

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.



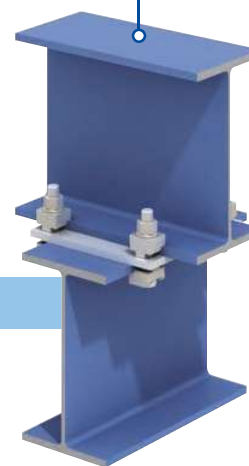
Step 2

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.



High strength

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



Adjustable

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



Safer connections

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



Industry leading approvals

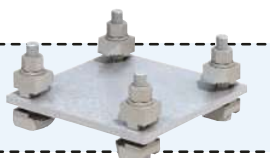
Lindapter has earned a reputation synonymous with safety and reliability, gaining multiple independent approvals. Further details can be found on **page 82**.



Free connection design

Lindapter's experienced Engineers can design a bespoke connection based on your specific requirements free of charge. See **page 83** for more details.

Turn to **page 6** 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



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:

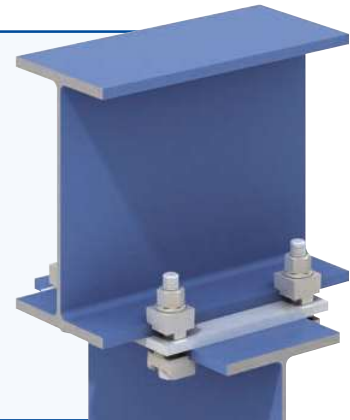
STANDARD

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 6](#).



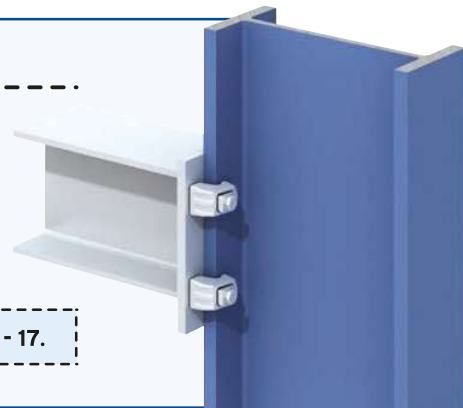
HIGH SLIP RESISTANCE

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 12 - 17](#).



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 design service on [page 83](#).



More examples of typical Lindapter configurations can be found on [pages 26 - 29](#). Alternatively, visit the website.

GIRDER CLAMPS

RAIL FIXINGS

LIFTING POINTS

HOLLOW-BOLT

FLOOR FIXINGS

SUPPORT FIXINGS

DECKING FIXINGS

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.

Standard Lindapter Girder Clamp components

The standard configuration consists of Type A and Type B clamps. See pages 26 - 29 for more examples.

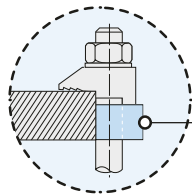
Standard Hardened Washer (200 Hv).

Lindapter Clamps
Dependent on the application, different clamps can be used (See page 7).

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.

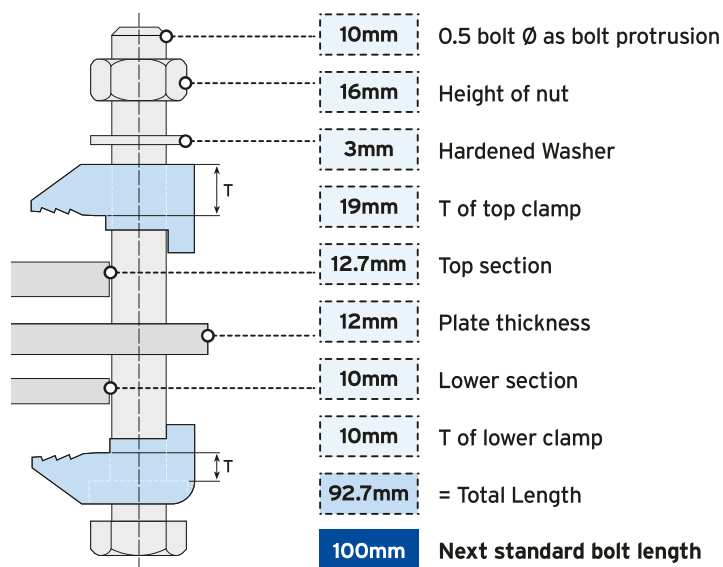


Packings (if required)
Increase the clamping range to suit thick beams.

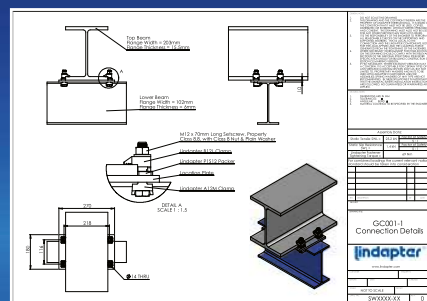
➔ **Safe working load up to 78.8kN tensile or 9kN slip resistance (size M24 Type A/B clamps). For higher loads up to 250kN tensile or 70kN slip resistance, see Type AF on page 14.**

Bolt Length Calculator

To calculate bolt length, simply add up all parts the bolt will go through. The next standard bolt length should be used. 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.).



Can we help? Try Lindapter's free connection design










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. Turn to page 83 for more information.

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
Type A page 8 	✓	-	✓	-	-	-	-	-
Type B page 9 	✓	-	✓	-	-	-	-	-
Type AAF page 12 	✓	✓	✓	✓	✓	✓	✓	-
Type AF page 14 	✓	✓	✓	✓	-	✓	-	-
Type CF page 15 	✓	✓	✓	✓	-	-	✓	-
Type LR page 18 	✓	✓	✓	-	-	✓	✓	-
Type D2 page 19 	✓	-	✓	-	-	-	✓	-
Type LS page 22 	✓	✓	✓	-	-	✓	✓	✓
Type RC page 24 	✓	-	✓	-	-	✓	-	-

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 24 	✓	-	✓	-	-	-	✓	-
Type FC page 25 	✓	✓	✓	-	-	-	✓	-

Also available

Lindapter Rail Fixings

See pages 30 - 33 for more information



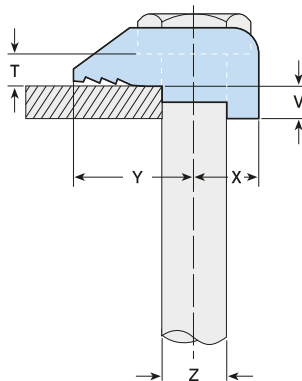
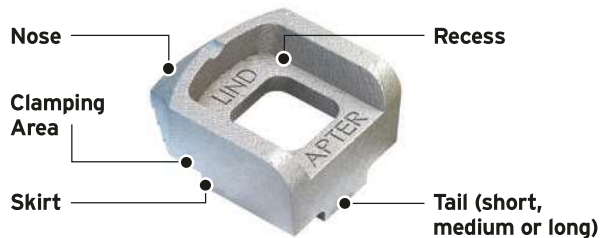
Lindapter Lifting Points

See pages 34 - 37 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.



- CE Mark, Lloyd's Register and TÜV approved.
- 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.
- For higher loads the Type AF should be used, see [page 14](#).

- Packings are available to increase the clamping range, see [page 10](#).
- Location plate / end plate details can be found on [page 11](#).

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



Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1)			Dimensions						
		Tensile / 1 Bolt kN	Slip / 2 Bolts kN	Tightening Torque* Nm	Y mm	X mm	Tail Length V			T mm	Width mm
							short mm	medium mm	long 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	0.7	69	26	13	4.5	6	9.5	6	29
A16	M16	7.3	1.5	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	25	9	12	16	13	55

* Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see [page 70](#).

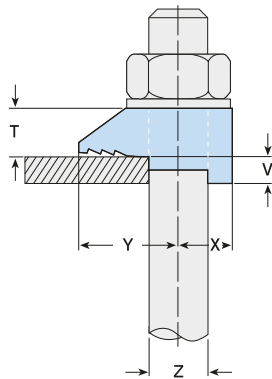
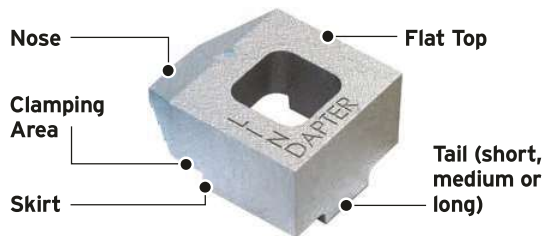


For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.003 on the website www.Lindapter.com/About/CE



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.



- CE Mark, Lloyd's Register and TÜV 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.
- For higher loads the Type AF should be used, see [page 14](#).

- Packings are available to increase the clamping range, see [page 10](#).
- Location plate / end plate details can be found on [page 11](#).

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



Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1)		Tightening Torque*	Dimensions						
		Tensile / 1 Bolt	Slip / 2 Bolts		Y	X	Tail Length V			T	Width
							short	medium	long		
		kN	kN	Nm	mm	mm	mm	mm	mm	mm	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	0.7	69	26	13	4.5	6	9.5	12	29
B16	M16	7.3	1.5	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 70](#).

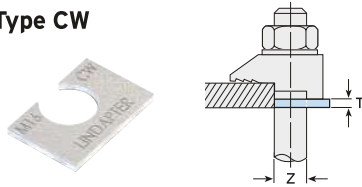
CE For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.003 on the website www.Lindapter.com/About/CE

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

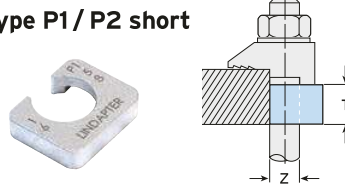


Mild steel, zinc plated or hot dip galvanised.

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

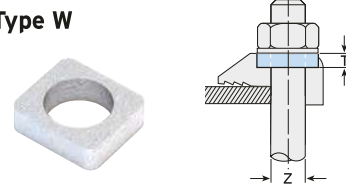


Mild steel, malleable iron, zinc plated or hot dip galv.

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	25

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

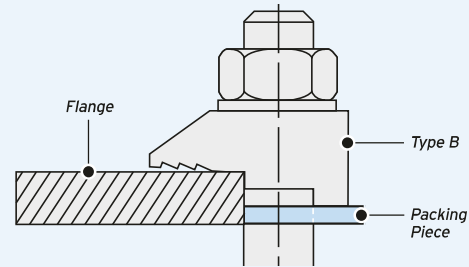
Note: The Type W is used to fill the recess in the Type A to convert it into a flat top clamp to enable the bolt head or nut to be rotated on a hardened washer.

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.



Flange Thickness mm	M12				M16				M20				M24			
	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 mm	M12				M16				M20				M24			
	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	-	L	-	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

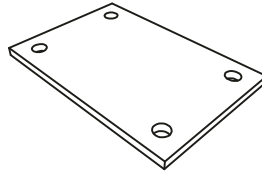
Location and End Plates for Types A and B

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

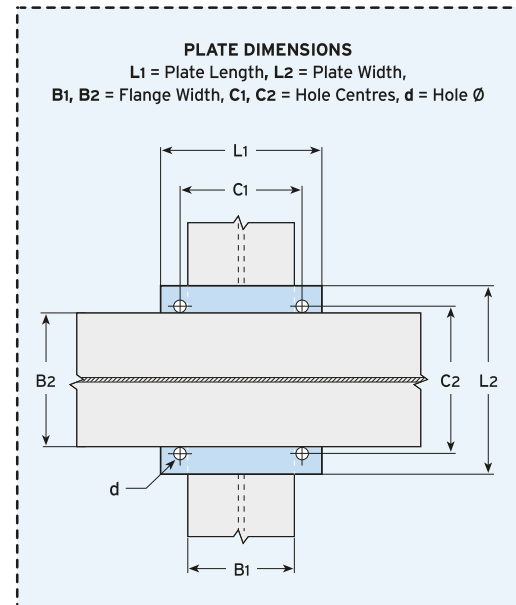
What is it?

Location plates are simple fabricated items designed to sit between the two sections to be clamped together to ensure the bolts are fixed at the correct centres.



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

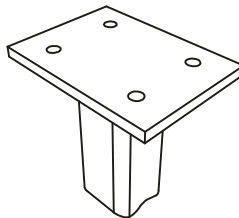
Bolt Size	Hole Ø d mm	Plate Thick. mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M8	9	6	B1 + 9	B1 + 36	B2 + 9	B2 + 36
M10	11	8	B1 + 11	B1 + 44	B2 + 11	B2 + 44
M12	14	8	B1 + 14	B1 + 54	B2 + 14	B2 + 54
M16	18	10	B1 + 18	B1 + 70	B2 + 18	B2 + 70
M20	22	12	B1 + 22	B1 + 88	B2 + 22	B2 + 88
M24	26	15	B1 + 26	B1 + 104	B2 + 26	B2 + 104



End Plate

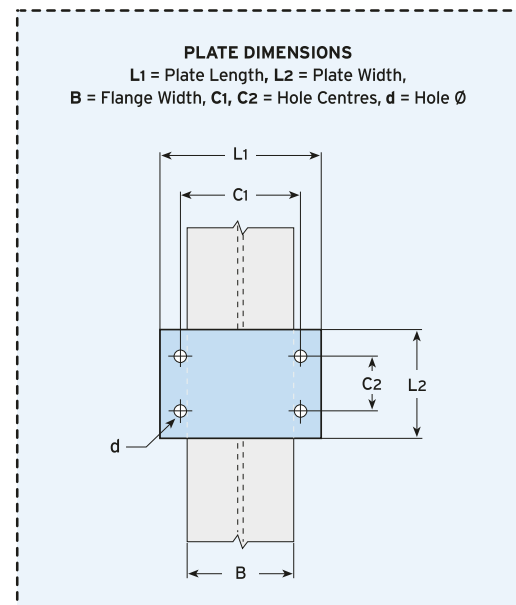
What is it?

End plates are simple fabricated items that are pre-welded to support frames, bracket or sections, allowing connection to the supporting structure with standard Lindapter clamps.



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

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

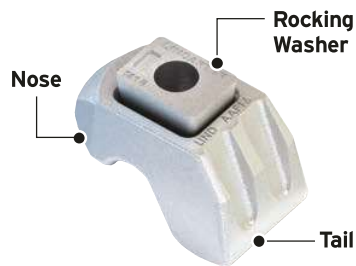


¹⁾ Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

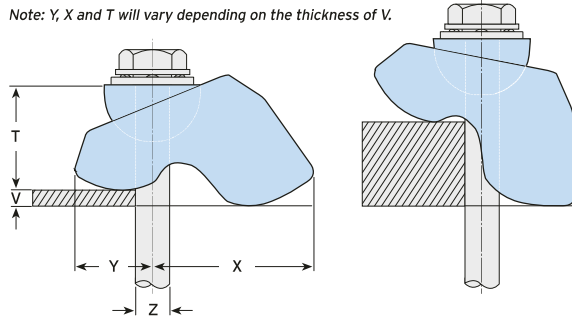
- To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 6.

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.



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



**HIGH SLIP
RESISTANCE**

- High slip resistance for tensile, frictional and combined load applications.
- Self-adjusts to suit flange thicknesses 6mm to 40mm (size M20).
- Safe working loads apply in temperatures as low as -60°C.
- Suitable for parallel and tapered flanges up to 10°.
- The tail spans slotted clearance holes.

➤ Packings are available to increase the clamping range, see page 16. Location plate / end plate details can be found on page 17.

➤ Lindapter recommends the use of DTI Washers conforming to EN14399-9 with the Type AAF. For further information please refer to page 70.

Material: Low temperature SG iron, hot dip galvanised.



USA Seismic Approval
See ESR-3976

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	48 - 78	49 - 64	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	48 - 78	49 - 64	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 AAP3 (for AAF20 only). See page 16.

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 70.

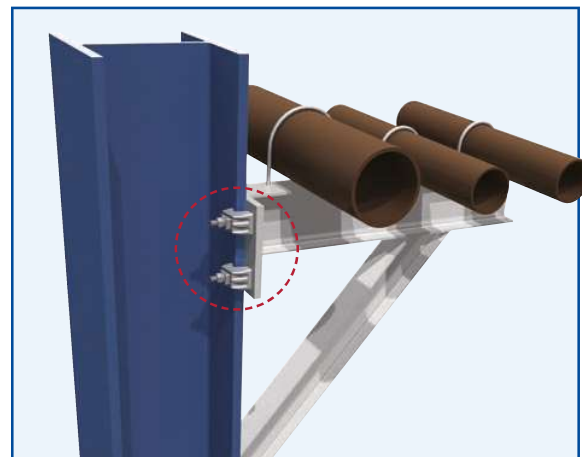
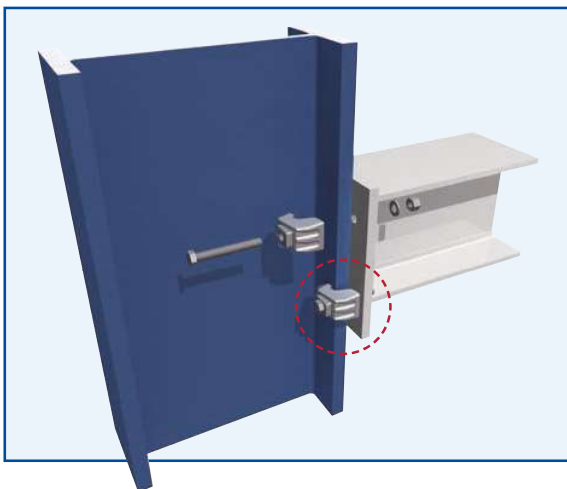
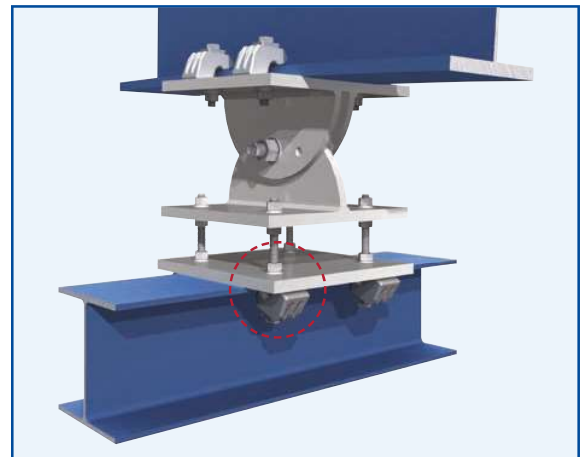
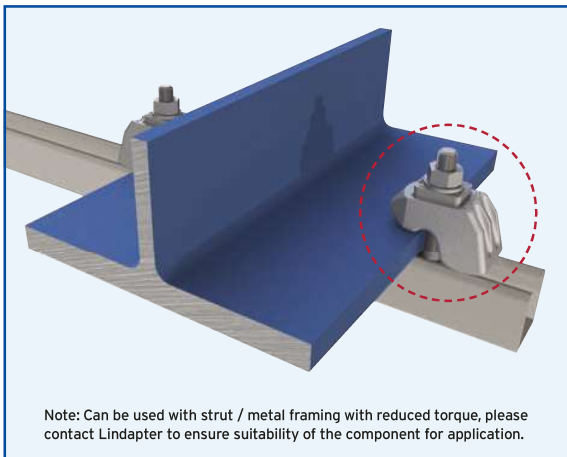
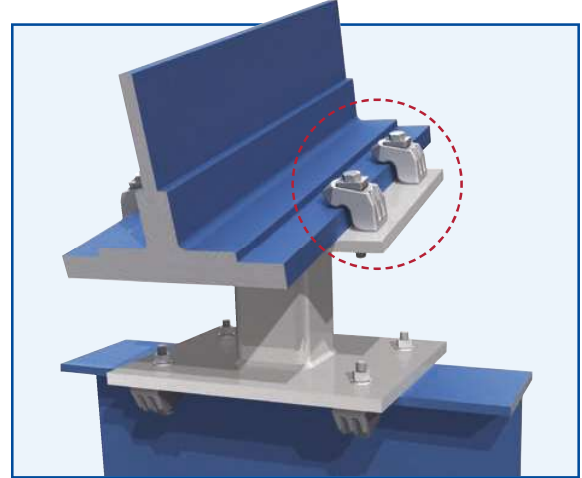
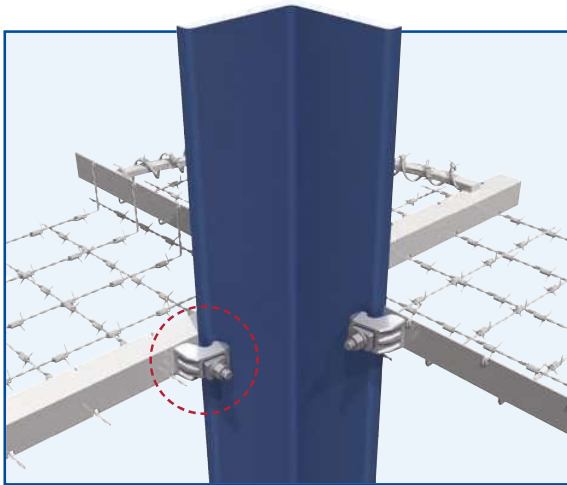


For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.005 on the website www.Lindapter.com/About/CE



Typical Applications for the Type AAF

The Type AAF is one of three products in Lindapter's range of High Slip Resistance (HSR) clamps, designed specifically for frictional applications and high tensile loading. This heavy duty clamp is used in many diverse industries and situations, here are some application examples:



GIRDER CLAMPS

RAIL FIXINGS

LIFTING POINTS

HOLLO-BOLT

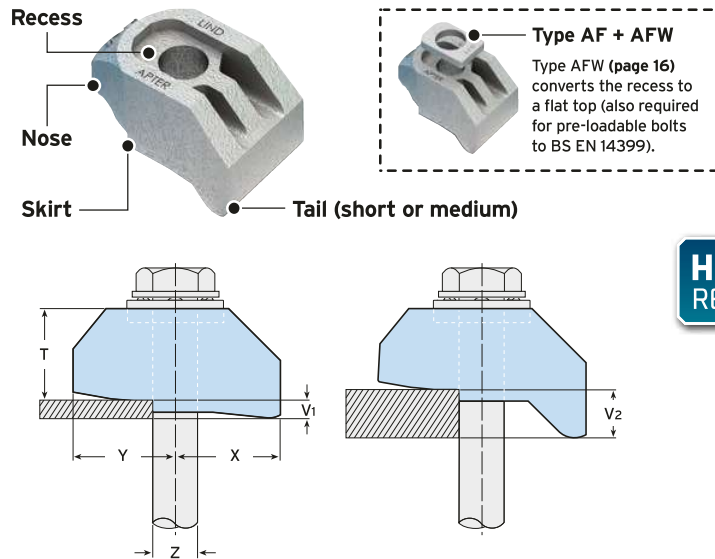
FLOOR FIXINGS

SUPPORT FIXINGS

DECKING FIXINGS

Type AF

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



**HIGH SLIP
RESISTANCE**

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

➤ Packings are available to increase the clamping range, see page 16. Location plate / end plate details can be found on page 17.

➤ Lindapter recommends the use of DTI Washers conforming to EN14399-9 with the Type AF.
For further information please refer to page 70.

Material: SG iron, hot dip galvanised.



USA Seismic Approval
See ESR-3976

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 V1	medium V2					
			kN						kN	kN	Nm	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 70.

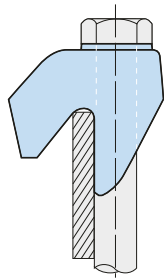
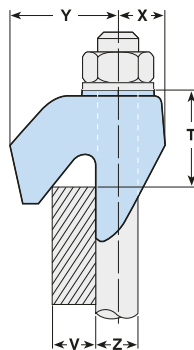
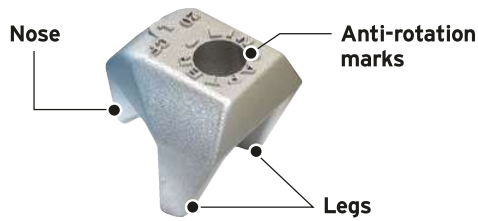


For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.004 on the website www.Lindapter.com/About/CE



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.



- New options available to suit larger steel sections with thicker flanges.
- Suitable for parallel and tapered flanges up to 8°.
- 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 17.

➤ Lindapter recommends the use of DTI Washers conforming to EN14399-9 with the Type CF. For further information please refer to page 70.

Material: SG iron, hot dip galvanised.



	Product Code	Bolt 8.8 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
				Painted Steelwork ²⁾	Galvanised Steelwork						
			kN	kN	kN	Nm	mm	mm	mm	mm	mm
NEW	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
NEW	CF216	M16	16	8	10	240	15 - 25	50	21	35 - 47	62
NEW	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	0.7	0.7	69	¹⁾ Slip resistant values calculated against movement exceeding 0.1mm. ²⁾ Shot blast and painted steelwork. ³⁾ Also applies to Type B (page 9), Type LR (page 18), Type D2 (page 19) and Type BR (page 31). * Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 70.				
	CF + A ³⁾	M16	7.3	1.5	1.5	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					



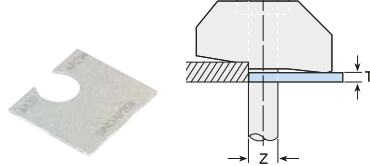
For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.011 on the website www.Lindapter.com/About/CE

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



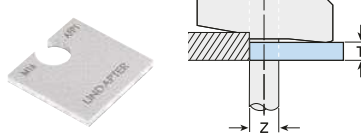
Mild steel, hot dip galvanised.

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

* Also 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

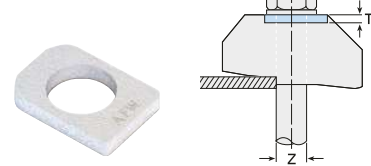
AF12P2*	M12	10
AF16P2*	M16	10
AF20P2	M20	10
AF24P2	M24	10

AAFP20P3*	M20	20
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* Also compatible with Type AAF clamp.

Also Available

Type AFW



SG iron, mild steel, hot dip galvanised.

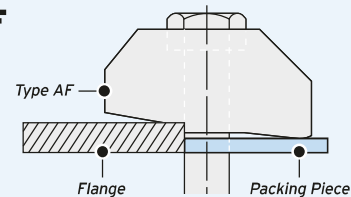
Product Code	Bolt Size Z	Dimension T (mm)
AFW12	M12	5
AFW16	M16	5
AFW20	M20	6
AFW24	M24	10

Note: The Type AFW is used to fill the recess in the Type AF to convert it into a flat top clamp to enable the bolt head or nut to be rotated on a hardened washer. The Type AFW is also required when using pre-loadable bolts to BS EN 14399 due to their larger hexagon heads.

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.



Flange Thickness mm	M12				M16				M20				M24			Flange Thickness mm	M12				M16				M20				M24		
	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFP1	AFP2		AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFP1	AFP2				
5	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	M	-	1	1	S	-	-	2	M	-	-	1	M	-	-
6	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	M	1	1	1	M	-	1	1	M	-	-	1	M	-	-
7	S	1	-	-	-	S	-	-	-	-	-	-	-	-	-	30	S	-	1	2	M	-	1	1	M	1	-	1	M	-	-
8	S	1	-	-	-	S	-	-	-	-	-	-	-	-	-	31	S	-	1	2	M	-	1	1	M	1	-	1	M	-	-
9	S	2	-	-	-	S	-	-	-	S	-	-	-	-	-	32	M	-	-	2	M	1	1	1	M	-	1	1	M	1	-
10	S	-	1	-	-	S	1	-	-	S	-	-	-	-	-	33	M	-	-	2	M	1	1	1	M	-	1	1	M	1	-
11	S	3	-	-	-	S	1	-	-	S	-	-	-	-	-	34	M	1	-	2	M	-	-	2	M	-	1	1	M	1	-
12	S	1	1	-	-	S	2	-	-	S	1	-	-	S	-	35	S	-	-	3	M	-	-	2	S	-	1	2	M	1	-
13	M	-	-	-	-	S	-	1	-	S	1	-	-	S	-	36	S	-	-	3	M	-	-	2	M	1	1	1	M	1	-
14	M	1	-	-	-	S	3	-	-	S	2	-	-	S	-	37	M	-	1	2	M	1	-	2	M	-	-	2	M	1	-
15	S	-	-	1	-	M	-	-	-	S	-	1	-	S	-	38	M	-	1	2	S	-	-	3	M	-	-	2	M	-	1
16	M	2	-	-	-	M	-	-	-	S	3	-	-	S	-	39	M	1	1	2	M	-	1	2	M	-	-	2	M	-	1
17	M	-	1	-	-	M	1	-	-	M	-	-	-	S	-	40	S	-	1	3	M	-	1	2	M	1	-	2	M	-	1
18	M	-	1	-	-	S	-	-	1	M	-	-	-	S	1	41	S	-	1	3	M	-	1	2	M	1	-	2	M	-	1
19	M	1	1	-	-	M	-	1	-	M	-	-	-	S	1	42	M	-	-	3	M	1	1	2	M	-	1	2	M	-	1
20	S	-	1	1	M	M	-	1	M	M	1	-	-	S	1	43	M	-	-	3	S	-	1	3	M	-	1	2	M	1	1
21	M	2	1	-	-	M	-	1	-	M	1	-	-	S	1	44	M	1	-	3	M	-	-	3	M	-	1	2	M	1	1
22	M	2	1	-	-	M	1	1	-	M	2	-	-	S	1	45	S	-	-	4	M	-	-	3	M	1	1	2	M	1	1
23	M	-	-	1	M	M	1	1	-	M	-	1	-	S	-	46	S	-	-	4	M	-	-	3	M	1	1	2	M	1	1
24	M	1	-	1	M	M	-	-	1	M	1	1	-	S	-	47	M	-	1	3	M	1	-	3	M	-	-	3	M	1	1
25	S	-	-	2	M	M	-	-	1	M	1	1	-	S	-	48	M	-	1	3	S	-	-	4	M	-	-	3	M	-	2
26	M	2	-	1	M	M	-	-	1	S	1	1	1	S	-	49	S	-	1	4	M	-	1	3	M	-	-	3	M	-	2
27	M	2	-	1	M	M	1	-	1	S	1	1	1	M	-	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

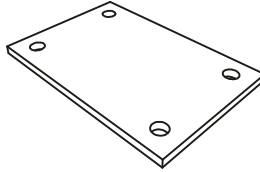
Location and End Plates for Types AF, AAF and CF

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

What is it?

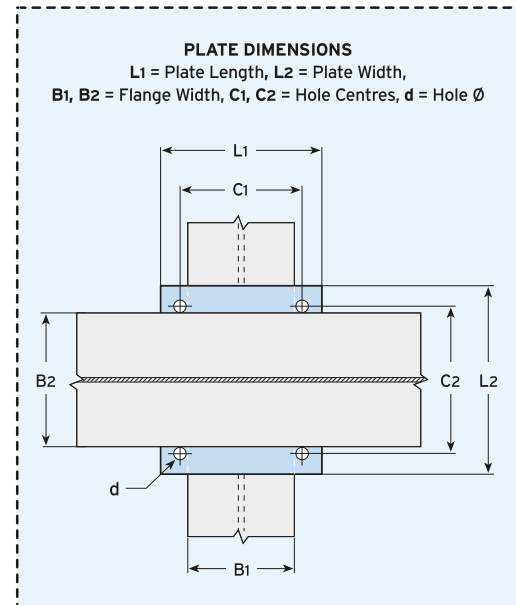
Location plates are simple fabricated items designed to sit between the two sections to be clamped together to ensure the bolts are fixed at the correct centres.



Material: Structural steel grade S355 JR, JO or J2.
For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thickness		Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
		8.8 mm	10.9 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

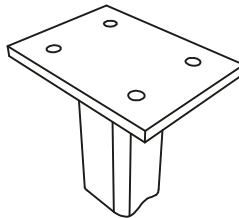
* Plate length / width for Type AF size M20 can be reduced to 130mm if required.



End Plate

What is it?

End plates are simple fabricated items that are pre-welded to support frames, bracket or sections, allowing connection to the supporting structure with standard Lindapter clamps.

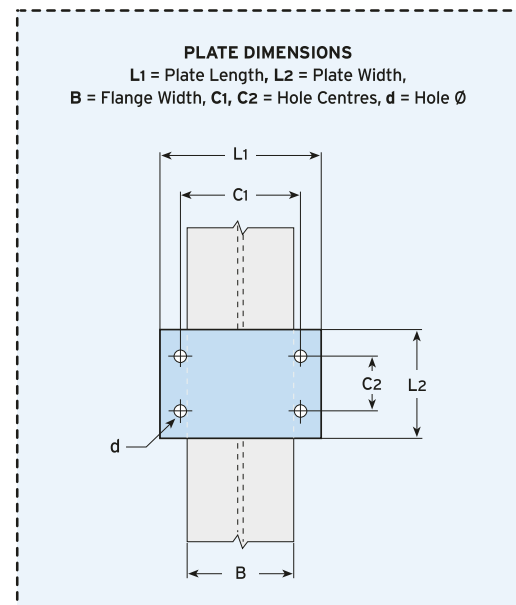


Material: Structural steel grade S355 JR, JO or J2.
For other grades contact Lindapter.

Bolt Size	Hole Ø d mm	Plate Thickness ¹⁾		Hole Centres C1 mm	Length min L1 mm	Hole Centres min C2 mm	Width min L2 mm
		8.8 mm	10.9 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.

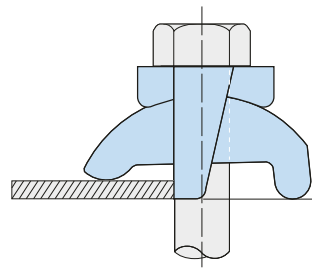
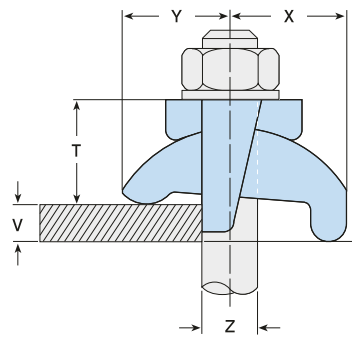
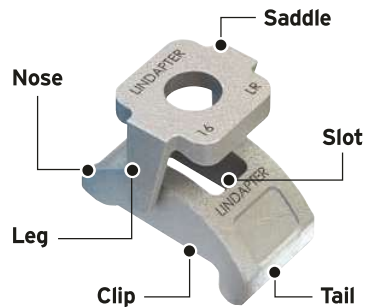
¹⁾ Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.



- 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 6.

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 15°.
- The leg of the saddle prevents the clamp from rotating.
- 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.

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



Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1)		Tightening Torque*	Clamping Range V mm	Dimensions			
		Tensile / 1 Bolt kN	Slip / 2 Bolts kN			Y mm	X mm	T mm	Width with Saddle mm
LR10	M10	1.5	-	20	3 - 10	21 - 24	24 - 26	21 - 24	33
LR12	M12	5.8	0.7	69	3 - 12	26 - 29	25 - 31	25 - 29	39
LR16	M16	7.3	1.5	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

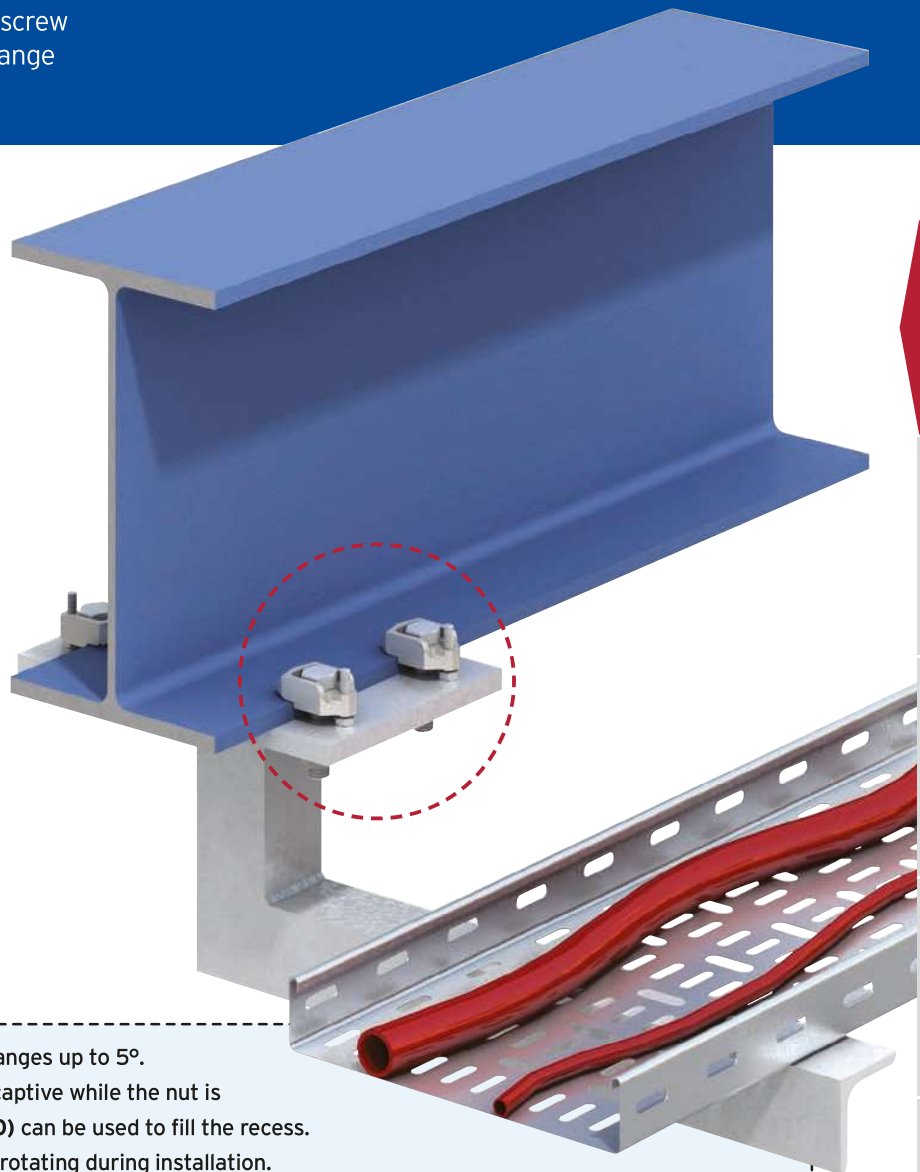
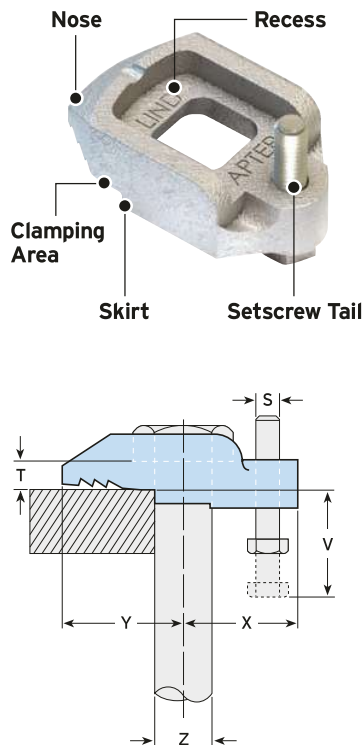
* Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 70.



For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.006 on the website www.Lindapter.com/About/CE

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 5°.
- Recessed top holds the bolt head captive while the nut is tightened. Type W washer (page 20) 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 20.
- Location plate / end plate details can be found on page 21.

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



Product Code	Bolt 8.8 Z	Safe Working Loads (FOS 5:1)		Tightening Torque*	Clamping Range		Dimensions				
		Tensile / 1 Bolt	Slip / 2 Bolts		V ¹⁾	V ²⁾	Y	X	S	T	Width
D210	M10	1.5	-	20	5 - 10	10 - 20	20	20	M6	5	26
D212	M12	5.8	0.7	69	5 - 10	10 - 22	26	25	M6	6	29
D216	M16	7.3	1.5	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 70.

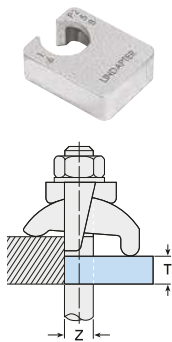
CE For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.007 on the website www.Lindapter.com/About/CE

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

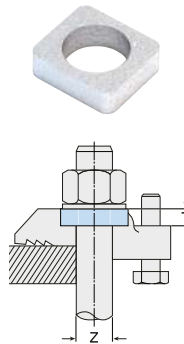


Mild steel, malleable iron, zinc plated or hot dip galv.

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

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 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	-

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.

LR = Type LR P1L = Type P1 long P2L = Type P2 long

➔ For thicker flanges please contact Lindapter.

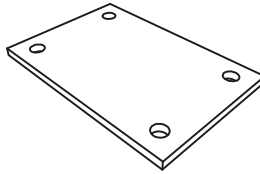
Location and End Plates for Types LR and D2

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

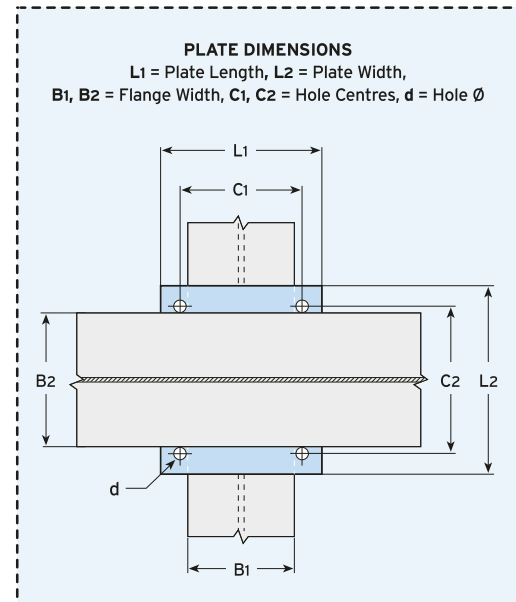
What is it?

Location plates are simple fabricated items designed to sit between the two sections to be clamped together to ensure the bolts are fixed at the correct centres.



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

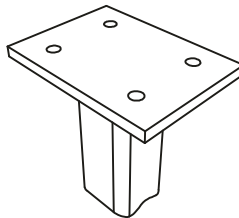
Bolt Size	Hole Ø d mm	Plate Thick. mm	Hole Centres C1 mm	Length min L1 mm	Hole Centres C2 mm	Width min L2 mm
M10	11	8	B ₁ + 11	B ₁ + 66	B ₂ + 11	B ₂ + 66
M12	14	10	B ₁ + 14	B ₁ + 81	B ₂ + 14	B ₂ + 81
M16	18	15	B ₁ + 18	B ₁ + 105	B ₂ + 18	B ₂ + 105
M20	22	20	B ₁ + 22	B ₁ + 132	B ₂ + 22	B ₂ + 132
M24	26	20	B ₁ + 26	B ₁ + 156	B ₂ + 26	B ₂ + 156



End Plate

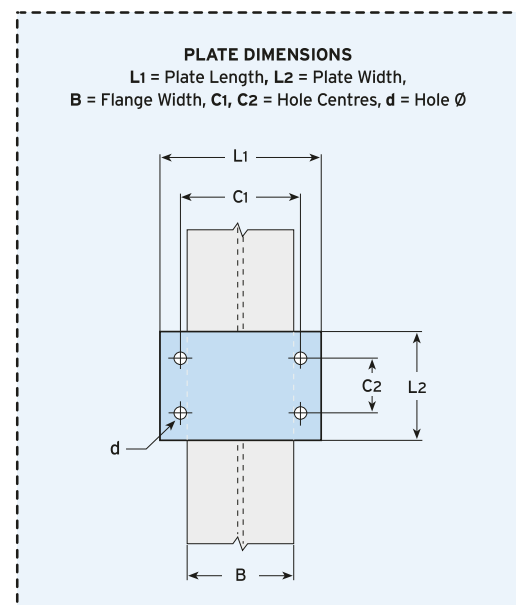
What is it?

End plates are simple fabricated items that are pre-welded to support frames, bracket or sections, allowing connection to the supporting structure with standard Lindapter clamps.



Material: Structural steel grade S355 JR or JO.
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 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

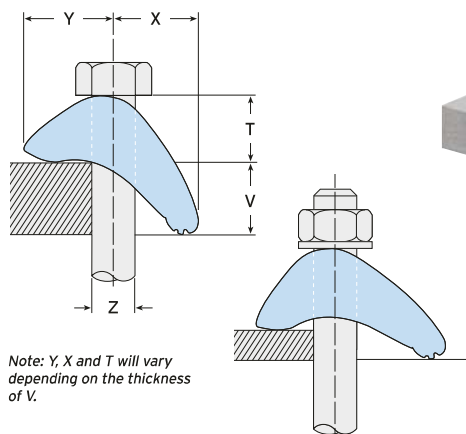
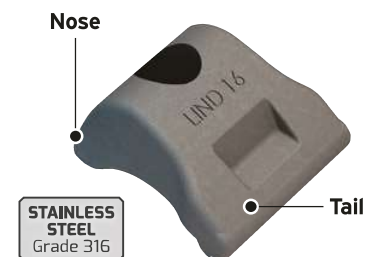


¹⁾ Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

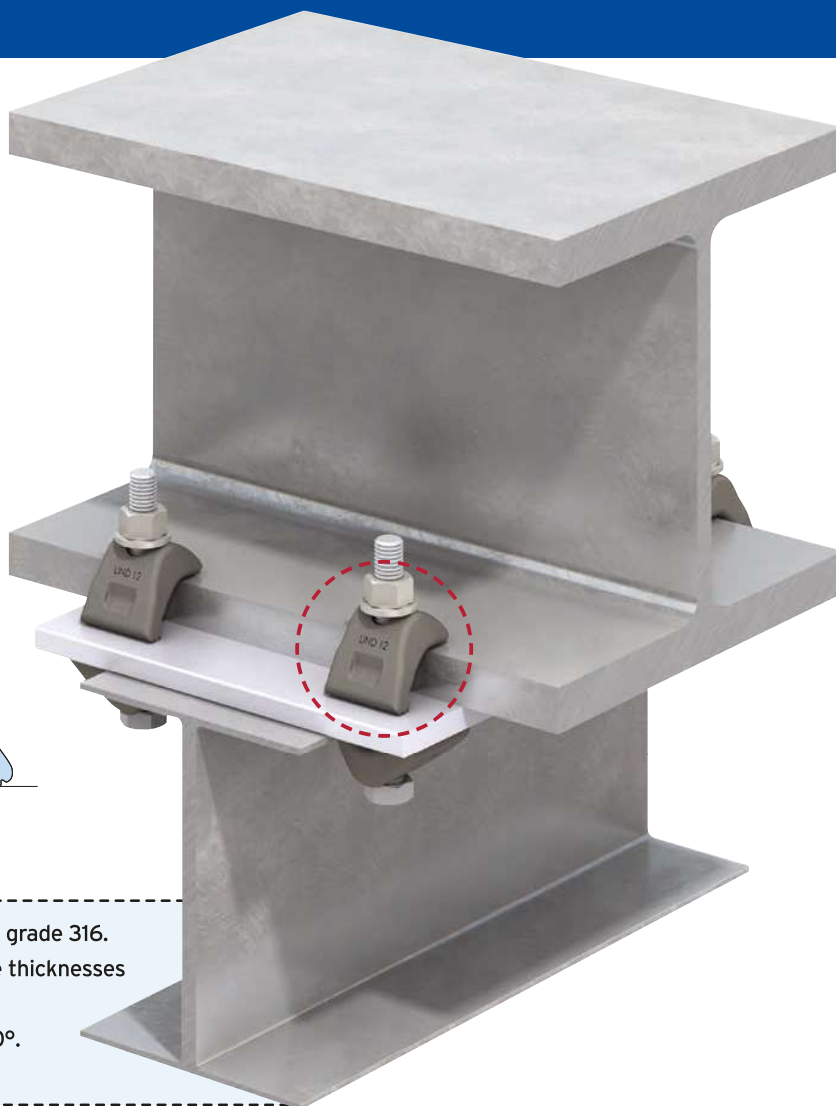
- ➔ To calculate the bolt length, add up the total distance that the bolt will pass through, plus half of the bolt diameter. Then round up the total to the nearest available bolt length. An example can be found on page 6.

Type LS

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



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



- Packings are available to increase the clamping range, see page 23.
- Location plate / end plate details can also be found on page 23.

Material: Cast stainless steel grade 316.



Product Code	Bolt A4-70 Z	Safe Working Loads		Tightening Torque*	Clamping Range V mm	Dimensions			
		Tensile / 1 Bolt (FOS 5:1) kN	Slip ¹⁾ / 2 Bolts (FOS 2:1) kN			Y mm	X mm	T mm	Width 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 70.



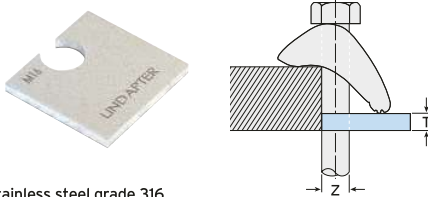
For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.008 on the website www.Lindapter.com/About/CE

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 Type LS

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.

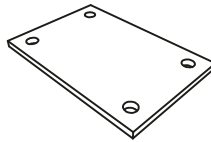
Combinations		Clamping Range			
LS	LSP2	M10 mm	M12 mm	M16 mm	M20 mm
1	-	3 - 15	3 - 20	3 - 25	3 - 30
1	1	13 - 25	13 - 30	13 - 35	13 - 40
1	2	23 - 35	23 - 40	23 - 45	23 - 50

➔ For thicker flanges please contact Lindapter.

Location Plate

What is it?

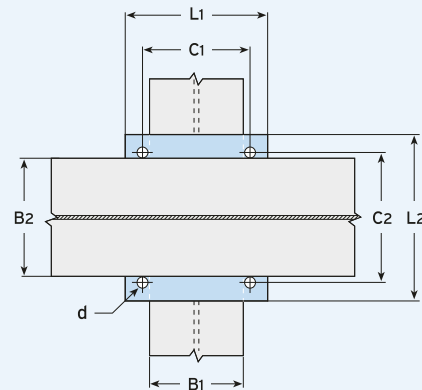
Location plates are simple fabricated items designed to sit between the two sections to be clamped together to ensure the bolts are fixed at the correct centres.



Material: Stainless steel grade 304 / 316.

Bolt Size	Hole Ø	Plate Thick.	Hole Centres	Length	Hole Centres	Width
	d mm	mm	C1 mm	min L1 mm	C2 mm	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

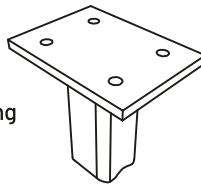
PLATE DIMENSIONS: L1 = Plate Length, L2 = Plate Width, B1, B2 = Flange Width, C1, C2 = Hole Centres, d = Hole Ø



End Plate

What is it?

End plates are simple fabricated items that are pre-welded to support frames, bracket or sections, allowing connection to the supporting structure with standard Lindapter clamps.

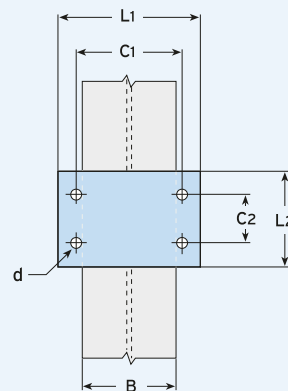


Material: Stainless steel grade 304 / 316.

Bolt Size	Hole Ø	Plate Thick. ¹⁾	Hole Centres	Length	Hole Centres	Width
	d mm	mm	C1 mm	min L1 mm	min C2 mm	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

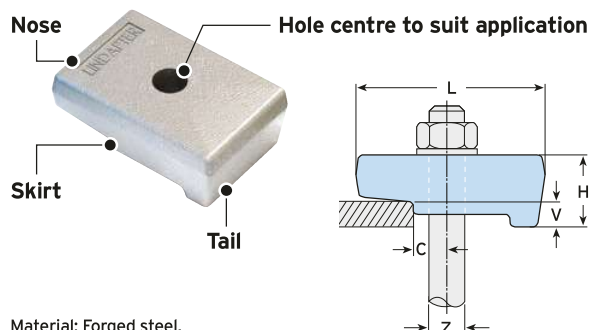
1) Depending on the type of connection and associated end plate use, the thickness may need to be modified to comply with accepted local design codes.

PLATE DIMENSIONS: L1 = Plate Length, L2 = Plate Width, B = Flange Width, C1, C2 = Hole Centres, d = Hole Ø



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.

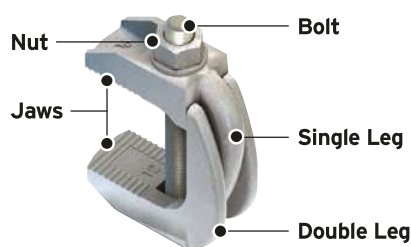
Product Code	Bolt 8.8 Z	Safe Working Loads Tensile / 1 Bolt (FOS 5:1)	Tightening Torque*	Tail Length V	Dimensions			
					C	L	H	Width
		kN	Nm	mm	mm	mm	mm	mm
RCS12	M12	2.6	69	10	6.5 - 26.5	76	29	50
RCS16	M16	4.0	147	10	9 - 24	76	29	50
RCS20	M20	9.6	285	10	11 - 22	76	29	50
RCS24	M24	12.3	491	10	13 - 20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

* Torque figures based on bolts / setscrews in an unlubricated condition. For further information on lubricated fasteners see page 70.

➔ 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.



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*	Clamping Range V	Dimensions			
with Bolt	without Bolt					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	35	44
F924NCHDG¹⁾	F924NBHDG¹⁾	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 70.

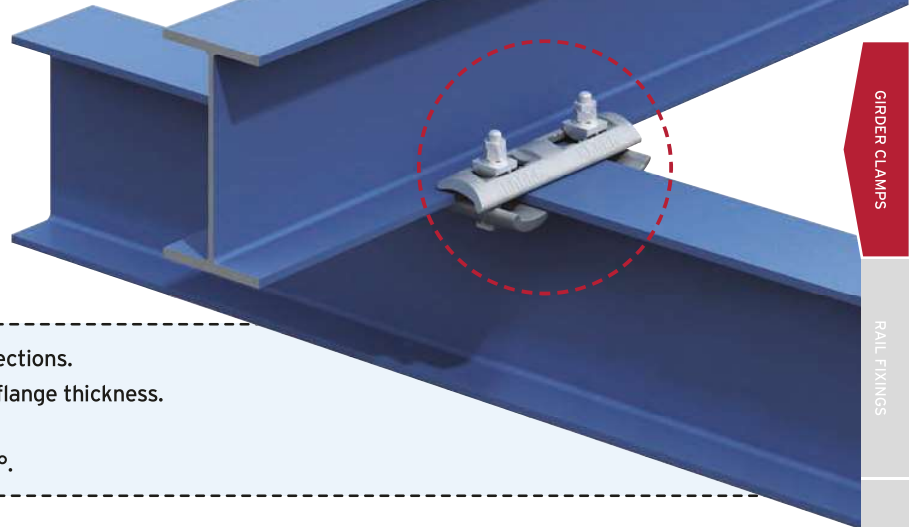
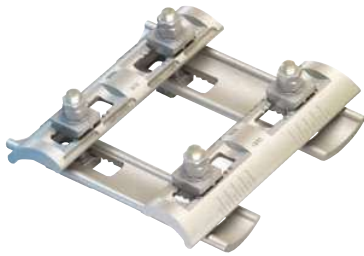
➔ Not suitable for tapered flanges.



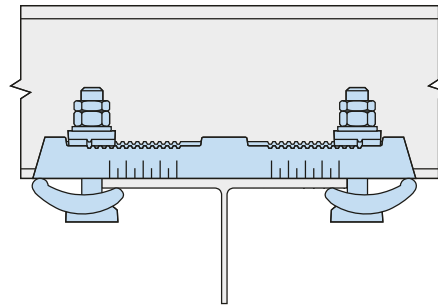
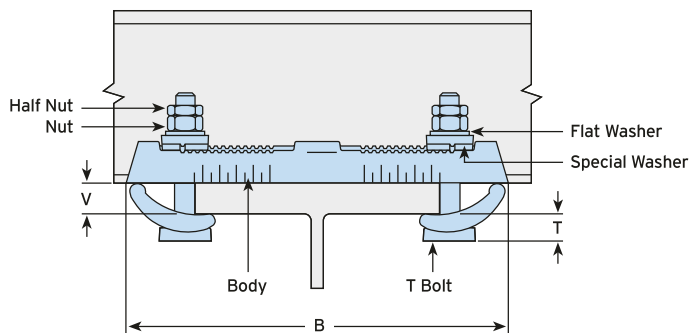
For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.010 on the website www.Lindapter.com/About/CE

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 10°.



Material: Forged steel, zinc plated plus JS500.

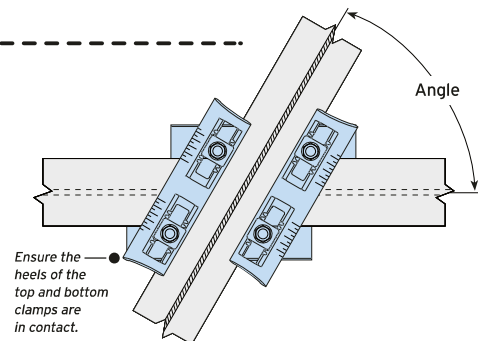
Product Code	T Bolt 8.8	Safe Working Loads (FOS 5:1)			Clamping Range		Dimensions	
		Tensile / 4 Bolts kN	Slip / 4 Bolts kN	Tightening Torque* Nm	Flange Thickness V mm	Flange Width ¹⁾ mm	T mm	B mm
FC16	M16	30.0	7.5	147	5 - 19	75 - 180	22 - 27	304

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 70.

Minimum Possible Beam Connection Angles

	Flange Width	Top Beam				
		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°



For Characteristic Resistances when designing a connection to Eurocode 3, please refer to DoP No.012 on the website www.Lindapter.com/About/CE

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. Visit the website for more examples or contact Lindapter to discuss your connection requirement.

GIRDER CLAMPS

RAIL FIXINGS

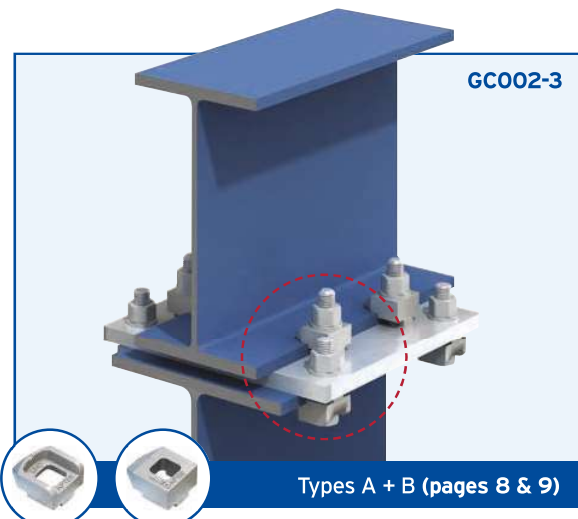
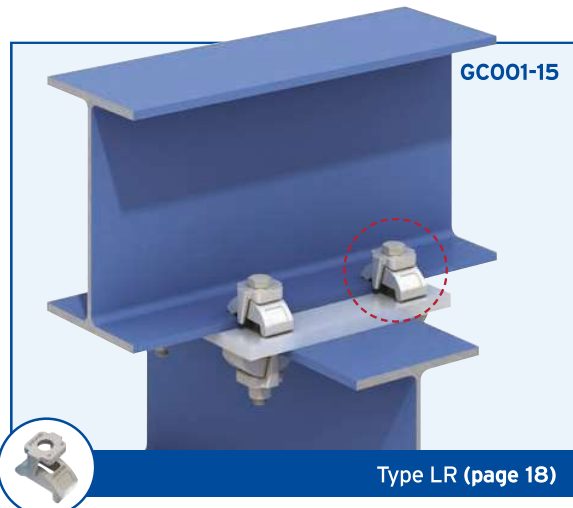
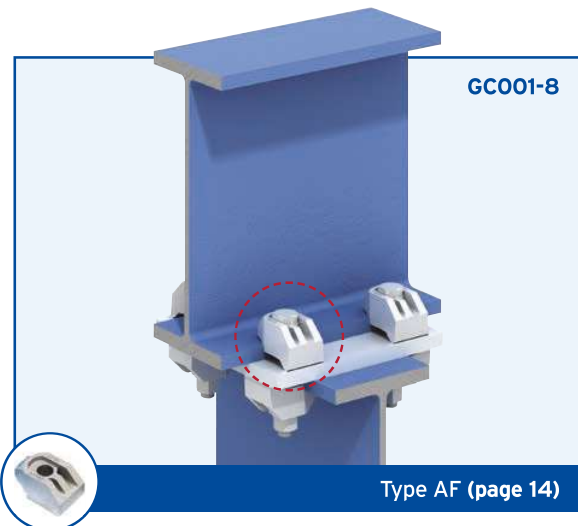
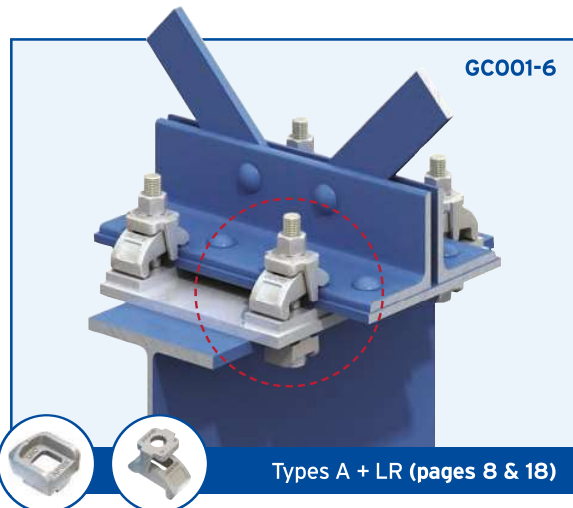
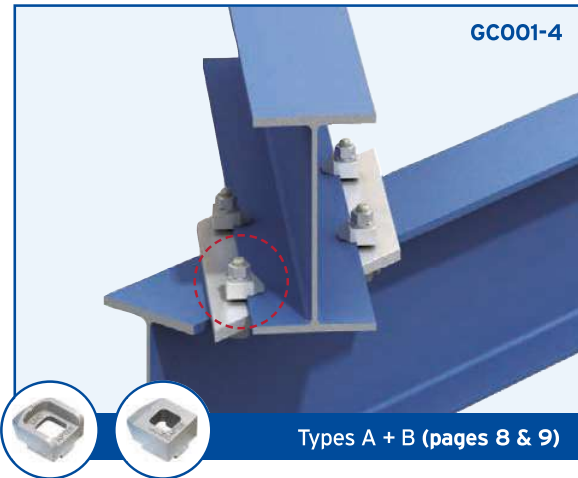
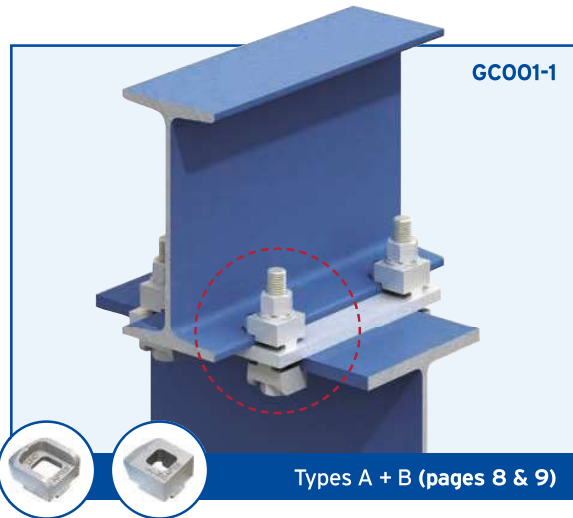
LIFTING POINTS

HOLLO-BOLT

FLOOR FIXINGS

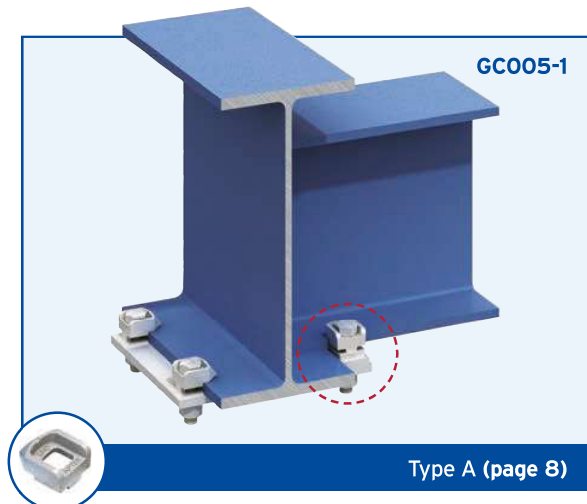
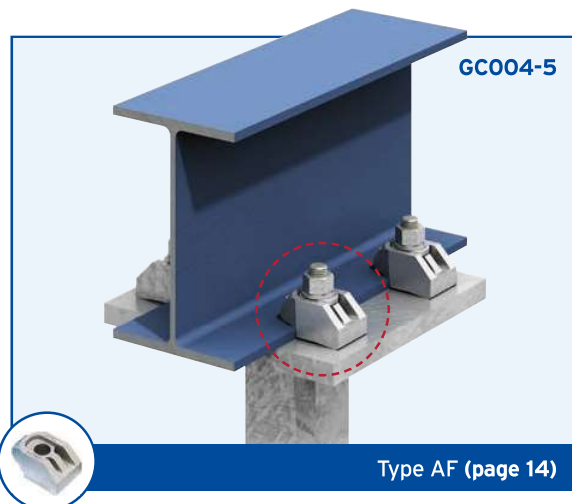
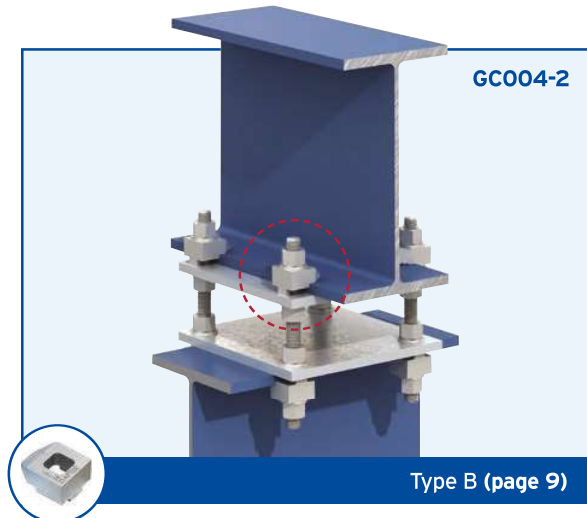
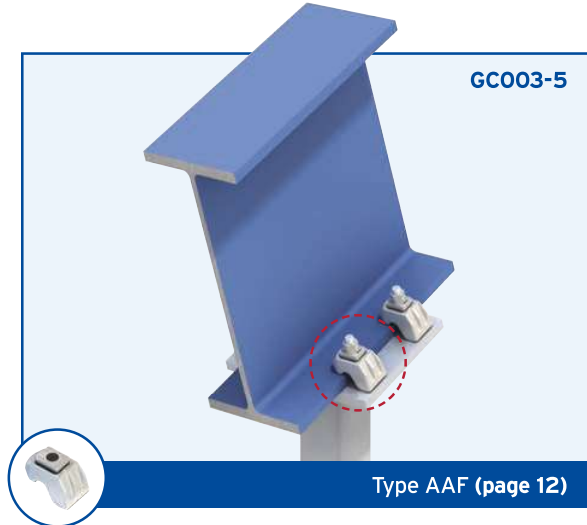
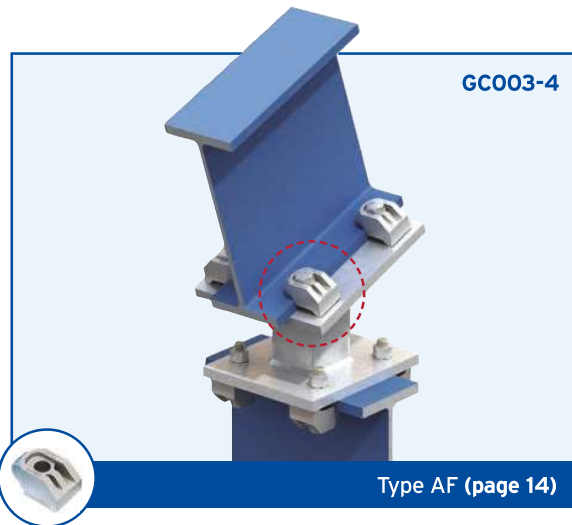
SUPPORT FIXINGS

DECKING FIXINGS



Typical Applications for Girder Clamps

Examples of popular connection arrangements are continued below.



GIRDER CLAMPS

RAIL FIXINGS

LIFTING POINTS

HOLLO-BOLT

FLOOR FIXINGS

SUPPORT FIXINGS

DECKING FIXINGS

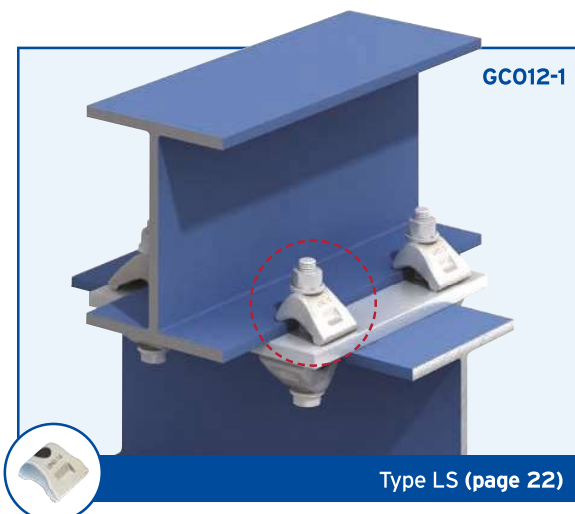
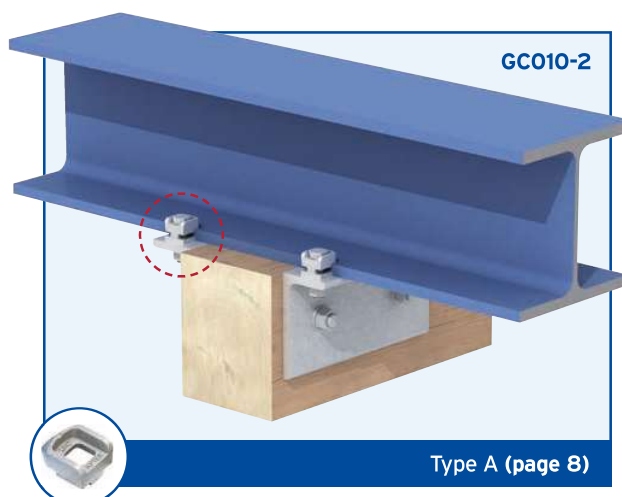
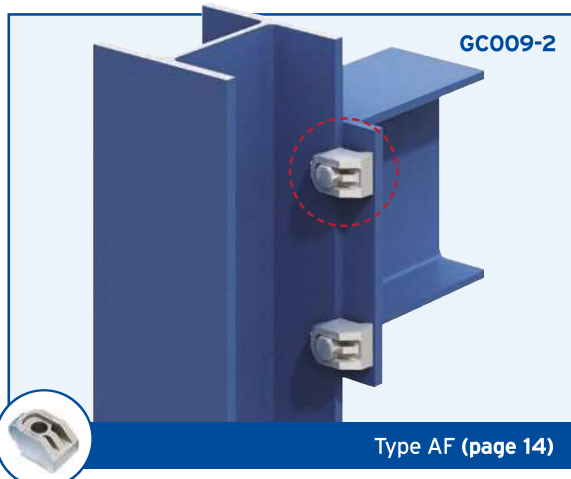
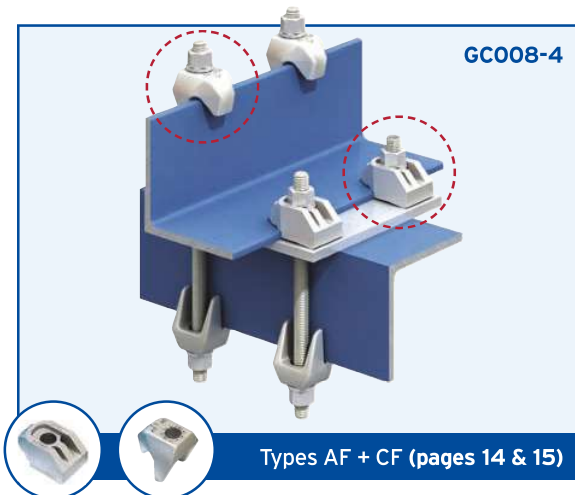
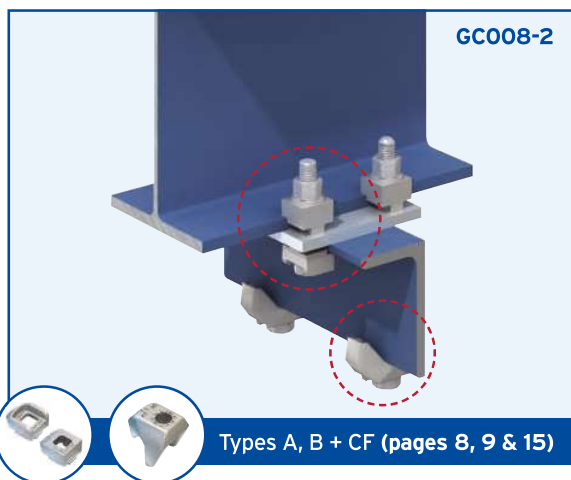
Typical Applications for Girder Clamps

More examples of popular connection assemblies are shown below.



Typical Applications for Girder Clamps

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



GIRDER CLAMPS

RAIL FIXINGS

LIFTING POINTS

HOLLO-BOLT

FLOOR FIXINGS

SUPPORT FIXINGS

DECKING FIXINGS

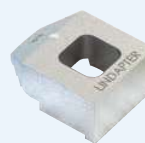


The popular Type HD provides lateral adjustability to allow the quick and precise alignment of rails (see page 32).

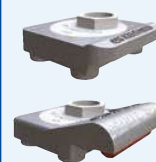
Rail Fixings

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 31

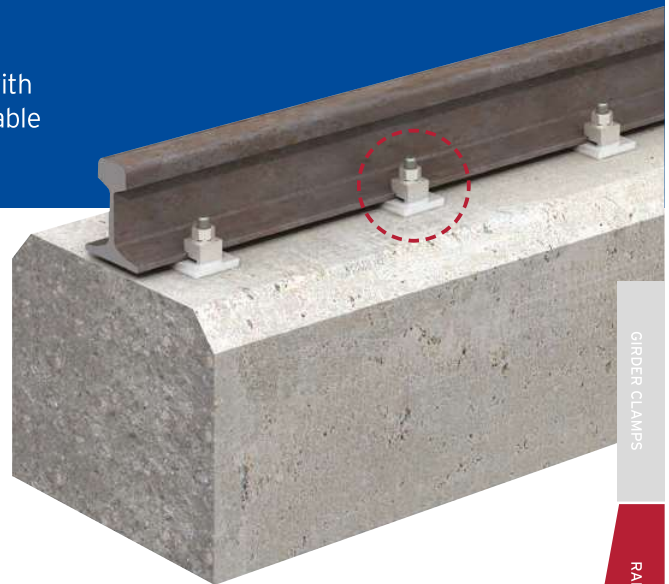
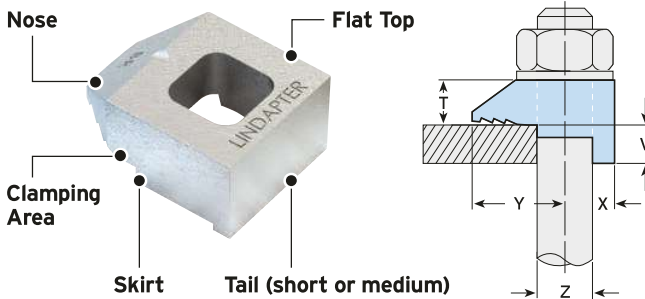


Type HD
pages 32 - 33



Type BR

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



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

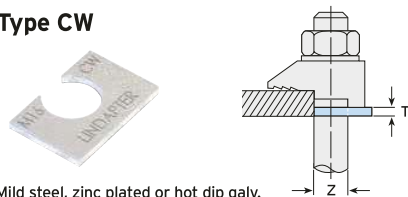
Product Code	Bolt 8.8 Z	Standard Loads (FOS 5:1)			Reduced Loads (FOS 5:1) (not suitable for slip conditions)		Dimensions					
		Tensile / 1 Bolt	Slip / 2 Bolts	Tightening Torque*	Tensile / 1 Bolt	Tightening Torque*	Tail Length V		T mm	Width mm	Y mm	X mm
		kN	kN	Nm	kN	Nm	short mm	medium mm				
BR12	M12	5.8	0.7	69	3.7	39	4	6	13	29	26	13
BR16	M16	7.3	1.5	147	5.2	93	6	8	16	35	30	16
BR20	M20	14.7	3.0	285	8.6	177	7	10	19	42	36	19

* Torque figures based on bolts / setscrews in an unlubricated condition.
For further information on lubricated fasteners see page 70.

- Contact Lindapter to ensure suitability of the component for application.
- Please ensure the anchor device is suitable for the torque value shown above.

Packing Pieces and Combinations for Type BR

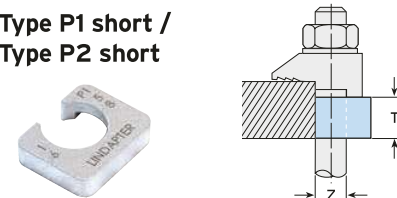
Type CW



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 Type BR

(For rails up to and including 8° slope)

➤ For thicker flanges please contact Lindapter.

Flange Thickness mm	M12				M16				M20			
	BR	CW	P1S	P2S	BR	CW	P1S	P2S	BR	CW	P1S	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