VIADRUS

VIADRUS G 700

MANUAL FOR BOILER OPERATION AND INSTALLATION

Table of Contents:

page

Dear customer,
we thank you that you have bought the VIADRUS G 700 boiler thus having shown your confidence in VIADRUS a.s.
For you to get used to a correct way of handling your new product from the beginning please read at first this manual for its usage (first of all the chapter no.7 – Boiler operation by user and the chapter no. 8 – Important warnings). Please follow the undermentioned information and Regulation no. 91/93 Coll. issued by Czech Office for Labour safety in order to ensure the safety at work in low-pressure boiler rooms. Thereby a long-time and trouble-free boiler operation will be guaranteed to both your and our satisfaction.

Purchase order: **Purchase order specification code** (type designation)

G 700 X X X X

Number of sections:
10: 10 sections
11: 11 sections
12: 12 sections
13: 13 sections
14: 14 sections
15: 15 sections

Way of delivery:
S: composed
R: decomposed

Type of regulation:
6: Electropanel - fixed regulation RZ 20

Type of burner:
0: without burner
1: with burner

In the purchase order you must specify:

- details according to the specification code for ordering ;
- The required maximum working overpressure of 400 kPa (4 bar) or 600 kPa (6 bar) *)

***)** **In case you require the maximum working overpressure of 600 kPa (6 bar) the sections of the boiler are tested by applying the overpressure of 1200 kPa (12 bar).**

1. Boiler use and advantages

A single-row cast-iron sectional hot-water boiler with an overpressure combustion chamber and a direct firing designed for gas (**natural gas**) and fluid fuels (**furnace oil extra light**) central heating. The pressure burners used in combination with boiler must correspond to:

EN 676 Gaseous fuels burners with a ventilator and an automatic control
EN 267 Fluid fuels burners with a ventilator
EN 303-1 Boiler pro central heating with burners + ventilator
EN 303-2 Boiler pro central heating burners + ventilator
EN 303-3 Boiler pro central heating burners + ventilator

The boiler is produced **exclusively for low-pressure hot-water** central heating systems with maximum 90 °C heating water operating temperature (optionally up to 115 °C), minimum 60 °C heating water operating temperature at maximum 400 kPa (4 bar), optionally 600 kPa (6 bar) *) operating overpressure.
The boiler drum is tested by 800 kPa (8 bar) testing overpressure.

***)** **In case you require the maximum working overpressure of 600 kPa (6 bar) the sections of the boiler are tested by applying the overpressure 1200 kPa (12 bar).**

Boiler advantages are as follows:

1. Longstanding service life of cast-iron boiler drum
2. Highly economical operation. Combustion efficiency in the whole power series is higher than 91,5 % for all sorts of fuel
3. Optionally a delivery incl. the burner
4. Modern design
5. Fully automatic two-stage operation
6. Boiler operation and defects signalling, possibly use of signals for transfer into a superior control system
7. Possibility to operate boiler through the superior automatics or a spatial temperature sensor
8. According to the boiler layout the closing plate can either open to the left-or the right hand side
9. Easily accessible sight glass and the probe for overpressure measuring in combustion chamber.
10. In combination with recommended burners (see chapter “Boiler technical data”) this boiler is environmentally friendly because the whole power series combustion results meet the strict environmental standards and regulations.

2. Boiler technical data

Tab. no. 1 Thermo – technical Parameters of the Boiler (Fuel: Natural gas H, heating oil extra light)

Boiler size (number of sections)	pc	10	11	12	13	14	15
Nominal power	kW	330	400	470	550	650	750
Lower step Power	kW	In accordance with a range of selected burner type					
Power Intake range	kW	360	438	512	591	710	820
Minimum efficiency	%	91,5					
Range of temperatures regulation	°C	60 – 90 (optionally 115)					
Min. temperature of return water	°C	50					
Fuel consumption – natural gas	m^3/h	36,1	43,9	51,4	60,2	71,1	82,3
– diesel fuel, heating oil	kg/h	30,2	36,8	43,1	50,5	58	65,5
Fuel Mass flow	kg/sec	0,088	0,10	0,12	0,135	0,156	0,180
Combustion products temperature	°C	165 – 190					
Combustion products temperature I. step	°C	130					
Combustion products routing volume	dm^3	610	676	742	808	874	940
Depth of combustion chamber	mm	1377	1527	1677	1827	1977	2127
Volume of combustion chamber	dm^3	314	347	381	414	447	480
Heat transfer surface	m^2	21,35	23,8	26,26	28,7	31,14	33,58
Pressure loss on the combustion products side	mbar	0,9	1,4	2,2	3,2	5	6,2
Recommended smokestack draught	mbar	min. 0,2					
Volume of boiler water space	l	252	277	302	327	352	377
Pressure loss on the water side – dt = 20 K	mbar	0,9	1,35	1,9	2,6	3,34	4,2
– dt = 10 K	mbar	3,4	3,9	5,3	8,6	12,4	16,7
Stand by Loss	kW	0,89	0,95	1	1,06	1,11	1,16
Maximum working overpressure	kPa (bar)	400 (4), optionally 600 (6) *)					
Dimensions – width	mm	904					
– height	mm	1424					
– depth	mm	1842	2142	2142	2442	2442	2592
Heat transfer media connections	mm	100					
Diameter of smoke socket D	mm	250			300		
Burner flange (boiler part) – H70	mm	220					
Burner connection dimensions	mm	Given in the documentation of the selected burner type					
Boiler Mass	kg	1660	1815	1970	2125	2280	2430

*) In case you require the maximum working overpressure of 600 (6 bar) kPa the sections of the boiler are tested by applying the overpressure 1200 kPa (12 bar).

Tab. no. 2 Recommended burners

Recommended burners for gaseous fuel combustion

Boiler size	10	11	12	13	14	15
Nominal Power (kW)	**330**	**400**	**470**	**550**	**650**	**750**
BENTONE	BG 450-2 BG 450 M	BG 450-2 BG 450 M	BG 550-2 BG 550 M	BG 650-2 BG 650 M	BG 650-2 BG 650 M	BG 650-2 BG 650 M
ELCO	VG 04.430	VG 04.430	VG 04.430	VG 04.430	VG 04.430	VG 04.430
INTERCAL	SGN 77/2	SGN 77/2	SGN 77/2	SGN 88/2		
WEISHAUPT	WG 40N/1-A	WG 40N/1-A	WG 40N/1-A	WM-G10/2 WM-G 10/3	WM-G 10/3	WM-G10/4 G 7/1-D
GIERSCH	MG10/1-LN	MG10/2-LN	MG10/2-LN	MG20/1-M-LN	MG20/1-M-LN	MG20/2-M-LN

Recommended burners for liquid fuel combustion

Boiler size	10	11	12	13	14	15
Nominal Power (kW)	**330**	**400**	**470**	**550**	**650**	**750**
BENTONE	B45-2H	B45-2H	B55-2	B55-2	B65-2	B65-2
ELCO	VL 04.430	VL 04.540	VL 04.540	VL 05.700	VL 05.1000	VL 05.1000
INTERCAL	SL 77/2	SL 88/2	SL 88/2	SL 88/2		
WEISHAUPT	WL 40Z-A	WL 40Z-A	WL 40Z-A	L 3Z-AD-C WM-L 10/3-A/T	L 5Z D WM-L 10/4-A/T	L 7Z D WM-L 10/4-A/T
GIERSCH	M10-Z-L	M10-Z-L	M10.2-Z-L	M2.1-Z-L	M2.1-Z-L	M2.1-Z-L

The gas flow is specified at the gas temperature and 0 °C and 1013,25 mbar air pressure. For a particular temperature and pressure the real consumption is calculated as follows:

$$V = V_{E.} \frac{1013{,}25.\ (273 + t)}{p.\ 273}$$

V gas volume at a given pressure and temperature
V_E gas volume at 0°C and 1013,25 mbar
t gas temperature (°C)
p absolute gas pressure (mbar)
273 absolute temperature (K)

3. Description

3.1 Boiler construction

The boiler drum (see Fig. no. 1 – individual positions) consists of sections by means of forced on insertions and secured by anchor bolts. The boiler has three-draught construction and the combustion chamber and the convective part are created by sections; the boiler water space is inside. The boiler tightness is guaranteed by the packing cord inserted in a groove on four sides of individual sections and the combustion chamber plus the silicon sealant deposited in grooves at the point of sections joint after boiler drum constriction.

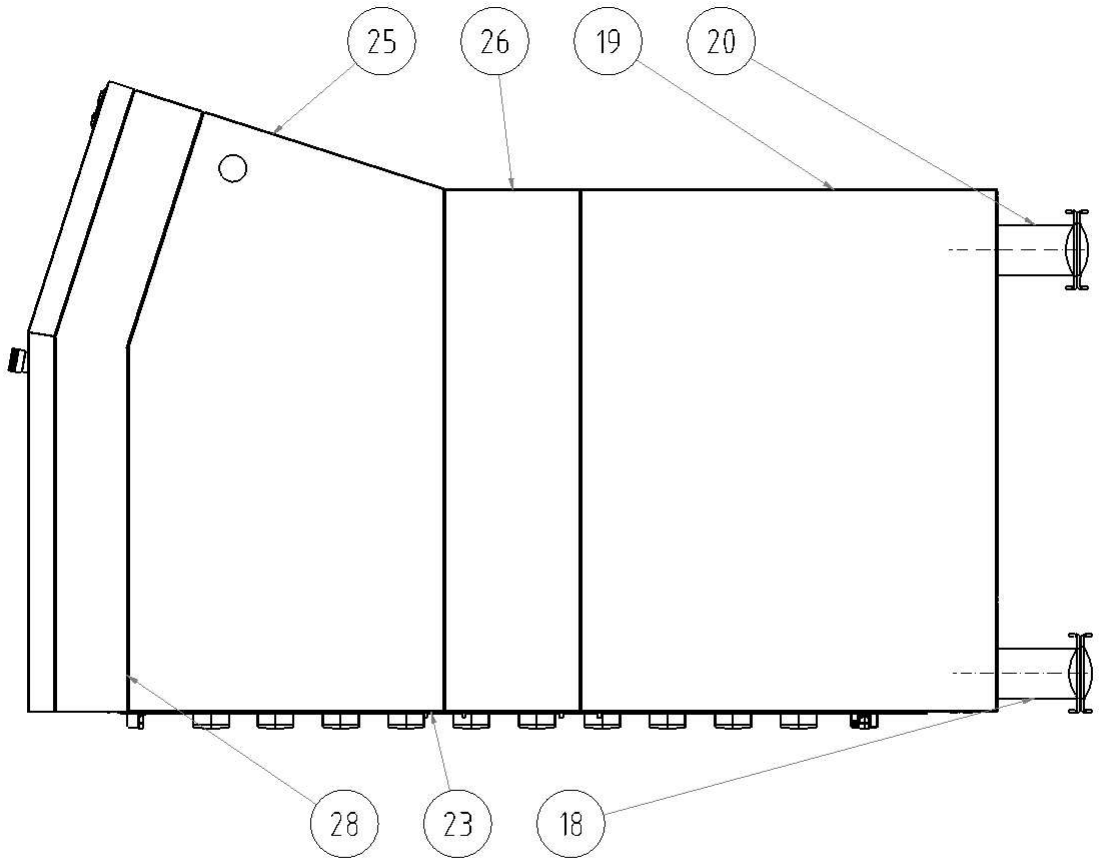
On the frontal section is there is mounted closing plate with insulation which can open either to the left or to the right hand side. This must correspond with hinges and closures position. The flange for burner is a part of closing plate. On the flange there is placed a sight glass with a probe for measuring the overpressure in combustion chamber.

The opening ϕ 126 mm in the upper part of the frontal section is closed by a flange with boring 3 x G 1/2“ for the reservoir of thermostat, safety thermostat and thermometer and the reverse valve of manometer. In the lower part of the frontal section there is an opening ϕ 126 closed by a blank flange.

Input and output of heat carrier are situated on the rear section and is carried out by means of flanges with a sleeve DN 100 and intermediate flanges DN 100. On the lower sleeve there is the discharge cock G 3/4“. The restricting insertion belongs to the flange with the sleeve for heat carrier input. In the riser above the lower flange with a sleeve there is positioned the outside protective clamp of boiler. In the upper and lower parts of the rear section there are four small covers for cleaning.

Flue gases are carried away from boiler through the outlet neck positioned on the flue collector. Under the outlet neck there is the explosive flap with a holder. On the outlet neck there are the measurement points for temperature and flue gases analysis..

The boiler drum is perfectly insulated by the mineral wool plates 100 mm thick. The steel shell of boiler is suspended on two consoles of the shell positioned next to upper anchor bolts. The surface is treated by comaxit paint. In the frontal part of boiler there is installed the electric panel in which there are installed the switching, regulation and safety elements and the wiring block.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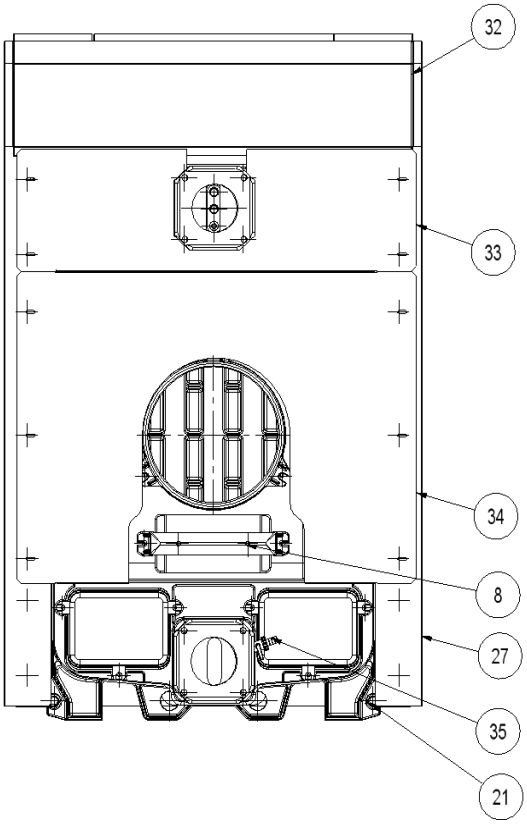
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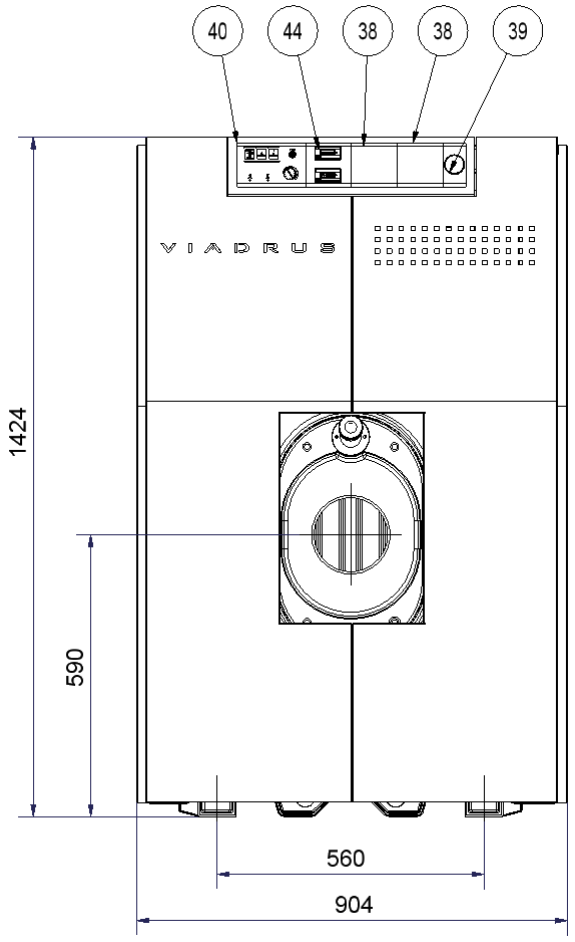
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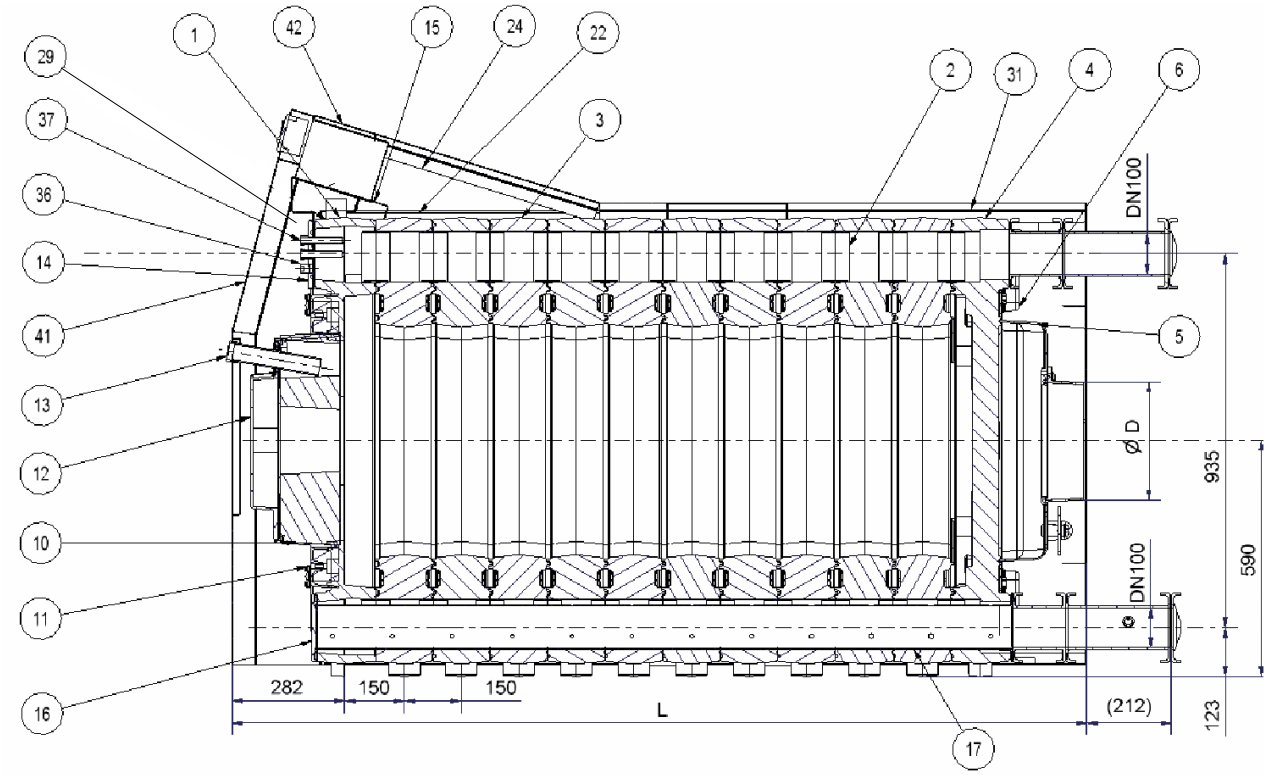


Legend:

1. frontal section
2. insertion
3. central section
4. rear section collector
5. flue gases
6. small cover for cleaning
8. explosive flap
10. closing plate with insulation
11. hinge
12. flange for burner with insulation
13. sight glass with measuring probe
14. flange 170x170 with boring 3x G1/2“
15. el. box console
16. flange 170x170
17. distribution pipe with a sleeve
18. return water flange
19. intermediate flange
20. heating water flange
21. anchor bolt
22. console of shell
23. connecting console
24. side part of shell frontal left
25. side part of shell frontal right
26. side part of shell
27. side part of shell rear
28. frontal part of shell segment 2 right
29. frontal part of shell segment 2 left
30. upper part of shell frontal
31. upper part of shell rear
32. upper part of shell
33. rear part of shell upper, lower
34. rear part of shell central
35. discharge cock
36. thermomanometer clack-valve
37. reservoirs of thermostats and thermostat capillary
38. blind flange big
39. blind flange with thermomanometer
40. network module
41. frontal cover of the shell
42. electric panel cover
43. frontal part of shell right
44. service clock

Fig.no.1 Boiler assembly

3.2 Electric wiring diagrams

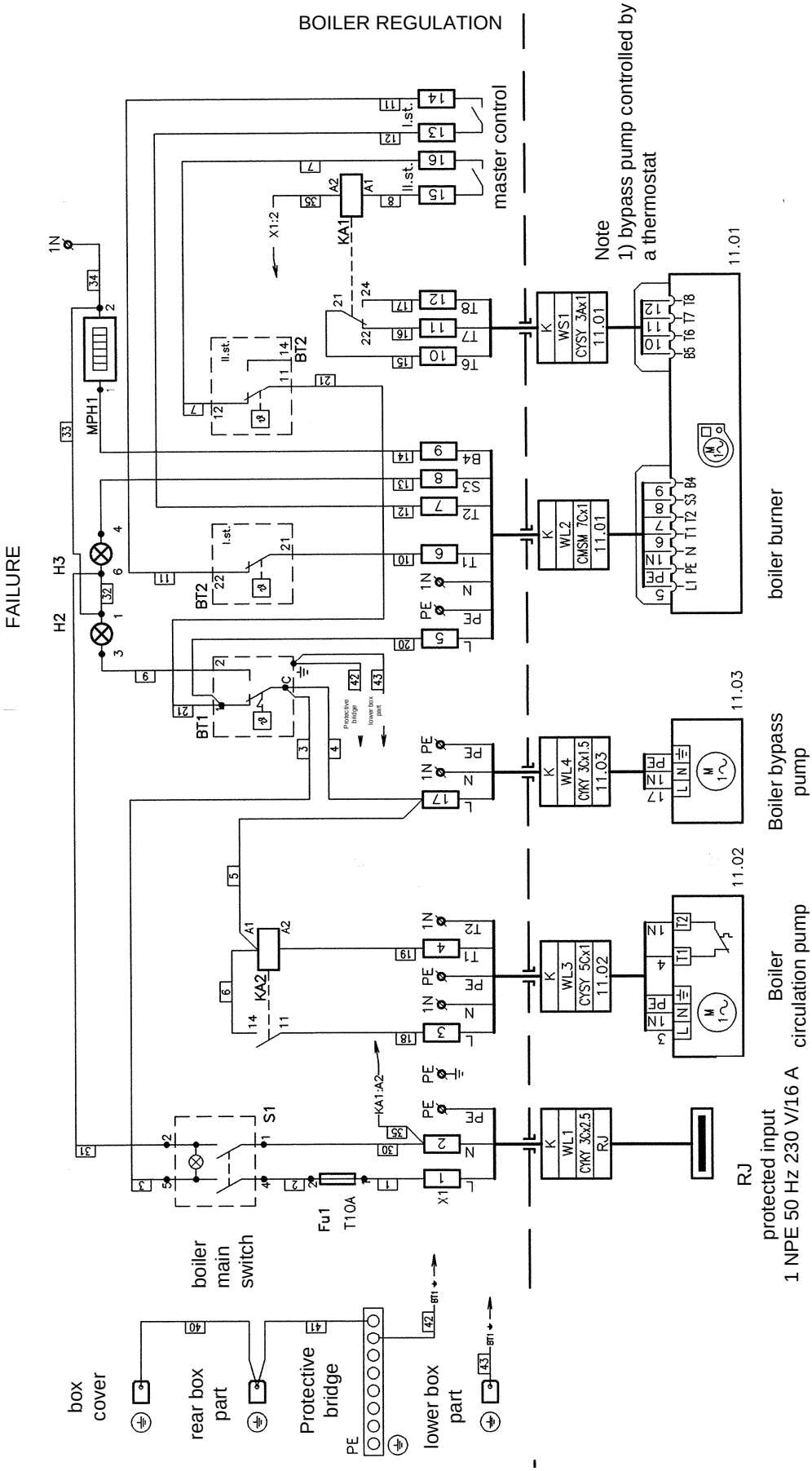


Fig. No.2 RZ 20 Regulation wiring diagram

4. Positioning and installation

4.1 Boiler positioning in boiler room

The installation of the boiler must comply with all requirements of ČSN 06 1008

The boiler is equipped with a movable mains supply and a plug. The boiler must be according to EN 60 335 – 1 ed. 2 Art. 7.12.4 positioned in a way making sure that the plug is accessible.
The boiler is designed to be positioned in closed rooms with low or medium aggressiveness in view of electrical regulations in an ordinary environment (ČSN 33 2000–7–701). It is suitable for installation in rooms separated from the housing premises (Regulation 91/93 Coll., ČSN 07 0703 Boiler rooms with gas fired equipment).
The boiler noise level does not exceed the maximum level L_A = 85 Db (A) (the real value depends on the type of used burner: for recommended types it ranges between 60 and 70 dB).
The boiler must be installed on an incombustible base or a bedding 50 mm high. In front of the boiler there must be left a free handling space minimum up to the boiler depth + 500 mm, from one side 600 mm (access to the back), rear access 800 mm and 500 mm between two boilers.
When installing the boiler we must consider the layout requirements of selected type of burner (gas supply etc.) In the next figure the distance L in front of boiler is specified in case that the boiler is cleaned by a mechanical brush. If the chemical cleaning is used for maintenance the distance depends on the type of used burner.

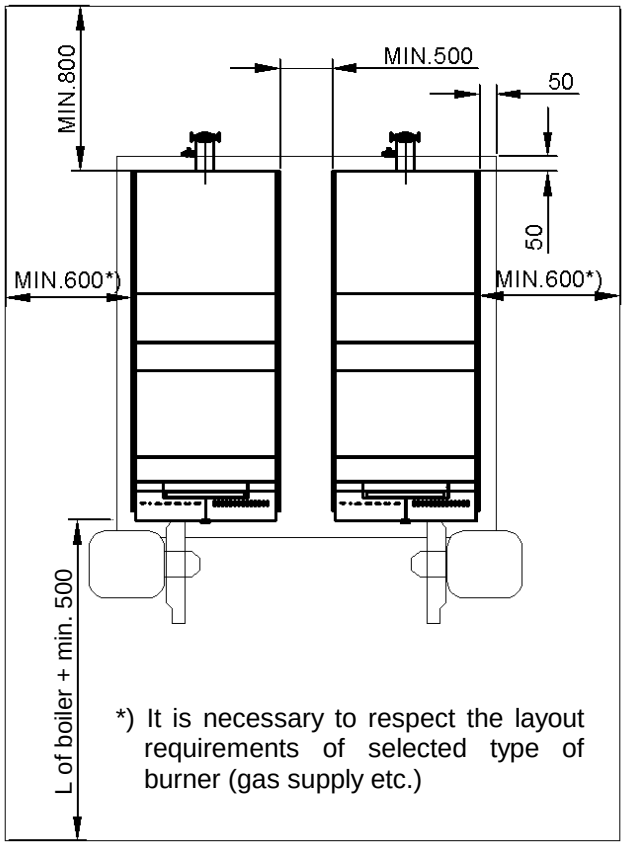


Fig.no. 3 Boiler positioning in a boiler room

A safe distance from the combustible materials:
- when installing and operating the boiler it is necessary to keep a safety distance of 200 mm from the materials of combustibility grade A1, A2, B and C (D);
- for easily combustible materials of combustibility grade E (F), which quickly burn and burn themselves even after removal of ignition source (such as paper, cardboard, asphalt and tar paper, wood and wood-fiber boards, plastics, floor coverings) the safe distance has to be doubled, i.e. to 400 mm;
- safe distance should be doubled as bulb where the grade of reaction to fire has not been proved.

Tab. no. 3 Grade of reaction to fire

Grade of reaction to fire	Examples of building materials and products included in the reaction to fire (Extract from EN 13 501-1 + A1)
A1 – incombustible	Granite, sandstone, concrete, bricks, ceramic tiles, mortars, fireproof plasters, …
A2 – combustible with difficulty	acumin, izumin, heraklit, lignos, boards and basalt felt, fibreglass boards,...
B – hardly combustible	Beech and oak wood, hobrex boards, plywood, werzalit, umakart, sirkolit,...
C (D) – medium combustible	Pinewood, larch, whitewood, chipboard and cork boards, rubber flooring,...
E (F) – easily combustible	Asphaltboard, fibreboards, cellulose materials, polyurethane, polystyrene, polyethylene, PVC,…

In case that it has occurred the danger of combustible vapours or gases development and their penetration into the boiler room or at works with temporarily developed fire or explosion danger (flooring gluing works, painting works using the flammable paints, etc.), boiler must be shut down long enough before the works start by pulling the supply cord out of the socket or switching off the main switch of the burner.

! Warning ! Don't put any objects made of flammable materials on boiler and within a distance smaller than the safe distance from the boiler.

Filling the heating system with water.. The heating system must be thoroughly rinsed out in order to wash out all impurities that might be deposited in distribution system or in heating elements and subsequently can cause the pump damage. Water for boiler and heating system filling must be clear and colourless, with no suspended materials, oil and aggressive chemicals. Parameters of circulating and refilling water must correspond with standard as follows:

Tab. no. 4 The maximum permissible values of heating water according to e ČSN 07 7401

hardness	(mmol/l)	1
Ca2+	(mmol/l)	0,3
total Fe + Mn concentration	(mg/l)	3*

*recommended value

WARNING!!! The use of anti-freeze mixture is not recommended by the manufacturer.

In case that the water hardness doesn't comply with standard it must be treated. Even heating the water with a higher hardness several times does not prevent the soils from getting precipitated on the boiler drum walls. Precipitation of 1 mm calcite reduces at a given point the heat transfer from the metal to water by 10%.
During the heating season the heating water volume in heating system must be kept constant and it has to be prevented from air intake. Water from boiler and heating system must never be discharged or taken for usage except for the emergency cases like repairs etc. Water discharge and filling with new water increases the danger of corrosion and scale development.
In case we have to refill the heating system with water we only refill a cold boiler in order to prevent the boiler sections from disruption.

4.2 Regulations and guidelines

The boiler can only be installed and maintained by special contractual service firm holding a valid IPB and ITI authorization to do the installations that is regularly retrained by the manufacturer. A project according to the valid regulations must be prepared for installation.
The heating system must be filled with water, that meets the ČSN 07 7401 requirements, especially its harness must not exceed the required parameters.

WARNING!!! The use of anti-freeze mixture is not recommended by the manufacturer.

a) to the heating system

ČSN 06 0310	Heating systems in buildings – Designing and installation
ČSN 06 0830	Heating systems in buildings – protecting device
ČSN 07 7401	Water and steam for thermal energy equipments with working pressure up to 8 MPa
EN 267	Forced draught oil burners – Definitions, requirements, testing, marking
EN 303-1	Heating boilers – Part 1: Heating boilers with forced draught burners – Terminology, general requirements, testing and marking
EN 303-2	Heating boilers – Part 2: Heating boilers with forced draught burners – Special requirements for boilers with atomizing oil burners
EN 676	Automatic forced draught burners for gaseous fuels

b) to the gas distribution

ČSN 07 0703	Boiler room with gas fuel –operated equipments
ČSN 38 6405	Gas equipments. Operating principles
ČSN 38 6420	Industrial gas pipelines

EN 1775	Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations.
EN 12007-1	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 1: General functional recommendations
EN 12007-2	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 2: Specific functional recommendations for polyethylene (MOP up to and including 10 bar)
EN 12007-3	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 3: Specific functional recommendations for steel
EN 12007-4	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar – Part 4: Specific functional recommendations for renovation
Act no. 222/94 Coll.	on the conditions of enterprise and public service performance in power industry sector and on the state energy inspection
Promulgation 91/93 Coll.	of Czech work safety office regarding the work safety assurance in low-pressure buildings

c) to liquid fuel distribution

ČSN 65 0201	Combustible liquids. Premises for production, storage and handling
Prom. MV ČR č. 35/77	on fire safety at storing and using the heating oil
PO 1410/65 of 01. 03. 1966	temporary regulations for heating with heating oil and fuel oil

d) to the electrical network

ČSN 33 0165	Electrical regulations. Marking the conductors with colours or digits. Implementing regulations.
ČSN 33 1500	Electrical regulations. Electrical equipments revision
ČSN 33 2000-3	Electrical regulations. Electrical equipments Part 3: Setting the basic characteristics.
ČSN 33 2000-4-41	Electric equipments: part 4: Safety chap. 41: Protection against electrical accident.
ČSN 33 2000-5-51 ed. 2	Electrical regulations. Electrical equipments construction.
ČSN 33 2130	Electrical regulations. Internal wiring.
ČSN 33 2180	Electrical regulations. Connection of electrical devices and appliances.
ČSN 34 0350	Electrical regulations. Regulations for mobile connections and cord extension sets.
EN 60079-10	Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas.
EN 60079-14 ed.2	Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)
EN 60 335-1 ed.2	Household and similar electrical appliances – Safety – Part 1: General requirements.
EN 60 335-2-102	Household and similar electrical appliances – Safety – Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections.
EN 60445 ed. 3	Basic and safety principles for man – machina interface, marking and identification – Identification of equipment terminals and conductor terminations
EN 60446	Basic and safety principles for man – machina interface, marking and identification – Identification of conductors by colours or numerals

e) to the chimney

ČSN 73 4201	Chimneys and flue gas ducting– designing, implementation and connection of fuel consumers.

The connection must carried out only if approved by a chimney organization wand must meet all provisions of these standards. The chimney must be resistant to combustion gases condensate, otherwise it might be seriously damaged.

f) regarding the fire regulations

ČSN 06 1008	Fire safety of heat installations.
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests.

g) to the system of HWS heating

ČSN 06 0320	Heating systems in buildings – Hot water preparation – Designing and planning
ČSN 06 0830	Heating systems in buildings – Safety devices.
ČSN 73 6660	House water plumbing

5. Order, delivery and assembly

5.1 Order

In an order it is necessary to specify following items:

1. Boiler size
2. Demands on elements delivered at request.

5.2 Delivery and accessories

Standard:

- In decomposed condition (individual sections on the pallet,the boiler fitting and accessories in a transport package)
- Casing/ jacket including insulation in a cardboard cover
- Electro-panel - design RZ 20
- Business technical documentation

At request:

- in assembled condition - the boiler body with mounted fitting on the pallet, protected by a foil, accessories stored in boiler. Jacket, including insulation in a cardboard cover.
- delivery with a recommended burner (see tab. No.2)
- flange for burner with connection openings according to the ordered burner
- possibility to deliver the burners
- regulation elements design for output temperature up to **115 °C** - **AMENDMENT to the service and installation instructions for boiler VIADRUS G 300, G 700 model 2007**

At request boiler equipment isn't included in boiler basic price.

5.3 Assembly procedure

The assembly procedure is described in „VIADRUS G 700 boiler assembly manual".

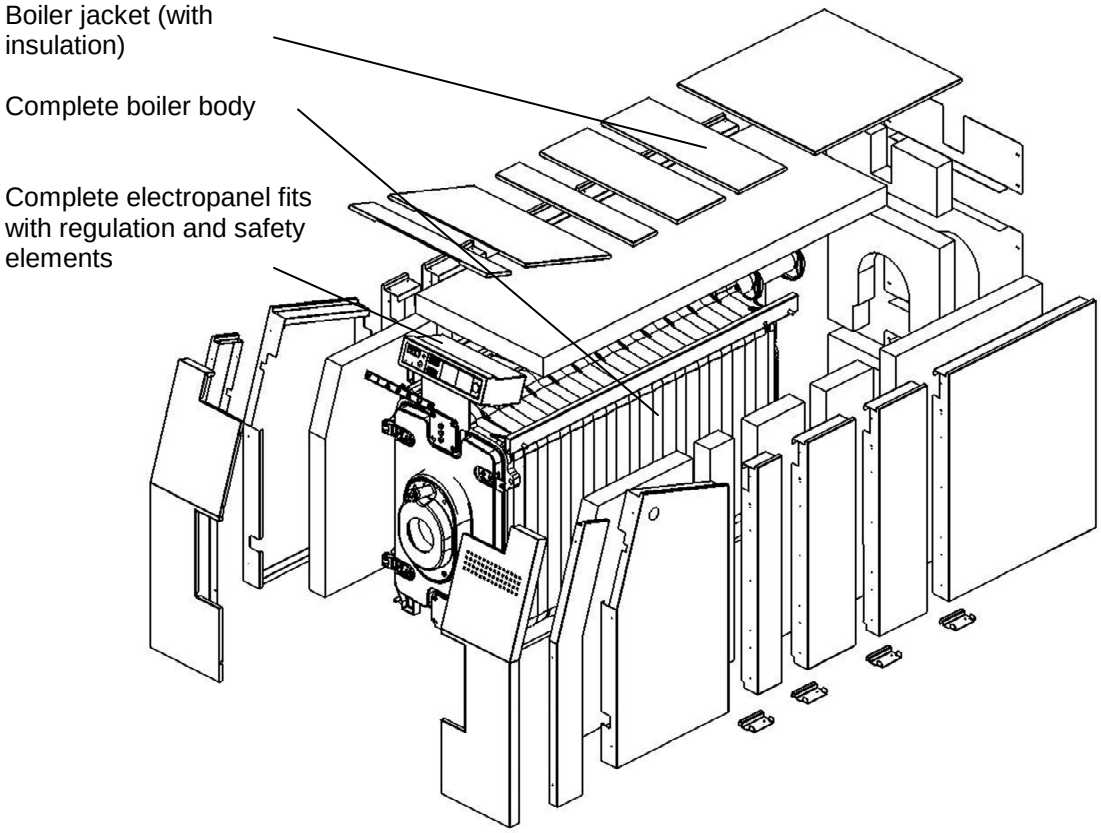


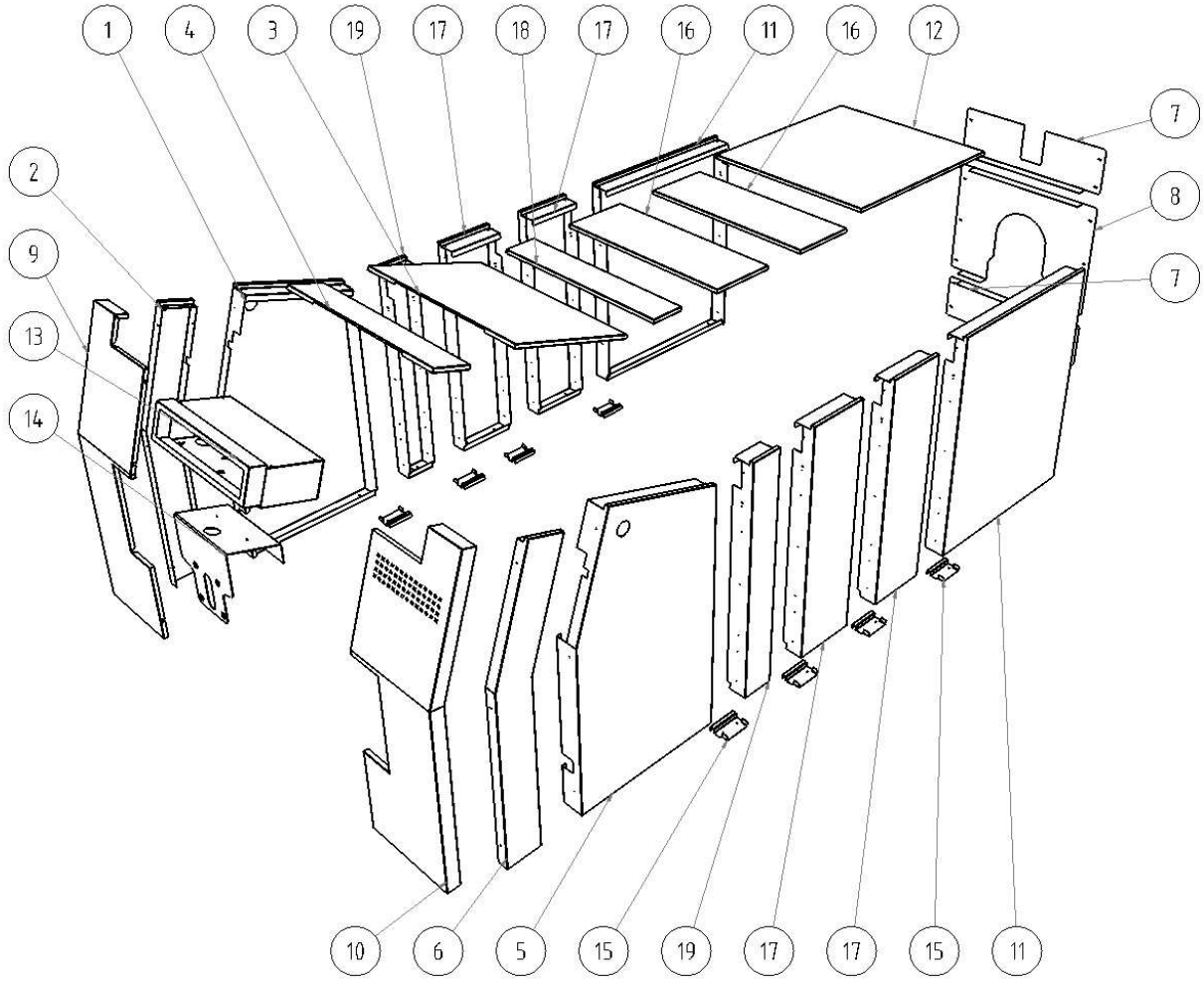
Fig.no. 4 Boiler Assembly

! Warning !
The anchor bolts are fit with springs in back side, which must be pressed in length of 32 mm. At boiler transportation and handling may come to release or spring compression. Before jacket mounting on boiler body there is necessary to check above-mentioned compression. If the length is bigger than specified length – it must be tightened for the length of 32 mm. If the lentgth is smaller, there is necessary to check if there could not come to back section indent of boiler body.

5.3.1 Boiler Jacketing

Single parts of jacket are filled with mineral insulation.

1. Place jacket consoles on front and back section riser (by the longer end of the console towards the front section) by the help of eye screws on anchor bolt
2. At all side parts screw on upper parts of rivet nuts some cones M5
3. Jacket side parts, front left and right one, fit with outlet ϕ 8 in upper part side bend 2 pcs cones M5 with a nut and washer in upper part 2 pcs cones M5
4. Single side parts with insulation are fixed together by the help of binding console, which are mounted by a screw M5 in bottom part
5. On the console and at the same time on bottom anchor bolt hang jacket side part on – left one and right one (pos. 1, 5).
6. By similar way to hang the jacket side parts from the left and from the right on so that come to insertion into binding console on bottom part of previous part
7. Upper jacket back parts, bottom and middle one, screw to back side parts by screws 4,2 x 9,5
8. Side jacket parts, front part 2, left and right fit in the front part with 3 pcs. of cones and in upper part with 2 pcs. of pin
9. Then screw these parts by screws 4,2 x 9,5 to appropriate front side jacket parts
10. Slide single upper jacket parts on cones in side jacket parts
11. Slide an electropanel console on screws with nuts, by which squared flange 170 x 170 with boring 3 x G1/2“ is screwed on front section and secure by nuts M16
12. Dismount electropanel upper part, this tack by 2 pcs screws M5 to electropanel console
13. Front jacket part fix with 6 pcs cones slide on shaping spring in appropriate points of front side jacket parts
14. Left front jacket part fix with 6 pcs shaping springs
15. Right front jacket part fix with 3 pcs shaping springs and into rivet nuts with 3 shaping cones
16. Left and right front jacket part slide on shaping springs in appropriate front side jacket – 2nd parts
17. Adjust electropanel positron so that front part match with front jacket part
18. Cover the electropanel and put an electropanel cover on



		10 sections	11 – 12 sections	13 – 14 sections	15 sections
1	Side jacket part – front left one	1	1	1	1
2	Front jacket part – 2 left one	1	1	1	1
3	Upper jacket part	1	1	1	1
4	Electropanel cover	1	1	1	1
5	Front right side jacket part	1	1	1	1
6	Front jacket part – 2 right ones	1	1	1	1
7	Back jacket part, back one and bottom one	2	2	2	2
8	Back jacket part – middle one	1	1	1	1
9	Front jacket part – left one	1	1	1	1
10	Front jacket part – right one	1	1	1	1
11	Side jacket part 920 mm	2	2	2	2
12	Upper jacket part 920 mm	1	1	1	1
13	Electropanel console	1	1	1	1
14	Electropanel	1	1	1	1
15	Binding console	2	4	6	8
16	Upper jacket part 300 mm	-	1	2	2
17	Side jacket part 300 mm	-	2	4	4
18	Upper jacket part 150 mm	-	-	-	1
19	Side jacket part 150 mm	-	-	-	2

Fig.no. 5 Boiler Jacketing

6. Commissioning

The boiler commissioning, heat output setting and any interference with boiler electric part or connection of additional control elements can only be done by a contractual service organization authorized to do the service works and a firm authorized to service the burner being operated.

1. Installation and assembly of the burner, its adjustment and boiler putting into operation together with burner must be done by burner supplier ´s the service firm. This service firm will give a training to the user regarding the operation, provide him with burner operation manual and will ensure the guarantee and after-guarantee repairs.
2. Make a registration in Revision book before the boiler commissioning.

6.1 Verification activities befor commissioning

Before the boiler commissioning it is necessary to check and bring into a correct status:

- water volume in system according to manometer
- open all slide valves and valves between the boiler and heating system
- correct burner mounting and its connection to electricity network (we recommend to have the box main switch in “0” position before we connect the supply cord with network)
- fuel supply opening
- regulation and safety elements setting

6.2 Operation

The boiler can be operated with both gaseous and liquid fuels and with burners tested and approved by Engineering Testing Institute Brno. Recommended types of burners - see chap. No. 3 – Boiler technical data.
The boiler operation itself is controlled by the burner automatics and setting of individual regulation elements.
The boiler operation in individual stages is signalled by pilot lamps on electric panel.

7. Boiler operation by user

7.1 Setting of regulation elements.

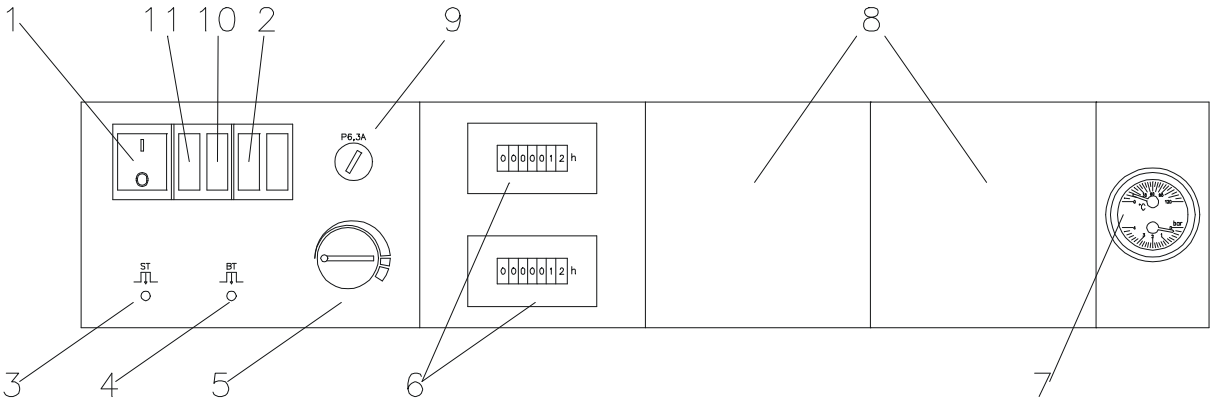
- Setting of temperature stage I. (reduced output) to 50 – 90 °C range (optionally 50 – 115 °C)
- Setting of temperature stage II. (nominal output) to 50 – 90 °C range (optionally 50 – 115 °C)
- in low-temperature regime the heating water temperature is set to 50 – 75 °C range.
- safety thermostat is permanently set to 100 °C by manufacturer (optionally to 120 °C).

In case of switching off – defect signalling is alight on electric panel – it is necessary (after having found out the reason and possible defect elimination) to bring the thermostat into its on-state position by pressing the button on the rear box panel.
The required chimney draught is min. 0,2 mbar. A probe positioned on sight-glass body serves for overpressure measuring in combustion chamber.

7.2 Electric panel – design RZ 20

Electro-panel consists of basic parts as follows:

- electro-panel itself with network module
- capillary pressure gauge
- capillary thermometer
- service thermostat
- safety thermostat
- running hours counter
- burner failure control lamps
- "failure" control lamps – safety thermostat switching
- connecting terminal block



1. Main switch
2. Blind flange
3. Safety thermostat
4. Service thermostat
5. Running hours counter
6. Thermomanometer
7. Blind flanges
8. Fuse 10 A
9. Burner failure signalling
10. Heating water temperature exceeded – signalling

Fig.no. 6 Electric panel

8. Important warnings

1. **The boiler only can be used for the purpose that it is destined for.**
2. **The boiler works automatically after its start up. It only can be operated by adults familiar with this manual and the burner operation manual.**
3. **The boiler is not destined for the use by persons (incl. children) whose physical, sensual or mental disability or lack of experience and knowledge prevent them from a safe use of the appliance unless they are supervised or if they were not instructed on the use of appliance by a person responsible for their safety.**
4. **Children should be supervised in order to ensure that they do not play with the appliance.**
5. **The boiler must be operated according to manual and related standards.**
6. **Combustion air must not contain a high moisture and dust content. If it is impossible to prevent moisture and dust in environment where the boiler is installed, then the combustion air must be brought to the boiler room directly from outdoor environment.**
7. **The boiler room must be kept clean and dustless. All sources of pollution must be removed from the boiler room and during the works producing dust (insulating works, boiler room cleaning), the boiler must be put out of operation. Even a partial dust deposit on burner will deteriorate the combustion process, jeopardize an economical and reliable boiler operation.**
8. **In order to prevent boiler from dewiness followed by low-temperature corrosion in situations where the boiler is operated at lower temperatures for a longer time (transition periods, heating system with a large volume of heating water, low- temperature regime etc.) it is necessary to ensure that the return water temperature does not drop below 50 °C. Creation of boiler own circuit is the best solution.**
9. **Burner stage I. adjustment (reduced output) must be done with regard to flue gases temperature which shouldn't be lower than 130 °C.**
10. **Water from boiler and heating system must never be discharged or taken for usage except for the emergency cases like repairs etc. Water discharge and filling with new water increases the danger of corrosion and scale development. In case we have to refill the heating system with water we only refill a cold boiler in order to prevent the boiler sections from disruption.**
11. **In case of boiler failure state the burner defect pilot lamp in boiler electric panel is alight. In case of electricity outage the burner is switched off and will start automatically after voltage recovery in el. network.**
12. **The burners operation defects are described in detail in burners operation manual including the ways of their elimination and they have to be followed.**
13. **In case of a long-term boiler shutdown is put it must be disconnected from el. network.**

14. **In case that it has occurred the danger of combustible vapours or gases development and their penetration into the boiler room or at works with temporarily developed fire or explosion danger (flooring gluing works, painting works using the flammable paints, etc.), boiler must be shut down long enough before the works start.**
15. **Don't put any objects made of flammable materials on boiler and within a distance smaller than the safe distance from the boiler.**
16. **The user is obliged to have the commissioning, regular maintenance and defects elimination done by professional contractual service accredited by VIADRUS a.s., the boiler manufacturer, otherwise the guarantee for boiler proper function is void. „VIADRUS G 700" boiler quality and completeness certificate" after having been filled by contractual service organization serves as the "Guarantee certificate".**
17. **Once a year a regular maintenance must be done on boiler according to the next chapter.**
18. **During assembly, installation and operation of the appliance it is necessary to comply with standards that apply in the relevant country of destination.**

When these terms are not observed the guarantee repairs cannot be demanded.

9. Maintenance

If the burner is properly adjusted the flue gases generated by gaseous and liquid fuels don't cause clogging of convection furnaces but after the heating season the sediments must be removed from the boiler in order to maintain its efficiency.

All skilled interventions can only be done by a professional contractual service organization trained by the manufacturer.

Before the cleaning works you must disconnected the boiler from el. network and the burner from fuel supply, open the closing plate with burner, which makes the combustion chamber and convection parts chambers accessible for cleaning. By using the brush remove the impurities from heat transfer surfaces. For a proper cleaning of vertical draughts between the rear and central sections you must dismount 4 small covers for the purpose of cleaning. This you can do after you have removed the upper and lower part of the rear shell. The remains after cleaning must be removed from combustion chamber space, from exhaust neck and flue gases collector- this after you have dismounted the holder with explosive flap (you must not handle the explosive flap and springs).

After cleaning you must close all small covers, closing plate, burner plate with burner, mount the holder with explosive flap and check them for tightness.

10. Failures and their elimination

- the failures elimination can only be done by a trained contractual service organization and this organization will make an entry in the guarantee certificate supplement
- **in case that there is repeatedly blocked the safety thermostat it is also necessary to call a contractual service worker**
- **the burners operation failures are in detail described in Burners operation manual, including the ways of failures elimination and they must be followed.**

11. Instructions for product disposal after its service life

VIADRUS a.s., is contractual partner of firm EKO – KOM a.s. with client number F00120649.
The packages comply with EN 13427.
Because the product is made of common materials its individual components are recommended to be disposed of as follows:
- the exchanger (grey cast-iron) through a firm dealing with waste collection and disposal
- piping, shell through a firm dealing with waste collection and disposal
- other metal parts through a firm dealing with waste collection and disposal
- ROTAFLEX insulation material - into the common waste

We recommend to dispose the packages in the following way:
- plastic foil, cardboard cover, use a salvage point
- metal strapping tape, use a salvage point
- wooden base, is designated for a single usage and no longer can be used as a product. Its disposal is subject to Act. 477/2001 Sb. a 185/2001 Coll. as amended.

In case that the product has lost its serviceability you can advantage of product "take back service" (if this is established); in case that the originator has declared that it is a scrap it must be handled according to the valid legislation of relevant country.

12. Guarantee and liability for defects

VIADRUS a.s. provides the guarantee:
- For boilers 24 months after the boiler putting into operation, but maximum 30 months after the date it was dispatched from the manufacturing factory.
- For boiler drum 5 years after the date its dispatch from the manufacturing factory.

The manufacturer requires for guarantee applicability:
- In sense of **Act no. 222/94 Coll., On business conditions and government administration in certified branches and on State electricity inspection", regulation no. 91/1993 Coll. issued by "Czech Office for labour safety for ensuring the labour safety in low-pressure boiler rooms" and ČSN 38 6405, EN 1775** to check the boiler regularly once a year. The checks can only be done by an authorized organization (contractual service), **accredited by** VIADRUS a.s. and the manufacturer of the burner being operated.
- To document all records about carried out guarantee and after-guarantee repairs and regular annual checkups in the annex enclosed to this guarantee certificate which belongs to boiler revision book.

The guarantee does not apply to the:
- **Faults caused by improper assembly and improper attendance of the product and faults caused by improper maintenance see chap. 9**
- **Faults and damage caused by failure to observe water quality in heating system see chap. no. 4.1 and 4.2 or by using the anti-freeze mixture**
- **Faults caused by failure to observe instructions stated in this manual**
- **defects caused by a faulty assembly and wrong product service**
- **products damaged during transport or in other mechanical way**
- **defects caused by an inconvenient way of storing**

Every defect must be announced immediately after having been found out and always in writing.

If the above instructions are not observed then the manufacturer will not provide the warranties.

The manufacturer reserves the right to make changes within the product innovations that needn't be included in this manual.

Information for customer

Packaging edentification	Assessment reference
PE Plastic sacks, folie, corrugaled board, iron and plastic fix line	

Identification od principál materials used. Paper, Polyethylene, iron, wood

Part 1: Summary of assessment

Standard/Report	Assessment requirement	Claim	Note
1.1 Prevention by source reduction		YES	
1.2 Heavy metals and	ensure below maximum permitted levels for components (CR 13695-1:2000)	YES	
1.3 Other noxious/hazardous substances	ensure in compliance with (CR 13695-2:2002, EN 13428:2000)	YES	
2 Reuse	ensure reusability in all terms of the standard for the functional packaging unit (EN 13429:2000)	NO	
3.1 Recovery by material recycling	ensure recyclability in all term sof the standard for the functional packaging unit (EN 13430:2000)	YES	
3.2 Recovery in the form of energy	ensure that calorific gain is achievable for the functional packaging unit (EN 13431:2000)	YES	Iron - NO
3.3 Recovery by composting	ensure compost ability in all terms of the standard for the functional packaging unit (EN 13432:2000)	NO	

NOTE Conformity with EN 13427 requires affirmative responses to sections 1.1; 1.2; 1.3 and to at least one of 3.1; 3.2; 3.3. In addition, where a claim of reuse is made section 2 should also record affirmative responses.

Part 2: Statement of conformity

In the light of the assessment results recorded in part I above, this packaging is claimed to comply with the requirements of EN 13427:2000.

VIADRUS

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