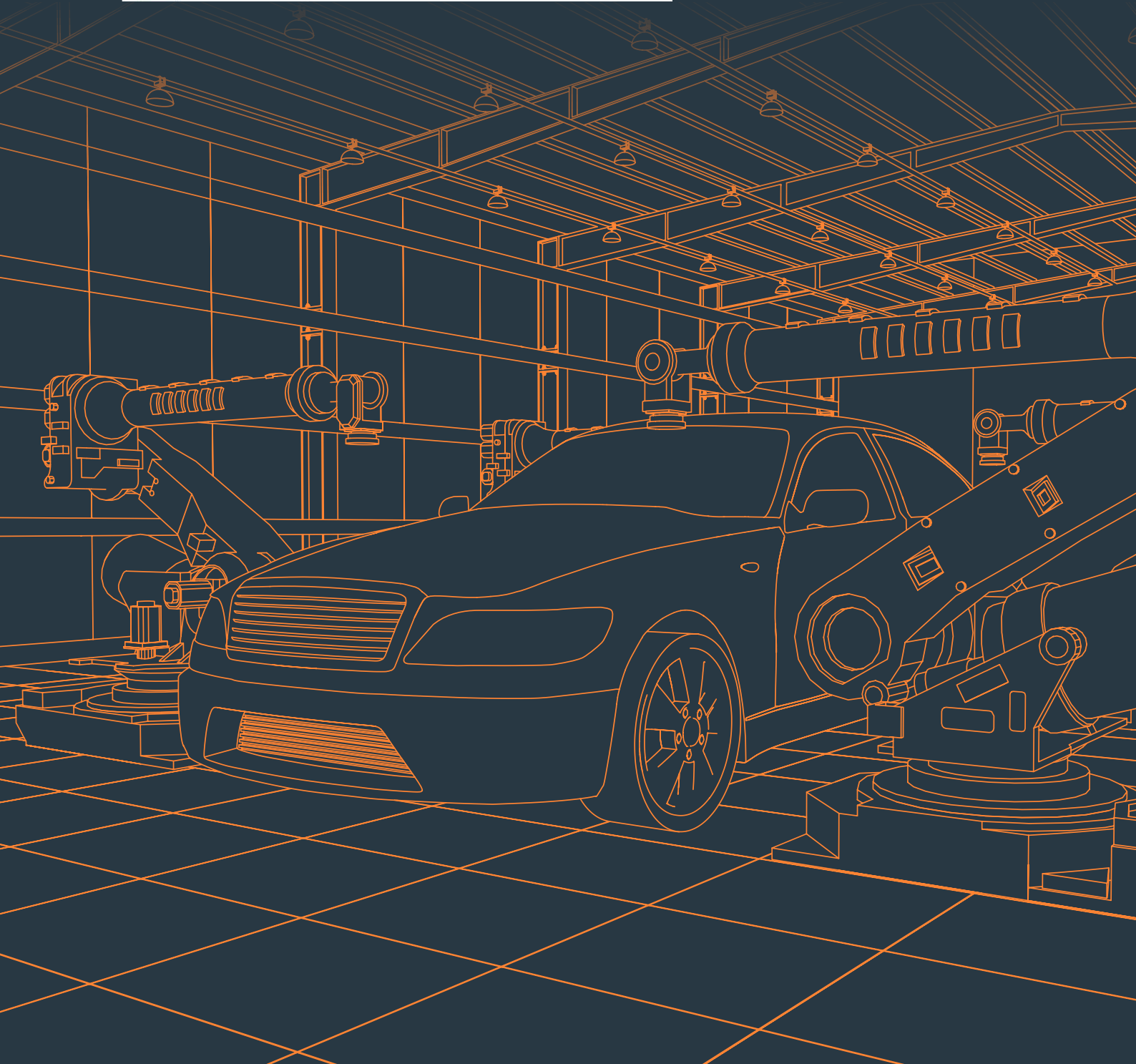


# Automotive & Production Manufacturing

**lindapter**<sup>®</sup>

Technical Innovation in  
Steelwork Connections

 MAURIN FIXATION



## **lindapter**<sup>®</sup>

Technical innovation in steelwork connections since 1934

Lindapter provides a unique range of approved steelwork solutions for overcoming challenging steel-to-steel connections. Our products are used extensively around the world and are the ideal solution when installing new or reconfiguring existing assembly lines within automotive and manufacturing plants.

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6 Steelwork

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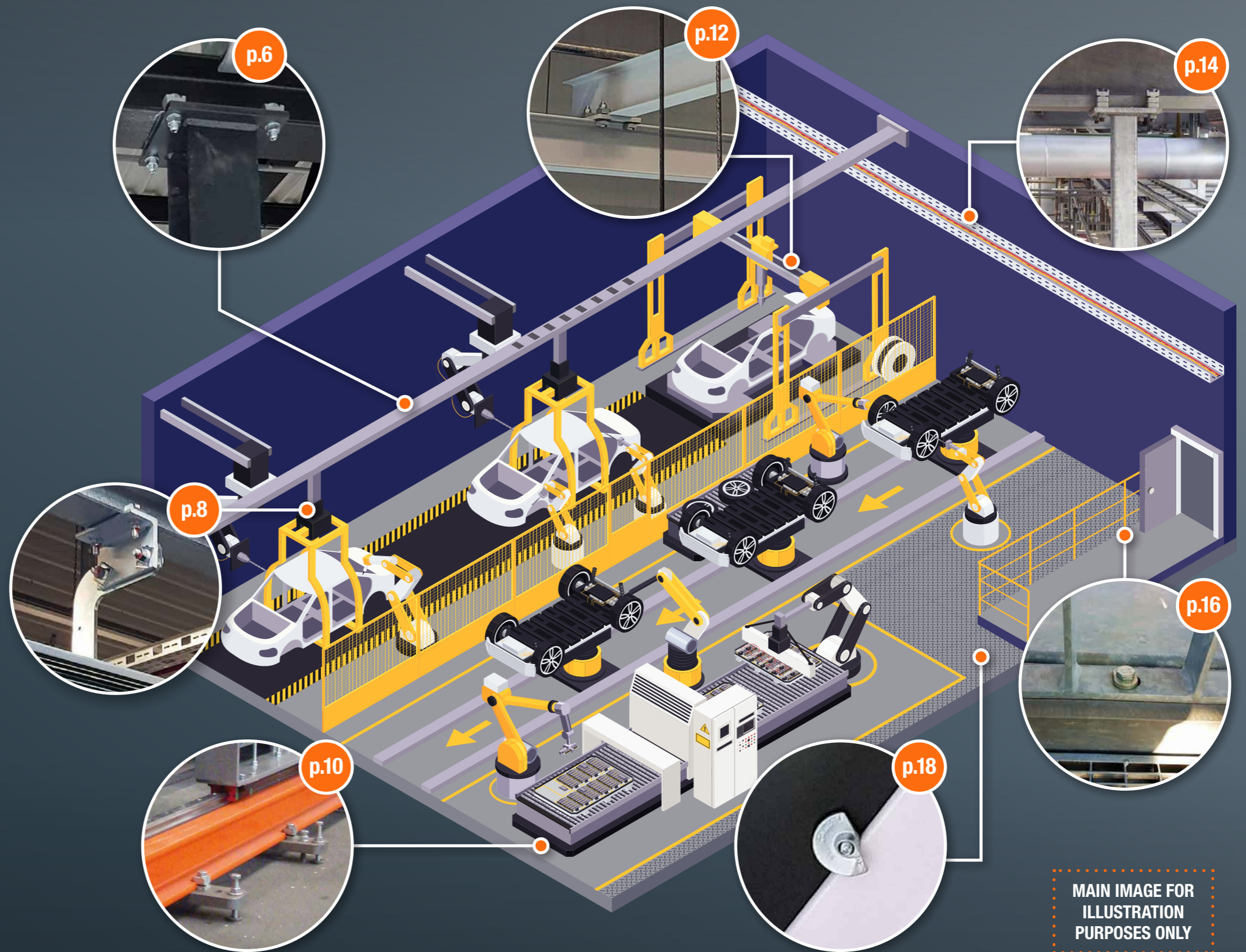
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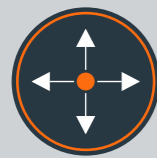
23 Accreditations & Approvals



MAIN IMAGE FOR ILLUSTRATION PURPOSES ONLY

## KEY BENEFITS

Lindapter products provide a faster, cost-effective alternative to on-site drilling or welding and are designed to reduce installation time and labour costs. A high strength, permanent (or temporary) connection is quickly achieved by clamping two steel sections together.



### Adjustable

Easy to install and adjust using hand tools. If a production line needs to change, girder clamps can be easily disassembled.



### Dynamic Loading

Many of our clamps are approved for use in dynamic loading applications making them ideal for use in the manufacturing sector.



### Save time and money

Clamping two steel sections together avoids time-consuming welding or conventional drilling and bolting.



### High strength

Choose from a range of clamps to suit your application, we have solutions for both low and high loads in both tensile and slip.



### No drilling or welding

Removes the need for hot work permits, no weakening of steel and results in safer working conditions.



### Approvals (see page 23)

Lindapter's reputation is synonymous with safety and reliability, gaining multiple independent approvals.

## GIRDER CLAMP CONNECTION CONCEPT

Maintenance engineers, contractors and specifiers working in the automotive and manufacturing sectors can take full advantage of these benefits. For example, production lines can be installed or reconfigured extremely quickly using Girder Clamps, minimising interruption to production which consequently saves time and money.



### STEP 1

A location plate is positioned between the two sections to be connected.

### STEP 2

Lindapter girder clamps, bolts and other required components are installed.

### STEP 3

Each bolt is tightened to the recommended torque using a torque wrench.

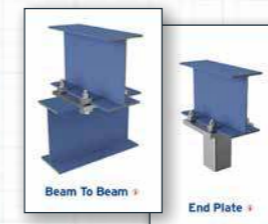
## WE ARE HERE TO HELP

Lindapter offers an extensive range of technical support and services to help you achieve the optimum solution for your next project or application. Our philosophy is to deliver the highest level of service from initial design through to installation guidance.



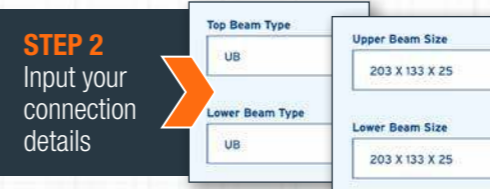
### ONLINE GIRDER CLAMP CONFIGURATOR

Lindapter's new online design tool for engineers and specifiers produces fully detailed connection drawings within seconds. Find your next solution at [www.Lindapter.com](http://www.Lindapter.com)



### STEP 1

Select your connection requirement



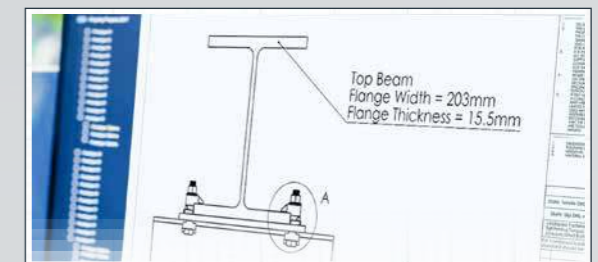
### STEP 2

Input your connection details



### STEP 3

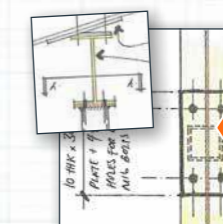
Choose your Lindapter solution



### FREE CONNECTION DETAILING

Lindapter can design a bespoke connection based on your specific requirements free of charge.

Our Technical Support Engineers will supply customised CAD drawings and BIM compatible files to complement your designs.



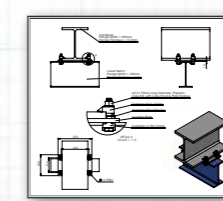
### STEP 1

Email your connection requirement to [support@Lindapter.com](mailto:support@Lindapter.com)



### STEP 2

Lindapter's experienced Engineers will design your bespoke solution



### STEP 3

An Engineer will send you a detailed connection drawing

## CHARACTERISTIC RESISTANCES

When designing a connection to Eurocode 3 please refer to our Declaration of Performance certificates that are available to download from [www.Lindapter.com](http://www.Lindapter.com). For applications with unusual loadings or where dynamic conditions are present contact Lindapter technical support.





Photo shows steelwork in the roof void of an automotive manufacturing plant. The additional steelwork was required to support new aluminium framework below to which robotics were connected for handling car components on the production line.

Lindapter's girder clamps are used to connect supporting or reinforcement steel to existing frameworks within production halls.

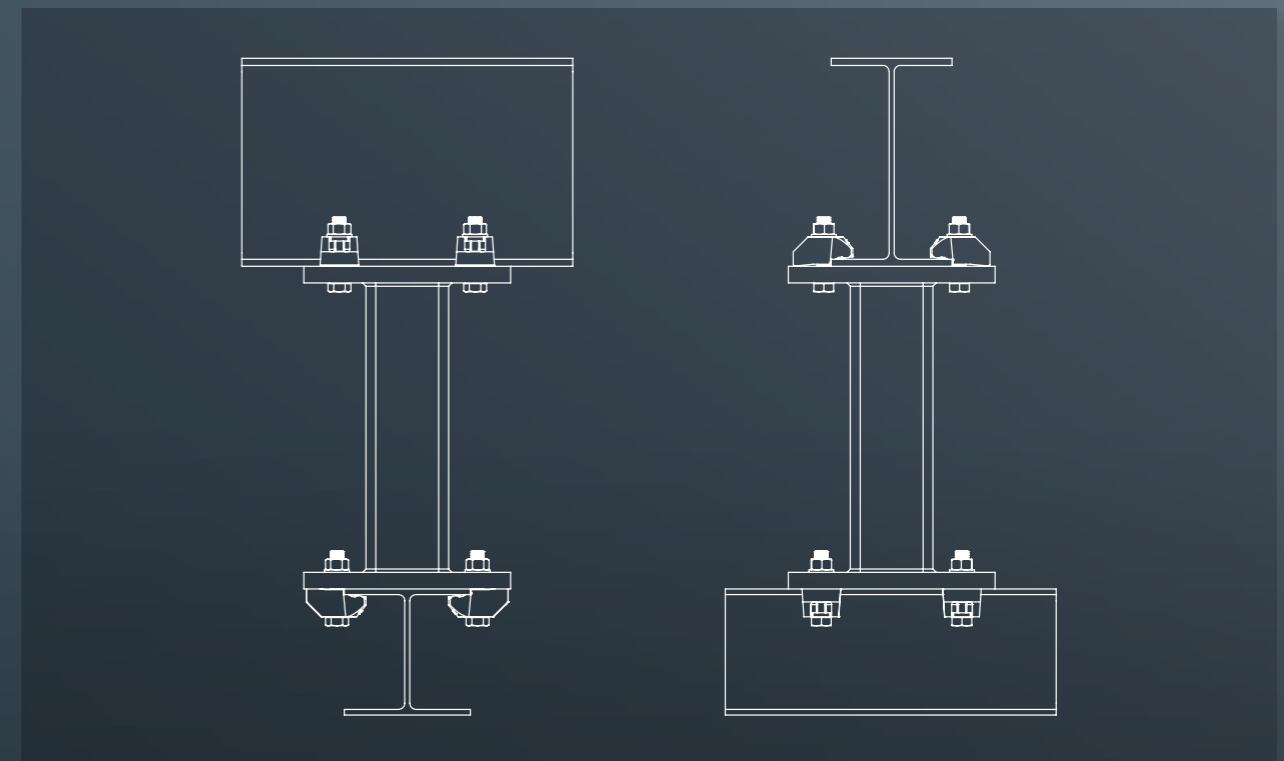
This is particularly beneficial when a production line needs to be reconfigured or new machinery such as robotics need to be installed.

Girder clamps are adjustable, allowing the installer to quickly align the steel, before tightening the clamps with standard hand tools. They provide a fast and convenient alternative to drilling and welding, while allowing connections to be easily disassembled in the future if the production line requires further modification.

### Key Benefits

- ✓ High strength connections for low, medium or high load capacity applications.
- ✓ Quick and easy to install, reducing production downtime.
- ✓ Easily disassembled during future modifications.
- ✓ No damage or weakening of existing steelwork.

### TYPICAL APPLICATION



### SERVICE SPOTLIGHT



### ONLINE APPLICATION SELECTOR

Lindapter's online Application Selector helps engineers and specifiers find a suitable connection arrangement, providing users with all the relevant connection details and components required. **Find your next solution at [www.Lindapter.com](http://www.Lindapter.com)**



Photo shows a reconfigured production line in an automotive manufacturing plant. Car conveyor hanger brackets are connected to overhead steelwork with Lindapter clamps.

**Overhead and floor conveyor systems are widely used in the production lines of automotive and other manufacturing plants to improve production rates.**

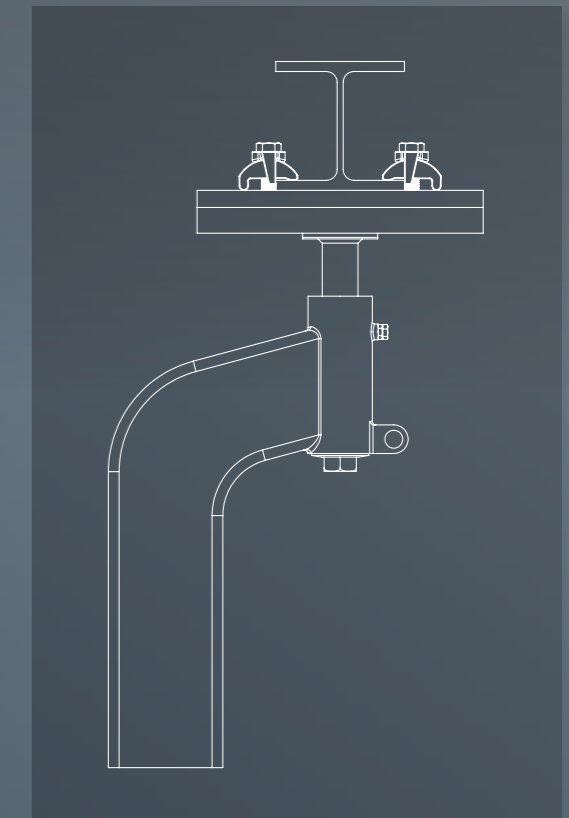
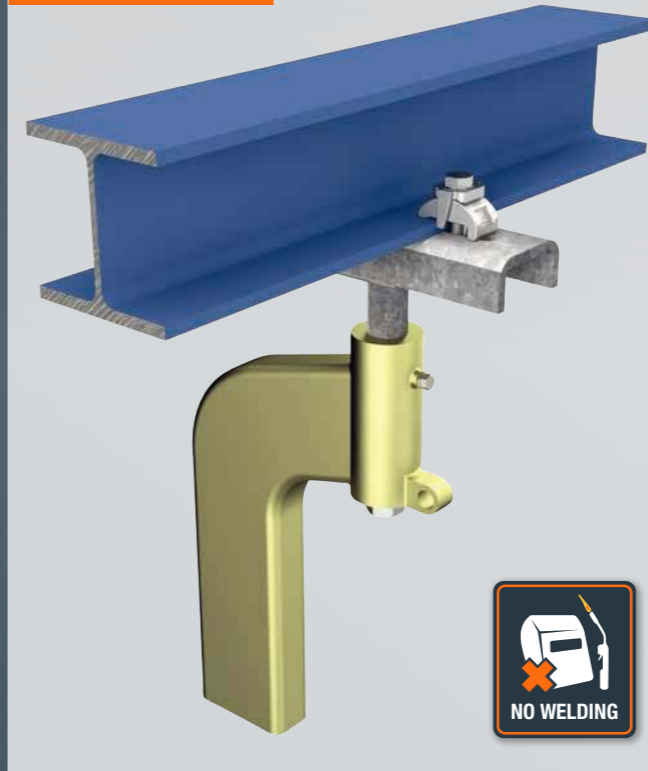
Conveyors create dynamic loads during operation due to their continuous movement and changes in direction which can cause challenges for maintenance engineers installing or reconfiguring production lines.

Lindapter has a range of clamping systems to overcome these challenges that are approved for use in dynamic loading applications and are the ideal solution for securing conveyors to the steel framework within manufacturing plants.

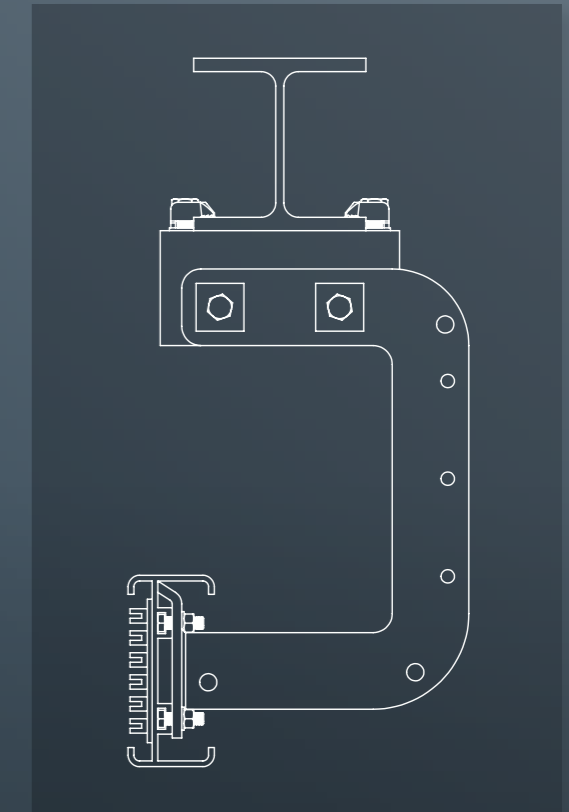
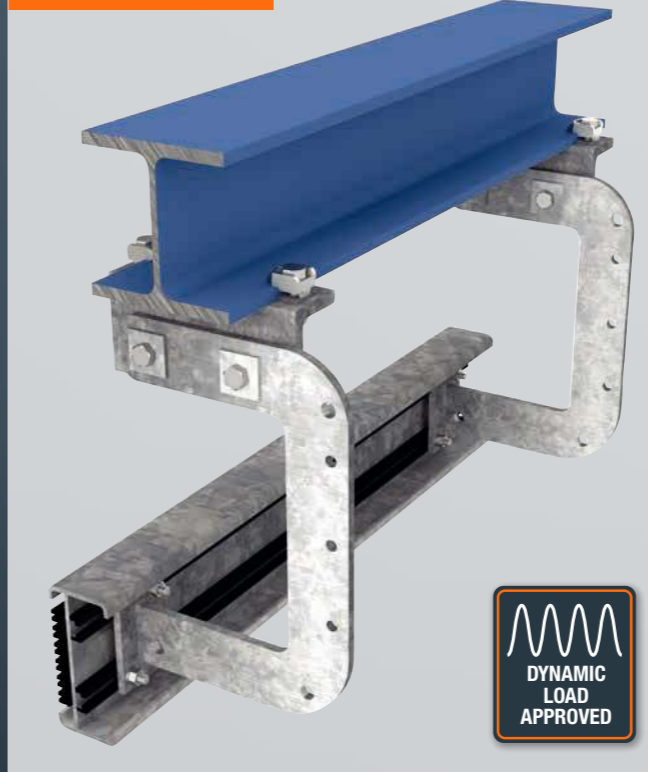
### Key Benefits

- ✓ Internationally approved for dynamic load applications.
- ✓ High strength connections for low, medium or high load capacity applications.
- ✓ Quick to install, reducing production downtime.
- ✓ Easy to install and adjust.
- ✓ Easily disassembled during future modifications.

### TYPICAL APPLICATION



### TYPICAL APPLICATION



### SERVICE SPOTLIGHT



Lindapter has a solution for you



Recommended

AAF

- Beam Size: M2 Type AAF (AAF12)
- Clamp: M2 Type AAF (AAF12)
- Lower Clamp: M2 Type AAF (AAF12)
- End Plate: 10 mm

### ONLINE GIRDER CLAMP CONFIGURATOR

Lindapter's online Girder Clamp Configurator is a new design tool for engineers and specifiers that produces fully detailed connection drawings within seconds. **Find your next solution at [www.Lindapter.com](http://www.Lindapter.com)**



Photo shows a textile machine building production line, as the machines are built, they move along a rail which is attached to a steel beam. Lindapter clamps were used to connect the beam to the adjustable levelling strip assembly anchored into the concrete floor.

The machine building industry requires a flexible approach to the assembly of machinery which is often large and difficult to move. Production lines are constantly re-configured to accommodate building of different machines.

Lindapter's clamping systems are the ideal solution for securing production lines. The clamps are manufactured from high strength materials and are designed to resist high loads in tensile and slip.

When the production line needs to be changed the clamps can easily be disassembled and moved with minimal time and effort.

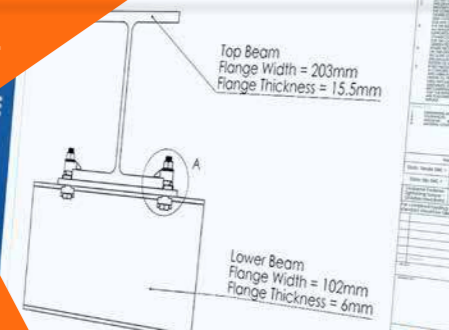
#### Key Benefits

- ✓ High strength connections for low, medium or high load capacity applications.
- ✓ Quick to install, reducing production downtime.
- ✓ Easy to install and adjust (or disassemble for re-configuration of the production line).

#### TYPICAL APPLICATION

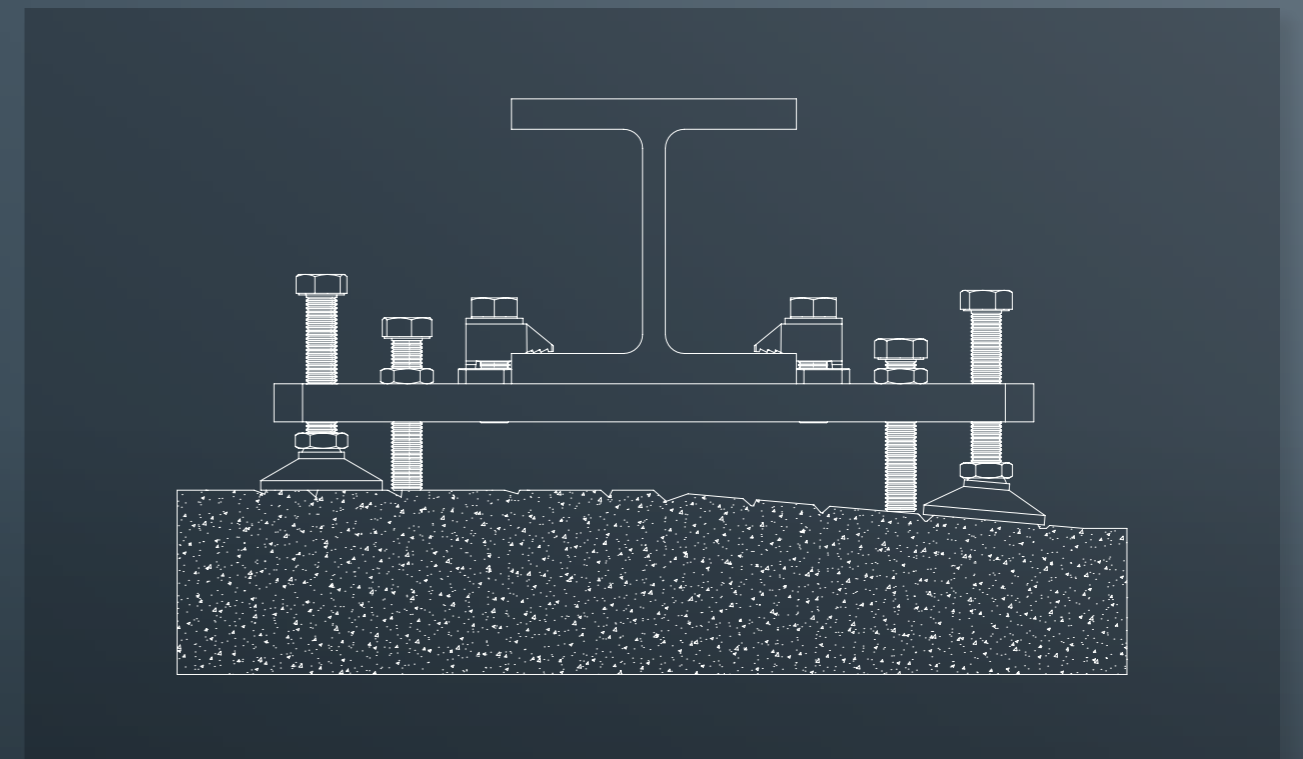


#### SERVICE SPOTLIGHT



#### FREE CONNECTION DETAILING

Lindapter can design a bespoke connection based on your specific requirements free of charge. Our Technical Support Engineers will supply customised CAD drawings and BIM compatible files to complement your designs. **Simply email [support@Lindapter.com](mailto:support@Lindapter.com)**



# Crane Rails & Hoists



**Cranes, crane rails and hoists are widely used in manufacturing plants and automotive production lines to ensure a steady workflow by lifting and moving raw materials and finished products effectively and safely.**

Dynamic loads can be present in crane structures during operation due to the movement of the hoist along the crane rail.

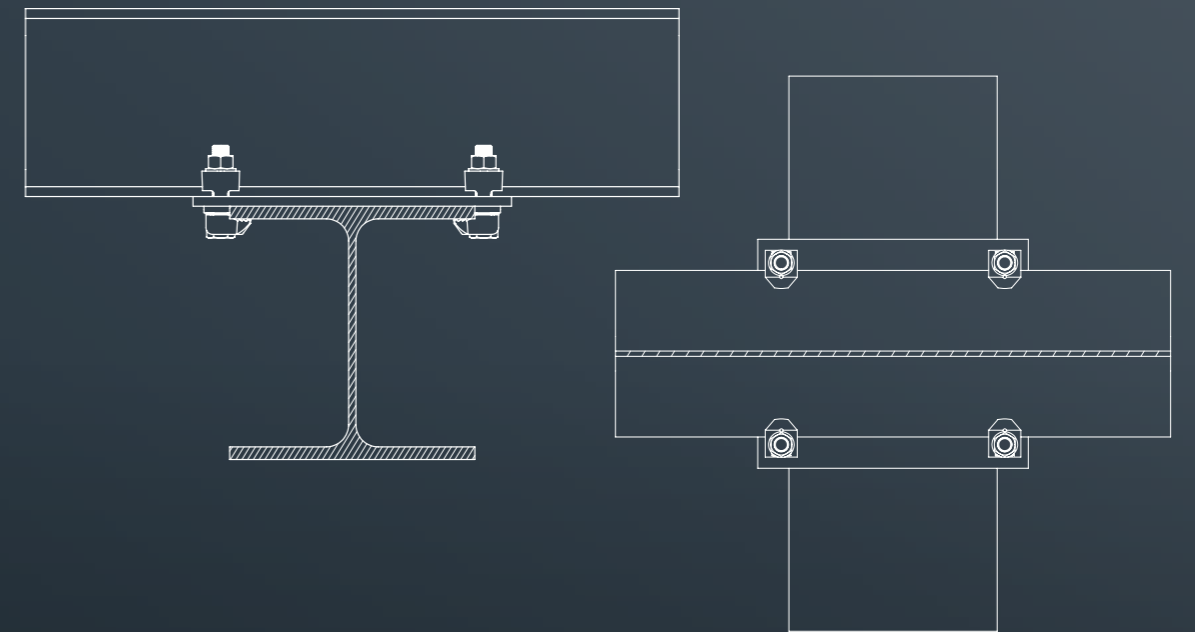
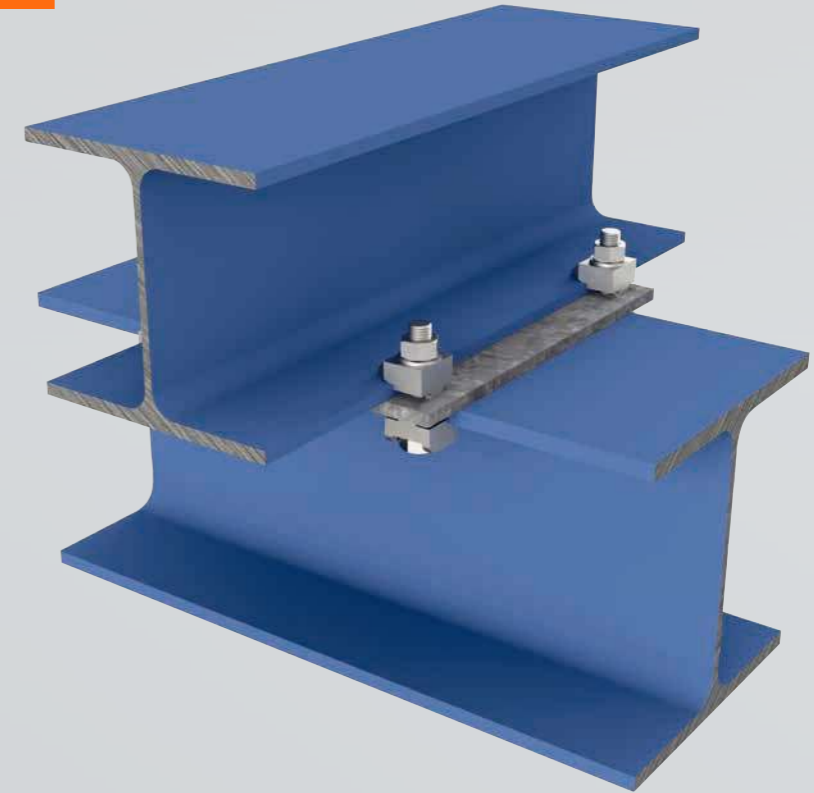
Lindapter has a range of clamping systems that are independently approved for use in dynamic loading applications and are the ideal solution for securing crane structures and crane rails to the steel framework within manufacturing plants.

### Key Benefits

- ✓ Internationally approved for dynamic load applications such as cranes and crane rails.
- ✓ High strength capable of resisting high load requirements during lifting.
- ✓ Easy to disassemble during re-configuration of production line.

Photo shows additional steelwork and crane rails connected with Lindapter clamps to the existing frame of the production hall.

### TYPICAL APPLICATION



### SERVICE SPOTLIGHT



### CUSTOMER VISITS

Our sales engineers and technical support team can visit your premises in order to identify a connection solution, provide installation guidance or carry out post-installation inspections. **To discuss your next project visit [www.Lindapter.com/contact](http://www.Lindapter.com/contact)**



Photo shows a cable tray steel support arm connected to existing steel frame with Lindapter clamps.

Cable trays or equipment can be secured within production halls in simple girder clamp tensile arrangements, or in vertical column applications withstanding frictional loads. Fast adjustability allows multiple cable tray / ladder systems to be easily setup to intersect with each other.

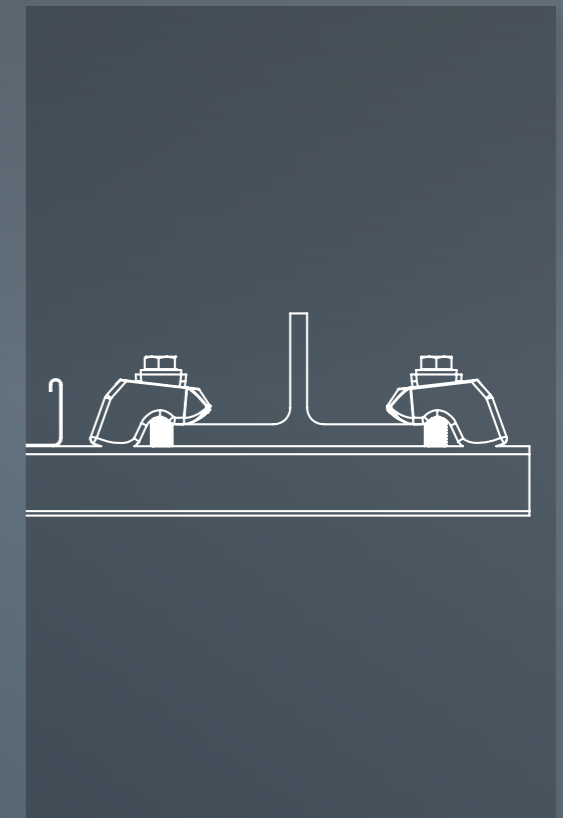
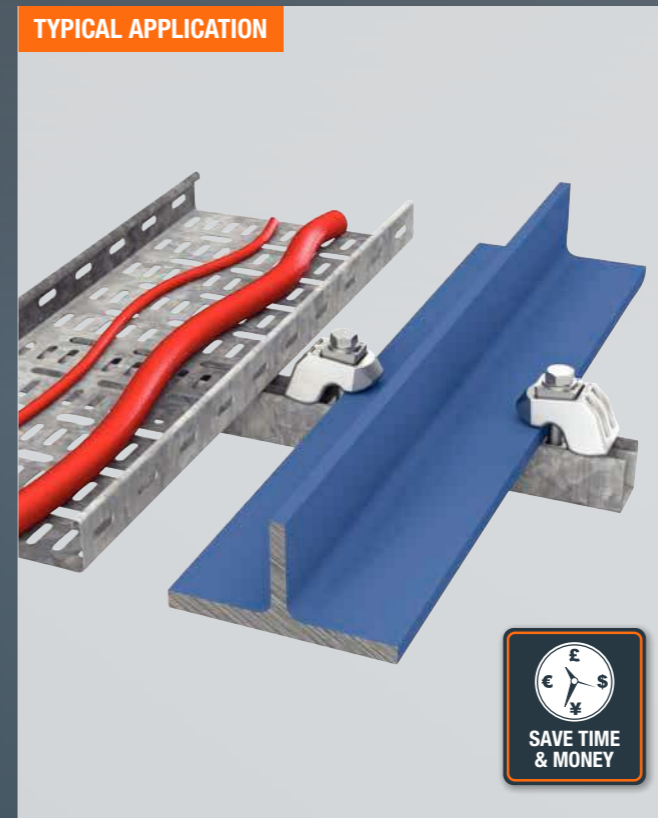
**Applications include:**

- Cable trays and ladders
- Piping and conduit supports
- Instrumentation and associated cabling
- Junction boxes and cabling

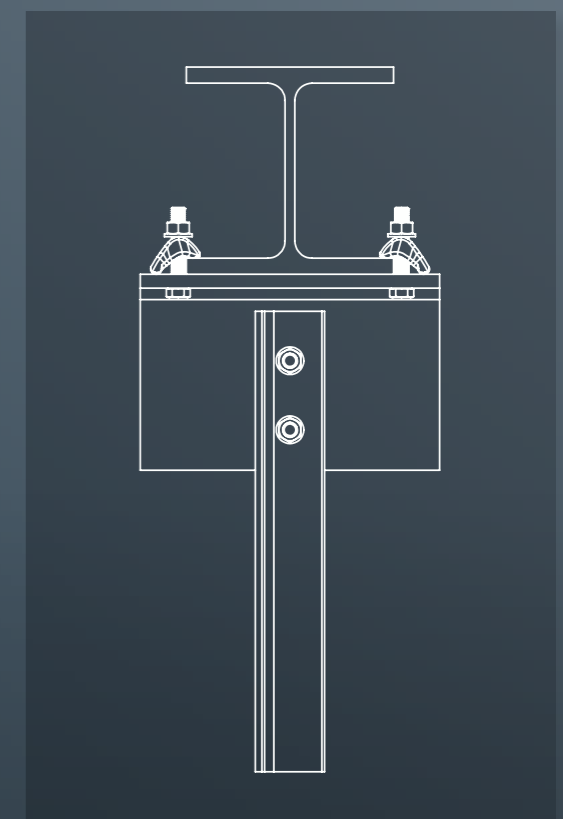
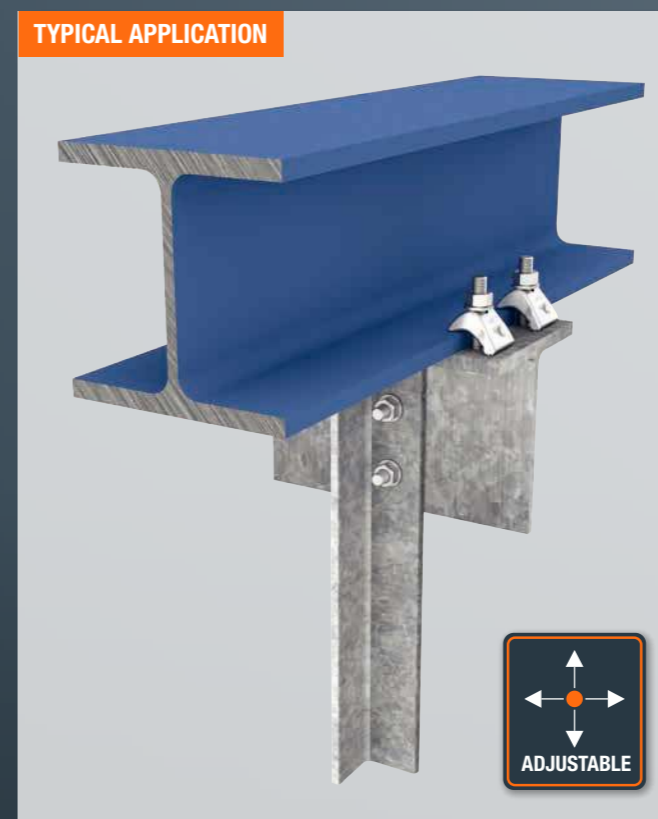
**Key Benefits**

- ✓ Fast, simple installation saves time and money.
- ✓ Fully adjustable for a convenient installation.
- ✓ Safer connections with no need to drill or weld.
- ✓ Easily disassembled during future modifications.
- ✓ No damage or weakening of existing steelwork.

**TYPICAL APPLICATION**



**TYPICAL APPLICATION**



**SERVICE SPOTLIGHT**



**GLOBAL DISTRIBUTION NETWORK**

Each Lindapter distributor has extensive knowledge and ensures that stock is available worldwide within a short time period, avoiding any unplanned downtime in manufacturing. Find your nearest Lindapter distributor by calling +44 (0)1274 521444.



# Structural Hollow Section

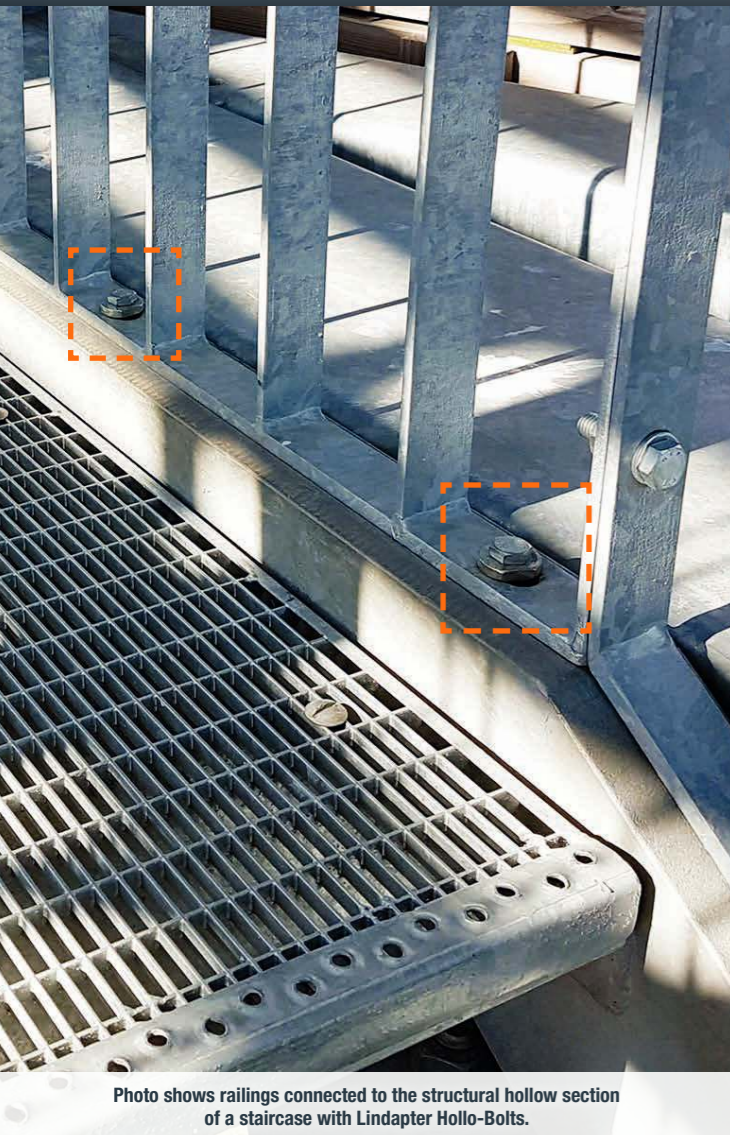


Photo shows railings connected to the structural hollow section of a staircase with Lindapter Hollo-Bolts.

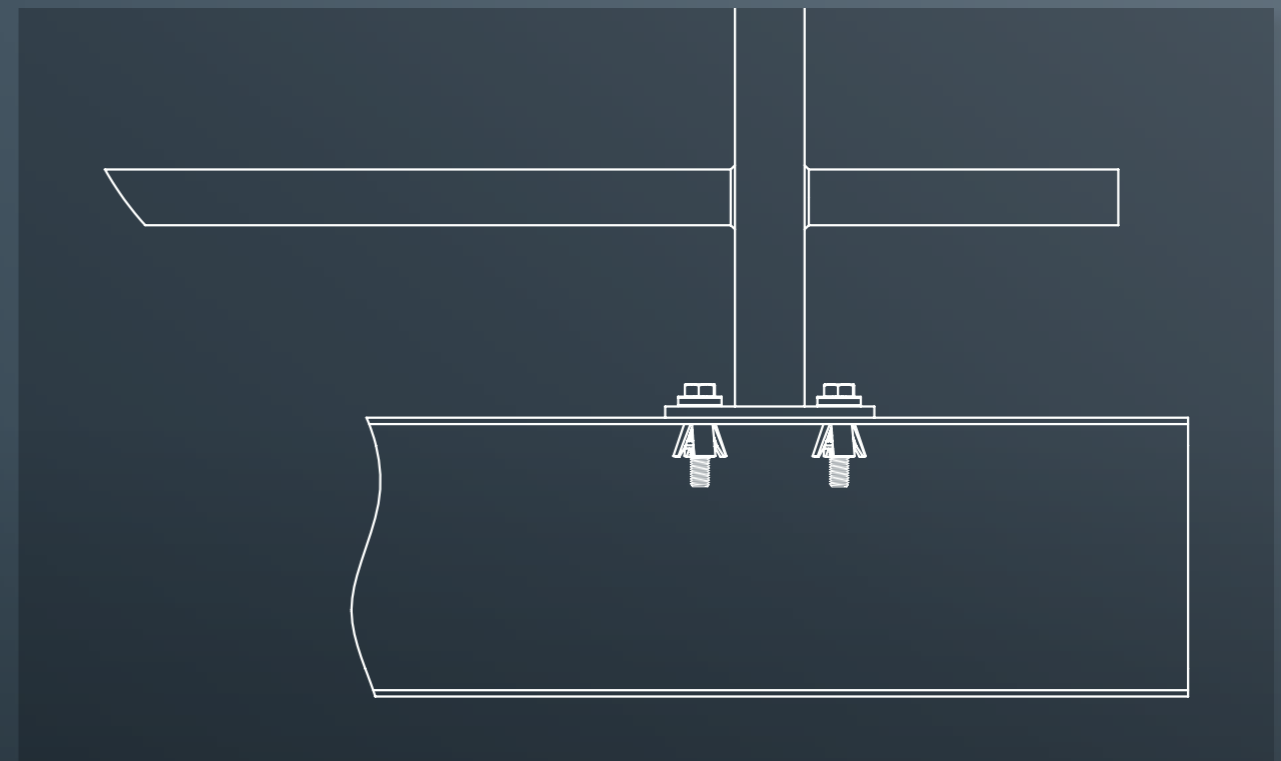
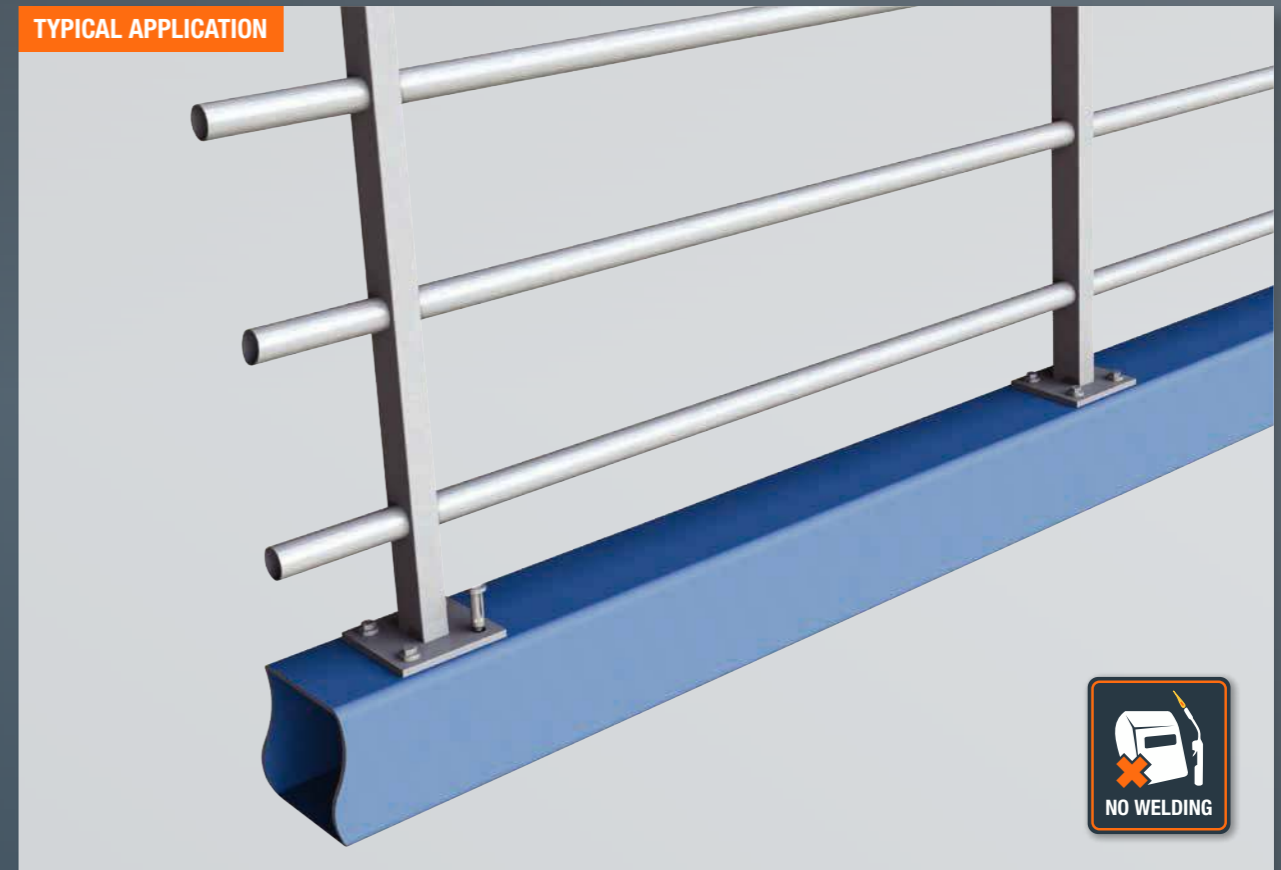
Lindapter Hollo-Bolts provide a unique solution for connecting to Structural Hollow Section (SHS). They are expansion bolts that only requires access from one side of the SHS, and offer a faster alternative to welding or through-bolting, enabling contractors to reduce construction time and labour costs.

A typical connection is made by inserting the Hollo-Bolt into the pre-drilled holes of the fixture and hollow section. As the bolt head is tightened, the cone is pulled up the bolt thread, causing the sleeve to expand until the cone locks the sleeve against the hollow section's inner wall. At full tightening torque, a clamping force is established between the fixture and the steel section to form a secure connection. Applications in automotive and manufacturing plants include handrails, barriers and staircases but they can be used for almost any connection to hollow section.

### Key Benefits

- ✓ Internationally approved for dynamic load applications.
- ✓ Fast, cost saving installation from one side.
- ✓ For square, rectangular & circular hollow sections.
- ✓ High resistance to shear and tension.
- ✓ Unique High Clamping Force design (sizes M16 and M20).
- ✓ Low temperature tested to -45°C (carbon steel variants).
- ✓ Range of head types available.

### TYPICAL APPLICATION



### SERVICE SPOTLIGHT



	TENSION	SHEAR
M10	4 kN	5 kN
M12	8.5 kN	10 kN
M16	21 kN	30 kN
M20	35 kN	40 kN

### ONLINE HOLLO-BOLT SELECTOR

Lindapter's online Hollo-Bolt Selector uses filters to dynamically display suitable products to help engineers quickly find and specify the correct Hollo-Bolt for the required application. **Find your next solution at [www.Lindapter.com](http://www.Lindapter.com)**



Photo shows the underside of chequer plate flooring connected to the steel beams with Lindapter FloorFast fixings.

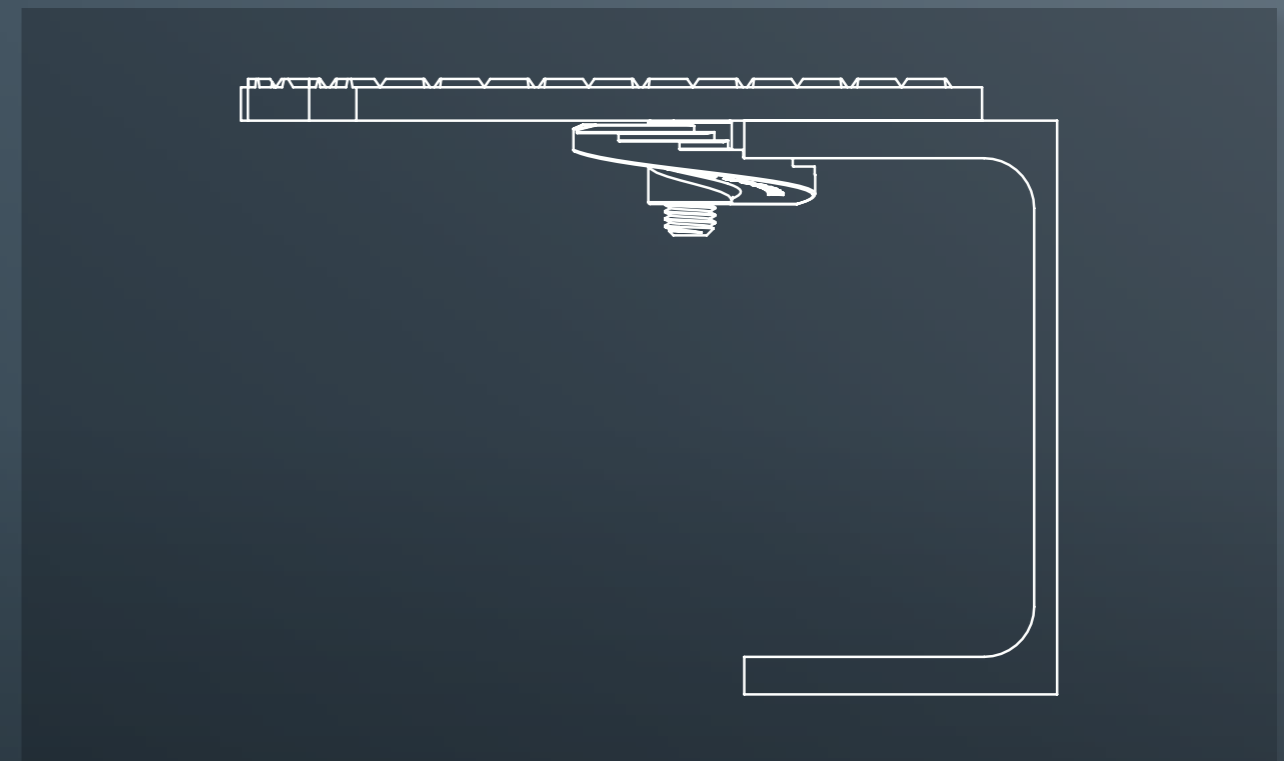
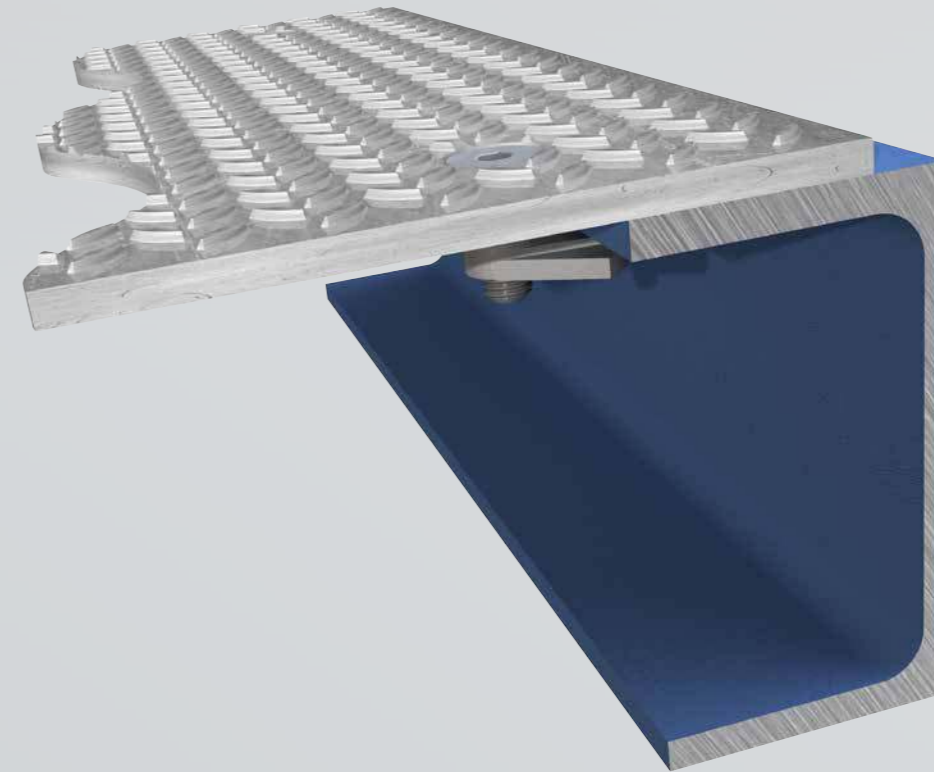
**Lindapter FloorFast provide a unique solution for securing chequer plate flooring to supporting steelwork without the need for on-site drilling or welding.**

Access to the underside of the flooring is not required, eliminating the need for costly scaffolding or elevated floors. Installation can be carried out quickly and safely from above, often by one person, significantly reducing costs. The stepped clamping face locks under the steelwork to provide a secure connection. Applications in automotive and manufacturing plants include walkways and access panels so maintenance can easily be carried out on machinery.

#### Key Benefits

- ✓ Superior clamping force from the cast body.
- ✓ Lloyd's Register Type Approval for resistance to shock and vibration.
- ✓ Zero protrusion above the surface of the floor plate.
- ✓ Easy to remove for maintenance access.

#### TYPICAL APPLICATION



#### SERVICE SPOTLIGHT



#### LIVE WEBINARS

Lindapter offers live webinars free of charge to structural engineers, consulting engineers, graduate engineers and specifiers to provide them with an introduction to steelwork clamping solutions. **To view our webinar schedule visit [www.Lindapter.com](http://www.Lindapter.com)**

## AUDI FACTORY UPGRADE INGOLSTADT, BAVARIA, GERMANY



### Lindapter Girder Clamps provided a solution for upgrading car production lines.

**Market:** Automotive  
**Product:** Type A, B and AF Girder Clamps  
**Client:** Audi AG



#### Project Background

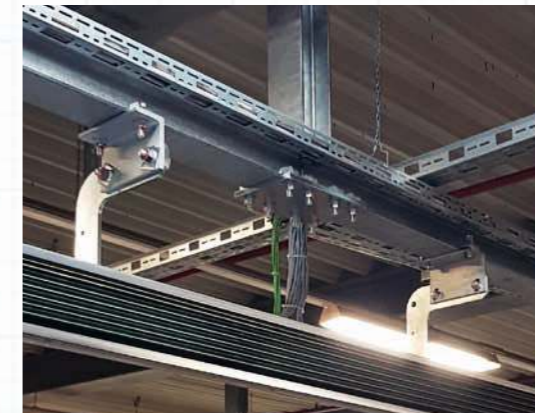
Audi has been building cars at the Ingolstadt headquarters for more than 70 years. The site continues to develop into a networked digital factory with modern production systems and high-tech solutions enabling highly efficient, sustainable manufacturing.

The plant is also getting ready for electric mobility, with measures to increase flexibility laying the foundation for the cars of the future.

#### Client Requirement

In the past Maintenance Engineers had used a range of self-made and other manufacturers clamps when carrying out modifications to the car production lines. The engineers found that they had to spend a lot of time inspecting and tightening the clamps due to them loosening and twisting with vibrations and dynamic loads caused by the production lines.

To reduce maintenance time the responsible engineer wanted to specify clamps that were approved for dynamic applications and compatible with locking washers. They also wanted to strengthen the existing connection points throughout the factory and install additional steel supports.



#### Design Solution

The engineer contacted Lindapter's technical support team who provided assistance including connection drawings, technical advice and product testing. Solutions were proposed and accepted for several applications within the factory including:

**Overhead Conveyor System**  
2-bolt connection for "L" shaped hanger brackets to be connected to overhead steelwork that carry the car conveyor system.



**Supporting Steelwork**  
4-bolt connection for securing various sized vertical posts with end plates to existing steelwork to provide extra support.



**Strengthening Steelwork**  
8-bolt connection with location plate and beams joining together end to end, and at 90° to reinforce existing steel above.



Other solutions included connections for beams at a 3° tilt, bracketry to accommodate height changes between two beams, and innovative shaped location plates for connecting non-aligned steel.

Each solution incorporated Lindapter Type A, Type B or Type AF Girder Clamps that have independent ETA / CE Mark approval for use in dynamic loading applications.

#### Installation

The Maintenance Engineers replaced all the existing non-Lindapter clamps and installed additional steel supports using over 5,000 Lindapter Type A & B Girder Clamps in various sizes (M12-M20) and over 500 Type AF Girder Clamps in size M16. The assemblies used grade 8.8 bolts installed through a range of pre-drilled bracket and end plate arrangements.

The clamps with locking washers were quick and easy to install using simple hand tools and calibrated torque wrench, the clamps also had an anti-rotational design that prevented them from rotating during installation.

#### Result

Lindapter Girder Clamps provided a connection solution independently approved for dynamic load applications. The clamped assemblies are fully adjustable which gave the engineers the ability during installation to manoeuvre them into their final positions before fully tightening the bolts. Installation was quick, minimising interruption to production and downtime, whilst the connections can be easily disassembled in the future if the production line requires further modification.

#### Key Benefits

- ✓ Approved for dynamic load applications
- ✓ Fully adjustable for easy installation
- ✓ Minimises downtime
- ✓ Easily disassembled for future upgrades

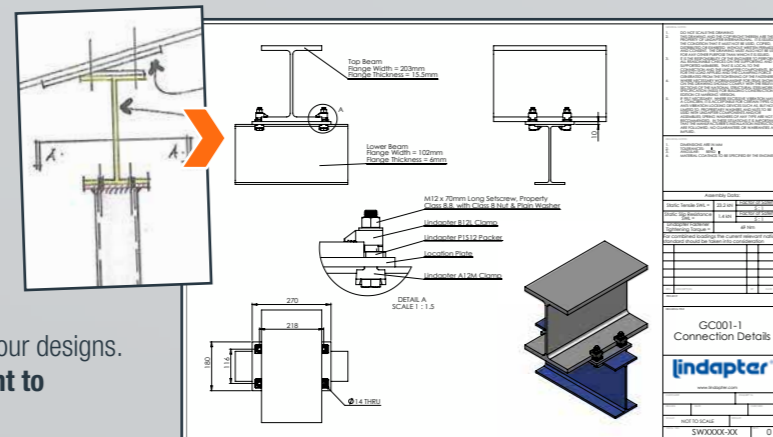


Read more examples of Lindapter's technical solutions on our website  
[www.Lindapter.com](http://www.Lindapter.com)

Project Name	Country	Lindapter Products
Volvo Cars Ghent	Belgium	Girder Clamps
GM Canada	Canada	Girder Clamps
Škoda Auto	Czech Republic	Girder Clamps
Ford Bordeaux Transmission Plant	France	Support Fixings
Smart Automobile Hambach	France	Girder Clamps
GM Opel, Bochum	Germany	Girder Clamps
GM Opel, Rüsselsheim	Germany	Girder Clamps
Mercedes-Benz, Berlin	Germany	Girder Clamps
Mercedes-Benz, Emden	Germany	Girder Clamps
Porsche, Zuffenhausen	Germany	Girder Clamps
VW, Hanover	Germany	Girder Clamps
VW, Mosel	Germany	Girder Clamps
VW, Wolfsburg	Germany	Girder Clamps
VW-Audi, Ingolstadt	Germany	Girder Clamps
BMW Engine Manufacturing Plant, Chennai	India	Girder Clamps
Jaguar	India	Girder Clamps
Mazda Car Plant Hiroshima	Japan	FloorFast
Volkswagen, Ching Chung Car Plant	Taiwan	Support Fixings
Honda Car Plant, Swindon	UK	Girder Clamps
Jaguar Land Rover, Solihull	UK	FloorFast, Hollo-Bolt, Girder Clamps
Nissan Motor Manufacturing, Washington	UK	Girder Clamps
Rolls-Royce Motor Cars	UK	Girder Clamps
Toyota Motor Manufacturing, Derby	UK	Girder Clamps
Toyota Motor Manufacturing, Shotton	UK	FloorFast
Ford Motor Co, Dearborn, Michigan	USA	Girder Clamps
Ford Motor Co, Detroit, Michigan	USA	Girder Clamps, FloorFast
GM Motors	USA	Girder Clamps
Mercedes-Benz U.S. International Vance Alabama	USA	Girder Clamps
Toyota Motor Manufacturing, Kentucky	USA	Girder Clamps

## WE ARE HERE TO HELP... TRY OUR FREE CONNECTION DETAILING SERVICE

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## QUALITY, ENVIRONMENT AND TRACEABILITY

Accredited to **ISO 9001** since 1986, Lindapter strictly enforces a quality management system that includes rigorous product testing to ensure consistently high manufacturing standards. As part of Lindapter's ISO 9001 quality management system and in compliance with the Construction Products Regulation, Lindapter operates a comprehensive Factory Production Control system that ensures traceability of all Lindapter products throughout the manufacturing process.

The company also operates an **ISO 14001** certified environmental management system, constantly monitoring and improving aspects of the business that may impact on the environment, such as the use of natural resources as well as handling and treatment of waste and energy consumption.



## INDEPENDENT PRODUCT APPROVALS

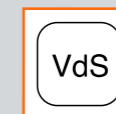
For over 85 years, Lindapter has manufactured to the highest standards, earning a multitude of independent approvals and a reputation synonymous with safety and reliability. Current accreditations are detailed below.



**CE Mark**  
CE Marking provides additional assurance that a product complies with the Construction Product Regulation and will perform as stated in the corresponding Declaration of Performance (DoP). DoPs list Characteristic Resistances for use when designing connections to Eurocode 3. For more information please visit [www.Lindapter.com](http://www.Lindapter.com)



**ICC-ES**  
North America's leading evaluation service has approved multiple Lindapter products to be compliant with the International Building Code.



**VdS Schadenverhütung GmbH**  
VdS is a leading independent testing institution in Germany for products used in fire protection applications.



**Loss Prevention Certification Board**  
The LPCB is a leading International Certification body in the field of security and fire protection.



**Lloyd's Register Type Approval**  
Lloyd's Register Type Approved products have been subjected to tensile, frictional, vibration and shock tests, witnessed and verified by Lloyd's Register.



**Factory Mutual**  
This American insurance organisation offers an approval that is recognised by the fire protection industry worldwide.



**TÜV Nord**  
TÜV is the certifying authority for safety, quality and environmental protection in Germany.

**Disclaimer** Lindapter International supplies components in good faith, on the assumption that customers fully understand the loadings, safety factors and physical parameters of the products involved. Customers or users who are unaware or unsure of any details should refer to Lindapter International before use. Responsibility for loss, damage, or other consequences of misuse cannot be accepted. Lindapter makes every effort to ensure that technical specifications and other product descriptions are correct. 'Specification' shall mean the specification (relating to the use of the materials) set out in the quotation given by the Seller to the Buyer. Responsibility for errors or omissions cannot be accepted. All dimensions stated are subject to production tolerances - if in doubt please check with Lindapter. In the interests of improving the quality and performance of Lindapter products, we reserve the right to make specification changes without prior notice.

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# lindapter®

*Distributeur agréé pour la France*

 MAURIN FIXATION

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