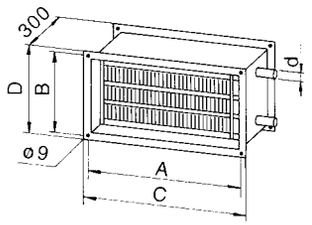
WHR-K



Dimensions WHR-K



Dim. in mm see table

Warm water heating element for connection to rectangular ventilation ducts.
Dimensionally matched to the Helios rectangular duct fans. Casing made of galvanised steel sheet, double-sided flanges. Air heater with aluminium blades, offset copper pipes.
Operating temp. $t_{max.}$ 100 °C.
Max. operating pressure 8 bar.
Water connection pipes with external thread.
With drain/vent valve.

Installation instructions

Install the heating element in the flow direction downstream of the fan. In case of installation upstream of the fan, ensure that the air flow temperature at the fan does not exceed its maximum permissible temperature.
In order to protect against contamination and to prevent a drop in performance, the installation of an air filter KLF is recommended.
A duct piece of at least 1 m in length must be installed between the fan and the heating element, so that a uniform flow is achieved.
When installing a heating element, make sure that drainage and venting is ensured. Attention: Frost protection should be provided on site.

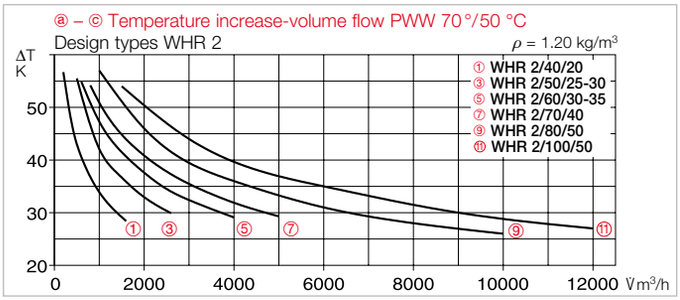
Selection

The effective temperature increase results from the parameters: Volume throughput, element output and flow temperature.
These parameters can be determined using the adjacent diagrams (in steps ⓐ – ⓒ).
The heat outputs are also specified in the type table for some volume parameters.
When selecting a fan (volume determination), the pressure loss of the heating element, which is shown in the diagrams, must be taken into account (figure ⓓ).

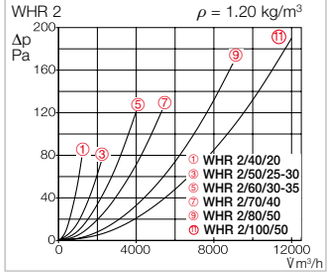
Accessories

Accessories	Page
Temperature control system WHS HE	496 f.

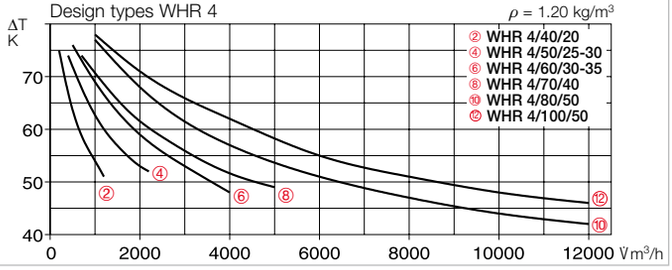
ⓐ – ⓒ Temperature increase-volume flow PWW 70 °/50 °C
Design types WHR 2 — ρ = 1.20 kg/m³



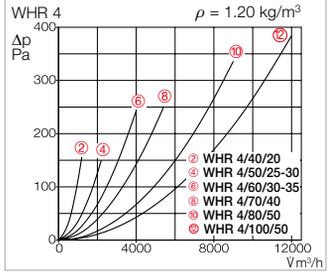
ⓓ Pressure loss-volume flow
WHR 2 — ρ = 1.20 kg/m³



ⓐ – ⓒ Temperature increase-volume flow PWW 70 °/50 °C
Design types WHR 4 — ρ = 1.20 kg/m³



ⓓ Pressure loss-volume flow
WHR 4 — ρ = 1.20 kg/m³



ⓐ Temperature increase

Determination: $\Delta T = \vartheta_i - \vartheta_a$ [K]
ΔT: Air temperature difference [K]
ϑ_i: Air temp., air heater outlet [°C]
ϑ_a: Air temp., air heater inlet [°C]

ⓑ Volume throughput

Given by fan performance curve, whereby system resistances and heating element pressure loss (figure ⓓ) must be taken into account.

ⓒ Determination of heat output

$$Q_H = \frac{\dot{V} \cdot \Delta T \cdot c_{PL} \cdot \rho_L}{3600} \text{ [kW]}$$

V: Volume flow [m³/h]
ΔT: Air temperature difference [K]
c_{PL}: Specific heat capacity of the air (1.0) [KJ/kg K]
ρ_L: Air density (1.2) [kg/m³]

ⓓ Determination of press. loss

The diagrams above show the pressure loss depending on volume flow for the respective heating element.

Type	Ref. no.	Compat. with fan	Air-side data: Heat output		Δ T air		at V̇	Water-side data[1]: Pressure loss	at water volume	Dimensions: A	B	C	D	Connection d[3]	Weight	Compatible temperature control system: Type	Ref. no.
		NG cm	kW[1]	kW[2]	K[1]	K[2]	m³/h	Δ p_w kPa	l/h	mm	mm	mm	mm	Ø	ca. kg		
WHR 2/40/20	08782	40/20	14	7.7	32	18	1200	10	610	420	220	450	250	3/4	7.0	**WHS HE**	08319
WHR 4/40/20	08783	40/20	22	12.6	51	29	1200	7	980	420	220	450	250	3/4	7.3	**WHS HE**	08319
WHR 2/50/25-30	08784	50/25-30	24	14	33	18	2200	7	1050	520	270/320	550	350	3/4	9.3	**WHS HE**	08319
WHR 4/50/25-30	08785	50/25-30	38	21	52	28	2200	5	1680	520	270/320	550	350	1	11.1	**WHS HE**	08319
WHR 2/60/30-35	08786	60/30-35	32	18	34	19	2600	8	1420	620	320/370	650	400	3/4	11.2	**WHS HE**	08319
WHR 4/60/30-35	08787	60/30-35	51	30	55	32	2600	7	2270	620	320/370	650	400	1	14.0	**WHS HE**[4]	08319
WHR 2/70/40	08788	70/40	50	28	30	17	4500	6	2200	720	420	750	450	1	17.0	**WHS HE**	08319
WHR 4/70/40	08789	70/40	81	44	50	27	4500	4	3570	720	420	750	450	1	17.0	–	–
WHR 2/80/50	08795	80/50	82	46	28	16	8000	11	3630	820	520	850	550	1	15.0	–	–
WHR 4/80/50	08796	80/50	138	80	48	28	8000	15	6110	820	520	850	550	1	20.0	–	–
WHR 2/100/50	08797	100/50	104	59	29	18	10000	19	4630	1020	520	1050	550	1	18.0	–	–
WHR 4/100/50	08798	100/50	172	99	48	28	10000	14	7640	1020	520	1050	550	1	24.0	–	–

The values apply for supply air temperature 0 °C and flow/return temperatures: [1] 90/70 °C, [2] 60/40 °C. [3] 3/4"= 19.05 mm, 1"= 25.4 mm, external thread. [4] with reduced heat output to approx. 2200 l/h.