

The PYRTEC grate firing system has been designed for automatically burning all dry to wet wood fuels (waste wood, pellets, wood chips, up to max. W50) and combines in the best way possible the benefits of underfeed firing with the benefits of grate firing.

The PYRTEC grate firing system is characterized by highest efficiencies and perfect combustion in all load stages. The PYRTEC has been tested and approved in accordance with the latest quality criteria in compliance with EN 303-5 heating boilers for solid fuels, CE certification as per European Machinery Directive and continuous quality assurance by TÜV.

Max. flow temperature: 100°C
Max. operating pressure: 6.0 bar
Safety heat exchanger: Built in the boiler & ready for use

Function:

- The solid, powerful and heat-resistant feed auger moves the fuel over the burner trough into the descending and into the grate zone, which drops down and travels. Situated on the conveyor pipe are the holding devices both for the burn-back sensor and for the thermal extinguishing valve. Above the auger there is the metering container with a light barrier for setting the level for the fuel isolating layer required according to TRD 414.
- The fuel is either ignited manually or automatically with an electric hot-air fan (separate price item). The tried-and-tested burner trough, the descending external grate and the moving burn-out grate made from highly-refractory cast steel (material no.: 1.4823; approx. 12 mm) allow excellent performance control and highest safety against burn-back in conjunction with automatic de-ashing system (separate price item) to be achieved for the combustion chamber. The solid, horizontally positioned and large-volume firing block has been optimised in terms of incineration, consists of a high-quality fireclay brick lining and is multiply insulated for the lowest possible surface temperatures. In the lower part, the primary airflow is supplied to the incineration grates via a supply air fan in an output-controlled fashion and pre-heated.
- In the upper part of the firing block, the secondary airflow is blown into the gas space of the firing system by an output-controlled fan via an encircling ring with high turbulence via individually adjustable nozzles. This mixes the fuel gases with fresh secondary air for complete burning. The firebox door is solidly constructed, air-cooled and very well insulated. Opening the firebox door with its solid double-knuckle hinges is an ideal solution for maintenance purposes. The heat energy from the fuel gases is transferred to the boiler water in the horizontal shell-and-tube heat exchangers. The boiler is well insulated, possesses attractive cladding and is highly accessible through the boiler door on the front. The insulated boiler door also allows a pneumatic cleaner to be installed (separate price item).
- The exhaust gas fan has been specially designed for burning wood and is very quiet. The spring-suspended motor possesses a solid, heat-resistant design with heat dissipation hub. The fan housing on the intake port rotates infinitely variably, and the blow-out nozzle is round. It is usually mounted on the exhaust gas deduster (separate price item).

Includes:

- Feed auger with isolating layer, including extinguishing valve with dirt collector, container with bracket for extinguishing water
- Fire block with burner trough, descending external grate and moving burn-out grate
- Boiler with horizontal shell-and-tube heat exchangers
- Exhaust gas fan
- Accessories: counter flange, including screws and seals, cleaning device

ACCESSORIES for PYRTEC grate firing (Item KPT- ...) at extra charge:

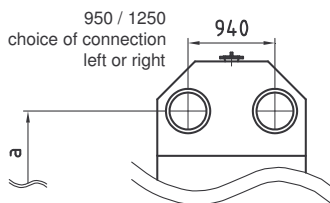
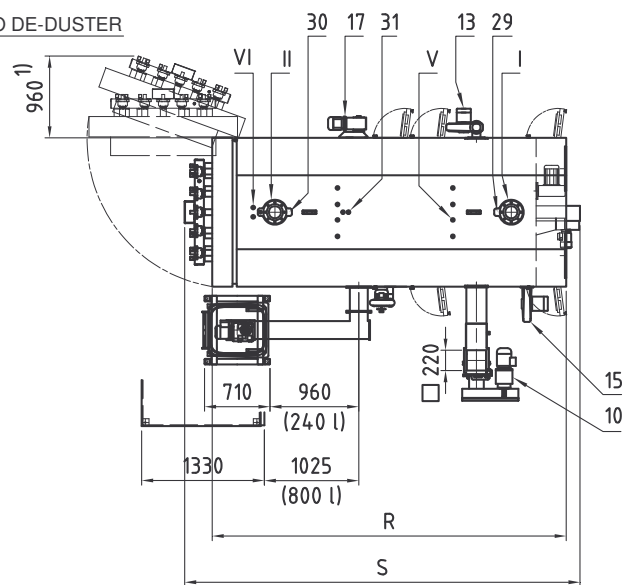
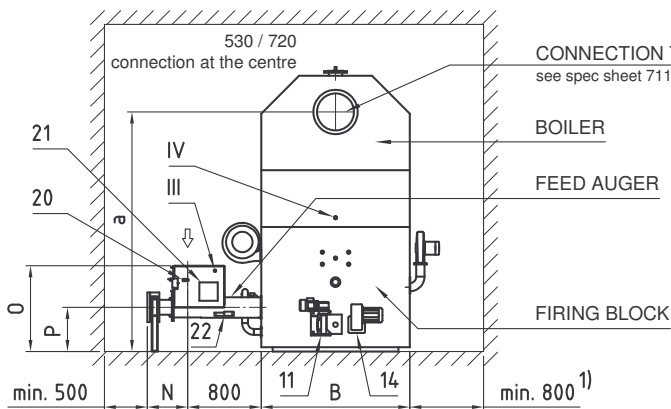
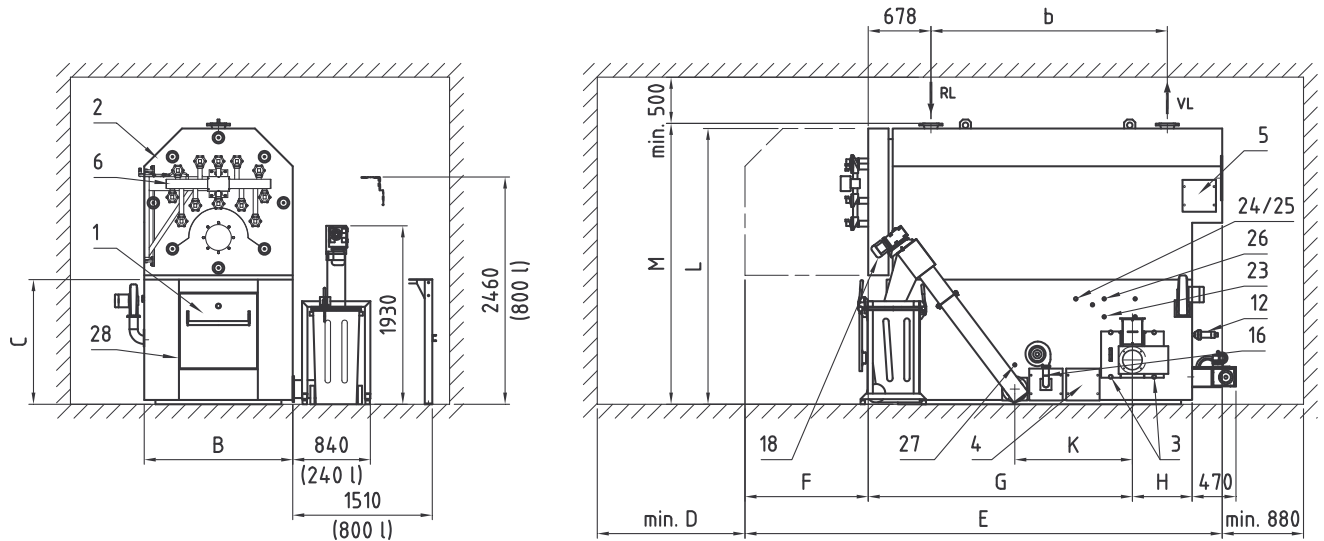
Designation	Item	Text	Dimensions	Use
Exhaust gas de-duster 240 l	KPT-E...-2	7110	7110	Required (exception: pellets)
Exhaust gas de-duster 800 l	KPT-E...-8	7110	7110	Variation of 240-litre
Preparation system for de-ashing	KPT-AV	7120	-	Optional for KPT-A2-S
De-ashing into bin, 240 l	KPT- A2-S	7120	7010	Optional for KPT-AV
De-ashing into skip 800 l	KPT- A8-S	7120	7010	Variation of 240-litre
Pneumatic cleaning system	KPT-W...-S	7120	7010	Optional
Automatic system	KPT-ZG-S	7200	7010	not suited for > W40
Set of displacement rods	KPT-V...	7200	-	Base load boiler
Flue gas recirculation system	KPT-R...-S	7200	-	For fuels < W20
Pyrocontrol control system	PYR- ...	7800	-	Required

Technical specs:

Trade name	PYRTEC Grate Firing System					
	390	530	720	950	1250	
Item No:	KPT-390	KPT-530 A	KPT-720	KPT-950	KPT-1250	
Performance data						
Rated heat output Q_N	[kW]	390	530	720	950	1250
Continuous output ¹⁾ Q_D	[kW]	390	530	720	950	1250
Minimum heat output ²⁾ Q_{min}	[kW]	98	132	180	238	312
Heat output, W45 chips Q_{W45}	[kW]	380	515	700	920	1210
Efficiency in operation to be performed ³⁾	[%]	> 90				
Maximum water content ⁴⁾	[%]	W 50				
Size of the chips ⁵⁾		G 30 / G 50 as per ÖNORM M7133				
Exhaust gas figures						
Mass flow rate Q_{N_i} ; W5; O ₂ 8%;	[g/s]	219	297	404	532	700
Volume flow Q_{N_i} ; W5; O ₂ 8%; 150 °C	[m ³ /s]	0,26	0,36	0,48	0,63	0,83
Mass flow rate Q_{W45} ; W45; O ₂ 10%;	[g/s]	303	412	560	736	968
Volume flow Q_{W45} ; W 45; O ₂ 10%; 150 °C	[m ³ /s]	0,37	0,50	0,67	0,88	1,15
Average exhaust gas temperature at Q_N ⁶⁾	[°C]	160				
Average exhaust gas temperature at Q_{min} ⁶⁾	[°C]	120				
Chimney draught required	[Pa]	+0				
Electrical connections						
Electrical connections (Σ boiler plant)	[kW]	6,42	8,28	8,28	9,51	11,31
Ignition device	[kW]	1,6				
Exhaust gas fan	[kW]	1,5	2,2	2,2	2,2	4,0
Feed auger	[kW]	1,1	1,5	1,5	2,2	2,2
Primary airflow fan 1	[kW]	0,14	0,3	0,3	0,48	0,48
Primary airflow fan 2	[kW]	1,0				
Secondary airflow fan	[kW]	0,9	1,5	1,5	1,85	1,85
Grate drive unit	[kW]	0,12				
Electric power consumption at Q_N	[kW]	3,36	4,68	4,68	5,29	6,91
Electric power consumption at Q_{min}	[kW]	2,75	3,83	3,83	4,28	5,6
Heating-relevant specs						
Volume on heating gas side	[ltr]	1540	2280	2830	4050	5210
Volume of ash container for grate ash	[ltr]	240 / 800				
Volume of ash container for exhaust gas de-duster	[ltr]	240 / 800				
Water-bearing resistance (Diff. 15 K)	[mbar]	13	23	43	26	45
Boiler water volume	[ltr]	9,76	1155	1786	2247	2662
Heating surface	[m ²]	25,5	33,9	49,5	66,7	79,0
Test pressure	[bar]	7,8				
Maximum operating pressure	[bar]	6				
Operating temperature	[°C]	100				
Minimum return temperature	[°C]	65				
Weights						
Weight of fire block	[kg]	2970	4238	4953	5779	6520
Weight of boiler	[kg]	1680	2707	3291	4874	5563
Weight of displacement rods	[kg]	292	327	394	538	538
Weight of exhaust blower	[kg]	60	78	78	82	107
Weight of feed auger	[kg]	153	153	153	190	190
Total weight without water ⁷⁾	[kg]	5230	7554	8869	11463	12918
Total weight with water ⁷⁾	[kg]	6380	8998	10730	13406	15400

- 1) Continuous output: Output levelling out as base load boiler in continuous operation with pneumatic cleaning system (for track time, see Operating Instructions)
- 2) $Q \geq Q_{min}$: Operation with modulated control
 $Q \leq Q_{min}$: Low load with ON Q_{min} / ember maintenance operation
- 3) Efficiency: Specification with displacement rods and flue gas recirculation system for dry fuels (W5 to W20) without flue gas recirculation system-reduced values
- 4) Wet fuels: >W45 further restrictions in terms of output, efficiency and control behaviour
- 5) Specification: See Spec Sheet 1010, Minimum Requirements for Wooden Fuels
- 6) Exhaust gas temperature: A reduction is possible by installing the displacement rods ($Q_N - 20$ °C; $Q_{min} - 10$ °C)
 Other influences: fuel water content, ash content, pneumatic cleaning system yes/no, track time (number of operating hours without cleaning) Specifications for the start of the track time (toward the end of the track time there is an increase in the exhaust gas temperature by approx. +15 °C)
- 7) Total weight: incl. displacement rods

Dimensional drawing:



Boiler bearing surface



Floor with heat-resistant design additional



The floor construction has to be free of any pipes or installation lines! Danger through the effects of heat!

- 1) 800 mm access, firing block
960 mm if there is a door stop & pneum. cleaning system
Position of approx. 110° required for manual cleaning of heat exchanger



Connections/dimensions:

PYRTEC [Item no.]		KPT-390	KPT-530 A	KPT-720	KPT-950	KPT-1250	
Water connections PN 6 (see Spec Sheet 7960)							
I	Boiler forward flow	DN 100	DN 100	DN 100	DN 125	DN 125	
II	Boiler return flow	DN 100	DN 100	DN 100	DN 125	DN 125	
III	Connection for extinguishing water	R ¾" AG	R ¾" AG	R ¾" AG	R ¾" AG	R ¾" AG	
IV	Drain valve for boiler	R 1 ½" IG	R 1 ½" IG	R 1 ½" IG	R 1 ½" IG	R 1 ½" IG	
V	Safety heat exchanger	4 x R ½" AG	4 x R ½" AG	8 x R ½" AG	8 x R ½" AG	8 x R ½" AG	
VI	Dipping shell for thermal run-off safety valve	1 x R ½" IG	1 x R ½" IG	2 x R ½" IG	2 x R ½" IG	2 x R ½" IG	
Connection to dust trap		A See data sheet 7110-2					
Location of the connections [mm]		a	2080	2231	2491	2444	2639
		b	2060	2560	2562	2562	3107
Dimensions of the foundations [mm]		d	4221	4733	4912	5096	5641
		e	1260	1260	1400	1630	1630
		f	2561	3073	3112	3066	3611
		g	1026	1034	1112	1360	1360
		h	1826	1834	1912	2160	2160
Dimensions of the boiler [mm]		B	1238	1274	1380	1612	1612
		C	1263	1396	1413	1371	1566
		D	960	960	1430	1050	1550
		E	4507	4862	5257	5447	5992
		F	1238	1046	1380	1612	1612
		G	2403	2905	2993	2861	3406
		H	577	567	577	657	657
		K	1200	1200	1200	1275	1275
		L	2332	2486	2784	2981	3176
		M	2382	2535	2834	3035	3230
		N	308	308	308	440	440
		O	803	803	803	929	929
		P	453	449	453	479	479
		R	3269	3784	3877	3835	4380
		S	3826	4207	4434	4392	4937

Values may differ by +/- 10,0 mm

The following applies to all dimensions: incl. pneumatic cleaning

Parts for maintenance

1	Fire box door with solid double hinging		
2	Boiler door		
3	Cleaning lid for burner trough		
4	Cleaning lid for external grate		
5	Cleaning lid for flue gas collector		
6	Pneumatic cleaning system	Item KPT-W...-S	Spec Sheet 7120

Electric drives; ignition

10	Feed auger		
11	Drive for feed grate		
12	Ignition device		
13	Primary airflow fan 1		
14	Primary airflow fan 2		
15	Secondary airflow fan		
16	Primary airflow fan 3	Dimensions:	/ Spec Sheet 7110
17	De-ashing, fire box auger	Item KPT-A.-S	/ Spec Sheet 7120
18	De-ashing, ascending conveyor auger	Item KPT-A.-S	/ Spec Sheet 7120

Switches and sensors These items are part of the Pyrocontrol control system

20	Light barrier for feed auger		
21	Limit switch for maintenance cover		
22	Temperature sensor for feed auger		
23	Light barrier for embers		
24	Fire box temperature sensor (insertion side)		
25	Negative pressure sensor (opposite insertion side)		
26	Overpressure monitor for fire box		
27	Light barrier for de-ashing		
28	Limit switch for fire box door		
29	Flow temperature sensor		
30	Return temperature sensor		
31	Temperature-limiting safety switch (TLSS)		
32	Exhaust gas sensor	Location:	Spec Sheet 7110
33	Lambda sensor with measuring transducer	Location:	Spec Sheet 7110