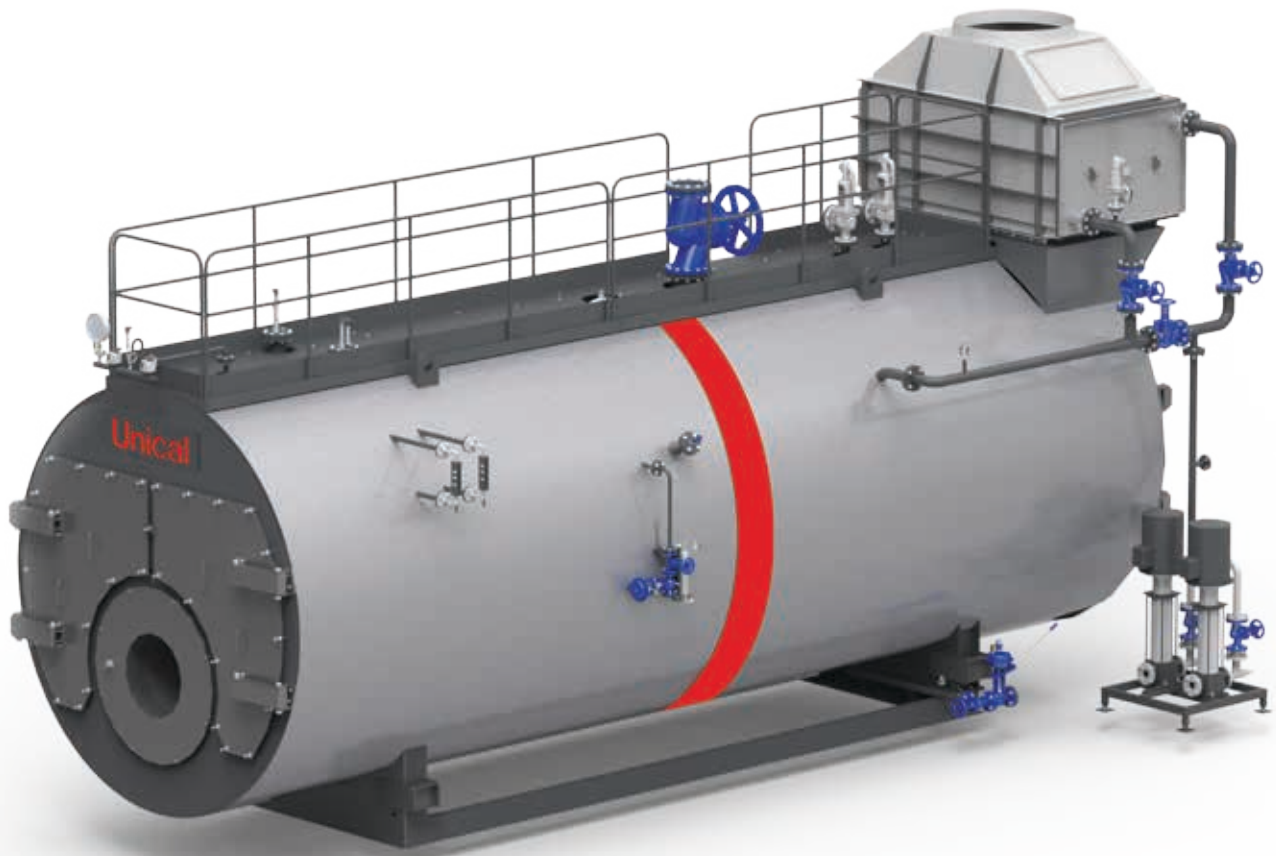


TRYPASS'



HIGH PRESSURE PACKAGED STEAM BOILER, GENUINE THREE-PASS FIRE TUBE

| | | | | | | | | |
|-----------------|---|-------|-------|-------|-------|-------|-------|------|
| RANGE | from 1328 kW (2000 kg/h) to 16607 kW (25000 kg/h) | | | | | | | |
| FUEL | gas, light oil | | | | | | | |
| DESIGN PRESSURE | 12 bar (higher pressure on request) | | | | | | | |
| MODELS | 2000 | 2500 | 3000 | 3500 | 4000 | 5000 | 6000 | 7000 |
| | 8000 | 10000 | 12000 | 15000 | 18000 | 20000 | 25000 | - |

DESCRIPTION

High pressure packaged steam boiler, genuine three-pass fire tube, horizontal, 90% efficiency ⁽¹⁾.

TRYPASS is a family of packaged smoke tube steam boilers, genuine three-pass, and wet back. Standard safety pressure up to 12 bar (higher pressure available on request) and output from 1300 to 22000 kg/h. With a large steam chamber and large evaporator for an high steam quality. It can be operated with liquid or gaseous fuels. Every model is complete with regulations and safety accessories for automatic operation and easy commissioning.

In compliance to the current laws, each steam boiler undergoes a conformity assessment, carried out by a Notified Body. The conformance to the essential safety requirements demanded by the European Pressure Equipment Directive 2014/68/UE (PED) is guaranteed by the CE mark.

Design features:

By means of the three-pass design the smoke gases in the combustion chamber are diverted to the front through the first set of fire tubes by the reversing chamber; then reversed again by the frontal smoke box to the second smoke tube sections and discharged through the chimney connection. The appliance is designed to ensure low heating loads in the combustion chamber, low superficial loads and low NOx emissions (with Low NOx burners).

- **Boiler body:** is made of a cylindrical shell and a wet back furnace, dished and butt welded tube plates, made of high quality steel. All the materials have certificates attesting their chemical and mechanical characteristics, the controls are carried out during each production stage, and, theirs suitability for use as well. The welding seams are carried out by qualified personnel in compliance to certified procedures and are subjected to Non Destructive Tests, in accordance to an internal "Manufacturing and Control" program. Once the boilers have been manufactured they are subjected to hydraulic testing in accordance to the requirement 7.4 – Annex I, laid down in the Directive 2014/68/UE (PED).
- **Smoke tubes:** made of high quality steel, are welded to tube plates, and are without helical turbulators.
- **Reversing chamber:** is built in welded steel plate, completely water-cooled, and connected to the rear smoke-box with supports and manhole.
- **Front smoke-box:** is built in welded steel plate, completely cladged internally with a layer of insulation material and with a layer of high density refractory material. Two doors for cleaning and inspection are fitted with hinges to be quickly opened. Close to the burner hole is present a self-cleaning sight glass for combustion control during boiler operation.
- **Rear smoke-box:** is built in welded steel plate, completely cladged internally with a layer of insulation material and with a layer of high density refractory material. Two doors for cleaning and inspection are fitted with hinges to be quickly opened. Complete with an horizontal chimney connection with a diameter sized to the boiler's output, and a self-cleaning sight glass for combustion control. The rear smoke-box can be accessorized with and external economizer.
- **The base:** is built with a steel frame, welded to the tube plates and closed with steel plates.
- **Walkway:** positioned on the top part of the boiler, is made of steel, covered with chequered plate and completed; on request with handrail and access ladder.
- **Insulation:** the shell is thermally insulated with a 100 mm rock wool cladding binded with high density, thick thermosetting resins, suitably supported and covered externally in 10/10 thick enamelled aluminum.

Standard equipment: ⁽²⁾

- Steam main globe valve.
- n. 2 spring loaded safety valves.
- n. 2 reflecting level indicators, with flanged connections, purging and cut-off cocks.
- n. 1 large manometer with 3 way cock for manometer calibration.
- n. 1 safety pressure switch with manual reset onto the board panel, CE PED certified.
- n. 1 limit working pressure switch.
- n. 1 regulation pressure switch for two stages burners or probe for modulating burners.
- n. 2 safety minimum level switches, with auto-diagnosis and manual reset on the board panel, CE certified.
- n. 2 water level probes for ON-OFF pump regulation.
- Feeding group complete with 2 vertical multistage centrifugal pumps.
- Valve assembly for feeding circuit, with relevant pipes already fitted.
- Automatic group for level control.
- n. 1 manual bottom blowdown valve.
- Man-hole on top and hand-hole on water side.
- Integral steam drier for high steam quality.
- Blind burner plate.
- Lifting lugs.
- Control board panel IP55 400V - 3+N - 50Hz
- Document folder enclosing:
 - Manufacturer's Declaration of Conformity in compliance with the Annex VII of the European Directive 2014/68/UE (PED)
 - Installation, operation and service manuals.
 - Certificates of safety components.
 - Control board's electric schemes and related Declaration of Conformity.
 - Water characteristics: requirements concerning the quality of water supply, the water in the boiler, frequency and type of sample tests to do.

Options:

- Kit of a "Second boiler water feeding pump"
- Kit of "maximum safety level"
- Kit TDS (Total Dissolved Salts)
- Kit of "Automatic de-sludging" (Blow down)
- Kit "72 hr" Supplied with electronic board panel Unical, model IML (Industrial Multi Logic)
- External Kit economizer and modulating boiler water feeding group
- Pre-drilled burner plate according to request
- Oil or Gas fired burner
- Ladder and walkway

Special versions for all models

TRYPASS' 24 hr / 72 hr

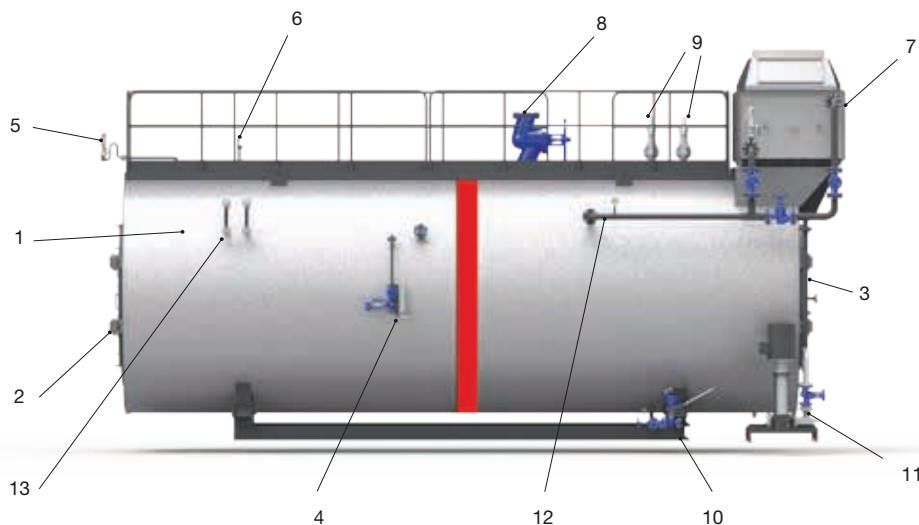
- equipped with "IML board panel" to obtain the certification for operation "without continuous surveillance" up to a maximum of 24 hr.
- equipped with "IML board panel" and "Kit 72 hr" to obtain the certification for operation "without continuous surveillance" up to a maximum of 72 hr.

(1) This value is intended without economizer and may change according working pressure and load conditions.

(2) The quantity and the model may vary according to the configuration.

MAIN COMPONENTS

1. Boiler body
2. Front doors
3. Rear doors
4. TDS - Salinity control group (optional)
5. Instruments assembly
6. Level safety sensors
7. Economizer (optional)
8. Steam valve
9. Safety valves
10. BBD automatic bottom drain (optional)
11. Pump feeding group
12. Water inlet thermometer
13. Level gauge



TECHNICAL DATA

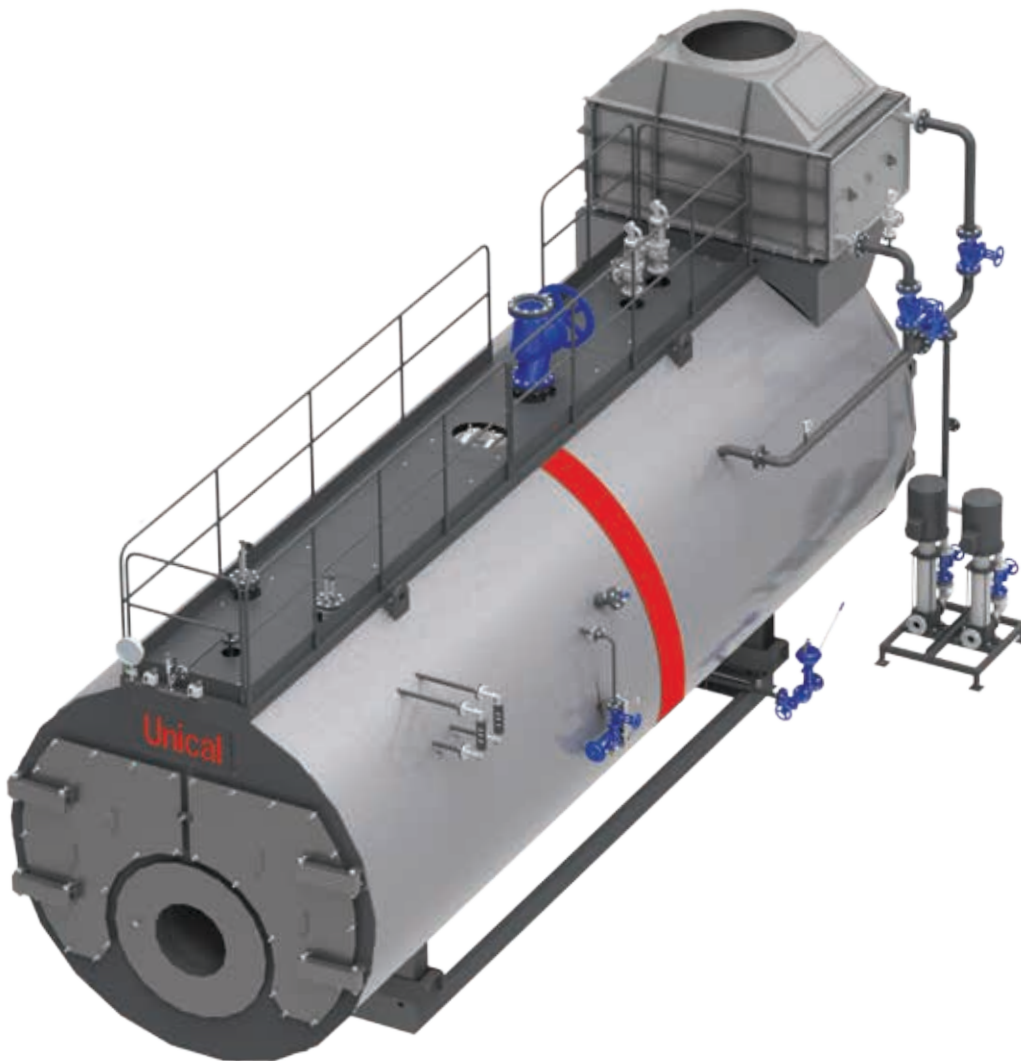
| Model | Steam production * | Nominal output | Furnace power | ΔP smoke side | Max. working pressure ** | Water content at level | Total volume | Min buffer length |
|--------------|--------------------|----------------|---------------|-----------------------|--------------------------|------------------------|--------------|-------------------|
| | kg/h | kW | kW | mbar | bar | lt | lt | mm |
| 2000 | 2000 | 1328 | 1476 | 6 | 12 | 5100 | 6200 | 400 |
| 2500 | 2500 | 1660 | 1845 | 5 | 12 | 6100 | 7400 | 400 |
| 3000 | 3000 | 1992 | 2214 | 5.5 | 12 | 7200 | 8700 | 400 |
| 3500 | 3500 | 2325 | 2583 | 5 | 12 | 7400 | 9000 | 400 |
| 4000 | 4000 | 2657 | 2952 | 6 | 12 | 8700 | 10500 | 400 |
| 5000 | 5000 | 3321 | 3690 | 6.5 | 12 | 9300 | 11500 | 400 |
| 6000 | 6000 | 3985 | 4428 | 7 | 12 | 11000 | 13000 | 400 |
| 7000 | 7000 | 4649 | 5166 | 8.5 | 12 | 11500 | 14000 | 400 |
| 8000 | 8000 | 5313 | 5905 | 7 | 12 | 12800 | 15500 | 400 |
| 10000 | 10000 | 6643 | 7381 | 8 | 12 | 15200 | 19000 | 400 |
| 12000 | 12000 | 7971 | 8857 | 8.5 | 12 | 15700 | 21000 | 400 |
| 15000 | 15000 | 9964 | 11071 | 12.5 | 12 | 20500 | 25200 | 400 |
| 18000 | 18000 | 11957 | 13286 | 10 | 12 | 26000 | 33000 | 400 |
| 20000 | 20000 | 13286 | 14762 | 13.5 | 12 | 28500 | 36000 | 400 |
| 25000 | 25000 | 16607 | 18452 | 12 | 12 | 27900 | 35860 | 400 |

*with feeding water temperature = 95°C and pressure = 12 bar

**safety valves setting value

PRODUCT PLUS VALUES

- **EXCELLENT EFFICIENCY**
thanks to the three real smoke passes
- **LOW NO_x EMISSIONS**
Thanks to the reduction of the specific thermal load according to the different versions
- **EFFICIENT THERMAL INSULATION**
given by:
 - high total thickness, made by joining two rock wool layers with aluminium foil
 - insulation between the casing and the hot parts of the boiler body for thermal bridges elimination
- **CLEANING DOORS**
front and rear doors for inspection and cleaning of the tubes
- **LADDER AND PLATFORM**
- **SIMPLIFIED ELECTRICAL CONNECTION**
via fast coupling connectors
- **BOARD PANEL**
electromechanical and electronic, expandable with options
- **POSSIBLE COMBINATION**
with one, two, three stage or modulating burners
- **IMPLEMENTABLE FUNCTIONS:**
boiler and board panel designed for the integration of optional kits, also with boiler already installed.

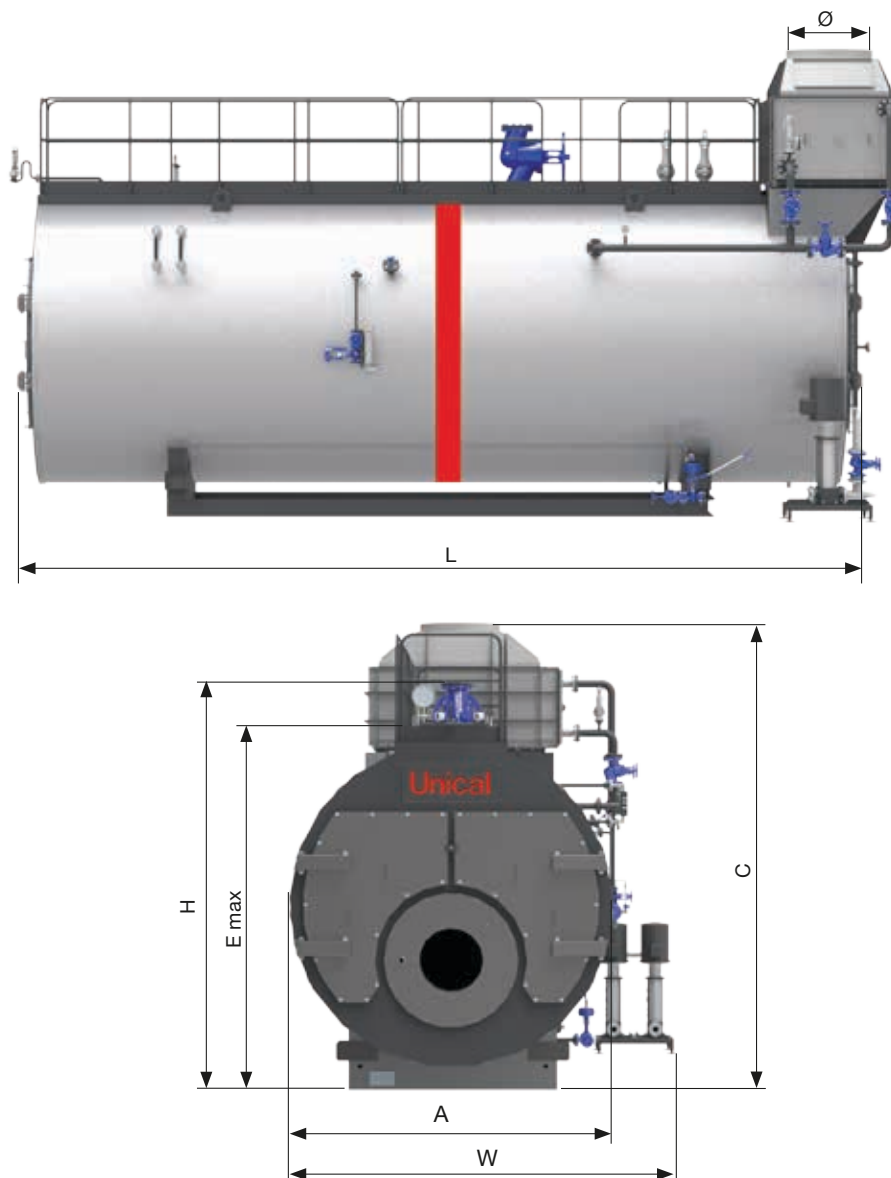


IML Board panel (optional)



Fast coupling connections

DIMENSIONS



| Model | W | L | H | A | C | E max | Ø | Empty Weight |
|-------|------|------|------|------|------|-------|------|--------------|
| | mm | mm | mm | mm | mm | mm | mm | kg |
| 2000 | 2650 | 3500 | 3000 | 2250 | 3400 | 2600 | 408 | 8100 |
| 2500 | 2650 | 4200 | 3000 | 2250 | 3400 | 2600 | 408 | 9000 |
| 3000 | 2650 | 4750 | 3000 | 2250 | 3400 | 2600 | 458 | 9800 |
| 3500 | 2650 | 4850 | 3000 | 2250 | 3400 | 2600 | 458 | 11500 |
| 4000 | 2740 | 4900 | 3050 | 2340 | 3490 | 2690 | 508 | 14000 |
| 5000 | 2740 | 5300 | 3050 | 2340 | 3490 | 2690 | 508 | 15000 |
| 6000 | 3000 | 5300 | 3400 | 2600 | 3850 | 2950 | 558 | 16000 |
| 7000 | 3000 | 6150 | 3400 | 2600 | 3850 | 2950 | 658 | 17500 |
| 8000 | 3160 | 6000 | 3595 | 2760 | 4010 | 3110 | 708 | 19000 |
| 10000 | 3160 | 6500 | 3595 | 2760 | 4010 | 3110 | 708 | 23000 |
| 12000 | 3400 | 6900 | 3835 | 3000 | 4250 | 3350 | 808 | 28000 |
| 15000 | 3400 | 8000 | 3835 | 3000 | 4250 | 3350 | 808 | 35000 |
| 18000 | 3800 | 7650 | 4350 | 3400 | 4650 | 3750 | 958 | 40000 |
| 20000 | 3800 | 8050 | 4350 | 3400 | 4650 | 3750 | 958 | 43000 |
| 25000 | 4000 | 8150 | 4550 | 3600 | 4850 | 3950 | 1008 | 55000 |