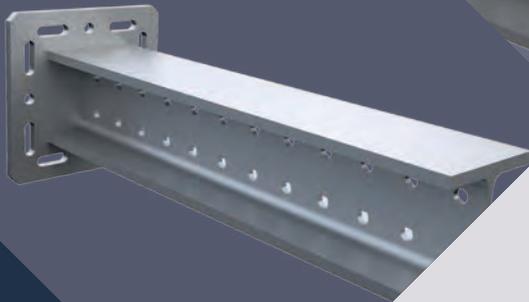
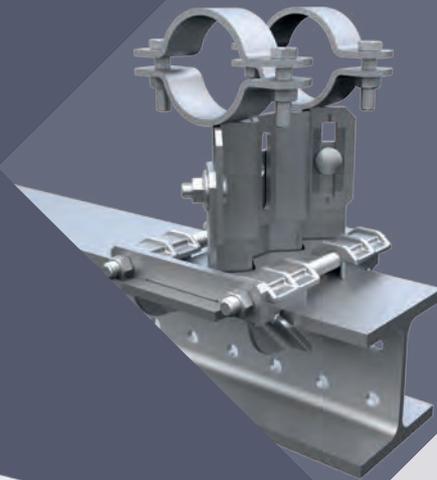
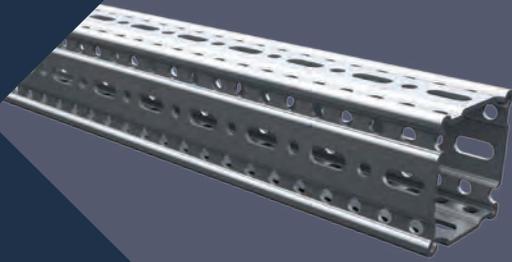


# sikla



## **Simotec**

Installation Guidelines

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### Application

Sikla „Installation Guidelines“ is intended to provide guidance for supporting constructions within industrial pipework and plant engineering consisting of the Sikla Systems siFramo 80, siFramo 100, Beam System 100 and Beam System 120.

All CE marked systems are subject to the certified factory production control according to EN 1090 and may therefore be used to EXC 2 for load-bearing structures.

### Basis of calculation

Eurocode 3 (DIN EN 1993) „Design of steel structures“ provides the basis for determining the load capacity. Regarding serviceability the specified restrictions are allocated separately according to the design of the individual constructions. These limits may also be specified differently by the client. All deformations are determined on the basis of characteristic loads ( $\gamma_F = 1.0$ ). The values of the permissible loads comply simultaneously the ultimate limit state and the serviceability limit state design. The respective governing load is listed as  $F_{z, perm}$  in the Installation Guideline.

### Load effects

Specified are permissible vertical loads  $F_{z, perm}$  in kN (e.g. pipeline weights), which have to be understood as maximum values of characteristic load effects and consider a safety factor  $\gamma_F = 1.35$ .

Some Sikla constructions take into account additional friction forces  $F_x = F_z \cdot \mu_0$  for Sikla Pipe Shoes based on hot-dipped galvanized surface of Sikla beams which are calculated from pipe weight  $F_z$  and a friction coefficient  $\mu_0 = 0.2$ . These variable forces from pipe expansion are taken into account with a safety factor  $\gamma_F = 1.5$ . Sliding or guided Pipe Shoes (Sikla slide elements) with a higher coefficient  $\mu_0 > 0.2$  (e.g. steel on steel) require an individual calculation.

### Conditions

All loads are static loads at room temperature unless stated otherwise. Technical notes of the respective product data sheets for use and application range must be observed.

### Load transmission into building structure

When fixing by anchors, or connection to existing cast-in channels, the structural safety analysis for the components used for this purpose must be done separately. When connecting to existing steel structures on site, resilience, support and torsional rigidity of the existing structure must be checked separately. In addition, when connecting with clamping sets, the static friction between clamping set and the on-site steel structure must fulfill the condition  $\mu_0 \geq 0.2$  (Sliding Surfaces Class D). On-site steel structure sizes (flange widths) of  $\geq 100$  mm are considered by using clamps for connection points.

Unless shown otherwise: force direction  $F_x =$  steel structure longitudinal axis.

Connections to concrete are designed with anchor type VMZ-A M12 (ETA-10/0260) in concrete strength C20/C25 under the design specifications  $h_{std} \geq 2 h_{ef}$  edge distance  $c \geq 120$  mm. Axis distances are determined by the components.

Reduction factor  $\alpha_A = 0.7$  for structural steel flange sizes  $\geq 201$  mm for End Support WBD F80, F100 and F100/160.

### Technical Information

Installation conditions are summarized at the end of this brochure - in particular specifications regarding tightening torques, bolt spacing, general installation instructions etc.

### Recycleability of Products

Products must only be re-used if the recommended working loads have not been previously exceeded and if the coating has not been discernibly damaged.

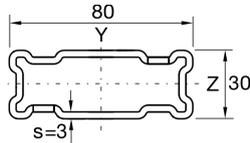
### General Remarks/ Disclaimer

This document is solely for being used by the receiver but remains property of Sikla. The technical drawings and all other content are to the best of our knowledge. Pictures and illustrations are non-committing. We can not be held responsible for printing errors and their implications. We reserve the right of making alterations and improvements without notice.

The present Guideline allows the user to select and to design supporting structures (constructions) easily. This document has been prepared in close cooperation with the following external specialists.

### Working loads in accordance with Eurocode 3

#### Beam Section TP F 80/30



Single-span beam with uniaxial load  
dead weight of the profile is considered

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_z * L)$
	[mm]	[kN/m]	[kN]
	500	<b>27,80</b>	<b>13,90</b>
	1000	<b>5,44</b>	<b>5,44</b>
	1500	<b>1,61</b>	<b>2,42</b>
	2000	<b>0,68</b>	<b>1,36</b>
	2500	<b>0,35</b>	<b>0,87</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	500	<b>9,13</b>
	1000	<b>3,40</b>
	1500	<b>1,51</b>
	2000	<b>0,85</b>
	2500	<b>0,54</b>

$F_z$  [kN] as a permanent load at L/2.

2 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	500	<b>6,85</b>
	1000	<b>1,99</b>
	1500	<b>0,89</b>
	2000	<b>0,50</b>
	2500	<b>0,32</b>

$F_z$  [kN] as permanent loads at L/3 and 2\*L/3.

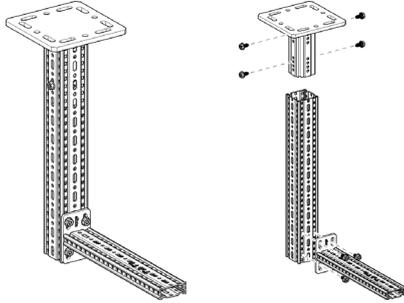
3 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	500	<b>4,56</b>
	1000	<b>1,43</b>
	1500	<b>0,64</b>
	2000	<b>0,36</b>
	2500	<b>0,23</b>

$F_z$  [kN] as permanent loads at L/4, L/2 and 3\*L/4.

Max. bending L/200.

## Working loads in accordance with Eurocode 3

### L-Construction F 80 - 80/30



#### Part List

- 1 x End Support WBD F 80
- 1 x Beam Section TP F 80
- 1 x Cantilever Bracket AK F 80/30
- 8 x Self-Forming-Screw FLS F

Distributed Load	$L_{max}$	300		500		700	
		$H_{max}$	$q_{z, perm}$	$F_z (q_z * L)$	$q_{z, perm}$	$F_z (q_z * L)$	$q_{z, perm}$
	[mm]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]
	500	<b>7,14</b>	<b>2,14</b>	<b>2,47</b>	<b>1,23</b>	<b>1,16</b>	<b>0,81</b>
	1000	<b>6,05</b>	<b>1,82</b>	<b>2,14</b>	<b>1,07</b>	<b>1,02</b>	<b>0,71</b>
	1500	<b>5,25</b>	<b>1,57</b>	<b>1,89</b>	<b>0,94</b>	<b>0,91</b>	<b>0,64</b>
	2000	<b>4,63</b>	<b>1,39</b>	<b>1,69</b>	<b>0,84</b>	<b>0,82</b>	<b>0,57</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	300		500		700	
		$H_{max}$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	500	<b>1,08</b>	<b>1,08</b>	<b>0,58</b>	<b>0,58</b>	<b>0,37</b>	<b>0,37</b>
	1000	<b>0,93</b>	<b>0,93</b>	<b>0,51</b>	<b>0,51</b>	<b>0,33</b>	<b>0,33</b>
	1500	<b>0,82</b>	<b>0,82</b>	<b>0,46</b>	<b>0,46</b>	<b>0,30</b>	<b>0,30</b>
	2000	<b>0,73</b>	<b>0,73</b>	<b>0,42</b>	<b>0,42</b>	<b>0,27</b>	<b>0,27</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	300		500		700	
		$H_{max}$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	500	<b>0,75</b>	<b>0,75</b>	<b>0,41</b>	<b>0,41</b>	<b>0,26</b>	<b>0,26</b>
	1000	<b>0,64</b>	<b>0,64</b>	<b>0,36</b>	<b>0,36</b>	<b>0,23</b>	<b>0,23</b>
	1500	<b>0,56</b>	<b>0,56</b>	<b>0,32</b>	<b>0,32</b>	<b>0,21</b>	<b>0,21</b>
	2000	<b>0,49</b>	<b>0,49</b>	<b>0,29</b>	<b>0,29</b>	<b>0,19</b>	<b>0,19</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

3 Point Loads	$L_{max}$	300		500		700	
		$H_{max}$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$	$F_z, perm$ for $F_x = \mu_0 * F_z$	$F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	500	<b>0,56</b>	<b>0,56</b>	<b>0,31</b>	<b>0,31</b>	<b>0,20</b>	<b>0,20</b>
	1000	<b>0,48</b>	<b>0,48</b>	<b>0,27</b>	<b>0,27</b>	<b>0,18</b>	<b>0,18</b>
	1500	<b>0,42</b>	<b>0,42</b>	<b>0,24</b>	<b>0,24</b>	<b>0,16</b>	<b>0,16</b>
	2000	<b>0,37</b>	<b>0,37</b>	<b>0,22</b>	<b>0,22</b>	<b>0,14</b>	<b>0,14</b>

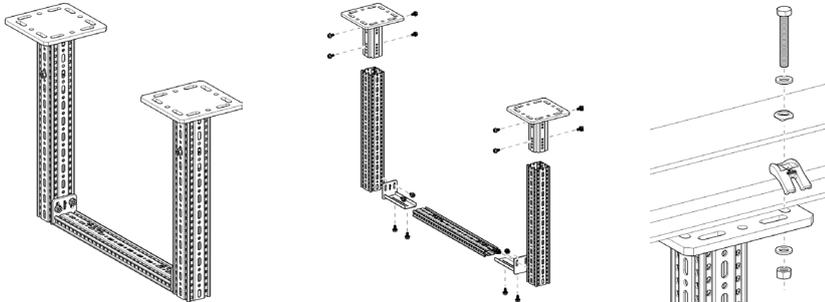
$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

All illustrated structures are able to be installed standing as well.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/100$ ;  $L/100$ .

### Working loads in accordance with Eurocode 3

#### Frame F 80 - 80/30



**Part List**

- 2 x End Support WBD F 80
- 2 x Beam Section TP F 80
- 1 x Beam Section TP F 80/30
- 2 x End Support STA F 80/30-E
- 16 x Self-Forming-Screw FLS F

Distributed Load		L <sub>max</sub> 500		1000		1500		2000		2500		3000	
		q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]
H <sub>max</sub> [mm]		16,75	8,38	5,86	5,86	2,04	3,05	0,94	1,88	0,50	1,24	0,28	0,84
500		16,75	8,38	5,81	5,81	2,02	3,03	0,93	1,87	0,49	1,24	0,28	0,84
1000		16,75	8,38	5,76	5,76	2,01	3,02	0,93	1,86	0,49	1,23	0,28	0,84
1500		16,75	8,38	5,71	5,71	2,00	3,00	0,92	1,85	0,49	1,22	0,28	0,83
2000		16,75	8,38	5,71	5,71	2,00	3,00	0,92	1,85	0,49	1,22	0,28	0,83

q<sub>z</sub> [kN/m] as permanent load over L.

Point Load		L <sub>max</sub> 500		1000		1500		2000		2500		3000	
		F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]				
H <sub>max</sub> [mm]		8,32	6,95	3,72	3,50	1,90	1,79	1,15	1,08	0,77	0,72	0,51	0,48
500		8,32	6,95	3,70	3,48	1,89	1,78	1,15	1,08	0,76	0,72	0,51	0,48
1000		8,32	5,70	3,68	3,46	1,88	1,77	1,14	1,08	0,76	0,72	0,51	0,48
1500		8,32	3,85	3,65	3,44	1,87	1,76	1,14	1,07	0,76	0,71	0,51	0,48
2000		8,32	3,85	3,65	3,44	1,87	1,76	1,14	1,07	0,76	0,71	0,51	0,48

F<sub>z</sub> [kN] as a permanent load at distance L/2; F<sub>x</sub> [kN] as a variable load at distance L/2.

2 Point Loads		L <sub>max</sub> 500		1000		1500		2000		2500		3000	
		F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]				
H <sub>max</sub> [mm]		4,17	3,48	2,20	2,07	1,13	1,06	0,69	0,65	0,46	0,43	0,30	0,28
500		4,17	3,48	2,19	2,06	1,12	1,06	0,68	0,64	0,45	0,43	0,30	0,28
1000		4,17	2,85	2,17	2,04	1,12	1,05	0,68	0,64	0,45	0,42	0,30	0,28
1500		4,17	1,93	2,16	1,91	1,11	1,04	0,68	0,64	0,45	0,42	0,30	0,28
2000		4,17	1,93	2,16	1,91	1,11	1,04	0,68	0,64	0,45	0,42	0,30	0,28

F<sub>z</sub> [kN] as permanent loads at distance 2\*L/3 and L/3; F<sub>x</sub> [kN] as variable loads at distance 2\*L/3 and L/3.

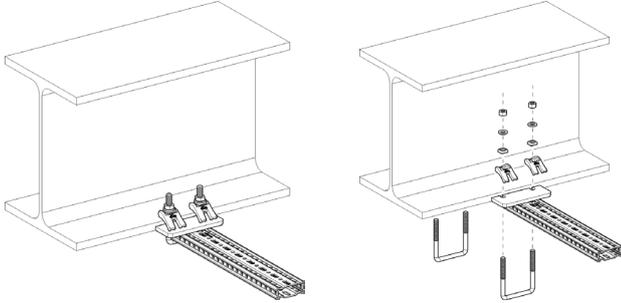
3 Point Loads		L <sub>max</sub> 500		1000		1500		2000		2500		3000	
		F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z,perm</sub> for F <sub>x</sub> = 0 F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]				
H <sub>max</sub> [mm]		2,78	2,32	1,56	1,47	0,80	0,75	0,49	0,46	0,32	0,30	0,21	0,20
500		2,78	2,32	1,55	1,46	0,79	0,75	0,49	0,46	0,31	0,30	0,21	0,20
1000		2,78	1,90	1,54	1,45	0,79	0,74	0,49	0,46	0,31	0,29	0,21	0,19
1500		2,78	1,29	1,53	1,27	0,79	0,74	0,48	0,46	0,31	0,29	0,21	0,19
2000		2,78	1,29	1,53	1,27	0,79	0,74	0,48	0,46	0,31	0,29	0,21	0,19

F<sub>z</sub> [kN] as permanent loads at distance 3\*L/4, L/2 and L/4; F<sub>x</sub> [kN] as variable loads at distance 3\*L/4, L/4 and L/4.

All illustrated structures are able to be installed standing as well.  
Friction coefficient μ<sub>0</sub> = 0,2 for friction in longitudinal direction. Max. deviation H/100; L/200.

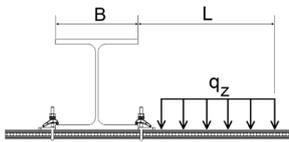
## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 80/30 horizontal



**Part List**  
 1 x Beam Section TP F 80/30  
 2 x U-Holder SB F 80/30-40

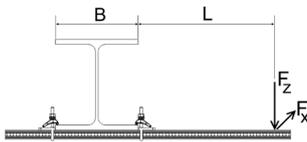
#### Distributed Load



$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
[mm]	[kN/m]	[kN]
300	<b>10,62</b>	<b>3,19</b>
500	<b>3,68</b>	<b>1,84</b>
700	<b>1,84</b>	<b>1,29</b>
900	<b>1,09</b>	<b>0,98</b>
1100	<b>0,72</b>	<b>0,79</b>

$q_z$  [kN/m] as permanent load over L;  
 $80 \text{ mm} < B < 200 \text{ mm}$ .

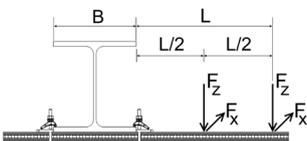
#### Point Load



$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>1,52</b>	<b>0,86</b>
500	<b>0,91</b>	<b>0,74</b>
700	<b>0,65</b>	<b>0,59</b>
900	<b>0,50</b>	<b>0,46</b>
1100	<b>0,35</b>	<b>0,35</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L;  
 $80 \text{ mm} < B < 200 \text{ mm}$ .

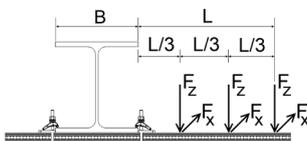
#### 2 Point Loads



$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>1,01</b>	<b>0,54</b>
500	<b>0,61</b>	<b>0,47</b>
700	<b>0,43</b>	<b>0,39</b>
900	<b>0,33</b>	<b>0,31</b>
1100	<b>0,27</b>	<b>0,25</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2;  
 $80 \text{ mm} < B < 200 \text{ mm}$ .

#### 3 Point Loads



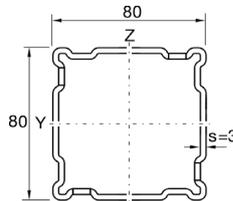
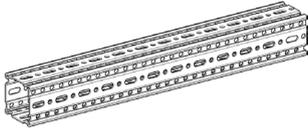
$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>0,76</b>	<b>0,39</b>
500	<b>0,45</b>	<b>0,34</b>
700	<b>0,32</b>	<b>0,30</b>
900	<b>0,25</b>	<b>0,23</b>
1100	<b>0,20</b>	<b>0,19</b>

$F_z$  [kN] as permanent loads at distance L,  $2*L/3$  and L/3;  $F_x$  [kN] as variable loads at distance L,  $2*L/3$  and L/3;  $80 \text{ mm} < B < 200 \text{ mm}$ .

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

### Working loads in accordance with Eurocode 3

#### Beam Section TP F 80



Single-span beam with uniaxial load  
dead weight of the profile is considered

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} \cdot L)$
	[mm]	[kN/m]	[kN]
	1000	<b>30,21</b>	<b>30,21</b>
	1500	<b>13,38</b>	<b>20,07</b>
	2000	<b>6,30</b>	<b>12,59</b>
	2500	<b>3,22</b>	<b>8,06</b>
	3000	<b>1,87</b>	<b>5,60</b>
	3500	<b>1,17</b>	<b>4,11</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>15,10</b>
	1500	<b>10,04</b>
	2000	<b>7,49</b>
	2500	<b>5,04</b>
	3000	<b>3,50</b>
	3500	<b>2,57</b>

$F_z$  [kN] as a permanent load at distance L/2.

2 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>11,33</b>
	1500	<b>7,53</b>
	2000	<b>4,62</b>
	2500	<b>2,96</b>
	3000	<b>2,05</b>
	3500	<b>1,51</b>

$F_z$  [kN] as permanent loads at distance L/3 and 2\*L/3.

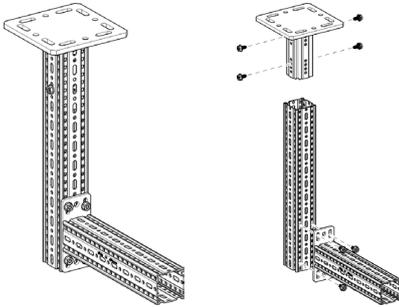
3 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>7,55</b>
	1500	<b>5,02</b>
	2000	<b>3,31</b>
	2500	<b>2,12</b>
	3000	<b>1,47</b>
	3500	<b>1,08</b>

$F_z$  [kN] as permanent loads at distance L/4, L/2 and 3\*L/4.

Max. bending L/200.

## Working loads in accordance with Eurocode 3

### L-Construction TP F 80



- Part List**  
 1 x End Support WBD F 80  
 1 x Beam Section TP F 80  
 1 x Cantilever Bracket AK F 80  
 8 x Self-Forming-Screw FLS F

H <sub>max</sub> [mm]	300		500		700	
	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z,perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]
500	<b>10,42</b>	<b>3,13</b>	<b>4,07</b>	<b>2,03</b>	<b>2,10</b>	<b>1,47</b>
1000	<b>8,25</b>	<b>2,47</b>	<b>3,25</b>	<b>1,62</b>	<b>1,69</b>	<b>1,18</b>
1500	<b>6,82</b>	<b>2,05</b>	<b>2,70</b>	<b>1,35</b>	<b>1,40</b>	<b>0,98</b>
2000	<b>5,81</b>	<b>1,74</b>	<b>2,31</b>	<b>1,15</b>	<b>1,20</b>	<b>0,84</b>

q<sub>z</sub> [kN/m] as permanent load over L.

H <sub>max</sub> [mm]	300		500		700	
	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
500	<b>1,70</b>	<b>1,70</b>	<b>1,06</b>	<b>1,06</b>	<b>0,75</b>	<b>0,75</b>
1000	<b>1,36</b>	<b>1,36</b>	<b>0,85</b>	<b>0,85</b>	<b>0,60</b>	<b>0,60</b>
1500	<b>1,13</b>	<b>1,13</b>	<b>0,71</b>	<b>0,71</b>	<b>0,50</b>	<b>0,50</b>
2000	<b>0,96</b>	<b>0,96</b>	<b>0,61</b>	<b>0,61</b>	<b>0,43</b>	<b>0,43</b>

F<sub>z</sub> [kN] as a permanent load at distance L; F<sub>x</sub> [kN] as a variable load at distance L.

H <sub>max</sub> [mm]	300		500		700	
	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
500	<b>1,11</b>	<b>1,11</b>	<b>0,70</b>	<b>0,70</b>	<b>0,50</b>	<b>0,50</b>
1000	<b>0,88</b>	<b>0,88</b>	<b>0,56</b>	<b>0,56</b>	<b>0,40</b>	<b>0,40</b>
1500	<b>0,73</b>	<b>0,73</b>	<b>0,47</b>	<b>0,47</b>	<b>0,34</b>	<b>0,34</b>
2000	<b>0,63</b>	<b>0,63</b>	<b>0,40</b>	<b>0,40</b>	<b>0,29</b>	<b>0,29</b>

F<sub>z</sub> [kN] as permanent loads at distance L and L/2; F<sub>x</sub> [kN] as variable loads at distance L and L/2.

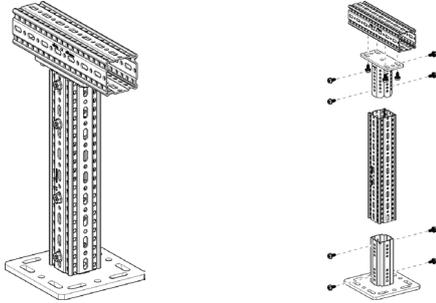
H <sub>max</sub> [mm]	300		500		700	
	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z</sub> [kN]	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
500	<b>0,82</b>	<b>0,82</b>	<b>0,52</b>	<b>0,52</b>	<b>0,37</b>	<b>0,37</b>
1000	<b>0,65</b>	<b>0,65</b>	<b>0,41</b>	<b>0,41</b>	<b>0,30</b>	<b>0,30</b>
1500	<b>0,54</b>	<b>0,54</b>	<b>0,35</b>	<b>0,35</b>	<b>0,25</b>	<b>0,25</b>
2000	<b>0,46</b>	<b>0,46</b>	<b>0,30</b>	<b>0,30</b>	<b>0,21</b>	<b>0,21</b>

F<sub>z</sub> [kN] as permanent loads at distance L, 2\*L/3 and L/3; F<sub>x</sub> [kN] as variable loads at distance L, 2\*L/3 and L/3.

All illustrated structures are able to be installed standing as well.  
 Friction coefficient μ<sub>0</sub> = 0,2 for friction in longitudinal direction. Max. deviation H/100; L/100.

### Working loads in accordance with Eurocode 3

#### T-Support F 80



#### Part List

- 1 x End Support WBD F 80
- 2 x Beam Section TP F 80
- 1 x End Support STA F 80
- 12 x Self-Forming-Screw FLS F

Distributed Load - symmetrical	$H_{max}$	$q_z, perm$	$F_z (q_z, perm \times 1m)$
	[mm]	[kN/m]	[kN]
	500	<b>13,19</b>	<b>13,19</b>
	1000	<b>13,15</b>	<b>13,15</b>
	1500	<b>13,12</b>	<b>13,12</b>
	2000	<b>13,08</b>	<b>13,08</b>

$q_z$  [kN/m] as permanent load over L;  $L_{max} = 1.100$  mm.

Point Load - central	$H_{max}$	$F_z, perm$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	500	<b>11,53</b>	<b>8,78</b>
	1000	<b>11,50</b>	<b>3,65</b>
	1500	<b>10,63</b>	<b>2,10</b>
	2000	<b>9,15</b>	<b>1,41</b>

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load; central load introduction for planned eccentricity  $\pm 50$  mm.

2 Point Loads - symmetrical	$H_{max}$	$F_z, perm$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	500	<b>6,46</b>	<b>4,32</b>
	1000	<b>6,46</b>	<b>1,88</b>
	1500	<b>6,46</b>	<b>1,07</b>
	2000	<b>6,46</b>	<b>0,71</b>

$F_z$  [kN] as permanent loads;  $F_x$  [kN] as variable loads;  $L_{max} = 1.100$  mm.

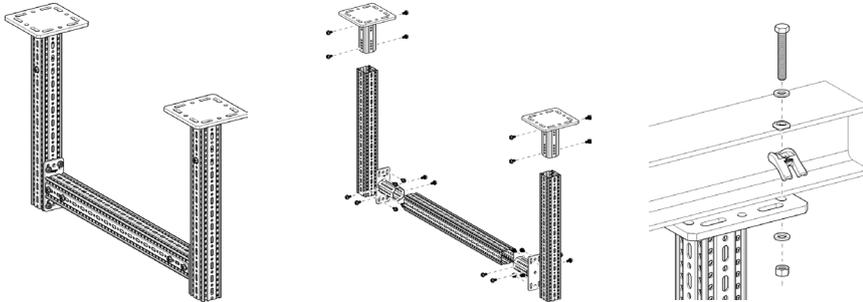
3 Point Loads - symmetrical	$H_{max}$	$F_z, perm$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	500	<b>4,39</b>	<b>3,16</b>
	1000	<b>4,38</b>	<b>1,25</b>
	1500	<b>4,37</b>	<b>0,71</b>
	2000	<b>4,36</b>	<b>0,47</b>

$F_z$  [kN] as permanent loads;  $F_x$  [kN] as variable loads;  $L_{max} = 1.100$  mm.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/150$ .

## Working loads in accordance with Eurocode 3

### Frame F 80



- Part List**  
 2 x End Support WBD F 80  
 3 x Beam Section TP F 80  
 2 x End Support STA F 80  
 24 x Self-Forming-Screw FLS

Distributed Load		500		1000		1500		2000		2500		3000	
		$q_{z,perm}$	$F_z (q_z * L)$										
	$H_{max}$	[kN/m]	[kN]										
	1000	<b>39,47</b>	<b>19,37</b>	<b>19,37</b>	<b>19,37</b>	<b>12,56</b>	<b>18,85</b>	<b>6,76</b>	<b>13,52</b>	<b>3,89</b>	<b>9,71</b>	<b>2,43</b>	<b>7,30</b>
	1500	<b>39,47</b>	<b>19,37</b>	<b>19,37</b>	<b>19,37</b>	<b>12,66</b>	<b>18,99</b>	<b>6,65</b>	<b>13,29</b>	<b>3,82</b>	<b>9,55</b>	<b>2,39</b>	<b>7,18</b>
	2000	<b>39,47</b>	<b>19,37</b>	<b>19,37</b>	<b>19,37</b>	<b>12,56</b>	<b>18,83</b>	<b>6,55</b>	<b>13,09</b>	<b>3,76</b>	<b>9,41</b>	<b>2,36</b>	<b>7,07</b>
	2500	<b>39,47</b>	<b>19,37</b>	<b>19,37</b>	<b>19,37</b>	<b>12,43</b>	<b>18,64</b>	<b>6,46</b>	<b>12,91</b>	<b>3,71</b>	<b>9,28</b>	<b>2,32</b>	<b>6,97</b>
	3000	<b>39,47</b>	<b>19,37</b>	<b>19,37</b>	<b>19,37</b>	<b>12,27</b>	<b>18,40</b>	<b>6,38</b>	<b>12,75</b>	<b>3,67</b>	<b>9,16</b>	<b>2,29</b>	<b>6,88</b>

$q_z$  [kN/m] as permanent load over L.

Point Load		500		1000		1500		2000		2500		3000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	1000	<b>19,67</b>	<b>9,02</b>	<b>16,21</b>	<b>8,76</b>	<b>11,21</b>	<b>8,18</b>	<b>8,63</b>	<b>6,56</b>	<b>6,08</b>	<b>5,38</b>	<b>4,52</b>	<b>4,25</b>
	1500	<b>19,67</b>	<b>5,49</b>	<b>16,13</b>	<b>5,42</b>	<b>11,15</b>	<b>5,26</b>	<b>8,51</b>	<b>5,00</b>	<b>5,99</b>	<b>4,63</b>	<b>4,45</b>	<b>4,18</b>
	2000	<b>19,67</b>	<b>3,74</b>	<b>16,04</b>	<b>3,72</b>	<b>11,09</b>	<b>3,66</b>	<b>8,40</b>	<b>3,56</b>	<b>5,92</b>	<b>3,41</b>	<b>4,39</b>	<b>3,22</b>
	2500	<b>19,67</b>	<b>2,74</b>	<b>15,96</b>	<b>2,73</b>	<b>11,04</b>	<b>2,70</b>	<b>8,31</b>	<b>2,65</b>	<b>5,85</b>	<b>2,59</b>	<b>4,34</b>	<b>2,49</b>
	3000	<b>19,67</b>	<b>2,09</b>	<b>15,89</b>	<b>2,09</b>	<b>10,98</b>	<b>2,08</b>	<b>8,22</b>	<b>2,05</b>	<b>5,78</b>	<b>2,02</b>	<b>4,29</b>	<b>1,97</b>

$F_z$  [kN] as a permanent load at distance L/2;  $F_x$  [kN] as a variable load at distance L/2.

2 Point Loads		500		1000		1500		2000		2500		3000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]										
	1000	<b>9,85</b>	<b>4,52</b>	<b>9,60</b>	<b>4,40</b>	<b>7,61</b>	<b>4,15</b>	<b>5,10</b>	<b>3,76</b>	<b>3,61</b>	<b>3,27</b>	<b>2,69</b>	<b>2,53</b>
	1500	<b>9,85</b>	<b>2,75</b>	<b>9,60</b>	<b>2,72</b>	<b>7,49</b>	<b>2,65</b>	<b>5,02</b>	<b>2,53</b>	<b>3,55</b>	<b>2,37</b>	<b>2,65</b>	<b>2,17</b>
	2000	<b>9,85</b>	<b>1,87</b>	<b>9,60</b>	<b>1,86</b>	<b>7,38</b>	<b>1,84</b>	<b>4,95</b>	<b>1,79</b>	<b>3,51</b>	<b>1,73</b>	<b>2,61</b>	<b>1,64</b>
	2500	<b>9,85</b>	<b>1,37</b>	<b>9,60</b>	<b>1,36</b>	<b>7,29</b>	<b>1,35</b>	<b>4,89</b>	<b>1,33</b>	<b>3,46</b>	<b>1,30</b>	<b>2,58</b>	<b>1,26</b>
	3000	<b>9,85</b>	<b>1,05</b>	<b>9,60</b>	<b>1,04</b>	<b>7,20</b>	<b>1,04</b>	<b>4,83</b>	<b>1,03</b>	<b>3,42</b>	<b>1,01</b>	<b>2,55</b>	<b>0,99</b>

$F_z$  [kN] as permanent loads at distance  $2 * L/3$  and  $L/3$ ;  $F_x$  [kN] as variable loads at distance  $2 * L/3$  and  $L/3$ .

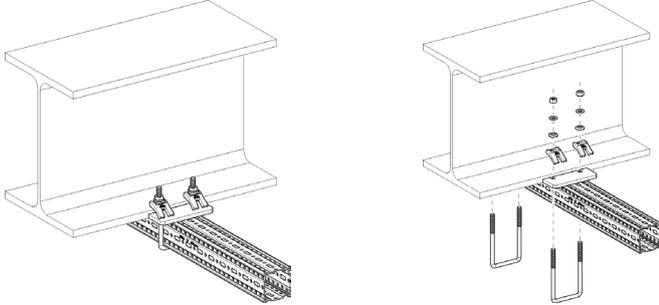
3 Point Loads		500		1000		1500		2000		2500		3000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]										
	1000	<b>6,57</b>	<b>3,01</b>	<b>6,42</b>	<b>2,94</b>	<b>5,37</b>	<b>2,78</b>	<b>3,63</b>	<b>2,54</b>	<b>2,58</b>	<b>2,22</b>	<b>1,93</b>	<b>1,81</b>
	1500	<b>6,57</b>	<b>1,83</b>	<b>6,42</b>	<b>1,81</b>	<b>5,29</b>	<b>1,77</b>	<b>3,57</b>	<b>1,70</b>	<b>2,54</b>	<b>1,60</b>	<b>1,90</b>	<b>1,47</b>
	2000	<b>6,57</b>	<b>1,25</b>	<b>6,42</b>	<b>1,24</b>	<b>5,21</b>	<b>1,23</b>	<b>3,52</b>	<b>1,20</b>	<b>2,50</b>	<b>1,16</b>	<b>1,87</b>	<b>1,10</b>
	2500	<b>6,57</b>	<b>0,91</b>	<b>6,42</b>	<b>0,91</b>	<b>5,14</b>	<b>0,90</b>	<b>3,48</b>	<b>0,89</b>	<b>2,47</b>	<b>0,87</b>	<b>1,85</b>	<b>0,85</b>
	3000	<b>6,57</b>	<b>0,70</b>	<b>6,42</b>	<b>0,70</b>	<b>5,08</b>	<b>0,69</b>	<b>3,44</b>	<b>0,69</b>	<b>2,44</b>	<b>0,68</b>	<b>1,82</b>	<b>0,66</b>

$F_z$  [kN] as permanent loads at distance  $3 * L/4$ ,  $L/2$  and  $L/4$ ;  $F_x$  [kN] as variable loads at distance  $3 * L/4$ ,  $L/4$  and  $L/4$ .

All illustrated structures are able to be installed standing as well.  
 Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/100$ ;  $L/200$ .

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 80 horizontal



**Part List**

- 1 x Beam Section TP F 80
- 2 x U-Holder SB F 80-40

Distributed Load		100		150		200		250		300	
		$q_{z, perm}$	$F_z (q_z * L)$								
$L_{max}$	[mm]	[kN/m]	[kN]								
	300	<b>14,39</b>	<b>4,32</b>	<b>20,42</b>	<b>6,13</b>	<b>24,82</b>	<b>7,45</b>	<b>28,17</b>	<b>8,45</b>	<b>30,72</b>	<b>9,22</b>
	500	<b>5,64</b>	<b>2,82</b>	<b>8,38</b>	<b>4,19</b>	<b>10,53</b>	<b>5,26</b>	<b>12,27</b>	<b>6,13</b>	<b>12,28</b>	<b>6,14</b>
	700	<b>3,02</b>	<b>2,12</b>	<b>4,62</b>	<b>3,23</b>	<b>5,93</b>	<b>4,15</b>	<b>6,19</b>	<b>4,34</b>	<b>6,19</b>	<b>4,34</b>
	900	<b>1,88</b>	<b>1,69</b>	<b>2,93</b>	<b>2,64</b>	<b>3,72</b>	<b>3,35</b>	<b>3,72</b>	<b>3,35</b>	<b>3,72</b>	<b>3,35</b>
	1100	<b>1,28</b>	<b>1,41</b>	<b>2,02</b>	<b>2,22</b>	<b>2,47</b>	<b>2,72</b>	<b>2,47</b>	<b>2,72</b>	<b>2,47</b>	<b>2,72</b>

$q_z$  [kN/m] as permanent load over L.

Point Load		100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>2,36</b>	<b>1,12</b>	<b>3,51</b>	<b>1,67</b>	<b>4,43</b>	<b>2,10</b>	<b>5,04</b>	<b>2,45</b>	<b>5,04</b>	<b>2,75</b>
	500	<b>1,55</b>	<b>0,74</b>	<b>2,41</b>	<b>1,14</b>	<b>3,02</b>	<b>1,49</b>	<b>3,02</b>	<b>1,79</b>	<b>3,02</b>	<b>2,05</b>
	700	<b>1,16</b>	<b>0,55</b>	<b>1,83</b>	<b>0,87</b>	<b>2,16</b>	<b>1,15</b>	<b>2,16</b>	<b>1,41</b>	<b>2,16</b>	<b>1,63</b>
	900	<b>0,92</b>	<b>0,44</b>	<b>1,48</b>	<b>0,70</b>	<b>1,68</b>	<b>0,94</b>	<b>1,68</b>	<b>1,16</b>	<b>1,68</b>	<b>1,36</b>
	1100	<b>0,77</b>	<b>0,36</b>	<b>1,24</b>	<b>0,59</b>	<b>1,37</b>	<b>0,79</b>	<b>1,37</b>	<b>0,99</b>	<b>1,37</b>	<b>1,16</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads		100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>1,46</b>	<b>0,69</b>	<b>2,12</b>	<b>1,01</b>	<b>2,62</b>	<b>1,24</b>	<b>3,01</b>	<b>1,43</b>	<b>3,32</b>	<b>1,57</b>
	500	<b>0,98</b>	<b>0,47</b>	<b>1,50</b>	<b>0,71</b>	<b>1,92</b>	<b>0,91</b>	<b>2,01</b>	<b>1,08</b>	<b>2,01</b>	<b>1,22</b>
	700	<b>0,74</b>	<b>0,35</b>	<b>1,16</b>	<b>0,55</b>	<b>1,44</b>	<b>0,72</b>	<b>1,44</b>	<b>0,86</b>	<b>1,44</b>	<b>0,99</b>
	900	<b>0,60</b>	<b>0,28</b>	<b>0,94</b>	<b>0,45</b>	<b>1,12</b>	<b>0,59</b>	<b>1,12</b>	<b>0,72</b>	<b>1,12</b>	<b>0,84</b>
	1100	<b>0,50</b>	<b>0,24</b>	<b>0,79</b>	<b>0,38</b>	<b>0,91</b>	<b>0,50</b>	<b>0,91</b>	<b>0,62</b>	<b>0,91</b>	<b>0,72</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

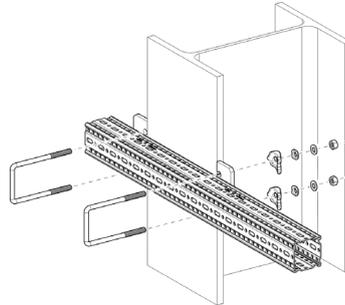
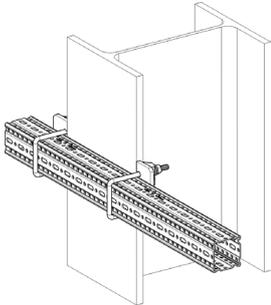
3 Point Loads		100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>1,06</b>	<b>0,50</b>	<b>1,52</b>	<b>0,72</b>	<b>1,86</b>	<b>0,88</b>	<b>2,12</b>	<b>1,00</b>	<b>2,33</b>	<b>1,10</b>
	500	<b>0,72</b>	<b>0,34</b>	<b>1,08</b>	<b>0,52</b>	<b>1,38</b>	<b>0,65</b>	<b>1,51</b>	<b>0,77</b>	<b>1,51</b>	<b>0,87</b>
	700	<b>0,55</b>	<b>0,26</b>	<b>0,84</b>	<b>0,40</b>	<b>1,08</b>	<b>0,52</b>	<b>1,08</b>	<b>0,62</b>	<b>1,08</b>	<b>0,71</b>
	900	<b>0,44</b>	<b>0,21</b>	<b>0,69</b>	<b>0,33</b>	<b>0,84</b>	<b>0,43</b>	<b>0,84</b>	<b>0,52</b>	<b>0,84</b>	<b>0,61</b>
	1100	<b>0,37</b>	<b>0,18</b>	<b>0,58</b>	<b>0,28</b>	<b>0,68</b>	<b>0,37</b>	<b>0,68</b>	<b>0,45</b>	<b>0,68</b>	<b>0,53</b>

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 80 vertical



**Part List**  
 1 x Beam Section TP F 80  
 2 x U-Holder SB F 80-40

Distributed Load		B		100		150		200		250		300	
		$L_{max}$	$q_{z, perm}$	$F_z (q_z * L)$	$q_{z, perm}$								
	[mm]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]
300		<b>3,21</b>	<b>0,96</b>	<b>4,46</b>	<b>1,34</b>	<b>5,34</b>	<b>1,60</b>	<b>5,99</b>	<b>1,80</b>	<b>6,49</b>	<b>1,95</b>		
500		<b>1,36</b>	<b>0,68</b>	<b>1,98</b>	<b>0,99</b>	<b>2,47</b>	<b>1,23</b>	<b>2,86</b>	<b>1,43</b>	<b>3,17</b>	<b>1,58</b>		
700		<b>0,75</b>	<b>0,52</b>	<b>1,13</b>	<b>0,79</b>	<b>1,44</b>	<b>1,00</b>	<b>1,69</b>	<b>1,18</b>	<b>1,91</b>	<b>1,34</b>		
900		<b>0,47</b>	<b>0,43</b>	<b>0,73</b>	<b>0,65</b>	<b>0,94</b>	<b>0,85</b>	<b>1,12</b>	<b>1,01</b>	<b>1,28</b>	<b>1,15</b>		
1100		<b>0,33</b>	<b>0,36</b>	<b>0,51</b>	<b>0,56</b>	<b>0,67</b>	<b>0,73</b>	<b>0,80</b>	<b>0,88</b>	<b>0,92</b>	<b>1,02</b>		

$q_z$  [kN/m] as permanent load over L.

Point Load		B		100		150		200		250		300	
		$L_{max}$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
300		<b>0,59</b>	<b>0,56</b>	<b>0,88</b>	<b>0,84</b>	<b>1,11</b>	<b>1,06</b>	<b>1,29</b>	<b>1,24</b>	<b>1,45</b>	<b>1,39</b>		
500		<b>0,39</b>	<b>0,37</b>	<b>0,60</b>	<b>0,58</b>	<b>0,79</b>	<b>0,75</b>	<b>0,94</b>	<b>0,90</b>	<b>1,08</b>	<b>1,03</b>		
700		<b>0,29</b>	<b>0,28</b>	<b>0,46</b>	<b>0,44</b>	<b>0,61</b>	<b>0,58</b>	<b>0,74</b>	<b>0,71</b>	<b>0,86</b>	<b>0,83</b>		
900		<b>0,23</b>	<b>0,22</b>	<b>0,37</b>	<b>0,35</b>	<b>0,50</b>	<b>0,48</b>	<b>0,61</b>	<b>0,59</b>	<b>0,72</b>	<b>0,69</b>		
1100		<b>0,19</b>	<b>0,18</b>	<b>0,31</b>	<b>0,30</b>	<b>0,42</b>	<b>0,40</b>	<b>0,52</b>	<b>0,50</b>	<b>0,61</b>	<b>0,59</b>		

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads		B		100		150		200		250		300	
		$L_{max}$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
300		<b>0,37</b>	<b>0,35</b>	<b>0,53</b>	<b>0,51</b>	<b>0,65</b>	<b>0,63</b>	<b>0,75</b>	<b>0,72</b>	<b>0,83</b>	<b>0,80</b>		
500		<b>0,25</b>	<b>0,24</b>	<b>0,37</b>	<b>0,36</b>	<b>0,48</b>	<b>0,46</b>	<b>0,57</b>	<b>0,54</b>	<b>0,64</b>	<b>0,62</b>		
700		<b>0,19</b>	<b>0,18</b>	<b>0,29</b>	<b>0,28</b>	<b>0,38</b>	<b>0,36</b>	<b>0,46</b>	<b>0,44</b>	<b>0,52</b>	<b>0,50</b>		
900		<b>0,15</b>	<b>0,14</b>	<b>0,24</b>	<b>0,23</b>	<b>0,31</b>	<b>0,30</b>	<b>0,38</b>	<b>0,36</b>	<b>0,44</b>	<b>0,42</b>		
1100		<b>0,13</b>	<b>0,12</b>	<b>0,20</b>	<b>0,19</b>	<b>0,27</b>	<b>0,26</b>	<b>0,33</b>	<b>0,31</b>	<b>0,38</b>	<b>0,37</b>		

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

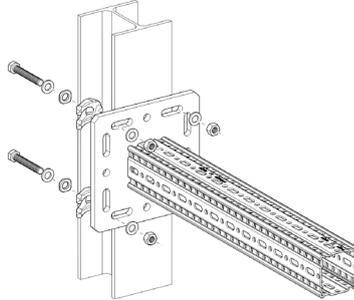
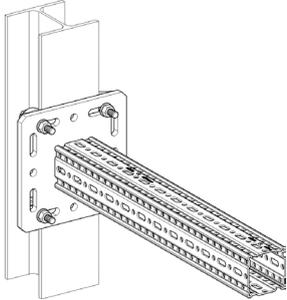
3 Point Loads		B		100		150		200		250		300	
		$L_{max}$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$
	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
300		<b>0,27</b>	<b>0,25</b>	<b>0,38</b>	<b>0,36</b>	<b>0,46</b>	<b>0,45</b>	<b>0,53</b>	<b>0,51</b>	<b>0,58</b>	<b>0,56</b>		
500		<b>0,18</b>	<b>0,17</b>	<b>0,27</b>	<b>0,26</b>	<b>0,35</b>	<b>0,33</b>	<b>0,41</b>	<b>0,39</b>	<b>0,46</b>	<b>0,44</b>		
700		<b>0,14</b>	<b>0,13</b>	<b>0,21</b>	<b>0,20</b>	<b>0,28</b>	<b>0,26</b>	<b>0,33</b>	<b>0,32</b>	<b>0,38</b>	<b>0,36</b>		
900		<b>0,11</b>	<b>0,11</b>	<b>0,17</b>	<b>0,17</b>	<b>0,23</b>	<b>0,22</b>	<b>0,28</b>	<b>0,27</b>	<b>0,32</b>	<b>0,31</b>		
1100		<b>0,09</b>	<b>0,09</b>	<b>0,15</b>	<b>0,14</b>	<b>0,20</b>	<b>0,19</b>	<b>0,24</b>	<b>0,23</b>	<b>0,28</b>	<b>0,27</b>		

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

## Working loads in accordance with Eurocode 3

### Beam Bracket F 80 - Variante a) clamped



**Part List**

- 1 x Beam Bracket TKO F 80
- 1 x Assembly Set MS 5P M12 S

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
	[mm]	[kN/m]	[kN]
	300	<b>54,99</b>	<b>16,50</b>
	500	<b>28,59</b>	<b>14,30</b>
	700	<b>14,59</b>	<b>10,21</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>11,91</b>	<b>7,40</b>
	500	<b>7,15</b>	<b>4,44</b>
	700	<b>5,04</b>	<b>3,17</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>7,94</b>	<b>4,93</b>
	500	<b>4,77</b>	<b>2,96</b>
	700	<b>3,40</b>	<b>2,11</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

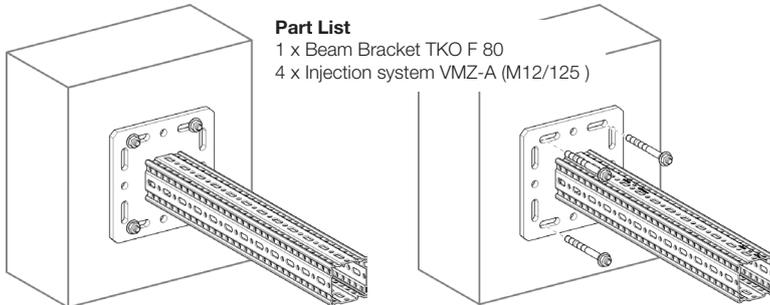
3 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>5,96</b>	<b>3,70</b>
	500	<b>3,57</b>	<b>2,22</b>
	700	<b>2,55</b>	<b>1,58</b>

$F_z$  [kN] as permanent loads at distance L,  $2*L/3$  and  $L/3$ ;  
 $F_x$  [kN] as variable loads at distance L,  $2*L/3$  and  $L/3$ .

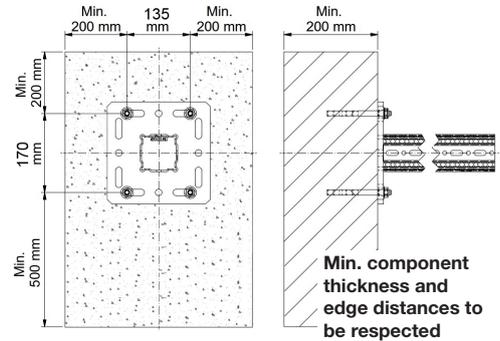
Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $L/100$ .

### Working loads in accordance with Eurocode 3

#### Beam Bracket F 80 - Variante b) anchored

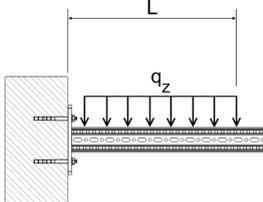


**Part List**  
 1 x Beam Bracket TKO F 80  
 4 x Injection system VMZ-A (M12/125)



Min. component thickness and edge distances to be respected

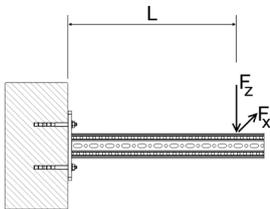
#### Distributed Load



$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
[mm]	[kN/m]	[kN]
300	<b>42,31</b>	<b>12,69</b>
500	<b>21,76</b>	<b>10,88</b>
700	<b>13,61</b>	<b>9,52</b>

$q_z$  [kN/m] as permanent load at distance L.

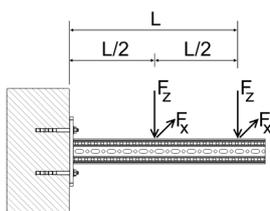
#### Point Load



$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>10,16</b>	<b>10,16</b>
500	<b>7,37</b>	<b>7,37</b>
700	<b>4,44</b>	<b>4,44</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

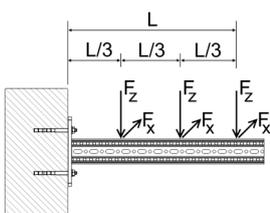
#### 2 Point Loads



$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>5,64</b>	<b>5,64</b>
500	<b>4,62</b>	<b>4,62</b>
700	<b>3,18</b>	<b>3,18</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

#### 3 Point Loads



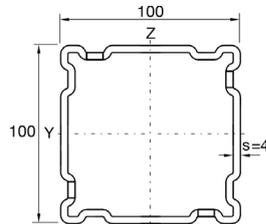
$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>3,91</b>	<b>3,91</b>
500	<b>3,24</b>	<b>3,24</b>
700	<b>2,44</b>	<b>2,44</b>

$F_z$  [kN] as permanent loads at distance L,  $2*L/3$  and  $L/3$ ;  
 $F_x$  [kN] as variable loads at distance L,  $2*L/3$  and  $L/3$ .

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $L/100$ .

### Working loads in accordance with Eurocode 3

#### Beam Section TP F 100



Single-span beam with uniaxial load  
dead weight of the profile is considered

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
	[mm]	[kN/m]	[kN]
	1000	<b>70,50</b>	<b>70,50</b>
	2000	<b>17,53</b>	<b>35,06</b>
	3000	<b>5,37</b>	<b>16,11</b>
	4000	<b>2,27</b>	<b>9,06</b>
	5000	<b>1,16</b>	<b>5,80</b>
	6000	<b>0,67</b>	<b>4,03</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>35,30</b>
	2000	<b>17,50</b>
	3000	<b>10,10</b>
	4000	<b>5,70</b>
	5000	<b>3,60</b>
	6000	<b>2,50</b>

$F_z$  [kN] as a permanent load at L/2.

2 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>26,40</b>
	2000	<b>13,10</b>
	3000	<b>5,90</b>
	4000	<b>3,30</b>
	5000	<b>2,10</b>
	6000	<b>1,50</b>

$F_z$  [kN] as permanent loads at L/3 and 2\*L/3.

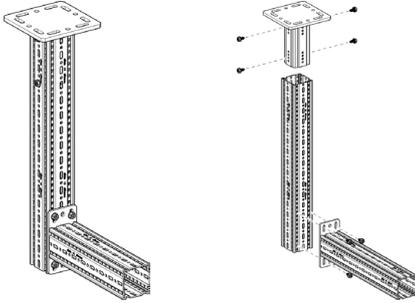
3 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>17,60</b>
	2000	<b>8,80</b>
	3000	<b>4,20</b>
	4000	<b>2,40</b>
	5000	<b>1,50</b>
	6000	<b>1,10</b>

$F_z$  [kN] as permanent loads at L/4, L/2 and 3\*L/4.

Max. bending L/200.

## Working loads in accordance with Eurocode 3

### L-Construction F 100



- Part List**  
 1 x End Support WBD F 100  
 1 x Beam Section TP F 100  
 1 x Cantilever Bracket AK F 100  
 8 x Self-Forming-Screw FLS F

Distributed Load	$H_{max}$ [mm]	300		500		700		900		1100	
		$q_{z, perm}$ [kN/m]	$F_z (q_z * L)$ [kN]								
	1000	<b>18,91</b>	<b>5,67</b>	<b>7,70</b>	<b>3,85</b>	<b>4,08</b>	<b>2,86</b>	<b>2,48</b>	<b>2,24</b>	<b>1,65</b>	<b>1,81</b>
	1500	<b>16,01</b>	<b>4,80</b>	<b>6,55</b>	<b>3,28</b>	<b>3,48</b>	<b>2,44</b>	<b>2,12</b>	<b>1,91</b>	<b>1,40</b>	<b>1,55</b>
	2000	<b>13,88</b>	<b>4,16</b>	<b>5,70</b>	<b>2,85</b>	<b>3,03</b>	<b>2,12</b>	<b>1,85</b>	<b>1,66</b>	<b>1,22</b>	<b>1,34</b>
	2500	<b>12,25</b>	<b>3,67</b>	<b>5,04</b>	<b>2,52</b>	<b>2,68</b>	<b>1,88</b>	<b>1,63</b>	<b>1,47</b>	<b>1,08</b>	<b>1,18</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$H_{max}$ [mm]	300		500		700		900		1100	
		$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
	1000	<b>3,20</b>	<b>3,20</b>	<b>2,05</b>	<b>2,05</b>	<b>1,48</b>	<b>1,48</b>	<b>1,14</b>	<b>1,14</b>	<b>0,91</b>	<b>0,91</b>
	1500	<b>2,72</b>	<b>2,72</b>	<b>1,75</b>	<b>1,75</b>	<b>1,27</b>	<b>1,27</b>	<b>0,98</b>	<b>0,98</b>	<b>0,78</b>	<b>0,78</b>
	2000	<b>2,37</b>	<b>2,37</b>	<b>1,53</b>	<b>1,53</b>	<b>1,11</b>	<b>1,11</b>	<b>0,85</b>	<b>0,85</b>	<b>0,68</b>	<b>0,68</b>
	2500	<b>2,09</b>	<b>2,09</b>	<b>1,36</b>	<b>1,36</b>	<b>0,98</b>	<b>0,98</b>	<b>0,76</b>	<b>0,76</b>	<b>0,60</b>	<b>0,60</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$H_{max}$ [mm]	300		500		700		900		1100	
		$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
	1000	<b>2,07</b>	<b>2,03</b>	<b>1,35</b>	<b>1,35</b>	<b>0,98</b>	<b>0,98</b>	<b>0,76</b>	<b>0,76</b>	<b>0,61</b>	<b>0,61</b>
	1500	<b>1,75</b>	<b>1,75</b>	<b>1,15</b>	<b>1,15</b>	<b>0,84</b>	<b>0,84</b>	<b>0,65</b>	<b>0,65</b>	<b>0,52</b>	<b>0,52</b>
	2000	<b>1,52</b>	<b>1,52</b>	<b>1,00</b>	<b>1,00</b>	<b>0,73</b>	<b>0,73</b>	<b>0,57</b>	<b>0,57</b>	<b>0,46</b>	<b>0,46</b>
	2500	<b>1,35</b>	<b>1,35</b>	<b>0,89</b>	<b>0,89</b>	<b>0,65</b>	<b>0,65</b>	<b>0,50</b>	<b>0,50</b>	<b>0,40</b>	<b>0,40</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

3 Point Loads	$H_{max}$ [mm]	300		500		700		900		1100	
		$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
	1000	<b>1,51</b>	<b>1,44</b>	<b>0,99</b>	<b>0,99</b>	<b>0,73</b>	<b>0,73</b>	<b>0,56</b>	<b>0,56</b>	<b>0,45</b>	<b>0,45</b>
	1500	<b>1,28</b>	<b>1,27</b>	<b>0,85</b>	<b>0,85</b>	<b>0,62</b>	<b>0,62</b>	<b>0,48</b>	<b>0,48</b>	<b>0,39</b>	<b>0,39</b>
	2000	<b>1,12</b>	<b>1,12</b>	<b>0,74</b>	<b>0,74</b>	<b>0,54</b>	<b>0,54</b>	<b>0,42</b>	<b>0,42</b>	<b>0,34</b>	<b>0,34</b>
	2500	<b>0,99</b>	<b>0,99</b>	<b>0,65</b>	<b>0,65</b>	<b>0,48</b>	<b>0,48</b>	<b>0,37</b>	<b>0,37</b>	<b>0,30</b>	<b>0,30</b>

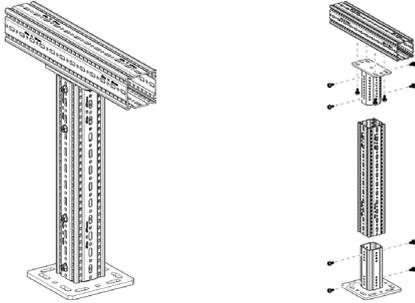
$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

All illustrated structures are able to be installed standing as well.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/100$ ;  $L/100$ .

### Working loads in accordance with Eurocode 3

#### T-Support F 100



#### Part List

- 1 x End Support WBD F 100
- 2 x Beam Section TP F 100
- 1 x End Support STA F 100
- 12 x Self-Forming-Screw FLS F

Distributed Load - symmetrical	$H_{max}$	$q_{z,perm}$	$F_z (q_{z,perm} * 1m)$
	[mm]	[kN/m]	[kN]
	1000	<b>13,98</b>	<b>13,98</b>
	1500	<b>13,92</b>	<b>13,92</b>
	2000	<b>13,86</b>	<b>13,86</b>
	2500	<b>13,80</b>	<b>13,80</b>

$q_z$  [kN/m] as permanent load over L;  
 $L_{max} = 1.100$  mm.

Point Load - central	$H_{max}$	$F_{z,perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	1000	<b>12,85</b>	<b>7,68</b>
	1500	<b>12,80</b>	<b>4,53</b>
	2000	<b>12,74</b>	<b>3,07</b>
	2500	<b>12,69</b>	<b>2,24</b>

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load;  
 Central load introduction for planned eccentricity  $\pm 50$  mm.

2 Point Loads - symmetrical	$H_{max}$	$F_{z,perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	1000	<b>6,98</b>	<b>4,36</b>
	1500	<b>6,95</b>	<b>2,53</b>
	2000	<b>6,92</b>	<b>1,70</b>
	2500	<b>6,89</b>	<b>1,24</b>

$F_z$  [kN] as permanent loads;  $F_x$  [kN] as variable loads;  
 $L_{max} = 1.100$  mm.

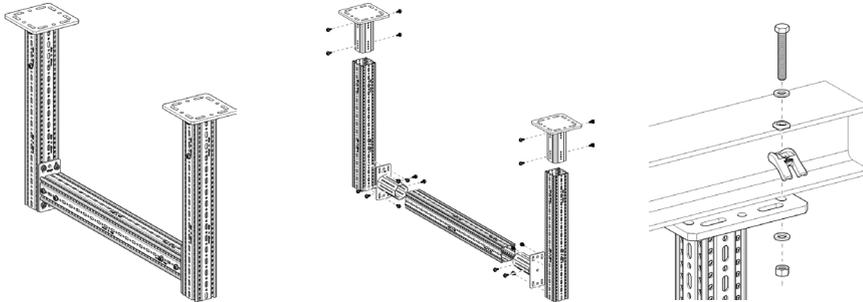
3 Point Loads - symmetrical	$H_{max}$	$F_{z,perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN/m]	[kN]
	1000	<b>4,65</b>	<b>2,91</b>
	1500	<b>4,63</b>	<b>1,69</b>
	2000	<b>4,61</b>	<b>1,13</b>
	2500	<b>4,59</b>	<b>0,82</b>

$F_z$  [kN] as permanent loads;  $F_x$  [kN] as variable loads;  
 $L_{max} = 1.100$  mm.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/150$ .

## Working loads in accordance with Eurocode 3

### Frame F 100



- Part List**  
 2 x End Support WBD F 100  
 3 x Beam Section TP F 100  
 2 x End Support STA F 100  
 24 x Self-Forming-Screw FLS F

Distributed Load		1500		2000		2500		3000		3500		4000	
		$q_{z, perm}$	$F_z (q_z * L)$										
$H_{max}$	[mm]	[kN/m]	[kN]										
1500	1500	16,48	24,72	12,29	24,57	9,75	24,38	6,23	18,70	4,18	14,63	2,94	11,78
2000	2000	16,42	24,63	12,23	24,46	9,70	24,24	6,16	18,49	4,13	14,47	2,91	11,64
2500	2500	16,38	24,57	12,18	24,37	9,65	24,12	6,10	18,29	4,09	14,31	2,88	11,51
3000	3000	16,33	24,50	12,14	24,28	9,55	23,88	6,04	18,11	4,05	14,17	2,85	11,40
3500	3500	16,31	24,46	12,13	24,25	9,46	23,65	5,98	17,94	4,01	14,04	2,82	11,29

$q_z$  [kN/m] as permanent load over L.

Point Load		1500		2000		2500		3000		3500		4000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
$H_{max}$	[mm]	[kN]	[kN]										
1500	1500	24,61	8,39	19,50	8,39	15,77	8,23	11,76	8,23	9,11	8,09	7,28	6,94
2000	2000	24,51	6,33	19,43	6,24	15,62	6,24	11,65	6,15	9,02	6,07	7,21	6,07
2500	2500	24,39	5,21	19,34	5,15	15,48	5,09	11,54	5,09	8,94	5,03	7,14	4,98
3000	3000	24,36	4,33	19,26	4,29	15,35	4,25	11,44	4,21	8,86	4,21	7,08	4,17
3500	3500	24,33	3,75	19,20	3,75	15,23	3,72	11,35	3,68	8,79	3,66	7,02	3,63

$F_z$  [kN] as a permanent load at distance L/2;  $F_x$  [kN] as a variable load at distance L/2.

2 Point Loads		1500		2000		2500		3000		3500		4000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
$H_{max}$	[mm]	[kN]	[kN]										
1500	1500	12,32	4,16	12,22	4,13	9,29	4,10	6,96	4,06	5,41	4,03	4,33	3,98
2000	2000	12,27	3,18	12,15	3,16	9,19	3,14	6,89	3,12	5,35	3,09	4,28	3,06
2500	2500	12,23	2,58	12,11	2,57	9,10	2,55	6,82	2,53	5,30	2,51	4,24	2,49
3000	3000	12,21	2,17	12,05	2,16	9,02	2,15	6,76	2,13	5,25	2,12	4,20	2,10
3500	3500	12,19	1,87	12,03	1,86	8,94	1,86	6,70	1,84	5,20	1,83	4,16	1,82

$F_z$  [kN] as permanent loads at distance  $2*L/3$  and  $L/3$ ;  $F_x$  [kN] as variable loads at distance  $2*L/3$  and  $L/3$ .

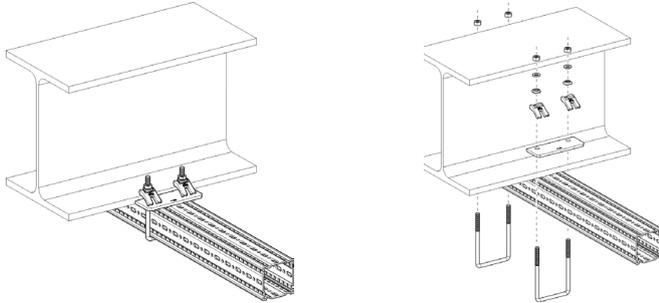
3 Point Loads		1500		2000		2500		3000		3500		4000	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
$H_{max}$	[mm]	[kN]	[kN]										
1500	1500	8,22	2,77	8,16	2,75	6,62	2,73	4,97	2,71	3,87	2,69	3,11	2,66
2000	2000	8,19	2,12	8,11	2,11	6,55	2,10	4,92	2,08	3,83	2,06	3,07	2,05
2500	2500	8,16	1,72	8,08	1,71	6,48	1,70	4,87	1,69	3,79	1,68	3,04	1,66
3000	3000	8,14	1,45	8,05	1,44	6,42	1,43	4,83	1,42	3,76	1,41	3,01	1,40
3500	3500	8,13	1,25	8,03	1,24	6,37	1,24	4,79	1,23	3,72	1,22	2,98	1,21

$F_z$  [kN] as permanent loads at distance  $3*L/4$ ,  $L/2$  and  $L/4$ ;  $F_x$  [kN] as variable loads at distance  $3*L/4$ ,  $L/2$  and  $L/4$ .

All illustrated structures are able to be installed standing as well.  
 Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/100$ ;  $L/200$ .

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 100 horizontal



**Part List**

- 1 x Beam Section TP F 100
- 2 x U-Holder SB F 100-40

Distributed Load	B	100		150		200		250		300	
		$q_{z, perm}$	$F_z (q_z * L)$								
	$L_{max}$	[mm]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN]
	300	<b>14,39</b>	<b>4,32</b>	<b>20,42</b>	<b>6,13</b>	<b>24,82</b>	<b>7,45</b>	<b>28,17</b>	<b>8,45</b>	<b>30,81</b>	<b>9,24</b>
	500	<b>5,64</b>	<b>2,82</b>	<b>8,38</b>	<b>4,19</b>	<b>10,53</b>	<b>5,26</b>	<b>12,27</b>	<b>6,13</b>	<b>13,70</b>	<b>6,85</b>
	700	<b>3,02</b>	<b>2,12</b>	<b>4,62</b>	<b>3,23</b>	<b>5,93</b>	<b>4,15</b>	<b>7,03</b>	<b>4,92</b>	<b>7,96</b>	<b>5,58</b>
	900	<b>1,88</b>	<b>1,69</b>	<b>2,93</b>	<b>2,64</b>	<b>3,82</b>	<b>3,44</b>	<b>4,59</b>	<b>4,13</b>	<b>5,26</b>	<b>4,73</b>
	1100	<b>1,28</b>	<b>1,41</b>	<b>2,02</b>	<b>2,22</b>	<b>2,67</b>	<b>2,94</b>	<b>3,24</b>	<b>3,56</b>	<b>3,74</b>	<b>4,12</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	B	100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
	$L_{max}$	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	300	<b>2,36</b>	<b>1,12</b>	<b>3,51</b>	<b>1,67</b>	<b>4,43</b>	<b>2,10</b>	<b>5,17</b>	<b>2,45</b>	<b>5,79</b>	<b>2,75</b>
	500	<b>1,55</b>	<b>0,74</b>	<b>2,41</b>	<b>1,14</b>	<b>3,14</b>	<b>1,49</b>	<b>3,77</b>	<b>1,79</b>	<b>4,32</b>	<b>2,05</b>
	700	<b>1,16</b>	<b>0,55</b>	<b>1,83</b>	<b>0,87</b>	<b>2,43</b>	<b>1,15</b>	<b>2,96</b>	<b>1,41</b>	<b>3,44</b>	<b>1,63</b>
	900	<b>0,92</b>	<b>0,44</b>	<b>1,48</b>	<b>0,70</b>	<b>1,98</b>	<b>0,94</b>	<b>2,44</b>	<b>1,16</b>	<b>2,86</b>	<b>1,36</b>
	1100	<b>0,77</b>	<b>0,36</b>	<b>1,24</b>	<b>0,59</b>	<b>1,67</b>	<b>0,79</b>	<b>2,08</b>	<b>0,99</b>	<b>2,45</b>	<b>1,16</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	B	100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
	$L_{max}$	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	300	<b>1,46</b>	<b>0,69</b>	<b>2,12</b>	<b>1,01</b>	<b>2,62</b>	<b>1,24</b>	<b>3,01</b>	<b>1,43</b>	<b>3,32</b>	<b>1,57</b>
	500	<b>0,98</b>	<b>0,47</b>	<b>1,50</b>	<b>0,71</b>	<b>1,92</b>	<b>0,91</b>	<b>2,27</b>	<b>1,08</b>	<b>2,57</b>	<b>1,22</b>
	700	<b>0,74</b>	<b>0,35</b>	<b>1,16</b>	<b>0,55</b>	<b>1,51</b>	<b>0,72</b>	<b>1,82</b>	<b>0,86</b>	<b>2,09</b>	<b>0,99</b>
	900	<b>0,60</b>	<b>0,28</b>	<b>0,94</b>	<b>0,45</b>	<b>1,25</b>	<b>0,59</b>	<b>1,52</b>	<b>0,72</b>	<b>1,76</b>	<b>0,84</b>
	1100	<b>0,50</b>	<b>0,24</b>	<b>0,79</b>	<b>0,38</b>	<b>1,06</b>	<b>0,50</b>	<b>1,30</b>	<b>0,62</b>	<b>1,53</b>	<b>0,72</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

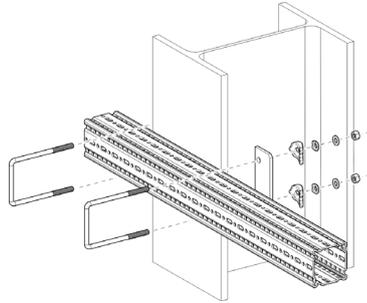
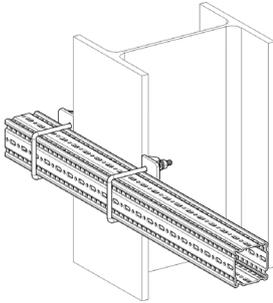
3 Point Loads	B	100		150		200		250		300	
		$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_{z, perm}$ for $F_x = \mu_0 * F_z$
	$L_{max}$	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	300	<b>1,06</b>	<b>0,50</b>	<b>1,52</b>	<b>0,72</b>	<b>1,86</b>	<b>0,88</b>	<b>2,12</b>	<b>1,00</b>	<b>2,33</b>	<b>1,10</b>
	500	<b>0,72</b>	<b>0,34</b>	<b>1,08</b>	<b>0,52</b>	<b>1,38</b>	<b>0,65</b>	<b>1,62</b>	<b>0,77</b>	<b>1,82</b>	<b>0,87</b>
	700	<b>0,55</b>	<b>0,26</b>	<b>0,84</b>	<b>0,40</b>	<b>1,10</b>	<b>0,52</b>	<b>1,31</b>	<b>0,62</b>	<b>1,50</b>	<b>0,71</b>
	900	<b>0,44</b>	<b>0,21</b>	<b>0,69</b>	<b>0,33</b>	<b>0,91</b>	<b>0,43</b>	<b>1,10</b>	<b>0,52</b>	<b>1,27</b>	<b>0,61</b>
	1100	<b>0,37</b>	<b>0,18</b>	<b>0,58</b>	<b>0,28</b>	<b>0,78</b>	<b>0,37</b>	<b>0,95</b>	<b>0,45</b>	<b>1,11</b>	<b>0,53</b>

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 100 vertical



**Part List**  
 1 x Beam Section TP F 100  
 2 x U-Holder SB F 100-40

Distributed Load		100		150		200		250		300	
		$q_{z,perm}$	$F_z (q_z * L)$								
$L_{max}$	[mm]	[kN/m]	[kN]								
	300	<b>3,21</b>	<b>0,96</b>	<b>4,46</b>	<b>1,34</b>	<b>5,34</b>	<b>1,60</b>	<b>5,99</b>	<b>1,80</b>	<b>6,49</b>	<b>1,95</b>
	500	<b>1,36</b>	<b>0,68</b>	<b>1,98</b>	<b>0,99</b>	<b>2,47</b>	<b>1,23</b>	<b>2,86</b>	<b>1,43</b>	<b>3,17</b>	<b>1,58</b>
	700	<b>0,75</b>	<b>0,52</b>	<b>1,13</b>	<b>0,79</b>	<b>1,44</b>	<b>1,00</b>	<b>1,69</b>	<b>1,18</b>	<b>1,91</b>	<b>1,34</b>
	900	<b>0,47</b>	<b>0,43</b>	<b>0,73</b>	<b>0,65</b>	<b>0,94</b>	<b>0,85</b>	<b>1,12</b>	<b>1,01</b>	<b>1,28</b>	<b>1,15</b>
	1100	<b>0,33</b>	<b>0,36</b>	<b>0,51</b>	<b>0,56</b>	<b>0,67</b>	<b>0,73</b>	<b>0,80</b>	<b>0,88</b>	<b>0,92</b>	<b>1,02</b>

$q_z$  [kN/m] as permanent load over L.

Point Load		100		150		200		250		300	
		$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>0,59</b>	<b>0,56</b>	<b>0,88</b>	<b>0,84</b>	<b>1,11</b>	<b>1,06</b>	<b>1,29</b>	<b>1,24</b>	<b>1,45</b>	<b>1,39</b>
	500	<b>0,39</b>	<b>0,37</b>	<b>0,60</b>	<b>0,58</b>	<b>0,79</b>	<b>0,75</b>	<b>0,94</b>	<b>0,90</b>	<b>1,08</b>	<b>1,03</b>
	700	<b>0,29</b>	<b>0,28</b>	<b>0,46</b>	<b>0,44</b>	<b>0,61</b>	<b>0,58</b>	<b>0,74</b>	<b>0,71</b>	<b>0,86</b>	<b>0,83</b>
	900	<b>0,23</b>	<b>0,22</b>	<b>0,37</b>	<b>0,35</b>	<b>0,50</b>	<b>0,48</b>	<b>0,61</b>	<b>0,59</b>	<b>0,72</b>	<b>0,69</b>
	1100	<b>0,19</b>	<b>0,18</b>	<b>0,31</b>	<b>0,30</b>	<b>0,42</b>	<b>0,40</b>	<b>0,52</b>	<b>0,50</b>	<b>0,61</b>	<b>0,59</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads		100		150		200		250		300	
		$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>0,37</b>	<b>0,35</b>	<b>0,53</b>	<b>0,51</b>	<b>0,65</b>	<b>0,63</b>	<b>0,75</b>	<b>0,72</b>	<b>0,83</b>	<b>0,80</b>
	500	<b>0,25</b>	<b>0,24</b>	<b>0,37</b>	<b>0,36</b>	<b>0,48</b>	<b>0,46</b>	<b>0,57</b>	<b>0,54</b>	<b>0,64</b>	<b>0,62</b>
	700	<b>0,19</b>	<b>0,18</b>	<b>0,29</b>	<b>0,28</b>	<b>0,38</b>	<b>0,36</b>	<b>0,46</b>	<b>0,44</b>	<b>0,52</b>	<b>0,50</b>
	900	<b>0,15</b>	<b>0,14</b>	<b>0,24</b>	<b>0,23</b>	<b>0,31</b>	<b>0,30</b>	<b>0,38</b>	<b>0,36</b>	<b>0,44</b>	<b>0,42</b>
	1100	<b>0,13</b>	<b>0,12</b>	<b>0,20</b>	<b>0,19</b>	<b>0,27</b>	<b>0,26</b>	<b>0,33</b>	<b>0,31</b>	<b>0,38</b>	<b>0,37</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

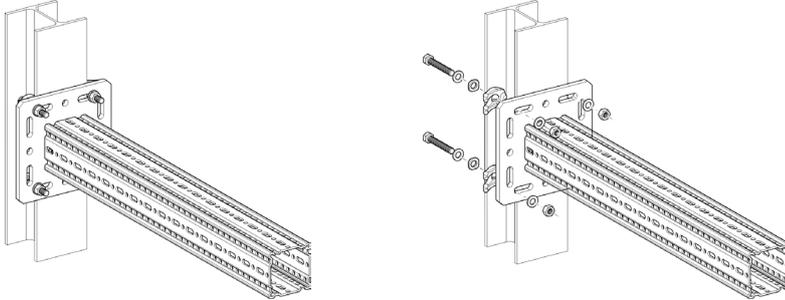
3 Point Loads		100		150		200		250		300	
		$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$	$F_{z,perm}$ for $F_x = 0$	$F_{z,perm}$ for $F_x = \mu_0 * F_z$
$L_{max}$	[mm]	[kN]	[kN]								
	300	<b>0,27</b>	<b>0,25</b>	<b>0,38</b>	<b>0,36</b>	<b>0,46</b>	<b>0,45</b>	<b>0,53</b>	<b>0,51</b>	<b>0,58</b>	<b>0,56</b>
	500	<b>0,18</b>	<b>0,17</b>	<b>0,27</b>	<b>0,26</b>	<b>0,35</b>	<b>0,33</b>	<b>0,41</b>	<b>0,39</b>	<b>0,46</b>	<b>0,44</b>
	700	<b>0,14</b>	<b>0,13</b>	<b>0,21</b>	<b>0,20</b>	<b>0,28</b>	<b>0,26</b>	<b>0,33</b>	<b>0,32</b>	<b>0,38</b>	<b>0,36</b>
	900	<b>0,11</b>	<b>0,11</b>	<b>0,17</b>	<b>0,17</b>	<b>0,23</b>	<b>0,22</b>	<b>0,28</b>	<b>0,27</b>	<b>0,32</b>	<b>0,31</b>
	1100	<b>0,09</b>	<b>0,09</b>	<b>0,15</b>	<b>0,14</b>	<b>0,20</b>	<b>0,19</b>	<b>0,24</b>	<b>0,23</b>	<b>0,28</b>	<b>0,27</b>

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

### Working loads in accordance with Eurocode 3

#### Beam Bracket F 100 - Variante a) clamped



#### Part List

- 1 x Beam Bracket TKO F 100
- 1 x Assembly Set MS 5P M12 S

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
	[mm]	[kN/m]	[kN]
	300	<b>54,99</b>	<b>16,50</b>
	500	<b>28,59</b>	<b>14,30</b>
	700	<b>14,59</b>	<b>10,21</b>
	900	<b>8,83</b>	<b>7,94</b>
	1100	<b>5,91</b>	<b>6,50</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>11,91</b>	<b>7,40</b>
	500	<b>7,15</b>	<b>4,44</b>
	700	<b>5,11</b>	<b>3,17</b>
	900	<b>3,97</b>	<b>2,47</b>
	1100	<b>3,25</b>	<b>2,02</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>7,94</b>	<b>4,93</b>
	500	<b>4,77</b>	<b>2,96</b>
	700	<b>3,40</b>	<b>2,11</b>
	900	<b>2,65</b>	<b>1,64</b>
	1100	<b>2,17</b>	<b>1,34</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

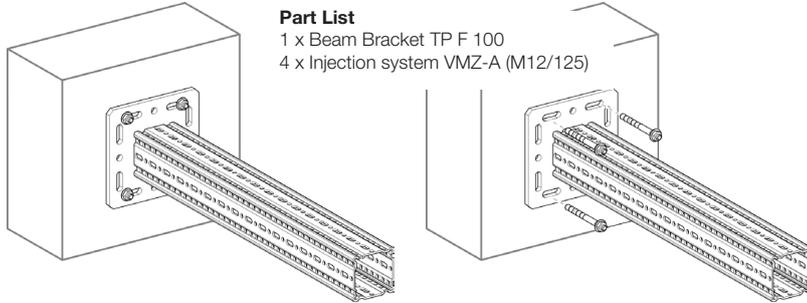
3 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN/m]	[kN]
	300	<b>5,96</b>	<b>3,70</b>
	500	<b>3,57</b>	<b>2,22</b>
	700	<b>2,55</b>	<b>1,58</b>
	900	<b>1,99</b>	<b>1,23</b>
	1100	<b>1,62</b>	<b>1,01</b>

$F_z$  [kN] as permanent loads at distance L,  $2*L/3$  and  $L/3$ ;  $F_x$  [kN] as variable loads at distance L,  $2*L/3$  and  $L/3$ .

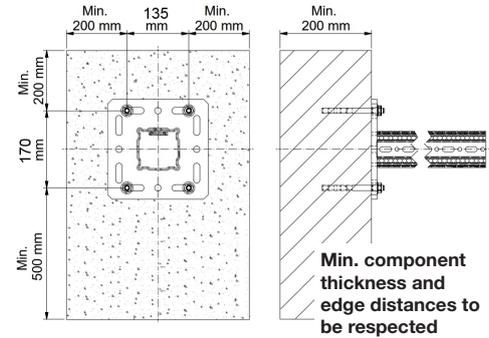
Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $L/100$ .

## Working loads in accordance with Eurocode 3

### Beam Bracket F 100 - Variante b) anchored



**Part List**  
 1 x Beam Bracket TP F 100  
 4 x Injection system VMZ-A (M12/125)



Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * L)$
	[mm]	[kN/m]	[kN]
	300	<b>42,31</b>	<b>12,69</b>
	500	<b>21,76</b>	<b>10,88</b>
	700	<b>13,61</b>	<b>9,52</b>
	900	<b>9,41</b>	<b>8,47</b>
	1100	<b>6,93</b>	<b>7,62</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>10,16</b>	<b>10,16</b>
	500	<b>8,02</b>	<b>8,02</b>
	700	<b>6,63</b>	<b>6,63</b>
	900	<b>5,33</b>	<b>5,33</b>
	1100	<b>4,35</b>	<b>4,35</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>5,64</b>	<b>5,64</b>
	500	<b>4,62</b>	<b>4,62</b>
	700	<b>3,91</b>	<b>3,91</b>
	900	<b>3,39</b>	<b>3,39</b>
	1100	<b>2,90</b>	<b>2,90</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

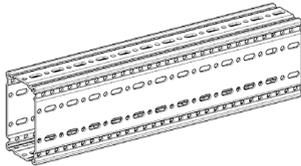
3 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN/m]	[kN]
	300	<b>3,91</b>	<b>3,91</b>
	500	<b>3,24</b>	<b>3,24</b>
	700	<b>2,77</b>	<b>2,77</b>
	900	<b>2,42</b>	<b>2,42</b>
	1100	<b>2,15</b>	<b>2,15</b>

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

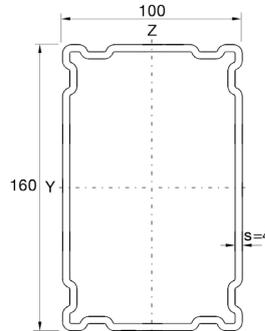
Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation L/100.

### Working loads in accordance with Eurocode 3

#### Beam Section TP F 100/160



Single-span beam with uniaxial load  
dead weight of the profile is considered



Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_z * L)$
	[mm]	[kN/m]	[kN]
	1000	<b>112,43</b>	<b>112,43</b>
	2000	<b>35,94</b>	<b>71,89</b>
	3000	<b>15,88</b>	<b>47,65</b>
	4000	<b>7,05</b>	<b>28,19</b>
	5000	<b>3,61</b>	<b>18,04</b>
	6000	<b>2,09</b>	<b>12,53</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$
	[mm]	[N]
	1000	<b>72,13</b>
	2000	<b>35,94</b>
	3000	<b>23,82</b>
	4000	<b>17,62</b>
	5000	<b>11,28</b>
	6000	<b>7,83</b>

$F_z$  [kN] as a permanent load at L/2.

2 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[N]
	1000	<b>54,10</b>
	2000	<b>26,96</b>
	3000	<b>17,87</b>
	4000	<b>10,34</b>
	5000	<b>6,62</b>
	6000	<b>4,60</b>

$F_z$  [kN] as permanent loads at L/3 and 2\*L/3.

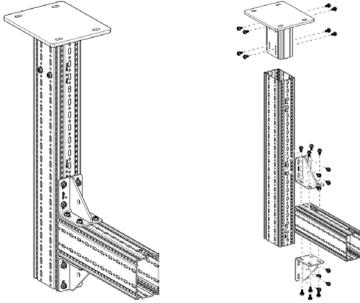
3 Point Loads	$L_{max}$	$F_{z, perm}$
	[mm]	[N]
	1000	<b>36,07</b>
	2000	<b>17,97</b>
	3000	<b>11,91</b>
	4000	<b>7,42</b>
	5000	<b>4,75</b>
	6000	<b>3,30</b>

$F_z$  [kN] as permanent loads at L/4, L/2 and 3\*L/4.

Max. bending L/200.

## Working loads in accordance with Eurocode 3

### L-Construction F 100/160



#### Part List

- 1 x End Support WBD F 100/160
- 2 x Beam Section TP F 100/160
- 2 x Corner Bracket WD F 100 140/140
- 24 x Self-Forming-Screw FLS F

Distributed Load	$L_{max}$	300		500		700		900		1100	
		$q_z$ [kN/m]	$F_z (q_z * L)$ [kN]	$q_z$ [kN/m]	$F_z (q_z * L)$ [kN]	$q_z$ [kN/m]	$F_z (q_z * L)$ [kN]	$q_z$ [kN/m]	$F_z (q_z * L)$ [kN]	$q_z$ [kN/m]	$F_z (q_z * L)$ [kN]
	$H_{max}$ [mm]										
	2000	<b>23,30</b>	<b>6,99</b>	<b>9,91</b>	<b>4,96</b>	<b>5,40</b>	<b>3,78</b>	<b>3,36</b>	<b>3,02</b>	<b>2,27</b>	<b>2,49</b>
	2500	<b>21,42</b>	<b>6,43</b>	<b>9,15</b>	<b>4,58</b>	<b>4,99</b>	<b>3,49</b>	<b>3,11</b>	<b>2,79</b>	<b>2,10</b>	<b>2,31</b>
	3000	<b>19,82</b>	<b>5,94</b>	<b>8,50</b>	<b>4,25</b>	<b>4,64</b>	<b>3,25</b>	<b>2,89</b>	<b>2,60</b>	<b>1,95</b>	<b>2,14</b>
	3500	<b>18,43</b>	<b>5,53</b>	<b>7,93</b>	<b>3,96</b>	<b>4,33</b>	<b>3,03</b>	<b>2,70</b>	<b>2,43</b>	<b>1,82</b>	<b>2,00</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	300		500		700		900		1100	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$ [mm]										
	2000	<b>4,04</b>	<b>3,10</b>	<b>2,71</b>	<b>2,71</b>	<b>2,01</b>	<b>2,01</b>	<b>1,58</b>	<b>1,58</b>	<b>1,29</b>	<b>1,29</b>
	2500	<b>3,72</b>	<b>2,63</b>	<b>2,51</b>	<b>2,38</b>	<b>1,87</b>	<b>1,87</b>	<b>1,47</b>	<b>1,47</b>	<b>1,20</b>	<b>1,20</b>
	3000	<b>3,46</b>	<b>2,28</b>	<b>2,34</b>	<b>2,09</b>	<b>1,74</b>	<b>1,74</b>	<b>1,37</b>	<b>1,37</b>	<b>1,12</b>	<b>1,12</b>
	3500	<b>3,23</b>	<b>2,02</b>	<b>2,19</b>	<b>1,87</b>	<b>1,63</b>	<b>1,63</b>	<b>1,28</b>	<b>1,28</b>	<b>1,04</b>	<b>1,04</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

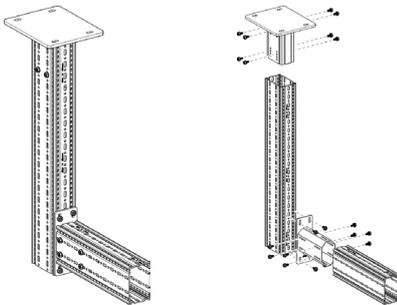
2 Point Loads	$L_{max}$	300		500		700		900		1100	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$ [mm]										
	2000	<b>2,56</b>	<b>1,62</b>	<b>1,76</b>	<b>1,48</b>	<b>1,32</b>	<b>1,32</b>	<b>1,04</b>	<b>1,04</b>	<b>0,85</b>	<b>0,85</b>
	2500	<b>2,36</b>	<b>1,37</b>	<b>1,62</b>	<b>1,26</b>	<b>1,22</b>	<b>1,170</b>	<b>0,96</b>	<b>0,96</b>	<b>0,79</b>	<b>0,79</b>
	3000	<b>2,19</b>	<b>1,18</b>	<b>1,51</b>	<b>1,10</b>	<b>1,13</b>	<b>1,03</b>	<b>0,90</b>	<b>0,90</b>	<b>0,73</b>	<b>0,73</b>
	3500	<b>2,04</b>	<b>1,04</b>	<b>1,41</b>	<b>0,98</b>	<b>1,06</b>	<b>0,92</b>	<b>0,84</b>	<b>0,84</b>	<b>0,69</b>	<b>0,69</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

3 Point Loads		$L_{max}$	300		500		700		900		1100	
			$F_{z, perm}$ for									
$H_{max}$	[mm]	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	
		2000		<b>1,86</b>	<b>1,10</b>	<b>1,28</b>	<b>1,01</b>	<b>0,96</b>	<b>0,93</b>	<b>0,76</b>	<b>0,76</b>	<b>0,63</b>
2500		<b>1,71</b>	<b>0,92</b>	<b>1,18</b>	<b>0,86</b>	<b>0,89</b>	<b>0,80</b>	<b>0,71</b>	<b>0,71</b>	<b>0,58</b>	<b>0,58</b>	
3000		<b>1,59</b>	<b>0,80</b>	<b>1,10</b>	<b>0,75</b>	<b>0,83</b>	<b>0,70</b>	<b>0,66</b>	<b>0,66</b>	<b>0,54</b>	<b>0,54</b>	
3500		<b>1,48</b>	<b>0,70</b>	<b>1,03</b>	<b>0,66</b>	<b>0,78</b>	<b>0,63</b>	<b>0,62</b>	<b>0,59</b>	<b>0,51</b>	<b>0,51</b>	

$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

For assembly with STA F 100 - 100/160 the loads have to be reduced by 10 % reduction ratio  $F_z$ .



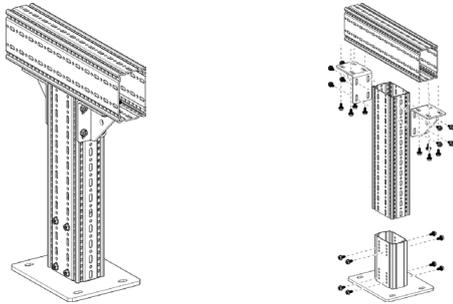
### Part List

- 1 x End Support WBD F 100/160
- 2 x Beam Section TP F 100/160
- 1 x End Support STA F 100 - 100/160
- 20 x Self-Forming-Screw FLS F

All illustrated structures are able to be installed standing as well.  
Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/100$ ;  $L/100$ .

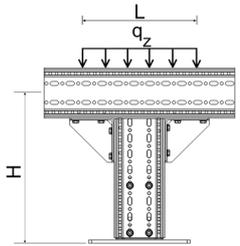
### Working loads in accordance with Eurocode 3

#### T-Support F 100/160

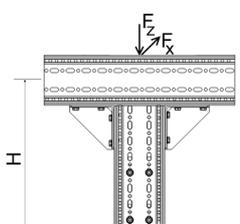


#### Part List

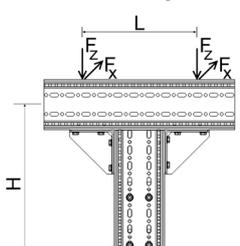
- 1 x End Support WBD F 100/160
- 2 x Beam Section TP F 100/160
- 2 x Corner Bracket WD F 100
- 24 x Self-Forming-Screw FLS F

Distributed Load - symmetrical		$H_{max}$	$q_{z, perm}$	$F_z (q_{z, perm} * 1m)$
		[mm]	[kN/m]	[kN]
		2000	<b>15,89</b>	<b>15,89</b>
		2500	<b>15,81</b>	<b>15,81</b>
		3000	<b>15,73</b>	<b>15,73</b>
		3500	<b>15,65</b>	<b>15,65</b>
$q_z$ [kN/m] as permanent load over L; $L_{max} = 1.100$ mm.				

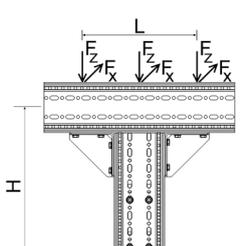
  

Point Load - central		$H_{max}$	$F_{z, perm}$ for	
		[mm]	$F_x = 0$	$F_x = \mu_0 * F_z$
			[kN]	[kN]
		2000	<b>15,27</b>	<b>3,35</b>
		2500	<b>15,19</b>	<b>2,52</b>
		3000	<b>15,11</b>	<b>1,98</b>
		3500	<b>15,04</b>	<b>1,61</b>
$F_z$ [kN] as a permanent load; $F_x$ [kN] as a variable load; Central load introduction for planned eccentricity $\pm 50$ mm.				

2 Point Loads - symmetrical		$H_{max}$	$F_{z, perm}$ for	
		[mm]	$F_x = 0$	$F_x = \mu_0 * F_z$
			[kN]	[kN]
		2000	<b>7,93</b>	<b>1,75</b>
		2500	<b>7,89</b>	<b>1,30</b>
		3000	<b>7,85</b>	<b>1,02</b>
		3500	<b>7,81</b>	<b>0,82</b>
$F_z$ [kN] as permanent loads; $F_x$ [kN] as variable loads; $L_{max} = 1.100$ mm.				

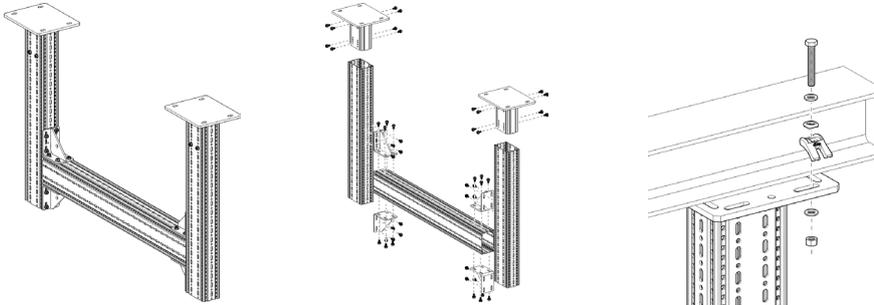
  

3 Point Loads - symmetrical		$H_{max}$	$F_{z, perm}$ for	
		[mm]	$F_x = 0$	$F_x = \mu_0 * F_z$
			[kN/m]	[kN]
		2000	<b>5,29</b>	<b>1,17</b>
		2500	<b>5,26</b>	<b>0,87</b>
		3000	<b>5,23</b>	<b>0,68</b>
		3500	<b>5,21</b>	<b>0,55</b>
$F_z$ [kN] as permanent loads; $F_x$ [kN] as variable loads; $L_{max} = 1.100$ mm.				

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction. Max. deviation  $H/150$ .

Working loads in accordance with Eurocode 3

Frame F 100/160



Part List

- 2 x End Support WBD F 100/160
- 3 x Beam Section TP F 100/160
- 4 x Corner Bracket WD F 100
- 48 x Self-Forming-Screw FLS F

**Distributed Load**

$H_{max}$	$L_{max}$	1500		2000		2500		3000		3500		4000	
		$q_{z, perm}$ [kN/m]	$F_z (q_z * L)$ [kN]										
2000	2000	26,71	32,58	18,80	32,34	14,45	32,07	11,69	31,79	9,78	31,50	8,26	30,72
2500	2500	26,49	32,31	18,63	32,04	14,30	31,74	11,55	31,42	9,65	31,09	8,26	30,74
3000	3000	26,29	32,07	18,48	31,78	14,17	31,45	11,43	31,10	9,55	30,74	8,16	30,36
3500	3500	26,11	31,85	18,34	31,54	14,05	31,19	11,33	30,82	9,45	30,43	8,07	30,03
4000	4000	25,94	31,64	18,21	31,32	13,95	30,96	11,24	30,58	9,37	30,18	7,93	29,51

$q_z$  [kN/m] as permanent load over L.

**Point Load**

$H_{max}$	$L_{max}$	1500		2000		2500		3000		3500		4000	
		$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$
2000	2000	32,52	7,96	32,21	7,93	31,76	7,88	27,97	7,83	24,47	7,78	21,81	7,57
2500	2500	32,23	6,47	31,89	6,44	31,51	6,40	27,81	6,36	24,33	6,32	21,67	6,22
3000	3000	31,97	5,44	31,61	5,42	31,17	5,39	27,65	5,37	24,18	5,30	21,54	5,17
3500	3500	31,75	4,60	31,36	4,58	30,89	4,54	27,49	4,49	24,04	4,43	21,42	4,35
4000	4000	31,52	3,87	31,11	3,85	30,64	3,83	27,33	3,80	23,90	3,76	21,29	3,69

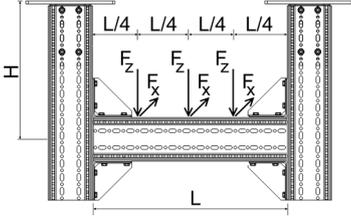
$F_z$  [kN] as a permanent load at distance L/2;  $F_x$  [kN] as a variable load at distance L/2.

**2 Point Loads**

$H_{max}$	$L_{max}$	1500		2000		2500		3000		3500		4000	
		$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$	$F_{z, perm}$ for $F_x = 0$	$F_x = \mu_0 * F_z$
2000	2000	16,27	3,98	16,13	3,97	15,98	3,95	15,81	3,93	15,38	3,90	13,71	3,88
2500	2500	16,14	3,23	15,98	3,22	15,80	3,21	15,61	3,19	15,41	3,17	13,49	3,15
3000	3000	16,01	2,72	15,84	2,71	15,65	2,70	15,44	2,69	15,22	2,67	13,29	2,61
3500	3500	15,90	2,30	15,72	2,29	15,51	2,28	15,29	2,26	15,06	2,23	13,10	2,19
4000	4000	15,79	1,93	15,60	1,93	15,39	1,92	15,16	1,91	14,91	1,89	12,92	1,87

$F_z$  [kN] as permanent loads at distance  $2L/3$  and  $L/3$ ;  $F_x$  [kN] as variable loads at distance  $2L/3$  and  $L/3$ .

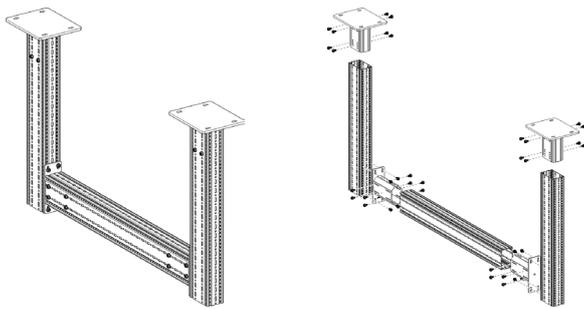
**3 Point Loads**



L <sub>max</sub>	1500		2000		2500		3000		3500		4000	
	F <sub>z,perm</sub> for		F <sub>z,perm</sub> for		F <sub>z,perm</sub> for		F <sub>z,perm</sub> for		F <sub>z,perm</sub> for		F <sub>z,perm</sub> for	
H <sub>max</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
[mm]	[kN]	[kN]										
2000	<b>10,85</b>	<b>2,66</b>	<b>10,76</b>	<b>2,64</b>	<b>10,66</b>	<b>2,63</b>	<b>10,53</b>	<b>2,62</b>	<b>10,44</b>	<b>2,61</b>	<b>9,52</b>	<b>2,59</b>
2500	<b>10,76</b>	<b>2,16</b>	<b>10,66</b>	<b>2,15</b>	<b>10,55</b>	<b>2,14</b>	<b>10,43</b>	<b>2,13</b>	<b>10,30</b>	<b>2,12</b>	<b>9,64</b>	<b>2,10</b>
3000	<b>10,68</b>	<b>1,82</b>	<b>10,57</b>	<b>1,81</b>	<b>10,45</b>	<b>1,80</b>	<b>10,32</b>	<b>1,79</b>	<b>10,18</b>	<b>1,78</b>	<b>9,49</b>	<b>1,75</b>
3500	<b>10,61</b>	<b>1,53</b>	<b>10,49</b>	<b>1,53</b>	<b>10,36</b>	<b>1,52</b>	<b>10,22</b>	<b>1,51</b>	<b>10,07</b>	<b>1,49</b>	<b>9,35</b>	<b>1,47</b>
4000	<b>10,54</b>	<b>1,29</b>	<b>10,41</b>	<b>1,29</b>	<b>10,28</b>	<b>1,28</b>	<b>10,13</b>	<b>1,27</b>	<b>9,97</b>	<b>1,26</b>	<b>9,22</b>	<b>1,25</b>

F<sub>z</sub> [kN] as permanent loads at distance 3\*L/4, L/2 and L/4; F<sub>x</sub> [kN] as variable loads at distance 3\*L/4, L/2 and L/4.

For assembly with STA F 100 - 100/160 F<sub>z</sub> has to be reduced by the reduction ratio F<sub>a</sub>.



**Part List**

- 2 x End Support WBD F 100/160
- 3 x Beam Section TP F 100/160
- 2 x End Support STA F 100 - 100/160
- 24 x Self-Forming-Screw FLS F

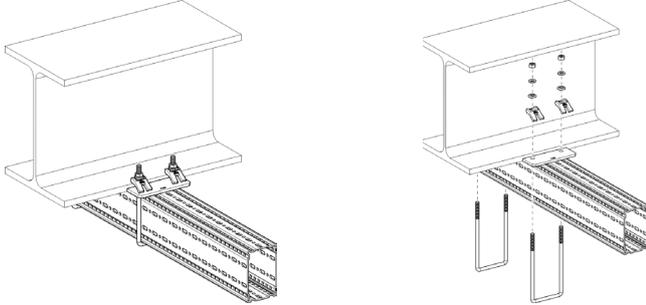
L (mm)	Reduction ratio F <sub>a</sub> [%]	
	F <sub>x</sub> = 0	F <sub>x</sub> = 0,2 * F <sub>z</sub>
2000	<b>-30%</b>	<b>0%</b>
2500	<b>-38%</b>	<b>0%</b>
3000	<b>-45%</b>	<b>0%</b>
3500	<b>-53%</b>	<b>0%</b>
4000	<b>-60%</b>	<b>0%</b>

All illustrated structures are able to be installed standing as well.

Friction coefficient μ<sub>0</sub> = 0,2 for friction in longitudinal direction. Max. deviation H/100; L/200.

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 100/160 horizontal



**Part List**

- 1 x Beam Section TP F 100/160
- 2 x U-Holder SB F 100/160-40

**Distributed Load**

L <sub>max</sub>	B 100		150		200		250		300	
	q <sub>z, perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z, perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z, perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z, perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]	q <sub>z, perm</sub> [kN/m]	F <sub>z</sub> (q <sub>z</sub> * L) [kN]
300	14,39	4,32	20,42	6,13	24,82	7,45	28,17	8,45	30,81	9,24
500	5,64	2,82	8,38	4,19	10,53	5,26	12,27	6,13	13,70	6,85
700	3,02	2,12	4,62	3,23	5,93	4,15	7,03	4,92	7,96	5,58
900	1,88	1,69	2,93	2,64	3,82	3,44	4,59	4,13	5,26	4,73
1100	1,28	1,41	2,02	2,22	2,67	2,94	3,24	3,56	3,74	4,12

q<sub>z</sub> [kN/m] as permanent load over L.

**Point Load**

L <sub>max</sub>	B 100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
300	2,36	1,12	3,51	1,67	4,43	2,10	5,17	2,45	5,79	2,75
500	1,55	0,74	2,41	1,14	3,14	1,49	3,77	1,79	4,32	2,05
700	1,16	0,55	1,83	0,87	2,43	1,15	2,96	1,41	3,44	1,63
900	0,92	0,44	1,48	0,70	1,98	0,94	2,44	1,16	2,86	1,36
1100	0,77	0,36	1,24	0,59	1,67	0,79	2,08	0,99	2,45	1,16

F<sub>z</sub> [kN] as a permanent load at distance L; F<sub>x</sub> [kN] as a variable load at distance L.

**2 Point Loads**

L <sub>max</sub>	B 100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
300	1,46	0,69	2,12	1,01	2,62	1,24	3,01	1,43	3,32	1,57
500	0,98	0,47	1,50	0,71	1,92	0,91	2,27	1,08	2,57	1,22
700	0,74	0,35	1,16	0,55	1,51	0,72	1,82	0,86	2,09	0,99
900	0,60	0,28	0,94	0,45	1,25	0,59	1,52	0,72	1,76	0,84
1100	0,50	0,24	0,79	0,38	1,06	0,50	1,30	0,62	1,53	0,72

F<sub>z</sub> [kN] as permanent loads at distance L and L/2; F<sub>x</sub> [kN] as variable loads at distance L and L/2.

**3 Point Loads**

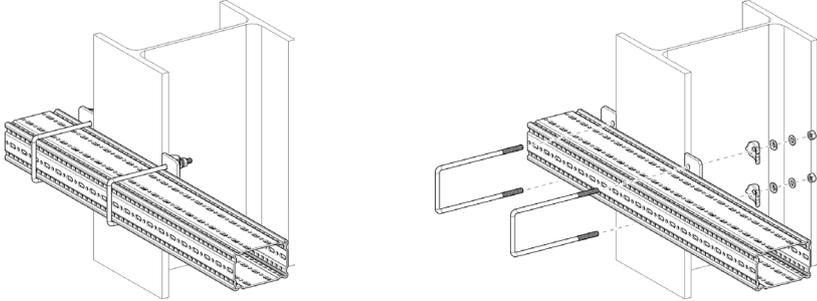
L <sub>max</sub>	B 100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = 0 [kN]	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub> [kN]
300	1,06	0,50	1,52	0,72	1,86	0,88	2,12	1,00	2,33	1,10
500	0,72	0,34	1,08	0,52	1,38	0,65	1,62	0,77	1,82	0,87
700	0,55	0,26	0,84	0,40	1,10	0,52	1,31	0,62	1,50	0,71
900	0,44	0,21	0,69	0,33	0,91	0,43	1,10	0,52	1,27	0,61
1100	0,37	0,18	0,58	0,28	0,78	0,37	0,95	0,45	1,11	0,53

F<sub>z</sub> [kN] as permanent loads at distance L, 2\*L/3 and L/3; F<sub>x</sub> [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient μ<sub>0</sub> = 0,2 for friction in longitudinal direction. Max. deviation L/100.

## Working loads in accordance with Eurocode 3

### Joining Beam Bracket F 100/160 vertical



**Part List**

- 1 x Beam Section TP F 100/160
- 2 x U-Holder SB F 100/160-40

**Distributed Load**

L <sub>max</sub>	100		150		200		250		300	
	q <sub>z, perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z, perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z, perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z, perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z, perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)
300	3,21	0,96	4,46	1,34	5,34	1,60	5,99	1,80	6,49	1,95
500	1,36	0,68	1,98	0,99	2,47	1,23	2,86	1,43	3,17	1,58
700	0,75	0,52	1,13	0,79	1,44	1,00	1,69	1,18	1,91	1,34
900	0,47	0,43	0,73	0,65	0,94	0,85	1,12	1,01	1,28	1,15
1100	0,33	0,36	0,51	0,56	0,67	0,73	0,80	0,88	0,92	1,02

q<sub>z</sub> [kN/m] as permanent load over L.

**Point Load**

L <sub>max</sub>	100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
300	0,59	0,56	0,88	0,84	1,11	1,06	1,29	1,24	1,45	1,39
500	0,39	0,37	0,60	0,58	0,79	0,75	0,94	0,90	1,08	1,03
700	0,29	0,28	0,46	0,44	0,61	0,58	0,74	0,71	0,86	0,83
900	0,23	0,22	0,37	0,35	0,50	0,48	0,61	0,59	0,72	0,69
1100	0,19	0,18	0,31	0,30	0,42	0,40	0,52	0,50	0,61	0,59

F<sub>z</sub> [kN] as a permanent load at distance L; F<sub>x</sub> [kN] as a variable load at distance L.

**2 Point Loads**

L <sub>max</sub>	100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
300	0,37	0,35	0,53	0,51	0,65	0,63	0,75	0,72	0,83	0,80
500	0,25	0,24	0,37	0,36	0,48	0,46	0,57	0,54	0,64	0,62
700	0,19	0,18	0,29	0,28	0,38	0,36	0,46	0,44	0,52	0,50
900	0,15	0,14	0,24	0,23	0,31	0,30	0,38	0,36	0,44	0,42
1100	0,13	0,12	0,20	0,19	0,27	0,26	0,33	0,31	0,38	0,37

F<sub>z</sub> [kN] as permanent loads at distance L and L/2; F<sub>x</sub> [kN] as variable loads at distance L and L/2.

**3 Point Loads**

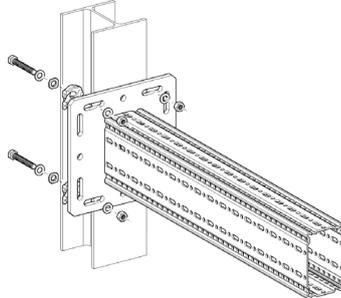
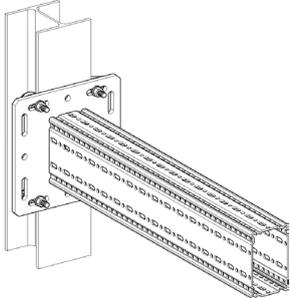
L <sub>max</sub>	100		150		200		250		300	
	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>z, perm</sub> for F <sub>x</sub> = 0	F <sub>z, perm</sub> for F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
300	0,27	0,25	0,38	0,36	0,46	0,45	0,53	0,51	0,58	0,56
500	0,18	0,17	0,27	0,26	0,35	0,33	0,41	0,39	0,46	0,44
700	0,14	0,13	0,21	0,20	0,28	0,26	0,33	0,32	0,38	0,36
900	0,11	0,11	0,17	0,17	0,23	0,22	0,28	0,27	0,32	0,31
1100	0,09	0,09	0,15	0,14	0,20	0,19	0,24	0,23	0,28	0,27

F<sub>z</sub> [kN] as permanent loads at distance L, 2\*L/3 and L/3; F<sub>x</sub> [kN] as variable loads at distance L, 2\*L/3 and L/3.

Friction coefficient μ<sub>0</sub> = 0,2 for friction in longitudinal direction; Max. deviation L/100.

### Working loads in accordance with Eurocode 3

#### Beam Bracket F 100/160 - Variante a) clamped



#### Part List

- 1 x Beam Bracket TKO F 100/160
- 1 x Assembly Set MS 5P M12 S

Distributed Load	$L_{max}$	$q_{z, perm}$	$F_z (q_z * L)$
	[mm]	[kN/m]	[kN]
	300	<b>47,89</b>	<b>14,37</b>
	500	<b>36,39</b>	<b>18,20</b>
	700	<b>18,57</b>	<b>13,00</b>
	900	<b>11,23</b>	<b>10,11</b>
	1100	<b>7,52</b>	<b>8,27</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>15,16</b>	<b>9,35</b>
	500	<b>9,10</b>	<b>5,61</b>
	700	<b>6,50</b>	<b>4,01</b>
	900	<b>5,05</b>	<b>3,12</b>
1100	<b>4,14</b>	<b>2,55</b>	

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>9,41</b>	<b>6,23</b>
	500	<b>6,07</b>	<b>3,74</b>
	700	<b>4,33</b>	<b>2,67</b>
	900	<b>3,37</b>	<b>2,08</b>
1100	<b>2,76</b>	<b>1,70</b>	

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

3 Point Loads	$L_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	300	<b>5,69</b>	<b>4,67</b>
	500	<b>4,55</b>	<b>2,80</b>
	700	<b>3,25</b>	<b>2,00</b>
	900	<b>2,53</b>	<b>1,56</b>
1100	<b>2,07</b>	<b>1,27</b>	

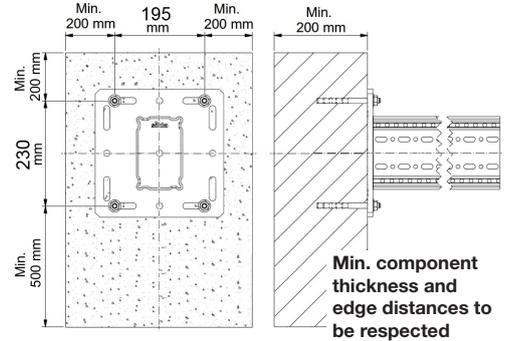
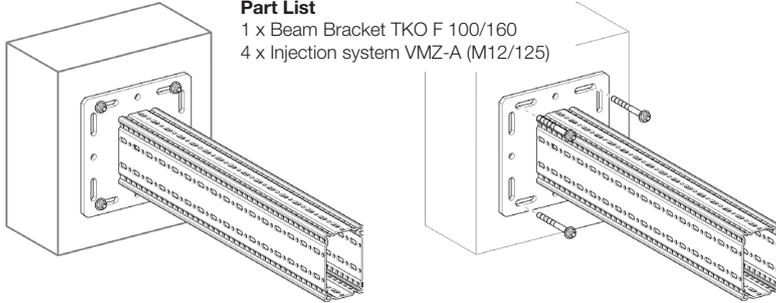
$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/3.

## Working loads in accordance with Eurocode 3

### Beam Bracket F 100/160 - Variante b) anchored

**Part List**

- 1 x Beam Bracket TKO F 100/160
- 4 x Injection system VMZ-A (M12/125)



**Distributed Load**

$L_{max}$	$q_{z, perm}$	$F_z (q_z * L)$
[mm]	[kN/m]	[kN]
300	<b>49,07</b>	<b>14,72</b>
500	<b>26,18</b>	<b>13,09</b>
700	<b>16,83</b>	<b>11,78</b>
900	<b>11,90</b>	<b>10,71</b>
1100	<b>8,93</b>	<b>9,82</b>

$q_z$  [kN/m] as permanent load over L.

**Point Load**

$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>12,40</b>	<b>12,40</b>
500	<b>10,25</b>	<b>10,25</b>
700	<b>8,73</b>	<b>8,73</b>
900	<b>7,07</b>	<b>7,07</b>
1100	<b>5,78</b>	<b>5,78</b>

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

**2 Point Loads**

$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN]	[kN]
300	<b>6,73</b>	<b>6,73</b>
500	<b>5,75</b>	<b>5,75</b>
700	<b>5,01</b>	<b>5,01</b>
900	<b>4,45</b>	<b>4,45</b>
1100	<b>3,86</b>	<b>3,86</b>

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

**3 Point Loads**

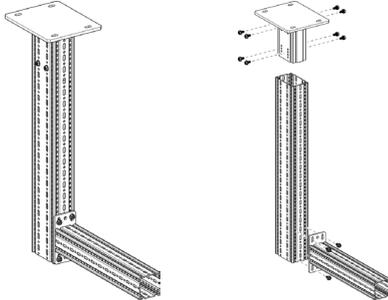
$L_{max}$	$F_{z, perm}$ for	
	$F_x = 0$	$F_x = \mu_0 * F_z$
[mm]	[kN/m]	[kN]
300	<b>4,62</b>	<b>4,62</b>
500	<b>3,99</b>	<b>3,99</b>
700	<b>3,52</b>	<b>3,52</b>
900	<b>3,14</b>	<b>3,14</b>
1100	<b>2,84</b>	<b>2,84</b>

$F_z$  [kN] as permanent loads at distance L, 2L/3 and L/3;  $F_x$  [kN] as variable loads at distance L, 2L/3 and L/3.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction; Max. deviation L/100.

## Working loads in accordance with Eurocode 3

### L-Construction F 100/160 - 100



#### Part List

- 1 x End Support WBD F 100/160
- 1 x Beam Section TP F 100/160
- 1 x Cantilever Bracket AK F 100
- 12 x Self-Forming-Screw FLS F

Distributed Load	$L_{max}$	300		500		700		900		1100	
		$q_{z, perm}$	$F_z (q_z * L)$								
		[mm]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]
	2000	<b>22,46</b>	<b>6,74</b>	<b>9,69</b>	<b>4,84</b>	<b>5,26</b>	<b>3,68</b>	<b>3,25</b>	<b>2,92</b>	<b>2,18</b>	<b>2,39</b>
	2500	<b>20,64</b>	<b>6,19</b>	<b>8,95</b>	<b>4,48</b>	<b>4,87</b>	<b>3,41</b>	<b>3,02</b>	<b>2,71</b>	<b>2,02</b>	<b>2,23</b>
	3000	<b>19,10</b>	<b>5,73</b>	<b>8,32</b>	<b>4,16</b>	<b>4,54</b>	<b>3,18</b>	<b>2,81</b>	<b>2,53</b>	<b>1,89</b>	<b>2,08</b>
	3500	<b>17,76</b>	<b>5,33</b>	<b>7,77</b>	<b>3,88</b>	<b>4,25</b>	<b>2,98</b>	<b>2,64</b>	<b>2,37</b>	<b>1,77</b>	<b>1,95</b>

$q_z$  [kN/m] as permanent load over L.

Point Load	$L_{max}$	300		500		700		900		1100	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]								
	2000	<b>4,00</b>	<b>3,39</b>	<b>2,65</b>	<b>2,49</b>	<b>1,94</b>	<b>1,94</b>	<b>1,50</b>	<b>1,50</b>	<b>1,21</b>	<b>1,21</b>
	2500	<b>3,70</b>	<b>3,16</b>	<b>2,46</b>	<b>2,36</b>	<b>1,80</b>	<b>1,80</b>	<b>1,40</b>	<b>1,40</b>	<b>1,13</b>	<b>1,13</b>
	3000	<b>3,44</b>	<b>2,88</b>	<b>2,30</b>	<b>2,25</b>	<b>1,69</b>	<b>1,69</b>	<b>1,31</b>	<b>1,31</b>	<b>1,06</b>	<b>1,06</b>
3500	<b>3,21</b>	<b>2,36</b>	<b>2,15</b>	<b>2,14</b>	<b>1,58</b>	<b>1,58</b>	<b>1,23</b>	<b>1,23</b>	<b>0,99</b>	<b>0,99</b>	

$F_z$  [kN] as a permanent load at distance L;  $F_x$  [kN] as a variable load at distance L.

2 Point Loads	$L_{max}$	300		500		700		900		1100	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]								
	2000	<b>2,57</b>	<b>1,95</b>	<b>1,74</b>	<b>1,49</b>	<b>1,29</b>	<b>1,20</b>	<b>1,01</b>	<b>1,00</b>	<b>0,82</b>	<b>0,82</b>
	2500	<b>2,37</b>	<b>1,80</b>	<b>1,61</b>	<b>1,40</b>	<b>1,20</b>	<b>1,14</b>	<b>0,94</b>	<b>0,94</b>	<b>0,76</b>	<b>0,76</b>
	3000	<b>2,20</b>	<b>1,44</b>	<b>1,50</b>	<b>1,32</b>	<b>1,12</b>	<b>1,08</b>	<b>0,88</b>	<b>0,88</b>	<b>0,71</b>	<b>0,71</b>
3500	<b>2,05</b>	<b>1,18</b>	<b>1,40</b>	<b>1,18</b>	<b>1,05</b>	<b>1,03</b>	<b>0,82</b>	<b>0,82</b>	<b>0,67</b>	<b>0,67</b>	

$F_z$  [kN] as permanent loads at distance L and L/2;  $F_x$  [kN] as variable loads at distance L and L/2.

3 Point Loads	$L_{max}$	300		500		700		900		1100	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]								
	2000	<b>1,87</b>	<b>1,37</b>	<b>1,28</b>	<b>1,06</b>	<b>0,95</b>	<b>0,86</b>	<b>0,74</b>	<b>0,72</b>	<b>0,60</b>	<b>0,60</b>
	2500	<b>1,72</b>	<b>1,20</b>	<b>1,18</b>	<b>0,99</b>	<b>0,88</b>	<b>0,81</b>	<b>0,69</b>	<b>0,69</b>	<b>0,56</b>	<b>0,56</b>
	3000	<b>1,60</b>	<b>0,96</b>	<b>1,10</b>	<b>0,93</b>	<b>0,82</b>	<b>0,77</b>	<b>0,65</b>	<b>0,65</b>	<b>0,53</b>	<b>0,53</b>
3500	<b>1,49</b>	<b>0,79</b>	<b>1,03</b>	<b>0,79</b>	<b>0,77</b>	<b>0,73</b>	<b>0,61</b>	<b>0,61</b>	<b>0,49</b>	<b>0,49</b>	

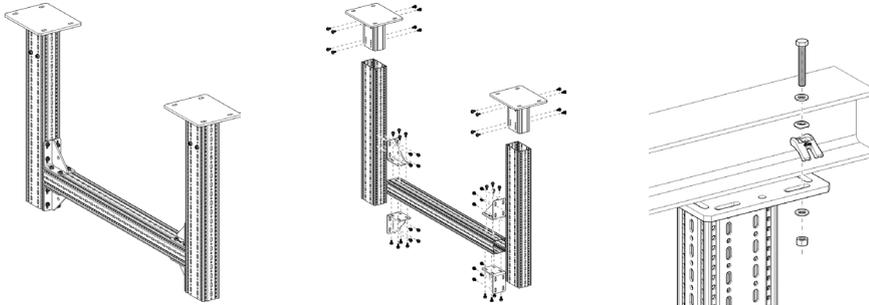
$F_z$  [kN] as permanent loads at distance L, 2\*L/3 and L/2;  $F_x$  [kN] as variable loads at distance L, 2\*L/3 and L/2.

All illustrated structures are able to be installed standing as well.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction; Max. deviation H/100; L/100.

## Working loads in accordance with Eurocode 3

### Frame F 100/160 - 100



- Part List**  
 2 x End Support WBD F 100/160  
 2 x Beam Section TP F 100/160  
 1 x Beam Section TP F 100  
 4 x Corner Bracket WD F 100  
 48 x Self-Forming-Screw FLS F

Distributed Load	L <sub>max</sub>		1500		2000		2500		3000		3500		4000	
	H <sub>max</sub>	[mm]	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)	q <sub>z,perm</sub>	F <sub>z</sub> (q <sub>z</sub> * L)
			[kN/m]	[kN]										
1500	22,07	26,92	16,39	28,20	12,90	28,63	9,64	26,22	6,61	21,28	4,67	17,37		
2000	22,07	26,92	16,39	28,20	12,90	28,63	9,60	26,12	6,48	20,87	4,58	17,04		
2500	22,07	26,92	16,39	28,20	12,90	28,63	9,41	25,60	6,35	20,46	4,49	16,72		
3000	21,95	26,78	16,27	27,98	12,89	28,62	9,23	25,11	6,24	20,08	4,41	16,42		
3500	21,87	26,68	16,22	27,90	12,81	28,43	9,06	24,65	6,12	19,72	4,34	16,13		

q<sub>z</sub> [kN/m] as permanent load over L.

Point Load	L <sub>max</sub>		1500		2000		2500		3000		3500		4000	
	H <sub>max</sub>	[mm]	F <sub>z,perm</sub> for											
			F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
1500	29,43	9,89	23,20	9,82	19,25	9,75	16,51	9,68	13,39	8,88	10,73	7,91		
2000	29,20	7,57	23,03	7,51	19,12	7,45	16,41	7,39	13,15	7,29	10,55	6,76		
2500	28,96	6,13	22,85	6,09	18,98	6,04	16,29	5,99	12,91	5,94	10,37	5,68		
3000	28,72	5,16	22,67	5,12	18,83	5,09	16,17	5,04	12,69	4,95	10,19	4,77		
3500	28,49	4,40	22,49	4,37	18,69	4,32	16,00	4,25	12,48	4,16	10,03	4,05		

F<sub>z</sub> [kN] as a permanent load at distance L/2; F<sub>x</sub> [kN] as a variable load at distance L/2.

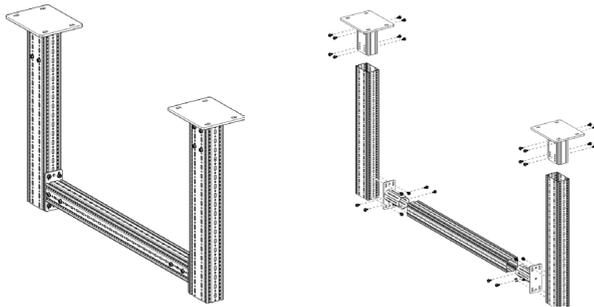
2 Point Loads	L <sub>max</sub>		1500		2000		2500		3000		3500		4000	
	H <sub>max</sub>	[mm]	F <sub>z,perm</sub> for											
			F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>	F <sub>x</sub> = 0	F <sub>x</sub> = μ <sub>0</sub> * F <sub>z</sub>
1500	16,45	4,95	16,24	4,92	13,53	4,89	10,17	4,86	7,95	4,57	6,39	4,11		
2000	16,45	3,79	16,24	3,76	13,25	3,74	9,98	3,72	7,80	3,69	6,27	3,46		
2500	16,45	3,07	16,24	3,05	12,99	3,03	9,79	3,01	7,65	2,99	6,16	2,88		
3000	16,38	2,58	16,09	2,57	12,74	2,55	9,61	2,53	7,52	2,49	6,05	2,41		
3500	16,31	2,20	16,02	2,18	12,51	2,16	9,44	2,13	7,39	2,09	5,95	2,04		

F<sub>z</sub> [kN] as permanent loads at distance 2\*L/3 and L/3; F<sub>x</sub> [kN] as variable loads at distance 2\*L/3 and L/3.

3 Point Loads		$L_{max}$	1500		2000		2500		3000		3500		4000	
			$F_{z, perm}$ for											
$H_{max}$	[mm]	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	
				[kN]	[kN]	[kN]								
	1500	10,99	3,30	10,86	3,28	9,80	3,26	7,58	3,25	5,93	3,08	4,77	2,79	
	2000	10,99	2,53	10,86	2,51	9,80	2,49	7,43	2,48	5,82	2,46	4,69	2,33	
	2500	10,99	2,05	10,85	2,03	9,64	2,02	7,29	2,01	5,71	1,99	4,60	1,93	
	3000	10,92	1,72	10,76	1,71	9,45	1,70	7,15	1,69	5,61	1,67	4,52	1,62	
	3500	10,87	1,47	10,71	1,46	9,28	1,44	7,02	1,42	5,51	1,40	4,44	1,36	

$F_z$  [kN] as permanent loads at distance  $3*L/4$ ,  $L/2$  and  $L/4$ ;  $F_x$  [kN] as variable loads at distance  $3*L/4$ ,  $L/4$  and  $L/4$ .

For assembly with STA F 100 - 100/160  $F_z$  has to be reduced by the reduction ratio  $F_a$ .



#### Part List

- 2 x End Support WBD F 100/160
- 2 x Beam Section TP F 100/160
- 1 x Beam Section TP F 100
- 2 x End Support STA F 100
- 32 x Self-Forming-Screw FLS F

L (mm)	Reduction ratio $F_a$ [%]	
	$F_x = 0$	$F_x = 0,2 * F_z$
1500	-15%	0%
2000	-25%	0%
2500	-30%	0%
3000	-30%	0%
3500	-35%	-5%

All illustrated structures are able to be installed standing as well.

Friction coefficient  $\mu_0 = 0,2$  for friction in longitudinal direction; Max. deviation  $H/100$ ; Max. bending  $L/200$ .

Working loads in accordance with Eurocode 3

**Beam Section 100**

$L_{max}$ [mm]	$F_{z, perm}$ [kN]
1000	<b>50,0</b>
1600	<b>31,0</b>
2000	<b>24,5</b>
3000	<b>15,0</b>
4000	<b>10,5</b>
5000	<b>7,8</b>
6000	<b>5,9</b>

**Part List**  
Sikla-Beam Section H100

$F_z$  [kN] as a permanent load at L/2; Max. bending L/150.

**L-Construction 100**

$H_{max}$ [mm]	$L_{max}$	$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
500	200	<b>4,35</b>	<b>1,73</b>	<b>1,56</b>	<b>0,64</b>	<b>0,93</b>	<b>0,38</b>
1000	600	<b>4,35</b>	<b>0,75</b>	<b>1,56</b>	<b>0,31</b>	<b>0,90</b>	<b>0,18</b>
1500	1000	<b>4,35</b>	<b>0,40</b>	<b>1,36</b>	<b>0,18</b>	<b>0,80</b>	<b>0,11</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, max. deviation H/150; L/150; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
2 x Beam Bracket TKO 100  
1 x Bracket Plates FV 100/120

**Frame 100**

$H_{max}$ [mm]	$L_{max}$	$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
500	500	<b>16,5</b>	<b>15,1</b>	<b>16,4</b>	<b>15,0</b>	<b>16,3</b>	<b>9,9</b>
1000	1000	<b>16,5</b>	<b>15,1</b>	<b>16,4</b>	<b>15,0</b>	<b>16,3</b>	<b>9,9</b>
1500	2000	<b>16,5</b>	<b>15,1</b>	<b>16,4</b>	<b>15,0</b>	<b>16,3</b>	<b>9,9</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load; Max. bending L/150, max. deviation H/150; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
3 x Beam Bracket TKO 100  
1 x End Support STA 100  
1 x Bracket Plates FV 100/120

**T-Support 100**

$H_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
200	<b>13,0</b>	<b>13,0</b>
600	<b>13,0</b>	<b>13,0</b>
1000	<b>13,0</b>	<b>13,0</b>
1400	<b>13,0</b>	<b>13,0</b>
2000	<b>13,0</b>	<b>9,5</b>

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load, max. deviation H/150; central load introduction for planned eccentricity  $\pm 50$  mm; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
1 x Beam Bracket TKO  
1 x T-Adapter TA 100

## Working loads in accordance with Eurocode 3

Beam Section 100	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>50,0</b>
	1600	<b>31,0</b>
	2000	<b>24,5</b>
	3000	<b>15,0</b>
	4000	<b>10,5</b>
	5000	<b>7,8</b>
	6000	<b>5,9</b>

**Part List**  
Sikla-Beam Section H100

$F_z$  [kN] as a permanent load at L/2, Max. bending L/150.

L-Construction 100	$L_{max}$	200		600		1000	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	[mm]						
	500	<b>3,51</b>	<b>3,22</b>	<b>2,67</b>	<b>1,54</b>	<b>2,13</b>	<b>0,95</b>
	1000	<b>3,51</b>	<b>0,96</b>	<b>2,67</b>	<b>0,43</b>	<b>2,13</b>	<b>0,27</b>
1500	<b>3,51</b>	<b>0,46</b>	<b>2,59</b>	<b>0,22</b>	<b>1,79</b>	<b>0,14</b>	

**Part List**  
2 x Beam Bracket TKO 100  
1 x Assembly Set MS 5P M12 S

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load; max. deviation H/150; L/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

Frame 100	$L_{max}$	500		1000		2000	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	[mm]						
	500	<b>8,2</b>	<b>8,0</b>	<b>8,1</b>	<b>7,9</b>	<b>8,0</b>	<b>7,8</b>
	1000	<b>8,2</b>	<b>8,0</b>	<b>8,1</b>	<b>7,9</b>	<b>8,0</b>	<b>7,8</b>
1500	<b>8,2</b>	<b>8,0</b>	<b>8,1</b>	<b>7,9</b>	<b>8,0</b>	<b>7,8</b>	

**Part List**  
3 x Beam Bracket TKO 100  
1 x End Support STA 100  
2 x Assembly Set MS 5P M12 S

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load;  
Max. bending L/150, max. deviation H/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

T-Support 100	$H_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	200	<b>13,0</b>	<b>13,0</b>
	600	<b>13,0</b>	<b>13,0</b>
	1000	<b>13,0</b>	<b>13,0</b>
	1400	<b>13,0</b>	<b>13,0</b>
	2000	<b>13,0</b>	<b>9,5</b>

**Part List**  
1 x Beam Bracket TKO 100  
1 x T-Adapter TA 100

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load, max. deviation H/150;  
central load introduction for planned eccentricity  $\pm 50$  mm;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

Working loads in accordance with Eurocode 3

**Beam Bracket 100**

**Part List**  
1 Beam Bracket TKO 120

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Connection with Assembly Set MS 5P M12 S		
200	<b>3,51</b>	<b>3,22</b>
400	<b>3,03</b>	<b>2,62</b>
600	<b>2,67</b>	<b>2,21</b>
800	<b>2,37</b>	<b>1,90</b>
1000	<b>2,13</b>	<b>1,67</b>
1400	<b>1,76</b>	<b>1,33</b>
2000	<b>1,36</b>	<b>0,99</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load; Max. bending  $L/150$ .

**Joining Beam Bracket 100**

**Part List**  
1 x Joining Beam Bracket QKOq

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Connection with Assembly Set MS 5P M12 S / M16 S		
300	<b>0,62</b>	<b>0,61</b>
500	<b>0,37</b>	<b>0,36</b>
700	<b>0,24</b>	<b>0,24</b>
Connection with Bracket Plates		
300	<b>1,48</b>	<b>1,48</b>
500	<b>0,93</b>	<b>0,93</b>
700	<b>0,66</b>	<b>0,66</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, max. deviation  $L/150$ ;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Angled Beam Bracket 100**

**Part List**  
1 x Beam Bracket TKO 100  
1 x Angled Beam Bracket SKO 100  
2 x Assembly Set MS 5P M12 S  
1 x Bracket Plates FV 100/120

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Inclined to the horizontal Bracket with 30°		
1000	<b>2,70</b>	<b>2,70</b>
678	<b>4,00</b>	<b>4,00</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, Max. bending  $L/150$ ;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

## Working loads in accordance with Eurocode 3

Beam Section 120	$L_{max}$	$F_{z, perm}$
	[mm]	[kN]
	1000	<b>98,5</b>
	1600	<b>61,5</b>
	2000	<b>49,5</b>
	3000	<b>31,5</b>
	4000	<b>22,3</b>
	5000	<b>16,8</b>
	6000	<b>13,0</b>

**Part List**  
Sikla-Beam Section H120

$F_z$  [kN] as a permanent load at L/2; Max. bending L/150.

L-Construction 120	$L_{max}$	200		600		1000	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	[mm]						
	500	<b>4,35</b>	<b>2,43</b>	<b>1,59</b>	<b>0,85</b>	<b>0,96</b>	<b>0,50</b>
	1000	<b>4,35</b>	<b>1,45</b>	<b>1,59</b>	<b>0,57</b>	<b>0,96</b>	<b>0,34</b>
1500	<b>4,35</b>	<b>0,88</b>	<b>1,59</b>	<b>0,40</b>	<b>0,96</b>	<b>0,24</b>	

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, max. deviation H/150; L/150; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
2 x Beam Bracket TKO 120  
1 x Bracket Plates FV 100/120

Frame 120	$L_{max}$	500		1000		2000	
		$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$	$F_x = 0$	$F_x = \mu_0 * F_z$
	$H_{max}$	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
	[mm]						
	500	<b>16,5</b>	<b>15,1</b>	<b>16,3</b>	<b>14,9</b>	<b>16,1</b>	<b>14,7</b>
	1000	<b>16,5</b>	<b>15,1</b>	<b>16,3</b>	<b>14,9</b>	<b>16,1</b>	<b>14,7</b>
1500	<b>16,5</b>	<b>15,1</b>	<b>16,3</b>	<b>14,9</b>	<b>16,1</b>	<b>14,7</b>	

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load; Max. bending L/150, max. deviation H/150; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
3 x Beam Bracket TKO 120  
1 x End Support STA 120  
1 x Bracket Plates FV 100/120

T-Support 120	$H_{max}$	$F_{z, perm}$ for	
		$F_x = 0$	$F_x = \mu_0 * F_z$
	[mm]	[kN]	[kN]
	200	<b>23,6</b>	<b>23,6</b>
	600	<b>23,6</b>	<b>23,6</b>
	1000	<b>23,6</b>	<b>23,6</b>
	1400	<b>23,6</b>	<b>21,6</b>
	2000	<b>23,6</b>	<b>15,9</b>

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load, max. deviation H/150; central load introduction for planned eccentricity  $\pm 50$  mm; Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

**Part List**  
1 x Beam Bracket TKO 120  
1 x T-Adapter TA 120

## Working loads in accordance with Eurocode 3

### Beam Section 120

**Part List**  
Sikla-Beam Section H120

$L_{max}$ [mm]	$F_{z, perm}$ [kN]
1000	<b>98,5</b>
1600	<b>61,5</b>
2000	<b>49,5</b>
3000	<b>31,5</b>
4000	<b>22,3</b>
5000	<b>16,8</b>
6000	<b>13,0</b>

$F_z$  [kN] as a permanent load at L/2; Max. bending L/150.

### L-Construction 120

**Part List**  
2 x Beam Bracket TKO 120  
1 x Assembly Set MS 5P M12 S

$L_{max}$ $H_{max}$ [mm]	$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
500	<b>3,61</b>	<b>3,35</b>	<b>2,86</b>	<b>2,41</b>	<b>2,34</b>	<b>1,86</b>
1000	<b>3,61</b>	<b>2,59</b>	<b>2,86</b>	<b>1,23</b>	<b>2,34</b>	<b>0,78</b>
1500	<b>3,61</b>	<b>1,18</b>	<b>2,86</b>	<b>0,62</b>	<b>2,34</b>	<b>0,39</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, max. deviation H/150; L/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

### Frame 120

**Part List**  
3 x Beam Bracket TKO 120  
1 x End Support STA 120  
2 x Assembly Set MS 5P M12 S

$L_{max}$ $H_{max}$ [mm]	$F_{z, perm}$ for		$F_{z, perm}$ for		$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
500	<b>8,2</b>	<b>8,0</b>	<b>8,0</b>	<b>7,8</b>	<b>7,8</b>	<b>7,6</b>
1000	<b>8,2</b>	<b>8,0</b>	<b>8,0</b>	<b>7,8</b>	<b>7,8</b>	<b>7,6</b>
1500	<b>8,2</b>	<b>8,0</b>	<b>8,0</b>	<b>7,8</b>	<b>7,8</b>	<b>7,6</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load;  
Max. bending L/150, max. deviation H/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

### T-Support 120

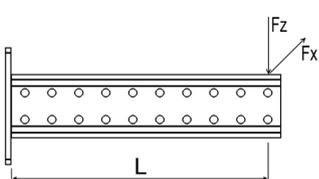
**Part List**  
1 x Beam Bracket TKO 120  
1 x T-Adapter TA 120

$H_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
200	<b>23,6</b>	<b>23,6</b>
600	<b>23,6</b>	<b>23,6</b>
1000	<b>23,6</b>	<b>23,6</b>
1400	<b>23,6</b>	<b>21,6</b>
2000	<b>23,6</b>	<b>15,9</b>

$F_z$  [kN] as a permanent load;  $F_x$  [kN] as a variable load, max. deviation H/150;  
central load introduction for planned eccentricity  $\pm 50$  mm;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

## Working loads in accordance with Eurocode 3

**Beam Bracket 120**

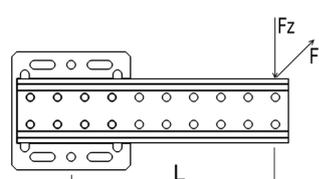


**Part List**  
1 Beam Bracket TKO 120

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Connection with Assembly Set MS 5P M12 S		
200	<b>3,61</b>	<b>3,35</b>
400	<b>3,20</b>	<b>2,81</b>
600	<b>2,86</b>	<b>2,41</b>
800	<b>2,57</b>	<b>2,10</b>
1000	<b>2,34</b>	<b>1,86</b>
1400	<b>1,95</b>	<b>1,49</b>
2000	<b>1,52</b>	<b>1,12</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, Max. bending L/150.

**Joining Beam Bracket 120**

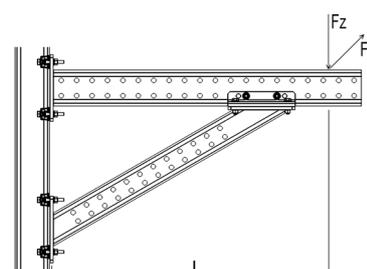


**Part List**  
1 x Joining Beam Bracket QKOq

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Connection with Assembly Set MS 5P M12 S / M16 S		
300	<b>0,72</b>	<b>0,69</b>
500	<b>0,44</b>	<b>0,40</b>
700	<b>0,29</b>	<b>0,25</b>
Connection with Bracket Plates		
300	<b>1,46</b>	<b>1,46</b>
500	<b>0,90</b>	<b>0,90</b>
700	<b>0,62</b>	<b>0,62</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, max. deviation L/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

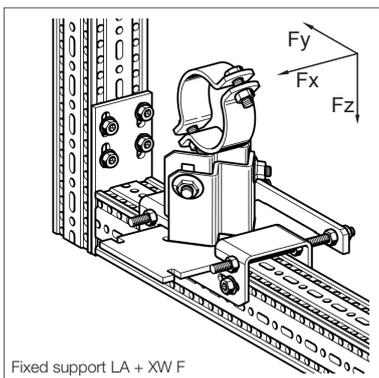
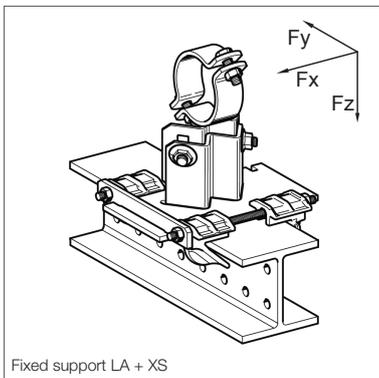
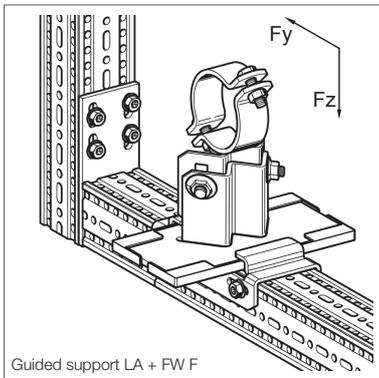
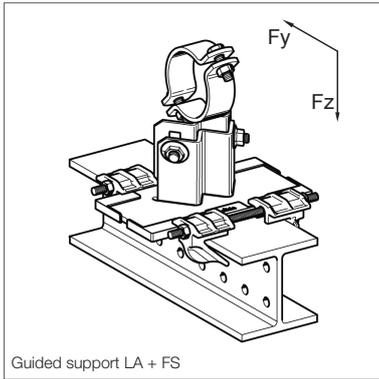
**Angled Beam Bracket 120**



**Part List**  
1 x Beam Bracket TKO 120  
1 x Angled Beam Bracket SKO 100  
2 x Assembly Set MS 5P M12 S  
1 x Bracket Plates FV 100/120

$L_{max}$ [mm]	$F_{z, perm}$ for	
	$F_x = 0$ [kN]	$F_x = \mu_0 * F_z$ [kN]
Inclined to the horizontal Bracket with 30°		
1000	<b>2,70</b>	<b>2,70</b>
678	<b>4,00</b>	<b>4,00</b>

$F_z$  [kN] as a permanent load,  $F_x$  [kN] as a variable load, Max. bending L/150;  
Friction coefficient  $\mu_0 = 0,2$  (for friction in longitudinal direction).

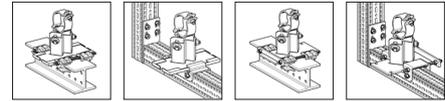


### Working loads for Pipe Shoes LA, LC and LD - HV

Basis of assessment EC 3, working loads for Pipe Shoes as delivered

Pipe Shoe LA - HV + Guiding Set FS resp. Fixed Point Set XS

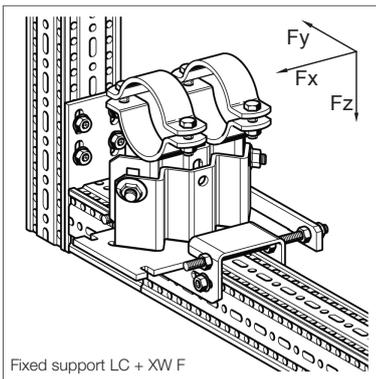
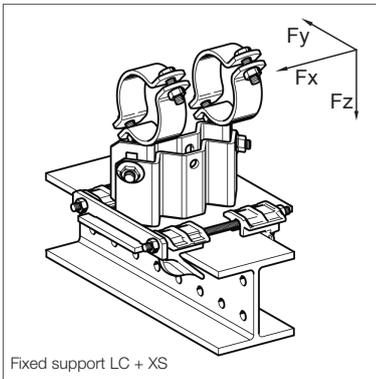
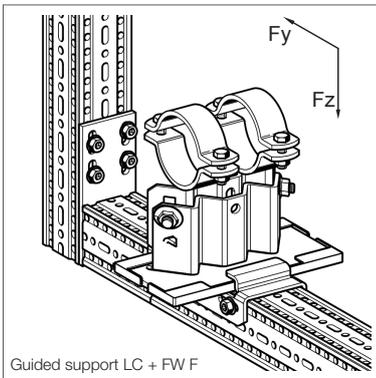
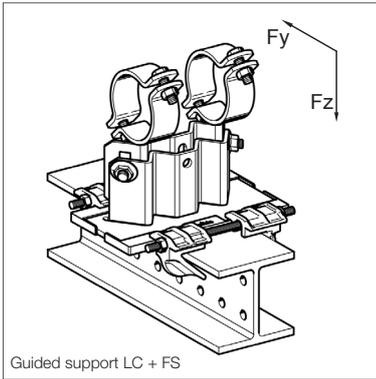
Pipe Shoe LA - HV + Guiding Bracket FW F resp. Fixed Point Bracket XW F



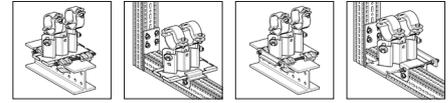
Height	DN	$F_x$ [kN] only for fixed supports	$F_y$ [kN]	$+ F_z$ [kN]	$- F_z$ FS 80/120 [kN]	$- F_z$ FW F [kN]	$- F_z$ XS 80/120 [kN]	$- F_z$ XW F [kN]
90	≤ 25	9,1	5,2	15,4	14	6,1	15,4	15,4
90	32	8,8	4,9	15,4	14	6,1	15,4	15,4
90	40	8,6	4,8	15,4	14	6,1	15,4	15,4
90	50	8,2	4,4	15,4	14	6,1	15,4	15,4
90	65	7,7	3,9	15,4	14	6,1	15,4	15,4
90	80	7,3	3,6	15,4	14	6,1	15,4	15,4
90	100	6,5	2,8	15,4	14	6,1	15,4	15,4
90	125	5,7	2,1	15,4	14	6,1	15,4	15,4
90	150	4,7	1,3	15,4	14	6,1	15,4	15,4
150	≤ 25	8,0	4,2	15,4	14	6,1	15,4	15,4
150	32	7,9	3,9	15,4	14	6,1	15,4	15,4
150	40	7,8	3,9	15,4	14	6,1	15,4	15,4
150	50	7,6	3,6	15,4	14	6,1	15,4	15,4
150	65	7,4	3,2	15,4	14	6,1	15,4	15,4
150	80	7,2	3,0	15,4	14	6,1	15,4	15,4
150	100	6,9	2,5	15,4	14	6,1	15,4	15,4
150	125	6,5	2,0	15,4	14	6,1	15,4	15,4
150	150	6,1	1,4	15,4	14	6,1	15,4	15,4
200	≤ 25	6,3	3,6	15,4	14	6,1	15,4	15,4
200	32	6,2	3,5	15,4	14	6,1	15,4	15,4
200	40	6,2	3,4	15,4	14	6,1	15,4	15,4
200	50	6,0	3,2	15,4	14	6,1	15,4	15,4
200	65	5,9	3,0	15,4	14	6,1	15,4	15,4
200	80	5,7	2,8	15,4	14	6,1	15,4	15,4
200	100	5,5	2,4	15,4	14	6,1	15,4	15,4
200	125	5,2	2,0	15,4	14	6,1	15,4	15,4
200	150	4,9	1,6	15,4	14	6,1	15,4	15,4



## Supports (Pipe Shoes)

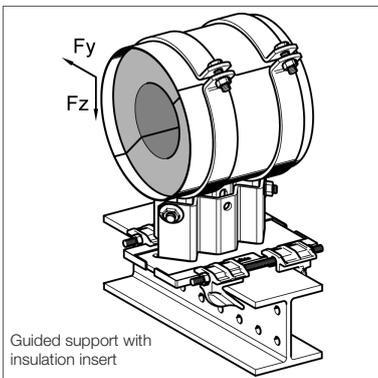
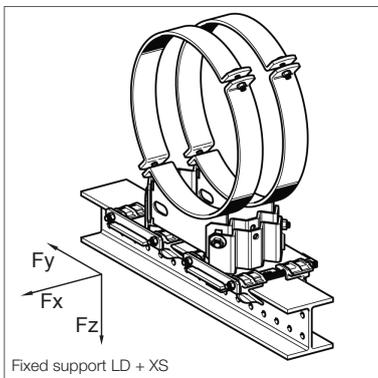
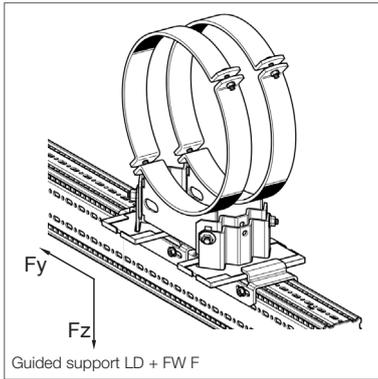


### Pipe Shoe LC - HV + Guiding Set FS resp. Fixed Point Set XS Pipe Shoe LC - HV + Guiding Bracket FW F resp. Fixed Point Bracket XW F

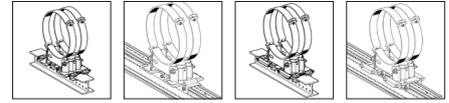


Height	DN	$F_x$ [kN] only for fixed supports	$F_y$ [kN]	$+ F_z$ [kN]	$- F_z$ FS 80/120 [kN]	$- F_z$ FW F [kN]	$- F_z$ XS 80/120 [kN]	$- F_z$ XW F [kN]
90	≤ 25	14,3	6,3	17,0	14	6,1	17	17
90	32	14,1	6,2	17,0	14	6,1	17	17
90	40	14,0	6,1	17,0	14	6,1	17	17
90	50	13,9	5,9	17,0	14	6,1	17	17
90	65	13,6	5,6	17,0	14	6,1	17	17
90	80	13,5	5,4	17,0	14	6,1	17	17
90	100	13,1	5,0	17,0	14	6,1	17	17
90	125	12,7	4,5	17,0	14	6,1	17	17
90	150	12,3	4,0	17,0	14	6,1	17	17
90	200	11,6	3,2	17,0	14	6,1	17	17
90	250	10,8	2,3	17,0	14	6,1	17	17
90	300	10,1	1,5	17,0	14	6,1	17	17
150	≤ 25	8,5	4,9	17,0	14	6,1	17	17
150	32	8,5	4,8	17,0	14	6,1	17	17
150	40	8,5	4,7	17,0	14	6,1	17	17
150	50	8,4	4,6	17,0	14	6,1	17	17
150	65	8,4	4,4	17,0	14	6,1	17	17
150	80	8,4	4,3	17,0	14	6,1	17	17
150	100	8,3	4,0	17,0	14	6,1	17	17
150	125	8,3	3,7	17,0	14	6,1	17	17
150	150	8,2	3,3	17,0	14	6,1	17	17
150	200	8,1	2,7	17,0	14	6,1	17	17
150	250	8,0	2,1	17,0	14	6,1	17	17
150	300	7,9	1,5	17,0	14	6,1	17	17
200	≤ 25	7,3	5,3	17,0	14	6,1	17	17
200	32	7,2	5,2	17,0	14	6,1	17	17
200	40	7,2	5,1	17,0	14	6,1	17	17
200	50	7,1	4,9	17,0	14	6,1	17	17
200	65	7,0	4,7	17,0	14	6,1	17	17
200	80	6,9	4,6	17,0	14	6,1	17	17
200	100	6,7	4,3	17,0	14	6,1	17	17
200	125	6,5	4,0	17,0	14	6,1	17	17
200	150	6,3	3,6	17,0	14	6,1	17	17
200	200	5,9	3,0	17,0	14	6,1	17	17
200	250	5,5	2,3	17,0	14	6,1	17	17
200	300	5,1	1,7	17,0	14	6,1	17	17





**Pipe Shoe LD - HV + 2 x Guiding Set FS resp. 2 x Fixed Point Set XS**  
**Pipe Shoe LD - HV + 2 x Guiding Bracket FW F resp. 2 x Fixed Point Bracket XW F**



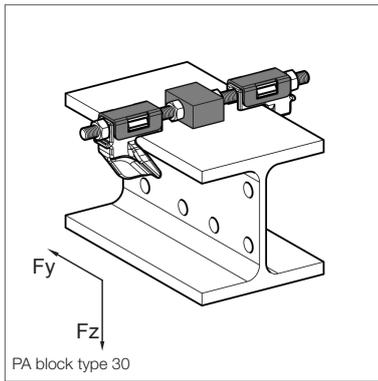
Height	DN	$F_x$ [kN] only for fixed supports	$F_y$ [kN]	$+ F_z$ [kN]	$- F_z$ FS 80/120 [kN]	$- F_z$ FW F [kN]	$- F_z$ XS 80/120 [kN]	$- F_z$ XW F [kN]
90	≤ 350	25,0	13,1	32,8	28	12,2	32,8	32,8
90	400	22,5	11,9	32,8	28	12,2	32,8	32,8
90	500	20,8	9,4	32,8	28	12,2	32,8	32,8
90	600	10,3	7,2	32,8	28	12,2	32,8	32,8
150	≤ 350	25,0	12,9	32,8	28	12,2	32,8	32,8
150	400	22,5	11,5	32,8	28	12,2	32,8	32,8
150	500	17,3	8,8	32,8	28	12,2	32,8	32,8
150	600	8,7	6,3	32,8	28	12,2	32,8	32,8
200	≤ 350	25,0	11,3	32,8	28	12,2	32,8	32,8
200	400	20,5	10,2	32,8	28	12,2	32,8	32,8
200	500	15,7	8,1	32,8	28	12,2	32,8	32,8
200	600	7,5	6,1	32,8	28	12,2	32,8	32,8

### Working loads for Supports with insulation insert and suspension

Basis of assessment EC 3, working loads for supports as delivered

#### Pipe Shoe LK - HV + Guiding Set FS

Height	DN	$F_y$ [kN]	$+ F_z$ [kN]
150	25	3,1	3,1
150	32	3,8	3,8
150	40	4,3	4,3
150	50	4,0	3,9
150	65	2,8	2,8
150	80	2,5	2,4
150	100	4,5	17,0
150	125	4,1	17,0
150	150	3,6	17,0
150	200	2,8	17,0
150	250	1,9	17,0
150	300	0,4	17,0

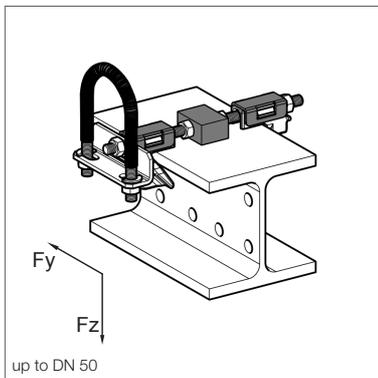
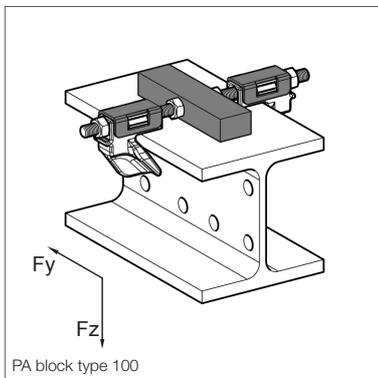


### Working loads for sliding supports LR - H 20, guided supports FR - H 20 and fixed points XR - H 20

Design according to EN 13480-3 Annex J

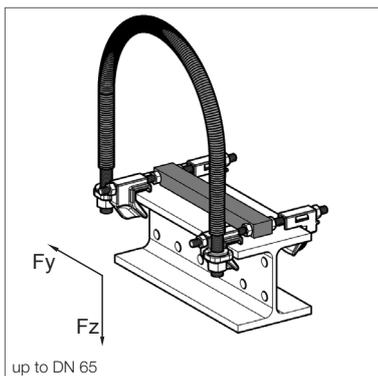
#### Sliding support LR - 20 with slide bar type 30 and type 100

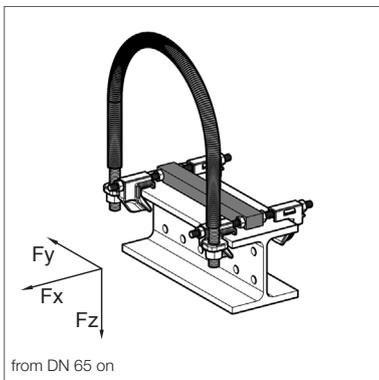
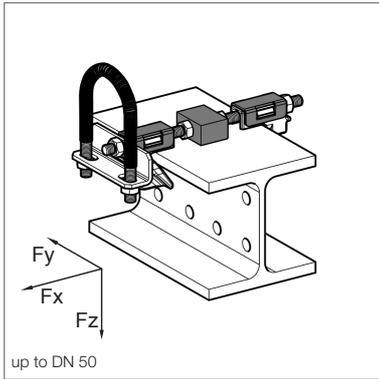
DN	+ F <sub>z</sub> [kN]
15	4,5
20	4,5
25	4,5
32	4,5
40	4,5
50	4,5
65	9,0
80	9,0
100	9,0
125	9,0
150	9,0
175	9,0
200	9,0
225	9,0
250	9,0
300	9,0



#### Guided support FR - H 20

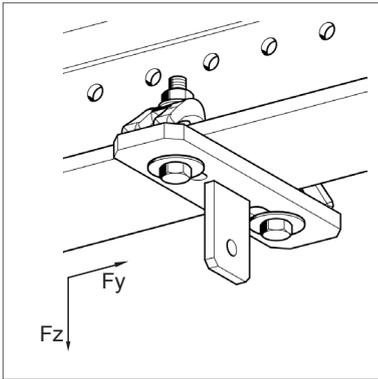
DN	F <sub>y</sub> [kN]	+ F <sub>z</sub> [kN]	- F <sub>z</sub> [kN]
15	0,2	4,5	0,2
20	0,2	4,5	0,2
25	0,2	4,5	0,2
32	0,2	4,5	0,2
40	0,2	4,5	0,2
50	0,2	4,5	0,2
65	0,9	9,0	1,1
80	0,9	9,0	1,1
100	0,9	9,0	1,1
125	0,9	9,0	1,1
150	0,9	9,0	1,1
175	0,9	9,0	1,1
200	0,9	9,0	1,1
225	0,9	9,0	1,1
250	0,9	9,0	1,1
300	0,9	9,0	1,1





### Fixed points XR - H 20

DN	$F_x$ [kN]	$F_y$ [kN]	+ $F_z$ [kN]	- $F_z$ [kN]
15	0,5	0,2	4,5	0,2
20	0,5	0,2	4,5	0,2
25	0,5	0,2	4,5	0,2
32	0,5	0,2	4,5	0,2
40	0,5	0,2	4,5	0,2
50	0,5	0,2	4,5	0,2
65	0,3	0,9	9,0	1,1
80	0,3	0,9	9,0	1,1
100	0,3	0,9	9,0	1,1
125	0,3	0,9	9,0	1,1
150	0,3	0,9	9,0	1,1
175	0,3	0,9	9,0	1,1
200	0,3	0,9	9,0	1,1
225	0,3	0,9	9,0	1,1
250	0,3	0,9	9,0	1,1
300	0,3	0,9	9,0	1,1



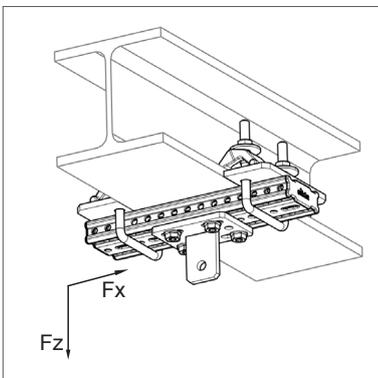
### Working loads for Rod Hangers

Design according to EN 13480-3 Annex J

Working loads valid for up to 4 degrees Load Chain inclination.

#### Beam system Eye-Plate HP 80/99

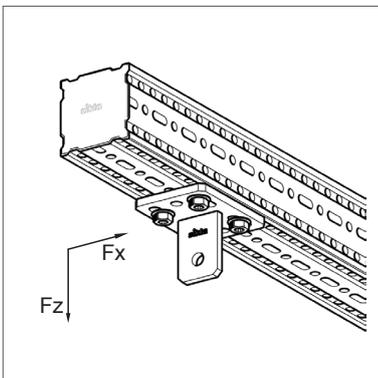
Type	$F_z$ [kN]
M10	11,2
M12	12,1
M16	12,5



#### Rod hanger beam connection LKA

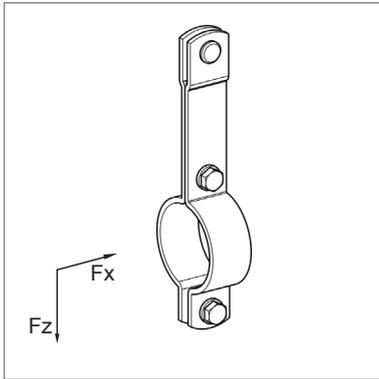
Trägerbreite 100-199 mm	
Type	$F_z$ [kN]
M10	10,9
M12	11,5
M16	12,1

Trägerbreite 200-310 mm	
Type	$F_z$ [kN]
M10	10,8
M12	11,3
M16	11,9



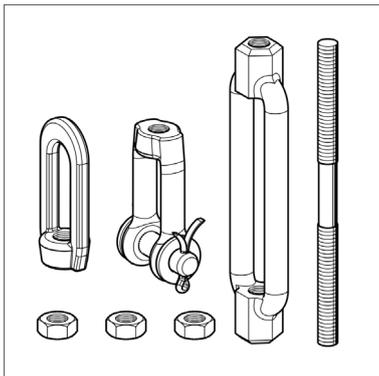
#### siFramo Eye-Plate HP F 80 siFramo Eye-Plate HP F 100

Type	$F_z$ [kN]
M10	11,2
M12	12,1
M16	12,5



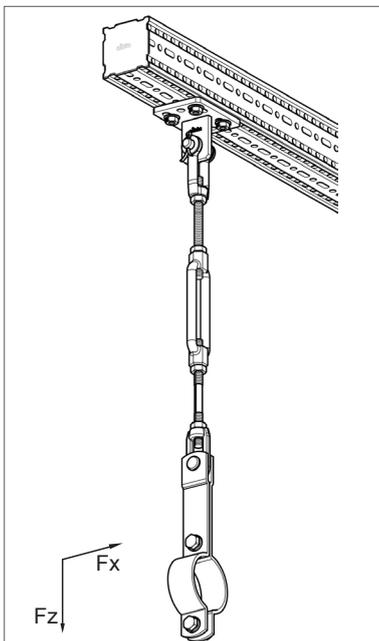
### Pipe Clamp Stabil Form C LK

Beam width 100-199 mm	
DN	$F_z$ [kN]
15	4,0
20	4,0
25	4,0
32	4,0
40	4,0
50	4,0
65	4,0
80	4,0
100	4,0
125	5,4
150	5,4
175	5,4
200	9,3
250	9,3
300	9,3



### Rod Hanger Load Chain Assembly LKV

Type	$F_z$ [kN]
M10	11,2
M12	12,1
M16	14,0



### Supports (Pipe Shoes)

#### Application

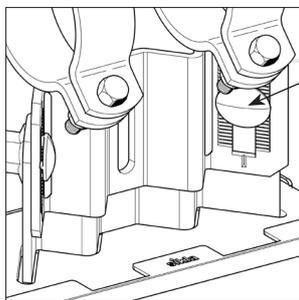
The Sikla height- adjustable Supports (Pipe Shoes; HV 90, HV 150, HV 200) can be used as a Skid, a Guide or as a Fixed Point. The testing process of the individual Support types and the determination of the direction dependent permissible loads was carried out by the independent testing house TÜV Rheinland (Report No. 69617494/01).

#### Conformity

The Sikla Simotec Supports (Pipe Shoes) therefore fulfill DIN EN 13480-3 : 2012-11, where particularly in section 13.3.6.1 it is highlighted that the design of Pipe Support components is in accordance with DIN EN 1993.

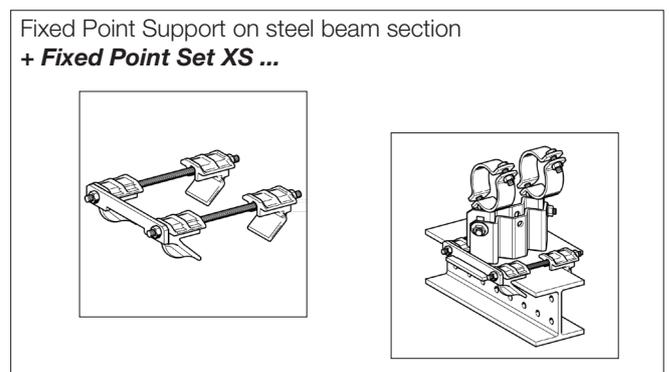
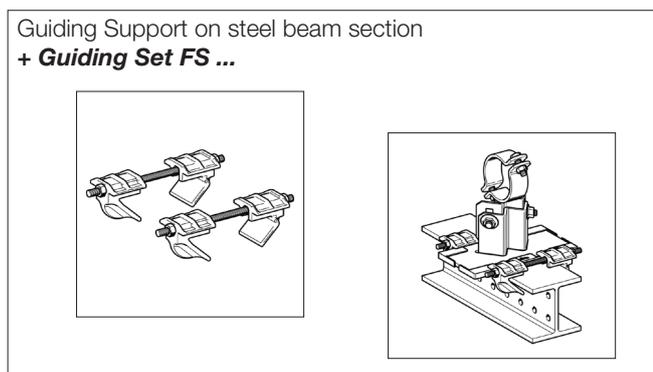
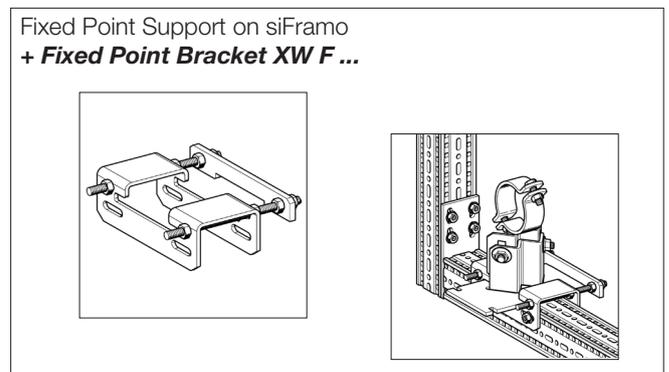
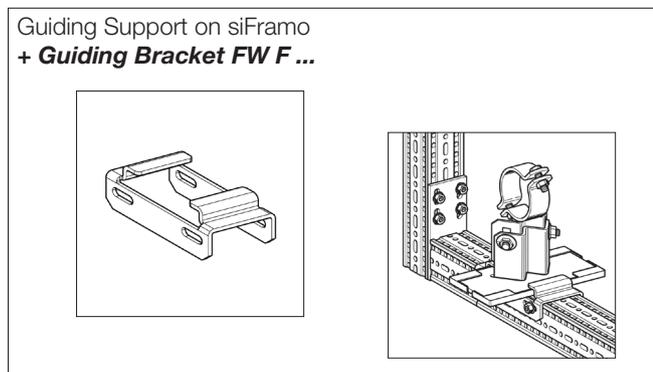
For every Pipe Support type (incl. required connection kit) a declaration of conformity could be issued in accordance with ISO / IEC 17050.

#### Installation



Special bolts for height- adjustable connection of lower and upper Pipe Shoe components.  
Tightening torque: 80 Nm

By combining **Pipe Shoe LA or LC** with the steel supporting structure and connecting parts below, it is possible to create a guided pipe shoe or a fixed point pipe shoe:



The dimension of the existing steel beam determines the required type of connection kit.  
Can be installed on steel beams with flange width  $\leq 300$  mm and flange thickness  $\leq 30$  mm.

### Design temperatures of pipe support components

The media temperature  $t_f$  has an influence on the system of the pipe support components. Acc. to DIN EN 13480-3 „*all components of the pipe support have to be designed based on a range of temperature from 0°C to 80°C. If the operational temperatures of the piping system are outside of this range, the corresponding values have to be specified.*“

During the design of pipe supports, components are basically assigned into 2 groups: inside and outside of insulation.

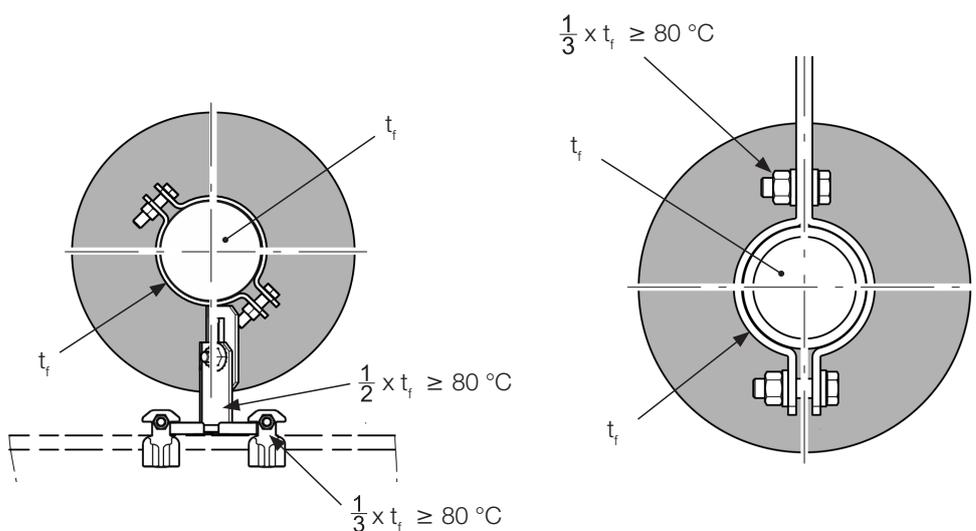
For all components being placed inside of an insulation the following values apply<sup>2</sup>:

Kind of component	Design temperature $t$ of the pipe support (depending on the media temperature $t_f$ )
Straps, pipe clamps and welded components with extensive contact to the piping system	$t = t_f$
Components not in contact with the piping system	$t = t_f - 20\text{ °C}$
Bolts, nuts, etc.	$t = t_f - 30\text{ °C}$

For all components being placed outside of the insulation the following values apply<sup>3</sup>:

Kind of component	Media temperature $t_f$	Design temperature $t$ of the pipe support
Components in direct contact with the pipe	$t_f > 80\text{ °C}$	$t = \frac{1}{2} \times t_f$ (min. 80°C)
	$t_f \leq 80\text{ °C}$	$t = 80\text{ °C}$
Bolts, nuts, etc.	$t_f > 80\text{ °C}$	$t = \frac{1}{3} \times t_f$ (min. 80°C)
	$t_f \leq 80\text{ °C}$	$t = 80\text{ °C}$

For clarification of the tables see the graphical illustration<sup>4</sup>:



<sup>1</sup> Compare EN 13480-3:2014-12, Table 13.3.1

<sup>2</sup> Compare EN 13480-3:2014-12, Chapter 13.3.2.2-1

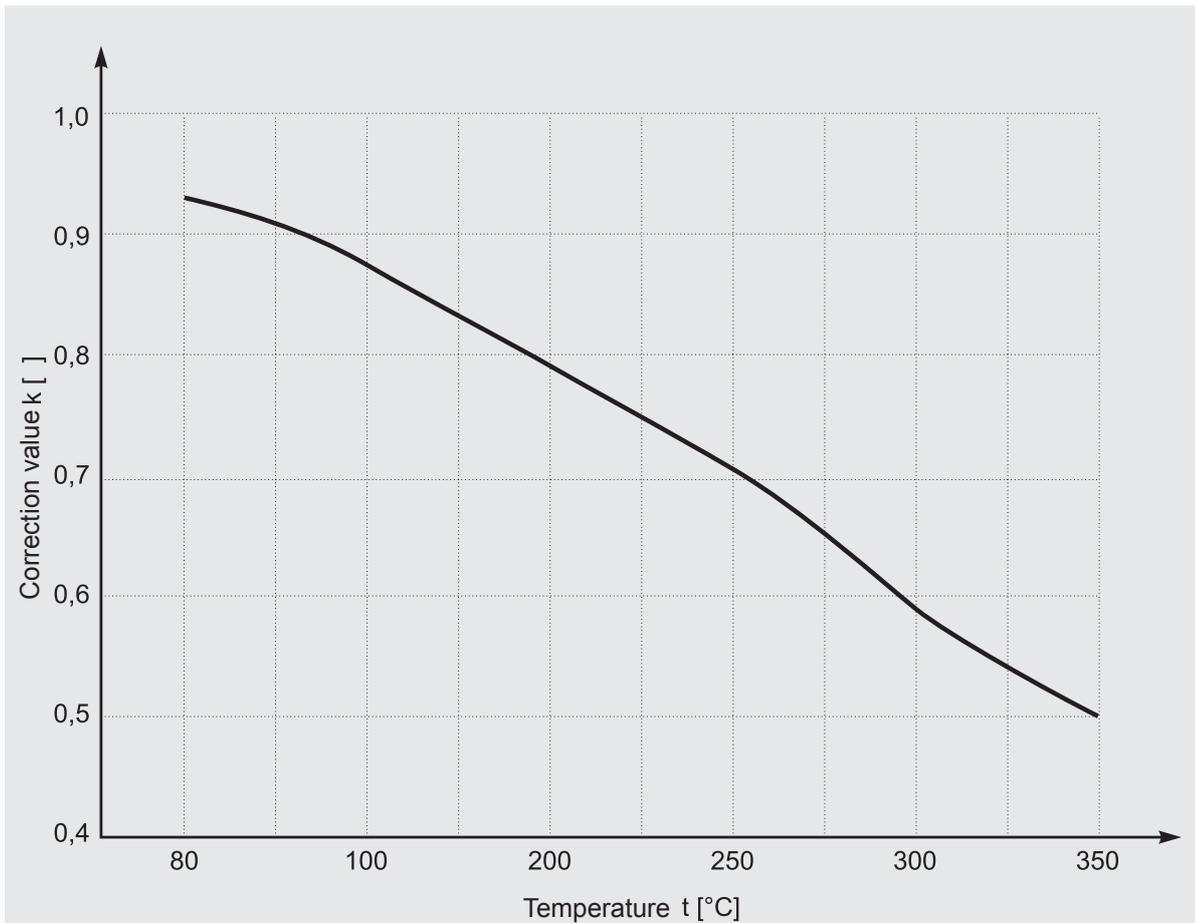
<sup>3</sup> Compare EN 13480-3:2014-12, Table 13.3.2-2

<sup>4</sup> Compare EN 13480-3:2014-12, Image 13.3.2-1

### Correction values for pipe support components

The working loads of the SIKLA pipe shoes LA, LC and LD as well as for the rod hangers are valid for component temperatures up to 80°C. If components are getting warmer than 80°C in service, the stated working loads have to be added with the correction value k to reduce the working loads. Because SIKLA pipe support components are manufactured with steel grade S235JR (or higher), the appropriate correction value has to be applied.

Correction val k for S235JR depending on the temperature:



### Correction values and practical application

$$F_{\text{perm}} \geq F_{\text{exist}}$$

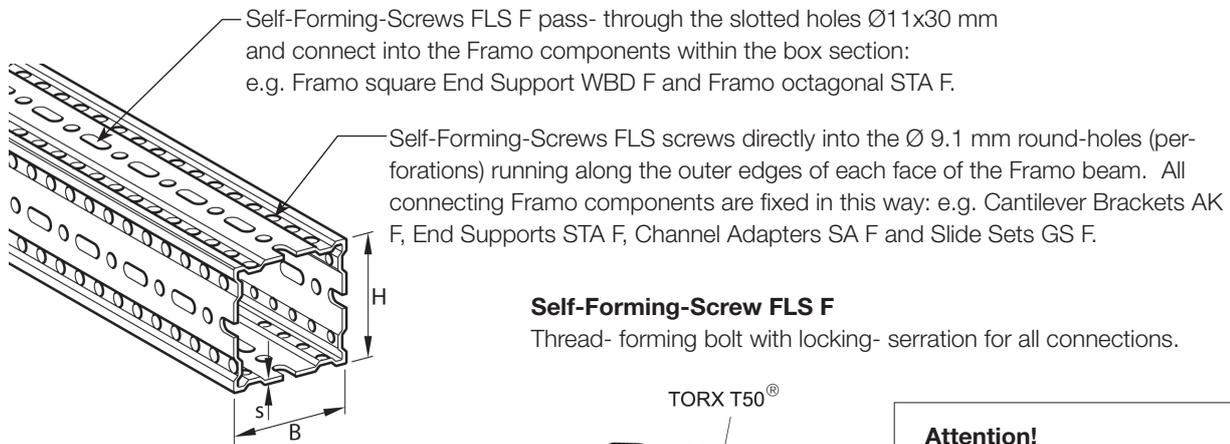
$$(F_{\text{perm}} = F_{R,20^\circ\text{C}} \cdot k) \geq F_{\text{exist}}$$

- $F_{\text{perm}}$  permissible load of Sikla pipe shoe at temperature  $t_x$  [°C]
- $F_{\text{exist}}$  pipe load according to structural analysis
- $F_{R,20^\circ\text{C}}$  permissible load of Sikla pipe shoe at 20°C
- k correction value

Temperature t [°C]	Correction value k [ ]
80	0.93
100	0.88
200	0.79
250	0.71
300	0.58
350	0.50

### siFramo

#### Beam Section TP F 80 and TP F 100



#### Self-Forming-Screw FLS F

Thread-forming bolt with locking-serration for all connections.

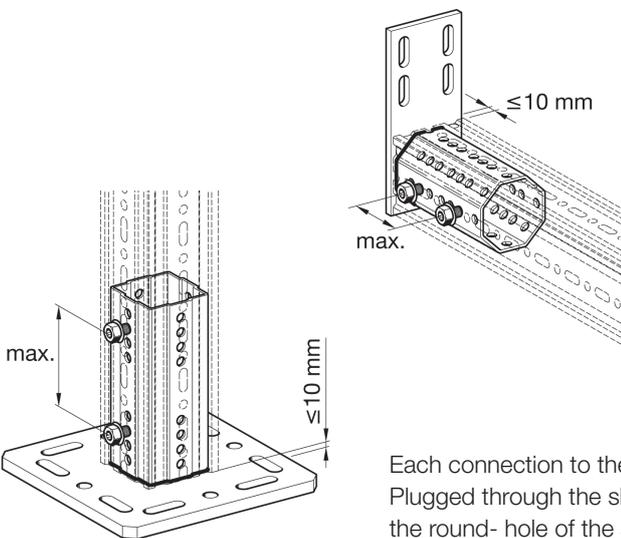


#### Attention!

► Max. applied torque no more than 60 Nm !

#### Assembly of Beam Section TP F with WBD-End Support and End Support STA F

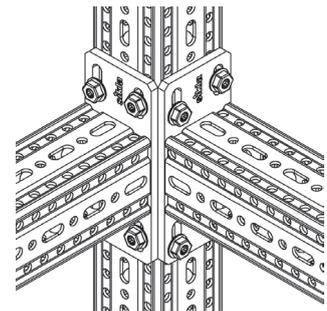
For best performance the Self-Forming-Screw FLS F must be applied to both sides in greatest possible distance apart 2 x 2 screws opposite one another.  
Distance between end of section and end-plate: ≤ 10 mm.



#### Assembly to Beam Section TP F, e.g. Cantilever Bracket AK F

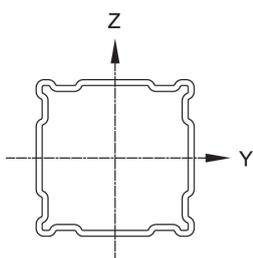
Offset hole-lines allow for connection at one level without collision of bolts inside the box section for all components with end-plate (e.g. STA F, SA F).

4 Self-Forming-Screws are required to fix each end-plate!



Each connection to the section requires 4 screws!  
Plugged through the slotted hole, these will screw into the round-hole of the section underneath.

#### Technical Data

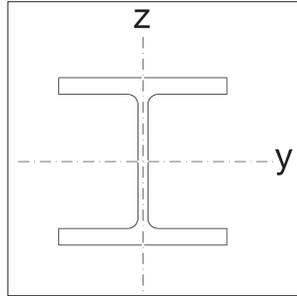
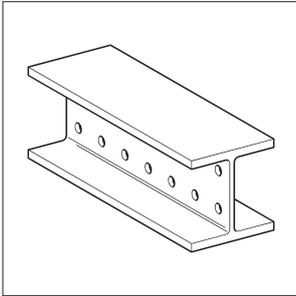


Description Beam Section [mm]	Description Axis	Wand- dicke s [mm]	Moment of Inertia		Section Modulus		Radius of Inertia		Torsional Moment It [cm <sup>4</sup> ]	Cross Section A [cm <sup>2</sup> ]	Weight G [kg/m]
			I <sub>y</sub> [cm <sup>4</sup> ]	I <sub>z</sub> [cm <sup>4</sup> ]	W <sub>y</sub> [cm <sup>3</sup> ]	W <sub>z</sub> [cm <sup>3</sup> ]	i <sub>y</sub> [cm]	i <sub>z</sub> [cm]			
TP F 80/30	z	3,0	35,4 <sup>*)</sup>	6,7 <sup>*)</sup>	10,3 <sup>*)</sup>	4,7 <sup>*)</sup>	3,63	1,58	8,58	2,69 <sup>*)</sup>	4,3
TP F 80/80	z	3,0	62,5 <sup>*)</sup>		15,8 <sup>*)</sup>		3,58		48,40 <sup>*)</sup>	4,85	6,4
TP F 100/100	z	4,0	179,8 <sup>*)</sup>		36,9 <sup>*)</sup>		4,80		135,00	7,80 <sup>*)</sup>	10,8
TP F 100/160	z	4,0	559,4 <sup>*)</sup>	280,3 <sup>*)</sup>	75,5 <sup>*)</sup>	46,2 <sup>*)</sup>	6,16	4,36	193,00	14,74 <sup>*)</sup>	14,3

Beam Section TP F. Steel. Hot-dipped-galvanized according to DIN EN ISO 1461 tZn o.  
All structural data takes perforation into account.

\*) determination of effective values by tests.

### Section data Simotec Beam System 100 / 120



Type	Moment of Inertia [cm <sup>4</sup> ]		Section Modulus [cm <sup>3</sup> ]		Radius of Inertia [cm]		Torsional Moment [cm <sup>4</sup> ]	Cross Section [cm <sup>2</sup> ] A	Weight [kg/m] G
	I <sub>y</sub>	I <sub>z</sub>	W <sub>y</sub>	W <sub>z</sub>	i <sub>y</sub>	i <sub>z</sub>			
H 100	<b>341</b>	<b>133</b>	<b>71,0</b>	<b>26,7</b>	<b>4,14</b>	<b>2,59</b>	<b>5,15</b>	<b>19,9</b>	<b>16,40</b>
HEA 100	349	134	72,8	26,8	4,06	2,51	5,26	21,2	16,70
H 120	<b>853</b>	<b>317</b>	<b>142,0</b>	<b>52,8</b>	<b>5,13</b>	<b>3,13</b>	<b>13,66</b>	<b>32,3</b>	<b>26,50</b>
HEB 120	864	318	144,0	52,9	5,04	3,06	13,90	34,0	26,70

**Remarks**

HEA 100 = IPBI 100 as per DIN 1025 Part 3: 1994-03: B100; H 96; Flange 8; Web 5 (EN 53)

HEB 120 = IPB 120 as per DIN 1025 Part 2: 1995-11: B120; H120; Flange11; Web 6,5 (EN 53)

Sikla Beam Sections H 100 und H 120 are hot-dipped-galvanized as per DIN 50976 / DIN EN ISO 1461.

### Tightening torque for typical connections

**Bracket Plates FV 100/120**

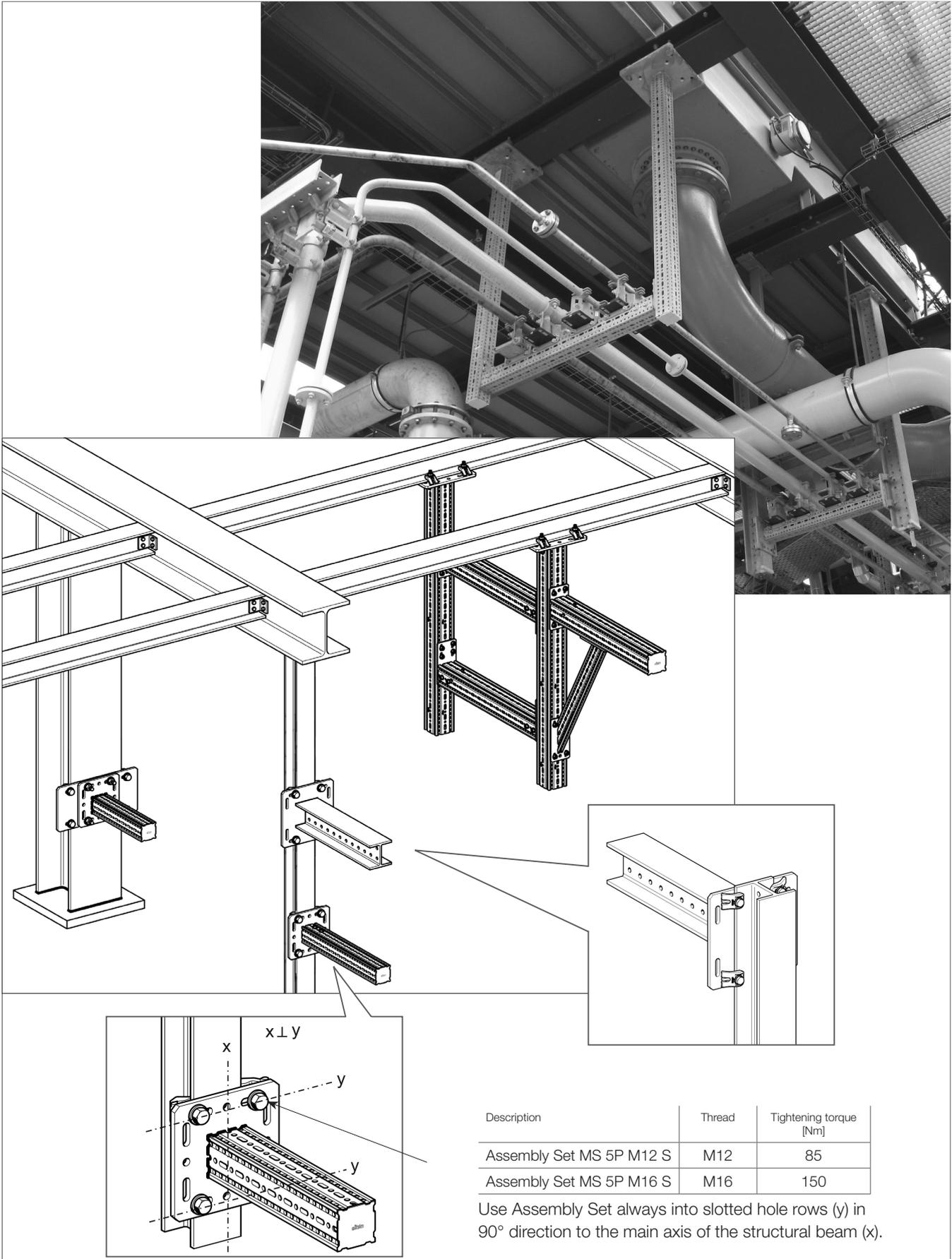
4 x M12 x 45  
Tightening torque 50 Nm

2 x M12 x 35  
Tightening torque 85 Nm

**Assembly Set MS 5P M12 S**

Assembly Set MS 5P M12 S  
Tightening torque 85 Nm

## Connection to primary steel structure by Assembly Set P2 S and P3 S



Description	Thread	Tightening torque [Nm]
Assembly Set MS 5P M12 S	M12	85
Assembly Set MS 5P M16 S	M16	150

Use Assembly Set always into slotted hole rows (y) in 90° direction to the main axis of the structural beam (x).