



Air-to-water heat pumps • aroTHERM plus

Technical
information

Be ready for the energy change



Vaillant Comfort for your home

A safe investment in the future



State-of-the-art heating technology with minimal environmental impact

Vaillant is continuously advancing the development of heat pump technology. The Vaillant research and development teams constantly strive to develop the most efficient and quiet heat pumps on the market, thoroughly testing them in our own testing centres for durability and performance. For example, we have climate and hail chambers where we can test for robustness and reliability in extreme conditions. Vaillant also manufactures only in Europe, so we can guarantee you and your customers receive the high quality expected from a Vaillant appliance.

Vaillant offers a great new model in our portfolio of air-to-water heat pumps with the introduction of the aroTHERM plus. This award-winning heat pump is the first in our range to use natural refrigerant R290. This refrigerant, commonly used in many household appliances, has a very low Global Warming Potential (GWP) that offers many advantages over refrigerants traditionally used in heat pumps.

The new aroTHERM plus heat pump has technical features for improved efficiency, as well as higher flow temperatures, so it's perfect for new and existing heating systems (including hybrid). It's also impressively quiet in operation and has been accredited by Quiet Mark*.

*Models 3.5, 5, 7 and 12kW

Always the right choice

Reliability and performance of the highest standards ensure peace of mind for your customers. It's so quiet, they won't even know it's on.



High performance

The aroTHERM plus heat pump has been designed to deliver the very best performance with low running costs, making it suitable for radiators as well as underfloor heating. With a flow temperature of up to 75°C, the aroTHERM plus can deliver more usable hot water with high hot water comfort levels and removes the need for direct electric immersion to sterilise the water, protecting from legionella.



Higher energy-efficiency

With a SCOP of up to 5.03, the aroTHERM plus is extremely energy efficient, enabling high energy savings against certain fossil fuels. The aroTHERM plus can also be combined with photovoltaic systems and integrated into smart power grids (SG-ready), so your customers can enjoy the benefits of variable electricity tariffs.



Super quiet

With sound power as low as 54 dB for easier planning and siting, the aroTHERM plus is suitable for use in densely built-up terraced housing estates.



Natural refrigerant

Already fulfilling the next NZEB requirements, the aroTHERM plus uses monobloc technology with a hermetically sealed refrigerant circuit using the natural refrigerant, R290, to deliver the one of the lowest GWP of 3.



Why R290?

R290 is a natural refrigerant with a very low GWP* of three. This offers the following advantages:

- future-proof, as not affected by the F-Gas Regulation
- higher flow temperature of up to 75°C
- higher hot water comfort and protection against legionella without electric auxiliary heating
- wider performance envelope with operating temperature ranging between -25°C and +46°C
- Already fulfilling the next NZEB requirements, the aroTHERM plus uses monobloc technology with a hermetically sealed refrigerant circuit using natural refrigerant R290 to deliver the one of the lowest GWP of 3
- Reduced refrigerant charge compared to R410a and R32

Natural refrigerants are already used in many areas of our daily lives, e.g. in refrigerators and heat pump tumble-driers

Model calculation

R290 (aroTHERM plus)

0.6 kg R290 x 3 GWP = 1.8 kg CO₂



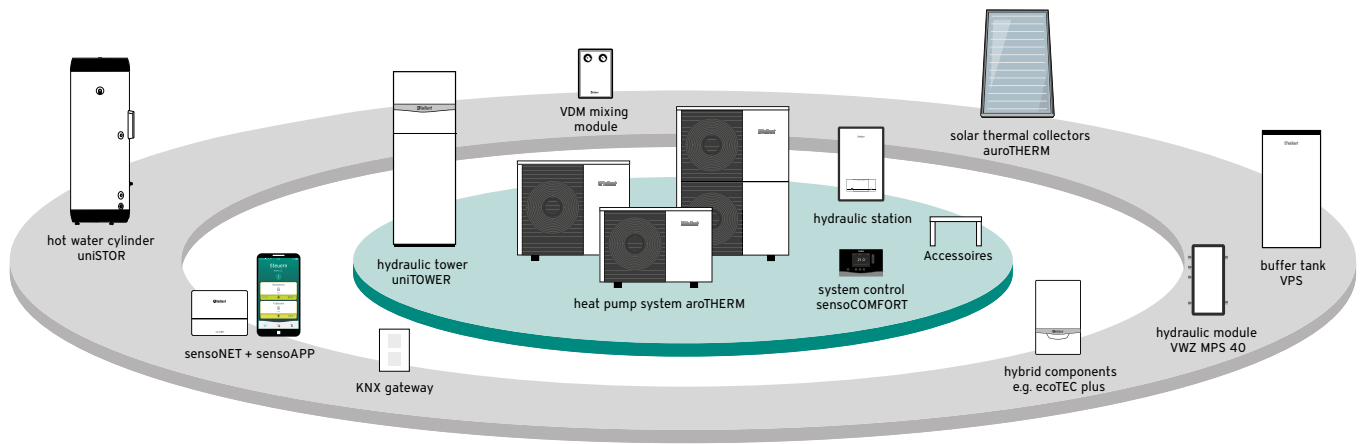
15 km journey
by car

*Comparison of refrigerant GWP values:

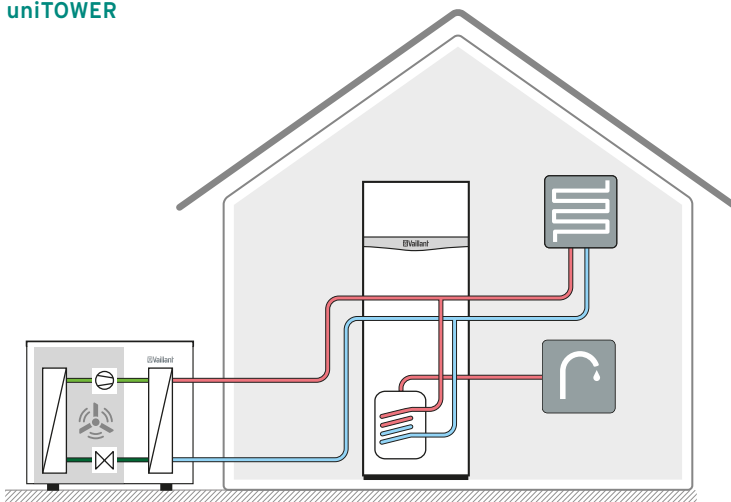
| | |
|-----------------|-------|
| CO ₂ | 1 |
| R290 | 3 |
| R32 | 675 |
| R410a | 2,088 |

Introducing the perfect partner

Your customers have widely differing wishes and needs. We offer the system components that enable you to fulfil them all – whether they wish to integrate photovoltaics, a solar-thermal system or smart home technology. All conveniently manageable with a single controller – the new sensoCOMFORT. This enables you to quickly commission the system and lets your customers change daily settings at the flick of a wrist.

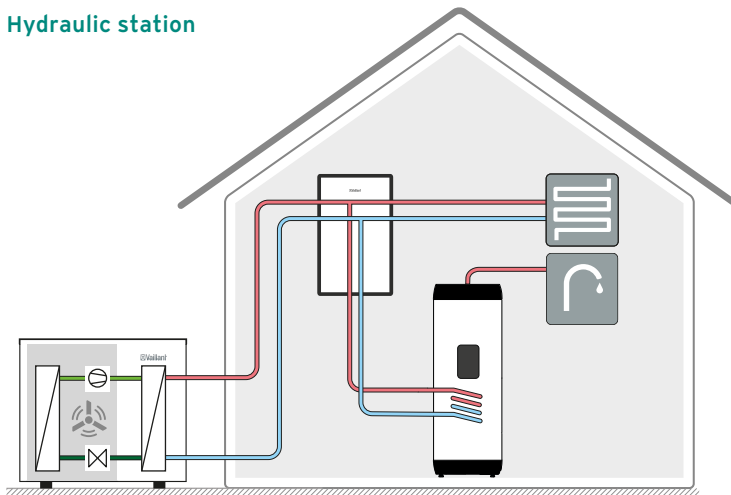


uniTOWER



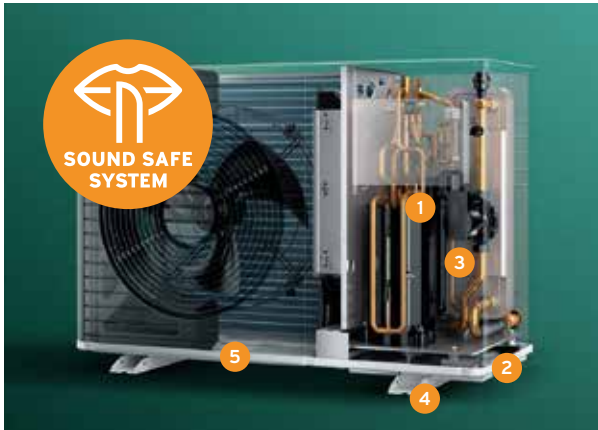
The uniTOWER is an integrated 190 litre cylinder with hydraulic components which can easily provide sufficient hot water for the needs of a family of five, including the use of rain showers. Thanks to its space-saving dimensions, the system is the perfect choice for new buildings. Installed indoors, the uniTOWER is about the size of a fridge freezer and saves valuable space in the room where it's installed.

Hydraulic station



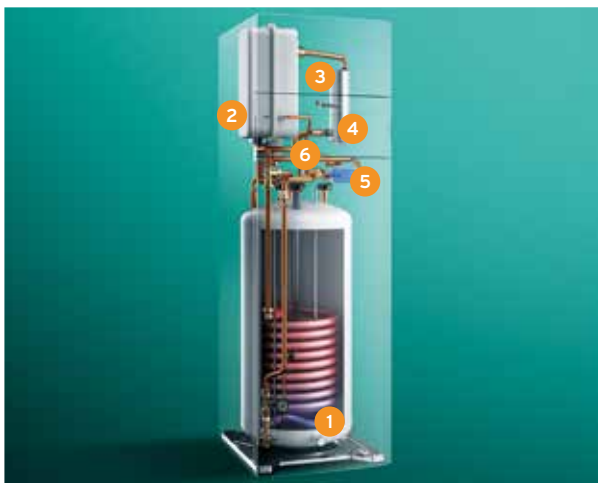
In the case of higher hot water demand, the aroTHERM plus can be used together with a wall-mounted hydraulic station and a wide range of accessories, including the uniSTOR heat pump cylinders and buffer tanks.

Features and benefits



aroTHERM plus

- 1 Hermetically sealed – no refrigerant certification required
- 2 Floating floor design absorbs vibration and reduces noise
- 3 Vortex sensor for accurate performance analysis
- 4 Weatherproof material and paint make it an ideal choice for coastal areas
- 5 Integrated tray and trace heater to ensure clear condensation run



uniTOWER

- 1 190-litre storage cylinder capacity, corresponds to up to 380-litres of usable hot water output
- 2 Hydraulic components already integrated, e.g. 15-litre expansion vessel
- 3 System accessory options, ready for integration, e.g. heating zone packs, 18-litre buffer or system separation plate heat exchanger
- 4 Modulating electric auxiliary heater with up to 6 kW
- 5 3-way diverter valve
- 6 Electric wiring interface



Hydraulic module

- 1 Hydraulic components already integrated, including 10-litre expansion vessel
- 2 Modulating electric auxiliary heater with up to 6 kW
- 3 3-way diverter valve
- 4 Continued use of existing hot water storage cylinders
- 5 Electric wiring interface



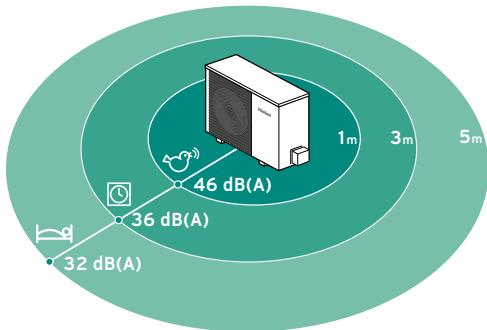
Heat pump interface

- Suitable for standard set-up and hybrid systems
- Heating system components can be placed to suit property layout
- Compatible with all Vaillant heat pump accessories including back-up heater, heat exchanger module and uniSTOR heat pump cylinders

SCOP and heating output

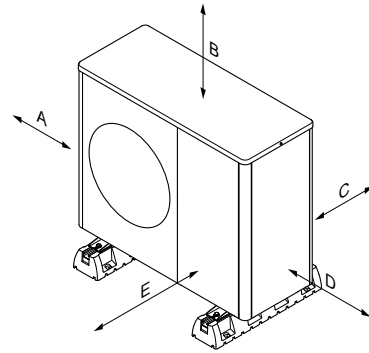
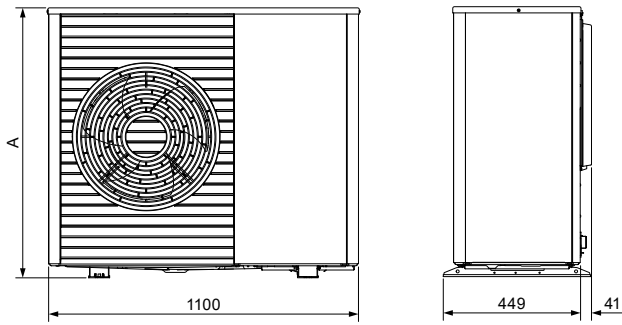
| aroTHERM output | | 35°C flow | | 40°C flow | | 45°C flow | | 50°C flow | | 55°C flow | |
|-----------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|
| | | Output | SCOP | Output | SCOP | Output | SCOP | Output | SCOP | Output | SCOP |
| 3.5kW | -5°C | 4.2 | 4.41 | 4.1 | 4.03 | 4 | 3.65 | 3.9 | 3.37 | 3.8 | 3.10 |
| | -3°C | 4.6 | | 4.4 | | 4.3 | | 4.2 | | 4 | |
| | 0°C | 4.7 | | 4.7 | | 4.6 | | 4.5 | | 4.4 | |
| | 2°C | 4.9 | | 4.9 | | 4.9 | | 4.7 | | 4.6 | |
| 5kW | -5°C | 6.3 | 4.48 | 6 | 4.13 | 5.6 | 3.77 | 5.5 | 3.41 | 5.4 | 3.06 |
| | -3°C | 6.8 | | 6.4 | | 6.1 | | 5.9 | | 5.8 | |
| | 0°C | 6.9 | | 6.7 | | 6.6 | | 6.4 | | 6.2 | |
| | 2°C | 7.1 | | 7 | | 6.9 | | 6.7 | | 6.5 | |
| 7kW | -5°C | 8.2 | 4.36 | 8.1 | 4.13 | 8 | 3.91 | 7.5 | 3.65 | 7 | 3.39 |
| | -3°C | 8.8 | | 8.6 | | 8.4 | | 7.9 | | 7.4 | |
| | 0°C | 9.5 | | 9.3 | | 9.1 | | 8.6 | | 8.1 | |
| | 2°C | 10 | | 9.8 | | 9.6 | | 9 | | 8.5 | |
| 10kW | -5°C | 9.9 | 5.03 | 9.7 | 4.58 | 9.4 | 4.13 | 9.1 | 3.85 | 8.8 | 3.58 |
| | -3°C | 10.7 | | 10.3 | | 10 | | 9.6 | | 9.2 | |
| | 0°C | 11.9 | | 11.6 | | 11.3 | | 10.7 | | 10.2 | |
| | 2°C | 12.8 | | 12.5 | | 12.1 | | 11.5 | | 10.9 | |
| 12kW | -5°C | 13.1 | 4.88 | 12.8 | 4.55 | 12.5 | 4.21 | 11.7 | 3.92 | 10.8 | 3.63 |
| | -3°C | 13.9 | | 13.4 | | 12.9 | | 12.1 | | 11.2 | |
| | 0°C | 15.2 | | 14.6 | | 14.1 | | 13.2 | | 12.3 | |
| | 2°C | 16 | | 15.5 | | 14.9 | | 13.9 | | 13 | |

Sound power



| Model | Sound Power Level A7/W55 | Sound Pressure Level | | |
|---------------------|--------------------------|----------------------|-------------|-------------|
| | | 1m distance | 3m distance | 5m distance |
| aroTHERM plus 3.5kW | 54 dB | 46 dB(A) | 36 dB(A) | 32 dB(A) |
| aroTHERM plus 5kW | 54 dB | 46 dB(A) | 36 dB(A) | 32 dB(A) |
| aroTHERM plus 7kW | 55 dB | 47 dB(A) | 37 dB(A) | 33 dB(A) |
| aroTHERM plus 10kW | 60 dB | 52 dB(A) | 42 dB(A) | 38 dB(A) |
| aroTHERM plus 12kW | 60 dB | 52 dB(A) | 42 dB(A) | 38 dB(A) |

Dimensions and clearances

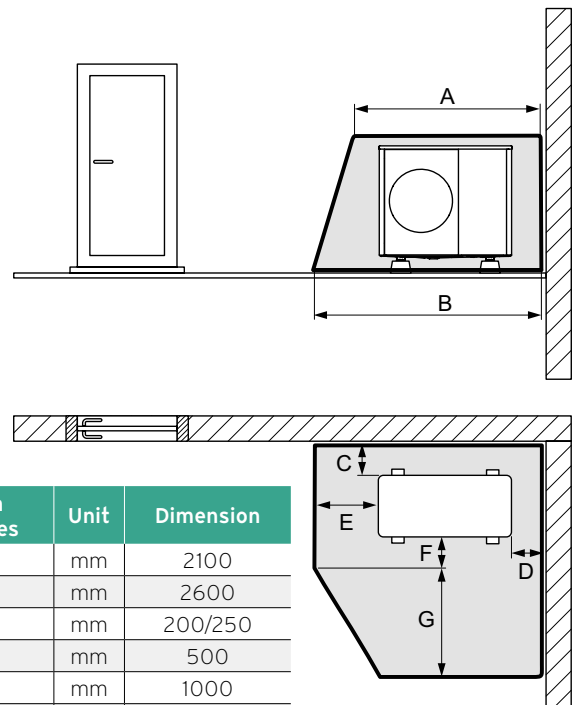
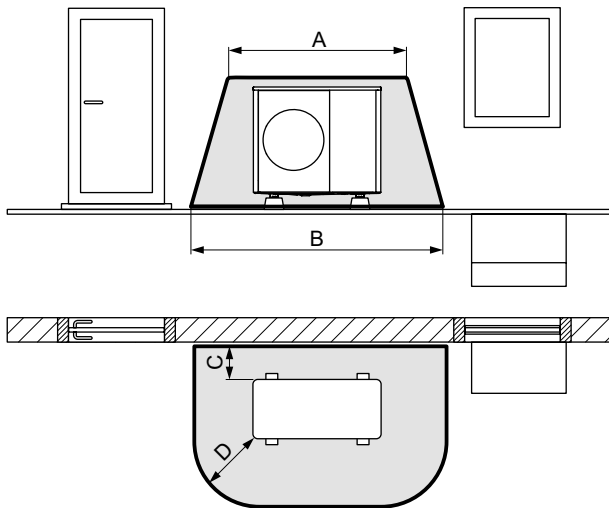


| aroTHERM plus | Unit | Dimension A |
|---------------|------|-------------|
| 3.5kW | mm | 765 |
| 5kW | mm | 765 |
| 7kW | mm | 965 |
| 10kW | mm | 1565 |
| 12kW | mm | 1565 |

| Minimum clearance | Unit | Heating mode | Heating and cooling mode |
|-------------------|------|--------------|--------------------------|
| A | mm | 100 | 100 |
| B | mm | 1000 | 1000 |
| C | mm | 200 | 250 |
| D | mm | 500 | 500 |
| E | mm | 600 | 600 |

R290 clearances

Clearances required for any drains, light wells or other openings



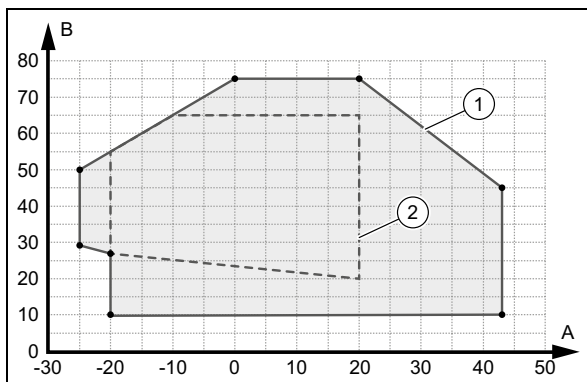
| Minimum clearances | Unit | Dimension |
|--------------------|------|-----------|
| A | mm | 2100 |
| B | mm | 3100 |
| C | mm | 200/250 |
| D | mm | 1000 |

| Minimum clearances | Unit | Dimension |
|--------------------|------|-----------|
| A | mm | 2100 |
| B | mm | 2600 |
| C | mm | 200/250 |
| D | mm | 500 |
| E | mm | 1000 |
| F | mm | 500 |
| G | mm | 1800 |

Application limits

heating mode

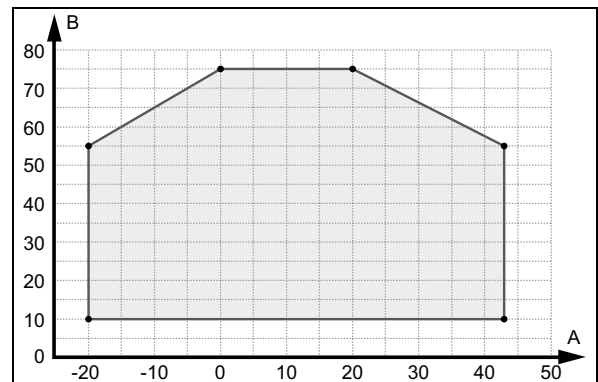
In heating mode, the product works at outdoor temperatures of -25 °C to 46 °C



A Outdoor temperature 1 Application limits, heating mode
 B Heating water temperature 2 Area of application, in accordance with EN 14511

DHW mode

For domestic hot water generation, the product works at outdoor temperatures of -20 °C to 46 °C.



A Outdoor temperature B Heating water temperature

Technical specifications

| aroTHERM plus | Unit | 3.5kW VWL 35 / 6 | 5kW VWL 55 / 6 | 7kW VWL 75 / 6 | 10kW VWL 105 / 6 | 12kW VWL 125 / 6 |
|---|-------------------|------------------------------------|-------------------|-------------------|---------------------|---------------------|
| General | | | | | | |
| Width | mm | 1,100 | | | | |
| Height | mm | 765 | | 965 | 1,565 | |
| Depth | mm | 450 | | | | |
| Weight, ready for operation | kg | 114 | | 128 | 194 | |
| Connection, heating circuit | | G 1 1/4" | | | | |
| Rated voltage | V | 230 V (+10%/- 15%), 50 Hz, 1~/N/PE | | | | |
| Rated current, maximum | A | 14.3 | | 15.0 | 23.3 | |
| Fuse size | | 16 | | | 25 | |
| Fuse type | A | C/D | | | | |
| RCD type | | A | | | | |
| eBUS (2-core communication cable) | mm ² | 0.75 | | | | |
| Maximum length eBUS cable (communication cable) | m | 50 | | | | |
| IP rating | | IP 15 B | | | | |
| Fan, power consumption | W | 40 | | | 50 | |
| Fan quantity | | 1 | | | 2 | |
| Fan, air flow , maximum | m ³ /h | 2,300 | | | 5,100 | |
| Heating pump, power consumption | W | 2 - 50 | | | 3 - 87 | |
| Heating circuit | | | | | | |
| Heating water temperature, minimum/maximum | ° C | 20 - 75 | | | | |
| Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit | m | 20 | | | | |
| Operating pressure, minimum | bar | 0.50 | | | | |
| Operating pressure, maximum | bar | 3.00 | | | | |
| Volume flow, minimum | l/h | 400 | | 540 | 995 | |
| Volume flow, maximum | l/h | 860 | | 1,205 | 2,065 | |
| Water volume, in the outdoor unit | l | 1.5 | | 2.0 | 2.5 | |
| Water volume, in the heating circuit, minimum, thawing mode, activated/deactivated back-up heater | l | 15 / 40 | | 20 / 55 | | 45 / 150 |
| Remaining feed pressure, hydraulic | kPa (mbar) | 56.0 (560.0) | | 44.0 (440.0) | 55.0 (550.0) | |

| aroTHERM plus | Unit | 3.5kW VWL 35 / 6 | 5kW VWL 55 / 6 | 7kW VWL 75 / 6 | 10kW VWL 105 / 6 | 12kW VWL 125 / 6 |
|---|------|------------------------------------|-------------------|-------------------|---------------------|---------------------|
| Refrigerant circuit | | | | | | |
| Fluid type | | R290 | | | | |
| Fluid fill quantity | kg | 0.6 | | 0.9 | | 1.3 |
| Refrigerant, Global Warming Potential (GWP) | | 3 | | | | |
| CO ₂ equivalent | t | 0.0018 | | 0.0027 | | 0.0039 |
| Permissible operating pressure | bar | 31.5 | | | | |
| Compressor type | | Rotary piston | | | Scroll compressor | |
| Compressor oil type | | Specific polyalkylene glycol (PAG) | | | | |
| Compressor, control | | Electronic | | | | |

| Noise emissions, heating mode | | | | | | |
|---|-------|----|--|----|--|----|
| Sound power, EN 12102, EN 14511 LWA, A7/W35 | dB(A) | 51 | | 53 | | 58 |
| Sound power, EN 12102, EN 14511 LWA, A7/W45 | dB(A) | 53 | | | | 58 |
| Sound power, EN 12102, EN 14511 LWA, A7/W55 | dB(A) | 54 | | 55 | | 60 |

| Efficiency | | |
|------------------------------|-------------|------|
| Energy efficiency class 35°C | (A+++ to F) | A+++ |
| Energy efficiency class 55°C | (A+++ to F) | A++ |

| Combination with uniTOWER | | |
|--|-------------|-----|
| Energy efficiency class | (A+++ to F) | A++ |
| Energy efficiency class for hot water supply | (A+ to F) | A |

| uniTOWER | Unit | VIH QW 190 / 6 |
|---|------|-----------------------------------|
| Total storage cylinder capacity | l | 188 |
| Temperature hot water (max. – with auxiliary heating) | °C | 55 - 75 |
| Dimensions, unpacked (height/width/depth) | mm | 1880 x 599 x 693 |
| Weight, unpacked | kg | 175 |
| Auxiliary electric heater | kW | 6kW (230V/50Hz) / 9kW (400V/50Hz) |

| Hydraulic station | Unit | VWZ MEH 97 |
|---|------|-------------------------------------|
| Dimensions, unpacked (height/width/depth) | mm | 720 x 440 x 350 |
| Weight, unpacked | kg | 15 |
| Power electric backup heater | kW | 6 kW (230V/50Hz) / 9 kW (400V/50Hz) |



Air-to-water heat pumps

| Description | Article number |
|---|----------------|
| aroTHERM plus with heat pump interface | |
| aroTHERM plus 3.5kW - VWL 35 / 6 | 0010037211 |
| aroTHERM plus 5kW - VWL 55 / 6 | 0010037212 |
| aroTHERM plus 7kW - VWL 75 / 6 | 0010037213 |
| aroTHERM plus 10kW - VWL 105 / 6 | 0010037214 |
| aroTHERM plus 12kW - VWL 125 / 6 | 0010037215 |
| aroTHERM plus with hydraulic module | |
| aroTHERM plus 3.5kW - VWL 35 / 6 | 0010037206 |
| aroTHERM plus 5kW - VWL 55 / 6 | 0010037207 |
| aroTHERM plus 7kW - VWL 75 / 6 | 0010037208 |
| aroTHERM plus 10kW - VWL 105 / 6 | 0010037209 |
| aroTHERM plus 12kW - VWL 125 / 6 | 0010037210 |
| aroTHERM plus with uniTOWER | |
| aroTHERM plus 3.5kW - VWL 35 / 6 | 0010037201 |
| aroTHERM plus 5kW - VWL 55 / 6 | 0010037202 |
| aroTHERM plus 7kW - VWL 75 / 6 | 0010037203 |
| aroTHERM plus 10kW - VWL 105 / 6 | 0010037204 |
| aroTHERM plus 12kW - VWL 125 / 6 | 0010037205 |

Compatible with



| Accessories | Article number |
|---|----------------|
| aroTHERM connection kit for ground install | 0010027971 |
| aroTHERM connection kit for ground install extension | 0010027972 |
| aroTHERM connection kit for wall install | 0010027974 |
| aroTHERM straight pipe connection kit | 0010027976 |
| 750mm flexihose for air-to-water heat pump (pair) | 0020165288 |
| Snow Spacer | 0010027984 |
| Wall bracket for insulated wall | 0020250224 |
| Wall bracket for non-insulated wall | 0020250225 |
| Anti-vibration feet large | 0020250226 |
| Anti-vibration rubber feet small | 0020252091 |
| Coding resistor active cooling | 0020269259 |
| Discharge vessel | 0020145563 |
| aroTHERM 45 litre buffer | 0010038365 |
| aroTHERM heat exchanger module | 0020222285 |
| aroTHERM inline 6kW back-up heater | 0020222286 |
| VR 10 temperature sensor | 306787 |
| WH40 low-loss header (flow rates up to 3,000 litres per hour) | 306720 |
| WH95 low-loss header (flow rates up to 8,000 litres per hour) | 306721 |
| VR 32/B eBUS coupler (includes housing) | 0020235465 |
| VR 32 eBUS coupler | 0020139895 |
| Ball filter valve 28mm | 0010038133 |
| uniTOWER accessories | |
| uniTOWER decoupling module (small) for 3.5 - 7kW model | 0010027982 |
| uniTOWER decoupling module (large) for 10 and 12kW model | 0010027973 |
| uniTOWER 1" adapter connection kit | 0020269275 |
| 18l Buffer cylinder for uniTOWER | 0020269273 |
| uniTOWER multi-zone kit - 1 direct zone | 0020170507 |
| uniTOWER extension set - 2 direct zones | 0020170509 |
| uniTOWER extension set - 1 mixed zone | 0020170508 |
| Circulation set without pump | 0020170502 |
| Circulation set with pump | 0020170503 |
| 2l brine expansion vessel | 0010030975 |

| Description | Pack contents | Article number |
|--|--------------------------------------|----------------|
| VRC 700 | | |
| VRC 700 wired, weather compensating programmable room thermostat | - | 0020236291 |
| VRC 700f wireless, weather compensating, programmable room thermostat | - | 0020259829 |
| One wired heating zone and hot water system | VRC 700, VR 70 | 0020236292 |
| One wireless heating zone and hot water system | VRC 700f, VR 70 | 0020259830 |
| One wired heating zone and solar thermal hot water system | VRC 700, VR 70, VR 11 | 0020236295 |
| One wireless heating zone and solar thermal hot water system | VRC 700f, VR 70, VR 11 | 0020259833 |
| Two wired heating zones and hot water system | VRC 700, VR 70, VR 91 | 0020236293 |
| Two wireless heating zones and hot water system | VRC 700f, VR 70, VR 91f | 0020259831 |
| Two wired heating zones and solar thermal hot water system | VRC 700, VR 70, VR 11, VR 91 | 0020259834 |
| Two wireless heating zones and solar thermal hot water system | VRC 700f, VR 70, VR 11, VR 91f | 0020259835 |
| Three wired heating zones and hot water system | VRC 700, VR 71, two VR 91 | 0020236294 |
| Three wireless heating zones and hot water system | VRC 700f, VR 71, two VR 91f | 0020259832 |
| VR 70 wiring centre for up to two zones | - | 0020184844 |
| VR 71 wiring centre for up to three zones | - | 0020184847 |
| VR 91 wired, additional room thermostat | - | 0020171334 |
| VR 91f wireless, additional room thermostat | - | 0020231566 |
| VR 40 two-in-seven multifunction module | - | 0020017744 |
| VR 11 solar collector NTC | - | 306788 |
| VR 10 immersion or contact sensor bare ends | - | 306787 |
| VR 32 eBUS coupler | - | 0020139895 |
| sensoCOMFORT | | |
| sensoCOMFORT wired weather compensating programmable room thermostat | - | 0010036819 |
| sensoCOMFORT RF wireless weather compensating programmable room thermostat | - | 0010036820 |
| One wired heating zone and hot water system | sensoCOMFORT, VR 71 | 0010036821 |
| One wireless heating zone and hot water system | sensoCOMFORT RF, VR 71 | 0010036826 |
| Two wired heating zones and hot water system | sensoCOMFORT, VR 71, VR 92 | 0010036822 |
| Two wireless heating zones and hot water system | sensoCOMFORT RF, VR 71, VR 92f | 0010036827 |
| Three wired heating zones and hot water system | sensoCOMFORT, VR 71, 2x VR 92 | 0010036823 |
| Three wireless heating zones and hot water system | sensoCOMFORT RF, VR 71 and 2x VR 92f | 0010036828 |
| Four wired heating zones and hot water system | sensoCOMFORT, VR 71, VR 70, 3x VR 92 | 0010036824 |
| Five wired heating zones and hot water system | sensoCOMFORT, VR 71, VR 70, 4x VR 92 | 0010036825 |
| VR 10 immersion or contact sensor bare ends | - | 306787 |
| VR 32 eBUS coupler | - | 0020139895 |
| VR 70 wiring centre | - | 0020184844 |
| VR 71 wiring centre | - | 0020184847 |
| VR 92 wired additional room thermostat | - | 0020260925 |
| VR 92f wireless additional room thermostat | - | 0020260940 |
| sensoNET internet gateway | - | 0020260963 |
| VR 40 two-in-seven multifunctional module | - | 0020017744 |
| VR 32/B eBUS coupler (includes housing) | - | 0020235465 |

Our experience is your guarantee

For over 140 years, Vaillant has been among the technology leaders when it comes to innovative heating solutions, with specific expertise in the area of heat pumps for more than 40 years. Our proprietary solutions - many of which are patented - have made this technology reliable, efficient and suitable for everyday life. More than 200,000 heat pumps installed around the world prove this in use each day. Benefit from our experience:

- Products developed in Germany and manufactured exclusively in the EU
- 100% test for each heat pump on the production line
- Toughest weather conditions simulated at our own test centres, in cold chambers with temperatures down to -25°C
- Vaillant heat pumps are among the quietest on the market
- High level of safety due to use of playground standards
- Quality management as per EN ISO 9001 and EN ISO 14001



Climatic chambers simulate all possible operating conditions



Optimisation of components in the acoustic lab

Renewable service and technical enquiries

For technical assistance:

Telephone: 0330 100 3540

Email: aftersales@vaillant.co.uk

General enquiries

If you have a general enquiry our friendly reception staff will happily point you in the right direction:

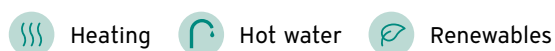
Telephone: 0345 602 2922

Training enquiries

Vaillant provides many different training courses. For more information:

Telephone: 0345 601 8885

Email: training@vaillant.co.uk



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Nottingham Road, Belper, Derbyshire DE56 1JT

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