

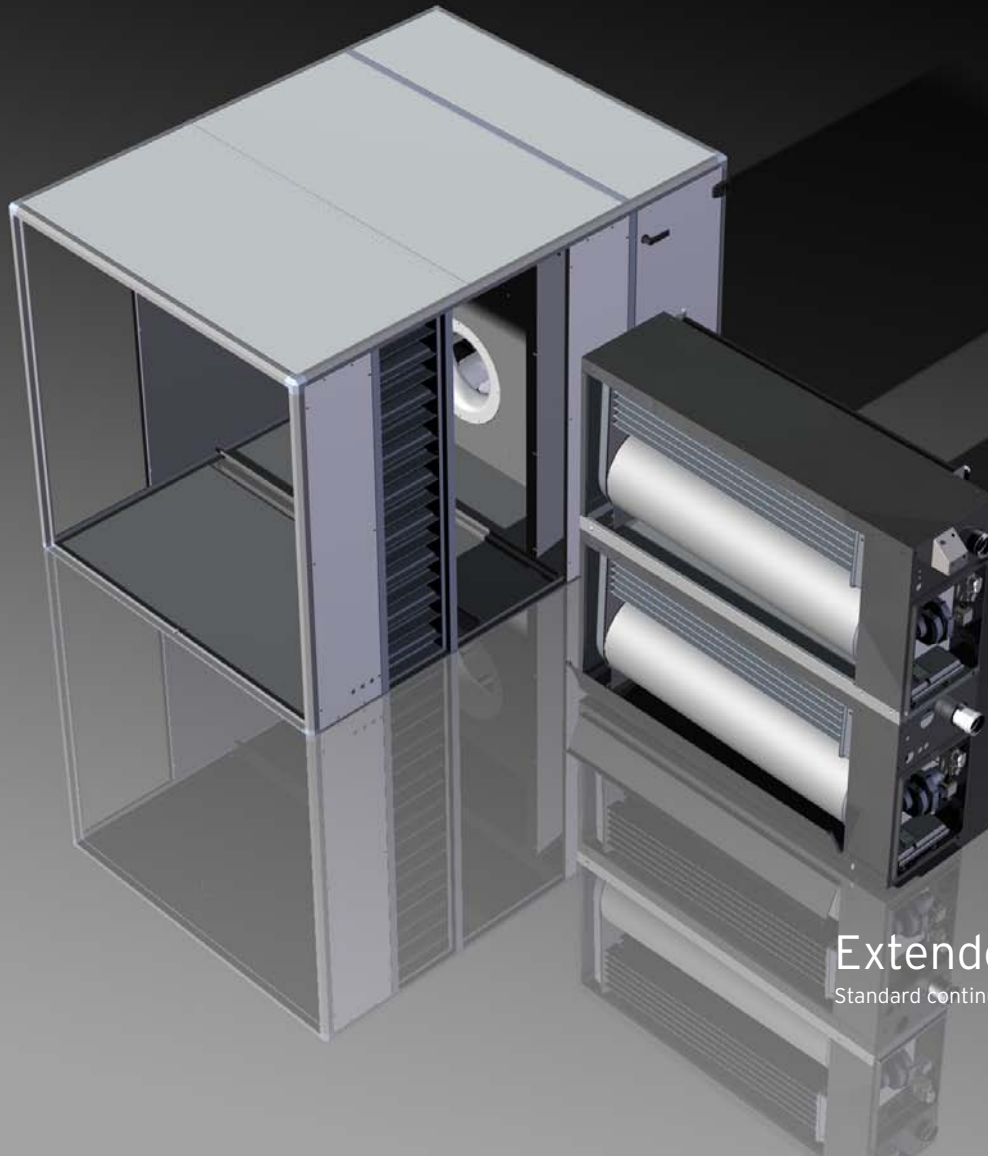


PCH/new Series

High performance, total flexibility

ApenGroup[®]

PCH/new Installation in Air Handling Unit example



Very Low Emissions

NOx lower than 30 ppm : Class 5

Capacity Range

five models from 20 kw to 420kw

Automatic Control

Electronic ignition and Simple electrical connection

Fine Tuning

Standard Power level managed by 0 - 10 volts control input from air handling unit

Extended Modulation

Standard continuous modulation from 100% to 20%

Condensing
Product

PCH/new

Condensing Gas Heating Modules for Air Handling Units and Rooftops

New Gas Modules PCH/new present an extended power range which goes from 20 kW to 420 kW.

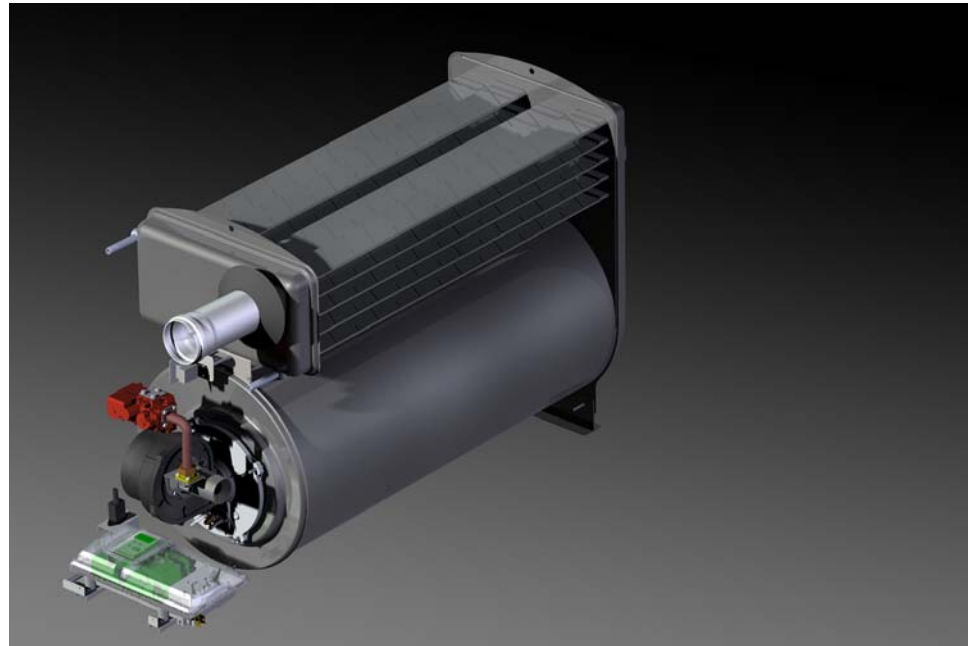
This result is achieved thanks to the possibility to assemble standard modules in parallel configuration. You can choose between three gas module configuration:

A system: Single modules with max power between 20 kW to 105 kW.

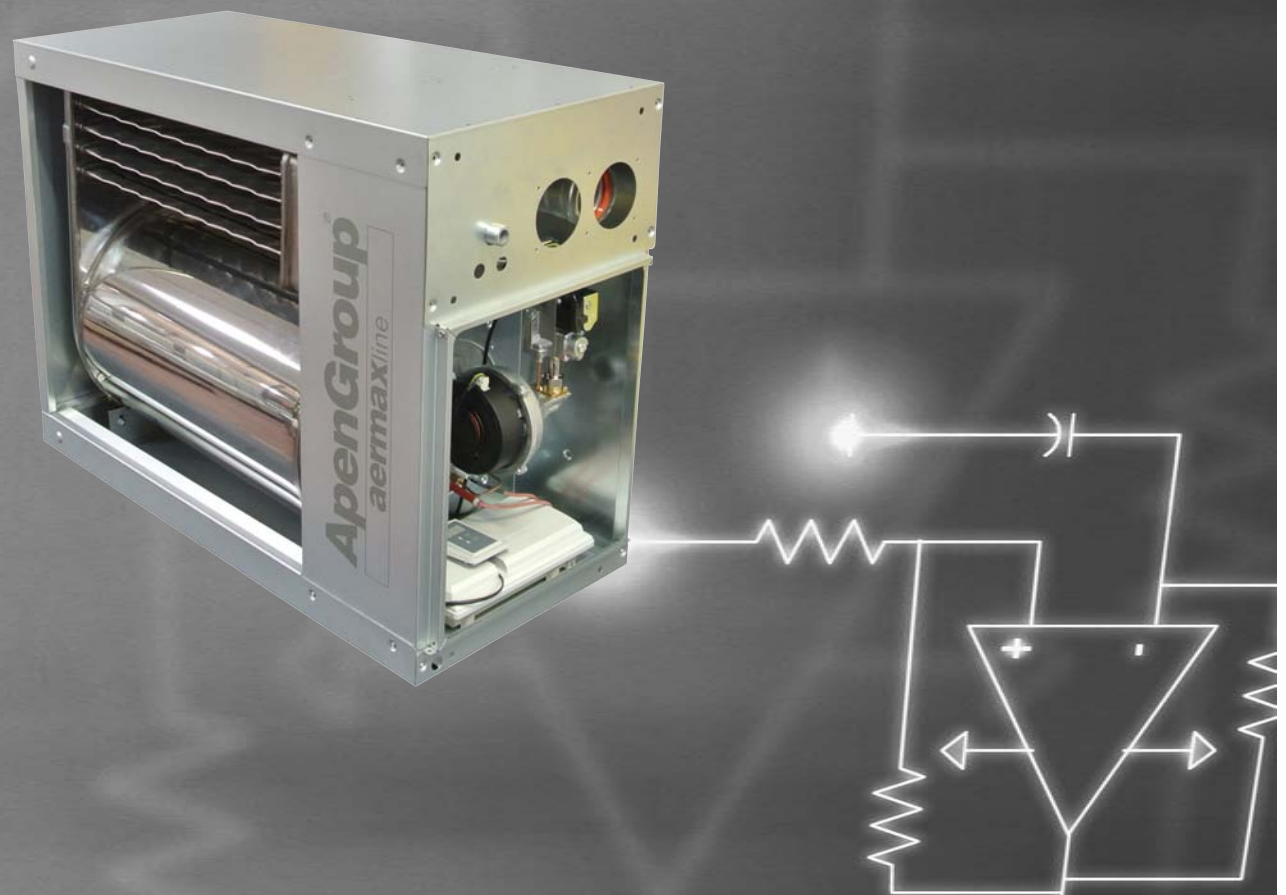
B system: Combined modules with horizontal /vertical parallel combination with max power between 130 kW to 420 kW.

C system: Combined modules with horizontal parallel combination with max power between 132 kW to 412 kW.

This complete product range is able to satisfy all heating needs of your air handling units and Roof Top packaged systems.



PCH/new CAD rendering of Combustion Chamber and Heat Exchangers, premix burner and electronic board controls



PCH/new: gas condensing energy modules

EFFICIENCY UP TO 109%

Apen Group has designed and developed PCH/new heating modules for installation in air handling and roof-top units. PCH module is built with environment-friendly, totally recyclable materials, such as stainless steel and aluminium. The heat produced using PCH module's "clean combustion" is earth-friendly and convenient. A microprocessor-based device controls continuous modulation of thermal power output and adjusts it to heat requirements. When modulation of heat output is enabled, an advanced regulating device installed on the main burner monitors and adjusts flow rates of combustion air and gas.

CLEAN COMBUSTION

PCH /new condensation modules are equipped with burners that fully premix air and gas. Moreover, a regulating device of heat output is installed. This results in:

- NO emissions of carbon monoxide ($CO = 0$);
- Very low emission of nitrogen oxides, below 30 parts per million ($NOx < 30$ ppm);
- Low emission of carbon dioxide, due to high combustion efficiency (109%) and to reduction of fuel consumption arising from heat output modulation.

UNDIRECT HEAT EXCHANGE

The heat produced PCH is directly transferred to ambient air through undirect exchange with combustion products. These products flow inside a sealed system, totally separated from the air heated for environment. No intermediate fluid is required, so the hydraulic circuit is unnecessary and water freezing becomes an out-of-date issue. A few minutes are enough for the environment to warm up thanks to the absence of thermal inertia.

NO NEED FOR A WATER BATTERY AND BOILER HEAT PLANT

- Savings on plant building cost (boiler, burner, pumps, safety and regulation devices, masonry work);
- Less space is required (units are smaller and require less clearance);
- No need for plant certification (our PCH module is already fully certified).

PCH/new Features

HEAT EXCHANGER

Furnace and air/flue exchanger are entirely built with stainless steel (with low carbon content) AISI 441 and 430 which assures maximum reliability and long life cycle.

The new cylinder shaped furnace and the air/flue exchangers, whose tube bundle is custom designed, guarantee performance that place PCH/new modules among the leading units for heat efficiency, with an outstanding value of 109%.

PREMIX BURNER

The burner is entirely made of AISI 430 steel and undergoes specific engineering processing that guarantee top reliability and high thermal-mechanical performance.



SAFETY AND CONTROL DEVICES

The following devices are installed on PCH modules:

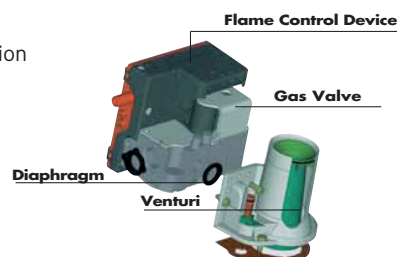
1. Safety thermostat with manual reset and positive safety;
2. Electronic ignition device for the burner and ionization flame control device;
3. Ignition and flame detection electrodes.

ELECTRONIC CART

The microprocessor-based electronic card regulates continuous modulation of heat output and controls both the electrical fan for air/gas mixing and the gas valve.

AIR/GAS MIXING: GUARANTEED SAFETY

An advanced technique of air/gas mixing guarantees total safety. The gas valve delivers gas according to the air/gas ratio set at the premises. If combustion air fails, the gas valve shuts up. If combustion air decreases, the valve automatically reduces gas flow while maintaining optimal combustion parameters.



CAD DRAWINGS

When ordering a PCH/new module, ask for its size drawings. We supply drawings in 3D CAD format to ease your assembling work of the PCH module into your installation!

GAS DIRECTIVE CERTIFICATION

Technical features of PCH module have been thoroughly checked and tested, then they have been approved and certified by KIWA GASTEC, the respected and renowned Body for European Certification.

By assigning to PCH module the approval number 0694CP1457, KIWA GASTEC has certified that this modules comply with the following Directives:

- 90/396/EEC - Directory on appliances burning gaseous fuels.
- 90/392/EEC - Machinery Directive.
- 72/23/EEC - Low Voltage Directive.
- 89/336/EEC - Directive on Electromagnetic Compatibility.

Condensing Product



PCH/new Technical Data (A system)

Model		PCH020	PCH034	PCH045	PCH065	PCH080	PCH105						
Type of appliance		B23P - B53P - C13 - C43 - C53 - C63 - C83											
CE approval	PIN.	0694CP1457											
NOx class	Val	5											
		min	max	min	max	min	max	min	max	min	max	min	max
Rated thermal input (hi)	kW	4,8	19	7,6	34,90	8,5	44	12,4	65	16,4	82	18	100
Rated thermal output	kW	5	18,2	8,1	33,6	9	42,8	13,4	62,9	17,8	80	19,6	97,2
Efficiency hi (p.C.I)	%	104,7	95,7	106,9	96,3	105,5	96,4	108,1	96,8	108,3	97,6	109,1	97,2
Efficiency hs (p.C.S)	%	94,3	86,2	93,3	86,8	95,1	86,9	97,4	87,2	97,6	87,9	98,3	87,6
Chimney loss - burner ON (hi)	%	0,4	4,3	0,6	3,7	0,5	3,6	0,2	3,2	0,3	2,4		2,8
Chimney loss - burner OFF (hi)	%	<0,1		<0,1		<0,1		<0,1		<0,1		<0,1	
Casing heat loss ⁽¹⁾		0%		0%		0%		0%		0%		0%	
Max. Condensation produced (2)	l/h	0,4		0,9		1,1		2,1		3,3		2,7	
Carbon monoxide CO (0% di O ₂) (3)	ppm	5	0	4	0	3	0	2	0	2	0	0	2
Nitrogen oxides - NOx - (0% di O ₂) (4)	mg/kWh	40		41		35		40		34		45	
Available flue pressure	Pa	80		90		100		120		120		120	
Power supply	V	230 Vac - 50 hz monophas											
Power absorbed	W	12	45	11	74	24	82	15	97	40	123	20	130
Power absorbed in stand by	W	5											
IP protection	IP	IP X5D											
Working temperature	°C	From -15°C to +40°C - (for lower temperatures order heating burner box electrical resistance kit)											
Ø Gas connection	GAS	UNI/ISO 7/1-3/4"		UNI/ISO 7/1-3/4"		UNI/ISO 7/1-3/4"		UNI/ISO 7/1-3/4"		UNI/ISO 7/1-1"		UNI/ISO 7/1-1"	
Ø of air inlet/exhaust pipes	mm	80/80		80/80		80/80		80/80		80/80		80/80	
Minimum air flow (5)	m ³ /h	1900		2100		2600		3100		4200		5400	
Max applicable pressure	Pa	1.200		1.200		1.200		1.200		1.200		1.200	
Net weight	kg	39		48		58		72		98		118	

NOTE:

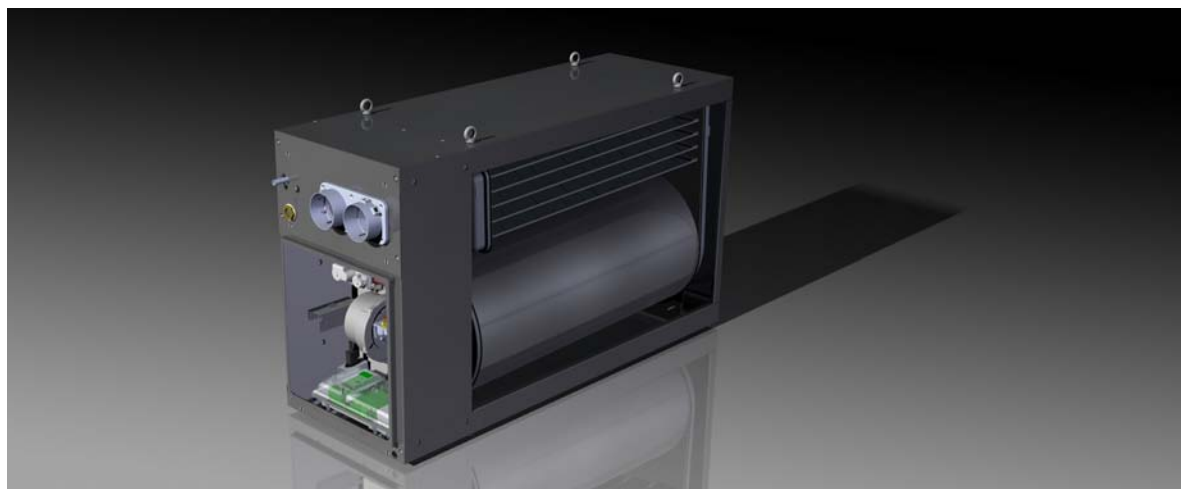
(1) The casing heat losses are the same as those of the machine which contains the PCH.

(2) Max. Condensation produced value obtained by test at 30% Nominal load (Qn).

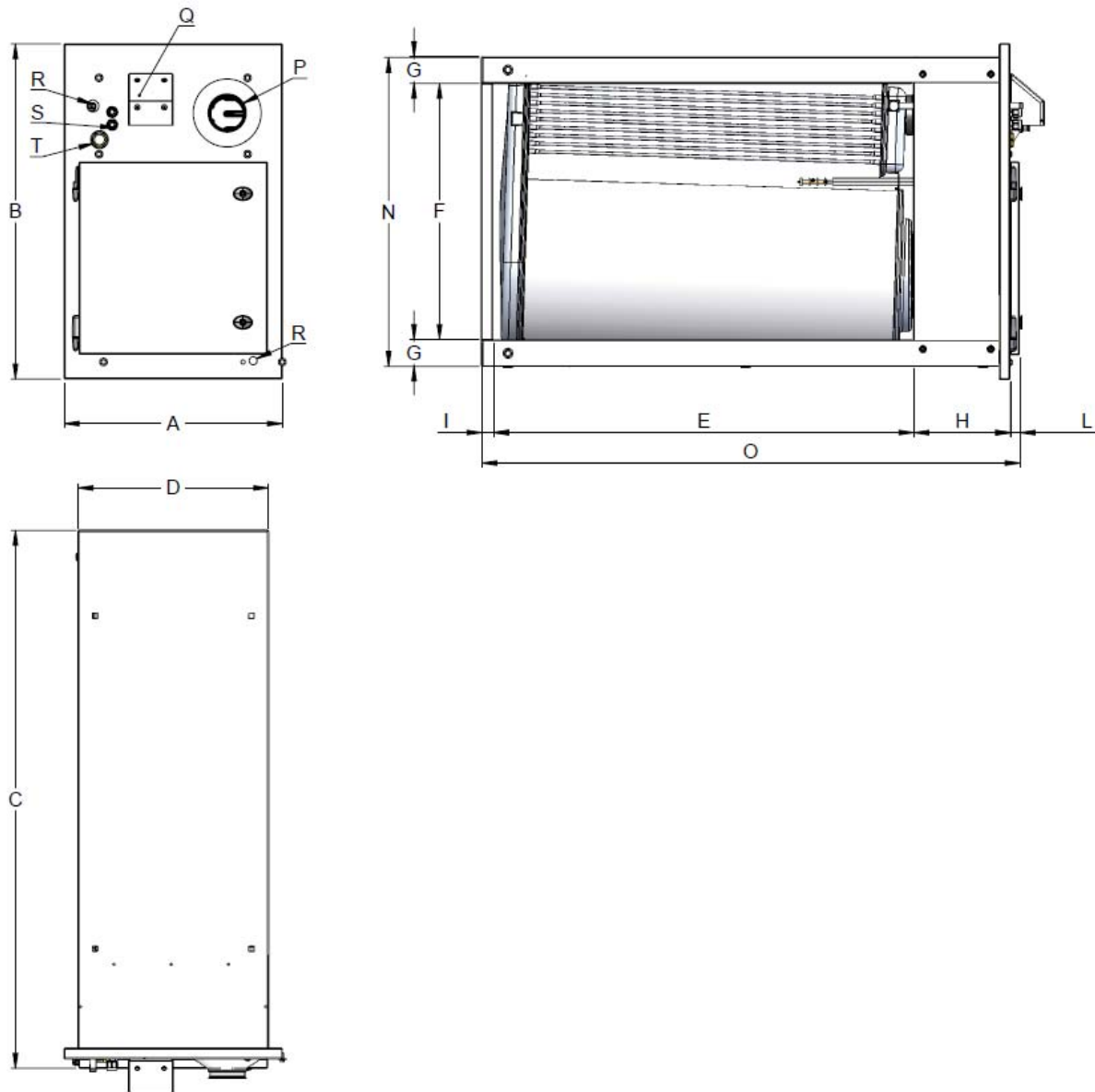
(3) Value reference with gas cat. H (G20).

(4) Value (statistical medium calculation) EN1020 reference gas cat. H (G20).

(5) Minimum air flow has been calculated for a t value of 50°C, which is suitable for process plants or special applications.



PCH/new Dimensions (A system)



Dimensions(mm)

Model	A (3)	B (3)	C (2)	D (1)	E (1)	F (1)	G (2)	H (1)	I (2)	L (2)	M (2)	N (2)	O (2)	P (1)	Q (1)	R (1)	S (1)	T (1)			
PCH020	514	720	728	449	450	534	63	228	28	22	-	660	728	Ø 80	Ø 80	3/8" GAS	2X Ø 21	3/4" GAS			
PCH034			968		968																
PCH045		790	968		604	730						Ø 80	Ø 80						3/8" GAS	2X Ø 21	1"
PCH065			1268		604	1268															
PCH080		875	1459		1181	815						1459	1"								
PCH105			1689		1411	1689															

PCH/new Technical Data (B system)

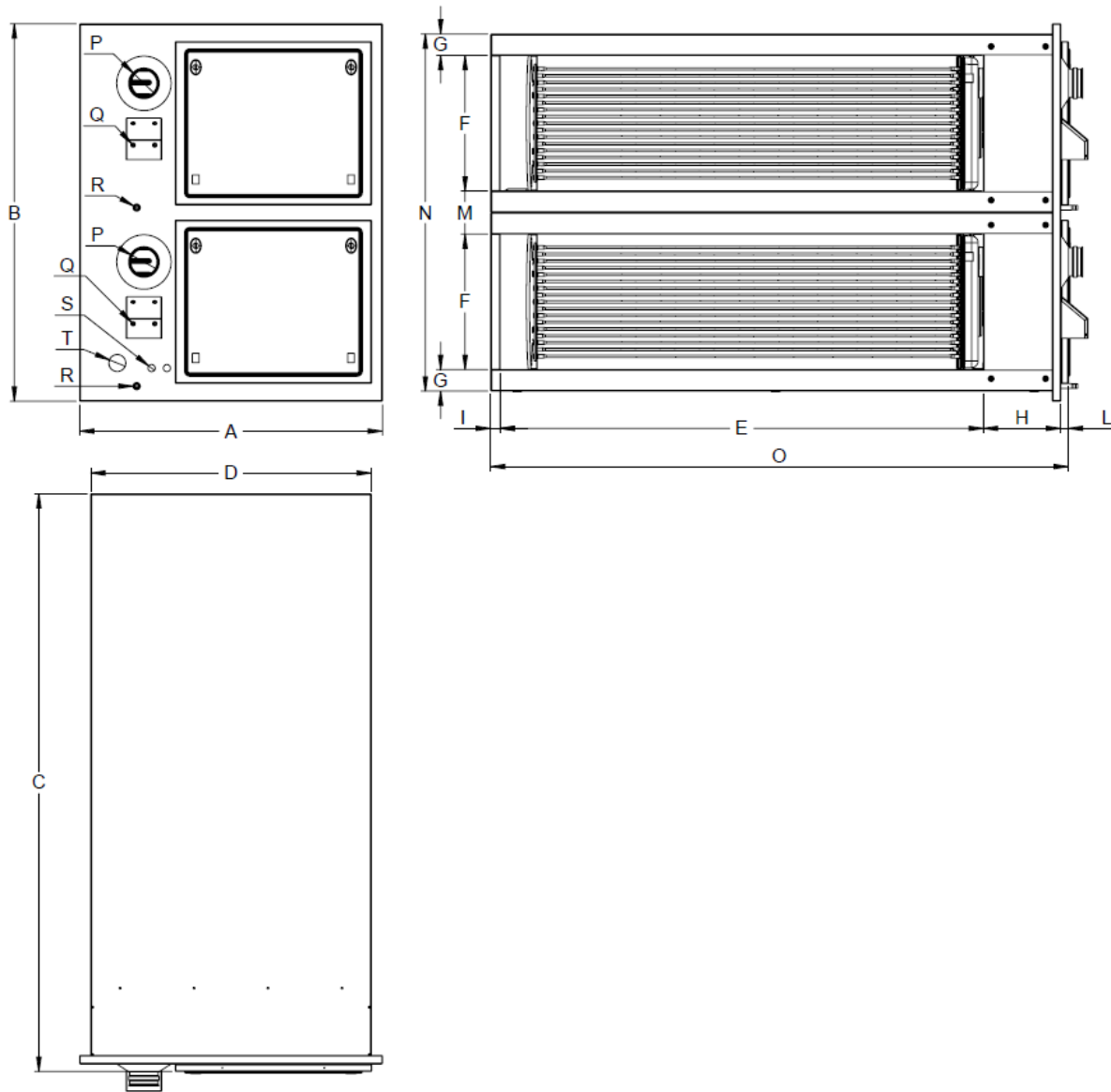
Model		PCH130		PCH160		PCH210		PCH320		PCH420	
Type of appliance		B23P - B53P - C13 - C43 - C53 - C63 - C83									
CE approval	PIN.	0694CPI457									
NOx class	Val	5									
		min	max	min	max	min	max	min	max	min	max
Rated thermal input (hi)	kW	12,4	130,0	16,4	164,0	18,0	200,0	18,0	300,0	18,0	400,0
Rated thermal output	kW	13,4	125,8	17,8	160,0	19,6	194,4	19,6	291,6	19,6	388,8
Efficiency hi (p.C.I)	%	108,1	96,8	108,3	97,6	109,1	97,2	109,1	97,2	109,1	97,2
Efficiency hs (p.C.S)	%	97,4	87,2	97,2	87,9	98,3	87,6	98,3	87,6	98,3	87,6
Chimney loss - burner ON (hi)	%	0,2	3,2	0,3	2,4		2,8		2,8		2,8
Chimney loss - burner OFF (hi)	%	<0,1		<0,1		<0,1		<0,1		<0,1	
Casing heat loss ⁽¹⁾		0%		0%		0%		0%		0%	
Max. Condensation produced (2)	l/h	4,2		6,6		5,4		8,1		10,8	
Carbon monoxide CO (0% di O ₂) (3)	ppm	2	0	2	0	0	2	0	2	0	2
Nitrogen oxides - NOx - (0% di O ₂) (4)	mg/kWh	40		34		45		45		45	
Available flue pressure	Pa	120		120		120		120		120	
Power supply	V	230 Vac - 50 hz monophase									
Power absorbed	W	30	194	80	246	40	260	60	390	80	520
Power absorbed in stand by	W	5									
IP protection	IP	IP X5D									
Working temperature	°C	From -15°C to +40°C - (for lower temperatures order heating burner box electrical resistance kit)									
Ø Gas connection	GAS	UNI/ISO 7/1- 1"		UNI/ISO 7/1- 1½"		UNI/ISO 7/1- 1½"		UNI/ISO 7/1- 1½"		UNI/ISO 7/1- 2"	
Ø of air inlet/exhaust pipes	mm	80/80		80/80		80/80		80/80		80/80	
Minimum air flow (5)	m ³ /h	6200		8400		10800		16200		21600	
Max applicable pressure	Pa	1.200		1.200		1.200		1.200		1.200	
Net weight	kg	154		206		250		375		500	

NOTE:

- (1) The casing heat losses are the same as those of the machine which contains the PCH.
- (2) Max. Condensation produced value obtained by test at 30% Nominal load (Qn).
- (3) Value reference with gas cat. H (G20).
- (4) Value (statistical medium calculation) EN1020 reference gas cat. H (G20).
- (5) Minimum air flow has been calculated for a Δt value of 50°C, which is suitable for process plants or special applications.



PCH/new Dimensions (B system)



Dimensions(mm)

Model	A (3)	B (3)	C (2)	D (1)	E (1)	F (1)	G (2)	H (1)	I (2)	L (2)	M (2)	N (2)	O (2)	P (1)	Q (1)	R (1)	S (1)	T (1)
PCH130																		
PCH160		1110	1468		1191								1469	2X Ø 80	2X Ø 80	2X 3/8" GAS	3X Ø 21	1 1/2" GAS
PCH210	890					398	63	228	28	22	127	1049						
PCH320		1787	1698	825	1421							1574	1699	3X Ø 80	3X Ø 80	3X 3/8" GAS		
PCH420		2360										2099		4X Ø 80	4X Ø 80	4X 3/8" GAS	4X Ø 21	

PCH/new Technical Data (C system)

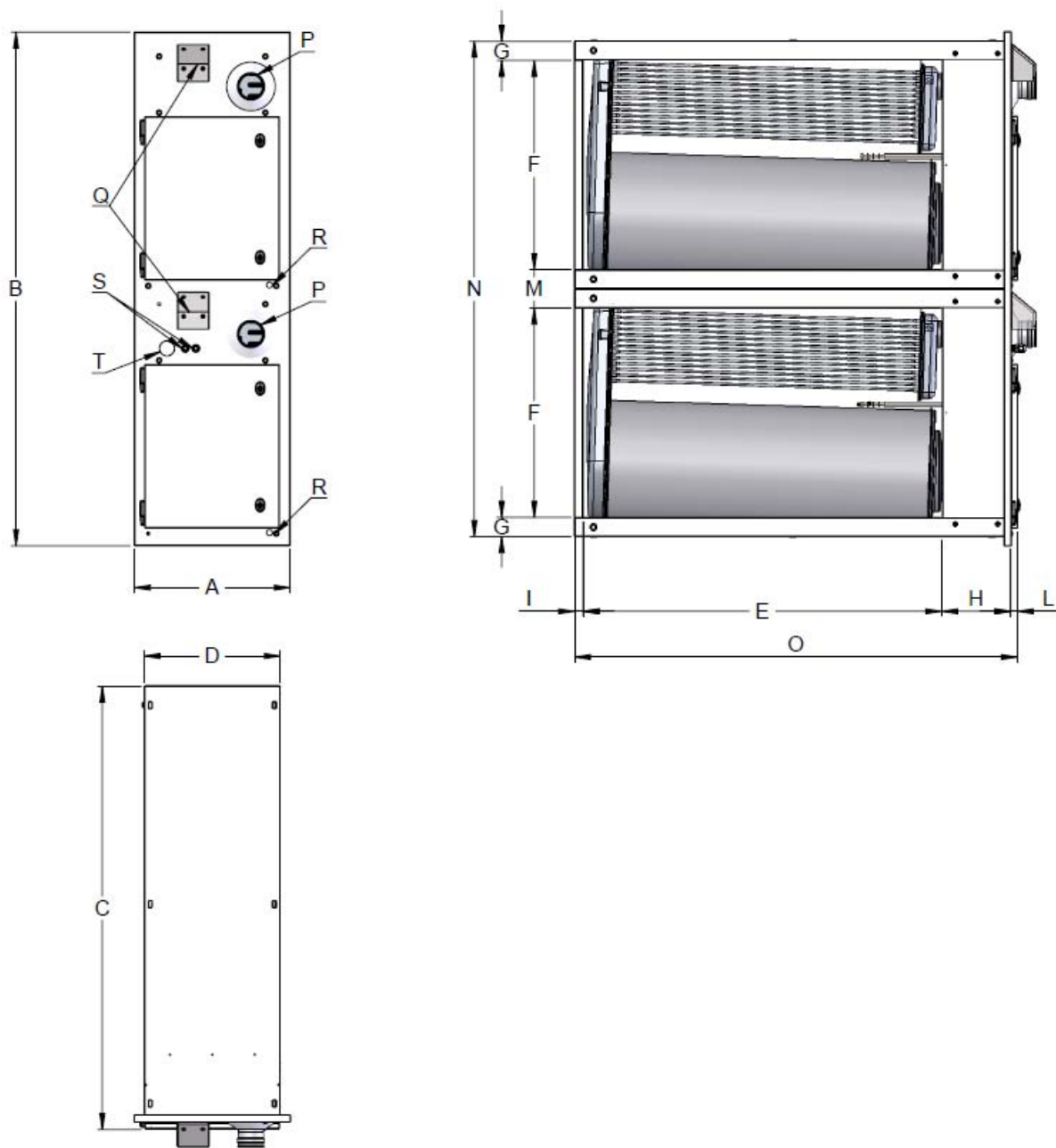
Model		PCH132		PCH162		PCH212	
Type of appliance		B23P - B53P - C13 - C43 - C53 - C63 - C83					
CE approval	PIN.	0694CP1457					
NOx class	Val	5					
		min	max	min	max	min	max
Rated thermal input (hi)	kW	12,4	130,0	16,4	164,0	18,0	200,0
Rated thermal output	kW	13,4	125,8	17,8	160,0	19,6	194,4
Efficiency hi (p.C.I)	%	108,1	96,8	108,3	97,6	109,1	97,2
Efficiency hs (p.C.S)	%	97,4	87,2	97,6	87,9	98,3	87,6
Chimney loss - burner ON (hi)	%	0,3	3,2	0,3	2,4		2,8
Chimney loss - burner OFF (hi)	%	<0,1		<0,1		<0,1	
Casing heat loss ⁽¹⁾		0%		0%		0%	
Max. Condensation produced (2)	l/h	4,2		6,6		5,4	
Carbon monoxide CO (0% di O ₂) (3)	ppm	2	0	2	0	0	2
Nitrogen oxides - NOx - (0% di O ₂) (4)	mg/kWh	40		34		45	
Available flue pressure	Pa	120		120		120	
Power supply	V	230 Vac - 50 hz monophase					
Power absorbed	W	30	194	80	246	40	260
Power absorbed in stand by	W	5					
IP protection	IP	IP X5D					
Working temperature	°C	From -15°C to +40°C - (for lower temperatures order heating burner box electrical resistance kit)					
Ø Gas connection	GAS	UNI/ISO 7/1- 1"		UNI/ISO 7/1- 1½"		UNI/ISO 7/1- 1½"	
Ø of air inlet/exhaust pipes	mm	80/80		80/80		80/80	
Minimum air flow (5)	m ³ /h	6200		8400		10800	
Max applicable pressure	Pa	1.200		1.200		1.200	
Net weight	kg	148		200		240	

NOTE:

- (1) The casing heat losses are the same as those of the machine which contains the PCH.
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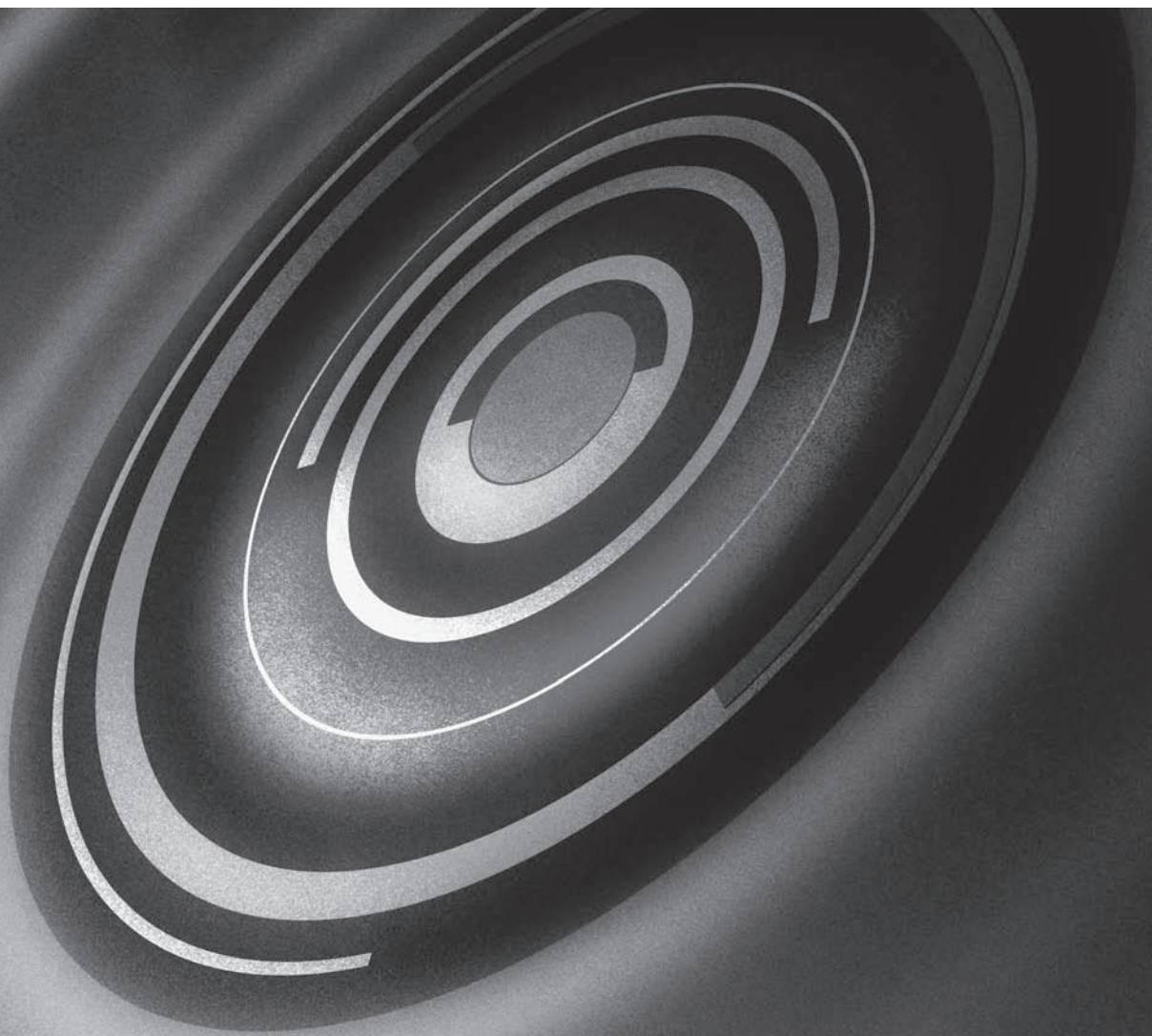


PCH/new Dimensions (C system)



Dimensions(mm)

Model	A (3)	B (3)	C (2)	D (1)	E (1)	F (1)	G (2)	H (1)	I (2)	L (2)	M (2)	N (2)	O (2)	P (1)	Q (1)	R (1)	S (1)	T (1)
PCH132	514	1520	1268	449	990	604	63	228	28	22	127	1461	1268	2X Ø 80	2X Ø 80	2X 3/8" GAS	2X Ø 21	1" GAS
PCH162		1690	1459		1181	689						1631	1459					
PCH212		1703	1411		1411	1689						1689						



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