HEAT GEEK × WORLD HEAT

The Super Cylinder

Installation, Commissioning & Service Manual

Stainless steel unvented hot water cylinders for heat pumps and other heat sources · 150 to 300 L

Issue 2, revision C · 28 October 2026

Document reference HGSC-IS-001

whcylinders.co.uk · heatgeek.com

World Heat Ltd · Dukinfield, Greater Manchester, UK

Contents

GENERAL & REGULATORY INFORMATION

Document control and compliance 3

Safety information and user warnings 4

PRODUCT OVERVIEW & PREPARATION

1. Product overview and key features 5

2. Storage, handling and positioning 6

3. Equipment supplied with the cylinder 7

4. Equipment the installer must supply 8

INSTALLATION & SYSTEM INTEGRATION

5. Cold-water supply, inlet control and expansion 9

6. Hydraulic connections and primary coil 10

7. Safety-valve discharge pipework (D1 & D2) 12

8. Electrical installation 14

COMMISSIONING, SERVICING & SUPPORT

9. Commissioning 16

10. Service and maintenance 17

11. Fault finding 18

12. Warranty and product support 19

TECHNICAL DATA & DRAWINGS

13. Super Cylinder specifications & technical data 20

14. Engineering drawing pack 23

Appendix A — Regulatory compliance summary 29

Read these instructions before installing. Leave this manual and the completed commissioning record with the householder.

Document control and compliance

GENERAL & REGULATORY INFORMATION

Item	Detail
Document reference	HGSC-IS-001
Document owner	World Heat Ltd
Intended users	Competent heating designers, qualified unvented hot water installers (holding unvented G3 competence), commissioning engineers and service technicians in Great Britain and Northern Ireland
Product scope	Heat Geek Super Cylinder stainless steel unvented indirect hot water cylinders, five models: 150 L Slim, 180 L Slim, 210 L Slim, 250 L Standard and 300 L Standard, each with a 4.0 m² corrugated stainless steel coil for heat pumps and other low-temperature heat sources
Controlling drawings	150HEATGEEKSLIM, 180HEATGEEKSLIM, 210HEATGEEKSLIM, 250HEATGEEK, 300HEATGEEK (Section 14)

Legal and compliance responsibilities

This manual gives installation, commissioning and maintenance instructions for the Super Cylinder range. It helps the installer meet regulatory requirements, but the installer remains responsible for making sure the complete installation complies with the Building Regulations, water fittings regulations, electrical safety standards and health and safety legislation in force at the time and place of installation.

Principal standards and legislation

- **Building Regulations / Building Standards:** England & Wales (Requirement G3 and Part L), Scotland (Building Standards Technical Handbook Sections 4 and 6), Northern Ireland (Technical Booklets P and F).
- **Water supply:** Water Supply (Water Fittings) Regulations 1999 (England & Wales), Scottish Water Byelaws 2014, Water Supply (Water Fittings) Regulations (Northern Ireland) 2009.
- **Product standard:** BS EN 12897, indirectly heated unvented (closed) storage water heaters.
- **Potable water pipework:** BS EN 806 (Parts 1–5) and BS 8558.
- **Electrical safety:** BS 7671 (IET Wiring Regulations), current edition.

Jurisdiction and regulatory precedence

Always apply the regulations and standards of the jurisdiction where the cylinder is installed. Where this manual differs from a statutory requirement, the statutory requirement takes precedence.

Safety information and user warnings

GENERAL & REGULATORY INFORMATION

WARNING

Pressurised hot water. The Super Cylinder stores water under pressure at high temperature. Incorrect installation, unauthorised modification or bypassing a safety device can cause serious injury, scalding or failure of the vessel. Only a qualified unvented hot water engineer may install, commission or service it.

Installer competence and requirements

- Installation, commissioning and servicing must only be carried out by a competent person holding a recognised unvented hot water qualification (G3).
- Electrical connections must be installed, inspected and tested by a suitably qualified electrician in accordance with BS 7671.
- Check that the incoming cold water pressure and flow meet the requirements in Section 5, and that the floor can carry the cylinder's full operating weight (Section 2).
- Complete and sign the commissioning record (Section 9) and leave it with the householder.

Safety devices: never

- Never remove, cap, bypass, tamper with or relocate any safety relief valve.
- Never fit an isolating valve or restriction between the vessel and the temperature and pressure (T&P) relief valve or the expansion relief valve.
- Never switch on the immersion heater or the primary heat source until the cylinder is completely full of water and vented.
- Never fit replacement safety components that are not genuine World Heat parts or parts World Heat has approved for this cylinder.

Product markings

The data badge and warning labels must stay clearly legible after installation. Replacement badges and labels are available from World Heat Ltd.

Warning to the building occupant

Do not adjust, tamper with or block any valve or discharge pipe on this cylinder. If water flows or drips from the tundish or discharge pipe, switch off the electricity supply and the heat source at once and call a qualified heating engineer.

1. Product overview and key features

PRODUCT OVERVIEW & PREPARATION

Indirect storage for low-temperature heat sources

The Super Cylinder is a stainless steel unvented hot water cylinder made by World Heat for Heat Geek. A 4.0 m² corrugated stainless steel coil gives a large heat-transfer surface for low primary flow temperatures, which suits heat pumps as well as boilers and other heat sources.

Key features

- **Stainless steel vessel:** duplex stainless steel vessel with no sacrificial anode to maintain.
- **4.0 m² coil:** 18 m of MH 211 K DN32 corrugated 316L stainless steel tube (Section 13 gives its heat-transfer duty and pressure drop).
- **Insulation:** 50 mm CFC/HCFC-free polyurethane foam (standing heat loss in Section 13).
- **Immersion heater:** factory-fitted 3 kW Incoloy element with an adjustable thermostat and a manual-reset thermal cut-out.
- **G3 unvented kit:** inlet control group (3.0 bar pressure reducing valve, 6.0 bar expansion relief valve), 7.0 bar / 90 °C T&P relief valve, pre-charged expansion vessel and tundish (Section 3).
- **Two formats, five capacities:** Slim (Ø475 mm) in 150, 180 and 210 L; Standard (Ø550 mm) in 250 and 300 L.

Model selection guidance

Choose the capacity from the household's occupancy, number of bathrooms, peak simultaneous hot water demand and the heat source's recharge capability:

Model	Typical use	Casing
150 L Slim	1–2 bedrooms, 1 bathroom with shower	Ø475 mm
180 L Slim	2–3 bedrooms, 1–2 bathrooms with shower	Ø475 mm
210 L Slim	3–4 bedrooms, 2 bathrooms	Ø475 mm
250 L Standard	4–5 bedrooms, 2–3 bathrooms or high demand	Ø550 mm
300 L Standard	5+ bedrooms, 3+ bathrooms	Ø550 mm

2. Storage, handling and positioning

PRODUCT OVERVIEW & PREPARATION

Storage and site handling

- Store the cylinder upright in its packaging in a dry, clean, frost-free place away from site traffic and debris.
- Do not stack packed cylinders.
- Use suitable lifting equipment. Never lift or drag the cylinder by its pipe stubs, thermostat pockets, immersion heater boss or casing seams.
- Inspect the cylinder and the supplied components on delivery, before starting work, and report any transit damage at once.

Positioning and floor loading

Install the cylinder vertically on a flat, level floor able to carry its full operating weight. The table gives each model's approximate dry weight and the weight with its stored water; add the coil's water content and any pipework and fittings to give the full operating weight.

Table 1 — Weights and floor loading

Model	Nominal capacity	Diameter × height	Dry weight (approx.)	Actual stored-water capacity (L)	Dry weight + stored water
150 L Slim	150 L	Ø475 × 1474 mm	43 kg	146	189 kg
180 L Slim	180 L	Ø475 × 1690 mm	48 kg	176	224 kg
210 L Slim	210 L	Ø475 × 2003 mm	58 kg	205	263 kg
250 L Standard	250 L	Ø550 × 1718 mm	65 kg	244	309 kg
300 L Standard	300 L	Ø550 × 2031 mm	70 kg	293	363 kg

Full operating weight = dry weight + stored water + the coil's water content + pipework and fittings.

Service clearances and access

- **Immersion heater:** leave at least 500 mm clear in front of the immersion heater boss for withdrawing the element.
- **Controls and valves:** keep the inlet control group, expansion vessel, T&P valve, drain valve and thermostat pockets accessible.
- **Frost protection:** the cylinder and its pipework must be inside a frost-free space.
- **Discharge:** position the cylinder so the discharge pipework (D1 and D2) can fall continuously to a safe termination (Section 7).

> ⚠ **CAUTION**
>
> **Structural assessment.** Confirm that joists, platforms or other supports can carry the full operating weight. In a loft or on a suspended timber floor, spread the load across several joists with continuous boarding.

3. Equipment supplied with the cylinder

PRODUCT OVERVIEW & PREPARATION

Component schedule, all five models

Every Super Cylinder is supplied with the G3 safety and control components listed below. Check every item is present before starting the installation.

Item	Qty	Component	Supply
1	1	Stainless steel unvented vessel in insulated casing	Main unit
2	1	3 kW Incoloy 1¾" BSP immersion heater with thermostat and manual-reset thermal cut-out	Factory fitted
3	1	4.0 m² MH 211 K DN32 corrugated stainless steel coil	Factory fitted
4	1	Cold water inlet control group: pressure reducing valve (set to 3.0 bar), line strainer, non-return valve, expansion relief valve (6.0 bar) and balanced cold connection	Loose kit
5	1	Temperature and pressure (T&P) relief valve, 7.0 bar / 90 °C	Factory fitted (upper boss)
6	1	Potable water expansion vessel, pre-charged to 3.0 bar	Loose kit
7	1	Tundish (15 mm inlet, 22 mm outlet)	Loose kit
8	1	Drain valve (½" BSP with hose union)	Factory fitted (lower boss)
9	1	22 mm compression fittings on the cold inlet, hot draw-off and secondary return	Factory fitted

NOTE

The immersion heater and coil are fitted and the vessel is pressure tested at World Heat's factory. The loose G3 components are matched to the Super Cylinder range.

4. Equipment the installer must supply

PRODUCT OVERVIEW & PREPARATION

The installer supplies and fits everything else needed for a compliant and safe heating and hot water installation.

Site-supplied materials

- **Electrical supply:** a dedicated 16 A double-pole switched fused connection unit with neon indicator (contact separation at least 3 mm), wired in heat-resistant flexible cable (at least 1.5 mm², 85 °C rated, e.g. H05V2V2-F) to BS 7671.
- **Discharge pipework (D1 and D2):** sized metal pipework from the T&P and expansion relief valves to the tundish (D1) and from the tundish to a safe termination (D2), to Building Regulations G3 (Section 7).
- **Primary zone valve:** a 2-port spring-return motorised zone valve (28 mm recommended), controlled by the heat pump and/or the control thermostat and, where fitted, the high-limit cut-out (Figure 3, Section 8). World Heat supplies the 22 mm dry pocket only: where a high-limit thermostat is required to meet Building Regulations G3 (for example when a boiler is connected), the installer fits it in the pocket provided.
- **Isolating valves:** full-bore isolating valves on the mains supply, the hot water distribution and the primary flow and return.
- **Primary heating circuit ancillaries:** primary circulation pump, system expansion vessel, filling loop, air vents and magnetic system filter. Pump sizing must be determined by the system designer using project-specific flow, temperature and pipework data, including the coil pressure drop chart in Section 13 (Figure 5).

Water treatment

- **Scale:** where the mains water hardness exceeds 200 ppm (mg/L $CaCO_3$), fit an approved in-line scale reducer or water softener upstream of the cylinder.
- **Primary circuit:** clean and flush the primary circuit to BS 7593 and dose it with an inhibitor compatible with stainless steel and the heat source's heat exchanger.

Optional accessories

- **Thermostatic mixing valve (TMV):** where vulnerable people could be scalded, fit an approved TMV (BS EN 1111 / BS EN 1287) on the hot water distribution.
- **Secondary circulation pump:** where a secondary return loop is installed, use a bronze or stainless potable-water pump with a timer and check valve.

5. Cold-water supply, inlet control and expansion

INSTALLATION & SYSTEM INTEGRATION

Mains water assessment

Measure both the static and the dynamic mains conditions: static pressure alone does not show that the supply can meet demand. As a guide for a home, at least 1.5 bar dynamic pressure and 25 litres/minute should be available at the cylinder; higher simultaneous demand needs more. The inlet control group reduces the supply to the cylinder's 3.0 bar operating pressure. The maximum incoming mains pressure is 12.0 bar.

Cold water inlet control group

- Fit a full-bore isolating valve upstream of the inlet control group (not a restrictive gate valve).
- Fit the inlet control group in the direction of the flow arrow, where it can be inspected, cleaned and replaced.
- Fit no valve, check valve or restriction between the cylinder and the expansion relief valve.
- Supply mixer taps and showers from the balanced cold connection where balanced pressures are needed.
- Provide drain points so the cylinder and its pipework can be drained safely.

Expansion vessel

Check the expansion vessel's pre-charge is 3.0 bar before filling, with no water pressure on the vessel. For potable water hygiene, fit the vessel to keep stagnant water to a minimum: a vertical, flow-through arrangement close to the cold supply is preferred. Leave access for pressure checks, flushing and replacement.

6. Hydraulic connections and primary coil

INSTALLATION & SYSTEM INTEGRATION

Cylinder port schedule

Port functions and connection sizes are the same across the range; port heights change with the cylinder's capacity: see the model's drawing in Section 14 for its dimensions.

Port	Connection	Function and installation guidance
Cold water inlet	22 mm compression	Top port feeding the internal stainless steel dip pipe, which discharges cold water at the base of the vessel
Hot water draw-off	22 mm compression	Top port drawing from the top of the stored water
Primary coil stubs (×2)	28 mm plain stub (80 mm)	Coil flow and return, side by side at the top of the coil. The coil is non-handed: either stub may be the flow
Secondary return	22 mm compression	Secondary circulation return, where one is installed
T&P relief valve boss	½" BSP female	Upper boss for the 7.0 bar / 90 °C T&P relief valve (Section 3)
Drain valve boss	½" BSP female	Lowest boss, for the drain valve with hose union
Thermostat pockets	22 mm dry pocket	Upper pocket: control thermostat and, where required, installer-fitted high-limit thermostat; lower pocket: auxiliary or monitoring sensor
Immersion heater boss	1¾" BSP female	3 kW immersion heater, factory fitted

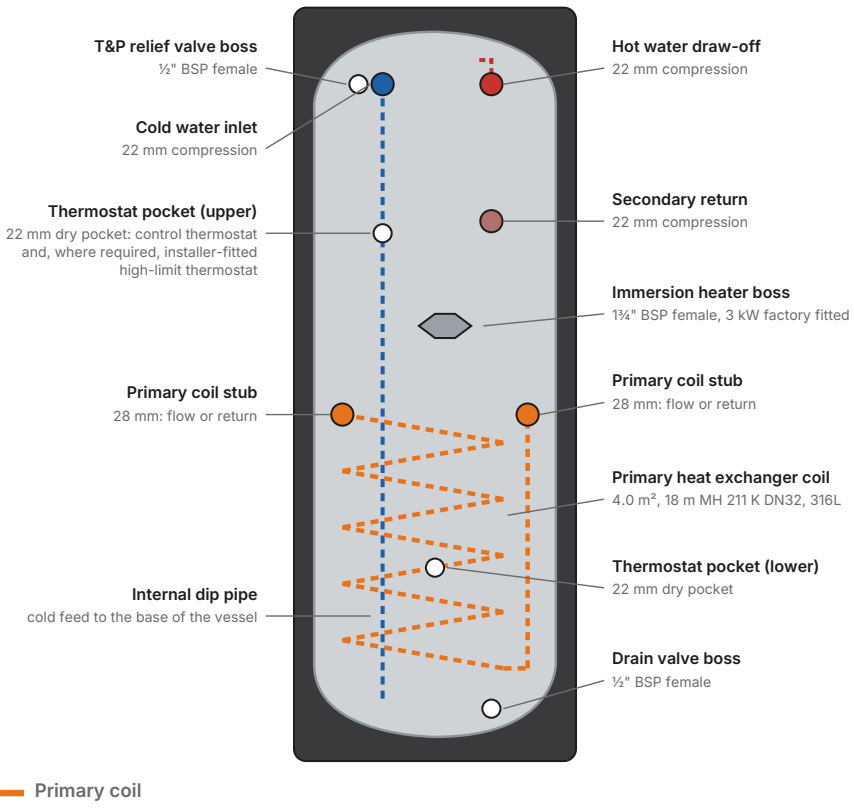


Figure 1 — Super Cylinder port locations, front elevation (schematic, not to scale). Port heights change with the capacity: see Section 14.

Hot water and balanced cold services

- Keep the hot water draw-off as short as practicable and insulate it to Part L and the project design.
- Supply mixer taps and showers from the balanced cold connection on the inlet control group where pressure balance is needed.
- Do not use a safety valve connection for anything else, and fit no isolating valve between the vessel and its safety devices.
- Support pipework independently so no load is carried by the cylinder's connections.

Primary coil connections

Connect the coil to a pumped, correctly controlled primary circuit (gravity circulation is not suitable) and do not exceed the 3.0 bar maximum primary working pressure. The heat source must have thermostatic control and an independent means of stopping heat input when the high-limit cut-out, where fitted, operates: the 2-port zone valve wired as Figure 3 does this. World Heat supplies the 22 mm dry pocket only: where a high-limit thermostat is required to meet Building Regulations G3 (for example when a boiler is connected), the installer fits it in the pocket provided. Check it fails safe during commissioning.

Secondary circulation

Where a secondary circulation loop is installed, use a potable-water circulator, non-return valve, balancing and suitable expansion provision. Insulate the whole loop and commission it to limit heat loss while keeping the required hygiene temperatures.

7. Safety-valve discharge pipework (D1 & D2)

INSTALLATION & SYSTEM INTEGRATION

> **WARNING**
>
> **Scalding hazard.** A safety valve can discharge near-boiling water and steam. Route and terminate all discharge pipework so a discharge is visible and cannot harm people, damage property or affect the building.

General requirements

The discharge arrangement must comply with Approved Document G (or the equivalent in Scotland and Northern Ireland). This is a summary, not a substitute for the current guidance or the project design.

- Fit the tundish in the same space as the cylinder, vertically below and as close as practicable to the safety device. The D1 pipe from the safety device to the tundish must be metal, have no valve or restriction, and normally be no more than **600 mm** long.
- The discharge must be visible at the tundish. Consider an additional warning device where occupants may not notice a discharge.
- Below the tundish, D2 must run vertically for at least **300 mm** before any elbow or bend.
- Lay D2 with a continuous fall of at least **1 in 200**, sized for the valve outlet, its equivalent length and the number of bends (Table 2).
- Use metal, or another material shown to withstand the discharge temperature and duration, and terminate in a safe, visible place.

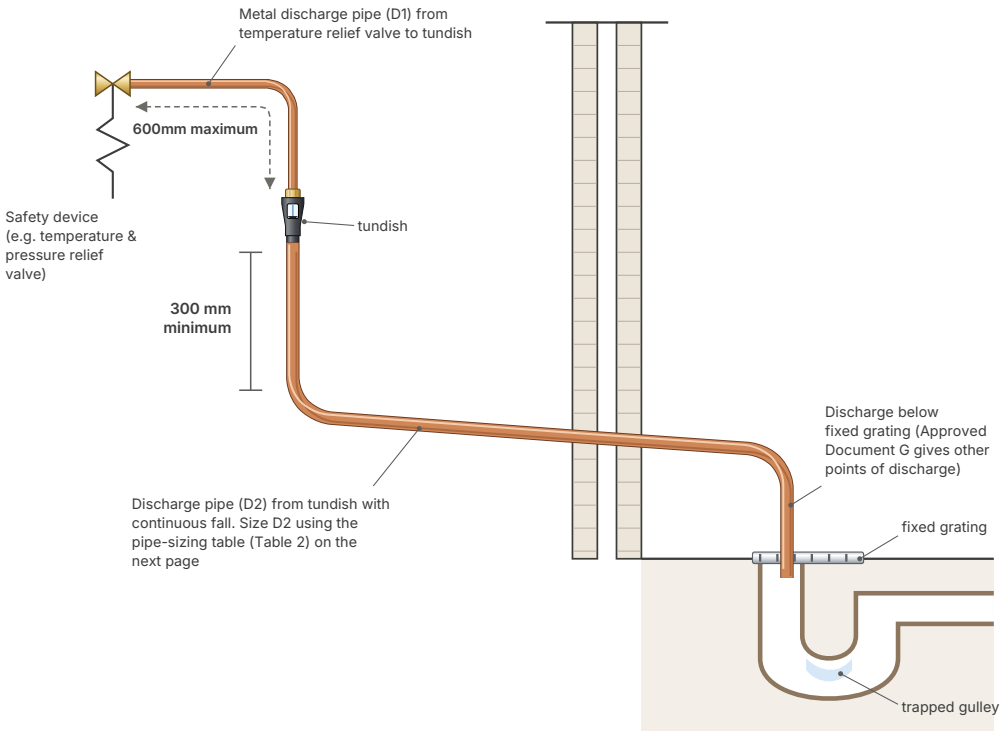


Figure 2 — Typical discharge-pipe arrangement (not to scale): metal D1 pipe from the safety device to the tundish, 600 mm maximum; D2 pipe with a minimum 300 mm vertical drop below the tundish, continuous fall and discharge below a fixed grating over a trapped gully. Size D2 using the pipe-sizing table on the next page, reproduced from Approved Document G.

Pipe sizing

D2 is normally at least one pipe size larger than the safety-valve outlet. Where the resistance of the run exceeds that allowed for a 9 m straight length, increase the size as Table 2 shows. Include the resistance of every bend and fitting.

Table 2 — Sizing of copper discharge pipe D2 (reproduced from Approved Document G)

Safety valve outlet	Minimum D2 size	Maximum length (no elbows)	Deduct per 90° elbow or bend
G½ (15 mm)	22 mm	Up to 9.0 m	0.8 m
G½ (15 mm)	28 mm	Up to 18.0 m	1.0 m
G¾ (22 mm)	28 mm	Up to 9.0 m	1.0 m
G¾ (22 mm)	35 mm	Up to 18.0 m	1.4 m
G1 (28 mm)	35 mm	Up to 9.0 m	1.4 m
G1 (28 mm)	42 mm	Up to 18.0 m	1.7 m

Worked example

A G½ temperature relief valve with four 22 mm elbows and a 7 m run from tundish to termination: 22 mm D2 allows 9.0 m of straight pipe; four elbows at 0.8 m each reduce this to 5.8 m, less than the 7 m needed. The next size, 28 mm, allows 18.0 m less 4 × 1.0 m = 14 m, so 28 mm is suitable.

Connection to a soil stack

Do not connect D2 to a soil discharge stack unless a competent designer shows that the stack and everything connected to it can withstand the discharge temperature and duration, and the arrangement meets every requirement of the current Approved Document G (including the mechanical seal and separation from sanitary appliances). A dedicated, visible termination is preferred.

8. Electrical installation

INSTALLATION & SYSTEM INTEGRATION

WARNING

Electrical safety. Isolate and prove dead before removing any cover or working on electrical parts. The immersion heater circuit and all fixed wiring must be installed and tested by a suitably qualified electrician.

Immersion heater

The Super Cylinder has a factory-fitted 3 kW, 230 V immersion heater with an operating thermostat and an independent manual-reset (non-self-resetting) high-limit cut-out, in a 1¾" BSP boss.

- Use only the immersion heater World Heat specifies for the model, with its operating thermostat and independent non-self-resetting cut-out.
- Provide double-pole isolation and overcurrent protection to BS 7671, rated for the heater.
- Choose the cable's type, size and temperature rating for the load, installation method, grouping and ambient temperature: do not rely on a generic size without calculation.
- Connect the protective conductor to the earth terminal and check continuity of all accessible conductive parts.
- Secure cables mechanically, keep them clear of hot surfaces and sharp edges, and leave no strain on the terminals.
- Do not switch on until the cylinder is full, vented and the immersion heater's seal has been checked for leaks.

Electrical test and documentation

Before handover, complete the electrical tests required by BS 7671 and the project specification. Keep the test certificates with the building's documentation.

Primary controls wiring

Figure 3 is the wiring arrangement for this cylinder: an S-plan with two 2-port zone valves. The control thermostat is on the cylinder, in the upper pocket. Where a high-limit cut-out is required to meet Building Regulations G3 (Section 4), it is a thermostat the installer fits in the pocket provided. Where it is fitted, the control thermostat and the high-limit cut-out are wired in series, so both must be closed for the hot water zone valve to open; if the cut-out operates, the valve closes and its auxiliary switch stops the heat source's hot water call.

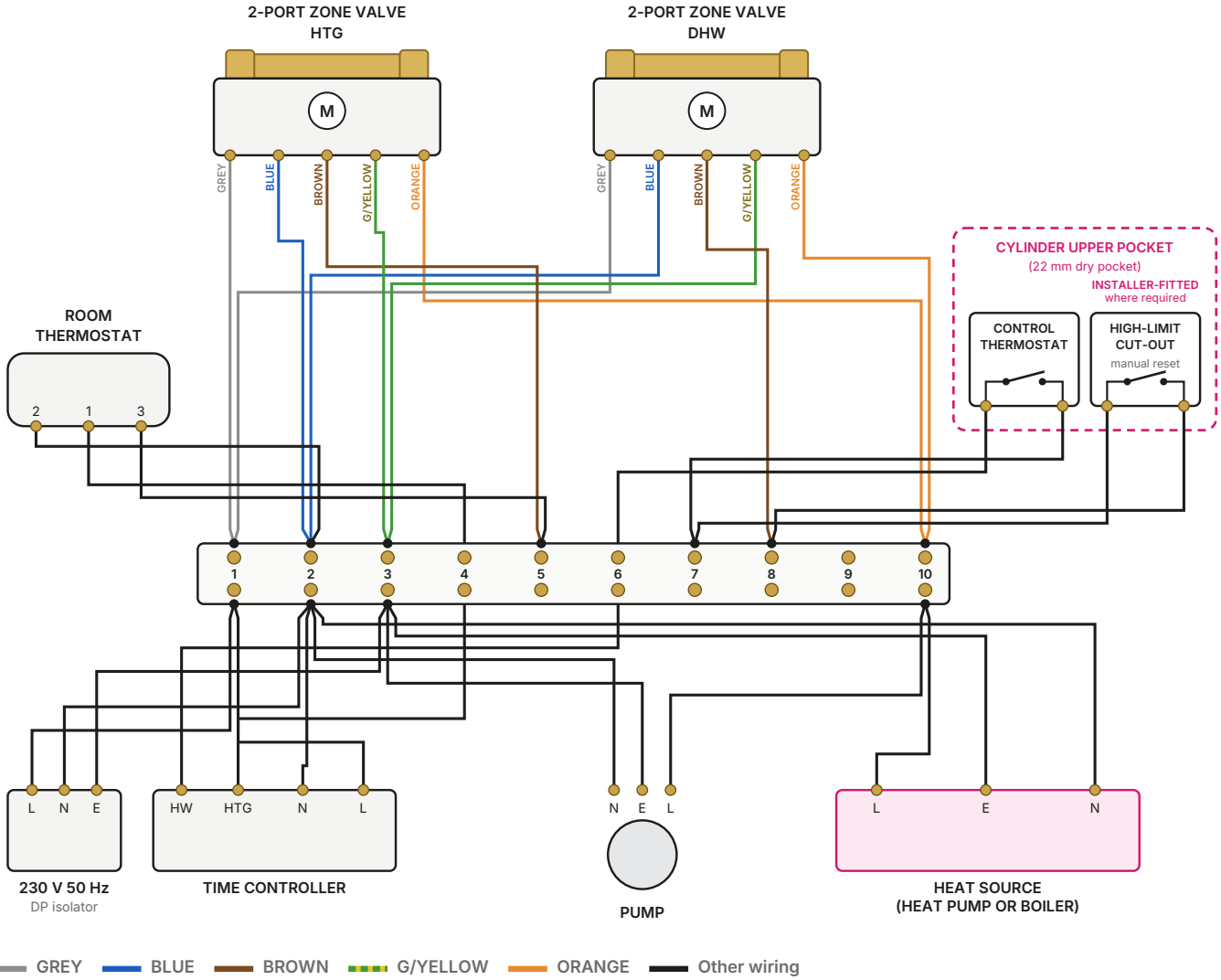


Figure 3 — S-plan arrangement with high-limit cut-out interlock: the high-limit cut-out is installer-fitted in the cylinder's upper pocket where required.

Confirm terminal designations, interlocks, protective devices, earthing, pump and valve outputs, sensor locations and safety cut-out operation before energising.

9. Commissioning

COMMISSIONING, SERVICING & SUPPORT

> **CAUTION**
>
> **Factory-made connections.** Transport and positioning can loosen compression joints. Check every factory-made and site-made connection before filling, and again while the system is pressurised and hot.

Pre-commissioning checks

- The model, controls, safety devices and valve settings match the data badge and the drawing.
- The cylinder is vertical, supported, accessible and protected from frost.
- The cold water controls are fitted the right way round and every safety path is unrestricted.
- The expansion vessel pre-charge has been checked with the water side depressurised.
- D1, the tundish, D2 and the termination are complete, visible and compliant.
- All pipework is supported, flushed and insulated as required.
- The electrical installation is complete, isolated and tested; earth continuity is confirmed.
- The heat source controls and, where a high-limit cut-out is fitted, its shutdown are wired as Figure 3.

Filling and venting

1. Open the hot tap furthest from the cylinder.
2. Slowly open the mains isolating valve and let the cylinder fill.
3. When water flows freely, flush until air and debris are cleared; then open each other outlet in turn.
4. Check every cylinder, valve, immersion heater and factory-made connection for leaks at operating pressure.
5. Do not switch on the immersion heater or the heat source until the cylinder is completely full and vented.

Safety device checks

- Operate the expansion relief valve by hand and confirm free flow through the tundish and safe discharge at the termination.
- Operate the T&P relief valve by hand and confirm free discharge and that it reseats.
- Check the operating thermostat, the high-limit cut-out where fitted, and the zone valve's shutdown of the heat source.
- Heat the cylinder and watch pressure, temperature, controls, discharge pipework and every joint.
- Stop commissioning at once if a safety valve discharges during normal heat-up, a control fails or a leak appears.

Temperature and handover

Set the storage temperature and time schedule to the project design. Where temperature is used to control legionella, store water at not less than 60 °C unless a documented risk assessment specifies another regime. Fit thermostatic outlet protection where there is a scalding risk. Complete the commissioning record, show the user the controls and safety warnings, leave all instructions and certificates with the building owner, and complete the Building Regulations notification. The commissioning record supports compliance but does not replace the Building Regulations certificate.

10. Service and maintenance

COMMISSIONING, SERVICING & SUPPORT

Competence and frequency

Servicing must be carried out by a competent person with current unvented hot water competence, at least once a year, or more often where the risk assessment, water quality, operating conditions or a component's manufacturer require it. The guarantee depends on annual servicing (Section 12).

Safe isolation and draining

1. Switch off and isolate every heat source and electrical supply; prove dead where covers will be removed.
2. Let the stored water cool where practicable, and warn the occupants of the scalding risk.
3. Close the mains isolating valve and open a hot tap to relieve the pressure.
4. Connect a hose to the drain valve and run it to a safe place below the cylinder.
5. Open the drain valve slowly, keeping a hot tap open to let air in.
6. Never remove an immersion heater, valve or sensor while the cylinder is pressurised or holds water hot enough to scald.

Annual service checklist

- Operate the expansion relief and T&P relief valves; confirm free discharge and that they reseat.
- Inspect D1, the tundish, D2 and the termination for blockage, damage, leaks or unsafe alterations.
- Clean the inlet strainer; check the pressure reducing valve and the balanced cold pressure.
- Check the expansion vessel pre-charge with the water side depressurised; recharge or replace it as needed.
- Inspect the cylinder, insulation, casing, supports, pipework and joints for damage or leaks.
- Check the immersion heater, its thermostat and cut-out, and the protective earthing.
- Check the primary controls, zone valves, pump, bypass and, where fitted, the high-limit shutdown interlock.
- Check the secondary circulation, its insulation and hygiene temperatures where fitted.
- Record water-quality or scale concerns and use only approved cleaning or treatment.
- Complete the service record, and report any non-compliance or safety-critical defect to the owner in writing.

> **WARNING**
>
> **Safety devices.** Safety valves and non-self-resetting cut-outs are safety-critical. Never bypass, plug or isolate one, or replace it with one of a different rating.

11. Fault finding

COMMISSIONING, SERVICING & SUPPORT

For competent engineers only. Isolate the heat source and electrical supply before investigating, where safe to do so. If a safety valve is discharging, treat the water as near boiling.

Symptom	Possible cause	Action
No hot water	Heat source off; no call for heat; thermostat or cut-out open; zone valve not opening; air lock or no primary flow	Check supplies and settings; test controls, interlocks and primary circulation. Reset a cut-out only once the cause is found and corrected
Water too hot	Thermostat set wrongly; sensor out of its pocket; thermostat or control failure; zone valve passing	Isolate heat input. Check the sensor position, thermostat and cut-out; replace faulty parts with approved ones
Intermittent discharge during heat-up	Expansion vessel charge lost, undersized or isolated; pressure reducing valve fault	Check the pre-charge with the water side depressurised; check the inlet pressure and the expansion path
Continuous discharge from the expansion relief valve	Pressure too high; debris on or damage to the valve seat; expansion path blocked	Check the pressure reducing valve, strainer and expansion vessel. Replace the valve only with the approved rating
Discharge from the T&P relief valve	Overheating, excess pressure, control failure or faulty valve	Isolate heat input at once. Check the controls, cut-out and pressures. Do not return to service until corrected
Poor hot water flow	Mains supply too low; blocked strainer; restrictive pipework; faulty pressure reducing valve	Measure the dynamic supply, clean the strainer, check the valves and pipe sizes
Noise or vibration	Air in the primary circuit, pump speed too high, water hammer, scale or unsupported pipework	Vent and balance; check the pump setting and supports; investigate scale
Immersion heater keeps tripping	Dry firing, scale, a loose connection, thermostat or cut-out fault or wrong wiring	Isolate. Confirm the cylinder is full; inspect the heater and terminals; test the thermostat and cut-out; replace only with approved parts

WARNING

Emergency. If the cylinder is distorted, leaking from the vessel or producing steam, or cannot be isolated safely, keep people away, isolate the energy and water supplies only where it is safe to, and contact World Heat or an emergency engineer.

12. Warranty and product support

COMMISSIONING, SERVICING & SUPPORT

Guarantee

The Super Cylinder carries World Heat's 25 year guarantee on stainless steel unvented cylinders up to 300 litres, subject to annual servicing. Controls, valves, electrical parts and other components are guaranteed for 12 months. The full terms are at whcylinders.co.uk/guarantee-terms. Your statutory rights are not affected.

Conditions

The cylinder must have been selected, installed, commissioned, notified and serviced every year by competent people in accordance with these instructions and the regulations, and not modified, misused, neglected, frozen, dry-fired or run outside its pressure, temperature or electrical ratings.

- Only approved safety devices, controls, heaters and replacement parts have been fitted.
- The heating circuit has been cleaned, inhibited and maintained with products compatible with all its materials.
- The cylinder has held only wholesome mains drinking water (not a private supply), with hardness above 200 ppm (mg/L $CaCO_3$) treated by an approved scale reducer or softener (Section 4), chloride no more than 200 mg/L, sulphate no more than 200 mg/L, and chloride and sulphate together no more than 300 mg/L.
- World Heat has been told before any repair, alteration or replacement, except urgent work to make the cylinder safe.

Exclusions

Unless the guarantee terms say otherwise, damage from scale, corrosion, galvanic action, water chemistry, chemical contamination, frost, transport after delivery, incorrect installation, blocked discharge pipework, lack of servicing or unauthorised modification is not a manufacturing defect.

Technical support

World Heat Ltd, manufacturer and guarantor: Unit 4, Tudor Industrial Estate, Ashton Street, Dukinfield, Greater Manchester SK16 4RN. Telephone 0161 343 8610, email sales@whcylinders.co.uk, www.whcylinders.co.uk. Register the guarantee at whcylinders.co.uk/warranty. When you contact us, give the model code, serial number, installation date, installer's details, photographs, the commissioning record and a clear description of the fault.

13. Super Cylinder specifications & technical data

TECHNICAL DATA & DRAWINGS

Engineering data

Table 3 — Engineering master data

Parameter	150 L Slim	180 L Slim	210 L Slim	250 L Standard	300 L Standard
PHYSICAL DIMENSIONS AND WEIGHTS					
Model code	150HEATGEEKSLIM	180HEATGEEKSLIM	210HEATGEEKSLIM	250HEATGEEK	300HEATGEEK
Nominal capacity (L)	150	180	210	250	300
Actual stored-water capacity (L)	146	176	205	244	293
Outer diameter (mm)	Ø475	Ø475	Ø475	Ø550	Ø550
Overall height (mm)	1474	1690	2003	1718	2031
Dry weight, approx. (kg)	43	48	58	65	70
Dry weight + stored water (kg)	189	224	263	309	363
THERMAL PERFORMANCE					
Standing heat loss (kWh/24h)	1.28	1.38	1.85	2.10	2.29
PRIMARY HEAT EXCHANGER COIL					
Coil surface area	4.0 m² (all models)				
Coil tube	18 m MH 211 K DN32 corrugated tube, 316L stainless steel, 0.3 mm wall				
Coil transfer potential	2.2 kW per K of temperature difference between coil and stored water at 30 L/min primary flow (Figure 4)				
Primary flow rate at rated output	30 L/min (1,800 L/h, 0.49 kg/s)				
Coil pressure drop	9.85 kPa at 1,800 L/h (30 L/min); other flow rates in Figure 5				
OPERATING PRESSURES AND TEMPERATURES					
Max incoming mains pressure	12.0 bar				
Operating pressure (PRV setting)	3.0 bar				
Expansion relief valve setting	6.0 bar				
T&P relief valve setting	7.0 bar / 90 °C				
Max primary working pressure	3.0 bar				
Max secondary working pressure	6.0 bar				
Hydraulic test pressure (vessel)	10.5 bar				
Expansion vessel pre-charge	3.0 bar				
Design temperature (primary / secondary)	0–95 °C / 0–95 °C				

Parameter	150 L Slim	180 L Slim	210 L Slim	250 L Standard	300 L Standard
Immersion heater	3.0 kW, 230 V AC, 50 Hz, 1¾" BSP, Incoloy				

Coil heat-transfer duty

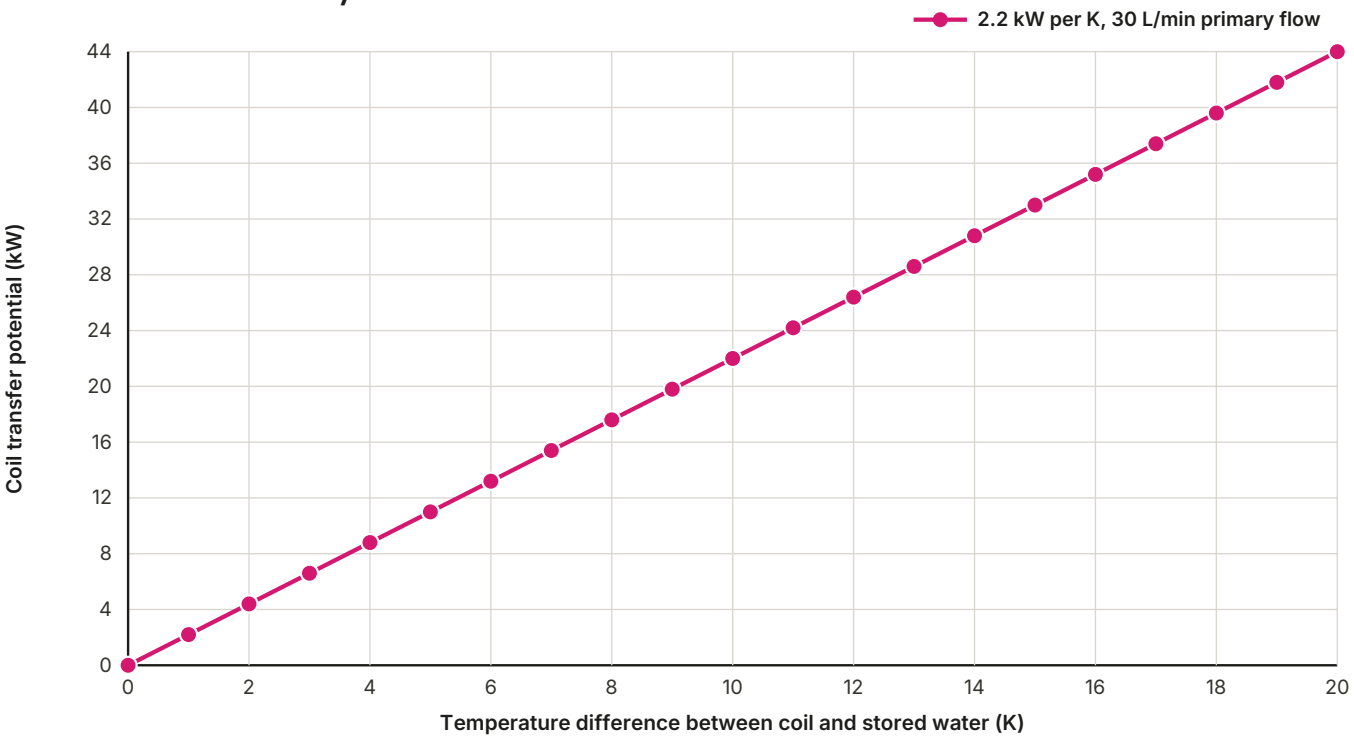


Figure 4 — Coil transfer potential against the temperature difference between the coil and the stored water: 2.2 kW per K at 30 L/min primary flow.

Heat-up time with a real-sized heat source

Table 4a — 70 °C flow: minimum heat-up time (minutes), 10 → 60 °C, by heat-source output delivered

Model	Actual stored-water capacity (L)	Energy 10 → 60 °C (kWh)	3 kW	5 kW	8 kW	12 kW	14 kW	16 kW
150 L Slim	146	8.49	170	102	64	42	36 †	32 †
180 L Slim	176	10.23	205	123	77	51	44 †	38 †
210 L Slim	205	11.92	238	143	89	60	51 †	45 †
250 L Standard	244	14.19	284	170	106	71	61 †	53 †
300 L Standard	293	17.03	341	204	128	85	73 †	64 †

Calculated from the energy needed alone, at a constant heat input delivered into the cylinder, with no allowance for heat losses or hot water drawn. † Coil transfer potential (Figure 4) is below the heat source output towards the end of the heat-up, so the last part takes longer than shown.

Table 4b — 50 °C flow: minimum heat-up time (minutes), 10 → 45 °C, by heat-source output delivered

Model	Actual stored-water capacity (L)	Energy 10 → 45 °C (kWh)	3 kW	5 kW	8 kW	12 kW	14 kW	16 kW
150 L Slim	146	5.94	119	71	45 †	30 †	25 †	22 †
180 L Slim	176	7.16	143	86	54 †	36 †	31 †	27 †
210 L Slim	205	8.34	167	100	63 †	42 †	36 †	31 †
250 L Standard	244	9.93	199	119	74 †	50 †	43 †	37 †
300 L Standard	293	11.92	238	143	89 †	60 †	51 †	45 †

Calculated from the energy needed alone, at a constant heat input delivered into the cylinder, with no allowance for heat losses or hot water drawn. † Coil transfer potential (Figure 4) is below the heat source output towards the end of the heat-up, so the last part takes longer than shown.

Actual recovery depends on the heat source's available heating output at its operating conditions: a heat pump's output changes with outdoor temperature, flow temperature and primary flow rate, defrost cycles and any electrical backup, and is often below its nameplate rating at high flow temperatures. Stratification, heat losses and hot water drawn during the heat-up also change it. Recovery times in Tables 4a and 4b are calculated from the stored volume and temperature rise at the stated delivered heat input, with no allowance for losses. Use the heat pump manufacturer's output at the actual flow and outdoor temperatures for a particular installation.

Coil pressure drop

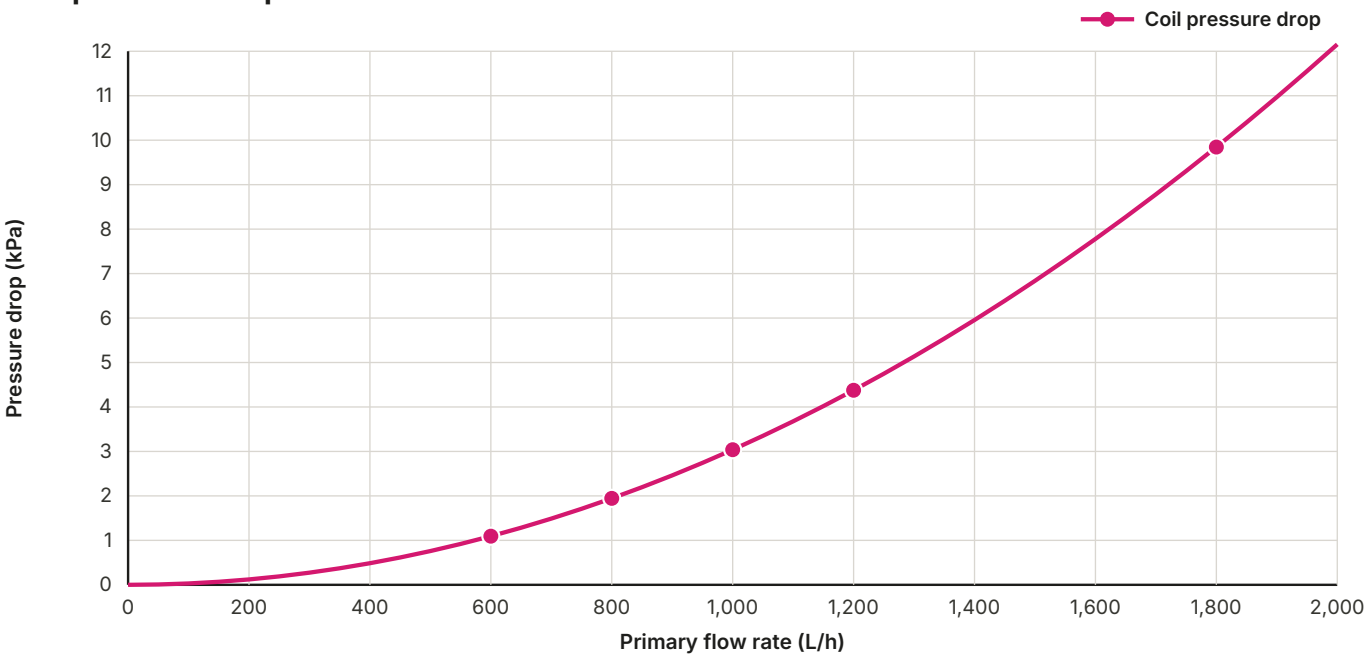


Figure 5 — Coil pressure drop against primary flow rate.

14. Engineering drawing pack

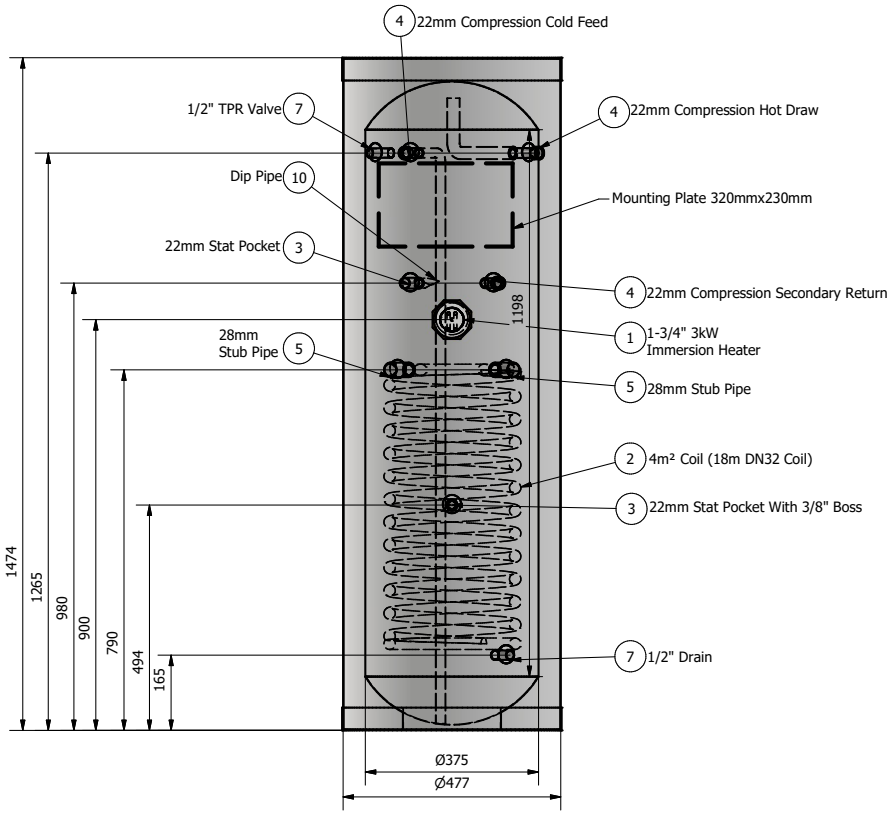
TECHNICAL DATA & DRAWINGS

Controlled production drawings, World Heat Ltd. Port heights and dimensions for each model.

Drawing schedule

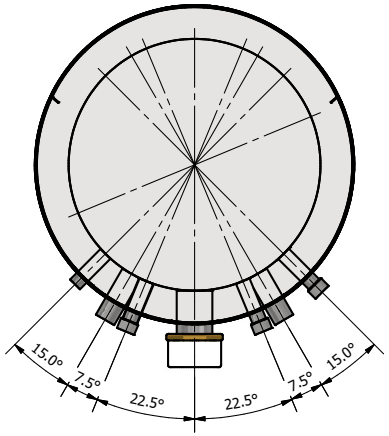
Drawing	Model	Diameter × height	Page
150HEATGEEKSLIM	150 L Slim	Ø475 × 1474 mm	24
180HEATGEEKSLIM	180 L Slim	Ø475 × 1690 mm	25
210HEATGEEKSLIM	210 L Slim	Ø475 × 2003 mm	26
250HEATGEEK	250 L Standard	Ø550 × 1718 mm	27
300HEATGEEK	300 L Standard	Ø550 × 2031 mm	28

Front View (0.11 : 1)



PARTS LIST		
ITEM	QTY	PART
1	1	1 3/4 inch, 3kW Immersion Heater - 65 mm Extended
2	1	18m of DN32 Stainless Steel Heat Pump Coil, 1 pass (MH 211 K)
3	2	22 mm Stub Dual Stat Pocket, Extended 80 mm (Stainless Steel)
4	3	22mm Compression 65mm Length
5	2	28 mm Stub Pipe, Extended 80 mm (Stainless Steel)
6	1	Cylinder Stand
7	2	Female Boss 0.5 Inch 65mm Length
8	2	Outer Case End
9	1	Outer Cylinder - 2 Sheets
10	2	Stainless Steel Dip Pipe

Top View (0.16 : 1)



Cylinder Sheets (1) 1188Lx1198H - Cover Sheets (1) 561Lx1470H (2) 956Lx1470H

Lid Depth 106 mm

	PRIMARY:	SECONDARY:	ADDITIONAL NOTES:
MAX WORKING PRESSURE:	3 BarG	6 BarG	1. Stand Size = 925 x 40 x 1 mm
DESIGN PRESSURE:	0 - 3.7 BarG	0 - 7 BarG	2. Approx Dry Weight = 43 kg
TEST PRESSURE:	5.55 BarG	10.50 BarG	3. Cylinder and both Ends Thickness: 1 mm
DESIGN TEMPERATURE:	0 - 95 °C	0 - 95 °C	4.
STANDING HEAT LOSS:	1.28 kWh/24h at 60°C & 21°C		5.

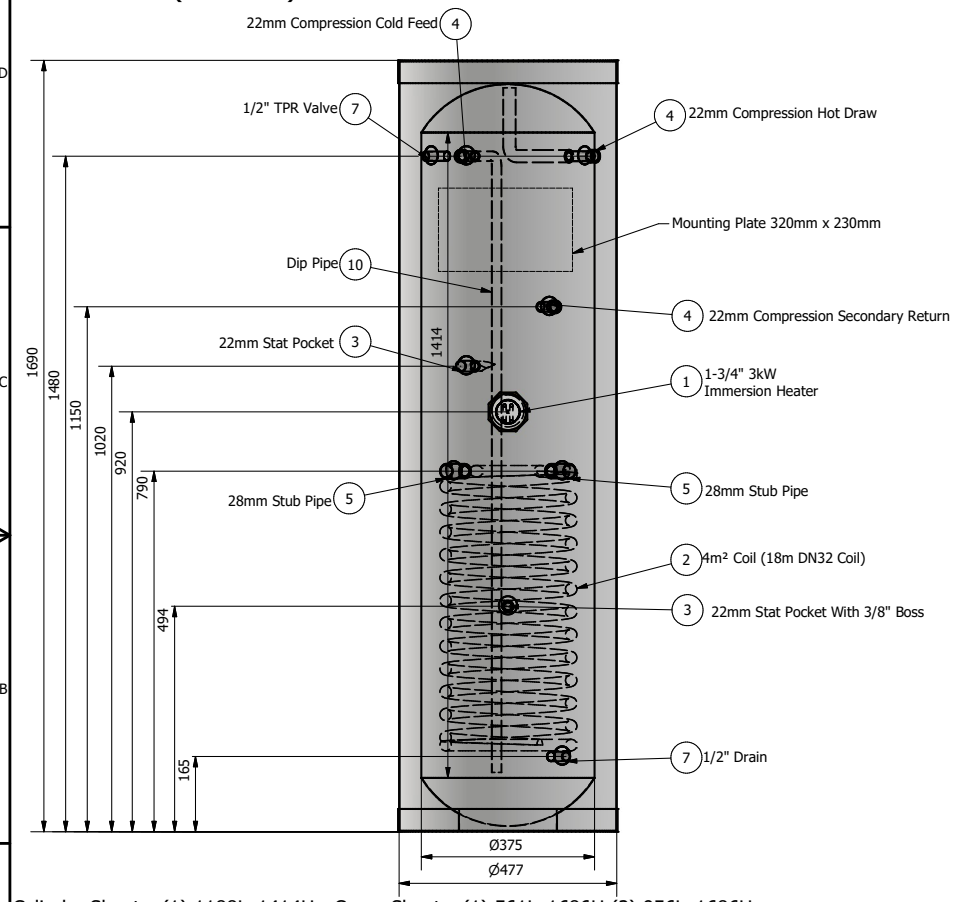
This drawing, and information contained within, is the property of World Heat Ltd. and must not be copied in whole/part or used for manufacture/otherwise disclosed without the prior written consent of the company.

TITLE:	150HEATGEEKSLIM		
DESCRIPTION:	150L Slim Heat Pump Cylinder		
QUANTITY:	1	CASE:	Yes
CUSTOMER:	See Works Order	WH REF.:	-
DESIGNED BY:	Jordan Irons	DATE:	20/05/2026
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
DRAWING NO.:	0	REVISION:	3

Unit 4, Tudor Industrial Estate, Dukinfield, SK16 4RN. Tel: 0161 343 8610 Email: sales@worldheat.co.uk

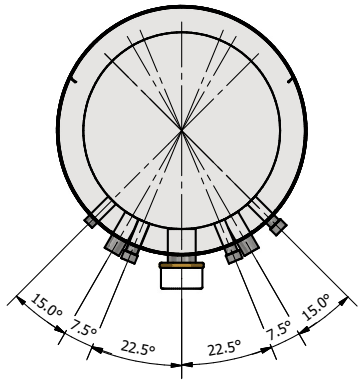
150HEATGEEKSLIM · 150 L Slim · Ø475 mm · height 1474 mm · Revision 3

Front View (0.11 : 1)



PARTS LIST		
ITEM	QTY	PART
1	1	1 3/4 inch, 3kW Immersion Heater - 65 mm Extended
2	1	18m of DN32 Stainless Steel Heat Pump Coil, 1 pass (MH 211 K)
3	2	22 mm Stub Dual Stat Pocket, Extended 80 mm (Stainless Steel)
4	3	22mm Compression 65mm Length
5	2	28 mm Stub Pipe, Extended 80 mm (Stainless Steel)
6	1	Cylinder Stand
7	2	Female Boss 0.5 Inch 65mm Length
8	2	Outer Case End
9	1	Outer Cylinder - 2 Sheets
10	2	Stainless Steel Dip Pipe

Top View (1:8)



Cylinder Sheets (1) 1188Lx1414H - Cover Sheets (1) 561Lx1686H (2) 956Lx1686H

Lid Depth 106 mm

	PRIMARY:	SECONDARY:	ADDITIONAL NOTES:
MAX WORKING PRESSURE:	3 BarG	6 BarG	1. Stand Size = 925 x 40 x 1 mm
DESIGN PRESSURE:	0 - 3.7 BarG	0 - 7 BarG	2. Approx Dry Weight = 48kg
TEST PRESSURE:	5.55 BarG	10.50 BarG	3. Cylinder and both Ends Thickness: 1 mm
DESIGN TEMPERATURE:	0 - 95 °C	0 - 95 °C	4.
STANDING HEAT LOSS:	1.38 kWh/24h at 60°C & 21°C		5.

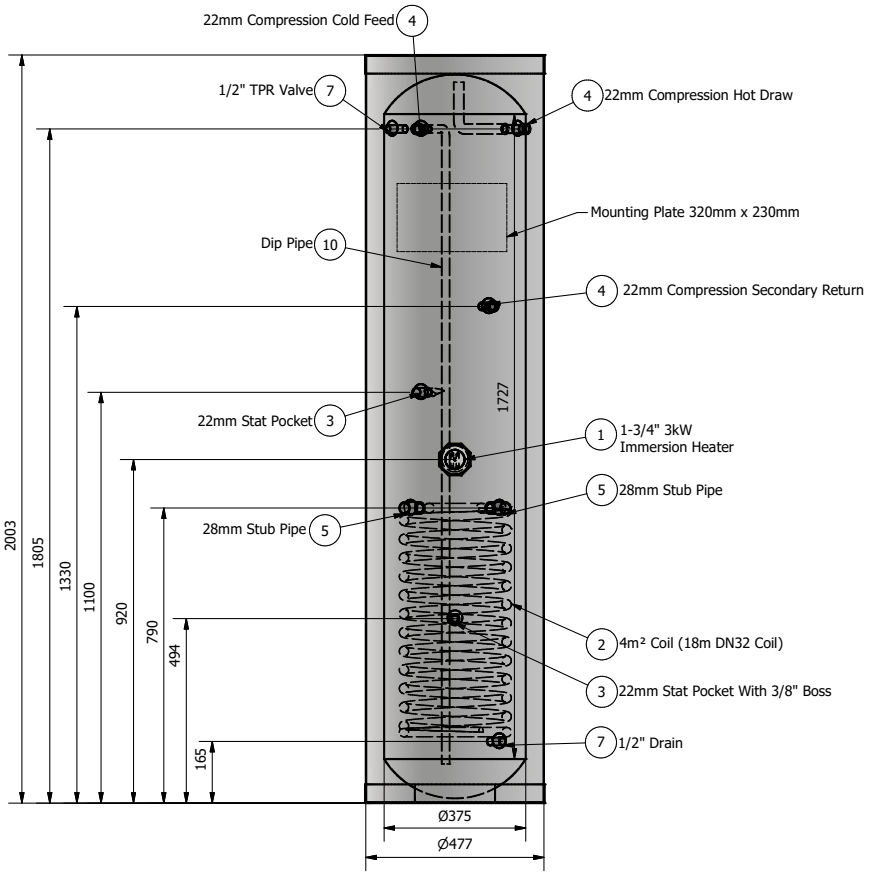
This drawing, and information contained within, is the property of World Heat Ltd. and must not be copied in whole/part or used for manufacture/otherwise disclosed without the prior written consent of the company.

TITLE:	180HEATGEEKSLIM		
DESCRIPTION:	180L Slim Heat Pump Cylinder		
QUANTITY:	1	CASE:	Yes
CUSTOMER:	See Works Order	WH REF.:	-
DESIGNED BY:	Jordan Irons	DATE:	21/05/2026
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
DRAWING NO.:	0	REVISION:	3

Unit 4, Tudor Industrial Estate, Dukinfield, SK16 4RN. Tel: 0161 343 8610 Email: sales@worldheat.co.uk

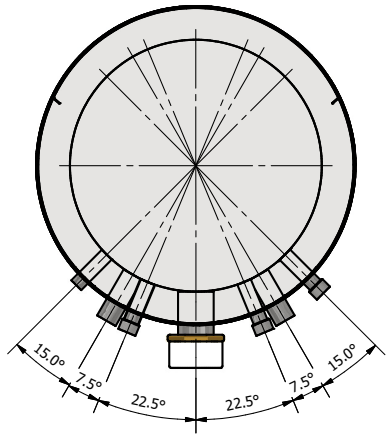
180HEATGEEKSLIM · 180 L Slim · Ø475 mm · height 1690 mm · Revision 3

Front View (0.09 : 1)



PARTS LIST		
ITEM	QTY	PART
1	1	1 3/4 inch, 3kW Immersion Heater - 65 mm Extended
2	1	18m of DN32 Stainless Steel Heat Pump Coil, 1 pass (MH 211 K)
3	2	22 mm Stub Dual Stat Pocket, Extended 80 mm (Stainless Steel)
4	3	22mm Compression 65mm Length
5	2	28 mm Stub Pipe, Extended 80 mm (Stainless Steel)
6	1	Cylinder Stand
7	2	Female Boss 0.5 Inch 65mm Length
8	2	Outer Case End
9	1	Outer Cylinder - 2 Sheets
10	2	Stainless Steel Dip Pipe

Top View (0.16 : 1)



Cylinder Sheets (1) 1188Lx1727H - Cover Sheets (1) 561Lx1999H (2) 956Lx1999H

Lid Depth 106 mm

	PRIMARY:	SECONDARY:	ADDITIONAL NOTES:
MAX WORKING PRESSURE:	3 BarG	6 BarG	1. Stand Size = 925 x 40 x 1 mm
DESIGN PRESSURE:	0 - 3.7 BarG	0 - 7 BarG	2. Approx Dry Weight = 58 kg
TEST PRESSURE:	5.55 BarG	10.50 BarG	3. Cylinder and both Ends Thickness: 1 mm
DESIGN TEMPERATURE:	0 - 95 °C	0 - 95 °C	4.
STANDING HEAT LOSS:	1.85 kWh/24h at 60°C & 21°C		5.

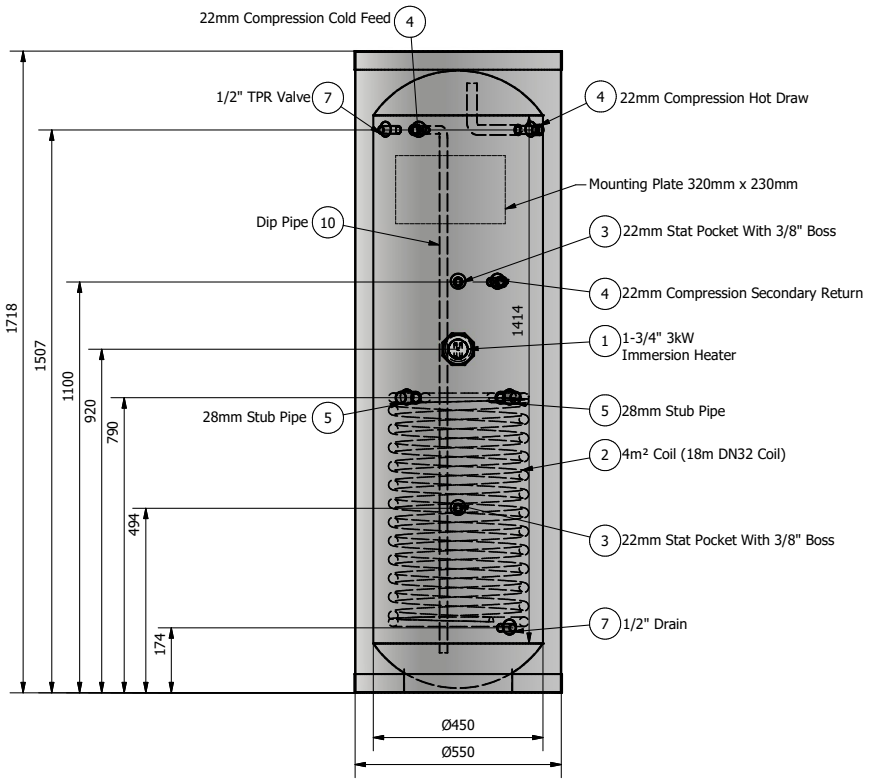
This drawing, and information contained within, is the property of World Heat Ltd. and must not be copied in whole/part or used for manufacture/otherwise disclosed without the prior written consent of the company.

TITLE:	210HEATGEEKSLIM		
DESCRIPTION:	210L Slim Heat Pump Cylinder		
QUANTITY:	1	CASE:	Yes
CUSTOMER:	See Works Order	WH REF.:	-
DESIGNED BY:	Jordan Irons	DATE:	20/05/2026
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
DRAWING NO.:	0	REVISION:	3

Unit 4, Tudor Industrial Estate, Dukinfield, SK16 4RN. Tel: 0161 343 8610 Email: sales@worldheat.co.uk

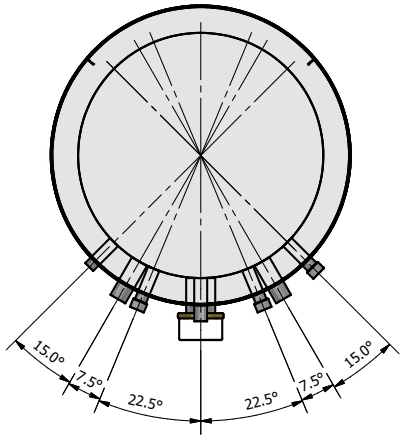
210HEATGEEKSLIM · 210 L Slim · Ø475 mm · height 2003 mm · Revision 3

Front View (0.09 : 1)



PARTS LIST		
ITEM	QTY	PART
1	1	1 3/4 inch, 3kW Immersion Heater - 65 mm Extended
2	1	18m of DN32 Stainless Steel Heat Pump Coil, 1 pass (MH 211 K)
3	2	22 mm Stub Dual Stat Pocket, Extended 80 mm (Stainless Steel)
4	3	22mm Compression 65mm Length
5	2	28 mm Stub Pipe, Extended 80 mm (Stainless Steel)
6	1	Cylinder Stand
7	2	Female Boss 0.5 Inch 65mm Length
8	2	Outer Case End
9	1	Outer Cylinder - 2 Sheets
10	2	Stainless Steel Dip Pipe

Top View (0.13 : 1)



Cylinder Sheets (1) 1424Lx1414H - Cover Sheets (1) 504Lx1714H (2) 1250Lx1714H

Lid Depth 120 mm

	PRIMARY:	SECONDARY:	ADDITIONAL NOTES:
MAX WORKING PRESSURE:	3 BarG	6 BarG	1. Stand Size = 925 x 40 x 1 mm
DESIGN PRESSURE:	0 - 3.7 BarG	0 - 7 BarG	2. Approx Dry Weight = 65 kg
TEST PRESSURE:	5.55 BarG	10.50 BarG	3. Cylinder and both Ends Thickness: 1 mm
DESIGN TEMPERATURE:	0 - 95 °C	0 - 95 °C	4.
STANDING HEAT LOSS:	2.10 kWh/24h at 60°C & 21°C		5.

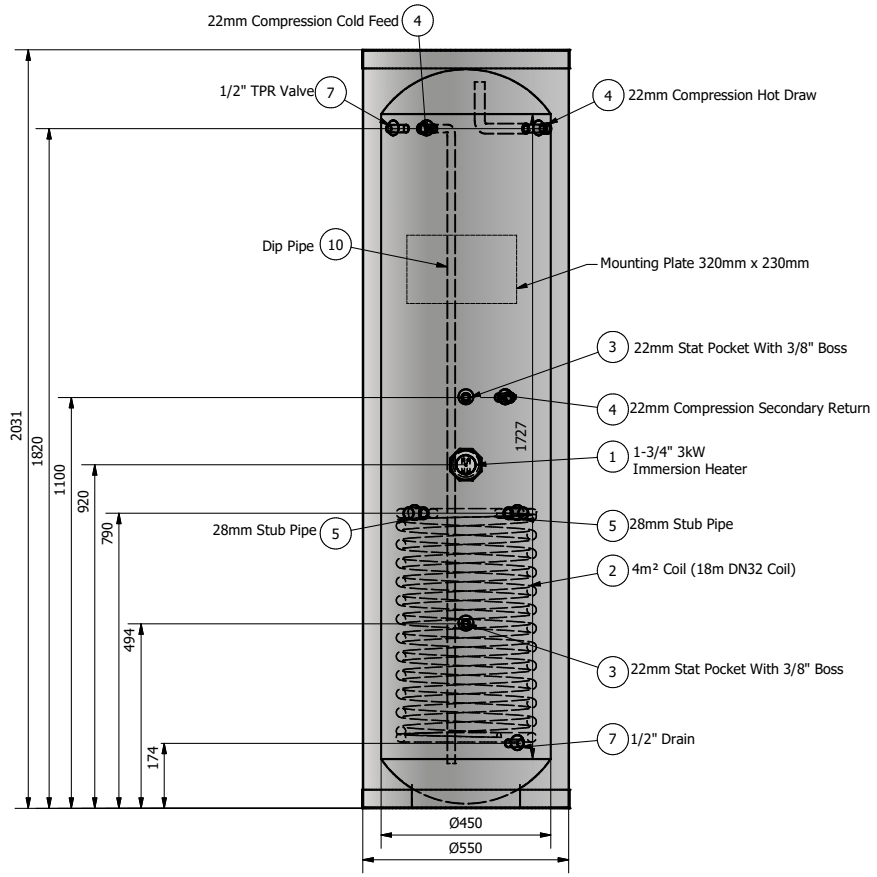
This drawing, and information contained within, is the property of World Heat Ltd. and must not be copied in whole/part or used for manufacture/otherwise disclosed without the prior written consent of the company.

TITLE:	250HEATGEEK		
DESCRIPTION:	250L Standard Heat Pump Cylinder		
QUANTITY:	1	CASE:	Yes
CUSTOMER:	See Works Order	WH REF.:	-
DESIGNED BY:	Jordan Irons	DATE:	20/05/2026
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
DRAWING NO.:	0	REVISION:	3

Unit 4, Tudor Industrial Estate, Dukinfield, SK16 4RN. Tel: 0161 343 8610 Email: sales@worldheat.co.uk

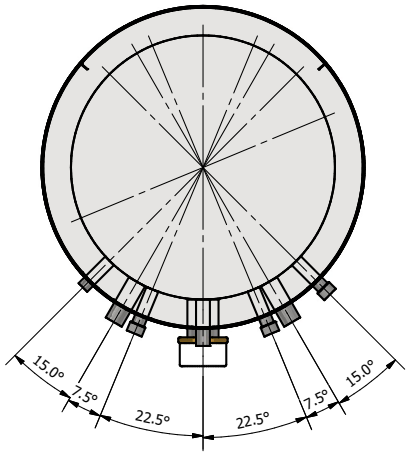
250HEATGEEK · 250 L Standard · Ø550 mm · height 1718 mm · Revision 3

Front View (0.09 : 1)



PARTS LIST		
ITEM	QTY	PART
1	1	1 3/4 inch, 3kW Immersion Heater - 65 mm Extended
2	1	18m of DN32 Stainless Steel Heat Pump Coil, 1 pass (MH 211 K)
3	2	22 mm Stub Dual Stat Pocket, Extended 80 mm (Stainless Steel)
4	3	22mm Compression 65mm Length
5	2	28 mm Stub Pipe, Extended 80 mm (Stainless Steel)
6	1	Cylinder Stand
7	2	Female Boss 0.5 Inch 65mm Length
8	2	Outer Case End
9	1	Outer Cylinder - 2 Sheets
10	2	Stainless Steel Dip Pipe

Top View (0.14 : 1)



Cylinder Sheets (1) 1424Lx1727H - Cover Sheets (1) 504Lx2027H (2) 1250Lx2027H

Lid Depth 120 mm

	PRIMARY:	SECONDARY:	ADDITIONAL NOTES:
MAX WORKING PRESSURE:	3 BarG	6 BarG	1. Stand Size = 925 x 40 x 1 mm
DESIGN PRESSURE:	0 - 3.7 BarG	0 - 7 BarG	2. Approx Dry Weight = 70 kg
TEST PRESSURE:	5.55 BarG	10.50 BarG	3. Cylinder and both Ends Thickness: 1 mm
DESIGN TEMPERATURE:	0 - 95 °C	0 - 95 °C	4.
STANDING HEAT LOSS:	2.29 kWh/24h at 60°C & 21°C		5.

This drawing, and information contained within, is the property of World Heat Ltd. and must not be copied in whole/part or used for manufacture/otherwise disclosed without the prior written consent of the company.

TITLE:	300HEATGEEK		
DESCRIPTION:	300L Standard Heat Pump Cylinder		
QUANTITY:	1	CASE:	Yes
CUSTOMER:	See Works Order	WH REF.:	-
DESIGNED BY:	Jordan Irons	DATE:	20/05/2026
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
DRAWING NO.:	0	REVISION:	3

Unit 4, Tudor Industrial Estate, Dukinfield, SK16 4RN. Tel: 0161 343 8610 Email: sales@worldheat.co.uk

300HEATGEEK · 300 L Standard · Ø550 mm · height 2031 mm · Revision 3

Appendix A — Regulatory compliance summary

TECHNICAL DATA & DRAWINGS

Always apply the legislation, Approved Documents, building standards and water regulations in force at the place and date of installation. Where this manual and a statutory requirement differ, the statutory requirement takes precedence.

Topic	Standard or legislation	Sections
Unvented hot water safety	Building Regulations 2010 Requirement G3 and Approved Document G (England & Wales); Building Standards Technical Handbook Section 4 (Scotland); Technical Booklet P (Northern Ireland)	3, 5, 7, 9, 10
Energy conservation and heat loss	Approved Document L (England & Wales); Building Standards Section 6 (Scotland); Technical Booklet F1 (Northern Ireland)	1, 2, 6, 13
Vessel standard	BS EN 12897, indirectly heated unvented (closed) storage water heaters	1, 3, 13, 14
Water fittings and quality	Water Supply (Water Fittings) Regulations 1999 and the water undertaker's requirements; Scottish Water Byelaws 2014	4, 5, 6
Potable water services	BS EN 806 series and BS 8558	5, 6, 9
Electrical safety	BS 7671, Requirements for Electrical Installations, current edition	4, 8
Legionella	HSE L8 and HSG274 Part 2, where applicable	5, 9, 10
Product documentation	World Heat UK Declaration of Conformity, drawings and data badge	3, 13, 14

Declaration of conformity

The Super Cylinder is UKCA marked. World Heat Ltd holds its Declaration of Conformity, available on request. Requirements G2, G3 and Part L are Building Regulations requirements and are not part of the UKCA declaration: installing to this manual is necessary but does not by itself certify the building work.

whcylinders.co.uk · heatgeek.com

WORLD HEAT LTD

Manufacturer and guarantor

Unit 4, Tudor Industrial Estate, Ashton Street
Dukinfield, Greater Manchester SK16 4RN
Telephone 0161 343 8610
Email sales@whcylinders.co.uk
Web www.whcylinders.co.uk
Register the guarantee: whcylinders.co.uk/warranty

© 2026 World Heat Ltd. HGSC-IS-001 · Issue 2, revision C · 28 October 2026. Heat Geek is a trademark of its owner, used with permission.