permaban®
protecting concrete floors worldwide

# permaban Eclipse®

## *explained*

### Why develop Eclipse?

Historically most heavy-duty armoured joints have adopted a similar product design, featuring heavy, thick steel top strips which literally armour the joint from the impact damage of forklift wheels.

These traditional joints have their strengths, but they have several weaknesses too; and can present some installation challenges for flooring contractors, including time-consuming remedial work prior to handover.

With Eclipse we've risen to the challenge to offer the market a clear improvement on traditional-style joints. Eclipse is not just a variation on the same theme – it's a clever, engineering-led design that approaches joint armouring for heavy-duty environments in a genuinely different and more cost-effective way.

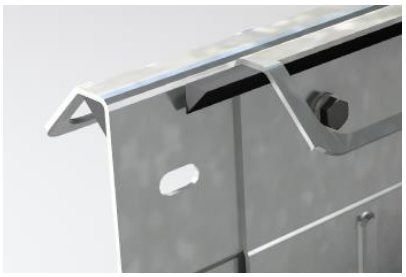
## Don’t construction joints need thick steel strips to properly withstand the impact forces from forklift wheels?

The reality is that thick steel strips don’t absorb impact forces, because science teaches us that steel has virtually no capacity to absorb energy – which is why the spheres keep on moving in Newton’s Cradle.

This means that when a forklift strikes the steel strips of an armoured joint, the impact forces pass straight through the steel to the concrete behind, regardless of how thick the steel is. This means that apart from the small area of steel where the wheels hit the joint, most of the steel strip on a traditional joint is actually doing very little to protect the concrete. The thickness of the steel mainly serves to ensure it doesn’t deform under the constant impact of vehicle wheels.

So the thickness of the steel matters less than its position and its ability to hold its shape. Permaban Eclipse uses thinner steel with a strong reinforcing section beneath to ensure it holds its shape.

## Will the thin steel at the top of Eclipse really be strong enough?



Yes – because of the triangular reinforcing section underneath the top corners. Without reinforcement the thin steel could well bend under the pressure of frequent, weighty traffic. But the reinforcement in Permaban Eclipse maintains the shape of the steel. The triangular reinforcing section is as strong as rebar, so absolutely will not bend.

## How can you prove Eclipse is tough enough for heavy duty applications?

We have carried out extensive testing on the product, firstly to check its rigidity, to ensure it will not bend under pressure. Secondly, we’ve installed the product on our in-house test rig, and cycled it under intense conditions, even more arduous than it would receive in reality - and it has withstood the pounding of the test rig wheels without deforming. We’ve also tested it alongside our AlphaJoint, and the results have been similar.

Now, after two years in the market, Eclipse has been installed on buildings for high profile brands around the world, including Coca-Cola Femsa, Mango, Kia Motors, Safran, Eaton and Price Smart. So it’s proving its worth in real-life buildings, not just under test conditions.

## I've always used a traditional-style joint, with solid steel strips. Why should I change?

Permaban Eclipse has plenty of benefits a traditional-style joint doesn't – and can solve many installation problems experienced on-site too.

- Continuous concrete ties along the entire length mean **the product can be cut at any point**, and it will still anchor securely into the concrete. This eliminates the 'flying ends' associated with stud concrete ties, and reduces remedial work on site before handover.
- Twin full-height divider plates give **extra strength and rigidity** during installation (most traditional joints have one, or one and a half).
- Any spalling that might occur behind the joint will be minimal, and localized – the concrete ties **prevent any spalling extending** along the length of the joint.
- The Eclipse profile **wraps around the concrete joint arris** to protect it fully once the floor is in use. The radiused corners on the inside top edges can also help vehicle wheels pass over smoothly.
- Eclipse is supplied **galvanised as standard**, so it will keep its appearance and can be used internally and externally.
- Eclipse's design builds in extra **strength at the dowel point**, for rigidity during installation.
- Because Eclipse is supplied in **shorter lengths** than many joints (2.4m lengths as standard), it's lighter to handle - a one-man lift. It also makes it easier to install the joints accurately. Also, when delivered, the pallets are more stable and easier to manoeuvre.

## Can Eclipse be used externally?

Because Eclipse comes in a **galvanized finish as standard**, it is resistant to rust - so it can be used for external concrete slabs, as well as inside a building. Using the same product simplifies specification, and means fewer product variants need to be used on site, giving a more consistent appearance throughout the building.

The galvanized finish makes the product resistant to normal weather conditions, which means it will continue to have a smart, clean appearance once the building is brought into use. We use the same grade of electroplated galvanized steel for Eclipse that is used for high quality white goods, and in car manufacturing.

## Will it start to rust if it is damaged or scratched?

The nature of the galvanization process means that the product can continue to resist rusting, even if it gets a little scratched. The joint won't suffer any damage through power troweling. During the life of the floor, should minor pitting corrosion occur, it can normally be polished away with dry nylon scrubbing pads. In a dry environment, it may be some time before any further corrosion is evident. If it ever becomes an issue, it is perfectly possible to clean the joint, isolate it from the slab with tape and apply a zinc based spray paint. If you want a joint which is absolutely rust proof, you need to consider a stainless steel joint.

## Is it easy to clean?

During the life of the floor, it is important that good housekeeping is maintained. Our recommendation is that cleaning only be undertaken with water and nylon scrubber pads. Aggressive cleaning agents, acid or alkali, should not be used: not only will they attack the joint, they will attack the floor's surface hardener, if used.

Grinding or abrasive polishing of the surface of the joint will potentially remove all the zinc coating, and under these circumstances the joint can be expected to rust.

Continuous prolonged submersion in water will result in eventual corrosion.

## Why are there two strips of concrete ties, top and bottom?

This is for added rigidity. It ensures exceptionally good anchoring into the concrete, deep into the slab, and helps ensure there are no torsion problems.

## Why is Eclipse joined with plastic bolts, instead of the rivet system used on AlphaJoint?

It's because of the way the joint is anchored into the slab, and how that affects the tensile force acting on the bolt when the joint opens.

AlphaJoint is a discretely-anchored joint, secured into the concrete with studs. Historically we manufactured AlphaJoint with nylon bolts, but we changed to the rivet system because the force needed to break the rivet has a tighter tolerance. This reduced the risk of the joint not opening as it should.

Eclipse is a continuously-anchored product. Because of this firm anchoring into the slab, there is a greater tensile force applied to the fastening system – so the bolts will always break without a problem.

## How is it installed?

There are four alternative methods, all commonly used for installing armoured joints: pin and weld; AlphaFix; universal feet, and on concrete dabs. Eclipse is optimised for AlphaFix installation. We can provide full written instructions for any method.

Eclipse can be installed in a similar way to BetaExpansion, and you can view the installation video for this on our website.

## Which way up does it go?

Along the bottom of the joint, there is no grid-cut face on each end. Also, the triangular reinforcing section should always be installed along the top of the joint.

All Permaban joints are designed to allow a gap underneath them. This means that the dowel within each product is set below the centre-line of the joint. If you're unsure, you can measure this on site. Measure from the edge of the joint to the dowel on both sides: the bigger distance will always go to the top.

## Will I get cracks along the continuous concrete ties?

The continuous grid-cut profile was specifically developed so concrete will flow around it without problems. This means that aggregate sits below, above and around the grid-cut profile. This ensures that the concrete is homogeneous along the arris of the slab, and minimises the risk of cracking.

## Which is best – AlphaJoint®, Eclipse, or Permaban Signature®?

The best choice very much depends on the application, which is why our technical staff are always happy to give personalised advice. Generally though, Permaban Eclipse is a versatile product which can be used on all floors as a direct substitute for AlphaJoint and other traditional-style joints.

Permaban Signature was designed specifically for parts of the building which experience directional traffic – where vehicles cross the joint at 90°. It's a premium product, for a particularly taxing application; and Eclipse is less suitable than Signature in these instances.

However, by using Eclipse and Signature together in a specification it's possible to value-engineer a floor for maximum performance without increasing the overall cost of the project, compared to an AlphaJoint specification. Talk to our sales or technical teams to find out more.

## Find out more

**Call us on +44 1752 895288.**
Visit www.permaban.com – or scan this code with your smartphone to go straight to the Eclipse product page where you can download the full specification sheet.

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