TECHNICAL DATA DOCUMENT: HEU_MQA-S M8/M10

Product name:	MQA-S M8/M10
Variants:	MQA-S M8/M10 (C_<2.75MM) MQA-S M8/M10 (C_>=2.75MM)
Item number:	2139755 2139756
Date:	07.04.2022
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Release date:	08.04.2022
Released:	NAbc Dipl.-Ing. Clemens Beiter x C. Beiter
Revision:	01

1 MQA-S M8/M10 – Variant C_<2.75MM Design resistance *Rd* according to Eurocode 3

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.

a) MQA-S M8/M10 (C_<2.75MM) resistance based on testing

$+F_{x,Rd}$ [kN]*	$-F_{x,Rd}$ [kN]*	$+F_{y,Rd}$ [kN]*	$-F_{y,Rd}$ [kN]*	$+F_{z,Rd}$ [kN]	$-F_{z,Rd}$ [kN]
0.001	0.001	0.001	0.001	4.15	0.00
$M_{x,Rd}$ [kNm]*	$M_{y,Rd}$ [kNm]*	$M_{z,Rd}$ [kNm]*			
0.001	0.001	0.001			

Valid for use of MQA-S M8/M10 with MT-30, MT-40 and MT-40D channels.
* Added for software stability only.

Interaction:

$$\max\left(\frac{F_{x.Ed}}{F_{x.Rd}}, \frac{F_{y.Ed}}{F_{y.Rd}}, \frac{F_{z.Ed}}{F_{z.Rd}}, \frac{M_{x.Ed}}{M_{x.Rd}}, \frac{M_{y.Ed}}{M_{y.Rd}}, \frac{M_{z.Ed}}{M_{z.Rd}}\right) \leq 1.0$$

2 MQA-S M8/M10 – Variant C_>=2.75MM Design resistance *Rd* according to Eurocode 3

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.

b) MQA-S M8/M10 (C_>=2.75MM) resistance based on testing

$+F_{x,Rd}$ [kN]*	$-F_{x,Rd}$ [kN]*	$+F_{y,Rd}$ [kN]*	$-F_{y,Rd}$ [kN]*	$+F_{z,Rd}$ [kN]	$-F_{z,Rd}$ [kN]
0.001	0.001	0.001	0.001	4.81	0.00
$M_{x,Rd}$ [kNm]*	$M_{y,Rd}$ [kNm]*	$M_{z,Rd}$ [kNm]*			
0.001	0.001	0.001			

Valid for use of MQA-S M8/M10 with MT-50 and MT-60 channels.
* Added for software stability only.

Interaction:

$$\max\left(\frac{F_{x.Ed}}{F_{x.Rd}}, \frac{F_{y.Ed}}{F_{y.Rd}}, \frac{F_{z.Ed}}{F_{z.Rd}}, \frac{M_{x.Ed}}{M_{x.Rd}}, \frac{M_{y.Ed}}{M_{y.Rd}}, \frac{M_{z.Ed}}{M_{z.Rd}}\right) \leq 1.0$$

3 Design basis

Design Methodology: Testing

Standards, codes:

EN 1993-1-1	Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings
EN 1993-1-3	Eurocode 3: Design of steel structures – Part 1-3: General rules- Supplementary rules for cold-formed members and sheeting
EN 1993-1-5	Eurocode 3: Design of steel structures – Part 1-5: Plated structural elements
EN 1993-1-8	Eurocode 3: Design of steel structures – Part 1-8: Design of joints
ANSI/AISC 360-16	American National Standard: Specification for Structural Steel Buildings
AISI S100-16	AISI Standard: North American Specification for the Design of Cold-Formed Steel Structural Members
EN 10025-2	Hot rolled products of structural steels- Part 2: technical delivery conditions for non-alloy structural steels

Software: Microsof Excel

Environmental conditions: Static loads
No fatigue loads
Temperature range: - 30°C to +93°C
- 22°F to +200°F

4 Material properties

Saddle nut: S235JR (EN10025-2)

$f_y = 235\ N/mm^2$	yield strength
$f_u = 360\ N/mm^2$	ultimate tensile strength
$\mathrm{E} = 200000\ N/mm^2$	modulus of elasticity
$\mathrm{v} = 0.3$	Poisson's ratio in elastic stage

INDEX

Revision List

Revision	Author	Date	Change	Description
00	NApj	06.12.2021	-	First issue
01	NApj	07.04.2022	1, 2	Interaction formulas revised for consistency with MQ in MSE. My and Mz resistance added for software stability.