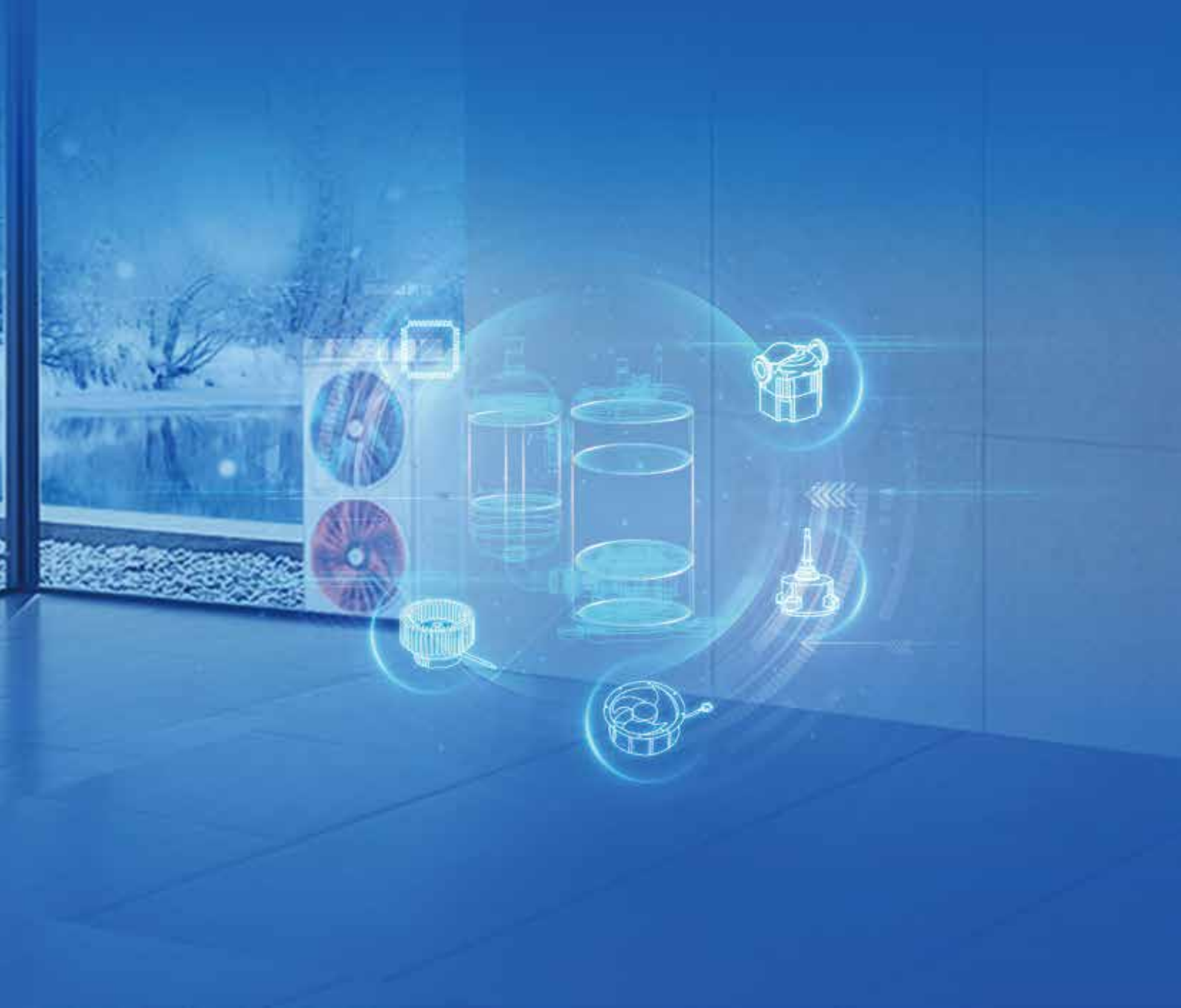
GMCC & Welling

Integrated Core Components Solution Provider for Heat Pumps

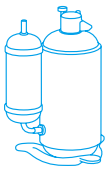
GMCC and Welling are integrated core component solution suppliers for consumer appliances. We design and produce rotary compressor, scroll compressor, electronic expansion valve, motor, fan and circulator water pump for various applications including heat pump space heating, heat pump water heater, heat pump dryer, and swimming pool heat pump. GMCC & Welling aim to provide core components and also package solutions with lower noise, smaller size, higher efficiency, stronger reliability.

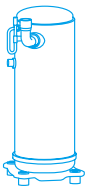


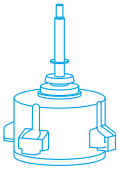
GMCC & Welling

GMCC & Welling are integrated core component solution suppliers for consumer appliances. We have established 11 R&D centers and 14 intelligent factories all over the world. We design and produce rotary compressor, scroll compressor, electronic expansion valve, motor, fan and circulating water pump for various applications including air conditioner, washing machine, refrigerator, heat pump heating, dehumidifier, car refrigerator, dryer, water dispensers, dishwashers, vacuum cleaners, refrigerated cars, RV air conditioners, etc.

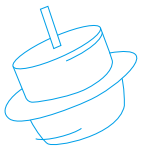
Core Components of Heat Pump

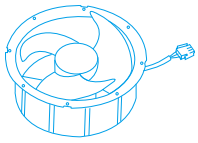

Rotary compressor

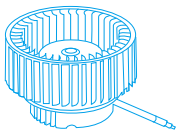

Scroll compressor

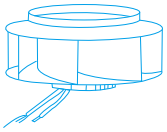

Motor for heat pump space heating

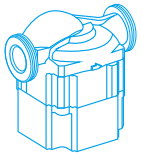

Axial fan for heat pump space heating

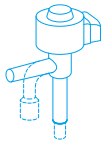

Motor for heat pump water heater


Axial fan for heat pump water heater


Forward-centrifugal fan for heat pump water heater

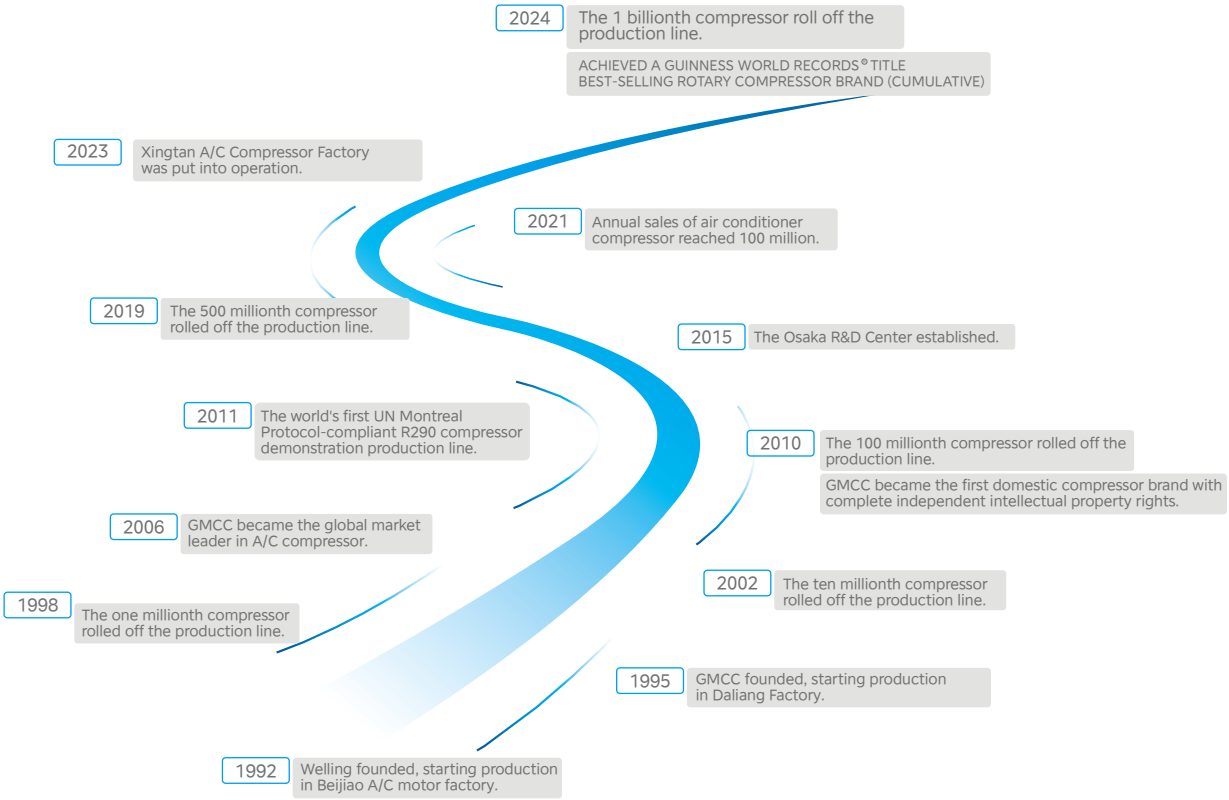

Backward-centrifugal fan for heat pump water heater

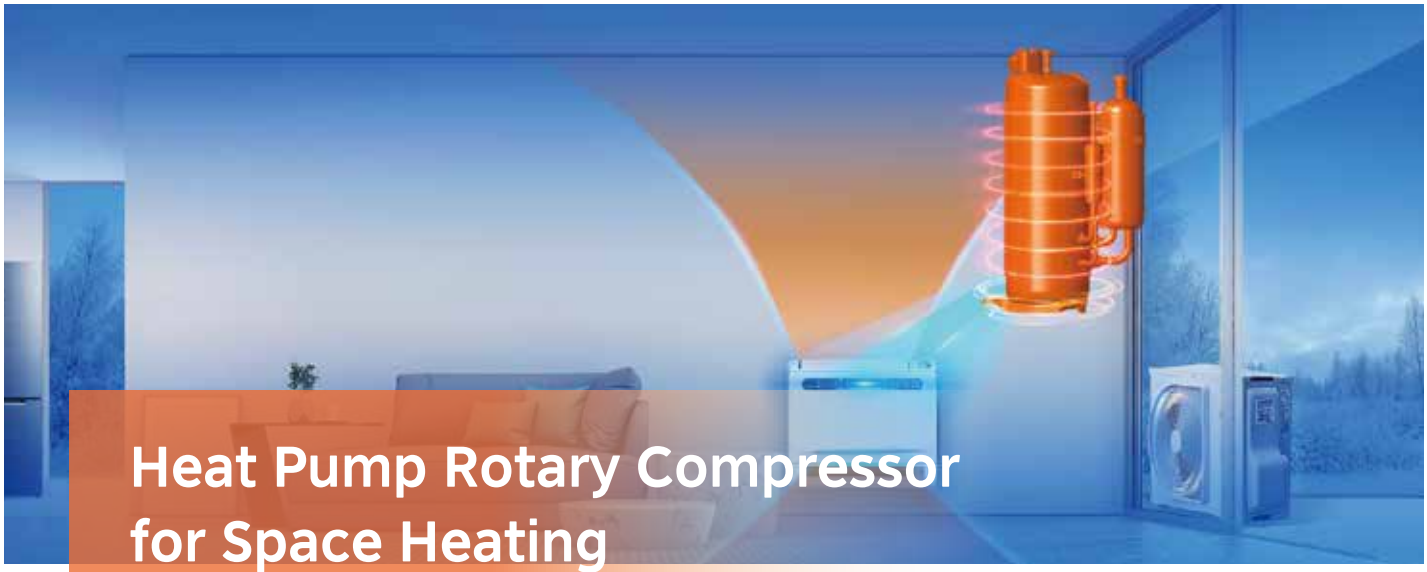

Circulating water pump


Electronic expansion valve


Chip

Development History





Heat Pump Rotary Compressor for Space Heating

Wide operating envelope
Maximum 17 pressure ratio, maximum 83℃ condensing temperature and minimum -35℃ evaporating temperature.

Smaller size design
The smaller size design optimized for R290 provide high efficiency and reliability, helping to reduce refrigerant charge amount.

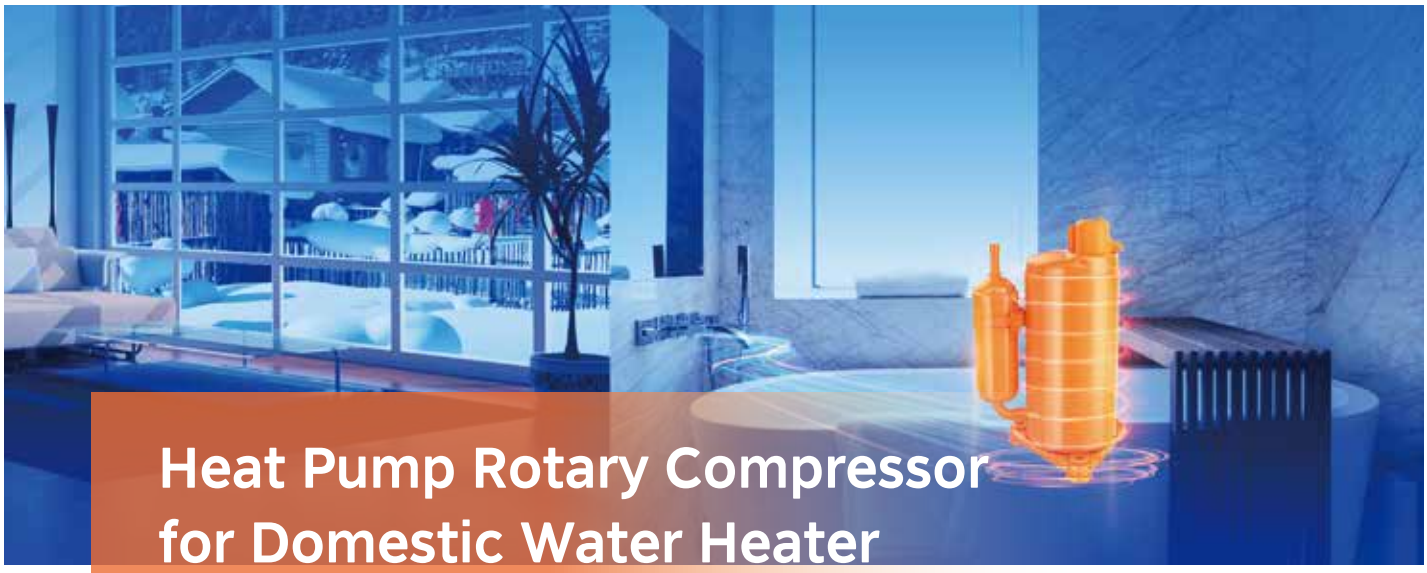
Noise & Vibration optimization
Compressor acoustic optimization design, can provide optimization services for the system pipeline.

Enhanced safety
Specially designed IP54 or IP67 terminal covers to enhance the insulation of electronic connections.

Optional EVI function
The EVI (Enhanced Vapor Injection) function is optional for most of the compressors.

Product Name	Type	Typical Model	Refrigerant	Displ. (cc)	Power Source	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
Rotary Compressor for Heat Pump Space Heating	DC inverter twin-cylinder	EDTN150D32EFZ	R290	15.0	1-phase	3210	652	4.92	SEER 60
		EDTN180D32EFZ	R290	18.0	1-phase	3890	785	4.96	SEER 60
		EDTN210D32EFZ	R290	20.9	1-phase	4500	910	4.95	SEER 60
		EDTM280D85EMT	R290	28.0	1-phase	6230	1265	4.92	SEER 60
		EDTM310D85EMT	R290	30.6	1-phase	6810	1385	4.92	SEER 60
		EDTF420D64EMT	R290	41.5	1-phase,3-phase	9200	1880	4.89	SEER 60
		EDTF420D62EMT	R290	41.5	3-phase	9200	1870	4.92	SEER 60
		EDTF550D64EMT	R290	55.0	1-phase,3-phase	12350	2505	4.92	SEER 60
		EDTF550D62EMT	R290	55.0	3-phase	12350	2505	4.92	SEER 60
		EDTQ580D2ENT	R290	58.0	3-phase	13000	2660	4.89	SEER 60
		EDTQ650D1ENT	R290	65.0	1-phase,3-phase	14900	3080	4.84	SEER 60
		EDTQ650D66ENT	R290	65.0	3-phase	14690	3025	4.86	SEER 60
		EDTQ750D1ENT	R290	75.0	1-phase,3-phase	17200	3555	4.84	SEER 60
		EDTQ750D66ENT	R290	75.0	3-phase	17200	3540	4.86	SEER 60
		EDTQ850D66ENT	R290	85.0	3-phase	19600	4050	4.84	SEER 60
Smaller Size Rotary Compressor for Heat Pump Space Heating	DC inverter twin-cylinder	EDTN180D32EEZ	R290	18.0	1-phase	3890	785	4.96	SEER 60
		EDTN210D32EEZ	R290	20.9	1-phase	4500	910	4.95	SEER 60
		EDTM280D85EFT	R290	28.0	1-phase	6220	1265	4.92	SEER 60
		EDTM310D85EFT	R290	30.6	1-phase	6800	1385	4.91	SEER 60

* SEER60 condition: Te=2.8℃, Tc=42.3℃, Tsh=10K，Tsc=8K，Speed 60rps;



Heat Pump Rotary Compressor for Domestic Water Heater

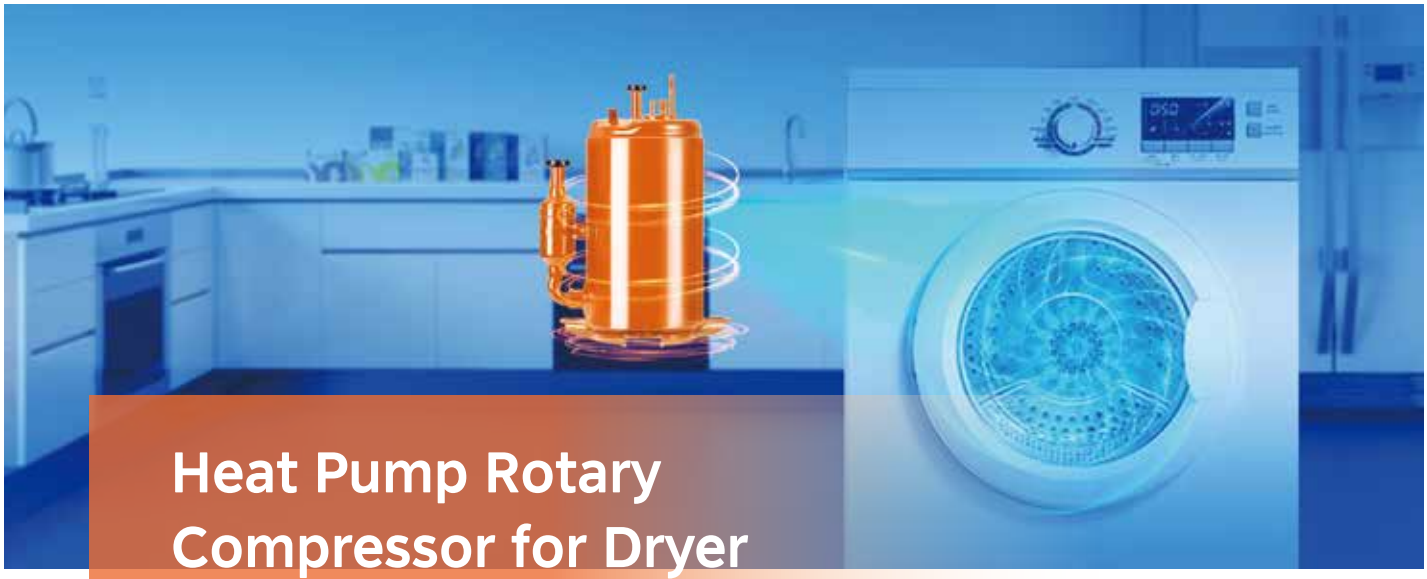
Good performance
Optimized motor and structure desing to enhance performance and acousitc result for DWH system.

High reliability
Long lifetime design and comprehensive reliability evaluation to meet DWH application requirements.

Wide range
Reliable operation under high load conditions in summer and high pressure ratio conditions in winter.

High safety
Small size design to reduce the refrigerant charge and enhance internal insulation for safety improvement.

Product Name	Type	Typical Model	Refrigerant	Displ. (cc)	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
Rotary Compressor for Heat Pump Water Heater	Fixed Speed	RDSK31V11TZH3	R290	3.1	580	162	3.58	ASH
		RDSK46V11TAH3	R290	4.6	915	235	3.89	ASH
		RDSN50V11TZG3	R290	5.0	970	235	4.13	ASH
		RDSN58V11TZL	R290	5.8	1135	285	3.98	ASH
		RDSN58V12TZR3	R290	5.8	1115	268	4.16	ASH
		RDSN89V11TBZ3	R290	8.9	1720	415	4.14	ASH
		RDSN89V12TZZ3	R290	8.9	1700	395	4.30	ASH
		RDSN108V11TBZ	R290	10.8	2150	522	4.12	ASH
		RDSM140V11TDZ	R290	13.9	2693	618	4.36	ASH
		RDSM155V11TKZ	R290	15.5	2953	678	4.36	ASH
		RDSM170V11TKZ	R290	16.9	3250	755	4.30	ASH
		RDSM215V2TDZ	R290	21.5	4165	965	4.32	ASH
		RDSF230V11TKT	R290	23.0	4595	1045	4.40	ASH
	DC inverter one-cylinder	RDSK53D08TAR3	R290	5.3	1140	245	4.65	SEER 60
		RDSK75D35TBZ3	R290	7.5	1645	340	4.84	SEER 60
		RDSK89D35TBZ3	R290	8.9	1920	400	4.80	SEER 60
	DC inverter twin-cylinder	RDTN150D21TEZ31	R290	14.9	3140	650	4.83	SEER 60
		RDTN150D54TEZ3	R290	14.9	3244	645	5.03	SEER 60
		EDTN180D32EFZ	R290	18.0	3890	785	4.96	SEER 60
		EDTN210D32EFZ	R290	20.9	4500	910	4.95	SEER 60



Heat Pump Rotary Compressor for Dryer

High reliability

High reliablity design for HP dryer, covering more than 10 years operation.

Good performance

Optimized motor and structure design to enhance performance and acousitc result for HP dryer system.

Wide operating range

Up to 90°C condensing temperature for R290 HPD compressors.

Full-range product

Full range of product portfolio can cover the new A to E energy efficiency level requirements.

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Product Name	Type	Typical Model	Refrigerant	Displ. (cc)	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
Rotary Compressor for Heat Pump Dryer	DC inverter	RJSK75D06EZE3	R134a	7.5	1710	481	3.56	HPD@60
	DC inverter	RJSK89D21EZ4C	R134a	8.9	2070	585	3.54	HPD@60
	Fixed-speed	RJSN82V3TZE3	R134a	8.2	1450	435	3.33	HPD
	Fixed-speed	RJSN118V1TZEB1	R134a	11.8	2075	678	3.06	HPD
	Fixed-speed	RJSN86V01TZE	R134a	8.6	1555	505	3.08	HPD
	Fixed-speed	RDSK68V11TZR	R290	6.8	1375	432	3.18	HPD
	Fixed-speed	RDSN65V11TZR3	R290	6.5	1342	395	3.40	HPD
	Fixed-speed	RDSN82V11TZE	R290	8.2	1710	510	3.35	HPD
	Fixed-speed	RDSK68V02TZR3	R290	6.8	1355	464	2.92	HPD
	Fixed-speed	RDSN68V01TZE3	R290	6.8	1415	445	3.18	HPD
	Fixed-speed	RDSN58V01TZE3	R290	5.8	1190	386	3.08	HPD
	Fixed-speed	RDSN65V01TZZ	R290	6.5	1338	440	3.04	HPD
	Fixed-speed	RDSN65V01EZRA3	R290	6.5	1338	418	3.20	HPD
	Fixed-speed	RDSN68V02TZE3	R290	6.8	1395	420	3.32	HPD
	Fixed-speed	RDSK57V11EZQ	R290	5.7	1170	375	3.12	HPD
	Fixed-speed	RDSN71V12EZR3	R290	7.1	1460	425	3.44	HPD
	Fixed-speed	RDSN78V11EZE	R290	7.8	1635	495	3.30	HPD
	Fixed-speed	RDSN68N11TZR1	R290	6.8	1760	525	3.35	HPD@60
	DC inverter	RDSK75D35EZD3	R290	7.5	2035	550	3.70	HPD@60
	DC inverter	RDTK82D32EZE3	R290	7.5	2070	588	3.52	HPD@60

* HPD condition: Te=25℃, Tc=70℃, Tsh=10K, Tsc=9K

Heat Pump Scroll Compressor for Space Heating

Wide operating envelope

The achievement of wide operation envelope by applying R290 special lubricating oil, new motor and tail strengthening and discharge valve optimization technology.

High-efficiency operation

The improvement of HP system efficiency under different working conditions by applying asymmetrical spiral line, multi-stage pressure relief static plate and new motor design.

High reliability design

The enhancement of reliability by flexibility moving plate, high strength vortex and shaft, optimized oil management and IP67 terminal cover technology.

Low noise and vibration

The reduction of compressor noise and vibration by reducing components deformation, optimizing dynamic balancing and compressing torque wave, and improving electromagnetic harmonic.

Product Name	Type	Typical Model	Refrigerant	Displ. (cc)	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
Scroll Compressor for Heat Pumps	DC inverter	SEAVC096D33ULK	R410A	96	31400	9660	3.25	ARI-60
	DC inverter	SAVE135D45ULG	R410A	135	44200	13600	3.25	ARI-60
	DC inverter	SEDGA042D**	R290	42	10000	2000	5.00	SEER60
					7320	2200	3.33	Medium temperature HP60
	DC inverter	SEDVC060D**	R290	60	14300	2830	5.05	SEER60
					10500	3100	3.39	Medium temperature HP60
	DC inverter	SEDVC070D**	R290	70	16700	3300	5.06	SEER60
					12200	3600	3.39	Medium temperature HP60
	DC inverter	SEDVC096D**	R290	96	22900	4550	5.03	SEER60
					16700	5060	3.30	Medium temperature HP60
	DC inverter	SEDVE135D**	R290	135	32000	6400	5.00	SEER60
					23500	7120	3.30	Medium temperature HP60

* Medium temperature HP condition: Te=-7℃, Tc=50℃, Ts=-2℃, Speed 60rps

Motor for Heat Pump Space Heating

High efficiency

10P12S, winding factor 0.866→0.933, magnetic flux utilization rate raised by 7.7%.

Compact size

IPM rotor with high magnetic flux, with effective space and material utilization rate increased by 5%.

High reliability

Insulated rotor + dual-conduction corrosion-proof solution, with shaft voltage amplitude reduced by 60%.

Product name	Type	Typical model	DC voltage (V)	Output power (W)	Speed (rpm)	Number of poles	Rated time	Insulation level
Motor for heat pumps	BLDC	ZKSP-34-8-XX	280~380	34	920	8P	Continuous	Class E
Motor for heat pumps	BLDC	ZKSP-100-8-XX	280~380	100	800	8P	Continuous	Class E
Motor for heat pumps	BLDC	ZKSP-170-8-XX	280~380	170	820	8P	Continuous	Class E
Motor for heat pumps	BLDC	ZKSP-200-8-XX	280~380	200	1050	8P	Continuous	Class E
Motor for heat pumps	BLDC	ZKSN-920-10-XL	310~650	920	920	10P	Continuous	Class B
Motor for heat pumps	BLDC	ZKSN-1500-10-X	310~650	1500	830	10P	Continuous	Class B

Axial Fan for Heat Pump Space Heating

Intelligent EC control tech.

EC motor drive and control technology is adopted, and can be combined with PWM and Vsp speed regulation modes, Modbus and other communication modes, to intelligently feed back the operating conditions of fans.

Large torque and high efficiency

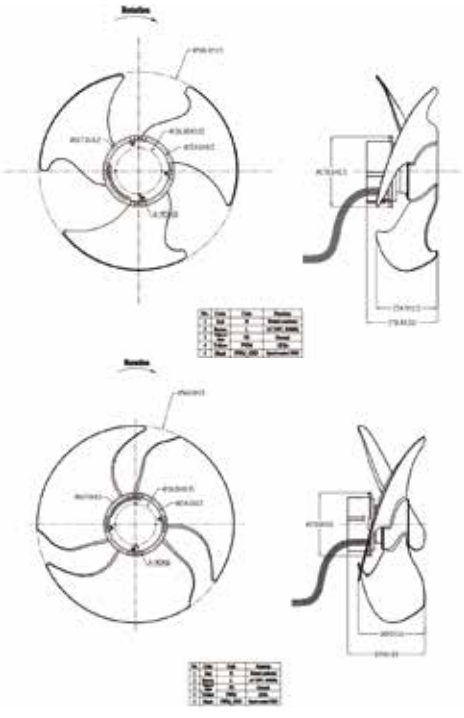
With outer rotor structure design, high-efficiency permanent magnet motor can adapt to client application scenarios; with self-developed fluid solution, the overall efficiency of the system can be improved.

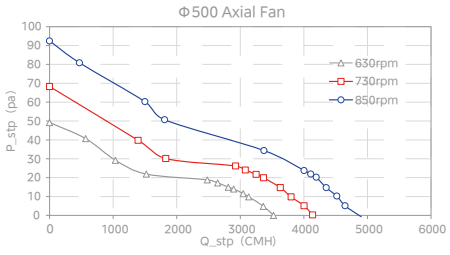
Ultra-silent design

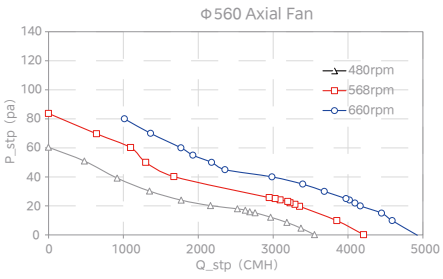
Excellent fluid design solution with silent motor design, to reduce vibration and noise by virtue of integration.

Compact structure and convenient installation and repair

Integrated design of motor, electronic control, impeller, air duct and other structures, to greatly reduce the product size, lower the assembly cost of motor and impeller, and streamline the assembly process.integration.







Product model	Power supply (VAC)	Maximum input power (W)	Speed (rpm)	Impeller diameter (mm)	Maximum air volume (m^3/h)	Maximum static pressure (Pa)	Noise (dB(A))	IP rating
AF500EC-KI-170-10-XX	220-240	170	850	500	4700	91	<56	IP54
AF560EC-KI-200-10-XX	220-240	200	660	560	4800	85	<52	IP54

Motor for Heat Pump Water Heater

87 series motor for heat pump water heater

Resin encapsulation.
Copper winding and aluminium winding.
Installation method: flange plate installation.

95/80 series motor for heat pump water heater

Tensile structure for iron-clad motor.
15~40mm core.
Copper winding and aluminium winding.

Product series	Scope of capacity 5 W 10 W 20 W 30 W 40 W 50 W 60 W 70 W 80 W	Output power range	Power supply	Voltage	Number of poles	Installation method	Control mode
87		25-70	BLDC	140–380	8 10	Flange plate / with rubber ring	Square wave drive, sine wave drive and no drive
95		15-80	AC	100–130/ 200–240	4 6	Horizontal	Main tap/sub-tap /single-speed
80		15-40	AC	100–130/ 200–240	4	Horizontal	Main tap/sub-tap /single-speed

Axial Fan for Heat Pump Water Heater

Large air volume

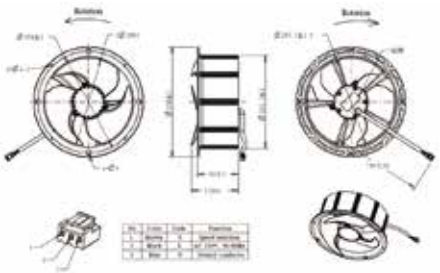
Excellent three-blade axial flow impeller design enables larger air volume output at the same volume.

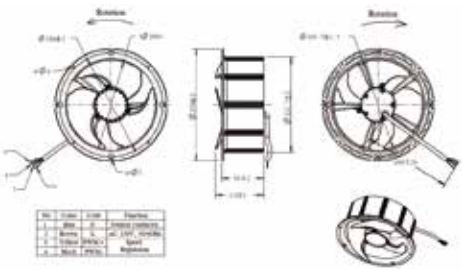
Low noise

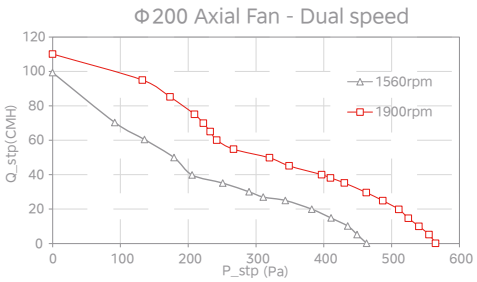
Excellent impeller design and silent motor can reduce noise in twofold sense.

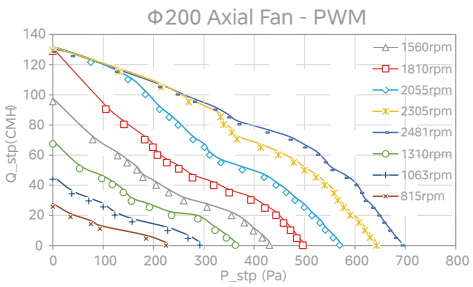
Resistance to static pressure

Fan's resistance to pressure is improved, so relatively obvious stalling area can be eliminated.









Product model	Power supply (VAC)	Maximum Input power (W)	Maximum speed (rpm)	Impeller diameter (mm)	Maximum air volume (m^3/h)	Maximum static pressure (Pa)	Noise (dB(A))	IP rating	Speed control mode
AF200EC-KI-12-10-01	220-240	22 17	1900 1560	200	570 470	110 100	47 43	IP42	Dual speed
AF200EC-KI-12-10-02	220-240	28	2480	200	690	128	56	IP42	PWM

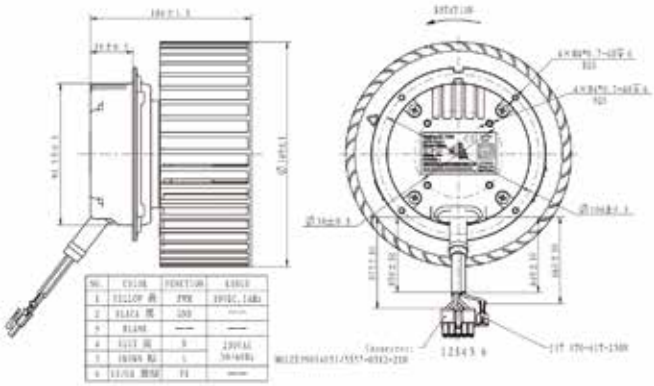
Forward-Centrifugal Fan for Heat Pump Water Heater

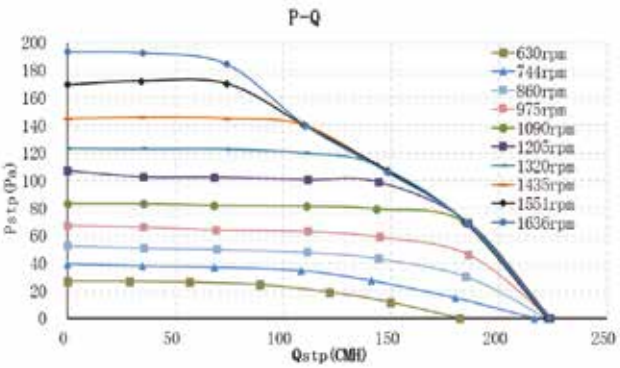
Low noise

Optimized blade shape, to reduce airflow noise. Therefore, with the silent motor, noise can be reduced in twofold sense.

High efficiency

High-efficiency permanent magnet DC outer rotor motor with high-efficiency impeller, to achieve the optimal system efficiency.





Product model	Power supply (VAC)	Maximum Input power (W)	Maximum speed (rpm)	Impeller diameter (mm)	Maximum air volume (m^3/h)	Maximum static pressure (Pa)	Noise (dB(A))	IP rating
FCF149EC-KI-13-10-XX	220-240	13	1636	149	222	190	43	IP44

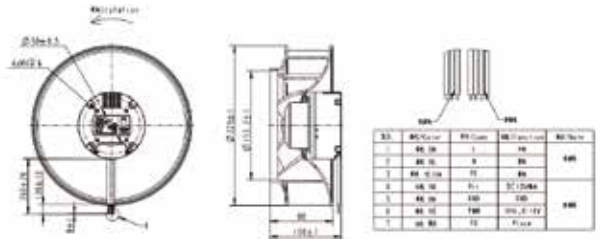
Backward-Centrifugal Fan for Heat Pump Water Heater

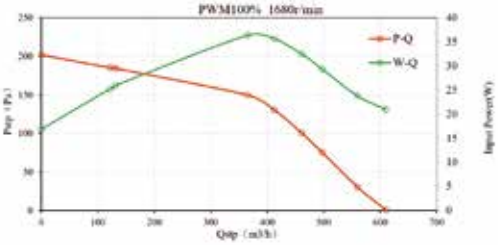
High static pressure

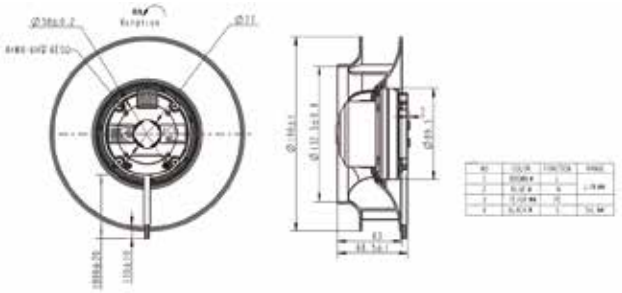
Backward-centrifugal impeller is applicable to the application scenario of long piping and high static pressure.

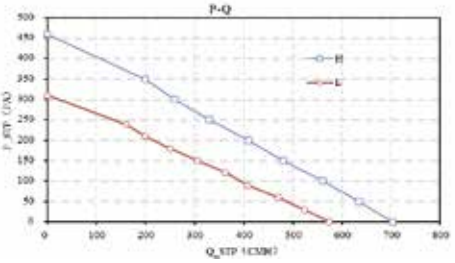
Low noise

Excellent fluid design and motor design, to significantly reduce heat flow noise and electromagnetic noise, bringing the ultimate auditory experience.









Product model	Power supply (VAC)	Maximum Input power (W)	Maximum speed (rpm)	Impeller diameter (mm)	Maximum air volume (m^3/h)	Maximum static pressure (Pa)	Noise (dB(A))	IP rating
BCF225EC-KI-75-10-XX	220-240	36	1680	225	600	200	63	IP54
BCF190EC-KI-60-10-XX	220-240	58 32	2900 2400	190	700 580	460 300	68	IP54

Circulating Water Pump for Heat Pump Space Heating

High reliability

Condensate protection design (BMC stator plastic seal protection)
Anti-jamming and simple-maintenance design (intelligent buffering start & mechanical exhaust port design)

High efficiency

Optimal design for electromagnetic solution (bar stator iron & 12 slots and 8 poles)
Optimal design for hydraulic efficiency (optimal design of impeller shape)

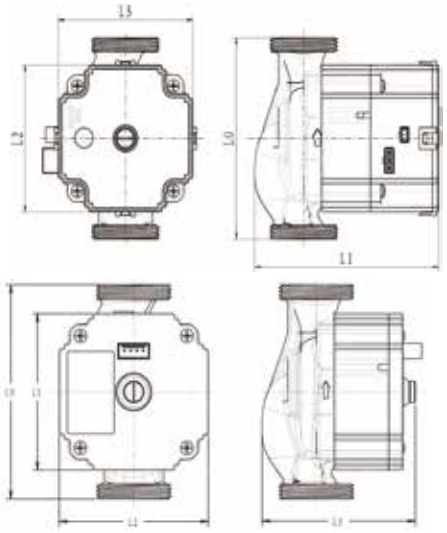
Compact size

Miniaturized structure of electronic control assembly (terminal pairing process & IPM integrated module)
Miniaturized structure of motor (compact plastic seal structure for BMC stator)

Model	TPLDR-25-130-90-66X	TPLDR-20-130-75-66X
Type of electric pump	Centrifugal circulating pump (non-self-priming)	Centrifugal circulating pump (non-self-priming)
Voltage/frequency	AC 230V 50/60Hz	AC230V 50/60Hz
Input power (W)	8~90	8~60
Rotational speed range (RPM)	600~4500	600~4100
Pressure-bearing class	PN 10	PN 10
IP rating	IP44	IP44
Ambient temperature	-25℃ ~ +53℃	-25℃ ~ +53℃
Medium temperature	-20℃ ~ +95℃	-20℃ ~ +95℃
Insulation class	Class F	Class F
Maximum lift (m)	9	7.5
Maximum flow (m^3/h)	4.5	2.1
Controller	With/without electronic control	With/without electronic control

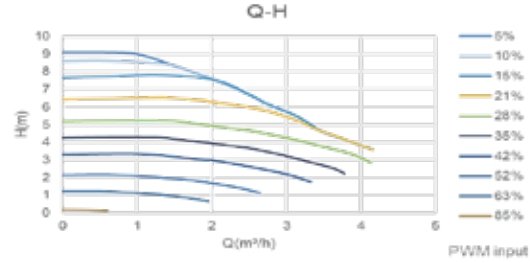
Circulating Water Pump for Heat Pump Space Heating

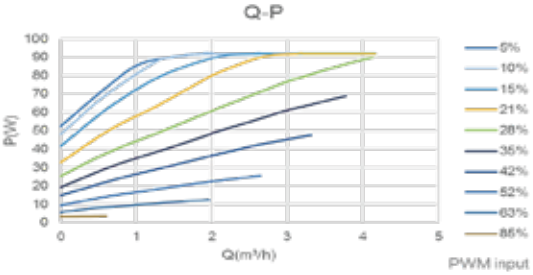
Product installation dimensions



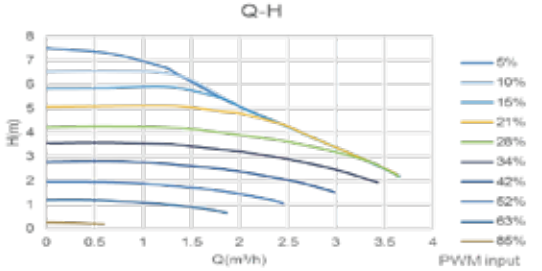
Parameter	Specification description	Specification description
Product model	Universal solution with electronic control	Solution without electronic control
Adaptive pipe diameter	DN25/DN20	DN25/DN20
Inlet/outlet Thread	G1.5/G1.0	G1.5/G1.0
L0 (mm)	130	130
L1 (mm)	130	95
L2 (mm)	95	95
L3 (mm)	95	98

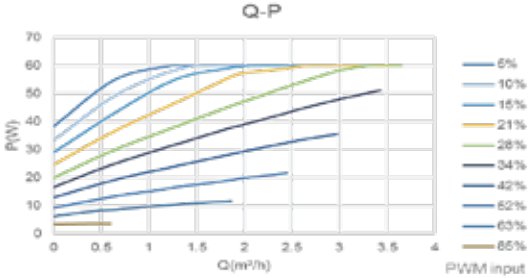
Product performance curve (9m with electronic control)





Product performance curve (7.5m with electronic control)





Test Conditions

Condition	SEER60	ASH	ARI	HPD	Medium Temp. HP
Condensing Temp. °C	43.2	54.4	54.5	70	50
Evaporating Temp. °C	2.8	7.2	7.2	25	-7
Suction Temp. °C	12.8	35	18.3	35	-2
Liquid Temp. °C	34.3	46.1	46.1	61	41.7
Ambient Temp. °C	35	35	35	35	35
Compressor Cooling	Natural Air	Natural Air	Natural Air	Natural Air	Natural Air

SEER60: Inverter operated at 60rps; Input power includes the inverter power.

Contact us

GMCC

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