

# ForkSafe

Certified Impact Protection Barrier System



## FORKSAFE COMPLIANCE



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# FORKSAFE IMPACT BARRIER PROTECTION

## ForkSafe Barrier

The ForkSafe barrier is a quality engineered steel powder coated barrier suitable for factories. The barrier has been designed to provide for ease of installation, safety of pedestrians, and a deterrent for forklifts and other mobile plant inside factories.

The posts and rails can be made to order but typically are installed in modules of 2400mm. The posts can readily be installed on an existing concrete floor and require minimal maintenance.

The ForkSafe barrier system and other warehouse safety equipment can be found at [www.dexsafe.com](http://www.dexsafe.com)

The ForkSafe barrier is:

- Safe
- Smart
- Easy maintenance
- Easy to install

## Why use a ForkSafe Barrier

ForkSafe barriers are required to control and reduce risk. The below risk assessment is helpful to determine what level of protection is required.

The purchaser needs to understand that no barrier will stop a heavily loaded forklift traveling at speed. Barriers can sustain a certain amount of damage at varying speeds and loads but a driver should become aware of their error once they hit the barrier. The barriers are more effective for glancing blow impacts than square on impacts.

The standard barriers are designed for the steel posts to yield (deform). The ForkSafe barrier is unique in that it has been designed to specifically yield and absorb energy. If you want a full protection barrier that cannot be passed through then we can design these for you specifically but generally such barriers are very large and require significant foundations.

Figure 1 - Risk assessment (Sample only)

What is the likelihood of someone being harmed by a forklift in your working area? What is the likely outcome as a consequence of contact?

CONSIDER THE LIKELIHOOD OF A HAZARDOUS EVENT OCCURRING

CONSIDER THE SEVERITY OF THE INJURY / ILLNESS

	Rare 0.01%	Unlikely 0.1%	Possible 1%	Likely 10%	Almost Certain 100%
<b>Catastrophic</b> Death or Major Injuries Toxic Environment Damage << \$1,000,000 Damage	MODERATE 	MODERATE 	HIGH 	CRITICAL 	CRITICAL 
<b>Major</b> Extensive Injuries High Environment Damage << \$1,000,000 Damage	LOW 	MODERATE 	MODERATE 	HIGH 	CRITICAL 
<b>Moderate</b> External Medical Medium Environment Damage << \$100,000 Damage	LOW 	MODERATE 	MODERATE 	MODERATE 	HIGH 
<b>Minor</b> Some First Aid Required Low Environment Damage << \$10,000 Damage	VERY LOW 	LOW 	MODERATE 	MODERATE 	MODERATE 
<b>Insignificant</b> No Injuries or First Aid No Environment Damage << \$1,000 Damage	VERY LOW 	VERY LOW 	LOW 	LOW 	MODERATE 

## Barrier Design Philosophy

Handrail design is in compliant with NZS 1170 for internal barriers. There are no specific design criteria or Standards in the New Zealand, Australian or British Standards for a crash barrier subjected to impact from mobile plant. Typically, designers state that barrier systems would comply with AS/NZS 1170. However, compliance with AS/NZS 1170 is strictly speaking not possible as the Standard is specifically designed for light vehicles.

AS/NZS 1170 is an energy absorption method of analysis based on deformation of the post and rail system under impact with a certain weight and speed. Adaptations are possible in ensuring an adequate barrier system. However, the arrangements for barriers for forklifts are different in that:

- The forklift load can be at any height when a barrier collision takes place;
- It is not possible to fix a barrier post adequately to withstand the overturning moments induced by impacts for loads exceeding those in the table;
- Concrete slabs in factories are typically of inadequate thickness to allow bolts to develop sufficient strength and often barriers are installed adjacent to construction joints in the slabs which is the limiting factor in the design of barrier posts;
- On impact with the rails (as opposed to directly on the post), the bolts to the rails tend to fail before the rails reach their design capacity.

Accordingly, our designers have rationalised the barrier design as follows for compliance with AS/NZS 1170 as practicably as possible:

- The impact can be at any point on the barrier post or the rails between the posts due to different load arrangements;
- Posts have been analysed for an impact force at the top of the post, not lower down (which would increase the capacity of the impact);
- There should be the ability for the posts to yield before the hold down bolts pull out but this cannot be guaranteed due to the variances in design loads, slab joint arrangements, height of contact, speed of vehicle and other factors;
- Typically rails will fail before the posts fail
- Deformations of 50mm, 100mm and 150mm are used in the analysis for 400mm, 600mm and 950mm high posts respectively.

In 2014



## Barrier Arrangements

ForkSafe barriers can be arranged in a number of ways with variable post spacing, post heights, number of rails and there is an option for a handrail. Standard barriers come with posts at a maximum of 2400mm spacing (modules) and the heights vary: 400mm, 650mm and 1000mm.

Posts are in the shape of an I-beam using 5mm thick steel plate to form the flanges and 8mm thick steel plate webs. The flanges are welded to the web and the base of the post is welded onto a 12mm thick steel baseplate. The baseplate is fixed onto the concrete slab using 4 x 12mm dia. screw bolt anchors. The unique ForkSafe design includes a slot approximately 100mm above the base which has been designed to ensure that a minimum amount of energy can be absorbed by the base plate.

Barriers are manufactured with 2mm G-shape rails spanning between posts. The number of rails can vary for different post heights at the purchaser's discretion. All bolts used for the rails are high tensile 8.8 grade.

In 2014



## Compliance Standards

Manufacture and supply complies with the following:

- Manufactured in accordance with NZS 3404 : Part 1: 1997, Section 14 (Fabrication)
- Sheet steel Grade 250MPa minimum
- NZS AS/NZS 1252 High strength steel bolts with associated nuts and washers for structural engineering
- AS/NZS 1554.1 Structural steel welding - Welding of steel structures
- AS/NZS 4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous article
- AS/NZS 4506:1998 Metal finishing - Thermoset powder coatings



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