Buderus

Conversion instructions from natural gas to propane

Room air-independent special gas-fired boiler Logano GA124

This conversion kit and the instructions are for conversion of the special gas-fired boilers of the GA124 model from natural gas to propane.

Requirements

GA124 -17 70 MBtu/hr	GA124 -23 94 MBtu/hr	GA124 -30 123 MBtu/hr

WARNING!

This conversion kit must only be installed by qualified heating contractor as specified by the manufacturer's instructions and the applicable rules and regulations of the local authorities. If these instructions are not followed exactly, a fire, explosion or release of carbon monoxide may occur with serious property damage or loss of life and serious injury. The heating contractor is liable for correct conversion of the heating system with this conversion kit.

CAUTION!

Before converting the heating system to a different type of gas the gas line must first be shut off and then the power to the heating system must be disconnected.

Note: Please keep these instructions for future reference.

Contents

1 Safety

Observe these instructions for your safety.

1.1 Correct use

The conversion kit is used for conversion of the GA124 special gas-fired boiler from natural gas to propane.

1.2 Notes structure

Additional symbols for identification of dangers and user instructions.

WARNING!

RISK TO LIFE

Identifies possible dangers emanating from a product, which might lead to serious injury or death if appropriate care is not taken.

WARNING!

RISK TO LIFE

from electric shock.

USER NOTE

Tip for the optimum utilization and setting of the control(s) plus other useful information.

1.3 Please observe these notes

WARNING!

RISK TO LIFE

from explosion of flammable gases.

- Never work on gas lines unless you are licensed for this type of work..

WARNING!

RISK TO LIFE

from electric shock.

- Disconnect the power supply to the heating system before conducting any work on it, e.g. switch off the heating emergency switch outside the boiler room.
- It is not sufficient just to switch off the control.

2 Scope of delivery

1. Honeywell gas solenoid valve conversion kit # 393 691, comprising:

– black safety screw
– pressure adjustment screw
– red spring
– yellow label for gas fitting

2. BBR 12 ignition gas pilot orifice
3. main gas orifices and seals
4. unit label (to be filled out and attached to the unit)
5. Technical documents

3 Conversion to propane

Read the instructions before conversion for your safety.

WARNING!

RISK TO LIFE

due to not observing the attached conversion instructions.

- If you wish to convert the boiler for operation with propane, the conversion from natural gas to propane must be carried out first as specified by the attached conversion instructions.

The following instructions must be followed for conversion of the boiler to propane:

1. If the boiler was in operation, close the gas shut-off valve. Otherwise continue with step 3.
2. Disconnect system from the power supply and set the thermostat to the lowest setting.
3. Remove safety screws from the left and right side panels, then lift the front panel of the boiler and pull it forward.

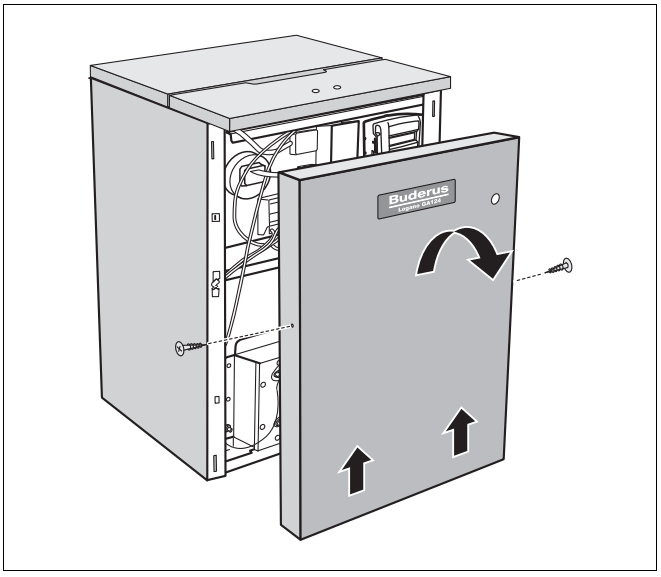

Fig. 1 Removing front panel of boiler

4. Turn gas valve ON/OFF button clockwise to OFF position. Do not use force.

WARNING!

RISK TO LIFE

from explosion of flammable gases.

- Wait five (5) minutes until all gas residues have dissipated. Check whether there is any smell of gas, including at floor level. If there is a gas odor: STOP! Follow instructions in section "B" of the safety instructions on page 9 If there is no sign of a gas odor, continue with the next step.

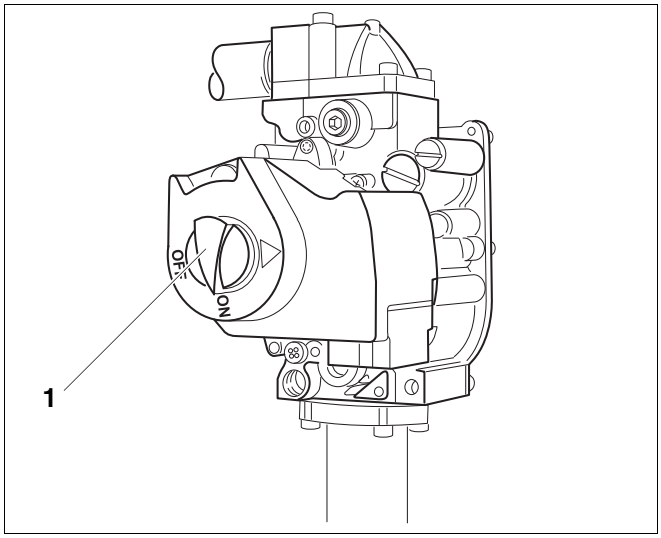

Fig. 2 Gas valve

1 *ON/OFF button (at ON position)*

Replacing main gas orifices

5. Disconnect pilot gas line from gas valve.

6. Disconnect ignition cable from ignition module.

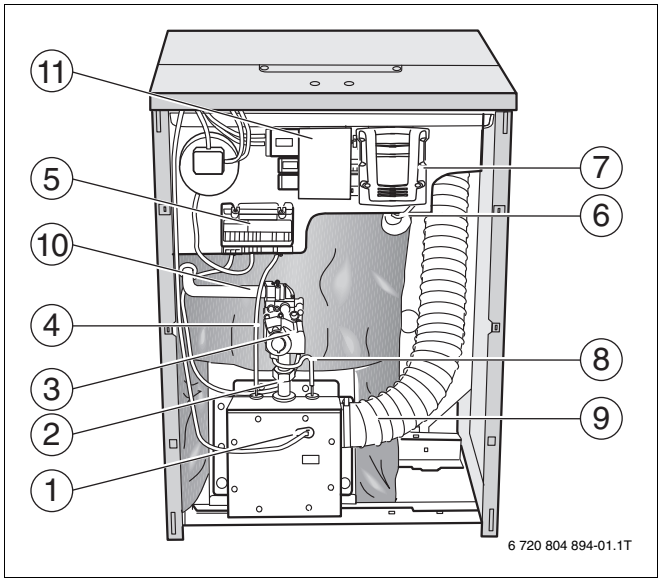

Fig. 3 Front view

1 *Flame roll-out switch (boiler size 17)*

2 *Gas connection pipe*

3 *Gas valve*

4 *Ignition cable*

5 *Ignition module*

6 *Wire holder for gas supply line*

7 *Aquasmart*

8 *Pilot gas line*

9 *Air supply hose*

10 *Gas supply pipe*

11 *Fuse*

7. Remove the safety screw for the manifold pressure adjustment on the gas valve.

8. Remove orifice pressure adjustment screw.

9. Remove stainless steel spiral spring.

10. Install the red spring from the Honeywell LP conversion kit in the gas valve.

11. Screw in the new orifice pressure adjustment screw from the Honeywell LP conversion kit until it is flush with the top edge of the pressure adjustment. Then screw the manifold pressure adjustment screw six (6) revolutions clockwise. This sets the pressure to about 10.0 in W.C. This setting must be checked with a pressure gauge when the conversion is complete.

12. Install new black safety screw from the Honeywell LP conversion kit.

13. Clean the housing of the gas fitting (→ Fig. 4) and attach the yellow label (→ Fig. 4) from the Honeywell LP conversion kit to the gas valve in a conspicuous position.

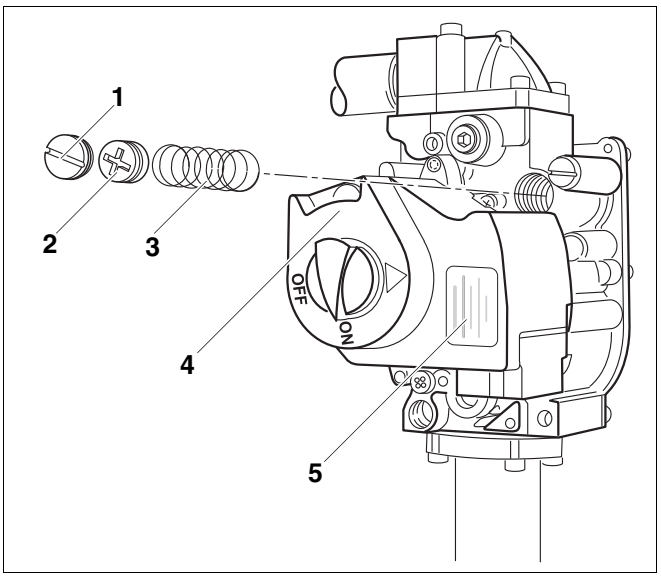

Fig. 4 Gas valve

1 *Safety screw*
2 *Orifice pressure adjustment screw*
3 *Stainless steel spiral spring*
4 *Gas valve*
5 *Yellow label*

14. Tie gas line (→ Fig. 3, page 5) with wire or cord (→ Fig. 3, page 5) (secure).

15. Remove screws between gas valve and burner box. Place the gas connection pipe gasket in a safe place.

CAUTION!

RISK TO LIFE

due to incorrectly connected wiring.

- When conducting maintenance work label all cables before disconnecting them.

16. Label wires of flame roll-out switch and disconnect from the roll-out switch.

17. Remove screws in burner box cover and remove cover.

18. Unscrew nuts and remove gas burner with burner box.

19. Release air supply hose (→ Fig. 3, page 5) and pull off burner box.

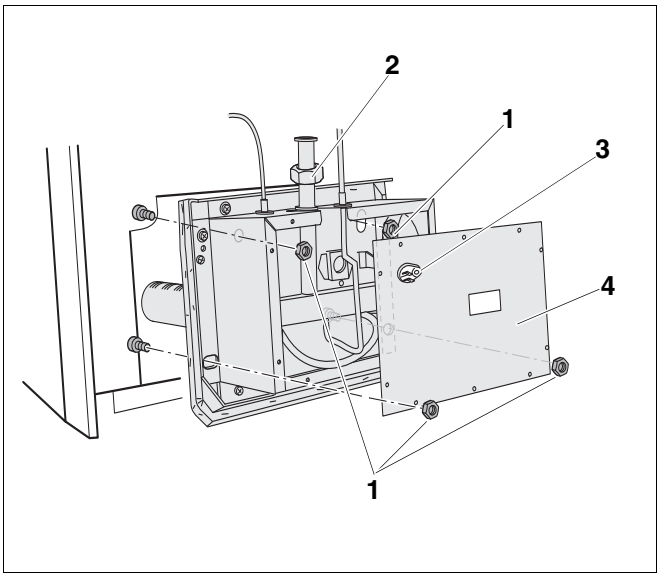

Fig. 5 Gas burner

1 *Fixing nuts*
2 *Screws*
3 *Flame roll-out switch (boiler size 23 and 30)*
4 *Burner box cover*

20. Turn gas burner 180° and unscrew bottom burner box panel.

21. Install the new main gas orifices and copper gaskets. Check with → Tab. 1 that the correct orifices for operation of the boiler are installed.

Orifices sizes for propane			
Model	GA124 -17	GA124 -23	GA124 -30
Orifice size	175	160	160
Number	2	3	4

Tab. 1 Orifice sizes

USER NOTE

The orifice sizes are for installations between 0 and 8500 feet above see level. Follow the "Conversion instructions for high altitudes" for installations between 8501 and 12000 feet above sea level.

22. Screw bottom burner box panel into place again.

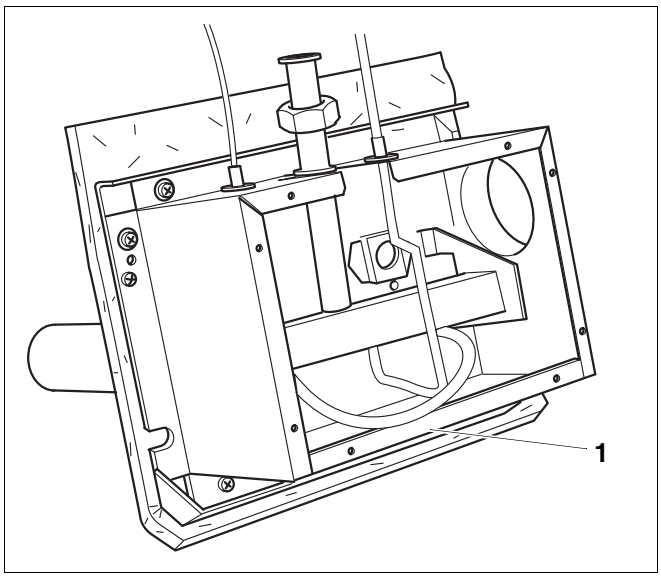

Fig. 6 Removing gas burner

1 *bottom burner box panel*

Replacing pilot gas orifice

23. Unscrew ignition pilot line from pilot burner.

24. Remove pilot orifice.

25. Place the new BBR 12 pilot orifice in the pilot burner.

26. Screw the pilot line to the pilot burner unit.

27. Check that the pilot burner unit is correctly seated compared to the main burner.

28. Install gas burner in boiler in reverse order of removal. Tighten the fixing nuts well.
Make sure that the front edge of the burner box cover (→ Fig. 8, page 8) is properly engaged in the sealing grommets (→ Fig. 8, page 8).

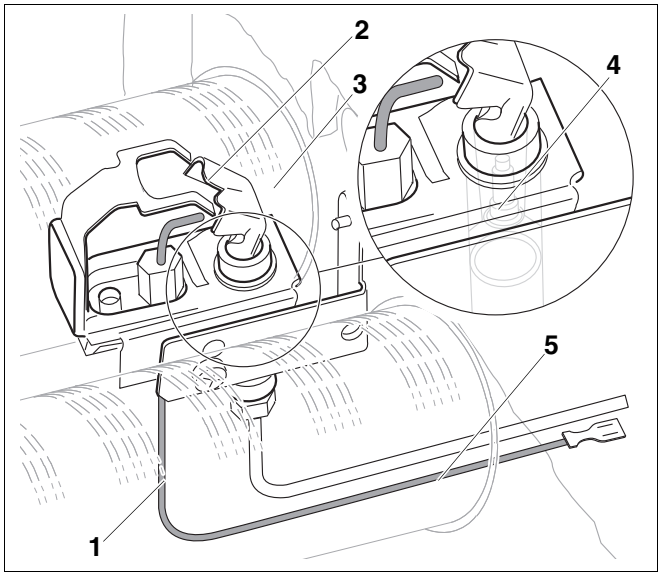

Fig. 7 Pilot burner

1 *Ignition cable*

2 *Pilot burner*

3 *Main burner*

4 *Pilot orifice*

5 *Pilot gas line*

29. Tighten the screws (→ Fig. 5, page 6) between the gas valve and the burner box again. Make sure that the connection pipe gasket removed in step 15 is replaced.

30. Attach wires to the flame roll-out switch.

31. Remove wire or rope that was used to hold the gas supply line in step 14.

32. Connect pilot gas line to gas valve again.

33. Connection ignition wire to the ignition module.

34. Enter the required information on the conversion label and attach on the outside of the boiler jacket as close as possible to the nameplate.

Carrying out leak test

35. Open manual gas shut-off in the gas line.

36. Check the gas supply line to the gas valve for leaks with soap solution. If no leaks are found, continue with step 38. If any leaks are found, close gas shut-off valve.

37. Seal leaks and repeat step 36.

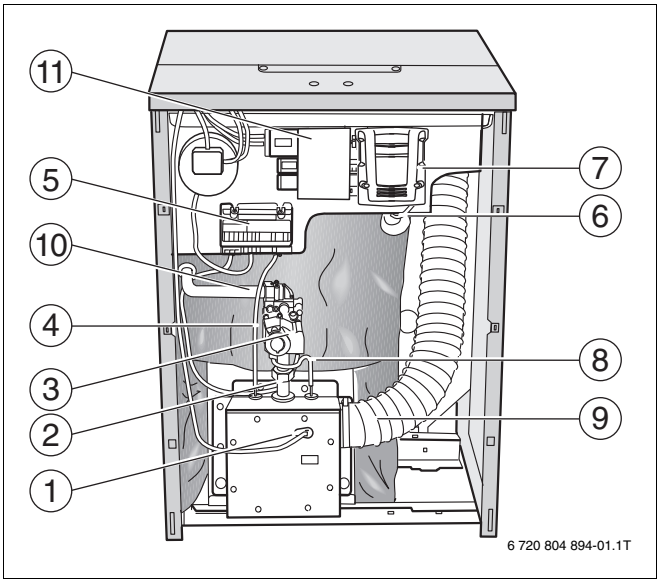

Fig. 8 Front view

1 *Flame roll-out switch (boiler size 17)*
2 *Gas connection pipe*
3 *Gas valve*
4 *Ignition cable*
5 *Ignition module*
6 *Wire holder for gas supply line*
7 *Aquasmart*
8 *Pilot gas line*
9 *Air supply hose*
10 *Gas supply pipe*
11 *Fuse*

38. Close main shut-off valve. Remove the screw plug for the gas supply port on the gas valve. Install pressure measuring nipple and attach a pressure gauge to measure the gas pressure.

39. Remove the screw plug for the manifold pressure port on the gas valve. Install pressure measuring nipple and attach a pressure gauge to measure the manifold pressure.

40. Open gas valve and measure the gas pressure of the boiler. The connection pressure must be between 11" and 13" W.C. If the connection pressure is not between 11" and 13" W.C., contact your customer service technician or LP gas company.

41. Always follow the start-up instructions on the next page.

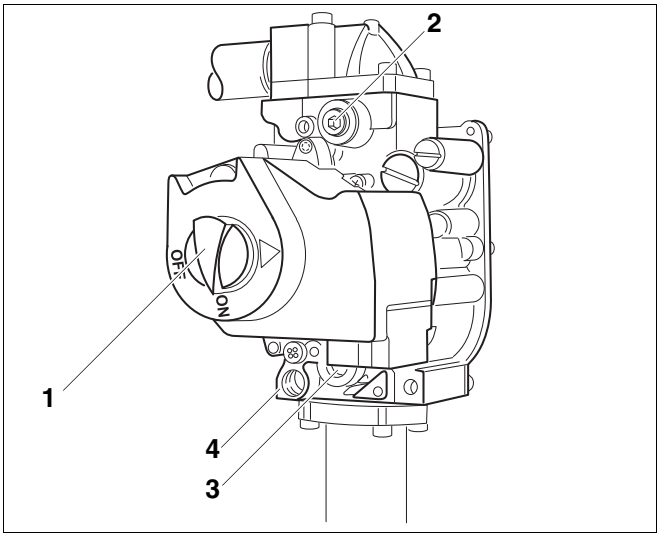

Fig. 9 Gas valve

1 *ON/OFF button (at ON position)*
2 *Screw plug for gas supply pressure measuring port*
3 *Screw plug for manifold pressure measuring port*
4 *Pilot gas line connection*

4 Start-up instructions

Read the instructions before start-up for your safety.

WARNING!

RISK TO LIFE

due to not observing the start-up instructions and resulting incorrect operation.

- If these instructions are not followed exactly, a fire or explosion may be caused with serious property damage or loss of life or serious injury.
- Observe the start-up instructions.

WARNING!

DANGER OF EXPLOSION

If you smell gas there is a danger of explosion..

- No open flame. No smoking.
- Prevent spark formation.
  Do not operate electrical switches, including telephones, plugs or door bells.
- Shut off main gas supply valve.
- Open doors and windows.
- Warn other occupants of the building.
- Evacuate the building.
- Call gas company or fire department from outside the building.

A *This unit is fitted with an igniter that automatically starts the ignition burner. Do not attempt to ignite it manually.*

B *Check for an odor of gas around the system. This test must also be conducted at floor level, because some types of gas are heavier than air and may accumulate at floor level.*

C *Switch on the ON/OFF switch on the gas valve by hand only. Never use a tool as assistance. If you cannot actuate the ON/OFF switch on the gas valve by hand, do not attempt to repair it. Contact a qualified technician. Any attempt to use force or to repair the valve may cause a fire or explosion.*

D *Do not operate the unit if any part is under water. Contact a qualified customer service technician immediately to have the unit checked and to replace the parts of the control and gas fittings that were under water.*

4.1 Making boiler ready for operation

STOP! First read the safety instructions on → page 9 of this manual.

1. Carry out leak test (→ page 8). Wait five (5) minutes until all gas residues have dissipated. Finally check whether there is any smell of gas, including at floor level. If there is a gas odor: STOP! Follow instructions in section "B" of the safety instructions on → page 9 of this manual. If there is no sign of a gas odor, continue with the next step.
2. Open main gas valve.

4.1.1 Placing heating system with aquasmart control in operation

The boiler is fully functional with the factory-installed aquasmart.

3. Turn on ON/OFF switch (contractor installed) (ON position). This turns on the boiler with all its components. Then continue with step 7.
4. Make sure that the room thermostat signals a heat requirement (set thermostat at least 10 °F above room temperature).

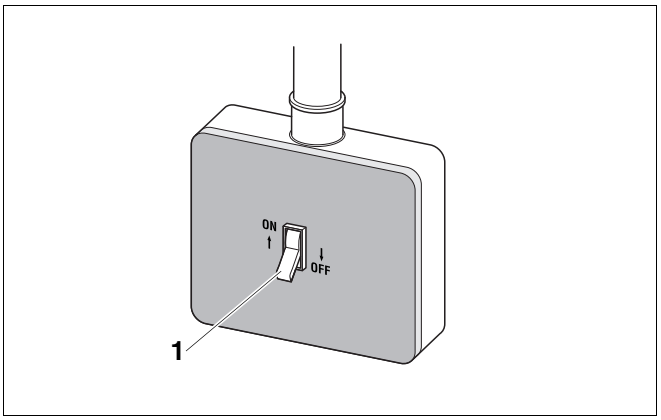

Fig. 10 Switching on heating system (with aquasmart)

1 *ON/OFF switch (main switch)*

4.2 Then carry out start-up procedures.

The following start-up procedures must be carried out regardless of the control type.

5. Look at the igniter through the sight glass in the burner housing.

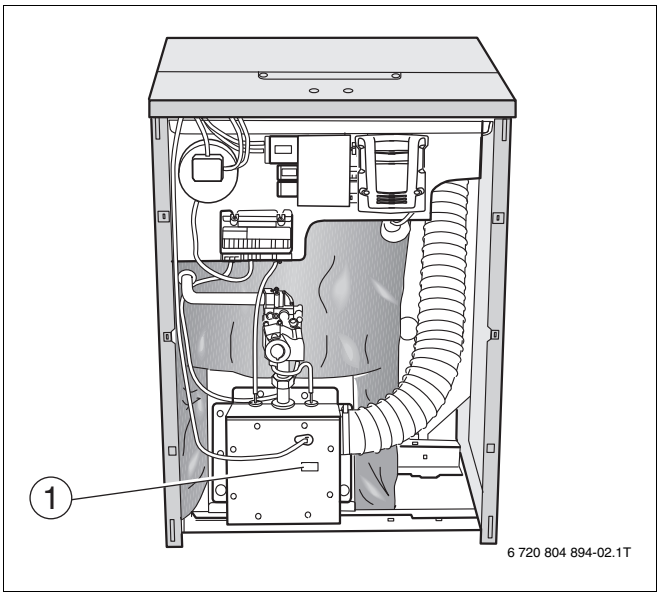

Fig. 11 Front view

1 *Sight glass*

6. Turn gas valve ON/OFF switch counterclockwise to ON position.
7. The automatic igniter must generate sparks towards the pilot burner. The pilot flame must appear and then ignite the main burner. If the main burner does not ignite, close the gas valve. Disconnect heating system from the power supply and inform your customer service technician or LP gas company.
8. If the main burner has ignited, the gas valve must be checked for leaks with soap solution. If no leaks are found, continue with step 12. If leaks have been found, switch ON/OFF switch on gas valve clockwise to the OFF position. Disconnect heating system from the power supply and set the thermostat to the lowest setting.
9. Seal leaks. Repeat steps 1 and 2 (regardless of the control in use).
   Caution:
   With aquasmart control continue with steps 3 and 4. Then repeat steps 7 to 10 regardless of the control in use.
10. Check the supply gas pressure while the boiler is operating. The supply pressure must be between 4.7" and 10.5" W.C. for natural gas and between 11" and 13" W.C. for propane gas. Record the measured values in the commissioning protocol in the installation and maintenance instructions.

GA124	Natural gas [inch W.C.]	Propane [inch W.C.]
17	3.6	8.9
23	3.6	9.9
30	3.5	9.5

Tab. 2 Manifold pressure

11. Check manifold pressure. The nozzle pressure must be set in accordance with the values in → Tab. 2. To set the manifold pressure the cover (→ Fig. 12) on the gas valve must be removed. Turn the adjustment screw clockwise to increase the pressure and counterclockwise to reduce the pressure. This setting must be adjusted while the boiler is operating.
12. Record the set value in the commissioning protocol of the installation and maintenance instructions and screw the safety screw (→ Fig. 12, page 11) into the gas valve again.

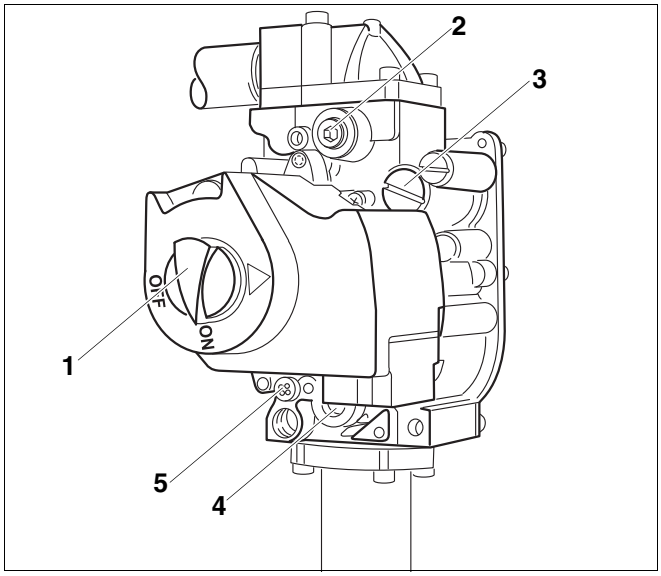

Fig. 12 Gas valve

1 *ON/OFF button (at ON position)*
2 *Screw plug for gas supply pressure measuring port*
3 *Safety screw for manifold pressure setting*
4 *Screw plug for manifold measuring port*
5 *Safety screw for pilot ignition pressure setting*

13. Observe ignition flame through the sight glass (→ Fig. 11, page 10) in the burner housing.

14. The flame must envelope the flame guard 1/2 to 1 1/2 inches. If this is the case continue with step 20.

15. If the ignition flame is too small or too large, the pressure for pilot burner must be adjusted with the corresponding adjustment screw.

USER NOTE

The adjustment screw is behind the ignition gas pressure adjustment safety screw (→ Fig. 12, page 11).

16. Remove safety screw for pilot ignition pressure setting (→ Fig. 12, page 11). Turn the inner adjustment screw clockwise to reduce the ignition flame and counterclockwise to enlarge the ignition flame.

17. After adjustment tighten the ignition gas pressure adjustment safety screw (→ Fig. 12, page 11) again.

18. Observe main burner flame through the sight glass (→ Fig. 11, page 10) in the burner housing. The flame must have a steady and fixed contour and generally has a bluish color. If the main burner flame meets the requirements, proceed with step 21. If the main burner flame is too weak or is yellow or goes out, turn the ON/OFF switch (→ Fig. 12, page 11) on the gas valve clockwise to OFF. Close the gas valve and disconnect the heating system from the power supply and contact the customer service technician or the gas company.

Checking flame sensor

19. Test the safety switch by closing the gas valve. The main burner flame (→ Fig. 14) and the ignition flame (→ Fig. 13) are extinguished. After six (6) seconds at the most the main gas solenoid valve on the gas valve must close with an audible noise.

20. After 90 seconds the automatic igniter must switch to lock status and stop generating sparks.

21. Disconnect the heating system from the power supply. Open main gas valve. Switch on unit power supply. A normal operating cycle must follow.

22. If the gas valve operates correctly, proceed to step 25. If the gas valve does not operate correctly, switch ON/OFF switch (→ Fig. 15) on the gas valve clockwise to the OFF position immediately. Close main gas valve. Disconnect heating system from the power supply and inform the customer service technician or LP gas company.

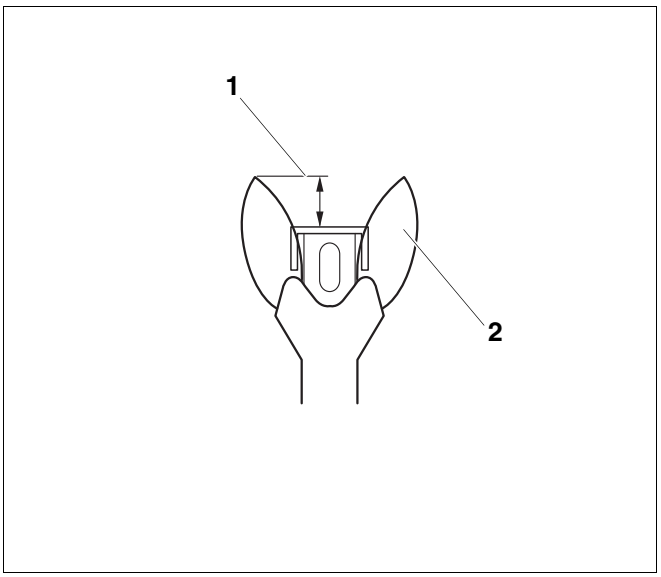

Fig. 13 Correct pilot flame setting

1 *1/2 to 1 1/2 inches*

2 *Pilot flame*

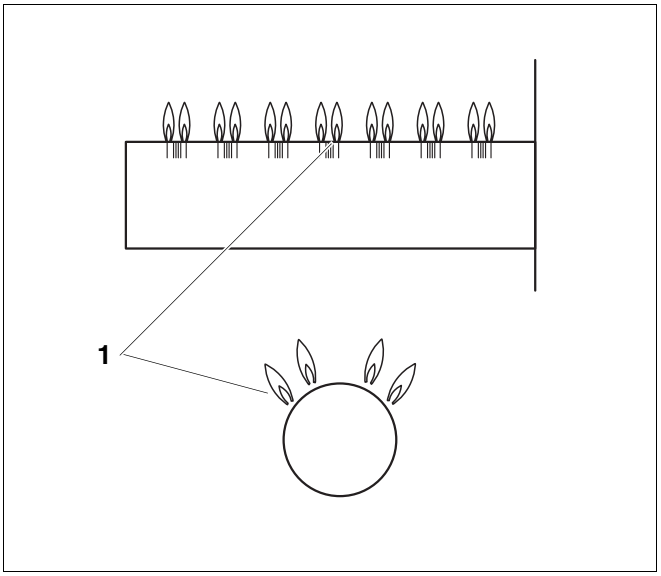

Fig. 14 Main burner

1 *Main burner flame*

23. Turn gas valve ON/OFF button clockwise to OFF position.

24. Close main gas shut-off.

25. Disconnect heating system from the power supply and set the thermostat to the lowest setting.

26. Remove pressure measuring nipple and pressure gauge for measuring gas supply pressure and manifold pressure from the gas valve and close the openings with the screw plugs.

27. Repeat steps 1 to 10 (depending on the control) and 20 to restart the heating system. Check the screw plugs for leaks with soap solution. If no leaks are found, continue with step 31. If leaks are found, close gas shut-off and switch ON/OFF button on gas valve clockwise to the OFF position. Disconnect the heating system from the power supply.

28. Seal leaks. Open gas shut-off and repeat step 24.

29. Carefully wipe away the soap solution to prevent corrosion caused by the alkali content of the soap.

30. Check the function of the maximum aquasmart to make sure that it switches off the boiler as soon as the boiler water temperature set at the aquasmart is reached. Record the result in the commissioning protocol of the installation and maintenance instructions.

31. Replace front panel of boiler.

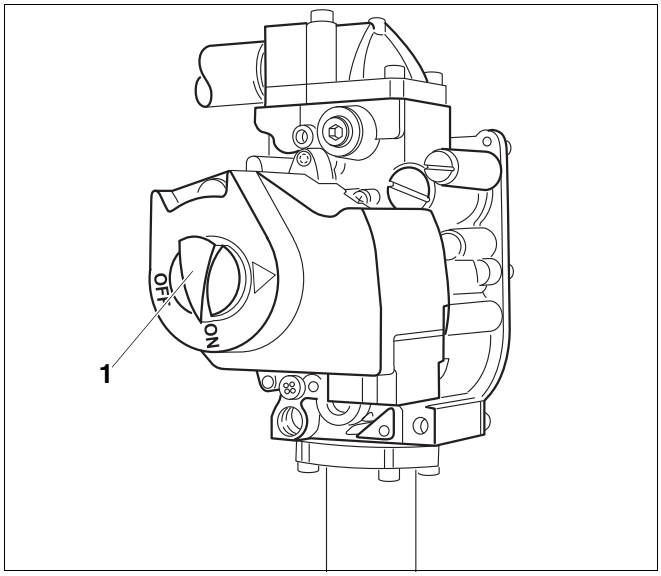

Fig. 15 Gas valve

1 *ON/OFF button (at ON position)*

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