

SE-UHT SERIES

SE-UHT-25V

Cascade heat pump delivering hot water to 125 °C from ambient air alone. An R410A low stage lifts the air-side heat, an R245fa high stage takes it the rest of the way, and the two meet at a cascade heat exchanger.

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HEATING CAPACITY
25 kW
 At T1 · A20 °C, / WB15 °C / W120 °C

PEAK COP
2.2
 At T1 · A20 °C, / WB15 °C / W120 °C

MAX WATER TEMP
125 °C
 Rated outlet 120 °C

HOT WATER OUTPUT
215 LPH
 At T1 · A20 °C, / WB15 °C / W120 °C

Performance

Rated output at each test condition

T1 A20 °C, / WB15 °C / W120 °C		T3 A-7 °C / WB-8 °C / W120 °C		T5 A-20 °C / W120 °C	
Heating capacity	25 kW	Heating capacity	18 kW	Heating capacity	15 kW
Power input	11.2 kW	Power input	10.6 kW	Power input	10.5 kW
COP	2.2	COP	1.7	COP	1.4
Hot water output	215 LPH	Hot water output	120 LPH	Hot water output	90 LPH

Technical specifications

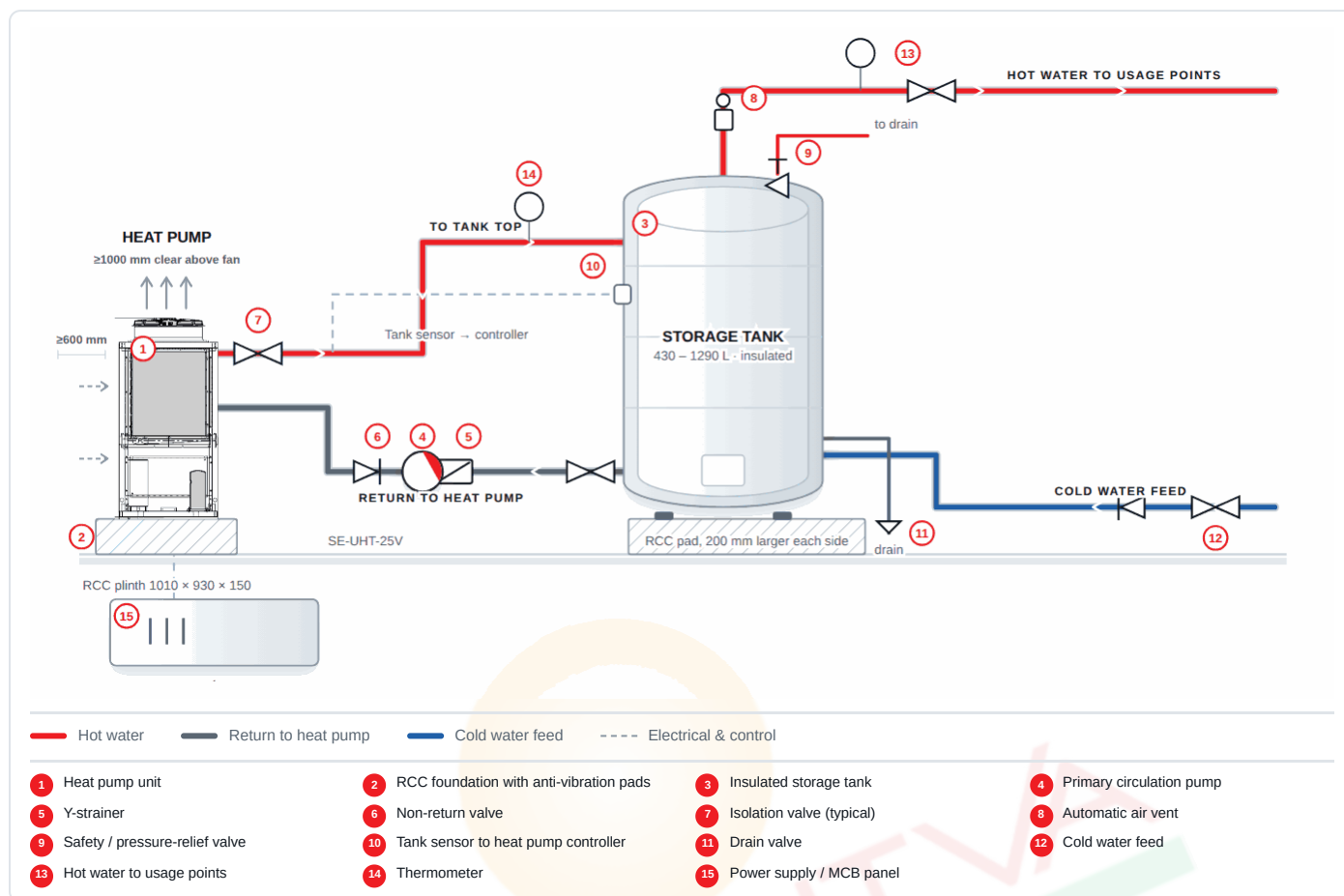
SE-UHT-25V

ELECTRICAL SUPPLY			WATER CIRCUIT		
Power supply	—	380-415 V / 50 Hz / 3 Ph	Rated water temperature	°C	120
Maximum current	A	50	Maximum water temperature	°C	125
REFRIGERATION CIRCUIT			Water flow	m³/hr	4.3
Compressor	—	Scroll (Copeland / Panasonic)	Water pipe size	inch	R1-1/4
Number of compressors	Nos	2	UNIT & ACOUSTICS		
Refrigerant	—	R410A + R245fa (cascade)	Dimensions (L × W × H)	mm	860 × 780 × 1780
Heat exchanger (condenser)	—	Tube-in-shell / Brazed plate heat exchanger	Net weight	kg	225
Evaporator	—	Blue finned evaporator coil	Noise at 1 metre	dB(A)	≤ 58
Throttling device	—	Thermostatic / Electronic expansion valve	TEST CONDITIONS T1 — Ambient 20 °C, water outlet 120 °C T2 — Ambient 7 °C, water outlet 120 °C T3 — Ambient -7 °C, water outlet 120 °C T4 — Ambient -12 °C, water outlet 120 °C T5 — Ambient -20 °C, water outlet 120 °C		

TEST CONDITIONS
T1 — Ambient 20 °C, water outlet 120 °C
T2 — Ambient 7 °C, water outlet 120 °C
T3 — Ambient -7 °C, water outlet 120 °C
T4 — Ambient -12 °C, water outlet 120 °C
T5 — Ambient -20 °C, water outlet 120 °C

INSTALLATION REQUIREMENT
Protection device and cable size are not published for this model. Confirm both with Sunniva before wiring — the rated current above is not sufficient to size them.
 Maintain water flow of **4.3 m³/hr** through the unit.

Site installation schematic How the unit connects to the tank, pumps and piping on site



Indicative hookup only. Static head, draw pattern and local code may call for additional components — confirm the final scheme with Sunniva before ordering.

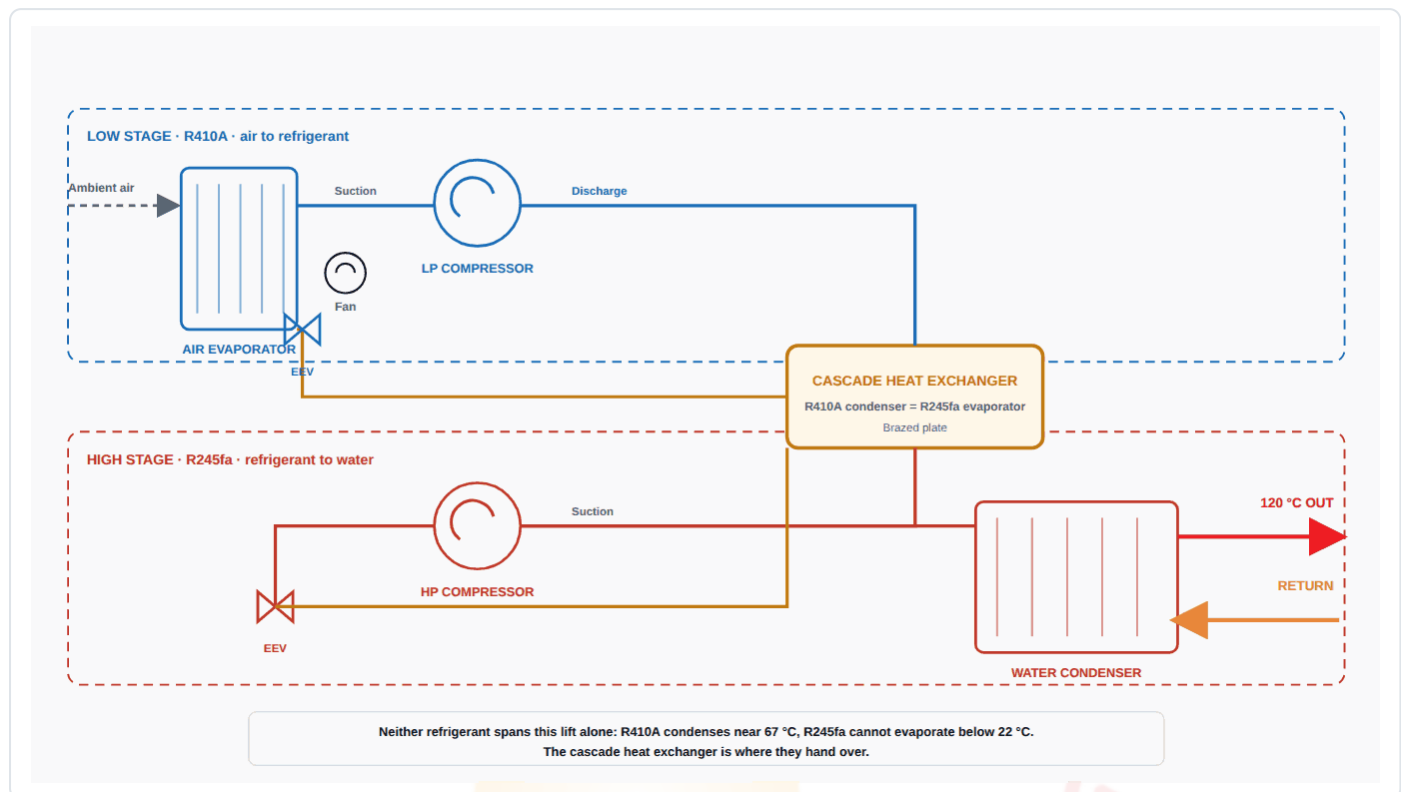
Selection & site preparation Recommended sizing derived from this model's rated data

SYSTEM SIZING		CIVIL & ELECTRICAL	
Storage tank volume	430 – 1290 L	Unit footprint & dry weight	860 × 780 mm · 225 kg
Tank sizing rule	Hot water output × 2 to 6 LPH measured at 20 °C ambient. Indicative range — stay inside it so the tank is neither undersized nor oversized.	Heat pump plinth	1010 × 930 × 150 mm RCC, M20
Primary circulation pump	5 m ³ /hr @ 10 – 12 m head	Plinth level	100 mm above finished floor, ± 3 mm/m
Primary pipe size	25 mm (R1-1/4) to 10 m run; 32 mm beyond	Tank pad (1000 L)	150 mm RCC, 200 mm larger each side ≈ 1150 kg filled
Line insulation	25 mm closed-cell, every line above 45 °C	Clearances	600 mm air-on · 1000 mm above fan · 800 mm service side
		Electrical	MCB ·

Installation steps Follow in order; commission before start-up

- Cast the RCC plinth 1010 × 930 × 150 mm in M20 concrete, 100 mm above finished floor. Let it cure and check it is level within 3 mm per metre.
- Place the tank on its own level pad, as close to the heat pump as the site allows. Short pipes lose less heat.
- Pipe the heat pump outlet → tank top inlet. Fit an isolation valve at each end so the unit can be serviced without draining the tank.
- Bring the cold water feed into the tank bottom through an isolation valve and a non-return valve.
- Insulate every hot line with 25 mm closed-cell insulation, pump body included.
- Fill and vent the system fully. Confirm the flow switch stops the unit when the pump is off, then start.
- Set the unit down on anti-vibration pads. Keep 600 mm clear at the finned coil faces and 1000 mm above the fan — the unit must breathe or capacity drops.
- Pipe tank bottom → isolation valve → Y-strainer → primary pump → heat pump inlet, in that order. Fit the non-return valve after the pump.
- Fit the automatic air vent and the safety valve on the tank top. Pipe the safety valve discharge to an open drain — never cap it.
- Fit the tank sensor into the tank pocket and run its cable back to the heat pump controller. Do not run it alongside the power cable.
- Power the unit from a dedicated MCB using .

Process & instrumentation diagram Refrigeration circuit, instrumentation and water connections



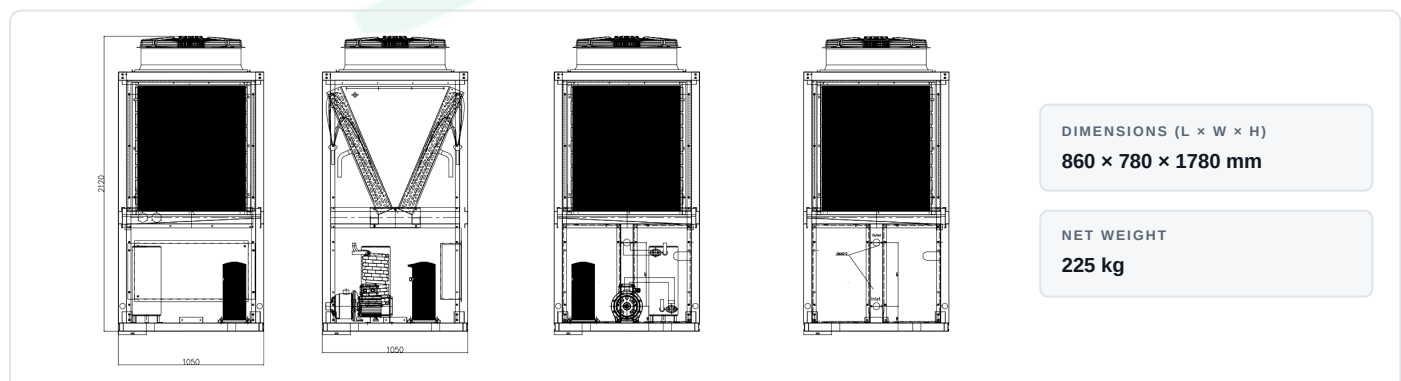
Schematic representation of the standard circuit — not to scale. Component arrangement may vary with build option.

Instrument schedule Tags as marked on the diagram above

TAG	DEVICE	FUNCTION
TT 01	Compressor discharge temperature	Discharge superheat & high-temperature cut-out
TT 02	Compressor suction temperature	Suction superheat monitoring
TT 03	Water outlet temperature	Set-point control
TT 04	Water inlet temperature	Return water sensing, ΔT calculation
PS HIGH	High-pressure switch	Discharge over-pressure cut-out

TAG	DEVICE	FUNCTION
PS LOW	Low-pressure switch	Loss-of-charge / low-suction cut-out
PI HP	High-side pressure gauge	Discharge pressure indication
PI LP	Low-side pressure gauge	Suction pressure indication
FS 01	Water flow switch	Interlock — no-flow lockout

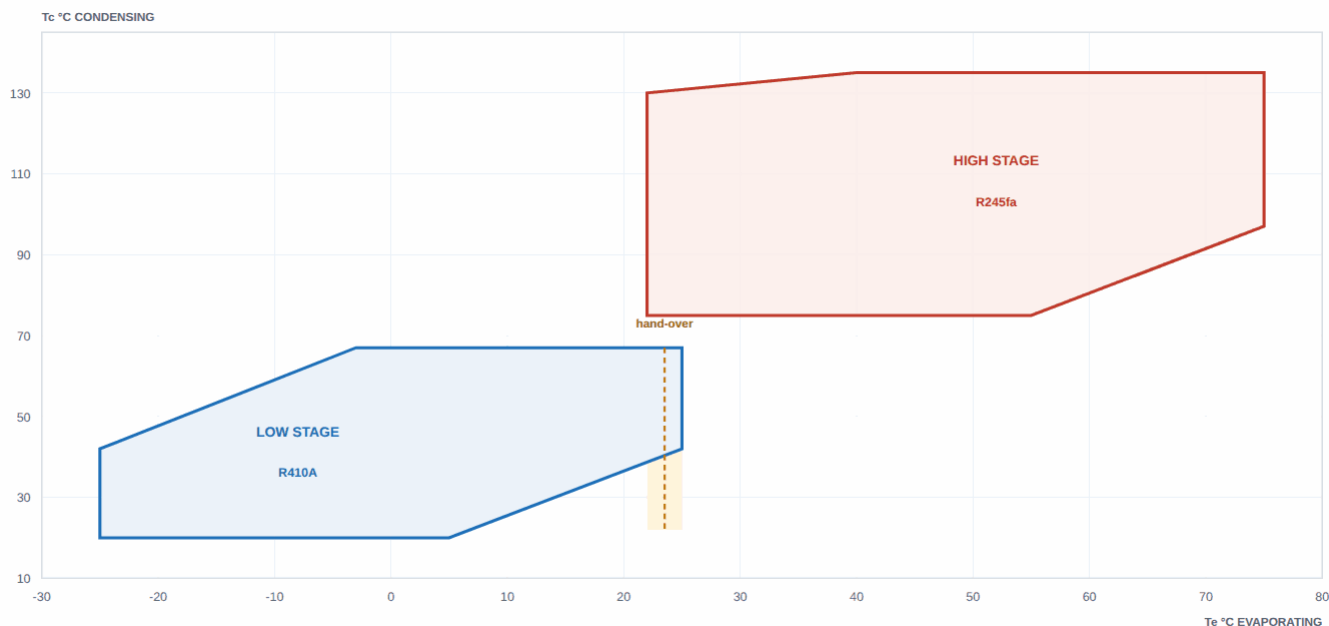
Cabinet reference drawing Typical general arrangement — this model's own dimensions alongside



Reference arrangement only — V-coil cabinet, vertical discharge. Dimensions printed on the drawing are indicative; the figures above and in the specification table are the ones that apply to this model.

Operating envelope

The compressor's permitted window, in refrigeration terms



ENVELOPE LIMITS

Low stage — R410A	Te -25 to 25 °C · Tc 20 to 67 °C
High stage — R245fa	Te 22 to 75 °C · Tc 75 to 135 °C
Hand-over	22 to 25 °C where the low stage's condensing overlaps the high stage's evaporating — the cascade heat exchanger sits in this band
Peak condensing	135 °C high stage; the machine's published water limit is 125 °C
Transient operation	Not applicable

READING THE ENVELOPE

Te (evaporating) follows the source the unit draws heat from — the colder the air or source water, the lower Te sits.

Tc (condensing) follows the water leaving the unit — asking for 80 °C hot water puts Tc near the top of the envelope.

A duty is valid only **inside the shaded area**. A cold source combined with very hot water pushes the point towards the top-left, which is exactly where the envelope closes in — that corner is the real limit on winter performance.

Two circuits, drawn on one frame. The low stage cannot condense much above 67 °C and the high stage cannot evaporate below 22 °C, so neither spans the lift alone — the shaded band between them is where the cascade heat exchanger hands the heat over. Envelopes redrawn from the **Xecom / Embraco Nidec** scroll compressor selection guide, "Operating Envelop". Where a duty sits close to a boundary, confirm against the compressors fitted to the unit before finalising the design.

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