

Grant Vortex Pro

External Combi Condensing Oil Boiler Range

ADDENDUM



ATTENTION INSTALLERS - UPDATED INFORMATION!

LOW NOX YELLOW FLAME (RIELLO RDB 2.2 BX) BURNER FITTED

THE GRANT VORTEX PRO EXTERNAL COMBI RANGE HAS SEVERAL RECENT CHANGES THAT DIFFER FROM THE INSTALLATION & SERVICING INSTRUCTIONS SUPPLIED WITH THE UNIT.

THESE CHANGES ARE DUE TO OUR CONTINUED PRODUCT IMPROVEMENT PROCESS AND ARE DETAILED ON THE FOLLOWING PAGES.

IMPORTANT – PLEASE READ THIS ADDENDUM AND USE THE INFORMATION IN CONJUNCTION WITH THE CORRESPONDING SECTIONS OF THE INSTALLATION AND SERVICING INSTRUCTIONS (AS INDICATED BELOW).

After installation and commissioning the boiler(s), please ensure that both the Installation and Servicing Instructions and this addendum are left with the user for future reference.



2 TECHNICAL DATA

2.1 BOILER TECHNICAL DATA

Table 2-1: Boiler technical data

	Units	External Combi 21	External Combi 26	External Combi 36
Water content (including 32 litre primary store)	litre	48.0	48.5	53.5
	gal	10.6	10.7	11.8
Weight (dry) *	kg	147	188	218
	lb	325	415	481
Maximum heat output (Kerosene)	kW	21.0	26.0	36.0
	Btu/h	71,600	88,700	122,800
Heating system flow and return connections	mm	22	22	28
Cold water mains inlet	mm	15	15	22
Domestic hot water outlet	mm	15	15	22
Minimum flow rate ($\Delta T=10^{\circ}\text{C}$)	l/h	1,800	2,200	3,000
Minimum flow rate ($\Delta T=20^{\circ}\text{C}$)	l/h	900	1,100	1,500
Pressure relief valve discharge	mm	15		
Maximum heating system pressure (cold)	bar	1.0		
Minimum heating system pressure (cold)	bar	0.5		
Expansion vessel (pre-charged at 1 bar)	litres	24		
Maximum heating system volume **	litres	255		
Minimum domestic hot water flow rate		3.0 litres/min (0.66 gal/min)		
Maximum domestic hot water temperature	$^{\circ}\text{C}$	65 (factory set)		
Maximum mains water inlet pressure	bar	8.0		
Minimum recommended mains water inlet pressure	bar	2.5		
Condensate connection		22 mm (only connect plastic pipe)		
Flue diameter (conventional)	mm	100		
Waterside resistance $\Delta T=10^{\circ}\text{C}$	mbar	28.5		26.0
Waterside resistance $\Delta T=20^{\circ}\text{C}$	mbar	10.0		9.5
Maximum static head	m	28		
Minimum circulating head	m	1		
Boiler thermostat range	$^{\circ}\text{C}$	65 to 78		
Limit (safety) thermostat shut off temperature	$^{\circ}\text{C}$	111 \pm 3		
Maximum hearth temperature	$^{\circ}\text{C}$	Less than 50		
Electricity supply		~230 1ph 50Hz 5A fused		
Burner motor power	Watts	90		
Absorbed motor power	kW	0.15		
Starting current	Amps	4.20	2.60	2.60
Running current	Amps	0.85		
Oil connection		¼" BSP male (on end of flexible fuel hose)		
Conventional flue draught	mbar	Minimum: 0.087 - Maximum: 0.37		
	in wg	Minimum: 0.035 - Maximum: 0.15		
Maximum operating pressure - sealed/open system	bar	2.0		
Maximum operating pressure - pressure relief valve	bar	2.5		
Boiler type		ON/OFF		

* Weight includes burner (and expansion vessel) but excludes flue

** Based on expansion vessel charge and initial cold system pressure of 0.5 bar

2.2 BURNER SETTINGS

! NOTE !

Burners are supplied factory set at the outputs shown.
When commissioning, the air damper must be adjusted to obtain the correct CO₂ level and the installer must amend the data label.

Table 2-2: Burner settings

Boiler models (burner type)	Heat output		Nozzle	Oil pressure (bar)	Smoke No.	Burner head type	Burner head/ air disc setting	Distance †		Fuel flow rate (kg/h)	Flue gas temp. (°C)	CO ₂ (%)	Flue gas VFR ‡ (m ³ /hr)
	(kW)	(Btu/h)						A	D				
External Combi 21 (Riello RDB2.2 BX E15/21)	21.0	71,600	0.60/60°ES	8.0	0 - 1	BX 500	Disc: C	-	13	1.84	75 - 80	12.5	23.0
External Combi 26 (Riello RDB2.2 BX VC26)	26.0	88,700	0.75/60°ES	8.5	0 - 1	BX 500	N/A	-	15	2.16	75 - 80	12.5	28.5
External Combi 36 (Riello RDB2.2 BX VC36)	36.0	122,800	1.00/60°ES	9.0	0 - 1	BX 700	N/A	-	17.5	2.99	75 - 80	12.5	39.5

Notes:

† Refer to Section 10.2 (Burner Settings: RDB2.2 BX burners)

‡ Flue gas VFR: Flue gas volumetric flow rate

1. The data given above is approximate only and is based on the boiler being used with a low level balanced flue.

2. The above settings may have to be adjusted on site for the correct operation of the burner.

3. Gas Oil is NOT suitable for use with Grant Vortex boiler range

4. The flue gas temperatures given above are ± 10%.

5. When commissioning, the air damper **must be** adjusted to obtain the correct CO₂ level.

6. The combustion door test point may be used for CO₂ and smoke readings only. Do not use this test point for temperature or efficiency readings.

2.3 FLUE GAS ANALYSIS

To allow the boiler to be commissioned and serviced, the boiler is supplied with a combustion test point on the front cleaning door.

When this test point is used please note the following:

- The test point is for CO₂ and smoke readings only.
- The boiler efficiency and temperature must be taken from the flue test point on high level, vertical and conventional flue adaptors.
- Concentric low level flues do not contain a test point. The temperature and efficiency readings must be taken from the flue terminal.

10 COMMISSIONING

To ensure safe and efficient operation, it is essential that a Grant Combi boiler is commissioned as detailed in the following procedure.

To access the controls, remove the front panel from the boiler (pull forward at the top and then lift off).

The controls are shown in Figure 10-1.

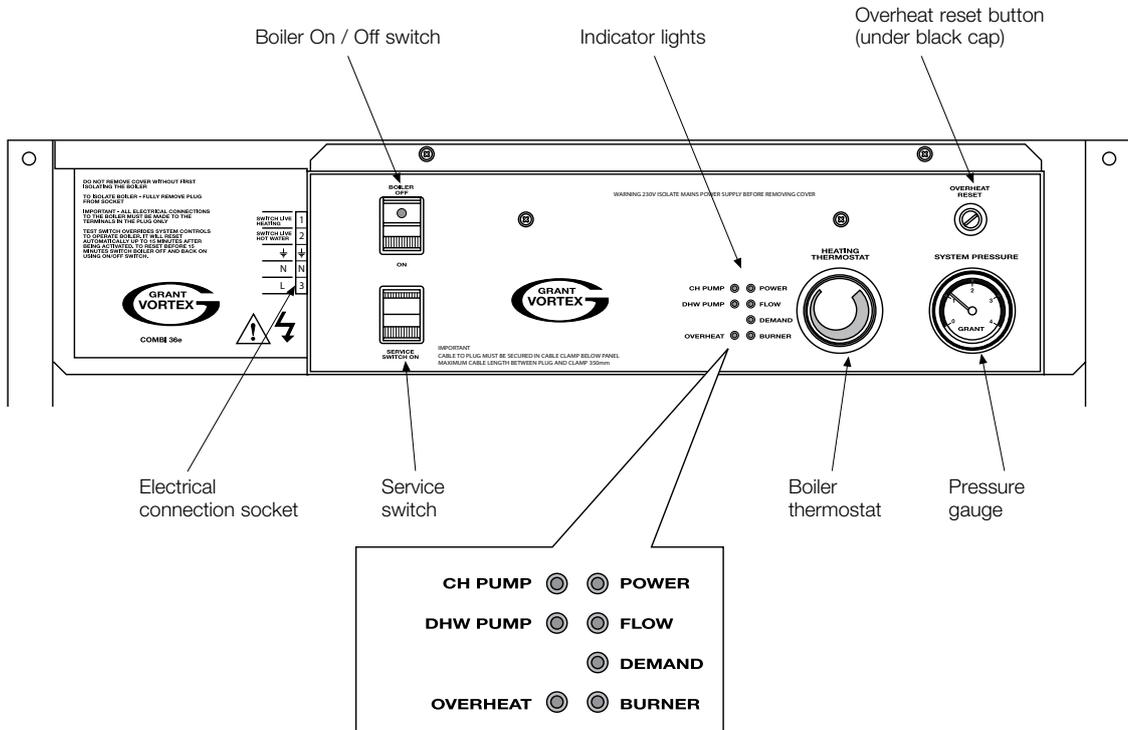


Figure 10-1: Vortex Pro Combi boiler control panel

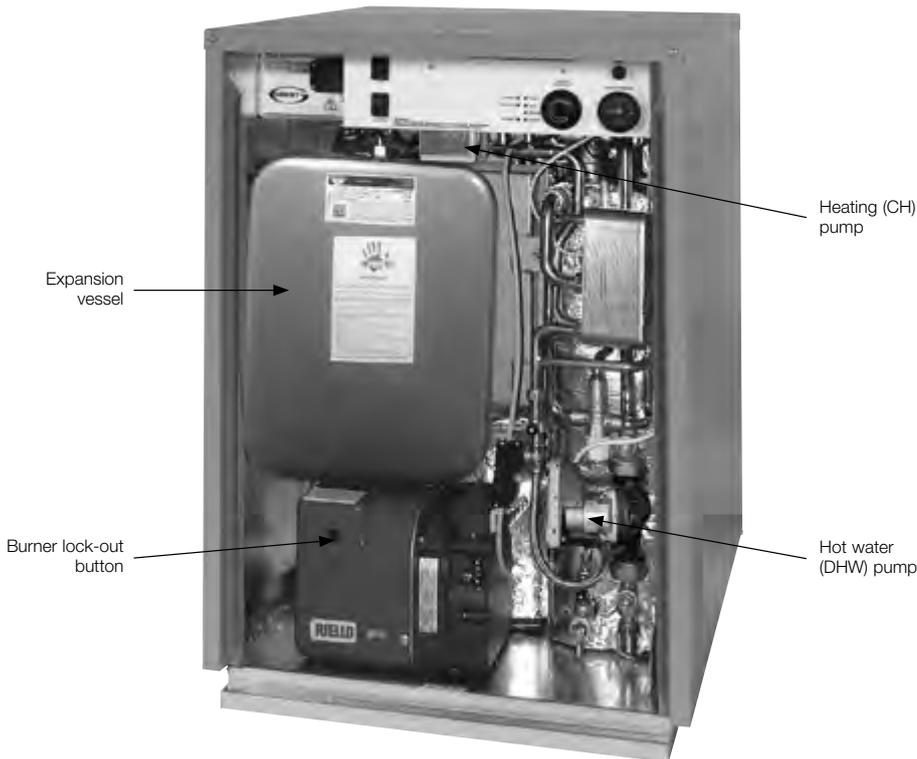


Figure 10-2: Position of boiler components - Vortex Pro Combi boiler

10.1 BEFORE SWITCHING ON

1. Ensure the boiler is isolated from the electrical supply and the boiler On/Off switch is set to OFF.
2. Check that the high limit thermostat bulb and both thermistor sensors are correctly located in their respective pockets. Refer to Figure 10-2. Check condition of both thermistor cables and thermostat capillary. Ensure they are not damaged, broken, kinked or crushed.
3. Remove the nuts and washers securing the front cleaning door. Withdraw the door – take care as it is HEAVY!
4. Check that the turbulators are in position and that the ends are vertical. Refer to Figure 11-4.
5. Check that the baffles are in position. Refer to Figures 11-1, 11-2, or 11-3 as required.
6. Re-fit cleaning door and check it is fitted correctly and that a good seal is made.
7. Unscrew the burner fixing nut (located at the top of the mounting flange) and remove the burner from the boiler.
8. Check/adjust the burner settings as described in Section 10.2 (burner settings).
9. Re-fit the burner to the boiler and tighten the fixing nut. DO NOT OVERTIGHTEN!
10. Check that the sealed system has been vented and pressurised and there are no leaks.
11. Ensure both air vents, and also the manual vent on the flow pipe, are open.
12. Check that all fuel line valves are open.
13. Remove the plastic burner cover if it was not previously removed.
14. Connect a combined vent manifold and pressure gauge to the pressure gauge connection port on the oil pump. Refer to Figure 3-5. Open the vent screw on the vent manifold to vent the oil supply whilst the pump is running.
15. Check that all system controls are calling for heat and turn the boiler thermostat to maximum.

10.2 BURNER SETTINGS

With the burner removed from the boiler:

1. Remove the burner head. Refer to Figure 10-4. Loosen the three fixing screws (1) and remove head (2) from burner.

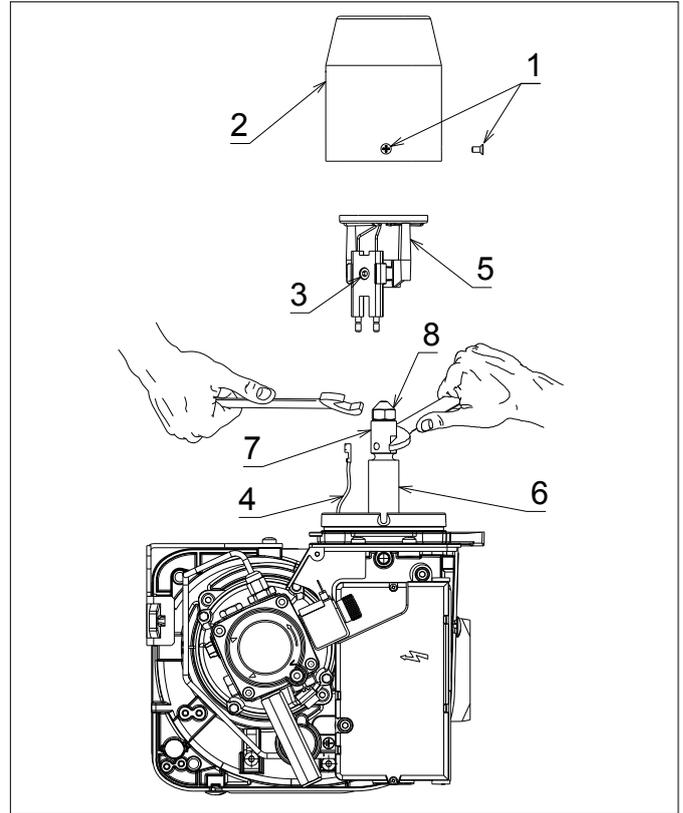


Figure 10-4: Burner head, diffuser and nozzle holder

2. Check the nozzle is correct for the required boiler output. Refer to Table 2-2 for the correct nozzle size and type for the required boiler output.
3. If the nozzle needs to be replaced - remove the diffuser/ electrode assembly. Refer to Figure 10-4.
 - Using a 4 mm Allen key, loosen the diffuser fixing screw (3) on the electrode assembly.
 - Lift diffuser/electrode assembly (5) up and off the nozzle holder.
 - Disconnect both ignition leads (4) from the electrodes.
4. Use a 16 mm spanner to remove/re-fit the nozzle, whilst holding the nozzle holder using a 19 mm spanner.

! CAUTION !

The use of an ill-fitting spanner will damage the nozzle and could lead to an incorrect flame pattern and poor combustion.

! NOTE !

Ensure that the nozzle is securely tightened so that it does not leak but DO NOT OVER TIGHTEN!

5. Re-fit the diffuser/electrode assembly. Refer to Figure 10-4.
 - Reconnect ignition leads (4) to electrodes.
 - Re-fit the diffuser/electrode assembly (5) onto the nozzle holder lining up the fixing screws with the recess in the nozzle holder.
 - Ensure diffuser assembly is fitted down hard onto the shoulder on the nozzle holder.
 - Tighten the fixing screw (3) to secure the diffuser/ electrode assembly in place on the nozzle holder.

! NOTE !

Do not overtighten the fixing screw as this may damage the electrode insulator.

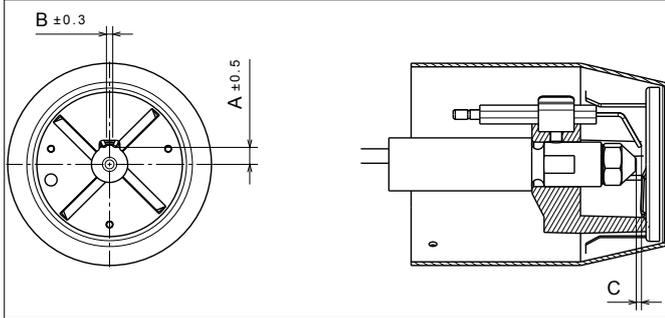


Figure 10-5: Ignition electrode settings

Model	A	B	C
Combi 21 and 26	7	2.5	2.5 - 3
Combi 36	4.5	3	2 - 2.5

6. Check/adjust electrode setting. Refer to Figure 10-5.
7. Re-fit the burner head. Refer to Figure 10-4.
 - Locate the head fixing screws (5) in the countersunk slots in the burner collar.
 - Check that the small oil drip hole (on the head) is pointing downwards.
 - Tighten the two screws (1) to secure the head (2) in position on the burner.
8. Adjust the diffuser position. Refer to Figure 10-6.

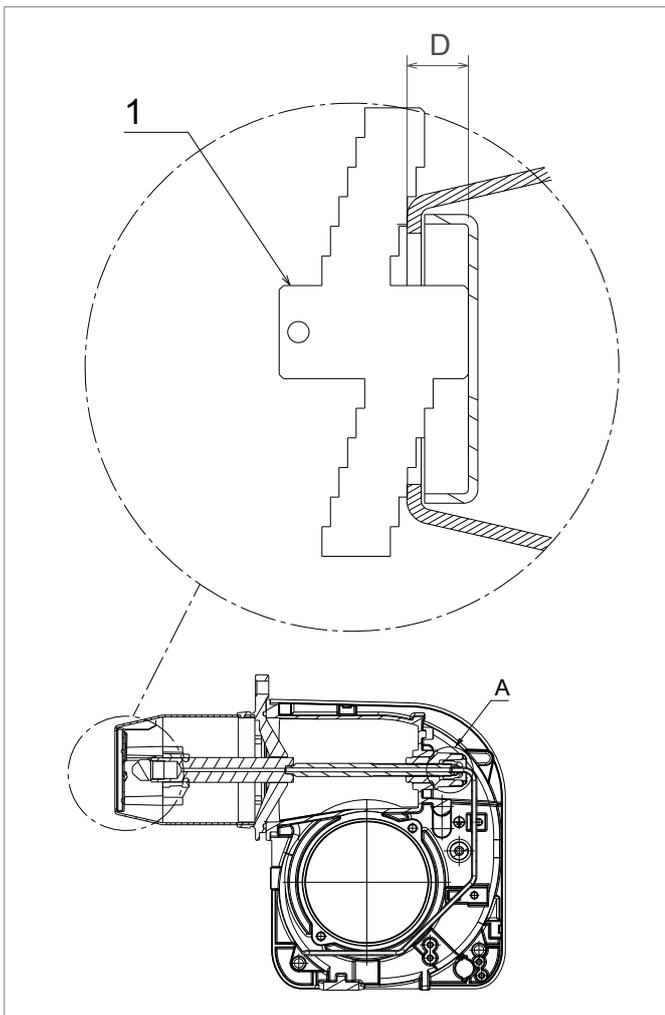


Figure 10-6: Diffuser position and gauge plate

! NOTE !

The distance between the end of the burner head and the front face of the diffuser (D) MUST be correctly set for the burner to operate correctly.

- Refer to Table 2-2 for the required distance (head setting) for the boiler output required.
- Check the distance D using the gauge plate supplied with the boiler.
- To use the gauge plate:
 - Position the gauge plate on the burner head as shown in Figure 10-6.
 - Locate the gauge plate with the correct steps (i.e. the two marked with the required distance D) resting on the edge of the burner head.
 - Check the gauge plate is at 90° to the end of the burner head and is positioned at the full diameter of the head.
 - If distance D is correct, the tongue of the gauge plate should just make contact with the diffuser with BOTH steps still in contact with the edge of the burner head.
 - If the steps are not in contact with the edge of the burner head when the tongue of the gauge plate is touching the diffuser, the diffuser must be 'opened' (see below).
 - If the tongue does not reach the diffuser when the steps are in contact with the edge of the burner head, the diffuser must be 'closed' (see below).
- To adjust the diffuser position:
 - If necessary, adjust distance D using the black adjustment knob located around the oil supply pipe on the front of the burner. Refer to item A (Figure 10-6). Re-check distance D using the gauge plate, as described above.
 - For easier access to the adjustment knob, pull the photocell out from the burner housing.
 - To increase distance D (to open the diffuser): rotate the knob clockwise - indicated as '+' on the knob.
 - To decrease distance D (to close the diffuser): rotate the knob anti-clockwise - indicated as '-' on the knob.

! NOTE !

One full rotation of the adjustment knob is approximately 1mm of diffuser movement.

! NOTE !

It is essential that the final position of the diffuser is checked, using the gauge plate provided with the boiler and the diffuser adjusted as necessary to achieve the required distance D.

9. For Combi 21 models only:
Check the burner air adjuster disc is correctly set. Refer to Section 10.3.

10.3 AIR ADJUSTER DISC – COMBI 21 ONLY

The Riello RDB 2.2 BX burner fitted to this boiler incorporates a secondary air adjustment.

This is an air adjuster disc located on the fan housing (inside the air inlet housing).

It is essential, for correct operation of the burner, that this internal air adjuster disc is correctly set.

Refer to Figure 10-7.

To access the air adjuster disc:

1. Ensure the boiler is isolated from the electrical supply.
2. Remove the burner fixing nut (located at the top of the mounting flange) and withdraw the burner from the boiler.
3. Undo the two screws and remove the air inlet cover from the side of the burner.
4. The air adjuster disc is mounted on the fan housing. Refer to Figure 10.7.
5. Check that this disc is correctly set for the factory set output of the boiler, i.e. with the correct cut-out marked located against the moulded boss on the fan housing. Refer to Table 2-2 for correct disc settings. If the disc is not correctly set it **MUST** be re-positioned. Refer to step 6 below.
6. The air adjuster disc is re-positioned as follows:
 - Remove the screw from the centre of the air shutter disc.
 - Re-position the disc so that the correct cut-out is located against the moulded boss on the fan housing.
 - Replace the screw in the centre of the air shutter disc and tighten.
7. Re-fit the air inlet cover to the side of the burner and secure in place using the two screws.

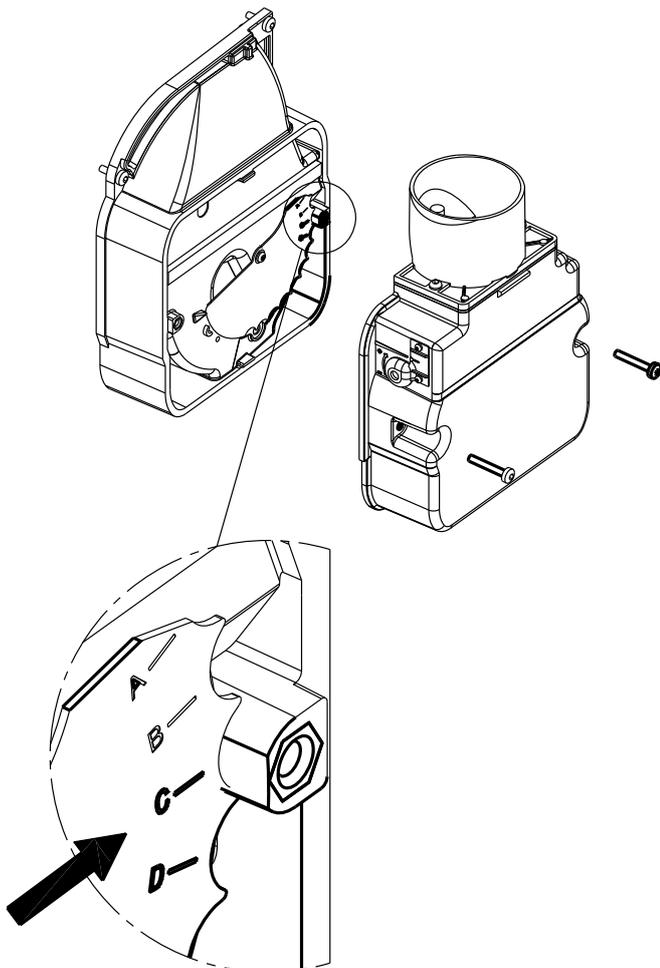


Figure 10-7: Air adjuster disc

10.4 SWITCHING ON

1. Switch on the electricity supply to the boiler.
2. Set the boiler On/Off switch to ON. A neon on the switch lights when it is in the ON position. Note that the neon lights when the boiler is switched on, but does not necessarily indicate the burner is firing.
Set both the Hot Water and Heating switches to ON. The burner should then fire. Open the vent screw on the vent manifold to vent the supply while the oil pump is running
3. Fully open a hot tap and allow it to run for a few moments to vent the internal primary circuit. The Hot Water pump will operate and the burner should light within about 12 seconds.
If the burner does not light and the 'Lock-out' reset button lights, wait for about 45 seconds then press the reset button to restart the ignition process. This procedure may have to be repeated during first lighting.
4. Close the hot tap. The burner will continue to fire to heat the primary water in the boiler or primary store until the required temperature is reached.

! NOTE !

Grant Vortex e Combi boilers incorporate a "pump overrun" feature, within the control circuit board, that operates as follows:

- **When reheating the Primary Hot Water store:** the burner will cut out when the boiler reaches 83°C (as detected by the boiler "flow" thermistor).
- **If there is a demand for Central Heating:** the hot water "store" pump will run on for 90 seconds before it stops and the "central heating" pump then comes in.
- **If there is no demand for Central Heating:** the hot water "store" pump will continue to run until the temperatures in the Primary Hot Water store and the boiler have equalised. The adjustable Boiler thermostat on the control panel regulates the boiler temperature when in Heating mode only. The recommended flow temperature setting is 70°C.

The Primary Hot Water store temperature is controlled via the "store" thermistor and control circuit board. The control thermostat has NO influence on either the store temperature or the hot water temperature at the tap.

! NOTE !

The hot water pump will continue to run for a short period after the burner has stopped.

The boiler will now be operating in the central heating mode.

! NOTE !

The burner may not fire immediately in the central heating mode.

5. With the burner alight, check the fuel pressure. Refer to the Technical Information, Section 2.3.
6. Adjust the pressure if necessary - see Figure 10-3.

! NOTE !

It is important that the oil pressure is correctly set.

7. Operate the boiler until it reaches normal operating temperature. Check oil supply/return pipe for leaks, rectifying where necessary.
8. Check the operation of the boiler thermostat. Ensure that by turning it anticlockwise it switches the burner off.
9. With the burner alight, re-check the fuel pressure and re-adjust if necessary. Turn the boiler off, remove the pressure gauge and replace the plug in the pump.

10. Ensure that there are no oil leaks, replace the burner cover.
11. On balanced flue installations - ensure the flexible air inlet tube is correctly connect to both the burner air inlet and the flue system.

10.5 RUNNING THE BOILER

1. Relight the boiler and allow it to run for at least 20 minutes.
2. Check the smoke number, if it is 0-1 then it is satisfactory.
3. Using a calibrated electronic flue gas analyser, set to the correct fuel, check the %CO₂ in the flue gases.
4. Set the %CO₂, as indicated on the flue gas analyser, to the required value as given in Section 2.3 for the boiler concerned.
5. Adjust the burner air damper, using the hexagonal key supplied, to achieve the required %CO₂. Refer to Figure 10-3.
6. To increase the %CO₂: Turn the screw anti-clockwise. This will close down the burner air damper and decrease the combustion air entering the burner.
To decrease the %CO₂: Turn the screw clockwise. This will open up the burner air damper and increase the combustion air entering the burner.
7. When the %CO₂ is set to the correct level, re-check the smoke number if the burner air damper has been moved. Under no circumstances must the smoke number be above 1.

! NOTE !

For safe and efficient operation of the boiler it is essential that the air damper is correctly set to give the required %CO₂ in the flue gases.

10.6 BALANCING THE SYSTEM

1. When the boiler has been adjusted and is running satisfactorily, balance the central heating system by adjusting the radiator lock shield valves. Start with the radiator nearest the boiler and adjust the valves to achieve the required temperature drop across each radiator. If thermostatic radiator valves have been installed, check the system bypass.
2. Switch off the boiler.

10.7 COMPLETION

1. With the system hot, check again for leaks, rectifying where necessary. Drain the system while it is hot to complete the flushing process. Refill and vent the sealed system.
2. A suitable central heating system inhibitor must be added to protect the system against the effect of corrosion.
3. A suitable antifreeze should be used to prevent damage to the boiler in areas where electrical power failure can occur in winter months.
4. Replace the top, front and rear panels as necessary.

! NOTE !

After commissioning the boiler complete the OFTEC CD/11 commissioning report. Leave the top copy with the user and retain the carbon copy.

If the boiler is to be left in service with the user, set the controls and room thermostat (if fitted) to the User's requirements.

If the boiler is not to be handed over immediately, close the boiler fuel supply valve and switch off the electricity supply.

! CAUTION !

If there is any possibility of the boiler being left during freezing conditions, then the boiler and system should be drained. Alternatively, a suitable heating system antifreeze should be used.

! NOTE !

To allow the boiler to be commissioned and serviced correctly a combustion test point is provided on the front cleaning door. Both the %CO₂ and smoke test may all be carried out using this test point.

This test point is NOT suitable for measuring boiler efficiency or conventional flue draught.

When using the test point on the cleaning cover note that the flue gas temperature reading will be higher than that measured in the flue thus resulting in an inaccurate efficiency reading. To obtain an accurate flue gas temperature and efficiency, the reading can only be measured outside through the low level flue terminal (or the test point on the conventional flue starter section when used).

10.8 INFORMATION FOR THE USER

The User must be advised (and demonstrated if necessary) of the following important points:-

- How to start and switch off the boiler and how to operate the system controls.
- The precautions necessary to prevent damage to the central heating system and to the building, in the event of the boiler not being in operation during frost conditions.
- The importance of servicing the boiler to ensure safe and efficient operation. This should normally be required only once a year.
- The type of fuel used.
- That any servicing or replacement of parts must only be carried out by a suitably qualified engineer.
- Ensure that the boiler controls and room thermostat (if fitted) are set to the User's requirements.
- Tell the User the system pressure and show them the position of the safety valve discharge pipe.
- Show the User how to reset the overheat thermostat and how to restart the boiler if it goes to 'Lockout'.

11 BOILER SERVICING

To ensure safe and efficient operation it is essential that a Grant Combi boiler is serviced at regular intervals of no longer than 12 months.

Servicing and replacement of parts must only be carried out by a suitably qualified engineer.

! CAUTION !

Details of every service should be entered in the Service Log, in the Boiler Handbook.

This information may be required to validate the Grant extended guarantee.

! WARNING !

Before starting any work on the boiler or fuel supply, please read the Health and Safety information given in Section 14 of these Instructions.

11.1 CHECKS BEFORE SERVICING

The following sequence of checks should be made before starting any servicing work:

1. Check the flue terminal and ensure it is not blocked or damaged.
2. Run the boiler and check the operation of its controls.
3. Ensure that all water system connections and fittings are sound. Remake any joints and check the tightness of any fittings that may be leaking.
4. Allow the boiler and system to cool down.
5. If the boiler is part of a sealed central heating system, check the system pressure, check the operation of the pressure relief valve and check the expansion vessel air charge. Refer to Section 7.
6. Refill, vent and re-pressurise the system as necessary. Refer to Section 7.
7. Check that any ventilation openings are adequate of adequate free area and are clear of obstructions. See Section 9.
8. Remove any sludge/water from the fuel tank by opening the sludge valve at the lower end of the tank (if fitted).
9. Ensure that all fuel system connections and fittings are sound. Remake any joints and check the tightness of any fittings that may be leaking.
10. With the fuel supply valve (at the oil tank) closed, clean/replace the filter element and clean the filter bowl.

! WARNING !

Before servicing, set the boiler ON/OFF switch to OFF, isolate the electricity supply and close the fuel supply valve.

The data label on the inside of the case side panel will indicate the fuel used and the nozzle fitted.

11.2 DISMANTLING PRIOR TO SERVICING

The procedure for dismantling the boiler is as follows:

1. Remove the front panel from the boiler (pull forward and the top and lift off).
2. Carefully lift up the expansion vessel and remove it from the boiler. Place it on the floor, taking care not to strain the flexible pipe.
3. Disconnect the flexible air tube from the burner.

4. Unscrew and remove the two fixing screws and remove the red cover from the burner.
5. Remove the burner fixing nut (located at the top of the mounting flange) and withdraw the burner from the boiler. If required, disconnect the flexible oil line(s), using a suitable container to prevent any oil spillage.
6. Check or replace the flexible fuel supply hose, as follows:
 - Braided flexible fuel supply hoses (as supplied with the boiler) should be replaced annually, i.e. when the boiler is serviced.
 - Long-life hoses should be inspected annually. If in doubt replace the hose(s). In any event, these hoses must be replaced every five years.

! NOTE !

With a two-pipe oil supply there will be two flexible hoses connected to the burner. Identify (mark if necessary) which is the inlet and return if they are to be disconnected.

11.3 CLEANING THE BOILER

The procedure for cleaning the boiler is as follows:

1. Remove the nuts and washers securing the front cleaning door and withdraw the door. Take care - it is heavy.
2. Remove the baffles as shown in Figure 11-1, Figure 11-2 and Figure 11-3.
3. Remove all deposits from the baffle plates and all the boiler internal surfaces using a stiff brush and scraper if necessary.
4. Check the condition of the flue, clean as necessary.
5. Check the condition of the front cleaning door seal and replace if necessary.
6. Replace the baffles, ensuring they are correctly fitted. See Figure 11-1, 11-2, 11-3 or 11-4, as appropriate. Pull out the spiral turbulators from the heat exchanger tubes.
7. Clean the turbulators using a stiff brush.
8. Test the heat exchanger condensate drain by pouring water into one of the lower tubes and observe whether the water discharges from the 22 mm condensate outlet. Replace the turbulators.
9. Replace the front cleaning door, ensuring the seal is in good condition and secure it in position with the nuts and washers previously removed. Tighten to form a seal.
10. Remove the condensate trap and check that it is not blocked and is operating correctly, i.e. the float is free to move. Clean the trap and float as required.
11. Check the condition of the flexible condensate hose between the trap and the boiler.
12. Check that the boiler condensate outlet is unobstructed. Clean if necessary.

! NOTE !

The condensate trap and condensate outlet must be checked on every service and cleaned as necessary.

The end cap is not sealed to the trap body and can be removed for cleaning. Ensure that this cap is correctly re-fitted before re-starting the boiler.

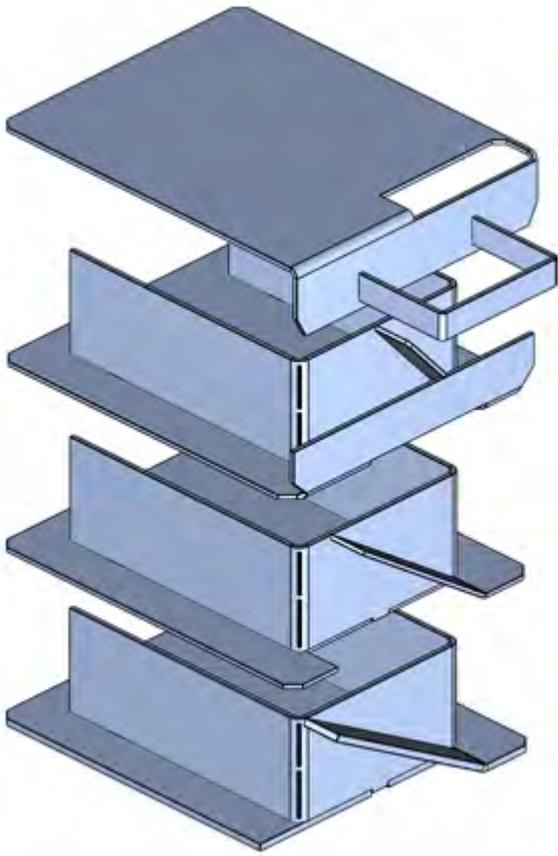


Figure 11-1: Baffles in Vortex Pro Combi 21

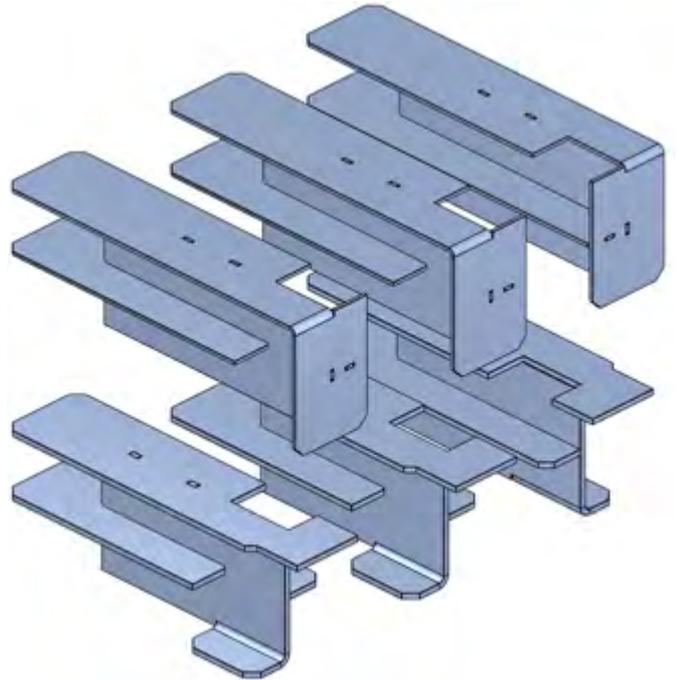


Figure 11-3: Baffles in Vortex Pro Combi 36

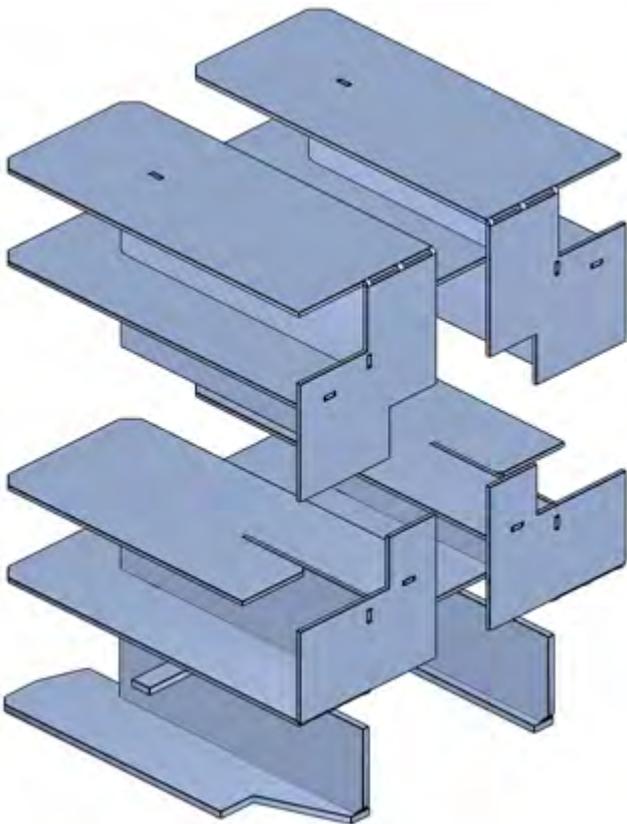


Figure 11-2: Baffles in Vortex Pro Combi 26

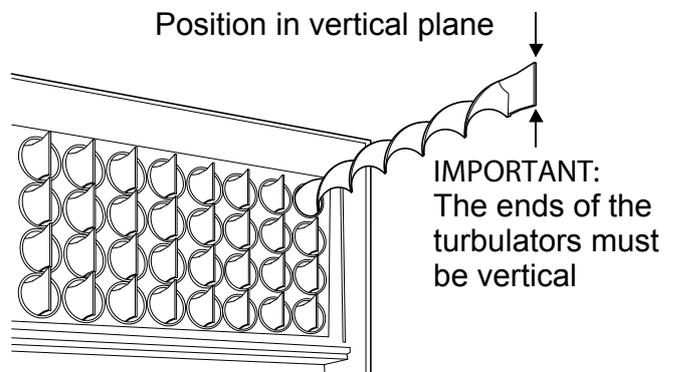


Figure 11-4: Turbulators in Vortex Pro Combi boilers

11.4 CLEANING THE BURNER

With the burner removed from the boiler:

Burner head, nozzle and diffuser/electrode assembly

1. Remove the burner head. Refer to Figure 10-4. Loosen both fixing screws (1) and remove head (2) from burner.
2. Clean the combustion head.
3. Remove diffuser/electrode assembly. Refer to Figure 10-4.
 - Using a 4 mm Allen key, loosen the diffuser fixing screw (3) from electrode assembly.
 - Lift diffuser/electrode assembly (5) up and off the nozzle holder.
 - Disconnect both ignition leads (4) from the electrodes.
4. Replace the nozzle (8). The nozzle should always be replaced on an annual service. Refer to Table 2-2 for the correct nozzle size and type for the required boiler output. Do NOT attempt to clean the nozzle.
 - Use a 16 mm spanner to remove/re-fit the nozzle, whilst holding the nozzle holder using a 19 mm spanner.

! CAUTION !

The use of an ill-fitting spanner will damage the nozzle and could lead to an incorrect flame pattern and poor combustion.

! NOTE !

Ensure that the nozzle is securely tightened so that it does not leak but do not overtighten.

5. Inspect the ignition electrodes - remove the diffuser fixing screw and withdraw the electrode assembly. Wipe clean and check for any cracks in the ceramic insulation. Replace if necessary.
6. Re-fit the diffuser/electrode assembly. Refer to Figure 10-4.
 - Reconnect ignition leads (4) to electrodes.
 - Re-fit the diffuser/electrode assembly (5) onto the nozzle holder lining up the fixing screw with the recess in the nozzle holder.
 - Ensure diffuser assembly is fitted down hard onto the shoulder on the nozzle holder.
 - Tighten the fixing screw (3) to secure the diffuser/electrode assembly in place on the nozzle holder.

! NOTE !

Do not overtighten the fixing screw as this may damage the electrode insulator.

7. Check/adjust the electrode settings. Refer to Figure 10-5. Always check the electrode settings after replacing the nozzle.
8. Re-fit the burner head. Refer to Figure 10-4.
 - Locate the head fixing screws (5) in the countersunk slots in the burner collar.
 - Check that the small oil drip hole (on the head) is pointing downwards.
 - Tighten the two screws (1) to secure the head (2) in position on the burner.

Photocell

The photocell is a push-fit in the front of burner body. Refer to Section 11.8 (burner components).

1. Holding the body of the photocell (4) and NOT the cable, carefully pull the photocell out of the burner.
2. Clean the sensor end of the photocell.
3. Replace photocell back in the burner and check that it is fully pushed in.

Burner air inlet cover

This is located on the right hand side of the burner. Refer to Section 11.8 (burner components).

1. Unscrew and remove the two screws and remove the air inlet cover from the burner.
2. Check inside and remove any debris, leaves, hair, fluff, etc. from the air inlet cover and air damper..
3. Check the condition of the rubber seal around the air inlet cover. Replace if damaged or missing.

Burner fan housing

This is located over the fan impeller. Refer to Section 11.8 (burner components).

With the Burner air inlet cover already removed:

1. Unscrew and remove the four screws and remove the fan housing from the burner.
2. Check and clean the fan impeller and remove any debris, leaves, hair, fluff etc.
3. Check/clean the fan housing is clean.
4. Check the rubber seal around the fan housing. Replace if damaged or missing.
5. Re-fit the fan housing to the burner and secure with the four screws.
6. Check the air adjuster disc (Combi 21 only). Refer to Section 11.6 for details.
7. Re-fit the air inlet cover to the burner and secure with the two screws.

Oil pump filter

This is located under the end cover on the oil pump. Refer to Section 11.8 (burner components).

1. Unscrew and remove the four cap screws securing the pump end cover.
2. Remove the filter and wash in kerosene.
3. Check the O-ring seal around the end cover. Replace if damaged.
4. Replace the filter and end cover.
5. Re-fit the four cap screws, tightening evenly, to secure the end cap.

11.5 ADJUSTING THE DIFFUSER

Adjust the diffuser position. Refer to Figure 10-6.

! NOTE !

The distance between the end of the burner head and the front face of the diffuser (D) MUST be correctly set for the burner to operate correctly.

- Refer to Table 2-2 for the required distance (head setting) for the boiler output required.
- Check the distance D using the gauge plate supplied with the boiler.
- To use the gauge plate:
 - Position the gauge plate on the burner head as shown in Figure 10-6.
 - Locate the gauge plate with the correct steps (i.e. the two marked with the required distance D) resting on the edge of the burner head.
 - Check the gauge plate is at 90° to the end of the burner head and is positioned at the full diameter of the head.
 - If distance D is correct is correct, the tongue of the gauge plate should just make contact with the diffuser with BOTH steps still in contact with the edge of the burner head.
 - If the steps are not in contact with the edge of the burner head when the tongue of the gauge plate is touching the diffuser, the diffuser must be 'opened' (see below).
 - If the tongue does not reach the diffuser when the steps are in contact with the edge of the burner head, the diffuser must be 'closed' (see below).
- To adjust the diffuser position:
 - If necessary, adjust distance D using the black adjustment knob located around the oil supply pipe on the front of the burner. Refer to item A (Figure 10-6). Re-check distance D using the gauge plate, as described above.
 - For easier access to the adjustment knob, pull the photocell out from the burner housing.
 - To increase distance D (to open the diffuser): rotate the knob clockwise - indicated as '+' on the knob.
 - To decrease distance D (to close the diffuser): rotate the knob anti-clockwise - indicated as '-' on the knob.

! NOTE !

One full rotation of the adjustment knob is approximately 1 mm of diffuser movement.

! NOTE !

It is essential that the final position of the diffuser is checked, using the gauge plate provided with the boiler and the diffuser adjusted as necessary to achieve the required distance D.

11.6 AIR ADJUSTER DISC – COMBI 21 ONLY

The Riello RDB 2.2 BX burner fitted to this boiler incorporates a secondary air adjustment.

This is an air adjuster disc located on the fan housing (inside the air inlet housing).

It is essential, for correct operation of the burner, that this internal air adjuster disc is correctly set.

Refer to Figure 10-7.

To access the air adjuster disc:

1. Ensure the boiler is isolated from the electrical supply.
2. Remove the burner fixing nut (located at the top of the mounting flange) and withdraw the burner from the boiler.
3. Undo the two screws and remove the air inlet cover from the side of the burner.
4. The air adjuster disc is mounted on the fan housing. It should be fixed in position 'C' – i.e. with the cut-out marked 'C' located against the moulded boss on the fan housing. Refer to Figure 10-7.
5. If the disc is not set to position 'C' it must be re-positioned as follows:
 - Remove the screw from the centre of the air shutter disc.
 - Re-position the disc so that the cut-out 'C' is located against the moulded boss on the fan housing.
6. Replace the screw in the centre of the air shutter disc and tighten.
7. Re-fit the air inlet cover to the side of the burner and secure in place using the two screws.

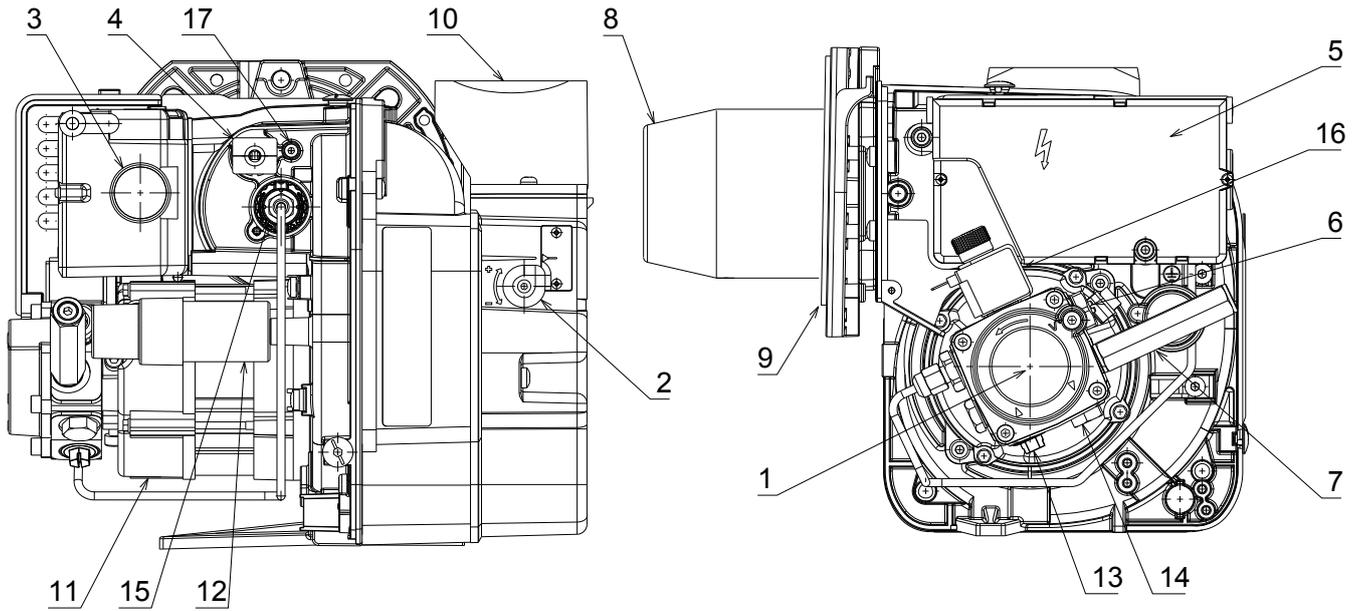
11.7 RECOMMISSIONING

! WARNING !

To ensure safe and efficient operation of the boiler it is important that recommissioning is carried out, especially combustion checks (%CO₂ level, flue gas temperature and smoke number) after the boiler has been serviced. Refer to the Commissioning instructions in Section 10.

11.8 BURNER COMPONENTS

11.8.1 COMBI XS 26, COMBI 21, COMBI26 AND COMBI 36 (RIELLO RDB 2.2 BX)



Item	Description	Item	Description
1	Oil pump	10	Air inlet
2	Air damper adjustment screw	11	Motor
3	Reset button with lockout lamp	12	Motor ignition capacitor
4	Photocell	13	Fuel suction line
5	Control box	14	Return line
6	Pump pressure adjustment screw	15	Combustion head adjustment handle
7	Extension for gauge connection	16	Coil
8	Combustion head	17	Air pressure test point
9	Flange with insulating gasket		

NOTES



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