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Tekwarm LP Lite / Ultra Low Underfloor Heating System Installation Guide for Cement Coated XPS Routed Board Applications Low- Profile Overlay UFH System



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Tekwarm

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INSTALLATION GUIDE FOR CEMENT COATED XPS ROUTED BOARD APPLICATIONS

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NO ADHESIVE PANEL SYSTEM

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1. INTRODUCTION

The Tekwarm LP Lite / Ultra Low Underfloor Heating System is a low-profile warm water UFH system designed for overlay floor applications where minimal floor build-up is required.

The system uses a cement-coated XPS board with routed channels designed to receive Tekwarm underfloor heating pipework. The cementitious surface provides a suitable face for compatible levelling compounds, screeds, tile adhesives and overboard systems, subject to correct preparation and manufacturer guidance.

The boards are available in thicknesses typically ranging from **12.5mm to 20mm**, with pipe sizes of **10mm, 12mm and 16mm** available depending on the board depth and system design.

This system is suitable for use over prepared substrates including cement-based substrates, timber-based substrates and suitable existing floor constructions, provided the substrate is structurally sound, clean, dry, stable and suitable for the intended fixing method and final floor build-up.

The system can be finished using a range of build-up options, including:

- Tekwarm 550 / 550 Plus screed or smoothing compound
- Flexible tile adhesive systems
- Decoupling mat systems for tiled floors
- Timber overlay boards
- Cement-based overlay boards
- Dry-fit floor deck systems
- Other suitable manufacturer-approved floor coverings

The system typically includes:

- Tekwarm LP Lite / Ultra Low cement-coated XPS routed boards
- Tekwarm UFH pipe — 10mm, 12mm or 16mm depending on board depth
- TekGrip or TekPrime where priming is required
- S1 flexible tile adhesive where bonding boards
- Tekwarm screws and washers where mechanically fixing boards

- Correct masonry or wood screws depending on substrate
- Tekwarm 550 / 550 Plus where using screed / smoothing compound
- Suitable decoupling mat where tiling
- Suitable overboard or dry-fit overlay system where required
- Manifold assembly
- Pipe conduit / protection sleeves where required
- Pressure testing equipment

This guide covers the key stages of installation, including substrate checks, priming, adhesive bonding, mechanical fixing, board installation, pipe installation, screeding / overlay options, manifold connection, pressure testing and final floor finish considerations.

This guide should be read alongside the Tekwarm UFH design, Tekwarm product guidance, adhesive manufacturer guidance, levelling compound / screed manufacturer guidance, board manufacturer guidance, floor finish manufacturer guidance 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.
- ✓ The board thickness has been confirmed.
- ✓ The correct pipe size has been supplied for the board depth.
- ✓ The substrate type has been identified.
- ✓ The fixing method has been confirmed.
- ✓ The boards are to be bonded, mechanically fixed, or fixed using a combined method where required.
- ✓ The correct primer has been selected.
- ✓ TekGrip or TekPrime has been allowed for where required.
- ✓ If bonding, a suitable S1 flexible tile adhesive has been specified.
- ✓ If mechanically fixing, Tekwarm screws and washers have been specified.
- ✓ The correct masonry or wood screws have been requested for the substrate.
- ✓ The final floor finish has been confirmed.
- ✓ The required screed / smoothing compound depth has been confirmed.
- ✓ Door thresholds and floor levels have been reviewed.
- ✓ The substrate is clean, dry, stable and suitable.
- ✓ Any movement joints, service penetrations and no-pipe zones have been reviewed.
- ✓ The area is weather-tight and suitable for installation.

Do not install the system over a weak, contaminated, damp, loose, uneven or moving substrate. Low-profile systems are brilliant when the base is right.

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 mechanically preparing substrates
- ✓ Cut-resistant gloves when handling cut boards or fixings

Where primers, adhesives, smoothing compounds or sprays are used, follow the relevant manufacturer's safety data sheets and application guidance.

Ensure adequate ventilation when using primers, adhesives or spray products.

Keep the work area clean and free from trip hazards. UFH pipework, routed boards, bags of compound, tools and offcuts can create trip risks during installation.

Avoid unnecessary traffic over installed boards and pipework before the system is covered.

4. TOOLS AND EQUIPMENT REQUIRED

Typical tools and equipment required include:

- Pipe decoiler
- Pipe cutter suitable for UFH pipe
- Tape measure
- Marker pen
- Straight edge
- Utility knife or suitable board cutting tool
- Notched trowel where bonding with adhesive
- Mixing bucket and paddle for adhesive or screed compound
- Roller or brush for primer
- Soft broom and vacuum
- Drill / driver where mechanically fixing
- Tekwarm screws and washers
- Correct masonry or wood screws
- Suitable S1 flexible tile adhesive where bonding
- TekGrip or TekPrime primer
- Levelling tools for Tekwarm 550 / 550 Plus
- Spanners / manifold connection tools
- Pressure test pump
- Hose connections
- Water supply for filling
- Temporary pipe protection sleeves / conduit
- Suitable tools for installing decoupling mat or overboard

The exact tools required will depend on the substrate, fixing method, board thickness, pipe size, screed / overlay system and final floor finish.

5. SUBSTRATE CHECKS AND PREPARATION

Before installing Tekwarm LP Lite / Ultra Low boards, the substrate must be inspected.

The substrate should be:

- ✓ Structurally sound
- ✓ Clean and free from debris
- ✓ Dry
- ✓ Stable
- ✓ Flat and level
- ✓ Free from sharp projections
- ✓ Free from oil, grease, dust, plaster residue, laitance, paint or contaminants
- ✓ Free from loose or friable material
- ✓ Capable of supporting the finished floor build-up
- ✓ Suitable for adhesive bonding or mechanical fixing
- ✓ Suitable for the intended floor loading and final floor finish

Remove all loose material, mortar droppings, plaster, timber offcuts, fixings, sharp objects and general site debris.

Sweep and vacuum the surface before installation.

Any cracks, movement, deflection, hollow areas, weak screed, loose boards or unstable substrates must be addressed before proceeding.

Do not install Tekwarm LP Lite / Ultra Low boards over a substrate that is moving, flexing excessively, contaminated or not capable of supporting the system.

The board must be fully supported. Voids, rocking or unsupported sections can affect heat transfer, board stability, floor finish performance and long-term durability.

6. SUBSTRATE SUITABILITY

The Tekwarm LP Lite / Ultra Low system may be installed over a range of substrates, subject to correct preparation.

Potential substrates may include:

- Concrete
- Sand/cement screed
- Cementitious levelling compound
- Calcium sulphate screed, subject to correct preparation and compatible primers
- Plywood
- Chipboard
- OSB
- Existing tiled floors, where suitable and correctly prepared
- Other suitable stable substrates

The substrate must be assessed before installation.

Cement-Based Substrates

Any cement-based substrate should be primed before board installation.

Where bonding the boards with an S1 flexible tile adhesive, use **TekGrip or TekPrime** as appropriate for the substrate and adhesive system.

The primer must be applied in accordance with Tekwarm / TekGroup guidance and the primer manufacturer's instructions.

Timber-Based Substrates

Timber substrates must be structurally sound, dry, clean, stable and free from excessive deflection.

Loose boards must be fixed. Damaged boards must be replaced. Joints should be secured, and the substrate must be suitable for the chosen fixing method.

Where mechanical fixing is used, ensure the correct **wood screws** are requested and used with Tekwarm washers.

Masonry / Cementitious Substrates

Where mechanical fixing into masonry, concrete or cementitious substrates is used, ensure the correct **masonry screws** are requested and used with Tekwarm washers.

Check for services before drilling.

7. FLOOR BUILD-UP AND LEVEL CHECKS

Before installation, confirm the full floor build-up.

Check:

- ✓ Existing substrate level
- ✓ Board thickness — typically 12.5mm to 20mm
- ✓ Pipe size — 10mm, 12mm or 16mm depending on board depth
- ✓ Screed / smoothing compound depth
- ✓ Decoupling mat thickness where tiling
- ✓ Dry-fit overlay board thickness where used
- ✓ Final floor finish thickness
- ✓ Adhesive layers
- ✓ Door thresholds
- ✓ Skirting details
- ✓ Stair risers
- ✓ Floor level transitions between rooms
- ✓ Appliance clearances
- ✓ Kitchen and fixed furniture details

Do not start installation until the finished floor level has been checked and agreed.

Low-profile systems are often selected to save height, so the finished build-up matters. Saving 5mm on paper and losing a doorway in real life is not a win.

8. BOARD THICKNESS AND PIPE SIZE SELECTION

Tekwarm LP Lite / Ultra Low boards are available in thicknesses typically ranging from **12.5mm to 20mm**.

Available pipe sizes include:

- 10mm pipe
- 12mm pipe
- 16mm pipe

The pipe size must be selected to suit the board depth and Tekwarm system design.

Do not substitute pipe diameter on site without approval. Changing pipe size can affect:

- Heat output
- Flow rates
- Loop lengths
- Pressure loss
- Pump requirements
- System balancing
- Manifold settings
- Response time
- Floor build-up compatibility

The pipe must sit correctly within the routed board channel. It should not sit proud, spring out or prevent the smoothing compound, screed or overboard from being installed correctly.

9. SETTING OUT THE INSTALLATION

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

Check:

- ✓ Room names and zones
- ✓ Manifold position
- ✓ Flow and return routes
- ✓ Pipe routes
- ✓ Loop lengths
- ✓ Pipe centres
- ✓ Board layout
- ✓ Board orientation
- ✓ No-pipe zones
- ✓ Door thresholds
- ✓ Service penetrations
- ✓ Movement joints
- ✓ Screed / overlay requirements
- ✓ Final floor finish requirements

The installer should mark out key room zones, manifold routes, no-pipe areas and any service zones before installation begins.

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.

Dry-lay initial boards where helpful to confirm orientation, cuts and pipe routes before final fixing or bonding.

10. 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 routed board area without kinks or tight bends.

Clearly identify flow and return bars before connecting pipework.

11. PRIMING THE SUBSTRATE

Priming is a key part of the installation process where bonding or applying cementitious products.

Any cement-based substrate should be primed before bonding the Tekwarm LP Lite / Ultra Low boards.

Where an S1 flexible tile adhesive is used to bond the boards, prime the substrate using:

TekGrip, or
TekPrime

The correct primer should be selected based on substrate condition, absorbency and adhesive requirements.

The primer helps:

- Improve adhesion
- Control substrate absorbency
- Bind residual surface dust
- Reduce the risk of adhesive debonding

- Prepare the surface for the selected bonding system

Primer should be applied:

- To a clean substrate
- To a dry substrate
- At the correct dilution where applicable
- At the correct coverage rate
- With suitable drying time before adhesive application
- In accordance with Tekwarm / TekGroup and primer manufacturer guidance

Do not apply adhesive over primer that is still wet unless the manufacturer specifically permits it.

Do not prime over loose dust, contamination or weak material and expect the primer to sort it.

12. BOARD INSTALLATION METHODS

Tekwarm LP Lite / Ultra Low boards may be installed by bonding, mechanical fixing, or a combined method depending on substrate and project requirements.

The fixing method must ensure the boards remain:

- Flat
- Stable
- Fully supported
- Securely restrained
- Free from rocking or movement
- Suitable to receive the pipework and chosen covering system

The fixing method must be agreed before installation begins.

13. BONDING BOARDS WITH S1 FLEXIBLE TILE ADHESIVE

Where bonding the boards, a suitable **S1 flexible tile adhesive** should be used.

This method is commonly used over suitable cementitious substrates, provided the substrate has been correctly prepared and primed.

Before bonding:

- Check substrate suitability.
- Prime cement-based substrates with TekGrip or TekPrime.
- Allow primer to dry as required.
- Confirm adhesive compatibility with cement-coated XPS boards.
- Confirm adhesive compatibility with the receiving substrate.
- Mix adhesive in accordance with manufacturer instructions.
- Use the correct trowel size and application method.

Apply the adhesive evenly to the prepared substrate.



The adhesive bed should provide full and consistent support beneath the board. Avoid voids beneath the boards.

Lay the boards into the adhesive while it remains workable. Press the boards firmly into place to achieve good contact.

Lift and check an initial board where required to confirm adequate adhesive transfer.

The boards should be installed tightly together with routed channels aligned correctly.

Do not allow adhesive to fill pipe channels or interfere with pipe installation.

Do not walk heavily on freshly bonded boards until the adhesive has cured sufficiently.

14. MECHANICAL FIXING WITH TEKWARM SCREWS AND WASHERS

Where mechanically fixing the boards, use **Tekwarm screws and washers**.

Ensure the correct screw type is requested and used:

- Masonry screws for concrete, screed or masonry-based substrates
- Wood screws for timber-based substrates

Mechanical fixings should:

- ✓ Hold the board securely
- ✓ Prevent movement
- ✓ Prevent board uplift
- ✓ Avoid crushing the board
- ✓ Be installed flush
- ✓ Be positioned away from pipe channels
- ✓ Avoid future pipe routes
- ✓ Be suitable for the substrate
- ✓ Be spaced sufficiently to prevent rocking or lifting

Before drilling or fixing, check for buried services.

Do not overtighten fixings. Overtightening can crush or distort the board and affect the finished floor build-up.

Fixing frequency should be sufficient to prevent movement and should be increased at perimeters, doorways, board edges, high-traffic zones and any areas where board movement is possible.

Where fixing into timber, ensure the timber substrate is sound and capable of holding fixings.

Where fixing into masonry or cementitious substrates, ensure the substrate has adequate strength and that fixings achieve proper hold.

15. BOARD JOINTS, EDGES AND CUT SECTIONS

Board joints should be tight and stable.

Pay particular attention to:

- Perimeters
- Doorways
- Manifold routes
- Small cut sections
- Pipe return areas
- Board transitions
- Service penetrations
- Movement joint locations

Cut boards should be neat, fully supported and restrained.

Small board infill pieces should not be left loose. They should be mechanically fixed, bonded or otherwise restrained as required.

Avoid gaps where smoothing compound, adhesive or floor finish systems may crack, deflect or become unsupported.

Where board joints are uneven, rocking or misaligned, correct them before installing pipework.

16. INSTALLING PIPEWORK INTO THE ROUTED BOARDS

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 installed:

- Into the correct routed channels
- In the correct room or zone
- Without kinks
- Without twisting
- With smooth bends
- Without excessive tension
- Without sitting proud of the board
- Without damaging the cement-coated surface
- With flow and return routes kept neat at the manifold

The pipe should sit neatly within the routed channel and should not spring out.

Where the pipe does not sit correctly, check the board depth, pipe size, routing and bend radius.

Do not force pipe into tight bends. If a pipe kinks, the affected section should be replaced or technical advice sought.

17. PIPE BENDS, RETURNS AND MANIFOLD ROUTES

Special care is required where pipe changes direction, returns to the manifold or enters / leaves the routed board area.

Pipe bends should:

- Be smooth
- Avoid kinks
- Respect the minimum bend radius
- Avoid excessive stress
- Remain seated within the routed channel
- Avoid lifting or damaging the board
- Be protected where required

At manifold routes, pipework can become congested. Ensure the pipework is neatly arranged and protected where required.

Where pipe exits routed channels, use suitable bends, protection sleeves or transition detailing where needed.

Do not allow pipework to sit proud where it may interfere with the screed, smoothing compound, overboard or floor finish system.

18. MAINTAINING PIPE SPACING AND SYSTEM LAYOUT

The Tekwarm LP Lite / Ultra Low routed board system is designed to maintain pipe spacing through pre-formed channels.

Do not alter pipe routes or centres without approval.

Changing pipe spacing or routes can affect:

- Heat output
- Floor surface temperature
- System balancing
- Comfort levels
- Flow rates
- Loop pressure loss
- Boiler or heat pump efficiency
- Floor covering performance
- System response time

The pipe should be checked as installation progresses to ensure it follows the correct routed path and layout.

Pay particular attention to:

- Perimeters
- Doorways
- Manifold routes
- Areas with obstacles
- Rooms with irregular shapes
- Board joints
- Cut board sections
- Loop returns

Where pipe routing needs to change due to site conditions, seek approval before proceeding.

19. PIPE SPACING AND NO-PIPE ZONES

Pipe spacing and no-pipe zones must follow the Tekwarm design.

Pipe should not normally be installed within areas where fixings may later penetrate the floor, unless clearly identified and protected.

No-pipe zones may include:

- Kitchen islands
- Fixed cupboards
- Shower trays
- Baths
- Toilets
- Stair bases
- Floor-mounted partitions
- Service penetrations
- Areas requiring future floor fixings

Mark or photograph pipe positions before covering the system. This is especially important around kitchens, islands, thresholds, stair bases, partitions and service zones.

A photographic record should be retained with the project handover information.

20. COVERING OPTIONS OVER TEKWARM LP LITE / ULTRA LOW

The Tekwarm LP Lite / Ultra Low system may be covered using different build-ups depending on the final floor finish and project requirements.

Common covering options include:

- Tekwarm 550 / 550 Plus screed or smoothing compound
- Flexible tile adhesive and decoupling mat for tiled finishes
- Timber overlay board
- Chipboard overlay panel

- Plywood overlay panel
- OSB overlay panel
- Cement-based board
- Dry-fit overlay floor systems

The selected covering system must be suitable for:

- The board type
- The pipe size
- The floor finish
- The intended loading
- The substrate
- The required floor height
- UFH use

The chosen build-up must be confirmed before installation begins.

21. SCREED / SMOOTHING COMPOUND COVER

Where a screed or smoothing compound system is used, the recommended product is:

Tekwarm 550

Tekwarm 550 Plus

The compound should be installed in accordance with Tekwarm / TekGroup guidance and the product data sheet.

Recommended minimum cover guidance:

- Minimum cover: **6mm**
- Nominal practical cover: **8–10mm**
- For LVT or carpet finishes: **10mm recommended**
- For tile or timber finishes: **6–8mm or thicker**, depending on system and floor finish requirements

The compound must fully cover and encapsulate the pipework.

The surface should be smooth, level and suitable for the intended floor finish.

Where thin floor finishes such as LVT are used, a smoother and more robust cover is generally required. For LVT and carpet, **10mm should be used as the preferred cover** to provide improved stability and surface regularity.

Where timber or tile finishes are used, **6–8mm or thicker** may be suitable, subject to the selected finish, adhesive, decoupling system and manufacturer requirements.

Do not feather compound too thinly over pipe locations. The pipe should be properly covered.

22. TILED FLOOR FINISHES

For tiled floor systems, a suitable tile build-up must be used.

Tekwarm always advocate the use of a **decoupling mat** for tile systems over low-profile UFH boards.

A decoupling mat helps:

- Manage differential movement
- Reduce stress transfer
- Support tile system durability
- Reduce risk of cracking
- Improve tolerance of thermal movement
- Provide a more robust tile installation

The tile adhesive should be suitable for UFH use and compatible with the decoupling mat, tile type, substrate and board system.

An S1 flexible tile adhesive would normally be considered as part of the tile system, subject to the tile adhesive manufacturer's instructions.

The tile system should be installed in accordance with:

- Tile adhesive manufacturer guidance
- Decoupling mat manufacturer guidance
- Tile manufacturer guidance
- BS 5385 where applicable
- Project specification

Large-format tiles, natural stone and sensitive tile finishes may require additional specification checks.

23. LVT, VINYL AND CARPET FLOOR FINISHES

Where LVT, vinyl or carpet is to be installed, the system should be covered with a suitable smoothing compound / screed system.

For LVT or carpet finishes, a **10mm cover** should be used as the preferred minimum over the Tekwarm LP Lite / Ultra Low system.

This helps provide:

- Improved surface regularity
- Better load distribution
- Better pipe coverage
- Reduced risk of localised surface variation
- A more suitable surface for adhesive-applied finishes
- Improved performance under softer floor finishes

The final surface must meet the floor finish manufacturer's requirements.

LVT and vinyl finishes are unforgiving. If the surface is poor, they will show it like a spreadsheet with all the errors highlighted.

24. TIMBER FLOOR FINISHES

Where timber flooring is used, the covering method must be suitable for both the UFH system and the timber floor manufacturer's requirements.

Options may include:

- Tekwarm 550 / 550 Plus cover
- Suitable dry overlay panel
- Plywood overlay
- Chipboard overlay
- Other approved timber floor build-up

For timber finishes, **6–8mm or thicker** compound cover may be suitable where using a screed / smoothing compound system, subject to manufacturer guidance and the floor finish requirements.

Timber flooring must be suitable for UFH. The timber manufacturer's limits on moisture content, adhesive, underlay, floor temperature and commissioning must be followed.

Maximum floor surface temperatures must be controlled.

25. DRY-FIT OVERLAY SYSTEMS

Where a dry-fit system is used, there are multiple options depending on the final floor finish and project requirements.

Dry-fit options may include:

- Timber overlay panel
- Plywood overlay
- Chipboard overlay
- OSB overlay
- Cement-based board
- Proprietary dry floor board system
- Tile backer board system where suitable

As a general guide:

A minimum **9mm timber / overlay panel** should be considered for light overlay applications, subject to board manufacturer guidance and project loading.

For more robust applications, **18–20mm overlay boards** may be required.

Where cement-based boards are used, the board manufacturer's installation details must be followed.

The dry-fit board must be:

- Suitable for the intended loading

- Suitable for UFH
- Suitable for the final floor finish
- Installed to manufacturer guidance
- Fixed and / or bonded as required
- Stable and free from movement
- Compatible with the Tekwarm LP Lite / Ultra Low system

Fixings must not damage the UFH pipework.

Pipe routes should be photographed and safe fixing zones clearly marked before overlay boards are installed.

26. CEMENT-BASED OVERLAY BOARDS

Where cement-based boards are used over the Tekwarm LP Lite / Ultra Low system, the board manufacturer's installation guidance must be followed.

This includes guidance on:

- Board thickness
- Board orientation
- Primer requirements
- Adhesive requirements
- Mechanical fixing requirements
- Joint treatment
- Movement joints
- Expansion gaps
- Tile compatibility
- Floor finish compatibility
- UFH suitability

Cement-based boards should not be installed in a way that damages or compresses the UFH pipe.

The installer must confirm the board is suitable for the intended floor finish and loading.

27. 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.

28. 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.

29. PRESSURE TESTING BEFORE COVERING

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 applying screed, smoothing compound, adhesive, decoupling mat or overlay boards, and kept under suitable pressure during covering works 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 cover 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 screeding, smoothing, overlay board installation 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.

30. 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.

31. PRE-COVERING INSPECTION CHECKLIST

Before screed, smoothing compound, decoupling mat or overlay boards are installed, check:

- ✓ Substrate clean, dry, level and suitable
- ✓ Cement-based substrates primed where required
- ✓ TekGrip or TekPrime used where required
- ✓ Correct S1 flexible tile adhesive used where bonding

- ✓ Correct Tekwarm screws and washers used where mechanically fixing
- ✓ Correct masonry or wood screws used for the substrate
- ✓ Boards fully supported
- ✓ Boards bonded or fixed securely
- ✓ No loose, rocking or lifted boards
- ✓ Board joints tight and stable
- ✓ No adhesive obstructing pipe channels
- ✓ Pipework installed to design
- ✓ Pipe fully seated in routed channels
- ✓ Pipe bends smooth and not kinked
- ✓ No pipework sitting proud
- ✓ Loops connected to manifold
- ✓ Loops labelled correctly
- ✓ System filled and vented
- ✓ Pressure test completed and recorded
- ✓ System left under pressure for covering
- ✓ Pipe routes photographed
- ✓ Safe fixing zones marked where overlay boards are used
- ✓ Correct covering system confirmed for final floor finish

32. PRE-FLOOR FINISH CHECKLIST

Before installing final floor finishes, check:

- ✓ Covering system suitable for UFH
- ✓ Tekwarm 550 / 550 Plus cured where used
- ✓ Correct cover depth achieved
- ✓ 10mm cover used for LVT / carpet where required
- ✓ Tile systems include decoupling mat where specified
- ✓ Overlay boards installed to manufacturer guidance
- ✓ Cement-based boards installed to manufacturer guidance
- ✓ 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.

33. 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
- Screed / smoothing compound manufacturer's guidance
- Floor finish manufacturer's guidance
- Overlay board 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.

34. FLOOR FINISH CONSIDERATIONS

Before installing floor finishes, check:

- ✓ Surface condition
- ✓ 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 covering system 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 covering system is suitable before installing the final floor finish.

35. COMMON INSTALLATION MISTAKES TO AVOID

Avoid the following:

- ✗ Installing over an uneven or contaminated substrate
- ✗ Failing to clean the substrate before installation
- ✗ Failing to prime cement-based substrates where required
- ✗ Using the wrong primer
- ✗ Using unsuitable adhesive
- ✗ Using non-flexible adhesive where S1 flexible adhesive is required
- ✗ Failing to use Tekwarm screws and washers where mechanically fixing
- ✗ Using masonry screws where wood screws are required
- ✗ Using wood screws where masonry screws are required

- ✗ Overtightening fixings and crushing the board
- ✗ Leaving boards loose, rocking or unsupported
- ✗ Failing to align routed channels correctly
- ✗ Leaving gaps between boards
- ✗ Allowing adhesive into pipe channels
- ✗ Using the wrong pipe size for the board depth
- ✗ Allowing pipe to sit proud
- ✗ Kinking pipe at bends or returns
- ✗ Changing pipe routes without approval
- ✗ Installing pipe below fixed furniture without design approval
- ✗ Failing to photograph pipe routes before covering
- ✗ Fixing overlay boards through pipework
- ✗ Using unsuitable overlay board material
- ✗ Failing to follow cement-board manufacturer guidance
- ✗ Installing too little cover over the pipework
- ✗ Using less than 10mm cover for LVT or carpet where required
- ✗ Omitting decoupling mat beneath tiled finishes
- ✗ Failing to pressure test before covering the system
- ✗ Not keeping the system under pressure during covering works
- ✗ Installing floor finishes without checking UFH suitability
- ✗ Running the UFH system too hot too soon

Low-profile UFH is all about precision. Get the base, bond, board, pipe and cover right, and it performs. Get them wrong, and the floor becomes a complaint with a postcode.

36. TEKWARM LP LITE / ULTRA LOW INSTALLATION SEQUENCE

1. Review the Tekwarm UFH design.
2. Confirm manifold position.
3. Confirm board thickness and pipe size.
4. Check total floor build-up.
5. Check substrate is clean, dry, level, stable and suitable.
6. Prime cement-based substrates with TekGrip or TekPrime where required.
7. Dry-lay initial boards where required to confirm layout.
8. Confirm board channels align with the Tekwarm design.
9. Bond boards using suitable S1 flexible tile adhesive, or mechanically fix using Tekwarm screws and washers.
10. Use correct masonry screws or wood screws depending on substrate.
11. Ensure boards are flat, stable and fully supported.
12. Secure small cut sections and perimeter pieces.
13. Keep adhesive and fixings clear of pipe channels.
14. Lay pipework from the manifold.
15. Press pipe securely into routed channels.
16. Check pipe is fully seated and not kinked.
17. Protect pipe at transitions where required.
18. Return pipe loops to the manifold.
19. Cut, connect and label each loop.
20. Fill and flush each loop individually.
21. Vent all air from the system.

22. Hydraulically pressure test the system.
23. Record the test results.
24. Leave the system under suitable pressure.
25. Photograph pipe routes and board layout.
26. Select the correct covering build-up for the final floor finish.
27. Apply Tekwarm 550 / 550 Plus at suitable cover depth where screeding / smoothing.
28. Use 10mm cover where LVT or carpet is specified.
29. Use 6–8mm or thicker cover for tile / timber systems where appropriate.
30. Include decoupling mat for tiled systems.
31. For dry-fit systems, install suitable overlay board in accordance with manufacturer guidance.
32. For cement-based boards, follow the board manufacturer's installation details.
33. Confirm pressure remains stable after covering.
34. Proceed with floor finish installation only once approved.

37. INSTALLER HANDOVER CHECKLIST

The installer should provide the following information at handover:

- ✓ UFH design drawing
- ✓ Manifold schedule
- ✓ Pipe layout photographs
- ✓ Board layout photographs
- ✓ Loop identification records
- ✓ Pressure test certificate
- ✓ Board thickness installed
- ✓ Pipe size installed
- ✓ Fixing method used
- ✓ Primer used
- ✓ Adhesive used where bonded
- ✓ Confirmation whether Tekwarm screws and washers were used
- ✓ Confirmation whether masonry or wood screws were used
- ✓ Confirmation boards were flat and fully supported
- ✓ Covering method used
- ✓ Tekwarm 550 / 550 Plus depth where used
- ✓ Confirmation of 10mm cover for LVT / carpet where applicable
- ✓ Confirmation of decoupling mat for tiled finishes where applicable
- ✓ Overlay board type where dry-fit system used
- ✓ Confirmation cement-based board manufacturer guidance was followed where applicable
- ✓ Commissioning guidance
- ✓ Any deviations from design
- ✓ Any areas requiring special attention

38. DISCLAIMER

This guide is provided as general installation guidance for Tekwarm LP Lite / Ultra Low cement-coated XPS routed board UFH systems. It does not replace project-specific design, structural calculations, board manufacturer instructions, adhesive manufacturer instructions, screed / smoothing compound 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, adhesive manufacturer guidance, 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.

Only use primers, adhesives, fixings, washers, smoothing compounds, decoupling mats and overlay systems that are suitable for the substrate, board system and final floor build-up.

Tekwarm / TekGroup accepts no responsibility for failures caused by incorrect installation, unsuitable substrates, poor board restraint, incompatible primers or adhesives, incorrect mechanical fixing, unsupported boards, incorrect pipe size, insufficient cover, omitted decoupling systems, incorrect overlay board installation, fixings damaging pipework, premature heating, incompatible floor finishes or failure to follow relevant manufacturer guidance.