

THERMAC[®] 



**HEAT RECOVERY UNITS
HHR SERIES – ERP2018**

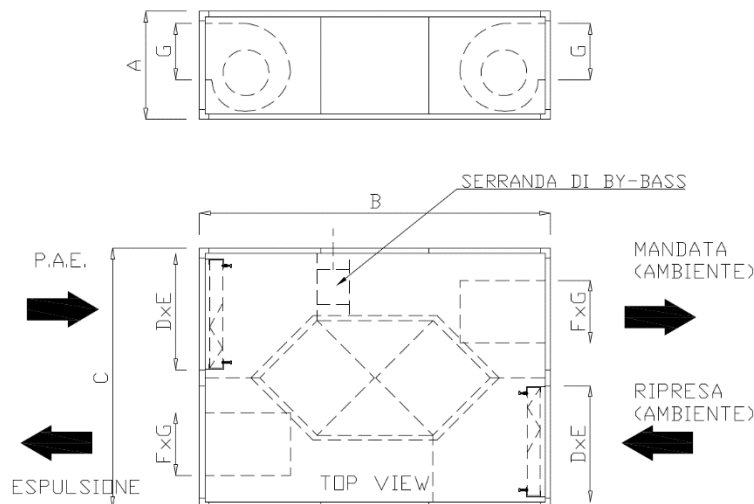
HEAT RECOVERY UNITS –HHR Series

The range of horizontal heat recovery units of series HHR have been designed for installation in ambients where, cause frequent air renewal, there is the necessity to recover part of the heat which otherwise would be lost in the state air. A crossflow aluminium plate heat recovery exchanger assures an heat exchange between exhaust and fresh air. This way the fresh air is pre-heated or pre-cooled (depending on the season). The supply air is also filtered before entering the heat exchanger which is also protected by another synthetic filter put on the exhaust air side, upstream the plate exchanger. Optionally, the supply air can be re-heated by a LPHW coil or by an electric coil. The heat recovery units of series HHR are proposed in four sizes with air flows from 300 m³/h to 4100 m³/h; furthermore the whole range has been updated to meet the new ERP 2018 Eco Design standard.

In addition can be supplied units with the following additional features:

- Sandwich panel of 17 mm thickness galvanized/galvanized insulated using injected polyurethane foam (density 40 Kg/m³).
- Sandwich panel of 17 mm thickness pre-painted/galvanized insulated using injected polyurethane foam (density 40 Kg/m³).
- Stainless steel AISI 304 drain pans.
- Supports for counter ceiling installation.
- Electric coil 400/3/50 V/ph/Hz.
- 2 rows LPHW heating coil.
- Plenum with 4 rows cold water coil.
- Plenum with 4 rows direct expansion cooling coil.
- Free-cooling aluminium dampers.
- Mixing box with 3 dampers.
- Servomotors for dampers.
- Air volume control damper.
- Pressostats or manometers on filters.
- Mixing box with 3 dampers conjugation.
- Frost protection thermostat.
- Commutator with 4 positions.
- Supports for ceiling suspension.

DIMENSIONS



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Ø DRAIN	WEIGHT (kg)
HHR 10	400	1300	960	430	360	234	208	1" G	130
HHR 20	460	2200	1400	650	420	234	262	1" G	150
HHR 30	620	2200	1400	650	580	267	290	1" G	220
HHR 40	820	2400	1400	650	780	311	342	1" G	270

TECHNICAL DATA

MODEL		HHR 10	HHR 20	HHR 30	HHR 40	
Nominal air flow	m ³ /h	1000	2000	3000	4000	
Ext static pressure	Pa	80	80	80	80	
VENTILATORI						
Available power	W	2x147	2x373	2x550	2x1000	
Poles	nr	4	4	4	6	
Max current absorption	A	1,4	3,9	5,2	5,5	
N° of fan speed	nr	3	3	3	3	
Protection grade	IP	20	20	20	20	
Insulation class		B	B	B	B	
Electrical power supply	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	
RECOVERY						
	Efficiency	%	76,9	73,9	73,9	73,9
Winter	Heat recovered	kW	5,15	9,9	14,8	19,8
	Leaving air temperature	°C	15,4	14,8	14,8	14,8
	Efficiency	%	69,9	67,8	67,9	67,8
Summer	Heat recovered	kW	2,3	4,5	6,8	9,1
	Leaving air temperature	°C	28,0	28,2	28,1	28,2
FILTERS						
EN779 Classification			G4	G4	G4	G4
Filtering efficiency		%	85	85	85	85
Air speed		m/s	1,8	3,2	2,7	2,6

The values in the above schedule refers to the following conditions:

- Nominal air flow at max fan speed of basic unit with E.S.P. of 100 Pa.
- Winter conditions: exhaust air 20° C/50%; fresh air: 0°C/80%.
- Summer conditions: exhaust air 25°C/50%; fresh air: 35°C/50%.

ACCESSORI

HEATING WATER COIL - "BAC"

In case it is required the re-heating of air, the basic configuration can be completed by a 2 rows heating coil. The hot water coil is fixed inside the basic unit as shown in the picture. The standard execution foresees copper tubes with a diameter of 10 mm and aluminium fins. The coil frame is in galvanized steel. The coil connections are threaded.

ELECTRIC COIL - "BE"

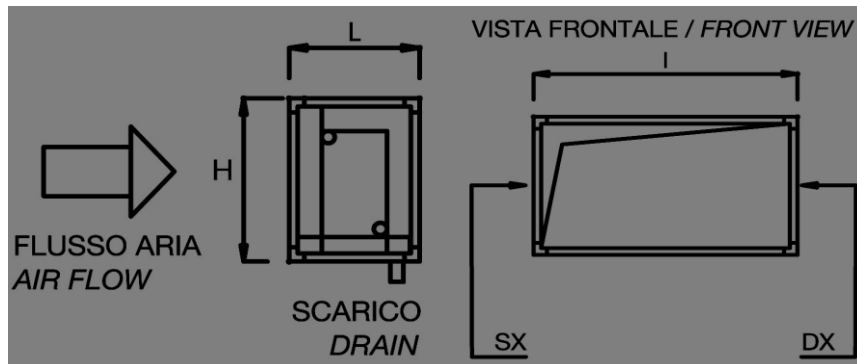
The electric re-heating coil is fixed directly inside the basic unit, as shown in the picture. The terminal block is fitted outside the unit. The pressure drop is very low. Features of heater:

- 1 - galvanized frame.
- 2 - resistors with iron tubes and galvanized fins (resistors with double insulation on ceramic insulators)
- 3 - safety thermostat adjusted at 60°C with exchange contact normally closed.
- 4 - external terminal block made of PVC, IP55

MODELLO		HHR 10	HHR 20	HHR 30	HHR 40
Resistenza elettrica	kW	6 (3+3)	9,5 (4,75+4,75)	12 (6+6)	13 (6,5+6,5)
Alimentazione elettrica	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
Stadi	nr	2	2	2	2
Assorbimento massimo	A	8,6	13,7	17,3	18,8
Peso	kg	8,5	10	12	12

SUPPLY PLENUM WITH COOLING COIL - "PBF"

To satisfy the need for cooling and dehumidifying the air coming out of the recuperator, the base unit can be supplied with a separate module in which a battery with copper pipes and aluminum fins is housed. The supporting structure is made like that of the base unit. The condensate collection tank is made of galvanized sheet metal, adequately insulated, with downward directed drains. The battery connections are threaded. The coil can be water or direct expansion.



MODEL	H (mm)	L (mm)	I (mm)	Ø HYDRAULIC CONNECT.	Ø DRAIN	WEIGHT (kg)
HHR 10	400	300	700	1" G	1" G	35
HHR 20	460	300	1000	1 ¼" G	1" G	50
HHR 30	520	300	1150	1 ½" G	1" G	60
HHR 40	660	300	1150	1 ½" G	1" G	70

		COOLING WATER COIL			
MODEL		HHR 10	HHR 20	HHR 30	HHR 40
Geometry/material		P3030 CuAl	P3030 CuAl	P3030 CuAl	P6030 CuAl
Rows	nr	4	4	4	4
Pipes per row	nr	10	10	14	18
Fins spacing	mm	2,5	2,5	2,5	2,5
Nominal air flow	m ³ /h	950	2400	3000	3650
Air speed	m/s	1,72	2,29	2,07	1,96
Cooling power	kW	8,0	18,4	23,0	28,0
Outlet air temperature	°C	14,0	15,3	15,1	15,0
Air pressure drop	Pa	49	79	67	61
Water pressure drop	kPa	19,5	23,4	10,7	11,4
weight	kg	20	33	40	51
Connection gauge	inch.	1"G	1 ¼" G	1 ½" G"	1 ½" G

COOLING DX COIL

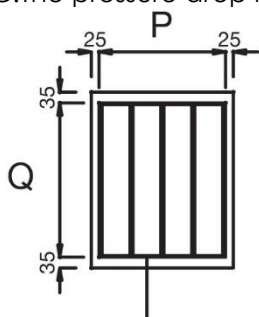
MODEL		HHR 10	HHR 20	HHR 30	HHR 40
Geometry/material		P3030 CuAl	P3030 CuAl	P3030 CuAl	P6030 CuAl
Rows	nr	4	4	4	4
Pipes per row	nr	10	10	14	18
Fins spacing	mm	2,5	2,5	2,5	2,5
Nominal air flow	m ³ /h	950	2400	3000	3650
Air speed	m/s	1,72	2,29	2,07	1,96
Cooling power	kW	9,6	22,1	27,4	34,0
Outlet air temperature	°C	11,7	13,1	13,1	12,9
Air pressure drop	Pa	78	124	105	96
weight	kg	20	33	45	57
Connection gauge	mm	28,0	35,0	42,0	54,0

POST-HEATING WATER COIL

MODEL		HHR 10	HHR 20	HHR 30	HHR 40
Geometry/material		P2525 CuAl	P2525 CuAl	P2525 CuAl	P2525 CuAl
Rows	nr	2	2	2	2
Pipes per row	nr	5	13	13	10
Fins spacing	mm	2,5	2,5	2,5	2,5
Nominal air flow	m/s	2,44	3,7	3,8	3
Air speed	kW	5,8	17,2	22,1	24,2
Cooling power	°C	25,8	28,9	29,6	27,4
Outlet air temperature	Pa	36	71	74	50
Air pressure drop	kPa	0,9	12,6	21,5	20,8
Water pressure drop	kg	12	20	22	20
weight	inch.	½"	1"	1"	1 ¼"

AIR VOLUME CONTROL DAMPERS FOR BASIC UNIT - "SER"

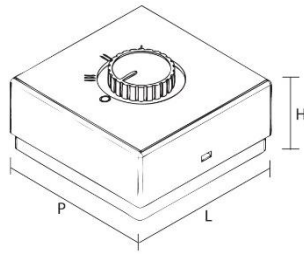
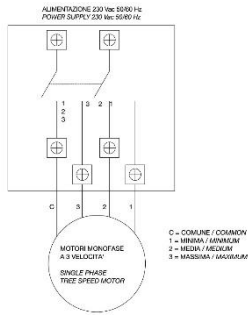
Dampers are made of extruded anticorodal aluminium with aerofoil blades and gaskets. The movement is opposed type and is made by ABS gears protected from the airflow. The working temperature limit is 80°C. The pressure drop is very low when damper is open.



MODEL	DIMENSIONS		
	P (mm)	Q (mm)	Weight
HHR 10	410	330	5
HHR 20	510	390	6
HHR 30	610	450	7
HHR 40	710	590	8

CONTROL PANEL WITH 3 SPEED SELECTOR - "CM3"

Together with unit can be supplied a control panel provided with a 4 positions (3 speed + stop) rotation selector switch.



MODEL	Power supply (VAC)	Max current (A)	TEMP. MAX (°C)	IP	dimensions P x L x H (mm)
CM3	230	6	50	40	82 x 82 x 38



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