

Assembly and Maintenance Instructions for the Drawbar, Model: ASD
EC Type Approval, No.: e4*94/20*94/20*3322*00

Technical data: Permissible vertical load: 1000 kg
Permissible Dc value: 125 kN
Permissible V value: 60 kN

$$D_c = \frac{T \times R}{T + R} \times 9,81 \quad D_c = \text{Permissible drawbar force in kN}$$

$$T = \frac{D \times R}{(R \times 9,81) - D} \quad T = \text{Total weight of towing vehicle in tons}$$

$$R = \frac{D \times T}{(T \times 9,81) - D} \quad R = \text{Total weight trailer in tons}$$

1. Assembly

Version A (bolted drawbar eye flange plate), Version B (welded drawbar eye flange plate / drawbar profile made of QStE 420), or Version C (welded drawbar eye flange plate / drawbar profile made of QStE 500) of the ASD model drawbar is provided (see Sheet 3).

The drawbar eye flange plate for Version A is bolted on the side to the drawbar profile (see Sheet 4).

The connection yokes are bolted inside to the drawbar profile (see Sheet 3).

At least three connection yokes must be mounted.

The crossbar/yokes are bolted to the side of the drawbar profile.

Layout of the crossbar / yoke version 1, see Sheet 5.

Layout of the crossbar version 2, see Sheet 6.

Layout of the crossbar version 3, see Sheet 7.

Layout of the crossbar version 4, see Sheet 8.

The ratio of the FLmax and STM min. values specified in the tables (Sheet 10) may not exceed the V value!

The drawbar is either bolted or welded to the chassis frame together with the crossbars (see Sheet 9).

The following must be used to bolt versions 1 and 2:

- 16 pieces hex bolt M16 in the required length, DIN 931 or DIN 933, strength grade 8.8 or 10.9
- 16 pieces hex nut M16, DIN 980 - 8 or 10
- The tightening torque is 210 +10/0 Nm for strength grade 8.8
- The tightening torque is 290 +10/0 Nm for strength grade 10.9

optional:

- 16 pieces flange bolts M16x1.5 in the required length, DIN 6921 - 10.9
- 16 pieces flange nuts M16x1.5, DIN 6927 - 10
- The tightening torque is 250 +10/0 Nm.

To handle the thrust, the drawbar thrust plates (SB) must be welded to the chassis frame after bolting in place. See Sheet 9 for the position. Material of the thrust plates: flat iron, min. 4.0x10x100 long, St 52-3. welded on both sides of the plate, but only longitudinally.

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MA-074	24-05-2013

Assembly and Maintenance Instructions for the Drawbar, Model: ASD
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$T = \frac{D \times R}{(R \times 9,81) - D}$	T =Total weight of towing vehicle in tons
$R = \frac{D \times T}{(T \times 9,81) - D}$	R =Total weight trailer in tons

The following must be used to bolt version 3:

- 16 pieces hex bolt M14 x 1.5 in the required length, DIN 931 or DIN 933, strength grade 10.9
- 16 pieces hex nut M14 x 1.5, DIN 980 - 10
- The tightening torque is 180 +10/0 Nm

optional:

- 16 pieces knurled head bolt M14x1.5 in the required length, strength grade 10.9
- 16 pieces hex nut M14 x 1.5, DIN 980 - 10
- The tightening torque is 180 +10/0 Nm

The crossbar version 1 is welded to the chassis frame as shown on Sheet 9.

The crossbar version 4 is welded to the chassis frame as shown on Sheet 8.

For handmade crossbars, the surface area of the welding bead on the connection to the yoke must be at least 5,000 mm².

2. Maintenance

All bolts on the drawbar, including the eyes, must be checked for tightness once per month, but at least every 20,000 km.

Tightening torques as described in these instructions.

See the Assembly Instructions for the drawbar eyes for the tightening torques for the drawbar eye bolts, MA-010.

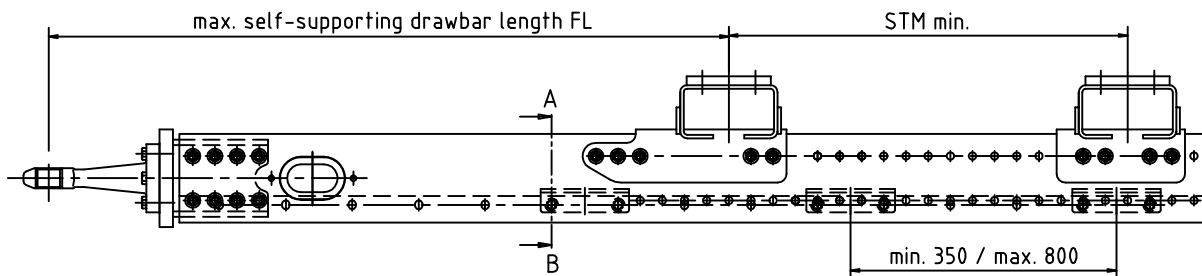
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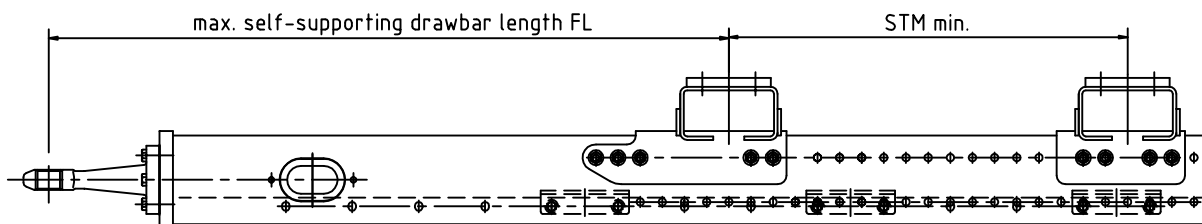
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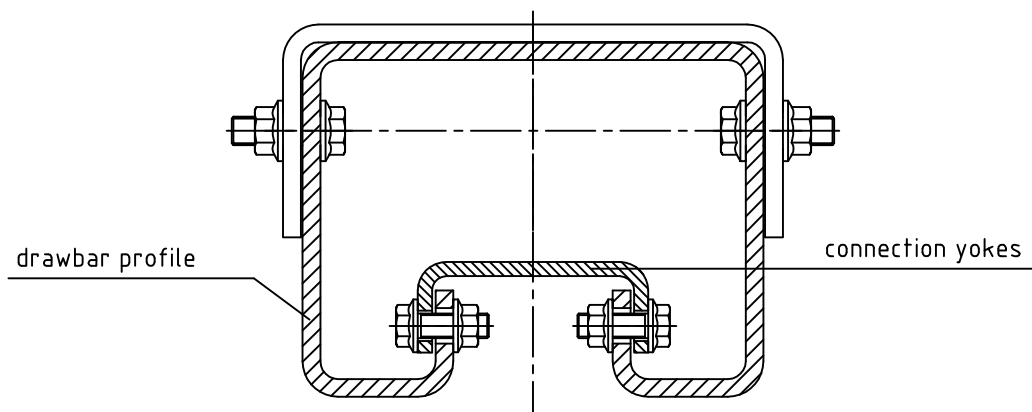
Drawbar Model ASD, Version A - flange bolted in drawbar profile



Drawbar Model ASD, Version B and C - flange welded to drawbar profile



Section A-B



Connection elements for 1 piece connection yokes and drawbar profile

- 4 pieces flange bolt M14x1.5x40 - DIN 6921 - 10.9
- 4 pieces flange nut M14x1.5 - DIN 6927 - 10
- Tightening torque 160 +10/0 Nm

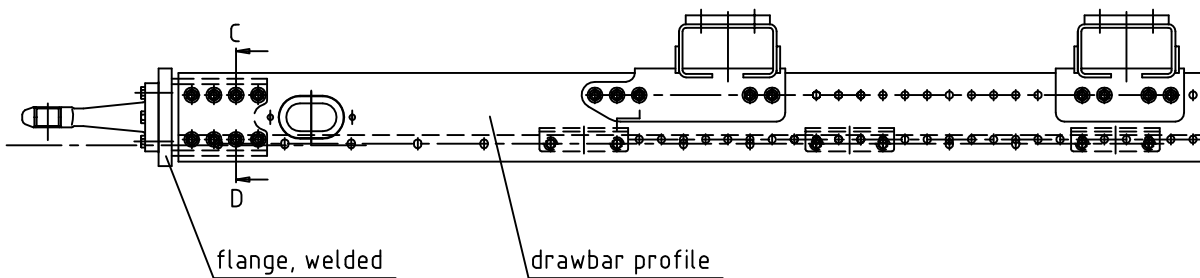
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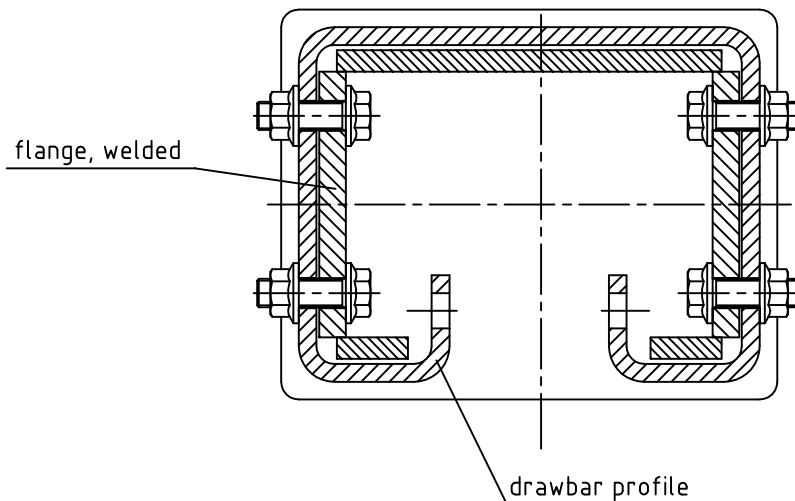
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Drawbar Model ASD, Version A - flange bolted in drawbar profile



Section C-D



Connection elements for welded flange and drawbar profile

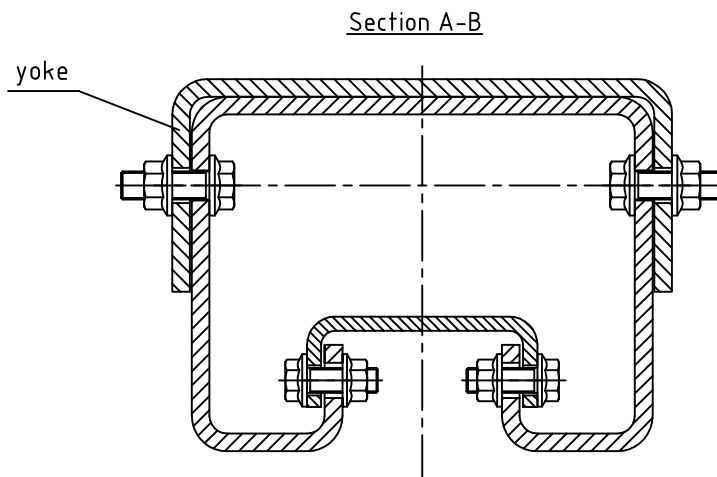
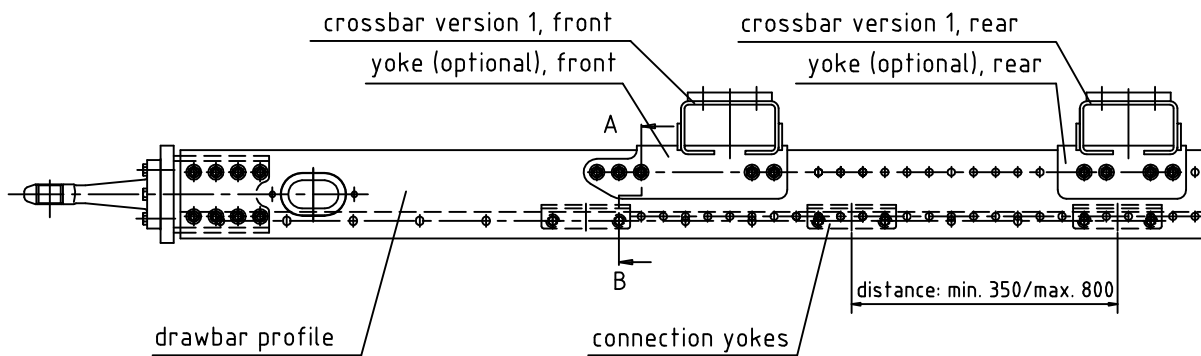
- 16 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9
- 16 pieces flange nut M16x1.5 - DIN 6927 - 10
- Tightening torque 250 +10/0 Nm

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Connection elements for crossbar version 1 (optional yoke), front and drawbar profile

10 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9

10 pieces flange nut M16x1.5 - DIN 6927 - 10

Tightening torque 250 +10/0 Nm

Connection elements for crossbar version 1 (optional yoke), rear and drawbar profile

8 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9

8 pieces flange nut M16x1.5 - DIN 6927 - 10

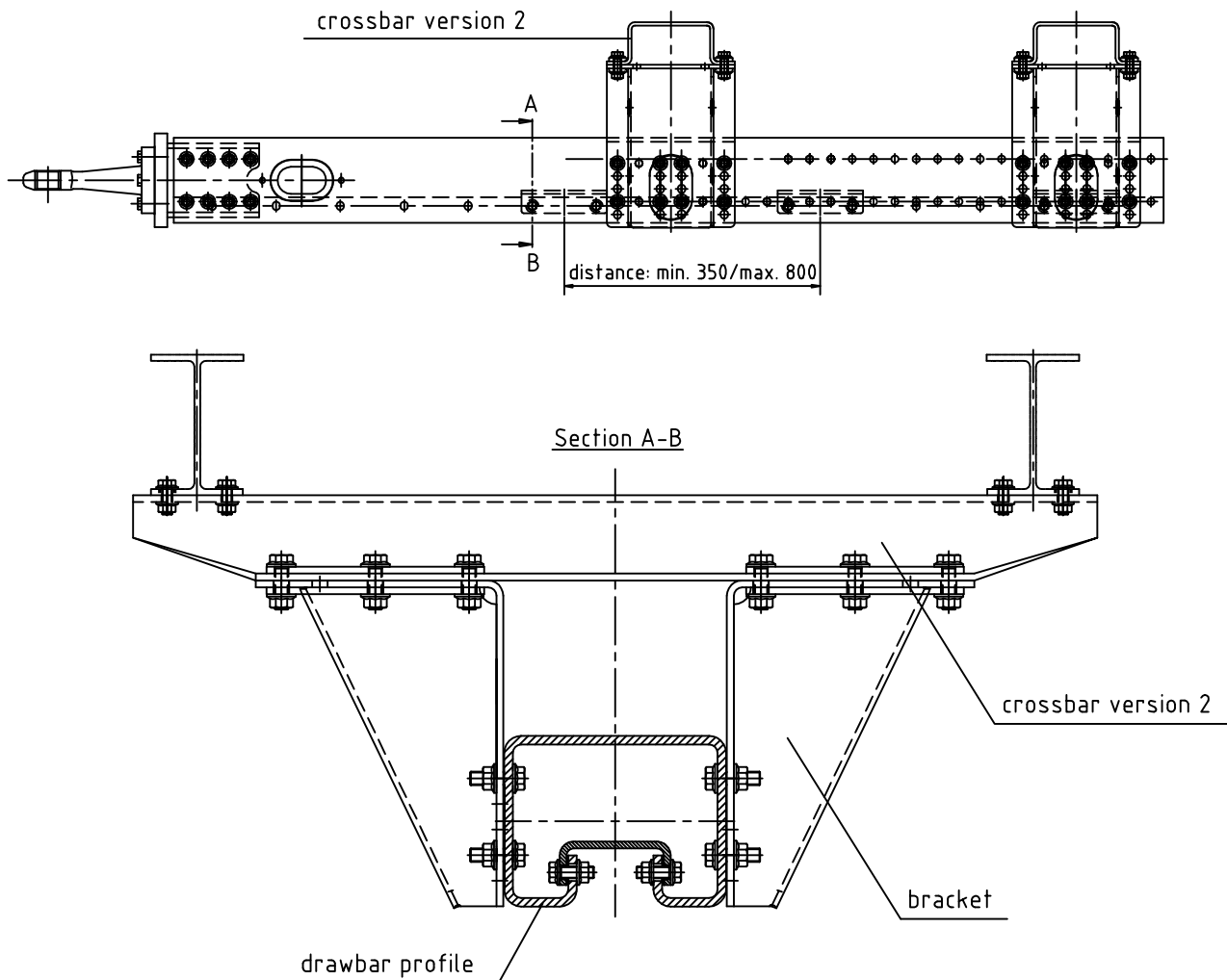
Tightening torque 250 +10/0 Nm

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Connection elements per crossbar version 2 with bracket

12 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9

12 pieces flange nut M16x1.5 - DIN 6927 - 10

Tightening torque 250 +10/0 Nm

Connection elements per pair of brackets with drawbar profile

16 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9

16 pieces flange nut M16x1.5 - DIN 6927 - 10

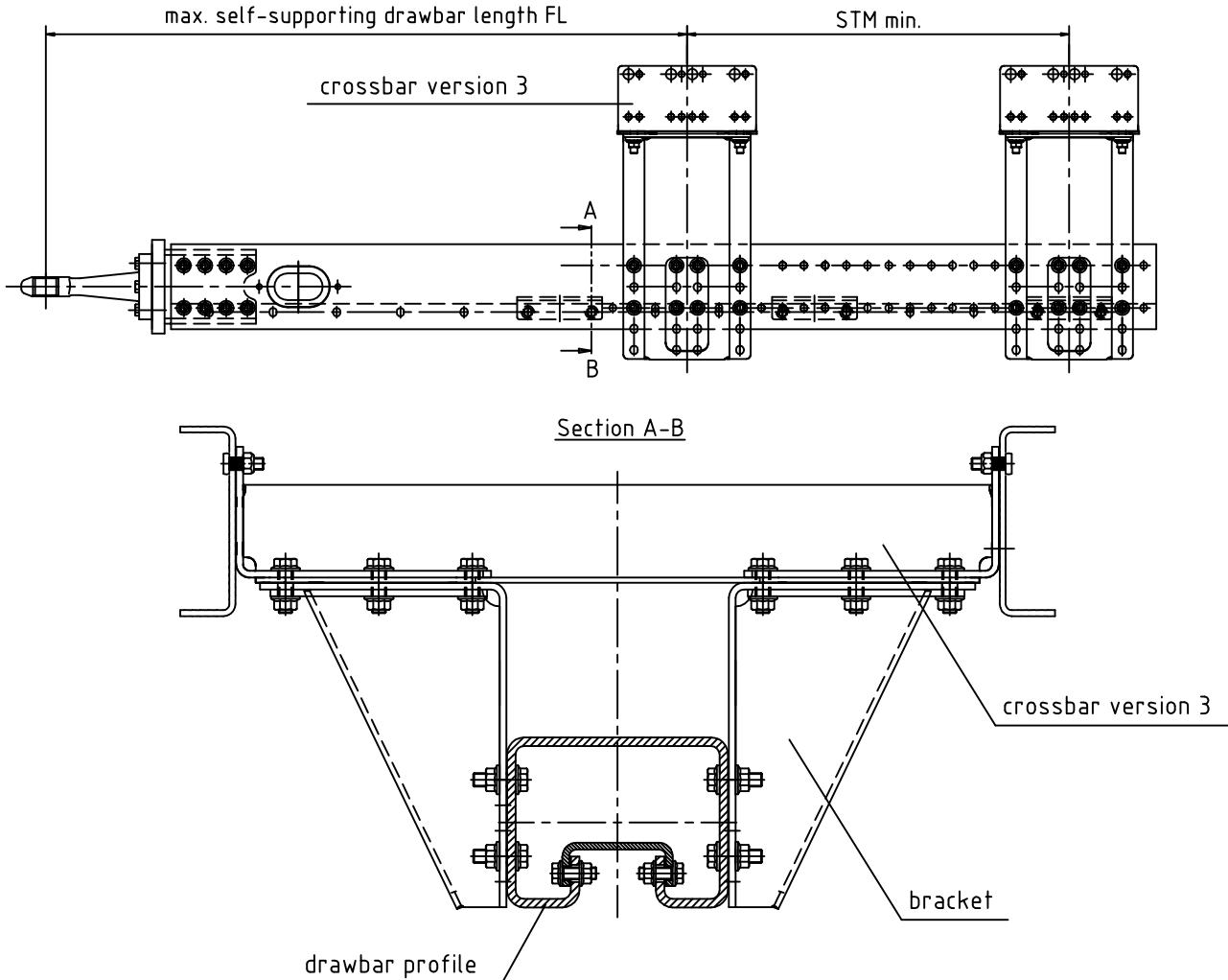
Tightening torque 250 +10/0 Nm

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Connection elements per crossbar version 3 with bracket

- 12 pieces flange bolt M16x1.5x50 – DIN 6921 – 10.9
- 12 pieces flange nut M16x1.5 – DIN 6927 – 10
- Tightening torque 250 +10/0 Nm

Connection elements per pair of brackets with drawbar profile

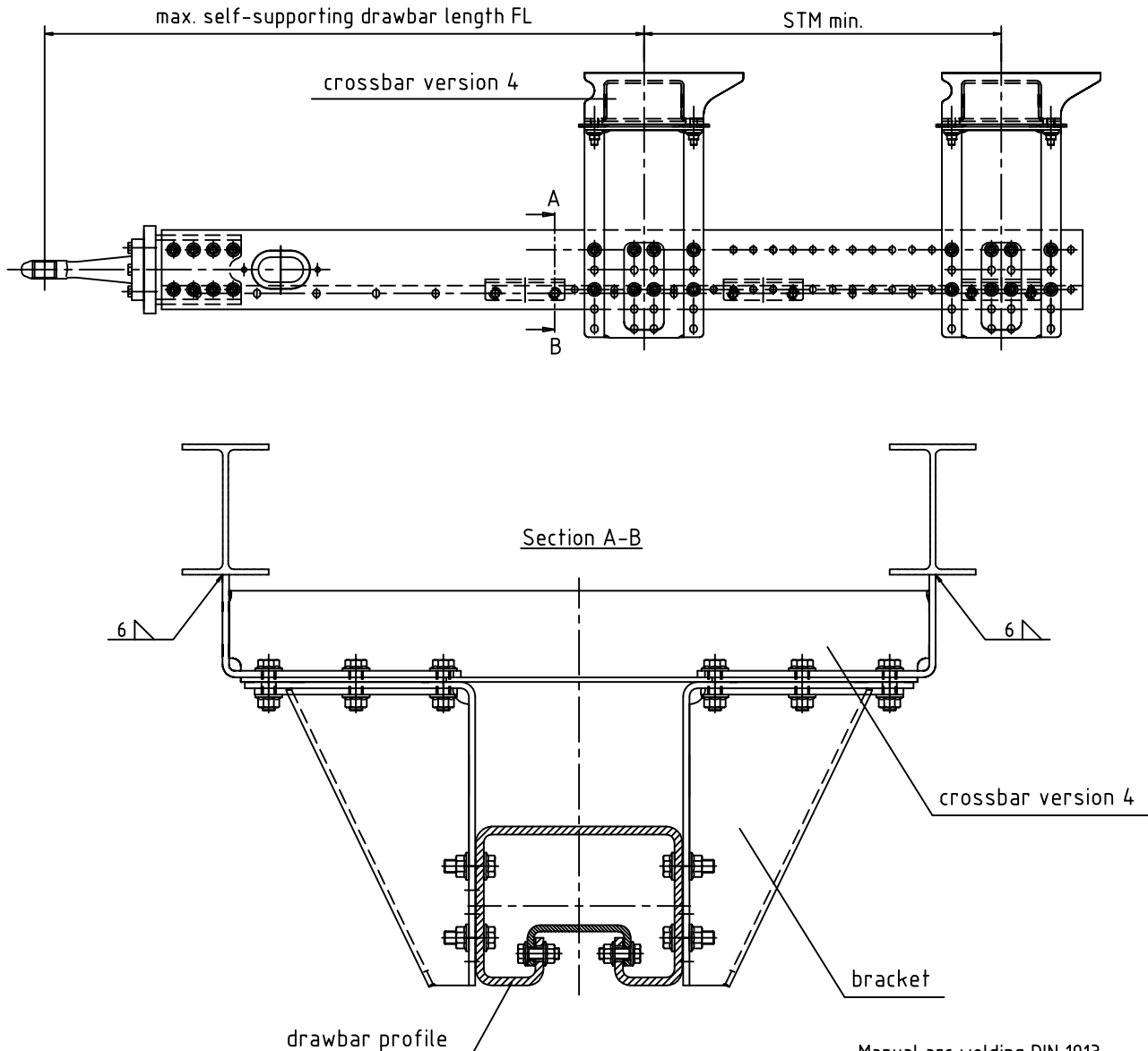
- 16 pieces flange bolt M16x1.5x50 – DIN 6921 – 10.9
- 16 pieces flange nut M16x1.5 – DIN 6927 – 10
- Tightening torque 250 +10/0 Nm

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Connection elements per crossbar version 4 with bracket

12 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9
12 pieces flange nut M16x1.5 - DIN 6927 - 10
Tightening torque 250 +10/0 Nm

Connection elements per pair of brackets with drawbar profile

16 pieces flange bolt M16x1.5x50 - DIN 6921 - 10.9
16 pieces flange nut M16x1.5 - DIN 6927 - 10
Tightening torque 250 +10/0 Nm

Manual arc welding DIN 1913
Rod electrode E 4343 RR (B) 7
Inert gas welding MAG DIN 8559
SG 3 - M 21 - Y 4 2 2 0

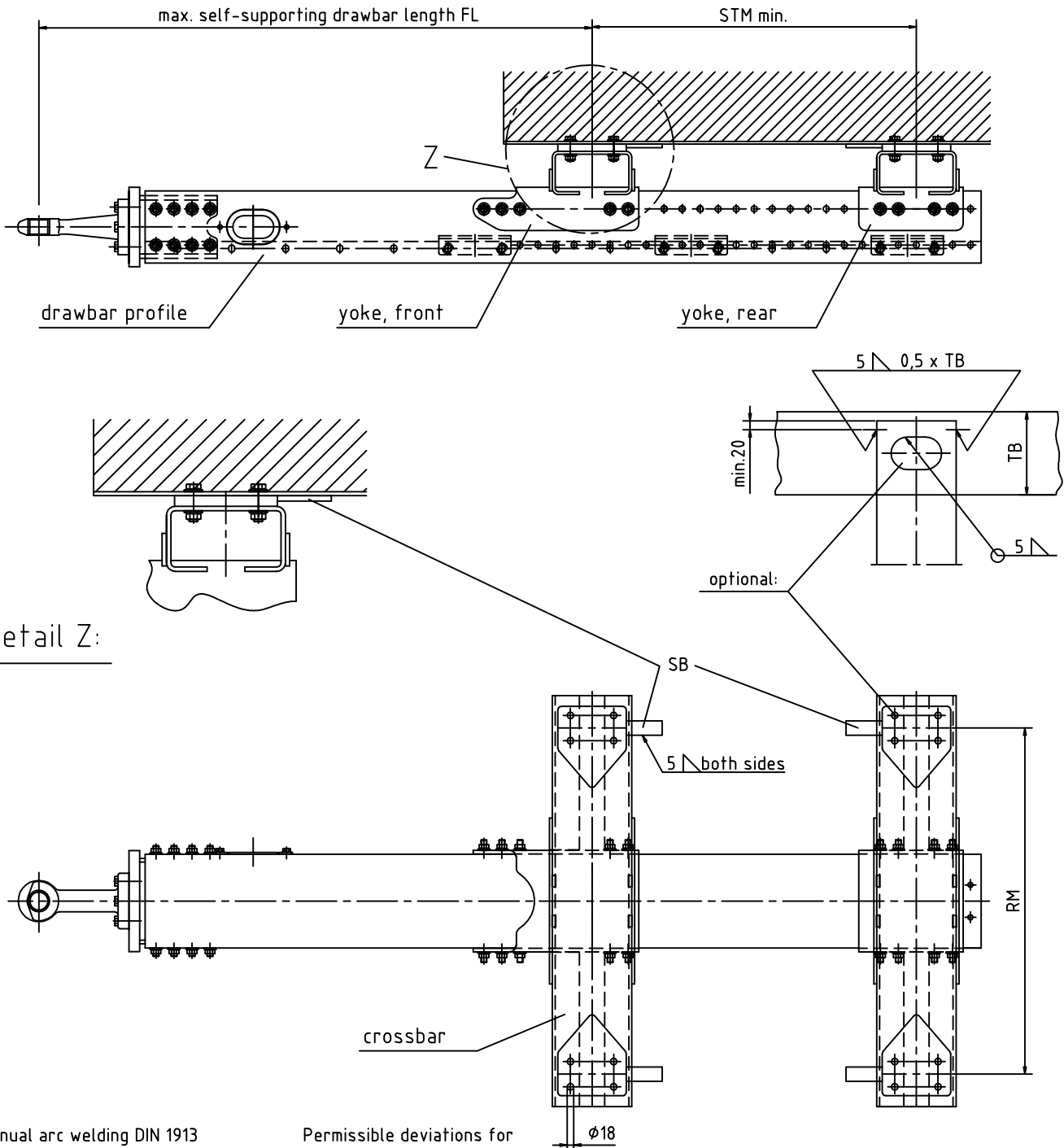
Permissible deviations for dimensions
without tolerance specifications for
welded constructions D DIN 8570

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Detail Z:

Manual arc welding DIN 1913
Rod electrode E 4343 RR (B) 7
Inert gas welding MAG DIN 8559
SG 3 - M 21 - Y 4 2 2 0

Permissible deviations for
dimensions without tolerance
specification DIN 7168 coarse

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Drawbar Model ASD, Version A
 Flange bolted to drawbar profile

Drawbar Model ASD, Version C
 Flange welded to drawbar profile

Permissible V value kN	FL max. mm	STM min. mm
40	3275	950
42	3125	950
44	3025	950
46	2925	1000
48	2825	1000
50	2775	1000
52	2675	1050
54	2625	1050
56	2525	1050
58	2475	1100
60	2425	1100

Drawbar Model ASD, Version B
 Flange welded to drawbar profile

Permissible V value kN	FL max. mm	STM min. mm
40	3025	900
42	2925	900
44	2825	900
46	2725	900
48	2625	950
50	2575	950
52	2475	950
54	2425	1000
56	2375	1000
58	2275	1000
60	2225	1000

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Determination of the varying vertical loads and V values

Ratings: Permissible Dc value: 125 kN
Fs max.: 69.810 N

S = vertical load in kg
V = V value in N

$$F_s \text{ max.} = V + S \times 9,81 \text{ m/s}^2$$

$$V = F_s \text{ max.} - S \times 9,81 \text{ m/s}^2$$

$$S = \frac{F_s \text{ max.} - V}{9,81 \text{ m/s}^2}$$

Example 1: Desired vertical load: 1,200 kg
 $V = 69810 \text{ N} - 1200 \text{ kg} \times 9,81 \text{ m/s}^2 = 58.038 \text{ N}$

Example 2: Desired V value: 55,000 N
 $S = \frac{69810 \text{ N} - 55000 \text{ N}}{9,81 \text{ m/s}^2} = 1509 \text{ kg}$

The calculation of the varying V values and vertical loads may only be performed by the WAP Fahrzeugtechnik GmbH!

The values calculated must be noted on the rating plate mounted on the drawbar.

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