

Precast Concrete Stair Landing Connections

TSS Telescopic Connectors

Primarily intended to support precast stairs and landings off core walls. An elegant and efficient alternative to traditional RSAs or corbels. The TSS range is cord operated and ideal for higher specifications, where an uncovered fair-faced concrete finish or sound deadening properties are preferred.

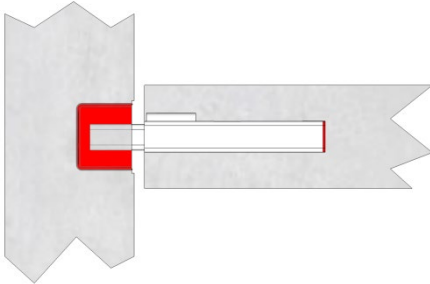
TSS connectors offer key benefits over RSA or corbel connection methods, such as:

- Inherent robustness compliance and fire resistance
- Clean architectural lines and increased usable headspace
- More environmentally sustainable
- Significantly improved health and safety
- Demonstrable cost and time efficiencies*

*A **study** found that using telescopic connectors instead of RSAs reduced direct costs by 44% and man hours by 80%.

Product range

TSS Telescopic Connectors



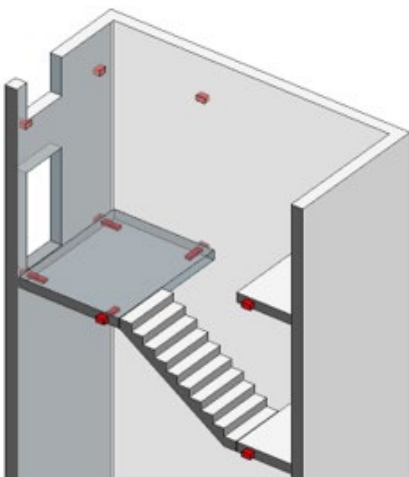
Application



Fig 1



Fig 2

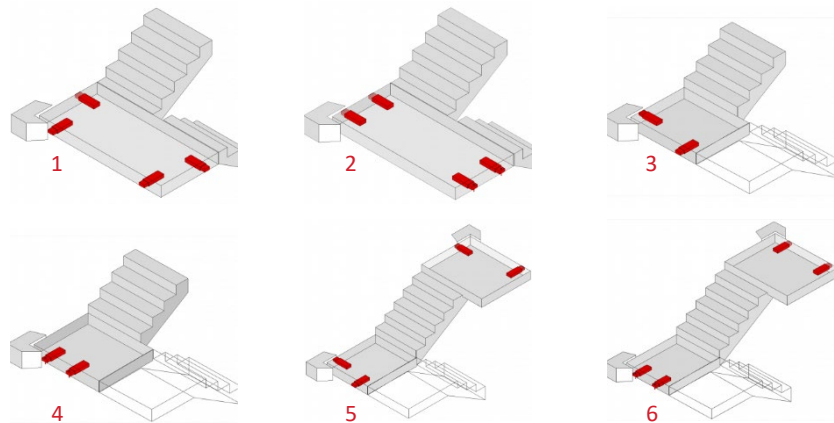


Robustness

UK regulations require that all precast floor and stair elements are anchored to the main structure to provide robustness in the event of an incident. Traditional dowels or similar connections into walls result in more work and additional costs on site. With appropriate positioning of TSS telescopic connectors, anchorage is inherent. Where layout allows, robustness requirements are met with no additional measures or expenditure.

Stair landing applications

Different configurations according to precast element shape and loadings are possible. **Technical enquiry forms** are available to download:



- 1 Landing with connectors on three sides
- 2 Landing with connectors at both ends
- 3 Integral flight and landing with connectors on side and end
- 4 Integral flight and landing with connectors on end
- 5 Integral flight and two landings with connectors on sides and ends
- 6 Integral flight and two landings with connectors at both ends

For other stair landing applications, please contact us for free technical and practical advice on product selection and installation.

Alternative applications

TSS connectors can also be used for a diverse range of applications, including:

- Curved precast elements (Fig 1)
- Stabilising parapets against vehicle impact in multi-storey car parks (Fig 2)

Product features

- Cord operated to deploy sliding inner tube
- Hot dip galvanised options, for smoother operation and corrosion resistance
- Cord operation means no hopper required, leaving no visible markings on top surface of landing
- Ideal where no screed is intended and blemish free precast finish is required
- Grade S355 (minimum) steel is used for its high stress capacity
- Available in 5 variants to satisfy all common application conditions

Use in combination with

REDiBOX® Concrete Wall
Permanent Recess Former

REDiBOX PRF-STD (standard version)

Provides generous tolerance for installation of stair landings. Eliminates traditional digging-out of polystyrene or timber.



Use with

- TSS 41
- TSS 60P
- TSS 101
- TSS 102

REDiBOX PRF-PIN (pinned version)

Has an integral reinforced pocket (pin supplied) for tying landings to walls so robustness requirements can be met where only 2 walls available.



Use with

- TSS 81-30

About Invisible Connections

We are the specialists in hidden structural connections for precast and in situ construction. Our range of telescopic connectors are purpose-designed to overcome the challenges of traditional construction and have multiple applications. We are also the manufacturers of FERBOX® bespoke reinforcement continuity strip.

All our products meet industry demands for improved safety, construction efficiency and cost competitiveness.

Invisible Connections Ltd

Unit 6, Thame Forty
Jane Morbey Road
Thame, Oxfordshire OX9 3RR

+44 (0)1844 266000

sales@invisibleconnections.co.uk

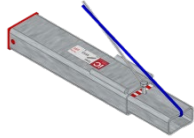
technical@invisibleconnections.co.uk

invisibleconnections.co.uk

Precast Concrete Stair Landing Connections

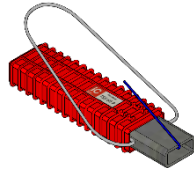
TSS Telescopic Connectors

TSS product range



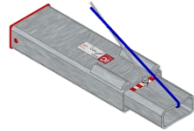
TSS 41 (40kN, Cord Operated, No Screed Required)

Cost-effective solution for thinner stair landings of thickness ≥ 150 mm. Small, compact connector for lighter loads up to 40kN. Use in conjunction with REDiBOX PRF-STD.



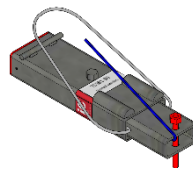
TSS 60P (60kN, Cord Operated, No Screed Required, HDPE Outer)

Slim design enables thinner landings and stair thicknesses ≥ 120 mm (full capacity 170mm). Recycled HDPE outer. Sustainable, economical and lightweight connector for light loads up to 60kN. Use in conjunction with REDiBOX PRF-STD.



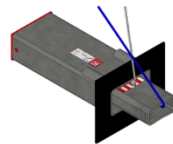
TSS 101 (100kN, Cord Operated, No Screed Required)

Versatile choice for most stair landing applications. Connector capacity up to 80kN in a 200mm thick (min.) landing, increasing to 100kN in a 265mm thick landing. Use in conjunction with REDiBOX PRF-STD.



TSS 81-30 (80kN/30kN, Cord Operated, No Screed Required, Pinned Anchorage)

Where walls are located only on 2 sides of landing, connector has to be pinned to wall to meet robustness requirements. Axial capacity ≤ 30 kN. Use in conjunction with REDiBOX PRF-PIN.



TSS 102 (100kN, Cord Operated, No Screed Required, Impact Sound Reduction)

Minimises step-sound vibration from stairwell into adjacent rooms for high specification applications. Incorporates sound absorbing rubber composite between sliding components and landing/wall. Use in conjunction with REDiBOX PRF-STD.

Capacity

To ensure lean and cost-efficient design, 40kN, 60kN, 80kN and up to 100kN standard capacities are available. Connectors may be used in pairs for higher load requirements. Capacities are resistances to factored loads (1.5 x live load, 1.35 x dead load). All telescopic connectors incorporate integral bearing blocks for correct seating of local reinforcement to avoid localised crushing or cracking.

Fire resistance

Grouting around the connector (in the airgap between the landing and wall) provides equivalent cover as concrete, therefore 40mm grout cover will give 2 hours fire resistance.

REDiBOX Permanent Recess Formers

All TSS telescopic connectors are designed to work in conjunction with a REDiBOX permanent recess former - a 'left in' component used to create recesses in precast or in situ walls to flexibly accommodate the TSS sliding inner section.

Resources

Up to date product information is available in the [Resources](#) section of invisibleconnections.co.uk, including [case studies](#), [videos](#), [published articles](#), [technical literature](#) and [drawings](#). You can also download our [brochure](#) or [cost comparison study](#).

Standards

Design is in accordance with the following standards:

Eurocode 2: Design of concrete structures Part 1-1 General rules and rules for buildings

Eurocode 3: Design of steel structures Part 1-1 General rules and rules for buildings

Eurocode 3: Design of steel structures Part 1-8 Design of joints

All TSS products are covered by appropriate [European Technical Assessment](#) (ETA).

For technical and practical advice call

+44 (0)1844 266000