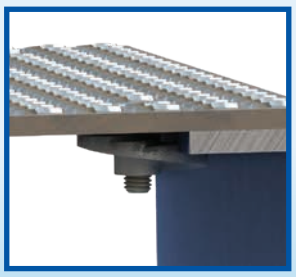
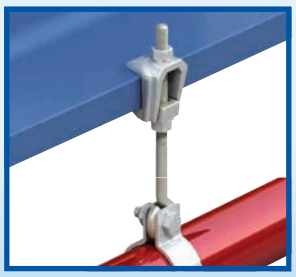
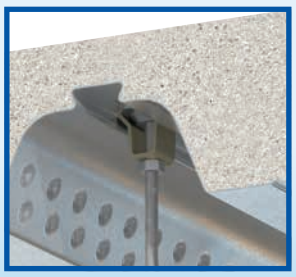
May 2025

Inventor of the Girder Clamp
Est. 1934
lindapter
Accept no substitute
and Hollo-Bolt®

lindapter®
Established 1934

Technical Innovation in Steelwork Connections

Welcome

For over 90 years Lindapter has earned a respected reputation as the pioneer in the design and manufacture of steelwork clamping systems, growing from a modest family business into a reputable global brand by providing a faster, cost-effective alternative to drilling or welding.

History

Original 1930s logo

Lindapter's proud heritage began in 1934 when Engineer Henry Lindsay invented an entirely new concept of connecting steelwork with the Lindsay Bolt Adapter, a solution that allowed steel beams to be quickly clamped together, instead of time-consuming drilling or welding.

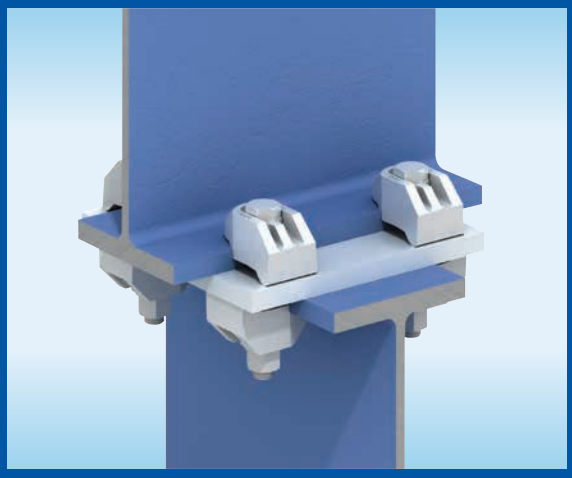
Henry combined the words 'Lindsay' and 'Adapter' to create the now-famous brand name. Today Lindapter remains true to its roots, by continuing to invent and manufacture high quality products that save steel contractors time and money.

Lindapter's unique connections can be installed with standard hand tools and allow faster construction, reduce labour costs and allow on-site adjustability with no damage to steel sections.

Girder Clamps

PAGES 8 - 33

Steel sections are clamped together using high strength connections configured to suit specific requirements without damaging the steelwork, for example, to resist 250kN tensile loading / 70kN slip.



Rail Fixings

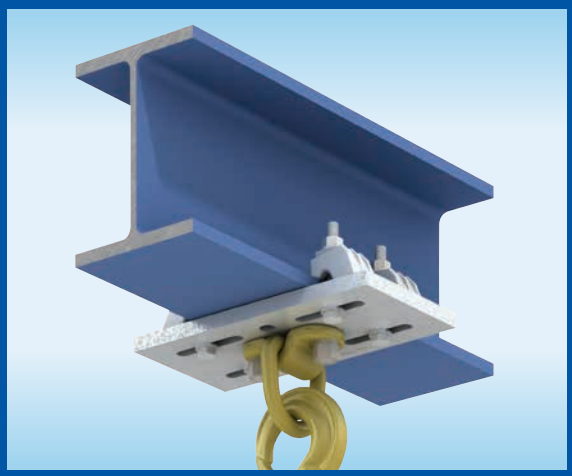
PAGES 34 - 37

Low speed rail is safely secured with easy-to-install products such as the **Type HD** that offers convenient lateral adjustability during installation.

Lifting Points

PAGES 38 - 41

These assemblies support the lifting or rigging of general equipment. Can be used for single lift situations or permanent applications such as theatre, lighting and rigging units.



Load values and typical Factors of Safety (FOS) shown in this catalogue are for Lindapter products only and are subject to the strength of the supporting section. Tightening torques stated are for unlubricated fasteners.

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Hollo-Bolt™

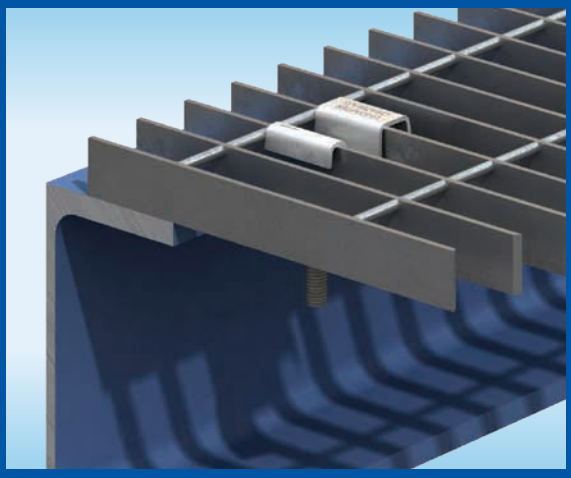
PAGES 42 - 55

A family of expansion bolts for quickly connecting steel sections to pre-drilled Structural Hollow Section (SHS) that require access to one side only. Products include the **Hollo-Bolt**™ and the **LindiBolt**™.

Floor Fixings

PAGES 56 - 59

A range of innovative fixings for connecting steel flooring to the supporting steelwork without the need for on-site drilling or welding. Installation can be carried out quickly and safely from above.



Support Fixings

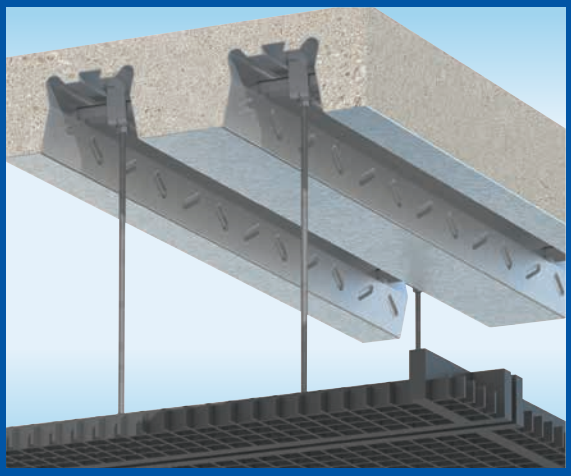
PAGES 60 - 67

Easy-to-install solutions for suspending building services from structural or secondary beams. The adjustability of these products allows pipework and other equipment to be quickly positioned.

Decking Fixings

PAGES 68 - 77

High quality, cost effective connections for building services, designed to fit inside the dovetail re-entrant channel of major decking profiles, this zero-impact method avoids damaging the decking.



www.Lindapter.com
+44 (0) 1274 521444

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Markets

We provide technical solutions that overcome engineering and construction challenges. Our Engineers and support teams add value to projects across the globe, proven from Antarctica to the Caribbean, creating safety and time-saving benefits in a vast range of markets including:

Building & Construction

- ✔ Architectural
- ✔ Arts / Entertainment / Staging
- ✔ Building Refurbishment & Renovation
- ✔ Façades & Cladding
- ✔ Modular & Offsite Construction
- ✔ Retail Centres
- ✔ Signage
- ✔ Stadiums / Arenas
- ✔ Steel Building Construction
- ✔ Theme Parks / Recreation
- ✔ Warehouse / Distribution Centres

Energy

- ✔ Nuclear
- ✔ Oil & Gas - Off Shore
- ✔ Oil & Gas - On Shore
- ✔ Power Generation (other)
- ✔ Renewable Energy

Industrial

- ✔ Automotive
- ✔ MEP / Building Services
- ✔ Chemical & Pharmaceutical
- ✔ Cranes & Crane Rail
- ✔ Food Processing
- ✔ General Manufacturing
- ✔ Gigafactory
- ✔ Machine Building
- ✔ Material Handling
- ✔ Mining
- ✔ Ship Building

Infrastructure

- ✔ Airports
- ✔ Bridge
- ✔ Data Centres
- ✔ Ports / Docks / Piers / Seawalls
- ✔ Foundations / Piling
- ✔ Rail
- ✔ Roads
- ✔ Towers / Monopoles / Pylons
- ✔ Water & Wastewater / Treatment

Project Case Studies can be found on pages 84-91


Architectural


Automotive

Stadiums / Arenas


Bridges


Renewable Energy


Steel Building Construction

Project Case Studies can be found on pages 84-91


Modular & Offsite Construction


Power Generation

Market Sector Brochures

In addition to this technical catalogue, browse our range of brochures to find typical connection solutions for your market. Each brochure is packed with typical applications and product recommendations. Visit our website and create a free Lindapter account to access these resources.

Steel connection solutions for many industries and applications including:

Each brochure features a wide range of Lindapter connection solutions for specific market sectors, as well as real-life project photographs, descriptions of the solution and 3D renders so the reader can quickly understand and visualise the application and relate it to their own situation.

Extracts from the MEP Brochure pictured

Download your copy from the 'Market Brochures' section at www.Lindapter.com

We are here to help

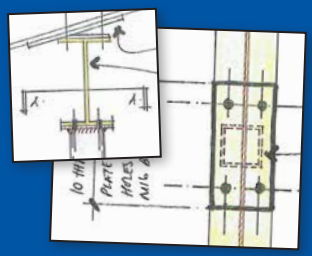
Lindapter's team of experienced Engineers offer an unrivalled support service, including free connection detailing and bespoke product development. Lindapter's philosophy is to deliver the highest level of service from initial detail through to installation guidance.

Free connection detailing

Lindapter can design a bespoke connection based on your specific requirements free of charge in three easy steps. Based on your connection requirements, our Technical Support Engineers will supply customised CAD drawings and BIM compatible files to complement your structural designs.

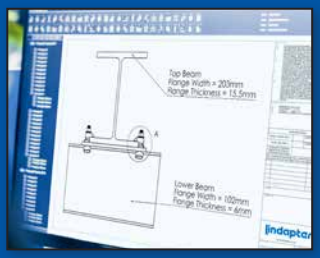
Step 1

Email your connection requirement to support@Lindapter.com



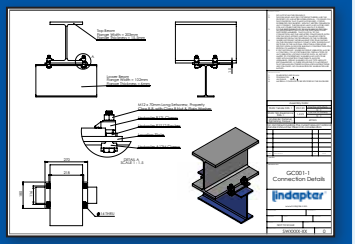
Step 2

Lindapter's experienced Engineers will design your bespoke solution



Step 3

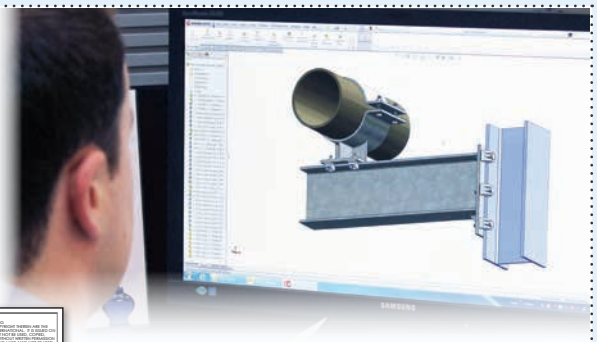
An Engineer will send you a detailed connection drawing (see below)

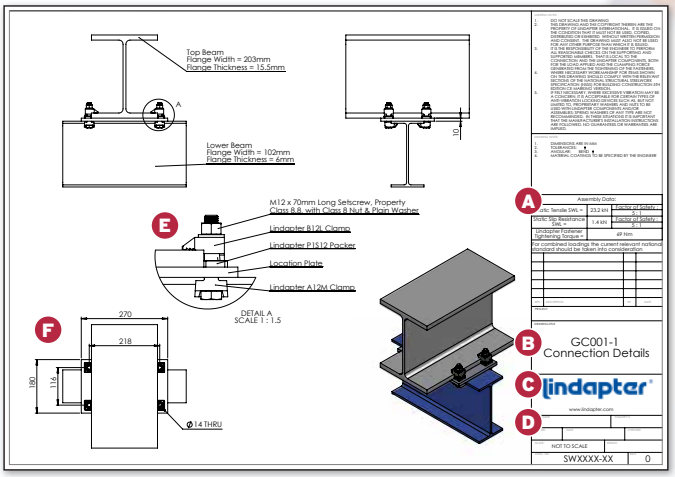


What we require...

If you would like Lindapter to design your custom connection, please make sure to have the following:

1. Steel sizes to be used or flange width and thickness
2. Loads to be resisted (eg. 10kN tension and 15kN slip)
3. General arrangement sketch / verbal description
4. Project Name / Title / Location (optional)

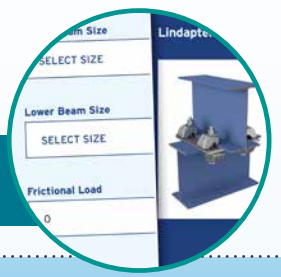




The Design Sheet

Includes the following:

- **A)** Assembly Data (allowable loads, torque requirements and Factor of Safety used)
- **B)** Bespoke project name or detail
- **C)** Lindapter distributor purchasing information
- **D)** Your company name
- **E)** Lindapter product requirements
- **F)** Additional dimensions for precise fabrication



Alternatively, try our **Girder Clamp Configurator** which produces fully detailed connection drawings to get an instant solution.

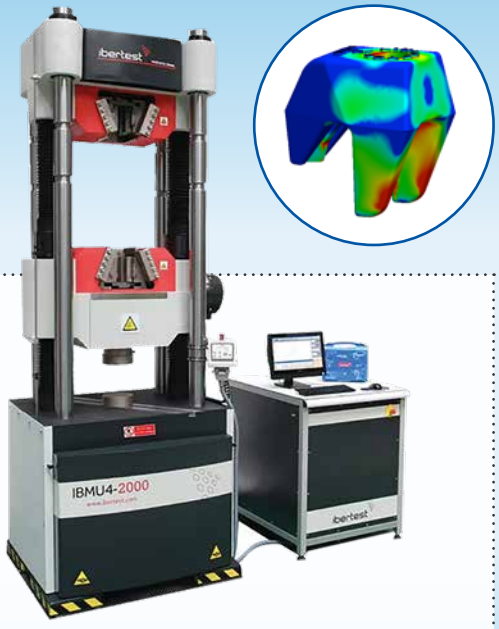
Ref: LindUKMay25

Additional technical support services available to you

We offer comprehensive design and support, tailoring our products to your application. Our team of qualified Structural and Mechanical Engineers are on hand to work with you to deliver the highest level of service from initial concept designs through to completion.

Engineered Solutions

Lindapter's Research & Development facility and unique expertise facilitates a bespoke product development service, passionately referred to as 'Engineered Solutions'. Supported by the latest technology including 3D modelling, 3D printing, FEA and three test machines with capacity of 50kN to 2000kN, Lindapter's Engineers can develop solutions that satisfy your connection demands.



Key R&D Capabilities

- ✔ Creating initial concepts and 3D models, performing FEA stress analysis to validate designs
- ✔ 3D printed samples help verify the design before prototypes are made and tested
- ✔ In-house test facility with three machines with a capacity of 50kN to 2000kN for static, tensile, compression, shear and slip tests
- ✔ The team ensure products meet or exceed industry standards

Contact Lindapter to design a solution for your connection requirement. Email **support@Lindapter.com** or call **+44 (0)1274 521444** for more details.

CPD / Technical Presentations

We are pleased to offer Continuing Professional Development (CPD) / Technical Presentations either in person or online and run regular live webinars. These presentations look at the unique solutions, offered by Lindapter, for connecting steelwork faster and more cost-effectively compared to alternative traditional methods of welding or drilling and bolting.

LEARN WITH LINDAPTER

Who should attend?

Structural Engineers, Consulting Engineers and Specifiers involved with the design of steelwork connections.

How do I book?

Please complete the CPD / Technical Presentation form on the Lindapter website. Once we receive your request we will contact you to confirm the date and time. Webinars can be booked via our website Live Webinar Schedule news page.

Girder Clamp - The Connection Concept

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.

Quick and easy to install

Step 1

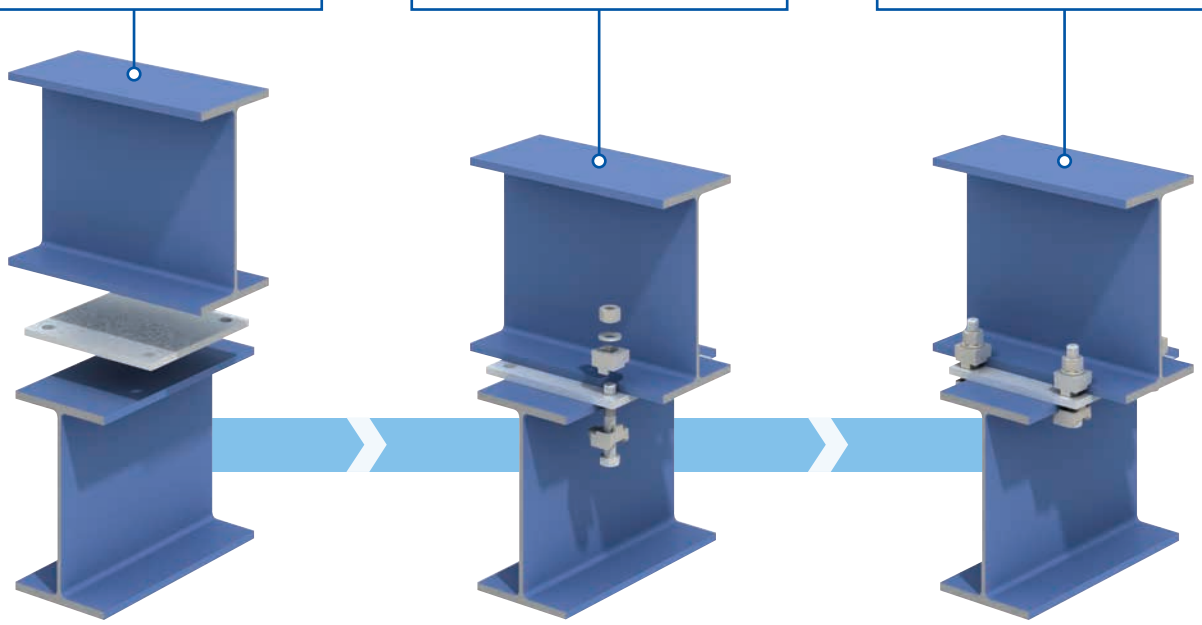
Bring the location plate and the lower beam into position below the upper beam.

Step 2

Fit the bolts with two Lindapter clamps, any packings required, a nut and a washer.

Step 3

Using a torque wrench, simply tighten each bolt to the recommended torque.



REASONS TO USE...

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

Safer connections
On-site drilling and welding is avoided, removing the need for hot work permits and encouraging safer site conditions.

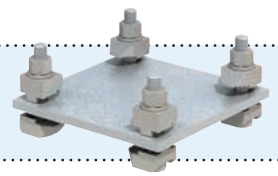
High strength
Lindapter clamps are manufactured from high strength materials to resist high load requirements and harsh environments.

Industry leading approvals
Lindapter has earned a reputation synonymous with safety and reliability, gaining multiple independent approvals. Further details can be found on **page 98**.

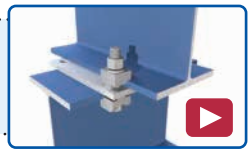
Adjustable
Quickly align steel sections by sliding the section into the correct position before tightening the Girder Clamp to complete the installation.

Free connection detailing
Lindapter's experienced Engineers can design a bespoke connection based on your specific requirements free of charge. See **page 6** for more details.

Turn to **page 10** to see the components of a Girder Clamp in more detail.



Watch installation videos of Girder Clamps and many more products at **www.Lindapter.com**



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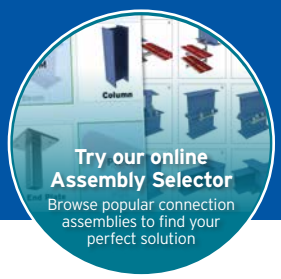
Typical Configurations

The Girder Clamp represents a range of Lindapter products that are compatible with virtually any shape or size of steel section and can withstand loading conditions in a wide variety of applications, for example:



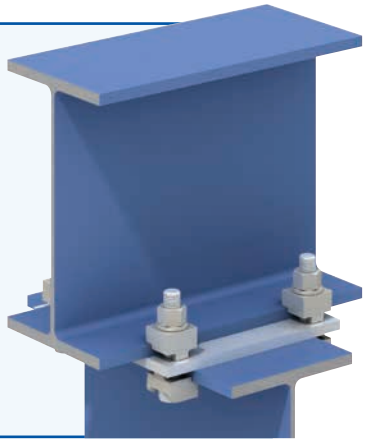
STANDARD

Beam-to-beam (tensile loading)

The original configuration is designed to secure steel sections and resist tensile loading. It features a pre-drilled location plate that is placed between the beams to locate the four bolts. Each bolt has two Lindapter components to clamp the flange immediately above and below the plate.

For thicker beams, packing pieces are required to raise the height of the clamps to enable the product to sit correctly on the beam.

See the components of a Girder Clamp in more detail on **page 10.**



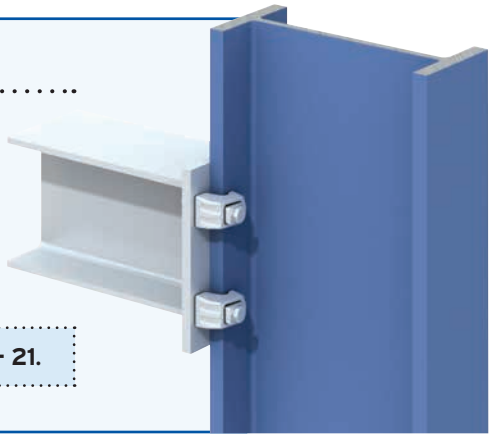
HIGH SLIP RESISTANCE

Beam-to-column (slip resistance)

This configuration utilises a High Slip Resistance (HSR) clamp per bolt to achieve a secure connection to vertical columns.

An end plate is pre-fabricated to the section that will be joined to the column. The purpose of this plate is to locate the bolts and provide a fastening position for the Lindapter clamps.

Lindapter's range of HSR clamps can be found on **pages 16 - 21.**



ADJUSTABLE

Inclined beam-to-beam (combined loading)

A fabricated assembly, optimised with Lindapter's adjustable HSR clamps to resist both tensile loading and slip.

This solution adjusts to fit a wide range of flange thicknesses for added convenience. Lindapter can design and supply the entire assembly to suit individual applications.

Read more about the free connection detailing service on **page 6.**

More examples of typical Lindapter configurations can be found on **pages 30 - 33.** Alternatively, visit the website.

Girder Clamp Configuration

A Girder Clamp is a connection system configured with components to suit specific application requirements, for example high tensile loading or high corrosion resistance. Take advantage of the free connection design service to find the best solution for your connection requirement.

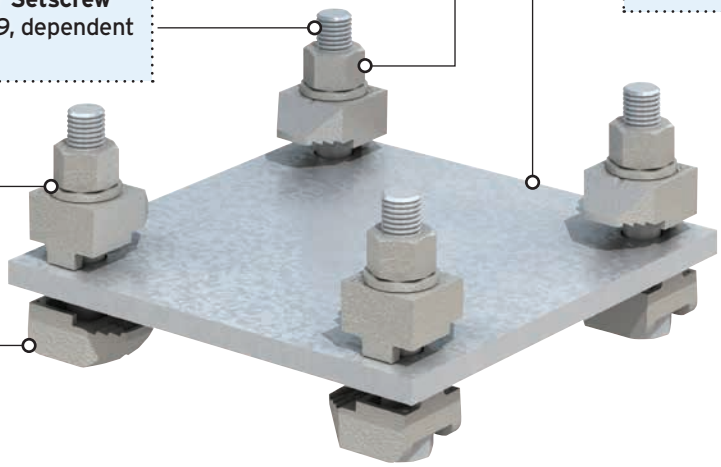
Typical Girder Clamp components

The standard configuration consists of Type A and Type B clamps. See **pages 30 - 33** for more examples.

Standard Hex Nut (Property Class 8 or 10).

Location Plate (can be supplied) An essential part of the assembly that enables all the components to be located in the correct position.

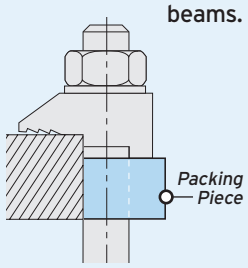
Standard Hexagon Bolt / Setscrew Property Class 8.8 or 10.9, dependent on the clamp type.



Standard Hardened Washer (200 Hv).

Lindapter Clamps Dependent on the application, different clamps can be used (See **page 11**).

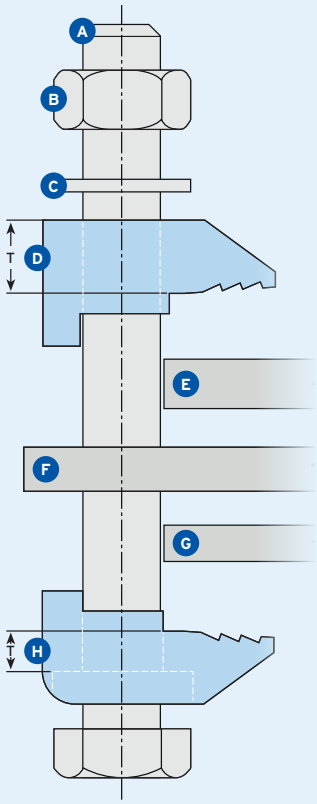
Packings (if required) Increase the clamping range to suit thick beams.



This example is for illustration purposes only. Contact Lindapter to determine the optimum configuration for your connection requirement.

Bolt Length Calculator

To calculate bolt length, simply add up all parts the bolt will go through and use the next standard bolt length*. The example below is based on a Type A and B size M20 with sections (Top: 254mm x 146mm x 43mm U.B. Bottom: 254mm x 102mm x 28mm U.B.).

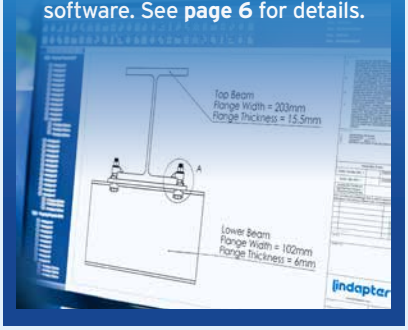


A 0.5 bolt Ø as bolt protrusion	10mm
B Height of nut	16mm
C Hardened Washer	3mm
D T of top clamp	19mm
E Top section	12.7mm
F Plate thickness	12mm
G Lower section	10mm
H T of lower clamp	10mm
= Total Length	92.7mm
Next standard bolt length	**100mm**

** If using bolts that are not fully threaded, the thread length must be checked to ensure full thread engagement of the nut.*

Can we help? Try Lindapter's free connection detailing

For your next project, Lindapter's team of experienced Engineers can advise the correct product and detail the connection for you free of charge, providing CAD drawings in 2D or 3D BIM compatible files that can be imported into all major software. See **page 6** for details.



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Product Comparison

The table below shows the various components that can be assembled in a Girder Clamp arrangement. Each product has specific properties, for example the Type AF heavy duty clamp can resist tensile loads up to 250kN when used with four bolts (property class 10.9) in a Girder Clamp assembly.

Single Components

Product	Parallel Flanges	Tapered Flanges	Tensile	High Slip Resistance	Low Temp. Down to -60°C	Slotted Clearance Holes	Adjustable	Stainless Steel	Fire Rated to ISO 834	Dynamic Approved	Seismic Approved
Type A page 12 	✔	*	✔	-	-	-	-	-	-	✔	-
Type B page 13 	✔	*	✔	-	-	-	-	-	-	✔	-
Type AAF page 16 	✔	✔	✔	✔	✔	✔	✔	-	✔	✔	✔
Type AF page 17 	✔	✔	✔	✔	-	✔	-	-	✔	✔	✔
Type CF page 18 	✔	✔	✔	✔	-	-	✔	-	-	-	-
Type LR page 22 	✔	✔	✔	-	-	✔	✔	-	-	-	-
Type D2 page 23 	✔	-	✔	-	-	-	✔	-	-	-	-
Type LS page 26 	✔	✔	✔	-	-	✔	✔	✔	-	-	-
Type RC page 28 	✔	-	✔	-	-	✔	-	-	-	-	-

** Suitable for UPN / IPN type tapered flanges. For further information contact Lindapter Technical Support.*

Other Clamp Systems (these products do not require a location plate)

Product	Parallel Flanges	Tapered Flanges	Tensile	High Slip Resistance	Low Temp. Down to -60°C	Slotted Clearance Holes	Adjustable	Stainless Steel
Type F9 page 28 	✔	-	✔	-	-	-	✔	-
Type FC page 29 	✔	✔	✔	-	-	-	✔	-

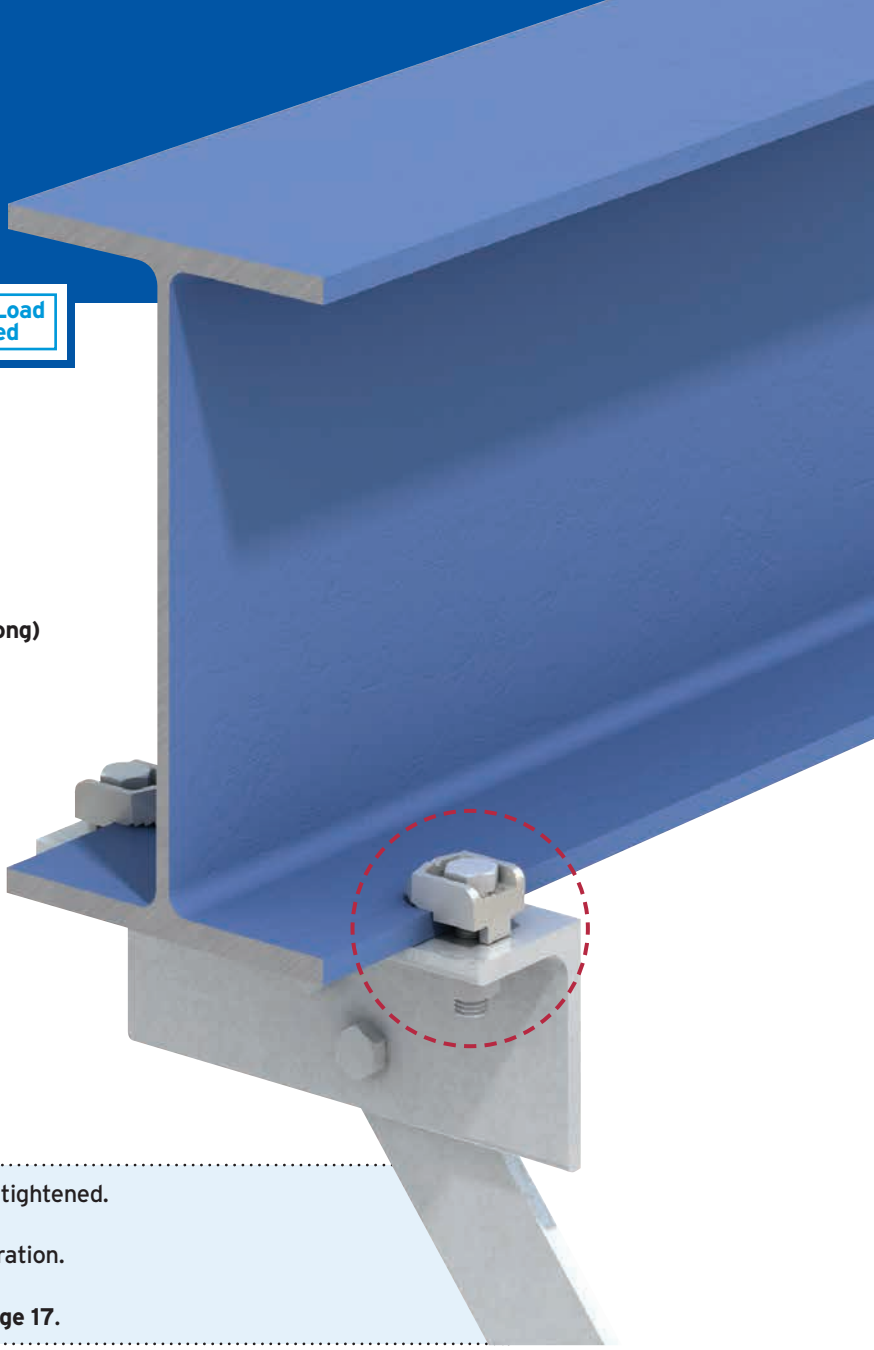
Also available

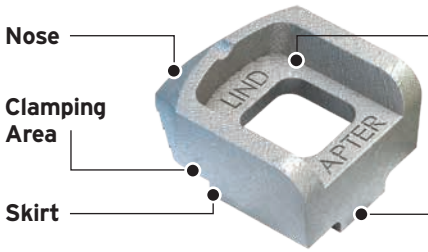
Lindapter Rail Fixings
See **pages 34 - 37** for more information 

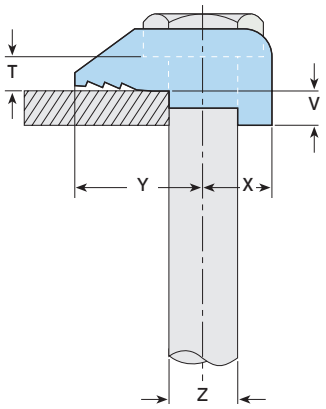
Lindapter Lifting Points
See **pages 38 - 41** for more information 

Type A

Lindapter's standard clamp is used to resist moderate tensile loading. Can also be used with Type B in a Girder Clamp configuration.







- Recessed top holds the bolt captive while the nut is tightened.
- Ideal for parallel flanges.
- Supports up to 78.8kN tensile in a four-bolt configuration.
- Independently approved for dynamic loading.
- For higher loads the Type AF should be used, see **page 17.**

Packings are available to increase the clamping range, see page 14. **Location plate / end plate details can be found on page 15.**

Dynamic load testing has been performed in accordance with EN 1993-1-9. Contact our Technical Support team for load data.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.003 (CE) or DoC No.103 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Malleable iron, zinc plated or hot dip galvanised.

Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1) Tensile / 1 Bolt kN	Slip / 2 Bolts kN	Tightening Torque* Nm	Dimensions Y mm	X mm	Tail Length V short mm	medium mm	long mm	T mm	Width mm
A08	M8	1.0	-	6	16	8	-	4	-	4	20
A10	M10	1.5	-	20	20	11	4	5	7	5	26
A12	M12	5.8	0.9	69	26	13	4.5	6	9.5	6	29
A16	M16	8.5	1.7	147	30	16	5.5	8	11	8	36
A20	M20	14.7	3.0	285	36	19	7	10	12.5	10	46
A24	M24	19.7	4.5	491	48	29	9	12	16	13	55

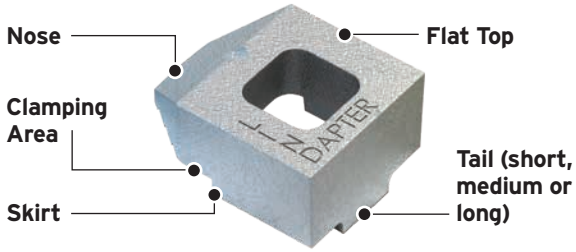
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

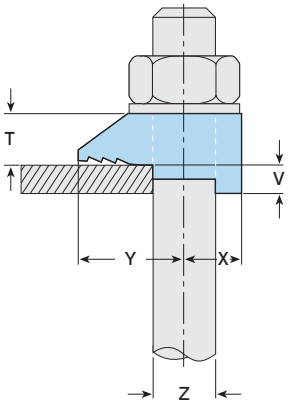
Ref: LindUKMay25

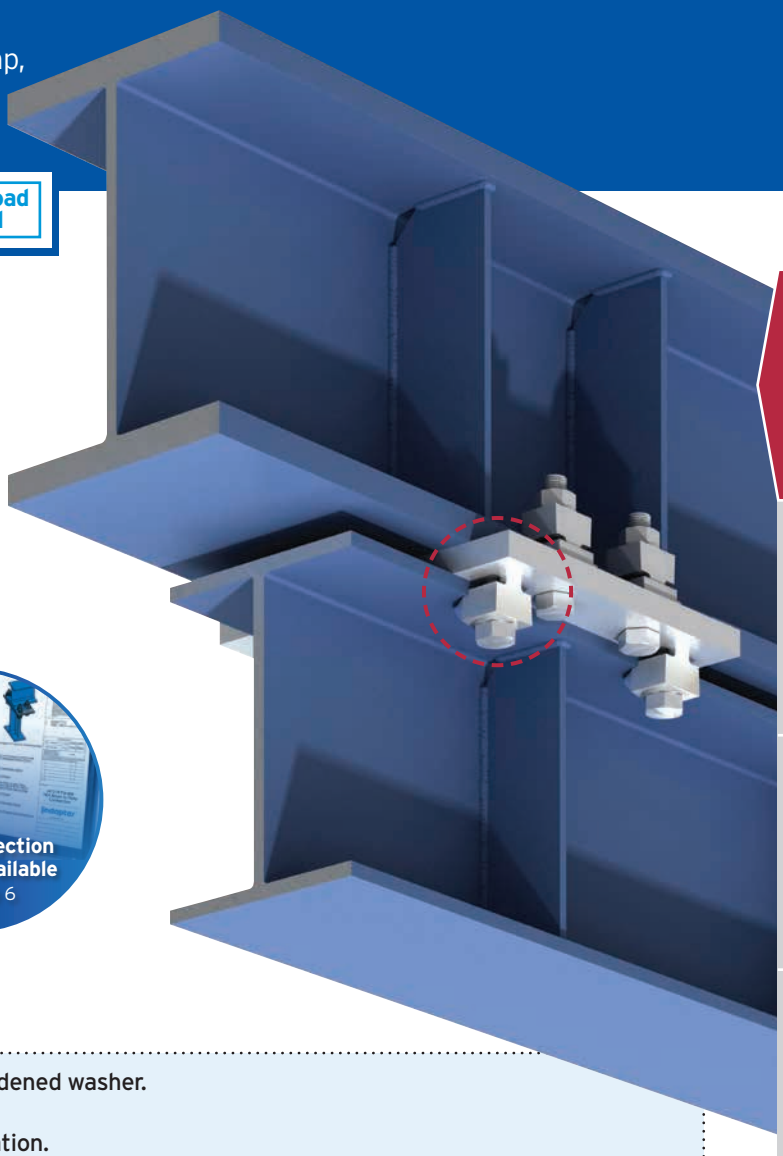
Type B

The flat-top version of Lindapter's standard clamp, for moderate tensile loading. Can also be used with Type A in a Girder Clamp configuration.

UK CA CE Lloyd's Register TÜVNORD Dynamic Load Approved







- Flat top allows the bolt head or nut to rotate on a hardened washer.
- Suitable for use with bolts, studs, tie rods, J-bolts.
- Supports up to 78.8kN in a tensile four-bolt configuration.
- Independently approved for dynamic loading.
- For higher loads the Type AF should be used, see **page 17.**

Packings are available to increase the clamping range, see page 14. **Location plate / end plate details can be found on page 15.**

Dynamic load testing has been performed in accordance with EN 1993-1-9. Contact our Technical Support team for load data.

UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.003 (CE) or DoC No.103 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

Material: Malleable iron, zinc plated or hot dip galvanised.

Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1) Tensile / 1 Bolt kN	Slip / 2 Bolts kN	Tightening Torque* Nm	Dimensions Y mm	X mm	Tail Length V short mm	medium mm	long mm	T mm	Width mm
B08	M8	1.0	-	6	16	8	-	4	-	8	20
B10	M10	1.5	-	20	20	11	4	5	7	10	26
B12	M12	5.8	0.9	69	26	13	4.5	6	9.5	12	29
B16	M16	8.5	1.7	147	30	16	5.5	8	11	16	36
B20	M20	14.7	3.0	285	36	19	7	10	12.5	19	46
B24	M24	19.7	4.5	491	48	25	9	12	16	25	55

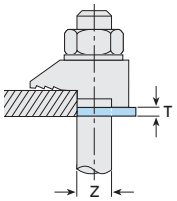
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Packing Pieces for Types A and B

These packing pieces are compatible with the Type A and Type B clamps and are used to increase the clamping range to suit flange thicknesses. Types A and B are available with three different tail lengths (short, medium or long) and the correct combination of packing pieces should be used.

Packing Pieces

Type CW

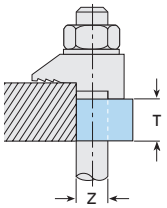


Mild steel, zinc plated or hot dip galvanised.

Product Code	Bolt Size Z	Dimension T (mm)
CW08*	M8	2
CW10	M10	2
CW12	M12	2.5
CW16	M16	3
CW20	M20	4
CW24	M24	4

* CW08 is only available zinc plated.

Type P1 / P2 short

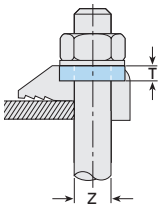


Mild steel, malleable iron, zinc plated or hot dip galv.

Product Code	Bolt Size Z	Dimension T (mm)
P1S08	M8	4
P1S10	M10	5
P1S12	M12	6
P1S16	M16	8
P1S20	M20	10
P1S24	M24	12
P2S10	M10	10
P2S12	M12	12
P2S16	M16	16
P2S20	M20	20
P2S24	M24	24

Also Available

Type W



Mild steel, malleable iron, zinc plated or hot dip galv.

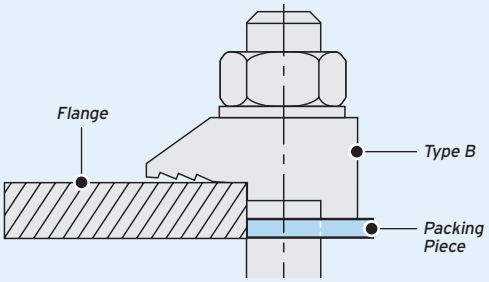
Product Code	Bolt Size Z	Dimension T (mm)
W08	M8	4
W10	M10	5.5
W12	M12	6
W16	M16	8
W20	M20	10

Note: The Type W is used to fill the recess in the Type A to convert it into a flat top clamp to enable the bolt head or nut to be rotated on a hardened washer.

Tail Length / Packing Piece Combinations for Types A and B

Choose the correct Type A/B configuration for your application using the table below. For example, a M24 Type A/B on a 26mm flange requires 1 x Type A/B short tail (S), 1 x Type CW (CW) and 1 x Type P1 short (P1S).

- **For thicker flanges contact Lindapter.**
- **Other combinations than what is shown below may be possible. Contact our Technical Support team to discuss your requirements.**



Flange Thickness	M12				M16				M20				M24			
mm	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S
5	S	-	-	-	S	-	-	-	✗	-	-	-	✗	-	-	-
6	M	-	-	-	S	-	-	-	✗	-	-	-	✗	-	-	-
7	S	1	-	-	M	-	-	-	S	-	-	-	✗	-	-	-
8	S	1	-	-	M	-	-	-	S	-	-	-	✗	-	-	-
9	M	1	-	-	S	1	-	-	M	-	-	-	S	-	-	-
10	L	-	-	-	L	-	-	-	M	-	-	-	S	-	-	-
11	M	2	-	-	L	-	-	-	S	1	-	-	M	-	-	-
12	L	1	-	-	S	2	-	-	S	1	-	-	M	-	-	-
13	S	1	1	-	S	-	1	-	L	-	-	-	S	1	-	-
14	S	1	1	-	L	1	-	-	M	1	-	-	S	1	-	-
15	L	2	-	-	S	3	-	-	S	2	-	-	L	-	-	-
16	L	-	1	-	M	-	1	-	S	2	-	-	L	-	-	-

Flange Thickness	M12				M16				M20				M24			
mm	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S	A/B	CW	P1S	P2S
17	M	2	1	-	L	2	-	-	S	-	1	-	S	2	-	-
18	M	-	-	1	L	2	-	-	M	2	-	-	S	2	-	-
19	S	1	-	1	L	-	1	-	S	3	-	-	L	1	-	-
20	S	1	-	1	L	3	-	-	M	-	1	-	L	1	-	-
21	M	1	-	1	L	3	-	-	S	1	1	-	S	-	1	-
22	L	-	-	1	L	1	1	-	M	3	-	-	S	-	1	-
23	S	-	1	1	L	1	1	-	L	-	1	-	M	-	1	-
24	M	-	1	1	M	-	-	1	M	1	1	-	M	-	1	-
25	S	1	1	1	L	2	1	-	S	2	1	-	S	1	1	-
26	S	1	1	1	L	2	1	-	S	2	1	-	S	1	1	-
28	L	-	1	1	S	2	-	1	M	2	1	-	L	-	1	-
30	M	-	-	2	L	1	-	1	M	-	-	1	S	2	1	-

A/B = Type A/B | **S** = A/B short | **M** = A/B medium | **L** = A/B long | **CW** = Type CW | **P1S** = Type P1 short | **P2S** = Type P2 short | ✗ = Not possible

Ref: LindUKMay25

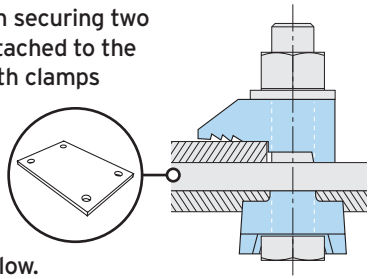
Location and End Plates for Types A, B and BR

These plates ensure the clamps and bolts are located in the correct position relative to the supporting steelwork. If you would like help choosing a suitable plate, please contact Lindapter.

Location Plate

Location plates are required when securing two sections together with clamps attached to the upper and lower sections with both clamps directly opposing each other.

The plate is positioned between the two sections to hold the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.

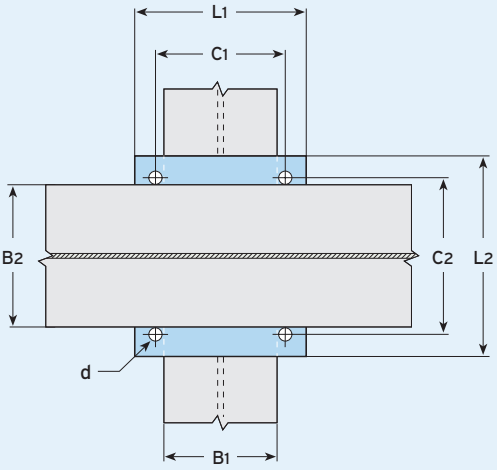


Material: Structural steel grade S275. For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thick. mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M8	9	6	$B_1 + 9$	$B_1 + 36$	$B_2 + 9$	$B_2 + 36$
M10	11	8	$B_1 + 11$	$B_1 + 44$	$B_2 + 11$	$B_2 + 44$
M12	14	8	$B_1 + 14$	$B_1 + 54$	$B_2 + 14$	$B_2 + 54$
M16	18	10	$B_1 + 18$	$B_1 + 70$	$B_2 + 18$	$B_2 + 70$
M20	22	12	$B_1 + 22$	$B_1 + 88$	$B_2 + 22$	$B_2 + 88$
M24	26	15	$B_1 + 26$	$B_1 + 104$	$B_2 + 26$	$B_2 + 104$

LOCATION PLATE DIMENSIONS

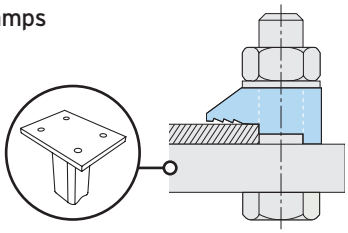
L_1 = Location Plate Length, **L_2** = Location Plate Width, **B_1, B_2** = Flange Width, **C_1, C_2** = Hole Centres, **d** = Hole Ø



End Plate

End Plates should be used when clamps are attached to the supporting section only.

The End Plate holds the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.



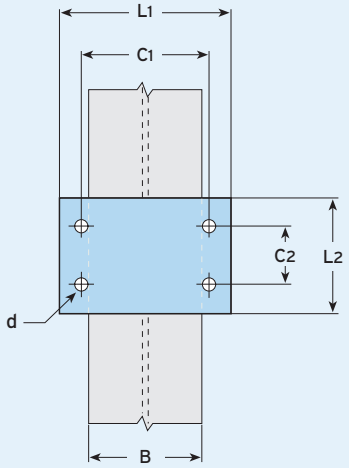
Material: Structural steel grade S275. For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thick.[1] mm	Hole Centre C1 mm	Length min L1 mm	Hole Centres min C2 mm	Width min L2 mm
M8	9	10	B + 9	B + 36	40	$C_2 + 40$
M10	11	12	B + 11	B + 44	50	$C_2 + 40$
M12	14	12	B + 14	B + 54	60	$C_2 + 50$
M16	18	15	B + 18	B + 70	70	$C_2 + 60$
M20	22	20	B + 22	B + 88	90	$C_2 + 70$
M24	26	25	B + 26	B + 104	110	$C_2 + 90$

1) Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

END PLATE DIMENSIONS

L_1 = End Plate Length, **L_2** = End Plate Width, **B** = Flange Width, **C_1, C_2** = Hole Centres, **d** = Hole Ø

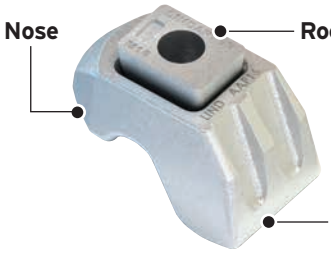


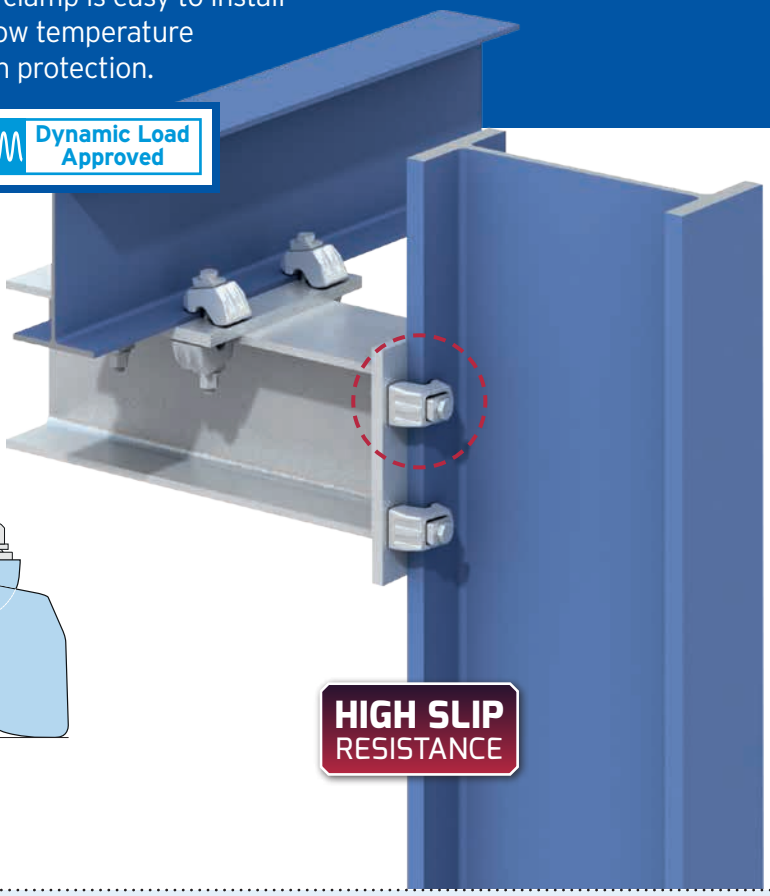
- **To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 10.**
- **If drilling through the flange of the supported steelwork please contact Lindapter to ensure suitability.**

Type AAF

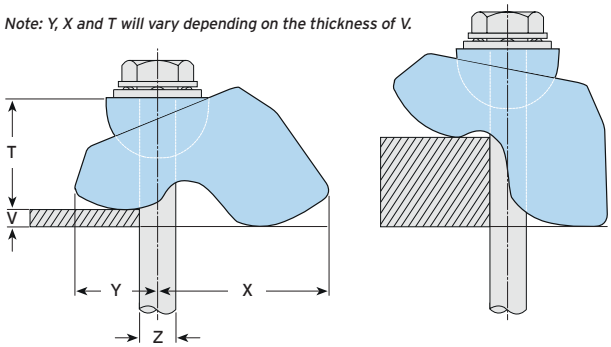
This adjustable High Slip Resistance (HSR) clamp is easy to install and provides high load capacities even in low temperature environments. Hot dip galvanised corrosion protection.

UK CA CE ICC ES TÜVNORD Fire Rated to ISO 834 Dynamic Load Approved





Note: Y, X and T will vary depending on the thickness of V.



- High slip resistance clamp evaluated for tensile, frictional and combined load applications.
- Independently approved for dynamic loading.
- Self-adjusts to suit flange thicknesses.
- Safe working loads apply in temperatures as low as -60°C.
- For parallel and tapered flanges up to and including 10°.
- The tail spans slotted clearance holes.

Packings are available to increase the clamping range, see page 20. Location plate / end plate details can be found on page 21.

Lindapter suggests the use of DTI Washers conforming to EN14399-9 with the Type AAF, see page 78.

Dynamic load testing has been performed in accordance with EN 1993-1-9. Contact our Technical Support team for load data.

UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.005 (CE) or DoC No.105 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

Material: Low temperature SG iron, hot dip galvanised.

Product Code	Bolt		Safe Working Loads			Tightening Torque*	Dimensions				
	Size Z	Property Class[4]	Tensile / 1 Bolt (FOS 4.5:1)	Slip[1] / 2 Bolts (FOS 2:1)			Clamping Range[3] V	Y	X	T	Width
				Painted Steelwork[2]	Galvanised Steelwork						
			kN	kN	kN	Nm	mm	mm	mm	mm	mm
AAF12	M12	8.8	8.5	3.4	3.9	90	5 - 26	25 - 34	27 - 49	26 - 35	41
AAF16	M16	8.8	16.0	8.0	10.0	240	6 - 30	34 - 50	31 - 58	35 - 46	56
AAF20	M20	8.8	26.3	13.0	16.0	470	6 - 40	49 - 64	48 - 78	52 - 64	77
AAF12	M12	10.9	10.0	4.0	5.2	130	5 - 26	25 - 34	27 - 49	26 - 35	41
AAF16	M16	10.9	19.5	11.0	12.0	300	6 - 30	34 - 50	31 - 58	35 - 46	56
AAF20	M20	10.9	30.0	20.0	25.0	647	6 - 40	49 - 64	48 - 78	52 - 64	77

1) Slip resistant values calculated against movement exceeding 0.1mm.
2) Shot blast and painted steelwork.
3) For thicker flanges, packing pieces AFP1 and AFP2 are available (for AAF12 and AAF16 only) or packing piece AAFP3 (for AAF20 only). See page 20.
4) For ease of installation when using 10.9 bolts Lindapter recommends using fastener assemblies to EN 14399-1.

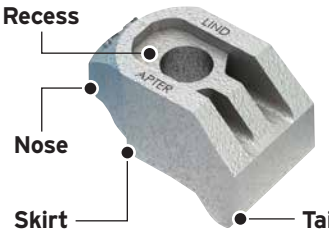
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Type AF

A heavy duty clamp offering the highest load capacities of all Lindapter's High Slip Resistance clamps. Hot dip galvanised corrosion protection.

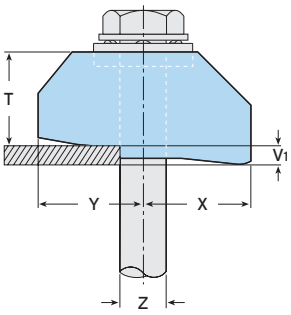
Fire Rated to ISO 834

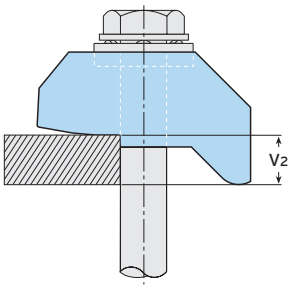
Dynamic Load Approved

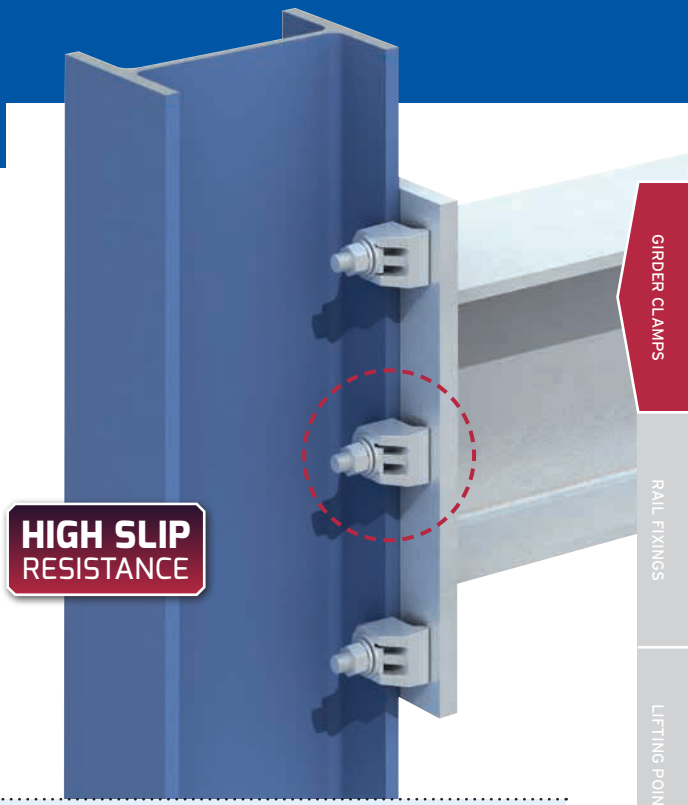


Type AF + AFW

Type AFW **(page 20)** converts the recess to a flat top (also required for pre-loadable bolts to BS EN 14399).







- High slip resistance clamp evaluated for tensile, frictional and combined load applications.
- 70kN static slip resistance or 250kN tensile (AF24 with 4 property class 10.9 fasteners).
- Independently approved for dynamic loading.
- Recess holds the bolt head captive (property class 8.8).
- For parallel and tapered flanges up to and including 10°.
- The tail spans slotted clearance holes.

Packings are available to increase the clamping range, see page 20. Location plate / end plate details can be found on page 21.

Lindapter suggests the use of DTI Washers conforming to EN14399-9 with the Type AF, see page 78.

Dynamic load testing has been performed in accordance with EN 1993-1-9. Contact our Technical Support team for load data.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.004 (CE) or DoC No.104 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: SG iron, hot dip galvanised.

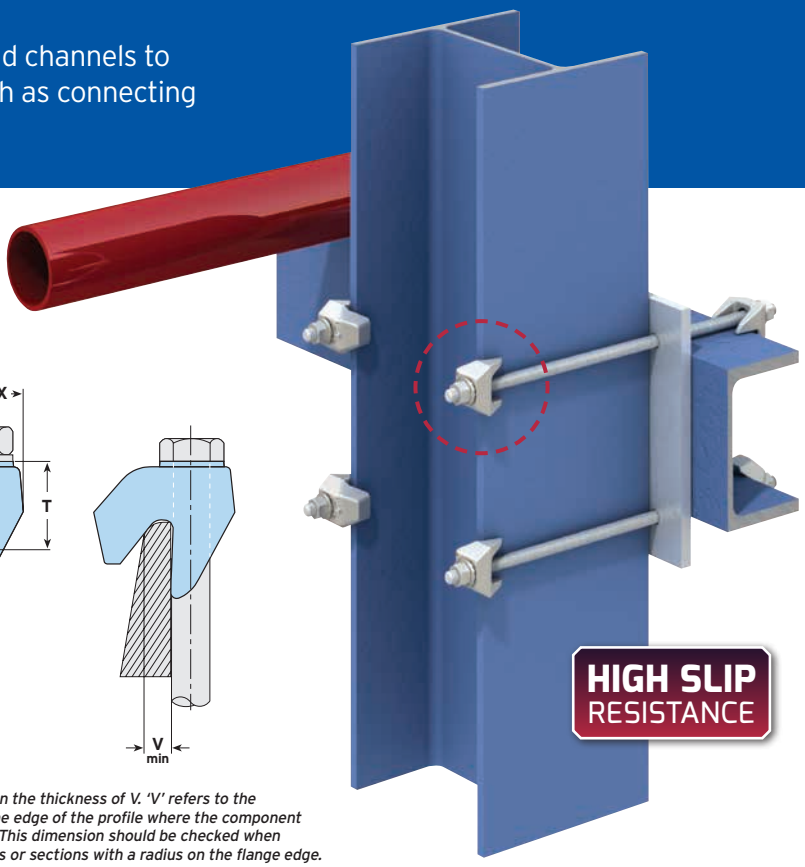
Product Code	Bolt		Safe Working Loads			Tightening Torque*	Dimensions						
	Size Z	Property Class[4]	Tensile / 1 Bolt (FOS 5:1)	Slip[1] / 2 Bolts (FOS 2:1)			Tail Length		Y	X	T	T	Width
				Painted Steelwork[2]	Galvanised Steelwork		short V_1	medium V_2			Type AF	Type AF with AFW	
			kN	kN	kN	Nm	mm	mm	mm	mm	mm	mm	mm
AF12	M12	8.8	8.5	3.4	3.9	90	5	12.5	27	27	17	22	39
AF16	M16	8.8	16.0	8.0	10.0	240	8	15	35	37	22	27	49
AF20	M20	8.8	26.3	13.0	16.0	470	10	18	40	39	25	31	56
AF24	M24	8.8	40.0	24.0	30.0	800	15	30	48	60	32	42	82
AF12	M12	10.9	10.0	4.0	5.2	130	5	12.5	27	27	17	22	39
AF16	M16	10.9	19.5	11.0	12.0	300	8	15	35	37	22	27	49
AF20	M20	10.9	30.0	20.0	25.0	647	10	18	40	39	25	31	56
AF24	M24	10.9	62.5[3]	28.0	35.0	1000	15	30	48	60	32	42	82

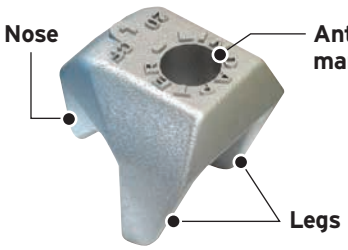
1) Slip resistant values calculated against movement exceeding 0.1mm.
2) Shot blast and painted steelwork.
3) 3.2:1 Factor of Safety.
4) For ease of installation when using 10.9 bolts Lindapter recommends using fastener assemblies to EN 14399-1.

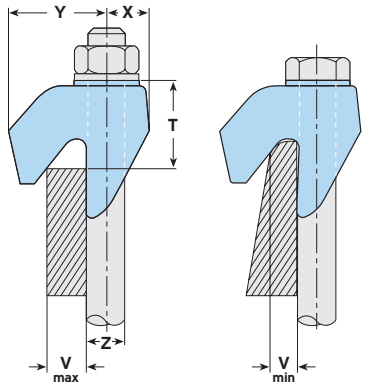
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Type CF

Hooks over the flanges of beams, angles and channels to connect steel sections that do not face, such as connecting horizontal beams with vertical columns.







Note: T will vary depending on the thickness of V. 'V' refers to the thickness of the section at the edge of the profile where the component is in contact with the flange. This dimension should be checked when connecting to tapered flanges or sections with a radius on the flange edge.

- New options available to suit larger steel sections with thicker flanges.
- Suitable for parallel and tapered flanges up to and including 10°.
- Can be combined with other Lindapter HSR clamps when used with property class 8.8 bolts; see table below for safe working loads.

Location plate / end plate details can be found on page 21.

Lindapter suggests the use of DTI Washers conforming to EN14399-9 with the Type CF, see page 78.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.011 (CE) or DoC No.111 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: SG iron, hot dip galvanised.

Product Code	Bolt 8.8 Z	Safe Working Loads: Tensile / 1 Bolt (FOS 5:1) kN	Slip[1] / 2 Bolts (FOS 2:1) Painted Steelwork[2] kN	Slip[1] / 2 Bolts (FOS 2:1) Galvanised Steelwork kN	Tightening Torque* Nm	Dimensions: Clamping Range V mm	Y mm	X mm	T mm	Width mm
CF12	M12	8.5	3.4	3.9	90	6 - 13	32	14	21 - 29	46
CF212	M12	8.5	3.4	3.9	90	12 - 20	39	16	28 - 37	48
CF16	M16	16	8	10	240	8 - 16	44	18	25 - 33	56
CF216	M16	16	8	10	240	15 - 25	50	21	35 - 47	62
CF20	M20	26.3	13	16	470	10 - 19	53	22	30 - 41	65
CF220	M20	26.3	13	16	470	18 - 30	64	27	41 - 55	70
CF combinations with other Lindapter clamps										
CF + A[3]	M12	5.8	0.9	0.9	69					
CF + A[3]	M16	8.5	1.7	1.7	147					
CF + A[3]	M20	14.7	3.0	3.0	285					
CF + AF / AAF	M12	8.5	3.4	3.9	90					
CF + AF / AAF	M16	16.0	8.0	10.0	240					
CF + AF / AAF	M20	26.3	13.0	16.0	470					

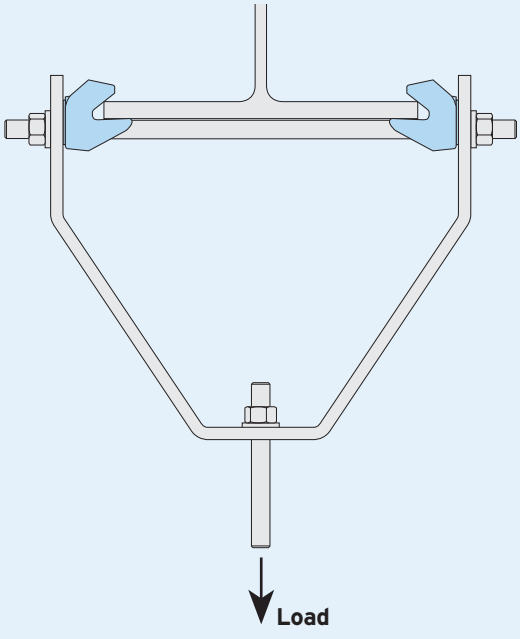
1) Slip resistant values calculated against movement exceeding 0.1mm.
2) Shot blast and painted steelwork.
3) Also applies to Type B (page 13), Type LR (page 22), Type D2 (page 23) and Type BR (page 35).
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Additional Applications for Type CF

Type CF is a versatile solution that has been tested in a wide range of applications, including suspending equipment from supporting sections. It can be easily adjusted for quick alignment of pipework, electrical cables and other building services equipment. Two popular connection arrangements are shown below.

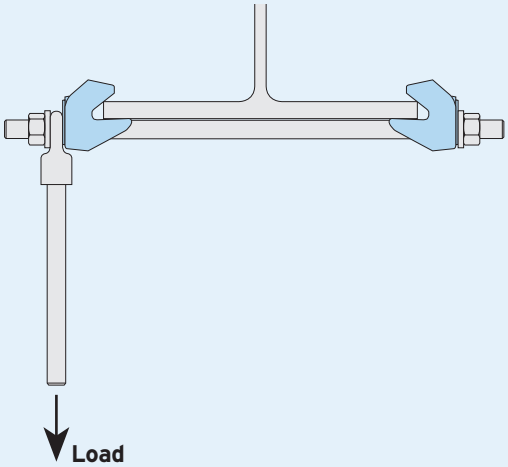
EXAMPLE 1

Bolt Size	Product Code(s)	Recommended Safe Working Load / bolt 5:1 Factor of Safety
M12	CF12 / CF212	5 kN
M16	CF16 / CF216	10 kN
M20	CF20 / CF220	20 kN



EXAMPLE 2

Bolt Size	Product Code(s)	Recommended Safe Working Load / bolt 5:1 Factor of Safety
M12	CF12 / CF212	1 kN
M16	CF16 / CF216	6 kN
M20	CF20 / CF220	12 kN

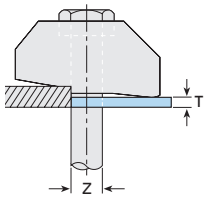


Packing Pieces for Types AF and AAF

Packing pieces are used to increase the clamping range to suit a range of flange thicknesses. The Type AF is available with two different tail lengths (short and medium) and the correct combination of packing pieces should be used, see the table at the bottom of the page.

Packing Pieces

Type AFCW



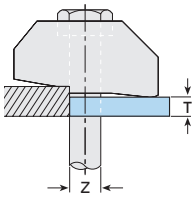
Mild steel, hot dip galvanised.

Product Code	Bolt Size Z	Dimension T (mm)
AF12CW	M12	2
AF16CW	M16	2
AF20CW*	M20	2

*** Not compatible with Type AAF clamp.**

Note: The AFCW has a slight bend along its centre line which flattens out during installation.

Type AFP1 / AFP2 / AAFP3



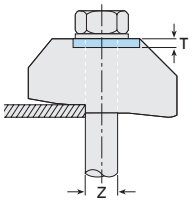
Mild steel, hot dip galvanised.

Product Code	Bolt Size Z	Dimension T (mm)
AF12P1	M12	5
AF16P1	M16	5
AF20P1*	M20	5
AF24P1*	M24	5
AF12P2	M12	10
AF16P2	M16	10
AF20P2*	M20	10
AF24P2*	M24	10
AAF20P3	M20	20

*** Not compatible with Type AAF clamp.**

Also Available

Type AFW



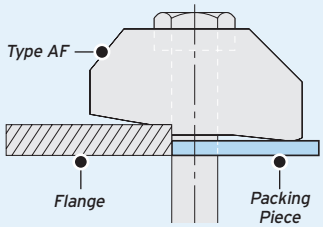
SG iron, mild steel, hot dip galvanised.

Product Code	Bolt Size Z	Dimension T (mm)
AFW12	M12	5
AFW16	M16	5
AFW20	M20	6
AFW24	M24	10

Note: Type AFW converts the recess to a flat top to enable the bolt head or nut to be rotated on a hardened washer and is required when using preloadable bolts to BS EN 14399.

Tail Length / Packing Piece Combinations for Type AF

Choose the correct combination for your configuration using the table below. Please note these calculations are for **parallel flanges and beams up to 10° slopes only.** For example, a M20 Type AF on a 40mm flange requires 1 x Type AF medium tail (M), 1 x Type AFCW and 2 x Type AFP2.



- **For thicker flanges contact Lindapter.**
- **Other combinations than what is shown below may be possible. Contact our Technical Support team to discuss your requirements.**

Flange Thickness mm	M12				M16				M20				M24		
	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFP1	AFP2
5	S	-	-	-	✗	-	-	-	✗	-	-	-	✗	-	-
6	S	-	-	-	✗	-	-	-	✗	-	-	-	✗	-	-
7	S	1	-	-	S	-	-	-	✗	-	-	-	✗	-	-
8	S	1	-	-	S	-	-	-	✗	-	-	-	✗	-	-
9	S	2	-	-	S	-	-	-	S	-	-	-	✗	-	-
10	S	-	1	-	S	1	-	-	S	-	-	-	✗	-	-
11	S	3	-	-	S	1	-	-	S	-	-	-	✗	-	-
12	S	1	1	-	S	2	-	-	S	1	-	-	S	-	-
13	M	-	-	-	S	-	1	-	S	1	-	-	S	-	-
14	M	1	-	-	S	3	-	-	S	2	-	-	S	-	-
15	S	-	-	1	M	-	-	-	S	-	1	-	S	-	-
16	M	2	-	-	M	-	-	-	S	3	-	-	S	-	-
17	M	-	1	-	M	1	-	-	M	-	-	-	S	-	-
18	M	-	1	-	S	-	-	1	M	-	-	-	S	1	-
19	M	1	1	-	M	-	1	-	M	-	-	-	S	1	-
20	S	-	1	1	M	-	1	-	M	1	-	-	S	1	-
21	M	2	1	-	M	-	1	-	M	1	-	-	S	1	-
22	M	2	1	-	M	1	1	-	M	2	-	-	S	1	-
23	M	-	-	1	M	1	1	-	M	-	1	-	S	-	1
24	M	1	-	1	M	-	-	1	M	1	1	-	S	-	1
25	S	-	-	2	M	-	-	1	M	1	1	-	S	-	1
26	M	2	-	1	M	-	-	1	S	1	1	1	S	-	1
27	M	2	-	1	M	1	-	1	S	1	1	1	M	-	-

Flange Thickness mm	M12				M16				M20				M24		
	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFP1	AFP2
28	M	-	1	1	S	-	-	2	M	-	-	1	M	-	-
29	M	1	1	1	M	-	1	1	M	-	-	1	M	-	-
30	S	-	1	2	M	-	1	1	M	1	-	1	M	-	-
31	S	-	1	2	M	-	1	1	M	1	-	1	M	-	-
32	M	-	-	2	M	1	1	1	M	-	1	1	M	1	-
33	M	-	-	2	M	1	1	1	M	-	1	1	M	1	-
34	M	1	-	2	M	-	-	2	M	-	1	1	M	1	-
35	S	-	-	3	M	-	-	2	S	-	1	2	M	1	-
36	S	-	-	3	M	-	-	2	M	1	1	1	M	1	-
37	M	-	1	2	M	1	-	2	M	-	-	2	M	1	-
38	M	-	1	2	S	-	-	3	M	-	-	2	M	-	1
39	M	1	1	2	M	-	1	2	M	-	-	2	M	-	1
40	S	-	1	3	M	-	1	2	M	1	-	2	M	-	1
41	S	-	1	3	M	-	1	2	M	1	-	2	M	-	1
42	M	-	-	3	M	1	1	2	M	-	1	2	M	-	1
43	M	-	-	3	S	-	1	3	M	-	1	2	M	1	1
44	M	1	-	3	M	-	-	3	M	-	1	2	M	1	1
45	S	-	-	4	M	-	-	3	M	1	1	2	M	1	1
46	S	-	-	4	M	-	-	3	M	1	1	2	M	1	1
47	M	-	1	3	M	1	-	3	M	-	-	3	M	1	1
48	M	-	1	3	S	-	-	4	M	-	-	3	M	-	2
49	S	-	1	4	M	-	1	3	M	-	-	3	M	-	2
50	S	-	1	4	M	-	1	3	M	1	-	3	M	-	2

AF = Type AF | **AFCW** = Type AFCW | **AFP1** = Type AFP1 | **AFP2** = Type AFP2 | **S** = AF short | **M** = AF medium | **✗** = Not possible

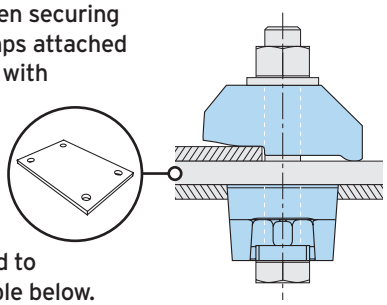
Location and End Plates for Types AF, AAF and CF

These plates ensure the clamps and bolts are located in the correct position relative to the supporting steelwork. If you would like help choosing a suitable plate, please contact Lindapter.

Location Plate

Location plates are required when securing two sections together with clamps attached to the upper and lower sections with both clamps directly opposing each other.

The plate is positioned between the two sections to hold the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.



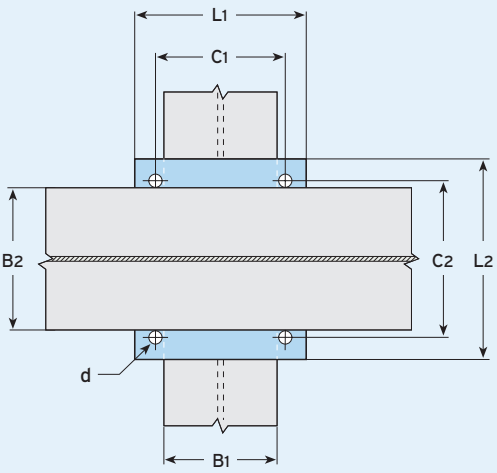
Material: Structural steel grade S355. For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thickness 8.8 mm	Plate Thickness 10.9 mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M12	14	10	12	$B_1 + 14$	$B_1 + 90$	$B_2 + 14$	$B_2 + 90$
M16	18	15	15	$B_1 + 18$	$B_1 + 110$	$B_2 + 18$	$B_2 + 110$
M20	22	20	20	$B_1 + 22$	$B_1 + 150$*	$B_2 + 22$	$B_2 + 150$*
M24	26	25	25	$B_1 + 26$	$B_1 + 180$	$B_2 + 26$	$B_2 + 180$

* Plate length / width for Type AF size M20 can be reduced to 130mm if required.

LOCATION PLATE DIMENSIONS

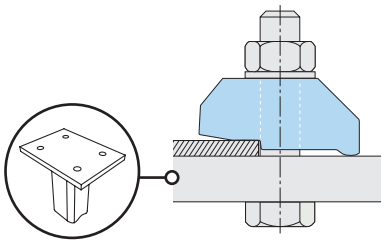
L1 = Location Plate Length, **L2** = Location Plate Width, **B1, B2** = Flange Width, **C1, C2** = Hole Centres, **d** = Hole Ø



End Plate

End Plates should be used when clamps are attached to the supporting section only.

The End Plate holds the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.



Material: Structural steel grade S355. For other grades contact Lindapter.

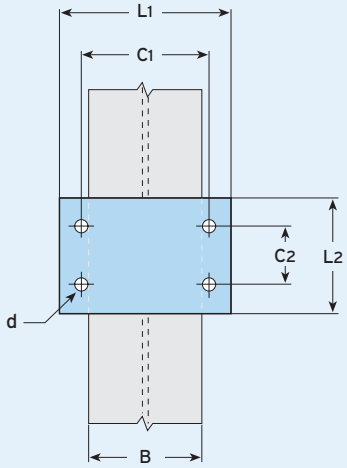
Bolt Size	Hole Ø d mm	Plate Thickness[1] 8.8 mm	Plate Thickness[1] 10.9 mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres min C2 mm	Width min L2 mm
M12	14	15	20	B + 14	B + 90	80	$C_2 + 80$
M16	18	20	25	B + 18	B + 110	100	$C_2 + 100$
M20	22	25	25	B + 22	B + 150*	180	$C_2 + 180$
M24	26	30	30	B + 26	B + 180	200	$C_2 + 200$

* Plate length for Type AF size M20 can be reduced to 130 if required.

1) Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

END PLATE DIMENSIONS

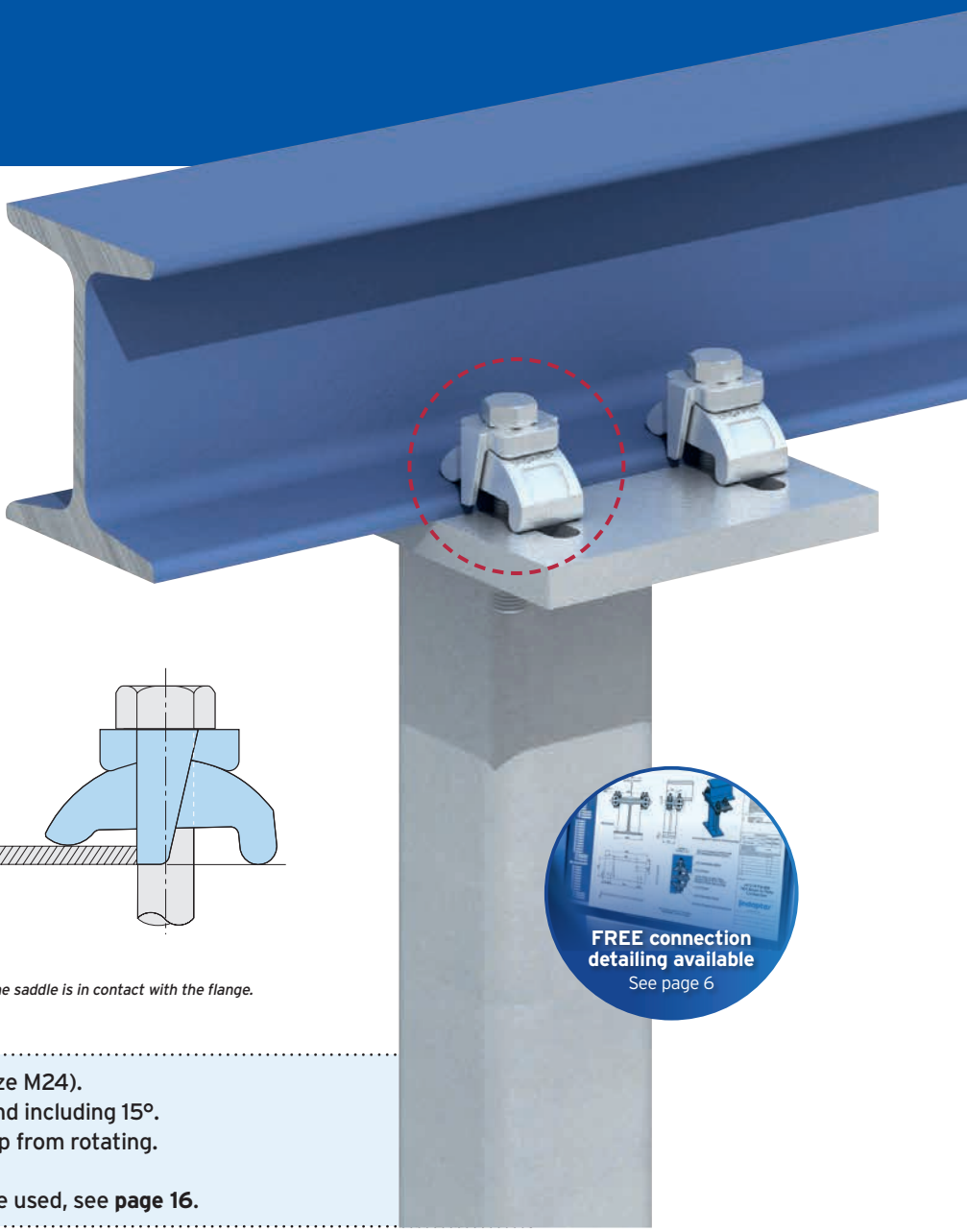
L1 = End Plate Length, **L2** = End Plate Width, **B** = Flange Width, **C1, C2** = Hole Centres, **d** = Hole Ø

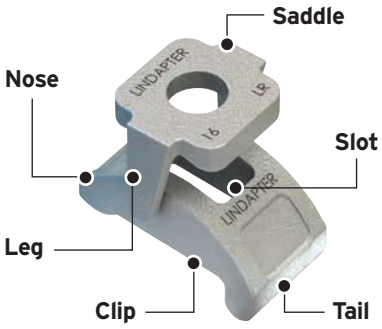


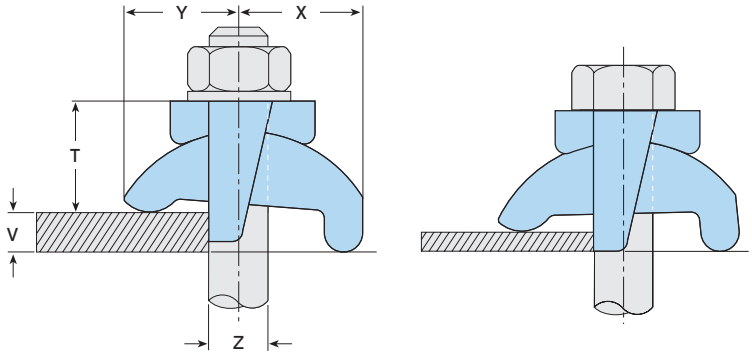
- **To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 10.**
- **If drilling through the flange of the supported steelwork please contact Lindapter to ensure suitability.**

Type LR

A versatile, self-adjusting clamp designed to suit a range of flange thicknesses.







Note 1: When installing, ensure the straight (not tapered) leg of the saddle is in contact with the flange.
Note 2: Y, X and T will vary depending on the thickness of V.

- Clamping ranges from 3mm - 24mm (size M24).
- For parallel and tapered flanges up to and including 15°.
- The leg of the saddle prevents the clamp from rotating.
- The tail spans slotted clearance holes.
- For higher loads the Type AAF should be used, see **page 16.**

Packings are available to increase the clamping range, see page 24. Location plate / end plate details can be found on page 25.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.006 (CE) or DoC No.106 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Malleable iron, zinc plated or hot dip galvanised.

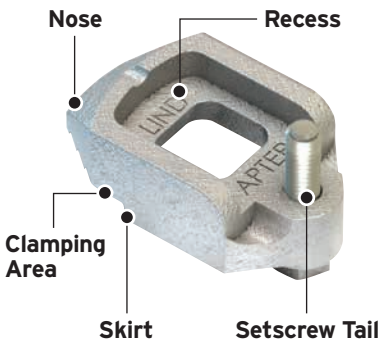
Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1) Tensile / 1 Bolt kN	Safe Working Loads (FOS 5:1) Slip / 2 Bolts kN	Tightening Torque* Nm	Dimensions Clamping Range V mm	Y mm	X mm	T mm	Width with Saddle mm
LR10[1)]	M10	1.5	-	20	3 - 10	21 - 24	24 - 26	21 - 24	33
LR12	M12	5.8	0.9	69	3 - 12	26 - 29	25 - 31	25 - 29	39
LR16	M16	8.5	1.7	147	3 - 16	30 - 35	34 - 37	30 - 36	46
LR20	M20	14.7	3.0	285	3 - 20	42 - 49	46 - 51	41 - 48	57
LR24	M24	19.7	4.5	491	3 - 24	47 - 57	52 - 58	44 - 54	76

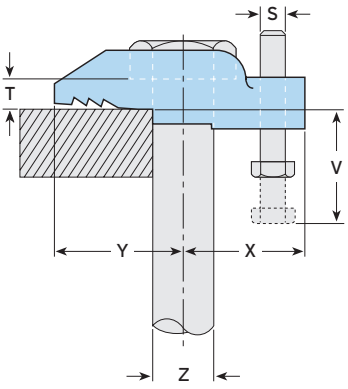
1) LR10 available in Hot Dip Galvanised only.
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

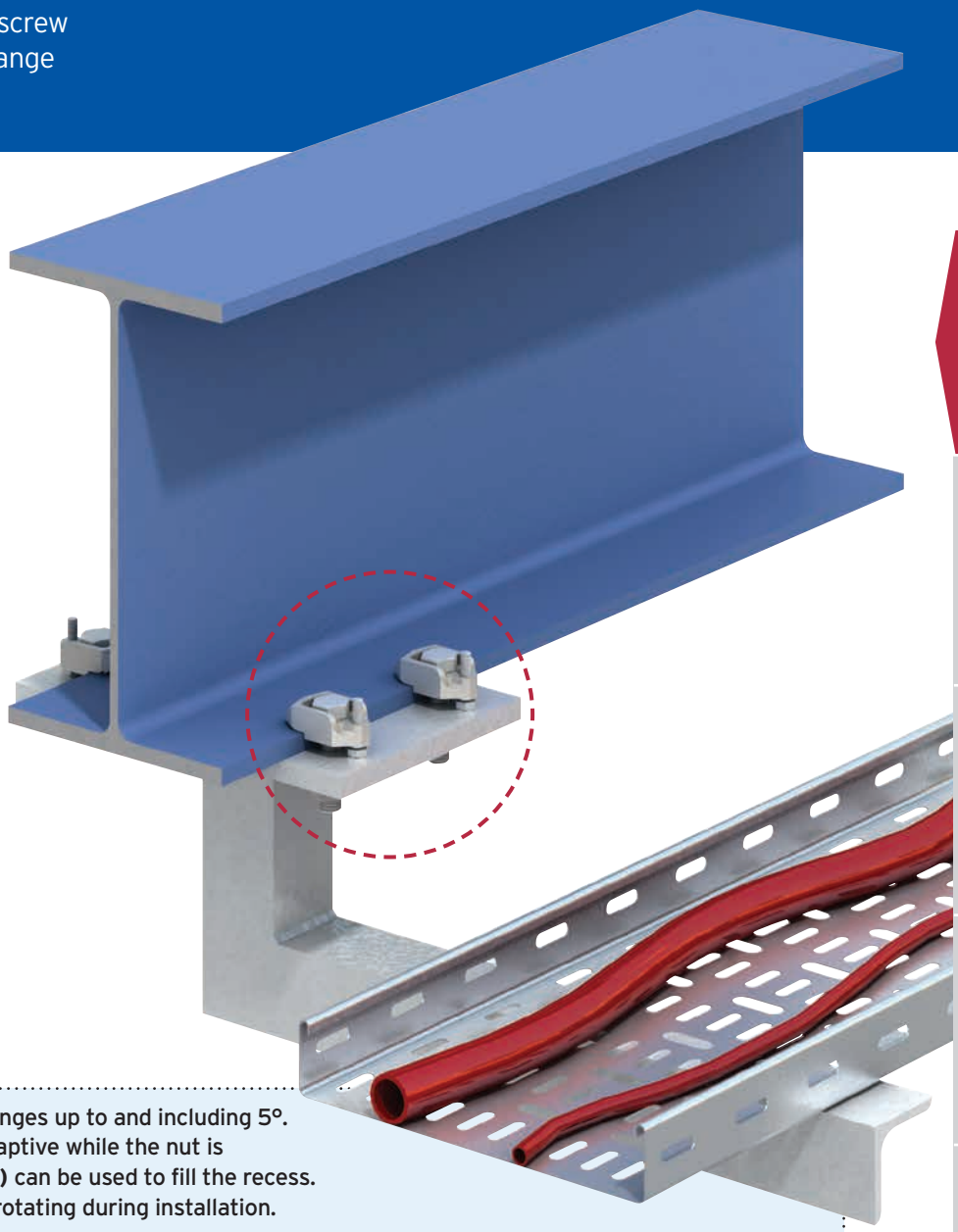
Ref: LindUKMay25

Type D2

This clamp has an adjustable Setscrew Tail that can be adapted to fit a range of flange thicknesses.







- Suitable for parallel and tapered flanges up to and including 5°.
- Recessed top holds the bolt head captive while the nut is tightened. Type W washer **(page 24)** can be used to fill the recess.
- The skirt prevents the clamp from rotating during installation.

Packings are available to increase the clamping range, see page 24. Location plate / end plate details can be found on page 25.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.007 (CE) or DoC No.107 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Malleable iron, zinc plated or hot dip galvanised.

Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1) Tensile / 1 Bolt	Safe Working Loads (FOS 5:1) Slip / 2 Bolts	Tightening Torque*	Dimensions Clamping Range V 1)	Clamping Range V 2)	Y	X	S	T	Width
		kN	kN	Nm	mm	mm	mm	mm		mm	mm
D210	M10	1.5	-	20	5 - 10	10 - 20	20	20	M6	5	26
D212	M12	5.8	0.9	69	5 - 10	10 - 22	26	25	M6	6	29
D216	M16	8.5	1.7	147	6.5 - 13	13 - 20	30	30	M8	8	35
D220	M20	14.7	3.0	285	8.5 - 17	17 - 24	36	35	M10	10	42

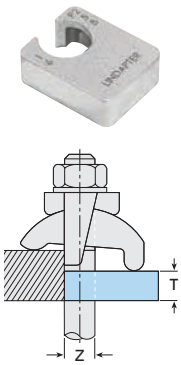
1) Setscrew (S) inserted from above.
2) Setscrew (S) inserted from below.
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Packing Pieces for Types LR and D2

These packing pieces are compatible with the Types LR and D2 fixings and are used to increase the clamping range to suit a range of flange thicknesses. Please select the correct packing combination from the table below.

Packing Pieces

Type P1 long / Type P2 long

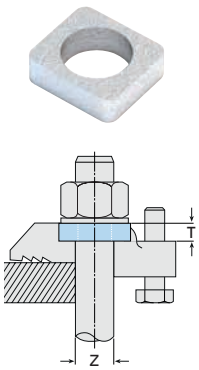


Mild steel, malleable iron, zinc plated or hot dip galv.

Product Code	Bolt Size Z	Dimension T (mm)
P1L10	M10	5
P1L12	M12	6
P1L16	M16	8
P1L20	M20	10
P1L24	M24	12
P2L10	M10	10
P2L12	M12	12
P2L16	M16	16
P2L20	M20	20
P2L24	M24	25

Also Available

Type W



Mild steel, zinc plated or hot dip galvanised.

Product Code	Bolt Size Z	Dimension T (mm)
W08	M8	4
W10	M10	5.5
W12	M12	6
W16	M16	8
W20	M20	10

Note: The Type W is used to fill the recess in the Type D2 to convert it into a flat top clamp to enable the bolt head or nut to be rotated on a hardened washer.

Tail Length / Packing Combinations

For thicker flanges contact Lindapter.

Other combinations than what is shown below may be possible. Contact our Technical Support team to discuss your requirements.

Packing Combinations for Type LR
(Parallel flanges only)

Combinations			Clamping Range				
LR	P1L	P2L	M10 mm	M12 mm	M16 mm	M20 mm	M24 mm
1	-	-	3 - 10	3 - 12	3 - 16	3 - 20	3 - 24
1	1	-	8 - 15	9 - 18	11 - 24	13 - 30	15 - 36
1	-	1	13 - 20	15 - 24	19 - 32	23 - 40	27 - 48
1	1	1	18 - 25	21 - 30	27 - 40	33 - 50	39 - 60
1	-	2	23 - 30	27 - 36	35 - 48	43 - 60	51 - 72
1	1	2	28 - 35	33 - 42	43 - 56	53 - 70	63 - 84
1	-	3	33 - 40	39 - 48	51 - 64	63 - 80	75 - 96

Packing Combinations for Type D2
(Parallel flanges and beams of up to 5° slope)

Combinations			Clamping Range			
D2	P1L	P2L	M10 mm	M12 mm	M16 mm	M20 mm
1[1)]	-	-	5 - 10	5 - 10	6.5 - 13	8.5 - 17
1	-	-	10 - 20	10 - 22	13 - 20	17 - 24
1	1	-	15 - 25	16 - 28	21 - 28	27 - 34
1	-	1	20 - 30	22 - 34	29 - 36	37 - 44
1	1	1	25 - 35	28 - 40	37 - 44	47 - 54
1	-	2	30 - 40	34 - 46	45 - 52	57 - 64
1	1	2	35 - 45	40 - 52	53 - 60	67 - 74
1	-	3	40 - 50	46 - 58	61 - 68	77 - 84

1) Setscrew inverted.

Packing Combinations for Type LR
(For IPN-Beams of an 8° slope only)

IPN Profile mm	M10			M12			M16			M20			M24		
	LR	P1L	P2L	LR	P1L	P2L	LR	P1L	P2L	LR	P1L	P2L	LR	P1L	P2L
80	1	-	-	✗	-	-	✗	-	-	✗	-	-	✗	-	-
100	1	-	-	1	-	-	✗	-	-	✗	-	-	✗	-	-
120	1	-	-	1	-	-	1	-	-	✗	-	-	✗	-	-
140	1	-	-	1	-	-	1	-	-	✗	-	-	✗	-	-
160	1	-	-	1	-	-	1	-	-	1	-	-	✗	-	-
180	1	-	-	1	-	-	1	-	-	1	-	-	✗	-	-
200	1	-	-	1	-	-	1	-	-	1	-	-	✗	-	-
220	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
240	1	1	-	1	-	-	1	-	-	1	-	-	1	-	-
260	1	1	-	1	-	-	1	-	-	1	-	-	1	-	-
280	1	1	-	1	1	-	1	-	-	1	-	-	1	-	-
300	1	1	-	1	1	-	1	-	-	1	-	-	1	-	-
320	1	1	-	1	1	-	1	-	-	1	-	-	1	-	-
340	1	1	-	1	1	-	1	-	-	1	-	-	1	-	-
360	1	-	1	1	1	-	1	1	-	1	-	-	1	-	-
380	1	-	1	1	1	-	1	1	-	1	-	-	1	-	-
400	1	-	1	1	1	-	1	1	-	1	-	-	1	-	-
425	1	-	1	1	-	1	1	1	-	1	1	-	1	-	-
450	1	-	1	1	-	1	1	1	-	1	1	-	1	-	-
475	1	1	1	1	-	1	1	1	-	1	1	-	1	-	-
500	1	1	1	1	-	1	1	1	-	1	1	-	1	-	-
550	1	1	1	1	1	1	1	-	1	1	1	-	1	-	-
600	-	-	-	1	1	1	1	-	1	1	1	-	1	1	-

LR = Type LR | **P1L** = Type P1 long | **P2L** = Type P2 long | ✗ = Not possible

Ref: LindUKMay25

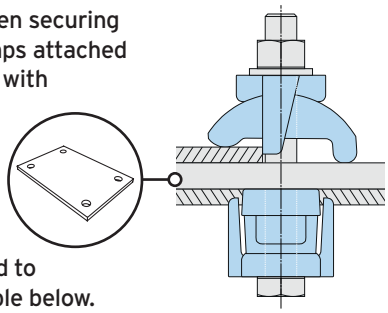
Location and End Plates for Types LR and D2

These plates ensure the clamps and bolts are located in the correct position relative to the supporting steelwork. If you would like help with choosing a suitable plate, please contact Lindapter.

Location Plate

Location plates are required when securing two sections together with clamps attached to the upper and lower sections with both clamps directly opposing each other.

The plate is positioned between the two sections to hold the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.

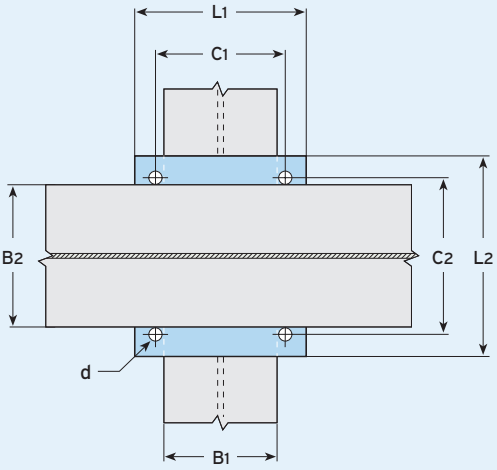


Material: Structural steel grade S355. For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thick. mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M10	11	8	$B_1 + 11$	$B_1 + 66$	$B_2 + 11$	$B_2 + 66$
M12	14	10	$B_1 + 14$	$B_1 + 81$	$B_2 + 14$	$B_2 + 81$
M16	18	15	$B_1 + 18$	$B_1 + 105$	$B_2 + 18$	$B_2 + 105$
M20	22	20	$B_1 + 22$	$B_1 + 132$	$B_2 + 22$	$B_2 + 132$
M24	26	20	$B_1 + 26$	$B_1 + 156$	$B_2 + 26$	$B_2 + 156$

LOCATION PLATE DIMENSIONS

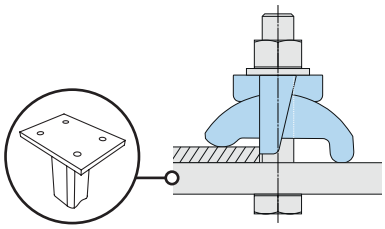
L_1 = Location Plate Length, **L_2** = Location Plate Width, **B_1, B_2** = Flange Width, **C_1, C_2** = Hole Centres, **d** = Hole Ø



End Plate

End Plates should be used when clamps are attached to the supporting section only.

The End Plate holds the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.



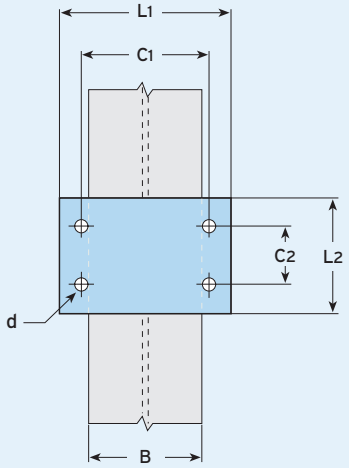
Material: Structural steel grade S355. For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thick.[1] mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres min C2 mm	Width min L2 mm
M10	11	8	B + 11	B + 66	70	$C_2 + 50$
M12	14	10	B + 14	B + 81	80	$C_2 + 60$
M16	18	15	B + 18	B + 105	100	$C_2 + 70$
M20	22	20	B + 22	B + 132	120	$C_2 + 90$
M24	26	20	B + 26	B + 156	150	$C_2 + 110$

1) Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

END PLATE DIMENSIONS

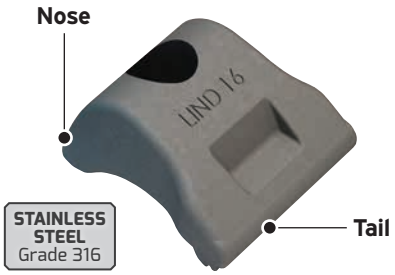
L_1 = End Plate Length, **L_2** = End Plate Width, **B** = Flange Width, **C_1, C_2** = Hole Centres, **d** = Hole Ø

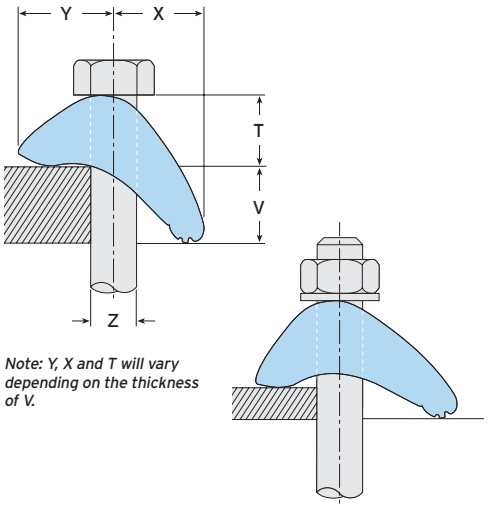


- **To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 10.**
- **If drilling through the flange of the supported steelwork please contact Lindapter to ensure suitability.**

Type LS

Providing excellent corrosion resistance, Lindapter's stainless steel clamp self-adjusts to suit a range of flange thicknesses.





Note: Y, X and T will vary depending on the thickness of V.

- Made from high strength stainless steel grade 316.
- Self-adjusts to suit 3 - 30mm flange thicknesses (size M20).
- For parallel and tapered flanges up to and including 10°.
- The tail spans slotted clearance holes.

Packings are available to increase the clamping range, see page 27. Location / end plate details can also be found on page 27.

For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.008 (CE) or DoC No.108 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Cast stainless steel grade 316.

Product Code	Bolt A4-70 Z	Safe Working Loads		Tightening Torque*	Dimensions				
		Tensile / 1 Bolt (FOS 5:1)	Slip[1] / 2 Bolts (FOS 2:1)		Clamping Range V	Y	X	T	Width
		kN	kN	Nm	mm	mm	mm	mm	mm
LS10	M10	3.0	1.5	40	3 - 15	17 - 19	18 - 24	16 - 21	38
LS12	M12	7.0	2.0	80	3 - 20	16 - 22	18 - 29	17 - 23	40
LS16	M16	10.0	3.0	200	3 - 25	22 - 25	27 - 37	20 - 28	55
LS20	M20	18.0	5.0	400	3 - 30	24 - 31	25 - 42	23 - 32	60

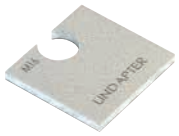
1) Slip resistant values calculated against movement exceeding 0.1mm.
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

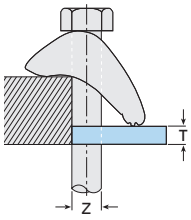
Packing Pieces and Plate Details for Type LS

Stainless steel packing pieces are available to increase the clamping range of the Type LS, please select the correct packing combination from the table below. This page also contains information for designing location / end plates.

Packing Pieces

Type LSP2





Material: Stainless steel grade 316.

Product Code	Bolt Size Z	Dimension T (mm)
LS10P2	M10	10
LS12P2	M12	10
LS16P2	M16	10
LS20P2	M20	10

Packing Combinations

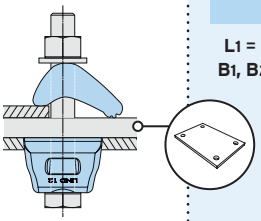
- **For thicker flanges contact Lindapter.**
- **Other combinations than what is shown below may be possible. Contact our Technical Support team to discuss your requirements.**

Choose the correct combination for your configuration using the table below. Please note these calculations are for **parallel flanges and beams up to 10° slopes only.** For example, a size M20 Type LS on a 42mm flange requires 2 x Type LSP2.

Combinations		Clamping Range			
LS	LSP2	M10 (mm)	M12 (mm)	M16 (mm)	M20 (mm)
1	-	3 - 15	3 - 20	3 - 25	3 - 30
1	1	13 - 25	13 - 30	13 - 35	13 - 40
1	2	23 - 35	23 - 40	23 - 45	23 - 50

Location Plate

Location plates are required when securing two sections together with clamps attached to the upper and lower sections with both clamps directly opposing each other. The plate is positioned between the two sections to hold the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.

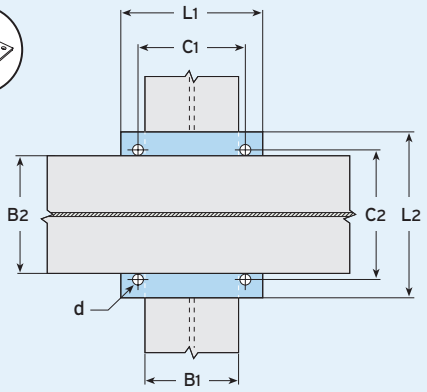


Material: Stainless steel grade 304 / 316.

Bolt Size	Hole Ø d mm	Plate Thick. mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M10	11	10	B1 + 11	B1 + 70	B2 + 11	B2 + 70
M12	14	12	B1 + 14	B1 + 80	B2 + 14	B2 + 80
M16	18	15	B1 + 18	B1 + 100	B2 + 18	B2 + 100
M20	22	20	B1 + 22	B1 + 130	B2 + 22	B2 + 130

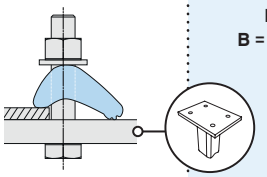
LOCATION PLATE DIMENSIONS

L1 = Location Plate Length, **L2** = Location Plate Width, **B1, B2** = Flange Width, **C1, C2** = Hole Centres, **d** = Hole Ø



End Plate

End Plates should be used when clamps are attached to the supporting section only. The End Plate holds the bolts at the correct centres and should be fabricated to the dimensions shown in the table below.



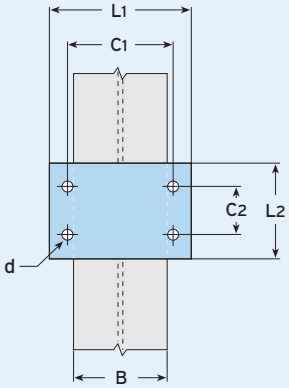
Material: Stainless steel grade 304 / 316.

Bolt Size	Hole Ø d mm	Plate Thick.[1] mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres min C2 mm	Width min L2 mm
M10	11	10	B + 11	B + 70	80	C2 + 60
M12	14	15	B + 14	B + 80	80	C2 + 60
M16	18	20	B + 18	B + 100	110	C2 + 80
M20	22	25	B + 22	B + 130	120	C2 + 90

1) Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

END PLATE DIMENSIONS

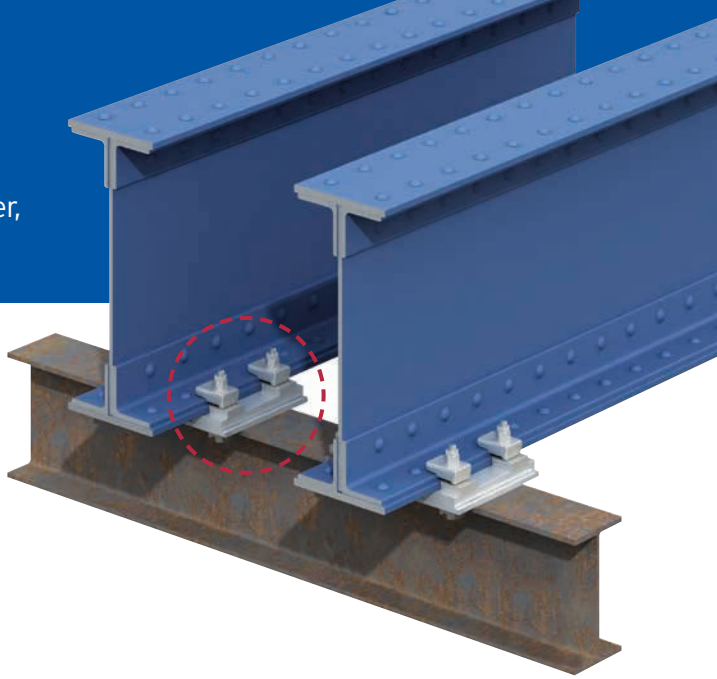
L1 = End Plate Length, **L2** = End Plate Width, **B** = Flange Width, **C1, C2** = Hole Centres, **d** = Hole Ø

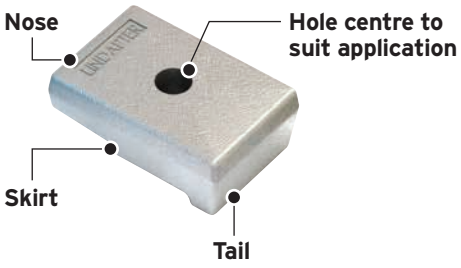


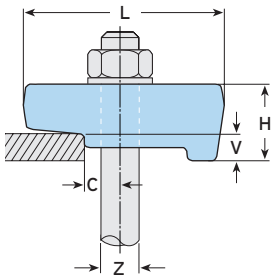
- **To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 10.**
- **If drilling through the flange of the supported steelwork please contact Lindapter to ensure suitability.**

Type RC

Customised position of hole centre, drilled by Lindapter to suit the application. For flanges of 10mm thickness or greater, either parallel or tapered up to 5°.







Material: Forged steel, corrosion protection as required.

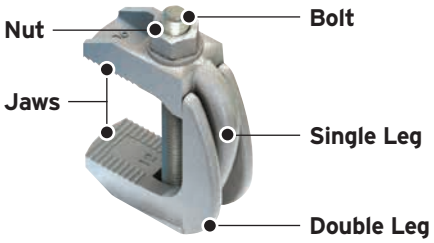
Product Code	Bolt 8.8 Z	Safe Working Loads Tensile / 1 Bolt (FOS 5:1)	Tightening Torque*	Dimensions				
				Tail Length V	C	L	H	Width
		kN	Nm	mm	mm	mm	mm	mm
RCS12	M12	2.6	69	10	6.5 - 26.5	76	29	50
RCS16	M16	4.0	147	10	9 - 24	76	29	50
RCS20	M20	9.6	285	10	11 - 22	76	29	50
RCS24	M24	12.3	491	10	13 - 20	76	29	50

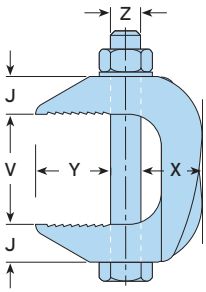
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Contact Lindapter to ensure suitability of the component for application.

Type F9

A flange clamp for connecting parallel running steel sections with flanges of the same width. Can be used with bolts or threaded rod.





For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.010 (CE) or DoC No.110 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Malleable iron, zinc plated or hot dip galvanised.

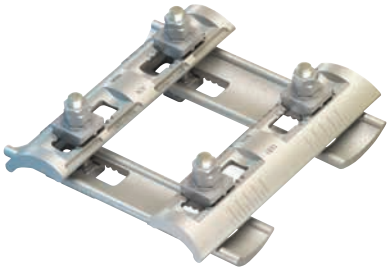
Product Code		Bolt 8.8 Z	Safe Working Loads Tensile / 1 Bolt (FOS 5:1)	Tightening Torque*	Dimensions				
with Bolt	without Bolt				Clamping Range V	Y	J	X	Width
			kN	Nm	mm	mm	mm	mm	mm
F910NC	F910NB	M10	2.0	20	19 - 42	25	13	19	24
F912NC	F912NB	M12	2.8	39	26 - 60	35	17	24	30
F916NC	F916NB	M16	5.6	93	29 - 69	43	21	28	35
F920NC	F920NB	M20	8.4	177	32 - 82	51	25	48	44
F924NCHDG[1)]	F924NBHDG[1)]	M24	14.0	235	45 - 95	76	38	55	63

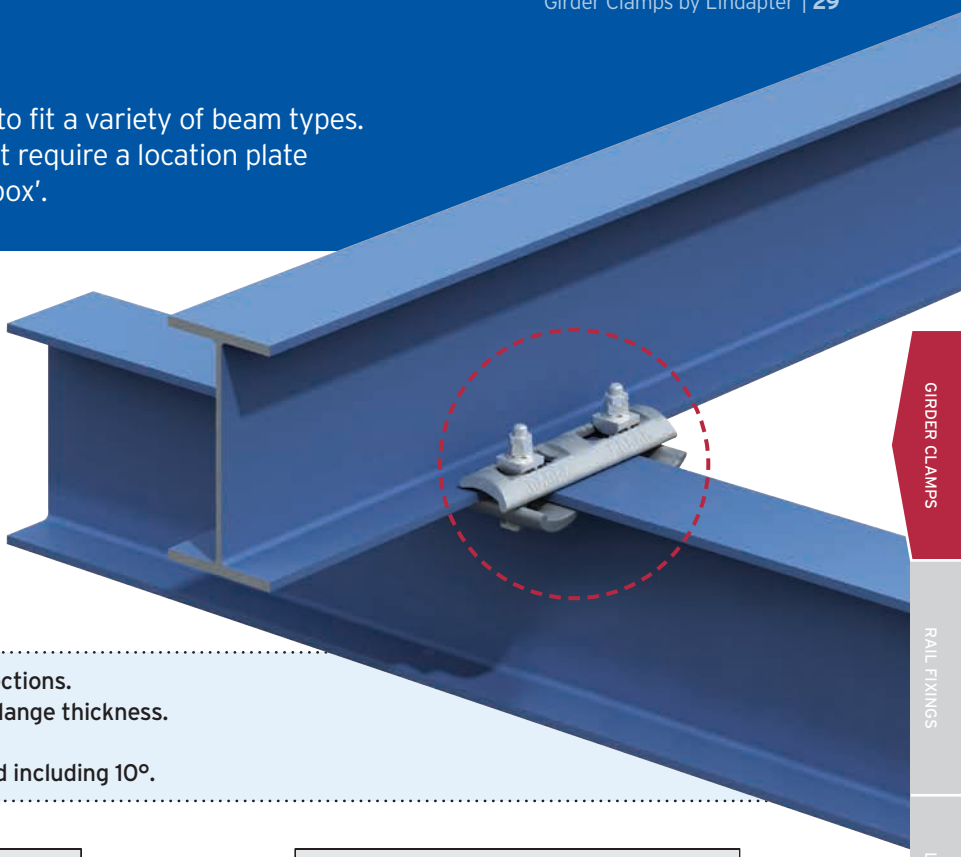
1) Available in hot dip galvanised only.
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

Not suitable for tapered flanges.

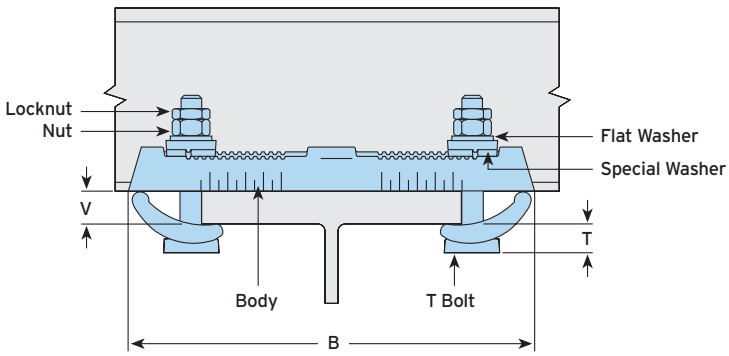
Type FC - Flush Clamp

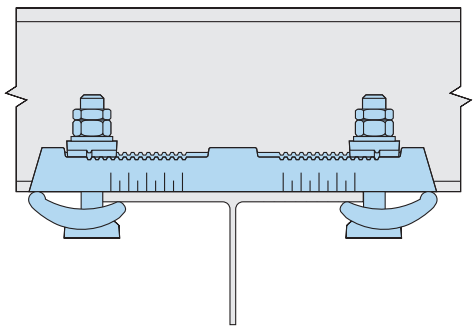
A full connection system that adjusts to fit a variety of beam types. This pre-configured assembly does not require a location plate and is ready for assembly 'out of the box'.





- 'All-in-one' device for connecting steel sections.
- Adjustable to suit both beam width and flange thickness.
- Quick and easy to install.
- For parallel and tapered flanges up to and including 10°.





For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.012 (CE) or DoC No.112 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

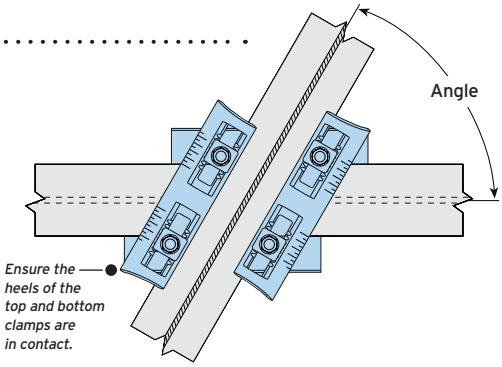
Material: Forged steel, zinc plated plus JS500.

Product Code	T Bolt 8.8	Safe Working Loads (FOS 5:1)		Tightening Torque*	Clamping Range		Dimensions	
		Tensile / 4 Bolts	Slip / 4 Bolts		Flange Thickness V	Flange Width[1)]	T	B
		kN	kN	Nm	mm	mm	mm	mm
FC16	M16	30.0	7.5	147	5 - 19	75 - 180	22 - 27	304

1) Depending on beam connection angles (see table below).
** Torque figures based on bolts / setscrews in an unlubricated condition (as supplied). For further information on lubricated fasteners see page 78.*

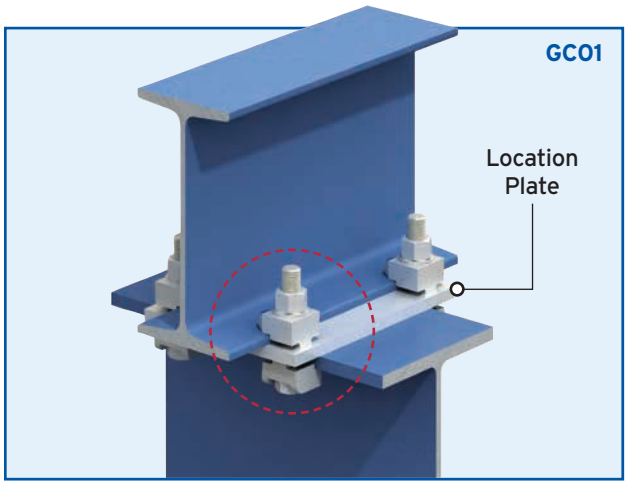
Minimum Possible Beam Connection Angles

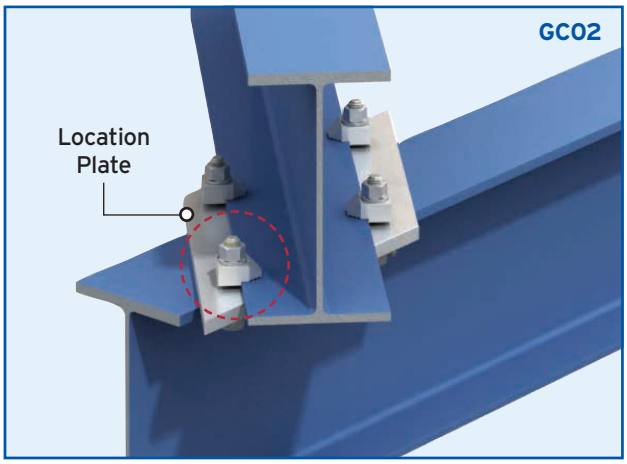
Bottom Beam \ Top Beam	Flange Width	76.2mm	101.6mm	127.0mm	152.4mm	177.8mm
Bottom Beam	76.2mm	45°	50°	55°	65°	75°
	101.6mm	50°	50°	55°	65°	75°
	127.0mm	55°	55°	55°	65°	75°
	152.4mm	65°	65°	65°	65°	75°
	177.8mm	75°	75°	75°	75°	80°

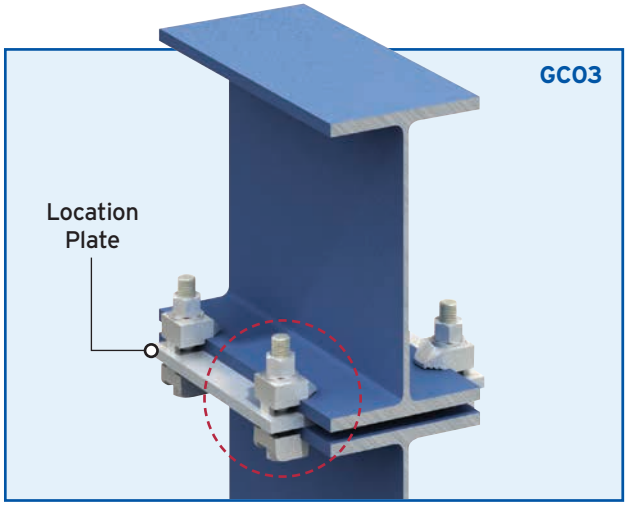


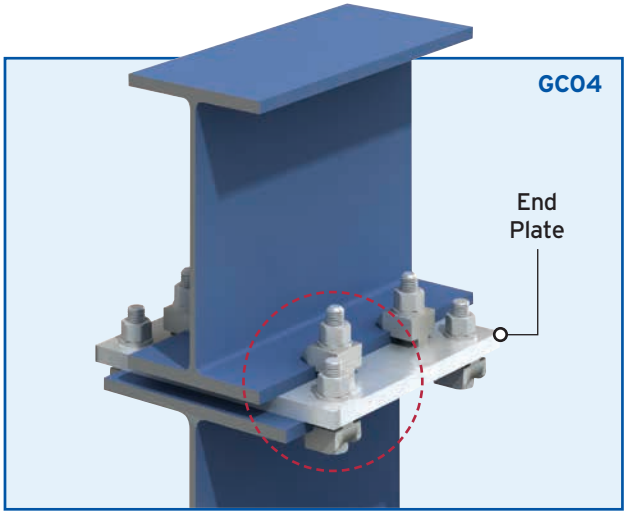
Typical Applications for Girder Clamps

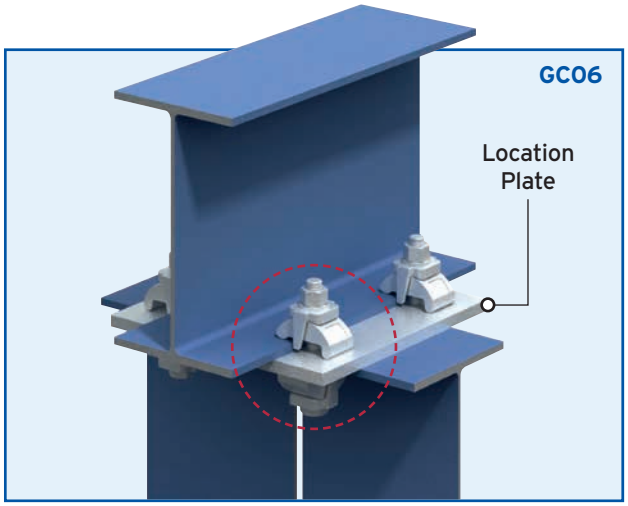
Popular connection assemblies are shown below. They represent a fraction of the possibilities as Lindapter's clamps are used all over the world to connect almost every type of steel section. Try our NEW online Assembly Selector to browse more connection assemblies and find your perfect solution.

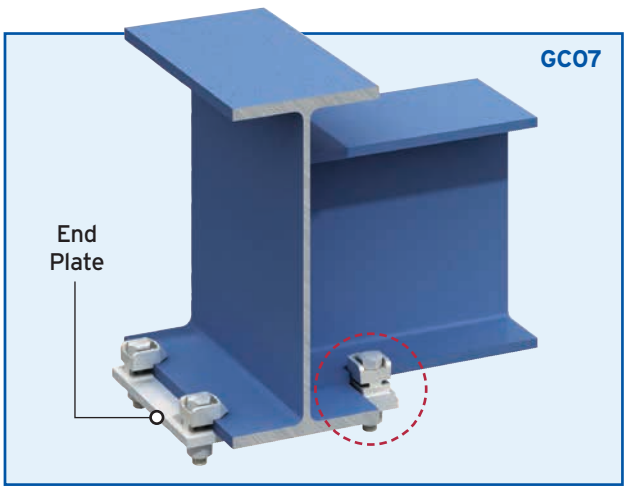










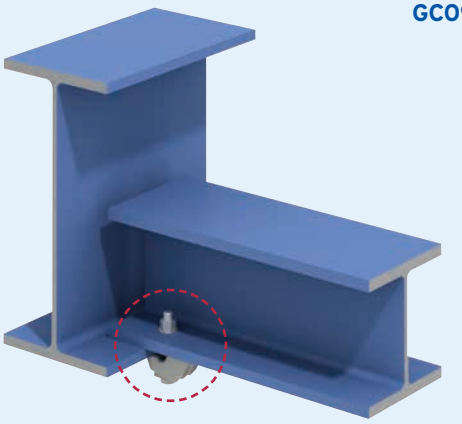


Ref: LindUKMay25

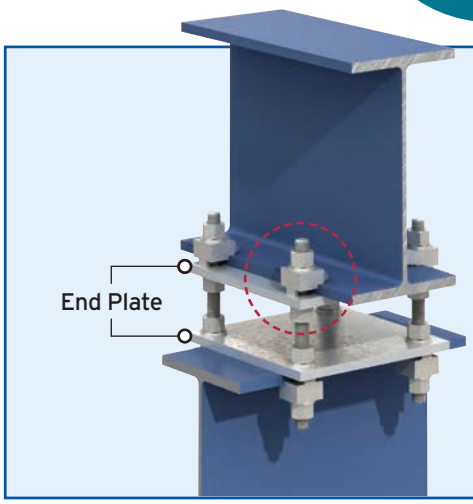
Typical Applications for Girder Clamps

Examples of popular connection arrangements are continued below.

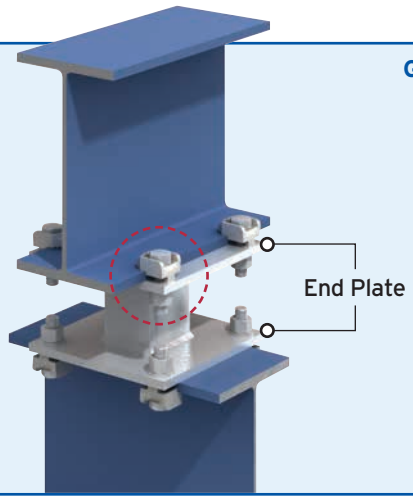
GC09



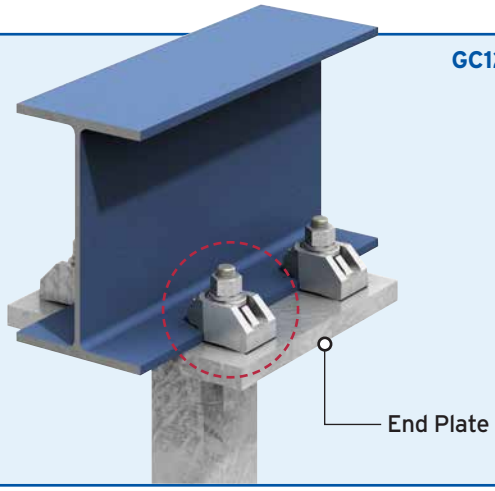
GC10



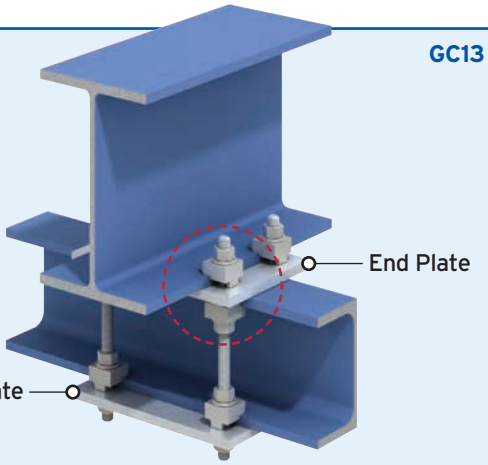
GC11



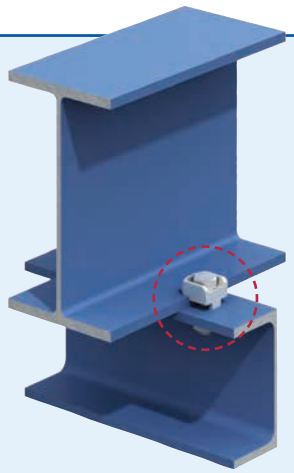
GC12



GC13



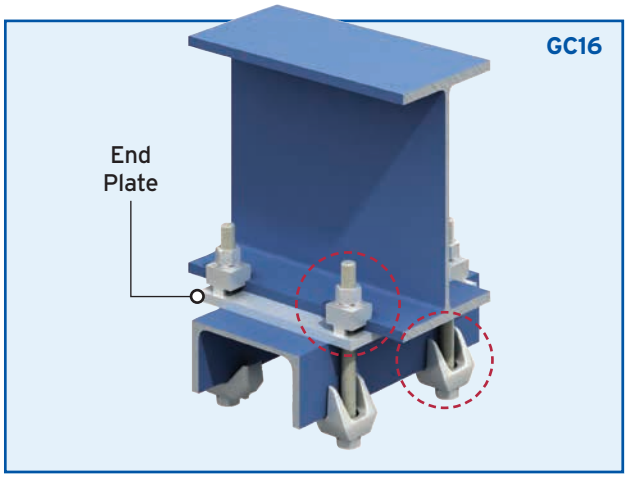
GC14



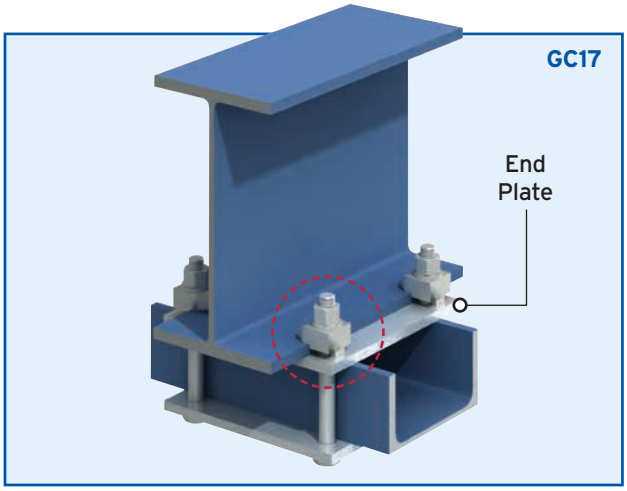
Typical Applications for Girder Clamps

More examples of popular connection assemblies are shown below.

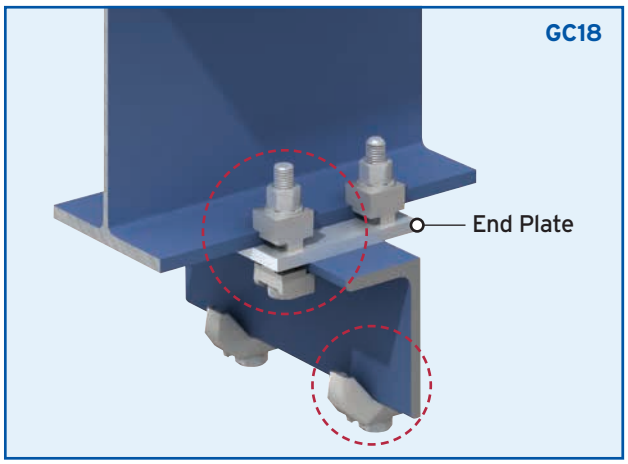
GC16



GC17



GC18



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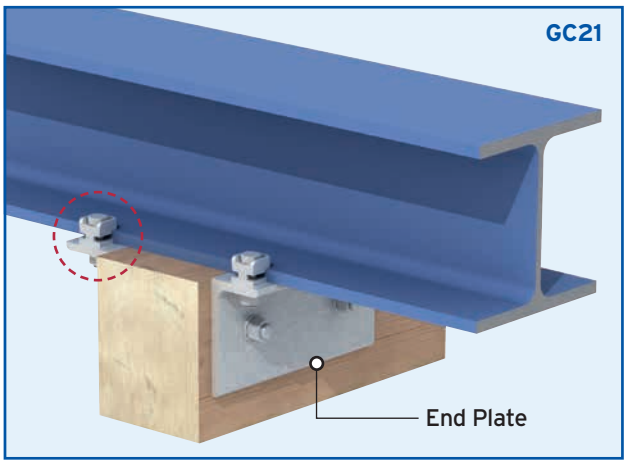
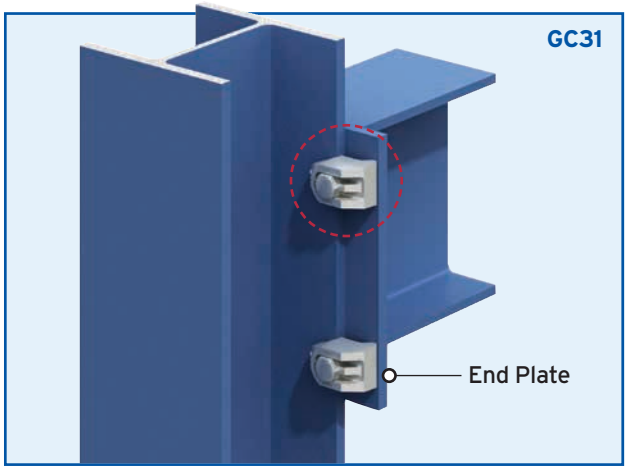
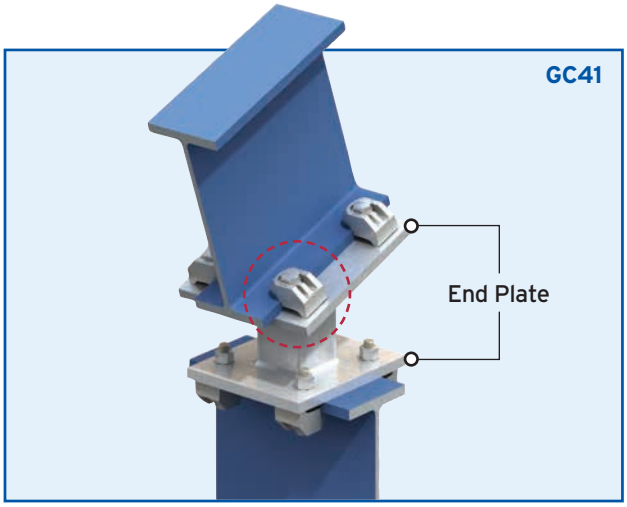


GC31



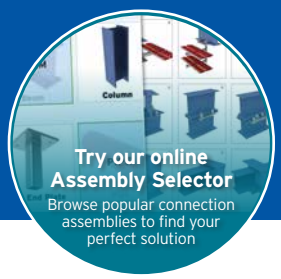
GC41



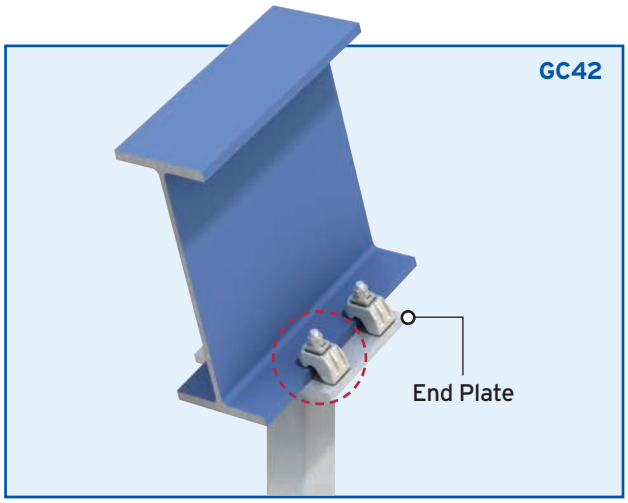
Ref: LindUKMay25

Typical Applications for Girder Clamps

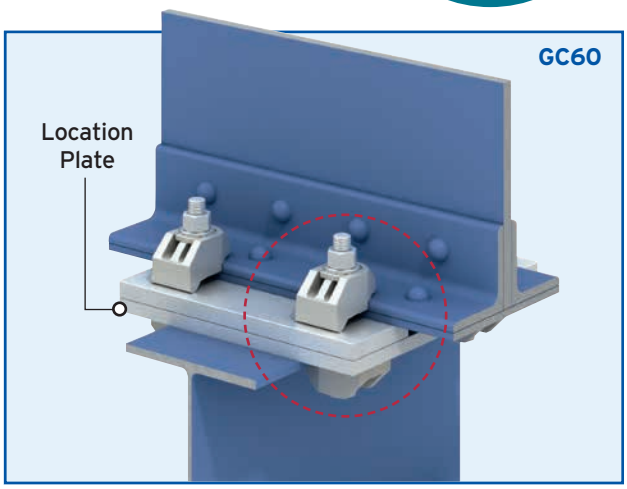
Examples of popular connection arrangements are continued below.
Contact Lindapter to discuss your connection requirement.



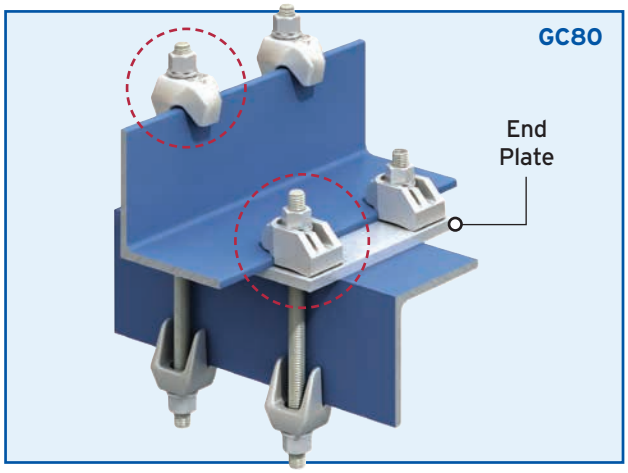
GC42



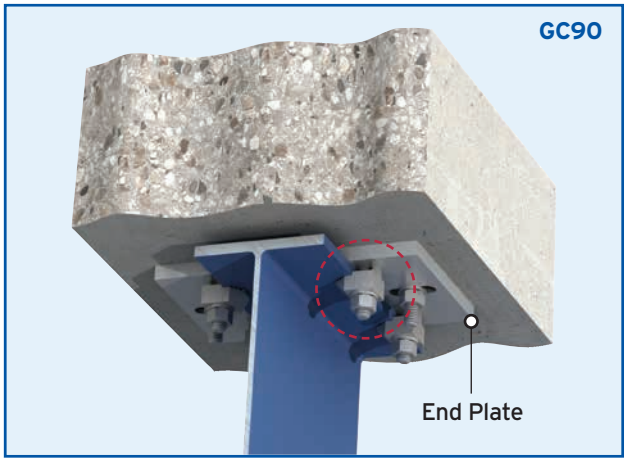
GC60



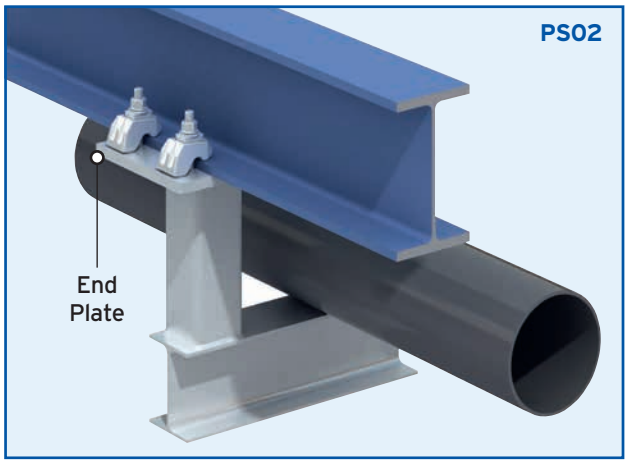
GC80



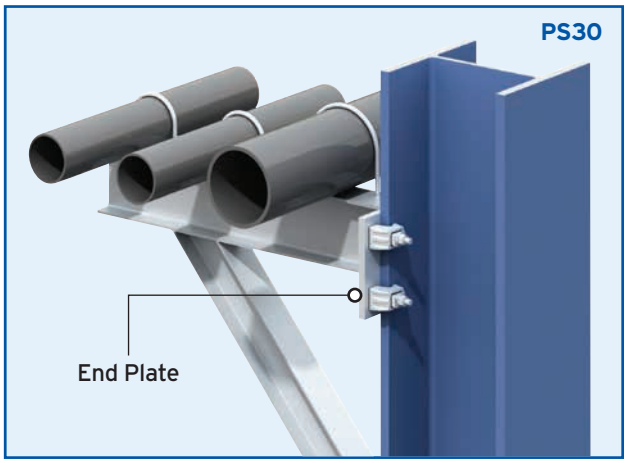
GC90



PS02



PS30



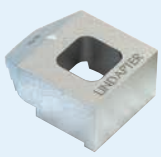
FREE connection detailing available
See page 6

The popular Type HD provides lateral adjustability to allow the quick and precise alignment of rails **(see page 36)**.

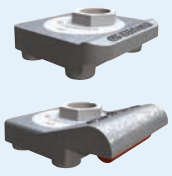
Rail Fixings

For securing rails or crane lines in low speed applications such as ground track, elevated rail and overhead gantries. These fixings are used in a wide range of environments including, train maintenance depots, industrial facilities, water treatment plants, dam/dockside cranes, automated warehouses and power stations.

Type BR
page 35



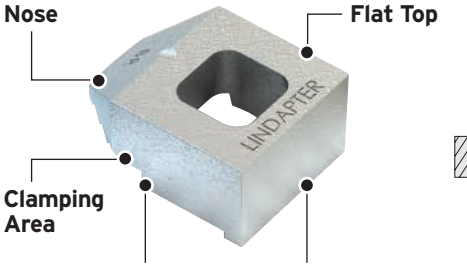
Type HD
pages 36 - 37

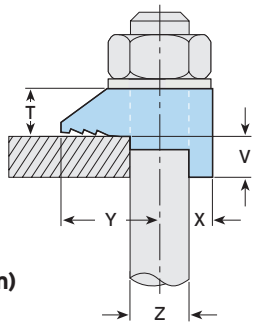


Ref: LindUKMay25

Type BR

A basic clamp for securing low speed rail or steel beams with either parallel or tapered flanges up to and including 8°. The tail is available in two lengths and spans slotted clearance holes.





Material: Malleable iron, zinc plated or hot dip galvanised.

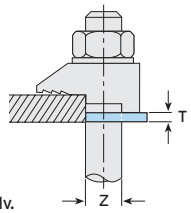
Product Code	Bolt 8.8 Z	Standard Loads (FOS 5:1) Tensile / 1 Bolt kN	Slip / 2 Bolts kN	Tightening Torque* Nm	Reduced Loads (FOS 5:1) (not suitable for slip conditions) Tensile / 1 Bolt kN	Tightening Torque* Nm	Dimensions Y mm	X mm	Tail Length V short mm	Tail Length V medium mm	T mm	Width mm
BR12	M12	5.8	0.9	69	3.7	39	26	13	4	6	13	29
BR16	M16	8.5	1.7	147	5.2	93	30	16	6	8	16	35
BR20	M20	14.7	3.0	285	8.6	177	36	22	7	10	19	42

** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

- **Contact Lindapter to ensure suitability of the component for application.**
- **Please ensure the anchor device is suitable for the torque value shown above.**
- **Location plate / end plate details can be found on page 15.**

Packing Pieces

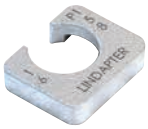
Type CW

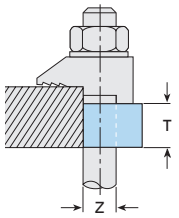


Mild steel, zinc plated or hot dip galv.

Product Code	Bolt Size Z	Dimension T (mm)
CW12	M12	2.5
CW16	M16	3
CW20	M20	4

Type P1 short / Type P2 short





Mild steel, malleable iron, zinc plated or hot dip galv.

Product Code	Bolt Size Z	Dimension T (mm)
P1S12	M12	6
P1S16	M16	8
P1S20	M20	10
P2S12	M12	12
P2S16	M16	16
P2S20	M20	20

Packing Combinations (For rails up to and including 8° slope)

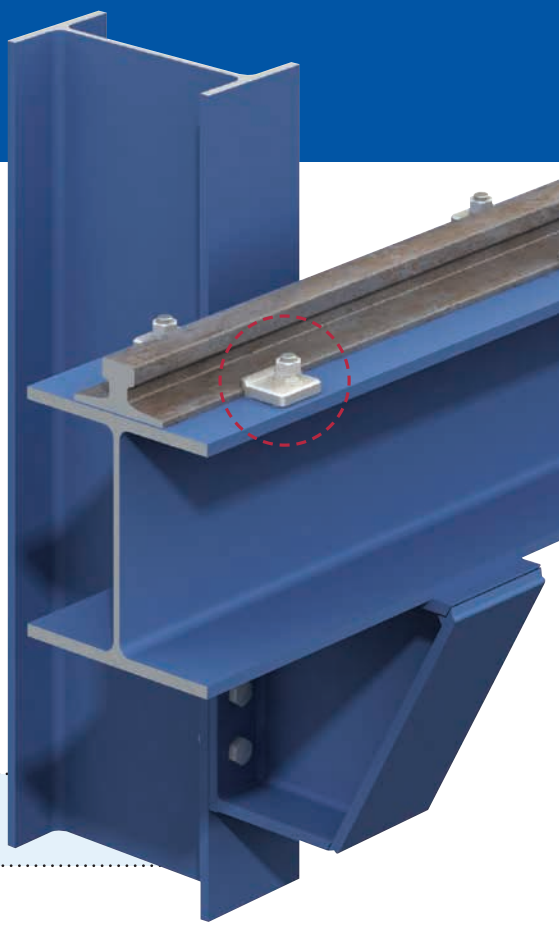
- **For thicker flanges contact Lindapter.**
- **Other combinations than what is shown below may be possible. Contact our Technical Support team to discuss your requirements.**

Flange Thickness mm	M12 BR	M12 CW	M12 P1S	M12 P2S	M16 BR	M16 CW	M16 P1S	M16 P2S	M20 BR	M20 CW	M20 P1S	M20 P2S
5	S	-	-	-	✗	-	-	-	✗	-	-	-
6	M	-	-	-	S	-	-	-	✗	-	-	-
7	S	1	-	-	S	-	-	-	S	-	-	-
8	M	1	-	-	M	-	-	-	S	-	-	-
9	S	2	-	-	S	1	-	-	S	-	-	-
10	S	2	-	-	S	1	-	-	M	-	-	-
11	M	2	-	-	M	1	-	-	S	1	-	-
12	M	-	1	-	S	2	-	-	S	1	-	-
13	S	1	1	-	S	2	-	-	S	1	-	-
14	M	1	1	-	S	-	1	-	M	1	-	-
15	S	2	1	-	S	-	1	-	S	2	-	-
16	S	2	1	-	M	-	1	-	S	2	-	-
17	M	2	1	-	S	1	1	-	S	-	1	-
18	M	2	1	-	S	1	1	-	M	2	-	-
19	S	1	-	1	M	1	1	-	S	3	-	-
20	M	1	-	1	S	2	1	-	M	-	1	-
21	M	1	-	1	S	2	1	-	M	-	1	-
22	S	-	1	1	S	-	-	1	M	3	-	-
23	M	2	-	1	M	-	-	1	M	3	-	-
24	M	-	1	1	M	-	-	1	M	1	1	-
25	S	1	1	1	S	1	-	1	S	2	1	-
26	M	1	1	1	S	1	-	1	S	2	1	-
27	S	2	1	1	M	1	-	1	S	-	-	1
28	S	-	-	2	S	2	-	1	M	2	1	-
29	S	-	-	2	S	2	-	1	M	2	1	-
30	M	-	-	2	M	2	-	1	M	-	-	1
31	S	1	-	2	M	2	-	1	S	1	-	1

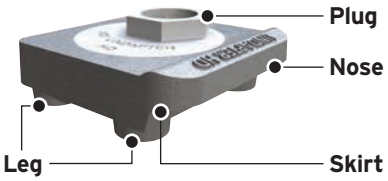
S = BR short | **M** = BR medium | **CW** = Type CW | **P1S** = P1 short | **P2S** = P2 short | ✗ = Not possible

Type HD

This convenient fixing provides lateral adjustability for fast and precise rail alignment in low speed applications.

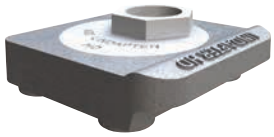


Type HD Soft

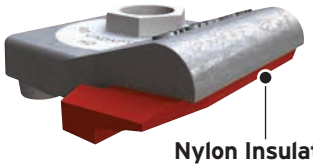


Type HD Spring

Type HD Hard



Type HD Isolated



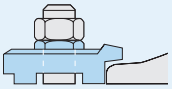
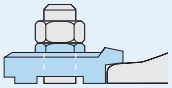
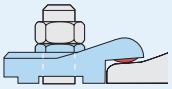
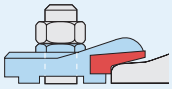
- Suitable for all rails with tapered flanges and crane speeds up to 60m/min.
- Safely and easily secures rail using only hand tools.

Contact Lindapter for wheel loads above 400kN or lateral loads higher than wheel loads.

Please contact Lindapter to ensure suitability of component for application.

Type HD Product Comparison

The table below shows the four options available. Each product has specific properties, e.g. a nylon insulator supplied with the Type HD Isolated will allow the product to be electrically isolated from the rails. Contact Lindapter for more information.

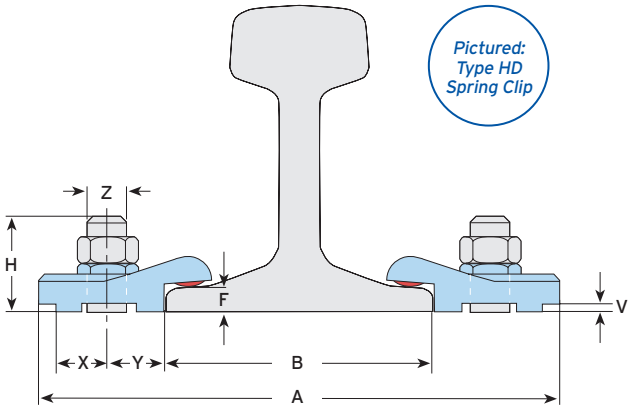
	Type HD Soft Allows rail wave Codes: HD20S / HD24S	**Type HD Hard** Clamps the rail down tightly Codes: HD20H / HD24H	**Type HD Spring** Includes an elastomer spring Codes: HD20SP / HD24SP	**Type HD Isolated** Supplied with nylon insulator Codes: HD20SPOR / HD24SPOR
				
Precise lateral adjustability	✔	✔	✔	✔
High strength SG Iron material	✔	✔	✔	✔
Various corrosion protection options	✔	✔	✔	✔
High resistance to lateral loads	✔	✔	✔	✔
Allows vertical rail / rail wave movement	✔	-	✔*	-
Electrically isolated from the rail	-	-	-	✔
Reduces track running noise	-	-	✔	-
Suitable for use with a resilient pad	✔	-	✔	✔

** The elastomer spring with a Shore A hardness of 90-97 provides some vertical restraint to the rail while still allowing it to lift with rail wave.*

Ref: LindUKMay25

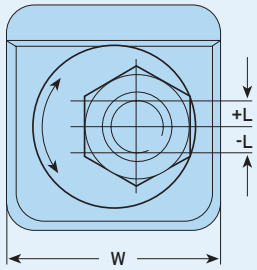
Type HD Technical Data

Type HD is suitable for all rails with tapered flanges and crane speeds up to 60 metres per minute. Please contact Lindapter for wheel loads above 400kN or lateral loads higher than wheel loads.



Lateral Adjustability

The rotatable plug allows lateral adjustment (L) towards and away from the rail. Before installing, ensure the hexagon on the plug is at the 3 o'clock position (as shown).



Material: SG iron, corrosion protection as requested.

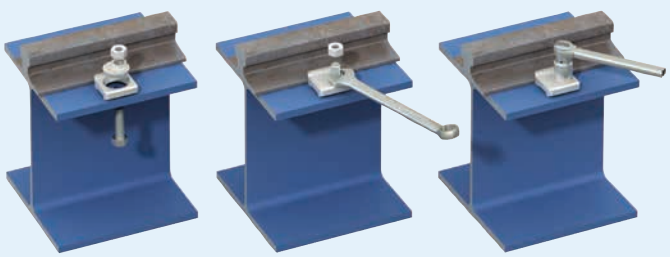
Clip Type	Product Code	Bolt 8.8 Z	Normal Lateral Conditions SWL (FOS 4:1) kN	Normal Lateral Conditions Tight. Torque* Nm	High Lateral Conditions SWL (FOS 4:1) kN	High Lateral Conditions Tight. Torque* Nm	Leg Length[3] V mm	Stud Length[3] H mm	Dimensions Lateral Adjust. L mm	Dimensions Plate Width min. A mm	Distances[1] Y mm	Distances[1] X mm	Width W mm
Soft	HD20S	M20	22.5	185	46.0	450	F - 4	F + 40	+/- 11.5	B + 137	30	27	74
	HD24S	M24	40.0	320	60.0	760	F - 4	F + 43	+/- 8	B + 130	30	27	74
Hard	HD20H[2]	M20	22.5	185	46.0	450	F - 8	F + 38	+/- 11.5	B + 137	30	27	74
	HD24H[2]	M24	40.0	320	60.0	760	F - 8	F + 41	+/- 8	B + 130	30	27	74
Spring	HD20SP	M20	22.5	185	46.0	450	F - 7	F + 40	+/- 11.5	B + 137	30	27	74
	HD24SP	M24	40.0	320	60.0	760	F - 7	F + 43	+/- 8	B + 130	30	27	74
Isolated	HD20SPOR	M20	22.5	185	46.0	450	F - 6	F + 42	+/- 11.5	B + 147	35	27	74
	HD24SPOR	M24	40.0	320	60.0	760	F - 6	F + 45	+/- 8	B + 140	35	27	74

1) Based on plug set at 3 o'clock position.
2) Not suitable for use with a resilient pad.
3) Please specify the required leg length (V) when ordering. If you are using the resilient pad with Soft, Spring or Isolated types (resilient pads are not suitable with Hard), increase the leg length and stud length (H) by the thickness of the pad.
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

How to install...

1) Position the HD clip on the bolt or stud, ensuring the plug is at the 3 o'clock position, place a hexagon nut and loosely tighten.
2) Rotate the plug in a clockwise direction to locate the clip against the rail. Laterally adjust the rail if required.
3) Tighten the hexagon nut to the recommended torque.

Watch the installation video at www.Lindapter.com



FREE connection detailing available
See page 6

The versatile Type ALP not only provides lateral adjustability, it also adjusts to suit different beam sizes and the orientation of the lift (**see page 40**).

Lifting Points

Lindapter's lifting points are used in a variety of industries to support the lifting and rigging of heavy equipment. Applications vary from suspending overhead audio-visual kit in theatres to lifting drilling risers onto offshore oil platforms.

Type ALP (Standard)
page 40

Type LP (Bespoke)
page 41

Ref: LindUKMay25

Lifting Point Configuration

Lindapter manufactures Lifting Points that are configured with adjustable, high strength components to suit heavy loads up to 200kN SWL. Take advantage of the Free Connection Design service for advice on the best solution for your connection.

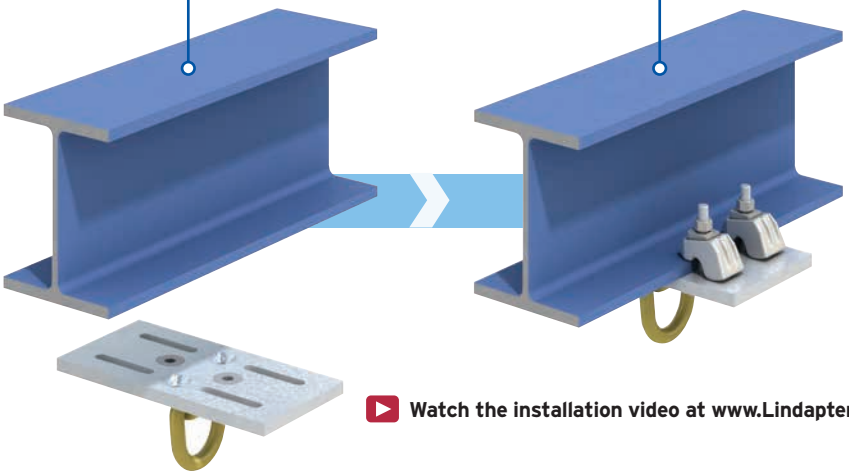
Quick and easy to install

Step 1

Offer the pre-assembled location plate up to the beam ensuring it is positioned centrally to it.

Step 2

Assemble the clamps and tighten to the recommended torque.



Watch the installation video at www.Lindapter.com

6 REASONS TO USE

1) Quick and easy to install using standard hand tools.
2) Easy to align / reposition.
3) Maximum safe working load up to 200kN (Type LP).
4) For parallel and tapered flanges up to 10°.
5) Utilises CE Marked Lindapter clamps.
6) Free Connection Design service available.

Email **support@Lindapter.com** your connection details and Lindapter's experienced Engineers will do the rest!

STANDARD

Type ALP

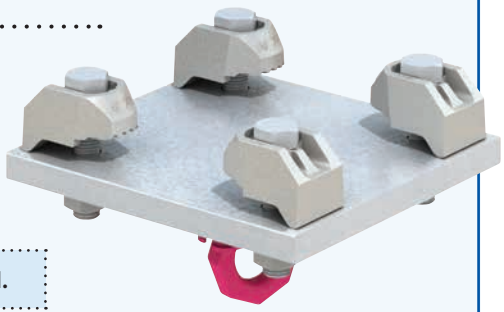
Ideal for most applications up to 3t (29.4kN), this assembly self-adjusts to suit a range of flange thicknesses. For further convenience, the slotted holes in the location plate allow the clamp to adapt to different beam widths, often allowing contractors to use just one type of lifting point throughout a project. Lindapter's standard lifting point is immediately available off-the-shelf.

See the Type ALP and its components in more detail on **page 40.**

BESPOKE

Type LP

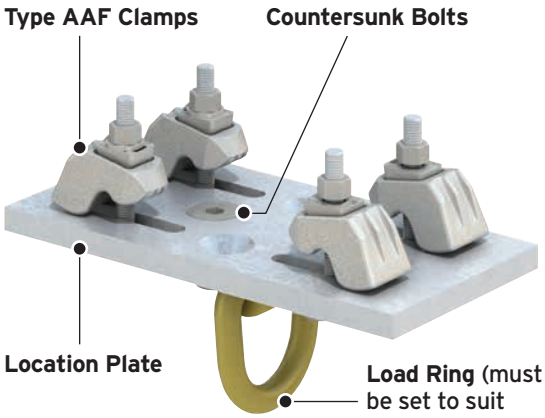
For large steel sections or loads up to 200kN, Lindapter manufactures custom-made solutions for specific application requirements. Whatever the application, Lindapter's durable products are valued for their quality and reliability, and provide contractors with a safe, quick and convenient lifting system.

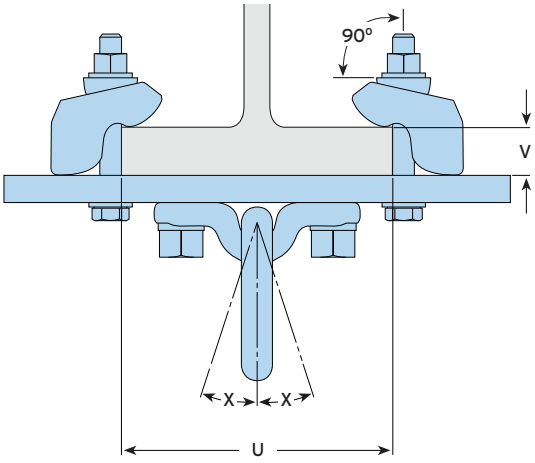


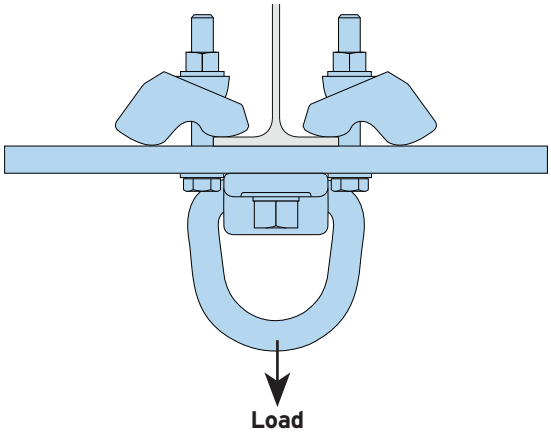
See the Type LP and its components in more detail on **page 41.**

Type ALP

Lindapter's standard rigging and lifting solution adjusts to suit the beam width, flange thickness and orientation of the lift. Safely supports loads up to three metric tonnes.







- Available 'off-the-shelf' with a safe working load up to 3t (29.4kN).
- Large load ring can be set to suit the lift orientation.
- Adjusts to suit different sized beams and can be easily repositioned.
- Suitable for parallel and tapered beams up to and including 10°.

Suitable for supporting the lifting and rigging of equipment only.

The ALP assembly must be regularly inspected for signs of wear or damage, in accordance with the standards / regulations of the country of use.

Static Safe Working Load values are subject to the capacity of the supporting sections. Please refer to the ALP user guide for guidance.

Material: Type AAF clamps (low temperature SG iron, hot dip galvanised), Location Plate (mild steel, hot dip galvanised) and Load Ring (forged steel, painted).

Product Code	Torque Figures*				Clamping Range		Safe Working Loads (FOS 4:1)	Max Angle of Load X
	Load Ring Countersunk Bolts		Type AAF Set Screws		Flange Thickness V	Beam Width U		
	10.9 Bolt	Torque Nm	8.8 Bolt	Torque Nm	mm	mm		
ALP 3T-1	M16	100	M12	90	5 - 26	70 - 210	3t (29.4kN)	18°
ALP 3T-2	M16	100	M12	90	5 - 26	190 - 330	3t (29.4kN)	18°
ALP 3T-3	M16	100	M12	90	5 - 26	310 - 450	3t (29.4kN)	18°

** Torque figures based on bolts / setscrews in an unlubricated condition as supplied. For further information on lubricated fasteners see page 78.*

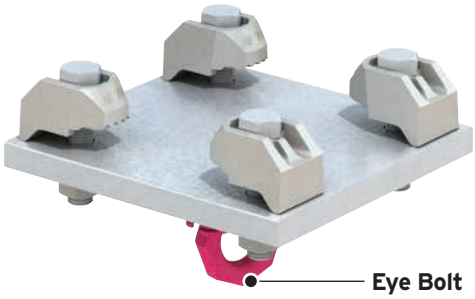
Ref: LindUKMay25

Type LP

Utilising Lindapter's high strength Type AF or AAF clamps for heavy loads, the Type LP is available in bespoke configurations up to 200kN SWL.

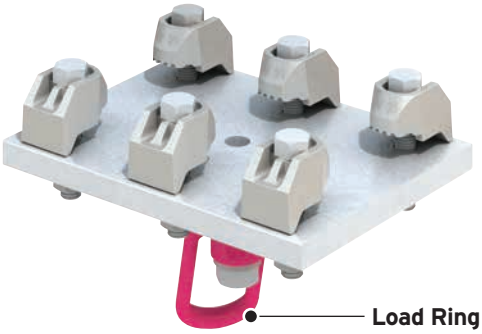
LP4 (up to 45kN SWL)

Lifting Point with 4 Type AF or AAF clamps



LP6 (up to 100kN SWL)

Lifting Point with 6 Type AF or AAF clamps



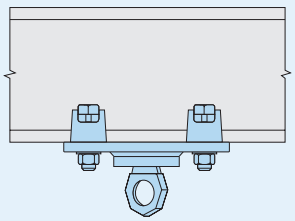
The Type LP can be supplied with either an Eye Bolt or Load Ring. Please state your requirement when ordering.

- **Lifting Points must be regularly inspected for signs of wear or damage, in accordance with the standards / regulations of the country of use.**
- **Static Safe Working Load values are subject to the capacity of the supporting sections.**

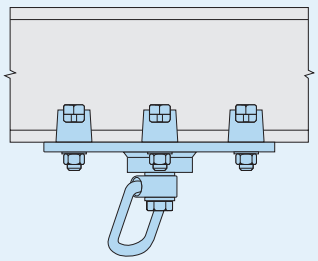
Bespoke Configurations

Lindapter manufactures customised Lifting Points to meet individual requirements, two examples are shown on the right. These bespoke connections are designed to specific application requirements, such as vertical loads, loads at an angle and orientation of up to 360°. The product designation, i.e. LP(#) determines the number of Type AF or AAF clamps.

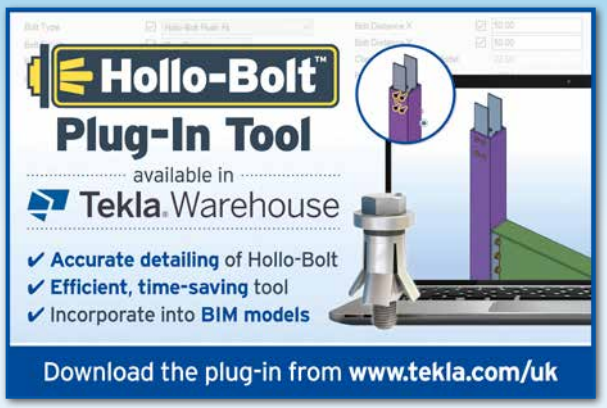
Type LP4 (with Eye Bolt)



Type LP6 (with Load Ring)



For example, the LP6 has six M24 Type AF clamps to create a Safe Working Load of 100kN (4:1 Factor of Safety). Provide details of the loading, rotation, angle and beam dimensions and Lindapter's team of Engineers will design a connection solution to suit your needs.



The Hollo-Bolt HCF (High Clamping Force) is optimised for higher strength structural connections (**see page 45**).

Hollo-Bolt™

Lindapter's expansion bolts require access to only one side of the Structural Hollow Section (SHS), and offer a faster alternative to welding or through-bolting, enabling contractors to reduce construction time and labour costs.

The Hollo-Bolt is independently approved for primary structural connections (**see pages 43-53**). The LindiBolt is ideal for applications in standard clearance holes (**page 54**).

Hollo-Bolt™
pages 43 - 53

LindiBolt™
page 54

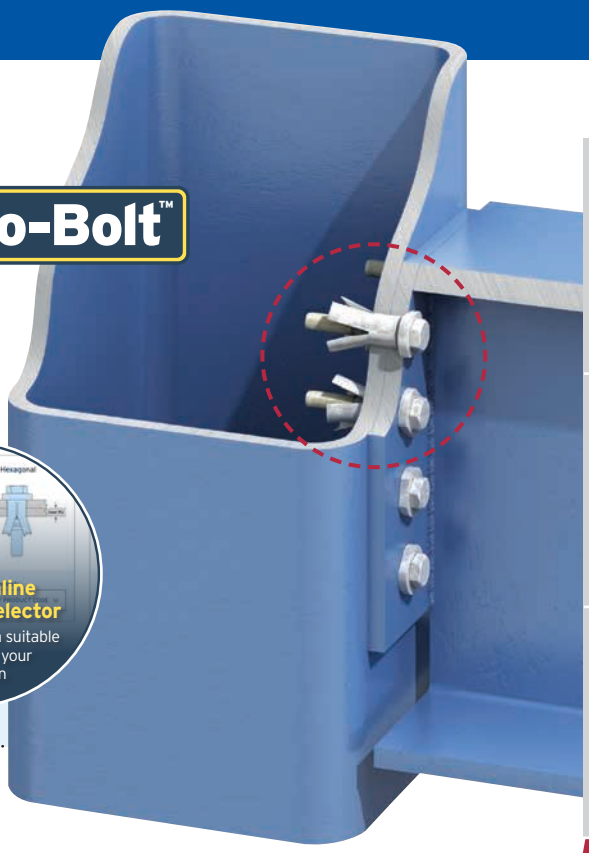
Ref: LindUKMay25

Hollo-Bolt™ by Lindapter

Installation is quickly carried out by inserting into pre-drilled steelwork and tightening with a torque wrench. Independent approvals include UKCA, CE Mark, TÜV, ICC-ES seismic accreditation and Fire Rated up to 120 minutes.

UK CA CE TÜVNORD ICC ES USA Seismic Approval See ESR-3330 Fire Rated to ISO 834

Hollo-Bolt HCF (High Clamping Force)
See page 45



- Fast, cost saving installation from one side.
- For square, rectangular and circular hollow sections.
- High resistance to shear and tension.
- Independently tested for dynamic loading.
- Independently fire tested.
- Unique High Clamping Force design.
- Low temperature tested to -45°C (carbon steel variants).
- Hollo-Bolt plug-in tool available in Tekla Warehouse.

Carbon steel, Hexagonal Head Hollo-Bolts in all sizes have been independently fire tested in both tension and shear in accordance with ISO 834 and are fire rated up to 120 minutes. For further details and load data please contact Lindapter.

Hollo-Bolt Options

Hollo-Bolts are available in a range of head types for a variety of architectural finishes...

KEY ✔ Standard Option ✓ Available on request

		Head Variants		
		HEXAGONAL Normal visible protrusion	**COUNTERSUNK** Minimal visible protrusion	**FLUSH FIT** Zero visible protrusion
	Sizes Available			
Core Bolt Ø	M8	✔ Fire Rated*	✔	✔
	M10	✔ Fire Rated*	✔	✔
	M12	✔ Fire Rated*	✔	✔
	M16 HCF (High Clamping Force)	✔ Fire Rated*	✔	-
	M20 HCF (High Clamping Force)	✔ Fire Rated*	-	-
	Corrosion Protection			
Carbon Steel with finish	Zinc Plated plus JS500	✔ Fire Rated*	✔	✔
	Hot Dip Galvanised	✔ Fire Rated*	-	-
	Sheraplex	✓ Fire Rated*	✔	✔
	Stainless Steel	✔	✔	✔

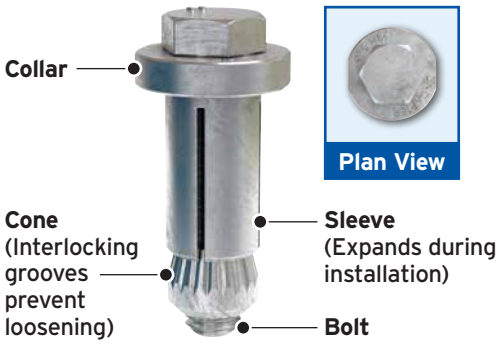
Sizes M16 and M20, known as the Hollo-Bolt HCF, feature a High Clamping Force mechanism to produce three times more clamping force than the same sized product without the mechanism. See page 45 for more information.

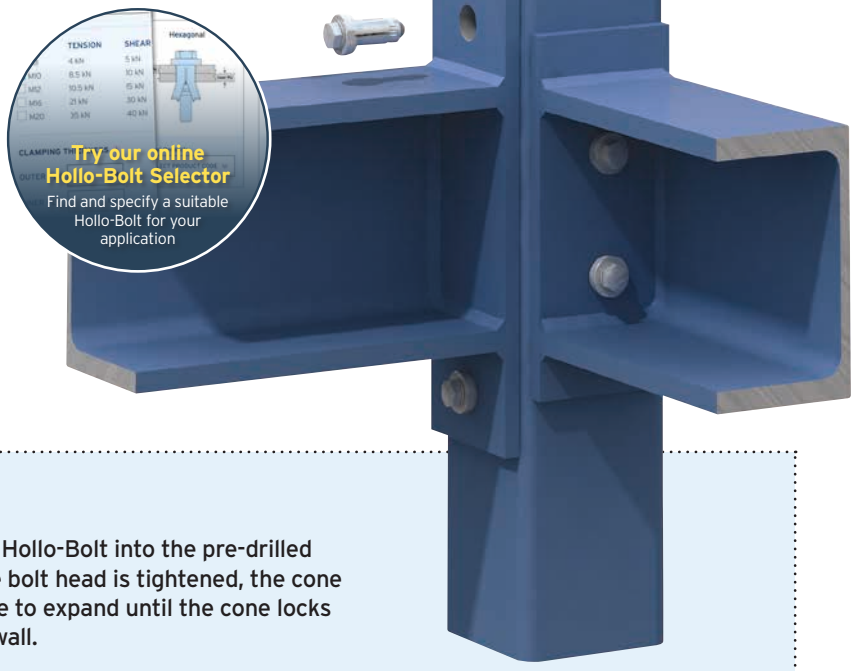
HIGH CLAMPING FORCE

Hollo-Bolt Options

Two versions are available; the original design for general hollow section connections (see below) and the larger sized High Clamping Force (HCF) for higher strength structural connections (see page 45).

Hollo-Bolt™ (sizes M8, 10 and M12)

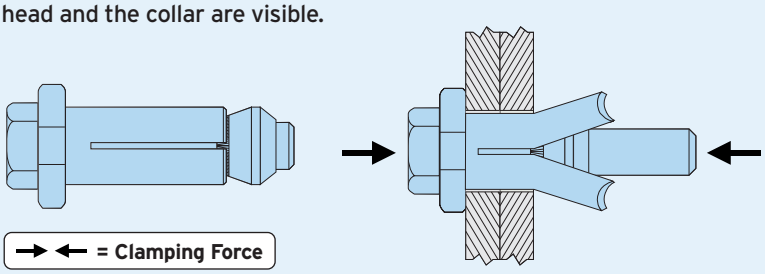


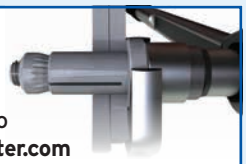


The Connection Concept

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.

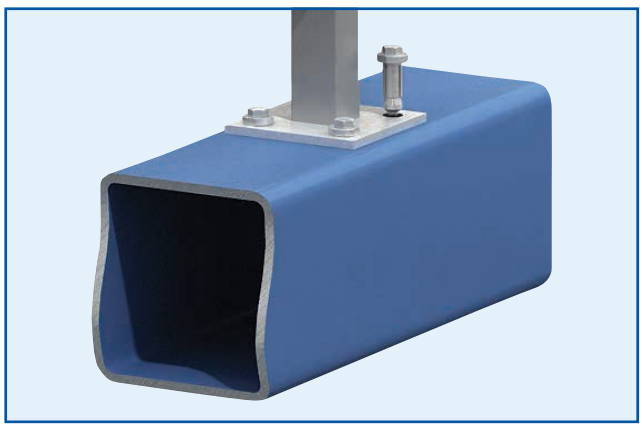
At full tightening torque, a clamping force is established between the fixture and the steel section to form a secure connection. Once installed, only the head and the collar are visible.





Watch the video at **www.Lindapter.com** to see how the Hollo-Bolt expands during installation.

Typical Applications

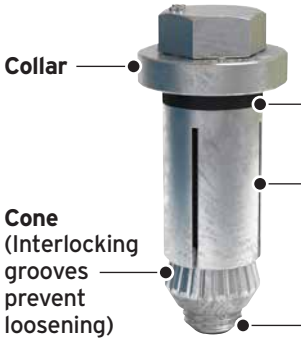


Ref: LindUKMay25

Hollo-Bolt HCF

The larger M16 and M20 Hollo-Bolts are optimised for high strength structural connections and feature a High Clamping Force mechanism for superior performance.

Hollo-Bolt™ HCF (sizes M16 and M20)

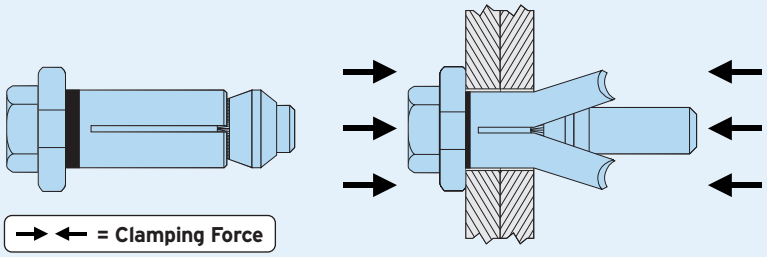


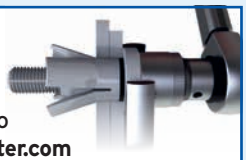
HIGH CLAMPING FORCE

The Connection Concept

The HCF mechanism consists of a special rubber washer that compresses during installation to significantly increase the clamping force between the connecting steel, thereby reducing displacement to achieve a higher strength connection.

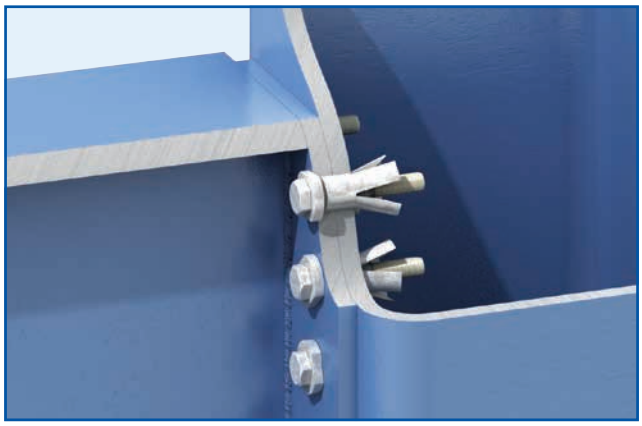
The typical clamping force of Hollo-Bolt HCF is over **three times higher** than the same sized product without the mechanism.

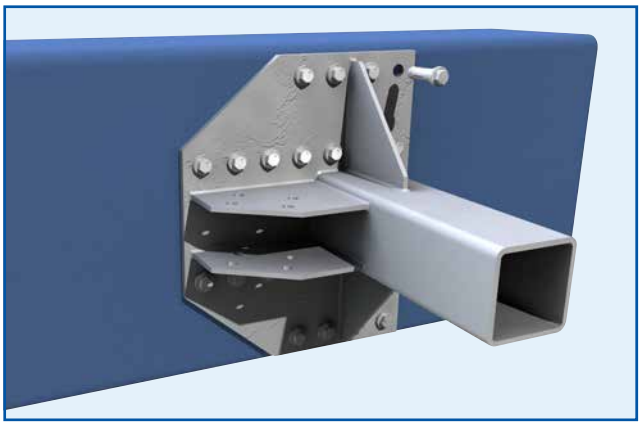




Watch the video at **www.Lindapter.com** to see how the High Clamping Force mechanism increases clamping force.

Typical Applications





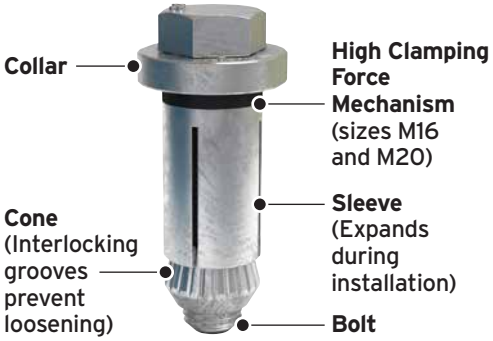
Hollo-Bolt™ Hexagonal Head Safe Working Loads

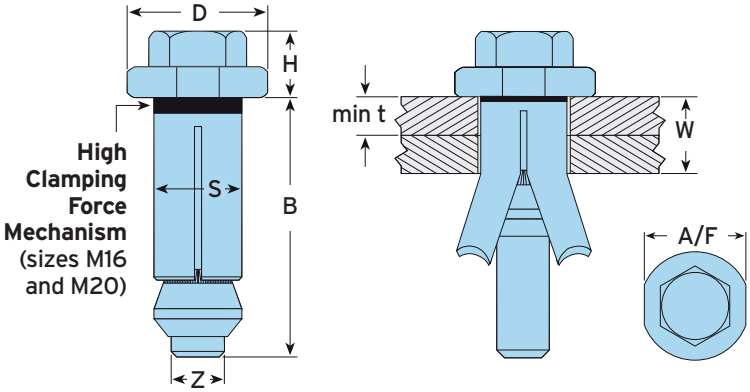
UK CA CE ICC ES TÜVNORD Dynamic Load Approved Fire Rated to ISO 834

Hexagonal Head Data

(Available in sizes M8, M10, M12, M16 & M20)

Hollo-Bolt™





Material: Carbon steel or stainless steel (see page 43 for corrosion protection options).

HEXAGONAL HEAD DATA

	Product Code	Bolt Ø Z	Height H mm	Length B (max) mm	Clamping Thickness W mm	Outer Ply min t mm	Collar Sleeve Outer Ø S mm	Collar Ø D mm	Collar A/F mm	Tightening Torque Nm	Safe Working Loads (Factor of Safety 5:1) Tensile kN	Safe Working Loads (Factor of Safety 5:1) Single Shear kN
	HB08-1	M8	10.5	45	3 - 22	-	13.75	22	19	23	4.0	5.0
	HB08-2	M8	10.5	65	22 - 41	-	13.75	22	19	23	4.0	5.0
	HB08-3	M8	10.5	85	41 - 60	-	13.75	22	19	23	4.0	5.0
	HB10-1	M10	12.5	49	3 - 22	-	17.75	29	24	45	8.5	10.0
	HB10-2	M10	12.5	64	22 - 41	-	17.75	29	24	45	8.5	10.0
	HB10-3	M10	12.5	84	41 - 60	-	17.75	29	24	45	8.5	10.0
	HB12-1	M12	14.5	53	3 - 25	-	19.75	32	30	80	10.5	15.0
	HB12-2	M12	14.5	73	25 - 47	-	19.75	32	30	80	10.5	15.0
	HB12-3	M12	14.5	93	47 - 69	-	19.75	32	30	80	10.5	15.0
Hollo-Bolt HCF	HB16-1	M16	18	67	12 - 29	8	25.75	38	36	190	21.0	30.0
Hollo-Bolt HCF	HB16-2	M16	18	92	29 - 50	8	25.75	38	36	190	21.0	30.0
Hollo-Bolt HCF	HB16-3	M16	18	112	50 - 71	8	25.75	38	36	190	21.0	30.0
Hollo-Bolt HCF	HB20-1	M20	22.5	80	12 - 34	8	32.75	51	46	300	35.0	40.0
Hollo-Bolt HCF	HB20-2	M20	22.5	110	34 - 60	8	32.75	51	46	300	35.0	40.0
Hollo-Bolt HCF	HB20-3	M20	22.5	140	60 - 86	8	32.75	51	46	300	35.0	40.0

- **Hollo-Bolts can be used on a wide variety of steel hollow shape sections. Safe working loads shown are applicable to the Hollo-Bolt only in both tension and shear. Failure of the section could occur at a lower figure and its strength should be checked by a qualified Structural Engineer.**
- **Dynamic load testing has been performed for Hollo-Bolt Hexagonal in accordance with EN 1993-1-9. Please contact our Technical Support team for more information and design data.**

Published by the SCI/BCSA Connections Group, 'Joints in Steel Construction - Simple Connections' provides design guidance for using Hollo-Bolt and structural steelwork connections in buildings designed using the 'Simple Method' i.e. braced frames where connections carry mainly shear and axial loads only. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

Hollo-Bolt™ Hexagonal Head Characteristic Resistances

Characteristic Resistances

The values listed in the tables below are to be used when designing bolted connection to Eurocode 3 only, they are not standard safe working loads.

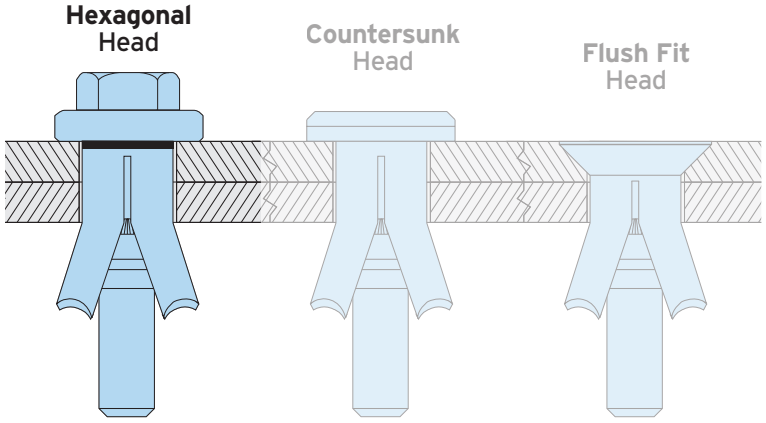
Please refer to CE Declaration of Performance No.001 or UKCA Declaration of Conformity No.101 on Lindapter's website. Alternatively, request a DoP or DoC brochure.

	HEXAGONAL HEAD Data for Zinc + JS500, HDG and Sheraplex				
	Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
	HB08	M8	23.1	32.9	430
	HB10	M10	39.6	54.2	430
	HB12	M12	45.8	71.0	430
HCF	HB16	M16	84.3	139.0	430
HCF	HB20	M20	124.0	211.0	390

	HEXAGONAL HEAD Data for Stainless Steel				
	Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
	HBST08	M8	26.8	30.7	500
	HBST10	M10	46.0	51.0	500
	HBST12	M12	53.3	65.0	500
HCF	HBST16	M16	98.0	128.0	500
HCF	HBST20	M20	154.0	205.0	500

- **Hollo-Bolt lengths 1, 2 and 3 are covered by ETA 10/0416. The characteristic values are used to determine the design resistance of the Hollo-Bolt. The design resistance is calculated by dividing the characteristic value by a partial factor γM2. The partial factor is a nationally determined parameter (eg: γM2 = 1.25 in UK).**
- **For Hollo-Bolt Hexagonal Head safe working loads with a Factor of Safety of 5:1 please refer to the table on page 46 of this catalogue. The characteristic values are valid for the assembly itself, in any connection detail the design resistance of the connection may be limited to a lesser value. For example, when the thickness of the connected component is small, pull out failure may occur before failure of the Hollo-Bolt. Design checks should be carried out to determine the static design resistance.**

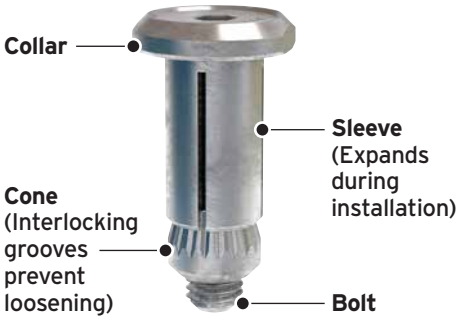
The SCI Greenbook publication 'Joints in Steel Construction: Simple Joints to Eurocode 3' contains a number of checks on the section. The characteristic values are only valid when the Hollo-Bolts are installed as per Lindapter's installation instructions. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

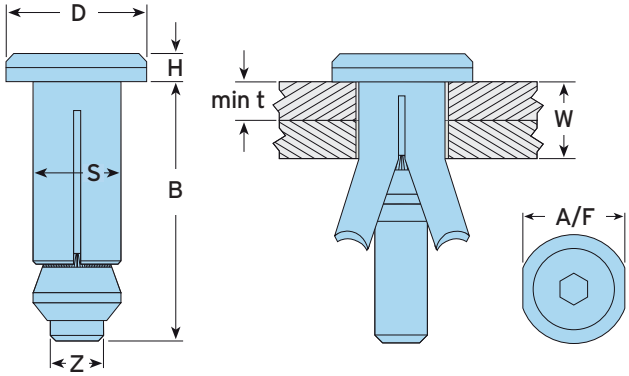


Hollo-Bolt™ Countersunk Head Safe Working Loads

Countersunk Head Data

(Available in sizes M8, M10, M12 & M16)





Material: Carbon steel or stainless steel (see page 43 for corrosion protection options).

COUNTERSUNK HEAD DATA

	Product Code	Bolt Ø Z	Height H mm	Length B (max) mm	Clamping Thickness W mm	Outer Ply min t mm	Collar Sleeve Outer Ø S mm	Collar Ø D mm	Collar A/F mm	Tightening Torque Nm	Safe Working Loads (Factor of Safety 5:1) Tensile kN	Safe Working Loads (Factor of Safety 5:1) Single Shear kN
	HBCSK08-1	M8	5	45	3 - 22	-	13.75	22	19	23	4.0	5.0
	HBCSK08-2	M8	5	65	22 - 41	-	13.75	22	19	23	4.0	5.0
	HBCSK08-3	M8	5	85	41 - 60	-	13.75	22	19	23	4.0	5.0
	HBCSK10-1	M10	6	44	3 - 22	-	17.75	29	24	45	8.5	10.0
	HBCSK10-2	M10	6	64	22 - 41	-	17.75	29	24	45	8.5	10.0
	HBCSK10-3	M10	6	84	41 - 60	-	17.75	29	24	45	8.5	10.0
	HBCSK12-1	M12	7	48	3 - 25	-	19.75	32	30	80	10.5	15.0
	HBCSK12-2	M12	7	73	25 - 47	-	19.75	32	30	80	10.5	15.0
	HBCSK12-3	M12	7	93	47 - 69	-	19.75	32	30	80	10.5	15.0
HCF	HBCSK16-1	M16	8	62	12 - 29	8	25.75	38	36	190	21.0	30.0
HCF	HBCSK16-2	M16	8	92	29 - 50	8	25.75	38	36	190	21.0	30.0
HCF	HBCSK16-3	M16	8	112	50 - 71	8	25.75	38	36	190	21.0	30.0

Hollo-Bolts can be used on a wide variety of steel hollow shape sections. Safe working loads shown are applicable to the Hollo-Bolt only in both tension and shear. Failure of the section could occur at a lower figure and its strength should be checked by a qualified Structural Engineer.

Published by the SCI/BCSA Connections Group, 'Joints in Steel Construction - Simple Connections' provides design guidance for using Hollo-Bolt and structural steelwork connections in buildings designed using the 'Simple Method' i.e. braced frames where connections carry mainly shear and axial loads only. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

Hollo-Bolt™ Countersunk Head Characteristic Resistances

Characteristic Resistances

The values listed in the tables below are to be used when designing bolted connection to Eurocode 3 only, they are not standard safe working loads.

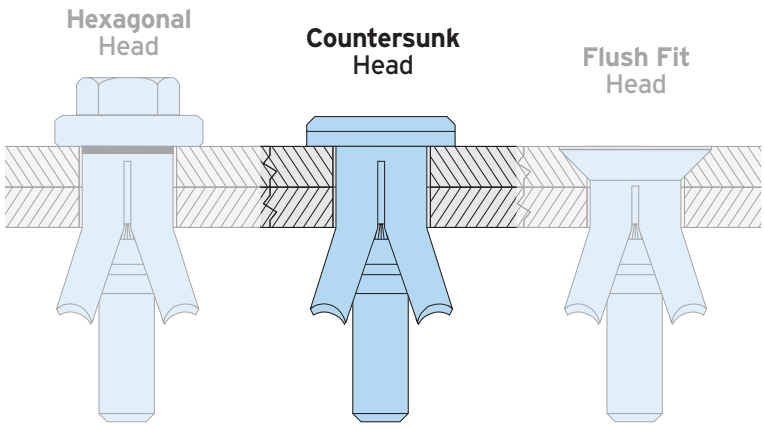
Please refer to CE Declaration of Performance No.001 or UKCA Declaration of Conformity No.101 on Lindapter's website. Alternatively, request a DoP or DoC brochure.

	COUNTERSUNK HEAD Data for Zinc + JS500 and Sheraplex				
	Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
	HBCSK08	M8	23.1	32.9	430
	HBCSK10	M10	39.6	54.2	430
	HBCSK12	M12	45.8	71.0	430
HCF	HBCSK16	M16	84.3	139.0	430

	COUNTERSUNK HEAD Data for Stainless Steel				
	Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
	HBSTCSK08	M8	26.8	30.7	500
	HBSTCSK10	M10	46.0	51.0	500
	HBSTCSK12	M12	53.3	65.0	500
HCF	HBSTCSK16	M16	98.0	128.0	500

- **Hollo-Bolt lengths 1, 2 and 3 are covered by ETA 10/0416. The characteristic values are used to determine the design resistance of the Hollo-Bolt. The design resistance is calculated by dividing the characteristic value by a partial factor γM2. The partial factor is a nationally determined parameter (eg: γM2 = 1.25 in UK).**
- **For Hollo-Bolt Countersunk Head safe working loads with a Factor of Safety of 5:1 please refer to the table on page 48 of this catalogue. The characteristic values are valid for the assembly itself, in any connection detail the design resistance of the connection may be limited to a lesser value. For example, when the thickness of the connected component is small, pull out failure may occur before failure of the Hollo-Bolt. Design checks should be carried out to determine the static design resistance.**

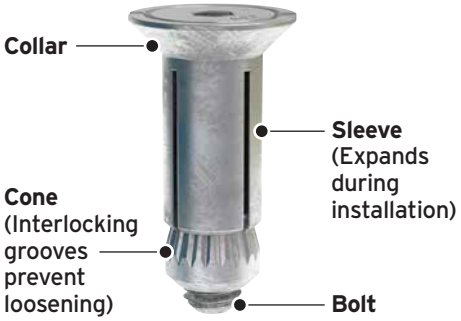
The SCI Greenbook publication 'Joints in Steel Construction: Simple Joints to Eurocode 3' contains a number of checks on the section. The characteristic values are only valid when the Hollo-Bolts are installed as per Lindapter's installation instructions. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

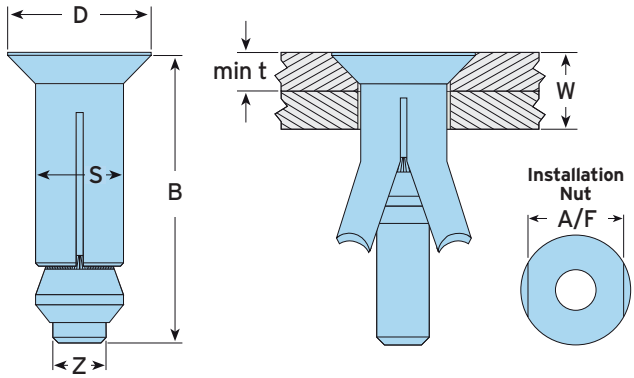


Hollo-Bolt™ Flush Fit Head Safe Working Loads

Flush Fit Head Data

(Available in sizes M8, M10 & M12)





Material: Carbon steel or stainless steel (see page 43 for corrosion protection options).

FLUSH FIT HEAD DATA

Product Code	Countersunk Bolt Ø Z	Length B mm	Clamping Thickness W mm	Outer Ply min t mm	Sleeve Outer Ø S mm	Collar Ø D mm	Collar Installation Nut A/F mm	Tightening Torque Nm	Safe Working Loads (Factor of Safety 5:1) Tensile kN	Safe Working Loads (Factor of Safety 5:1) Single Shear kN
HBFF08-1	M8	50	10 - 27	8	13.75	24	19	23	4.0	5.0
HBFF08-2	M8	70	27 - 45	8	13.75	24	19	23	4.0	5.0
HBFF08-3	M8	90	45 - 64	8	13.75	24	19	23	4.0	5.0
HBFF10-1	M10	50	12 - 27	10	17.75	30	24	45	8.5	10.0
HBFF10-2	M10	70	27 - 45	10	17.75	30	24	45	8.5	10.0
HBFF10-3	M10	90	45 - 64	10	17.75	30	24	45	8.5	10.0
HBFF12-1	M12	55	12 - 30	10	19.75	33	30	80	10.5	15.0
HBFF12-2	M12	80	30 - 52	10	19.75	33	30	80	10.5	15.0
HBFF12-3	M12	100	52 - 74	10	19.75	33	30	80	10.5	15.0

Hollo-Bolts can be used on a wide variety of steel hollow shape sections. Safe working loads shown are applicable to the Hollo-Bolt only in both tension and shear. Failure of the section could occur at a lower figure and its strength should be checked by a qualified Structural Engineer.

Published by the SCI/BCSA Connections Group, 'Joints in Steel Construction - Simple Connections' provides design guidance for using Hollo-Bolt and structural steelwork connections in buildings designed using the 'Simple Method' i.e. braced frames where connections carry mainly shear and axial loads only. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

Hollo-Bolt™ Flush Fit Head Characteristic Resistances

Characteristic Resistances

The values listed in the tables below are to be used when designing bolted connection to Eurocode 3 only, they are not standard safe working loads.

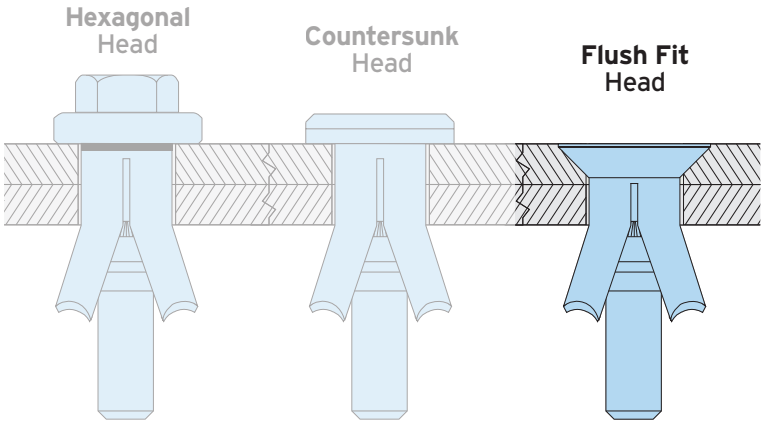
Please refer to CE Declaration of Performance No.001 or UKCA Declaration of Conformity No.101 on Lindapter's website. Alternatively, request a DoP or DoC brochure.

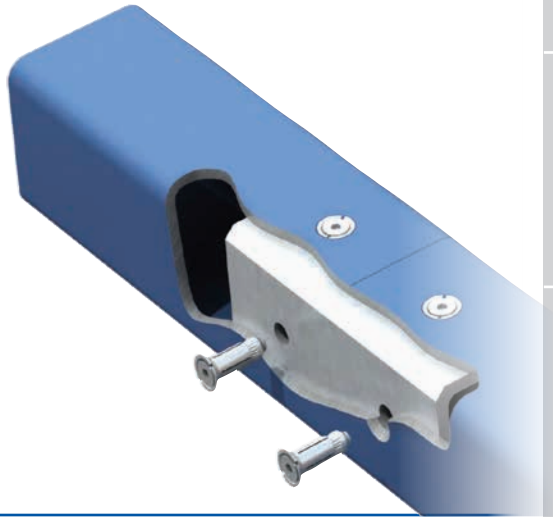
FLUSH FIT HEAD Data for Zinc + JS500 and Sheraplex				
Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
HBFF08	M8	23.1	32.9	430
HBFF10	M10	39.6	54.2	430
HBFF12	M12	45.8	71.0	430

FLUSH FIT HEAD Data for Stainless Steel				
Product Code	Nominal Size	Tensile $F_{t,Rk}$ kN	Shear $F_{v,Rk}$ kN	Sleeve Material Strength N/mm²
HBSTFF08	M8	26.8	30.7	500
HBSTFF10	M10	46.0	51.0	500
HBSTFF12	M12	53.3	65.0	500

- **Hollo-Bolt lengths 1, 2 and 3 are covered by ETA 10/0416. The characteristic values are used to determine the design resistance of the Hollo-Bolt. The design resistance is calculated by dividing the characteristic value by a partial factor γM2. The partial factor is a nationally determined parameter (eg: γM2 = 1.25 in UK).**
- **For Hollo-Bolt Flush Fit Head safe working loads with a Factor of Safety of 5:1 please refer to the table on page 50 of this catalogue. The characteristic values are valid for the assembly itself, in any connection detail the design resistance of the connection may be limited to a lesser value. For example, when the thickness of the connected component is small, pull out failure may occur before failure of the Hollo-Bolt. Design checks should be carried out to determine the static design resistance.**

The SCI Greenbook publication 'Joints in Steel Construction: Simple Joints to Eurocode 3' contains a number of checks on the section. The characteristic values are only valid when the Hollo-Bolts are installed as per Lindapter's installation instructions. For more information please contact The Steel Construction Institute on **+44 (0) 1344 636525** or visit **www.steel-sci.com**

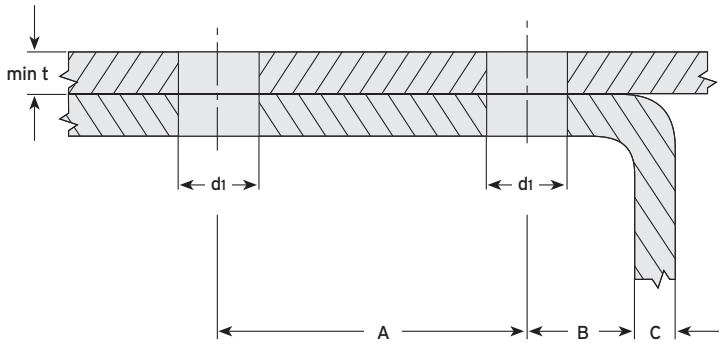




Hollo-Bolt Hexagonal and Countersunk - Drilling and Installation

Please ensure that the holes are drilled into both the fixture and the section according to the drilling guidance below. Please note that the holes are slightly larger than standard bolt clearance holes to accommodate the sleeve and cone.

Preparation for installing Hollo-Bolt Hexagonal and Countersunk



Type		Outer Ply	Clearance Hole Ø*	Hole Distances**		Edge Distances**
Hexagonal	Countersunk	min t mm	d1 mm	min A mm	min B mm	B + C mm
HB08	HBCSK08	-	14 (+1.0/-0.2)	35	13	≥ 17.5
HB10	HBCSK10	-	18 (+1.0/-0.2)	40	15	≥ 22.5
HB12	HBCSK12	-	20 (+1.0/-0.2)	50	18	≥ 25.0
HB16	HBCSK16	8	26 (+2.0/-0.2)	55	20	≥ 32.5
HB20	-	8	33 (+2.0/-0.2)	70	25	≥ 33.0

** For Hollo-Bolts with Hot Dip Galvanised Finish, drilling the clearance hole to the top tolerance is recommended.*
*** Ensure holes do not cut through the outer radius.*

Sizes M16 and M20 require outer ply thickness (min t) to be at least 8mm.

Tool sizes for installing Hollo-Bolt Hexagonal

Hollo-Bolt Hexagonal			
Product Code	Spanner mm	Socket mm	Tightening Torque Nm
HB08	19	13	23
HB10	24	17	45
HB12	30	19	80
HB16	36	24	190
HB20	46	30	300

Tool sizes for installing Hollo-Bolt Countersunk

Hollo-Bolt Countersunk			
Product Code	Spanner mm	Hexagon Key mm	Tightening Torque Nm
HBCSK08	19	5	23
HBCSK10	24	6	45
HBCSK12	30	8	80
HBCSK16	36	10	190

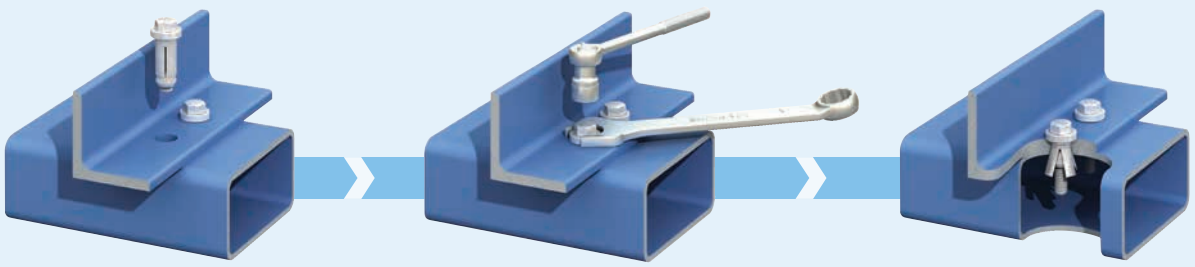
How to install...

Watch the Hollo-Bolt installation video at www.Lindapter.com

1) Align pre-drilled fixture and section then insert the Hollo-Bolt [a].

2) Grip Hollo-Bolt collar with an open ended spanner.

3) Using a calibrated torque wrench, tighten the central bolt to the recommended torque [b].



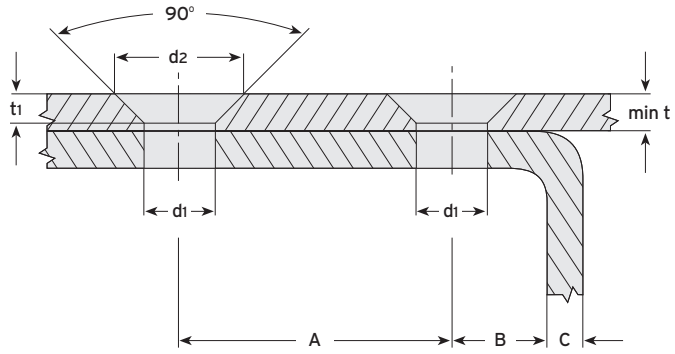
Notes:
a) Before tightening, ensure that the materials that are to be connected together are touching.
b) Rotate the torque wrench only. See table above for tightening torque.
c) Power tools, such as an impact wrench, may be used to speed up the tightening of the Hollo-Bolt. However, when using power tools, always complete the tightening process with a calibrated torque wrench to ensure the correct torque is applied to the Hollo-Bolt.

Ref: LindUKMay25

Hollo-Bolt Flush Fit Head - Drilling and Installation

Please ensure that the holes are drilled into both the fixture and the section according to the drilling guidance below. Please note that the holes are slightly larger than standard bolt clearance holes to accommodate the sleeve and cone.

Preparation for installing Hollo-Bolt Flush Fit Head

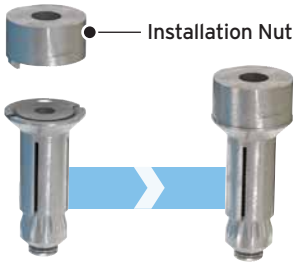


Type	Outer Ply	Clearance Hole Ø	Countersunk		Hole Distances*		Edge Distances*
	min t mm	d1 mm	d2 mm	t1 mm	min A mm	min B mm	B + C mm
HBFF08	8	14 (+1.0/-0.2)	27	6.5	35	13	≥ 17.5
HBFF10	10	18 (+1.0/-0.2)	31	6.5	40	15	≥ 22.5
HBFF12	10	20 (+1.0/-0.2)	35	7.5	50	18	≥ 25.0

** Ensure holes do not cut through the outer radius.*

Tool sizes for installing Hollo-Bolt Flush Fit Head

Hollo-Bolt Flush Fit Head			
Product Code	Spanner mm	Hexagon Key mm	Tightening Torque Nm
HBFF08	19	5	23
HBFF10	24	6	45
HBFF12	30	8	80



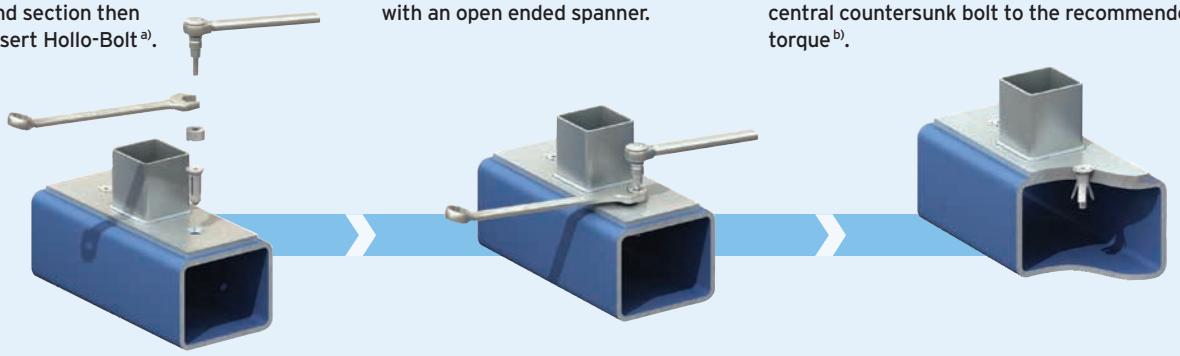
How to install...

Watch the Hollo-Bolt installation video at www.Lindapter.com

1) Align pre-drilled fixture and section then insert Hollo-Bolt [a].

2) Apply the installation nut and grip with an open ended spanner.

3) Using a calibrated torque wrench, tighten the central countersunk bolt to the recommended torque [b].

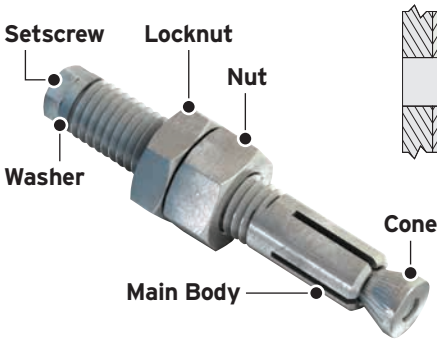


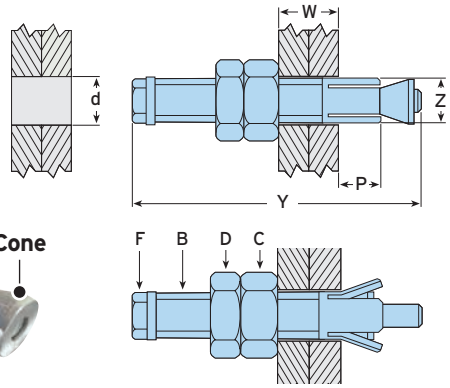
Notes:

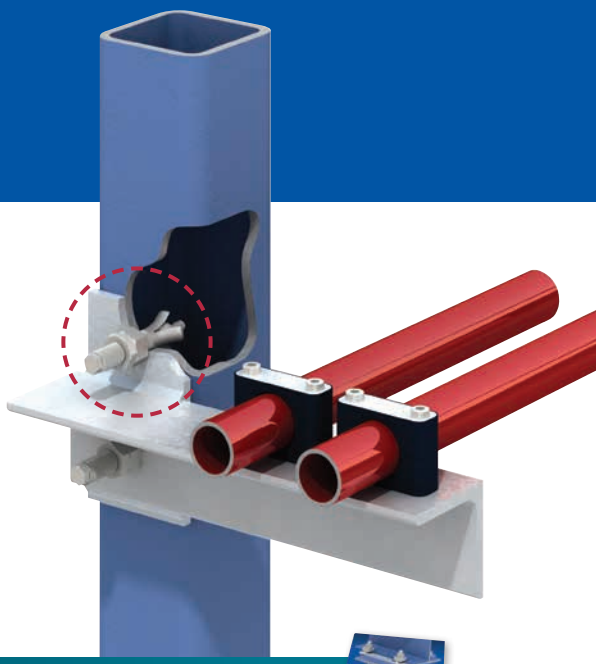
a) Before tightening, ensure that the materials that are to be connected together are touching.
b) Rotate the torque wrench only (the installation nut is for restraining only). See table above for tightening torque.
c) Power tools, such as an impact wrench, may be used to speed up the tightening of the Hollo-Bolt. However, when using power tools, always complete the tightening process with a calibrated torque wrench to ensure the correct torque is applied to the Hollo-Bolt.

Type LB2 - LindiBolt™ 2

Self-heading bolt suitable for connecting steelwork to hollow sections where access is only available from one side. The LindiBolt uses a standard clearance hole.







For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.002 (CE) or DoC No.102 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Steel, zinc plated. Stainless steel grade 316.

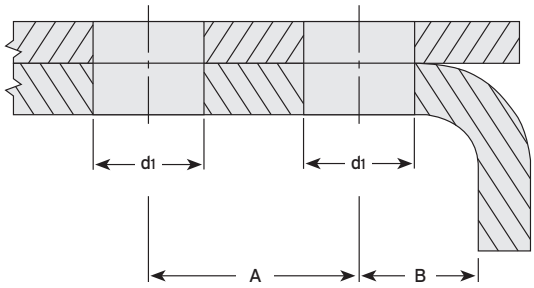
Product Code	LindiBolt Bolt Z	LindiBolt Length Y mm	Safe Working Loads (FOS 5:1) Tensile kN	Safe Working Loads (FOS 5:1) Single Shear kN	Clamping Length W mm	Projection P mm
LB10	M10	74	3.0	3.4	7 - 30	7.5 - 10
LB12	M12	85	5.0	5.0	10 - 36	9 - 12
LB16	M16	105	8.0	9.8	12 - 48	12 - 16
LB20	M20	128	14.0	15.2	14 - 60	15 - 20
LB24	M24	158	20.0	22.5	18 - 72	18 - 24

Product Code	Setscrew (F) Bolt F	Setscrew (F) Tightening Torque Nm	Setscrew (F) A/F mm	Main Body (B) and Nut (C and D) Thread Z	Main Body (B) and Nut (C and D) Tightening Torque Nm	Main Body (B) and Nut (C and D) A/F mm
LB10	M5	6	8	M10	20	17
LB12	M6	11	10	M12	31	19
LB16	M8	23	13	M16	81	24
LB20	M10	45	17	M20	129	30
LB24	M12	80	19	M24	203	36

The safe working loads, in both tension and shear shown, are applicable to the LindiBolt™ only. Failure of the section, particularly on those with thin walls and a wide chord face, could occur at a lower figure and its strength should be checked by a qualified Structural Engineer.

LindiBolt - Drilling and Installation

Please ensure that the holes are drilled into both the fixture and the section according to the drilling guidance below.

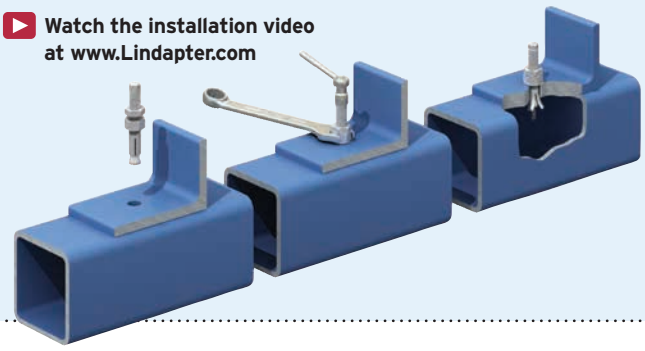


Product Code	Clearance Hole Ø d1 mm	Hole Distances min A mm	Hole Distances min B mm
LB10	11 (+1.0)	25	15
LB12	13 (+1.0)	30	20
LB16	17 (+1.0)	40	25
LB20	21 (+1.0)	50	30
LB24	25 (+1.0)	60	35

How to install...

1) Set nut (C) at (W) plus projection (P) then tighten the locknut (D).
2) Align pre-drilled fixtures. Insert LindiBolt cone end first through both fixtures.
3) Hold nut (C) with a spanner and tighten the bolt (F). Loosen off the locknut (D) and tighten the nut (C). Secure by re-tightening the locknut (D).

Watch the installation video at www.Lindapter.com

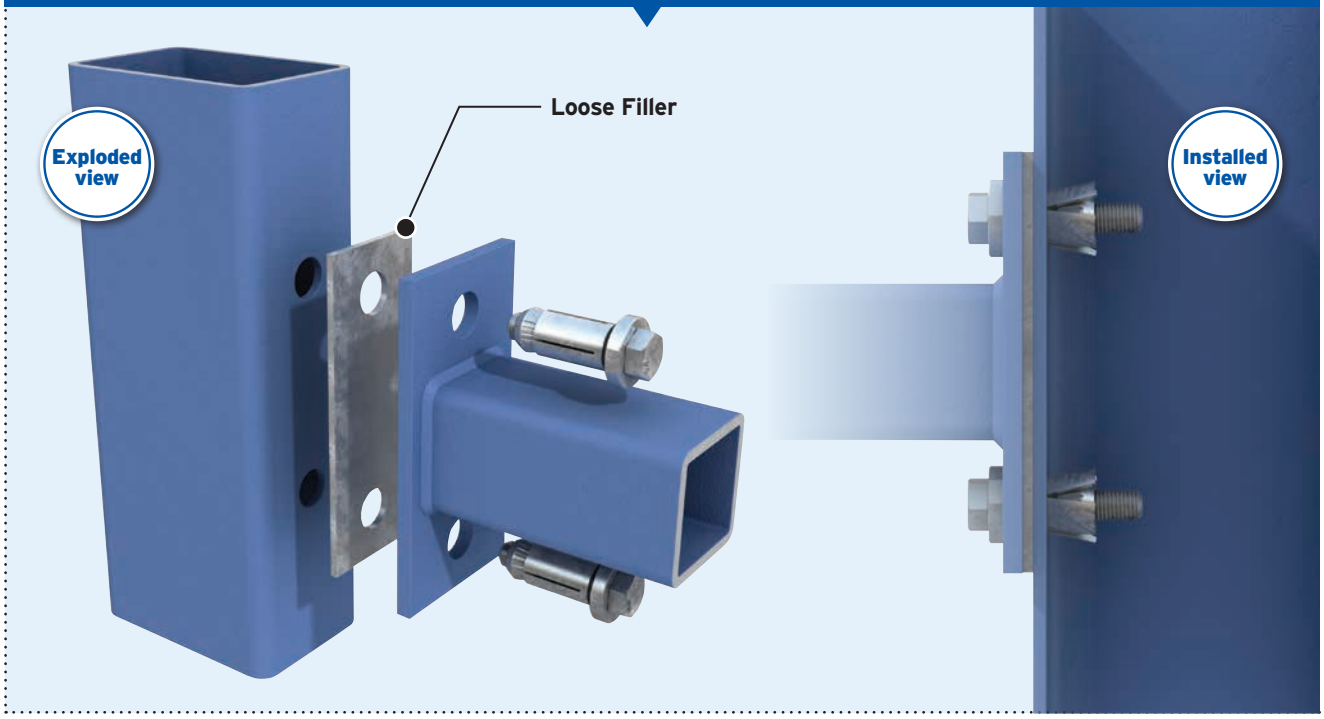


Ref: LindUKMay25

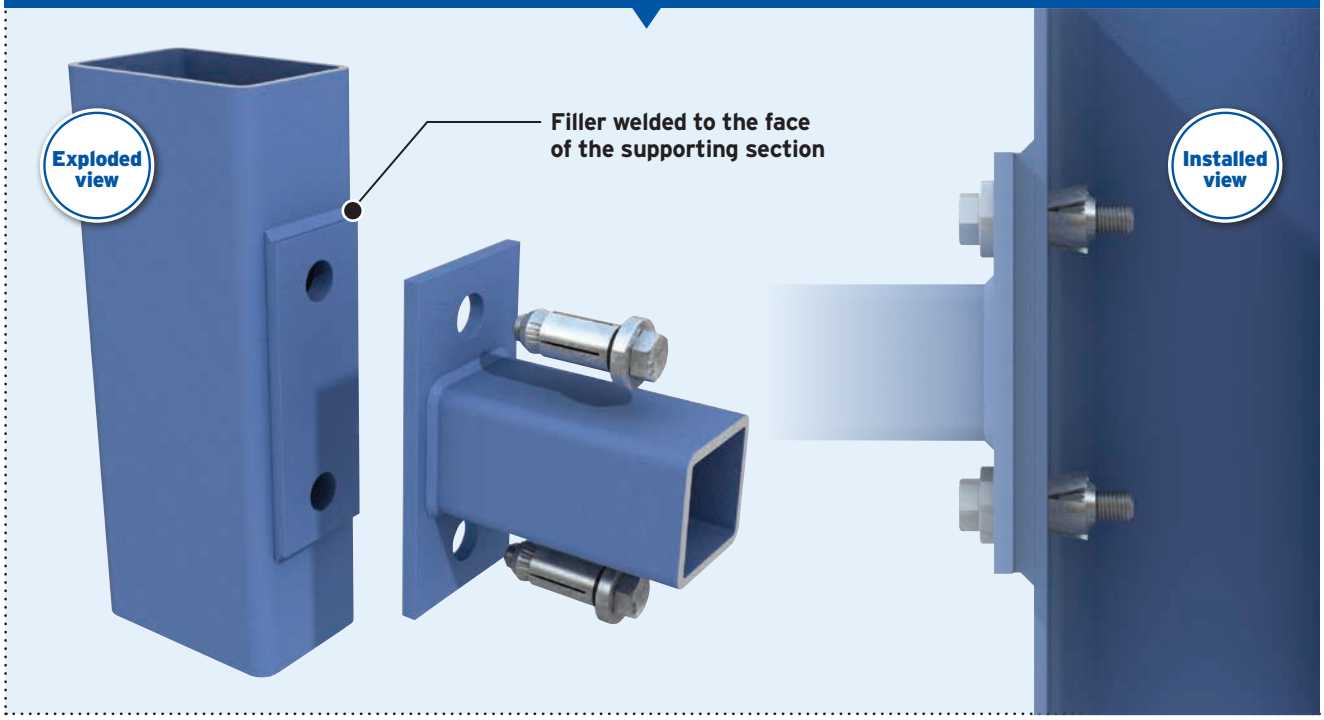
Fillers for Hollo-Bolt applications

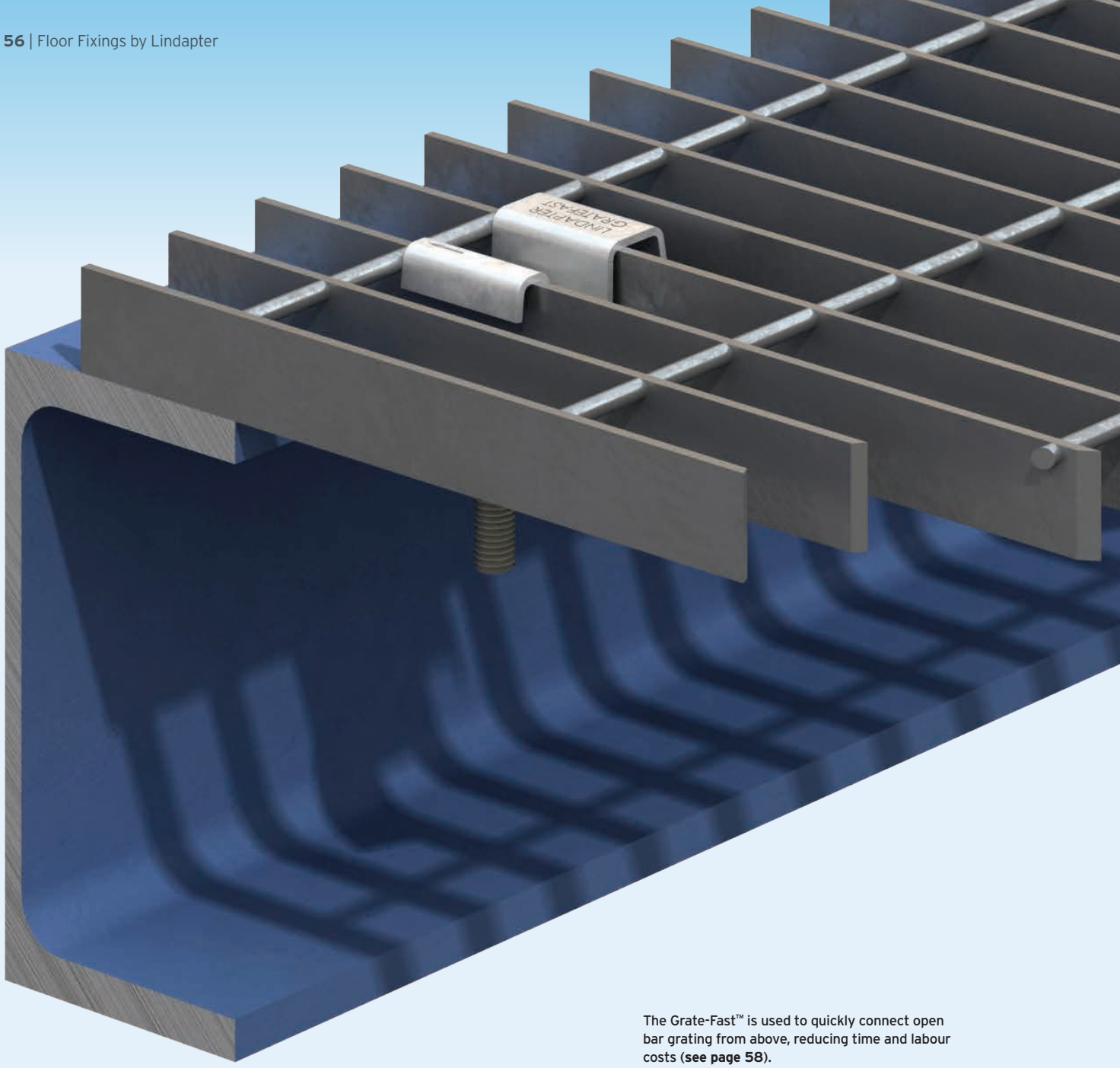
Fillers or shims are steel strips or plates used in bolted connections to fill gaps in the connecting steelwork. For guidance regarding the use of fillers/shims in Bolted-Bearing Type connections please refer to EN 1090-2 - Execution of Steel Structures and Aluminium Structures Section 8.

LOOSE FILLERS



WELDED FILLERS



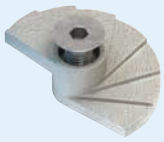


The Grate-Fast™ is used to quickly connect open bar grating from above, reducing time and labour costs (**see page 58**).

Floor Fixings

A range of innovative fixings for securing steel flooring to the 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.

Type FF FloorFast™
page 57



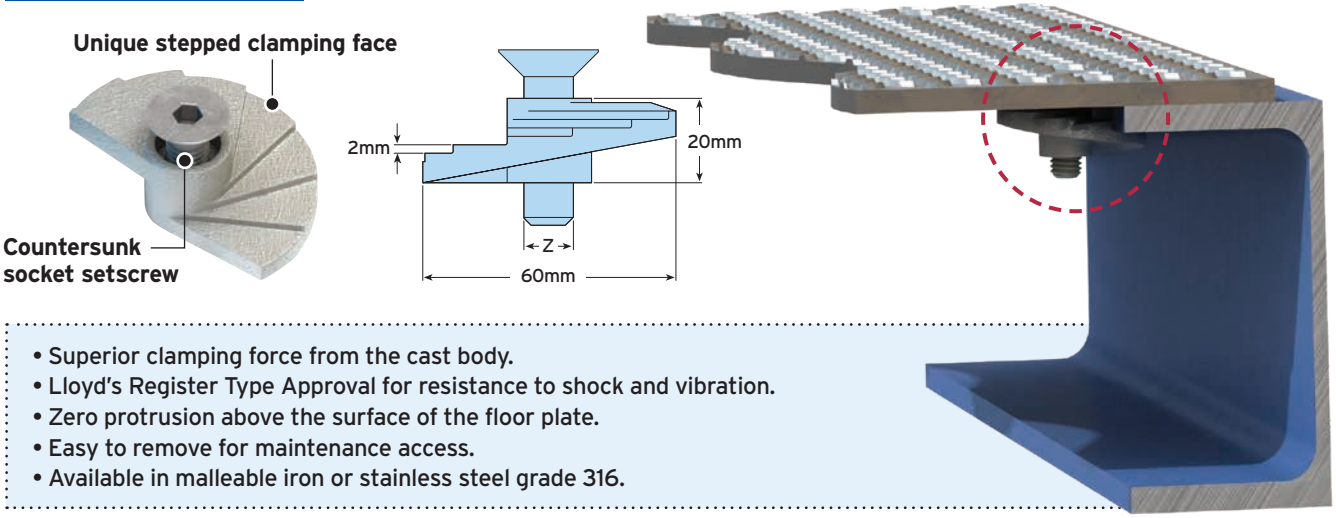
Type GF Grate-Fast™
page 58

Type 1055
page 59

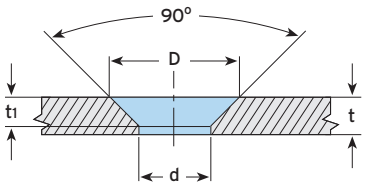
Ref: LindUKMay25

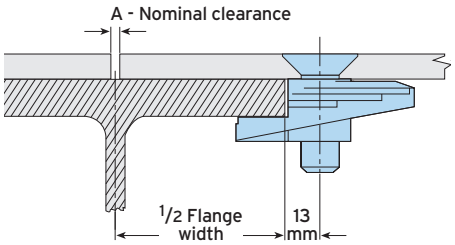
Type FF - FloorFast™

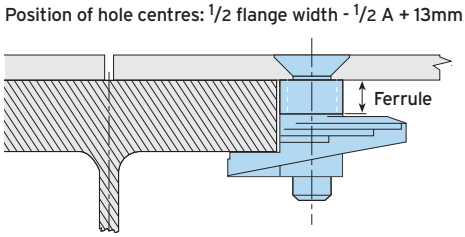
Securing chequer plate flooring to supporting steelwork can be carried out quickly and safely from above, often by one person, significantly reducing costs. The stepped clamping face locks under the steelwork to provide a secure connection.



- 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.
- Available in malleable iron or stainless steel grade 316.







For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.013 (CE) or DoC No.113 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material: Malleable iron, zinc plated or hot dip galvanised. Stainless steel grade 316.

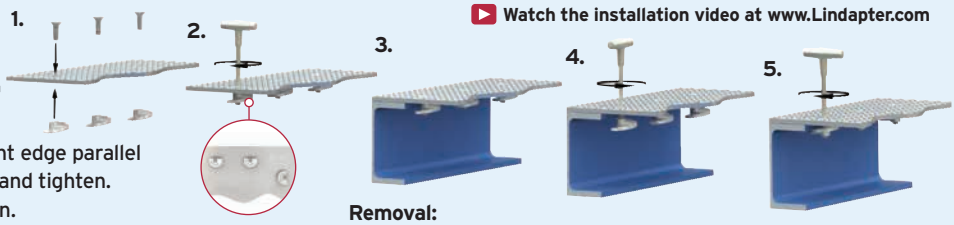
Product Code	Bolt min 4.6 [1]	Floorplate Thickness	Flange Thickness				Hole Ø	Dimensions				Tightening Torque	Hexagon Key
			Standard	With Ferrule [2]				Countersunk Ø for Bolt		Countersunk Depth for Bolt			
	Z	t	-	10	20	30	d	BZP D	HDG D	BZP t1	HDG t1		
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm	mm
FF08	M8	4.5 - 12	3 - 15	13 - 25	23 - 35	33 - 45	9	17	-	4	-	11	5
FF10	M10	5 - 12	3 - 15	13 - 25	23 - 35	33 - 45	11	21	19	5	4	22	6
FF12	M12	6 - 12	3 - 15	13 - 25	23 - 35	33 - 45	13.5	25	23	5.8	4.8	22	8

1) Hot Dip Galvanised (HDG) M10 and M12 versions are supplied with a slotted countersunk screw. 2) To order FloorFast with a ferrule, simply add ferrule size to product code.

Safe Working Loads (FF08/FF10/FF12): **Tensile = 2kN/bolt** (4:1 FoS) **Slip = 0.5kN/4 bolts** (4:1 FoS) **Designed for pedestrian walkways only.**

How to install...

Watch the installation video at www.Lindapter.com

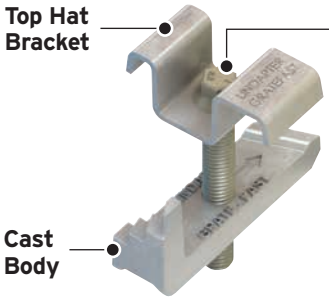


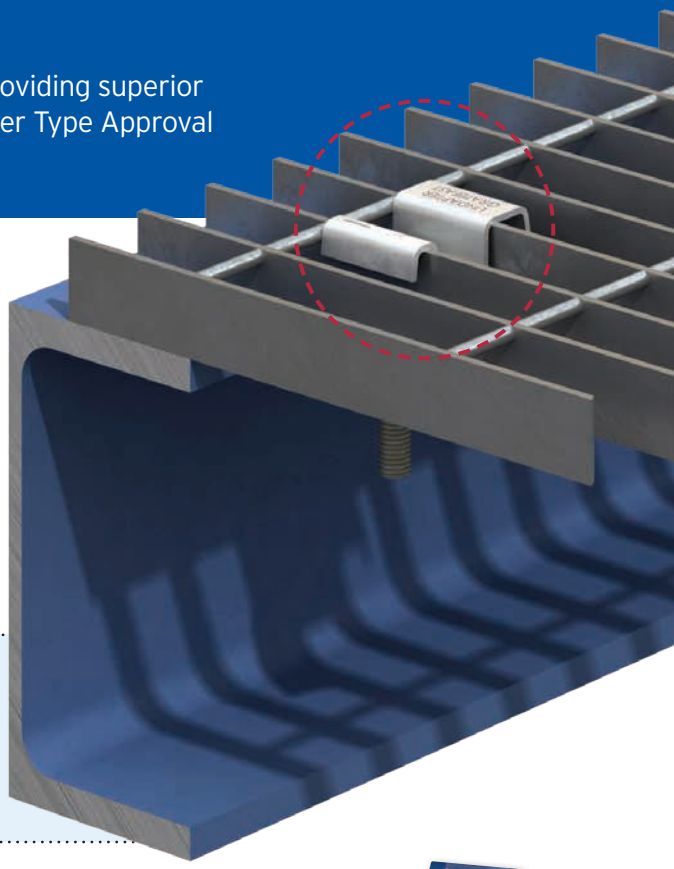
1) Assemble bolt and FloorFast™ through the chequer plate.
2) Align castings with the straight edge parallel to the edge of the plate and hand tighten.
3) Lay the floorplate into position.
4) Using a hexagon key release countersunk screw one full turn.
5) Tighten down the countersunk socket screw.

Removal:
Using a hexagon key, give the FloorFast™ one full anti-clockwise turn to release the connection from the flange.

Type GF - Grate-Fast™

A high strength floor fixing for rectangular open bar grating, providing superior clamping force due to a malleable iron cast body. Lloyd's Register Type Approval for resistance to shock and vibration.



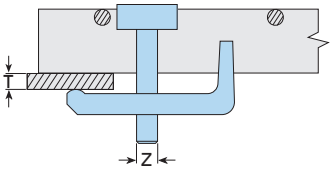


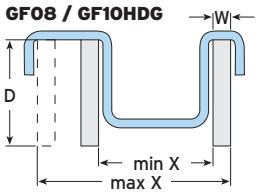
- Easy to remove for maintenance access.
- **GF08** for GRP grating with stainless steel top hat bracket, Sheraplex coated body and socket head screw.
- **GF10HDG** is hot dip galvanised for increased corrosion resistance.
- **GF210HDG** is hot dip galvanised for use with 30mm width floor grating bars only.

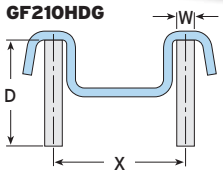
For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.014 (CE) or DoC No.114 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Material:
Top Hat: Stainless steel grade 304 *(GF08 only).* Mild Steel, hot dip galvanised *(GF10HDG and GF210HDG only).*

Body: Malleable iron, Sheraplex *(GF08 only).* Malleable iron, hot dip galvanised *(GF10HDG and GF210HDG only).*







Product Code	Bolt 8.8 Z	Flange T mm	Grating Bar Depth D mm	Grating Bar Width W mm	Bar Distance X mm	Tightening Torque Nm	Across Flats mm
GF08 [1]	M8	3 - 19	22 - 38	5 - 10	19 - 48	5	6
GF10HDG [2]	M10	3 - 19	20 - 50	3 - 7	25 - 45	11	10
GF210HDG [2]	M10	3 - 19	19 - 40	3 - 6.5	30	11	10

1) Supplied with socket head cap screw. 2) Supplied with hex head screw.

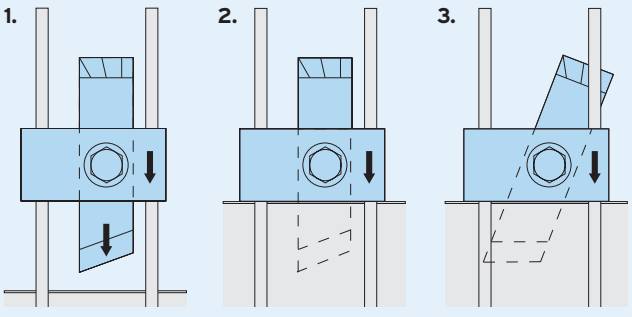
Safe Working Loads (GF08/GF10HDG/GF210HDG): **Tensile = 1.6kN/bolt** (4:1 FoS) **Slip = 0.5kN/4 bolts** (4:1 FoS)

Designed for pedestrian walkways only.

How to install...

Watch the installation video at www.Lindapter.com

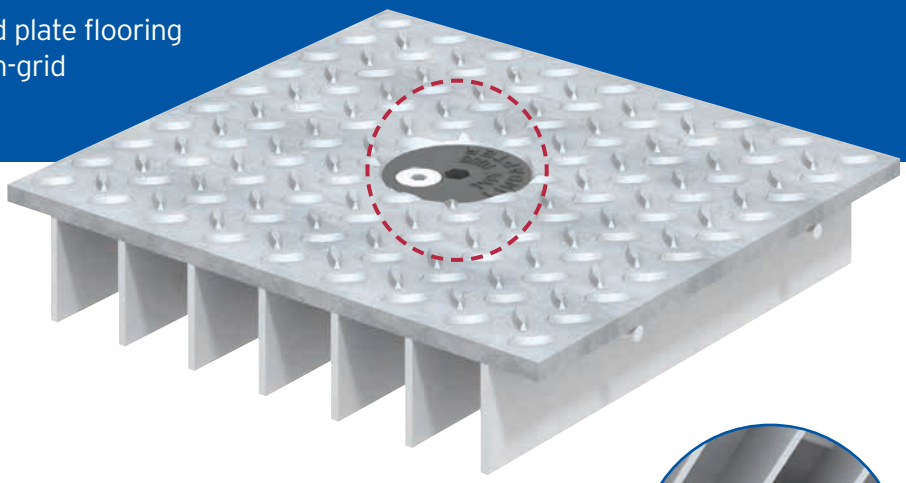
1) Position pre-assembled Grate-Fast™ with the body between the grating bars and the nose pointing towards the steelwork. The arrows on the top hat bracket should also be pointing towards the supporting steelwork and the bracket itself resting on the bearing bars.
2) Slide the Grate-Fast™ towards the steelwork until the nose fits under the beam flange. Where necessary adjust body / screw to the approximate flange thickness / grating depth.
3) Tighten the screw. The Grate-Fast™ body will automatically rotate until it locks under the bearing bar, with the nose under the flange. Tighten to the recommended torque.

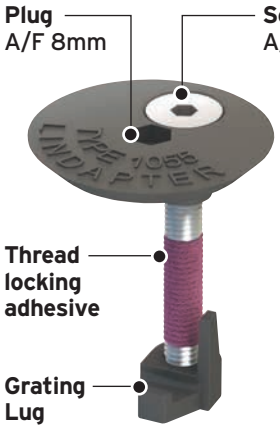


Ref: LindUKMay25

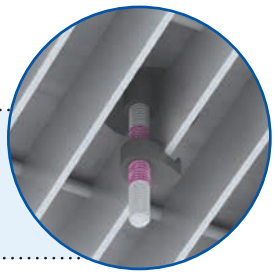
Type 1055

This unique solution enables solid plate flooring to be fitted to open-mesh or open-grid flooring using simple hand tools.

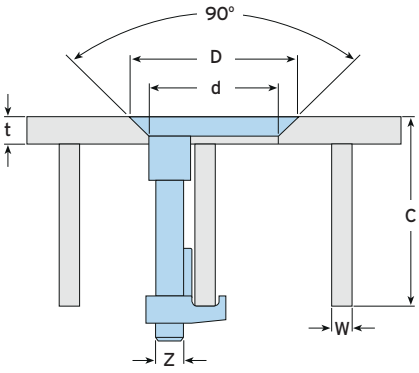




- Fast installation from above, no need for expensive scaffolding.
- Stainless steel for high corrosion resistance.
- Superior clamping force from high quality castings.
- Safely retrofit without welding, no need for hot work permits.



For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.015 (CE) or DoC No.115 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.



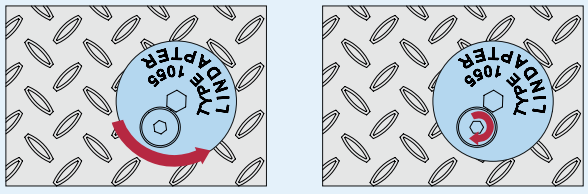
Material: Cast stainless steel, self colour.

Product Code	Bolt A4-70 Z	Floorplate Thickness t mm	Clamping Range C mm	Grating Bar Width W mm	Hole Ø d mm	Counter-sunk Ø D mm	Setscrew Tightening Torque Nm	Setscrew Hexagon Key mm
FG1055	M8	min. 6	35 - 56	3 - 8	40	50	11	5

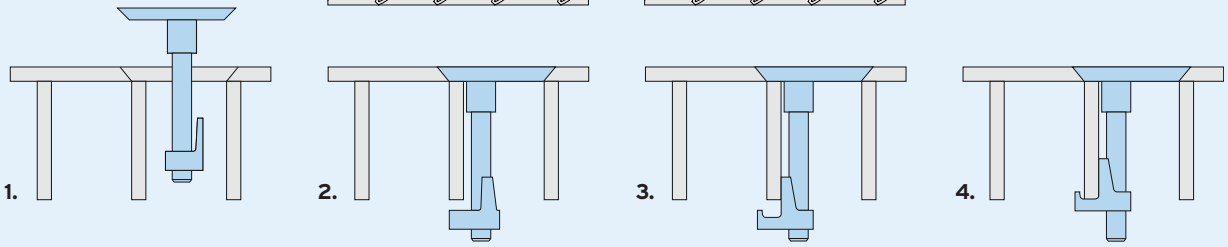
Safe Working Loads (FG1055): **Tensile = 1kN/bolt** (4:1 FoS) **Slip = 0.15kN/4 bolts** (4:1 FoS)

Designed for pedestrian walkways only.

How to install...



Watch the installation video at www.Lindapter.com



1) Insert the pre-assembled Type 1055 into the countersunk hole between the grating bars.
2) Use an 8mm hexagon key to rotate the plug anti-clockwise until the underside of the plug locates against the grating bar.
3) Use a 5mm hexagon key to rotate the countersunk setscrew clockwise until the grating lug makes contact with the grating bar.
4) Tighten the setscrew to 11Nm; the grating lug will be drawn up the screw and will activate the thread locking adhesive.

The Type F3 has a large clamping range to suit various flange thicknesses (**see page 64**).

Support Fixings

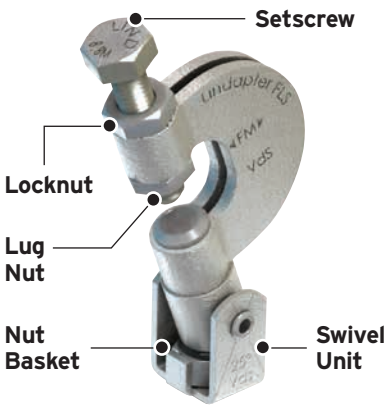
Easy-to-install connections for suspending building services from structural or secondary beams. Typical applications include supporting HVAC equipment, pipework, fire protection and sprinkler systems. Adjustable to allow a fast and precise alignment of building services.

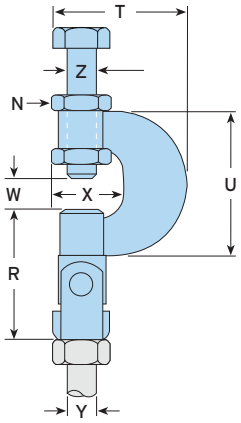
Ref: LindUKMay25

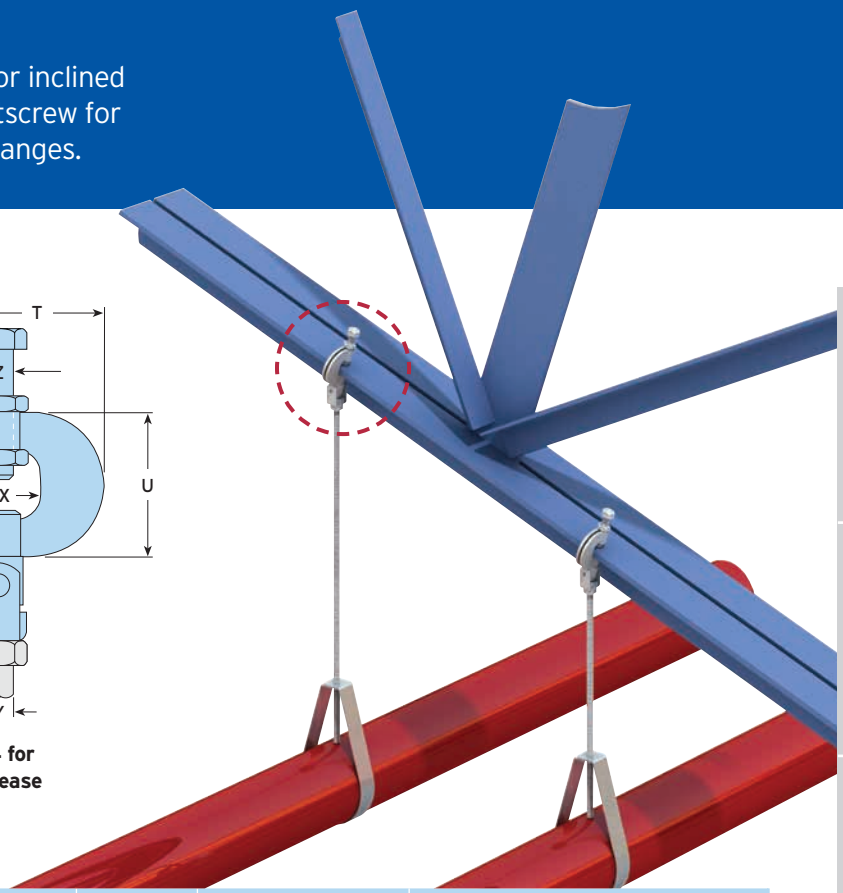
Type FLS

A versatile flange clamp with a swivel unit for inclined applications. Supplied with a high tensile setscrew for a secure grip on both parallel and tapered flanges.

FM APPROVED (M10 only) | VdS | Fire Rated to ISO 834 (M10 only)





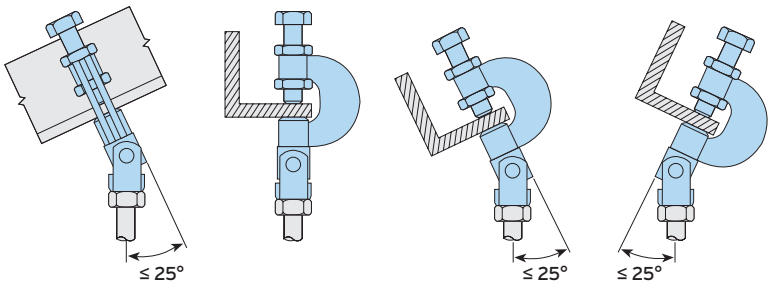


Independently fire tested in accordance with ISO 834 for a duration of 120 minutes. For fire rated load limits please contact Lindapter.

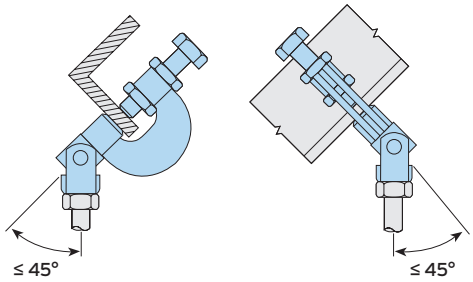
Material: High grade alloy steel, zinc plated.

Product Code	Rod Y	Safe Working Load (FOS 4:1) Tensile ≤ 25°	Safe Working Load (FOS 4:1) Tensile 25° to 45°	Clamping Range W	Setscrew Z	Tightening Torque Setscrew Z	Tightening Torque Locknut N	Dimensions R	Dimensions T	Dimensions U	Dimensions X	Dimensions Width
		kN	kN	mm		Nm	Nm	mm	mm	mm	mm	mm
FLS08	M8	2.5	1.5	3 - 17	M10	18	18	55	53	58	27	28
FLS10	M10	2.5	1.5	3 - 17	M10	18	18	55	53	58	27	28

Independently Approved Applications

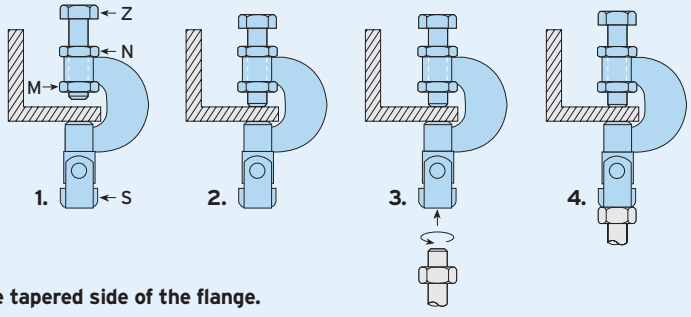


General Applications (Parallel Flanges only)



How to install...

1) Locate the FLS onto the flange.
2) Ensuring the lug nut (M) locates into the main body, tighten down the setscrew (Z) and locknut (N).
3) Install the threaded rod by screwing into the nut located in the nut basket (S). Ensure full thread capture.
4) Secure assembly in nut basket (S) from beneath using a nut (not supplied).

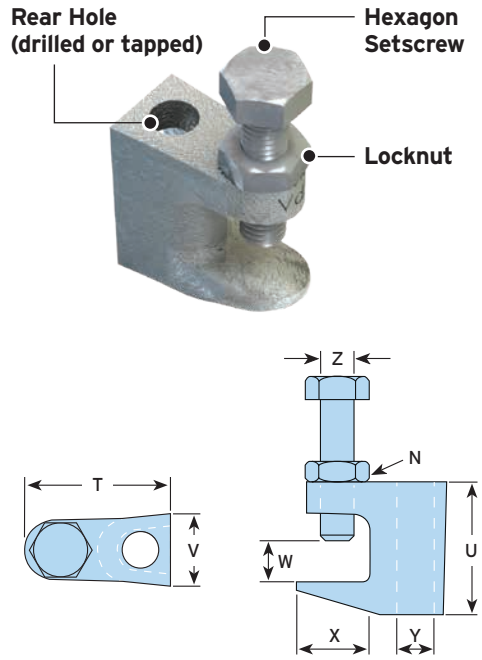


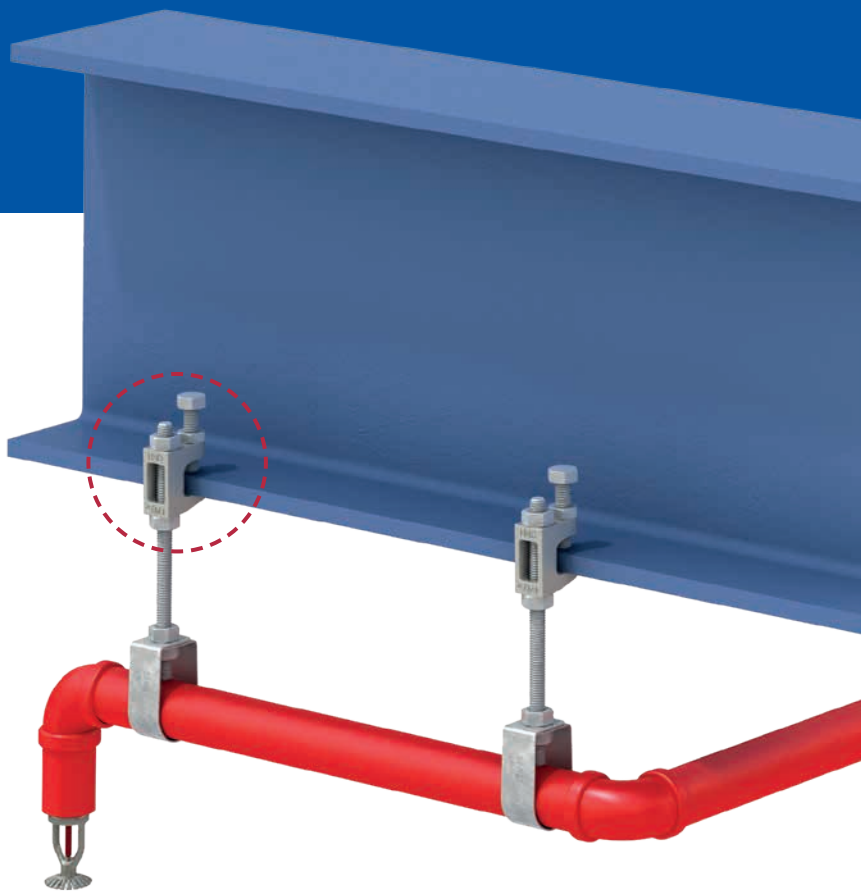
Ensure that the cup point setscrew always grips on the tapered side of the flange.

Type FL

FM and VdS approved flange clamp for use with parallel or tapered flange beams, supplied with the rear hole drilled or tapped.

FM APPROVED (FL210 & FL312 only) VdS Fire Rated to ISO 834 (M10 and above)





Independently fire tested in accordance with ISO 834 for a duration of 120 minutes. For fire rated load limits please contact Lindapter.

Material: Malleable iron, zinc plated.

Product Code				Safe Working Load (FOS 4:1)			Tightening Torque		Dimensions			
Drilled Hole	Tapped Hole	Drilled Hole Ø Y mm	Tapped Thread Y	Tensile kN	Clamping Range W mm	Setscrew Z	Setscrew Z Nm	Locknut N Nm	T mm	U mm	X mm	Width V mm
FL106D	FL106T	7	M6	1.1	3 - 17	M8	8	11	36	35	20	19
FL108D	FL108T	9	M8	1.1	3 - 17	M8	8	11	36	35	20	19
FL210D*	FL210T	11	M10	2.4	3 - 20	M10	8	22	45	40	22	22
FL312D	FL312T	13	M12	3.1	3 - 24	M10	8	22	50	46	28	25
FL412D	FL410T	13	M10	3.1	9 - 29	M10	8	22	53	51	27	26

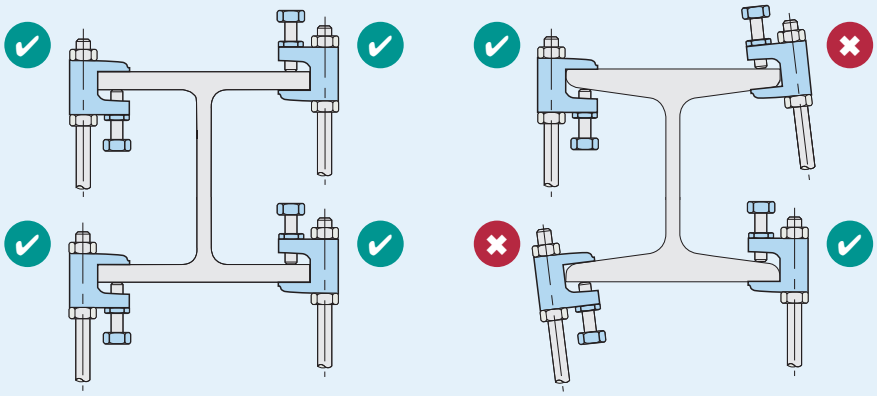
** Also available in stainless steel.*

The Type FL can be used with Type SW (page 63) when connecting to inclined sections.

How to install...

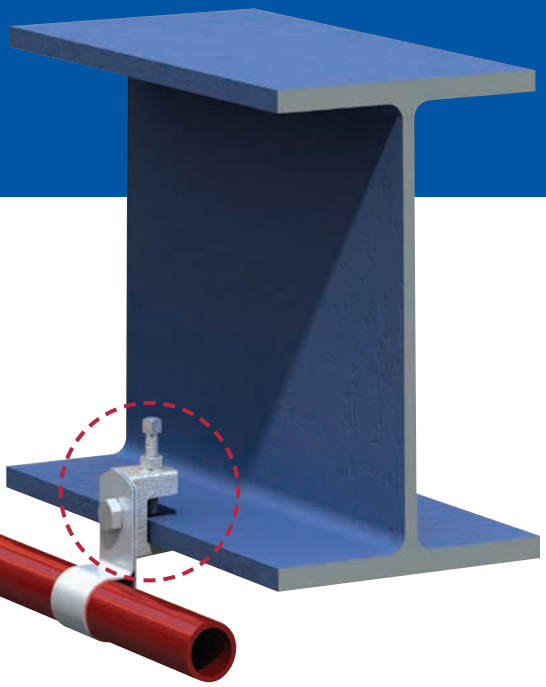
1) Slide the Type FL onto the beam flange and tighten setscrew to the recommended torque. As a guide, tighten the setscrew finger tight and then apply an additional quarter turn (90°) with spanner.
2) Tighten the locknut (N) to the recommended torque.

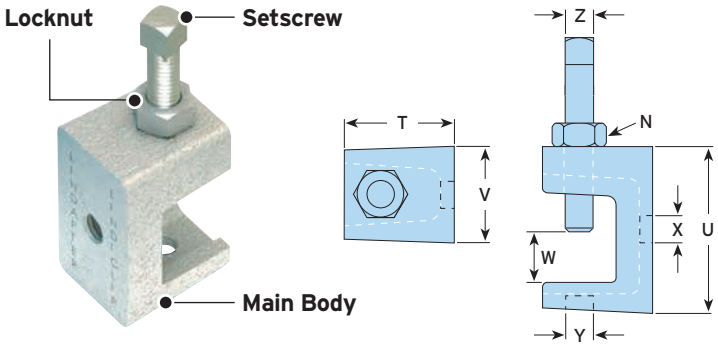
On tapered flanges, the cup point setscrew has to grip on the inside of the flange.



Type LC - LindiClip™

A flange clamp for parallel or tapered flanges with tapped holes to accept threaded rod or cable clips. Supplied with a high tensile cup point setscrew.





Material: Malleable iron, zinc plated.

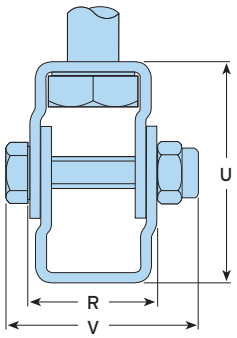
Product Code	Tapped Thread X	Tapped Thread Y	Safe Working Load (FOS 4:1) Tensile in Position X kN	Safe Working Load (FOS 4:1) Tensile in Position Y kN	Clamping Range W mm	Setscrew Z	Tightening Torque Setscrew Z Nm	Tightening Torque Locknut N Nm	Dimensions T mm	Dimensions U mm	Dimensions Width V mm
LC06	M6	M6	0.18	0.59	3 - 18	M6	4	4	25	36	21
LC08	M8	M8	0.18	0.59	3 - 18	M6	4	4	25	36	21

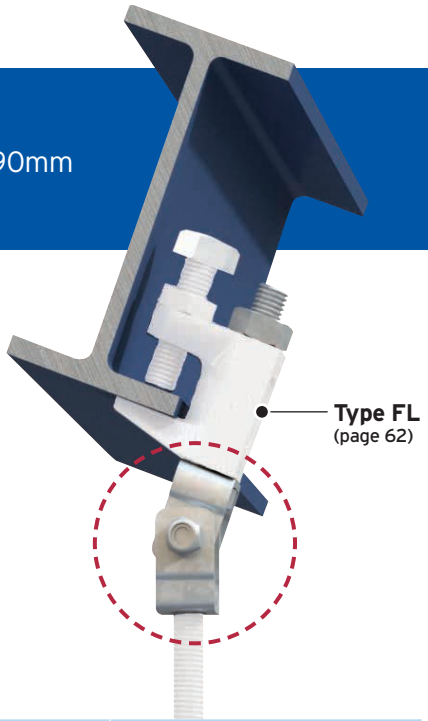
Lindiclip™ installation is the same as Type FL (page 62).

Type SW

A swivel unit for applications on inclined beams complete with a M10 x 90mm (property class 8.8) setscrew and nut. Can be supplied with Type FL.

FM APPROVED (when used with Type FL)





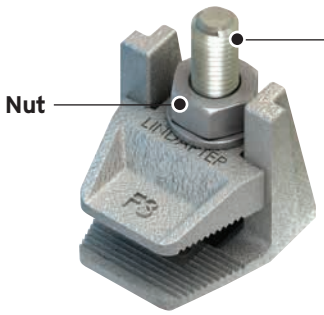
Material: High grade alloy steel, zinc plated.

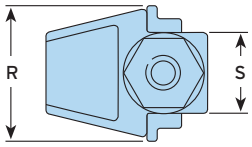
Product Code	Rod	Safe Working Load (FOS 4:1) Tensile kN	Maximum Inclination	Rotation	Tightening Torque Nm	Dimensions U mm	Dimensions R mm	Dimensions Width with Bolt V mm
SW10	M10	2.4	18°	360°	11	45	25	35

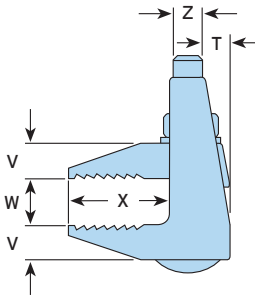
Type F3

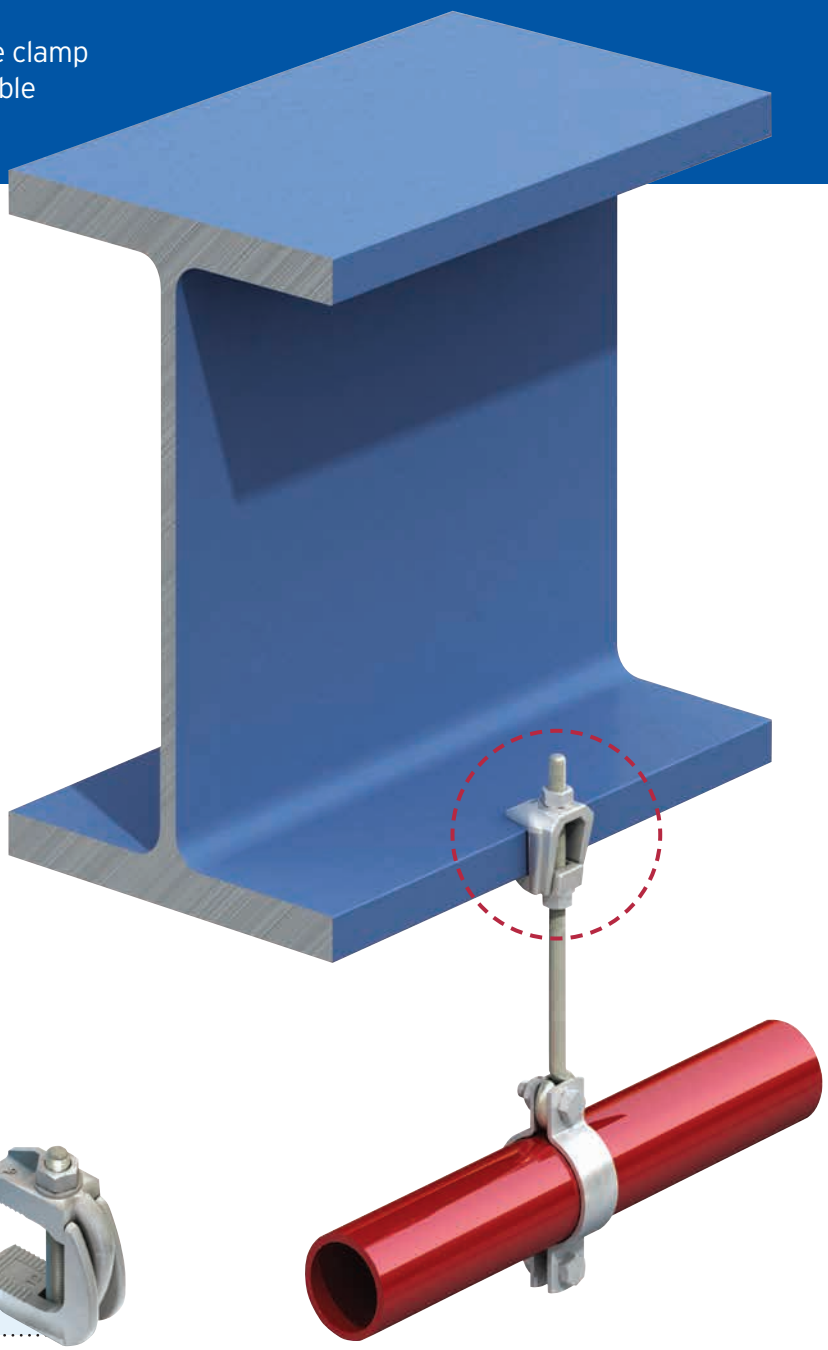
An FM approved, high strength flange clamp with a large clamping range. Compatible with drop rods and J bolts.

FM APPROVED (M10 and above)









For heavier loads or wider clamping range, please see the Type F9 on **page 28.**

Material: Malleable iron, hot dip galvanised.

Product Code			Safe Working Load (FOS 4:1)			Dimensions				
With Bolt	Without Bolt	Bolt 4.6 Z	Tensile kN	Clamping Range W mm	Tightening Torque* Nm	S mm	T mm	V mm	X mm	Width R mm
F308NC	F308NB	M8	0.9	2 - 25	6	19	6	8	20	33
F310NC	F310NB	M10	1.2	2 - 30	20	22	7	10	25	38
F312NC	F312NB	M12	2.0	2 - 40	39	29	9	12	35	49
F316NC	F316NB	M16	4.0	3 - 55	93	36	12	16	46	60
F320NC	F320NB	M20	6.0	5 - 70	177	44	15	19	55	76

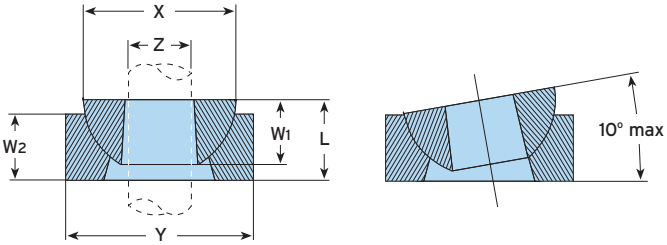
** Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 78.*

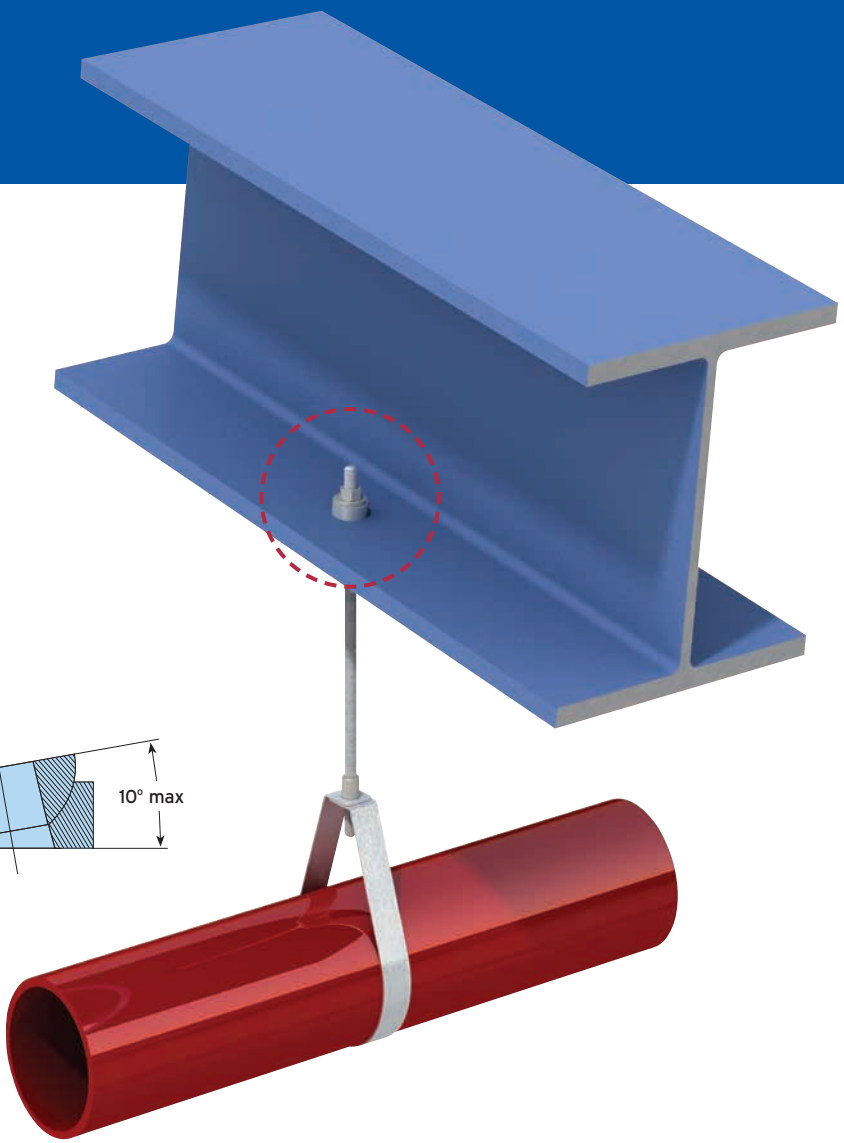
For parallel flanges only. Supplied with or without bolt.

Ref: LindUKMay25

Type HW / HC

For vertical suspension on angled surfaces of up to 10° swing either side of the vertical.





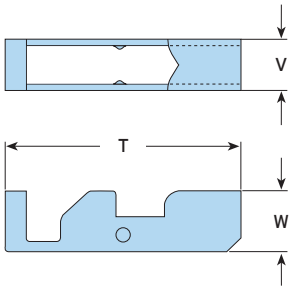
Material: Malleable iron, zinc plated or hot dip galvanised.

Product Code			Hemispherical Washer		Hemispherical Cup		Hemispherical Washer & Cup
Hemispherical Washer (can be used without cup)	Hemispherical Cup	Rod Z	X mm	W_1 mm	Y mm	W_2 mm	L mm
HW10	**HC10**	M10	26	11.5	32.5	12	16
HW12	**HC12**	M12	29	12.5	34	13	17.5
HW16	**HC16**	M16	34.5	16	41	16	22
HW20	**HC20**	M20	44	18	54.5	19	23

Type TC - Toggle Clamp

Designed for service suspension from pre-cast hollow core slabs (minimum core depth 75mm).

FM APPROVED (M10 only)



Material: Steel strip, zinc plated.

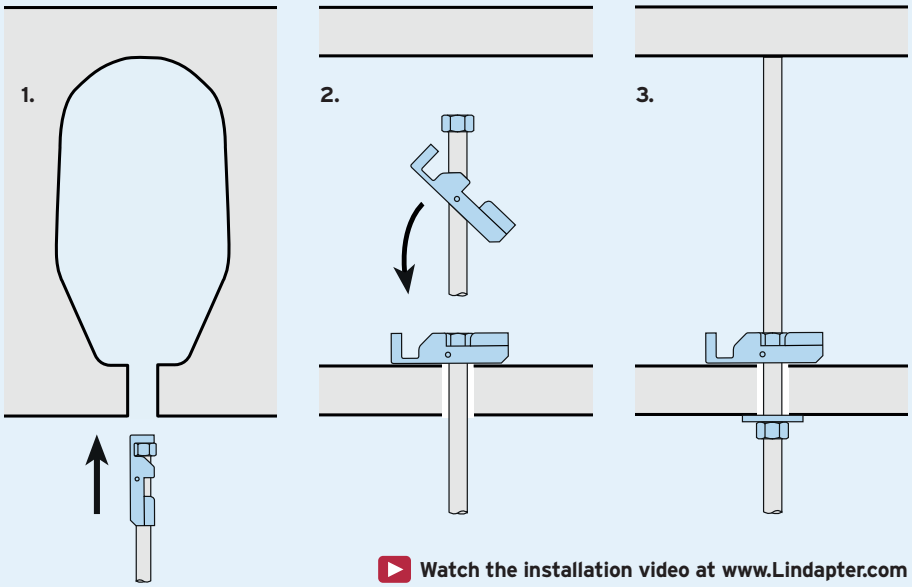
Product Code	Rod min 8.8	Hole Ø mm	Safe Working Load (FOS 4:1) Tensile / 1 Rod kN	Tightening Torque Nm	Dimensions T mm	W mm	Width V mm
TC08	M8	22	2.45	10	68	16.5	13
TC10	M10	25	2.45	10	68	17.5	15

Safe Working Loads subject to the strength of the supporting section.

How to install...

Instructions for hollow core slab:

1) Pre-assemble the clamp on the rod and insert into the hole (ensure it is central to the hollow core).
2) Shake the rod to allow the toggle body to locate horizontally across the hole, then lower the rod so that the nut locates in the toggle body.
3) Wind up the rod to the top of the section so it is as high as possible. Secure the assembly with a nut and washer.



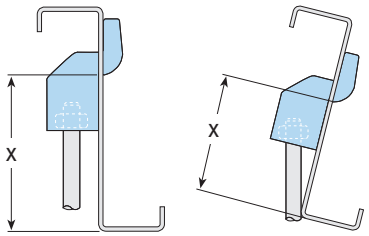
Watch the installation video at www.Lindapter.com

Ref: LindUKMay25

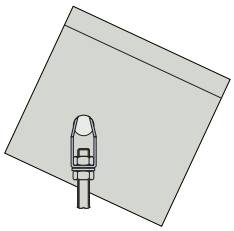
Type WF

The Webfix allows a quick installation directly from the web of purlins.

Hole Position: Canted Purlins
When purlins are connected to a sloping roof beam, the maximum allowable distance X (hole centre to the bottom edge of the purlin) must decrease.



Hole Position: Inclined Purlins
Type WF adjusts to whatever angle is required. Hole position is not a limiting factor on product installation.

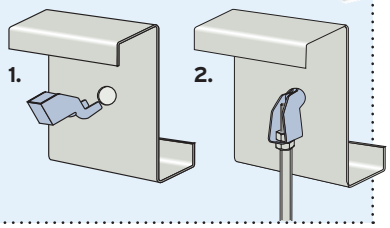


Material: Mild steel, zinc plated.

Code	Rod	Safe Working Load (FOS 5:1) Tensile kN	Maximum Purlin Thickness mm	Hole Ø mm	Maximum Distance X at Angle of 10° mm	20° mm	30° mm
WF10	M10	1.0	4	18	103	94	74

How to install...

1) Squeeze the legs of the Type WF together and push through the hole until it clicks into place.
2) Assemble with the nut, ensuring full thread capture.



Type HCW30

A purlin clip suitable for horizontal purlins.

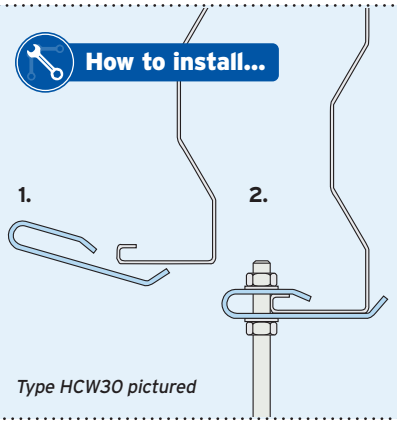
Type HCW31

A universal purlin clip suitable for multiple applications.

Type HCW30 >

Type HCW31 >

How to install...

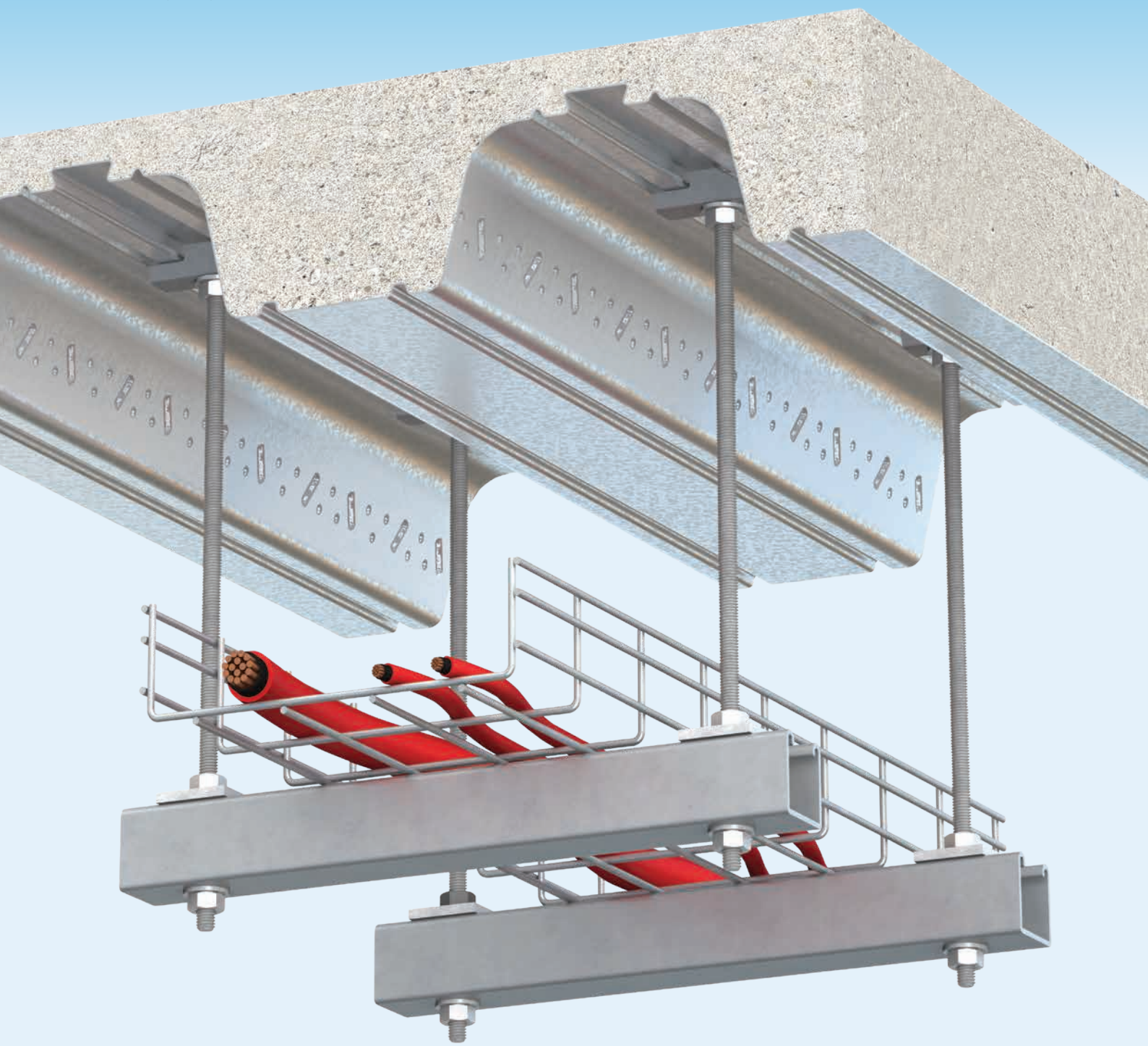


Type HCW30 pictured

Material:
Pre-galvanised strip.

Code	Purlin	Rod	Safe Working Load (FOS 3:1) Tensile kN	Tightening Torque Nm
HCW30	Kingspan Multibeam 3	M10	0.2	8
HCW31	Kingspan Multibeam 3	-	0.2	-

Safe working loads are subject to the strength of the purlin. Please refer to the purlin manufacturer's literature.



Decking Fixings

High quality, cost effective connections for securing building services. Designed to fit inside the dovetail re-entrant channels of popular composite decking profiles, Lindapter's fixings provide a zero-impact method that avoids delamination and damage to the decking.

On-site capacity checks

Lindapter's Engineers can provide tensile tests on the full range of decking fixings. Available on request and subject to application.

Ref: LindUKMay25

Compatible Profiles

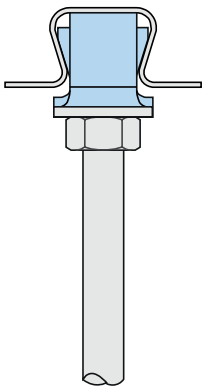
Lindapter has developed an extensive range of CE Marked decking fixings to ensure optimum compatibility with all major decking profiles.

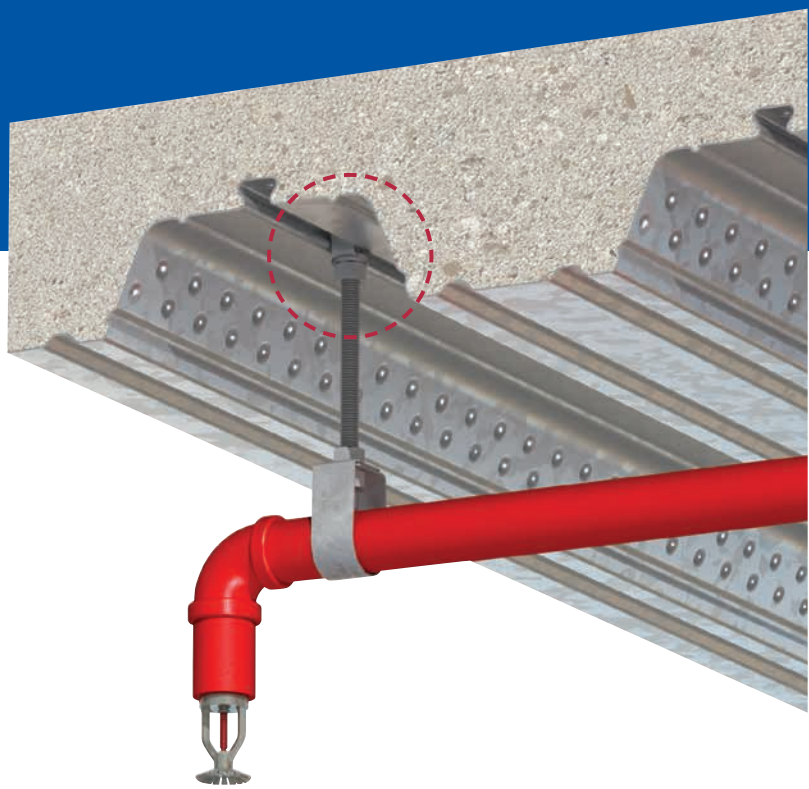
Lindapter Decking Fixing	Compatible Composite Decking Profile(s)
Type COM page 70 Fire Rated to ISO 804	**Tata Steel** ComFlor® 60, 80 and 95 Opening: 15mm (+/-1mm)
Type TR60 page 71 Fire Rated to ISO 804	**SMD®** TR60+™ and TR80+™
Type MF page 72 Fire Rated to ISO 804	**CMF®** MetFloor® 60 and MetFloor® 80
Type MW2 Multiwedge 2 page 73 Fire Rated to ISO 804	**Kingspan®** Multideck MD60 and MD80
Type AW Alphawedge page 74 Fire Rated to ISO 804	**Richard Lees Decking** Ribdeck E60
Type AMD page 75	**AMDECK®** AMDECK® 60 and AMDECK® 80
Type SM page 76 Fire Rated to ISO 804	**Sigmat** SigDeck 100
Type VN page 77 Fire Rated to ISO 804	**Fits several profiles including:** AMDECK® 54, R51+™, ComFlor® 51+, Holorib, Superib, Multideck MD50 and MetFloor® 55.

Type COM

Designed for use with the ComFlor® 60, ComFlor® 80 and ComFlor® 95 decking profiles manufactured by Tata Steel.

UK CA CE Fire Rated to ISO 834



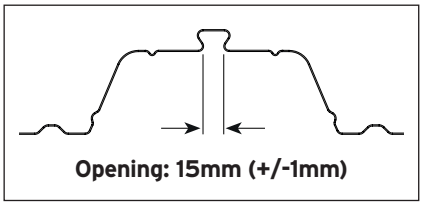


UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.023 (CE) or DoC No.123 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

Locking Plate: Pre-galvanised strip. **Wedge:** Cold formed steel, zinc plated.

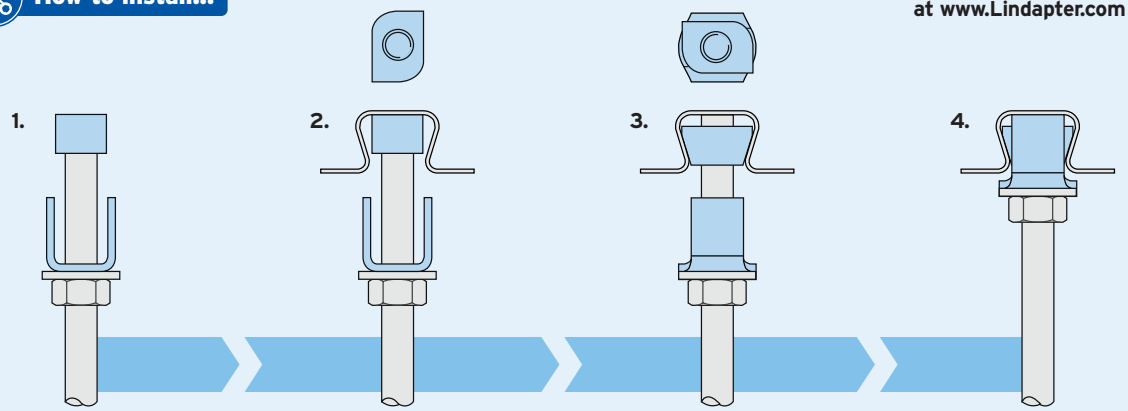
Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
COM10	M10	1.25	10

Independently fire tested in accordance with BS EN 1991-1-2. For fire ratings please refer to www.Lindapter.com



How to install...

Watch the installation video at www.Lindapter.com



1) Pre-assemble the Locking Plate and wedge (flat surface facing up) onto the threaded rod.
2) Insert wedge into the re-entrant channel of the decking and rotate 90°.
3) Slide the plate up the threaded rod, over the wedge, to lock it in position into the channel.
4) To hold the assembly in position, tighten a nut beneath the plate and washer to the tightening torque specified in the table above.

Install the decking fixings after the concrete has been poured and has reached full strength.

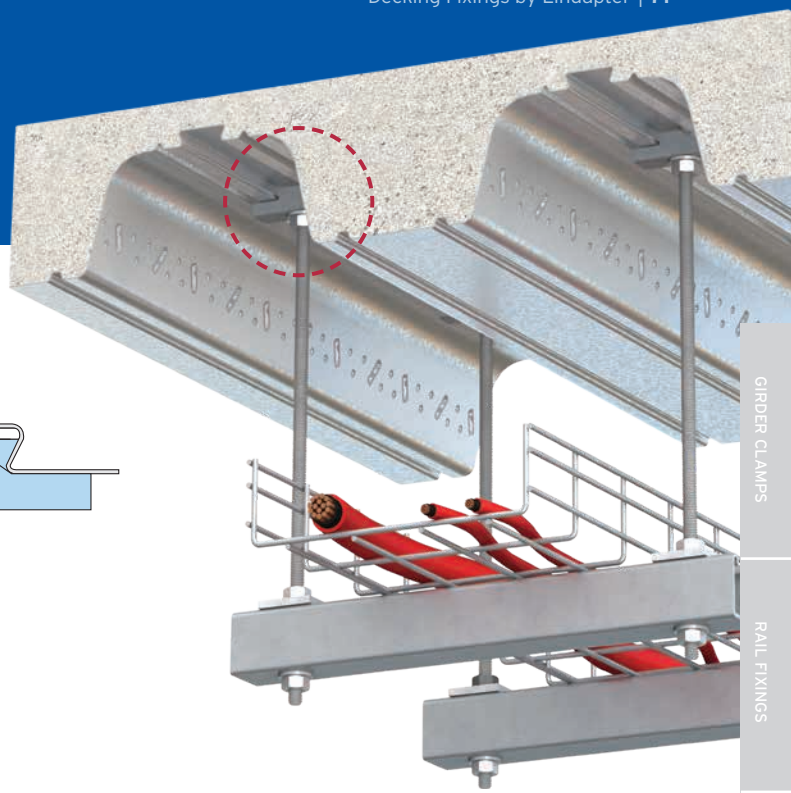
If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.

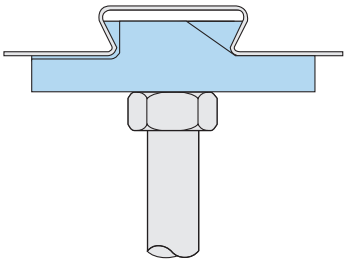
Ref: LindUKMay25

Type TR60

Designed for the TR60+™ and TR80+™ profiles manufactured by SMD®.

UK CA CE Fire Rated to ISO 834





UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.020 (CE) or DoC No.120 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

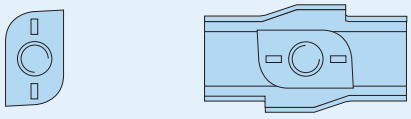
Locking Plate: Pre-galvanised strip. **Wedge:** Malleable iron, bright zinc plated.

Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
TR6006*	M6	1.0	10
TR6008*	M8	1.0	10
TR6010*	M10	1.0	10

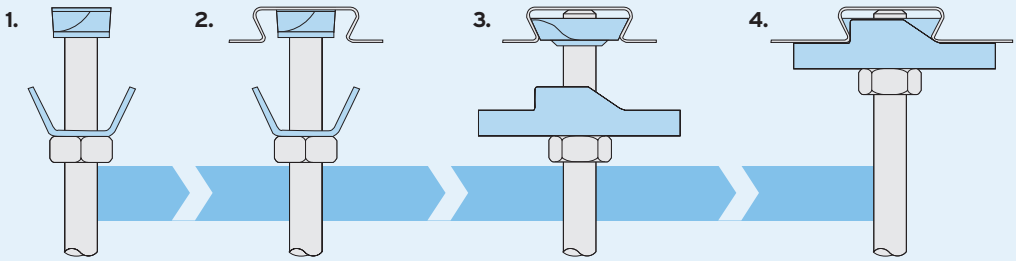
** A washer is required for TR6006. Washers are optional for TR6008 and TR6010.*

Independently fire tested in accordance with BS EN 1991-1-2. For fire ratings please refer to www.Lindapter.com

How to install...



Watch the installation video at www.Lindapter.com



1) Pre-assemble the locking plate and wedge (flat surface up) onto the threaded rod.
2) Insert the wedge into the re-entrant channel of the decking.
3) Rotate until the chamfered cams engage on the sides of the channel.
4) Slide the plate up the threaded rod and over the wedge to lock it into position in the channel. To hold the assembly in position, tighten a nut beneath the plate and washer to the tightening torque specified in the table above.

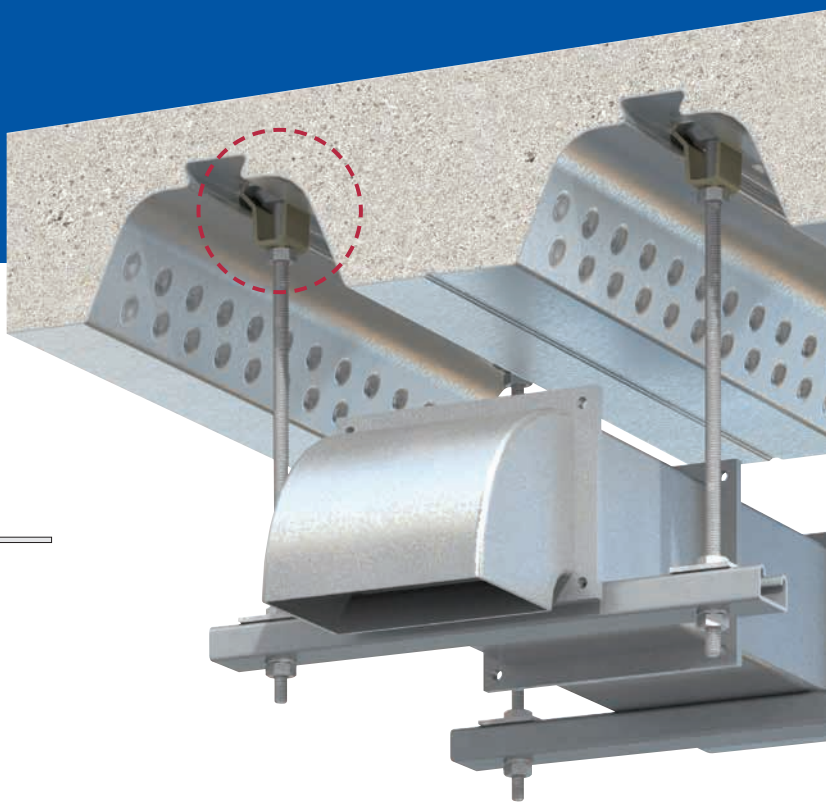
Install the decking fixings after the concrete has been poured and has reached full strength.

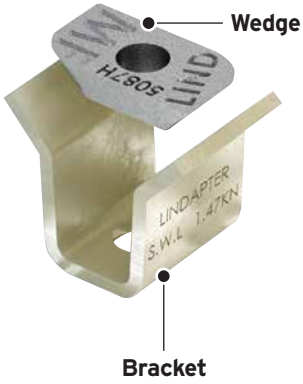
If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.

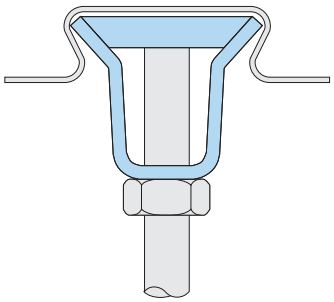
Type MF

Specifically developed for use with MetFloor® 60 and MetFloor® 80 profiles manufactured by Construction Metal Forming (CMF®).

UK CA CE Fire Rated to ISO 834







UK CA CE For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.017 (CE) or DoC No.117 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Bracket: Steel strip, zinc plated + JS500. **Wedge:** Malleable iron, zinc plated.

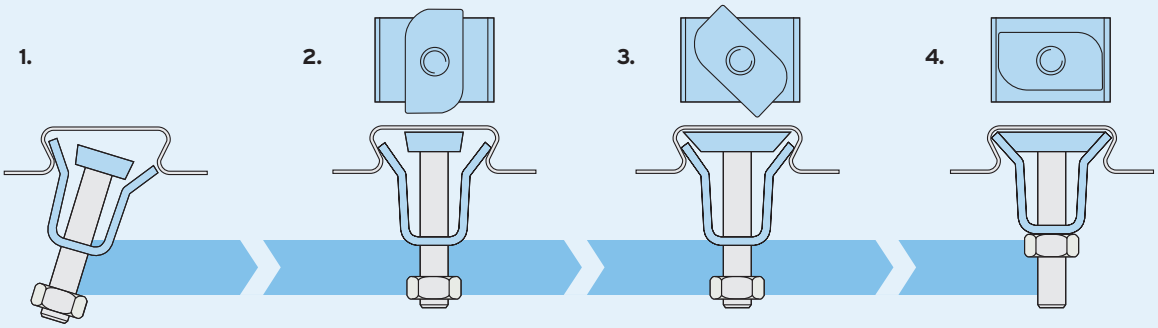
Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
MF06*	M6	1.47	10
MF08*	M8	1.47	10
MF10*	M10	1.47	10

** Oversized washer supplied with MF06 and MF08. A washer is optional for MF10.*

Independently fire tested in accordance with BS EN 1991-1-2. For fire ratings please refer to www.Lindapter.com

How to install...

Watch the installation video at www.Lindapter.com



1) Pre-assemble the bracket and wedge (flat surface facing up) onto the threaded rod and insert one side of the bracket into the re-entrant channel of decking.
2) Insert the other side of the bracket into position inside the decking.
3) Turn the wedge clockwise until the position in Fig. 4 has been achieved.
4) Tighten the nut on the rod to a torque of 10Nm (prevent rod from rotating).

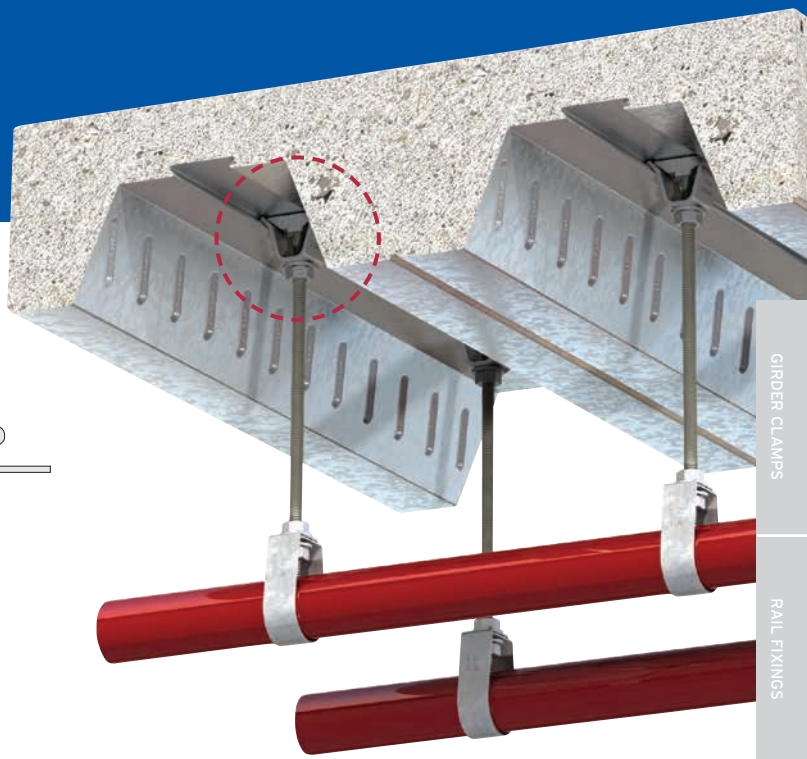
- **Install the decking fixings after the concrete has been poured and has reached full strength.**
- **If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.**
- **Although the Type MF is similar in appearance to Type MW2 (p. 73), it should NOT be used in profiles manufactured by Kingspan®.**

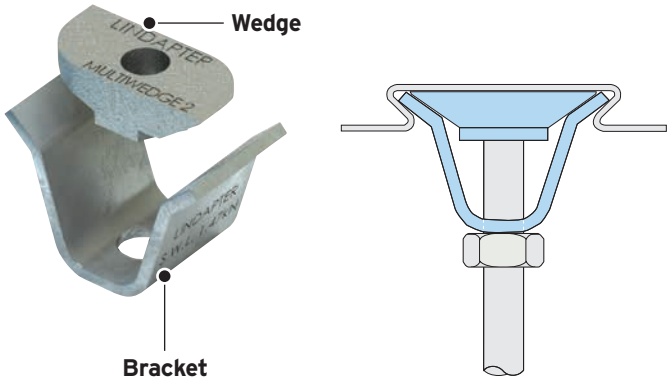
Ref: LindUKMay25

Type MW2 - Multiwedge 2

Designed for the Multideck MD60 and Multideck MD80 profiles manufactured by Kingspan®.

UK CA CE Fire Rated to ISO 834





UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.019 (CE) or DoC No.119 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

Bracket: Pre-galvanised strip. **Wedge:** Malleable iron, zinc plated.

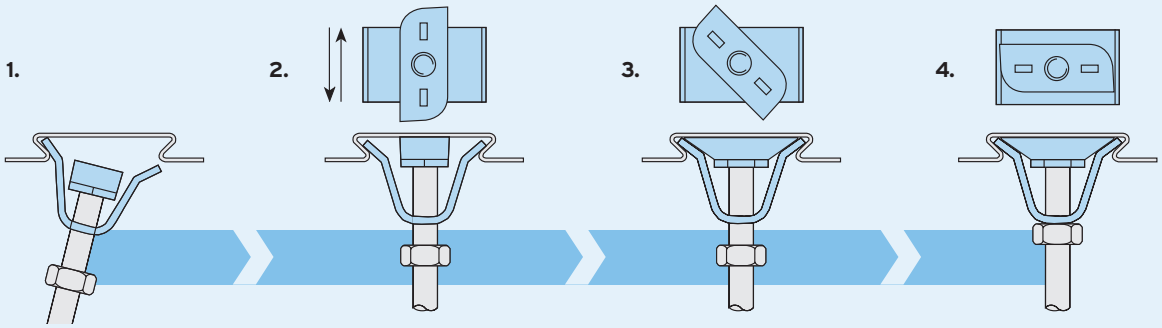
Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
MW06*	M6	1.47	10
MW08*	M8	1.47	10
MW10*	M10	1.47	10

** Oversized washer supplied with MW06 and MW08. A washer is optional for MW10.*

For fire ratings refer to www.Lindapter.com

How to install...

Watch the installation video at www.Lindapter.com



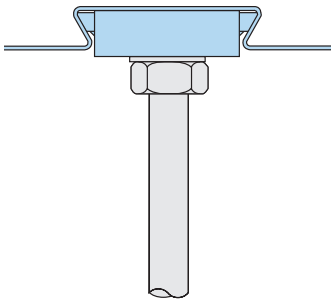
1) Pre-assemble the bracket and wedge (flat surface facing up) onto the threaded rod and insert one side of the bracket into the re-entrant channel of the decking.
2) Click the other leg of the bracket into position inside the decking and slide the assembly to the desired position along the length of the re-entrant channel.
3) Push and turn the wedge clockwise until it locks into the channel walls.
4) Tighten the hexagon nut beneath the assembly to the tightening torque specified in the table above.

- **Install the decking fixings after the concrete has been poured and has reached full strength.**
- **If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.**
- **Although the Type MW2 is similar in appearance to Type MF (p. 72), it should NOT be used in profiles manufactured by CMF®.**

Type AW - Alphawedge

Designed for Ribdeck E60 profiles manufactured by Richard Lees Decking (owned by William Hare).

UK CA CE Fire Rated to ISO 834



UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.016 (CE) or DoC No.116 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

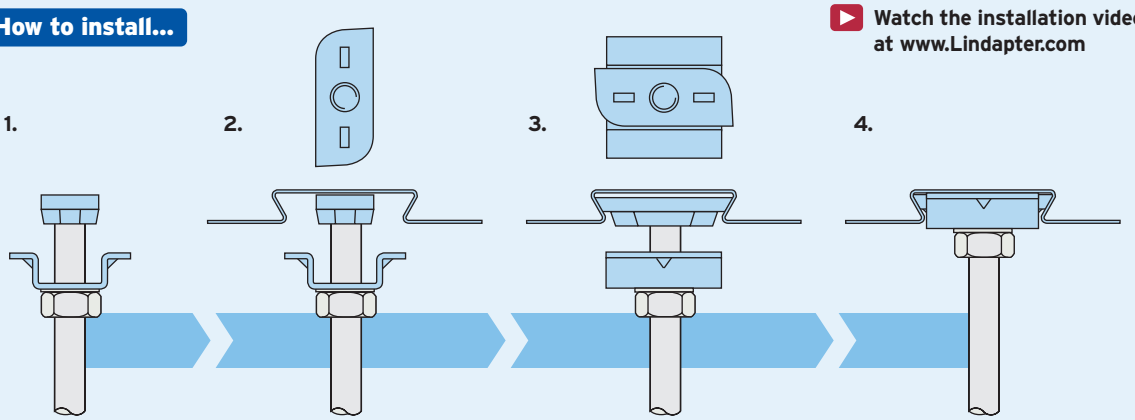
Locking Plate: Pre-galvanised strip. **Wedge:** Malleable iron, zinc plated.

Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
AW06	M6	1.0	10
AW08	M8	1.0	10
AW10	M10	1.0	10

For fire ratings refer to www.Lindapter.com

How to install...

Watch the installation video at www.Lindapter.com



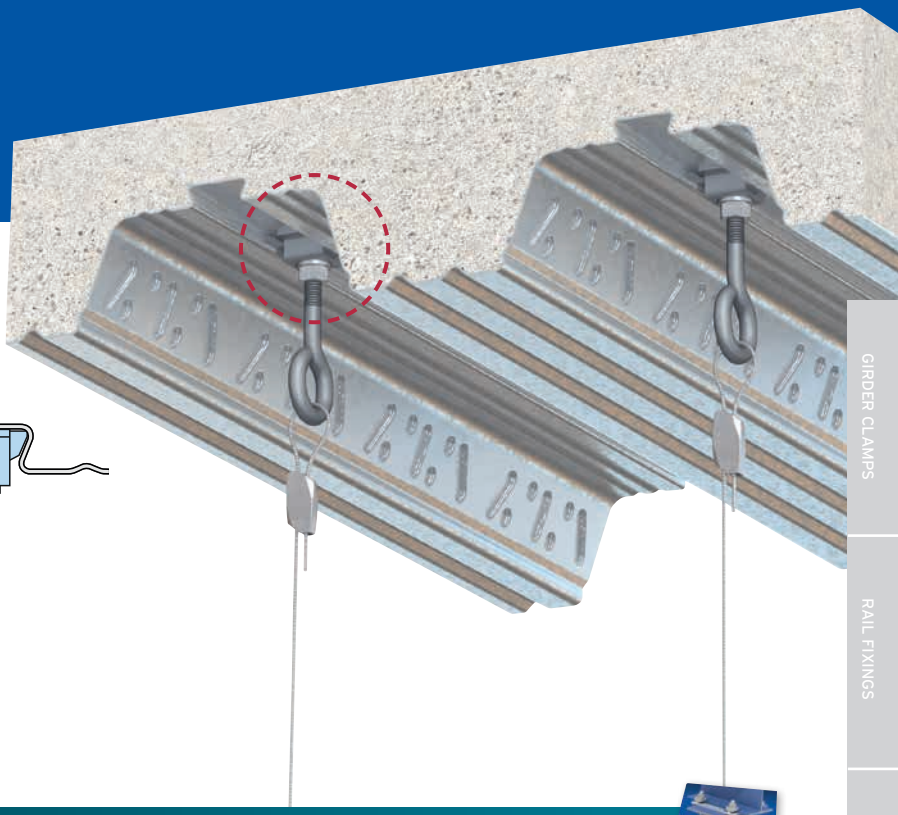
1) Pre-assemble the Locking Plate and wedge (flat surface up) onto the threaded rod.
2) Insert the wedge into the re-entrant channel of the decking and rotate 90°.
3) Slide the plate up the threaded rod, over the wedge, to lock it in position into the channel.
4) To hold the assembly in position, tighten a nut beneath the plate and washer to the tightening torque specified in the table above.

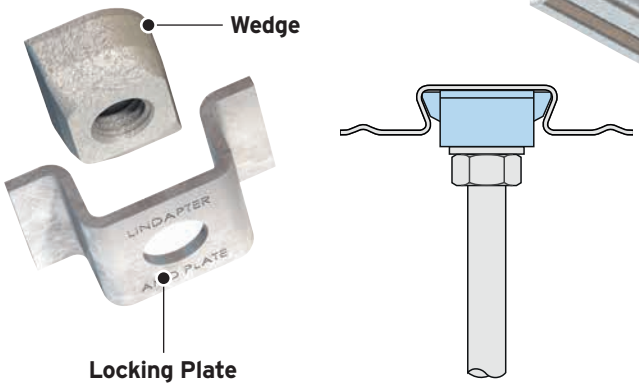
- **Install the decking fixings after the concrete has been poured and has reached full strength.**
- **If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.**
- **Although the Type AW is similar in appearance to Type AMD (p. 75), it should NOT be used in profiles manufactured by AMDECK®.**

Ref: LindUKMay25

Type AMD

Suitable for AMDECK® 60 and AMDECK® 80 decking profiles manufactured by AMDECK®.





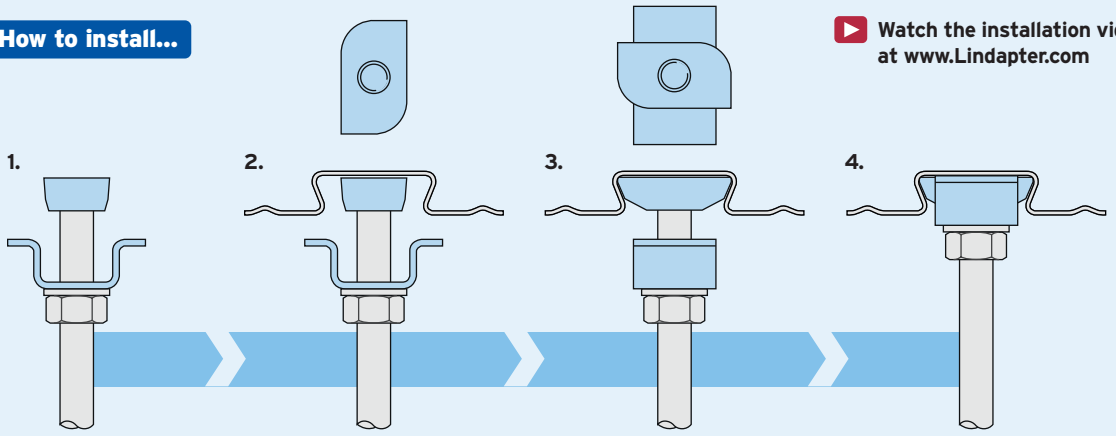
For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.018 (CE) or DoC No.118 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

Locking Plate: Pre-galvanised strip. **Wedge:** Malleable iron, bright zinc plated.

Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
AMD06	M6	1.0	10
AMD08	M8	1.0	10
AMD10	M10	1.0	10

How to install...

Watch the installation video at www.Lindapter.com



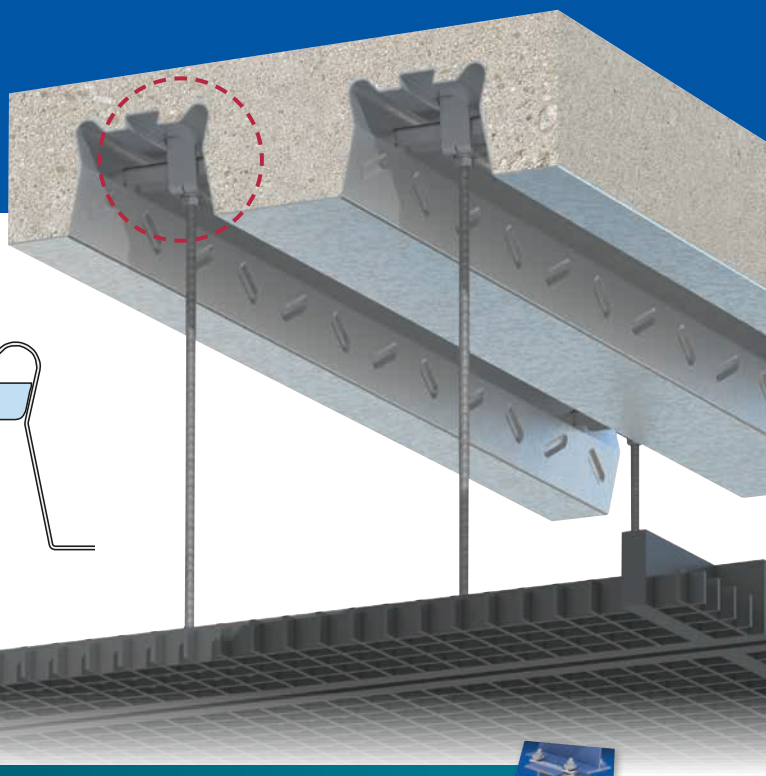
1) Pre-assemble the Locking Plate and wedge (flat surface facing up) onto the threaded rod.
2) Insert wedge into the re-entrant channel of the decking, rotate 90°.
3) Slide plate up the threaded rod, over the wedge, to lock it in position into the channel.
4) To hold the assembly in position, tighten a nut beneath the plate and washer to the tightening torque specified in the table above.

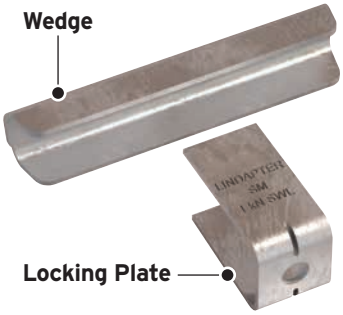
- **Install the decking fixings after the concrete has been poured and has reached full strength.**
- **If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.**
- **Although the Type AMD is similar in appearance to Type AW (p. 74), it should NOT be used in profiles manufactured by Richard Lees.**

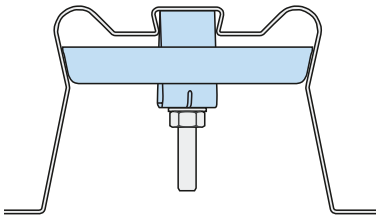
Type SM

Suitable for SigDeck 100 decking profiles manufactured by Sigmat.

UK CA CE Fire Rated to ISO 834







UK CA CE **For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.024 (CE) or DoC No.124 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.**

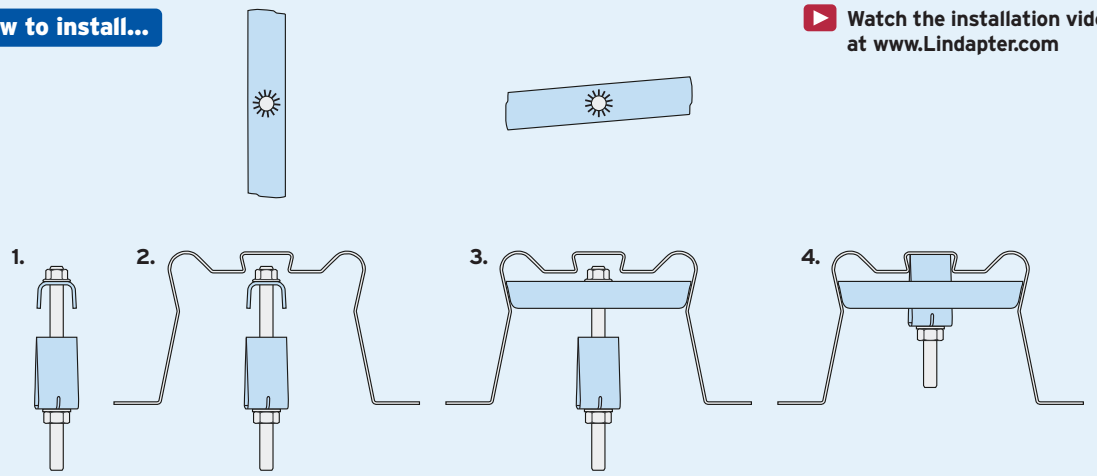
Material: Mild Steel and Bright Zinc Plated (BZP)

Product Code	Rod min 4.6	Safe Working Load (FOS 3:1) Tensile / 1 Rod kN	Tightening Torque Nm
SM10	M10	1.0	8

Independently fire tested in accordance with BS EN 1991-1-2. For fire ratings please refer to www.Lindapter.com

How to install...

Watch the installation video at www.Lindapter.com



1) Pre-assemble the locking plate and wedge plate onto the threaded rod with the flange nut (supplied) above the wedge plate, and a nut and washer beneath the locking plate.
2) Insert the wedge plate into the re-entrant channel of the decking.
3) Rotate the wedge until it contacts on both sides (approximately 85°). The wedge should be horizontal.
4) Slide the plate up the threaded rod and over the wedge to lock it in position. To secure the assembly tighten the nut beneath to 8Nm (or as a guide, finger tighten the nut plus one full turn of the spanner).

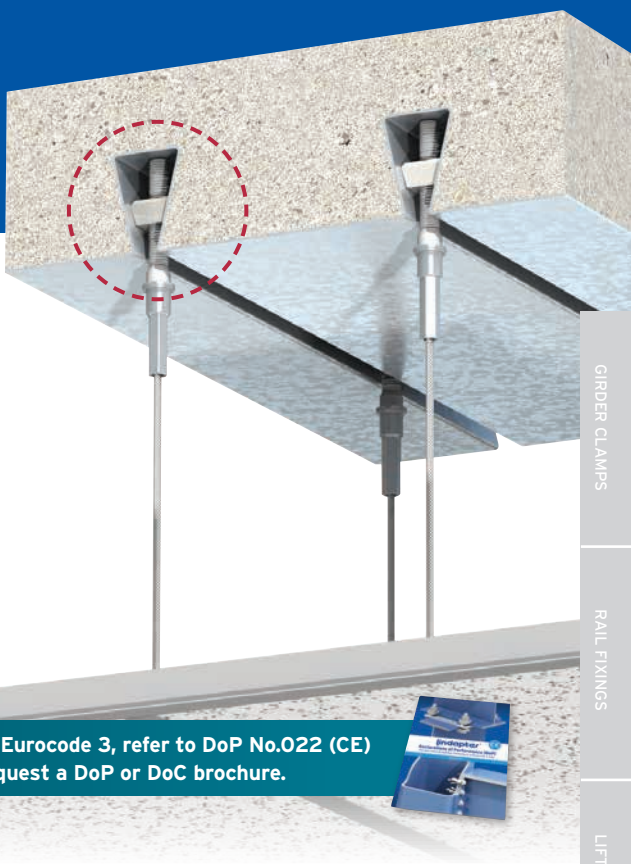
- **The fixing is to be secured with the wedge sat equally on both ends and slightly angled, as step 3.**
- **Install the decking fixings after the concrete has been poured and has reached full strength.**
- **If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.**

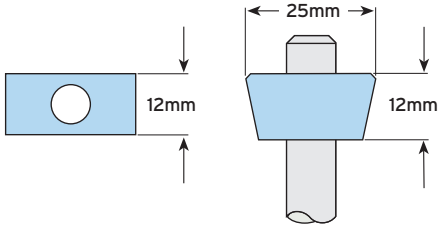
Ref: LindUKMay25

Type VN

Fits inside the re-entrant channel of several composite floor decking profiles including AMDECK® 54, R51+™, ComFlor® 51+, Holorib, Superib, Multideck MD50 and MetFloor® 55.

UK CA CE Fire Rated to ISO 834





For Characteristic Resistances when designing a connection to Eurocode 3, refer to DoP No.022 (CE) or DoC No.122 (UKCA) on Lindapter's website. Alternatively, request a DoP or DoC brochure.

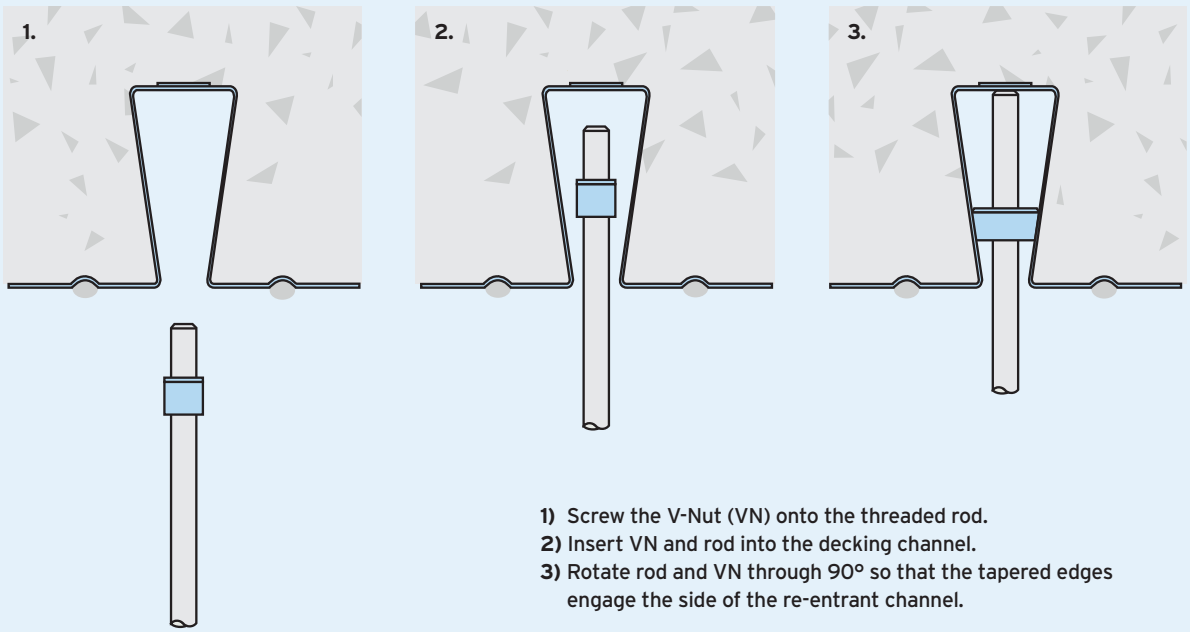
Material: Mild steel, zinc plated.

Product Code	Rod min 4.6	Safe Working Load (FOS 4:1) Tensile / 1 Rod kN	Tightening Torque Nm
VN10	M10	2.1	10

Independently fire tested in accordance with BS EN 1991-1-2. For fire ratings please refer to www.Lindapter.com

How to install...

Watch the installation video at www.Lindapter.com



1) Screw the V-Nut (VN) onto the threaded rod.
2) Insert VN and rod into the decking channel.
3) Rotate rod and VN through 90° so that the tapered edges engage the side of the re-entrant channel.

Install the decking fixings after the concrete has been poured and has reached full strength.

If the decking profile is deformed or distorted, do not install the fixing. If in doubt, contact the Technical Support team for advice.

Tightening Torque and DTI Washers

Important information about the tightening torque values published in this catalogue can be found below. Additional information about the use of DTI Washers is also provided.

Tightening Torque Values

All torque figures given in this catalogue are for fasteners in an unlubricated condition. The use of these torque figures with lubricated or greased threaded fasteners and hexagon nuts will apply a much higher preload and may result in damage to the clamp and fastener.

When using lubricated fasteners with a Lindapter component, a reduced torque value should be used. Please contact your bolt and nut supplier for information on the alternative torque for the selected lubricant to ensure the correct preload is generated.

Using DTI Washers

If preferred, DTI washers can be used as part of the fastener assembly with the components shown in the table below. The use of this type of washer can be used with lubricated fasteners and provides a visual indication that the correct preload has been achieved in the bolt. Alternatively, Tension Control Bolts in accordance with EN 14399-10 may be used with the Type AF/AAF.

Lindapter Product	DTI Washer (EN 14399-9)	
	8.8 Bolts	10.9 Bolts
Type AAF 	Suggested	Suggested
Type AF 	Suggested	Suggested
Type CF 	Suggested	Not Suitable

Other Lindapter products have lower torque values to limit the amount of preload on unlubricated bolts and cannot be used with DTI washers.

Product Durability

The durability of the Lindapter product is achieved by coating or by use of stainless steel and is categorised by Corrosivity Class in accordance with ISO 9223. For Corrosivity Class C4 and C5 please contact Lindapter.

Corrosivity Class	Galvanised Steel	Steel with Sheraplex finish	Electro-plated Steel + JS500	Electro-plated Steel	Stainless Steel
C1	more than 50 years	more than 50 years	more than 50 years	more than 20 years	more than 50 years
C2	more than 50 years	more than 50 years	more than 20 years	more than 5 years	more than 50 years
C3	more than 20 years	more than 20 years	more than 10 years	Not suitable	more than 50 years

For Corrosivity Class information, see www.steelconstruction.info/Standard_corrosion_protection_systems_for_buildings

Ref: LindUKMay25

FAQs about Lindapter Girder Clamps

Below you'll find answers to the questions we get asked the most about Lindapter Girder Clamps. If your question is not answered here please contact Lindapter's Technical Support team.

Can location plates be made to any dimensions?

No. Details of the minimum sizes are shown in this catalogue and on the website.

Are Lindapter assemblies reusable?

If an assembly which has not been subjected to dynamic or fatigue loading is repositioned and reused, a visual inspection should be carried out to check the condition of the components and the protective coating. If any signs of physical damage or corrosion to the clamps or plates can be seen, the full assembly should be replaced.

Do tail length and packing combination calculations have to be exact?

The tables within the catalogue or on the website should be used for guidance on tail lengths and packing combinations; there is a tolerance which varies depending on the bolt diameter.

Is it possible to use Lindapter products with proprietary concrete anchors?

Yes, but it may be necessary to reduce Lindapter's recommended bolt tightening torque to comply with the anchor bolt manufacturers figures; if so, this is likely to affect the connection capacity.

Will clamps damage my steel surface coating?

The material from which Lindapter clamps are manufactured should not damage the structure although removal marks might be visible on some surface coatings.

Can Lindapter connections be used in a combined tension and friction / slip resistance load?

Yes, although calculations are needed to determine the best size and Lindapter product to use.

Why do location and end plates have to be made to a certain minimum thickness?

As well as positioning all the components, the location plate supports the tail of the clamp.

On girder clamp assemblies the plate does not have to be as thick as it does for end plates; the reason for this is that the tail of the clamp on the bottom beam is trying to bend the plate but this is counteracted by the clamp's tail on the top beam.

With end plates there is no counteracting clamp, hence the plate needs to be thicker to support the tail. Plate thicknesses may be able to be reduced by using higher grade/strength material.

Are Lindapter assemblies affected by vibration?

Although tested and approved for situations where they will be subject to vibration conditions, we would recommend that, in circumstances where this could be extreme, a proprietary locking device / anti-vibration washer can be used.

Can Lindapter Type F9 be used to connect beams together?

It is possible if the beams are running parallel to each other but they must be of the same type and width although a Lindapter Girder Clamp is a much better option; the Type F9 must never be used to connect beams together which are crossing at 90º to each other or have tapered flanges.

Can Lindapter assemblies be used as permanent connections or are they only for temporary use?

They can be used in temporary and permanent applications. Lindapter has details of applications that have been in situ for 50 years or more.

FAQs about Lindapter Girder Clamps

Below you'll find more answers to the questions we get asked the most about Lindapter Girder Clamps. If your question is not answered here please contact Lindapter's Technical Support team.

How long will Lindapter assemblies last in an exterior environment?

The best coating would be Hot Dip Galvanising. Longevity would depend on the background corrosion rate evident in the location it is intended they be used; guidance should be sought from the galvanisers association of the relevant country.

Why is there such a high Factor of Safety, typically 5:1, on Lindapter connections?

This recommended Factor of Safety is to ensure that the components are subject to loads well within their capacity range in normal working condition but in event of an unintentional overload of the component / assembly there is sufficient strength within the clamps to avoid damage and / or failure of the connection. A lower FOS must not be used without first seeking advice.

Do I need to use a torque wrench when assembling a Lindapter connection?

Yes, we always recommend the use of a calibrated torque wrench. It is important to tighten up the fasteners to our published torque figures to ensure it replicates test conditions so that the Safe Working Loads can be achieved.

Is it possible to use Lindapter products either sub-sea or within the splash zone?

Yes, although consideration has to be given to the proposed material or coating used; splash zones can be more aggressive than total submersion.

What should be considered when connecting a pre-drilled section to an existing beam?

Make sure the section is thick enough to counter the reaction from the tail of the clamp.

Is it possible to use stainless steel fasteners with Lindapter products?

It is not recommended as it is likely to create a mechanism for the onset of bi-metallic corrosion. They can however be used with the Lindapter Type LS which is manufactured in stainless steel.

Why is the frictional Factor of Safety on Lindapter Type AF only 2:1 and not 5:1 as it is on the tensile Safe Working Loads?

The published safe working load and 2:1 factor of safety is a recognised method of determining slip and is defined according to the Eurocode as the load corresponding to 0.1mm of movement.

As the safe working load is based on movement of 0.1mm it is acceptable to use a reduced factor of safety of 2:1.

Can I use Lindapter clamps in slotted hole connections?

Yes, but it is important that the slot is 'bridged' to ensure that the tail of the clamp does not fit into it. This can be done by using a product with a full width tail such as Types AAF, AF, LR or LS.

NSSS 7th Edition Section 6.1.5 recommends that Plate Washers shall be used under the head of the bolt or nut when using slotted holes.

What is the recommended Lindapter safe working temperature range?

As a general rule -30ºC to +350ºC; however, this can increase or decrease in certain situations. For example, Type AAF clamp is tested to -60ºC. Surface coating may reduce the temperature range.

Ref: LindUKMay25

FAQs about Lindapter Hollo-Bolts

Below you'll find answers to the questions we get asked the most about Lindapter Hollo-Bolts. If your question is not answered here please contact Lindapter's Technical Support team.

Can the Hollo-Bolt be used in concrete?

No. It is designed as an expansion bolt for SHS or other steel sections where access is available from one side only.

Is it possible to reuse the Hollo-Bolt?

No, although a new Hollo-Bolt can be inserted in the existing hole.

Can I use slotted holes in Hollo-Bolt connections?

Yes, as long as the slot is in the outer ply only and is perpendicular to any shear load.

Is it necessary to seal the Hollo-Bolt to prevent ingress of water?

Not always, especially on the size M16 and M20 Hollo-Bolt HCFs where the rubber washer expands to fill the void. Sealing washers are available; however, it is important the interface between the SHS face and plate or bracket is not ignored.

Can the maximum clamping thicknesses published in the catalogue be exceeded?

No. The figures are accurate depictions and should not be exceeded under any circumstances.

Which Hollo-Bolt load table should I use?

For connections to secondary steelwork, refer to pages 46, 48 or 50. If designing structural connections to Eurocode 3, see the Characteristic Values on pages 47, 49 or 51. For structural connections using the 'Simple Method' i.e. braced frames where connections carry mainly shear and axial loads only, refer to the BCSA and SCI design guide 'Joints in Steel Construction – Simple Connections'.

Can the Hollo-Bolt be used in all shapes and sizes of SHS?

Yes. It can be used in square, rectangular, circular, and other profiles where access is restricted to the outer face. In all cases the suitability of the component is subject to the available void space, the total thickness of the material to be clamped and in the case of circular sections, the radius of the outer face.

Why is there a minimum outer ply requirement when using M16 and M20 Hollo-Bolts?

To ensure the rubber washer does not compromise the shear capacity of the Hollo-Bolt by being within the shear plane.

How do I remove a Hollo-Bolt?

Using a power / hand tool to remove a pre-installed Hexagonal or Countersunk Hollo-Bolt (sizes M8, M10 and M12):

1) Set the power / hand tool to reverse mode (anti-clockwise rotation).
2) Place a suitable size spanner (depending on collar size) on the flats of the collar to hold in place.
3) Use the power / hand tool to loosen the bolt.
4) Continue in reverse mode until the cone on the inside of the SHS at the other end of the bolt, is released to drop inside the SHS.
5) The bolt can now be removed as can the sleeve by prying the collar with a pinch or crow bar.

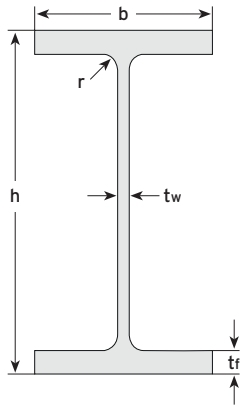
Using a power / hand tool to remove a pre-installed Hollo-Bolt High Clamping Force (sizes M16 and M20):

Steps 1) to 3) same as above.
4) Continue in reverse mode until the cone, expanded sleeve, and rubber washer on the inside of the SHS, at the other end of the bolt are released to drop inside the SHS.
5) The bolt and loose collar can now be removed.

Structural Sections

Lindapter's products are compatible with almost any type of steel section. Properties of popular beams and channels are included over the next four pages. While this is not a definitive list of all steel sections, it may be a convenient reference point for Engineers.

Universal Beams (UB) Section Properties



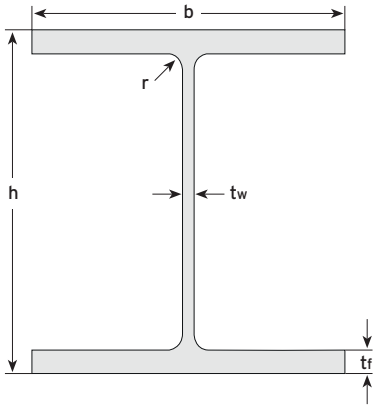
Section Designation		Mass per metre kg/m	Depth of section h mm	Width of section b mm	Thickness Web tw mm	Thickness Flange tf mm	Root Radius r mm
1016 x 305	x 584	584.0	1056.0	314.0	36.0	64.0	30.0
	x 494	494.0	1036.0	309.0	31.0	54.0	30.0
	x 438	438.0	1026.0	305.0	26.9	49.0	30.0
	x 415	415.0	1020.0	304.0	26.0	46.0	30.0
	x 393	392.7	1015.9	303.0	24.4	43.9	30.0
	x 350	350.0	1008.0	302.0	21.1	40.0	30.0
	x 314	314.3	999.9	300.0	19.1	35.9	30.0
	x 272	272.3	990.1	300.0	16.5	31.0	30.0
	x 249	248.7	980.1	300.0	16.5	26.0	30.0
	x 222	222.0	970.3	300.0	16.0	21.1	30.0
914 x 419	x 388	388.0	921.0	420.5	21.4	36.6	24.1
	x 343	343.3	911.8	418.5	19.4	32.0	24.1
914 x 305	x 576	576.0	993.0	322.0	36.1	65.0	19.0
	x 521	521.0	981.0	319.0	33.0	58.9	19.0
	x 474	474.0	971.0	316.0	30.0	54.1	19.0
	x 425	425.0	961.0	313.0	26.9	49.0	19.0
	x 381	381.0	951.0	310.0	24.4	43.9	19.0
	x 345	345.0	943.0	308.0	22.1	39.9	19.0
	x 313	313.0	932.0	309.0	21.1	34.5	19.0
	x 289	289.1	926.6	307.7	19.5	32.0	19.1
	x 271	271.0	923.0	307.0	18.4	30.0	19.0
	x 253	253.4	918.4	305.5	17.3	27.9	19.1
	x 238	238.0	915.0	305.0	16.5	25.9	19.0
	x 224	224.2	910.4	304.1	15.9	23.9	19.1
	x 201	200.9	903.0	303.3	15.1	20.2	19.1
838 x 292	x 226	226.5	850.9	293.8	16.1	26.8	17.8
	x 194	193.8	840.7	292.4	14.7	21.7	17.8
	x 176	175.9	834.9	291.7	14.0	18.8	17.8
762 x 267	x 197	196.8	769.8	268.0	15.6	25.4	16.5
	x 173	173.0	762.2	266.7	14.3	21.6	16.5
	x 147	146.9	754.0	265.2	12.8	17.5	16.5
	x 134	133.9	750.0	264.4	12.0	15.5	16.5
686 x 254	x 170	170.2	692.9	255.8	14.5	23.7	15.2
	x 152	152.4	687.5	254.5	13.2	21.0	15.2
	x 140	140.1	683.5	253.7	12.4	19.0	15.2
	x 125	125.2	677.9	253.0	11.7	16.2	15.2
610 x 305	x 238	238.1	635.8	311.4	18.4	31.4	16.5
	x 179	179.0	620.2	307.1	14.1	23.6	16.5
	x 149	149.2	612.4	304.8	11.8	19.7	16.5
610 x 229	x 140	139.9	617.2	230.2	13.1	22.1	12.7
	x 125	125.1	612.2	229.0	11.9	19.6	12.7
	x 113	113.0	607.6	228.2	11.1	17.3	12.7
	x 101	101.2	602.6	227.6	10.5	14.8	12.7
610 x 178	x 100	100.3	607.4	179.2	11.3	17.2	12.7
	x 92	92.2	603.0	178.8	10.9	15.0	12.7
	x 82	81.8	598.6	177.9	10.0	12.8	12.7
533 x 312	x 273	273.3	577.1	320.2	21.1	37.6	12.7
	x 219	218.8	560.3	317.4	18.3	29.2	12.7
	x 182	181.5	550.7	314.5	15.2	24.4	12.7
	x 151	150.6	542.5	312.0	12.7	20.3	12.7
533 x 210	x 138	138.3	549.1	213.9	14.7	23.6	12.7
	x 122	122.0	544.5	211.9	12.7	21.3	12.7
	x 109	109.0	539.5	210.8	11.6	18.8	12.7
	x 101	101.0	536.7	210.0	10.8	17.4	12.7
	x 92	92.1	533.1	209.3	10.1	15.6	12.7
	x 82	82.2	528.3	208.8	9.6	13.2	12.7
533 x 165	x 85	84.8	534.9	166.5	10.3	16.5	12.7
	x 75	74.7	529.1	165.9	9.7	13.6	12.7
	x 66	65.7	524.7	165.1	8.9	11.4	12.7
457 x 191	x 161	161.4	492.0	199.4	18.0	32.0	10.2
	x 133	133.3	480.6	196.7	15.3	26.3	10.2
	x 106	105.8	469.2	194.0	12.6	20.6	10.2
	x 98	98.3	467.2	192.8	11.4	19.6	10.2
	x 89	89.3	463.4	191.9	10.5	17.7	10.2
	x 82	82.0	460.0	191.3	9.9	16.0	10.2
	x 74	74.3	457.0	190.4	9.0	14.5	10.2
	x 67	67.1	453.4	189.9	8.5	12.7	10.2
457 x 152	x 82	82.1	465.8	155.3	10.5	18.9	10.2
	x 74	74.2	462.0	154.4	9.6	17.0	10.2
	x 67	67.2	458.0	153.8	9.0	15.0	10.2
	x 60	59.8	454.6	152.9	8.1	13.3	10.2
	x 52	52.3	449.8	152.4	7.6	10.9	10.2
406 x 178	x 85	85.3	417.2	181.9	10.9	18.2	10.2
	x 74	74.2	412.8	179.5	9.5	16.0	10.2
	x 67	67.1	409.4	178.8	8.8	14.3	10.2
	x 60	60.1	406.4	177.9	7.9	12.8	10.2
	x 54	54.1	402.6	177.7	7.7	10.9	10.2
406 x 140	x 53	53.3	406.6	143.3	7.9	12.9	10.2
	x 46	46.0	403.2	142.2	6.8	11.2	10.2
	x 39	39.0	398.0	141.8	6.4	8.6	10.2
356 x 171	x 67	67.1	363.4	173.2	9.1	15.7	10.2
	x 57	57.0	358.0	172.2	8.1	13.0	10.2
	x 51	51.0	355.0	171.5	7.4	11.5	10.2
	x 45	45.0	351.4	171.1	7.0	9.7	10.2
356 x 127	x 39	39.1	353.4	126.0	6.6	10.7	10.2
	x 33	33.1	349.0	125.4	6.0	8.5	10.2
305 x 165	x 54	54.0	310.4	166.9	7.9	13.7	8.9
	x 46	46.1	306.6	165.7	6.7	11.8	8.9
	x 40	40.3	303.4	165.0	6.0	10.2	8.9
305 x 127	x 48	48.1	311.0	125.3	9.0	14.0	8.9
	x 42	41.9	307.2	124.3	8.0	12.1	8.9
	x 37	37.0	304.4	123.4	7.1	10.7	8.9
305 x 102	x 33	32.8	312.7	102.4	6.6	10.8	7.6
	x 28	28.2	308.7	101.8	6.0	8.8	7.6
	x 25	24.8	305.1	101.6	5.8	7.0	7.6
254 x 146	x 43	43.0	259.6	147.3	7.2	12.7	7.6
	x 37	37.0	256.0	146.4	6.3	10.9	7.6
	x 31	31.1	251.4	146.1	6.0	8.6	7.6
254 x 102	x 28	28.3	260.4	102.2	6.3	10.0	7.6
	x 25	25.2	257.2	101.9	6.0	8.4	7.6
	x 22	22.0	254.0	101.6	5.7	6.8	7.6
203 x 133	x 30	30.0	206.8	133.9	6.4	9.6	7.6
	x 25	25.1	203.2	133.2	5.7	7.8	7.6
203 x 102	x 23	23.1	203.2	101.8	5.4	9.3	7.6
178 x 102	x 19	19.0	177.8	101.2	4.8	7.9	7.6
152 x 89	x 16	16.0	152.4	88.7	4.5	7.7	7.6
127 x 76	x 13	13.0	127.0	76.0	4.0	7.6	7.6

Ref: LindUKMay25

Structural Sections

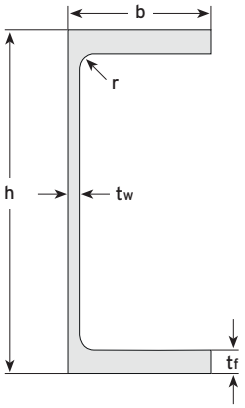
(Continued).

Universal Columns (UC) Section Properties



Section Designation		Mass per metre kg/m	Depth of section h mm	Width of section b mm	Thickness Web tw mm	Thickness Flange tf mm	Root Radius r mm
356 x 406	x 1299	1299.0	600.0	476.0	100.0	140.0	15.4
	x 1202	1202.0	580.0	471.0	95.0	130.0	15.4
	x 1086	1086.0	569.0	454.0	78.0	125.0	15.0
	x 990	990.0	550.0	448.0	71.9	115.0	15.0
	x 900	900.0	531.0	442.0	65.9	106.0	15.0
	x 818	818.0	514.0	437.0	60.5	97.0	15.0
	x 744	744.0	498.0	432.0	55.6	88.9	15.0
	x 677	677.0	483.0	428.0	51.2	81.5	15.0
	x 634	633.9	474.6	424.0	47.6	77.0	15.2
	x 592	592.0	465.0	421.0	45.0	72.3	15.0
	x 551	551.0	455.6	418.5	42.1	67.5	15.2
	x 509	509.0	446.0	416.0	39.1	62.7	15.0
	x 467	467.0	436.6	412.2	35.8	58.0	15.2
	x 393	393.0	419.0	407.0	30.6	49.2	15.2
	x 340	339.9	406.4	403.0	26.6	42.9	15.2
	x 287	287.1	393.6	399.0	22.6	36.5	15.2
	x 235	235.1	381.0	394.8	18.4	30.2	15.2
356 x 368	x 202	201.9	374.6	374.7	16.5	27.0	15.2
	x 177	177.0	368.2	372.6	14.4	23.8	15.2
	x 153	152.9	362.0	370.5	12.3	20.7	15.2
	x 129	129.0	355.6	368.6	10.4	17.5	15.2
305 x 305	x 283	282.9	365.3	322.2	26.8	44.1	15.2
	x 240	240.0	352.5	318.4	23.0	37.7	15.2
	x 198	198.1	339.9	314.5	19.1	31.4	15.2
	x 158	158.1	327.1	311.2	15.8	25.0	15.2
	x 137	136.9	320.5	309.2	13.8	21.7	15.2
	x 118	117.9	314.5	307.4	12.0	18.7	15.2
	x 97	96.9	307.9	305.3	9.9	15.4	15.2
254 x 254	x 167	167.1	289.1	265.2	19.2	31.7	12.7
	x 132	132.0	276.3	261.3	15.3	25.3	12.7
	x 107	107.1	266.7	258.8	12.8	20.5	12.7
	x 89	88.9	260.3	256.3	10.3	17.3	12.7
	x 73	73.1	254.1	254.6	8.6	14.2	12.7
203 x 203	x 127	127.5	241.4	213.9	18.1	30.1	10.2
	x 113	113.5	235.0	212.1	16.3	26.9	10.2
	x 100	99.6	228.6	210.3	14.5	23.7	10.2
	x 86	86.1	222.2	209.1	12.7	20.5	10.2
	x 71	71.0	215.8	206.4	10.0	17.3	10.2
	x 60	60.0	209.6	205.8	9.4	14.2	10.2
	x 52	52.0	206.2	204.3	7.9	12.5	10.2
	x 46	46.1	203.2	203.6	7.2	11.0	10.2
152 x 152	x 51	51.2	170.2	157.4	11.0	15.7	7.6
	x 44	44.0	166.0	155.9	9.5	13.6	7.6
	x 37	37.0	161.8	154.4	8.0	11.5	7.6
	x 30	30.0	157.6	152.9	6.5	9.4	7.6
	x 23	23.0	152.4	152.2	5.8	6.8	7.6

Parallel Flange Channels (PFC) Section Properties

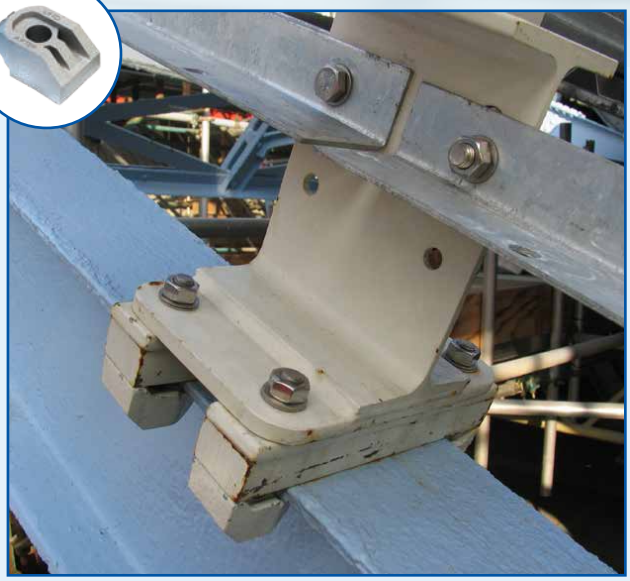


Section Designation	Mass per metre kg/m	Depth of section h mm	Width of section b mm	Thickness Web tw mm	Thickness Flange tf mm	Root Radius r mm
430 x 100 x 64	64.4	430	100	11.0	19.0	15
380 x 100 x 54	54.0	380	100	9.5	17.5	15
300 x 100 x 46	45.5	300	100	9.0	16.5	15
300 x 90 x 41	41.4	300	90	9.0	15.5	12
260 x 90 x 35	34.8	260	90	8.0	14.0	12
260 x 75 x 28	27.6	260	75	7.0	12.0	12
230 x 90 x 32	32.2	230	90	7.5	14.0	12
230 x 75 x 26	25.7	230	75	6.5	12.5	12
200 x 90 x 30	29.7	200	90	7.0	14.0	12
200 x 75 x 23	23.4	200	75	6.0	12.5	12
180 x 90 x 26	26.1	180	90	6.5	12.5	12
180 x 75 x 20	20.3	180	75	6.0	10.5	12
150 x 90 x 24	23.9	150	90	6.5	12.0	12
150 x 75 x 18	17.9	150	75	5.5	10.0	12
125 x 65 x 15	14.8	125	65	5.5	9.5	12
100 x 50 x 10	10.2	100	50	5.0	8.5	9

Proven connection solutions

Lindapter products are used in multiple industries around the world in an extensive range of applications. The case studies below highlight the wide use of Lindapter fixings. To view more project examples, please visit the website www.Lindapter.com

St Pancras Station, London, UK



Product: **Type AF**
Application: **Connecting the steel framework of a new roof to the station's existing structure.**

The Type AF allowed a new steel framed roof to be secured to the existing structure of the Grade I listed shed designed by William Henry Barlow at St Pancras Station.

The product accommodated variations in height due to sagging in some areas of the original riveted beam structure, ensuring a secure load at varying angles.

Lindapter's high slip resistance clamp assembly avoided drilling or welding, thereby removing the risk of damaging the historic Victorian arches and the protective coatings.

See page 17 for Type AF.

Ref: LindUKMay25

Solar Car Charging Stations, Germany

Product: **Type HB Countersunk**
Application: **Connecting the Structural Hollow Section (SHS) solar roof frame together onsite.**

EnBW Energie plans to build 2500 charging stations across Germany by 2025. They are designed with a solar roof frame manufactured from SHS.

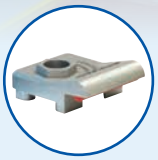
Countersunk Head Hollo-Bolts were specified in critical locations of the roof to provide a simple and durable solution for connecting the SHS together onsite, whilst a Sheraplex coating provided a high level of corrosion protection.

Once onsite each length of SHS was assembled by inserting the Hollo-Bolts into predrilled holes and tightening them with a wrench to the recommended tightening torque. Solar panels were connected to the framework and then the whole roof hoisted into position on steel support columns.

See pages 43 - 53 for Hollo-Bolt.

Hitachi Ashford Depot, UK

Product: **Type HD**
Application: **Securing low speed rails to way beams in a train maintenance depot.**



Lindapter's M20 Type HD rail clips were used to connect low speed lines at Hitachi's Ashford Train Maintenance Centre.

The product allowed contractors to safely secure FB rails along lengths of UKC way beam, in turn supported by reinforced concrete plinths. These low speed rails were installed in pairs down the entire length of the new depot building to give access for maintenance and repair work on the trains.

Type HD facilitated the precise rail alignment by allowing a high degree of lateral adjustability.

See pages 36 - 37 for Type HD.

Proven connection solutions

Lindapter products are used in multiple industries around the world in an extensive range of applications. The case studies below highlight the wide use of Lindapter fixings. To view more project examples, please visit the website www.Lindapter.com

Whitemoor Power Station, UK

Product: **Type A & Type AF**
Application: **Securing the steel framework to support heavy duty pipes.**

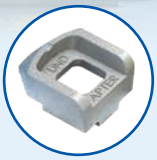
The power plant engineers needed a safe, secure method of connecting steel sections together to create pipe support structures that would carry heavy duty pipelines around the plant.

Lindapter design several simple but effective connections using a variety of Lindapter Girder Clamps, each clamp optimised to suit the required application. Type AF high slip resistance girder clamps in a four-bolt connection were specified for both tensile and frictional connections of the heavy duty pipes to the support structures. Type A girder clamps were used for tensile connections of smaller, lighter duty pipes.

See page 12 for Type A & page 17 for Type AF.

Ref: LindUKMay25

Tower Bridge, London, UK



Product: **Type A**
Application: **Attach the supporting steel frame of the new glass walkway to the original steel lattice.**

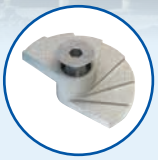
The new viewing platform spans 42m on the upper level of the bridge over the River Thames and features a glass floor to reveal the bridge deck and water below.

The floor consists of six 80mm thick glass panels, each weighing 530kg and supported by a 1000kg carbon steel framework.

Lindapter's simple connection solution allowed the frame to be safely secured to the original steel lattice structure without on-site drilling or welding, ensuring that there was no damage to the bridge. The contractors completed the renovation inside six weeks without closing the site.

See page 12 for Type A.

Arnside Viaduct, UK



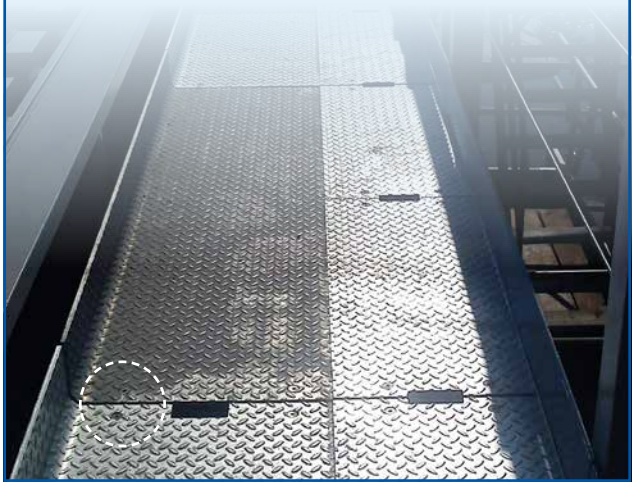
Product: **Type FF - FloorFast™**
Application: **Securing maintenance walkway alongside the replacement viaduct deck.**

An upgrade of the 150 year old viaduct required the replacement of the entire deck.

Chequer plate flooring was quickly secured to supporting box girder sections along the entire length of the new deck using 8,000 of Lindapter's easy to install FloorFast fixings.

FloorFast allows installation to be easily carried out from above, without the need for drilling, welding or scaffolding. This meant the flooring could be fitted on the viaduct as the deck units were removed, helping the major renovation to be completed on schedule.

See page 57 for Type FF - FloorFast™.



Proven connection solutions

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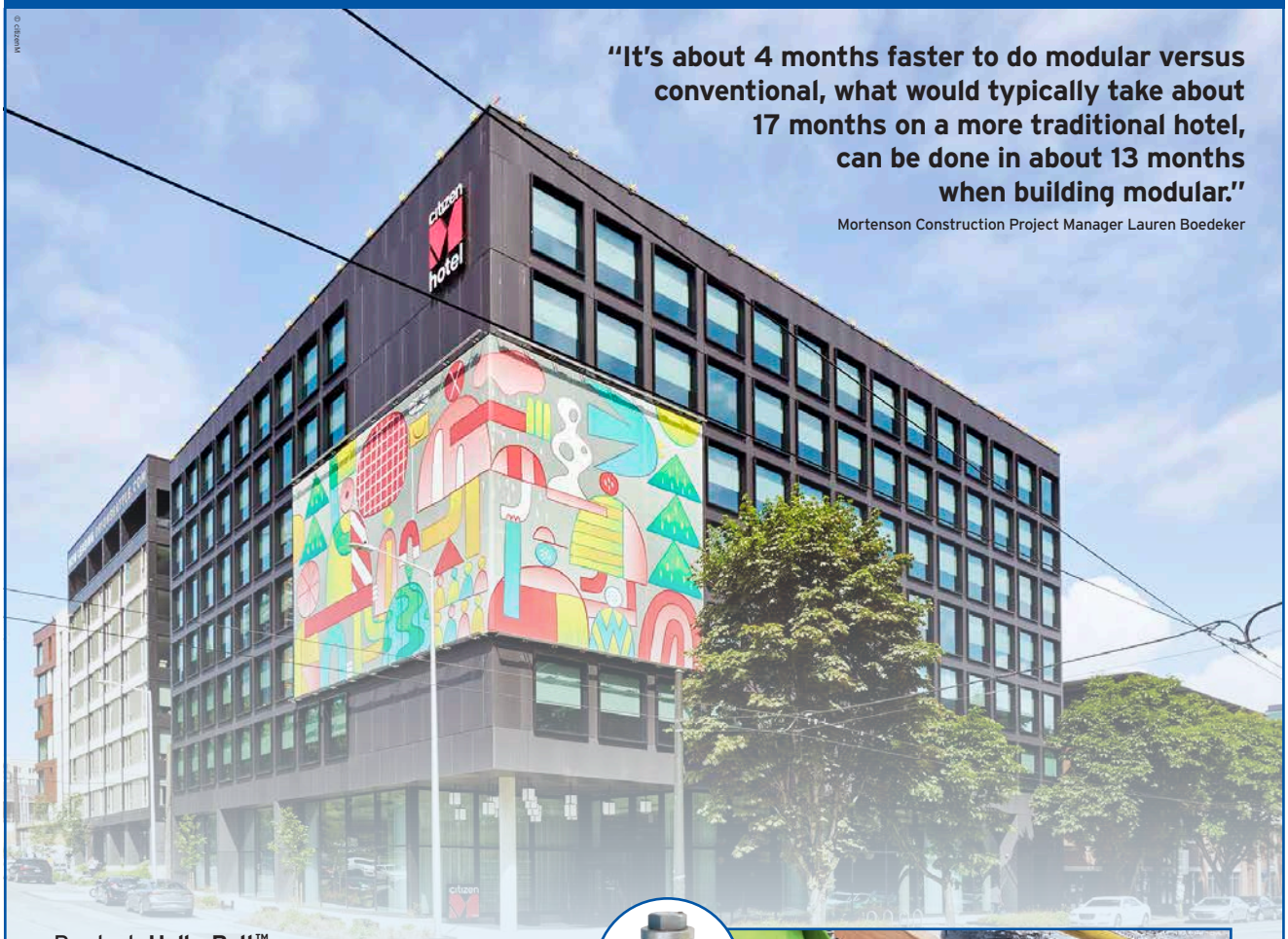
citizenM Hotel Seattle, USA



"It's about 4 months faster to do modular versus conventional, what would typically take about 17 months on a more traditional hotel, can be done in about 13 months when building modular."

Mortenson Construction Project Manager Lauren Boedeker

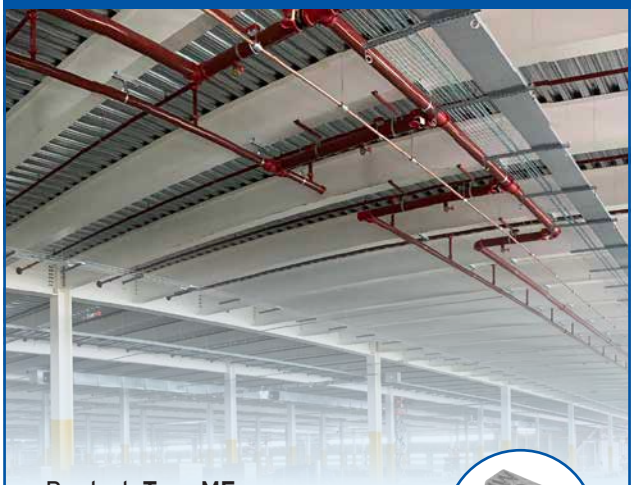
Product: **Hollo-Bolt™**
Application: **Connecting modular units during the construction of this hotel in Seattle.**

Polcom was appointed to build 228 modular units for this hotel in Seattle. The traditional method of connecting the units together by drilling and bolting was not appropriate and hot welding risked damaging the waterproof membrane.

Special steel structural shear plates were designed and added to the modules. Hollo-Bolts were then used to connect through the shear plates to the Structural Hollow Sections (SHS) of each module. High strength capacity Hollo-Bolts provided a drilling and weld free connection that was quick and easy to install without damaging the waterproof membranes.

See pages 43 - 53 for Hollo-Bolt.

Amazon Distribution Warehouse, UK



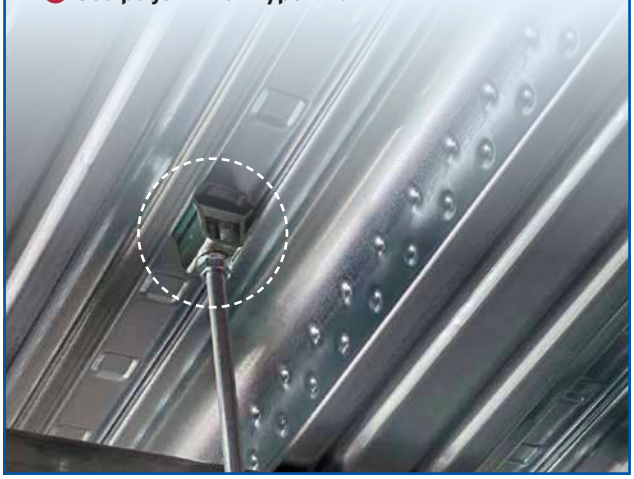
Product: **Type MF**
Application: **Securing building services to the roof decking profile.**

This £400m distribution centre in South West England gives the world's largest online retailer over two million square feet of warehouse space.

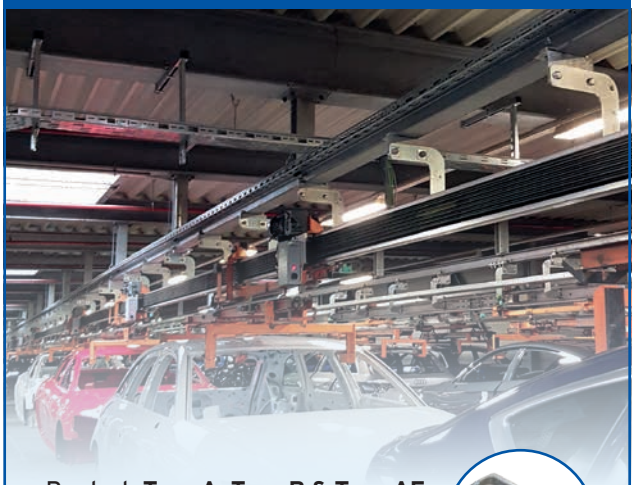
The design engineers specified a composite slab with a MetFloor decking profile manufactured by Construction Metal Forming (CMF) to carry all the necessary building services, including pipes and electrical cables, around this vast storage area.

The dovetail re-entrant profile of the profile along with Lindapter's Type MF decking fixing provided a zero-impact method of connection that avoided delamination and damage to the concrete deck, resulting in an easy installation.

See page 72 for Type MF.



Audi Factory Upgrade, Germany

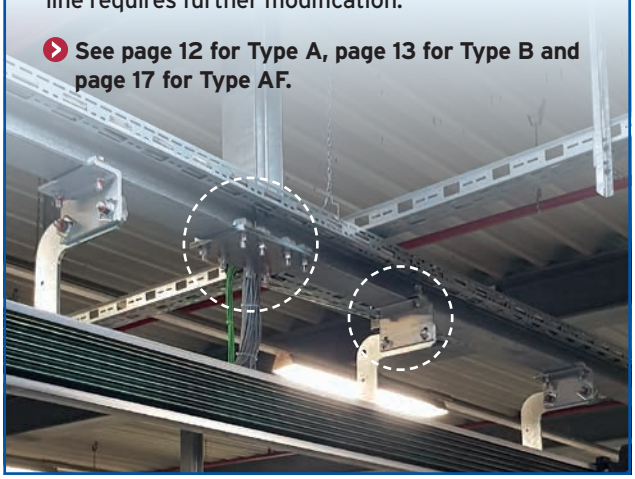


Product: **Type A, Type B & Type AF**
Application: **Securing overhead conveyor systems and additional steelwork during upgrade of the car production line.**

Engineers at Audi required a solution for connecting overhead conveyors and additional steelwork to the ceiling. The solution needed to be future proof meaning it had to be easy to adjust and move whilst also being approved for dynamic loads.

Solutions incorporating Lindapter Type A, Type B and Type AF Girder Clamps that have independent ETA / CE mark approval for use in dynamic loading applications were proposed and accepted. The fully adjustable clamps gave the engineers the ability to manoeuvre them into their final positions before fully tightening the bolts. Installation was quick, minimising downtime, and the connections can be easily disassembled in the future if the production line requires further modification.

See page 12 for Type A, page 13 for Type B and page 17 for Type AF.



Proven connection solutions

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Blue Oval City, USA

Product: **Type AAF**
Application: **Securing seismic bracing cables to the primary steel of the battery manufacturing facility.**

As located in Seismic Design Category D, the engineer required a method to restrain pipe racks and suspended ceiling, however, Ford stipulated no permanent connections to future-proof manufacturing reconfiguration. Lindapter proposed to attach the 12mm diameter 6x19 steel wire bracing system to the primary steel using high strength and adjustable Type AAF clamps. This enabled a fast installation and overcame the additional challenge of connecting beams varying from W14x90 to W14x283.

Lindapter's solution met the client's key requirement of a code-compliant, seismic resistant connection that can be removed for future reconfiguration.

See page 12 for Type AAF.

Ref: LindUKMay25

Lío London Refurbishment, UK

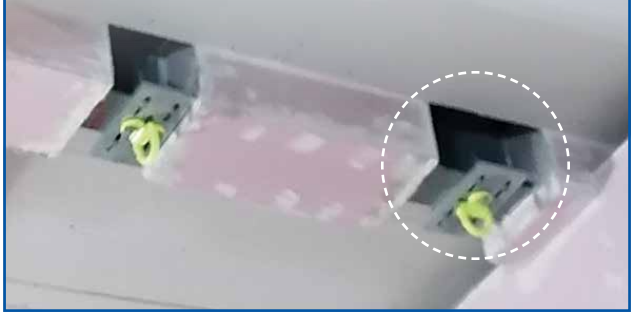
Product: **Type ALP Lifting Point**
Application: **Securing lighting supports to the entertainment venue ceiling.**

Once known as the legendary Café de Paris, this lavish event space was undergoing major refurbishment. The contractor needed a solution for securing lighting supports to the existing steel beams of the ceiling.

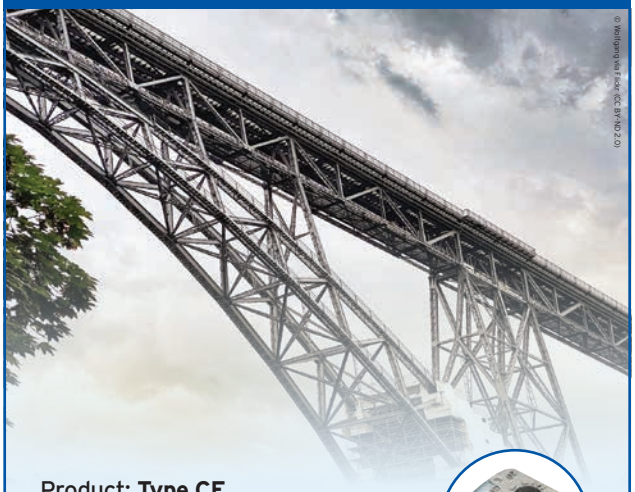
Lindapter's Adjustable Lifting Points (ALP3T-1 and ALP3T-2) were chosen for their high load capacity and adjustability that allowed precise alignment of the lighting supports. Additionally, as an off-the-shelf solution, the Type ALPs were readily available, helping to keep the project on time allowing the venue to reopen as scheduled.

The non-intrusive installation also preserved the building's architectural integrity by avoiding permanent alterations such as drilling or welding.

See pages 38-41 for Lifting Points.



Müngstener Bridge, Germany



Product: **Type CF**
Application: **Securing safety rope brackets on Germany's highest railway bridge.**

Constructed in 1897 this arched, riveted steel bridge is a national monument and tourist destination. A new tourist skywalk was being added which required a solution to securely attach safety rope brackets without damaging the original steelwork.

Lindapter's Type CF Girder Clamps were ideal due to their ability to secure connections without causing damage to the existing steel structure. Designed to accommodate the overlapping sheets of steel on the riveted beams, the CF clamps provided a reliable and adjustable attachment point for the safety rope brackets. This non-intrusive solution eliminated the need for drilling or welding, preserving the integrity of the historical monument while ensuring compliance with modern safety standards.

See page 12 for Type CF.

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Passionate about safety

For over 90 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.

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.

bsi ISO 9001 Quality Management Systems CERTIFIED
Q 05143

bsi ISO 14001 Environmental Management CERTIFIED
EMS 546660

Independent Product Approvals and Associations

These approvals reinforce Lindapter's extensive in-house testing procedures. Products are tested so that Engineers and Contractors can be confident Lindapter products will perform as detailed in this catalogue. For more information please visit www.Lindapter.com

UKCA
The UKCA Mark demonstrates compliance with the Construction Products Regulation in Great Britain. Independently verified product specification data, including Characteristic Resistances for designing connections to Eurocode 3 are published in Declaration of Conformity (DoC) documents.

CE
CE Marking provides additional assurance that a product complies with the EU 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.

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

Fire Ratings
As part of our continued commitment and investment in product development, many Lindapter products are independently fire tested in accordance with BS EN 1991-1-2.

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.

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.

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

Associations
Lindapter is a member of the **British Constructional Steelwork Association (BCSA)**, **The Steel Construction Institute (SCI)**, **American Institute of Steel Construction (AISC)**, **Australian Steel Institute (ASI)** and more. See the full list at www.Lindapter.com

Ref: LindUKMay25

Live Webinars

We are pleased to offer live webinars **free of charge** to Structural Engineers, Consulting Engineers, Graduate Engineers and Specifiers. More information is below, to view our webinar schedule and to register visit www.Lindapter.com

Designing with Innovative Steelwork Connections

Gain an update on the latest CE marked steelwork connections and an insight to the technical and practical advantages of specifying innovative clamping systems. Our experienced presenter will introduce a range of faster, cost-effective alternatives to conventional bolted and welded connections to solve your steel connection problems.

Duration: 50 mins + Q&A

Introduction to Lindapter

- Our history which began in 1934.
- Market sectors and industries we supply.
- Global brands we have worked with.

Conventional Connection Methods vs Lindapter Method

Overview of welding and drilling and bolting versus Lindapter clamping systems

Innovative Solutions

- Girder Clamps for connecting steel sections.
- Floor fixings for steel plate and open bar grating.
- Hollo-Bolt expansion bolts for connecting to SHS.

Typical Applications, Installation and Case Studies

See a wide selection of typical assemblies that are possible with Lindapter products and find out how other customers have used them to solve problems in real case study examples. Video animations are also used to demonstrate the simplicity of installation.

Technical Support (Free Connection Detailing)

Learn about our industry leading Technical Support services, including FREE connection detailing, site visits and contractor product installation training.

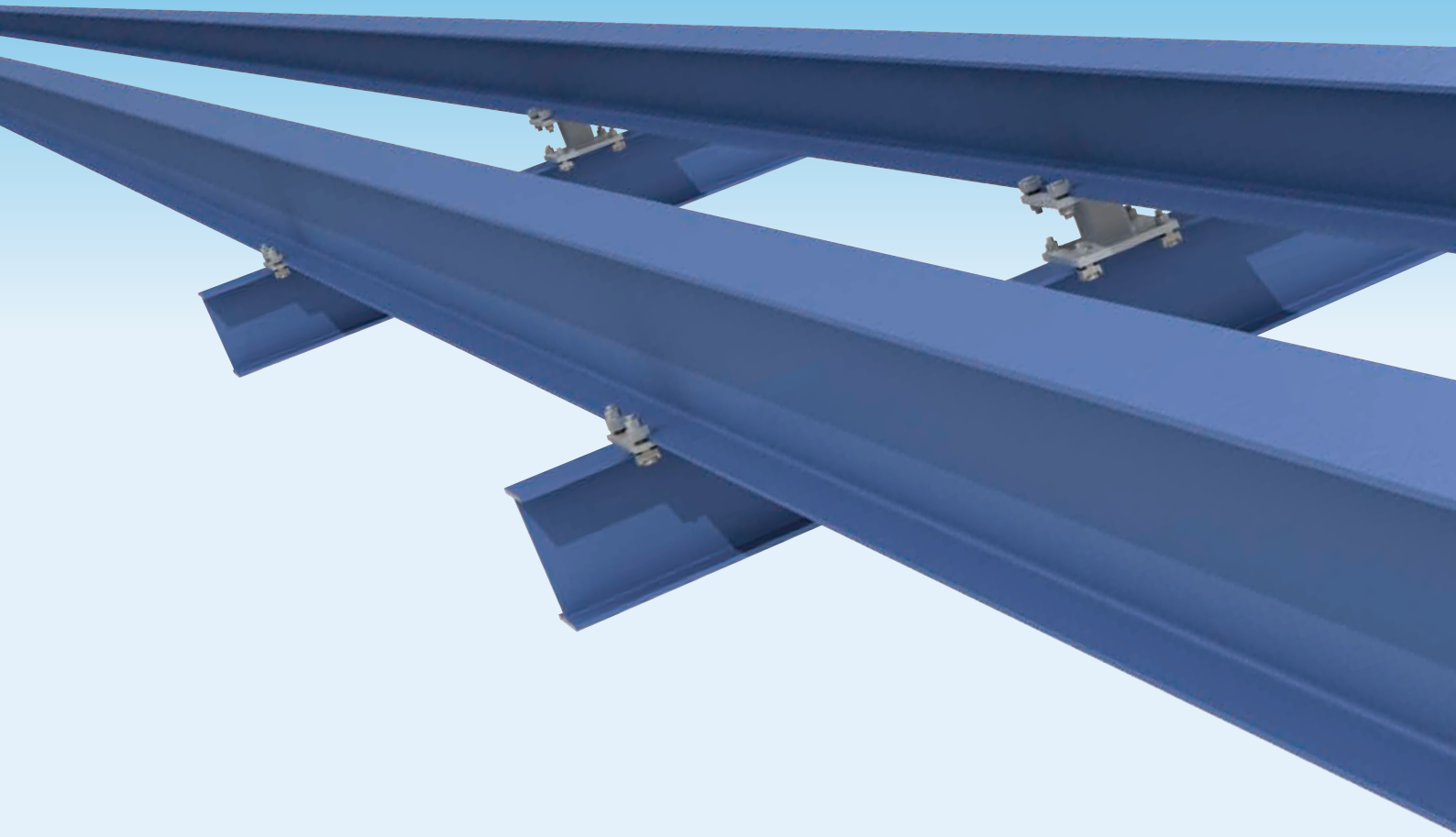
Research & Development (Engineered Solutions)

Do you have a unique connection problem? Our R&D facility can work with you to develop bespoke products and solutions.

Q&A Session

Submit your questions during the webinar and our experienced presenter will answer as many as possible at the end during a live 10 minutes Q&A session.

To view our webinar schedule and to register free of charge visit **www.Lindapter.com**



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