
LNA
SOLUTIONS



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WE MAKE ANY STEEL CONNECTION

LNA Solutions is North America's leading steelwork connection company, based in Buffalo, New York. We manufacture, engineer, and specify steel-to-steel connection solutions for all structural steel applications.

More than a components supplier, we provide technical design solutions for any steel connection challenge. Our sales team and qualified engineers offer first-class, personalized service to ensure you receive customized designs to meet your needs. Our engineering services are provided at no additional cost.

QUALITY SERVICE

We are not just distributors; We take full ownership of our supply chain, overseeing everything from supply to our warehouses. This hands-on approach allows us to maintain consistent quality standards and industry-leading pricing for all our products. To ensure your project planning runs smoothly, we've created a systematic inventory monitoring system that guarantees product availability.

Our pricing strategies are carefully designed to offer outstanding value, and our flexibility in customizing solutions means we can adapt our offerings to perfectly match your unique application requirements, enhancing efficiency in your projects.

SOLUTIONS

Our range of steel-to-steel connections is extensive and constantly evolving. We are deeply committed to innovation, continuously developing and engineering new products to meet the ever-changing demands of our customers. Our primary focus is on delivering customized solutions that address your specific requirements.

Should you have any inquiries or face a steel connection challenge, please feel free to reach out to us. You can either visit our website at **LNASolutions.com** or give us a call at 888-724-2323. We're here to assist you.

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MARKETS & APPLICATIONS

Our BEAMCLAMP®, BOXBOLT®, and STEEL FLOOR FASTENER™ products are designed for steel-to-steel connections across all industries and markets. The examples below are just some of the applications where our connections are most common:





INFRASTRUCTURE

BeamClamp attaches secondary steelwork to the existing infrastructure in a variety of applications within the civil sector including rail, road, water treatment facilities and in power generation plants. In bridge applications, BeamClamp is integrated to strengthen steelwork, walkway platforms and for suspension systems to the bridge structure. Water treatment plants depend on BeamClamp to secure guardrail to protect filtration tanks, secure walkways and provide corrosion resistant connections in these harsh environments.



STEEL CONSTRUCTION

The steel construction industry depend on our products when connecting structural steel in the field. BeamClamp and BoxBolt products are used extensively for secondary steel or temporary applications when damage to the existing structure is prohibited and surface integrity must be maintained. Our steel connection systems are also used when flexibility of installation is important; where drilling or welding are not acceptable, when access to power sources are limited, or when heavy machinery is not practical. Typical applications include the connection of runway beams for walkways, connecting cladding, securing steel flooring, and for strengthening open steel joist frames.



SOLAR & WIND ENERGY

BeamClamp and BoxBolt products are the trusted steel connection solution in the solar energy sector. Our clamps are often specified for securing solar panels to supporting frames and for affixing brackets to existing structures that support the solar panels. Within the wind energy market a variety of our products are utilized on powerful wind turbines. Typical applications would integrate our FloorFix and GrateFix clamping systems for securing steel flooring and grating on the inside of the energy platforms.



BUILDING SERVICES

A wide range of BeamClamp products are suitable for connecting steel members to steel structures within the building services industry. BeamClamp solutions do not require drilling or welding - they protect the structural integrity and design by connecting directly to the building structure with basic hand tools. Applications include the connection of mechanical services (pipe work), heating ventilation, air-conditioning systems, electrical services and fire protection services.



FAÇADES AND CURTAIN WALLING

BoxBolt and BeamClamp are high performance solutions used in the façade and curtain walling industries. BoxBolt provides the connection of curtain walling brackets to hollow structural steel sections. BeamClamp offers a strong clamping solution for securing curtain walling or cladding supports to the existing structure without the need for drilling or welding.



OIL, GAS & PROCESSING PLANTS

BeamClamp products are used in the construction and expansion of offshore oil rigs, gas drilling platforms, and their helideck pads. The majority of these applications connect new steel to existing structures. No drilling or welding is required to fasten BeamClamp on site, as most hot work is forbidden in these offshore applications. The full range of BeamClamp products are also used in manufacturing facilities and processing plants for pipe supports, monorail systems, conveyor rails, flooring sections, and for blast walls.



MATERIAL HANDLING & CONVEYORS

BeamClamp products are extensively used for material handling applications due to their flexibility and their unique capacity to be removed and reinstalled without damaging existing steel. BeamClamp can be affixed for temporary installations such as lifting points or utilized in more permanent solutions connecting conveyor supports. BeamClamp is also used in crane applications. Common uses include the installation of runway beams for connecting cranes to existing steel and free-standing frames for gantry cranes.



STADIUMS & AMPHITHEATERS

Many of our steel connection products are used within steel structured stadiums and amphitheaters. BeamClamp is used for attaching secondary brackets to the existing structural steel for floodlights, display screens, and general building service equipment. BoxBolt steel connectors are also used for connecting guard railing, securing steel flooring, and connecting of arena seating to the supporting structure.

INTRODUCTION TO BOXBOLT®

BoxBolt® is a high-strength solution for blind connection applications and Hollow Structural Steel (HSS) members. BoxBolts are structural anchor bolts which provide a solution for joining steel without the need for on-site drilling or welding, offering much more flexibility than traditional methods. The system provides a guaranteed connection every time, without the need for on-site verification, as long as the installation guidelines are correctly followed.

BoxBolt is a fully tested and approved blind connection solution for connecting to hollow section steel or where access is restricted to one side only. It is suitable for use with rectangular, square, and even circular hollow sections. The BoxBolt features a hexagon head design for easy installation with a standard wrench. It can also be installed with the unique BoxSok™ installation tool for faster installation times.

BoxBolts are available in three finishes:

- **Zinc plated for less aggressive environments**
- **Hot-dip galvanized for more aggressive environments**
- **Stainless steel for the most demanding applications**

These finishes, combined with the different BoxBolt lengths available, make them extremely versatile to suit any environment and application.

BoxBolts are approved for use by Lloyd's Register (LR) type approval and the Deutsches Institut für Bautechnik (DIBt), giving specifiers and users total confidence.

FEATURES

- **Hot-Dip Galvanized Steel as standard**
- **Installation requires only basic hand tools**
- **High tensile and shear values**
- **ICC Seismic Approved**

BENEFITS

- **Long lasting, corrosion-resistant finish**
- **Ideal for steel applications where access is limited to one side only**
- **Eliminates need for drilling/tapping, welding, strapping, through-bolting**
- **Approved for slip-critical connections**
- **Suitable for rectangular, circular or square tube**



BOXBOLT®
SOLUTIONS

BOXBOLT® SIZES & SPECS

* BQ1Z06 is tested at an external test house but is not approved by LR type or DIBt.

Part Number & Description			Dimensional Information							Load Information		
Product Code	Bolt Dia	Description	Setscrew Length	Clamping Range (X)		Across Flats of Shoulder	Shoulder Thick-ness	Sleeve Dia	Hole Size Dia	Available Strength (lbs)		Torque (ft lb)
				Min	Max					Tensile	Shear	
BQ1Z06*	1/4″	1/4″ BoxBolt Size 1 - Zinc	1-3/4″	1/8″	7/8″	11/16″	3/16″	3/8″	7/16″	2,872	4,793	14
BQ1S06	1/4″	1/4″ BoxBolt Size 1 - SS	1-3/4″	1/8″	7/8″	11/16″	3/16″	3/8″	7/16″	2,872	4,793	14
BQ1Z08	5/16″	5/16″ BoxBolt Size 1 - Zinc	2″	3/16″	1″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ2Z08	5/16″	5/16″ BoxBolt Size 2 - Zinc	2-3/4″	11/16″	1-13/16″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ3Z08	5/16″	5/16″ BoxBolt Size 3 - Zinc	3-9/16″	1-3/16″	2-5/8″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ1G08	5/16″	5/16″ BoxBolt Size 1 - HDG	2″	3/16″	1″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ2G08	5/16″	5/16″ BoxBolt Size 2 - HDG	2-3/4″	11/16″	1-13/16″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ3G08	5/16″	5/16″ BoxBolt Size 3 - HDG	3-9/16″	1-3/16″	2-5/8″	7/8″	1/4″	1/2″	9/16″	5,071	5,917	18
BQ1S08	5/16″	5/16″ BoxBolt Size 1 - SS	2″	3/16″	1″	7/8″	1/4″	1/2″	9/16″	4,314	6,787	18
BQ2S08	5/16″	5/16″ BoxBolt Size 2 - SS	2-3/4″	11/16″	1-13/16″	7/8″	1/4″	1/2″	9/16″	4,314	6,787	18
BQ1Z10	3/8″	3/8″ BoxBolt Size 1 - Zinc	2″	3/16″	7/8″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ2Z10	3/8″	3/8″ BoxBolt Size 2 - Zinc	2-3/4″	11/16″	1-11/16″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ3Z10	3/8″	3/8″ BoxBolt Size 3 - Zinc	3-9/16″	1-3/8″	2-1/2″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ1G10	3/8″	3/8″ BoxBolt Size 1 - HDG	2″	3/16″	7/8″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ2G10	3/8″	3/8″ BoxBolt Size 2 - HDG	2-3/4″	11/16″	1-11/16″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ3G10	3/8″	3/8″ BoxBolt Size 3 - HDG	3-9/16″	1-3/8″	2-1/2″	15/16″	1/4″	11/16″	3/4″	9,718	10,985	33
BQ1S10	3/8″	3/8″ BoxBolt Size 1 - SS	2″	3/16″	7/8″	15/16″	1/4″	11/16″	3/4″	6,839	12,222	33
BQ2S10	3/8″	3/8″ BoxBolt Size 2 - SS	2-3/4″	11/16″	1-11/16″	15/16″	1/4″	11/16″	3/4″	6,839	12,222	33
BQ1Z12	1/2″	1/2″ BoxBolt Size 1 - Zinc	2-3/16″	3/16″	1″	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ2Z12	1/2″	1/2″ BoxBolt Size 2 - Zinc	3-1/8″	3/4″	2′	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ3Z12	1/2″	1/2″ BoxBolt Size 3 - Zinc	4″	1-9/16″	2-3/4″	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ1G12	1/2″	1/2″ BoxBolt Size 1 - HDG	2-3/16″	3/16″	1″	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ2G12	1/2″	1/2″ BoxBolt Size 2 - HDG	3-1/8″	3/4″	2′	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ3G12	1/2″	1/2″ BoxBolt Size 3 - HDG	4″	1-9/16″	2-3/4″	1″	5/16″	3/4″	13/16″	13,015	12,676	59
BQ1S12	1/2″	1/2″ BoxBolt Size 1 - SS	2-3/16″	3/16″	1″	1″	5/16″	3/4″	13/16″	9,945	15,543	59
BQ2S12	1/2″	1/2″ BoxBolt Size 2 - SS	3-1/8″	3/4″	2′	1″	5/16″	3/4″	13/16″	9,945	15,543	59
BQ1Z16	5/8″	5/8″ BoxBolt Size 1 - Zinc	3″	3/16″	1-3/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ2Z16	5/8″	5/8″ BoxBolt Size 2 - Zinc	4″	1-3/16″	2-3/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ3Z16	5/8″	5/8″ BoxBolt Size 3 - Zinc	4-3/4″	2-3/16″	3-1/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ1G16	5/8″	5/8″ BoxBolt Size 1 - HDG	3″	3/16″	1-3/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ2G16	5/8″	5/8″ BoxBolt Size 2 - HDG	4″	1-3/16″	2-3/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ3G16	5/8″	5/8″ BoxBolt Size 3 - HDG	4-3/4″	2-3/16″	3-1/8″	1-7/16″	3/8″	1″	1-1/16″	26,199	29,578	140
BQ1S16	5/8″	5/8″ BoxBolt Size 1 - SS	3″	3/16″	1-3/8″	1-7/16″	3/8″	1″	1-1/16″	18,523	28,191	140
BQ2S16	5/8″	5/8″ BoxBolt Size 2 - SS	4″	1-3/16″	2-3/8″	1-7/16″	3/8″	1″	1-1/16″	18,523	28,191	140
BQ1Z20	3/4″	3/4″ BoxBolt Size 1 - Zinc	4″	5/16″	1-5/8″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ2Z20	3/4″	3/4″ BoxBolt Size 2 - Zinc	4-3/4″	1-3/8″	2-13/16″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ3Z20	3/4″	3/4″ BoxBolt Size 3 - Zinc	6″	2-9/16″	4″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ1G20	3/4″	3/4″ BoxBolt Size 1 - HDG	4″	5/16″	1-5/8″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ2G20	3/4″	3/4″ BoxBolt Size 2 - HDG	4-3/4″	1-3/8″	2-13/16″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ3G20	3/4″	3/4″ BoxBolt Size 3 - HDG	6″	2-9/16″	4″	1-13/16″	7/16″	1-1/4″	1-5/16″	36,932	33,804	221
BQ1S20	3/4″	3/4″ BoxBolt Size 1 - SS	4″	5/16″	1-5/8″	1-13/16″	7/16″	1-1/4″	1-5/16″	28,909	47,203	221
BQ2S20	3/4″	3/4″ BoxBolt Size 2 - SS	4-3/4″	1-3/8″	2-13/16″	1-13/16″	7/16″	1-1/4″	1-5/16″	28,909	47,203	221

The loads stated above have a partial reduction factor of 0.75 applied to the ultimate tensile and shear strength to give the available strengths of the BoxBolt. A further reduction factor or factor of safety should be applied to these load values that is relevant to the application, code, or design guidelines. The overall strength of the connection is normally governed by the strength of material the BoxBolt is connecting into; therefore, the structural capacity of the connection should be checked by a structural engineer.

Approvals

The published loads are taken from physical testing in hollow structural section which are then verified by Lloyds Register Type Approval. The BoxBolt is also tested and approved by DIBt (Deutsches Institut fur Bautechnik) which complies with the DIN 18800 and Eurocode 3 design methods for bolted steel connections. A design guide and calculator is available when using these methods. Please ask our technical team for more information.

ICC APPROVED BOXBOLT (TYPE C)

The Type C BoxBolt is engineered for Hollow Structural Section (HSS) to Structural Steel connections with static dominant lateral loads in slip-critical conditions, and where static dominant loads are combined and assigned with any Seismic Design Category (A-F).

The Type C BoxBolt has a slightly modified design in order to resist seismic loads and are assembled with four components: a core bolt, body, shoulder, and cone. Type C BoxBolt is available in Hot-Dip Galvanized finish.

ES ICC EVALUATION SERVICE®





FEATURES & BENEFITS

- Mild steel to BS EN 10083 Grade 1.1151
- Hot-Dip Galvanized to BS EN ISO 1461
- ICC ESR-3217
- Acceptance Criteria - AC437
- ICC approved

BoxBolt® TypeC Blind Fastener Dimensional and Install Information

Product Code	Part Number & Description		Dimensional Information						Install Info.	
	BoxBolt® (Core Bolt Diameter)	Description	Core Bolt Length	Clamping Range (X)		Across Flats of Shoulder	Collar Thickness	Dim A	Dim B	Dim C Drill Data	Torque (ft lb)
				min	max						
BQ1GAL12C	1/2″ (12mm)	1/2″ BoxBolt Size 1	2-3 16″ (55mm)	1/2″	5/16″	1″ (26mm)	5/16″ (8.4mm)	2-1/16″ (52mm)	1-1/8″	13/16″	60
BQ2GAL12C	1/2″ (12mm)	1/2″ BoxBolt Size 2	3-1/8″ (80mm)	3/4″	1-7/8″	1″ (26mm)	5/16″ (8.4mm)	2-1/16″ (52mm)	1-1/8″	13/16″	60
BQ3GAL12C	1/2″ (12mm)	1/2″ BoxBolt Size 3	4″ (100mm)	1-1/2″	2-11/18″	1″ (26mm)	5/16″ (8.4mm)	2-1/16″ (52mm)	1-1/8″	13/16″	60
BQ1GAL16C	5/8″ (16mm)	5/8″ BoxBolt Size 1	3″ (75mm)	5/8″	1-3/8″	1-7/16″ (36mm)	3/8″ (9.4mm)	2-11/16″ (68mm)	1-3/8″	1-1/16″	140
BQ2GAL16C	5/8″ (16mm)	5/8″ BoxBolt Size 2	4″ (91mm)	1″	2-5/16″	1-7/16″ (36mm)	3/8″ (9.4mm)	2-11/16″ (68mm)	1-3/8″	1-1/16″	140
BQ3GAL16C	5/8″ (16mm)	5/8″ BoxBolt Size 3	4-3/4″ (100mm)	2″	3-1/16″	1-7/16″ (36mm)	3/8″ (9.4mm)	2-11/16″ (68mm)	1-3/8″	1-1/16″	140
BQ1GAL20C	3/4″ (20mm)	3/4″ BoxBolt Size 1	4″ (100mm)	3/4″	1-13/16″	1-13/16″ (46mm)	7/16″ (11.4mm)	3-7/16″ (87mm)	1-3/4″	1-3/8″	220
BQ2GAL20C	3/4″ (20mm)	3/4″ BoxBolt Size 2	5-1/8″ (130mm)	1-5/16″	3″	1-13/16″ (46mm)	7/16″ (11.4mm)	3-7/16″ (87mm)	1-3/4″	1-3/8″	220
BQ3GAL20C	3/4″ (20mm)	3/4″ BoxBolt Size 3	6″ (150mm)	2-9/16″	4″	1-13/16″ (46mm)	7/16″ (11.4mm)	3-7/16″ (87mm)	1-3/4″	1-3/8″	220

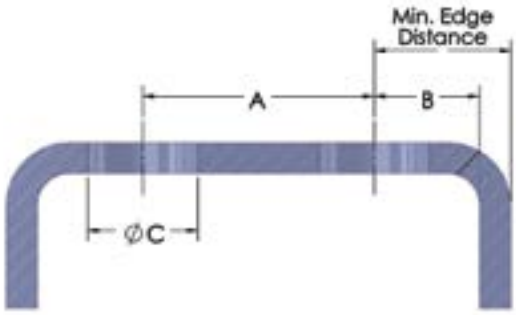
BoxBolt® TypeC Blind Fastener Strength Information

Part Code	LRFD Strenghts (lbf)						ASD Strengths (lbf)					
	Static Dominant Loads			Seismic SDC D, E, or F			Static Dominant Loads			Seismic SDC D, E, or F		
	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension
BQ1GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ2GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ3GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ1GAL16C	12,200	170	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ2GAL16C	12,200	170	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ3GAL16C	12,200	170	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ1GAL20C	17,600	790	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470
BQ2GAL20C	17,600	790	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470
BQ3GAL20C	17,600	790	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470

BOXBOLT® PRE-INSTALLATION PREP

BoxBolts must be installed in pre-drilled holes in the sections to be connected. The holes must have the correct diameter, spacing, and edge distance according to the chart below. The pre-drilled holes must be standard diameter holes conforming to AISC 360, where the bolt hole diameter is no greater than the Body diameter plus 1/16th of an inch. Burrs in the holes must be removed prior to installation.





See table on page 8 for Dimensioning & Positioning info for Type C bolts

Hole Dimensions & Positioning - Standard BoxBolts			
Box Bolt Size	Dim A	Dim B	Dim C
1/4"	1-3/16″	7/16″	7/16″
5/16″	1-3/8″	1/2″	9/16″
3/8″	1-9/16″	9/16″	3/4″
1/2″	2″	13/16″	13/16″
5/8″	2-3/16″	13/16″	1-1/16″
3/4″	2-3/4″	1″	1-5/16″

Minimum edge distance = Dim B + the thickness of hollow section

BOXSOK™ RAPID ASSEMBLY TOOL

The BoxSok™ Installation Tool is a rapid, unique assembly tool for the BoxBolt. This specially designed socket holds the hexagon shoulder on the body to stop rotating while allowing the inner socket to tighten up the core bolt. The core bolt draws the cone up inside the slotted body of the sleeve and expands the individual fins inside the connection.



The BoxSok eliminates the need for two tools to install the BoxBolt; this considerably speeds up the installation process and also reduces the risk of trapping hands between two tools. The BoxSok device is available to suit all BoxBolt diameters.

Size	Overall Length	Body Length	Body Diameter	Drive Size
M06	4-5/16″	3-3/8″	1-3/16″	1/4″
M08	4-7/16″	3-3/8″	1-5/16″	3/8″
M10	4-7/16″	3-3/8″	1-1/2″	3/8″
M12	4-1/2″	3-7/16″	1-5/8″	3/8″
M16	4-1/2″	3-7/16″	1-15/16″	1/2″
M20	4-9/16″	3-1/2″	2-5/16″	1/2″



or

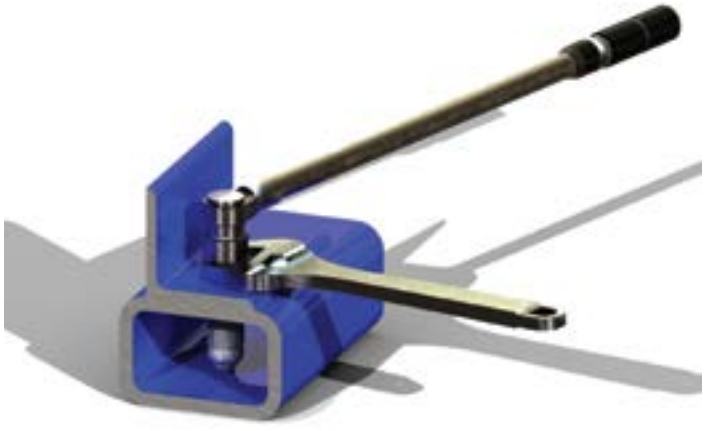




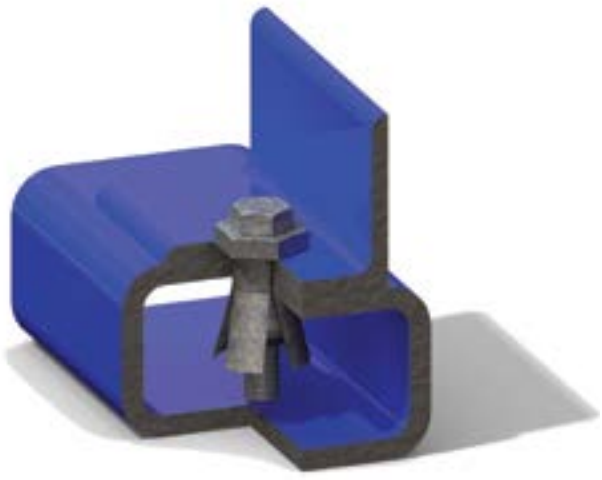
BOXBOLT® INSTALLATION INSTRUCTIONS



STEP 1: Align the holes in the bracket to be secured with the pre-drilled hole in the structural tube.
Insert the BoxBolt through both pieces of steel until the underside of the shoulder is flush with the outside of the steel.



STEP 2: Hold the hexagon shoulder of the BoxBolt with an open ended wrench. Use an impact wrench or ratchet to tighten the core bolt.



STEP 3: Remove the open ended wrench and check to ensure that the core bolt is tightened to the recommended torque.

BOXBOLT® APPLICATION EXAMPLES



APPLICATION 01
Two hollow sections at 90 degrees using an end plate



APPLICATION 02
Hollow section below an I-Beam at 90 degrees using a combination of BoxBolt and BeamClamp fixings



APPLICATION 03
Two hollow sections at 90 degrees using angle brackets



APPLICATION 04
Hollow section sleeve connector creating an aesthetic joint from the outside



APPLICATION 05
Angle to vertical hollow section post



APPLICATION 06
Rigging point to outside of hollow section



APPLICATION 07
Side fixing of handrail base to hollow section



APPLICATION 08
Top fixing of handrail base to hollow section



APPLICATION 09
Glazing bracket to hollow section

INTRODUCTION TO BEAMCLAMP®

BeamClamp® is a comprehensive range of clamping products designed for making steel-to-steel connections without drilling or welding. The clamping system gives specifiers peace of mind, knowing that once the steel connection is made, it has a guaranteed safe working load. BeamClamp also provides flexibility for installers, as minor adjustments to accommodate common imperfections in steel construction can be easily made with simple hand tools. This reduces overall costs in areas where drilling or welding is not permitted or where access to power sources is restricted.

FEATURES

- **Third party approvals (Lloyds & DIBt)**
- **Guaranteed 5 to 1 Factor of Safety**
- **No special tools or skilled labor required**
- **Hot-Dip Galvanized as standard**
- **Easy to adjust on-site**
- **No weakening of existing steel**
- **No damage to protective coating of the steel**

BENEFITS

- **Peace of mind when specifying or installing**
- **Provides safe connections**
- **Savings in installation time and cost on-site**
- **Excellent long term corrosion resistance for external applications**
- **Provides flexibility to allow for site tolerances**
- **Structural integrity of steel remains unchanged**
- **Integrity of existing steel coating remains unchanged**

TECHNICAL SUPPORT

We offer an all-inclusive engineering service to support our products, including recommendations for individual products or full designs for large projects. Our technical team has 2D/3D CAD capabilities and can provide design detailing for specific application solutions. Our technical sales engineers regularly perform CPD seminars to educate design engineers on how to specify our clamping products.

APPROVAL

All the loads stated in our catalog have been derived from physical testing and where you see an approval symbol, they have also been approved by that particular body. The majority of the range is Lloyds Register Type Approved and the Types BA, BB, BF1, BG1, BH1 have the additional approval of the Deutsches Institut für Bautechnik (DIBt)

Lloyd's Register

Deutsches Institut für Bautechnik DIBt



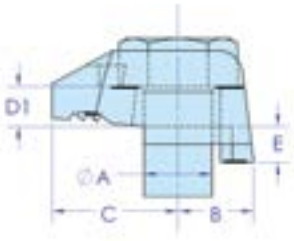
BEAMCLAMP®
SOLUTIONS

FLAT FLANGES (TYPE BA + BB)

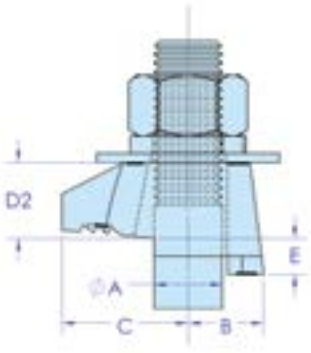
Type BA and BB clamps are commonly used in pairs to clamp two steel sections together. The type BA clamp has a recessed top to grip the head of a grade 5 setscrew or bolt, allowing a nut and washer to be tightened down onto the flat top of the BB clamp using a single tool. Both clamps are available with three tail lengths, denoted by the dimension E. The tail length should be as close to the thickness of the steel being clamped as possible, or slightly less if an exact match is not possible.

Packing pieces BF1, BG1 and BH1 can be used in combination with the tail length to achieve a match to the steel flange. BA and BB types are suitable for parallel flanges and flanges up to 8 degrees taper. They can also be used on their own if one piece of the steelwork has been pre-drilled.

To simplify the selection of tail lengths and packing pieces, please see the tables on pages 20 and 21.



TYPE BA



TYPE BB



FEATURES & BENEFITS

- Hot-Dip Galvanized to BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563
- 5 to 1 Factor of Safety
- Lloyd's Register approved
- DIBt approved

RECOMMENDED BOLT

- 3/8" BA (M10 / Grade 8.8 / Grade 10.9)
- 1/2" BA (M12 / Grade 5 / Grade 8)
- 5/8" BA (M12 / Grade 5 / Grade 8)
- 3/4" BA (M20 / A325 / A490)
- 1" BA (M24 / Grade 5 & 8 / 7/8" A325)

The Safe Working Loads are based on assemblies tested in typical conditions

Tail Length	Product Code	Product Code	A Bolt Dia	B	C	D1	D2	E	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)	Friction SWL (lbs) (per 4 bolts)
Short	BA1G10	BB1G10	3/8"	1/2"	13/16"	1/4"	7/16"	1/8"	1"	14	562	X
	BA1G12	BB1G12	1/2"	5/8"	1"	5/16"	1/2"	3/16"	1-1/8"	51	1,293	292
	BA1G16	BB1G16	5/8"	11/16"	1-1/4"	3/8"	11/16"	1/4"	1-7/16"	109	2,219	877
	BA1G20	BB1G20	3/4"	13/16"	1-3/8"	7/16"	13/16"	5/16"	1-3/4"	210	3,703	2,473
	BA1G24	BB1G24	1"	1"	1-15/16"	1/2"	1"	3/8"	2-1/8"	355	4,743	4,047
Medium	BA2G08	BB2G08	5/16"	3/8"	5/8"	3/16"	3/8"	1/8"	13/16"	4	281	X
	BA2G10	BB2G10	3/8"	1/2"	13/16"	1/4"	7/16"	3/16"	1"	14	562	X
	BA2G12	BB2G12	1/2"	5/8"	1"	5/16"	1/2"	1/4"	1-1/8"	51	1,293	292
	BA2G16	BB2G16	5/8"	11/16"	1-1/4"	3/8"	11/16"	5/16"	1-7/16"	109	2,219	877
	BA2G20	BB2G20	3/4"	13/16"	1-3/8"	7/16"	13/16"	3/8"	1-3/4"	210	3,703	2,473
	BA2G24	BB2G24	1"	1"	1-15/16"	1/2"	1"	1/2"	2-1/8"	355	4,743	4,047
Long	BA3G10	BB3G10	3/8"	1/2"	13/1"6	1/4"	7/16"	5/16"	1"	14	562	X
	BA3G12	BB3G12	1/2"	5/8"	1"	5/16"	1/2"	3/8"	1-1/8"	51	1,293	292
	BA3G16	BB3G16	5/8"	11/16"	1-1/4"	3/8"	11/16"	7/16"	1-7/16"	109	2,219	877
	BA3G20	BB3G20	3/4"	13/16"	1-3/8"	7/16"	13/16"	1/2"	1-3/4"	210	3,703	2,473
	BA3G24	BB3G24	1"	1"	1-15/16"	1/2"	1"	5/8"	2-1/8"	355	4,743	4,047

Do Not Exceed the Safe Working Load (SWL) Specified

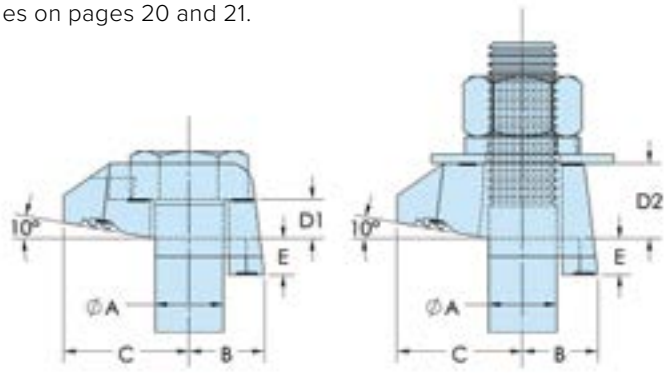
SLOPED FLANGES (TYPE BT + BW)

Type BT and BW are specifically designed with a 10 degrees sloping nose. This sloping nose makes them ideal for clamping on to tapered steel such as S beams or crane rail sections. The BT has a recessed top to captivate the head of a Grade 5 setscrew or bolt. The BW has a flat top to allow a nut and washer to be tightened down on it.

Both clamps are available with two tail lengths, denoted by the dimension E. This should be as near to the thickness of steel it is clamping to or slightly less if an exact match is not possible. Packing pieces BF1, BG1 and BH1 can be used in combination with the tail length to achieve a match to the steel flange. The BT and BW can also be used on their own if one piece of the steel has been pre-drilled.

To simplify the selection of tail lengths and packing pieces, please see tables on pages 20 and 21.





TYPE BT **TYPE BW**

FEATURES & BENEFITS

- Hot-Dip Galvanized to BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563
- 5 to 1 Factor of Safety
- 10 degree noise

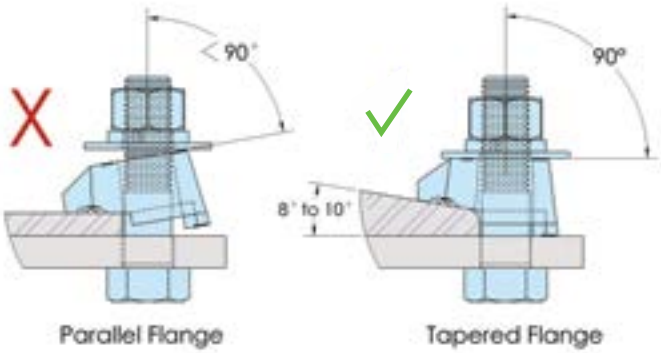
RECOMMENDED BOLT

- 1/2″ BT (M12 / Grade 5 / Grade 8)
- 5/8″ BT (M16 / Grade 5 / Grade 8)
- 3/4″ BT (M20 / A325 / A490)

The Safe Working Loads are based on assemblies tested in typical conditions

Tail Length	Product Code	Product Code	A Bolt Dia	B	C	D1	D2	E	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)	Friction SWL (lbs) (per 4 bolts)
Short	BT1G12	BW1G12	1/2″	5/8″	1″	5/16″	1/2″	3/16″	1-1/8″	51	1,293	292
	BT1G16	BW1G16	5/8″	11/16″	1-1/4″	3/8″	11/16″	1/4″	1-7/16″	109	2,219	877
	BT1G20	BW1G20	3/4″	13/16″	1-3/8″	7/16″	13/16″	1/4″	1-3/4″	210	3,703	2,473
Medium	BT2G12	BW2G12	1/2″	5/8″	1″	5/16″	1/2″	1/4″	1-1/8″	51	1,293	292
	BT2G16	BW2G16	5/8″	11/16″	1-1/4″	3/8″	11/16″	5/16″	1-7/16″	109	2,219	877
	BT2G20	BW2G20	3/4″	13/16″	1-3/8″	7/16″	13/16	3/8″	1-3/4″	210	3,703	2,473

Do Not Exceed the Safe Working Load (SWL) Specified



Parallel Flange Tapered Flange



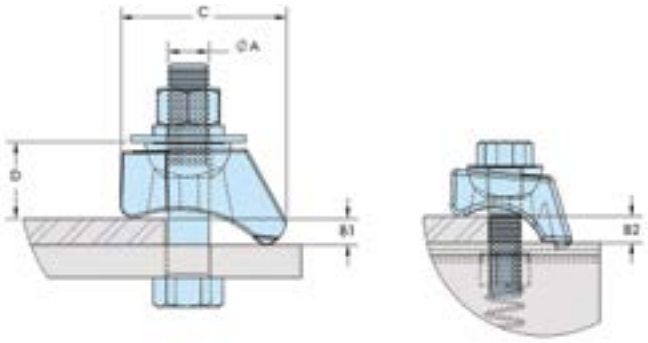
FLAT AND SLOPED (TYPE BK)

The BK1 is a self-adjusting clamp that consists of two parts. The main body provides a recess to allow a hemispherical washer to be seated. This allows the body to adjust between a specified clamping range and as the washer rotates it provides a flat surface for a nut. This mechanism makes the product suitable for clamping to tapered steel of up to 15 degrees.

It is also extremely useful for projects where the thickness of steel may vary. The 5/16", 3/8" and 1/2" versions feature a tab at the back edge that can be located in the open ends of strut products, both aiding installation and preventing rotation once installed. Should the maximum clamping range be exceeded, our BF2 and BG2 packers can be used to increase it.

To simplify the selection of tail lengths and packing pieces, please see the tables on pages 20 and 21 for details.





FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563
- 5 to 1 Factor of Safety
- Lloyds Register approved
- Self adjusting body style

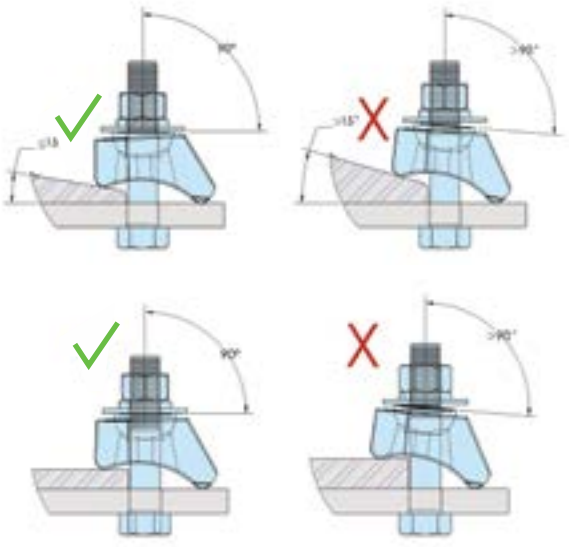
RECOMMENDED BOLT

- 3/8" BK (M10 / Grade 8.8 / Grade 10.9)
- 1/2" BK (M12 / Grade 5 / Grade 8)
- 5/8" BK (M16 / Grade 5 / Grade 8)
- 3/4" BK (M20 / A325 / A490)
- 1" BK (M24 / Grade 5 & 8 / 7/8" A325)

The Safe Working Loads are based on assemblies tested in typical conditions

Product Code	A Bolt Dia	B1	B2	C	D	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)	Friction SWL (lbs) (per 4 bolts)
BK1G08	5/16"	1/8 to 1/2"	1/8 to 3/8"	1-5/8"	11/16"	1-5/8"	4	281	X
BK1G10	3/8"	1/8 to 5/8"	1/8 to 1/2"	1-7/8"	3/4"	1-5/8"	14	562	X
BK1G12	1/2"	1/8 to 11/16"	1/8 to 5/8"	1-7/8"	7/8"	1-5/8"	51	1,619	456
BK1G16	5/8"	1/8 to 15/16"	N/A	2-1/2"	1-5/16"	2"	109	2,713	962
BK1G20	3/4"	1/8 to 1-3/16"	N/A	2-7/8"	1-1/4"	2-1/4"	210	5,836	1,522
BK1G24	1"	1/8 to 1-7/16"	N/A	3-3/8"	1-13/16"	2-15/16"	355	2,866	4,047

Do Not Exceed the Safe Working Load (SWL) Specified

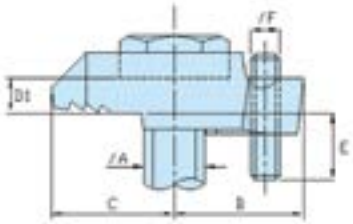




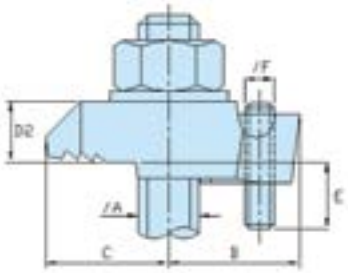
FLAT AND SLOPED FLANGES (TYPE BE1 + BE2)

The BE1 and BE2 clamps feature a socket screw at the back to adjust for varying steel thicknesses. They are the ideal choice when flange thicknesses are unknown or change on a project. Our BF2 and BG2 packers can be used to increase the clamping range (see page 20).





TYPE BE1



TYPE BE2

FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563
- 5 to 1 Factor of Safety
- LR Type Approved
- Adjustable to suit any thickness of steel

RECOMMENDED BOLT

- 3/8″ BA (M10 / Grade 8.8 / Grade 10.9)
- 1/2″ BA (M12 / Grade 5 / Grade 8)
- 5/8″ BA (M12 / Grade 5 / Grade 8)
- 3/4″ BA (M20 / A325 / A490)
- 1″ BA (M24 / Grade 5 & 8 / 7/8″ A325)

The Safe Working Loads are based on assemblies tested in typical conditions

Product Code	Product Code	Bolt Dia A	B	C	D	E	Screw Dia F	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)	Friction SWL (lbs) (per 4 bolts)
BE1G10	X	3/8″	13/16″	13/16″	1/4″	1/8 to 13/16″	1/4″	1″	14	562	X
BE1G12	BE2G12	1/2″	1″	1″	5/16″	3/16 to 7/8″	1/4″	1-1/8″	51	836	292
BE1G16	BE2G16	5/8″	1-3/16″	1-1/4″	3/8″	3/16 to 15/16″	5/16″	1-7/16″	109	1,855	877
BE1G20	X	3/4″	1-3/8″	1-3/8″	7/16″	3/16 to 1″	3/8″	1-3/4″	210	3,624	2,473
BE1G24	X	1″	1-15/1″6	1-15/16″	1/2″	1/4 to 1-3/16″	1/2″	2-1/8″	355	4,743	4,047

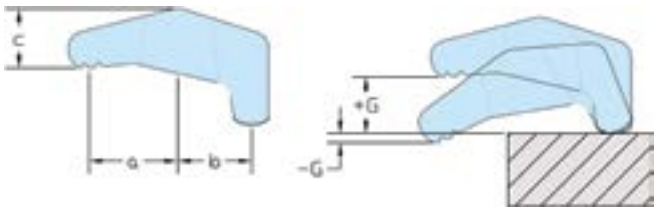
Do Not Exceed the Safe Working Load (SWL) Specified



BEAMCLAMP® COMPONENTS TYPE BM

The BM is a one-piece, self-adjusting clamp that adjusts between a specified clamping range and is suitable for both parallel and tapered flanges. It is ideal for applications where flange thicknesses vary or are unknown, as well as in seismic conditions (the 5/8″ RF version of the clamp is seismically rated). If the maximum clamping range is exceeded, our BF2 and BG2 packers can be used to increase it (see page 20 for details).





FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Electro-Galvanized Tempered Steel
- 5 to 1 Factor of Safety
- Lloyds Register approved
- Self adjusting body style

RECOMMENDED BOLT

- 1/2″ BK (M12 / Grade 5 / Grade 8)
- 1″ BK (M24 / Grade 5 & 8 / 7/8″ A325)

The Safe Working Loads are based on assemblies tested in typical conditions

Product Code	Bolt Dia	Grip Range (-G to +G)	A	B	C	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)	Friction SWL (lbs) (per 4 bolts)
BM1G10	3/8″	-1/4 - 3/8″	13/16″	5/8″	1/2″	1-1/4″	44	512	410
BM1G12	1/2″	-1/4 - 9/16″	13/16″	7/8″	1/2″	1-1/2″	62	566	452
BM1G16	5/8″	-1/4 - 11/16″	1-1/4″	1″	11/16″	1-15/16″	118	1,267	1,012
BM1G16_RF	5/8″	-1/4 - 11/16″	1-13/16″	1″	7/8″	1-15/16″	43	640	X
BM1G20	3/4″	-7/16 - 7/″8	1-9/16″	1-1/4″	7/8″	2-1/2″	258	1,608	1,288

Do Not Exceed the Safe Working Load (SWL) Specified

ANGLES OR CHANNELS (TYPE BC + BD)

The types BC1 and BD1 are designed to hook over the upstanding flanges of angles or channels. They can be used together for channel to channel connections or in conjunction with our other clamping products for making angle/channel connections to other types of steel.

The BC1 features a recessed top to grip a bolt head and the BD1 has a flat top to allow a nut and washer to be tightened on to it. It is suitable for use with bolts, threaded rod or other threaded items but we always recommend the use of Grade 5 or B7 high tensile threaded items.





FEATURES & BENEFITS

- Hot-Dip Galvanized to BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563
- 5 to 1 Factor of Safety
- Lloyds Register approved

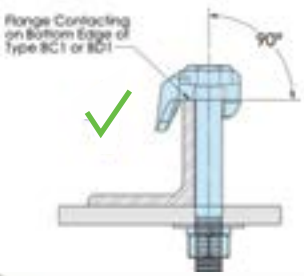
RECOMMENDED BOLT

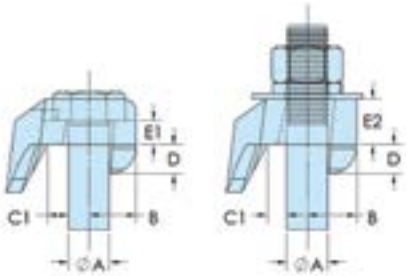
- 3/8″ BA (M10 / Grade 8.8 / Grade 10.9)
- 1/2″ BA (M12 / Grade 5 / Grade 8)
- 5/8″ BA (M12 / Grade 5 / Grade 8)
- 3/4″ BA (M20 / A325 / A490)
- 1″ BA (M24 / Grade 5 & 8 / 7/8″ A325)

The Safe Working Loads are based on assemblies tested in typical conditions

Product Code	Product Code	A Bolt Dia	B	C		D	E1	E2	Width	Torque (ft lb)	Tensile SWL (lbs) (per bolt)
				Min	Max						
BC1G08	BD1G08	5/16″	3/8″	3/16″	5/16″	1/4″	3/16″	3/8″	7/8″	2	281
BC1G10	BD1G10	3/8″	1/2″	3/16″	3/8″	5/16″	1/4″	7/16″	1-3/16″	7	562
BC1G12	BD1G12	1/2″	5/8″	1/4″	1/2″	3/8″	5/16″	1/2″	1-1/4″	25	971
BC1G16	BD1G16	5/8″	11/16″	5/16″	1/2″	7/16″	3/8″	11/16″	1-5/8″	54	1686
BC1G20	BD1G20	3/4″	13/16″	3/8″	9/16″	9/16″	7/16″	13/16″	1-15/16″	105	2473
BC1G24	BD1G24	1″	1″	1/2″	11/16″	11/16″	1/2″	1″	2-3/8″	178	3860

Do Not Exceed the Safe Working Load (SWL) Specified





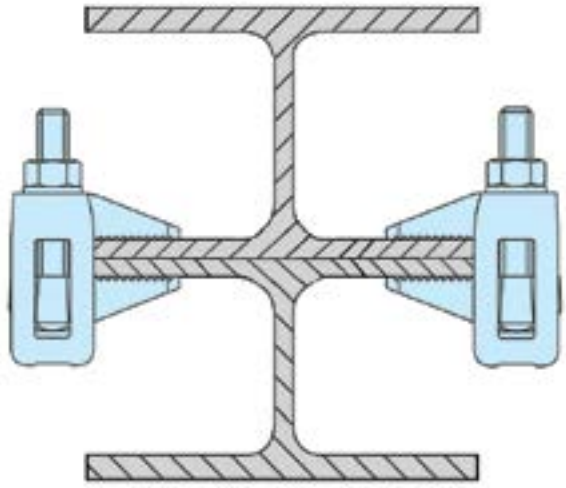


C STYLE BEAMCLAMP® (TYPE BL)

The BL clamp is used for clamping steel directly together without the need for a location plate. Typical applications include clamping two parallel steel sections of the same width, or clamping down pressure vessel lids. It can also be used with clips and brackets underneath the nut and washer side to connect conduit or even pipework.

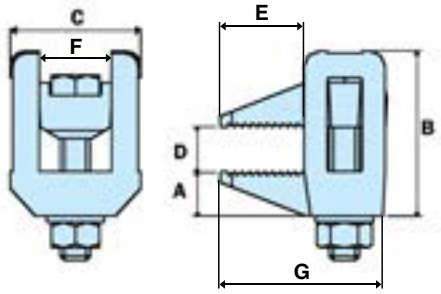
The BL clamp is tested for tensile and lateral loads (see datasheet below). The BL part is specifically designed to grip the head of a bolt or nut, so the clamp can always be connected with a single wrench. The central bolt can be replaced with other threaded items – such as threaded rod, eyebolts, or J-bolts – to provide a suspension element.





FEATURES & BENEFITS

- Hot-Dip Galvanized to BS EN ISO 1461
- Extensive clamping range
- Can accommodate clips/brackets
- Tested for Tensile and Lateral Loading

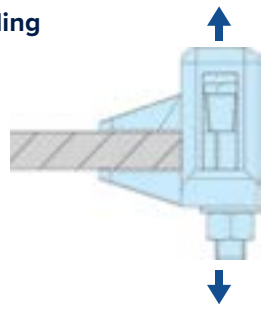


The Safe Working Loads are based on assemblies tested in typical conditions

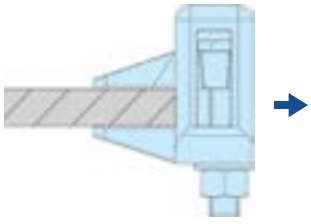
										3 to 1 Factor of Safety Applied		
Product Code	Bolt Dia	A	B	C	D	E	F	G	Tightening Torque (ft lb)	Tensile load in line with rod (lbs)	Tensile load at nose (lbs) (per pair)	Lateral Load (lbs)
BL1G08A	5/16″	1/2″	1-3/4″	1-9/16″	3/16″ to 13/16″	1″	13/16″	1-7/8″	7	225	1664	56
BL1G10A	3/8″	9/16″	2-5/16″	1-7/8″	1/4″ to 1-3/16″	1-1/8″	1-1/16″	2-1/4″	14	562	2098	90
BL1G12A	1/2″	5/8″	2-9/16″	2″	1/4″ to 1-3/8″	1-3/8″	1-1/4″	2-5/8″	29	1124	2473	135
BL1G16A	5/8″	13/16″	3-3/4″	2-5/16″	5/16″ to 2-3/16″	1-3/4″	1-3/8″	3-3/8″	66	1686	4571	157
BL1G20A	3/4″	7/8″	4-9/16″	2-5/8″	5/16″ to 2-3/4″	1-15/16″	1-13/16″	4-1/16″	132	2023	5246	169
BL1G24A	1″	1″	5-3/4″	2-15/16″	3/8″ to 3-3/4″	2-5/16″	1-13/16″	4-3/4″	147	2360	7718	180

Do Not Exceed the Safe Working Load (SWL) Specified

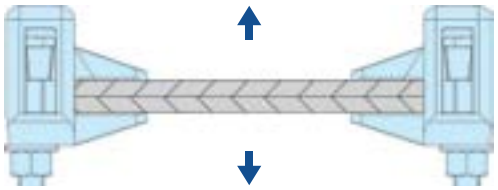
Loading



Tensile load in line with threaded element



Lateral Load



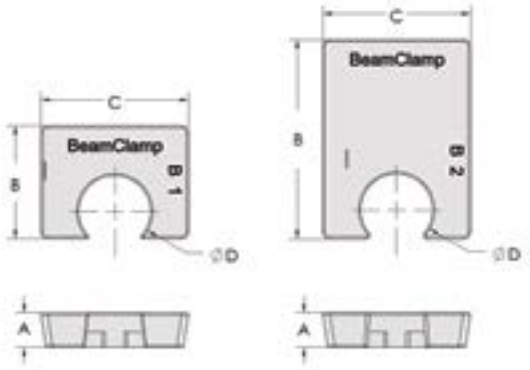
Tensile load acting at the nose of the clamps

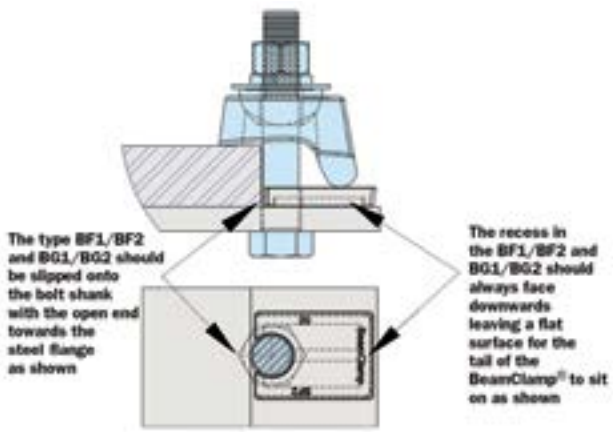
BEAMCLAMP® PACKING PIECES

Our range of packing pieces is designed to provide support to the underside of clamps, ensuring that they clamp onto the steel at the correct angle. We have a series of short packers for the BA, BB, BT, and BW clamps, and a series of long packers for the BK1 clamps that reach further back onto the supporting steel. The packers can be used in combination with the clamping range of the clamp to ensure a correct connection.









BF1

Product Code	Bolt Dia.	A	B	C	D Dia.
BF1G08	5/16″	1/8″	9/16″	7/8″	3/8″
BF1G10	3/8″	3/16″	11/16″	1-1/8″	7/16″
BF1G12	1/2″	1/4″	7/8″	1-3/16″	9/16″
BF1G16	5/8″	5/16″	1-1/8″	1-3/8″	11/16″
BF1G20	3/4″	3/8″	1-5/16″	1-11/16″	13/16″
BF1G24	1″	1/2″	1-3/4″	2-3/16″	1-1/16″

BG1

Product Code	Bolt Dia.	A	B	C	D Dia.
BG1G08	5/16″	5/16″	9/16″	7/8″	3/8″
BG1G10	3/8″	3/8″	11/16″	1-1/8″	7/16″
BG1G12	1/2″	1/2″	1/8″	1-3/16″	9/16″
BG1G16	5/8″	5/8″	1-3/8″	1-3/8″	11/16″
BG1G20	3/4″	3/4″	1-11/16″	1-11/16″	13/16″
BG1G24	1″	1″	1-3/4″	2-3/16″	1-1/16″

BH1

Product Code	Bolt Dia.	A	B	C	D Dia.
BH1Z08	5/16″	1/16″	5/8″	7/8″	3/8″
BH1Z10	3/8″	1/16″	13/16″	1-1/8″	7/16″
BH1Z12	1/2″	1/8″	15/16″	1-3/16″	9/16″
BH1Z16	5/8″	1/8″	1-1/8″	1-3/8″	11/16″
BH1Z20	3/4″	3/16″	1-5/16″	1-11/16″	13/16″
BH1Z24	1″	3/16″	1-3/4″	2-3/16″	1-1/16″

LONG PACKERS FOR TYPE BE1, BE2, BK1 AND BM

BF2

Product Code	Bolt Dia.	A	B	C	D Dia.
BF2G08	5/16″	1/8″	1″	7/8″	3/8″
BF2G10	3/8″	3/16″	1-3/16″	1-1/8″	7/16″
BF2G12	1/2″	1/4″	1-1/2″	1-3/16″	9/16″
BF2G16	5/8″	5/16″	1-15/16″	1-3/8″	11/16″
BF2G20	3/4″	3/8″	2-1/4″	1-11/16″	13/16″
BF2G24	1″	1/2″	3″	2-3/16″	1-1/16″

BG2

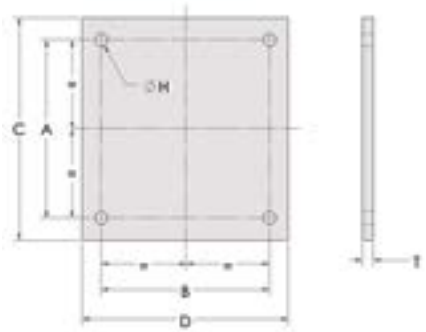
Product Code	Bolt Dia.	A	B	C	D Dia.
BG2G08	5/16″	5/16″	1″	7/8″	3/8″
BG2G10	3/8″	3/8″	1-3/16″	1-1/8″	7/16″
BG2G12	1/2″	1/2″	1-1/2″	1-3/16″	9/16″
BG2G16	5/8″	5/8″	1-15/16″	1-3/8″	11/16″
BG2G20	3/4″	3/4″	2-1/4″	1-11/16″	13/16″
BG2G24	1″	1″	3″	2-3/16″	1-1/16″

BEAMCLAMP® LOCATION PLATES & BOLT LENGTHS

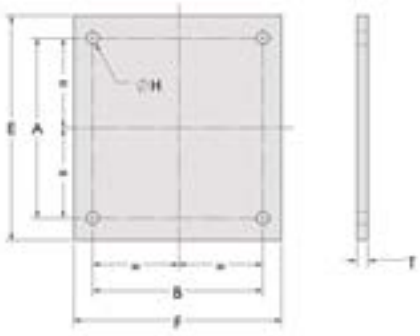
The location plate is an important part of a BeamClamp assembly. It provides support for the rear of the BeamClamp to react against while the front of the product clamps down on to the steel. The hole centers are designed to suit the widths of both the upper and lower members and to ensure that the clamps are located as close to the edge of the steel as possible.



Location plate for Types BA, BB, BBLN, BT & BW



Location plate for Type BE1, BE2, BK1 & BM

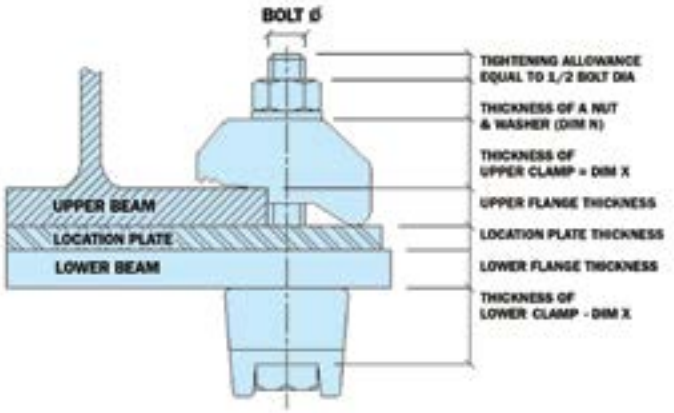


Dimension Table for BeamClamp® Location Plates

Bolt Dia	A Upper Beam Width +	B Lower Beam Width +	C Upper Beam Width +	D Lower Beam Width +	E Upper Beam Width +	F Lower Beam Width +	H Dia	T
5/16″	3/8″	3/8″	1-1/2″	1-1/2″	2-1/4″	2-1/4″	3/8″	5/16″
3/8″	7/16″	7/16″	1-3/4″	1-3/4″	2-5/8″	2-5/8″	7/16″	5/16″
1/2″	9/16″	9/16″	2-1/4″	2-1/4″	3-3/8″	3-3/8″	9/16″	3/8″
5/8″	11/16″	11/16″	2-3/4″	2-3/4″	4-1/8″	4-1/8″	11/16″	3/8″
3/4″	13/16″	13/16″	3-1/4″	3-1/4″	4-7/8″	4-7/8″	13/16″	1/2″
1″	1-1/8″	1-1/8″	4-1/2″	4-1/2″	6-3/4″	6-3/4″	1-1/8″	5/8″

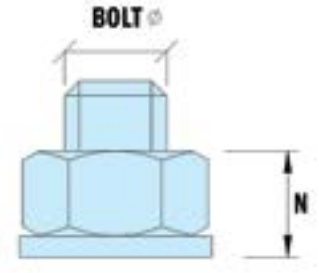
Thickness of Clamps (Dim X)

Bolt Dia	Type BA & BT (X)	Type BB & BW (X)	Type BK1 (X)
5/16″	3/16″	3/8″	11/16″
3/8″	1/4″	7/16″	7/8″
1/2″	5/16″	1/2″	1″
5/8″	3/8″	11/16″	1-1/8″
3/4″	7/16″	13/16″	1-3/8″
1″	1/2″	1″	1-13/16″



Thickness of Nut/Washer (Dim N)

Bolt Dia	N
5/16″	7/16″
3/8″	1/2″
1/2″	5/8″
5/8″	13/16″
3/4″	15/16″
1″	1-1/16″



Location plates can be fabricated to suit a variety of applications with different angles of cross over and gaps between sections. We will be happy to assist – free of charge – with detailing these plates for your individual applications.

LOCATION SPACERS



BEAMCLAMP® HIGH FRICTION COMPONENTS (TYPE BY + BYP)



The Type BY clamp is designed for High Friction and Tensile applications that exceed the capacities of the standard BeamClamp products. It features a recessed top that prevents the head of the bolt from rotating during installation therefore requires the use of only one wrench.

The Type BYP washer can be used to fill in the recess of the Type BY to provide a flat surface for a washer and nut. This also allows the Type BY clamps to be used together in beam to beam connections. The full width tail of the BY allows for use with slotted holes for greater diversity in applications. Please see pages 20 and 21 for beam packing combinations.

LNA always recommends using the values for frictional loading from the painted steel column for design purposes as the thickness of galvanizing can vary between applications.

FEATURES & BENEFITS

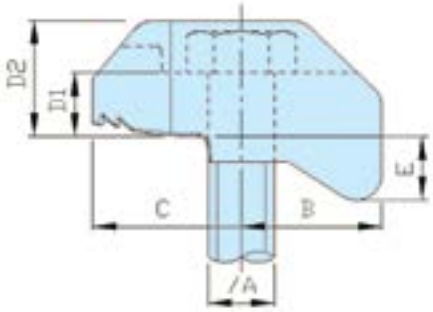
- Hot-Dip Galvanized to BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563

RECOMMENDED BOLT

- 1/2″ BY (M12 / Grade 5 / Grade 8, A325 use BYP)
- 5/8″ BY (M16 / Grade 5 / Grade 8 / A325 / A490)
- 3/4″ BY (M20 / A325 / A490, Grade 5 & 8 use BYP)

Tail Length	Product Code	A Bolt Dia.	B	C	D1	D2	E	Width	Torque (ft lb)	Tensile SWL (lbs) per bolt (5:1 Factor of Safety)	Frictional SWL (lbs) per two bolts Painted Steel (2:1 Factor of Safety)	Frictional SWL (lbs) per two bolts Galvanized Steel (2:1 Factor of Safety)
Small	BY1G12	1/2″	1-1/16″	1-1/8″	1/2″	15/16″	3/16″	1-9/16″	66	2,423	1,165	3,105
	BY1G16	5/8″	1-5/16″	1-5/16″	11/16″	1-3/16″	5/16″	1-15/16″	177	4,145	2,088	5,892
	BY1G20	3/4″	1-9/16″	1-1/2″	7/8″	1-7/16″	3/8″	2-3/16″	346	7,087	2,974	6,362
	BY1G12	1/2″	1-1/16″	1-1/8″	1/2″	15/16″	3/16″	1-9/16″	95	2,769	2,536	3,876
	BY1G16	5/8″	1-5/16″	1-5/16″	11/16″	1-3/16″	5/16″	1-15/16″	221	4,658	3,606	6,171
	BY1G20	3/4″	1-9/16″	1-1/2″	7/8″	1-7/16″	3/8″	2-3/16″	477	7,524	5,649	7,733
Medium	BY2G12	1/2″	1-1/16″	1-1/8″	1/2″	15/16″	1/2″	1-9/16″	66	2,423	1,165	3,105
	BY2G16	5/8″	1-5/16″	1-5/16″	11/16″	1-3/16″	9/16″	1-15/16″	177	4,145	2,088	5,892
	BY2G20	3/4″	1-9/16″	1-1/2″	7/8″	1-7/16″	11/16″	2-3/16″	346	7,087	2,974	6,362
	BY2G12	1/2″	1-1/16″	1-1/8″	1/2″	15/16″	1/2″	1-9/16″	95	2,769	2,536	3,876
	BY2G16	5/8″	1-5/16″	1-5/16″	11/16″	1-3/16″	9/16″	1-15/16″	221	4,658	3,606	6,171
	BY2G20	3/4″	1-9/16″	1-1/2″	7/8″	1-7/16″	11/16″	2-3/16″	477	7,524	5,649	7,733



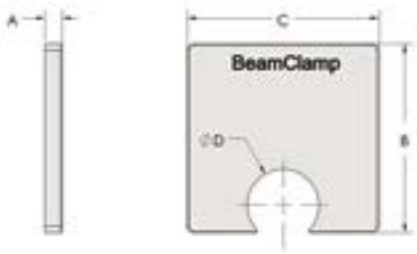




The BY recess is suitable for the hexagonal head of 1/2″ Grade 5 bolts, 5/8″ A325/A490 bolts and 3/4″ A325/A490 bolts. The Type BYP may be used to fill in the recess allowing for any grade bolt or nut to be tightened down to its surface.

BEAMCLAMP® PACKING PIECES FOR TYPE BY

The range of packing pieces below are designed to provide support to the underside of type BY clamps to ensure they clamp at 90 degrees to the steel and provide a flat surface for the bolt head or nut to be tightened down on to. These can be used in various combinations with the two tail lengths of BY clamps to achieve the best clamping position.



TYPE BF3



Product Code	A	B	C	D
BF3G12	3/16″	1-9/16″	1-9/16″	9/16″
BF3G16	3/16″	2″	2-1/16″	11/16″
BF3G20	3/16″	2-3/16″	2-3/16″	13/16″

TYPE BF4



Product Code	A	B	C	D
BF4G12	3/8″	1-9/16″	1-9/16″	9/16″
BF4G16	3/8″	2″	2-1/16″	11/16″
BF4G20	3/8″	2-3/16″	2-3/16″	13/16″

TYPE BH2



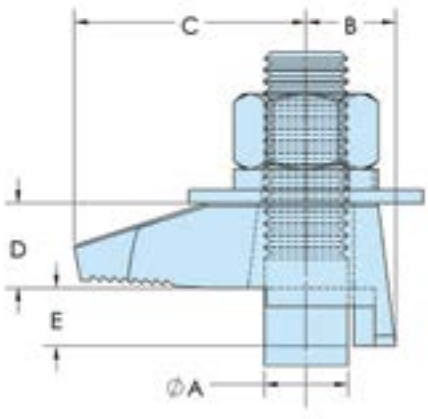
Product Code	A	B	C	D
BH2G12	1/16″	1-9/16″	1-9/16″	9/16″
BH2G16	1/16″	1-7/8″	1-7/8″	11/16″
BH2G20	1/16″	2″	2″	13/16″

The Type BY can be used in a variety of applications and our design team will be pleased to configure a connection specific to your requirements. A cut sheet is available for manually working out of the tail length and packing piece combinations along with the bolt lengths and location plate dimensions and is available upon request.

BEAMCLAMP® TYPE BB LONG NOSE (BBLN)

The BB Long Nose clamp is very similar to our standard type BB clamp, but with an extended nose. This distributes more contact on the flanges of parallel beams, providing contact closer to the web. Packing pieces BH1, BF1, and BG1 can be used with this product to fit various thicknesses of steel at 90 degrees (see page 20 for details).





FEATURES & BENEFITS

- Hot-Dip Galvanized to BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563

Product Code	Bolt Grade	A Bolt Dia.	B	C	D	E	Width	Torque (ft lb)	Tensile SWL (lbs) per bolt (5:1 Factor of Safety)	Frictional SWL (lbs) per four bolts Galvanized Steel (5:1 Factor of Safety)
BB1LNG12	Grd 5	1/2″	9/16″	1-13/16″	11/16″	1/4″	1-1/8″	51	1,292	287
BB1LNG16	Grd 5	5/8″	11/16″	1-3/4″	5/8″	7/16″	1-7/16″	109	2,218	872

SPECIFYING THE CORRECT BEAMCLAMP®

SPECIFYING THE CORRECT BEAMCLAMP® PRODUCT

It is important to select the correct Product Type, tail length, and packing shim requirement to suit your application. Unless using an adjustable tail Type BK1 the combined tail length plus the thickness of the shim(s) must be equal to the thickness of steel being clamped.

The following tables are designed to assist you in selecting the appropriate combination.

For Wide Flange Beams and Parallel Steel - Table 1

For Structural I-Beams - Table 2

For C-Channels - Table 3

Tables are located on pages 26-29

NOTES

A plus sign (+) between any of the above designations means that there is a packing required in addition to the clamp. Combinations of BH1, BF1, BG1, BF2, BG2, BH2, BF3 and BF4 packings are used. Where ″2 x″ or ″3 x″ is indicated, use 2 or 3 as the multiplier to get the number of packings needed to suit the given thickness.

TABLE 1: WIDE FLANGE AND PARALLEL STEEL

If you wish to use a 3⁄8″ diameter Type BB Clamp to secure a W10 x 45 wide flange beam, you would

1) Referring to steel guides, look up the thickness of the flange. For a W10 x 45 the thickness is 5⁄8″.

2) Read down the 3⁄8″ BA & BB Column and read across the 5⁄8″ thickness row until they intersect.

3) The correct tail length is a Size 2 complete with a Type 1 + BH1 + BG1 Packing.

Flange Thickness	5/16″ Bolt dia		3/8″ Bolt dia	
	BA & BB	BK1	BA & BB	BK1
1/8″	X	OK	X	OK
3/16″	2	OK	2	OK
1/4″	2 + BH1	OK	1 + BH1	OK
5/16″	2 + BF1	OK	3	OK
3/8″	2 + BH1 + BF1	OK	1 + BF1	OK
7/16″	2 + BH1 + BF1	OK	3 + [2 x BH1]	OK
1/2″	2 + BG1	+ BF2	3 + [3 x BH1]	OK
9/16″	2 + BH1 + BG1	+ BF2	1 + BG1	OK
5/8″	2 + BF1 + BG1	+ BF2	1 + BH1 + BG1	+ BF2
11/16″	2 + BH1 + BF1 + BG1	+ BG2	3 + BG1	+ BF2
3/4″	2 + BH1 + BF1 + BG1	+ BG2	1 + BF1 + BG1	+ BF2
13/16″	2 + [2 x BG1]	+ BF2 + BG2	2 + BF1 + BG1	+ BG2
7/8″	2 + BH1 + [2 x BG1]	+ BF2 + BG2	3 + BF1 + BG1	+ BG2
15/16″	2 + BF1 + [2 x BG1]	+ BF2 + BG2	1 + [2 x BG1]	+ BG2
1″	2 + BF1 + [2 x BG1]	+ [2 x BG2]	2 + [2 x BG1]	+ BG2



SPECIFYING THE CORRECT BEAMCLAMP®



THE FOLLOWING STEPS WILL HELP IN USING THE TABLES

1) Select the type of clamp you wish to use: BA, BB, BT, BW, BK1 or BY.

2) Select the bolt size you wish to use. The load capacity for each product is stated on the individual product pages. LNA SOLUTIONS recommends that SAE Grade 5 Bolts are used.

3) When connecting to wide flange beams or parallel flanges, refer to steel guides to find the flange thickness.

4) Using the Tables 1, 2, or 3, select the appropriate tail length and packing.

TABLE 2: STRUCTURAL I-BEAMS AND C-CHANNELS

If you wish to use a 1⁄2″ diameter Type BT Clamp to secure an S12 x 50, you would:

1) Read down the 1⁄2″ Type BT & BW column and read across the S12 x 50 row until they intersect.

2) The correct tail length is a Size 2 complete with two Type BH1 Packings.

S-beam size	1/2″ Bolt dia BT & BW	5/8″ Bolt dia BT & BW
S18 x 70	2 + [2 x BH1]	2 + BH1
S18 x 54.7	2 + [2 x BH1]	2 + BH1
S15 x 50	1 + BF1	1 + BH1
S15 x 42.9	1 + BF1	1 + BH1
S12 x 50	2 + [2 x BH1]	2 + BH1
S12 x 40.8	2 + [2 x BH1]	2 + BH1
S12 x 35	2 + BH1	2
S12 x 31.8	2 + BH1	2

KEY

1 = Short Tail Type BA, BB, BT, BW or BY

2 = Medium Tail BA, BB, BT, BW or BY

3 = Long Tail BA or BB

BF1 = Type BF1 packing must be used

BG1 = Type BG1 packing must be used

BH1 = Type BH1 packing must be used

BF2 = Type BF2 packing must be used

BG2 = Type BG2 packing must beused

BH2 = Type BH2 packing must be used

BF3 = Type BF3 packing must be used

BF4 = Type BF4 packing must be used

OK = Product is suitable without any additional packings

X = Not recommended

TABLE 1 - TO SUIT WIDE FLANGE BEAMS

Flange Thickness	5/16″ Bolt dia		3/8″ Bolt dia		1/2″ Bolt dia		
	BA & BB	BK1	BA & BB	BK1	BA & BB	BK1	BY
1/8″	X	OK	X	OK	X	OK	X
3/16″	2	OK	2	OK	1	OK	1
1/4″	2 + BH1	OK	1 + BH1	OK	2	OK	1
5/16″	2 + BF1	OK	3	OK	2 + BH1	OK	1 + BH2
3/8″	2 + BH1 + BF1	OK	1 + BF1	OK	3	OK	1 + BF3
7/16″	2 + BH1 + BF1	OK	3 + [2 x BH1]	OK	2 + [2 x BH1]	OK	1 + BF3
1/2″	2 + BG1	+ BF2	3 + [3 x BH1]	OK	1 + BH1 + BF1	OK	2
9/16″	2 + BH1 + BG1	+ BF2	1 + BG1	OK	3 + [2 x BH1]	OK	2 + BH2
5/8″	2 + BF1 + BG1	+ BF2	1 + BH1 + BG1	+ BF2	3 + BF1	OK	1 + BF4
11/16″	2 + BH1 + BF1 + BG1	+ BG2	3 + BG1	+ BF2	2 + [2 x BH1] + BF1	OK	2 + BF3
3/4″	2 + BH1 + BF1 + BG1	+ BG2	1 + BF1 + BG1	+ BF2	1 + BH1 + BG1	+ BF2	1 + [2 x BH] + BF4
13/16″	2 + [2 x BG1]	+ BF2 + BG2	2 + BF1 + BG1	+ BG2	2 + BH1 + BG1	+ BF2	2 + BH2 + BF3
7/8″	2 + BH1 + [2 x BG1]	+ BF2 + BG2	3 + BF1 + BG1	+ BG2	1 + BF1 + BG1	+ BF2	2 + BF4
15/16″	2 + BF1 + [2 x BG1]	+ BF2 + BG2	1 + [2 x BG1]	+ BG2	2 + BF1 + BG1	+ BF2	2 + BH2 +BF4
1″	2 + BF1 + [2 x BG1]	+ [2 x BG2]	2 + [2 x BG1]	+ BG2	1 + BH1 + BG1 + BF1	+ BG2	1 + [2 x BF4]
1-1/16″	2 + BH1 + BF1 + [2 x BG1]	+ [2 x BG2]	3 + [2 x BG1]	+ BF2 + BG2	2 + BH1 + BG1 + BF1	+ BG2	1 + BH2 + [2 x BF4]
1-1/8″	2 + [3 x BG1]	+ BF2 + [2 x BG2]	1 + BF1 + [2 x BG1]	+ BF2 + BG2	1 + [2 x BG1]	+ BG2	2 + [3 x BH2] + BF4
1-3/16″	2 + BH1 + [3 x BG1]	+ BF2 + [2 x BG2]	2 + BF1 + [2 x BG1]	+ BF2 + BG2	2 + [2 x BG1]	+ BG2	1 + BF3 + [2 x BF4]
1-1/4″	X	X	X	X	1 + BH1 + [2 x BG1]	+ BF2 + BG2	1 + BH3 + BF3 + [2 x BF4]
1-5/16″	X	X	X	X	3 + [2 x BG1]	+ BF2 + BG2	2 + [2 x BF4]
1-3/8″	X	X	X	X	1 + BF1 + [2 x BG1]	+ BF2 + BG2	1 + [3 x BF4]
1-7/16″	X	X	X	X	2 + BF1 + [2 x BG1]	+ [2 x BG2]	2 + [2 x BH2] + [2 x BF4]
1-1/2″	X	X	X	X	X	+ [2 x BG2]	2 + BF3 + [2 x BF4]

Flange Thickness	5/8″ Bolt dia			3/4″ Bolt dia			1″ Bolt dia	
	BA & BB	BK1	BY	BA & BB	BK1	BY	BA & BB	BK1
1/8″	X	OK	X	X	OK	X	X	OK
3/16″	X	OK	X	X	OK	X	X	OK
1/4″	1	OK	X	1	OK	X	X	OK
5/16″	2	OK	1	1	OK	X	1	OK
3/8″	1 + BH1	OK	1 + BH2	2	OK	1	1	OK
7/16″	3	OK	1 + BH2	1 + BH1	OK	1	2	OK
1/2″	1 + [2 x BH1]	OK	1 + BF3	3	OK	1 + BH2	2	OK
9/16″	3 + BH1	OK	2	2 + BH1	OK	1 + [2 x BH2]	1 + BH1	OK
5/8″	2 + BF1	OK	2	3 + BH1	OK	1 + BF3	3	OK
11/16″	3 + [2 X BH1]	OK	2 + BH2	1 + BF1	OK	2	1 + [2 x BH1]	OK
3/4″	3 + BF1	OK	2 + [2 x BH2]	1 + [3 x BH1]	OK	2	3 + BH1	OK
13/16″	3 + [3 X BH1]	OK	2 + BF3	2 + BF1	OK	2 + BH2	3 + BH1	OK
7/8″	2 + [2 x BH1] + BF1	OK	2 + BH2 + BF3	2 + [3 x BH1]	OK	2 + [2 x BH2]	1 + BF1	OK
15/16″	2 + BG1	OK	2 + [2 x BH2] + BF3	2 + BH1 + BF1	OK	2 + BF3	2 + BF1	OK
1″	3 + [2 x BH1] + BF1	+ BF2	2 + BF4	1 + [2 x BH1] + BF1	OK	2 + BH2 +BF3	1 + BH1 + BF1	OK
1-1/16″	3 + BG1	+ BF2	2 + BH2 + BF4	1 + BG1	OK	2 + 2BH2 + BF3	3 + BF1	OK
1-1/8″	1 + [2 x BH1] + BG1	+ BF2	1 + [2 x BF4]	2 + [2 x BH1] + BF1	OK	2 + BF4	3 + BF1	OK
1-3/16″	3 + BH1 + BG1	+ BF2	2 + BF3 + BF4	2 + BG1	OK	2 + BH2 + BF4	1 + [2 x BH1] + BF1	OK
1-1/4″	2 + BF1 + BG1	+ BF2	2 + BH2 + BF3 + BF4	1 + BH1 + BG1	+ BF2	2 + [2 x BH2] + BF4	3 + BH1 + BF1	OK
1-5/16″	2 + BF1 + BG1	+ BG2	1 + BF3 + [2 x BF4]	2 + BH1 + BG1	+ BF2	2 + BF3 + BF4	1 + BG1	OK
1-3/8″	3 + BF1 + BG1	+ BG2	2 + [2 x BF4]	2 + BH1 + BG1	+ BF2	2 + BH2 + BF3 + BF4	1 + BG1	OK
1-7/16″	3 + BF1 + BG1	+ BG2	2 + [2 x BH2] + [2 x BF4]	3 + BH1 + BG1	+ BF2	2 + [2 x BH2] + BF3 + BF4	2 + BG1	+ BF2
1-1/2″	3 + BH1 + BF1 + BG1	+ BG2	1 + [3 x BF4]	2 + [2 x BH1] + BG1	+ BF2	2 + [2 x BF4]	1 + BH1 + BG1	+ BF2

LNA SOLUTIONS CUSTOM DESIGNS CONNECTIONS FOR YOU

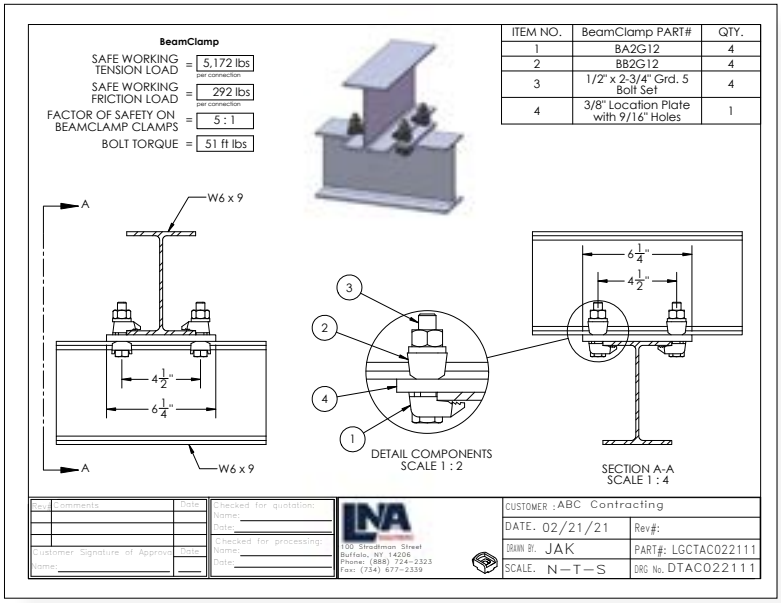
CONNECTION DESIGN SERVICE

Our engineering staff specializes in structural steel connections. We will take your connection information and create assembly specific drawings to suit your project specifications. A full flange bending analysis is available upon request. We also provide PE sign-off stamps for installations where Engineer approval is required. This free service saves you valuable billing hours and provides cost-effective peace of mind.

CAD BLOCKS

We can provide CAD blocks for use in your structural DWG details as requested. We have a wide library of 2D and 3D CAD block drawings for a variety of structural connections.

To request CAD blocks from LNA Solutions, please visit our website **LNASolutions.com** and fill out the contact form. Be sure to include the specific CAD blocks you need, as well as the file format you prefer (DWG, DXF, etc.). We will respond to your request as soon as possible.



FEATURES & BENEFITS

- AutoCAD or SolidWorks Output
- Full Flange Bending Analysis
- PE sign off available
- Fast & Friendly Replies
- Free service with no obligation
- 24 hour or less response
- Terrific Service & Support
- Expert design team

TABLE 2 - TO SUIT S-BEAMS

S-beam size	1/2″ Bolt dia BT & BW	5/8″ Bolt dia BT & BW	3/4″ Bolt dia BT & BW	1/2″ Bolt dia BY	5/8″ Bolt dia BY	3/4″ Bolt dia BY
S24 x 121	1 + BH1 + BG1	2 + BH1 + BF1	1 + [3 x BH1]	2 + BH2 + BF3	2 + BF3	2 + BH2
S24 x 106	1 + BH1 + BG1	2 + BH1 + BF1	1 + [3 x BH1]	2 + BH2 + BF3	2 + BF3	2 + BH2
S24 x 100	2 + BH1 + BF1	1 + BF1	1 + [2 x BH1]	2 + BH2	2	1 + BF3
S24 x 90	2 + BH1 + BF1	1 + BF1	1 + [2 x BH1]	2 + BH2	2	1 + BF3
S24 x 80	2 + BH1 + BF1	1 + BF1	1 + [2 x BH1]	2 + BH2	2	1 + BF3
S20 x 96	1 + BG1	1 + [3 x BH1]	1 + [2 x BH1]	1 + BF4	2	1 + BF3
S20 x 86	1 + BG1	1 + [3 x BH1]	1 + [2 x BH1]	1 + BF4	2	1 + BF3
S20 x 75	2 + [3 x BH1]	1 + BF1	2 + BH1	2 + BH2	1 + BF3	1+ [2 x BH2]
S20 x 66	2 + [3 x BH1]	1 + BF1	2 + BH1	2 + BH2	1 + BF3	1 + [2 x BH2]
S18 x 70	2 + [2 x BH1]	2 + BH1	1 + BH1	1 + BF3	1 + BH2	1
S18 x 54.7	2 + [2 x BH1]	2 + BH1	1 + BH1	2	1 + [2 x BH2]	1 + BH2
S15 x 50	1 + BF1	1 + BH1	2	1 +BF3	1 + BH2	1
S15 x 42.9	1 + BF1	1 + BH1	2	1 +BF3	1 + BH2	1
S12 x 50	2 + [2 x BH1]	2 + BH1	1 + BH1	1 + [3 x BH2]	1 + BH2	1
S12 x 40.8	2 + [2 x BH1]	2 + BH1	1 + BH1	1 + [3 x BH2]	1 + [2 x BH2]	1 + BH2
S12 x 35	2 + BH1	2	1	1 + [2 x BH2]	1	1
S12 x 31.8	2 + BH1	2	1	1 + [2 x BH2]	1	1
S10 x 35	1 + BH1	2	1	1 +BH2	1	X
S10 x 25.4	1 + BH1	2	1	1 +BH2	1	X
S8 x 23	2	1	1	1 +BH2	1	X
S8 x 18.4	2	1	1	1 +BH2	1	X
S7 x 20	2	1	1	1 +BH2	X	X
S7 x 15.3	2	1	1	1 +BH2	X	X
S6 x 17.25	1	1	X	1	X	X
S6 x 12.5	2	1	X	1	X	X
S5 x 14.75	1	1	X	1	X	X
S5 x 10	1	1	X	1	X	X
S4 x 9.5	1	X	X	1	X	X
S4 x 7.7	1	X	X	1	X	X
S3 x 7.5	1	X	X	1	X	X
S3 x 5.7	1	X	X	1	X	X

TABLE 3 - TO SUIT C-CHANNELS

Channel Size	1/2″ Bolt dia BT & BW	5/8″ Bolt dia BT & BW	3/4″ Bolt dia BT & BW	1/2″ Bolt dia BY	5/8″ Bolt dia BY	3/4″ Bolt dia BY
C15 x 50	1 + [2 x BH1]	1 + BH1	2	1 + BF3	1 + BH2	1
C15 x 40	1 + [2 x BH1]	1 + BH1	2	1 + BF3	1 + BH2	1
C15 x 33.9	1 + [2 x BH1]	1 + BH1	2	1 + BF3	1 + BF3	1
C12 x 30	2	1	1	1 + BH2	1	X
C12 x 25	2	1	1	1 + BH2	1	X
C12 x 20.7	2	1	1	1 + BH2	1	X
C10 x 30	2	1	1	1	X	X
C10 x 25	2	1	1	1	X	X
C10 x 20	2	1	1	1	X	X
C10 x 15.3	2	1	1	1	X	X
C9 x 20	2	1	1	1	X	X
C9 x 15	2	1	1	1	X	X
C9 x 13.4	2	1	1	1	X	X
C8 x 18.75	2	1	1	1	X	X
C8 x 13.75	2	1	1	1	X	X
C8 x 11.5	2	1	1	1	X	X
C7 x 14.75	1	1	X	1	X	X
C7 x 12.25	1	1	X	1	X	X
C7 x 9.8	1	1	X	1	X	X
C6 x 13	1	1	X	1	X	X
C6 x 10.5	1	1	X	1	X	X
C6 x 8.2	1	1	X	1	X	X
C5 x 9	1	1	X	1	X	X
C5 x 6.7	1	1	X	1	X	X
C4 x 7.25	1	X	X	1	X	X
C4 x 5.4	1	X	X	1	X	X
C3 x 6	1	X	X	1	X	X
C3 x 5	1	X	X	1	X	X
C3 x 4.1	1	X	X	1	X	X



TYPICAL BEAMCLAMP® ASSEMBLY

The diagram to the left is an example of a typical BeamClamp assembly used to connect two steel sections together. The assembly consists of a pre-drilled location plate inserted between the two steel sections.

An upper set of BeamClamp components clamp down on the lower flange of the upper beam while a lower set of components work in the opposite direction, clamping the underside of the upper flange of the lower member. Additional packing shims may be used to adjust the clamp to the thickness of the flange being connected. The connection is secured by inserting a bolt through each of the lower clamps, the location plate, the upper clamps and then tightening a nut to the recommended torque.

We offer free design services to advise on the appropriate components for your particular assembly. In addition, we include a quotation for your supply of bolts, nuts, washers and pre-drilled location plates.



APPLICATION 01
Two I-Sections of equal width running parallel



APPLICATION 02
Two I-Sections at 90 degrees to each other using a location spacer bracket



APPLICATION 03
Two I-Sections at 90 degrees with a sloping top beam using two location plates



APPLICATION 04
I-Section with end plate to column at 90 degrees



APPLICATION 05
I-Section to I-Section with an angled cross over



APPLICATION 06
I-Section to I-Section at 90 degrees to each other



APPLICATION 07

I-Sections of different widths running parallel



APPLICATION 08

I-Section to top of a column end plate



APPLICATION 09

Sloping I-Section with a gap to another I-Section using a spacing bracket



APPLICATION 10

Two I-Sections at 90 degrees with a gap between using threaded bar and location pins



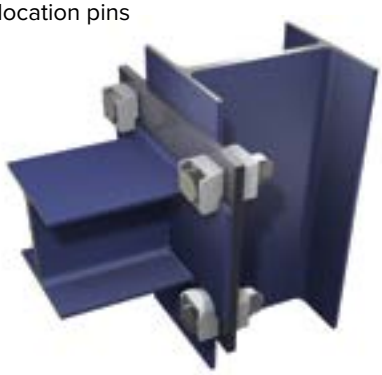
APPLICATION 11

I-Section secured to the inside flange of another I-section



APPLICATION 12

Column end plate to sloping I-Section



APPLICATION 13

I-Section to I-Section column using a location plate



APPLICATION 14

Heavy duty pipe support to I-Section



APPLICATION 15

Cantilevered angle support to I-Section



APPLICATION 16

Drilled I-Section running parallel to another I-Section



APPLICATION 17

Fixed rigging point below an I-Section



APPLICATION 18

Swivel rigging point below an I-Section



APPLICATION 19

Column end plate to I-Section



APPLICATION 20

Hemispherical cup/washer hanging an I-Section underneath a sloping section



APPLICATION 21

Two I-sections at 90 degrees with a sloping top beam using two location plates



APPLICATION 22

Two channels secured back to back



APPLICATION 23

Angle section below an I-section at 90 degrees



APPLICATION 24

Channel section secured above an I-section using two location plates



APPLICATION 25

Channel section at 90 degrees below an I-Section



APPLICATION 26

Channel section underneath another channel section at 90 degrees



APPLICATION 27

Channel section below I-Section at 90 degrees



APPLICATION 28

Channel section face upwards below I-Section at 90 degrees



APPLICATION 29

Angle section to another angle section at 90 degrees



APPLICATION 30

Channel positioned above I-Section at 90 degrees

INTRODUCTION TO STEEL FLOOR FASTENERS™

Steel Floor Fasteners™ (also known as grating fasteners) are used to fasten either open steel gratings or solid steel plate flooring to supporting steel underneath. Grating Clips and FloorFix both allow flooring to be connected securely without the need for access to the underside of the floor or drilling or welding to the supporting steel.

FEATURES	BENEFITS
• No access to the underside required	• Allows easy repositioning or lifting of floor plate/grating
• Manufactured from Ductile Iron	• Reduced labor cost
• No special tools or skilled labor required	• Quick and easy installation
• Tested for vibration conditions at TÜV	• Minimal maintenance required



STEELFLOOR™
FASTENERS

FLOORFIX® HT



FloorFix HT has been developed following customer feedback to provide a clamp with increased functionality to suit a wider range of applications. FloorFix HT is designed to clamp flooring plate to supporting steel from the topside only without the need for time consuming on-site drilling, tapping, bolting or welding.

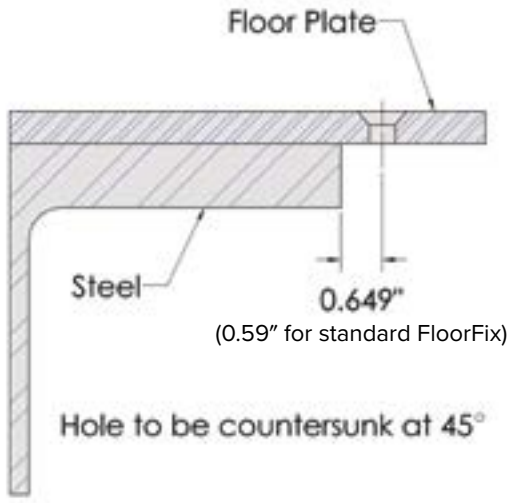
It works on a cam mechanism that can be operated using a basic hexagon key drive. FloorFix HT is so named because it allows steel erectors a high degree of tolerance. It retains all the benefits of our widely renowned original design but is far more user friendly. FloorFix HT allows for floor plates to be connected to new steel that is erected within +/- 1/4″ of its intended position. It is capable of connecting to steel flanges from 1/8″ - 1″ without the need for additional packing pieces.



FEATURES & BENEFITS

- Allows for +/- 1/4″ construction tolerance
- Can clamp up to 1″ thick steel as standard
- Hot-Dip Galvanized finish as standard
- Easily installed from the top side only
- No drilling, tapping or welding required
- Allows easy repositioning or lifting of floor plate
- No special tools or skilled labor required
- No access to the underside required
- Tested for vibration conditions at TÜV

PLATE PREPARATION



FloorFix HT has been tested for vibration conditions to simulate the most common applications where the clamps would be used, e.g. walkways, machine shops, and press shops. Please ask our technical department for a copy of the certificate, should you require one.

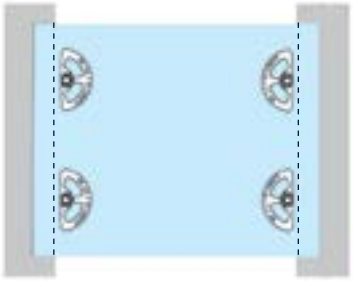
Product Code	Screw Diameter	Floor Plate Thickness		Steel Flange Thickness		Tightening Torque (ft lb)
		min	max	min	max	
FLOORFIXM08HT	5/16″	1/8″	1/2″	1/8″	1″	15
FLOORFIXM10HT	3/8″	3/16″	1/2″	1/8″	1″	18
FLOORFIXM12HT	1/2″	1/4″	1/2″	1/8″	1″	22

Note: FloorFixM10 vibration testing completed at 2’-0”o.c.

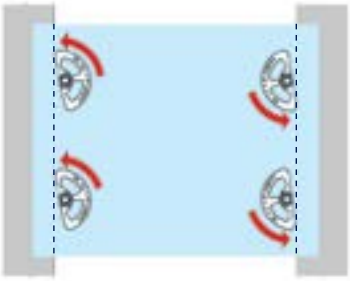
FLOORFIX® HT INSTALLATION INSTRUCTIONS



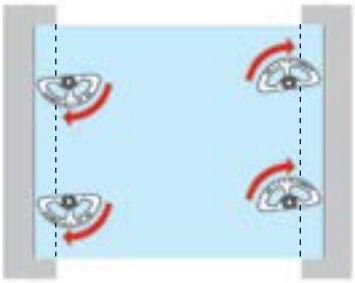
STEP 1 Assemble the FloorFix HT to the underside of the floor plate making sure the markings “THIS WAY UP” are facing the underside. Loosely tighten the bolt making sure the flat edge of the clamp is in line with the edge of the steel it is going to connect to.



STEP 2 Lower the plate in to position over the supporting steelwork.



STEP 3 Once the floor plate is in the desired position, rotate the countersunk bolt one full turn counter-clockwise.



STEP 4 Tighten the countersunk screw until the plate is secured. For guaranteed performance, use the recommended tightening torques given in the table on page 34.

NOTE 1 We recommend using the 1/2″ version when vibration conditions are incurred as this can be tightened to a higher torque.

NOTE 2 If the steel being connected to is thicker than 1” then we can supply packers and a longer bolt to increase the clamping range.

FLOORFIX®

FEATURES & BENEFITS

- Installation from one side only
- Manufactured from Ductile Iron
- Hot-Dip Galvanized
- Allows for easy maintenance



Product Code	Screw Diameter	Floor Plate Thickness		Steel Flange Thickness		Tightening Torque (ft lb)
		min	max	min	max	
FLOORFIXM08	5/16″	1/8″	1/2″	1/8″	5/8″	15
FLOORFIXM10	3/8″	3/16″	1/2″	1/8″	5/8″	18
FLOORFIXM12	1/2″	1/4″	1/2″	1/8″	5/8″	22

GRATEFIX®



FEATURES & BENEFITS

- Mechanical Galvanized Malleable Iron
- Stainless Steel Grade 304 and 316
- Easily installed from the top side only
- No drilling, tapping or welding required
- Allows easy repositioning or lifting of grating
- No special tools or skilled labor required
- No access to the underside required
- Tested for vibration conditions at TÜV

Body Ref.	Clip Ref.	Socket Screw	Grade
GF1G10	GF2G10	3/8″ UNC x 2.25″	8
GF1S08	GF6S08	5/16″ UNC x 2.25″	A4-70
GF3S08	GF4S08	5/16″ UNC x 2.25″	A2-70



GrateFix is a heavy-duty clamp that allows open floor grating to be clamped to the supporting steel from the topside only. The GrateFix features a cast bottom piece that provides additional strength to clamp on to the steel flange. The GrateFix is available in several different styles to suit the grating dimensions and the application.

GF3S08

Pressed Top Bracket – Stainless Steel to EN 10088 Grade 1.4301 (AISI 304)
Cast Bottom Bracket – Stainless Steel to ASTM A743 Grade CF-8 (S30400)

GF1S08

Pressed Top Bracket – Stainless Steel to EN 10088 Grade 1.4401 (AISI 316)
Cast Bottom Bracket – Stainless Steel to ASTM A743 Grade CF-8M (S31600)

GF1G10 (All Lengths)

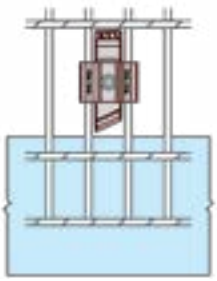
Pressed Top bracket – Material: Mild steel to EN 10025 grade S275
Cast Bottom Bracket – Material: Malleable iron to BS 1562: Grade EN GJMB-300-06
Both finished in: Mechanical Galv to ASTM B695

Product Code	Material/Finish	Screw Dia.	Flange Thickness, T	Grating Bar Depth		Grating Bar Width	Grating Bar Spacing	Body Width	Tightening Torque (ft lb)
				Min.	Max.				
GF3S08	304 Stainless Steel	5/16″	1/8 - 3/4″	7/8″	1-1/2″	5/16″ - 3/8″	3/4″ - 1-7/8″	5/8″	4
GF1S08	316 Stainless Steel	5/16″	1/8 - 3/4″	7/8″	1-1/2″	5/16″ - 3/8″	3/4″ - 1-7/8″	5/8″	4
GF1G10	Galvanized Malleable Iron	3/8″	1/8 - 3/4″	3/4″	*2″ minus T	1/8″ - 1/4″	1-3/16″	3/4″	8
GF1G10-75	Galvanized Malleable Iron	3/8″	1/8 - 3/4″	1-5/8″	*2-5/8″ minus T	1/8″ - 1/4″	1-3/16″	3/4″	8
GF1G10-90	Galvanized Malleable Iron	3/8″	1/8 - 3/4″	2-1/8″	*3-1/8″ minus T	1/8″ - 1/4″	1-3/16″	3/4″	8
GF1G10-100	Galvanized Malleable Iron	3/8″	1/8 - 3/4″	2-5/8″	*3-5/8″ minus T	1/8″ - 1/4″	1-3/16″	3/4″	8
GF1G10-110	Galvanized Malleable Iron	3/8″	1/8- 3/4″	3-1/8″	*4-1/4″ minus T	1/8″ - 1/4″	1-3/16″	3/4″	8

* Grating Bar Depth is variable dependent on thickness of the flange.

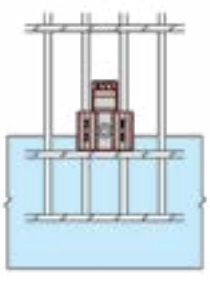
Custom solutions also available. Please contact LNA Solutions for more information.

INSTALLATION



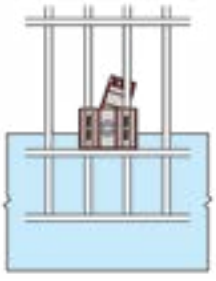
STEP 1

Lower the GrateFix through the open part of the grating, ensure the bracket is seated over the adjacent bearing bars.



STEP 2

Slide the GrateFix towards the supporting steelwork flange as far as it will go to ensure maximum clamping force.

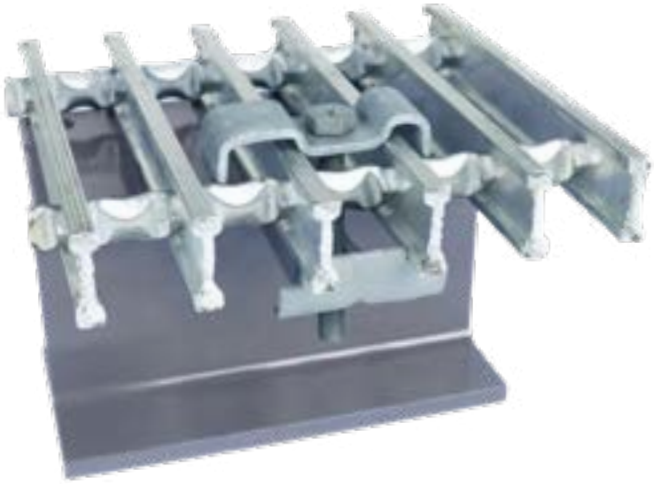


STEP 3

Tighten the screw and ensure that the lower casting rotates until one of the steps locates on the bearing bar.

THE GRATING CLIP

The Grating Clip is the most common style of clip used for clamping down open steel flooring. It provides a quick and cost effective method of clamping. It is Hot-Dip Galvanized and comes standard with a top bracket to suit 1-3/16″ - 1-5/8″ CTRS grating bars.





FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563

Product Code	Screw Dia.	Flange Thickness, T	Grating Bar Spacing		Grating Bar Depth
			Min.	Max.	Max.
GRAT 1G08	5/16″	1/8″ – 3/4″	1-3/16″	1-5/8″	2-1/4″ minus T

Flooring Depth	Bolt Length	Part
20mm, 25mm, 30mm, 35mm, 40mm	70mm	GRAT1G08
45mm, 50mm, 55mm, 60mm	90mm	GRAT2G08

G-CLIP GG

FASTENS BAR GRATING TO STRUCTURAL MEMBERS

The G-Clip GG fastener is a galvanized, carbon steel grating fastener for securing steel grating to existing steel. Hand tools can be used for ease of installation. To install, simply drop the clip in place above the grating, slide the clip toward the beam flange, and tighten the G-Clip fastener using a 7/16″ nut driver. Clips are also available in stainless steel for more corrosive environments.





Product Code	Bolt Diameter	Grating Thickness	Tightening Torque (ft. lb.)
KSGG-1A	1/4″	1″	5
KSGG-1B	1/4″	1 1/4″	5
KSGG-1C	1/4″	1 1/2″	5

FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563

G-CLIP GM

MOUNTS DEVICE ONTO FLOOR GRATING

The G-Clip GM fastener is a galvanized steel fastener used to mount devices onto the grating surface. The G-Clip GM fastener consists of three parts; the stamped top, threaded stud, and the lower body assembly. The lower body assembly holds in place a 1/2″ nut, making installation hassle-free. Install using a spanner wrench or an adjustable open end wrench to tighten in place. This clip eliminates the need for J-bolts. The G-Clip GM fastener can withstand 1,000 lbs. of direct upward pull force with no distortions.



Note: Tighten to 80 in-lbs

Product Code	Stud Diameter	Stud Length	Body Width
KSGM-12	1/2″	3″	7/8″

The lower body assembly is constructed with a specially designed stamped wing component that keeps a 1/2″ nut from turning.



FEATURES & BENEFITS

- Hot-Dip Galvanized BS EN ISO 1461
- Manufactured from Ductile Iron to BS EN 1563



INTRODUCTION TO PRE-ENGINEERED SOLUTIONS

Pre-Engineered Solutions focuses on steel-to-steel clamping systems that customers can buy off-the-shelf with very little customization required. These ready-made connectors are in-stock items that can be used in tandem with other products. Together, they create dependable, industry tested connection solutions to fit the specific needs of an application or project.

Pre-Engineered Solutions are ideal for projects where installation requires working at height or other unique environments and you need a quick connection solution for a permanent or temporary application.

Most of our Pre-Engineered products a can be connected securely with single side access and there is never a need to drill or weld to the supporting steel.

FEATURES

- **Quick turn-around time for most applications**
- **Turnkey solution for a trusted, single source provider**
- **Allows for varying crossover angles**
- **Available in different finishes**

BENEFITS

- **Pre-integrated products saves time and cost compared with implementing custom designed solutions**
- **Peace of mind utilizing tested and trusted products**
- **Faster installation times**
- **Reduced labor costs**

TECHNICAL SUPPORT

- **Guaranteed safe working loads**
- **Alterations easily implemented to fit any project**
- **Design changes requires minimal engineering**

APPROVAL

- **Independently load tested**
- **Lloyd's Register approved**
- **DIBt approved**

BEAMCLAMP® RIGGING CLAMPS

The Adjustable Rigging Clamp is a self adjusting, ready to install rigging clamp capable of safe working loads of up to 5,000 lbs. The shackle connection allows loads to be applied up to 45 degrees. The Adjustable Rigging Clamp can accommodate a variety of flange widths and thickness and is installed without the need for any drilling or welding to the support beam.

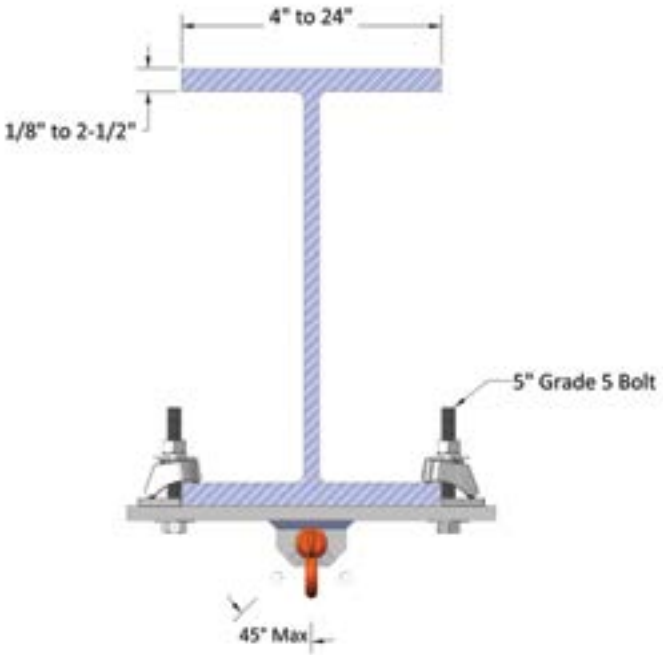
The Adjustable Rigging Clamp is available in five (5) standard sizes to accommodate any flange width from 4″ to 24″. The Adjustable Rigging Clamp is designed to be self adjusting to the flange thickness from as little as 1/8″ to as thick as 2-1/2″.

The Adjustable Rigging Clamp is designed to accommodate the safe working load not to exceed 5,000 lbs.

Note: The structural integrity of the existing steelwork should be verified by a licensed structural Engineer.



Product Code	Flange Width	Bolt Torque (ft lbs)	Number of bolts	Safe Working Load (lbs. Do not exceed)
KRC062-A	4″ to 8″	109	4	5,000 lbs.
KRC062-B	8″ to 12″	109	4	5,000 lbs.
KRC062-C	12″ to 16″	109	4	5,000 lbs.
KRC062-D	16″ to 20″	109	4	5,000 lbs.
KRC062-E	20″ to 24″	109	4	5,000 lbs.





NOTE: Custom designed rigging and lifting points are available. Please contact LNA Solutions for more information.

BOXBOLT® RIGGING CLAMPS

The LNA Solutions BoxBolt Rigging Clamp is a means of attaching an anchor point to Hollow Structural Sections (HSS) and other structural members when access is available from only one side.

The standard BoxBolt Rigging Clamp utilizes Hot-Dip Galvanized M12 Size 1 BoxBolts and a load ring welded to a custom fabricated anchor plate that allows for Safe Working Loads up to 5000 lbs.

The BoxBolt® Rigging Clamp is easily installed by drilling a pre-determined set of 13/16" holes into existing steelwork, lining up the anchor plate with the newly drilled holes, inserting and tightening the LNA Solutions BoxBolts to the specified torque values. There is no more need for site welding, tapping, or strapping.

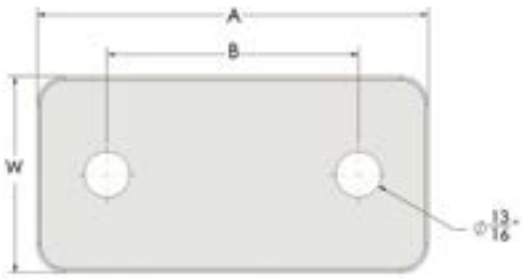
BQRC-V

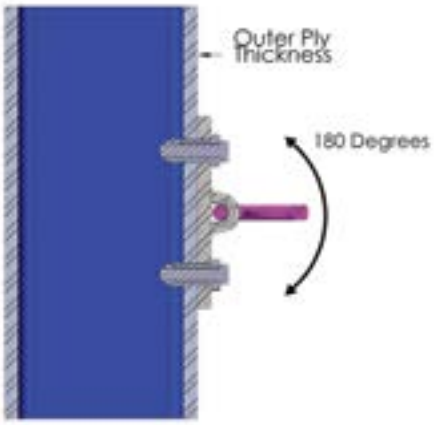


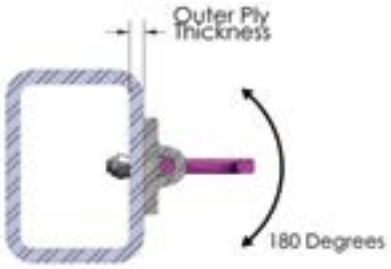
BQRC-H



Product Code	Outer Ply Thickness	Hole Size	Safe Working Loads (lbs)	Torque (ft lbs)	Dimensions			Thickness
					W	A	B	
BQRC050-V	1/8" - 1/2"	13/16"	5,000	59	3-1/2"	7-3/4"	5-1/4"	1/2"
BQRC050-H	1/8" - 1/2"	13/16"	5,000	59	3-1/2"	7"	4-1/2"	1/2"







NOTES:

Blind Connection rigging and lifting points can be individually designed for each application and carry a wide range of load capacities (up to 30 KIPS). Although LNA Solutions guarantees the Safe Working Load of the BoxBolt Connection, we are not responsible for the structural integrity of the existing steelwork.

We recommend that a Licensed Structural Engineer be consulted to establish the capacity of the existing structural member.

FASTFIT

FastFit is an off the shelf engineered clamping solution to connect two steel sections together without the need for on-site drilling or welding. All you need to secure two sections together comes in one box. The system comprises a frame which wraps around the edges of the sections and slides into place to provide a position for the clamps to be secured. The system allows for varying angles that can be easily achieved by sliding the beams relative to each other.

The FastFit system delivers a guaranteed connection every time without the need for on-site testing or relying on the skills of the installer. No removal of the protective coatings on the existing steel or holes is required to make a connection. All that is required to complete a connection are simple hand tools and semi-skilled labor.

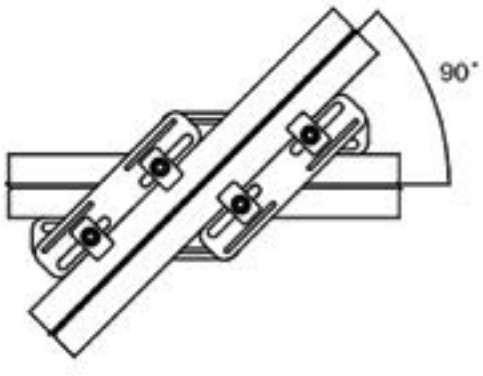
Product Code	Bolt Diameter	Bolt Grade	Bolt Length	Overall Size	Flange Thickness	Flange Width	Tightening Torque (ft/lb)	Tensile Load (4 bolts) (lbs)	Frictional Load (4 bolts) (lbs)
BCFF16	M16 (5/8)	8.8	5″	13 3/4″ x 13 3/4″	1/4″ to 1″	2 1/2″ to 7 1/2″	110	4,763	1,142

FACTOR OF SAFETY

The above loading data has a 5 to 1 Factor of Safety

ACHIEVABLE ANGLES

The FastFit system is designed to allow sections of different widths to be connected at varying angles. The table below provides information on what angles can be achieved.





INSTALLATION INSTRUCTIONS

The FastFit system can be fully installed in under 5 minutes which saves time compared to traditional welding or drilling methods.

Flange Width		Top Section										
		2.5″	3.0″	3.5″	4.0″	4.5″	5.0″	5.5″	6.0″	6.5″	7.0″	7.5″
Bottom Section	2.5″	45	45	50	50	50	55	55	60	65	70	75
	3.0″	45	45	50	50	50	55	55	60	65	70	75
	3.5″	50	50	50	50	55	55	55	55	65	70	75
	4.0″	50	50	50	50	55	55	55	55	65	70	75
	4.5″	50	50	50	50	50	55	55	55	65	70	75
	5.0″	55	55	55	55	55	55	55	55	65	70	75
	5.5″	55	55	55	55	55	55	55	60	65	70	75
	6.0″	60	60	60	60	60	60	60	65	65	70	75
	6.5″	65	65	65	65	65	65	65	65	65	70	75
	7.0″	70	70	70	70	70	70	70	70	70	75	75
	7.5″	75	75	75	75	75	75	75	75	75	75	80

HEMISPHERICAL CUPS AND WASHERS - BV1 + BU1

The hemispherical washers (BU1) and cups (BV1) provide a pivotable action when used with threaded rod. They allow a 10 degree swing in all directions from vertical and when used in pairs can provide a locked connection. Typical applications would be connecting to a roof rafter where the threaded rod needs to be hanging perpendicular to the floor or for making a ball socket on the legs of air conditioning support frames to allow adjustability for sloping roofs.

BU1



BV1

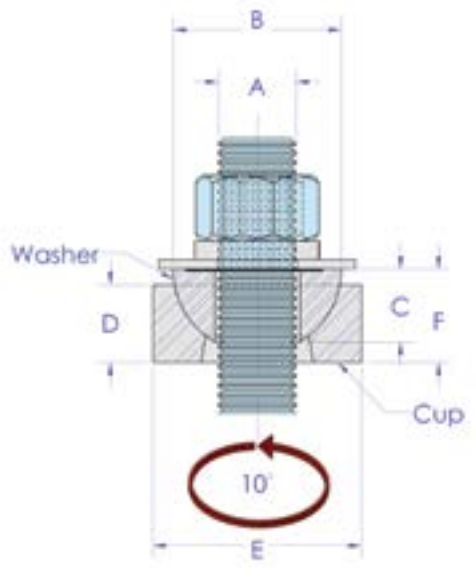


FEATURES & BENEFITS

- Allows a swing of 10° in all directions
- Prevents the need to bend threaded rod
- Provides pivotable element for adjustment

Washer Product Code	Cup Product Code	A Bolt Dia	B	C	D	E	F	Tensile Load (lbs)
BU1G08	X	5/16″	7/8″	5/16″	X	X	X	281
BU1G10	BV1G10	3/8″	1″	3/8″	1/2″	1-1/4″	9/16″	562
BU1G12	BV1G12	1/2″	1-1/8″	1/2″	1/2″	1-3/8″	9/16″	926
BU1G16	BV1G16	5/8″	1-5/16″	9/16″	5/8″	1-5/8″	3/4″	1,484
BU1G20	BV1G20	3/4″	1-3/4″	3/4″	3/4″	2-1/8″	15/16″	2,151
BU1G24	BV1G24	1″	2-1/4″	1″	1″	2-5/8″	1-1/8″	2,866

All of the above loads have been subject to a 5:1 Factor of Safety.



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