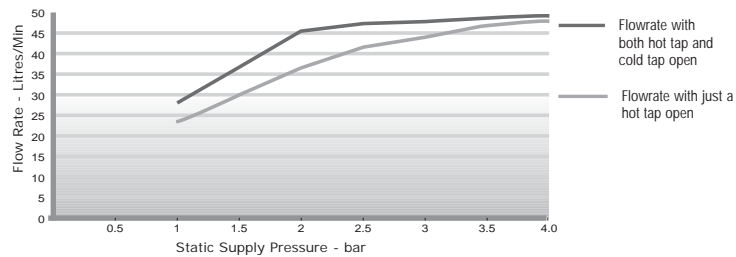


# SPECIFICATION SUMMARY

## Flowrate Performance

Ultrasteel HE Unvented v Flow Performance  
(measured at 50% Backpressure to simulate the effect of the drawoff pipework and taps)



## Materials

Inner shell - Duplex Stainless Steel

Coil - 22mm Diameter 316L Stainless Steel

Bosses - 316L Stainless Steel

Every Ultrasteel HE is water tested to a pressure of 15 bar.

## Insulation

Fire retardant polyurethane foam, nominal thickness 50mm.

The foam is CFC-Free and HCFC-Free.

The foam has an ozone depletion potential of ZERO.

## Casework

Zintec corrosion proofed steels throughout

Durable, oven hardened, gloss white paint finish

## Anode

None fitted / none required

## Expansion Vessel

18 Litre size with 180, 210 and 250 Litre models

25 Litre size with 300 Litre model

## Control Settings

Pressure Reducing Valve - 3 Bar

Expansion Relief Valve - 6 Bar

Pressure and Temperature Relief Valve - 7 Bar/90°C

High Limit Thermostat in Dual Thermostat - 85°C

High Limit Thermostat in Immersion Heater - 85°C

## Immersion Heater

1 3/4" BSP Parallel Threaded Head

Long Life Incoloy Sheathed Low Noise Element 14" Long

Long Life Incoloy Sheathed Thermostat Pocket 11" Long

Brazed Construction

11" Combined Thermostat and Safety Cut-Out

Element Rating 3Kw at 240V A/C

## Approvals

- WRAS Approved to the Water Regulations

- WRC-NSF Approved to Building Regulations' G3 & L

- CE Compliant and fitted with a

BEAB Approved Immersion Heater



WRC-NSF Ltd  
Building Regulations Approved



benchmark  
The code of practice for the installation,  
commissioning & servicing of central heating systems



# ULTRASTEEL HE

## Mains Pressure Unvented Cylinders

### INSTALLATION INSTRUCTIONS FOR ULTRASTEEL HE • ULTRASTEEL SLIM HE

Both Direct and Indirect models

Issue 2 December 2006



### IMPORTANT NOTE TO THE INSTALLER

Read these installation and maintenance instructions before commencing. Unvented cylinders are a controlled service as defined in the latest edition of the building regulations and should only be fitted by a competent person.

The relevant regulations are : England and Wales – Building Regulation G3 , Scotland – Technical Standard P3 , N Ireland – Building Regulation P5

After installation the benchmark log book must be completed and left along with these instructions with the householder for future reference.



New Brunswick Street • Off Thornes Lane • Wakefield • West Yorkshire • WF1 5QR  
Telephone: 01924 203020 • Fax: 01924 203021



# INTRODUCTION

## INTRODUCTION

The Ultrasteel HE Unvented cylinder is made from Duplex Stainless Steel for excellent corrosion resistance. Ultrasteel HE has a strong rust-proofed steel case and is highly insulated with environmentally friendly foam.

It is available in a family of 7 sizes from 90 – 300 litres and in Direct, Indirect and Twin Coil indirect forms.

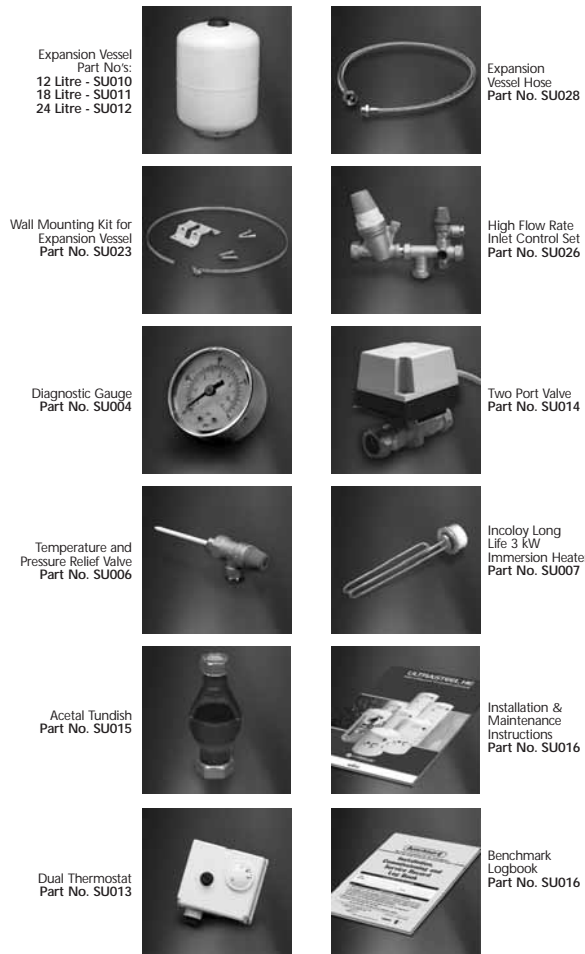
Ultrasteel HE is supplied complete with all the necessary safety and control devices needed to connect to the cold water mains. All are pre-adjusted. High quality controls have been selected to combine high flowrate performance with minimum pressure drop to make Ultrasteel HE perform well in all areas, even those with poor water pressure.

Ultrasteel HE is WRAS approved to show compliance with Building Regulations G3+L

## STORAGE PRIOR TO INSTALLATION

Ultrasteel HE should be stored in its original packaging in an upright position in an area free from excessive damp.

# UNPACKING THE UNIT



Ultrasteel HE comes complete with all the fittings you need to complete the installation:

### DIRECT PARTS

- Inlet Control set
- Temp & Pressure relief valve
- 15mm / 22mm Tundish
- Expansion vessel
- Wall mounting bracket
- Expansion vessel hose
- 2 x Immersion Heaters (1 on 90L)
- Installation & Maintenance Instructions
- Benchmark Logbook

### INDIRECT PARTS

- Inlet Control set
- Temp & Pressure relief valve
- 15mm / 22mm Tundish
- Expansion vessel
- Wall mounting bracket
- Expansion vessel hose
- Immersion Heater
- Two port valve
- Diagnostic Gauge
- Dual Thermostat
- Installation & Maintenance Instructions
- Benchmark Logbook

### TWIN COIL PARTS

- Inlet Control set
- Temp & Pressure relief valve
- 15mm / 22mm Tundish
- Expansion vessel
- Wall mounting bracket
- Expansion vessel hose
- Immersion Heater
- 2 x Two port valves
- Diagnostic Gauge
- 1 x Dual Thermostat
- 1 x Single Thermostat
- 1 x Single HighThermostat
- Installation & Maintenance Instructions
- Benchmark Logbook

# WATER SUPPLY

Ultrasteel HE operates at 3 bar (controlled by the inlet control set) and is capable of delivering over 50 litres per minute. The high quality inlet control set has been designed to make the most of what is available however the performance of any Unvented system is only as good as the water supply.

The maximum possible water demand should be assessed taking into consideration that both hot and cold services are supplied simultaneously from the mains.

The water supply should be checked to ensure it can meet these requirements. If necessary consult the local water company regarding the likely pressure and flow rate availability.

If measuring the water pressure note that a high static (no flow) mains pressure is no guarantee of good flow availability. In a domestic installation 1.5 bar and 25 l/m should be regarded as the minimum. The maximum mains pressure the inlet control set can cope with is 16 bar.

Consideration should be given to upgrading existing 1/2" (15mm) cold mains pipework to a larger size if the recommended minimum pressure/flowrate is not being achieved.

# SITING THE UNIT

Ultrasteel HE can supply outlets above it or at some distance from it. Site the unit to minimise "dead leg" distances especially to the point of most frequent use.

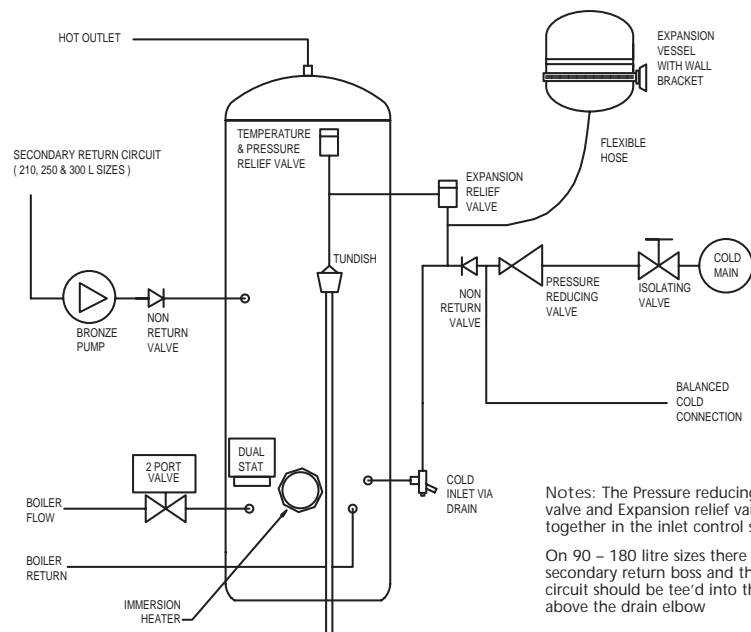
Outlets above the Ultrasteel HE will reduce the outlet pressure available by 0.1 bar for every 1m of height difference

The unit should be protected from frost. Particular care is needed if siting in a garage or outbuilding. All exposed pipework should be insulated

Ultrasteel HE must be installed VERTICALLY on a flat base capable of supporting the weight of the cylinder when full (see technical specification section for weights). The minimum recommended cupboard size is 650mm square

Access for maintenance of the valves should be considered. The immersion heaters are 375mm long and care should be taken that they can be withdrawn for servicing if required. The discharge pipework from the

# SCHEMATIC DIAGRAM



Notes: The Pressure reducing valve, Non return valve and Expansion relief valve are combined together in the inlet control set.

On 90 – 180 litre sizes there is no dedicated secondary return boss and the secondary return circuit should be tee'd into the cold feed pipe just above the drain elbow

# GENERAL INSTALLATION

## COLD MAINS PIPEWORK

Run the cold main through the building to the place where the Ultrasteel HE is to be installed. Take care not to run the cold pipe near hot water or heating pipe work so that the heat pick up is minimized.

Identify the cold water supply pipe and fit an isolating valve (not supplied)  
A 22mm BS1010 stopcock can typically be used but a 22mm quarter turn full bore valve would be better as it does not restrict the flow as much. Do not use "screwdriver slot" or similar valves.

Make the connection to the cold feed of the cylinder and incorporate a drain valve. Position the inlet control just ABOVE the Temperature & Pressure Relief Valve (TPRV) mounted on the side of the cylinder. This ensures that the cylinder does not have to be drained down in order to service the inlet control set.

Ensure that the arrow points in the direction of the water flow.



Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided. Use the hose to connect to the inlet control group.

## BALANCED COLD CONNECTION

If there are to be showers, bidets or monobloc taps in the installation then a balanced cold supply is necessary. There is a 22mm balanced connection on the inlet control set.

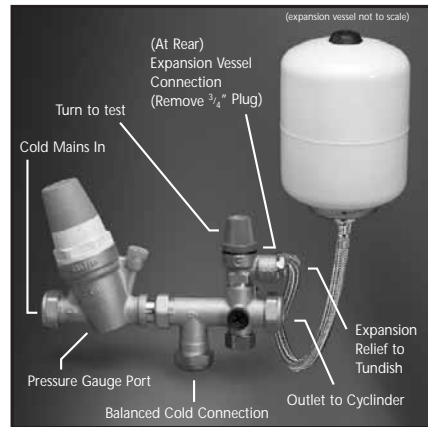
An alternative method is to split the inlet control set on to two parts. Site the pressure reducing valve immediately after the incoming cold mains stopcock (typically under the kitchen sink.) All outlets in the house will be at 3 bar and thus automatically balanced.

The expansion vessel section must still be mounted just above the TPRV on the cylinder. A 3/4" F-22mm compression adaptor will be needed (not supplied)

## HOT WATER PIPEWORK

Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot drawoff pipework to a practical minimum so that the time taken for the hot water is as quick as possible.

Do not use monobloc mixer tap or showers if the balanced cold connection is not provided. The unit will back pressurize the unit and result in discharge. Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided and connect to the inlet control set with the flexible hose provided. Ensure that the top of the vessel is accessible for servicing.



## PRIMARY COIL CONNECTIONS

Connect the primary connections ( indirect only ) using the compression connections provided.

The primary circuit must be positively pumped. Gravity circulation is not suitable. Either primary connection may be used as the primary flow. Reheat times are identical either way.

The primary circuit can be open vented or sealed with up to a maximum pressure of 7 bar. If you seal the primary circuit an additional expansion vessel and safety valve is required.

The boiler may be Gas, Electric, Oil etc but must be under effective thermostatic control. Uncontrolled heat sources such as some AGA's, back boilers, solid fuel stoves, etc are NOT SUITABLE. Please contact our technical department for guidance.

Connect the two port zone valve ( indirect only ) into the primary flow pipework. The direction of flow arrow should be towards the primary flow connection.

On twin coil cylinders we have provided an extra thermostat boss should you wish to use it. Again a two port zone valve should be fitted (supplied).

## SECONDARY CIRCULATION

Ultrasteel HE can be used with secondary circulation. An appropriate WRAS approved bronze circulator should be used in conjunction with a non return valve to prevent backflow. On large secondary circulation systems it may be necessary to incorporate an extra expansion vessel into the circuit to accommodate the increased system water volume. Secondary circulation should be avoided for direct electrically heated units being used on off peak electricity tariffs. A secondary return boss is fitted as standard on 210, 250 & 300L. On smaller sizes tee into the cold feed pipe above the drain.

## IMMERSION HEATERS

Only immersion heaters with a thermal cutout may be used. To help ensure this the immersion heaters have a special 1 3/4" thread. They are rated at 3 kW at 240 V and are of a low noise Incoloy construction. They have both a thermostat and a high limit cutout. Please order the correct replacement via ourselves, any other fitted may affect your guarantee.

When fitting ensure the 'O' ring is positioned correctly on the head of the immersion heater and lubricate before fitting. Fit it by hand until almost home then tighten gently as the 'O' rings will seal easily.

The electrical supply to each immersion heaters must be fused at 13A via a double pole isolating switch to BS 3456. The cable must be 2.5mm<sup>2</sup> heat resistant (85°C HOFRR) sheathed flex complying to BS 6141:1981 Table 8.

Do not operate the immersion heater/s until the unit is full of water.

Do not operate the immersion heater/s if any sterilisation liquid is in the cylinder as this will cause premature failure.

Fit the immersion thermostat ( indirect only ) into the thermostat pocket.

Complete the wiring – use the appropriate wiring diagrams on page 6.

# DISCHARGE ARRANGEMENT

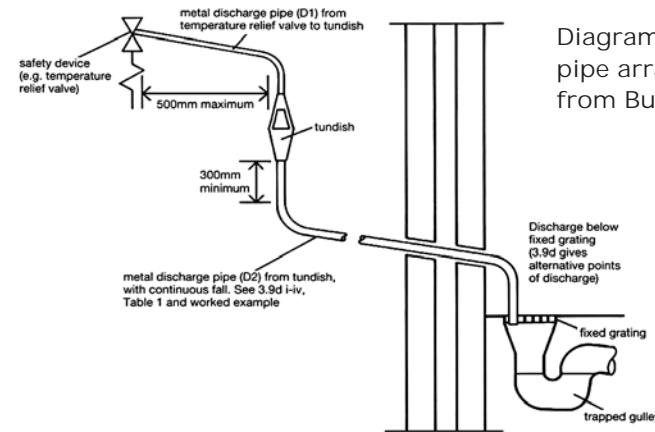


Diagram of a typical discharge pipe arrangement (extract from Building Regulation G3)

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

Note: It is not acceptable to discharge straight into a soil pipe.

Position the inlet control group so that the discharge from both the two safety valves can be joined together via a 15mm end feed Tee. (Fig.3)

Connect the Tundish and route the discharge pipe. The discharge pipework must be routed in accordance with Part G3 of schedule 1 of the Building Regulations. The information that follows is not exhaustive and if you are in doubt you should seek advice.

The two safety valves will only discharge water under fault conditions. When operating normally water will not be discharged.

The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible and within 500mm of the safety device e.g. the temperature relief valve.

The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal and:

- 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 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance. Refer to diagram 1, Table 1 and the worked example.
- An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipework.
- Be installed with a continuous fall.
- It is preferable for the discharge to be visible at both the tundish and the final point of discharge but where this is not possible or practically difficult there should be clear visibility at one or other of these locations. Examples of acceptable discharge arrangements are:

- Ideally below the fixed grating and above the water seal in a trapped gully.
- Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact whilst maintaining visibility.
- Discharges at a high level; e.g. in to metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering systems that would collect such discharges (tundish available).
- Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation can be traced reasonably easily. The single common discharge pipe should be at least one pipe size larger than the largest individual discharge pipe to be connected. If unvented hot water storage systems are installed where discharges from safety devices may not be apparent i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.

## WORKED EXAMPLE

The example below is for G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

From Table 1:

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is: 9.0m Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m

Therefore the maximum permitted length equates to: 5.8m  
5.8m is less than the actual length of 7m therefore calculate the next largest size.

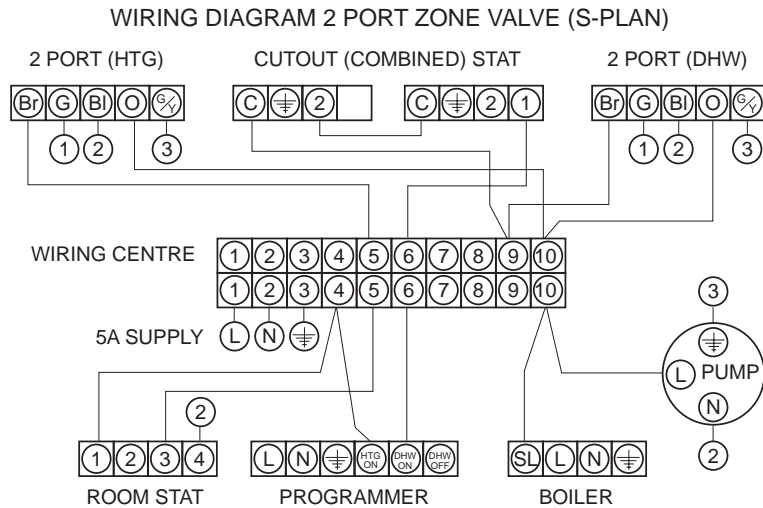
Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valve equates to: 14m  
As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Table 1

Sizing of copper discharge pipe 'D2' for a temperature relief valve with a G1/2 outlet size (as supplied).

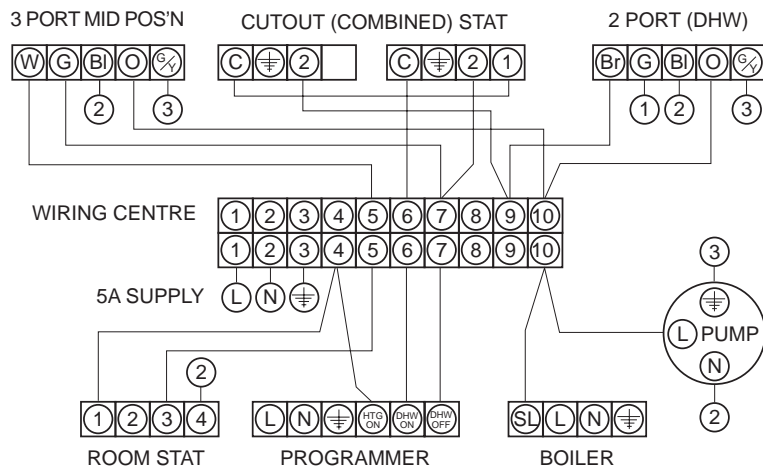
Size of discharge pipework	Maximum length of straight pipe (no bends or elbows)	Deduct the figure below from the maximum length for each bend or elbow in the discharge pipe
22mm	Up to 9m	0.8m
28mm	Up to 18m	1m
35mm	Up to 27m	1.4m

## WIRING DIAGRAM TWO 2 PORT ZONE VALVE (S-PLAN)



## WIRING DIAGRAM 3 PORT MID POSITION VALVE (Y-PLAN) + 2 PORT VALVE

WIRING DIAGRAM 3 PORT MID POSITION VALVE (Y-PLAN) + 2 PORT VALVE



Key: W = White, G = Grey, BI = Black, O = Orange, G/Y = Green / Yellow, Br = Brown,  
L = Live, N = Neutral, C = Common Terminal, SL = Switched Live

Note: The boiler and programmer power can be taken either from the Wiring Centre or from elsewhere whichever is more convenient

## COMMISSIONING

### FILLING

Check the pressure in the expansion vessel is 3 bar (45PSI). (i.e the same as the setting of the pressure reducing valve. The valve is of the car tyre (Schrader) type

**Check all the connections for tightness including any factory made connections such as the immersion heater and the temperature and pressure relief valve.**

Before filling open the hot tap furthest away from the Ultrasteel HE to let air out. Open the cold main isolation valve and allow the unit to fill.

When water flows from the tap allow it to run for a short while to flush through any dirt, swarf or flux residue.

Close the tap and open every other hot tap in turn to purge all remaining air.

### DIRECT UNITS

After filling with water and after sterilisation liquid has been purged, switch on the power to the immersion heaters and allow the unit to start to heat.

The immersion heater is supplied preset at 55°C. Turning fully to + sets to approx 65°C

### INDIRECT UNITS

Consult the boiler manufacturers commissioning instructions and fill the primary circuit.

Ensure the wheel on the two port valve is set to the filling position. When full move the lever back.

Switch the programmer to Domestic Hot water (DHW) and allow the unit to start to heat.

Adjust the dial of the dual thermostat to between 55°C and 65°C as required.

### STORAGE TEMPERATURE

The recommended storage temperature for both direct and indirect Ultrasteel HE is 60-65°C. In hard water areas consideration should be given to reducing this to 50-55°C.

In many healthcare applications the guidance on Legionella control and safe water delivery temperatures will require storing the water at 60-65°C, distributing at 50-55°C and using thermostatic mixing valves to control the final temperature.

For details consult the NHS estates guidance on safe hot water temperatures.

### SAFETY VALVE CHECKS

During heat-up there should have been no sign of water coming from either the expansion relief valve or the temperature / pressure relief valve.

Now hold both of these safety valves fully open allowing as much water as possible to flow through the tundish. Check that your discharge pipework is free from debris and is carrying the water away to waste efficiently

Release the valves and check that they reseat properly.

## SERVICING

### GENERAL

Service should only be carried out by competent installers and any spare parts used must be purchased from Copperform.

**NEVER** bypass any safety devices or operate the unit without them fully operational.

### DRAINING

Isolate from the electrical supply to prevent the immersion heaters burning out.

Isolate the unit from the cold mains. Attach a hose to the draining tap ensuring it reaches to a level below the unit (This will ensure an efficient syphon is set up and the maximum amount of water is drained from the unit).

Open the hot tap closest to the unit and open the draining tap  
**WARNING: WATER DRAINED OFF MAY BE VERY HOT!**

### ANNUAL MAINTENANCE

Ultrasteel HE requires an annual service in order to ensure safe working and optimum performance.

It is essential that the following checks are performed by a competent installer on an annual basis. Commonly this is done at the same time as the annual boiler service.

- 1) Twist the cap of the expansion relief valve on the inlet control set and allow water to flow for 5 seconds. Release and make sure it resets correctly. Repeat with the pressure / temperature relief valve.

In both cases check that the discharge pipework is carrying the water away adequately. If not check for blockages etc. and clear.

**WARNING: THE WATER DISCHARGED MAY BE VERY HOT!**

- 2) Check that any immersion heaters fitted are working correctly and that they are controlling the water at a temperature between 55°C and 65°C.
- 3) Check the pressure in the expansion vessel is charged to 3 bar. Turn off the water supply to the unit and open a hot tap first. The air valve on expansion vessel is a Schrader (car tyre) type. Air or CO<sup>2</sup> may be used to charge the expansion vessel.
- 4) Unscrew the head on the inlet control set and clean the mesh filter within.
- 5) The benchmark log book supplied with this unit should be updated at each service.

**YOUR GUARANTEE MAY BE VOID WITHOUT PROOF OF ANNUAL SERVICING**

### SPARE PARTS

We carry the full range of spares listed below in stock. If you order before noon we will dispatch the same day for delivery the next to most locations.

- SU026 - Inlet control set (pressure reducing valve, strainer and expansion relief valve)
- SU006 - Temperature & pressure relief valve
- SU015 - Tundish
- SU027 - Expansion relief valve (cartridge only)
- SU014 - 2 port valve
- SU004 - Diagnostic Gauge
- SU013 - Dual thermostat
- SU007 - Immersion heater ( same on all models )
- SU010 - 12 litre Expansion Vessel ( 90 , 120 & 150 sizes )
- SU011 - 18 litre Expansion vessel ( 180 , 210 & 250 sizes )
- SU012 - 24 litre expansion vessel ( 300 litre size )
- SU028 - Expansion vessel hose ( 3/4" M x 3/4" F )

## FAULT FINDING

FAULT	POSSIBLE CAUSE	SOLUTION
Water escaping from the case.	Compression fitting on hot drawoff not sealing	Check/remake joint with sealing paste
Cold water at taps	Direct – Immersion heater not switched on or cutout has triggered	Check / reset
	Indirect – Boiler not working	Check boiler – consult boiler manufacturers instructions
	Indirect – motorised valve fault	Check plumbing / wiring to motorised valve
	Indirect – cut-out in dual stat has operated	Reset and investigate cause
Water discharges from expansion relief valve	If continual – pressure reducing valve ( part of inlet control set ) may not be operating correctly	Check outlet pressure from inlet control set is 3 bar.
	If continual – expansion relief valve seat may be damaged	Remove cartridge – check seat and renew if necessary
Water discharges from temperature & pressure relief valve	If intermittent – expansion vessel charge may have reduced / bladder perished	Check pressure in expansion vessel Recharge to 3 bar if necessary. If bladder perished replace vessel.
	Unit it being back pressurized	With cylinder cold check pressure in cylinder. If this is the same as the incoming mains pressure then you are getting backfed. Install a balanced cold supply (see page 4)
Milky / cloudy water	Unit has overheated – thermal controls have failed	Switch off power to boiler and immersion heaters. Leave water supply on. Wait until discharge stops. Isolate water supply and replace if faulty
	Oxygenated water	Water from any pressurised system will release oxygen bubbles when flowing. The bubbles will settle out.
No hot water flow	Cold main off	Check and open stop cock
	Strainer blocked in pressure reducing valve	Isolate water supply and clean
Noise during hot water drawoff- typically worse in the morning.	Inlet control set may be fitted incorrectly	Check and refit as required
	loose airing cupboard pipework	Install extra clips
Hot or warm water from cold tap	if tap runs cold after a minute or so the pipe is picking up heat from heating pipework.	insulate / reroute

## GUARANTEE

The Ultrasteel HE's stainless steel vessel carries a 25 year guarantee against faulty materials or manufacture provided that:

- It has been correctly installed as per this document and all the relevant standards, regulations and codes of practice in force at the time.
- It has not been modified in any way, other than by Copperform.
- It has not been misused, tampered with or subjected to neglect
- It has only been used for the storage of potable water.
- It has not been subjected to frost damage.
- The unit has been serviced annually
- The benchmark log book has been filled in after each annual service.
- The guarantee period starts from the date of purchase and no registration is required.
- The extended guarantee is not transferable, and rests with the original householder.
- The system is fed from a public water supply.

Please note that invoices for servicing may be requested to prove that the unit has been serviced annually.

All the components fitted to / or supplied with the Ultrasteel HE carry a 2 year guarantee.

### EXCLUSIONS –THE GUARANTEE DOES NOT COVER

The effects of scale build up.

Any labour charges associated with replacing the unit or its parts

Any consequential losses caused by the failure or malfunction of the unit.

### GUIDANCE IN THE EVENT OF A PROBLEM

If you have a problem in the first year contact the plumber who fitted the unit. Thereafter contact the plumber who carries out the annual servicing for you.

If your Ultrasteel HE develops a leak we will supply you with a new one. We ask for an nominal up-front payment to prevent fraud. We will require the original unit to be returned to us for inspection along with a copy of your benchmark log book. If it is confirmed that it has failed within the terms of the warranty your upfront payment will be refunded.

If a component part fails within the two year guarantee period we will send you a new one without any upfront charge. Credit card details may be taken to prevent fraud. We ask you to post the faulty part back to us within one month by recorded delivery.

If you do not return the part we will charge you for it and for the postage and packing.

If your part fails after two years service, we will ask for upfront payment.

## USER INSTRUCTIONS

Your stainless system is automatic in normal use and requires only annual servicing. You should employ a competent installer to perform the annual servicing. Normally this is timed to coincide with the annual boiler service.

IF WATER IS FLOWING FROM THE SAFETY VALVES THROUGH THE TUNDISH THIS INDICATES A FAULT CONDITION AND ACTION IS NEEDED

If this water is hot turn the boiler and / or the immersion heater off. Do not turn off the water until the discharge runs cool. The discharge may also stop.

CALL A COMPETENT PLUMBER OUT TO SERVICE THE UNIT.

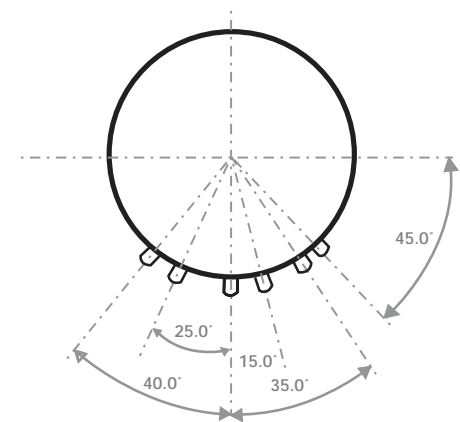
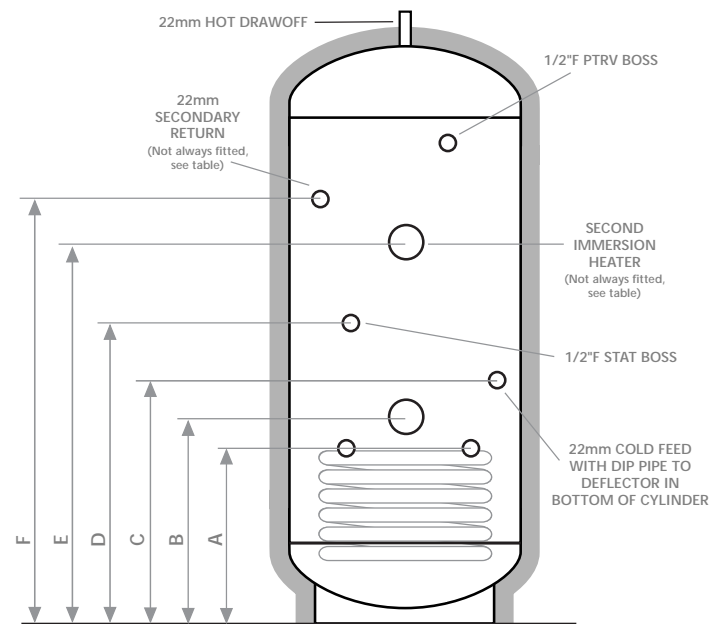
Tell them you have a fault on an unvented cylinder. We stock all the spare parts they may need.

# TECHNICAL SPECIFICATIONS

## INDIRECT



SECOND IMMERSION  
ON 250 & 300 LITRE  
MODELS ONLY

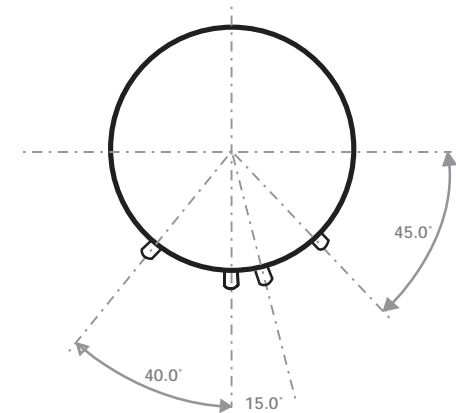
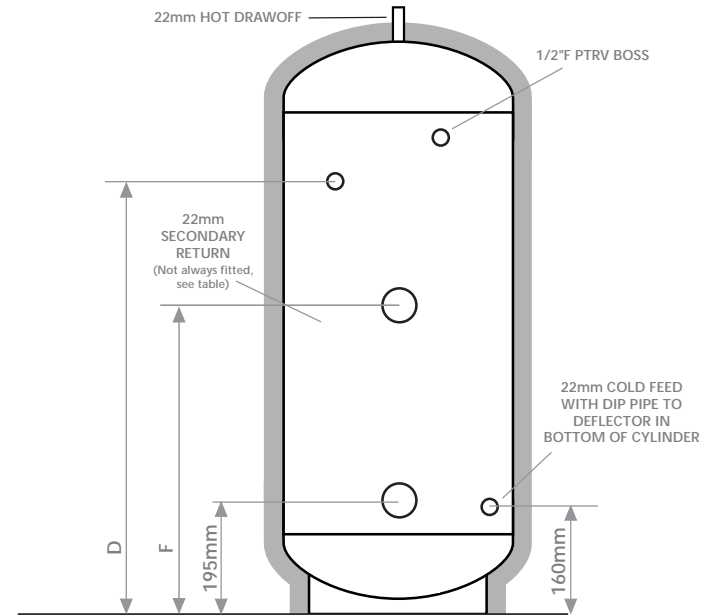


CODE	CAPACITY	HEIGHT	DIAMETER	A	B	C	D	E	F	WEIGHT (kg-EMPTY)	WEIGHT (kg-FULL)
SU90I	90 L	718	550	290	330	390	345	N/F	N/F	30	120
SU120I	120 L	906	550	290	330	390	345	N/F	N/F	35	155
SU150I	150 L	1093	550	330	370	465	385	N/F	N/F	40	190
SU180I	180 L	1281	550	330	370	465	385	N/F	N/F	45	225
SU210I	210 L	1469	550	365	405	465	465	N/F	1150	50	260
SU250I	250 L	1719	550	365	405	465	560	N/F	1400	55	305
SU300I	300 L	2032	550	365	405	465	660	1100	1600	60	360

All Dimensions are in mm and are of the cased unit. N/F = not fitted.

# TECHNICAL SPECIFICATIONS

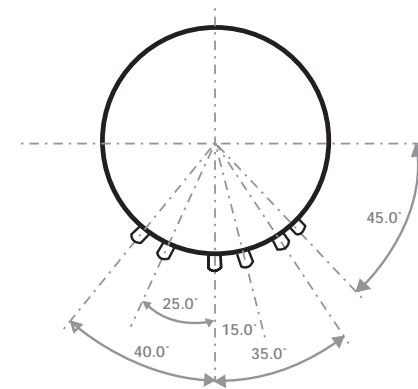
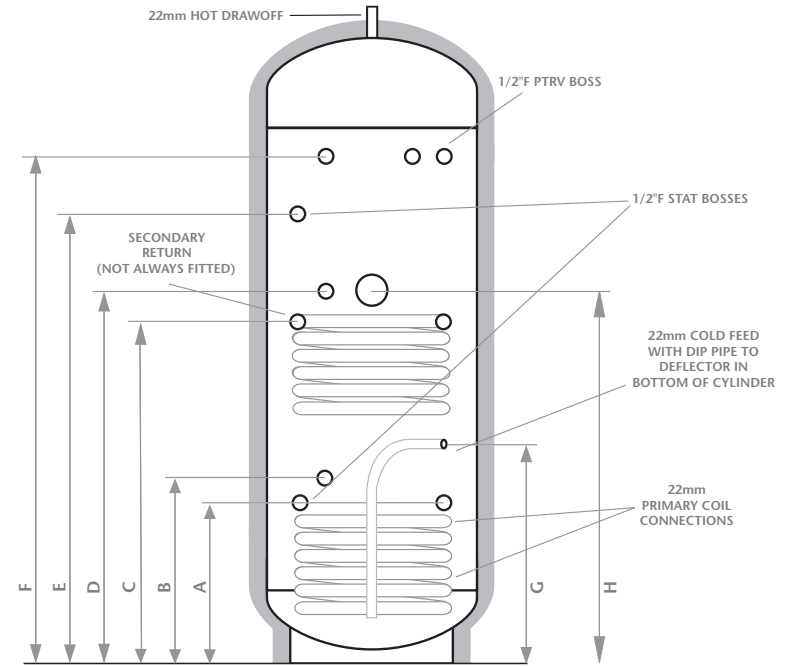
## DIRECT



CODE	CAPACITY	HEIGHT	DIAMETER	D	F	WEIGHT (Kg-EMPTY)	WEIGHT (Kg-FULL)
SU90I	90 L	718	550	N/F	N/F	25	115
SU120I	120 L	906	550	N/F	510	30	150
SU150I	150 L	1093	550	N/F	610	35	185
SU180I	180 L	1281	550	N/F	710	40	220
SU210I	210 L	1469	550	1000	810	45	255
SU250I	250 L	1719	550	1250	950	50	300
SU300I	300 L	2032	550	1500	1100	55	355

All Dimensions are in mm and are of the cased unit. N/F = not fitted.

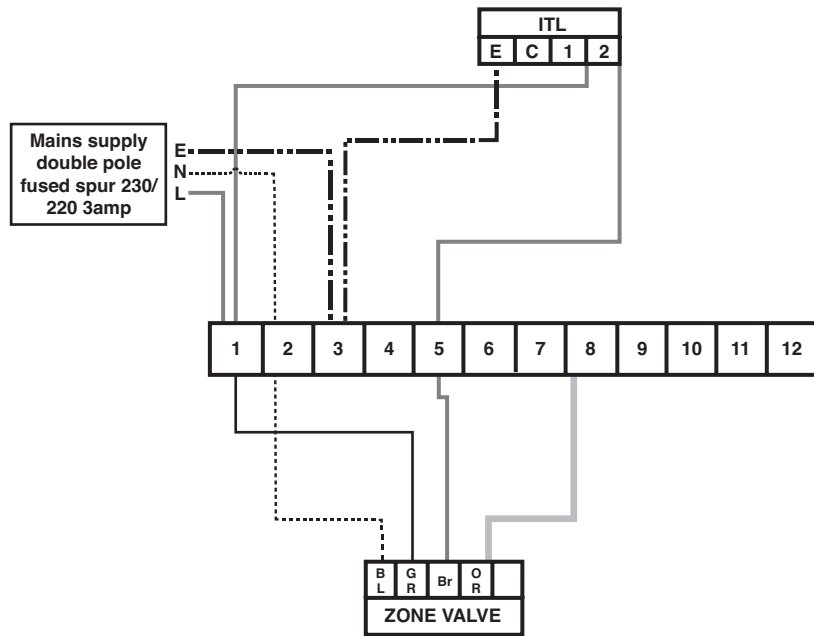
## INDIRECT SOLAR HE



CODE	CAPACITY	HEIGHT	DIAMETER	A	B	C	D	E	F	G	H	WEIGHT (Kg-EMPTY)	WEIGHT (Kg-FULL)
SU150I ECO	150 L	1093	550	290	345	642	708	N/A	893	390	693	45	195
SU180I ECO	180 L	1281	550	290	345	674	729	N/A	1080	390	725	50	230
SU210I ECO	210 L	1469	550	365	420	779	834	1150	1268	465	830	55	265
SU250I ECO	250 L	1719	550	365	420	854	909	1400	1518	465	905	60	310
SU300I ECO	300 L	2032	550	365	420	979	1034	1600	1832	465	1030	65	365

All Dimensions are in mm and are of the cased unit. N/F = not fitted.

# Ultrasteel Unvented Indirect Twin Coil Solar HE



Indirect twin coil units can be installed in two separate formats:

- a) In a solar powered system with a fossil fuel boiler.
- b) In a system with two independent fossil fuel boilers.

With either format it is essential the overall installation meets all current legislation including, in particular, the high limit isolation requirements of Building Regulation G3. This document is designed to assist in achieving this aim.

## Upper Coil

The upper coil is connected to the fossil fuel boiler as per the instructions for the Stainless Unvented Indirect HE single coil model with the Danfoss ITD100 control and high limit thermostat inserted into pocket D (fig. page 15). The wiring requirements are as depicted on page 6.

## Lower Coil: Solar Installation

In a solar powered system the lower coil is connected to the solar heat source. Either primary coil connection may be utilised as the flow or return. The solar cylinder sensor, supplied as part of the solar controls, inserts into pocket B (fig. page 15). It is necessary to mount the solar pump in the return pipework with the Danfoss HP22 two port valve (supplied with the cylinder) installed between the cylinder and the pump. This valve is of the powered open, sprung closed design and is wired through the Danfoss ITC100 high limit stat which inserts into pocket F (fig. Page 15). Two wiring options for high limit isolation are provided in fig. 1 and fig. 2 page 16. The Danfoss ITC100 control thermostat is not required in a solar installation.

## Lower Coil: Two Boiler Installation

Where the lower coil is to be used with a fossil fuel boiler, the pipework requirements are as per that of a Stainless Indirect HE single coil cylinder described earlier in this book. Electrically the ITC100 inserts into Pocket B (fig. Page 15) to control the boiler input and the Danfoss ITC100 limit stat into Pocket F (fig. Page 15). The Danfoss HP22 two port valve may be installed into either the flow or return pipework. Wiring of the ITC100 and ITC100 are as per the wiring detail using the ITD100 on page 6.

