

TECHNICAL BULLETIN

PRODUCT: BUDERUS 500 and 600/28C GAS BOILERS

AIR/GAS RATIO CONTROL VALVES:

Combustion performance information for condensing boilers incorporating air/gas ratio control valve technology:

Gas Safe has issued an important technical bulletin relating to undertaking work on condensing boilers, which incorporate an air/gas ratio control valve.

COMMISSIONING DURING INSTALLATION:

Warning: The combustion settings on all Buderus gas boilers incorporating an Air/Gas ratio valve have been checked, adjusted and preset at the factory for operation on the gas type defined on the boiler data plate. No adjustment of the Air/Gas ratio is normally needed.

Check the operational (working) gas inlet pressure:

Set the boiler to run at maximum rate and check the operational (working) gas pressure at the inlet gas pressure test point shown in Fig 1.

The table below shows the minimum and maximum mbar at the inlet of the gas valve

Boiler model	Gas type	Minimum mbar	Maximum mbar
All Buderus gas range	Natural gas	17 mbar	25 mbar
	L.P.G.	30 mbar	50 mbar

Table 1 : minimum mbar requirement

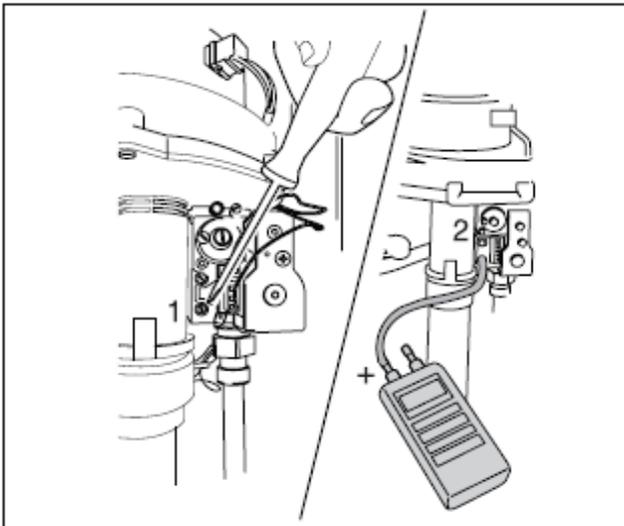


Fig 1: Inlet test nipple for the SIT gas valve

The mbar pressure should be no less than that shown in the table for both natural gas and L.P.G. Buderus gas boilers.

ROUTINE SERVICING MAINTENANCE AND REPAIR:

Warning: During routine servicing, and after any maintenance or change of part of the combustion circuit, the following must be checked with reference to the installation manual:

- ▶ The integrity of the flue system and the flue seals, as described in the flue installation section.
- ▶ The integrity of the boiler combustion circuit and the relevant seals, as described the commissioning section.
- ▶ The operational (working) gas inlet pressure at maximum rate, as described in the commissioning section.
- ▶ The gas rate, as described in the commissioning section and
- ▶ The combustion performance, as described commissioning section.

Competence to carry out the check of combustion performance:

BS 6798: 2009 Specification for installation and maintenance of gas-fired boilers of rated output not exceeding 70 kW net advises that:

- ▶ The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and interpretation of the results;
- ▶ The flue gas analyser used should be one meeting the requirements of BS 7927 or BS-EN50379-3 and be calibrated in accordance with the manufacturers requirements.
- ▶ Competence can be demonstrated by satisfactory completion of the CPA1 ACS assessment, which covers the use of electronic portable combustion gas analysers in accordance with BS 7967, parts 1 to 4.

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COMBUSTION CHECK:

Connect the flue gas analyser to the flue gas sampling point as shown in Fig 2 and check combustion.

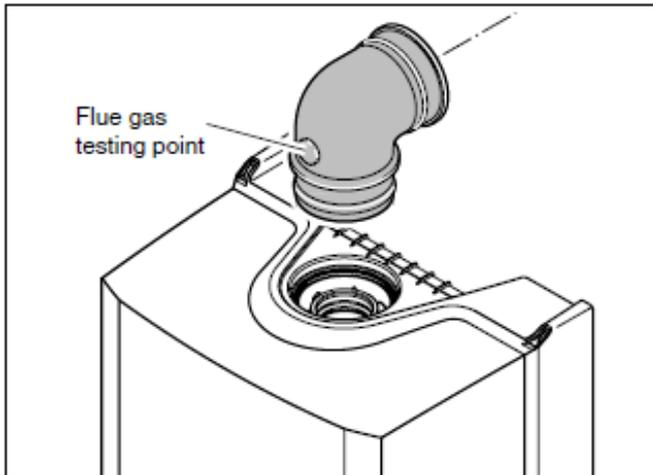


Fig 2: Flue sampling point

Notice: Safe combustion must be confirmed with a CO₂/CO ratio no greater than 0.004 and a CO reading no greater than 400ppm.

Warning: If the combustion reading is greater than the acceptable value and the integrity of the complete flue system and combustion circuit seals have been verified and the inlet gas pressure (and gas rate) has been verified, proceed as in section 'Setting the Air/Gas Ratio'.

SETTING THE AIR/GAS RATIO CONTROL VALVE:

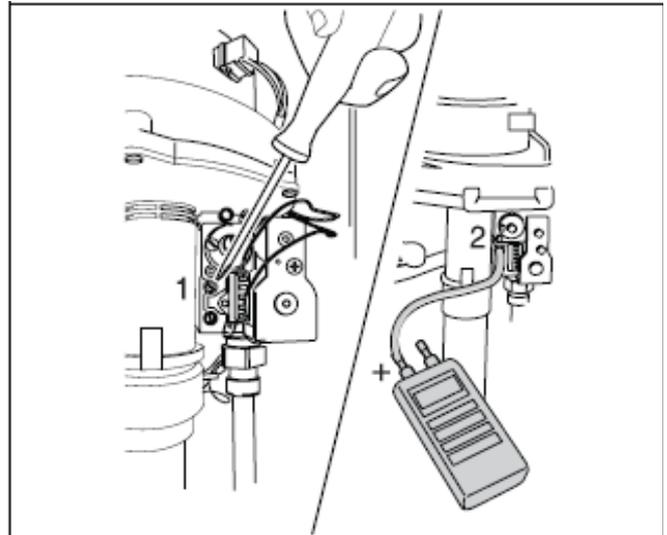


Fig 3: setting the Air/Gas ratio control valve

With the boiler isolated from the electricity supply and gas supply, open the outlet test point and connect a tube. Position a digital manometer in a stable place and allow it to settle. Zero the gauge and connect the tube to the + connection. Turn on the gas and electricity to the boiler and operate in test mode at minimum output as describe in the installation and servicing manual.

Allow the pressure reading to stabilise;

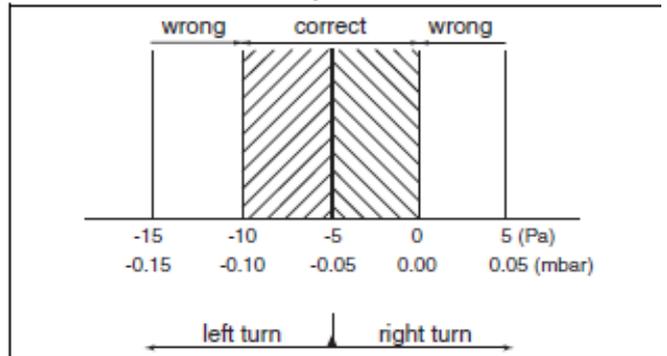


Fig 4: tolerance

The optimum Air/Gas ratio is -0.05 mbar however the tolerance is between -0.10 and 0 mbar. Do not adjust unless the reading is outside the tolerance.

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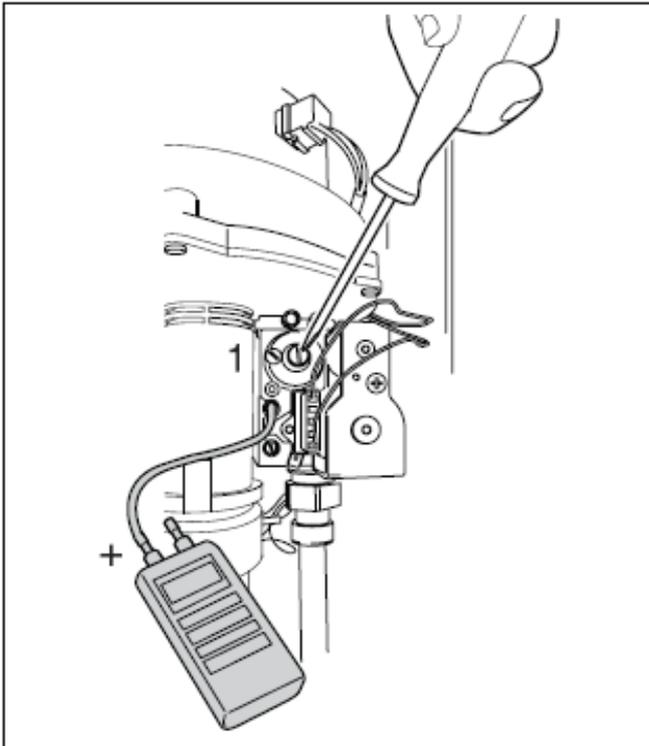


Fig 5: Adjusting the valve

Notice: Adjust in steps of no more than 1/8 of a turn and wait 1 minute after each adjustment to allow the setting to stabilise.

To adjust the Air/Gas ratio, remove the safety screw (1) and adjust the offset using a 4mm allen key or Torx T40 key as appropriate.

Once a satisfactory reading is reached, switch off the boiler and replace the safety screw and remove gauge. Operate the boiler and test all disturbed test points for gas tightness with leak detection fluid.

In the event an acceptable setting level cannot be obtained:

Warning: Do not continue to adjust the air/gas ratio valve, shut off the gas supply to the boiler and contact Technical Support on: 0844 892 4224