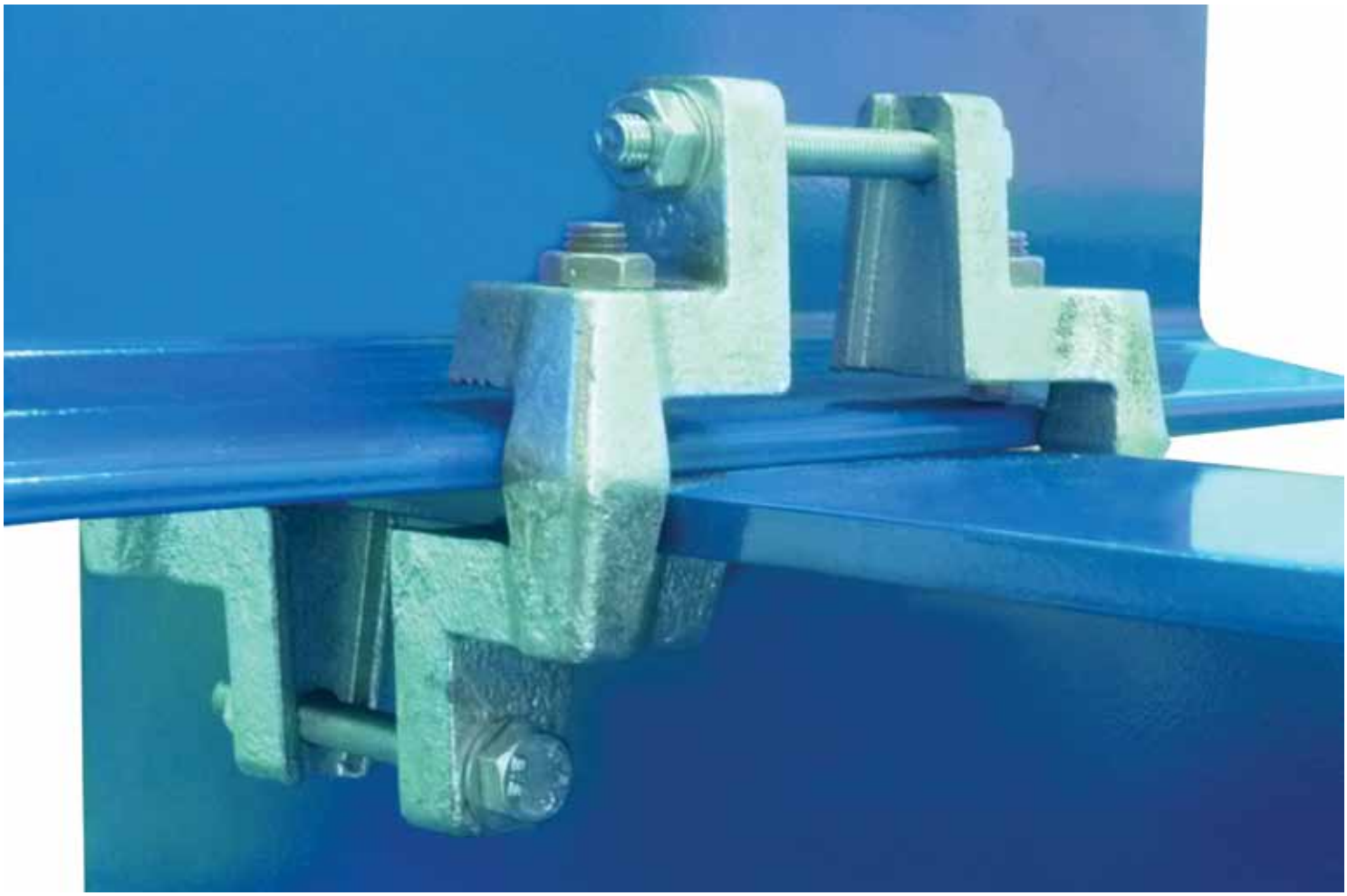
Girder Fix

A KEE SAFETY PRODUCT

Steel to Steel Connection System



- NO SITE DRILLING OR WELDING
- EASILY ADJUSTED
- RAPID INSTALLATION IN UNDER 5 MINS
- NO FABRICATION OF PLATES OR CLAMPS

What is the GirderFix System?

GirderFix is an off the shelf engineered clamping solution that provides a means of connecting two steel sections together at 90° without the need for on-site drilling or welding. The system incorporates four clamps to connect onto each corner of where two steel sections cross over. All that is required to then complete the connection are some linking fasteners to the correct specification. See page 3 for specification details and how to calculate the correct fastener length.

The GirderFix system provides a guaranteed connection every time it is installed correctly 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 are required to make each connection. Every connection is made using simple hand tools and semi-skilled labour. The connections are very easy to re-adjust for initial alignment or for maintenance and re-positioning purposes.

The clamping action of the GirderFix provides a very high Frictional capacity for the size of the clamp which is particularly beneficial for when side loads are applied.

Why use GirderFix and what benefits does it provide?

Features	Advantages	Benefits
No fabrication of plates or clamps required	Available off the shelf	Considerably reduces lead times
No drilling or welding to the existing structure	No on-site power required	Reduced installation times and no need for relocating equipment
Easy re-alignment of steel members	Eliminates remedial work due to steel misalignment	Provides on site flexibility
No heat or sparks Generated	No hot work permit is necessary	Reduction in installation cost and administration time
Installation by semi-skilled labour	No need for specialist skills or equipment	Reduction in hire and installation costs
Tested at a third Party test facility	Documentation to prove the testing	Confidence that the connection is guaranteed
Hot Dipped Galvanised Finish	No requirements for post connection touch up	Reduction in installation time and confidence in the finish
Suits a wide range of standard steel sections	A one stop shop for most connections	Reduced sourcing costs for users
Guaranteed loading and factor of safety	No on-site testing required or reliance on the skill of the installer	Reduction in installation time and peace of mind that every connection will perform as stated
Provides a flush steel to steel connection	No location plate or spacers required	Saves time on re-design due to height level changes

Technical Information

Product Code	Dim A (mm)	Dim B (mm)	Dim C (mm)	Dim D (mm)	Dim E (mm)	Combined Flange thickness (mm)	Flange Width (mm)	Tightening Torque for clamping screw (Nm)	Tensile load (4 bolts) (kN)	Frictional load (4 bolts) (kN)
GFIX1T	80	55	60	80	55	0 to 24	80 to 250	20	10	5.5

Note1 : The above Safe Working Loads (SWL) include a 5 to 1 Factor of Safety (FOS)
Note2 : The Girderfix should only be used on 90º Connections

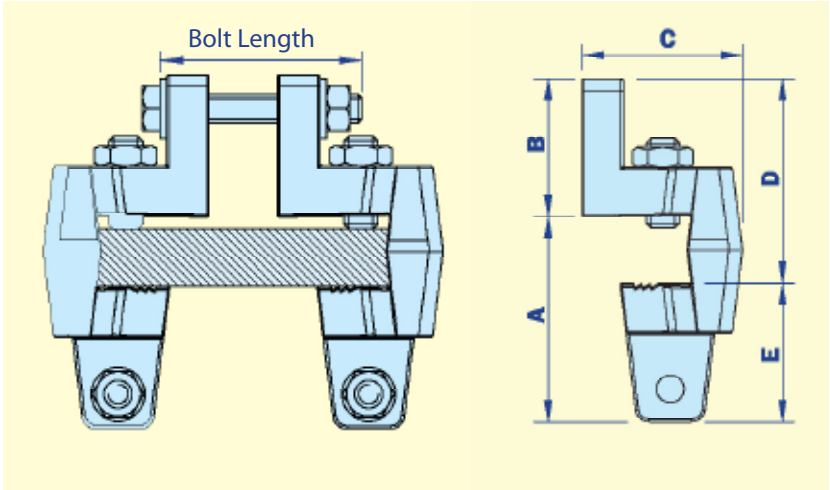
Linking Fasteners

The bolts or setscrews should be M10 grade 8.8 or 3/8" SAE grade 5 as a minimum.

The length of the bolts required is determined by the width of the section being connected together in the direction that the bolt will be installed. When two sections of the same width are joined together all four bolt lengths will be the same, however, when the widths are different there will be two pairs of bolts each of the same length.

Bolt Length 1
Length = Beam width 1 – 30mm
e.g. Beam width 1 = 100mm
Bolt length 1 = 70mm

Bolt Length 2
Length = Beam width 2 – 30mm
e.g. Beam width 2 = 120mm
Bolt length 2 = 90mm



Caution

The GirderFix MUST NOT be used without the correct specification of fasteners to join the four clamps in each corner together.

Installation Procedure

STEP 1 - Install the first GirderFix Clamp into one corner by hand ensuring it is as close into the corners as possible.

STEP 2 - Repeat this for the other three corners ensuring the connecting holes for the bolts are facing each other and in line.

STEP 3 - Once the sections are in the desired position, tighten each clamping screw to the recommended torque of 20Nm (15 ft/lbs)

STEP 4 - Ensure the locknut is tightened to the top of GirderFix clamp using the method finger tight plus 1/4 turn.

STEP 5 - Connect the clamps together using fasteners that meet the specification in the section "Linking fasteners".

IMPORTANT CHECK!
Tighten the linking fasteners together using the method finger tight plus 1/2 turn as below.

GirderFix system v's Drilling or Welding – Comparison

The model below is designed to demonstrate the time that can be saved by using a GirderFix system compared to either a standard welded or drilled and bolted connection. The majority of time and cost is saved by the reduction in preparation and labour time. This model does not include the potential for remedy work that may need to be carried out should the connection not be in the correct place. With the GirderFix system this is quick and easy to do where as with a welded or drilled and bolted connection this is more time consuming and difficult.

GIRDERFIX SYSTEM

Connection Requirements	Time (hrs)	Details of each step
Engineering	0.1	The design time is reduced dramatically as the system works within stated parameters
Marking of steel	0.06	The marking is reduced as the connection is adjustable
Site set up	0.05	Product arrives in a kit ready to install
Assembly time	0.05	The assembly time is quicker than a bolted connection as no hole alignment is required
Tightening of bolts	0.04	Allowing 1 minute per bolt and nut
Approx. 30 min		

WELDED

Using a fully filleted weld connecting to red oxide or galvanised steel.

Connection Requirements	Time (hrs)	Details of each step
Engineering	0.25	Limited design work required apart from highlighting the position and penetration of weld
Apply for hot work permit	0.5	The issue time is set at 30 min which can be much longer
Marking of steel	0.25	The marking of the steel is minimal for a welded connection
Site set up	0.5	Time to move equipment, power cords and get machinery ready
Removal of corrosion protection	1	The whole area for the weld needs to be removed by grinding and is time consuming
Performing of weld (including equipment)	1.5	Based on a coded welder and equipment to make the connection
Touch up of Galv / Paint	0.33	Replacement of the galv/paint will not be as good as the original finish
Non destructive testing	0.33	Testing of the weld required to prove load capabilities
Approx. 4.5 hrs		

TIME IS MONEY

It is estimated that over 3 hours can be saved in site labour by using our off the shelf GirderFix System. This not only means savings in cost but the connection can be made much quicker with a guaranteed connection every time.

Welding (hrs)	Drilling & Bolting (hrs)	GirderFix (hrs)	Savings (hrs)
4.5	3.5	0.5	3 to 4

DRILLING AND BOLTING

Using 4 Grade 8.8 High tensile Bolts

Connection Requirements	Time (hrs)	Details of each step
Engineering	0.25	Detailing the positions and checking the integrity of the existing steel after adding holes
Drilling time of new steel off site	1	Based on a flange thickness of 1/2 inch and 1/4 hr per hole (see cutting speed rates)
Marking of steel	0.5	The time required to mark the steel on site to ensure alignment with secondary member
Site set up	0.25	The time required to access power, get the drilling machine into position etc.
Drilling time on site	1	Based on a flange thickness of 1/2 inch and 1/4 hr per hole (see cutting speed rates)
Positioning and alignment	0.25	Alignment of Primary and secondary steel holes on site
Assembly time	0.04	Very quick to assemble with only four bolts and nuts once steel is aligned
Tightening of bolts	0.04	Allowing 1 minute per bolt and nut
Material costs (bolts)	N/A	Four 5/8" bolts, nuts and washers, drill bits etc.
Approx. 3.5 hrs		

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