

ARCA
caldaie

TECNOLOGIE PER L'AMBIENTE

Regovent Regovent Combi

Combustion chamber
thickness 8 mm

Electronic controlled,
solar panels
managing ready



Regovent Regovent Inox

STEEL GASIFICATION BOILER
WITH HOT WATER PRODUCTION
FACILITY
POWER RANGE 16 TO 174 kW
(14,000 TO 150,000 kCal/h)

Regovent Combi Regovent Combi Inox

MULTIFUEL DOUBLE-BODIED
STEEL BOILER
WITH HOT WATER PRODUCTION FACILITY
"DRY WALLS" GAS/OIL SEPARATE
COMBUSTION CHAMBER
POWER RANGE 16 TO 60kW
(14.000 TO 52.000 kCal/h)

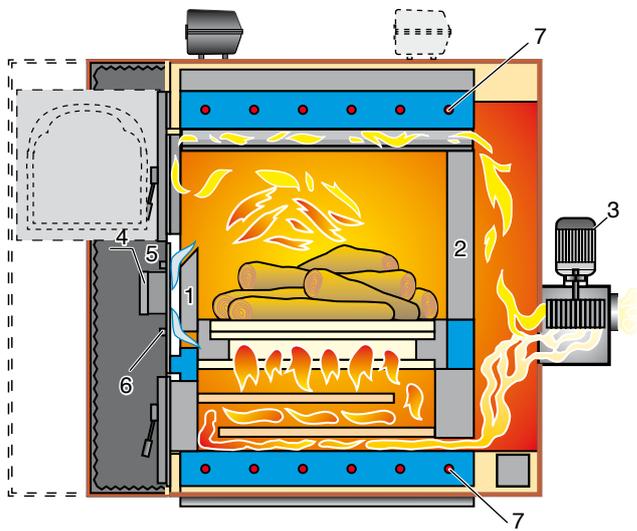


Certified in accordance with
EN 303.5
Performance class 5

REGOVENT TECHNOLOGY

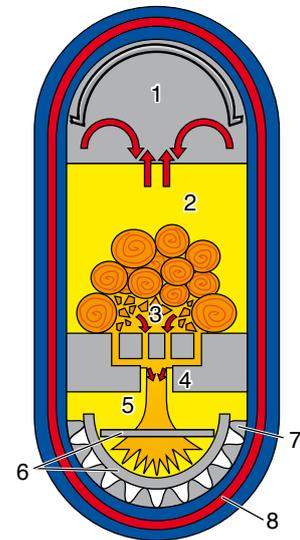
Boiler REGOVENT operation is based upon solid fuel gasification technology applied to wood. The solid fuel, placed in the boiler's upper chamber (wood collecting box), coming in touch with the hot ember layer lying upon the burner grate, releases combustible gazes which, along with the air stream blown in the burner body, lights in the area beneath the bottom of the wood box (thermal exchange area) producing a reverse flame coming out from the burner grate center slot, sucked by the smoke drafting fan. Furthermore, the flame hits the catalyst element which helps in getting an almost complete burning process. Using gasification technology,

the wood is not burnt directly, what is really burnt instead are the gazes released by wood in high temperature conditions, thus allowing a complete burning process and reaching a high overall thermal yield with very low levels of unburnt materials and harmful emissions in the smoke released outside. The REGOVENT boiler has been designed to minimize the negative effects of the acid condensation. The firebox has a thickness of 8 mm (5 mm the STAINLESS STEEL version) and does not show weld bead in the upper area of the wood stock; also the front and rear walls are protected by a layer of refractory cement and are not crossed by the water (dry walls).



Key:

- | | |
|--------------------------|------------------------|
| 1 Front dry wall | 5 Primary air stream |
| 2 Rear dry wall | 6 Secondary air stream |
| 3 Fan | 7 Hot water exchanger |
| 4 Thermostatic operation | (version SA only) |



Key:

- | | |
|-------------------------------------|----------------------------|
| 1 Wood box where the wood is placed | 6 Catalyst element |
| 2 Gasification zone | 7 Thermal exchange surface |
| 3 Ember zone | 8 Sanitary exchanger |
| 4 Cast iron burner | |
| 5 Combustion chamber | |

THERMAL YIELD/TECHNOLOGY

The REGOVENT boilers top technology obtains the best possible thermal performances from the fuel, thanks to the gasification style boiler arrangement and to the presence of the catalyst element, directly hitted by the end part of the flame (the hottest). By reaching a very high temperature, the catalyst allows complete burning of any residual particle which didn't burn in the rest of the flame. The overall thermal yield reaches a higher value thanks to the thermostatic electronic control which maintains the boiler at a constant temperature. The smoke released outside is very poor in solid unburnt particles and has almost no gaseous unburnt content at all. This is achieved by the very high combustion temperature reached, much higher than any other traditional, conventional combustion arrangement hearth appliance. By this way, the customer can get an important fuel economy.

CATALYST

In order to get the longest smoke path, without bypassing it, the upper catalyst element must be in direct contact with the inner surface of the door; to get this, the catalyst element must be pulled slightly outside by hand and then pushed inside closing the door by the door itself. We recommend to periodically turn upside down and rotate the catalyst to lengthen its life.



VERTICAL MOTOR

The vacuum ventilator works on vertical position in order to avoid unbalancing typical of the overhang motor. The cooling is ensured by two ventilators. A microswitch enables the full automatic operation of the boiler: when the door is open the fan works like a simple fumes extractor; when the door is closed the fan is controlled by the thermostat of the boiler.



WOOD BOX - CONDENSATION AND CORROSION FREE

The power modulation facility of the boiler and the operation without cut off periods help much in reducing the humidity level in the wood box and condensation related issues. The wood box refractory material internal lining integrally protects both the wood collection box rear and front wall. All the upper chamber walls have 8 mm thickness, without any welding point. Thus, the average life of the boiler, strictly corrosion dependent, is about double that of other products with 5 mm wall thickness. In fact, admitting a minimum usable thickness of 2 mm, with a 8 mm wall thickness we would have 6 mm of metal which can be eaten away by corrosion, while with a 5 mm wall thickness we have only 3 mm available, the half of the first case. If the available wood has a high aggressive degree (i.e. usually wet wood) we recommend buying the boiler version with stainless steel chambers (5 mm).

STARTING UP

The fuel charging and starting up is performed in the same manner as an ordinary solid fuel boiler. The boiler is fired with the wood box door open and the drafting fan on, while the lower door is held closed. After about 10 minutes, when an ember layer is available, the wood box door must be closed: the vacuum produced by the drafting fan will make the reverse flame appear. The reverse flame combustion process is controlled by looking through the flame surveillance bull's eye

WOOD CHARGING

Under normal operating condition, if the boiler is correctly dimensioned for the heating system needs, the wood charging will be performed on an average basis of 2 - 3 times a day. During the low season it is necessary do not keep full the wood box when the boiler is off. In such conditions, in fact, the wood releases the humidity and causes a strong corrosive effect. It is recommended the use of an inertial storing tank (Puffer). See hydraulic schemes on our web site www.arcacaldaie.com

SECURITY FEATURES

The boiler is equipped with an emergency heat exchanger submerged in the boiler water which wastes the excess heat if the boiler temperature reaches 98/100 °C, using cold water from the waterworks. The thermal relief valve is delivered upon request.

STAINLESS STEEL VERSIONS

It 'well known that even the wood dried for 2 or 3 years contains a quantity of water that hovered around 15%. The water present in the wood can reduce the yield of the combustion and can constitute a source of high corrosive attack, in areas where the aquifer is sulfur or particularly rich of acidic substances, the trees through the roots drink this type of water and they will produce wood rich of water with high concentrations of sulfur, and various acids etc .. Such aggressiveness produces very corrosive attack, especially when the boiler is on stand-by mode and steam drying lapping walls of the fire chamber for long time. This happens in spring and autumn when there is not a storing tank or when we have hot sanitary water production during summer. The Arca proposal is decisive for any type of wood used: the combustion chamber in stainless steel AISI 304.

The use of these materials implies a specific welding technology of the product and Arca it is equipped by since years.

Visit our web-site www.arcacaldaie.com to deepen into the topic of corrosion phenomenon in the wood gasification boilers. The Arca proposal is decisive for any type of wood used: the combustion chamber in stainless steel AISI 304. The use of these materials implies a specific welding technology of the product and Arca it is equipped by since years.

INSULATION

The thermal insulation is obtained with a 80 mm thick fiberglass insulating mattress, in direct contact with the boiler body.

COMBUSTION AIR DISTRIBUTION BOX AND BURNER COMPLETELY REMOVABLE

TECHNOLOGY

This boiler was projected and realized as a modular product whose components can be replaced independently at any moment.

In this way, replacing the two doors, the drafting fan, the combustion air distribution box, the burner, its grates, the catalyst element is a breeze, even without asking for assistance. The burner components are made of high chrome content cast iron.

IMPORTANCE OF SMOKE TEMPERATURES CONTROL

Depending on the calorific value and umidity of the wood used, we could have many different smoke temperature for the same fan used.

In particular, using wood with limited powerheating value, such as the poplar, and maybe with highhumidity, we could have a fl ue gas temperature of 140 ° C,while using beech wood with low humidity we could have a fl ue gas temperature over 280 ° C.

1 TOO LOW TEMPERATURES

If the flue gas temperature is too low, for example,less than 140 ° C, we can expect condensation and tar in the heat exchanger with tank of unburnt residues. during time these could ignite and cause serious damage to the chimney and heated the environment.

2 TOO HIGH TEMPERATURES

If the fl ue gas temperature is too high, for example,over 200 ° C, you may registerr the following problems:

- a) drying of the bearing and consequent noise and wear of the fan motor / fume extractor
- b) reduction of the thermal effi ciency of the boiler and an excessive consumption of fuel.

To obviate these drawbacks, the new electronics check the flue gas temperature and change the rotation of the fan stabilizing the temperature inside the range set between 14 and 15 of the electronic card itself. The motor of the vacuum device is equipped with double winding and can therefore work at 2800 or at 2000 rev / min. The output given by the boiler may vary between 100% and 65% on average.

A reduction of the power below 65% may cause the problems listed in paragraph 1.

It has been adopted the motor with double winding since the solution of the modulating motor with Phase cutting causes unwished electromagnetic emissions and can cause the overheating of the engine and of its electronics.

IMPORTANCE AND PURPOSE OF THE MODULATION ON THE WATER TEMPERATURE

The electronics, beyond controlling the fumes, provides for the modulation of the motor even when the water temperature is close to the temperature required by the user.

The purpose of this modulation is to reduce switching on and off of the motor when the power required by the system is less than the maximum power supplied by the boiler.

LAMBDA PROBE

With PEL0100SL is possible have also the function of Oxygen level control in the fumes, by means of the LAMBDA probe and a special software implemented in the eletronic board.

BURNER FOR GRANULAR BIOMASS

It is possible burn any type of granular biomass (pellet, wood chips, corns, olive stones) with the reversed flame system with manual loading and manual ignition, using a special device to place inside the combustion chamber, also mixing the biomass with wood logs.

STORING TANK

We recommend using an external heat storing tank to store thermal energy during the low request periods which can be released in the high request periods; this permits obtaining a higher cyclic efficiency, minimizing the required firing cycles and the corrosion issues in the combustion chamber, which appear especially during the stand-by periods

THE MIXING VALVE

Wood has a higher humidity degree than other fuels. In order to limit condensation production a high working average combustion temperature is required.

To accomplish this, the temperature settings may vary only in the range 65 - 90 C.

We recommend installing a mixing valve to have a better control over the heating system water temperature.

We also recommend charging the boiler with a quantity of wood suitable to the real heating needs in order to avoid long stop periods with the wood box full of wet wood.

SA VERSION: AUXILIARY SANITARY EXCHANGER

The boiler ASPIRO, in its SA version, can produce hot water by means of a copper coil pipe heat exchanger of 22 mm diameter completely plunged in the boiler water.

This exchanger can be used to produce warm sanitary water istantaneously or can be used like a seconday heating circuit for closed vessel systems.

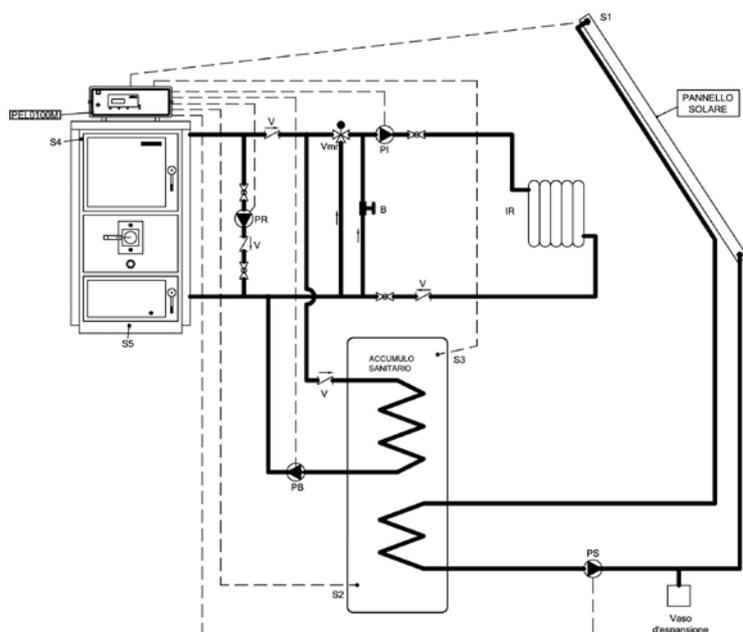


SPECIAL VERSIONS

A product that is available in more versions:

- Regovent Inox with stainless steel firebox
- Regovent INOX COMBI, with stainless steel firebox and a diesel oil/gas boiler placed on the wood boiler.
- Regovent Inox SA, the boiler with stainless steel firebox and an immersed exchanger for instantaneous sanitary function or a secondary heating circuit with closed vessel, keeping the boiler circuit with open vessel.

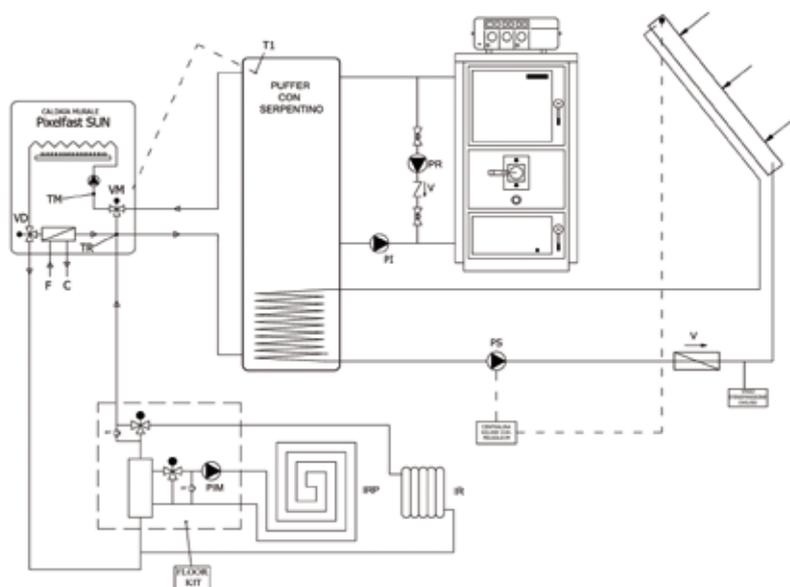
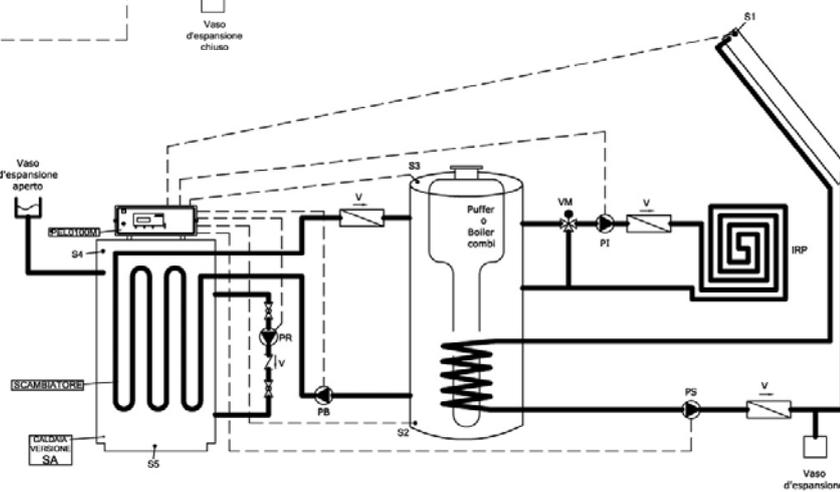
As an example, we provide hydraulic schemes more complex with the presence of the solar panel, wood or pellet boiler and possible floor heating system.



RECOMMENDED PLANT SCHEMES

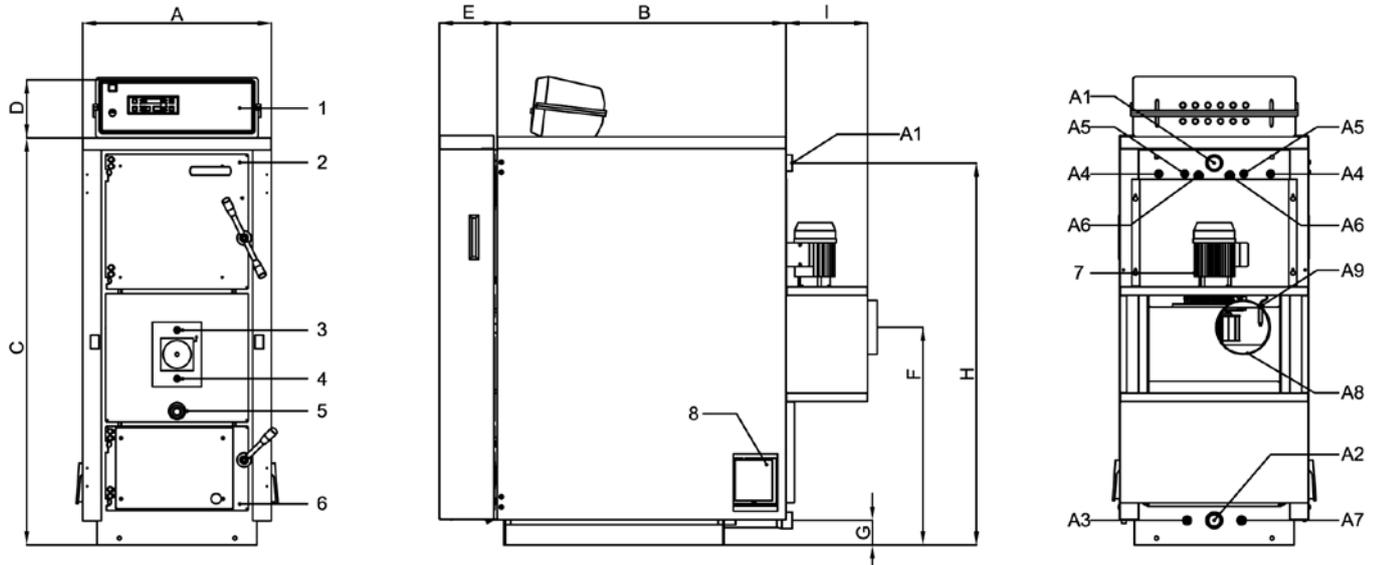
With solar energy for domestic use only with double coil boiler

With solar energy for heating integration (only recommended if there is an underfloor system) with Combi puffer tank.



Hydraulic diagrams for complex systems.

If there is a wall-mounted boiler and solar energy or biomass source, Arca has an innovative patented high efficiency system: the SUN system. For further details on the SUN diagram, please visit www.arccaldiaie.com



Key:

1. Electronic Panel
2. Upper door (wood collecting box)
3. Primary air stream adjustment
4. Secondary air stream adjustment
5. flame surveillance bull's eye
6. Lower door (combustion chamber)
7. two speeds motor
8. anti-deflagration door

- A1 heating system supply
- A2 heating system return boiler drain
- A4 sanitary exchanger connections (only SA version)

- A5 Safety exchanger connections
- A6 sockets connections
- A7 boiler sensor connections (S5)
- A8 Chimney connections
- A9 fumes sensor connections

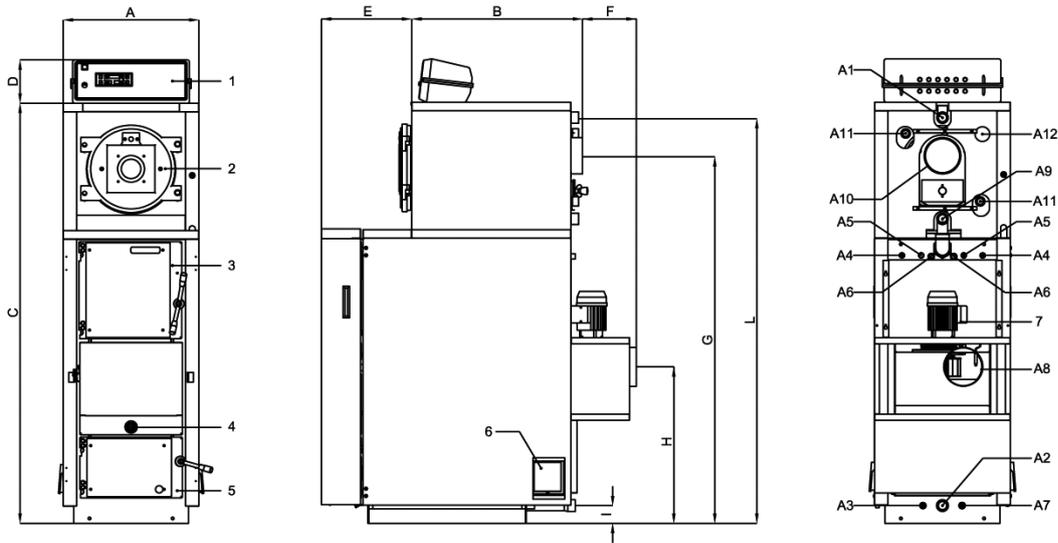
TECHNICAL CHARACTERISTICS

Model	Minumum working power	MAX working power	Rated power	Boiler weight	Boiler capacity	Insertion losses water side	Insertion losses smoke side	Maximum working power	Combustion chamber volume	Charging port dimensions	Maximum wood logs length
	kcal/h kW	kcal/h kW	kcal/h kW	kg	litri	mbar	mbar	bar	litri	mm	cm
RV 29 R/SA	14.000 16	26.000 30	29.500 34	380	95	10	0,03	4	95	290x330	53
RV 43 R/SA	23.000 27	35.000 41	43.000 50	470	115	8	0,04	4	135	340x430	53
RV 52 R/SA	28.000 33	42.000 49	52.000 60	555	135	10	0,06	4	185	340x430	68
RV 70 R/SA	38.000 44	59.000 69	70.000 81	685	170	10	0,06	4	230	340x520	74
RV 90 R/SA	52.000 60	72.000 84	90.000 105	920	215	10	0,06	4	320	340x520	105
RV 120 R/SA	70.000 81	98.000 114	120.000 140	990	240	10	0,05	4	320	340x520	105
RV 150 R/SA	88.000 102	122.000 142	150.000 174	1700	260	12	0,05	4	770	400x700	125

DIMENSIONS

CONNECTIONS

Model	A	B	C	D	E	F	G	H	I	A1-A2	A3	A4	A5	A6-A7	A8
	mm	mm	mm	mm	mm	mm	mm	mm	mm	ø	ø	ø	ø	ø	ø
RV 29 R/SA	550	850	1.200	190	160	650	80	1.130	250	1 1/4"	1/2"	1/2"	1/2"	1/2"	160
RV 43 R/SA	650	850	1.300	190	160	710	80	1.220	250	1 1/2"	1/2"	1/2"	1/2"	1/2"	160
RV 52 R/SA	650	1.030	1.300	190	160	710	80	1.220	250	1 1/2"	1/2"	1/2"	1/2"	1/2"	160
RV 70 R/SA	760	1.100	1.430	190	180	840	100	1.340	250	2"	3/4"	1/2"	3/4"	1/2"	200
RV 90 R/SA	760	1.370	1.430	190	180	840	100	1.340	250	2"	3/4"	1/2"	3/4"	1/2"	200
RV 120 R/SA	760	1.370	1.430	190	180	920	100		250	2"	3/4"		3/4"	1/2"	200
RV 150 R/SA	930	1.770	1.800	190	180	1.430	110		350	2"	1"		3/4"	1/2"	2x180



Key:

- | | | |
|------------------------------|---|---|
| 1 Electronic panel | A1 Heating system supply | A7 Boiler sensor connection (S5) |
| 2 oil/gas boiler door | A2 Heating system return | A8 Chimney connection for wood boiler |
| 3 upper door | A3 Boiler drain | A9 Heating system return boiler oil/gas |
| 4 bull's eye for flame check | A4 Sanitary water connections (only SA version) | A10 Chimney connection boiler oil/gas |
| 5 lower door | A5 safety exchanger connections | A11 Storage tank connection |
| 6 antideflagration door | A6 boiler sensors connections | A12 Boiler sensors connections (S4) |
| 7 2 speed fan | | |

FOCOLARE LEGNA

Model	Minimum working power	MAX working power	Rated power	Boiler weight	Boiler capacity	Insertion losses water side	Insertion losses smoke side	Maximum working power	Combustion chamber volume	Charging port dimensions	Maximum wood logs length
	kcal/h kW	kcal/h kW	kcal/h kW	kg	litri	mbar	mbar	bar	litri	mm	cm
RVD 29 R/SA	14.000 16	26.000 30	29.500 34	380	95	10	0,03	4	95	290x330	53
RVD 43 R/SA	23.000 27	35.000 41	43.000 50	470	115	8	0,04	4	135	340x430	53
RVD 52 R/SA	28.000 33	42.000 49	52.000 60	555	135	10	0,06	4	185	340x430	68

DIMENSIONS

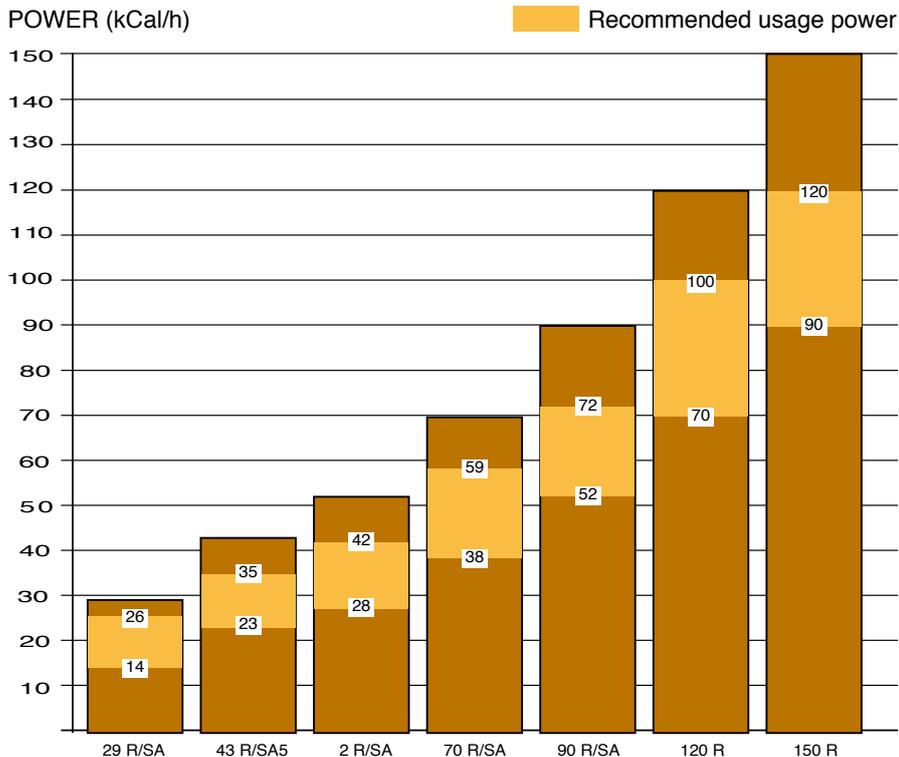
CONNECTIONS

Model	A	B	C	D	E	F	G	H	I	L	A1-A2 A9	A3	A4	A5	A6-A7	A8	A10	A11	A12
	mm	mm	mm	mm	mm	mm	mm	mm	mm	MM	ø	ø	ø	ø	ø	ø	ø	ø	ø
RV 29 R/SA	550	680	1.720	190	430	250	1.500	650	80	1.670	1/4"	1/2"	1/2"	1/2"	1/2"	180	150	1"	1/2"
RV 43 R/SA	650	680	1.870	190	430	250	1.660	710	80	1.810	1/2"	1/2"	1/2"	1/2"	1/2"	180	150	1"	1/2"
RV 52 R/SA	650	750	1.870	190	520	250	1.660	710	80	1.810	1/2"	1/2"	1/2"	1/2"	1/2"	180	150	1"	1/2"

DIESEL OIL / GAS FIREBOX

Model	Minimum/Max working power	Minimum/Max Rated power	Boiler weight	Boiler capacity	Insertion losses water side	Insertion losses smoke side	Maximum working power
	kcal/h kW	kcal/h kW	kg	litri	mbar	mbar	bar
RVD 29 R/SA	15.222 ÷ 20.468 17,7 ÷ 23,8	16.942 ÷ 22.962 19,7 ÷ 26,7	125	35	12	0,14	4
RVD 43 R/SA	21.672 ÷ 26.230 25,5 ÷ 30,6	24.252 ÷ 29.498 28,2 ÷ 34,3	135	45	15	0,10	4
RVD 52 R/SA	32.164 ÷ 37.754 37,4 ÷ 43,9	38.378 ÷ 42.742 42,3 ÷ 49,7	155	50	18	0,16	4

POWER CHART PER MODEL



MODEL CHOICE

Three different models of ASPIRO boiler are available. Each model is available in both versions SA (with hot water production heat exchanger) and R (without hot water exchanger, only heating).

For each type of boiler three different powers are given: the minimum power, the working power (which is achieved with standard wood with a thermal specific power of 3.500 kcal/Kg and 15% humidity content) and the maximum power, given for security devices dimensioning purposes only (relief valves, security waste pipe diameter, etc.).

Anyway, any choice must be approved by a qualified technician taking into account the average specific power and the humidity degree of the intended wood. For example, it should be noted that a poplar wood with a moisture content of 25% allows the generator to reach a power 50% lower than the maximum power indicated.

Visit the web site www.arcacaldaie.com to see how the thermal yield of the boiler can be different according to the types of wood that is burnt.

CHIMNEY CONNECTION

It's strongly recommend the use of a chimney complying the current regulations, and in particular to EN 1806. the chimney has to provide a resistance to a temperature up to 1000°C. You are responsible for damages caused by unuitable chimney. In sizing of the fl ue it is necessary to provide a vacuum of 3 mm to the base, for the good operation of the generator.

WARRANTY - 1st FREE IGNITION

The warranty is 3 years on the steel boiler body (10 years for INOX models), 2 years on electrical parts, 1 year on the refractory and materials of consumption. The warranty is subject to the proper execution of the first ignition by the authorized technical service ARCA and by sending the warranty card. The first ignition is free except the case mentioned in the general warranty conditions. Any future setting of the parameters has to be paid by customers. The warranty does not cover damages due to corrosion problems and galvanic currents. The warranty is void if the recirculation pump is not installed. Warranty is excluded for all corrosion, including combustion of materials not authorized by ARCA.

COMPLETE HEATING SYSTEMS - COMBINATIONS

If, on the same plant beyond the wood or pellet boiler is expected the installation of a wall hung gas boilers or a floor standing steel boiler or a solar panel or a floor heating system, using all ARCA products is ensured the dialogue and the compatibility among the single components. Visit our web site www.arcacaldaie.com to find out all the ARCA products range.

ARCA
caldaie

TECNOLOGIE PER L'AMBIENTE

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