Manual and Installation book of Stove

Water Stove Spectra

HEATING BOILERS • SOLAR PANELS • AIR CONDITIONERS
HEIZKESSEL • SOLAR TECHNIC • KLIMA ANLAGE

TÜV CERT
EN ISO 9001:2000
6896/28/100

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With us heating makes economies!

Manual and Installation book of boiler
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1) Advantages of SPECTRA

- ✓ Fuel: wood (wet max 20%), wood briquets (wet max 20%)
- ✓ Easy connection to radiator's installation system
- ✓ Built in safety cooling loop
- ✓ Primary and secondary air provides excellent burning
- ✓ Ceramic plate burns flue gases completely
- ✓ Easy to clean and service
- ✓ Special piro-glas secure from dirties.

2) Short description

A fireplace with a water jacket can power central heating systems and pro-vide hot household water while offering a decorative quality in the interior. It is intended mainly for use in single-family houses, ser-vice workshops, shops, utility buildings, etc.
The fireplace has an optionally installed ex-changer in the form of a pipe coil, a cooling water jacket and a unique self-cleaning system for the glass front which practi-cally frees you from the need to clean it yourselves.

3) Technical data

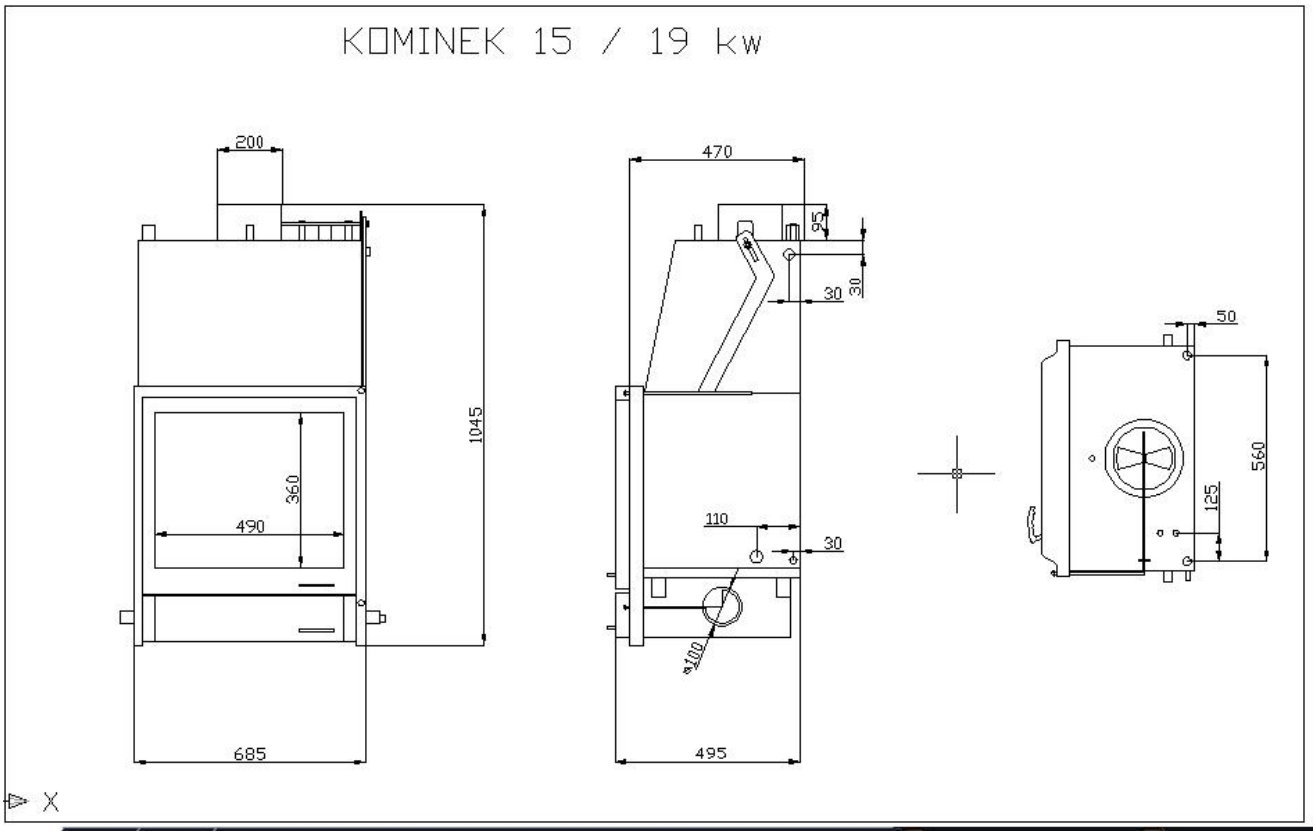
Type	*Unit*	*Spectra 15 / 19*	*Spectra 25*
Power Range (Output):	kW	15, 19	20-25
Fuel:		**Wood/Briquets** (max. Wet 20%, 30-55cm long)	
Efficiency:	%	79-89	
Dimensions: Height x Width x Depth	mm	1465 x 630 x 520	1465 x 6800 x 520
Stove Water Volume:	dm^3	40	50
Max. Working Pressure:	bar	2	
Flue gases Temperature:	^oC	>250	
Recommended Chimney Underpressure	Pa	20	
Recommended High of the Chimney	m	8	
Recommended Chimney's Intersection	cm^2	400	

3.1) Structure of SPECTRA:

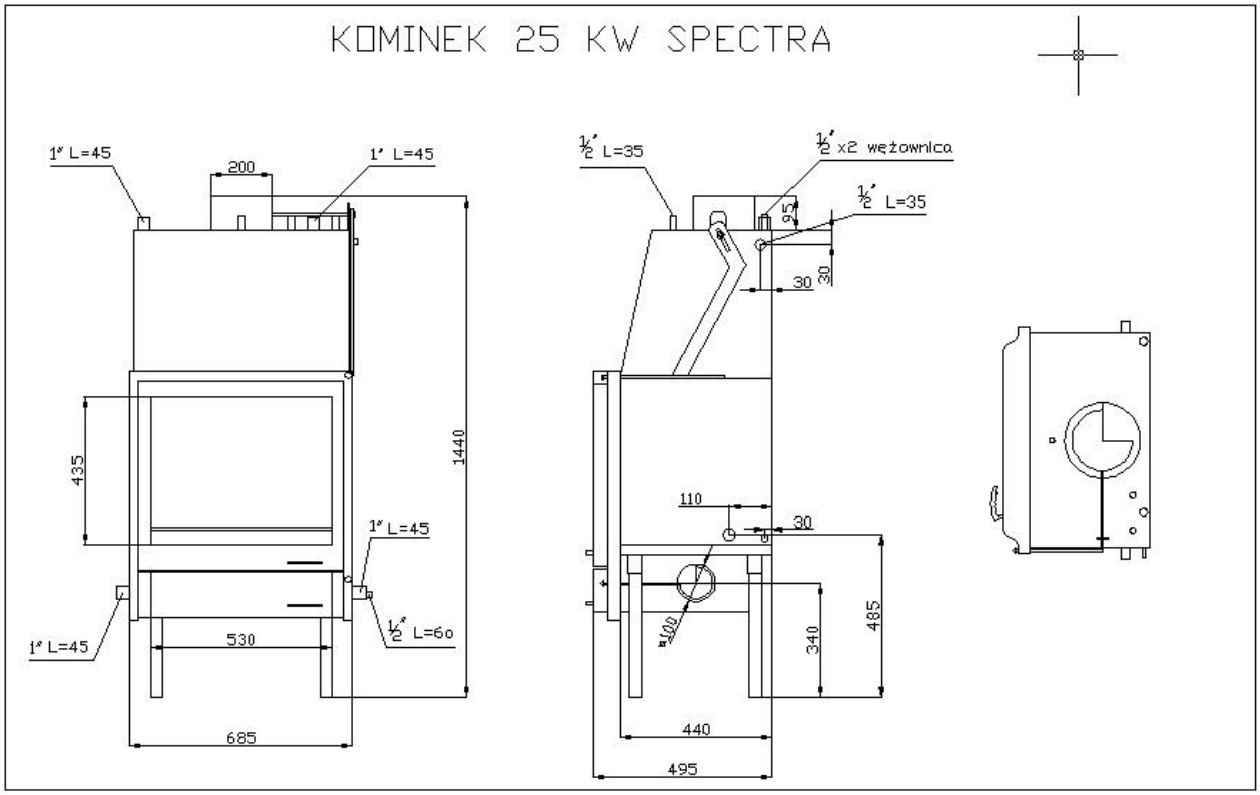
SPECTRA is made from the steel (4-5 mm) with built in the upper part water coat. Heat exchanger is made from special horizontal steel tubes, which are covered by flame during fire. This solution is giving high efficiency. The grill is made from cast iron and it is placed in the middle of ceramic plate. To the combustion chamber is delivered primary and secondary air. Under the grill there is placed ash drawer and primary air regulation.

3.2) Dimensions of SPECTRA:

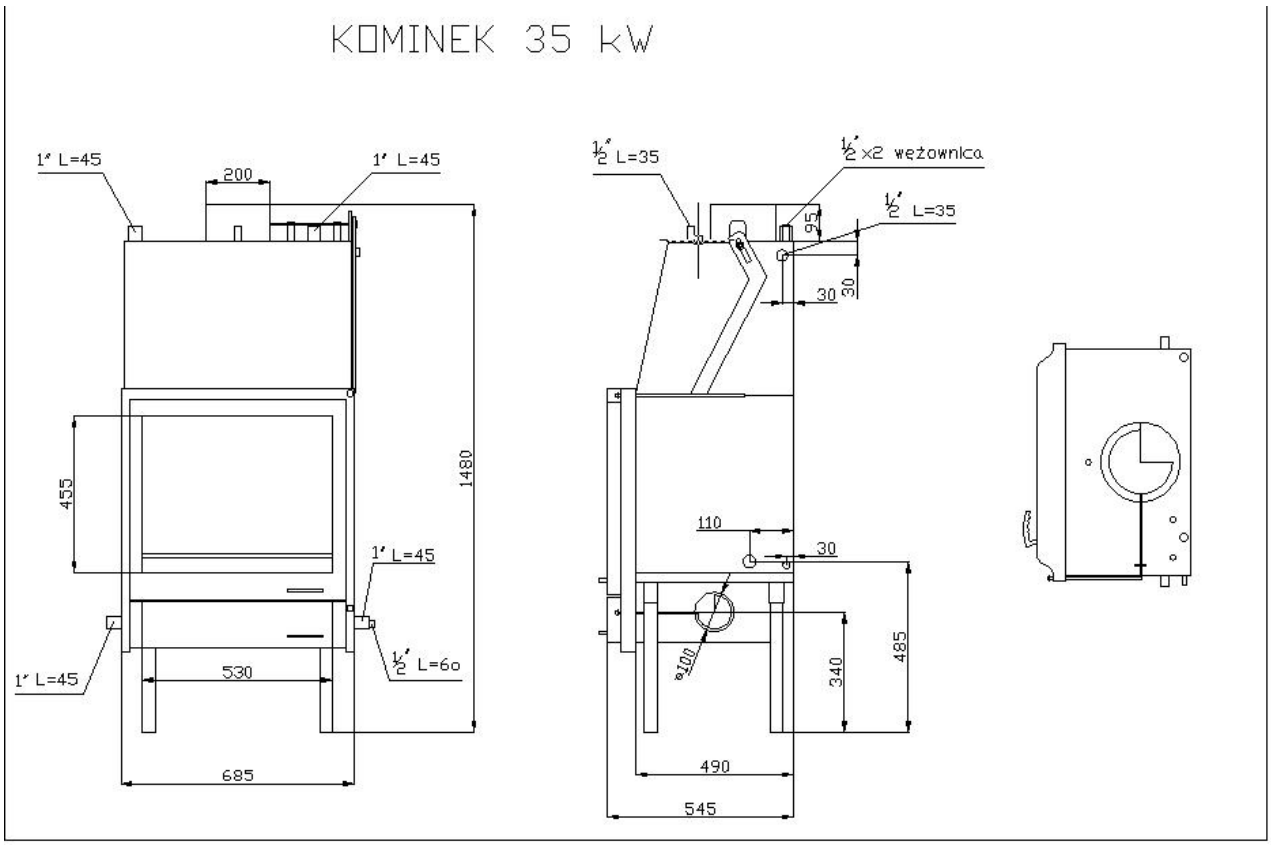
Model: 15kW and 19kW



Model 25kW:

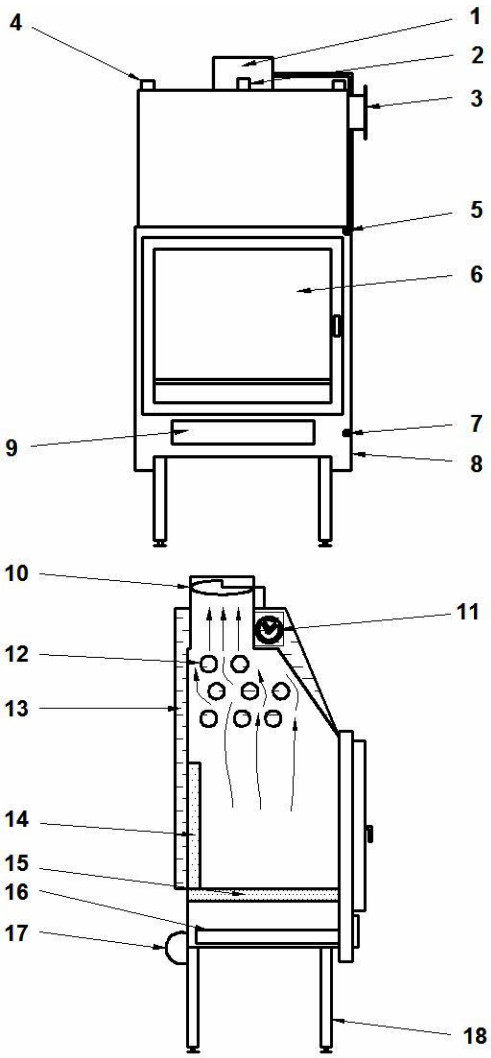


Model 35kW:



NOTE: Water Stove Spectra 25 is 680mm wide

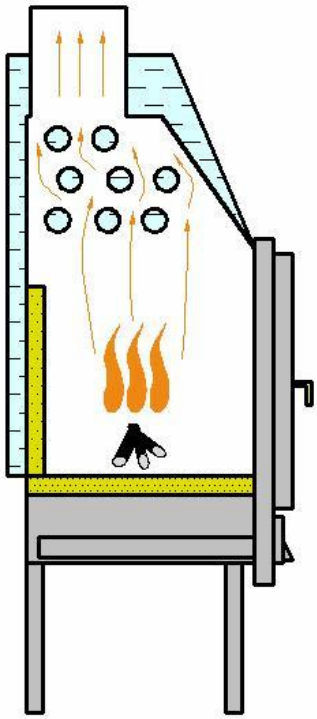
3.4) Schema of SPECTRA:



1 Flue gases connection
2 Sensors assembly slot
3 Safety coil connection
4 Water outlet (left and right side)
5 Flue gases throttle opening unit
6 Fire-doors
7 Air throttle opening unit
8 Water Return (left and right side)
9 Air choke in ash drawer
10 Flue gases throttle
11 Built Safety Coil
12 Tubular channels of water jacket
13 Water jacket
14 Fire-clay bricks
15 Cast-iron grid cased with fire-clay
16 Ash drawer
17 Additional air lead φ=100 mm.
18 Leg of fireplace with control of height.

Cross-section of Spectra:

3.5) SPECTRA principle of working:



During burning in fireplace flue gases wash fireplace walls and exchanger tubular passing on warmth to heating factor, and they hit to chimney then.
The fire-clay contributions being in combustion space after warming by a long term hold warmth what as well as allows to more precise burning down in washing it flue gases the carbon monoxide it makes easier lighting the next parties of fuel.
The natural chimney draught which secures the corrects work of device is controllable by flue gases throttle and air choke. Shutting the throttles causes the decrease and the opening the enlargement of chimney draught strength. If we will deliver more air the combustion will be more intensive.
Proper setting these throttles will be large influence on obtainment suitable thermal comfort and use fireplace

4) Using SPECTRA

4.1) Fuel:

4.1.1) Kinds of fuels.

Fireplace be corresponsive to combustion as well as briquettes and woods - They should pose the leaflike trees' chunks of wood of large hardness basic fuel, such as: oak, beech, acacia, ash whether hornbeam. They can be this also softer woods from: birch whether poplar.
We can applying briquettes about low moisture and contents of ash also effective combustion. It should however remember that their heat value is higher from leaflike trees' logs loading to combustion space should be smaller.
We can as supplement substitutionally apply coniferae's chunks of wood. However we in this case have to take under attention quicker the overgrowing the internal walls of fireplace as well as window panel, and what cleaning for this goes more frequent.

4.1.2) Humidity, sizes.

Recommended humidity of fuel is about 20%. This is important with regard on heat value of wood which changes near change of humidity fundamentally. Near humidity on level 20% heat value this about 12,5 MJ / kg however near humidity 50% already only about 7,5 MJ / kg.

Using fuel of large humidity causes his larger waste as well as causes the condensations of water steam inside fireplace. Condensate accelerates the corrosions of steel exchanger of fireplace.
To get wood humidity about 20% near natural drying it should be seasoned where through the least 18 months. Near seasoning of wood by period since 6 months till year the humidity of wood will be on level 45% to 30%.
The diameter of logs of wood should carry out 10-20 cm. and their length should make possible them free loading to chamber.

4.2) Burning up SPECTRA:

Before first lighting as well as after long term of non-use of fireplace, before accession to use should check the patency of channels of fireplace and chimney as well as the heating factor in installation.

1) Open the fire-doors and throttles of flue gases (pressing levers 5)
2) Set the initially air inlet (lever 7).
3) On grill to arrange the kindling-fuel (the paper or kindling-fuel grilowa) and at the top little twig and pieces of wood about diameter 3-5cm.
4) Fire the paper and close fire-doors.
5) When burning fuel creates the shell of heat unlock fire-doors to supply the chamber with chunks of wood or briquette.
6) Close the fire-doors and regulate the process of combustion with throttles of flue gases and air.
    a. As well as the throttles are more open the chimney draught it larger and the combustion is more intensive (larger power)
    b. As well as the throttles are more closed the chimney draught is smaller and the combustion is freer (smaller cardinality).
    c. The protrusion the mechanism of throttle of flue gases causes her lock and inserting opening.
    d. The air choke is open when lever is in horizontal position and closed when it is in perpendicular position.
7) Fuel make-up can happen only at that time when fires over heat start burning down. We close the air choke, we unlock the throttle of flue gases and we unlock fire-doors then slow. We supply fuel and close fire-doors. We make the adjustment of draught.

We put, in aim to obtain the maximum power, to boiler 5-7 chunks of about diameter from 10 cm. to 20 cm and we unlock the throttles of flue gases and air entirely.
To get the lower power of fireplace we should charge smaller quantity fuel and adjust throttles in such way to fire was not too intensive.

At first burning up in fireplace water can show inside fireplace ("perspiration fireplace”). This normal effect is because the temperature of flue gases at cold fireplace can fall below temperature of dew and the condensation of water steam follows. Effect goes out after heating fireplace and installation.

If during work flue gases get out outside, enlarge the strength of the chimney draught across openly the throttles of fumes and air.

Warning! During use of fireplace please remembering that the external elements can be heated and they can cause burn.

Warning! Please do not place the combustible materials in nearby of fireplace.

4.3) CLEANING I CONSERVATION SPECTRA:

The keeping up the cleanness in channels and chamber of fireplace is the condition of correct, effective and safe work of device.
Sediment on walls of water jacket has influence on exchange of warmth among flue gases and heating factor and what effect for this goes it has on efficiency of fireplace.
The everyday conservation should to consist on emptying ash from drawer and the cosmetics of device.
We clean the window panel of fire-doors in dependence from degree her smokiness, using the special detergents.
We clean chamber and tubular exchanger in dependence from sediment on surface. If the layer of chimney soot is above 2-3mm we should to brush down walls by steel brush. It is possible to apply chemical means to prevent generation excessive deposition of chimney soot.
We should periodically oil device with (for example: with liquid WD-40) movable elements of fireplace: the mechanisms of throttles the, hinges, the handle of closing the fire-doors.
Yearly we should to brush down combustion ducts.

Warning! We make on non-working device all maintenance actions

4.4) Safety of using Spectra:

In order to safely use of fireplace with water jacket:

- It is not allowed to receive cold water during work of device if the temperature of fireplace crosses 40ºC because this can cause the failure of water jacket.
- Do not allow to boiled water in fireplace
- Do not touch front the warmed elements of fireplace because this threatens burns.
- Does not it flood fire in fireplace with water.
- Do not use different fuel than recommended.
- Do not store in nearby of fireplace any combustible materials.
- Use the fireplace according with operating manual.

5) System

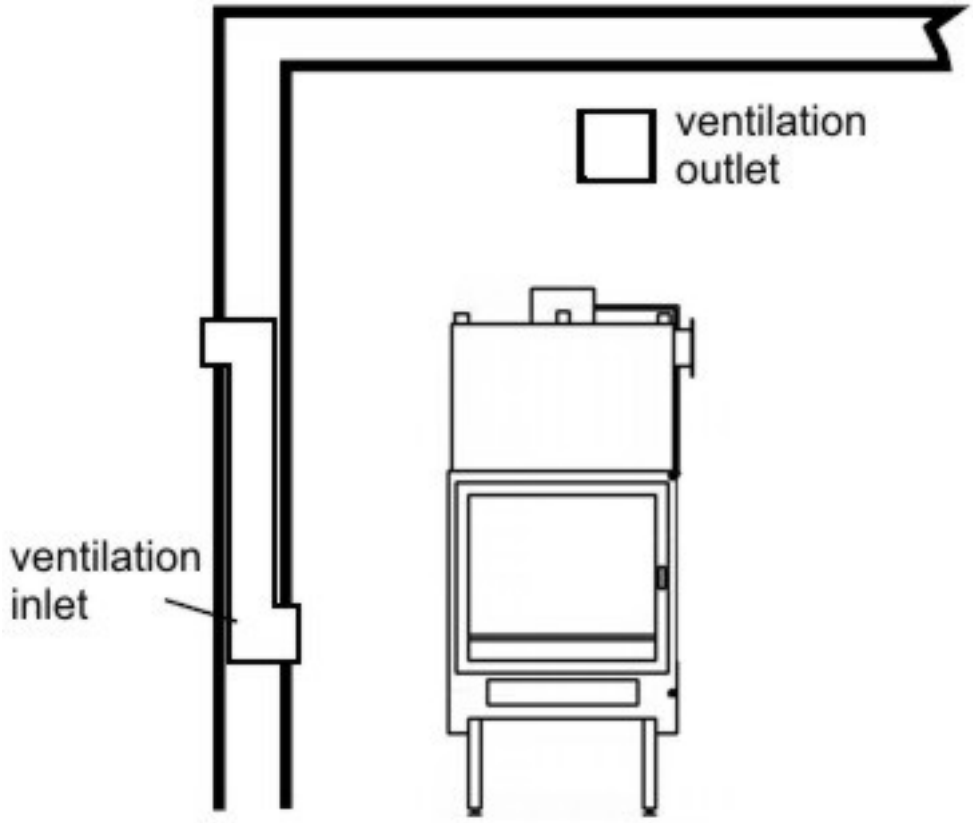
5.1) Standards

- Heating System – during installation and operation of the boiler it is very important to keep safe distance from the inflammable materials. The boiler is allowed to work only in open type heating systems!
- Electrical installation – the regulator's power supply is 230V/50Hz
- Chimney – It must be done with respect to current norms and regulations. Due boiler gasses temperature 90-100 C it is obligatory to put the INOX or other material tubes into the chimney. Required chimney draught is 0,1 – 0,2 mbar. Installation according to ADJ does entail some testing of the chimney, which may be carried out by a sweep
- Important sources of guidance installers: 98/37/EEG; 89/336/EEG; 73/23/EEG; EN 55014-1, 1993 /A1, 1997; EN 55014-1; EN 55014-2 C1 1998; EN 61000-3-2; EN 61000-4-2, -3-4-5-6-11, Level2; EN 50165; EN 50165 C1; EN 60335-1; EN 303-5; EN 12809; EN 13394

5.2) Combustion ducts, ventilation:

At connecting fireplace flue - should turn attention on following recommendations:

- To provide the correct work of device the chimney draught should figure out about 15 Pa.
- The flue should be performed from heat-resistant steel and leaded straight as possible and with the smallest number of deflecting.
- Connecting flue with chimney should be made at an angle of 45º.
- The assembly of simple section after exit from flue connection courts about length min. 30 cm directly.
- The connections of flue should be tight.
- Fireplace should be connected to individual flue.
- External chimneys should be insulated.
- Room in which fireplace will be installed should be equipped in ventilations.
- The minimum intersection of chimney is 400 cm2 and height this 6-8 m.
- Air to fireplace should be brought by channel about intersection =100mm



Natural chimney draught generated by chimney institutes the basis of correct of fireplace. If it is too low can cause the flue gases regress to room and too high draught accelerates the process of combustion, which leads to quicker burning of fuel and can cause non-controlment raise of temperature of factor in water jacket.

Factors causing disturbances in chimney draught:

- Too low chimney,
- Too small intersection of chimney,
- Low atmospheric pressure,
- The atmospheric large humidity,
- The small difference of temperature among internal air and external.
- Polluted flues or ducts of fireplace.
- Lack or failure working ventilation of air.

6) Boiler installation systems:

Fireplace with water jacket should be connected in system of installation of central heating so as boilers on solid fuel.

Fireplace should be secured with norm peaceably PN -91 / B -02413 with open dish. The dish pipe and pipe of safety about should have min. diameter 25mm. Pipes from dish should be diverted: transfer and signalling.
Hydraulic connecting depends on connecting of supply and the return to installation of central heating (look the drawing below). Because we have at command along two feeding and return connectors it is recommended to connect crosswise ducts.
One pair of connectors attends to connecting to installation c.h., second meanwhile to connecting storage tank. Unless non-connect storage tank - we blind connectors.


safety valve


manometer


thermometer


expansion tank


return valve


return valve to shut off


flap trap gravity operated


air vent


manual mixing valve


stop valve


dirt catcher


regulating valve


relief valve

thermal valve


drain tap

heating pump

hot water tank loading pump

boiler circuit pump

transfer pump

loading pump


hot water tank loading valve

reversing valve

motor mixing valve

two-way valve


thermostat valve


reducing valve (at joining of water supply over 6 bar only)


outflowing crater


heat consumer

radiator heating circuit

underfloor heating circuit

ventilator heating circuit

swimming pool heat exchanger

hot water tank thermostat

flue gas thermostat

minimum thermostat

safety temperature limiter

accumulator tank thermostat

outside temperature sensor

clip-on sensor boiler circuit

forward temperature sensor

boiler temperature sensor

hot water tank sensor

water tank sensor

remote control

differential temperatrue sensor

accumulator tank sensor top

accumulator tank sensor bottom

sensor solar collector outlet

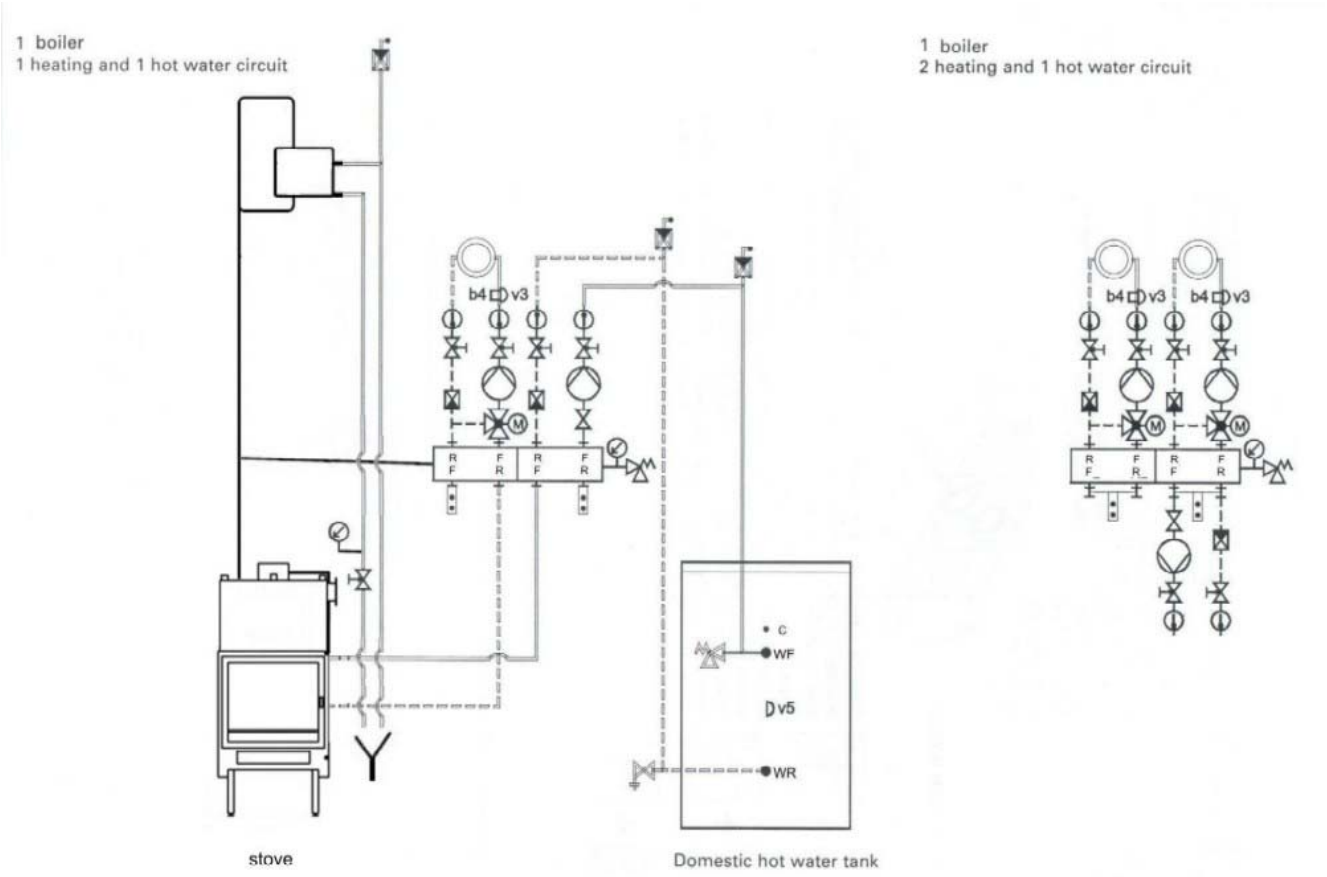
sensor solar collector inlet

sensor solar tank

F	forward
R	return
BF	boiler forward
BR	boiler return
WF	hot water tank forward
WR	hot water tank return
HF	heating forward
HR	heating return
SF	solar forward
SR	solar return
C	circulation

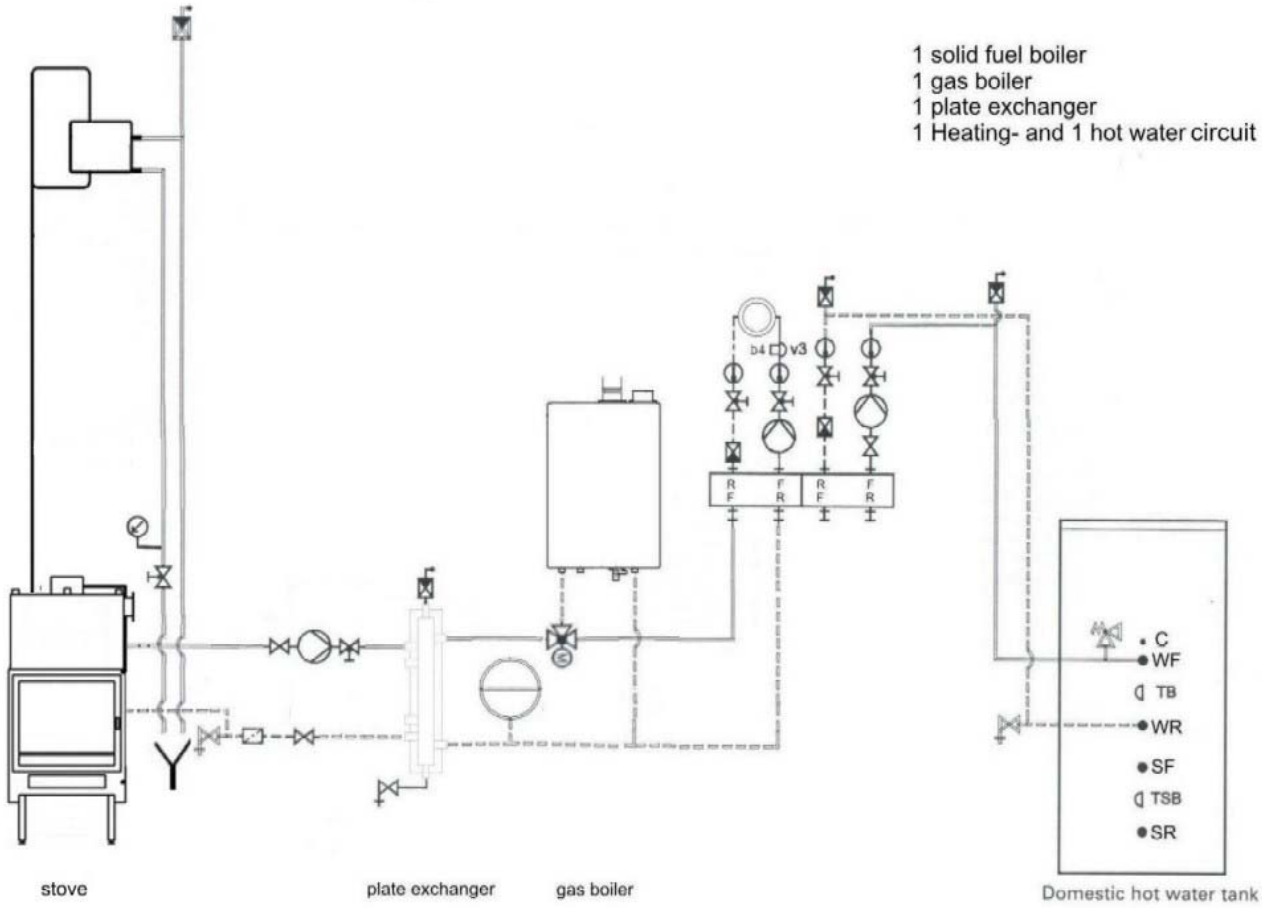
pipework and fittings on customer's side

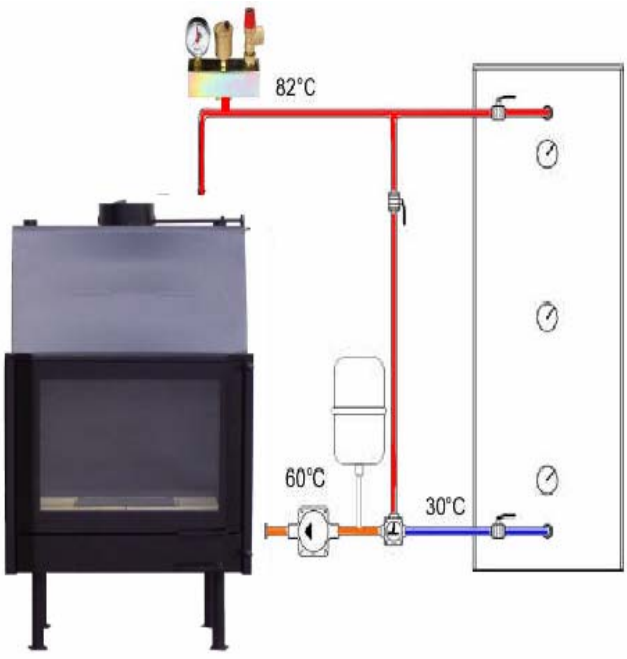
➢ Connecting to installation of open system



It happens often that existing installations are secured by closed arrangement. Unless we have the possibility of opening of installation we can then protect fireplace with open installation arrangement and connect across plate exchanger to closed arrangement.

- **Connecting to of central heating installation secured with closed arrangement the fireplace.**





Example design installation: