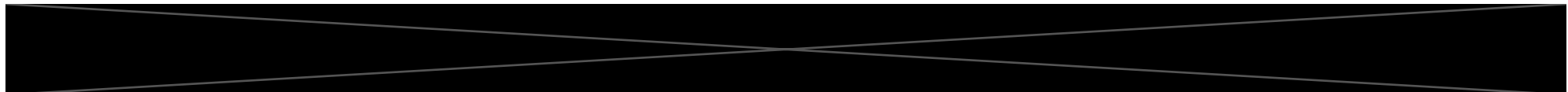


**Record of installation relating to**

**Building notice**

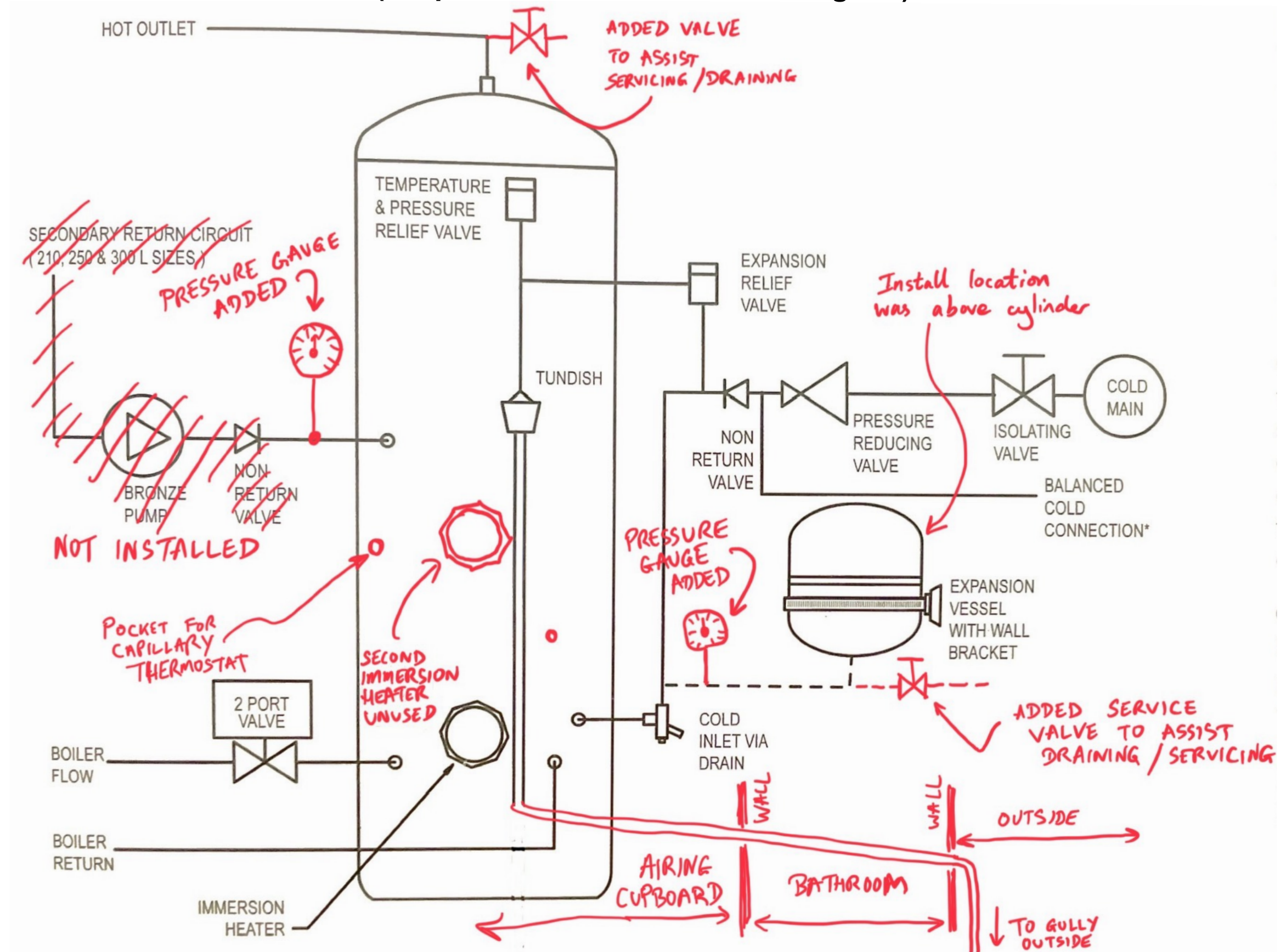
**24/03535/BN**



**28th Sept 2024**

# Schematic of new system as built

(adapted from manufacturer's diagram)





# Product description

Hot Water Energy Storage  
Unvented Cylinders

GB & NI

## SPECIFICATION DETAILS

The unvented cylinder is made from Duplex stainless steel for excellent corrosion resistance. The cylinder has a strong rust-proofed steel case and is highly insulated with environmentally-friendly foam. Further details are below.

### MATERIALS

- Inner shell – Duplex stainless steel
- Coil – 22mm diameter stainless steel
- Bosses – Stainless steel
- Polyurethane CFC- and HCFC-free foam insulation. This insulation has an Ozone Depletion Potential of Zero and a Global Warming Potential of 3.1.
- Casing – galvanized steel, durable finish
- Anode – none fitted/required

All cylinders are welded using our advanced TIG welding production methods, under a controlled oxygen purged process, to maximize the corrosion resistant qualities of the high-grade Duplex stainless steel. Every cylinder is checked using 15 bar pressure testing.

Table 3: Pressure specifications

|   |          |
|---|----------|
| Maximum Inlet Water Pressure  | 12.0 bar |
| Operating Pressure/Maximum Design Pressure                            | 3.0 bar  |
| Expansion Valve Opening Pressure                                      | 6.0 bar  |
| Expansion Vessel Charge Pressure                                      | 3.0 bar  |
| Maximum Operating Pressure  | 7.0 bar  |
| Opening Pressure of T & P Valve                                       | 7.0 bar  |
| Opening Temperature of T & P Valve                                    | 90°C     |
| Maximum Pressure on Primary Circuit (Indirect, Heat Pump, Solar Coil) | 3.5 bar  |

Table 4: Immersion element specifications

|   |                            |
|---|----------------------------|
| Element Rating  | 3kW 240V                   |
| Thread Type   | 1½" BSP                    |
| Fuse Requirement  | 13A via Double Pole Switch |
| Control Thermostat for Element Temperature Range        | 45°C - 65°C                |
| High Limit Thermostat for Element Temperature Set Point | 85°C                       |

Installation & Maintenance Instructions for an unvented hot water cylinder with external thermal expansion

### IMMERSION HEATER

- 1½" BSP parallel threaded head
- Long life incoloy sheathed low noise element and thermostat pocket
- Brazed construction
- Combined thermostat and safety cut-out
- Element rating 3kW at 240V A/C

Smart control fitted to the lower immersion heater on selected models only, please refer to insert sheet for details.

### GUARANTEE

The inner cylinder carries a 25-year guarantee against faulty materials or manufacture on indirect and direct models, 10 years for all heat pump models. All parts supplied with the cylinder carry a 2-year guarantee. All guarantees must be registered at [www.kingspanenviro.com/guarantee](http://www.kingspanenviro.com/guarantee) or by completing and returning the guarantee card on page 28.

### FLOW RATES

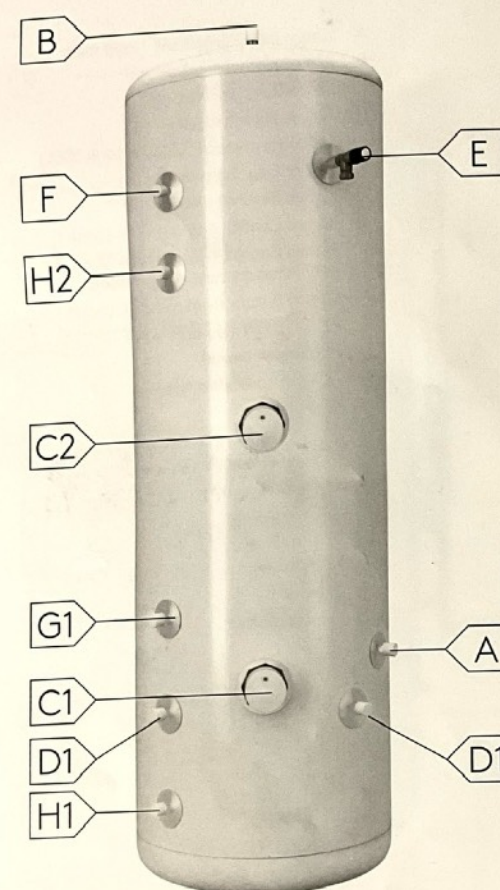
Our cylinders are renowned for their fast flow rates. The graph on the insert sheet illustrates the speed at which hot water can be distributed reliably throughout the home.

Hot Water Energy Storage  
Unvented Cylinders

GB & NI

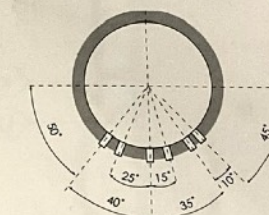
## PRODUCT DIAGRAMS (CONTINUED)

### INDIRECT



### CONNECTIONS:

- A 22mm Cold feed with dip pipe to diffuser in bottom of cylinder (1" Female BSP connection on 400 & 500L model with no diffuser)
- B 22mm Hot water outlet (1" Female BSP connection on 400 & 500L model)
- C1 Immersion heater
- C2 Secondary immersion heater - 250 litre & above only
- D1 22mm Boiler coil connections
- D2 22mm Solar coil connections
- E ½" Temperature relief valve - 90L to 300L  
¾" Temperature relief valve - 400L & 500L (factory-fitted to cylinder)
- F 22mm Secondary return - for cylinders with a capacity of 210 litres and above only
- G1 Dry stat pocket
- G2 Dry stat pocket



H1 & H2 Destratification connections  
400 & 500 litre cylinders only.

|     | H1<br>(mm) | H2<br>(mm) |
|-----|------------|------------|
| 400 | 197        | 1247       |
| 500 | 197        | 1547       |

THIS MODEL INSTALLED

| Capacity<br>(L) | Height<br>(mm) | Dia<br>(mm) | A<br>(mm) | B<br>(mm) | C1<br>(mm) | C2<br>(mm) | D1<br>(mm) | D2<br>(mm) | E<br>(mm) | F<br>(mm) | G1<br>(mm) | G2<br>(mm) |
|-----------------|----------------|-------------|-----------|-----------|------------|------------|------------|------------|-----------|-----------|------------|------------|
| 90              | 745            | 550         | 390       | 745       | 330        | n/a        | 290        | n/a        | 520       | n/a       | 385        | n/a        |
| 120             | 933            | 550         | 390       | 933       | 330        | n/a        | 290        | n/a        | 705       | n/a       | 385        | n/a        |
| 150             | 1120           | 550         | 465       | 1120      | 370        | n/a        | 330        | n/a        | 895       | n/a       | 425        | n/a        |
| 180             | 1308           | 550         | 465       | 1308      | 370        | n/a        | 330        | n/a        | 1080      | n/a       | 425        | n/a        |
| 210             | 1496           | 550         | 465       | 1496      | 405        | n/a        | 365        | n/a        | 1270      | 1150      | 465        | n/a        |
| 250             | 1746           | 550         | 465       | 1746      | 405        | 950        | 365        | n/a        | 1520      | 1400      | 560        | n/a        |
| 300             | 2055           | 550         | 465       | 2055      | 405        | 1100       | 365        | n/a        | 1830      | 1600      | 660        | n/a        |
| 400             | 1657           | 693         | 197       | 1657      | 767        | 1057       | 692        | n/a        | 1387      | 1347      | 827        | n/a        |
| 500             | 1946           | 693         | 197       | 1946      | 767        | 1357       | 692        | n/a        | 1687      | 1647      | 827        | n/a        |

Note: Please refer to the specification insert sheet for performance details on individual cylinders.



# Commissioning data for new system:

- Kingspan 250 litre unvented indirect hot water cylinder AUI250ERP:**

Max permitted inlet pressure: 12 bar, max operating pressure: 7 bar, volume 250 litres, 19 litre expansion vessel supplied by cylinder manufacturer.

- TPRV opens at 7.0bar or 90 degrees C.
- Static mains pressure at cylinder location is between 2.0 and 2.5 bar depending on time of day. Dynamic pressure is between 1.7 bar and 2.0 bar.
- Cylinder inlet pressure regulator has been set to 2.0 bar (lowest static mains pressure) and expansion vessel charge at 1.6 bar (just below minimum dynamic pressure to avoid bladder bottoming out).
- Boiler flow/return is vented system with head of 2.0 meter (0.2 bar) at location of coil.
- Indirect heating: primary temperature control is boiler thermostat, first safety is boiler over-temperature cutout (Part G: 3.21), second safety is TPRV, third safety is capillary thermostat in cylinder pocket interfaced to non-self resetting closure of flow valve.
- Immersion heating: primary temperature control is immersion thermostat, first safety is non-self resetting immersion cutout, second safety is TPRV (as Part G: 3.18).

**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: [REDACTED]  
Address: [REDACTED]  
Cylinder Make: [REDACTED]  
Cylinder Serial Number: 7573460  
Commissioned by (print name): [REDACTED]  
Company Name: [REDACTED]  
Company Address: [REDACTED]  
Commissioning Date: 30<sup>th</sup> SEPT 2024

To be completed by the customer on receipt of a Building Regulations Compliance Certificate\*:  
Building Regulations Notification Number (if applicable):

**ALL SYSTEMS PRIMARY SETTINGS** (indirect heating only)  
Is the primary circuit a sealed or open vented system? Sealed ☐ Open ☒  
What is the maximum primary flow temperature? 60 °C

**ALL SYSTEMS**  
What is the incoming static cold water pressure at the inlet to the system? 2.0 - 2.4 bar  
Has a strainer been cleaned of installation debris (if fitted)? Yes ☒ No ☐  
Is the installation in a hard water area (above 200ppm)? Yes ☒ No ☐  
If yes, has a water scale reducer been fitted? Yes ☐ No ☒  
What type of scale reducer has been fitted?  
What is the hot water thermostat set temperature? 48 °C  
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)? > 5 l/min  
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations? Yes ☒ No ☐  
Type of control system (if applicable) Y Plan ☐ S Plan ☒ Other ☐  
Is the cylinder solar (or other renewable) compatible? Yes ☐ No ☒  
What is the hot water temperature at the nearest outlet? 48 °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)? ON WALL TOP RIGHT OF CYLINDER  
What is the pressure reducing valve setting? 2.0 bar  
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested? Yes ☒ No ☐  
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations Yes ☒ No ☐  
Are all energy sources fitted with a cut out device? Yes ☒ No ☐  
Has the expansion vessel or internal air space been checked? Yes ☒ No ☐

**THERMAL STORES ONLY**  
What store temperature is achievable? [REDACTED] °C  
What is the maximum hot water temperature? [REDACTED] °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 ☒  
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 ☒

Commissioning Engineer's Signature: [REDACTED]  
Customer's Signature: [REDACTED]  
(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.

**benchmark**  
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICE OF DOMESTIC HEATING AND HOT WATER SYSTEMS  
www.centralheating.co.uk

©Heating and Hotwater Industry Council (HHIC)

Commissioning checklist required by Manufacturer.



**Next two slides show  
old installation and its  
removal:**



# Old Indirect Vented HW Cylinder





**New unvented cylinder**  
beside **old vented**



**Old header tank:**  
attic and its **removal**

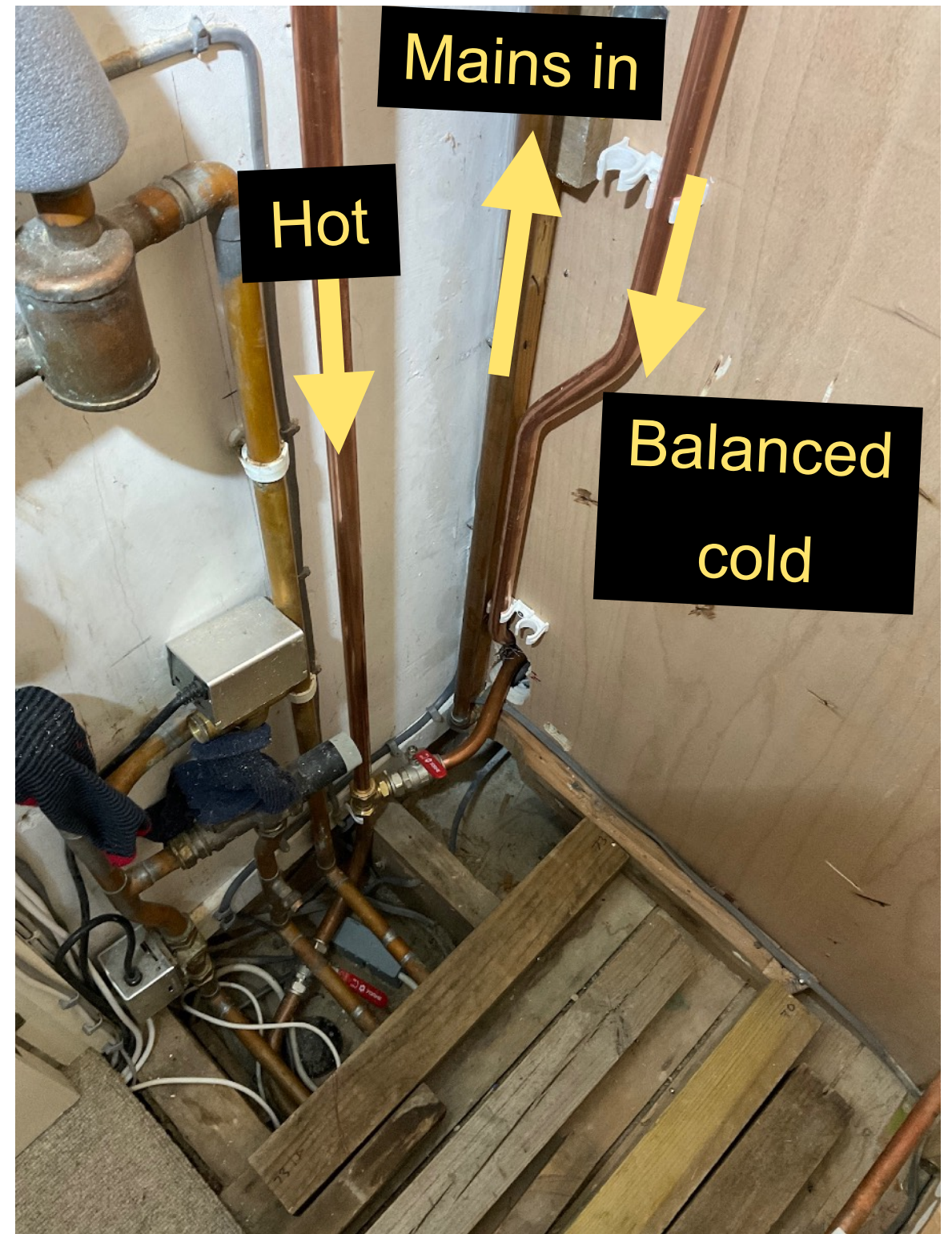
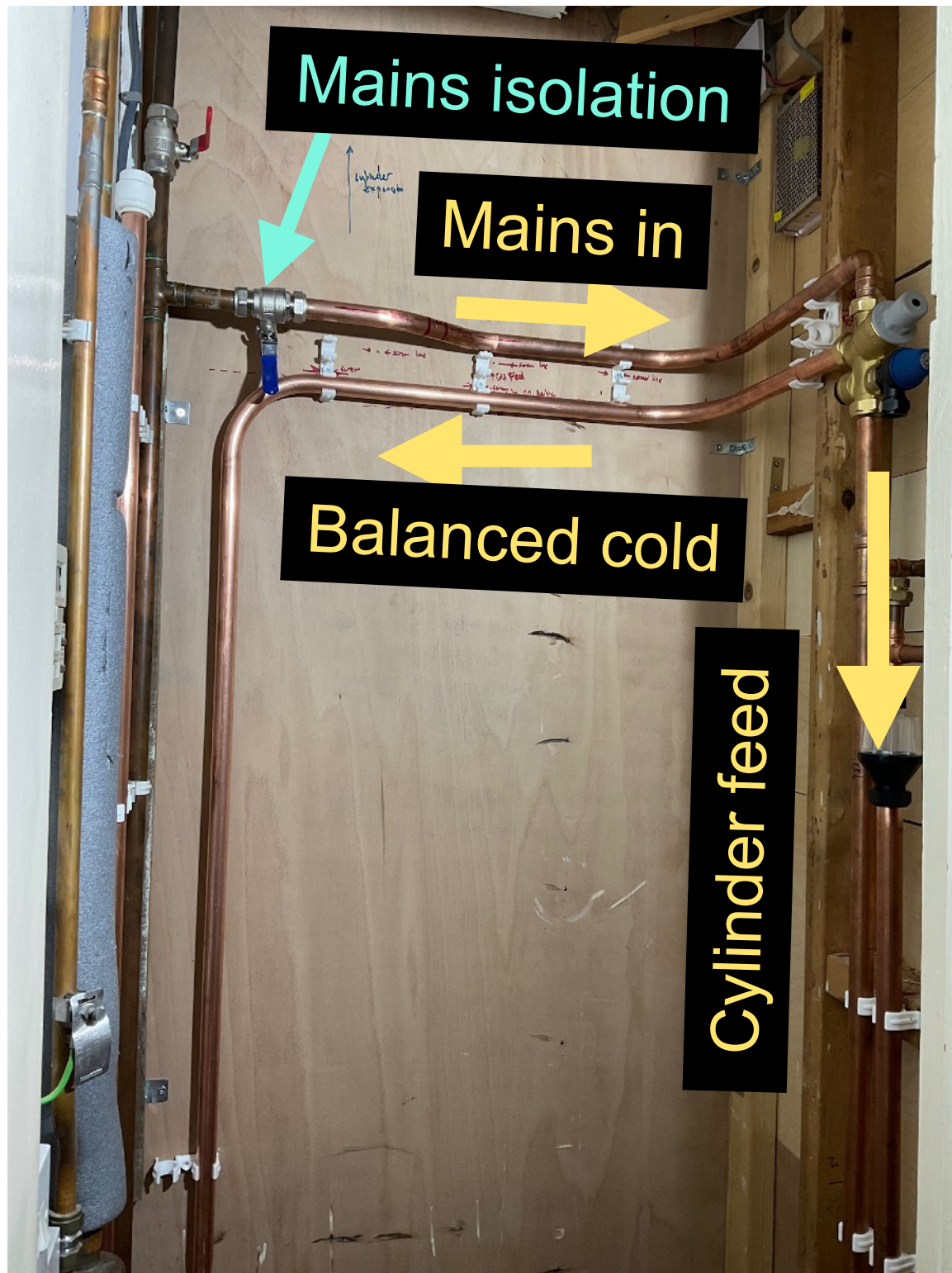




**Subsequent pages  
show **new** cylinder and  
associated parts being  
installed:**



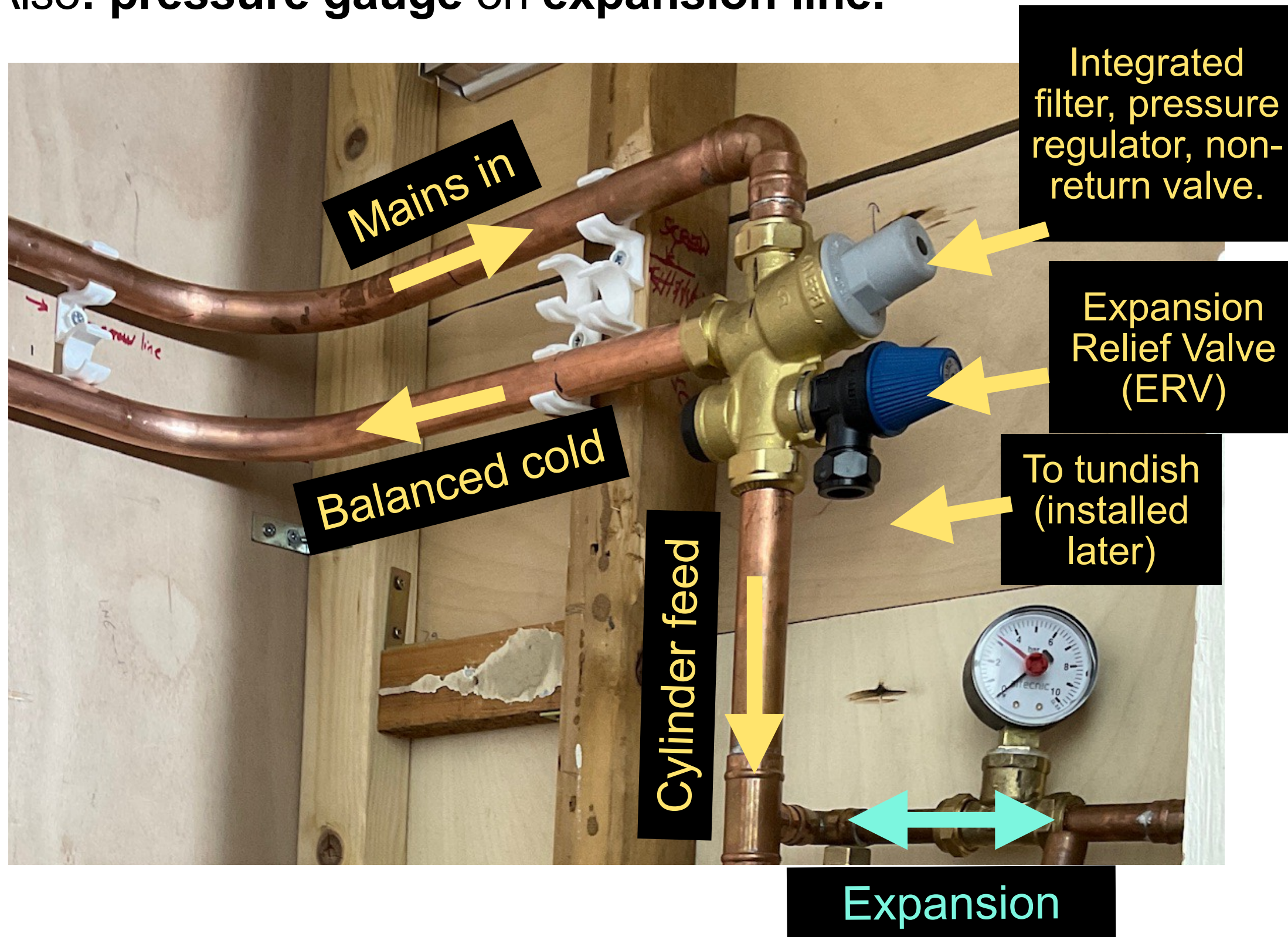
# Cold feed (in) and balanced cold (out)





**Combination valve:** (i) filter, (ii) pressure regulator, (iii) expansion relief valve, (iv) non-return valve.

Also: pressure gauge on expansion line.



Pipework from pressure relief valve to tundish not installed a time of photo. See later pictures.

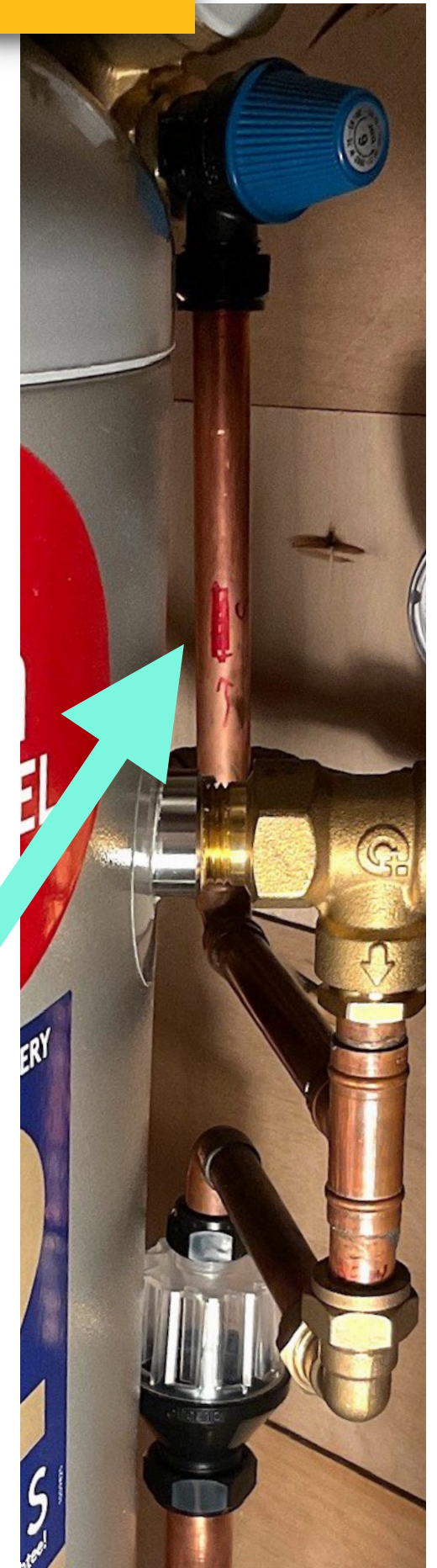


## Discharge pipe D1 from TPRV and ERV to tundish

Both discharge pipes are less than 600mm long and have continuous fall.



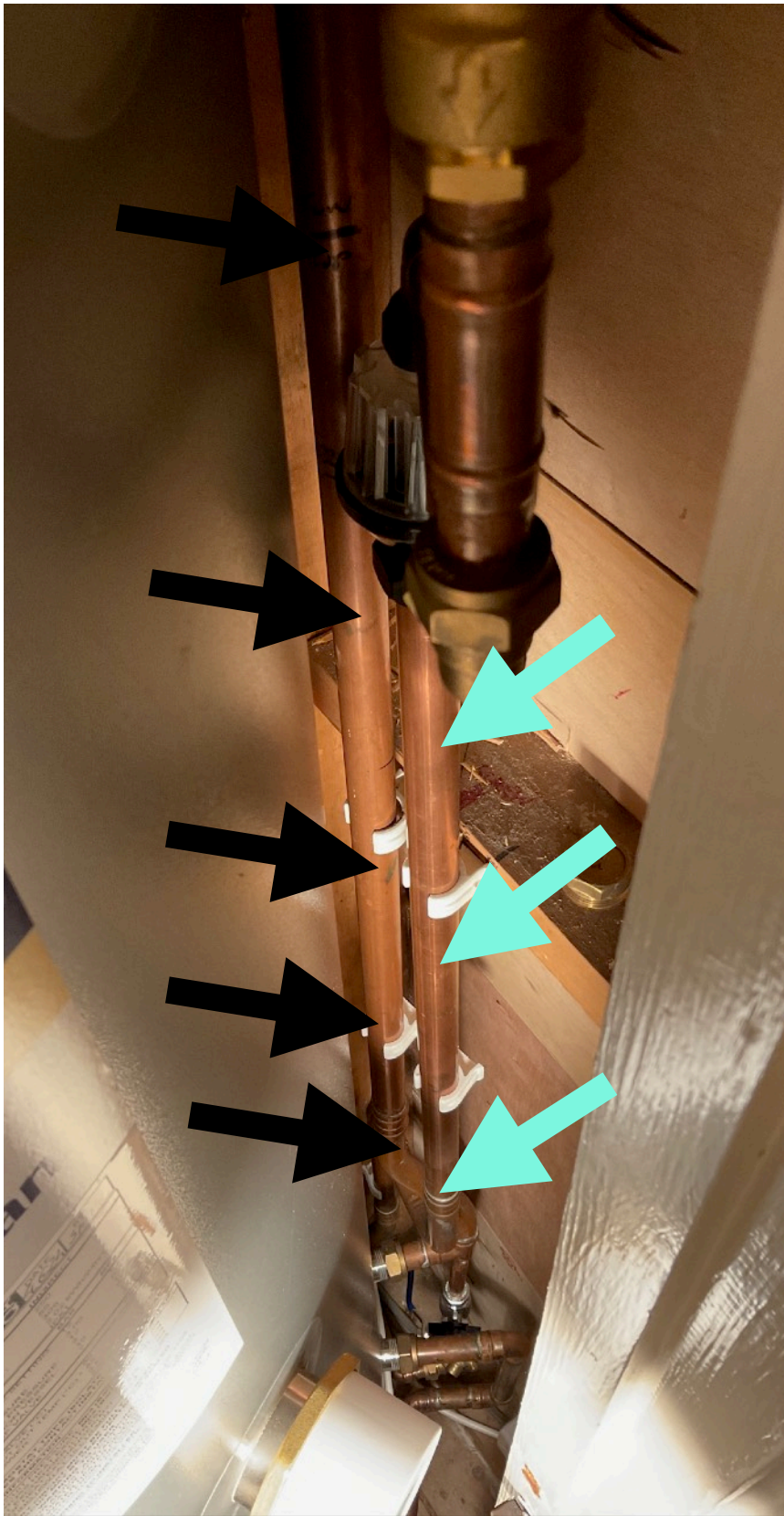
Discharge pipe D1 (15mm copper from **TPRV** to tundish)



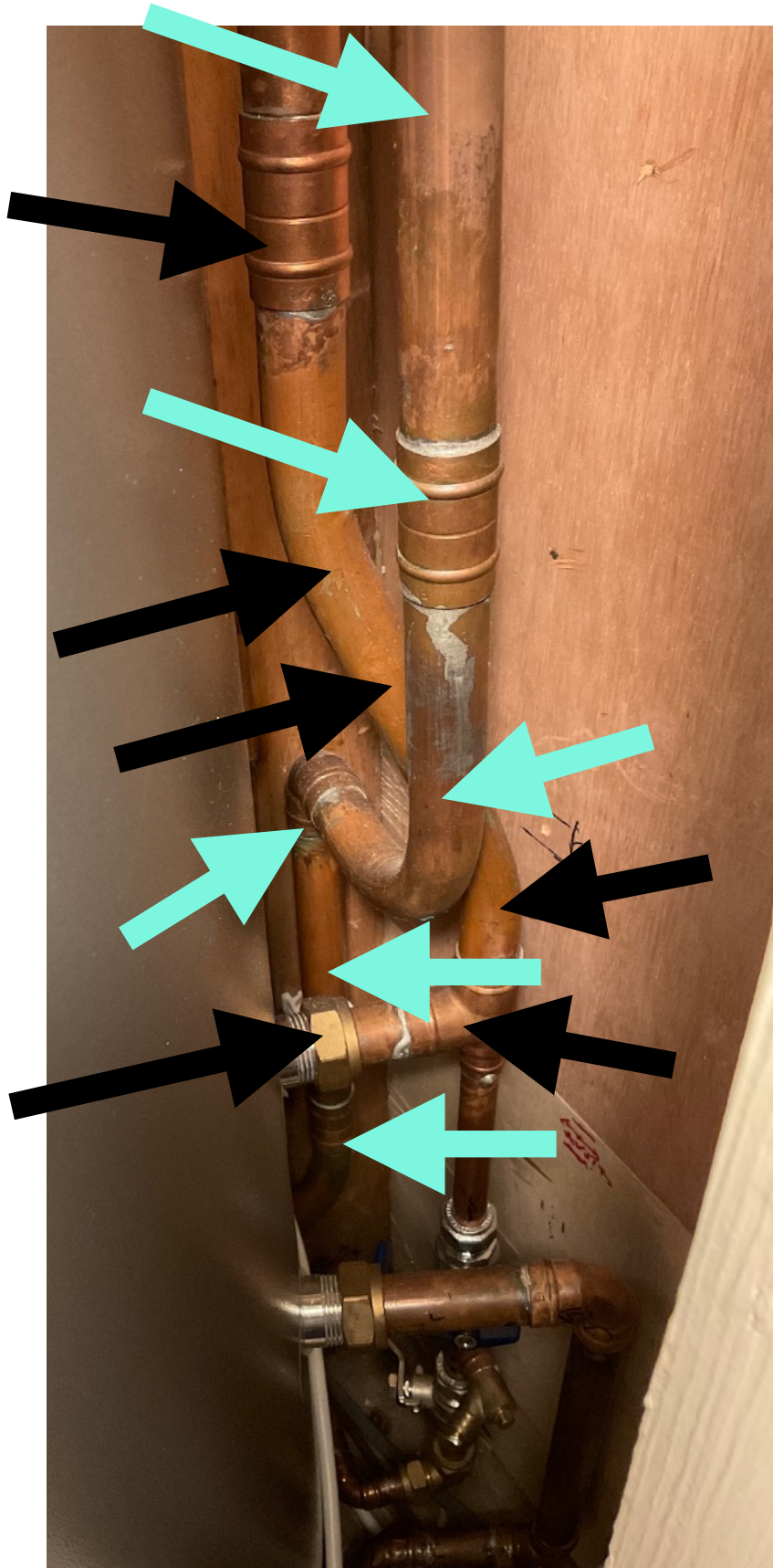
Discharge pipe D1 (15mm copper from **ERV** to tundish)

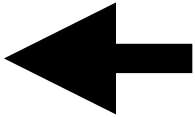
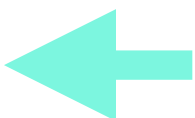


# Discharge pipe D2 (22mm copper from tundish to drain (start))



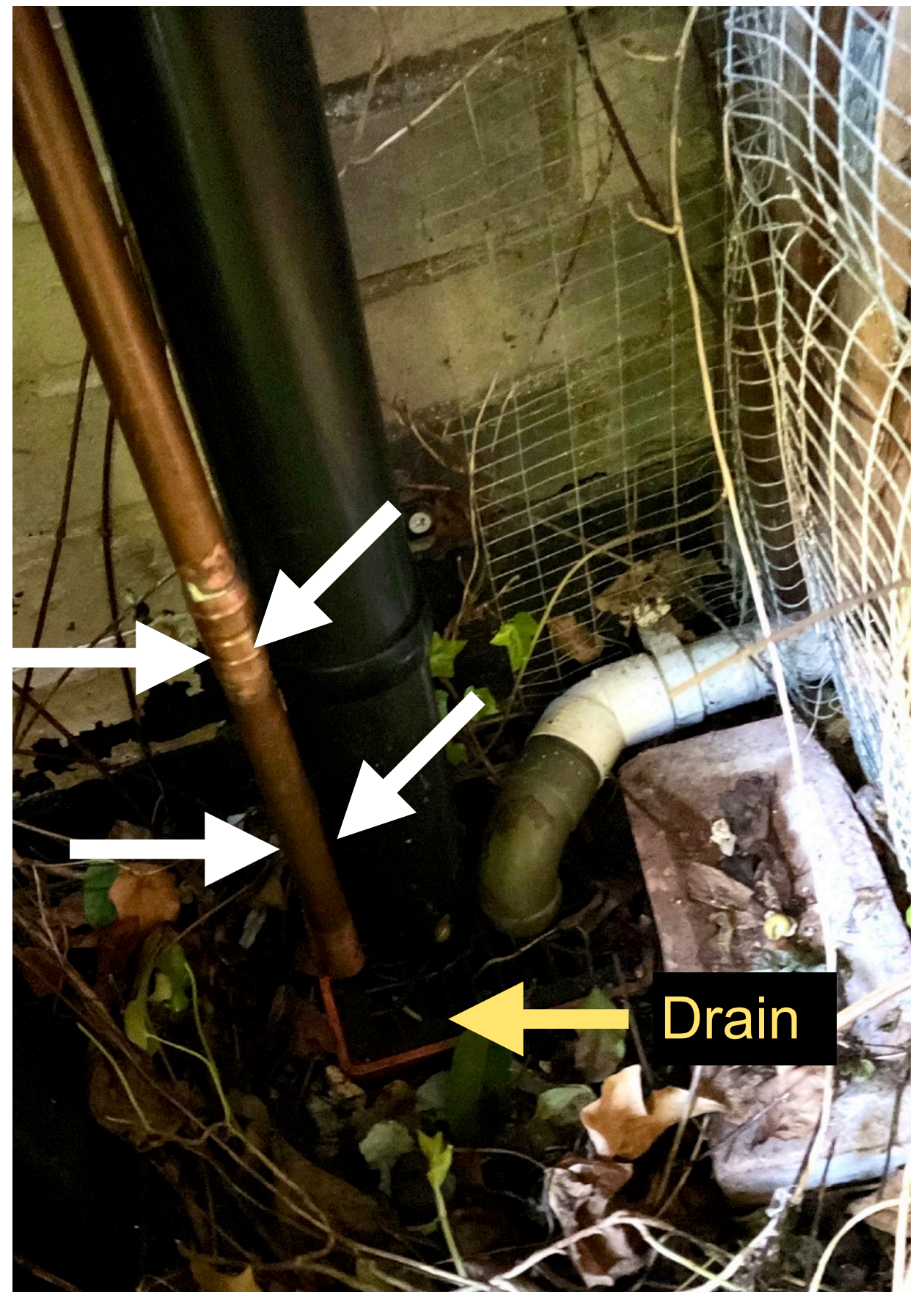
Vertical drop of D2 below tundish is approx 600mm (and so exceeds minimum 300mm)



-  Feed to Cylinder
-  = D2 Discharge Pipe



# Discharge pipe D2 (22mm copper from tundish to drain (outside))

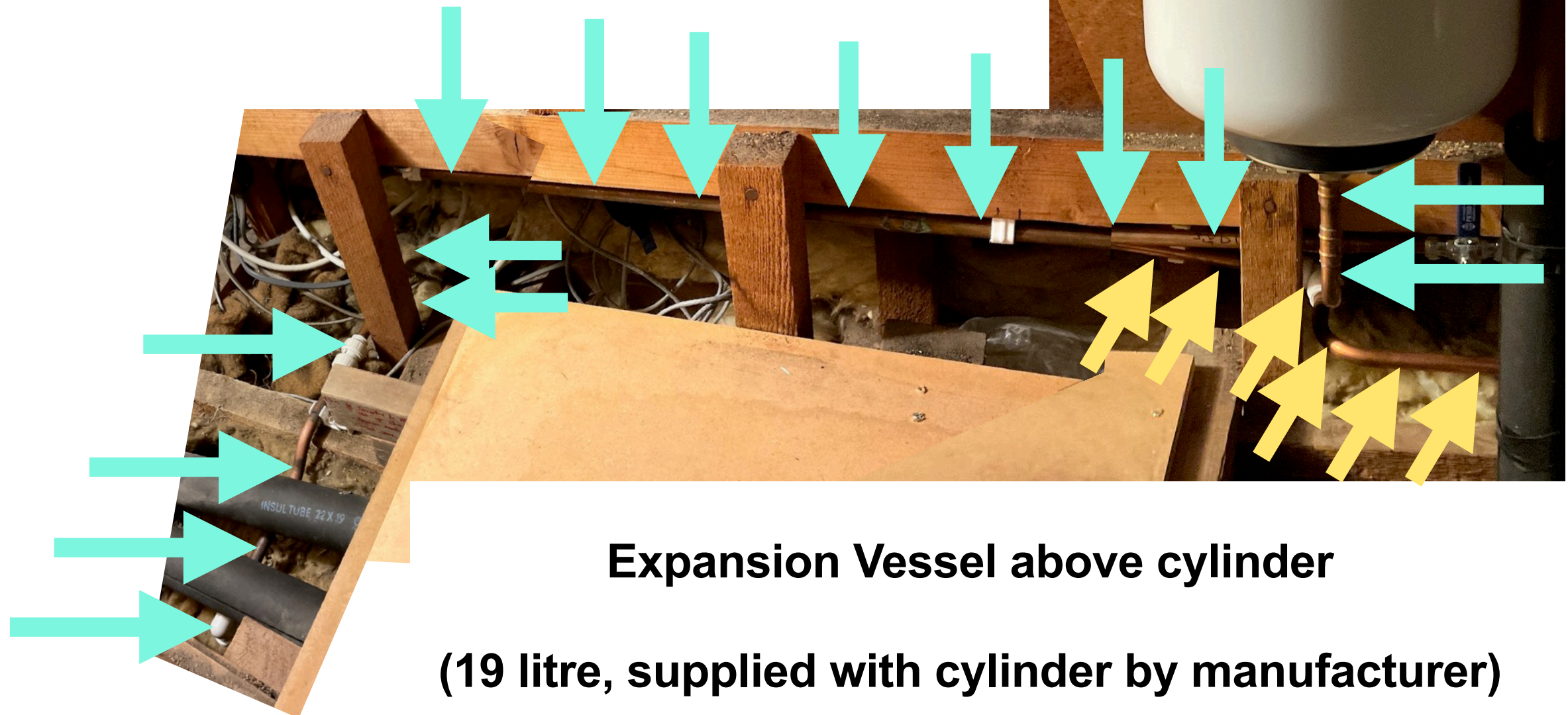




Expansion pipe = 

Unrelated pipe = 

Expansion pipe has no valves between expansion vessel and cylinder





Pressure gauge and service valve on secondary return.



Capillary thermostat (and spare) is required secondary safety measure against over heating.



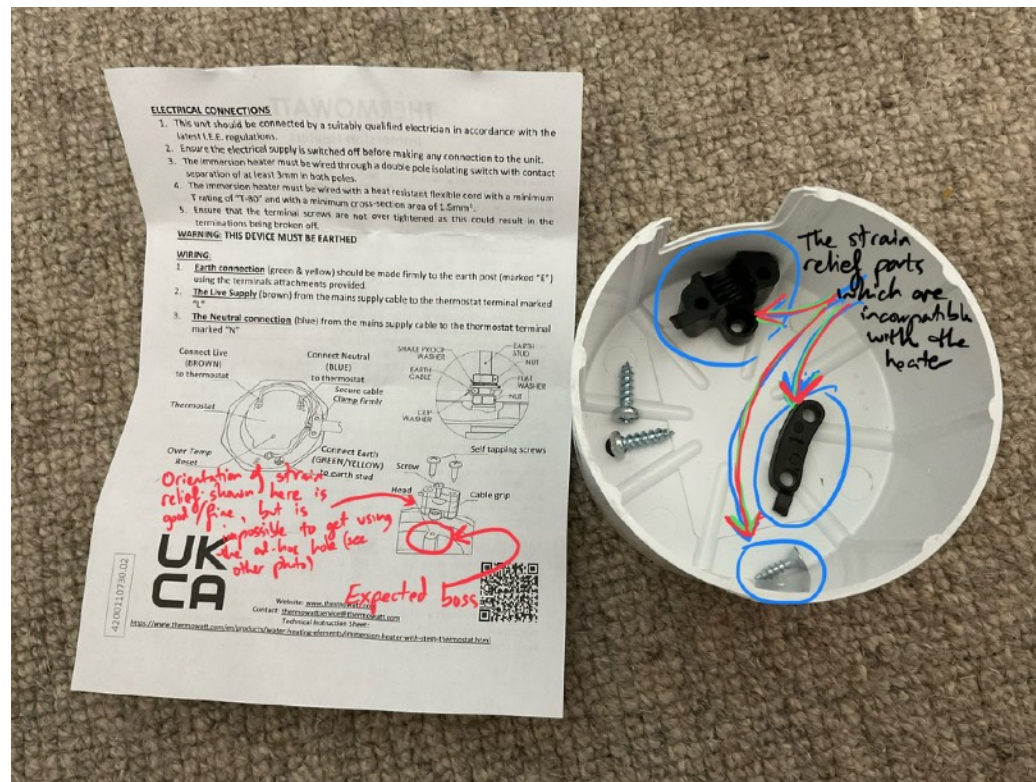


# Repositioned HW control valve (on flow from boiler) and return to boiler (below)

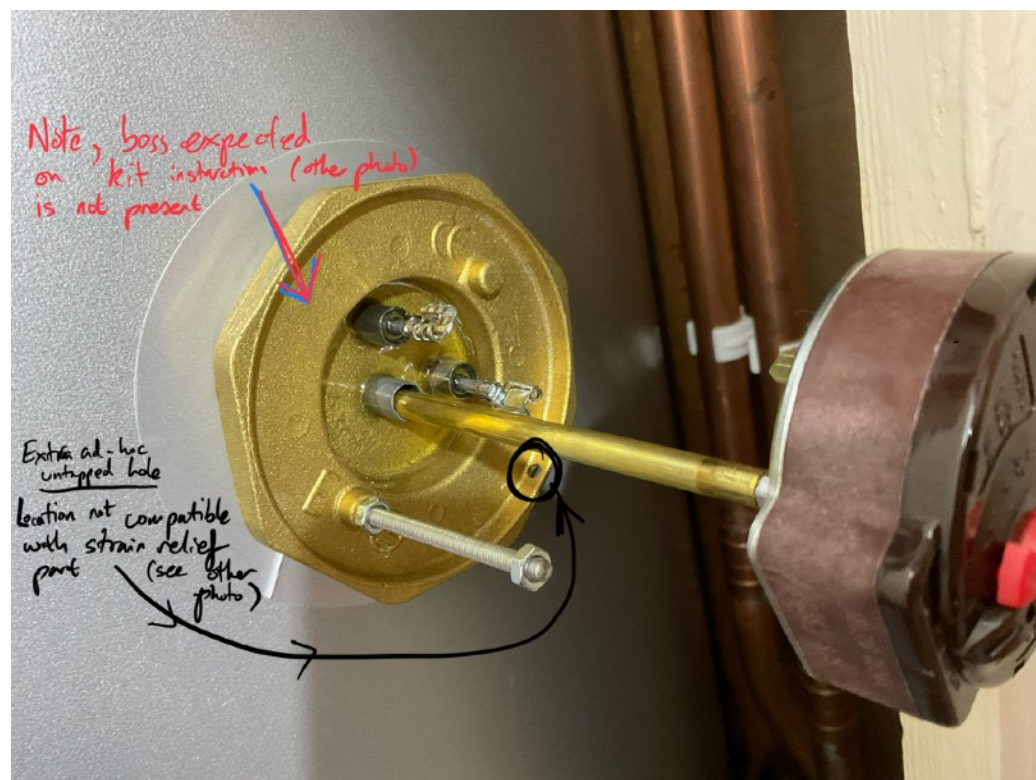




Manufacturer-supplied immersion heaters came unusable strain relief fittings for the cable ...



... so had to make own strain relief fitting to ensure cable properly supported.





# Old immersion supply reused, but relocated.



Old location on left wall.



New location on right wall.



Finished cylinder

