

KDE



CONDENSING STEEL BOILER

OUTPUT RANGE

from 124 kW (116 kW input) to 2160 kW

OPERATION TEMPERATURE

no limit on the return temperature

SUPPLY

Natural Gas or LPG fed pressure jet burners

MODELS

124

200

290

400

480

570

700

900

1140

1420

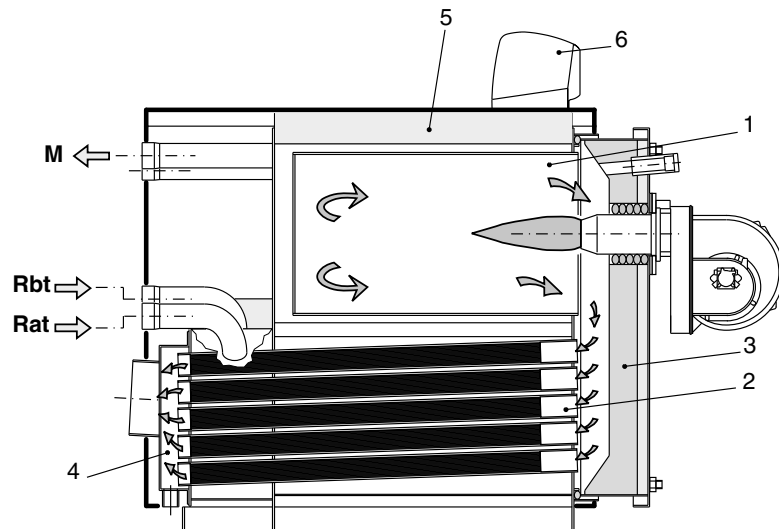
1820

2160

large water content
special smoke pipes in stainless steel AISI 316L with aluminium profiles

MAIN COMPONENTS

1. Furnace
 2. Smoke pipes with smoke diverters
 3. Door with flame sight glass
 4. Smoke chamber
 5. Body insulation
 6. Board panel
- M Flow
Rbt Low temperature return
Rat High temperature return



PRODUCT PLUS VALUES

■ VERY HIGH QUALITY OF THE EMPLOYED METALS

Outer shell in high resistance carbon steel: smoke chamber in stainless steel AISI 316L

■ PROGRESSIVE SMOKE PIPES (patented)

With very high thermal exchange, stainless steel special progressive pipes, armoured on the outside, with inside multi-fin aluminium turbulators

■ SELFCLEANING OF THE TUBE BUNDLE

thanks to the natural washout that the condensate produces for gravity

■ COMMAND AND CONTROL PANEL (optional)

electronic type with Ufly P thermoregulation, which allows the management of the one-stage, two-stage or modulating burners.

■ Arrangement for battery with control panel CASCATA UFLY P (optional)

Up to 8 KDE managed

■ LEAST THERMAL LOSSES

KDE is insulated with a layer of 100 mm of thermal and acoustic mineral wool insulation material. Carbon steel door with thermal insulation in light cement

■ MAXIMIZATION OF THE THERMAL EXCHANGE

Outer shell with reversed flame structure: in the blind cylindrical furnace the first two passes of the combustion gases are completed; subsequently they take the particular tube bundle used for the third pass.

■ VERY HIGH SAVING AND SEASONAL EFFICIENCY

Thanks to the adoption of fan assisted modulating burners and to the hydraulic connection prearranged for two return connections (high / low temperature)

■ CERTIFIED EFFICIENCY 109%

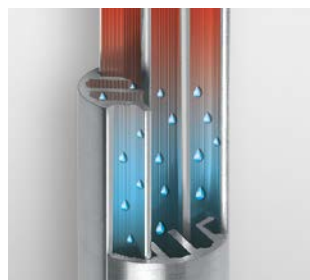
at 30% part load

■ SIMPLIFIED INSTALLATION

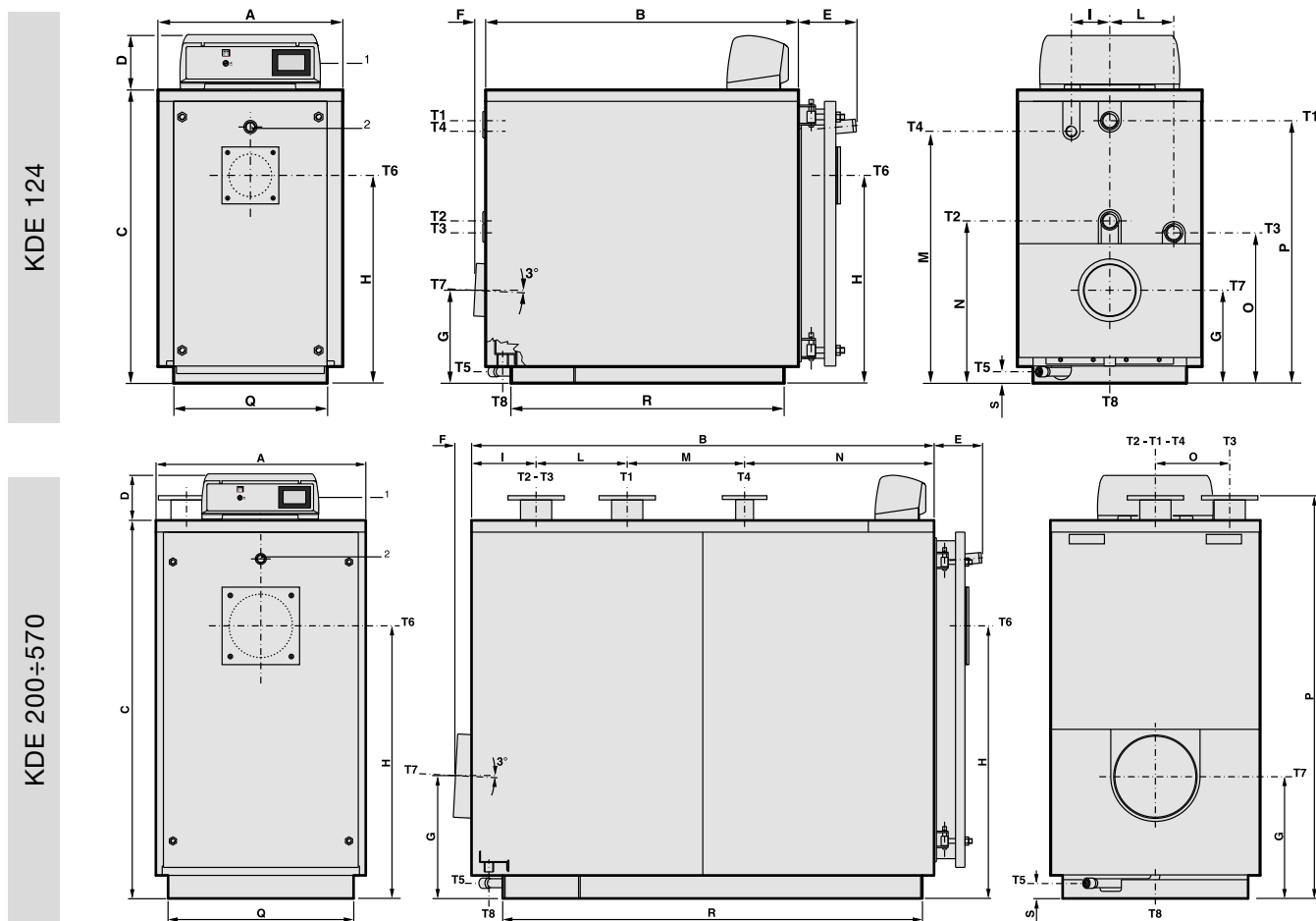
- Single smoke evacuation
- No hydraulic interface between boiler and C.H. system

■ WIDE RANGE OF REGULATION ACCESSORIES

- Temperature sensor for mixed zone flow connection
- Sensor PT 1000 for management of solar panels with E8



DIMENSIONS KDE 124÷570



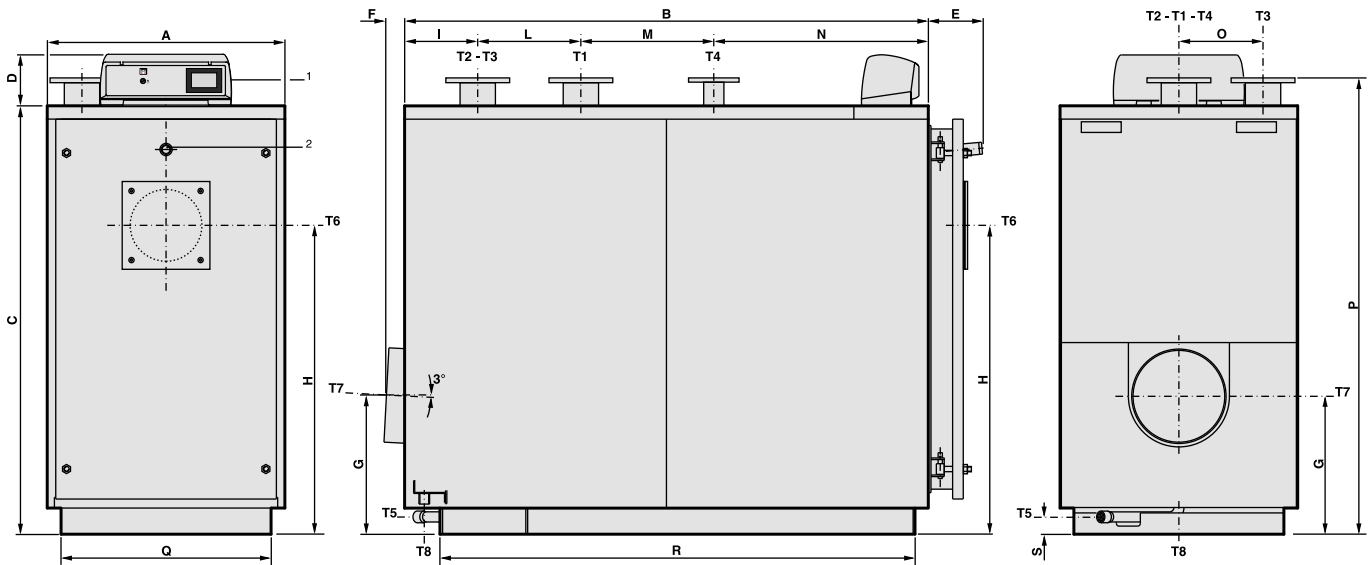
- 1 Panel board
- 2 Flame sight glass
- T1 C.H. flow
- T2 Low temperature C.H. return
- T3 High temperature C.H. return
- T4 Expansion vessel connection
- T5 Boiler drain
- T6 Burner connection
- T7 Chimney connection
- T8 Condensation drain

| KDE | CONNECTIONS | | | | | | | Weight kg |
|-----|------------------------------------|-------------------------------|---------------|---------------|---------|----------|----------|--------------|
| | T1 - T2 ISO 7/1 UNI 2276 PN6 | T3 ISO 7/1 UNI 2276 PN6 | T4 ISO 7/1 | T5 ISO 7/1 | T6 Ø | T7 Øi | T8 Øe | |
| 124 | Rp 2 | Rp 2 | Rp 1¼ | Rp ¾ | 150 | 182 | 40 | 365 |
| 200 | DN 65 | DN 65 | Rp 1½ | Rp ¾ | 180 | 202 | 40 | 525 |
| 290 | DN 80 | DN 80 | Rp 2 | Rp 1 | 180 | 252 | 40 | 660 |
| 400 | DN 80 | DN 80 | Rp 2 | Rp 1 | 180 | 252 | 40 | 800 |
| 480 | DN 100 | DN 100 | Rp 2 | Rp 1 | 220 | 302 | 40 | 1007 |
| 570 | DN 100 | DN 100 | Rp 2 | Rp 1 | 220 | 302 | 40 | 1137 |

| KDE | A | B | C | D | E | F | G | H | I | L | M | N | O | P* | Q* | R* | S |
|-----|-----|------|------|-----|-----|----|-----|------|-----|-----|-----|-----|-----|------|-----|------|----|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 124 | 650 | 1100 | 1032 | 190 | 205 | 37 | 329 | 730 | 135 | 225 | 885 | 570 | 528 | 922 | 540 | 961 | 40 |
| 200 | 720 | 1450 | 1132 | 190 | 205 | 48 | 374 | 790 | 255 | 320 | 250 | 625 | 255 | 1248 | 610 | 1311 | 45 |
| 290 | 790 | 1465 | 1282 | 190 | 235 | 55 | 402 | 900 | 231 | 359 | 250 | 625 | 275 | 1385 | 680 | 1314 | 60 |
| 400 | 790 | 1755 | 1282 | 190 | 235 | 65 | 402 | 900 | 271 | 379 | 450 | 655 | 275 | 1385 | 680 | 1614 | 60 |
| 480 | 854 | 1770 | 1472 | 190 | 270 | 67 | 494 | 1062 | 306 | 358 | 500 | 606 | 306 | 1585 | 750 | 1606 | 65 |
| 570 | 854 | 1940 | 1472 | 190 | 270 | 67 | 494 | 1062 | 306 | 358 | 500 | 776 | 306 | 1585 | 750 | 1776 | 65 |

(*) Minimum dimensions for boiler room access.

DIMENSIONS KDE 700÷2160



- 1 Panel board
- 2 Flame sight glass
- T1 C.H. flow
- T2 Low temperature C.H. return
- T3 High temperature C.H. return
- T4 Expansion vessel connection
- T5 Boiler drain
- T6 Burner connection
- T7 Chimney connection
- T8 Condensation drain

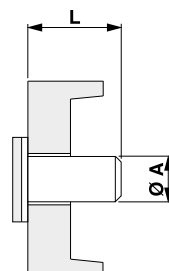
| KDE | CONNECTIONS | | | | | | | Weight kg |
|------|--------------|--------------|--------------|---------|---------|----------|----------|--------------|
| | T1 T2 | T3 | T4 | T5 | T6 Ø | T7 Øi | T8 Øe | |
| | UNI 2276 PN6 | UNI 2276 PN6 | UNI 2276 PN6 | ISO 7/1 | mm | mm | mm | |
| 700 | DN 125 | DN 125 | DN 65 | Rp 1 | 270 | 352 | 40 | 1376 |
| 900 | DN 125 | DN 125 | DN 65 | Rp 1 | 270 | 352 | 40 | 1613 |
| 1140 | DN 150 | DN 150 | DN 80 | Rp 1½ | 320 | 402 | 40 | 2158 |
| 1420 | DN 150 | DN 150 | DN 80 | Rp 1½ | 320 | 402 | 40 | 2443 |
| 1820 | DN 200 | DN 200 | DN 100 | Rp 1½ | 320 | 452 | 40 | 3458 |
| 2160 | DN 200 | DN 200 | DN 100 | Rp 1½ | 320 | 452 | 40 | 3765 |

| KDE | A | B | C | D | E | F | G | H | I | L | M | N | O | P* | Q* | R* | S |
|------|------|------|------|-----|-----|----|-----|------|-----|-----|------|------|-----|------|------|------|----|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 700 | 894 | 1970 | 1612 | 190 | 292 | 65 | 523 | 1161 | 275 | 388 | 500 | 807 | 316 | 1715 | 790 | 1787 | 65 |
| 900 | 894 | 2340 | 1612 | 190 | 292 | 65 | 523 | 1161 | 405 | 388 | 500 | 1047 | 316 | 1715 | 790 | 2157 | 65 |
| 1140 | 1064 | 2360 | 1802 | 190 | 317 | 57 | 551 | 1287 | 289 | 624 | 900 | 547 | 390 | 1911 | 960 | 2157 | 55 |
| 1420 | 1064 | 2740 | 1802 | 190 | 317 | 57 | 552 | 1287 | 459 | 624 | 900 | 757 | 390 | 1911 | 960 | 2537 | 55 |
| 1820 | 1204 | 2980 | 2052 | 190 | 387 | 53 | 681 | 1493 | 372 | 563 | 785 | 1260 | 432 | 2165 | 1100 | 2752 | 95 |
| 2160 | 1204 | 3204 | 2052 | 190 | 387 | 54 | 681 | 1493 | 371 | 563 | 1010 | 1260 | 432 | 2165 | 1100 | 2977 | 95 |

(*) Minimum dimensions for boiler room access.

BURNER BLAST TUBE DIMENSIONS

| BOILER TYPE | øA mm | L mm |
|---------------|----------|---------|
| KDE 124 | 150 | 230 |
| KDE 200 | 180 | 230 |
| KDE 290÷400 | 180 | 270 |
| KDE 480÷570 | 220 | 300 |
| KDE 700÷900 | 270 | 320 |
| KDE 1140÷1420 | 320 | 350 |
| KDE 1820÷2160 | 320 | 420 |



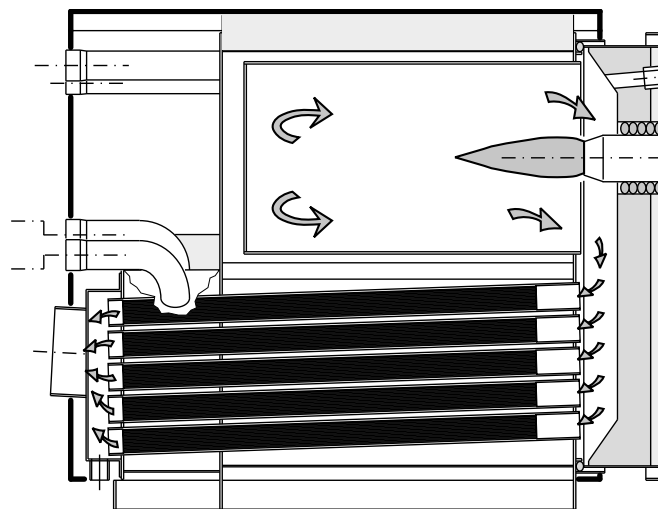
TYPE AND SHAPE OF FURNACE

KDE boilers are equipped with a blind cylindrical furnace, in which the central flame of the burner is reversed peripherally towards the front.

When the combustion gases have reached the front part, they are sent through the door into the tubes of the third pass to reach the rear flue gas chamber and then the chimney.

The combustion chamber is always pressurised while the burner is operating within the power range of the boiler.

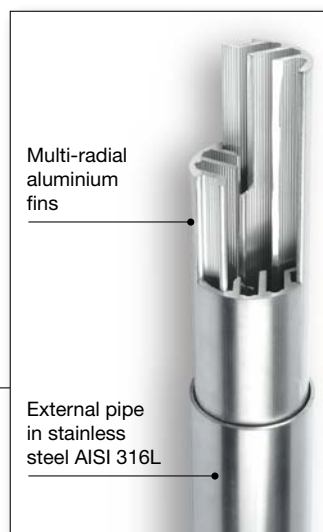
The chimney must be calculated so that no positive pressure is detected at its base.



SPECIAL SMOKE PIPES (patented)

SMOKE PIPES:

- Exceptional thermal exchange
- Functional outflow of the condensate
- Absence of wet acidic deposits
- Washout, for gravity, of the smooth exchange surfaces
- Greater duration



TECHNICAL DATA

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site www.schusterboilers.com at the page of the product


| KDE (Gas fired) | | 124 | 200 | 290 | 400 | 480 | 570 |
|--|------|-------|-------|-------|-------|-------|-------|
| Nominal heat output (80°-60°C) | kW | 112.8 | 182.7 | 265.6 | 367.1 | 440.7 | 523.3 |
| Nominal heat output (50°-30°C) | kW | 124 | 200 | 290 | 400 | 480 | 570 |
| Nominal heat input | kW | 115.9 | 186.9 | 271 | 373.8 | 448.6 | 532.7 |
| Heat efficiency at nominal load (80°-60°C) | % | 97.3 | 97.72 | 98.2 | 98.2 | 98.23 | 98.23 |
| Heat efficiency at nominal load (50°-30°C) | % | 107 | 107 | 107 | 107 | 107 | 107 |
| Heat efficiency at 30% load | % | 109 | 109 | 109 | 109 | 109 | 109 |
| Combustion efficiency (80°-60°C) | % | 98.06 | 98.1 | 98.23 | 98.37 | 98.37 | 98.37 |
| Combustion efficiency (50°-30°C) | % | 99 | 99 | 99 | 99 | 99 | 99 |
| Boiler capacity | l | 140 | 260 | 305 | 332 | 544 | 515 |
| Heat loss at shell (80°-60°C) | % | 0.76 | 0.38 | 0.23 | 0.17 | 0.14 | 0.14 |
| Heat loss at shell (50°-30°C) | % | 0.68 | 0.34 | 0.21 | 0.15 | 0.12 | 0.12 |
| Heat loss at chimney with burner on (80°-60°C) | % | 1.94 | 1.90 | 1.77 | 1.63 | 1.63 | 1.63 |
| Heat loss at chimney with burner on (50°-30°C) | % | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| Heat loss at chimney with burner off | % | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Maximum boiler working pressure | bar | 6 | 6 | 6 | 6 | 6 | 6 |
| Water pressure drops (*) | kPa | 1.5 | 3.8 | 2.5 | 3.2 | 2 | 2.9 |
| Flue gas pressure drop | daPa | 9.8 | 18.6 | 25.4 | 32.3 | 34.3 | 39.2 |
| Flue gas temperature tf-ta (80°-60°C) | °C | 44 | 43 | 40 | 37 | 37 | 37 |
| Flue gas temperature tf-ta (50°-30°C) | °C | 22 | 22 | 22 | 22 | 22 | 22 |
| CO ₂ content | % | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 |
| Flue gas mass flow rate | kg/h | 166.9 | 269.1 | 390.2 | 538.3 | 645.9 | 767 |
| Maximum condensation production (natural gas) | l/h | 19.61 | 31.62 | 45.85 | 63.24 | 75.89 | 90.12 |

| KDE (Gas fired) | | 700 | 900 | 1140 | 1420 | 1820 | 2160 |
|--|------|--------|--------|--------|--------|--------|--------|
| Nominal heat output (80°-60°C) | kW | 642.6 | 826.2 | 1046.6 | 1303.6 | 1670.8 | 1983 |
| Nominal heat output (50°-30°C) | kW | 700 | 900 | 1140 | 1420 | 1820 | 2160 |
| Nominal heat input | kW | 654.2 | 841.1 | 1065.4 | 1327.1 | 1700.9 | 2018.7 |
| Heat efficiency at nominal load (80°-60°C) | % | 98.23 | 98.23 | 98.23 | 98.23 | 98.23 | 98.23 |
| Heat efficiency at nominal load (50°-30°C) | % | 107 | 107 | 107 | 107 | 107 | 107 |
| Heat efficiency at 30% load | % | 109 | 109 | 109 | 109 | 109 | 109 |
| Combustion efficiency (80°-60°C) | % | 98.37 | 98.37 | 98.37 | 98.37 | 98.37 | 98.37 |
| Combustion efficiency (50°-30°C) | % | 99 | 99 | 99 | 99 | 99 | 99 |
| Boiler capacity | l | 625 | 664 | 1107 | 1157 | 1936 | 1904 |
| Heat loss at shell (80°-60°C) | % | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Heat loss at shell (50°-30°C) | % | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Heat loss at chimney with burner on (80°-60°C) | % | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 |
| Heat loss at chimney with burner on (50°-30°C) | % | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| Heat loss at chimney with burner off | % | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Maximum boiler working pressure | bar | 6 | 6 | 6 | 6 | 6 | 6 |
| Water pressure drops (*) | kPa | 3 | 3.7 | 3.5 | 4 | 3.9 | 5.5 |
| Flue gas pressure drop | daPa | 46 | 58.8 | 73.5 | 88.2 | 90.2 | 98 |
| Flue gas temperature tf-ta (80°-60°C) | °C | 37 | 37 | 37 | 37 | 37 | 37 |
| Flue gas temperature tf-ta (50°-30°C) | °C | 22 | 22 | 22 | 22 | 22 | 22 |
| CO ₂ content | % | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 |
| Flue gas mass flow rate | kg/h | 941.9 | 1211.1 | 1534 | 1910.8 | 2449 | 2906.6 |
| Maximum condensation production (natural gas) | l/h | 110.68 | 142.3 | 180.24 | 224.52 | 287.76 | 341.52 |

(*) Pressure drops corresponding to a thermal variation of 15K.

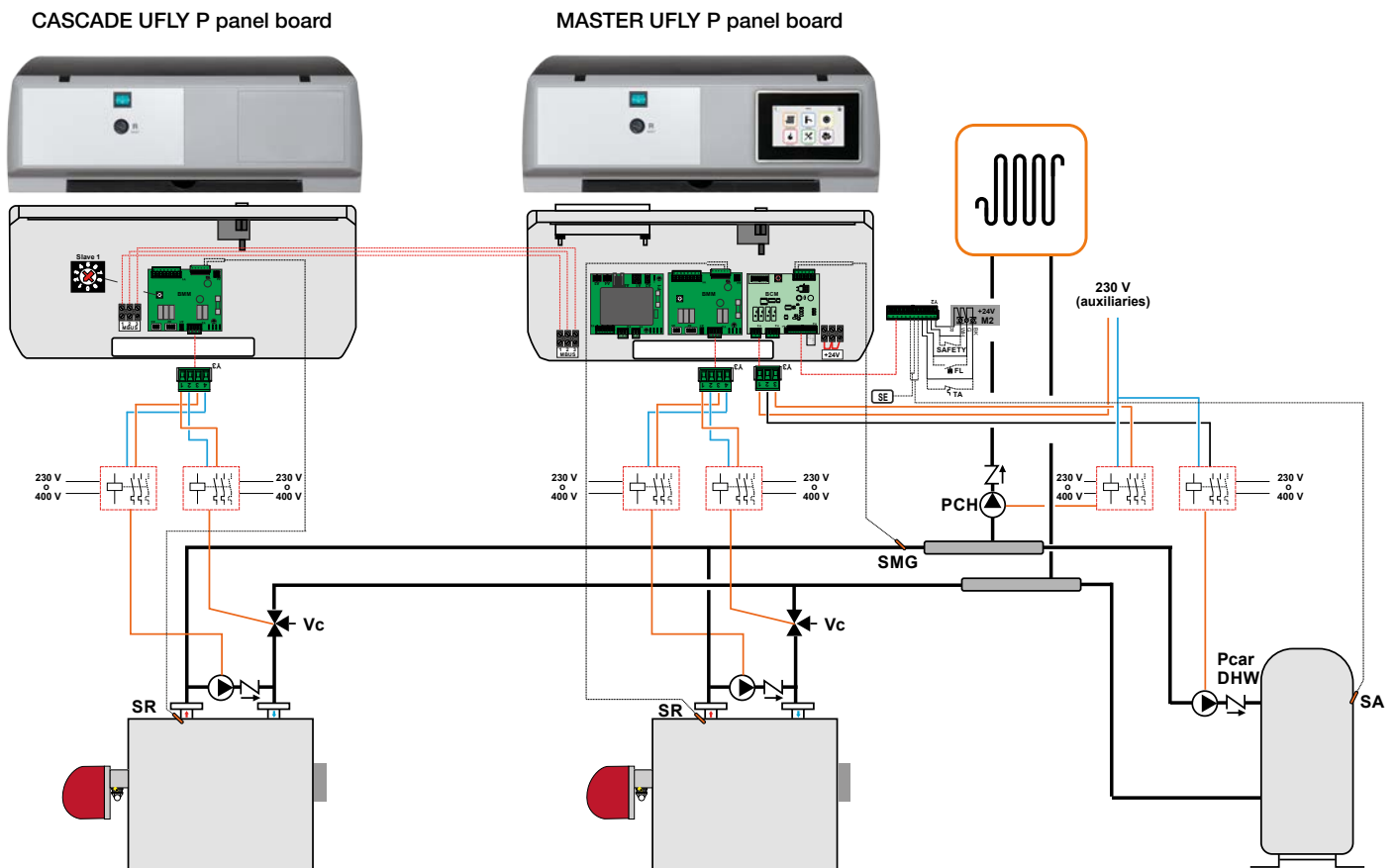
TECHNICAL DATA ACCORDING TO ErP DIRECTIVE

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site www.schusterboilers.com at the page of the product

| KDE (Gas fired) | | | 124 | 200 | 290 | 400 |
|--|---------------|---|----------|----------|----------|----------|
| EFFECTIVE NOMINAL OUTPUT | P_n | kW | 113 | 183 | 266 | 367 |
| SEASONAL ENERGY EFFICIENCY TO HEAT THE ROOM | η_s | % | 93 | 93 | 93 | 93 |
| SEASON EFFICIENCY CLASS TO DISCHARGE | |  | A | A | A | A |
| FOR BOILERS TO HEAT THE ROOM AND MIXED BOILERS: USEFUL HEAT OUTPUT | | | | | | |
| USEFUL HEAT OUTPUT with high temperature capacity (Tr 60 °C / Tm 80 °C) | P_4 | kW | 112.8 | 182.6 | 266.1 | 367.1 |
| RATED HEAT OUTPUT EFFICIENCY with high temperature capacity (Tr 60 °C / Tm 80 °C) | η_4 | % | 87.7 | 88.0 | 88.5 | 88.5 |
| USEFUL POWER AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C) | P_1 | kW | 97.9 | 61.1 | 88.6 | 122.6 |
| PERFORMANCE AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C) | η_1 | % | 98.2 | 98.2 | 98.2 | 98.8 |
| BOILER WITH OUTPUT RANGE ADJUSTMENT: YES / NO | | | NO | NO | NO | NO |
| AUXILIARY ELECTRICITY CONSUMPTION | | | | | | |
| WITH A FULL LOAD | $e_{l_{max}}$ | kW | 0.35 | 0.35 | 0.7 | 0.6 |
| STANDBY MODE | P_{SB} | kW | 0.050 | 0.050 | 0.050 | 0.050 |
| OTHER ELEMENTS | | | | | | |
| HEAT DISPERSION ON STAND-BY | P_{stby} | kW | 0.058 | 0.093 | 0.136 | 0.187 |
| NITROGEN OXIDES EMISSIONS referred to NCV & (GCV) | NO_x | mg/kWh | 57 (51) | 55 (50) | 55 (50) | 55 (50) |

NOTA: i modelli superiori ai 400 kW non sono coperti da direttiva 2009/125/CE

BASIC SCHEME OF SYSTEM OPERATION



| | |
|-----------|--|
| SMG | Global Flow sensor |
| SR | Heating sensor |
| PRC | Boiler recirculation pump (connect to BMM) |
| SA | DHW storage temperature sensor |
| P.car DHW | Cylinder charging pump (connect on BCM) |
| P. CH | Heating circuit pump (connect to BCM) |
| PCL | 2-way valve Boiler |

For condensing boilers, no boiler recirculation pump (PRC) is required.