




# AGUAdens<sup>TM</sup>



wall-hung condensing residential water heaters  
16 - 22 - 35 litres



## AGUAdens the condensing water heater generation

### Simple and intuitive control panel

Control panel with digital back-lighting display for an easy and intuitive visualization of parameters, water heater phases, error messages, with electronic temperature control.

Display back-lighting turns off after 5 minutes of inactivity (SAVE ENERGY).

### So much hot water in a very small space

As small as a trolley, a depth of only 30,5 cm (48,4 cm for **AGUAdens 37**) contains all the power of **AGUAdens** that is on the market with a complete range to consistently achieve the maximum comfort. An eye-catching design and compact size, allow the **AGUAdens** installation in any residential space and can easily fit inside a kitchen cabinet.

### Anti-legionella function health-safe domestic hot water

By producing instant hot water, **AGUAdens** ensures maximum hygiene and excludes any possibility of contamination by Legionella bacteria, as is the case with hot water storage tanks.

If **AGUAdens** is used in combination with storage tanks, the control unit automatically activates the anti-legionella cycle via the tank sensor.



## You save up to 100 € compared to a traditional water heater

New energy-saving regulations and modern building insulation techniques have significantly reduced heating requirements, which are set to decrease more and more. With the spread of multi-jet showers, cascade showerheads, Jacuzzis, wellness and fitness centres, the need for hot water, and thus the incidence of fuel consumption for its production, is increasing.

If we consider that we use domestic hot water 365 days a year and at all latitudes, saving when producing hot water has become a priority.

Compared to conventional water heaters, you save up to 30% with AGUAdens.

AGUAdens, the patented water heater built entirely by Cosmogas, is available in 16, 22 and 35 litre models (27 - 33,5 - 61 kW output ratings).







## Comfort and energy saving wherever you are

To install **AGUAdens** outdoors, **COVER-BOX**, the weatherproof, UV-resistant ABS insulated cover, is available as an accessory on demand. The highly insulating, fireproof polyethylene insulation gives the water heater an IP X5D electrical protection rating and protects it from cold and bad weather. **AGUAdens** is protected against frost as it is automatically activated when regularly powered and the temperature drops below 7°C. A safety kit complete with shut-off gas valve and expansion tank, which can be integrated in the cover, is available on demand for **AGUAdens 37**.

**AGUAdens** can be combined with **DIMMI**, the new evolved Wi-Fi thermoregulation system with mirror display that allows you to remotely control and configure maximum comfort with simple commands, and thanks to its elegant and essential design it integrates perfectly into any environment.

Thanks to its intuitive free **EcoHOME Life APP**, available for both Android and Apple iOS, it will be possible to interact with the water heater at any time, even if you are on the other side of the world.



Everything under control  
even outdoors



AGUAdens 16 - 22  
with COVER-BOX



AGUAdens 37  
with COVER-BOX

IP X5D



# The ideal combination when more hot water is needed

**B50**, the wall-mounted storage tank, combined with **AGUAdens**, allows the production of a considerable amount of hot water in storage.

Designed, patented and built by Cosmogas, **B50** is made of AISI 316L stainless steel and weighs only 36 kg. It guarantees instantaneous and continuous domestic hot water supply with very short recovery times. Quick and easy installation and reduced running costs. An effective and reliable combination for:

- ❖ **Beauty centres**
- ❖ **Hair salons**
- ❖ **Small B&Bs**
- ❖ **Farmhouses**



AGUAdens

B50





## Large production of domestic hot water without thermal power plant

Thanks to the double coil storage tank, **AGUastore** is the ideal solution where there are high peak demands and low heating output, such as sports centres and gyms.

**AGUastore** with **AGUAdens 16 e 22**, having an output of less than 35 kW, it can be installed in any room without the need for a prepared room or thermal power plant.

This winning combination ensures hot water replenishment and its continuous production, always working in a condensing mode for the benefit of energy savings and environmental friendliness.

Compact, easy to connect and versatile, this system is well suited to providing domestic hot water for:

- ❖ **Gyms**
- ❖ **Sports Centres**
- ❖ **Sports grounds**
- ❖ **Kitchens**
- ❖ **Car washes**
- ❖ **Livestock facilities**





# Cascade sequence up to 480 kW

AGUAdens can be connected in cascade sequence up to 8 units to ensure a highly variable domestic hot water demand.

This solution ensures modularity of output required and maximum continuity of supply depending on the load. It is specifically designed to produce large quantities of domestic hot water to meet contemporary and peak demands in facilities such as:

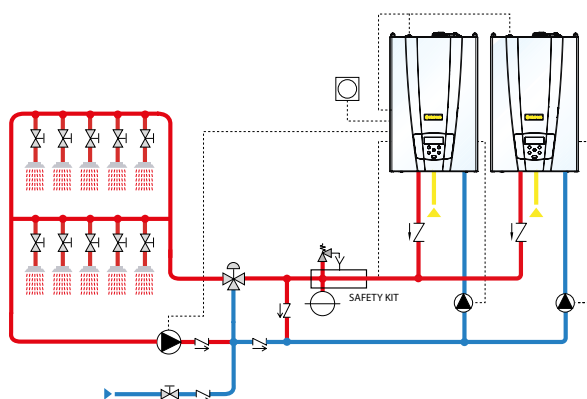
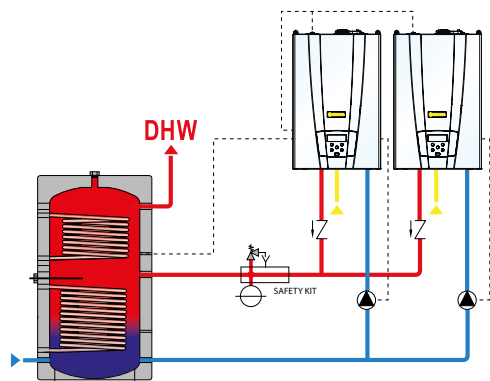
- ❖ **Hotels**
- ❖ **Campings**
- ❖ **Commercial facilities**
- ❖ **Industrial plants**
- ❖ **Livestock facilities**
- ❖ **Wellness centres**
- ❖ **SPAs**





## Safety kit suitable for DHW

For outputs above 35 kW, the stainless steel safety kit suitable for domestic hot water complete with gas shut-off valve, to be installed in the presence of a recycling loop or storage circuit, is available on request.



### AGUAdens in cascade sequence with storage tank

AGUAdens can be connected in cascade sequence to meet the required output of the system. Depending on the domestic hot water demand at simultaneous and peak period **AGUAdens** in cascade sequence can be coupled to a storage tank of suitable capacity according to the type of system. Thanks to the advanced electronics as standard, it can be electrically linked with the corresponding 2-wire cabling and activate cascade sequence management, up to 8 units, without the need for additional electronic control units.

### AGUAdens in cascade sequence with recycling loop

AGUAdens in cascade sequence can be connected directly to the system without the storage tank when the volume of water contained in the system and in the recycling loop can meet the needs for domestic hot water at simultaneous and peak period. Cosmogas provides the ACQUACALDA.TECH calculation software for verifying domestic hot water needs in sports facilities, hotels, industry, etc.



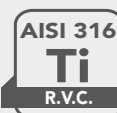
## Unlimited and safe instantaneous production of domestic hot water

**AGUAdens** is a newly developed condensing water heater that considerably reduces energy consumption, thanks to the triple R.V.C. heat exchanger with radial variable circulation, made of AISI 316 Ti TITANIUM stainless steel, which recovers the latent heat of the flue gases, improving heat exchange and efficiency, achieving exceptional efficiencies of up to 107%.

The built-in pump provides domestic hot water, at a constant temperature, immediately on opening the taps and can feed a small recirculation loop.

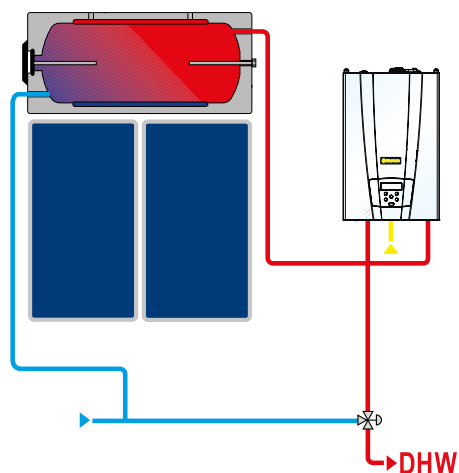
The entire range is equipped with eco-friendly premix Fecralloy metal fibre burners, fitted as standard with a back flue preventer (clapet), on the combustion circuit, to prevent the possible recirculation of flue gases between the different exchangers, in the case of cascade installations.

All **AGUAdens** components have frontal access, so that all maintenance, adjustment and control operations are quick and easy.



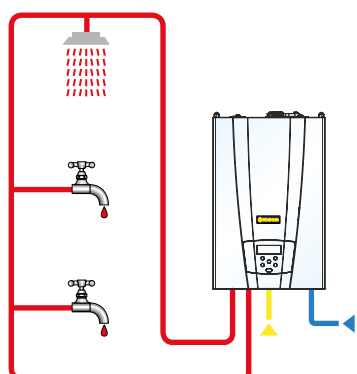
## Connection to solar systems

AGUAdens can be connected to solar systems and only intervenes if solar radiation is insufficient to guarantee the required hot water temperature.

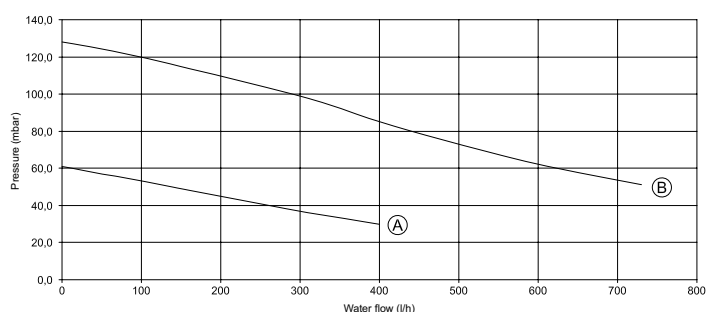


## Connection to recycling loop

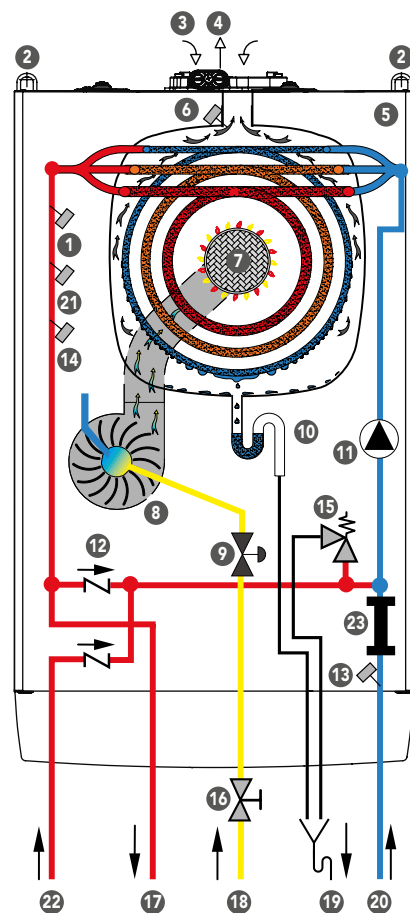
AGUAdens thanks to the built-in recirculating pump is able to serve a recycling loop; check the head available to the system.



## Recycling loop available head



## Operating scheme



- 1 · Hot water supply temperature sensor
- 2 · Support hooks
- 3 · Air intake
- 4 · Flue gas outlet
- 5 · Sealed chamber
- 6 · Flue gas temperature sensor
- 7 · Fecralloy metal fibre premix burner
- 8 · Fan
- 9 · Gas valve
- 10 · Siphon for condensate drain
- 11 · Circulating pump
- 12 · Backflow preventer
- 13 · Cold water temp. sensor
- 14 · Domestic hot water temperature sensor
- 15 · Safety relief valve
- 16 · Gas inlet
- 17 · Hot water supply
- 18 · Gas inlet
- 19 · Condensate drain
- 20 · Cold water inlet
- 21 · High limit temperature switch
- 22 · Recycling loop return
- 23 · Water flow meter

A · AGUAdens 16 and 22  
B · AGUAdens 37

## INSTANTANEOUS AND STORAGE DOMESTIC HOT WATER PRODUCTION

Model		AGUAdens 16			AGUAdens 22			AGUAdens 37		
DHW temperature	$\Delta t$	25°C	30°C	35°C	25°C	30°C	35°C	25°C	30°C	35°C
After the first 5 minutes	l	77	64	55	91	80	68	175	145	125
After the first 10 minutes	l	155	129	110	192	160	137	350	291	250
Continuous	l/min	15,5	12,9	11,0	19,2	16,0	13,7	35,0	29,1	25,0

Operating conditions: hot water heater temperature set at 55°C



## The efficiency of three heat exchangers in the size of one

Patented **R.V.C.** heat exchanger, with Radial Variable Circulation, is made of AISI 316L stainless steel, without weld joints.

Designed to easily condense and recover the greatest amount of latent heat in the flue gases **R.V.C.** is actually equipped with "3 heat exchangers" hydraulically connected to each other.

The heat exchanger No.1, with large diameter, envelops the burner to absorb a large amount of heat, the No.2 envelops the first one and further lowers the flue gas temperature and the No.3 wraps around the previous ones and acts as a capacitor. The wide exchange surface of the "3 heat exchangers" allows **efficiency up to 107%** with gas savings up to 30%.



## Fecralloy eco-friendly premix burner

- High-efficiency combustion
- NOx low polluting emissions
- CO2 low greenhouse effect
- Natural gas, LP gas and Natural gas/20% Hydrogen blend operating

Eco-friendly premix water heaters have a constant air/gas ratio in each point of the turndown range of the burner, decreasing polluting emissions and optimising efficiency.

The premix burner is made of "Fecralloy" a special metal fibre and has a round shape. **Cosmogas eco-friendly premix burner** spreads short and perfectly nourished flames.

The patented premix system, **Cosmomix**, adopted in **AGUAdens** condensing water heaters, allows an exceptional **turndown ratio of 1:8**.



3° Capacitor - heat exchanger

2° Medium temperature heat exchanger

1° High temperature heat exchanger

## Three heat exchangers in one

- Large passages
- Great exchange surface
- Large water flow
- Working pressure up to 10 bar

During operation, the cold inlet water is distributed over the three coils that make up the Cosmogas R.V.C. exchanger with diameters 18, 16 and 16 mm.

## The only Titanium heat exchanger that works directly with mains water

The patented primary heat exchanger R.V.C., the heart of the AGUAdens system, is the result of intensive studies and tests combined with the experience of Cosmogas which, for over 50 years, has been designing and patenting heating and domestic hot water production systems.

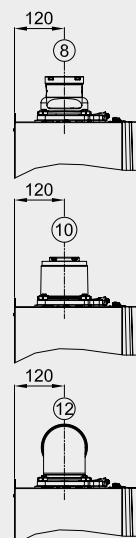
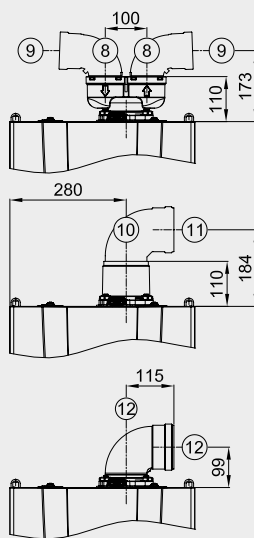
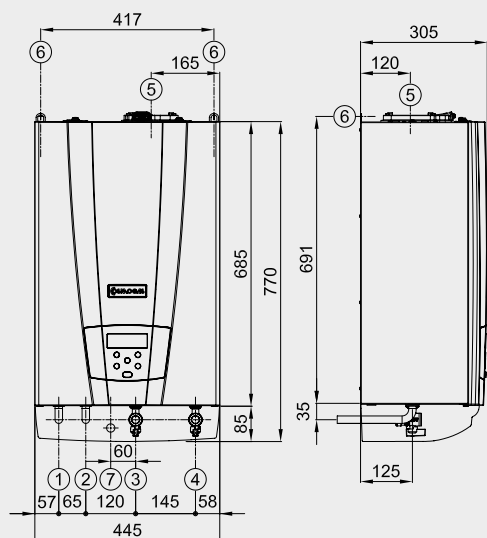
The 3 **AISI 316 Ti (Titanium)** stainless steel exchangers, which make up the R.V.C. heat exchanger have **no weld joints**, this allows them to work with working pressures up to 10 bar, to maintain the characteristics of titanium stainless steel and to provide the right resistance to corrosion from potable water with sometimes high percentages of chlorine.

The low inlet water temperature and variable fluid circulation enhance the condensation effect and produce domestic hot water at the outlet, even at high temperatures, maximising energy and consumption savings.



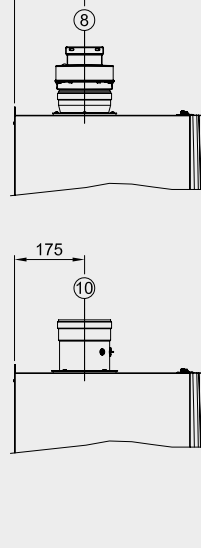
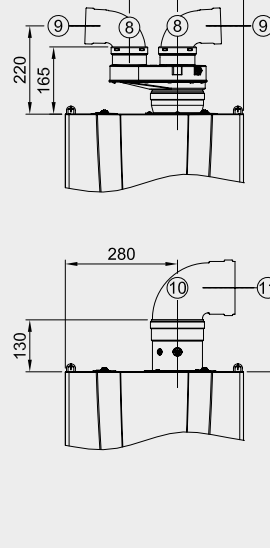
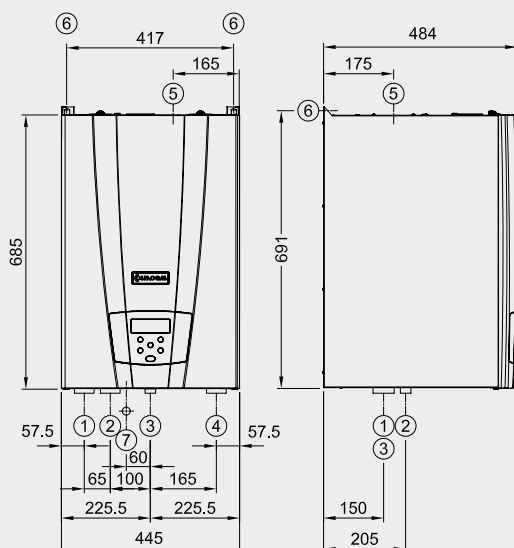
# Size and connections

## AGUAdens 16 - 22

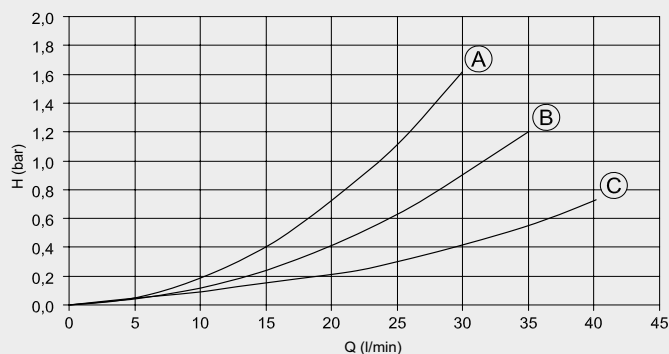


- 1 · Recycling loop 3/4"
- 2 · DHW supply 1"
- 3 · Gas inlet 3/4"
- 4 · Cold water inlet 3/4" AGUAdens 16 and 22 1" AGUAdens 37
- 5 · Flue gas outlet/Air intake
- 6 · Support hooks
- 7 · Condensate drain Ø20
- 8 · Split system vent adaptor
- 9 · Interaxis with 90° elbow P/N 62617244
- 10 · Vertical coaxial adaptor
- 11 · Interaxis with 90° elbow P/N 62617321
- 12 · Interaxis horizontal coaxial outlet

## AGUAdens 37



# AGUAdens pressure drops



- A · AGUAdens 16
- B · AGUAdens 22
- C · AGUAdens 37

## PIPES MAX OVERALL LENGTH

Pipe model	AGUAdens 16	AGUAdens 22	AGUAdens 37
Split smooth pipe	Ø80/80 PP = 40 m Ø60/60 PP = 15 m Ø50/50 PP = 14 m	Ø80/80 PP = 25 m Ø60/60 PP = 9 m Ø50/50 PP = 6 m	Ø80/80 PP = 20 m - -
Split corrugated pipe	Ø80/80 PP = 20 m	Ø80/80 PP = 13 m	Ø80/80 PP = 6 m
Coaxial	Ø60/100 PP = 10 m	Ø60/100 PP = 10 m	Ø80/125 PP = 10 m

For each 90° elbow installed please consider a linear loss of: 1 metre (Ø80/80 - Ø60/100), 3 metres (Ø60/60), 4 metres (Ø50/50)



# Technical data

AGUADENS			MU	16	22	37
Type (Type of exhaust flue gas/air intake)				B23; B23P; C13; C33; C43; C53; C63; C83; C93		
Category				I12H3P	I12H3P	I12H3P
EU type approval certificate (PIN)				0476CQ1097	0476CQ1097	0476CQ1097
Maximum heat input "Qn" LHV (HHV)			kW	25,5 (28,3)	32,0 (35,5)	57,8 (64,2)
Heating minimum heat input "Qm" LHV (HHV)			kW	3,2 (3,6)	6,0 (6,7)	12,0 (13,3)
Maximum heat output "Pn"			kW	27,0	33,5	60,9
Efficiency at maximum heat output LHV (HHV)			%	105,7 (95,2)	104,7 (94,3)	105,3 (94,9)
Minimum heat output "Pm"			kW	3,30	6,14	12,85
Efficiency at minimum heat output LHV (HHV)			%	103,0 (92,8)	102,4 (92,3)	107,1 (96,5)
Gas flow rate	G20	m <sup>3</sup> /h		2,70	3,38	6,11
	G31	kg/h		1,98	2,48	4,49
Gas supply pressure	G20	mbar		20	20	20
	G31	mbar		37	37	37
Gas supply minimum pressure	G20	mbar		10	10	10
	G31	mbar		10	10	10
Gas supply maximum pressure	G20	mbar		45	45	45
	G31	mbar		45	45	45
DHW temperature adjustment range			°C	40-60 (75)	40-60 (75)	40-60 (75)
DHW flow rate (Δt 30°C)			l/min	12,9	16,0	29,1
Sanitary circuit maximum pressure "Pw"			bar	10	10	10
Sanitary circuit minimum pressure			bar	1	1	1
Minimum water flow			l/min	2,5	2,5	2,5
Rated power supply voltage			V~	230	230	230
Rated power supply frequency			Hz	50	50	50
Total absorbed electrical power			W	165	165	235
Pump absorbed electrical power			W	95	95	95
Burner absorbed electrical power			W	70	70	140
Electrical protection rating				IP X4D	IP X4D	IP X4D
Flue gas exhaust pipe diameter / air intake (split)			mm	80 or 50	80 or 50	80 or 50
Max. length flue gas exhaust pipe / air intake (split) (80) or (50)			m	(20) or (7*)	(12,5) or (3*)	10
Flue gas exhaust pipe diameter (coaxial)			mm	60/100	60/100	80/125
Max. length of flue gas exhaust pipe (coaxial)			m	10	10	10
Equivalent length of a bend			m	45° bend = 0,5 m - 90° bend = 1m		
Weighted CO (0% O <sub>2</sub> ) (EN26:2015)	G20	ppm		11	19	10
	G20	mg/kWh		20	29	16
Weighted NO <sub>x</sub> (0% O <sub>2</sub> ) (EN26:2015) HHV	G31	mg/kWh		24	34	20
	G20	%		8,5	8,5	8,3
CO <sub>2</sub> (%) at minimum output	G31	%		9,5	10,0	9,5
	G20	%		9,0	9,0	8,7
CO <sub>2</sub> (%) at maximum output	G31	%		10,5	10,5	10,1
	G20	%		5,8	5,8	6,1
O <sub>2</sub> (%) at minimum output	G31	%		6,4	5,6	6,4
	G20	%		4,9	4,9	5,4
O <sub>2</sub> (%) at maximum output	G31	%		4,9	4,9	5,5
Maximum flue gas temperature at appliance outlet			°C	80	80	80
Mass flow of exhaust flue gas at minimum power			g/s	1,5	3,4	5,9
Mass flow of exhaust flue gas at maximum power			g/s	11,6	14,6	27,2
Available head at outlet			Pa	90	90	90
Maximum exhaust flue gas temperature for overheating			°C	95	95	95
Max. negative pressure allowed in the exhaust flue gas/air intake system			Pa	90	90	90
Condensate maximum flow rate			l/h	3,2	4,0	7,2
Condensate average acidity			pH	4	4	4
Operating room temperature			°C	0,5 ; +50	0,5 ; +50	0,5 ; +50
Water heater weight			kg	36	36	48

\* In these conditions, the appliance output is reduced by 10%

All Cosmogas products are designed, patented and built by us

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