

Ribbon Underfloor Heating Fitting Guide

How to plan, lay and commission an EkoBuild Ribbon floor, and how to look after it once it is down.

READ THIS FIRST

Two things decide whether your floor heats the room properly, and both are settled before anything is switched on: **how much of the floor you cover**, and **whether the heat can escape upward**.

Get those right and the rest of this guide is detail.

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The final 240V connection must be made by a Part P qualified electrician and certified to BS 7671. This guide does not replace that.

Before you start

Plan the finished room, not the empty one.

The Ribbon is designed around how the room will actually be used, so work out these before you order anything:

- The final floor covering, and its maximum floor temperature.
- Where the sofas, bed, wardrobes and cabinets will sit, and how much clearance is under them.
- Kitchen units, fitted cupboards and anything else that sits solid on the floor.
- Bay windows and any awkward shapes.
- Where the thermostat will go.
- Doors, thresholds and stairs, so the finished floor height still works.

Check the subfloor

The floor underneath has to be sound, clean, dry, stable and reasonably level. Fix loose boards, cracks, movement and any damp problem **before** the heating goes down. Once the Ribbon is covered, the subfloor is no longer accessible.

Check the height you have to play with

Measure from the existing subfloor up, and check it against your doors, thresholds and any adjoining room. Typical finished build-ups:

Floor finish	Approximate total build-up
Laminate or carpet	about 15mm with a 9mm laminate
Engineered wood	about 21mm with a 15mm engineered board
Tile or stone	30 to 35mm to the top of the tile

Always check the actual figures for the products you have bought.

Insulation goes down first

Without it you are heating the ground.

Insulation sits **underneath** the Ribbon. Its job is to stop heat travelling downward into the structure and push it up into the room instead.

EkoBuild supplies **6mm Therm-All**, which is acoustic insulation, thermal insulation and a 1000-gauge damp proof membrane in one layer. That is what keeps the total floor build-up so low.

Tape or seal the joints as the insulation product requires, so the finished installation stays stable.

The order is always the same: existing floor → insulation → the Ribbon → your floor covering. What changes between jobs is what sits between the Ribbon and the floor covering, and that depends entirely on the finish you have chosen. Section 5 covers each one.

Planning the layout

This is the part that decides whether the floor heats the room.

Cover 70% of the usable floor, aim for 80%

For the Ribbon to be the room's **primary heat source**, cover **at least 70%** of the usable floor area. **80% or more** is better.

Below 70% it becomes a supplementary heat source rather than the main one. If the room cannot physically take 70%, an infrared panel makes up the gap. Ask us and we will size it.

Measure coverage against the floor you can **actually use**, not the total room size. Fitted kitchen units sitting solid on the floor are not usable floor.

More coverage costs less to run, not more. A well covered, well insulated room reaches temperature in about three minutes and the thermostat then switches off. A half covered floor with no insulation runs almost constantly trying to catch up.

Never cut the Ribbon

The heating element must never be cut, shortened or overlapped. You design the layout around the sizes supplied, you do not trim them to fit.

Sections can sit side by side

Lengths of Ribbon can be laid right up against each other, and right up to the wall. There is no spacing gap and no perimeter margin to leave. The one rule is that the **heating elements inside must not touch**, which the construction handles as long as you lay them flat and do not overlap.

Bay windows and awkward shapes

Step into and back out of a bay in half metre increments using the sizes you have. That is how you follow the shape of a room without cutting anything.

Go under the furniture

This is where most layouts lose coverage for no reason. The Ribbon does not have to stop at the edge of the furniture.

It can run underneath sofas, chairs, tables, beds and suitable cabinets wherever there is **about 50mm of clearance** for warm air to escape. In a bedroom, run it under the bed. Stopping at the bed frame is the most common reason a bedroom ends up under 70%.

It can also run into **kitchen plinths**, so you do not get warm heels and cold toes at the counter.

It can run under a **freestanding bath or shower, or a kitchen unit**, as long as there is an air gap for the heat to escape. It does **not** go under a unit that sits solid on the floor with no air gap.

The test is not "is something on top of it". The test is "can the heat still get out". If warm air can escape, the Ribbon can go underneath. If it is sealed in, it cannot.

What must never go on top

Trapped heat is the one thing that will damage this system.

Never lay additional insulation over the Ribbon. No Kingspan, no foam boards, no beanbags, no mattress on the floor. The heat has to escape upward. Trap it and the element simply keeps climbing in temperature.

On one job in Bristol, 200mm of Kingspan was laid over a finished hall installation. The element reached 90°C and melted through it.

Also avoid

- **Thick or high tog rugs.** If you want a rug, use one rated for underfloor heating and keep the tog low.
- **Rubber mats** in play areas, exercise areas and utility rooms. Not impossible, but do not permanently cover a large heated area with one.
- **Beanbags and large foam furniture.** Beanbags are not recommended over heated areas at all.
- **Fold out sofa beds.** Worth thinking about at design stage, because the mattress covers a large area the moment it is opened.
- **Furniture with a solid base** sitting flat on the floor with no air gap.

Never fix through the floor

Do not drill, screw or nail into a heated floor unless you know exactly where the elements are. Keep the layout drawing and the installation photographs. Years later they are the only thing standing between a future tradesman and a very expensive mistake.

Your floor covering

What sits between the Ribbon and the finish changes with the floor.

Carpet

Measure gripper rod to gripper rod, not wall to wall. Build-up is insulation, Ribbon, then the carpet system.

The critical number is tog. Use a **combined carpet and underlay tog of 2.8, no higher**, with a **0.8 tog rubber underlay rated for underfloor heating**.

It is the weave of the carpet that sets the tog, not the thickness. A thick carpet is not automatically a high tog carpet. Ask the supplier for the tog certificate before you buy.

Carpet comes up to temperature in about five minutes.

Laminate

Laid as a floating floor over the Ribbon. Level the subfloor properly first. **Glue the joints with a D3 or PVA waterproof adhesive**, particularly in busy areas such as kitchens. If underlay is used it must be suitable for underfloor heating and must not add unnecessary thermal resistance.

Laminate and wood take 15 to 20 minutes to come up to temperature.

Engineered wood

Confirm the board is approved for underfloor heating and follow the manufacturer's expansion requirements. About 21mm total build-up with a 15mm board.

Solid wood

Solid wood is fine over the Ribbon using one of **three approved methods**: battens at 500mm centres, latex levelling, or an overboard.

Note for installers: the printed manual is more cautious than this. Russell's guidance here is the current position.

LVT

LVT is about 5mm and rigid, so it goes over a dry overlay board, or floats straight over the Ribbon.

Sheet vinyl

Sheet vinyl is about 2mm and flexible, so it normally goes into a **levelling compound** over the Ribbon. In a domestic room it can go on a dry overlay board instead. How much traffic the floor takes decides which.

Vinyl and LVT are not the same job. Judge it on rigidity, never on thickness alone.

Tile and stone

A 10mm tile backer board on a levelled subfloor, then the Ribbon, then tile straight onto it. Total build-up 30 to 35mm to the top of the tile. Use a flexible adhesive and grout approved for heated floors, and follow the movement joint and curing requirements.

Tile and stone take around 20 minutes to come up to temperature, and hold the heat well afterwards.

Bamboo and cork

Both vary a lot between products. Cork in particular is naturally insulating, so the thermal resistance of the whole build-up matters. Confirm the exact product is approved for underfloor heating before you buy it.

Grounding kit

Best practice in wet areas. Not a requirement.

The grounding kit comes in 0.5m by 5m rolls and is stocked.

It is **best practice in wet areas and anywhere there is a lot of metal**, such as bathrooms, wet rooms, kitchens and utility rooms, around sinks and appliances.

It is **not required**, because the Ribbon is already double insulated.

A grounding kit is never a substitute for proper electrical work. It does not replace earthing, bonding where required, RCD or RCBO protection, isolation, inspection or testing by a qualified electrician.

Thermostats and controls

One per room, and two in some rooms.

Where the thermostat goes

Mount it **1.2 to 1.5m above the subfloor, in the room it controls**, where it reads a fair average of the room. Keep it away from direct sunlight, draughts, external doors, radiators, ovens, hobs and fridges, and do not let furniture block the air around it.

The floor sensor

The floor sensor sits **between two runs of Ribbon, never on top of one**. Run it in conduit so it can be replaced later without lifting the floor.

Use two thermostats where the room needs them

Kitchen-diners, and rooms facing east or west, want two thermostats. One cannot allow for solar gain. The sunny side reads warm and switches the whole room off while the far side is still cold. Two keeps the room even and costs less to run.

What the thermostat is set to do

The Ribbon runs at **27 to 28°C**, averaging about 27°C, which gives a floor surface of **24 to 25°C**. No floor surface should exceed 27 to 28°C.

Programme it around when the room is actually used, rather than leaving it running all day. The core warms in about three minutes, so it does not need a long head start.

Electrical work and testing

This part is not optional and it is not a DIY job.

The final 240V connection must be made by a Part P qualified electrician and certified to BS 7671.

Before you start

The electrician should establish the total heating load, the number of zones, circuit requirements, thermostat loading, protective devices, cable sizes and where the connections will sit. Where the load is more than the thermostat can switch, a suitable switching arrangement is needed.

Test before you cover, and record it

Test the system **before** anything goes over it, and write the results down. Number every section, identify the junction box cable, and record resistance before, during and after installation.

Photograph the whole floor before it is covered. It takes two minutes and it is the single most useful thing you can leave behind.

Protect it while the floor goes down

Once the Ribbon is laid, keep tools, screws, nails, sharp objects, unsuitable adhesives and other trades off it. No fixing should ever penetrate the heating.

If a protective device trips

Switch off, isolate, and have a qualified electrician investigate. **Never repeatedly reset a tripping device**, and never bypass or uprate protection to keep an installation running. On a large tiled or stone floor, moisture from adhesive and grout can affect readings while it dries, which is a reason to test properly, not a reason to defeat the protection.

Commissioning

Let it cure, then bring it up slowly.

Leave the heating **switched off** for the full period required by your flooring, adhesive, levelling compound or grout. The material manufacturer's curing time takes priority over everything else.

Once cured, bring the heating on **gradually**. Do not put a newly finished floor straight to maximum. This matters most with timber and anything else that reacts to changes in temperature and moisture.

Then set it up

- Room temperature.
- Heating schedule.
- Floor temperature limit where one applies.
- Sensor configuration.
- Each zone tested on its own.

Hand it over properly

The customer should be shown how to change the temperature, how to set the times, how the zones work, what the floor temperature limit is for their covering, what must not be put on the floor, and where the heating elements are.

Leave them the layout drawing, the photographs, the electrical test results, the thermostat details and the product information.

Living with your floor

For the customer, once it is all in.

Give it a moment

Underfloor heating is not a radiator. The floor itself is the heat source, so set the temperature you want and let it get there. Constantly adjusting the thermostat while you wait works against it.

Keep the heat free to escape

Do not add thick rugs, foam backed coverings, rubber mats or beanbags over the heated area, and do not stand solid based furniture on it. Everything between the Ribbon and the room affects how the heat gets through: underlay, flooring, adhesive, rugs and furniture all count.

Before anyone drills your floor

Do not drill, screw or nail into the floor without checking where the heating is. Keep the layout drawing and photographs somewhere safe, and show them to any tradesman working on the floor in future.

If the heating does not come on

1. Is the thermostat powered, and is it calling for heat?
2. Is the schedule active, and is the right zone selected?
3. Is there an error message on the display?
4. Has a protective device in the consumer unit operated?
5. Has anyone worked on the floor recently?

A thermostat or sensor fault can easily look like an element fault, so check those first. If a protective device keeps tripping, switch the heating off and call a qualified electrician. Do not keep resetting it, and never try to repair the electrical side yourself.

If only part of the room feels warm

Before assuming a fault, check what is sitting on the floor. Furniture, thick rugs and cabinets restricting heat transfer are a far more common cause than a failed element.

Installer checklist

Tick it off on site.

Before installation

- ☐ Room measurements confirmed
- ☐ Heat requirement assessed
- ☐ Floor covering confirmed
- ☐ Subfloor inspected and prepared
- ☐ Finished floor height checked against doors and thresholds
- ☐ Insulation requirement established
- ☐ Heated areas marked out
- ☐ Fixed furniture identified
- ☐ Coverage confirmed at 70% or more of usable floor
- ☐ Thermostat positions agreed

During installation

- ☐ Insulation laid, joints sealed
- ☐ Ribbon laid to the drawing
- ☐ Nothing cut, shortened or overlapped
- ☐ Elements not touching
- ☐ Floor sensor between runs, in conduit
- ☐ Ribbon kept clear of solid based units
- ☐ Ribbon protected from damage

Electrical

- ☐ Load and circuit requirements checked

- ☐ Thermostat rating checked
- ☐ Protective devices confirmed
- ☐ Tests completed and results recorded
- ☐ Part P electrician, certified to BS 7671

Flooring

- ☐ Correct adhesive or system selected
- ☐ Flooring manufacturer's requirements followed
- ☐ Maximum floor temperature identified
- ☐ Carpet: combined tog 2.8 or lower, certificate seen
- ☐ Ribbon protected while flooring goes down

Commissioning

- ☐ Flooring and adhesives fully cured
- ☐ Thermostat programmed
- ☐ Each zone tested
- ☐ Heating brought up gradually
- ☐ Customer shown the controls

Documentation

- ☐ Layout drawing provided
- ☐ Photographs taken before covering
- ☐ Test results recorded
- ☐ Thermostat and sensor details provided
- ☐ Guide handed to the customer

Your warranty

15 years on the Ribbon, provided the installation follows the guidance in this manual.

It covers the Ribbon itself, not your floor covering. The thermostat carries 12 months.

EkoBuild is the UK importer, so a claim does not go through a third party. Russell can attend site and sign a claim off himself.

Getting it wrong is almost always one of three things

1. **Not enough coverage.** Under 70% of the usable floor and it was never going to heat the room on its own.
2. **Heat with nowhere to go.** Insulation, foam, a mattress or solid based furniture on top of a heated floor.
3. **No insulation underneath.** Heat going down into the structure instead of up into the room.

Not sure about your room? Send us the dimensions and what is going in it. We would far rather answer a question before the floor goes down than after.

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EKO Heating and Flooring Ltd, Unit 6, Field Farm, Oakenholt, Flint, Flintshire, CH6 5SU. Company number 11151327. This guide covers the EkoBuild Ribbon system. Always follow your floor covering manufacturer's own instructions for their product, and the current wiring regulations for the electrical installation.