REC AL AND REC PP – RECUPERATIVE PLATE TYPE HEAT EXCHANGERS "AIR - AIR"

Description

- Heat exchangers are designed for recycling of heat or cold of the exhaust air or gas from ventilation, air-conditioning, drying or technological systems.
- Work with air and gas with temperature from -40^{O}C up to +90^{O}C and maximal differential pressure between two streams 1000 Pa.
- Heat exchangers are not suitable for aggressive, flammable and explosive mixtures.

Models

- **REC AL** – heat exchanger with aluminum lamellas
- **REC PP** – modular plate heat exchanger with profiled polypropylene lamellas

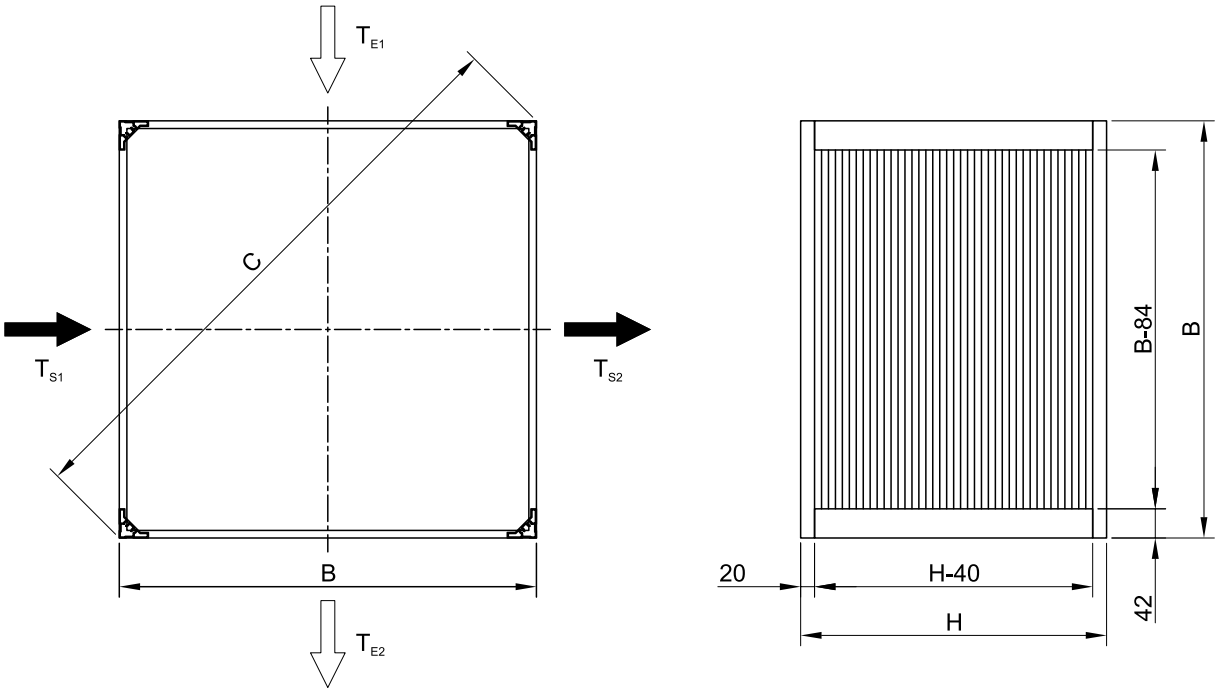
Options – after individual request in the offices of Tangra-AV

- Air filters at the inlets of fresh and exhaust air - section 02-03.
- Heat exchanger by-pass for fresh air - PGR-BS double multiple leaf damper with single control option (manual or automatic) – section 02-09.
- Elements for control, regulation and automation: presostat for polluted filter and recuperator freeze protection of the exhaust air.

Installation

- Heat exchangers are incorporated in ventilation blocks and air handling units. Detached incorporation in rectangular air duct system with joined dimensions (B-40)/(H-40) or completed four sided with flanges from galvanized metal sheets is also possible.

REC AL – Overall and joined dimensions



Typesize	Conditional air volume [m³/h]	E [%]	Overall dimensions			A_0 [m²]	Weight [kg]
			B [mm]	C [mm]	H [mm]		
REC AL-600/5-020	2000	47 ÷ 54	600	849	440	0.210	22.5
REC AL-600/5-025	2500	47 ÷ 54	600	849	540	0.260	26.2
REC AL-600/5-030	3000	47 ÷ 54	600	849	640	0.310	29.8
REC AL-600/5-035	3500	47 ÷ 54	600	849	740	0.360	33.1
REC AL-600/5-040	4000	47 ÷ 54	600	849	840	0.420	37.2
REC AL-600/5-050	5000	47 ÷ 54	600	849	1080	0.520	52.3
REC AL-600/5-060	6000	47 ÷ 54	600	849	1280	0.620	59.7
REC AL-1200/9-050	5000	53 ÷ 57	1200	1698	440	0.41	68.4
REC AL-1200/9-060	6000	53 ÷ 57	1200	1698	540	0.52	78.6
REC AL-1200/9-070	7000	53 ÷ 57	1200	1698	640	0.62	88.1
REC AL-1200/9-080	8000	53 ÷ 57	1200	1698	740	0.72	97.5
REC AL-1200/9-100	10000	53 ÷ 57	1200	1698	840	0.83	107.0
REC AL-1200/9-120	12000	53 ÷ 57	1200	1698	1080	1.04	157.2
REC AL-1200/9-140	14000	53 ÷ 57	1200	1698	1280	1.24	176.1
REC AL-1200/9-160	16000	53 ÷ 57	1200	1698	1480	1.44	195.0
REC AL-1200/9-200	20000	53 ÷ 57	1200	1698	1680	1.66	213.9
REC AL-1200/9-240	24000	53 ÷ 57	1200	1698	2220	2.16	292.5
REC AL-1200/9-300	30000	53 ÷ 57	1200	1698	2520	2.49	321.0
REC AL-1200/9-360	36000	53 ÷ 57	1200	1698	3160	3.10	409.0

REC AL – Tentative calculation heating mode

Initial conditions:

Quantities of supply and exhaust air are equal – $V_S = V_E$ [m³/h]

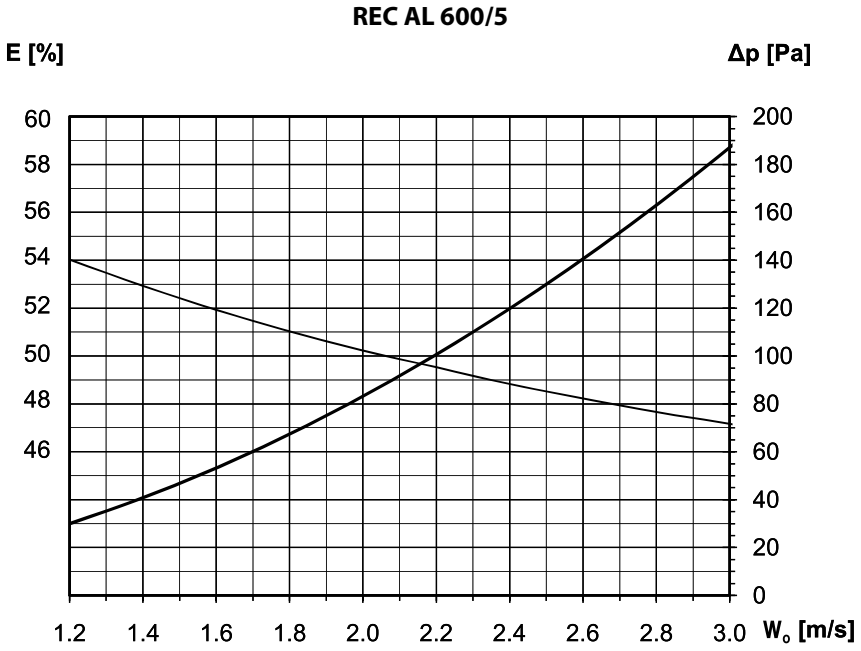
Atmospheric pressure – **710 mmHg** ≈ 940 hPa

T_{S1} ($T_{OUT.}$) = **-12°C** – temperature of fresh air

φ_S = **90%** – relative humidity of the fresh air

T_{E1} ($T_{premise.}$) = **+22°C** – temperature of the exhausted air

φ_S = **30%** – relative humidity of the exhausted air



W_0 [m/s]	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
T_{S2} (°C)	3.6	4.0	4.4	4.7	4.9	5.2	5.4	5.6	5.8	6.0
T_{E2} [°C]	6.4	6.0	5.6	5.3	5.1	4.8	4.6	4.4	4.2	4.0
Δp [Pa]	30	41	53	67	83	101	120	141	163	187
E [%]	54.0	52.9	51.9	51.0	50.2	49.5	48.8	48.2	47.7	47.2
q [W/m³/h]	5.80	5.67	5.57	5.47	5.39	5.31	5.24	5.18	5.12	5.06

W_0 [m/s] – velocity at the inlet section A_0 [m²]

T_{S2} [°C] – temperature of supplied air after recuperator

T_{E2} [°C] – temperature of exhaust air after recuperator

Δp [Pa] – supply air pressure drop

E [%] – supply air efficiency

q [W/m³/h] – recycled energy for 1 m³/h air

Note:

For particular cases and detailed calculations of all parameters, please use **REC 01** software.

REC AL – Tentative calculations heating mode

Initial conditions:

Quantities of supply and exhaust air are equal – $V_S = V_E$ **[m³/h]**

Atmospheric pressure – **710 mmHg** ≈ 940 hPa

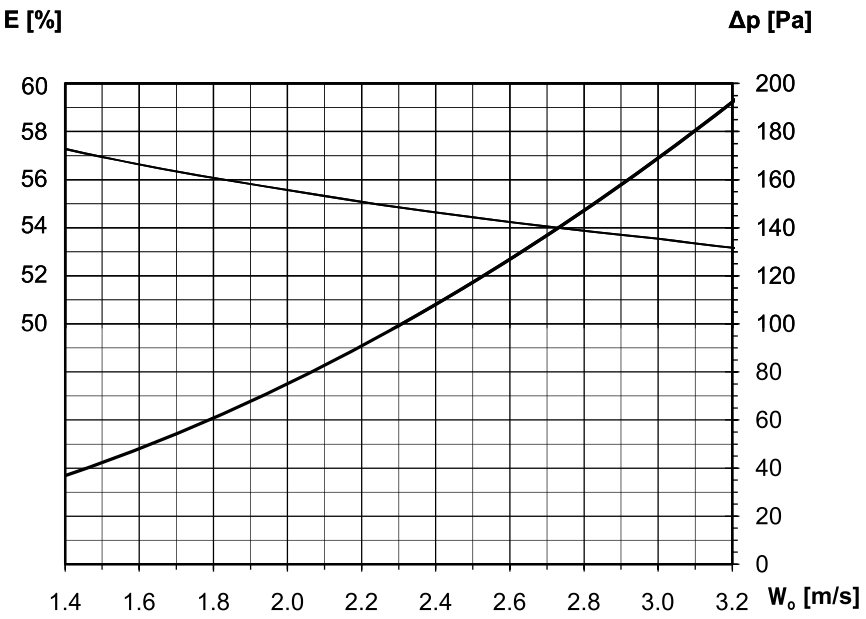
T_{S1} ($T_{OUT.}$) = **-12°C** – temperature of fresh air

φ_S = **90%** – fresh air relative humidity

T_{E1} ($T_{ПОМ.}$) = **+22°C** – exhaust air temperature

φ_S = **30%** – exhaust air relative humidity

REC AL 1200/9



W_0 [m/s]	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
T_{S2} (°C)	2.5	2.7	2.9	3.1	3.3	3.4	3.6	3.7	3.8	3.9
T_{E2} [°C]	7.5	7.3	7.1	6.9	6.7	6.6	6.4	6.3	6.2	6.1
Δp [Pa]	37	48	61	75	91	108	127	147	169	192
E [%]	57.3	56.6	56.1	55.6	55.1	54.6	54.2	53.9	53.5	53.2
q [W/m³/h]	6.15	6.08	6.01	5.96	5.91	5.86	5.82	5.78	5.74	5.71

W_0 [m/s] – velocity at the inlet section A_0 [m²]

T_{S2} [°C] – temperature of supplied air after recuperator

T_{E2} [°C] – temperature of exhaust air after recuperator

Δp [Pa] – supply air pressure drop

E [%] – supply air efficiency

q [W/m³/h] – recycled energy for 1m³/h air

Note:

For particular cases and detailed calculations of all parameters, please use **REC 01** software.