VIADRUS

VIADRUS G 50

MANUAL FOR BOILER OPERATION AND INSTALLATION

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Dear customer,
we thank you that you have bought the VIADRUS G 50 boiler thus having shown your confidence in VIADRUS a.s.
The boiler design you have received is determined for furnace extra light oil (TOEL) combustion and for natural gas combustion in central pressurized burners and its trade name is VIADRUS G 50.
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. 8 – Boiler operation by user and the chapter no. 9 – Important warnings). Please follow the under mentioned information and especially the prescribed annual check-ups to be carried out an authorized firm in order to guarantee a long-time and trouble-free boiler operation to both your and our satisfaction.

1. Produced boiler variants

1.1 Purchase order

In the purchase order there must be specified:

Purchase order specification code

G 50 X X

Boiler size:
2: 2 sectional design
3: 3 sectional design
4: 4 sectional design
5: 5 sectional design
6: 6 sectional design

Design of electric panel:
0: without electrical equipment
1: The control box 03 OS
2: The control box 04 OS

2. Boiler usage and its advantages

VIADRUS G 50 is a cast iron boiler determined for combustion liquid and gaseous fuels. Two- and three-sectional size suits the reconstruction of heat sources in smaller houses and recreational facilities. Bigger sizes suit the requirements for heating of cottages, shops, schools etc.
Boilers are only manufactured as the hot-water type with forced heating water circulation and working overpressure up to do 400 kPa (4 bar). Before the dispatch the boilers are tested for tightness by testing overpressure 800 kPa (8 bar); they satisfy the insulation and transient resistance tests.

Boiler advantages:

1. A high service life of cast-iron exchanger and all other parts with regard to the quality of used materials.
2. Efficiency above 90 %.
3. Reliability of regulation and security elements.
4. Simple operation and maintenance.
5. Low demand on chimney draught.
6. Output graduation by number of sections.

3. Boiler technical data

Tab. no. 1 Dimensions, boiler technical parameters
fuel value: natural gas33,99 MJ.m^{-3} furnace oil extra light(TOEL) 42,7 MJ/kg

Number of sections	pc	2	3	4	5	6
Boiler mass without burner	kg	165	216	270	319	367
Water space volume	l	27	40	53	66	79
Diameter of smoke socket D	mm	130	130	150	150	150
Boiler dimensions: • height (without control box) x width	mm	785 x 600				
• length (without burners) L	mm	488	638	788	938	1088
Heat-delivery surface	m^2	1,05	1,69	2,33	2,97	3,61
Combustion chamber volume	m^3	0,009	0,021	0,032	0,044	0,056
Combustion gas volume	m^3	0,0186	0,02586	0,0331	0,0403	0,0475
Combustion chamber depth	mm	205	355	505	655	805
Opening for burner	mm	115				
Pressure loss on water side (Δ T = 15 K)	mbar	1,1	1,7	2,4	3,1	4
Testing water overpressure	kPa (bar)	800 (8)				
Working water overpressure	kPa (bar)	400 (4)				
Recommended heating water operating temperature	°C	50 – 80				
Safety thermostat setting	°C	100				
Stand-by waste	kW	0,2	0,3	0,3	0,4	0,5
Pressure loss on flue gases side	mbar	0,11	0,14	0,18	0,21	0,26
Noise level	dB	See the burner documentation				
Chimney draught	mbar	Min. 0,05		Min. 0,10		
Boiler connections – heating and return water	Js	1“		1 1/4“		
Connection voltage		1/N/PE 230 V AC 50 Hz TN - S				
Electric input	kW	Max. 0,1 + burner input				
Electric coverage		IP 40				

The values that depend on the type of used central burner are stated in burner documentation.

Tab. no. 2 Thermal & technical parameters at the boiler determined for furnace oil extra light (TOEL)
combustion (heating value 42,7 MJ.kg $^{-3}$, air temperature 15 °C and bar. air pressure 1013,25 mbar)

Number of sections		2	3	4	5	6
Rated thermal output maximum	kW	25	37	46	60	80
Rated thermal output minimum	kW	18	25	37	46	60
Rated thermal input maximum	kW	27	40	50	65	87
Rated thermal input minimum	kW	20	27	40	50	65
Efficiency	%	Up to 93				
Mass of flue gases 13% CO_2	kg.hod^{-1}	28-38	38-58	58-73	73-100	95-133
Flue gases temperature	°C	140 – 190				
Fuel connecting overpressure	mbar	See the burner documentation				

Tab. no. 3 Thermal & technical parameters at the boiler determined for natural gas combustion
(heating value 33,99 MJ.m^{-3}, air temperature15 °C and bar. air pressure 1013,25 mbar)

Number of sections		2	3	4	5	6
Appliance category		II $_{2H}$				
Rated thermal output maximum	kW	22	33	46	60	80
Rated thermal output minimum	kW	14	22	33	46	60
Rated thermal input maximum	kW	24	36	50	65	87
Rated thermal input minimum	kW	15	24	36	50	65
Efficiency	%	Up to 93				
Mass of flue gases 9,5% CO_2	kg.hod^{-1}	25-36	36-55	55-83	83-111	108-148
Mass of flue gases temperature	°C	150 – 187				
Fuel connecting overpressure	mbar	See the burner documentation				

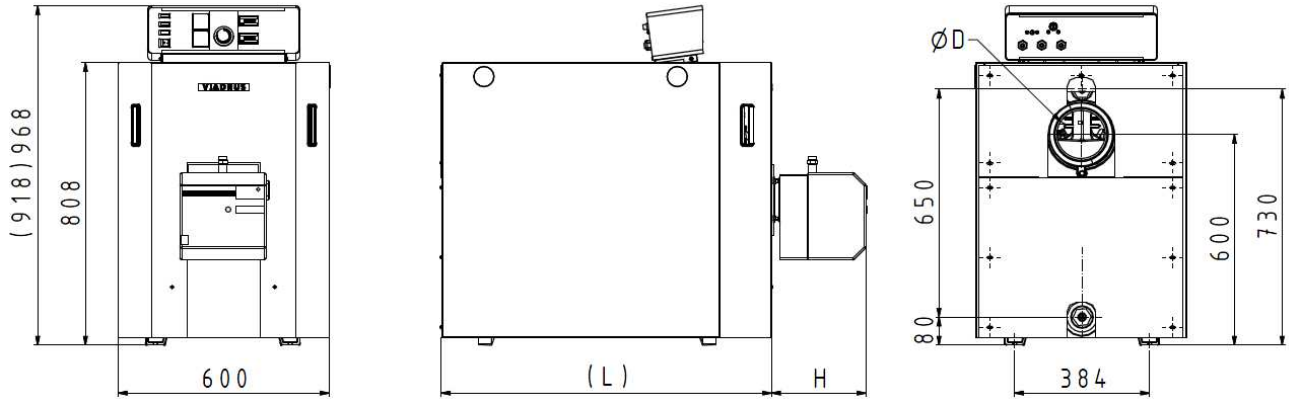
Tab. no. 4 Recommended types of burners

G 50 – natural gas

Number of sections	[-]	2	3	4	5	6
Boiler output	[kW]	14- 22	22 - 33	33 – 46	46 - 60	60 – 80
Recommended burner	[-]	Bentone BG 100		Bentone BG 200		

G 50 – furnace oil extra light

Number of sections	[-]	2	3	4	5	6
Boiler output	[kW]	18 - 25	25 - 37	37 - 46	46 – 60	60 – 80
Recommended burner	[-]	Bentone B 10		Bentone B 20		



Number of sections	2	3	4	5	6
furnace oil extra light(TOEL) – output in W	18-25	25-37	37-46	46-60	60-80
natural gas– output in W	14-22	22-33	33-46	46-60	60-80
L	488	638	788	938	1088
D	130	130	150	150	150
H (max.)	260	260	320	320	320

Fig. no. 1 Dimensions boilers VIADRUS G 50

4. Description

4.1 Boiler construction

The main part of the cast iron boiler is the cast iron sectional boiler drum made of grey cast iron according to EN 1561:

- quality 150 (previously ČSN 42 2415) or
- quality 200 (previously ČSN 42 2420).

The pressure parts of the boiler correspond to the strength requirements according to:

EN 297 Gas – fired central heating boilers – Type B_{11} and B_{11BS} fitted with atmospheric burners of nominal heat input not exeeding 70 kW

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

VIADRUS G 50 boiler has a cast-iron closed overpressure combustion chamber. This is a boiler with three draughts.

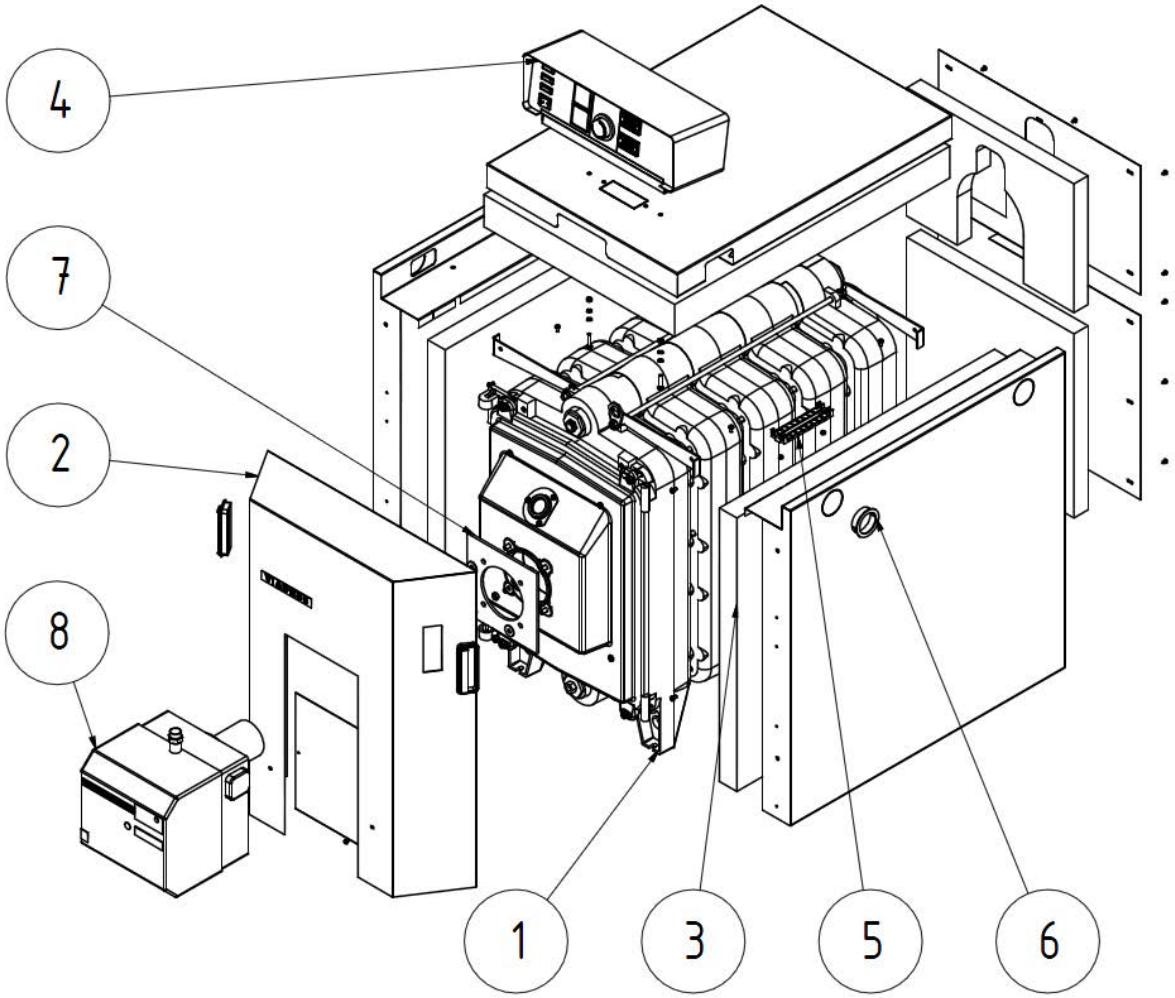
The boiler output is determined by number of sections. Individual sections are interconnected by means of forced-on insertions and tightened with the anchor bolts, thus creating a combustion space with convection surface and the boiler water volume inside the sections. Heating water input and output are situated in the rear part of boiler.

To the basic boiler accessories belong the sectional boiler drum assembled together with insulated burner door, smoke extension, sheathing incl. thermal insulation and boiler control panel. Optionally other pieces of accessories are available.

Insulated boiler door and the smoke extension are sealed by means of packing cord.

By use of inbuilt elements (lower turbulators, guide plate and upper turbulators) in the smoke channels (see Fig. no. 3) the heat transfer and boiler efficiency are improved.

The turbulators can be removed in order to increase the pressure in the combustion chamber and the flue gases temperature.
The whole boiler drum is insulated with health harmless insulation which reduces losses related to heat transfer into environment.
The boiler steel shell surface is painted by using a good quality comaxite paint.

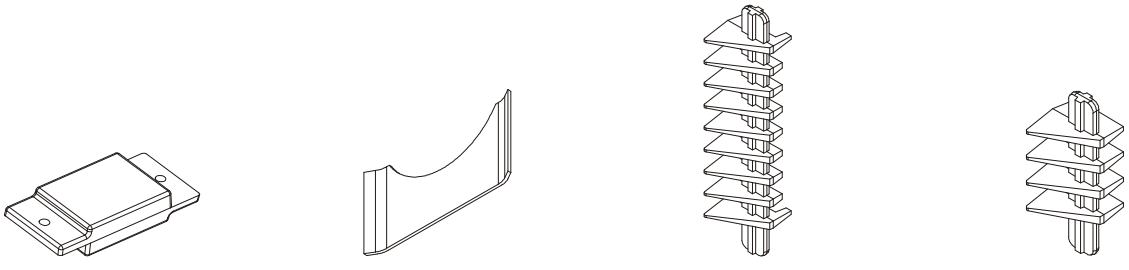


1. Boiler drum with armature
2. Shell of boiler
3. Boiler drum insulation
4. Control box
5. Toolbar KZL
6. Bushing SB
7. Burner isolation
8. Burner

Fig. no. 2 VIADRUS G 50 boiler assembly

Tab. no. 5 Dislocation guide plates and turbulators

Type of boiler	G 50 2xxx	G 50 3xxx	G 50 4xxx	G 50 5xxx	G 50 6xxx
Lower turbulator small	2			2	-
Lower turbulator big	-	2	2	4	-
guide plates	2	(2)	(2)	-	-
Upper turbulators	2	-	-	-	-



upper turbulator | guide plate | lower turbulator big | lower turbulator small

Fig. no. 3 Turbulators

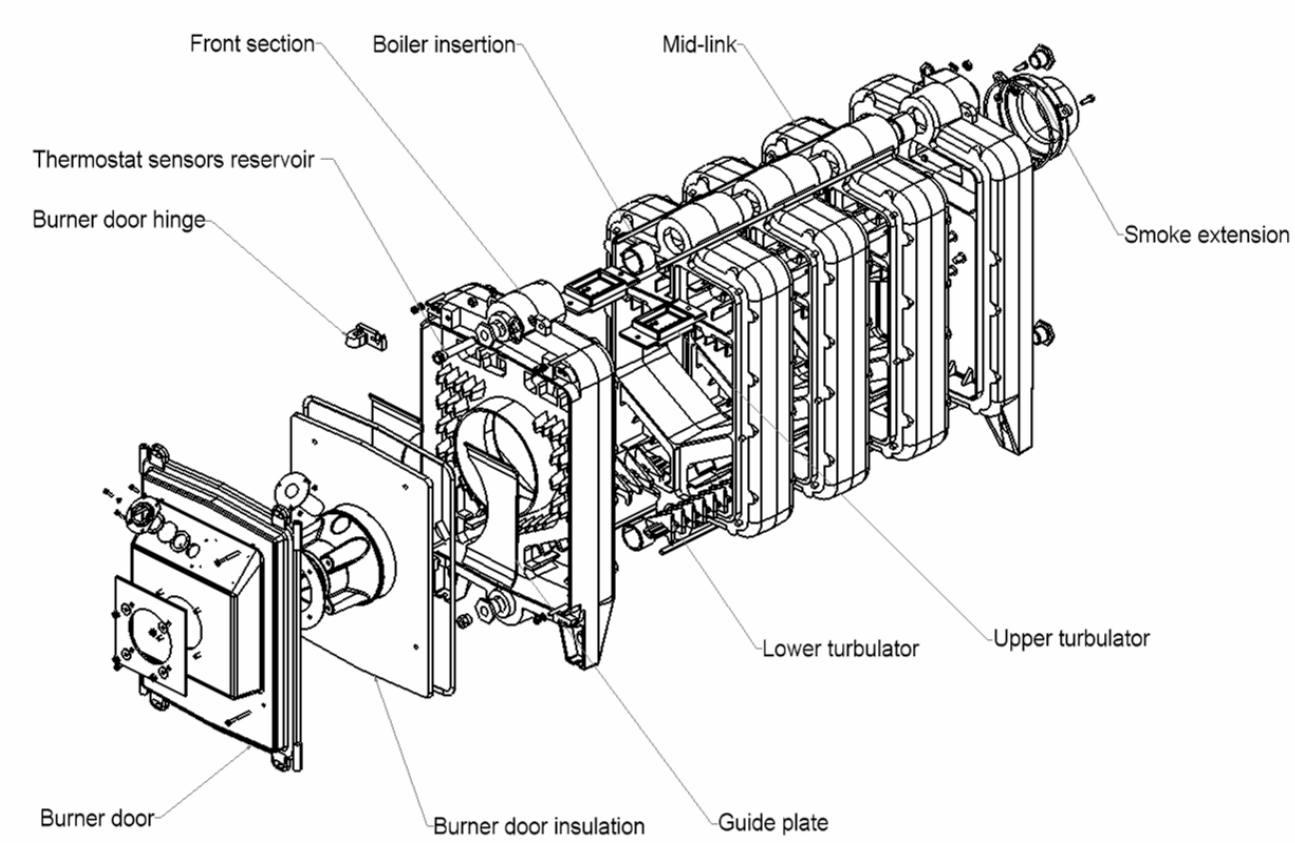


Fig. no. 4 VIADRUS G 50 Boiler drum

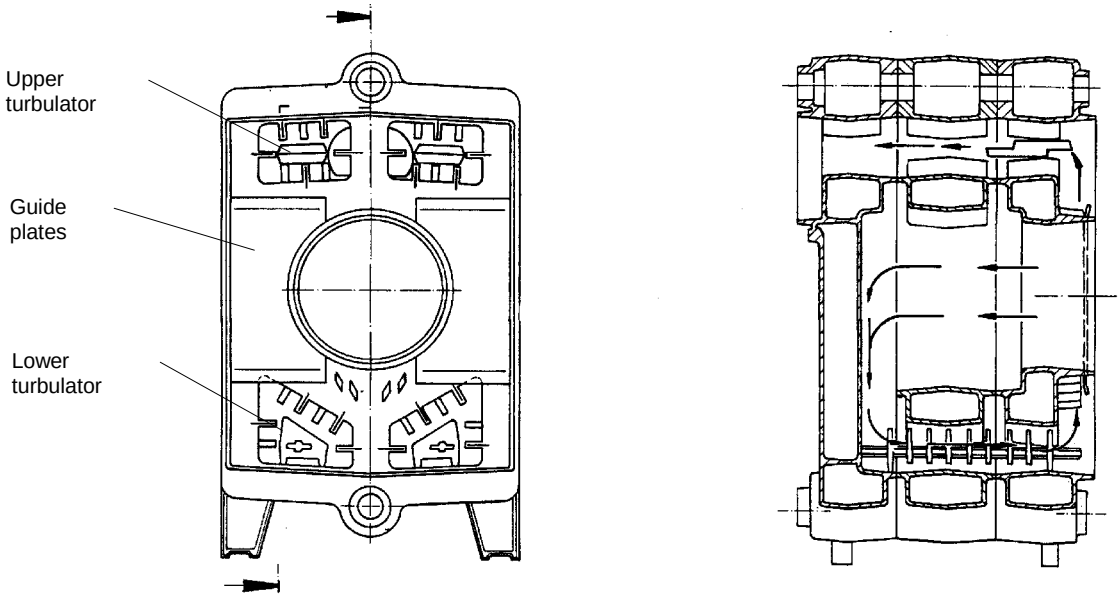


Fig. no. 5 Flue gases turbulence in boiler drum

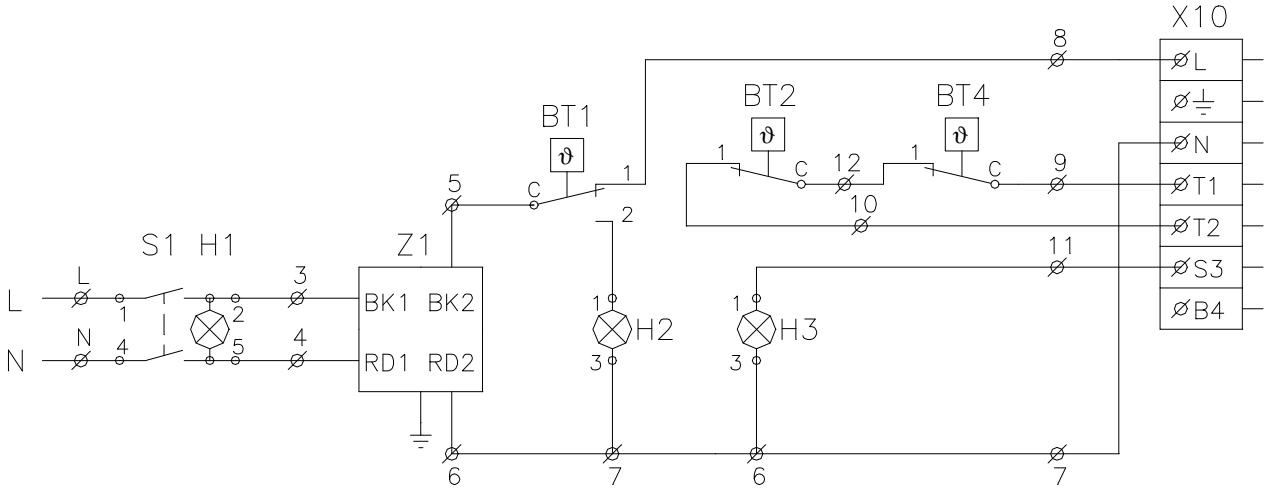
4.2 Control, regulation and safety elements

As a standard boiler is delivered without the master regulation, with network module and thermostats.

In the basic connection it enables:

- Connection of circulating pump (switched by pump thermostat)
- Connection of indoor thermostat
- Connection of boiler by means of a three- way valve

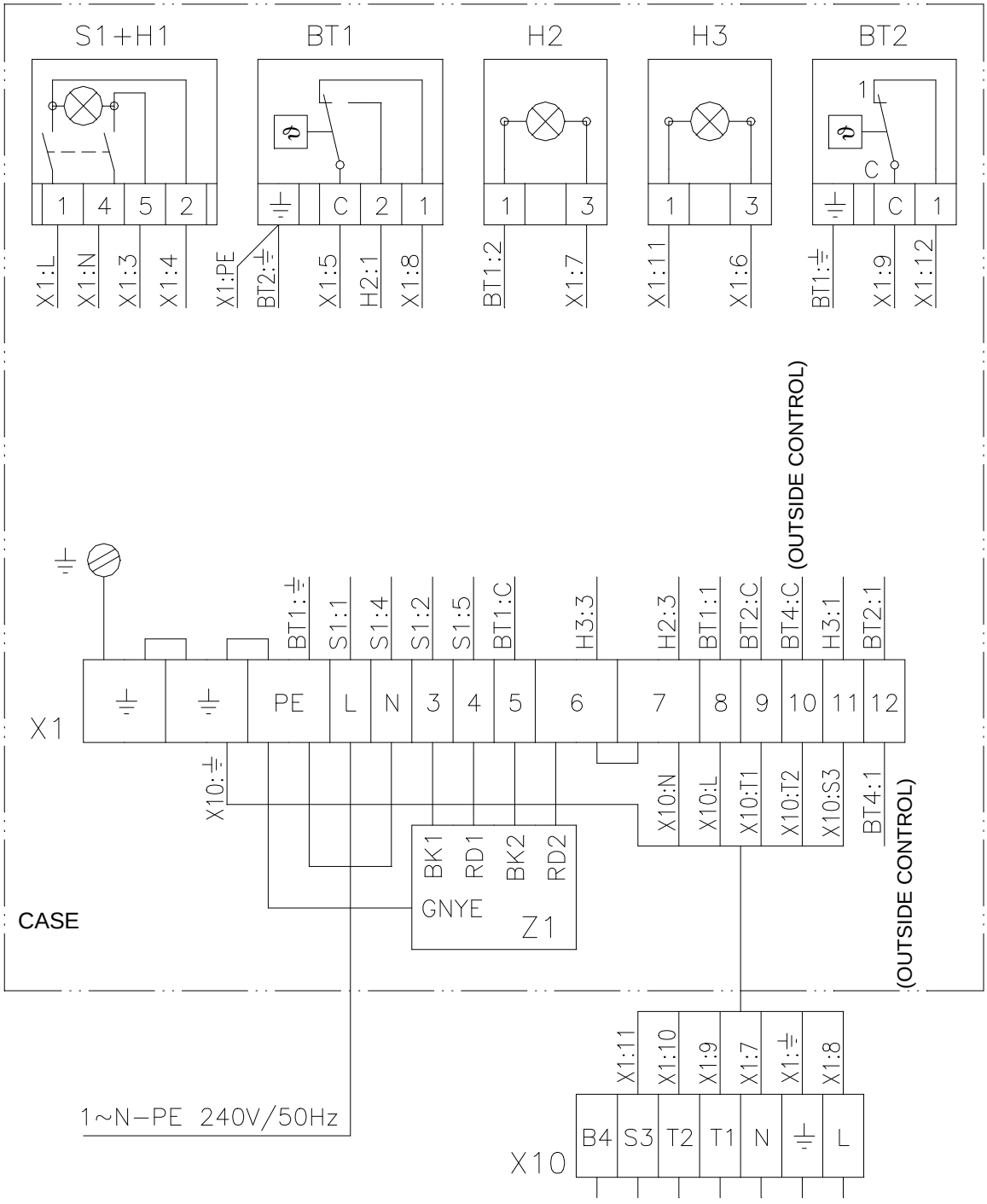
4.3 Electric wiring diagram for boiler



LEGEND:

S1	MAIN SWITCH
H1	SWITCHED ON" SIGNALLING
Z1	SUPPRESSION COMPONENT
BT1	SAFETY THERMOSTAT
H2	BT1 SIGNALLING
BT2	SERVICE THERMOSTAT
BT4	INDOOR THERMOSTAT (BOILER OUTSIDE CONTROL)
H3	BURNER DEFECT SIGNALLING
X1	BOILER TERMINAL BOARDS
X10	BURNER CONNECTOR

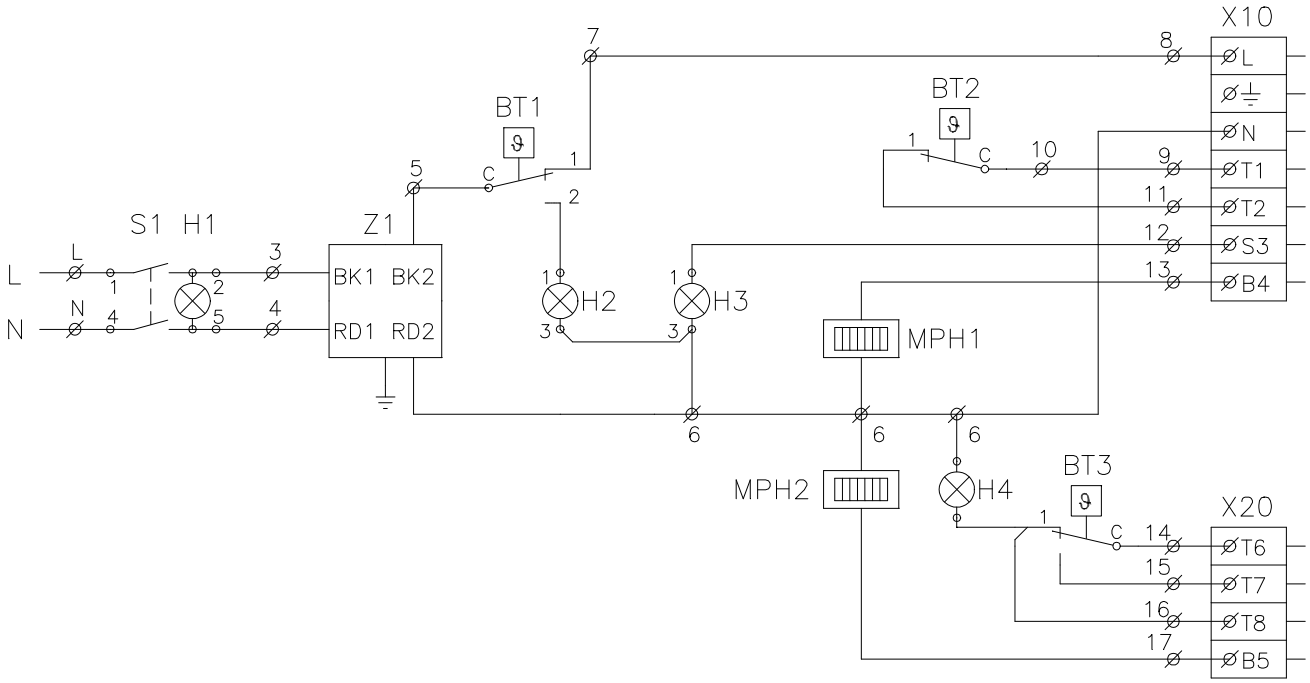
Fig. no. 6 Elementary wiring diagram of VIADRUS G 50 boiler with OS 03 control panel



LEGEND:

S1	MAIN SWITCH
H1	SWITCHED ON" SIGNALLING
Z1	SUPPRESSION COMPONENT
BT1	SAFETY THERMOSTAT
H2	BT1 SIGNALLING
BT2	SERVICE THERMOSTAT
BT4	INDOOR THERMOSTAT (BOILER OUTSIDE CONTROL)
H3	BURNER DEFECT SIGNALLING
X1	BOILER TERMINAL BOARDS
X10	BURNER CONNECTOR

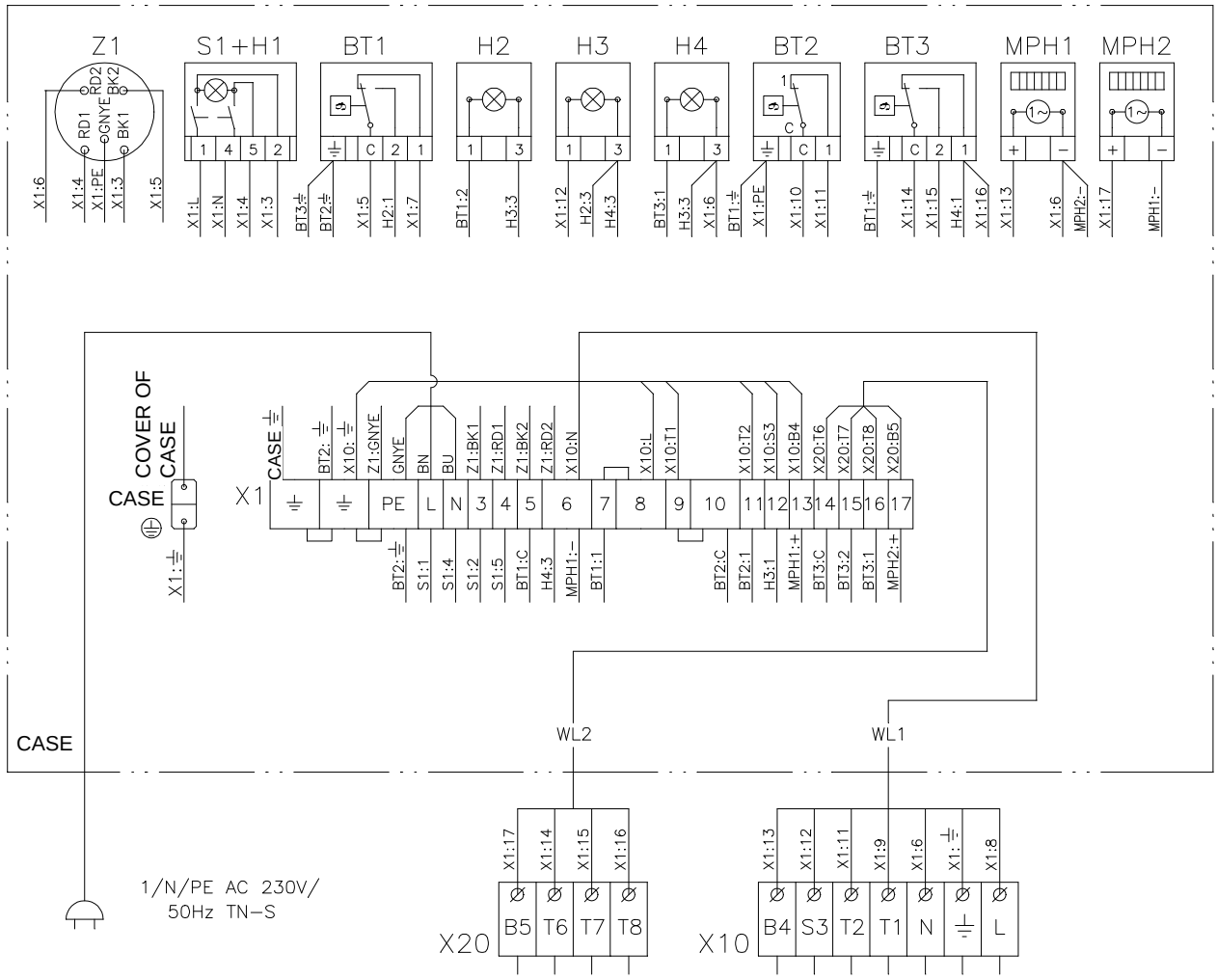
Fig. no. 7 Electrical wiring diagram of the boiler VIADRUS G 50 with the control box 03 OS



LEGEND:

Z1	SUPPRESSION COMPONENT 6,3 A
S1	MAIN SWITCH
H1	BOILER UNDER VOLTAGE SIGNALLING
BT1	SAFETY THERMOSTAT
H2	BT1 SIGNALLING
H3	BURNER DEFECT SIGNALLING
H4	BURNER 2ND STAGE WORKING SIGNALLING
BT2	SERVICE THERMOSTAT
BT3	THERMOSTAT FOR 2ND BURNER STAGE
MPH1	SERVICE HOURS GAUGE FOR 1ST BURNER STAGE
MPH2	SERVICE HOURS GAUGE FOR 2ND BURNER STAGE
X1	BOILER TERMINAL BOARDS
X10	FEEDING CONNECTOR AND 1ST BURNER STAGE
X10	BURNER 2ND STAGE CONNECTOR

Fig. no. 8 Circuit diagram of the boiler VIADRUS G 50 with the control box 04 OS4



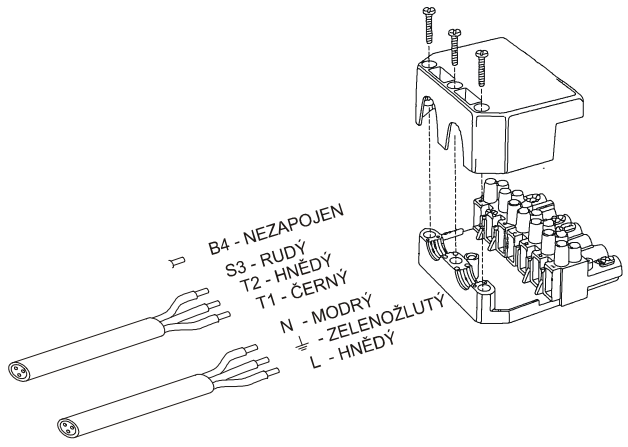
LEGEND:

Z1	SUPPRESSION COMPONENT 6,3 A
S1	MAIN SWITCH
H1	BOILER UNDER VOLTAGE SIGNALLING
BT1	SAFETY THERMOSTAT
H2	BT1 SIGNALLING
H3	BURNER DEFECT SIGNALLING
H4	BURNER 2ND STAGE WORKING SIGNALLING
BT2	SERVICE THERMOSTAT
BT3	THERMOSTAT FOR 2ND BURNER STAGE
MPH1	SERVICE HOURS GAUGE FOR 1ST BURNER STAGE
MPH2	SERVICE HOURS GAUGE FOR 2ND BURNER STAGE
X1	BOILER TERMINAL BOARDS
X10	FEEDING CONNECTOR AND 1ST BURNER STAGE
X10	BURNER 2ND STAGE CONNECTOR

Conductor colour:

GNYE	green- yellow
BK	black
RD	dark red

Fig. no. 9 Electrical wiring diagram of the boiler VIADRUS G 50 with the control unit 04 OS



B4	UNCONNECTED
S3	RED
T2	BROWN
T1	BLACK
N	BLUE
⏚	YELLOW/GREEN
L	BROWN

Fig. no. 10 Connection of burner connector – power supply+ 1°

5. Positioning and installation

5.1 Rules and regulations

Boiler can only be installed by a firm holding a valid license for gas appliances installation and maintenance. 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.

Recommended values		
Hardness	mmol/l	1
Ca^{2+}	mmol/l	0,3
Concentration of total Fe + Mn	mg/l	(0,3)*

*) recommended value

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

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
ČSN 38 6405	Gas equipments. Operating principles
Act no. 222/94 Coll.	on the conditions of enterprise and public service performance in power industry sector and on the state energy inspection

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 – machine interface, marking and identification – Identification of equipment terminals and conductor terminations
EN 60446	Basic and safety principles for man – machine 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.

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) oil storage

ČSN 65 0201	Combustible liquids. Premises for production, storage and handling
ČSN 65 7991	Oil industry products. Fuel oils. Technical requirements.
ČSN 73 0081	Corrosion protection in building industry.
ČSN 75 3415	Water protection against oil products. Facilities for handling the oil products and their storage.

Promulgation MLVH no. 6/1977 Coll. on protection of quality of surface and underground waters.

h) 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

Regulation issued by MLVH no. 6/1977 Coll. on surface and underground waters protection.

Based on the regulation issued by Czech Office for Labour Protection– Code no. 91/1993 it is necessary to distinguish in design, erection, positioning and operation of low-pressure steam-boiler rooms:

- **boilers with rated heat output up to do 50 kW**
- **boilers with rated heat output up 50 kW and above – boiler room category III – it regards boiler VIADRUS G 50 in 5 and 6 Art.**

ČSN 07 0703	**Boiler room with gas fuel –operated equipments**
ČSN 38 6420	**Industrial gas pipelines**

5.2 Positioning possibilities

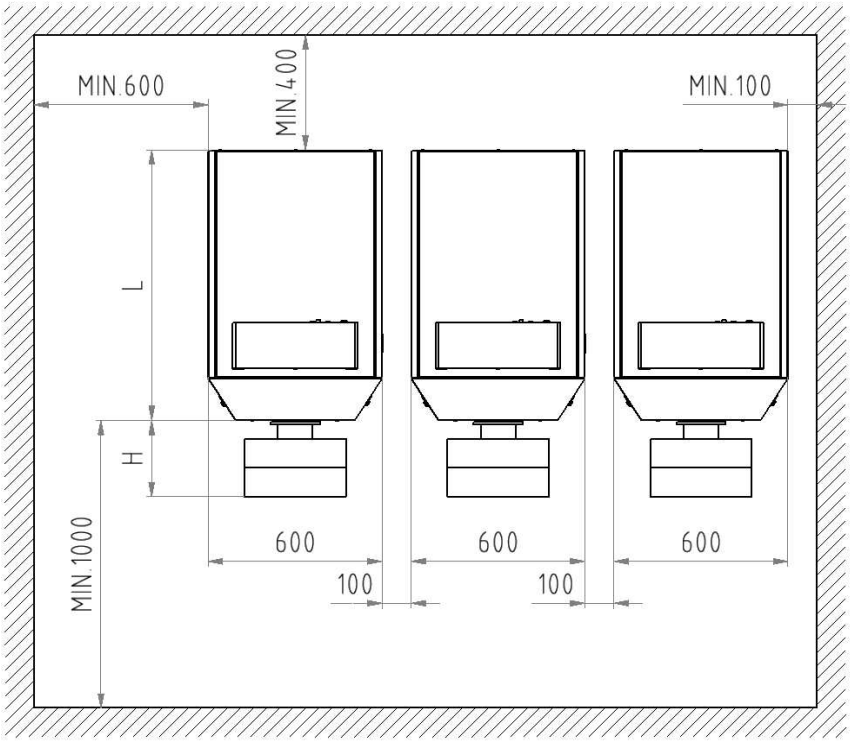
Boiler VIADRUS G 50 can be installed in basic environment AA5/AB5 according to ČSN 33 2000-3. It must not be installed in zones 0, 1, 2 according to ČSN 33 2000-7-701.
The boiler is equipped with a movable mains supply and a plug. The boiler must be according to EN 60 335 – 1 ed. 2 Art. 7.12.4 positioned in a way making sure that the plug is accessible.
The installation of the boiler must comply with all requirements of ČSN 06 1008

Boilers positioning with regard to the fire regulations:

1. Positioning on the floor made of incombustible material
– Install boiler on fireproof thermally bottom exceeding the boiler platform by 20 mm on the sides and only up to the boiler drum depth.
– If the boiler is positioned in a cellar we recommend to install it on a retaining wall (bedding) minimum 50 mm high
2. A safe distance from 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. 6 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,…



Number of sections	2	3	4	5	6
TOEL – output in kW	18-25	25-37	37-46	46-60	60-80
Natural gas– output in kW	14-22	22-33	33-46	46-60	60-80
L	488	638	788	938	1088
H (max.)	260	260	320	320	320

Fig. no. 11 Positioning of G 50 boilers in boiler room

Boilers positioning with regard to the necessary handling space:

according to Fig. No. 11

Air supply demands:

Boiler must only be installed in a room with air supply according to ČSN 38 6441 „Coal gas and natural gas demand equipments in buildings.“

6. Delivery and assembly

6.1 Delivery and accessories

The boiler is delivered in a decomposed condition. The boiler drum is completed and fastened to a pallet. The boiler shells and control box are in separate cardboard boxes.
The boiler drum can be handled by use of a hand pallet truck (the boiler drum is put on a pallet) or after the shells assembly there are installed the lifting lugs in the upper part of the boiler drum for its suspension.

Standard boiler delivery

- Boiler on a pallet, with an adequate number of sections
- The shell incl. the insulation, adequately sized
- Control box 1 pc
- Cleaning tools (brush with a handle, dowel 1 pc,)
- Filling and discharge tap Js 1/2“ 1 pc
- Screw M5 x 10 8 pcs
- Tapping screw 4,2 x 9 13 pcs
- Shell handrail 2 pcs
- VIADRUS label 1 pc
- Toolbar KZL 1 pc
- Nut M5 2 pcs
- Bushing SB 2-25-29 1 pc
- Commercial & technical documentation

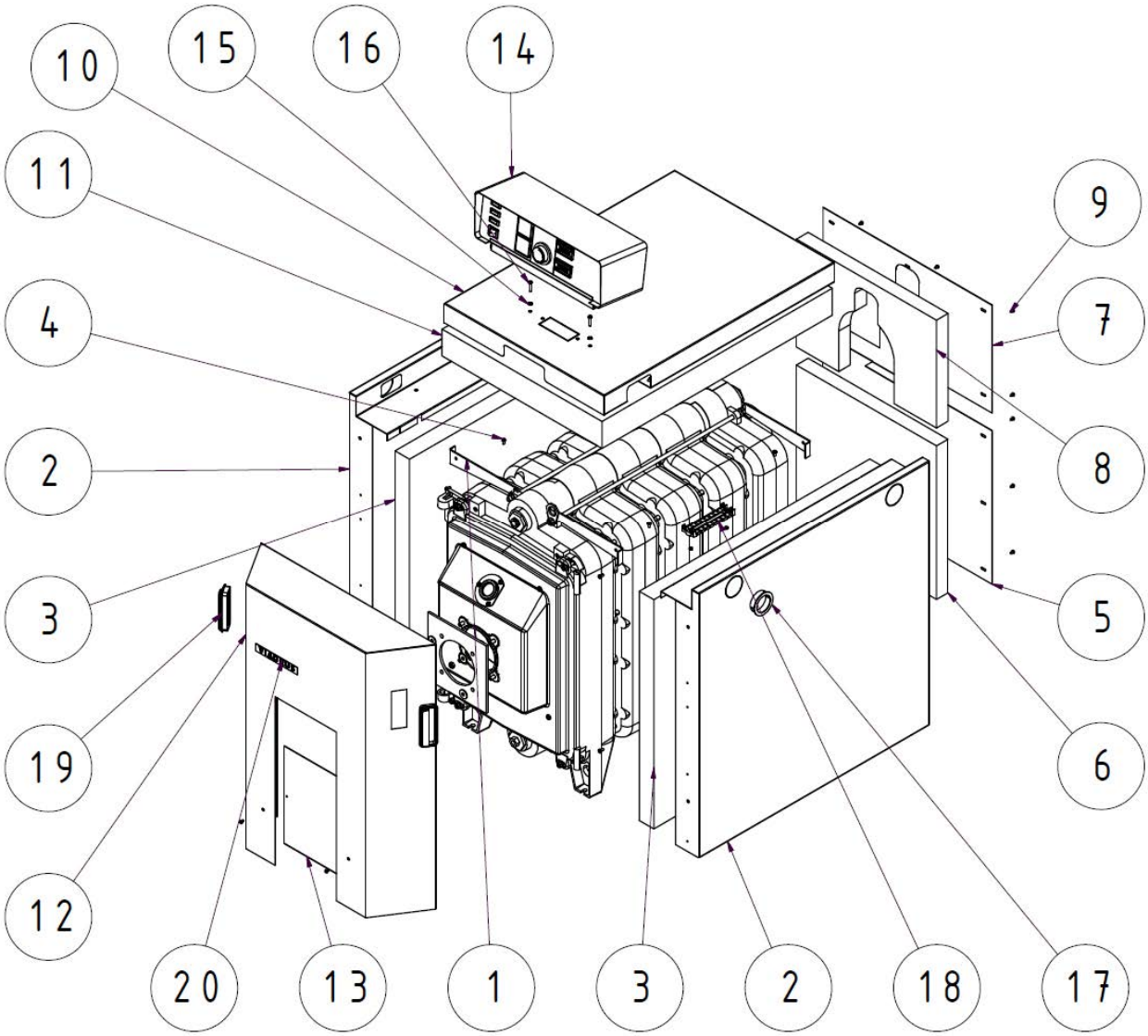
6.2 Assembly procedure

1. Put the consoles (pos. 1) between the anchor bolts nuts with washers and risers at the top of the front and rear boiler section.
2. Chamfered side of the console is directed to the boiler section.
3. Put the side parts of the shell (2) on the consoles – with the narrower cutout in the front part of the boiler.
4. In the rear part of the boiler screw the rear upper part of the shell with insulation (pos.7 + 8) and rear lower part of the shell with insulation (pos. 5 + 6) to the side parts of the shell (2) by means of tapping screws (9).
5. To 2 pc M5 threaded rods welded in the upper part of the shell (10) put the strip KZL (18) according to the selected wiring outlet direction and secure with 2 pc M5 nuts.
6. To the top section of the side parts (2) fit 2 M5 screws in the front part and 2 M5 screws in the rear part it means 4 pc M5 screws altogether so as to retain the gap of the sheet thickness between the shell and the screw head.
7. Before mounting the control box (14) put out the perforated section in the upper part of the shell (10).
8. Pull the conductors, capillaries of thermostats and thermomanometer through the opening.
9. Put the capillaries of thermostats and thermometer sensor into the basin installed in the top hub of the front boiler section and secure with the spring of capillaries. Screw the check valve of the manometer into the bottom hub of the front section.
10. Screw the control box (14) by means of 2 pc screws M5 (16) with washers (15) to the upper part of the shell (10).
11. Screw the upper rear part of the shell (7) by means of 3 tapping screws (9) to the upper part of the shell (10).
12. After the burner installation is complete put the front part of the shell (12) with the label VIADRUS (20) on the screw heads located in the front part of the shell side parts (2). Before mounting click into 2 pc handles (19).
13. Cover the lower section of the front part of the shell (12) with its bottom part (13) using 2 pc tapping screws (9).
14. **Filling the heating system with water.**
    The heating system must be thoroughly flushed in order to wash out all impurities. Water for boilers and heating system filling must be clear and colourless, with no suspended materials, oil and aggressive chemicals. Its hardness must correspond to ČSN 07 7401 and it is necessary to treat water in case its hardness is unsuitable. The heating systems with an open expansion reservoir allow a direct contact between heating water and atmosphere. During the heating season the expanding water in reservoir absorbs oxygen which increases the corrosive affects and at the same lot of water gets evaporated. It can only be replenished by water treated according to ČSN 07 7401. During the heating season the water volume in heating system must be kept constant. When refilling the heating system with water it is necessary to prevent it from air intake. Water from boilers and heating system must never be discharged or taken for usage except for cases of 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 do this operation when boiler** is cold in order to prevent the sections from getting damaged.

15. After having filled a boiler and heating system it is necessary to check all joints for their tightness.

The assembly completion and stoking tests accomplishment must be recorded in "Guarantee certificate".



1.	Shell console	4 pcs	11.	Insulation of the upper part of the shell	1 pc
2.	Side part of the shell	2 pcs	12.	Front part of the shell	1 pc
3.	Insulation of the side part of the shell	2 pcs	13.	Lower part of the front part of the shell	1 pc
4.	Screw M 5 x 10	8 pcs	14.	Control box	1 pc
5.	Rear lower part of the shell	1 pc	15.	Serrated lock washer 5,3	2 pcs
6.	Insulation of the rear lower part of shell	1 pc	16.	Screw M 5 x 25	2 pcs
7.	Rear upper part of the shell	1 pc	17.	Bushing	1 pc
8.	Insulation of the rear upper part of shell	1 pc	18.	Toolbar KZL + 2 pcs nuts M 5	1 pc
9.	Tapping screw 4,2x9	13 pcs	19.	Shell handrail	2 pcs
10.	Upper part of the shell	1 pc	20.	VIADRUS label	1 pc

Fig. no. 12 Boiler shell compostion

7. Commissioning

Boilers commissioning, thermal output setting and any interference in electric part of boilers or connection of other control elements can only be done by a contracting service organization authorized to do the service works.

7.1 Verification before commissioning

Before boilers commissioning it is necessary to check:

a) heating system filling with water (thermo-manometer and system tightness check-up)

b) Boiler thermostat setting to 50 - 80 ^{o}C

c) Fuel input pressure before the boiler (18 – 23 mbar for natural gas, furnace oil extra light (TOEL) according to burner documentation)

d) Connection to electric network 230 V/50 Hz via a cable with a plug to a standardized socket secured by 10 A. ČSN 33 2180 Art.. 6.2.2. – the sockets is carried out in a way making sure that the protective plug is up and the inner or zero conductor is connected to right hand cup in the front view. The same applies to double sockets.

e) Connection to the chimney – tightness and mechanical stability

7.2 Boilers commissioning

1. Burner assembly and its adjustment plus commissioning together with a burner must be done by a burner supplier's service firm. The service firm will provide the user with a training in operating the burner, with manual for burner operation and will ensure its guarantee and after guarantee repairs.
2. Gas or furnace oil extra light (TOEL) connection to the burner and electric network
3. Boiler commissioning– setting of required return water 50 – 80 °C temperature.
4. Operate boiler in this operating condition according to manual for usage
5. Make the user acquainted with boilers operation
6. Put down a record in Guarantee certificate.

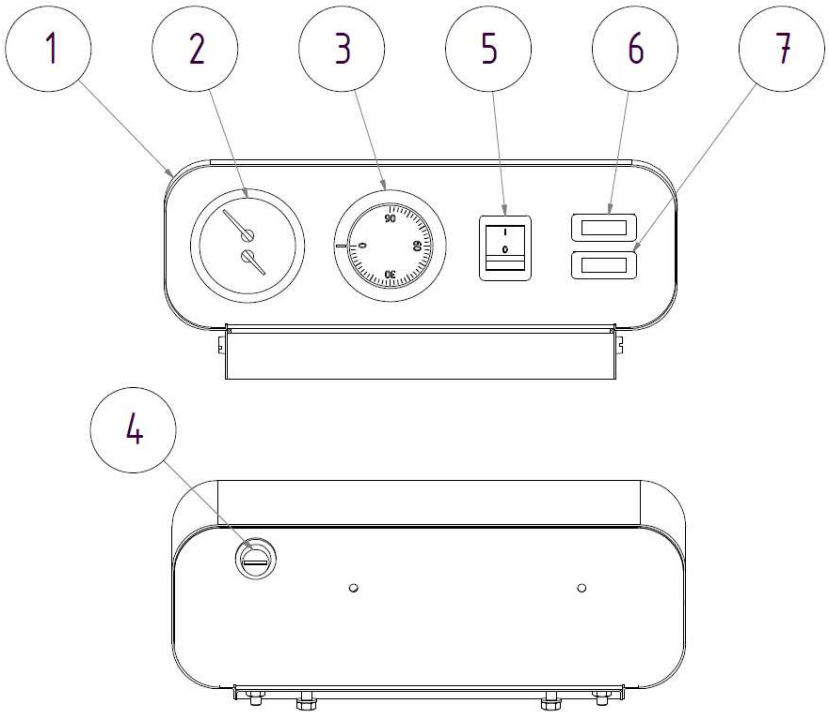
8. Boiler operation by user

Boilers work automatically according to their regulation elements setting and users only have to do regularly following operations that the worker who puts the boiler into operation is obliged to be make them acquainted with:

1. **Boiler switch off or switch** on via the power supply switch on the boiler control panel.
2. **Boiler operation control via the selectd regulation,** according to operation manual.
3. **Required heating water temperature setting and control** in the range from 50 to 80°C. We recommend to set this temperature in this range only at boilers without regulation. If a boiler is controlled by an indoor thermostat or by some other type of regulation the boiler thermostat must in the maximum temperature position.
4. **In case there appears a boiler failure state** the exceeded temperature signalling or burner defect signalling will appear on boiler control panel.
5. **In case of an electricity outage** the burner is switched off and after the voltage has been restored in the network the burner is restarted automatically.
6. **Unblocking of safety thermostat.** If the boiler has been switched of via the safety thermostat on the control panel there is lit a lamp signalling the exceeded temperature. The thermostat can be unblocked by user using the safety thermostat "reset" switch positioned in the network module on the control panel.
7. **The pressure control in heating system** – the pressure must not exceed 400 kPa (4 bar) and be lower than minimum value set by the commissioning technician.

8.1 Setting the regulatory elements

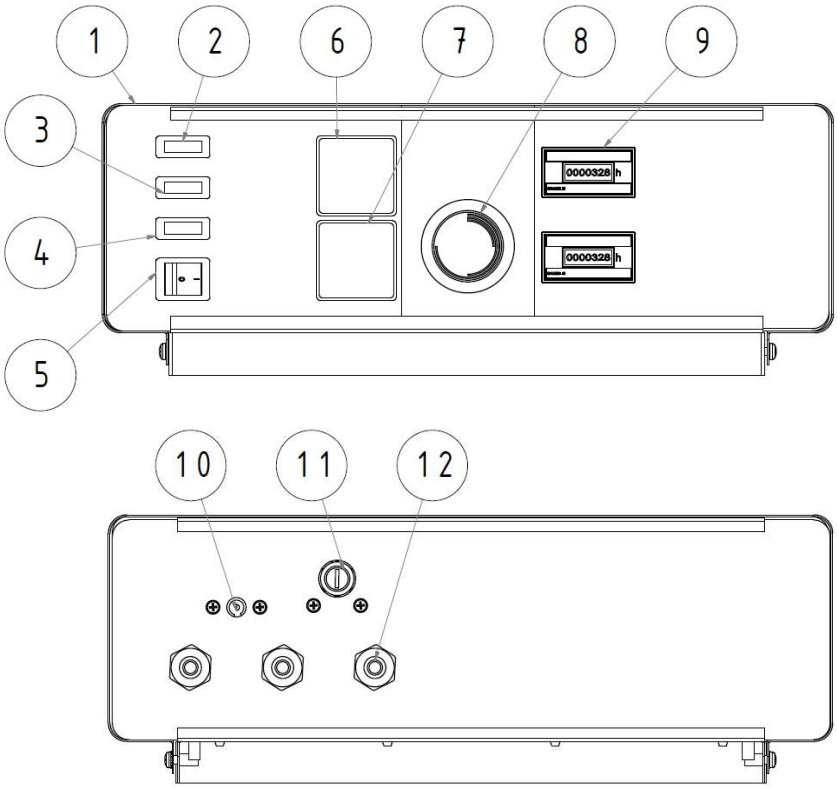
Control box OS 03



1. Control box OS 03
2. Thermomanometer
3. Thermostat
4. Safety thermostat
5. Main switch
6. Signal lamp-overheated
7. Signal lamp - burner fault

Fig. no. 13 Control box OS 03

Control box OS 04



1. Control box OS 04
2. Signal light “failure” indicating a contact actuation on safety thermostat
3. Signal light – Malfunction of burner
4. Control lights indicating operation in mode II of the burner
5. Main power switch
6. Capillary thermometer
7. Capillary manometer
8. Combustion products temperature II. Step – Set Up
9. Operating hours I. and II. Step metering devices
10. Combustion products temperature I. Step
11. Mechanical unblocking of the Safety Thermostat
12. Bushings

Fig. no. 14 Control box OS 04

Temperature control of the first degree (reduced output) is adjustable between 50 and 90 ° C.
Temperature control of the second degree (nominal output) is adjustable between 50 and 90 ° C.
In the low temperature mode the temperature of heating water is set between 50 and 75 ° C.
Safety thermostat is permanently set by the manufacturer to 100 ° C.
In case of it's switching off – the indicator of failure on the panel of the control box is lit - it is necessary (after finding and removing of possible fault) by pushing the button on the rear panel of the box bring the thermostat into the switched state.

9. IMPORTANT WARNINGS

1) **The boiler only can be used for the purpose that it is destined for.**
2) **The boiler can only be operated by adult persons and is forbidden to leave children without being attended by adults.**
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) **In case of a long-term still-stand of boilers they must be disconnected from electricity- from the socket.**
6) **Boiler rooms must be kept clean and dustless. From the boiler room area there must be removed all sources of pollution and during the works (insulating works, boiler room cleaning) which cause the dustiness the boiler must be put out of operation. Even the partial impurities deposits on the burner will degrade the combustion process and threaten the economic and reliable boilers operation. We don't recommend to keep domestic animals (dogs, cats etc.)in boiler rooms**
7) **In case that there appears the danger of flammable vapours or gases penetration into the boiler room or during the works at which there is a temporary fire or explosion danger (gluing the flooring, paints using the flammable materials) the boiler must be long enough before the works put out of operation.**
8) **Don't put ay objects made of flammable material on boiler and within a distance smaller than the safe distance from it.**
9) **The user is obliged to charge with boiler commissioning, its regular maintenance and defect elimination only a professional contractual service accredited by VIADRUS a.s., the boilers manufacturer, otherwise there does not apply the guarantee for boilers proper function. "VIADRUS G 50 quality and completeness certificate" filled in by the service contractual organization serves as the "Guarantee certificate".**
10) **Once a year it is necessary to do a regular boiler maintenance according to following table.**
11) **During assembly, installation and operation of the appliance it is necessary to comply with standards that apply in the relevant country of destination.**

If these conditions are not observed the guarantee repairs cannot be required.

10. Maintenance

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

1. Disconnect the boiler from electricity supply.
2. Close the fuel supply to burner.
3. Dismount the burner door nuts and open the door.
4. Check the convection surfaces:
   - dismount the front part of boiler shell
   - dismount the fastening nuts and open the burner door
   - visual check of convection surfaces
5. In case of convection surfaces clogging apply the procedure as follows:
   - fill all convection surfaces vents with diluted soap solution
   - let the solution effect for approx. 10 minutes
   - use a lower water pressure for spraying the convection surfaces
   - repeatedly by applying a higher water pressure complete the convection surfaces cleaning
   - remove thoroughly the impurities from the space of burner

Warning: Water must never get into contact with burner door insulation!

6. Check the burner nozzle clogging. In case of impurities clean it according to burner manufacturer ´s instructions.
7. Shut again the burner door and secure with nuts and washers.
8. Connect the fuel supply to the burner
9. Open the fuel supply,
10. Check the fuel supply tightness to the burner.
11. Connect the boilers to the electricity supply and switch them on
12. Set and regulate the boilers thermal output.

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 manufactured of common metallic materials we recommend to dispose them in the ways 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
- gas fitting, breather - through a firm dealing with waste collection and disposal as the non-ferrous metal
- ROTAFLEX insulation material - into the common waste

The boiler package should be disposed of in following way:

- plastic foil, cardboard package and wooden pallet into the common waste
- metal strap (for strapping) - through a firm dealing with waste collection and disposal

In case that the product has lost its serviceability you can take 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. Defects and their elimination

The defects can only be eliminated by a trained contractual service organization which notes it down in the guarantee attachment.
If the safety thermostat keeps blocking repeatedly the contractual service worker must be called.

	DEFECT	***REASON***		***ELIMINATION***
1.	the pilot light on the main switch is not on after the boiler has been switched on	No el. voltage on the boilers input		Check the voltage in the socket
		Defect pilot lamp		Exchange the switch
2.	boiler sets on fire but goes out immediately	A wrong connection between the inner and phase conductor in supply socket		Check and change of connection: Terminal U- phase conductor Terminal N – zero conductor
		Impurities filter on the gas valve input clogged		Clean the gas valve filter
3.	boiler cannot be lit – the safety thermostat switched off (on the control panel in network module there the exceeded temperature signalling lamp is on)			Thermostat unblock in network module - TB
		Insufficient water circulation (the pump doesn't work) filter before the pump clogged	*	Switch over the revolutions
				Check the pump operation (rotor release)
				Pump replacement
		Filter before the pump clogged		Clean the filter
		Lack of water in system		Check the water pressure in system and if necessary refill water
			*	Check the pressure in expansion reservoir (if there is used a closed heating system)
4.	burner defect signalling	The pump thermostat does not switch on		Exchange the thermostat
				Possible defects and the way of their elimination are shown in burner documentation

13. Guarantee and liability for defects

Setting up a claim to responsibility for defects is ruled by § 422-441 and for indemnity by § 373-386 Commercial Code.

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 " and ČSN 38 6405, ČSN 38 6441** to carry out regularly once a year the check of natural gas or furnace oil extra light TOEL boilers. The check can only be done by an authorized organization (contractual service), **accredited by** VIADRUS a.s., the manufacturer.
- **In case of 5 segmental boilers it is necessary to observe the conditions set by Collection of Laws no. 91/1993 and ČSN 07 0703, ČSN 38 6420.**
- To document all records about carried out guarantee and after-guarantee repairs and regular annual checkups in the annex enclosed to the guarantee certificate.

The guarantee does not apply to:

- **Faults caused by improper assembly and improper attendance of the product and faults caused by improper maintenance see chap. 10**
- **Product damage arised during the transport or other mechanical damage**
- **Faults caused by wrong storage**
- **Faults and damage caused by failure to observe water quality in heating system see chap. no. 5.1 and 6.3 or by using the anti-freeze mixture**
- **Faults caused by failure to observe instructions stated in this manual**

Every defect must be announced immediately after having been found out, always in writing and by an agreement made by telephone.

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

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

Information for customer

Packaging identification	Assessment reference
PE Plastic sacpc, folie, corrugaled board, iron and plastic fix line	

Identification of principal 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 terms of 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 a.s.
Bezručova 300
735 81 Bohumín

Guarantee certificate and Quality and completeness certificate for VIADRUS G 50 … boiler

Boiler serial number .....…… Boiler output .....

User (surname, name) ……

Address (street, town, postcode) ……

Telephone/Fax ……

Service gas overpressure: 18 – 23 mbar natural gas furnace oil extra light according to burner documentation

Boiler complies with requirements:

EN 267 Forced draught oil burners – Definitions, requirements, testing, marking

EN 297 Gas – fired central heating boilers – Type B_{11} and B_{11BS} fitted with atmospheric burners of nominal heat input not exceeding 70 kW

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

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 adjustment according to boiler operation manual operation and installation will be done by contractual service organization.
The completeness including the standard accessories and the output setting according to „Operation and installation manual" is guaranteed by manufacturer through its contracting service organization.
The guarantee certificate isn't valid without having been filled in.

Stoking test results:

Measured values		Numeric value
Gas input pressure	(mbar)	
pressure at the nozzle	(mbar)	
Hourly consumption	(m^3. h^{-1}, $kg.h^{-1}$)	

The user confirms that:

- **the boiler adjusted by the contracting service organization didn't show any defect during the stoking test**
- **he received the „Operation and installation manual" with properly filled-in guarantee certificate and Quality certificate**
- **he was made acquainted with boiler operation and maintenance**

.....	.....	.....
Manufacture date	Manufacturer's stamp	Controlled by (signature)
.....	.....	.....
Date of installation	Installation company (stamp, signature)	User's signature
.....	.....	.....
Date of putting into operation	Contractual service organization (stamp, signature)	User's signature

Annex to the guarantee certificate for customer- the user

Record of accomplished guarantee and after-guarantee repairs and regular product checpc			
Record date	**Carried out activity**	**Contracting service organization (stamp, signature)**	**Customer´s signature**

VIADRUS a.s.
Bezručova 300
735 81 Bohumín

Guarantee certificate and Quality and completeness certificate for VIADRUS G 50 … boiler

Boiler serial number .....…… Boiler output .....

User (surname, name) ……

Address (street, town, postcode) ……

Telephone/Fax ……

Service gas overpressure: 18 – 23 mbar natural gas furnace oil extra light according to burner documentation

Boiler complies with requirements:

EN 267 Forced draught oil burners – Definitions, requirements, testing, marking

EN 297 Gas – fired central heating boilers – Type B_{11} and B_{11BS} fitted with atmospheric burners of nominal heat input not exceeding 70 kW

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

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- **he received the „Operation and installation manual" with properly filled-in guarantee certificate and Quality certificate**
- **he was made acquainted with boiler operation and maintenance**

.....	.....	.....
Manufacture date	Manufacturer's stamp	Controlled by (signature)
.....	.....	.....
Date of installation	Installation company (stamp, signature)	User's signature
.....	.....	.....
Date of putting into operation	Contractual service organization (stamp, signature)	User's signature

Intended for manufacturer

VIADRUS a.s.
Bezručova 300
735 81 Bohumín

Guarantee certificate and Quality and completeness certificate for VIADRUS G 50 … boiler

Boiler serial number ..... Boiler output .....

User (surname, name) ……

Address (street, town, postcode) ……

Telephone/Fax ……

Service gas overpressure: 18 – 23 mbar natural gas furnace oil extra light according to burner documentation

Boiler complies with requirements:

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EN 297	Gas – fired central heating boilers – Type B_{11} and B_{11BS} fitted with atmospheric burners of nominal heat input not exceeding 70 kW
EN 303-1	Heating boilers – Part 1: Heating boilers with forced draught burners – Terminology, general requirements, testing and marking
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VIADRUS

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