TIMÔLEON TECHNICAL INDEX TX 100

Underfloor Heating with Acoustic Constructions

Detailed technical information on the use of underfloor heating & surface cooling within acoustic constructions in accordance with the Robust Standard Details.
ACOUSTIC CONSTRUCTIONS

Acoustic constructions are commonly found in residential buildings with floors, walls and ceilings that separate living spaces. These constructions are required to provide resistance to the passage of sound and allowing occupants to enjoy quiet living conditions without being disturbed by those living in adjacent properties. Such buildings can benefit enormously from underfloor heating & surface cooling, not only to enhance the living environment but also to improve energy efficiency. Acoustic constructions are by no way limited to residential structures, buildings such as commercial offices will also require floors utilising sound resistant constructions.

Timléon underfloor heating & surface cooling systems are ideally suited to being incorporated in acoustic constructions, both in residential and commercial environments. Part E of the Building Regulations shows how such constructions must provide resistance to the passage of sound. The performance standards for the constructions are set out in Part E with compliance being granted by passing a pre-completion test (PCT) for each individual construction. However PCT’s can be avoided if a Robust Standard Detail (RSD) is adopted. Specific RSD’s have been established for each construction and underfloor heating can be incorporated into an RSD construction provided:

That no fixings or staples penetrate or break the separating resilient layer used in a construction

In a floating floor treatment the underfloor heating does not connect the structural floor with any of the floating floor elements thereby bridging the resilient layer.

There are a variety of RSD constructions and it is important to understand how effective the underfloor heating system will be when used with these constructions. In this guide to underfloor heating and acoustic constructions we show how underfloor heating can be simply incorporated into RSD constructions.

Call the project team on
01392 36 36 05
TECHNICAL INDEX TX 100 - ACOUSTIC CONSTRUCTIONS

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For more detailed information on the products shown in this guide please refer to the technical publications, guides and indexes. Each publication can also be downloaded directly from our website e.g. www.timoleon.ltd.uk/tx100

| TX | TECHNICAL INDEX |
|    |                  |
| Ti | TECHNICAL INFORMATION |
| TN | GUIDES & BROCHURES |
| CS | CASE STUDY |

Please refer to “Robust Details Part E - Resistance to the passage of sound” for specifications and further information. Available from Robust Details Ltd, Davy Avenue, Knowhill, Milton Keynes, MK5 8ND.
Underfloor heating for Robust Standard Detail E-FC-1

AB PLATES

- FFT1 - Minimum 70mm batten system with pre-bonded resilient layer

SCREED

- 40mm Sand & Cement

STRUCTURAL FLOOR

- 150mm Precast Concrete Floor Plank

CEILING

AB SYSTEM

- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance

E-FC-1 Uses our AB Plate System

TI 1012 AB PLATE DATASHEET

TI 4101 E-FC-1 DATASHEET
Underfloor heating for Robust Standard Detail E-FC-2

FLOOR COVERING

Shown T&G Wooden Floor Finish
18mm thick

AB PLATES

FFT1 - Minimum 70mm batten system with pre-bonded resilient layer

STRUCTURAL FLOOR

Structural Floor - 250mm in-situ Concrete floor slab or 200mm in-situ Concrete floor slab with 40mm (min) Screed directly applied to the slab

AB SYSTEM

E-FC-2 Uses our AB Plate System

- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance
Underfloor heating for Robust Standard Detail E-FC-4

<table>
<thead>
<tr>
<th>FLOOR COVERING</th>
<th>Shown with Tile Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCREED</td>
<td>65mm Sand &amp; Cement</td>
</tr>
<tr>
<td>CLIPPLATE</td>
<td></td>
</tr>
<tr>
<td>RESILIENT LAYER</td>
<td>6mm IsoRubber</td>
</tr>
<tr>
<td>STRUCTURAL FLOOR</td>
<td>150mm Precast Concrete Floor Plank</td>
</tr>
<tr>
<td>CEILING</td>
<td></td>
</tr>
</tbody>
</table>

**CLIPPLATE SYSTEM**

- E-FC-4 Uses our ClipPlate System
- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation
Underfloor heating for Robust Standard Detail E-FC-5

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

CLIPPLATE SYSTEM

E-FC-5 Uses our ClipPlate System

- FLOOR COVERING
  - Shown with Tile Finish

- SCREED
  - 65mm Sand & Cement

- CLIPPLATE

- RESILIENT LAYER
  - YELOfon HD10+

- STRUCTURAL FLOOR
  - 150mm Precast Concrete Floor Plank

- CEILING
Underfloor heating for Robust Standard Detail E-FC-6

<table>
<thead>
<tr>
<th>FLOOR COVERING</th>
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<tbody>
<tr>
<td>Shown with Tile Finish</td>
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</table>

<table>
<thead>
<tr>
<th>SCREED</th>
</tr>
</thead>
<tbody>
<tr>
<td>65mm Sand &amp; Cement</td>
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<table>
<thead>
<tr>
<th>CLIPLATE</th>
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<table>
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<tr>
<th>DPM</th>
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</thead>
<tbody>
<tr>
<td>0.2mm waterproof membrane</td>
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</table>

<table>
<thead>
<tr>
<th>RESILIENT LAYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>YELOfon HD10+</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>STRUCTURAL FLOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>150mm Precast Concrete Floor Plank</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEILING</th>
</tr>
</thead>
</table>

CLIPPLATE SYSTEM

E-FC-6 Uses our ClipPlate System

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation
Underfloor heating for Robust Standard Detail E-FC-7

- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance

**AB SYSTEM**

E-FC-7 Uses our AB Plate System

<table>
<thead>
<tr>
<th>FLOOR COVERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shown T&amp;G Wooden Floor Finish</td>
</tr>
<tr>
<td>18mm thick</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>AB PLATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battened System with</td>
</tr>
<tr>
<td>Acoustic Pads</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCREED</th>
</tr>
</thead>
<tbody>
<tr>
<td>20mm levelling</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>STRUCTURAL FLOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam &amp; block, 100mm infill blocks, 50mm concrete topping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEILING</th>
</tr>
</thead>
</table>

**aether**

**TI 1012** FOILBOARD DATASHEET

**TI 4107** E-FC-7 DATASHEET
Underfloor heating for Robust Standard Detail E-FC-8

- **FLOOR COVERING**
  - Shown with Tile Finish

- **SCREED**
  - 65mm Sand & Cement

- **CLIPPLATE**

- **ISOLATING LAYER**
  - 5mm Foamed Polyethylene

- **STRUCTURAL FLOOR**
  - 25mm mineral wool batt
  - 150mm Precast Concrete Floor Plank

- **CEILING**

**CLIPPLATE SYSTEM**

- E-FC-8 Uses our ClipPlate System
- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

---

**mets**

**E-FC-8 DATASHEET**

**CLIPPLATE DATASHEET**

**TI 1003**

**TI 4108**
**Underfloor heating for Robust Standard Detail E-FC-9**

| FLOOR COVERING | 3mm Thermal Economics
|                | IsoRubber Top |
| SCREED         | 65mm Sand & Cement |
| CLIPPLATE      |                   |
| STRUCTURAL FLOOR | 150mm Precast Concrete
|                | Floor Plank      |
| CEILING        |                   |

**CLIPPLATE SYSTEM**

E-FC-9 Uses our ClipPlate System

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

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<table>
<thead>
<tr>
<th>Document Numbers</th>
<th>Downloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>TI 1003</td>
<td>CLIPPLATE DATASHEET</td>
</tr>
<tr>
<td>TI 4109</td>
<td>E-FC-9 DATASHEET</td>
</tr>
</tbody>
</table>
Underfloor heating for Robust Standard Detail E-FC-10

- **Ceiling**
- **Floor Covering**
  - 3mm IsoRubber Top bonded to slab
- **Screed**
  - 65mm Sand & Cement
- **Structural Floor**
  - 175mm in-situ concrete floor slab
- **ClipPlate**

### ClipPlate System

- E-FC-10 uses our ClipPlate System
- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

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**Software**

- TI 1003
- TI 4110

**Datasheets**

- ClipPlate Datasheet
- E-FC-10 Datasheet
## E-FC-11

### Underfloor heating for Robust Standard Detail E-FC-11

<table>
<thead>
<tr>
<th>CEILING</th>
<th>FLOOR COVERING</th>
<th>SCREED</th>
<th>STRUCTURAL FLOOR</th>
<th>CLIPPLATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>65mm Sand &amp; Cement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150mm Precast Concrete Floor Plank</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CLIPPLATE SYSTEM</td>
</tr>
</tbody>
</table>

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

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**CLIPPLATE SYSTEM**

E-FC-11 Uses our ClipPlate System

[Ti 1003](#) [CLIPPLATE DATASHEET](#)

[Ti 4111](#) [E-FC-11 DATASHEET](#)
Underfloor heating for Robust Standard Detail E-FC-12

- **FLOOR COVERING**
- **SCREED**
  - 65mm Sand & Cement
- **RESILIENT LAYER**
  - 3mm IsoRubber Base HP3 layer with IsoEdge flanking strip
- **STRUCTURAL FLOOR**
  - 200mm Precast Concrete Floor Plank
- **CEILING**

**CLIPPLATE SYSTEM**

E-FC-12 Uses our ClipPlate System

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

**Datasheets**

- TI 1003
- TI 4112
- CLIPPLATE DATASHEET
- E-FC-12 DATASHEET
### Underfloor heating for Robust Standard Detail E-FC-13

<table>
<thead>
<tr>
<th>FLOOR COVERING</th>
<th>SCREED</th>
<th>CLIPPLATE</th>
<th>RESILIENT LAYER</th>
<th>STRUCTURAL FLOOR</th>
<th>CEILING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65mm Sand &amp; Cement</td>
<td></td>
<td>InstaLay 65 Layer with InstaLay 65 edge strip</td>
<td>150mm Precast Concrete Floor Plank</td>
<td></td>
</tr>
</tbody>
</table>

#### CLIPPLATE SYSTEM

- E-FC-13 Uses our ClipPlate System
- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation

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**mets**

**CLIPPLATE DATASHEET**

<table>
<thead>
<tr>
<th>TI 1003</th>
<th>E-FC-13 DATASHEET</th>
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</thead>
</table>

**CLIPPLATE DATASHEET**

<table>
<thead>
<tr>
<th>TI 4113</th>
<th>E-FC-13 DATASHEET</th>
</tr>
</thead>
</table>
Underfloor heating for Robust Standard Detail E-FT-1

FLOOR COVERING
- Shown T&G Floor Finish - 18mm thick

GYPSUM BASED BOARD
- Weight 13.5 kg/m³

AB PLATE
- FFT1 Minimum 70mm batten system with pre-bonded resilient layer
- Minimum 15mm mineral wool quilt 33-36 kg/m³

FLOOR DECK
- 15mm thick wood based board

INSULATION
- 100mm mineral wool quilt

CEILING

AB SYSTEM
- E-FT-1 Uses our AB Plate System
- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance

E-FT-1 DATASHEET

TI 1012
TI 4001
Underfloor heating for Robust Standard Detail E-FT-2

FLOOR COVERING
- Shown T&G Floor Finish
- 18mm thick

FFT1 120mm batten system with pre-bonded resilient layer
- Minimum 60mm mineral wool quilt
- 10-36 kg/m³

FLOOR DECK
- 11mm thick wood based board

GYPSUM BASED BOARD
- Weight 13.5 kg/m³

AB PLATE
- FFT1 120mm batten system with pre-bonded resilient layer
- Minimum 60mm mineral wool quilt
- 10-36 kg/m³

INSULATION
- 100mm mineral wool quilt

CEILING

aether

AB SYSTEM
E-FT-2 Uses our AB Plate System

- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance

E-FT-2 DATASHEET
TI 4002

AB PLATE DATASHEET
TI 1012
Underfloor heating for Robust Standard Detail E-FT-3

<table>
<thead>
<tr>
<th>FLOOR COVERING</th>
<th>Shown T&amp;G Floor Finish - 18mm thick</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>GYPSUM BASED BOARD</td>
<td>Weight 13.5 kg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>AB PLATE</td>
<td>FFT1 Minimum 70mm batten system with pre-bonded resilient layer Minimum 60mm mineral wool quilt 33-36 kg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>FLOOR DECK</td>
<td>11mm thick wood based board</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>INSULATION</td>
<td>100mm mineral wool quilt</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>CEILING</td>
<td></td>
</tr>
</tbody>
</table>

**AB SYSTEM**

E-FT-3 Uses our AB Plate System

- Plates are easily installed over the batten
- Integrated insulation to minimise down loss
- Designed to maximise contact with the floor deck, giving improved performance

**Thermal Insulation Data**

- **E-FT-3 DATASHEET**
- **AB PLATE DATASHEET**
Underfloor heating for Robust Standard Detail E-FT-4

<table>
<thead>
<tr>
<th>SCREED</th>
<th>40mm Gyvlon SoundBar</th>
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</thead>
<tbody>
<tr>
<td>CLIPPLATE</td>
<td></td>
</tr>
<tr>
<td>SOUNDBAR BOARD</td>
<td>500mm gauge polythene on 34mm SoundBar board</td>
</tr>
<tr>
<td>INSULATION</td>
<td>100mm mineral wool quilt</td>
</tr>
<tr>
<td>CEILING</td>
<td></td>
</tr>
</tbody>
</table>

**CLIPPLATE SYSTEM**

E-FT-4 Uses our ClipPlate System

- No fixings or staples to dislodge as the screed is being laid
- The pipe is protected from site traffic during and after installation
- Flexible, multi-directional panel with integrated insulation
Underfloor heating for Robust Standard Detail E-FT-5

**SCREEDBOARD**
- Celecta ScreedBoard 28

**FOILBOARD**
- Floating Floor System

**FLOOR DECK**
- 18mm thick base board

**INSULATION**
- 100mm mineral wool batt

**CEILING**

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**FOILBOARD FLOATING**

- E-FT-5 Uses our FoilBoard System
- Integrated insulation – no parts to assemble
- Panels can be easily trimmed and adjusted on site
- Simple, quick installation

---

**FOILBOARD DATASHEET**

- TI 1005
- TI 4005

**E-FT-5 DATASHEET**
Underfloor heating for Robust Standard Detail E-FT-6

**FOILBOARD FLOATING**

E-FT-6 Uses our FoilBoard System

- Integrated insulation – no parts to assemble
- Panels can be easily trimmed and adjusted on site
- Simple, quick installation
The Metis ClipPlate system has been purposely designed to avoid using fixings and staples in the floor and to speed up the installation of underfloor heating systems.

Metis is a series of interlocking sheets with an integrated 10mm expanded polystyrene insulation layer. The castellations in the panel provide grip for the pipe, whilst also providing protection from site traffic and the screed being laid.

Metis can be installed over any subfloor. Where floor build-up is limited the integrated 10mm EPS provides some resistance when the product is laid over an un-insulated floor. The panel is designed to allow pipes to be installed at spacings as close as 50mm and at 45° & 90° bends, providing additional flexibility.

Our Aether FoilBoard Floating system is laid over a solid floor. The panels provide the support for the fully floating floor deck that is laid over. Each panel is manufactured from extra high density insulation which has a high compressive strength, suitable for floating floor applications.

The heat diffusers are pre-bonded and made from soft temper aluminium. As no thick rigid plates are used the panels are easily trimmed on site.

Once the insulation is laid a tongue and groove floor deck is laid over. The product is available in standard thicknesses from 25mm to 75mm, however other thicknesses are available to suit your project as required.
**STAPLE SYSTEM**

The staple system provides a quick, flexible and simple method of installing underfloor heating into a screeded floor. The pipe is easily fixed to the insulation using staples. The barbs on each staple fix into the insulation and hold the pipe in place. The Timóleon Gridded insulation has a laminated foil surface that provides an even stronger fix than plain insulation alone. The foil also provides a convenient grid guide that can easily help with the layout of the piping system. To speed up the process further we also supply a Pipe Stapler with our Acis system, making installation even easier and faster.

**TORON FLOORING SYSTEM**

Our Toron Flooring system consists of flooring grade panels routed with channels to accept 10mm pipe. The design of the panel makes it suitable as a structural floor deck. The panels have the pipe as close to the floor finish as possible. This maximises the heat output of the panels whilst minimising the temperature of the water being used. The panels are laid on the battens according to the design. The pipe is installed into the grooves with the ends of the circuit dropping into the batten space to be connected to a common flow and return. A 6mm ply covering layer is installed for all finishes except wood, which can be fixed directly to the flooring panels.

**AXIOS MANIFOLD**

The Timóleon Axios manifold is pre-assembled, ready for installation and provides all the functionality stipulated by British Standards (BS1264-4) for an underfloor heating manifold. The manifold benefits from features such as an automatic air vent and water mixing valve so that once commissioned the system will run with very little maintenance for years to come.

Each Axios manifold is supplied with an energy efficient “A” rated circulator and is also available with an automatic bypass and additional manifold ports for the connection of towel radiators.
ENERGY CONSULTANCY FROM TIMÓLEON

Tonos is the energy assessment and consultation service from Timóleon. Tonos plays a key role in helping Timóleon deliver the right long term heating & cooling solution by understanding energy performance in buildings and how we can improve it.

The energy we use for heating, lighting and power in our homes produces over a quarter of the UK’s CO2 emissions. Other buildings produce a further sixth. With targets set for an 80% reduction in greenhouse gas emissions by 2050, it is now very clear that homeowners, builders, landlords and architects need to take positive action to improve their buildings’ energy ratings. However, current energy performance certificates (EPCs) only go so far when it comes to making changes.

They report on the state of the building and provide outline recommendations.

We provide an energy assessment service for Energy Performance Certificates and a consultation service. We support architects and specifiers as well as anyone who is interested in understanding a building’s energy performance and how they can improve it.

We can provide assessment and consultancy for:
- Code for sustainable homes
- SAP
- SBEM
- EPCs for both domestic and commercial properties

HELP & ADVICE

Questions?
Call the project team on 01392 36 36 05