

## **Unit 205: Cold water systems**

### **Outcome 5**

**Key requirements of testing and  
decommissioning of domestic  
cold water systems**

# Testing

Once pipework has been installed into a property, the plumber **must** make sure that the system is:

- Sound (no leaks)
- Flushed through (cleaned internally)
- Disinfected (chemically cleaned)
- Commissioned (set up correctly)

# Testing

**Completed**



**Visual inspection**



**Soundness test**



**Flushing out**



**Disinfecting**



**Hand over to customer**

# Testing

## **Soundness testing**

Before soundness testing, always walk around the system to make sure all joints have been made – visual check:

- Open ends
- Soldered joints made
- Compression joints tight
- Clips are in place

Then carry out the soundness test: there is a different soundness test for rigid pipe (copper and steel) and plastic pipe.

# Testing

## Soundness testing

Rigid pipe (copper and steel)



- Slowly fill the system with water
- Walk around the system and check for leaks
- Leave to stand for 30 minutes (temperature stabilisation)
- Attach the hydraulic test bucket
- Pump system up to 1.5 x working pressure (if system works at 3bar it should be tested at 4.5bar etc)
- Leave for one hour
- Check for any pressure drop (no drop allowed)
- Rectify and re-test if necessary

# Testing

## **Soundness testing**

Plastic pipe (polybutylene)

### Test A:

- Slowly fill the system with water
- Walk around the system and check for leaks
- Pump system to 1bar – after 45 minutes, check for loss of pressure
- Increase pressure to 1.5 x working pressure for
- 15 minutes
- Check for pressure loss
- Reduce pressure to one-third for a further 45 minutes
- Check for pressure loss
- You do not want to damage the plastic pipe or O rings

# Testing

## **Soundness testing**

Plastic pipe (polybutylene)

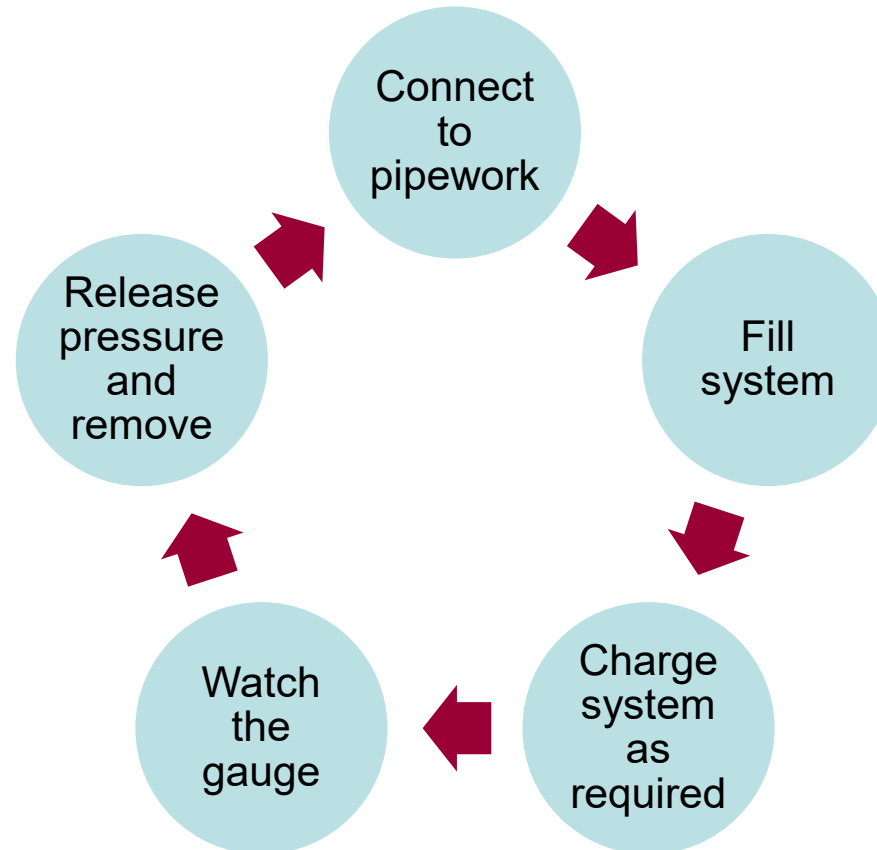
### Test B:

- Slowly fill the system with water
- Walk around the system and check for leaks
- Pump system to manufacturer's test pressure
- Inspect for pressure loss after 30 minutes
- Leave for a further 120 minutes
- Inspect for pressure loss
- If total loss is less than 0.2bar, soundness is good
- You do not want to damage the plastic pipe or O rings

# Testing

## Soundness testing

Whichever test is undertaken, the simple process is:





# Testing

## **Flushing and disinfecting**

After a new system or section of pipework has been installed, all the debris inside the pipe needs to be removed and the pipe made ready to carry wholesome water.

- The system is re-filled with water and then drained down from the lowest point
- Re-fill the system
- Open the kitchen tap and allow water to run until clear of debris/colour
- Do likewise with all other outlets in the property
- Add disinfectant to system (sodium hypochlorite solution or chlorine) for 1 hour – as BS6700

# Testing

## Flushing and disinfecting

- Test chlorine levels at each outlet – as BS6700
- Drain system
- Flush system through from each outlet until no chlorine is present

After a soundness test, the system should always be flushed out prior to being handed over to the customer.

# Testing

## Commissioning

- Make sure system is completely filled
- Adjust FOV levels in CWSC and WCs
- Test flow rates at outlets (litres/min or litres/sec)
- Test pressure at outlets (bar)
- Inspect insulation or pipework and CWSC
- Inspect support for CWSC (label valves)
- Complete any documentation
- Hand over to customer (explain)



# Testing

## **Commissioning**

A correct installation prevents:

Bacterial growth  
(stagnation)

Legionella  
(temperatures 20-46<sup>0</sup>C)

Noise  
(flow of water, water hammer)

# Decommission

## Decommissioning

At some point a system will need isolating due to a repair, extension, renewal or permanent removal – this is known as decommissioning.

**Temporary decommissioning:** a system is isolated for a period of time while work is carried out, after which the system is put back into normal operation.

**Permanent decommissioning:** a system or appliance is taken out of use. The system will be isolated at the incoming mains stop valve and then drained. The pipework can be removed and the pipework capped either above the stop valve, if the whole system is decommissioned, or at the end of a branch pipe to stop stagnation of water.

# Decommission

## Decommissioning

If decommissioning, inform customer or work colleagues.

- Cap pipework at the end of branches
- Always label valves after isolation while work is carried out, to avoid the valve being turned on (warning notice)
- Always drain water off correctly to an appropriate location
- Check at various outlets to make sure the system has drained off
- If unsure if the drain to the house is connected to the mains sewer, check with the local authority

# Decommission

## Dead legs

**Passive dead leg:** a section of pipework through which water cannot be drawn off or flow. Pipe not being cut back to a branch end or a drop with no DOV – these can give rise to bacterial growth.

**Active dead leg:** a section of pipework through which cold water has to be drawn off before the hot water is drawn off. A long section of pipe on the hot water circuit (waste of water).

# Decommission

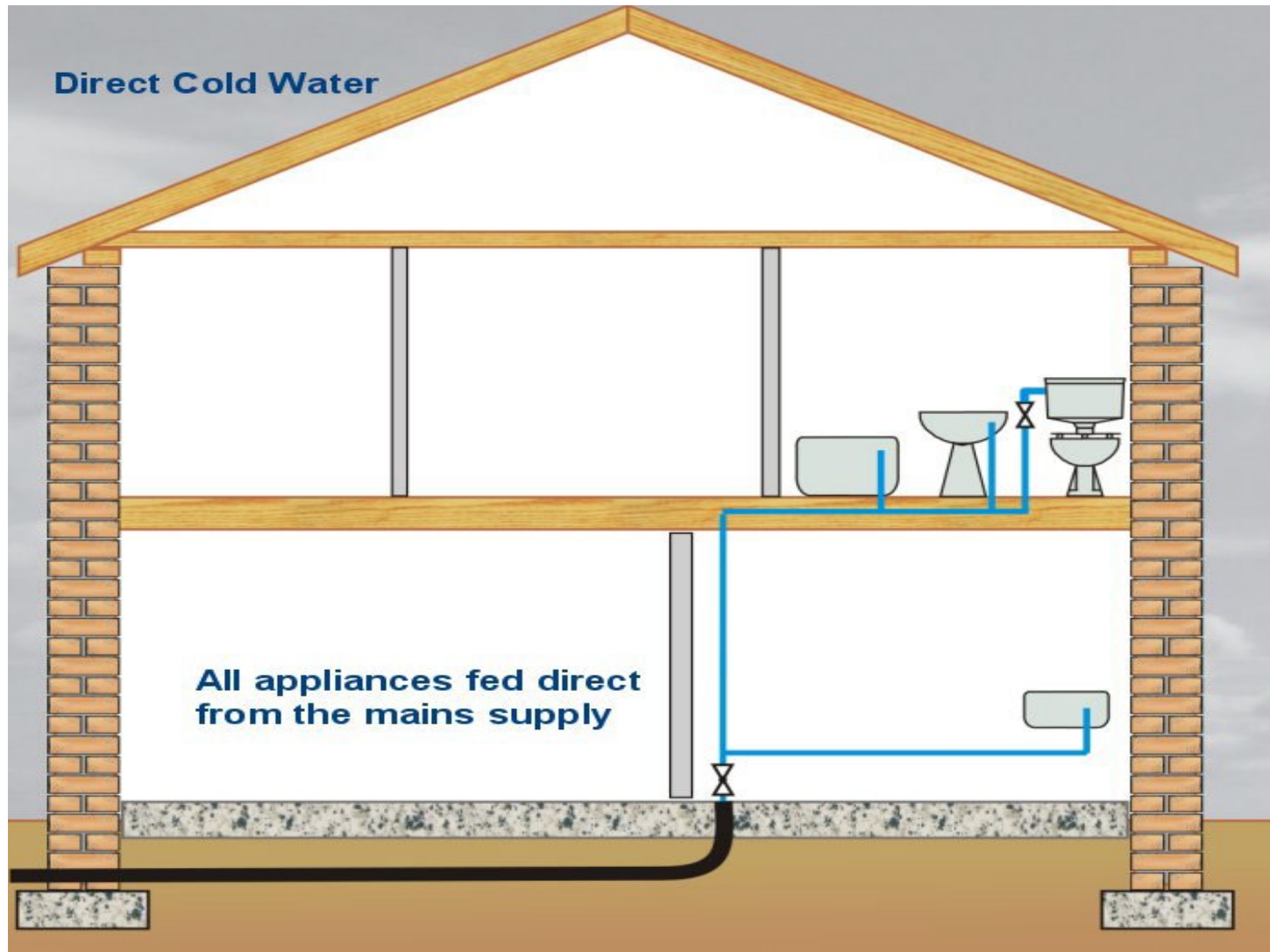
## Draining cold water systems

- Localised draining
- Part draining
- Fully drain systems

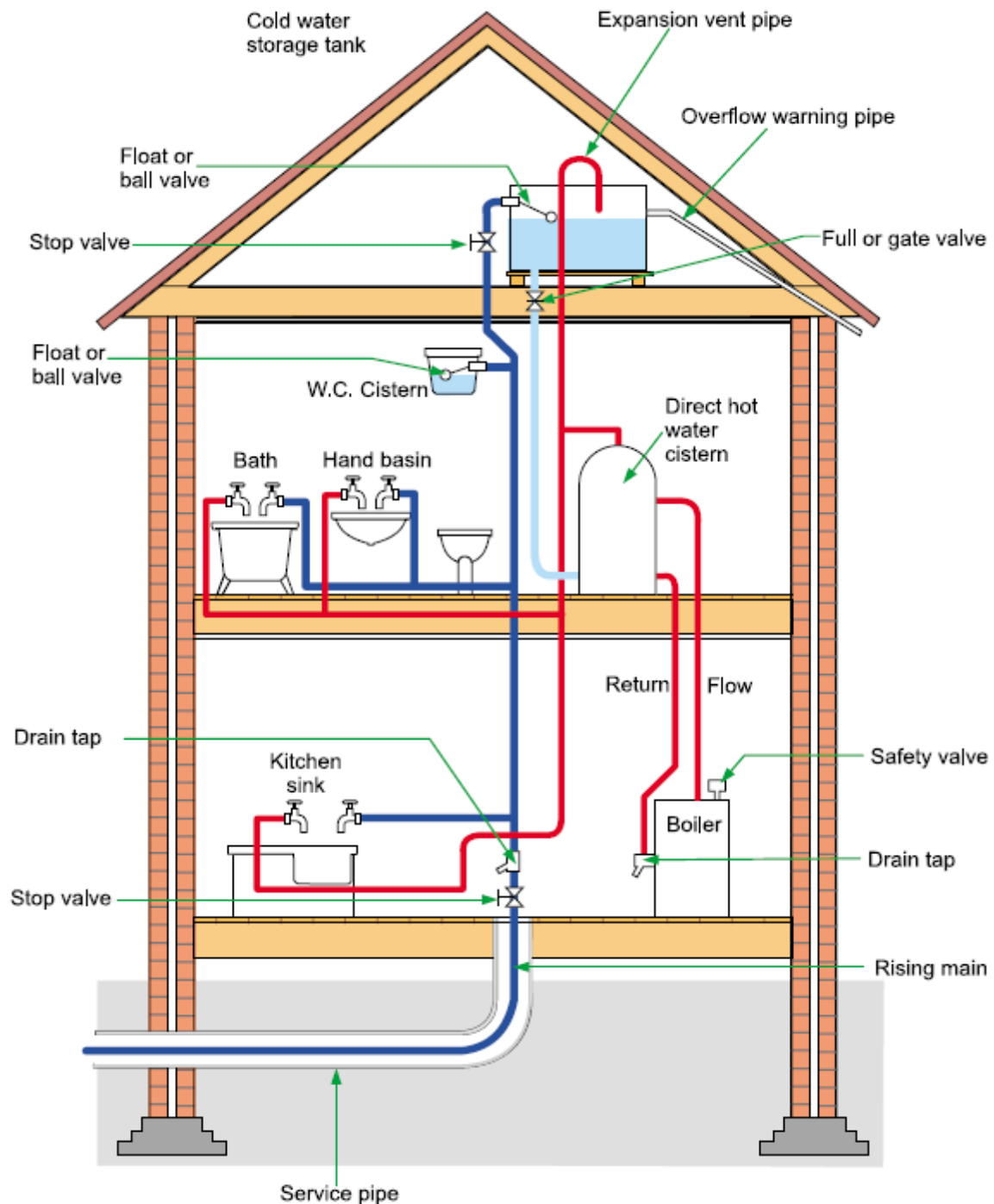


# Decommission

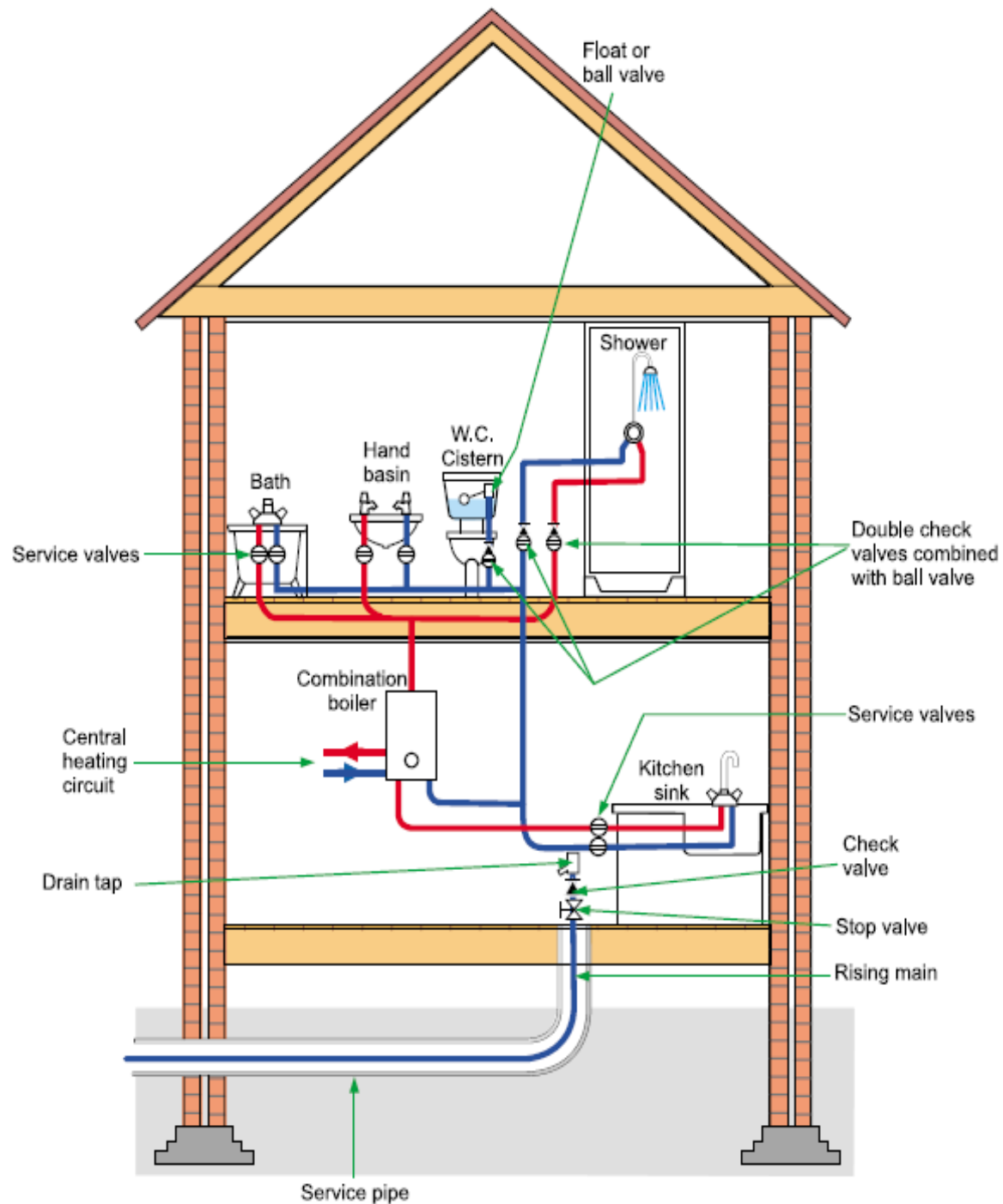
## Draining cold water systems



# Draining cold water systems

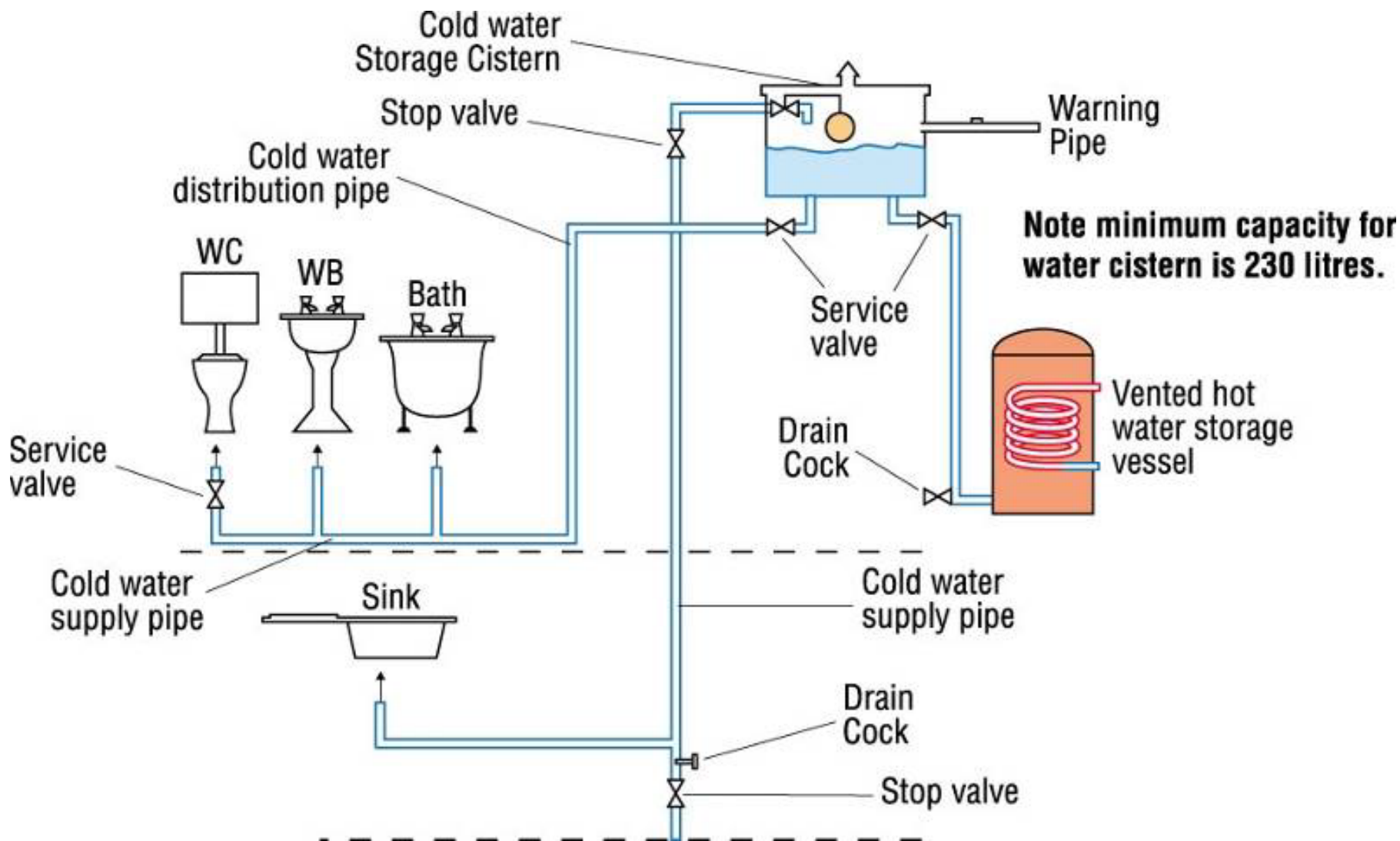


# Draining cold water systems



# Decommission

## Draining cold water systems



# Decommission

## Draining cold water systems

Always drained:

- From the lowest point of the system using a DOV and hose pipe
- So the least amount of water is wasted
- If maintenance/replacement is required, nearest to component, isolating rest of system
- Bung kits could be used
- To a safe point