



GAZ-TECHNIKA
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Operation manual

Heating boilers **FORNAX PO**

adapted for combustion of waste oil



All operation, installation and repair activities should be performed after reading this operation manual.

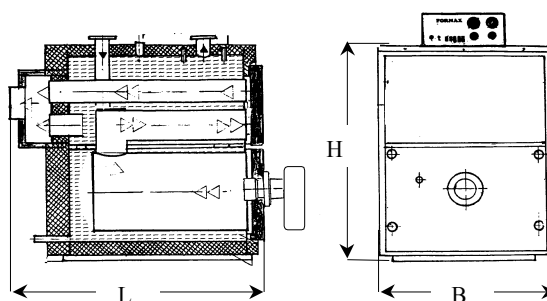
Low-temperature boiler with triple exhaust flow

FORNAX - PO

Technical data

Type	PO – 50	PO-80	PO-100	PO-150
Heating power	50 kW	85 kW	105 kW	150
Power range kW	30 –60 kW	65 – 90	95 –115	115-150
Water volume	180 l	320 l	340 l	390 l
Exhaust diameter	200	200	200	200
Dimensions L x B x H	1220x660x1240	1240x780x1420	1380x780x1420	1440x780x1420
Supply/return connection	DN 50	DN 65	DN 65	DN 65
Weight	350 kg	480 kg	568 kg	686 kg
Efficiency	90%	90%	90%	90%
Power supply	220 V / 50 Hz	220 V / 50 Hz	220 V / 50 Hz	220/50Hz
Current consumption	2.8 A	2.8 A	3.3 A	3.3 A
Oil consumption	4.6 kg/h	7.0 kg/h	10.2 kg/h	14.0 kg/h
Burner type	CBW-50	CBW-50	CBW-50	CBW-150

Technical changes possible



Boiler operation

Boiler operation consists in automatic initiation of combustion process and water heating to the temperature set by user. When water reaches the required temperature, the boiler switches off. The next initiation will take place automatically, when the water temperature drops in the range of the thermostat inertia limits.

The minimum boiler operation temperature during used-oil combustion is 50°C.

A properly selected boiler in the heating season should operate for 6 – 10 hours a day, using fuel amount, appropriate for the given boiler power.

The boiler operation time and fuel consumption depend on the quality of thermal insulation of the heated building and the external temperature.

Before turning the boiler on

- 1) Check the condition of the boiler, fittings and screw connections*
- 2) Inspect the water boiler system*
- 3) Check if the combustion chamber, exhaust pipe and chimney are clean and free from foreign objects*
- 4) Perform the tightness control of oil system connections*
- 5) Check the functioning of ventilation and exhaust ducts*
- 6) Check the functioning of:*
 - the boiler thermostat*
 - the STB thermal protection*
 - pump releasing thermostat**
 - burner mounting assembly*
- 7) Check the safety valve, vent for closed system*
- 8) Check the functioning of the burner, clean it if required.*

Boiler start-up

Simple automations system – basic equipment.

- 1) Open the main valve, cutting of the oil supply – fuel system must be flooded with oil*
- 2) Connect the boiler to the power supply system*
- 3) Set the switch on the control to the “off” position – only the heater turns on – and wait approx. 10 minutes for the oil to heat up in the burner, then set the switch to the “on” position – see the burner manual*
- 4) Set the desired boiler temperature using the thermostat.*

Boiler switch-off

- 1) Turn the power supply button to “off”*
- 2) Set the thermostats hand-wheels to “0” positions*
- 3) Close the main fuel valve*

Boiler automation

The automation system consists of the following elements:

see diagram

- *boiler thermometer, power supply switch, thermostat, STB – thermal protection of maximum boiler temperature – 95 or 110°C,*
- *burner failure lamp*

Automation system panel may be additionally equipped with a hot tap water priority system, room thermostats (sensors) or a microprocessor control (weather system).

Automation system operation

*After connecting the boiler to the power supply and pushing the burner and pump buttons, the burner starts. The required boiler temperature is set using the thermostat, (minimum setting **for used oil is 50°C**).*

The pump starts its operation after reaching the temperature of approx. 40°C.*

** additional equipment*

Maximum boiler temperature protection **STB**

The STB turns off the boiler (completely) if the maximum temperature is exceeded. 95°C – open central heating system, 100°C – closed system.

In order to restart the boiler wait until it cools down, unscrew the protection cap on the protection and press the green button.

If the STB activates several times, turn the boiler off and call service.

Burner failure lamp

It signals the failure of burner operation.

In such case, press the button lamp on the burner housing (red button lamp), located in the lower right corner of the burner housing.

When the failure lamp lights up, wait approx. 2 minutes before restarting the burner.

If the burner switches off after a few restarts, turn it off and call service.

The cause of burner failure may be due to a lack of fuel supply.

Check the following:

- fuel level in tanks*
- possible leaks in the fuel system*
- if the fuel temperature is too low, approx. 5°C – paraffin precipitates*
- dirty fuel filter – wash the cartridge*
- dirty (clogged) nozzle*
- water in the fuel system*
- dirty photocell*
- dirty ignition electrodes*

If the boiler does not work at all:

- no lamps are lighting – check the power supply*
- check STB*
- check thermostat operation (slight click during hand-wheel rotation)*

Service

In order to assure proper boiler operation during the whole heating season, it is necessary to order the service inspection of the boiler and burner every 5000 hours of burner operation.

Periodical boiler operation inspection

Boiler operation under conditions of proper operation of control and protection system, does not require constant supervision. Due to boiler connection with oil, central heating and power supply system, the user should periodically check:

- the tightness of connections with heating and oil system*
- water level in central the heating system*
- natural ventilation efficiency*
- air intake efficiency*

Perform periodical burner inspection of: filters, the water in the heater, the nozzle, and the baffle plate. The frequency of Inspection depends on oil quality.

Do not refill the water in the central heating system when the boiler is in operation or is hot.

Operation safety

Following the above instructions assures the safety of the boiler operation.

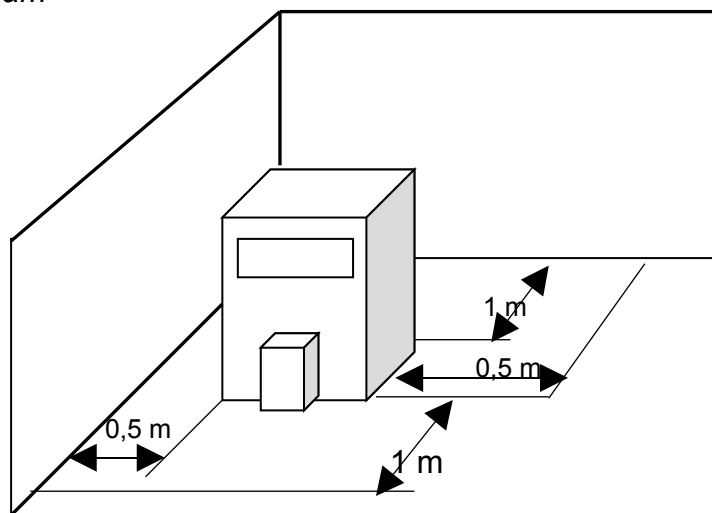
In case of a fuel leak, close the valve, to cut-off the fuel flow in the tank and boiler.

Boiler installation

Install the boiler in the boiler room with adequate space around it for periodical service.

Boiler location diagram

Minimum distances

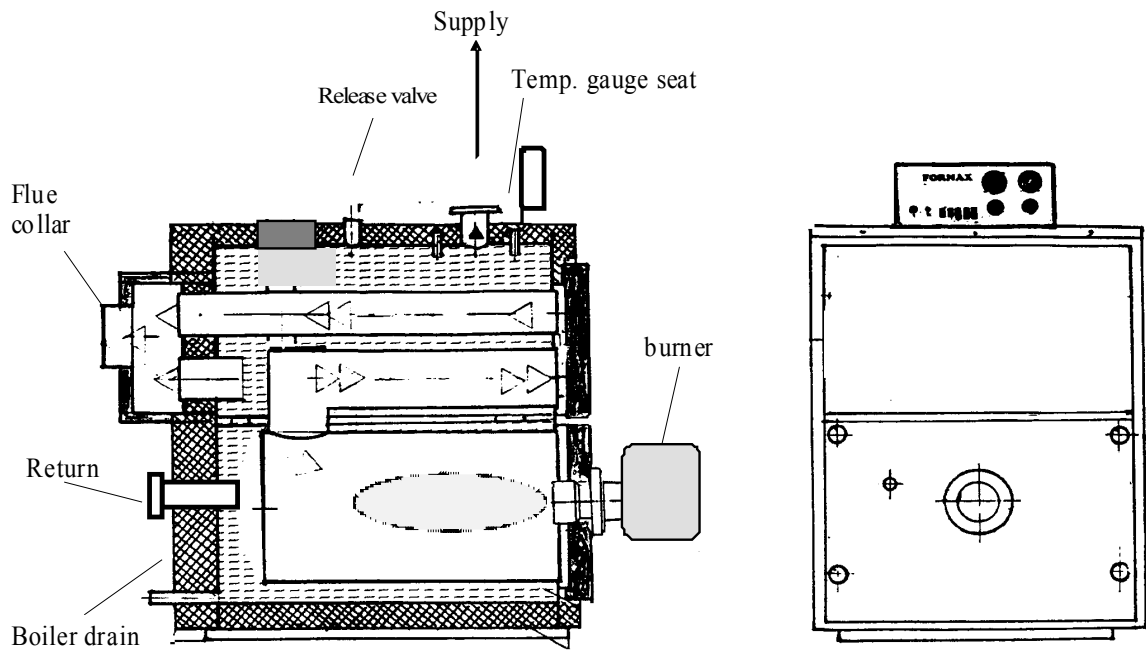


Connecting boiler to the central heating system

Install the boiler in the boiler room with sufficient space around it for periodical service. The boiler door may be opened towards the left or the right, which facilitates operation.

The water supply is located in front of the boiler, whereas the return is in the back. In the centre there are connections for the safety valve and the venting system. The boiler must be maintained at a minimum temperature of approx. 50°C, but does not require a minimum return temperature. It can operate in both, old and new central heating systems.

The cut-off valves may be mounted on supply and return connection pipes.



Connecting to the chimney

Avoid rather sharp bends of exhaust pipe.

Choose proper exhaust pipe diameter for the given boiler power.

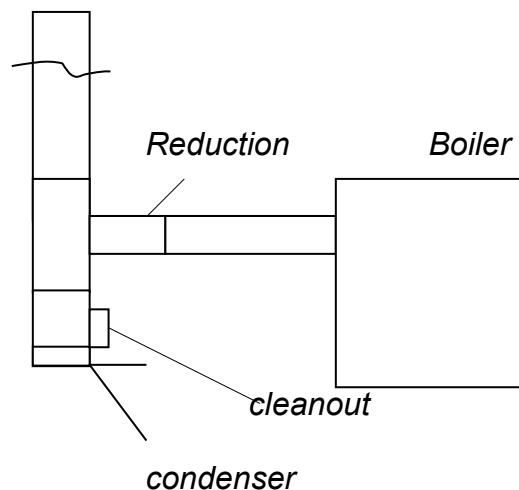
The chimney diameter should not be smaller than the boiler exhaust pipe diameter.

Installation of chimney pipe of high quality steel and draught control is recommended.

In case of external chimney installation, it is necessary to use a double-wall chimney.

The reduction of chimney connection diameter should be at the connection between the chimney and the boiler exhaust pipe.

The connection should be rigid, do not use goffered aluminium pipes.



Installation of the Automatic

Remove the upper boiler cover, position the control panel on the boiler, connect the wires to the terminal strip (all outputs are labelled), guide wires through the nodes in the boiler side wall, insert sensors capillary tubes into boiler bushings (under the insulation, approx. 150 mm from the front), install the automatics and replace the cover.

CBW Burner installation

The burner should be installed on the boiler front plate using the installation flange (supplied with the burner).

*The flange should be fixed with 4 screws (without over-tightening), with the seal positioned under it. Then insert the burner tube into the flange hole from the outside (after opening the door) and **slide it in, so it protrudes approx. 80 cm inside**.*

Attach the tube, screwing two upper flange parts and tighten the flange to the boiler door.

Adjust the burner according to the manual.

All work associated with burner must be performed by a qualified service company.

The fuel system should be constructed according to the diagram in the burner manual. Use recommended supply diameters. Install the check valve on the supply line.

Defects

Defect	Reason	Removing
Burner is not working	No voltage	Check switch position Check fuse Check main switch
	STB limiter switched off	Unlock STB Call authorised service after next activation
	No heat demand	Set higher boiler temperature
Too low boiler temperature	Too low setpoint	Set higher boiler temperature
Too low tap water temperature	Too low controller setpoint	Set higher tap water temperature
	Damaged tap water pump	Replace pump
Boiler pump is not working	Summer/winter switch set incorrectly	Set correct switch position
	Blocked pump	Unblock pump
	Damaged pump	Replace pump
Tap water supply pump is not working	No demand	Open tap water valve Set higher temperature
	Blocked tap water pump	Unblock pump
	Damaged tap water pump	Replace pump

Action test STB

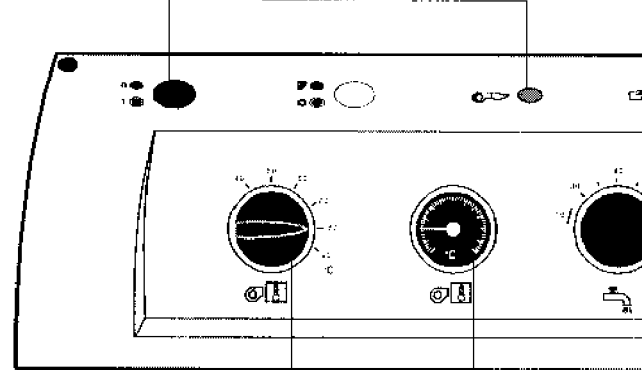
View

R11 adjustment

Overheating temperature limiter

On/off switch

Burner failure lamp



Boiler water temperature controller

Set point 38-80°C

Boiler water temperature indicator

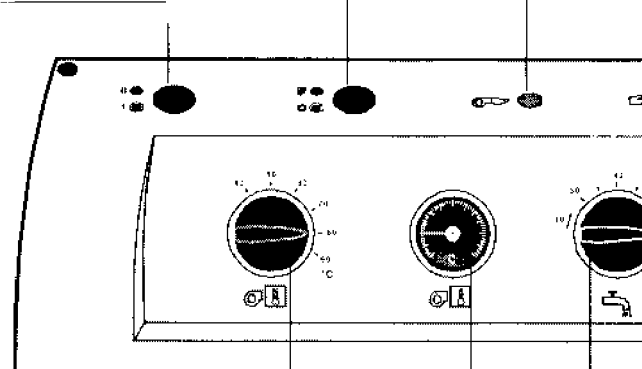
R11-SB adjustment

Overheating temperature limiter

Burner failure lamp

Switch: summer-winter

On/off switch



Temperature controller

Set point 38-80°C

Boiler temperature indicator

Tap water temperature controller

Service level



Power supply switch
In O position system is disconnected from power supply

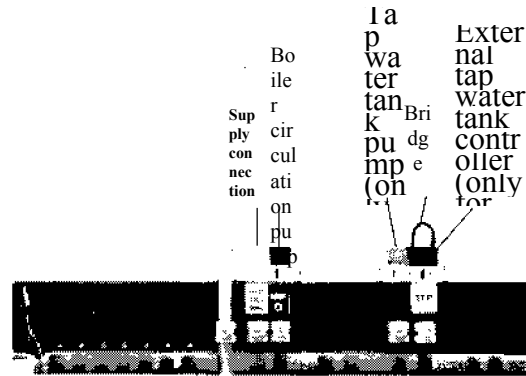


Summer/winter switch (only for R11-SB).

Burner failure lamp

Electric connections / boiler temperature controller

Electric connections



Unscrew two screws of back control system cover and remove system. Connect power supply cable with supplied plug. Insert plug into marked place on the strip and protect cable. Boiler pump and tap water tank pump are equipped with plugs by default. Insert plugs into marked place on the strip and protect cables.

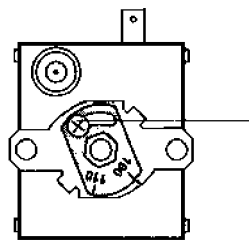
External tap water tank control, e.g. SP1

When it is required to install the external temperature controller (e.g. SP1), as the default is too short, remove bridge on "STR" plug. Connect the external sensor to the "STR" plug according to the diagram and insert plug into strip marked place. Protect the cable. The default controller will be inactive, and the tap water tank control will be realized by the connected external controller.

Boiler temperature controller set point

Check the maximum temperature on the boiler controller. It is set to 80°C by default and should not be changed.

Overheating limiter (STB) switching



Check the overheating limiter set point.

For Poland it must not exceed 100°C.

If the setting is different, e.g. 110°C, it is absolutely required to switch it to 100°C.

Set point can not be switched!

Disconnect control system power supply.

Remove STB cover, remove fixing nut, remove fixing screws and turn the control system cover towards front. Remove STB and set 100°C value on the scale. Replace parts in the opposite sequence.

Above activities must be performed only by the qualified service.