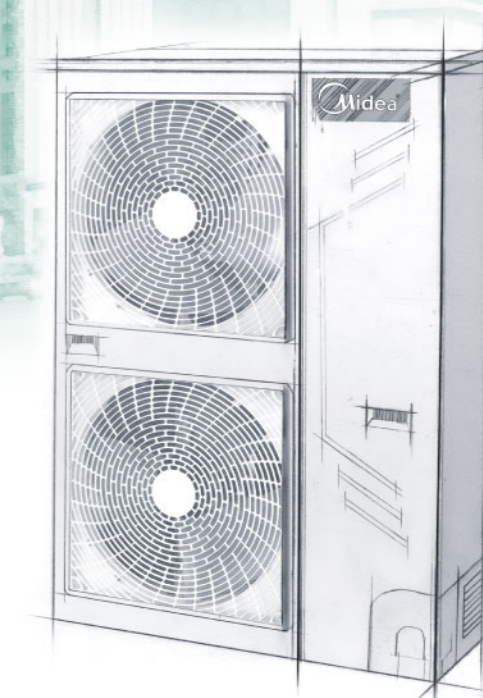




COMMERCIAL AIR CONDITIONERS

Mini Spilt Chiller & Mini Unitary Chiller 50Hz

2012



GD Midea Refrigeration Equipment Co., Ltd.
Have received ISO 9001 certification for quality assurance.
Certificate Registration
NO.01 100 019209



GD Midea Refrigeration Equipment Co., Ltd.
Have received environmental management system
Standard ISO 14001 certification
Certificate NO.CC 1417

Commercial Air Conditioner Business Units Midea Air Conditioning and Refrigeration Sector

Add: West region of Midea commercial air conditioner department, Industry Avenue,
Beijiao, Shunde, Foshan, Guangdong, P.R. China Postal code:528311
Tel: +86-757-22394101 Fax: +86-757-26338003
<http://www.midea.com> <http://www.mideaaircon.com>

Note: The data in this book may be changed without notice for further improvement on quality and performance.

Corporate Introduction

Midea Group

From its humble beginnings in 1968, Midea has developed into a large corporation, covering HVAC, appliances, lighting, industrial components, logistics, and real estate. Its 40 years of relentless growth has brought its global turnover to \$14 billion USD in 2009. Consequently, Midea has created over 150,000 jobs both within China and all over the world. In addition to providing affordable goods to consumers worldwide, Midea is a responsible corporate citizen, and has contributed to several social causes.

Midea believes in creating value through rapid response to market demands, cost-efficient operations and consumer satisfaction. As a result, Midea wields vast production capacities to meet these demands, a fully integrated manufacturing process, and a comprehensive range of affordable, high-quality products to serve its global customers.

Today, Midea is a home appliance leader in China. The company continues to actively globalize its operation by opening plants in Vietnam, Belarus and Egypt. Additionally, Midea has several forthcoming plants in order to offer enhanced products and services closer to the market.



Midea CAC (MCAC)

As a key part of Midea Group, the Midea Central Air Conditioner (CAC) Business Unit is a professional CAC products supplier and commercial products solution expert. Since 1999 Midea central air-conditioner contributes to the commercial product R&D and technology innovation. By cooperating with the international enterprises plus the independent R&D, Midea CAC achieves big success in the commercial air-conditioner market and has established thousands of sample projects all over the world.

Right now Midea CAC is one of the most professional CAC products supplier as well as the professional project solution provider in marketing, sales, project design and after service etc.

MCAC Chongqing factory with 9 product lines concentrates on the water cooled centrifugal / screw/ scroll chillers, Air cooled screw/ scroll chiller and AHU/FCU products.

MCAC Shunde factory with 31 product lines concentrates on the VRF (DC inverter product/ Digital scroll product), split product, heat pump water heater, AHU/FCU etc.



Product general introduction

Midea Mini chiller series is air-cooled water heat pump chiller, no need cooling water tower at the condensing side, easy for installation. The units can freely combined with indoor fan coil units, additionally combined with indoor top level decoration, this bring you to enjoy the nobility coming from central air conditioner.

Midea Mini chiller series include unitary type (built-in water pump and expansion tank) and spilt type, and the capacity of full range product is from 5kW to 16kW.

Improved the features such as high efficiency, low noise, compactness ,safety running, easy maintenance etc.,They are widely applied in small business office building, apartments, villas, as well as restaurant and the similar places.

Contents

▶05 **Nomenclature**

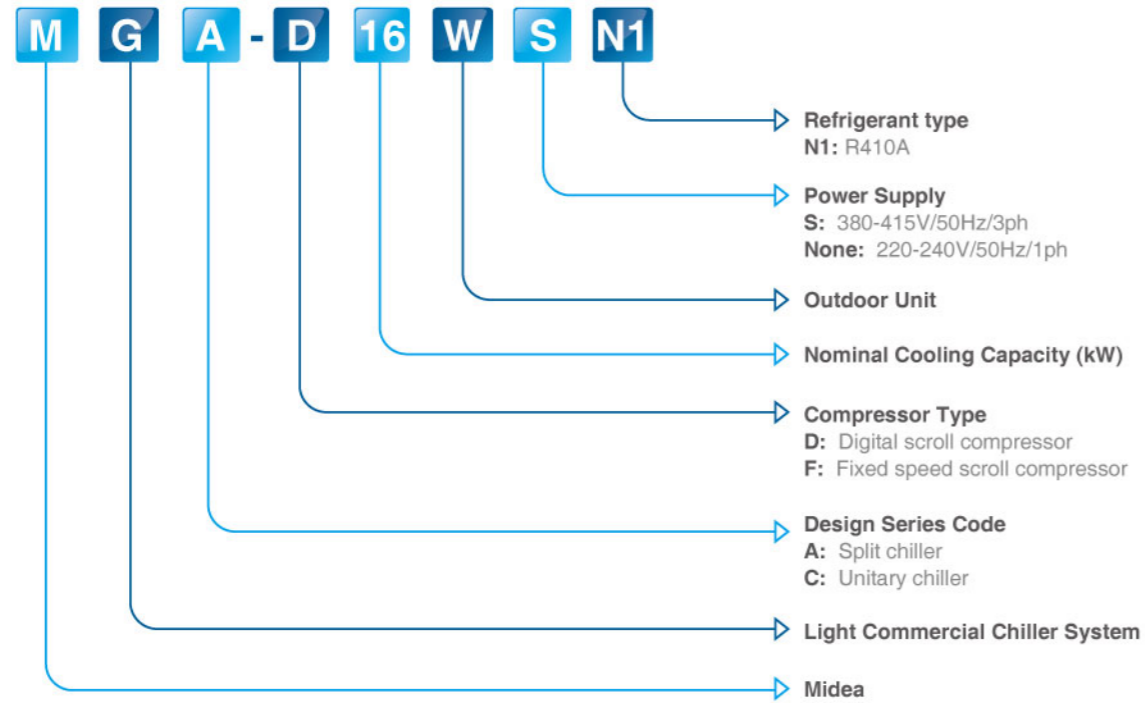
▶06 **Product lineup**

▶07 **Mini spilt chiller**

▶27 **Mini unitary chiller**



Nomenclature



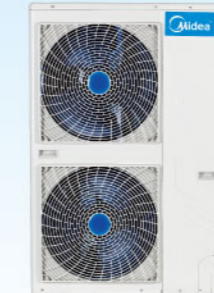
Product lineup

Split type

(Digital scroll compressor adopted)



10.5kW



12/14/16kW



Water Pump BOX

Model	Power supply	Compressor type	Refrigerant	Heat exchanger	A/C mode	Water pump
MGA-D10/N1	220~240 V 1Ph 50Hz	Digital scroll	R410A	Plate type	Heat pump	SBX/N1-01
MGA-D12/N1	220~240 V 1Ph 50Hz	Digital scroll	R410A	Plate type	Heat pump	SBX/N1-01A
MGA-D14/N1	380~415 V 3Ph 50Hz	Digital scroll	R410A	Plate type	Heat pump	SBX/SN1-01
MGA-D16/N1	380~415 V 3Ph 50Hz	Digital scroll	R410A	Plate type	Heat pump	SBX/SN1-01A



Unitary type

(Hydraulic module integrated)



5/7.2kW



10.5kW



12/14/16kW

Model	Power supply	Compressor type	Refrigerant	Heat exchanger	A/C mode	Water pump
MGC-F05W/N1	220~240 V 1Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F07W/N1	220~240 V 1Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F10W/N1	220~240 V 1Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F10W/SN1	380~415 V 3Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F12W/SN1	380~415 V 3Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F14W/SN1	380~415 V 3Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in
MGC-F16W/SN1	380~415 V 3Ph 50Hz	Fixed scroll	R410A	Plate type	Heat pump	Built-in

Mini spilt chiller →



Mini spilt chiller

- Product description
- Features and benefits
- Description of main components
- Specification
- Operation limits
- Hydraulic performance
- Dimension
- Service space
- Piping diagram
- Capacity tables
- Pipe connection information
- Hydraulic connections
- Wiring specifications
- Accessories

Product description

Midea mini split chiller is air cooled reverse-cycle chiller with axial-flow fans operate with refrigerant fluid, they are suitable for outdoor installation, the units conform to the essential requisites of 2004/108/EC. The units is international popular split design, the pump box is split from the outdoor units ,which can be installed inside the room or outside, the installation is very convenient and simple.


Features and benefits

R410a environment friendly refrigerant, no harm to ozone layer.

ODP=0


R410A


No harm to ozone layer



HGWP=0.28

Greenhouse effect is small





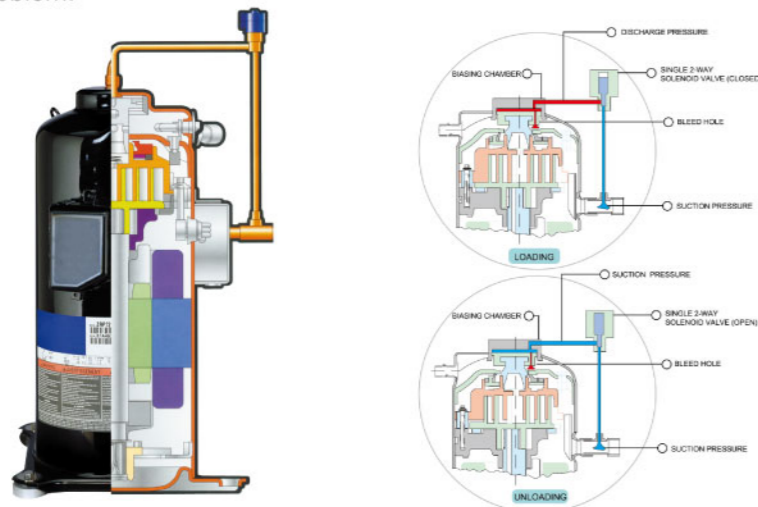
Air-cooled system, no need cooling water tower, packaged design, easy for installation

All the components and accessories of the mini chiller (evaporator, compressor, air-cooled condenser, expansion device and hydraulic module, such as expansion tank, water pump, water flow switch and so on) have been manufactured, assembled and tested as a completed package within the factory. These packaged systems can reduce field labor, speed installation and improve reliability.

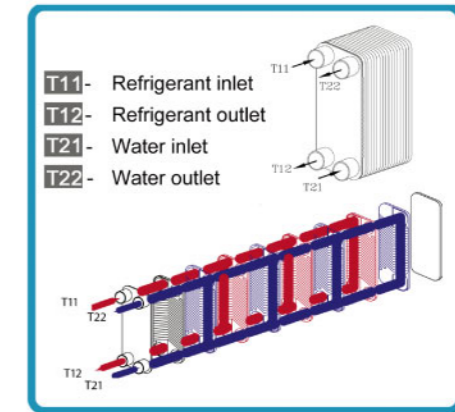


Energy saving and high reliability

By adopting Copeland digital scroll compressor, the capacity can be stepless adjusted and the chiller can bring you more comfortable living conditions with less energy consumption. The system has no EMC problem.

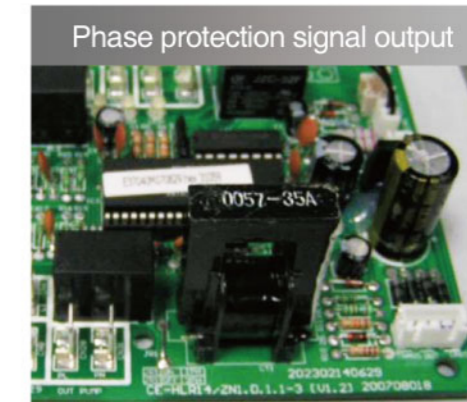
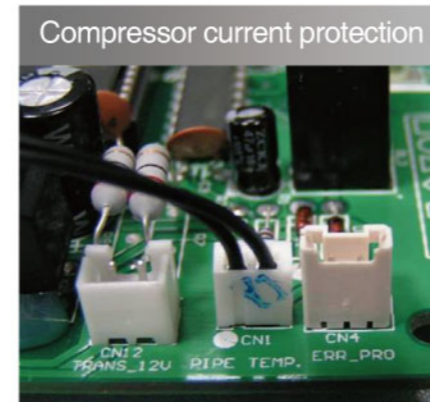


By adopting high efficiency plate heat exchanger, the energy consumption can be reduced.



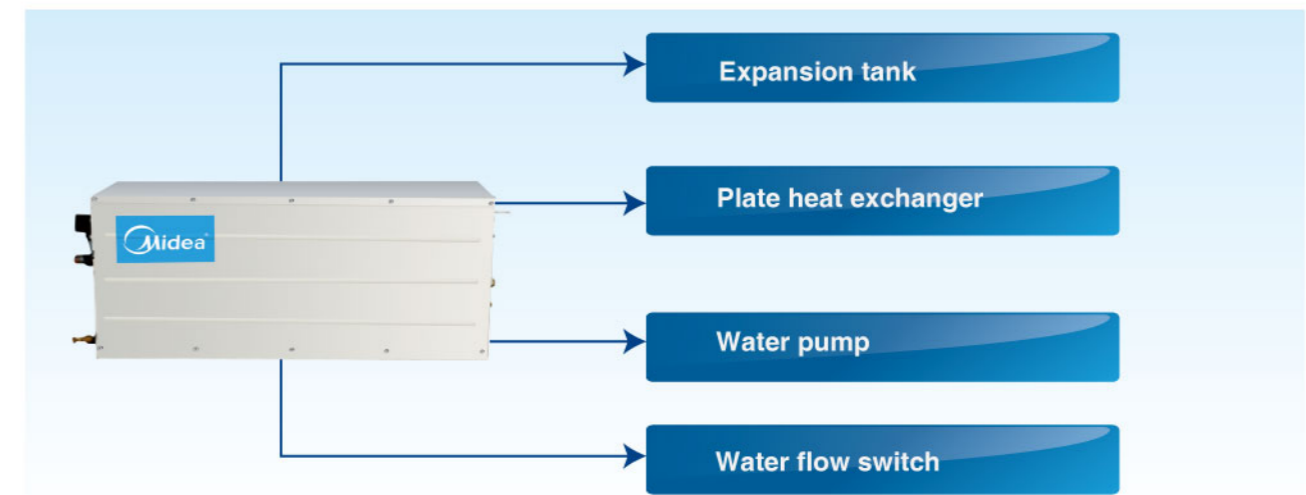
Metallic protective cabinet with rustproof polyester paint.

Built-in with voltage protection, current protection, anti-freezing protection, differential water flow protection, compressor, water pump and fan motor overload protection and etc., effectively guarantee the system to work safety.



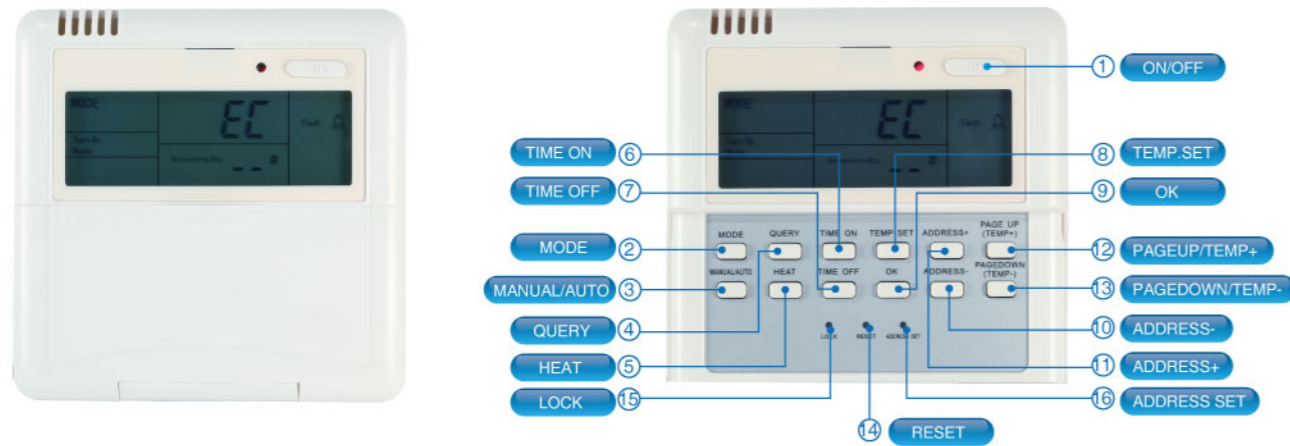
Convenient and simple installation

With international popular split design, the pump box can be installed inside the matched room and its outdoor unit is compact and light.



Flexible and convenient control

- Adopt wired controller KJR-08B/BE with the auto-restart functions of adjusting outlet water temperature and power failure memory, etc..



Reserved control port for electrical heater

Signal output: 230V/50Hz/3PH.
Electrical heater needs power supply separately.

Emergency switch

Stop the chiller directly by the switch in any urgent case.

Description of main components

Structure

Panels and base are made from galvanized steel plate painted with epoxy powder to ensure total resistance to atmospheric pollution, condensate collection pan as standard.

Compressor

Midea mini split chiller are equipped with Copeland brand high efficiency, reliable and silence digital scroll compressor, the capacity can be stepless adjusted and the chiller can bring you more comfortable living condition with less energy consumption; The system has no EMC problem.

Air cooled condenser

Coils

The coils are made from high performance and seamless copper tube and high surface area aluminium fins to ensure optimum heat exchange capability. Condenser coil protection grill as standard.

Low noise fan and fan motor

To achieve high efficiency heat exchange, the units is equipped with the high performance axial-flow fans. The fan is direct driven by weather proof motor to ensure reliable operation, the fan motor is six -pole electric motor with built-in thermal cut-out.

Evaporator (in the water pump box)

The heat exchanger is made of AISI 316 stainless steel high efficiency plate heat exchanger to ensure high heat exchange efficiency, complete with electric heater and differential pressure switch. The complete heat exchanger is insulated with thermal insulation closed cell rubber foam to give optimum thermal insulation.

Water pump box

The mini split chiller water pump box are fully integrated and equipped with key hydraulic components such as expansion tank, water flow switch, plate type heat-exchanger, water circulating pump.

Refrigerant circuit

The refrigerant circuit is factory brazed and evacuated before accurately charged with R410A to ensure optimum operating requirement. To ensure flawless continuous operation, each refrigerant circuit is equipped with a carefully sized capillary tube.

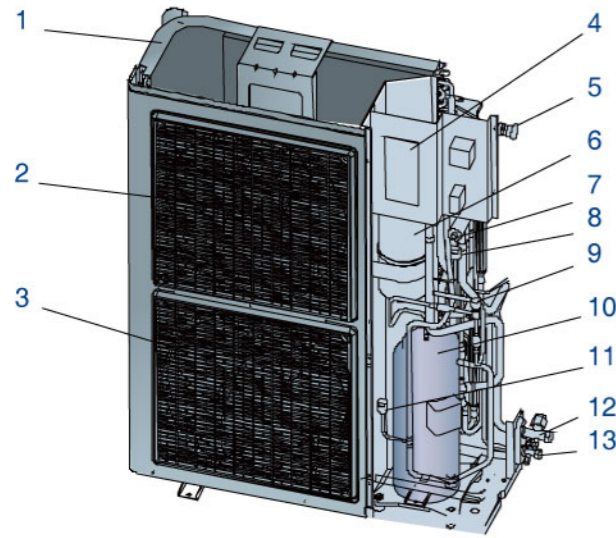
Power and control electrical panel

Power and control electrical panel constructed in accordance with IEC 204-1/EN60335-2-40, complete with compressor contactor, control via "HSW7" control panel.



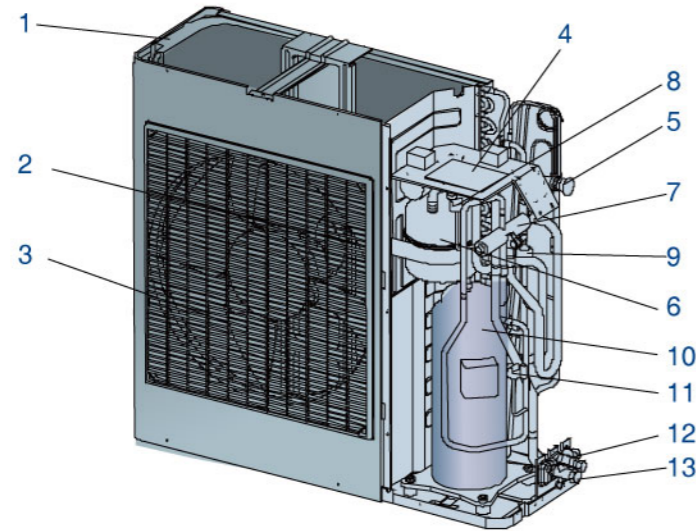
Outdoor unit

Model 12, 14, 16kW



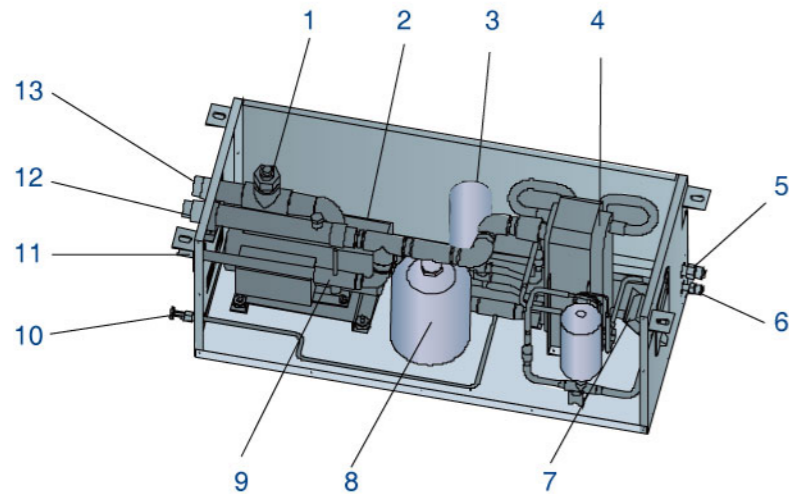
- 1 Condenser
- 2 Motor
- 3 Axial-flow fan
- 4 Electrical panel
- 5 Emergency stop pushbuttons
- 6 Liquid receiver
- 7 4-way valve
- 8 Low pressure switch
- 9 Solenoid valve
- 10 Compressor
- 11 High pressure switch
- 12 Gas side
- 13 Liquid side

Model 10.5kW



- 1 Condenser
- 2 Motor
- 3 Axial-flow fan
- 4 Electrical panel
- 5 Emergency stop pushbuttons
- 6 Accumulator
- 7 4-way valve
- 8 Low pressure switch
- 9 Solenoid valve
- 10 Compressor
- 11 High pressure switch
- 12 Liquid side
- 13 Gas side

Water pump container



- 1 Flow switch
- 2 Pump
- 3 Liquid receiver
- 4 Plate heat exchanger
- 5 Gas side
- 6 Liquid side
- 7 Electrical panel
- 8 Expansion tank
- 9 Auto-water replenishing
- 10 Water discharge
- 11 Auto-water pipe
- 12 Water inlet
- 13 Water outlet

Specification

Model			MGA-D10/N1	MGA-D12/N1	
Power supply		V-Ph-Hz	220-240, 1, 50	220-240, 1, 50	
Cooling	Capacity	kW	10.5	12	
	Input	W	3912	3978	
Heating	Capacity	kW	13	14	
	Input	W	4216	4260	
Max. input consumption		W	6150	6200	
Max. input current		A	29.2	29.4	
Refrigerant	Refrigerant Type		R410A	R410A	
	Refrigerant Charged volume		g	2700	3600
Throttle Type			Capillary	Capillary	
Outdoor units	Compressor	Type	Digital Scroll	Digital Scroll	
		Brand	Copeland	Copeland	
		Number of Compressor	1	1	
		Thermal protector	Inner	Inner	
		Refrigerant oil	ml	POE OIL, 1892	POE OIL, 1892
	Condenser fan motor	Type	AC motor	AC motor	
		Brand	Welling	Welling	
		Number of fan	1	1	
		Input (Hi/Lo)	W	307/194	185/120(x2)
		Speed (Hi/Lo)	r/min	740/530	860/610
	Max. air flow	m³/h	4500	5800	
	Condenser coil	Number of rows	2	2	
		Fin type	Hydrophilic aluminium	Hydrophilic aluminium	
		Tube outside dia. and type	mm	Φ9.53	Φ9.53
				inner grooved tube	inner grooved tube
Number of circuits	4	7			
Other information	Throttle Type		Capillary	Capillary	
	Noise level (sound pressure)	dB(A)	57	60	
	Dimension (WxHxD)	mm	990x966x340	940x1250x340	
	Packing (WxHxD)	mm	1120x1100x440	1058x1380x435	
	Net/ Gross weight	kg	109/115	122/128	
	Model		CE-SBX/N1-01	CE-SBX/N1-01A	
Water pump	Input	W	420	420	
	Pumping head	m	22	20	
Expansion tank	volume	L	3	3	
Heat exchange	Type		Plate	Plate	
	Rated water flow	m³/h	1.80	2.06	
Water flow switch			standard	standard	
	Other information				
Hydraulic module	Minimum water flow	m³/h	0.9	1.03	
	The max. and min. water inlet pressure	bar	5.0/0.5	5.0/0.5	
	Noise level (sound pressure)	dB(A)	38.4	38.9	
	Dimension (WxHxD)	mm	905x370x366	905x370x366	
	Packing (WxHxD)	mm	1057x439x436	1057x439x436	
		kg	52/57	54/59	
	Net/ Gross weight	mm	Φ9.5	Φ9.5	
Refrigerant pipe diameter	mm	Φ19	Φ19		
Pipe diameter	mm	DN32	DN32		
Control	Water inlet/outlet		Wired controller KJR-08B/BE(standard)		
Ambient temperature	°C	Cooling: 10°C~43°C	Cooling: 10°C~43°C		
		Heating: -15°C~24°C	Heating: -15°C~24°C		

Nominal capacity is based on the following conditions:

- Cooling: outdoor ambient temperature 35°C, inlet/outlet water temperature 12/7°C.
- Heating: outdoor ambient temperature 7°C 85% R.H; inlet/outlet water temperature 40/45°C.
- 1m away in open field(sound pressure).

Model			MGA-D14/N1	MGA-D16/N1	
Power supply		V-Ph-Hz	380-415, 3, 50	380-415, 3, 50	
Cooling	Capacity	kW	14	16	
	Input	W	4453	4904	
Heating	Capacity	kW	16	17	
	Input	W	4828	4943	
Max. input consumption		W	6400	6600	
Max. input current		A	12.4	12.5	
Refrigerant	Refrigerant Type		R410A	R410A	
	Refrigerant Charged volume	g	4100	4400	
Throttle Type			Capillary	Capillary	
Outdoor units	Compressor	Type	Digital Scroll	Digital Scroll	
		Brand	Copeland	Copeland	
		Number of Compressor	1	1	
		Thermal protector	Inner	Inner	
		Refrigerant oil	ml	POE OIL, 1892	POE OIL, 1892
	Condenser fan motor	Type		AC motor	AC motor
		Brand		Welling	Welling
		Number of fan		2	2
		Input (Hi/Lo)	W	185/120(x2)	185/120(x2)
		Speed (Hi/Lo)	r/min	860/610	860/610
	Condenser coil	Max. air flow	m³/h	5600	5600
		Number of rows		3	3
		Fin type		Hydrophilic aluminium	Hydrophilic aluminium
		Tube outside dia. and type	mm	Φ9.53 inner grooved tube	Φ9.53 inner grooved tube
	Other information	Number of circuits		12	8
		Noise level (sound pressure)	dB(A)	60	60
		Dimension (WxHxD)	mm	940x1250x340	940x1250x340
		Packing (WxHxD)	mm	1058x1380x435	1058x1380x435
	Net/ Gross weight	kg	123/130	126/133	
	Model			CE-SBX/SN1-01	CE-SBX/SN1-01A
Water pump	Input	W	420	420	
	Pumping head	m	18	17	
Expansion tank	volume	L	3	3	
Heat exchange	Type		Plate	Plate	
	Rated water flow	m³/h	2.4	2.58	
Water flow switch	Model		standard	standard	
Hydraulic module	Other information	Minimum water flow	m³/h	1.2	1.29
		The max. and min. water inlet pressure	bar	5.0/0.5	5.0/0.5
		pressure	dB(A)	41.2	37.8
	Other information	Noise level (sound pressure)	mm	905x370x366	905x370x366
		Dimension (WxHxD)	mm	1057x439x436	1057x439x436
		Packing (WxHxD)	kg	54/59	55/60
Refrigerant pipe diameter	Net/ Gross weight	mm	Φ9.5	Φ9.5	
Pipe diameter	Liquid side	mm	Φ19	Φ19	
	Gas side	mm	DN32	DN32	
Control	Water inlet/outlet		Wired controller KJR-08B/BE(standard)		
Ambient temperature	°C	Cooling	10°C~43°C	Cooling	10°C~43°C
		Heating	-15°C~24°C	Heating	-15°C~24°C

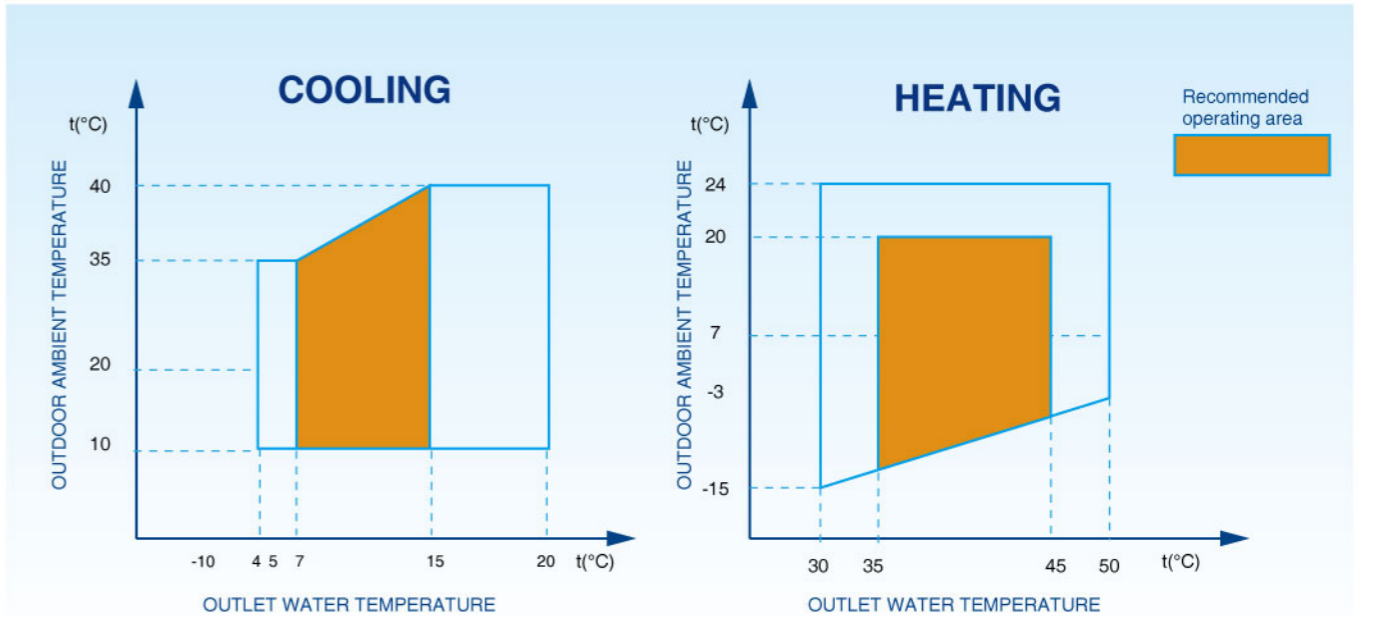
Nominal capacity is based on the following conditions:

1. Cooling: outdoor ambient temperature 35°C, inlet/outlet water temperature 12/7°C.
2. Heating: outdoor ambient temperature 7°C 85% R.H; inlet/outlet water temperature 40/45°C.
3. 1m away in open field(sound pressure).

Operation limits

Cooling and heating operation temperature range

Cooling operation	Outdoor ambient temperature: 10°C~43°C
	Outlet water temperature: 4°C-20°C
Heating operation	Outdoor ambient temperature: 4°C~24°C (-15°C~24°C, when charge enough antifreeze)
	Outlet water temperature: 30°C-50°C



Ethylene glycol solutions

Water and ethylene glycol solutions used as a thermal vector in the place of water reduce the performance of the unit. Multiply the performance figures by the values given in the following table.

	Freezing point (°C)					
	0	-5	-10	-15	-20	-25
	Percentage of ethylene glycol in weight					
	0	12%	20%	28%	35%	40%
cPf	1	0.98	0.97	0.965	0.96	0.955
cQ	1	1.02	1.04	1.075	1.11	1.14
cdp	1	1.07	1.11	1.18	1.22	1.24

cPf: correction factor refrigerating capacity.

cQ: correction factor flow rate.

cdp: correction factor pressure drop.

Notes:

1. During winter leaving the unit unused, please drain water out completely from unit if no antifreeze were charged into pipeline, or keep power on (at standby or off status) and ensure that water is contained inside of unit.
2. When ambient temperature is lower than 5°C, running cooling mode must be charged antifreeze. Refer to upper parameters for the charged volume.

Fouling factors

The performance data given refer to conditions with clean evaporator plates (fouling factor=1). For different fouling factors, multiply the figures in the performance tables by the coefficient given in the following table.

Fouling factors (m ² °C/W)	Evaporator		
	f1	fk1	fx1
4.4×10 ⁻⁵	-	-	-
0.86×10 ⁻⁴	0.96	0.99	0.99
1.72×10 ⁻⁴	0.93	0.98	0.98

f1: capacity correction factor
 fk1: compressor power input correction factor
 fx1: total power input correction factor

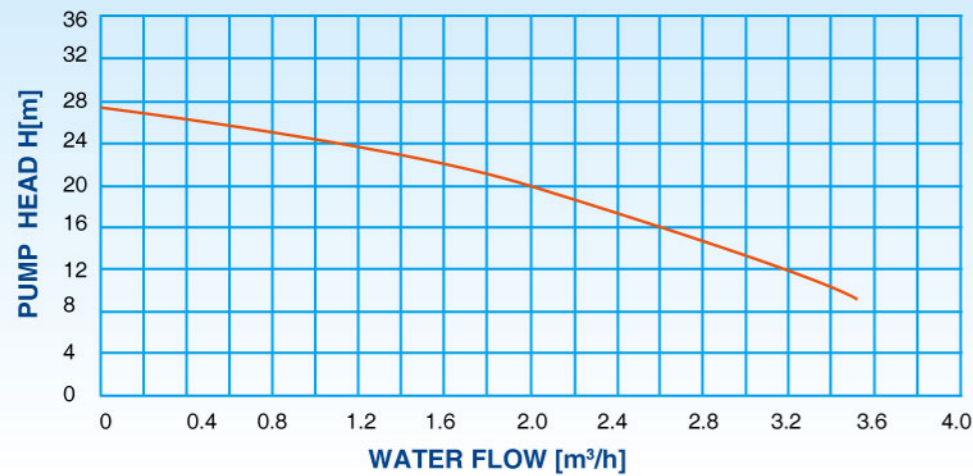
Water volume for installation

Model	MGA-D10/N1	MGA-D12/N1	MGA-D14/SN1	MGA-D16/SN1
Minimum water volume (L)	43	50	60	68

If the total water volume in the system is less than the value in the table above, the additional water tank is necessary in order to avoid the compressor On/Off frequency.
 The minimum size of the water tank is calculated as: size of additional water tank(L)=Minimum water volume (L) –Actual water volume(L)

Hydraulic performance

Pump head curves(*)



Note:
 (*) To obtain the useful head for installation, subtract the pressure drop of the plate heat exchanger.

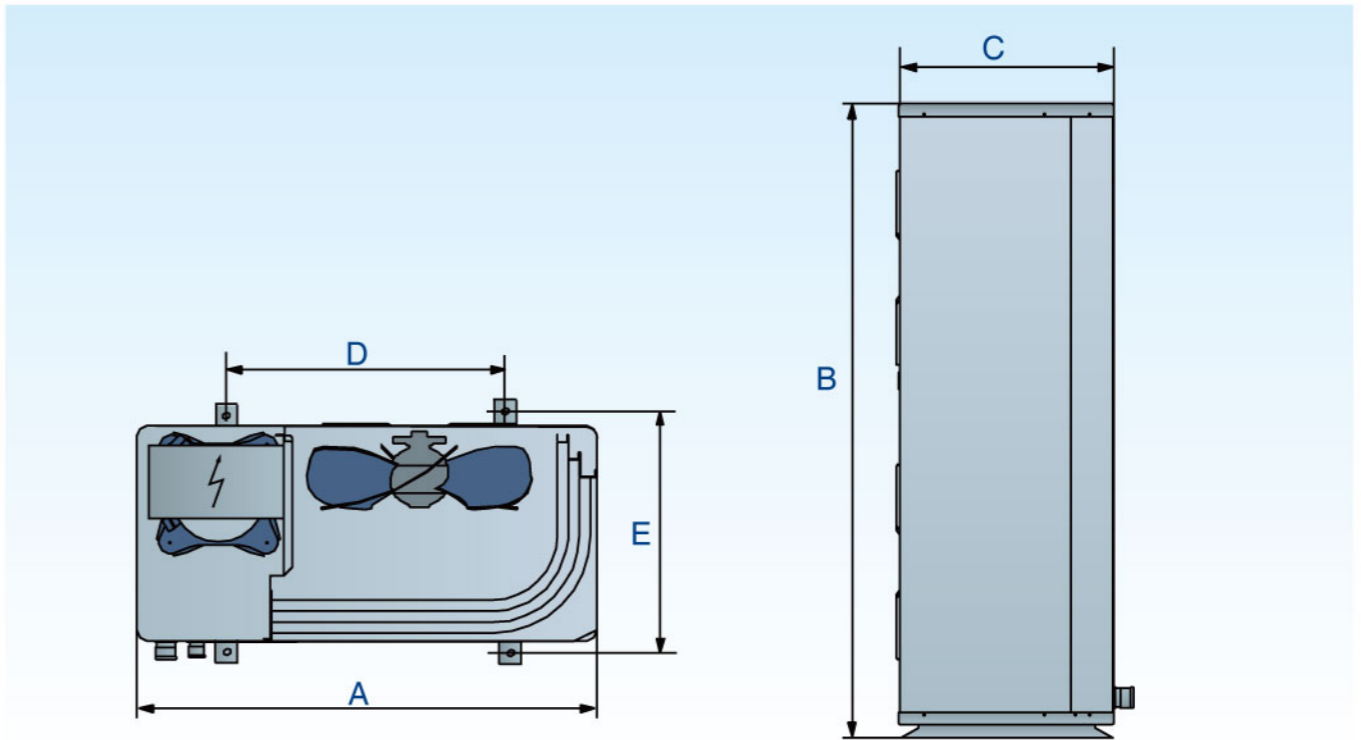
Heat exchanger pressure drop (water side)

Model	Water flow	m ³ /h	0.8	1.0	1.2	1.4	1.6	1.8	2.0
		l/sec	0.222	0.278	0.333	0.389	0.444	0.500	0.556
10.5kW	Pressure drop	kPa	26	29	33	37	42	46	50

Model	Water flow	m ³ /h	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6
		l/sec	0.333	0.389	0.444	0.500	0.556	0.611	0.667	0.722
12 kW	Pressure drop	kPa	35	39	44	47	50	53	58	
14 kW		kPa	28	31	36	40	43	46	50	54
16 kW		kPa	26	29	32	37	41	45	49	52

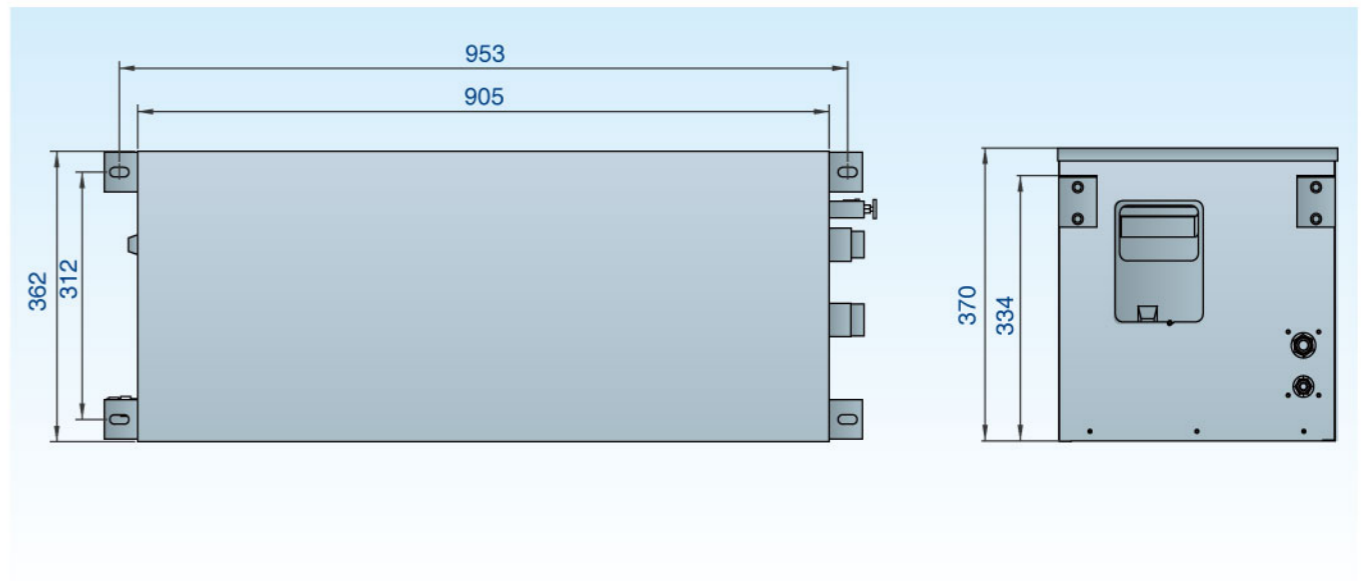
Dimensions

Outdoor unit

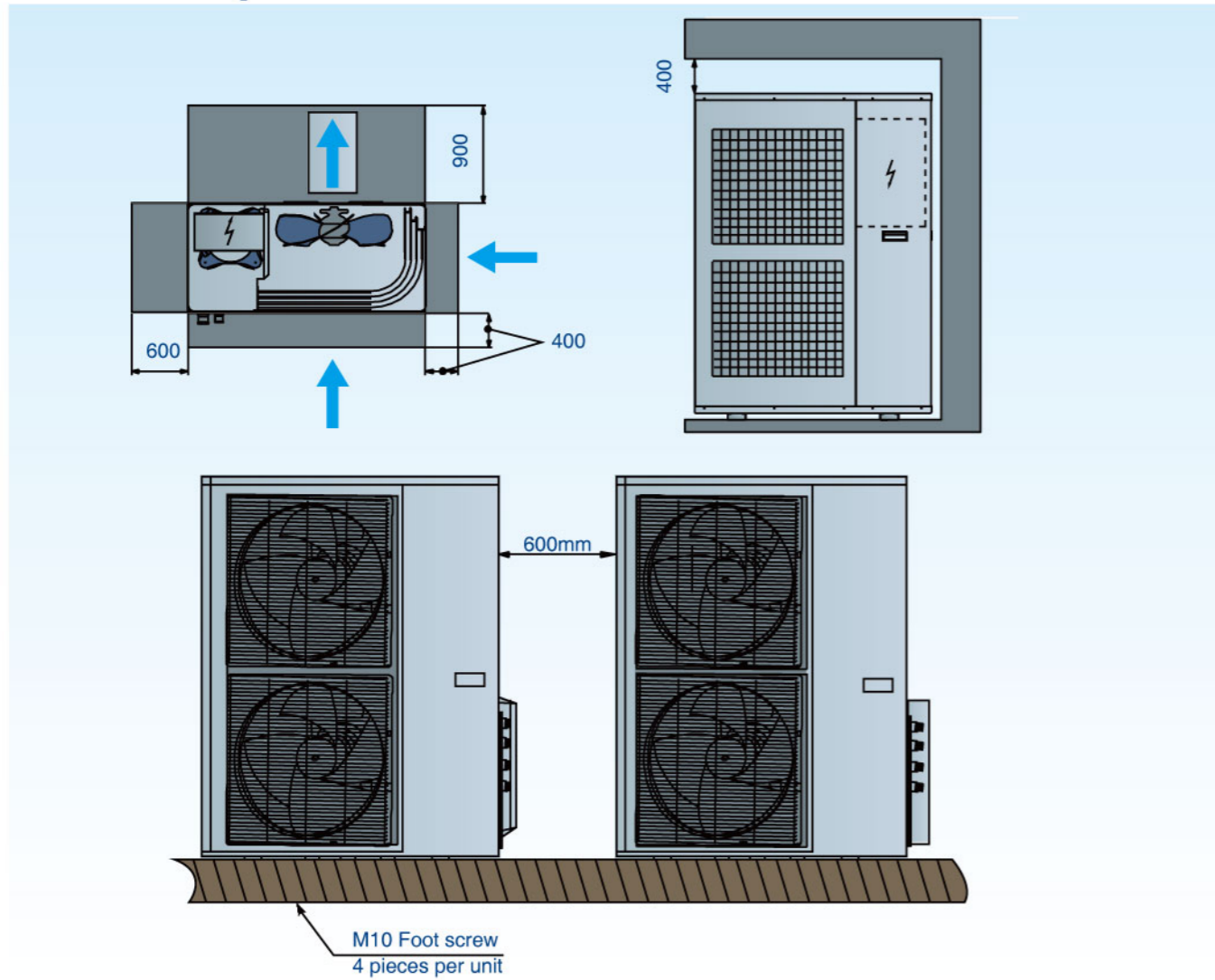


Dimensions	A	B	C	D	E
MGA-D10/N1	990	966	340	624	366
MGA-D12/N1	940	1250	340	600	376
MGA-D14/SN1	940	1250	340	600	376
MGA-D16/SN1	940	1250	340	600	376

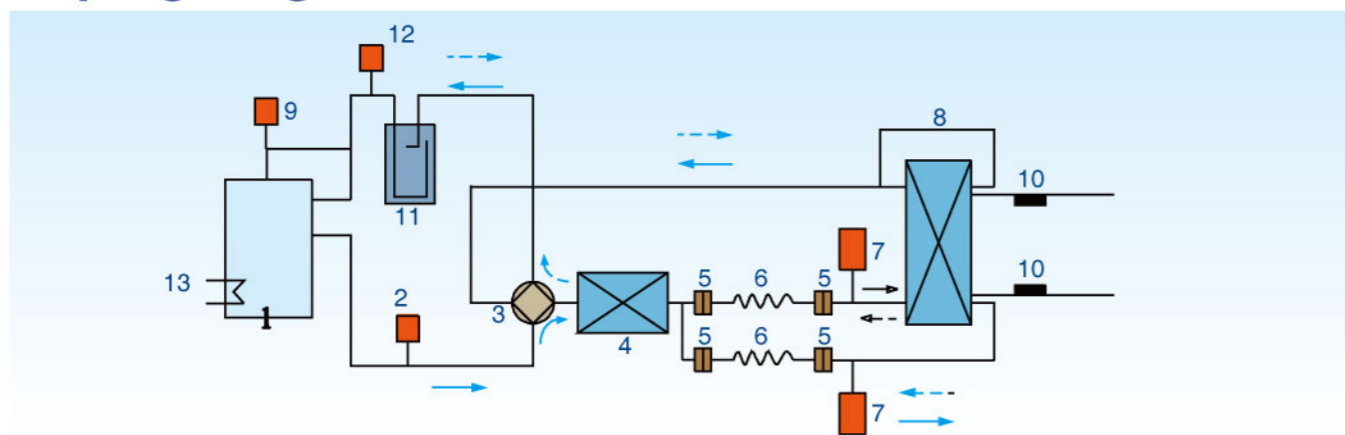
Water pump box



Service space



Piping diagram



Remark:

No	Name	No	Name	No	Name
1	Compressor	6	Capillary	11	Liquid receiver
2	High pressure switch	7	Liquid receiver	12	Low pressure switch
3	4-way valve	8	Plate heat exchanger	13	Crank heater
4	Condenser	9	PWM valve		
5	Filter	10	Water temperature sensor		

Capacity tables

Cooling capacity

Model		MGA-D10/N1					
Ta. (°C)	Tw (°C)	5	6	7	8	9	10
25	Pf (kW)	10.9	11.2	11.5	11.8	12.1	12.4
	Pa (kW)	3.3	3.3	3.4	3.4	3.4	3.5
	Pat (kW)	4.1	4.1	4.2	4.2	4.2	4.3
	Qev (m³/h)	1.9	1.9	2.0	2.0	2.1	2.2
	ΔPev (kPa)	47.3	47.6	50.0	50.3	54.0	57.0
30	Pf (kW)	10.4	10.8	11.1	11.5	11.8	12.1
	Pa (kW)	2.9	2.9	3.0	3.1	3.1	3.1
	Pat (kW)	3.4	3.4	3.5	3.6	3.6	3.6
	Qev (m³/h)	1.8	1.8	1.9	2.0	2.0	2.0
	ΔPev (kPa)	44.7	45.6	47.7	49.8	50.4	50.9
35	Pf (kW)	9.9	10.2	10.5	10.7	11.0	11.3
	Pa (kW)	3.3	3.3	3.4	3.4	3.5	3.5
	Pat (kW)	3.8	3.8	3.9	3.9	4.0	4.0
	Qev (m³/h)	1.7	1.7	1.8	1.9	1.9	2.0
	ΔPev (kPa)	40.5	41.3	45.0	48.0	48.6	51.0
40	Pf (kW)	9.4	9.7	10.0	10.3	10.6	11.0
	Pa (kW)	3.6	3.6	3.7	3.7	3.8	3.8
	Pat (kW)	4.1	4.1	4.2	4.2	4.3	4.3
	Qev (m³/h)	1.6	1.6	1.7	1.7	1.8	1.8
	ΔPev (kPa)	36.0	36.6	40.8	41.4	45.5	45.8
43	Pf (kW)	9.0	9.3	9.5	9.8	10.0	10.3
	Pa (kW)	3.8	3.8	3.9	3.9	4.0	4.0
	Pat (kW)	4.3	4.3	4.4	4.4	4.5	4.5
	Qev (m³/h)	1.5	1.6	1.6	1.7	1.7	1.8
	ΔPev (kPa)	31.5	35.7	36.6	40.5	41.3	46.5

Model		MGA-D12/N1					
Ta. (°C)	Tw (°C)	5	6	7	8	9	10
25	Pf (kW)	12.4	12.7	13.0	13.3	13.6	13.9
	Pa (kW)	3.5	3.5	3.5	3.6	3.6	3.6
	Pat (kW)	4.1	4.1	4.1	4.2	4.2	4.2
	Qev (m³/h)	2.2	2.2	2.3	2.3	2.3	2.4
	ΔPev (kPa)	46.6	47.8	49.6	51.8	54.6	60.0
30	Pf (kW)	11.9	12.2	12.5	12.8	13.1	13.4
	Pa (kW)	3.8	3.8	3.8	3.9	3.9	3.9
	Pat (kW)	4.4	4.4	4.4	4.5	4.5	4.5
	Qev (m³/h)	2.0	2.1	2.1	2.2	2.2	2.3
	ΔPev (kPa)	37.0	37.1	40.6	43.2	46.1	48.0
35	Pf (kW)	11.4	11.7	12.0	12.3	12.6	12.9
	Pa (kW)	4.2	4.2	4.2	4.3	4.3	4.3
	Pat (kW)	4.8	4.8	4.8	4.9	4.9	4.9
	Qev (m³/h)	2.0	2.0	2.1	2.1	2.2	2.2
	ΔPev (kPa)	33.8	37.1	40.6	43.2	46.1	48.0
40	Pf (kW)	10.9	11.2	11.5	11.8	12.1	12.4
	Pa (kW)	4.5	4.5	4.5	4.6	4.6	4.6
	Pat (kW)	5.1	5.1	5.1	5.2	5.2	5.2
	Qev (m³/h)	1.9	2.0	2.0	2.0	2.1	2.1
	ΔPev (kPa)	32.3	35.0	36.3	38.4	41.0	45.1
43	Pf (kW)	10.5	10.8	11.1	11.4	11.7	12.0
	Pa (kW)	4.7	4.7	4.7	4.8	4.8	4.8
	Pat (kW)	5.3	5.3	5.3	5.4	5.4	5.4
	Qev (m³/h)	1.8	1.9	1.9	2.0	2.0	2.0
	ΔPev (kPa)	28.0	30.1	33.8	37.4	38.6	40.5

Remark:

Ta: outside air temperature (°C)
 Pf: cooling capacity (kW)
 Pat: total power input (kW)
 ΔPev: evaporator pressure drop (kPa)

Tw: evaporator water outlet temperature (°C)
 Pa: compressor power input (kW)
 Qev: evaporator water flow (m³/h)

Model		MGA-D14/SN1					
Ta. (°C)	Tw (°C)	5	6	7	8	9	10
25	Pf (kW)	14.8	15.1	15.4	15.7	16.1	16.4
	Pa (kW)	3.6	3.6	3.6	3.7	3.7	3.7
	Pat (kW)	4.1	4.1	4.1	4.2	4.2	4.2
	Qev (m³/h)	2.6	2.6	2.7	2.7	2.8	2.8
	ΔPev (kPa)	49.3	50.0	51.7	53.0	56.1	57.8
30	Pf (kW)	14.1	14.4	14.7	15.0	15.3	15.6
	Pa (kW)	4.1	4.1	4.1	4.2	4.2	4.2
	Pat (kW)	4.6	4.6	4.7	4.7	4.7	4.7
	Qev (m³/h)	2.4	2.5	2.5	2.6	2.6	2.7
	ΔPev (kPa)	43.9	47.9	48.3	49.1	50.2	52.7
35	Pf (kW)	13.4	13.7	14.0	14.3	14.6	14.9
	Pa (kW)	4.6	4.6	4.6	4.7	4.7	4.7
	Pat (kW)	5.1	5.1	5.1	5.2	5.2	5.2
	Qev (m³/h)	2.3	2.4	2.4	2.5	2.5	2.5
	ΔPev (kPa)	40.8	43.5	44.2	46.9	47.8	48.3
40	Pf (kW)	12.5	12.8	13.1	13.4	13.7	14.0
	Pa (kW)	5.1	5.1	5.1	5.2	5.2	5.2
	Pat (kW)	5.6	5.6	5.6	5.7	5.7	5.7
	Qev (m³/h)	2.2	2.2	2.3	2.3	2.4	2.4
	ΔPev (kPa)	33.3	34.5	36.7	39.8	43.7	44.9
43	Pf (kW)	12.0	12.3	12.6	12.9	13.2	13.5
	Pa (kW)	5.5	5.5	5.5	5.6	5.6	5.6
	Pat (kW)	6.0	6.0	6.0	6.1	6.1	6.1
	Qev (m³/h)	2.1	2.1	2.2	2.2	2.3	2.3
	ΔPev (kPa)	30.6	32.5	35.2	36.2	39.1	40.5

Model		MGA-D16/SN1					
Ta. (°C)	Tw (°C)	5	6	7	8	9	10
25	Pf (kW)	15.5	15.7	16.0	16.3	16.5	16.8
	Pa (kW)	3.9	3.9	3.9	4.0	4.0	4.0
	Pat (kW)	4.7	4.7	4.7	4.8	4.8	4.8
	Qev (m³/h)	2.7	2.7	2.8	2.8	2.9	2.9
	ΔPev (kPa)	54.9	57.6	59.4	62.1	65.2	67.7
30	Pf (kW)	14.9	15.2	15.5	15.8	16.1	16.4
	Pa (kW)	4.4	4.4	4.4	4.5	4.5	4.5
	Pat (kW)	5.2	5.2	5.2	5.4	5.4	5.4
	Qev (m³/h)	2.6	2.6	2.7	2.7	2.8	2.8
	ΔPev (kPa)	51.0	52.9	50.9	54.7	59.9	63.0
35	Pf (kW)	14.4	14.7	15.0	15.3	15.6	15.9
	Pa (kW)	4.9	4.9	4.9	5.0	5.0	5.0
	Pat (kW)	5.7	5.7	5.7	5.8	5.8	5.8
	Qev (m³/h)	2.6	2.6	2.7	2.7	2.8	2.8
	ΔPev (kPa)	50.8	53.1	55.8	58.1	61.2	63.2
40	Pf (kW)	13.9	14.2	14.5	14.8	15.1	15.2
	Pa (kW)	5.3	5.3	5.3	5.4	5.4	5.4
	Pat (kW)	6.1	6.1	6.1	6.2	6.2	6.2
	Qev (m³/h)	2.5	2.5	2.6	2.6	2.7	2.7
	ΔPev (kPa)	46.8	49.1	51.5	53.1	55.8	59.4
43	Pf (kW)	13.5	13.8	14.1	14.4	14.7	14.8
	Pa (kW)	5.7	5.7	5.7	5.8	5.8	5.8
	Pat (kW)	6.5	6.5	6.5	6.6	6.6	6.6
	Qev (m³/h)	2.4	2.4	2.5	2.5	2.6	2.6
	ΔPev (kPa)	41.4	44.3	47.0	49.1	51.5	59.4

Remark:
 Ta: outside air temperature (°C) Tw: evaporator water outlet temperature (°C)
 Pf: cooling capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qev: evaporator water flow (m³/h)
 ΔPev: evaporator pressure drop (kPa)

Heating capacity

Model		MGA-D10/N1			
Ta. U.R.87% (°C)	Tw (°C)	35	40	45	50
-5	Pt (kW)	8.3	8.3	8.3	-
	Pa (kW)	3.6	3.9	4.2	-
	Pat (kW)	4.4	4.7	5.0	-
	Qc (m³/h)	1.5	1.5	1.5	-
	ΔPc (kPa)	29.4	28.4	27.0	-
0	Pt (kW)	9.4	9.4	9.4	9.2
	Pa (kW)	3.7	4.0	4.3	4.5
	Pat (kW)	4.5	4.8	5.1	5.3
	Qc (m³/h)	1.8	1.8	1.8	1.8
	ΔPc (kPa)	27.5	25.6	24.8	23.2
7	Pt (kW)	13.2	13.1	13.0	12.9
	Pa (kW)	3.8	4.1	4.4	4.7
	Pat (kW)	4.6	4.9	5.2	5.5
	Qc (m³/h)	2.2	2.2	2.2	2.2
	ΔPc (kPa)	37.2	35.8	34.5	33.1
10	Pt (kW)	12.3	12.2	12.1	12.0
	Pa (kW)	3.9	4.2	4.5	4.8
	Pat (kW)	4.7	5.0	5.3	5.1
	Qc (m³/h)	2.3	2.3	2.3	2.3
	ΔPc (kPa)	40.5	40.0	39.2	38.8
15	Pt (kW)	13.8	13.7	13.6	13.5
	Pa (kW)	4.0	4.3	4.6	4.9
	Pat (kW)	4.8	5.1	5.4	5.7
	Qc (m³/h)	2.4	2.4	2.3	2.3
	ΔPc (kPa)	45.8	45.1	43.6	42.9

Model		MGA-D12/N1			
Ta. U.R.87% (°C)	Tw (°C)	35	40	45	50
-5	Pt (kW)	11.0	10.9	10.8	-
	Pa (kW)	3.7	4.0	4.3	-
	Pat (kW)	4.5	4.8	5.1	-
	Qc (m³/h)	1.7	1.7	1.7	-
	ΔPc (kPa)	41.6	41.0	40.3	-
0	Pt (kW)	12.2	12.1	12.0	11.9
	Pa (kW)	3.8	4.1	4.4	4.6
	Pat (kW)	4.6	4.9	5.2	5.4
	Qc (m³/h)	2.0	2.0	2.0	2.0
	ΔPc (kPa)	33.0	32.6	32.1	31.8
7	Pt (kW)	14.2	14.1	14.0	13.9
	Pa (kW)	3.9	4.2	4.5	4.8
	Pat (kW)	4.7	5.0	5.3	5.6
	Qc (m³/h)	2.4	2.4	2.4	2.4
	ΔPc (kPa)	44.0	43.6	43.1	42.8
10	Pt (kW)	15.2	15.1	15.0	14.9
	Pa (kW)	4.0	4.3	4.6	4.9
	Pat (kW)	4.8	5.1	5.4	5.7
	Qc (m³/h)	2.5	2.5	2.5	2.5
	ΔPc (kPa)	38.0	37.6	37.2	37.0
15	Pt (kW)	16.7	16.6	16.5	16.4
	Pa (kW)	4.1	4.4	4.7	5.0
	Pat (kW)	4.9	5.2	5.5	5.8
	Qc (m³/h)	2.8	2.8	2.8	2.8
	ΔPc (kPa)	45.0	44.8	44.6	44.2

Remark:
 Ta: outside air temperature (°C) Tw: evaporator water outlet temperature (°C)
 Pt: heating capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qc: condenser water flow (m³/h)
 ΔPc: evaporator pressure drop (kPa) -: conditions outside of operating limits

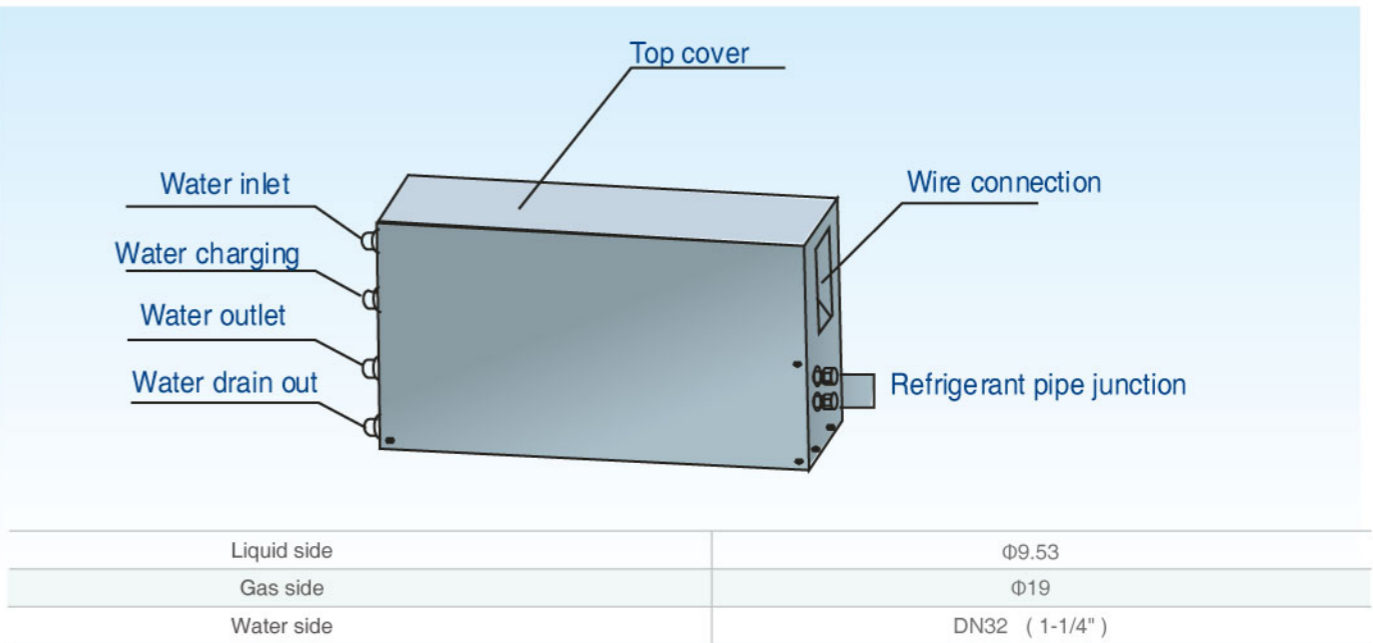
Model		MGA-D14/SN1			
Ta. U.R.87% (°C)	Tw (°C)	35	40	45	50
-5	Pt (kW)	10.4	10.5	10.6	-
	Pa (kW)	4.0	4.4	4.9	-
	Pat (kW)	4.8	5.2	5.7	-
	Qc (m³/h)	1.9	1.9	1.9	-
	ΔPc (kPa)	25.8	27.2	27.0	-
0	Pt (kW)	13.1	13.0	13.0	12.9
	Pa (kW)	4.0	4.4	4.9	5.4
	Pat (kW)	4.8	5.2	5.7	6.1
	Qc (m³/h)	2.3	2.3	2.3	2.3
	ΔPc (kPa)	21.1	21.1	21.0	21.0
7	Pt (kW)	16.2	16.1	16.0	15.9
	Pa (kW)	4.1	4.5	5.0	5.5
	Pat (kW)	4.9	5.3	5.8	6.3
	Qc (m³/h)	2.8	2.8	2.8	2.8
	ΔPc (kPa)	31.2	31.1	31.0	31.0
10	Pt (kW)	17.6	17.5	17.4	17.4
	Pa (kW)	4.2	4.6	5.1	5.6
	Pat (kW)	5.0	5.4	5.9	6.4
	Qc (m³/h)	3.1	3.1	3.1	3.1
	ΔPc (kPa)	36.4	36.2	36.0	35.9
15	Pt (kW)	19.8	19.7	19.6	19.4
	Pa (kW)	4.3	4.7	5.2	5.7
	Pat (kW)	5.1	5.5	6.0	6.5
	Qc (m³/h)	3.5	3.5	3.5	3.5
	ΔPc (kPa)	45.4	45.2	45.0	44.9

Model		MGA-D16/SN1			
Ta. U.R.87% (°C)	Tw (°C)	35	40	45	50
-5	Pt (kW)	11.5	11.4	11.3	-
	Pa (kW)	4.1	4.5	5.0	-
	Pat (kW)	4.9	5.3	5.8	-
	Qc (m³/h)	2.0	2.0	2.0	-
	ΔPc (kPa)	25.0	25.0	24.8	-
0	Pt (kW)	14.2	14.1	14.0	13.9
	Pa (kW)	4.2	4.6	5.1	5.6
	Pat (kW)	5.0	5.4	5.9	6.4
	Qc (m³/h)	5.0	5.4	5.9	6.4
	ΔPc (kPa)	20.2	20.1	20.0	19.9
7	Pt (kW)	17.2	17.1	17.0	16.9
	Pa (kW)	4.3	4.7	5.2	5.7
	Pat (kW)	5.1	5.5	6.0	6.5
	Qc (m³/h)	2.9	2.9	2.9	2.9
	ΔPc (kPa)	30.2	30.1	30.0	30.0
10	Pt (kW)	18.7	18.6	18.5	18.4
	Pa (kW)	4.4	4.8	5.3	5.8
	Pat (kW)	5.2	5.6	6.1	6.6
	Qc (m³/h)	3.2	3.2	3.2	3.2
	ΔPc (kPa)	35.4	35.2	35.0	34.8
15	Pt (kW)	21.0	20.9	20.8	20.7
	Pa (kW)	4.5	4.9	5.4	5.9
	Pat (kW)	5.3	5.7	6.2	6.7
	Qc (m³/h)	3.6	3.6	3.6	3.6
	ΔPc (kPa)	46.2	45.6	45.0	44.4

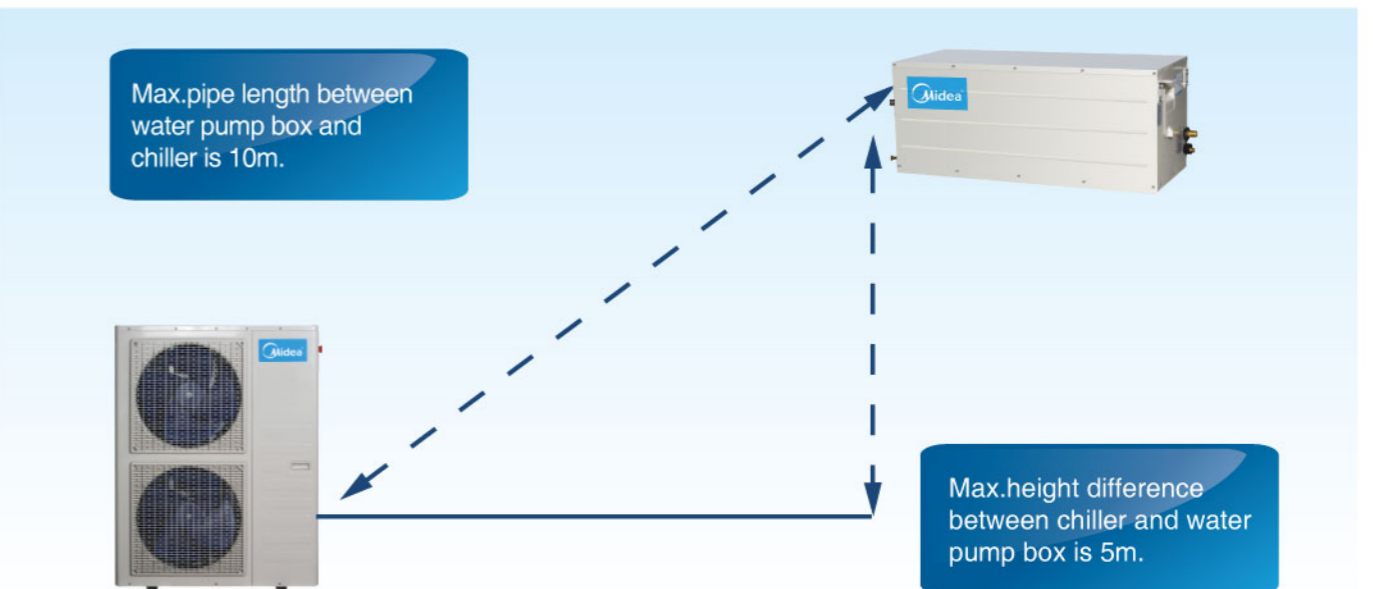
Remark:
 Ta: outside air temperature (°C)
 Pt: heating capacity (kW)
 Pa: compressor power input (kW)
 Pat: total power input (kW)
 ΔPc: evaporator pressure drop (kPa)
 Tw : evaporator water outlet temperature (°C)
 Pa: compressor power input (kW)
 Qc: condenser water flow (m3/h)
 - : conditions outside of operating limits

Pipe connection information

Pipe connection



Pipe length and height difference between main unit and water pump box

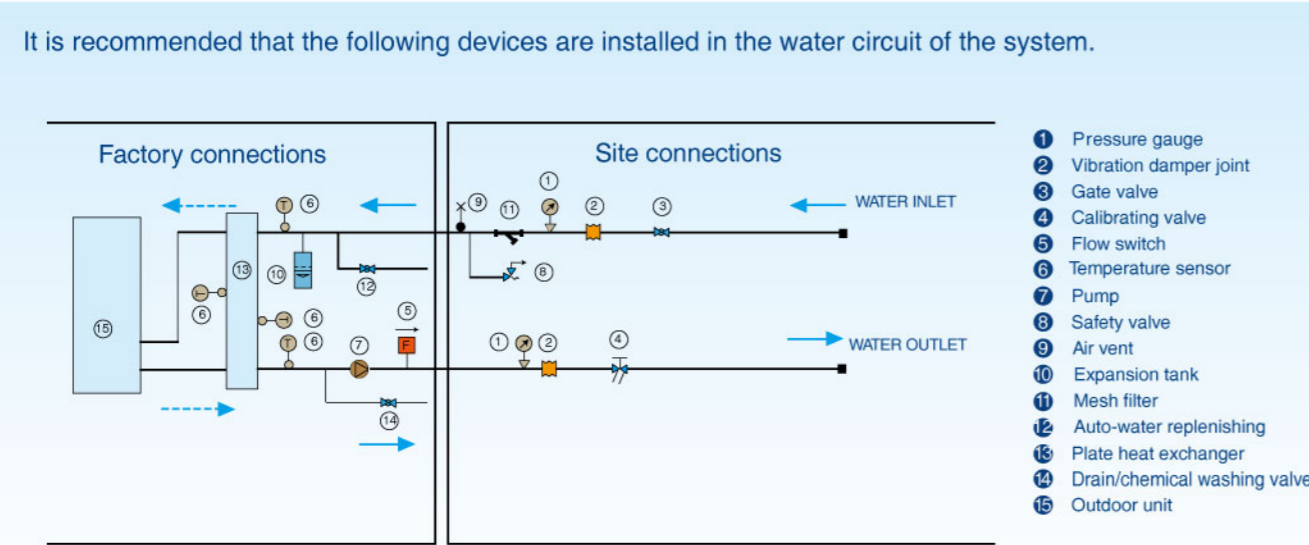


Additional refrigerant charge

Liquid pipe length	Additional refrigerant
Less than 5m	No need
5-10m	(Pipe length-5)×60g

Hydraulic connections

The choice and installation of components is the responsibility of the installer who should follow good working practice and current legislation.



Wiring specification

Model	Name	Qty	Specifications (for reference)	Note (purchased by customers)
10.5/12kW	Overall power cord	1	3x6.0mm ²	For outdoor unit
14/16kW	Overall power cord	1	5x4.0mm ²	For outdoor unit
10.5/12/14/16kW	Water-flow controlling wire	1	7-cord shielded wire	Between outdoor units and water pump box
	Temp. sensor signal wire (shielded wire)	1	3x1.0mm ²	Between outdoor units and Auxiliary heater
	Water pump power cord	1	3x1.0mm ²	Between outdoor units and water pump box
	Auxiliary heater controlling wire		3x1.0mm ²	Between outdoor units and Auxiliary heater
	Controlling wire for central & wired controller	1	2x0.5mm ² (2-cord shielded wire)	Between outdoor units and central & wired controller(shorter than 120m)

- The power cord type designation is H07RN-F.
- Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed flexible cord, type designation H07RN-F or heavier cord.
- The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

Accessories

Water pump box: SBX/(S)N1(A)



Wired controller: KJR-08B/BE



Accessories table

	SBX/N1-01	SBX/N1-01A	SBX/SN1-01	SBX/SN1-01A	KJR-08B/BE
10.5kW	●				●
12kW		●			●
14kW			●		●
16kW				●	●

- The main unit must use water pump box and wired controller.
- Water pump box and wired controller are standard with the units.
- One wired controller can control more than 1 chiller.



Mini unitary chiller →



Mini unitary chiller

- Product description
- Features and benefits
- Description of main components
- Specification
- Operation limits
- Hydraulic performance
- Dimension
- Service space
- Piping diagram
- Capacity tables
- Hydraulic connections
- Wiring specifications
- Accessories

Product description

Midea mini unitary chiller is air cooled reverse-cycle chiller with axial-flow fans operate with refrigerant fluid, they are suitable for outdoor installation, the units conform to the essential requisites of 2004/108/EC. The units are integrated and compact design, the chiller built in water pump, expansion tank, plate heat-exchanger and so on, it is very simple for installation such kind of system.

Features and benefits

R410a environment friendly refrigerant, no harm to ozone layer

ODP=0 **R410A** HGWP=0.28
 No harm to Ozone layer Greenhouse effect is small

Integrated and compact design, simple installation and save space

Built in water pump, expansion tank and plate heat-exchanger. It is very easy for installation.

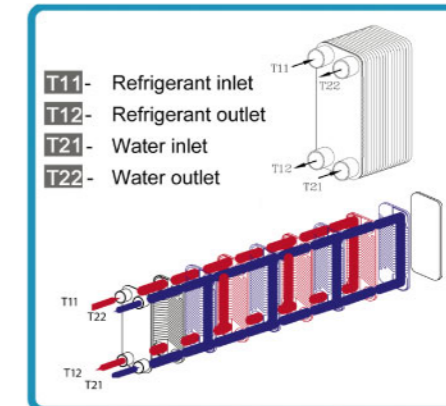
Air-cooled system, no need cooling water tower, packaged design, easy for installation.

All the components and accessories of the mini chiller (evaporator, compressor, air-cooled condenser, expansion device and Hydraulic module, such as expansion tank, water pump, water flow switch and so on.) have been manufactured, assembled, and tested as a complete package within the factory. The packaged systems can reduce field labor and increase reliability.

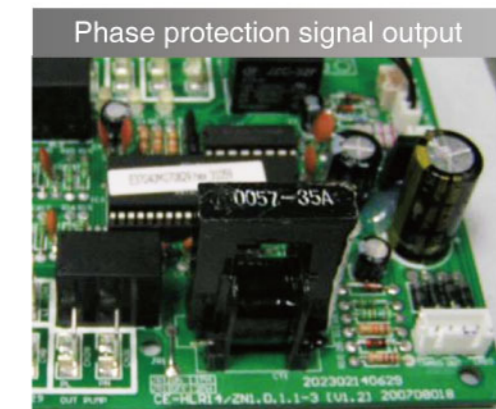


Energy saving and high reliability

- By adopting high efficiency plate heat exchanger, the energy consumption can be reduced.



- Metallic protective cabinet with rustproof polyester paint.
- Built-in with voltage protection, current protection, anti-freezing protection, water flow protection and etc., effectively guarantee the system to work safety.



Flexible and convenient control

- Built-in with Eliwell ST542 electronic controller at factory. Compact devices with advanced function and friendly user interface.

The front panel of the device functions as the user interface and is used to perform all operations relating to the device.

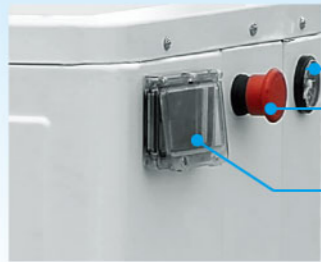


- The chiller also can be controlled by the Eliwell remote control keyboard kit SKW210, which is LCD remote terminal with integrated room temperature control (optional).

- Reserved control port for electrical heater
Signal output: 230V/50Hz/3Ph
Electrical heater needs power supply separately.



- Reserved ON/OFF control port
Can be used to connect with an ON/OFF switch or a timer controller.
- Reserved alarm signal output port
Can be used to connect the alarm light to show the error of the chiller.
- Auto-restart function
Resume former running status automatically after power failure.
- Emergency switch
Stop the chiller directly by the switch in any urgent case
- Built-in with water pressure gauge:
Inspect water pressure all the time.



- Water pressure gauge:
inspect the water pressure any time
- Emergency switch:
stop the chiller directly by the switch in any urgent case
- Controller: control interface of the chiller

Description of main components

Structure

Panels and base are made from galvanized steel plate painted with epoxy powder to ensure total resistance to atmospheric pollution, condensate collection pan as standard.

Compressor

Hermetic rotary or scroll compressor with crankcase heater and thermal cut-out
MGC-F05W/N1 and MGC-F07W/N1 adopt Midea-Toshiba Rotary compressor; the other adopt Copeland or SANYO high efficiency scroll compressor.

Air cooled condenser

Coils

The coils are made from high performance and seamless copper tube and high surface area aluminium fins to ensure optimum heat exchange capability. Condenser coil protection grill is standard.

Low noise fan and fan motor

To achieve high efficiency heat exchange, the unit is equipped with the high performance axial-flow fans. The fan is driven directly by weather proof motor to ensure reliable operation, the fan motor is six-pole electric motor with built-in thermal cut-out.

Evaporator

The heat exchanger is made of AISI 316 stainless steel high efficiency plate heat exchanger to ensure high heat exchange efficiency, complete with electric heater and differential pressure switch. The complete heat exchanger is insulated with thermal insulation closed cell rubber foam to give optimum thermal insulation.

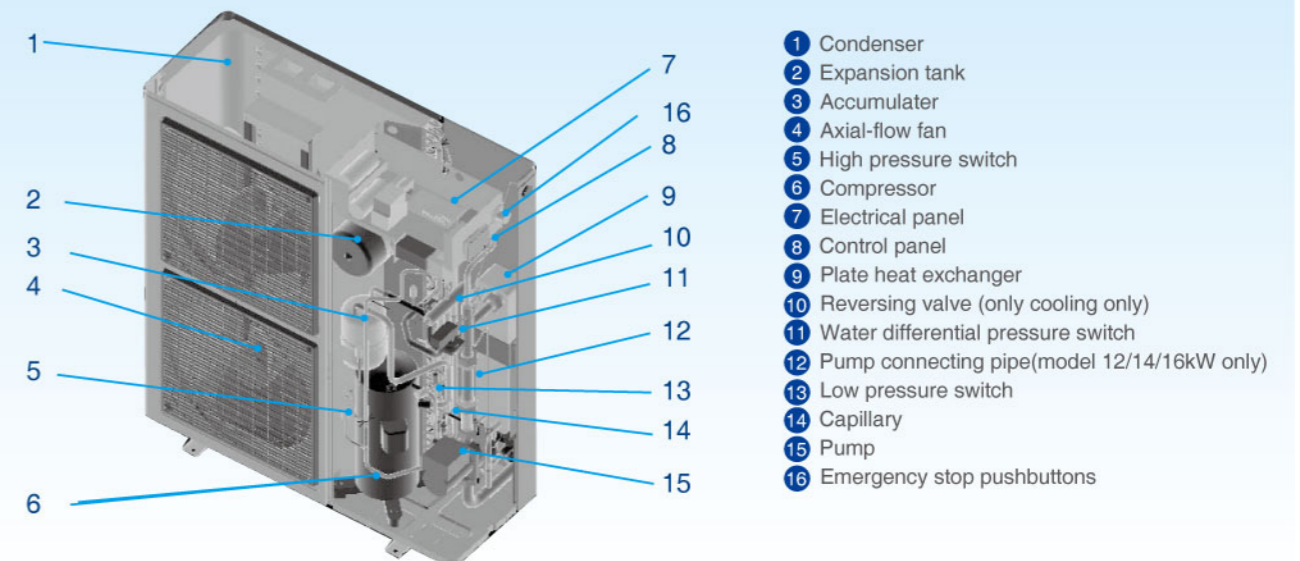
Hydraulic module

Midea mini unitary chiller are fully integrated and equipped with key hydraulic components such as expansion tank, plate type of heat-exchanger, water circulating pump.

The water pressure difference switch is provided in the units to protect against damage to the water pump.

Power and control electrical panel

Power and control electrical panel constructed in accordance with IEC 204-1/EN60335-2-40, complete with compressor contactor, control via "A2" control panel.



Specification

Model			MGC-F05W/N1	MGC-F07W/N1	MGC-F10W/N1	
Power supply		V-Ph-Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	
Cooling	Capacity	kW	5	7.2	10.5	
	Input	W	1938	2755	3614	
Heating	Capacity	kW	5.5	7.7	12	
	Input	W	1987	2834	4004	
Max. input consumption		W	2350	3200	5500	
Max. input current		A	11.7	16.7	25.7	
Starting current		A	36.8	55	110	
Refrigerant	Refrigerant Type		R410A	R410A	R410A	
	Refrigerant Charged volume	g	1600	2100	3000	
Throttle Type			Capillary	Capillary	Capillary	
Compressor	Type		ROTARY	ROTARY	Fix speed Scroll type	
	Brand		Midea-Toshiba	Midea-Toshiba	Copeland	
	Number of Compressor		1	1	1	
	Thermal protector		Inner	Inner	Inner	
	Refrigerant oil	ml	ESTER OIL VG74, 750	ESTER OIL VG74, 1100	POE OIL, 1656	
Outdoor fan motor	Type		AC motor	AC motor	AC motor	
	Brand		Welling	Welling	Welling	
	Number of fan		1	1	2	
	Input (Hi/Lo)	W	220	220	185/120	
	Speed (Hi/Lo)	r/min	660	660	860/610	
Max. air flow		m³/h	5563	5624	6500/4300	
Outdoor coil	Number of rows		1	1	3	
	Fin type		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium foil	
	Tube outside dia. and type	mm	Φ7.94	Φ7.94	Φ9.53	
			Inner grooved copper tube	Inner grooved copper tube	inner groove tube	
Hydraulic module	Water pump	Input (H/M/L)	W	93/67/46	93/67/46	210/175/120
		Pumping head	m	5.5	5.5	8.5
	Expansion tank	volume	L	2	2	3
		Type		Plate	Plate	Plate
	Heat exchange	Rated water flow	m³/h	0.86	1.24	1.74
		heat-exchanger water pressure drop	kpa	21	35	44
Pressure Difference Switch			standard	standard	standard	
The Max. and Min. water inlet pressure		kpa	500/150	500/150	60/50	
Outdoor noise level (sound pressure)		dB(A)	55	56	500/150	
Outdoor unit	Dimension (WxHxD)		mm	990x966x354	990x966x354	940x1245x360
	Packing (WxHxD)		mm	1120x1100x435	1120x1100x435	1058x1380x438
	Net/ Gross weight		kg	83/89	94/100	138/145
Pipe diameter	Water inlet/outlet		mm	R1	R1	R5/4
Control			electronic controller	electronic controller	electronic controller	
Ambient temp.		°C	Cooling: 10°C~43°C; Heating: -15~24°C			
Water inlet setting temp. range (default)		°C	Cooling: 4~20°C; Heating mode: 30~55°C			

Nominal capacity is based on the following conditions:

1. Cooling: outdoor ambient temperature 35°C, inlet/outlet water temperature 12/7°C.
2. Heating: outdoor ambient temperature 7°C 85% R.H; inlet/outlet water temperature 40/45°C.
3. 1m away in open field(sound pressure).

Model			MGC-F10W/SN1	MGC-F12W/SN1	MGC-F14W/SN1	MGC-F16W/SN1	
Power supply		V-Ph-Hz	380-415, 3, 50	380-415, 3, 50	380-415, 3, 50	380-415, 3, 50	
Cooling	Capacity	kW	10.5	12	14	16	
	Input	W	3930	4410	4859	6430	
Heating	Capacity	kW	12	14	16.12	18	
	Input	W	4240	4643	5218	6444	
Max. input consumption		W	4400	5000	6550	7700	
Max. input current		A	8.3	9.1	10.5	14.3	
Starting current		A	45	66	60	92	
Refrigerant type/Quantity	Type		R410A	R410A	R410A	R410A	
	Charged volume	g	2700	3000	3600	4200	
Throttle			Capillary	Capillary	Capillary	Capillary	
Compressor	Type		Fix speed Scroll type	Fix speed Scroll type	Fix speed Scroll type	Fix speed Scroll type	
	Brand		Copeland	SANYO	SANYO	SANYO	
	Capacity	Btu/h	42300	48100	56000	65510	
	Input	W	4100	4750	5750	6750	
	Thermal protector		Inner	Inner	Inner	Inner	
	Refrigerant oil	ml	POE OIL, 1952	FV68S, 1700	FV68S, 1600	FV68S, 1700	
Outdoor fan motor	Type		AC motor	AC motor	AC motor	AC motor	
	Brand		Welling	Welling	Welling	Welling	
	Number of fan		2	2	2	2	
	Input (Hi/Lo)	W	185/120	185/120	185/120	185/120	
	Speed (Hi/Lo)	r/min	860/610	860/610	860/610	860/610	
	Outdoor air flow		m³/h	6465/4270	6470/4280	6500/4300	6550/4483
Outdoor coil	Number of rows		2	2	3	3	
	Fin type		Hydrophilic aluminium foil	Hydrophilic aluminium foil	Hydrophilic aluminium foil	Hydrophilic aluminium foil	
	Tube outside dia. and type	mm	Φ7.94	Φ7.94	Φ9.53	Φ7.94	
				Inner grooved copper tube	Inner grooved copper tube	Inner grooved copper tube	Inner grooved copper tube
Hydraulic module	Water pump	Input (H/M/L)	W	210/175/120	210/175/120	210/175/120	
		Pumping head	m	8.5	8.5	8.5	8.5
	Expansion tank	volume	L	3	3	3	3
		Type		plate	plate	plate	plate
	Heat exchange	Rated water flow	m³/h	1.72	2.0	2.4	2.8
		Water pressure drop	kpa	44	40	34	38
Pressure Difference Switch			standard	standard	standard	standard	
The Max. and Min. water inlet pressure		kpa	500/150	500/150	500/150	500/150	
Outdoor noise level (sound pressure)		dB(A)	58/48	59/49	60/50	60/51	
Outdoor unit	Dimension (WxHxD)		mm	940x1245x360	1070x1249x420	1070x1249x420	1070x1249x420
	Packing (WxHxD)		mm	1058x1380x438	1188x1385x498	1188x1385x498	1188x1385x498
	Net/ Gross weight		kg	131/139	137/145	145/160	142/150
Pipe diameter	Water inlet/outlet		mm	R5/4	R5/4	R5/4	R5/4
Control			electronic controller	electronic controller	electronic controller	electronic controller	
Ambient temp.		°C	Cooling: 10°C~43°C; Heating: -15~24°C				
Water inlet setting temp. range (default)		°C	Cooling: 4~20°C; Heating mode: 30~55°C				

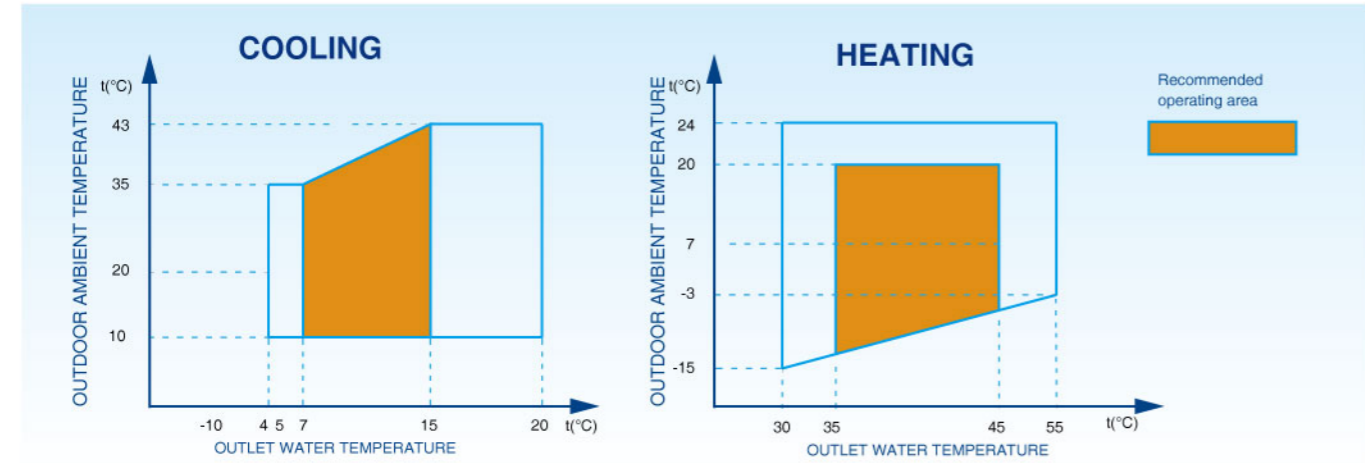
Nominal capacity is based on the following conditions:

1. Cooling: outdoor ambient temperature 35°C, inlet/outlet water temperature 12/7°C.
2. Heating: outdoor ambient temperature 7°C 85% R.H; inlet/outlet water temperature 40/45°C.
3. 1m away in open field(sound pressure).

Operation Limits

Cooling and heating operation temperature range

Cooling operation	Outdoor ambient temperature: 10°C~43°C
	Outlet water temperature: 4°C~20°C
Heating operation	Outdoor ambient temperature: 4°C~24°C (-15°C~24°C, when charge enough antifreeze)
	Outlet water temperature: 30°C~55°C



Ethylene glycol solutions

Water and ethylene glycol solutions used as a thermal vector in the place of water reduce the performance of the unit. Multiply the performance figures by the values given in the following table.

	Freezing point (°C)					
	0	-5	-10	-15	-20	-25
	Percentage of ethylene glycol in weight					
	0	12%	20%	28%	35%	40%
cPf	1	0.98	0.97	0.965	0.96	0.955
cQ	1	1.02	1.04	1.075	1.11	1.14
cdp	1	1.07	1.11	1.18	1.22	1.24

cPf: correction factor refrigerating capacity cQ: correction factor flow rate cdp: correction factor pressure drop

Notes:

- During winter leaving the unit unused, please drain water out completely from unit if no antifreeze were charged into pipeline, or keep power on (at standby or off status) and ensure that water is contained inside of unit.
- When ambient temperature lower 5°C, running cooling mode must be charged antifreeze. Refer to upper parameters for the charged volume.

Fouling factors

The performance data given refer to conditions with clean evaporator plates (fouling factor=1). For different fouling factors, multiply the figures in the performance tables by the coefficient given in the following table.

Fouling factors (m ² °C/W)	Evaporator		
	f1	fk1	fx1
4.4×10 ⁻⁵	-	-	-
0.86×10 ⁻⁴	0.96	0.99	0.99
1.72×10 ⁻⁴	0.93	0.98	0.98

f1: Capacity correction factor fk1: Compressor power input correction factor fx1: Total power input correction factor

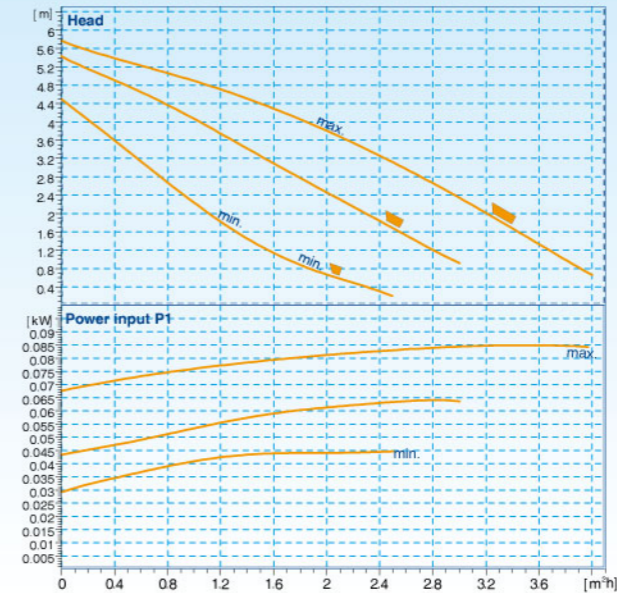
Minimum water volume

Model	MGC-F05W/N1	MGC-F07W/N1	MGC-F10W/(S)/N1
Minimum water volume (L)	21	30	43

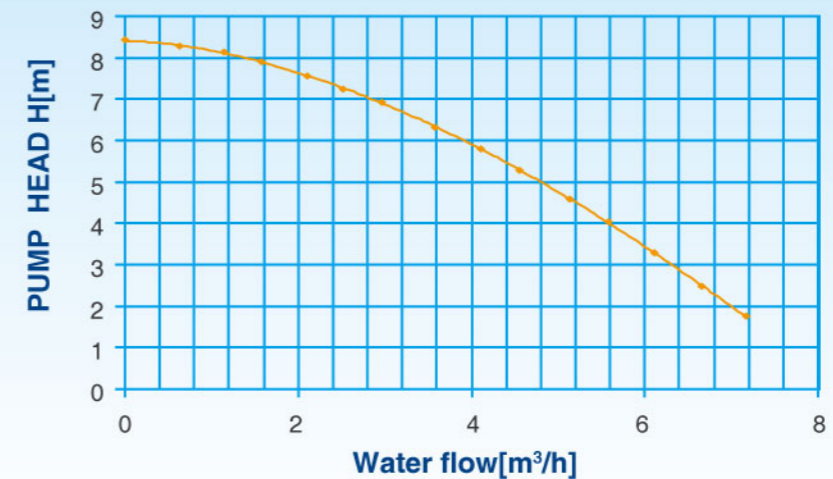
Model	MGC-F12W/SN1	MGC-F14W/SN1	MGC-F16W/SN1
Minimum water volume (L)	50	60	68

Hydraulic performance

Pump head curve(5/7.2kW)



Pump head curve(10.5/12/14/16kW)



Note:

(*) To obtain the useful head of the installation, subtract the pressure drop of the plate heat exchanger.

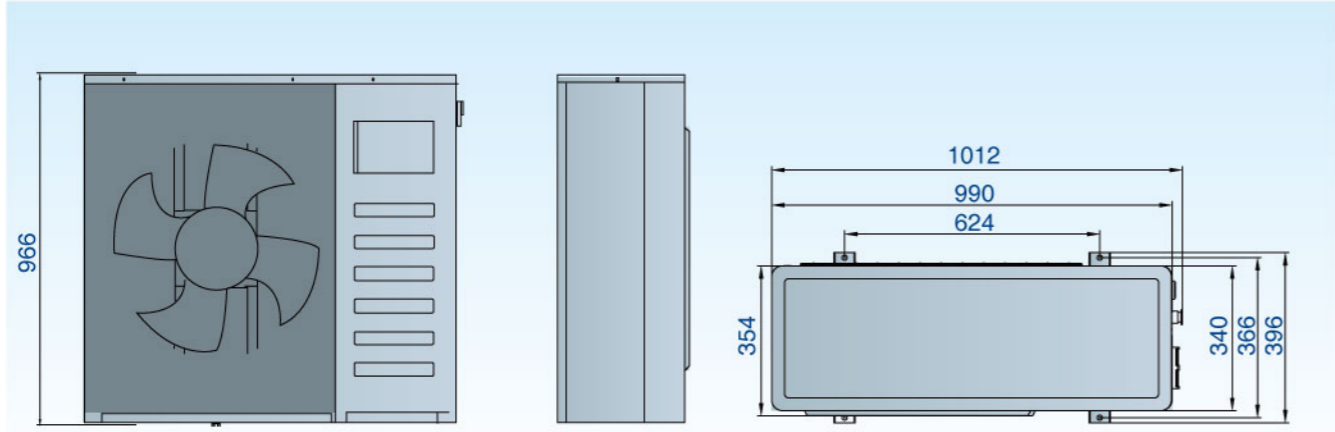
Heat exchanger pressure drop (water side)

Model	Water flow	m ³ /h	0.8	1.0	1.2	1.4	1.6	1.8	2.0
		l/sec	0.222	0.278	0.333	0.389	0.444	0.500	0.556
5 kW	Pressure drop	kPa	13	23	36	52	-	-	-
		7.2 kW	kPa	12	21	33	47	65	-

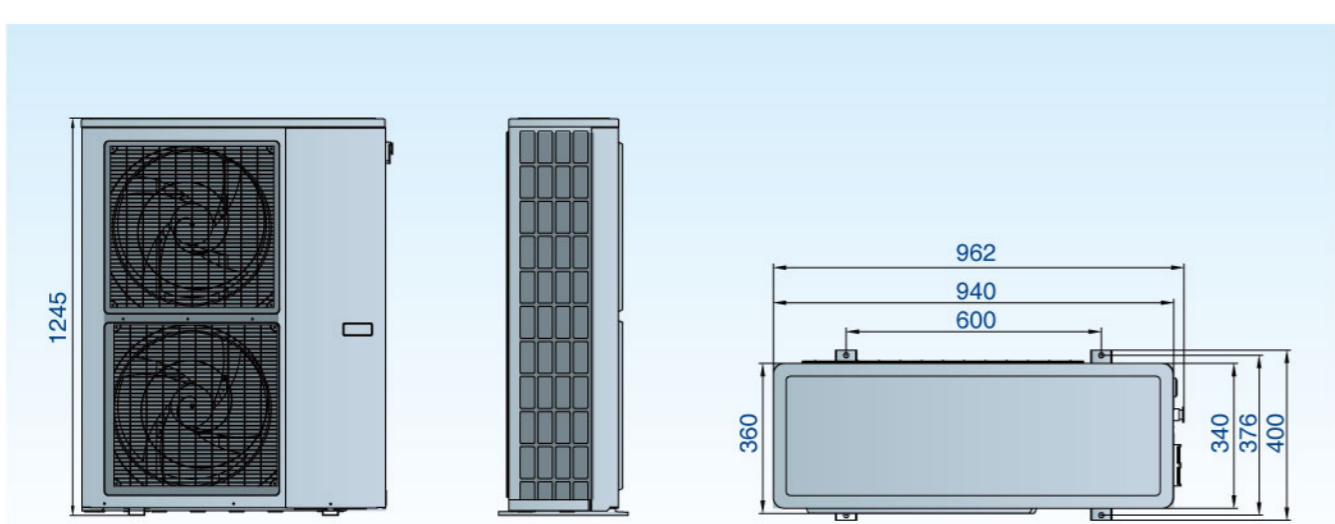
Model	Water flow	m ³ /h	1.2	1.4	1.6	1.8	2.0	2.2	2.4	
		l/sec	0.333	0.389	0.444	0.500	0.556	0.611	0.667	
10.5KW	Pressure drop	kPa	8	11	15	19	24	30	37	
		12 kW	kPa	7	10	14	18	23	29	36
		14 kW	kPa	6	8	10	14	17	21	26
		16 kW	kPa	6	7	9	13	16	20	24

Dimensions (unit: mm)

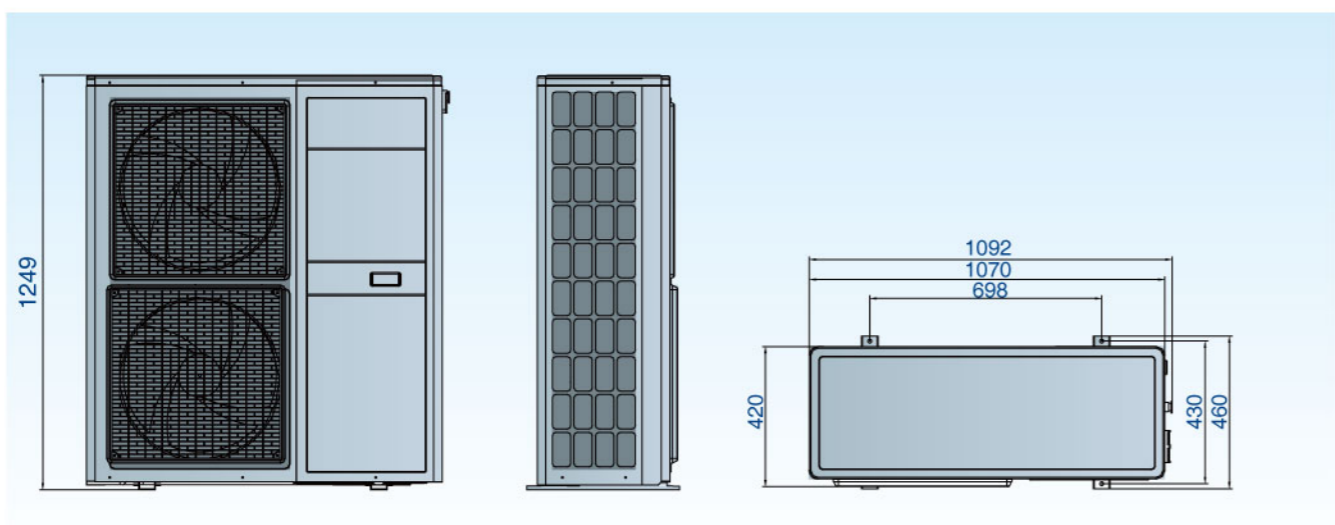
MGC-F05W/N1 MGC-F07W/N1



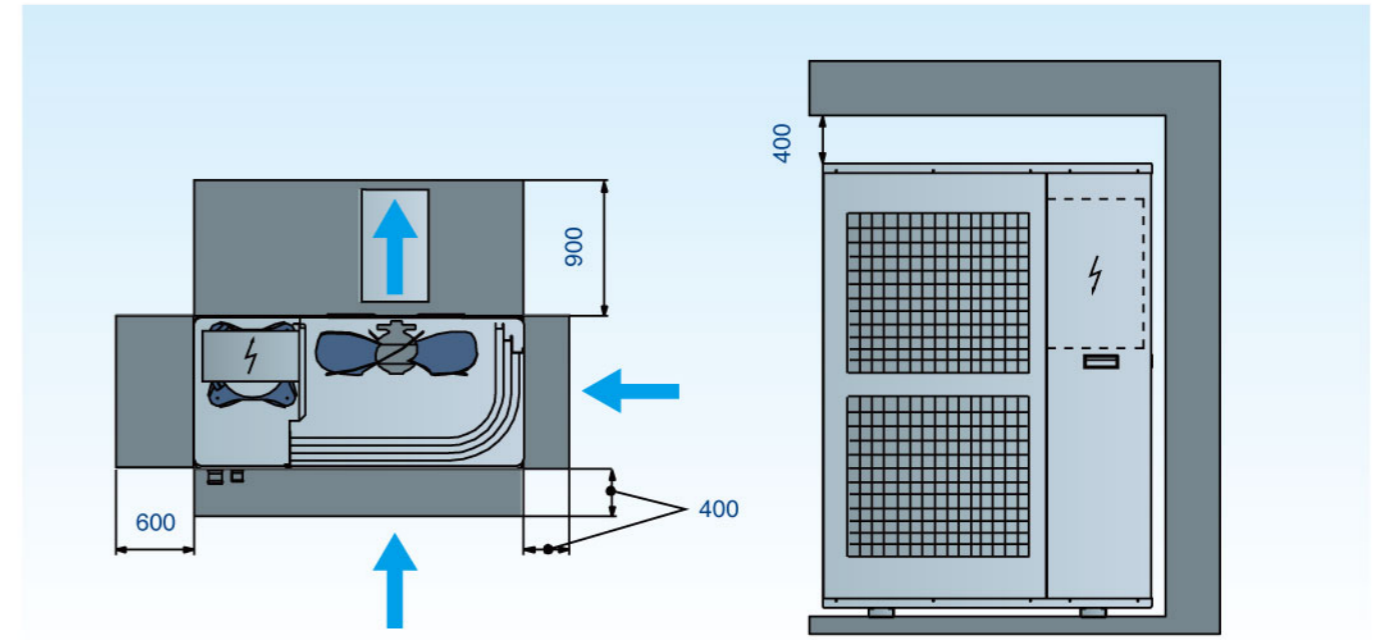
MGC-F10W/N1 MGC-F10W/SN1



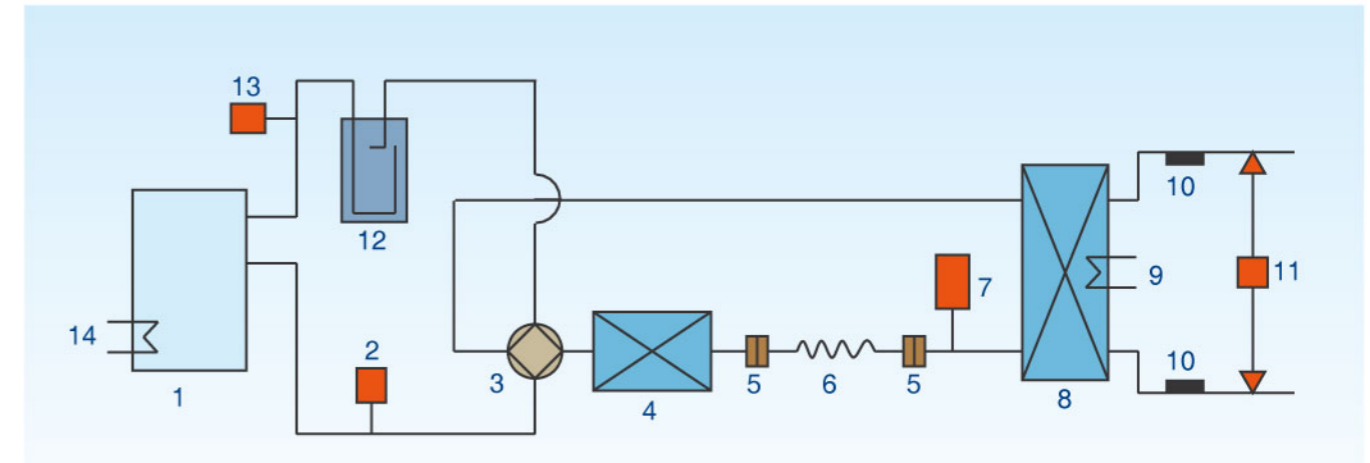
MGC-F12W/SN1 MGC-F14W/SN1 MGC-F16W/SN1



Service Space



Piping Diagram



Remark:

No.	Name	No.	Name	No.	Name
1	Compressor	6	Capillary	11	Water differential pressure switch
2	High pressure switch	7	Liquid receiver	12	Accumulator
3	4-way valve	8	Plate heat exchanger	13	Low pressure switch
4	Condenser	9	Defrost heater	14	Crankcase heater
5	Filter	10	Water temperature sensor		

Capacity tables

Cooling capacity

Model		MGC-F05W/N1					
Ta	Tw	5.0	6.0	7.0	8.0	9.0	10.0
25	Pf	5.1	5.2	5.4	5.5	5.6	5.8
	Pa	1.5	1.5	1.5	1.5	1.6	1.6
	Pat	1.8	1.8	1.8	1.8	1.9	1.9
	Qev	0.88	0.89	0.93	0.95	0.96	1.00
	ΔPev	21.6	23.0	24.6	26.3	27.8	29.5
30	Pf	4.9	5.0	5.1	5.3	5.4	5.5
	Pa	1.8	1.8	1.8	1.8	1.9	1.9
	Pat	2.1	2.1	2.1	2.1	2.2	2.2
	Qev	0.84	0.86	0.88	0.91	0.93	0.95
35	Pf	4.8	4.9	5.0	5.1	5.2	5.3
	Pa	1.8	1.8	1.8	1.9	1.9	1.9
	Pat	2.1	2.1	2.1	2.2	2.2	2.2
	Qev	0.83	0.84	0.86	0.88	0.89	0.91
40	Pf	4.6	4.7	4.9	5.0	5.1	5.2
	Pa	1.9	1.9	1.9	2.0	2.0	2.0
	Pat	2.2	2.2	2.2	2.3	2.3	2.3
	Qev	0.79	0.81	0.84	0.86	0.88	0.89
43	Pf	4.3	4.5	4.6	4.7	4.9	5.0
	Pa	2.1	2.1	2.1	2.2	2.2	2.2
	Pat	2.4	2.4	2.4	2.5	2.5	2.5
	Qev	0.74	0.77	0.79	0.81	0.84	0.86
ΔPev	14.8	15.9	17.1	18.3	19.5	20.8	

Model		MGC-F07W/N1					
Ta	Tw	5.0	6.0	7.0	8.0	9.0	10.0
25	Pf	7.3	7.4	7.6	7.7	7.8	8.0
	Pa	2.3	2.3	2.3	2.3	2.4	2.4
	Pat	2.6	2.6	2.6	2.6	2.7	2.7
	Qev	1.26	1.27	1.31	1.32	1.34	1.38
	ΔPev	35.6	37.0	38.6	40.3	41.8	43.5
30	Pf	7.1	7.2	7.3	7.5	7.6	7.7
	Pa	2.6	2.6	2.6	2.6	2.7	2.7
	Pat	2.9	2.9	2.9	2.9	3.0	3.0
	Qev	1.22	1.24	1.26	1.29	1.31	1.32
	ΔPev	32.4	33.7	36.1	37.6	39.1	40.6
35	Pf	7.0	7.1	7.2	7.3	7.4	7.5
	Pa	2.6	2.6	2.6	2.7	2.7	2.7
	Pat	2.9	2.9	2.9	3.0	3.0	3.0
	Qev	1.20	1.22	1.24	1.26	1.27	1.29
40	Pf	6.8	6.9	7.1	7.2	7.3	7.4
	Pa	2.7	2.7	2.7	2.8	2.8	2.8
	Pat	3.0	3.0	3.0	3.1	3.1	3.1
	Qev	1.17	1.19	1.22	1.24	1.26	1.27
43	Pf	6.5	6.7	6.8	6.9	7.1	7.2
	Pa	2.9	2.9	2.9	3.0	3.0	3.0
	Pat	3.2	3.2	3.2	3.3	3.3	3.3
	Qev	1.12	1.15	1.17	1.19	1.22	1.24
ΔPev	28.8	29.9	31.1	32.3	33.5	34.8	

Note:
 Ta: outside air temperature (°C)
 Tw : evaporator water outlet temperature (°C)
 Pf: cooling capacity (kW)
 ΔPev: evaporator pressure drop (kPa)

Pa: compressor power input (kW)
 Pat: total power input (kW)
 Qev: evaporator water flow (m³/h)

Model		MGC-F10W/N1					
Ta	Tw	5	6	7	8	9	10
25	Pf	10.9	11.2	11.5	11.8	12.1	12.4
	Pa	2.6	2.6	2.7	2.7	2.7	2.8
	Pat	3.1	3.1	3.2	3.2	3.2	3.3
	Qev	1.9	1.9	2.0	2.0	2.1	2.2
	ΔPev	31.5	31.7	33.0	33.5	36.0	38.0
30	Pf	10.4	10.8	11.1	11.5	11.8	12.1
	Pa	2.9	2.9	3.0	3.1	3.1	3.1
	Pat	3.4	3.4	3.5	3.6	3.6	3.6
	Qev	1.8	1.8	1.9	2.0	2.0	2.0
35	Pf	9.9	10.2	10.5	10.7	11.0	11.3
	Pa	3.3	3.3	3.4	3.4	3.5	3.5
	Pat	3.8	3.8	3.9	3.9	4.0	4.0
	Qev	1.7	1.7	1.8	1.9	1.9	2.0
40	Pf	9.4	9.7	10.0	10.3	10.6	11.0
	Pa	3.6	3.6	3.7	3.7	3.8	3.8
	Pat	4.1	4.1	4.2	4.2	4.3	4.3
	Qev	1.6	1.6	1.7	1.7	1.8	1.8
43	Pf	9.0	9.3	9.5	9.8	10.0	10.3
	Pa	3.8	3.8	3.9	3.9	4.0	4.0
	Pat	4.3	4.3	4.4	4.4	4.5	4.5
	Qev	1.5	1.6	1.6	1.7	1.7	1.8
ΔPev	21.0	23.8	24.4	27.0	27.5	31.0	

Model		MGC-F10W/SN1					
Ta	Tw	5	6	7	8	9	10
25	Pf	10.9	11.2	11.5	11.8	12.1	12.4
	Pa	2.6	2.6	2.7	2.7	2.7	2.8
	Pat	3.1	3.1	3.2	3.2	3.2	3.3
	Qev	1.9	1.9	2.0	2.0	2.1	2.2
	ΔPev	31.5	31.7	33.0	33.5	36.0	38.0
30	Pf	10.4	10.8	11.1	11.5	11.8	12.1
	Pa	2.9	2.9	3.0	3.1	3.1	3.1
	Pat	3.4	3.4	3.5	3.6	3.6	3.6
	Qev	1.8	1.8	1.9	2.0	2.0	2.0
35	Pf	9.9	10.2	10.5	10.7	11.0	11.3
	Pa	3.3	3.3	3.4	3.4	3.5	3.5
	Pat	3.8	3.8	3.9	3.9	4.0	4.0
	Qev	1.7	1.7	1.8	1.9	1.9	2.0
40	Pf	9.4	9.7	10.0	10.3	10.6	11.0
	Pa	3.6	3.6	3.7	3.7	3.8	3.8
	Pat	4.1	4.1	4.2	4.2	4.3	4.3
	Qev	1.6	1.6	1.7	1.7	1.8	1.8
43	Pf	9.0	9.3	9.5	9.8	10.0	10.3
	Pa	3.8	3.8	3.9	3.9	4.0	4.0
	Pat	4.3	4.3	4.4	4.4	4.5	4.5
	Qev	1.5	1.6	1.6	1.7	1.7	1.8
ΔPev	21.0	23.8	24.4	27.0	27.5	31.0	

Note:
 Ta: outside air temperature (°C)
 Tw : evaporator water outlet temperature (°C)
 Pf: cooling capacity (kW)
 ΔPev: evaporator pressure drop (kPa)

Pa: compressor power input (kW)
 Pat: total power input (kW)
 Qev: evaporator water flow (m³/h)

Model		MGC-F12W/SN1					
Ta	Tw	5	6	7	8	9	10
25	Pf	12.4	12.7	13.0	13.3	13.9	
	Pa	3.5	3.5	3.5	3.6	3.6	3.6
	Pat	4.1	4.1	4.1	4.2	4.2	4.2
	Qev	2.2	2.2	2.3	2.3	2.3	2.4
	ΔPev	29.1	29.9	31.0	32.4	34.1	37.5
30	Pf	11.9	12.2	12.5	12.8	13.1	13.4
	Pa	3.8	3.8	3.8	3.9	3.9	3.9
	Pat	4.4	4.4	4.4	4.5	4.5	4.5
	Qev	2.0	2.1	2.1	2.2	2.2	2.3
	ΔPev	23.1	23.2	25.4	27.0	28.8	30.0
35	Pf	11.4	11.7	12.0	12.3	12.6	12.9
	Pa	4.2	4.2	4.2	4.3	4.3	4.3
	Pat	4.8	4.8	4.8	4.9	4.9	4.9
	Qev	2.0	2.0	2.1	2.1	2.2	2.2
	ΔPev	21.1	23.2	25.4	27.0	28.8	30.0
40	Pf	10.9	11.2	11.5	11.8	12.1	12.4
	Pa	4.5	4.5	4.5	4.6	4.6	4.6
	Pat	5.1	5.1	5.1	5.2	5.2	5.2
	Qev	1.9	2.0	2.0	2.0	2.1	2.1
	ΔPev	20.2	21.9	22.7	24.0	25.6	28.2
43	Pf	10.5	10.8	11.1	11.4	11.7	12.0
	Pa	4.7	4.7	4.7	4.8	4.8	4.8
	Pat	5.3	5.3	5.3	5.4	5.4	5.4
	Qev	1.8	1.9	1.9	2.0	2.0	2.0
	ΔPev	17.5	18.8	21.1	23.4	24.1	25.3

Model		MGC-F14W/SN1					
Ta	Tw	5	6	7	8	9	10
25	Pf	14.8	15.1	15.4	15.7	16.1	16.4
	Pa	3.6	3.6	3.6	3.7	3.7	3.7
	Pat	4.1	4.1	4.1	4.2	4.2	4.2
	Qev	2.6	2.6	2.7	2.7	2.8	2.8
	ΔPev	29.0	29.4	30.4	31.2	33.0	34.0
30	Pf	14.1	14.4	14.7	15.0	15.3	15.6
	Pa	4.1	4.1	4.1	4.2	4.2	4.2
	Pat	4.6	4.6	4.7	4.7	4.7	4.7
	Qev	2.4	2.5	2.5	2.6	2.6	2.7
	ΔPev	25.8	28.2	28.4	28.9	29.5	31.0
35	Pf	13.4	13.7	14.0	14.3	14.6	14.9
	Pa	4.6	4.6	4.6	4.7	4.7	4.7
	Pat	5.1	5.1	5.1	5.2	5.2	5.2
	Qev	2.3	2.4	2.4	2.5	2.5	2.5
	ΔPev	24.0	25.6	26.0	27.6	28.1	28.4
40	Pf	12.5	12.8	13.1	13.4	13.7	14.0
	Pa	5.1	5.1	5.1	5.2	5.2	5.2
	Pat	5.6	5.6	5.6	5.7	5.7	5.7
	Qev	2.2	2.2	2.3	2.3	2.4	2.4
	ΔPev	19.6	20.3	21.6	23.4	25.7	26.4
43	Pf	12.0	12.3	12.6	12.9	13.2	13.5
	Pa	5.5	5.5	5.5	5.6	5.6	5.6
	Pat	6.0	6.0	6.0	6.1	6.1	6.1
	Qev	2.1	2.1	2.2	2.2	2.3	2.3
	ΔPev	18.0	19.1	20.7	21.3	23.0	23.8

Note:
 Ta: outside air temperature (°C) Pa: compressor power input (kW)
 Tw : evaporator water outlet temperature (°C) Pat: total power input (kW)
 Pf: cooling capacity (kW) Qev: evaporator water flow (m³/h)
 ΔPev: evaporator pressure drop (kPa)

Model		MGC-F16W/SN1					
Ta	Tw	5	6	7	8	9	10
25	Pf	15.5	15.7	16.0	16.3	16.5	16.8
	Pa	5.0	5.0	5.0	5.1	5.1	5.1
	Pat	5.5	5.5	5.5	5.6	5.6	5.6
	Qev	2.7	2.7	2.8	2.8	2.9	2.9
	ΔPev	30.5	32.0	33.0	34.5	36.2	37.6
30	Pf	14.8	15.0	15.3	15.6	15.8	16.1
	Pa	4.5	4.5	4.5	4.6	4.6	4.6
	Pat	5.0	5.0	5.0	5.1	5.1	5.1
	Qev	2.6	2.6	2.7	2.7	2.8	2.8
35	ΔPev	28.3	29.4	28.3	30.4	33.3	35.0
	Pf	14.9	15.2	15.5	15.8	16.1	16.4
	Pa	6.0	6.0	6.0	6.1	6.1	6.1
	Pat	6.5	6.5	6.5	6.6	6.6	6.6
40	Qev	2.6	2.6	2.7	2.7	2.8	2.8
	ΔPev	28.2	29.5	31.0	32.3	34.0	35.1
	Pf	14.2	14.5	14.8	15.1	15.4	15.7
	Pa	5.5	5.5	5.5	5.6	5.6	5.6
43	Pat	6.0	6.0	6.0	6.1	6.1	6.1
	Qev	2.5	2.5	2.6	2.6	2.7	2.7
	ΔPev	26.0	27.3	28.6	29.5	31.0	33.0
	Pf	13.5	13.8	14.1	14.4	14.7	15.0
43	Pa	5.0	5.0	5.0	5.1	5.1	5.1
	Pat	5.5	5.5	5.5	5.6	5.6	5.6
	Qev	2.4	2.4	2.5	2.5	2.6	2.6
	ΔPev	23.0	24.6	26.1	27.3	28.6	30.0

Note:
 Ta: outside air temperature (°C) Pa: compressor power input (kW)
 Tw : evaporator water outlet temperature (°C) Pat: total power input (kW)
 Pf: cooling capacity (kW) Qev: evaporator water flow (m³/h)
 ΔPev: evaporator pressure drop (kPa)

Heating capacity

Model		MGC-F05W/N1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	4.2	4.2	4.1	-
	Pa	1.3	1.5	1.6	-
	Pat	1.5	1.7	1.8	-
	Qc	0.72	0.72	0.71	-
0	ΔPc	14.6	14.5	14.1	-
	Pt	4.8	4.8	4.7	4.7
	Pa	1.3	1.5	1.7	1.9
	Pat	1.6	1.8	2	2.2
7	Qc	0.83	0.83	0.81	0.81
	ΔPc	18.5	18.4	18.1	18.1
	Pt	5.6	5.5	5.5	5.4
	Pa	1.4	1.5	1.7	1.9
10	Pat	1.7	1.8	2	2.2
	Qc	0.96	0.95	0.95	0.93
	ΔPc	23.9	23.4	23	22.9
	Pt	6.1	6.1	6	6
15	Pa	1.4	1.5	1.7	1.9
	Pat	1.7	1.8	2	2.2
	Qc	1.05	1.05	1.03	1.03
	ΔPc	27.8	27.5	27.1	27
15	Pt	6.5	6.5	6.5	6.4
	Pa	1.4	1.6	1.7	1.9
	Pat	1.7	1.9	2	2.2
	Qc	1.12	1.12	1.12	1.10
15	ΔPc	33.2	33	32.9	32.5

Note:
 Ta: outside air temperature (°C) Tw : evaporator water outlet temperature (°C)
 Pt: heating capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qc: condenser water flow (m³/h)
 ΔPc: evaporator pressure drop (kPa) -: Exceed operating limits

Model		MGC-F07W/N1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	6.4	6.4	6.3	-
	Pa	2.2	2.4	2.5	-
	Pat	2.5	2.7	2.8	-
	Qc	1.10	1.10	1.08	-
	ΔPc	27.6	27.5	27.1	-
0	Pt	7	7	6.9	6.9
	Pa	2.2	2.4	2.6	2.8
	Pat	2.5	2.7	2.9	3.1
	Qc	1.20	1.20	1.19	1.19
	ΔPc	31.5	31.4	31.1	31.1
7	Pt	7.8	7.7	7.7	7.6
	Pa	2.3	2.4	2.6	2.8
	Pat	2.6	2.7	2.9	3.1
	Qc	1.34	1.32	1.32	1.31
	ΔPc	36.9	36.4	36	35.9
10	Pt	8.3	8.3	8.2	8.2
	Pa	2.3	2.4	2.6	2.8
	Pat	2.6	2.7	2.9	3.1
	Qc	1.43	1.43	1.41	1.41
	ΔPc	40.8	40.5	40.1	40
15	Pt	8.7	8.7	8.7	8.6
	Pa	2.3	2.5	2.6	2.8
	Pat	2.6	2.8	2.9	3.1
	Qc	1.50	1.50	1.50	1.48
	ΔPc	46.2	46	45.9	45.5

Model		MGC-F10W/SN1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	8.3	8.3	8.3	-
	Pa	3.0	3.2	3.5	-
	Pat	3.5	3.7	4.0	-
	Qc	1.4	1.4	1.4	-
	ΔPc	19.6	18.9	18.0	-
0	Pt	9.4	9.4	9.4	9.2
	Pa	3.1	3.3	3.6	3.8
	Pat	3.6	3.8	4.1	4.3
	Qc	1.7	1.6	1.6	1.6
	ΔPc	27.5	25.6	24.8	23.2
7	Pt	11.4	11.3	11.2	11.1
	Pa	3.3	3.6	3.8	4.1
	Pat	3.8	4.1	4.3	4.6
	Qc	2.0	2.0	2.0	1.9
	ΔPc	37.2	35.8	34.5	33.1
10	Pt	12.3	12.2	12.1	12.0
	Pa	3.4	3.7	3.9	4.2
	Pat	3.9	4.2	4.4	4.7
	Qc	2.1	2.1	2.1	2.1
	ΔPc	40.5	40.0	39.2	38.8
15	Pt	13.8	13.7	13.6	13.5
	Pa	3.5	3.8	4.0	4.3
	Pat	4.0	4.3	4.5	4.8
	Qc	2.4	2.4	2.3	2.3
	ΔPc	45.8	45.1	43.6	42.9

Model		MGC-F10W/N1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	8.3	8.3	8.3	-
	Pa	3.0	3.2	3.5	-
	Pat	3.5	3.7	4.0	-
	Qc	1.4	1.4	1.4	-
	ΔPc	19.6	18.9	18.0	-
0	Pt	9.4	9.4	9.4	9.2
	Pa	3.1	3.3	3.6	3.8
	Pat	3.6	3.8	4.1	4.3
	Qc	1.7	1.6	1.6	1.6
	ΔPc	27.5	25.6	24.8	23.2
7	Pt	11.4	11.3	11.2	11.1
	Pa	3.3	3.6	3.8	4.1
	Pat	3.8	4.1	4.3	4.6
	Qc	2.0	2.0	2.0	1.9
	ΔPc	37.2	35.8	34.5	33.1
10	Pt	12.3	12.2	12.1	12.0
	Pa	3.4	3.7	3.9	4.2
	Pat	3.9	4.2	4.4	4.7
	Qc	2.1	2.1	2.1	2.1
	ΔPc	40.5	40.0	39.2	38.8
15	Pt	13.8	13.7	13.6	13.5
	Pa	3.5	3.8	4.0	4.3
	Pat	4.0	4.3	4.5	4.8
	Qc	2.4	2.4	2.3	2.3
	ΔPc	45.8	45.1	43.6	42.9

Model		MGC-F12W/SN1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	9.9	9.8	9.8	-
	Pa	3.7	4.0	4.3	-
	Pat	4.3	4.6	4.9	-
	Qc	1.7	1.7	1.7	-
	ΔPc	26.0	25.6	25.2	-
0	Pt	11.1	11.0	11.0	11.0
	Pa	3.8	4.1	4.4	4.6
	Pat	4.4	4.7	5.0	5.2
	Qc	1.9	1.9	1.9	1.9
	ΔPc	33.0	32.6	32.1	31.8
7	Pt	13.4	13.3	13.2	13.1
	Pa	3.9	4.2	4.5	4.8
	Pat	4.5	4.8	5.1	5.4
	Qc	2.3	2.3	2.3	2.3
	ΔPc	44.0	43.6	43.1	42.8
10	Pt	14.4	14.3	14.2	14.1
	Pa	4.0	4.3	4.6	4.9
	Pat	4.6	4.9	5.2	5.5
	Qc	2.5	2.5	2.5	2.5
	ΔPc	38.0	37.6	37.2	37.0
15	Pt	15.9	15.8	15.7	15.6
	Pa	4.1	4.4	4.7	5.0
	Pat	4.7	5.0	5.3	5.6
	Qc	2.8	2.8	2.8	2.8
	ΔPc	45.0	44.8	44.6	44.2

Note:
 Ta: outside air temperature (°C) Tw: evaporator water outlet temperature (°C)
 Pt: heating capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qc: condenser water flow (m3/h)
 ΔPc: evaporator pressure drop (kPa) -: Exceed operating limits

Note:
 Ta: outside air temperature (°C) Tw: evaporator water outlet temperature (°C)
 Pt: heating capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qc: condenser water flow (m3/h)
 ΔPc: evaporator pressure drop (kPa) -: Exceed operating limits

Model		MGC-F14W/SN1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	10.4	10.5	10.6	-
	Pa	4.0	4.4	4.9	-
	Pat	4.5	4.9	5.4	-
	Qc	1.9	1.9	1.9	-
	ΔPc	15.2	15.1	15.0	-
0	Pt	13.1	13.0	13.0	12.9
	Pa	4.0	4.4	4.9	5.4
	Pat	4.5	4.9	5.4	5.9
	Qc	2.3	2.3	2.3	2.3
	ΔPc	21.1	21.1	21.0	20.9
7	Pt	16.2	16.2	16.1	16.0
	Pa	4.1	4.5	5.0	5.5
	Pat	4.6	5.0	5.5	6.0
	Qc	2.8	2.8	2.8	2.8
	ΔPc	31.2	31.1	31.0	31.0
10	Pt	17.6	17.5	17.4	17.4
	Pa	17.6	17.5	17.4	17.4
	Pat	17.6	17.5	17.4	17.4
	Qc	3.1	3.1	3.1	3.1
	ΔPc	36.4	36.2	36.0	35.9
15	Pt	19.8	19.7	19.6	19.4
	Pa	4.3	4.5	5.2	5.7
	Pat	4.8	5.0	5.7	6.2
	Qc	3.5	3.5	3.5	3.5
	ΔPc	45.4	45.2	45.0	44.9

Model		MGC-F16W/SN1			
Ta(U.R.87%)	Tw	35	40	45	50
-5	Pt	10.5	10.4	10.3	-
	Pa	3.6	4.0	4.5	-
	Pat	3.9	4.3	4.8	-
	Qc	1.8	1.8	1.8	-
	ΔPc	13.9	13.9	13.8	-
0	Pt	12.8	12.7	12.6	12.5
	Pa	3.7	4.1	4.6	5.1
	Pat	4.0	4.4	4.9	5.4
	Qc	2.2	2.2	2.2	2.2
	ΔPc	20.2	20.1	20	19.9
7	Pt	15.6	15.5	15.5	15.4
	Pa	3.8	4.2	4.7	5.3
	Pat	4.1	4.5	5.0	5.6
	Qc	2.7	2.7	2.7	2.7
	ΔPc	30.2	30.1	30	30
10	Pt	16.9	16.8	16.7	16.6
	Pa	3.9	4.3	4.8	5.3
	Pat	4.2	4.6	5.1	5.6
	Qc	3.0	3.0	3.0	3.0
	ΔPc	35.4	35.2	35	34.8
15	Pt	19	18.9	18.8	18.7
	Pa	4.0	4.4	4.9	5.5
	Pat	4.3	4.7	5.2	5.7
	Qc	3.2	3.2	3.2	3.2
	ΔPc	46.2	45.6	45	44.4

Note:
 Ta: outside air temperature (°C) Tw : evaporator water outlet temperature (°C)
 Pt: heating capacity (kW) Pa: compressor power input (kW)
 Pat: total power input (kW) Qc: condenser water flow (m3/h)
 ΔPc: evaporator pressure drop (kPa) -: Exceed operating limits

Hydraulic connections

The choice and installation of components is the responsibility of the installer who should follow good working practice and current legislation.

It is recommended that the following devices are installed in the water circuit of the system.

- 1 Pressure gauge
- 2 Vibration damper joint
- 3 Gate valve
- 4 Calibrating valve
- 5 Water flow switch
- 6 Thermometer
- 7 Pump
- 8 Safety valve
- 9 Air vent
- 10 Expansion tank
- 11 Mesh filter
- 12 Auto-water replenishing valve
- 13 Temperature sensor
- 14 Differential pressure switch
- 15 Drain/chemical washing valve
- 16 Plate heat exchanger
- 17 Additional pump
- 18 Additional pump

Wiring specification

Type	5kw	7.2kw	10.5kw	12kw	14kw	16kw	
Power supply	220-240V~, 50Hz		380-415V 3N~, 50Hz				
Circuit breaker/fuse	(A)	25/20	30/25	25/15	25/15	30/20	
Power wiring	(mm ²)	3x2.5	3x2.5	5x2.5	5x2.5	5x2.5	5x4.0
Ground wiring	(mm ²)	2.5	2.5	2.5	2.5	2.5	4.0
Outdoor/indoor connecting	1.0	1.0	1.0	1.0	1.0	1.0	

- The power cord type designation is H07RN-F.
- Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed flexible cord, type designation H07RN-F or heavier cord.
- The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

Accessories

Item	Model	Description	Appearance	Note
Remote controller	SKW210	LCD remote terminal with integrated room temperature control;		optional