Power-Tech R1KG
HIGH POWER

1. GENERAL FEATURES

Radiant R1KG 180 and R1KG 240 are stainless steel, high efficiency, fully modulating, floor standing gas boilers, made respectively of three, or four, primary heat exchangers of 60 kW each.

R1KG 180 and R1KG 240 are low environmental impacts (CO and Nox emissions) and extremely compact units, because of their vertical design.

R1KG 180 and R1KG 240 can be positioned side-to-side, or back-to-back, enabling a number of boilers to be installed in limited areas.

The standard supply includes the gas manifold, the flue exhausts collector, and the condensate neutraliser; one circulating pump for each heat exchanger, an insulated heating flow/return hydraulic manifold connected on the back of the module and finally the electronic cascade controller.

These R1KG's are XP4 protected ones, meant for indoor installation only.

They feature all the benefits of the Radiant exchangers and their ample air/gas ratio up to 1:40.

The cascade controller allows the management of a total of two units of 240 kW each (8 heat exchangers in total), two booster pumps (for heating), two-storage tank load circulating pumps (or divertor valves), one DHW recirculation pump and two dedicated mixing valves for the management of mixed system.

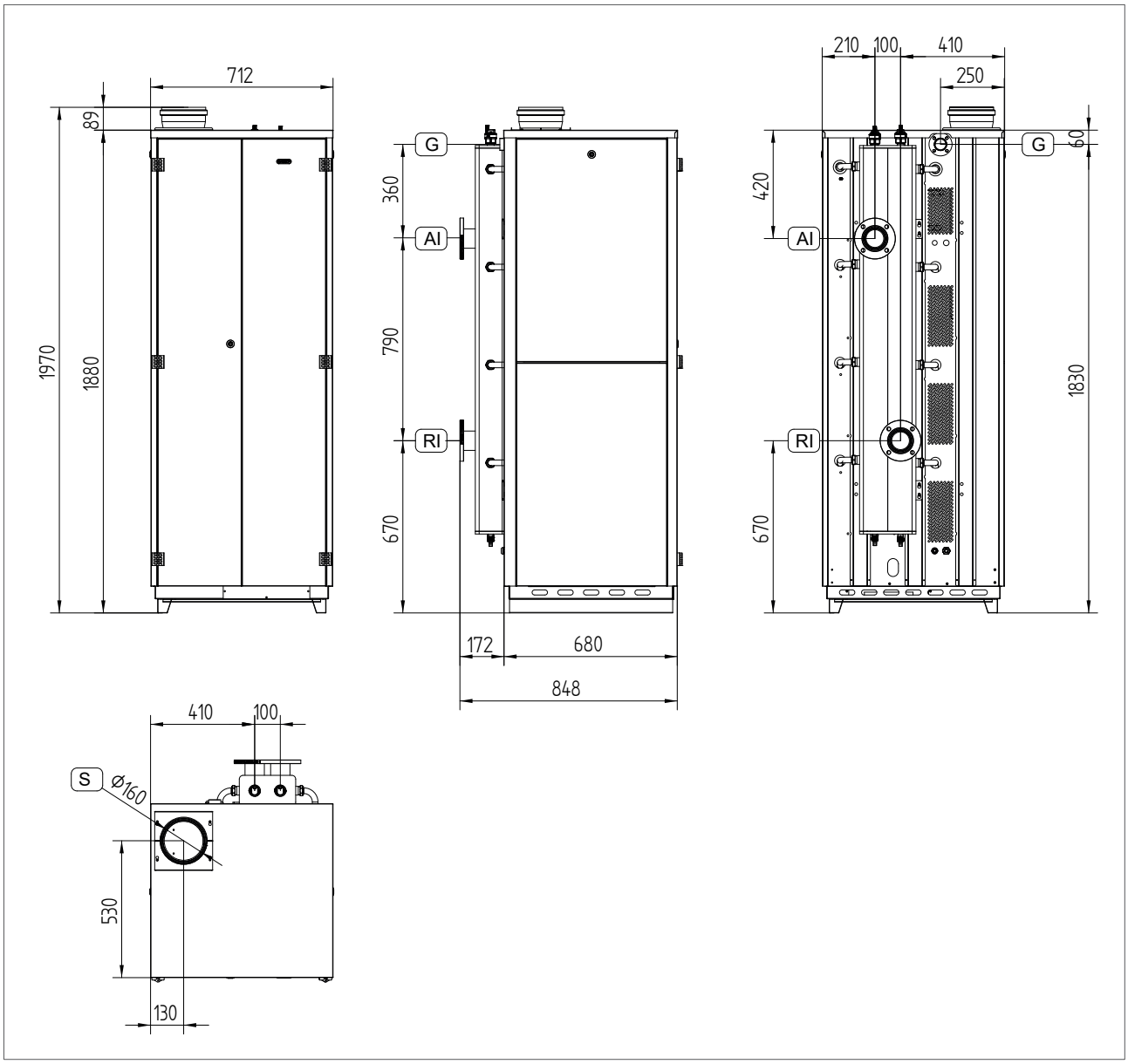
The high head circulating pumps fitted as standard (11 meters/head) guarantee the correct circulation of the system in all operating modes.

2. TECHNICAL DATA

Model designation			R1KG 180	R1KG 240
Gas category			II2H3P	II2H3P
Flue system type			B23-B23p	B23-B23p
Energy efficiency 92/42 CEE	no. stars		4	4
Heat Input max (C.H.)	kW		177	236
Heat Input min (C.H.)	kW		6	6
Heat Output max. - 60/80°C	kW		171,96	229,27
Heat Output min. - 60/80°C	kW		5,75	5,75
Heat Output max. - 30/50°C	kW		188,51	251,34
Heat Output min. - 30/50°C	kW		6,44	6,44
Heat Output max at 30% Heat Input average - return 30°C	kW		29,59	39,13
Efficiency at 100% Heat Input - 60/80°C	%		97,15%	97,15%
Efficiency at 30% Heat Input - return 30°C	%		108,30%	108,30%
Heat Input average efficiency - 60/80°C	%		97,00%	97,00%
Heat Output max at 30% Heat Input average - return 47°C	%		102,70%	102,70%
Efficiency at 30% Heat Input average - return 30°C	%		107,80%	107,80%
Efficiency Heat Output min. - 60/80°C	%		95,80%	95,80%
Efficiency at 100% Heat Input - 30/50°C	%		106,50%	106,50%
Efficiency Heat Output min - 30/50°C	%		107,30%	107,30%
Maximum combustion efficiency	%		97,20%	97,20%
Minimum combustion efficiency	%		98,20%	98,20%
Flue efficiency losses with burner on (Heat Input max.)	%		2,80%	2,80%
Flue efficiency losses with burner on (Heat Input min.)	%		1,80%	1,80%
Fumes temperature - Heat Input max.	°C		81,2	81,2
Fumes temperature - Heat Input min.	°C		58,7	58,7
Casing efficiency losses (Heat Input max.)	%		0,05	0,05
Casing efficiency losses (Heat Input min.)	%		2,4	2,4
Fumes mass - Heat Input max.	g/s		26,62	26,62
Fumes mass - Heat Input min.	g/s		2,7	2,7
NOx class	class		6	6
Weighted NOx (0% O2) on GCV mg/kWh	mg/kWh		32	32
Width	mm		712	712
Depth	mm		830	830
Height	mm		1884	1884
Gross weight	Kg		197	226
C.H. Flow	Ø		DN40	DN40
Gas	Ø		1 1/2"	1 1/2"
C.H. Return	Ø		DN40	DN40
Flue connection	Ø		160 mm	160 mm
Voltage-frequency	V/Hz		220-230/50	220-230/50
Electric power with boiler OFF	W		14	14
Max Power consumption	W		324	432
Max Power consumption - boiler pump (100%)	W		165	220
Protection rating	IP		X4D	X4D
Gas consumption - G20	m3/h		18,73	24,97

3. OVERALL DIMENSIONS AND CONNECTIONS

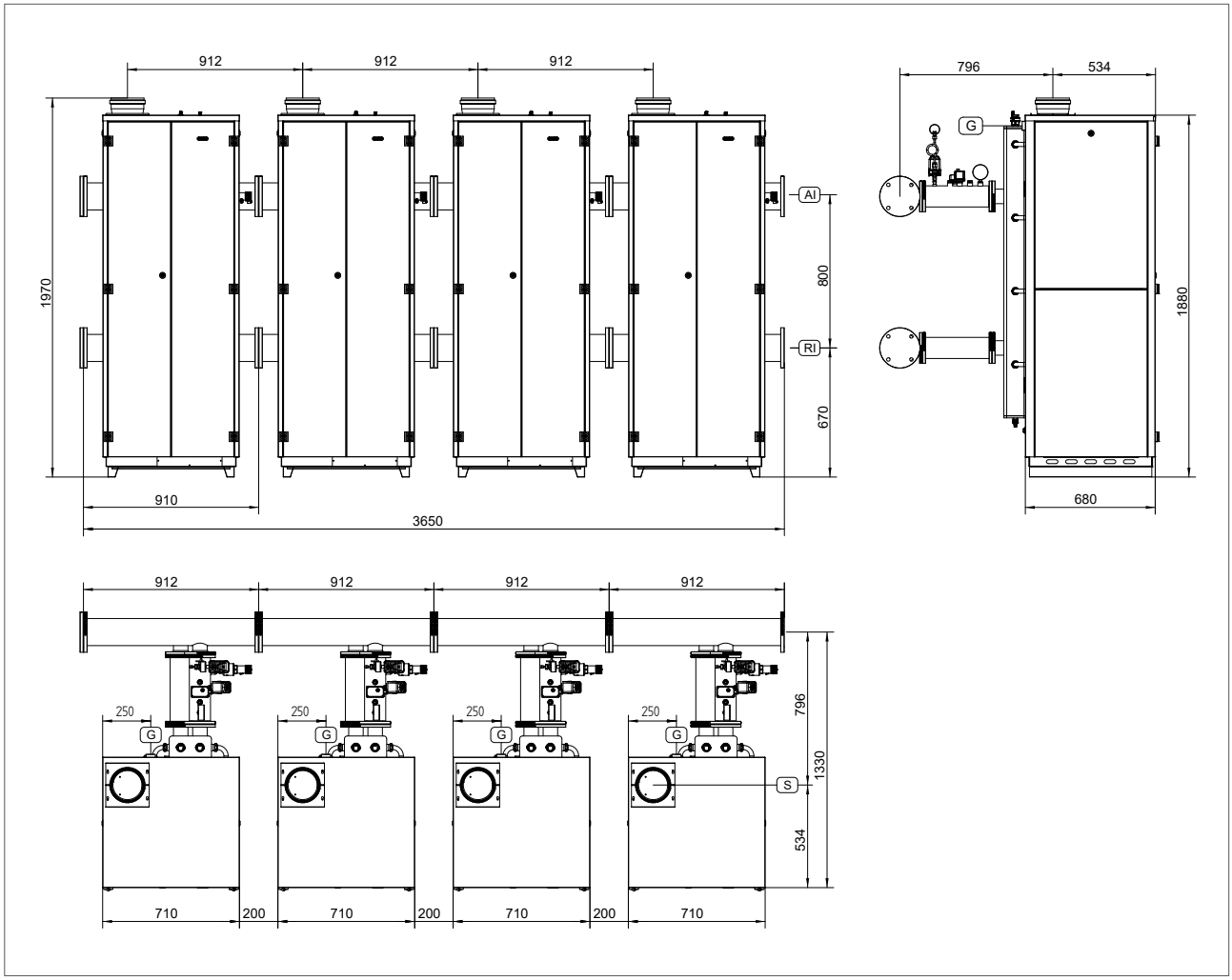
R1KG – SINGLE INSTALLATION



Legenda

AI	HEATING FLOW	DN40
RI	HEATING RETURN	DN40
G	GAS	Ø1¨1/2
S	FLUE VENTING	Ø160

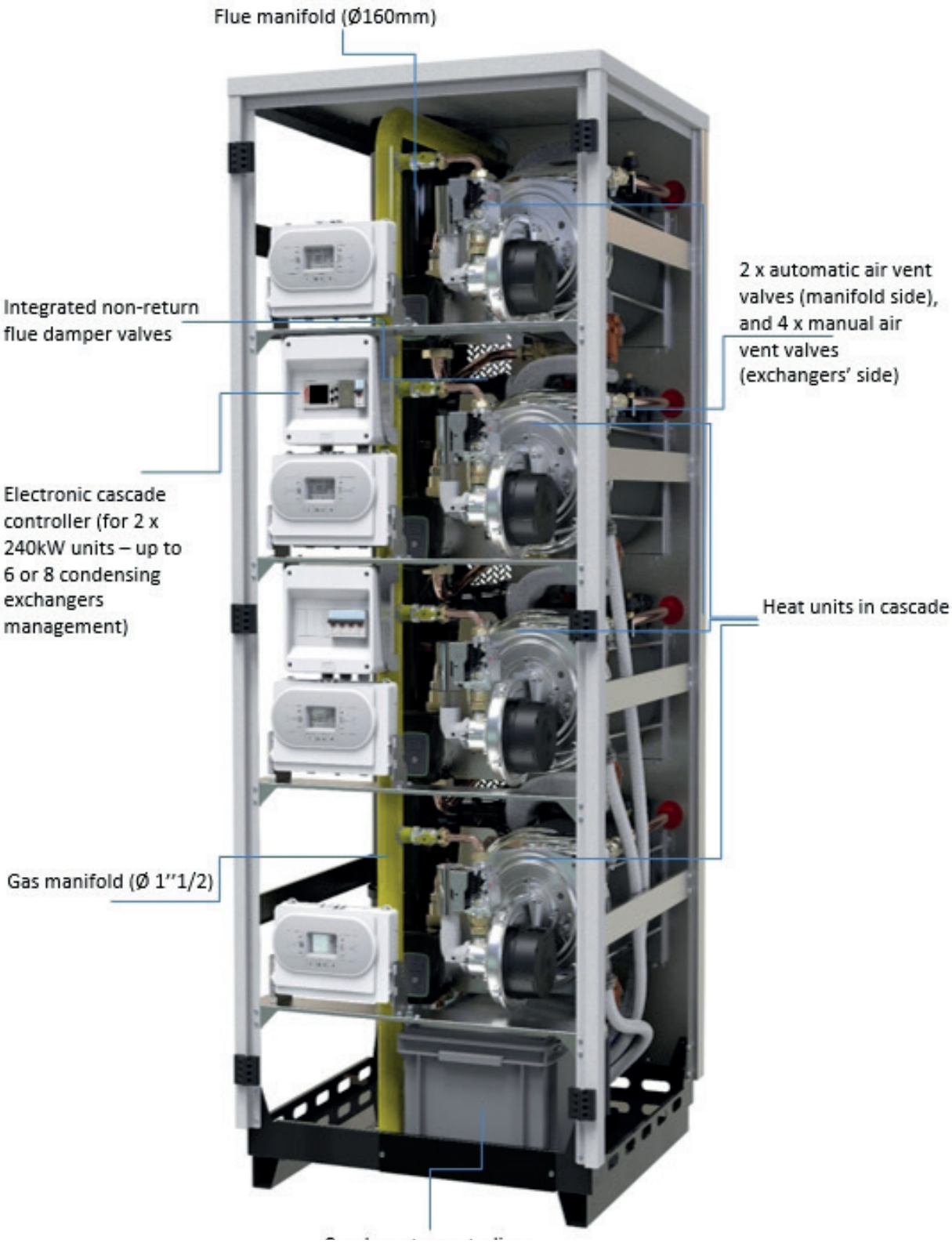
EXAMPLE OF NO. 4 X R1KG UNITS CASCADED



Legenda

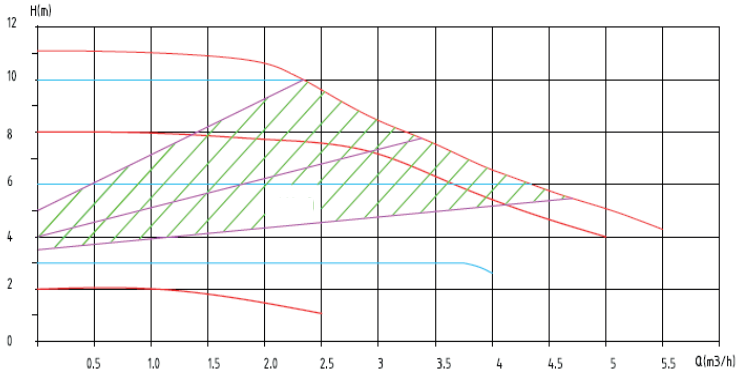
AI	HEATING FLOW	DN100
RI	HEATING RETURN	DN100
G	GAS	Ø1"1/2
S	FLUE VENTING	Ø160

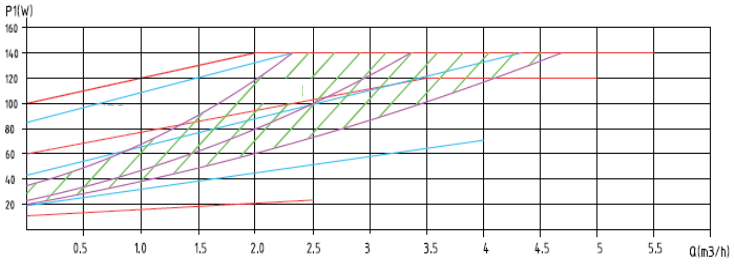
4. TECHNICAL ASSEMBLY



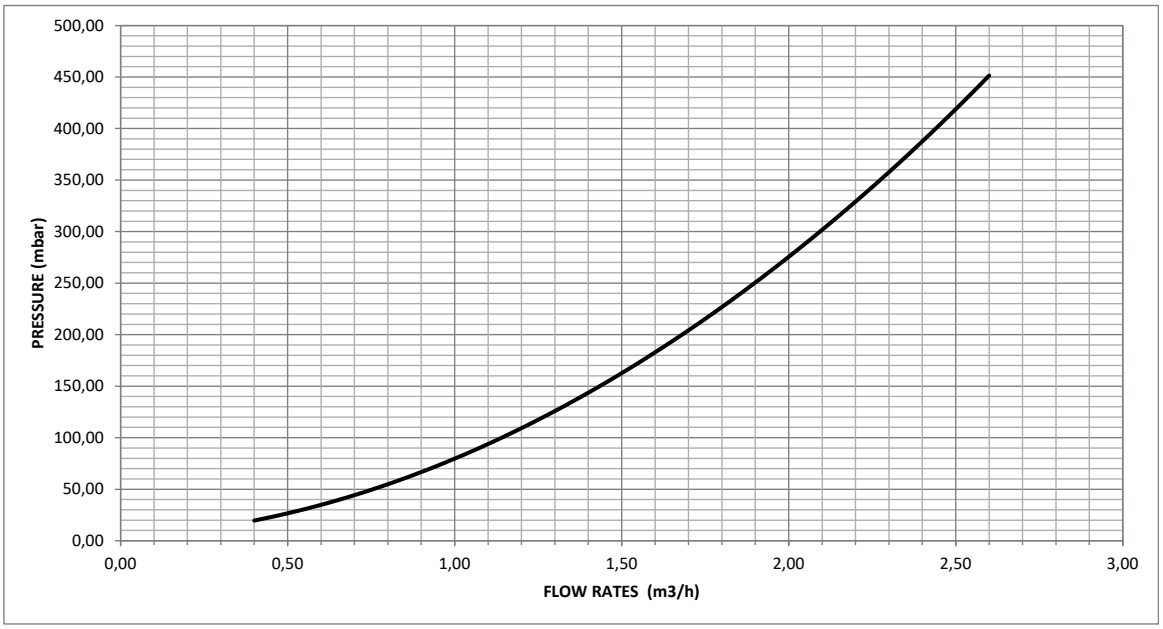
5. CIRCULATING PUMP – CARACTHERISTICS

HIGH HEAD CIRCULATING PUMP (THESE CURVES INCLUDE THE HYDRAULIC LOSSES AS PER THE ATTACHED GRAPH [1]





HYDRAULIC LOSSES [1]



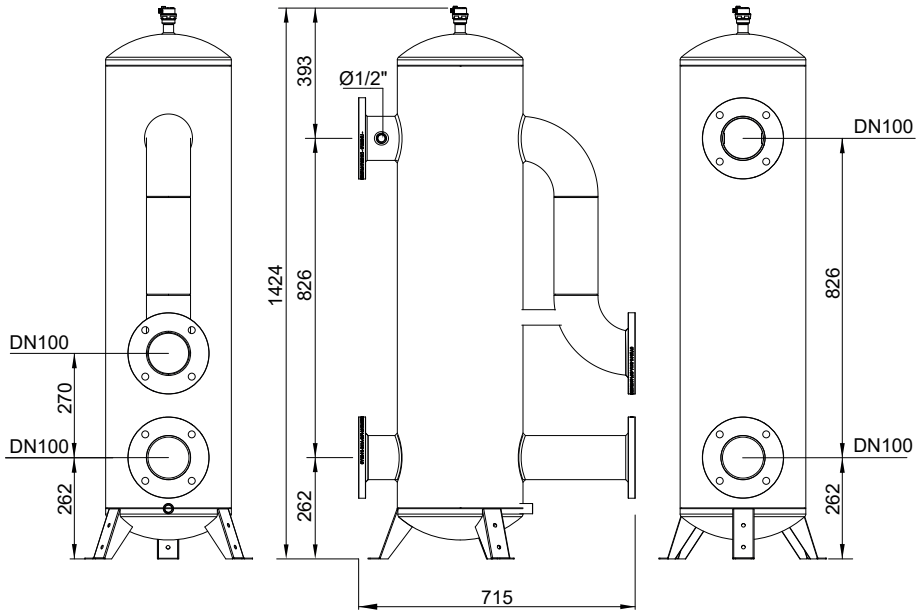
NOTE: [1] THESE INFORMATION ARE RELATED TO ONE HEAT EXCHANGER ONLY

6. ACCESSORIES

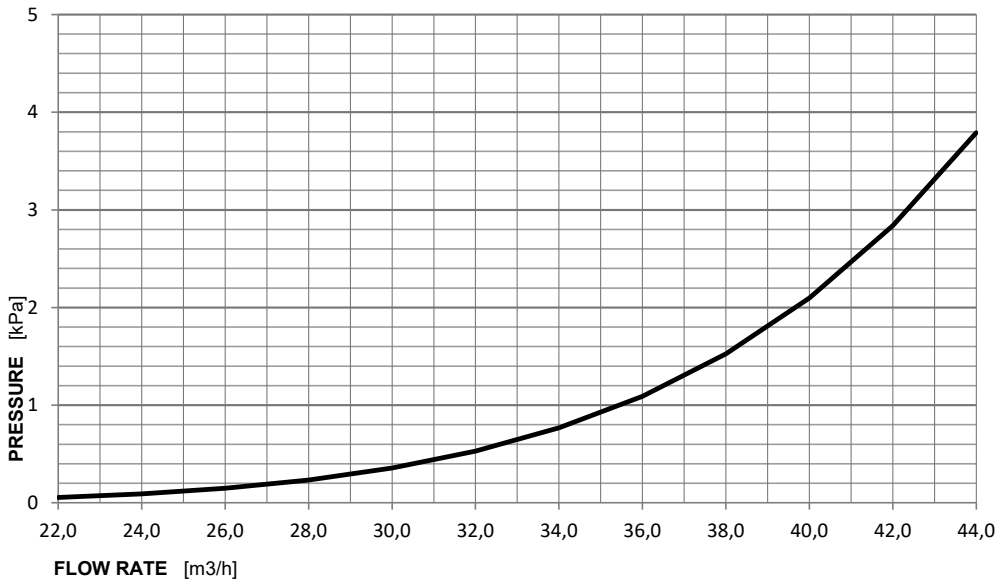
HYDRAULIC SEPARATOR

We highly recommend the installation of the hydraulic separator aimed to guarantee the balanced operation in all conditions, like for instance in case of variations of the sanitary flow rates.

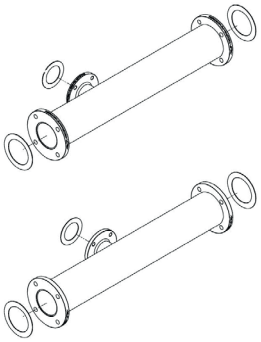
Part number 12-00659 DN 300 – DN100 connections



Flow rate [Q]	Speed	Head loss [H]
m3/h	m/s	kPa
22	0,086	0,056
24	0,094	0,093
26	0,102	0,150
28	0,110	0,234
30	0,118	0,356
32	0,126	0,529
34	0,134	0,768
36	0,142	1,092
38	0,149	1,526
40	0,157	2,097
42	0,165	2,838
44	0,173	3,790



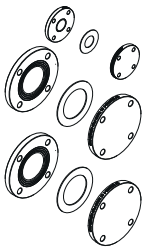
HYDRAULIC COLLECTORS



KIT ADDITIONAL HORIZONTAL COLLECTOR DN 100 – PART NUMBER 65-01128

The factory supply includes

- DN40-PN6 flanged flow/return connections
- DN100 stainless steel flow/return hydraulic collectors c/w insulated PN6 flanged connections



KIT FLANGES

- DN 65 – Part number 65-00678
- DN 100 – Part number 65-00679

PLATE HEAT EXCHANGER

In case of a standard boiler's replacement in an old system with impurities and in case of problems during the system flushing, the installation of a heat exchanger is recommended to prevent boiler's obstructions that might compromise its functioning. The heat exchanger, interface between the primary circuit which includes the boiler and the secondary circuit, guarantees a real separation of thermal carriers flows and the consequently boiler safeguard.

EXCHANGER TABLE

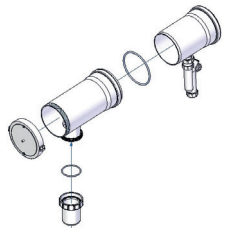
Version	Primary circuit				Secondary circuit				Plates heat exchanger			
	Q	T_{IN}	T_{OUT}	H_{MAX}	Q	T_{IN}	T_{OUT}	H_{MAX}				
	litres/h	°C	°C	kPa	litres/h	°C	°C	kPa	code	model	plates	type
R1KG 180	8600	80	59.9	5.32	11467	55	70	9.16	25-00476	Z3	39	inspected
				6.00				10.33	25-00703	ZB450	80	brazed
R1KG 240	10148	80	60.1	5.07	13531	55.2	70	8.74	25-00918	Z3	47	inspected
				5.37				9.26	25-00735	ZB450	100	brazed

NOTES: The dimensions shown in the table must be considered as purely indicative and are therefore subject to design verification by the professional who draws up the project and are to be considered rough.

FLUE VENTINGS

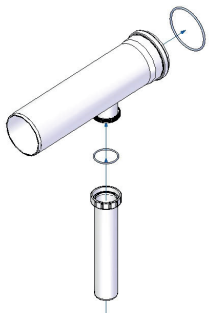
		R1KG 180	R1KG 240
Maximum fan gas pressure head available	Pa	100[1]	100[1]
Minimum fan gas pressured head available	Pa	21.5 [1]	21.5 [1]

[1] THESE INFORMATION ARE RELATED TO ONE HEAT EXCHANGER ONLY



PP STANDARD EXHAUSTS COLLECTOR FOR R1KG UNITS

DIA 200 MM. PART NUMBER 50-00489
DIA 250 MM. – PART NUMBER 50-00491
DIA 315 MM. – PART NUMBER 50-00493



ADDITIONAL PP EXHAUSTS COLLECTOR FOR R1KG UNITS

DIA 200 MM. PART NUMBER 50-00490
DIA 250 MM. – PART NUMBER 50-00492
DIA 315 MM. – PART NUMBER 50-00494

7. ELECTRONIC CASCADE CONTROLLER

The control unit allows the management of a total of two modules of 240 kW each (8 heat units/exchangers in total), of two heating booster pumps (for heating), two storage tank load circulating pumps (or diverter valve), one DHW recirculating pump, and two dedicated mixing valves for the management of mixed system.

Owing to the Modbus communication protocol, the controller allows the management of all functions.

	Part number 40-00337	Master controller
	Part number 65-00691	Slave board for the solar management
	Part number 65-00544	OT/Modbus interface board
	Part number 40-00344	Room control
	Part number 73518LA	Outdoor sensor
	Part number 40-00667	Web Visor
-	Part number 40-00351	Cable sensor collector/mixed system
-	Part number 40-00346	Cable sensor/solar tank SBS-SB12
-	Part number 0-00347	Cable sensor solar tank SBI
-	Part number 31409LA	Cable sensor solar collector SBS