

Shear Load Connectors

Dowelled Joints

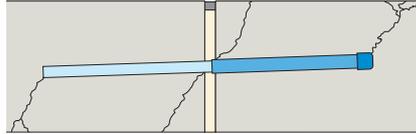
Dowels are used to transfer shear across construction and movement joints in concrete. They are usually either cast or drilled into the concrete. A single row of short thick dowels provides reasonable shear transfer but suffer from deformation. This can lead to stress concentrations, resulting in subsequent spalling of the concrete.

Where dowels are used across expansion and contraction joints, half the length of the bar is debonded to allow movement to take place.

Dowelled joints either require formwork to be drilled for the dowels to pass through, or concrete to be drilled for dowels to be resin fixed in one side.

Where dowels are used at movement joints the dowels will need to be accurately aligned in both directions to ensure movement can actually take place, otherwise cracking is likely to occur.

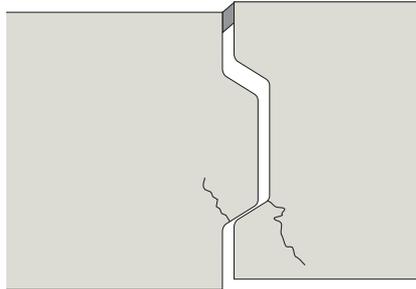
Single dowels are not very effective when used across joints wider than 10mm.



Misaligned Dowels Restrict Movement and can Result in Cracking

Keyed Joints

Keyed joints require complicated formwork to create the tongue and groove. If the joint is not formed correctly, differential movement can take place. Load is transferred through the locally reduced section of the joint which can at times result in cracking.

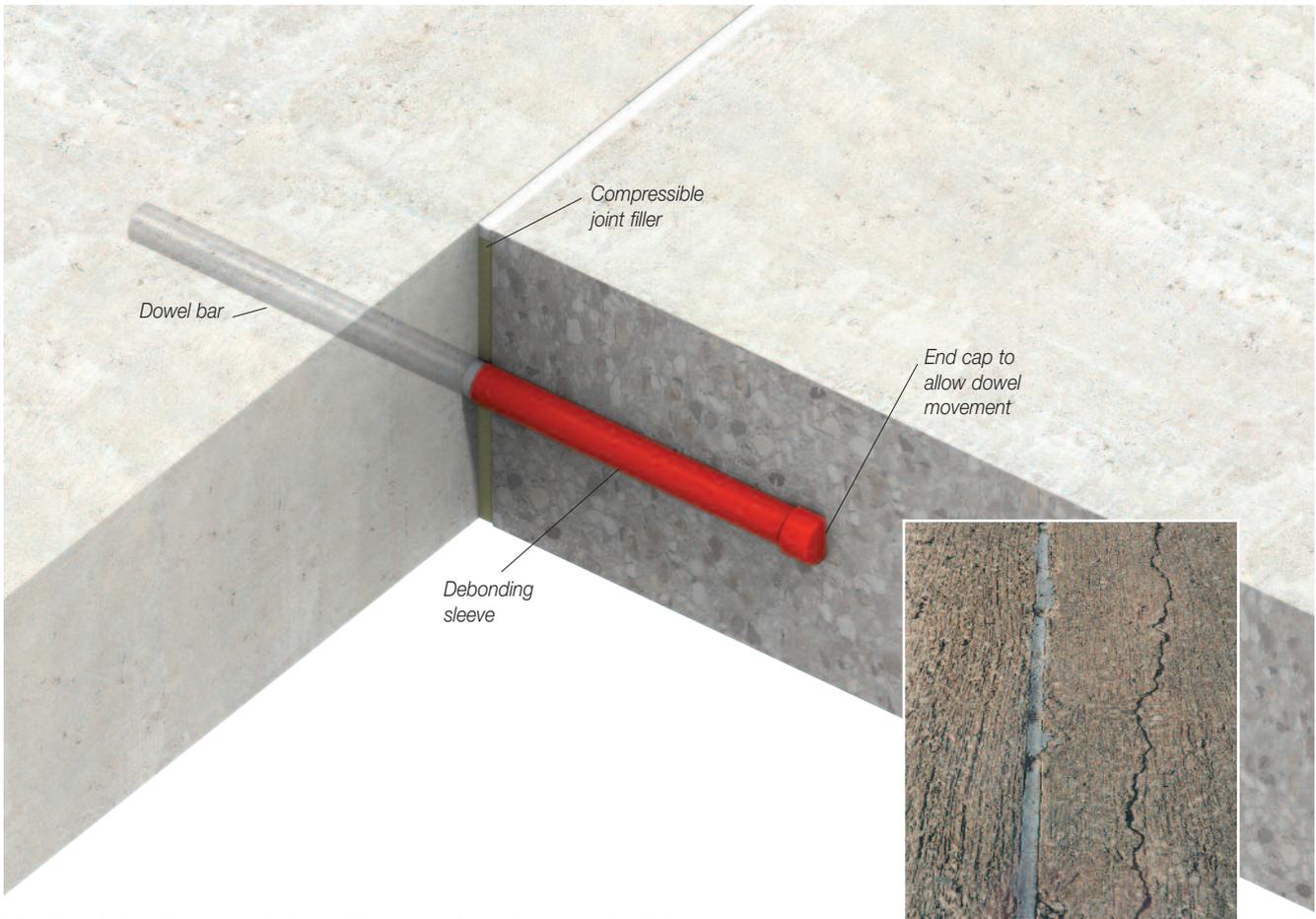


Keyed Joints Allow Differential Movement and can Result in Cracking

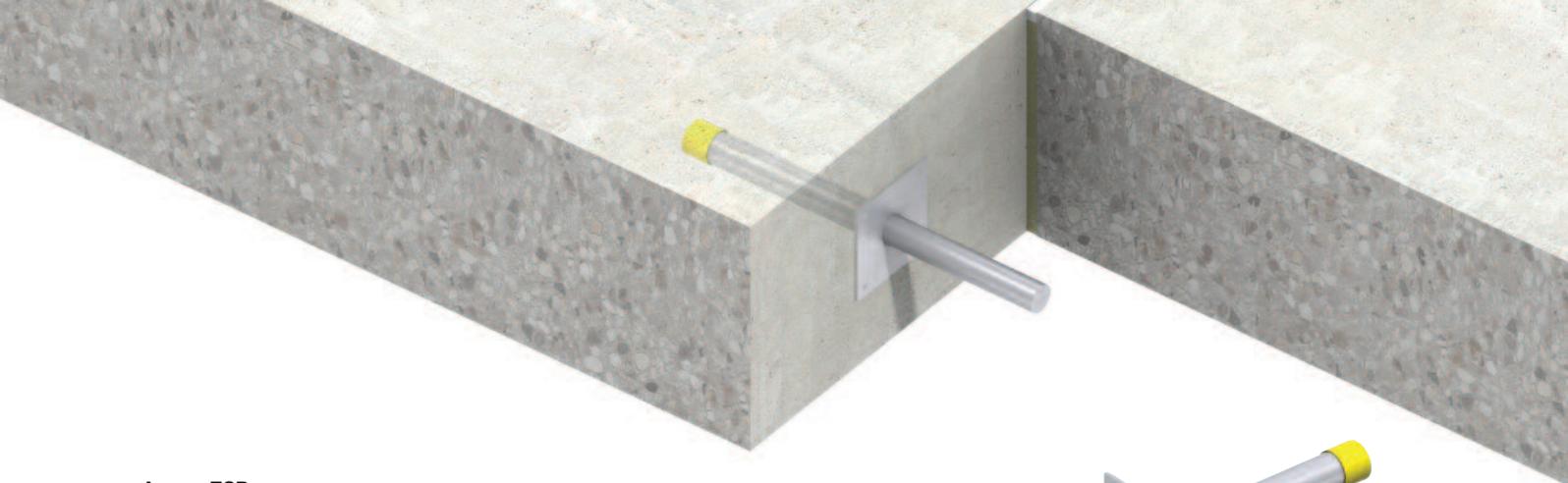
Ancon ESD Shear Connectors

The ESD range of connectors offers significant advantages over plain dowels and removes the need for corbels/keyed joints. Each connector is a two-part assembly comprising a sleeve and a dowel component. Installation is a fast and accurate process, drilling of either formwork or concrete is not required. The sleeve is simply nailed to the formwork ensuring subsequent alignment with the dowel, essential for effective movement.

Ancon ESD/Q connectors can be provided with 90 minutes fire protection. Special sleeves, manufactured from a fire barrier material, replace the compressible filler at the connector's position in the joint. This material foams and expands during a fire to protect the connector (page 16).



Misaligned dowels can result in cracking away from the expansion joint



Ancon ESD

The Ancon ESD shear load connector is used where loads are smaller than those requiring the DSD, but where alignment is critical. It is available in four sizes. The dowel component is Duplex stainless steel bar. The cylindrical sleeve and flange plate are manufactured from grade 1.4301 (304).

Ancon ESDQ

The Ancon ESDQ shear load connector uses the same dowel as the ESD, but the cylindrical sleeve is contained within a rectangular box section to allow lateral movement or rotation in addition to longitudinal movement. Material specifications are the same as the ESD.

ESDQ-L Lockable Dowel

The ESDQ-L Lockable Dowel allows initial movement to take place and then, after a predetermined time period (generally 90-120 days), is locked with a two-part epoxy resin poured into the L-shaped void former. See page 18 for further information and other products within the range.

Ancon ED

The Ancon ED is a low cost dowel connector for use in floor slabs where alignment is important but loads are small. The single dowel shear connector is available in four sizes. The sleeve component is made from a durable plastic and features an integral nail plate. The dowel component is available in Duplex stainless steel, zinc plated and carbon steel.

Ancon Staisil Acoustic Dowel

The Ancon Staisil Acoustic Dowel is designed to transfer shear loads and limit sound transmission across joints in concrete. The sleeve has Elastomer sound absorbing material between two stainless steel tubes and a nail plate for fixing to formwork. The sound transmission properties are generally unaffected by either joint width or service load. Significant reductions in sound transmission were recorded when compared with a standard solid dowel. Tests in the frequency of 100-3150 Hz (DIN 4109) had a 20 dB reduction and tests across all frequencies had a 25 dB reduction.

