



Vitodens Indirect

INSTALLATION MANUAL V3 2022

INDIRECT UNVENTED HOT WATER STORAGE CYLINDER WITH **EXTERNAL** EXPANSION VESSEL

Boiler - Indirect Single Coil, Indirect Solar Single Coil, Indirect Solar Twin Coil

IMPORTANT

This range of water heaters and unvented water storage cylinders should only be installed as per these instructions by a competent & certified heating installer. By installing this product you agree to be bound by the purchasing and warranty terms and conditions found in this manual and on our website.



INTRODUCTION

This UK manufactured product is made from Duplex stainless steel, providing durability and long-lasting resistance against corrosion. It is highly insulated with environmentally friendly foam, and enclosed in a rust resistant outer steel case.

The Indirect is an indirectly heated unvented hot water storage cylinder as defined under the current ErP Directive and available in eight sizes from 60-300litres.

The cylinder is approved to comply with G3 Building Regulations and the United Kingdom Water Supply (Water Fittings) Regulations / Scottish Water Byelaws.

This Indirect cylinder comes supplied with all necessary safety & control devices needed to connect to the water mains. If for any reason you suspect this may not be the case, please contact us (see back page).

Please ensure that you have understood this manual before starting the installation, and leave this guide with the end user once the installation is complete.

For information on potential Warranty Exclusions – please see the appendix of this installation manual.

BENCHMARK

The Benchmark scheme places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations and relevant electrical qualifications. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the scheme.

Visit www.centralheating.co.uk for more information.

COMPONENT LISTING

Cold Water Inlet Set	LOOSE
15 x 22mm Tundish	LOOSE
Temperature & Pressure Relief Valve	FITTED
Expansion Vessel & Mounting Bracket	LOOSE
Immersion Heater(s) - Capacity and configuration dependant	FITTED
Installation Manual	LOOSE
Benchmark Logbook - Found at the back of this manual	LOOSE

In addition, 2-Port zone valves and dual cylinder stats are provided with standard indirect cylinders, and high limit stats (as well as solar fixing grommets) are provided with solar single and twin coil cylinders.

GENERAL INSTALLATION REQUIREMENTS

The cylinder must be installed, commissioned and maintained by a competent installer holding a current G3 unvented qualification, and/or being a member of a competent persons' scheme. Once the unit is installed and commissioned, the user must be given an explanation of the operation of the cylinder and its key safety components. In addition, the end user must be given this installation manual for future reference.

STORAGE AND HANDLING

Care must be taken when handling the product. Seek assistance when moving the product as required, and follow safe working practices and lifting techniques to avoid injury or product damage. Before installation, the cylinder must be stored upright in its original packaging, on a secure, level surface within a dry and frost-free environment.

SITING THE UNIT

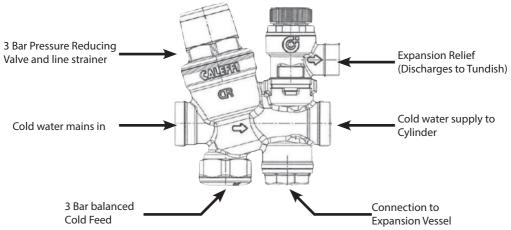
This product must be installed vertically on a flat base that is capable of supporting the maximum-fill weight of the cylinder. For each metre an outlet is above the cylinder, the supply pressure of the hot water will be reduced by 0.1 bar.

The minimum recommended cupboard size is 650mm square as the product diameter can vary (capacity and configuration dependant) between 475mm to 580mm. This is to ensure that there is access to the cylinder safety controls/immersion heaters and for future valve maintenance or replacement during service. Therefore, please ensure all connections are outward facing towards a door or similar opening for this purpose.

Areas subject to freezing should be avoided. If the cylinder is sited outside of a heated area of the dwelling, such as a garage or outbuilding, ensure the provision of adequate frost protection, such as insulation of exposed pipework. Pipe lengths must be kept to a minimum to ensure minimal losses.

COLD WATER INLET CONTROL SET

Included in your unvented safety components is a multibloc inlet control group. This single unit is standard issue for many unvented water systems, and comprises of many different safety valves, housed into a single brass casting. This is detailed as follows:



WATER SUPPLY

We recommend that the maximum on-site water demand be assessed and the water supply be tested to ensure it meets the following requirements. This should be sourced from mains water only - your warranty does NOT include the use of wells or bore holes as a water supply.

It must be noted that a high mains water pressure does NOT always guarantee a high flow rate. Ensure a working (not static) condition site pressure reading is taken. The minimum mains water supply requirements should be 0.15MPa (1.5 bar) working pressure, and a 20 litres per minute flow rate available. Where mains inlet pressures may exceed 10 bar, an additional upstream pressure reducing device should be fitted in addition to the cold water inlet set provided.

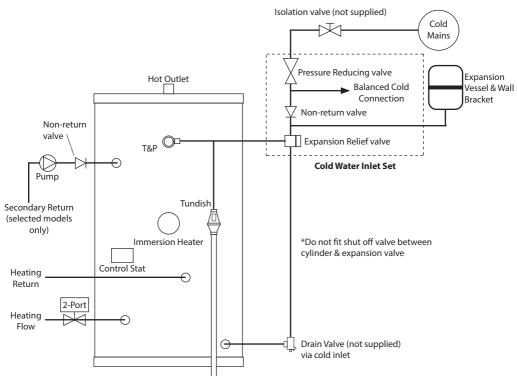
The mains supply pipe-work should be a minimum of 22mm. This could warrant the replacement of any existing 1/2" (15mm) cold mains pipe-work.

The water supply must be of a wholesome water quality, defined as Fluid Category 1 in the Water Supply Regulations 1999. In areas of hard water content (CaCO₃) greater than 200ppm, treatment should be installed.

CHANGE OF WATER SUPPLY

The changing or alternation of one water supply to another can be detrimental on the operation and/or life expectation of the product and its accessories. Where a water supply changeover occurs, e.g. a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought, or should be tested to ensure the supply will meet the requirements given in these guidelines for our manufacturer's warranty to apply.

CYLINDER SUPPLY AND SAFETY DISCHARGE SCHEMATIC



GENERAL INSTALLATION AND COMMISSIONING

PLEASE NOTE - THE WATER CONNECTION BOSSES AND THE OLIVES & GLAND NUTS SUPPLIED AS STANDARD ON THIS INDIRECT ARE THREADED 3/4" BSP.

COLD MAINS PIPEWORK

The cold mains pipework should be a minimum of 22mm, through to the cylinder installation to ensure that hot water flow requirements for taps and shower heads are met. Care should be taken to avoid inefficiency and heat transfer where cold water pipes run adjacent to hot water or heating pipework. Install an isolating valve (not supplied) to the cold mains pipework. A 22mm BS1010 stopcock or a quarter turn full-bore lever valve should be used rather than a screwdriver slot or other similar valve. Make the connection to the cold feed of the cylinder, incorporating a drain valve.

Position the inlet control set above the Temperature and Pressure Relief Valve (T&P) found on the side of the cylinder. This ensures the cylinder does not need to be drained in order to service the inlet control. Ensure the directional flow arrow on the inlet control follows the flow of water.

Mount the external expansion vessel in a suitable position to the wall using the provided bracket, and connect the pipework to the expansion vessel connection provided on the cold water inlet set. There must be no obstruction or flow restriction between the cylinder and the expansion vessel.

You must ensure that the cylinder does not fill to a pressure of greater than 3.0bar. If there are to be any showers, bidets, or monobloc taps in the installation (or wherever mixing/blending water fittings are installed) then a balanced cold supply is necessary, otherwise there is the danger of a mains fed cold service pressure leaking into the controlled hot circuit. Such back pressure would be detrimental to the system and could cause the unwarranted operation of discharge valves.

It is essential that the cold service be balanced throughout the property by taking the cold services from the **balanced cold connection** on the inlet control set. Should this not be possible an independent 3.0bar inlet

pressure reducing valve must be installed into the cold supply of any such mixed fitting, suitably positioned so as to not compromise water flow to the cylinder. An outside hose tap may still be connected direct to the incoming cold supply if desired.

HOT WATER PIPEWORK

The majority of the hot water distribution pipework should be 22mm, possibly reduced to 15mm or 10mm dependant on the type of tap. Keep the hot draw off pipework to a minimum to maximise the transfer speed of hot water from cylinder to outlet. We advise against soldering fittings immediately to the hot water draw off, as this reduces any inherent risk of flux landing on the immersion heater and causing premature corrosion to the connection and unit.

If the balanced cold connection is not provided, do not use monobloc mixer taps or showers. This would cause the unit to back pressurise and result in discharge. Ensure that the top of the vessel is accessible for servicing.

CONNECTION OF PRIMARY COILS - BOILER AND SOLAR (See Schematic on Page 8)

Both boiler and solar coils are provided with 22mm compression connections and are suitable for open vented or sealed system primary circuits. The coil must be positively pumped and are not suitable for gravity systems. To ensure maximum performance and efficiency the primary flow must enter the left hand lower coil connection when viewed from the front of the cylinder, and return from the right hand upper coil connection. An air release valve must be installed adjacent to the return connection point. The boiler coil should also benefit from the operation bypass when the heating circuit closes. See diagram. In twin coil installations this installation detail applies to both coils.

The coils are rated to 6.0 bar maximum operating pressure although heating circuits normally operate at a maximum of 3.0 bar, solar circuits 6.0 bar. In a boiler circuit the two port valve should be installed in the primary flow. In a solar circuit the two port valve should be installed in the primary return.

Ensure an inhibitor suitable for use with stainless steel is used. Only connect the cylinder to a protected heat source with effective thermostatic control - uncontrolled heat sources such as solid fuel stoves, AGAs etc. may not be suitable - if in doubt seek guidance from ourselves.

CONTROL THERMOSTAT

The non-solar indirect cylinders come provided with a mechanical control dual cylinder thermostat. This adjustable safety component can be changed by the end user to keep the hot water in the cylinder stored at any value between 25°C-65°C. As well as being a thermostatic control, the stat also functions as a heat source isolation safety device with the included 2-port zone valve in the event of overheating, and should be installed as per the wiring diagrams set out in this manual.

When the cylinder thermostat is set to maximum, please ensure that the flow output from the boiler is also set appropriately so that the vessel can achieve the desired temperature.

RECOMMENDED STORAGE TEMPERATURE

For domestic usage a temperature set of 55°C-60°C is the norm. This is above recognised bacterial growth levels and low enough to prevent nuisance tripping of limit thermostats or unnecessary scaling.

SOLAR COIL INSTALLATION INDIRECT SOLAR SINGLE AND TWIN COIL MODELS

Indirect solar single coil cylinders have one coil at the bottom of the cylinder for connection to the the solar thermal system. For indurect solar twin coil cylindersconnect only the lower coil to the solar thermal system. Connection procedure to solar is identical for both products. Connect the solar coil as instructed in the above section "CONNECTION OF PRIMARY COILS - BOILER AND SOLAR". The solar temperature control sencor (supplied as part of the solar package) inserts into the pocket directly above the coil and is retained with the wiring grommet supplied. High limit control of the solar input is monitored with the single high limit thermostat which inserts into an upper pocket at the the same height as the T&P relief valve. For installations where solar panels are higher than the cylinder connect the solar panels are lower than the cylinder connect the solar panels are lower than the cylinder connects to the boiler flow and return. The dual control / high limit thermostat installs into the pocket immediately above the upper coil and is wired to activate the two-port valve (supplied) installed into the boiler primary flow.

This cylinder as supplied is not designed for installation with two boilers without extra controls listed below. Should it be the desire to connect the solar indirect twin coil cylinder to two boilers then a further dual control / high limit thermostat and two port-valve will be required and both coils and safety controls must be installed as per the single coil boiler format. Both the additional thermostat and two port valve may be purchased from the cylinder manufacturer.

SECONDARY CIRCULATION

Seconday return connections are supplied as standard on 200-300 litre indirect cylinders only. Where secondary circulation is unavoidable for smaller capacity cylinders, a circulator suitable for potable water must be used in conjunction with a non-return valve to prevent backflow. The return connection should be made with a swept tee into the cold feed pipework directly above the drain connection. It may be necessary to incorporate an extra expansion vessel into the circuit to accommodate an increased system volume in larger secondary circulation systems.

IMMERSION HEATER

All standard supply is with immersion heater elements of 3 Kilowatt output at 240 Volts, Incoloy elements, double pole thermal isolation and a 13/" BSP threaded head.

ELECTRICAL CONNECTION - 3kW

This appliance must be earthed. It is suitable for a 240 volt A.C. supply only. The electrical installation should only be carried out by a suitably qualified electrician in accordance with latest I.E.E. regulations. Ensure the electrical supply is isolated before working on the system.

The electrical supply to each immersion heater must be fused at 13A via a double pole isolating switch with a separation of at least 3mm to both poles to BS 3456.

The cable must be 2.5mm² heat resistant (85°C HOFR) sheathed flex complying to BS EN 50525. Do not use a cable of lesser rating.

For immersion heaters other than 3kW consult wiring requirements supplied with the immersion heater.

Do not operate the immersion heater(s) until the unit is full of water. If any sterilisation liquid is in the cylinder do not operate the immersion heater(s) as this will cause premature failure.

This device must be earthed.

Earth connection, (green & yellow), should be made firmly to the earth post marked "E", using the terminal attachments provided. Live connection, (brown), from the mains supply cable to the thermostat terminal marked "L". Neutral connection, (blue), from the mains supply cable to the thermostat terminal marked "N".

WIRING - 3kW

Our 3kW immersion heaters MUST be wired in 2.5mm² heat resistant cable, as failure to do so can cause nuisance tripping. We will be unable to support your installation until this has been corrected. For alternate higher wattage immersion heaters, consult the instructions supplied with the device.

COMMERCIAL/HEAVY DUTY USE

For commercial/heavy duty installations with constant usage/reheat requirements or where an external programmer designed for immersion heaters is not present then Titanium immersion heaters must be fitted in order to comply with the warranty.

RECOMMENDED TEMPERATURE SETTINGS - IMMERSION HEATER

For domestic usage a temperature set of 55°C-60°C is the norm. This is above the growth temperature area for Legionella and low enough to prevent nuisance tripping and unnecessary scaling.

THERMOSTAT OPERATION

The thermostat has an adjustable control operating between 20°C and 65°C. The usual desired domestic setting is between 55°C and 60°C. The thermostat is supplied set at 60°C. For setting the stat, turn fully clockwise to the maximum, and then anticlockwise (back off) approximately a quarter of its travel. Then make minor adjustments to suit your personal taste.

THERMAL CUTOUT

If the cylinder begins to overheat (80°C), the thermal cut-out will activate, isolating both the live and negative connections within the immersion heater. This may also happen during a power spike. For resetting, isolate the power supply and allow the cylinder to cool down. Remove the head cap and press the high limit cut-out reset button on top of the thermostat. Should nuisance tripping occur, consult a qualified electrician to investigate the power supply and/or the thermostat itself.

REPLACEMENT IMMERSION HEATERS - ALL TYPES

Replacement immersion heaters are available in all formats for your water heater. These should be obtained via ourselves to ensure the correct specification is supplied, and our warranty is not compromised. The standard heater has incoloy elements, a 1¾" BSP threaded head and standard rating of 3kW at 240 volts. Check the label detail on the head before ordering, as alternative specifications are available.

The 'O' ring on the head of the immersion heater should be correctly positioned and lubricated with a WRAS approved silicon lubricant before fitting. Screw in by hand until almost sealed and then gently finish tightening as the 'O' rings will seal easily. Remake the wiring connection as per instructions provided.

INSULATION OF THE TEMPERATURE & PRESSURE RELIEF VALVE

Components for insulating the T&P are supplied in order to retain heat and energy. Installation instructions are provided with the insulation cover.

DISCHARGE ARRANGEMENT

The diagram opposite was taken directly from UK government Building Regulations Part G: 2016.

This information is not exhaustive. If in doubt, seek advice. Full details of Building Regulation G3, is available from: www.planningportal.gov.uk

The discharge from both the temperature, and expansion relief valves can be joined together via a 15mm end feed tee. Water should only be discharged when there is a fault with the system, and be visible at the tundish. (Consider a safety device to alert those of impaired vision or mobility when this occurs.)

Discharge water must not be allowed to collect in the pipe-work but rather flow freely to the tundish. This should be vertically mounted, in a visible location, in the same space as the cylinder, and fitted as close as possible within 600mm of the safety device (the relief valves). The discharge pipework must be in accordance with Part G3 of the Building Regulations. These are as follows:

• The discharge pipe (D2) from the Tundish should have a vertical section of pipe 300mm long below the Tundish before any elbows or bends in the pipework.

• This pipe should then be installed with a continuous fall of at least 1 in 200 thereafter.

• The pipe must be at least one pipe size larger than the nominal outlet size of the safety device (unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 times larger and so on.) Bends must be taken into account in calculating the flow resistance. An alternative approach for sizing discharge pipes would be to follow the BS 8558 Specification for the design installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

Discharge pipework should terminate in a safe place where there is no danger to persons in the vicinity of the discharge. Examples of acceptable discharge arrangements include:

• To a trapped gully with the outlet below a fixed grating and above a water seal.

Downward discharges to low level, within 100mm, above external surfaces such as a car park, hard standing, grassed area with a protective wire cage to prevent contact but retaining visibility of discharge.
 Into a metal hopper at high level with a metal downpipe and a clearly visible termination point or onto a roof capable of withstanding high temperature discharge at least 3m away from any plastic guttering.

Building Regulation G3 allows non-metallic pipework within the tundish discharge (D2). The discharge pipe (D2) should be made of a) metal or b) another material that has demonstrated it can safely withstand high temperature water discharges and is clearly and permanently marked to identify the product and the performance standard. The discharge should not be connected to a soil discharge stack unless it can be demonstrated of safely withstanding high temperature water discharges, in which case it should;

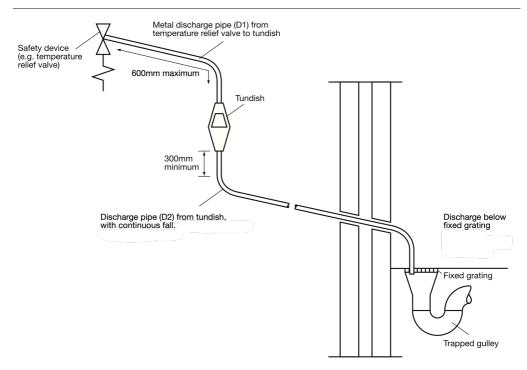
1. Contain a mechanical seal, not a water trap, which allows water into the branch pipe but not foul drain air to be ventilated through the tundish.

2. Be a separate branch pipe with no sanitary appliances connected to it.

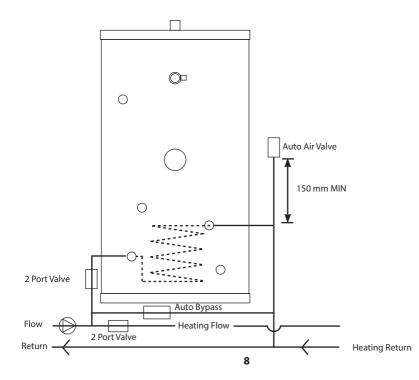
3. Plastic pipes used as branch pipes with the discharge should be Polybutalene (PB) or cross linked polythene (PEX) complying with national standards such as Class S of B7291-2: or Class S of BS7291-3 respectively.

4. Be continuously marked with a warning that no sanitary appliances should be connected to the pipe. 5. Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1.

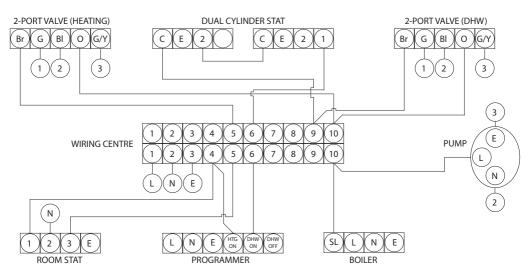
Queries regarding specific discharge arrangements should be directed to your local building control office.



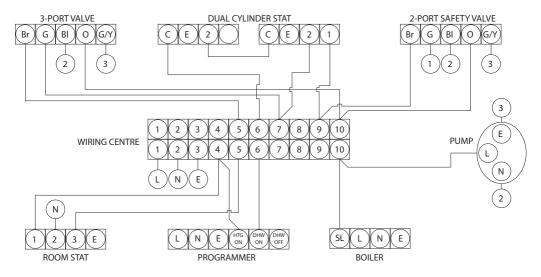
SCHEMATIC OF COIL CONNECTION - TYPICAL 'S' PLAN



TYPICAL WIRING - S PLAN, SINGLE ZONE



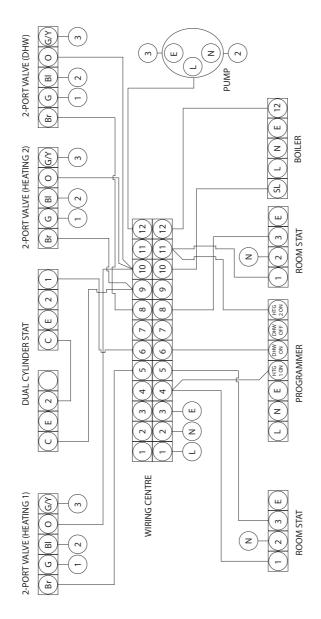
TYPICAL WIRING - Y PLAN



COLOUR CODES

 $\label{eq:main_state} \begin{array}{ll} W = \text{WHITE} & \textbf{G} = \text{GREEN} & \textbf{BI} = \text{BLUE} & \textbf{G/Y} = \text{GREEN}/\text{YELLOW} & \textbf{Br} = \text{BROWN} \\ \textbf{L} = \text{LIVE} & \textbf{N} = \text{NEUTRAL} & \textbf{C} = \text{COMMON} & \textbf{SL} = \text{SWITCH LIVE} & \textbf{E} = \text{EARTH} \end{array}$

TYPICAL WIRING - S PLAN, TWIN ZONE



COLOUR CODES

 $\label{eq:main_state} \begin{array}{ll} W = \text{WHITE} & \textbf{G} = \text{GREEN} & \textbf{BI} = \text{BLUE} & \textbf{G/Y} = \text{GREEN}/\text{YELLOW} & \textbf{Br} = \text{BROWN} \\ \textbf{L} = \text{LIVE} & \textbf{N} = \text{NEUTRAL} & \textbf{C} = \text{COMMON} & \textbf{SL} = \text{SWITCH LIVE} & \textbf{E} = \text{EARTH} \end{array}$

COMMISSIONING - FILLING THE SYSTEM

Check all connections for water tightness including factory made connections, as these may become loose in transit. The expansion vessel should be 3 bar (45PSI).

The hot tap furthest away from the cylinder should be opened before filling the system to purge air and flush any disturbed particles.

The pipes should be flushed before use. The remaining taps should be opened in turn to purge air from the system before turning on the electrical supply.

SAFETY VALVE CHECKS

A problem is occurring if water is released from either safety valve during the heat up process (temperature relief and expansion relief.) This must be rectified before continuing. Both valves should be opened slowly one at a time, and then together, allowing as much water as possible through the tundish. Check that the discharge pipework is cleared of obstruction, free flowing, and without spillage over the tundish. Check that the valves reseat correctly when released.

DRAINING PROCESS

Isolate the unit from the electric supply to prevent immersion heater burn out. Isolate the unit from the cold mains. Attach a hose to the draining tap. Ensure this reaches to a level below the unit for creating an effective siphon so that the maximum amount of water is drained from the unit. Open the hot tap closest to the unit and open the draining tap.

Caution: Water drained off may be hot.

SERVICE AND MAINTENANCE

• Servicing must be carried out annually by a competent installer.

• Any spares used must be purchased from us.

• Safety devices must not be bypassed. Do not use the unit if safety features are not fully operational.

• Proof of annual servicing is required to avoid invalidating your manufacturer's guarantee.

• Upon installation of the unit the installer must complete the accompanying commissioning certificate at the rear of this manual.

ANNUAL SERVICING PROCESS

This must be conducted by a competent installer on an annual basis, ideally at the same time as the annual boiler service:

1. The expansion relief valve should be eased open to allow water to flow for a minimum of 5 seconds. Close the valve and make sure it resets correctly. Repeat this procedure with the temperature & pressure relief valve. Ensure that the discharge pipework is cleared and allowing a free flow of discharge.

2. Ensure all fitted immersion heaters are working correctly. They should be controlling the water temperature between 55°C and 60°C.

3. Make sure the pressure in the expansion vessel is set to 3 bar. This is done by turning off the water supply to the unit and opening a hot tap first. Air or CO_2 can be used for repressuring the expansion vessel.

4. Remove the head on the inlet control set and clean the mesh filter within.

5. Update the benchmark service record supplied after every service by the installer.

DISCHARGE AT THE TUNDISH

IF WATER IS FLOWING THROUGH THE TUNDISH THIS INDICATES DISCHARGE FROM ONE OF THE SAFETY VALVES AND INDICATES A FAULT IN THE SYSTEM. CONTACT A COMPETENT PLUMBER OUT TO SERVICE OR DIAGNOSE THE SYSTEM.

USER INSTRUCTIONS

This unvented hot water storage cylinder once commisioned by the installer requires no user adjustment. The householder must arrange for annual servicing as part of the warranty conditions. This must be carried out by a competent installer who will be able to advise upon any control settings. If you are unsure regarding the operation of this cylinder, contact a competent installer. These cylinders are not designed for adjustment by non-qualified persons. Details regarding service requirements and temperature settings are included under the appropriate headings in this manual.

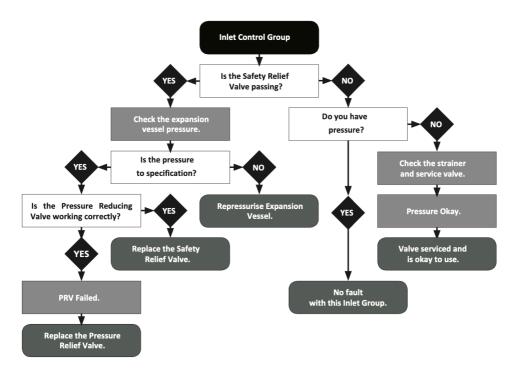
LINDED FAILT FINDL

CYLINDER FAULT FINDING						
PROBLEM	POSSIBLE CAUSE	REMEDIATIVE ACTION				
	Potential discharge from T&P valve	Follow tundish/T&P fault finding				
	Potential discharge from Expansion relief valve due to fault at PRV	Follow inlet control set fault finding				
Water is visible at tundish	Back pressure from system	Check all cold connections into mixer outlets are fed from the balanced cold service from the inlet control valve. If not, additional PRV's must be fitted.				
Expansion relief valve opens when cylinder is heated	Possible fault at Expansion Vessel	Follow expansion vessel fault finding				
Cylinder appears to be leaking from inside the steel case	Loose cylinder connection - notably from hot water outlet	Check all connection points including the immersion heaters and the hot out- let to ensure that these are not leaking, and remake joints if necessary.				
Noise when operating tap or shower	Vibrating/insecure pipework	Ensure that all pipework is secured to the wall with pipe clips as appropriate.				
Reduced water flow	Possible external water works being carried out	Check with local authorities and wait for works to be completed				
neutrea water now	Lodged debris from mains at Inlet control set or PRV sticking	Strip & clean PRV/inline filter, or replace inlet control set.				
No hot water available	Possible immersion heater failure	Follow immersion heater fault finding				

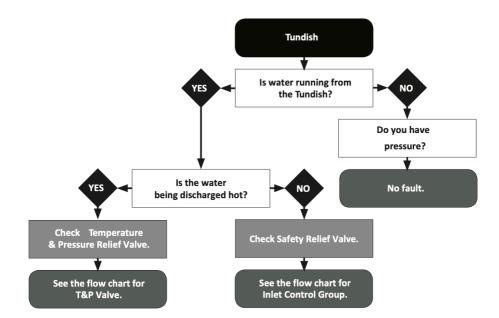
EXPANSION VESSEL FAULT FINDING

PROBLEM	POSSIBLE CAUSE	REMEDIATIVE ACTION				
	Expansion Vessel is undersized	Vessel needs resizing and installing by a qualified heating engineer.				
Discharge of water from relief valve into tundish	Pre-charge set incorrectly on vessel installation	Pre-charge requires setting when the system is depressurised according to manufacturer's recommendations.				
	Vessel membrane is ruptured and may require replacement	Check schrader valve for leaks or damage. Replace vessel if necessary				
	Membrane may be partially depressurised due to losses over time and require re-pressurisation	Check schrader valve for leaks or damage. Have heating system serviced and vessel repressurised or replaced.				
	Failure of flange plate	Replace flange plate or entire vessel				
Leak from flange or water connection	Ruptured membrane has led to internal corrosion and has caused leak in vessel	Replace entire vessel				
Vessel appears full of liquid when system is cold	Membrane is fully depressurised	Replace membrane or entire vessel. Check schrader valve for leaks or damage.				
Water discharges from vessel when schrader pin is depressed for inspec- tion of pressure	Vessel membrane is ruptured	Replace membrane or entire vessel.				

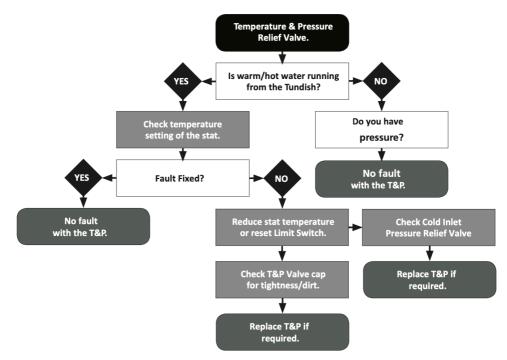
INLET CONTROL SET FAULT FINDING



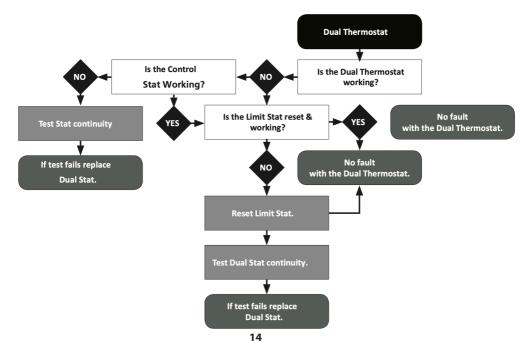
TUNDISH FAULT FINDING



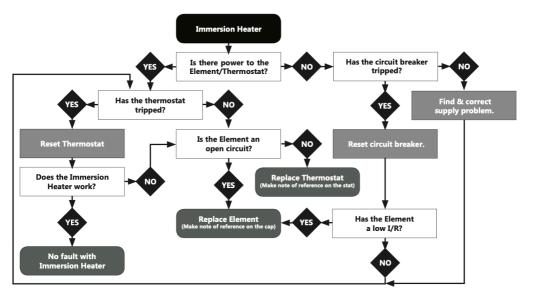
TEMPERATURE & PRESSURE RELIEF VALVE FAULT FINDING



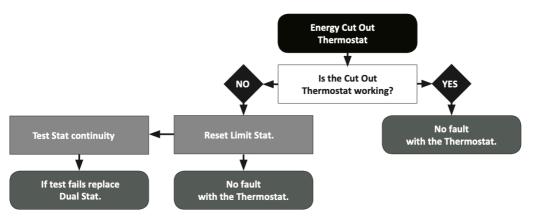
DUAL THERMOSTAT FAULT FINDING



IMMERSION HEATER FAULT FINDING



ENERGY CUTOUT FAULT FINDING



MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer name:	Telephone number:							
Gasting name: reprint name: reprint remained and reprint remained and remained an								
Cylinder Make and Model								
Cylinder Serial Number								T
Commissioned by (PRINT NAME):	Registe	red Operat	ive ID Num	iber				
Company name:	-	ne number						
Company address:			-					
	Commis	sioning da	te:					
To be completed by the customer on receipt of a Building Regulations Compliance Ce								
Building Regulations Notification Number (if applicable)								
ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)								_
Is the primary circuit a sealed or open vented system?		ealed					Oper	1
What is the maximum primary flow temperature?								°C
ALL SYSTEMS					<u> </u>			
What is the incoming static cold water pressure at the inlet to the system?							bar	-
Has a strainer been cleaned of installation debris (if fitted)?					Yes		N	
Is the installation in a hard water area (above 200ppm)?					Yes		N	-
					Yes		N	
If yes, has a water scale reducer been fitted? Yes What type of scale reducer has been fitted?						INC	<u>′</u>	
What is the hot water thermostat set temperature?							°C	
	high flow	outlot)2						
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)? ///min Time and temperature controls have been fitted in compliance with Part L of the Building Regulations? Yes							_	
Time and temperature controls have been fitted in compliance with Part L of the Buildi Type of control system (if applicable)	ing iteguia	10113 !	Y Plan		S Plan		Othe	
					N	-		
							<u> </u>	
What is the hot water temperature at the nearest outlet? °C All appropriate pipes have been insulated up to 1 metre or the point where they become concealed Yes								
								,
UNVENTED SYSTEMS ONLY								
Where is the pressure reducing valve situated (if fitted)?							bar	
What is the pressure reducing valve setting?	d and dia	abarga taat			Yes	<u> </u>	N	
Has a combined temperature and pressure relief valve and expansion valve been fitte		-			res		Ye	
0.11						N		
Are all energy sources fitted with a cut out device? Yes								
Has the expansion vessel or internal air space been checked? Yes No							, 	
THERMAL STORES ONLY					1			1.10
What store temperature is achievable?								°C
What is the maximum hot water temperature?						°C		
ALL INSTALLATIONS								_
The hot water system complies with the appropriate Building Regulations Yes								
The system has been installed and commissioned in accordance with the manufacturer's instructions Yes						3		
The system controls have been demonstrated to and understood by the customer Yes								
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes						3		
Commissioning Engineer's Signature								
Customer's Signature								
(To confirm satisfactory demonstration and receipt of manufacturer's literature)								

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.



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SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

			D (
SERVICE 01	Date:	SERVICE 02	Date:					
Engineer name:			Engineer name:					
Company name:		Company name:						
Telephone No:		Telephone No:						
Comments:		Comments:						
Signature		Signature						
SERVICE 03	Date:	SERVICE 04 Date:						
Engineer name:	bute.							
Company name:		Engineer name:						
Telephone No:		Company name: Telephone No:						
Comments:		Comments:						
Signature		Signature						
SERVICE 05	Date:	SERVICE 06	Date:					
Engineer name:		Engineer name:						
Company name:		Company name:						
Telephone No:		Telephone No:						
Comments:		Comments:						
Signature		Signatura						
		Signature						
SERVICE 07	Date:	SERVICE 08	Date:					
Engineer name:		Engineer name:						
Company name:		Company name:						
Telephone No:		Telephone No:						
Comments:		Comments:						
Signature		Signature						
SERVICE 09	Date:	SERVICE 10	Date:					
Engineer name:	bute.	Engineer name:	but.					
Company name:		Company name:						
Telephone No:		Telephone No:						
Comments:		Comments:						
Signature		Signature						

GUARANTEE AND EXEMPTIONS

The cylinder carries a 25-year guarantee against faulty materials or manufacturing, based upon the following conditions:

• Correct installation as per this document and all relevant standards, regulations, and codes of practice in force at the time.

- The Benchmark Commissioning Checklist has been completed.
- The unit has been serviced annually.
- The product has not been modified in any way, other than by us.
- There has not been any misuse, tampering, or neglect of the cylinder.
- It has only been used for the storage of potable water.
- It has not been subjected to frost damage.
- The system is fed from a public mains water supply.
- Storage temperatures have not exceeded 65°C.
- Installations made only in the United Kingdom.
- The water chemistry used in the system is found to be above the maximum allowances.
- Units are not installed with uncontrollable heat sources (e.g. wood burning stoves).

• For commercial or heavy-duty installations where constant usage and reheating is required, titanium immersion heaters must be fitted to comply with the warranty.

- The guarantee period starts from the date of purchase.
- The extended guarantee is not transferable and rests with the original householder.

EXCLUSIONS

- The effect of scale build-up on the unit or its components
- Any labour charges associated with replacing the unit or its parts
- Any consequential losses caused by the failure or malfunction of the unit.

Note: Invoices for servicing may be requested to prove that the unit has been serviced annually. All the components fitted to/or supplied with the cylinder carry a 2-year guarantee. The guarantee starts when the cylinder is first filled.

CLAIMS

On the rare occasion of a fault occurring, we will only consider sensible claims that are submitted in full at the time when the faulty part/unit is returned to us.

We will not cover any installer claims for excessive travelling where the installer has accepted a job more than 30 miles from their base of operations.

Removal costs cannot be recovered for the collection of a faulty unit from a difficult to reach area or where cylinder access has been restricted (as per this manual guidance.)

Claims will not be accepted for units that have not been installed in accordance with this manual.

PROBLEM GUIDANCE

When a problem arises, your first point of contact is the plumber who fitted the unit (in the first year), followed by the plumber who carries out the annual servicing of your unit for you.

If your cylinder begins to leak, we will supply you with a new one. To prevent fraud, we request an up-front payment in this case while we establish the cause of the fault. The original unit must be returned to us for inspection along with a copy of your service record and commissioning checklist. Your upfront payment will be refunded as soon as it is confirmed that the cylinder has failed within the terms of our warranty.

If a component part fails within the two-year guarantee, we will send you a new one with an upfront charge. Your credit card details may be required to prevent fraud. We ask you to post the faulty part back to us by recorded delivery within a month. A refund will be issued once the part has been tested and proven to be at fault.

APPENDIX - WATER CHEMISTRY

This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the cylinder. If you are unsure of your water chemistry, you may be able to obtain the relevant water chemistry information from your local water supply authority.

*Our warranty will not apply where water stored in the storage cylinder exceeds at any time any of the following levels: - TOTAL HARDNESS 200mg/L, TOTAL DISSOLVED SOLIDS 600mg/L

CONDITIONS OF SALE 1. DEFINITIONS "Brows" means the person who accepts a quotation of the Company for the sale of the Goods or whose order for the Goods is

Automotion of the LLEGRIBITION CONTRACT AND A CONTR

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

2.1 If the Company shall set affor the expert shall possible the company and accepted by the Borphary and the Company offer the table Bory (1 accepted by the Borphary and the table Borghar) (accepted by the Borphary and the table Borghar) (accepted by the Borphary Borghar) (accepted by the Borphary Borghar) (accepted by Borghary (1 accepted by Borghar)) (accepted by Borghary (1 accepted by Borghary (1 accepted by Borghar))) (accepted by Borghary (1 accepted by Bor

govem the Contract to the exclusion of any other terms, subject to which any such quotation or offer is accepted, or purported to be accepted. 22.4 ny viariation to these Conditions (including any special terms and conditions agreed between the partice) shall be imapplicable blue unless agreed in writing by the Company or its employees or agents to the Buyer or its employees or agents as to the storage pacification or use of the Good which in a tote formed in writing by the Company is followed or acted upon entitiely at the Buyer's own risk and accordingly the Company of that leads for any such advice or recommendation which 2.4 Any phogenphatic alrefal certain or own risk on any advice and accordingly the Company shall not be label for any such advice or recommendation which 2.4 Any phogenphatic alrefal certain or own recommission any advice linear terms and the Company shall be subject to correction without any lability on the part of the company.

Company 25 All specifications, drawings, particulars of weight and dimension and performance data contained in any of the Company Iterature are approximate only. 2.0 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 thrid party any benefit nor the right to enforce any time of these Conditions or any Contract whether pursuant to the Contract. Rights of Third Parties) Act

1999 or otherwise 3. THE PRICE AND PAYMENT

3.1 The Price shall be either

3.11 he mice shall be either: increased and the company and the company requestion of the data after which time the Price may be altered by the Company and which all be subject to the Company requestings. 3.12 where no price has been quited the Price listed in the then current price list of the Company and 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's quotation or in any price list of the Company or otherwise agreed in writing between the Buyer and the Company's quotation or in any price list of the Company or otherwise agreed in writing between the Buyer and the Company and the Company's quotation or in any price list of the Company or otherwise agreed in writing between the Buyer and the Company and the Company's quotation or in any price list of the Company or otherwise for than port and the Company of the Company and the Company and the Company or the Buyer form time of the Company of the Buyer form time of the Buyer form time of the Company of the Buyer form time of the Company of the Buyer form time of the Buye

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3.6 If the Buver fails to make any payment on the due date then without prejudice to any other right or rer 3.6 If the flayer fails to make any payment on the due date then without prejudice to any other right or remedy available to the Company the Company that be entited to a 5.0 L ance the concutar or superaid any thirther deliveries to the Buyer 3.62 Appropriate any payment make by the Buyer to such of the Goods (or the Goods) supplied under any other contract between 3.62 Appropriate any payment make by the Buyer to such of the Goods (or the Goods) supplied under any other contract between 3.62 Appropriate any payment make by the Buyer to such of the Goods (or the Goods) supplied and the any other contract between above Barciary 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 collauding interest). 4.11TH equating and exciption of the Goods shall be as set out in the Company's quotation or in the Company's offer (as the case 1 applications) and the Goods shall be as set out in the Company's quotation or (where there is no quotation) in the Company's furging and bescription of the Goods in paymention.

case may beginned case may beginned 14. The equality line response in the Goods in all be as set out in the Company's quotation or (where there is no quotation) in 14. 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 is to its requestion that the Good in a guestion applicable generation is used in the groups of performs the Contract in acconduce with its terms of all the Good are top thin a sufficient time to enable the Company to perform the Contract in acconduce with its terms of any order and any information applicable generation is used in the Good any top terms the Contract in acconduce on the Sum of the Good are top any applicable generation is the contract in the Good are contract in acconduce with its terms of all the Good are top any applicable generation is used in the Good any top terms the Contract in acconduce on the Sum of the Good are top top applicable generation is the Good are top top against or incurred by the Company is contraction with a guide and agrees to be paid by the Company in settement of any clasmic for infingement of any patert comparity the test by the Sum and agrees to be paid by the Company in active top and the Sum of a sum of the sum of the Company is and the Sum of the Sum of the Company is and the Sum of the Su

5. DBL/Refr OF GOODS 5. Ulless otherwise agreed in writing the Company shall deliver the Goods to such delivery address as is specified by the Buye the Company at such time as the Goods or part thereof (as the case may be) are nady for delivery. 3. The Buyer shall be reponsible for officiating the Goods at the delivery address and shall advice the Company of any local or internal laws, byelans or rules relating to parking or loading of vehicles at the delivery address. 3. The Buyer shall be reponsible for officiating that access to the delivery address in whole by a road with a surface capable of 3. The Buyer shall be reponsible for originarity that access to the delivery address. very address as is specified by the Buyer to

subtransformed to the second s otice to the Buve

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 contill the Buyer to true the Contract as a whole as republiced 5.6 If the Buyer fails for any reason whatoover to take delivery of the Goods or fails to give the Company adequate delivery in-stance of the Company in a second second

by the Cor

6 RISK AND RETENTION OF TITLE

Buyer's behalf or to the Buyer's Older. The Buyer shall effect adequate insurance of the goods against all risks to the Bull invoice wake of the goods, usin nume to be dericelized in on the time of delivery unit poperty in the goods all pass to the Buyer 6.2 poperty 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 do invoice the super when full payment has been made by the Buyer to the Call all one goods and the subject of this contract. 6.2.2 all other goods when subjects of any work contract between the Buyer and the Company which, at the time of payment of the goods supplies thermoder passes to the Buyer is not negative to the Buyer but not paid for in full. G a until poperty in the goods supplies thermoder passes to the Buyer is not negative to the Buyer but not paid for in full. G a until poperty in the goods supplies thermoder passes to the Buyer is accontance with paragraph (1) aboves many from any other goods in the Buyer is possession and in a manner which enables: them to be identified as our goods. All the Buyer is high to posses the goods that Company headd the Companies authorised representative so request. All the necessary incidents associated with a fluctary relationship shall apply. 6.4.1 the Buyer fails to make payment in All for the goods subtin the time stipulated in clause 1 benetified. 6.4.2 the Buyer shall be to paids a company, committy and ot handrogic, makes a papodia lis is other cellors or a compromise 6.4.3 the Buyer shall be made a subject of the All buyer buyer handlink would entitle an administrator or administrator oreadministrator oreadministrator or administrator or administr

or to apply for an administration order. 6.3 the Buyer hereby grants to the Company an inrevocable licence to enter at any time any vehicle or premises owned or occup 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 dumage caused to any vehicle or premise in such repossession and remo being damaged which was not reasonably practicable to avail of the Buyer shall as permitted to self the goods to thing parties in the normal course of busies. In this respect the Buyer shall as the capacity of the Company against in the campany capacity of the Surger Surger

6.6.2 shall not be mixed with other monies nor paid into an overdrawn bank account. The Company, as principal, shall remunera 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, New State Company, Data State St

such land or building.

such land or building. 6.8.2 Use all necessary steps to prevent title to the goods from passing to the landlor of such land or building. 6.8.3 Lot which increasing steps to prevent title to the goods from passing to the land or building concerned. The Buyer warrants to repara and makes good any damage caused by the diration of the goods to or their erround large may land or building and to indemnify the Company against all loss damage or lability the Company may incur or sustains a a result of affinition or remould. 6 in the event that, before property in the goods has passed to the Buyer meter paraging h10 interv. Of the goods or any d of 1 the bits, taking, damaged or destroyed. d of 1 the bits, taking, damaged or destroyed, d of 1 the bits, taking, damaged or destroyed, d of 1 the bits, taking, damaged or destroyed.

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. AVMRRANTESANDALIAILTYFORRINGCOCCINNTGALLEDNTHUK CONLY 7.1 Subject to the following provisions, the Company warrants that the Goods will be free from defects in material and workmaniship for a period of 24 months from their dehvery to the Buyer, unless a period of different dualation is specified in the product malatilian instructions in respect of that product and/or its specific warranty terms, or specified components thered. 7.2 I the company shall be under to labelly in nespect of any defect in the Goods arising from any information drawing design or specific warranty terms or the company subject to the following conditions: 7.2.1 the company shall be under to labelly in nespect of any defect in the Goods arising from any information drawing design or specification subject by the Boyer. abnormal working conditions failure to follow the Company substructions (whether ond or in writing) misuse or alteration or repair abnormal working conditions thaline to follow the Company substructions (whether ond or in writing) misuse or alteration or repair abnormal working conditions failure to follow the Company's instructions (whether ond or in writing) misuse or alteration or repair who conditions failure to formance

7.2.3 the Company shall not be liable for any consequential damage(s) occurred to

7.2.3 the Company shall not be liable for any consequential damagels) occurred to the Boyer, or the Boyer's customer's processing cuared by failure of the Company's Goodt. Any such costs incurred shall be claimed by the Boyer or the Boyer's customer's processing such gastrong the Company for any cost end to part in matrixis designations. The such as the such as the Boyer's customer's processing such gastrong the cost of sector to part in matrixis designations. The such as the su

7.4.2 damage suffered by 1979 shall not be limited 7.5 Subject as expressly provi ded in these Conditions all other warranties conditions or terms whether implied by statute o

common law or otherwise are

hereby excluded

hereby excluded 7.2 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 labele to the Buyer's for and the Company's Jubility shall be limited to the excess If any of the cost to the Buyer (in the Chaepert available market) of similar goods to replace those not delivered over the Price ofth

27 The bage shall examine all Goods delivered for thirth following delivery, Any claim by the Buyer which is based on any defect in the quality or controlling of the failure to correspond with specifications hall lowhere or not delivery is related 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 essonable inception) within a seasoful time after discovery of the defect of failure failure in the seasoful or necessorial time delivery is related and the Buyer data be bound to pay the Price as if the Goods halb been delivered in accordance with the contract in over that the Buyer data be bound to pay the Price as if the Goods halb been delivered in accordance with the contract in the Buyer data be bound to pay the Price as if the Goods halb been delivered in accordance with the contract in the Buyer data be bound to pay the Price as if the Goods halb been delivered in accordance with the contract in the Buyer data be the extent of the seasoful and been delivered in accordance with the contract in the Buyer data be entitled to relation and the Buyer data be accordance with the contract in the seasoful and the seasoful and begies of any dismute which is a significant on the seasoful and the seasoful and the set of the by the Company as being suitable for the purpose. "20 Where any valid lead in in respect of any of the Goods which is based on any defect in the Company whall be entitled to the company or begies the failer to the Company in accordance with these Condition the Condition to the Ecosy and the part of englisher to cload be the part of the goal condition of the Condition of 10 Where any valid and conditions. He Company in accordance with the condition of number of the Condition the Company in and subsequently found to have no fuil found or failed due to rea 7.7 The Buyer shall examine all Goods delivered forthwith following delivery. Any claim by the Buyer which is based on any defect

• Which a mean should be returned up are company and subsequency round to have no fault found or failed due to reason; side these terms and conditions, the Company reserves the right to claim any subsequent costs enabled, from the Buyer. I Without prejudice to the provisions of clauses 7.5, 7.6, 7.7, 9.9 and 7.10 the entire liability of the Buyer under or in connection h the Contract shall not exceed the Price of the Goods. 7 11 Wit

with the Contrast shall not exceed the Price of the Goods. 1.71 The Conquery shall not be labeled to the Bury or be desented to be in head, of the control by reason of any delay in perform-tion of the Bury of the Conquery is a straight of the Bury or be desented to be in head. Of the control by reason of any delay in perform-tion of the Conquery reasonable control Wilhout limiting the foregoing, the following shall be regarded at cause beyond the Conquery reasonable control. F12.1 as 1 of edge explosion, flowed the (memory of the Bury of the Conquery terms) F1.22 wars or thread of wars, abolizing, insurection, wild situations or requisition; 71.23 acts, restlictions, regulations, by-laws, probletions or measure of any kind on the ard of any Conservation Bury and Bury to calcal Authority;

promotions of measures or any some on me part or any operammental, ramamentary or local automoty; 17.24 miports or exports, regulations or embargos; 7.125 strikes, lockouts or other industrial action or trade disputes (whether employees of the Company or of a third party); 7.126 difficulties in bothaming raw metarias(a blood: fuel, parts or machinery; 7.12.7 power failure, failure of tele-communical 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

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8.1 This clause applies if.
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The categories of exclutents remain your me vocos. In a categories of exclutents remain your me vocos. In 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 content of the Company. It Is Any notice required or permitted to be given by either party to the other under these Conditions shall be in writing including ID Any notice required or permitted to be given by either party to the other under these Conditions shall be in writing including ID Any notice required or permitted to be given by either party to the other under these Conditions shall be in writing including relevant time have been nonfined pursuant to this provision to the party given by the tother and while use more than the buyer been releved to the party to whort it was addressed. If sets thy factuation leagon that manifestion if during a normal buieness day and otherwise on the nets business day and if tent by post. Z hours after posting. ID A ho waker by the Company of any trench of the Contract by the Boyer shall be considered as a waker of any subsequent breach of the same are of the provision its 3 f any provision of these Conditions is able by a court or other competent authority to solving in the breach basines day and if tent by post. Z hours after posting. ID A ho waker by the English court: IS all the Boyer shall index of the Contract and the sc Conditions and the remainder of the solution in an united that the defect entry biol. ID A how the ten plant basin is the Boyer shall index of the cost and damages, including attorney's ID A the Company as a suit of the Boyer shall index of the cost and damages, including attorney's ID A Boyer and the basin by the defect entry biol. ID A Boyer and the basin by the Company of any trend the Boyer shall index of the cost and damages, including attorney's ID A Boyer and the basin by the defect entry biol. ID A Boyer and the basin the Boyer shall

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 warmal terms are available on request. Terms & Conditions may change without prior notice being given, for up to date terms please visit www.viessmann.co.uk

Viessmann Limited Hortwood 30, Telford, Shropshire, TF1 7YP Tel: **01952 675000** Email: **info-uk@viessmann.com**