



## Wood gasification boilers – Dokogen

with automatic ignition and controller ACD04



## DC18GD

Gasification boiler for wood.



**Rated power 19 kW**



**Boiler efficiency 90,3 %**



**Emission class nr. 5 (Ecodesign)**



**Log length 330 mm**

## DC25GD

Gasification boiler for wood.



**Rated power 25 kW**



**Boiler efficiency 92,5 %**



**Emission class nr. 5 (Ecodesign)**



**Log length 530 mm**

## DC30GD

Gasification boiler for wood.



**Rated power 30 kW**



**Boiler efficiency 91,3 %**



**Emission class nr. 5 (Ecodesign)**



**Log length 530 mm**

## Wood gasification boilers – Dokogen

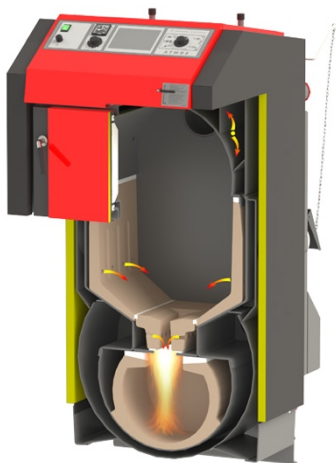
Modern Dokogen boilers are characterized by a unique combustion chamber, which is lined on both sides with ceramic fittings. These fittings are provided with openings in the lower part for the supply of highly preheated primary air, which ensures the gradual wood pre-drying and combustion. Between the upper combustion chamber and the lower combustion chamber, the boilers are equipped with a gasification nozzle with openings for the supply of preheated secondary air. Through this nozzle, the flames go into the lower combustion chamber with a spherical ceramic space, where all combustible substances are completely burned. The boilers are also equipped with a rear flue gas duct with a tube heat exchanger, ensuring the highest boiler efficiency, and an exhaust fan which function is to blow flue gases into the chimney. The ATMOS Dokogen boiler body is made as a weldment from high-quality steel sheets with a thickness of 3 to 8 mm.

Wood gasification (reverse combustion) with subsequent combustion of wood gas at temperature between 1000 and 1250 °C in a ceramic combustion chamber guarantees high-quality wood combustion with high efficiency and a minimum of harmful exhalations.

The air supply and combustion process controlled by the exhaust fan, together with simple or electronic controller according to the customer's needs, allow the boiler to heat up quickly and burn well from the ignition.

## Advantages of wood gasification boilers ATMOS

- Option to burn large pieces of wood
- Large space for wood - long burning time - up to 12 hours, depending on boiler type
- Tube heat exchanger
- High efficiency over 90 % - primary and secondary air is preheated to a high temperature
- Ceramic loading chamber - fuel pre-drying
- Ceramic combustion chamber
- Ecological burning - boiler class 5 - EN 303-5:2012, ECODESIGN 2015/1189
- Exhaust fan - dust-free ash removal, smokeless boiler room
- Cooling loop protecting against overheating - without risk of boiler damage
- Automatic shutdown of the boiler after the fuel burns out - flue gas thermostat
- Comfortable ash removing - large space for ash (when burning wood, clean it 1x / week)
- Small size and low weight
- Possibility of choosing a door R / L (right/left) for selected types
- High quality



DCxxGD



Combustion chamber with heat-resistant fitting – nozzle



Filling hole dimensions



View of bottom combustion chamber



Flame in the lower combustion chamber



Draught regulator FR 124, exhaust fan and



Tubesheets without air brakers

## Installation

ATMOS boilers must be connected via the **LADDOMAT 22** or thermoregulatory valve (three-way valve controlled with actuator) to achieve keeping the minimum temperature of water returning to boiler at 65 °C. We keep the outlet temperature of the boiler in the range of 80 – 90 °C and set the temperature of the water to the radiators or floor heating on the mixing three-way valve as needed (e.g. 30 – 80 °C).

The default configuration of all boilers includes a cooling circuit to prevent overheating. We recommend installing a boiler with accumulation tanks, which will reduce fuel consumption and increase heating comfort.

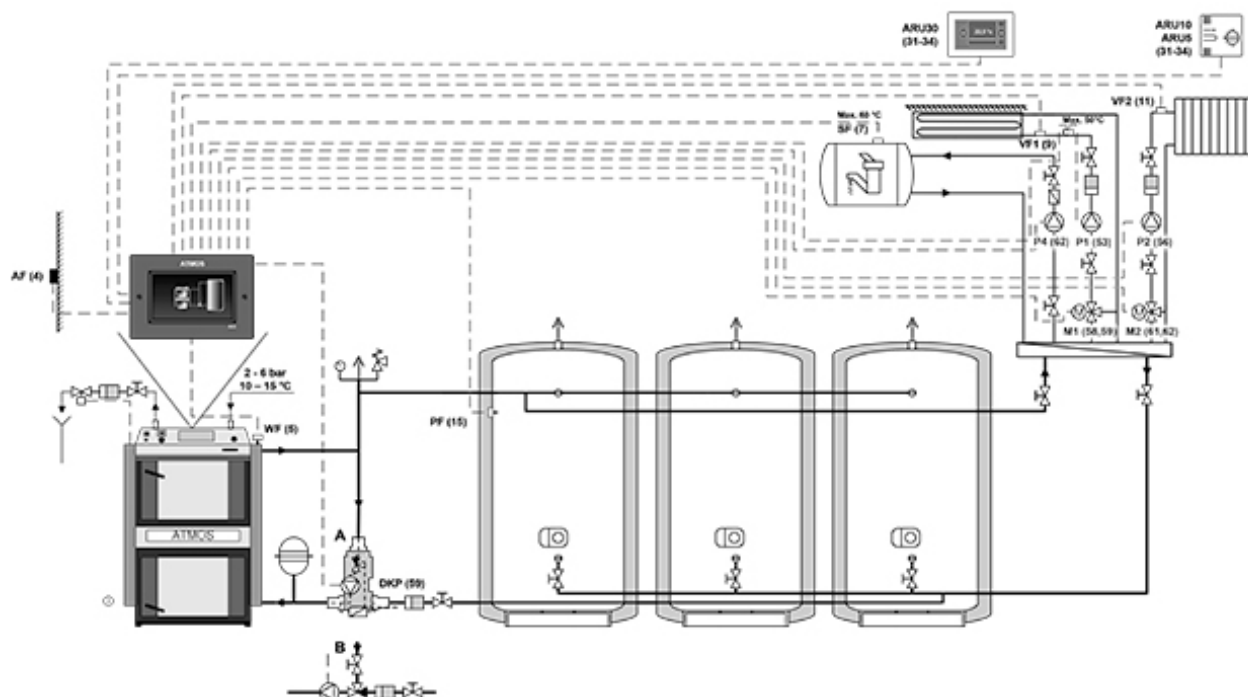
**MODELS DCxxGD BOILERS ARE ONLY INTENDED FOR CONNECTION WITH ACCUMULATION TANKS OF SUFFICIENT CAPACITY WITH A MINIMUM OF 55 LITRES PER 1 KW OF INSTALLED BOILER OUTPUT.**



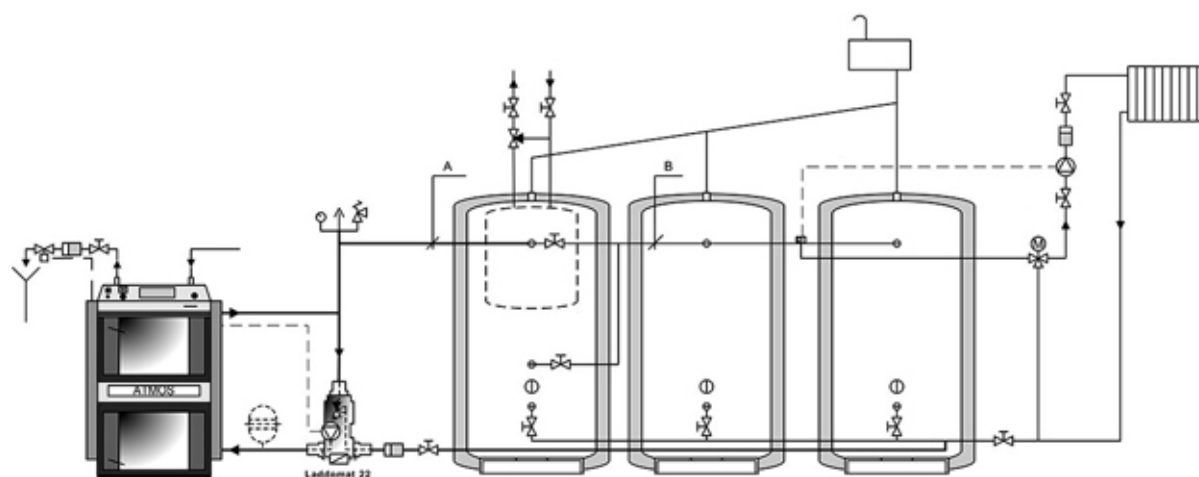
Laddomat 22



Draught regulator FR 124



Boiler wiring diagram with ACD 03 control and storage tanks



Boiler wiring diagram with Laddomat 22 and accumulation tanks

## Boilers regulation

Electromechanical regulation – boiler performance is regulated by an air regulating valve controlled by a draft regulator, FR 124 type, which automatically opens or closes the air valve according to the set water outlet temperature (80 – 90 °C). In addition to performance regulation, the draft regulator helps protect the boiler against overheating. Its advantage is a quick ignition and firing up to the required output when the air valve is fully open. The boilers are equipped with a control thermostat on the instrument panel, which controls the exhaust fan according to the set water outlet temperature (80 – 85°C) and a flue gas thermostat, which is used to shut down the boiler and turn off the exhaust fan after the fuel has burned out. In the case of connecting a boiler with accumulation tanks, the flue gas thermostat also controls the operation of the pump in the boiler circuit.

The advantage of regulation and design of ATMOS boilers is that the boilers work with a good chimney draft up to 70 % of the nominal power even without a fan.

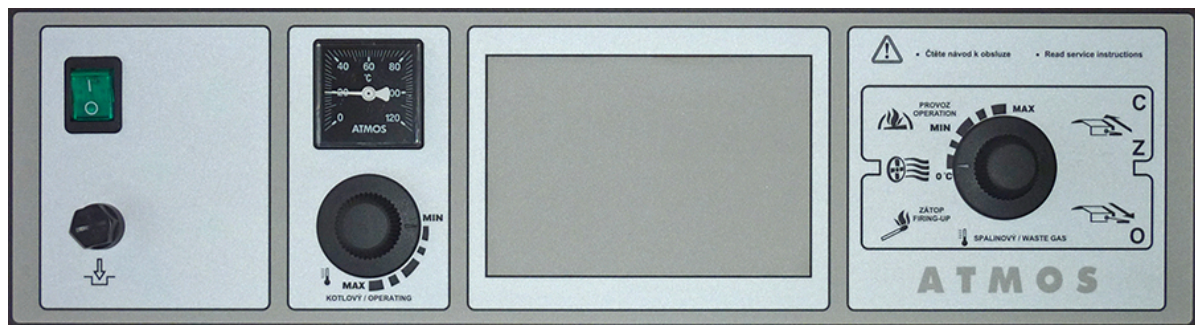




Regulating air flap



Draught regulator FR 124



Boiler control panel with standard regulation

### Panel composition:

Main off switch, safety thermostat, thermometer, regulator thermostat and combustion thermostat

Electromechanical control is the optimal solution for controlling the operation of the boiler (fan) in a simple way. The design of the panel with standard regulation is the basic design for all manufactured boilers.

### Regulace ACD 03

Each boiler can be equipped with a modern touch electronic control **ATMOS ACD 03** for controlling the entire heating system depending on the outdoor temperature, room temperature and time. This regulation is able to control the boiler itself with a fan with many other functions.

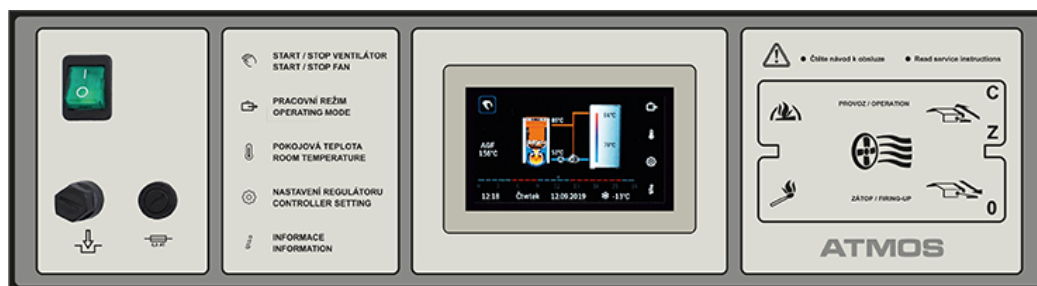


Boiler control panel with equithermal regulation ATMOS ACD 03

### Equithermal regulation ACD 04

The boilers **DC18GD**, **DC25GD** and **DC30GD** can be ordered from the factory with built-in **ATMOS ACD 04** touch screen control only with combination with **Automatic wood ignition (AIW)**. The boilers are factory-equipped with all the necessary sensors for connecting the boiler and the heating system, including the flue gas temperature sensor (AGF). This unit is designed for comfortable control of the hot water system of the heated building. The controller contains

functions for direct control of the boiler, boiler circuit, three heating circuits, domestic hot water, solar, etc.



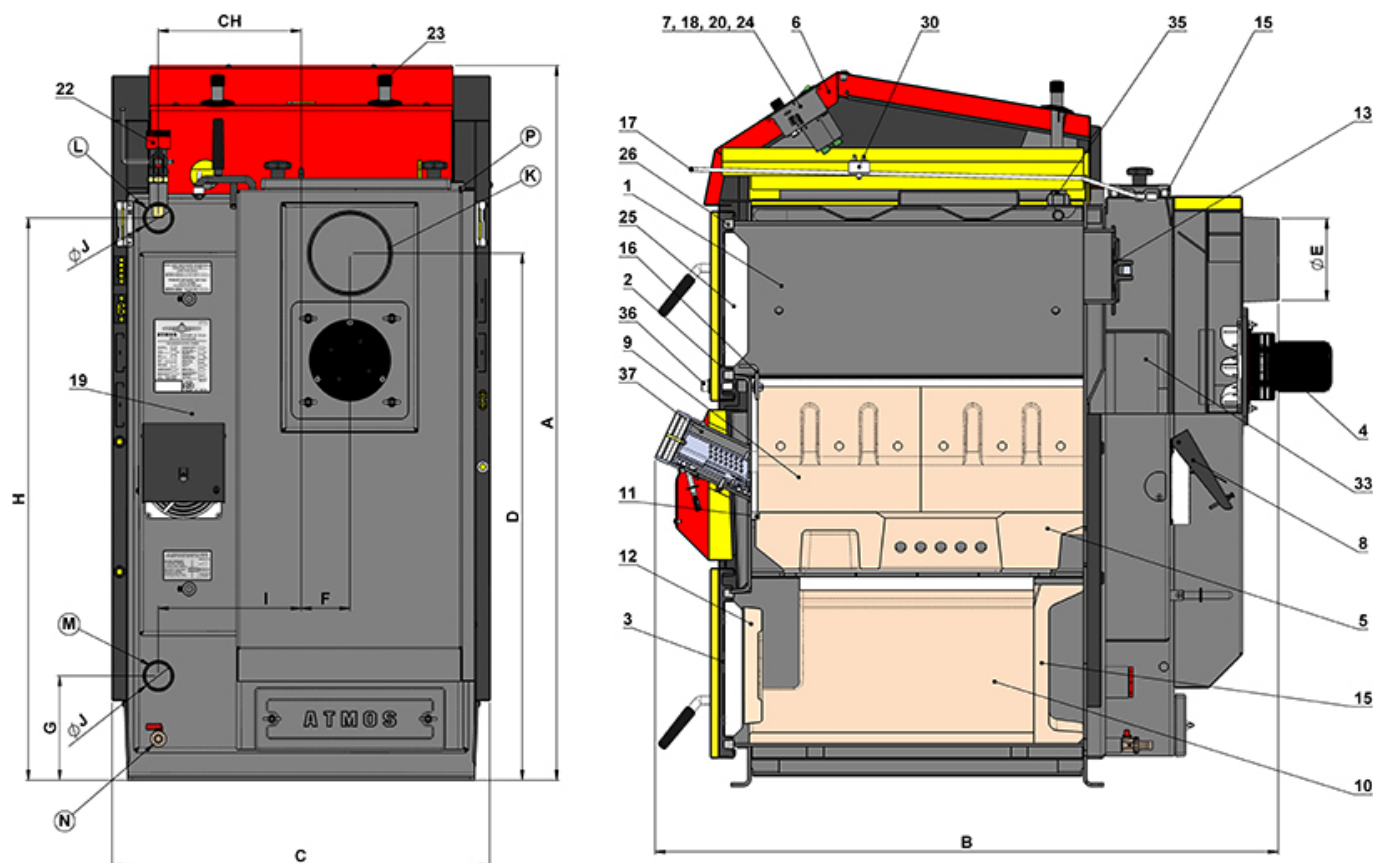
Boiler control panel with equithermal regulation ATMOS ACD 04

## Automatic wood ignition

Automatic wood ignition is used for the planned ignition of the boiler, eg before the arrival home in the afternoon or before arrival at the cottage. Ignition of the fuel is very fast (approx. 5 minutes) and allows the boiler operator to arrive “into the heat”. Fuel ignition can be set and scheduled to control **ATMOS ACD 04** according to time (weekly program), according to the requirements of the heating system or according to the temperature in the **Accumulation tank**.

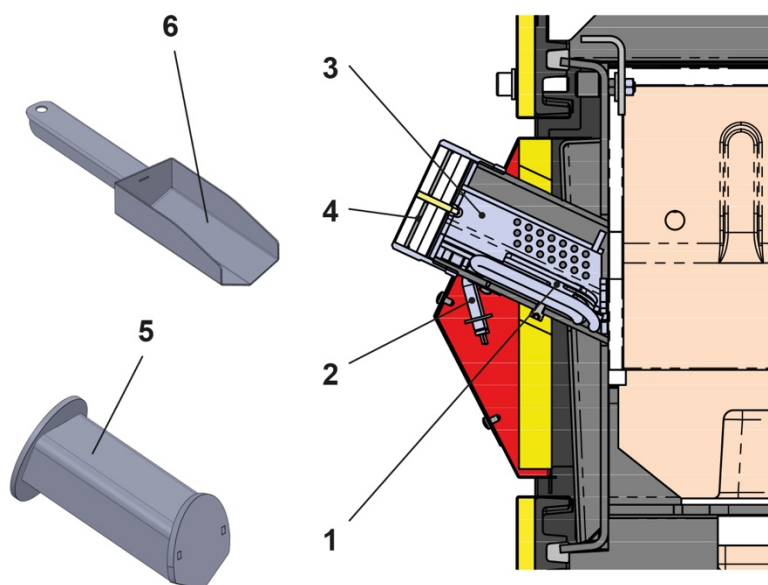
A device for automatic wood ignition is built in between the upper and lower doors (a chamber with a heating spiral). High-quality wood pellets are used for ignition, which are used to fill the ignition chamber. The amount of pellets corresponds to the size of the shovel that is included in the delivery of the boiler.

The pellets are ignited at the set moment using an electric heating spiral (500 W).



## Drawings of boilers with automatic wood ignition

1. Boiler body	19. Intake duct – air duct
2. Stocking door (upper)	20. Main switch
3. Ash-pan door (lower)	22. Draught regulator – Honeywell FR 124
4. Exhaust fan	23. Cooling loop protecting against overheating
5. Heatproof shaped piece – nozzle	24. ATMOS ACD 04 controller
6. Control panel	25. Door filling – Sibrall small – thick for upper door small – thin for lower door
7. Safety thermostat	26. Door sealing – cord 18 x 18
8. Regulating flap	30. Capacitor for exhaust fan – 1µF
9. Heat proof shaped piece – for type GD – combustion area side)	33. Tube heat exchanger (tubular)
10. Heat proof shaped piece – for type GD – spherical space	35. Pocket for thermostats (sensors)
11. Sealing – nozzle – 12 x 12 (14 x 14)	36. Locking screw
12. Heatproof shaped piece – half moon	37. Ignition device
13. Ignition valve	
14. Heat proof shaped piece – for type GD – rear face of spherical space	K flue gas duct neck
15. Cleaning lid	L water outlet from
16. Frame shield	M boiler – water inlet to
17. Ignition valve pulling rod	N boiler – filling valve
18. Fuse T6,3A/1500 – type H	P pipe sleeve – sleeve for cooling loop control valve sensor (TS 131, STS 20)



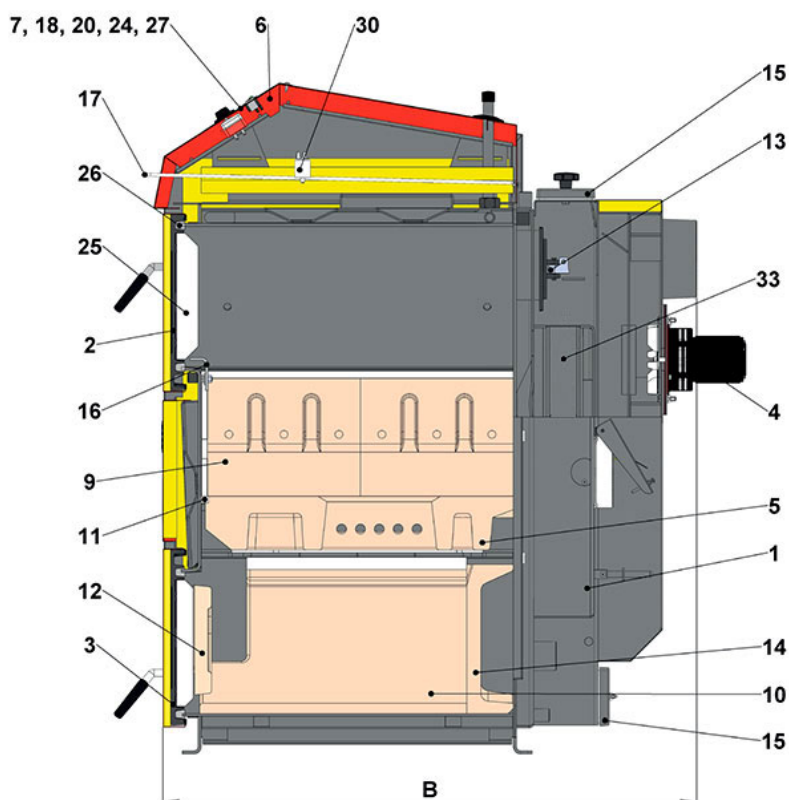
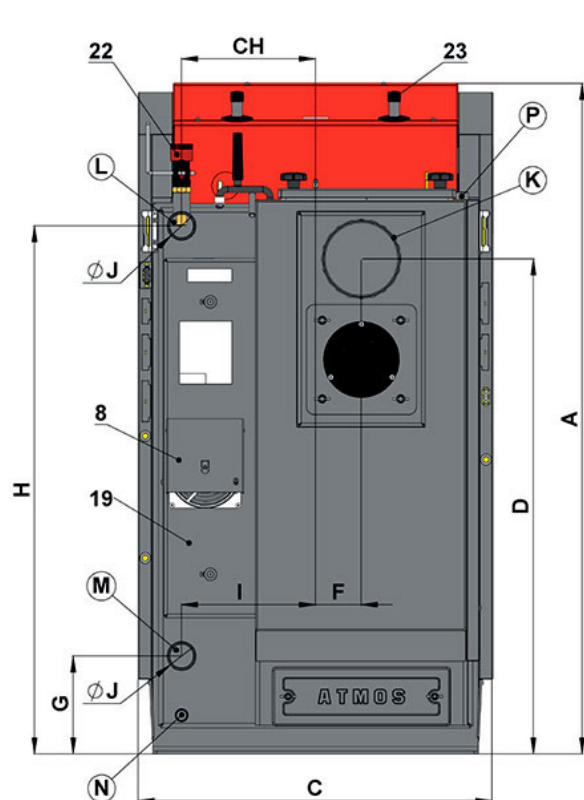
## Drawing of the ignition device

1. Ignition spiral plate
2. Ignition spiral
3. Removable ignition chamber
4. Screw lid (always tightened during operation)
5. Removable blanking chamber
6. Pellet filling scoop





## Technical information



## Description of the boiler drawing

- |                                    |   |
|------------------------------------|---|
| 1. Boiler body                     | 18. Thermometer                                 |
| 2. Filling door – upper            | 19. Supply air duct                             |
| 3. Ashtray door – lower            | 20. Switch with an indicator light              |
| 4. Exhaust fan (S)                 | 22. Draught regulator – HONEYWELL FR124         |
| 5. Heat-resistant fitting – nozzle | 23. Cooling loop protecting against overheating |
| 6. Control panel                   | 24. Fan control thermostat (boiler)             |
| 7. Safety thermostat               | 25. Door panel – Sibrál                         |
| 8. Control flap                    | 26. Door seal – cord 18 x 18                    |

9. Heat-resistant fitting – side part	27. Waste gas thermostat
10. Heat-resistant fitting – spherical space L + R	30. Capacitor for exhaust fan
11. Nozzle seal – 12 x 12 (14 x 14)	33. Tube heat exchanger – tube sheet
12. Heat-resistant fitting – half-moon	
13. Firing up valve	<b>K</b> – the flue-gas duct neck
14. Heat-resistant fitting – rear part of spherical space	<b>L</b> – the boiler water outlet
15. Cleaning lid	<b>M</b> – the boiler water inlet
16. Frame screen	<b>N</b> – filling valve pipe sleeve
17. Fire valve stem	<b>P</b> – sleeve for a sensor of the valve which regulates the cooling loop

Boiler dimensions (mm)	Boiler type				
	DC18GD	DC25GD	DC30GD	DC40GD	DC50GD
<b>A</b>	1281	1281	1281	1435	1435
<b>B</b>	820	1020	1020	1120	1120
<b>C</b>	680	680	680	680	680
<b>D</b>	945	945	945	1095	1095
<b>E</b>	150/152	150/152	150/152	150/152	150/152
<b>F</b>	87	87	87	82	78
<b>G</b>	185	185	185	185	185
<b>H</b>	1008	1008	1008	1152	1152
<b>CH</b>	256	256	256	256	256
<b>I</b>	256	256	256	256	256
<b>J</b>	6/4"	6/4"	6/4"	2"	2"

Specifications		Boiler type				
		DC18GD	DC25GD	DC30GD	DC40GD	DC50GD
Boiler heat output	kW	19	25	29,8	40	49
<b>Boiler thermal input</b>	kW	20,8	27	32,6	44	53,3
Heating surface	m <sup>2</sup>	2,5	3,1	3,1	3,8	4,1
<b>Fuel shaft volume</b>	dm <sup>3</sup> (l)	80	120	125	160	160
Filling hole dimensions	mm	450 x 260	450 x 260	450 x 260	450 x 260	450 x 260
<b>Prescripted chimney draft</b>	Pa/mbar	16/0,16	18/0,18	20/0,20	22/0,22	24/0,24
Max. working water overpressure	kPa/bar	250/2,5	250/2,5	250/2,5	250/2,5	250/2,5
<b>Boiler weight</b>	kg	376	469	466	548	565
Gas-outlet pipe diameter	mm	150/152	150/152	150/152	150/152	150/152
<b>Ingress protection of electric parts</b>	IP	20	20	20	20	20

Electrical power input (auxiliary)	W	50	50	50	50	50
<b>Electrical input in standby mode</b>	W	0	0	0	0	0
Ignition mode	manual / automatic			manual		
<b>Efficiency over the entire performance range</b>	%	91,5	92,5	91,3	90,6	92,0
Boiler class		5	5	5	5	5
<b>Boiler category</b>		1				
Operating mode	non-condensing					
<b>Energy efficiency class</b>		A+	A+	A+	A+	A+
Waste gas temperature at nominal output	°C	145	127	148	175	183
<b>Waste gas combustion products flow weight at nominal output</b>	kg/s	0,014	0,017	0,017	0,021	0,025
Specified fuel (preffered)	Dry wood with a calorific value of 15 – 17 MJ/kg <sup>-1</sup> , water content 12 – 20 %, diameter 80 – 120 mm					
<b>Average fuel consumption for the heating season</b>	kg.h <sup>-1</sup>	5,1	6,1	7,7	10	13
Prescribed wood length	mm	330	530	530	530	530
<b>Combustion time at nominal output</b>	Hours	2	2	2	2	2
The volume of water in the boiler	l	73	105	105	112	128
<b>Boiler hydraulic loss</b>	mbar	0,22	0,22	0,22	0,23	0,24
Minimum volume of accumulation tank	l	1045	1375	1639	2200	2695
<b>Regulation temperature settings</b>	°C	from 75 to 95				
Connecting voltage	V/Hz	230/50				
<b>Minimum return water temperature during operation</b>	°C	65				

#### EKODESIGN

All boilers in **DOKOGEN** line are only intendet for connection with an **ACCUMULATION TANKS** of sufficient capacity with a minimum of **55 litres per 1 kW** of instaled boiler output.