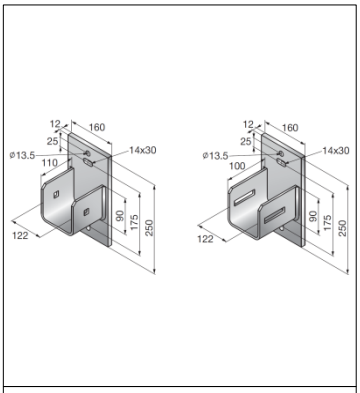
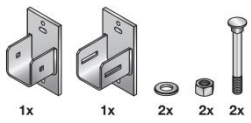
MIC-C120-EDB elevator connector

Designation	Item number
MIC-C120-EDB elevator connector	**2149420**



Package content



Corrosion protection:
Hot dipped galvanized as per DIN EN ISO 1462, thickness 55 micr ons

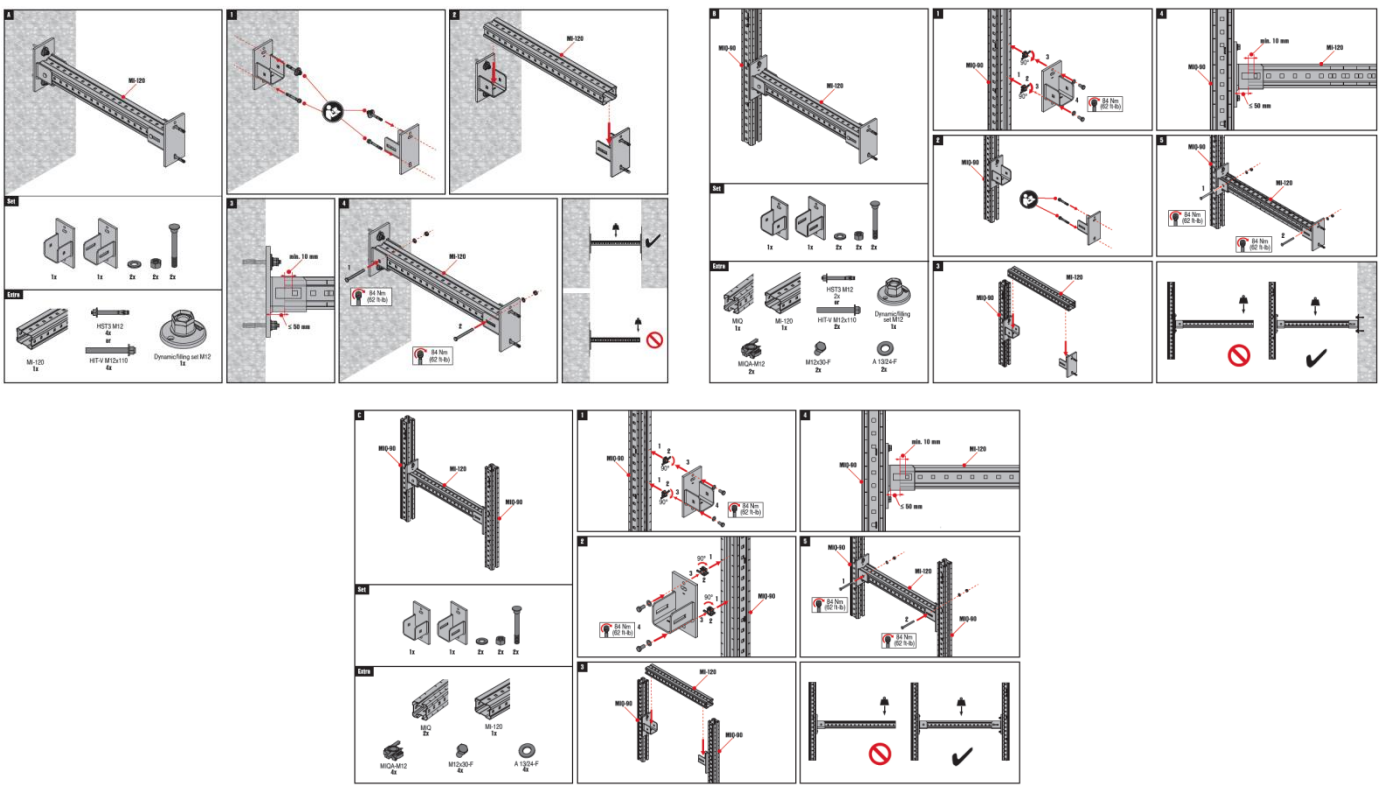
Weight:
11043g incl. accessories

Submittal text:
Hot-dipped galvanised Hilti elevator connector, used primarily to connect an MI or MIQ girder to either a concrete wall or another girder. The baseplate of the connector is fastened to concrete through anchor holes with Hilti HST3 anchors or similar, and with MIA-OH bolts to another girder, secured with two self-locking nuts. Sold as a pair of connectors, one with a single hole and the other with an oblong hole, through which the connector is fastened to the girder with MIA-OH through-bolts. Material weight 11.04kg including all items.

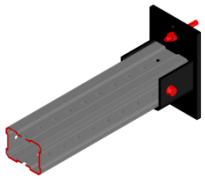
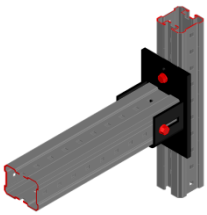
Material properties:

Material	Yield strength	Ultimate strength	E-modulus	Shear modulus
S355 JR DIN EN 10025	$F_y = 355 \frac{N}{mm^2}$	$F_u = 490 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$

Instruction For Use:



MIC-C120-EDB elevator connector

Possible loading cases		
On concrete	On steel	
		

Design criteria used for loading capacity

Methodology:
- Finite element analysis
- Analytic calculation

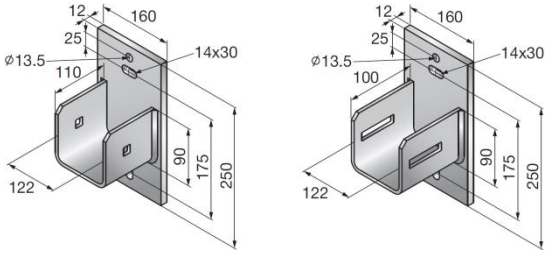
Standards and codes:

• EN 1990	Basics of structural design	03.2003
• EN 1991-1-1	Eurocode 1: Actions on structures – Part 1-1: General actions – densities, self-weight, imposed loads for buildings	09.2011
• EN 1993-1-1	Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings	03.2012
• EN 1993-1-3	Eurocode 3: Design of steel structures – Part 1-3: General rules- Supplementary rules for cold-formed members and sheeting	03.2012
• EN 1993-1-5	Eurocode 3: Design of steel structures – Part 1-5: Plated structural elements	03.2012
• EN 1993-1-8	Eurocode 3: Design of steel structures – Part 1-8: Design of joints	03.2012
EN 10025-2	Hot rolled products of structural steels- Part 2: technical delivery conditions for non-alloy structural steels	02.2005
• RAL-GZ 655	Pipe Supports	04.2008

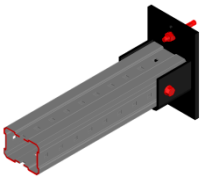
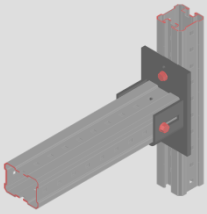
Software:
- Ansys 16.0
- Microsoft Excel
- Analytic calculation

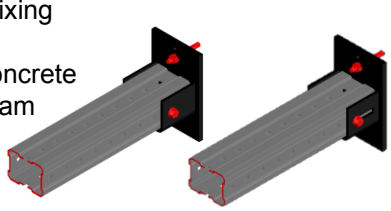
Environmental conditions:
- static loads
- no fatigue loads

Simplified drawing:



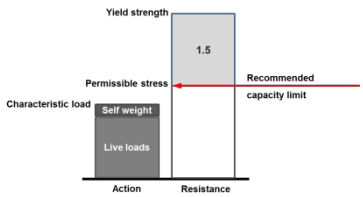
MIC-C120-EDB elevator connector

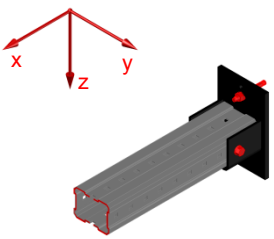
Possible loading cases		
On concrete	On steel	
		

Loading case: On concrete	Combinations covered by loading case
BOM: Base material connector incl. all connectivity material **MIC-C120-EDB elevator connector 2149420**	Connector used for fixing MIQ girder, perpendicularly to concrete usually as divider beam (wall to wall) in elevator shaft 

Recommended loading capacity - simplified for most common applications

Method



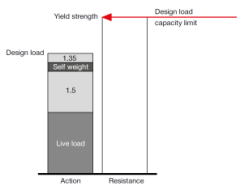


±Fx,rec. [kN]	±Fy,rec. [kN]	±Fz,rec. [kN]
1.40	4.33	6.67

These values are individual one directional maximal capacity limits. For any combinations of multiple directions, use design values and their corresponding interaction formulas.

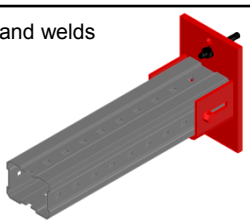
Design loading capacity - 3D 1/2

Method

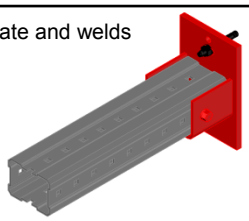


Limiting components of capacity evaluated in following tables:

1. Slotted connector incl. bolt, base plate and welds



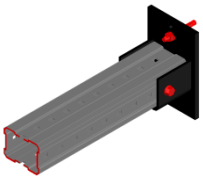
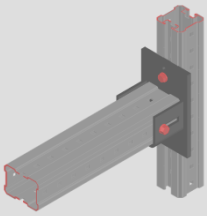
2. Connector with hole incl. bolt, base plate and welds



MIC-C120-EDB elevator connector

Conditions of the loading capacity tables:

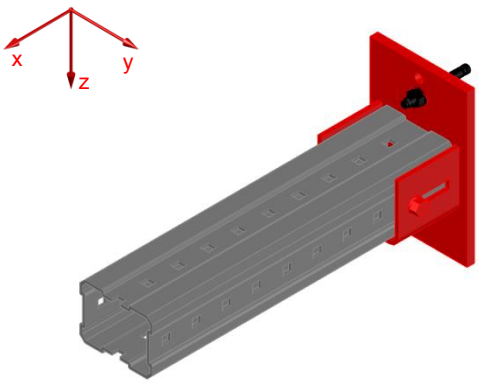
- Just for static loads
- No fatigue loads
- No low (< -10° C), no high (> +100° C) temperatures

Possible loading cases		
On concrete	On steel	
		

Design loading capacity - 3D 2/2

Summary of design loads*
NOTE: all values in interaction formulas should be used in absolute values! The values below are referred to the coordinate system shown in the drawing.

1. Slotted connector incl. bolt, base plate and welds



+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
2.10	2.10	6.50**	6.50**	10.00	10.00
+Mx,Rd [kNm]	**-Mx,Rd [kNm]**	**+My,Rd [kNm]**	**-My,Rd [kNm]**	**+Mz,Rd [kNm]**	**-Mz,Rd [kNm]**
0.10	0.10	0.00	0.00	0.00	0.00

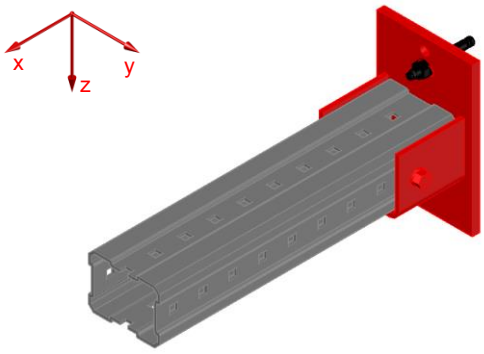
**Values are provided for 1mm local deflection on connector

Interaction:

$$\frac{F_{x.Ed}}{F_{x.Rd}} + \frac{F_{y.Ed}}{F_{y.Rd}} + \frac{F_{z.Ed}}{F_{z.Rd}} + \frac{M_{x.Ed}}{M_{x.Rd}} \le 1$$

Note: The welds and the one hand screw are modelled appropriately in the FE- calculation and are therefore included in the overall resistance for connector given above

2. Connector with hole incl. bolt, base plate and welds



+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
14.00	14.00	6.50**	6.50**	10.00	10.00
+Mx,Rd [kNm]	**-Mx,Rd [kNm]**	**+My,Rd [kNm]**	**-My,Rd [kNm]**	**+Mz,Rd [kNm]**	**-Mz,Rd [kNm]**
0.10	0.10	0.00	0.00	0.00	0.00

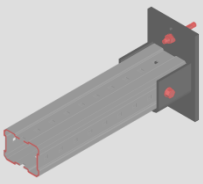
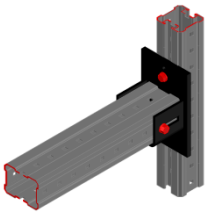
**Values are provided for 1mm local deflection on connector

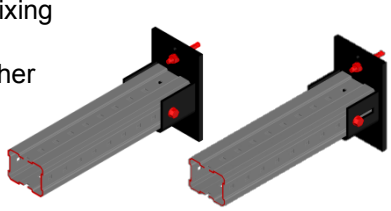
Interaction:

$$\frac{F_{x.Ed}}{F_{x.Rd}} + \frac{F_{y.Ed}}{F_{y.Rd}} + \frac{F_{z.Ed}}{F_{z.Rd}} + \frac{M_{x.Ed}}{M_{x.Rd}} \le 1$$

Note: The welds and the one hand screw are modelled appropriately in the FE- calculation and are therefore included in the overall resistance for connector given above

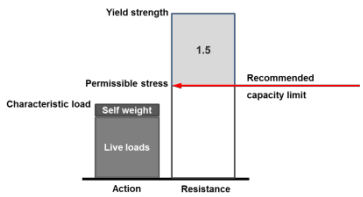
MIC-C120-EDB elevator connector

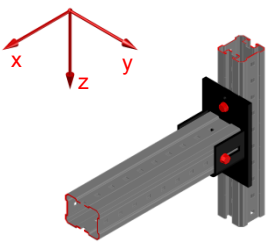
Possible loading cases		
On concrete	On steel	
		

Loading case: On steel	Combinations covered by loading case
BOM: Base material connector incl. all connectivity material **MIC-C120-EDB elevator connector** **2149420** Connection to vertical MIQ girder **2x MIQM-M12 wing nut** **2120275** **2x M12x30-F hex. Head screw** **284387**	Connector used for fixing MI-120 girder, perpendicularly to other MIQ vertical girder usually as divider beam (wall to wall) in elevator shaft 

Recommended loading capacity - simplified for most common applications

Method



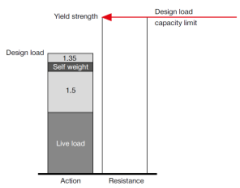


±Fx,rec. [kN]	±Fy,rec. [kN]	±Fz,rec. [kN]
1.40	4.33	6.67

These values are individual one directional maximal capacity limits. For any combinations of multiple directions, use design values and their corresponding interaction formulas.

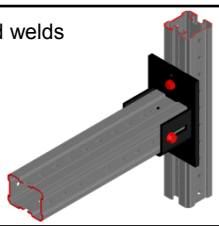
Design loading capacity - 3D 1/2

Method

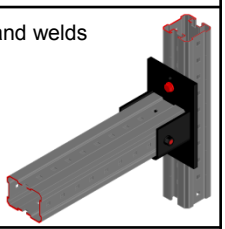


Limiting components of capacity evaluated in following tables:

1. Slotted connector incl. bolt, base plate and welds



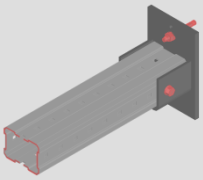
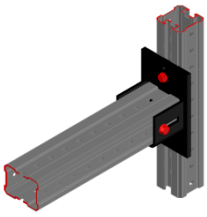
2. Connector with hole incl. bolt, base plate and welds



MIC-C120-EDB elevator connector

Conditions of the loading capacity tables:

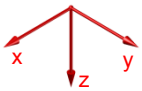
- Just for static loads
- No fatigue loads
- No low (< -10° C), no high (> +100° C) temperatures

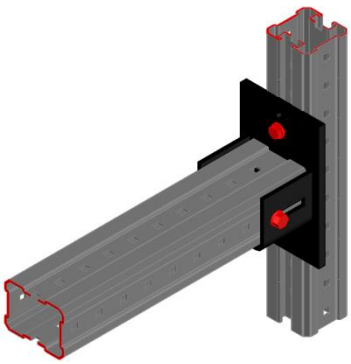
Possible loading cases		
On concrete	On steel	
		

Design loading capacity - 3D 2/2

Summary of design loads*
NOTE: all values in interaction formulas should be used in absolute values! The values below are referred to the coordinate system shown in the drawing.

1. Slotted connector incl. bolt, base plate and welds





+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
2.10	2.10	5.00**	5.00**	8.50	8.50
+Mx,Rd [kNm]	**-Mx,Rd [kNm]**	**+My,Rd [kNm]**	**-My,Rd [kNm]**	**+Mz,Rd [kNm]**	**-Mz,Rd [kNm]**
0.10	0.10	0.00	0.00	0.00	0.00

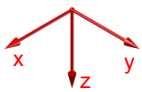
**Values are provided for 1mm local deflection on connector

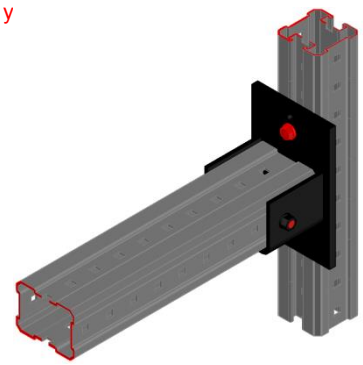
Interaction:

$$\frac{F_{x.Ed}}{F_{x.Rd}} + \frac{F_{y.Ed}}{F_{y.Rd}} + \frac{F_{z.Ed}}{F_{z.Rd}} + \frac{M_{x.Ed}}{M_{x.Rd}} \le 1$$

Note: The welds and the one hand screw are modelled appropriately in the FE- calculation and are therefore included in the overall resistance for connector given above

2. Connector with hole incl. bolt, base plate and welds





+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
10.60	10.600	5.00**	5.00**	8.50	8.50
+Mx,Rd [kNm]	**-Mx,Rd [kNm]**	**+My,Rd [kNm]**	**-My,Rd [kNm]**	**+Mz,Rd [kNm]**	**-Mz,Rd [kNm]**
0.10	0.10	0.00	0.00	0.00	0.00

**Values are provided for 1mm local deflection on connector

Interaction:

$$\frac{F_{x.Ed}}{F_{x.Rd}} + \frac{F_{y.Ed}}{F_{y.Rd}} + \frac{F_{z.Ed}}{F_{z.Rd}} + \frac{M_{x.Ed}}{M_{x.Rd}} \le 1$$

Note: The welds and the one hand screw are modelled appropriately in the FE- calculation and are therefore included in the overall resistance for connector given above

