

**schuster®**



**SKD**

PRESSURIZED STEEL BOILER WITH REVERSED FLAME  
FROM 64 kW TO 6000 kW

# From 64 kW to 291 kW

- **Compact dimensions**  
simplifies the transport and the positioning in boiler house
- **Thermal exchange optimisation**  
by driven water passage into the boiler
- **Tube bundle positioning**  
decentralized upwards, above the furnace, with drastic reduction of the possible condensation
- **Smoke pipes of high thickness**  
with anti-condensing effect
- **Turbulators**  
for the thermal exchange optimisation into the smoke pipes
- **Bottom of the furnace**  
reinforced with U profiles for greater mechanical resistance
- **Internal door insulation**  
in light refractory concrete
- **Front door**  
with self-centering locking
- **External casing**  
inclusive of 60 mm rock wool insulation
- **Panel board**  
suitable for electronic control



PRESSURIZED STEEL BOILER WITH REVERSED FLAME					
RANGE	from 64 to 291 kW				
EFFICIENCY CLASS	★ CE				
WORKING TEMPERATURE	minimum return temperature higher than 50°C				
OPERATION WITH	gas or oil fired pressure jet burners				
MODELS	64	76	93	105	116
	140	163	186	233	291
Decentralization of tube bundle for high resistance to the condensate					

# From 340 kW to 6000 kW

- **Flexibility of use**
- **Thermal exchange optimisation**  
by driven water passage into the boiler
- **The elliptic shell shape** (up to 970 kW):
  - smaller dimensions (for easier transport and positioning)
  - tube bundle positioning above the furnace with drastic reduction of the possible condensation
- **Smoke pipes**  
of high thickness with anti-condensing effect
- **Helicoidal turbulators**  
for the thermal exchange optimisation into the smoke pipes
- **Cylindrical floating furnace**  
anti thermo-mechanic stress from mod. 760 kW
- **Front door with self-centering locking**
- **Bottom of the furnace**  
with dissipation plates for greater performance and greater mechanical resistance
- **Internal door insulation**  
in light refractory concrete
- **External casing**  
(including smoke back chamber) inclusive of 80 mm rock wool insulation
- **Panel board**  
suitable for electronic control
- **Facilitated transport**  
thanks to the upper hooks and strong base plates
- **Available for versions to be assembled**  
in boiler house (from 340 to 1570 kW)



PRESSURIZED STEEL BOILER WITH REVERSED FLAME											
RANGE	from 255 to 6000 kW										
EFFICIENCY CLASS	★★★CE										
WORKING TEMPERATURE	minimum return temperature 55°C										
OPERATIONS WITH	gas or oil fired pressure jet burners										
MODELS	340	420	510	630	760	870	970	1100	1320	1570	1850
	2200	2650	3000	3500	4000	4500	5000	5500	6000		
CERTIFICATION IN OUTPUT RANGE (in the order, it's possible to request a specific output within the certified range)											

# Technical data

## Door

Front door insulation, responsible for 30% of the boilers heat losses for irradiation has been greatly improved using:

- Up to 291 kW a ceramic fibre with high insulating power
- From 340 kW to 970 kW a special light insulating concrete
- Over 970 kW, instead, a special double layer refractory concrete

## Thermal balancing

Great thermal stability thanks to homogenous temperature distribution on the shell: the internal hydraulic circuit takes advantages of thermal exchange and at the same time it cools off the more stressed parts, (front plate, front part of smoke pipes and furnace) thus reducing the calcium deposits formation.

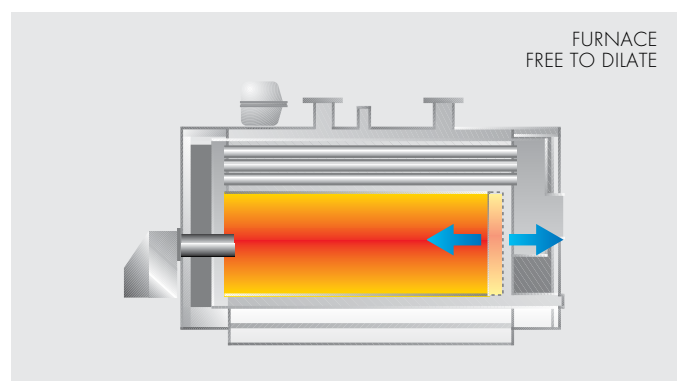
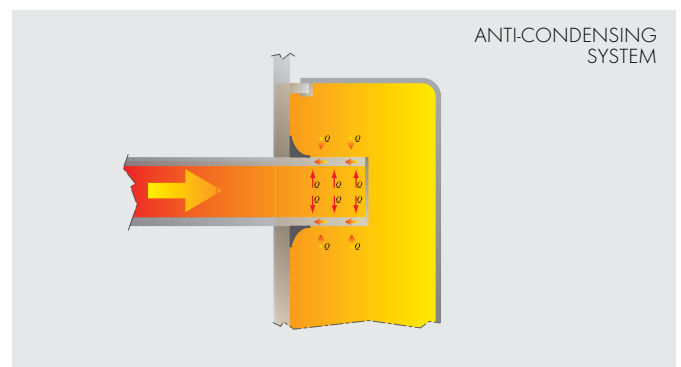
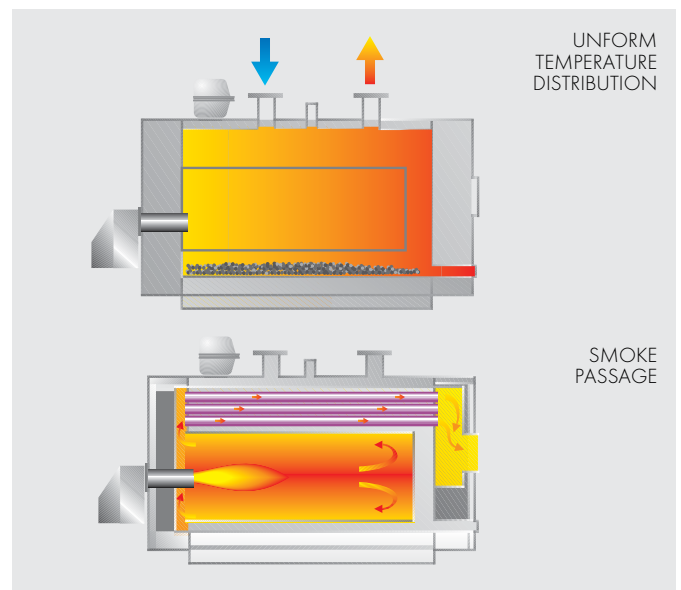
## Tab effect

Increasing the pipe length reduces acid condensation, particularly into the smoke pipes and in their welding to the rear plate, and extends boiler life. This causes a tab effect which directs the accumulated heat  $Q$  towards the welding seam, drying the condensation around it and avoiding its formation.

## Floating Cylindrical Furnace

On particularly big boilers the longitudinal expansion of the furnace becomes consistent. It is for this reason that, from SKD 760 onwards, the furnace is welded only on the front plate. It remains free to dilate, guaranteeing a long duration and operation elasticity.

The perfect gas soundness is guaranteed by the self centering and reversible closing (right or left) with fine registration.



## Recirculation pump

The boilers SKD must always operate with forced water circulation and with an average temperature of the boiler higher or equal 55° C.

Therefore, it's preferred the use of a recirculation pump, with anti-condensing function too, installed between flow and return connections upstream potential mixing valve.

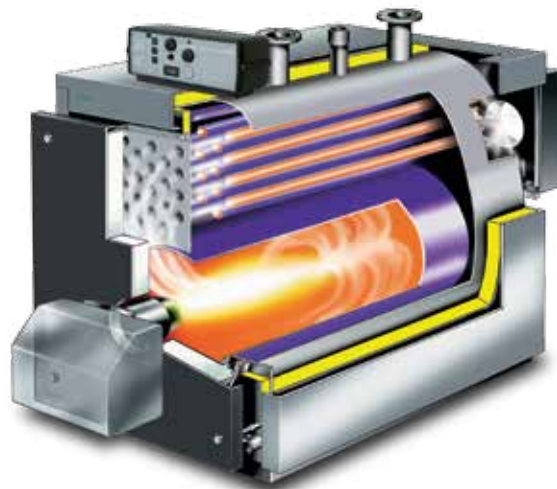
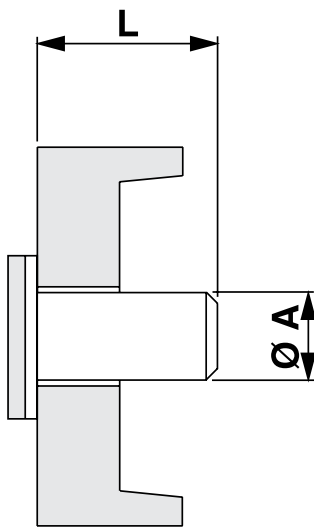
That pump will be dimensioned from the formulation

$$Q = P \times 22$$

Where  $Q$  = water flow rate l/h

$P$  = Nominal output of the boiler in kW  
and manometric head of 1 ÷ 2 m H<sub>2</sub>O

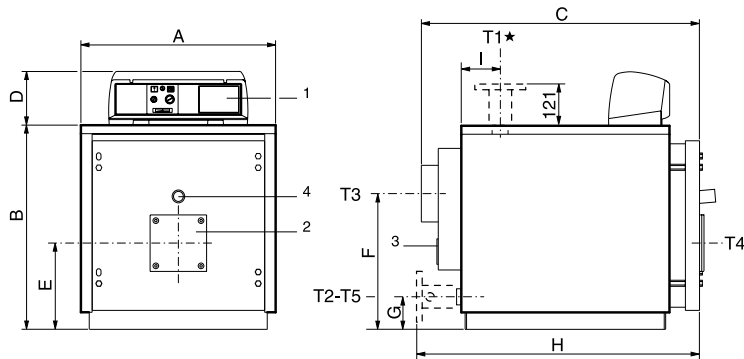
## Dimensions of burner tube



Model	Ø A mm	L (min.) mm
SKD 64÷93	130	150
SKD 105÷140	180	170
SKD 163÷186	180	170
SKD 233÷291	180	170
SKD 340÷630	220	250
SKD 760÷970	270	270
SKD 1100÷1320	320	300
SKD 1570÷1850	320	320
SKD 2200÷2650	380	350
SKD 3000	380	400
SKD 3500÷4000	400	400
SKD 4500÷6000	500	520

# Dimensions 64÷291

SKD 64÷291

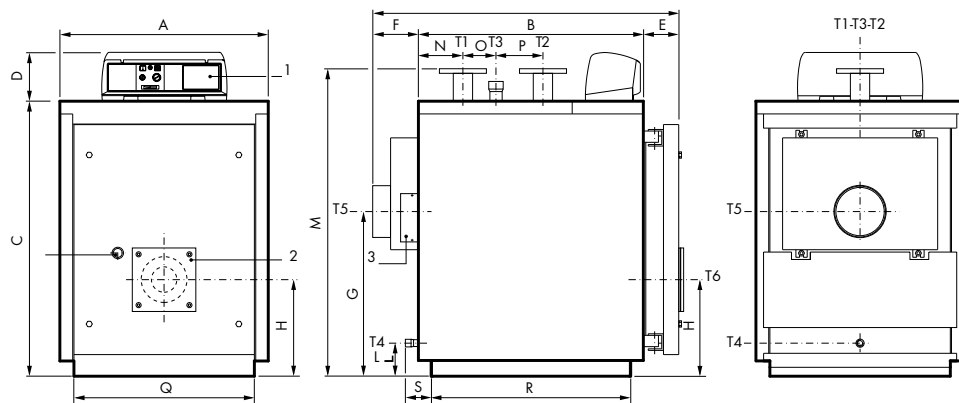


- 1 - Panel board
- 2 - Burner fixing plate
- 3 - Smoke chamber cleaning door
- 4 - Flame sight glass
- T1 - CH flow
- T2 - CH return
- T3 - Flue socket
- T4 - Max. burner blast tube dia.
- T5 - Boiler drain

Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	T1 - T2 ISO 7/1 EN 1092-1 PN16	T3 Ø <sub>e</sub> mm	T4 Ø mm	T5 Ø mm
SKD 64	690	722	990	190	305	480	115	-	147	Rp 1 <sup>1/2</sup>	200	130	Rp 3/4
SKD 76	690	722	990	190	305	480	115	-	147	Rp 1 <sup>1/2</sup>	200	130	Rp 3/4
SKD 93	690	722	990	190	305	480	115	-	147	Rp 1 <sup>1/2</sup>	200	130	Rp 3/4
SKD 105	760	812	1205	190	350	500	130	-	157	Rp 2	200	180	Rp 3/4
SKD 116	760	812	1205	190	350	500	130	-	157	Rp 2	200	180	Rp 3/4
SKD 140	760	812	1205	190	350	500	130	-	157	Rp 2	200	180	Rp 3/4
SKD 163	760	812	1385	190	350	500	130	-	157	Rp 2	200	180	Rp 3/4
SKD 186	760	812	1385	190	350	500	130	-	258	Rp 2	200	180	Rp 3/4
SKD 233	860	937	1437	190	421	580	165	1482	258	DN 65	200	180	Rp 3/4
SKD 291	860	937	1687	190	421	580	165	1732	258	DN 65	200	180	Rp 3/4

# Dimensions 340÷2650

## SKD 340÷970

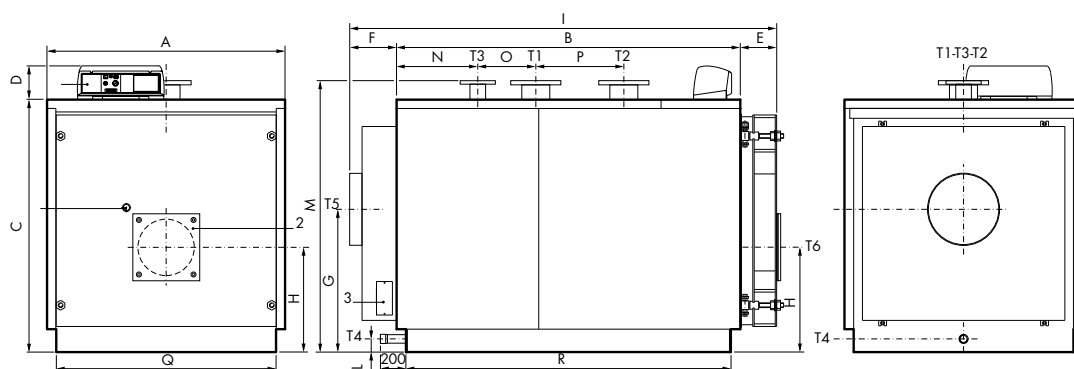


- 1 - Panel board
- 2 - Burner fixing plate
- 3 - Smoke chamber cleaning door
- 4 - Flame Sight glass
- T1 - CH flow
- T2 - CH return
- T3 - Expansion vessel connection
- T4 - Boiler drain
- T5 - Flue socket
- T6 - Max. burner blast tube dia.

Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M* mm	N mm	O mm	P mm	Q* mm	R* mm	S mm	T1-T2 EN 1092-1 PN16	T3 ISO 7/1 - EN 1092-1 PN16	T4 ISO 7/1	T5 Ø mm	T6 Ø mm
SKD 340	860	1210	1182	190	139	190	708	400	1541	130	1310	215	340	250	750	1112	100	DN 80	Rp 2	Rp	250	220
SKD 420	890	1275	1352	190	139	190	748	440	1606	125	1485	255	285	315	780	1177	100	DN 100	Rp 2	Rp	250	220
SKD 510	890	1470	1352	190	139	190	748	440	1801	125	1485	255	480	315	780	1372	100	DN 100	Rp 2	Rp	250	220
SKD 630	890	1780	1352	190	139	190	748	440	2113	125	1485	255	790	315	780	1682	100	DN 100	Rp 2	Rp	300	220
SKD 760	1122	1605	1432	190	195	190	765	480	1989	125	1540	298	435	440	1020	1504	200	DN 125	DN 65	Rp 1	350	270
SKD 870	1122	1800	1432	190	195	190	765	480	2184	125	1540	298	630	440	1020	1699	200	DN 125	DN 65	Rp 1	350	270
SKD 970	1122	1995	1432	190	195	190	765	480	2379	125	1540	298	825	440	1020	1894	200	DN 125	DN 65	Rp 1	350	270

(\* ) Minimum dimensions for boiler room access requirements.

## SKD 1100÷2650



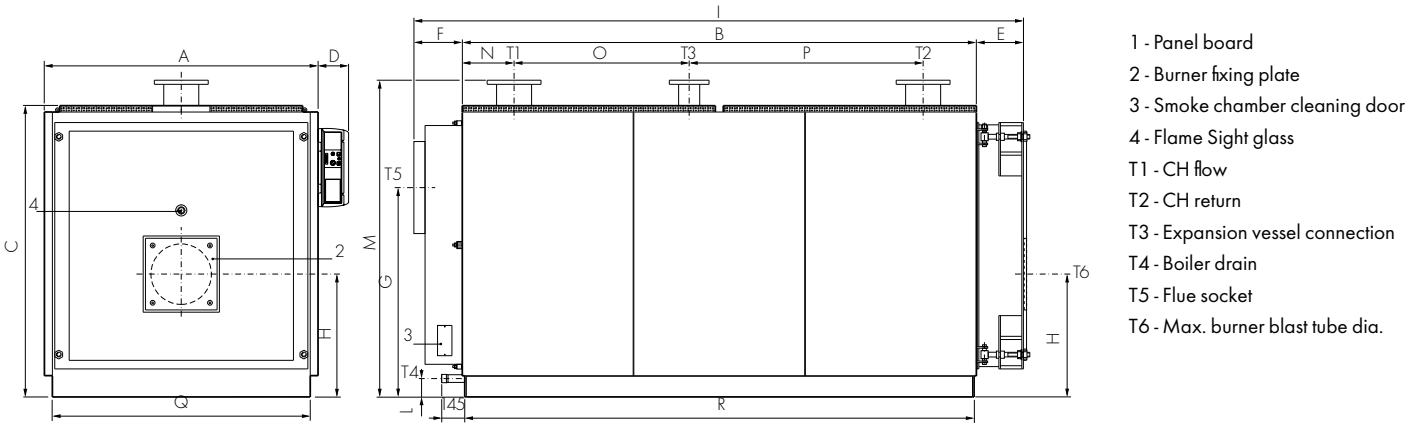
- 1 - Panel board
- 2 - Burner fixing plate
- 3 - Smoke chamber cleaning door
- 4 - Flame Sight glass
- T1 - CH flow
- T2 - CH return
- T3 - Expansion vessel connection
- T4 - Boiler drain
- T5 - Flue socket
- T6 - Max. burner blast tube dia.

Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M* mm	N mm	O mm	P mm	Q* mm	R* mm	T1-T2 EN 1092-1 PN16	T3 EN 1092-1 PN16	T4 ISO 7/1	T5 Øi mm	T6 Ø mm
SKD 1100	1352	1952	1432	190	207	187	810	595	2346	180	1540	461	330	500	1250	1846	DN 150	DN 80	Rp 1	400	320
SKD 1320	1352	2292	1432	190	207	187	810	595	2686	180	1540	461	670	500	1250	2186	DN 150	DN 80	Rp 1	400	320
SKD 1570	1462	2282	1542	190	227	272	880	640	2781	75	1650	561	510	550	1360	2176	DN 175	DN 100	Rp 1	450	320
SKD 1850	1462	2652	1542	190	227	272	880	640	3151	75	1650	561	880	550	1360	2546	DN 175	DN 100	Rp 1	450	320
SKD 2200	1622	2692	1702	190	259	274	950	690	3225	75	1810	661	670	700	1520	2590	DN 200	DN 125	Rp 1	520	380
SKD 2650	1622	3014	1702	190	258	273	950	690	3545	75	1810	662	990	700	1520	2910	DN 200	DN 125	Rp 1	520	380

(\* ) Minimum dimensions for boiler room access requirements.

# Dimensions 3000÷6000

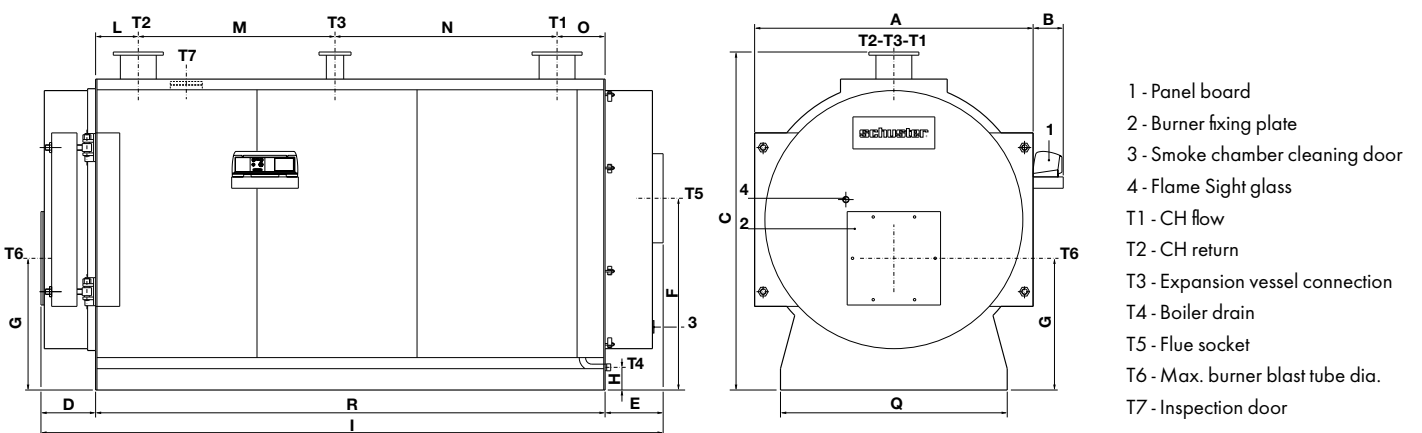
## SKD 3000÷4000



Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M* mm	N mm	O mm	P mm	Q* mm	R* mm	T1-T2 EN 1092-1 PN16	T3 EN 1092-1 PN16	T4 ISO 7/1	T5 Øi mm	T6 Ø mm
SKD 3000	1720	3230	1830	190	295	310	1315	772	3835	115	1990	325	1100	1470	1620	3200	DN 200	DN 125	Rp 1	570	380
SKD 3500	1970	3194	2090	190	325	360	1535	915	3879	144	2271	377	1060	1420	1870	3164	DN 200	DN 125	Rp 1	620	400
SKD 4000	1970	3594	2090	190	325	360	1535	915	4279	144	2271	777	1060	1420	1870	3564	DN 250	DN 125	Rp 1	620	400

(\*) Minimum dimensions for boiler room access requirements.

## SKD 4500÷6000



Model	A mm	B mm	C* mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	Q* mm	R* mm	T1-T2 EN 1092-1 PN16	T3 EN 1092-1 PN16	T4 ISO 7/1	T5 Øi mm	T6 Øi mm	T7 Ø mm
SKD 4500	2088	226	2533	417	445	1437	987	170	4682	320	1475	1665	360	1700	3820	DN 250	DN 125	Rp 1	660	500	133
SKD 5000	2088	226	2533	417	445	1437	987	170	4682	320	1475	1665	360	1700	3820	DN 250	DN 125	Rp 1	660	500	133
SKD 5500	2214	240	2653	437	465	1550	1007	167	4872	320	1475	1815	360	1700	3970	DN 250	DN 125	Rp 1	660	500	133
SKD 6000	2214	240	2653	437	465	1550	1007	167	4872	320	1475	1815	360	1700	3970	DN 250	DN 125	Rp 1	660	500	133

(\*) Minimum dimensions for boiler room access requirements.



# Technical data 64÷291

Model	Water content	Water side pressure loss*	Smoke side pressure loss	Maximum working pressure	Weight
	<i>l</i>	<i>m w.c.</i>	<i>mm w.c.</i>	<i>bar</i>	<i>kg</i>
SKD 64	86	0,10	1,5	6	195
SKD 76	86	0,13	1,8	6	195
SKD 93	86	0,16	2,5	6	195
SKD 105	126	0,10	3	6	280
SKD 116	126	0,10	3	6	280
SKD 140	126	0,14	5	6	280
SKD 163	151	0,20	8	6	318
SKD 186	151	0,25	14	6	318
SKD 233	203	0,22	18	6	420
SKD 291	247	0,30	22	6	420

(\*) Hydraulic resistance for a flow rate corresponding to a  $\Delta t$  of 15 K

SKD (gas)		64	76	93	105	116	140	163	186	233	291
NOMINAL OUTPUT	kW	64,0	76,0	93,0	105,0	116,0	140,0	163,0	186,0	233,0	291,0
NOMINAL INPUT	kW	71,0	84,0	102,0	115,0	128,0	155,0	180,0	206,0	258,0	322,0
WATER EFFICIENCY AT FULL LOAD	%	90,1	90,4	91,1	91,3	90,6	90,3	90,5	90,2	90,3	90,3
WATER EFFICIENCY AT PART LOAD	%	85,4	85,6	85,9	86	86,1	86,4	86,6	86,8	87,1	87,3
COMBUSTION EFFICIENCY AT NOMINAL LOAD	%	90,6	91	91,6	91,8	91,1	90,8	91,2	91	91	90,8
CASING HEAT LOSSES	%	0,5	0,5	0,5	0,5	0,4	0,5	0,6	0,7	0,7	0,5
CHIMNEY LOSSES WITH BURNER ON	%	9,3	8,9	8,3	8,1	8,9	9,1	8,7	8,9	8,9	9,1
CHIMNEY LOSSES WITH BURNER OFF	%	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
NET FLUE GAS TEMPERATURE TF-TA	°C	187,0	180,4	189,2	167,3	182,3	187,9	179,5	184,2	183,2	187,0
CO <sub>2</sub> CONTENT	%	9,5	9,6	9,7	9,8	9,8	9,8	9,8	9,8	9,8	9,8
FLUE GAS MASS FLOW RATE	kg/h	109,0	128,5	154,7	172,9	192,4	233,0	270,6	309,6	387,8	484,0

SKD (light oil)		64	76	93	105	116	140	163	186	233	291
NOMINAL OUTPUT	kW	64,0	76,0	93,0	105,0	116,0	140,0	163,0	186,0	233,0	291,0
NOMINAL INPUT	kW	71,0	84,0	102,0	115,0	128,0	155,0	180,0	206,0	258,0	322,0
WATER EFFICIENCY AT FULL LOAD	%	90,1	90,4	91,1	91,3	90,6	90,3	90,5	90,2	90,3	90,3
WATER EFFICIENCY AT PART LOAD	%	85,4	85,6	85,9	86	86,1	86,4	86,6	86,8	87,1	87,3
COMBUSTION EFFICIENCY AT NOMINAL LOAD	%	90,6	91	91,6	91,8	91,1	90,8	91,2	91	91	90,8
CASING HEAT LOSSES	%	0,5	0,5	0,5	0,5	0,4	0,5	0,6	0,7	0,7	0,5
CHIMNEY LOSSES WITH BURNER ON	%	9,3	8,9	8,3	8,1	8,9	9,1	8,7	8,9	8,9	9,1
CHIMNEY LOSSES WITH BURNER OFF	%	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
NET FLUE GAS TEMPERATURE TF-TA	°C	200,0	193,0	181,0	179,0	195,0	201,0	192,0	197,0	196,0	200,0
CO <sub>2</sub> CONTENT	%	12,4	12,5	12,6	12,7	12,8	12,8	12,8	12,8	12,8	12,8
FLUE GAS MASS FLOW RATE	kg/h	111,4	131,6	158,6	177,4	196	237,4	275,6	315,4	395,1	493,1

# Technical data 340÷6000

Model	Water content l	Water side pressure loss* m w.c.	Smoke side pressure loss mm w.c.	Maximum working pressure bar	Weight kg
SKD 340	298	0,16÷0,28	17÷34	6	629
SKD 420	398	0,09÷0,17	16÷29	6	796
SKD 510	462	0,14÷0,25	24÷43	6	919
SKD 630	565	0,21÷0,38	32÷55	6	1049
SKD 760	671	0,15÷0,26	29÷51	6	1341
SKD 870	753	0,19÷0,33	33÷57	6	1447
SKD 970	836	0,24÷0,41	29÷49	6	1553
SKD 1100	1040	0,18÷0,30	32÷52	6	1821
SKD 1320	1242	0,20÷0,35	38÷67	6	2030
SKD 1570	1418	0,19÷0,33	35÷60	6	2780

Model	Water content l	Water side pressure loss* m w.c.	Smoke side pressure loss mm w.c.	Maximum working pressure bar	Weight kg
SKD 1850	1617	0,26÷0,45	42÷73	6	3280
SKD 2200	2086	0,21÷0,34	39÷65	6	4145
SKD 2650	2324	0,28÷0,48	43÷76	6	4465
SKD 3000	2667	0,36÷0,62	35÷60	6	5110
SKD 3500	4142	0,54÷0,84	47÷74	6	6700
SKD 4000	4455	0,54÷0,85	60÷80	6	7500
SKD 4500	6012	0,70÷0,85	51÷88	6	7750
SKD 5000	6012	0,80÷1,05	65÷110	6	7750
SKD 5500	7058	0,95÷1,15	60÷100	6	9300
SKD 6000	7058	1,00÷1,35	68÷120	6	9300

(\*) Hydraulic resistance for a flow rate corresponding to a  $\Delta t$  of 15 K

SKD (gas)		340	420	510	630	760	870	970	1100	1320	1570	1850	2200	2650	3000	3500	4000	4500	5000	5500	6000	
NOMINAL OUTPUT	kW	255 340	315 420	385 510	480 630	580 760	660 870	750 970	860 1100	1000 1320	1200 1570	1400 1850	1700 2200	2000 2650	2300 3000	2700 3500	3040 4000	3420 4500	3800 5000	4180 5500	4560 6000	
NOMINAL INPUT	kW	277 371	342 459	418 557	520 688	630 830	715 950	815 1060	935 1200	1087 1442	1304 1715	1520 2020	1845 2400	2170 2890	2492 3280	2930 3825	3297 4371	3638,3 4838,7	4064,2 5421,8	4446,8 5914	4877 6506,2	
WATER EFFICIENCY AT FULL LOAD	%	92 91,6	92,1 91,5	92,1 91,5	92,3 91,5	92 91,5	92,3 91,5	92 91,5	91,9 91,6	92 91,5	92 91,5	92,1 91,5	92,1 91,6	92,1 91,7	92,3 91,4	92,1 91,4	92,2 91,5	94,0 93,0	93,5 92,22	94,0 93,0	93,5 92,22	
WATER EFFICIENCY AT PART LOAD	%	93,6 93,6	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	94,66 93,65	94,15 92,87	94,66 93,65	94,15 92,87	
COMBUSTION EFFICIENCY AT NOMINAL LOAD	%	92,9 92,5	92,8 92,4	92,7 92,4	92,6 92	92,3 92,1	92,8 92,1	92,5 91,9	91,4 92	92,2 91,8	92,2 91,9	92,4 91,9	92,4 91,9	92,4 92	92,4 91,8	92,4 91,8	92,4 91,8	94,54 93,51	94,05 92,83	94,54 93,46	94,05 92,83	
CASING HEAT LOSSES	%	0,8 0,8	0,7 0,9	0,6 0,9	0,3 0,4	0,2 0,5	0,5 0,6	0,5 0,4	0,4 0,3	0,2 0,3	0,2 0,4	0,3 0,3	0,3 0,3	0,3 0,3	0,2 0,3	0,3 0,3	0,2 0,3	0,54 0,51	0,55 0,61	0,54 0,61	0,55 0,46	
CHIMNEY LOSSES BURNER ON (min-max)	%	7,1 7,4	7,1 7,5	7,2 7,5	7,3 7,9	7,6 7,8	7,1 7,8	7,4 8	7,6 7,9	7,7 8,1	7,7 8	7,5 8,1	7,5 8	7,5 7,9	7,5 8,1	7,5 8,1	7,5 8,1	5,46 6,49	5,95 7,17	5,46 6,54	5,95 7,17	
CHIMNEY LOSSES BURNER OFF (min-max)	%	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	
NET FLUE GAS TEMPERATURE TFTA	°C	145 152	147 154	149 153	151 163	156 161	147 160	152 165	155 163	158 166	158 165	153 166	153 164	153 163	153 167	153 167	153 166	153 166	112 133	122 147	112 134	122 147
CO <sub>2</sub> CONTENT	%	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	
FLUE GAS MASS FLOW RATE	kg/h	416 557	514 689	628 837	781 1034	947 1247	1074 1428	1225 1593	1405 1803	1633 2167	1960 2577	2284 3036	2773 3607	3261 4344	3745 4930	4404 5754	4955 6570	5468,9 7273,3	6109,0 8149,8	6684,2 8889,5	7330,8 9779,7	

SKD (light oil)		340	420	510	630	760	870	970	1100	1320	1570	1850	2200	2650	3000	3500	4000	4500	5000	5500	6000	
NOMINAL OUTPUT	kW	255 340	315 420	385 510	480 630	580 760	660 870	750 970	860 1100	1000 1320	1200 1570	1400 1850	1700 2200	2000 2650	2300 3000	2700 3500	3040 4000	3420 4500	3800 5000	4180 5500	4560 6000	
NOMINAL INPUT	kW	277 371	342 459	418 557	520 688	630 830	715 950	815 1060	935 1200	1087 1442	1304 1715	1520 2020	1845 2400	2170 2890	2492 3280	2930 3825	3297 4371	3638,3 4838,7	4064,2 5421,8	4446,8 5914	4877 6506,2	
WATER EFFICIENCY AT FULL LOAD	%	92 91,6	92,1 91,5	92,1 91,5	92,3 91,5	92 91,5	91,5 91,5	91,5 91,5	91,9 91,6	92 91,5	92 91,5	92,1 91,5	92,1 91,6	92,1 91,7	92,3 91,4	92,1 91,4	92,2 91,5	94,0 93,0	93,5 92,22	94,0 93,0	93,5 92,22	
WATER EFFICIENCY AT PART LOAD	%	93,6 93,6	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	93,9 93,9	94,66 93,65	94,15 92,87	94,66 93,65	94,15 92,87	
COMBUSTION EFFICIENCY AT NOMINAL LOAD	%	92,8 92,5	92,7 92,4	92,7 92,4	92,6 92	92,3 92,1	92,1 92,1	92,5 91,9	92,3 92	92,2 91,8	92,2 91,9	92,4 91,8	92,4 91,9	92,4 92	92,4 91,7	92,4 91,7	92,4 91,8	94,53 93,48	94,07 92,84	94,53 93,48	94,07 92,84	
CASING HEAT LOSSES	%	0,8 0,8	0,6 0,9	0,6 0,9	0,3 0,4	0,2 0,5	0,5 0,5	0,4 0,4	0,4 0,3	0,2 0,2	0,2 0,3	0,3 0,3	0,3 0,3	0,3 0,3	0,3 0,3	0,3 0,3	0,2 0,3	0,53 0,48	0,57 0,62	0,53 0,48	0,57 0,48	
CHIMNEY LOSSES BURNER ON (min-max)	%	7,1 7,4	7,2 7,5	7,3 7,5	7,3 7,9	7,6 7,8	7,8 7,8	7,4 8	7,6 7,9	7,7 8,1	7,7 8	7,5 8,1	7,5 8	7,5 7,9	7,5 8,2	7,5 8,2	7,5 8,1	5,47 6,52	5,93 7,16	5,47 6,52	5,93 7,16	
CHIMNEY LOSSES BURNER OFF (min-max)	%	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	
NET FLUE GAS TEMPERATURE TFTA	°C	156 164	158 166	160 165	162 175	168 173	158 172	164 177	167 175	170 179	170 177	165 178	165 176	165 175	165 180	165 180	165 179	165 179	120 143	130 157	120 143	130 157
CO <sub>2</sub> CONTENT	%	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	
FLUE GAS MASS FLOW RATE	kg/h	424 568	523 702	640 852	796 1053	964 1271	1094 1454	1248 1632	1431 1837	1664 2208	1996 2626	2327 3093	2825 3675	3322 4425	3816 5022	4486 5861	5048 6693	5571,4 7409,6	6223,5 8302,5	6809,4 9056,1	7468,2 9963,0	

# Panel board

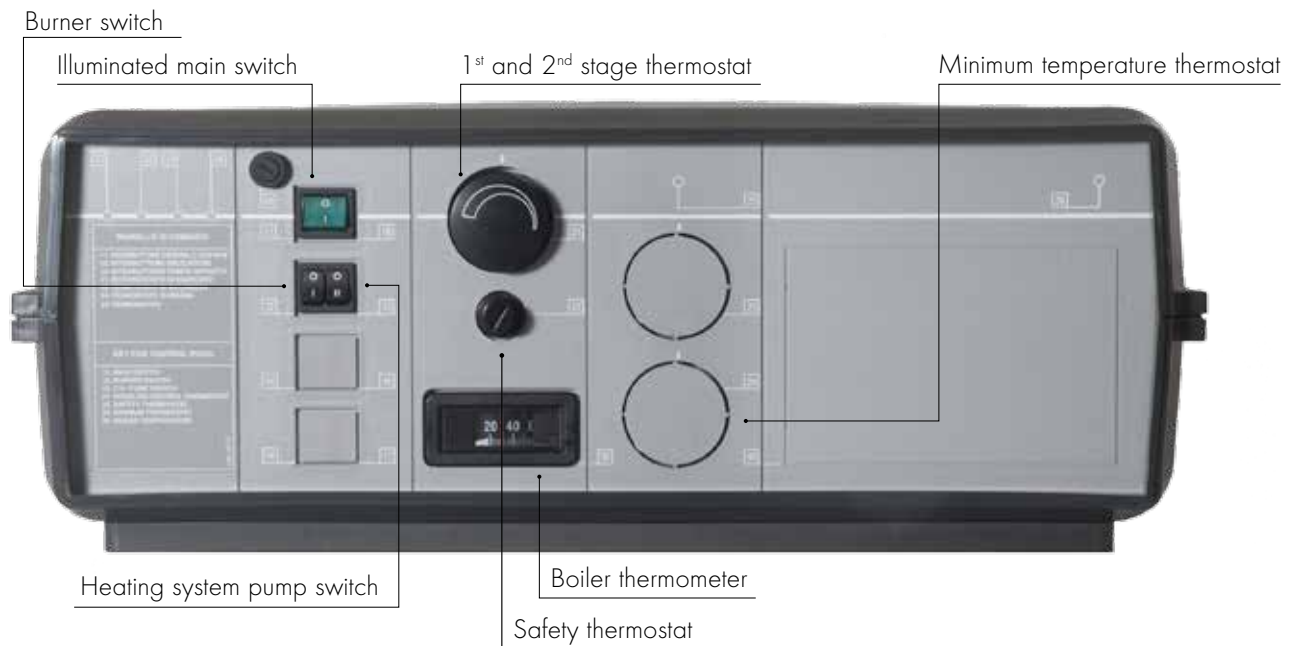
The panel board is manufactured in conformity to the LVD Directive 2006/95/EC. On request it can be adapted to any type of installation.

SKD is supplied with the **standard thermostatic panel board**, controlling, via thermostats that allows the **regulation of burner operations (one- or two-stage), pump and water temperature operations.**

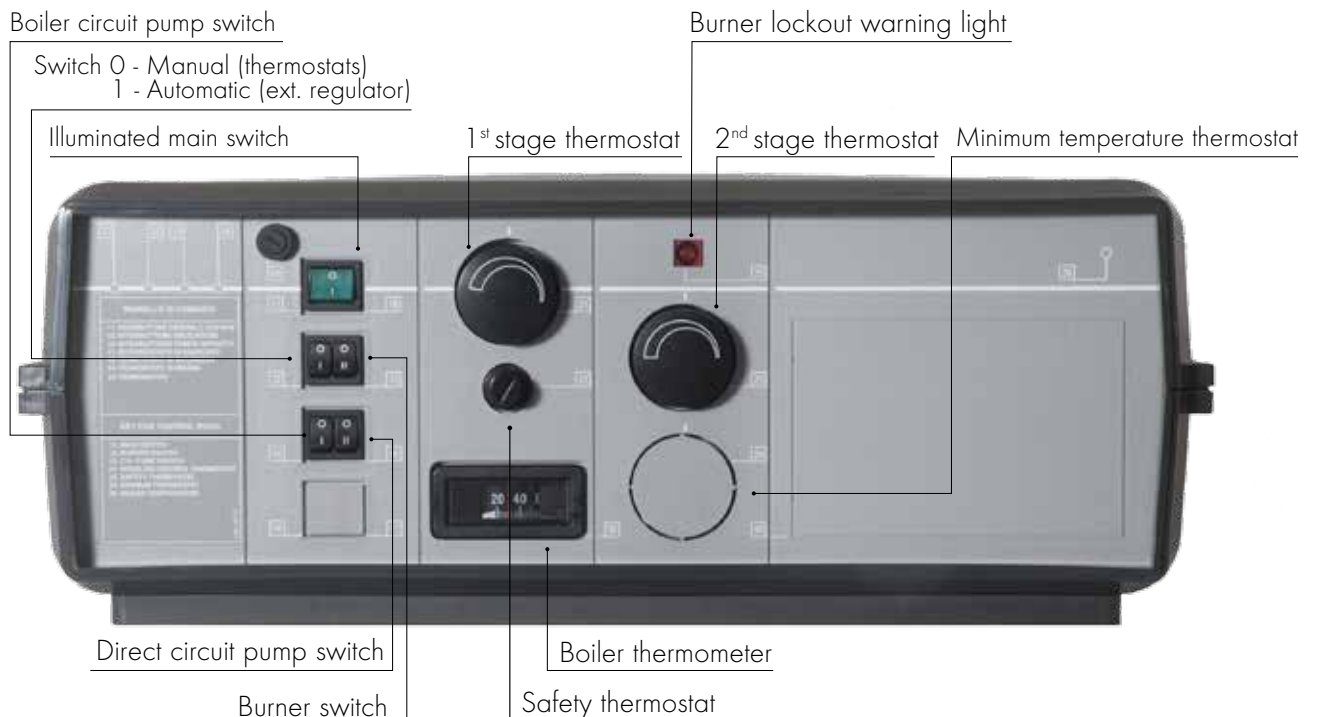
The panel board in the **predisposed version**, allows a connection to an **external regulator**, to control the modulating burners and distribution heat circuits.

The panel board is complete with main switch, CH pump switch, burner switch, boiler thermometer, two stage working thermostat, safety thermostat and minimum temperature thermostat (internal to the panel board).

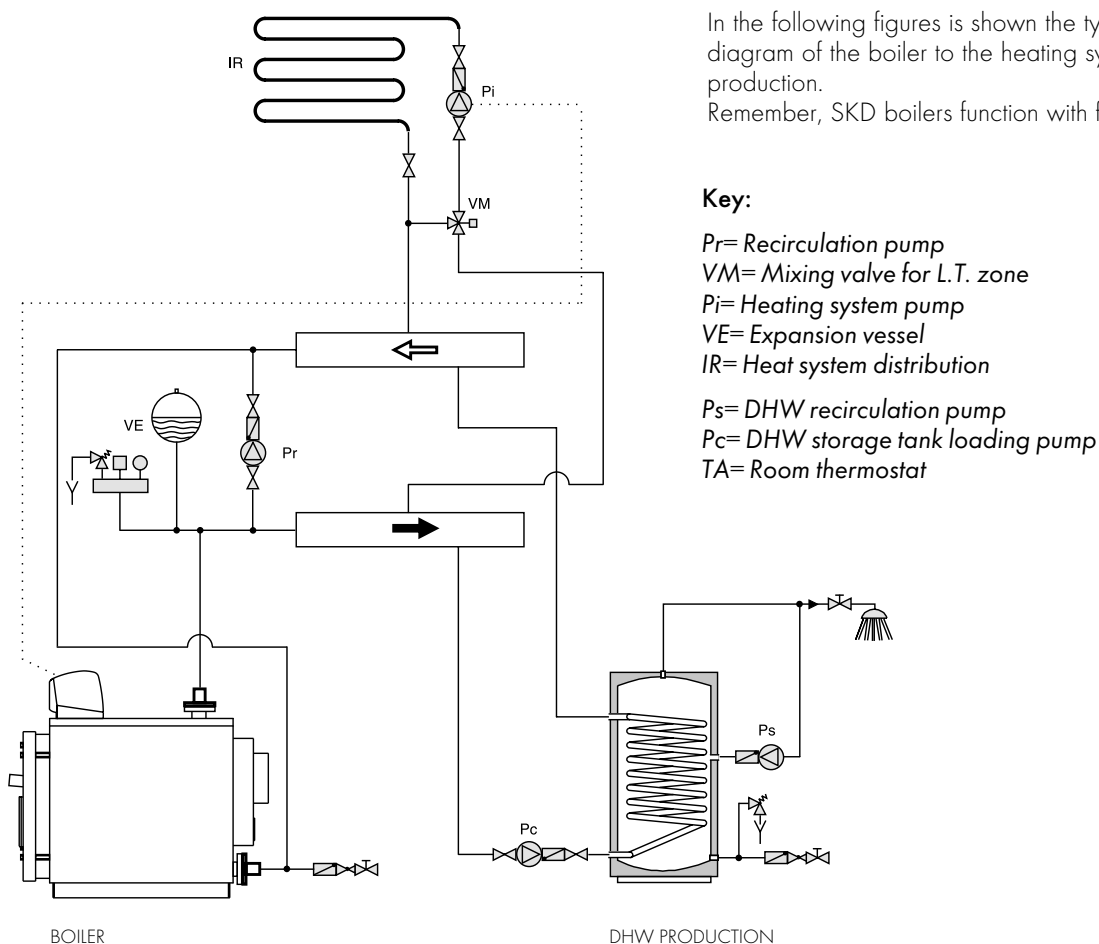
## ELECTROMECHANICAL VERSION



## PREDISPOSED VERSION FOR AN ELECTRONIC EXTERNAL CONTROL



# Hydraulic and electrical connections



In the following figures is shown the typical connection diagram of the boiler to the heating system with DHW production. Remember, SKD boilers function with forced circulation.

## Key:

- Pr*= Recirculation pump
- VM*= Mixing valve for L.T. zone
- Pi*= Heating system pump
- VE*= Expansion vessel
- IR*= Heat system distribution
- Ps*= DHW recirculation pump
- Pc*= DHW storage tank loading pump
- TA*= Room thermostat

The standard panel board of SKD boiler, automatically manage the switching off of the burner if the boiler's temperature reaches the value set on working thermostat. In addition, it manages pump system, that will function only with the attainment of the minimal boiler temperature of 50°C (anticondensing protection temperature).

By reaching the lower limit of 50°C (descending) pump system will turn off.

The panel board is predisposed for the management of two-stage or modulating burners.

With this diagram configuration, the possible DHW storage tank loading pump will function with priority on CH pump.