



# Hot Water Heat Pump

QAHV-N560YA-HPB

PRODUCT FLYER

CO<sub>2</sub> Refrigerant



# Mitsubishi Electric's QAHV Hot Water Heat Pump

Our solution to hot water supply for commercial and industrial applications.

As a leading manufacturer of air-to-water heat pumps, we have developed QAHV, the latest innovation in Mitsubishi Electric's lineup of Hot Water Heat Pump products. QAHV has been specifically designed to produce high volume hot water and is suitable for commercial and industrial applications where hot water demand is high. By adopting Mitsubishi Electric's unique technology, QAHV can ensure highly reliable performance as well as high heating capacity even at low outdoor temperatures.

## Why is CO<sub>2</sub> (R744) used?

QAHV adopts CO<sub>2</sub> (R744) as a refrigerant, which does not destroy the ozone layer (ODP=0) and has significantly low global warming potential (GWP=1). With CO<sub>2</sub> as a refrigerant, QAHV can contribute to the reduction of CO<sub>2</sub> emissions.

\*ODP: Ozone Depletion Potential, GWP: Global Warming Potential

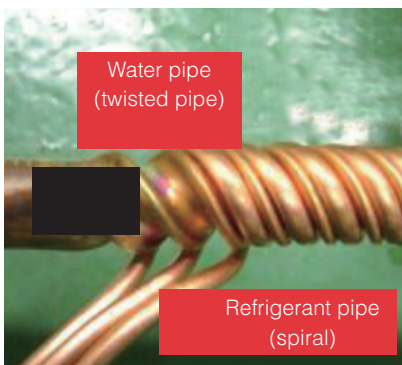
## High energy savings with patented technology

QAHV utilises a twisted and spiral gas cooler which is Mitsubishi Electric's unique technology. The three connected refrigerant pipes are wound around the twisted water pipe, which maximises heat transfer. The continuous spiral grooves in the twisted pipe accelerate the turbulence effect of water and also help to reduce pressure loss within the heat exchanger, hence improving the efficiency of the system.

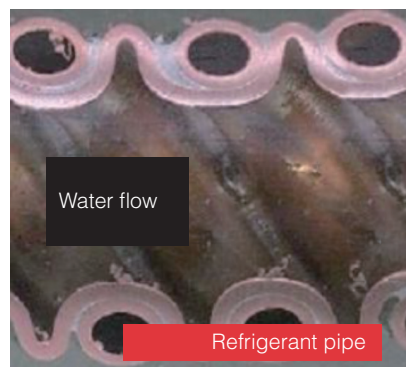
Equipped with the latest inverter scroll compressor, QAHV can significantly increase the annual efficiency which fixed speed systems cannot match.



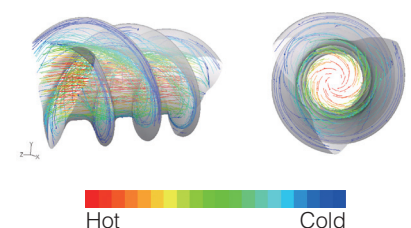
## Twisted and spiral gas cooler



## Cut section



## Water flow and water temperature distribution

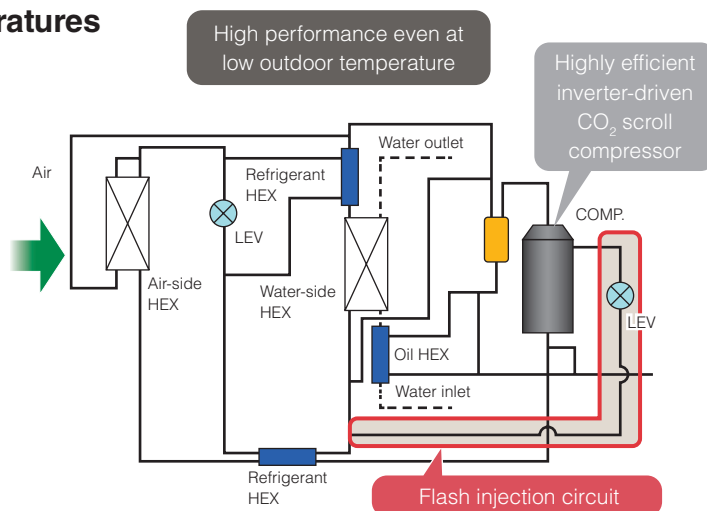
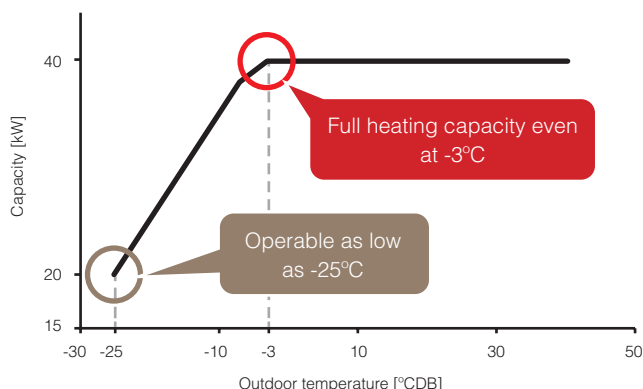


Using twist pipes as water pipes and running the refrigerant pipes along their grooves help increase the heat-conductive area, allowing for better heat transfer.

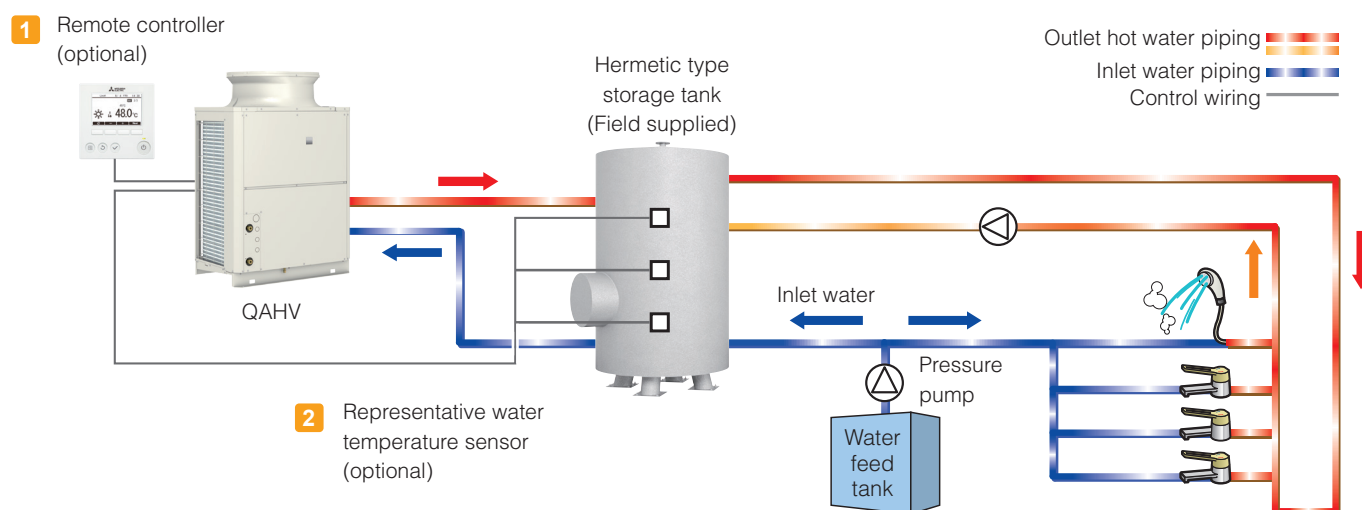
## Bringing a year round hyper heating capacity to extreme climate

QAHV is able to provide full heating capacity even at ambient temperatures of -3°C. Furthermore, the unit is operable and can supply 90°C hot water in ambient temperatures as low as -25°C. The technology behind this is a Flash Injection Circuit, which provides optimum amount of refrigerant to the system via the compressor through a specially designed injection port to ensure a particularly stable operation.

### Stable heating capacity even at low temperatures



### QAHV System Schematic Image



### Optional Parts

Description	Image	Model Name	Remarks
1 Remote controller		PAR-W31MAA-J	The unit remote controller for QAHV
2 Representative water temperature sensor		TW-TH16-E	The water temperature sensor for QAHV

### QAHV Features

» High efficiency (achieved COP 3.88)\*

\*Under normal heating conditions at outdoor temperature: 16°CDB/12°CWB, inlet water temperature 17°C, outlet water temperature 65°C.

» Utilises natural refrigerant (CO<sub>2</sub>)

» Supplies high temperature hot water of up to 90°C

» Operable even at low outdoor temperatures of -25°C

# SPECIFICATIONS

Model		QAHV-N560YA-HPB	
		Interval	Winter
Power source		3-phase 4-wire 380-400-415 V 50Hz	
Outdoor temperature	°C	DB: 16, WB: 12	DB: 7, WB: 6
Capacity	kW	40.0 (56.0*1)	40.0
Inlet water temperature	°C	17.0	9.0
Outlet water temperature	°C	65.0	65.0
Outlet water volume	L/min	11.9	10.2
Power input	kW	10.31	11.0
Current input	A	16.9	19.0
COP (kW/kW)		3.88	3.65
Compressor		11 kw x 1 (hermetic)	
FAN		0.92 kW	
Heat exchanger (Water-side)		Copper tube coil	
Heat exchanger (Air-side)		Plate fin and copper tube	
Refrigerant control		LEV	
Refrigerant		CO <sub>2</sub> (R744) 6.5 kg	
Lubricant		PAG (polyalkylene glycol)	
Case heater (Compressor)		45 W x 1	
Electric heater (Antifreeze)		12 W x 4	
Pump		0.1 kW	
Control Method	Operation control	Remote control	
	Operation mode change	Remote control or automatic control by optional hot water temperature sensor	
	Capacity control	Compressor inverter-control	
	Outlet water temperature control	Pump inverter-control	
	Defrosting method	Hot gas	
Protection		High pressure switch, overcurrent protection (compressor), discharge gas thermal sensor, thermal switch (fan motor), power module thermal sensor	
Accessories		-	
External finish		MUNSELL 5Y 8/1 or similar	
Sound pressure level *2	dB<A>	56 <58>	
Maximum current input	A	33.8	
Net weight	kg	400	
Operating mass	kg	406	
Range of use	Outdoor temperature	°C	-25~43
	Outlet water temperature	°C	55~90
	Inlet water temperature	°C	5~63
	Inlet water pressure	kPa	0~500
	Allowable external pump head	kPa	77 (at 17 L/min)

\*1 Capacity of up to 56.0kW can be enabled through maximum capacity mode input on the control board.

\*2 The value of noise is measured 1m away from in front of the unit and 1.5m high in an anechoic chamber.  
< > is the value of wintertime (factory setting).

\*3 Please refer to installation manual for water quality specifications.



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