CITY MULTI
QAHV Hot Water Heat Pump
For Large Capacity Hot Water Applications
As a leading manufacturer of air-to-water heat pumps, Mitsubishi Electric have developed QAHV; the latest innovation in their comprehensive 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 ensures highly reliable performance as well as high heating capacity even at low outdoor temperatures.

### QAHV Hot Water Heat Pump Series

**Main Features of QAHV**

- Utilises natural refrigerant (CO₂)
- High efficiency (Achieved COP 3.88*)
- Supplies high temperature hot water of up to 90°C
- Operable even at low outdoor temperature of -25°C

### Increased Energy Savings

Unique to Mitsubishi Electric, QAHV utilises a twisted and spiral gas cooler. Using twisted pipes as water pipes and running the refrigerant pipes along their grooves helps to increase the heat-conductive area; allowing for better heat transfer and an impressive COP of 3.88*. The continuous spiral groove design accelerates the turbulence effect of water and helps to reduce pressure loss within the heat exchanger, enhancing efficiency. Equipped with the latest inverter scroll compressor, QAHV offers unparalleled efficiency when compared to fixed speed systems.

### Superior Heating Performance in Low Temperatures

QAHV is able to provide its full heating capacity of 40kW even at ambient temperatures as low as -3°C. Furthermore, the unit operates to supply 90°C hot water in ambient temperatures as low as -25°C. This superior level of performance is achieved using Mitsubishi Electric’s industry-first Flash Injection Circuit which provides the optimum amount of refrigerant to the system via a compressor through a specially designed injection port, ensuring highly stable operation.

### Why is CO₂ Refrigerant Used?

QAHV adopts CO₂ (R744) as it is an environmentally-friendly, natural refrigerant which has zero Ozone Depletion Potential (ODP) and has a Global Warming Potential (GWP) of 1.

*Under normal heating conditions at outdoor temp: 16°CDB/12°CWB, inlet water temp 17°C, outlet water temp 65°C*
Stable Heating Capacity Even at Low Temperatures

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

Mitsubishi Electric Patented Twisted and Spiral Gas Cooler

Illustration showing water flow and water temperature distribution
**Optional Parts**

**Remote Controller**
PAR-W31MAA-J

**Representative Water Temperature Sensor**
TW-TH16-E

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**Notes:**

1. Under Normal heating conditions at the outdoor temp, 16°CDB/12°CWB (60.8°FDB/53.6°FWB), the outlet water temperature 65°C (149°F), and the inlet water temperature 17°C (62.6°F).

2. Under Normal heating conditions at the outdoor temp, 7°CDB/6°CWB (44.6°FDB/42.8°FWB), the outlet water temperature 65°C (149°F), and the inlet water temperature 9°C (48.2°F).

3. Under Normal heating conditions at the outdoor temp, 7°CDB/6°CWB (44.6°FDB/42.8°FWB), the outlet water temperature 65°C (149°F), and the inlet water temperature 15°C (59.0°F).

4. Under Normal heating conditions at the outdoor temp, 7°CDB/6°CWB (44.6°FDB/42.8°FWB), when the unit is set to the "Capacity Priority" mode through the dry NC-contact.

Due to continuing improvements, specifications may be subject to change without notice.

Do not use steel pipes as water pipes.

Keep the water circulated at all times. Blow the water out of the pipes if the unit will not be used for an extended period of time.

Do not use ground water or well water.

Do not install the unit in an environment where the wet bulb temperature exceeds 32°C.

The water circuit must use the closed circuit.

There is a possibility that the unit may abnormally stop when it operates outside its operating range. Provide backup (ex. boiler start with error display output signal (blue CN511 1-3)) for abnormal stop.

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**QBHV-N560YA-HPB**

<table>
<thead>
<tr>
<th>Power Source</th>
<th>kW</th>
<th>40</th>
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<tbody>
<tr>
<td>Btu/h</td>
<td></td>
<td>136480</td>
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<tr>
<td>Current Input</td>
<td>kW</td>
<td>10.31</td>
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<tr>
<td>COP (kW/kW)</td>
<td></td>
<td>3.88</td>
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<table>
<thead>
<tr>
<th>Capacity *1</th>
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<tbody>
<tr>
<td>Power Input</td>
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<tr>
<td>Btu/h</td>
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<tr>
<td>Current Input</td>
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<tr>
<td>COP (kW/kW)</td>
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<th>Capacity *2</th>
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<tbody>
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<td>Power Input</td>
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<tr>
<td>Btu/h</td>
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<tr>
<td>Current Input</td>
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<tr>
<td>COP (kW/kW)</td>
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<th>Capacity *3</th>
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<tbody>
<tr>
<td>Power Input</td>
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<tr>
<td>Btu/h</td>
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<td>Current Input</td>
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<tr>
<td>COP (kW/kW)</td>
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<th>Capacity *4</th>
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</thead>
<tbody>
<tr>
<td>Current Input</td>
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<tr>
<td>COP (kW/kW)</td>
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**Temperature Range**

Outlet Water Temp: 55–90°C (when the secondary side control is enabled: 55–80°C)

Outdoor Temp: -25–43°C

**Sound Pressure Level (measured 1m below the unit in an anechoic room)**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>dB(A)</th>
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<tbody>
<tr>
<td>100 Hz</td>
<td>56</td>
</tr>
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**Water Pipe Diameter and Type**

<table>
<thead>
<tr>
<th>Inlet</th>
<th>mm(in.)</th>
<th>19.05(Rc 3/4”), screw pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlet</td>
<td>mm(in.)</td>
<td>19.05(Rc 3/4”), screw pipe</td>
</tr>
</tbody>
</table>

**External Finish**

Acrylic painted steel plate

**External Dimension**

H x W x D mm: 1837(1777 not including legs) x 1220 x 760

**Net Weight**

kg(lbs): 400(882)

**Design Pressure**

R744 MPa: 14

Water MPa: 0.5

**Heat Exchanger**

Water-side Type: Copper tube coil

Air-side Type: Plate fin and copper tube

**Compressor**

Type: Inverter scroll hermetic compressor

Maker: MITSUBISHI ELECTRIC CORPORATION

Motor Output kW: 11.0

Case Heater kW: 0.045

**FAN**

Air Flow Rate m³/min: 220

L/s: 3666

Type x Quantity: Propeller fan

Control, Driving Mechanism: Inverter-control, Direct-driven by motor

Motor Output kW: 0.92

**HiC (HIC: Heat inter-changer) Circuit**

Copper pipe

**Protection**

High Pressure Protection

High pres.Sensor & High pres. Switch at 14MPa (643psi)

Inverter Circuit

Overheat and overcurrent protection

Compressor

Overheat protection

Fan Motor

Thermal switch

**Defrosting Method**

Auto-defrost mode (Hot gas)

**Refrigerant**

Type x Original Charge: CO₂ (R744) 6.5kg

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For more information on Mitsubishi Electric Heat Pumps, please visit [www.mitsubishi-electric.co.nz](http://www.mitsubishi-electric.co.nz) or call our Customer Service Team on 0800 784 382.

Be sure to ask for Mitsubishi Electric. Other brands share the 3-diamond logo, however they are separate to the Mitsubishi Electric brand and cannot supply the models, features or guarantees outlined in this brochure. | All models, features and specifications are subject to change and amendment at anytime. Printed August 2018.