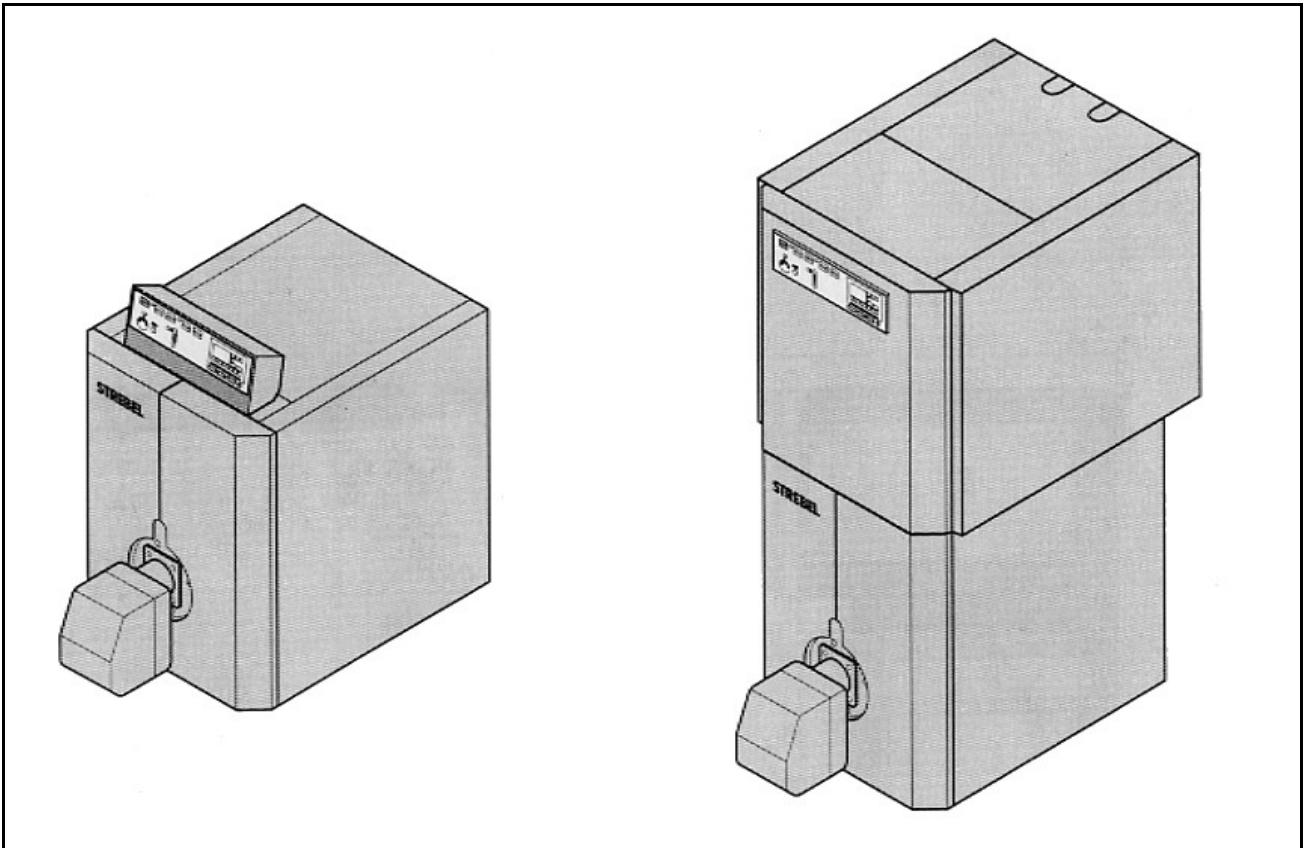


# Ca 7s and BCa 7s 61-235 kW



## INSTALLATION AND OPERATING INSTRUCTIONS

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**General Specifications**

The STREBEL Camino 7s is a special boiler for oil or gas fired pressure jet burner.

In the BICALOR construction a calorifier for the supply of hot water is built onto the boiler.

CSH-S type calorifiers are manufactured from 1.4571 high tensile steel with an incorporated heating coil of galvanised copper ribbed pipe.

Triple pass block of cast iron sections.  
 The first pass is the combustion chamber. From there the flue gases pass between the rear section and the last intermediate section through the second pass to the front of the boiler. They are then diverted into the third pass and flow back to the rear through the flue spigot into the chimney.

Flue baffles of cast iron can be introduced into the flue passes in order to influence the flue gas temperature depending on chimney conditions.

The boiler can be used with an oil or gas burner.

**Brief description.**

- Corrosion resistant block of cast iron sections.
- Triple pass boiler with optimised use of energy.
- High efficiency.
- Built-in instrument panel with multiple control possibilities and retro-fit control options.
- Easy erection and cleaning.
- Modern design.

**Operating conditions**

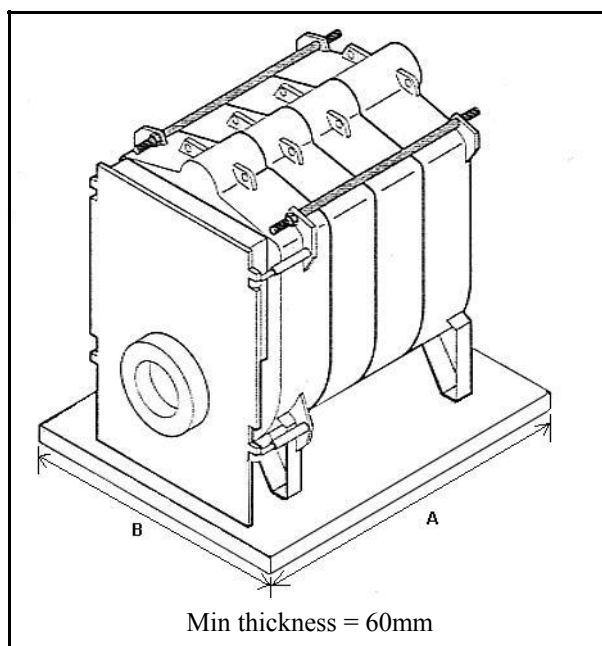
Boiler:  
 Maximum operating temperature up to 110°C  
 Maximum operating temperature up to 120°C depending on technical safety of the equipment.  
 Maximum operating pressure 4.0 bar  
 Maximum test pressure 5.2 bar

Calorifier:  
 Maximum operating pressure 10 bar  
 Maximum test pressure 13 bar

The boiler can be delivered in individual sections or as a boiler block. The accessories are packed separately. There are different orders of assembly depending on the condition of supply. when assembling and connecting the boiler, all relevant instructions should be observed.

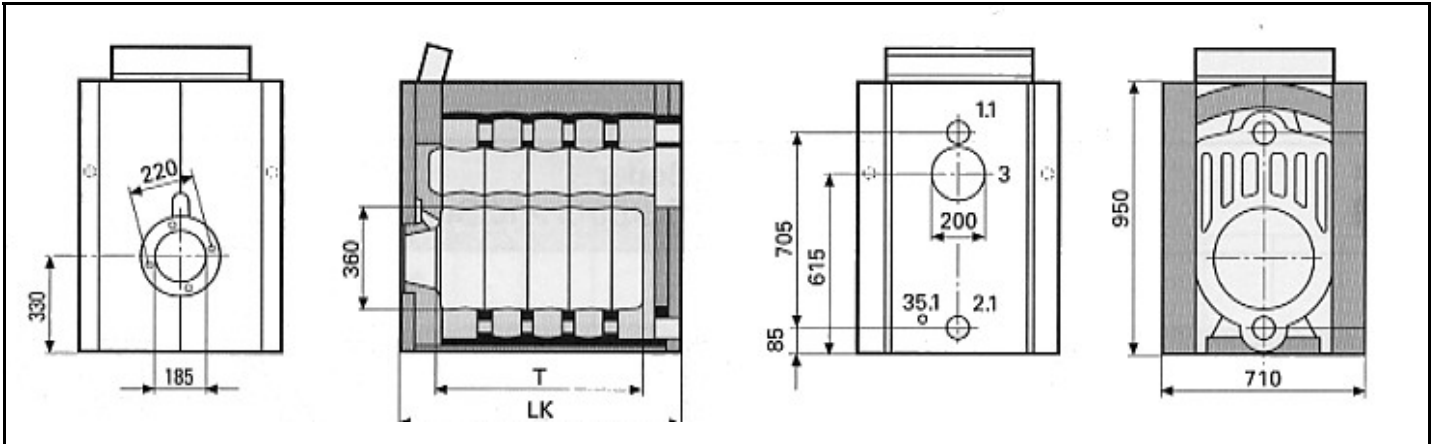
The boiler is to be erected on a base, or a level floor which is capable of supporting the weight of the boiler, water content and any ancillary equipment. Refer to base details opposite.

Assembly, connections and the initial set-up operation should be carried out by a qualified heating engineer.



Dimensions		
	A	B
Ca 7s-4	965	810
Ca 7s-5	1115	810
Ca 7s-6	1265	810
Ca 7s-7	1415	810
Ca 7s-8	1565	810
Ca 7s-9	1715	810
Ca 7s-10	1865	810

**Boiler Dimensions**

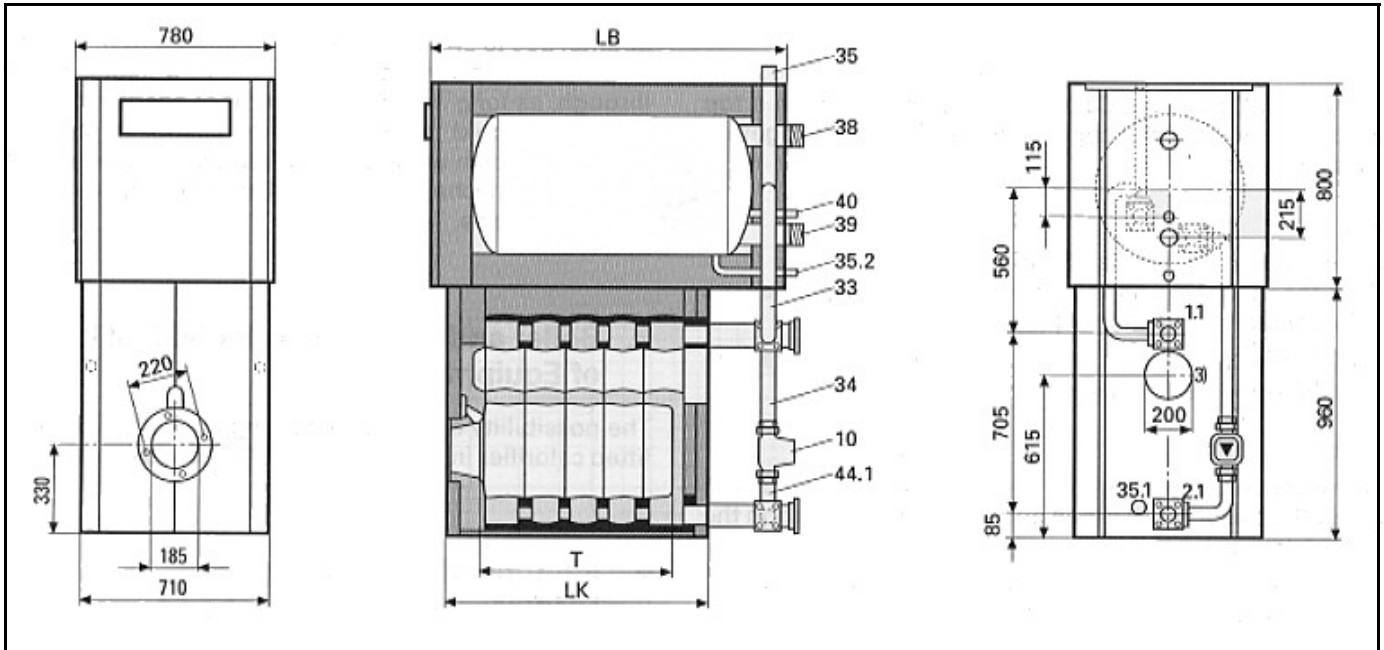


**Ca 7s - Dimensions**

**KEY:**

- 1.1 Boiler Flow 130mm NW65
- 2.1 Boiler Return 130mm NW65
- 35.1 Boiler Drain 3/4"

Boiler	LK mm	Tmm
Ca7s-4	865	555
Ca7s-5	1015	705
Ca7s-6	1165	855
Ca7s-7	1315	1005
Ca7s-8	1465	1155
Ca7s-9	1615	1305
Ca7s-10	1765	1455

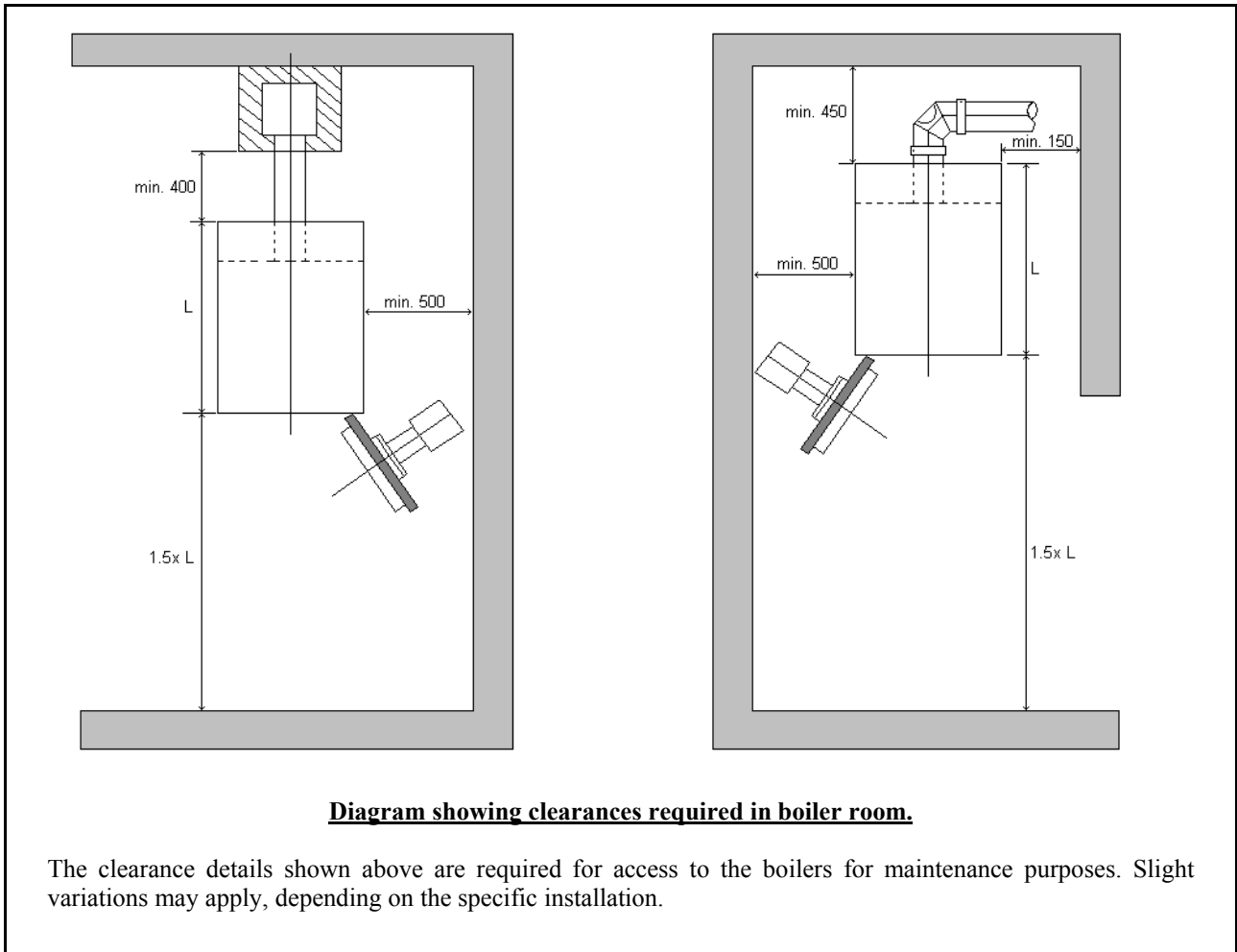


**BCa 7s - Dimensions**

**KEY:**

1.1	Boiler flow	130mm NW65	35.2	HWS drain off	3/4"
2.1	Boiler return	130mm NW65	38	HWS water connection flow	(1 1/2"*) 2"
10	Primary pump 1x230V	1 1/4"	39	Cold water connection	(1 1/2"*) 2"
33	Primary connection pipe	(1 1/4"*) 1 1/2"	40	Circulation connection	3/4"
34	Return connection pipe	(1 1/4"*) 1 1/2"	44.1	Non return valve	
35	Air vent	3/8 "	*	Available for calorifier CSH 240S	
35.1	Boiler drain off	3/4"			

Boiler	LK mm	LK Calorifier Type CSH-			
		240S mm	300S mm	360S mm	500S mm
Ca7s-4	865	1175			
Ca7s-5	1015	1175	1475		
Ca7s-6	1165		1475	1625	
Ca7s-7	1315		1475	1625	2075
Ca7s-8	1465			1625	2075
Ca7s-9	1615				2075
Ca7s-10	1765				2075



**Boiler Block Assembly**

The boiler block is assembled by ‘pulling-up’ each section in turn starting from the rear section (1). All other sections (2)(3)(4) are mounted individually using the pulling-up tools.

One face of the adjoining sections must have a length of mastic sealing strand placed into the mastic groove.

Each of the boiler nipples must be inspected to ensure there is no damage apparent. The nipples and nipple ports should then be kept free from dirt and checked at each stage of assembly. Particles of dirt which are not removed lead to leakage.

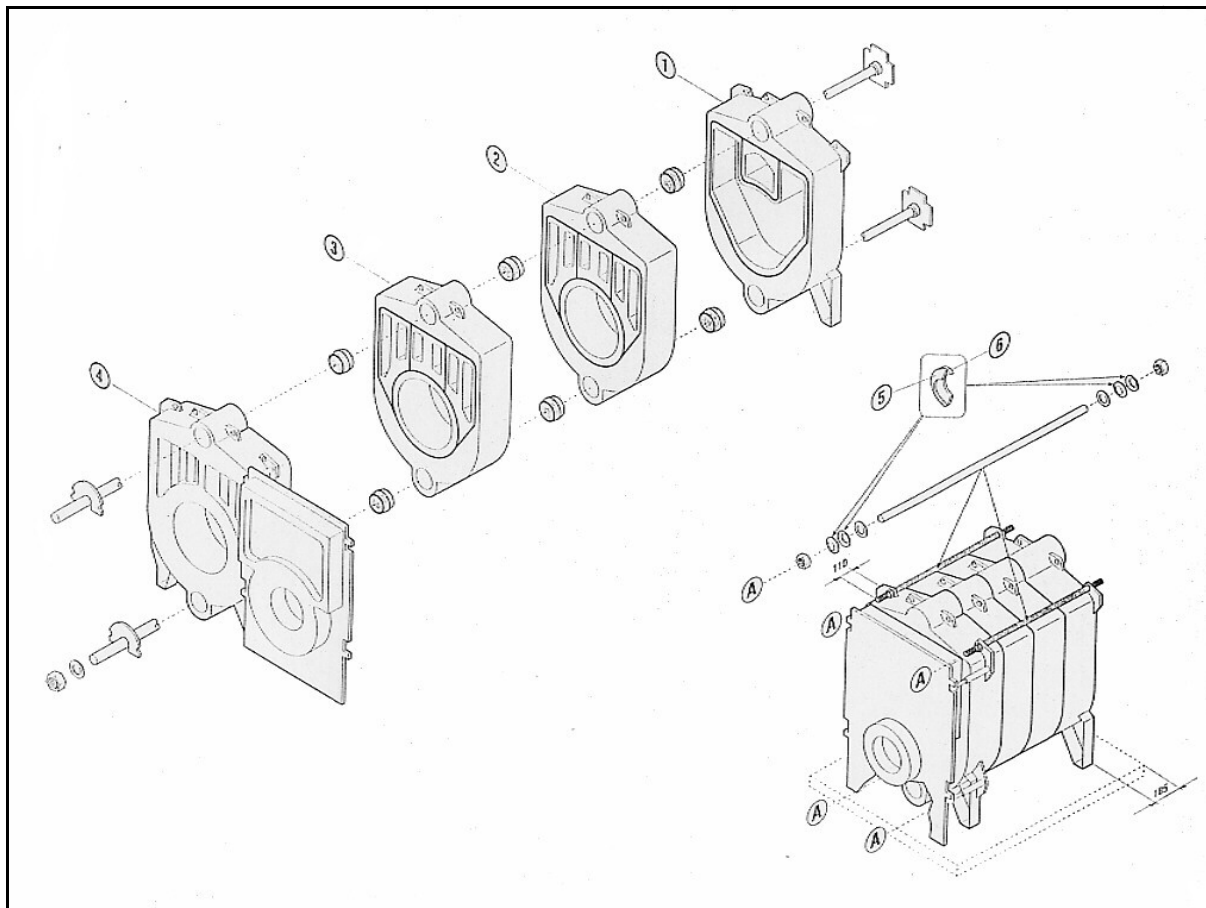
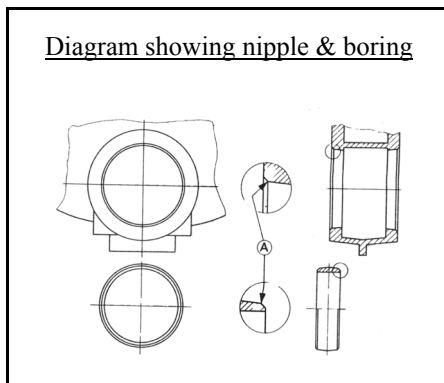
The accompanying nipple jointing oil serves as a lubricant as well as a waterproof seal and must be used.

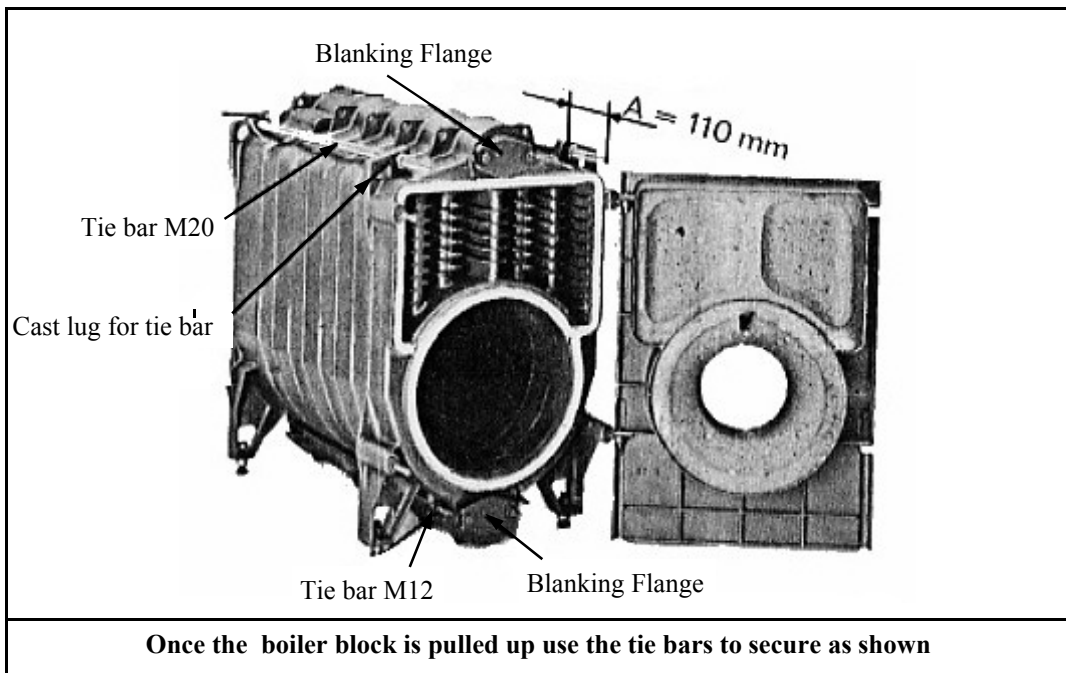
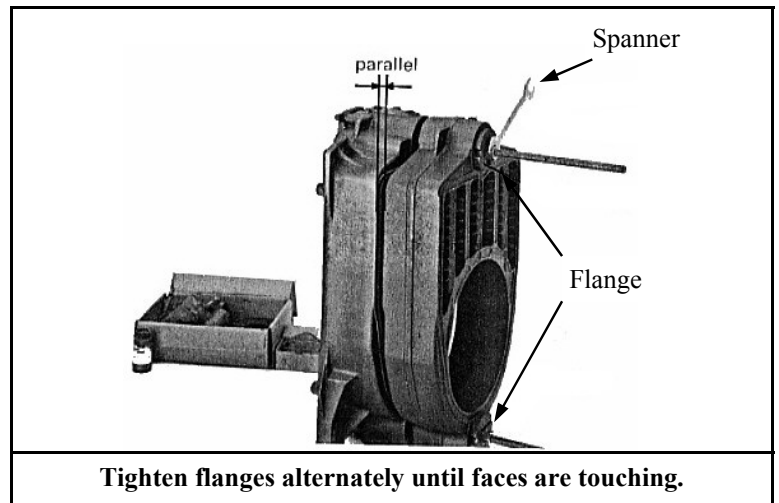
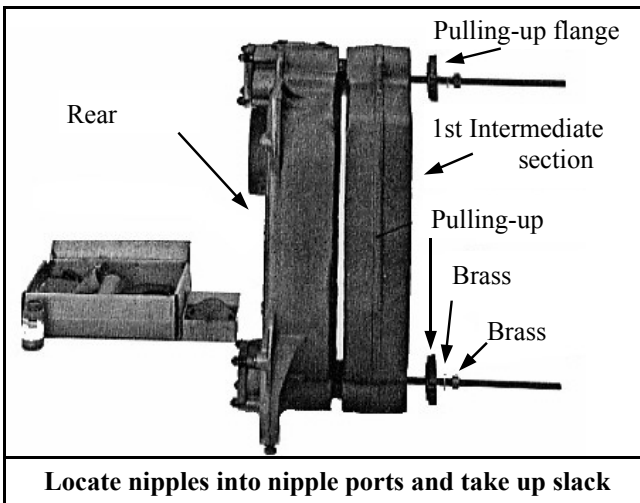
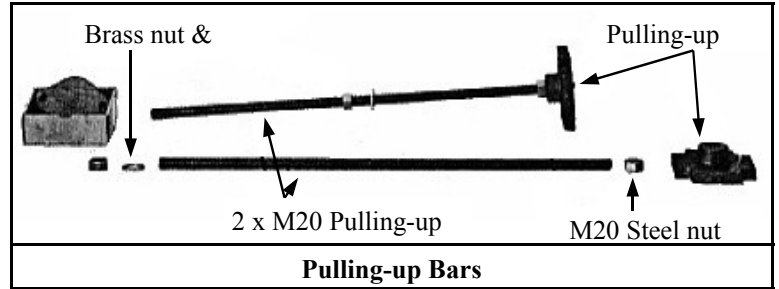
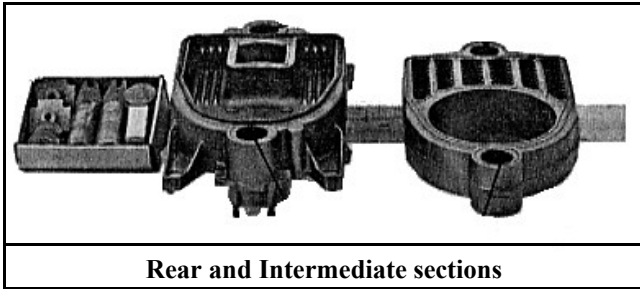
Boiler nipples and nipple ports must align exactly at all stages of assembly. An inclined, retracted nipple leads to leakage.

The clearance between the sections throughout the pulling-up stages should always be even. If the clearance is uneven, a flat chisel should be inserted into the narrower point and the sections pulled up until the clearance is even again.

Once assembled, the boiler block is to be secured with the tie bars (2 at the top, and 2 at the bottom). Prior to screwing nuts up ensure the two disc springs (5)&(6) are slotted on with concave sides facing each other. The nuts can now be tightened until the disc springs flatten.

The burner door hinges should now be fitted on the left or right hand side of the front section depending on requirements. Ensure the eyelet screws (door hinge) are at the same depth and when the door is closed it should press flat with the front section.







The order of assembly from (1) to (7) must be observed.

**Important points:**

- When fitting the long injection tube (1) (only fitted to boilers with 7 sections or more) care should be taken to ensure that the holes for the direction of water, are facing upwards.
- The boiler flow (3) must be assembled with the connection facing upwards eccentrically.
- The boiler return (2) must be assembled with the connection facing downwards eccentrically.
- It is possible to hinge the door to swing from either side of the front section. Care should be taken to ensure the burner plug is mounted accordingly.

**Cold water pressure test:**

The assembled boiler is to be subjected to a cold water pressure test of 1.5 times the operating pressure.

The maximum test pressure of the boiler is 5.2 bar.

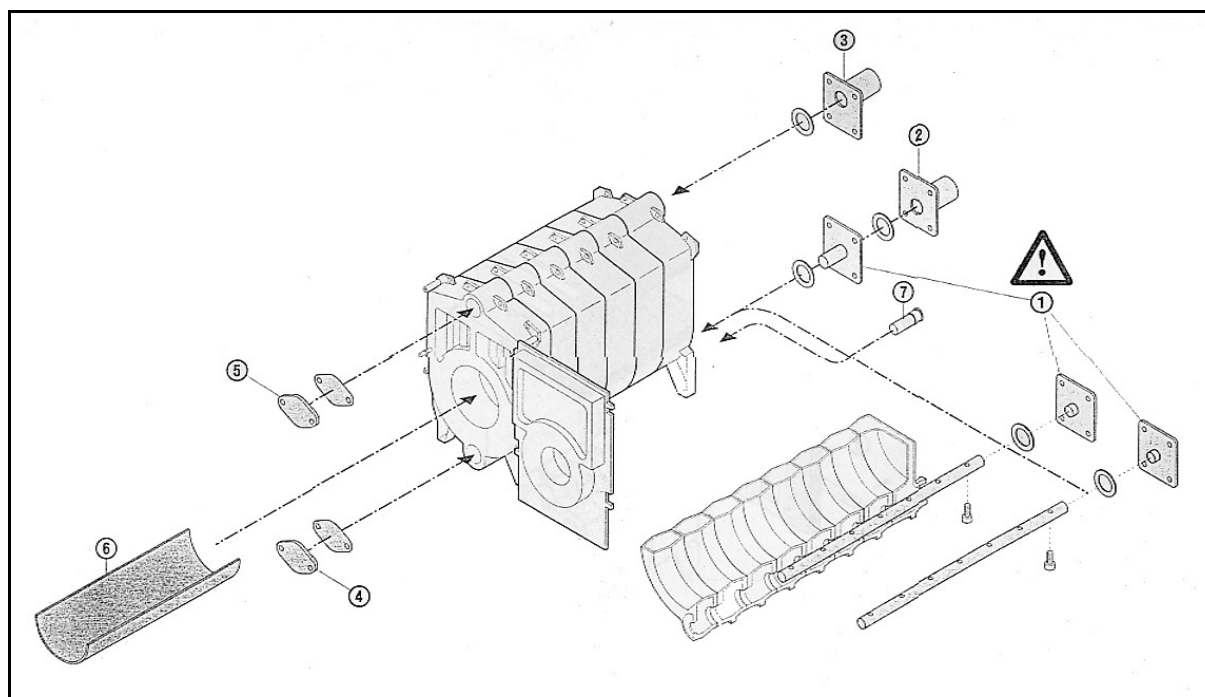
In addition, at the time of testing for water pressure, no pressure control fittings or safety fittings may be assembled which cannot be separated from the water area of the boiler.

Only fill, slowly from the bottom via the filling and draining cock.

Ventilate during the filling procedure from time to time, until the water emerges.

If a nipple connection is leaking then drain off the water via the filling and draining cock. Separate by driving flat wedges around the perimeter of the join between sections. New nipples MUST be used for re-assembly.

Assemble and repeat test.



The order of assembly from (1) to (13) must be observed.

**Important points:**

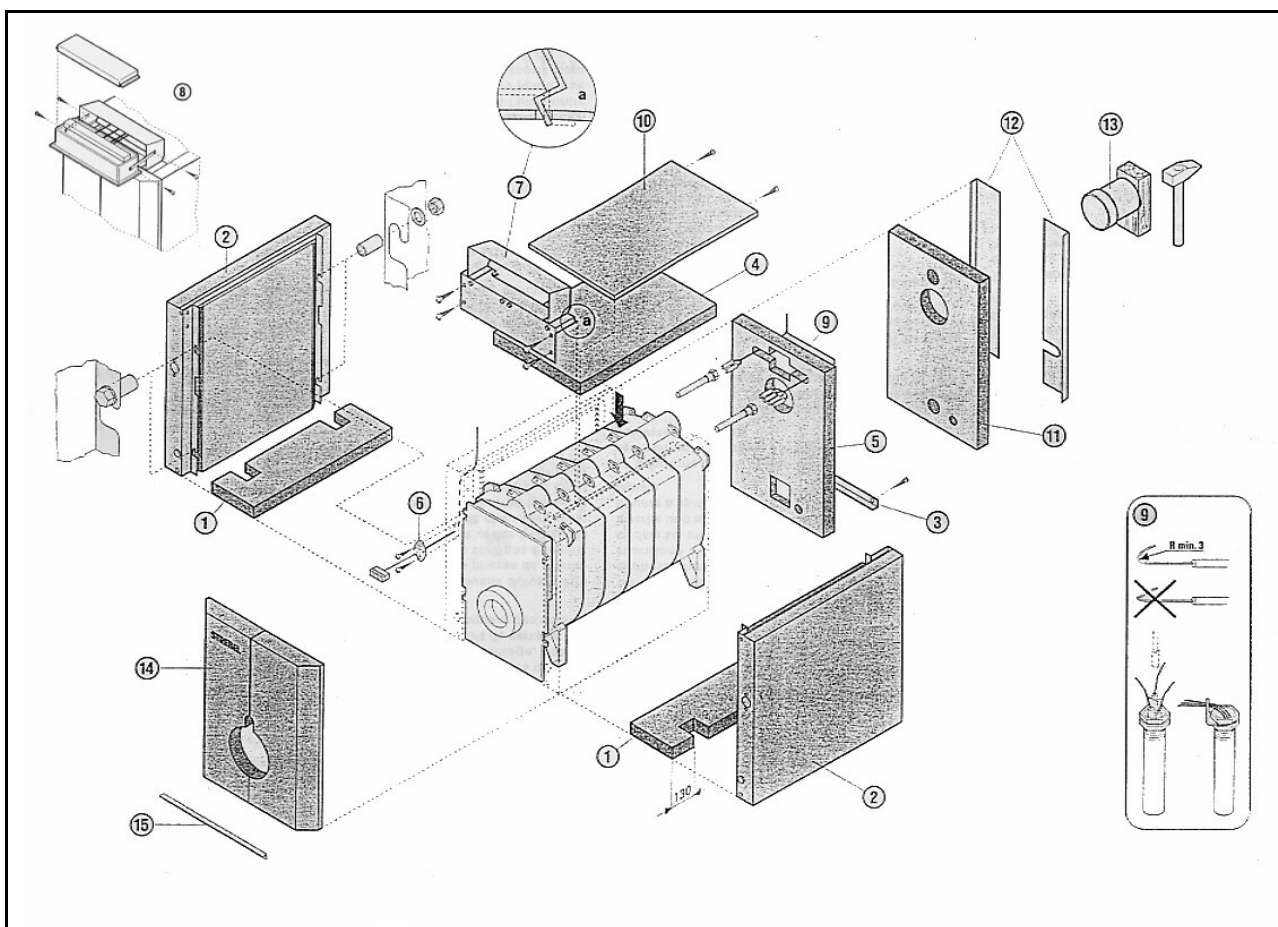
When assembling the floor insulation (1) as well as the side jackets (2) care should be taken to ensure they are in the correct position (with burner cable holes facing the front).

The water temperature sensors (9) must be pushed with the pressure spring into the immersion sleeves (max. 3 per sleeve) and then secured with the protective guard.

**Note: The sensor leads (capillary tubes) should not be kinked.**

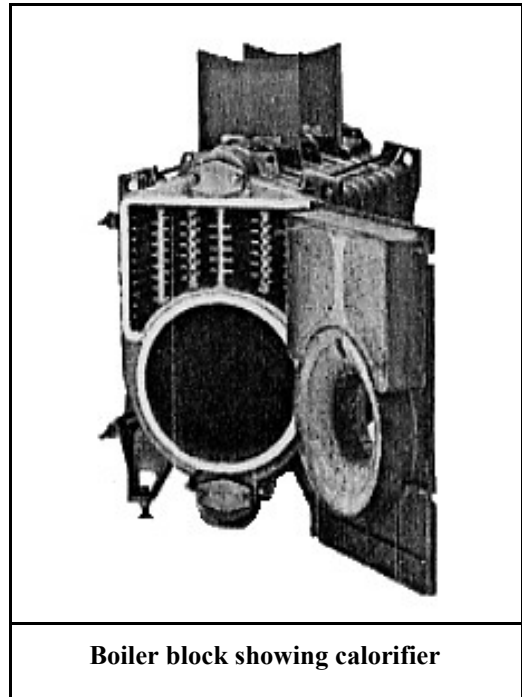
The jacket assembly should be in the following order:

1. Insulation under the boiler both left and right.
2. Boiler side jackets left and right.
3. Rear bottom bracing angle.
4. Front bracing bracket.
5. Rear inner insulation.
6. Position burner cable according to door hinging.
7. Position instrument control panel.
8. Mount control panel to mounting bracket.
9. Mount sensors in sensor pockets.
10. Top jacket.
11. Outer rear insulation.
12. Fit insulation retainer.
13. Fit flue over cast spigot on rear section (using rubber mallet and block of wood).

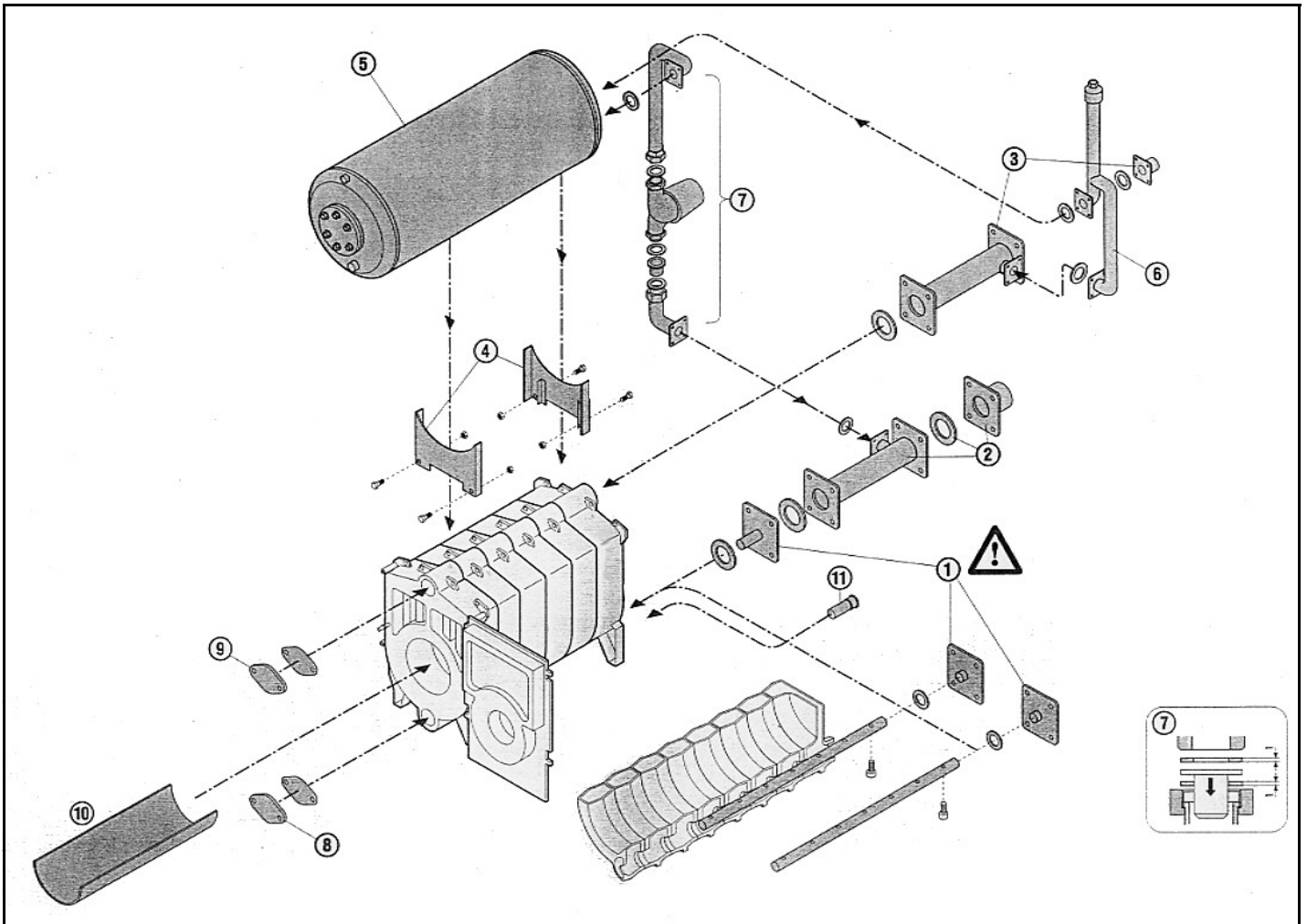


**Calorifier assembly and connections:**

1. Injector tubes (Note: Ensure the holes for the direction of water are facing upwards).
2. Header for the return connection to calorifier.
3. Header for the flow connection to the calorifier.
4. Calorifier mounting bracket.
5. Calorifier.
6. Pipework to calorifier (flow).
7. Pipework to calorifier (return).
8. Blank flange for return connection.
9. Blank flange for flow connection.
10. Reflector plate.
11. Injector tube.

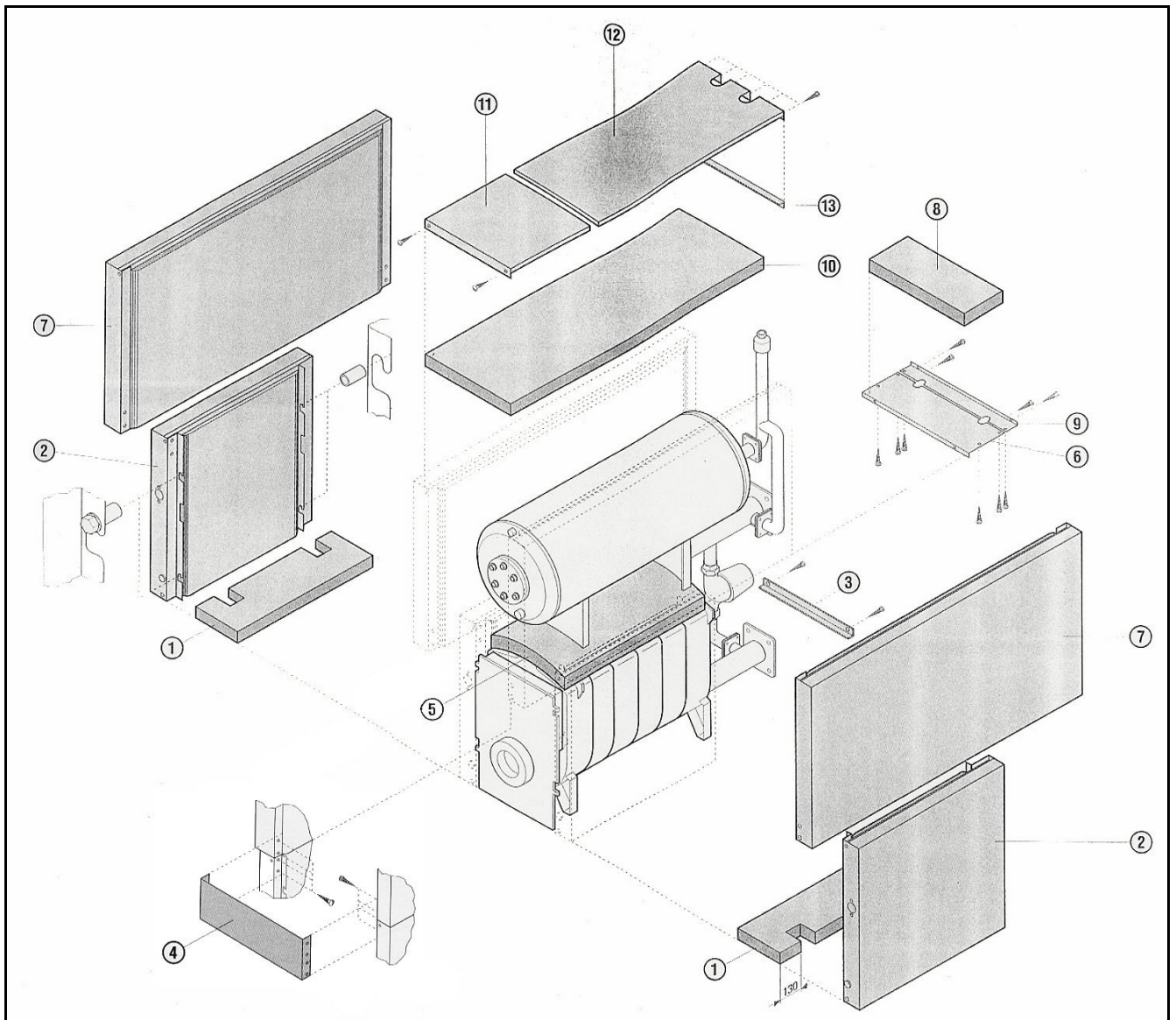


Boiler block showing calorifier



**BCa7s Jacket assembly**

Follow the steps below for completion of the jacket assembly.

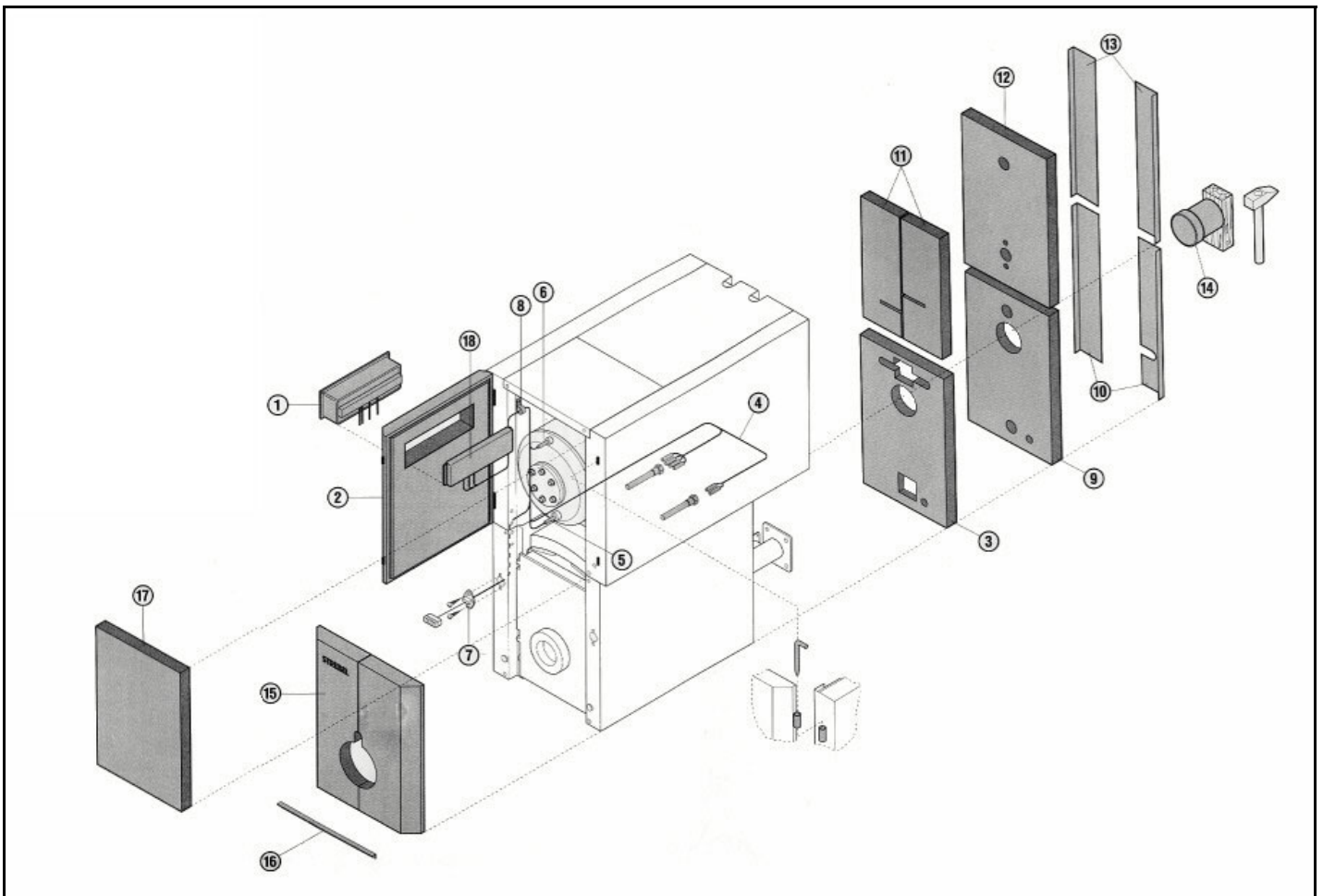
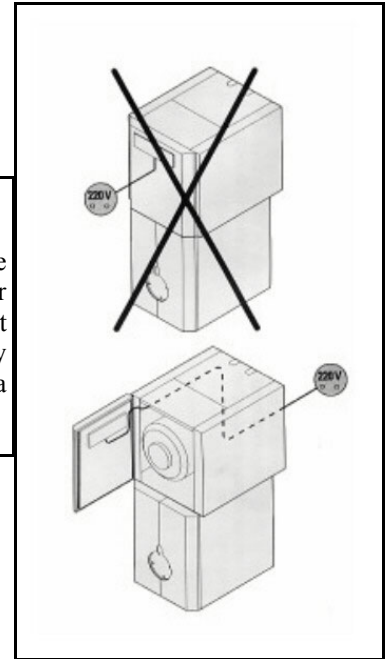


The jacket assembly is completed by following the steps below:

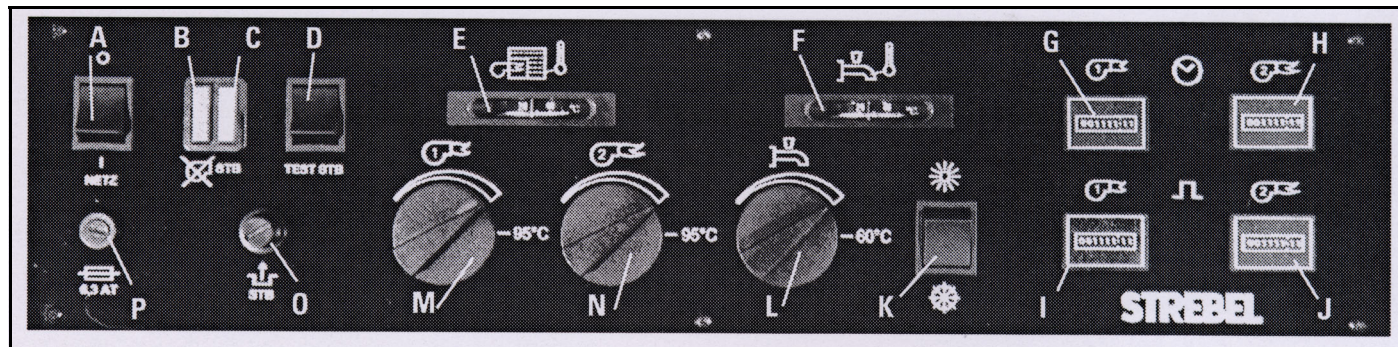
- The sensors (4) must be pushed into the sensor pockets at the rear of the boiler (max. of 3 per pocket)
- The calorifier control thermostat sensor (5) must be pushed into the lower sensor pocket with the retaining spring.
- The calorifier thermometer (6) must be pushed into the upper sensor pocket.
- All sensor leads (capillary leads) must not be kinked.

**Note:**

Mains connection should be made via the rear of the boiler through to the control panel. It must not be connected directly to the front of the boiler via the calorifier jacket door.

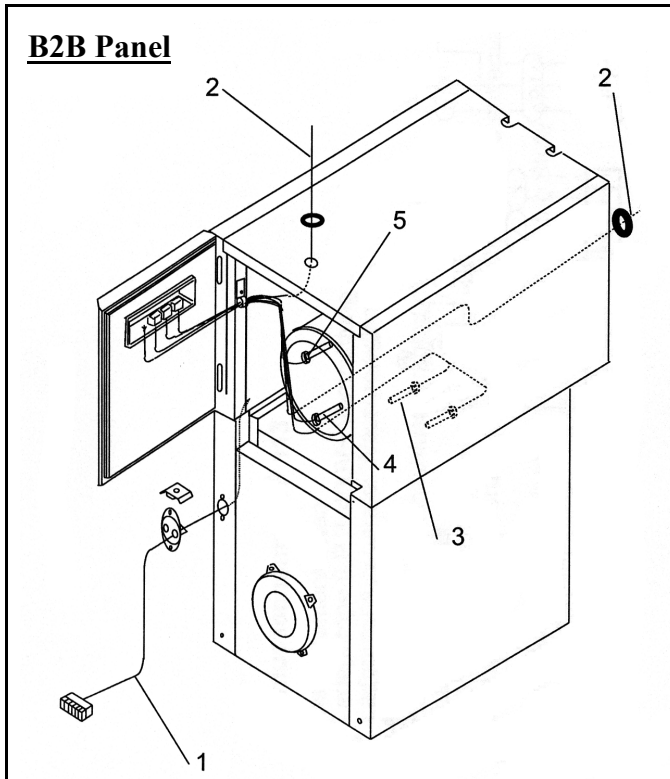




**Instrument Control Panel Description****Key:**

- A. Power On / Off switch.
- B. Burner lock-out indicator. (RED) - The red lamp will illuminate if the burner has gone to lock-out.
- C. High limit indicator. (ORANGE) - Illuminates if the high limit thermostat is activated. Has to be manually reset by removing cap from STB reset, and press button.
- D. High Limit Test Switch. (STB) - Overrides the control thermostat to enable limit thermostat test.
- E. Boiler Thermometer– Shows the actual boiler water temperature and has no influence on boiler temperature control.
- F. HWS Thermometer - Shows temperature of the HWS calorifier. (B2B version only)
- G. Hours Run Meter (blanked as standard) Burner Stage 1 - Shows running time of the stage 1 burner operation.
- H. Hours Run Meter (blanked as standard) Burner Stage 2 - Shows running time of the stage 2 burner operation.
- I. Frequency of Switching Meter for Stage 1. (blanked as standard).
- J. Frequency of Switching Meter for Stage 2. (blanked as standard).
- K. Summer / Winter Switch - For switching boiler between modes to supply HWS only in the summer period.
- L. Calorifier Control Thermostat - Set for the required hot water temperature (60°C Max.)
- M. Control Thermostat - Stage 1.
- N. Control Thermostat - Stage 2.
- O. Boiler Safety Limit Thermostat (STB) - Manual reset. Used when the boiler water temperature overheats. The water in the boiler must cool to around 80°C, to enable reset. (refer to point “C” above).
- P. Fuse (6.3A) - Protection for all the controls and any ancillary equipment connected back to the control panel. A defective fuse MUST be replaced with an identical one.

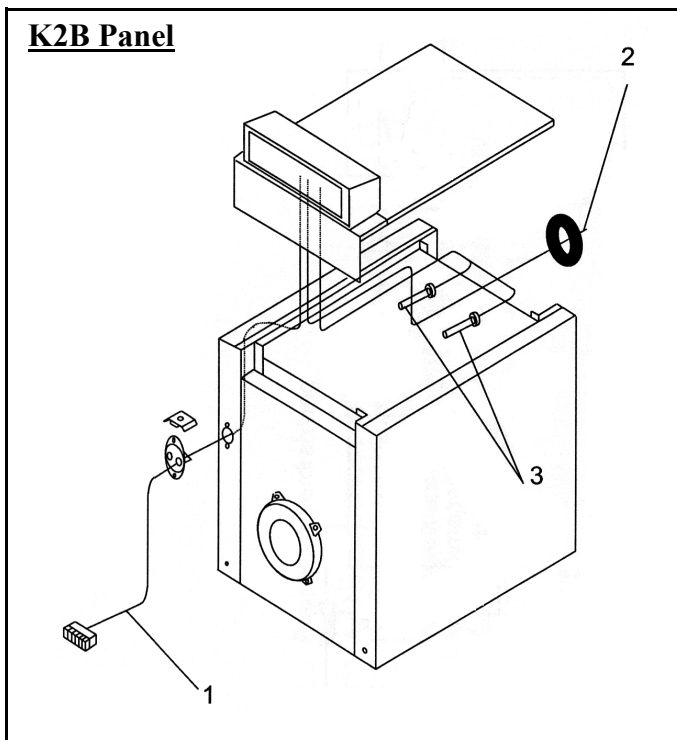
**ATTENTION: Before a fuse is replaced, the instrument control panel must be isolated.**

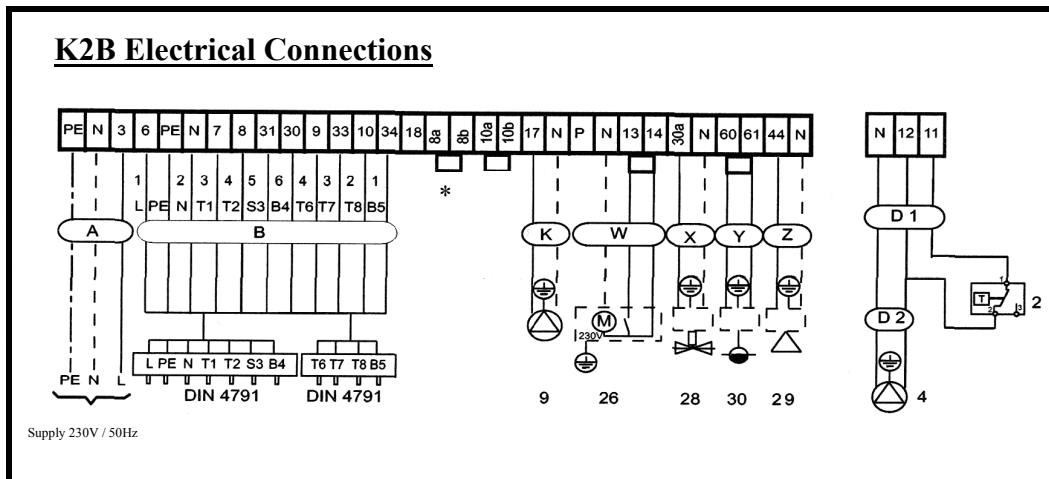
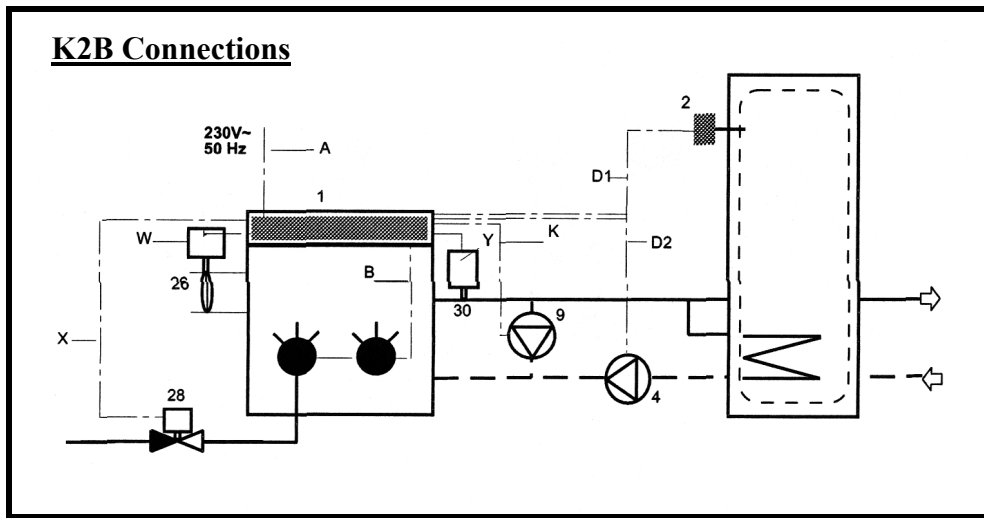


The diagrams opposite shows connections to the instrument control panel.

**Key:**

1. Burner Cables
2. Power Supply Connection.
3. Stage 1 & Stage 2 Thermostat Sensor & boiler Thermometer Sensor Pockets.
4. Calorifier Thermostat Sensor Pocket.
5. Calorifier Thermometer Sensor Pocket.

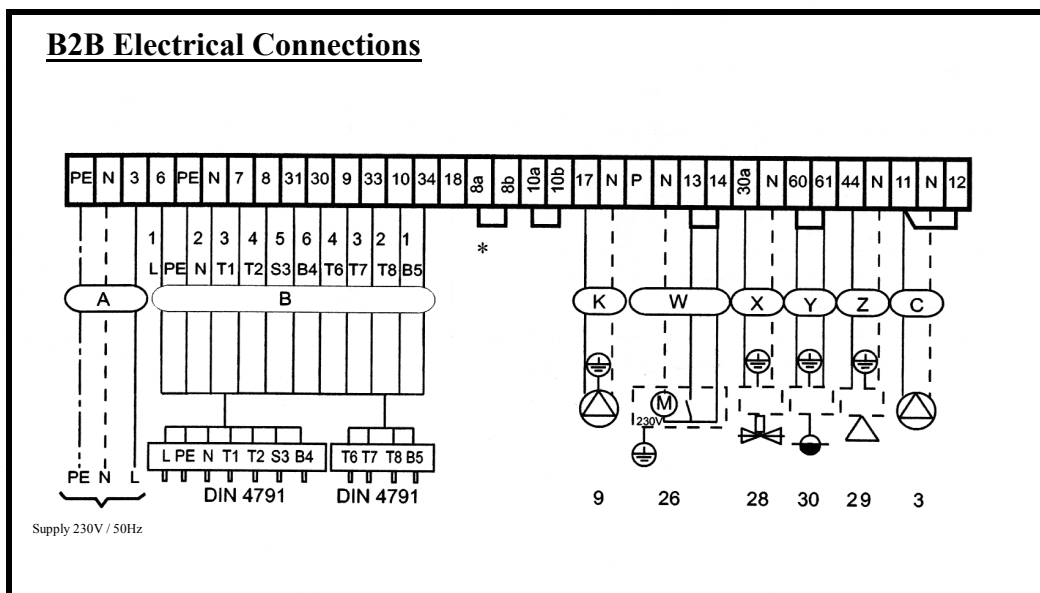
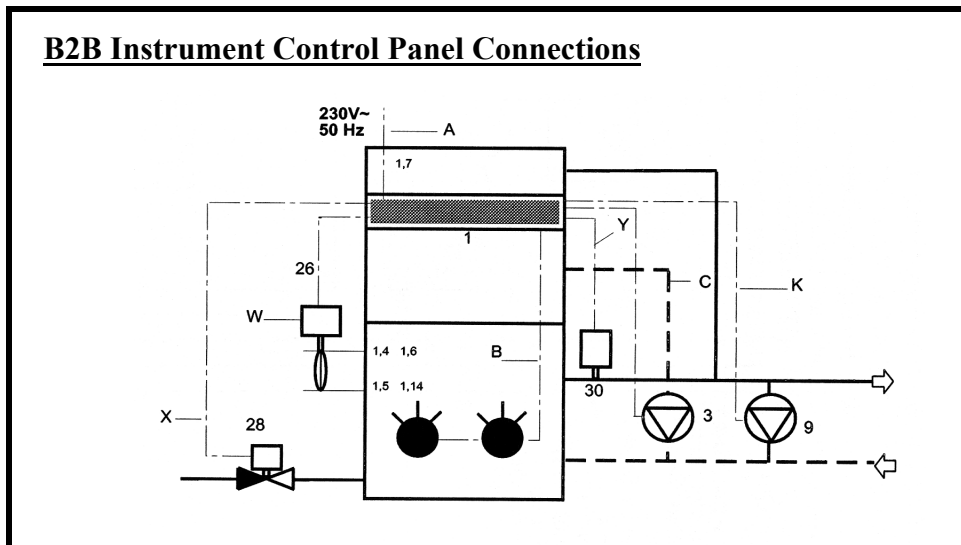




**Legend**

- |   |  |
|---|--|
| 1. Instrument Control Panel.  | A. Power Supply 230V / 50Hz                                      |
| 2. Separate Calorifier Control.   | B. Burner Connections. (Plug and Socket Looms).                  |
| 4. Separate Calorifier Circulating Pump.                                      | K. Boiler Circulating Pump Interlock.                            |
| 9. Boiler Shunt Pump.   | W. Flue Gas Damper Interlock.                                    |
| 26. Flue Gas Damper.  | X. Safety Solenoid Valve Interlock.                              |
| 28. Safety Solenoid Valve.  | Y. Calorifier Thermostat Interlock.                              |
| 29. High Limit Thermostat.  | Z. Provision for Remote High Temperature Limit Indication.       |
| 30. Calorifier Control Thermostat.  | D1. Calorifier Instrument Control Panel Connection.              |
| DIN 4791 - Weiland Connector (7-way for stage 1 burner operation).            | D2. Calorifier Circulating Pump Connection.                      |
| DIN 4791 - Additional Weiland Connector. (4-way for use with Hi/Low Burners). | * Provision for Remote Switching of Burner. (terminals 8a & 8b). |

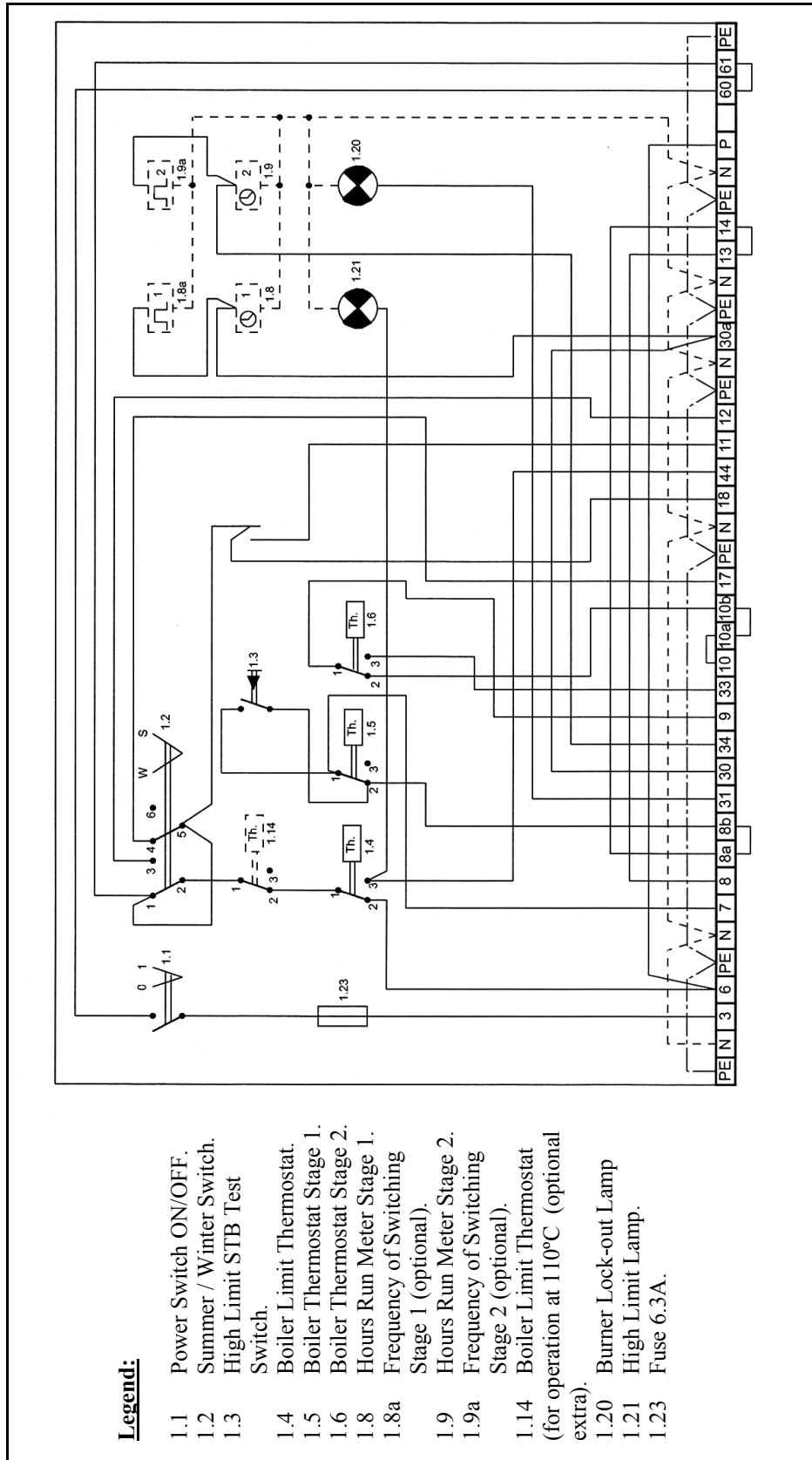




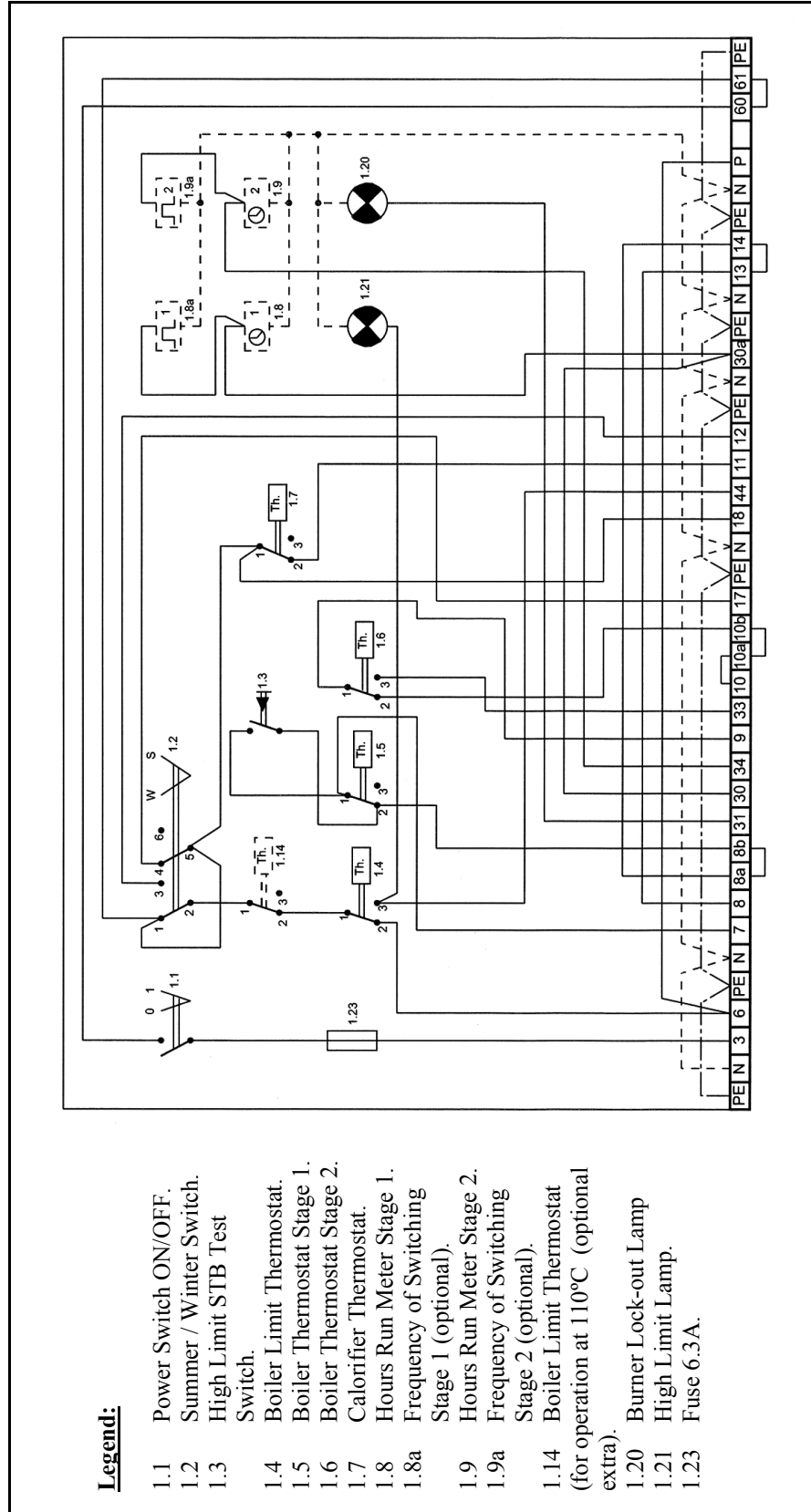
### Legend

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Instrument Control Panel.</li> <li>3. Calorifier Circulating Pump.</li> <li>9. Boiler Shunt Pump (where applicable)</li> <li>26. Flue Gas Damper. (where applicable)</li> <li>28. Safety Solenoid Valve. (where applicable)</li> <li>29. High Limit Indication.</li> <li>30. Calorifier Control Thermostat.</li> </ol> <p>DIN 4791 - Weiland Connector.<br/>(7-way for stage 1 burner operation).</p> <p>DIN 4791 - Additional Weiland Connector.<br/>(4-way for use with Hi/Low Burners).</p> | <ol style="list-style-type: none"> <li>A. Power Supply 230V / 50Hz</li> <li>B. Burner Connections. (Plug and Socket Looms).</li> <li>C. Calorifier Primary Circulating Pump.</li> <li>K. Boiler Circulating Pump Interlock.</li> <li>W. Flue Gas Damper Interlock.</li> <li>X. Safety Solenoid Valve Interlock.</li> <li>Y. Calorifier Thermostat Interlock.</li> <li>Z. Provision for Remote High Temperature Limit Indication.</li> </ol> <p>* Provision for Remote Switching of Burner.<br/>(terminals 8a &amp; 8b).</p> |
|--|---|

**K2B Instrument Control Panel - Internal Wiring Diagram**



**B2B Instrument Control Panel - Internal Wiring Diagram**



**IMPORTANT:**

Flue-gas temperatures of below 160°C can lead to sooting of the flue, when entering a stone or brick chimney. Where flue-gas temperatures are below 160°C gross, specially adapted chimneys must be available. If after the burner has been set, the flue-gas temperature is too low, the baffles from the 3rd flue pass can be taken out. If necessary, the 2nd flue pass baffles can also be removed.

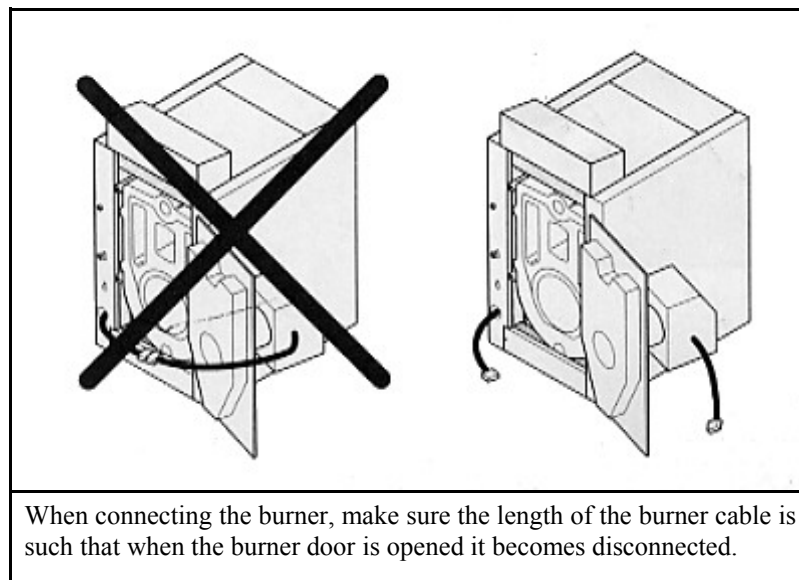
**NB: Every change made to the flue baffles requires re-commissioning of the burner settings.**

Electrical connections must be carried out by qualified personnel in accordance with instructions supplied.

Electrical leads and oil pipes should never be fastened to the boiler casing.

In the interest of technical progress, we reserve the right to undertake changes and improvements in production without notification.

Please refer to 'Operating and Maintenance' information for details on baffles and control panel information.





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**THE COMPANY RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AND DIMENSIONS WITHOUT NOTICE**

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