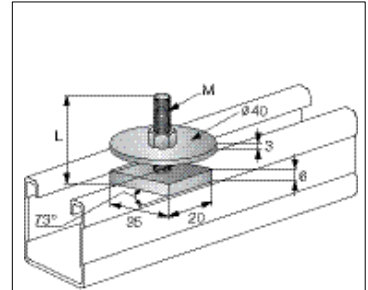


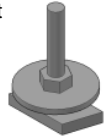
## M8 T-bolt in the channel

Designation	Item number
HHK 41 M8X40	312361
HHK 41 M8X50	312362
HHK 41 M8X60	312363
HHK 41 M8X80	312365
HHK 41 M8X100	312367
HHK 41 M8X120	312368
HHK 41 M8X150	312369



M = 8 mm  
L = see designation HHK 41 M8xL

Package content



### Corrosion protection:

**Threaded rod** galvanized 5µm  
**Washer** galvanized 5µm  
**Nut** galvanized 5µm

### Weight:

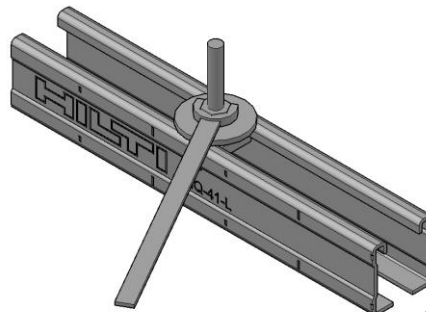
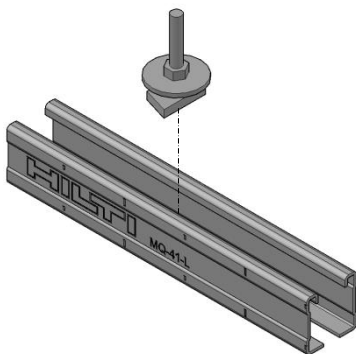
HHK 41 M8X40 - 73g  
HHK 41 M8X50 - 78g  
HHK 41 M8X60 - 82g  
HHK 41 M8X80 - 88g  
HHK 41 M8X100 - 94g  
HHK 41 M8X120 - 100g  
HHK 41 M8X150 - 110g

### Material properties:

Material	Yield strength	Ultimate strength	E-modulus	Shear modulus
<b>Threaded rod</b> Steel grade 4.8 DIN 976-1	$F_y = 320 \frac{N}{mm^2}$	$F_u = 400 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$
<b>Washer</b> Steel S235JR/DD11MOD DIN EN 10025-2 2005.4/HN 547 2004.10	$F_y = 235 \frac{N}{mm^2}$	$F_u = 360 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$
<b>Nut</b> Steel grade 8	$F_y = 640 \frac{N}{mm^2}$	$F_u = 800 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$

### Instruction For Use:

Simplified, not attached to the packaging



M8 - 13mm



# M8 T-bolt in the channel

Possible loading cases		
Standard		

## Design criteria used for loading capacity

### Methodology:

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

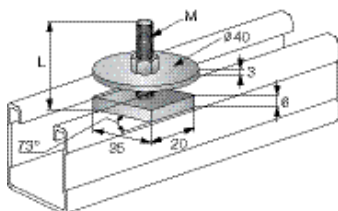
### Software:

- Ansys 16.0
- Microsoft Excel

### Environmental conditions:

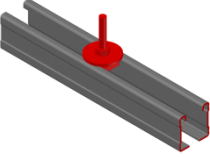
- static loads
- no fatigue loads

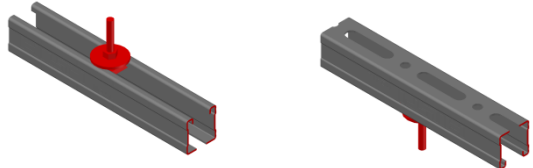
### Simplified drawing:

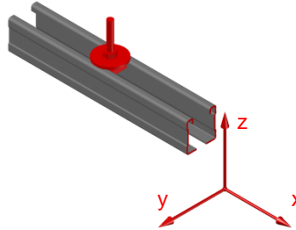
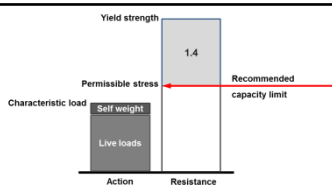


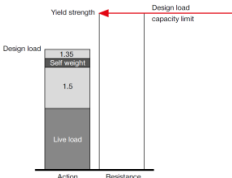
M = 8 mm  
L = see designation HHK 41 M8xL

## M8 T-bolt in the channel

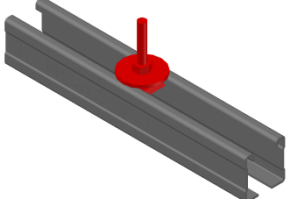
Possible loading cases		
Standard		
		

<b>Loading case: Standard</b>	<b>Combinations covered by loading case</b>
<b>BOM:</b> 1x HHK HHK 41 M8X40                   312361 HHK 41 M8X50                   312362 HHK 41 M8X60                   312363 HHK 41 M8X80                   312365 HHK 41 M8X100                  312365 HHK 41 M8X120                  312367 HHK 41 M8X150                  312368	Threaded bolt connection into a channel using simple channel nut, large washer and nut  

Recommended loading capacity - simplified for most common applications								
<b>Method</b>		<table border="1"> <tr> <th><math>\pm F_{x,rec.}</math> [kN]</th> <th><math>\pm F_{y,rec.}</math> [kN]</th> <th><math>\pm F_{z,rec.}</math> [kN]</th> </tr> <tr> <td></td> <td></td> <td>2.50</td> </tr> </table> <p>These values are individual one directional maximal capacity limits. For any combinations of multiple directions, use design values and their corresponding interaction formulas.</p>	$\pm F_{x,rec.}$ [kN]	$\pm F_{y,rec.}$ [kN]	$\pm F_{z,rec.}$ [kN]			2.50
$\pm F_{x,rec.}$ [kN]	$\pm F_{y,rec.}$ [kN]	$\pm F_{z,rec.}$ [kN]						
		2.50						
								

Design loading capacity - 3D		1/2
<b>Method</b>		
		

### Limiting components of capacity evaluated in following tables:

1. T-bolt	
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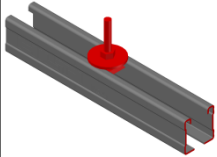
## M8 T-bolt in the channel

### Conditions of the loading capacity tables:

- Just for static loads
- No fatigue loads
- No low ( $< -10^{\circ} \text{ C}$ ), no high ( $> +100^{\circ} \text{ C}$ ) temperatures

### Possible loading cases

Standard



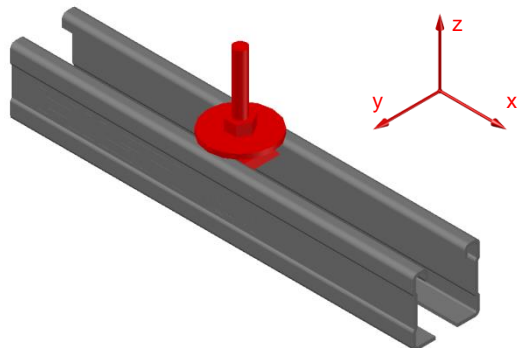
## Design loading capacity - 3D

2/2

### Summary of design loads\*

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

#### 1. Washer and nut



+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
				3.50	3.50
+Mx,Rd [kNcm]	-Mx,Rd [kNcm]	+My,Rd [kNcm]	-My,Rd [kNcm]	+Mz,Rd [kNcm]	-Mz,Rd [kNcm]

Condition: valid for channel edge distance  $\geq 100\text{mm}$