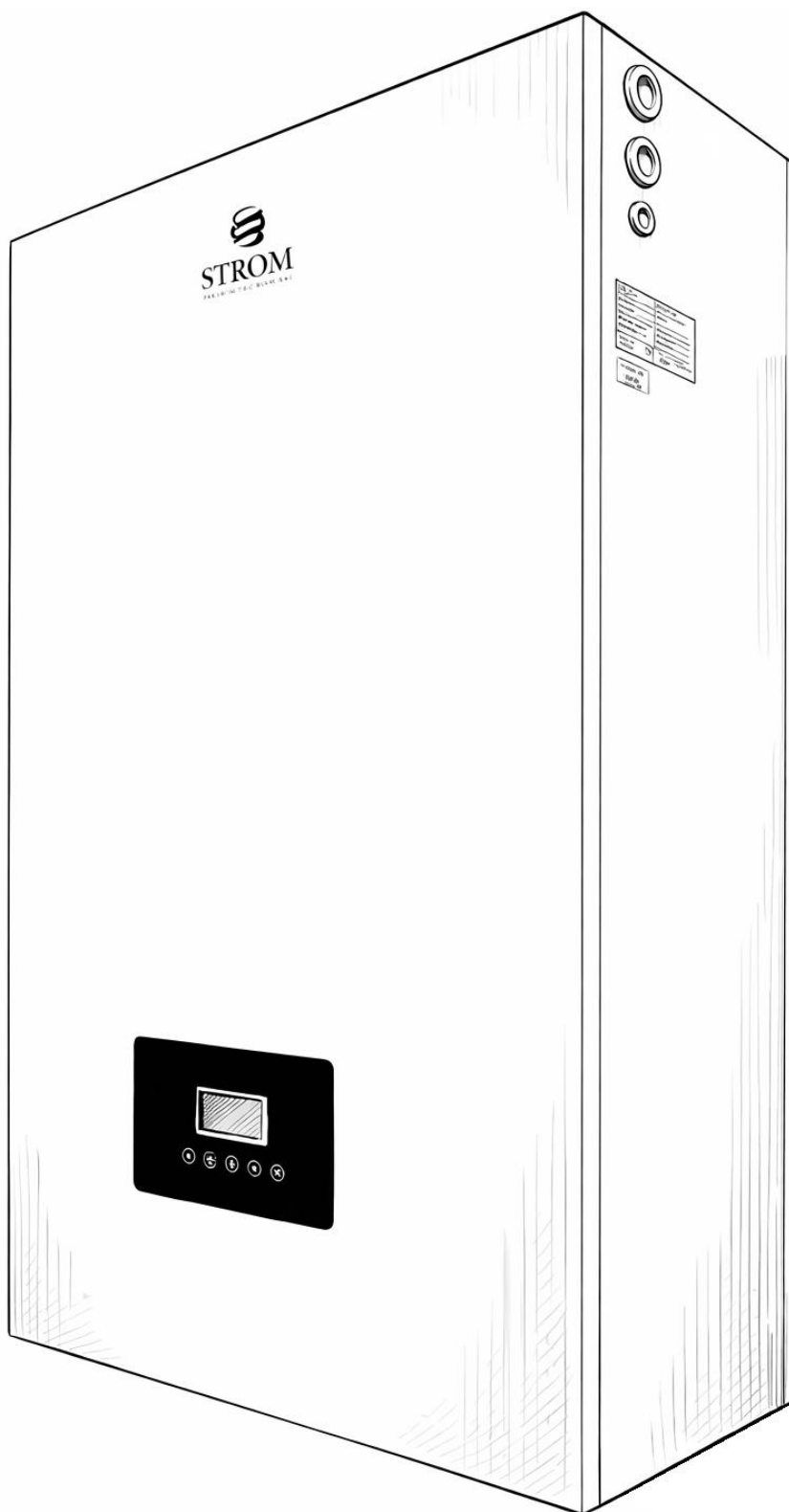


The Strom Auraheat Storage Combination Boiler
INSTALLATION & USER GUIDE V1 Manual



THE FUTURE OF HEATING, IT'S ALL IN THE DETAILS...

REMEMBER TO REGISTER
WWW.STROMLTD.COM/GUARANTEE

www.stromltd.com
STROM LIMITED 2026

INTRODUCTION

Please read the whole manual carefully following the correct operating instructions before installation to ensure longevity of this Strom Electric Boiler. These instructions must be conserved and given to any new user.

All Strom Auraheat Storage Combination boilers come with a full 5-year warranty from the date of registration (registration must be completed within the first 45 days of purchase) unless purchased with a promotional warranty. The warranty relates to any manufacturing defects and covers the replacement of any faulty parts and labour costs during the first 2 years; the balance of the warranty is parts-only. The warranty will not cover damage to the boiler through poor installation and/or any consequent water damage or leaks into the boiler. All plumbing must be checked for water tightness and normal operation before the boiler is left with the end user. The warranty will not cover charges that have not been organized by Strom Ltd.

This appliance is not intended for use by anyone (including children) with reduced physical, sensorial or mental capacities, or lack of experience with the appliance, unless they have been given supervision or instruction by a competent person responsible for their safety.

This electric boiler must be fitted in accordance with the following:

- The local building regulations.
- UK building regulations.
- G3 Regulations.

BS EN 12828 Heating systems in buildings: Design for water-based heating systems.

BS EN 12831 Heating systems in buildings: Method for calculation of the design heat load.

BS EN 14336 Heating systems in buildings: Installation and commissioning of water-based heating systems.

BS7671 Requirements for electrical installations. IEE Wiring Regulations. Nineteenth edition.

BS EN 7593 Code of practice for treatment of water in heating systems.

1. Load Check - A load check should be taken into consideration when installing high output boilers.
2. Central heating design - detailed recommendations are provided in BS EN 12828 and BS EN 6700.
3. Location - The boiler can be installed in almost any location, but consideration should be given to the potential of frost or damp conditions, and to the future maintenance of the equipment. Clearance should be allocated for the removal of the front panel if necessary and for air flow into the boiler. The boiler must be installed in an upright position, failure to do so will invalidate the warranty. The wall where the boiler is being sited should be strong enough to support the weight of the boiler when full. The surface to be mounted on should be made of non-combustible materials and have a heat tolerance in excess of 100oC.

RELEVANT STANDARDS

BY FITTING THIS BOILER, YOU AGREE:

- YOU HAVE CARRIED OUT ALL HEAT LOSS CALCULATIONS ON THE PROPERTY AND ARE SURE THAT THIS BOILER IS SUITABLE FOR THE APPLICATION. OVERSIZING THE BOILER MAY LEAD TO PREMATURE FAILURE NOT COVERED BY THE WARRANTY.

▫ PART L 2022 OF THE BUILDING REGULATIONS CLEARLY STATE THAT BOILERS CAN NO LONGER BE SIGNIFICANTLY OVERSIZED.

▫ DO NOT REPLACE AN OLD BOILER WITH THE SAME SIZED NEW ONE, ELECTRIC BOILERS ARE 100% EFFICIENT AND OLD BOILERS MAY HAVE BEEN OVERSIZED.

▫ DO NOT SIZE ACCORDING TO WATER NEEDS, SIZE ACCORDING TO HEATING AND LOOK TO SEE IF THE WATER FLOW RATES ARE ADEQUATE, IF NOT AN ELECTRIC COMBINATION BOILER MAY NOT BE A SUITABLE SOLUTION FOR YOUR NEEDS.

- YOU HAVE CARRIED OUT VOLTAGE AND LOAD TESTS TO DETERMINE THE CORRECT SIZED BREAKER & CABLE ARE USED.
- YOU HAVE CHECKED IN THE CASE OF THE COMBINATION BOILER THAT THE HOT WATER FLOW RATE IS SUFFICIENT FOR THE APPLICATION
- THAT THE BOILER IS FITTED IN A MANNER AND LOCATION WHERE IT CANNOT BE ACCESSED BY UNAUTHORISED/UNQUALIFIED PERSONS.
- TO BE BOUND TO THE TERMS AND CONDITIONS ON THE LAST PAGE OF THIS MANUAL.
- THE BOILER HAS BEEN RECEIVED IN GOOD CONDITION.
- A PART P ELECTRICAL CERTIFICATE WILL BE ISSUED IMMEDIATELY AFTER A LIVE CONNECTION HAS BEEN MADE TO THE BOILER IN ACCORDANCE WITH BUILDING REGULATIONS UK. THIS IS A CONDITION OF THE WARRANTY. PART P REGULATIONS CLEARLY STATE THAT WHEN ANY NEW CIRCUIT OR ALTERATION TO AN EXISTING CIRCUIT HAS OCCURED A CERTIFICATE MUST BE PROVIDED. BOILERS REGARDLESS OF FUEL TYPE ARE CLASSED AS NOTIFIABLE WORKS. THE INSTALLATION OF THE ELECTRICAL CIRCUIT TO THE BOILER IS ALSO NOTIFIABLE WORKS.
- UNDER G3 REGULATIONS, BUILDING CONTROL OR CPS WILL BE IMMEDIATELY NOTIFIED OF THESE WORKS AFTER THE INSTALLTION HAS BEEN COMPLETED IN ORDER FOR CERTIFICATION FOR THIS INSTALLATION TO BE PROVIDED BY BUILDING CONTROL.

STAYING COMPLIANT

When installing an electric boiler, it is important to pay attention to all national laws, local laws and by-laws to make sure that you are safe and your installation is compliant.

Installation of the electrical connections should only be completed by qualified electricians who are members of a competent person's scheme. It is a requirement in law and of the schemes that an electrical installation certificate is provided for electric boiler installs as this will class as a "a new circuit or significant alteration of an existing circuit".

As this product contains a 35-litre storage vessel that is heated, it is a requirement by law and regulation that the person/s that installs the water connections to this product have acquired G3 installation certification and the installation and this product is installed in accordance with those G3 regulations.

Building regulations stipulate that boiler installations regardless of fuel type are notifiable by law. To comply, the installers of this product must be fully qualified and competent person/s who will notify CPS or the local building authority of the installation as well as providing both an electrical installation certificate and Part P certificate. You may be required to have more than one person complete this installation for the purposes of ensuring this criteria is met.

Below is an extract from the Department for Communities & Local Government showing what is required:

Remember even as the homeowner it is your job to ensure that your property complies with this law. Failure to do so may result in legal fines being levied, insurance policies being cancelled, and possible prison sentences. Selling your house may also prove difficult without the correct paperwork in place.

For more information about the requirements for electrical works being carried out look at a competent persons scheme website like: www.NICEIC.com

Or check out the building regulations approval site at: <https://www.gov.uk/building-regulations-approval>

BOILER SPECIFICATION

Power Rating	9.5 kW	13.5 kW
Voltage	230V	230V
Amps	46 A	62 A
Min Recommended Breaker	50 A	63 A
Min Recommended Cable Size	10 mm ²	10 mm ²
Temp Range Heating	30-80°C	30-80°C
Temp Range Tank	45-80°C	45-80°C
Temp Range DHW output	30-55°C	30-55°C
Max Heating Pressure	3 Bar	3 Bar
Min Heating Pressure	0.5 Bar	0.5 Bar
Max DHW Pressure	6 Bar	6 Bar
Tank Volume (Litres)	35	35
Maximum Recommended DHW Flow Rate (Lpm)	10	12
Minimum Recommended DHW Flow Rate (Lpm)	4.5	6.7
Heating Connections	¾" Male BSP	¾" Male BSP
DHW Connections	½" Male BSP	½" Male BSP
PRV Connection	½" Female BSP	½" Female BSP

Please note the products recommended flow rates are based on providing you with a minimum of 90 litres of water at a total output temperature of 40°C (enough to fill a bath) if the products tank is fully heated (tank temperature set to 80°C, blending temperature set to 30°C). This performance may not be sustainable past 90 litres of hot water without allowing the tank to fully reheat again.

Reducing the flow rate below the recommended flow rates listed above can help boost the performance detailed to suit your requirements of total hot water volume, higher temperatures or both.

This product will also provide continuous instantaneous hot water without any hot water stored in the tank at the minimum recommended flow rates detailed above (30°C increase). You should consider setting the flow rates at basins, kitchen taps and shower heads (not bath taps) below the maximum recommended DHW flow rate listed above to help ensure consistency and the longevity of hot water stored within the tank. Only outlets that require a high demand of flow such as bath taps should be set at the maximum recommended flow rates detailed above.

WHAT'S IN THE BOX?

1. BOILER
2. WALL MOUNTING GUIDE
3. 2 x EXPANDING WALL BOLTS
4. TANK DRAIN OFF VALVE ADAPTOR
5. REGISTRATION DOCUMENTATION

G3 COMPLIANCE KIT

1. 4 LITRE EXPANSION VESSEL
2. INLET CONTROL MULTIBLOCK
3. 15MM X 22MM TUNDISH

INSTALLATION SCHEDULE

PRIOR TO INSTALLATION

Please ensure that all steps of the installation schedule are carried out in this order, and only in this order. Failing to carry out the installation in this order may result in damage to the boiler and incorrect function of the system.

1. HEAT LOSS CALCULATION.

Correctly calculate the correct size unit for the properties heating demand. We regret to inform you that after installation there is no way to boost the output of the unit, so it is important you get the correct unit for the property. Strom can assist you with these calculations upon request.

2. HOT WATER CALCULATION.

Please ensure that the boiler has a sufficient heat output to provide the correct temperature & flow of water required for the application. Information on this products DHW performance can be found on our website, the products promotional literature and it is also detailed on pages 5 & 25. If you need help calculating this, please contact Strom.

3. VOLTAGE & LOAD CALCULATION.

Typically the UK single phase supply is 230V. All our technical data is based on this; however, you should take an exact measurement at the installation address to correctly determine the correct input voltage for your installation. This will help determine the size of breaker required and will also be a factor in your calculations of determining what cable sized is required. All our breaker and cable size recommendations are only that and should be checked against the conditions of the installation and your requirements.

Heating elements within all Strom Electric Boilers maintain a fixed resistance, as a result, as voltage increases so too does the current drawn. All our boilers specifications are based on exactly a 230V supply therefore any variance from this must be taken into account when calculating the correct breaker and cable size.

4. DHW MAINS WATER PRESSURE.

The maximum rated DHW pressure of these units is 6 bar. Where incoming water pressure is approaching this limit, or where dynamic pressure varies and may exceed this, the pressure reducing set on the multiblock provided should be adjusted appropriately to negate this on the mains supply.

All these considerations must be made prior to at least installation but preferably before purchase is made. Regrettably, once the products box has been opened, we are unable to accept returns of the product unless the product is faulty or does not operate as advertised by Strom.

IMPORTANT

It is important that once you start installing this product you do not leave it unattended with power connected or water in the circuits unless all steps required within this manual have been followed to complete the installation. If you intend to leave the boiler unattended without completing the installation you should ensure that no leaks are present or possible, and the electricity supply to the boiler has been fully isolated.

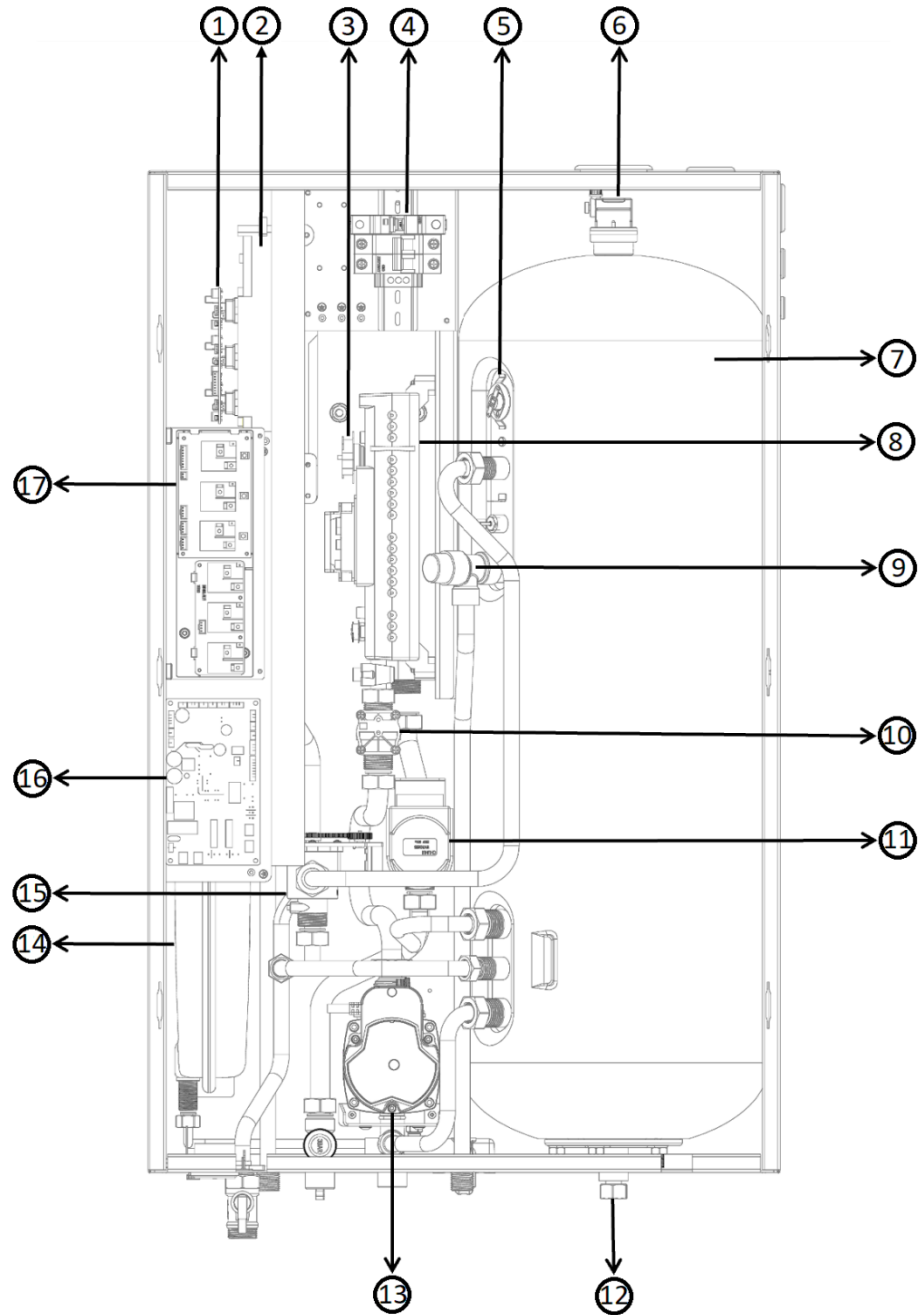
INSTALLATION

1. COMPLETE SYSTEM PIPING - SEE PAGE 12
2. WALL MOUNT THE BOILER - SEE PAGE 14
3. FLUSHING YOUR SYSTEM - SEE PAGE 15
4. MAKE WATER CONNECTIONS - SEE PAGE 16
5. MAKE ELECTRICAL CONNECTIONS - SEE PAGE 17
6. WIRE AN EXTERNAL THERMOSTAT - SEE PAGE 18
7. CHECK ELECTRIC CONNECTIONS - SEE PAGE 19
8. POWERING THE BOILER ON - SEE PAGE 20
9. FILLING TANK AND SYSTEM - SEE PAGE 21
10. CHECK ALL WATER CONNECTIONS - SEE PAGE 22
11. SET BOILER PARAMETERS - SEE PAGES 23 & 24

POST INSTALLATION

1. PROGRAM THERMOSTAT - REFER TO MANUFACTURERS MANUAL
2. SETTING DHW FLOW RATES - SEE PAGE 25
3. TEST HEATING & HOT WATER / COMMISSIONING - SEE PAGE 26
4. COMPLETE CHECK LIST - SEE PAGES 27 & 28
5. ASK OWNER TO REGISTER - REFER TO www.stromltd.com/guarantee

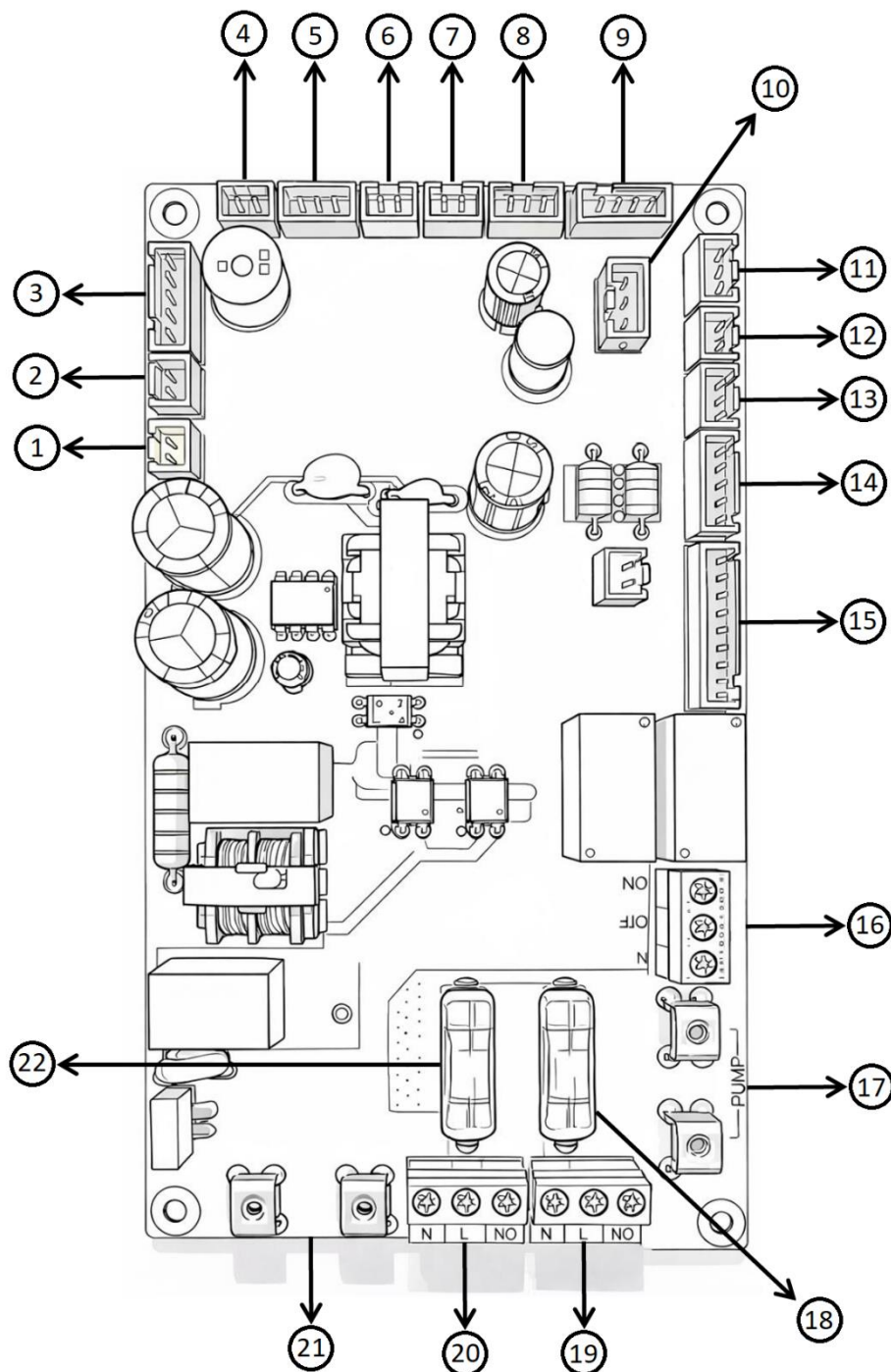
PRODUCT SCHEMATIC



Key:

- | | |
|--|--|
| 1. DHW Triac Board. | 9. Tank Temperature & Pressure Relief Valve. |
| 2. DHW Heating Element. | 10. Heating Flow Sensor. |
| 3. Heating Thermal Cut Out (Also included on DHW element). | 11. Diverter Valve. |
| 4. Internal Trip Switch. | 12. Tank Drain Off Connection. |
| 5. Tank Thermal Cut Out. | 13. Pump. |
| 6. Tank Air Vent. | 14. Heating Expansion Vessel (5 Litre). |
| 7. 35 Litre Storage Tank. | 15. Digital Blending Valve. |
| 8. Heating Element. | 16. PCB. |
| | 17. Heating Relay Board. |

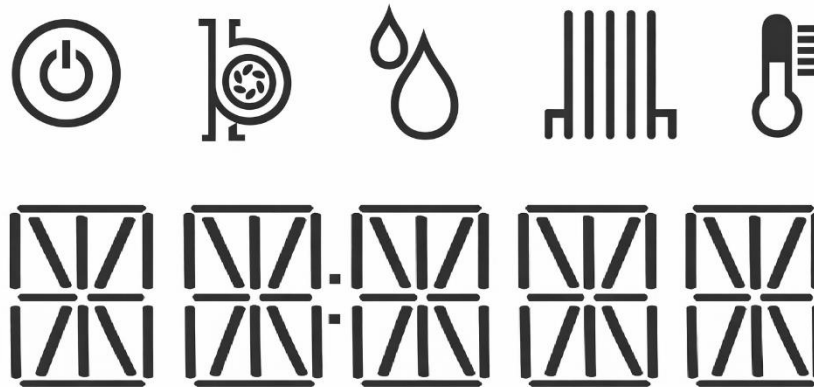
PCB SCHEMATIC



Key:

- | | | |
|--------------------------------|--|-----------------------------------|
| 1. Internal Tank Temp Sensor. | 9. Display Board. | 16. Diverter Valve Power. |
| 2. Blending Valve Power. | 10. Pump PWM Control. | 17. Pump Power. |
| 3. Blending Valve Comms Cable. | 11. DHW Flow Sensor. | 18. DHW Control Circuit Fuse. |
| 4. DHW Inlet Temp Sensor. | 12. Blending Valve Outlet Temp Sensor. | 19. DHW Control Connections. |
| 5. Heating Flow Sensor. | 13. DHW Outlet Temp Sensor. | 20. Heating Control Connections. |
| 6. Heating Return Temp Sensor. | 14. DHW Triac Board. | 21. Thermal Protection Circuit. |
| 7. Heating Flow Temp Sensor. | 15. Heating Relay Board. | 22. Heating Control Circuit Fuse. |
| 8. Tank Outlet Temp Sensor. | | |

SCREEN DIAGRAM



Power Icon:

Indicates the power status of the boiler. When displayed the boiler is on, when not displayed the boiler is in standby.



Pump Icon:

Indicates the functionality of the Pump. When displayed the pump is in operation, when not displayed the pump is not operational. This icon may also display or flash when changing settings related to the pump.



DHW/ Tank Icon:

Indicates the functionality of the DHW system. When displayed the Tank is being heated, when flashing the instantaneous element is operational, when not displayed there is no DHW function operational. This icon may also display or flash when changing settings related to the pump.



Heating Icon:

Indicates the functionality of the heating system. When displayed the heating system is being heated, when not displayed the heating is not operational. This icon may also display or flash when changing settings related to the heating.



Temperature Achieved Icon:

Indicates when a desired temperature set has been achieved. When displayed the desired temperature set has been achieved. This icon may also display or flash when changing settings related to the setting temperatures.



Alphanumeric Display:

This will display numbers and text depending on the boilers current functions. If the boiler is in operation and no menus are open it will display the live temperature. If the heating is on the live heating temperature will be displayed. If the tank is heating the live internal tank temperature will be displayed. If a tap / outlet is open this will display the live temperature the boiler is outputting. This display will also show important text information in the boilers menus as well as displaying error codes should there be an issue with the system or boiler.

DISPLAY BUTTONS



Power Button:

Press and hold for 3 seconds to turn the boiler from its standby state into its on state. It can also be used to exit menus.



Menu Button:

Press and hold for 3 seconds when the boiler is either in its on state or off state to access menus. Single presses will allow you to cycle through the menu options.



Plus Button:

Apply single presses for increasing settings value.



Minus Button:

Apply single presses for decreasing settings value.



Confirm Button:

Can be used to confirm settings changes in the on-state menu. All other settings outside of the on-state menus are saved as they are altered.

SYSTEM PIPING

The boiler must be installed by a competent and certified plumber or heating engineer, and systems should be designed to meet the current building regulations in force at the time of installation. Strom Limited are not responsible for faulty installations which are performed by unqualified tradespeople.

DESIGN NOTES:

ISOLATION VALVES:

For ease of removal from the system, it is essential that full bore isolation valves are fitted on the flow and return pipework from the boiler. Do not use standard ball valves, as this can restrict the flow in and out of the boiler and result in detrimental performance.

AUTOMATIC AIRVENTS:

An automatic air vent is already built into the boiler. However, if the boiler is to be used in tandem with a hot water cylinder, an additional air vent should be fitted in the vicinity of the cylinder coil. An airvent should always be considered at the highest point in a system to aid in purging the system of any air.

AUTOMATIC BYPASS VALVE:

An automatic bypass valve is integral to any system and **MUST** be installed as part of this installation. The ABV should be fitted to begin opening as the first valve, radiator, or actuator shuts in the system, this stops excess pressure from building in the system on the flow side. Failure to fit and set the ABV can result in poor performance and premature boiler failure.

WATER CONNECTIONS:

For filling the heating system, reference should be made to BS EN 14336. There must be no connection between the central heating systems and the main water supply, and all local water bylaws must be observed. Any connection made between the mains water and heating system must be disconnected after use.

WATER PURGES:

Install purges in the radiators and any high points in the heating system to aid in removing air.

DRAIN POINT:

A drain point should be fitted at the lowest point of the heating system. It is not acceptable to drain the boiler through a safety valve as debris can prevent the correct operation of the valve.

HEATING EXPANSION VESSEL:

An expansion vessel (5 Litre) is fitted internally within the boiler to provide room for thermal expansion of water under regular operating conditions. However, if the system contains significant volumes of water, an additional heating expansion vessel should be fitted externally.

G3 COMPLIANCE KIT:

This product contains a 35-litre tank of water that is heated and as such requires an expansion vessel, an inlet control (includes pressure relief valve) and a tundish to be installed in line with G3 regulations to maintain safe operation of this product. This boiler is provided with a G3 compliance kit which includes these components. Failure to install these components correctly or not at all is a violation of G3 regulations, extremely dangerous and this could also result in criminal prosecution.

PART L COMPLIANT LAYOUTS

WALL MOUNTING THE BOILER



Important:

When filled with water this product weighs 95kg. Please ensure the mounting surface can support this full weight. The supplied fixings are appropriate for load-bearing walls only, you should always ensure the correct fixings are used for the type of wall you have. If alternate fixings are being used, please ensure these fixings are suitable to support the full weight of this product. If you are in doubt, please consult a builder. Failure to correctly and appropriately secure this boiler will result in the invalidation of the products warranty.

Product Dimensions:

Height – 900mm / Width – 570mm / Depth – 300mm

Mounting the Boiler:

The boiler has an integrated bracket fixed to the back of the unit; two holes need to be drilled into the wall to allow for hooks to place perfectly into the bracket. Use the cardboard template (perfectly scaled) provided to identify where best to locate your drill holes whilst remaining conscious of the additional space required for the boiler to be seated in. You will require a 16mm drill bit for the fixings provided. Place the fixings into the drilled holes and then rotate the hooks until extremely tight and firm. If the fixings spin freely and are unable to get enough grip within the hole to tighten then remove the fixing and slightly tighten the nut at the bottom of the fixings to expand the fixings wings. This should then allow the fixing to grip tightly within the hole and allow the fixings wings to further expand until the plug is very firmly secured to the wall. In tight spaces you may benefit from placing temporary guidance markers you are able to see to indicate where the fixings are as you mount the boiler onto them.

We recommend a clearance of 100mm from all sides of the boiler plus whatever additional space is practical for the purposes of product servicing.

FLUSHING:

The system must be flushed to 10% of mains PPM (chloride and otherwise) or lower to ensure that the water system is not detrimental to the lifespan of the boiler. Regardless of whether this boiler is being installed on a freshly installed system or being retrofit onto an existing system a power flush must be carried out on the radiators and pipework to remove any potential debris.

WATER CONNECTIONS

MAKING CONNECTIONS:

- The connections for flow and return must be carried out according to the colour scheme and labelling marked on the boiler.
- The connections for mains water inlet and outlet must be carried out according to the colour scheme and labelling marked on the boiler.
- When tightening or loosening threaded connections, always use suitable tools such as open-end adjustable spanners. Do not use pipe wrenches, extensions or unsuitable tools that may cause damage or water leaks.
- When using irons please ensure that you secure both connections and do not apply more torque than necessary as you may split in the internal pipework of the boiler or weaken it, both will render the warranty void and increase the chance of a leak that would not be covered by the warranty.

HEATING FLOW & RETURN:

These connections are ¾" bsp male for connection to 22mm pipe. Suitable diameter service valves should be installed at the flow and return to allow the boiler to be isolated for maintenance without draining the entire heating system.

HOT WATER INLET & OUTLET:

These connections are ½" bsp male for connection to 15mm pipe with service valve on the inlet for flow restriction.

PRESSURE RELIEF VALVE:

The boiler comes with a barb fitting for quick connection in temporary applications; however, we recommend the removal of this to expose a ½" bsp female connection, this can then be converted to 15mm copper pipe and discharged according to current building regulations.

TEMPERATURE AND PRESSURE RELIEF VALVE:

This connection is a ½" bsp male for connection to 15mm pipe. Ensure the pipework connected at this point is compliant with requirements within the G3 regulations.

TANK DRAIN OFF:

At the base of the tank is a ½" bsp female connection. Provided with the boiler is a cap, isolation valve and an adapter for a hose connection for convenient drain down. Whether you use the fittings provided or not, always ensure that any cap used cannot be untightened by hand or tampered with. Water within this tank can be stored up to 80°C please always ensure the water has reached a safe temperature before fully draining down this tank.

ELECTRICAL CONNECTIONS

POWER SUPPLY:

The supply cable to the boiler should be of sufficient size to carry the load capacity required. It should be wired through a double pole rotary isolator switch with minimum contact gaps of 3mm in every pole, and the system protected by a suitably rated circuit breaker.

It is essential that the boiler is properly earthed, and the wiring tested to current IEE regulations.

The following table shows the specification for this range of Strom Boilers, please check carefully for your model and read off the table below. Calculations should always be completed to ensure that the information is correct for your circumstances, as variances in installations can change the breaker size and or cable size required, for instance voltage varies from property to property and does not necessarily follow any regional variances.

Rated Boiler Output	9.5 kW	13.5 kW
Rated Voltage	230	230
Current (A) @ Rated Voltage	46	62
Minimum MCB/RCD (A)	50	63
Minimum Cable Size (mm ²)	10	10

The terminal connection block is located centrally / top of the inside of the boiler and is accessible via multiple predrilled options on the casing. The supply cable should be safely routed through any of these cable entry points at the top of the right-hand panel of the boiler and then secured with a cable gland. Do not drill any additional holes in the casing of this product for the purposes of cable entry. This is a modification to the boiler and will invalidate your warranty.

Ensure the supply cables are wired into the correct terminals and are securely in position. Failure to correctly and tightly secure these connections can result in damage to the cable and/or the products internal breaker also resulting in the invalidation of your warranty.

Remember an electric boiler is a fixed resistance device, if the voltage goes up so to does the current drawn. This will need to be accounted for in the sizing of the cable and breaker.

EARTH LEAKAGE DESIGN:

When designing your system please be aware that this product can produce a high level of intentional earth leakage for it to work correctly. If you are fitting an RCD in conjunction with this product it is important to take this into account. If you see persistent tripping on the RCD then take a measurement of the earth leakage. You may be required to provide this boiler with its own independant RCD or alternatively you may be required to design your system in such a way that an RCD is not required.

CABLE TYPE:

For ease of installation Strom always recommend a multi strand high temperature flexible cable such as HO7 cable, please consult your electrical distributor, and always make sure that size of cable is correct for the current drawn as different cables can have different ratings at different core sizes. Please remember to check the manufacturer's specific current carrying capacity of the cable you have chosen to install.

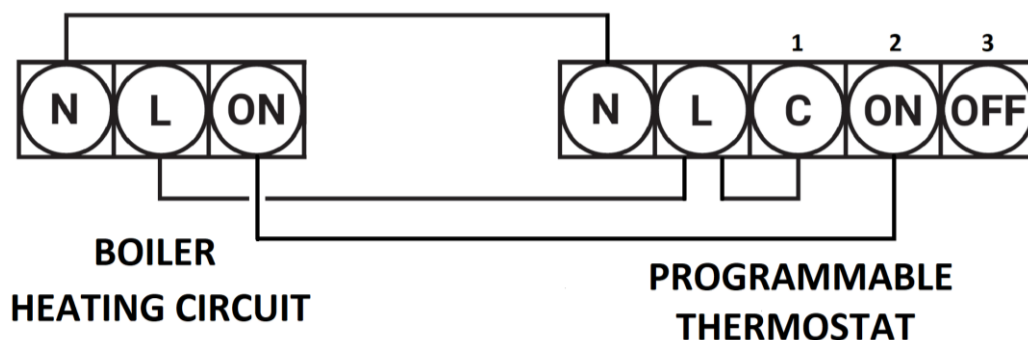
CONNECTING EXTERNAL CONTROLS

Because no programming or temperature control can be performed on the heating by the boiler itself it is necessary to fit an external thermostat. Should you wish to heat your internal tank to specific times or dates you will also need to include a 2 or 3 channel programmer and wire the thermostat in line with this additional control. This programmer can then be used to create a heating schedule as well. If you do not plan to schedule on off times for your internal tank then it is recommended that you fit time and temperature control in the form of separate programmer and thermostat(s) or in the form of all-in-one programmable thermostat(s).

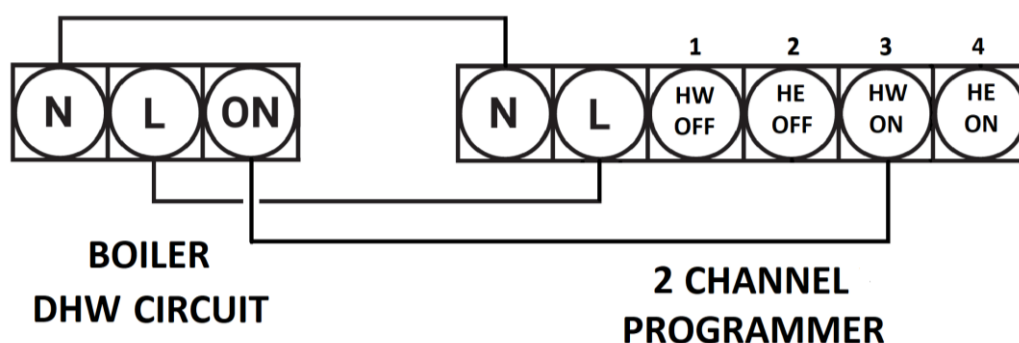
THERMOSTAT WIRING:

The following information is provided as a guide only and refers to Strom manufactured heating controls, however you should follow the guidance of the manufacturer when connecting the thermostat to the Strom Boiler. We regret that we cannot offer any wiring advice of competitor products and can only refer in those circumstances to the connections on our boiler. These diagrams can be used to demonstrate where to wire the controls into the boiler rather than demonstrate where to wire into the controls themselves. When wiring thermostats in conjunction with channel programmers amongst other controls you may need to refer to basic s-plan diagrams alongside the manufacturer's instructions.

Heating:



DHW:



The PCB control board for the heating and hot water circuits is located in the lower left-hand side of the boiler (Please see schematics on pages 8 & 9).

All wiring must be carried out in accordance with current IEE BS7671 wiring regulations.
 All electrical connections must be made by a qualified electrician.

CHECKING ELECTRICAL CONNECTIONS

It is important before powering the boiler on for the first time that all electrical connections are checked, this is not only your own connections but also the factory-made ones too. Whilst all factory-made connections are tested prior to the products dispatch it is possible that during transit or installation, connections may have come loose.

For screwed connections please check for cable movement and tighten with a screwdriver if necessary and for ribbons and push plastic connectors please gently apply pressure to make sure they are firmly seated. Please check the following connections:

1. The main power supply connections to the unit, both installer and factory made.
2. The external control connections on the PCB control board.
3. Push connectors labelled 1 – 15 and screwed connections labeled 16,17 and 21 on the PCB control board schematic on page 9.
4. All terminations on the heating element (these are the braided connections).
5. All terminations on the hot water elements (these are the braided connections)
6. All earth terminations both factory made and installer made.

POWERING THE BOILER

IMPORTANT

Before supplying power to the boiler for the first time please make sure you have completed the following:

1. All aspects of the manual proceeding this section have been completed as instructed.
2. The fitted thermostat or programmer is set to the off position, or where off is not possible the thermostat is set to the lowest possible temperature.
3. Make sure that any power isolators inside the boiler are turned on, and the boiler casing is secured.
4. The boiler can now be powered on by activating power at the breaker in the consumer unit. The boiler will initially power on in standby mode. **DO NOT** activate the boiler out of standby mode at this time until the filling procedures on the next page have been followed and completed. Turning your boiler on without water in the system could result in dry heating, damaging the product and invalidating your warranty.

FILLING HOT WATER AND HEATING SYSTEMS:

IMPORTANT

Please note when filling the heating system, power to the boiler must be on but the boiler **MUST** be kept in standby mode until the heating system and hot water systems are completely filled and purged of air. Please fill the DHW side first and then the heating system following the procedures detailed below.

HOT WATER:

Prior to filling, ensure that one hot water outlet / tap is open to help with releasing air as the tank fills. There is also an air vent located at the top of the tank to help remove any air traps within the tank. Begin to open the isolating valve before the cold-water inlet until it is fully open. You will now hear air escaping from both the tanks air vent and the open outlet. Leave the valve open until air has stopped escaping from both the air vent and the outlet. Now close the outlet / tap and the DHW side has been filled.

HEATING SYSTEM:

Ensure that both flow and return isolation valves fitted as part of your installation are fully open. Find the automatic air vent behind the pump and ensure that the cap is freely moving and not screwed down in the closed position. Please add inhibitor to your system in the most suitable / appropriate place at this time (refer to the manufacturers' guidance for dilution rates). Connect the filling loop to the filling point connection.

Prior to opening any valves to start filling ensure the boiler is powered on and in its standby state. Press and hold both the plus and minus buttons on the boiler until 'WI' is displayed on the screen. This has now activated the water injection function. This allows the pump to cycle through different speeds and the diverter valve to sporadically open and close between the two heating circuits helping purge air as the system is filled.

Open the valves on the filling loop and allow the system to fill slowly until the pressure gauge reads between 1 and 1.5 bar, at which point the valves on the filling loop should be shut. Allow the water injection program to continue to run until the system is quiet and fully purged of air. Continuing to occasionally open the filling loop to top up pressure when the air released from the system drops the pressure below 1 bar. Now go around your system relieving air from any manual air vents and bleed radiators until satisfied all air has been removed. Once the system is quiet and fully purged of air and then press and hold the M button to exit the water injection program and return to the boilers standby state.

After completing these procedures, you are now free to power the boiler on out of its standby state using the power button.

CHECK WATER CONNECTIONS

It is important not only to check for leaks on the pipework installed by yourself, but also to check the internals of the boiler for any leaks over a few hours after installing the boiler.

Every boiler is pressure tested inside our factory, however after a long journey and installation it can sometimes be necessary to tighten connections when water escapes occur. Please do not unnecessarily tighten connections, or overtighten them, only as required in the few hours after initial installation.

If you are unable to check for leaks in the few hours after installation, please drain down and only fill the system again when you have the time to do so.

SET THE BOILER PARAMETERS

CHANGING THE SETTINGS:

To access all menus for setting and adjusting temperatures on this boiler, the boiler is required to be in its standby state. To put the boiler in its standby state, simply press and hold the power button until the boiler beeps. Single presses will allow you to cycle through the menu options and the plus and minus buttons will allow you to change the value of each setting. Below are details of each setting within this menu.

HEATING FLOW TEMPERATURE (HE)

The boiler flow temperature displays on the boiler as “HE”. This is the temperature you require the water within your heating system to be and maintain whilst there is a demand from an external thermostat / control. Please ensure that you have correctly designed your system to operate at temperatures that comply with current building regulations. Your heating flow temperature should be set at the value that is determined by building regulations.

TANK STORAGE TEMPERATURE (TA)

The tank storage temperature displays on the boiler as “TA”. This is the temperature you require the water to be stored within your tank. This setting can be adjusted to suit energy saving or performance preferences. To achieve specified DHW Flow rates and temperatures it is recommended that this value is set to 80. Please be aware that if you set a tank temperature below 60°C or below a site specific legionella risk assessment MUST be undertaken.

DHW OUTLET TEMPERATURE (HW)

The DHW outlet temperature displays on the boiler as “HW”. This is the desired temperature that you want coming out of your outlets (taps, shower heads etc). This value can be adjusted to suit end users preferences, however, please note the recommended flow rates provided are based on a total output temperature of 40°C. Please be aware that there are many internal and external factors that can affect if this set value is actually achieved such as flow rate, blending temperature and incoming mains temperature. Take these into account and make further adjustment to factors within control if required.

BLENDING TEMPERATURE (BL)

The blending temperature displays on the boiler as “BL”. This is the desired temperature you would like the digital blending valve to reduce the temperature of the water from the tank down to before it is then fed into the instantaneous element. Adjusting this value will affect the longevity of hot water held within the storage tank and thus total volume of water until there is a drop in the boilers DHW performance. A higher value will result in the tank depleting quicker and a lower value will result in the tank depleting slower. To achieve the recommended flow rates and total out temperatures this will need to be set to 30.

STATUS AND DHW CONTROL MENU

ACCESSING THE MENU

To access all status and DHW control menus, on this occasion the boiler needs to be in its on state. If the boiler is currently in its standby state, simply press and hold the power button until the boiler beeps and the display lights up. Whilst in the on state, press and hold the menu button for 3 seconds and the screen will revert to the status menus. Apply single presses to the menu button to cycle through each option. Please note that no settings can be altered in this menu with the exception of DHW tank functionality.

Detailed below are the options within these menus and what they indicate.

TANK DEMAND SIGNAL

When only the water icon is lit on the display and the text beneath says yes or no. This is an indication of if the boiler is recognizing a signal from an external control demanding the tank begins to heat. If the value is yes then a signal is being recognized, if the value is no then no signal is being recognized.

HEATING DEMAND SIGNAL

When only the radiator icon is lit on the display and the text beneath says yes or no. This is an indication of if the boiler is recognizing a signal from an external control demanding the heating turns on. If the value is yes then a signal is being recognized, if the value is no then no signal is being recognized.

LIVE TANK TEMPERATURE:

When TA is displayed, this gives you an update on the current tank temperature. This would not be visible on the normal display unless the tank heating function is in operation at that time.

DHW FLOW SIGNAL

When FL is displayed on the screen at the side of it yes or no will be displayed at the side. This is an indication of if the boiler is detecting flow passing through it on the DHW side (i.e. a tap is open). If yes is displayed then the boiler is recognizing a flow, if no is displayed then the boiler is not recognizing a flow.

DHW TANK FUNCTIONALITY

Finally, when the water icon is illuminated and text beneath either says off, auto, boost or timed, then this shows the set value of the DHW tank functionality. Using the plus or minus buttons you can change this value to suit your desired needs and press the confirm button for the boiler to accept this setting change.

Off means that the tank will not heat at all and you are only using the instantaneous element for heating the water.

Auto means that the tank does not require any external control, and it will maintain the desired tank storage temperature (TA) at all times. When the tank temperature drops 10°C below the set temperature the tank will automatically begin to recover its temperature as long as the hot water is still not in use.

Boost means that you are asking the tank to do a one time heat up to the set tank storage temperature (TA). Once this temperature has been achieved and the hot water has either been used or cooled the tank will not reheat again unless manually asked to do so again.

Timed means that the tank will only heat up when an external control that is wired into the boiler determines it can heat up. During schedules where the external control allows the tank to heat, the tank will maintain the set tank storage temperature (TA) only reheating if the hot water has fully depleted or the tank has cooled by 10°C.

SET DHW FLOW

The hot water side of the boiler relies on setting the correct flow rate of water passing through the unit; if the water going in to the unit is too fast then the unit will be unable to cope with the demand and the water will come out cold. You should aim to set your boiler to approximately the following flowrates, you can do this by restricting the isolation valve fitting on the cold water of the inlet during installation.

RECOMMENDED FLOW RATES

Power Rating	9.5kW	13.5kW
Recommended Flow Rate (Lpm)	10	12

Please note the products recommended flow rates are based on providing you with a minimum of 90 litres of water at a total output temperature of 40°C (enough to fill a bath) if the products tank is fully heated (tank temperature set to 80°C, blending temperature set to 30°C). This performance may not be sustainable past 90 litres of hot water without allowing the tank to fully reheat again.

Reducing the flow rate below the recommended flow rates listed above can help boost the performance detailed to suit your requirements of total hot water volume, higher temperatures or both.

This product will also provide continuous instantaneous hot water without any hot water stored in the tank at the minimum recommended flow rates detailed above (30°C increase). You should consider setting the flow rates at basins, kitchen taps and shower heads (not bath taps) below the maximum recommended DHW flow rate listed above to help ensure consistency and the longevity of hot water stored within the tank. Only outlets that require a high demand of flow such as bath taps should be set at the maximum recommended flow rates detailed above.

TESTING HEATING & HOT WATER

Before completing the installation checklist, please take the time to check the heating circuit and domestic hot water circuit. This final check is important to ensure that you do not have to reattend site at a later date to correct any issues.

HEATING TEST

- Set the thermostat to a temperature approximately 4-5 degrees above current room temperature and ensure that the boiler fires.
- Leave the boiler running for several minutes and check that the radiators are beginning to get warm.
- Wait until the thermostat reaches temperature and deactivates the boiler.
- Now set the thermostat 4-5 degrees higher and wait for a few minutes check to see if the boiler successfully fires again.
- Return the thermostat to its required position to complete testing.

HOT WATER TEST

- Activate the products tank to start heating and wait for the tank to fully achieve the desired temperature set.
- Open a hot water tap and ensure that the boiler fires.
- Give the boiler a few minutes to reach temperature.
- Check that the tap is outputting water at the correct temperature, if not please refer to setting the hot water flow and temperature on page 25.
- Close the hot water tap to complete testing.

PLUMBERS CHECKLIST

PLUMBER TO COMPLETE...

COMPANY NAME:

PLUMBERS NAME:

COMPANY ADDRESS:

COMPANY TELEPHONE:

DATE OF INSTALLATION:

PRODUCT CODE:

WAS THIS AN EXISTING INSTALL OR NEW INSTALL?

HOW MANY HEATING ZONES ARE INSTALLED?

HAS THE FILLING LOOP BEEN REMOVED & CAPPED OFF?

WHAT SETTING IS THE ABV SET AT?

WHAT IS THE HEATING PRESSURE SET AT?

WHAT IS THE INCOMING MAINS PRESSURE?

WHAT HAS THE BOILER FLOW TEMPERATURE BEEN SET AT?

WHAT HAS THE DESIRED TANK TEMPERATURE BEEN SET AT?

WHAT HAS THE DESIRED DHW TEMP BEEN SET AT?

WHAT HAS THE BLENDING TEMPERATURE BEEN SET AT?

WHAT TANK HEATING FUNCTION HAS BEEN SET?

WHAT PUMP SPEED HAS BEEN SET ON THE BOILER?

NOTES:

BY SIGNING, YOU AGREE THAT YOU HAVE INSTALLED THE BOILER IN ACCORDANCE WITH THIS MANUAL AND THAT THE BOILER IS WORKING AS INTENDED WITHOUT ANY LEAKS AND ALL INSTALLER MADE AND FACTORY-MADE CONNECTIONS HAVE BEEN CHECKED.

SIGNED:

DATE:

ELECTRICIANS CHECKLIST

ELECTRICIAN TO COMPLETE...

COMPANY NAME:

ELECTRICIANS NAME:

COMPANY ADDRESS:

COMPANY TELEPHONE:

DATE OF INSTALLATION:

WHAT IS THE INCOMING MAINS VOLTAGE AT THE FUSE BOARD?

WHAT IS THE INCOMING MAINS VOLTAGE AT THE APPLIANCE?

WHAT SIZE BREAKER HAS BEEN FITTED FOR THE BOILER?

WHAT IS THE DRAW OF THE APPLIANCE FOR HEATING?

WHAT IS THE DRAW OF THE APPLIANCE FOR HOT WATER?

WHAT SIZE CABLE WAS INSTALLED TO THE APPLIANCE?

WHAT IS THE APPROXIMATE CABLE RUN TO THE BOILER?

WHAT TYPE OF CABLE HAS BEEN USED?

NOTES:

BY SIGNING YOU AGREE THAT YOU HAVE INSTALLED THE BOILER IN ACCORDANCE WITH THIS MANUAL AND THAT THE BOILER IS WORKING AS INTENDED WITHOUT ANY LEAKS AND ALL INSTALLER MADE AND FACTORY MADE CONNECTIONS HAVE BEEN CHECKED.

SIGNED:

DATE:

FAULT FINDING

IMPORTANT

Any troubleshooting process that requires removing the boiler casing must only be undertaken by a qualified and competent person after the boiler is fully isolated. End users should not attempt under any circumstances to access the inside of their boiler.

Error Code	Potential Cause	Solution
E0	Heating system contains a lack of water or pressure is not sufficient for circulation (below 0.5 bar).	Add water to the heating system via filling loop and bring the pressure to a suitable level (above 1 bar). Or loose connection between pressure switch and PCB. Reseat cable into PCB.
E1	Loose connections between heating flow temperature sensor & PCB.	Reseat cable between heating flow temperature sensor and PCB back into PCB.
E2	Loose connection between the heating return temperature sensor & PCB.	Reseat cable between heating return temperature sensor and PCB back into PCB.
E3	Heating system flow temperature overheating.	Check that there is sufficient system circulation. If the boiler has been set for temperatures in excess of 75oC please check to see if the system can support a lower temperature. Reset thermal cut-outs if required.
E5	Inadequate flow within heating system (below 3 litres per minute).	The heating requires a minimum flow rate of 3lpm, please check: • Pump Speed. • Air in the system. • ABV is installed & set correctly. • Check for blockages in the return strainer (plastic mesh filter inside return boss). • Check for blockages or build ups in the systems magnetic filter. • Check for any other signs of blockages or sediment build ups in the system.
E6	Loose connection between domestic hot water outlet temp sensor & PCB.	Reseat cable between domestic hot water outlet temp sensor and PCB back into PCB.
E7	Domestic hot water temperature is greater than 73°C.	Consider reducing desired output temperature / blending temperature settings or increasing the mains water flow rate.
E8	Loose connection between domestic hot water inlet temp sensor & PCB.	Reseat cable between domestic hot water inlet temp sensor and PCB back into PCB.
EA	Power supply to the boiler is too high.	Check supply voltage & correct. Re-check all wiring to the unit.
Eb	Loose connection between domestic hot water tank outlet temp sensor & PCB.	Reseat cable between domestic hot water tank outlet temp sensor and PCB back into PCB.

EC	Loose connection between domestic hot water tank temp sensor & PCB.	Reseat cable between domestic hot water tank temp sensor and PCB back into PCB.
Ed	Loose connection between domestic hot water tank surface temp sensor & PCB.	Reseat cable between domestic hot water tank surface temp sensor and PCB back into PCB.
EF	Loose connection between blending valve & PCB.	Reseat cable between blending valve and PCB back into PCB.
ER	Loose connection between relay board & PCB.	Reseat cable between relay board and PCB back into PCB.
Display is not illuminated	No power to the boiler.	Check internal and external breakers for signs of tripping.
	Loose connection between display board & PCB.	Reseat cable between display board and PCB back into PCB.
Heating temperature is increasing too slow or not at all	Thermal cut outs have triggered.	Reset thermal cut outs on element.
	Boiler is not recognizing demand for heat from external controls.	Check thermostat wiring to ensure it is correct. Check thermostat is correctly powered. Check fuse on PCB and replace if necessary.
Heating is turning off at a low temperature	Default heating temperature needs to be adjusted.	Please follow instructions on setting you heating temperature on page 23.
Nuisance tripping (internal or external)	Loose electrical connection.	This may be a connection made during installation a pre-factory connection. Please check all connections and ensure they are tight and secure.
	Incorrect cable size or breaker used for installation.	Please double check that the specification of your installation is correct. As stated on pages 6 & 17, ultimately the voltage at the installation will influence the external breaker and cable size required for this installation. Use ohms law to calculate if the correct specifications have been applied to the installation. Adjust accordingly.
Hot water temperature is increasing too slow or not at all.	Thermal cut outs have triggered and need resetting.	Reset thermal cut outs on element.
	Flow rate too high.	Adjust flow rate using isolation valves on either the inlet pipework to the boiler or inlet pipework to the tap or shower outlet
	Settings are required to be altered to match your desired needs.	It may be that the desired temperatures have not been set correctly or the blending temperature has been set too low to achieve your desired output temperature. Adjust accordingly.
	Tank has run out of hot water.	Activate the tank to reheat and wait for the tank temperature to achieve the desired temperature set.
	Boiler is not recognizing flow of water.	Measure flow rate and adjust accordingly as advised on page 25. Pipe work is reversed (boiler inlet connected to outlet pipework and vice versa) please correct this accordingly. Loose connection between flow sensor and PCB. Debris / limescale build up

		in flow sensor. Isolate water and check inlet and sensor for signs of blockage, clear accordingly.
--	--	--

It is essential before contacting Strom all troubleshooting steps are followed and completed by your installer so that you are potentially able to resolve any issues significantly quicker. For anything and everything else, we are on hand to help on 03333442474.

WARRANTY INFORMATION

All Strom products are supplied in accordance with standard Terms & Conditions (available on request or via our website). This Policy also applies in addition to our terms and conditions to any Strom Electric Boilers and by fitting this product you are agreeing to be bound by these Terms & Conditions and this Policy. This Policy sets out the Warranty Period and exclusions which apply to Electric Boilers, for other products please see our website or their corresponding manuals. This Policy is subject to our Standard Terms and Conditions and should be read in conjunction with those terms. We reserve the right to amend this policy at any time.

Warranty Details:

Subject to the exclusions set out below and any applicable points in our Terms and Conditions, faulty parts and products will be replaced or repaired free of charge by Strom, or one of its representatives during the applicable Warranty Period. Where work is carried out by personnel not associated with Strom, or without Strom's knowledge we will be unable to cover the associated costs, parts, and labour charges. If Strom or its representatives are unable to attend your property in a timely manner we reserve the right to allow third parties to undertake the work once a pre-agreed cost has been agreed with Strom directly (agreements via third parties will not be accepted).

Exclusions:

This policy only applies where:

1. The product is installed and used strictly in accordance with the Terms and Conditions and the instructions supplied with the product; and the failure is not due to accident, misuse, abuse, unsuitable water conditions (including contaminants or inappropriate water pressure), limescale build up, or to any alteration, modification or repair by any party not expressly nominated by Strom. Unsuitable water conditions include:
 - a) Private water supplies that are not regulated by water authorities.
 - b) Hard water that is left untreated.
 - c) Water additives that lead to product corrosion.
 - d) The absence of corrosion inhibitor in heating circuits.
2. This warranty does not cover damage resulting from non-operation of the product or consequential damage to any other goods, furnishings or property.
3. This warranty does not apply to any consumables associated with the product.
4. Installations that have not been carried out by person/s that do not hold the relevant qualifications required in their field to carry out the works undertaken. An electrical installation certificate from a qualified electrician must be provided for your install, failure to supply this certificate will render any warranties null and void.
5. Warranties are non-transferable and must be purchased as new from one of our distributors.

Warranty Periods:

All Strom Boilers comes with a standard out of box warranty of 1 year, however by completing the included warranty guarantee procedure within 45 days of purchase (please see warranty documentation) the warranty will be extended to the offered warranty duration free of charge. The warranty period may vary dependent on supplier, model, or package purchased. All details are set out in the included warranty documentation.

Auraheat Storage Combination Boiler

TERMS & CONDITIONS

CONDITIONS OF SALE

1. DEFINITIONS

"Buyer" means the person who accepts a quotation of the Company for the sale of the Goods or whose order for the Goods is accepted by the Company
"Company" means Strom Limited.

"Conditions" means the terms and conditions of sale set out in this document and any special terms and conditions agreed in writing by the Company and the Buyer

"Contract" means the contract for the purchase and sale of the Goods

"Goods" means the goods which the Company is to supply and which the Buyer agrees to buy in accordance with these Conditions

"Price" means the price for the Goods (including transport and insurance (if any))
1.2 Any reference in these Conditions to any provision of a statute shall be construed as a reference to that provision as amended re-enacted or extended at the relevant time

1.3 The headings in these Conditions are for convenience only and shall not affect their interpretation

2. BASIS OF SALE

2.1 The Company shall sell and the Buyer shall purchase the Goods in accordance with :-

2.1.1 the Company's quotation (if provided by the Company and accepted by the Buyer); or

2.1.2 (if the Company does not submit a quotation and following a request or purported order from the Buyer for Goods) in accordance with the Company's offer to the Buyer (if accepted by the Buyer) subject in either case to these Conditions, which shall govern the Contract to the exclusion of any other terms, subject to which any such quotation or offer is accepted, or purported to be accepted.

2.2 Any variation to these Conditions (including any special terms and conditions agreed between the parties) shall be inapplicable unless agreed in writing by the Company

2.3 Any advice or recommendation given by the Company or its employees or agents to the Buyer or to its employees or agents as to the storage application or use of the Goods which is not confirmed in writing by the Company is followed or acted upon entirely at the Buyer's own risk and accordingly the Company shall not be liable for any such advice or recommendation which is not so confirmed

2.4 Any typographical or other errors on the Company's quotation or offer or on the quotation price list acceptance of offer invoice or other document or information issued by the Company shall be subject to correction without any liability on the part of the Company

2.5 All specifications, drawings, particulars of weight and dimension and performance data contained in any of the Company's literature are approximate only.

2.6 The Company reserves the right to improve and/or modify any specifications, designs and dimensions without notice.

2.7 For the avoidance of doubt nothing in these Conditions or any Contract shall confer on any third party any benefit nor the right to enforce any term of these Conditions or any Contract whether pursuant to the Contracts (Rights of Third Parties) Act 1999 or otherwise

3. THE PRICE AND PAYMENT

3.1 The Price shall be either :-

3.1.1 the Company's quoted price which shall only be valid for 30 days from its date after which time the Price may be altered by the Company and shall be subject to the Company's quotation or offer

3.1.2 where no price has been quoted the Price listed in the then current price list of the Company sent by the Company to the Buyer from time to time.

3.2 Except as otherwise stated in the Company's quotation or in any price list of the Company or otherwise agreed in writing between the Buyer and the Company, all prices are given by the Company to include the Company's charges for transport and insurance.

3.3 The Price and any other sums payable by the Buyer to the Company is exclusive of any applicable Value Added Tax, which the Buyer shall be additionally liable to pay to the Company

3.4 [Subject to any special terms agreed in writing between the Buyer and the Company,] the Company may invoice the Buyer for the Price of the Goods on or at any time after delivery of the Goods, [or any installment of the Goods] unless the Goods are to be collected by the Buyer or the Buyer wrongfully fails to take delivery of the Goods, in which event the Company shall be entitled to invoice the Buyer for the Price at any time after the Company has notified the Buyer that the Goods are ready for collection or (as the case may be) the Company has tendered delivery of the Goods.

3.5 Save as otherwise agreed in writing, payment of the Price and VAT shall be due within the agreed period from the date of the invoice without deduction or set off. Time for payment shall be of the essence

3.6 If the Buyer fails to make any payment on the due date then without prejudice to any other right or remedy available to the Company the Company shall be entitled to:

3.6.1 cancel the contract or suspend any further deliveries to the Buyer

3.6.2 appropriate any payment made by the Buyer to such of the Goods (or the Goods supplied under any agreement between the Buyer and the Company) as the Company may think fit (notwithstanding any purported appropriation by the Buyer) and

3.6.3 charge the Buyer interest (both before and after any judgement) on the amount unpaid at the rate of 8% per cent per annum above Barclays Bank PLC base rate from time to time until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest)

4. THE GOODS

4.1.1 The quantity and description of the Goods shall be as set out in the Company's quotation or in the Company's offer (as the case may be); and

4.1.2 the quality and specification for the Goods shall be as set out in the Company's quotation or (where there is no quotation) in the Company's literature and brochure for the Goods in question.

4.2 The Buyer shall be responsible to the Company for ensuring the accuracy of the terms of any order and any information supplied for the Company as to its requirements (including but without limitation the use to which the Goods will be put and any applicable specification) submitted by the Buyer and for giving the Company any necessary information relating to the Goods within a sufficient time to enable the Company to perform the Contract in accordance with its terms

4.3 If the Goods are to be manufactured or any process is to be applied to the Goods by the Company in accordance with a specification submitted by the Buyer the Buyer shall indemnify the Company against all losses damages costs, claims, demands, liabilities and expenses awarded against or incurred by the Company in connection with or paid or agreed to be paid by the Company in settlement of any claim for infringement of any patent copyright design trade mark or other industrial or intellectual property rights of any other person which results from the Company's use of the Buyer's specification or from compliance by the Company with the Buyer's instructions whether express or implied.

4.4 No order which has been accepted by the Company may be cancelled by the Buyer except with the agreement in writing of the Company and on terms that any deposit paid shall not be repayable and that the Buyer shall indemnify the Company in full against all loss (including loss of profit) costs (including the cost of all labour and materials used) damages charges and expenses incurred by the Company in carrying out any work in respect of the Goods or otherwise as a result of cancellation

4.5 All designs, sketches, or similar articles supplied by or submitted in confidence by the Company shall remain the property of the Company and may not be disclosed by nor used by nor copied or otherwise reproduced by the Buyer without the prior written consent of the Company.

5. DELIVERY OF GOODS

5.1 Unless otherwise agreed in writing the Company shall deliver the Goods to such delivery address as is specified by the Buyer to the Company at such time as the Goods or part thereof (as the case may be) are ready for delivery.

5.2 The Buyer shall be responsible for offloading the Goods at the delivery address and shall advise the Company of any local or internal laws, bylaws or rules relating to parking or loading of vehicles at the delivery address.

5.3 The Buyer shall be responsible for ensuring that access to the delivery address is wholly by a road with a surface capable of withstanding the weight and size of a vehicle carrying the Goods.

5.4 Any dates quoted for delivery of the Goods are approximate only and the Company shall not be liable for any delay in delivery of the Goods howsoever caused Time for delivery shall not be of the essence unless previously agreed by the

Company in writing The Goods may be delivered by the Company in advance of the Delivery Date upon giving reasonable notice to the Buyer

5.5 Where the Goods are to be delivered in installments each delivery shall constitute a separate contract and failure by the Company to deliver any one or more of the installments in accordance with these Conditions or any claim by the Buyer in respect of any one or more installments shall not entitle the Buyer to treat the Contract as a whole as repudiated

5.6 If the Buyer fails for any reason whatsoever to take delivery of the Goods or fails to give the Company adequate delivery instructions at the time stated for delivery (otherwise than by reason of any cause beyond the Buyer's reasonable control or by reason of the Company's default) then without prejudice to any other right or remedy available to the Company the Company may:

5.6.1 store the Goods until actual delivery and charge the Buyer for the reasonable costs (including insurance) of returning the Goods to the Company's premises, storage and for transport, packaging and insurance for re-delivery of the Goods; or

5.6.2 sell the Goods at the best price readily obtainable and (after deducting all reasonable storage and selling expenses) account to the Buyer for the excess over the Price or charge the Buyer for any shortfall below the Price

5.8 Goods may not be returned to the Company except by prior written permission of an authorised officer of the Company and such return shall be subject to payment by the Buyer of handling and re-stocking charges, transport and all other costs incurred by the Company

6. RISK AND RETENTION OF TITLE

6.1 Goods supplied by the Company shall be at the Buyer's risk immediately upon delivery to the Buyer or into custody on the Buyer's behalf or to the Buyer's Order.

The Buyer shall effect adequate insurance of the goods against all risks to the full invoice value of the goods, such insurance to be effective from the time of delivery until property in the goods shall pass to the Buyer as hereinafter provided.

6.2 Property in the goods supplied hereunder will pass to the Buyer when full payment has been made by the Buyer to the Company for :-

6.2.1 the goods of the subject of this contract;

6.2.2 all other goods the subject of any other contract between the Buyer and the Company which, at the time of payment of the full price of the goods sold under this contract, have been delivered to the Buyer but not paid for in full.

6.3 Until property in the goods supplied hereunder passes to the Buyer in accordance with paragraph (3) above.

6.3.1 the Buyer shall hold the goods in a fiduciary capacity for us and shall store the same separately from any other goods in the Buyer's possession and in a manner which enables them to be identified as our goods.

6.3.2 the Buyer shall immediately return the goods to the Company should the Companies authorised representative so request. All the necessary incidents associated with a fiduciary relationship shall apply.

6.4 the Buyer's right to possess the goods shall cease forthwith upon the happening of any of the following events, namely:-

6.4.1 if the Buyer fails to make payment in full for the goods within the time stipulated in clause 3 hereof.

6.4.2 if the Buyer, not being a company, commits any act of bankruptcy, makes a proposal to his or her creditors for a compromise or does anything which would entitle a petition for a Bankruptcy Order to be presented.

6.4.3 if the Buyer, being a company, does anything or fails to do anything which would entitle an administrator or an administrative receiver or a receiver to take possession of any assets of the company or entitle a person to present a petition for winding up or to apply for an administration order.

6.5 the Buyer hereby grants to the Company an irrevocable license to enter at any time any vehicle or premises owned or occupied by the Buyer or in the possession of the Buyer for the purposes of repossessing and recovering any such goods the property in which has remained in the Company under paragraph (2) above. The Company shall not be responsible for and the Buyer will indemnify the Company against liability in respect of damage caused to any vehicle or premises in such repossession and removal being damaged which it was not reasonably practicable to avoid.

6.6 notwithstanding paragraph (4) hereof and subject to paragraph (5) hereof, the Buyer shall be permitted to sell the goods to third parties in the normal course of business. In this respect the Buyer shall act in the capacity of the Companies commission agent and the proceeds of such sale :-

6.6.1 shall be held in trust for us in a manner which enables such proceeds to be identified as such, and;

6.6.2 shall not be mixed with other monies nor paid into an overdrawn bank account. The Company, as principal, shall remunerate the Buyer as commission agent a commission depending upon the surplus which the Buyer can obtain over and above the sum, stipulated in this contract of supply which will satisfy the Company.

6.7 in the event that the Buyer shall sell any of the goods pursuant to clause (5) hereof, the Buyer shall forthwith inform the Company in writing of such sale and of the identity and address of the third party to whom the goods have been sold.

6.8 if, before property in the goods passes to the Buyer under paragraph (3) above the goods are or become affixed to any land or building owned by the Buyer it is hereby agreed and declared that such affixation shall not have the effect of passing property in the goods to the Buyer. Furthermore if, before property in the goods shall pass to the Buyer under paragraph (3) hereof, the goods are or become affixed to any land or building (whether or not owned by the Buyer), the Buyer shall :-

6.8.1 ensure that the goods are capable of being removed without material injury to such land or building.

6.8.2 take all necessary steps to prevent title to the goods from passing to the landlord of such land or building.

6.8.3 forthwith inform the Company in writing of such affixation and of the address of the land or building concerned. The Buyer warrants to repair and make good any damage caused by the affixation of the goods to or their removal from any land or building and to indemnify the Company against all loss damage or liability the Company may incur or sustain as a result of affixation or removal.

6.9 in the event that, before property in the goods has passed to the Buyer under paragraph (3) hereof, the goods or any of them are lost, stolen, damaged or destroyed :-

6.9.1 the Buyer shall forthwith inform the Company in writing of the fact and circumstances of such loss, theft, damage or destruction.

6.9.2 the Buyer shall assign to the Company the benefit of any insurance claim in respect of the goods so lost, stolen, damaged or destroyed.

7. WARRANTIES AND LIABILITY -FOR PRODUCTS INSTALLED IN THE UK ONLY

7.1 Subject to the following provisions, the Company warrants that the Goods will be free from defects in material and workmanship for a period of 24 months from their delivery to the Buyer, unless a period of different duration is specified in the product installation instructions in respect of that product and/or its specific warranty terms, or specified components thereof.

7.2 The warranty in clause 7.1 is given by the Company subject to the following conditions:

7.2.1 the Company shall be under no liability in respect of any defect in the Goods arising from any information drawing design or specification supplied by the Buyer.

7.2.2 the Company shall be under no liability in respect of any defect arising from fair wear and tear willful damage negligence abnormal working conditions failure to follow the Company's instructions (whether oral or in writing) misuse or alteration or repair of the Goods without the Company's approval

7.2.3 the Company shall not be liable for any consequential damage(s) occurred to the Buyer, or the Buyer's customer's property, caused by failure of the Company's Goods. Any such costs incurred shall be claimed by the Buyer or the Buyer's customer's insurance party.

7.2.4 the above warranty does not extend to parts materials equipment not manufactured by the Company in respect of which the Buyer shall only be entitled to the benefit of any such warranty or guarantee as is given by the manufacturer of the Goods.

7.3 The Buyer shall not make any statement or representation or give any warranty to any third party in respect of any Goods other than in the terms made or given by the Company to the Buyer in these Conditions nor shall the Buyer have any authority to commit the Company to provide any service in relation to the Goods. The Buyer shall indemnify the Company against all losses, damages, costs, claims, demands, liabilities and expenses incurred or suffered by the Company in respect of or arising out of any such statement, representation or warranty made or given by the Buyer in contravention of this clause.

7.4 The Company's liability to the Buyer for -

7.4.1 death or injury resulting from its own or that of its employees' agents' or subcontractors' negligence; and

7.4.2 damage suffered by the Buyer as a result of any breach of the obligations implied by Section 12 of The Sale of Goods Act 1979 shall not be limited

7.5 Subject as expressly provided in these Conditions all other warranties conditions or terms whether implied by statute or common law or otherwise are hereby excluded

7.6 If the Company fails to deliver the Goods for any reason other than any cause beyond the Company's reasonable control or the Buyer's fault then the Company shall only be liable to the Buyer for and the Buyer's liability shall be limited to the excess (if any) of the cost to the Buyer (in the cheapest available market) of similar goods to replace those not delivered over the Price of the Goods

7.7 The Buyer shall examine all Goods delivered forthwith following delivery. Any claim by the Buyer which is based on any defect in the quality or condition of the Goods or their failure to correspond with specification shall (whether or not delivery is refused by the Buyer) be notified to the Company within 7 days from the date of delivery or (where the defect or failure was not apparent on reasonable inspection) within a reasonable time after discovery of the defect or failure If delivery is not refused and the Buyer does not notify the Company accordingly the Buyer shall not be entitled to reject the Goods and the Company shall have no liability for such

defect or failure and the Buyer shall be bound to pay the Price as if the Goods had been delivered in accordance with the Contract In no event shall the Buyer be entitled to reject the Goods on the basis of any defect or failure which is so slight that it would be unreasonable for the Buyer to reject them

7.8 The Company shall be entitled to examine any Goods which are the subject of any claim by the Buyer and to remove such Goods or any part thereof for testing. No tests carried out by the Buyer will be recognised by the Company unless carried out strictly in accordance with a method previously agreed by the Company as being suitable for the purpose.

7.9 Where any valid claim in respect of any of the Goods which is based on any defect in the quality or condition of the Goods or their failure to meet specification is notified to the Company in accordance with these Conditions the Company shall be entitled to repair or replace the Goods (or the part in question) free of charge or at the Company's sole discretion and to the Buyer the Price (or a proportionate part of the Price) but the Company shall have no further liability to the Buyer.

7.10 Where failed Goods are returned to the Company and subsequently found to have no fault found or failed due to reason(s) outside these terms and conditions, the Company reserves the right to claim any subsequent costs entailed, from the Buyer.

7.11 Without prejudice to the provisions of clauses 7.5, 7.6, 7.7, 7.9 and 7.10 the entire liability of the Buyer under or in connection with the Contract shall not exceed the Price of the Goods.

7.12 The Company shall not be liable to the Buyer or be deemed to be in breach of the contract by reason of any delay in performing or any failure to perform any of the Company's obligations in relation to the Goods if the delay or failure was due to any cause beyond the Company's reasonable control Without limiting the foregoing, the following shall be regarded as causes beyond the Company's reasonable control:

7.12.1 act of god, explosion, flood, tempest, or inclement weather, fire or accident;

7.12.2 acts of sabotage, terrorism, war, civil disturbance, riot or insurrection;

7.12.3 acts, restrictions, regulations, by-laws, prohibitions or measures of any kind on the part of any Governmental, Parliamentary or Local Authority;

7.12.4 imports or exports, regulations or embargos;

7.12.5 strikes, lockouts or other industrial action or trade disputes (whether employees of the Company or of a third party);

7.12.6 difficulties in obtaining raw materials, labour, fuel, parts or machinery;

7.12.7 power failure, failure of tele-communications lines, failure or breakdown of plant, machinery or vehicles;

7.12.8 theft or malicious damage;

7.12.9 defaults for any reason whatsoever of suppliers or sub-contractors of the Company;

7.12.10 incompleteness or inaccuracy of any technical information which it is the responsibility of the Buyer to provide

8. INSOLVENCY OF THE BUYER

8.1 This clause applies if:

8.1.1 the Buyer makes any composition or voluntary arrangement with its creditors (being an individual or firm) becomes bankrupt or (being a company) becomes subject to an administration order or seeks an out of court route into administration or goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction) or an insolvency comes into force in respect of the Buyer (within the meaning of the Insolvency Act 1986); or

8.1.2 an encumbrancer takes possession of a receiver or manager or administrative receiver or administrator is appointed of any of the property or assets of the buyer, or

8.1.3 the Buyer ceases or threatens to cease to carry on business or

8.1.4 the Company reasonably apprehends that any of the events mentioned above is about to occur in relation to the Buyer and notifies the Buyer accordingly

8.2 If this clause applies then without prejudice to any other right or remedy available to the Company the Company shall be entitled to stop any Goods in transit, cancel the Contract or suspend any further deliveries under the Contract without any liability to the Buyer and if the Goods have been delivered but not paid for the Price shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary

9. HEALTH AND SAFETY INFORMATION

The Buyer agrees and undertakes with the Company to ensure that the provisions of all instruction manuals including health and safety instructions and any other information or document relating to the use of the Goods provided by the Company with the Goods are fully implemented so as to ensure so far as is reasonably practicable that the Goods will be safe and without risk to health at all times, when it is being installed, used, cleaned or maintained by a person at work and that all such manuals instructions or documents remain with the Goods.

10. GENERAL

10.1 The Contract is personal to the Buyer which may not assign or dispose of any of its rights or obligations or otherwise delegate any of its obligations under the Contract without the written consent of the Company.

10.2 The Company shall be entitled to assign its rights and obligations under the Contract and to sub-contract or otherwise delegate any of its obligations under the Contract.

10.3 Any notice required or permitted to be given by either party to the other under these Conditions shall be in writing including a facsimile addressed to that other party at a registered office or principal place of business or such other address as may at the relevant time have been notified pursuant to this provision to the party giving the notice and shall be deemed to have been received by the party to whom it was addressed, if sent by facsimile upon its transmission if during a normal business day and otherwise on the next business day and if sent by post, 72 hours after posting

10.4 No waiver by the Company of any breach of the Contract by the Buyer shall be considered as a waiver of any subsequent breach of the same or any other provision 10.5 If any provision of these Conditions is held by a Court or other competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of these Conditions and the remainder of the provision in question shall not be affected thereby

10.6 The Contract and these Conditions shall be governed by the laws of England 10.7 The parties hereby submit to the non-exclusive jurisdiction of the English courts

10.8 The Buyer shall indemnify the Company for all costs and damages, including attorneys' fees, suffered by the Company as a result of the Buyers actual or threatened breach of these terms and conditions.

11. INFORMATION

The Company will provide the Buyer on request with information as to the proper and safe use of the Goods and the Buyer shall at all times obey and comply with the Company's instructions or other information relating to the use of the Goods Specific product warranty terms are available on request.