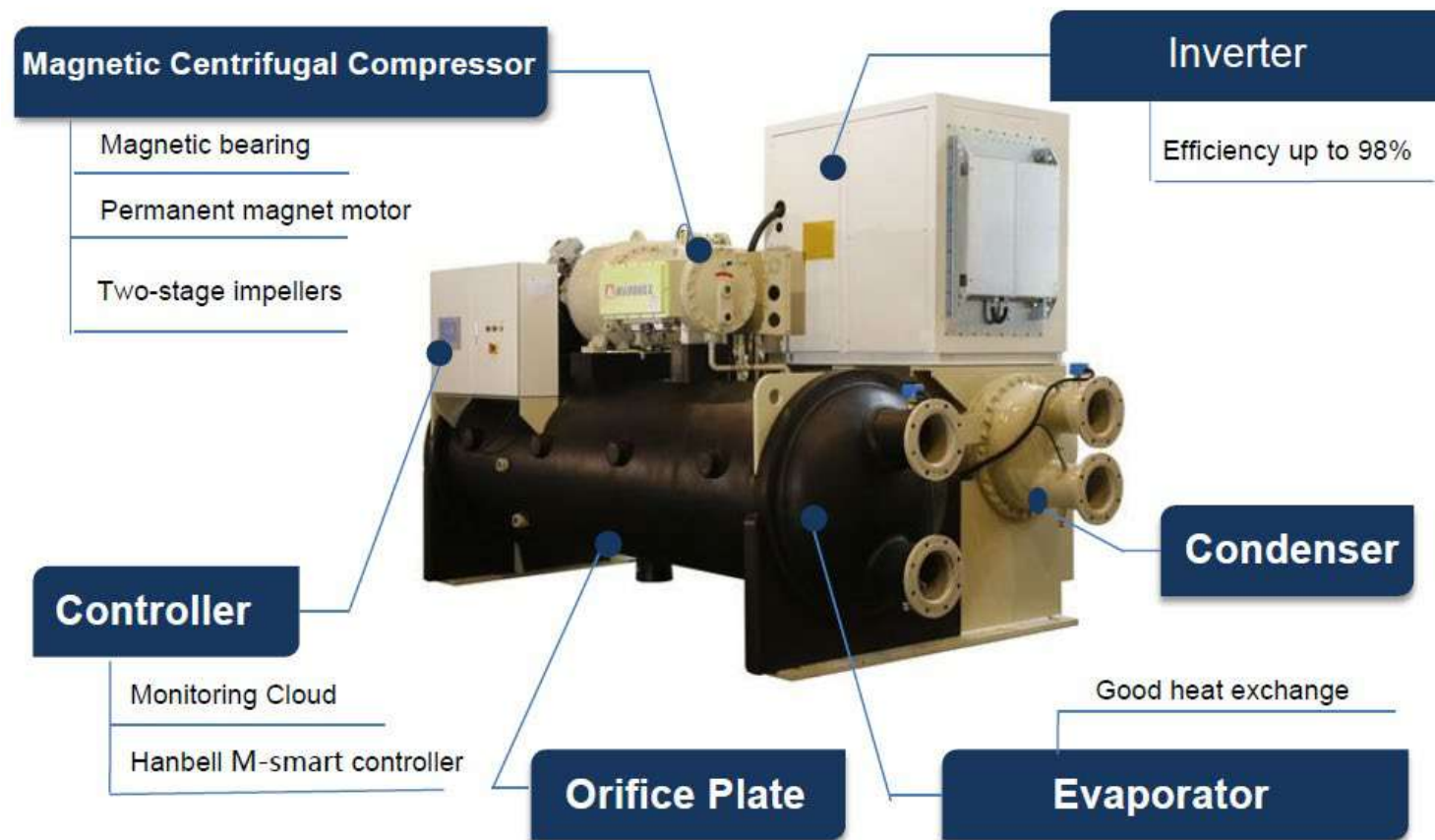


Construction of KCMC Centrifugal Compressor



HERMES VIET NAM MACHINERY CO., LTD

Block 28-30-32, 11 Street, Tan Duc IP, Huu Thanh Commune, Duc Hoa District,
Long An Province, Viet Nam.

Tel: +84-72-2769688 <http://www.hanbell-vn.com>

HANBELL PRECISE MACHINERY CO., LTD

NO.5 Kongsan Road, Kuan-Yin IP, Kuan-Yin Shiang, Tao-Yuan Hsien, Taiwan, R.O.C

Tel: +886-3-4836215 <http://www.hanbell.com>

SHANGHAI HANBELL PRECISE MACHINERY CO., LTD

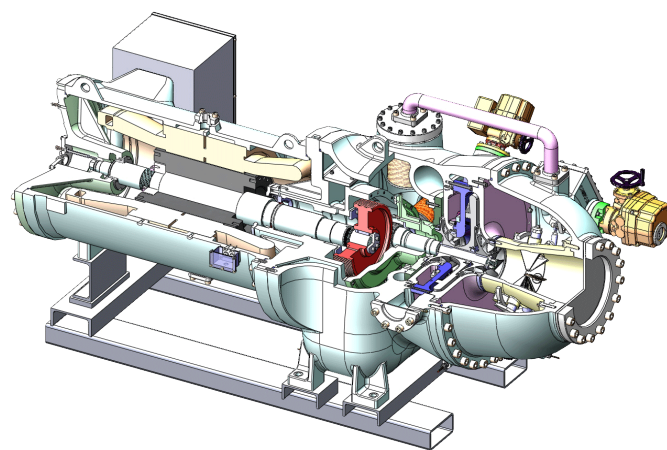
NO.8289, Tingfeng Road, Fengjing Town, Jinshan Area in Shanghai.

Tel: 021-57350280 <http://www.hanbell.com.cn>

Two-stage centrifugal compression
Centrifugal compressor deicated to
R134a

KMC AND KMCM SERIES
WATER COOLED
CENTRIFUGAL CHILLER



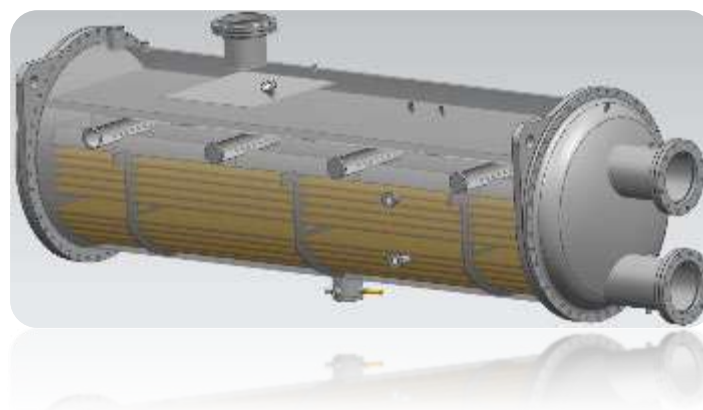


Advantages of Centrifugal Compressor

- Fewer rubbing parts, relative energy saving and with higher refrigerant flow than a similar sized reciprocating compressor.
- Shorter length and spoke-like design for rapid acceleration of refrigerant flow and immediate delivery to diffuser thereafter.

Condenser and Evaporator

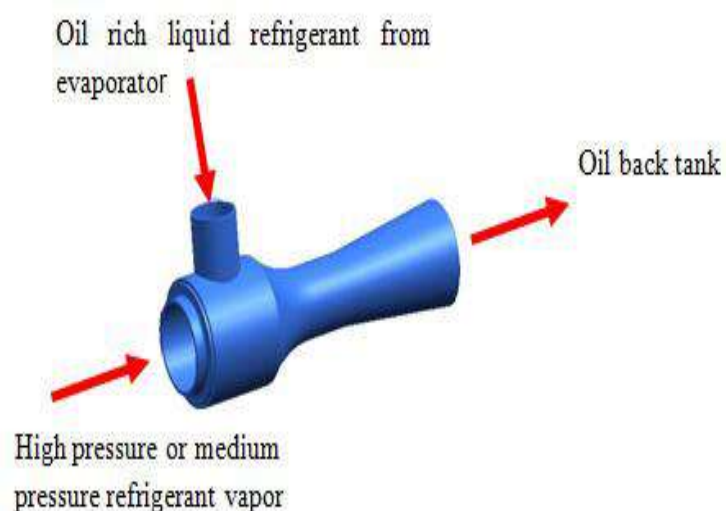
- The condenser and evaporator (Spray type) are intelligently designed. Make sure heat exchange efficiency is excellent. Condenser and Evaporator Patent in China.
- Reliable oil reclaim device-Ejector Pump: The ejector pump is used to recovery oil in low pressure side by medium pressure flash gas, without energy-loss on water chiller.



Model illustration.

KM	C	-	A	500	L	Y	T
1	2		3	4	5	6	7

- ① KM: Shanghai Comer Machinery Co., Ltd
- ② C: Cooling water chiller unit.
H: Water source heat pump unit.
- ③ A: Single machine.
B: Double machine.
- ④ 500: Nominal refrigeration capacity (RT).
- ⑤ L: 380V/50Hz M: 6000V/50Hz
N: 6600V/50Hz H: 10000V/50Hz;
- ⑥ Y: Star-Delta start. S: Soft-start.
V: Variable frequency start.
D: Direct start. R: Reactance start
- ⑦ T: Special machine H: 100% heat reclaim. M: 50% heat reclaim.



Performance and specification of products (Single machine)

KMC-	A600	A650	A700	A800	A900	A1000	A1100
Cooling capacity (kW)	2113	2285	2431	2816	3180	3529	3875
Power input (kW)	333	362	389	446	512	565	610
Full load COP (kW/kW)	6.35	6.31	6.25	6.31	6.21	6.25	6.35
kW/RT	0.55	0.56	0.56	0.56	0.57	0.56	0.55
Condenser							
Water flow (m ³ /h)	409	443	471	546	616	684	751
Water pressure drop (kPa)	75	75	75	95	95	95	95
Water inlet & outlet pipe connection (DN)	250	250	250	300	300	300	350
Evaporator							
Water flow (m ³ /h)	328	354	377	436	493	547	601
Water pressure drop (kPa)	70	70	70	90	90	90	90
Water inlet & outlet pipe connection (DN)	250	250	250	300	300	300	350
Dimensions							
A (length), mm	4120	4120	4120	4570	4570	4570	4780
B (height), mm	2380	2380	2380	2550	2550	2550	2800
C (width), mm	2500	2500	2500	2900	2900	2900	2950
Installation Dimensions							
D (mm)	3144	3144	3144	3384	3384	3384	3384
E (mm)	1800	1800	1800	2000	2000	2000	2300
Net weight (kg)	10100	10600	11200	11800	12500	13200	14500
Total weight (kg)	11100	11700	12350	13100	14000	14800	16350
Refrigerant charge (kg)	600	650	700	800	900	1000	1100

Note:

- ① operation condition (AHRI 550/590-2015).
 - a) Evaporation: Water outlet 6.67 °C, water flow: 0.155 m³/(h*kW).
 - b) Condenser: Water inlet 29.44 °C, water flow: 0.1938 m³/(h*kW).
- ② The condenser and evaporator connection is by flange.
- ③ Refrigerant: R134a.
- ④ The power supply: Low-voltage unit: 3φ-380V-50Hz.
High-voltage unit: 3φ-6KV-50Hz, 3φ-6.6KV-50Hz, 3φ-10KV-50Hz.
- ⑤ The pressure of water side: 1.0Mpa.
- ⑥ Unit conversion: 1RT = 3.517kW.

Performance and specification of products (Single machine)

KMC-	A1200	A1300	1400
Cooling capacity (kW)	4221	4592	4927
Power input (kW)	666	722	778
Full load COP (kW/kW)	6.34	6.36	6.33
kW/RT	0.55	0.55	0.56
Condenser			
Water flow (m ³ /h)	818	890	955
Water pressure drop (kPa)	98	98	98
Water inlet & outlet pipe connection (DN)	350	350	350
Evaporator			
Water flow (m ³ /h)	654	712	764
Water pressure drop (kPa)	95	95	95
Water inlet & outlet pipe connection (DN)	350	350	350
Dimensions			
A (length), mm	4780	4780	4780
B (height), mm	2800	2800	2800
C (width), mm	2950	2950	2950
Installation Dimensions			
D (mm)	3384	3384	3384
E (mm)	2300	2300	2300
Net weight (kg)	15500	16500	18000
Total weight (kg)	17500	18600	20000
Refrigerant charge (kg)	1200	1300	1400

Note:

① operation condition (AHRI 550/590-2015).

a) Evaporation: Water outlet 6.67 °C, water flow: 0.155 m³/(h*kW).

b) Condenser: Water inlet 29.44 °C, water flow: 0.1938 m³/(h*kW).

② The condenser and evaporator connection is by flange.

③ Refrigerant: R134a.

④ The power supply: Low-voltage unit: 3φ-380V-50Hz.

High-voltage unit: 3φ-6KV-50Hz, 3φ-6.6KV-50Hz, 3φ-10KV-50Hz.

⑤ The pressure of water side: 1.0Mpa.

⑥ Unit conversion: 1RT = 3.517kW.

Performance and specification of products (Double machine)

KMC-RT-	B1600	B1700	B1800	B1900	B2000	B2100	B2200
Cooling capacity (kW)	5632	600	6360	6700	7060	7400	7750
Power input (kW)	892	958	1025	1075	1130	1170	1120
Full load COP (kW/kW)	6.31	6.26	6.2	6.23	6.24	6.32	6.35
kW/RT	0.56	0.56	0.57	0.56	0.56	0.56	0.55
Condenser							
Water flow (m ³ /h)	1091	1163	1233	1298	1368	1661	1502
Water pressure drop (kPa)	95	95	95	95	105	105	105
Water inlet & outlet pipe connection (DN)	400	400	400	450	450	450	450
Evaporator							
Water flow (m ³ /h)	897	930	986	1039	1094	1147	1201
Water pressure drop (kPa)	90	90	90	90	95	95	95
Water inlet & outlet pipe connection (DN)	400	400	400	450	450	450	450
Dimensions							
A (length), mm	8300	8300	8300	8500	8500	8950	8950
B (height), mm	3600	3650	3650	3650	3650	3680	3680
C (width), mm	2900	2900	2900	2950	2950	2980	2980
Installation Dimensions							
D (mm)	6678	6678	6678	6678	6678	7278	7278
E (mm)	2600	2600	2600	2600	2600	2600	2600
Net weight (kg)	23600	24300	25000	25700	26400	27700	29000
Total weight (kg)	26500	27100	28000	22800	29600	31150	32700
Refrigerant charge (kg)	1600	1530	1620	1710	1800	1890	1980

Note:

① operation condition (AHRI 550/590-2015).

a) Evaporation: Water outlet 6.67 °C, water flow: 0.155 m³/(h*kW).

b) Condenser: Water inlet 29.44 °C, water flow: 0.1938 m³/(h*kW).

② The condenser and evaporator connection is by flange.

③ Refrigerant: R134a.

④ The power supply: Low-voltage unit: 3φ-380V-50Hz.

High-voltage unit: 3φ-6KV-50Hz, 3φ-6.6KV-50Hz, 3φ-10KV-50Hz.

⑤ The pressure of water side: 1.0Mpa.

⑥ Unit conversion: 1RT = 3.517kW.

Performance and specification of products (Double machine)

KMC-	B2300	B2400	B2500	B2600	B2700	B2800
Cooling capacity (kW)	8100	8450	8820	9200	9500	9855
Power input (kW)	1275	1330	1930	1450	1500	1555
Full load COP (kW/kW)	6.35	6.35	6.35	6.34	6.33	6.34
kW/RT	0.55	0.55	0.55	0.55	0.56	0.55
Condenser						
Water flow (m ³ /h)	1570	1638	1709	1783	1841	1910
Water pressure drop (kPa)	105	105	105	105	105	105
Water inlet & outlet pipe connection (DN)	450	450	500	500	500	500
Evaporator						
Water flow (m ³ /h)	1256	1310	1367	1426	1473	1528
Water pressure drop (kPa)	95	95	95	95	95	95
Water inlet & outlet pipe connection (DN)	450	450	500	500	500	500
Dimensions						
A (length), mm	8950	8950	9000	9000	9000	9000
B (height), mm	3680	3680	3680	3680	3700	3700
C (width), mm	2980	2980	3000	3000	3000	3000
Installation Dimensions						
D (mm)	7278	7278	7278	7278	7278	7278
E (mm)	2600	2600	2600	2600	2600	2600
Net weight (kg)	30000	31000	32000	33000	34500	36000
Total weight (kg)	33850	35000	36100	37200	38600	40000
Refrigerant charge (kg)	2070	2160	2250	2340	2430	2520

Note:

① operation condition (AHRI 550/590-2015).

a) Evaporation: Water outlet 6.67°C, water flow: 0.155 m³/(h*kW).

b) Condenser: Water inlet 29.44°C, water flow: 0.1938 m³/(h*kW).

② The condenser and evaporator connection is by flange.

③ Refrigerant: R134a.

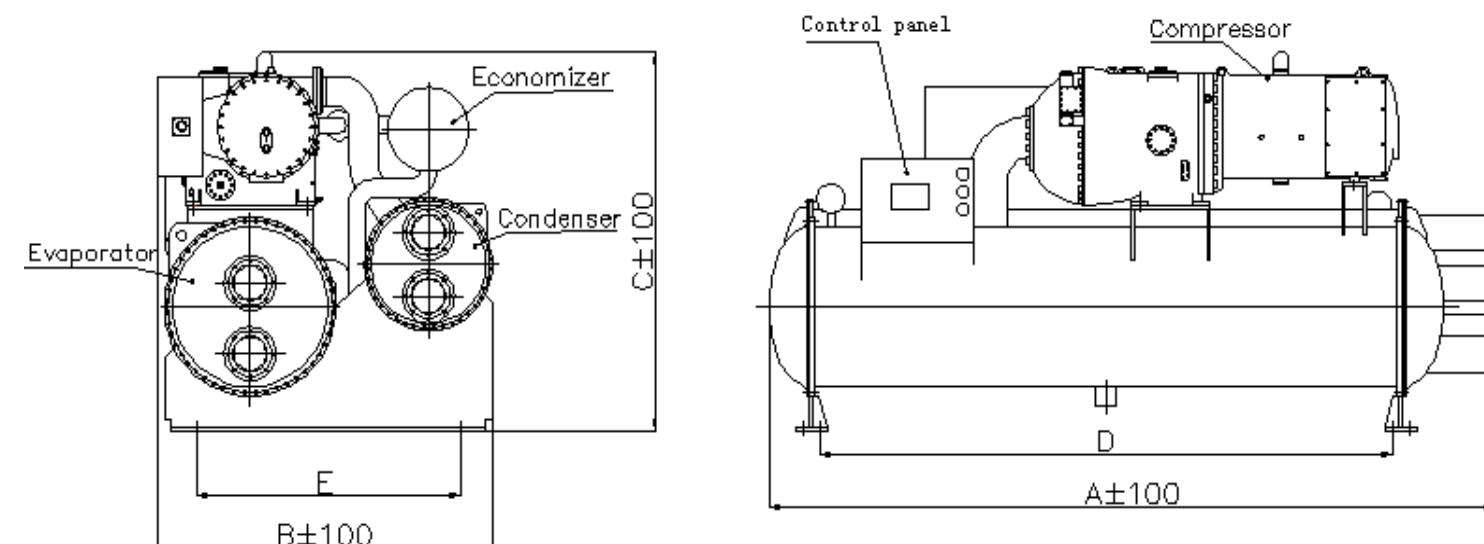
④ The power supply: Low-voltage unit: 3φ-380V-50Hz.

High-voltage unit: 3φ-6KV-50Hz, 3φ-6.6KV-50Hz, 3φ-10KV-50Hz.

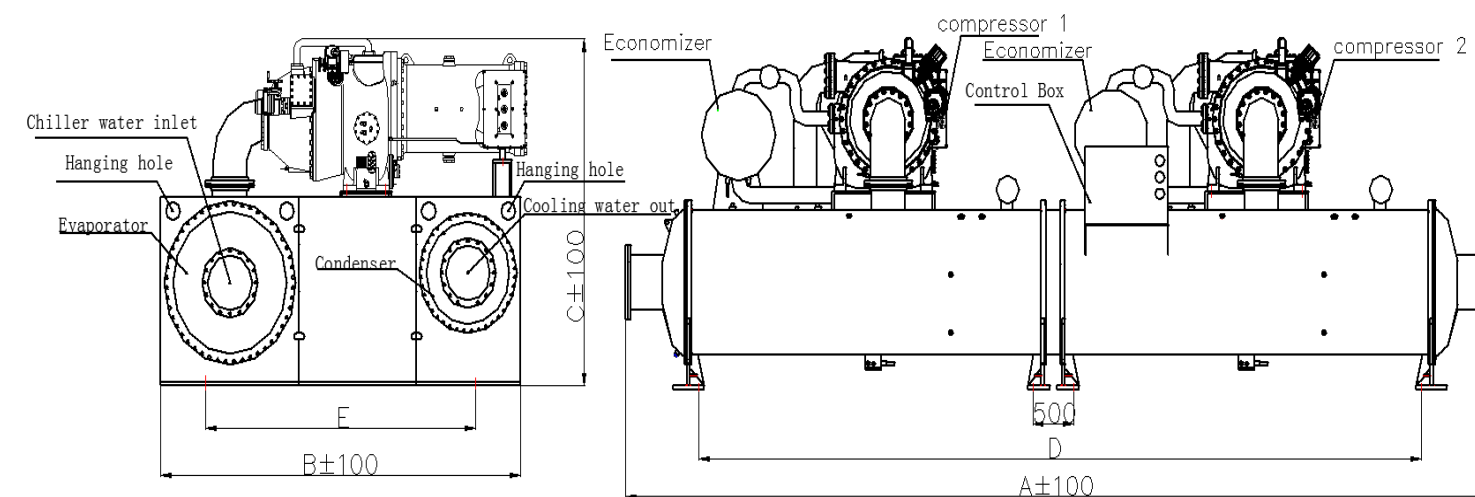
⑤ The pressure of water side: 1.0Mpa.

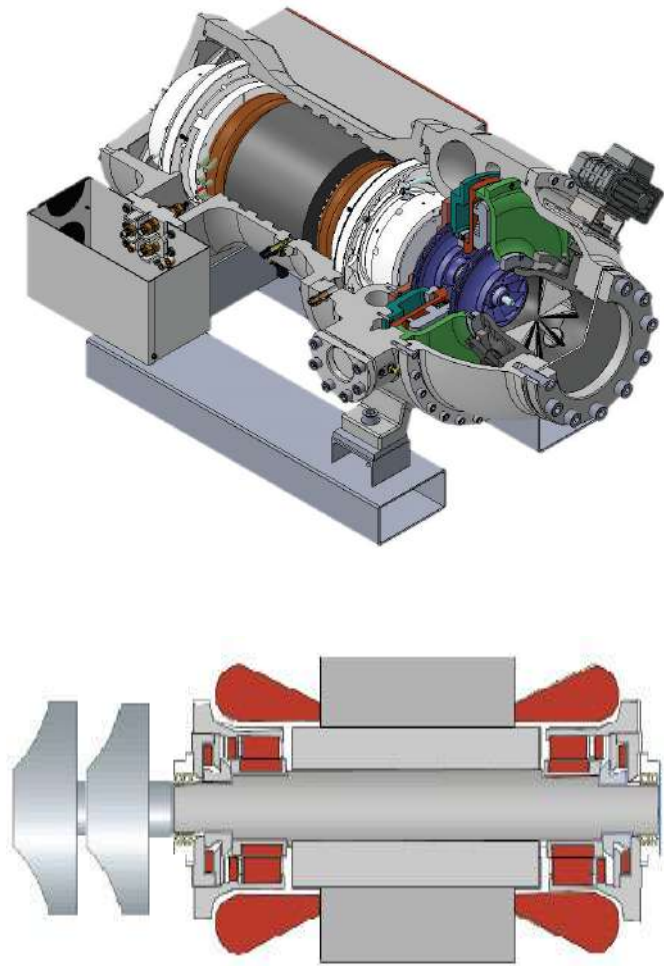
⑥ Unit conversion: 1RT = 3.517kW.

Outline drawing (Single unit)



Outline drawing (Double unit)





Model illustration.

KM	CM	-	A	400	L	V	T
1	2		3	4	5	6	7

- ① KM: Shanghai Comer Machinery Co.,Ltd
- ② CM: Hanbell variable frequency magnetic centrifugal.
- ③ A: Compound; B: Cascade.
- ④ 400: Nominal refrigeration capacity (RT).
- ⑤ L: 380V~460V/50Hz.
- ⑥ V: Frequency conversion start.
- ⑦ T: Special machine Null: Standard model.

Advantages of Centrifugal Compressor

- Advanced technology of magnetic bearing and permanent magnet motor: Combination of mechanical, electrical, and digital control technology. Levitated rotor, no bearing friction and automatic control.
- Automatic control system: Plug-in and easy setup, flexible software adapts various protocols. Comprehensive monitoring of magnetic bearing, 15000 times per second in both axial and radial direction.
- Variable speed drive: Modulate cooling capacity matching the varying load of the system. Operate much more efficiently at partial loads than standard compressor. Smoother start, lower inrush current, smaller electrical cable size
- Oil free operation: Eliminate the need for oil maintenance. Saving on operation and maintenance cost. Reduced energy losses due to friction, increase heat transfer efficiency on chiller.
- Quiet operation, low vibration levels: Reduced friction of moving parts, minimum vibration levels. Quiet operation at 74dBA or less

The report of the National Quality Supervision and Inspection Center of Compressor Refrigeration Equipment.

合肥通用机电产品检测院有限公司

Hefei General Machinery and Electrical Products Inspection Institute

国家军机相关产品质量监督检验中心

National Quality Supervision and Inspection Center for Core Equipment and Related Products

检测报告

Inspection Report

报 号: 2018KJ030

检验结果 (附后)

Inspection results

共 3 页 Page 3 of 3 pages

检测日期: 2018 年 09 月 27 日

报告日期: 2018 年 09 月 27 日

检测项目 Inspection item	单位 Unit	检测参数 Parameter	标准规定要求 International standard Technical specification	检测结果 Inspection result	备注 Remarks
轴转速	r/min	9913.300	≥10000, 13000	18721.200	合格
前轴平衡品质等级	G	260.000	≤150.000	231.919	合格
轴振动值	mm/s	6.34	≤6.65	8.30	合格

备注 (Remarks):

1. 名义功率 60kW, 型式: 电液式 受试件: 流量 147.980t/h, 出口水温 52℃

2. 轴平衡品质等级: 前轴平衡 3级, 后轴平衡 4级 受试件: 流量 132.932t/h

3. 轴振动值: 前轴振动 0.03mm/s, 后轴振动 0.03mm/s 受试件: 流量 132.932t/h

4. 轴转速: 10000r/min, 前轴转速 10000r/min, 后轴转速 13000r/min 受试件: 流量 132.932t/h

5. 轴转速: 10000r/min, 前轴转速 10000r/min, 后轴转速 13000r/min 受试件: 流量 132.932t/h

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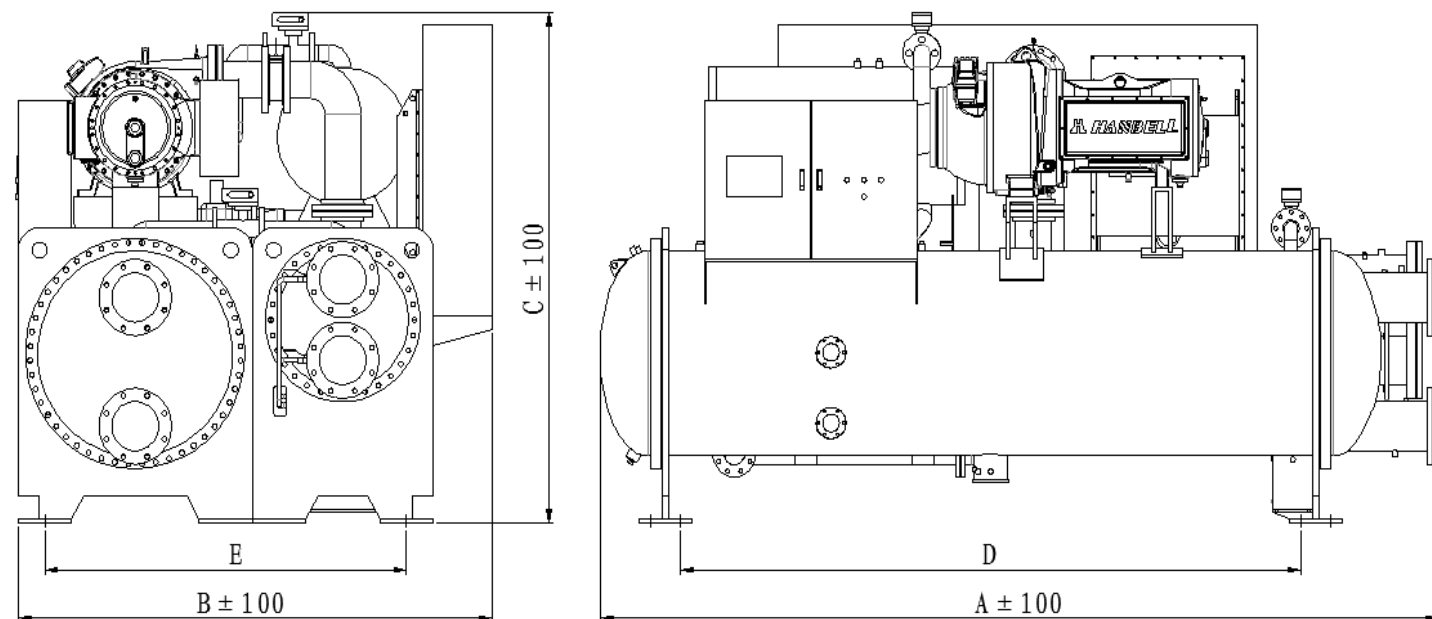
Variable Frequency Magnetic Centrifugal Chiller

KMCM-	Single unit			Double units		
	A400	A450	A500	B800	B900	B1000
Cooling capacity (kW)	1402	1576	1730	2805	3152	3460
Power input (kW)	210	240	270	420	480	540
Full load COP (kW/kW)	6.68	6.56	6.4	6.68	6.57	6.41
kW/RT	0.52	0.53	0.55	0.52	0.53	0.55
IPLV	11.55	13.36	11.13	11.55	11.36	11.12
Condenser						
Water flow (m3/h)	272	305	335	543	610	670
Water pressure drop (kPa)	70	70	70	60	60	60
Water inlet &outlet pipe connection (DN)	250	250	250	300	300	300
Evaporator						
Water flow (m3/h)	217	244	268	435	489	536
Water pressure drop (kPa)	60	60	60	80	80	80
Water inlet &outlet pipe connection (DN)	200	200	200	300	300	300
Dimensions						
A (length), mm	4570	4570	4570	5500	5500	5500
B (height), mm	2400	2400	2400	2680	2680	2680
C (width), mm	2600	2600	2600	2650	2650	2650
Installation Dimensions						
D (mm)	3448	3448	3448	4340	4340	4340
E (mm)	1800	1800	1800	2050	2050	2050
Net weight (kg)	7000	7500	8000	12500	13000	13500
Total weight (kg)	7700	8300	8800	14500	15000	15500
Refrigerant charge (kg)	380	410	450	720	810	900

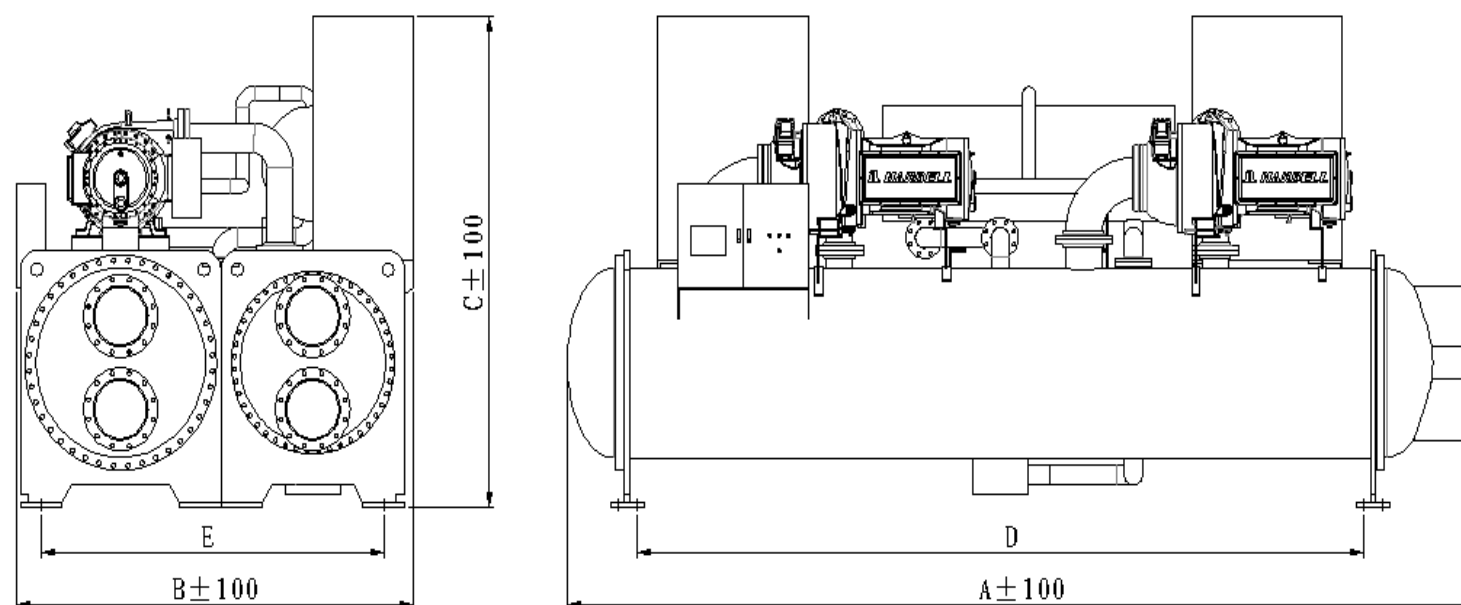
Note:

- ① operation condition (AHRI 550/590-2015).
 - a) Evaporation: Water outlet 6.67°C , water flow: $0.155 \text{ m}^3/(\text{h}\cdot\text{kW})$.
 - b) Condenser: Water inlet 29.44°C , water flow: $0.1938 \text{ m}^3/(\text{h}\cdot\text{kW})$.
- ② The condenser and evaporator connection is by flange.
- ③ Refrigerant: R134a.
- ④ The power supply: Low-voltage unit: $3\phi\text{-}380\text{V}\sim 460\text{V}\text{-}50\text{Hz}$.
- ⑤ The pressure of water side: 1.0Mpa .
- ⑥ Unit conversion: $1\text{RT}=3.517\text{kW}$.

Outline drawing (Single unit)



Outline drawing (Double units)



Outline drawing (Single unit)



Outline drawing (Single unit)

