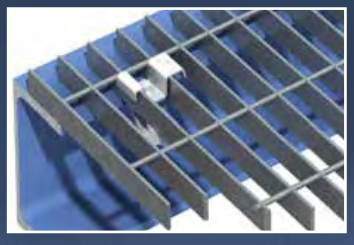
Technical Innovation in Steel Connections

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



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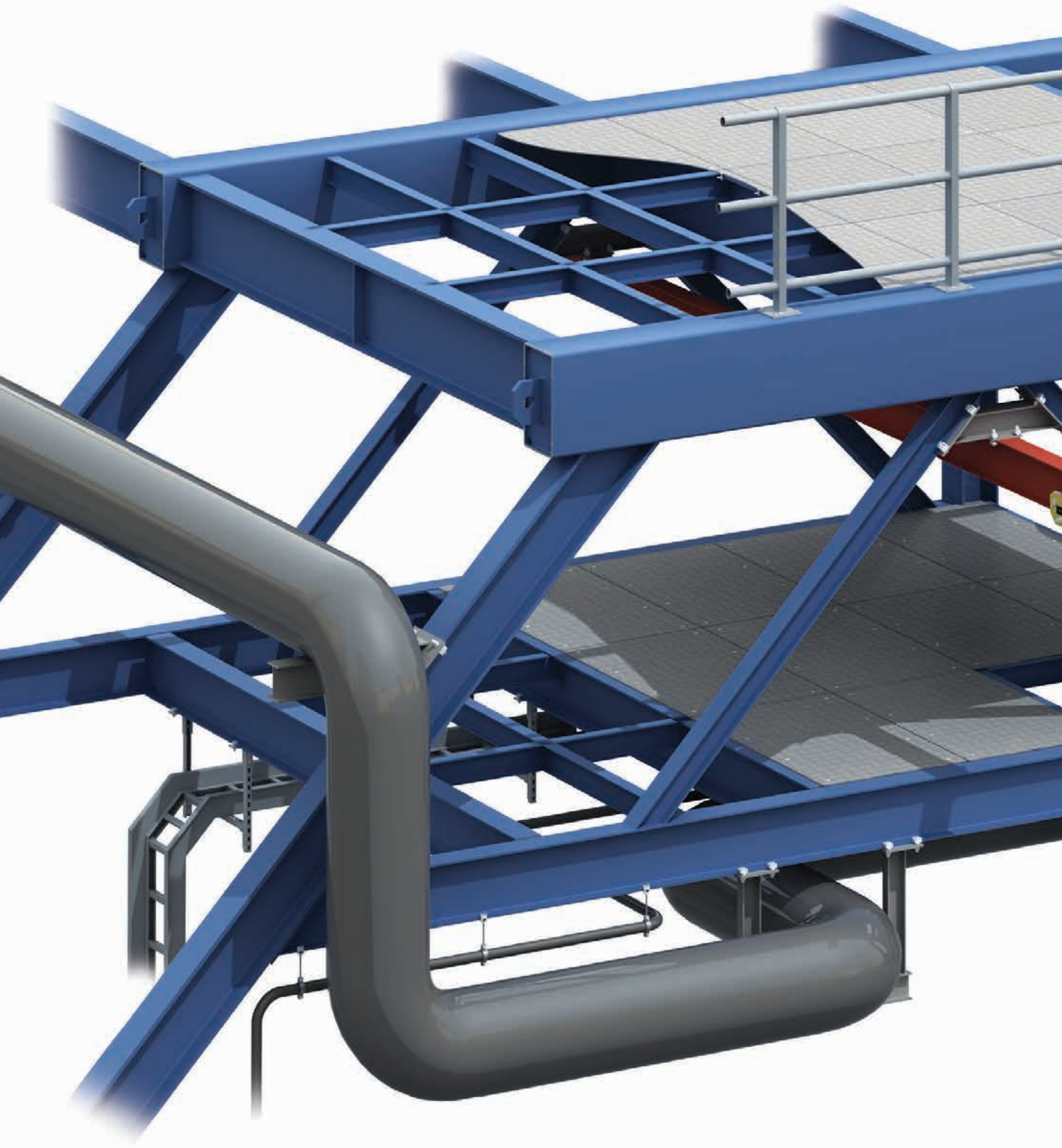
CustomerService@strutandsupply.com



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For more than 75 years, Lindapter has earned a respected reputation as the inventor and pioneer of steel clamping systems, providing an independently approved and exclusive product range of steel, hollow structural section (HSS), concrete decking, pipe / conduit supports and steel floor connections.

Founder Henry Lindsay

Lindapter's unique connections create significant advantages in comparison to traditional methods such as welding or drilling, including the reduction of installation time and labor costs, on-site adjustability and no damage to steel sections or protective coatings.

The company's proud heritage began in 1934 when Engineer Henry Lindsay invented an entirely new concept of connecting steel with the Lindsay Bolt Adapter, allowing simple, fast clamping, instead of often difficult and time consuming drilling or welding. The idea was to revolutionize millions of future connections on countless projects worldwide and the combination of the two words 'Lindsay' and 'Adapter' explains the formation of the now famous brand name.

Today, the world's best Engineers choose Lindapter for projects as varied as Rome Train Station, Gatwick Airport, Alexander Hamilton Bridge, Dubai Shopping Mall and Gautrain Rapid Rail Link. Whether joining primary structural sections, securing secondary beams or suspending building services, Lindapter has a proven and trusted solution.

Lindapter has passionately grown since 1934 from a modest family business into a reputable global brand and strives to continue its proud heritage; to invent and deliver 'Technical Innovation in Steel Connections'.

For further information:

- Service and Support (page 6)
- Quality and Approvals (page 7)

The large illustration opposite shows examples of Lindapter connections.

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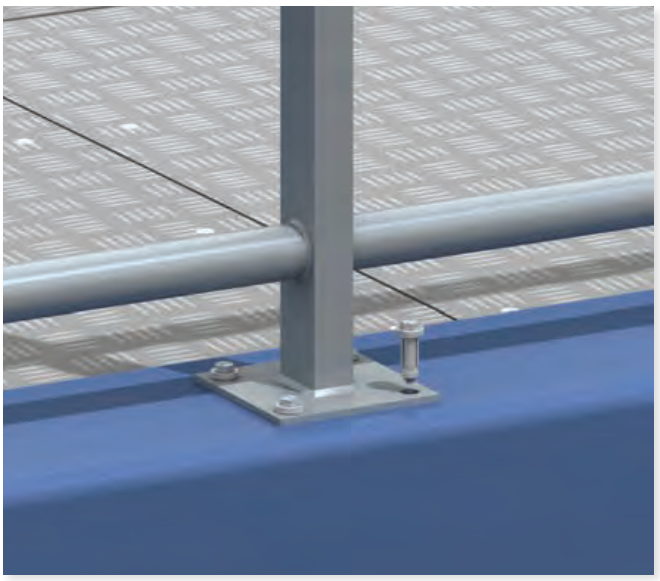
1 Steel Connections



2 Hollow Section (HSS) Connections

3 Concrete Decking Connections

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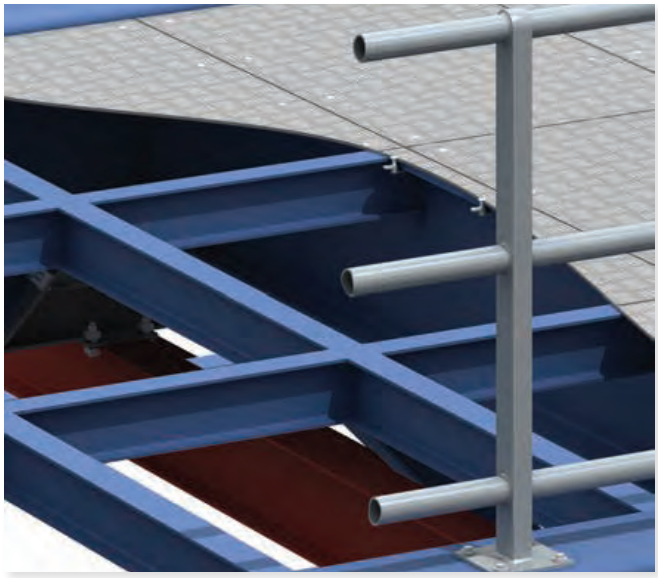
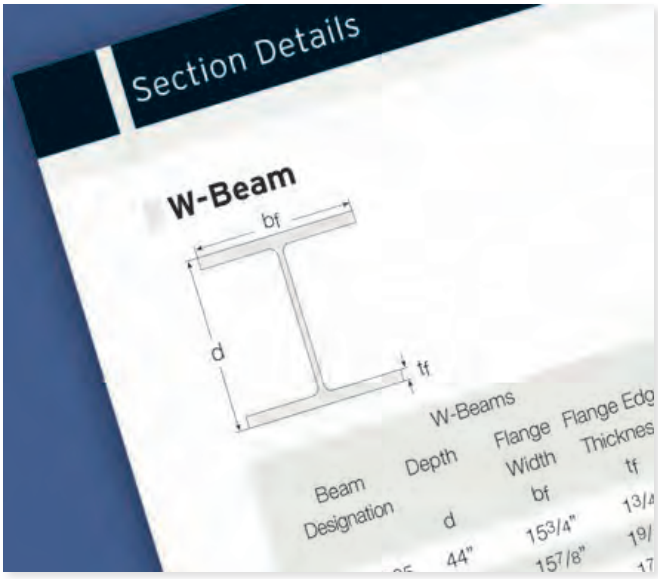
4 Pipe / Conduit Supports



5 Steel Floor Connections



6 Appendix

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

Lindapter International is Lindapter's Global Headquarters, located at Lindsay House, Brackenbeck Road, Bradford, BD7 2NF, England.

Applications
All the applications featured in the catalog are based on real projects. More information can be found on the website: www.LindapterUSA.com

Research and Development

To meet the needs of an ever-changing world, Lindapter's R&D department is constantly developing innovative new products. The team is supported by the latest technology including 3D modeling, rapid prototyping, finite element analysis, in addition to two in-house 224,800 lbs hydraulic test machines.

Lindapter works in collaboration with respected companies and organizations such as Tata Steel Europe® *(formerly Corus)*, Mannesmann, The Steel Construction Institute, CIDECT as well as many leading universities and approval bodies.

Engineered Solutions

Lindapter's unique expertise and R&D capability facilitates a custom product development service, passionately referred to as 'Engineered Solutions'. The Type 1055 is an example of a product invented and manufactured for a customer; the stainless steel floor connection was developed specifically for Amec / Shell, for fitting solid plate to open-grid flooring to offshore platforms.

The service offered to clients includes:

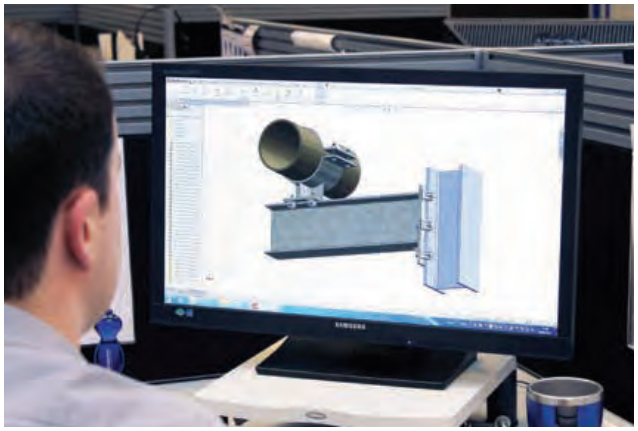
- Design and development of custom products
- Full strength and performance analysis
- Thoroughly tested with detailed reports
- Manufactured to Lindapter's exacting standards

Type 1055, an Engineered Solution

Technical Support

The comprehensive technical support from Lindapter's experienced Engineers ensures an efficient specification process with a free design service and bills of materials upon request. Lindapter's philosophy is to deliver the highest quality at every stage of the service, from initial connection design to installation guidance.

- Free connection design based upon your requirement
- Optimized solution for cost and performance
- Bespoke drawings delivered in 2D and interactive 3D formats
- CAD files for import into major software applications
- Contractor training
- 3D Assembly PDFs



Corrosion Protection

Lindapter products are delivered either bright zinc plated or hot dip galvanized as standard. Various other coatings and alternative materials are available upon request for most products including:

- Sherardizing
- Galvanizing
- Plastic coating
- Special paint coating
- Delta seal
- Deltatone
- Sheraplex
- Stainless steel

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Quality

Accredited to ISO 9001 since 1986, Lindapter strictly enforces a quality management system that includes vigorous product testing to ensure consistently high manufacturing standards.

bsi. ISO 9001 Quality Management

Q 05143

Environment

Lindapter operates an ISO 14001 certified environmental management system and constantly monitors and improves aspects of the business that may have an impact on the environment, including the use of natural resources, the handling and treatment of waste, and energy consumption.

bsi. ISO 14001 Environmental Management

EMS 546660

Associations

Lindapter is a member of the following organizations:

AISC ASSOCIATE
American Institute of Steel Construction

BCSA
British Constructural Steelwork Association

SCI Member
The Steel Construction Institute

steel STEEL CONSTRUCTION
Southern African Institute of Steel Construction

Approvals

Lindapter has manufactured to the highest standard for over three quarters of a century, earning a multitude of independent approvals and a reputation synonymous with safety and reliability. Current accreditations awarded by international associations include the following:

ICC-ES
Hollo-Bolt is the only expansion bolt for structural steel that is approved by ICC-ES for all Seismic Design Categories (SDC) A through F, in compliance with the 2012 International Building Code. The United States' leading evaluation service has published Evaluation Report ESR-3330 for designing Hollo-Bolt connections to LRFD and ASD methods.

ICC ES ESR-3330 Seismic Approved

LARR
The Los Angeles Research Report RR 260 provides independent evidence that the Hollo-Bolt product complies with the 2014 City of Los Angeles Building Code.

LA DBS DEPARTMENT OF BUILDING AND SAFETY

CE Mark
For Lindapter products in compliance with the provisions of the EC Construction Products Directive 89/106/EEC, please refer to the website: www.lindapter.com/About/CE

CE

Deutsches Institut für Bautechnik (DIBt)
DIBt is a body that approves construction products for use in structural and civil engineering industries in Germany.

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

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

TÜV NORD Baumuster geprüft

Factory Mutual (FM)
FM, the American insurance organization, offers an approval that is recognized by the fire protection industry worldwide.

FM APPROVED

Verband der Schadenversicherer (VdS)
VdS e.V. is one of Germany's leading independent testing institutions for products used in fire protection applications.

VdS

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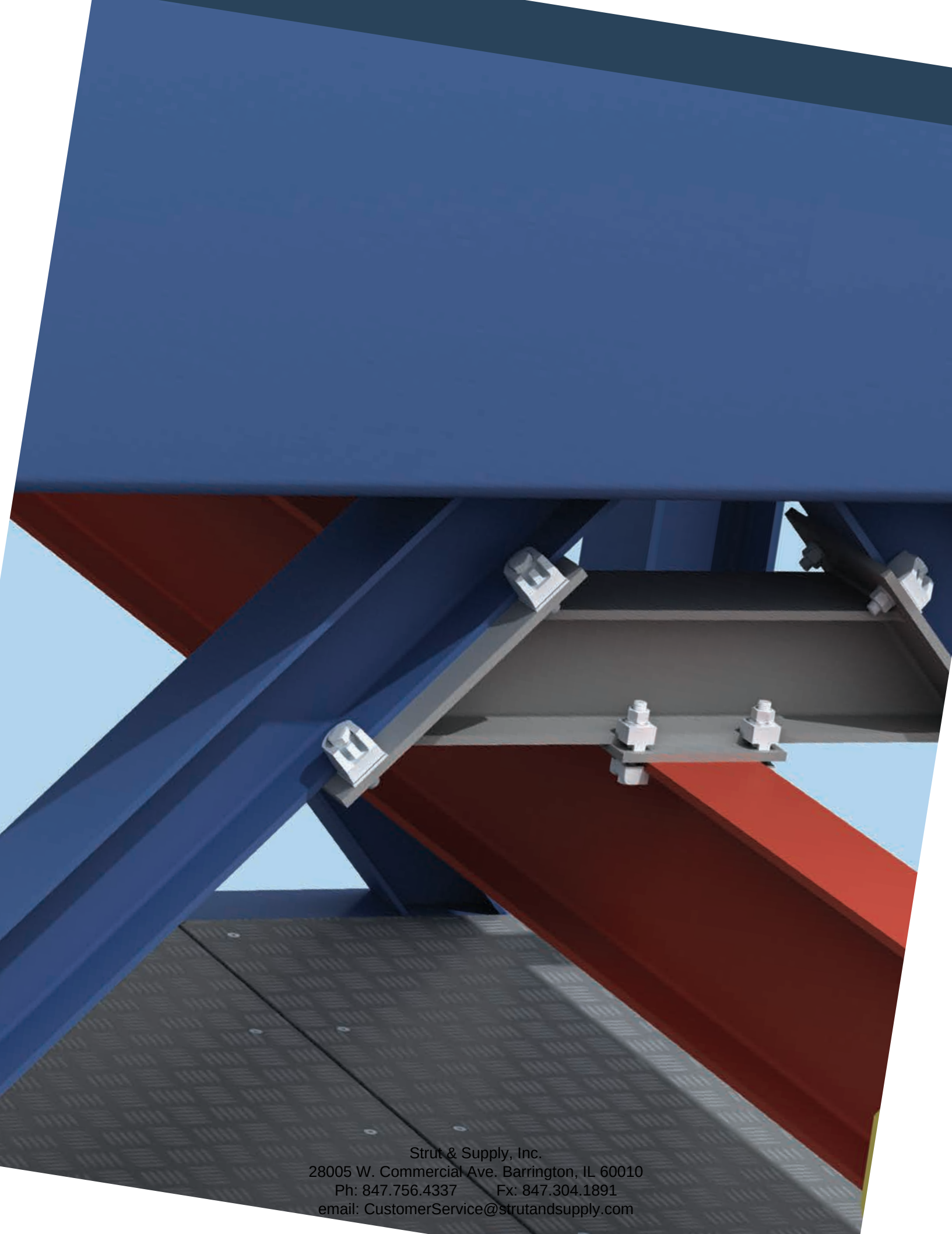

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Steel Connections

Lindapter steel connections require no on-site drilling or welding, saving both time and money, and are compatible with virtually any size or shape of steel section in a wide variety of applications.

The Girder Clamp symbolizes Lindapter's concept perfectly; boldly challenging the need to drill or weld, when a safe, high strength connection can be quickly accomplished by clamping two steel sections together. Although the concept is simple, Lindapter products undergo complex design and testing as the experienced Research & Development team constantly refine, improve and invent to achieve greater product performance and safety approvals.

The connections shown throughout this catalog are actual applications from real project successes, both new construction and the refurbishment of existing structures.

Advantages

- Less design time (Lindapter will design the connection)
- Independently approved loads and quality standards
- No on-site drilling or welding
- Fast and safe construction
- 'Hot Working' not required
- Adjustable on-site
- Less work at height
- Only hand tools required to install
- Power not required
- Ability to deconstruct and multi-cycle

Markets include:

- Plant Engineering
- Chemical and Petrochemical
- Material Handling
- Structural Engineering
- Civil Engineering
- Façades
- Theatre Equipment
- Transportation
- Offshore

Applications include:

- Steel Construction
- Cranes
- Lifting Beams
- Pipe Supports
- Towers and Masts
- Almost any steel-to-steel connection

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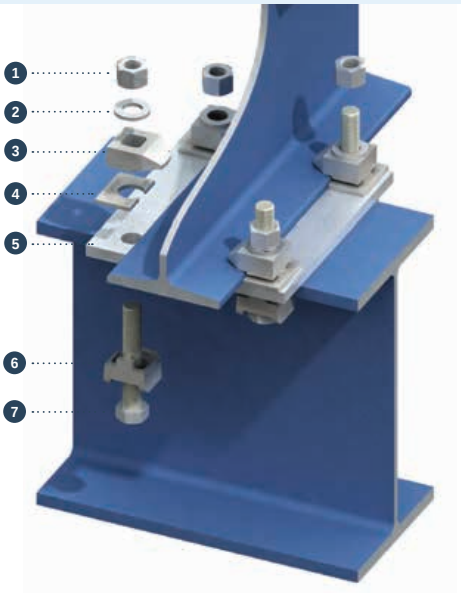
Components of a Girder Clamp

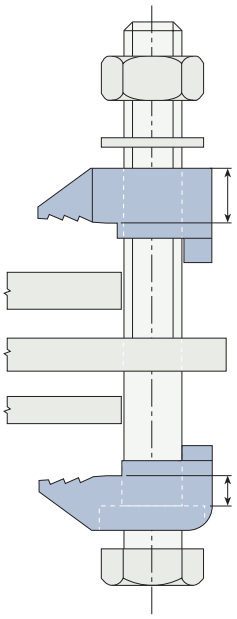
1. **Standard Grade 5 Hex Nut**
2. **Standard Hardened Washer**
3. **Lindapter Clamp**
   Dependent on the application different clamps could be used, i.e. Types A, B, BR, AF, LR, LS.
4. **Packing Piece**
   In combination with the clamps mentioned above, these parts increase the tail length to enable the product to sit correctly on the beam.
5. **Location Plate (can be supplied if required)**
   This is an essential part of the girder clamp assembly that enables all the components to be located in the correct position. The hole centers and plate thickness are calculated to suit the individual application.
6. **Lindapter Clamp**
   This can be of a similar type as component 3 (above), although certain products are designed to specifically work together, i.e. A + B.
7. **Standard SAE Grade 5 Hex Bolt or Setscrew**



Bolt length calculation for a standard Lindapter Girder Clamp,

Showing 3/4" Type A and B as an example

To calculate the bolt length, all parts the bolt will go through have to be added up. The next standard bolt length should be used.

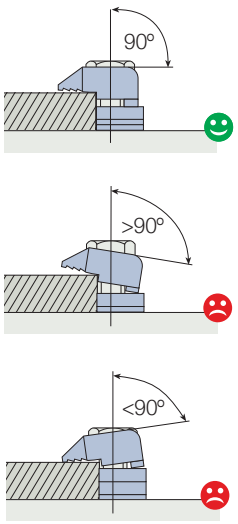


0.5 · bolt Ø as bolt protrusion		3/8"
Height of nut		3/4"
+ Washer		1/8"
+ T of top clamp		3/4"
+ Top section		1/2"
+ Plate thickness		1/2"
+ Lower section		3/8"
+ T of lower clamp		3/8"
	=	3 3/4"
Next standard bolt length	=	4"

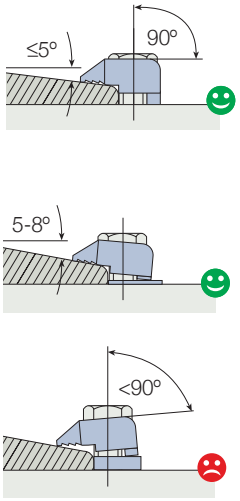
Correct installation of Types A and B

Showing Type A as an example

Parallel flanges



Tapered flanges



Maximum tail length tolerance (before applying tightening torque):

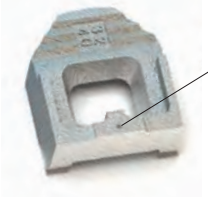
Bolt sizes 3/8" to 5/8": - 3/64" tolerance
Bolt sizes 3/4" to 1": - 1/16" tolerance

On 6° and 8° slopes, Types A and B require a special tail length / packing combination which will allow the clamp to tilt back slightly (incorporated into the combination table on page 15).

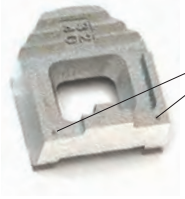
For applications above 8° please see Types AF, LR and LS.

Tail length

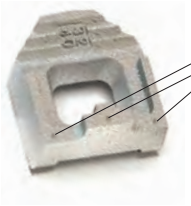
The different tail length can be identified by a code of dimples underneath the clamps.



One dimple: tail length short *(s)*



Two dimples: tail length medium *(m)*



Three dimples: tail length long *(l)*

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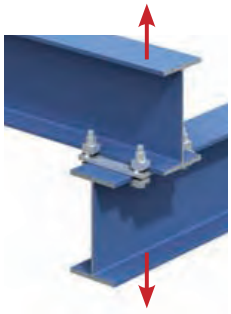
Loads and Specifications

Lindapter steel connections are designed to suit the loading condition of each application, as defined below. Safe Working Loads published in this catalog are for SAE Grade 5 bolts unless otherwise stated. Should you require assistance in selecting the correct product for your needs, please contact Lindapter.



Tensile Loading

In tensile applications, the load transmits a force parallel to the center line of the bolt shank, hence applying a load to the contact point of the Lindapter. See product data tables for allowable tensile loads at varying bolt sizes.

Combined Loads

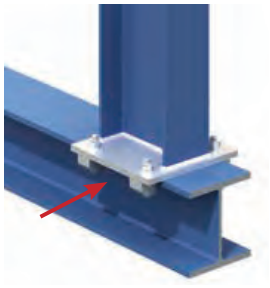
When the connections are subject to more than one load condition, the resulting forces must be calculated to determine the product and bolt sizes required. Please contact Lindapter with your application.

Frictional Loading

The force is applied at 90° to the bolt shank. The point at which slip occurs depends upon the condition and finish of the steel, the coating of the Lindapter and the grade of bolt used. Slip is defined as the constant load at which relative movement between clamped components exceeds 0.004 inch (0.1mm).

Compression Loading

Force here is applied directly to the supporting section rather than the Lindapter products. If, however, there is a gap between the surfaces being connected, the buckling strength of the supporting fabrication must be considered.



Shear Loading

The Safe Working Load of the assembly is determined by the bolt grade and diameter as the force is resisted by the cross sectional area of the bolt shanks. It is recommended that reference be made to the bolt manufacturers' technical literature or the relevant structural steel design code to ascertain a Safe Working Load per bolt.

Tightening Torque

The recommended torque values stated in the product sections must be applied in order to achieve the stated Safe Working Loads. Any reduction in torques applied will lower the product Safe Working Load and is not recommended.

Safe Working Loads

The table below shows tensile and frictional load capabilities for a standard four bolt Girder Clamp using 4 bolts at a 90° crossover angle. Lindapter is only too pleased to carry out design work for individual connections free of charge based on the following details:

- Load per connection
- Size and Type of both beams
- Angle of crossover
- Distance between beams
- Inclination of beams

Clamps		Types A, B, BR, LR				Type AF	
Bolt size		1/2"	5/8"	3/4"	1"	1"	1"
Bolt grade		Grd. 5	Grd. 5	Grd. 5	Grd. 5	Grd. 5	A490
Safe Working Load Tensile / for 4 bolts	lbs	5205	6552	13237	17679	35968	56200[1)]
Safe Working Load Friction / for 4 bolts	lbs	315	674	1349	2023	13488[2)]	15736[2)]
Tightening Torque	ft lb	50	108	210	362	590	737

1) Factor of safety 3.2:1 2) Factor of safety 2:1

Loads are based on a factor of safety (typically 5:1). The reduction of published safety factors is not recommended.

Approvals

All approvals apply to Girder Clamps using Types A and B only, in sizes from 1/2" to 1". Further information is available upon request.

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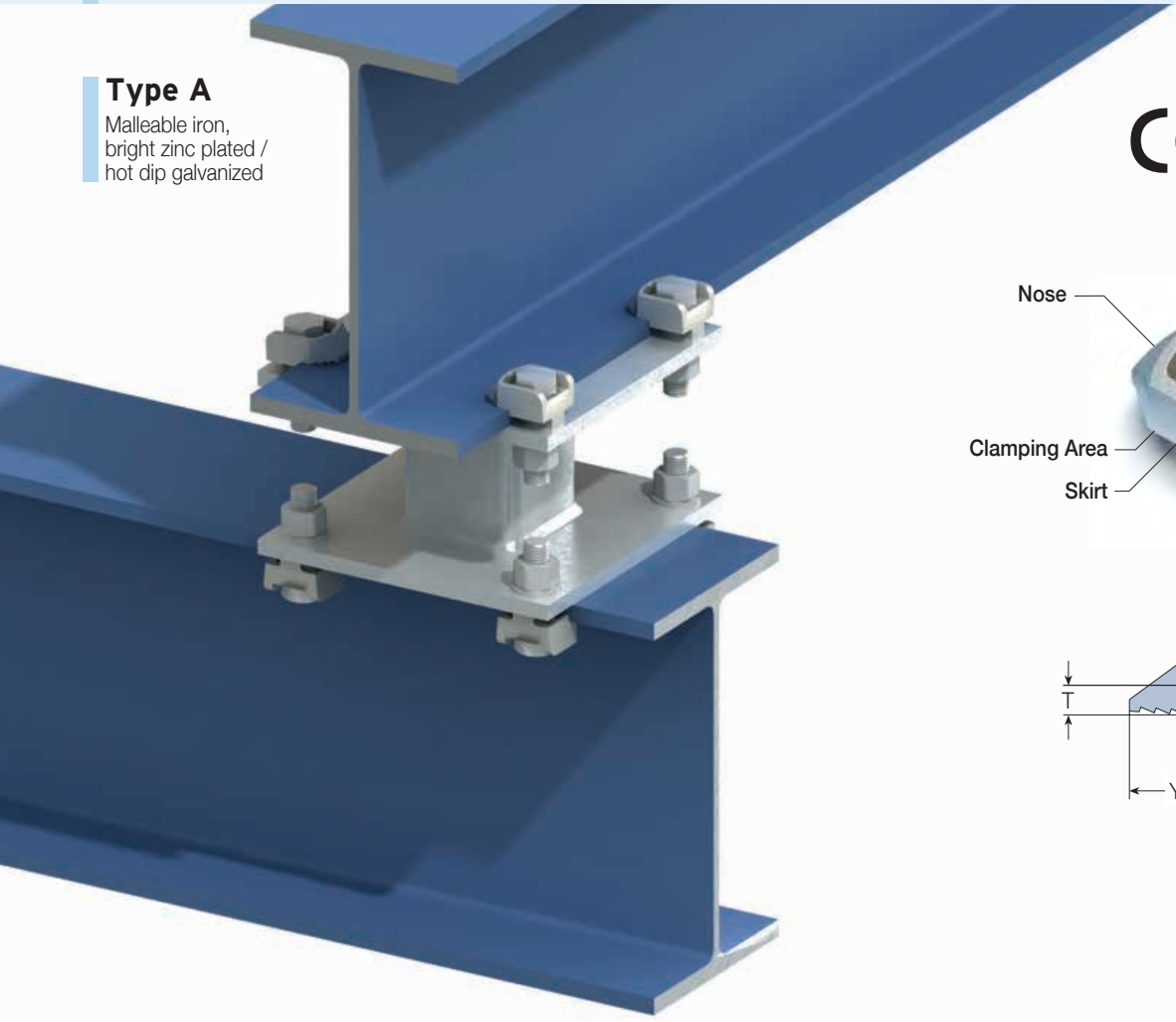
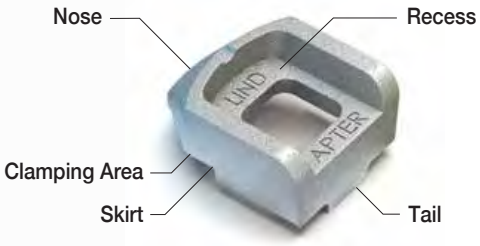
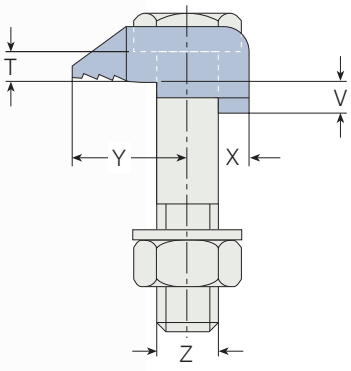
Type A

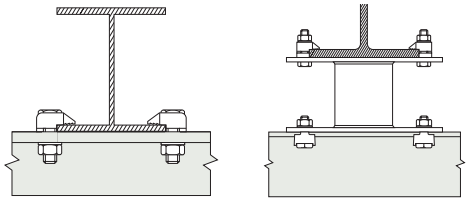
Malleable iron,
bright zinc plated /
hot dip galvanized







Typical Applications (see also pages 34-37)



The recessed top of the Type A clamp holds the bolt head captive while the nut is tightened. The skirt prevents the clamp rotating during installation. The clamp is suitable for parallel flanges, tapered flanges up to 8° and installed correctly when the clamping area grips the flange. The tail must be chosen to suit the thickness of the flange being gripped. For correct tail length/packing combinations, please see page 15.

Product Code	Grd. 5 Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Frictional / 2 Bolts lbs	Tightening Torque ft lb	Dimensions Y	X	Tail Length V short	medium	long	T	Width
LA037[1)]	3/8"	330	-	15	13/16"	7/16"	1/8"	3/16"	1/4"	3/16"	1"
LA050	1/2"	1300	157	50	1"	1/2"	3/16"	1/4"	3/8"	1/4"	1 1/8"
LA062	5/8"	1640	337	108	1 3/16"	5/8"	1/4"	5/16"	7/16"	5/16"	1 3/8"
LA075	3/4"	3300	674	210	1 7/16"	3/4"	5/16"	3/8"	1/2"	3/8"	1 13/16"
LA100	1"	4430	1012	362	1 7/8"	1"	3/8"	1/2"	5/8"	1/2"	2 1/8"

1) Requires Type W washer, product code LW037 (see Page 14).

If using A325 bolts, the Type B should be used (see Page 13).

For higher loads, the Type AF should be used (see page 16).

Order example: LA062M

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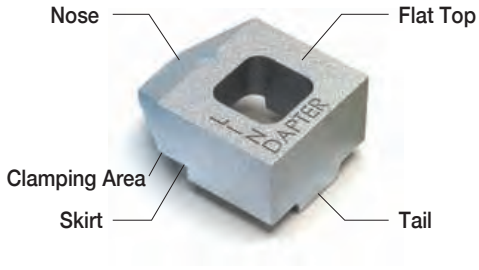
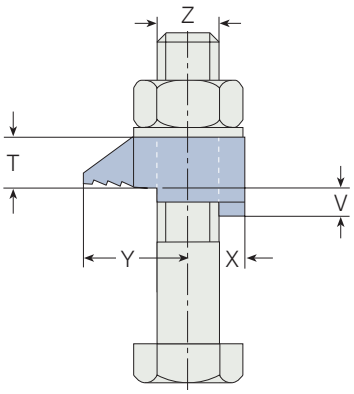
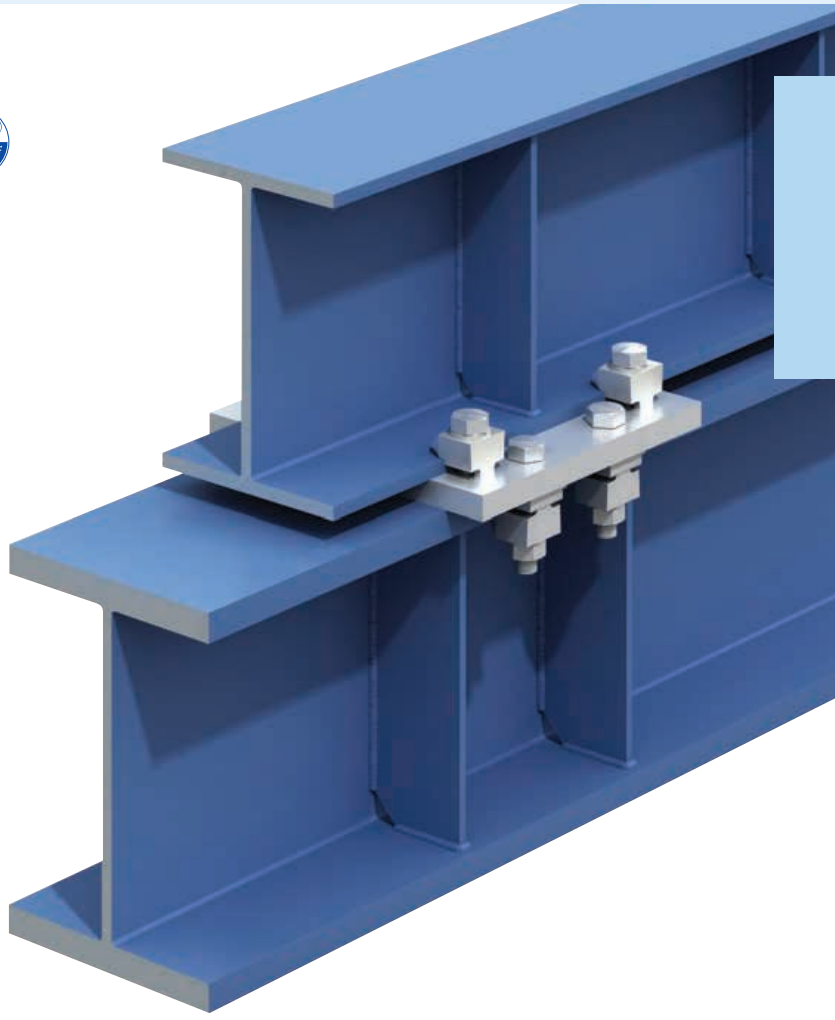
Type B

Malleable iron,
bright zinc plated /
hot dip galvanized

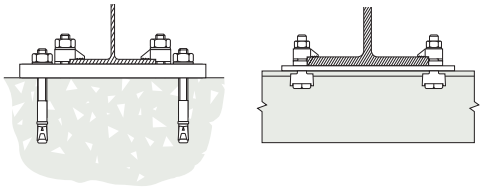






The flat top of the Type B clamp allows the bolt head or nut to be rotated.
The clamp is suitable for use with bolts, studs, tie rods, J-bolts, parallel flanges and tapered flanges up to 8°.
The clamp is installed correctly when the clamping area grips the flange.
The tail must be chosen to suit the thickness of the flange being gripped.
For correct tail length/packing combinations, please see page 15.

Typical Applications (see also page 34-37)



Product Code	Grd. 5 Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Frictional / 2 Bolts lbs	Tightening Torque ft lb	Dimensions Y	X	Tail Length V short	medium	long	T	Width
LB037[1)]	3/8"	330	-	15	13/16"	7/16"	1/8"	3/16"	1/4"	3/8"	1"
LB050	1/2"	1300	157	50	1"	1/2"	3/16"	1/4"	3/8"	1/2"	1 1/8"
LB062	5/8"	1640	337	108	1 3/16"	5/8"	1/4"	5/16"	7/16"	5/8"	1 3/8"
LB075	3/4"	3300	674	210	1 7/16"	3/4"	5/16"	3/8"	1/2"	3/4"	1 13/16"
LB100	1"	4430	1012	362	1 7/8"	1"	3/8"	1/2"	5/8"	1"	2 1/8"

1) Requires a thick flat washer under the bolt head.

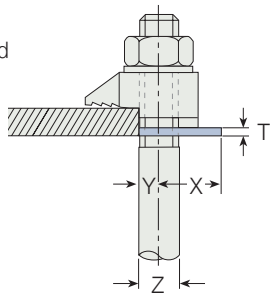
For higher loads, the Type AF should be used (see page 16).

Order example: LB062M

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type CW - Clipped Washer

Mild Steel, bright zinc plated / hot dip galvanized



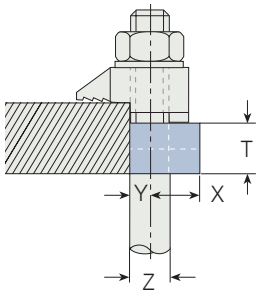
A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Product Code	Bolt Size Z	Dimensions Y	X	T	Width
LCW037	3/8"	3/16"	9/16"	1/16"	1"
LCW050	1/2"	1/4"	3/4"	1/8"	1 1/4"
LCW062	5/8"	5/16"	11/16"	1/8"	1 1/2"
LCW075	3/4"	3/8"	7/8"	3/16"	1 3/4"
LCW100	1"	1/2"	1 1/8"	3/16"	2 1/4"

Order example: LCW062

Type P1 short / P2 short

Mild Steel, malleable iron,
bright zinc plated / hot dip galvanized



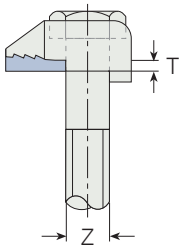
A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Product Code (P1)	Product Code (P2)	Bolt Size Z	Dimensions Y	X	(P1) T	(P2) T	Width
LP1037S	LP2037S	3/8"	3/16"	1/2"	3/16"	3/8"	15/16"
LP1050S	LP2050S	1/2"	1/4"	5/8"	1/4"	1/2"	13/16"
LP1062S	LP2062S	5/8"	5/16"	13/16"	5/16"	5/8"	1 3/8"
LP1075S	LP2075S	3/4"	3/8"	15/16"	3/8"	3/4"	1 11/16"
LP1100S	LP2100S	1"	1/2"	1 1/4"	1/2"	1"	2 1/8"

Order example: LP1062S

Type T

Malleable iron, bright zinc plated / hot dip galvanized



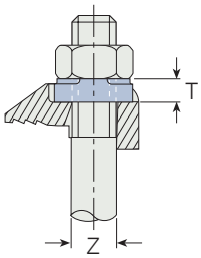
A packing, for parallel flanges only, used to fill the nose of Type A and B, making it horizontal. The thickness 'T' should be added for tail length and bolt length calculations. The product is for aesthetic purposes only and is not mandatory from a technical perspective.

Product Code	Bolt Size Z	Dimensions T
LT050	1/2"	1/8"
LT062	5/8"	3/16"
LT075	3/4"	3/16"
LT100	1"	1/4"

Order example: LT062

Type W

Mild Steel, malleable iron,
bright zinc plated / hot dip galvanized



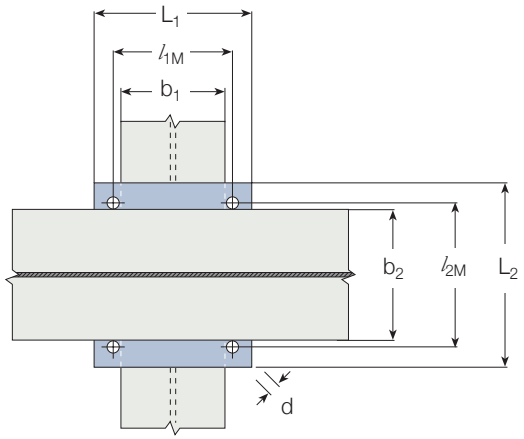
A washer used to fill the recess of Type A to enable the nut to be tightened. When calculating the bolt length, please add 'T'.

Product Code	Bolt Size Z	Dimensions T
LW037	3/8"	3/16"
LW050	1/2"	1/4"
LW062	5/8"	5/16"
LW075	3/4"	3/8"

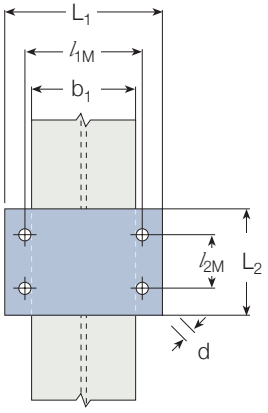
Order example: LW062

Location and End Plates

L_1 = Plate length
L_2 = Plate width
l_{1M}, l_{2M} = Hole centers
b_1, b_2 = Flange width
d = Hole Ø
s = Plate thickness



Location Plate



End Plate

Plate Dimensions
Material: Mild Steel Grade A36 (for other grades, please contact Lindapter)

Bolt Z	Hole Ø d	Location Plate: Plate Thickness s	Location Plate: Hole Centers l_{1M}, l_{2M}	Location Plate: Length/Width min L_1, min L_2	End Plate[1]: Plate Thickness s	End Plate[1]: Hole Center l_{1M}	End Plate[1]: Length min L_1	End Plate[1]: Hole Center min l_{2M}	End Plate[1]: Width min L_2
3/8"	7/16"	5/16"	b + 7/16"	b + 1 3/4"	1/2"	b_1 + 7/16"	b_1 + 1 3/4"	2"	l_{2M} + 1 5/8"
1/2"	9/16"	3/8"	b + 9/16"	b + 2 1/4"	1/2"	b_1 + 9/16"	b_1 + 2 1/4"	2 3/8"	l_{2M} + 2"
5/8"	11/16"	3/8"	b + 11/16"	b + 2 3/4"	5/8"	b_1 + 11/16"	b_1 + 2 3/4"	2 7/8"	l_{2M} + 2 3/8"
3/4"	13/16"	1/2"	b + 13/16"	b + 3 1/4"	7/8"	b_1 + 13/16"	b_1 + 3 1/4"	3 5/8"	l_{2M} + 2 3/4"
1"	1 1/8"	5/8"	b + 1 1/8"	b + 4 1/2"	1"	b_1 + 1 1/8"	b_1 + 4 1/2"	4 3/8"	l_{2M} + 3 5/8"

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

Calculation of bolt length see page 10

Tail Length / Packing Combinations for Types A and B

For beams up to and including 5° slope

Flange Thickness	Types A and B 3/8" A,B	CW	P1S	P2S	1/2" A,B	CW	P1S	P2S	5/8" A,B	CW	P1S	P2S	3/4" A,B	CW	P1S	P2S	1" A,B	CW	P1S	P2S
3/16"	m	-	-	-	s	-	-	-	■	-	-	-	■	-	-	-	■	-	-	-
1/4"	s	1	-	-	m	-	-	-	s	-	-	-	s	-	-	-	■	-	-	-
5/16"	l	-	-	-	m	1	-	-	m	-	-	-	s	-	-	-	s	-	-	-
3/8"	s	-	1	-	l	-	-	-	s	1	-	-	m	-	-	-	s	-	-	-
7/16"	l	2	-	-	m	2	-	-	l	-	-	-	s	1	-	-	m	-	-	-
1/2"	l	3	-	-	s	1	1	-	s	2	-	-	l	-	-	-	m	-	-	-
9/16"	s	-	-	1	l	2	-	-	l	1	-	-	m	1	-	-	s	1	-	-
5/8"	s	1	-	1	l	-	1	-	m	-	1	-	l	1	-	-	l	-	-	-
11/16"	l	-	-	1	m	2	1	-	l	2	-	-	s	-	1	-	s	2	-	-
3/4"	s	-	1	1	s	1	-	1	l	-	1	-	s	3	-	-	l	1	-	-
13/16"	m	-	1	1	m	1	-	1	l	3	-	-	m	-	1	-	l	1	-	-
7/8"	l	-	1	1	s	-	1	1	m	2	1	-	m	3	-	-	s	-	1	-
15/16"	s	-	-	2	m	-	1	1	m	-	-	1	m	1	1	-	m	-	1	-
1"	m	-	-	2	s	1	1	1	l	2	1	-	s	2	1	-	s	1	1	-
1 1/16"	l	-	-	2	m	1	1	1	l	-	-	1	s	-	-	1	l	-	1	-
1 1/8"	l	1	-	2	s	-	-	2	s	2	-	1	m	2	1	-	l	-	1	-
1 3/16"	■	-	-	-	m	-	-	2	l	1	-	1	m	-	-	1	s	2	1	-
1 1/4"	■	-	-	-	s	1	-	2	m	-	1	1	s	1	-	1	l	1	1	-

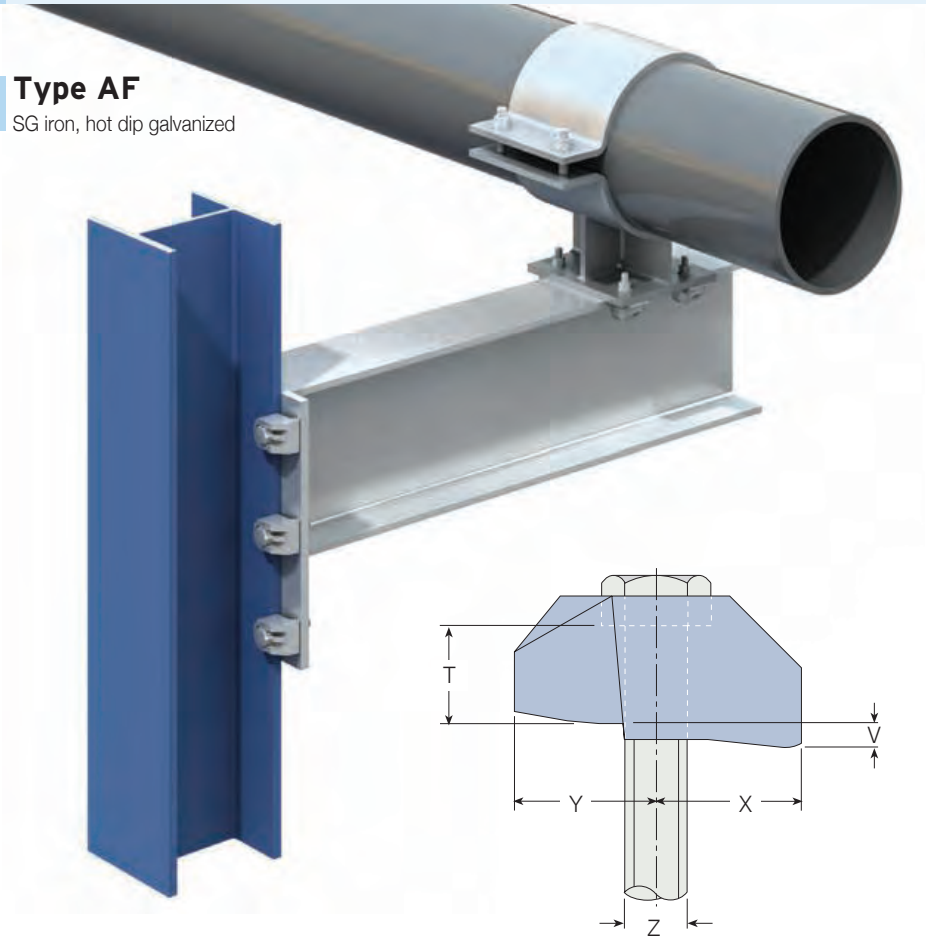
s = short m = medium l = long P1S = P1 short P2S = P2 short ■ = Type not applicable

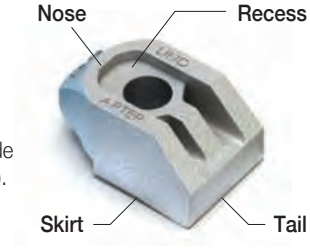
For thicker flanges, please contact Lindapter.

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

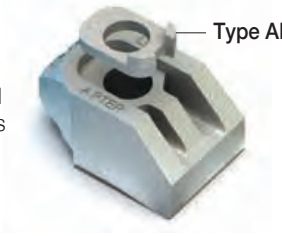
Type AF

SG iron, hot dip galvanized

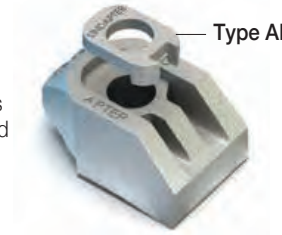




Type AF
The recess holds the bolt head captive (bolt Grade 5, sizes ½" to ¾").

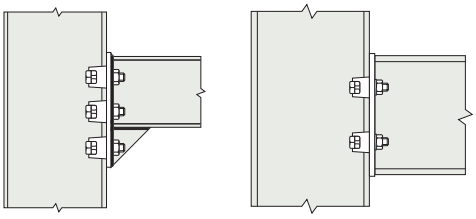


Type AF & AFW (inverted)
Holds the bolt head captive (bolt Grades A325 & A490 sizes ½" to ¾").



Type AF & AFW
Converts the recess to a flat top (required for 1" bolts).

Typical Applications (see also page 34-37)



A High Slip Resistance (HSR) clamp with a recessed top to hold the bolt head captive while the nut is tightened. Washer Type AFW available (see illustrations above and page 18). The skirt prevents the clamp rotating during installation. The tail of the AF spans across slotted holes. Suitable for flanges up to 10°, ideal for S-beams. The clamp can be combined with Type CF.

For correct tail length/packing combinations, please see page 19.

The Type AF is compatible with Grade 5/A325 and A490 bolts: please refer to the table below for performance comparisons.

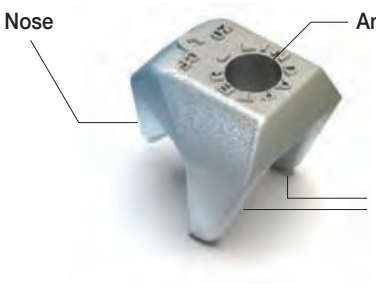
Product Code	Z	Bolt Grade	Safe Working Loads (5:1) Factor of Safety (2:1) Tensile / 1 Bolt lbs	Frictional[1] / 2 Bolts Painted Steel[2] lbs	Frictional[1] / 2 Bolts Galv. Steel lbs	Tightening Torque ft lb	Dimensions Y	X	Tail Length V short	V medium	T Type AF	T Type AF with AFW	Width
LAF050	1/2"	Grd. 5/A325	1911	764	877	66	1 1/8"	1 1/16"	3/16"	1/2"	1 1/16"	7/8"	1 9/16"
LAF062	5/8"	Grd. 5/A325	3597	1798	2248	177	1 3/8"	1 1/2"	5/16"	9/16"	7/8"	1 1/16"	1 15/16"
LAF075	3/4"	Grd. 5/A325	5901	2922	3597	347	1 9/16"	1 9/16"	3/8"	11/16"	1"	1 1/4"	2 3/16"
LAF100	1"	Grd. 5/A325	8892	5395	6774	590	1 7/8"	2 3/8"	9/16"	1 1/8"	1 1/4"	1 5/8"	3 1/4"
LAF050	1/2"	A490	2248	899	1169	96	1 1/8"	1 1/16"	3/16"	1/2"	1 1/16"	7/8"	1 9/16"
LAF062	5/8"	A490	4383	2473	2698	221	1 3/8"	1 1/2"	5/16"	9/16"	7/8"	1 1/16"	1 15/16"
LAF075	3/4"	A490	6744	4496	5620	477	1 9/16"	1 9/16"	3/8"	11/16"	1"	1 1/4"	2 3/16"
LAF100	1"	A490	14050[3]	6295	7868	737	1 7/8"	2 3/8"	9/16"	1 1/8"	1 1/4"	1 5/8"	3 1/4"

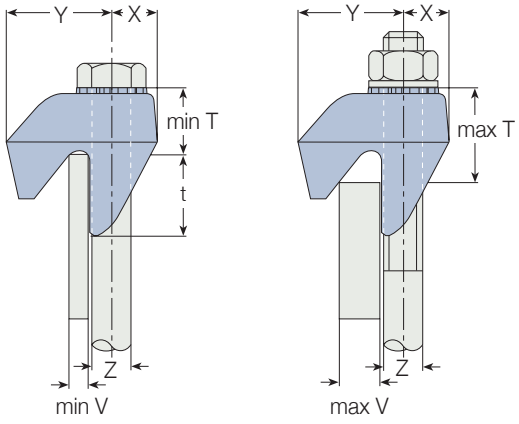
1) Frictional load figures are based on Type AF and Location plates in hot dip galvanized finish calculated against slip (movement exceeding 0.004"/0.1mm)
2) Shot blast and painted steel
3) 3.2:1 factor of safety

Order example: LAF050S

Type CF

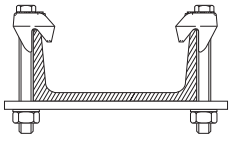
SG iron, hot dip galvanized

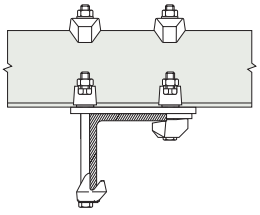




A High Slip Resistance (HSR) clamp which hooks over flanges of beams, angles and channels. Lindapter markings act as a unique anti-rotation device.Can be combined with all Lindapter Girder Clamp products, including the Type AF.

Typical Applications
(see also page 34-37)





Product Code	Bolt Grd. 5 Z	Safe Working Loads Factor of Safety (5:1) Tensile / 1 Bolt lbs	(2:1) Frictional[1] / 2 Bolts Painted Steel[2] lbs	Galv. Steel lbs	Tightening Torque ft lb	Dimensions Y	X	V	T	t	Width
LCF050	1/2"	1911	764	877	66	1 1/4"	9/16"	1/4" - 1/2"	13/16" - 1 1/8"	1"	1 13/16"
LCF062	5/8"	3597	1798	2248	177	1 3/4"	11/16"	5/16" - 5/8"	1" - 1 1/4"	1 1/4"	2 3/16"
LCF075	3/4"	5901	2922	3597	347	2 1/16"	7/8"	3/8" - 3/4"	1 3/16" - 1 9/16"	1 3/4"	2 9/16"

CF Combinations with other Lindapter Clamps		lbs	lbs	lbs	ft lb
CF / A[3]	1/2"	1300	157	157	50
CF / A[3]	5/8"	1640	337	382	108
CF / A[3]	3/4"	3300	674	674	210
CF / AF	1/2"	1911	764	877	66
CF / AF	5/8"	3597	1798	2248	177
CF / AF	3/4"	5901	2922	3597	347

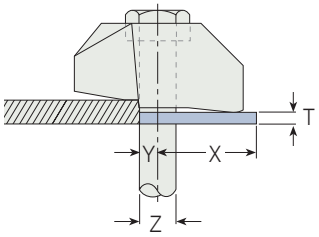
Order example: LCF050

1) Frictional load figures are based on Type CF and location plate in HDG finish calculated against slip (movement exceeding 0.004"/0.1mm)
2) Shot blast and painted steel
3) Also applies to Type B, BR, LR, D2 or D3.

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type AFCW

Mild steel, hot dip galvanized



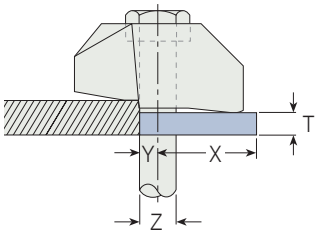
Product Code	Bolt Size Z	Dimensions Y	X	T	Width
LAF050CW	1/2"	1/4"	15/16"	1/16"	19/16"
LAF062CW	5/8"	5/16"	19/16"	1/16"	2"
LAF075CW	3/4"	3/8"	15/8"	1/16"	23/16"

Order example: LAF050CW

A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses; has a slight bend along its center line which flattens out during installation.

Type AFP1 / AFP2

Mild Steel, hot dip galvanized



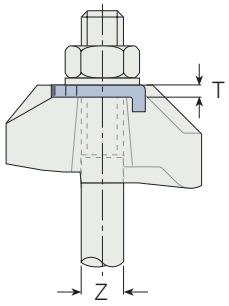
Product Code (AFP1)	Product Code (AFP2)	Bolt Size Z	Dimensions Y	X	(AFP1) T	(AFP2) T	Width
LAF050P1	LAF050P2	1/2"	1/4"	15/16"	3/16"	3/8"	19/16"
LAF062P1	LAF062P2	5/8"	5/16"	15/8"	3/16"	3/8"	21/16"
LAF075P1	LAF075P2	3/4"	3/8"	113/16"	3/16"	3/8"	23/16"
LAF100P1	LAF100P2	1"	1/2"	27/8"	3/16"	3/8"	33/8"

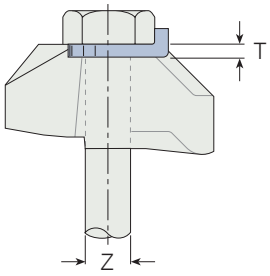
Order example: LAF050P1

A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Type AFW

SG iron, malleable iron, mild steel, hot dip galvanized





Product Code	Bolt Size Z	Dimensions T
LAF050W	1/2"	3/16"
LAF062W	5/8"	3/16"
LAF075W	3/4"	1/4"
LAF100W	1"	3/8"

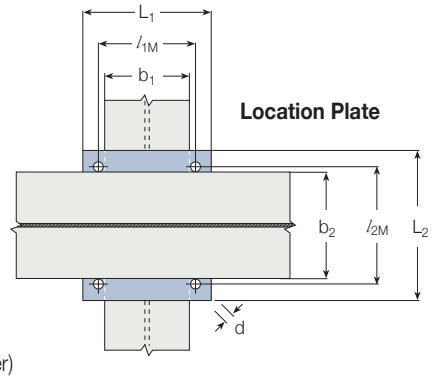
Order example: LAF050W

A washer used to fill the recess of the Type AF.

The washer features two projections which, when the AFW is inverted, will captivate the larger hexagons of A325 or A490 bolts (1/2" to 3/4"). LAF100W (1" version) has no projections.

Location and End Plates

L_1 = Plate length
L_2 = Plate width
l_{1M}, l_{2M} = Hole centers
b_1, b_2 = Flange width
d = Hole Ø
s = Plate thickness



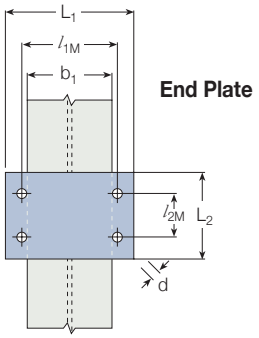


Plate Dimensions
Material: Mild Steel Grade A50 (for other grades, please contact Lindapter)

		Location Plate					End Plate[1)]				
Bolt Z	Hole Ø d	Plate Thickness Grd. 5 / A325 / A490	Hole Centers l_{1M}	Length / Width min L_1	Hole Centers l_{2M}	Length / Width min L_2	Plate Thickness Grd. 5 / A325	Plate Thickness A490	Hole Centers l_{1M}	Length min L_1	Hole Centers min l_{2M}	Width min L_2
1/2"	9/16"	1/2"	b_1 + 9/16"	b_1 + 4"	b_2 + 9/16"	b_2 + 4"	5/8"	5/8"	b + 9/16"	b + 4"	3 1/8"	l_{2M} + 3 1/8"
5/8"	11/16"	5/8"	b_1 + 11/16"	b_1 + 4"	b_2 + 11/16"	b_2 + 4"	3/4"	1"	b + 11/16"	b + 4"	4"	l_{2M} + 4"
3/4"	13/16"	3/4"	b_1 + 13/16"	b_1 + 6"*	b_2 + 13/16"	b_2 + 6"*	1"	1"	b + 13/16"	b + 6"*	7"	l_{2M} + 7"
1"	1 1/8"	1"	b_1 + 1 1/8"	b_1 + 7"	b_2 + 1 1/8"	b_2 + 7"	1 1/4"	1 1/4"	b + 1 1/8"	b + 7"	7 7/8"	l_{2M} + 7 7/8"

** Plate thickness for Type AF size 3/4" can be reduced to 5" if required.*
1) Depending on the type of connection and associated end plate used, the thickness may need to be modified to comply with accepted local design codes.

The Type CF can be used in combination with the Type AF (see plate dimensions above), Types A, B, and BR (see page 15 for plate dimensions) and Types D2, D3 and LR (see page 23 for plate dimensions).

Tail Length / Packing Combinations for Type AF

For beams up to and including 5° slope

Calculation of bolt length see page 10

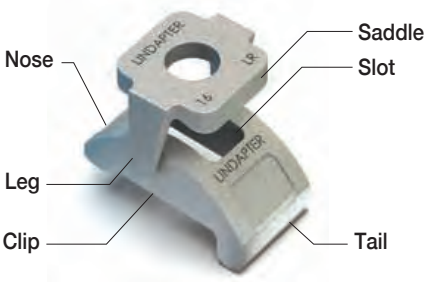
Flange Thickness	Type AF															
	1/2"				5/8"				3/4"				1"			
	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2	AF	AFCW	AFP1	AFP2
3/16"	s	-	-	-	■	-	-	-	■	-	-	-	■	-	-	-
1/4"	s	-	-	-	■	-	-	-	■	-	-	-	■	-	-	-
5/16"	s	1	-	-	s	-	-	-	■	-	-	-	■	-	-	-
3/8"	s	-	1	-	s	1	-	-	s	-	-	-	■	-	-	-
7/16"	s	-	1	-	s	1	-	-	s	-	-	-	■	-	-	-
1/2"	m	-	-	-	s	-	1	-	s	1	-	-	s	-	-	-
9/16"	m	1	-	-	m	-	-	-	s	2	-	-	s	-	-	-
5/8"	s	-	-	1	m	-	-	-	s	-	1	-	s	-	-	-
11/16"	m	-	1	-	m	1	-	-	m	-	-	-	s	-	-	-
3/4"	s	2	-	1	m	2	-	-	m	-	-	-	s	-	1	-
13/16"	s	-	1	1	m	-	1	-	s	-	-	1	s	-	1	-
7/8"	m	-	-	1	m	1	1	-	m	2	-	-	s	-	1	-
15/16"	m	1	-	1	m	2	1	-	m	-	1	-	s	-	-	1
1"	s	-	-	2	m	-	-	1	m	1	1	-	s	-	-	1
1 1/16"	s	1	-	2	m	1	-	1	m	2	1	-	s	-	-	1
1 1/8"	m	3	-	1	s	-	-	2	m	-	-	1	s	-	-	1
1 3/16"	s	-	1	2	m	-	1	1	m	1	-	1	m	-	-	-
1 1/4"	s	1	1	2	m	1	1	1	m	2	-	1	m	-	-	-
1 5/16"	m	-	-	2	s	-	1	2	m	-	1	1	m	-	-	-
1 3/8"	s	-	-	3	m	-	-	2	m	1	1	1	m	-	1	-
1 7/16"	m	2	-	2	m	1	-	2	m	2	1	1	m	-	1	-
1 1/2"	m	-	1	2	s	-	-	3	m	-	-	2	m	-	-	1
1 9/16"	m	1	1	2	m	-	1	2	m	1	-	2	m	-	-	1
1 5/8"	m	2	1	2	m	1	1	2	m	1	-	2	m	-	-	1
1 11/16"	m	-	-	3	s	-	1	3	m	-	1	2	m	-	1	1
1 3/4"	m	1	-	3	m	2	1	2	m	1	1	2	m	-	1	1
1 13/16"	s	3	1	3	s	4	-	3	s	3	-	3	m	-	1	1
1 7/8"	s	1	-	4	m	1	-	3	m	-	-	3	m	-	1	1
1 15/16"	m	1	1	3	m	2	-	3	s	2	1	3	m	-	-	2
2"	s	-	1	4	m	3	-	3	s	3	1	3	m	-	-	2

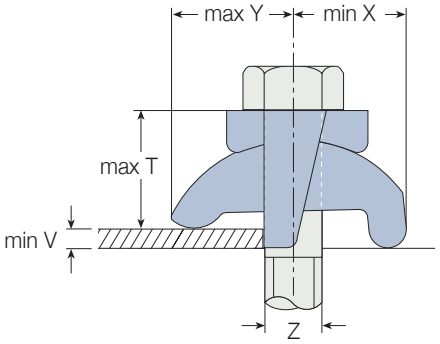
s = short m = medium ■ = Type not applicable

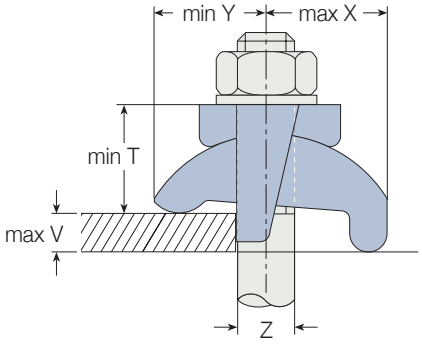
For thicker flanges please contact Lindapter.

Type LR

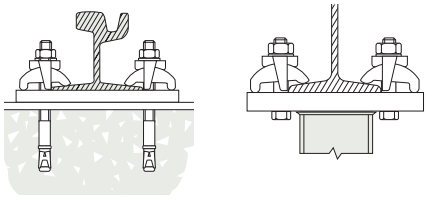
Malleable iron, bright zinc plated / hot dip galvanized







Typical Applications (see also page 34-37)



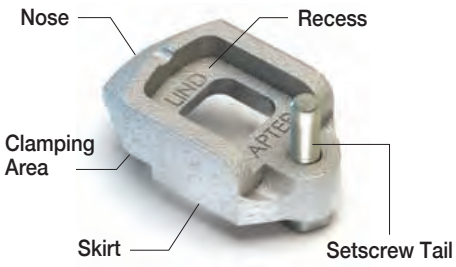
A self adjusting clamp for various flange thicknesses and slopes up to 15°. The leg of the saddle prevents the clamp from rotating during installation. The LR tail spans slotted holes. For thicker flanges, packings P1 long and P2 long are available. For correct packing combinations please see page 23.

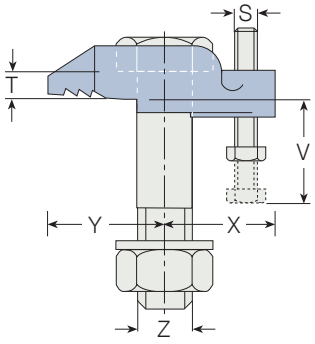
Product Code	Grd. 5 Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Safe Working Loads (5:1 Factor of Safety) Frictional / 2 Bolts lbs	Tightening Torque ft lb	Clamping Range V	Clamping Range Y	Dimensions X	Dimensions T	Width with Saddle
LLR037	3/8"	330	-	15	1/8" - 3/8"	13/16" - 15/16"	15/16" - 1"	13/16" - 15/16"	15/16"
LLR050	1/2"	1300	157	50	1/8" - 1/2"	1" - 1 1/8"	1"-1 1/4"	1"-1 1/8"	19/16"
LLR062	5/8"	1640	337	108	1/8" - 5/8"	1 3/16" - 1 3/8"	15/16" - 1 7/16"	13/16" - 1 7/16"	1 13/16"
LLR075	3/4"	3300	674	210	1/8" - 3/4"	1 5/8" - 1 15/16"	1 13/16" - 2"	1 5/8" - 1 7/8"	2 1/4"
LLR100	1"	4430	1012	362	1/8" - 1"	1 7/8" - 2 1/4"	2 1/16" - 2 1/4"	1 3/4" - 2 1/8"	3"

Order example: LLR037

Type D2

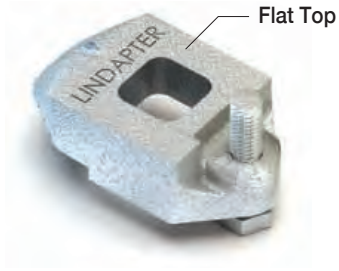
Malleable iron, bright zinc plated / hot dip galvanized

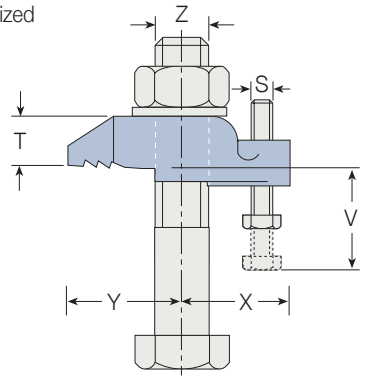




Type D3

Malleable iron, bright zinc plated / hot dip galvanized

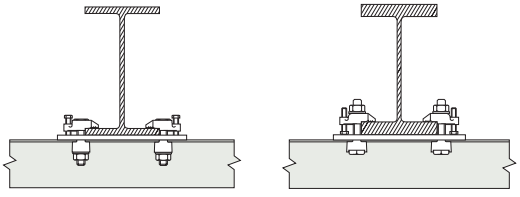




Adjustable clamps that incorporate a setscrew to accommodate a wide range of flange thicknesses. Type D2 has a recessed head to hold the bolt head captive. The skirt prevents the clamp rotating during installation. For flanges up to 5°. For thicker flanges packings P1 long and P2 long are available. For correct packing combinations please see page 23.

Correct Installation: *Setscrew S needs to be adjusted so that V is 1/32" shorter than the flange thickness prior to installation. Adjust the setscrew after installation so that the bolt Z is 90° to the clamp and the clamp contacts the flange with the clamping area only.*

Typical Applications (see also page 34-37)



Product Code	Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Safe Working Loads (5:1 Factor of Safety) Frictional / 2 Bolts lbs	Tightening Torque ft lb	Clamping Range V[1]	Clamping Range V[2]	Dimensions Y	Dimensions X	Dimensions S	Dimensions T	Width
LD2037	3/8"	330	-	15	3/16" - 3/8"	3/8" - 13/16"	13/16"	13/16"	3/16"	3/16"	1"
LD2050	1/2"	1300	157	50	3/16" - 3/8"	3/8" - 7/8"	1"	1"	3/16"	1/4"	1 1/8"
LD2062	5/8"	1640	337	108	1/4" - 1/2"	1/2" - 13/16"	13/16"	13/16"	1/4"	5/16"	1 3/8"
LD2075	3/4"	3300	674	210	5/16" - 11/16"	11/16" - 15/16"	1 3/8"	1 3/8"	5/16"	3/8"	1 5/8"
LD2100	1"	4430	1012	362	3/8" - 3/4"	3/4" - 13/16"	1 7/8"	1 15/16"	3/8"	1/2"	2 1/8"
LD3050	1/2"	1300	157	50	3/16" - 3/4"	3/8" - 7/8"	1"	1"	3/16"	1/2"	1 1/8"
LD3062	5/8"	1640	337	108	1/4" - 1/2"	1/2" - 13/16"	13/16"	13/16"	1/4"	5/8"	1 3/8"

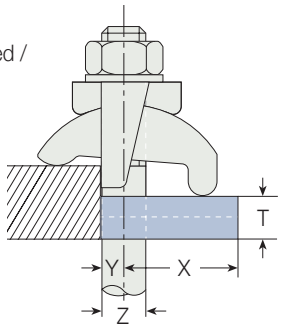
1) Setscrew S inserted from above. 2) Setscrew S inserted from below.

Order example: LD2100 BZP

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type P1 long / P2 long

Mild Steel, malleable iron, bright zinc plated / hot dip galvanized



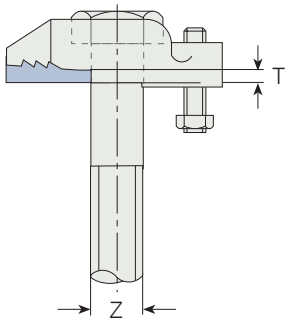
A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Product Code (P1)	Product Code (P2)	Grd. 5 Bolt Size Z	Y	X	Dimensions (P1) T	Dimensions (P2) T	Width
LP1037L	LP2037L	3/8"	3/16"	15/16"	3/16"	3/8"	15/16"
LP1050L	LP2050L	1/2"	1/4"	1 1/4"	1/4"	1/2"	1 3/16"
LP1062L	LP2062L	5/8"	5/16"	1 9/16"	5/16"	5/8"	1 3/8"
LP1075L	LP2075L	3/4"	3/8"	1 7/8"	3/8"	3/4"	1 11/16"
LP1100L	LP2100L	1"	1/2"	2 1/2"	1/2"	1"	2 1/8"

Order example: LP1037L

Type T

Malleable iron, bright zinc plated / hot dip galvanized



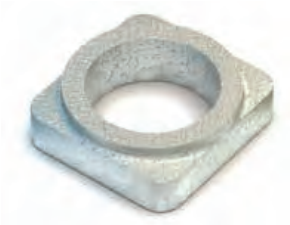
A packing to fill the nose of Type D2 and D3, making it horizontal. For parallel flanges only. The thickness 'T' should be added for tail length and bolt length calculations. The product is for aesthetic purposes only and is not mandatory from a technical perspective.

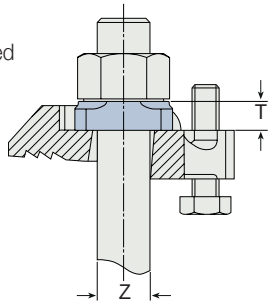
Product Code	Bolt Size Z	Dimensions T
LT050	1/2"	1/8"
LT062	5/8"	3/16"
LT075	3/4"	3/16"
LT100	1"	1/4"

Order example: LT062

Type W

Mild Steel, malleable iron, bright zinc plated / hot dip galvanized





A washer used to fill the recess of Type D2 to enable the nut to be tightened. When calculating the bolt length please add 'T'.

Product Code	Bolt Size Z	Dimensions T
LW037	3/8"	3/16"
LW050	1/2"	1/4"
LW062	5/8"	5/16"
LW075	3/4"	3/8"

Order example: LW062

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Location and End Plates

L_1 = Plate length
L_2 = Plate width
l_{1M}, l_{2M} = Hole centers
b_1, b_2 = Flange width
d = Hole Ø
s = Plate thickness

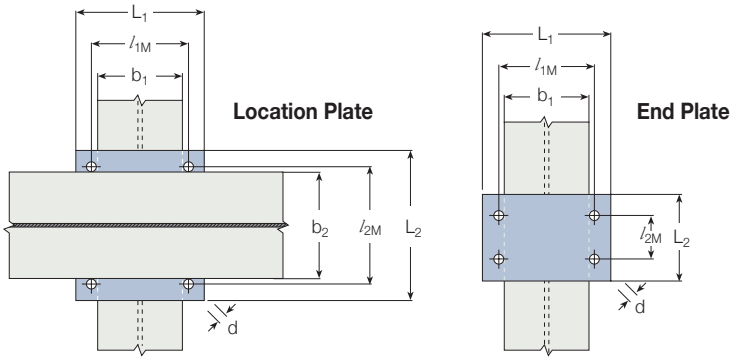


Plate Dimensions
Material: Mild Steel Grade A50 (for other grades please contact Lindapter)

Bolt Z	Hole Ø d	Location Plate: Plate Thickness s	Location Plate: Hole Centers l_{1M}, l_{2M}	Location Plate: Length/Width min L_1, min L_2	End Plate[1)]: Plate Thickness s	End Plate[1)]: Hole Center l_{1M}	End Plate[1)]: Length min L_1	End Plate[1)]: Hole Center min l_{2M}	End Plate[1)]: Width min L_2
3/8"	7/16"	5/16"	b + 7/16"	b + 2 5/8"	5/16"	b + 7/16"	b + 2 5/8"	2 3/4"	l_{2M} + 2"
1/2"	9/16"	1/2"	b + 9/16"	b + 3 3/8"	1/2"	b + 9/16"	b + 3 3/8"	3 1/8"	l_{2M} + 2 3/8"
5/8"	11/16"	5/8"	b + 11/16"	b + 4 1/8"	5/8"	b + 11/16"	b + 4 1/8"	4"	l_{2M} + 2 3/4"
3/4"	13/16"	3/4"	b + 13/16"	b + 4 7/8"	3/4"	b + 13/16"	b + 4 7/8"	4 3/4"	l_{2M} + 3 1/2"
1"	1 1/8"	3/4"	b + 1 1/8"	b + 6 3/4"	3/4"	b + 1 1/8"	b + 6 3/4"	6"	l_{2M} + 4 1/4"

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

Calculation of bolt length see page 10

Packing Combinations for Type LR

For beams up to and including 5° slope

Flange Thickness	Type LR 3/8" P1L	3/8" P2L	1/2" P1L	1/2" P2L	5/8" P1L	5/8" P2L	3/4" P1L	3/4" P2L	1" P1L	1" P2L
3/16"	-	-	-	-	-	-	-	-	-	-
1/4"	-	-	-	-	-	-	-	-	-	-
5/16"	-	-	-	-	-	-	-	-	-	-
3/8"	-	-	-	-	-	-	-	-	-	-
7/16"	1	-	-	-	-	-	-	-	-	-
1/2"	1	-	-	-	-	-	-	-	-	-
9/16"	1	-	1	-	-	-	-	-	-	-
5/8"	-	1	1	-	-	-	-	-	-	-
11/16"	-	1	1	-	1	-	-	-	-	-
3/4"	-	1	-	1	1	-	-	-	-	-
13/16"	1	1	-	1	1	-	1	-	-	-
7/8"	1	1	-	1	1	-	1	-	-	-
15/16"	1	1	-	1	1	-	1	-	-	-
1"	1	1	1	1	-	1	1	-	-	-
1 1/16"	-	2	1	1	-	1	1	-	1	-
1 1/8"	-	2	1	1	-	1	1	-	1	-
1 3/16"	-	2	1	1	-	1	-	1	1	-
1 1/4"	1	2	-	2	-	1	-	1	1	-

Packing Combinations for Type D2 and D3

For beams up to and including 5° slope

Flange Thickness	Types D2 and D3 3/8" P1L	3/8" P2L	1/2" P1L	1/2" P2L	5/8" P1L	5/8" P2L	3/4" P1L	3/4" P2L	1" P1L	1" P2L
7/8"	1	-	-	-	1	-	-	-	-	-
15/16"	1	-	1	-	1	-	-	-	-	-
1"	-	1	1	-	1	-	1	-	-	-
1 1/16"	-	1	1	-	1	-	1	-	-	-
1 1/8"	-	1	-	1	-	1	1	-	-	-
1 3/16"	1	1	-	1	-	1	1	-	-	-
1 1/4"	1	1	-	1	-	1	1	-	1	-

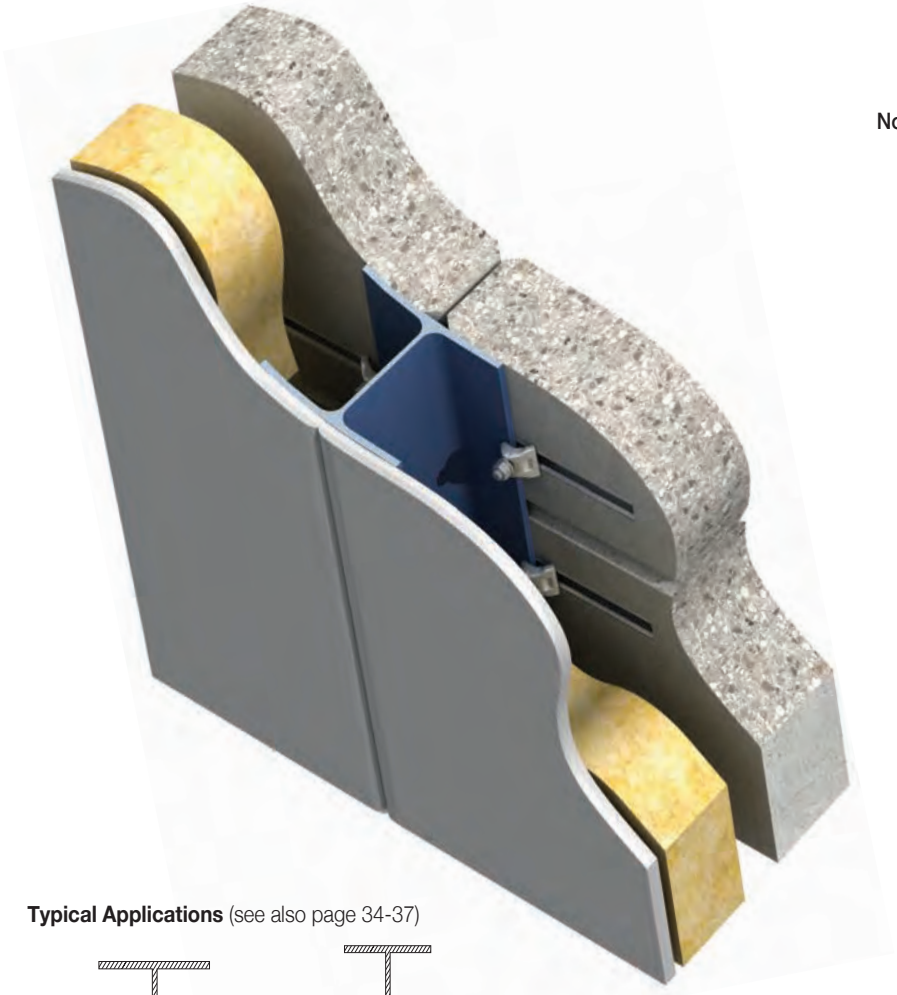
P1L = P1 long P2L = P2 long

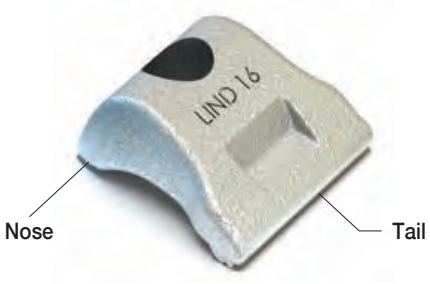
For thicker flanges please contact Lindapter.

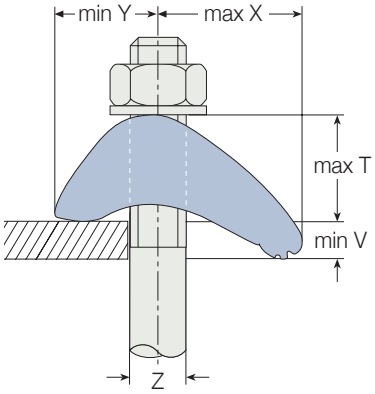
Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

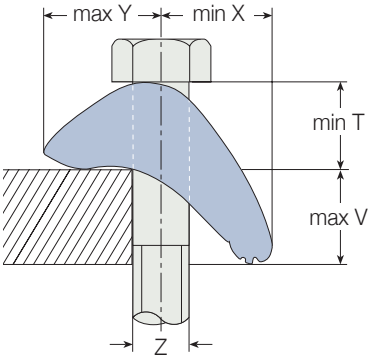
Type LS

Cast Stainless Steel Grade 316
US Design Patent No: US D597,393 S.
US Patent No: US 8459624.
Multiple International Design Patents Pending

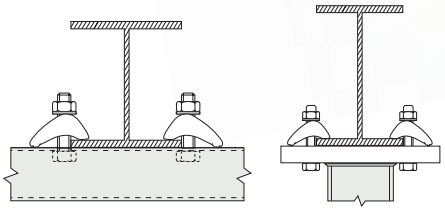








Typical Applications (see also page 34-37)



A self adjusting clamp for various flange thicknesses and slopes up to 10°. The special serrations on the tail prevent the clamp rotating during installation. The LS tail spans over slotted holes. For thicker flanges, packings LSP2 are available. For correct packing combinations please see page 25.

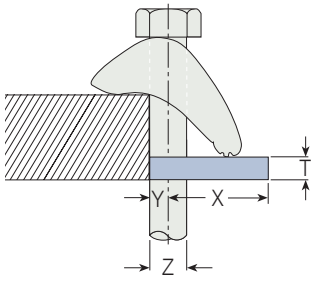
Product Code	Bolt A4-70 Z	Safe Working Load (5:1) Factor of Safety (2:1) Tensile / 1 Bolt lbs	Frictional[1] / 2 Bolts lbs	Tightening Torque ft lb	Clamping Range V	Dimensions Y	X	T	Width
LLS037	3/8"	675	337	30	1/8" - 9/16"	5/8" - 3/4"	11/16" - 15/16"	5/8" - 13/16"	11/2"
LLS050	1/2"	1574	450	60	1/8" - 13/16"	5/8" - 7/8"	11/16" - 11/8"	5/8" - 7/8"	19/16"
LLS062	5/8"	2248	675	148	1/8" - 1"	7/8" - 1"	11/16" - 17/16"	3/4" - 11/8"	23/16"
LLS075	3/4"	4047	1124	295	1/8" - 13/16"	15/16" - 11/4"	1" - 15/8"	7/8" - 11/4"	23/8"

1) Frictional loads calculated against slip (movement exceeding 0.004" / 0.1mm).

Order example: LLS037

Type LSP2

Stainless Steel Grade 316



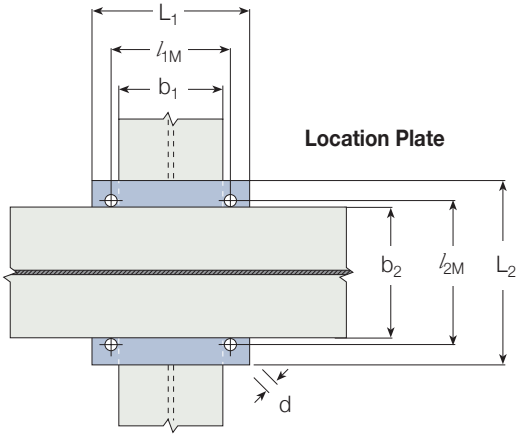
Product Code	Grd. 5 Bolt Size Z	Dimensions Y	X	T	Width
LLS037P2	3/8"	3/16"	1 1/8"	3/8"	1 9/16"
LLS050P2	1/2"	1/4"	1 5/16"	3/8"	1 9/16"
LLS062P2	5/8"	5/16"	1 9/16"	3/8"	2"
LLS075P2	3/4"	3/8"	1 5/8"	3/8"	2 3/16"

A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Order example: LLS050P2

Location and End Plates

L_1 = Plate length
L_2 = Plate width
l_{1M}, l_{2M} = Hole centers
b_1, b_2 = Flange width
d = Hole Ø
s = Plate thickness



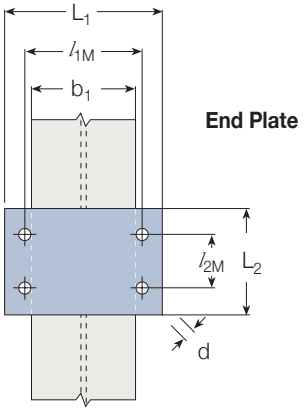


Plate Dimensions
Material: ASTM 304 or 316 Stainless Steel

Bolt Z	Hole Ø d	Location Plate: Plate Thickness s	Hole Centers l_{1M}, l_{2M}	Length/Width min L_1, min L_2	End Plate[1]: Plate Thickness s	Hole Center l_{1M}	Length min L_1	Hole Center min l_{2M}	Width min L_2
3/8"	7/16"	1/2"	b + 7/16"	b + 2 3/4"	5/8"	b + 7/16"	b + 2 3/4"	3 1/8"	l_{2M} + 2 3/8"
1/2"	9/16"	5/8"	b + 9/16"	b + 3 1/8"	3/4"	b + 9/16"	b + 3 1/8"	3 1/8"	l_{2M} + 2 3/8"
5/8"	11/16"	7/8"	b + 11/16"	b + 4"	1"	b + 11/16"	b + 4"	4 3/8"	l_{2M} + 3 1/8"
3/4"	13/16"	1"	b + 13/16"	b + 5 1/8"	1-1/4"	b + 13/16"	b + 5 1/8"	4 3/4"	l_{2M} + 3 9/16"

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

Calculation of bolt length see page 10

Packing Combinations for Type LS

For beams up to and including 5° slope

Flange Thickness	Type LS 3/8" LSP2	1/2" LSP2	5/8" LSP2	3/4" LSP2
1/2"	-	-	-	-
9/16"	-	-	-	-
5/8"	1	-	-	-
11/16"	1	-	-	-
3/4"	1	-	-	-
13/16"	1	1	-	-
7/8"	1	1	-	-

Flange Thickness	Type LS 3/8" LSP2	1/2" LSP2	5/8" LSP2	3/4" LSP2
15/16"	1	1	-	-
1"	1	1	-	-
1 1/16"	2	1	1	-
1 1/8"	2	1	1	-
1 3/16"	2	1	1	-
1 1/4"	2	2	1	1

For thicker flanges please contact Lindapter.

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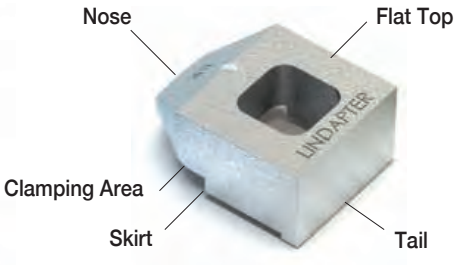
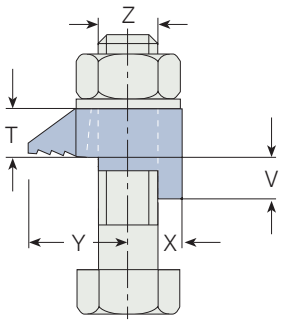
Type BR

Malleable iron, bright zinc plated / hot dip galvanized





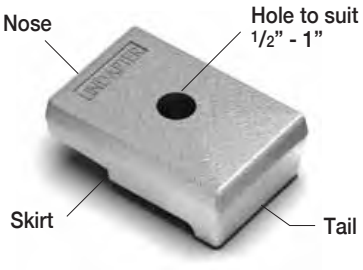
A versatile clamp for steel beams or rails. The skirt prevents the clamp from rotating during installation. The BR tail spans slotted holes. Suitable for flanges up to 8°.

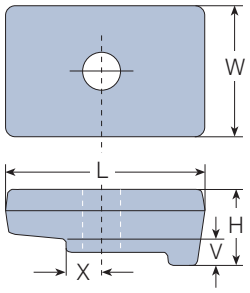
Product Code	Grd. 5 Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Frictional / 2 Bolts lbs	Tightening Torque ft lb	Dimensions Y	X	Tail Length V short	medium	T	Width
LBR050	1/2"	1300	157	50	1"	1/2"	3/16"	1/4"	1/2"	1 1/8"
LBR062	5/8"	1640	337	108	1 3/16"	5/8"	1/4"	5/16"	5/8"	1 3/8"
LBR075	3/4"	3300	674	210	1 3/8"	3/4"	5/16"	3/8"	3/4"	1 5/8"
LBR100	1"	4430	1012	362	1 7/8"	1"	3/8"	1/2"	1"	2 1/8"

Order example: LBR050S

Type RC

Forged steel, corrosion protection as required





A special clamp to secure rails or steel beams of 3/8" or greater. Packings are available for thicker flanges. The RC tail spans slotted holes. Suitable for flanges up to 5°.
The product will be drilled to suit hole size and position requirements of the application.

Product Code	Grd. 5 Bolt Size Z	Min. Safe Working Load[1] (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Tightening Torque ft lb	Tail Length V	Dimensions X	L	H	Width W
RCS050	1/2"	585	50	3/8"	1/4" - 11/16"	3"	1 1/8"	2"
RCS062	5/8"	900	108	3/8"	3/8" - 1"	3"	1 1/8"	2"
RCS075	3/4"	2160	210	3/8"	7/16" - 7/8"	3"	1 1/8"	2"
RCS100	1"	2765	362	3/8"	1/2" - 3/4"	3"	1 1/8"	2"

1) The safe working load depends on the position of the bolt hole. The greater dimension X the lower the load.

Order example: RCS050 HDG with position of hole center i.e. dimension X = _____ (inch)

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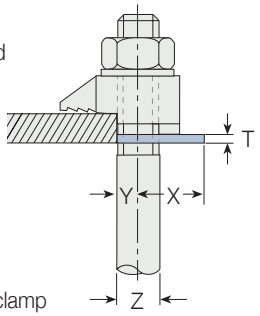
Type CW - Clipped Washer

Mild Steel, bright zinc plated, hot dip galvanized



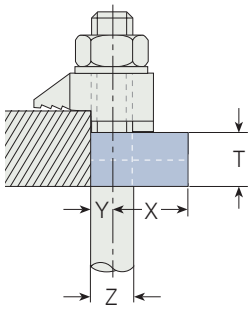
A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Product Code	Bolt Size Z	Dimensions Y	X	T	Width
LCW050	1/2"	1/4"	3/4"	1/8"	1 1/4"
LCW062	5/8"	5/16"	11/16"	1/8"	1 1/2"
LCW075	3/4"	3/8"	7/8"	3/16"	1 3/4"
LCW100	1"	1/2"	1 1/8"	3/16"	2 1/4"

Order example: LCW050 BZP

Type P1 short / P2 short

Mild Steel, malleable iron,
bright zinc plated / hot dip galvanized



A packing used to adjust the tail length of the clamp to meet differing beam flange thicknesses.

Product Code (P1)	Product Code (P2)	Bolt Size Z	Dimensions Y	X	(P1) T	(P2) T	Width
LP1050S	LP2050S	1/2"	1/4"	5/8"	1/4"	1/2"	1 3/16"
LP1062S	LP2062S	5/8"	5/16"	13/16"	5/16"	5/8"	1 3/8"
LP1075S	LP2075S	3/4"	3/8"	15/16"	3/8"	3/4"	1 11/16"
LP1100S	LP2100S	1"	1/2"	1 1/4"	1/2"	1"	2 1/8"

Order example: LP1050S BZP

For Type BR Location and End Plates, see the 'Plate and Packing Details for Type A and B' on page 15. To calculate bolt length see page 10.

Tail Length / Packing Combinations for Types BR

For rails up to and including 8° slope

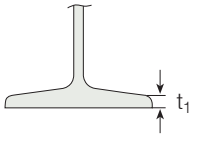
Flange Thickness	Type BR 1/2" BR	CW	P1S	P2S	5/8" BR	CW	P1S	P2S	3/4" BR	CW	P1S	P2S	1" BR	CW	P1S	P2S
3/16"	s	-	-	-	■	-	-	-	■	-	-	-	■	-	-	-
1/4"	m	-	-	-	s	-	-	-	s	-	-	-	■	-	-	-
5/16"	m	1	-	-	m	-	-	-	s	-	-	-	■	-	-	-
3/8"	s	2	-	-	s	1	-	-	m	-	-	-	s	-	-	-
7/16"	m	2	-	-	m	1	-	-	s	1	-	-	m	-	-	-
1/2"	s	1	1	-	s	2	-	-	s	1	-	-	m	-	-	-
9/16"	m	1	1	-	s	-	1	-	m	1	-	-	s	1	-	-
5/8"	s	2	1	-	m	-	1	-	s	2	-	-	m	1	-	-
11/16"	m	2	1	-	s	1	1	-	s	-	1	-	s	2	-	-
3/4"	s	1	-	1	m	1	1	-	s	3	-	-	s	2	-	-
13/16"	m	1	-	1	s	2	1	-	m	-	1	-	m	2	-	-
7/8"	s	-	1	1	m	2	1	-	m	3	-	-	s	-	1	-
15/16"	m	-	1	1	m	-	-	1	m	1	1	-	m	-	1	-
1"	s	1	1	1	s	1	-	1	s	2	1	-	s	1	1	-
1 1/16"	m	1	1	1	m	1	-	1	s	-	-	1	s	1	1	-
1 1/8"	s	-	-	2	s	2	-	1	m	2	1	-	m	1	1	-
1 3/16"	m	-	-	2	m	2	-	1	m	-	-	1	s	2	1	-
1 1/4"	s	1	-	2	m	-	1	1	s	1	-	1	m	2	1	-

s = short m = medium P1S = P1 short P2S = P2 short ■ = Type not applicable

Type BR is only available with tail length 'short' or 'medium'.

For thicker flanges please contact Lindapter.

NB: The flange thickness refers to t_1.



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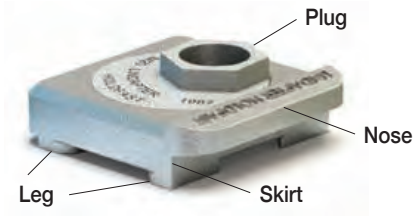
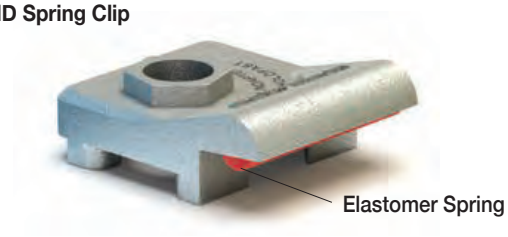
Type HD

Malleable iron, SG iron, corrosion protection as requested

Type HD Hard / Soft Clip



Type HD Spring Clip



The Type HD rail clamps facilitate the precise alignment of rails by allowing a high degree of stepless lateral adjustability. Three variants are available (see opposite page).

Technical Data

Suitable for all rails with tapered flanges and crane speeds of up to 200ft/min. For wheel loads above 90,000 lbs or lateral loads higher than wheel loads please contact Lindapter.

Product Code	Clip Type	Grd. 5 Bolt Size Z	Normal Lateral Conditions SWL[1] lbs	Normal Lateral Conditions Torque ft lb	High Lateral Conditions SWL[1] lbs	High Lateral Conditions Torque ft lb	Dimensions Leg V	Stud Length H	Lateral Adjustm. Plate Width max L	Plate Width min A	Distances X[3]	Distances Y[3]	Width W
LHD075H	Hard	3/4"	5060	136	10340	332	F -5/16"	F +1 1/2"	±7/16"	B + 5 3/8"	1 3/16"	1 1/16"	2 15/16"
LHD075S	Soft	3/4"	5060	136	10340	332	F -3/16"	F +1 9/16"	±7/16"	B + 5 3/8"	1 3/16"	1 1/16"	2 15/16"
LDHD075SP	Spring	3/4"	5060	136	10340	332	F -5/16"	F +1 9/16"	±7/16"	B + 5 3/8"	1 3/16"	1 1/16"	2 7/8"
LHD075S-P	Soft & Pad	3/4"	5060	136	10340	332	F[1]	F +1 3/4"	±7/16"	B + 5 3/8"	1 3/16"	1 1/16"	2 15/16"
LHD075SP-P	Spring & Pad	3/4"	5060	136	10340	332	F -1/16"[2]	F +1 3/4"	±7/16"	B + 5 3/8"	1 3/16"	1 1/16"	2 7/8"
LHD100H	Hard	1"	9000	236	13500	560	F -5/16"	F +1 5/8"	±5/16"	B + 5 1/8"	1 3/16"	1 1/16"	2 15/16"
LHD100S	Soft	1"	9000	236	13500	560	F -3/16"	F +1 11/16"	±5/16"	B + 5 1/8"	1 3/16"	1 1/16"	2 15/16"
LHD100SP	Spring	1"	9000	236	13500	560	F -3/16"	F +1 11/16"	±5/16"	B + 5 1/8"	1 3/16"	1 1/16"	2 7/8"
LHD100S-P	Soft & Pad	1"	9000	236	13500	560	F +1/16"[2]	F +1 7/8"	±5/16"	B + 5 1/8"	1 3/16"	1 1/16"	2 7/8"
LHD100SP-P	Spring & Pad	1"	9000	236	13500	560	F -1/16"[2]	F +1 7/8"	±5/16"	B + 5 1/8"	1 3/16"	1 1/16"	2 7/8"

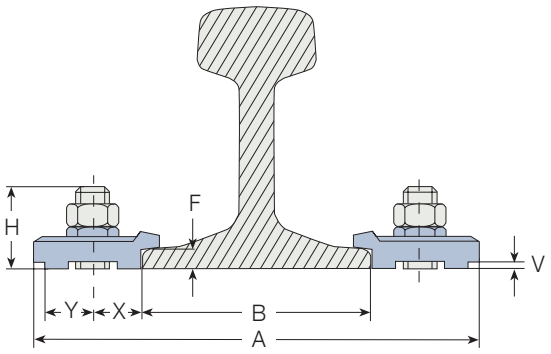
1) Lateral Safe Working Load (4:1 Factor of Safety)
2) Based on 3/16" thick resilient pad.
3) Based on plug set at 3 o'clock position.

NB: Leg length V for use with rail sections only with tapered base. For parallel sections please refer to Lindapter.

Order example: LHD075H HDG for rail reference or dimensions B____ and F____ (inch)

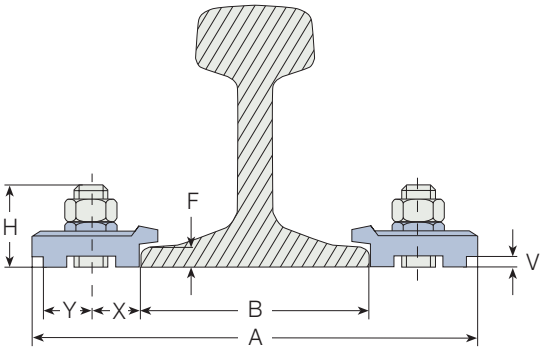
Type HD Hard Clip

Leg length V should be selected to clamp rail down tightly and allow no vertical rail movement. Not to be used when the rail is supported by a resilient pad.



Type HD Soft Clip

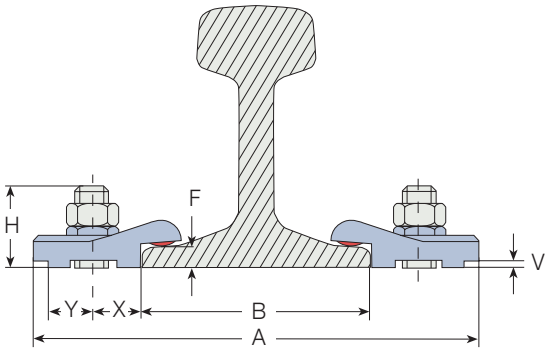
Leg length V should be selected to allow vertical rail movement caused by rail wave, whilst holding the rail in precise alignment laterally. Rail ends need to be fixed.



Type HD Spring Clip

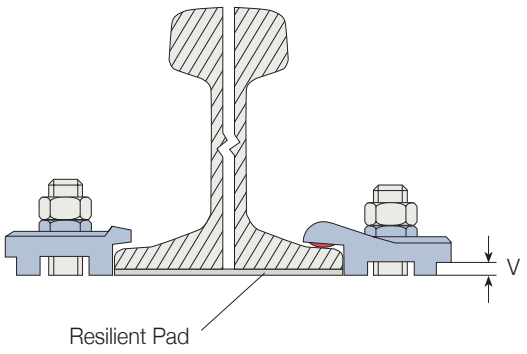
The spring clip version incorporates an elastomer spring into the nose of the product, designed to provide some vertical restraint to the rail whilst still allowing the rail to lift with rail wave.

The elastomer spring is manufactured from high density synthetic polymer which has a Shore A hardness of 94.97. The spring is unaffected by salt water and most chemicals and has a high resistance to abrasion.

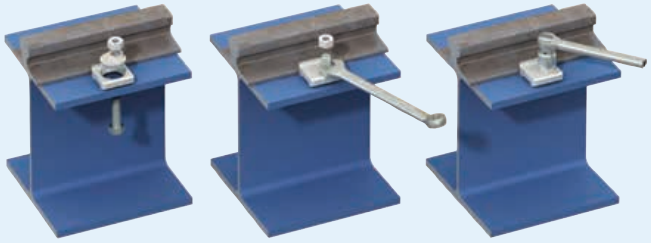


Resilient Pad

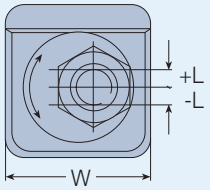
Both the spring and soft clips can be used with a resilient pad to decrease track running noise / structural vibration, level out irregular contact between surface and rail and to spread wheel load evenly over a wider area.



INSTALLATION



1. Position clip on bolt or stud. Place the plug in 3 o'clock position and tighten the nut.
2. Rotate the built in nut profile in a clockwise direction from the 3 o'clock position to locate the clip against the rail and laterally adjust the rail if required.



3. Apply the recommended tightening torque to the hexagon nut.

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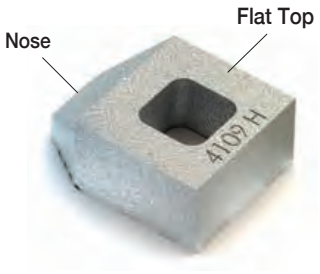
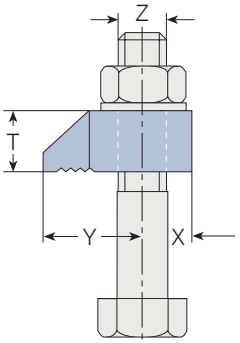
Type BSNT

Malleable iron, bright zinc plated / hot dip galvanized





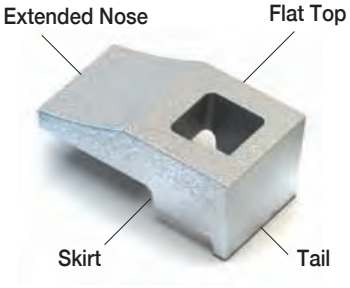
A special clamp for installation of beams flange to flange. The location plate is substituted by a connecting frame made of steel flats equalling the flange thicknesses in height. The clamps are welded to this frame.

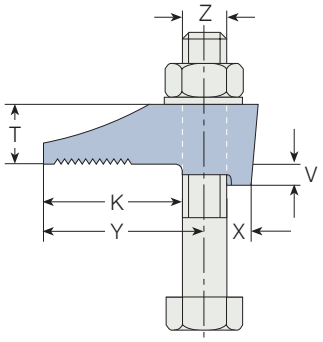
Product Code	Grd. 5 Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Tightening Torque ft lb	Dimensions Y	X	T	Width
LBSNT050	1/2"	1300	50	1"	1/2"	5/8"	1 1/8"
LBSNT062	5/8"	1640	108	1 3/16"	1/2"	3/4"	1 3/8"
LBSNT075	3/4"	3300	210	1 7/16"	3/4"	1"	1 5/8"
LBSNT100	1"	4430	362	1 7/8"	1"	1 1/4"	2 1/8"

Order example: LBSNT050

Type BSLN

Malleable iron, bright zinc plated / hot dip galvanized





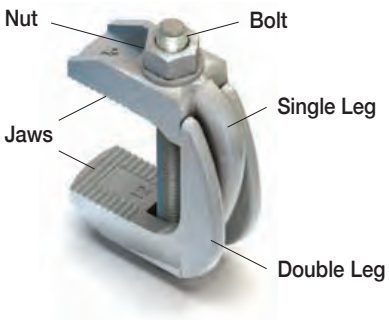
A special clamp designed with longer nose to extend the contact area with the steel section. For parallel flanges only. Can be used with Types CW, P1 short and P2 short.

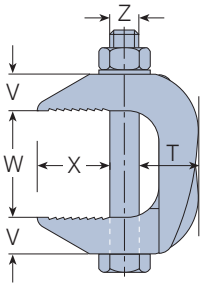
Product Code	Grd. 5 Bolt Size Z	Safe Working Load (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Tightening Torque ft lb	Dimensions Y	X	Tail Length V	T	Width
LBSLN050	1/2"	1300	50	1 13/16"	5/8"	1/4"	11/16"	1 1/8"
LBSLN062	5/8"	1640	108	1 3/4"	11/16"	7/16"	5/8"	1 1/4"

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type F9

Malleable iron, bright zinc plated / hot dip galvanized





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

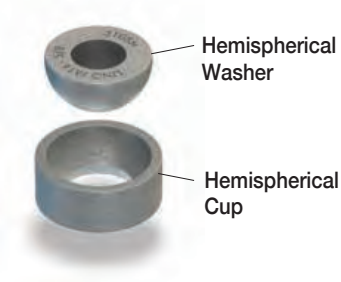
Not suitable for tapered flanges.

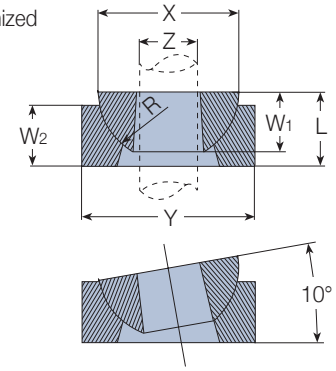
Product Code with Bolt	Product Code without Bolt	Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 1 Bolt lbs	Tightening Torque ft lb	X	Dimensions W min	W max	V	T	Width
LF9037WB	LF9037NB	M10	440	15	1"	3/4"	1 11/16"	1/2"	3/4"	15/16"
LF9050WB	LF9050NB	M12	630	29	1 3/8"	1"	2 3/8"	11/16"	15/16"	1 3/16"
LF9062WB	LF9062NB	M16	1260	69	1 11/16"	1 1/8"	2 3/4"	13/16"	1 1/8"	1 3/8"
LF9075WB	LF9075NB	M20	1880	131	2"	1 1/4"	3 1/4"	1"	1 3/8"	1 3/4"
LF9100WB	LF9100NB	M24	3147	173	3"	1 3/4"	3 3/4"	1 1/2"	2 3/16"	2 1/2"

Order example: LF9037WB

Type HW/HC

Malleable iron, bright zinc plated / hot dip galvanized





For vertical suspension on angled surface of up to 10° swing either side of the vertical. The hemispherical washer (HW) can be used without the cup. Loads are subject to applications. Please contact Lindapter for more information.

Product Code Washer	Product Code Cup	Rod Size Z	Dimensions Washer X	Washer W_1	Cup Y	Cup W_2	Washer & Cup R	Washer & Cup L
LHW037	LHC037	3/8"	1"	1/2"	1 1/4"	1/2"	1/2"	9/16"
LHW050	LHC050	1/2"	1 1/8"	1/2"	1 3/8"	1/2"	9/16"	5/8"
LHW062	LHC062	5/8"	1 3/8"	5/8"	1 5/8"	5/8"	11/16"	3/4"
LHW075	LHC075	3/4"	1 3/4"	3/4"	2 1/8"	3/4"	7/8"	15/16"
LHW100	LHC100	1"	2 1/4"	1"	2 5/8"	1"	1 1/8"	1 1/4"

Order example: LHW037 + LHC037

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Type SC and LP

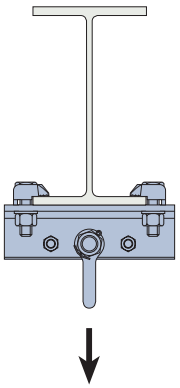
Material and corrosion protection as required

Lindapter manufactures **customized** Shackle Clamps and Lifting Points to meet individual customer requirements. Three examples of popular requests are shown below. These custom connections are designed to specific application requirements, such as vertical loads, loads at an angle and rotation of up to 360°. Please provide details of your loading, rotation, angle and beam dimensions and Lindapter's Engineers will design your connection solution.

Type SC

The Shackle Clamp is available in various configurations with vertical SWL (Safe Working Loads) **up to 13.5kip.**

Typical Configuration

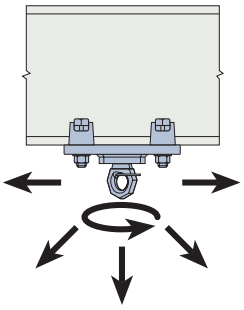


Type SC
Shackle Clamp with 4 bolts
Loading: up to 13.5kip
Directions: vertical lift
Angle: ± 10°

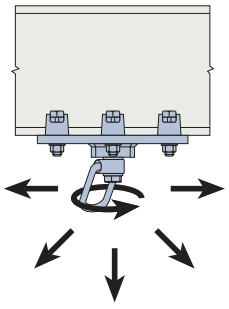
Type LP

Lifting Points utilize Lindapter's high strength Type AF clamps for heavy loads, various configurations are available **up to 44kip SWL**. The product designation, i.e. LP(#) determines the number of AF clamps, for example the LP6 has 6 AF clamps to create a Safe Working Load of 22.5kip. The Type LP can be supplied with either an Eye Bolt or Load Ring. Please state your requirement when ordering.

Typical Configurations



Type LP4
Lifting Point with 4 Bolts
Loading: up to 10kip
Directions: 360° rotation
Angle: 0 - 90°



Type LP6
Lifting Point with 6 Bolts
Loading: up to 22.5kip
Directions: 360° rotation
Angle: 0 - 90°

- Order details: Loading, rotation, angle and beam dimensions

All loads are subject to suitability of supporting section. The supplied D Shackle, Eye Bolt or Load Ring may differ in appearance from the above examples, please contact Lindapter to discuss the available options.

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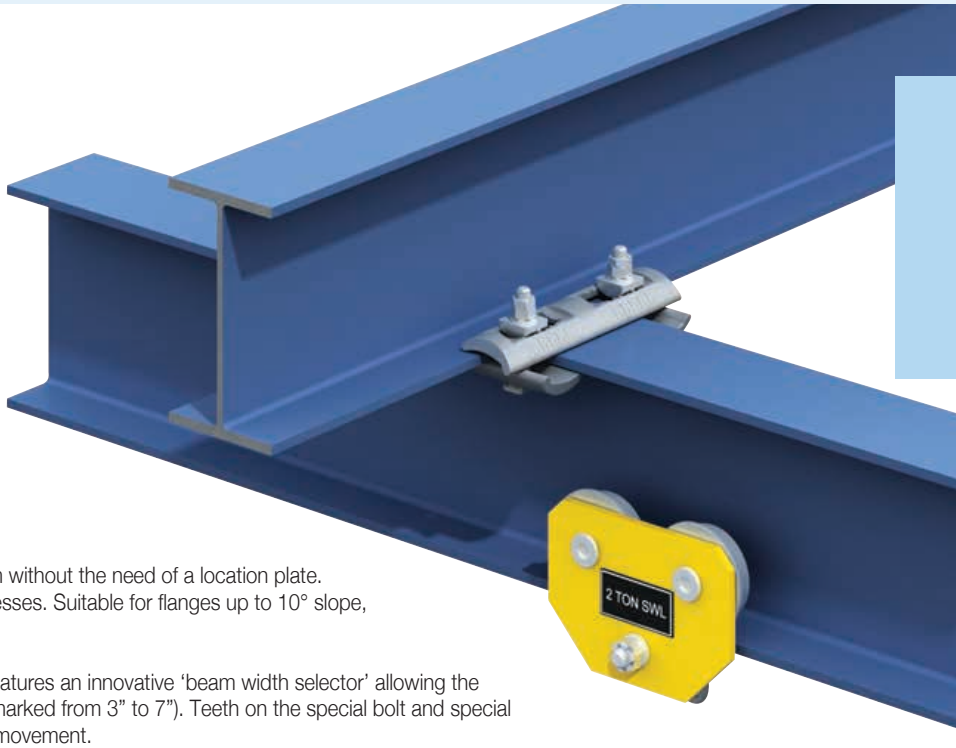
Type FC - Flush Clamp

Forged steel, bright zinc plated plus JS500



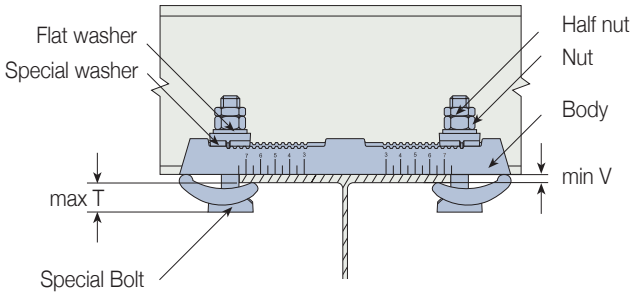
The Flush Clamp is a highly adjustable Girder Clamp System without the need of a location plate. Suitable for connecting beams of varying widths and thicknesses. Suitable for flanges up to 10° slope, ideal for S-beams.

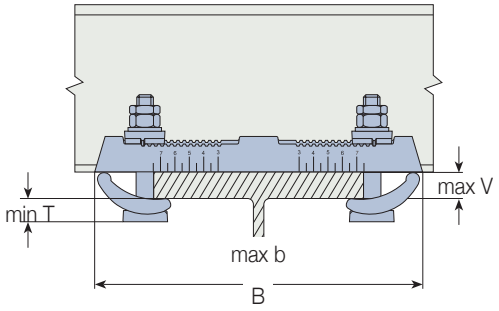
For convenience and ease of installation, the Flush Clamp features an innovative 'beam width selector' allowing the installer to quickly adjust the clamp to the required setting (marked from 3" to 7"). Teeth on the special bolt and special washer engage teeth on the body of the clamp, preventing movement.

Product Code	Special Bolt Size Z	Safe Working Loads (5:1 Factor of Safety) Tensile / 4 Bolts lbs	Frictional / 4 Bolts lbs	Tightening Torque ft lb	Clamping Range Flange Thickness V	Flange Width[1] b	Dimensions T	B
LFCM16	5/8"	6744	1686	108	3/16" - 3/4"	3" - 7"	7/8" - 1 1/16"	12"

1) Depending on beam connection angles (see table below).

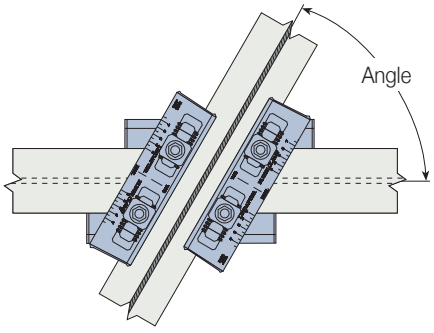
Order example: LFCM16





Minimum Possible Beam Connection Angles

Bottom Beam Flange Width	Top Beam 3"	4"	5"	6"	7"
3"	45°	50°	55°	65°	75°
4"	50°	50°	55°	65°	75°
5"	55°	55°	55°	65°	75°
6"	65°	65°	65°	65°	75°
7"	75°	75°	75°	75°	80°



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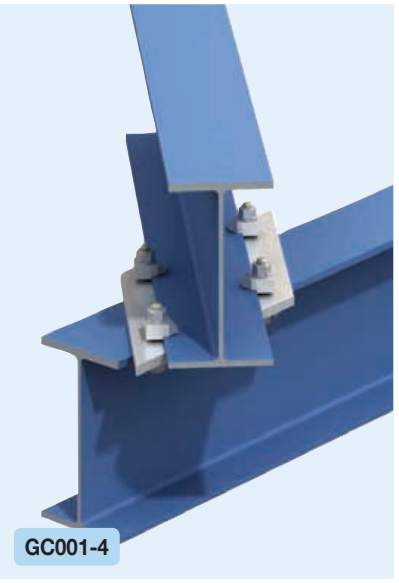
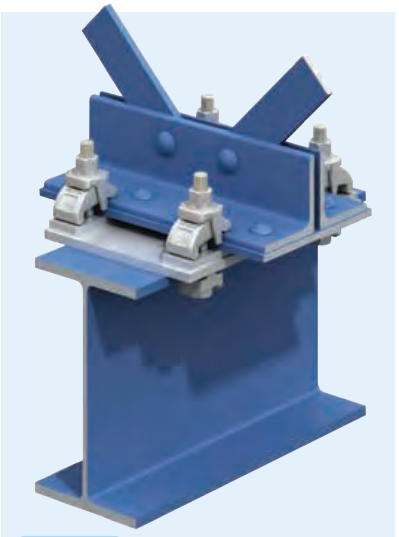
A selection of popular connection examples are shown below. Lindapter will design a custom configuration to suit your unique requirement; simply advise Lindapter of your beam dimensions and load conditions.


GC001-1


GC001-3

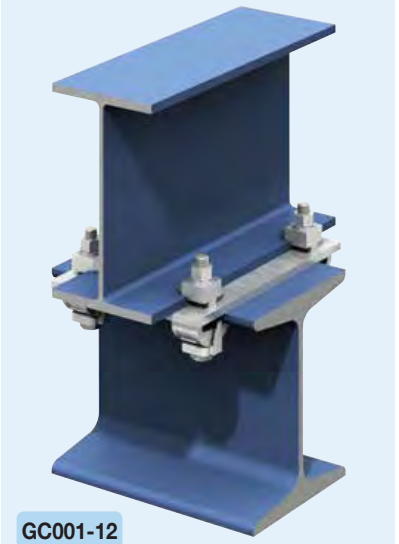

GC001-4


GC001-5


GC001-6


GC001-7


GC001-9


GC001-12


GC002-1

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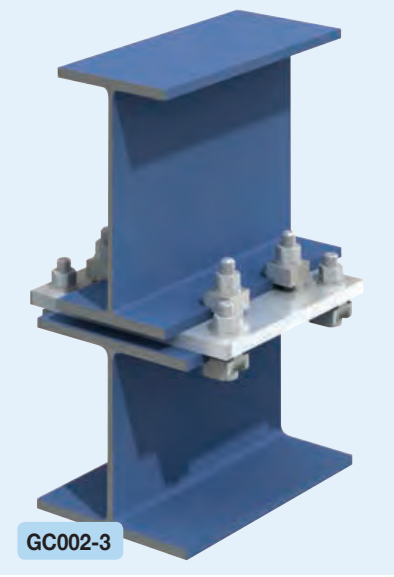
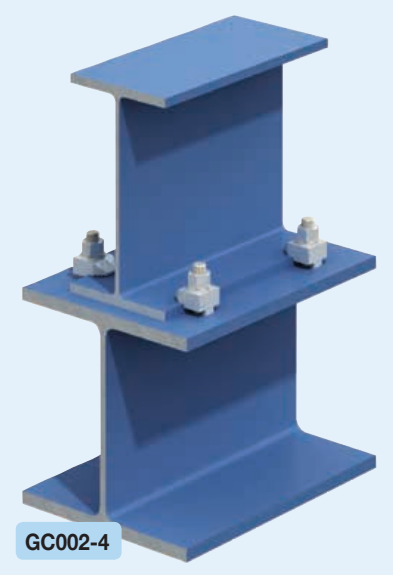
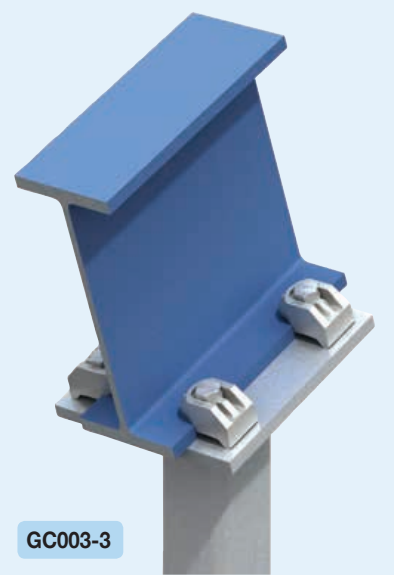
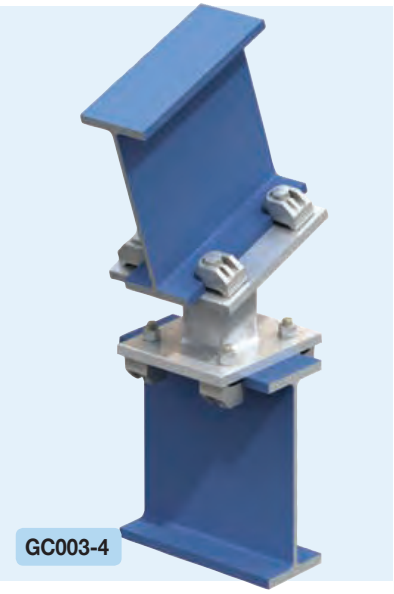
GC002-2


GC002-3


GC002-4

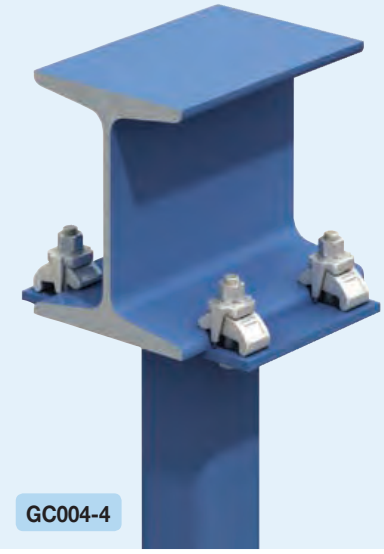

GC003-1


GC003-3


GC003-4


GC004-1


GC004-2


GC004-4

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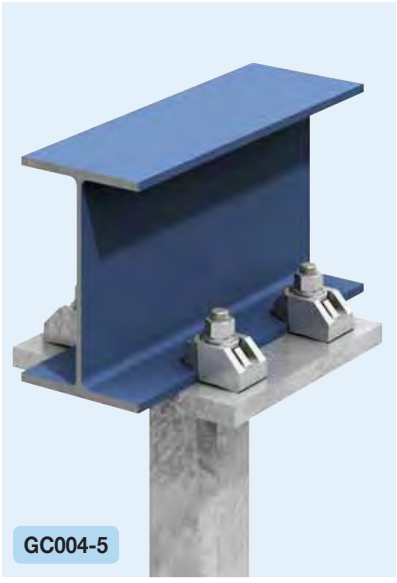
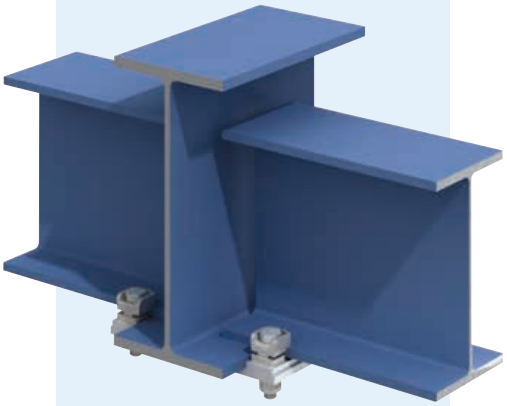
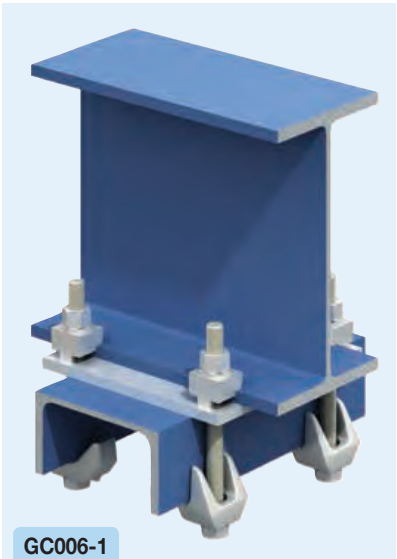
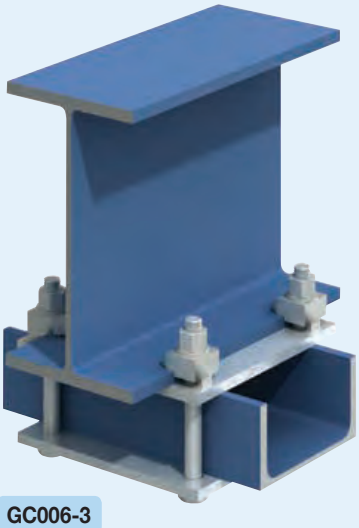

GC004-5

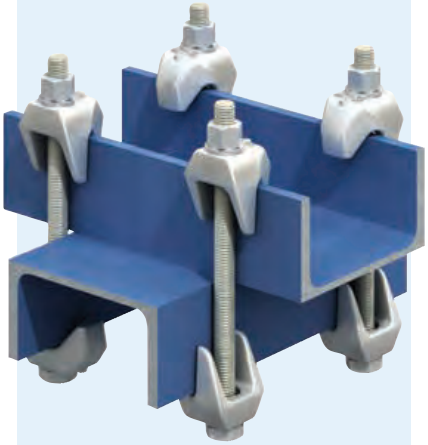

GC005-1

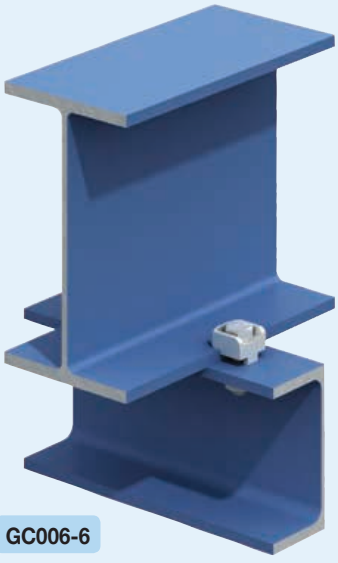

GC005-2


GC006-1


GC006-2


GC006-3


GC006-5


GC006-6


GC007-1

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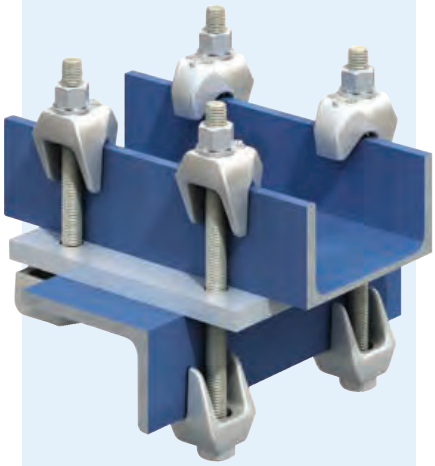
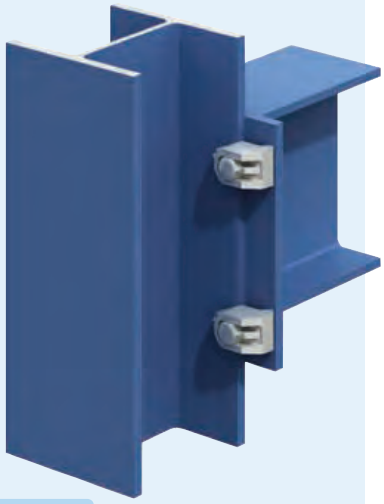
A selection of popular connection examples are shown below. Lindapter will design a custom configuration to suit your unique requirement; simply advise Lindapter of your beam dimensions and load conditions.


GC008-2


GC008-3


GC008-4

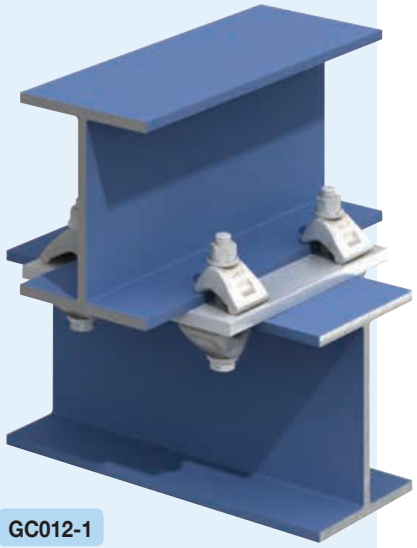

GC009-1


GC009-2


GC010-1


GC011-1


GC011-2


GC012-1

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Hollow Section (HSS) Connections

The Hollo-Bolt® and Lindibolt™ eliminate the need for conventional through-bolting or welding of hollow structural section (HSS) or any steel structure where access is only available from one side.

Both the Lindibolt and Hollo-Bolt enable fast, safe construction and can be swiftly installed by simply inserting the product into pre-drilled holes, then tightening to the recommended tightening torque using hand tools.

In the late 1940s, Lindapter revolutionized 'blind connections' with the development of the original Lindibolt, for situations where access to both sides of the steel was restricted. Following the introduction and wide acceptance of HSS, the Hollo-Bolt was invented to suit virtually any type of hollow section, including square, rectangular, circular and oval profiles. As with all Lindapter products, the R&D department has continued to develop the range with the rapid expansion in diameters, lengths, finishes and head types.

Following comprehensive testing, The Steel Construction Institute (SCI) and British Constructional Steelwork Association (BCSA) recognize the Hollo-Bolt as a primary structural connection, in the design guide 'Joints in Steel Construction – Simple Connections'. The American Institute of Steel Construction (AISC) also recognizes the Hollo-Bolt as a HSS connection in the Steel Construction Manual.

Typical Hollo-Bolt applications include:

- Primary Connections
- Secondary Connections
- Bridges
- Cladding
- Balconies
- Towers and masts
- Staircases and handrails
- Glazing and roofs

Full ICC-ES seismic approval (A-F)

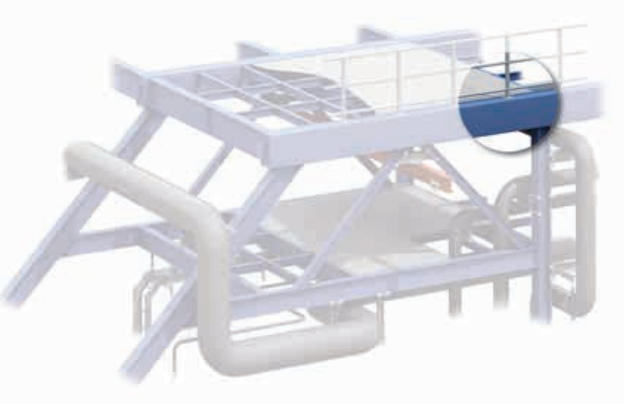
Hollo-Bolt is the only expansion bolt ICC-ES approved for Seismic Design Categories (SDC) A through F, in compliance with the 2012 International Building Code.

ICC ES ESR-3330 Seismic Approved

- ✔ Designed for HSS and other structural steel sections
- ✔ Fast installation from one side only
- ✔ Highest resistance to tensile loading in accordance with AC437
- ✔ Patented High Clamping Force design (sizes 5/8" and 3/4")
- ✔ Hot Dip Galvanized corrosion protection
- ✔ All product sizes approved from 5/16" to 3/4"
- ✔ Standard product at standard pricing
- ✔ Available 'off-the-shelf' from your local distributor

See page 43 for extracts from ESR-3330, including Hollo-Bolt Design Data to Load and Resistance Factor Design (LRFD) and Allowable Strength Design (ASD) Methods.

Download the full report now from Lindapter's website: **www.LindapterUSA.com**



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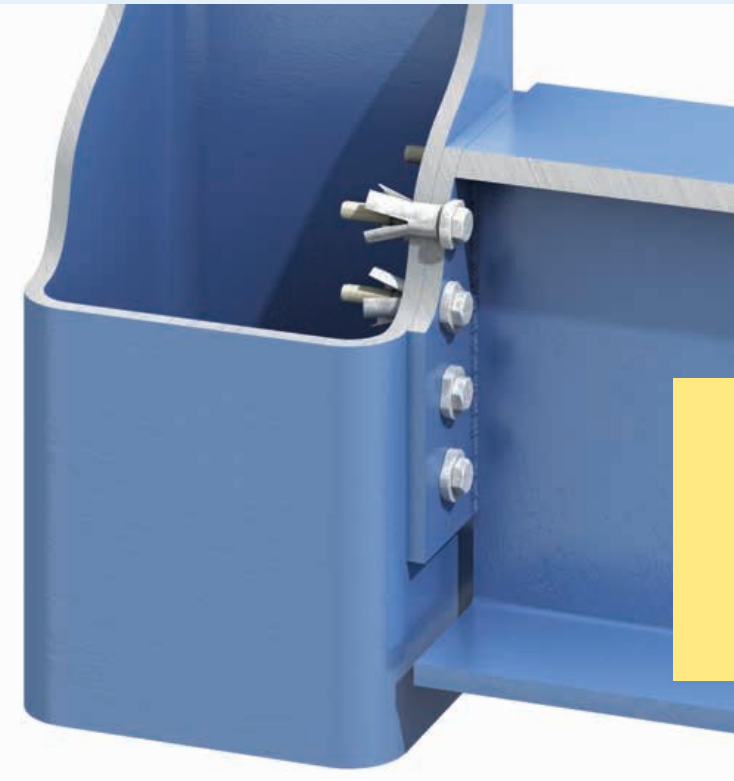
Type HB - Hollo-Bolt®

Steel, bright zinc plated plus JS 500
Steel, sheraplex
Steel, hot dip galvanized
Stainless Steel Grade 316



Suitable for hollow sections, tubes and where access is available from one side only. The Hollo-Bolt is continuously developed to meet the requirements of Structural Engineers, with performance improvements including the patented High Clamping Force (HCF) version (see page 40). The Hollo-Bolt is protected by multiple international patents and registered designs including LARR. Los Angeles Research Report RR 260 provides independent evidence that the Hollo-Bolt product complies with the 2014 City of Los Angeles Building Code.

Lindapter Hollo-Bolt Head Variations

Hexagonal
Visible protrusion: Regular
The Hollo-Bolt collar and hexagonal head of the Grade 8.8 bolt (Grd. 5 / A325 equivalent) are evident above the surface of the steel section. This head variant is the usual choice for the majority of HSS connections, or where architects favor an 'industrial' look.

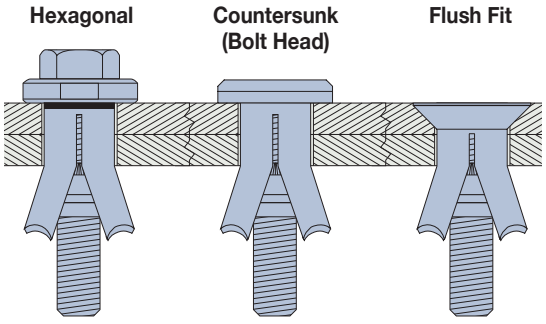
Countersunk (Bolt Head)
Visible protrusion: Minimal
This discreet midway option has a smaller protrusion for the perfect balance of appearance and convenience, and features a Grade 10.9 (A490 equivalent) countersunk bolt with a special collar designed to accommodate the entire bolt head. Drilling countersunk holes in the steel section is not required.

Flush Fit
Visible protrusion: Zero
The innovative Flush Fit Hollo-Bolt is entirely concealed within a drilled countersunk hole once installed, leaving no protrusion above the surface of the steel section - the perfect solution for architects!

Also available: Engineered Solutions
Visible protrusion: Customized
For the rare connection requirement that an off-the-shelf Hollo-Bolt cannot fulfil, Lindapter's Research & Development Facility has the capability to design and manufacture custom connection solutions. The example (left) shows the Security / Button Head. Contact Lindapter to discuss your requirement.

Availability of Head Variations

	Hex Head	Countersunk	FlushFit
M8 (5/16")	✓	✓	✓
M10 (3/8")	✓	✓	✓
M12 (1/12")	✓	✓	✓
M16 HCF* (5/8")	✓	✓	
M20 HCF* (3/4")	✓		
JS500	✓	✓	✓
Stainless Steel	✓	✓	✓
Sheraplex	✓	✓	✓
Hot Dip Galv.	✓		



***Sizes M16 (5/8") and M20 (3/4"), known as the Hollo-Bolt HCF, feature a patented High Clamping Force mechanism to produce three times more clamping force than the same sized product without the mechanism. The significance of clamping force and the superior performance of Lindapter's unique Hollo-Bolt HCF is illustrated on page 40.**

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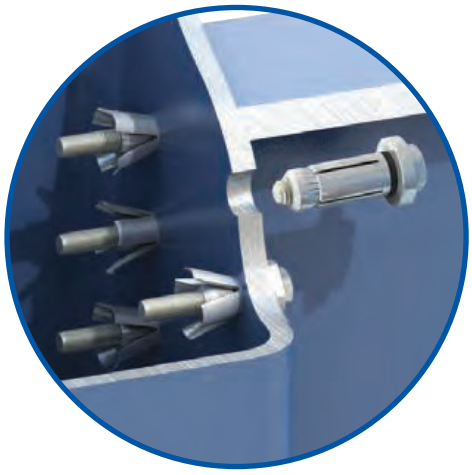
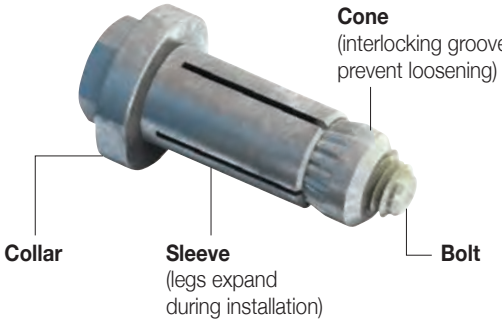
Hollo-Bolt and Hollo-Bolt HCF

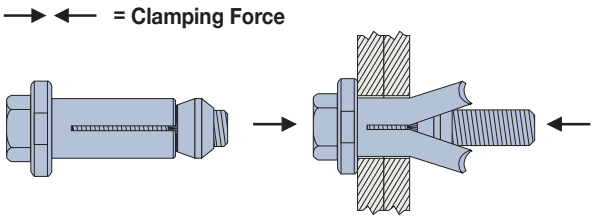
The Hollo-Bolt is available in two versions: the original 3-part design for general hollow section connections and the larger sized 5-part **High Clamping Force** (HCF) version, for higher strength structural connections.



3-Part Hollo-Bolt

M8 5/16" | M10 3/8" | M12 1/2"





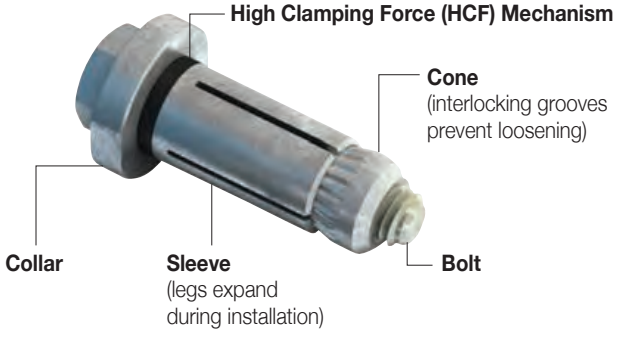
A typical connection is made by inserting the Hollo-Bolt into the pre-drilled holes of the fixture and hollow section. As the bolt head is tightened, the cone is pulled up the bolt thread, causing the legs of the sleeve to expand until the cone locks the sleeve against the inner wall of the hollow section.

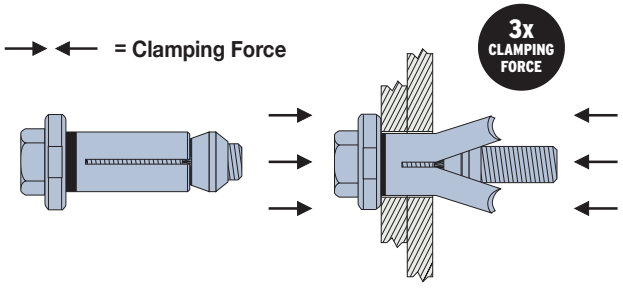
At full tightening torque, a clamping action is set up between the fixture and steel section to form a secure connection.

5-Part Hollo-Bolt (HCF)

HIGH CLAMPING FORCE

M16 5/8" | M20 3/4"



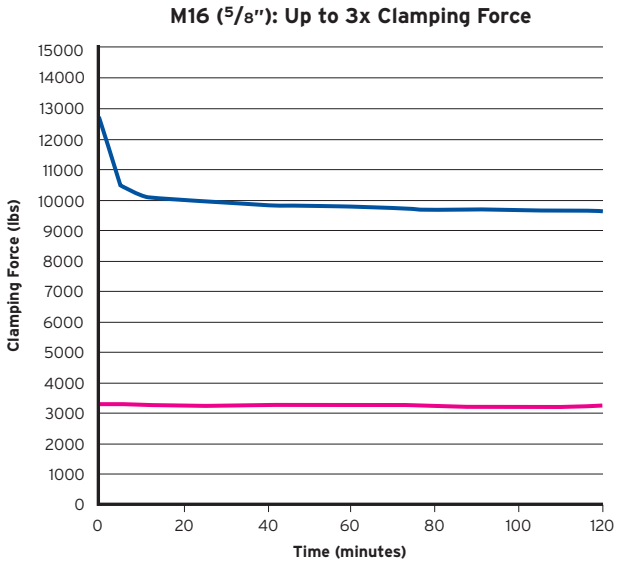


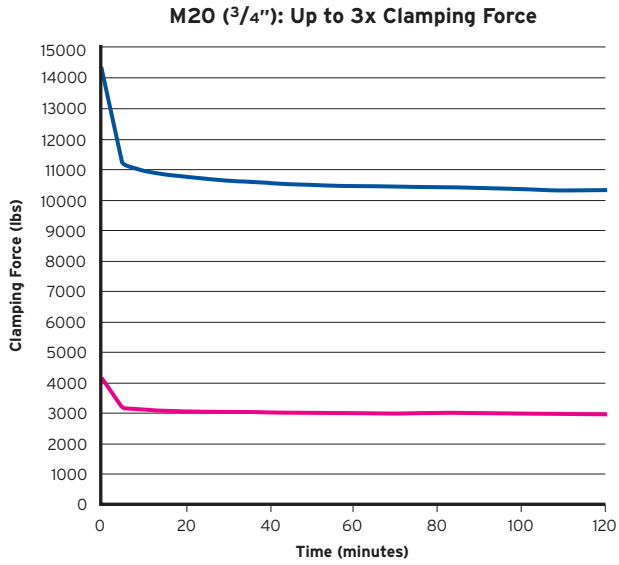
Working closely with Structural Engineers & Steel Fabricators, Lindapter identified the need for the larger M16 (5/8") and M20 (3/4") Hollo-Bolts to have an increased clamping force suitable for higher strength structural connections. Research & Development led to the invention of the patented 5-part design, optimized for superior performance.

The High Clamping Force (HCF) mechanism consists of a special washer that 'compresses' to significantly increase clamping force between the fixture and hollow section, when compared to a 3-part product of the same size, thereby reducing displacement.

Hollo-Bolt HCF
Typical Performance Increase

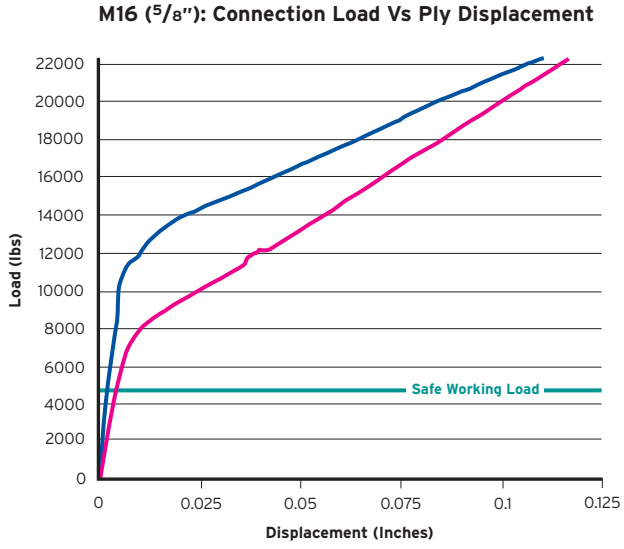
With HCF Mechanism 5-Part Design *(Hot Dip Galvanized, Size 2)*
Without HCF Mechanism 3-Part Design *(Hot Dip Galvanized, Size 2)*

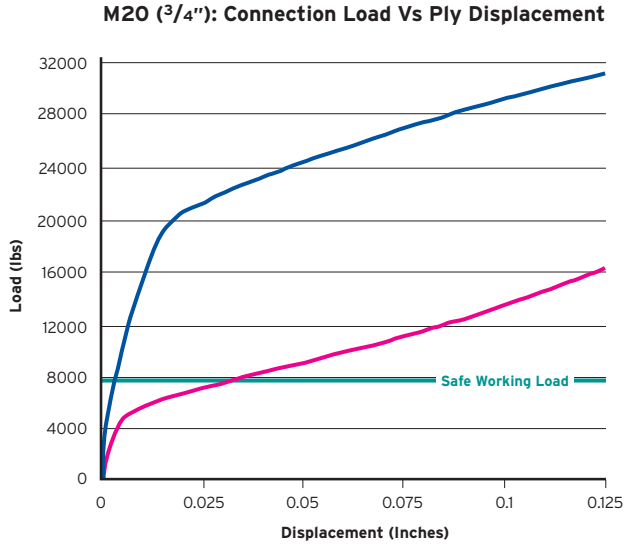




Clamping Force

As with any structural bolt, immediately after installation the bolt relaxes until a typical clamping force is reached. The typical clamping force of the Hollo-Bolt HCF is over three times higher than the same sized product without the HCF mechanism. This results in a more secure connection and a greater force that has to be overcome before displacement begins.





Displacement

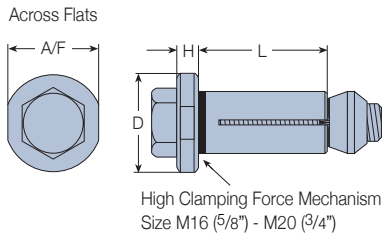
The significance of increased clamping force is shown in the graphs above. The blue curve demonstrates the superior performance of the Hollo-Bolt HCF in contrast to M16 (5/8") & M20 (3/4") sized products without Lindapter's patented HCF mechanism (i.e. the 3-part design in these larger sizes). When using the Hollo-Bolt HCF, displacement (movement in the connection) is minimized at Safe Working Load for a safer and more secure connection.

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

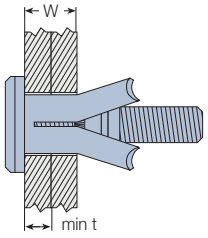
Hollo-Bolt - Safe Working Loads

See Page 43 for ICC-ES approved data to LRFD and ASD design methods.

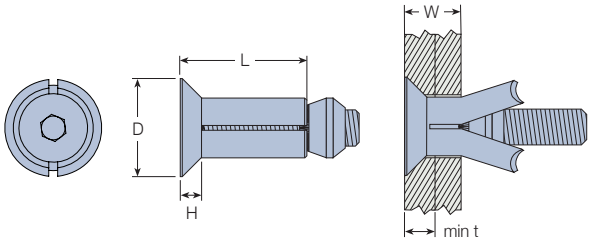
(a) Hexagonal



(b) Countersunk (Bolt Head)



(c) Flush Fit



(a) HEXAGONAL		(b) COUNTERSUNK										
Product Code	Bolt	Product Code	Countersunk Bolt	Clamping Thickness W	Outer Ply min t	Sleeve Length L	Collar Height H	Collar Ø D	Collar A/F	Tightening Torque ft lb	Safe Working Loads (5:1 Factor of Safety) Tensile lbs	Safe Working Loads (5:1 Factor of Safety) Single Shear lbs
LHBM08#1	5/16" x 2"	LHBCSKM08#1	5/16" x 2"	1/8" - 7/8"	-	13/16"						
LHBM08#2	5/16" x 2 3/4"	LHBCSKM08#2	5/16" x 2 3/4"	7/8" - 1 5/8"	-	1 15/16"	3/16"	7/8"	3/4"	17	899	1124
LHBM08#3	5/16" x 3 9/16"	LHBCSKM08#3	5/16" x 3 9/16"	1 5/8" - 2 3/8"	-	2 11/16"						
LHBM10#1	3/8" x 2 3/16"	LHBCSKM10#1	3/8" x 2"	1/8" - 7/8"	-	13/16"						
LHBM10#2	3/8" x 2 3/4"	LHBCSKM10#2	3/8" x 2 3/4"	7/8" - 1 5/8"	-	17/8"	1/4"	1 1/8"	15/16"	33	1910	2248
LHBM10#3	3/8" x 3 9/16"	LHBCSKM10#3	3/8" x 3 9/16"	1 5/8" - 2 3/8"	-	2 5/8"						
LHBM12#1	1/2" x 2 3/8"	LHBCSKM12#1	1/2" x 2 3/16"	1/8" - 1"	-	13/8"						
LHBM12#2	1/2" x 3 5/32"	LHBCSKM12#2	1/2" x 3 5/32"	1" - 1 13/16"	-	2 1/4"	1/4"	1 1/4"	1 3/16"	59	2360	3372
LHBM12#3	1/2" x 4"	LHBCSKM12#3	1/2" x 4"	1 13/16" - 2 3/4"	-	3 1/8"						
High Clamping Force (HCF) LHBM16#1	5/8" x 3"	LHBCSKM16#1	5/8" x 2 3/4"	1/2" - 1 1/8"	5/16"	1 5/8"						
LHBM16#2	5/8" x 4"	LHBCSKM16#2	5/8" x 4"	1 1/8" - 2"	5/16"	2 1/2"	5/16"	1 1/2"	1 3/8"	140	4720	6744
LHBM16#3	5/8" x 4 3/4"	LHBCSKM16#3	5/8" x 4 3/4"	2" - 2 13/16"	5/16"	3 5/16"						
LHBM20#1	3/4" x 3 9/16"	-	-	1/2" - 1 5/16"	5/16"	1 15/16"						
LHBM20#2	3/4" x 4 3/4"	-	-	1 5/16" - 2 3/8"	5/16"	3"	3/8"	2"	1 13/16"	221	7868	8992
LHBM20#3	3/4" x 5 7/8"	-	-	2 3/8" - 3 3/8"	5/16"	4"						

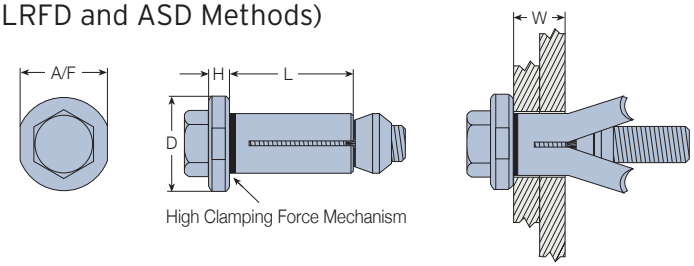
Sizes M16 (5/8") and M20 (3/4"), known as the Hollo-Bolt HCF, feature a patented High Clamping Force mechanism to produce three times more clamping force than the same sized product without the mechanism. The significance of clamping force and the superior performance of Lindapter's unique Hollo-Bolt HCF is illustrated on page 40.

(c) FLUSH FIT										
Product Code	Countersunk Bolt	Clamping Thickness W	Outer Ply min t	Sleeve Length L	Collar H	Collar D	Installation Nut A/F	Tightening Torque ft lb	Safe Working Loads (5:1 Factor of Safety) Tensile lbs	Safe Working Loads (5:1 Factor of Safety) Single Shear lbs
LHBFF08#1	5/16" x 2"	3/8" - 1 1/16"	5/16"	1 3/16"						
LHBFF08#2	5/16" x 2 3/4"	1 1/16" - 1 3/4"	5/16"	2 1/8"	13/64"	15/16"	3/4"	17	899	1124
LHBFF08#3	5/16" x 3 5/8"	1 3/4" - 2 1/2"	5/16"	2 7/8"						
LHBFF10#1	3/8" x 2"	1/2" - 1 1/16"	3/8"	1 3/16"						
LHBFF10#2	3/8" x 2 3/4"	1 1/16" - 1 3/4"	3/8"	2 1/8"	15/64"	1 3/16"	15/16"	33	1910	2248
LHBFF10#3	3/8" x 3 5/8"	1 3/4" - 2 1/2"	3/8"	2 7/8"						
LHBFF12#1	1/2" x 2 3/16"	1/2" - 1 3/16"	3/8"	1 3/8"						
LHBFF12#2	1/2" x 3 5/32"	1 3/16" - 2 1/32"	3/8"	2 1/2"	9/32"	1 5/16"	1 3/16"	59	2360	3372
LHBFF12#3	1/2" x 4"	2 1/32" - 2 7/8"	3/8"	3 3/8"						

The Hollo-Bolt can be used on a wide variety of steel hollow sections; safe working loads shown are based on use in A36 Structural Tube. The safe working loads, in both tension and shear, are applicable to the Hollo-Bolt only. Failure of the section, particularly on those with thin walls and a wide chord face, could occur at a lower figure and strength of the section should be checked by a qualified Structural Engineer.

Clearance hole details can be found on pages 44 and 45.

Hollo-Bolt Allowable Loading
(LRFD and ASD Methods)



ICC-ES is North America's leading evaluation service for innovative building products, providing evidence that products meet the requirements of building codes and technical standards. This catalog includes extracts from ESR-3330, including Allowable Loading data.

ICC ES ESR-3330 Seismic Approved

	Product Code	Bolt	Max Clamping Range W	Sleeve Length L	Collar Height H	Collar Ø D	Collar Ø A/F	Tightening Torque ft lb	ALLOWABLE LOADING: Static and SDC* A, B, C — LRFD Method Tensile lbs	LRFD Method Shear lbs	ASD Method Tensile lbs	ASD Method Shear lbs	SDC* D, E, F — LRFD Method Tensile lbs	LRFD Method Shear lbs	ASD Method Tensile lbs	ASD Method Shear lbs
	LHBM08#1	5/16" x 2"	1/8" - 7/8"	1 3/16"	3/16"	7/8"	3/4"	17	3775	3215	2340	2000	3305	2675	2045	1665
	LHBM08#2	5/16" x 2 3/4"	7/8" - 1 5/8"	1 15/16"	3/16"	7/8"	3/4"	17	3775	3215	2340	2000	3305	2675	2045	1665
	LHBM08#3	5/16" x 3 9/16"	1 5/8" - 2 3/8"	2 11/16"	3/16"	7/8"	3/4"	17	3775	3215	2340	2000	3305	2675	2045	1665
	LHBM10#1	3/8" x 2 3/16"	1/8" - 7/8"	1 3/16"	1/4"	1 1/8"	15/16"	33	6160	5485	3820	3415	5485	4565	3395	2830
	LHBM10#2	3/8" x 2 3/4"	7/8" - 1 5/8"	1 7/8"	1/4"	1 1/8"	15/16"	33	6160	5485	3820	3415	5485	4565	3395	2830
	LHBM10#3	3/8" x 3 9/16"	1 5/8" - 2 3/8"	2 5/8"	1/4"	1 1/8"	15/16"	33	6160	5485	3820	3415	5485	4565	3395	2830
	LHBM12#1	1/2" x 2 3/8"	1/8" - 1"	1 3/8"	1/4"	1 1/4"	1 3/16"	59	8545	7485	5305	4675	7465	6250	4630	3890
	LHBM12#2	1/2" x 3 5/32"	1" - 1 13/16"	2 1/4"	1/4"	1 1/4"	1 3/16"	59	8545	7485	5305	4675	7465	6250	4630	3890
	LHBM12#3	1/2" x 4"	1 13/16" - 2 3/4"	3 1/8"	1/4"	1 1/4"	1 3/16"	59	8545	7485	5305	4675	7465	6250	4630	3890
High Clamping Force (HCF)	LHBM16#1	5/8" x 3"	1/2" - 1 1/8"	1 5/8"	5/16"	1 1/2"	1 3/8"	140	13915	11645	8635	7285	13330	9780	8270	6090
High Clamping Force (HCF)	LHBM16#2	5/8" x 4"	1 1/8" - 2"	2 1/2"	5/16"	1 1/2"	1 3/8"	140	13915	11645	8635	7285	13330	9780	8270	6090
High Clamping Force (HCF)	LHBM16#3	5/8" x 4 3/4"	2" - 2 13/16"	3 5/16"	5/16"	1 1/2"	1 3/8"	140	13915	11645	8635	7285	13330	9780	8270	6090
High Clamping Force (HCF)	LHBM20#1	3/4" x 3 9/16"	1/2" - 1 5/16"	1 15/16"	3/8"	2"	1 13/16"	221	19985	18390	12410	11490	19335	15330	12005	9555
High Clamping Force (HCF)	LHBM20#2	3/4" x 4 3/4"	1 5/16" - 2 3/8"	3"	3/8"	2"	1 13/16"	221	19985	18390	12410	11490	19335	15330	12005	9555
High Clamping Force (HCF)	LHBM20#3	3/4" x 5 7/8"	2 3/8" - 3 3/8"	4"	3/8"	2"	1 13/16"	221	19985	18390	12410	11490	19335	15330	12005	9555

*Seismic Design Categories

Sizes M16 (5/8") and M20 (3/4"), known as the Hollo-Bolt HCF, feature a patented High Clamping Force mechanism to produce three times more clamping force than the same sized product without the mechanism. The significance of clamping force and the superior performance of Lindapter's unique Hollo-Bolt HCF is illustrated on page 40.

Clearance hole details can be found on pages 44 and 45.

Testing and Evaluation Process

Product testing was carried out by an independent ISO 17025 accredited testing laboratory. ICC-ES thoroughly examined independent test reports, calculations, quality control methods and other factors. After extensive analysis, ICC-ES has certified that Hollo-Bolt is the only expansion bolt with the following:

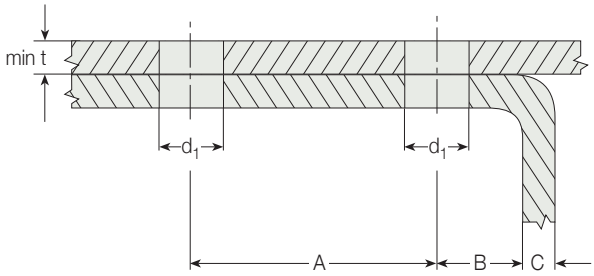
> Highest resistance to tensile loading in accordance with Acceptance Criteria (AC437).
> Compliance with the 2012 International Building Code, the 2009 International Building Code and the 2013 Abu Dhabi International Building Code.
> Approved for use in Seismic Design Categories A to F.

Download the full ESR-3330 report today from www.LindapterUSA.com

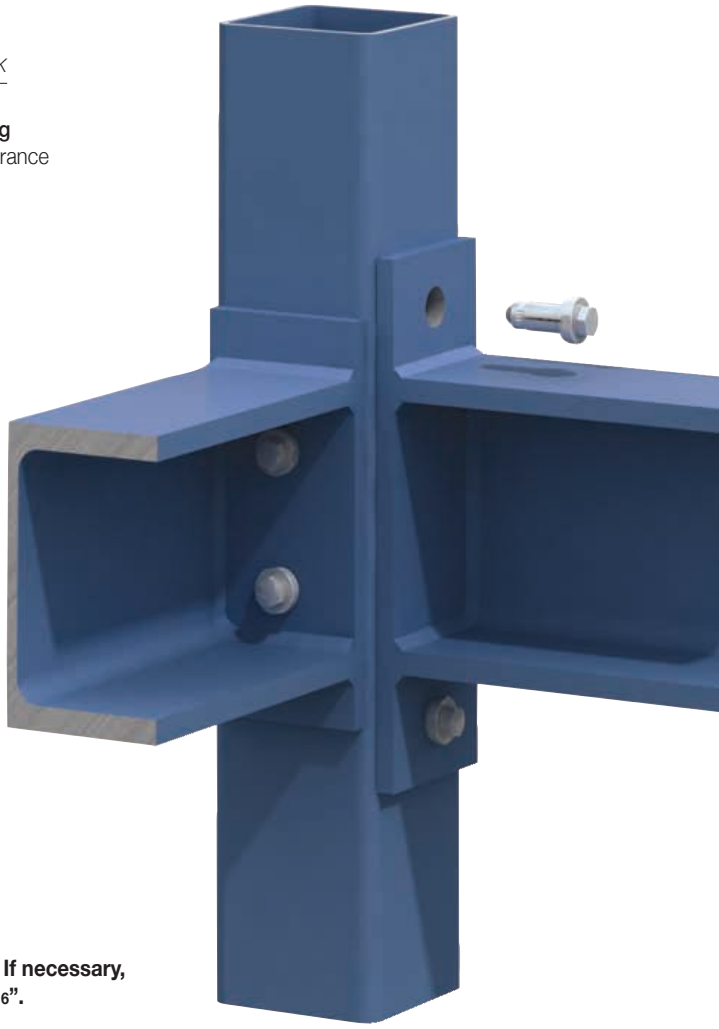
Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Hollo-Bolt and Hollo-Bolt (HCF)
Drilling and Preparation

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



Hexagonal	Countersunk (Bolt Head)	Outer Ply	Clearance Hole Ø	Hole Distances		Edge Distances
		min t	d_1	min A	min B	B + C
LHBM08	LHBCSKM08	-	9/16"	1 3/8"	1/2"	11/16"
LHBM10	LHBCSKM10	-	3/4"	1 9/16"	9/16"	7/8"
LHBM12	LHBCSKM12	-	13/16"	2"	3/4"	1"
LHBM16	LHBCSKM16	5/16"	1 1/16"	2 3/16"	13/16"	1 5/16"
LHBM20	-	5/16"	1 5/16"	2 3/4"	1"	1 5/16"



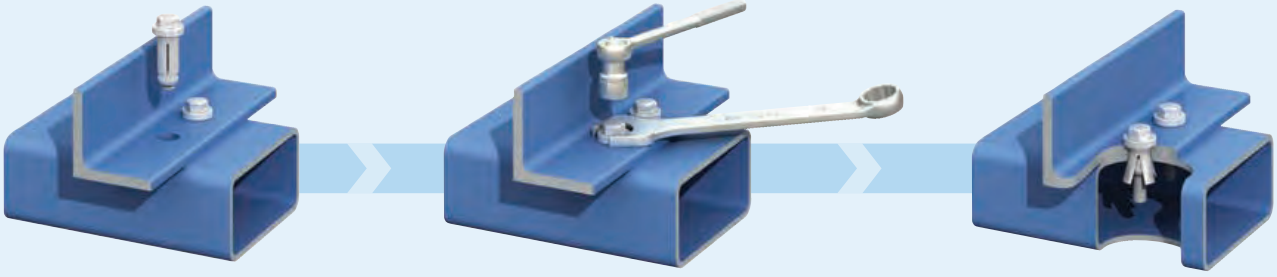
- **Clearance holes can be drilled with a -0 / +1/16" tolerance.**
- **Sizes 5/8" and 3/4" require the thickness of the outer ply (min t) to be at least 5/16". If necessary, spacer washers should be used beneath the collar to increase the thickness to 5/16".**

INSTALLATION

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

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

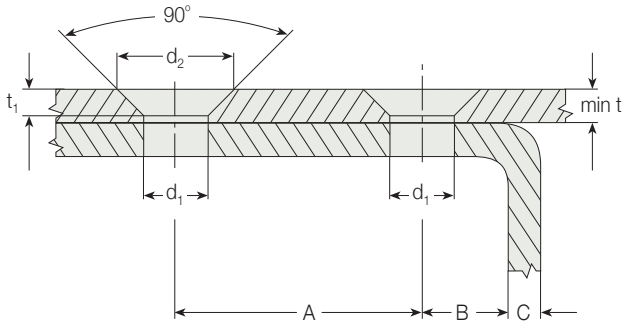
3. Using a calibrated torque wrench, tighten the central bolt to the recommended torque[b].

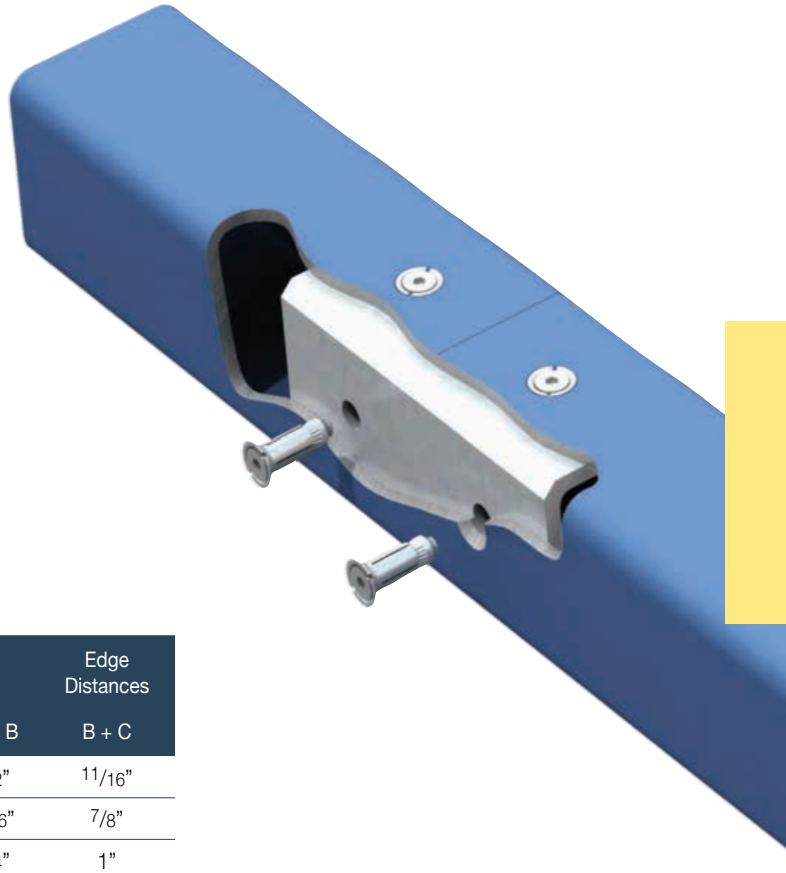


- **a) Before tightening, ensure that the materials that are to be connected together are touching. See page 42 for tightening torque.**
- **b) Power tools, such as an impact wrench, may be used to speed up the tightening of the Hollo-Bolt. However, when using power tools, always complete the tightening process with a torque wrench to ensure the correct torque is applied to the Hollo-Bolt.**

Hollo-Bolt Flush Fit
Drilling and Preparation

Ensure that countersunk holes are drilled in the fixture, and standard holes are drilled in the section, according to the drilling guidance below. Please note that clearance holes are slightly larger than standard bolt clearance holes to accommodate the sleeve and cone.





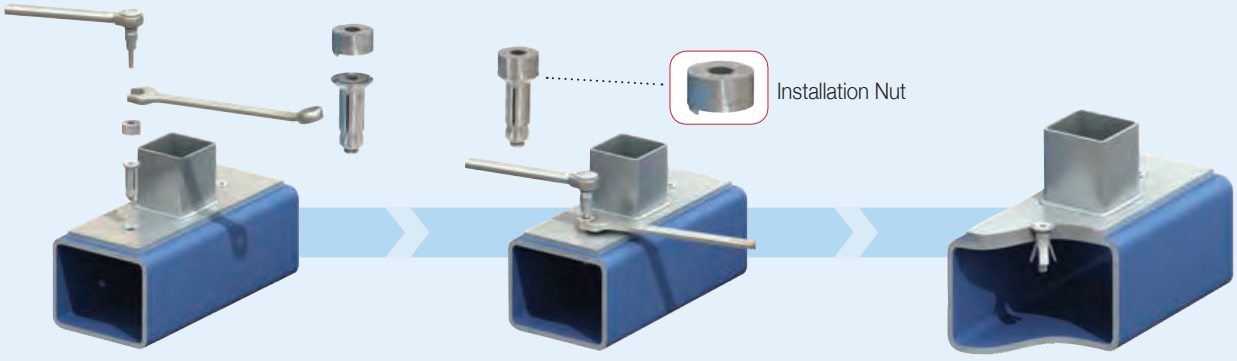
Type	Outer Ply	Clearance Hole Ø	Countersunk Ø	Countersunk Depth	Hole Distances		Edge Distances
	min t	d_1	d_2	t	min A	min B	B + C
LHBM08FF	5/16"	9/16"	1 1/16"	1/4"	1 3/8"	1/2"	11/16"
LHBM10FF	3/8"	3/4"	1 1/4"	1/4"	1 9/16"	9/16"	7/8"
LHBM12FF	3/8"	13/16"	1 3/8"	5/16"	2"	3/4"	1"

INSTALLATION

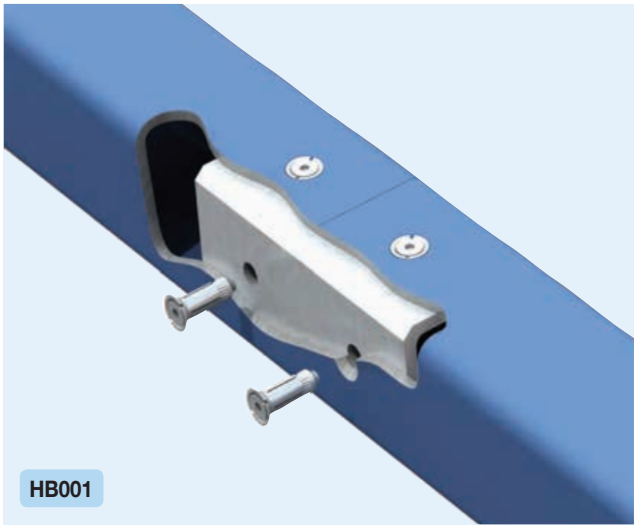
1. Align pre-drilled fixture and section and insert Hollo-Bolt[a].

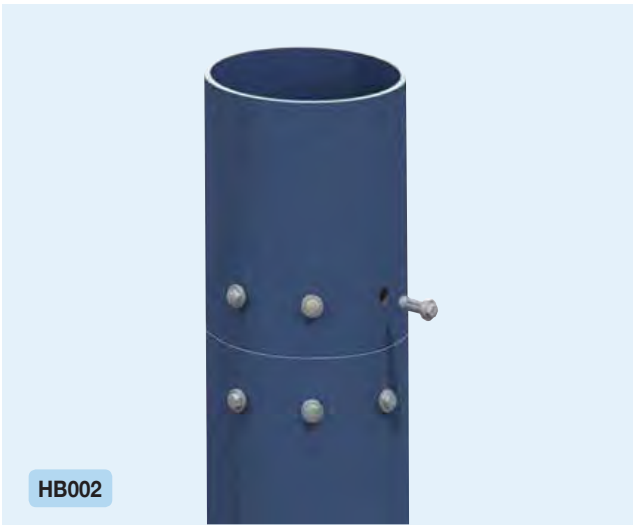
2. Apply installation nut and grip with an open ended adjustable spanner.

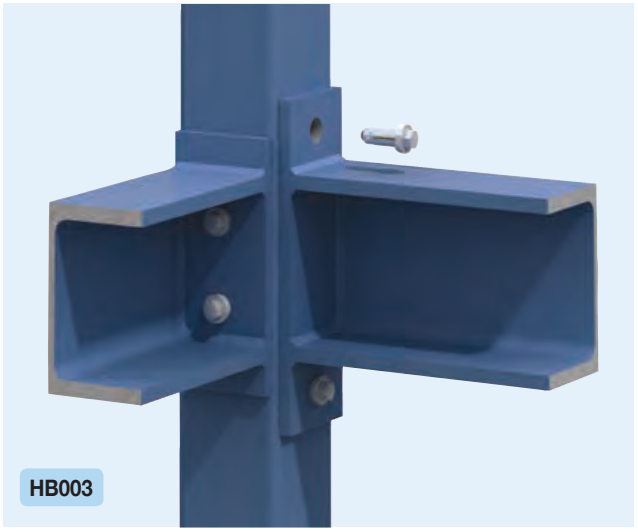
3. Using a calibrated torque wrench, tighten the central countersunk bolt to the recommended torque[b].



a) Before tightening, ensure that the materials that are to be connected together are touching. See page 42 for tightening torque.
b) 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 torque wrench to ensure the correct torque is applied to the Hollo-Bolt.


HB001


HB002

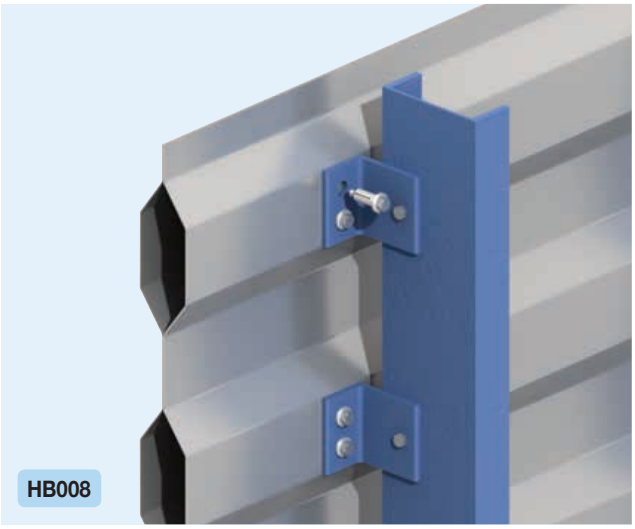

HB003

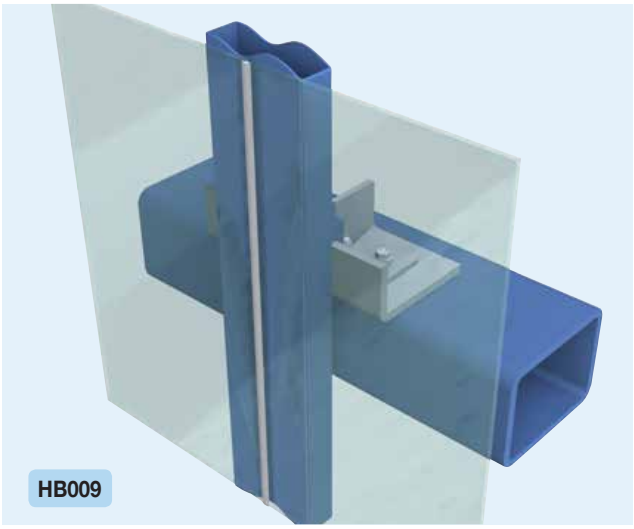

HB004


HB005


HB006

Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

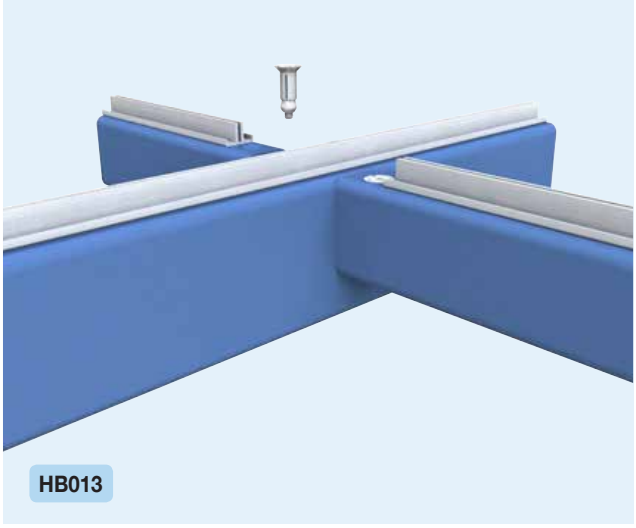

HB008


HB009


HB010


HB011


HB012


HB013

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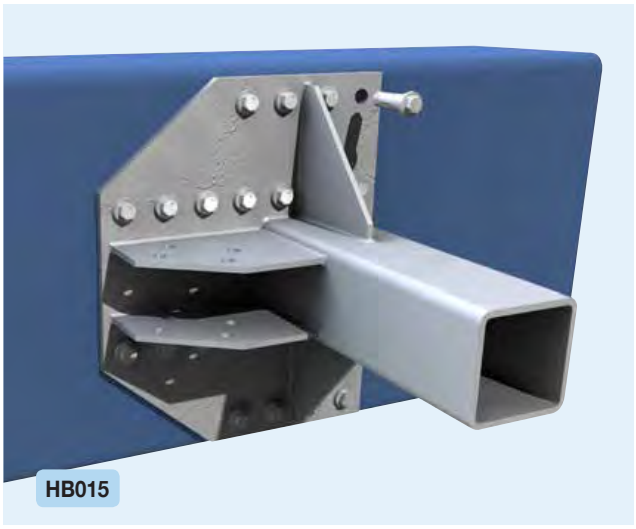
HB014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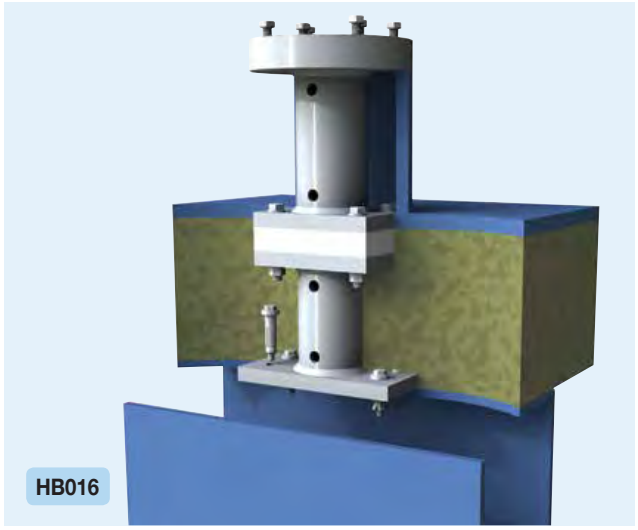
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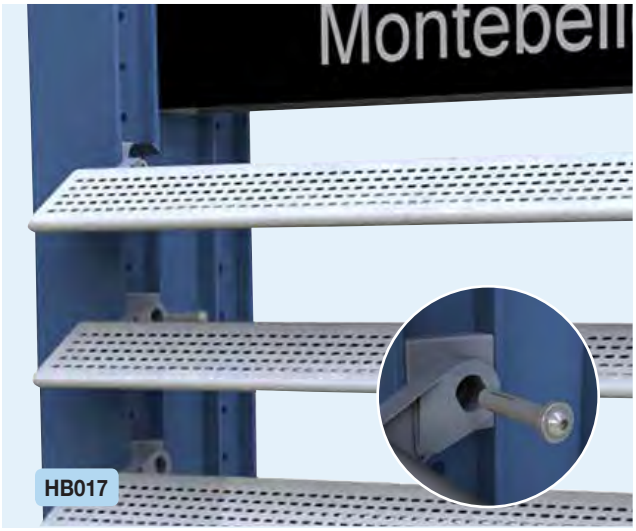

HB017


HB018

For more information on the Hollo-Bolt, including a Global Project Portfolio and FAQs, request the new Hollo-Bolt Brochure today.

Email **inquiries@LindapterUSA.com** to request a copy or visit the Hollo-Bolt website to download.

Hollo-Bolt® by lindapter

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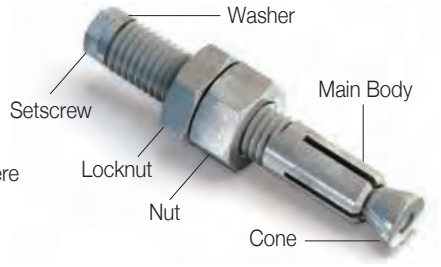
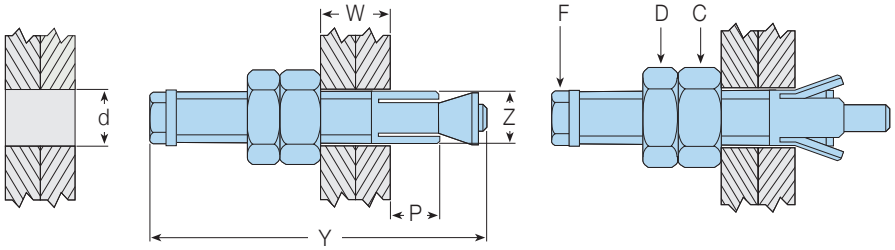
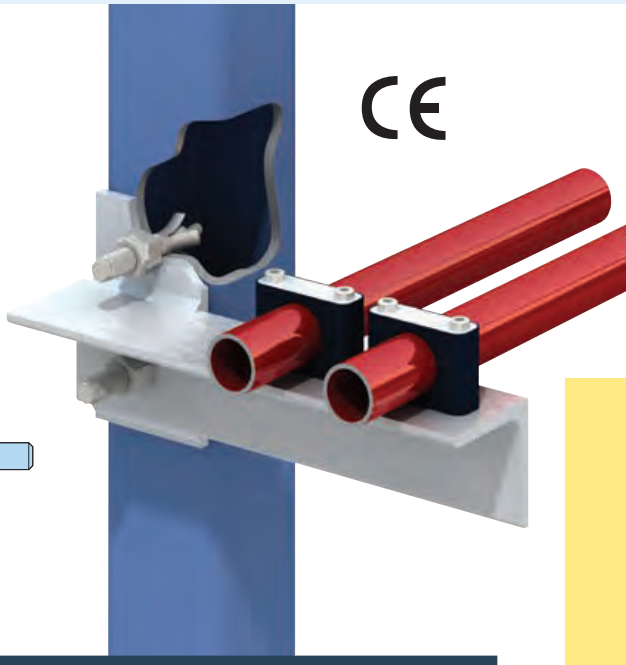
Type LB2 - Lindibolt® 2

Steel, bright zinc plated
Stainless Steel Grade 316

A self heading bolt suitable for connecting steelwork to hollow sections, tubes and where access is available from one side only. The Lindibolt 2 uses a standard clearance hole.







Safe Working Loads

Product Code	Lindibolt 2 Size Z	Length Y	Hole Ø d	Safe Working Load[1] (Factor of Safety 5:1) Tensile lbs	Single Shear lbs	Clamping Length W	Projection P	Setscrew F Torque ft lb	Nut A/F	Nut C & Locknut D Torque ft lb	Nut A/F
LLB037	M10 (3/8")	2 11/16"	7/16"	674	764	1/4" - 1 3/16"	5/16" - 3/8"	4	5/16"	15	11/16"
LLB050	M12 (1/2")	3 1/8"	9/16"	1124	1124	3/8" - 1 7/16"	3/8" - 1/2"	8	3/8"	23	3/4"
LLB062	M16 (5/8")	4 1/8"	11/16"	1798	2203	1/2" - 1 7/8"	1/2" - 5/8"	17	1/2"	60	1"
LLB075	M20 (3/4")	5"	13/16"	3147	3417	9/16" - 2 3/8"	9/16" - 13/16"	33	11/16"	95	1 1/4"
LLB100	M24 (1")	6 3/16"	1 1/16"	4496	5058	11/16" - 2 7/8"	11/16" - 1"	59	3/4"	150	1 7/16"

The safe working loads, in both tension and shear shown above, 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.

Characteristic Values of Tensile and Shear Resistance

taken from ETA-11/0199 (www.Lindapter.com/About/CE)

CE For designing to Eurocode 3 standard only

Lindibolt 2

Product Code	Nominal Size	Tensile $F_{t,Rk}$ lbs	Shear $F_{v,Rk}$ lbs	Material Strength of Sleeve ksi
LLB037	M10 (3/8")	2698	3327	55
LLB050	M12 (1/2")	3979	4811	55
LLB062	M16 (5/8")	7756	9127	55
LLB075	M20 (3/4")	12252	14410	55
LLB100	M24 (1")	17782	20952	55

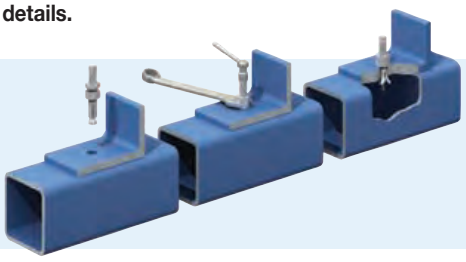
Lindibolt 2 Stainless Steel

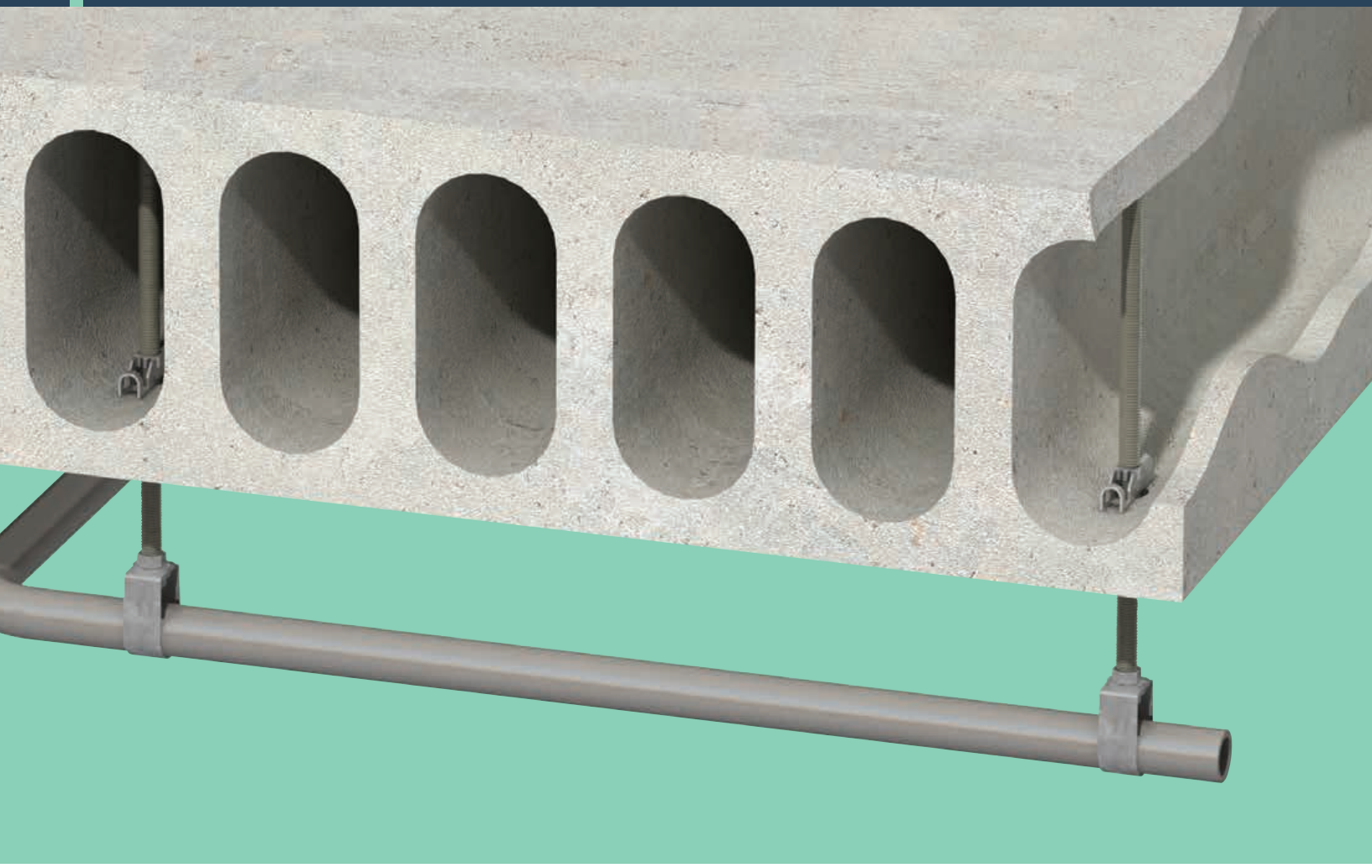
Product Code	Nominal Size	Tensile $F_{t,Rk}$ lbs	Shear $F_{v,Rk}$ lbs	Material Strength of Sleeve ksi
LLBST037	M10 (3/8")	3552	3080	73
LLBST050	M12 (1/2")	5216	4474	73
LLBST062	M16 (5/8")	10206	8543	73
LLBST075	M20 (3/4")	16119	13511	73
LLBST100	M24 (1")	23403	19626	73

Characteristic Values for the Lindibolt, listed in the tables immediately above, are for use when designing bolted connections to Eurocode 3 ONLY. These are not standard safe working loads. See page 38 for more details.

INSTALLATION

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





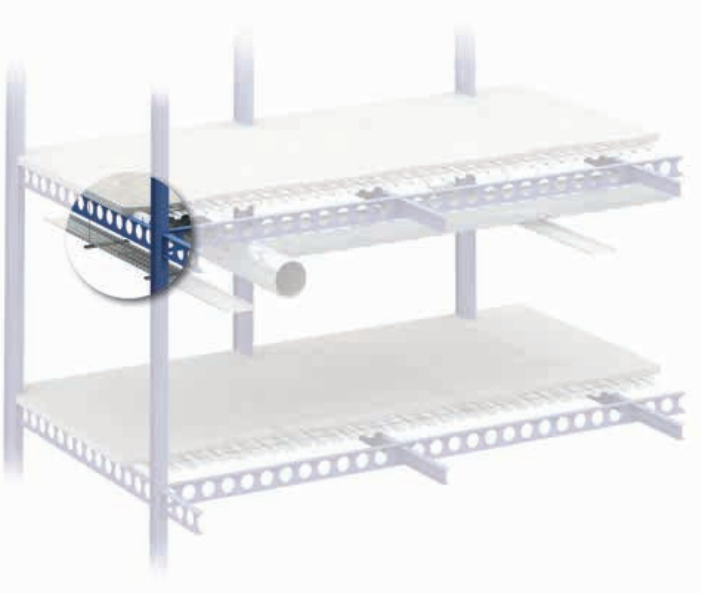
Concrete Decking Connections

Easy to install connections that allow building services, such as pipes or electrical cabling, to be suspended from pre-cast hollow core slabs or composite structural floor decking profiles.

Advantages include:

- Speed of installation
- Cost effective
- Ease of use
- No special tools required
- Adjustable and easily removable
- Approved safe working loads

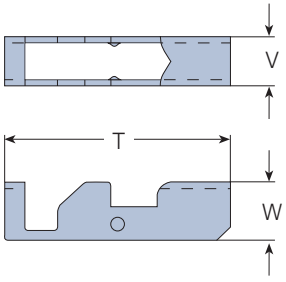
It is important that the Type VN and all other Lindapter composite decking connections are installed only when the slab has been poured and the concrete reaches full strength.



Type TC - Toggle Clamp

Steel Strip, bright zinc plated

FM APPROVED
(3/8" only)



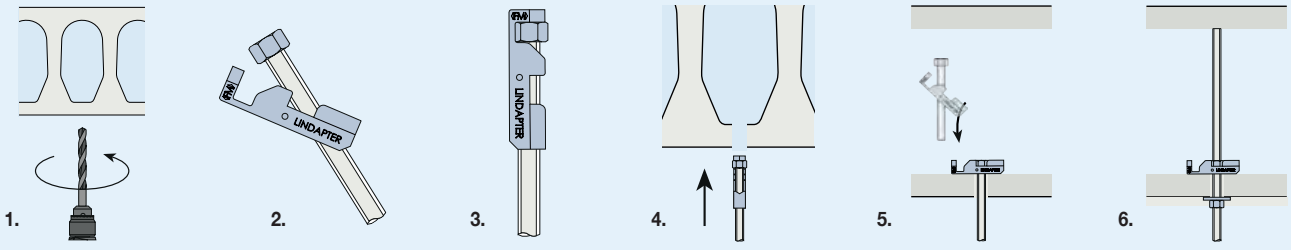
The Toggle Clamp is designed for service suspension from pre-cast hollow core slabs (minimum depth of core 3") as well as HSS, steel sheeting or purlins.

Product Code	Drop Rod Size	Hole Ø	Safe Working Load[1] (4:1 Factor of Safety) Tensile / 1 Rod lbs	Tightening Torque ft lb	Dimensions T	W	Width V
LTC037	3/8"	1"	550	7	2 11/16"	11/16"	9/16"

1) Subject to the strength of the concrete section.

Order example: LTC037

INSTALLATION



1. Drill hole. If toggle is to be used to support from pre-cast hollow core slab, ensure hole is central to hollow core.
2. Insert threaded rod through toggle, ensuring nut is flush with end of rod.
3. Align toggle parallel with rod so that nut engages into the retaining cavity.
4. Offer up the assembly, inserting the toggle body completely through the hole.
5. Shake rod so that toggle body locates horizontally across hole. Allow rod to drop down so that the nut locates in the seat in the toggle body.
6. Wind up rod to top of section as shown as high as possible. Secure the assembly with a nut and washer.
Note: The LTC037 is supplied with a special nut tapped 3/8" UNC. A standard 3/8" UNC nut will not fit.

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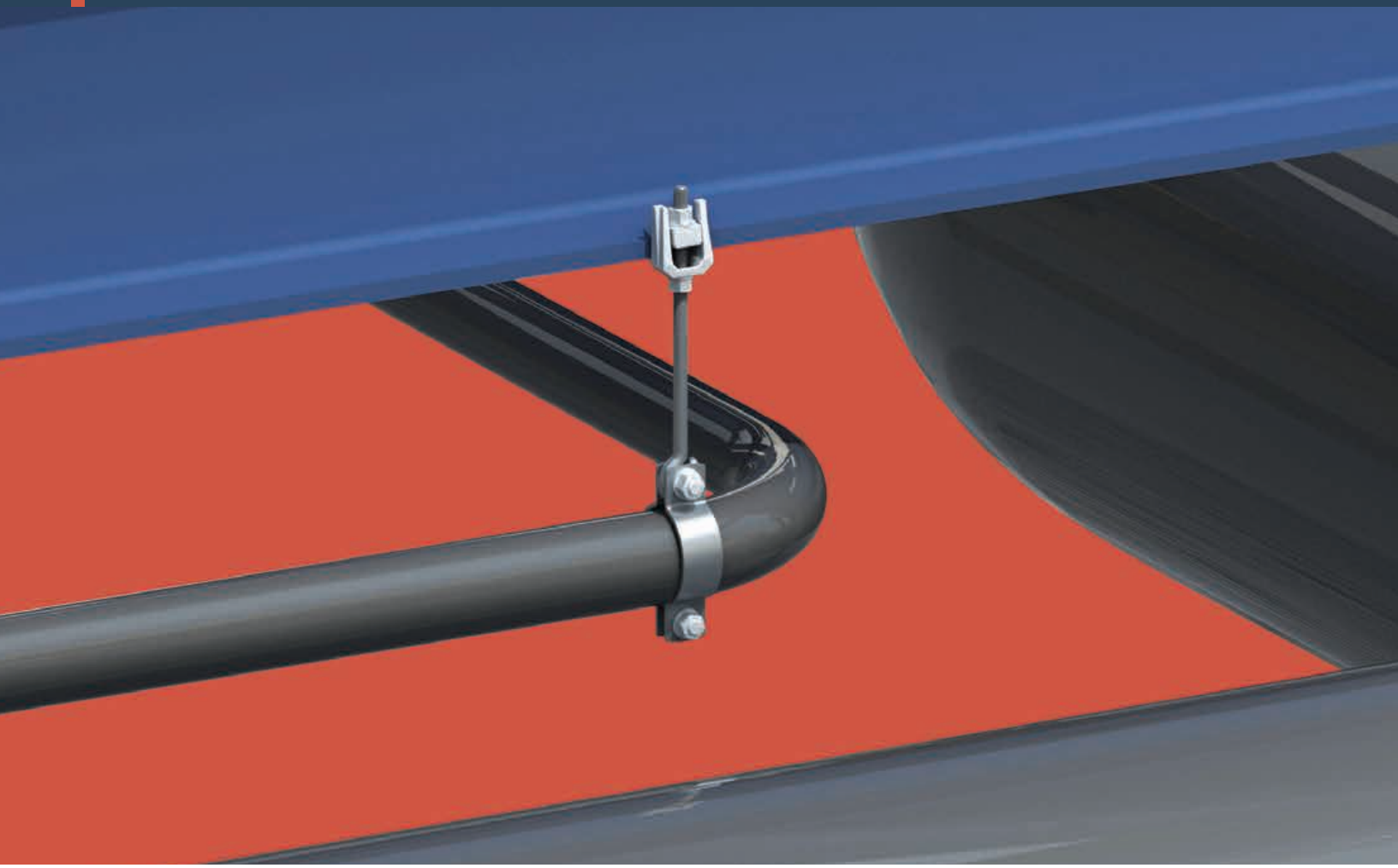


Pipe / Conduit Supports

Lindapter provides easy-to-install solutions for supporting building services from structural or secondary beams.

Examples include:

- The suspension of HVAC equipment
- Pipe work
- Fire protection/sprinkler systems
- Suspended ceilings
- Electrical equipment

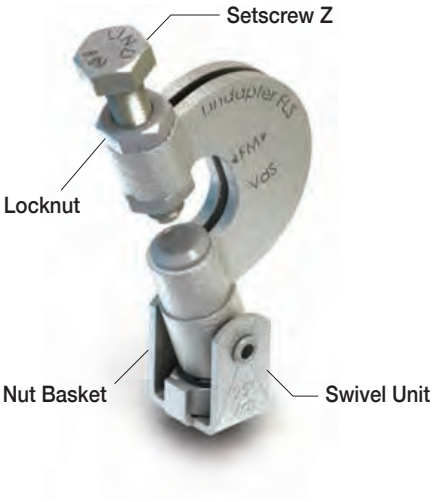
The range of high quality connections are extremely adjustable, allowing the fast alignment of pipes and services for a quick, cost effective installation. As with all Lindapter connections, safety is paramount and where appropriate, independent approvals include VdS and FM (Factory Mutual), the American insurance organization globally recognized throughout the fire protection industry. The FM APPROVED mark, which is backed by third party scientific research and testing, verifies that Lindapter products conform to the highest standards.

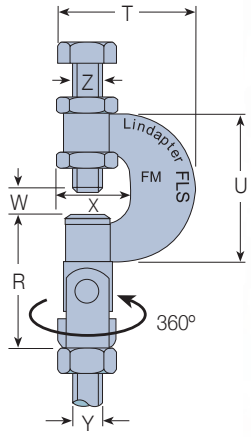
Please note, for the installation of heavy duty pipe supports, such as those of the petrochemical industry, the steel connections in Section 1 of this catalog are more suitable. For more information, please contact Lindapter who will be pleased to design a connection to your specific requirement.

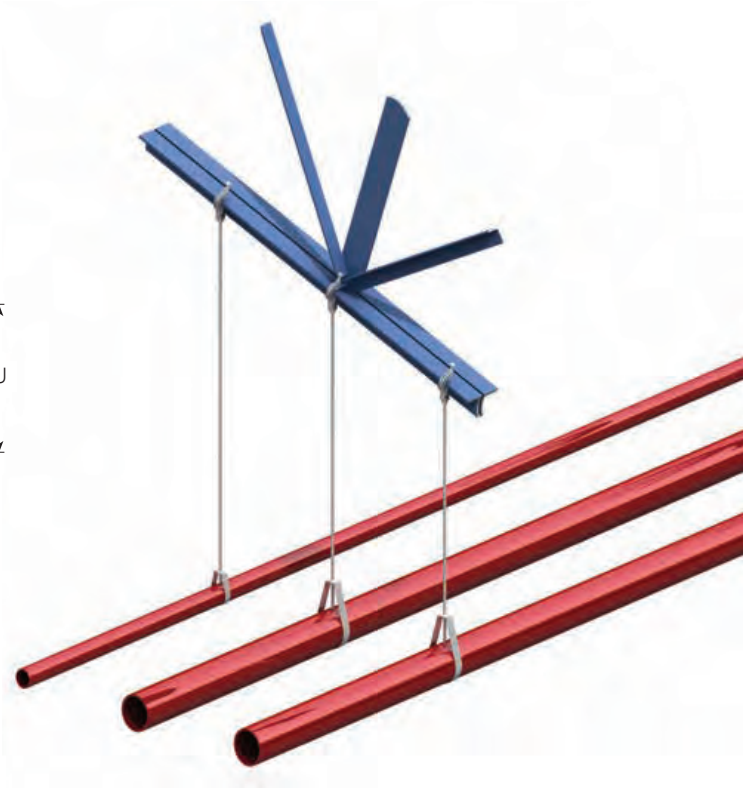
Type FLS

High Grade Alloy Steel, bright zinc plated

FM APPROVED VdS







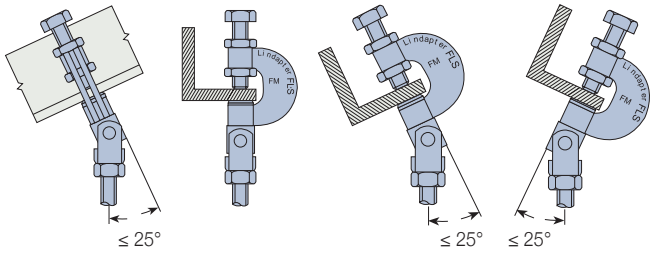
A flange clamp with swivel unit for parallel and sloping flanges.
Supplied with a high tensile setscrew for secure grip.

Product Code	Thread Y	Safe Working Load (4:1 Factor of Safety) Tensile/≤ 25° lbs	Tensile/> 25° to ≤ 45° lbs	Clamping Thickness W	Tightening Torque (ft lb) Setscrew Z	Setscrew Z	Nut N	Dimensions R	T	U	X	Width
LFLS037	3/8"	550	330	1/8" - 11/16"	M10	13	13	2 3/16"	2 1/8"	2 1/4"	1 1/16"	11/16"

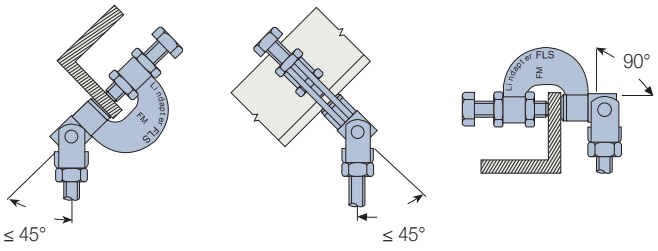
Order example: LFLS037

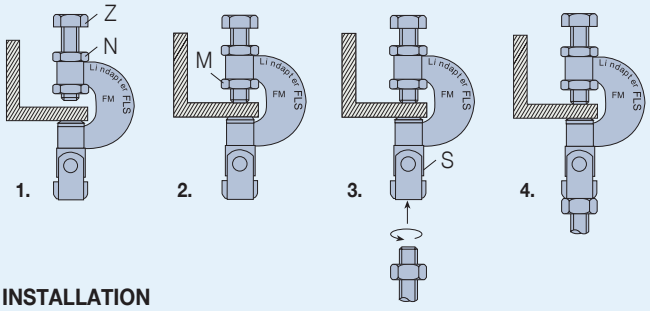
Approved Applications

FM APPROVED VdS



General Applications - Parallel Flanges only





INSTALLATION

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

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

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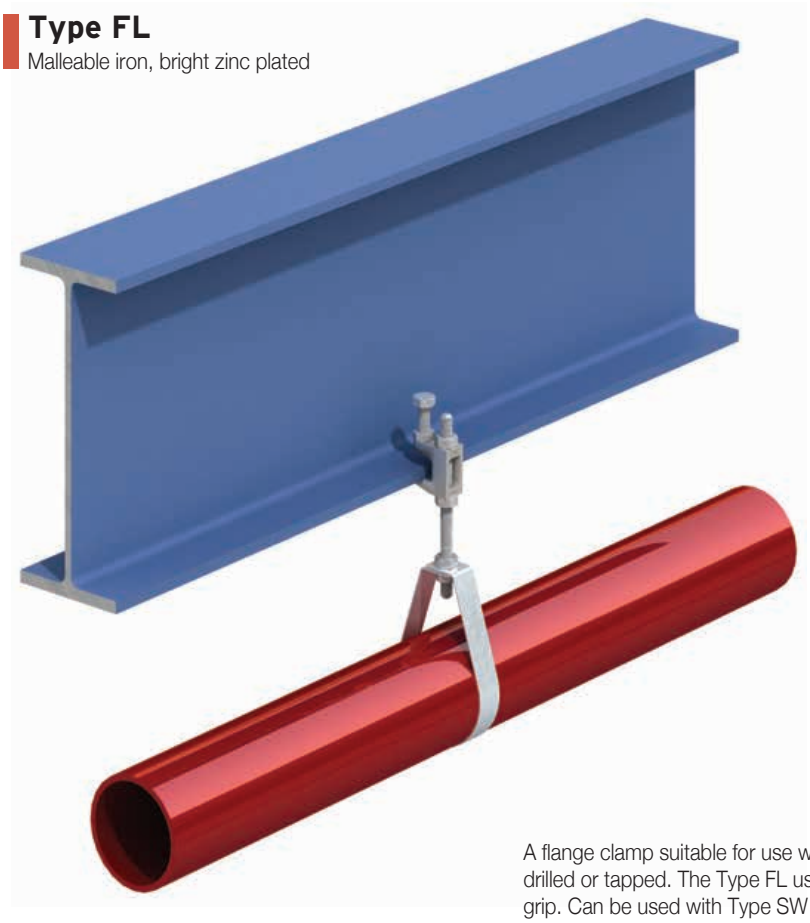
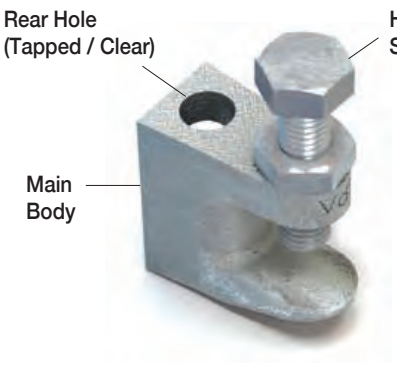
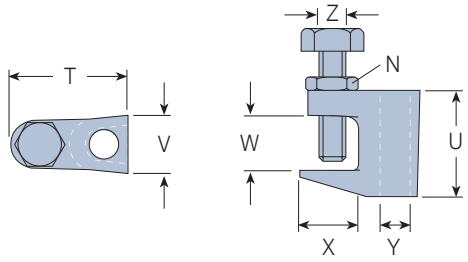
Type FL

Malleable iron, bright zinc plated



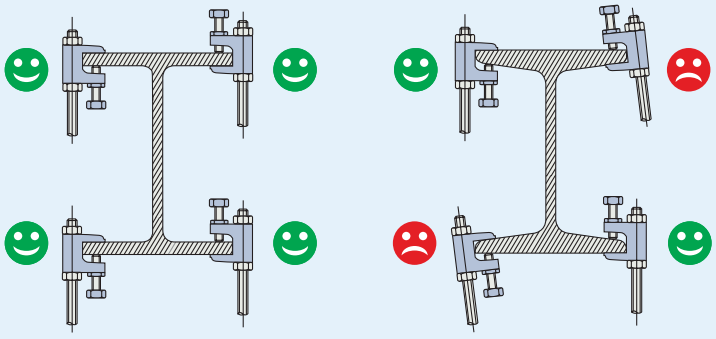




A flange clamp suitable for use with parallel or tapered flange beams, supplied with the rear hole drilled or tapped. The Type FL uses a hexagon head, high tensile cup point setscrew for secure grip. Can be used with Type SW – Swivel Unit (see page 55) when connecting to inclined sections.

Product Code		Clear Hole Ø	Tapped Thread	Safe Working Load (4:1 Factor of Safety)	Clamping Thickness	Set-screw	Tightening Torque		Dimensions			
Clear	Tapped	Y	Y	Tensile lbs	W	Z	Set-screw Z ft lb	Lock-nut N ft lb	T	U	X	Width V
LFL037C	LFL037T	7/16"	3/8"	540	1/8" - 3/4"	M10 (3/8")	6	16	1 3/4"	1 9/16"	7/8"	7/8"
LFL050C	LFL050T	1/2"	1/2"	700	1/8" - 7/8"	M10 (3/8")	6	16	2"	1 13/16"	1 1/8"	1"

Order example: LFL037C



INSTALLATION

1. Slide FL onto beam flange and tighten setscrew to the recommended torque. Guideline: tighten the setscrew finger tight and then apply a further 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.

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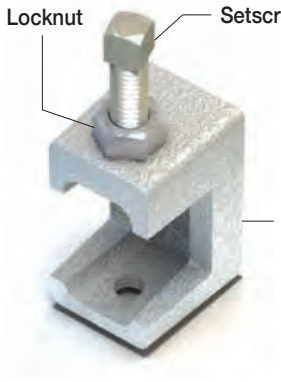
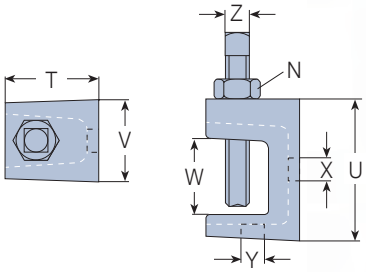
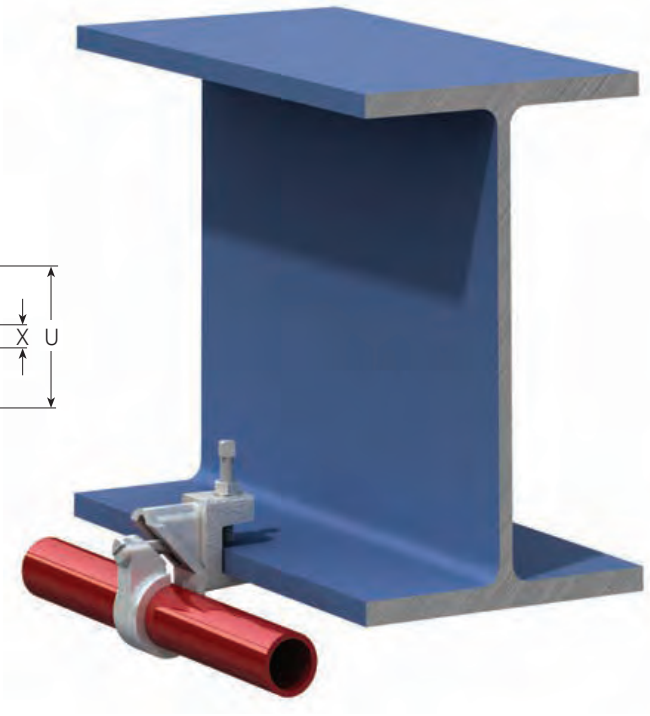
Type LC

Malleable iron, bright zinc plated







A flange clamp with tapped holes in position X and Y to accept threaded rod or cable clips. For parallel or tapered flanges. Supplied with a high tensile cup point setscrew.

Installation see page 54 – Type FL

Product Code	Thread X & Y	Safe Working Load (4:1 Factor of Safety) Tensile / in Pos. X lbs	Tensile / in Pos. Y lbs	Clamping Thickness W	Setscrew Z	Tightening Torque Setscrew Z ft lb	Locknut N ft lb	Dimensions T	U	Width V
LLC025	1/4"	40	135	1/8" - 13/16"	M6 (1/4")	3	3	1"	17/16"	7/8"

Order example: LLC025

Type SW - Swivel Unit

High Grade Alloy Steel, bright zinc plated

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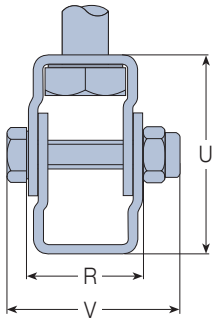

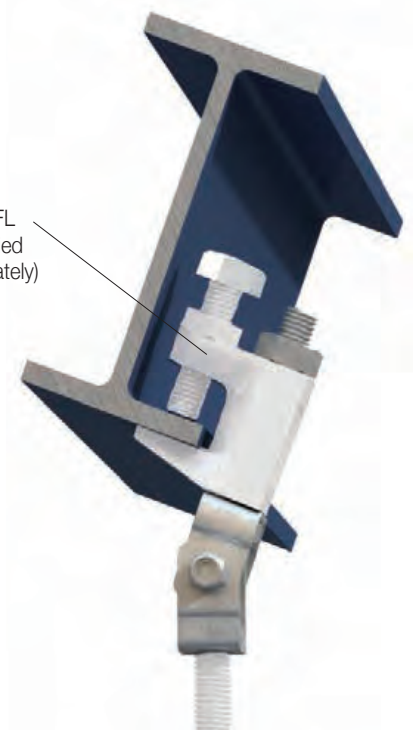

Swivel unit for applications on inclined beams. Can be used with a clear hole Type FL. Supplied complete with a high tensile M10 x 19/16" setscrew and nut.

Product Code	Drop Rod	Safe Working Load (4:1 Factor of Safety) Tensile lbs	Max. Inclination	Rotation	Tightening Torque ft lb	Dimensions U	R	With Bolt Width V
LSW037	M10 (3/8")	540	18°	360°	8	13/4"	1"	13/8"

Order example: LSW037

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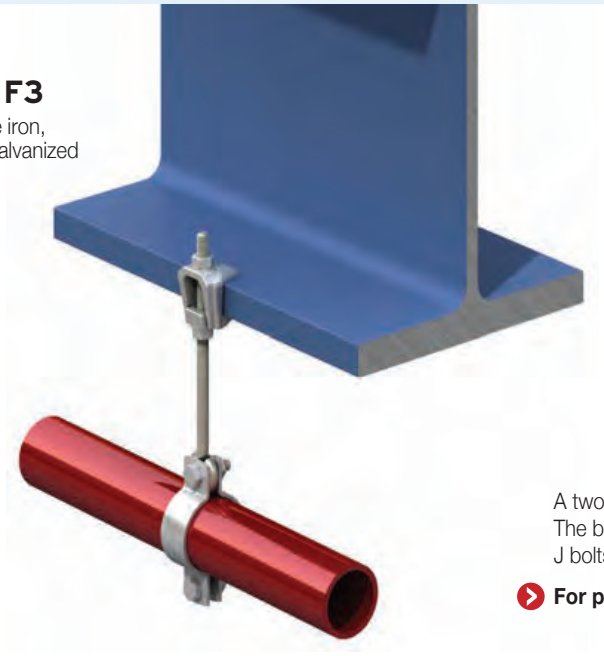
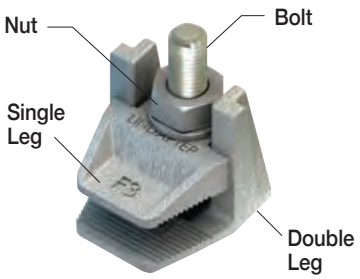
Type F3

Malleable iron,
hot dip galvanized





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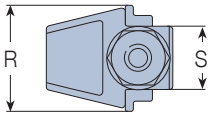
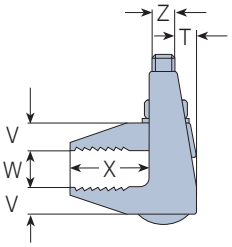




A two part flange clamp with large clamping range. The bolt can be substituted with either drop rod or J bolts. Supplied with or without bolt.

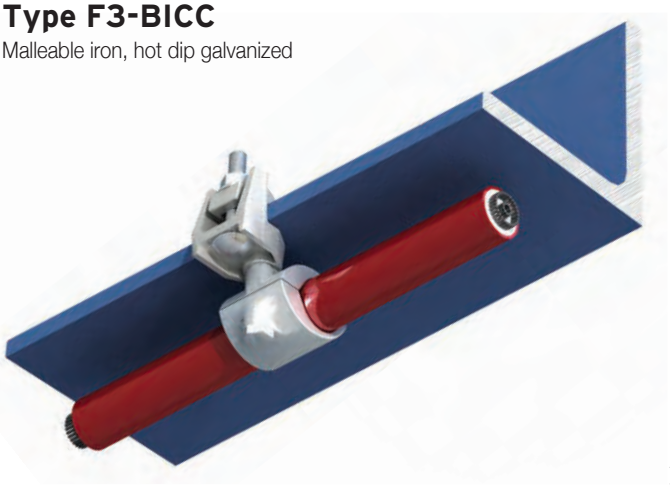
For parallel flanges only.

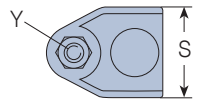
Product Code With Bolt	Product Code No Bolt	Bolt/Thread Z	Safe Working Load (4:1 Factor of Safety) Tensile / 1 bolt lbs	Clamping Thickness W min	Clamping Thickness W max	Tightening Torque ft lb	Dimensions S	T	V	X	Width R
LF3037WB	LF3037NB	M10	270	1/16"	1 3/16"	15	7/8"	5/16"	3/8"	1"	1 1/2"
LF3050WB	LF3050NB	M12	450	1/16"	1 9/16"	29	1 1/8"	3/8"	1/2"	1 3/8"	1 15/16"
LF3062WB	LF3062NB	M16	900	3/32"	2 3/16"	69	1 3/8"	1/2"	5/8"	1 13/16"	2 3/8"
LF3075WB	LF3075NB	M20	1350	3/16"	2 3/4"	130	1 3/4"	9/16"	3/4"	2 3/16"	3"

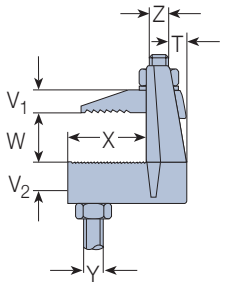
Order example: LF3037WB

Type F3-BICC

Malleable iron, hot dip galvanized







A two part flange clamp which fixes claw type cable cleats directly beneath the flange. Supplied with bolt.

For parallel flanges only.

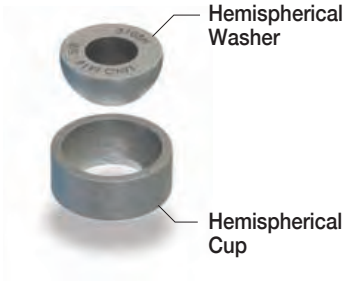
Product Code	Bolt Z	Safe Working Load (4:1 Factor of Safety) Tensile lbs	Clamping Thickness W	Thread Y	Tightening Torque ft lb	Dimensions T	V_1	V_2	X	Width S
F3M10BICCA	M10	270	0" - 1 3/16"	M10	15	5/16"	3/8"	5/8"	1 3/16"	1 1/2"

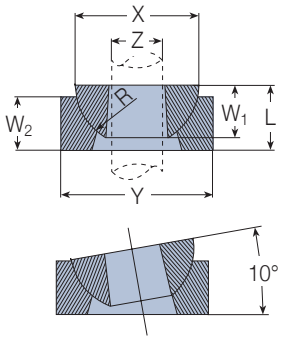
Order example: F3M10BICCA

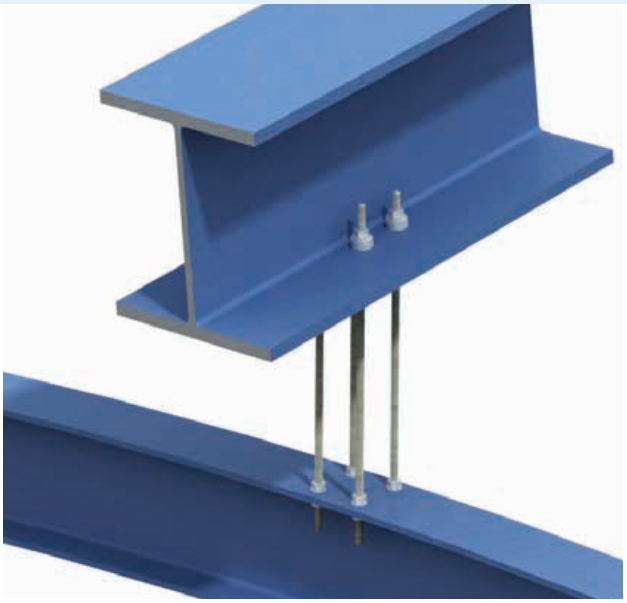
Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type HW/HC

Malleable iron, bright zinc plated / hot dip galvanized







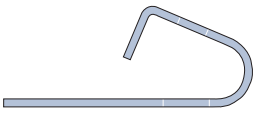
For vertical suspension on angled surface of up to 10° swing either side of the vertical. The hemispherical washer (HW) can be used without the cup. Loads are subject to applications. Please contact Lindapter.

Product Code		Rod Size	Dimensions					
			Washer		Cup		Washer & Cup	
Washer	Cup	Z	X	W_1	Y	W_2	R	L
LHW037	LHC037	3/8"	1"	1/2"	1 1/4"	1/2"	1/2"	9/16"
LHW050	LHC050	1/2"	1 1/8"	1/2"	1 3/8"	1/2"	9/16"	5/8"
LHW062	LHC062	5/8"	1 3/8"	5/8"	1 5/8"	5/8"	11/16"	3/4"
LHW075	LHC075	3/4"	1 3/4"	3/4"	2 1/8"	3/4"	7/8"	15/16"
LHW100	LHC100	1"	2 1/4"	1"	2 5/8"	1"	1 1/8"	1 1/4"

Order example: LHW037 + LHC037

Type Z10

Mild steel, bright zinc plated

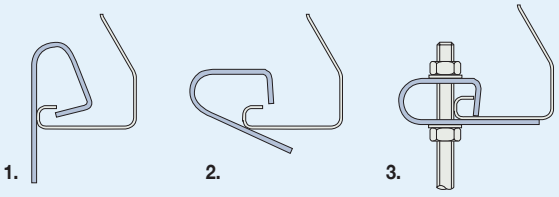


A purlin clip to suit a large range of purlin sections. Can be used with Type SW – Swivel Unit (see page 55) for use on inclined purlins.

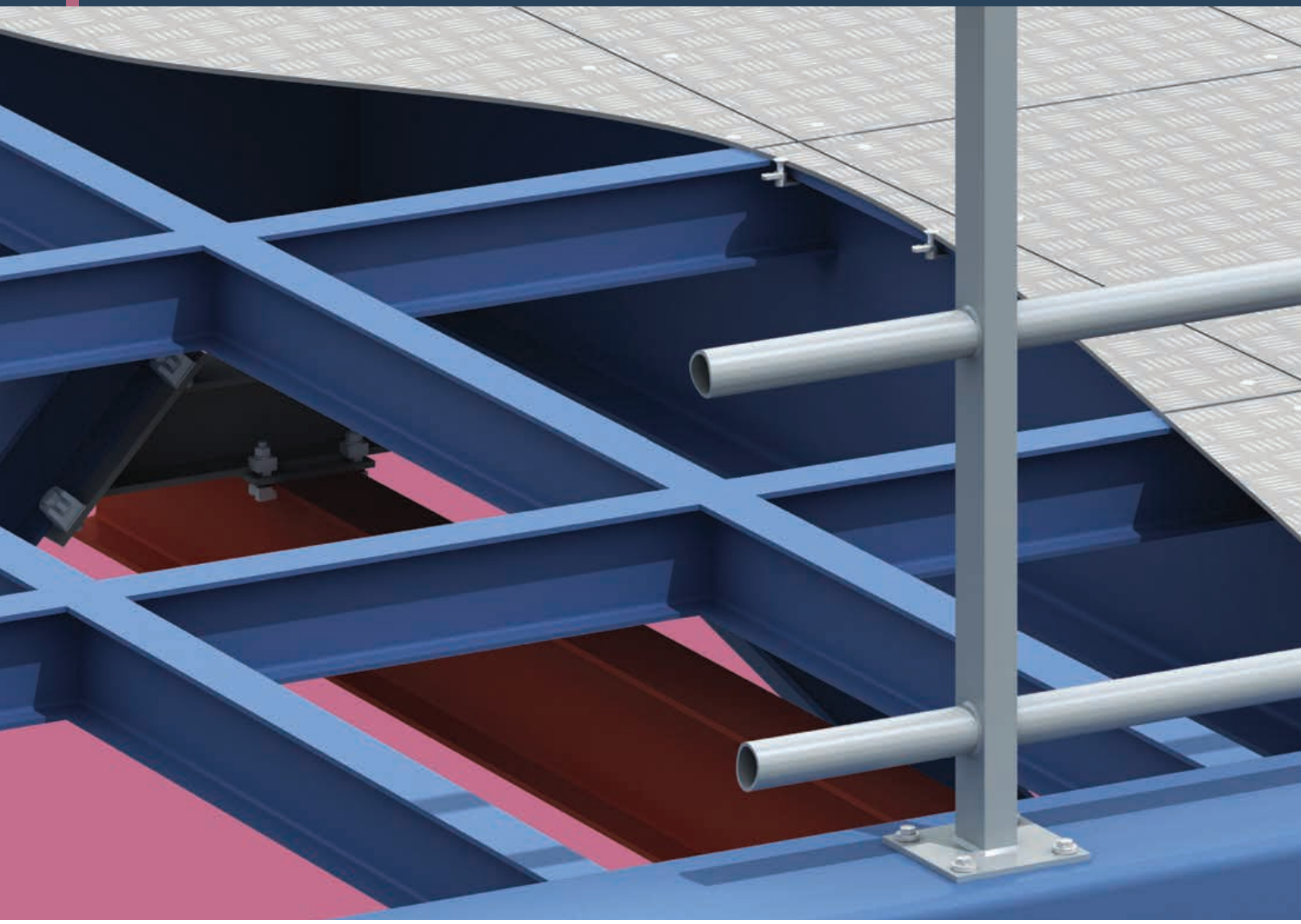
Product Code	Purlins	Rod	Safe Working Load (3:1 Factor of Safety) Tensile lbs	Tightening Torque ft lb
LZ037	Kingspan Multibeam 2 & 3	3/8"	44	6
LZ037	Metsec	3/8"	22 - 44	6
LZ037	Zeta	3/8"	53	6

Order example: LZ037

INSTALLATION



Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com



Steel Floor Connections

Lindapter applied its connection concept to steel flooring and invented a range of innovative products making it possible to install checker plate or open bar grating without on-site drilling or welding, for a fast, low cost operation.

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 installation costs.

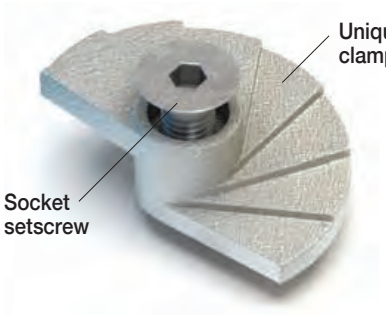
Both the Floorfast® & Grate-Fast® carry the Lloyd's Register Type Approval in respect of their resistance to shock and vibration. Hot working is not required, creating particular benefits in hazardous environments such as petrochemical and processing industries, while a rapid and cost efficient installation is beneficial in any industry.

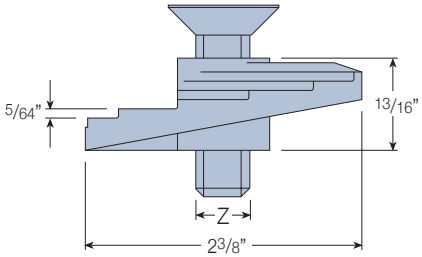
lindapter® USA

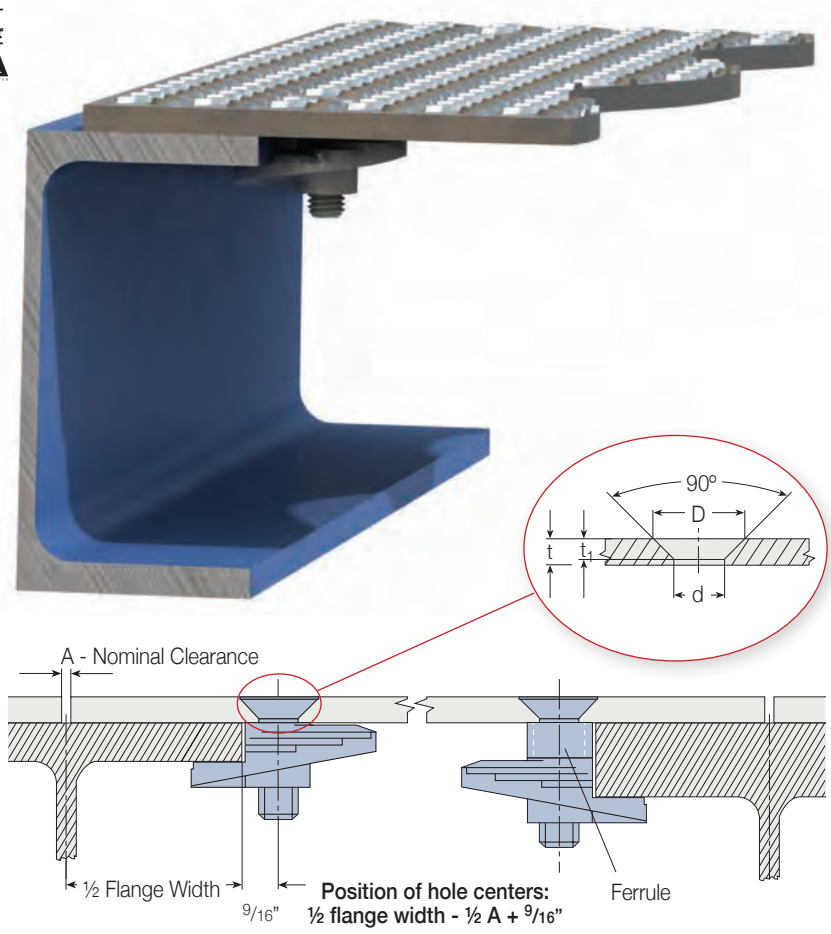
Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type FF - Floorfast®

Malleable iron, bright zinc plated / hot dip galvanized
Stainless Steel Grade 316







An innovative connection for securing checker plate flooring to supporting steel. The product consists of a malleable iron body casting with a countersunk socket screw. The eccentric stepped web of the casting allows it to lock under the steel, providing full face contact when torque is applied. For thicker flanges, a ferrule can be supplied. Lloyd's Register Type Approval for vibration resistance.

Product Code	Bolt[1]	Floorplate Thickness	Flange Thickness				Countersunk						
			Standard	With Ferrule[2]			Hole Ø	Countersunk Ø for Bolt		Countersunk Depth for Bolt		Tightening Torque	Hexagon Key
				10mm (3/8")	20mm (3/4")	30mm (1 3/16")		BZP	HDG	BZP	HDG		
	Z	t					d	D		t_1		ft lb	inches
LFF031	M8	1/8" - 1/2"	1/8" - 5/8"	1/2" - 1"	15/16" - 1 3/8"	15/16" - 1 3/4"	3/8"	11/16"	-	3/16"	-	8	3/16"
LFF037	M10	3/16" - 1/2"	1/8" - 5/8"	1/2" - 1"	15/16" - 1 3/8"	15/16" - 1 3/4"	7/16"	13/16"	3/4"	3/16"	3/16"	16	1/4"
LFF050	M12	1/4" - 1/2"	1/8" - 5/8"	1/2" - 1"	15/16" - 1 3/8"	15/16" - 1 3/4"	9/16"	1"	15/16"	1/4"	3/16"	16	5/16"

1) Hot dip galvanized 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 (see order example right).

■ Order example: LLFF050, with 10mm ferrule

INSTALLATION

1. Pre-assemble Floorfast on underside of floorplate with stepped surface facing inwards.
2. Align castings with straight edge parallel to the edge of the plate and hand tighten.
3. Lay floorplate into position
4. Using a hexagon key, release the countersunk screw one full turn.
5. Tighten down the countersunk socket screw.

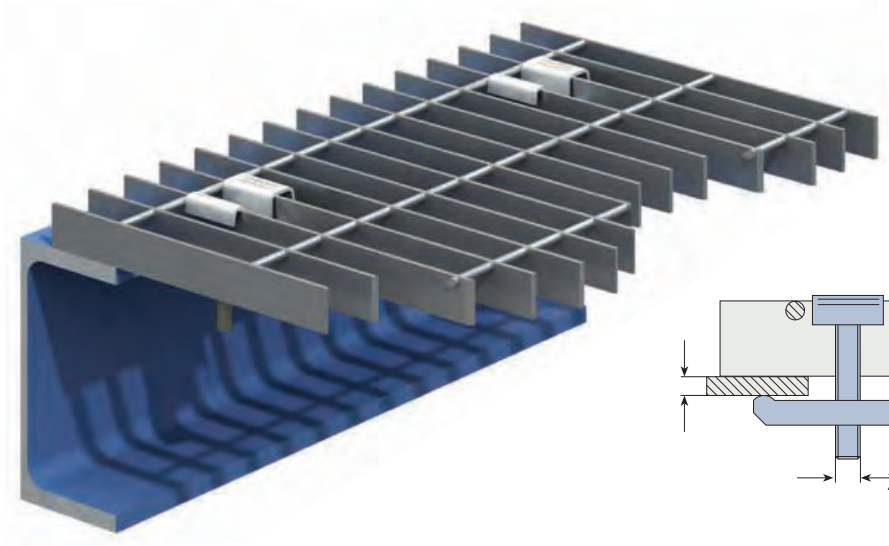
Removal Using a hexagon key, give the Type FF one full counterclockwise turn to release connection from the flange.

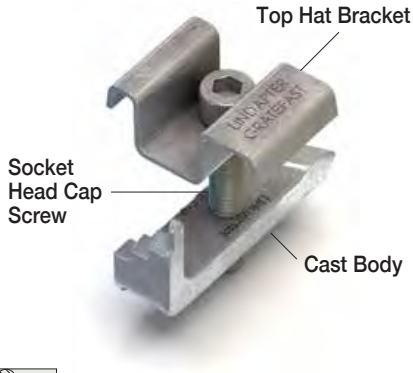
Strut & Supply, Inc.
28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

Type GF - Grate-Fast®

Top Hat: Stainless Steel Grade 304 (LGF031)
Mild Steel, hot dip galvanized (LGF037 (OSB) & LGF037)

Body: Malleable iron, sheraplex (LGF031)
Mild Steel, hot dip galvanized (LGF037 (OSB) & LGF037)

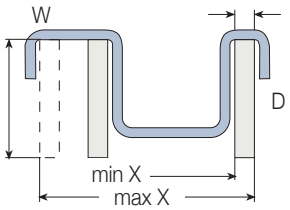




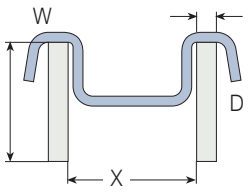
A grating connection for rectangular open bar gratings, with superior clamping force from the cast body. Lloyd's Register Type Approval for vibration resistance.

LGF031 for GRP grating with stainless steel top-hat bracket, sheraplex coated body and socket head screw.
LGF037 (OSB) features an oversized bracket to fit various grating profiles. Galvanized for corrosion resistance.
LGF037 for use with 1 3/16" width floor grating bars only. Galvanized for corrosion resistance.

LGF031 / LGF037 (OSB)



LGF037

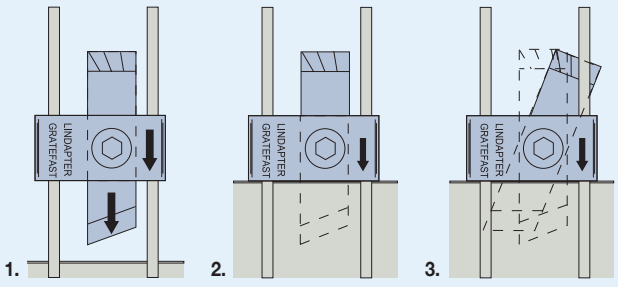


Product Code	Bolt Z	Flange T	Grating Bar Depth D	Grating Bar Width W	Bar Distance X	Body Width	Tightening Torque ft lb	Hexagon Key
LGF031	M8	1/8" - 3/4"	7/8" - 1 1/2"	3/16" - 3/8"	3/4" - 1 7/8"	5/8"	4	6mm (1/4")
LGF037 (OSB)[1)]	M10	1/8" - 3/4"	1 3/16" - 1 3/16"	1/8" - 1/4"	1" - 1 3/4"	3/4"	8	8mm (5/16")
LGF037[1)]	M10	1/8" - 3/4"	3/4" - 1 1/4"	1/8" - 1/4"	1 3/16"	3/4"	8	8mm (5/16")

1) May be supplied with a hex head screw.

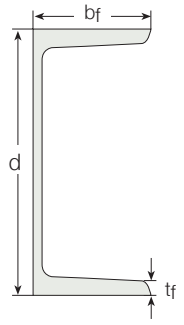
Order example: LGF031

INSTALLATION



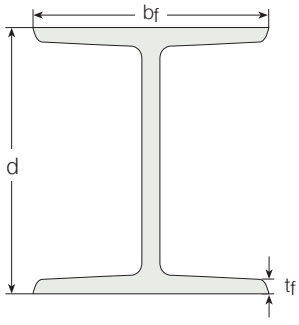
1. Position pre-assembled Grate-Fast with body between grating bars and nose pointing toward the steel.The arrows on the top hat bracket should also be pointing toward supporting steel and bracket itself resting on the bearing bars.
2. Slide Grate-Fast toward steel until nose fits under the beam flange.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

C-Channel



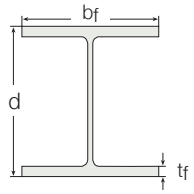
C-Channels				C-Channels				C-Channels			
Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f
C15 x 50	15”	3 1/16”	3/8”	C9 x 20	9”	2 5/8”	1/4”	C6 x 8.2	6”	1 7/8”	3/16”
C15 x 40	15”	3 1/2”	3/8”	C9 x 15	9”	2 1/2”	1/4”	C5 x 9	5”	1 7/8”	3/16”
C15 x 33.9	15”	3 3/8”	3/8”	C9 x 13.4	9”	2 3/8”	1/4”	C5 x 6.7	5”	1 3/4”	3/16”
C12 x 30	12”	3 3/16”	1/4”	C8 x 18.75	8”	2 1/2”	3/16”	C4 x 7.25	4”	1 3/4”	3/16”
C12 x 25	12”	3 1/16”	5/16”	C8 x 13.75	8”	2 3/8”	3/16”	C4 x 5.4	4”	1 9/16”	1/8”
C12 x 20.7	12”	2 15/16”	5/16”	C8 x 11.5	8”	2 1/4”	1/4”	C3 x 6	3”	1 5/8”	3/16”
C10 x 30	10”	3 1/16”	1/4”	C7 x 12.25	7”	2 3/16”	3/16”	C3 x 5	3”	1 1/2”	1/8”
C10 x 25	10”	2 7/8”	1/4”	C7 x 9.8	7”	2 1/16”	1/4”	C3 x 4.1	3”	1 3/8”	1/8”
C10 x 20	10”	2 3/4”	1/4”	C6 x 13	6”	2 3/16”	3/16”				
C10 x 15.3	10”	2 5/8”	1/4”	C6 x 10.5	6”	2 1/16”	1/4”				

S-Beam



S-Beams				S-Beams				S-Beams			
Beam Designation	Depth d	Flange Width b_f	Flange ‘t_f’ to nearest 1/16”	Beam Designation	Depth d	Flange Width b_f	Flange ‘t_f’ to nearest 1/16”	Beam Designation	Depth d	Flange Width b_f	Flange ‘t_f’ to nearest 1/16”
S24 x 121	24 1/2”	8”	3/4”	S15 x 50	15”	5 5/8”	3/8”	S7 x 15.3	7”	3 5/8”	1/4”
S24 x 106	24 1/2”	7 7/8”	3/4”	S15 x 42.9	15”	5 1/2”	3/8”	S6 x 17.25	6”	3 5/8”	3/16”
S24 x 100	24”	7 1/4”	9/16”	S12 x 50	12”	5 1/2”	7/16”	S6 x 12.5	6”	3 3/8”	3/16”
S24 x 90	24”	7 1/8”	9/16”	S12 x 40.8	12”	5 1/4”	7/16”	S5 x 14.75	5”	3 1/4”	3/16”
S24 x 80	24”	7”	9/16”	S12 x 35	12”	5 1/8”	7/16”	S5 x 10	5”	3”	3/16”
S20 x 96	20 1/4”	7 1/4”	5/8”	S12 x 31.8	12”	5”	5/16”	S4 x 9.5	4”	2 3/4”	3/16”
S20 x 86	20 1/4”	7”	5/8”	S10 x 35	10”	5”	5/16”	S4 x 7.7	4”	2 5/8”	3/16”
S20 x 75	20”	6 3/8”	1/2”	S10 x 25.4	10”	4 5/8”	5/16”	S3 x 7.5	3”	2 1/2”	1/8”
S20 x 66	20”	6 1/4”	1/2”	S8 x 23	8”	4 1/8”	1/4”	S3 x 5.7	3”	2 3/8”	1/8”
S18 x 70	18”	6 1/4”	7/16”	S8 x 18.4	8”	4”	1/4”				
S18 x 54.7	18”	6”	7/16”	S7 x 20	7”	3 7/8”	1/4”				

W-Beam



W-Beams				W-Beams				W-Beams			
Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f
W44 x 335	44”	15 3/4”	1 3/4”	W36 x 135	35 1/2”	12”	13/16	W24 x 492	29 5/4”	14 1/8”	3 9/16”
W44 x 290	43 5/8”	15 7/8”	1 9/16”	W33 x 354	35 1/2”	16 1/8”	2 1/16”	W24 x 408	28 1/2”	13 3/4”	3”
W44 x 262	43 5/16”	15 3/4”	1 7/16”	W33 x 318	35 1/8”	16”	1 7/8”	W24 x 335	27 1/2”	13 1/2”	2 1/2”
W44 x 230	42 15/16”	15 3/4”	1 1/4”	W33 x 291	34 7/8”	15 7/8”	1 3/4”	W24 x 279	26 3/4”	13 1/4”	2 1/16”
W40 x 593	43”	16 3/4”	3 1/4”	W33 x 263	34 1/2”	15 3/4”	1 9/16”	W24 x 250	26 3/8”	13 1/8”	1 7/8”
W40 x 503	42 1/16”	16 7/16”	2 3/4”	W33 x 241	34 1/8”	15 7/8”	1 3/8”	W24 x 229	26”	13 1/8”	1 3/4”
W40 x 431	41 1/4”	16 1/4”	2 3/8”	W33 x 221	33 7/8”	15 3/4”	1 1/4”	W24 x 207	25 3/4”	13”	1 9/16”
W40 x 372	40 5/8”	16 1/16”	2 1/16”	W33 x 201	33 5/8”	15 3/4”	1 1/8”	W24 x 192	25 1/2”	13”	1 7/16”
W40 x 321	40 1/16”	15 7/8”	1 3/4”	W33 x 169	33 7/8”	11 1/2”	1 1/4”	W24 x 176	25 1/4”	12 7/8”	1 5/16”
W40 x 297	39 7/8”	15 7/8”	1 5/8”	W33 x 152	33 1/2”	11 5/8”	1 1/16”	W24 x 162	25”	13”	1 1/4”
W40 x 277	39 3/4”	15 7/8”	1 9/16”	W33 x 141	33 1/4”	11 1/2”	15/16”	W24 x 146	24 3/4”	12 7/8”	1 1/16”
W40 x 249	39 3/8”	15 3/4”	1 7/16”	W33 x 130	33 1/8”	11 1/2”	7/8”	W24 x 131	24 1/2”	12 7/8”	15/16”
W40 x 215	39”	15 3/4”	1 1/4”	W33 x 118	32 7/8”	11 1/2”	3/4”	W24 x 117	24 1/4”	12 3/4”	7/8”
W40 x 199	38 5/8”	15 3/4”	1 1/16”	W30 x 477	34 1/4”	15 7/8”	3”	W24 x 104	24”	12 3/4”	3/4”
W40 x 174	38 1/4”	15 3/4”	13/16”	W30 x 391	33 1/4”	15 5/8”	2 7/16”	W24 x 103	24 1/2”	9”	1”
W40 x 466	42 7/16”	12 5/8”	2 15/16”	W30 x 326	32 3/8”	15 3/8”	2 1/16”	W24 x 94	24 1/4”	9 1/8”	7/8”
W40 x 392	41 9/16”	12 3/8”	2 1/2”	W30 x 292	32”	15 1/4”	1 7/8”	W24 x 84	24 1/8”	9”	3/4”
W40 x 331	40 13/16”	12 3/16”	2 1/8”	W30 x 261	31 5/8”	15 1/8”	1 5/8”	W24 x 76	23 7/8”	9”	11/16”
W40 x 278	40 3/16”	12”	1 13/16”	W30 x 235	31 1/4”	15”	1 1/2”	W24 x 68	23 3/4”	9”	9/16”
W40 x 264	40”	12”	1 3/4”	W30 x 211	31”	15 1/8”	1 5/16”	W24 x 62	23 3/4”	7”	9/16”
W40 x 235	39 3/4”	11 7/8”	1 9/16”	W30 x 191	30 5/8”	15”	1 3/16”	W24 x 55	23 5/8”	7”	1/2”
W40 x 211	39 3/8”	11 3/4”	1 7/16”	W30 x 173	30 1/2”	15”	1 1/16”	W21 x 201	23”	12 5/8”	1 5/8”
W40 x 183	39”	11 3/4”	1 1/4”	W30 x 148	30 5/8”	10 1/2”	1 3/16”	W21 x 182	22 3/4”	12 1/2”	1 1/2”
W40 x 167	38 5/8”	11 3/4”	1”	W30 x 132	30 1/4”	10 1/2”	1”	W21 x 166	22 1/2”	12 3/8”	1 3/8”
W40 x 149	38 1/4”	11 3/4”	13/16”	W30 x 124	30 1/8”	10 1/2”	15/16”	W21 x 147	22”	12 1/2”	1 1/8”
W36 x 848	42 1/2”	18 1/8”	4 1/2”	W30 x 116	30”	10 1/2”	7/8”	W21 x 132	21 7/8”	12 1/2”	1 1/16”
W36 x 798	42”	18”	4 5/16”	W30 x 108	29 7/8”	10 1/2”	3/4”	W21 x 122	21 5/8”	12 3/8”	15/16”
W36 x 650	40 1/2”	17 5/8”	3 9/16”	W30 x 99	29 5/8”	10 1/2”	11/16”	W21 x 111	21 1/2”	12 3/8”	7/8”
W36 x 527	39 1/4”	17 1/4”	2 15/16”	W30 x 90	29 1/2”	10 3/8”	9/16”	W21 x 101	21 3/8”	12 1/4”	13/16”
W36 x 439	38 1/4”	17”	2 7/16”	W27 x 539	32 1/2”	15 1/4”	3 9/16”	W21 x 93	21 5/8”	8 3/8”	15/16”
W36 x 393	37 1/4”	16 7/8”	2 3/16”	W27 x 448	31 3/8”	15”	3”	W21 x 83	21 3/8”	8 3/8”	13/16”
W36 x 359	37 3/8”	16 3/4”	2”	W27 x 368	30 3/8”	14 5/8”	2 1/2”	W21 x 73	21 1/4”	8 1/4”	3/4”
W36 x 328	37 1/8”	16 5/8”	1 7/8”	W27 x 307	29 5/8”	14 1/2”	2 1/16”	W21 x 68	21 1/8”	8 1/4”	11/16”
W36 x 300	36 3/4”	16 5/8”	1 11/16”	W27 x 258	29”	14 1/4”	1 3/4”	W21 x 62	21”	8 1/4”	5/8”
W36 x 280	36 1/2”	16 5/8”	1 9/16”	W27 x 235	28 5/8”	14 1/4”	1 5/8”	W21 x 57	21”	6 1/2”	5/8”
W36 x 260	36 1/4”	16 1/2”	1 7/16”	W27 x 217	28 3/8”	14 1/8”	1 1/2”	W21 x 55	20 3/4”	8 1/4”	1/2”
W36 x 245	36 1/4”	16 1/2”	1 3/8”	W27 x 194	28 1/8”	14”	1 5/16”	W21 x 50	20 7/8”	6 1/2”	1/2”
W36 x 230	35 7/8”	16 1/2”	1 1/4”	W27 x 178	27 3/4”	14 1/8”	1 3/16”	W21 x 44	20 5/8”	6 1/2”	7/16”
W36 x 256	37 3/8”	12 1/4”	1 3/4”	W27 x 161	27 5/8”	14”	1 1/16”	W18 x 311	22 3/8”	12”	2 3/4”
W36 x 232	37 1/8”	12 1/8”	1 9/16”	W27 x 146	27 3/8”	14”	1”	W18 x 283	21 7/8”	11 7/8”	2 1/2”
W36 x 210	36 3/4”	12 1/8”	1 3/8”	W27 x 129	27 5/8”	10”	1 1/8”	W18 x 258	21 1/2”	11 3/4”	2 5/16”
W36 x 194	36 1/2”	12 1/8”	1 1/4”	W27 x 114	27 1/4”	10 1/8”	15/16”	W18 x 234	21”	11 5/8”	2 1/8”
W36 x 182	36 3/8”	12 1/8”	1 3/16”	W27 x 102	27 1/8”	10”	13/16”	W18 x 211	20 5/8”	11 1/2”	1 15/16”
W36 x 170	36 1/8”	12”	1 1/8”	W27 x 94	26 7/8”	10”	3/4”	W18 x 192	20 3/8”	11 1/2”	1 3/4”
W36 x 160	36”	12”	1”	W27 x 84	26 3/4”	10”	5/8”	W18 x 175	20”	11 3/8”	1 9/16”
W36 x 150	35 7/8”	12”	15/16”								

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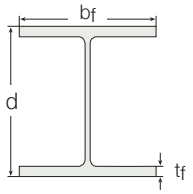
28005 W. Commercial Ave. Barrington, IL 60010 Ph: 847.756.4337
Fx: 847.304.1891 email: CustomerService@strutandsupply.com

W-Beam



W-Beams				W-Beams				W-Beams			
Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f	Beam Designation	Depth d	Flange Width b_f	Flange Edge Thickness t_f
W18 x 158	19 3/4"	11 1/4"	17/16"	W14 x 159	15"	15 5/8"	1 3/16"	W12 x 19	12 1/8"	4"	3/8"
W18 x 143	19 1/2"	11 1/4"	1 5/16"	W14 x 145	14 3/4"	15 1/2"	1 1/16"	W12 x 16	12"	4"	1/4"
W18 x 130	19 1/4"	11 1/8"	1 3/16"	W14 x 132	14 5/8"	14 3/4"	1"	W12 x 14	11 7/8"	4"	1/4"
W18 x 119	19"	11 1/4"	1 1/16"	W14 x 120	14 1/2"	14 5/8"	15/16"	W10 x 112	11 3/8"	10 3/8"	1 1/4"
W18 x 106	18 3/4"	11 1/4"	15/16"	W14 x 109	14 3/8"	14 5/8"	7/8"	W10 x 100	11 1/8"	10 3/8"	1 1/8"
W18 x 97	18 5/8"	11 1/8"	7/8"	W14 x 99	14 1/8"	14 5/8"	3/4"	W10 x 88	10 7/8"	10 1/4"	1"
W18 x 86	18 3/8"	11"	3/4"	W14 x 90	14"	14 1/2"	1 1/16"	W10 x 77	10 5/8"	10 1/4"	7/8"
W18 x 76	18 1/4"	11"	1 1/16"	W14 x 82	14 1/4"	10 1/8"	7/8"	W10 x 68	10 3/8"	10 1/8"	3/4"
W18 x 71	18 1/2"	7 5/8"	13/16"	W14 x 74	14 1/8"	10 1/8"	13/16"	W10 x 60	10 1/4"	10 1/8"	1 1/16"
W18 x 65	18 3/8"	7 5/8"	3/4"	W14 x 68	14"	10"	3/4"	W10 x 54	10 1/8"	10"	5/8"
W18 x 60	18 1/4"	7 1/2"	1 1/16"	W14 x 61	13 7/8"	10"	5/8"	W10 x 49	10"	10"	9/16"
W18 x 55	18 1/8"	7 1/2"	5/8"	W14 x 53	13 7/8"	8'	1 1/16"	W10 x 45	10 1/8"	8"	5/8"
W18 x 50	18"	7 1/2"	9/16"	W14 x 48	13 3/4"	8"	5/8"	W10 x 39	9 7/8"	8"	1/2"
W18 x 46	18"	6"	5/8"	W14 x 43	13 5/8"	8"	1/2"	W10 x 33	9 3/4"	8"	7/16"
W18 x 40	17 7/8"	6"	1/2"	W14 x 38	14 5/8"	6 3/4"	1/2"	W10 x 30	10 1/2"	5 3/4"	1/2"
W18 x 35	17 3/4"	6"	7/16"	W14 x 34	14"	6 3/4"	7/16"	W10 x 26	10 3/8"	5 3/4"	7/16"
W16 x 100	17"	10 3/8"	1"	W14 x 30	13 7/8"	6 3/4"	3/8"	W10 x 22	10 1/8"	5 3/4"	3/8"
W16 x 89	16 3/4"	10 3/8"	7/8"	W14 x 26	13 7/8"	5"	7/16"	W10 x 19	10 1/4"	4"	3/8"
W16 x 77	16 1/2"	10 1/4"	3/4"	W14 x 22	13 3/4"	5"	5/16"	W10 x 17	10 1/8"	4"	5/16"
W16 x 67	16 3/8"	10 1/4"	1 1/16"	W12 x 336	16 7/8"	13 3/8"	2 15/16"	W10 x 15	10"	4"	1/4"
W16 x 57	16 3/8"	7 1/8"	1 1/16"	W12 x 305	16 3/8"	13 1/4"	2 11/16"	W10 x 12	9 7/8"	4"	3/16"
W16 x 50	16 1/4"	7 1/8"	5/8"	W12 x 279	15 7/8"	13 1/8"	2 1/2"	W8 x 67	9"	8 1/4"	15/16"
W16 x 45	16 1/8"	7"	9/16"	W12 x 252	15 3/8"	13"	2 1/4"	W8 x 58	8 3/4"	8 1/4"	13/16"
W16 x 40	16"	7"	1/2"	W12 x 230	15"	12 7/8"	2 1/16"	W8 x 48	8 1/2"	8 1/8"	1 1/16"
W16 x 36	15 7/8"	7"	7/16"	W12 x 210	14 3/4"	12 3/4"	1 7/8"	W8 x 40	8 1/4"	8 1/8"	9/16"
W16 x 31	15 7/8"	5 1/2"	7/16"	W12 x 190	14 3/8"	12 5/8"	1 3/4"	W8 x 35	8 1/8"	8"	1/2"
W16 x 26	15 3/4"	5 1/2"	3/8"	W12 x 170	14"	12 5/8"	1 9/16"	W8 x 31	8"	8"	7/16"
W14 x 808	22 7/8"	18 1/2"	5 1/8"	W12 x 152	13 3/4"	12 1/2"	1 3/8"	W8 x 28	8"	6 1/2"	7/16"
W14 x 730	22 3/8"	17 7/8"	4 15/16"	W12 x 136	13 3/8"	12 3/8"	1 1/4"	W8 x 24	7 7/8"	6 1/2"	3/8"
W14 x 665	21 5/8"	17 5/8"	4 1/2"	W12 x 120	13 1/8"	12 3/8"	1 1/8"	W8 x 21	8 1/4"	5 1/4"	3/8"
W14 x 605	20 7/8"	17 3/8"	4 3/16"	W12 x 106	12 7/8"	12 1/4"	1"	W8 x 18	8 1/8"	5 1/4"	5/16"
W14 x 550	20 1/4"	17 1/4"	3 13/16"	W12 x 96	12 3/4"	12 1/8"	7/8"	W8 x 15	8 1/8"	4"	5/16"
W14 x 500	19 5/8"	17"	3 1/2"	W12 x 87	12 1/2"	12 1/8"	13/16"	W8 x 13	8"	4"	1/4"
W14 x 455	19"	16 7/8"	3 3/16"	W12 x 79	12 3/8"	12 1/8"	3/4"	W8 x 10	7 7/8"	4"	3/16"
W14 x 426	18 5/8"	16 3/4"	3 1/16"	W12 x 72	12 1/4"	12"	1 1/16"	W6 x 25	6 3/8"	6 1/8"	7/16"
W14 x 398	18 1/4"	16 5/8"	2 7/8"	W12 x 65	12 1/8"	12"	5/8"	W6 x 20	6 1/4"	6"	3/8"
W14 x 370	17 7/8"	16 1/2"	2 11/16"	W12 x 58	12 1/4"	10"	5/8"	W6 x 15	6"	6"	1/4"
W14 x 342	17 1/2"	16 3/8"	2 1/2"	W12 x 53	12"	10"	9/16"	W6 x 16	6 1/4"	4"	3/8"
W14 x 311	17 1/8"	16 1/4"	2 1/4"	W12 x 50	12 1/4"	8 1/8"	5/8"	W6 x 12	6"	4"	1/4"
W14 x 283	16 3/4"	16 1/8"	2 1/16"	W12 x 45	12"	8"	9/16"	W6 x 9	5 7/8"	4"	3/16"
W14 x 257	16 3/8"	16"	1 7/8"	W12 x 40	12"	8"	1/2"	W5 x 19	5 1/8"	5"	7/16"
W14 x 233	16"	15 7/8"	1 3/4"	W12 x 35	12 1/2"	6 1/2"	1/2"	W5 x 16	5"	5"	3/8"
W14 x 211	15 3/4"	15 3/4"	1 9/16"	W12 x 30	12 3/8"	6 1/2"	7/16"	W4 x 13	4 1/8"	4"	3/8"
W14 x 193	15 1/2"	15 3/4"	1 7/16"	W12 x 26	12 1/4"	6 1/2"	3/8"				
W14 x 176	15 1/4"	15 5/8"	1 5/16"	W12 x 22	12 1/4"	4"	7/16"				

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28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
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Steel Connections

Project: Alexander Hamilton Bridge Refurbishment

Location: Route 95, New York

Product: Type AF

Application: Temporary support connections

Image: bridgeandtunnelclub.com

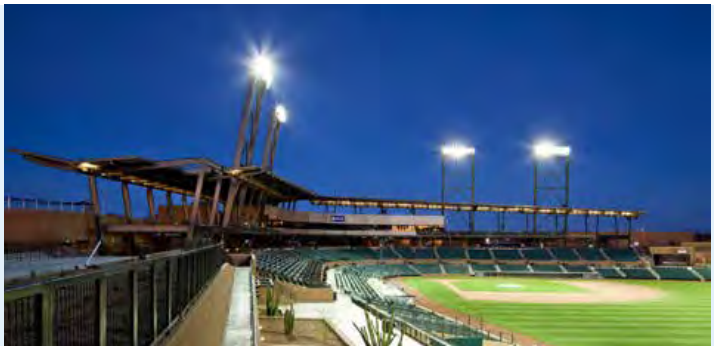
Hollow Section (HSS) Connections

Project: Salt River Fields Spring Training Facility

Location: Scottsdale, Arizona

Product: Type HB - Hollo-Bolt HCF Hexagonal

Application: Structural connections of floodlighting frames



Pipe / Conduit Supports

Project: Manhattan Bridge

Location: New York City

Product: Type F3

Application: Pipe supports

Steel Floor Connections

Project: Hartfield-Jackson Airport

Location: Atlanta

Product: Type GF – Grate-Fast

Application: Securing maintenance walkway

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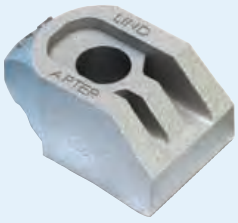
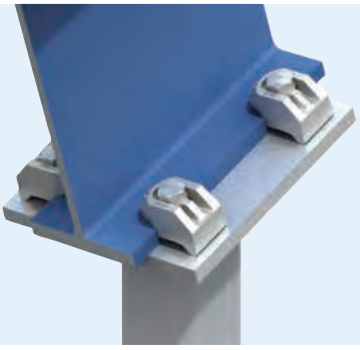
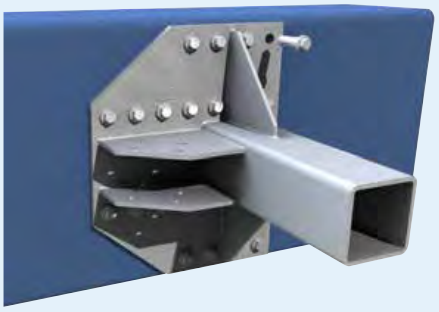
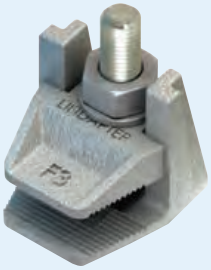


Lindapter Type AF connections were used on the major refurbishment and widening of the Alexander Hamilton Bridge to connect temporary support systems for cantilevered roadways. Type AF clamps were ideal for the varying connection angles of the application due to their high performance in friction and tensile.

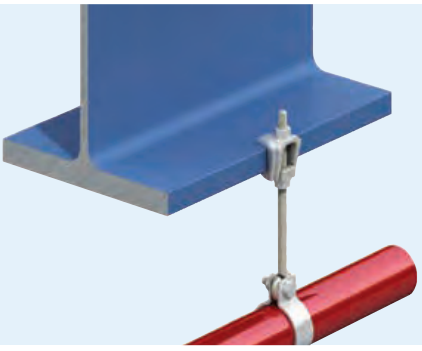


Lindapter Hollo-Bolts were used to connect the large end plates of the horizontal structural tube cross beams to the vertical tubular frame of the lighting rigs. The M20 (3/4") structural steel expansion bolts featured Lindapter's patented High Clamping Force (HCF) mechanism to increase clamping force by up to three times for a more secure connection.

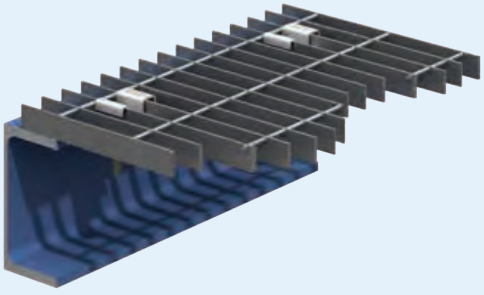




Lindapter Pipe Support connections are often specified for securing pipework due to the ease of installation and high adjustability. In this case, the Type F3 was used to connect piping carrying fibre optic cable for high-speed internet. No drilling, welding or power was required, simplifying the installation across the 1480ft span of the iconic Manhattan Bridge.



Lindapter Grate-Fast connections were used to secure open bar grating maintenance walkways along 1.5 miles of light rail track running between three new stations at the Hartfield-Jackson Airport. The Grate-Fast floor connector enabled the flooring to be attached to the supporting steel members in a matter of seconds without requiring specialist tools or skilled labor, saving time and money in comparison to traditional bolted connections.



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Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

lindapter® USA

Steel Connections

Project: Target Field Ballpark

Location: Minneapolis, Minnesota

Product: Type LR

Application: Secured the canopy soffit

Image: Wayne Kryduba / Minnesota Twins

Hollow Section (HSS) Connections

Project: Kimmel Center for the Performing Arts

Location: Philadelphia, Pennsylvania

Product: Type HB - Hollo-Bolt Hexagonal

Application: Structural connections on the steel framed roof

Image: Jeff Goldberg/Esto, courtesy of Kimmel Center

Pipe Supports (Heavy Duty)

Project: ExxonMobil Refinery

Location: Houston, Texas

Product: Type LR

Application: Pipe supports

Steel Floor Connections

Project: Benjamin Franklin Bridge

Location: Philadelphia, Pennsylvania

Product: Type GF – Grate-Fast

Application: Securing maintenance platforms

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Ph: 847.756.4337 Fx: 847.304.1891
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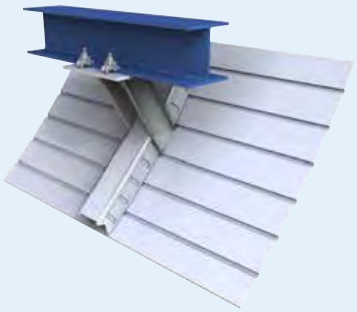
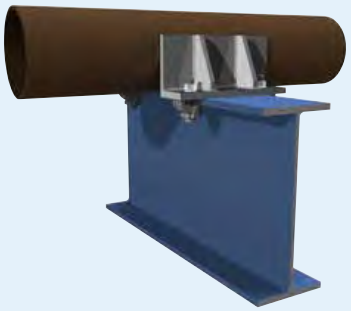
The stadium features a 1,988 ton steel sunshade canopy that sweeps around the stadium, with an 80,000 ft² glistening soffit safely suspended overhead with Lindapter steel connections. The adjustable Type LR clamp allowed contractors to quickly connect the soffit framework to the structural sections, despite the variations in beam size and connection angle.

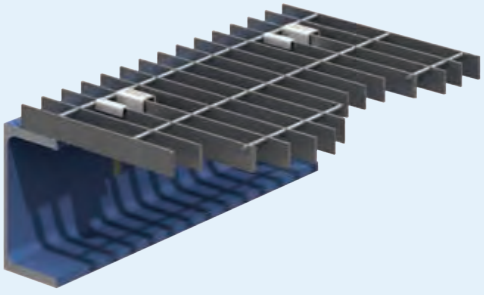


Lindapter Hollo-Bolts connect the arched trusses that form the 150ft high barrel vault roof. The connection design consisted of splice joints inside the adjoining pre-drilled hollow sections, allowing the Hollo-Bolts to be simply inserted and tightened with a torque wrench for a rapid installation. The design also eradicated the possibility of tube deformation that can be associated with through-bolting if the bolts are over tightened.

In addition to the Pipe / Conduit Supports product line, Lindapter's Steel Connections are often used for heavy duty pipe supports. At this major refinery in Houston, Type LR clamps were used to secure a new pipeline, spanning several thousand feet to existing cantilever beams. As drilling or welding was not required, potential fire hazards and the associated hot work permits were avoided. Lindapter's connection enabled pipe guides to be installed in a continuously operational facility, with no interference to the refinery's productivity.



Grate-Fast steel floor connections were used for the installation of open bar grating platforms to provide maintenance access to accent lighting equipment on Philadelphia's Benjamin Franklin Bridge. The Grate-Fast connections allowed the platforms to be installed by a single person using standard hand tools.



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28005 W. Commercial Ave. Barrington, IL 60010
Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com

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Ph: 847.756.4337 Fx: 847.304.1891
email: CustomerService@strutandsupply.com