



Part No. DOC 38 Rev. 02 January 2007

SUPPLEMENTARY INSTALLATION
and
SERVICING INSTRUCTIONS

**Vortex 15/21 Utility and Outdoor Module
Vortex Combi 21 and Outdoor Vortex Combi 21**

For use with Kerosene only

IMPORTANT

This supplement does NOT replace the main Installation and Servicing instructions supplied with the boiler, but MUST be read in conjunction with them.

Reference to the main instruction manual must be made for the following information:

- User instructions
- Flue systems
- Sealed system information
- Electrical connections and controls
- Commissioning and Servicing

1 Boiler technical data

Table 1 Boiler technical data

		15/21 Utility	15/21 Module	Combi 21	Outdoor Combi 21
Water content	litre	16.5	16.5	48.0*	48.0*
	gal	3.6	3.6	10.6	10.6
Primary store	litre	N/A	N/A	31.5	31.5
	gal	N/A	N/A	6.9	6.9
Weight (dry)	kg	70	99	146	147
	lb	154	218	322	325
Max. heat output	kW	21.0			
	Btu/h	71 650			
Flow and return connection		22 mm Tectite			
Condensate connection		22 mm	N/A	22 mm	N/A
Flue diameter (conventional)		100 mm			
Flue draught - Maximum	in. wg	0.15			
Flue draught - Minimum	in. wg	0.035			
Waterside resistance					
Flow/return $\Delta T=10^{\circ}\text{C}$	mbar	28.5			
Flow/return $\Delta T=20^{\circ}\text{C}$	mbar	10.0			
Boiler thermostat range		65°C - 75°C			
Electricity supply		230V 50Hz Fused 5A			
Motor power	Watts	90			
Starting current	Amps	4.2			
Running current	Amps	0.85			
SEDBUK efficiency		93% (Band A)		90.2% (Band A)	

* Includes primary store

All other technical data as given in main Installation and Servicing manual supplied with the boiler

Table 2 - Sealed system data - 15/21 Module, Combi 21 and Outdoor Combi 21

Heating system pressure (cold)	Maximum 1.0 bar, minimum 0.5 bar
Operating pressure of pressure relief valve	2.5 bar
Expansion vessel size - 15/21 Module	10 litres (pre-charged at 1 bar)
Expansion vessel size - Combi 21	10 litres (pre-charged at 1 bar)
Maximum heating system volume (including boiler) - 15/21 Module *	106 litres
Maximum heating system volume (including boiler) - Combi 21	106 litres
Cold water mains connection	15 mm copper pipe
Pressure relief valve discharge connection - Combi 21	15 mm copper pipe

**Table 3a - Vortex 15/21 Utility and Outdoor modules with Riello RDB2.2 burner
For use with Class C2 Kerosene only**

Heat Output		Nozzle	Oil pressure (bar)	Smoke No.	Burner head type	Disc setting	Fuel flow rate (kg/h)	Flue gas temp. (° C)		CO ₂ (%)
(kW)	(Btu/h)							Flue	Door	
15.0	51 200	0.50/80°EH	7.0	0 - 1	T1	B	1.29	66	195	12.0
18.3	62 400	0.55/80°EH	7.5	0 - 1	T1	C	1.56	73	215	12.0
* 21.0	71 650	0.60/80°EH	9.0	0 - 1	T1	C	1.83	80	235	12.0

* Factory set output

**Table 3b - Vortex Combi 21 and Outdoor Combi 21 with Riello RDB2.2 burner
For use with Class C2 Kerosene only**

Heat Output		Nozzle	Oil pressure (bar)	Smoke No.	Burner head type	Disc setting	Fuel flow rate (kg/h)	Flue gas temp. (° C)		CO ₂ (%)
(kW)	(Btu/h)							Flue	Door	
21.0	71 650	0.60/80°EH	9.0	0 - 1	T1	C	1.83	80	235	12.0

2 Boiler dimensions

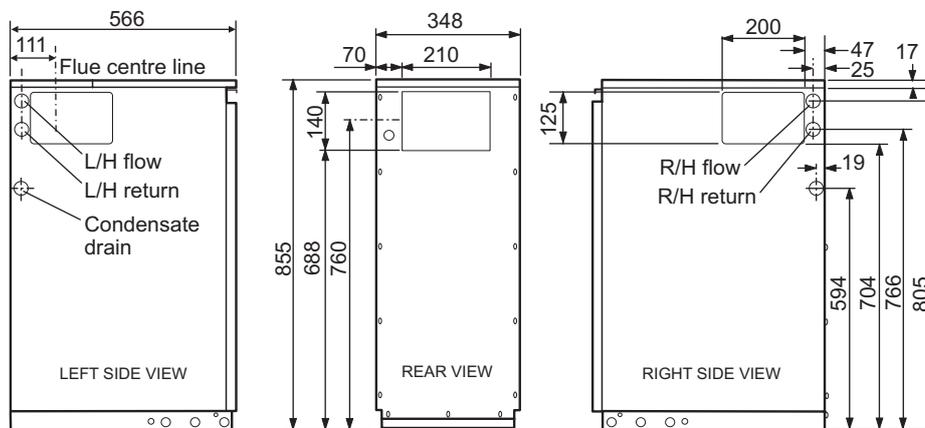


Fig. 1a - Vortex 15/21 Utility dimensions

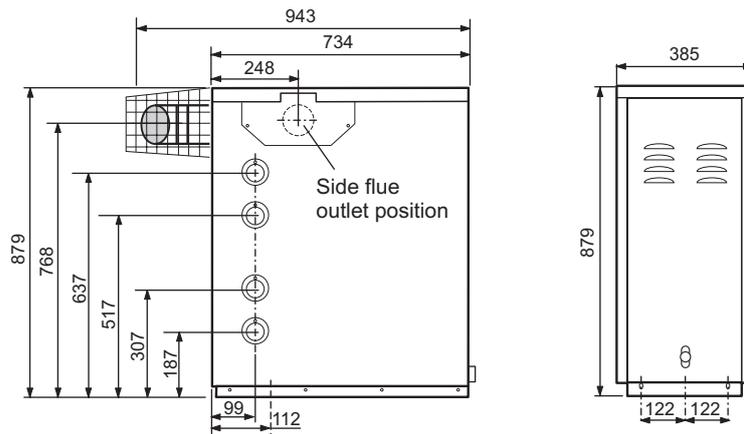


Fig. 1b - Vortex 15/21 Outdoor Module dimensions

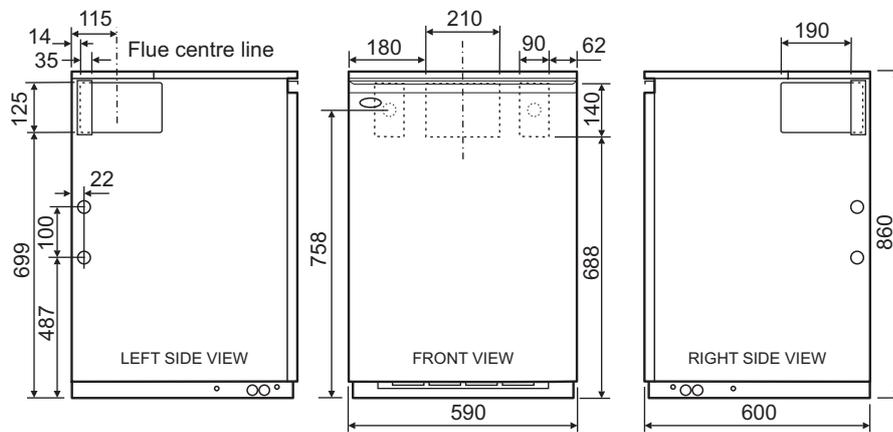


Fig. 1c - Vortex Combi 21 dimensions

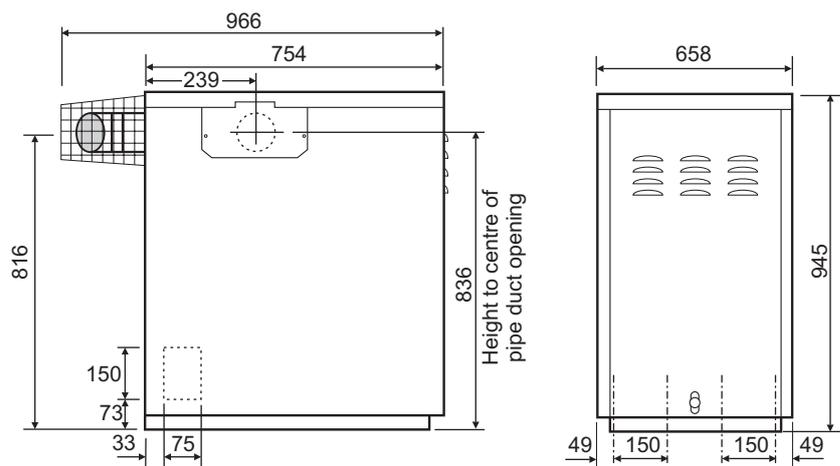


Fig. 1d - Vortex Outdoor Combi 21 dimensions

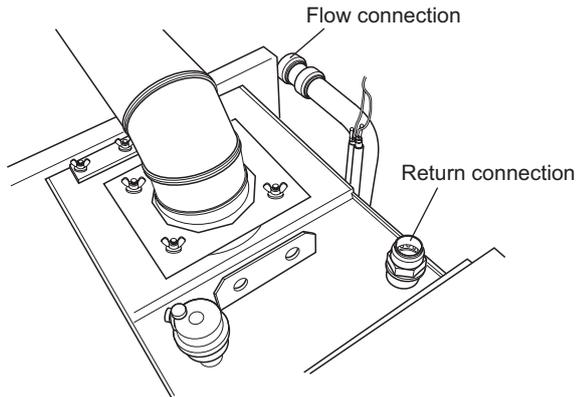
3 Installation

FLOW AND RETURN CONNECTIONS

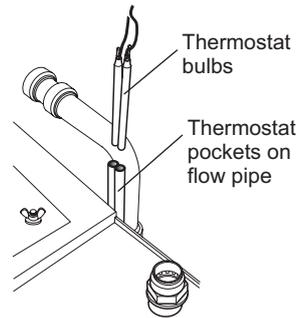
Vortex Utility and Vortex Outdoor Module

Flow connection - A 22 mm straight push-fit Tectite connector is provided on the flow pipe fitted to the boiler.

Return connection - A 22 mm Tectite connector is supplied fitted to the return connection, situated on the top of the condensing heat exchanger. Refer to Fig. 2a.



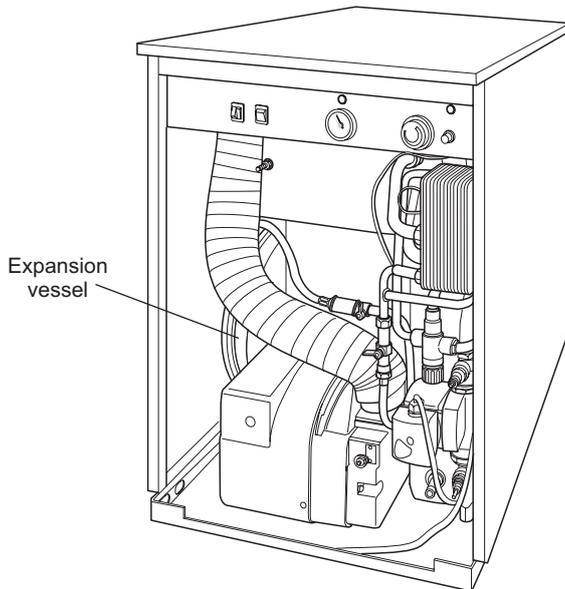
*Fig. 2a - Flow and return connections
(Vortex 15/21 Outdoor Module shown)*



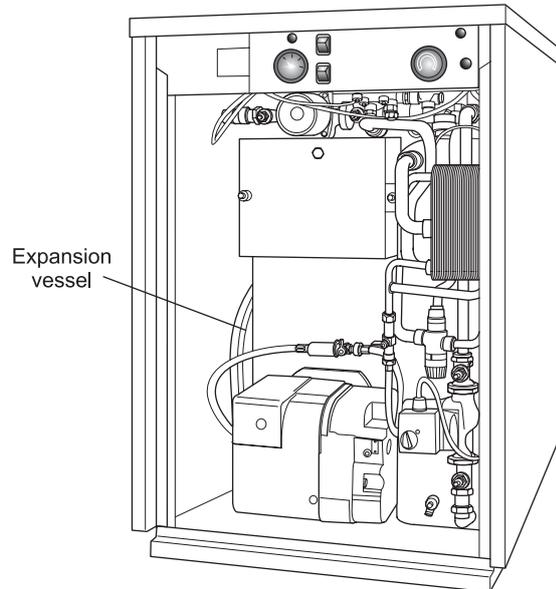
*Fig. 2b - Location of thermostat bulbs
(Utility and Module only)*

Vortex Combi 21 and Vortex Outdoor Combi 21

For water connections on Vortex Combi 21 and Vortex Outdoor Combi 21 refer to the information in the main manual supplied with the boiler.



*Fig. 3a - Vortex Combi 21
(front view showing expansion vessel)*



*Fig. 3b - Vortex Outdoor Combi 21
(front view showing expansion vessel)*

FLUE SYSTEMS

Balanced flue system - Vortex Utility and Vortex Combi 21

For details of low level, high level, vertical and external balanced flue systems (including positions of flue holes in walls) refer to the corresponding section of the main instruction manual supplied with the boiler.

Conventional flue system - Vortex Utility and Vortex Combi 21

For details of conventional flue systems refer to the corresponding section of the main instruction manual supplied with the boiler.

Note: Balanced flue and Conventional flue details for the Vortex 15/21 Utility and Vortex Combi 21 are the SAME as given in the main manual for the Vortex 15/26 Utility and Vortex Combi 26 respectively.

Conventional flue system - Vortex Outdoor Module and Vortex Outdoor Combi 21

For details of conventional flue systems refer to the corresponding section of the main instruction manual supplied with the boiler.

Note: Conventional flue system details for the Vortex 15/21 Outdoor Module and Vortex Outdoor Combi 21 are the SAME as given in the main manual for the Vortex 15/26 Outdoor Module and Vortex Outdoor Combi 26 respectively.

AIR SUPPLY

Air Supply - Vortex Utility and Vortex Combi 21

For air supply details for both Balanced flue and Conventional flue installations refer to Air Supply section of the main instruction manual supplied with the boiler.

Referring to diagrams in the main manual – the required Ventilation areas are as follows:

Vent A	Vent B	Vent C	Vent D	Vent E
88 cm ² (14 in ²)	176 cm ² (28 in ²)	88 cm ² (14 in ²)	176 cm ² (28 in ²)	264 cm ² (41 in ²)

4 Fitting of sealed system kit - Vortex 15/21 Outdoor Module only

Kit contents

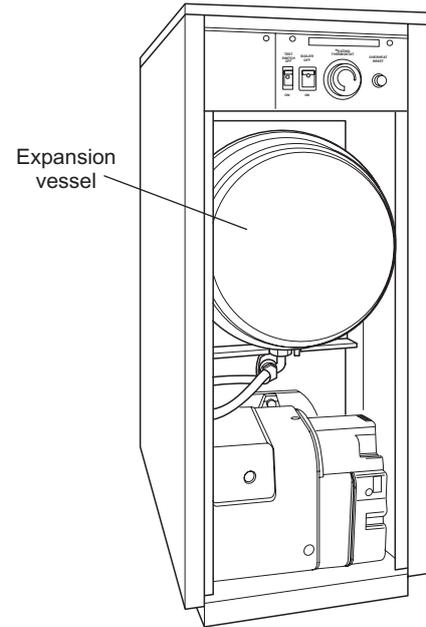
The sealed system kit includes the following items:

- Pressure relief valve and automatic air vent.
- Manifold pipe.
- 10 litre expansion vessel with flexible hose and sealing washer.
- Expansion vessel mounting bracket.
- Filling loop kit.
- Pressure gauge (mounted on compression tee).
- 6 m head circulating pump with 22 mm gate type valves.
- 15 mm copper pressure relief valve discharge pipe (in two pieces with Tectite connector).
- Pump support bracket (with fixing screws).

Fitting procedure

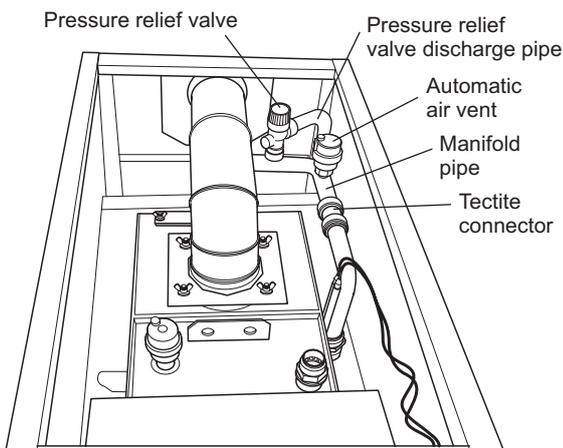
- Unscrew and remove the two nuts and washers from the two cleaning door studs. Remove cleaning door from boiler.
- Remove the ½" BSP black iron plug from the front of the boiler waterway, using a ¾" drive socket wrench.
Fit the ½" BSP straight connector end of the flexible expansion vessel hose into the tapping on the front of the waterway using a suitable thread sealant.
- Fit the ¾" BSP connection on the flexible expansion vessel hose to the vessel using the black rubber sealing washer supplied and tighten the union nut.
- Replace the cleaning door on the two door studs. Fit the expansion vessel mounting bracket onto the studs. Replace the nuts and washers and re-tighten to secure door and bracket.

5. Fit the pressure relief valve and automatic air vent onto the manifold pipe. Then push fit the manifold pipe end into the 22mm Tectite connector on the boiler flow pipe. Refer to Fig. 4b.
6. Fit both 22 mm pump valves to the circulating pump using the sealing washers provided.
7. Fit the pump support bracket, with the screws provided, using the two holes in the left hand side panel flange (viewed from rear of boiler).
8. Fit the pump/pump valve assembly to the end of the pressure relief valve/auto air vent manifold pipe. Ensure that the pump shaft is horizontal and the pump motor is facing towards the right side of the boiler (viewed from the rear). Refer to Fig. 4c. The flow arrow on the body of the pump must face in the required direction of flow – away from the boiler flow connection – downwards in this case.
9. Ensure that the pump/valve assembly is supported by the bracket. The upper part of the lower valve should rest on the support bracket, with the body of the valve passing through the cut-out. Connect the flow pipework to the lower pump valve.
10. Assemble the two sections of the pressure relief valve discharge pipe using the 15 mm straight Tectite connector provided. Adjust the pressure relief valve so that the outlet points to the rear left corner of the boiler (viewed from the rear of the boiler).
11. Fit the pressure relief valve discharge pipe to the pressure relief valve outlet using the nut and olive provided. Route the pipe down the left hand rear side of the boiler and locate the lower end through the slot in the bottom flange of the left hand side panel.
12. The circulating pump may be wired into the boiler control panel if required. Refer to Section 9 in the main Installation & Servicing manual supplied with boiler.
13. The pressure gauge and filling loop should be installed in a convenient position inside the building.



**Fig. 4a - Front view
(showing expansion vessel)**

Refer to Section 5.6 in the main Installation and Servicing manuals supplied with the boiler for details of filling the sealed heating system.



**Fig. 4b - Top view (showing automatic air vent,
pressure relief valve and manifold)**

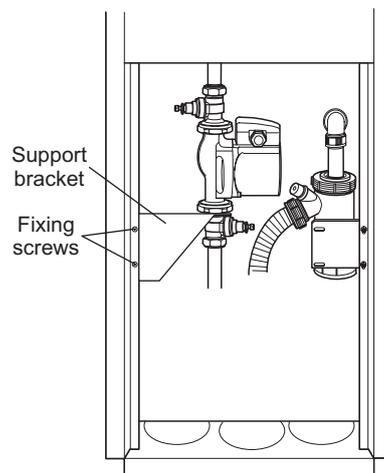


Fig. 4c - Rear view (showing pump assembly)

5 Commissioning/Serviceing

Burner - Riello RDB 2.2

Important - Refer to the main Installation and Servicing manual supplied with the boiler for details of the full burner Commissioning and Servicing procedures.

The Riello RDB 2.2 burner fitted to this boiler incorporates a secondary air adjustment shutter located within the air inlet housing. If the burner is to be de-rated from the factory set output of 21 kW to the minimum output of 15 kW (Utility and Outdoor Modules only), it is essential that this internal shutter be correctly adjusted. To do this proceed as follows:

1. Switch off the boiler and isolate from the electrical supply.
2. Disconnect the air supply tube (Utility and Combi models only).
3. Remove the burner from the boiler.
4. Undo the two screws and remove the air inlet cover from the side of the burner.
5. The secondary air shutter disc is factory set in position 'C' – i.e. with the cut-out marked C located against the die-cast boss on the fan housing - suitable for outputs of 18.3 and 21 kW only. See Fig 5.

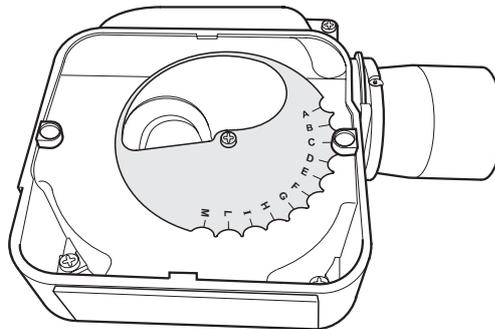


Fig. 5 - Burner air adjuster disc (shown set to position 'C')

6. Remove the screw from the centre of the air shutter disc, and re-position the disc such that the cut-out 'B' (corresponding to 15 kW output setting – refer to Table 2a) is located against the cast 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.
8. Change nozzle - refer to Table 2a (burner details) for correct nozzle for new output setting.
9. Re-fit the burner to the boiler and re-connect the air supply tube to the burner (Utility model only).

Heat exchanger baffles

Important - Refer to the main Installation and Servicing manual supplied with the boiler for details of the full burner Commissioning and Servicing procedures.

The procedure for cleaning the boiler is as given in the main manual. To remove the baffles proceed as follows:

1. Remove the two nuts and washers securing the front cleaning door and withdraw the door.
2. Remove the top baffle (No. 4) using the handle provided on the baffle.
3. Remove baffle No. 3 by lifting upwards and then out through the access opening.
4. Remove baffles No. 2 and No. 1 using the same method.
5. After inspection and cleaning replace the baffles using the reverse procedure.

Important - Ensure that the front of the top baffle is correctly located over the front section of baffle No. 3.

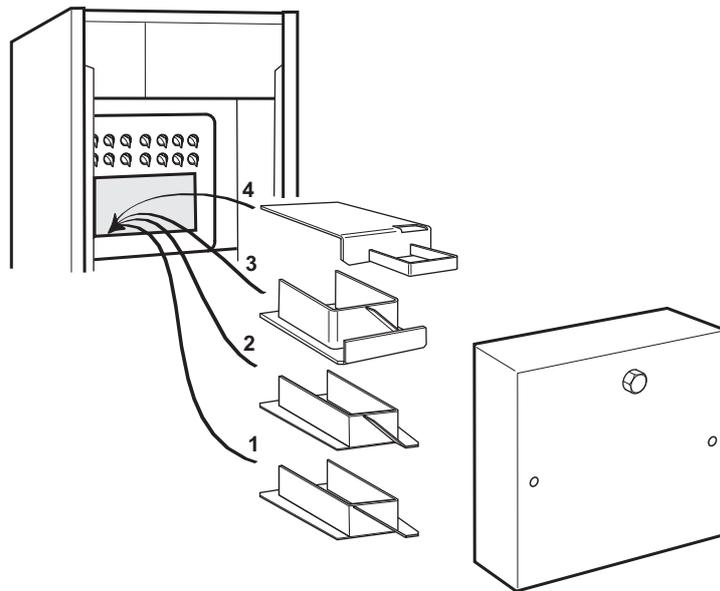


Fig. 6a - Removal/replacement of baffles (Vortex 15/21 Module shown)

The spiral turbulators are removed and inspected using the same method as in the main manual.

Important - When replacing the turbulators after inspection and cleaning, ensure that the flat end sections are all positioned vertically.

After ensuring that the seal is in good condition, replace the front cleaning door and secure in position with the two nuts and washers previously removed. Tighten to form a seal.

Refer to the Commissioning or Servicing procedures given in the main manual to complete the work in hand.

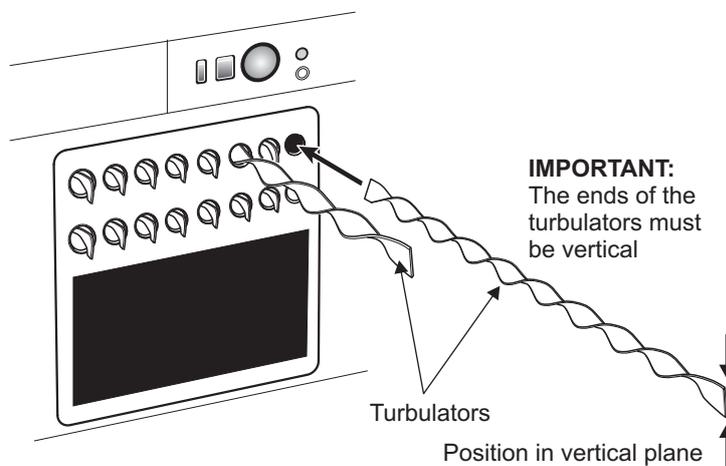


Fig. 6b - Removal/replacement of spiral turbulators



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