop	Evaporating temperature: 0°C Refrigerating capacity	Power	Cop	Evaporating temperature: 5°C Refrigerating capacity	Power	Cop
1	150	234.84	62.05	3.78	298.30	62.76	4.75	—	—	—	—	—	—	—	—	—	—	—	—
2	225	377.68	99.61	4.24	474.32	91.65	5.19	—	—	—	—	—	—	—	—	—	—	—	—
3	300	520.53	117.16	4.44	650.34	120.54	5.40	—	—	—	—	—	—	—	—	—	—	—	—
4	375	637.94	148.19	4.32	799.49	151.92	5.28	—	—	—	—	—	—	—	—	—	—	—	—
5	450	780.79	175.74	4.44	975.50	180.81	5.40	—	—	—	—	—	—	—	—	—	—	—	—
6	525	888.21	206.77	4.36	1124.65	212.19	5.31	—	—	—	—	—	—	—	—	—	—	—	—
7	600	1041.05	234.32	4.44	1300.67	241.08	5.40	—	—	—	—	—	—	—	—	—	—	—	—

### Refrigerant: R22, SDT: 20°C, SH: 10K, SBC: 0K, unit of capacity and power: KW

serial number	HP	Evaporating temperature: -20°C Refrigerating capacity	Power	Cop	Evaporating temperature: -15°C Refrigerating capacity	Power	Cop	Evaporating temperature: -10°C Refrigerating capacity	Power	Cop	Evaporating temperature: -5°C Refrigerating capacity	Power	Cop	Evaporating temperature: 0°C Refrigerating capacity	Power	Cop	Evaporating temperature: 5°C Refrigerating capacity	Power	Cop
1	150	227.43	67.36	3.38	285.53	69.09	4.13	350.06	70.14	4.99	—	—	—	—	—	—	—	—	—
2	225	368.97	96.64	3.82	455.71	99.95	4.58	554.54	101.94	5.46	—	—	—	—	—	—	—	—	—
3	300	508.50	125.93	4.02	625.89	130.81	4.78	759.03	133.74	5.68	—	—	—	—	—	—	—	—	—
4	375	620.22	159.61	3.90	768.65	165.36	4.66	934.06	168.81	5.55	—	—	—	—	—	—	—	—	—
5	450	759.76	188.89	4.02	938.83	196.22	4.78	1138.54	200.61	5.68	—	—	—	—	—	—	—	—	—
6	525	873.47	222.57	3.94	1081.60	230.76	4.70	1313.57	235.68	5.58	—	—	—	—	—	—	—	—	—
7	600	1013.01	251.86	4.02	1251.78	261.63	4.78	1518.06	267.48	5.68	—	—	—	—	—	—	—	—	—

### Refrigerant: R22, SDT: 25°C, SH: 10K, SBC: 0K, unit of capacity and power: KW

serial number	HP	Evaporating temperature: -20°C Refrigerating capacity	Power	Cop	Evaporating temperature: -15°C Refrigerating capacity	Power	Cop	Evaporating temperature: -10°C Refrigerating capacity	Power	Cop	Evaporating temperature: -5°C Refrigerating capacity	Power	Cop	Evaporating temperature: 0°C Refrigerating capacity	Power	Cop	Evaporating temperature: 5°C Refrigerating capacity	Power	Cop
1	150	220.11	72.54	3.03	272.80	75.14	3.63	331.95	77.38	4.29	397.49	78.72	5.05	467.78	77.67	6.02	—	—	—
2	225	356.12	103.77	3.46	436.94	108.23	4.06	527.83	111.99	4.73	628.55	113.84	5.54	733.57	110.85	6.65	—	—	—
3	300	492.14	135.01	3.65	601.08	141.33	4.25	723.72	146.59	4.94	859.62	148.95	5.77	999.37	144.03	6.94	—	—	—
4	375	602.20	171.28	3.53	737.48	178.90	4.14	889.69	185.26	4.82	1058.37	188.31	5.64	1233.26	182.88	6.76	—	—	—
5	450	738.21	202.51	3.65	901.62	211.99	4.25	1065.58	219.89	4.94	1269.43	223.43	5.77	1499.05	216.05	6.94	—	—	—
6	525	848.27	238.78	3.57	1083.02	249.56	4.17	1251.55	258.58	4.85	1488.14	262.79	5.67	1732.94	254.88	6.81	—	—	—
7	600	954.29	270.01	3.65	1202.16	282.66	4.25	1447.44	293.19	4.94	1719.24	297.90	5.77	1998.73	288.06	6.94	—	—	—

### Refrigerant: R22, SDT: 30°C, SH: 10K, SBC: 0K, unit of capacity and power: KW

serial number	HP	Evaporating temperature: -20°C Refrigerating capacity	Power	Cop	Evaporating temperature: -15°C Refrigerating capacity	Power	Cop	Evaporating temperature: -10°C Refrigerating capacity	Power	Cop	Evaporating temperature: -5°C Refrigerating capacity	Power	Cop	Evaporating temperature: 0°C Refrigerating capacity	Power	Cop	Evaporating temperature: 5°C Refrigerating capacity	Power	Cop




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## Low temperature screw rack specifications (R404a)

Refrigerant: R404a, condensing temperature: 30°C, degree of superheat: 28K, degree of subcooling: 0K, refrigerating capacity and power unit: kW

serial number	HP	Evaporating temperature:-20°C			Evaporating temperature:-25°C			Evaporating temperature:-30°C			Evaporating temperature:-35°C			Evaporating temperature:-40°C		
		Refrigerating capacity	Power	COP												
1	150	251.68	95.04	2.65	212.80	90.04	2.36	177.08	85.10	2.08	144.92	80.34	1.80	117.14	75.90	1.54
2	200	357.11	127.75	2.80	299.98	121.60	2.47	249.37	115.86	2.15	202.96	110.08	1.84	162.61	104.58	1.55
3	225	377.52	142.56	2.65	319.20	135.06	2.36	265.62	127.65	2.08	217.38	120.51	1.80	175.71	113.85	1.54
4	250	462.54	160.46	2.88	387.16	153.16	2.53	321.66	146.62	2.19	261.00	139.82	1.87	208.08	133.26	1.56
5	300	503.36	190.08	2.65	425.60	180.08	2.36	354.16	170.20	2.08	289.84	160.68	1.80	234.28	151.80	1.54
6	325	588.38	207.98	2.83	493.56	198.18	2.49	410.20	189.17	2.17	333.46	179.99	1.85	266.65	171.21	1.56
7	375	693.81	240.69	2.88	580.74	229.74	2.53	482.49	219.93	2.19	391.50	209.73	1.87	312.12	199.89	1.56
8	450	819.65	288.21	2.84	687.14	274.76	2.50	571.03	262.48	2.18	463.96	249.90	1.86	370.69	237.84	1.56
9	500	925.08	320.92	2.88	774.32	306.32	2.53	643.32	293.24	2.19	522.00	279.64	1.87	416.16	266.52	1.56

Refrigerant: R404a, condensing temperature: 35°C, degree of superheat: 28K, degree of subcooling: 0K, refrigerating capacity and power unit: kW

serial number	HP	Evaporating temperature:-20°C			Evaporating temperature:-25°C			Evaporating temperature:-30°C			Evaporating temperature:-35°C			Evaporating temperature:-40°C		
		Refrigerating capacity	Power	COP												
1	150	241.06	103.82	2.32	203.40	98.48	2.07	168.66	93.20	1.81	138.22	88.30	1.57	110.86	83.44	1.33
2	200	342.82	139.81	2.45	287.96	133.40	2.16	238.03	127.04	1.87	193.27	120.98	1.60	154.26	115.20	1.34
3	225	361.59	155.73	2.32	305.10	147.72	2.07	252.99	139.80	1.81	207.33	132.45	1.57	166.29	125.16	1.33
4	250	444.58	175.80	2.53	372.52	168.32	2.21	307.40	160.88	1.91	248.32	153.66	1.62	197.66	146.96	1.34
5	300	482.12	207.64	2.32	406.80	196.96	2.07	337.32	186.40	1.81	276.44	176.60	1.57	221.72	166.88	1.33
6	325	565.11	227.71	2.48	474.22	217.56	2.18	391.73	207.48	1.89	317.43	197.81	1.60	253.09	188.68	1.34
7	375	666.87	263.70	2.53	558.78	252.48	2.21	461.10	241.32	1.91	372.48	230.49	1.62	296.49	220.44	1.34
8	450	787.40	315.61	2.49	660.48	301.72	2.19	545.43	287.92	1.89	441.59	274.64	1.61	351.92	262.16	1.34
9	500	889.16	351.60	2.53	745.04	336.64	2.21	614.80	321.76	1.91	496.64	307.32	1.62	395.32	293.92	1.34

Refrigerant: R404a, condensing temperature: 40°C, degree of superheat: 28K, degree of subcooling: 0K, refrigerating capacity and power unit: kW

serial number	HP	Evaporating temperature:-20°C			Evaporating temperature:-25°C			Evaporating temperature:-30°C			Evaporating temperature:-35°C			Evaporating temperature:-40°C		
		Refrigerating capacity	Power	COP												
1	150	229.72	113.64	2.02	193.28	107.86	1.79	159.64	102.32	1.56	130.32	97.08	1.34	104.12	92.04	1.13
2	200	327.67	153.28	2.14	274.37	146.37	1.87	225.68	139.59	1.62	182.54	133.12	1.37	144.76	127.02	1.14
3	225	344.58	170.46	2.02	289.92	161.79	1.79	239.46	153.48	1.56	195.48	145.62	1.34	156.18	138.06	1.13
4	250	425.62	192.92	2.21	355.46	184.88	1.92	291.72	176.86	1.65	234.76	169.16	1.39	185.40	162.00	1.14
5	300	459.44	227.28	2.02	386.56	215.72	1.79	319.28	204.64	1.56	260.64	194.16	1.34	208.24	184.08	1.13
6	325	540.48	249.74	2.16	452.10	238.81	1.89	371.54	228.02	1.63	299.92	217.70	1.38	237.46	208.02	1.14
7	375	638.43	289.38	2.21	533.19	277.32	1.92	437.58	265.29	1.65	352.14	253.74	1.39	278.10	243.00	1.14
8	450	753.29	346.20	2.18	629.83	331.25	1.90	517.40	316.45	1.64	417.30	302.28	1.38	330.16	289.02	1.14
9	500	851.24	385.84	2.21	710.92	369.76	1.92	583.44	353.72	1.65	469.52	338.32	1.39	370.80	324.00	1.14

Refrigerant: R404a, condensing temperature: 45°C, degree of superheat: 28K, degree of subcooling: 0K, refrigerating capacity and power unit: kW

serial number	HP	Evaporating temperature:-20°C			Evaporating temperature:-25°C			Evaporating temperature:-30°C			Evaporating temperature:-35°C			Evaporating temperature:-40°C		
Refrigerating capacity	Power	COP	Refrigerating capacity	Power	COP											