

SE-SHT SERIES

SE-SHT-100V

Air source super high-temperature heat pump for process and sanitary water, rated at 95 °C. R515B scroll circuit, three-phase.

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HEATING CAPACITY

102.4 kW

At T1 · A30 °C / W90 °C

PEAK COP

2.3

At T1 · A30 °C / W90 °C

MAX WATER TEMP

95 °C

Rated outlet 90 °C

HOT WATER OUTPUT

1500 LPH

At T1 · A30 °C / W90 °C

Performance

Rated output at each test condition

T1 A30 °C / W90 °C

Heating capacity	102.4 kW
Power input	44.6 kW
COP	2.3
Hot water output	1500 LPH

T2 A25 °C / W90 °C

Heating capacity	91.4 kW
Power input	42.6 kW
COP	2.1
Hot water output	1210 LPH

T3 A20 °C / W90 °C

Heating capacity	79.8 kW
Power input	40.4 kW
COP	2.0
Hot water output	1780 LPH

Technical specifications

SE-SHT-100V

ELECTRICAL SUPPLY

Power supply	—	380~415 V / 50 Hz / 3 Ph
Rated current	A	73.6

REFRIGERATION CIRCUIT

Compressor	—	Scroll
Number of compressors	Nos	2
Refrigerant	—	R515B
Heat exchanger (condenser)	—	Tube in shell heat exchanger
Evaporator	—	Blue finned evaporator coil
Throttling device	—	Electronic expansion valve
Fan quantity	Nos	1

WATER CIRCUIT

Rated water temperature	°C	90
Maximum water temperature	°C	95
Water flow	m ³ /hr	18
Water pipe size	inch	R2

UNIT & ACOUSTICS

Dimensions (L × W × H)	mm	2260 × 1030 × 2170
Net weight	kg	750
Noise at 1 metre	dB(A)	≤ 65

TEST CONDITIONS

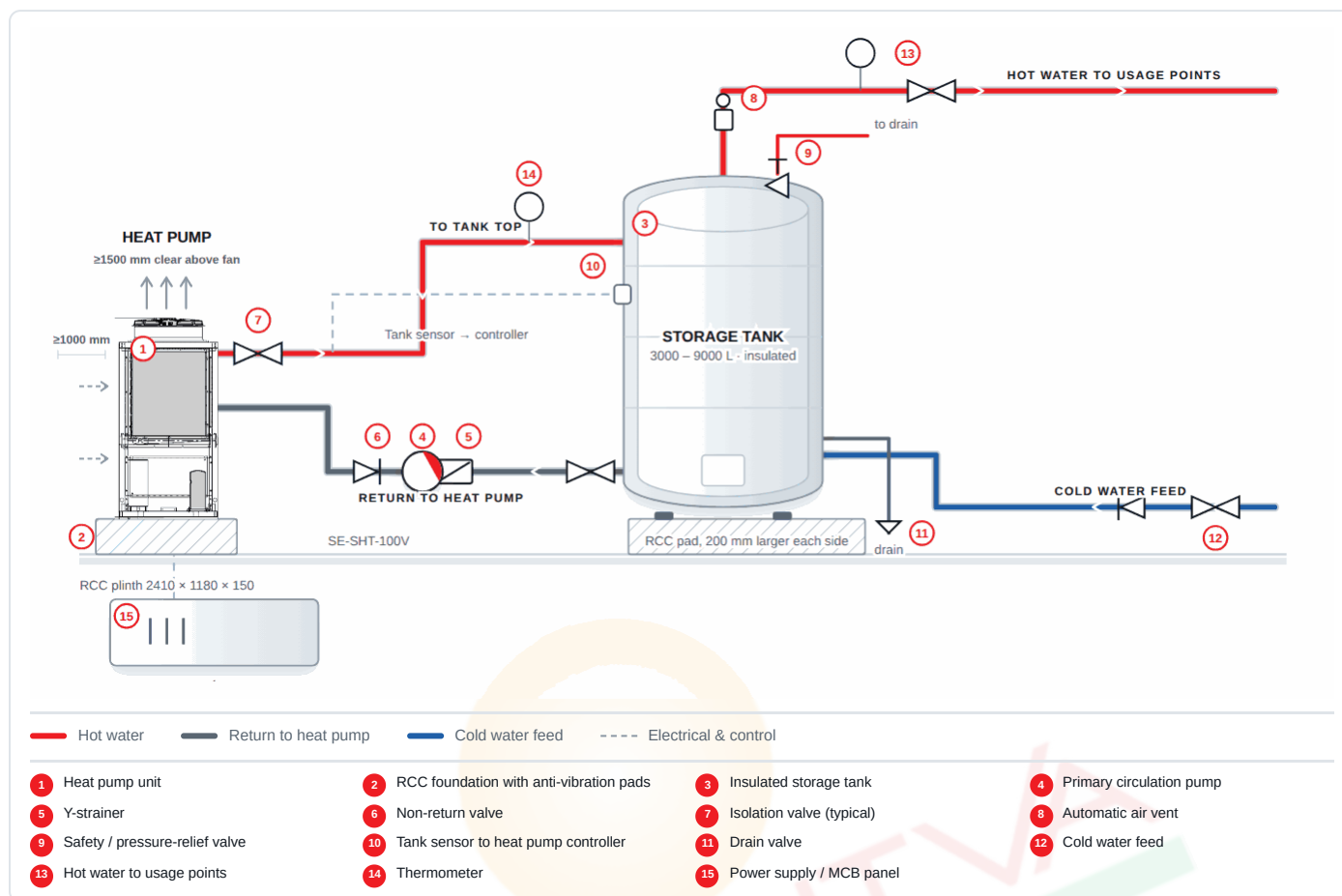
T1 — Ambient 30/25 °C (DB/WB), E.T. 20 °C, C.T. 95 °C
T2 — Ambient 25/20 °C (DB/WB), E.T. 15 °C, C.T. 95 °C
T3 — Ambient 20/15 °C (DB/WB), E.T. 10 °C, C.T. 95 °C

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 **18 m³/hr** through the unit.

Site installation schematic



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

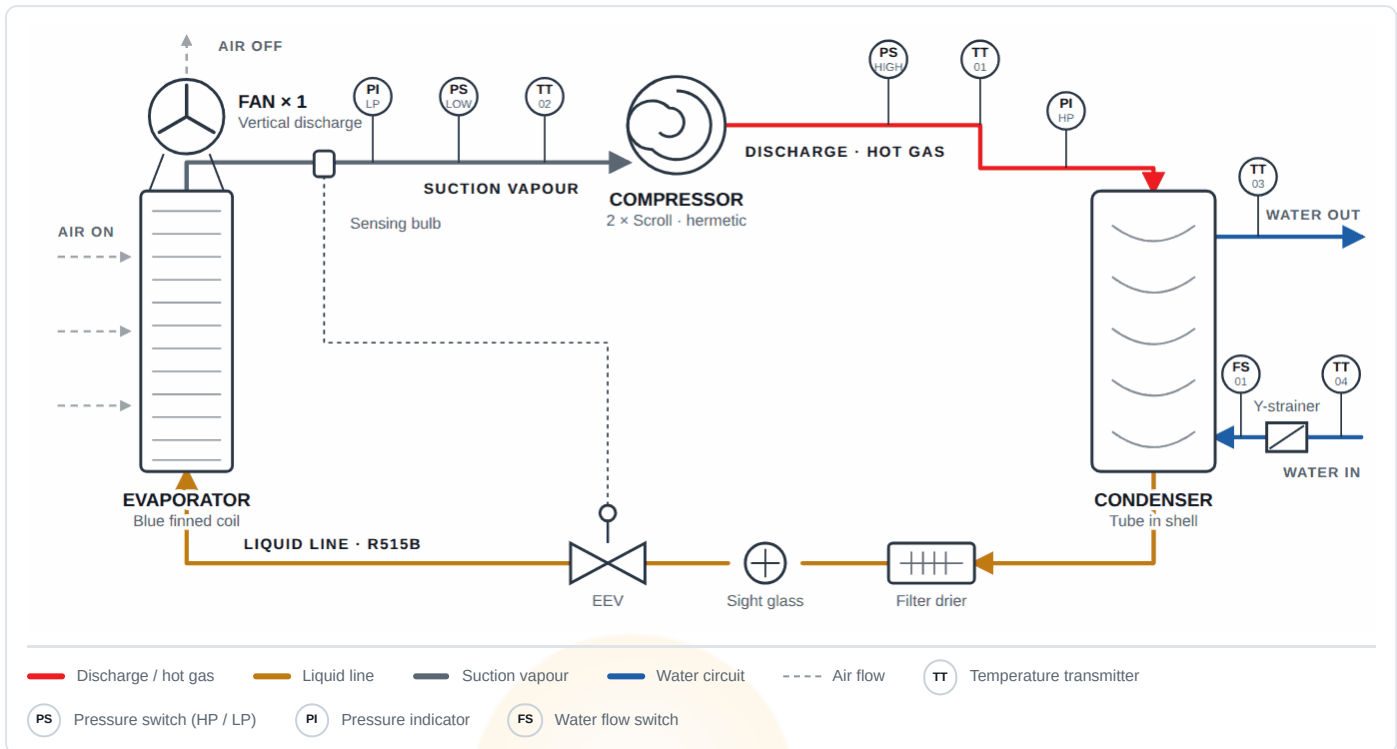
SYSTEM SIZING		CIVIL & ELECTRICAL	
Storage tank volume	3000 – 9000 L	Unit footprint & dry weight	2260 × 1030 mm · 750 kg
Tank sizing rule	Hot water output × 2 to 6 LPH measured at 20 °C ambient. Indicative range — stay inside it so the tank is neither undersized nor oversized.	Heat pump plinth	2410 × 1180 × 150 mm RCC, M20
Primary circulation pump	19 m³/hr @ 10 – 12 m head	Plinth level	100 mm above finished floor, ± 3 mm/m
Primary pipe size	50 mm (R2) to 10 m run; 65 mm beyond	Tank pad (3000 L)	150 mm RCC, 200 mm larger each side ≈ 3450 kg filled
Line insulation	25 mm closed-cell, every line above 45 °C	Clearances	1000 mm air-on · 1500 mm above fan · 1000 mm service side
		Electrical	MCB ·

Installation steps Follow in order; commission before start-up

- 1 Cast the RCC plinth **2410 × 1180 × 150 mm** in M20 concrete, 100 mm above finished floor. Let it cure and check it is level within 3 mm per metre.
- 3 Place the tank on its own level pad, as close to the heat pump as the site allows. Short pipes lose less heat.
- 5 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.
- 7 Bring the **cold water feed** into the tank bottom through an isolation valve and a non-return valve.
- 9 Insulate every hot line with **25 mm closed-cell** insulation, pump body included.
- 11 Fill and vent the system fully. Confirm the flow switch stops the unit when the pump is off, then start.
- 2 Set the unit down on anti-vibration pads. Keep **1000 mm clear** at the finned coil faces and **1500 mm above the fan** — the unit must breathe or capacity drops.
- 4 Pipe **tank bottom** → **isolation valve** → **Y-strainer** → **primary pump** → **heat pump inlet**, in that order. Fit the non-return valve after the pump.
- 6 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.
- 8 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.
- 10 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

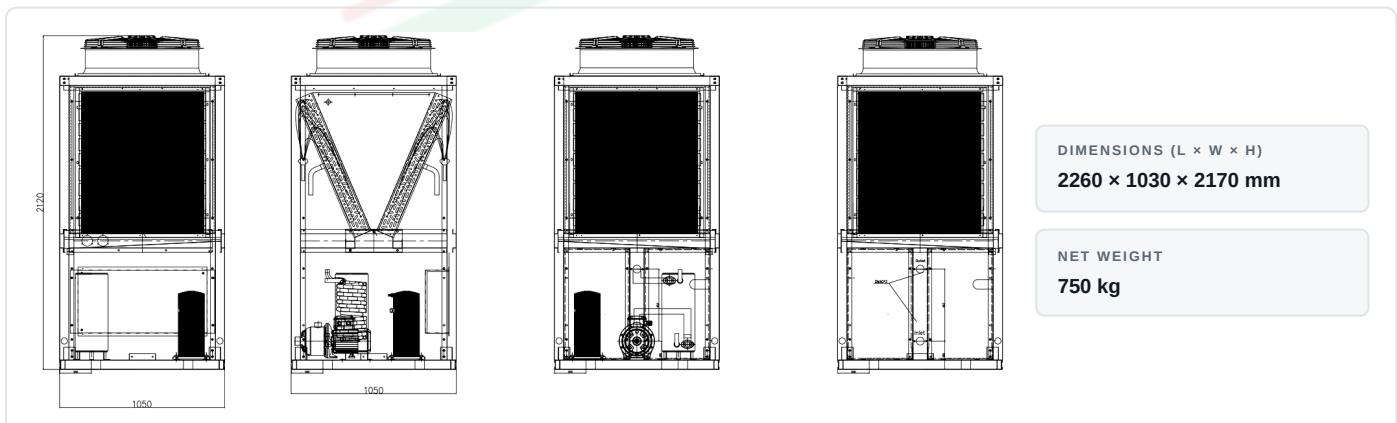
Tags as marked on the diagram above

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.

SUNNIVA ENCON LLP

Manufacturer & exporter of heat pumps since 2012

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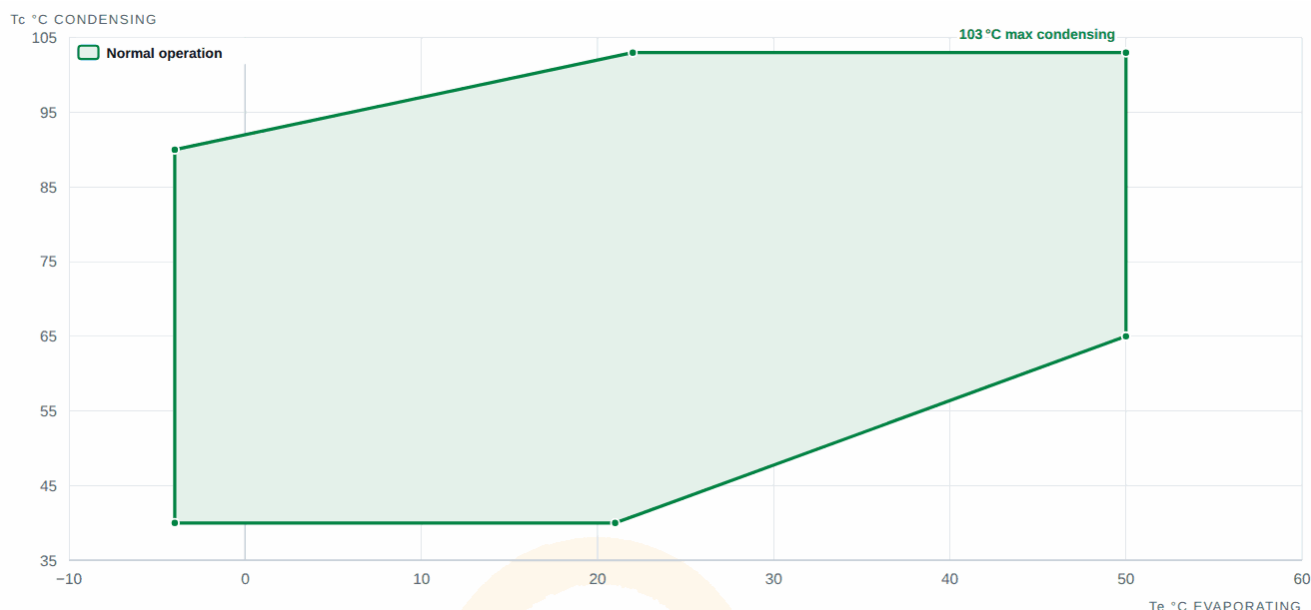
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Operating envelope The compressor's permitted window, in refrigeration terms

Operating envelope · R515B circuit

Condensing against evaporating temperature — the compressor's permitted operating window



ENVELOPE LIMITS

Evaporating temperature T_e	-4 °C to 50 °C
Condensing temperature T_c	40 °C to 103 °C
Peak condensing	103 °C highest hot-water temperature the circuit can reach
Transient operation	Not applicable the envelope above is the continuous operating window

READING THE ENVELOPE

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

T_c (condensing) follows the water leaving the unit — asking for 80 °C hot water puts T_c 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.

Representative envelope for the R515B circuit, redrawn from the Xecom / Embraco Nidec scroll compressor selection guide, "Operating Envelop", XD*E panel. Envelope limits are broadly similar across compressor makes, so treat this as a representation of the circuit's operating window. Where a duty sits close to a boundary, confirm against the compressor fitted to the unit before finalising the design.

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