

Water cooled VRV IV W-series

Ideal for high rise buildings,
using water as heat source

Unified range
for **heat pump**
& **heat recovery**
and **standard**
& **geothermal**
series



Indoor units

VRV type indoor units OR
Residential type indoor units*
(such as Daikin Emura, ...)



Control systems



Air curtain

Biddle Air curtain for VRV (CYV)



Hot water

High temperature hydrobox*



Ventilation

Heat Reclaim ventilation (VAM/VKM)
AHU connection kit



Widest range of BS boxes for the fastest installation



VRV IV standards: Variable refrigerant temperature

Customize your VRV for best seasonal efficiency & comfort

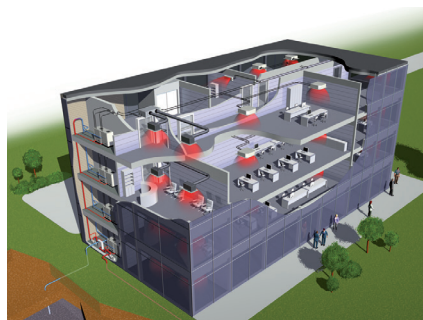
- › Full inverter compressors
- › Reluctance brushless DC compressor
- › Sine wave DC inverter
- › Manual demand function

For more information on these features refer to the VRV IV technologies tab
* on request. Contact your local sales representative for more information



Geothermal operation and advantages

Geothermal operation uses the more stable temperature of the ground around the building, eliminating the need for another heat source. It reduces CO₂ emissions and is an infinitely renewable energy source.



Indoor installation makes unit invisible from the outside

Seamless integration in the surrounding architecture as you cannot see the unit

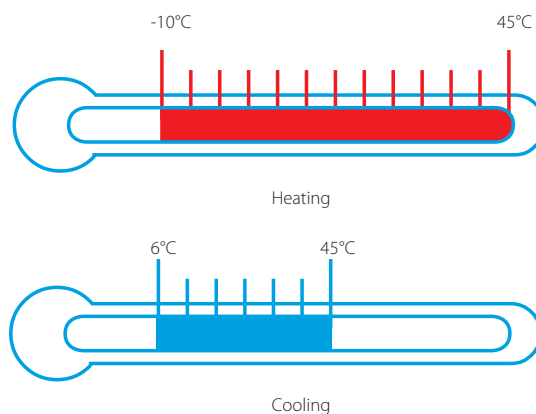
- › Highly suited for sound sensitive areas as there is no external operation sound
- › Superior efficiency, even in the most extreme outside conditions, especially in geothermal operation



Wide operation range

Standard water cooled outdoor units have a wide operation range between 10°C & 45°C inlet water temperature, both in heating and cooling. In geothermal mode the operation range is extended even more, down to -10°C* in heating and 6°C in cooling mode.

* Ethylene glycol should be added to the water when the water inlet temperature is below 5°C



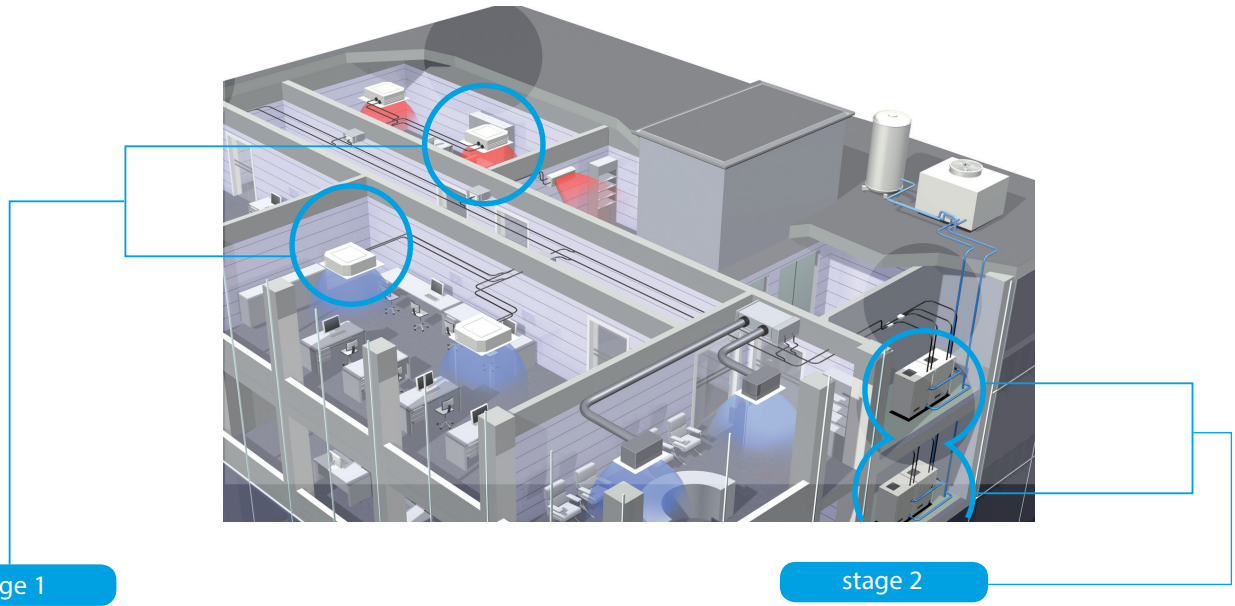
High energy efficiencies results from 2-stage heat recovery

Stage 1: Heat recovery between indoor units in the same refrigerant circuit

Heat exhausted from indoor units in cooling mode is transferred to units in areas requiring heating, maximising energy efficiency and reducing electricity costs.

Stage 2: Heat recovery between the outdoor units via the water loop - also available on heat pump units!

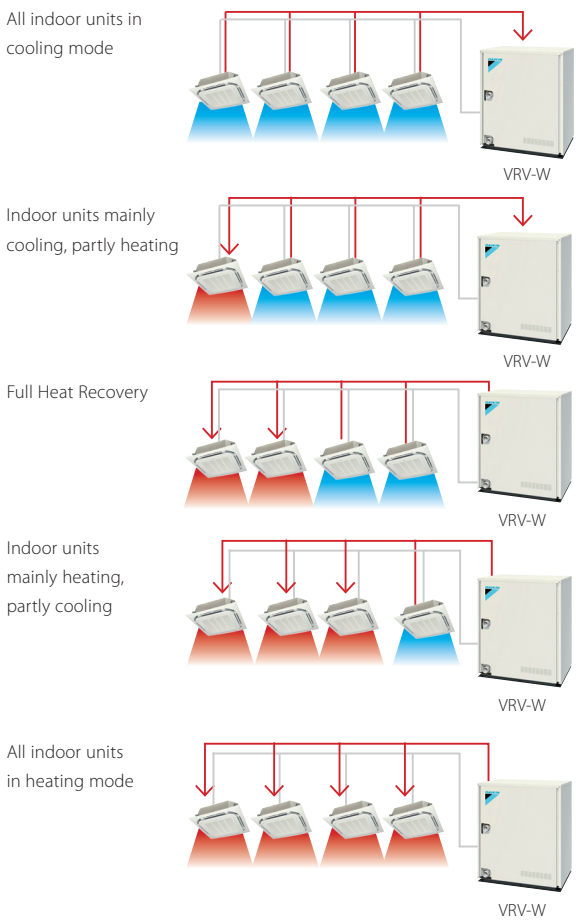
Second stage heat recovery is achieved within the water loop between the water cooled outdoor units.



stage 1

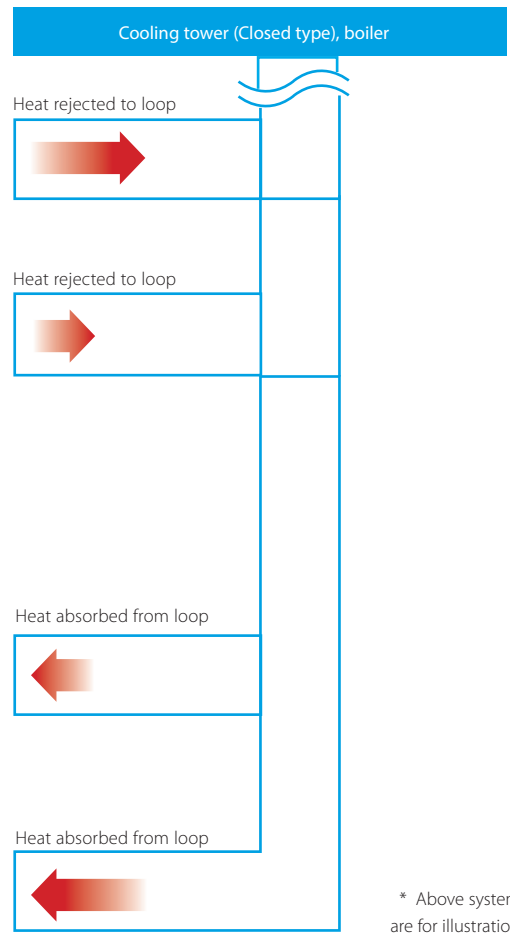
stage 2

Heat recovery between indoor units



Heat recovery between outdoor units

(Heat recovery and heat pump)

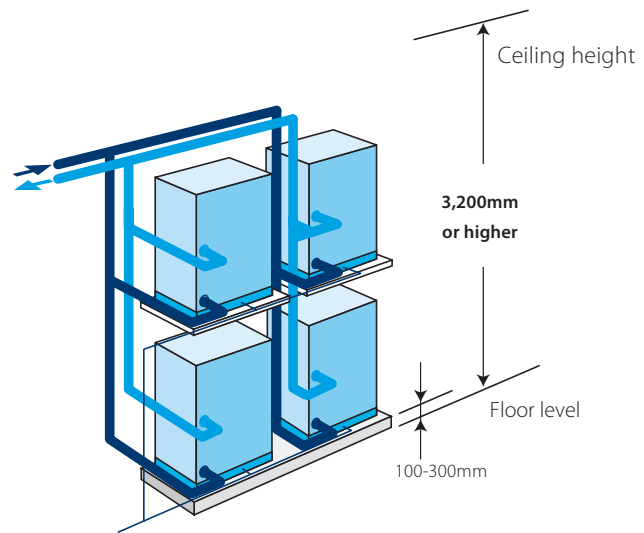


* Above system configurations are for illustration purposes only.

Space saving - Stacked configuration

The adoption of a new water heat exchanger and optimization of the refrigerant control circuit has resulted in the industry's most compact and lightweight design. The unit weight of 149kg* and height of 1,000 mm makes installation easy. Stacked configuration is also possible, contributing further to space savings.

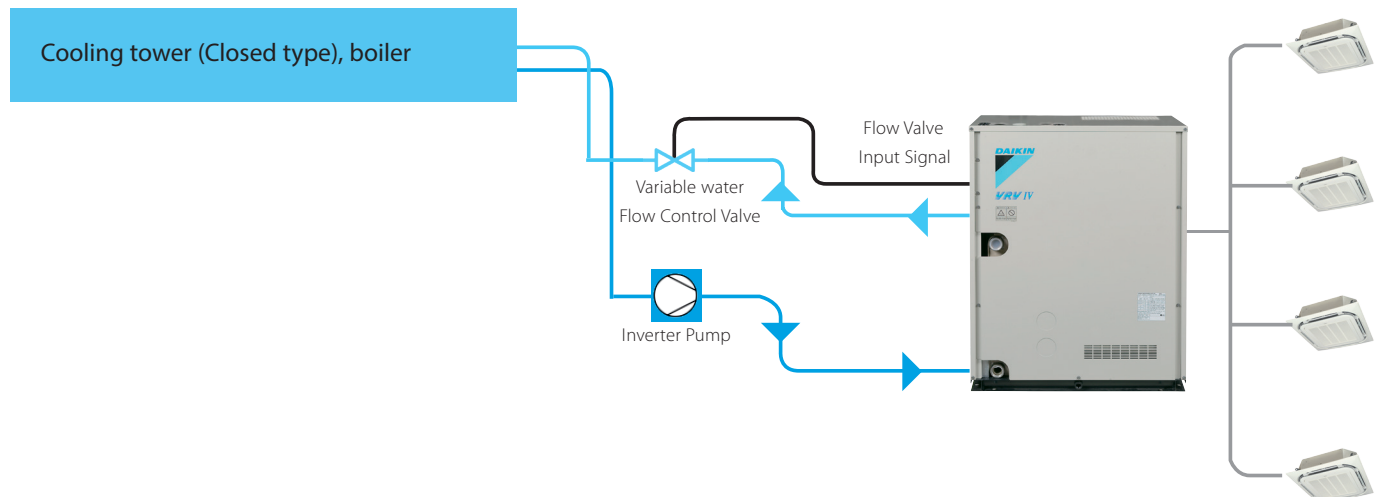
* for 8HP unit



Stacked configuration is possible.

Variable water flow control

The variable water flow control option reduces energy use by the circulation pump by reducing the water flow when possible and not using a fixed water flow all the time.



Standard water strainer

A standard water strainer reduces installation time. The new filter also has less pressure drop at higher water flows.

	Specifications
Connections	G1 1/4"
PHE connections	G1 1/4"
Mesh size	Max. particle diam. 0,5mm
Design Pressure	2.0MPa
Design Temp.	Max. 80oC
Glycol resistance	Up to 40% ethylene glycol
Pressure drop	See below graph



Lower refrigerant levels

Water-cooled VRV systems typically have less refrigerant per system making it ideal to comply with the EN378 legislation limiting the amount of refrigerant in hospitals and hotels.

The refrigerant levels remain limited thanks to:

- > limited distance between outdoor and indoor unit
- > modularity: enabling small systems per floor instead of one big system. Thanks to the water circuit heat recovery is still possible in the entire building

Fully redesigned BS boxes

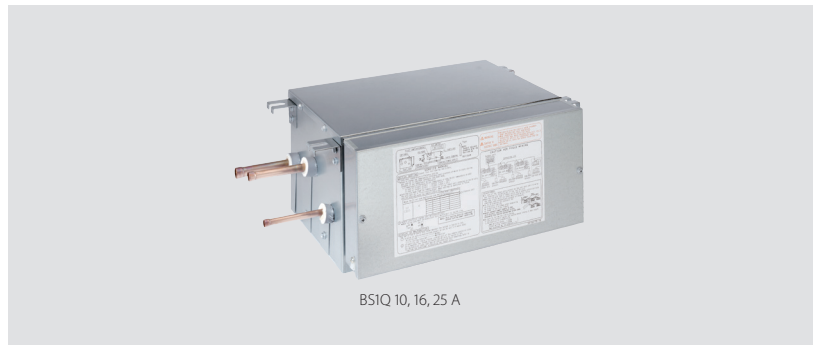
Maximum design flexibility

and installation speed

- › Quickly and flexibly design your system with a unique range of single and multi BS boxes.
- › A wide variety of compact and lightweight multi BS boxes greatly reduces installation time.
- › Free combination of single and multi BS boxes

Single port

- › Unique to the market
- › Compact and light to install
- › No drain piping needed
- › Ideal for remote rooms
- › Technical cooling function
- › Connect up to 250 class unit (28 kW)
- › Allows multi-tenant applications



BS1Q 10, 16, 25 A

Multi port: 4 – 6 – 8 – 10 – 12 – 16

- › Up to 55% smaller and 41% lighter than previous range
- › Faster installation thanks to a reduced number of brazing points and wiring
- › All indoor units connectable to one BS box
- › Fewer inspection ports needed
- › Up to 16 kW capacity available per port
- › Connect up to 250 class unit (28kW) by combining 2 ports
- › No limit on unused ports, permitting phased installation
- › Allows multi-tenant applications



BS 4 Q14 A

BS 6, 8 Q14 A

BS 10, 12 Q14 A

BS 16 Q14 A

Flexible piping design

Flexible water piping

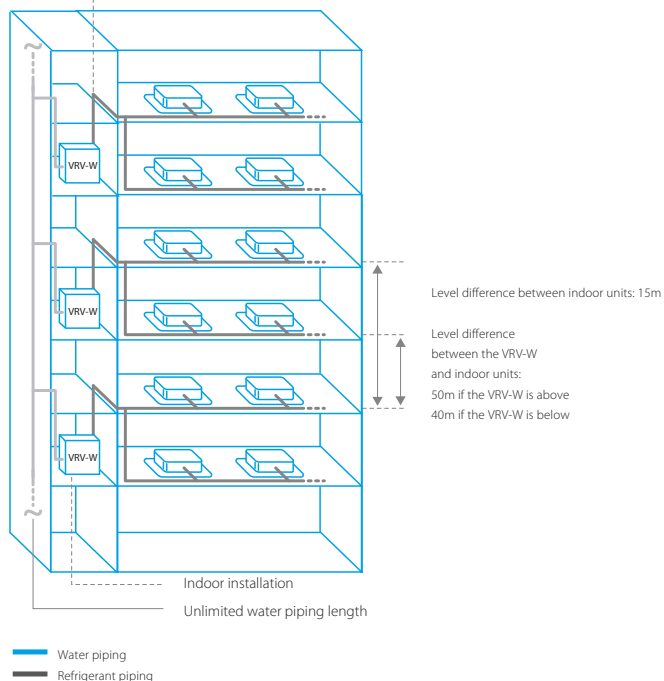
Water cooled VRV uses water as its heat source, so it is optimal for large buildings, including tall, multi-storey buildings, because the system can tolerate water pressure of up to 1.96 MPa.

Furthermore, if the currently installed heat source's water temperature is between 10°C and 45°C, it may be possible to use the existing water pipe work and heat source. This alone makes it an ideal system solution for building refurbishment projects.

Total piping length	300m
Longest length actual (Equivalent)	120m (140m)
Longest length after first branch	40m (90m ¹)
Level difference between indoor and outdoor units	50m (40m ²)
Level difference between indoor units	15m

1 Contact your local dealer for more information and restrictions
2 In case outdoor unit is located below indoor units

Actual piping length between the VRV-W and indoor units: 120m (Equivalent piping length: 140m)



Park Phi, Enschede - The Netherlands

BREEAM excellent office building

For Gerard Schröder the choice for this system was an easy one: 'As far as I'm concerned, with the VRV Heat Recovery system, Daikin has the Rolls Royce in heat pump technology. If you want to build a sustainable office building, there really is no other alternative.'

BREEAM® new construction 2011, v1.0

Excellent



169-NOP-2010



VRV-WIII geothermal system, Daikin Altherma HT, Sky Air, aircooled chiller with heat recovery, iManager, iTouch Manager, i-Net

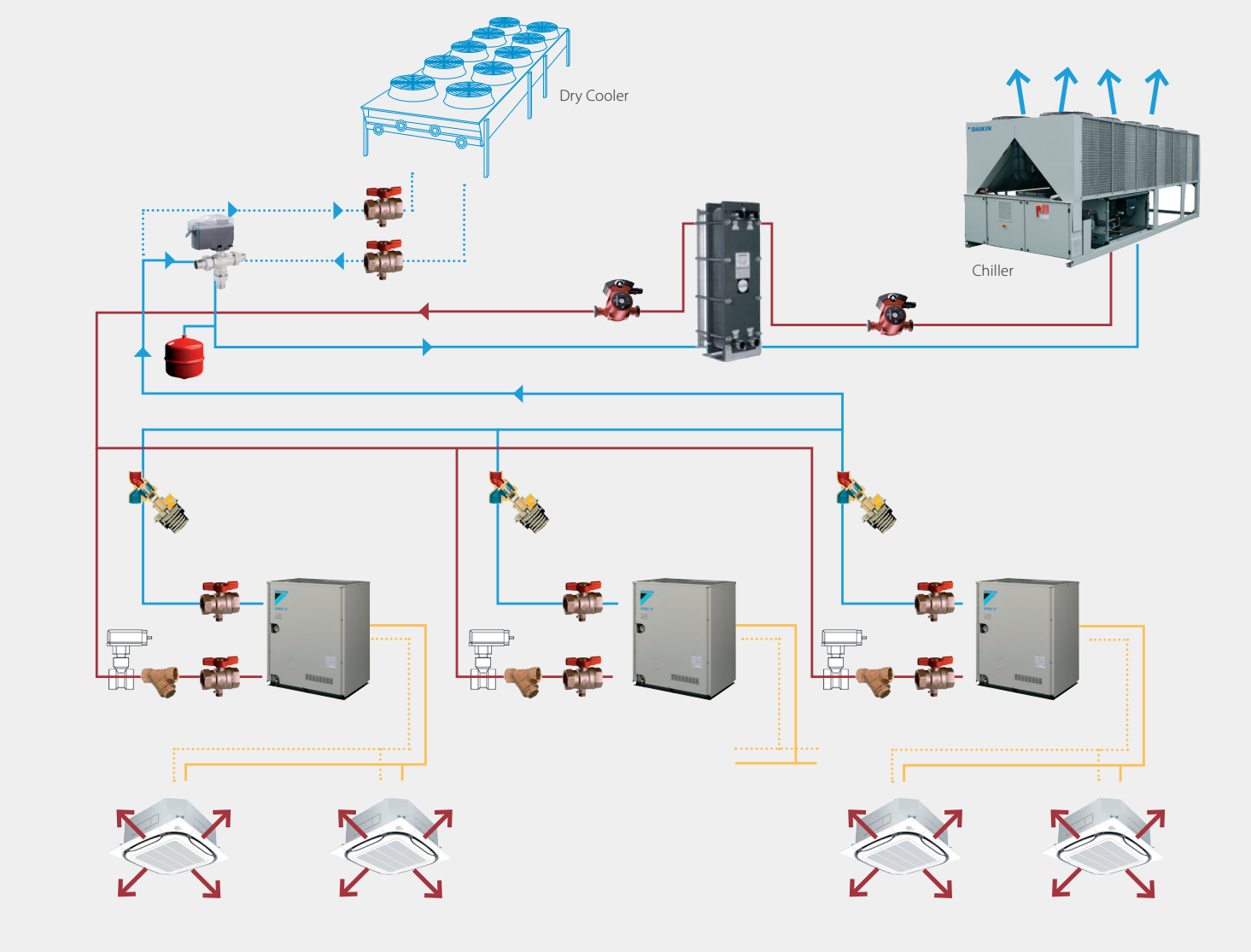










BREEAM EXCELLENT OFFICE BUILDING - WATERCOOLED VRV




Application

examples

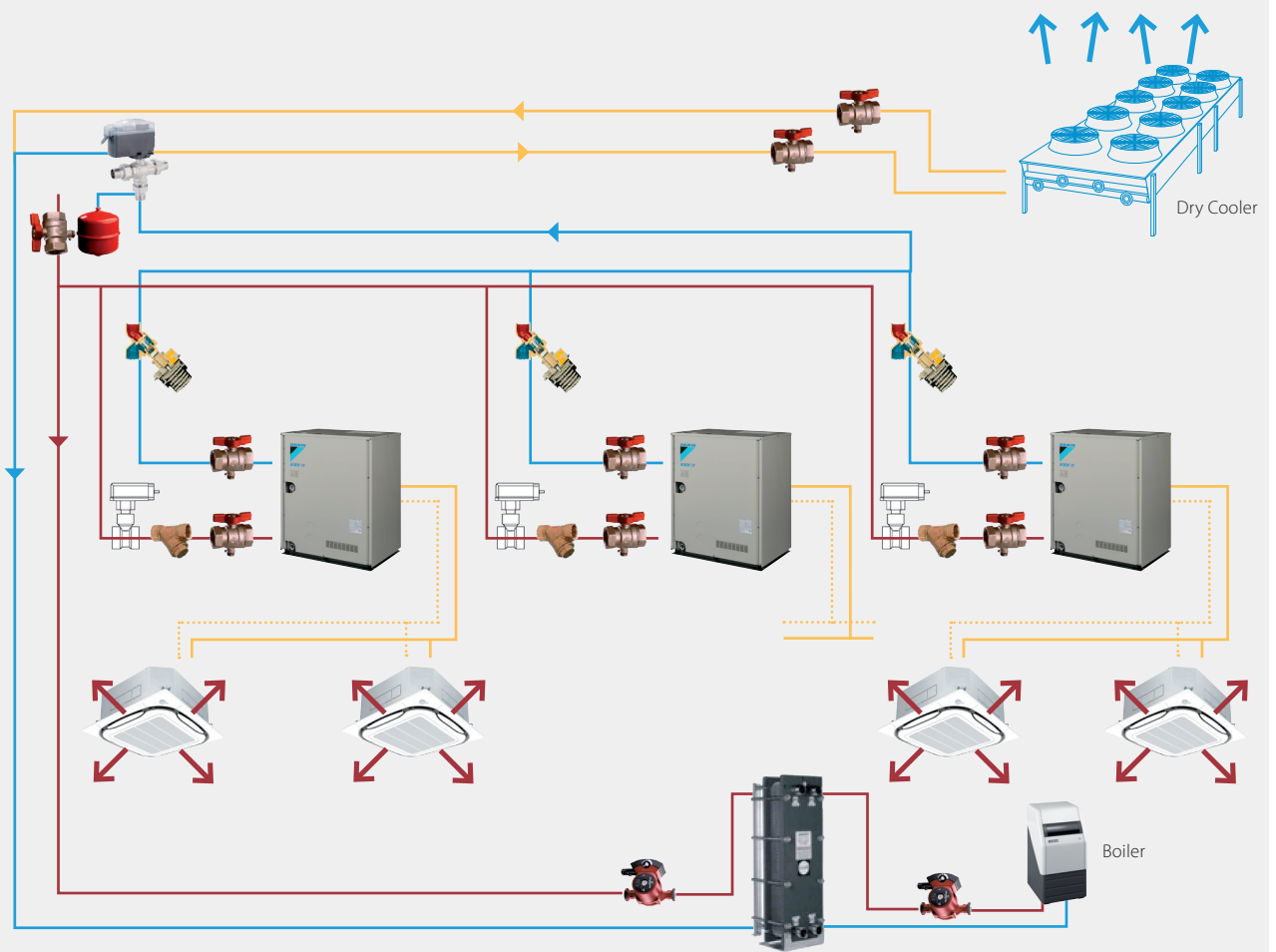
Dry cooler used for cooling, Chiller used for heating















-  Expansion tank
-  Circulator Pump
-  Flow valve or flow control valve
-  Stop valve
-  Strainer
-  Heat exchanger
-  Flow switch
-  Three way valve

- Cooling mode 
- Heating mode 
- Refrigerant flow 

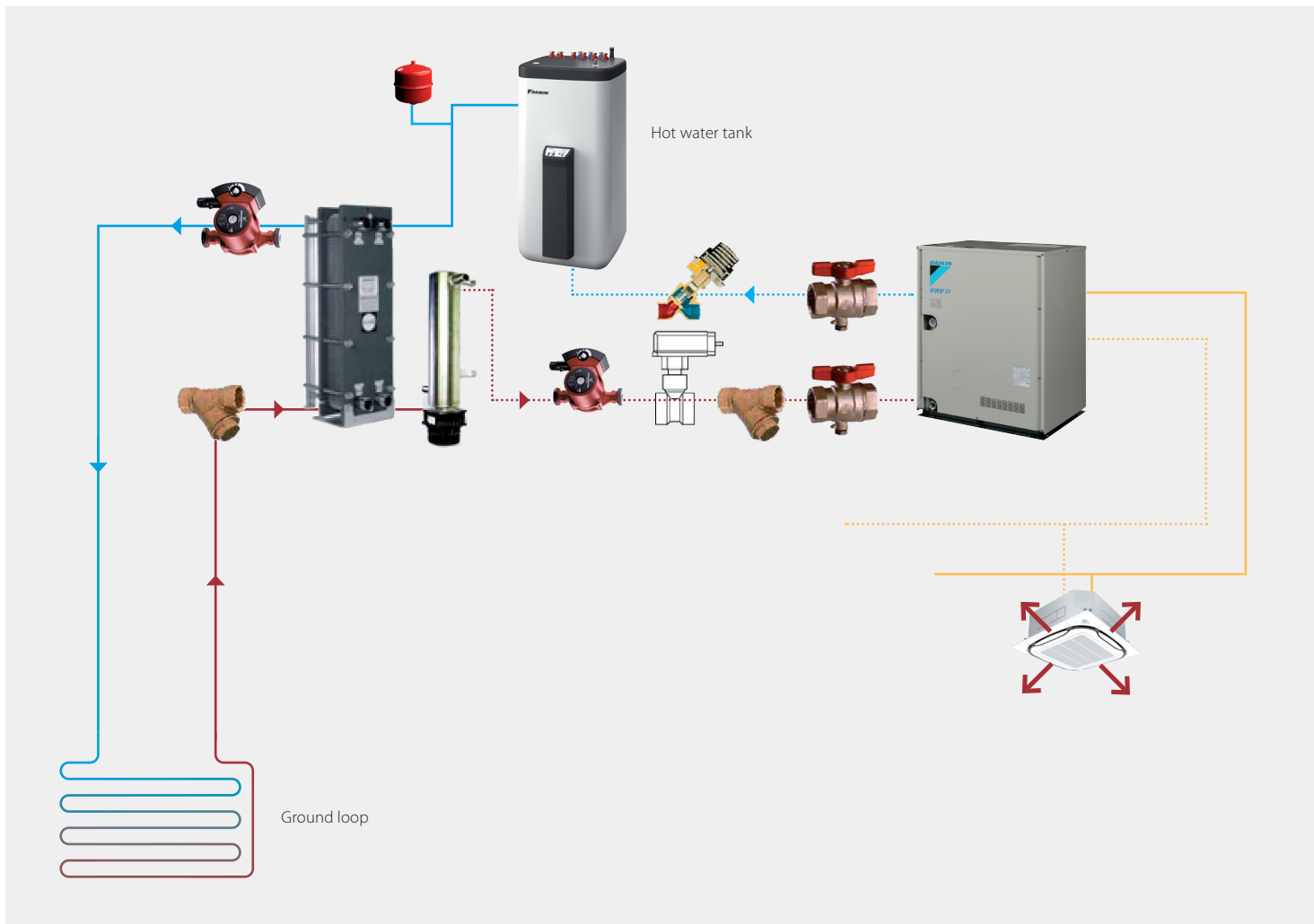
Dry cooler used for cooling, boiler used for heating

















-  Expansion tank
-  Circulator Pump
-  Flow valve or flow control valve
-  Stop valve
-  Strainer
-  Heat exchanger
-  Flow switch
-  Three way valve

- Cooling mode 
- Heating mode 
- Refrigerant flow 
- 

Geothermal operation



-  Expansion tank
-  Circulator Pump
-  Heat exchanger
-  Flow switch
-  Liquid heater
-  Buffer tank
-  Flow valve or flow control valve
-  Stop valve
-  Strainer
-  Three way valve

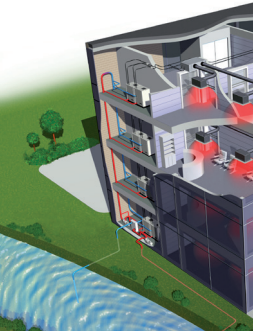
- Cooling mode 
- Heating mode 
- Refrigerant flow 
- 

Ground loop

Examples

Open system

Uses water from a well or surface water (river, lake). The water is pumped back to a second well or surface water



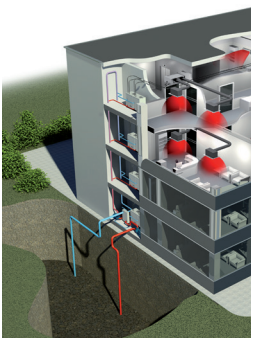
Conditions:

- › At 20 m depth water has a constant temperature of 10°C through the year
- › Surface water cools down to 5°C during winter

- ✓ Can be the most economical type of geothermal system
- ✓ Constant ground water temperature has positive impact on heat pump efficiency
- ✗ Risk to damage system components because of water quality → a secondary loop might be required to protect the heat exchanger
- ✗ Water should be tested for acidity, mineral content, organic content and corrosiveness:
- ✗ In many areas open systems are prohibited due to environmental concerns

Closed system

Uses water pipes that are buried in the ground and exchange heat with the ground

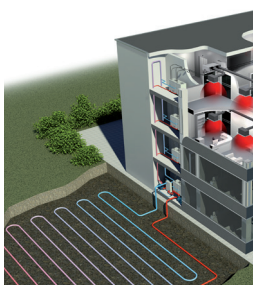


Vertical system conditions

- › Typical depth: 30-140 m. Below 15 m, the temperature of the ground is constant around 10°C

- ✓ Less surface space required
- ✓ Very constant ground temperature
- ✗ Expensive due to drilling cost

For smaller applications also horizontal loops can be used



Horizontal loop system

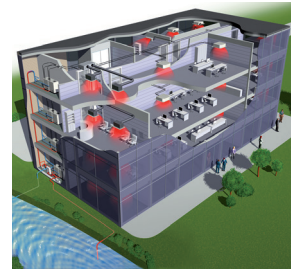
- › Typical trench depth: 1 – 2 m. The ground temperature varies, but always above 5°C (Exception: in cold areas)
- › Slinky loop: the plastic geothermal loop pipe is coiled in overlapped circles and flattened (Installed where there is not enough space for closed horizontal)

- ✓ Installation is easier and less expensive than vertical closed loops.
- ✗ Mainly for small applications as the property land should be large enough
- ✗ You cannot plant trees or build constructions over the land containing the loop.
- ✗ Glycol is needed to prevent freezing of the water.

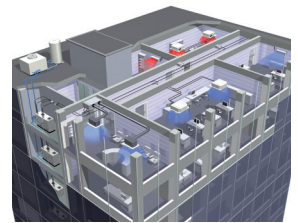
VRV IV water cooled series

Ideal for high rise buildings, using water as heat source

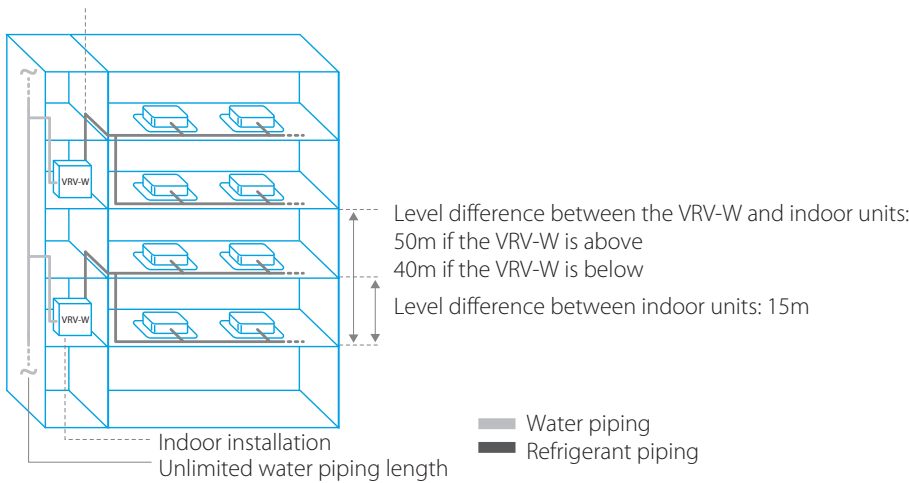
- › Unified range for standard and geothermal series simplifies stock. Geothermal series reduce CO₂ emissions thanks to the use of geothermal energy as a renewable energy source
- › No need for an external heating or cooling source when used in geothermal mode
- › Covers all thermal needs of a building via a single point of contact: accurate temperature control, ventilation, air handling units and Biddle air curtains
- › Compact & lightweight design can be stacked for maximum space saving
- › Incorporates VRV IV standards & technologies: Variable Refrigerant Temperature and full inverter compressors
- › 2-stage heat recovery: first stage between indoor units, second stage between outdoor units thanks to the storage of energy in the water circuit
- › Available in heat pump and heat recovery version
- › Variable Water Flow control option increases flexibility and control
- › Contains all standard VRV features



Geothermal operation



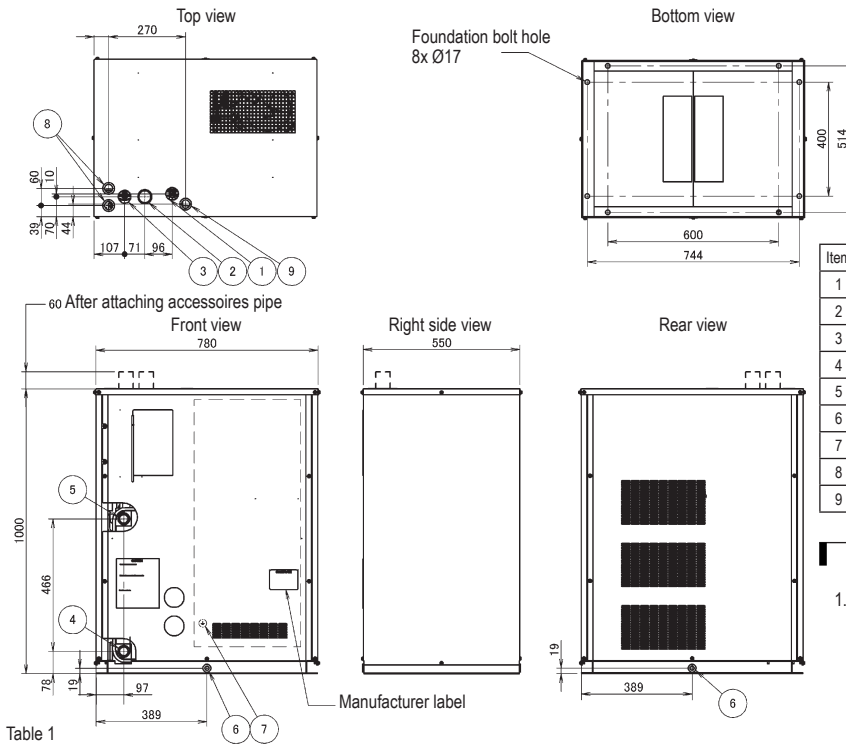
Standard operation



Outdoor unit		RWEYQ	8T8	10T8	16T8	18T8	20T8	24T8	26T8	28T8	30T8	
System	Outdoor unit module 1		RWEYQ8T	RWEYQ10T	RWEYQ8T		RWEYQ10T		RWEYQ8T		RWEYQ10T	
	Outdoor unit module 2		-	-	RWEYQ8T		RWEYQ10T		RWEYQ8T		RWEYQ10T	
	Outdoor unit module 3		-	-	RWEYQ8T		RWEYQ10T		RWEYQ8T		RWEYQ10T	
Capacity range		HP	8	10	16	18	20	24	26	28	30	
Cooling capacity	Nom.	kW	224 (1) / 22.4 (2)	28.0 (1) / 27.5 (2)	44.8 (1) / 44.8 (2)	50.4 (1) / 49.9 (2)	56.0 (1) / 55.0 (2)	67.2 (1) / 67.2 (2)	72.8 (1) / 72.3 (2)	78.4 (1) / 77.4 (2)	84.0 (1) / 82.5 (2)	
Heating capacity	Nom.	kW	25.0 (3) / 25.0 (4)	31.5 (3) / 31.5 (4)	50.0 (3) / 50.0 (4)	56.5 (3) / 56.5 (4)	63.0 (3) / 63.0 (4)	75.0 (3) / 75.0 (4)	81.5 (3) / 81.5 (4)	88.0 (3) / 88.0 (4)	94.5 (3) / 94.5 (4)	
Power input - 50Hz	Cooling	Nom.	kW	4.42 (1) / 4.45 (2)	6.14 (1) / 6.35 (2)	8.8 (1) / 8.9 (2)	10.6 (1) / 10.8 (2)	12.3 (1) / 12.7 (2)	13.3 (1) / 13.4 (2)	15.0 (1) / 15.3 (2)	16.7 (1) / 17.2 (2)	18.4 (1) / 19.1 (2)
	Heating	Nom.	kW	4.21 (3) / 4.30 (4)	6.00 (3) / 6.20 (4)	8.4 (3) / 8.6 (4)	10.2 (3) / 10.5 (4)	12.0 (3) / 12.4 (4)	12.6 (3) / 12.9 (4)	14.4 (3) / 14.8 (4)	16.2 (3) / 16.7 (4)	18.0 (3) / 18.6 (4)
EER		kW	5.07 (1) / 5.03 (2)	4.56 (1) / 4.33 (2)	5.07 (1) / 5.03 (2)	4.77 (1) / 4.62 (2)	4.56 (1) / 4.33 (2)	5.07 (1) / 5.03 (2)	4.86 (1) / 4.74 (2)	4.69 (1) / 4.51 (2)	4.56 (1) / 4.33 (2)	
COP		kW	5.94 (3) / 5.81 (4)	5.25 (3) / 5.08 (4)	5.94 (3) / 5.81 (4)	5.53 (3) / 5.38 (4)	5.25 (3) / 5.08 (4)	5.94 (3) / 5.81 (4)	5.65 (3) / 5.51 (4)	5.43 (3) / 5.27 (4)	5.25 (3) / 5.08 (4)	
Maximum number of connectable indoor units			36 (5)									
Indoor index connection	Min.		100	125	200	225	250	300	325	350	375	
	Nom.		200	250	400	450	500	600	650	700	750	
	Max.		260	325	520	585	650	780	845	910	975	
Dimensions	Unit	HeightxWidthxDepth	mm 1,000x780x550									
Weight	Unit		kg 137									
Sound power level	Cooling	Nom.	dBA 50									
Sound pressure level	Cooling	Nom.	dBA 51									
Operation range	Inlet water temperature	Cooling	Min.~Max.	°CDB 10~45								
		Heating	Min.~Max.	°CWB -10 / 10.0~45								
Refrigerant	Type		R-410A									
	Charge	kg	3.5	4.2							-	
		TCO _{2eq}	7.3	8.8							-	
Piping connections	Liquid	OD	mm 9.52		12.7	15.9			19.1			
	Gas	OD	mm 19.10 (6)		22.2 (6)	28.6 (6)			34.9 (6)			
	Discharge gas	OD	mm 15.9 (7) / 19.10 (8)		19.1 (7) / 22.10 (8)	22.2 (7) / 28.60 (8)			28.6 (7) / 34.90 (8)			
	Water	Inlet/Outlet	ISO 228 - G1 1/4 B External Thread/ISO 228 - G1 1/4 B External Thread									
	Total piping length	System	Actual	m 300								
Power supply	Phase/Frequency/Voltage	Hz/V	3N~/50/380-415									
Current - 50Hz	Maximum fuse amps (MFA)	A	20			32			50			

(1) Cooling: Indoor temp. 27°CDB; 19°CWB; inlet water temp.: 30°C; equivalent refrigerant piping: 7.5m; level difference: 0m. Rated values are with 100% water (no glycol) (2) Cooling: Indoor temp. 27°CDB; 19°CWB; inlet water temp.: 30°C; equivalent refrigerant piping: 7.5m; level difference: 0m. Rated values are with 30% glycol. (3) Heating: Indoor temp. 20°CDB; inlet water temp.: 20°C; equivalent refrigerant piping: 7.5m; level difference: 0m. Rated values are with 100% water (no glycol). (4) Heating: Indoor temp. 20°CDB; inlet water temp.: 20°C; equivalent refrigerant piping: 7.5m; level difference: 0m. Rated values are with 30% glycol. (5) Actual number of connectable indoor units depends on the indoor unit type (VRV indoor, Hydrobox, RA indoor, etc.) and the connection ratio restriction for the system (50% <= CR <= 130%) (6) In case of heat pump system, gas pipe is not used (7) In case of heat recovery system (8) In case of heat pump system | Contains fluorinated greenhouse gases

RWEYQ-T



Item	Part name	Remark
1	Liquid pipe	See table 1
2	Suction pipe	See table 1
3	Gas pipe	See table 1
4	Water in connection	External pipe thread · ISO 228 - G1 1/4 B·
5	Water out connection	External pipe thread · ISO 228 - G1 1/4 B·
6	Drain outlet	External pipe thread · ISO 228 - G1/2 B·
7	Grounding terminal	M5
8	Power supply wiring intake	Ø29
9	Cable inlet	Ø29

NOTES

- The grounding terminal is located in the switch box.

Table 1

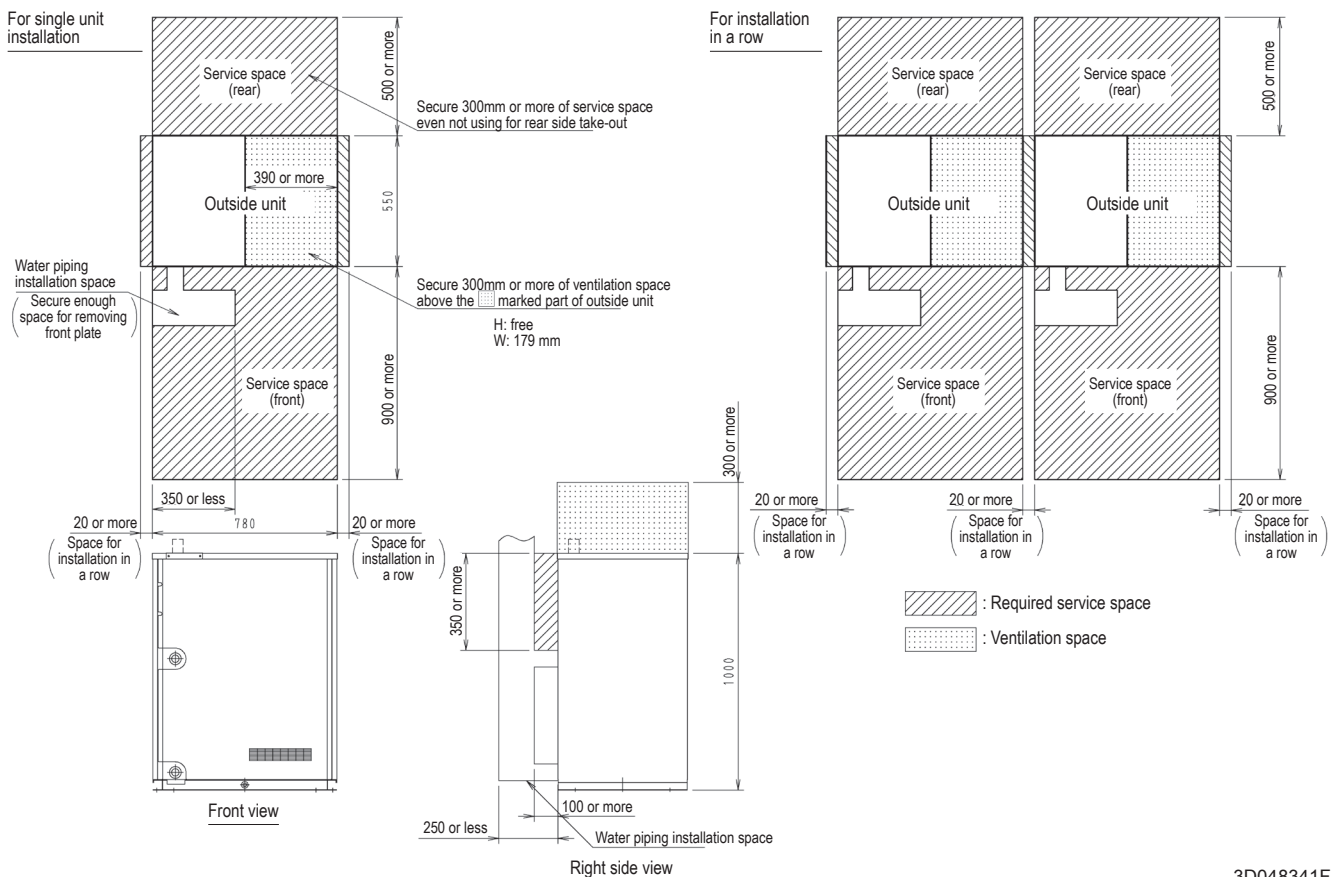
Model	RWEYQ8		RWEYQ10	
	Heat pump	Heat recovery	Heat pump	Heat recovery
Operation system	Heat pump	Heat recovery	Heat pump	Heat recovery
Liquid pipe	Ø9.5	Ø9.5	Ø9.5	Ø9.5
Suction pipe		Ø19.1		Ø22.2
Gas pipe (high/low pressure)	Ø19.1	Ø15.9	Ø22.2	Ø19.1

Connection method Liquid pipe Flare connection
 Suction pipe Brazed connection
 Gas pipe (high/low pressure)

In case of a heat pump, the suction pipe is not used.

3D085178B

RWEYQ-T



3D048341F