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**Tekwarm Double Aluminium Plate Underfloor Heating System  
Installation Guide for Suspended Timber Joist Applications  
Over Suspended Joists with Overboard Finish**



**Designed to Heat. Built to Last**

Tekwarm

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## INSTALLATION GUIDE FOR SUSPENDED TIMBER JOIST APPLICATIONS

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## OVER SUSPENDED JOISTS WITH OVERBOARD FINISH

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### 1. INTRODUCTION

The Tekwarm Double Aluminium Plate Underfloor Heating System is designed for use in suspended timber floor constructions where warm water underfloor heating pipework is installed within aluminium diffuser plates positioned between timber joists.

The aluminium plates are designed to hold the UFH pipework and distribute heat evenly beneath a suitable structural overboard layer, such as chipboard, OSB, plywood or cement board.

This system is suitable for suspended timber floors where the joists are correctly designed, structurally suitable and capable of supporting the required dead and imposed loads of the complete floor build-up.

The system is typically installed with insulation between the joists to reduce downward heat loss and improve system efficiency. The insulation may be mineral wool, rigid board insulation or another suitable insulation type, depending on the project requirements.

The system typically includes:

- Tekwarm double aluminium diffuser plates
- Tekwarm underfloor heating pipe
- Suitable between-joist insulation
- Timber joists at 400mm or 600mm centres
- Suitable overboard layer
- Pipe conduit / protection sleeves where required
- Manifold assembly
- Fixing tools and accessories
- Pressure testing equipment
- Temporary access boards / safe walkway system

This guide covers the key stages of installation, including joist checks, safe access, insulation installation, aluminium plate selection, plate fixing, joist notching, pipe installation, overboarding, manifold connection, filling and pressure testing.

This guide should be read alongside the Tekwarm UFH design, structural design information, joist manufacturer's guidance, overboard manufacturer's instructions, floor finish requirements and all relevant British Standards and Building Regulations.

## 2. IMPORTANT NOTES BEFORE STARTING

Before installation begins, check that:

- ✓ The Tekwarm UFH design has been reviewed and understood.
- ✓ The manifold location has been agreed.
- ✓ Joist centres have been confirmed as either 400mm or 600mm centres.
- ✓ The correct aluminium plate size has been selected.
- ✓ 395mm plates are used for 400mm joist centres.
- ✓ 590mm plates are used for 600mm joist centres.
- ✓ The joists are structurally suitable for the proposed floor build-up.
- ✓ The joists are level, stable and properly fixed.
- ✓ The insulation type and thickness have been confirmed.
- ✓ The overboard type has been confirmed.
- ✓ The overboard fixing and gluing method has been confirmed.
- ✓ Safe working access has been provided over exposed joists.
- ✓ All services passing through the floor zone have been reviewed.
- ✓ The pipe diameter and loop layout match the Tekwarm design.
- ✓ Any joist notching required for pipe routes has been reviewed against the Tekwarm design and UK Building Regulations guidance.
- ✓ The area is dry, weather-tight and suitable for installation.

Do not install the system if the joists are loose, damaged, overloaded, excessively uneven, incorrectly spaced or unsuitable for the required loading. Aluminium plates distribute heat.

## 3. HEALTH AND SAFETY

Installation should only be carried out by competent persons.

Always wear appropriate PPE, including:

- ✓ Safety boots
- ✓ Gloves
- ✓ Eye protection
- ✓ Knee protection
- ✓ High-visibility clothing where required
- ✓ Dust protection where cutting boards or insulation
- ✓ Cut-resistant gloves when handling aluminium plates

Aluminium plates can have sharp edges. Handle with care.

Where joists are exposed, a safe working platform must be provided. Do not walk directly on open joists unless a safe access method has been installed and approved.

Temporary crawl boards, scaffold boards or suitable sheet material should be used to create a safe walkway and working area.

The safe walkway must:

- ✓ Be stable
- ✓ Be wide enough for safe movement

- ✓ Be capable of supporting operatives and materials
- ✓ Be secured where required
- ✓ Avoid damaging installed plates or pipework
- ✓ Be repositioned safely as the installation progresses

#### 4. TOOLS AND EQUIPMENT REQUIRED

Typical tools and equipment required include:

- ✓ Pipe decoiler
- ✓ Pipe cutter suitable for UFH pipe
- ✓ Tape measure
- ✓ Marker pen
- ✓ Utility knife
- ✓ Insulation saw or knife
- ✓ Drill / driver
- ✓ Suitable fixings for aluminium plates
- ✓ Suitable fixings for overboard installation
- ✓ Suitable tools for forming pipe notches where required
- ✓ Adhesive or glue required by overboard manufacturer
- ✓ Straight edge or level
- ✓ Temporary access boards / safe walkway boards
- ✓ Spanners / manifold connection tools
- ✓ Pressure test pump
- ✓ Hose connections
- ✓ Water supply for filling
- ✓ Temporary pipe protection sleeves/conduit
- ✓ Vacuum or brush for cleaning joist zones

The exact tools required will depend on the joist type, plate type, insulation type, overboard material and project specification.

#### 5. JOIST AND STRUCTURAL CHECKS

Before installing insulation, aluminium plates or pipework, the suspended floor structure must be inspected.

The joists should be:

- Structurally sound
- Correctly designed for the intended loading
- Correctly spaced
- Level and aligned
- Free from significant damage
- Free from excessive deflection
- Securely fixed
- Dry and free from rot or decay
- Suitable to receive the proposed floor build-up
- Capable of supporting the overboard, floor finish, furniture and imposed loads



Where engineered joists are used, cutting, notching, drilling or fixing into them must only be carried out in accordance with the joist manufacturer's guidance.

Any damaged, cracked, wet, decayed, undersized or overloaded joists must be assessed before installation continues.

The Tekwarm system should not be used to compensate for a weak or unsuitable floor structure. Structural suitability must be confirmed by the project designer, structural engineer, builder or competent responsible person.

## 6. SAFE ACCESS OVER EXPOSED JOISTS

Where the floor deck has not yet been installed, exposed joists create a significant fall and trip hazard.

Before work begins, install a temporary safe walkway or working platform.

Safe access should be provided for:

- Installer movement
- Carrying aluminium plates
- Installing insulation
- Laying pipework
- Fixing plates
- Connecting pipework
- Inspection and pressure testing

Temporary access boards should not damage insulation, aluminium plates or pipework.

As installation progresses, avoid standing directly on aluminium plates unless they are designed and supported to take that load. Aluminium plates can distort if overloaded or poorly supported.

Where pipework has been installed, access should be carefully controlled to avoid crushing, kinking or damaging the pipe.

## 7. CONFIRMING JOIST CENTRES AND PLATE SELECTION

Before installing plates, confirm the actual joist centres on site.

The Tekwarm double aluminium plate system is designed for use with different plate widths depending on joist spacing.

Use:

Tekwarm 395mm aluminium plates for joists at 400mm centres

Tekwarm 590mm aluminium plates for joists at 600mm centres

Do not assume joist centres are correct based only on drawings. Site measurement is required.

Check multiple locations across the floor area, as joist spacing may vary near openings, trimmers, stairwells, service zones or older structures.

The plate must fit correctly between joists and be suitably supported. Incorrect plate selection can lead to poor fit, plate movement, sagging, poor contact with the overboard and reduced heat output.

## 8. SETTING OUT THE INSTALLATION

Before installing plates or pipework, review the Tekwarm UFH layout drawing.

Check:

- ✓ Room names and zones
- ✓ Manifold position
- ✓ Flow and return routes
- ✓ Pipe spacing
- ✓ Loop lengths
- ✓ Pipe direction
- ✓ Joist direction
- ✓ Joist centres
- ✓ Plate size
- ✓ Required pipe notching locations
- ✓ No-pipe zones
- ✓ Service penetrations
- ✓ Door thresholds
- ✓ Floor finish requirements
- ✓ Overboard type and thickness
- ✓ Areas where pipe protection is required

The installer should mark out key zones before fixing plates.

Pipe should generally not be installed beneath fixed units, kitchen islands, baths, shower trays, toilets, fitted wardrobes or areas where permanent fixtures may trap heat or where future fixings may penetrate the floor, unless specifically allowed within the Tekwarm design.

## 9. MANIFOLD POSITIONING AND MOUNTING

The manifold should be installed in the agreed location shown on the Tekwarm design.

The manifold should be:

- Accessible for commissioning, servicing and maintenance
- Positioned to allow neat pipe routing
- Located where all loops can return without excessive pipe congestion
- Mounted level
- Securely fixed to a suitable wall, cabinet or support frame
- Protected from impact and site damage
- Positioned high enough to allow suitable pipe bends and connections

Avoid positioning the manifold behind fixed units, in inaccessible cupboards or where future access will be restricted.

Allow sufficient space below the manifold for pipework to route neatly into the floor zone without kinks or tight bends.

Clearly identify flow and return bars before connecting pipework.

## 10. INSULATION BETWEEN JOISTS

Insulation must be installed between the joists to reduce downward heat loss and improve the efficiency of the UFH system.

The insulation type should be confirmed by the project specification and may include:

- Mineral wool insulation
- Rigid PIR insulation
- Rigid EPS insulation
- Rigid XPS insulation
- Other suitable between-joist insulation systems

Insulation should be installed:

- Between joists
- Tight to the joist sides where possible
- Without significant gaps
- Without sagging
- At the correct depth
- Fully supported where required
- Clear of pipe channels and plate positions
- In accordance with the insulation manufacturer's guidance

Where mineral wool is used, it should be supported so that it does not slump away from the underside of the aluminium plates.

Where rigid insulation is used, it should be cut neatly and installed without large gaps. Any gaps should be treated in accordance with the project specification.

The insulation should sit close enough to the aluminium plates to minimise downward heat loss, but it must not push the plates upwards, distort them or prevent them from sitting correctly.

Do not compress insulation in a way that affects plate position or overboard level.

## 11. ALUMINIUM PLATE SUPPORT REQUIREMENTS

The Tekwarm aluminium diffuser plates must be suitably supported.

The plates should:

- Sit flush with the top of the joists
- Be properly supported along their edges
- Remain flat
- Avoid sagging
- Avoid rocking or movement

- Support the pipe evenly
- Allow the overboard to sit flat above
- Provide good contact with the overboard
- Be installed without distortion

Plate sag must be avoided. Sagging plates can reduce contact with the overboard, lower system output, create uneven heat transfer and affect the finished floor performance.

The aluminium plate should be flush with the surface of the joists before the overboard is installed.

If the plate sits too low, bows downward or is unsupported, heat transfer into the floor deck can be reduced.

If the plate sits too high, it may prevent the overboard from sitting flat and can create floor movement or squeaking.

The target is simple: plate flat, pipe secure, overboard supported.

## 12. INSTALLING TEKWARM DOUBLE ALUMINIUM PLATES

Install the Tekwarm double aluminium plates between the joists in accordance with the Tekwarm design.

The plates should be installed:

- Between the joists
- With the correct plate size for the joist centres
- Flush with the top of the joists
- Fully supported
- Straight and aligned
- Securely fixed where required
- Without sagging
- Without distortion
- With pipe channels running in the correct direction
- With sufficient space for pipe bends and returns

The plates should be positioned to suit the pipe layout and loop design.

Where plates are cut or trimmed, ensure sharp edges are removed or protected so they cannot damage the UFH pipe.

Plates should not be forced into spaces that are too tight, as this can cause distortion.

Where joist spacing varies, the plate installation may need to be adjusted. Do not use an incorrectly sized plate where it cannot be properly supported.

## 13. FIXING THE ALUMINIUM PLATES

The aluminium plates should be fixed or restrained in a way that keeps them flat, secure and flush with the top of the joists.

Fixings should:

- Suit the joist type
- Hold the plate securely
- Avoid sharp projections
- Avoid damaging the pipe channel
- Avoid creating high points under the overboard
- Avoid contact with the pipe
- Not split or damage timber joists
- Be installed in accordance with the Tekwarm design and site requirements

Where fixings are used, they should be positioned so they do not interfere with pipe installation.

Do not leave plates loose if they are able to move, rattle, lift or sag.

Before pipe installation, check each plate is stable and correctly seated.

#### 14. PIPE HANDLING AND STORAGE

Tekwarm UFH pipe should be handled carefully.

Before installation:

- Store pipe on a clean, dry surface.
- Keep pipe in its packaging until required.
- Protect pipe from sharp objects.
- Do not drag pipe across rough timber, metal edges or sharp surfaces.
- Do not install damaged, kinked, crushed or heavily scratched pipe.
- Do not expose pipe to unnecessary heat or naked flames.
- Use a pipe decoiler to prevent twisting.

Pipe should be installed in continuous loops from the manifold and back to the manifold. Do not join pipework within the floor build-up unless specifically approved by Tekwarm and the project design team.

Any damaged pipe should be replaced.

#### 15. LAYING PIPEWORK INTO THE ALUMINIUM PLATES

Start each loop at the manifold.

Connect the pipe to the correct manifold port or leave sufficient pipe length for connection, depending on the preferred installation method.

Lay the pipe in accordance with the Tekwarm UFH design drawing.

Pipe should be laid:

- In the correct room or zone
- In the aluminium plate channels
- Without kinks
- Without twisting

- With smooth bends
- Without sharp contact with plate edges
- Without excessive tension
- With flow and return routes kept neat at the manifold
- Without forcing plates to move, sag or lift

Press the pipe carefully into the aluminium plate channels so that it is held securely.

The pipe should sit fully within the plate channel and maintain good contact with the aluminium.

Where pipe passes over or through joists, pipe notches, holes or routes must comply with structural requirements, UK Building Regulations guidance and joist manufacturer guidance.

Do not notch, drill or alter joists unless specifically permitted by the structural design, joist manufacturer or relevant project authority.

## 16. PIPE BENDS, RETURNS AND JOIST CROSSINGS

Special care is required where pipe changes direction, returns to the manifold or crosses joist zones.

Pipe bends should:

- Be smooth
- Avoid kinks
- Respect the minimum bend radius
- Avoid sharp plate edges
- Avoid excessive stress
- Be protected where required
- Avoid tight turns directly at joist edges

Where pipe crosses joists, the joists should be notched as required to allow the pipework to pass in accordance with the Tekwarm UFH design.

Notching must be kept to the minimum depth required for the pipe and must not exceed 1/8 of the total joist depth. Notches should be formed neatly to avoid sharp edges or pipe damage.

General UK guidance for solid timber joists states that notches should be made only in the permitted zone, should not exceed 0.125 times the joist depth, and should not be cut too close to the support or too far into the span. Building control guidance commonly states that notches should be located between 0.07 and 0.25 of the span from the support, with holes positioned separately within their own permitted zone.

Where multiple pipe notches are required, maintain no less than 100mm between notches unless the structural designer or local Building Control confirms an alternative approach.

All notching must comply with UK Building Regulations guidance and relevant structural requirements. Where there is any uncertainty, seek advice from the project designer, structural engineer, joist manufacturer or Building Control before proceeding.

For engineered joists, follow the joist manufacturer's service hole and notching guidance exactly. General building control guidance confirms that standard solid timber joist notching rules do not apply to engineered joists, where manufacturer instructions should be followed instead.

Where pipe passes through timber, use suitable pipe protection sleeves, grommets or conduit where required to prevent abrasion and noise.

Pipework must not be crushed by overboarding, fixings or structural members.

## 17. JOIST NOTCHING FOR PIPE ROUTES

Where pipework needs to pass across joists, the joists should be notched only where shown or allowed within the Tekwarm UFH design and project specification.

Joist notching must be kept to an absolute minimum and must be carried out carefully to avoid weakening the floor structure.

Where notching is required:

- Only notch the joist to the depth required for the pipe to pass through.
- Do not notch deeper than the outside diameter / thickness of the pipe unless specifically approved.
- Do not notch more than 1/8 of the total joist depth.
- Keep notches neat, smooth and free from sharp edges.
- Maintain a minimum 100mm gap between separate notches.
- Do not notch joists randomly or outside the agreed pipe route.
- Do not notch engineered joists unless the joist manufacturer specifically permits it.
- Do not notch trimmers, doubled joists, beams or structural members unless approved by the project structural designer.
- Protect pipework where it passes through or over notched joists.
- Ensure the pipe is not crushed when the overboard is installed.

As general UK guidance, notches in solid timber joists should be located within the permitted notching zone and should not exceed the maximum permitted depth. Guidance from UK building control sources states that notches should not be deeper than 0.125 times the joist depth and should generally be positioned between 0.07 and 0.25 of the joist span from the support.

Before notching, check for existing services, previous notches, drilled holes, cracks, defects or signs of structural weakness.

If the joist is already weakened, damaged, undersized or heavily notched, stop and seek advice before continuing.

Do not over-notch the joists to make pipe installation easier.

## 18. MAINTAINING SYSTEM PERFORMANCE

The aluminium diffuser plate system relies on good heat transfer between the pipe, plate and overboard.

To support performance:

- ✓ Use the correct plate width for the joist centres.
- ✓ Ensure plates are flush with the joist tops.
- ✓ Ensure plates are supported and not sagging.

- ✓ Ensure pipe sits fully in the channels.
- ✓ Ensure pipe routes through notches do not lift the overboard.
- ✓ Ensure insulation is installed beneath the system.
- ✓ Ensure overboard is installed flat and tight.
- ✓ Avoid air gaps between plate and overboard.
- ✓ Avoid loose, rattling or distorted plates.
- ✓ Avoid unsupported plate spans.
- ✓ Avoid excessive pipe movement.

Poor plate contact can reduce heat output. In plain English: if the heat cannot get into the floor properly, it will not warm the room properly.

## 19. OVERBOARDING THE SYSTEM

Once the aluminium plates and pipework have been installed and checked, the floor should be overboarded using a suitable board material.

Suitable overboard materials may include:

- Chipboard
- OSB
- Plywood
- Cement board
- Other approved structural flooring boards

The selected overboard must be:

- Suitable for the intended loading
- Suitable for use over UFH
- Suitable for the floor finish
- Compatible with the project build-up
- Installed in accordance with the board manufacturer's instructions
- Fixed correctly
- Glued where required
- Fit for the intended purpose

The overboard should be installed so that it sits flat on the joists and over the aluminium plates without rocking, bouncing or creating high points.

The overboard should be fixed and glued as required using the correct manufacturer-approved products.

Fixings must not penetrate or damage the UFH pipe.

Before fixing boards, the installer should clearly identify pipe routes and avoid fixing through pipe locations.

Where chipboard is used, tongue-and-groove joints should be glued where required by the board manufacturer.

Where plywood, OSB or cement board is used, follow the board manufacturer's guidance on board thickness, orientation, expansion gaps, fixing centres, adhesive, primer and suitability for the final floor finish.

Do not assume all boards are suitable just because they are flat and available.

## 20. FIXING PRECAUTIONS DURING OVERBOARDING

When overboarding, take extreme care to avoid pipe damage.

Before fixing:

- ✓ Check pipe routes.
- ✓ Mark safe fixing zones.
- ✓ Confirm plate positions.
- ✓ Confirm joist positions.
- ✓ Confirm notched pipe crossing locations.
- ✓ Use suitable fixing lengths.
- ✓ Avoid fixing into pipe channels.
- ✓ Avoid fixing into pipe notches.
- ✓ Avoid over-penetration.
- ✓ Do not use fixings where pipe location is uncertain.

The overboard fixing pattern should follow the board manufacturer's instructions and structural requirements.

Where adhesive or glue is specified, use the correct product. The adhesive must be compatible with the board, joist and intended floor build-up.

After overboarding, do not drag heavy materials across the floor unless suitable protection is used.

## 21. MANIFOLD CONNECTIONS

Once each loop has been installed, return the pipe to the correct manifold connection.

Cut the pipe cleanly and square using a suitable pipe cutter.

Connect each loop to the correct manifold port using the appropriate Tekwarm manifold connection set.

Ensure:

- Pipe ends are clean and undamaged
- Connections are fully inserted
- Compression fittings are tightened correctly
- Flow and return are connected to the correct bars
- Each loop is clearly labelled
- Loop references match the Tekwarm design drawing
- Pipework below the manifold is neat and protected
- Pipe bends into the manifold are smooth and not stressed

Do not overtighten manifold connections. Follow the manifold fitting guidance.

Each loop should be clearly labelled with the room name or circuit number.

## 22. FILLING THE SYSTEM

Before pressure testing, the system must be filled with water and air must be removed from each circuit.

Typical filling procedure:

- Close the manifold isolation valves from the primary heating system.
- Connect a water supply to the manifold fill point.
- Connect a hose from the drain point to a suitable drain.
- Open one UFH loop at a time.
- Flush water through the loop until air is removed and water runs clear.
- Close the completed loop.
- Repeat for each loop.
- Once all loops are filled and vented, open all loops ready for pressure testing.

The system must be fully vented. Air left in the pipework can affect the pressure test and later system performance.

Pressure testing should be carried out hydraulically using water unless otherwise stated by the project specification or Tekwarm guidance.

## 23. PRESSURE TESTING BEFORE OVERBOARDING OR FLOOR FINISH

The Tekwarm UFH system must be pressure tested before it is permanently covered or concealed.

Pressure testing confirms the integrity of the pipework and manifold connections before the system becomes difficult to access.

Ideally, the system should be pressure tested before overboarding and kept under suitable pressure during overboarding so accidental damage can be identified.

A typical pressure testing process is:

- Ensure all pipe loops are connected to the manifold.
- Ensure all loop valves are open.
- Ensure the manifold is isolated from the primary heating system.
- Connect a suitable hydraulic pressure test pump.
- Fill and fully vent all loops.
- Increase the pressure gradually.
- Check all manifold connections and visible pipework.
- Maintain the required test pressure for the required test period.
- Record the test pressure, duration, date and installer details.
- Inspect for any pressure loss or visible leaks.
- Do not overboard or conceal the system until the pressure test has passed.

The Tekwarm UFH system should be hydraulically pressure tested before the pipework is permanently concealed. Unless project-specific guidance states otherwise, the system should be tested to 4 bar and

checked for pressure stability and visible leaks. The system should remain under suitable pressure during overboarding and any subsequent floor installation works.

Where there is a risk of freezing, do not leave the system filled with untreated water unless suitable frost protection measures are in place.

Do not proceed if the pressure test has failed or unexplained pressure loss is observed.

#### 24. PRESSURE TEST RECORD

A pressure test record should be completed before the system is permanently covered.

Recommended information to record:

- ✓ Project name
- ✓ Plot / area / room reference
- ✓ Installer name
- ✓ Date of test
- ✓ Manifold reference
- ✓ Number of loops tested
- ✓ Pipe diameter
- ✓ Test pressure
- ✓ Test duration
- ✓ Start pressure
- ✓ End pressure
- ✓ Ambient temperature
- ✓ Any pressure loss
- ✓ Confirmation of visual inspection
- ✓ Installer signature
- ✓ Client / site representative signature where required

A copy of the pressure test record should be retained as part of the project handover file.

#### 25. PRE-OVERBOARD INSPECTION CHECKLIST

Before overboarding, check:

- ✓ Joists structurally suitable
- ✓ Joist centres confirmed
- ✓ Correct plate size selected
- ✓ 395mm plates used for 400mm joist centres
- ✓ 590mm plates used for 600mm joist centres
- ✓ Safe walkway provided during installation
- ✓ Insulation installed between joists
- ✓ Insulation supported and not sagging
- ✓ Aluminium plates installed correctly
- ✓ Plates flush with joist tops
- ✓ Plates suitably supported
- ✓ No plate sagging
- ✓ No loose or rattling plates

- ✓ No sharp edges contacting pipe
- ✓ Pipework installed to design
- ✓ Pipe fully seated in plate channels
- ✓ Pipe bends smooth and not kinked
- ✓ Joist notching completed only where required by the design
- ✓ Notch depth limited to pipe thickness only
- ✓ Notch depth does not exceed 1/8 of joist depth
- ✓ Minimum 100mm gap maintained between notches
- ✓ Notches checked for sharp edges
- ✓ Pipe protected at notches where required
- ✓ No engineered joists notched unless manufacturer-approved
- ✓ Pipe protected at joist crossings where required
- ✓ Loops connected to manifold
- ✓ Loops labelled correctly
- ✓ System filled and vented
- ✓ Pressure test completed and recorded
- ✓ System left under pressure for overboarding
- ✓ Pipe routes photographed
- ✓ Board fixing zones identified

## 26. PRE-FLOOR FINISH CHECKLIST

Before installing final floor finishes, check:

- ✓ Overboard type suitable for UFH
- ✓ Overboard installed to manufacturer's guidance
- ✓ Boards fixed correctly
- ✓ Boards glued where required
- ✓ No fixings have damaged UFH pipework
- ✓ Floor is flat, stable and suitable
- ✓ UFH pressure has remained stable
- ✓ UFH commissioning has been completed where required
- ✓ Floor finish manufacturer's UFH guidance has been reviewed
- ✓ Maximum floor surface temperature has been confirmed
- ✓ Any required primers, adhesives or decoupling layers have been specified

Different floor finishes have different UFH requirements. Timber, laminate, vinyl, carpet, tiles and resin finishes all have different rules.

## 27. COMMISSIONING AND INITIAL HEAT-UP

The UFH system should not be operated at full temperature immediately after installation.

Commissioning should be carried out gradually and in accordance with:

- Tekwarm guidance
- Heat source manufacturer's guidance
- Floor finish manufacturer's guidance

- Overboard manufacturer's guidance
- Project specification
- Relevant UFH standards

The initial heat-up cycle should be controlled and gradual.

Do not use the UFH system to force-dry wet trades or accelerate construction works unless specifically approved.

A gradual commissioning process helps reduce thermal shock, movement, floor finish failure and unnecessary stress within the floor build-up.

## 28. FLOOR FINISH CONSIDERATIONS

Before installing floor finishes, check:

- ✓ Overboard surface condition
- ✓ Board moisture content where relevant
- ✓ Floor stability
- ✓ UFH commissioning records
- ✓ Floor finish manufacturer's requirements
- ✓ Adhesive compatibility
- ✓ Maximum floor surface temperature
- ✓ Need for primers, smoothing compounds or membranes
- ✓ Expansion gap requirements
- ✓ Suitability of the board for the chosen finish

Resilient floor finishes, timber, laminate, vinyl, carpet and tiles all have different requirements.

The floor finish installer must confirm that the overboard is suitable before installing the final covering.

## 29. COMMON INSTALLATION MISTAKES TO AVOID

Avoid the following:

- ✗ Working over exposed joists without a safe walkway
- ✗ Assuming joist centres without measuring
- ✗ Using 395mm plates where 590mm plates are required
- ✗ Using 590mm plates where 395mm plates are required
- ✗ Installing over unsuitable or overloaded joists
- ✗ Failing to check joist structural suitability
- ✗ Allowing insulation to sag below the plates
- ✗ Compressing insulation so it pushes plates upwards
- ✗ Installing aluminium plates below joist level
- ✗ Installing aluminium plates proud of joist level
- ✗ Allowing aluminium plates to sag
- ✗ Leaving plates loose or rattling
- ✗ Failing to support the plates correctly
- ✗ Installing pipe against sharp aluminium edges

- ✗ Kinking pipe at joist crossings
- ✗ Drilling or notching joists incorrectly
- ✗ Over-notching joists
- ✗ Notching deeper than the pipe thickness
- ✗ Notching more than 1/8 of the joist depth
- ✗ Positioning notches too close together
- ✗ Creating sharp notches that may damage pipe
- ✗ Notching engineered joists without manufacturer approval
- ✗ Ignoring UK Building Regulations guidance on joist notching
- ✗ Failing to protect pipe through joists
- ✗ Fixing overboard through pipework
- ✗ Using unsuitable overboard material
- ✗ Failing to glue boards where required
- ✗ Using incorrect fixings or adhesive
- ✗ Failing to pressure test before covering the system
- ✗ Not keeping the system under pressure during overboarding
- ✗ Installing floor finishes without checking UFH suitability
- ✗ Running the UFH system too hot too soon

The aluminium plate needs solid contact with the overboard. If it sags, the heat transfer drops. That is not a minor detail — that is the whole point of the system quietly slipping away.

### 30. TEKWARM DOUBLE ALUMINIUM PLATE INSTALLATION SEQUENCE

1. Review the Tekwarm UFH design.
2. Confirm manifold position.
3. Check joists are structurally suitable and correctly installed.
4. Provide safe walkway/access over exposed joists.
5. Measure joist centres on site.
6. Select 395mm plates for 400mm joist centres.
7. Select 590mm plates for 600mm joist centres.
8. Confirm insulation type and depth.
9. Install insulation between joists.
10. Ensure insulation is supported and does not cause plate movement.
11. Set out plate and pipe routes.
12. Install aluminium plates between joists.
13. Ensure plates are flush with joist tops.
14. Ensure plates are supported and not sagging.
15. Remove or protect sharp edges where required.
16. Notch joists only where required by the design.
17. Keep notch depth to the pipe thickness only and no more than 1/8 of the total joist depth.
18. Maintain at least 100mm between notches and follow UK Building Regulations / structural guidance.
19. Lay pipework from the manifold.
20. Press pipe securely into the aluminium plate channels.
21. Protect pipe at notches and joist crossings where required.
22. Return pipe loops to the manifold.
23. Cut, connect and label each loop.
24. Fill and flush each loop individually.
25. Vent all air from the system.
26. Hydraulically pressure test the system.

27. Record the test results.
28. Leave the system under suitable pressure.
29. Photograph pipe routes, notches and plate layout.
30. Mark safe fixing zones for overboarding.
31. Install suitable overboard in accordance with manufacturer's guidance.
32. Fix and glue boards as required using correct products.
33. Confirm pressure remains stable after overboarding.
34. Proceed with floor finish installation only once approved.

### 31. INSTALLER HANDOVER CHECKLIST

The installer should provide the following information at handover:

- ✓ UFH design drawing
- ✓ Manifold schedule
- ✓ Pipe layout photographs
- ✓ Plate layout photographs
- ✓ Joist notch photographs where applicable
- ✓ Loop identification records
- ✓ Pressure test certificate
- ✓ Joist centres confirmed
- ✓ Plate size used
- ✓ Insulation type installed
- ✓ Confirmation plates were flush and supported
- ✓ Confirmation notching was completed in line with design and UK Building Regulations guidance
- ✓ Confirmation overboard type installed
- ✓ Confirmation board fixing and gluing method used
- ✓ Commissioning guidance
- ✓ Any deviations from design
- ✓ Any areas requiring special attention

### 32. DISCLAIMER

This guide is provided as general installation guidance for Tekwarm Double Aluminium Plate UFH systems installed over suspended joists. It does not replace project-specific design, structural calculations, joist manufacturer instructions, overboard manufacturer instructions, floor finish guidance or statutory requirements.

All installations must be carried out by competent persons and in accordance with the Tekwarm design, relevant British Standards, Building Regulations, structural requirements, board manufacturer guidance and floor finish manufacturer requirements.

Where site conditions differ from the design or specification, works should stop and advice should be sought before proceeding.

Joist notching must be reviewed carefully and carried out only where structurally suitable. Where there is any doubt, advice should be sought from the project structural designer, joist manufacturer or local Building Control before works continue.

Tekwarm / TekGroup accepts no responsibility for failures caused by incorrect installation, unsuitable joists, inadequate structural design, incorrect plate selection, poor plate support, plate sagging, excessive or incorrect joist notching, insufficient insulation, incorrect overboarding, fixings damaging pipework, premature heating, incompatible floor finishes or failure to follow relevant manufacturer guidance.