

# Beam connection channel JXA - BM

Connection system for steel composite structures

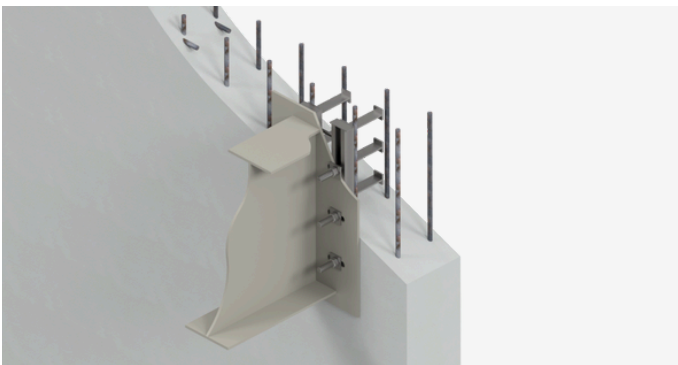


# Beam connection channel JXA – BM

## High capacity and adjustable connections for hybrid frame buildings.

The beam connection channel JXA – BM connectors offer a straightforward method for connecting structural steel beams to reinforced concrete structures, such as stair cores. By utilising toothed cast in channels and toothed T-bolt connections, beam connection channel JXA – BM provides a safe and adjustable connection system, negating the need for onsite welding or drilling.

The beam connection channel JXA – BM assembly enables vertical adjustment of connections, allowing beams to be accurately levelled and positioned for height. In combination with packing shims and horizontal slots in the end plates at the T-bolt locations, three-dimensional installation tolerance can be achieved.



The beam connection channel JXA – BM and toothed T-bolts are available in hot-dip galvanised or A4 stainless steel. If required, high-compression thermal insulation shims can also be provided to thermally insulate the steel beam from the concrete structure.

The beam connection channel JXA – BM typically consists of two toothed channels joined together in parallel with spacer bars. Toothed channels are available in several load capacities and are used in conjunction with a corresponding range of toothed T-bolts.

The length of the channels is defined by either the length of the fixing plate or by the number of T-bolts required to transfer the shear load. Custom concrete anchorage can be designed to suit a wide range of loading and structural requirements.

### Beam Connection Channel JXA – BM Benefits

- Excellent load performance and fully adjustable connections
- Heavy-duty, hot-rolled toothed profiles absorb both static and dynamic loading.
- Special modifications aid installation in slip-form structures
- Specialist labour is not required for installation
- Connector weight is limited to enable hand installation without crane lifting.
- No special tools or electrical power requirements on site.

### Replacing drilled connections achieves the following:

- Potential exposure to silica dust is reduced.
- Potential exposure to drilling noise levels is reduced
- Risk of drilling noise nuisance to neighbouring offices and residences is reduced
- Potential exposure to HAVS risk from vibrating hand tools is reduced.

### Replacing welded connections achieves the following:

- Reduces the potential risk of fires or injury caused by falling sparks or hot surfaces
- No requirement for any site applied protective finishes after welding.

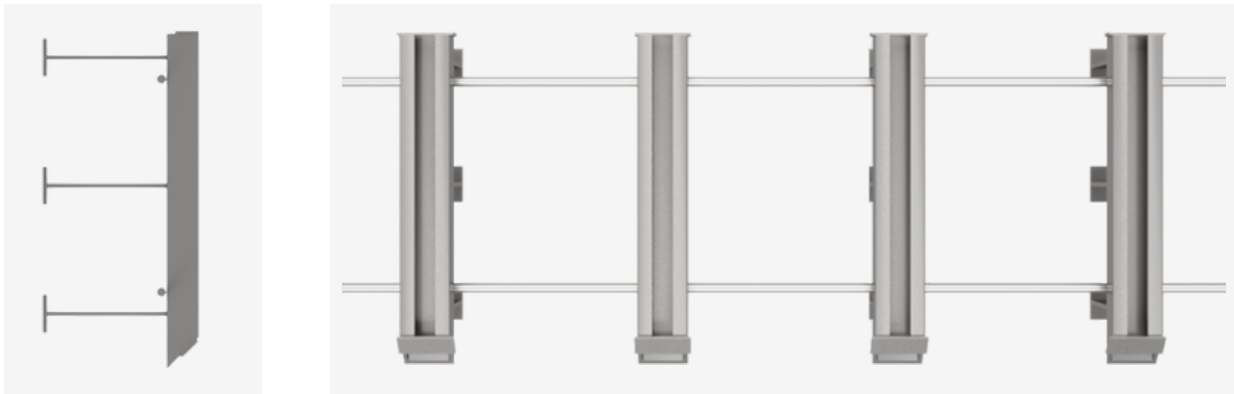
### Typical beam connection channel JXA – BM



# Beam connection channel JXA – BM

## Modifications and Design Resistances

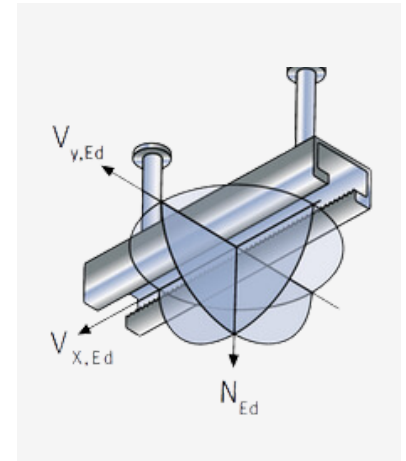
Section and elevation views of a beam connection channel JXA – BM assembly illustrating optional diagonal ramps at the ends of the channels used to aid slipform transition.



**Design Resistances per T-Bolt**

Channel Profile	$N_{Rd}$ [kN]	$V_{Rd}$ [kN]	$X_{Rd}$ [kN]	T-Bolts
JXM W 64/44	59.1	67.2	35.8	JXE M24
JXM W 53/34	40.3/35.9 <sub>1)</sub>	56.2/50.9 <sub>1)</sub>	18.8/12.7 <sub>1)</sub>	JXB M20
JXM W 41/27	25.0	26.8	16.8	JXH M16
JXM W 38/23	19.6/23.8 <sub>1)</sub>	26.8/23.7 <sub>1)</sub>	10.8/6.6 <sub>1)</sub>	JXH M16

<sub>1)</sub> Second value applies to stainless steel material



- Design resistances shown in the table are maximum values per T-bolt, based on channel profile lip capacity. The overall performance of the cast-in connection can potentially be affected by concrete edge positions and T-bolt spacings. Please contact us for design assistance.
- For simultaneous load in all load directions, the following relationship must be verified:
 
$$N_{Ed}/N_{Rd} + V_{Ed}/V_{Rd} + X_{Ed}/X_{Rd} \leq 1$$

$X_{Ed}, V_{Ed}, N_{Ed}$ : Design loads  
 $X_{Rd}, V_{Rd}, N_{Rd}$ : Design resistances
- If the load, e.g., for stand-off installation, is introduced at a distance from the channel lip, the bolt bending moments must be accounted for and must be superimposed on the tensile load component.
- The factored resistance of the T-bolt and the channel profile need to be considered. The lower value is applicable in each case.
- For maximum factored resistance in shear, the tightening torques must be applied, depending on bolt size and bolt strength.
- Concrete strength will need to be verified on a case-by-case basis.
- Smaller bolt sizes can be utilised.



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