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Structural Report

Endplate-QLJZ15C
Suspension point F44

23279-B

for the system by

Global Truss
Furong Industrial Area
Shajing Town

Baoan District Shenzhen China

Compiled by:

Aachen, 23rd Mai 2026



This report includes pages:

1 – 5

Annex:

Technical Drawing QLJZ15C

This static calculation is set up exclusively for the company Global Truss.
Forwarding to third parties only with the author's approval



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+Annex: Technical Drawing QLJZ15C



1 GENERAL REMARKS

1.1 Basics

The currently applicable regulations and standards, in particular:

DIN EN 1991-1	Loadings for buildings (Eurocode 1)
DIN EN 13814	Temporary structures
DIN EN 13782	Temporary structures - Tents
DIN EN 1993-1	Steel structures (Eurocode 3)
DIN EN 1995-1	Wooden structures (Eurocode 5)
DIN EN 1999-1	Aluminium Structures (Eurocode 9)
DIN EN 12385	Steel cable

1.2 Building materials

Q235 strength class of the used steel material

1.3 General description / advice on setting up and operation

Subject of this structural report is an attachment component for the F44 truss system. The component can be connected to the four main chords of a F44 Truss (Fa. Globaltruss) with cone connectors.

The component is made of 10 mm thick steel plates and its dimensions are corresponding to the dimensions of the F44 truss. The component is designed to support a vertical payload of 1000 kg as shown in chapter 2.

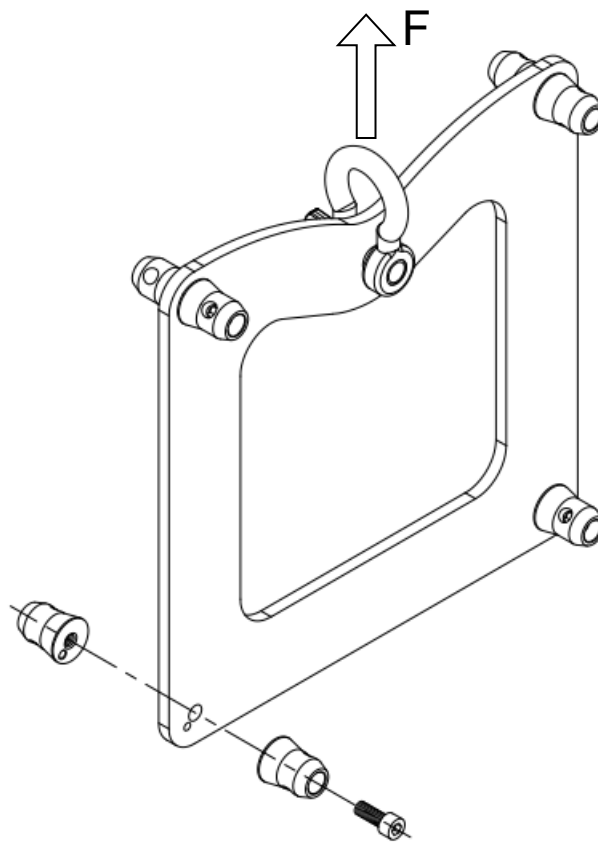
The verifications based on the calculations are carried out in accordance with the safety concept of the European steel construction standards with increased safety requirements for loads above persons (see chap. 1.4).

These verifications are partly based on the yield strength and therefore do not provide a direct statement regarding the actual breaking load, which is in reality higher.



1.4 **Loadings**

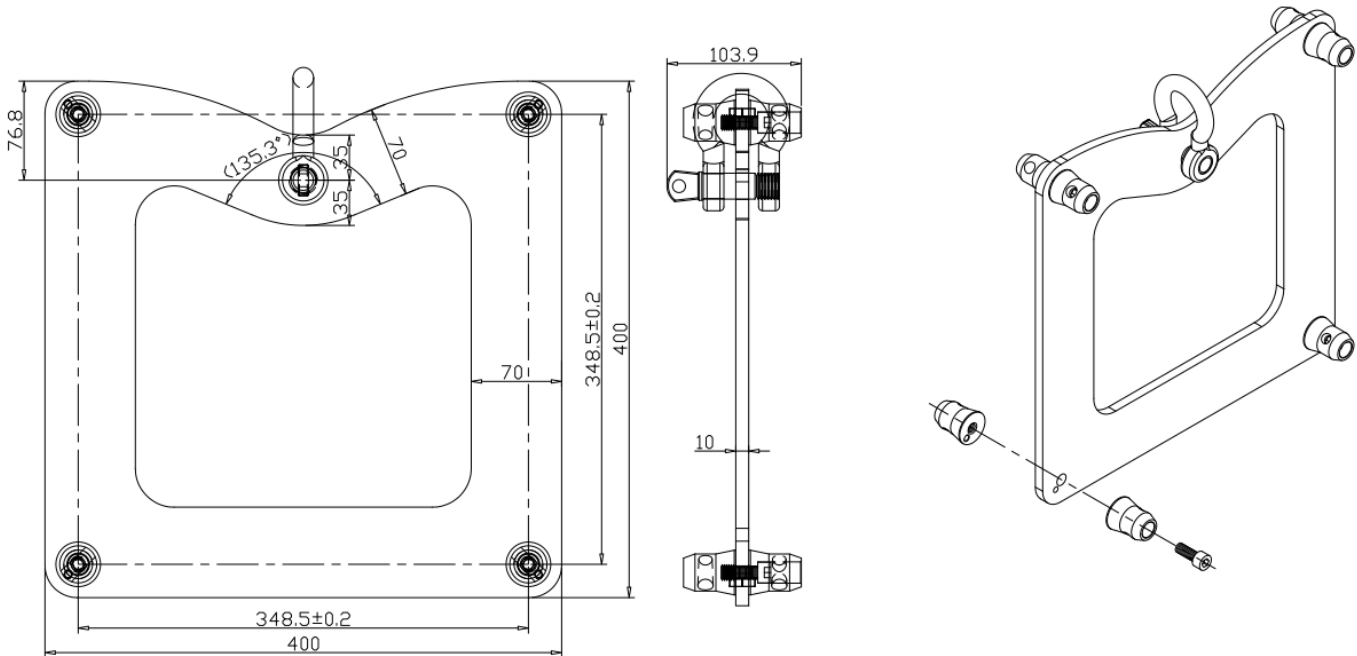
Self-weight	The low self-weight can be neglected	
Payload	maximum vertical payload	$F = 1000 \text{ kg} = 10 \text{ kN}$
Safety factors	Safety factor on loading side $y_F = 1,5$ according to EN 1990 Additional safety factor $y = 2,0$ to cover the case: loads above person acc. to DGUV 17	





2 SYSTEM

Dimensions in [mm]



Steel Q235

t= 10 mm

yield strength
tensile strength

$f_y = 235 \text{ N/mm}^2$
 $f_u \geq 360 \text{ N/mm}^2$

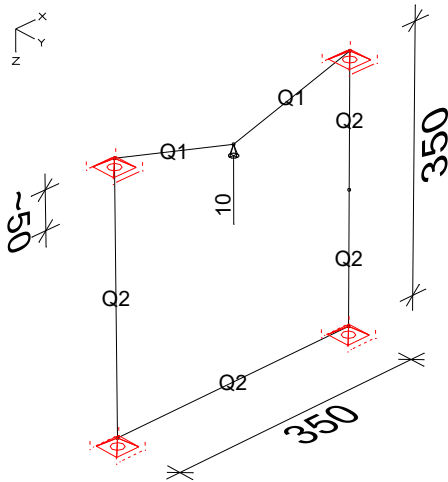
maximum Payload

F = 1000 kg = 10 kN

The shackle is no part of this structural report.

3 VERIFICATION

System for the EDV-Calculation – Dimension in [mm]:



→ Loading without safety factor

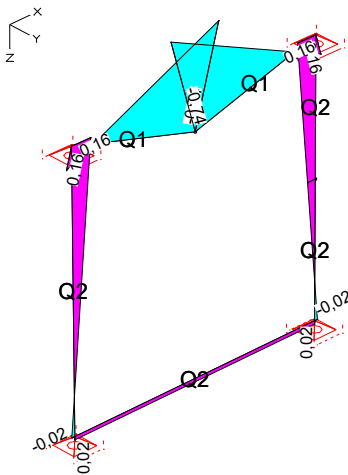
with cross-section Q1
Q235 steel

$b \times h = 10 \times 70 \text{ mm}$
yield strength $f_y = 235 \text{ N/mm}^2 = 23,5 \text{ kN/cm}^2$

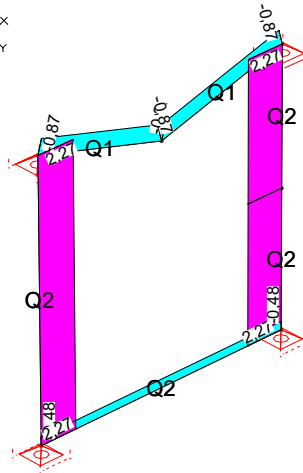
Verification of the Cross-section

Resulting internal Forces and stresses:

M_y [kNm]



N [kN]



Cross-section properties

$$W_{pl} = t \cdot h^2 / 4$$

$$= 1,0 \cdot 7,0^2 / 4 = 12,25 \text{ cm}^3$$

$$A = t \cdot h$$

$$= 1,0 \cdot 7,0 = 7,0 \text{ cm}^2$$

resulting stress (without safety factors)

$$\sigma_x = M_y / W_{pl} + N / A$$

$$= 74 \text{ kNcm} / 12,25 \text{ cm}^3 + 0,87 \text{ kN} / 7,0 \text{ cm}^2$$

$$= 6,17 \text{ kN/cm}^2$$

with safety factors (see chapter 1.4)

$$\sigma_{xd} = 1,5 \cdot 2,0 \cdot 6,17 \text{ kN/cm}^2$$

$$= 18,51 \text{ kN/cm}^2$$

$$< f_{yd} = 23,5 \text{ kN/cm}^2$$



Verification of the bearing capacity of the hole

Verification according to DIN EN 1993-1

Acting Payload $F_{sd} = 1,5 \cdot 2,0 \cdot 10,0 \text{ kN} = 30 \text{ kN}$

Bearing Capacity $F_{b,Rd} = k_1 \cdot \alpha_b \cdot f_u \cdot d \cdot t / y_{M2}$
 $= 2,5 \cdot 0,57 \cdot 360 \text{ N/mm}^2 \cdot 20 \text{ mm} \cdot 10 \text{ mm} \cdot 10^{-3} / 1,25$
 $= 82,1 \text{ kN}$

$F_{b,Rd} = 82,1 \text{ kN} > F_{sd} = 30 \text{ kN}$

With: $k_1 = \min\{2,8 \cdot e_2 / d_0 - 1,7 ; 1,4 \cdot p_2 / d_0 - 1,7 ; 2,5\}$
 $= \min\{5,13 ; / ; 2,5\} = 2,5$

$\alpha_b = \min\{e_1 / (3 \cdot d_0) ; f_{ub} / f_u ; 1,0\}$
 $= \min\{0,57 ; 1,11 ; 1,0\} = 0,57$

$f_u = 360 \text{ N/mm}^2$

$f_{ub} = 400 \text{ N/mm}^2$ (assumption for bolt material 4.6)

$d = 20 \text{ mm}$

$d_0 = 20,5 \text{ mm}$

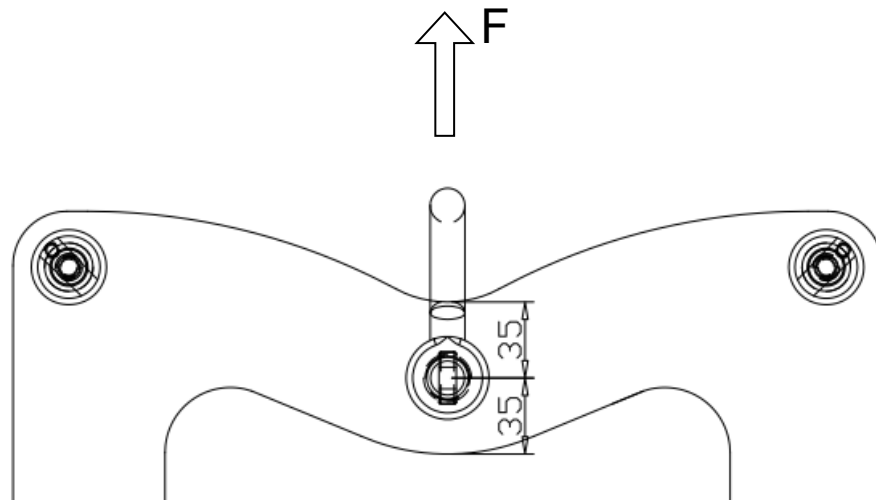
$t = 10 \text{ mm}$

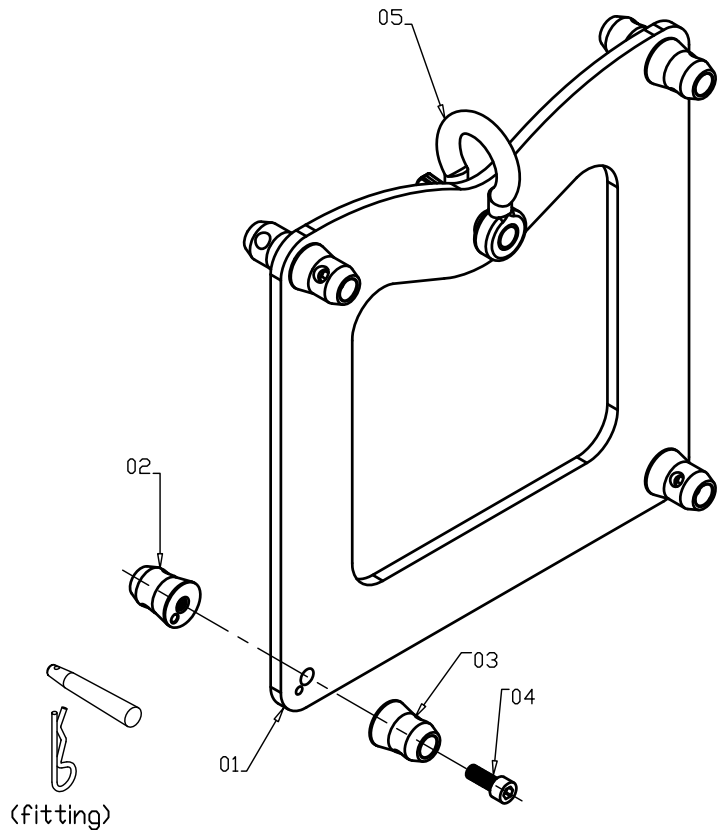
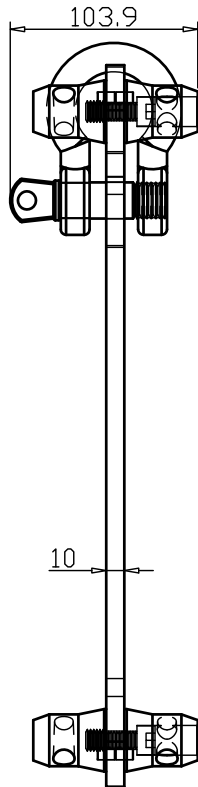
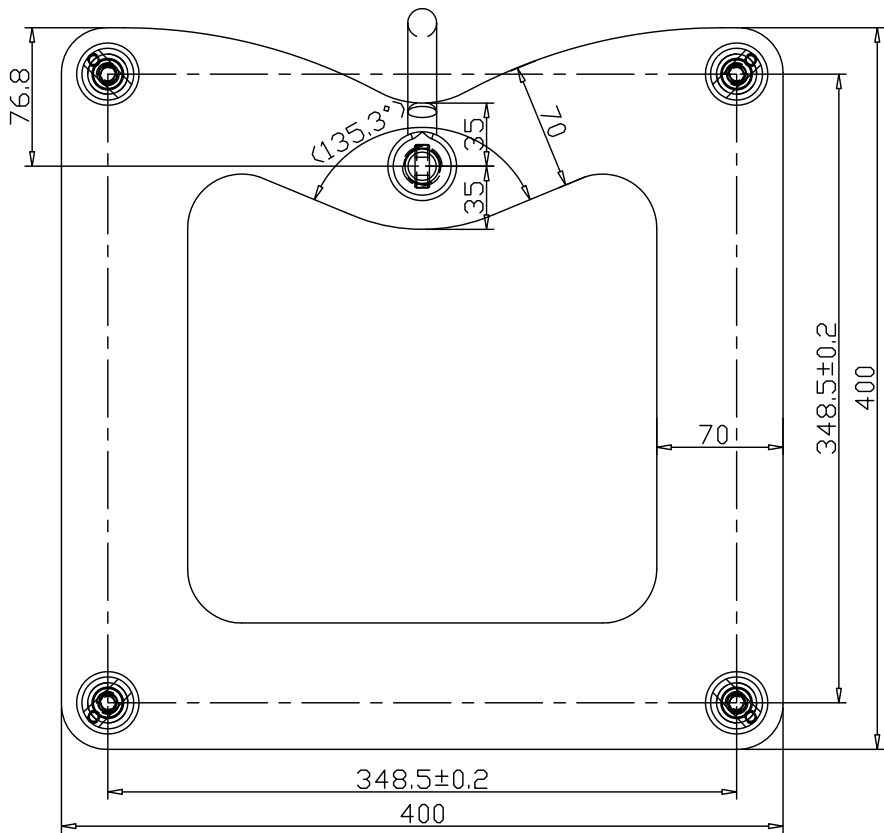
$y_{M2} = 1,25$

$e_1 = 35 \text{ mm}$

$p_2 = /$

$e_2 = 50 \text{ mm}$ (set)





fitting	DMS-01-1	Steel	ZP	8
	DMS-01-4	S45C	ZP	8
05	M20*3.25Ton	S45C	ZP	1
04	M12*1.75P*25mm	10.9	Black	4
03	DMS-03-2N	S45C	ZP	4
02	ST5003A-2	S45C	ZP	4
01	400*400*10t	Q235	ZP	1
NO.	SPEC.	MATERIAL	FIN.	QTY.

MARK	NAME	RETRIEVE	CONTENTS	DATE

	DRAWN	DRAW NO	QLJZ15C	2D/3D	edition	1
	Specification	400*400*103.9mm	DESIGN	DLY	DATE	23.04.17
	Weight	**kgs/pcs	UNITS	mm	CHECKED	APPROVED
	SURFACE	ZP	SCALE	1:4	Proofread	