



HDG FK Hybrid with HDG Control

Price catalogue

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Log wood/pellet combination for log wood (500 mm) pressed wood briquettes and pellets



The HDG log wood/pellet combination consists of the HDG F Hybrid gasifying wood boiler and the HDG K Hybrid pellet unit. This combines the advantages of a modern log wood boiler with the convenience of an automatic pellet boiler. The pellets are fed in either manually or with a automatic pellet suction system. The pellet system can be retrofitted at any time.

HDG F Hybrid

- Folded fuel chamber inner cladding
- Flue gas extractor in the fuel chamber
- Large fuel chamber door/low filling edge
- Nozzle brick made from fire-resistant concrete, burner nozzle made from solid cast stainless steel
- Actuators for primary and secondary air
- High-temperature combustion chamber for low-emission recombustion
- Convenient removal of the ash at the front in the ash pan
- Cleaning turbulators in the upright heat exchanger pipes
- Intuitive-to-operate heating and system controller with user-friendly 7" touch-screen display. Combustion and output control with lambda sensor and flue gas temperature sensor. Outside temperature sensor included
- Hydraulic connection set for combination

HDG K Hybrid

- Split model – simple installation of the components
- Exact fuel dosage
- Stainless steel combustion tray with automatic ash removal and integrated primary/secondary air supply
- Automatic ignition
- Speed-controlled flue gas fan
- Automatic heating area cleaning and ash removal into the ash container
- Burn-back prevention by extinguishing water tank and chute in combustion chamber
- Internal pipe set for combination

Type-tested in accordance with DIN EN 303-5, certified to EU Pressure Equipment Directive 97/23/EC (HDG F).

HDG FK Hybrid boiler type	Item no.	EURO	PG
HDG FK Hybrid 20/15 log wood/pellet combination for filling with pellets manually	15220100S		1
HDG FK Hybrid 30/15 log wood/pellet combination for filling with pellets manually	15220101S		1
HDG FK Hybrid 30/26 log wood/pellet combination for filling with pellets manually	15220102S		1
HDG FK Hybrid 40/26 log wood/pellet combination for filling with pellets manually	15220104S		1
HDG FK Hybrid 50/33 log wood/pellet combination for filling with pellets manually	15220106S		1
HDG FK Hybrid 20/15 log wood/pellet combination with pellet suction system	15220110S		1
HDG FK Hybrid 30/15 log wood/pellet combination with pellet suction system	15220111S		1
HDG FK Hybrid 30/26 log wood/pellet combination with pellet suction system	15220112S		1
HDG FK Hybrid 40/26 log wood/pellet combination with pellet suction system	15220114S		1
HDG FK Hybrid 50/33 log wood/pellet combination with pellet suction system	15220116S		1
HDG K15 Hybrid pellet unit for manual filling with pellets (for later retrofitting)	15220010S		1
HDG K26 Hybrid pellet unit for manual filling with pellets (for later retrofitting)	15220011S		1
HDG K33 Hybrid pellet unit for manual filling with pellets (for later retrofitting)	15220015S		1
HDG K15 Hybrid pellet unit with pellet suction system (for later retrofitting)	15220012S		1
HDG K26 Hybrid pellet unit with pellet suction system (for later retrofitting)	15220013S		1
HDG K33 Hybrid pellet unit with pellet suction system (for later retrofitting)	15220016S		1
HDG automatic ignition system for HDG FK Hybrid	16001009		7
HDG automatic cleaning system for HDG FK Hybrid	16001035		7
HDG convenience package for HDG FK Hybrid, consisting of: Automatic ignition system and automatic cleaning system	16001036		7
HDG HDG FK Hybrid (20/15, 30/15, 30/26) flue pipe connection set for common flue pipe connection	15220055		7
HDG HDG FK Hybrid (40/26, 50/33) flue pipe connection set for common flue pipe connection	15220056		7



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Regulation and control technology

	Item no.	EURO	PG
 HDG Control XL 7" touch-screen display for HDG FK Hybrid with integrated web visualisation Extra charge		Inc.	

The HDG Control can also control various plumbing system functions as well as the boiler. If the maximum number of the particular functions is exceeded, additional HDG Control touch-screen displays can be integrated in the system.

Control of the various plumbing system functions requires the appropriate inputs and outputs, e.g. for sensors, pumps and mixer valves. The requirements must be compared with the available inputs and outputs and expansion modules added if necessary. Expansion modules with displays are listed in Section E.

HDG Control sensor packages for controlling the following plumbing system functions (s. Section E for more details)	Inputs and outputs required			Max. per display	Item no.	EURO	PG
	Sensor	Pump	Mixing v.				
Accumulator management (1 accumulator)¹ incl. recharging management 3 immersion sensors for top, middle and bottom of accumulator 1	3			1	16005050		7
Accumulator management (2 accumulators) 3 immersion sensors for top, middle and bottom of accumulator	3			1	16005052		7
Accumulator management (2 accumulators) with charge transfer system 3 immersion sensors for top, middle and bottom of accumulator	3	1	1		16005053		7
External heat source (e.g. oil/gas boiler) 1 immersion sensor	1 ²	1 ²	1 ²	1	16005055		7
Weather-compensated heating circuit , 1 heating circuit contact sensor 2	2 ³	1	1	6	16005005		7
Grid pump (for district heating grids) 1 contact sensor	1 ²	1	1 ²	2	16005056		7
Domestic water management , 1 immersion sensor 3	1	1		2	16005006		7
Solar charge on buffer tank , 1 collector sensor	1 ²	1	0-2 ²	1	16005008		7
Solar charge on water and possibly buffer , 1 collector sensor, 1 immersion sensor	2 ²	1	0-2 ²		16005015		7
Control hardware expansion: control of the packages requires the appropriate control hardware. The hardware can be selectively expanded	Available inputs and outputs			Max. per display	Item no.	EURO	PG
	Sensor	Pump	Mixing v.				
Central module for HDG FK Hybrid (installed in the boiler) 4	12	3	2 ⁵			Inc.	
EM4, extension module for installation in boiler	4	2	1	1 ²	16005021		7
EM8, external extension module in wall unit	8	3	2	3 ²	16005023		7
EM8+4, external extension module in wall unit	12	5	3		16005025		7

¹ The HDG Control accumulator management supplementary package is required for operation of the HDG FK Hybrid.

² Depending on plumbing configuration.



³ Sensor input is reserved for room control unit light/room control sensor.

⁴ For speed control of solar operation using a PWM signal, an EM4, EM8 or EM8+4 is required in the system network.

⁵ Third mixer connection is reserved for switch valve.

Function guaranteed only if installed according to HDG plumbing configuration diagrams and using HDG system components and correctly installed and commissioned by HDG-trained staff.

System and hydraulic components

	Item no.	EURO	PG
 HDG return temperature control A DN 32 for HDG FK Hybrid 5 Return temperature control set DN 32 with insulation, Wilo 30/1-7.5 energy-efficient circulation pump w/o display, 180 mm, DN 50 ext. thread, incl. insulation, three-way mixer valve DN 32, actuator SM 4.6, running time 150 seconds, 230 V, 2 ball valves DN 32 int. thread, side DN 25 connection for boiler safety set, angle piece, screw connection/seal	16002081		7
 HDG return temperature control A for HDG FK Hybrid with energy-efficient circulation pump Wilo 30/1-7.5 w/o display, 180 mm, DN 50 ext. thread, incl. insulation, three-way mixer valve DN 40, int. thread DN 40, actuator SM 4.10, running time 150 seconds, 230 V, screw connection/seal	16002080		7
Boiler safety set DN 25 , up to 50 kW, safety valve 3 bar DN 15, pressure gauge, automatic vent valve, insulation 6	15110030		7
Thermal safety device , DN 20 int. thread, immersion sleeve, 142 mm with DN 15 ext. thread 7	15110009		7

HDG system accumulators and accessories can be found in Section F

Accumulator dimensioning for HDG FK Hybrid

The accumulator size must be matched to the boiler model, the type of wood and the heat requirement of the building. According to the environmental pollution legislation applicable in Germany, accumulators used with log wood boilers should have a volume of at least 12 l per litre of boiler fuel chamber capacity and/or a ratio of 55 l per kW of boiler output must be strictly adhered to. HDG recommends at least 2000 l for the HDG F20/30 Hybrid, 2500 l for the HDG F40 Hybrid, and 3000 l for the HDG F50 Hybrid. Please also take note of DIN EN 303-5, VDI 2035 and the information on the boiler and accumulator dimensioning. Function guaranteed only if installed according to HDG plumbing configuration diagrams and using HDG system components and correctly commissioned by HDG-trained staff.

HDG starter packages for HDG FK Hybrid for standard hydraulic systems	Consisting of:	Suitable for boiler type:	Item no.	EURO	PG
Accumulator charging only	1 4 5 6 7	HDG FK Hybrid	16095114		99
Accumulator charging, 1 heating circuit, domestic hot water	1 2 3 4 5 6 7	HDG FK Hybrid	16095117		99
Accumulator charging, 2 heating circuits, domestic hot water	1 2 2 3 4 5 6 7	HDG FK Hybrid	16095120		99



HDG FK Hybrid functional principle log wood/pellet combination

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The HDG log wood/pellet combination has a shared **hydraulic connection** for supply/return (included in scope of delivery). This means that a shared return temperature control is sufficient for both combustion units.

The **HDG Control** forms the core of combustion control for the HDG FK Hybrid. It controls all electronic processes required for heat generation and optimum combustion. In addition, the HDG Control features an integrated heating and system controller with connection options for accumulator management and system-dependent heating circuit controllers. Switching between log wood and pellet operation takes place automatically.



Due to the extremely generously dimensioned fuel chamber door (47 cm x 42 cm on HDG F20/30 Hybrid and 52 cm x 54 cm on HDG F40/50 Hybrid) with additional inner lining and low filling edge (approx. 86 cm), the boiler is especially ergonomic and easy to fill. The door hinge of the fuel chamber door is on the right as standard but can be refitted on the left at any time on site.

The integrated, standard **cleaning turbulators** can be operated conveniently from the front. The turbulators are used for cleaning the upright heat exchanger. They also contribute to maintaining the boiler output to an optimum level. The optional **HDG automatic cleaning function** automatically operates the cleaning turbulators at the press of a button. Opening the integrated **flue gas flap** allows the boiler to be safely and conveniently cleaned and also reheated if necessary.



Flue gas flap closed



Flue gas flap open

The modularly structured hot combustion chamber is located directly under the fuel chamber according to the functional principle of downward combustion technology. The fuel gases produced are burned out here by addition of secondary air. The combustion chamber, which was specially developed for the HDG F Hybrid, essentially consists of individual refractory concrete firebricks which sit on an additional water chamber. This protects the combustion chamber from overheating. This works to actively prevent early wearing.

The fuel chamber capacity of the HDG F20/30 Hybrid is 155 l, and of the HDG F40/50 Hybrid is 205 l. The fuel chamber casing consists of high-quality 6 mm steel sheet and is fully lined with high-quality flanged panel sections. The special construction of the side panels ensures the wood slips down and protects the panels against warpage. The fuel chamber capacity is an important reference point for the design of the required accumulator capacity.

The wood goes through four different temperature zones in the fuel chamber. In the upper section, the firewood is "preheated". The water bound in the firewood is evaporated at temperatures around 100°C. For non-polluting combustion, the firewood must be sufficiently split and contain less than 20% water content (25% wood moisture). Wood is composed of approximately 85 percent volatile components by weight, which account for about 70% of the heating energy. At temperatures up to approx. 600°C, the firewood is degassed with the addition of primary air. The added primary air also cools the lower parts of the side panels. The primary air is conducted through the side primary air opening into the lower fuel chamber area. The gases released in the first step are ultimately burned out with the addition of secondary air in the underlying hot combustion chamber (downward combustion technology).

The high-temperature resistant, cast stainless steel **burner nozzle** is a floating fit in the split burner nozzle brick. The burner nozzle is a 2-piece design and extremely durable. Its special design allows the burner nozzle to expand evenly. The special design of the burner nozzle prevents the logs having an adverse effect on combustion gas extraction – which guarantees long life expectancy and optimum operational safety and reliability. The split nozzle brick encloses the secondary air duct in which the secondary air is pre-heated. In return, the nozzle brick is protected from overheating.





HDG FK Hybrid functional principle log wood/pellet combination



The pellets are fed into the combustion tray via a timer-controlled **fuel metering auger** and subsequent sloping fuel chute. The attached temperature monitor with integrated water reservoir provides for maximum operational safety and reliability.

The interchanging operation with either log wood or pellets means that the two **flue pipe connections** can be combined in one flue.

The **pellet container** is used as an interim storage area for the pellets before they reach the actual boiler. The container has a capacity of approx. 107 kg and can be filled manually, for example with bagged goods. As an alternative, filling can be performed automatically. In this case, the pellets are suctioned up as required by a vacuum fan from the pellet storage room into the container.

The **pellet unit** is always on the right hand side of the log wood boiler. This means that the pellet container is located at the front of the log wood/pellet combination and is thus easily accessible for the operator.

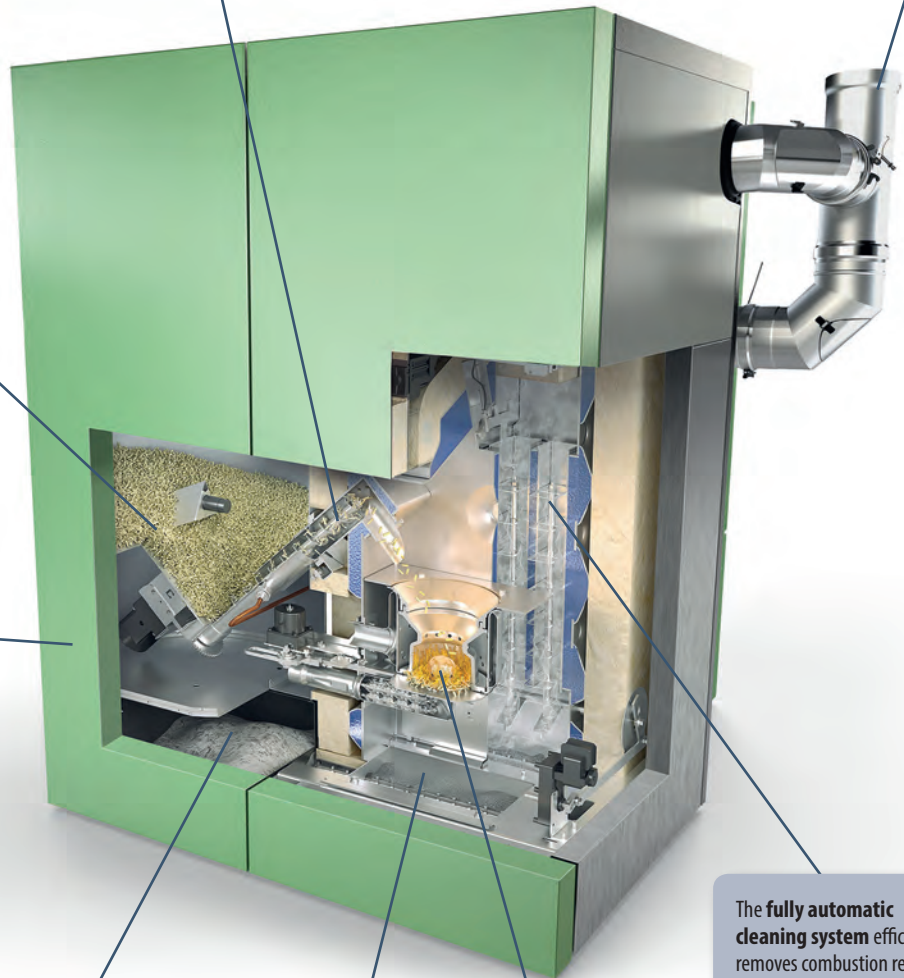
The **HDG automatic ignition system** is optionally available for the HDG F Hybrid. This makes wood heating more convenient, because the fuel chamber contents are ignited as required and automatically.

The external **ash container** can take the combustion and flue ash from up to 4 t of pellets. The ash container hooks onto the boiler and can be sealed with a cover for transportation.

The **fully automatic ash removal system** for the combustion and flue ash ensures long service intervals. Control of the de-ashing system is linked to the cleaning of the upright heat exchanger surfaces.

The **stainless steel burner bowl** with fully automatic de-ashing function ensures a high level of operational safety and reliability combined with economical pellet consumption. Automatic ignition by means of ceramic heating elements enables fast and efficient boiler start-up. The integrated secondary air ducting with optimum air preheating ensures the lowest possible emission values.

The **fully automatic cleaning system** efficiently removes combustion residues from the upright rectangular heat exchanger surfaces. The falling ash is carried away to the external ash container by the fully automatic ash extraction system.





HDG FK Hybrid Technical Data

Boiler type	Unit	HDG FK 20/15	HDG FK 30/15	HDG FK 30/26	HDG FK 40/26	HDG FK 50/33
Performance data (measured according to DIN EN 303-5)						
Nominal thermal power	kW	20 / 15	30 / 15	30 / 25,9	40 / 25,9	50 / 32,5
Minimum thermal power	kW	15 / 4,3	15 / 4,3	15 / 7,6	25 / 7,6	25 / 9,8
Boiler efficiency at nominal thermal power ¹⁾	%	93,8 / 93,8	93,0 / 93,8	93,0 / 93,9	93,9 / 93,9	94,3 / 94,8
Required auxiliary energy at nominal thermal power ¹⁾	W	78 / 33	85 / 33	85 / 48	74 / 48	63 / 77
Electrical power supply: Voltage/frequency	V/Hz	230 / 50	230 / 50	230 / 50	230 / 50	230 / 50
Electrical power supply: Back-up fuse	A	10 / 13	10 / 13	10 / 13	10 / 13	10 / 13
General boiler data						
Boiler class		5	5	5	5	5
Maximum permissible operating pressure	bar	3	3	3	3	3
Maximum supply temperature ²⁾	°C	95 / 85	95 / 85	95 / 85	95 / 85	95 / 85
Minimum return temperature	°C	60	60	60	60	60
Water capacity	l	125 / 39	125 / 39	125 / 47	180 / 47	180 / 47
Fuel chamber capacity	l	155	155	155	205	205
Fuel chamber depth	mm	570	570	570	570	570
Total weight	kg	830	830	850	1100	1100
Dimensioning data for flue calculation (DIN EN 13384-1)						
Flue gas temperature (Tw) at nominal thermal power	°C	155 / 119	165 / 119	165 / 134	155 / 134	165 / 138
Flue gas temperature (Tw) at lowest thermal power	°C	155 / 82	155 / 82	155 / 90	155 / 90	155 / 92
Flue gas mass flow at nominal load ¹⁾	kg/s	0,0130 / 0,0085	0,0130 / 0,0085	0,0130 / 0,0146	0,0220 / 0,0049	0,0310 / 0,0180
Flue gas mass flow at lowest thermal power ¹⁾	kg/s	0,0100 / 0,0034	0,0100 / 0,0034	0,0100 / 0,0049	0,0140 / 0,0049	0,0140 / 0,0060
CO ₂ content at nominal thermal power ¹⁾	%	14,2 / 14,2	14,2 / 14,2	14,2 / 14,2	14,4 / 14,2	14,6 / 14,6
CO ₂ content at lowest thermal power ¹⁾	%	13,3 / 10,1	13,3 / 10,1	13,3 / 12,1	14,5 / 12,1	14,5 / 12,3
Required flue draught (Pw)	Pa	10 / 5	10 / 5	10 / 5	10 / 5	10 / 5
Diameter of flue pipe connection	mm	150 / 130	150 / 130	150 / 130	150 / 130	150 / 130
Diameter of shared flue pipe connection	mm	150	150	150	150	150
Height of flue pipe connection	mm	1580	1580	1580	1580	1580
Water-side connections						
Flow and return connections (socket)	DN	32, int. thread	32, int. thread	32, int. thread	32, int. thread	32, int. thread
Recommended minimum pipe dimensions	DN	32	32	32	32	32
Water-side resistance at nominal thermal power, 10K ¹⁾	Pa	1600 / 760	2400 / 760	2400 / 2150	1500 / 2150	1700 / 3110
Water-side resistance at nominal thermal power, 20K ¹⁾	Pa	400 / 210	600 / 210	600 / 580	300 / 580	400 / 860
Other information						
Combustion duration per filling in terms of fuel recommendation (beech), approx.	h	Up to 7	Up to 5	Up to 5	Up to 6	Up to 5
Combustion duration per filling in terms of fuel recommendation (spruce), approx.	h	Up to 6	Up to 4	Up to 4	Up to 5	Up to 4
Sound pressure level	dB(A)	< 70	< 70	< 70	< 70	< 70
Min. Air inlet cross section ³⁾	cm ²	150	150	150	150	150
Label Boiler		A+ / A+	A+ / A+	A+ / A+	A+ / A+	A+ / A+
Label Boiler + Controller		A++ / A+	A+ / A+	A+ / A++	A++ / A++	A++ / A++

¹⁾ Figures as per type-approval test to DIN EN 303-5 by TÜV-Süd

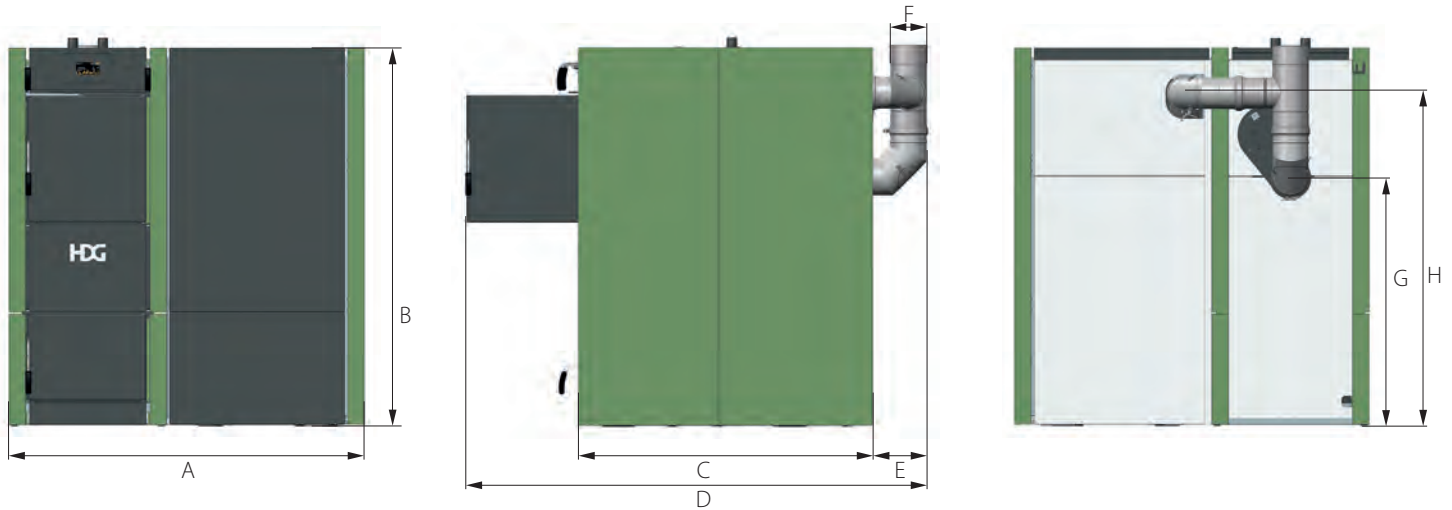
²⁾ Maximum operating temperatures of up to 110 °C can also briefly occur.

³⁾ Observe country-specific guidelines

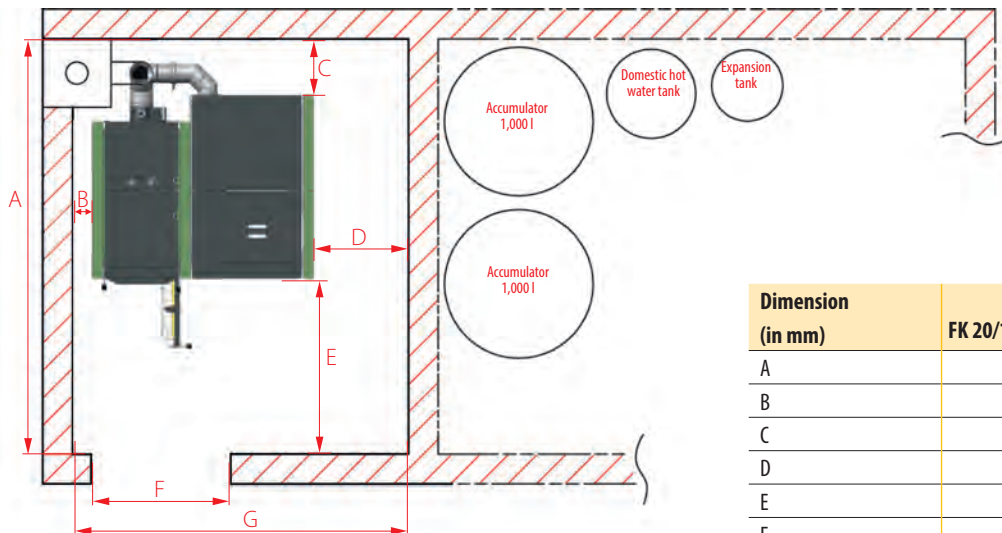


HDG FK Hybrid

Technical drawings, minimum clearances



Dimension (in mm)	Description	HDG FK 20/15, FK 30/15, FK 30/26		HDG FK 40/26, FK 50/33	
		Manual filling	Pellet suction system	Manual filling	Pellet suction system
A	Width of boiler	1490	1490	1590	1590
B	Height of boiler (equates to height of flow/return connection)	1590	130	1650	1730
C	Length of boiler without attachments and flue pipe connection	1230	1230	1230	1230
D	Total length with open fuel chamber door including flue pipe connection	1930	1930	2080	2080
E	Overhang of flue pipe connection	230	230	280	280
F	Diameter of flue pipe connection	150	150	150	150
G	Height of centre of flue pipe connection (HDG K Hybrid)	1390	1390	1390	1390
H	Height of centre of flue pipe connection (HDG F Hybrid)	1040	1040	1070	1070



Minimum ceiling height:
 HDG FK 20/15 - 30/15 - 30/26: 1.90 m
 HDG FK 40/26 - 50/26: 2.00 m

Recommended ceiling height: 2.30 m

Caution: Observe the required access clearance and tilting height of the accumulator.

Dimension (in mm)	HDG FK 20/15 - 30/15 - 30/26	HDG FK 40/26 - 50/33
A	At least 300	At least 750
B	At least 100	At least 100
C	At least 500	At least 500
D	At least 650	At least 650
E	At least 800	At least 800
F	At least 680	At least 760
G	At least 2300	At least 2400