

RHR

High efficiency
heat recovery unit

from 600 to 4260 m³/h



General features

RHR series heat recovery are available in 4 models with nominal airflow rate from 600 to 4260 m³/h. They can permit very high money saving, recovering up to 80% of heat contained in the exhaust air, which otherwise would be lost. This is possible by using a special air-to-air high surface exchanger. These units may be integrated with traditional heating and cooling systems (such as fan-coils, water heaters, etc.) and can operate both in summer and winter seasons; besides, they are particularly suitable for false ceiling installation and may be appropriately ducted allowing air supply and air suction directly in the room in many different orientations.

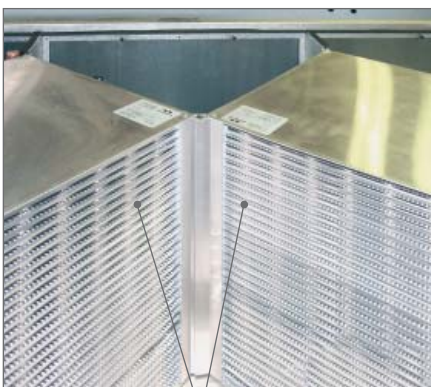
Mechanical features

Fully removable panels (sandwich type). Acoustic and thermal panel insulation 20 mm thickness. The panels are fixed to the frame by steel screws. Fan section is complete of double inlet forward curved centrifugal fan, mounted on antivibrators and selected to work at the maximum speed with as low as possible noise level. The electric motor, direct driven type, is a single phase 3 speed for RHR14-19-30 and 3-phase 2 speed for RHR50, eventually controlled by control panel; as an option, the motor can be equipped by the frequency converter. Heat recovery is an aluminium plated crossflow exchanger - EUROVENT certificated-; under the recovery a removable galvanized steel drain tray is installed. Air filters are synthetic cell cleanable type G4 class efficiency, removable from lower or side panels; as an option, F6 soft bag filter after the G4 prefilter.

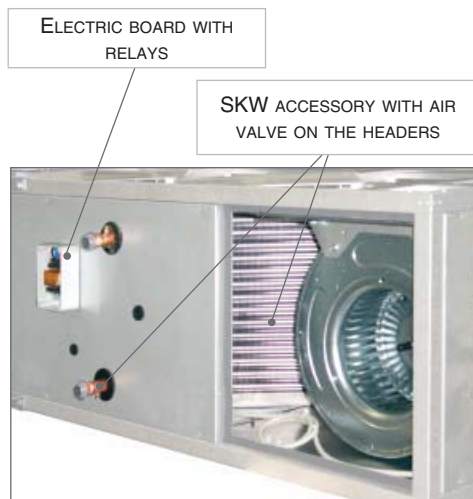
Accessories

- > Built-in by-pass for free-cooling BP
- > Internal water heating coil SKW
- > Electric heater SKE
- > Water cooling coil external section SAF
- > Adiabatic cooling/umidifier section HCP
- > Round adapter for circular duct BCC
- > 3-damper mixing box MS3
- > Damper connection lever LCS
- > FC6 compact filter FC6
- > F6 soft bag filter FT6
- > F7 soft bag filter FT7
- > F8 soft bag filter FT8
- > Frequency converter fan-motors DDE
- > Roof cover TPR
- > Adjusting damper SKR
- > Antivibrating flexible joint GAT
- > Casing with bird net CFA
- > Supports legs H 90 (kit 4 p) PD
- > Supports legs H 200 (kit 4 p) PDX

Controls

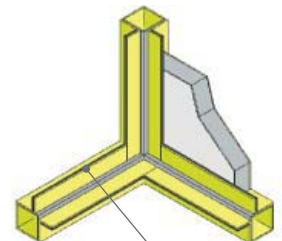


DOUBLE EXCHANGER
SURFACE



ELECTRIC BOARD WITH
RELAYS

SKW ACCESSORY WITH AIR
VALVE ON THE HEADERS



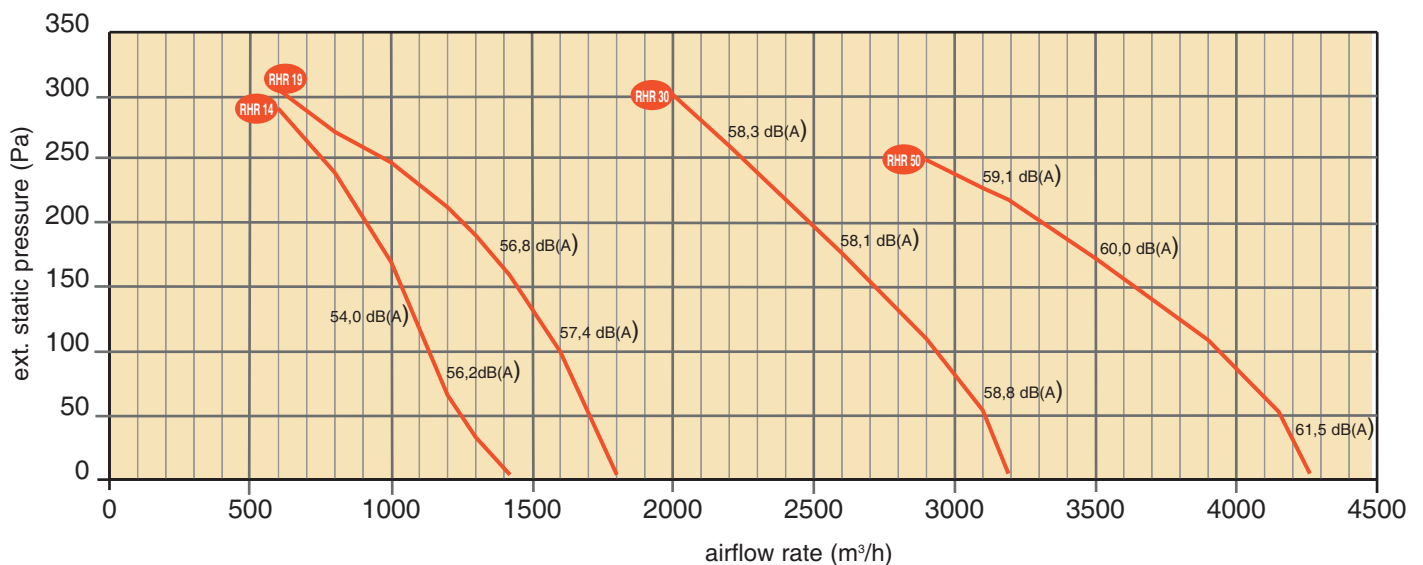
STEEL FRAME AND INSULATED
PANEL

Airflow rate	Max	m³/h	1000	1600	2900	3900
	Med		900	1400	2500	-
	Min		800	1000	1850	3000
External static pressure	Max	Pa	170	100	110	110
	Med		176	94	73	-
	Min		139	95	68	190
1 m sound pressure level	Max	dB(A)	54,8	57,4	58,7	60,4
	Med		56,3	55,4	54,5	-
	Min		47,7	48,4	51,2	58,4
Shaft power		W	2 x 350	2 x 350	2 x 550	2 x 1500
Maximum current		A	5,8	6,0	11,4	11,2
Fan speeds		n°	3	3	3	2
Poles		n°	4	4	4	4
Protection degree - minimum -	IP20					
Temperature class			F	F	F	F
Electrical power supply	V/ph/Hz		230/1/50			400/3/50

Recovery efficiency ⁽¹⁾	Max	%	74,2	72,0	76,2	77,2
	Med		75,4	73,6	77,9	-
	Min		76,8	77,5	81,2	80,1
Saved power ⁽¹⁾	Max	kW	6,8	10,5	20,2	27,5
	Med		6,2	9,4	17,8	-
	Min		5,6	7,1	13,7	21,9
Supply temperature ⁽¹⁾	Max	°C	13,6	13,0	14,1	14,3
	Med		13,8	13,4	14,5	-
	Min		14,2	14,4	15,3	15,0

⁽¹⁾ At the following conditions: room air temperature 20°C db 50% RH; fresh air temperature -5°C.

MAX SPEED AIR PERFORMANCES



RHR ACCESSORIES

14

19

30

50

Water heating coil SKW

Heating capacity (at max fan speed) ⁽¹⁾	kW	11,6	16,5	29,8	36,1
Supply air temperature	°C	47,3	43,4	43,3	40,3
Air side pressure drop	Pa	32	60	70	64
n° ranghi batteria	n°	3	3	3	3
Water side pressure drop	kPa	17	12	20	14
Water flow rate	m ³ /h	1,02	1,45	2,62	3,18

Electric heater SKE

Heating capacity	kW	6	9	12	18
Air side ΔT (at max fan speed)	°C	17,7	16,6	12,2	14
Electrical power supply	V/ph/Hz	400/3/50			
Air side pressure drop	Pa	4	8	9	9

Water cooling coil SAF

Total cooling capacity (at max fan speed) ⁽²⁾	kW	7,8	11,7	22,6	26,7
Supply air temperature °C		16,4	17,1	17,6	
Air side pressure drop	Pa	45	72	79	50
Coil rows	n°	3	3	3	3
Water side pressure drop	kPa	9	12	33	25

High efficiency filter (at max fan speed)

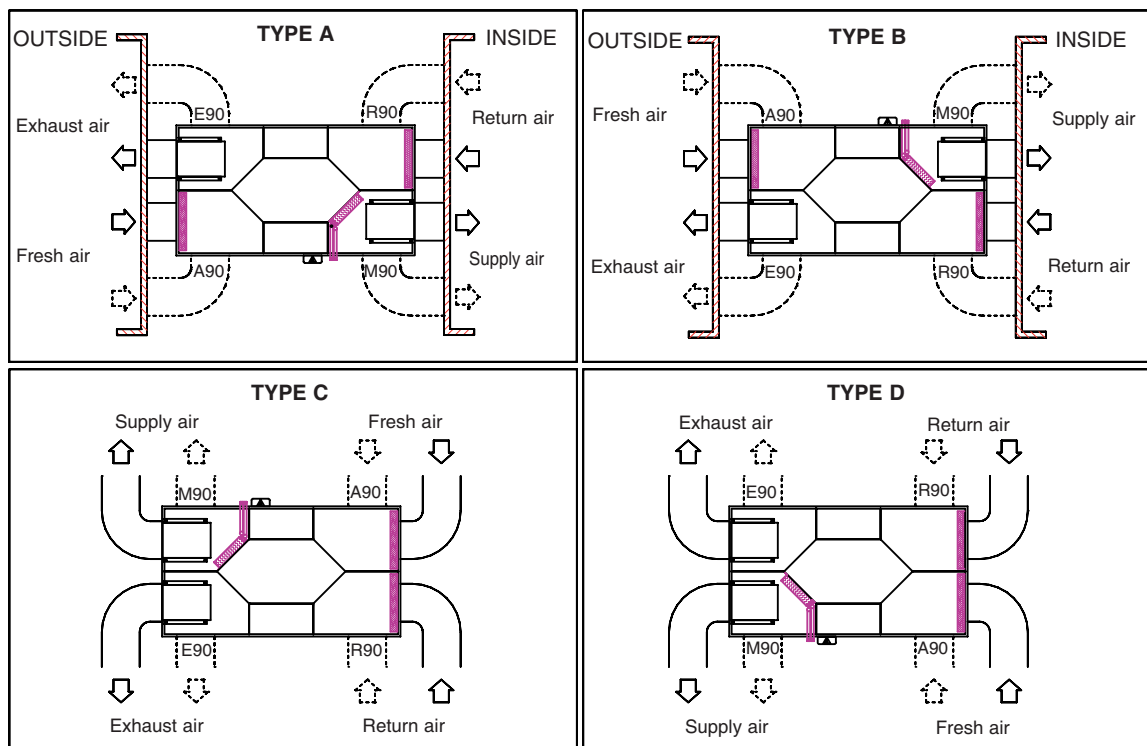
F6 Compact filter - FC6 Pressure drop	Pa	23	33	35	34
F6 Bag filter - FT6 Pressure drop	Pa	97	133	155	134
F7 Bag filter - FT7 Pressure drop	Pa	114	155	179	156
F8 Bag filter - FT8 Pressure drop	Pa	142	187	218	190

Round adapter for circular duct BCC

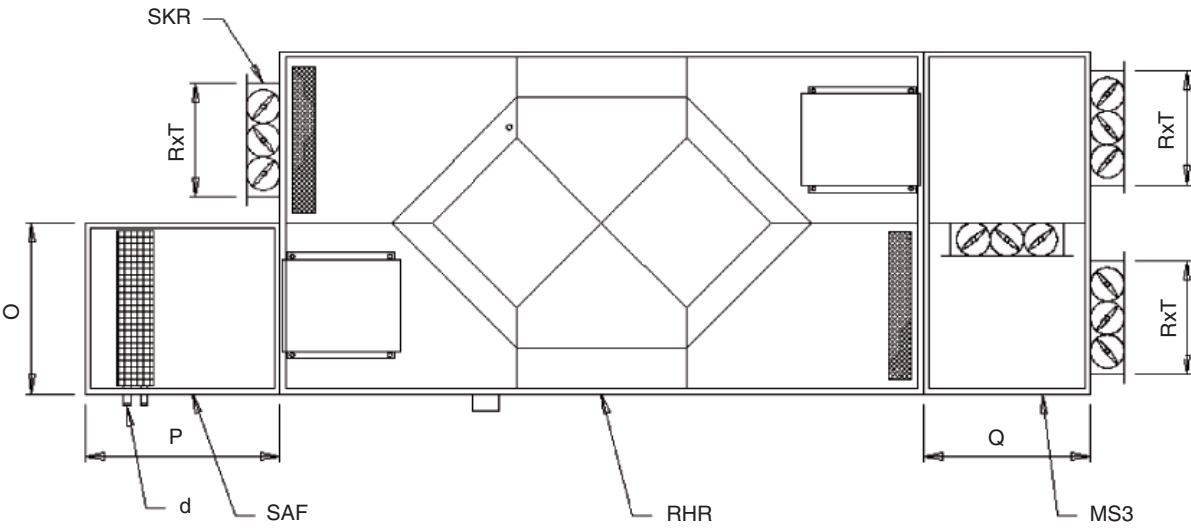
Diameter Ø	mm	315	315	400	600
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⁽¹⁾ Inlet air temperature 13°C - Water temperature 70°/60°C
⁽²⁾ Inlet air conditions 29°C db 60% RH - Water temperature 7°/12°C

RHR POSSIBLE INSTALLATIONS



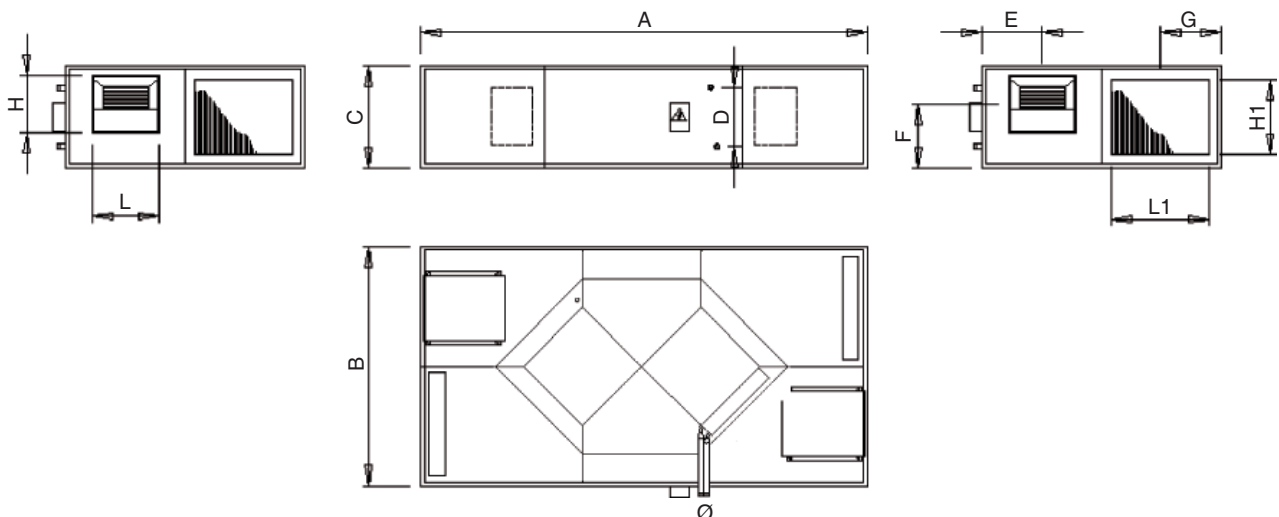
DIMENSIONS



Dimensions		14	19	30	50
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A	(mm)	2000	2150	2580	2580
B	(mm)	900	900	1230	1350
C	(mm)	410	470	530	705
D	(mm)	230	280	305	480
Ø	(")	G ¾"	G ¾"	G ¾"	G 1"
E	(mm)	241	230	308	353
F	(mm)	224	284	331	427
G	(mm)	241	241	323	353
H	(mm)	270	270	297	297
H1	(mm)	267	327	387	555
L	(mm)	240	240	339	339
L1	(mm)	337	337	502	555
weight	kg	131	147	212	313

O	(mm)	450	450	615	675
P	(mm)	700	700	700	850
Q	(mm)	480	480	650	707
R	(mm)	310	410	410	610
T	(mm)	330	330	500	600
d	(mm)	¾"	¾"	1"	1 ½"



CONTROLS

SPEED CONTROL

Control panel
 CVU: manual 3 step fan speed regulator (min/med/max).



3 POINT CONTROL

It is mainly composed of a control panel and valves that allow a modulating regulation on 3 points and a manual or automatic control of the fan speeds.

Control panel
 PCR: command panel with manual or automatic regulation of the fan speeds by 3 steps, manual or automatic mode summer/winter, room thermostat (remotable by NTC 4,7 sensor, optional), handling of two water coils for heating/cooling or coil (cold or promiscuous) and electric heater.



Accessories controlled by PCR
 V33: 3 way valve with electric servocontrol, power supply 230V
 NTC4,7: remotable temperature sensor

Accessories not controlled
 TEG: antifreeze thermostat
 SSE: on/off damper servocontrol power supply 230 V
 PSTD: air filter pressure switch

MODULATING CONTROL

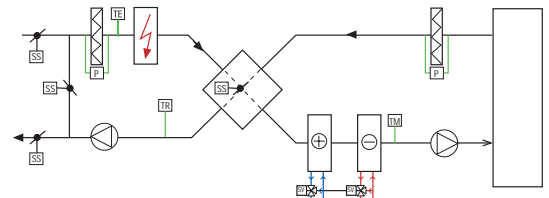
It is composed by an electronic kit, an hydronic kit and a range of accessories used for the control services.
 The modulating regulation allows to optimize the unit work handling carefully the air flow rate and the water flow rate to satisfy the request (set point).

Electronic Kit
 RQU: temperature analogical regulator complete by n. 3 NTC sensor and electric board

- Regulator services
- Heating/cooling/free-cooling automatic mode (2/4 pipe plant)
 - antifreeze
 - electric heater on/off mode
 - winter heating speed-up
 - heat recovery defrost
 - manual or automatic fan speed selection (by CO₂ or pressure sensor)
 - dirty filter alarm (by PSTD)
 - missing ventilation alarm (by pressure switch)
 - Timer
 - Prearrangement for BMS (via MODBUS protocol)

Hydronic Kit
 V33: 3 way valve with electric servocontrol, power supply 230V

Accessory
 SSE: on/off damper servocontrol power supply 230 V
 PSTD: air filter pressure switch



AIRFLOW CONTROL

AQS is the ductable CO₂ sensor, it must be connected to the RQU control

KAQ is the Air Quality control system; it includes:
 ductable CO₂ sensor
 modulating regulator
 24V transformer

DPS is a sensor for constant pressure working mode



AQS



RQU



KAQ