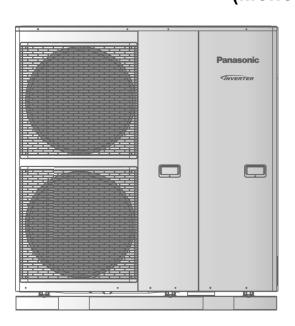
Service Manual (Mono Bloc) Air-to-Water Heatpump System

Mono Bloc Unit WH-MHF09G3E5

> Destination Europe Turkey



This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by $\underline{\wedge}$ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

A PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigerant circuit.



1. Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before installation of (Mono bloc) Air-to-Water Heatpump system (hereafter referred to as "Mono bloc unit").
- Electrical works and water installation works must be done by licensed electrician and licensed water system installer respectively. Be sure to use the correct rating and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignorance or negligence of the instructions will cause harm or damage, and the seriousness is classified by the following indications.

This indication shows the possibility of causing death or serious injury.
This indication shows the possibility of causing injury or damage to properties only.

• The items to be followed are classified by the symbols:

\bigcirc	This symbol denotes item that is PROHIBITED from doing.
00	Symbol with dark background denotes item that must be carried out.

- Carry out test run to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.
- If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.

1.	Do not install Mono bloc unit near handrail of veranda. When installing Mono bloc unit at veranda of high rise building, child may climb up to Mono bloc unit and cross over the handrail and causing accident.	\bigcirc
2.	Do not use unspecified cord, modified cord, join cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.	\bigcirc
3.	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.	\bigcirc
4.	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.	\bigcirc
5.	Do not sit or step on the unit, you may fall down accidentally.	\bigcirc
6.	Keep plastic bag (packaging material) away from small children, it may cause suffocation.	\bigcirc
7.	Do not use pipe wrench to install refrigerant pipe. It might deform the piping and cause the unit to malfunction.	\bigcirc
8.	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc They might cause electrical shock or fire.	\bigcirc
9.	This unit is a multi supply appliances. All circuits must be disconnected before accessing to the unit terminals.	\bigcirc
10.	Do not modify the wiring of Mono bloc unit for installation of other components (i.e. heater, etc.). Overloaded wiring or wire connection points may cause electrical shock or fire.	\bigcirc
11.	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.	\Diamond
12.	For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	0
13.	For water circuit installation work, follow to relevant European and national regulations (including EN61770) and local plumbing and building regulation codes.	0
14.	Must engage an authorized dealer or specialist for installation. If installation is defective, it will cause water leakage, electrical shock or fire.	0
15.	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	0
16.	Only use the supplied or specified installation parts. Else, it may causes Mono bloc unit vibrate, fall, water leakage, electrical shock or fire.	0
17.	Install at a flat, strong and firm location which is able to withstand the Mono bloc unit's weight. If the location is slanting, or strength is not enough the set will fall and cause injury.	0

18.	This equipment is strongly recommended to be installed with Residual Current Device (RCD) on-site according to the respective national wiring rules or country-specific safety measures in terms of residual current.	0
19.	The unit is only for use in a closed water system. Utilization in an open water system may lead to excessive corrosion of the water piping and risk of incubating bacteria colonies, particularly Legionella, in water.	0
20.	If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.	0
21.	Select a location where in case of water leakage, the leakage will not cause damage to other properties.	0
22.	When installing electrical equipment at wooden building of metal lath or wire lath, in accordance with electrical facility standard, no electrical contact between equipment and building is allowed. Insulator must be installed in between.	0
23.	This installation may be subjected to building regulation approval applicable to respective country that may require to notify the local authority before installation.	0
24.	Any work carried out on the Mono bloc unit after removing the front panel which is secured by screws, must be carried out under the supervision of authorized dealer and licensed installation contractor.	0
25.	This unit must be properly earthed, the electrical earth must not be connected to a gas pipe, water pipe, the earth of a lightning rod or a telephone. Otherwise there is a danger of electrical shock in the event of an insulation breakdown or electrical earth fault in the Mono bloc unit.	Ð

1.	Do not install the Mono bloc unit in areas where there is a risk of flammable gas leakage. There is a risk of fire if flammable gas accumulates near or around the Mono bloc unit.	\Diamond
2.	Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.	\bigcirc
3.	Make sure the power supply cord does not contact with hot part (i.e. water piping). High temperature may cause insulator of power supply cord damage hence electrical shock or fire.	\bigcirc
4.	Do not touch the sharp aluminum fins or edges of metal parts. If you are required to handle sharp parts during installation or servicing, please wear hand glove. Sharp parts may cause injury.	\bigcirc
5.	Do not apply excessive force to water pipes that may damage the pipes. If water leakage occurs, it will cause flooding and damage to other properties.	\bigcirc
6.	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water leakage may happen and may cause damage to properties of the user.	0
7.	The piping installation work must be flushed before the Mono bloc unit is connected to remove contaminants. Contaminants may damage the Mono bloc unit components.	0
8.	Select an installation location where it is accessible for maintenance.	0
9.	 Power supply connection to the Mono bloc unit. Power supply point should be in easily accessible place for power disconnection in case of emergency. Must follow local national wiring standard, regulation and this installation instruction. Strongly recommended to make permanent connection to a circuit breaker. It must be a double pole switch with a minimum 3.0 mm gap. Power supply 1: Use approved 40A circuit breaker Power supply 2: Use approved 40A circuit breaker 	0
10.	Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire.	0
11.	After installation, the installer is obliged to verify correct operation of the Mono bloc unit. Check the connection point for water leakage during test run. If leakage occurs, it will cause damage to other properties.	0
12.	Installation work. Four or more people are required to carry out the installation work. The weight of Mono bloc unit might cause injury if carried by less than four people.	0

2. Specifications

2.1 WH-MHF09G3E5

	Item	Unit	Refrigerant System			
Performance Test Cor	ndition		EN14	1511		
		Condition (Ambient/Water)	A7W35	A2W35		
Heating Capacity		Condition	9.00	9.00		
		BTU/h	30700	30700		
		kcal/h	EN14511 A7W35 A2W 9.00 9.0 30700 307 7740 774 4.64 3.4	7740		
COP		W/W	4.64	3.45		
COP		kcal/hW	3.99	2.97		
Air Flow		m ³ /min (ft ³ /min)	76.8 (2710)			
Refrigeration Control I	Device		Expansion Valve			
Refrigeration Oil		cm ³	FV50S (1600)			
Refrigerant (R407C)		g (oz)	1.92k (67.8)			
	Туре		Hermetic Motor / Rotary			
Compressor	Motor Type		Brushless	(4-poles)		
	Rated Output	kW	3.4	40		
	Туре		Propell	er Fan		
	Material		P	P		
Fan	Motor Type		DC (8-	poles)		
Fan	Input Power	W	_	-		
	Output Power	W	6	0		
	Fan Speed	rpm	490 (Top Fan) 530 (Bottom Fan)			
	Fin material		Aluminium	(Pre Coat)		
Lloot Evolopgor	Fin Type		Corruga	ited Fin		
Heat Exchanger	Row × Stage × FPI		2 × 51	× 18		
	Size (W × H × L)	mm	903.7 × 129	95.4 × 38.1		

	Item	Unit	Mono E	Bloc Unit		
	Height	mm (inch)	1410 (55-1/2)			
Dimension	Width	mm (inch)	1283 ((50-1/2)		
	Depth	mm (inch)	320 (1	2-19/32)		
Net Weight	·	kg (lbs)	151	(333)		
		dB-A	4	49		
Noise Level		Power Level dB	(66		
		ø				
Power Source (Pha	se, Voltage, Cycle)	V	1283 (50-1/2) 320 (12-19/32) 151 (333) 49 66	30		
		Hz	50			
Input Power		kW				
Maximum Input Pov	ver For Mono Bloc Unit	kW	6	.09		
Power Supply 1: Phase (ø) / Max. Current (A) / Max. Input Power (W)			Single / 2	8.5 / 6.09k		
Power Supply 2: Ph	ase (ø) / Max. Current (A) / M	ax. Input Power (W)	Single / 1	3.0 / 3.00k		
Power Supply 3: Ph	ase (ø) / Max. Current (A) / M	ax. Input Power (W)	-/-/-			
Starting Current		A	ç	9.3		
Running Current		A	9.3 12.5			
Maximum Current F	or Mono Bloc Unit	A	2	8.5		
Power Factor		%	91	91		

	ltem		Unit	Mono Bloc Unit
Power factor means total	I figure of comp	pressor and outd	loor fan motor.	
Power Cord		core		-
ower factor means total f ower Cord hermostat rotection Device If erformance Test Condition peration Range ternal Pressure Different /ater Pipe Diameter /ater Drain Hose Inner D ump ot Water Coil ressure Relief Valve Wat low Switch	Length		m (ft)	-
Thermostat				Electronic Control
Protection Device				Electronic Control
	ltem		Unit	Water System
Performance Test Condition				EN14511
Operation Range		mbient	°C	-20 ~ 35
Dperation Range nternal Pressure Differential Water Pipe Diameter Water Drain Hose Inner Dian	Water Out	et	°C	25 ~ 65
Internal Pressure Differential			kPa	26.5
Water Dine Diameter	Inlet		mm (inch)	30 (1-3/16)
Water Pipe Diameter Outlet			mm (inch)	30 (1-3/16)
Water Drain Hose Inner I	Diameter		mm (inch)	15.00 (19/32)
	Motor Type	e		DC Motor
Performance Test Condition Operation Range Internal Pressure Different Water Pipe Diameter Water Drain Hose Inner Di Pump Hot Water Coil Pressure Relief Valve Wate Flow Switch	No. of Spe	ed		7 (Software Selection)
	Input Powe	er	W	58
	Туре			Brazed Plate
	No. of Plat	es		80
Hot water Coll	Size (W x	H x L)	mm	130 × 93 × 325
	Water Flow	v Rate	l/min (m ³ /h)	25.8 (1.5)
Pressure Relief Valve Wa	ater Circuit		kPa	Open: 300, Close: 265 and below
Flow Switch				Magnetic Lead Switch
Protection Device			А	Residual Current Circuit Breaker (40)
		Volume	I	10
Expansion Vessel		MWP	bar	3
Capacity of Integrated EI	ectric Heater		kW	3.00

Note:

Heating capacities are based on outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb) with controlled water inlet temperature of 30°C and water outlet temperature of 35°C.

• Specification are subjected to change without prior notice for further improvement.

3. Features

- Inverter Technology
 - Energy saving
- High Efficiency
- Compact Design
- Environment Protection
 - Non-ozone depletion substances refrigerant (R407C)
- Easy to use remote control
- Weekly Timer setting

Quality Improvement

- Random auto restart after power failure for safety restart operation
- Gas leakage protection
- Prevent compressor reverse cycle
- Inner protector to protect compressor

• Serviceability Improvement

- Breakdown Self Diagnosis function
- System Status Check Buttons for servicing purpose
- System Service Mode Button for servicing purpose
- Front maintenance design for mono bloc unit

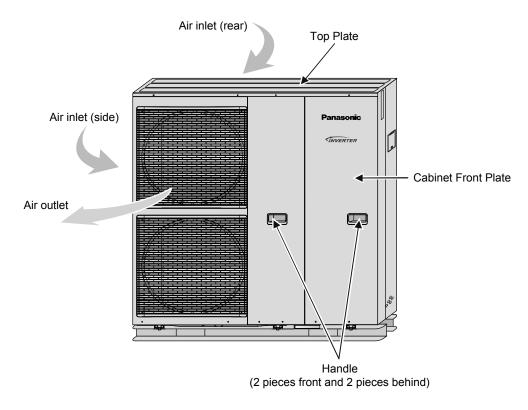
• Operation Condition

		Water outlet temperature (°C)	Ambient temperature (°C)
HEATING	Maximum	65	35
	Minimum	25	-20

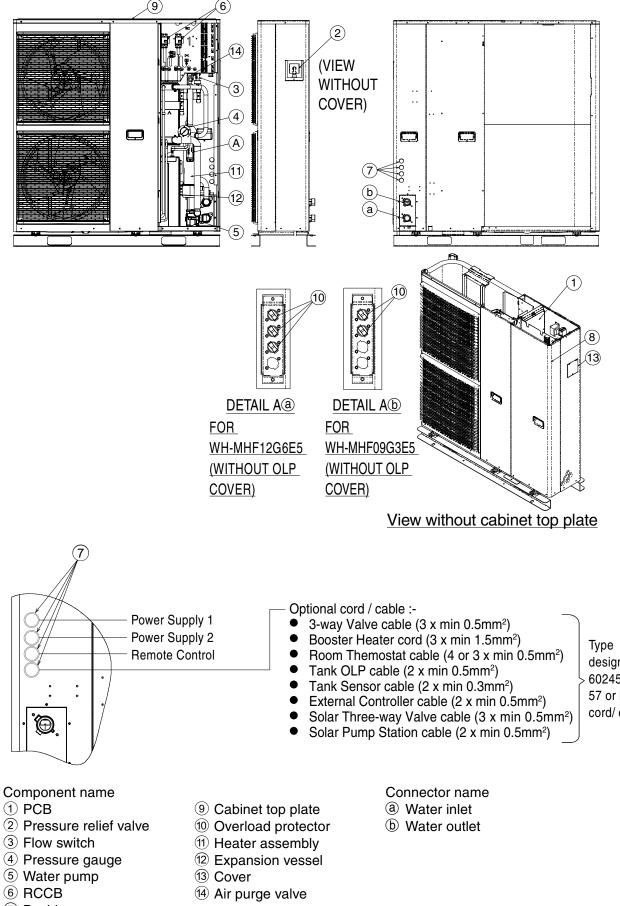
NOTICE : When the outdoor temperature is out of the above temperature range, the heating capacity will drop significantly and mono bloc unit might stop for protection control.

4. Location of Controls and Components

4.1 Mono Bloc Unit



4.1.1 Main Components

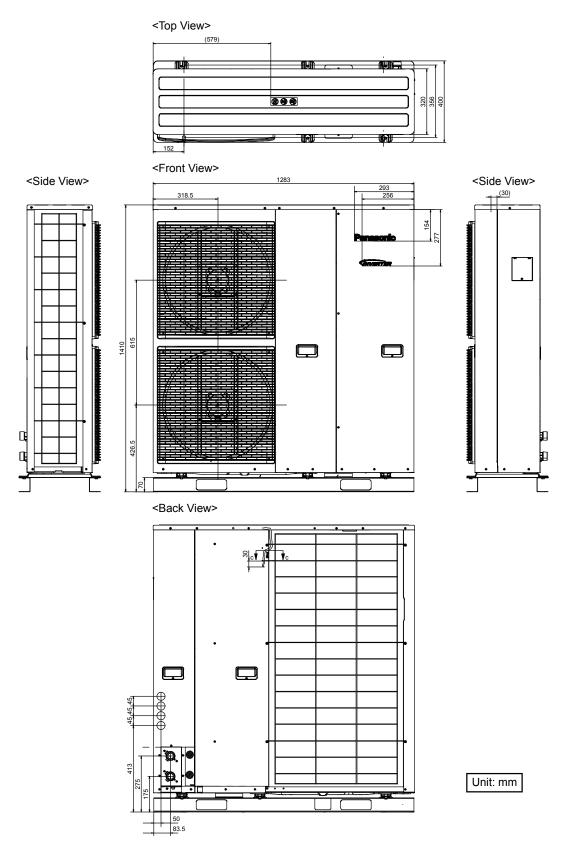


- ⑦ Bushing
- (8) Cabinet front plate

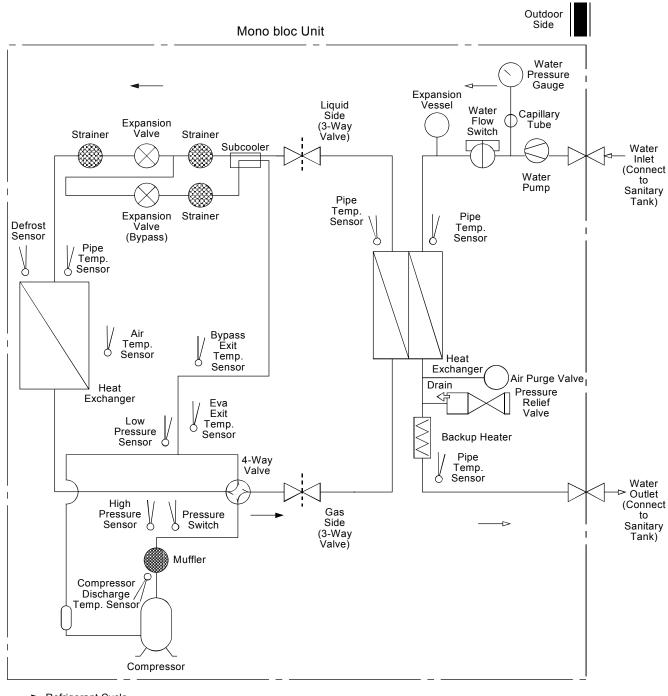
Type designation 60245 IEC 57 or heavier cord/ cable

5. Dimensions

5.1 Mono Bloc Unit

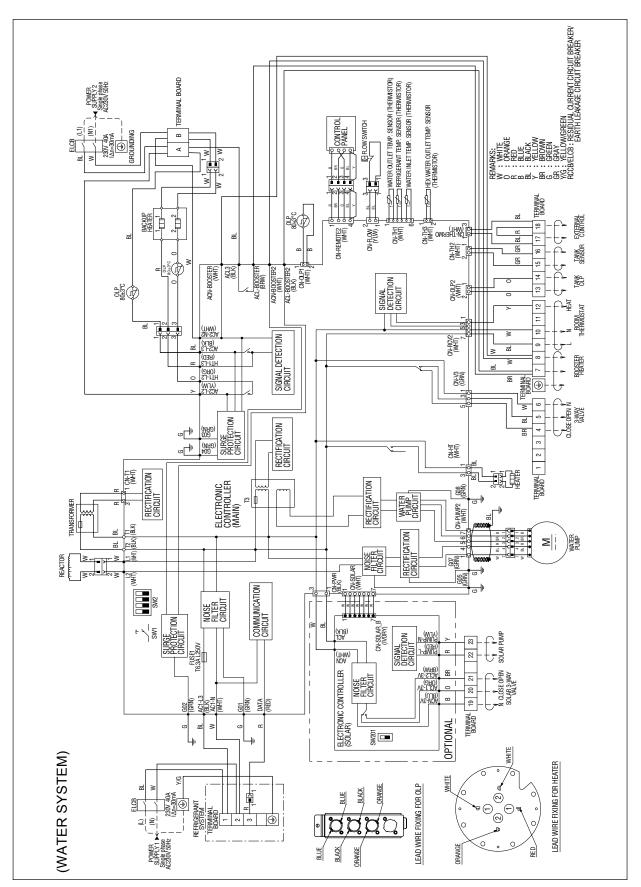


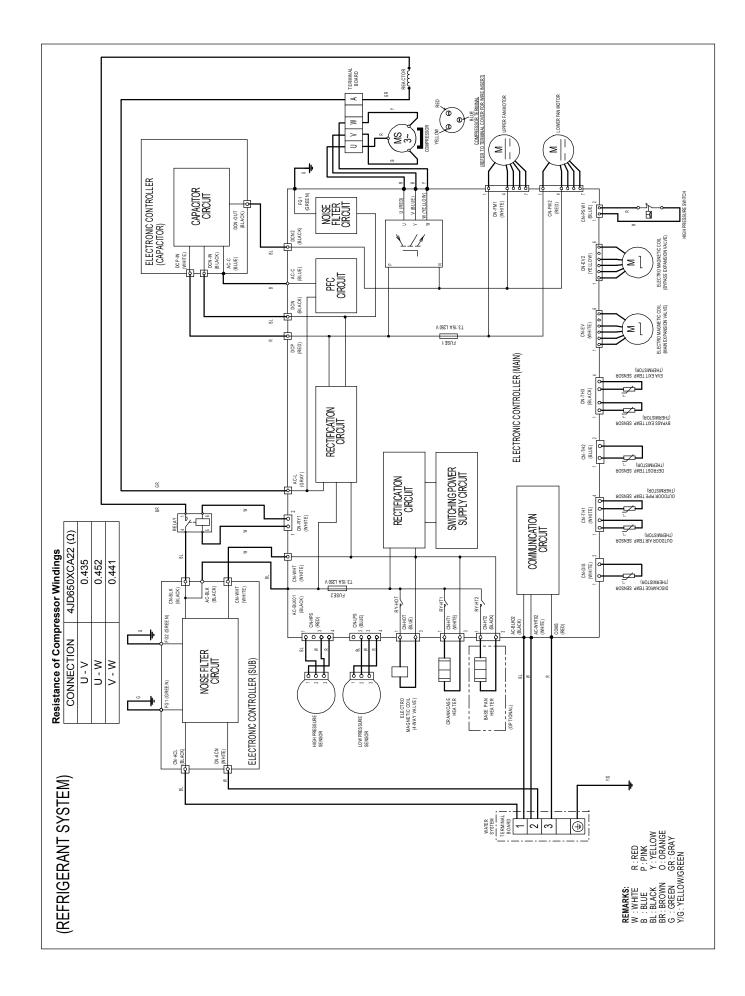
6. Refrigeration and Water Cycle Diagram



Refrigerant Cycle

—⊳ Water Cycle





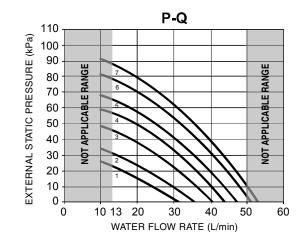
How To Adjust Water Flow Rate

Before adjust the water flow rate, make sure that the total water volume in the installation is 50 litres minimum for heating side. The default setting is SPEED 4 (Only for WH-MHF09G3E5) and SPEED 5 for WH-MHF12G6E5. Please ensure the minimum flow rate is not less than 13 l/min and not more than 50 l/min.

The available external static pressure (kPa) in function of the water flow rate (l/min) is shown in the P-Q graph. Depend on the hydraulic system pressure loss and type, the water flow rate can be adjusted by remote control.

- 1 When the Air-to-Water Heatpump is in stop operation, press SERVICE button for 5 seconds.
- 2 Press ▲/▼ button to select menu S02 (PUMP SPEED ADJUST MODE) and press SET button to confirm the menu.
- 3 Press SELECT button then press ▲/▼ button to change pump speed and press SET button to confirm the pump speed.
- 4 Press OFF/ON button to exit PUMP SPEED ADJUST MODE.

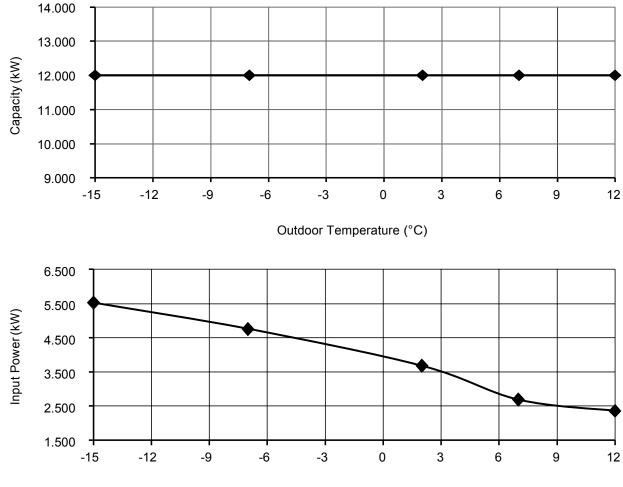
During PUMP SPEED ADJUST MODE, we can select AIR PURGE function by pressing FORCE button. In AIR PURGE function, the pump will operate ON and OFF for 10 minutes to purge the air in the hydraulic system. Press again the FORCE button to exit AIR PURGE function. PUMP SPEED ADJUST MODE will stop operation.



18.1.2 WH-MHF12G6E5

Heating Characteristics at Different Outdoor Air Temperature

- Condition
 - Outdoor air temperature : 7°C (DBT), 6°C (WBT)
 - Indoor water inlet temperature : 30°C
 - Indoor water outlet temperature : 35°C



Outdoor Temperature (°C)

18.2 Heating Capacity Table

18.2.1 WH-MHF09G3E5

Water Out (°C)	30		3	5	4	0	4	5	55	5*	65	**
Outdoor Air (°C)	Capacity (W)	Input Power (W)										
-15	9000	3460	9000	3710	9000	4010	8800	4260	8500	4710	7800	5380
-7	9000	3060	9000	3290	9000	3560	8900	3830	8900	4280	9000	5020
2	9000	2430	9000	2610	9000	2910	9000	3210	9000	3720	9000	4370
7	9000	1820	9000	1940	9000	2210	9000	2460	9000	2990	9000	3640
12	9000	1520	9000	1700	9000	1880	9000	2160	9000	2630	9000	3200

* is tested with dT = 8°C, ** is tested with dT = 10°C

18.2.2 WH-MHF12G6E5

Water Out (°C)	30		3	5	4	0	4	5	55	5*	65	**
Outdoor Air (°C)	Capacity (W)	Input Power (W)										
-15	12000	5160	12000	5530	11000	5510	10800	5490	9700	5520	8000	5610
-7	12000	4430	12000	4760	11500	4910	11200	5060	10100	5060	9600	5430
2	12000	3420	12000	3680	11500	3860	11300	4140	10800	4660	10300	5130
7	12000	2520	12000	2690	12000	3060	12000	3440	12000	4100	12000	4970
12	12000	2030	12000	2360	12000	2690	12000	3020	12000	3610	12000	4370

* is tested with dT = 8°C, ** is tested with dT = 10°C