

MODERATED- PRESSURE STEAM BOILERS

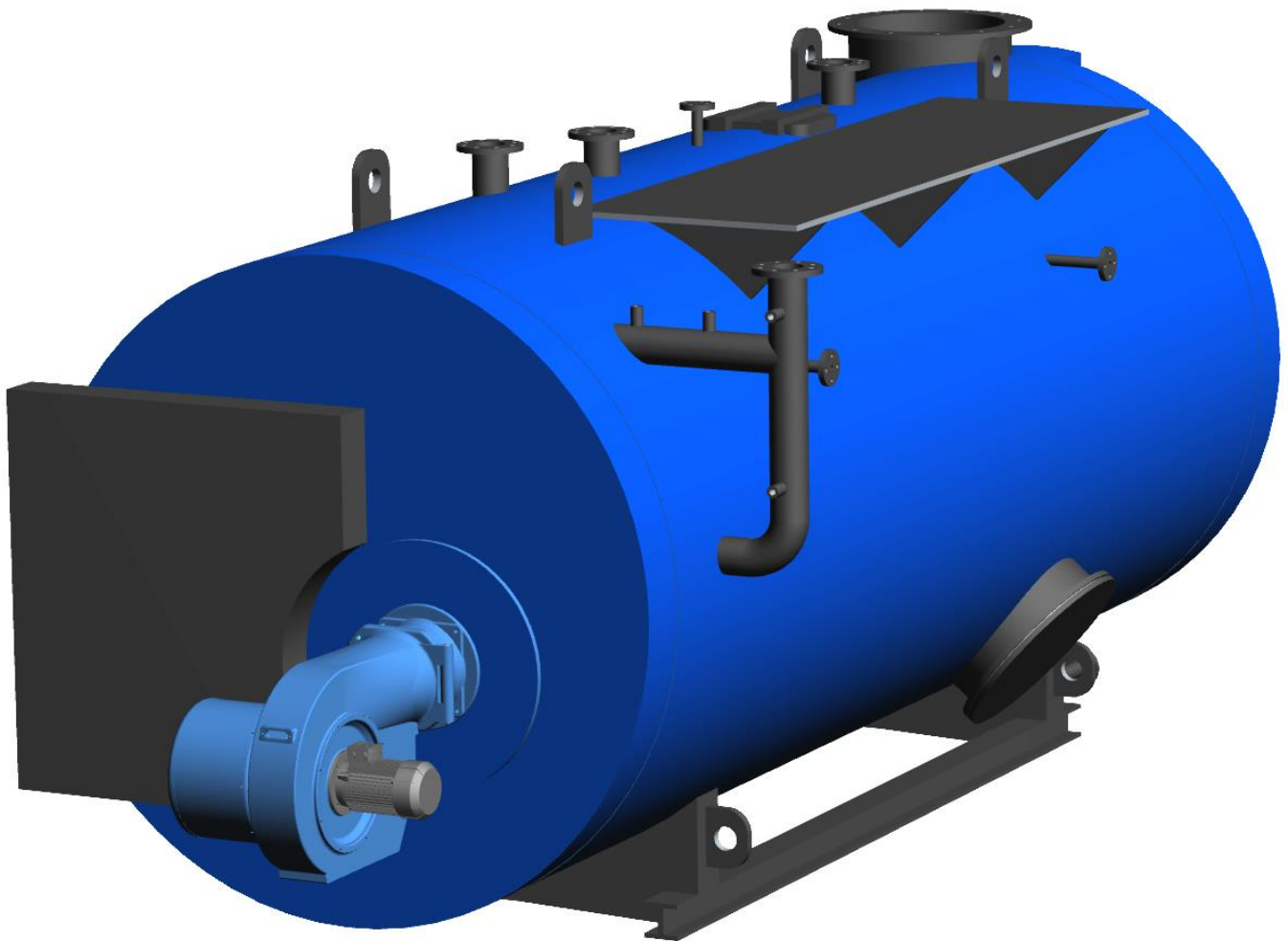
PB-P PB-PP



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PB-P, PB-PP Series

Moderated-pressure three-pass steam boilers combusting gaseous and liquid fuels

In compliance with the requirements of standard ČSN EN 12 953 and directive EC 97/23

Design

The boiler body consists of a cylindrical shell, two reinforced bottoms, an asymmetrically bedded boiler flue, a water cooled inflective rear chamber and a nest of stay tubes of the second and the third pass.

The front inflective chamber is not cooled. It is closed with a door enabling cleaning of the generating surfaces. Boiler venting is provided by a flue gas collector in the rear part of the boiler. Flue gas discharge is realized via a chimney neck with an upper or rear outlet.

Equipment

The boiler body is equipped with an instrument pipe with power supply regulation, a glass gauge, a manometer, a manostat to regulate the burner output and an emergency manostat. The boiler body also includes a neck for steam outlet, a feeding neck, a safety valve, deaeration, continual and periodical blow-down and a neck for level monitoring or the BOSB assembly.

The superheated steam boiler design is additionally equipped with a temperature sensor, an emergency thermostat and a steam superheater relief valve.

A manhole together with inspection holes enables inner revision of the boiler. All the generating surfaces are easily accessible for cleaning assuring thus permanently high efficiency even for a long-term operation with liquid fuels.

Efficiency

The heat contained in flue gasses leaving the boiler can be transferred to feeding water in the exhaust-heat exchanger. Energy gained this way increases the boiler efficiency of up to 5% reducing thus the fuel consumption.

Economizer

It supplements the basic design of the PB-P and PB-PP boilers. It can be integrated into the flue gas collector or autonomously placed at the flue gas outlet.

The economizer provides a highly efficient heat transfer - the counter-flow principle. It consists of nests of finned or plain tubes in the flue gas channel with admission in the water chambers.

Superheater

In case of use of superheated steam, the PB-P boilers can be added with a steam superheater positioned in the front inflective chamber between the second and the third boiler pass.

Modifications

The boilers can be supplied in a design with a preparation for a future change to a warm-water or hot-water operation without interfering into the pressure assembly.

BASIC TECHNICAL SPECIFICATION

- Output 1 000 ÷ 30 000 kg/h
- Operation overpressure 6 ÷ 25 bar(g)
- Heat transfer medium - saturated or superheated steam
- In compliance with technical requirements of ČSN EN 12953

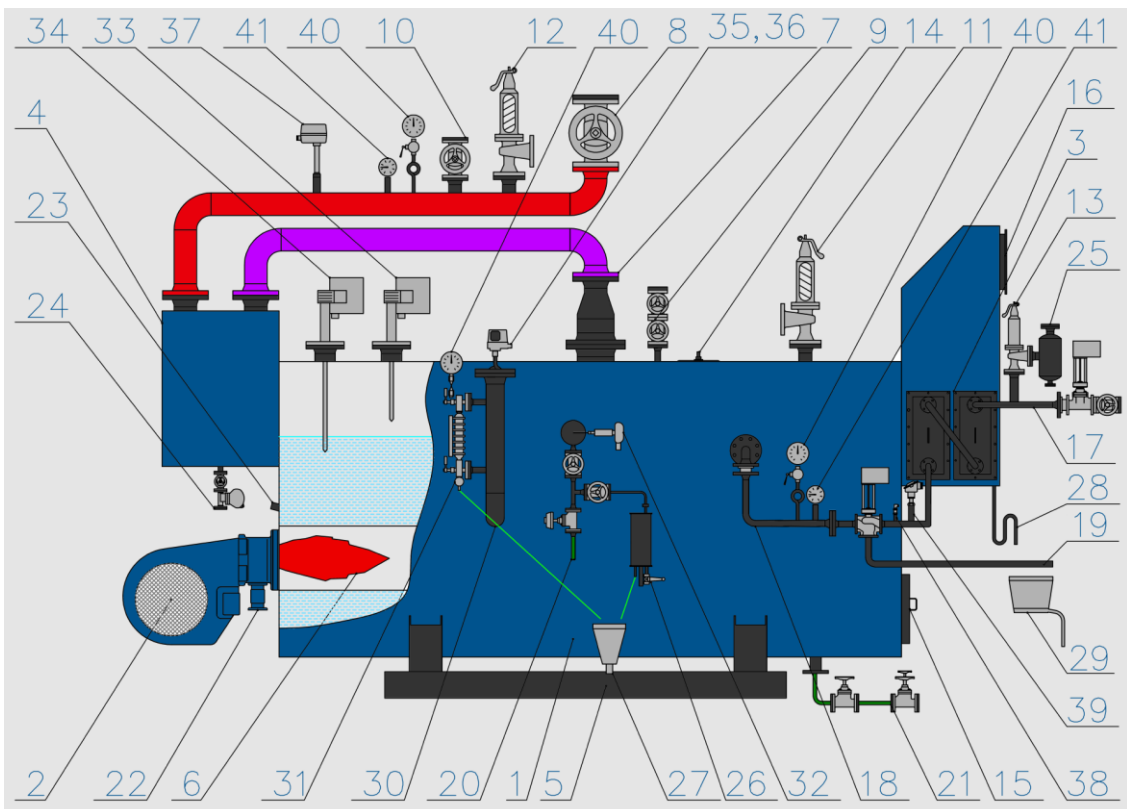
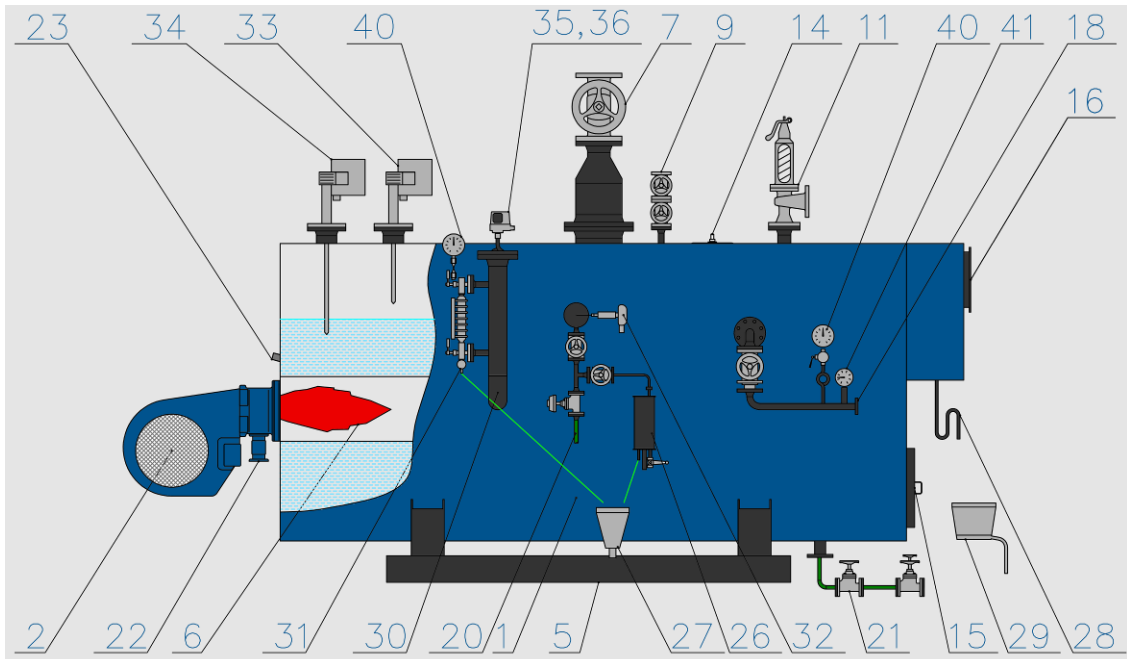
FUEL

- Natural gas
- Propane, propane-butane
- Low calorific power gasses - biogas
- Oil fuels

ADVANTAGES

- High lifetime
- Economical operation
- Combustion of different types of fuel
- Low combustion area load
- Large-capacity boiler
- Design customization
- High-quality warranty and post-warranty service
- Boilers in connection with low-emission burners meet the legal emission limits for gaseous and liquid fuels

BASIC CONNECTION DIAGRAM OF STEAM BOILERS



- | | | | |
|-----------------------------|--|-----------------------------------|--------------------------|
| 1) Boiler | 12) Superheater relief valve | 23) Sight glass into the flue | 34) Level monitoring |
| 2) Burner | 13) Economizer relief valve | 24) Superheater dewatering | 35) Emergency manostat |
| 3) Economizer | 14) Manhole into the boiler | 25) Blow-off damper | 36) Operation manostat |
| 4) Superheater | 15) Manhole into the combustion chamber | 26) Sample cooler | 37) Emergency thermostat |
| 5) Base | 16) Flue gas outlet | 27) Non-pressure waste sunk basin | 38) Pressure sensor |
| 6) Boiler flue | 17) Feeding branch before the economizer | 28) Condensing loop | 39) Temperature sensor |
| 7) Saturated steam outlet | 18) Feeding branch before the boiler | 29) Neutralization box | 40) Manometer |
| 8) Superheated steam outlet | 19) By-pass to the feeding tank | 30) Column with level measurement | 41) Thermometer |
| 9) Deaeration | 20) Continual blown-down | 31) Level gauge | |
| 10) Boiler starting valve | 21) Periodical blown-down | 32) Conductivity probe | |
| 11) Boiler safety valve | 22) Fuel supply | 33) Level regulation | |

BASIC TECHNICAL DATA

Boiler type	Burner output [kW]	Boiler output [kW]	Boiler steam output [kg/h]	Pressure loss flue gas side [Pa]	Indicative boiler length* (A) [mm]	Indicative boiler width (B) [mm]	Indicative boiler height (C) [mm]	Transport weight (pressure 13bar) [kg]	Service weight (pressure 13bar) [kg]
PB-P1	716	652	1 000	820	3 300	2 030	2 050	4 300	6 700
PB-P1,6	1 146	1 043	1 600	860	3 940	2 210	2 170	5 200	8 800
PB-P2	1 435	1 306	2 000	880	4 875	2 075	2 100	5 950	10 050
PB-P2,5	1 793	1 632	2 500	900	5 310	2 185	2 200	7 520	11 920
PB-P3	2 152	1 958	3 000	910	5 400	2 470	2 400	9 450	14 850
PB-P4	2 869	2 611	4 000	920	5 560	2 605	2 625	9 800	16 600
PB-P5	3 587	3 264	5 000	960	6 380	2 730	2 700	12 650	20 050
PB-P6	4 304	3 917	6 000	980	6 650	2 960	3 010	15 100	25 400
PB-P8	5 738	5 222	8 000	1 080	7 770	3 070	3 230	19 700	34 300
PB-P10	7 174	6 528	10 000	1 150	7 555	3 388	3 520	23 500	41 200
PB-P12	8 608	7 833	12 000	1 450	8 098	3 354	3 507	24 800	46 300
PB-P14	10 043	9 139	14 000	1 650	7 910	3 610	3 780	29 200	58 860
PB-P16	11 477	10 444	16 000	1 800	8 251	3 710	3 820	30 800	63 300
PB-P20	14 346	13 055	20 000	1 450	on request				
PB-P25	17 933	16 319	24 000	1 650	on request				
PB-P30	21 520	19 583	30 000	1 800	on request				

* without burner

Changes reserved!

DIMENSIONAL DRAFT

