

# Water hammer and noise transmission

## Water hammer

### What is it?

Water hammer is a banging or vibrating sound that can occur in your water service pipe.

### What causes it?

It mainly occurs when a tap or valve is suddenly closed, causing hydraulic shock waves to be transmitted through the pipe.

### What is hydraulic shock?

Hydraulic shock occurs when fluid flowing through a pipe has a sudden or rapid change in velocity (speed and direction). This generates pressure, which travels back and forth within the pipe until the energy dissipates.

### How can I minimise it?

Remove air from your pipes by turning on the tap found at the highest point on your property. If the problem persists, consult a licensed plumber to assess the situation.

### Causes of water hammer

- Air in pipes
- Plumbing design faults
- Wrong types of taps used for particular fittings
- Restrictions in flow caused by kinks or corrosion in pipes
- Automatic valves on sprinkler systems
- Mains pressure on gravity hot water services
- Faulty float controls in toilet cisterns
- Starting and stopping of pumps

### Can it cause damage?

While not common, water hammer can cause pipes to burst if a weakness exists in your internal pipework, such as at joins or where there has been some corrosion. Water hammer can also cause pipes to move if they are not well secured, resulting in fatigue cracks or friction holes.

## Noise transmission

### What is it?

Noise transmission is when sound, such as banging, is transferred into the wall of a water pipe. It is more common in iron and copper pipes (compared to plastic) as metal amplifies the noise.

### Can it cause damage?

No, it is simply noise created by the pipe.

### How can I minimise it?

Consult a licensed plumber to find the source of the noise and remove it if possible. The plumber may:

- install a short loop of polyethylene pipe in your plumbing system (ensuring that the electrical earth is maintained)
- install insulating joints in the pipe system
- insulate exposed pipes or bury pipes (if possible)
- replace metal pipes with polyethylene piping.

### Causes of noise transmission

- Water rushing through the pipe
- Restricted flow in pipes caused by undersized plumbing
- Valves or taps that are not fully open
- An object hitting or rubbing on an exposed pipe
- Worn or split tap washer pads
- Loose fitting pipes that can vibrate
- Air in pipes
- Noise being transmitted from a neighbour's service pipes to your pipes due to high-density living e.g. flats or units
- Impact sprinklers commonly used in parks and playing fields

