Specifications

Model			CAHV-P500YA-HPB (-BS)
Power Source			3-phase 4-wire 380-400-415V 50/60Hz
Capacity *1		kW	45
		kcal/h	38,700
		BTU/h	153,540
	Power input	kW	12.9
	Current input	A	21.78-20.69-19.94
	COP (kW / kW)		3.49
Capacity *2		kW	45
		kcal/h	38,700
		BTU/h	153,540
	Power input	kW	10.9
	Current input	A	10.6 (400V)
	COP (kW / kW)		4.13
Capacity *3		kW	45
		kcal/h	38,700
		BTU/h	153,540
	Power input	kW	25.6
	Current input	A	43.17-41.01-39.53
	COP (kW / kW)		1.76
Maximum current input *4		A	57.77-54.88-52.90
Water pressure drop *1			12.9kPa (1.87psi)
Temp. range	Outlet water temp *5		25~70°C 77~158°F
	Outdoor temp *5	D.B	-20~40°C -4~104°F
Circulating water volume range			7.5 m³/h-15.0m³/h
Sound Pressure level (measured in anechoic room) *1 at 1m		dB (A)	59
Sound Pressure level (measured in anechoic room) *1 at 10m		dB (A)	51
Sound Pressure level (measured in anechoic room) *4		dB (A)	63
Diameter of water pipe	Inlet	mm (in)	38.1 (Rc 1 1/2") screw
	Outlet	mm (in)	38.1 (Rc 1 1/2") screw
External finish			Acrylic painted steel plate <MUNSELL 5Y 8/1 or similar>
External dimension H × W × D		mm in.	1,710 (without legs 1,650) × 1,978 × 759 67.3 (without legs 65.0) × 77.9 × 29.9
Net weight		kg (lb)	526 (1,160)
Accessories			Y strainer Rc 1 1/2
Design Pressure	R407C	MPa	3.85
	Water	MPa	1.0
Drawing	Wiring		KC94G268X01
	External		KC94G195X01
Heat exchanger	Water side		stainless steal plate and copper brazing
	Air side		Plate fin and copper tube
Compressor	Type		Inverter scroll hermetic compressor
	Manufacture		MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter
	Motor output	kW	7.5 × 2
	Case heater	kW	0.045 × 2
	Lubricant		MEL32
FAN	Air flow rate	m³/min	185 × 2
		L/s	3,083 × 2
		cfm	6,532 × 2
	External static press.		0Pa (0mmH₂O)
	Type × Quantity		Propeller fan × 2
	Control, Driving mechanism		Inverter-control, Direct-driven by motor
	Motor output	kW	0.46 × 2
HIC circuit (HIC:Heat inter-Changer)			Copper pipe
Protection	High pressure protection		High pres.Sensor & High pres.Switch at 3.85MPa (643psi)
	Inverter circuit		Over-heat protection, Over current protection
	Compressor		Over-heat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (Reversed refrigerant circle)
Refrigerant	Type × original charge		R407C × 5.5(kg) × 2
	Control		LEV and HIC circuit

*1 Under Normal heating conditions at outdoor temp. 7°CDB/6°CWB(44.6°FDB/42.8°FWB)/ outlet water temp 45°C(113°F), inlet water temp 40°C(104°F).

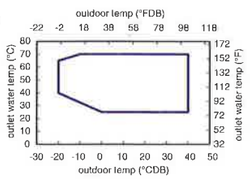
*2 Under Normal heating conditions at outdoor temp. 7°CDB/6°CWB(44.6°FDB/42.8°FWB)/ outlet water temp 35°C(95°F), inlet water temp 30°C(86°F).

*3 Under Heating conditions at outdoor temp. 7°CDB/6°CWB(44.6°FDB/42.8°FWB), outlet water temp 70°C (158°F).

*4 Under Heating conditions at outdoor temp. 7°CDB/6°CWB(44.6°FDB/42.8°FWB) when this unit is set to capacity priority mode by non-voltage B contact.

* Due to continuing improvement, the above specifi cations may be subject to change without notice.
* Please don't use the steel material for the water piping material.
* Please always make water circulate or pull out the circulation water completely when not using it.
* Please do not use groundwater and well water.
* Install the unit in an environment where the wet bulb Temp. will not exceed 32°C.
* The water circuit must use the closed circuit.

*5.



Outdoor temp -20°CDB/ Outlet water temp 40~65°C
(Outdoor temp -4°FDB/ Outlet water temp 104°F~149°F)
Outdoor temp -10°CDB/ Outlet water temp 33°C~70°C
(Outdoor temp 14°FDB/ Outlet water temp 91°F~158°F)
Outdoor temp 0°CDB/ Outlet water temp 25°C~70°C
(Outdoor temp 32°FDB/ Outlet water temp 77°F~158°F)

Unit converter

kcal =kW × 860
BTU/h =kW × 3,412
cfm =m³/min × 35.31
lb =kg/0.4536

<PAR-W21MAA>



Up to 16 units can be controlled with one remote controller.

<External input/output from the unit>

*The unit can be operated and the operation status can be monitored with external input/output terminals.

The Air Conditioning & Refrigeration Systems Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO) based on a review of Quality management for the production of refrigeration and air conditioning equipment.

ISO Authorization System
The ISO 9000 series is a plant authorization system relating to quality management as stipulated by the ISO. ISO 9001 certifies quality management based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

FM33568 / ISO 9001;2008

The Air Conditioning & Refrigeration Systems Works acquired environmental management system standard ISO 14001 certification.

The ISO 14000 series is a set of standards applying to environmental protection set by the International Standard Organization (ISO).

EC97J1227 051

MITSUBISHI ELECTRIC CORPORATION
http://Global.MitsubishiElectric.com

New publication effective Jan.2011
Specifications subject to change without notice

MEE10K013

Changes for the Better

MITSUBISHI ELECTRIC
HOT WATER HEAT PUMP



HOTEL



OFFICE



RESIDENCE





CAHV-P500YA-HPB

for a greener tomorrow

Mitsubishi Electric - Leading Manufacturer of Hot Water Heat Pump

Mitsubishi Electric has been designing and manufacturing commercial hot water heat pumps since 1970.
Mitsubishi Electric was one of the first manufacturers in Japan to utilize heat pump technology to provide hot water. We were also the first manufacturer to develop R407C products, which can supply hot water of up to 70°C, high enough to eliminate legionella bacteria.

We quickly rose to the forefront of hot water supply industry in Japan - a position we still enjoy today.
Our products are mainly used in commercial applications, such as hotels, hospitals, or nursing homes, which means our products are highly reliable. As a leading manufacturer of hot water supply industry, we proudly introduce our high efficient new Hot Water Heat Pump system.

Case Study

Oil boiler had been previously installed for more than ten years, and had a frequent malfunction. When we built a new annex in 2005, we decided to renew the system. We first thought of the gas system; however, concerning safety and reliability, we decided to use the electric system. Up to today, we have been using Mitsubishi Electric's Hot Water Heat Pump for more than five years. No malfunction has occurred, and we are also satisfied with its safety.

Owner's Voice

Application :	Nursing home
Country :	Japan
Work :	June, 2005
Installation :	Hot water heat pump 20HP x 1

*Our previous model sold in Japan





70°C High temperature / COP Over 4*

"Flash-injection Circuit", which is designed for our ZUBADAN CITY MULTI (air conditioning system for cold regions), is mounted in our new Hot Water Heat Pump. By utilizing our advanced "Flash-injection Circuit" and the latest high-efficient compressor, Hot Water Heat Pump is able to provide hot water of 70°C, and produces less capacity drop at low outdoor temperature.

*COP 4.13
Outdoor temp. 7°CDB/ 6°CWB
Outlet water temp. 35°C

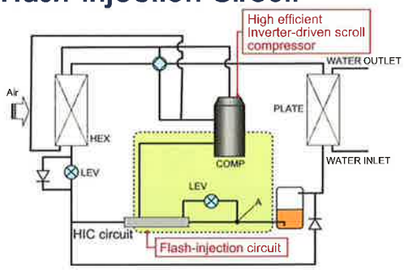
High efficient

Built-in Inverter-driven Scroll Compressor



High performance even at low outdoor temp.

Flash-injection Circuit



Two-phase refrigerant is separated into liquid refrigerant and gas refrigerant at the point of A. Liquid refrigerant, whose pressure is reduced by LEV (Linear Expansion Valve), exchanges heat in the HIC circuit and become gas-liquid two-phase refrigerant. The two-phase refrigerant flows into the injection port in the compressor for controlling the increase of the discharge temperature. Therefore the optimal amount of refrigerant can be provided to the system via the compressor, which makes it possible to provide hot water of 70 °C.

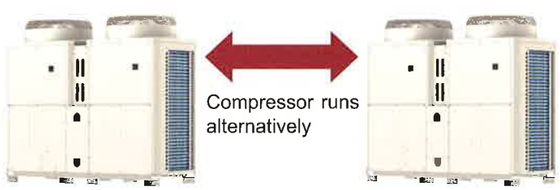
Backup Function / Rotation Function

Hot Water Heat Pump ensures an exceptionally high level of reliability by utilizing "Backup Function*". If either of the compressors malfunctions, the other compressor keeps operation to avoid a complete stop of the system.
"Rotation Function" is also available. When two or more units are in the system, the unit runs alternatively ensuring an optimum product life cycle for both of its component units.
*If the main circuit board is at fault, backup function and rotation function are not available.
*Capacity drops by 50%.

Backup Function



Rotation Function

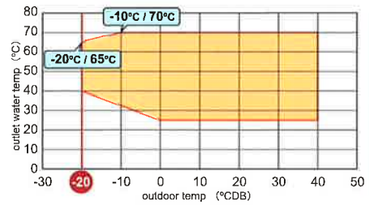


Depending on the setting, "Rotation Function" is available within a unit.

Operable even at -20°C

Hot Water Heat Pump can be operated between outdoor temp. of -20°C and 40°C.
It delivers precise comfort even in the coldest days of the year down to -20°C.

Range of operation temperature and outlet water temperature



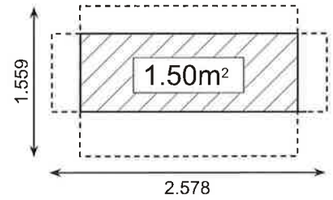
During defrost operation, two compressors, which are equipped within one unit, run alternatively resulting in less drop in outlet water temperature.

Less Space

Smaller footprint has been achieved by developing a high efficient new heat exchanger with low pressure loss.

Installation footprint 3.54m²*

*Installation footprint for one unit including service space



MAX. 70kW Over*

"Efficiency Priority Mode" and "Capacity Priority Mode" are selectable. With "Capacity Priority Mode", Hot Water Heat Pump can provide a maximum capacity of over 70kW. "Capacity Priority Mode" is more effective when used with a boiler because fuel cost for a boiler and CO_2 emission from a boiler can be reduced.

*Outdoor temp. 20°CDB, Outlet water temp. 35°C
*Relative humidity 85%
*In Capacity Priority Mode

Efficiency Priority Mode

Outlet water temp. 35°C	Outdoor temp.°CDB	-20	-10	0	7	20
	Capacity kW	31.9	40.3	42.7	45.0	45.0

Capacity Priority Mode

Outlet water temp. 35°C	Outdoor temp.°CDB	-20	-10	0	7	20
	Capacity kW	31.9	40.3	42.7	63.4	73.9

51dB(A)* Low Sound Pressure Level

Lower sound pressure levels have been achieved by developing a new fan.

*at 10m
*based on theoretical calculation

Ozone Friendly

Environmental friendly R407C refrigerant with ZERO ozone depleting potential is used in the product, which reduces CO_2 emissions compared to that of gas boilers.