



**SUPERHEATED WATER BOILER THREE PASS REVERSE FLAME
VERSION WITH SPECIAL TUBES - EFFICIENCY UP TO 95%**

RANGE	from 140 to 2900 kW						
TYPE	HP			HPO			
	BIMETALLIC pipe			HEXALOBULAR pipe			
FUEL	gas - LPG			gas - LPG - light & heavy oil			
WORKING PRESSURE	4.9 bar (SŪHR' 5) / 9.8 bar (SŪHR' 10)						
WORKING TEMPERATURE	158.1°C (SŪHR' 5) / 183.2°C (SŪHR' 10)						
MODELS	140	210	270	370	465	580	700
	1000	1160	1400	1750	2050	2300	2900

DESCRIPTION

Reversed flame superheated water boiler, special high-efficiency pipes, 92-95% efficiency ⁽¹⁾.

SUHR' is a family of packaged smoke tube superheated water boilers, three pass reversed flame, wet back. Standard safety pressure up to 5 or 10 bar (higher pressure available on request) and output from 140 to 2900 kW. 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 superheated 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 reverse flame principle the smoke gases in the combustion chamber are diverted to the front, then reversed again to the smoke tube sections and discharged through the chimney connection. The appliance is designed to ensure low heating loads in the combustion chamber and low superficial loads.

■ **Boiler body:** is made up of a cylindrical shell and a wet back furnace, 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. Tubes might have high efficiency insert according boiler version.

■ **Front door:** is built in welded steel plate, completely cladded internally with a layer of insulation material and with a layer of high density refractory material. The door is fitted with hinges which enable it to be easily adjusted and quickly opened. Moreover, the door is fitted with a self-cleaning sight glass for combustion control during boiler operation.

■ **Rear smoke-box:** is built in welded steel plate and fixed on to the tube plate by nuts for an easy access to it. It is fitted with a small door for cleaning purposes and the horizontal flue connection (vertical on request), with a diameter sized to the boiler's output. 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.

■ **Insulation:** the shell is thermally insulated with rock wool cladding, suitably supported and covered externally in 10/10 thick enamelled aluminum.

Standard equipment: ⁽²⁾

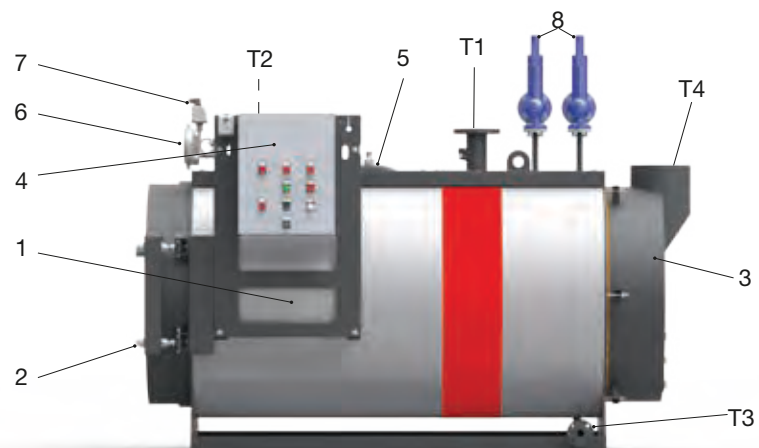
- n. 1 or 2 spring loaded safety valves (according boiler's capacity).
- n. 1 manual draining group.
- n. 1 large dial thermometer.
- n. 1 large manometer with 3 way cock for calibration.
- n. 2 working thermostats.
- n. 1 safety pressure switch with manual reset.
- n. 1 safety thermostat with manual reset.
- 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.

(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

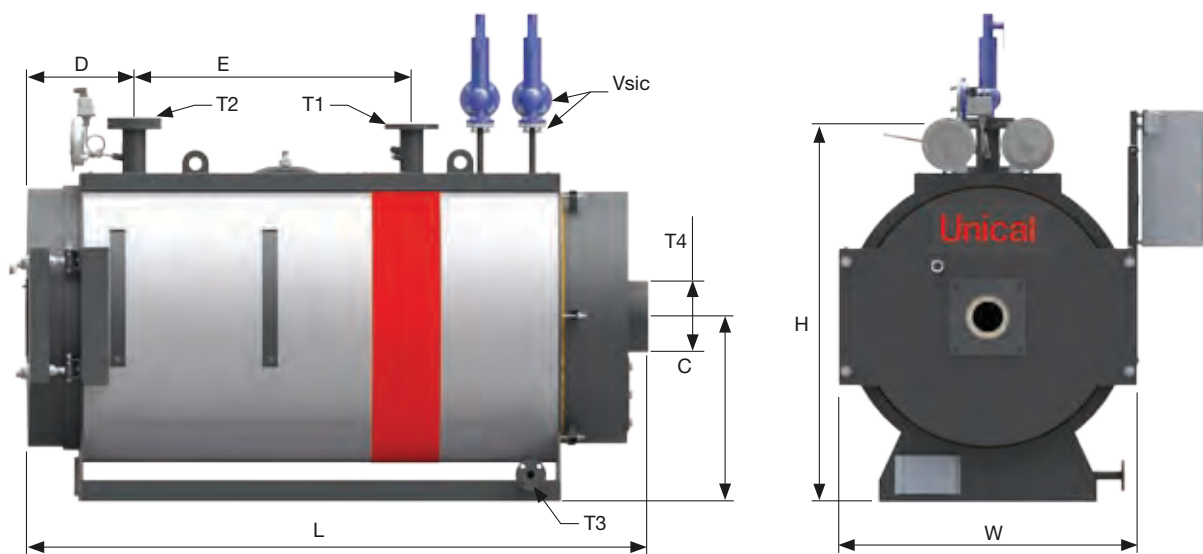
1. Boiler body
2. Front door
3. Rear smoke chamber
4. Board panel
5. Man hole for inspection
6. Safety pressure switch
7. Manometer with 3 way cock for calibration purposes
8. Safety valves
- T1. Flow
- T2. Return
- T3. Boiler drain
- T4. Chimney connection



TECHNICAL DATA

Model	Nominal output kW	Nominal input mod. HP kW	Nominal input mod. HPO kW	ΔP smoke side mbar	Water content l	Water side pressure drop (ΔT 15°C) mbar	Empty weight (4.9 bar) kg
140	140	167.4	151.4	3	335	3.7	798
210	210	221.1	227.0	3.75	549	8	1135
270	268	282.1	289.7	4.5	549	13	1135
370	372	391.6	402.2	6.3	690	11	1615
465	465	489.5	502.7	6.75	690	17	1615
580	581.5	612.1	628.6	7.5	1143	12	1760
700	700	736.8	756.8	9	1143	18	2165
1000	1000	1053.0	1081.0	10.5	1625	22	2760
1160	1160	1224.2	1257.3	8.25	1625	20	2760
1400	1395	1469.5	1509.2	9	1950	22	3425
1750	1745	1836.8	1886.5	10,5	2575	25	5030
2050	2035	2142.1	2200.0	12.3	2575	30	5030
2300	2325	2447.4	2513.5	13.5	3015	40	6165
2900	2900	3060.0	3412.7	14.25	4290	45	7350

DIMENSIONS



Model	W	L	H	C	D	E	T1 - T2	T3	T4	Vsic
	mm	mm	mm	mm	mm	mm	DN	DN	Ø mm	DN
140	900	1900	1230	550	200	650	65	25	208	20/32
210	1000	2125	1270	600	200	800	65	25	228	20/40
270	1000	2125	1270	600	200	800	65	25	228	20/40
370	1115	2424	1327	675	200	1010	80	25	258	20/40
465	1115	2424	1327	675	200	1010	80	25	258	20/40
580	1270	2792	1500	765	200	1140	80	25	358	20/40
700	1270	2792	1500	765	200	1140	80	25	358	20/40
1000	1400	3200	1660	865	250	1450	100	25	408	25/40
1160	1400	3200	1660	865	250	1450	100	25	408	25/40
1400	1510	3426	1770	920	300	1570	125	25	408	40/50
1750	1720	3500	2030	1075	300	1600	150	40	508	40/50
2050	1720	3500	2030	1075	300	1600	150	40	508	40/50
2300	1800	3875	2120	1115	300	1700	200	40	558	40/50
2900	1980	4195	2290	1205	300	1850	200	40	608	40/65

PRODUCT PLUS VALUES

■ FRONT DOOR

Fitted on hinges, with reversible opening. It is in welded steel sheet, with the inside completely insulated with refractory concrete. Complete with burner plate and flame sight glass

■ REAR SMOKE CHAMBER

Made of steel sheet and complete of horizontal chimney connection (vertical on request) and cleaning openings

■ BASEMENT

In steel profiles

■ THERMAL INSULATION

Made of a mineral wool mattress, externally protected by painted aluminum panels

■ DELIVERY

Is complete with board panel "FLAT_SH", safety and control devices

TYPE OF PIPES

BIMETALLIC PIPE (HP)

an aluminium multiradial profile, bound by rolling, is inserted within the steel pipes in order to increase the exchange surface and efficiency.



HEXALOBULAR PIPE (HPO)

a steel profile with a hexalobular section, bound by rolling, is inserted within the smoke pipes, in order to increase the exchange surface and efficiency.



BOARD PANELS (optional)

IMC_SH

- Single and two-stage burner control
- Possible 24/72 h exemption
- No. 1 low level safety PED level switch (optional)
- Terminal board on quick coupling connectors
- Expansion with optional kits
- IP55 Protection rating



IML_SH

- Control PLC
- 7" touch screen display with graphic interface
- Single and two-stage, three-stage, modulating burner control
- Possible 24/72 h exemption
- No. 1 low level safety PED level switch (optional)
- Terminal board on quick coupling connectors
- Expansion with optional kits
- IP55 Protection rating



OPTIONAL EQUIPMENT

■ 24 h EXEMPTION KIT

Set of accessories to obtain the partial exemption of the burner (24 h) according to L.D. 25 February 2000 no.93, MD 1 December 2004, no.329, UNI/T S 11325-3:2010.

Consisting of:

- 24h exemption control panel including a timer and preset for a 24h exemption reset procedure
- Instrument/safety device wood log to be mounted on the boiler flow, with all equipment required and namely:
 - 1 pressure gauge with a pressure gauge valve
 - 1 large dial thermometer with a limit indication
 - 1 maximum and minimum safety pressure switch
 - 1 reflection level indicator with shut-off valves
 - 1 fail-safe minimum level safety probe
 - 2 fail-safe self-controlled temperature switch units (PT100), TRD604 CAT. IV.



■ 72 h EXEMPTION KIT

Set of accessories to obtain the partial exemption of the burner (72 h) according to L.D. 25 February 2000 no.93, MD 1 December 2004, no.329, UNI/T S 11325-3:2010.

Consisting of:

- Control panel for up to a 72h exemption, including a timer and preset for a 72h exemption reset procedure
- Instrument/safety device wood log to be mounted on the boiler flow, with all equipment required and namely:
 - 1 pressure gauge with a pressure gauge valve
 - 1 large dial thermometer with a limit indication
 - 1 maximum and minimum safety pressure switch
 - 1 reflection level indicator with shut-off valves
 - 1 fail-safe minimum level safety probe
 - 2 fail-safe self-controlled temperature switch units (PT100), TRD604 CAT. IV.
 - 1 kit of safety accessories for the expansion vessel consisting of a minimum pressure switch and fail-safe minimum level safety probe