

TRISTAR 2S



BREVETTO
Unical
PATENT

multi-fin pipes

PRESSURIZED CARBON STEEL BOILER WITH REVERSED FLAME FURNACE

OUTPUT RANGE

from 80 to 6100 kW

OPERATION TEMPERATURE

minimum return temperature 55°C

SUPPLY

Natural Gas or LPG fed pressure jet burners

MODELS

| | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 80 | 120 | 160 | 200 | 250 | 300 | 370 | 450 | 560 | 680 | 780 | 870 | 1000 | 1180 |
| 1400 | 1650 | 2000 | 2350 | 2700 | 3100 | 3500 | 3900 | 4400 | 4800 | 5200 | 5700 | 6100 | - |

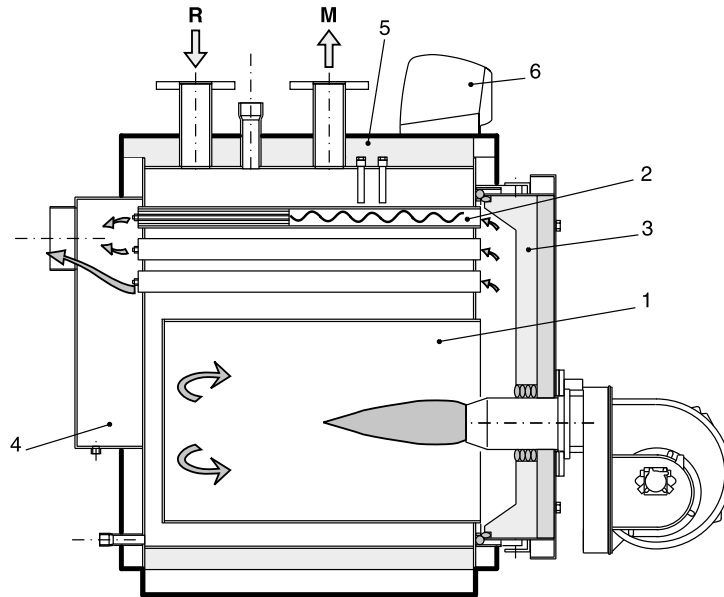
ENERGETIC CLASS
according to Dir. 92/42/EC

★★★★CE

Certified in OUTPUT RANGE
Special patented smoke pipes with aluminium profiles – Floating furnace

MAIN COMPONENTS

1. Furnace
2. Special smoke pipes EASY STREAM PIPE with turbulators
3. Door with flame control warning light
4. Smoke chamber
5. Body insulation
6. Panel board

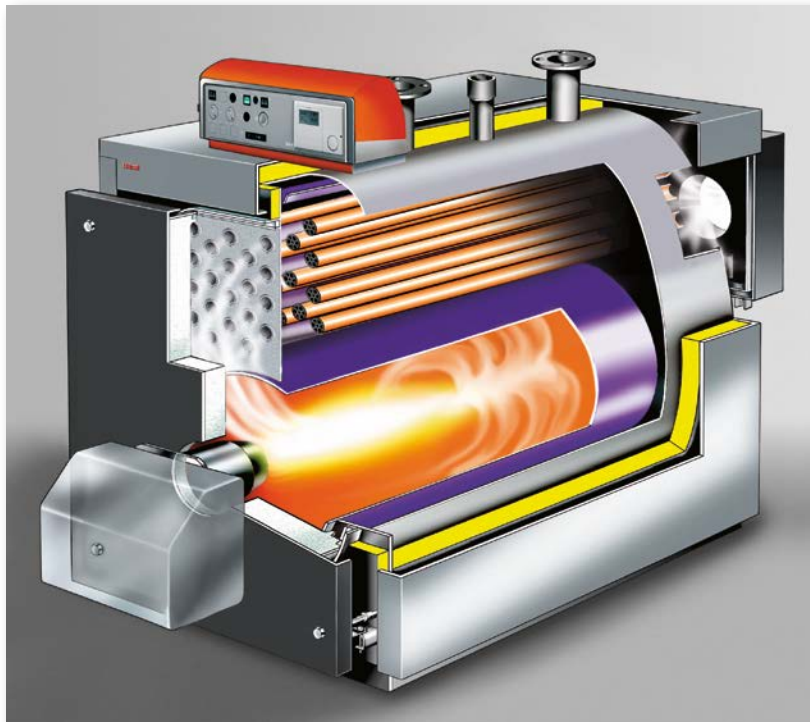


TECHNICAL DATA

| MODEL | Heat output | Heat input | Boiler capacity | Water side | Flue gas pressure | Max. boiler operating pressure | Weight |
|-----------------|-------------|---------------|-----------------|----------------|-------------------|--------------------------------|--------|
| | min/max | min/max | | pressure drops | pressure drops | | |
| | kW | kW | l | m w.c. | mm w.c. | bar | kg |
| TRISTAR 2S 80 | 60÷80 | 63.3÷85.2 | 86 | 0.08÷0.15 | 3.8÷6.8 | 6 | 221 |
| TRISTAR 2S 120 | 90÷120 | 94.6÷127.4 | 126 | 0.06÷0.11 | 6.1÷10.8 | 6 | 325 |
| TRISTAR 2S 160 | 120÷160 | 125.8÷169.4 | 151 | 0.11÷0.20 | 8.9÷15.8 | 6 | 366 |
| TRISTAR 2S 200 | 150÷200 | 157÷211.3 | 203 | 0.10÷0.17 | 11.1÷19.7 | 6 | 505 |
| TRISTAR 2S 250 | 187.5÷250 | 195.8÷263.6 | 247 | 0.12÷0.22 | 13.3÷23.6 | 6 | 583 |
| TRISTAR 2S 300 | 225÷300 | 234.6÷315.8 | 298 | 0.12÷0.22 | 15.9÷28.4 | 6 | 665 |
| TRISTAR 2S 370 | 277.5÷370 | 288.8÷388.7 | 398 | 0.08÷0.14 | 18.1÷32.2 | 6 | 845 |
| TRISTAR 2S 450 | 337.5÷450 | 351÷472.4 | 462 | 0.11÷0.20 | 20.2÷35.8 | 6 | 986 |
| TRISTAR 2S 560 | 420÷560 | 436.8÷587.9 | 565 | 0.17÷0.30 | 23.7÷42.1 | 6 | 1119 |
| TRISTAR 2S 680 | 510÷680 | 530.4÷713.9 | 671 | 0.12÷0.21 | 27.8÷49.4 | 6 | 1435 |
| TRISTAR 2S 780 | 585÷780 | 608.4÷818.9 | 753 | 0.15÷0.27 | 30.7÷54.4 | 6 | 1557 |
| TRISTAR 2S 870 | 652.5÷870 | 678.6÷913.4 | 836 | 0.19÷0.33 | 33÷58.6 | 6 | 1656 |
| TRISTAR 2S 1000 | 750÷1000 | 780÷1049.8 | 1040 | 0.11÷0.19 | 35.9÷63.9 | 6 | 1970 |
| TRISTAR 2S 1180 | 885÷1180 | 920.4÷1238.8 | 1242 | 0.15÷0.26 | 38.6÷68.6 | 6 | 2175 |
| TRISTAR 2S 1400 | 1050÷1400 | 1092÷1469.8 | 1418 | 0.15÷0.26 | 42.1÷74.9 | 6 | 2975 |
| TRISTAR 2S 1650 | 1237.5÷1650 | 1287÷1732.3 | 1617 | 0.20÷0.36 | 45.5÷80.9 | 6 | 3465 |
| TRISTAR 2S 2000 | 1500÷2000 | 1560÷2099.7 | 2086 | 0.16÷0.38 | 40.5÷72 | 6 | 4390 |
| TRISTAR 2S 2350 | 1762.5÷2350 | 1833÷2467.1 | 2324 | 0.21÷0.38 | 43.2÷76.9 | 6 | 4700 |
| TRISTAR 2S 2700 | 2025÷2700 | 2106÷2834.6 | 2667 | 0.28÷0.50 | 45.6÷81 | 6 | 5370 |
| TRISTAR 2S 3100 | 2325÷3100 | 2418.1÷3254.5 | 4142 | 0.37÷0.66 | 43.3÷76.9 | 6 | 6990 |
| TRISTAR 2S 3500 | 2625÷3500 | 2730.1÷3674.5 | 4455 | 0.37÷0.65 | 50.4÷89.5 | 6 | 7790 |
| TRISTAR 2S 3900 | 2925÷3900 | 3042.1÷4094.4 | 6012 | 0.28÷0.50 | 44.4÷78.6 | 6 | 8630 |
| TRISTAR 2S 4400 | 3300÷4400 | 3432.1÷4619.3 | 6012 | 0.35÷0.63 | 56.6÷100.5 | 6 | 8630 |
| TRISTAR 2S 4800 | 3600÷4800 | 3744.1÷5039.3 | 7058 | 0.42÷0.75 | 50.5÷92.2 | 6 | 9675 |
| TRISTAR 2S 5200 | 3900÷5200 | 4056.1÷5459.2 | 7058 | 0.50÷0.88 | 59.3÷105.4 | 6 | 9675 |
| TRISTAR 2S 5700 | 4275÷5700 | 4446.1÷5984.1 | 7909 | 0.59÷1.05 | 49.5÷90.5 | 6 | 13060 |
| TRISTAR 2S 6100 | 4575÷6100 | 4758.1÷6404.1 | 7909 | 0.68÷1.21 | 56.7÷100.7 | 6 | 13060 |

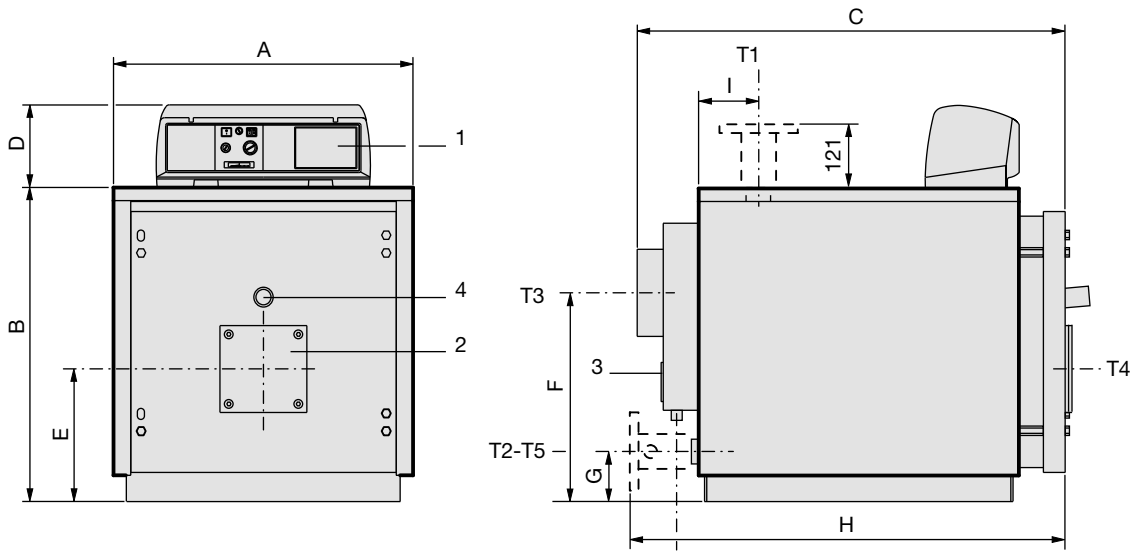
On special order the boilers from model 1000 to 6100 can be manufactured for a max. working pressure up to 10 bar.

PRODUCT PLUS VALUES



- **CERTIFICATION IN OUTPUT RANGE**
- **OUTER SHELL OF ELLIPTIC SHAPE**
(up to the model 870 kW) that creates the following advantages:
 - small dimensions in width
 - positioning of most of the tube bundle above the furnace, with drastic reduction of the possible formation of condensate
- **FLOATING FURNACE** from model 680 and on, in order to reduce the mechanical stress due to the different dilatations of the furnace, smoke pipes and outer shell.
- **FURNACE BOTTOM** with heat recovering plates welded on the water side for efficiency increase and as stiffeners of the bottom it self.
- **MULTI-FIN, PATENTED, BIMETALLIC PIPES**
with high efficiency
- **OPTIMIZATION OF THE HEAT EXCHANGE**
thanks to:
 - special helical turbulators in the front part of the smoke pipes
 - guided water way inside the boiler
- **FRONT DOOR**
with self-centring closing, adjustable in vertical / axial and transversal way, with bolts separated from the hinges to avoid mechanical stresses
- **INTERNAL DOOR INSULATION**
in recyclable super light concrete
- **OUTER PROTECTING CASING**
in steel sheet panels, with insulating mattress in mineral wool protected with anti-tearing fabric foil, rounded directly on the boiler body. Thickness of 50 - 60 - 80 - 100 mm according to the output.
- **SMOKE CHAMBER**
with condensate drain connection
- **BOARD PANEL**
thermostatic type (std) or electronic type (optional)
- **EASY HANDLING**
thanks to the upper hooks and strong base longitudinal members
- **AVAILABLE IN LOOSEN PARTS VERSION**
to be assembled in the boiler house (up to 870 kW).

DIMENSIONS TRISTAR 2S 80÷250



- 1 Panel board
- 2 Burner connection flange
- 3 Smoke chamber cleaning door
- 4 Flame control warning light

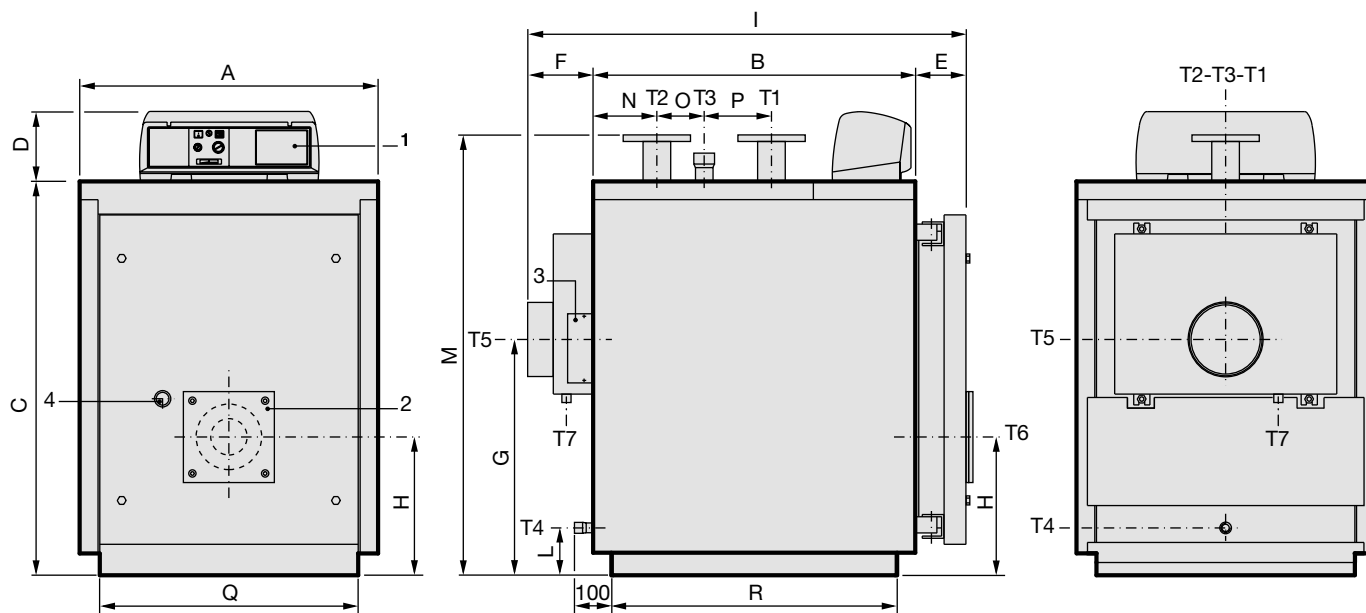
- T1 Heating flow
- T2 Heating return
- T3 Chimney connection
- T4 Burner connection

- T5 Boiler drain
- T6 Condensation drain

| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | |
|---------------|-------------------------|------------------------|-------------------------|--|---|---|--------------|-----------------------|----------|----------|--------|----------|
| | | | | | | | | T1 T2 | T3 Øe | T4 Øi | T5 | T6 Øe |
| | | | | | | | | UNI228 UNI2278PN16 | mm | mm | UNI228 | mm |
| 80 | 60÷80 | 63.3÷85.2 | 86 | 0.08÷0.15 | 3.8÷6.8 | 6 | 221 | G 1½ | 200 | 130 | G ¾ | 40 |
| 120 | 90÷120 | 94.6÷127.4 | 126 | 0.06÷0.11 | 6.1÷10.8 | 6 | 325 | G 2 | 200 | 180 | G ¾ | 40 |
| 160 | 120÷160 | 125.8÷169.4 | 151 | 0.11÷0.20 | 8.9÷15.8 | 6 | 366 | G 2 | 200 | 180 | G ¾ | 40 |
| 200 | 150÷200 | 157÷211.3 | 203 | 0.10÷0.17 | 11.1÷19.7 | 6 | 505 | DN 65 | 250 | 180 | G ¾ | 40 |
| 250 | 187.5÷250 | 195.8÷263.6 | 247 | 0.12÷0.22 | 13.3÷23.6 | 6 | 583 | DN 65 | 250 | 180 | G ¾ | 40 |

| TRISTAR 2S | A | B | C | D | E | F | G | H | I |
|---------------|-----|-----|------|-----|-----|-----|-----|------|-----|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 80 | 690 | 722 | 995 | 190 | 305 | 480 | 115 | -- | 147 |
| 120 | 760 | 812 | 1210 | 190 | 350 | 500 | 130 | -- | 157 |
| 160 | 760 | 812 | 1390 | 190 | 350 | 500 | 130 | -- | 157 |
| 200 | 860 | 937 | 1442 | 190 | 421 | 580 | 165 | 1487 | 258 |
| 250 | 860 | 937 | 1692 | 190 | 421 | 580 | 165 | 1737 | 258 |

DIMENSIONS TRISTAR 2S 300÷560



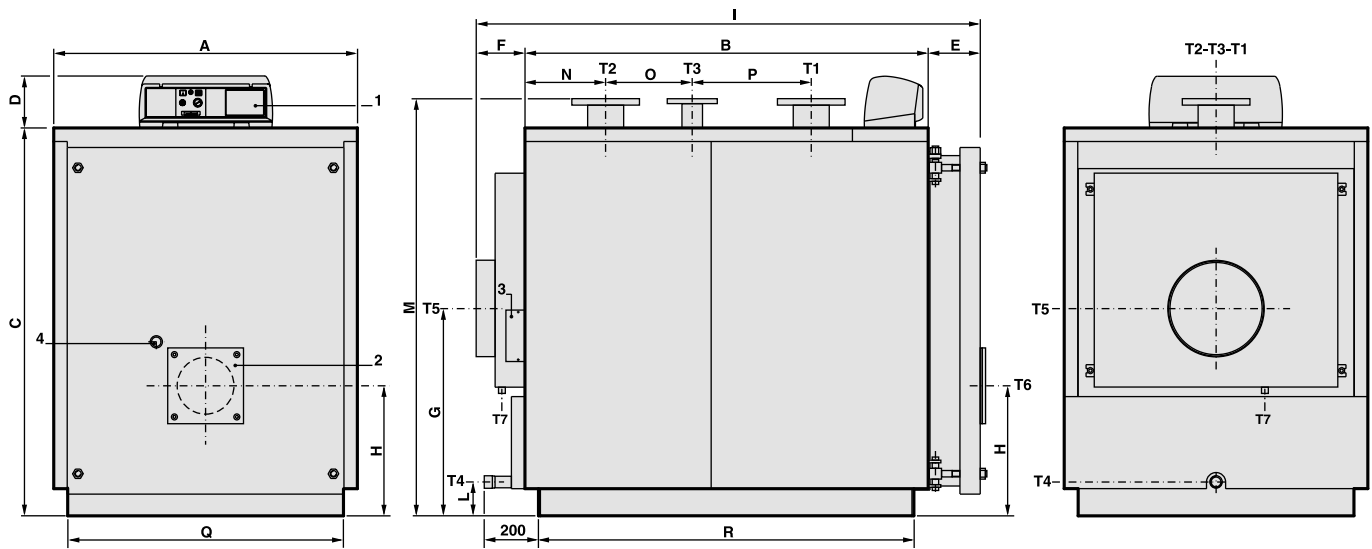
- 1 Panel board
- 2 Burner connection flange
- 3 Smoke chamber cleaning door
- 4 Flame control warning light
- T1 Heating flow
- T2 Heating return
- T3 Expansion vessel connection
- T4 Boiler drain
- T5 Chimney connection
- T6 Burner connection
- T7 Condensation drain

| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | | |
|------------|----------------------|---------------------|----------------------|------------------------------------|-----------------------------------|--|--------------|----------------------|---------------|---------------|----------|---------|----------|
| | | | | | | | | T1 T2 | T3 | T4 | T5 Øi | T6 Ø | T7 Øe |
| 300 | 225÷300 | 234.6÷315.8 | 298 | 0.12÷0.22 | 15.9÷28.4 | 6 | 665 | UNI2278PN16 DN 80 | UNI228 G 2 | UNI228 G ¾ | 250 | 220 | 40 |
| 370 | 277.5÷370 | 288.8÷388.7 | 398 | 0.08÷0.14 | 18.1÷32.2 | 6 | 845 | DN 100 | G 2 | G ¾ | 250 | 220 | 40 |
| 450 | 337.5÷450 | 351÷472.4 | 462 | 0.11÷0.20 | 20.2÷35.8 | 6 | 986 | DN 100 | G 2 | G ¾ | 250 | 220 | 40 |
| 560 | 420÷560 | 436.8÷587.9 | 565 | 0.17÷0.30 | 23.7÷42.1 | 6 | 1119 | DN 100 | G 2 | G ¾ | 300 | 220 | 40 |

| TRISTAR 2S | A | B | C | D | E | F | G | H | I | L | M* | N | O | P | Q* | R* |
|------------|-----|------|------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 300 | 860 | 1210 | 1182 | 190 | 140 | 191 | 708 | 400 | 1541 | 130 | 1310 | 215 | 340 | 250 | 750 | 1112 |
| 370 | 890 | 1275 | 1352 | 190 | 140 | 191 | 748 | 440 | 1606 | 125 | 1485 | 255 | 285 | 315 | 780 | 1177 |
| 450 | 890 | 1470 | 1352 | 190 | 140 | 191 | 748 | 440 | 1801 | 125 | 1485 | 255 | 480 | 315 | 780 | 1372 |
| 560 | 890 | 1780 | 1352 | 190 | 141 | 192 | 748 | 440 | 2113 | 125 | 1485 | 255 | 790 | 315 | 780 | 1684 |

(*) Minimum dimensions for boiler room access.
 (**) Pressure drops corresponding to a thermal variation of 15K.

DIMENSIONS TRISTAR 2S 680÷870



- 1 Panel board
- 2 Burner connection flange
- 3 Smoke chamber cleaning door
- 4 Flame sight glass
- T1 Heating flow
- T2 Heating return
- T3 Expansion vessel connection
- T4 Boiler drain
- T5 Chimney connection
- T6 Burner connection
- T7 Condensation drain

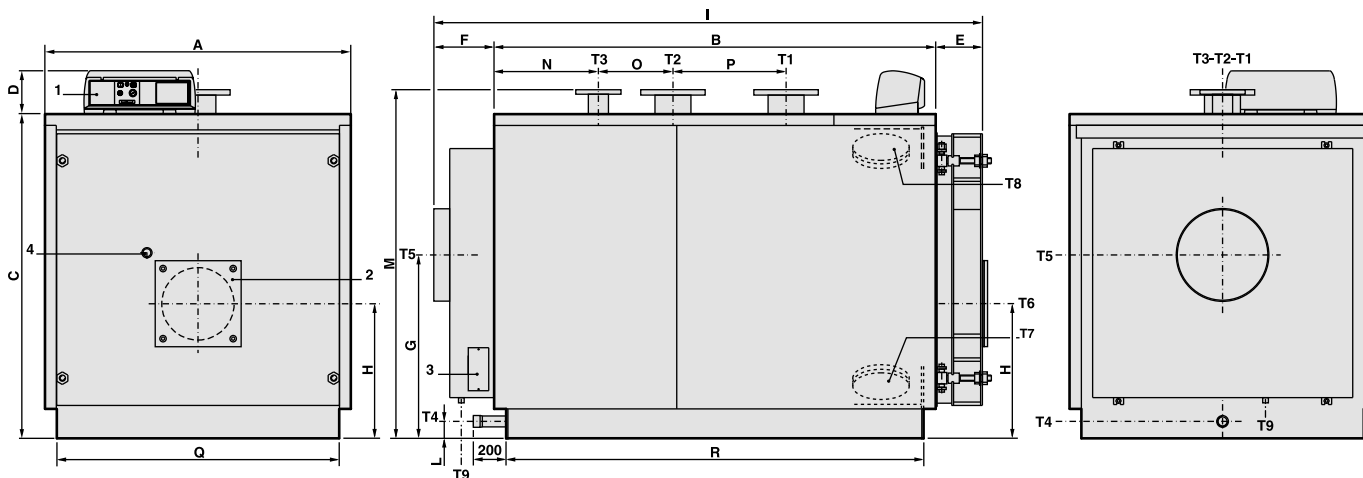
| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | | |
|------------|----------------------|---------------------|----------------------|------------------------------------|-----------------------------------|--|--------------|-----------------------|----------------------|----------------|----------|---------|----------|
| | | | | | | | | T1 T2 | T3 | T4 | T5 Øi | T6 Ø | T7 Øe |
| 680 | 510÷680 | 530.4÷713.9 | 671 | 0.12÷0.21 | 27.8÷49.4 | 6 | 1435 | UNI2278PN16 DN 125 | UNI2278PN16 DN 65 | UNI228 G 1¼ | 350 | 270 | 40 |
| 780 | 585÷780 | 608.4÷818.9 | 753 | 0.15÷0.27 | 30.7÷54.5 | 6 | 1557 | DN 125 | DN 65 | G 1¼ | 350 | 270 | 40 |
| 870 | 652.5÷870 | 678.6÷913.4 | 836 | 0.19÷0.33 | 33÷58.6 | 6 | 1656 | DN 125 | DN 65 | G 1¼ | 350 | 270 | 40 |

| TRISTAR 2S | A | B | C | D | E | F | G | H | I | L | M* | N | O | P | Q* | R* |
|------------|------|------|------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|------|------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 680 | 1122 | 1605 | 1432 | 190 | 195 | 190 | 765 | 480 | 1989 | 125 | 1540 | 298 | 435 | 440 | 1020 | 1504 |
| 780 | 1122 | 1800 | 1432 | 190 | 195 | 190 | 765 | 480 | 2184 | 125 | 1540 | 298 | 630 | 440 | 1020 | 1699 |
| 870 | 1122 | 1995 | 1432 | 190 | 195 | 190 | 765 | 480 | 2379 | 125 | 1540 | 298 | 825 | 440 | 1020 | 1894 |

(*) Minimum dimensions for boiler room access.

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

DIMENSIONS TRISTAR 2S 1000÷2350



- 1 Panel board
- 2 Burner connection flange
- 3 Smoke chamber cleaning door
- 4 Flame sight glass
- T1 Heating flow
- T2 Heating return
- T3 Expansion vessel connection
- T4 Boiler drain
- T5 Chimney connection
- T6 Burner connection
- T7 Boiler air bleed
- T8 Inspection door
- T9 Condensation drain

| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | | |
|------------|----------------------|---------------------|----------------------|------------------------------------|-----------------------------------|--|--------------|-------------|--------|------|----------|---------|----------|
| | | | | | | | | T1 T2 | T3 | T4 | T5 Øi | T6 Ø | T9 Øe |
| 1000 | 750÷1000 | 780÷1049.8 | 1040 | 0.11÷0.19 | 35.9÷63.9 | 6 | 1970 | DN 150 | DN 80 | G 1½ | 400 | 320 | 40 |
| 1180 | 885÷1180 | 920.4÷1238.8 | 1242 | 0.15÷0.26 | 38.6÷68.6 | 6 | 2175 | DN 150 | DN 80 | G 1½ | 400 | 320 | 40 |
| 1400 | 1050÷1400 | 1092÷1469.8 | 1418 | 0.15÷0.26 | 42.1÷74.9 | 6 | 2975 | DN 175 | DN 100 | G 1½ | 450 | 320 | 40 |
| 1650 | 1237.5÷1650 | 1287÷1732.3 | 1617 | 0.20÷0.36 | 45.5÷80.9 | 6 | 3465 | DN 175 | DN 100 | G 1½ | 450 | 320 | 40 |
| 2000 | 1500÷2000 | 1560÷2099.7 | 2086 | 0.16÷0.28 | 40.5÷72 | 6 | 4390 | DN 200 | DN 125 | G 1½ | 520 | 380 | 40 |
| 2350 | 1762.5÷2350 | 1833÷2467.1 | 2324 | 0.21÷0.38 | 43.2÷76.9 | 6 | 4700 | DN 200 | DN 125 | G 1½ | 520 | 380 | 40 |

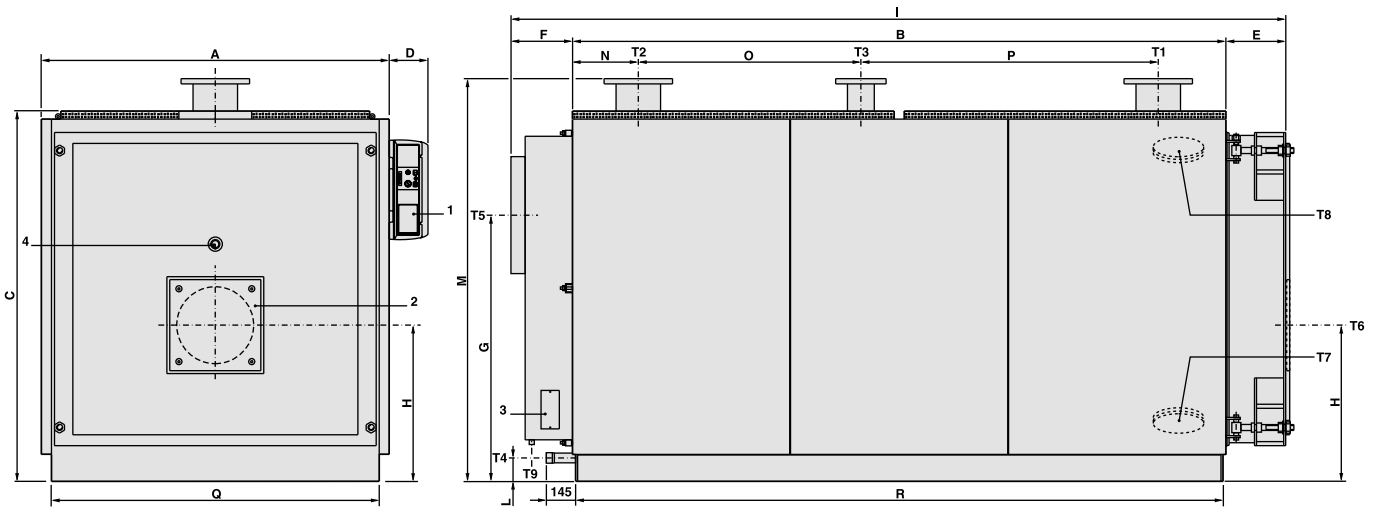
| TRISTAR 2S | A | B | C | D | E | F | G | H | I | L | M* | N | O | P | Q* | R* |
|------------|------|------|------|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|------|------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1000 | 1352 | 1952 | 1432 | 190 | 207 | 187 | 810 | 595 | 2346 | 180 | 1540 | 461 | 330 | 500 | 1250 | 1846 |
| 1180 | 1352 | 2292 | 1432 | 190 | 207 | 187 | 810 | 595 | 2686 | 180 | 1540 | 461 | 670 | 500 | 1250 | 2186 |
| 1400 | 1462 | 2282 | 1542 | 190 | 227 | 272 | 880 | 640 | 2781 | 75 | 1650 | 561 | 510 | 550 | 1360 | 2176 |
| 1650 | 1462 | 2652 | 1542 | 190 | 227 | 272 | 880 | 640 | 3151 | 75 | 1650 | 561 | 880 | 550 | 1360 | 2546 |
| 2000 | 1622 | 2692 | 1702 | 190 | 259 | 274 | 950 | 690 | 3225 | 75 | 1810 | 661 | 670 | 700 | 1520 | 2590 |
| 2350 | 1622 | 3014 | 1702 | 190 | 258 | 273 | 950 | 690 | 3545 | 75 | 1810 | 662 | 990 | 700 | 1520 | 2910 |

(*) Minimum dimensions for boiler room access.

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

On special order the boilers from model TRISTAR 2S 1000 to TRISTAR 2S 6100 can be manufactured for a max. working pressure up to 10 bar.

DIMENSIONS TRISTAR 2S 2700÷3500



- 1 Panel board
- 2 Burner connection flange
- 3 Smoke chamber cleaning door
- 4 Flame sight glass
- T1 Heating flow
- T2 Heating return
- T3 Expansion vessel connection
- T4 Boiler drain
- T5 Chimney connection
- T6 Burner connection
- T7 Boiler air bleed
- T8 Inspection door
- T9 Condensation drain

| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | |
|------------|----------------------|---------------------|----------------------|------------------------------------|-----------------------------------|--|--------------|------------------------|------------------------|----------------|----------|---------|
| | | | | | | | | T1 T2 | T3 | T4 | T5 Øi | T6 Ø |
| 2700 | 2025÷2700 | 2106÷2834.6 | 2667 | 0.28÷0.50 | 45.6÷81 | 6 | 5370 | UNI2278 PN16 DN 200 | UNI2278 PN16 DN 125 | UNI228 G 1½ | 570 | 380 |
| 3100 | 2325÷3100 | 2418.1÷3254.5 | 4142 | 0.37÷0.66 | 43.3÷76.9 | 6 | 6990 | DN 200 | DN 125 | G 1½ | 620 | 400 |
| 3500 | 2625÷3500 | 2730.1÷3674.5 | 4455 | 0.37÷0.65 | 50.4÷89.5 | 6 | 7790 | DN 250 | DN 125 | G 1½ | 620 | 400 |

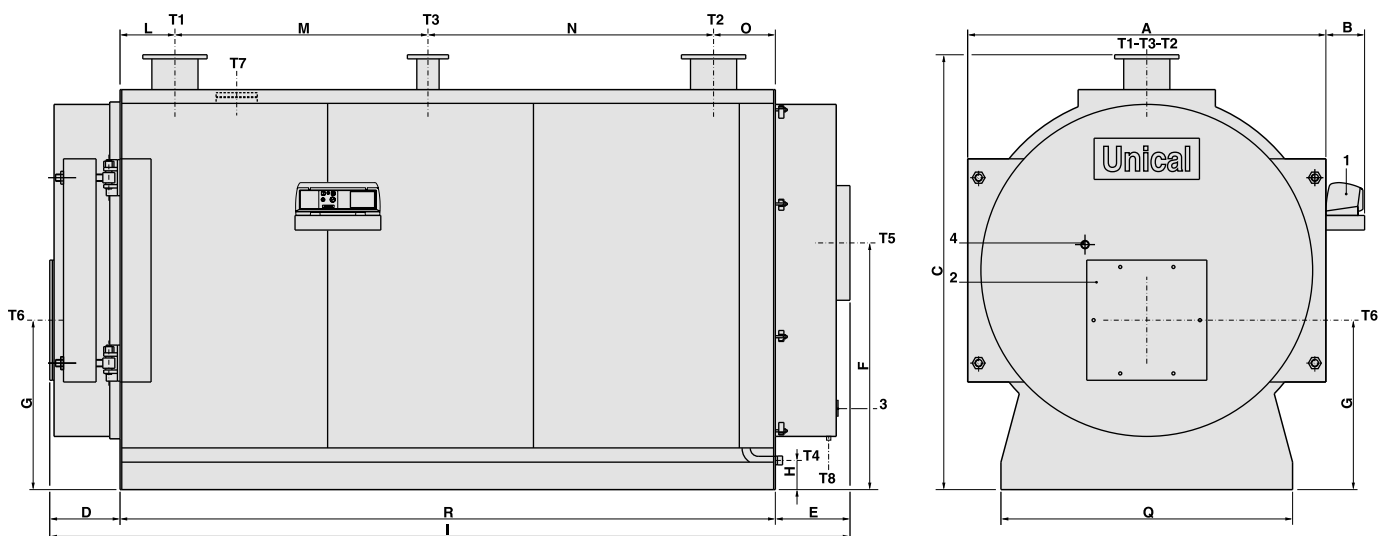
| TRISTAR 2S | A | B | C | D | E | F | G | H | I | L | M* | N | O | P | Q* | R* |
|------------|------|------|------|-----|-----|-----|------|-----|------|-----|------|-----|------|------|------|------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 2700 | 1720 | 3230 | 1830 | 190 | 295 | 310 | 1315 | 772 | 3835 | 115 | 1990 | 325 | 1100 | 1470 | 1620 | 3200 |
| 3100 | 1970 | 3194 | 2090 | 190 | 325 | 360 | 1535 | 915 | 3879 | 144 | 2271 | 377 | 1060 | 1420 | 1870 | 3164 |
| 3500 | 1970 | 3594 | 2090 | 190 | 325 | 360 | 1535 | 915 | 4279 | 144 | 2271 | 777 | 1060 | 1420 | 1870 | 3564 |

(*) Minimum dimensions for boiler room access.

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

On special order the boilers from model 1000 to 6100 can be manufactured for a max. working pressure up to 10 bar.

DIMENSIONS TRISTAR 2S 3900÷6100



- | | | |
|-------------------------------|--------------------------------|-----------------------|
| 1 Panel board | T1 Heating flow | T5 Chimney connection |
| 2 Burner connection flange | T2 Heating return | T6 Burner connection |
| 3 Smoke chamber cleaning door | T3 Expansion vessel connection | T7 Inspection door |
| 4 Flame sight glass | T4 Boiler drain | T8 Condensation drain |

| TRISTAR 2S | Nominal output kW | Nominal input kW | Boiler capacity l | Water pressure drops(**) m w.c. | Flue gas pressure drop mm w.c. | Maximum boiler working pressure bar | Weight kg | CONNECTIONS | | | | | | |
|------------|----------------------|---------------------|----------------------|------------------------------------|-----------------------------------|--|--------------|--------------------|--------------------|---------------|----------|---------|---------|----------|
| | | | | | | | | T1 T2 | T3 | T4 | T5 Øi | T6 Ø | T7 Ø | T8 Øe |
| 3900 | 2925÷3900 | 3042.1÷4094.4 | 6012 | 0.28÷0.50 | 44.4÷78.6 | 6 | 8630 | UNI2278PN16 DN 250 | UNI2278PN16 DN 125 | ISO 7/1 Rp 1½ | 660 | 500 | 133 | 40 |
| 4400 | 3300÷4400 | 3432.1÷4619.3 | 6012 | 0.35÷0.63 | 56.6÷100.5 | 6 | 8630 | DN 250 | DN 125 | Rp 1½ | 660 | 500 | 133 | 40 |
| 4800 | 3600÷4800 | 3744.1÷5039.3 | 7058 | 0.42÷0.75 | 50.5÷92.2 | 6 | 9675 | DN 250 | DN 125 | Rp 1½ | 660 | 500 | 133 | 40 |
| 5200 | 3900÷5200 | 4056.1÷5459.2 | 7058 | 0.50÷0.88 | 59.3÷105.4 | 6 | 9675 | DN 250 | DN 125 | Rp 1½ | 660 | 500 | 133 | 40 |
| 5700 | 4275÷5700 | 4446.1÷5984.1 | 7909 | 0.59÷1.05 | 49.5÷90.5 | 6 | 13060 | DN 250 | DN 125 | Rp 1½ | 720 | 500 | 133 | 40 |
| 6100 | 4575÷6100 | 4758.1÷6404.1 | 7909 | 0.68÷1.21 | 56.7÷100.7 | 6 | 13060 | DN 250 | DN 125 | Rp 1½ | 720 | 500 | 133 | 40 |

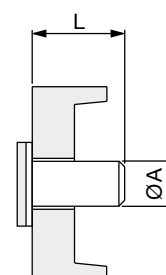
| TRISTAR 2S | A | B | C* | D | E | F | G | H | I | L | M | N | O | Q* | R* |
|------------|------|-----|------|-----|-----|------|------|-----|------|-----|------|------|-----|------|------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 3900 | 2088 | 226 | 2533 | 417 | 485 | 1437 | 987 | 170 | 4738 | 323 | 1475 | 1665 | 363 | 1700 | 3826 |
| 4400 | 2088 | 226 | 2533 | 417 | 485 | 1437 | 987 | 170 | 4738 | 323 | 1475 | 1665 | 363 | 1700 | 3826 |
| 4800 | 2214 | 240 | 2653 | 437 | 515 | 1550 | 1007 | 167 | 4928 | 323 | 1475 | 1815 | 363 | 1700 | 3976 |
| 5200 | 2214 | 240 | 2653 | 437 | 515 | 1550 | 1007 | 167 | 4928 | 323 | 1475 | 1815 | 363 | 1700 | 3976 |
| 5700 | 2380 | 240 | 2860 | 509 | 595 | 1650 | 1100 | 224 | 5484 | 325 | 2920 | 670 | 465 | 1850 | 4380 |
| 6100 | 2380 | 240 | 2860 | 509 | 595 | 1650 | 1100 | 224 | 5484 | 325 | 2920 | 670 | 465 | 1850 | 4380 |

(*) Minimum dimensions for boiler room access. (**) Pressure drops corresponding to a thermal variation of 15K.

On special order the boilers from model TRISTAR 2S 1000 to TRISTAR 2S 6100 can be manufactured for a max. working pressure up to 10 bar.

BURNER HEAD TUBE DIMENSIONS

| BOILER TYPE | øA mm | L mm | BOILER TYPE | øA mm | L mm |
|----------------------|----------|---------|----------------------|----------|---------|
| TRISTAR 80 2S | 130 | 150 | TRISTAR 2000÷2350 2S | 380 | 350 |
| TRISTAR 120÷250 2S | 180 | 170 | TRISTAR 2700 2S | 380 | 400 |
| TRISTAR 300÷560 2S | 220 | 250 | TRISTAR 3100÷3500 2S | 400 | 400 |
| TRISTAR 680÷870 2S | 270 | 270 | TRISTAR 3900÷5200 2S | 500 | 250 |
| TRISTAR 1000÷1180 2S | 320 | 300 | TRISTAR 5700÷6100 2S | 500 | 630 |
| TRISTAR 1400÷1650 2S | 320 | 320 | | | |



TECHNICAL DATA

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

| Gas-fired | | TST 80 2S | TST 120 2S | TST 160 2S | TST 200 2S | TST 250 2S | TST 300 2S | TST 370 2S |
|--|------|------------|------------|-------------|------------|-------------|-------------|-------------|
| Nominal heat output | kW | 60÷80 | 90÷120 | 120÷160 | 150÷200 | 187.5÷250 | 225÷300 | 277.5÷370 |
| Thermal output of furnace | kW | 63.3÷85.2 | 94.6÷127.4 | 125.8÷169.4 | 157÷211.3 | 195.8÷263.6 | 234.6÷315.8 | 288.8÷388.7 |
| Heat efficiency at nominal load (100%) | % | 94.7÷93.8 | 95.1÷94.2 | 95.4÷94.5 | 95.5÷94.6 | 95.7÷94.8 | 95.9÷95 | 96.1÷95.2 |
| Heat efficiency at 30% load | % | 94.9÷94.0 | 95.3÷94.4 | 95.6÷94.7 | 95.7÷94.8 | 95.9÷95 | 96.1÷95.2 | 96.3÷95.4 |
| Combustion efficiency at nominal load (100%) | % | 95.4÷94.6 | 95.7÷94.9 | 95.9÷95.1 | 96.1÷95.2 | 96.2÷95.4 | 96.4÷95.5 | 96.3÷95.4 |
| Heat loss at casing (min.-max.) | % | 0.6÷0.7 | 0.6÷0.6 | 0.5÷0.6 | 0.5÷0.6 | 0.5÷0.6 | 0.5÷0.5 | 0.2÷0.2 |
| Heat loss at chimney with burner on (min.-max.) | % | 4.6÷5.4 | 4.3÷5.1 | 4.1÷4.9 | 3.9÷4.8 | 3.7÷4.6 | 3.6÷4.5 | 3.7÷4.6 |
| Heat loss at chimney with burner off (min.-max.) | % | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 |
| Flue gas temperature tf-ta (min.-max.) | °C | 94.9÷111.7 | 88.6÷105.7 | 84.4÷101.5 | 80.8÷97.9 | 77.2÷94.3 | 74.5÷91.9 | 76.6÷94.9 |
| CO ₂ 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 |
| Flue gas mass flow rate (min.-max) | kg/h | 95÷128 | 142÷191 | 189÷255 | 236÷318 | 294÷396 | 353÷475 | 434÷584 |

| Gas-fired | | TST 450 2S | TST 560 2S | TST 680 2S | TST 780 2S | TST 870 2S | TST 1000 2S | TST 1180 2S |
|--|------|------------|-------------|-------------|-------------|---------------|-------------|--------------|
| Nominal heat output | kW | 337.5÷450 | 420÷560 | 510÷680 | 585÷780 | 652.5÷870 | 750÷1000 | 885÷1180 |
| Thermal output of furnace | kW | 351÷472.4 | 436.8÷587.9 | 530.4÷713.9 | 608.4÷818.9 | 678.6÷913.4 | 780÷1049.8 | 920.4÷1238.8 |
| Heat efficiency at nominal load (100%) | % | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 |
| Heat efficiency at 30% load | % | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 |
| Combustion efficiency at nominal load (100%) | % | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 |
| Heat loss at casing (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 |
| Heat loss at chimney with burner on (min.-max.) | % | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 |
| Heat loss at chimney with burner off (min.-max.) | % | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 |
| Flue gas temperature tf-ta (min.-max.) | °C | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 |
| CO ₂ 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 |
| Flue gas mass flow rate (min.-max) | kg/h | 528÷710 | 657÷884 | 797÷1073 | 914÷1231 | 1020.1÷1372.9 | 1172÷1578 | 1383÷1862 |

| Gas-fired | | TST 1400 2S | TST 1650 2S | TST 2000 2S | TST 2350 2S | TST 2700 2S | TST 3100 2S | TST 3500 2S |
|--|------|-------------|-------------|-------------|-------------|-------------|---------------|---------------|
| Nominal heat output | kW | 1050÷1400 | 1237.5÷1650 | 1500÷2000 | 1762.5÷2350 | 2025÷2700 | 2325÷3100 | 2625÷3500 |
| Thermal output of furnace | kW | 1092÷1469.8 | 1287÷1732.3 | 1560÷2099.7 | 1833÷2467.1 | 2106÷2834.6 | 2418.1÷3254.5 | 2730.1÷3674.5 |
| Heat efficiency at nominal load (100%) | % | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 |
| Heat efficiency at 30% load | % | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 |
| Combustion efficiency at nominal load (100%) | % | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 |
| Heat loss at casing (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 |
| Heat loss at chimney with burner on (min.-max.) | % | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 |
| Heat loss at chimney with burner off (min.-max.) | % | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 |
| Flue gas temperature tf-ta (min.-max.) | °C | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 |
| CO ₂ 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 |
| Flue gas mass flow rate (min.-max) | kg/h | 1641÷22095 | 1935÷2609 | 2345÷3156 | 2755÷3708 | 3166÷4261 | 3635÷4892 | 4104÷5523 |

| Gas-fired | | TST 3900 2S | TST 4400 2S | TST 4800 2S | TST 5200 2S | TST 5700 2S | TST 6100 2S |
|--|------|---------------|---------------|---------------|---------------|---------------|---------------|
| Nominal heat output | kW | 2925÷3900 | 3300÷4400 | 3600÷4800 | 3900÷5200 | 4275÷5700 | 4575÷6100 |
| Thermal output of furnace | kW | 3042.1÷4094.4 | 3432.1÷4619.3 | 3744.1÷5039.3 | 4056.1÷5459.2 | 4446.1÷5984.1 | 4758.1÷6404.1 |
| Heat efficiency at nominal load (100%) | % | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 | 96.1÷95.2 |
| Heat efficiency at 30% load | % | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 | 96.3÷95.4 |
| Combustion efficiency at nominal load (100%) | % | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 | 96.3÷95.5 |
| Heat loss at casing (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 |
| Heat loss at chimney with burner on (min.-max.) | % | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 | 3.7÷4.5 |
| Heat loss at chimney with burner off (min.-max.) | % | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 | 0.1÷0.1 |
| Flue gas temperature tf-ta (min.-max.) | °C | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 | 75.4÷93.4 |
| CO ₂ 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 |
| Flue gas mass flow rate (min.-max) | kg/h | 4573÷6154 | 5159÷6943 | 5628÷7575 | 6097÷8206 | 6683÷8995 | 7152÷9626 |