

Installation manual Operating instructions

Gas Boiler

CE 0085

GS 117 E / GS 152 E / GS 192 E



CE 0085

Installation, calibration and commissioning must be undertaken by a specialist.

The boiler must be connected according to the regulations in force and may only be operated in well vented areas.

Control devices must be checked for functioning. Fittings, immersion sleeves, connection seals, drain valve etc must be checked and if necessary retightened or resealed.

General terms and conditions of warranty state that all installations must be carried out by a suitably trained and qualified plumber who observes the local norms and regulations.

The installation and maintenance record must be entirely completed and the user has to be instructed accordingly.

Efficient operation can only be guaranteed if the instructions of this manual are followed.

Warranty does not cover any damage caused due to non-observance of this manual and the technical rules in force.

The system is to be checked annually by a specialized company. In addition, occurring defects must be repaired immediately.

This document should be handed over to the client on completion of the installation.

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Security advice

When smelling gas

- close gas tap
- open the window
- don't operate any electric switch
- extinguish open flames
- call (from outside) gas company and authorized specialist

When smelling exhaust gas

- disconnect appliance
- open windows and doors
- call authorized specialist

Explosive and readily flammable material

- Don't use or store any readily flammable material (paper, thinner, paint etc.) in direct proximity to the appliance.

Combustion air / Ambient air

- Keep combustion air / ambient air free from aggressive substances (e.g. halogen carbon dioxide, hydroxide containing chlorine or fluorine compounds) to avoid corrosion

1 General

The standing gas boiler is a direct fired multi-gas appliance. It is suited for a maximum working pressure of 10 bar and a maximum working temperature of 70°C. The pressure resistant boiler can supply several tap connections at the same time. The flue gas must be dissipated through an authorized flue gas system.

A baffle plate mounted to the flue gas pipe of the tank guarantees an excellent heat transmission. The burner unit consists of a main burner and pilot burner, control fittings with piezo spark ignition, thermoelectric safety pilot, temperature control as well as a gas pressure regulator and can be converted to natural gas and liquid gas according to the DVGW process sheet G 260. 2 measuring devices have been fitted at the control unit to regulate pressure in nozzles and connecting pipes. The desired water temperature can be regulated at the temperature control button. In case of overheating the built in temperature stop control will cut off the electricity supply at circuit.

The tank is protected against corrosion by double-coated enamel and magnesium anode. An insulation layer between the internal tank and the steel plate housing minimizes loss of heat. The steel plate housing is lacquered.

The burner unit can be removed at the front for cleaning and maintenance purpose. The tank may only be operated with an installed protection anode.

Installation, calibration, commissioning and maintenance must be undertaken by a specialist.

For the installation, the following regulations should be considered: DIN 18160, DIN 4753, DIN 4109, DVGW TRGI 2008, TRF 1996/97 Part 1 and 2, DIN 1988, the relevant regulations of the suppliers as well as the local legal building regulations in force. All tank connecting pipes are to be planned, constructed and tested according to the technical rules in force, and the corresponding norms and regulations in accordance with their application and supply medium.

2 Transport and installation

In order to prevent damage during transport, the packaging should only be removed at the site of installation. During shipment, it should be ensured that the tank does not come in contact with any spiky or sharp items, nor is damaged through dropping or knocks.

Always place in a frost free but cool area and close to the chimney. The size of the room and the ventilation necessary is subject to DVGW-standards. Avoid under all circumstances rooms with any kind of aggressive fumes (propellant, glue, solvents etc.) as these can cause corrosion in the exhaust system and can lead to combustion or explosion. Cover wooden or synthetic floor with fire resistant insulator. The tank must be disconnected from any humidity carrying components. Any light flammable material must be placed at least one meter away. Moreover, sufficient space for maintenance and cleaning must be kept unobstructed at the front, the sides, above and behind the boiler.

3 Dimensions and connections

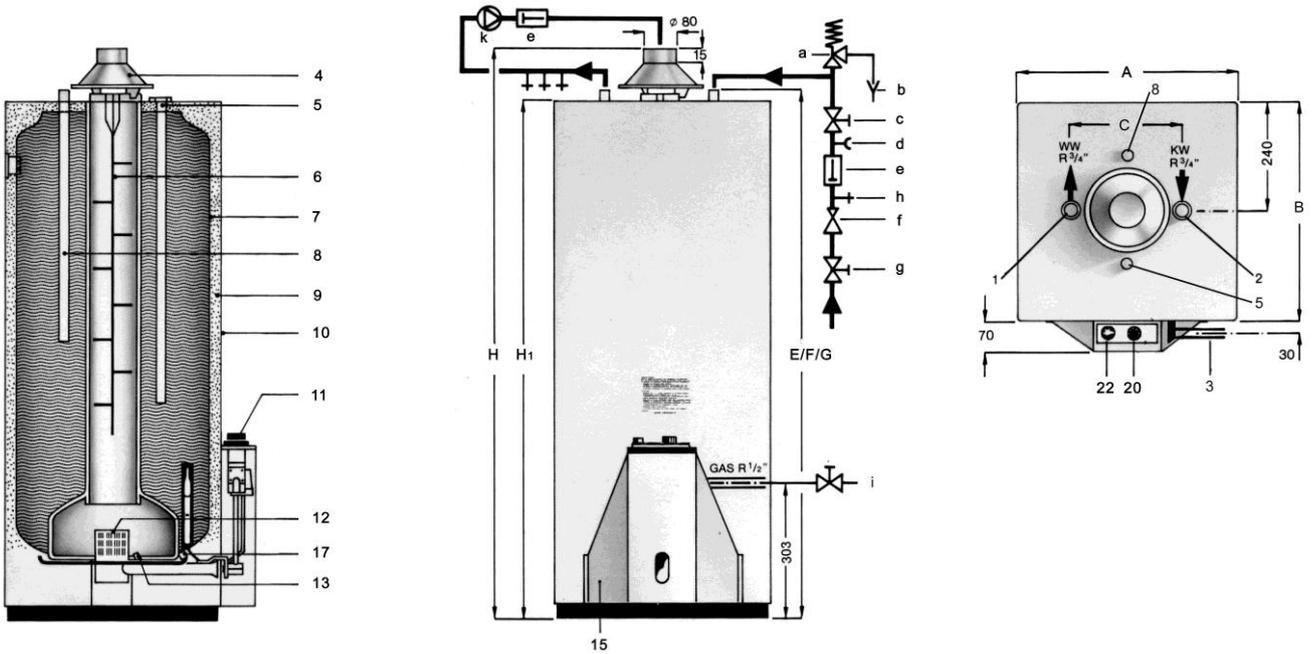


Illustration1

- | | |
|---|---|
| <ul style="list-style-type: none"> 1 Hot water connection R 3/4 2 Cold water connection R 3/4 3 Gas connection Rp 1/2 4 Flow operated safety device 5 Anode 6 Baffle plate 7 Water tank 8 Circulation immersion pipe R 3/4 (Accessory) 9 Insulation 10 Casing 11 Control fittings 12 Main burner 13 Pilot burner 15 Cover plate 17 Drain 20 Temperature control button 22 Piezo spark ignition | <ul style="list-style-type: none"> a Diaphragm - safety valve min. DN 15 b Drain pipe c Water stop valve d Manometer- connection nozzle e Backflow preventer f Pressure reducing valve if more than 8 bar connection pressure g Water stop valve h Test valve i Gas stop valve k Circulation pump |
|---|---|

Dimensions:

Type	A	B	C	E	F	G	H	H1	Height gas connection	Diameter tube flue gas
	[mm]	[mm]								
GS 117 E	480	480	224	1140	1140	1140	1208	1100	303	80
GS 152 E	480	480	224	1396	1396	1396	1464	1356	303	80
GS 192 E	480	480	224	1713	1713	1713	1781	1673	303	80

Chart 1

Connections:

Type			GS 117 E	GS 152 E	GS 192 E
Cold water / hot water	1/2	R	3/4	3/4	3/4
Circulation	3	R	3/4	3/4	3/4
Drain	17	Rp	1/2	1/2	1/2
Gas connection	18	Rp	1/2	1/2	1/2
Anode	19	Rp	3/4	3/4	3/4

Chart 2

R = male thread
Rp = female thread

4 Technical data

Type		GS 117 E	GS 152 E	GS 192 E
Storage volume (real) acc. to DIN EN 12897	[litre]	111	142	185
Max. working pressure	[bar]	10	10	10
Output	[kW]	7,12	8,12	9,18
Input (gross)	[kW]	8,0	9,1	10,2
Flue gas temperature	[°C]	155	171	171
Flue gas volume	[kg/h]	18,3	19,7	21,5
Flue draft requirement	[mbar]	0,04	0,04	0,04
CO ₂ by volume	[%]	6,4	6,8	7,0
Time to recover from 10°C to 60°C	[ca. min]	52	61	67
Energy loss	[kWh/24h]	4,08	4,85	5,04
Continuous output DHW of 45°C	[l/h]	175	200	226
Hot water starting efficiency 45°C	[ca. l/10 min]	160	205	266
Gas consumption				
Natural gas group E H _{UB} 9,4 kWh/m ³	[m ³ /h]	0,85	0,97	1,09
Natural gas group LL H _{UB} 8,5 kWh/m ³	[m ³ /h]	0,94	1,07	1,20
Liquid gas (propane) H _{UB} 12,8 kWh/kg	[kg/h]	0,63	0,71	0,8
Nominal Load N _L (70°)		ca. 1,7	ca. 2,7	ca. 3,4
Load profile		L	XL	XXL
Energy efficiency class		B	B	B
Weight (empty)	[kg]	ca. 65	ca. 80	ca. 90

Chart 3

Necessary flow pressure for gas connection

Natural gas 18– 25 mbar

Liquid gas 50 mbar +/- 5 mbar

If the flow pressure for gas connection is outside those values, an installation is prohibited (see 6.1, 3 ff)

Gas

according to CE-Norm (at 15°C, 1013 mbar)

E (G20) Wobbeindex: 11,3 – 15,2 kWh/m³

LL (G25) Wobbeindex: 9,5 – 12,4 kWh/m³

P (G31) Wobbeindex: 20,3 – 21,3 kWh/m³

according to DVGW (at 0°C, 1013 mbar)

N (H) Wobbeindex: 12,0 – 15,7 kWh/m³

N (L) Wobbeindex: 10,5 – 13,0 kWh/m³

F Wobbeindex: 22,1 – 25,81 kWh/m³

5 Installation

5.1 Water connection

Erect boiler vertically and straight with the aid of a spirit level and if necessary place metal strips underneath. Water connections should have removable connections and must be checked for tightness. A safety group must be installed in the cold-water connection and if water pressure is above 8 bar a pressure reducing valve is to be installed. Appropriate filters should be used to prevent dirt or particles from entering the boiler.

The safety valve must be set at 10 bar excess pressure and must be tested and executed at least with DN 15. It is to be installed in the cold water connection and must not be cut off through the hot water tank. It must be well accessible for control purpose. The functional capacity of the safety valve in the cold water connection must be checked at regular intervals by venting.

The exhaust pipe must be at least as big as the safety valve outlet in width. It may not have more than 2 bends and should not be longer than 2 m. The exhaust pipe must be installed with downward gradient. It must be ensured that people cannot be endangered by escaping hot water or steam.

The drain line behind the funnel must feature at least the double width of the valve entrance. The exhaust pipe and drain pipe must be protected against freezing and should not lead outside.

A sign is to be attached close to the exhaust pipe of the safety valve or on the safety valve itself. „For safety reasons water may leak from the exhaust pipe during the heating process! Do not lock!”

To avoid an excessive loss of water an appropriated expansion valve can be installed between the tank and the safety valve inside the cold water pipe.

5.2 Circulation pipe

Should a circulation pipe be necessary it must be carefully insulated for economical reasons. To ensure a flawless and energy saving functioning, the circulation pipe must be fitted at the tank only with an original connection attachment (available as spare parts) at the connection point. Connect the circulation pump and reverse flow stopcock between warm water supply and circulation connection. The circulation pump should be regulated through thermal control (Pump should only start operation when the temperature in the circulation falls beneath 30° C) to keep operating cost low. Should no circulation be needed during the night an extra time control switch is recommended to turn off the circulation pump.

5.3 Gas connection

The gas connection is to be fitted at the front of the control fittings in adequate dimension and only after having cleared the pipe by blowing through and airing. Contamination of the control fittings through dirt and thickening materials must be avoided. The stopcock for the gas is to be fitted on site and has to be at least NW1/2'. The connections must be checked for tightness. Checked pressure max. 50mbar (500mm WS). Should it be necessary to use more pressure to check for leaks in the gas connection pipe then the gas connection pipe is to be removed from the control unit.

5.4 Exhaust connection

Check chimney for suitability to transport exhaust fumes. Cross section and durability have to comply with DVGW-TRGI regulations.

Check if pipe sockets (b) are still correctly fitted with the baffle plate (d) in the exhaust pipe.

The pipe sockets have to be pushed into the exhaust pipe up to their bulge.

At first installation: remove cover plate (15) and cap (a) with screws from the base. Place cap (a) onto pipe sockets (b) and fix securely with 3 screws (c).

Connect corrosion resistant exhaust pipe airtight at the pipe sockets of the flow operated safety device. Place exhaust pipe elevating towards the chimney at shortest possible distance. It must not penetrate the cross section of the chimney. The distance needed between the flows operated safety device and the exhaust bend to the chimney must be no less than 160mm. No covers are to be placed over nor are any alterations to be made to the flow operated safety device.

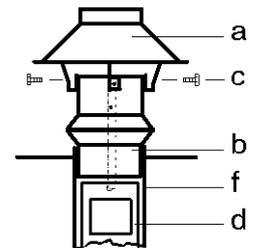
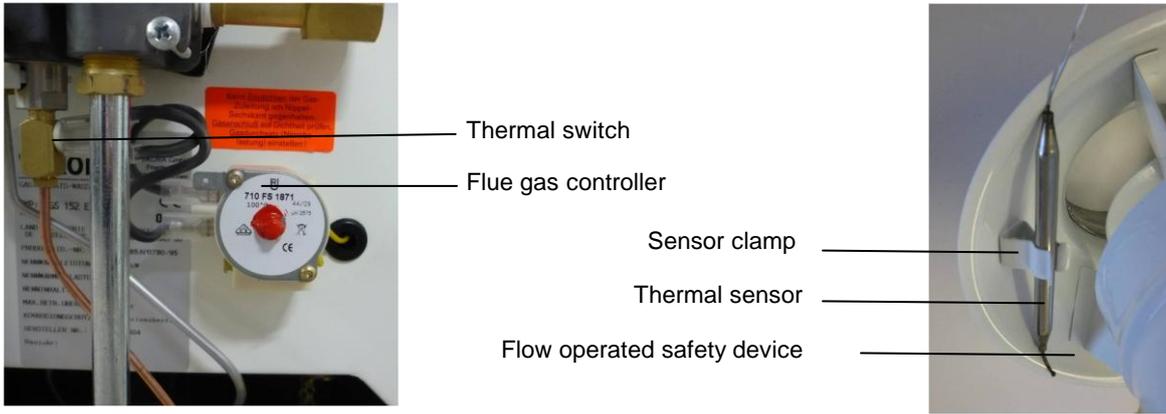


Illustration 2

5.5 Flue gas sensor



Warning: The flue gas sensor must never be disconnected.

Installation

Carefully lift thermal sensor and clip to the sensor clamp at the cap of the flow operated safety device. Avoid bending the capillary tube in the process. A seal is to be placed over the thermal sensor to avoid slipping or even unauthorized removal.

Operating instructions

The contact in the thermostat of the flue gas controller is integrated in the thermal electrical circuit. Should over a prolonged period of time exhaust fumes escape at the flow operating safety device, the flue gas sensor interrupts the thermal electrical circuit and cuts off the gas supply automatically. After a period of 5 minutes switch the gas-boiler can be put again into operation (see commissioning No. 6ff) .

Should the appliance cut off several times via the flue gas sensor, a specialist is to be called in order to check the boiler and the exhaust system (see list of faults p. 12).

Operating control

To check the flue gas sensor, proceed as follows: Close completely the exhaust pipe with the help of cloth and other such materials at the first connection point behind the flow operated safety device. After commissioning, a complete drop out of exhaust fumes will take place at the flow operated safety device. The flue gas sensor must then cut off the gas supply after only 2 minutes. This check should be carried out swiftly and the area needs to be aired sufficiently (danger of suffocation).

5.6 Exhaust fume cap

By installation of a flue gas damper only use Diemayer-damper HOK 80 W DIN-DVGW-Reg.-No. 86.02e 003! (Wikora part number 090062).

6 Commissioning

6.1 First commissioning

In order to fill the tank and vent all the air, open the cold water stop valve and all hot water nozzles. The tank is filled and all pipes are vented when water leaks out of all hot water nozzles. Then close all nozzles again and check all water-bearing parts on tightness.

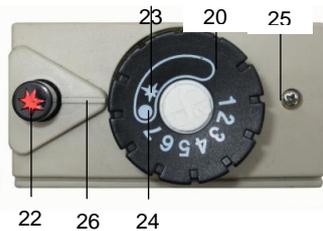
Check if the appliance is correlating with the type of gas available. If this is not the case, convert as shown on page 9. If the type of gas is correct proceed according to page 8.

6.2 Commissioning and operating

Before any commissioning and operating check that the hot water tank is filled. Open the cold water stop valve and all hot water nozzles. The tank is filled and all pipes are vented when water leaks out of all hot water nozzles. Then close all nozzles again. Moreover, the functional capacity of the safety valve must be checked by venting.

6.3 Prepare for use

1. Open gas safety valve at the appliance.
2. Switch temperature control button from OFF ● (24) to full stop at ignition mark ★ (23).



3. Push temperature control button (20) several times at the same time as piezo spark ignition ★ (22) till pilot flame appears. Once the pilot flame is burning, press the temperature control button a further 20 seconds, then release. Should the pilot flame go out, repeat ignition procedure after 5 minutes.
4. Turn temperature control button to the desired water temperature. The most economical setting is between 5 and 6 (60°C). Due to lime scale damage is setting 7 (ca 70 °C) only to be used for short periods. (Number scale and dial marking 26 to be assimilated).
5. The main flame operates when the chosen temperature is higher than the actual water temperature in the tank. The appliance is working automatically. The gas control fittings will switch off or on the main burner depending on the water temperature. At the moment the appliance is switched on again the gas will be ignited by the constantly burning pilot flame.

6.4 Temporary interruption (Stand-by-Position)

If the main burner should be kept switched off and only the pilot flame remains burning, the temperature control button must be turned to ignition mark ★.

6.5 Switch off

1. Turn temperature control button to OFF position ● (24) and close the gas stop valve at the appliance
Attention: The switch on lock prevents the re-ignition of the appliance during the safety time of 60 seconds.
2. If the appliance is kept off for a longer period of time, close the water stop valve and the gas stop valve. Keep appliance running in frosty conditions or empty tank after closing gas supply.

6.6 Emptying

Switch off any gas connection at the hot water tank. Let the content of the tank cool down. Close the cold water stop valve at the cold water supply and open the nearest hot water nozzle. Empty tank through drain valve and close drain valve afterwards. Refill with water before any further use. (see commissioning).

6.7 Condensation

As the tank gets heated up from a cold state to a temperature of about 48°C, condensation will occur quite naturally on warmed surfaces. At times, this condensation was incorrectly thought to be caused by a leak in the tank. Therefore, to check the tank and the water connections on tightness ensure that the tank is not heated and that full water pressure is resumed. The construction ensures an effective compensation of the condensate, avoids any disturbing effect caused by flames and functioning and protects against corrosion.

It is recommended to keep the tank operated outside the noticeable condensate area between position 5 and 6 which corresponds to ca. 60° C.

7 Gas regulation

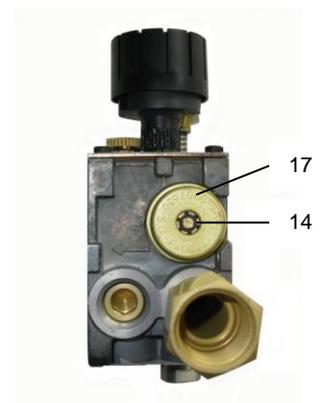
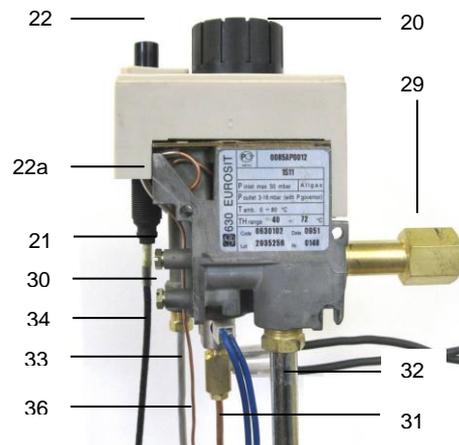
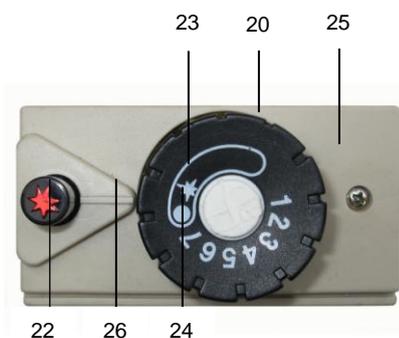
All appliances are compliant with the kind of gas shown on the additional sticker "Type of gas" placed on the appliance. Should other gas be used the appliance is to be adjusted accordingly (see page 9). The performance of the appliance is to be set according to the nozzle pressure method or the volumetric method. This is only to be undertaken by a recognized specialist. Both methods require a U-tube-manometer.

Remark: The nozzle pressure method is more time-saving and therefore the preferred option. If operated with liquid gas the regulation of the nominal load is obsolete. It is sufficient to check the flame according to DVGW-TRF regulations. All flames have to be burning uninterrupted and with as little green core as possible and not beat back. When liquid gas is used the connection pressure is to be monitored and regulated at the separate pressure measure device on the gas supply unit. It has to be at 50 mbar + 5 mbar.

7.1 Nozzle pressure regulation method

Wobbe-Index W_0 and net heating value H_{uB} to be requested from the gas supply company.

1. Take off cover plate (15), pressure adjusting screw at measure nozzle (30) and connect U-tube-manometer.
2. Open gas stop cock and put appliance into operation (see page 7).
3. Read existing connection flow pressure at U-tube-manometer. For natural gas, the connection flow pressure should be between 18 mbar and 25 mbar.
4. Should the connection flow pressure vary from the above mentioned values, the cause needs to be established and the fault to be rectified. Should this not be possible, the gas supplier needs to be contacted.
5. Switch the temperature control (20) button to OFF ● (24). Take off the U-tube-manometer only when gas stop cock is closed. Screw in screw of the measure nozzle (30) gas tight.
6. Remove screw of the measure nozzle (21) and connect U-tube-manometer.
7. Open gas stop cock and put appliance into operation according to „Commissioning“ (page 7).
8. Check that the water temperature in the tank is not higher than lukewarm to 50°C, cool by emptying some water if necessary. Turn temperature regulation button (20) to position "6".
9. Take off cover cap (25) and adjust the die pressure that is stipulated in the table on page 10 by turning the pressure adjusting screw (17) of the pressure regulator (14). The die pressure is increased by turning to the right and decreased by turning to the left. Replace the cover cap (25) and put the screws in place.
10. Turn the temperature control button (20) ● to OFF position. (Align marking (24) with marking (26)). Close gas stop cock, remove U-tube-manometer and screw in the screws of the measure nozzle (21) gas tight.
11. Check if the right nozzle has been used and then proceed with a rough check on the gas meter in l/min (see gas flow rate table 9.2). Do not adjust the die pressure if the discrepancy of the rough count represents less than 10% of the value of gas consumption in l/min shown in the gas flow rate table. If the gap is larger than 10%, the die pressure is not correctly set.
12. Safety check: Close gas stop cock for 20 – 45 seconds. The safety pilot should audibly close after the gas stop cock has been closed.
13. Replace cover plate (15).



- 14 Pressure regulator
- 17 Pressure adjusting screw
- 20 Temperature control button
- 21 Measure nozzle for die pressure
- 22 Button for piezo spark ignition
- 22a Piezo spark ignition
- 23 Marking for ignition setting
- 24 Marking for OFF position
- 25 Cover cap

- 26 Marking for temperature control button
- 29 Gas connection flange 1/2"
- 30 Measure nozzle for connection pressure
- 31 Thermal power line
- 32 Gas supply from main burner
- 33 Ignition gas line
- 34 Ignition cable
- 36 Capillary tube for temperature sensor

7.2 Volumetric method

Only possible if no extra gas is pumped into the net by the GVU.

Wobbe-Index W_0 and net heating value H_{uB} to be requested from the gas supply company.

1. Take off cover plate (15), pressure adjusting screw at measure nozzle (30) and connect U-tube-manometer. Open gas stop cock and put appliance into operation (see page 7).
2. Read existing connection flow pressure at U-tube-manometer. For natural gas, the connection flow pressure should be between 18 mbar and 25 mbar.
3. Should the connection flow pressure vary from the above mentioned values, the cause needs to be established and the fault to be rectified. Should this not be possible, the gas supplier needs to be contacted.
4. Open gas stop cock and put appliance into operation according to „Commissioning“ (page 7).
5. Check that the water temperature in the tank is not higher than lukewarm to 50°C, cool by emptying some water if necessary. Turn temperature regulation button (20) to position „6“.
6. Adjust the die pressure that is stipulated in the table on page 10 by turning the pressure adjusting screw (17) of the pressure regulator (14). The die pressure is increased by turning to the right and decreased by turning to the left.
7. Turn the temperature control button (20) ● to OFF position and close gas stop cock
8. Safety check: Close gas stop cock for 20 – 45 seconds. The safety pilot should audibly close after the gas stop cock has been closed.
9. Switch the temperature control (20) button to OFF ● (24). Take off the U-tube-manometer only when gas stop cock is closed. Screw in screw of the measure nozzle (30) gas tight.
10. Replace cover plate (15).

8 Conversion to other gas types

Any conversion is only to be undertaken by a registered specialist.

8.1 From natural gas to liquid gas

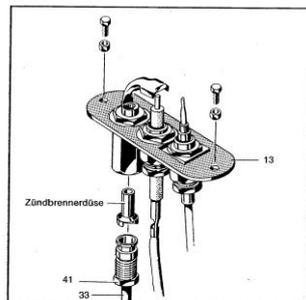
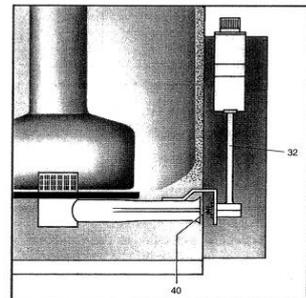
- 8.1.1. Close gas stop cock and remove cover plate (15).
- 8.1.2. Remove burner unit: Loosen screws for the gas supply line (32), ignition gas line (33) and thermal power line (31) at the regulator. Lift the burner unit from the 2 centre bolts at the support and move everything slightly forward. Now place on bottom tray and remove.
- 8.1.3. Exchange main nozzle (40). For nozzle diameter see table on page 10.
- 8.1.4. Loosen screws (41) of the ignition gas line (33) at the pilot burner (13) and exchange nozzle. The nozzle number can be found in the table on page 10. Re-attach the ignition gas line (33) gastight by using the screws (41).
- 8.1.5. Relocate burner unit on centre bolts. Screw back gas supply line (32) and ignition gas line (33) onto the regulator and make sure that it is gastight. Screw back the thermal power line (31) hand tight.
- 8.1.6. Remove cover cap (25). Remove pressure regulator (14) and replace with maximum set screw No. 228. The die pressure is about equal the connection pressure.
- 8.1.7. Open gas stop cock and check pipes and gas fittings on tightness. Replace cover cap (25) and fix screws.
- 8.1.8. Close gas stop cock
- 8.1.9. Place new sticker „Type of gas“ on the gas fittings.
- 8.1.10. Replace cover plate (15).

8.2 From liquid gas to natural gas

- 8.2.1. Follow points 8.1.1 till 8.1.5
- 8.2.2. Remove cover cap (25). Remove maximum set screw No. 228 and install pressure regulator (14). Set nominal load according to “Gas regulation“ (page 8).
- 8.2.3. Follow points 8.1.7. till 8.1.10

8.3 From natural gas group E to natural gas group LL or vice versa

- 8.3.1. Close gas stop cock and remove cover plate (15).
- 8.3.2. For GS 117 and 152: Exchange main nozzle (40). For nozzle diameter see table on page 10. Open gas stop cock and check pipes and gas fittings on tightness.
- 8.3.3. Remove cover cap (25). Set nominal load according to “Gas regulation“ (page 8). Replace cover cap (25) and fix screws.
- 8.3.4. Close gas stop cock.
- 8.3.5. Place new sticker „Type of gas“ on the gas fittings.
- 8.3.6. Replace cover plate (15).



9 Technical data - Gas

9.1 Die pressure table GS 117 E / GS 152 E / 192 E

Type			GS 117 E		GS 152 E		GS 192 E	
Output			7,12 KW		8,12 KW		9,18 KW	
Input (gross)			8,0 KW		9,1 KW		10,2 KW	
Gas type	Wobbe-Index kWh/m ³	Pilot burner nozzle No.	Nozzle pressure [mbar] at nominal load	Main burner nozzle No.	Nozzle pressure [mbar] at nominal load	Main burner nozzle No.	Nozzle pressure [mbar] at nominal load	Main burner nozzle No.
Natural gas group LL	12,4	27	8,8	280	11,2	280	10,1	300
Natural gas group E	15,0	27	8,2	260	10,5	260	7,0	300
Liquid gas (propane)	25,7	023	50	115 R	50	120 R3	50	130 R1

9.2 Gas flow rate table GS 117 E / GS 152 E / 192 E

Type		GS 117 E		GS 152 E		GS 192 E	
Output		7,12 KW		8,12 KW		9,18 KW	
Input (gross)		8,0 KW		9,1 KW		10,2 KW	
Gas type	Net heating value H _{1,R} *) kWh/m ³	Gas volume [l/min.] at nominal load					
Natural gas group LL	8,5	15,5	17,6	19,8			
Natural gas group E	9,4	14,1	16,1	18,0			
Liquid gas (propane)	27,7	4,8	5,4	6,1			

*Net heating value H_{UB} at gas volume at 15°C, 1013 mbar dry.

10 Conversion kits

GS 117 E / GS 152 E /GS 192 E- execution with gas fittings EUROSIT 630, stainless steel burner and LOW-Energy-pilot burner.

			GS 117 E	GS 152 E	GS 192 E
	Item	Part No	Quantity		
Natural gas	Group E	Part No	39 12 21	39 12 21	39 82 21
	Burner nozzle				
	Ø 2,6 mm, No 260	03 91 21	1	1	-
	Ø 3,0 mm, No 300	03 96 32	-	-	1
	Ignition Nozzle No 27	39 54 60	1	1	1
	Pressure regulator	03 95 18	1	1	1
Natural gas	Group LL	Part No	39 92 21	39 92 21	39 92 22
	Burner nozzle				
	Ø 2,8 mm, No 280	03 95 32	1	1	-
	Ø 3,0 mm, No. 300	03 97 32	-	-	1
	Ignition Nozzle No 27	39 54 60	1	1	1
	Pressure regulator	03 95 18	1	1	1
Liquid gas	Group P 50 mbar	Part No	03 91 31	39 83 10	39 93 10
	Burner nozzle				
	Ø 1,15 mm, No 115R	39 13 31	1		-
	Ø 1,20 mm, No 120R3	03 96 33		1	
	Ø 1,30 mm, No 130R1	03 97 33	-	-	1
	Ignition Nozzle No 023	39 54 62	1	1	1
	Maximum set screw	03 95 19	1	1	1

11 Maintenance and wear parts

According to the regulations for gas operated burner units the end user has to have the appliance checked every year by a qualified specialist. Only original spare parts are to be used. The following work needs to be done:

1. **Check safety anode for wear and tear. When heavy wear occurs, a new original safety anode is to be fitted to protect the tank against corrosion.**
2. Check ignition safety valve: Close gas stop cock for 20 – 45 seconds. The safety pilot should audibly close after the gas stop cock has been closed.
3. Clean gas filter at the entrance of the control fittings
4. Clean pilot burner and main burner. (Removal and fitting of burner units can be found on page 9 „Conversion to other gas types“)
5. Clean baffle plate (6), fire tube and combustion chamber with a brush.
6. Rinse vessel with fresh water
7. Check temperature limiter in water or similar. It needs to switch off at 92 ± 3 C
8. Check the plastic pipes for cold and warm water as well as possibly circulation connections and exchange when damaged.
8. When cleaning is finished, prepare the appliance for use. Check safety valve at the cold water supply by venting and check all gas and water carrying devices on tightness. Put the appliance into operation. Check gas setting (see page 8 section „gas regulation“).
9. Check flue gas evacuation.

12 Recycling and disposal

The products are specified and manufactured according to VDI 2243. The products are mechanically separable and 100% recyclable. Make sure that the components are disposed according to the relevant regulations.

13 User Information

The boiler is a quality appliance. It is tested and approved according to the current regulations regarding energy efficiency, presser safety and operational safety. It can be adjusted to natural gas and liquid gas and has an increase pressure safety (10bar). It has a long life expectancy. This is because the high quality enamel application takes place directly at the already welded boiler which guaranties an all round protection against corrosion.

Installation, calibration and commissioning must only to be undertaken by a registered and qualified specialist, approved by the gas board. Any fault can be identified according to the fault-identification list. The specialist will inform the customer on how the appliance is used and how it works. The customer is also to be informed of the importance of regular maintenance and that this is a decisive factor as to how long the appliance will last. Openings necessary to allow air circulation around the site of installation must not to be reduced nor closed. Exhaust parts must not be altered in any way. The customer is not permitted to undertake any alterations or maintenance issues.

The boiler temperature can be regulated with the temperature control button (20). High temperatures are only to be run for short periods of time (lime scale build up). Chose a setting between 4 and 5, about 60° C for an economic and hygienic (e.g. legionella) running. In buildings with long pipe works – e.g. hospitals, old people's homes, hotels and blocks of flats – the water temperature has to be set at 60° C. This also applies to installations with more than one boiler, should they have a combined water volume of more than 400 liters.

In frosty weather or if frost is expected, the appliance is either to be kept running or emptied completely.

13.1 Commissioning and handling

See point 6.

13.2 Care

A damp cloth is sufficient to clean the outer parts. Please avoid using any abrasive or solvent cleaning agents. Before putting the tank into operation but also during operation, the functional capacity of the safety valve must by checked at regular intervals by venting. When working correctly, water will run out at full blast.

13.3 Maintenance

The end user has to have the appliance cleaned and checked on its impeccable functioning annually by a qualified and registered specialist and according to the regulations regarding gas-operated appliances. Occurring defects must be repaired immediately. Before any intervention make sure that the stop cocks for gas and water are closed.

Any maintenance work to be carried out can be found in section 11. Should it not be possible to establish the cause of any fault, inform customer services, the sales representative or the company with all findings. Please indicate in that case the technical data on the performance sticker.

14 Faults

A member of our customer service team is always happy to assist you with any fault. However, should the fault lie with the user or the installer, then the costs have to be passed on. This also applies during the period when the appliance is still covered under warranty. In case of warranty the company will cover the costs raised by customer services.

14.1 List of faults

Fault	Cause	Rectification by	I = Installer B = User K = Customer services
1) CO to high in exhaust fumes	Appliance not set to nominal load	I	Set nominal load (according to page 8 ff) to correct nozzle pressure – or gas flow rate
	Main burner unit not correctly placed	I	Place main burner unit correctly
2) Strong condensation (see page 7)	Appliance not set to nominal load	I	Set nominal load (according to page 8 ff) to correct nozzle pressure – or gas flow rate
	Baffle plate not placed or incorrectly placed	I	Place baffle plate correctly (see page 5)
	Appliance is constantly run in condensation area (till 50° C)	B	Set temperature control button higher to setting 4 till 5 (red dot). This corresponds to ca. 60°C.
	Wrong main burner nozzle installed	I	Change nozzle (see page 10 nozzle pressure table)
3) Water in the bottom tray	Connections not tight	I	Check all connections on tightness (see page 5)
	Strong condensation		see point 2)
4) Pilot flame can't be lit	Temperature control button not pressed deeply enough	B	Press temperature control button fully (see page 7)
	Pilot nozzle dirty	I	Clean pilot nozzle
	Installed pilot nozzle is too small	I	Install correct burner nozzle according to die pressure table on page 10
5) Pilot flame will not spark although gas is flowing	Piezo spark ignition defect	I	Replace piezo spark ignition
	Ignition cable defect	I	Replace ignition cable
	Spark plug defect	I	Replace spark plug
6) Pilot flame extinguishes after release of starter button	Thermal element not heated yet	B	Keep temperature control button longer pressed after ignition (see page 7)
	Screws of the thermal element at the control fittings not correctly tightened.	I	Tighten carefully, connection has to be dry and clean (see page 8)
	Thermal element not correctly fitted at ignition burner	I	Place thermal element fully in support at pilot burner so that pilot flame can heat up thermal element.
	Thermal element defect	I	Replace thermal element
	Magnet in gas regulator broken	K	Replace gas control fittings
	Flue gas sensor defect	I	Replace flue gas sensor
7) Pilot flame extinguishes when changing from pilot flame to main flame	Flow pressure for gas connection far too low (gas connection from the system far too small, connection pipe blocked, filter blocked)	I	Check gas supply, adjust dimensions of gas pipes, clean connecting pipes, clean dirt filter.
	Ignition nozzle blocked	I	Clean ignition nozzle
	The installed ignition nozzle is too small	I	Install correct burner nozzle according to die pressure table on page 10
	Baffle plate not placed or incorrectly placed	I	Place baffle plate correctly (see page 5)
	Nominal load set too high (appliance is overloaded)	I	Set nominal load (according to page 8 ff) to correct nozzle pressure – or gas flow rate
8) Not enough hot water	Temperature control button not set at correct temperature	B	Adjust temperature control button to correct temperature
	Baffle plate not placed or incorrectly placed	I	Place baffle plate correctly (see page 5)
	Nominal load set too low	I	Set nominal load (according to page 8 ff) to correct nozzle pressure – or gas flow rate
	Temperature control button defect	K	Replace gas control fittings
	Cold water immersion pipe or circulation immersion pipe defect (poss. through welding connection)	I	Install new cold water immersion pipe or circulation immersion pipe
	Circulation pipe not correctly connected	I	Connect circulation pipe correctly (see installation page 3 and 5)
9) After chosen water temperature is reached, pilot flame extinguishes too	Installed burner nozzle too big	I	Install correct burner nozzle according to die pressure table on page 10
	Temperature control defect, temperature stop control unit activated	K	Replace gas control fittings
10) Main burner is burning too noisily or outer cover of appliance becomes overheated	Nominal load set too high	I	Set nominal load (according to page 8 ff) to correct nozzle pressure – or gas flow rate
	Baffle plate not placed or incorrectly placed	I	Place baffle plate correctly (see page 5)
11) Pilot flame extinguishes during heating up process	Flue gas sensor has started	I	Check flue gas evacuation
	Boiler is not exactly vertical, is tilting heavily to the left and forward, condensation dripping onto pilot flame	I	Adjust tank with a spirit level and erect absolute vertical. Strong condensation (see point 2)
12) Appliance can't be set to nominal load	Flow pressure far too low	I	Check connecting pipes, check that gas stop cock is opened completely.
	Wrong main burner nozzle fitted	I	Install correct burner nozzle according to die pressure table on page 10
	Gas connecting pipes have a too small dimension	I	Adjust dimensions of connecting pipes
	The filter in the regulator is blocked	I	Clean filter
	Pressure regulator defect	K	Replace gas control fittings

15 Warranties and guarantee

The warranty for our products is based on the legal provisions of the general Civil Code and the Consumer Protection Act.

In addition, defective appliances are replaced within the framework of our full warranty within 1 year, as of the date of the invoice, including the replacement, procurement and incidental costs. As far as our hot-water heaters and pressurized boilers are concerned, the warranty amounts for 6 months, as of the date of the invoice.

Subsequent to the full warranty, defective tanks are replaced within the framework of our guarantee. The guarantee of the different products and the conditions are shown in the table below.

All other claims are excluded. Repairs and costs which occur due to damage, inappropriate installation, chemical, electrochemical or electrical influences, incorrect operation or improper manipulation, are excluded. Furthermore, the warranty becomes invalid if the appliance has been modified through the installation of externally supplied parts or through irregular professional maintenance.

Subject to our general terms and conditions.

Products	Legal warranty 2 years	Guarantee years*	Conditions
DHW storage tanks			
WBO T/ToF	•	5	20 / 27
WBL	•	5	20 / 27
WBO Uno	•	5	20 / 27
WBO Duo	•	5	20 / 27
WP/Sol	•	5	20 / 27
WBO H	•	5	20 / 27
GS	•	5	20 / 27
Combi buffer tanks			
Wikosol Twin	•	10	27
Wikosol	•	10	27
WPKR H Twin	•	5	20 / 27
WPKR Twin	•	5	20 / 27
WPKR	•	5	20 / 27
WPK	•	5	20 / 27
WPH-FW (tank)	•	5	27
WPR-FW (tank)	•	5	27
Buffer tanks			
WPS	•	5	20 / 27
WPH	•	5	-
WPR	•	5	-
WPRR	•	5	-
WKS	•	5	-
Tank accessories			
Cu-finned tube heat exchanger	•	-	27
Electric heating element	•	-	-

Conditions:

- | | |
|----|--|
| 20 | Under condition that the limits of the valid DHW regulations have been respected, the anode has been examined for the first time after 2 years and afterwards annually and that the anode has been replaced by an original Wikora anode (individual receipts needed) by a specialized company. |
| 27 | Coverage Germany:
Compliance with the limits of the valid DHW regulations (TrinkwV 2001), especially the limits in accordance with Appendix 2, Part 1-2 and Appendix 3
Coverage EU :
Compliance with the limits of the EG-Regulations 83/98 |

* Start of guarantee at date of invoice

16 Installation record

The installation has been completed according to DIN and the technical rules in force. In addition, the customer has received instruction concerning the operation and maintenance.

Place..... Date.....

Customer Installer

..... Signature Signature

Place of installation:

Name:

ZIP Code/Place:

Street:

Phone:

Tank model: Serial number

Date of invoice

Anode maintenance record

Date	Visual examination of anode	Exchange of anode	Signature + stamp of installer

In the case of reclamation, the receipts for maintenance must be provided as proof. Please complete the data sheet, including the reason for reclamation, and submit to Wikora.

Submitting the maintenance record does not ensure any promise of guarantee or claim.