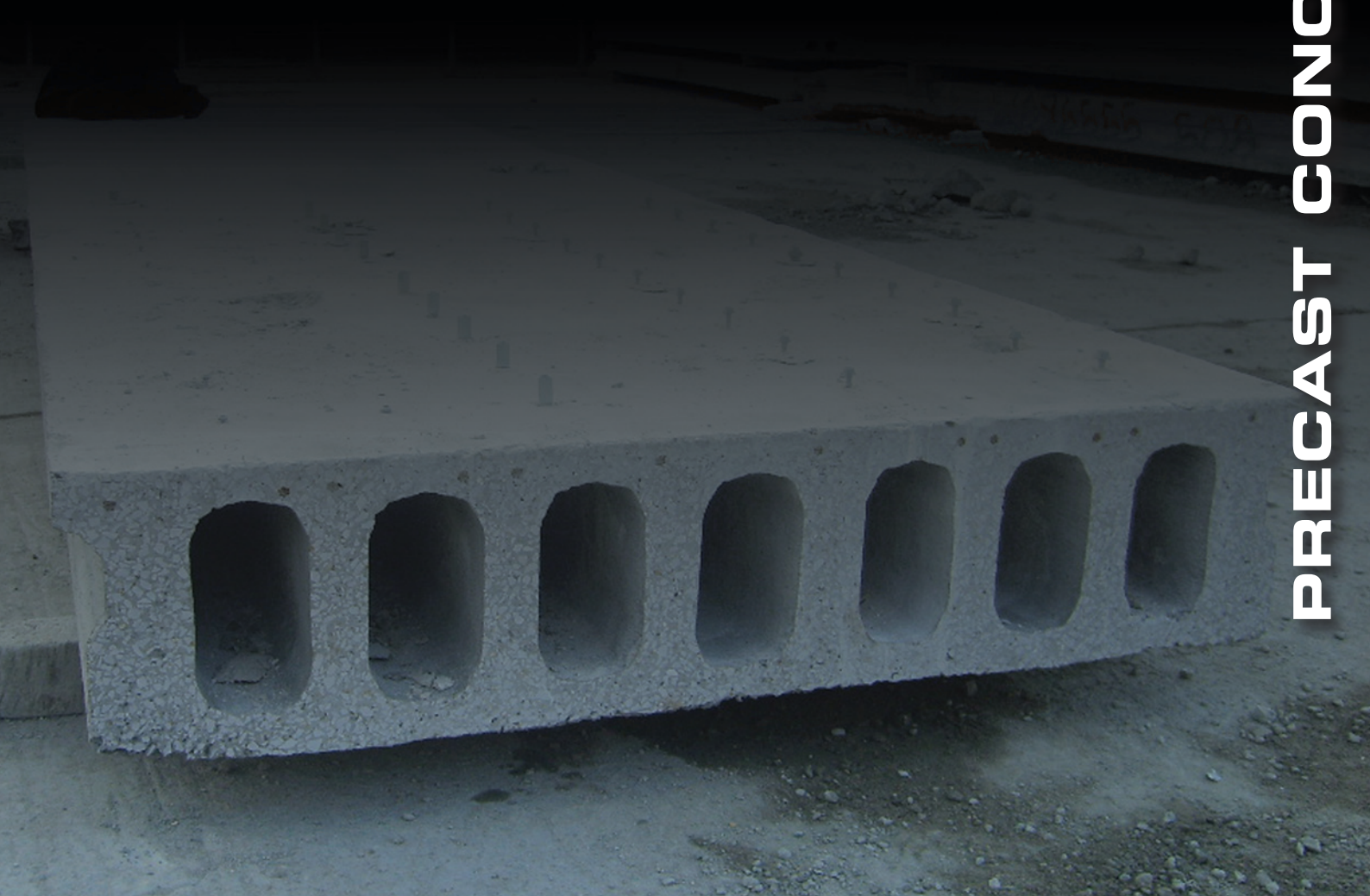


# **SPIT**

**FIXINGS**

**PRECAST CONCRETE FIXING GUIDE**



In conjunction with

**MILBANK**  
CONCRETE PRODUCTS



## AN INTRODUCTION

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### Spit

Spit products offer a complete range of solutions for fixing components into steel and concrete. Founded in 1949 when a unique system for fixing into these materials was invented (now generally known as cartridge or powder actuated tools: PAT), the past 60 years has seen Spit develop a variety of technologies for fixing on the construction site including - direct fixing, drilling and anchoring.

As part of the multi-billion dollar organization ITW - Illinois Tool Works Inc, Spit has access to almost 100 years of experience in the design, development and manufacture of fasteners and components, equipment & consumable systems across the world.

In conjunction with Milbank, one of the leading Precast Concrete Manufacturers in the UK, this guide has been produced in order to promote best fixing practices when installing Precast Concrete Systems and to provide an outline of performance data, when installing onto a variety of substrates.

**This document is intended as a guide only. For detailed, project specific installation advice, users should always refer to Milbank for guidance.**



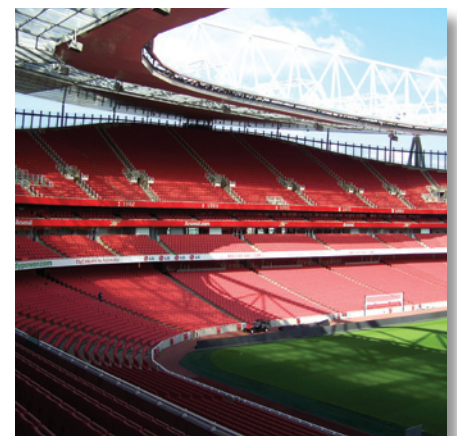
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## Technical Services

In the UK & Ireland the Spit Technical Services Team is always on hand to provide on or off site support when you need it most and have offered advice on a variety of high profile projects including Heathrow Terminal 5, Wembley Stadium and the Emirates Stadium.

Our highly trained personnel are able to provide support at all stages of the design and construction process from Specification Advice through to onsite testing and installation training.

In addition to the technical services on offer we also have a wide range of literature to help you select the best products for your applications. Contact the Technical Helpdesk for information on the Product Guide, Fixings Design Guide or Spit Expert Calculation Software.



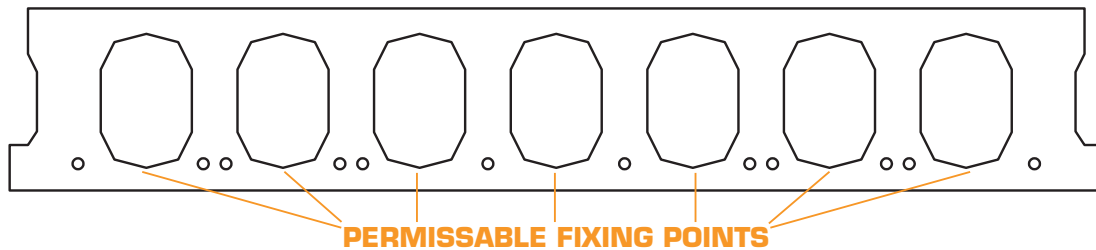
# MECHANICAL & RESIN FIXING SYSTEMS APPROVED FOR USE ON MILBANK HOLLOWCORE CONCRETE SECTIONS

In conjunction with Milbank, Spit have conducted product performance tests at their premises in Colchester, Essex.

A number of Spit fixings were tested on Milbank's 200mm deep hollowcore floor unit which has been subjected to a minimum curing time of 28 days. All fixings have been tested into the soffit side of the slab in order to replicate construction site conditions. All fixings have been tested 10 times, exceeding CFA guidelines, using a calibrated meter. Tests were conducted in order to establish the recommended loadings on Spit fixings when installed onto these substrates.



All recommended loads are in Tensile value.



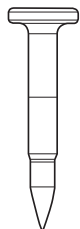
Due to the structural properties of hollowcore units, care should be taken to select fixings that have appropriate performance, whilst retaining the integrity of the slab.

The following Spit fixings adhere to these requirements and have been tailored to meet the needs of a range of specialised trades including:

- Mechanical
- Electrical
- HVAC
- Drywall and Partitioning
- Steel Frame Systems



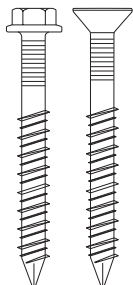
## Pulsa Gas Powered Nailing System



| Pin Length                   | Embedment | Min Edge Distance | Min Spacing Distance | Recommended Tensile Load | Recommended Shear Load |
|------------------------------|-----------|-------------------|----------------------|--------------------------|------------------------|
| <b>HC6 Pins</b>              |           |                   |                      |                          |                        |
| 22mm                         | 17mm      | 70mm              | 50mm                 | 0.1kN                    | 0.25kN                 |
| <i>(15 - 40mm available)</i> |           |                   |                      |                          |                        |



## Hex Head / Countersunk Tapcon Self Tapping Concrete Screws

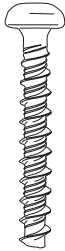


| Anchor Diameter | Anchor Length Range | Embedment            | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|-----------------|---------------------|----------------------|----------------|--------------------------|------------------------|
| 5mm             | 32 - 100mm          | 35mm (depth to core) | 4mm            | 2.5kN                    | 1.2kN                  |
| 6mm             | 32 - 125mm          | 35mm (depth to core) | 5mm            | 3.4kN                    | 1.5kN                  |



# MECHANICAL & RESIN FIXING SYSTEMS APPROVED FOR USE ON MILBANK HOLLOWCORE CONCRETE SECTIONS

## Pan Head Tapcon Self Tapping Concrete Screws



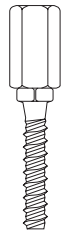
| Anchor Diameter | Anchor Length Range | Embedment            | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|-----------------|---------------------|----------------------|----------------|--------------------------|------------------------|
| 5.5mm           | 30 - 40mm           | 35mm (depth to core) | 4mm            | 1.5kN                    | 1.9kN                  |
| 6.5mm           | 30 - 40mm           | 35mm (depth to core) | 5mm            | 2.3kN                    | 3.0kN                  |

## LDT Tapcon Self Tapping Concrete Screws



| Anchor Diameter | Anchor Length Range | Embedment            | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|-----------------|---------------------|----------------------|----------------|--------------------------|------------------------|
| 7.5mm           | 35 - 100mm          | 35mm (depth to core) | 6mm            | 2.4kN                    | 6.2kN                  |
| M10             | 45 - 128mm          | 35mm (depth to core) | 8mm            | 4.8kN                    | 3.8kN                  |

## NEW Tapcon Rod Hanger (Stud Version Also Available)



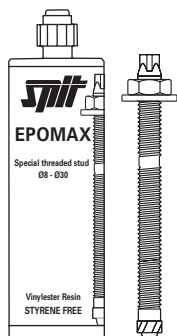
| Anchor Diameter | Anchor Length Range | Embedment            | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|-----------------|---------------------|----------------------|----------------|--------------------------|------------------------|
| 7.5mm           | 35 - 45mm           | 35mm (depth to core) | 6mm            | 1.3kN                    | 6.2kN                  |

## Original Tapcon Rod Hanger



| Anchor Diameter | Anchor Length Range | Embedment            | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|-----------------|---------------------|----------------------|----------------|--------------------------|------------------------|
| 9mm             | 44mm                | 35mm (depth to core) | 6.5mm          | 4.5kN                    | 3.7kN                  |

## Epomax Chemical Fixing (For Use With Metal Sleeve)



| Stud Diameter | Stud Length Range | Embedment                          | Drill Diameter | Recommended Tensile Load | Recommended Shear Load |
|---------------|-------------------|------------------------------------|----------------|--------------------------|------------------------|
| M8            | 110mm             | To base of core using metal sleeve | 10mm           | 3.8kN                    | 5.5kN                  |
| M10           | 130mm             | To base of core using metal sleeve | 12mm           | 6.1kN                    | 9.4kN                  |
| M12           | 160mm             | To base of core using metal sleeve | 14mm           | 8.9kN                    | 12.6kN                 |

The recommended values shown above are based upon installation using Spit equipment only. Any deviation from this equipment can result in different loadings being achieved than those specified.

## AN INTRODUCTION

### Milbank

Milbank are one of the leading manufacturers of high quality precast concrete products within the United Kingdom.

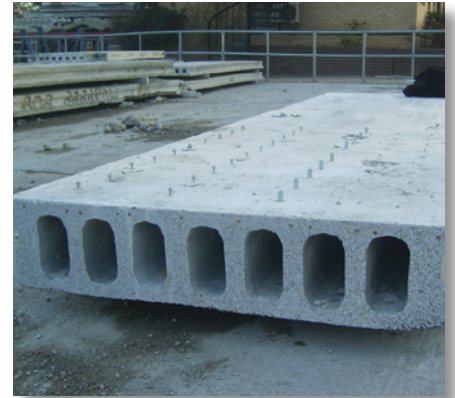
Throughout the design, manufacturing, delivery and installation stages, Milbank offers the most comprehensive and professional service.

Hollowcore floor planks are precast concrete elements with continuous longitudinal voids providing an efficient lightweight section.

When grouted, the effective shear key between adjacent Milbank Hollowcore planks ensures that the individual planks behave similarly to a monolithic slab.

Hollowcore planks may be used to produce a diaphragm to resist horizontal forces, either with or without a structural topping.

Hollowcore planks, supported on masonry or steel structures can be used in domestic, commercial and industrial applications.



**MILBANK**  
CONCRETE PRODUCTS

Earls Colne Business Park,  
Earls Colne,  
Colchester  
Essex CO6 2NS

T: 01787 223931  
F: 01787 220525  
www.milbank.co.uk

24<sup>th</sup> June 2009

**ITW Construction Products**  
Fleming Way  
Crawley  
West Sussex  
RH10 9DP

Attn: Mr Anthony Mulligan

Dear Sirs,

Re: **Testing of ITW Fixings in Milbank Hollowcore Planks**

We confirm that the tests as detailed in your document titled 'Precast Concrete Fixing Guide' were carried out at our Earls Colne factory on 4<sup>th</sup> March 2009.

The tests were carried out on the soffit of a standard 200mm hollowcore plank, and the results are a true record of the tests. We only tested the 200mm deep planks, however the results are true for all of our Hollowcore range.

Therefore, we can recommend that the fixings described are suitable for use in our hollowcore planks, in accordance with ITW Construction Products recommendations.

Yours Faithfully

**David Costin**  
Technical Director

## TECHNICAL SERVICES

### Onsite: Field Engineers

The Technical Team offer comprehensive on-site support for all of our customers. This support can range from product demonstration, application testing and tool box talks, through to proof and failure load testing for safety critical applications.

All of our testing is completed in accordance with the Construction Fixing Association guidelines. All test results are then provided in the form of a written test report.

To arrange a visit from one of our technical field engineers simply contact the Technical Helpdesk.



### Product and Operator Training

When it comes to safety, we know that training is critical, which is why we pride ourselves on our extensive range of product training offered to our customers. We currently train over 12,000 end users per annum.

End users and contractors can benefit from our on-site product training, which is offered free of charge to anyone using a Spitz product.

To find out more about our training including course dates please contact the Technical Helpdesk.



**CONSTRUCTION FIXINGS**  
association



### Contact Spitz

ITW Construction Products  
Fleming Way, Crawley,  
West Sussex RH10 9DP

Main Tel: 0141 342 1660  
Technical Helpdesk: UK - 0800 731 4924  
Technical Helpdesk: ROI - 1 800 882 388

[www.itwcp.co.uk](http://www.itwcp.co.uk)



### Contact Milbank

Milbank  
Earls Colne Business Park  
Earls Colne  
Colchester  
Essex CO6 2NS

Tel: 01787 223931  
Fax: 01787 220535  
[estimating@milbank.co.uk](mailto:estimating@milbank.co.uk)  
[www.milbank.co.uk](http://www.milbank.co.uk)

**MILBANK**  
CONCRETE PRODUCTS