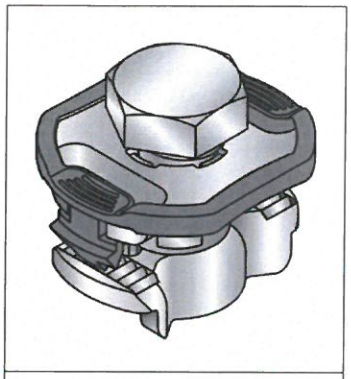
MQN-CP Push Button

Designation	Item number
MQN-CP	**2184850**



Package content

Corrosion protection:
Electro galvanized

Weight:
69g

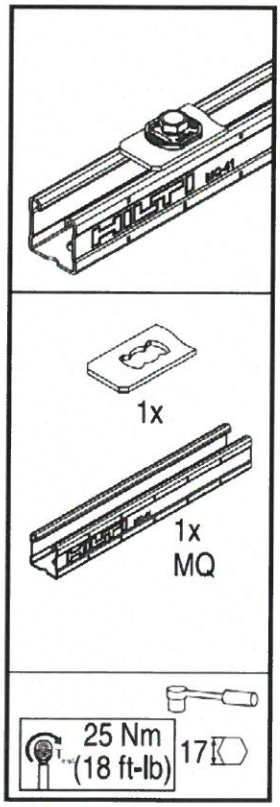
Submittal text:
Part, for fixation of connectors with Butterfly openings and channels wit pre-fixation element. Installation by pre-fixation element in Butterfly opening. Typically used for fixing of Angles, Base connectors and connection elements. Can transfer tension, compression and shear loads.

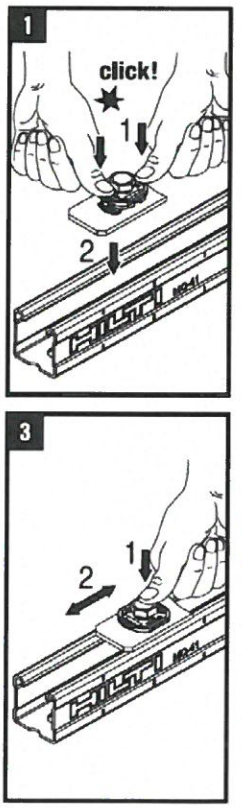
Material properties

Material	Yield strength	Ultimate strength	E-modulus	Shear modulus
Plate: steel S355J2 DIN EN 10025-2	$F_y = 235 \frac{N}{mm^2}$	$F_u = 360 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$
Nut: S355MC - DIN EN 10149-2	$F_y = 355 \frac{N}{mm^2}$	$F_u = 430 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$
Bolt: grade 8.8 - DIN EN ISO 898	$F_y = 640 \frac{N}{mm^2}$	$F_u = 800 \frac{N}{mm^2}$	$E = 210000 \frac{N}{mm^2}$	$G = 80769 \frac{N}{mm^2}$
Plastic: PA 6.6				

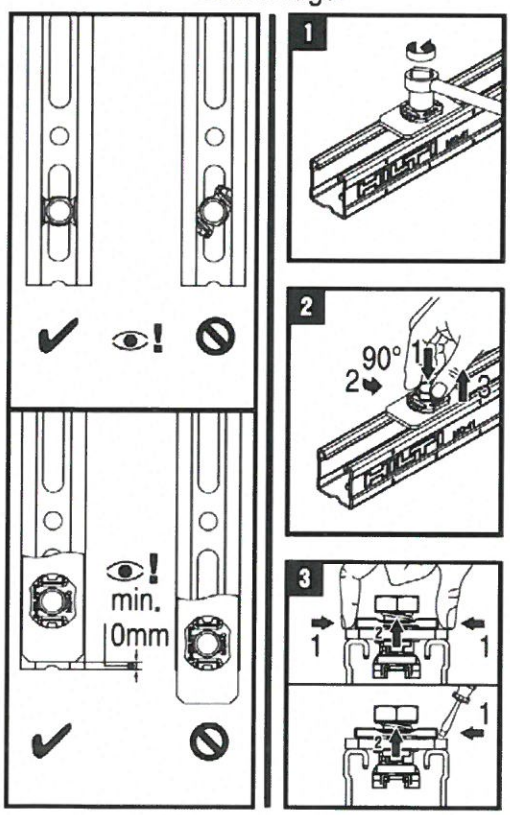
Instruction For Use:

Montage / Assembly / Montage:

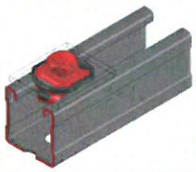
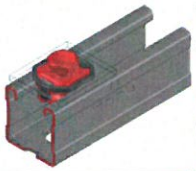
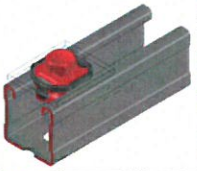




Demontage/Disassembly/
Démontage:



MQN-CP Push Button

Possible loading cases		
In 1.5mm wall thick channels MQ-41-L, MQ-21.5	**In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D**	**In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD**
		

Design criteria used for loading capacity

Methodology:
- Finite element analysis

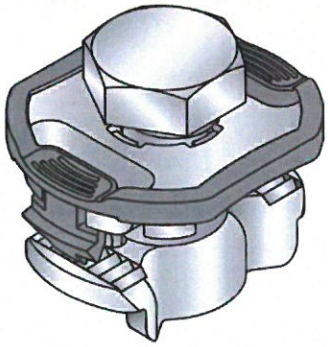
Standards and codes:

• 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

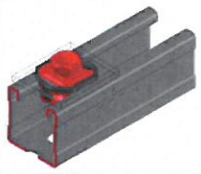
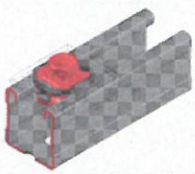
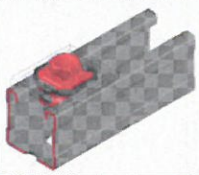
Software:
- Ansys 16.0
- Microsoft Excel

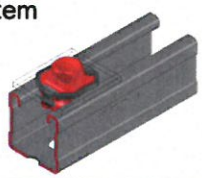
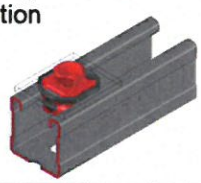
Environmental conditions:
- static loads
- no fatigue loads

Simplified drawing:



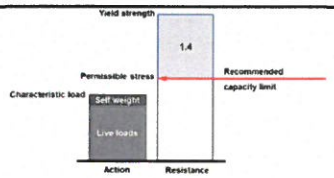
MQN-CP Push Button

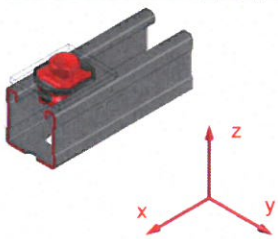
In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

Loading case: in 1.5mm wall thick channels MQ-41-L, MQ-21.5	Combinations covered by loading case
BOM: Push button cannot be used without connector **MQN-CP** **2184850** And various connectors of MQ System 	This particular loading case show push button limiting factor of any connection where push button is used in connectors with Hilti butterfly holes and Hilti channels with compatible serration 

Recommended loading capacity - simplified for most common applications

Method



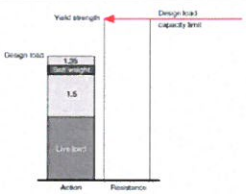


	±Fx,rec. [kN]	±Fy,rec. [kN]	+Fz,rec. [kN]
	5.0		2.5

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

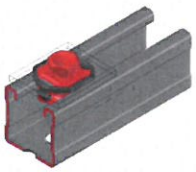
Design loading capacity - 3D 1/2

Method



Limiting components of capacity evaluated in following tables:

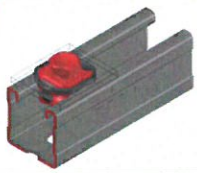
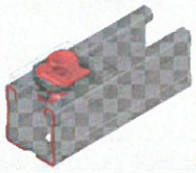
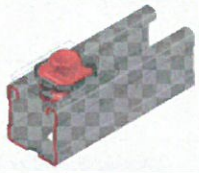
1. MQN-CP push button in 1.5mm wall thick channels MQ-41-L, MQ-21.5



MQN-CP Push Button

Conditions of the loading capacity tables:

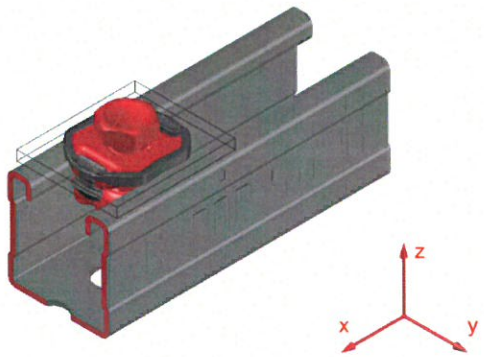
- Just for static loads
- No fatigue loads
- No low (< -10° C), no high (> +100° C) temperatures

In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

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.

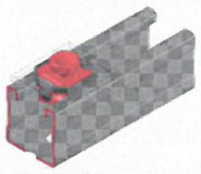
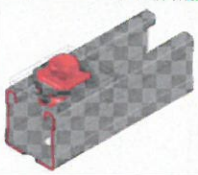
1. MQN-CP push button in 1.5mm wall thick channels MQ-41-L, MQ-21.5

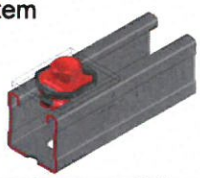
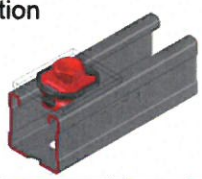


+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
7.00	7.00			3.50	
+Mx,Rd [kNcm]	**-Mx,Rd [kNcm]**	**+My,Rd [kNcm]**	**-My,Rd [kNcm]**	**+Mz,Rd [kNcm]**	**-Mz,Rd [kNcm]**

valid for edge distance ≥ 100mm

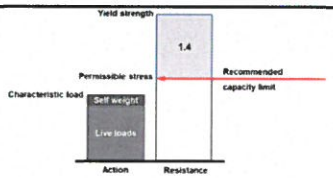
MQN-CP Push Button

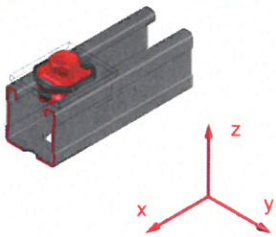
In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

Loading case: in 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	Combinations covered by loading case
BOM: Push button cannot be used without connector **MQN-CP 2184850** And various connectors of MQ System 	This particular loading case show push button limiting factor of any connection where push button is used in connectors with Hilti butterfly holes and Hilti channels with compatible serration 

Recommended loading capacity - simplified for most common applications

Method



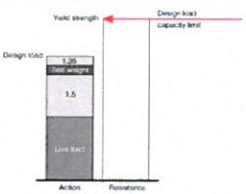


	±Fx,rec. [kN]	±Fy,rec. [kN]	+Fz,rec. [kN]
	5.0		5.0

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

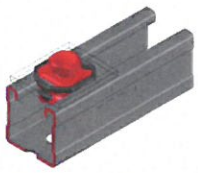
Design loading capacity - 3D 1/2

Method



Limiting components of capacity evaluated in following tables:

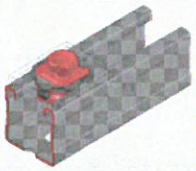
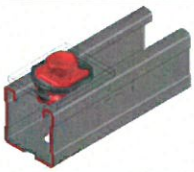
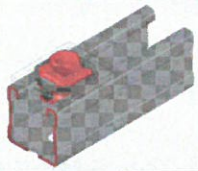
1. MQN-CP push button in 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D



MQN-CP Push Button

Conditions of the loading capacity tables:

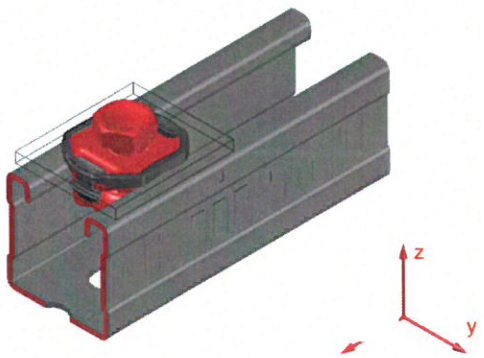
- Just for static loads
- No fatigue loads
- No low (< -10° C), no high (> +100° C) temperatures

In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

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.

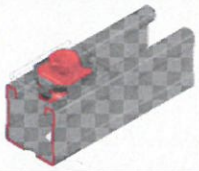
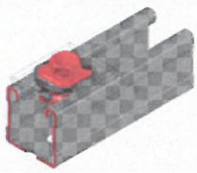
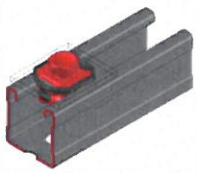
1. 1. MQN-CP push button in 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D

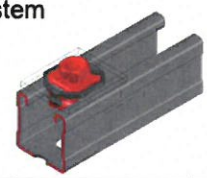
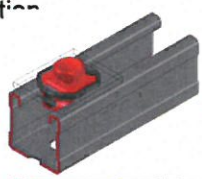


+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
7.00	7.00			7.00	
+Mx,Rd [kNcm]	**-Mx,Rd [kNcm]**	**+My,Rd [kNcm]**	**-My,Rd [kNcm]**	**+Mz,Rd [kNcm]**	**-Mz,Rd [kNcm]**

valid for edge distance ≥ 100mm

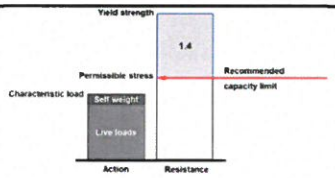
MQN-CP Push Button

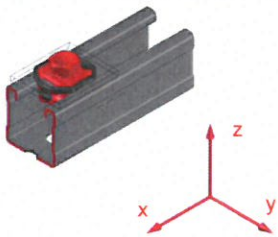
In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

Loading case: in ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD	Combinations covered by loading case
BOM: Push button cannot be used without connector **MQN-CP** **2184850** And various connectors of MQ System 	This particular loading case show push button limiting factor of any connection where push button is used in connectors with Hilti butterfly holes and Hilti channels with compatible serrat[illegible] 

Recommended loading capacity - simplified for most common applications

Method



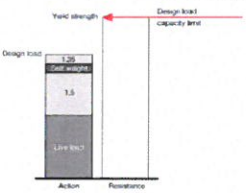


	±Fx,rec. [kN]	±Fy,rec. [kN]	+Fz,rec. [kN]
	5.0		5.0

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

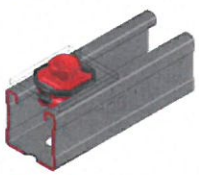
Design loading capacity - 3D 1/2

Method



Limiting components of capacity evaluated in following tables:

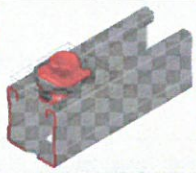
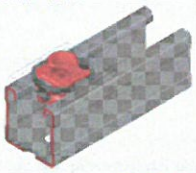
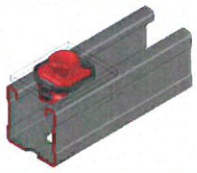
1. MQN-CP push button in ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD



MQN-CP Push Button

Conditions of the loading capacity tables:

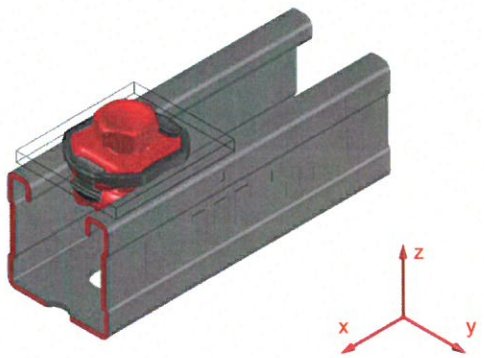
- Just for static loads
- No fatigue loads
- No low (< -10° C), no high (> +100° C) temperatures

In 1.5mm wall thick channels MQ-41-L, MQ-21.5	In 2mm wall thick channels MQ-21, MQ-41, MQ-21D, MQ-41D	In ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD
		

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. MQN-CP push button in ≥ 2.5mm wall thick channels MQ-41/3, MQ-52, MQ-72, MQ-52-72D, MQ-124XD



+Fx,Rd [kN]	-Fx,Rd [kN]	+Fy,Rd [kN]	-Fy,Rd [kN]	+Fz,Rd [kN]	-Fz,Rd [kN]
7.00	7.00			7.00	
+Mx,Rd [kNcm]	**-Mx,Rd [kNcm]**	**+My,Rd [kNcm]**	**-My,Rd [kNcm]**	**+Mz,Rd [kNcm]**	**-Mz,Rd [kNcm]**

valid for edge distance ≥ 100mm