

## Installation tolerances

Joints should be installed as precisely vertical as possible, and checked with a spirit level to ensure proper function of the dowels during slab movement. The levelness and straightness of the joint installation, should be according to the relevant requirements of the floor slab design, and again checked using a standard laser level device or optical sight level.

## Installation

### Step 1. Sub-base level

The sub-base must be made as accurate and level as possible to the requirements on the slab drawing. The tolerance of the level has to be taken into account when ordering joints. Typically the Joint height will be 10 mm to 35 mm less than the slab depth.

### Step 2. Joint location

The required layout, position and height of the joints will be specified on the floor slab drawing which must be followed closely. String lines are placed to identify the position of joints according to the slab layout dimensioned drawings.

### Step 3. Joint Installation

1. Joints are placed sequentially away from junction pieces or from vertical column/wall.
  - a. If Junction pieces are used the first joint is connected to the junction piece at the overlap section using a dowel bush, plastic bolt and steel nut.
  - b. If junction pieces are not used the first joint is placed adjacent to column or wall allowing for isolation material.
2. The joints are placed in the correct position according to the string line, and the height is adjusted. The height should be verified by laser level or similar at both ends, and the joint should be set vertical using a spirit level which can be placed across the top edges.



- The joint can then be fixed in position using pins. Fixing pins should be 14 mm – 16 mm diameter and at least 300 mm longer than the joint height. A good practice is to use 14 x 600 mm fixing pins.

For slabs up to 200 mm deep 4 pins per joint are required, (up to 300 mm 6 pins per joint). The pins should be spaced equally along one side of the joint, on the opposite side to the first pour.

Alternate pins should be placed vertically and fixed approximately half-way along the length of the studs, and at an angle of approximately 30 degrees to the vertical, away from the joint and fixed at the end of the studs. This ensures excellent stability, and if it is possible to do the first pour on the opposite side to the pins, then it will allow them to be sawn through before pouring the second side reducing any resistance to joint opening. Pins should always be placed so that they finish level with the stud, and if necessary any excess pin above the level of the stud should be removed prior to pouring.

Pins can be simply driven into place with a suitable impact gun or hammer.



- Subsequent joints are aligned, fixed at the overlap using dowel bushes, plastic bolts and nuts, adjusted and fixed in the same manner. The joints should be fixed so that the ends of adjacent top strips are not touching but have a clearance gap of between 1 mm and 2 mm to allow for longitudinal movement.
- The final joint in any run will usually require being cut to length. The gap between the column/wall and the penultimate joint is measured taking account of suitable isolation material. The final joint is cut to length and installed in the same manner as previous joints.
- If the joint layout requires a run of joints between two junction pieces and the distance between them is not a full multiple of 3 metres then there will need to be a cut joint in the run. Joints should be placed running from the junction pieces, to some point approximately equidistant from both when the gap is less than 3 m.

The gap should be measured accurately between the top strips. The final joint should have a section cut from the center equal to the distance between the joints, keeping both overlap sections at the ends intact. The two pieces are then installed in the usual manner to each side of the gap and simply butt-welded together at the joint.

- If required by the design 'X' or 'T' junctions should be placed according to the required layout and set to the correct height using a laser level or equivalent. The junction pieces are placed in the correct position and the height is adjusted. The height should be verified by laser level and the junction should be set horizontal using a spirit level in two perpendicular directions. The junction pieces can then be fixed in position using pins as described in section 3. 'X' junctions require 4 pins and 'T' junctions 3 pins.
- As an alternative and if pins are not available then the joints and junction pieces can be positioned and held in place by concrete 'dabs'. The joints and intersections must be positioned accurately and supported. The dabs should be placed at 1 m spacing along the joint lengths or at the centre of the intersection pieces. Dabs should be sufficient to support the rails during pouring and levelling of the concrete ideally conical in shape and poured up to at least half the depth of the rail. Dabs should be allowed to harden sufficiently before removing support.

### Step 4. Pouring concrete

Once rails are correctly positioned pouring of concrete can commence. Concrete should be poured to the level of the rails with particular attention to consolidation around the dowels and sleeves. All plate type dowels require close attention to filling around the dowels to eliminate the possibility of air entrapment. This should be done with a suitable vibrating poker. Both sides of joints can be poured at the same time if so required.

