MJ-GERÜST
Scaffolding Systems

SCAFFOLDINGS MADE IN PLETTENBERG

Translation oft the original german version
that has not been checked by the Deutsche Institut für Bautechnik.

COMBI DUO

APPROVAL NO. Z-8.22-926

Deutsches Institut für Bautechnik

DIBt

Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts
Mitglied der EOTA, der UEAtc und der WFTAO

Allgemeine Bauartgenehmigung

Datum: 11/11/2020

Geschäftszeichen: I 37.1-1.8.22-57/20

Nummer:
Z-8.22-926

Geltungsdauer
vom: **16 October 2020**
bis: **16 October 2025**

Antragsteller:
MJ Gerüst GmbH
Ziegelstraße 68
58840 Plettenberg

Gegenstand dieses Bescheides:
Modular system 'MJ COMBI DUO'

The above-mentioned subject matter of the regulation is hereby generally authorised by the general building approval. This decision consists of 26 pages plus Attachment A (pages 1 through 3), Attachment B (pages 1 through 230), Attachment C (pages 1 through 6), and Attachment D (pages 1 through 7).
The subject matter has been licensed for the first time in 16 August 2010 by building inspectorate approval.

I GENERAL PROVISIONS

1 Applicability of the general subject matter of the regulation has been proven with the general type permit in the sense of the Land building regulations.

2 This decision does not substitute construction projects to be executed under legally required authorisations, approvals, and certificates.

3 This decision is issued without prejudice to the rights of third parties, especially private property rights.

4 Copies of this decision shall be made available to the user of the subject matter of the regulation without prejudice to more extensive regulations in the in the 'Special Provisions'. In addition, the user of the subject matter of the regulation must be advised that this decision must be at hand at the place of application. Upon request, the authorities involved shall also be furnished with copies.

5 This decision document may only be duplicated in full. Any publication in extracts requires the consent of the German Institute for Building Technology (DIBt). Texts and drawings of promotional literature may not contradict this decision and translations must contain the notice 'Unchecked translation of the original German version by the German Institute for Building Technology (DIBt)'.

6 This decision is revocable. The provisions may be supplemented and amended subsequently especially if new technical knowledge requires it.

7 This decision refers to the information and documents submitted by the applicant in the approval procedure on the subject matter of the regulation. Any change to these approval bases is not covered by this notice and must be disclosed to the German Institute for Building Technology (DIBt) without delay.

8 The general type approval covered by this decision is at the same time a general technical approval for the type of construction.

II SPECIAL PROVISIONS

1 Subject matter of the regulation and scope of application

Subject of approval is the planning, dimensioning, and execution of the modular system 'MJ COMBI DUO', consisting

- of from scaffold components according to Table 1 and
- of scaffold components according to MVV TB, Part C 2.16 according to the respective area of application.

The modular system is made up of standards, ledgers, lattice bars, and platform units as basic system components as well as scaffold spindles, tie members, system components for lateral protection, access components, and supplementary components. The standards, ledgers, and lattice bars are interconnected by special scaffold nodes. The scaffold nodes are available in different variants which can be combined according to Table 2.

The scaffold nodes consist of a perforated disc welded to a standard tube and connection heads welded to U- or O-ledgers or hinged to vertical diagonals. The connection heads enclose the perforated disc and are wedged to the perforated disc by driving in a captive wedge such that the connection heads are pressed against the standard tube.

A maximum of eight components can be connected per perforated disc.

The modular system 'MJ COMBI DUO' may be used as working and safety scaffold according to DIN EN 12811-1:2004-03 in connection with the 'Application Guideline for Working Scaffolds according to DIN EN 12811-1'[1] and DIN 4420-1:2004-03, as shoring scaffold according to DIN EN 12812:2008-12 in consideration of the 'Application Guideline for Shoring Scaffolds according to DIN EN 12812'[2] or as other temporary construction.

2 Regulations for planning, dimensioning, and execution

2.1 Planning

2.1.1 General

The modular system 'MJ COMBI DUO' is made up of the scaffold components mentioned in Section 1. The design differences of the individual variants of the scaffold nodes and components are described in Appendix B, pages 01.01.00 to 01.07.00, and 50.00.01 to 50.00.04 as well as 50.01.01 to 50.01.16 and 50.02.01 to 50.02.06. Depending on the types used, a distinction is made between the designs listed in Table 2.

Table 1: Scaffold components for use in the 'MJ COMBI DUO' modular system

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Base jack 0.60; 0.78 m	02.01.00	---	regulated in Z-8.1-872
Base jack 0.30; 0.50; 1.00 m	02.02.00	---	
Base jack 0.55 m, swivelling	02.03.00	---	
Base plate	02.04.00	---	

1 see DIBt-Mitteilungen issue 2/2006, page 61 ff.
2 see DIBt-Mitteilungen issue 6/2009, page 227 ff.

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Base jack 0.60 m, solid	02.05.00	---	regulated in Z-8.1-872
Lead-off adapter 235 mm	03.01.00	01.02.00	regulated in Z-8.22-921
Lead-off adapter 330 mm	03.02.00	01.02.00	
Lead-off adapter 430 mm	03.03.00	01.02.00	
Vertical post with upset spigots	03.04.00	01.02.00	
initial vertical post with upset spigot	03.05.00	01.02.00; 03.04.01	
Vertical post without spigot	03.06.00	01.02.00	
Spigots for vertical posts	03.07.00	---	
Suspended scaffold connector	03.08.00	01.06.00; 01.07.00	
Triangular support 3.00; 4.00; 5.00; 6.00 m	03.09.00	---	
Base plate for triangular support	03.10.00	---	
O-ledger (tubular ledger)	04.01.00	01.03.00; 01.07.00	
O-ledger – reinforced (tubular ledger) 1.09, 1.29 m	04.02.00	01.03.00; 01.07.00	
Double O-ledger (tubular ledger with main beam)	04.03.00	01.03.00; 01.07.00; 04.03.01	
Deck ledger U bracket	04.04.00	01.05.00; 01.07.00; 04.04.01	
Deck ledger U bracket, reinforced	04.05.00	01.05.00; 01.07.00; 04.04.01	
Double deck ledger U bracket	04.06.00	01.05.00; 01.07.00; 04.03.01; 04.04.01	
Lattice girder, steel version	04.07.00; 04.08.00	---	regulated in Z-8.1-872
U-rail, deck ledger	04.09.00	---	
Intermediate transom	04.10.00	01.07.00; 04.10.01	regulated in Z-8.22-921
Deck ledger U bracket OPTI-LINE	04.11.00	01.05.00; 01.07.00; 04.11.01	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Console pipe bracket 0.39 m with spigot	05.01.00	01.03.00; 01.07.00; 05.01.01	regulated in Z-8.22-921
Console pipe bracket 0.73 m with spigot	05.02.00	01.03.00; 01.07.00; 05.01.01	
Console pipe bracket 1.09 m w/out spigot	05.03.00	01.03.00; 01.07.00	
Console U bracket 0.39 m with spigot	05.04.00	01.06.00; 01.07.00; 04.04.01; 05.01.01	
Console U bracket 0.73 m with spigot	05.05.00	01.06.00; 01.07.00; 04.04.01; 05.01.01	
Console U bracket 0.50 m with spigot	05.06.00	01.06.00; 01.07.00; 04.04.01; 05.01.01	
Console U bracket 1.09 m w/o spigot	05.07.00	01.03.00; 01.05.00; 01.07.00; 04.04.01	
Console U bracket 0.22 m w/o spigot	05.08.00	01.05.00; 01.07.00; 04.04.01	
Console U bracket 0.32 m w/o spigot	05.09.00	01.05.00; 01.07.00; 04.04.01	
Vertical diagonal wedge head	06.01.00	01.04.00; 01.07.00	
O-ledger (diagonal bar – horizontal diagonal)	06.02.00	01.03.00; 01.07.00	
Tie member, spacer tube	07.01.00	---	regulated in Z-8.1-872
Steel deck pipe bracket, width 0.32 m	08.01.00	---	regulated in Z-8.22-921
Steel deck pipe bracket, width 0.19 m, machine-welded – Manual lifting protection	08.02.00	---	
Steel deck pipe bracket, width 0.19 m, spot-welded – Manual lifting protection	08.03.00	---	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Steel deck U-bracket, width 0.32 m	08.04.00	---	regulated in Z-8.1-872
Steel deck U bracket, width 0.19 m, machine-welded	08.05.00	---	
Steel deck U-bracket, width 0.19 m, spot-welded	08.06.00	---	
Platform unit with access trapdoor, pipe bracket, aluminium deck – aluminium hatch backwards	11.01.00	---	regulated in Z-8.22-921
Platform unit with access trapdoor, pipe bracket, timber deck – wooden hatch backwards	11.02.00	---	
Platform unit with access trapdoor, pipe bracket, aluminium deck – aluminium hatch sidewards	11.03.00	---	
Platform unit with access trapdoor, U bracket, aluminium deck – aluminium hatch backwards	11.04.00	---	regulated in Z-8.1-872
Platform unit with access trapdoor, U bracket, timber deck – wooden hatch backwards	11.05.00	---	
Platform unit with access trapdoor, U bracket, aluminium deck – aluminium hatch sidewards	11.06.00	---	
Aluminium landing staircase, pipe bracket	12.01.00	---	regulated in Z-8.22-921
Aluminium landing staircase, U bracket	12.02.00	---	regulated in Z-8.1-872
External stair railing, single	12.03.00	01.03.00; 01.07.00	regulated in Z-8.22-921
External stair railing double, pipe bracket	12.04.00	01.07.00	
Internal stair railing	12.05.00	---	regulated in Z-8.1-872
Handrail holder	12.06.00	01.03.00; 01.07.00	regulated in Z-8.22-921
Toeboard – pipe support, timber type	13.01.00	---	
Toeboard – pipe support, aluminium type	13.02.00	---	
Toeboard – U bracket, timber type	13.03.00	---	
Toeboard – U bracket, aluminium type	13.04.00	---	
Lifting protection for U ledger (deck ledger)	14.01.00	---	

Lifting protection for U ledger (deck ledger) 0.42; 0.45 m for console U bracket 0.39; 0.73 m	14.02.00	---	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Gravity pin Ø 11	14.03.00	---	regulated in Z-8.1-872
Mounting safety rail, waling	15.01.00	---	regulated in Z-8.22-841
Mounting safety rail, post	15.02.00	---	
Mounting safety rail, front-end	15.03.00	---	
Lead-off adapter 'Variant K2000+'	50.01.17	50.01.01	regulated in Z-8.22-64
Post with spigot 'Variant K2000+'	50.01.18	50.01.01	
Post w/out spigot 'Variant K2000+'	50.01.19	50.01.01	
O-ledger 0.73 m – 4.35 m 'Variant K2000+'	50.01.20	50.01.02 50.01.06	
O-ledger HD 'Variant K2000+'	50.01.21	50.01.02 50.01.06	
U ledger 0.73 m 'Variant K2000+'	50.01.22	50.01.03 50.01.06 50.04.03 50.04.04	
U- Ledger 1.09 m – 1.40 m 'Variant K2000+'	50.01.23		
U double ledger 1.57 m- 3.07 m 'Variant K2000+'	50.01.24		
Lattice bar 'Variant K2000+'	50.01.25	50.01.05 50.01.06	
U board bracket 0.39 m 'Variant K2000+'	50.01.26	50.01.04 50.01.06 50.04.03 50.04.04	
U board bracket 0.73 m 'Variant K2000+'	50.01.27		
U board bracket 0.28 m 'Variant K2000+'	50.01.28		
U board bracket 0.45 m with 2 wedge heads 'Variant K2000+'	50.01.29	50.01.03 50.01.06 50.04.03 50.04.04	
U board bracket 0.73 m with 2 wedge heads 'Variant K2000+'	50.01.30		
Bracket brace 2.05 m 'Variant K2000+'	50.01.31	50.01.05 50.01.06	
U deck lock against lift-off 0.39 m – 1.57 m	50.01.32	---	
O-lattice girder 5.14 m; 6.14 m x 0.50 m 'Variant K2000+'	50.01.33	50.01.02 50.01.06	
O-lattice girder 2.07 m – 3.07 m x 0.50 m 'Variant K2000+'	50.01.34	50.01.02 50.01.03 50.01.06 50.04.03 50.04.04	
O-lattice girder 4.14 m – 6.14 m x 0.50 m 'Variant K2000+'	50.01.35		

O-lattice girder 4.14 m – 7.71 m x 0.40 m ‘Variant K2000+’	50.01.36	50.01.02 50.01.06	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Side protection 1.57 m – 3.07 m 'Variant K2000+'	50.01.37	50.01.02 50.01.06	regulated in Z-8.22-64
U passage beam 1.57 m 'Variant K2000+'	50.01.38	50.01.02 50.01.03 50.01.06 50.04.03 50.04.04	
U board bracket 2.60 m 'Variant K2000+'	50.01.39	50.01.04 50.01.06	
KK handrail 2.57 m; 3.07 m 'Variant K2000+'	50.01.40		
Handrail 2.57 m; 3.07 m 'Variant K2000+'	50.01.41	50.01.06	
Handrail holder 'Variant K2000+'	50.01.42		
U canopy support bracket 'Variant K2000+'	50.01.43	50.01.03 50.01.06 50.04.03 50.04.04	
U-gap ledger 0.73 m- 3.07 m 'Variant K2000+'	50.01.44	50.01.02 50.01.06	
TG-60 frame 0.50 m – 0.50 m x 1.09 m 'Variant K2000+'	50.01.45	50.01.01	
TG-60 frame 0.71 m – 0.50 m x 1.09 m 'Variant K2000+'	50.01.46		
TG-60 frame 1.00 m – 0.50 m x 1.09 m 'Variant K2000+'	50.01.47		
Lead-off adapter 'Variant II'	50.01.48	50.01.07 50.01.08	
Post with spigot 'Variant II'	50.01.49		
O-ledger 0.73 m- 3.07 m 'Variant II'	50.01.50	50.01.09 50.01.10 50.01.16	
U ledger 0.73 m 'Variant II'	50.01.51	50.01.11 50.01.12 50.01.14 50.01.16	
Lattice bar 'Variant II'	50.01.52	50.01.15 50.01.16	
U board bracket 0.36 m 'Variant II'	50.01.53	50.01.13 50.01.14 50.01.16 50.04.04	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
O-lattice girder 5.14 m; 6.14 m x 0.40 m 'Variant II	50.01.54	50.01.09 50.01.10 50.01.16	regulated in Z-8.22-64
Side protection guard 1.57 m – 3.07 m 'Variant II'	50.01.55		
Lead-off adapter LW	50.02.07	50.02.01 50.02.10	regulated in Z-8.22-939
Post LW with moulded spigot	50.02.08		
Lead-off adapter LW 2.21 m	50.02.09		
Post LW w/out spigot	50.02.11		
Spigot for post	50.02.12	---	
O-ledger LW 0.73 m – 4.35 m	50.02.13	50.02.02 50.02.06	
O-ledger LW HD	50.02.14		
U ledger LW 0.73 m T14	50.02.15	50.02.03 50.02.06 50.04.03	
U ledger LW 1.09 m – 1.40 m T14	50.02.16		
U- Ledger LW 1.40 m – 3.07 m , reinforced T14	50.02.17		
Lattice bar 'Variant LW'	50.02.18	50.02.05 50.02.06	
U wooden toeboard 0.73 m – 3.07 m	50.02.19	---	
U wooden toeboard 4.14 m	50.02.20	---	
U steel toeboard 0.73 m- 3.07 m T17	50.02.21	---	
U steel toeboard 0.73 m – 3.07 m	50.02.22	---	
U board bracket LW 0.39 m	50.02.23	50.02.04 50.02.06 50.04.03	
U board bracket LW 0.73 m	50.02.24		
U board bracket LW 0.28 m	50.02.25		
U board bracket LW 0.45 m with 2 wedge heads	50.02.26	50.02.03 50.02.06 50.04.03	
U board bracket LW 0.73 m with 2 wedge heads	50.02.27		
Bracket brace 2.05 m 'Variant LW'	50.02.28	50.02.05 50.02.06	
U deck lock against lift-off T8 0.39 m – 1.57 m	50.02.29	---	
U deck lock against lift-off T9 1.40 m – 3.07 m	50.02.30	---	
Universal U deck lock against lift-off	50.02.31	---	
O-lattice girder LW 5.14 m; 6.14 m x 0.50 m	50.02.32	50.02.02 50.02.06	
U-lattice girder LW 2.07 m – 3.07 m x 0.50 m	50.02.33	50.02.02 50.02.03 50.02.06 50.04.03	
U-lattice girder LW 4.14 m – 6.14 m x 0.50 m	50.02.34		

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
Push-in spigot for channel section	50.02.35	---	regulated in Z-8.22-939
Spigot for lattice girders	50.02.36	---	
U lattice girder ledger LW 0.73 m	50.02.37	50.04.03	
O-lattice girder LW 4.14 m – 7.71 m x 0.40 m	50.02.38	50.02.02 50.02.06	
Side protection guard LW 1.57 m – 3.07 m	50.02.39		
U passage beam LW 1.57 m	50.02.40	50.02.02 50.02.03 50.02.06 50.04.03	
Reinforcement post 2.60 m 'Variant LW'	50.02.41	50.02.04 50.02.06	
U comfort stairs 2.57 m – 3.07 m x 2.00 m x 0.64 m	50.02.42	50.02.43	
Handrail 2.57 m; 3.07 m	50.02.44	50.01.06 50.02.06	
KK handrail 2.57 m; 3.07 m 'Variant LW'	50.02.45	50.02.04 50.02.06	
Handrail holder	50.02.46	50.01.06 50.02.06	
U canopy support bracket T7 'Variant LW'	50.02.47	50.02.03 50.02.06 50.04.03	
U-gap ledger LW 0.73 m 0.73	50.02.48	50.02.02 50.02.06	
Spigot with half coupling	50.02.49	---	
Storey ladder, 7 rungs T15	50.02.50	---	
U telescopable slatted floor LW 0.73 m – 3.07 m	50.02.51	---	
Steel gap sheet 0.73 m – 0.32 m x 0.32 m	50.02.52	---	
U aluminium access way 1.00 m – 0.61 m	50.02.53	---	
O steel toeboard 0.73 m – 3.07 m	50.03.01	---	regulated in Z-8.1-919
O steel toeboard 0.73 m- 3.07 m T18	50.03.02	---	
O Al landing staircase 2.57 m; 3.07 m x 0.64 m	50.03.03		
O comfort stairs 2.57 m; 3.07 m x 2.00 m x 0.64 m	50.03.04	---	
O gap ledger LW 0.73 m 0.73	50.03.05	50.02.02 50.02.06	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
O gap ledger 0.73 m- 3.07 m 'Variant K2000+'	50.03.06	50.01.02 50.01.06	regulated in Z-8.1-919
O-ledger with half coupling 0.73 m 'Variant LW'	50.03.07	50.02.02 50.02.06	
O-ledger with half coupling 0.73 m 'Variant K2000+'	50.03.08	50.01.02 50.01.06	
Base jack 60	50.04.01	---	regulated in Z-8.1-16.2
Base jack 80 reinforced	50.04.02	---	
Stairway circulating railing 1.00 m – 0.50 m	50.04.05	---	
Tie member 0.38 m – 1.75 m	50.04.06	---	
Gravity pin red Ø 11 mm	50.04.07	---	
Gravity pin Ø 9 mm	50.04.08	---	
Lattice girder coupler	50.04.09	---	
U Al landing staircase 2.57 m; 3.07 m x 2.00 m x 0.64 m	50.04.10	50.04.11	
Al erection guard-rail1.57 m – 2.07 m; 2.57 m / 3.07 m	50.04.12	---	
Assembly post T5	50.04.13	---	
U steel deck T4 0.73 m – 3.07 m x 0.32 m; type: spot-welded	50.04.14	---	
U steel deck T4 0.73 m – 3.07 m x 0.32 m; type: hand-welded	50.04.15	---	
U steel deck 0.73 m – 3.07 m x 0.32 m; type: spot-welded	50.04.16	---	
U steel deck 0.73 m – 3.07 m x 0.32 m; type: hand-welded	50.04.17	---	
U robust deck 0.73 m – 2.57 m x 0.61 m	50.04.18	---	
U robust deck 3.07 m – 0.61 m	50.04.19	---	
U robust deck 0.73 m – 3.07 m x 0.32 m	50.04.20	---	
U robust deck access way 2.57 m – 0.64 m	50.04.21	---	
Storey ladder, 7 rungs	50.04.22	---	
U robust access way with ladder 2.57 m - 3.07 m / 0.61 m	50.04.23	---	
U Al access way 2.07 m – 3.07 m x 0.61 m	50.04.24	---	

Table 1: (Cont'd)

Designation	Appendix B, page	Details / Components according to Annex B, page	Rules on production, marking, and proof of conformity
U Al access way with ladder 2.57 m – 3.07 m x 0.61 m	50.04.25	---	regulated in Z-8.1-16.2
U robust access way 1.57 m – 3.07 m x 0.61 m, cover offset	50.04.26	---	
U robust access way 2.57 m – 3.07 m x 0.61 with ladder, cover offset	50.04.27	---	
U steel deck 0.73 m – 3.07 m x 0.19 m	50.04.28	---	
U steel deck 0.73 m – 3.07 m x 0.19 m (old version)	50.04.29	---	

2.1.2 Standard design

Rules of execution are described for the use of the scaffold components in façade scaffolds for which the stability proofs of the fully assembled scaffold configurations have been provided. Execution of façade scaffolding is considered standard execution if they correspond to the provisions of Appendix C and D. Deviations from this require separate proof.

The standard design applies to façade scaffolds with assembly heights up to 24 m above ground plus jack spindle extension length. The scaffold system may be used in the standard version in accordance with the specifications of Appendices C and D with the system width b = 0.732 m and with bay widths $\ell \leq 3.07$ m for working scaffolds of load classes ≤ 3 in accordance with DIN EN 12811-1:2004-03 and as safety and roof safety scaffolds with a safety layer of class FL1 and as safety and roof safety scaffolds with safety barriers of class SWD 1 in accordance with DIN 4420-1:2004-03.

2.1.3 Deviations from the rules of execution

Proof of the stability of the scaffolds must be provided in each individual case or by a static type calculation according to the technical building regulations and the specifications of this decision if the assembly variants do not correspond to the standard design according to Appendix C and D. The characteristic values to be applied in the stability proof are specified in this decision.

Other anchoring grids and nets or tarpaulins may also be used as scaffold claddings. Any increased loads (e.g. from the increase in dead weight and wind loads or from increased live loads) must be tracked in a scaffold up to the anchorages and up to the erection level. The influence of construction hoists or other lifting equipment must also be taken into account if they are not operated independently of the scaffold.

2.2 Design

2.2.1 General and system assumptions

For the design and dimensioning of the scaffolds to be erected using the modular system, the Technical Building Regulations, in particular for working and protective scaffolds the provisions of DIN EN 12811-1:2004-03 in conjunction with the 'Application guideline for working scaffolds according to DIN EN 12811-1'[1], DIN 4420-1: 2004-03 as well as the 'Approval principles for working and protective scaffolds, requirements, calculation assumptions, tests, proof of conformity'[3] and for falsework the provisions of DIN EN 12812:2008-12 taking into account the 'Application guideline for falsework in accordance with DIN EN 12812'[2].

Depending on the types used, a distinction is made between the designs listed in Table 2.

If it is not certain which types of construction are used together, the load-bearing capacities and rigidity factors of design 'B' must be assumed for the ledger connections and for the vertical diagonals when verifying the scaffold. When verifying the perforated disc, version "B" is to be assumed unless it is ensured that no 'Variant II' components are connected.

The provisions of the following sections apply to the node connection including the connection between the connection heads and the standard, ledger, and diagonal pipes specified in the Appendices.

Table 2: Versions for ledger and diagonal connection

<table>
<tr><td rowspan="2">Design of the connection heads for ledgers or lattice bars</td><td></td><td colspan="3">Design of the perforated disc</td></tr>
<tr><td>'MJ COMBI'</td><td>'Variant LW'</td><td>'K2000+'</td><td>'Variant II'</td></tr>
<tr><td>'MJ COMBI'</td><td>regulated in Z-8.22-921</td><td colspan="2">Version 'A'</td><td>Version 'B'</td></tr>
<tr><td>'Variant LW'</td><td rowspan="2">Version 'A'</td><td>regulated in Z-8.22-939</td><td colspan="2">regulated in Z-8.22-949</td></tr>
<tr><td>'K2000+'</td><td rowspan="2">regulated in Z-8.22-949</td><td colspan="2" rowspan="2">regulated in Z-8.22-64</td></tr>
<tr><td>'Variant II'</td><td>Version 'B'</td></tr>
</table>

The static systems for the calculation shall be modelled according to Appendix A, page 3. The short columns specified there from the standard tube axis to the connections may be assumed to be rigid. The indices given in the following sections refer to a local coordinate system in which the x-axis represents the ledger axis and the z-axis the standard tube axis (cf. Appendix A, page 3).

When verifying the scaffold system, it must be ensured that the bending moment in the ledger-standard tube connection is related to the outer edge of the standard tube and that the vertical component in the vertical diagonal connection is considered with a connection eccentricity according to the specifications in Appendix A, page 3. The torsional moment around the column tube axis resulting from the horizontal component in the vertical diagonal connection is transmitted by the node and must be verified in the ledgers.

Depending on the ledger design (U- or O-ledger), only the stresses listed in Table 3 may be transmitted in the connection of a ledger. When using short ledgers with $L < 0.60$ m, the connections must be assumed to be articulated; only normal forces and transverse forces may be transmitted.

[3] to be obtained from Deutsches Institut für Bautechnik.

As planned, only normal forces may be transferred after the diagonals.

The specifications for stiffness and strength of the connections apply to the connection in the "small" and "large" hole of the perforated disc.

In all formulae of the following sections, the cutting forces N and V must be entered in [kN], the bending and torsion moments M in [kNcm].

2.2.2 Connecting ledgers

2.2.2.1 Load deformation behaviour

2.2.2.1.1 Bending in the standard tube/ledger plane

Provided that no articulated connection is assumed, torsion-spring restraints in accordance with the moment/angle of rotation (M_y/φ) relationship must be used in the verification of a scaffold, irrespective of the ledger design (U- or O-ledger) in the plane formed by the standard tube and the ledger (vertical plane).

to be considered for version ‘A’ according to Appendix A, Figure 1 or

for version ‘B’ according to Appendix A, Figure 2.

Deviating from this, an articulated connection is to be assumed after a short ledger L < 0.73 m for bending around the y-axis.

2.2.2.1.2 Bending in the plane perpendicular to the plane of the standard tube/ledger (horizontal plane)

Provided that no articulated connection is assumed, the ledger connections shall be taken into account in the verification of a scaffold when loaded by horizontal bending with a torsion-spring clamping in accordance with the moment/angle of rotation (Mz/φ) relationship for design ‘A’ and ‘B’ according to Appendix A, Fig. 3.

2.2.2.1.3 Torsion at the tubular ledger of version ‘A’

When verifying the O-ledger of design "A" under torsional stress, the ledger connection must be equipped with a torsionally sprung clamping device in accordance with the moment /rotational angle(M_T/φ) relationship according to Appendix A, Figure 4. In the connection of U ledgers, no torsion may be transmitted as planned.

Horizontal load perpendicular to the ledger axis.

If the deformation influence of the ledger connection in the horizontal direction is to be taken into account, a translational spring stiffness according to Appendix A, Figure 5 is to be expected in the ledger connection when checking the ledgers when subjected to horizontal loads at right angles to the axis of the ledger connection.

2.2.2.2 Check of load capacity

2.2.2.2.1 General proofs

It must be verified in the connection of a ledger that the stresses are not greater than the load capacities according to Table 3.

Table 3: Load-bearing capacities in the connection of a ledger

Connection section size	Load-bearing capacity	
	Version ‘A’	Version ‘B’
Bending moment $_{y,Rd}$ [kNcm]	± 101.0	± 68.0
Vertical shear force $_{z,Rd}$ [kN]	± 26.4	± 17.4
Bending moment $_{z,Rd}$ [kNcm]	± 37.2	± 37.2

Table 3: (Cont'd)

Connection section size	Load-bearing capacity	
	Version 'A'	Version 'B'
horizontal shear force $_{y,Rd}$ [kN]		
O-ledger	± 10.0	± 6.7
U-Ledger	± 5.9	± 5.9
Torsional moment $_{T,Rd}$ [kNcm]		
O-ledger	± 52.5	---
U-Ledger	---	---
Axial force N_{Rd}[kN]	± 31.0	± 22.7

2.2.2.2.2 Standard tube / ledger connection interaction

In the area of loaded perforated discs, the following interaction relationship must be fulfilled regardless of the design:

$$_S + 0.33 \cdot _Æ \leq 1.0 \qquad \text{(Gl. 1)}$$

Where:

I_A U utilisation rate in the ledger connection

$$Æ = \frac{_{y,Ed}}{_{y,Rd}} \qquad \text{(Eq 2)}$$

with: $M_{y,Ed}$ Bending moment in the ledger connection

$M_{y,Rd}$ Load-bearing capacity against bending moments in the ledger connection according to Table 3

I_S Utilisation rate in the standard tube in the area of loaded perforated discs

- We have for $v_{act} \leq 1/3$:

$$_S = — \qquad \text{(Gl. 3)}$$

a, b see Figure 1

- For $1/3$ < v_{act} ≤ 0.9 the vector utilisation rate shall be determined taking into account the interaction relationship according to the left part of the equation, column 4 of Table 7, DIN 4420-1:1990-12.

Where:

$Vact_{act}$ Utilisation rate vs. shear force in the standard tube

$$_{act} = \frac{_{St,Ed}}{~~_{St,Rd}~~} \qquad \text{(Eq 4)}$$

$V_{St,Ed}$ Stress due to shear force in the standard tube

$V_{St,Rd}$ Load-bearing capacity vs. shear force in the standard tube

$V_{St,Rd} = V_{pl,d} = 48.5\ kN$

$m = \frac{M_{St,Ed}}{~~M_{St,Rd}~~}$

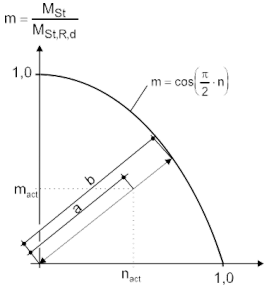


Figure 1: Vectorial utilisation rate in the standard tube

Where:

Vm_{act} Utilisation rate vs. bending moments in the standard tube

$V_{St,Ed}$ Stress due to bending in the standard tube

$M_{St,Rd}$ Load-bearing capacity vs. bending in the standard tube

$M_{St,Rd} = f_{y,d} \bullet \alpha_{pl} \bullet W_{el} = 175\ kNcm$

$Nact_{act}$ *Utilisation rate vs. axial force in the standard tube*

$N_{St,Ed}$ Stress due to axial force in the standard tube

$N_{St,Rd}$ Load-bearing capacity vs. axial force in the standaed tube

$N_{St,Rd} = f_{y,d} \bullet A = 132\ kN$

2.2.2.2.3 Combination of internal forces and cutting power

The following condition must be met for combination of internal forces and cutting power in the connection of a ledger:

a) Version 'A'

$$\frac{(+)}{\text{Ed}}{\text{Rd}} + \frac{|_{y,Ed}|}{_{y,Rd}} + \frac{(|_{z,Ed}| - 2.1; 0)}{_{z,Rd}} + \frac{|_{y,Ed}|}{27.1} + \frac{|_{z,Ed}|}{_{z,Rd}} + \frac{|_{T,Ed}|}{_{T,Rd}} \leq 1 \quad \text{(eq 5)}$$

The following additional proof must be provided for the weld between the ledger tube (O-ledger) and the connection head:

$$\frac{(|\ _{w,Ed}\ | - 6.4; 0}{76.8} + \frac{J(^2\ _{y,w,Ed} + ^2\ _{z,w,Ed})}{110.3} + \frac{J(^2\ _{z,w,Ed} + ^2\ _{y,w,Ed})}{48.9} + \frac{|_{T,w,Ed}|}{163,8} \leq 1 \quad \text{(Eq 6)}$$

The following additional proof must be provided for the weld between the U-ledger section and the connection head:

$$\frac{|_{w,Ed}| +}{71.0} \quad \frac{|_{y,w,Ed}|}{116.4} + (|_{z,w,Ed}| + |_{y,w,Ed}| \quad 58.5 \quad 18.0) \leq 1 \quad \text{(eq 7)}$$

b) Version 'B'

$$\frac{(+)}{\sigma_{Rd}} + \left\{ \frac{|_{y,Ed}|}{_{y,Rd}}; (0.79 \frac{|_{y,Ed}|}{_{y,Rd}} + \frac{|_{z,Ed}|}{_{z,Rd}}) \right\} + \frac{|_{y,Ed}|}{25.0} + \frac{|_{z,Ed}|}{_{z,Rd}} \leq 1 \qquad \text{(eq 8)}$$

Where:

$M_{y,Ed}$, $V_{y,Ed}$, $V_{z,Ed}$, $M_{z,Ed}$	Stresses in the ledger connection in [kN] or [kNcm]
$^{(+)}_{Ed}$	Stress due to tensile-normal force in the ledger connection in [kN]
N_{Rd}, $M_{y,Rd}$, $V_{z,Rd}$, $M_{z,Rd}$	Load-bearing capacities according to Table 3 in [kN] or [kNcm]
$N_{w,Ed}$, $V_{y,w,Ed}$, $V_{z,w,Ed}$	Force loads in the ledger connection in [kN]
$M_{y,w,Ed}$, $M_{z,w,Ed}$, $M_{T,w,Ed}$	Moment loads in the ledger connection in [kNcm]

A weld between the ledger section and ledger head is not required in the 'B' version.

2.2.3 Vertical diagonal connection

2.2.3.1 Load deformation behaviour

When verifying a scaffold, the vertical diagonals including their connections with a translational spring must be taken into account with the design values according to Table 4.

Table 4: Design values of the rigidity factors $_{v,d}$ of the vertical diagonals in [kN/cm].

Field width L [m]	Field height H [m]	Stress due to normal compressive force	Stress due to normal tensile force
3.07	2.0	4.65	12.8
2.57		6.28	12.9
2.07		7.63	13.1
1.57		8.94	13.1
1.09		10.2	12.3
0.73		11.2	11.5

2.2.3.2 Check of load capacity

The following verification must be carried out for the vertical diagonals depending on the stress direction:

$$\frac{_{V,Ed}}{_{V,Rd}} \leq 1 \qquad \text{(eq. 9)}$$

Where:

$N_{V,Ed}$	Tensile or compressive force in the vertical diagonal
$N_{V,Rd}$	Load-bearing capacity of the vertical diagonals in relation to tensile or compressive force according to Table 5

Table 5: Design values of the load-bearing capacities $N_{V,Rd}$ of the vertical diagonals in [kN]

Field width L [m]	Field height H [m]	Stress due to normal compressive force		Stress due to normal tensile force	
		Version 'A'	Version 'B'	Version 'A'	Version 'B'
3.07	2.0	8.3	8.4	17.9	8.4
2.57		10.2			
2.07		12.4			
1.57		14.8			
1.09		16.1		16.6	
0.73		16.1		15.9	

2.2.4 Horizontal diagonal connection

2.2.4.1 Load deformation behaviour

When verifying a scaffold with horizontal diagonal braces according to Annex B, page 06.02.00, the horizontal diagonal connections with the characteristic values of the tubular cross bars according to Annex B, page 04.01.00 must be taken into account.

When verifying a scaffold, O-ledgers HD "Variant K2000+" according to Appendix B, page 50.01.21 and O-ledgers LW HD according to Appendix B, page 50.02.14 with total stiffness $C_{H,d}$ for the connections and the diagonal tube according to Table 6 must be taken into account.

2.2.4.2 Check of load capacity

For the horizontal diagonal braces according to Annex B, page 06.02.00, the horizontal diagonal connections with the characteristic values of the tubular cross bars according to Annex B, page 04.01.00 must be taken into account. The diagonal itself must be examined for flexural buckling under compressive stress.

For the O-ledger HD "Variant K2000+" according to Appendix B, page 50.01.21 and O-ledger LW HD according to Appendix B, page 50.02.14 the following verification shall be carried out:

$$\frac{\text{K,Ed}}{\text{K,Rd}} \leq 1 \qquad \text{(eq. 10)}$$

Where:

$N_{H,Ed}$ Tensile or compressive force in the O-ledger HD

$N_{H,Rd}$ Load-bearing capacity of the O-ledger HD according to Table 6

Table 6: Characteristic values of the O-ledgers HD according to Appendix B, pages 50.01.21 and 50.02.14

L [mm]	B [mm]	Load-bearing capacity $N_{H,Rd}$ [kN]	Rigidity $c_{H,d}$ [kN/cm] (Tensile and compressive force)
1572	1088	± 12.0	85.1
2072	732		59.4
2072	1088		67.8
2572	732		44.8
2572	1088		49.2
3072	732		28.1
3072	1088		26.1
L, b see Appendix B, pages 50.01.21 or 50.02.14			

2.2.5 Perforated disc

2.2.5.1 Connection in immediately adjacent holes of the perforated disc

When connecting two ledgers or one ledger and a vertical or horizontal diagonal in immediately adjacent holes in the perforated sheet, the following verification must be carried out, whereby the further assumptions are always uniformly based on the most unfavourable connected component on the perforated sheet:

$$(\text{Æ} + \text{B})^2 + (\text{Æ} + \text{B})^2 \leq 1 \qquad \text{(Gl. 11)}$$

Where:

n, v	Interaction proportions according to Table 7
A	Connecting ledger A
B	Connection of ledger B, vertical diagonal or horizontal diagonal

Table 7: Interaction portions

Inter-action-portion	Connection ledger A / ledger B	Connection ledger A /vertical diagonal B	Connection ledger A / horizontal diagonal B or O-ledger HD B
Æ	$\frac{\text{Æ}(+)_{Ed} + \lvert \text{Æ}_{y,Ed} \rvert}{\text{Rd}}$	$\frac{\text{Æ}(+)_{Ed} + \lvert \text{Æ}_{y,Ed} \rvert}{\text{Rd}}$	$\frac{\text{Æ}(+)_{Ed} + \lvert \text{Æ}_{y,Ed} \rvert}{\text{Rd}}$
B	$\frac{\text{B}(+)_{Ed} + \lvert \text{B}_{y,Ed} \rvert}{\text{Rd}}$	$\frac{0.707 \cdot \cdot (+)_{V,Ed} + (\quad \text{D}) \cdot \cos \cdot \lvert \text{V,Ed} \rvert}{\cdot \text{Rd}}$	$\frac{(+)_{K,Ed}}{\text{Rd}}$
Æ	$\frac{\text{Æ}_{z,Ed}}{\lvert \text{Æ}_{z,Ed} \rvert} \cdot \left(\frac{\lvert \text{Æ}_{z,Ed} \rvert + \text{s,Ed} \quad \lvert \text{Æ} \rvert}{\text{z,Rd}} 2{,}0 \right)$		$\frac{\text{Æ}_{z,Ed}}{\text{z,Rd}}$
B	$\frac{\text{B}_{z,Ed}}{\lvert \text{B} \rvert_{z,Ed}} \cdot \left(\frac{\lvert \text{B} \rvert + \lvert \text{BEd} \rvert_{z,Ed}}{\text{z,Rd}} 2{,}0^{2} \right)$	$\frac{2{,}2 \cdot \cdot \text{V,Ed}}{38.3}$	---

Where:

$\text{Æ}(+)_{Ed}$; $\text{B}(+)_{Ed}$	Stress due to normal force (only consider tensile forces) in the Connection ledger A / ledger B)
$\text{Æ}_{y,Ed}$; $\text{B}_{y,Ed}$	Stress due to bending in the ledger connection (ledger A or ledger B)
$\text{Æ}_{z,Ed}$; $\text{B}_{z,Ed}$	Stress due to vertical shear force in the ledger connection (ledger A or ledger B)
$N_{V,Ed}$	Stress due to normal force in the vertical diagonal
$(+)_{V,Ed}$	Stress due to normal tensile force in the vertical diagonal
$(+)_{K,Ed}$	Stress due to normal tensile force in the horizontal diagonal

e	Lever arm ledger connection	
	Version ‘A’:	e = 3.3 cm
	Version ‘B’:	e = 2.75 cm
e_D	Vertical diagonal connection lever arm	
		e_D = 6.6 cm
	Load-bearing capacity factor for vertical diagonal connection	
	vertical diagonal and post version ‘A’:	*= 1.41*
	Vertical diagonal or post version ‘B’:	*= 1.00*
Rd, z,Rd	Load capacities acc. to Table 4	

The proof is to be carried out in pairs around the node.

2.2.5.2 Connection of ledgers and/or diagonals in any holes of the perforated disc

$$\frac{\sum z,Ed}{\sum z,Rd} \leq 1 \qquad \text{(eq. 12)}$$

Where:

$\sum z,Ed$ Sum of all vertical transverse forces acting on the perforated disc (incl. vertical component of the vertical diagonal)

$\sum z,Rd$ Load-bearing capacity of the perforated discs in relation to vertical shear forces is independent

in Version ‘A’: $\sum z,Rd = 105.6$

in Version ‘B’: $\sum z,Rd = 69.5$

2.2.6 U board bracket connection

The regulations in Sections 2.2.2 and 2.2.5 for the U-ledger connection may be applied for the U board bracket connection. Additional factors must be taken into account:

- for Appendix B, page 01.06.00 the weld data according to Appendix B, page 01.06.01 and
- for Appendix B, pages 50.01.04, 50.01.13, 50.01.14, and 50.02.04 Section 2.2.8.9

2.2.7 Joints

Unless otherwise specified in the following, column joints in the modular system "MJ COMBI DUO" must always be modelled and verified in accordance with the applicable technical building regulations, see also "Mathematical treatment of column joints with a centrally fixed joint pin on one side for working and protective scaffolds as well as for steel shoring "[4].

For stud joints of vertical studs Ø 48.3 x 3.2 made of steel grade S235JRH (increased yield strength 320 N/mm²) with integrally formed stud Ø 38 according to Appendix B, page 03.04.01 the regulations according to Z-8.22-921 are to be applied.

For stud joints of vertical studs Ø 48.3 x 2.9 made of steel grade S460MH (increased yield strength with integrally formed stud Ø 38 according to Appendix B, page 50.02.10 the regulations according to Z-8.22-939 are to be applied.

A tensile strength of *ZRd = 10.0 kN* may be applied fo the pressed-in spigots of the posts according to Appendix B, page 50.01.18 and 50.01.49.

The spigots of the TG60 frames must be verified according to Z-8.22-64.

If it is not certain which version is to be used, the most unfavourable assumptions must be used in each case.

4 See DIBt-Newsletter 4/2017

2.2.8 Proof of the overall system

2.2.8.1 Vertical load-bearing capacity of decks

The decks of the modular system 'MJ COMBI DUO' are verified according to Table 8 for the live loads of the load classes according to DIN EN 12811-1:2004-03, Table 3 and for the use in fall arrest and roof fall arrest scaffold with fall heights up to 2 m according to DIN 4420-1:2004-03 (Class D according to DIN EN 12810-1:2004-03).

Table 8: Assignment of the decks to the load classes

Designation	Appendix B, page	Bay width ℓ [m]	Use in load class
Steel deck pipe bracket, width 0.32 m	08.01.00	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4
Steel deck U-bracket, width 0.32 m	08.04.00	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4
		4.14	≤ 3
Steel deck pipe bracket, width 0.19 m Steel deck U-bracket, width 0.19 m	08.02.00 / 08.03.00 08.05.00 / 08.06.00	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4
Platform unit w. access trapdoor – pipe bracket Al deck	11.01.00 11.03.00	≤ 3.07	≤ 3
Platform unit w. access trapdoor – pipe bracket timber deck Platform unit w. access trapdoor – U bracket with Al timber deck	11.02.00 11.05.00		
Platform unit w. access trapdoor – U bracket with Al deck	11.04.00 11.06.00	3.07	≤ 3
		≤ 2.57	≤ 4
U telescopable slatted floor	50.02.51	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4
U aluminium access way 1.00 m – 0.61 m	50.02.53	1.00	≤ 3
U steel deck T4 0.32 m U steel deck 0.32 m	50.04.14 50.04.15 50.04.16 50.04.17	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4
U robust deck 0.61 m	50.04.18 50.04.19	≤ 3.07	≤ 3
U robust deck 0.32 m	50.04.20	≤ 1.57	≤ 6
		2.07	≤ 5
		2.57	≤ 4
		3.07	≤ 3
U steel deck access way 0.64 m	50.04.21	2.57	≤ 4
U robust access way 0.61 m	50.04.23 50.04.26 50.04.27	≤ 3.07	≤ 3

Table 8: (Cont'd)

Designation	Appendix B, page	Bay width ℓ [m]	Use in load class
U Al access way 0.61 m	50.04.24 50.04.25	≤ 3.07	≤ 3
U steel deck 0.19 m	50.04.28 50.04.29	≤ 2.07	≤ 6
		2.57	≤ 5
		3.07	≤ 4

2.2.8.2 Elastic support of the vertical frame columns

Non-anchored nodes of rows of standards may be assumed to be elastically supported in the plane at right angles to the direction of tension of the deckings (in the case of façade scaffolding at right angles to the façade) by the horizontal planes (deck elements), provided the horizontally adjacent nodes are anchored. This elastic support may be taken into account for load classes ≤ 3 by assuming a trilinear translational spring according to Figure 2 with the rated values given in Table 9.

Table 9: Design values of the horizontal translational springs

Deck	acc. to Appendix B, page	Scaffold width b [m]	Bay width ℓ [m]	Loose f_o [cm]	Rigidity $c_{\perp d}$ [kN/cm]		Spring load-bearing capacity N_{Rd} [kN]
					$c_{1\perp,d}$	$c_{2\perp,d}$	
Steel deck pipe bracket, 0.32 m	08.01.00	0.73	≤ 3.07	7.0	0.70	0.70	3.00
Steel deck U bracket, 0.32 m	08.04.00 50.04.14 50.04.15 50.04.16 50.04.17	0.73	≤ 3.07	4.1	0.51	0.31	2.61
	50.04.14 50.04.15 50.04.16 50.04.17	1.09		5.0	0.83	0.68	3.00
U robust deck 0.61 m	50.04.19 50.04.20	0.73	≤ 2.57	4.9	0.58	0.30	2.91
			3.07				2.72

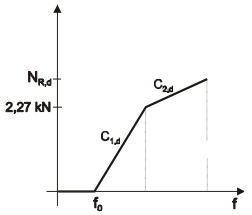


Figure 2: Trilinear rigidity factor

2.2.8.3 Elastic coupling of the vertical planes

The inner and outer vertical planes of a scaffold may be assumed to be elastically coupled to each other in the direction of these planes (parallel to the façade in the case of façade scaffolds) by the decks. This elastic coupling may be taken into account for load classes ≤ 3 by assuming coupling springs with the characteristic values given in Table 10, regardless of the field width.

Table 10: Design values of the horizontal coupling springs

Deck	acc. to Appendix B, page	Scaffold width b [m]	Loose f_o [cm]	Rigidity c_d [kN/cm]	Spring load-bearing capacity N_{Rd} [kN]
Steel deck pipe bracket, 0.32 m	08.01.00	0.73	1.90	2.50	4.50
Steel deck U bracket, 0.32 m	08.04.00 50.04.14 50.04.15 50.04.16 50.04.17	0.73	0.36	1.93	5.20
	50.04.14 50.04.15 50.04.16 50.04.17	1.09	0.59	1.55	8.88
U robust deck 0.61 m	50.04.19 50.04.20	0.73	0.28	1.70	8.93

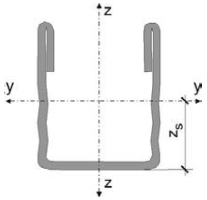
2.2.8.4 Material characteristics

For components made of steel S235 with increased yield strength ($R_{eH} \geq 320$ N/mm²) - these components are designated accordingly in the drawings of Appendix B - a design value of the yield strength of $f_{y,d}$ = 291 N/mm² may be used as a basis for the calculation.

2.2.8.5 U-sections

2.2.8.5.1 Cross-section values of U-section 53 without perforation

The U-section 53 used for various components without perforation according to Appendix B, page 04.04.01 or 04.11.01 (type 2) must be verified with the characteristic values according to Figure 3. The assignment of the different U-profiles to the components is shown in Appendix B. The geometric differences of the U-profiles can be seen in the appendices mentioned above.

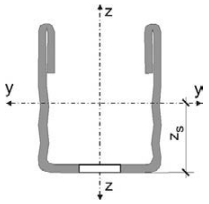


U-section 53, type 1			U-Profil 53, type 2		
z_S	=	2.34 cm	z_S	=	2.45 cm
A	=	4.18 cm²	A	=	4.52 cm²
I_y	=	14.20 cm⁴	I_y	=	15.0 cm⁴
N_{Rd}	=	122 kN	N_{Rd}	=	189 kN
M_{Rd}	=	203 kNcm	M_{Rd}	=	313 kNcm
V_{Rd}	=	44.5 kN	V_{Rd}	=	64.0 kN

Figure 3: Characteristic values of U-section 53 without perforation

2.2.8.5.2 Cross-section values of U-section 53 with perforation

The U-section 53 used for various components with perforation ⌋ 20 x 40 mm according to Appendix B, page 04.04.01 or 04.11.01 2 must be verified with the characteristic values



U-section 53, type 1			U-Profil 53, type 2		
z_S	=	2.64 cm	z_S	=	2.74 cm
A	=	3.68 cm²	A	=	4.02 cm²
I_y	=	11.40 cm⁴	I_y	=	12.0 cm⁴
N_{Rd}	=	107 kN	N_{Rd}	=	168 kN
M_{Rd}	=	169 kNcm	M_{Rd}	=	257 kNcm
V_{Rd}	=	44.5 kN	V_{Rd}	=	64.0 kN

according to Figure 4.

Figure 4: Characteristic values of U-section 53 with perforation

2.2.8.5.3 Proof of interaction with U-section 53, type 2

For the cross-sectional check on the gross and net cross-section of U-section 53, type 2 according to Appendix B, page 04.11.01, the following interaction check must be carried out in connection with the assumptions according to Figure 5.

$$\frac{|_{Ed} + \cdot_{Ed}|}{\cdot\left[1 - \cdot_{(Ed)2} - \cdot_{(Ed)2}\right]} \leq 1 \qquad \text{(Eq 13)}$$

Rd N Rd V Rd

Where:

M_{Ed}, N_{ED}, V_{ED}	Stresses on the U-section 53, type 2
M_{Rd}, N_{Rd}, V_{Rd}	Bending load capacities according to Fig. 3 or Fig. 4
ξ_N, ξ_V	Interaction parameters according to Table 11

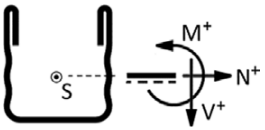
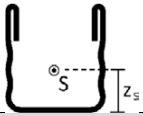
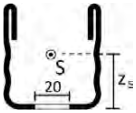


Figure 5: Conventions for the proof of interaction

Table 11: Characteristic values of the U-section 53, type 2 for the interaction proof

Characteristic value	**Gross cross section** 	**Net cross section** 
Parameters for the proof of interaction		
e in [cm]	0.12	0.32
ξ_N in [−]	1.36	1.32
ξ_V in [−]	0.47	0.57

2.2.8.5.4 Cross-section values of U-section 53 according to Z-8.22-64

For the U-sections according to Appendix B, pages 50.04.03 and 50.04.04, the regulations according to Z-8.1-16.2 may be applied, taking into account the net cross-sections.

2.2.8.6 Scaffold spindles

The equivalent cross-section values for the stress and interaction verifications and deformation calculations according to DIN 4425:2017-04 (Appendix B of DIN EN 12811-1:2004-03) are to be assumed for the scaffold spindles according to Appendix B, pages 02.01.00, 02.02.00 and 50.04.01 as follows:

$$A = A_S = 3.84\ cm^2$$
$$I = 3.74\ cm^4$$
$$W_{el} = 2.61\ cm^3$$
$$_{red}W_{pl} = 1.5 \cdot 2.1 = 3.6\ cm^3$$

The cosine interaction according to DIN 4420-1:1990-12, Table 7 may be used to verify the load-bearing capacity of the scaffold spindles.

2.2.8.7 Couplers

The load-bearing capacities and rigidity factors for half-couplers of class B according to DIN EN 74-2:2009-01 shall be applied when verifying the half-couplers with screw locks attached to different components.

2.2.8.8 TG60 frame

The TG60 frames according to Appendix B, pages 50.01.45 to 50.01.47 shall be verified according to Z-8.22-64.

2.2.8.9 Dimensioning welded malleable cast iron components

The welded joints on wedge heads according to Annex B, pages 50.01.04, 50.01.13, 50.01.14,and 50.02.04 shall be verified in accordance with the regulations under Z-8.22-64.

2.3 Design

2.3.1 General

The erection, modification,and dismantling of the scaffolds must be carried out in accordance with the instructions for erection and use.

2.3.2 Condition of the components

All components must be checked for perfect condition before installation; damaged components must not be used.

2.3.3 Structural detailing

2.3.3.1 General

The following applies to the use of the scaffold node:

- A maximum of eight rods can be connected per perforated disc.
- The wedges of the connection heads are to be fixed from top to bottom with a hammer weighing at least 500 g until they bounce.

2.3.3.2 Base area

The lower standard tubes or lead-off adapters are to be placed on scaffold spindles and aligned so that the working levels are horizontal. It must be ensured that the end plates of the scaffold spindles rest horizontally and over their entire surface and that the forces resulting from the scaffolding can be absorbed and transmitted in the erection plane.

5 The instructions for erection and use must comply with the requirements set out in the 'Application guideline for working scaffolds according to DIN EN 12811-1', see DIBt-Mitteilungen issue 2/2006.

2.3.3.3 Scaffold deck

The scaffold decks must be secured against unintentional lifting.

2.3.3.4 Side protection

The provisions of DIN EN 12811-1:2004-03 apply to side protection. The components intended for this purpose shall be used as a matter of priority and, only in exceptional cases, components such as steel tubes and couplings in accordance with DIN EN 12811-1:2004-03 and scaffold boards, and planks in accordance with DIN 4420-1:2004-03.

2.3.3.5 Bracing system

Scaffolds must be braced.

The vertical planes are to be braced by longitudinal ledgers or by longitudinal ledgers in combination with vertical diagonals. As longitudinal tubes, system decks in combination with U- or tubular ledgers can also be considered for stability verification.

The horizontal planes shall be braced by system decks in connection with U- or tubular ledgers according to 2.2.8.2 and 2.2.8.3 or by horizontal diagonals.

The design and position of the individual bracing planes is derived from the stability certificate.

2.3.3.6 Anchorage

The anchoring grid and the anchor forces result from the proof of stability.

The anchoring of the scaffold tie members to the façade or elsewhere on the building is not covered by this decision. The user must ensure that these can safely absorb and transfer the forces from the scaffold tie members. Vertical forces must not be transmitted in this process.

2.3.3.7 Couplers

The couplers with screw lock must be tightened to a torque of 50 Nm when connecting to the uprights; deviations of ±10 % are permissible. The screws must be kept easily movable according to the manufacturer's use instructions.

2.3.3.8 Joints

The upright joints must be designed in accordance with the erection and use instructions to protect against lifting forces in accordance with the proof of stability.

2.3.4 Certificate of compliance

The company carrying out the construction work must submit a declaration of conformity in accordance with §§ 16 a (5), 21 (2) MBO to confirm that the erected scaffold complies with the general design approval covered by this notice.

3 Provisions for use, maintenance, and servicing

3.1 General

The use of the scaffold is not covered by this decision.

3.2 Wooden scaffold components

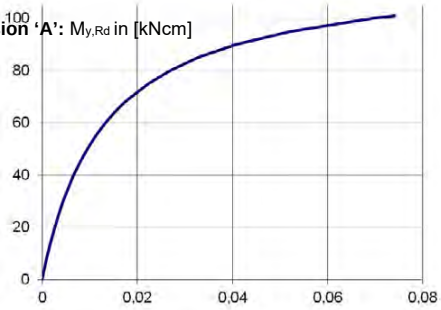
To prevent damage to wooden scaffold components due to the effects of moisture, they must be stored in a dry, floor-free area with adequate ventilation.

Andreas Schult
Head of Division

Attested
Gilow-Schiller

Deutsches Institut für Bautechnik DIBt

Version 'A': $M_{y,Rd}$ in [kNcm]

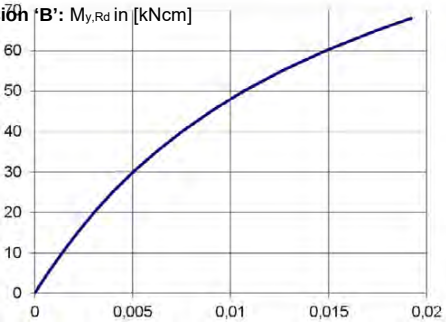


$$_{d} = \frac{_{y,Rd}}{9140 — 77 \cdot |_{y,Rd}|}$$

φ_d in [rad]

Figure 1: Rotational spring stiffness in the ledger connection in the vertical plane in version 'A'

Version 'B': $M_{y,Rd}$ in [kNcm]

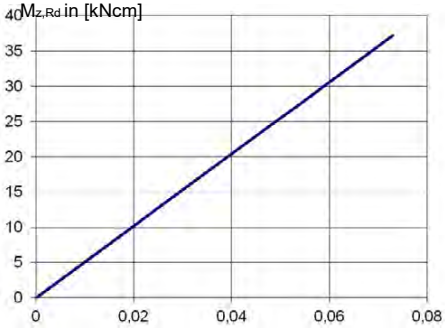


$$_{d} = \frac{_{y,Rd}}{7850 — 63.4 \cdot |_{y,Rd}|}$$

φ_d in [rad]

Figure 2: Rotational spring stiffness in the ledger connection in the vertical plane in version 'B'

$M_{z,Rd}$ in [kNcm]



$$_{d} = \frac{_{z,Rd}}{510}$$

φ_d in [rad]

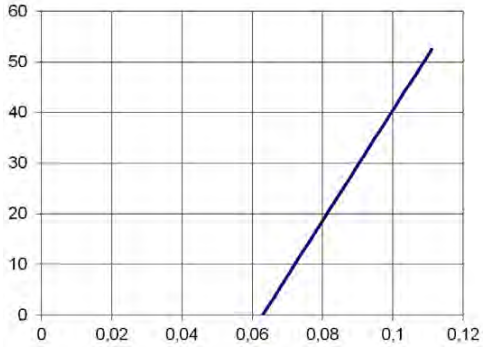
Figure 3: Rotational spring stiffness in the ledger connection in the horizontal plane in version 'A'

and 'B' Modular system 'MJ COMBI DUO'

Rigidity factors

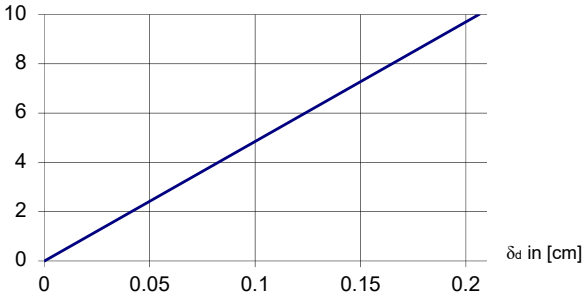
Appendix A, page 1

Version 'A': $M_{T,Rd}$ in [kNcm]



$$_{d} = 0.0629 + \frac{_{T,Rd}}{1091}$$

Figure 4: Rotational spring stiffness in the O-ledger connection under torsional stress in version 'A'



$$= \frac{_{y}}{48.5} \qquad []$$

$_{y}$ []

Figure 5: Force/displacement relationship in the ledger connection for version 'A' and 'B' with horizontal shear force

Modular system 'MJ COMBI DUO'	
Rigidity factors	Appendix A, page 2

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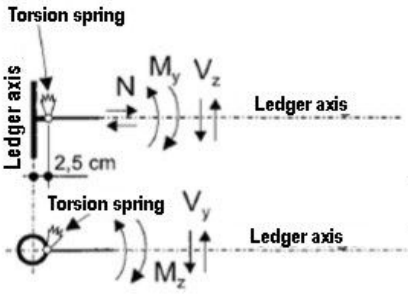
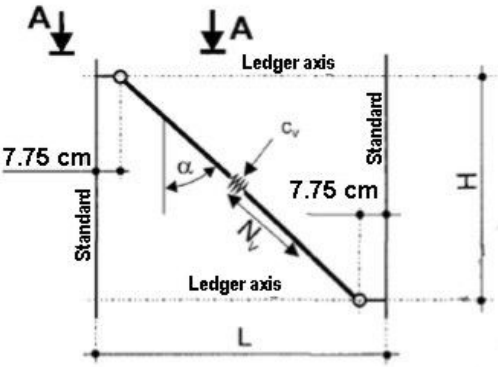
Static system ledger connection

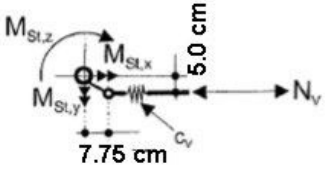


1) The positive horizontal components of the diagonal forces must correspond to the positive normal forces N'.
2) The positive vertical components must correspond to the positive shear forces V'

Static system lattice bar



Section A-A



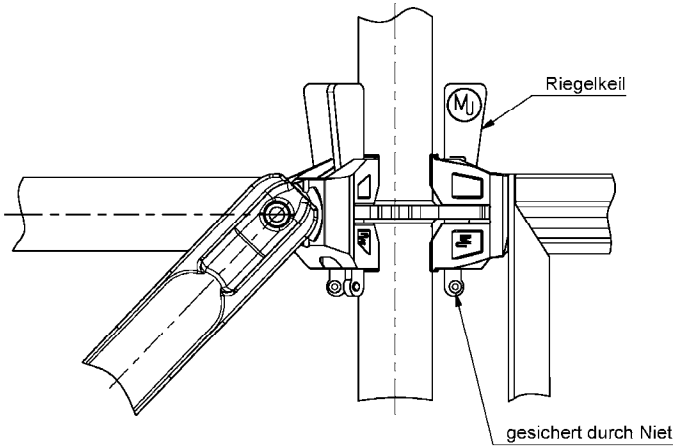
Node moments due to diagonal force N

$M_{St,x} = N_v \cdot \cos \alpha \cdot 5.0$ cm

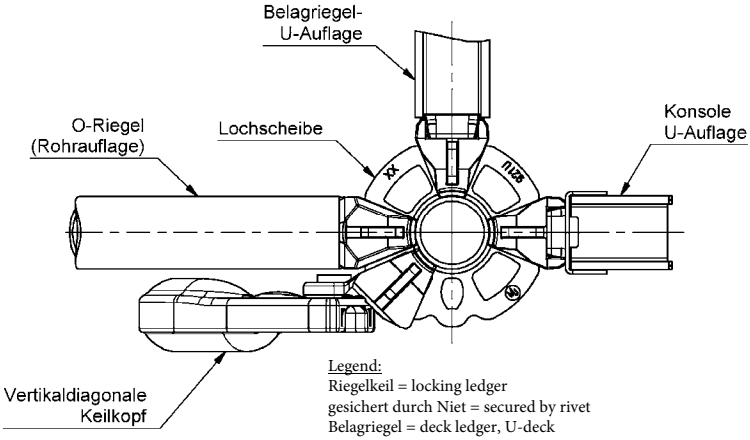
$M_{St,y} = N_v \cdot \cos \alpha \cdot 7.75$ cm

$M_{St,z} = N_v \cdot \sin \alpha \cdot 5.0$ cm

The node moments must be absorbed by the standards and the ledgers



Legend 2:
Konsole, U-Auflage = board bracket
Belagriegel-U-Auflage = deck ledger



Legend:
Riegelkeil = locking ledger
gesichert durch Niet = secured by rivet
Belagriegel = deck ledger, U-deck
Lochscheibe= perforated disc
O-Riegel (RohrauflageO-ledger (pipe support)
Vertikaldiagonale Keilkopf = vertical diagonal, wedge head

Modulsystem MJ COMBI DUO	geregelt in Z-8.22-921	
Knotenübersicht O-Riegel / Belagriegel U-Auflage Vertikaldiagonale mit Keilkopf / Konsole U-Auflage		Anlage B, 01.01.00

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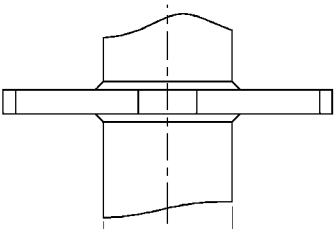
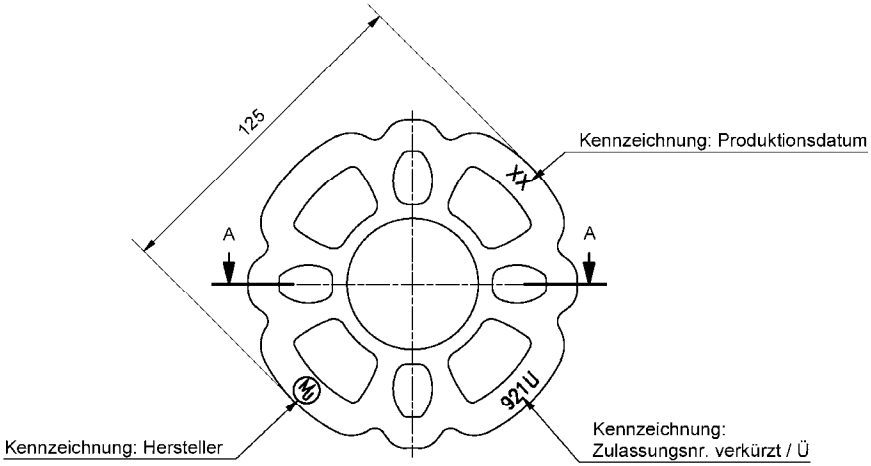
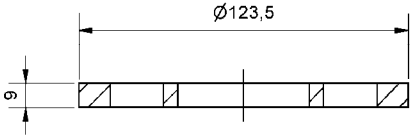


Legend:
Kennzeichnung: Produktionsdatum = mark: production date
Kennzeichen: Hersteller = mark: manufacturer
Lochscheibe = perforated disc
Kennzechen: Zulassungsnr. verkürzt / Ü = mark: approval no, abbr.



A-A



1	Band	1	Stahl	
Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung

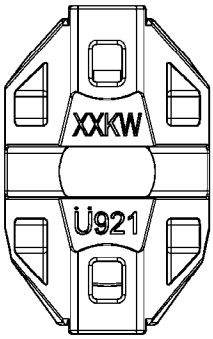
Modulsystem MJ COMBI DUO

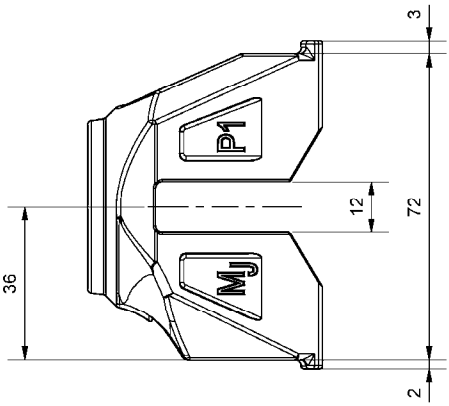
geregelt in Z-8.22-921

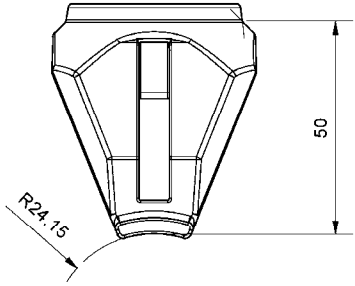
Lochscheibe

Anlage B, 01.02.00

Deutsches Institut für Bautechnik DIBt







Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	O - Riegelkopf	1	Stahlguss	

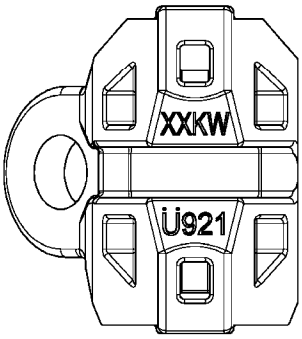
Modulsystem MJ COMBI DUO

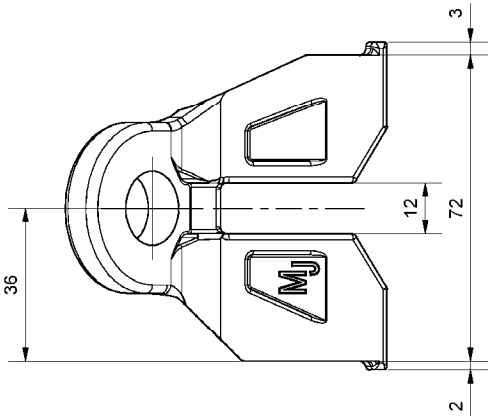
geregelt in Z-8.22-921

O-Riegelkopf **O-ledger head**

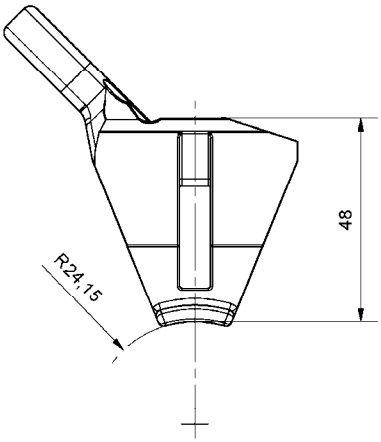
Anlage B, 01.03.00

Deutsches Institut für Bautechnik DIBt





Legend:
Darstellung entspricht dem Diagonalkopf, Ausführung "links" = representation corresponds to the diagonal head, "left" version
Ausführung "rechts" spiegelbildlich = version "right" mirror-inverted



Darstellung entspricht dem Diagonalkopf Ausführung "links"

Ausführung "rechts" spiegelbildlich

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	Diagonalkopf	1	Stahlguss	

Modulsystem MJ COMBI DUO

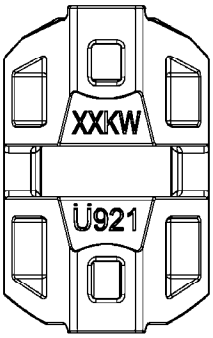
geregelt in Z-8.22-921

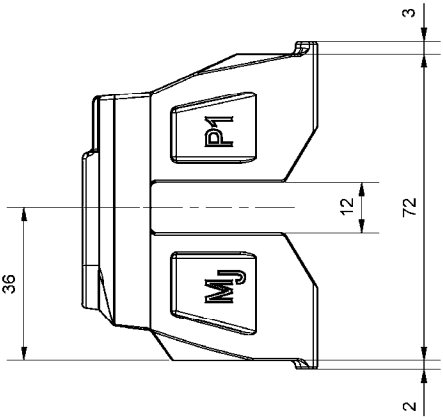
Diagonalkopf
für Vertikaldiagonalen
links / rechts

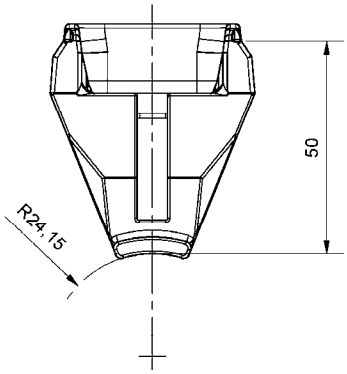
Diagonal head for vertical diagonals left / right

Anlage B, 01.04.00

Deutsches Institut für Bautechnik DIBt







Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	U - Riegelkopf	1	Stahlguss	

Modulsystem MJ COMBI DUO

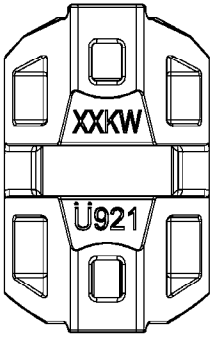
geregelt in Z-8.22-921

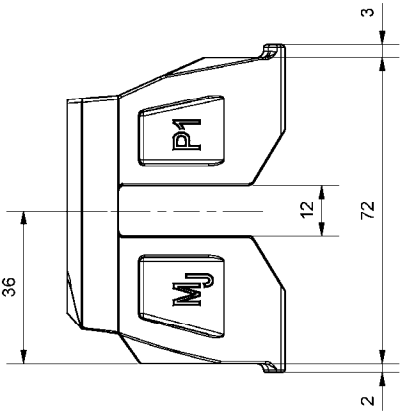
U-Riegelkopf

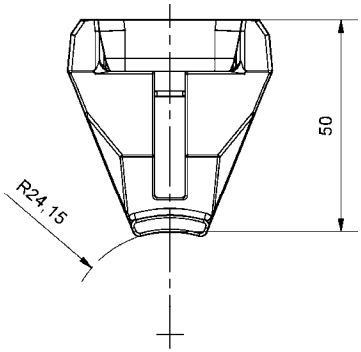
Legend:
U ledger head

Anlage B, 01.05.00

Deutsches Institut für Bautechnik DIBt







Anschluss siehe:
Anlage B, Seite 01.06.01

Legend:
Connection: see Appendix B, page 01.06.01

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	U-Riegelkopf für Konsole	1	Stahlguss	

Modulsystem MJ COMBI DUO

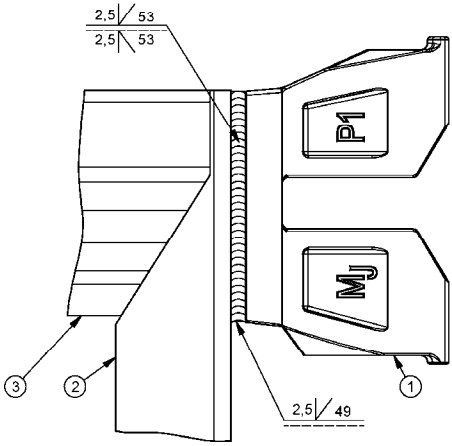
geregelt in Z-8.22-921

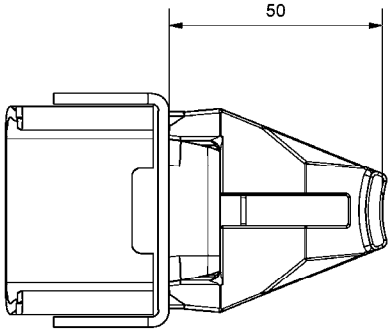
U-Riegelkopf für Konsole

U leadger head for board bracket

Anlage B, 01.06.00

Deutsches Institut für Bautechnik DIBt





Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	U-Profil (Anlage B, 04.04.01) U-section (Appdx B, 04.04.01)	1	-	
2	U-Stütze 55 x 27 x 2,5 U-support 55 x 27 x 2,5	1	S235JR	DIN EN 10025
1	U - Riegelkopf für Konsole (Anlage B, 01.06.00)	1	-	

Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

U-Riegelkopf für Konsole Anschlussdetail

U ledger head for board bracket, connection detail

Anlage B, 01.06.01

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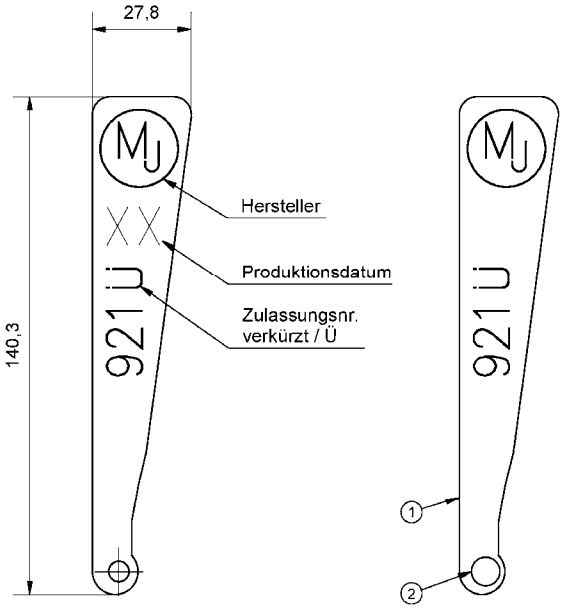


Legend:
Hersteller = manufacturer
Produktionsdatum = production date
Zulassungsnr. verkürzt /Ü = approval no, shortened / U

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Halbrundniet Half-round rivet	1	Stahl	
1	Spaltband Slit strip	1	Stahl	

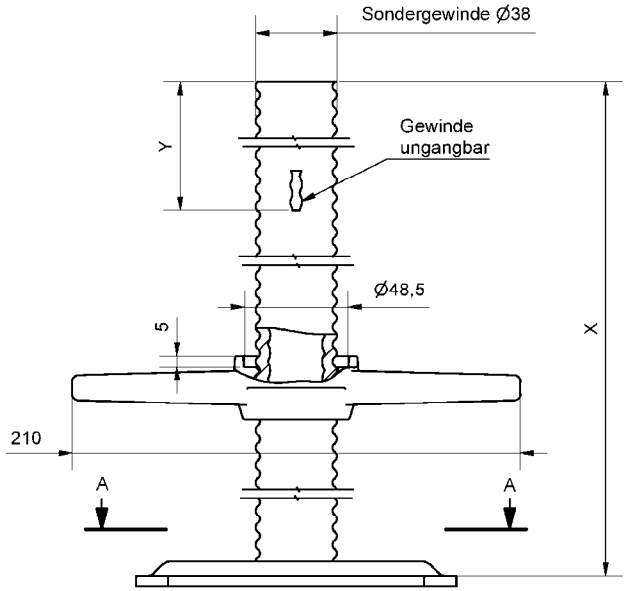
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

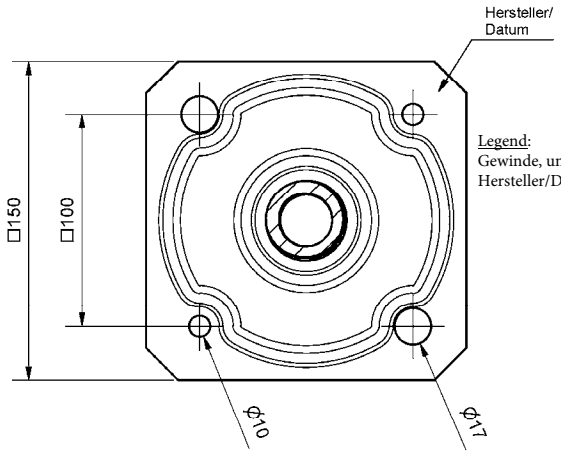
Riegelkeil 6 mm **Locking wedge 6 mm**

Anlage B, 01.07.00

Deutsches Institut für Bautechnik DIBt



A-A



Legend:
Gewinde, ungangbar = thread, unthreadable
Hersteller/Datum = manufacturer, date

X	Y	Gew./ kg
600	150	3,4
780	195	3,9

Modulsystem MJ COMBI DUO

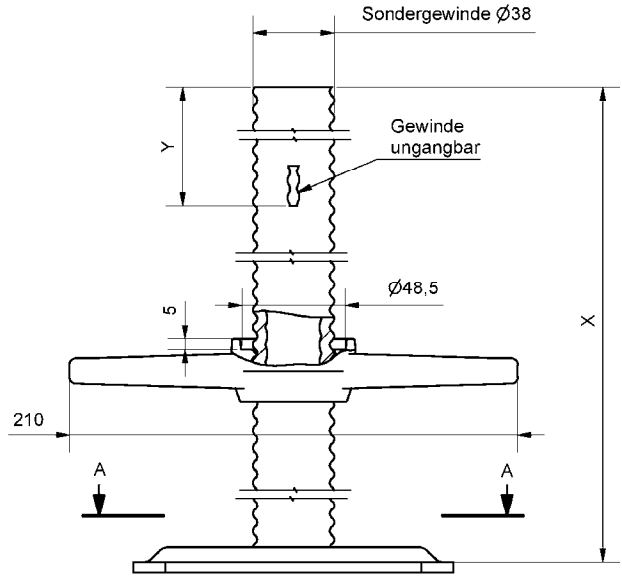
geregelt in Z-8.1-872

Fußspindel
0,60 ; 0,78 m

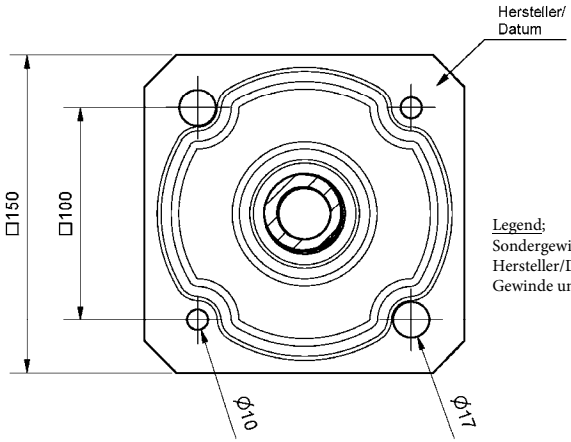
Fußspindel = base jack

Anlage B, 02.01.00

Deutsches Institut für Bautechnik DIBt



A-A



Legend;
Sondergewinde = special thread
Hersteller/Datum = manufacturer/date
Gewinde ungangbar = thread unthreadable

X	Y	Gew./ kg
300	150	2,4
500	150	3,1
1000	250	4,7

Modulsystem MJ COMBI DUO

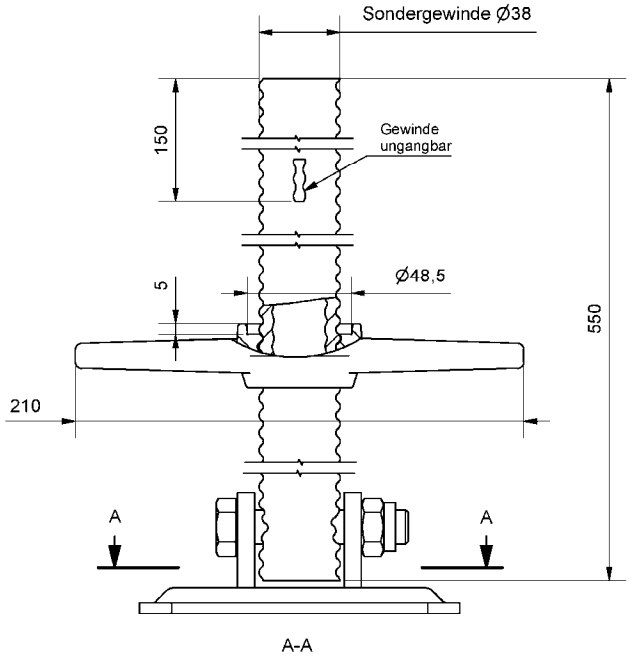
geregelt in Z-8.1-872

Fußspindel
0,30 ; 0,50 ; 1,00 m

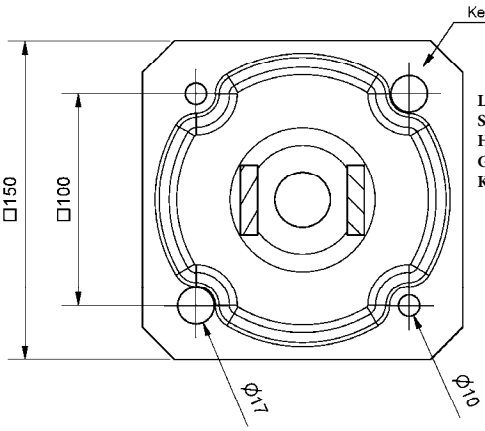
Base jack

Anlage B, 02.02.00

Deutsches Institut für Bautechnik DIBt



A-A



Legend;
Sondergewinde = special thread
Hersteller/Datum = manufacturer/date
Gewinde ungangbar = thread unthreadable
Kennzeichnung = mark

Gew./ kg
3,6

Modulsystem MJ COMBI DUO

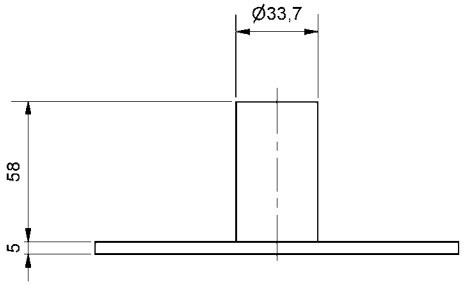
geregelt in Z-8.1-872

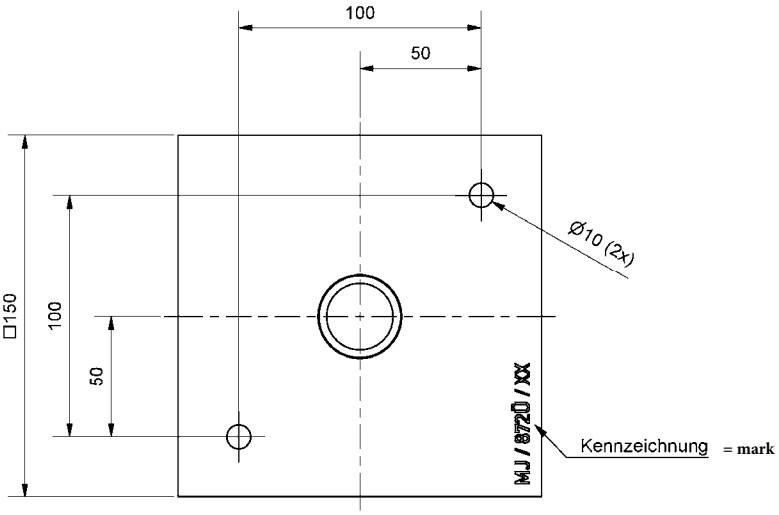
Fußspindel
0,55 m
schwenkbar

Base jack
0.55 m
pivoted

Anlage B, 02.03.00

Deutsches Institut für Bautechnik DIBt

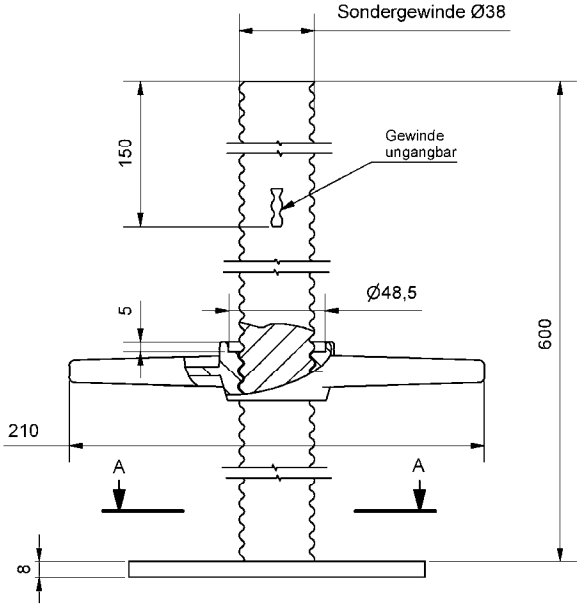


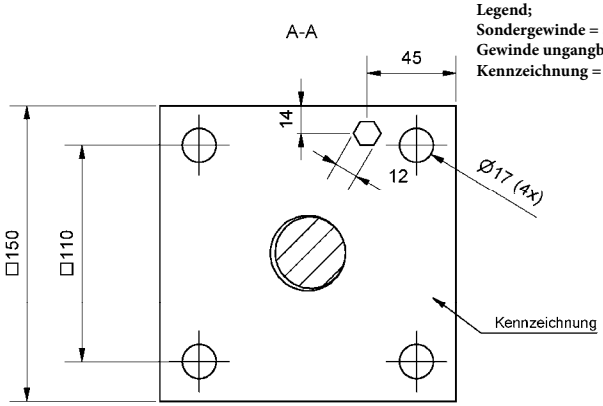


Gew./ kg
1,0

Modulsystem MJ COMBI DUO	geregelt in Z-8.1-872	
Fußplatte	**Base plate**	Anlage B, 02.04.00

Deutsches Institut für Bautechnik DIBt





Legend;
Sondergewinde = special thread
Gewinde ungangbar = thread unthreadable
Kennzeichnung = mark

Gew./ kg
6,7

Modulsystem MJ COMBI DUO

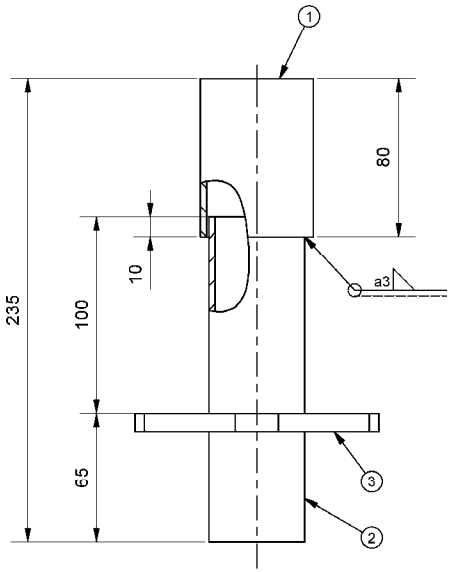
geregelt in Z-8.1-872

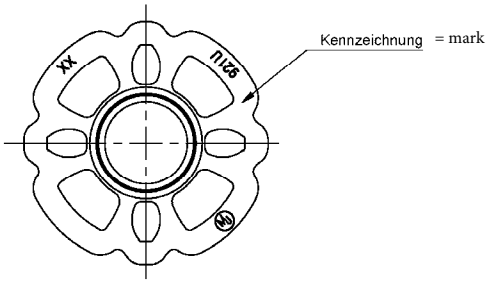
Fußspindel 0,60 m
massiv

Base jack 0.60 m
solid

Anlage B, 02.05.00

Deutsches Institut für Bautechnik DIBt





Gew./ kg
1,4

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Lochscheibe (Anlage B, 01.02.00)	1	-	
2	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø57 x 3,2	1	S235JRH	DIN EN 10219

Modulsystem MJ COMBI DUO

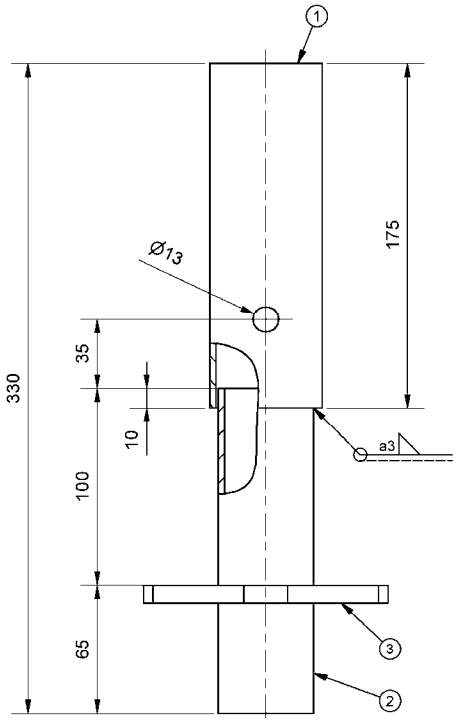
geregelt in Z-8.22-921

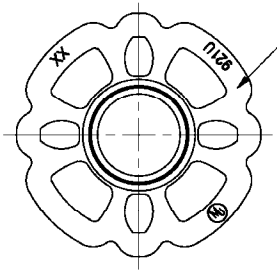
Anfangsstück 235 mm

Lead-off adapter 235 mm

Anlage B, 03.01.00

Deutsches Institut für Bautechnik DIBt





Gew./ kg
1,8

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Lochscheibe (Anlage B, 01.02.00)	1	-	
2	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø57 x 3,2	1	S235JRH	DIN EN 10219

Modulsystem MJ COMBI DUO

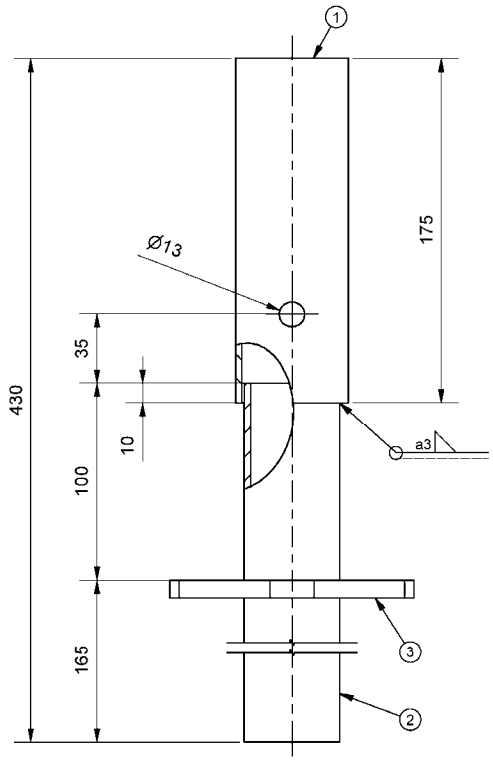
geregelt in Z-8.22-921

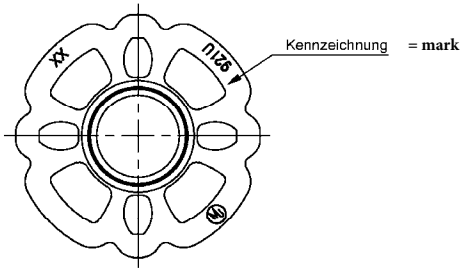
Anfangsstück 330 mm

Lead-off adapter 330 mm

Anlage B, 03.02.00

Deutsches Institut für Bautechnik DIBt





Gew./ kg
2,1

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Lochscheibe (Anlage B, 01.02.00)	1	-	
2	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø57 x 3,2	1	S235JRH	DIN EN 10219

Modulsystem MJ COMBI DUO

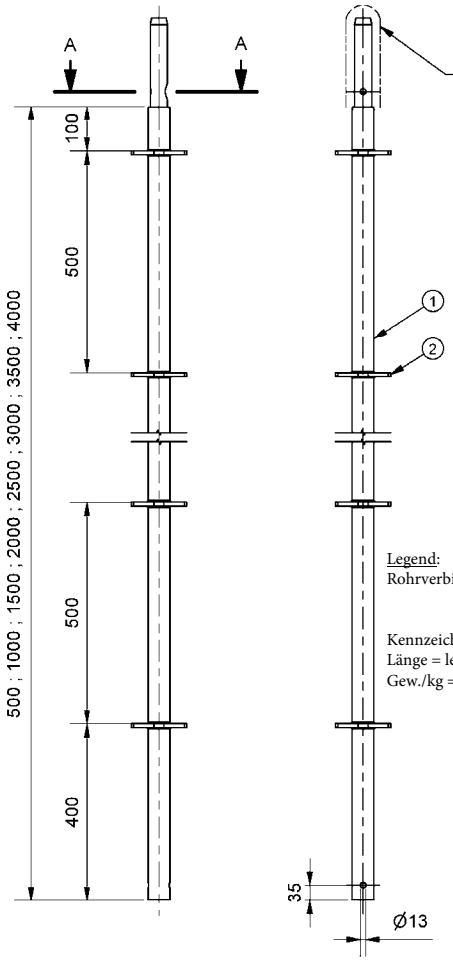
geregelt in Z-8.22-921

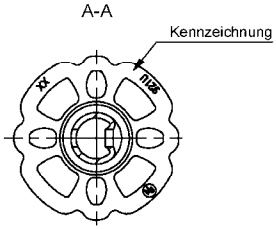
Anfangsstück 430 mm

Lead-off adapter 430 mm

Anlage B, 03.03.00

Deutsches Institut für Bautechnik DIBt





Legend:
Rohrverbinder gestaucht = spigot, vertical post
Detail vd:
Appendix B, 03.04.01
Kennzeichnung = mark
Länge = length; Anz. Pos 2 = qty pos. 2
Gew./kg = Weight/kg

Länge	Anz. Pos.2	Gew./ kg
500	1	3,2
1000	2	5,2
1500	3	7,7
2000	4	9,8
2500	5	12,1
3000	6	14,4
3500	7	16,7
4000	8	18,5

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Lochscheibe (Anlage B, 01.02.00)	-	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

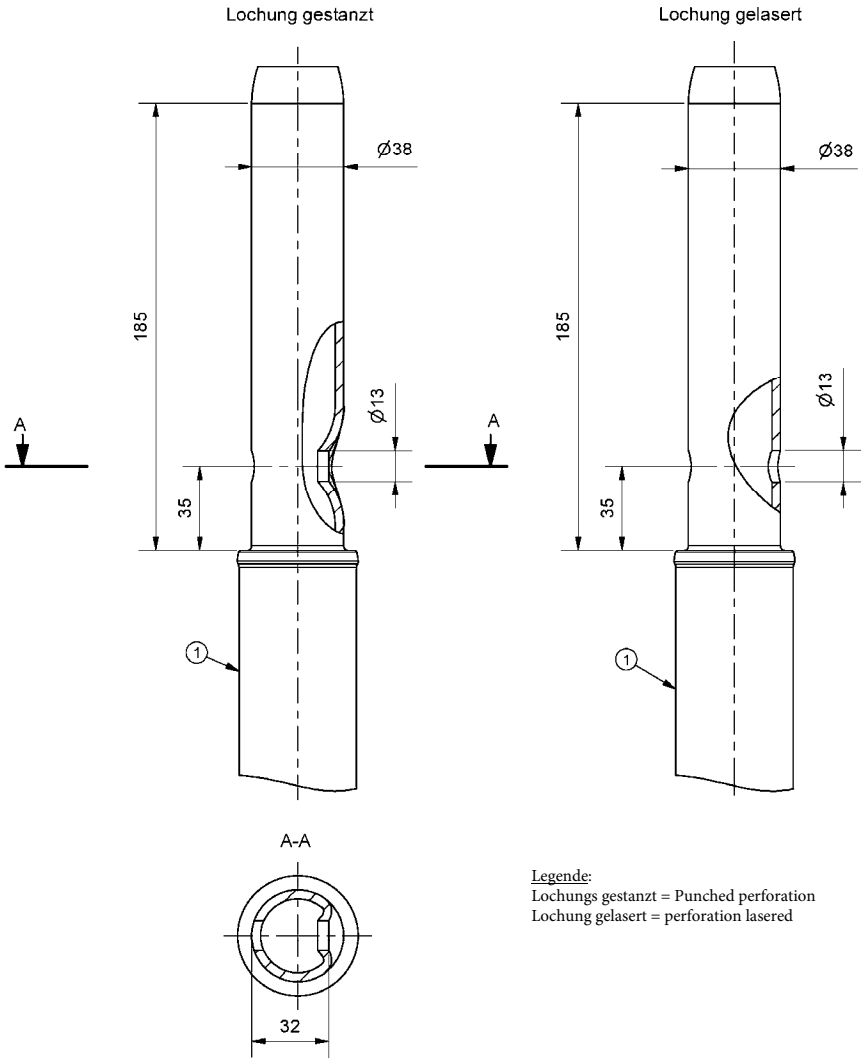
geregelt in Z-8.22-921

Vertikalstiel
mit gestauchtem Rohrverbinder

Vertical post
with upset spigot

Anlage B, 03.04.00

Deutsches Institut für Bautechnik DIBt



Legende:
Lochungs gestanzt = Punched perforation
Lochung gelasert = perforation lasered

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

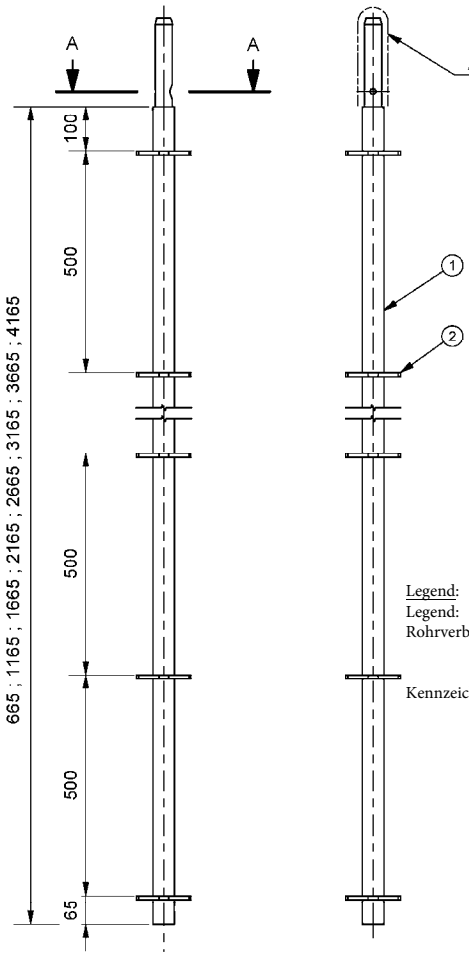
Modulsystem MJ COMBI DUO

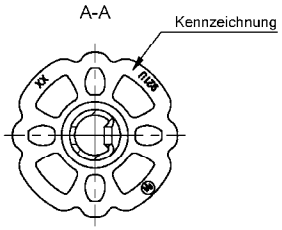
geregelt in Z-8.22-921

Rohrverbinder gestaucht **Spigot upset**

Anlage B, 03.04.01

Deutsches Institut für Bautechnik DIBt





Legend:
Legend:
Rohrverbinder gestaucht = spigot, vertical post
Detail vd:
Appendix B, 03.04.01
Kennzeichnung = mark

Länge	Anz. Pos.2	Gew./ kg
0,66	2	4,2
1,16	3	6,5
1,66	4	8,8
2,16	5	11,0
2,66	6	13,3
3,16	7	15,4
3,66	8	17,6
4,16	9	19,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Lochscheibe (Anlage B, 01.02.00)	-	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

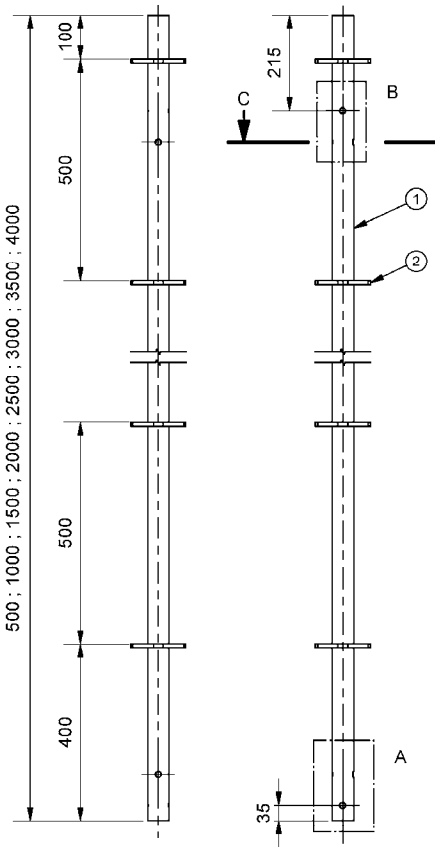
geregelt in Z-8.22-921

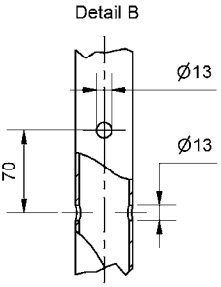
Anfangs-Vertikalstiel
mit gestauchtem Rohrverbinder

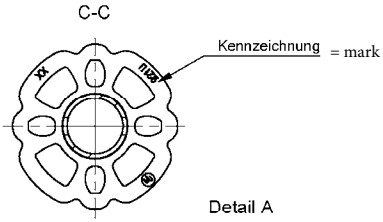
Initial vertical post with upset spigot

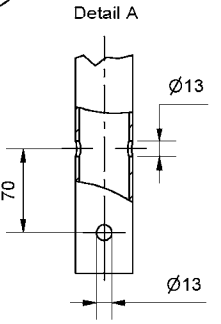
Anlage B, 03.05.00

Deutsches Institut für Bautechnik DIBt









Länge	Anz. Pos.2	Gew./ kg
500	1	2,8
1000	2	4,3
1500	3	6,8
2000	4	8,9
2500	5	11,4
3000	6	13,5
3500	7	15,6
4000	8	17,6

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Lochscheibe (Anlage B, 01.02.00)	-	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 $R_{eH} \geq 320 N/mm^2$

Modulsystem MJ COMBI DUO

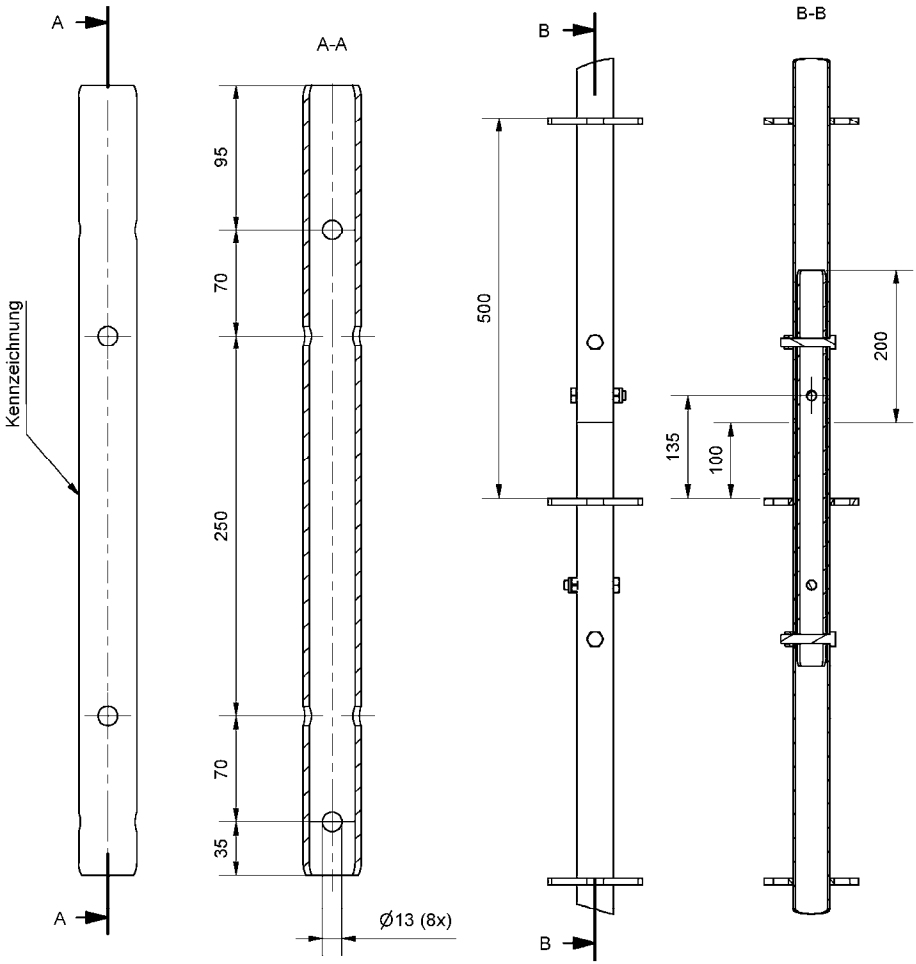
geregelt in Z-8.22-921

Vertikalstiel
ohne Rohrverbinder

Vertical post
w/out spigot

Anlage B, 03.06.00

Deutsches Institut für Bautechnik DIBt



Gew./ kg
1,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	Rohr Ø38 x 4	1	S275J0H	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

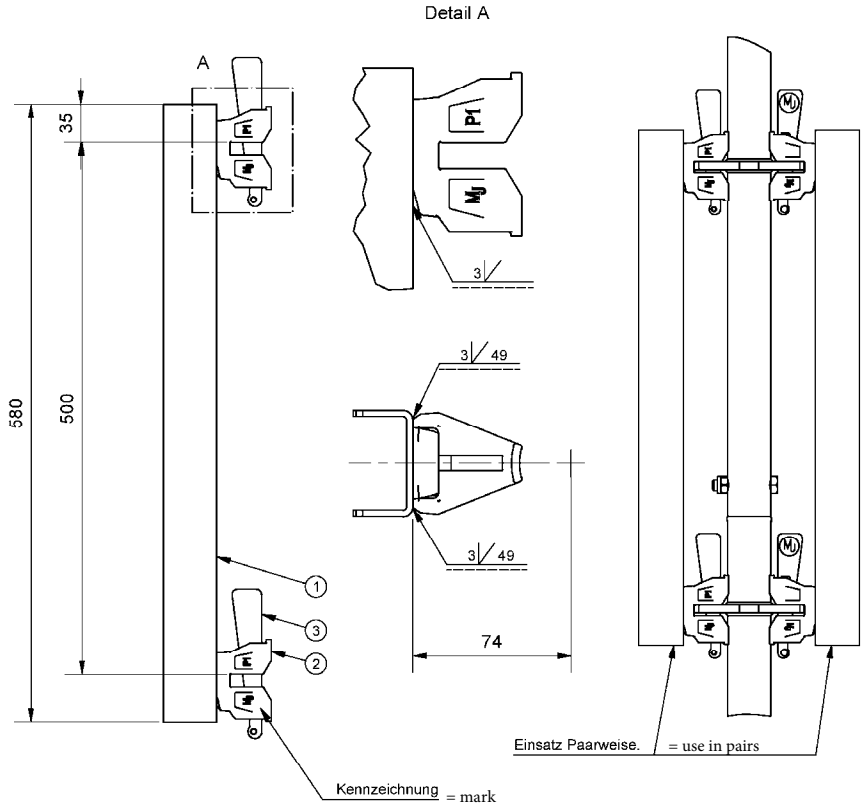
geregelt in Z-8.22-921

Rohrverbinder
für Vertikalstiele

**Vertical post
for vertical posts**

Anlage B, 03.07.00

Deutsches Institut für Bautechnik DIBt



Gew./ kg
3,6

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00)	2	-	
2	U-Riegelkopf für Konsole (Anlage B, 01.06.00)	2	-	
1	Vierkantrohr 50 x 50 x 3	1	S235JRH	DIN EN 10219

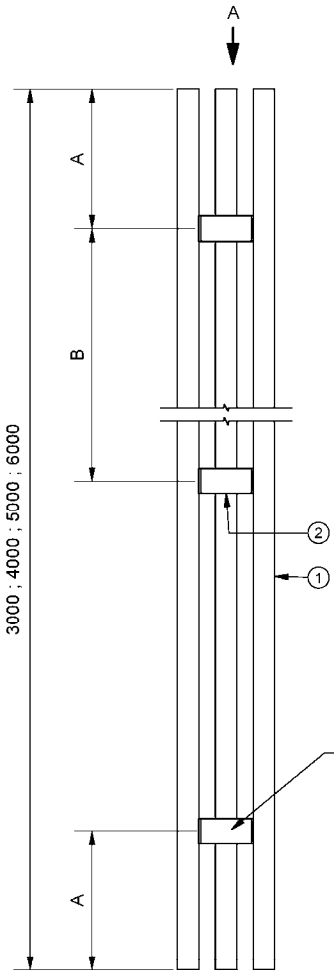
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

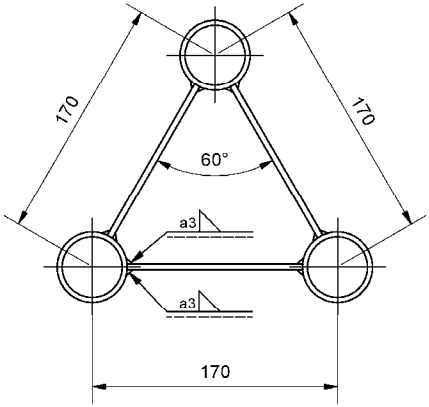
Hängegerüstverbinder **Suspended scaffold connector**

Anlage B, 03.08.00

Deutsches Institut für Bautechnik DIBt



Ansicht A View A



Length / Länge	Qty pos 2 / Anz. Pos.2	A	B	Whgt / kg / Gew./ kg
3000	12	315	790	40,0
4000	15	400	800	53,0
5000	21	130	790	65,0
6000	24	235	790	75,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
(2)	Band / Flach 60 x 4 ; alternativ	-	S235JR	DIN EN 10025-2
2	Band 56 x 4	-	S235JR	DIN EN 10025-2
1	Rohr Ø48,3 x 3,2	3	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

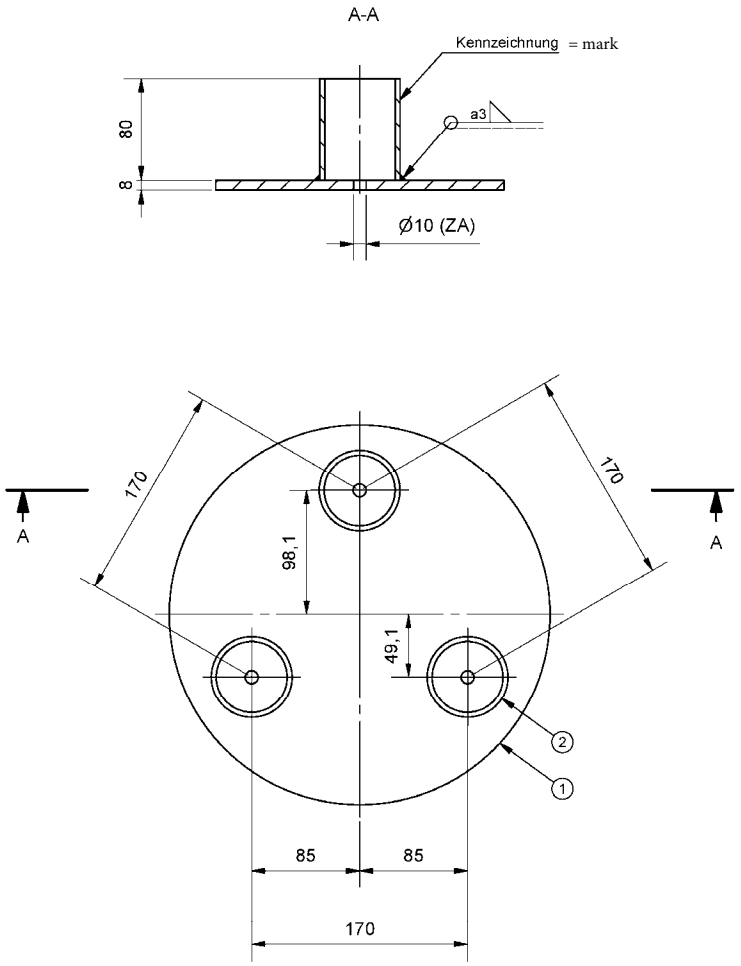
geregelt in Z-8.22-921

Dreieckstütze
3,00 ; 4,00 ; 5,00 ; 6,00 m

Triangular support

Anlage B, 03.09.00

Deutsches Institut für Bautechnik DIBt



Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Rohr Ø63,5 x 4	3	S355J2H	DIN EN 10220
1	Zuschnitt Ø300 x 8	1	S235JR	DIN EN 10025-2

Modulsystem MJ COMBI DUO

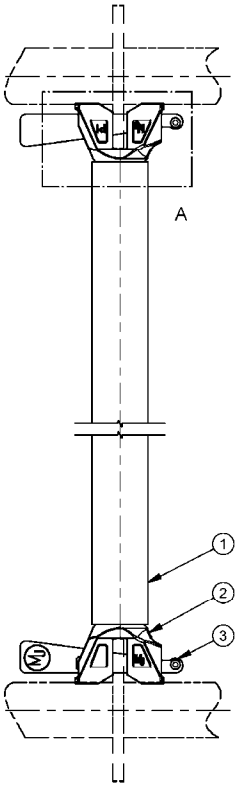
geregelt in Z-8.22-921

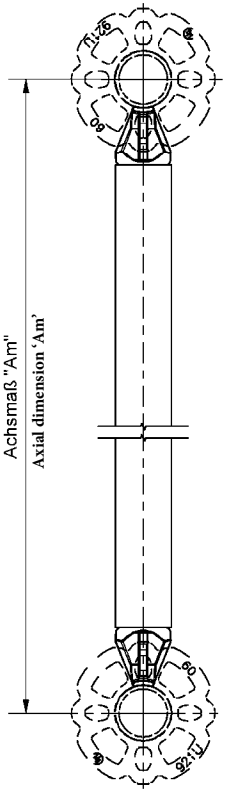
Fußplatte
für Dreieckstütze

Base plate
for triangular support

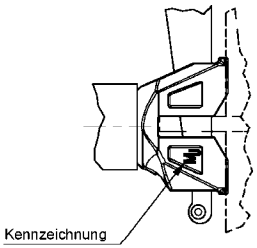
Anlage B, 03.10.00

Deutsches Institut für Bautechnik DIBt





Detail A
(Ansicht 90° gedreht)
(90° rotated view)



Ben.	Am	Gew./ kg
0,39	390	2,0
0,42	422	2,1
0,73	732	3,5
1,04	1036	3,9
1,09	1088	4,5
1,29	1286	5,3
1,40	1400	5,8
1,54	1536	6,1
1,57	1572	6,4
2,07	2072	7,8
2,57	2572	9,7
3,07	3072	11,0
4,14	4144	14,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00)	2	-	
2	O-Riegelkopf (Anlage B, 01.03.00)	2	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

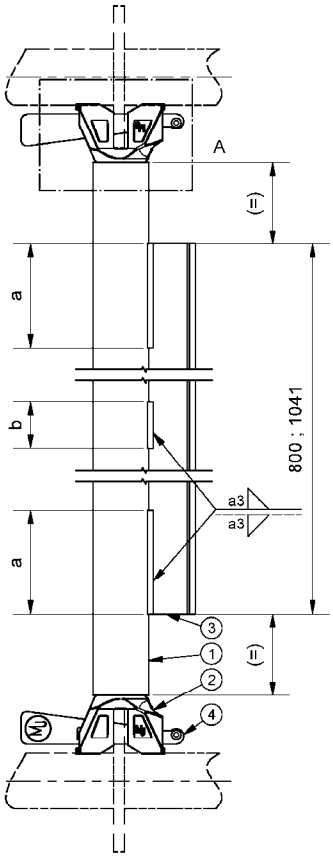
geregelt in Z-8.22-921

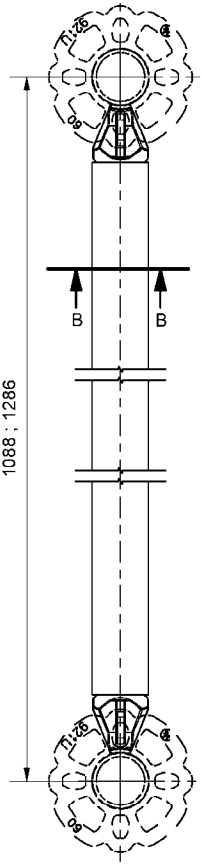
O-Riegel (Rohrriegel)

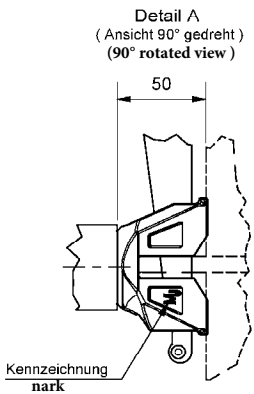
O-ledger (tubular ledger)

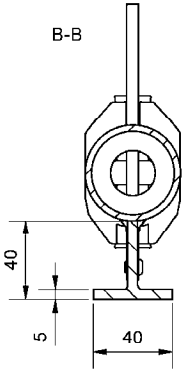
Anlage B, 04.01.00

Deutsches Institut für Bautechnik DIBt









Ben.	a (mm)	Anz. a	b (mm)	Anz. b	Gew./ kg
1,09	90	2	40	1	6,9
1,29	100	2	40	1	7,8

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	2	-	
3	T-Stahl 40 x 40 x 5 (nach DIN EN 10055)	1	S235JR	DIN EN 10025
2	O-Riegelkopf (Anlage B, 01.03.00)	2	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

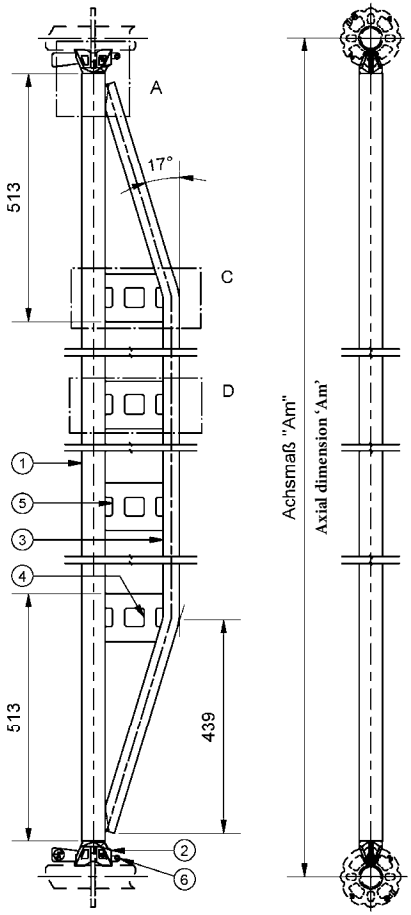
geregelt in Z-8.22-921

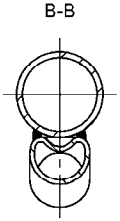
O-Riegel - verstärkt
(Rohrriegel)
1,09 ; 1,29

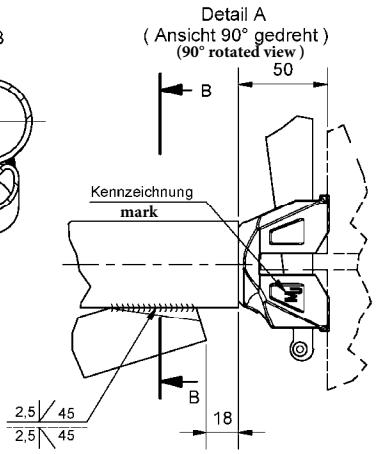
O-ledger reinforced
(tubular ledger)

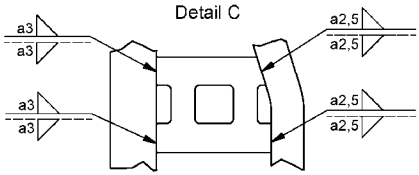
Anlage B, 04.02.00

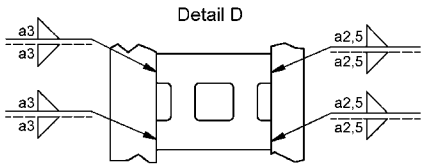
Deutsches Institut für Bautechnik DIBt











Ben.	Am	Anz. Pos.5	Gew./ kg
1,57	1572	0	9,7
2,07	2072	1	12,8
2,57	2572	2	15,9
3,07	3072	3	19,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
6	Riegelkeil (Anlage B, 01.07.00)	2	-	
5	Knotenblech gerade (Anlage B, 04.03.01)	-	-	
4	Knotenblech schräg (Anlage B, 04.03.01)	2	-	
3	Rohr Ø33,7 x 2,5	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
2	O-Riegelkopf (Anlage B, 01.03.00)	2	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

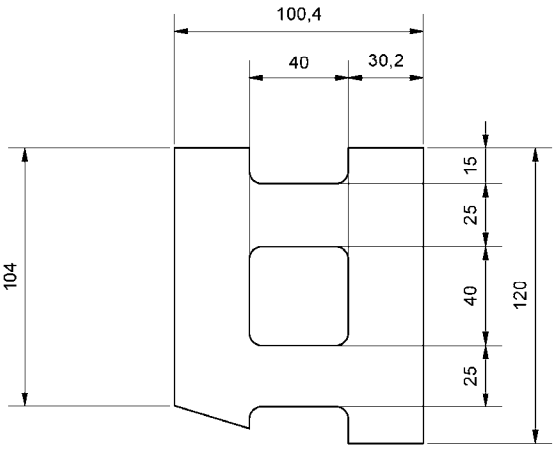
geregelt in Z-8.22-921

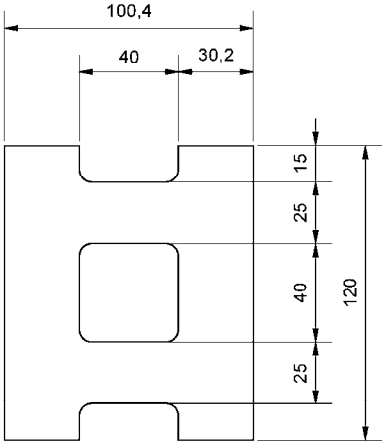
Doppel- O-Riegel
(Rohrriegel mit Unterzug)

Double O-ledger
(tubular ledger with main beam)

Anlage B, 04.03.00

Deutsches Institut für Bautechnik DIBt





Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	Spaltband 120,0 x 4,00	-	S235JR	DIN EN 10025 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

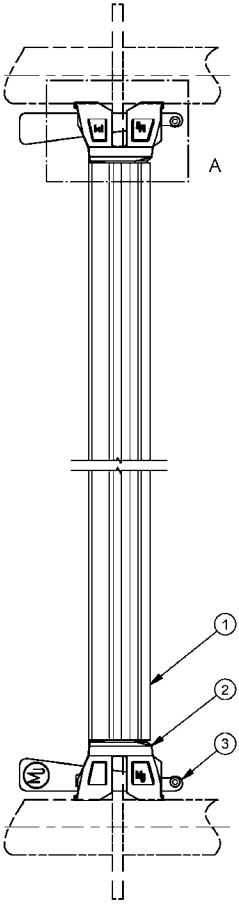
geregelt in Z-8.22-921

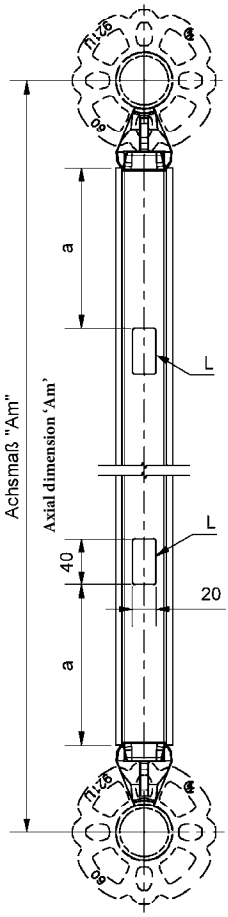
Knotenblech
gerade / schräg

Junction plate
straight / inclined gusset plate

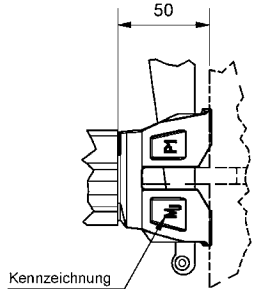
Anlage B, 04.03.01

Deutsches Institut für Bautechnik DIBt





Detail A
(Ansicht 90° gedreht)
(90° rotated view)



Ben.	Am	a	Anz. L	Gew./ kg
0,42	422	127,5	1	2,1
0,45	450	130,8	1	2,2
0,73	732	140	2	3,1
1,04	1036	140	2	4,2

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00)	2	-	
2	U-Riegelkopf (Anlage B, 01.05.00)	2	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

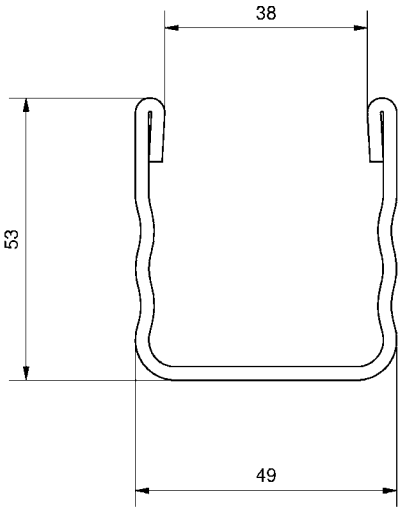
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

Belagriegel **Decking ledger**
U-Auflage **U-bracket**

Anlage B, 04.04.00

Deutsches Institut für Bautechnik DIBt



Pos	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	U-ProfilL 53 x 49 x 2,5 x L	1	S235JR	DIN EN 10025 R_{eH}≥320N/mm²

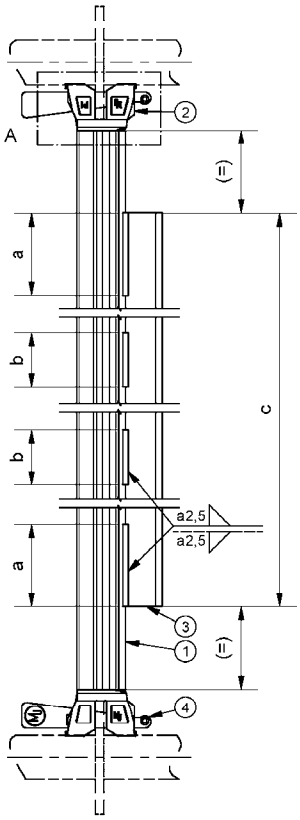
Modulsystem MJ COMBI DUO

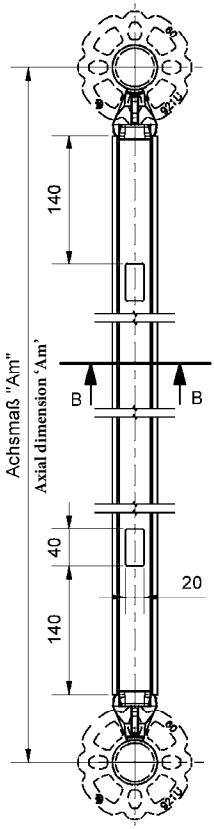
geregelt in Z-8.1-872

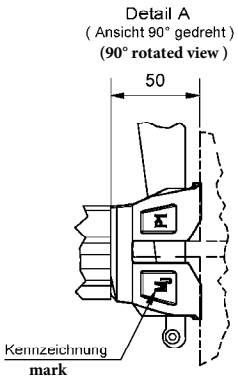
U-Profil 53 **U-section 53**

Anlage B, 04.04.01

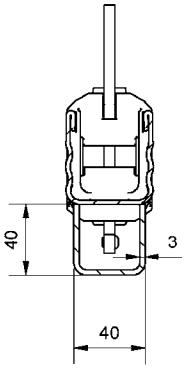
Deutsches Institut für Bautechnik DIBt







B-B



Ben.	Am	a (mm)	Anz. a	b (mm)	Anz. b	c	Gew./ kg
1,09	1088	90	2	60	2	760	6,6
1,40	1400	90	2	60	3	1052	8,3
1,54	1536	90	2	60	5	1188	9,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	2	-	
3	U-Profil 40 x 40 x 3	1	S235JR	DIN EN 10025
2	U-Riegelkopf (Anlage B, 01.05.00)	2	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

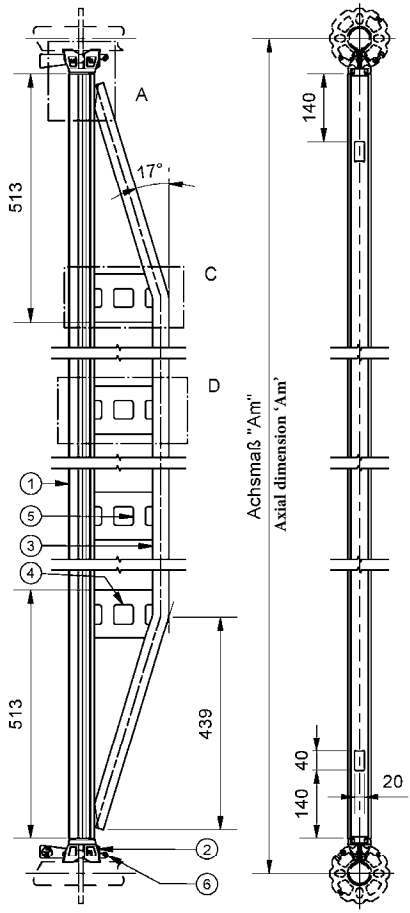
Modulsystem MJ COMBI DUO

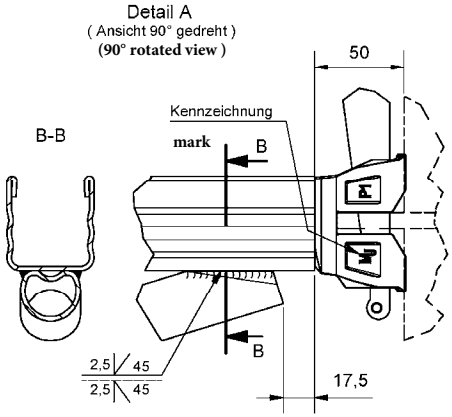
geregelt in Z-8.22-921

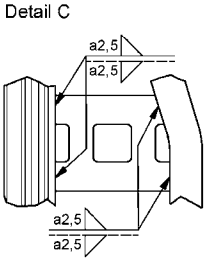
Belagriegel **Decking ledger**
U-Auflage **U-bracket**
verstärkt **reinforced**

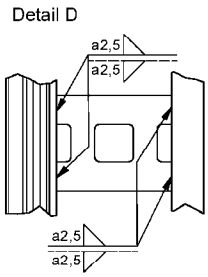
Anlage B, 04.05.00

Deutsches Institut für Bautechnik DIBt









Ben.	Am	Anz. Pos.5	Gew./ kg
1,57	1572	0	9,8
2,07	2072	1	12,8
2,57	2572	2	16,0
3,07	3072	3	19,2

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
6	Riegelkeil (Anlage B, 01.07.00)	2	-	
5	Knotenblech gerade (Anlage B, 04.03.01)	-	-	
4	Knotenblech schräg (Anlage B, 04.03.01)	2	-	
3	Rohr Ø33,7 x 2,5	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
2	U-Riegelkopf (Anlage B, 01.05.00)	2	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

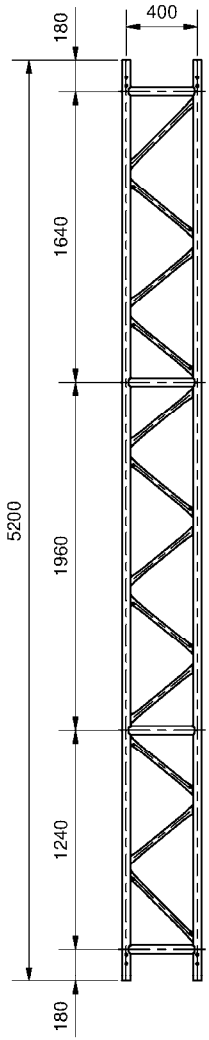
geregelt in Z-8.22-921

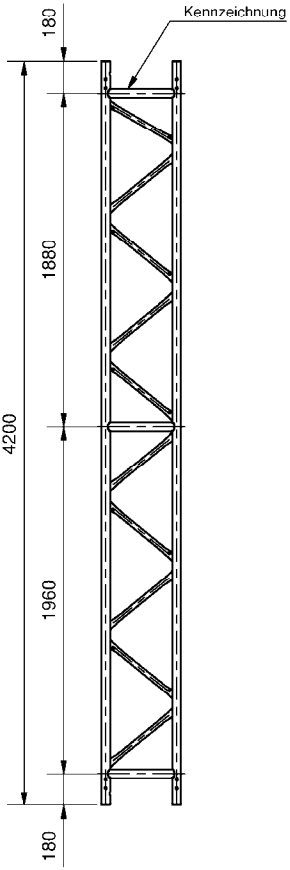
Doppel- Belagriegel
U-Auflage

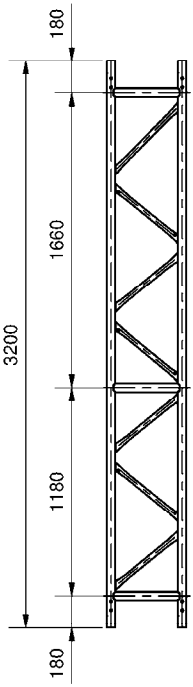
Double decking ledger
U-bracket

Anlage B, 04.06.00

Deutsches Institut für Bautechnik DIBt







Länge / m	Gew./ kg
3,20	31,0
4,20	39,0
5,20	49,5

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Rohr Ø 26,9 x 2,3 (Diagonale)	7-12	S235JRH	DIN EN 10219
2	Rohr Ø 48,3 x 3,2 (Pfosten) **(post)**	3/4	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø 48,3 x 3,2 (Gurt) **(flange)**	2	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

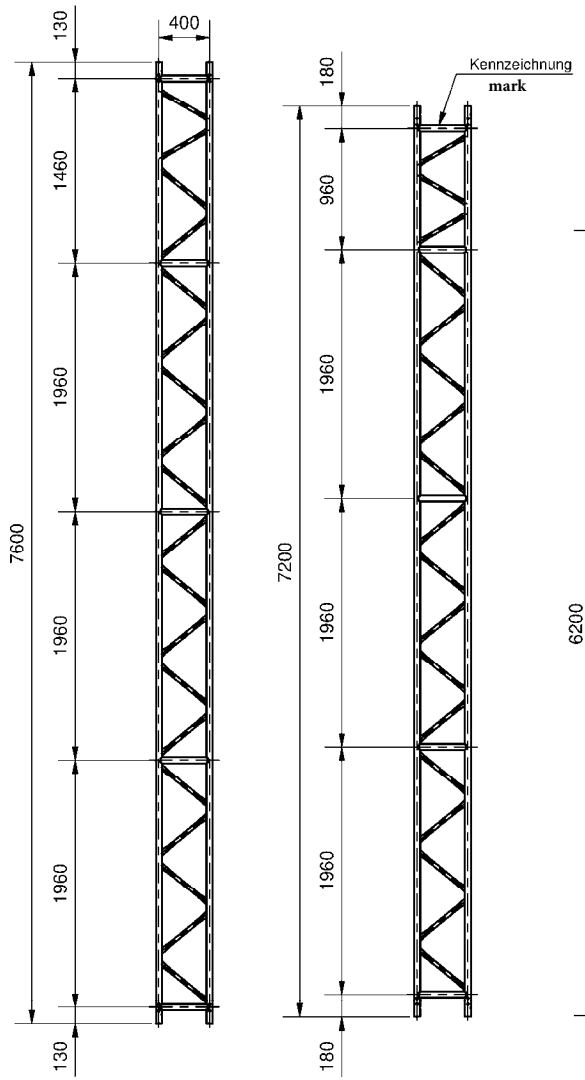
geregelt in Z-8.1-872

Gitterträger
Ausführung Stahl

Lattice girder
Steel version

Anlage B, 04.07.00

Deutsches Institut für Bautechnik DIBt



Länge / m	Gew./ kg
6,20	58,5
7,20	68,5
7,60	71,8

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Rohr Ø 26,9 x 2,3 (Diagonale)	15-19	S235JRH	DIN EN 10219
2	Rohr Ø 48,3 x 3,2 (Pfosten)	4/5	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø 48,3 x 3,2 (Gurt)	2	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

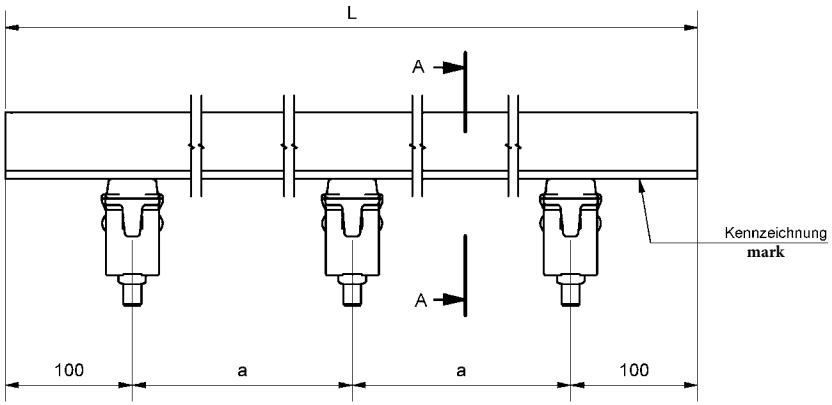
geregelt in Z-8.1-872

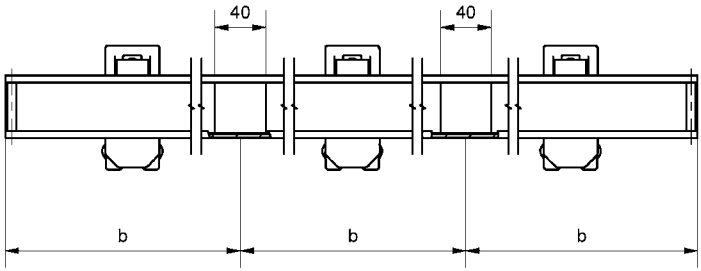
Gitterträger
Ausführung Stahl

Lattice girder
Steel version

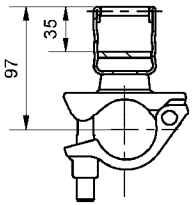
Anlage B, 04.08.00

Deutsches Institut für Bautechnik DIBt





A-A



Ben. (m)	Anz. Bohlen	L (mm)	a (mm)	b (mm)	Gew./ kg
0,97	3	965	765	382,5	4,5
2,25	7	2245	1022,5	748,3	10,0
2,57	8	2565	788,3	855	11,5
3,21	10	3205	1001,7	1068,3	13,5
4,17	13	4165	991,2	833	18,0
5,13	16	5125	985	1025	22,5
6,09	19	6085	980,8	1217	26,5

Modulsystem MJ COMBI DUO

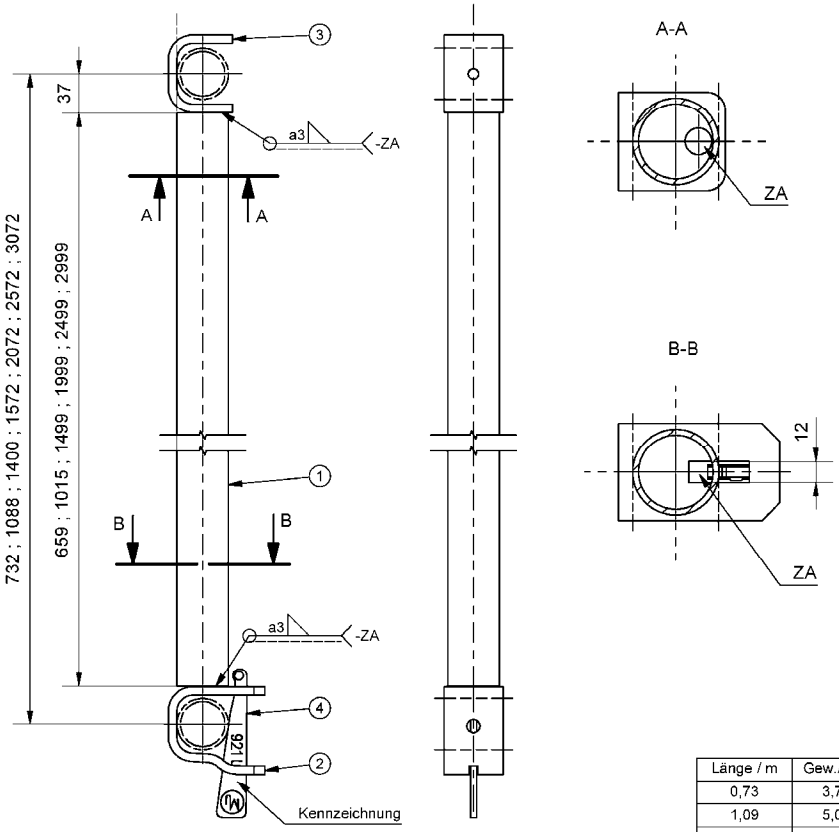
geregelt in Z-8.1-872

U-Schiene
Belagriegel

U-rail
Decking ledger

Anlage B, 04.09.00

Deutsches Institut für Bautechnik DIBt



Länge / m	Gew./ kg
0,73	3,7
1,09	5,0
1,40	6,1
1,57	6,7
2,07	8,5
2,57	10,2
3,07	12,0

Riegelkeil = ledger wedhe
U-Klaue = U-claw
Einhängung, width 55 = hinging fixture, width 55
Rohr = pipe/tube

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	1	-	
3	U-Klaue 60 x 73 x 55 (Anlage B, 04.10.01)	1	-	
2	Einhängung Breite 55 / t= 8 (Anlage B, 04.10.01)	1	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

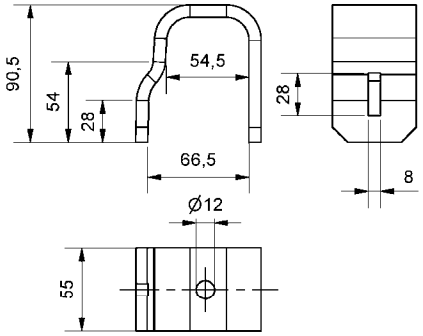
geregelt in Z-8.22-921

Zwischenquerriegel **Intermediate transom**

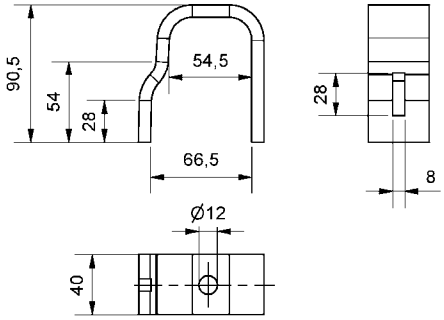
Anlage B, 04.10.00

Deutsches Institut für Bautechnik DIBt

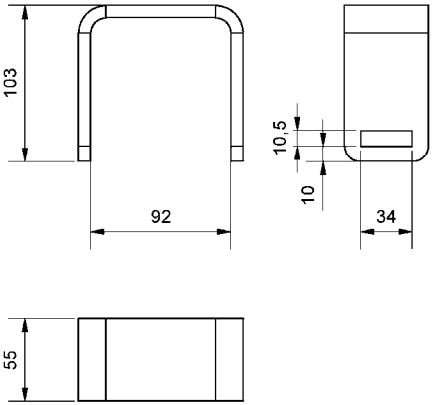
Pos.1



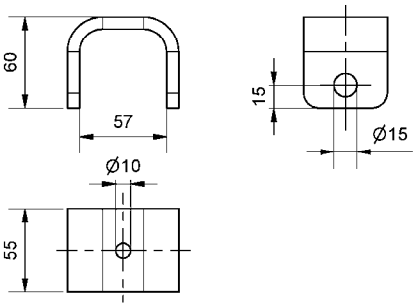
Pos.2



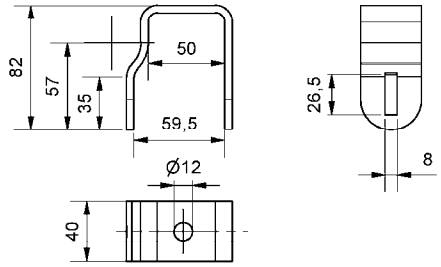
Pos.3



Pos.4



Pos.5



Riegelkeil = ledger wedge
U-Klaue = U-claw
Einhängung, Breite 55 = hinging fixture, width 55

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Einhängung Breite 40 / t= 5 ; aus Spaltband 208 x 5	1	S235JR	DIN EN 10025
4	U-Klaue 60 x 73 x 55 x 8 ; aus Flach 55 x 8	1	S235JR	DIN EN 10025
3	U-Klaue 103 x 108 x 55 x 8 ; aus Flach 55 x 8	1	S235JR	DIN EN 10025
2	Einhängung Breite 40 / t= 8 ; aus Flach 40 x 8	1	S235JR	DIN EN 10025
1	Einhängung Breite 55 / t= 8 ; aus Flach 55 x 8	1	S235JR	DIN EN 10025

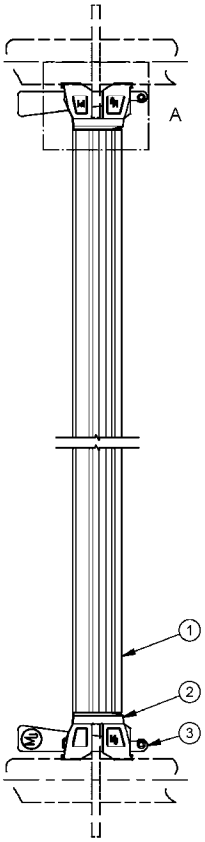
Modulsystem MJ COMBI DUO

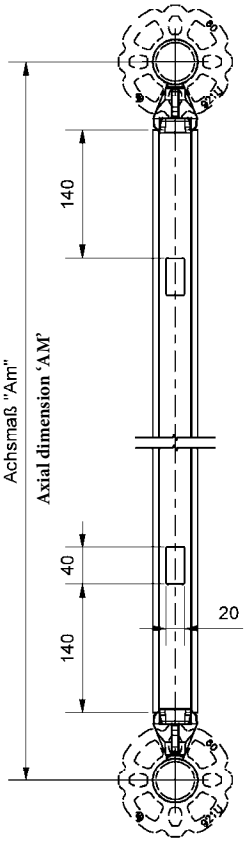
geregelt in Z-8.22-921

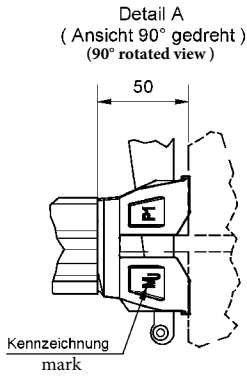
Klauen / Einhängungen **Claws / Hinging fixtures**

Anlage B, 04.10.01

Deutsches Institut für Bautechnik DIBt







Legend:
Riegelkeil =ledger wedge
U-Riegelkopf = U-ledger head
U-Profil = U-section

Ben.	Am	Gew./ kg
1,09	1088	4,5
1,40	1400	5,6

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00)	2	-	
2	U - Riegelkopf (Anlage B, 01.05.00)	2	-	
1	U-Profil 53 x 49 x 2,5; Typ-2 (Anlage B, 04.11.01)	1	-	

Modulsystem MJ COMBI DUO

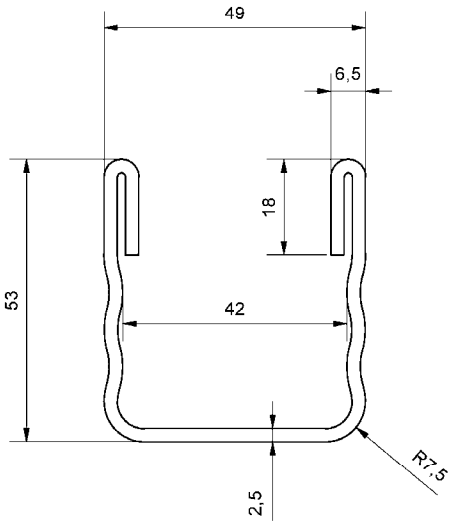
geregelt in Z-8.22-921

Belagriegel
U-Auflage
OPTI-LINE

Decking ledger
U-bracket
OPTI-LINE

Anlage B, 04.11.00

Deutsches Institut für Bautechnik DIBt



Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
1	U-Profil 53 x 49 x 2,5 ; nach DIN EN 10162	-	S460MC	DIN EN 10149-2

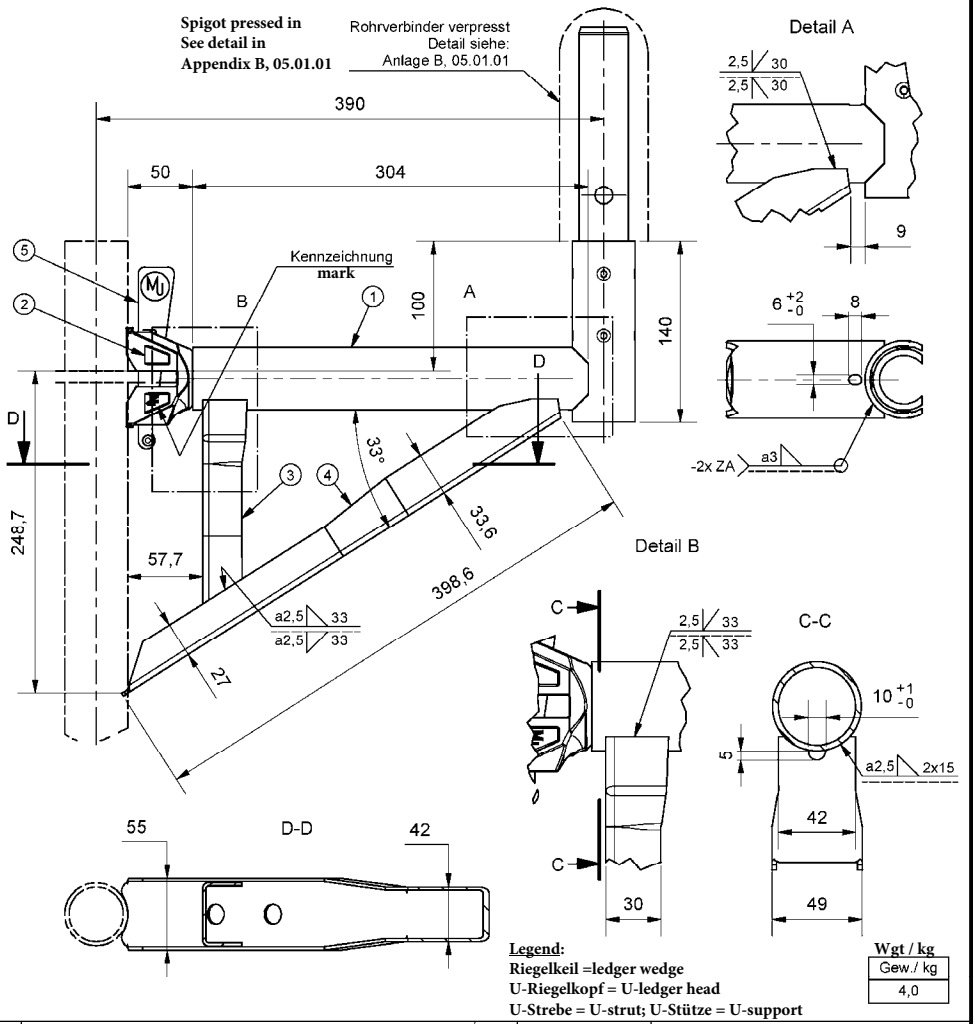
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

U-Profil 53 **U-section 53**
Typ-2

Anlage B, 04.11.01

Deutsches Institut für Bautechnik DIBt



Legend:
Riegelkeil =ledger wedge
U-Riegelkopf = U-ledger head
U-Strebe = U-strut; U-Stütze = U-support

Wgt / kg

Gew./ kg
4,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Riegelkeil (Anlage B, 01.07.00)	1	-	
4	U-Strebe 55/42 x 27/33 x 2,5	1	S235JR	DIN EN 10025
3	U-Stütze 49 x 30 x 2,5	1	S235JR	DIN EN 10025
2	O-Riegelkopf (Anlage B, 01.03.00)	1	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

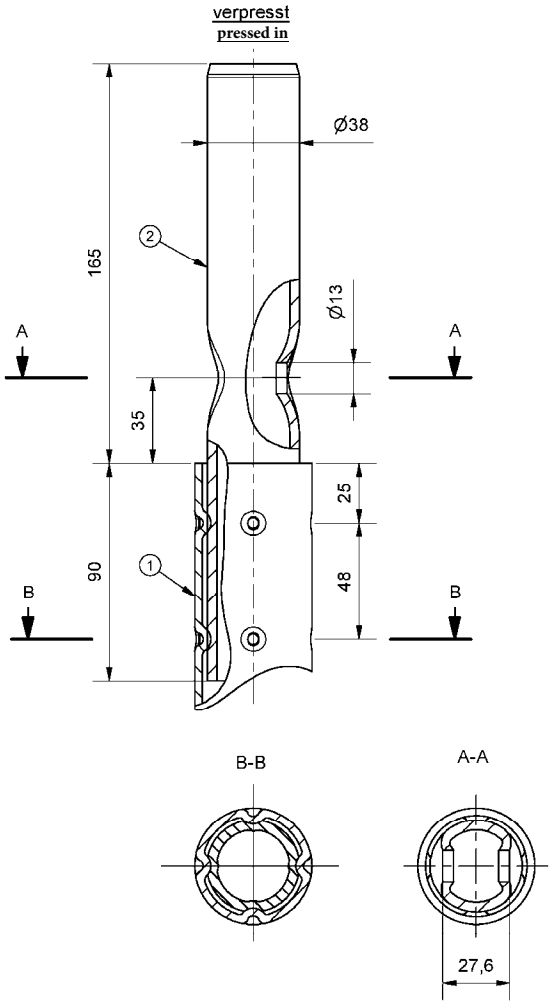
geregelt in Z-8.22-921

Konsole
Rohrauflage 0,39 m
mit Rohrverbinder

Board bracket
Pipe bracket 0.39 m
with spigot

Anlage B, 05.01.00

Deutsches Institut für Bautechnik DIBt



Rohr = pipe/tube

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
2	Rohr Ø38 x 4	1	S275J0H	DIN EN 10219 R_{eH}≥320N/mm²
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

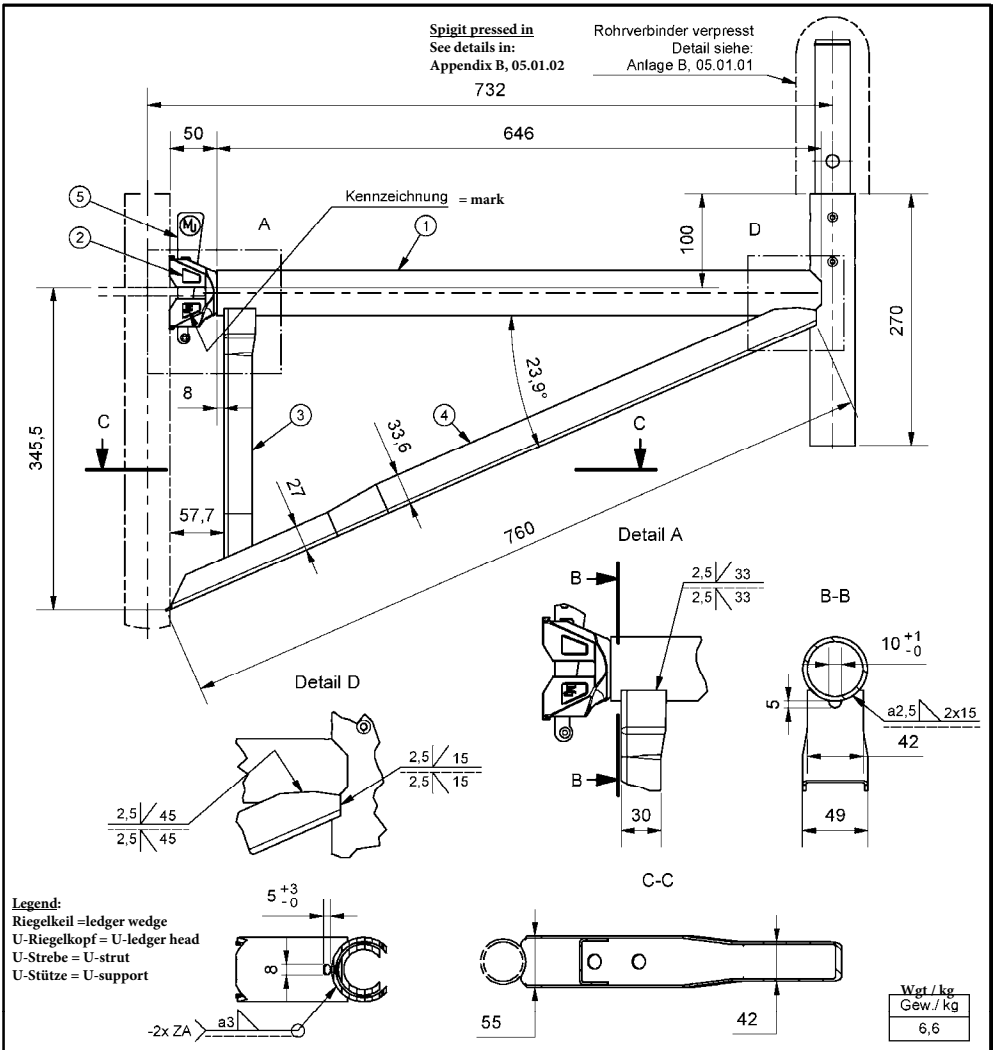
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

Rohrverbinder verpresst **Spigot peressed in**

Anlage B, 05.01.01

Deutsches Institut für Bautechnik DIBt



Legend:
Riegelkeil =ledger wedge
U-Riegelkopf = U-ledger head
U-Strebe = U-strut
U-Stütze = U-support

Wgt / kg
Gew./ kg
6,6

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Riegelkeil (Anlage B, 01.07.00)	1	-	
4	U-Strebe 55/42 x 27/33 x 2,5	1	S235JR	DIN EN 10025
3	U-Stütze 49 x 30 x 2,5	1	S235JR	DIN EN 10025
2	O-Riegelkopf (Anlage B, 01.03.00)	1	-	
1	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 $R_{eH} \geq 320 N/mm^2$

Modulsystem MJ COMBI DUO

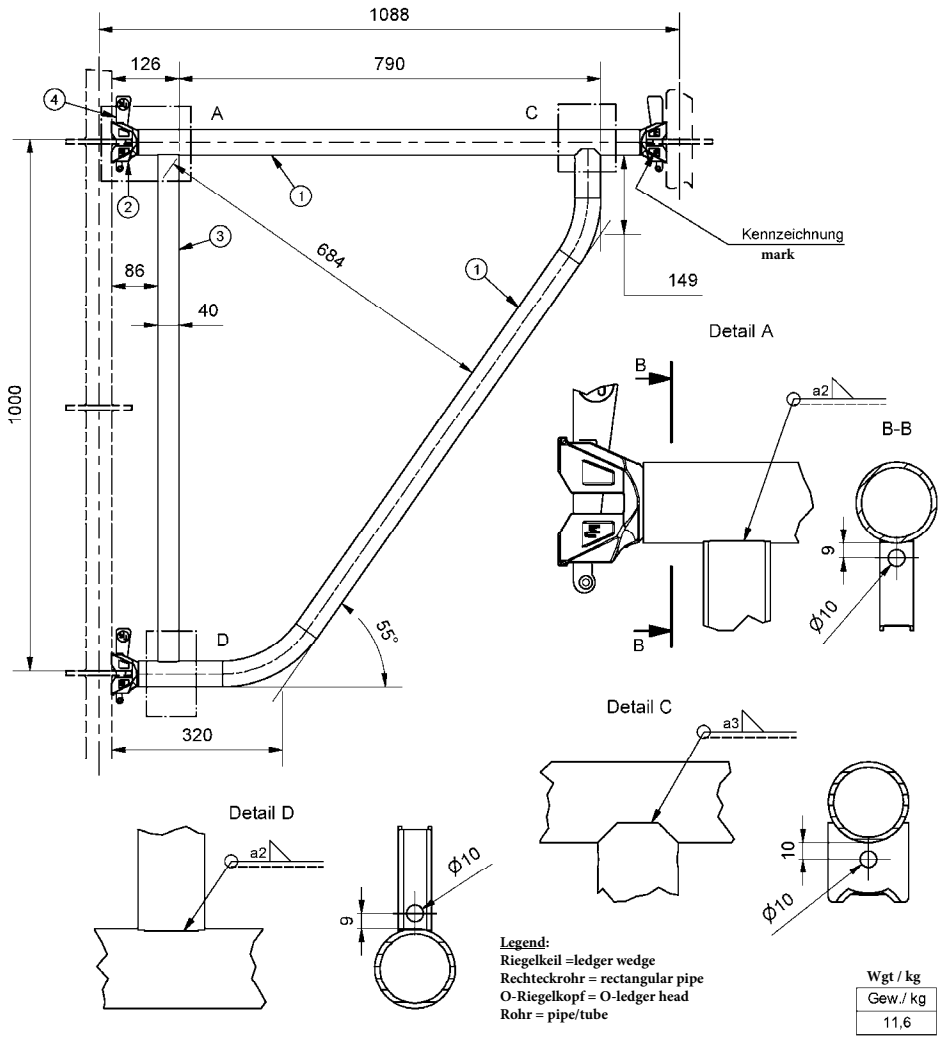
geregelt in Z-8.22-921

Konsole
Rohrauflage 0,73 m
mit Rohrverbinder

Board bracket
Pipe bracket 0.73 m
with spigot

Anlage B, 05.02.00

Deutsches Institut für Bautechnik DIBt



Legend:
Riegelkeil =ledger wedge
Rechteckrohr = rectangular pipe
O-Riegelkopf = O-ledger head
Rohr = pipe/tube

Wgt / kg
Gew./ kg
11,6

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	3	-	
3	Rechteckrohr 40 x 20 x 2	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²
2	O-Riegelkopf (Anlage B, 01.03.00)	3	-	
1	Rohr Ø48,3 x 3,2	2	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

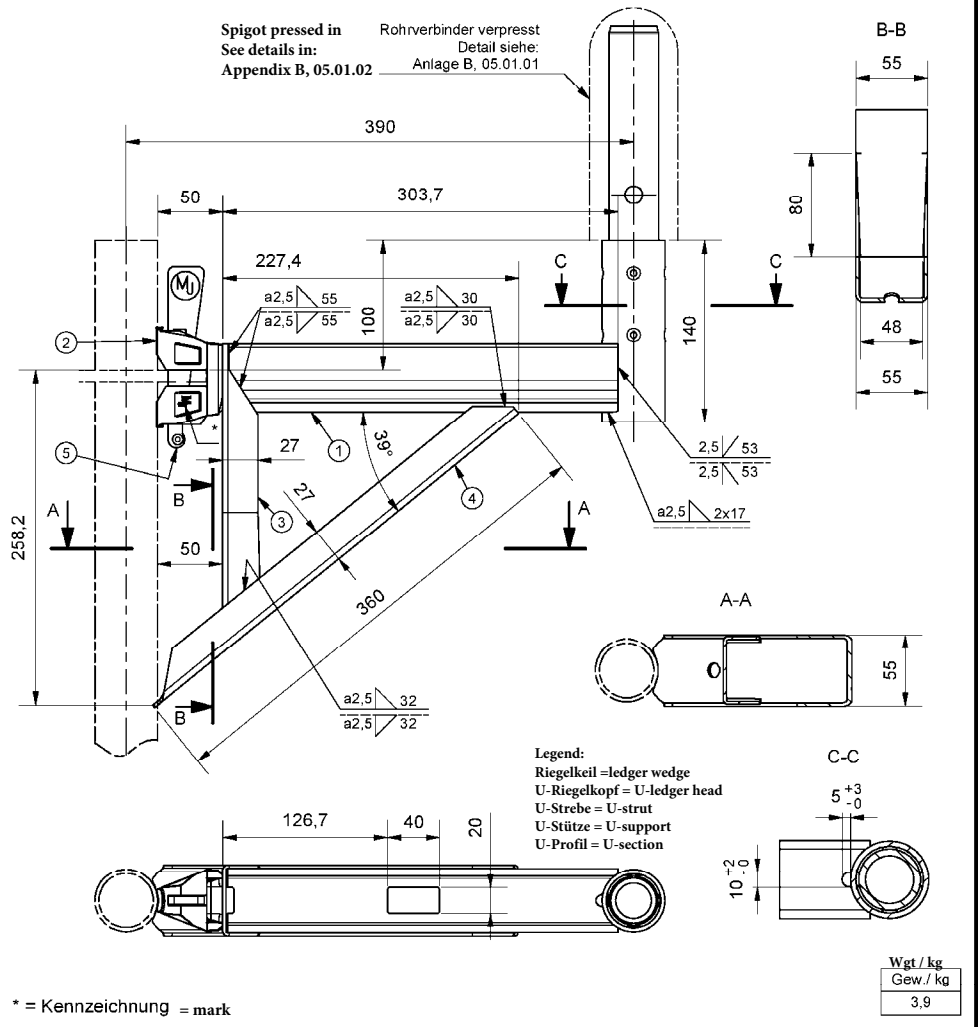
geregelt in Z-8.22-921

Konsole
Rohrauflage 1,09 m
ohne Rohrverbinder

Board bracket
Pipe bracket 1.09 m
w/out spigot

Anlage B, 05.03.00

Deutsches Institut für Bautechnik DIBt



Wgt / kg
Gew./ kg
3,9

* = Kennzeichnung = mark

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Riegelkeil (Anlage B, 01.07.00)	1	-	
4	U-Strebe 55 x 27 x 2,5	1	S235JR	DIN EN 10025
3	U-Stütze 55 x 27 x 2,5	1	S235JR	DIN EN 10025
2	U-Riegelkopf für Konsole (Anlage B, 01.06.00)	1	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

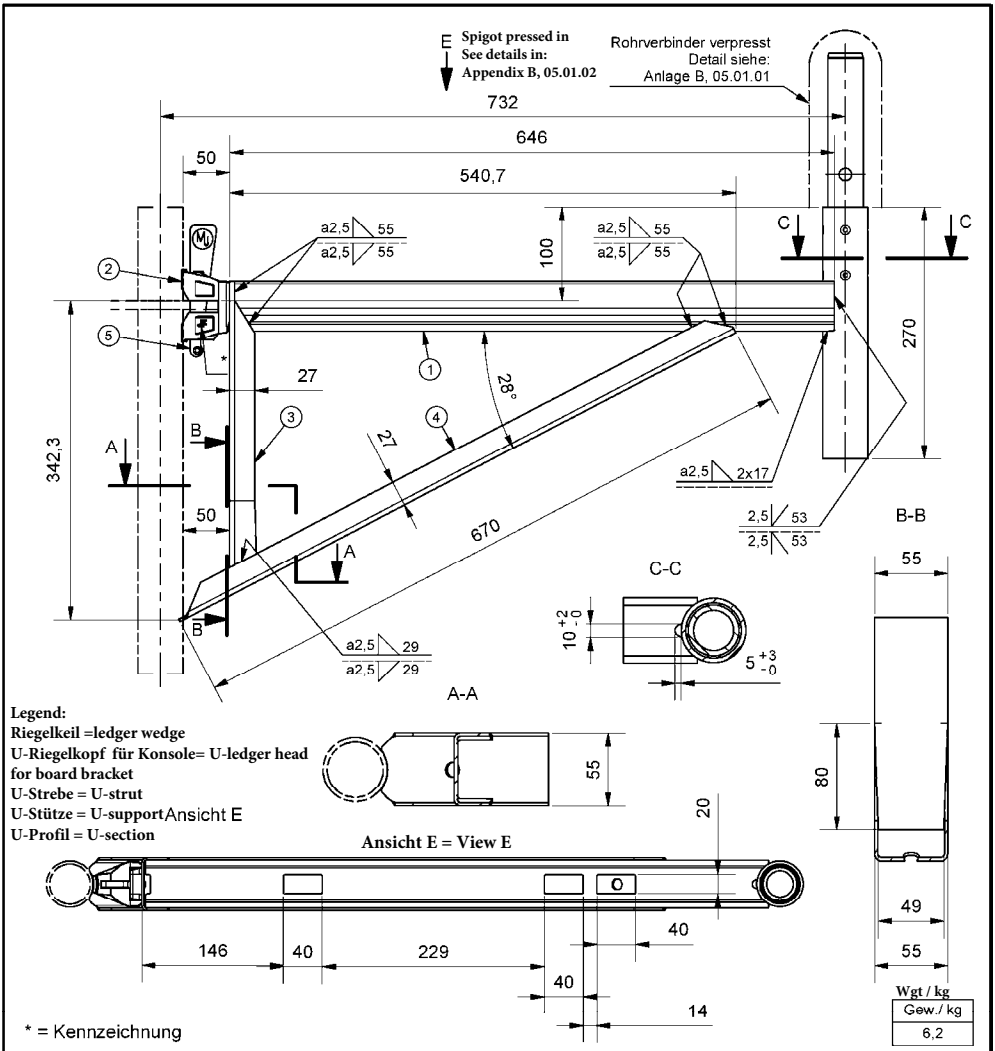
geregelt in Z-8.22-921

Konsole
U-Auflage 0,39 m
mit Rohrverbinder

Board bracket
U-bracket 0.39 m
with spigot

Anlage B, 05.04.00

Deutsches Institut für Bautechnik DIBt



Legend:
Riegelkeil =ledger wedge
U-Riegelkopf für Konsole= U-ledger head for board bracket
U-Strebe = U-strut
U-Stütze = U-support
U-Profil = U-section

Ansicht E

Wgt / kg
Gew./ kg
6,2

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Riegelkeil (Anlage B, 01.07.00)	1	-	
4	U-Strebe 55 x 27 x 2,5	1	S235JR	DIN EN 10025
3	U-Stütze 55 x 27 x 2,5	1	S235JR	DIN EN 10025
2	U-Riegelkopf für Konsole (Anlage B, 01.06.00)	1	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

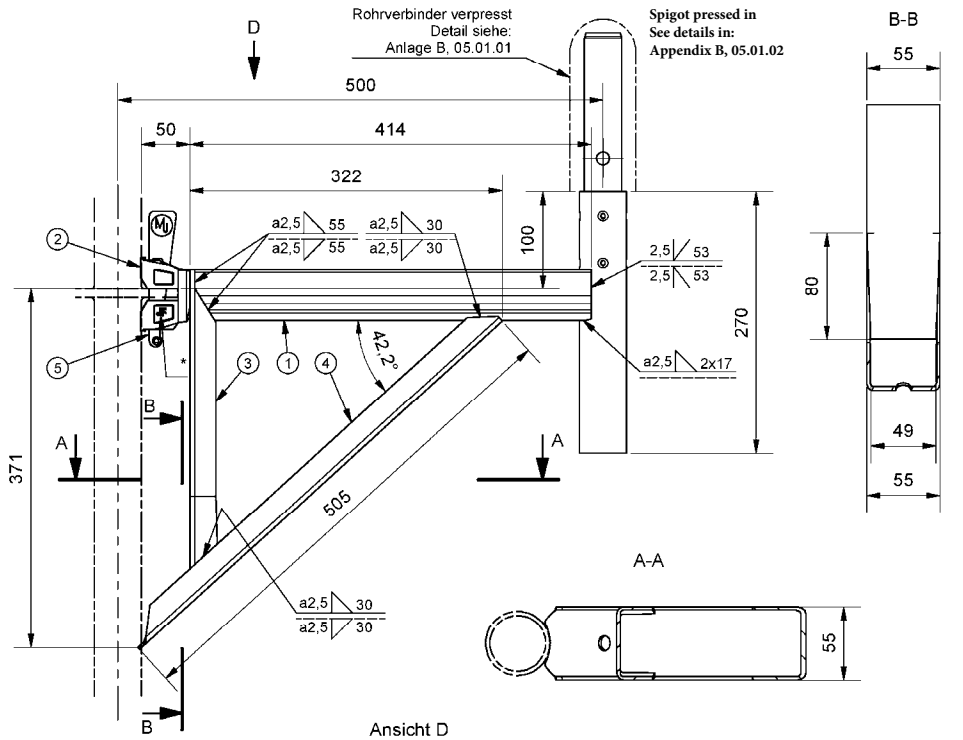
geregelt in Z-8.22-921

Konsole
U-Auflage 0,73 m
mit Rohrverbinder

Board bracket
U-bracket 0.73 m
with spigot

Anlage B, 05.05.00

Deutsches Institut für Bautechnik DIBt



Legend:
Riegelkeil =ledger wedge
U-Riegelkopf für Konsole= U-ledger head for board bracket; U-Strebe = U-strut
U-Stütze = U-support; U-Profil = U-section

* = Kennzeichnung
= mark

Wgt / kg
Gew./ kg
5,2

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
5	Riegelkeil (Anlage B, 01.07.00)	1	-	
4	U-Strebe 55 x 27 x 2,5	1	S235JR	DIN EN 10025
3	U-Stütze 55 x 27 x 2,5	1	S235JR	DIN EN 10025
2	U-Riegelkopf für Konsole (Anlage B, 01.06.00)	1	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

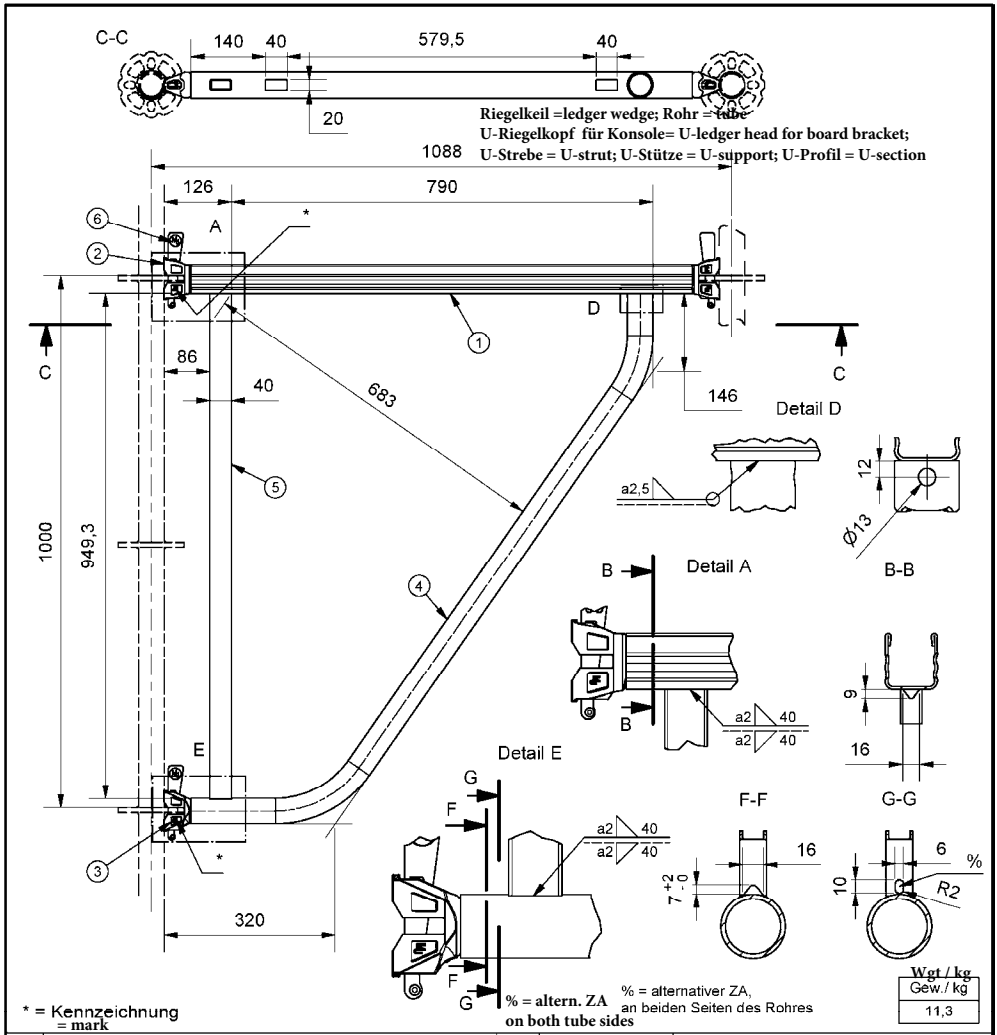
geregelt in Z-8.22-921

Konsole
U-Auflage 0,50 m
mit Rohrverbinder

Board bracket
U-bracket
with spigot

Anlage B, 05.06.00

Deutsches Institut für Bautechnik DIBt



* = Kennzeichnung
= mark

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
6	Riegelkeil (Anlage B, 01.07.00)	3	-	
5	Rechteckrohr 40 x 20 x 2	1	S235JRH	DIN EN 10219 $R_{eH} \geq 320 N/mm^2$
4	Rohr Ø48,3 x 3,2	1	S235JRH	DIN EN 10219 $R_{eH} \geq 320 N/mm^2$
3	O-Riegelkopf (Anlage B, 01.03.00)	1	-	
2	U-Riegelkopf (Anlage B, 01.05.00)	2	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

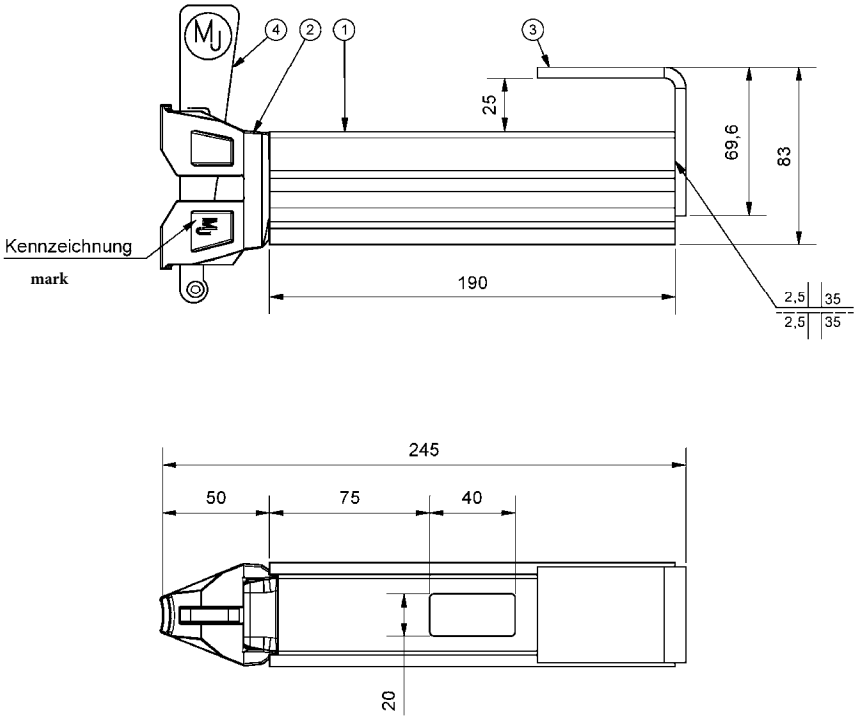
geregelt in Z-8.22-921

Konsole
U-Auflage 1,09 m
ohne Rohrverbinder

Board bracket
U-bracket
w/out spigot

Anlage B, 05.07.00

Deutsches Institut für Bautechnik DIBt



Riegelkeil =ledger wedge;
L 70 x 70 from flats 45 x 5
Rohr = tube
U-Riegelkopf für Konsole= U-ledger head;
U-Profil = U-section

Gew./ kg
1,4

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	1	-	
3	L 70 x 70 aus Flach 45 x 5	1	S235JR	DIN EN 10025
2	U - Riegelkopf (Anlage B, 01.05.00)	1	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, Seite 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

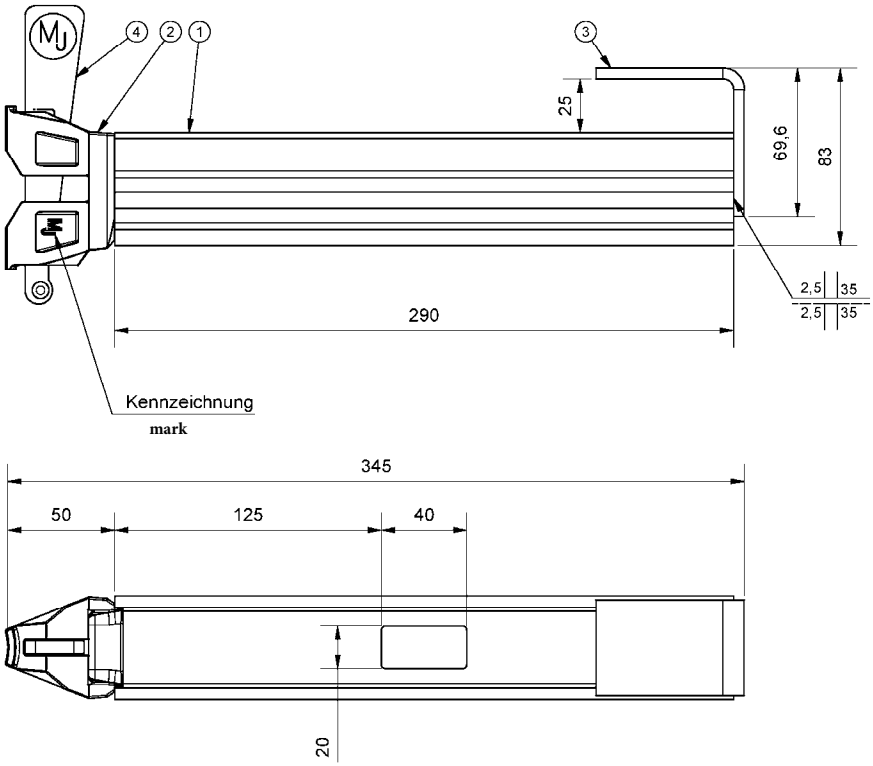
geregelt in Z-8.22-921

Konsole
U-Auflage 0,22 m
ohne Rohrverbinder

Board bracket
U-bracket 0.22 m
w/out spigot

Anlage B, 05.08.00

Deutsches Institut für Bautechnik DIBt



Riegelkeil =ledger wedge;
L 70 x 70 from flats
U-Riegelkopf = U-ledger head
U-Profil = U-section

Wgt / kg

Gew./ kg
1,8

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00)	1	-	
3	L 70 x 70 aus Flach 45 x 5	1	S235JR	DIN EN 10025
2	U - Riegelkopf (Anlage B, 01.05.00)	1	-	
1	U-Profil 53 x 49 x 2,5 (Anlage B, 04.04.01)	1	-	

Modulsystem MJ COMBI DUO

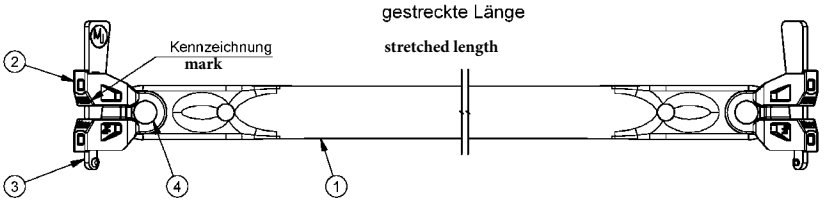
geregelt in Z-8.22-921

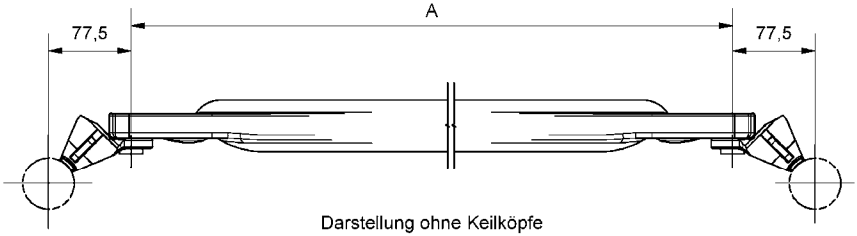
Konsole
U-Auflage 0,32 m
ohne Rohrverbinder

Board bracket
U-bracket 0.32 m
w/out spigot

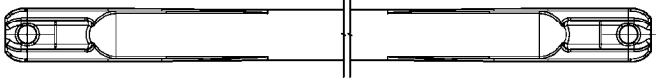
Anlage B, 05.09.00

Deutsches Institut für Bautechnik DIBt

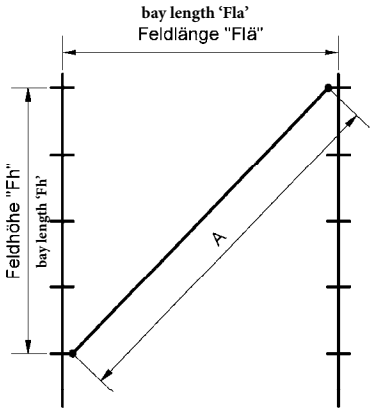




Darstellung ohne Keilköpfe
Figurewithout wedge heads



Ben.	FLä	FH	A	Gew./ kg	Ben.	FLä	FH	A	Gew./ kg
0,73	732	2000	2082	7,2	0,73	732	1000	1154	4,7
1,04	1036	2000	2185	7,4	1,04	1036	1000	1333	5,2
1,09	1088	2000	2207	7,5	1,09	1088	1000	1368	5,3
1,29	1286	2000	2298	7,7	1,29	1286	1000	1510	5,7
1,40	1400	2000	2356	7,8	1,40	1400	1000	1597	5,9
1,57	1572	2000	2451	8,1	1,54	1536	1000	1705	6,2
2,07	2072	2000	2770	9,0	1,57	1572	1000	1734	6,3
2,57	2572	2000	3137	9,9	2,07	2072	1000	2162	7,3
3,07	3072	2000	3537	11,0	2,57	2572	1000	2616	8,5
4,14	4144	2000	4462	13,3	3,07	3072	1000	3084	9,8
1,09	1088	1500	1766	6,3	1,57	1572	500	1503	5,6
1,40	1400	1500	1949	6,8	2,07	2072	500	1981	6,9
1,57	1572	1500	2063	7,1	2,57	2572	500	2468	8,2
2,07	2072	1500	2434	8,1	3,07	3072	500	2960	9,4
2,57	2572	1500	2845	9,1					
3,07	3072	1500	3280	10,3					



Pos.	Bezeichnung		Stk.	Werkstoff	Bemerkung
4	Halbhohlniet	**semi-tubular rivet**	2	-	
3	Riegelkeil (Anlage B, 01.07.00)	**locking wedge**	2	-	
2	Diagonalkopf (Anlage B, 01.04.00)	**diagonal head**	2	-	
1	Rohr Ø48,3 x 2,3	**tube**	1	Stahl	

Modulsystem MJ COMBI DUO

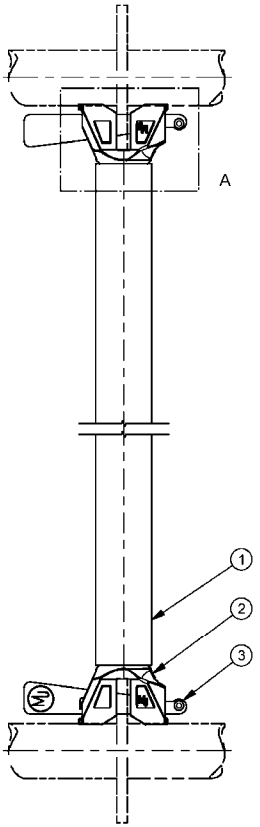
geregelt in Z-8.22-921

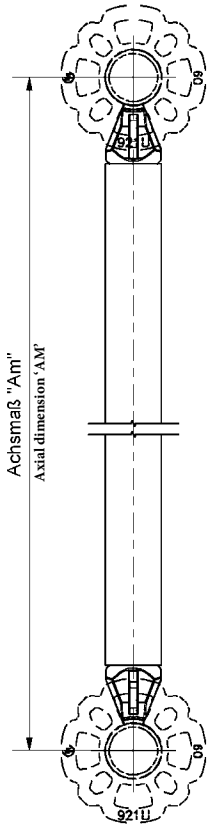
Vertikaldiagonale Keilkopf

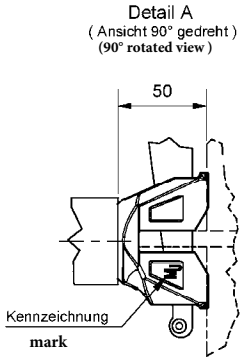
Vertical diagonal Wedge head

Anlage B, 06.01.00

Deutsches Institut für Bautechnik DIBt







Feld (m)	Am	Gew./ kg
1,57 x 1,57	2223,1	7,7
2,07 x 2,07	2930,2	10,0
2,57 x 2,57	3637,4	12,2
3,07 x 3,07	4344,5	14,5

Pos.	Bezeichnung		Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00)	wedge head	2	-	
2	O-Riegelkopf (Anlage B, 01.03.00)	O-wedge hed	2	-	
1	Rohr Ø48,3 x 3,2	tube/pipe	1	S235JRH	DIN EN 10219 R_{eH}≥320N/mm²

Modulsystem MJ COMBI DUO

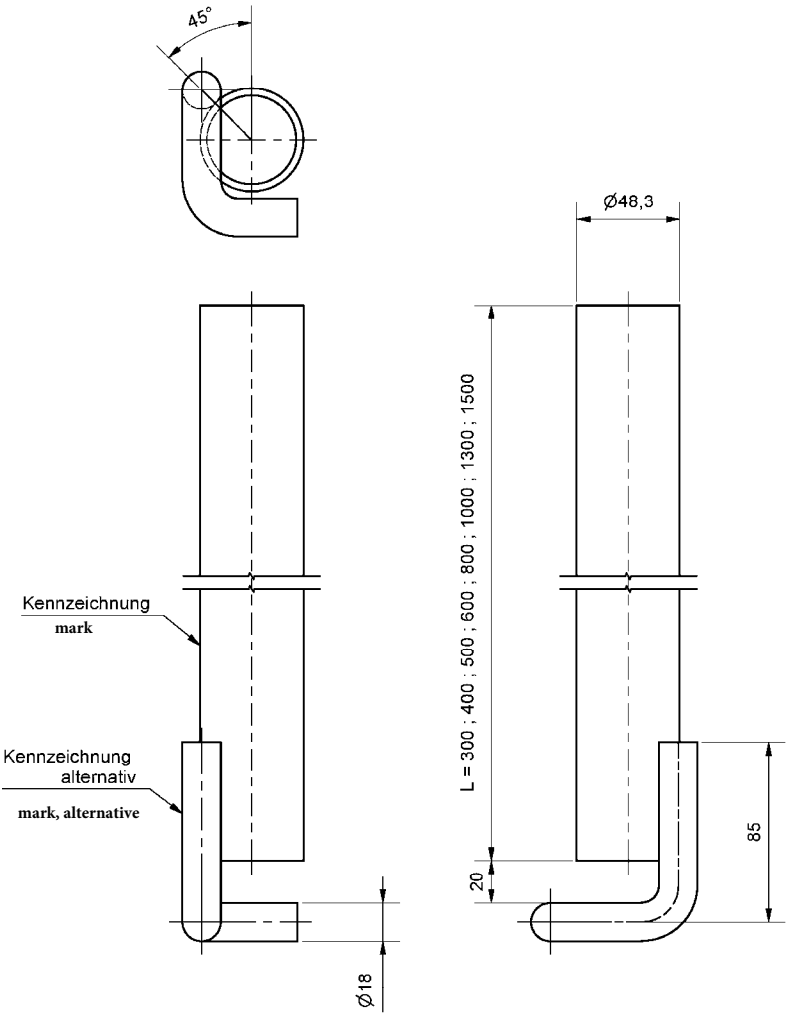
geregelt in Z-8.22-921

O-Riegel
(Diagonalriegel - Horizontaldiagonale)

O-ledger
(diagonal ledger - horizontal diagonal

Anlage B, 06.02.00

Deutsches Institut für Bautechnik DIBt



Länge	Gew./ kg	Länge	Gew./ kg
0,30	1,4	0,80	3,2
0,40	1,8	1,00	3,8
0,50	2,0	1,30	4,8
0,60	2,6	1,50	5,5

Modulsystem MJ COMBI DUO

geregelt in Z-8.1-872

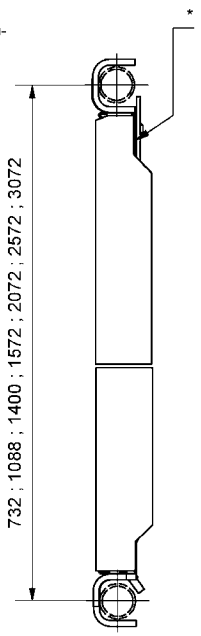
Gerüsthalter **Tie member**
Abstandrohr **Spacer**

Anlage B, 07.01.00

Deutsches Institut für Bautechnik DIBt

Ausführung mit Maschinen- oder Punktgeschweißten Kopfstücken.

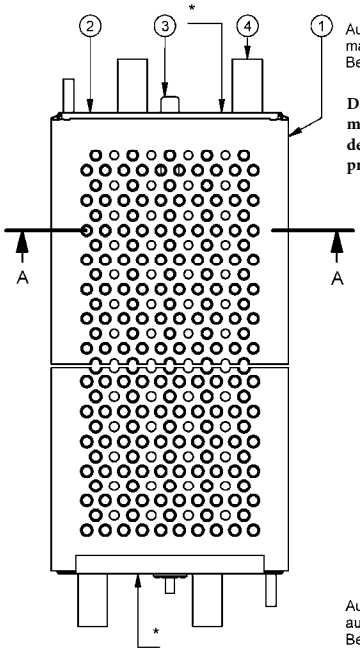
Design mit maxhine or spot welded head pieces



Ausführung mit Handgeschweißten Kopfstücken.

(keine Produktion mehr)

Design with hand-welded head pieces (production discon'd)



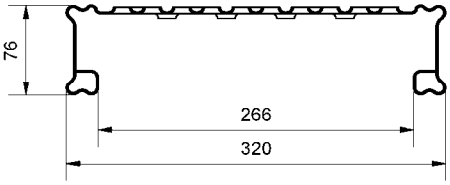
Ausführung mit manueller Belagsicherung

Design with manual deck lifting protection

Ausführung mit automatischer Belagsicherung

Design with automatic deck lifting protection

A-A
(Kopfstück ausgeblendet)
(head piece hidden)



Feld	Gew./ kg (t=1,25)	Gew./kg (t=1,5)
0,73 m	7,0	7,4
1,09 m	9,2	10,0
1,29 m	10,5	11,4
1,40 m	11,4	12,2
1,57 m	12,4	13,4
2,07 m	15,5	16,9
2,57 m	18,8	20,5
3,07 m	21,9	24,0

* = Kennzeichnung geprägt Hersteller / Produktionsjahr / verkürzte Zulassungsnr.

*** = Mark embossed Manufacturer / production year / abbreviated approval no**

Pos.	Bezeichnung		Stk.	Werkstoff	Bemerkung
4	Klaue	**claw**	4	Stahl **steel**	
3	Belagsicherung	**deck lifting protection**	2	Stahl	
2	Kopfstück	**head piece**	2	Stahl	
1	Belagblech	**deck plate**	1	Stahl	

Modulsystem MJ COMBI DUO

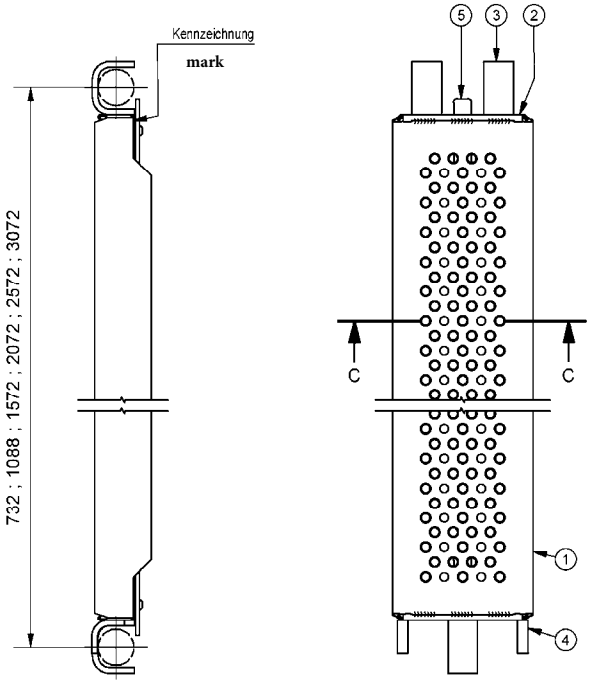
geregelt in Z-8.22-921

Stahlboden Rohrauflage
Breite 0,32 m

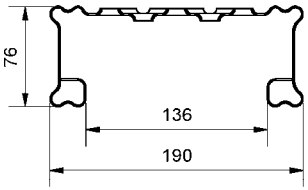
Steel deck pipe bracket
Width 0.32 m

Anlage B, 08.01.00

Deutsches Institut für Bautechnik DIBt



C-C
(Kopfstück ausgeblendet)
(head piece hidden)



Feld	Gew./ kg
0,73 m	5,2
1,09 m	7,3
1,57 m	9,5
2,07 m	11,7
2,57 m	14,1
3,07 m	16,4

Pos.	Bezeichnung		Stk.	Werkstoff		Bemerkung
5	Belagsicherung	**deck lifting protection**	2	Stahl	**steel**	
4	Flach	**flats**	2	Stahl		
3	Klaue	**claw**	3	Stahl		
2	Kopfstück	**head piece**	2	Stahl		
1	Belagblech	**deck plate**	1	Stahl		

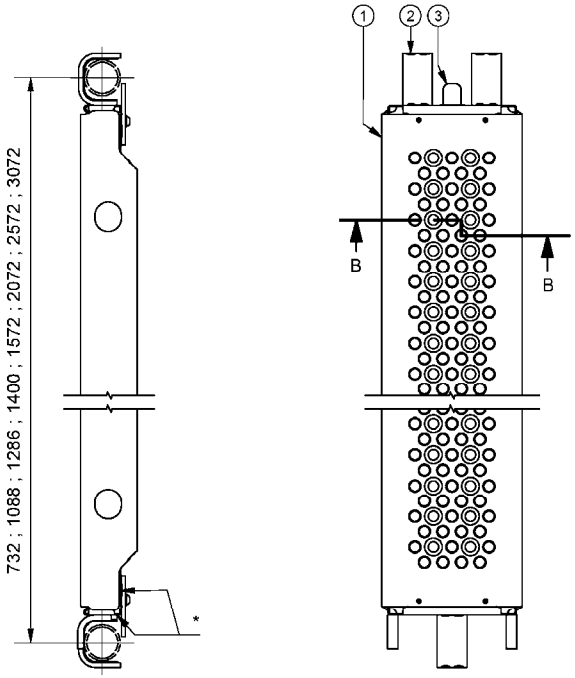
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

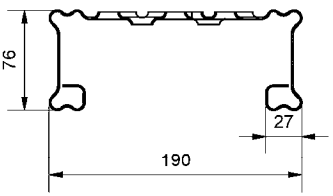
Stahlboden - Rohrauflage **Steel deck - pipe bracket**
Breite 0,19 m **Width 0.19 m**
Maschinengeschweißt - manuelle Belagsicherung **Mach.-welded - man. deck lifting prot.**

Anlage B, 08.02.00

Deutsches Institut für Bautechnik DIBt



B-B
(Kopfstück ausgeblendet)
(head piece hidden)



Bay	Wgt / kg	Wgt / kg
Feld	Gew./ kg (t=1,25)	Gew./ kg (t=1,5)
0,73 m	5,0	5,5
1,09 m	6,7	7,5
1,29 m	7,6	8,6
1,40 m	8,1	9,1
1,57 m	9,0	10,2
2,07 m	11,3	12,9
2,57 m	13,7	15,7
3,07 m	16,1	18,5

* = Kennzeichnung

Pos.	Bezeichnung		Stk.	Werkstoff	Bemerkung
3	Belagsicherung	**deck lifting protection**	2	Stahl **steel**	
2	Kopfstück	**head piece**	2	Stahl	
1	Belagblech	**deck plate**	1	Stahl	

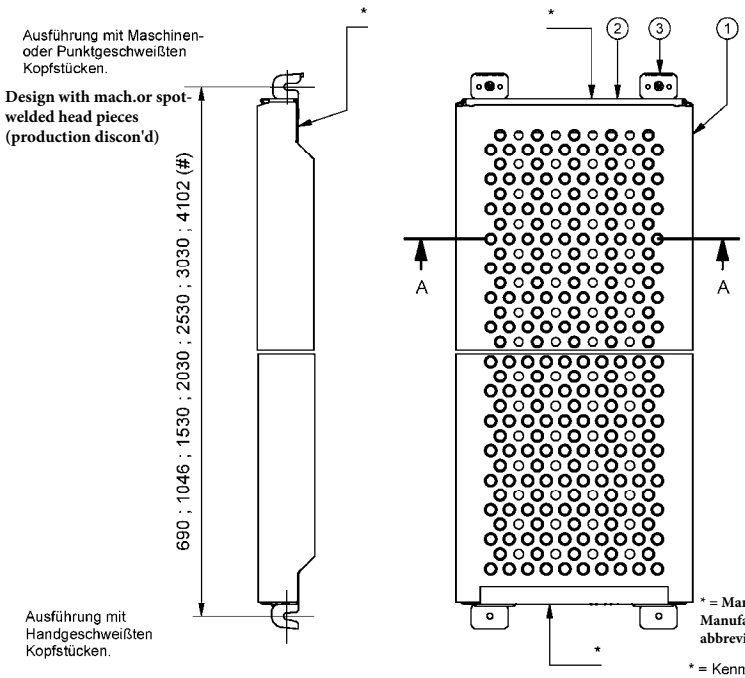
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

Stahlboden - Rohrauflage **Steel deck - pipe bracket**
Breite 0,19 m **Width 0.19 m**
Punktgeschweißt - manuelle Belagsicherung **Spot-welded - man. deck lifting prot.**

Anlage B, 08.03.00

Deutsches Institut für Bautechnik DIBt



* = Mark embossed Manufacturer / production year / abbreviated approval no

* = Kennzeichnung geprägt Hersteller / Produktionsjahr / verkürzte Zulassungsnr.

\# = nur Ausführung Maschinengeschweißt

\# = only mach.-welded version

Feld Bay	Gew./ kg (t=1,25)	Gew./kg (t=1,5)
0,73 m	5,6	7,4
1,09 m	7,7	10,0
1,57 m	10,9	13,4
2,07 m	13,9	16,9
2,57 m	16,9	19,7
3,07 m	19,8	23,3
4,14 m	-	32,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Kralle **claw**	4	Stahl **steel**	
2	Kopfstück **head piece**	2	Stahl	
1	Belagblech **deck plate**	1	Stahl	

Modulsystem MJ COMBI DUO

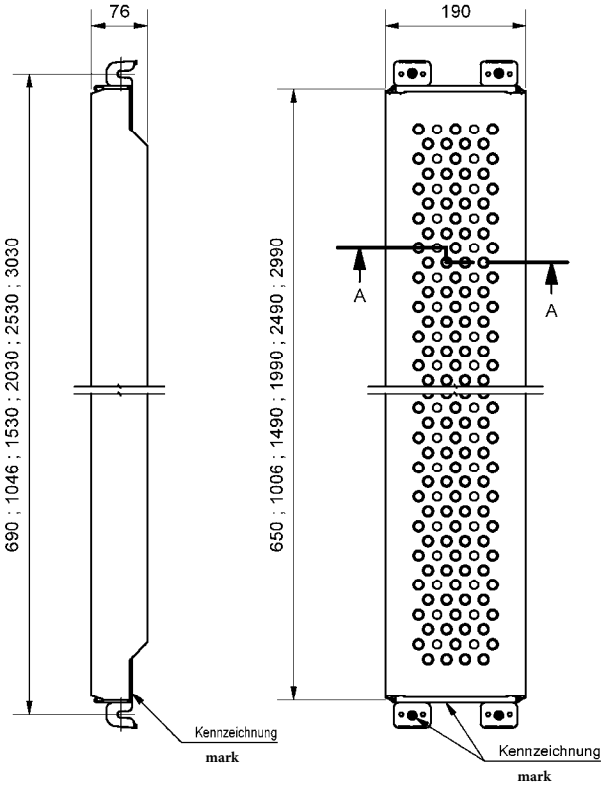
geregelt in Z-8.1-872

Stahlboden U-Auflage
Breite 0,32 m

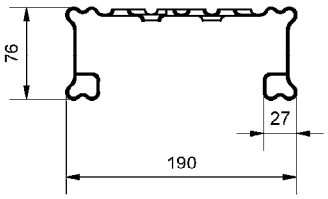
Steel deck U-bracket
Width 0.32 m

Anlage B, 08.04.00

Deutsches Institut für Bautechnik DIBt



A-A
(Kopfstück ausgeblendet)
(Head piece hidden)



Feld	Gew./ kg
0,73 m	4,2
1,09 m	6,4
1,57 m	8,8
2,07 m	11,1
2,57 m	13,4
3,07 m	15,7

Modulsystem MJ COMBI DUO

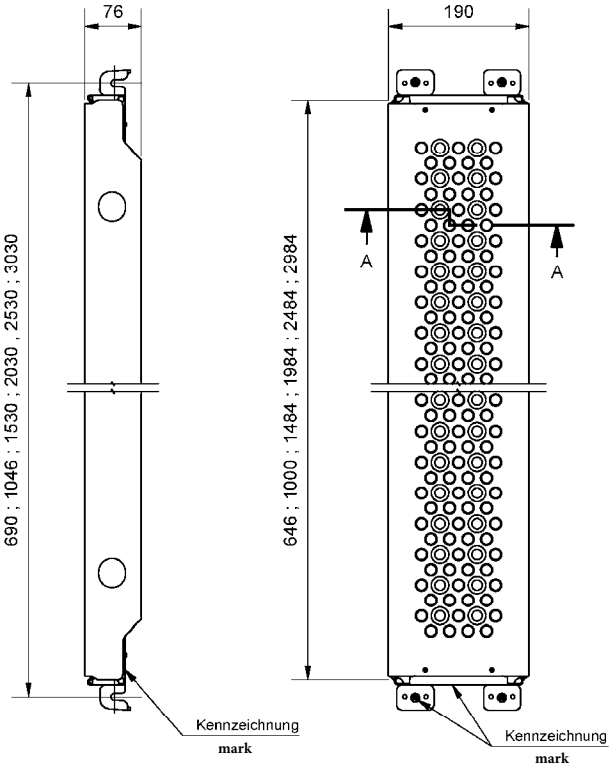
geregelt in Z-8.1-872

Stahlboden - U-Auflage
Breite 0,19 m
Maschinengeschweißt

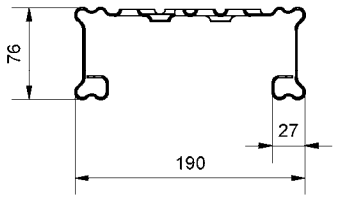
Steel deck - U-bracket
Width 0.19 m
Machine-welded

Anlage B, 08.05.00

Deutsches Institut für Bautechnik DIBt



A-A
(Kopfstück ausgeblendet)
(Head piece hidden)



Bay Feld	Wgt/kg Gew./ kg
0,73 m	4,2
1,09 m	6,2
1,57 m	8,5
2,07 m	10,6
2,57 m	12,7
3,07 m	15,9

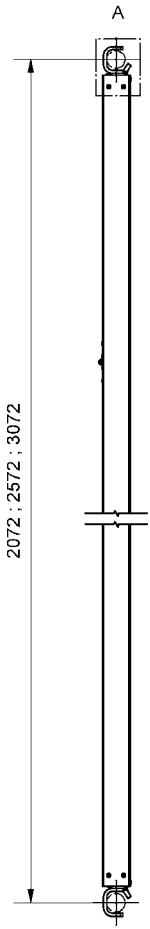
Modulsystem MJ COMBI DUO

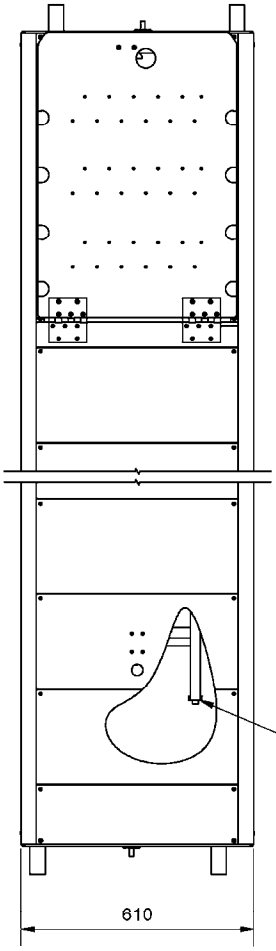
geregelt in Z-8.1-872

Stahlboden - U-Auflage — **Steel deck - U-bracket**
Breite 0,19 m — **Width 0.19 m**
Punktgeschweißt — **Spot-welded**

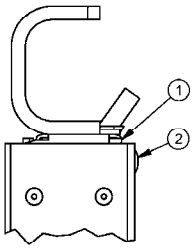
Anlage B, 08.06.00

Deutsches Institut für Bautechnik DIBt





Detail A



Ausführung 2,07m
ohne Leiter

Version 2.07 m
w/out ladder

Bay	Wgt / kg
Feld	Gew./ kg
2,07	17,5
2,57	26,6
3,07	30,5

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
-	sonstige Ausführung geregelt in Z-8.1-872 **other version regukated in ...**	1		
2	Blindniet **Blind rivet**	4	-	
1	Kopfstück - Rohrauflage **Head piece - pipe bracket**	2	-	

Modulsystem MJ COMBI DUO

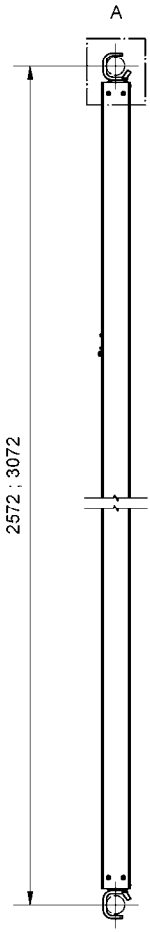
geregelt in Z-8.22-921

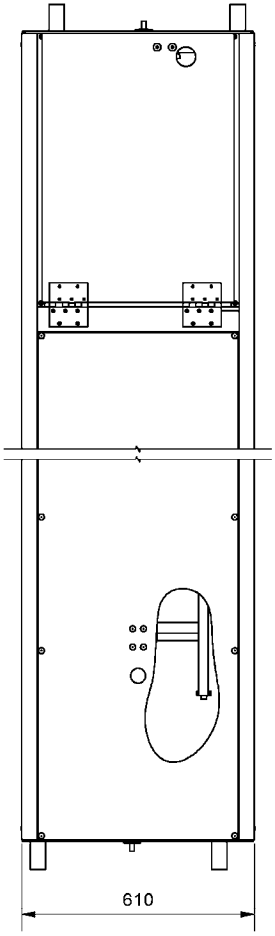
Durchstiegstafel - Rohrauflage
Aluminiumbelag - Aluminumklappe nach hinten

Platform unit with access trapdoor
Al deck - Al hatch backwards

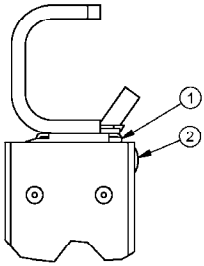
Anlage B, 11.01.00

Deutsches Institut für Bautechnik DIBt





Detail A



Bay	Wgt/kg
Feld	Gew./ kg
2,57	25,5
3,07	29,8

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
-	sonstige Ausführung geregelt in Z-8.1-872 **other version regukated in ...**	-		
2	Blindniet **Blind rivet**	4	-	
1	Kopfstück - Rohrauflage **Head piece - pipe bracket**	2	-	

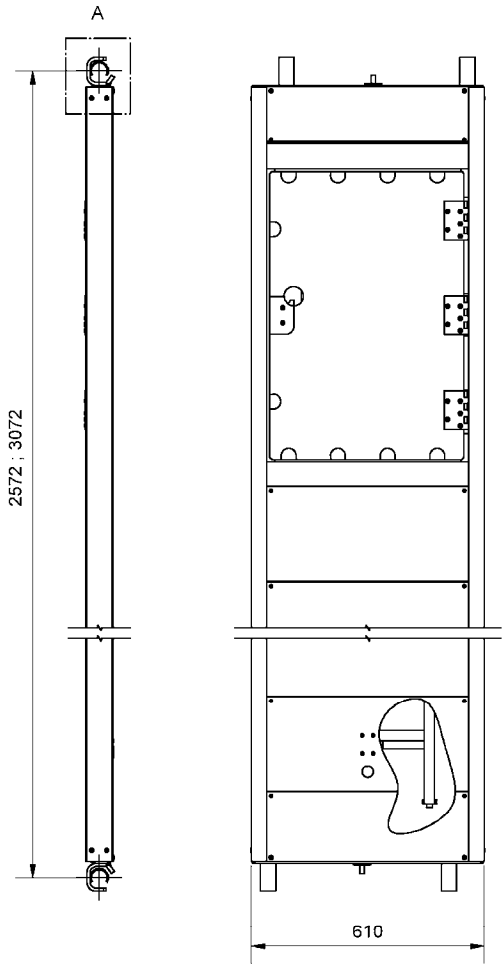
Modulsystem MJ COMBI DUO

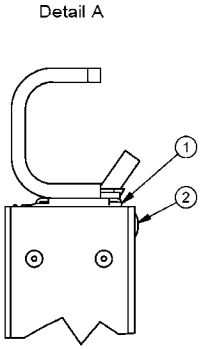
geregelt in Z-8.22-921

Durchstiegstafel - Rohrauflage **Platform unit with access trapdoor**
Holzbelag - Holzklappe nach hinten **Wooden deck - wooden hatch backwards**

Anlage B, 11.02.00

Deutsches Institut für Bautechnik DIBt





Bay	Wgt / kg
Feld	Gew./ kg
2,57	25,1
3,07	28,1

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
-	sonstige Ausführung geregelt in Z-8.1-872 other version regukated in ...	-		
2	Blindniet Blind river	4	-	
1	Kopfstück - Rohrauflage Head oiece - pipe bracket	2	-	

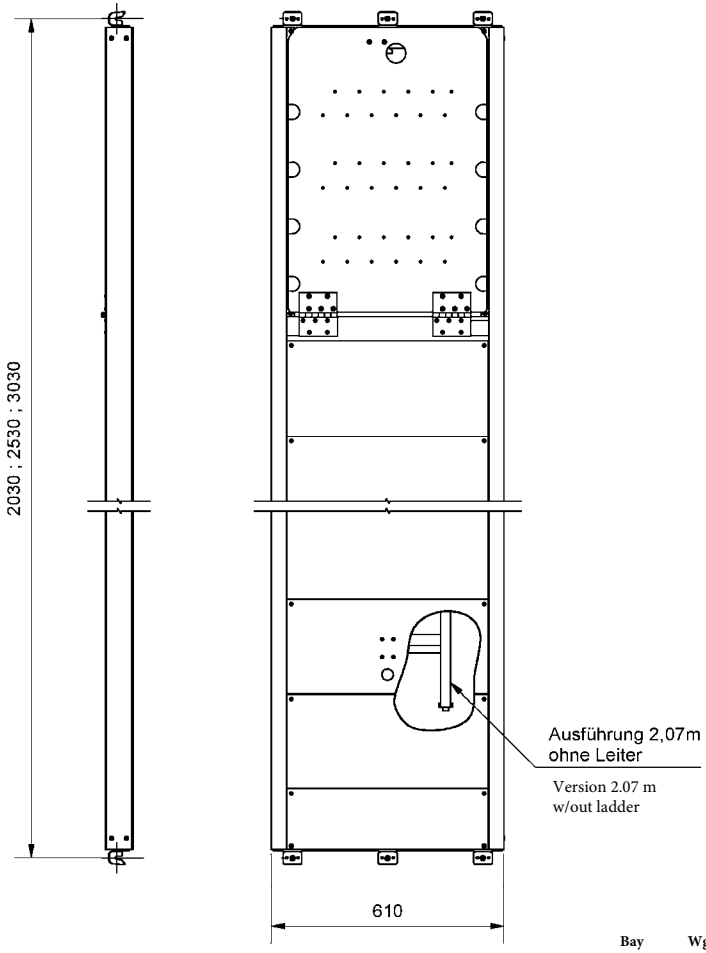
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

Durchstiegstafel - Rohrauflage — Platform unit with access trapdoor
Aluminiumbelag - Aluminiumklappe zur Seite — Pipe bracket
Al deck - Al hatch sidewards

Anlage B, 11.03.00

Deutsches Institut für Bautechnik DIBt



Bay	Wgt / kg
Feld	Gew./ kg
2,07	17,5
2,57	23,7
3,07	26,7

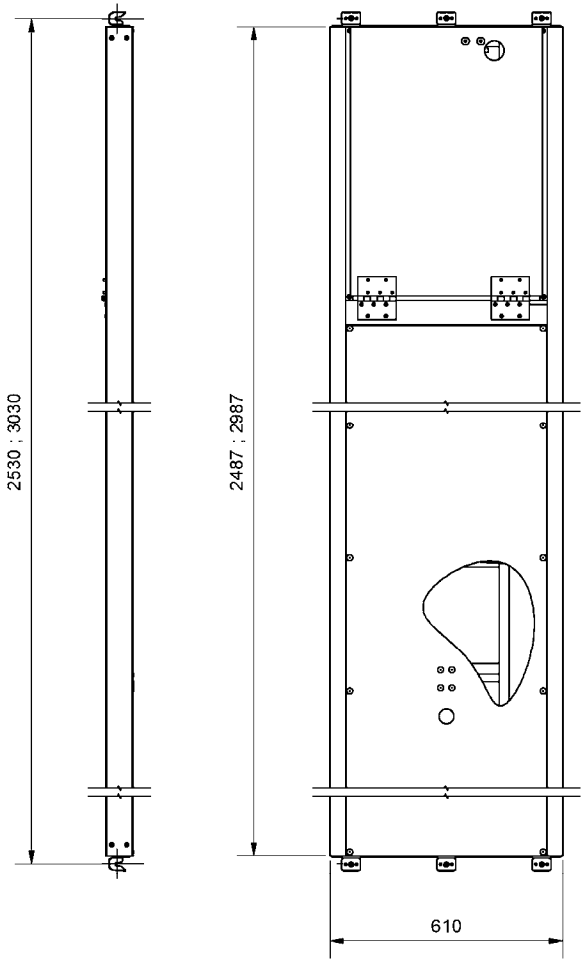
Modulsystem MJ-COMBI DUO

geregelt in Z-8.1-872

Durchstiegstafel - U-Auflage **Walk-through board - U-bracket**
Aluminiumbelag - Aluminiumklappe nach hinten
Al decking - Al hatch backwards

Anlage B, 11.04.00

Deutsches Institut für Bautechnik DIBt



Bay	Wgt / kg
Feld	Gew./ kg
2,57	24,0
3,07	29,5

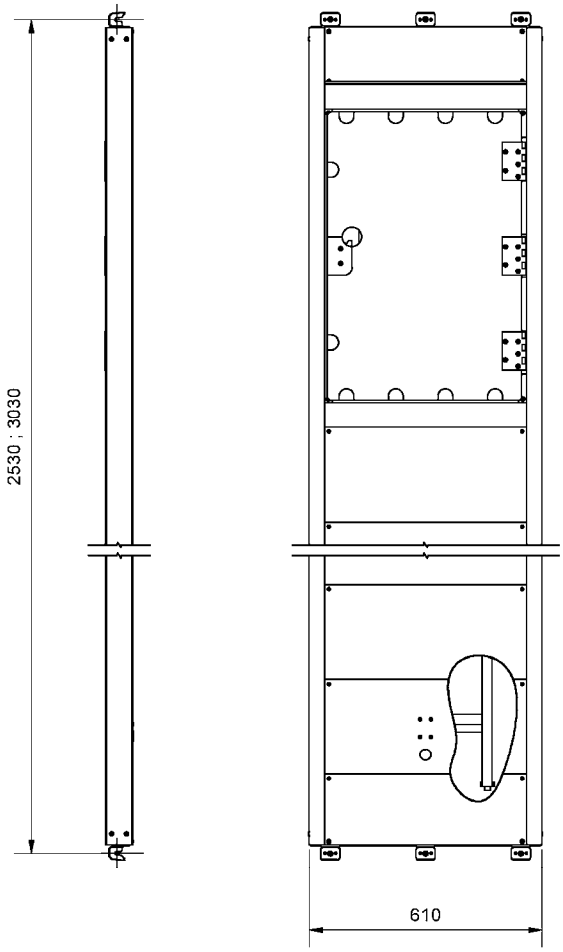
Modulsystem MJ COMBI DUO

geregelt in Z-8.1-872

Durchstiegstafel - U-Auflage **Walk-through board - U-bracket**
Holzbelag - Holzklappe nach hinten
Timber decking - wooden hatch backwards

Anlage B, 11.05.00

Deutsches Institut für Bautechnik DIBt



Bay	Wgt / kg
Feld	Gew./ kg
2,57	24,5
3,07	27,5

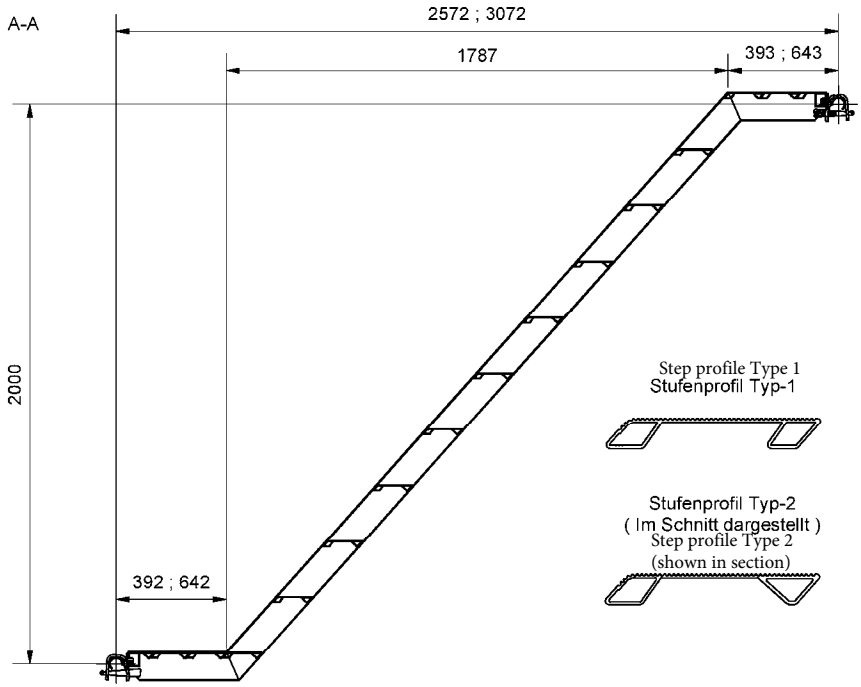
Modulsystem MJ COMBI DUO

geregelt in Z-8.1-872

Durchstiegstafel - U-Auflage **Walk-through board - U-bracket**
Aluminiumbelag - Aluminiumklappe zur Seite
Al decking - Al hatch sidewards

Anlage B, 11.06.00

Deutsches Institut für Bautechnik DIBt



Bay	Wgt / kg
Feld	Gew./ kg
2,57	30,0
3,07	35,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Flanschmutter mit Polyamidring	10	Stahl	
3	Schraube	10	Stahl	
2	Einhängung für Podesttreppe - Rohrauflage	2	-	
1	Aluminiumkonstruktion der Podesttreppe, geregelt in Z-8.1.872	1	-	

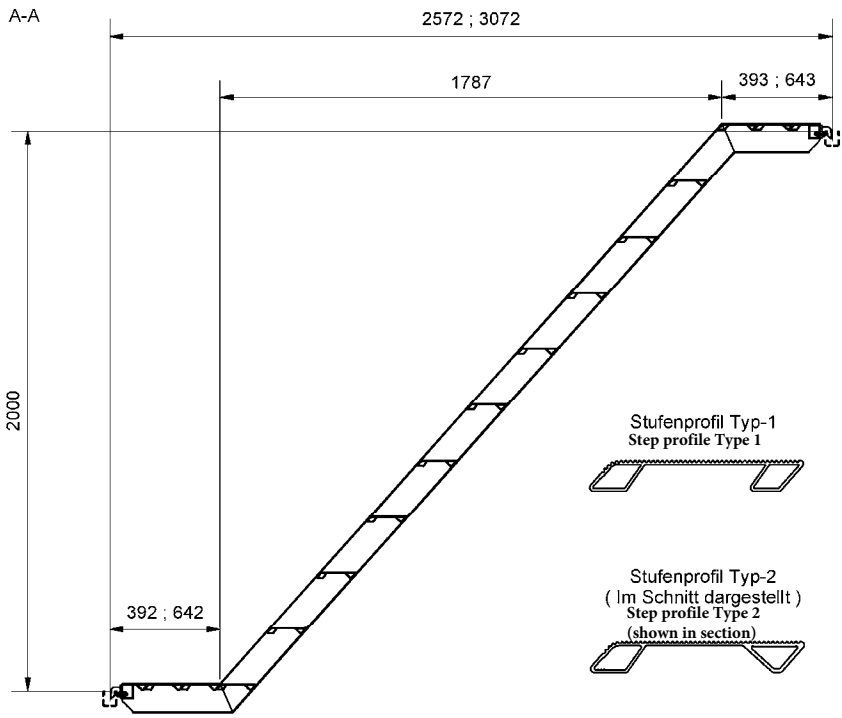
Modulsystem MJ COMBI DUO

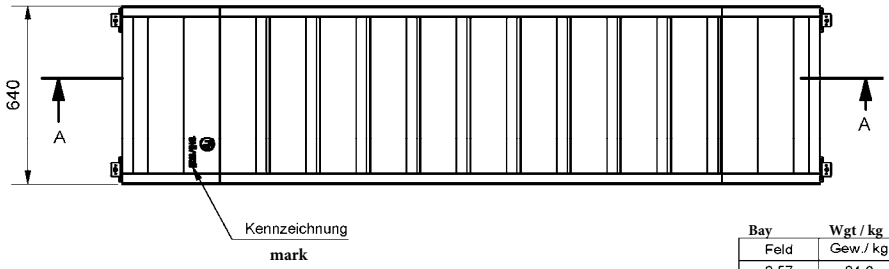
geregelt in Z-8.22-921

Aluminium Podesttreppe **Aluminium platform stairs**
Rohrauflage **Pipe bracket**

Anlage B, 12.01.00

Deutsches Institut für Bautechnik DIBt





Bay Feld	Wgt / kg Gew./ kg
2,57	24,0
3,07	29,0

Modulsystem MJ COMBI DUO

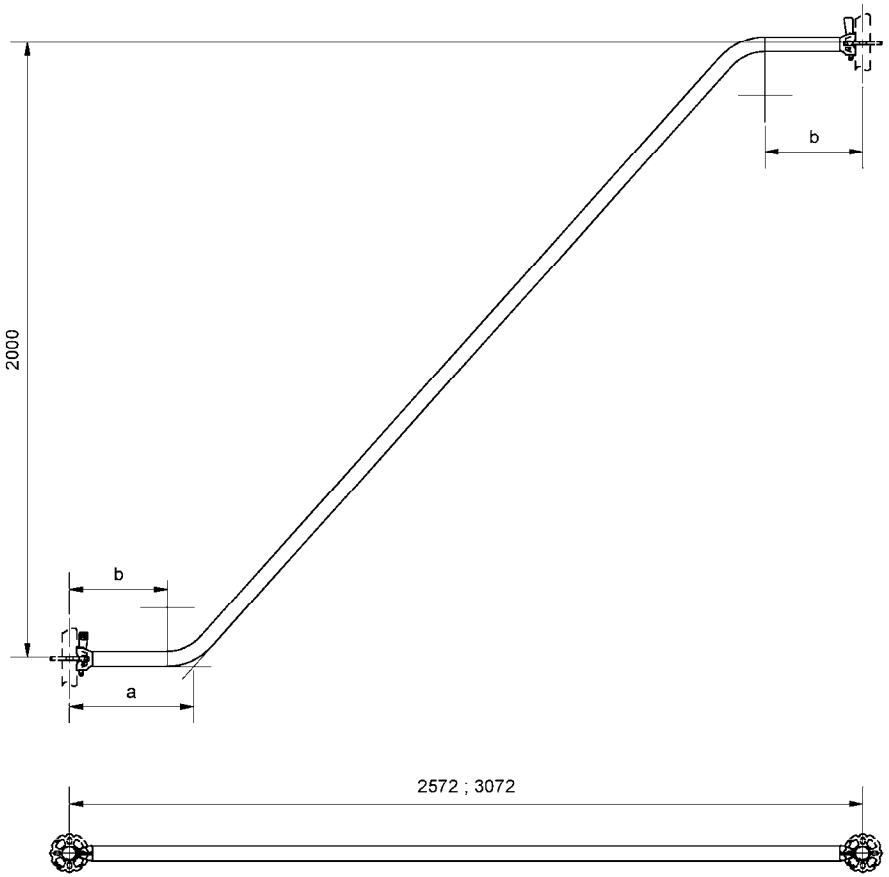
geregelt in Z-8.1-872

Aluminium Podesttreppe
U-Auflage

Aluminium platform stairs
U-bracket

Anlage B, 12.02.00

Deutsches Institut für Bautechnik DIBt



Length Länge	a	b	Bav / kg Gew. / kg
2,57 m	402,7	317,2	11,2
3,07 m	652,7	567,2	12,7

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Riegelkeil (Anlage B, 01.07.00) **locking wedge (Appendix B, ...**	2	-	
2	O-Riegelkopf (Anlage B, 01.03.00) **O-ledger head**	2	-	
1	Rohr Ø48,3 x 2,7 **Pipe**	1	Stahl	

Modulsystem MJ COMBI DUO

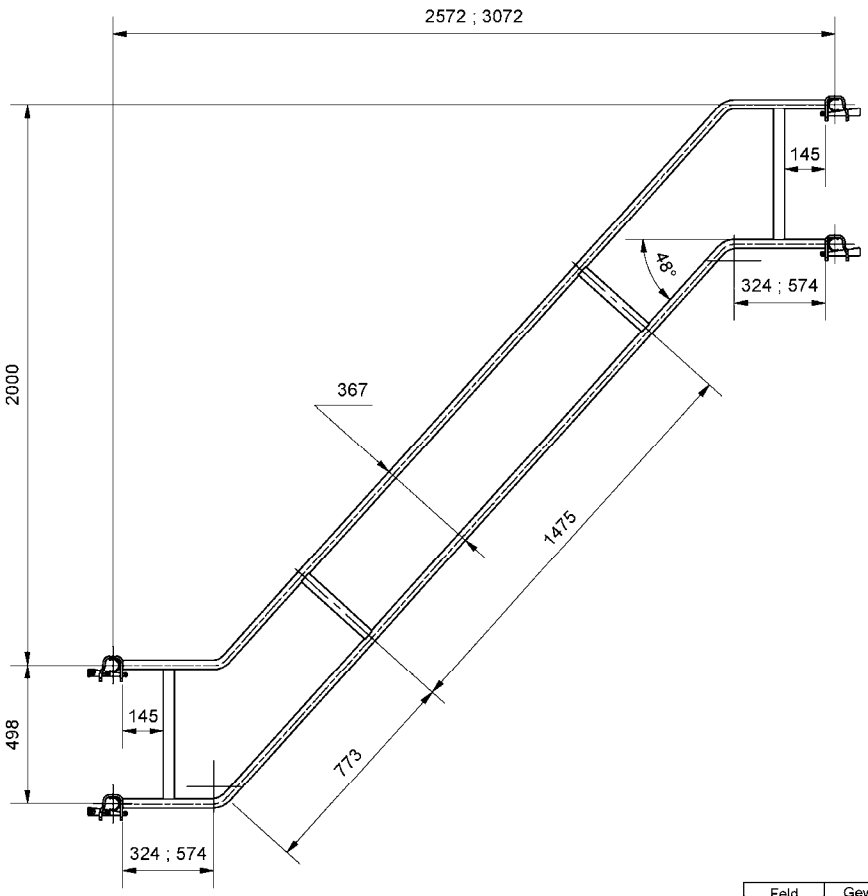
geregelt in Z-8.22-921

Außentreppengeländer einfach

Aluminium platform stairs single

Anlage B, 12.03.00

Deutsches Institut für Bautechnik DIBt



Feld	Gew./ kg
2,57 m	16,1
3,07 m	17,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00) **locking wedge**	4	-	
3	Einhängung Breite 55 / t= 8 **inging fixture, width 55 /d = 8)**	4	-	
2	Rechteckrohr 40 x 20 **rectangular pipe**	4	Stahl	
1	Rohr Ø33,7 **Pipe**	2	Stahl	

Modulsystem MJ COMBI DUO

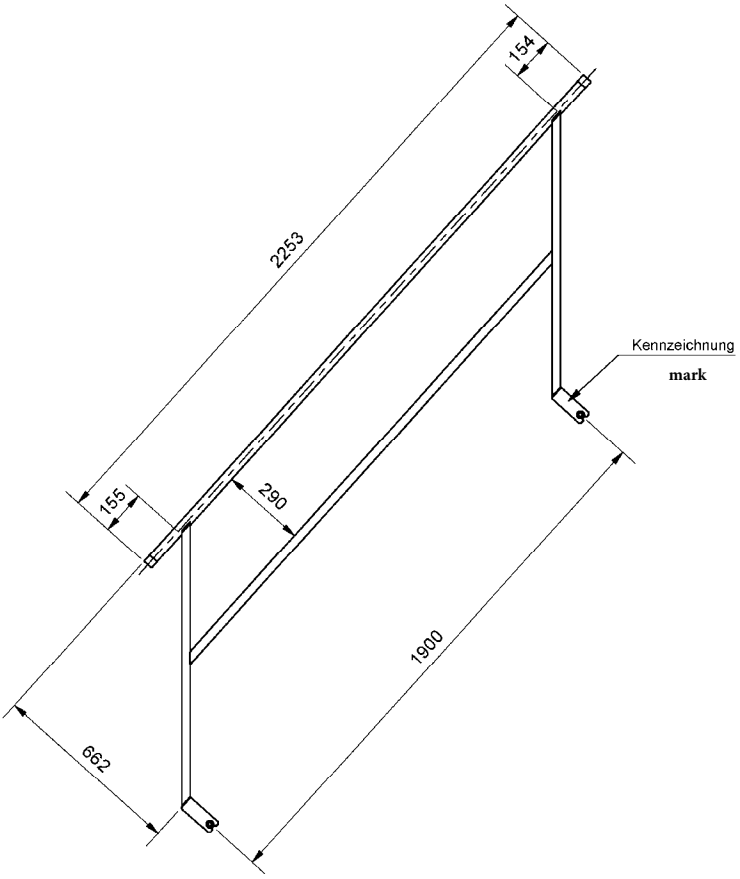
geregelt in Z-8.22-921

Außentreppengeländer doppelt - Rohrauflage

Aluminium platform stairs double - pipe bracket

Anlage B, 12.04.00

Deutsches Institut für Bautechnik DIBt



Gew./ kg
12,0

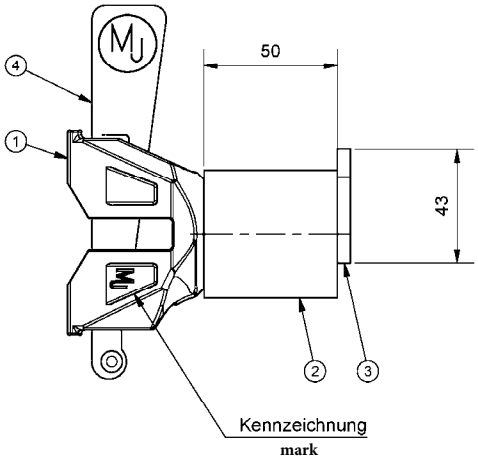
Modulsystem MJ COMBI DUO

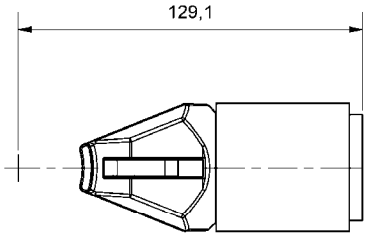
geregelt in Z-8.1-872

Treppeninnengeländer **Internal stair railing**

Anlage B, 12.05.00

Deutsches Institut für Bautechnik DIBt





Bay / kg
Gew./ kg
0,8

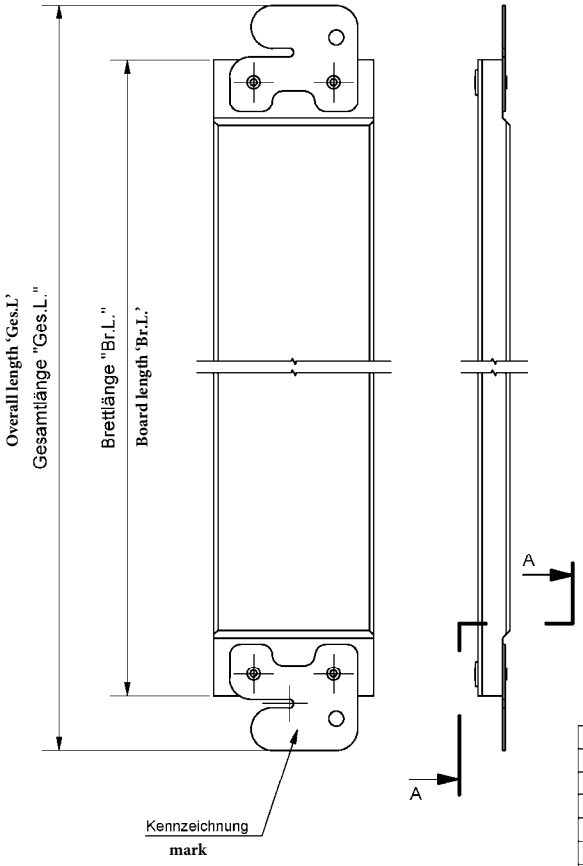
Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Riegelkeil (Anlage B, 01.07.00) **locking wedge (Appendix B, ...**	1	-	
3	Band 5 x 40 **Strip**	1	Stahl **steel**	
2	Rohr Ø48,3 **Pipe**	1	Stahl	
1	O-Riegelkopf (Anlage B, 01.03.00) **O-ledger head (Appendix B, ...**	1	-	

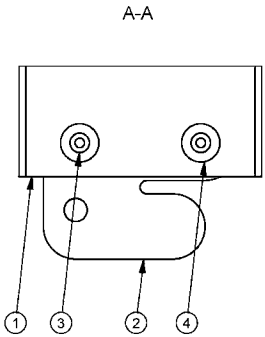
Modulsystem MJ COMBI DUO

geregelt in Z-8.22-921

Treppengeländer-Halter **Handrail holder**

Anlage B, 12.06.00





Ben.	Br.L.	Ges.L.	Gew./ kg
0,73	664	766	1,5
1,09	1020	1122	2,5
1,40	1332	1434	3,4
1,57	1504	1606	3,5
2,07	2004	2106	4,3
2,57	2504	2606	5,7
3,07	3004	3106	6,3
4,14	4076	4178	7,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Unterlegscheibe **washer**	4	Stahl **steel**	
3	Rohrniet **tubular rivet**	4	Stahl	
2	Bordbrettbeschlag **toeboard fitting**	2	Stahl	
1	Brett 150 **board**	1	Holz **timber**	

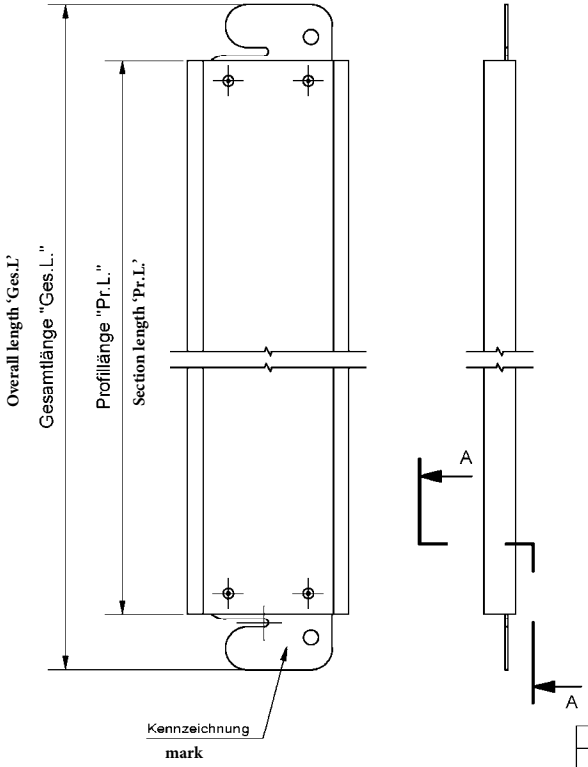
Modulsystem MJ COMBI DUO

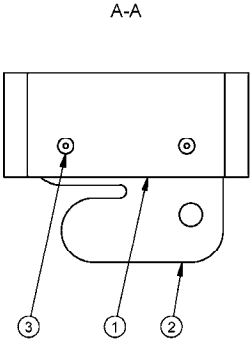
geregelt in Z-8.22-921

Bordbrett - Rohrauflage **Toeboard - pipe bracket**
Ausführung Holz **Wood version**

Anlage B, 13.01.00

Deutsches Institut für Bautechnik DIBt





Ben.	Pr.L.	Ges.L.	Wgt / kg Gew./ kg
0,73	660	766	1,3
1,09	1016	1122	1,9
1,40	1328	1434	2,4
1,57	1500	1606	2,7
2,07	2000	2106	3,4
2,57	2500	2606	4,2
3,07	3000	3106	4,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Blindniet **blind rivet**	4	-	
2	Bordbrettbeschlag **toeboard fitting**	2	Stahl	
1	Bordbrett ; Profil , geregelt in Z-8.1-872 **toeboard: section, reg. in Z-B...**	1	-	

Modulsystem MJ COMBI DUO

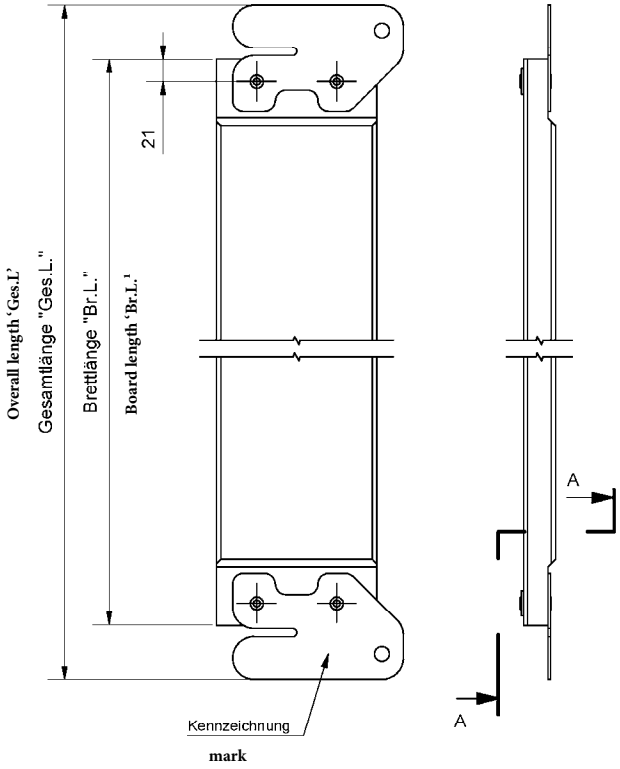
geregelt in Z-8.22-921

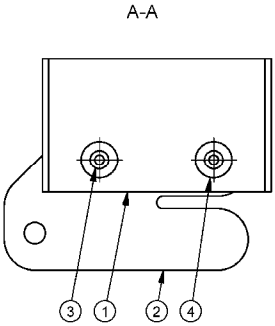
Bordbrett - Rohrauflage
Ausführung Aluminium

Toeboard - pipe bracket
Aluminium version

Anlage B, 13.02.00

Deutsches Institut für Bautechnik DIBt





Ben.	Br.L.	Ges.L.	Wgt / kg Gew./ kg
0,73	664	766	1,5
1,09	1020	1122	2,5
1,40	1332	1434	3,4
1,57	1504	1606	3,5
2,07	2004	2106	4,3
2,57	2504	2606	5,7
3,07	3004	3106	6,3
4,14	4076	4178	7,9

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
4	Unterlegscheibe **washer**	4	Stahl **steel**	
3	Rohrniet **tubular rivet**	4	Stahl	
2	Bordbrettbeschlag **toeboard fitting**	2	Stahl	
1	Brett 150 **board 150**	1	Holz **timber**	

Modulsystem MJ COMBI DUO

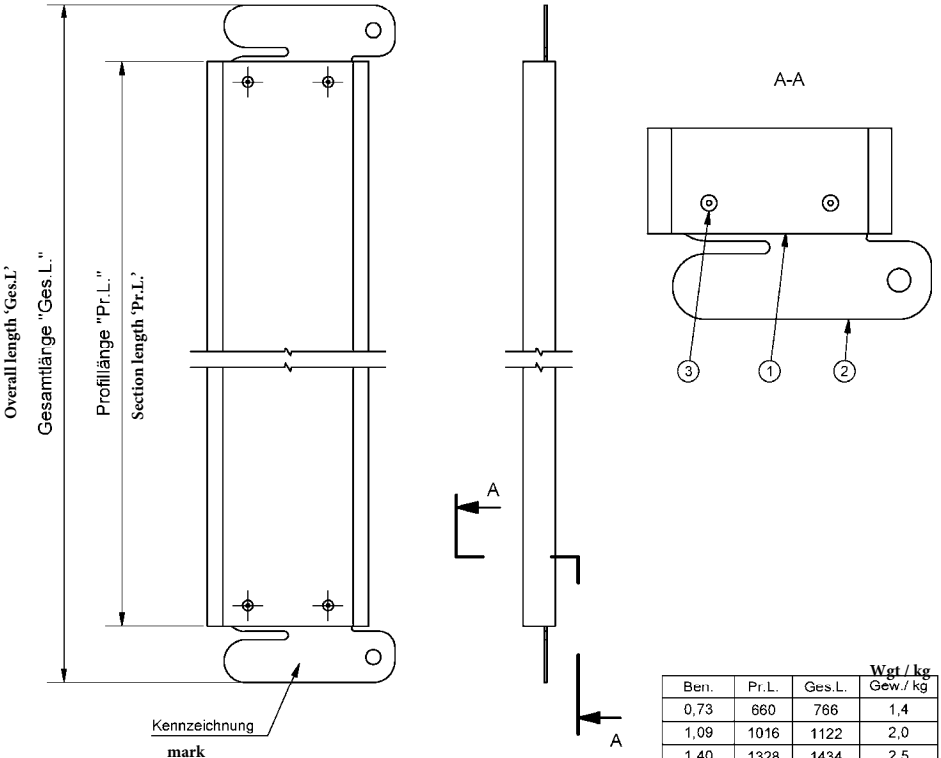
geregelt in Z-8.22-921

Bordbrett - U-Auflage
Ausführung Holz

Toeboard - U-bracket
Wood version

Anlage B, 13.03.00

Deutsches Institut für Bautechnik DIBt



Ben.	Pr.L.	Ges.L.	Wgt / kg Gew./ kg
0,73	660	766	1,4
1,09	1016	1122	2,0
1,40	1328	1434	2,5
1,57	1500	1606	2,8
2,07	2000	2106	3,5
2,57	2500	2606	4,3
3,07	3000	3106	5,0

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
3	Blindniet **blind rivet**	4	-	
2	Bordbrettbeschlag **toeboard fitting**	2	Stahl	
1	Bordbrett ; Profil , geregelt in Z-8.1-872 **toeboard: section, reg. in Z-8.1..**	1	-	

Modulsystem MJ COMBI DUO

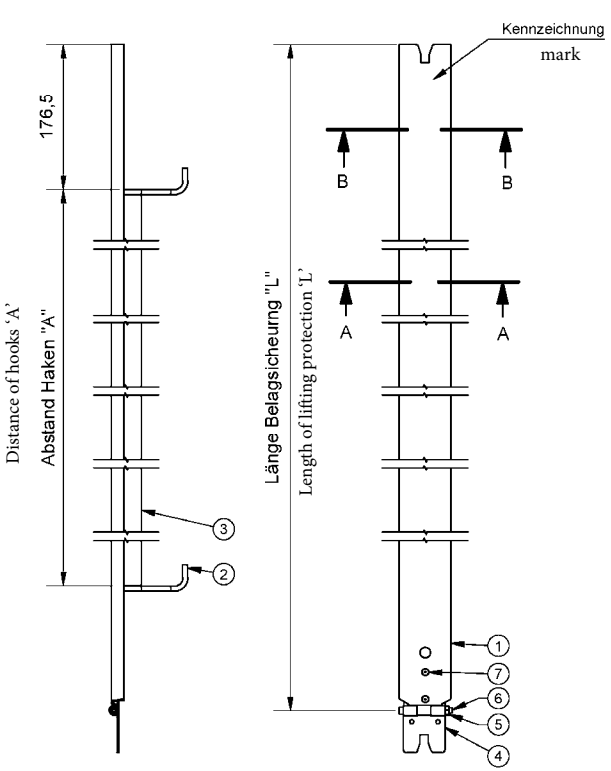
geregelt in Z-8.22-921

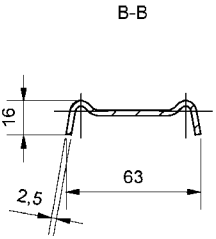
Bordbrett - U-Auflage
Ausführung Aluminium

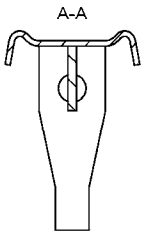
Toeboard - U-bracket
Aluminium version

Anlage B, 13.04.00

Deutsches Institut für Bautechnik DIBt







Ben.	L	A	Wgt/ kg Gew./ kg
0,73	592	264	1,3
1,04	896	568	1,8
1,09	948	620	1,9
1,40	1260	932	2,5
1,54	1396	1068	2,7
1,57	1432	1104	2,8
2,07	1932	1604	5,2
2,57	2432	2104	6,5
3,07	2932	2604	7,6

Pos.	Bezeichnung		Stk.	Werkstoff	Bemerkung
7	Blindniet	blind rivet	2	-	
6	Zylinderschraube	cylinder head screw	1	Stahl **steel**	
5	Mutter	nut	1	Stahl	
4	Scharnier	hinge	1	-	
3	Flach 30 x 4 ; ab Länge 2,07 m	flats 30 x 4; from length 2,07	1	Stahl	
2	Haken t= 6	hook d = 6	2	Stahl	
1	Profil	section	1	Stahl	

Modulsystem MJ COMBI DUO

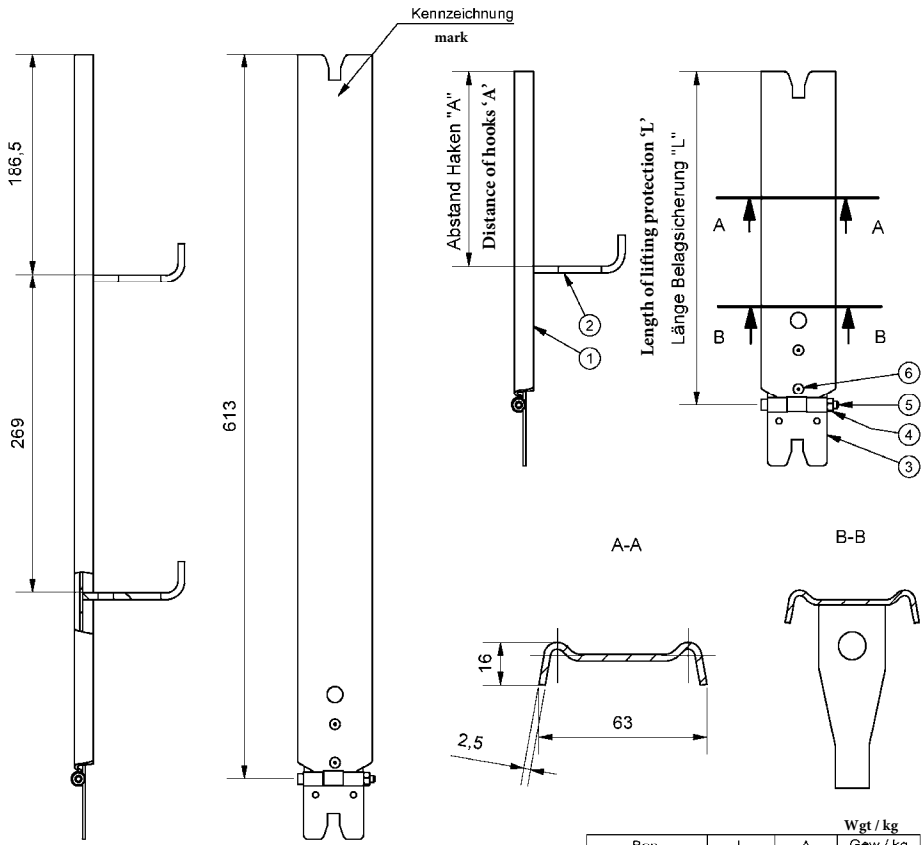
geregelt in Z-8.22-921

Belagsicherung für U-Riegel (Belagriegel)

Lifting protection for U-ledger (decking ledger)

Anlage B, 14.01.00

Deutsches Institut für Bautechnik DIBt



Ben.	L	A	Wgt / kg Gew./ kg
Riegel 0,42	282	164	0,7
Riegel 0,45	310	167	0,8
Konsole 0,39	271	132	0,7
Konsole 0,73	-	-	1,3

Riegel = ledger // Konsole = board bracket

Pos.	Bezeichnung	Stk.	Werkstoff	Bemerkung
6	Blindniet **blind rivet**	2	-	
5	Zylinderschraube **cylinder head screew**	1	Stahl **steel**	
4	Mutter **nut**	1	Stahl	
3	Scharnier **hinge**	1	-	
2	Haken t= 6 **hook d = 6**	1/2	Stahl	
1	Profil **section**	1	Stahl	

Modulsystem MJ COMBI DUO

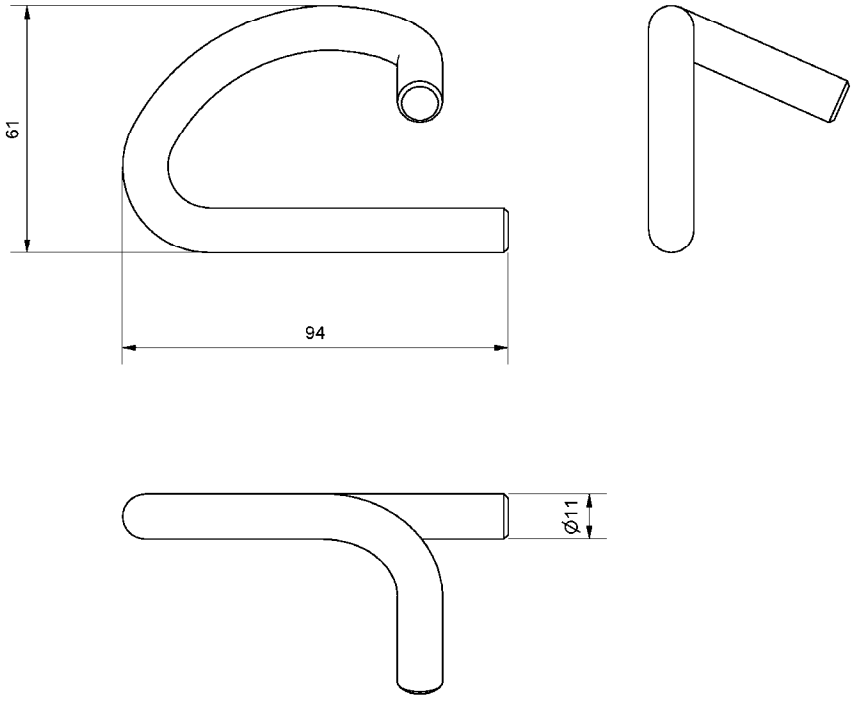
geregelt in Z-8.22-921

Belagsicherung
für U-Riegel (Belagriegel) 0,42 ; 0,45 m
für Konsole U-Auflage 0,39 ; 0,73 m

Lifting protection
for U-ledger (decking ledger) 0.42; 0.45 m
for board bracket, U-bracket 0.39; 0-73 m

Anlage B, 14.02.00

Deutsches Institut für Bautechnik DIBt



Gew./ kg
0,16

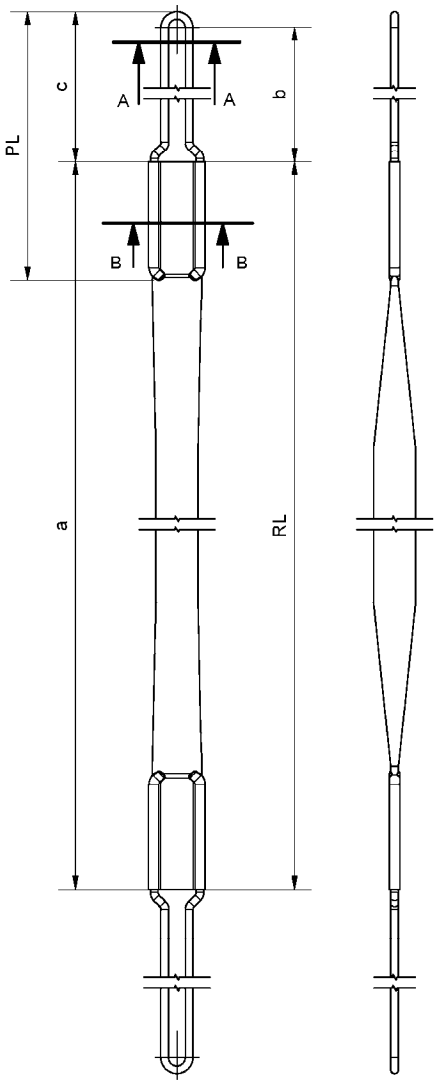
Modulsystem MJ COMBI DUO

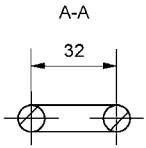
geregelt in Z-8.1-872

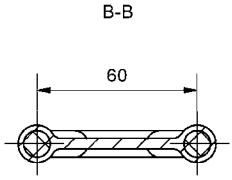
Fallstecker Ø11 **Gravity pin Ø 11**

Anlage B, 14.03.00

Deutsches Institut für Bautechnik DIBt







Ben.	a	b	c	PL	RL
1,57	1300	720	754	880	1274
2,07	1800	640	674	800	1774
2,57	2300	580	614	740	2274
3,07	2800	530	564	690	2774

Modulsystem MJ COMBI DUO

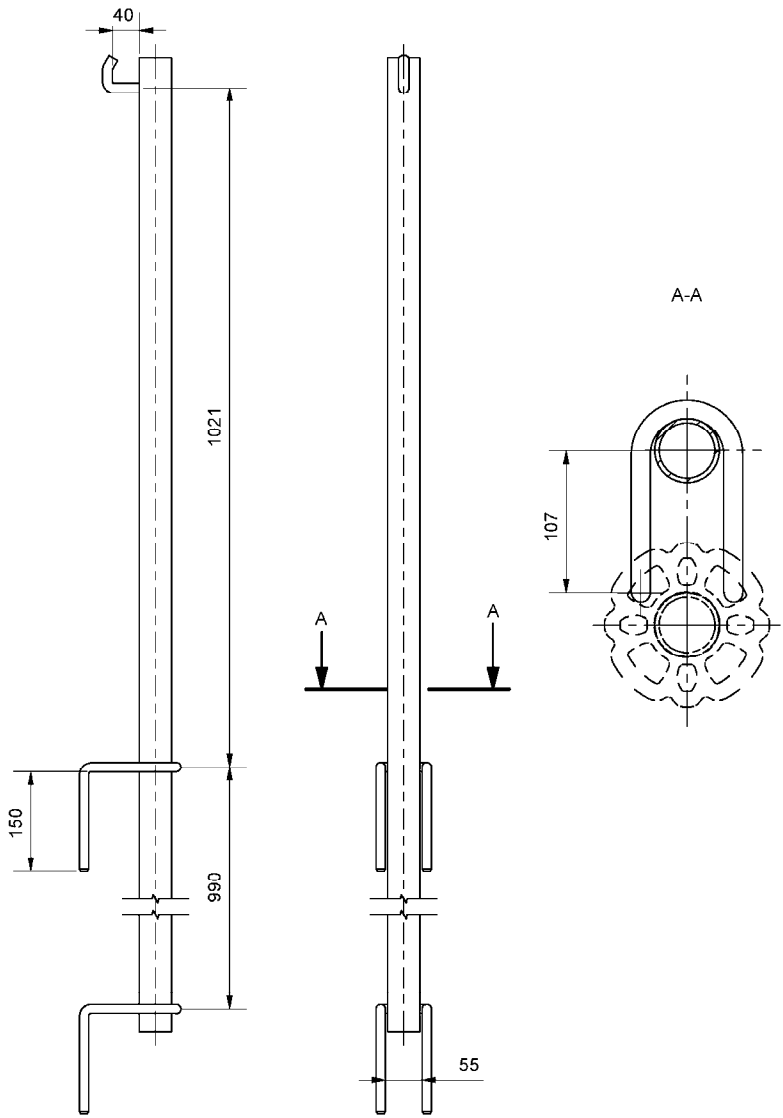
geregelt in Z-8.22-841

Montagesicherheitsgeländer
Holm

Mounting safety rail
Strut

Anlage B, 15.01.00

Deutsches Institut für Bautechnik DIBt



Modulsystem MJ COMBI DUO

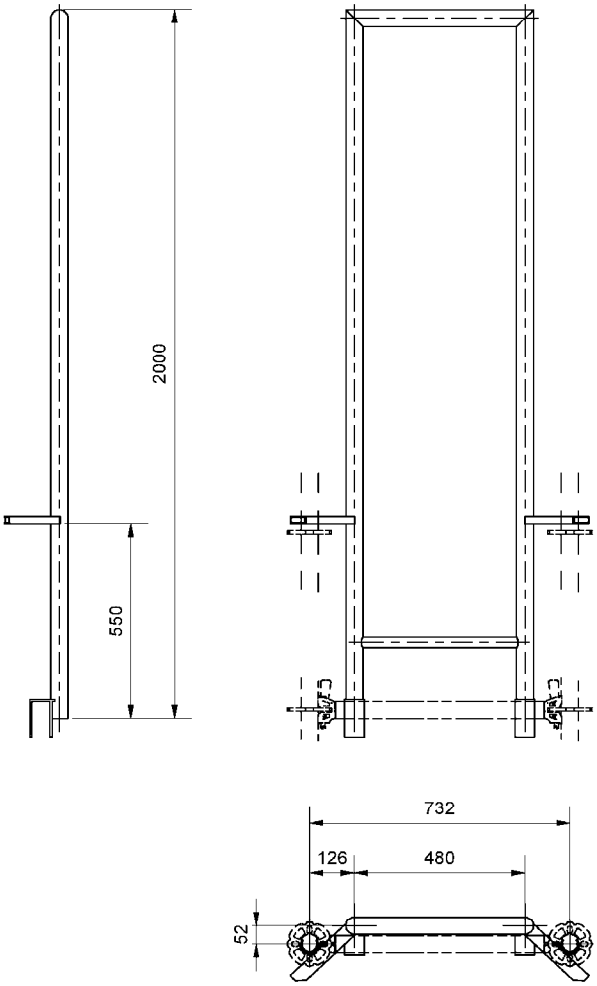
geregelt in Z-8.22-841

Montagesicherheitsgeländer
Pfosten

Mounting safety rail
Post

Anlage B, 15.02.00

Deutsches Institut für Bautechnik DIBt



Modulsystem MJ COMBI DUO

geregelt in Z-8.22-841

Montagesicherheitsgeländer stirnseitig

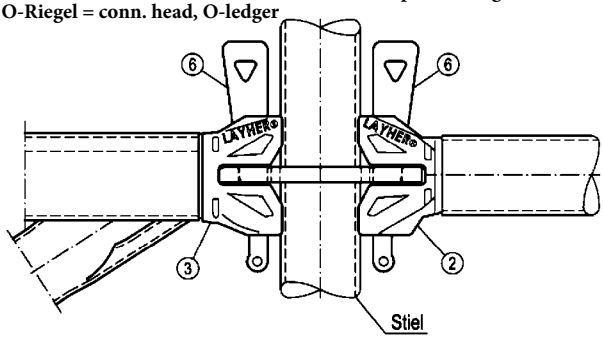
Mounting safety rail front

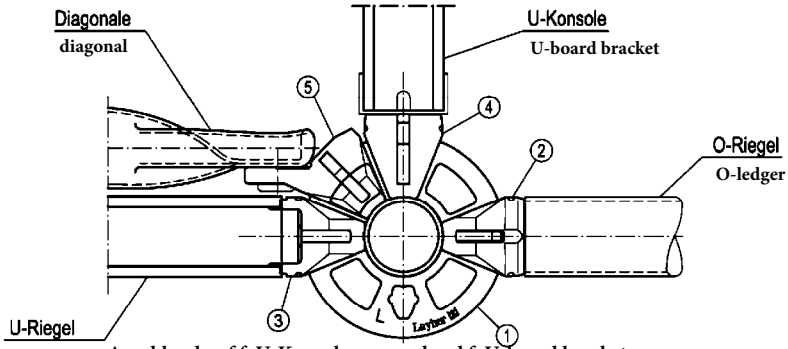
Anlage B, 15.03.00

Deutsches Institut für Bautechnik DIBt

Lochscheibe = perforated disc
Anschlusskopf f. O-Riegel = conn. head, O-ledger

Anschlusskopf f. O-Riegel = conn. head, U-ledger





Anschlusskopf f. U-Konsole = conn. head f. U-board bracket
Anschlosskopf f. Diagonale = conn. head f. diagonal

		"Variante LW"	"K2000+"	"Variante II"
① Lochscheibe	(gem. Anlage B,	50.02.01	50.01.01	50.01.07 50.01.08
② Anschlusskopf für O-Riegel	(gem. Anlage B,	50.02.02	50.01.02	50.01.09 50.01.10
③ Anschlusskopf für U-Riegel	(gem. Anlage B,	50.02.03	50.01.03	50.01.11 50.01.12 50.01.14
④ Anschlusskopf für U-Konsole	(gem. Anlage B,	50.02.04	50.01.04	50.01.13 50.01.14
⑤ Anschlusskopf für Diagonale	(gem. Anlage B,	50.02.05	50.01.05	50.01.15
⑥ Keil wedge	(gem. Anlage B,	50.02.06	50.01.06	50.01.16

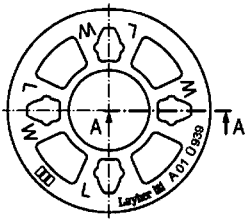
Korrosionsschutz : Feuerverzinkung nach EN ISO 1461
Korrosiensschutz: Feuerverzinkung n. EN ISO 1461 = hot-dip galvanized coating to EN ISO 1461

MJ COMBI DUO

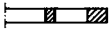
Übersicht Knoten **Nodes overview**
"Variante LW" / "Variante K2000+" / "Variante II"

Anlage B, 50.00.01

Deutsches Institut für Bautechnik DIBt

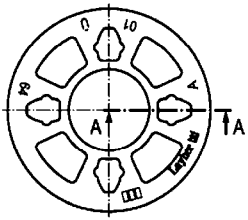


Section A-A
Schnitt A-A

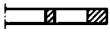


"Variante LW"
Lochscheibe gestanzt Ø 124
gem. Anlage B, 50.02.01

'Variant LW'
Perf. disc, punched
acc. to Appx B, 50.02.01

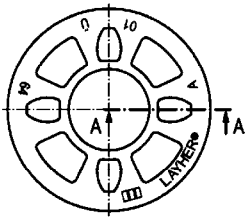


Section A-A
Schnitt A-A

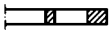


"Variante K2000+"
Lochscheibe gestanzt Ø 124
gem. Anlage B, 50.01.01

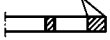
'Variant K2000+'
Perf. disc, punched Ø 124
acc. to Appx B, 50.01.01



Section A-A
Schnitt A-A



Ränder entgratet



Edges deburred

"Variante II - Produktion eingestellt"

'Variant II - Proction discnt'd

"Variante II"
Lochscheibe gestanzt Ø 124
gem. Anlage B, 50.01.07
Perf. disc, punched Ø 124
acc. to Appx B, 50.01.07

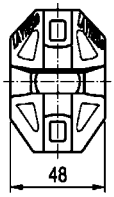
"Variante II"
Lochscheibe gestanzt Ø 122
gem. Anlage B, 50.01.08
Perf. disc, punched Ø 124
acc. to Appx B, 50.01.08

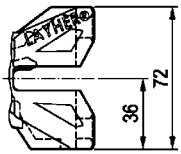
MJ COMBI DUO

Übersicht Lochscheiben **Perforated discs overview**
"Variante LW" / "Variante K2000+" / "Variante II"

Anlage B, 50.00.02

Deutsches Institut für Bautechnik DIBt



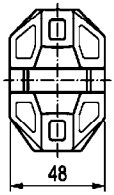


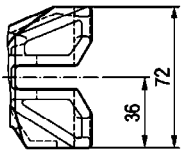
Riegel-Anschlusskopf:
"Variante LW"

mit Aussparungen an den Seitenflächen
und ringförmigen Stirnflächen, 72 mm hoch,
gem. Anlage B, 50.02.02, 50.02.03, 50.02.04

Ledger connection head:
'Variant LW'

With recesses on the side faces and ring-shaped end faces, 72 mm high, acc. to Annex B 50.02.02, 50.02.03, 50.02.04



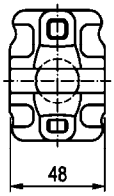


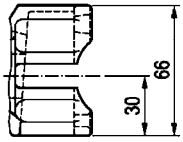
Riegel-Anschlusskopf:
"Variante K2000+"

mit Aussparungen an den Seitenflächen
und ringförmigen Stirnflächen, 72 mm hoch,
gem. Anlage B, 50.01.02, 50.01.03, 50.01.04

Ledger connection head:
'Variant K2000+'
With recesses on the side faces and ring-shaped end faces, 72 mm high, acc. to Annex B 50.01.02, 50.01.03, 50.01.04

'Production discont'd'
"Produktion eingestellt"





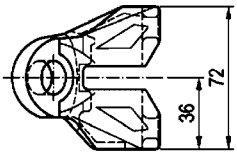
Riegel-Anschlusskopf:
"Variante II"

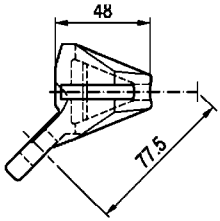
Ledger connection head: 'Variant II'
mit Aussparungen an den Seitenflächen
und ringförmigen Stirnflächen, 66 mm hoch,
gem. Anlage B, 50.01.09, 50.01.10, 50.01.11,
50.01.12, 50.01.13, 50.01.14

With recesses on the side faces and ring-shaped end faces, 72 mm high, acc. to Annex B 50.01.09, 50.01.10, 50.01.11, 50.01.12, 50.01.13, 50.01.14

MJ COMBI DUO	
Übersicht Riegel - Anschlussköpfe "Variante LW" / "Variante K2000+" / "Variante II"	Anlage B, 50.00.03

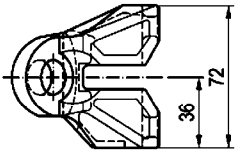
Deutsches Institut für Bautechnik DIBt

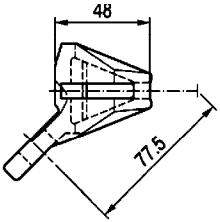




"Variante LW"
nur in Verbindung mit Diagonale
aus Rohr Ø 48,3 mm
Kopf 72 mm hoch,
gem. Anlage B, 50.02.05

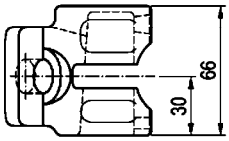
'Variant LW'
only in connection w. diagonal
from tube Ø 48.3 mm,
head 72 mm high,
acc. to Appx B, 50.02.05

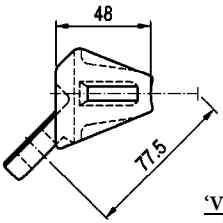




"Variante K2000+"
nur in Verbindung mit Diagonale
aus Rohr Ø 48,3 mm
Kopf 72 mm hoch,
gem. Anlage B, 50.01.05

'Variant K2000+'
only in connection w. diagonal
from tube Ø 48.3 mm,
head 72 mm high,
acc. to Appx B, 50.01.05





"Produktion eingestellt"
'Production discont'd'
"Variante II"
nur in Verbindung mit Diagonale
aus Rohr Ø 48,3 mm
Kopf 66 mm hoch,
gem. Anlage B, 50.01.15

'Variant II'
only in connection w. diagonal
from tube Ø 48.3 mm, head 66 mm high,
acc. to Appx B, 50.01.15

MJ COMBI DUO

Übersicht Diagonal - Anschlussköpfe **Diagonal connection heads overview**
"Variante LW" / "Variante K2000+" / "Variante II"

Anlage B, 50.00.04

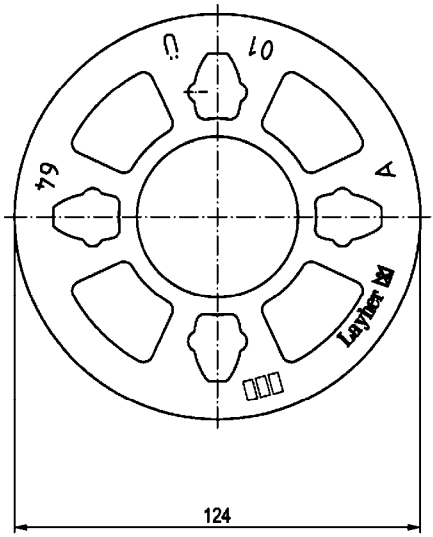
Deutsches Institut für Bautechnik DIBt

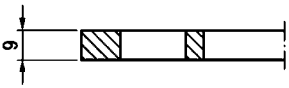
MJ COMBI DUO

Kennzeichnungsschlüssel

Anlage B, 50.00.05

Deutsches Institut für Bautechnik DIBt





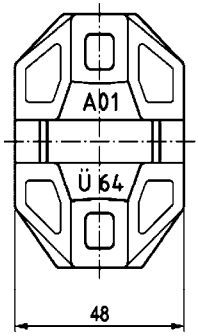
Herstellung ab 2000

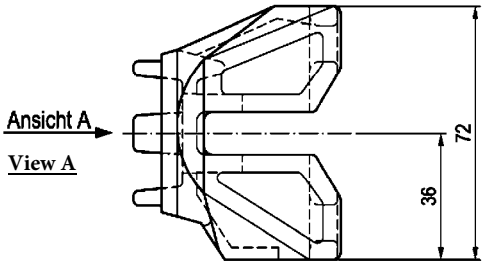
MJ COMBI DUO

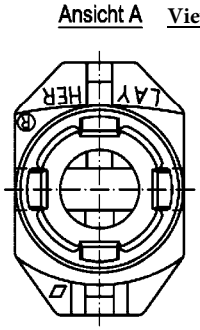
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Punched perforated disc Ø 124 'Variant 'K2000+'
Lochscheibe gestanzt Ø 124 "Variante K2000+"

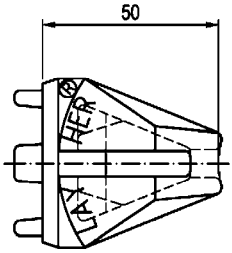
Anlage B, 50.01.01

Deutsches Institut für Bautechnik DIBt









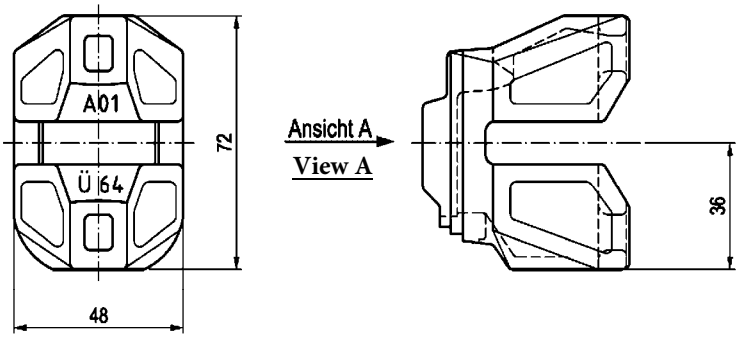
Herstellung ab 2000

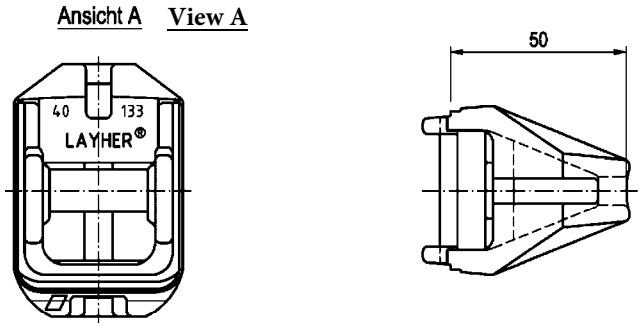
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.ss-64**
Connection head for ledger 'Variant K2000+'
Anschlusskopf für O-Riegel "Variante K2000+"

Anlage B, 50.01.02

Deutsches Institut für Bautechnik DIBt





Production from 2000

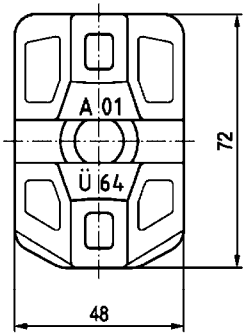
Herstellung ab 2000

MJ COMBI DUO

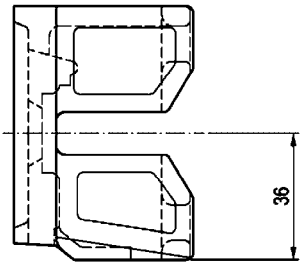
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.ss-64**
Connection head for U-ledger 'Variant K2000+'
Anschlusskopf für U-Riegel "Variante K2000+"

Anlage B, 50.01.03

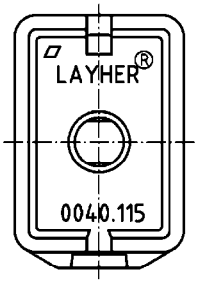
Deutsches Institut für Bautechnik DIBt

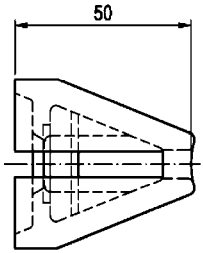


Ansicht A
View A



Ansicht A View A





Production from 2000

Herstellung ab 2000

MJ COMBI DUO

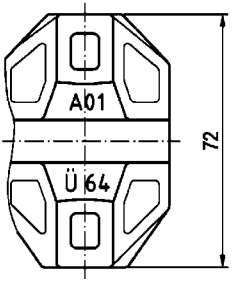
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.ss-64**

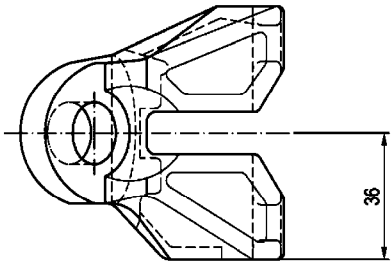
Connection head for U-board bracket 'Variant K2000+'

Anschlusskopf für U-Konsole "Variante K2000+"

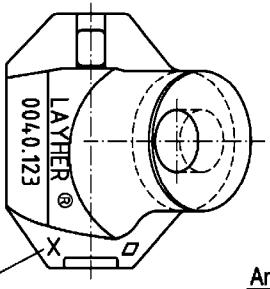
Anlage B, 50.01.04

Deutsches Institut für Bautechnik DIBt



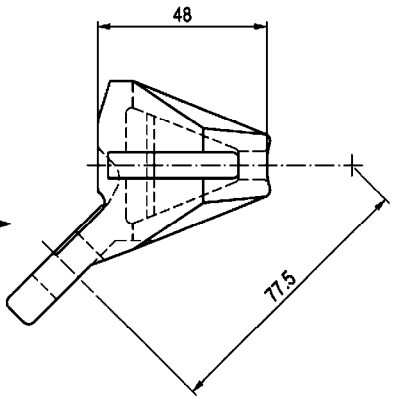


Ansicht A View A



X = 1 = Ausführung wie gezeichnet
X = 2 = Ausführung spiegelbildlich
X = 1 = Version as drawn
X = 2 = Mirror-inverted version

Ansicht A
View A



Production from 2000
Herstellung ab 2000

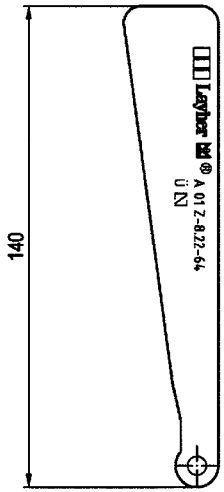
MJ COMBI DUO

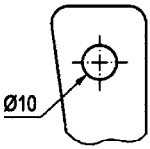
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.ss-64**
Connection head for diagonal 'Variant K2000+'
Anschlusskopf für Diagonale "Variante K2000+"

Anlage B, 50.01.05

Deutsches Institut für Bautechnik DIBt

Alternativ Ausführung
mit Bohrung
Alternative version
with hole



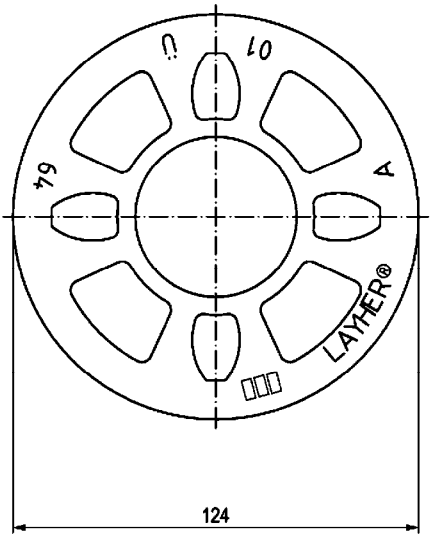


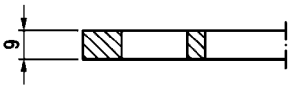
Production from 2000

Herstellung ab 2000

MJ COMBI DUO	
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.ss-64**	Anlage B, 50.01.06
Keil "Variante K2000+" **Wedge 'Variant K2000+'**	

Deutsches Institut für Bautechnik DIBt





Production from Dec 1991
Herstellung ab Dez. 1991

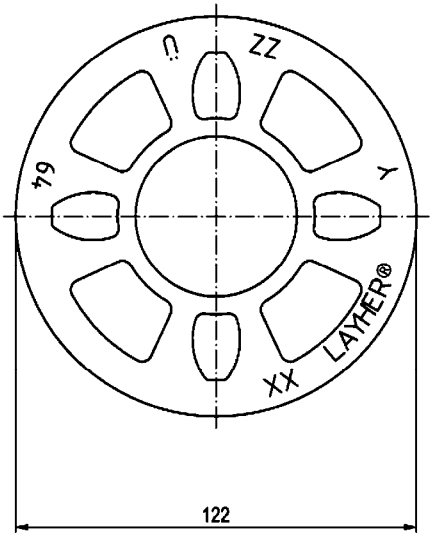
MJ COMBI DUO

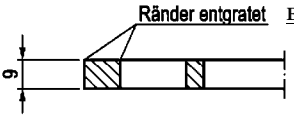
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

Lochscheibe gestanzt Ø 124 "Variante II" **Punched perforated disc Ø 124 'Variant II'**

Anlage B, 50.01.07

Deutsches Institut für Bautechnik DIBt





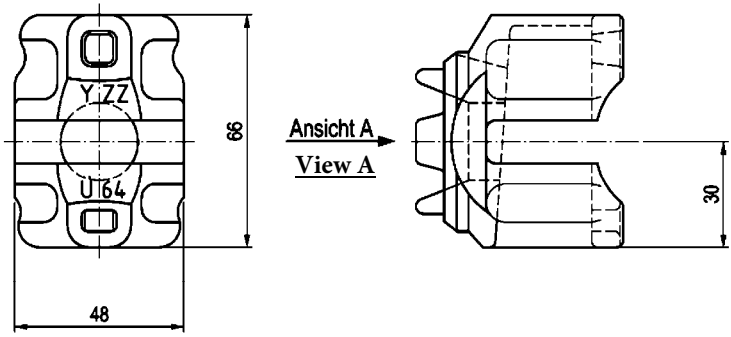
(X, Y u. Z) = Fertigungskennzeichnung
(X, Y, Z) = Production marking

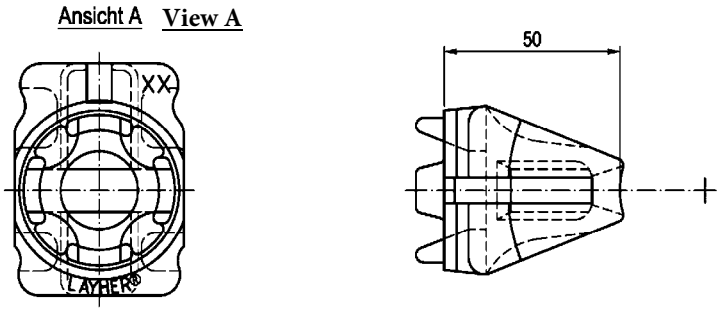
Production from Dec 1991

Herstellung bis Dez. 1991

MJ COMBI DUO	
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64** Lochscheibe gestanzt Ø 122 "Variante II"	Anlage B, 50.01.08

Deutsches Institut für Bautechnik DIBt





Production from May 1989

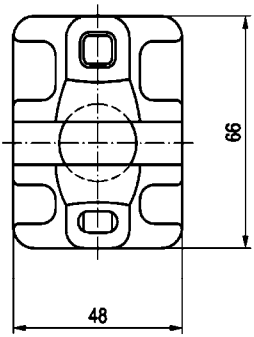
Herstellung ab Mai 1989

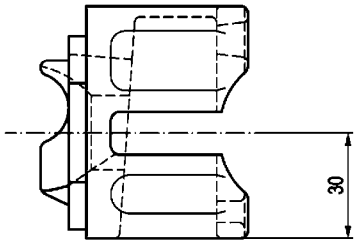
MJ COMBI DUO

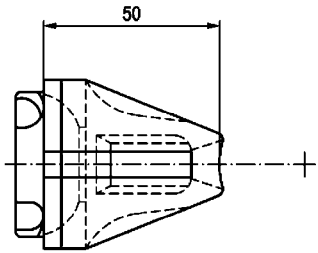
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Connection head for O-ledger 'Variant II'
Anschlusskopf für O-Riegel "Variante II"

Anlage B, 50.01.09

Deutsches Institut für Bautechnik DIBt







Production from May 1989

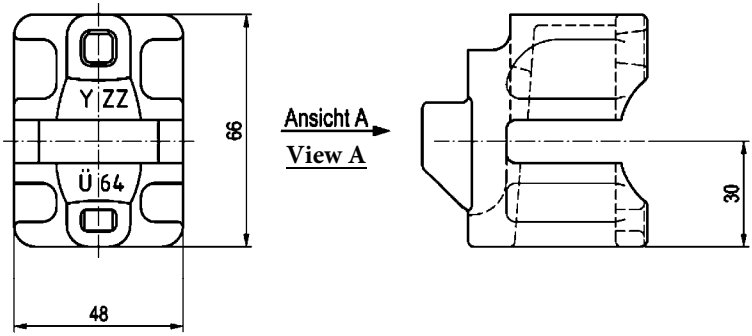
Herstellung bis Mai 1989

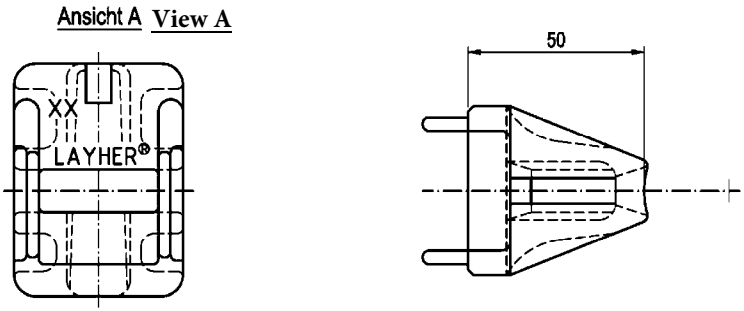
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Connection head for O-ledger 'Variant II'
Anschlusskopf für O-Riegel "Variante II"

Anlage B, 50.01.10

Deutsches Institut für Bautechnik DIBt





(X, Y u. Z) = Fertigungskennzeichnung

(X, Y, Z) = Production marking

Production from May 1989

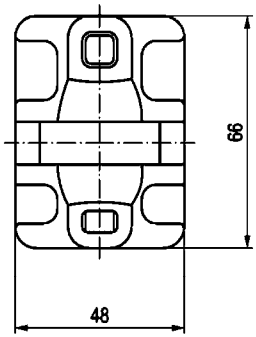
Herstellung ab Mai 1989

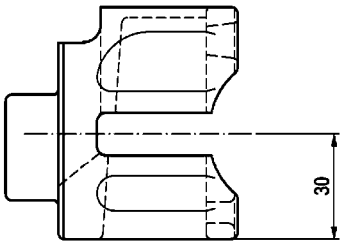
MJ COMBI DUO

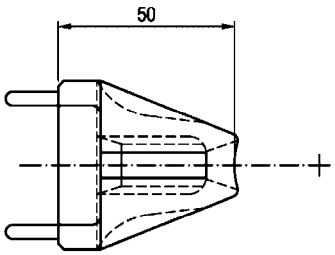
Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Connection head for U-ledger 'Variant II'
Anschlusskopf für U-Riegel "Variante II"

Anlage B, 50.01.11

Deutsches Institut für Bautechnik DIBt







Production up to May 1989

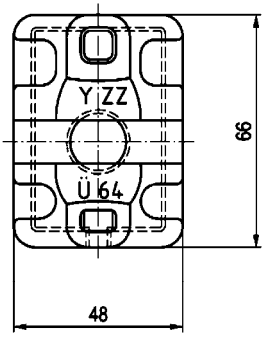
Herstellung bis Mai 1989

MJ COMBI DUO

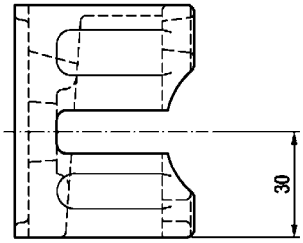
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Connection head for U-ledger 'Variant II'
Anschlusskopf für U-Riegel "Variante II"

Anlage B, 50.01.12

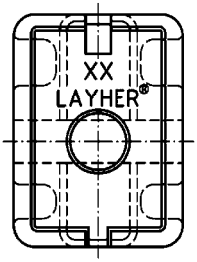
Deutsches Institut für Bautechnik DIBt

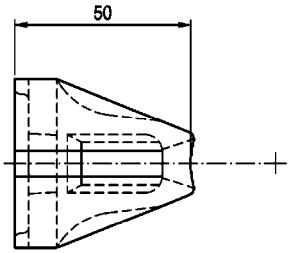


Ansicht A
View A



Ansicht A View A





(X, Y u. Z) = Fertigungskennzeichnung
(X, Y, Z) = Production marking

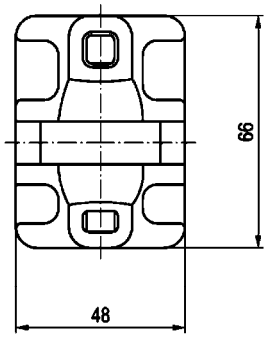
Production from May 1989
Herstellung ab Mai 1989

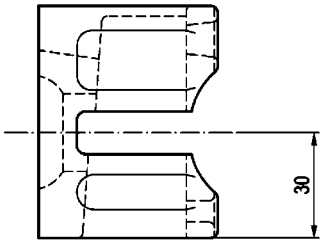
MJ COMBI DUO

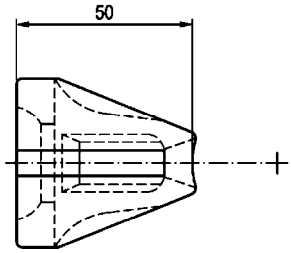
Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Connection head for U-ledger 'Variant II'
Anschlusskopf für U-Konsole "Variante II"

Anlage B, 50.01.13

Deutsches Institut für Bautechnik DIBt







Production up to May 1989

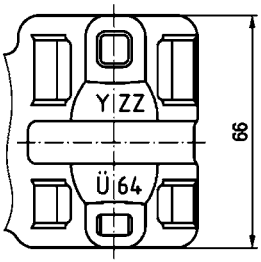
Herstellung bis Mai 1989

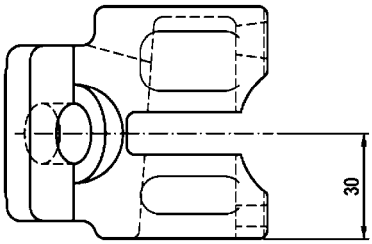
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Connection head for U-ledger / U-board bracket 'Variant II'
Anschlusskopf für U-Riegel / U-Konsole "Variante II"

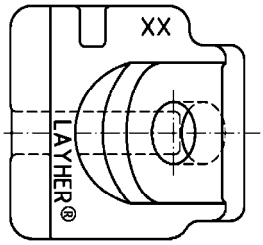
Anlage B, 50.01.14

Deutsches Institut für Bautechnik DIBt





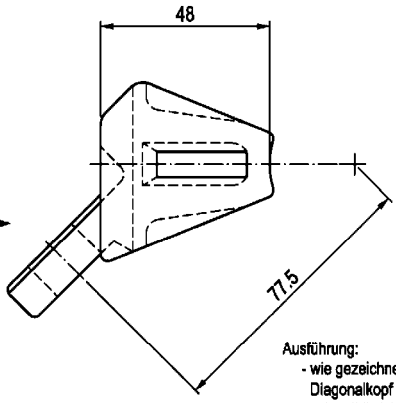
Ansicht A View A



(X, Y u. Z) = Fertigungs-kennzeichnung

(X, Y, Z) = Production marking

Ansicht A
View A



Version:
- as drawn for diagonal head rh
- mirror-inverted for diagonal head lh

Ausführung:
- wie gezeichnet für Diagonalkopf rechts
- spiegelbildlich für Diagonalkopf links

Herstellung ab Mai 1989
Production from May 1989

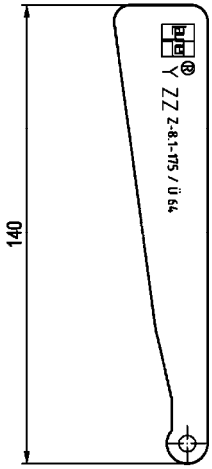
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 (vd. Appendix B. 50.01.01)
Connection head for diagonal 'Variant'
Anschlusskopf für Diagonale "Variante II"

Anlage B, 50.01.15

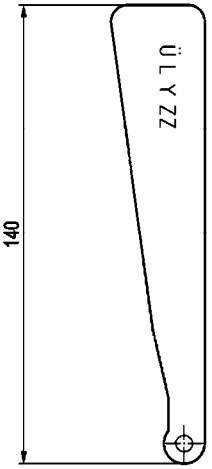
Deutsches Institut für Bautechnik DIBt

"Ausführung A"



Herstellung ab Mai 1989
Production from May 1989

"Ausführung B"



Herstellung bis Mai 1989
Production up to May 1989

(Y u. Z) = Fertigungskennzeichnung
(Y + Z) = Production marking

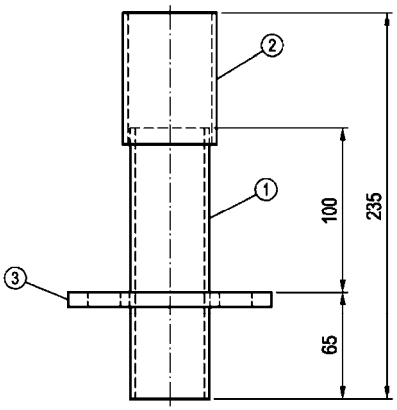
MJ COMBI DUO

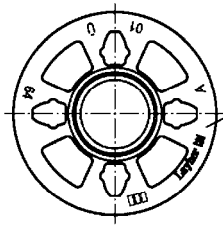
Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

Keile "Variante II" Wedges 'Variant II'

Anlage B, 50.01.16

Deutsches Institut für Bautechnik DIBt





① Rohr = Pipe
② Rohr
③ Lochscheibe "Variante K2000+"
Perforated disc 'Variant K2000+'

(siehe Anlage B, 50.01.01)
(vd. Appendix B. 50.01.01)

Gew. [kg] 1,4

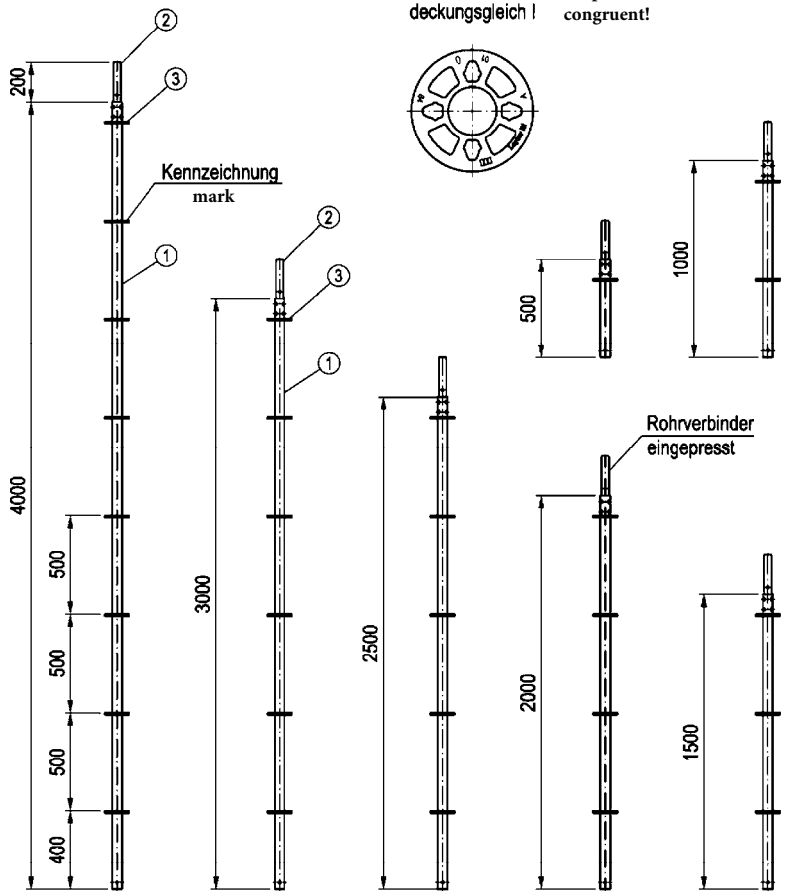
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

Anfangsstück "Variante K2000+" **Lead-off adapter 'Variant K2000+'**

Anlage B, 50.01.17

Deutsches Institut für Bautechnik DIBt



Abm. [m]	Gew. [kg]
0,50	3,2
1,00	5,5
1,50	7,8
2,00	10,1
2,50	12,4
3,00	14,6
4,00	19,2

① Rohr Pipe
② Rohrverbinder Spigot
③ Lochscheibe "Variante K2000+"
Perforated disc 'Variant K2000+'

(siehe Anlage B, 50.01.01)
(vd. Appendix B. 50.01.01)

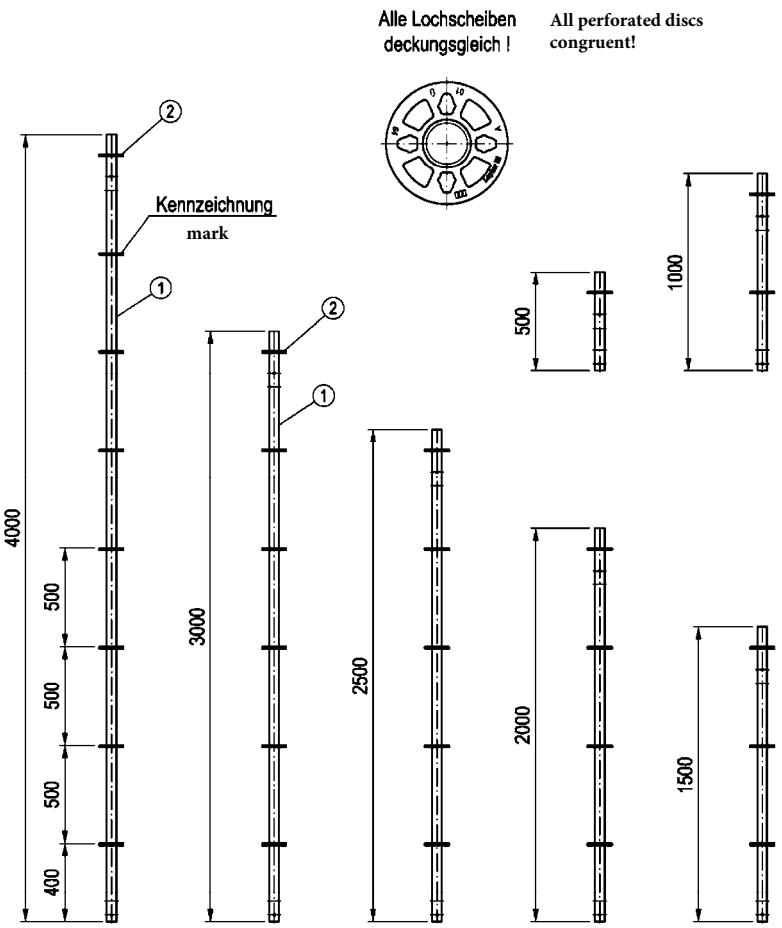
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

Stiel mit Rohrverbinder "Variante K2000+" Post with spigot 'Variant K2000+'

Anlage B, 50.01.18

Deutsches Institut für Bautechnik DIBt



Abm. [m]	Gew. [kg]
0,50	2,5
1,00	4,6
1,50	6,8
2,00	9,0
2,50	11,7
3,00	13,7
4,00	18,1

① Rohr Pipe
② Lochscheibe "Variante K2000+"
Perforated disc 'Variant K2000+'

(siehe Anlage B, 50.01.01)
(vd. Appendix B. 50.01.01)

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

Stiel ohne Rohrverbinder "Variante K2000+" Post w/out spigot 'Variant K2000+'

Anlage B, 50.01.19

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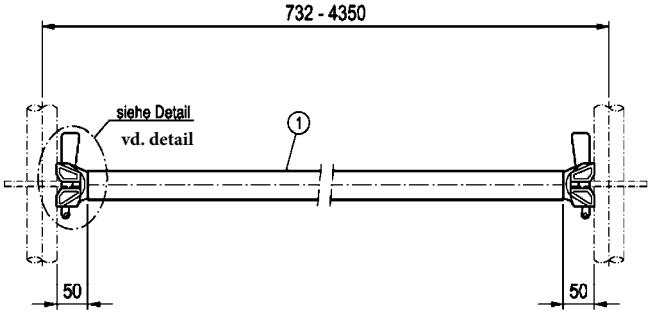
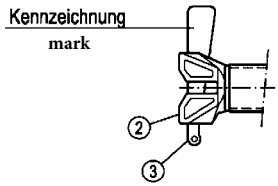


Detail



Abm. [m]	Gew. [kg]
0,73	3,2
1,09	4,4
1,57	6,1
2,07	7,9
2,57	9,6
3,07	11,5

① Rohr
② Kopfstück "Variante K2000+" (siehe Anlage B, 50.01.02) (vd. Appendix B. 50.01.02)
③ Keil "Variante K2000+" (siehe Anlage B, 50.01.06) (vd. Appendix B. 50.01.06)

Rohr = pipe
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

O-Riegel 0,73 m - 4,35 m "Variante K2000+" O-ledger 0.73 - 4.35 m 'Variant K2000+'

Anlage B, 50.01.20

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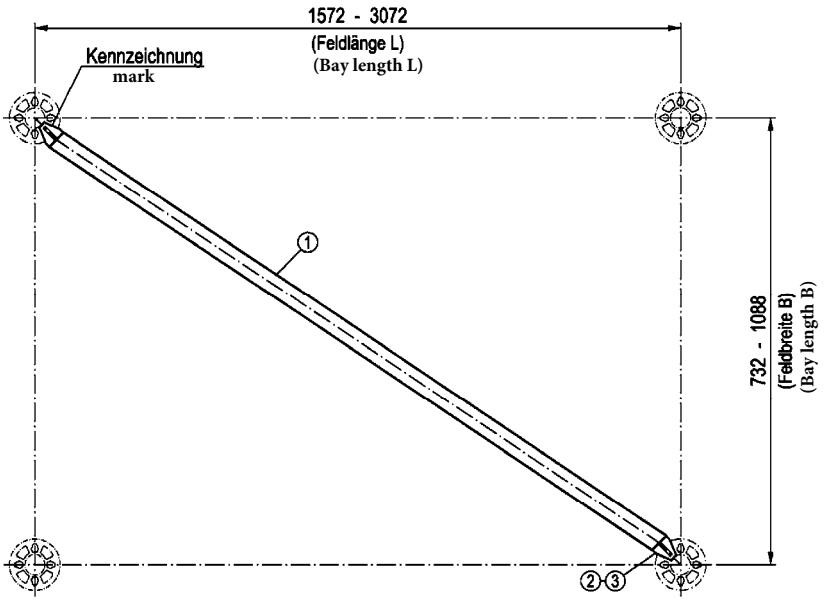

①	Rohr		
②	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.02)
③	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Rohr = pipe
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

Abm. [m]	Gew. [kg]
2,07 x 0,73	9,0
2,57 x 0,73	10,8
2,07 x 1,09	8,4
2,57 x 1,09	9,7

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

O-Riegel HD "Variante K2000+" **O-ledger HD 'Variant K2000+'**

Anlage B, 50.01.21

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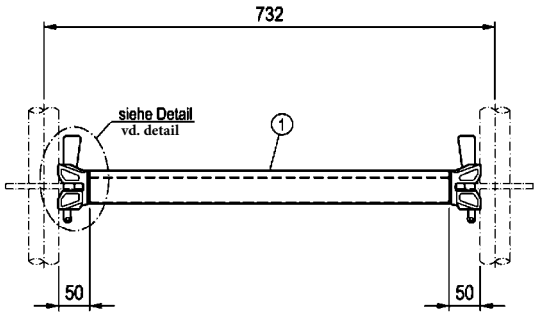
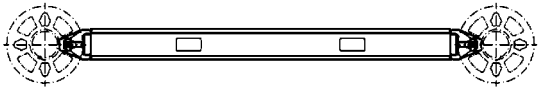
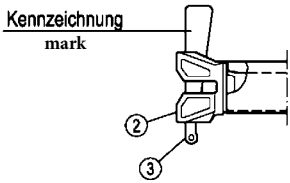




Detail



vd. Appendix ...

①	U-Profil	(siehe Anlage B, 50.04.03 und 50.04.04)
②	Kopfstück "Variante K2000+"	(siehe Anlage B, 50.01.03)
③	Keil "Variante K2000+"	(siehe Anlage B, 50.01.06)

U-Profil = U-section
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

Gew. [kg]
3,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

U-Riegel 0,73 m "Variante K2000+" U-ledger 0.73 m 'Variant K2000+'

Anlage B, 50.01.22

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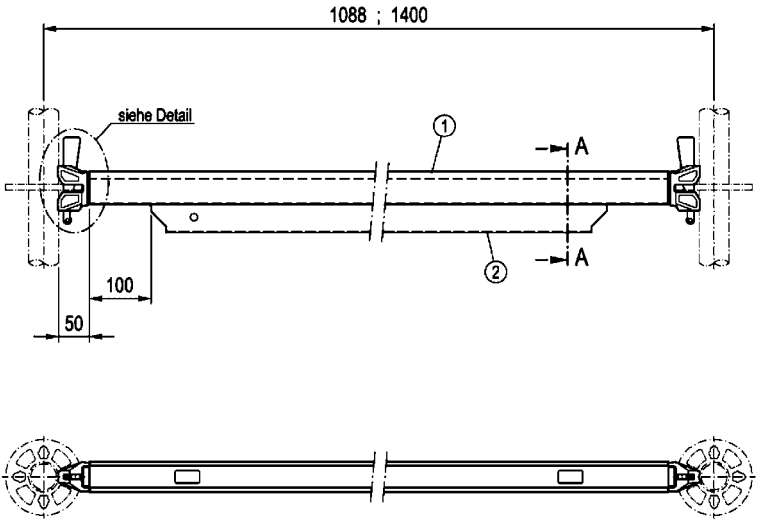
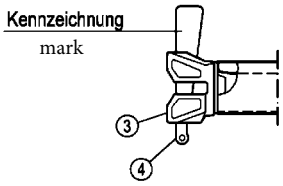
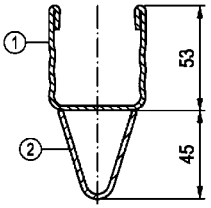


Detail



Schnitt A-A **Section A-A**



U-Profil = U-section
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

vd. Appendix ...

				Dim. Wgt [m] [kg]	
				Abm. [m]	Gew. [kg]
1	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04)	1,09	5,7
2	Verstärkung			1,40	7,5
3	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.03)		
4	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)		

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64** **U-ledger 1.09 - 1.40 m reinforced**

U-Riegel 1,09 m - 1,40 m verstärkt "Variante K2000+"

Anlage B, 50.01.23

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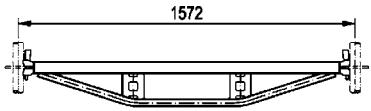
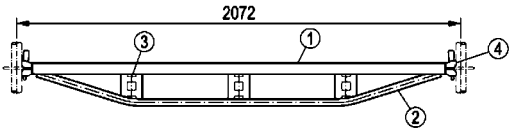
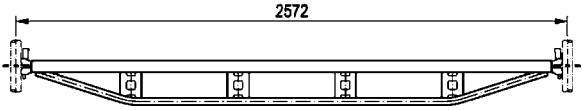
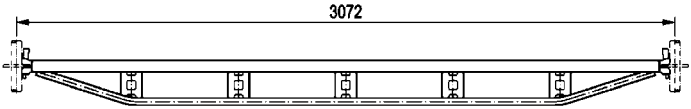
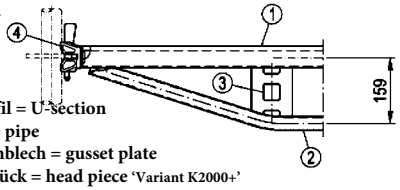








Detail



U-Profil = U-section
Rohr = pipe
Knotenblech = gusset plate
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

			vd. Appendix B, ...
①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04)
②	Rohr		
③	Knotenblech		
④	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.03)
⑤	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Dim. [m] / Wgt [kg]

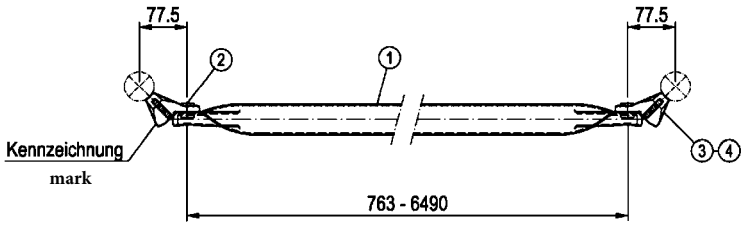
Abm. [m]	Gew. [kg]
1,57	9,4
2,07	12,1
2,57	15,2
3,07	17,6

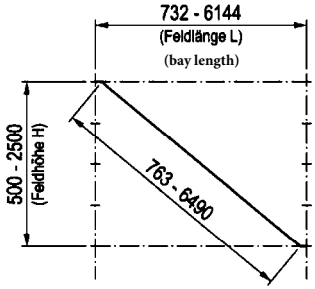
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

U-Doppelriegel 1,57 m - 3,07 m "Variante K2000+"

Anlage B, 50.01.24





Rohr = pipe
Zylinderkopfniet = round head rivet
Kopfstück = head piece 'Variant K2000+'
Keil = wedge 'Variant K2000+'

①	Rohr		(vd. Appendix B, ...)
②	Zylinderkopfniet		(siehe Anlage B, 50.01.05)
③	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.06)
④	Keil	"Variante K2000+"	

Dim. [m] Abm. [m]	Wgt [kg] Gew. [kg]
2,07 x 2,00	8,9
2,57 x 2,00	9,5
2,07 x 1,50	8,2
2,57 x 1,50	9,5

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

Diagonale "Variante K2000+" **Diagonal 'Variant K2000+'**

Anlage B, 50.01.25

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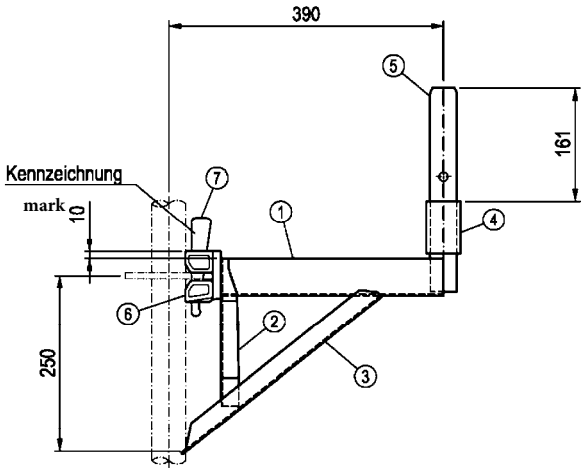

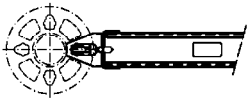

U-Profil = U-section
Stütz-U = support-U
Streb-U = brace-U
Rohr = pipe
Rohrverbinder = spigot
Kopfstück = head piece
Keil = wedge

				Wgt [kg]
1	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04) (vd. Appendix B, ...	Gew. [kg] 3,9
2	Stütz-U			
3	Streb-U			
4	Rohr			
5	Rohrverbinder			
6	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.04)	
7	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)	

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

U-Konsole 0,39 m "Variante K2000+" **U-board bracket 0.39 m**

Anlage B, 50.01.26

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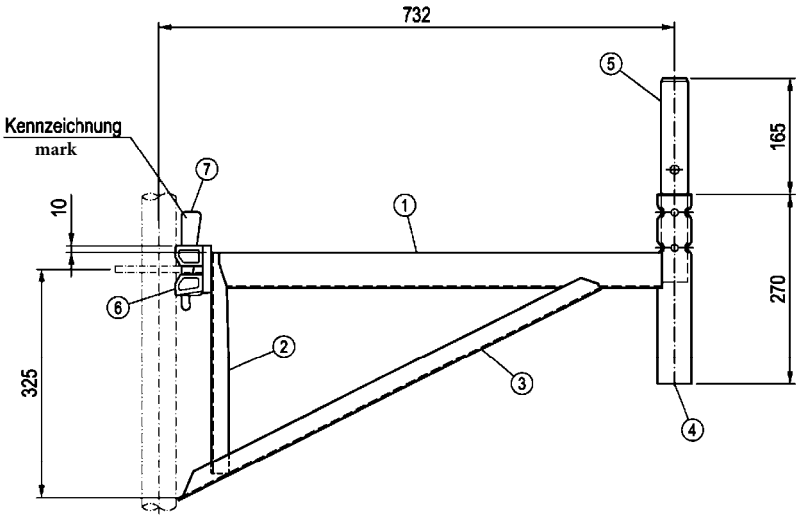

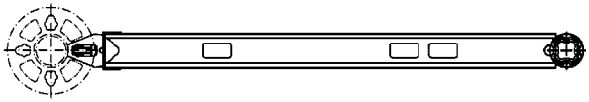

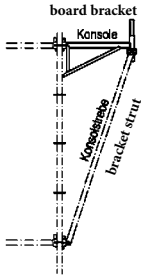

U-Profil = U-section
Stütz-U = support-U
Streb-U = brace-U
Rohr = pipe
Rohrverbinder = spigot
Kopfstück = head piece
Keil = wedge

①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04) (vd. Appendix B, ...)
②	Stütz-U		
③	Streb-U		
④	Rohr		
⑤	Rohrverbinder		
⑥	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.04)
⑦	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Wgt [kg]

Gew. [kg]
6,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

U-Konsole 0,73 m "Variante K2000+" U-board bracket 0.73 m

Anlage B, 50.01.27

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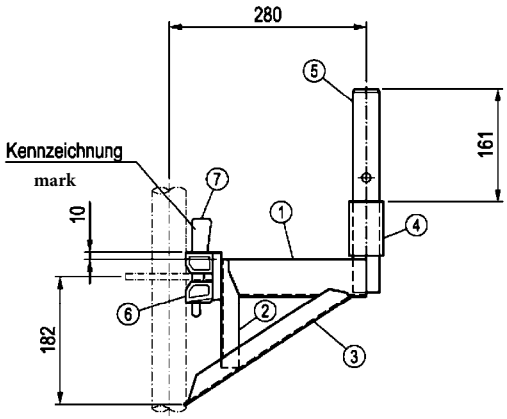

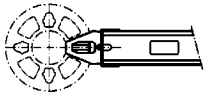

U-Profil = U-section
Stütz-U = support-U
Streb-U = brace-U
Rohr = pipe
Rohrverbinder = spigot
Kopfstück = head piece
Keil = wedge

1	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04)	(vd. Appendix B,
2	Stütz-U			
3	Streb-U			
4	Rohr			
5	Rohrverbinder			
6	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.04)	
7	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)	

Wgt [kg]
Gew. [kg]
3,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

U-Konsole 0,28 m "Variante K2000+" **U-board bracket 0.28 m**

Anlage B, 50.01.28

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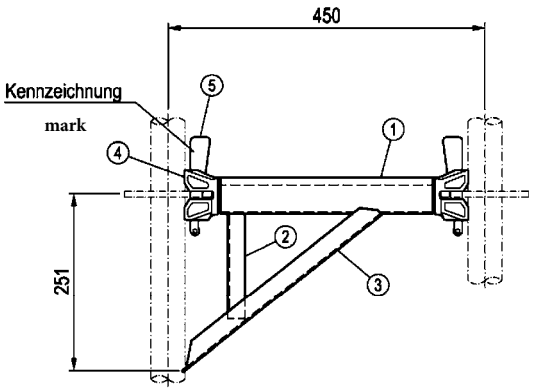

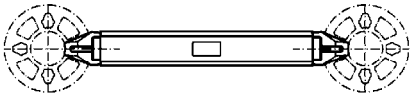

		U-Profil = U-section Stütz-U = support-U Streb-U = brace-U Kopfstück = head piece Keil = wedge	
①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04) (vd. Appendix B, ...)
②	Stütz-U		
③	Streb-U		
④	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.03)
⑤	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Wgt [kg]
Gew. [kg]
3,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64** **U-board bracket 0.45 m w. 2 wedge heads**

U-Konsole 0,45 m mit 2 Keilköpfen "Variante K2000+"

Anlage B, 50.01.29

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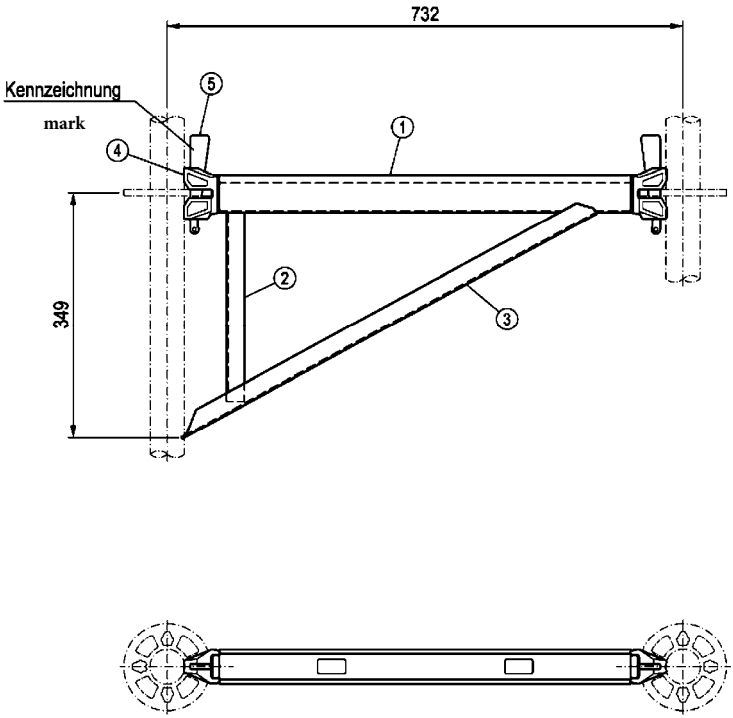

U-Profil = U-section
Stütz-U = support-U
Streb-U = brace-U
Kopfstück = head piece
Keil = wedge

①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04)
②	Stütz-U		(vd. Appendix B, ...)
③	Streb-U		
④	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.03)
⑤	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Wgt [kg]
Gew. [kg]
5,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
U-board bracket 0.73 m w. 2 wedge heads
U-Konsole 0,73 m mit 2 Keilköpfen "Variante K2000+"

Anlage B, 50.01.30

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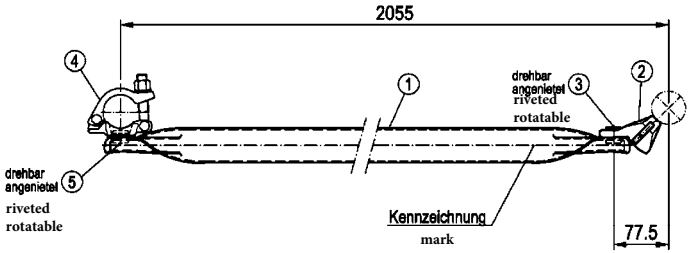

① Rohr
② Kopfstück + Keil "Variante K2000+" (siehe Anlage B, 50.01.05 und 50.01.06)
③ Zylinderkopfniet
④ Halbkupplung mit Schraubverschluss gem. Zulassung Z-8.331-882
⑤ Zylinderkopfniet

Rohr = pipe
Kopfstück + Keil = head piece + wedge (vd. Appendix B, ...
U-Profil = U-section
Zylinderkopfniet = round head rivet
Halbkupplung mit Schraubverschluss = semi-coupling w. screw cap acc. to approval Z-8.331-882
Zylinderkopfniet = round head rivet

Wgt [kg]
Gew. [kg]
8,8

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64

Konsolstrebe 2,05 m "Variante K2000+" Bracket strut 2.05 m

Anlage B, 50.01.31

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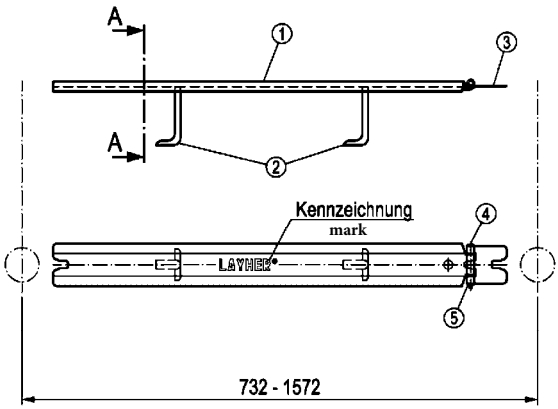
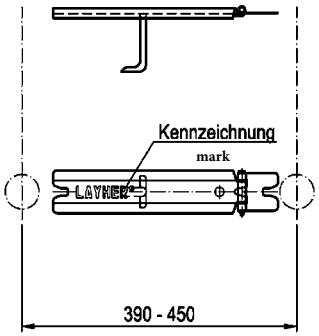
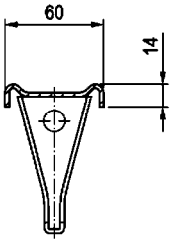




Schnitt A-A Section A-A



①	Schiene	Schiene = rail
②	Sicherungshaken	Sicherungshaken = safety hook
③	Sicherungsklappe	Sicherungsklappe = safety flap
④	Sechskantschraube	Sechskantschraube = hexagon screw
⑤	Sicherungsmutter	Sicherungsmutter = prevailing torque type locknut

Dim. [m] / Wgt [kg]

Abm. [m]	Gew. [kg]
0,39	0,6
0,45	0,7
0,73	1,3
1,09	0,8
1,40	2,5
1,57	3,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

U-Boden-Sicherung 0,39 m - 1,57 m **U-floor locking device 0.39 --1.57 m**

Anlage B, 50.01.32

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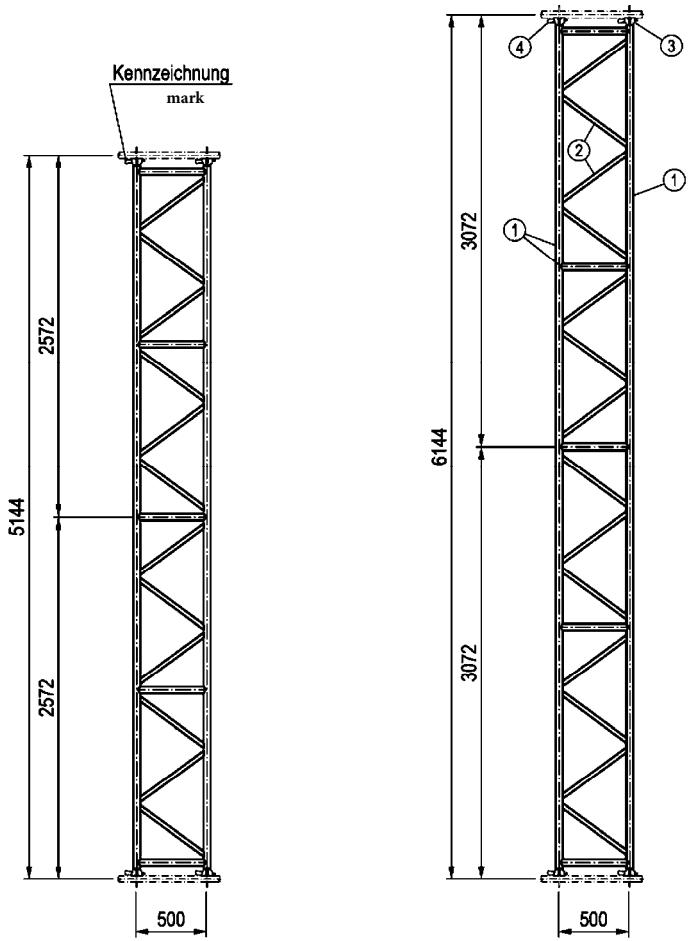

Rohr = pipe
Rechteckrohr = rectangular pipe
Kopfstück = head piece
Keil = wedge

① Rohr
② Rechteckrohr
③ Kopfstück
④ Keil

(siehe Anlage B, 50.01.02) (vd. Appx B, ...
(siehe Anlage B, 50.01.06)

Dim. [m] Wgt [kg]

Abm. [m]	Gew. [kg]
5,14	55,2
6,14	64,2

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
O-lattice girder, 14 m; 6.14 m x 0.50 m
O-Gitterträger 5,14 m ; 6,14 m x 0,50 m "Variante K2000+"

Anlage B, 50.01.33

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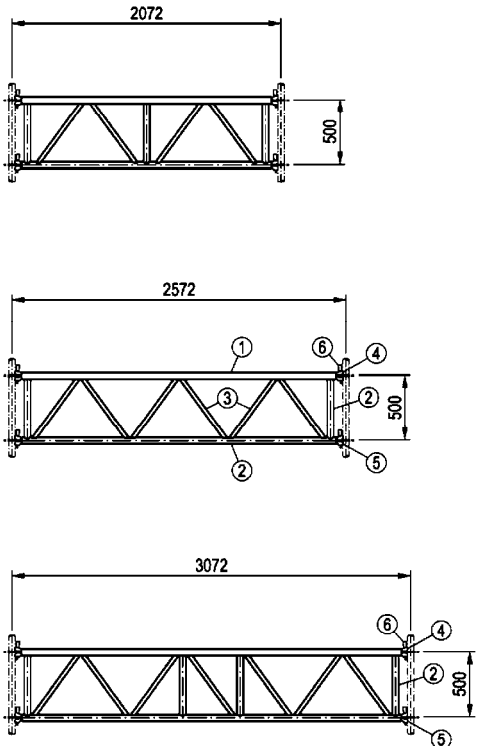

U-Profil = U-section
Rohr = pipe
Rechteckrohr = rectangular pipe
Kopfstück (U-Profil) = head piece (U-section
Kopfstück (Rohr) = head piece (pipe)
Keil = wedge

				Dim. [m]	Wgt [kg]
①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04) vd. Appendix B, ...)	Abm. [m]	Gew. [kg]
②	Rohr			2,07	23,4
③	Rechteckrohr			2,57	29,5
④	Kopfstück (U-Profil)	"Variante K2000+"	(siehe Anlage B, 50.01.03)	3,07	35,6
⑤	Kopfstück (Rohr)	"Variante K2000+"	(siehe Anlage B, 50.01.02)		
⑥	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)		

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
U-lattice girder 2.07 m - 3.07 m x 0.50 m
U-Gitterträger 2,07 m - 3,07 m x 0,50 m "Variante K2000+"

Anlage B, 50.01.34

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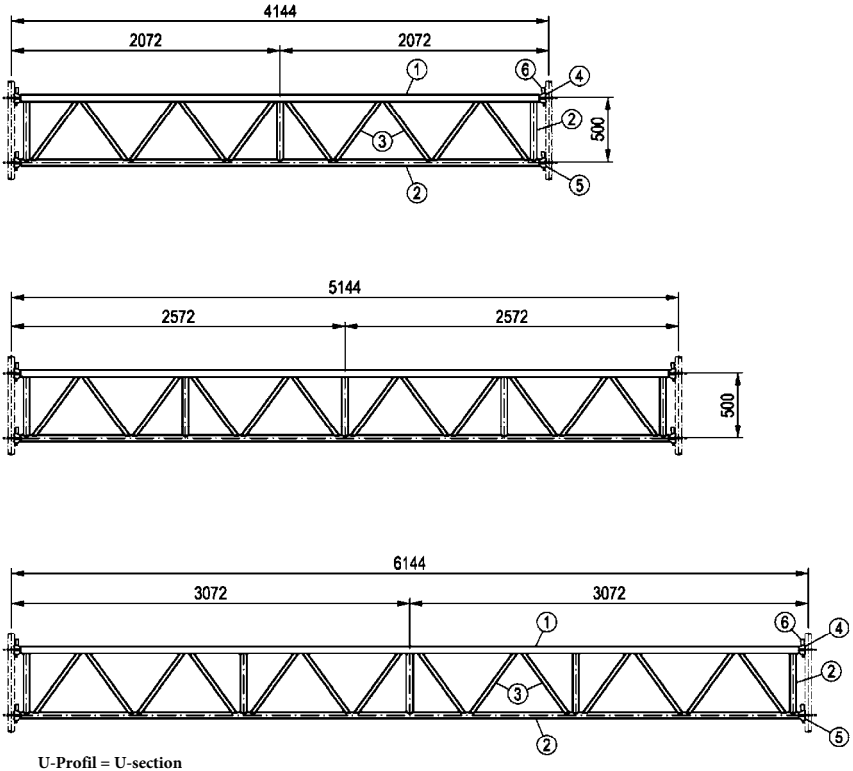

U-Profil = U-section
Rohr = pipe
Rechteckrohr = rectangular pipe
Kopfstück (U-Profil) = head piece (U-section
Kopfstück (Rohr) = head piece (pipe)
Keil = wedge

①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04)
②	Rohr		(vd. Appendix B, ...)
③	Rechteckrohr		
④	Kopfstück (U-Profil)	"Variante K2000+"	(siehe Anlage B, 50.01.03)
⑤	Kopfstück (Rohr)	"Variante K2000+"	(siehe Anlage B, 50.01.02)
⑥	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Dim. [m] Abm. [m]	Wgt [kg] Gew. [kg]
4,14	44,0
5,14	54,1
6,14	62,5

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
U-lattice girder, 14 m - 6,14 m x 0.50 m
U-Gitterträger 4,14 m - 6,14 m x 0,50 m "Variante K2000+"

Anlage B, 50.01.35

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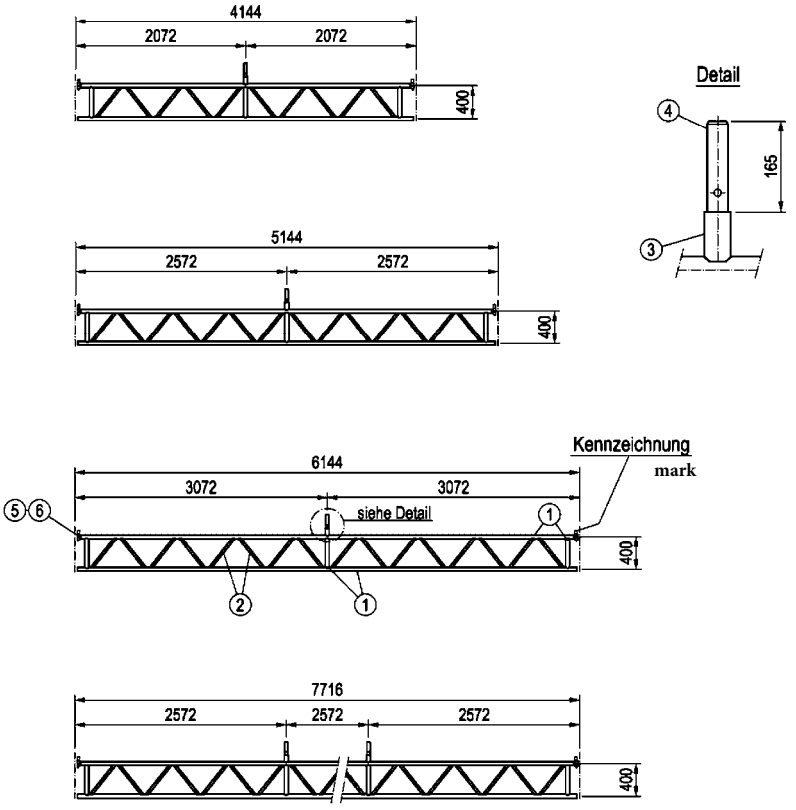

①	Rohr	Rohr = pipe Rechteckrohr = rectangular pipe	
②	Rechteckrohr	Rohr = pipe Rohrverbinder = spigot	
③	Rohr	Kopfstück = head piece	
④	Rohrverbinder	Keil = wedge	
⑤	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.02) (vd. Appendix B, ...
⑥	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
4,14	41,6
5,14	51,5
6,14	60,0
7,71	77,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
O-lattice girder 4.14 m - 7.71 m x 0.40 m
O-Gitterträger 4,14 m - 7,71 m x 0,40 m "Variante K2000+"

Anlage B, 50.01.36

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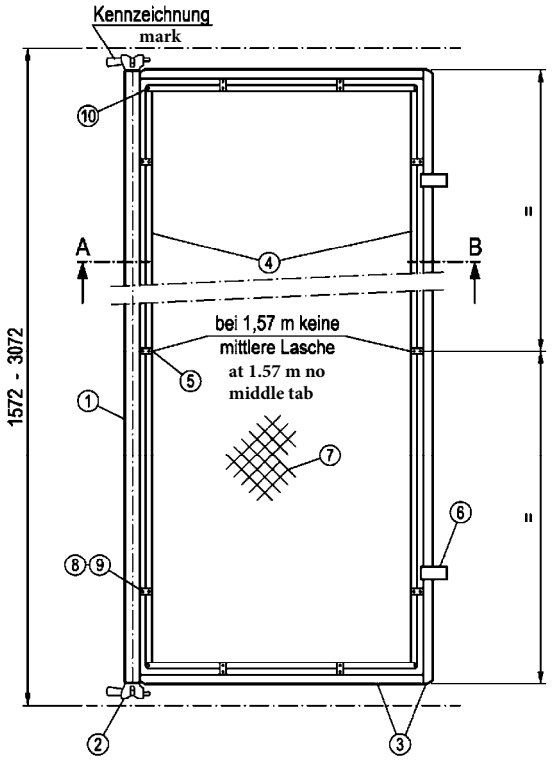
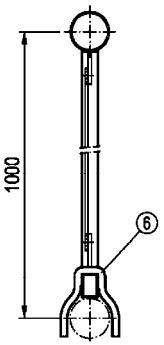


Schnitt A-B
Section A-B



①	Rohr	Rohr = pipe	
②	Kopfstück + Keil "Variante K2000+"	Kopfstück + Keil = head piece + wedge	(siehe Anlage B, 50.01.02 und 50.01.06) (vd. Appendix B, ...)
③	Rechteckrohr	Rechteckrohr = rectangular pipe	
④	Schutzgitterstab	Schutzgitterstab = Safety guard bar	
⑤	Haltelasche	Haltelasche = holding tab	
⑥	Haltebügel	Haltebügel = retaining bracket	
⑦	Drahtgeflecht	Drahtgeflecht = square wire mesh netting	
⑧	Sechskantschraube	Sechskantschraube = hexagon screw	
⑨	Sechskantmutter	Sechskantmutter = hexagon nut	
⑩	Edelstahl-Blindniet	Edelstagl-Blindniet = stainless steel blind rivet	

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
1,57	16,5
2,07	19,5
2,57	23,0
3,07	26,3

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Side protection safety guard 1.57 m - 3.07 m
Seitenschutzgitter 1,57 m - 3,07 m "Variante K2000+"

Anlage B, 50.01.37

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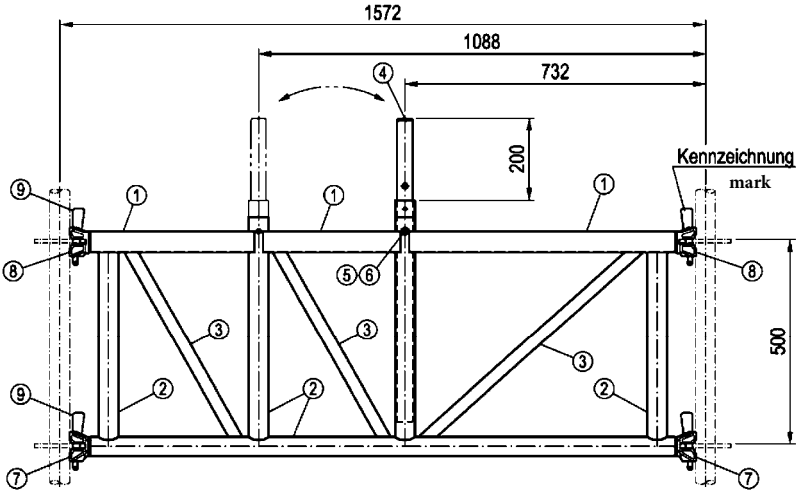

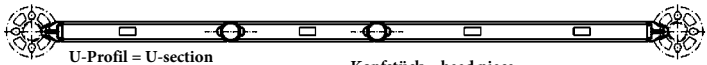

U-Profil = U-section
Rohr = pipe
Rechteckrohr = rectangular pipe
Sechskantschraube = hexagon screw
Sechkantmutter = hexagon nut

Kopfstück = head piece
Kopfstück = head piece
Keil = wedge

①	U-Profil		(siehe Anlage B, 50.04.03 und 50.04.04) (vd. Appendix B, ...)
②	Rohr		
③	Rechteckrohr		
④	Rohrverbinder		
⑤	Sechskantschraube		
⑥	Sechskantmutter		
⑦	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.02)
⑧	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.03)
⑨	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)

Wgt [kg]
Gew. [kg]
21,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
U-passage beam 1.57 m
U-Durchgangsträger 1,57 m "Variante K2000+"

Anlage B, 50.01.38

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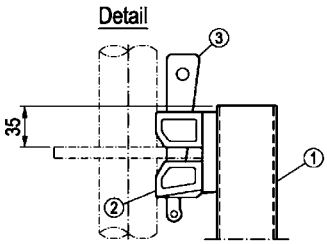

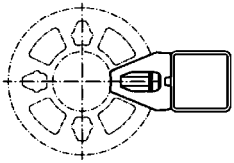

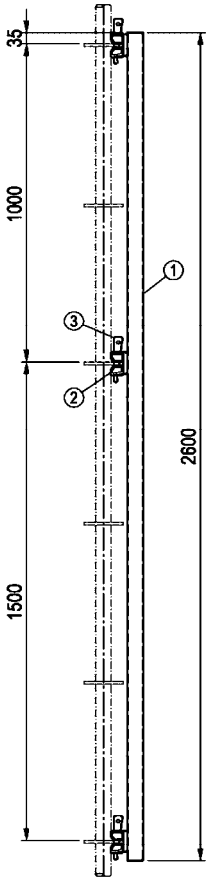

					Wgt [kg]
Square tube	①	Quadratrohr	50 x 2,5	EN 10219 - S235JRH	Gew. [kg]
Head piece	②	Kopfstück	"Variante K2000+"	(siehe Anlage B, 50.01.04) (vd. Appendix B, ...	13,4
Wedge	③	Keil	"Variante K2000+"	(siehe Anlage B, 50.01.06)	

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**

Reinforcement post 2.60 m
Verstärkungspfosten 2,60 m "Variante K2000+"

Anlage B, 50.01.39

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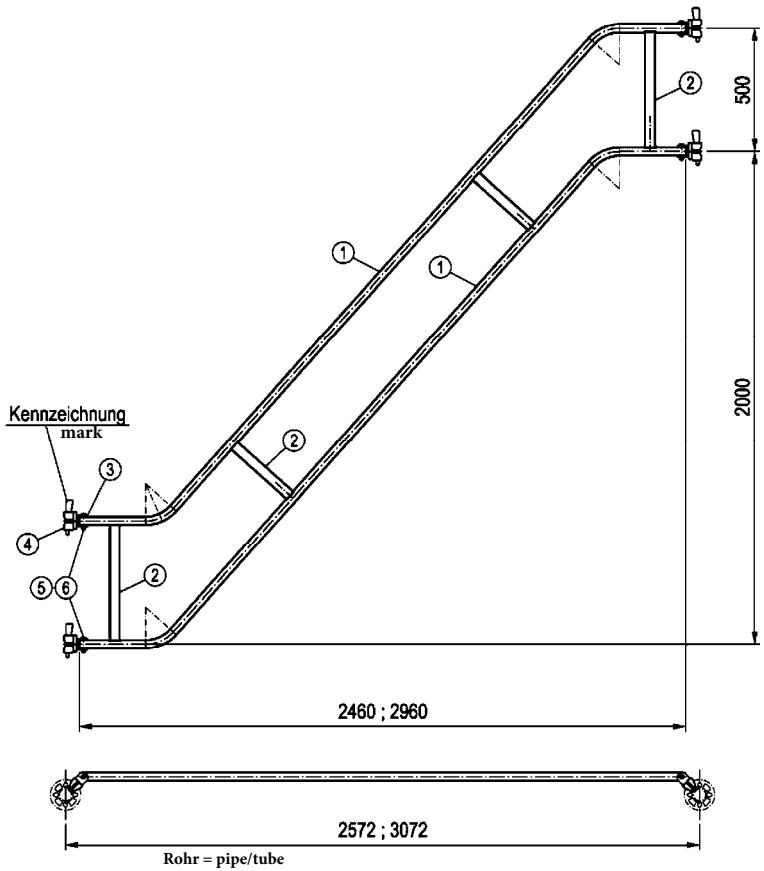

Rohr = pipe/tube
Rechteckrohr =
Lasche = tab
Kopfstück + Keil = head piece + wedge
Sechskantschraube = hexagon screw
Sicherungsmutter = prevailing torque type nut

① Rohr
② Rechteckrohr
③ Lasche
④ Kopfstück + Keil "Variante K2000+" (siehe Anlage B, 50.01.04 und 50.01.06)
⑤ Sechskantschraube (vd. Appendix B, ...)
⑥ Sicherungsmutter

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,57	18,0
3,07	21,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
KK Handrail 2.57 m; 3.07 m
KK Treppengeländer 2,57 m ; 3,07 m "Variante K2000+"

Anlage B, 50.01.40

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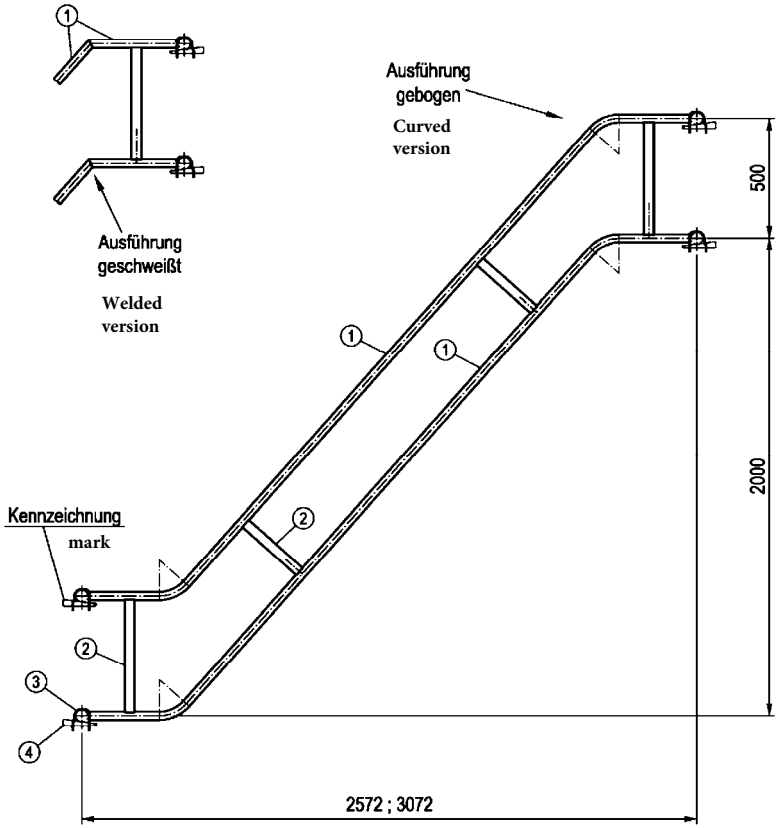

Rohr = pipe/tube
Rechteckrohr = square tube
Sicherungs-U = safety-U
Keil = wedge

①	Rohr	Ø 33,7 x 2,25	Stahl Steel	
②	Rechteckrohr	40 x 20 x 2	Stahl	
③	Sicherungs-U		Stahl	
④	Keil "Variante K2000+"		(siehe Anlage B, 50.01.06) (vd. Appendix B, ...	

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
2,57	18,1
3,07	20,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Handrail 2.57 m; 3.07 m
Treppengeländer 2,57 m ; 3,07 m "Variante K2000+"

Anlage B, 50.01.41

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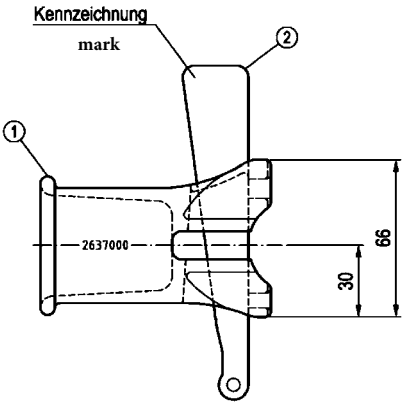
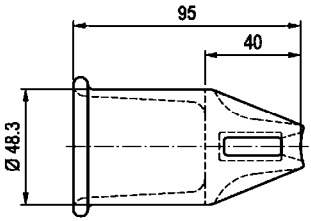




Head piece ① Kopfstück
Wedge ② Keil "Variante K2000+"

EN 1562-GJMW-450-7
(siehe Anlage B, 50.01.06)
vd. Appendix B, ...

Wgt [kg]

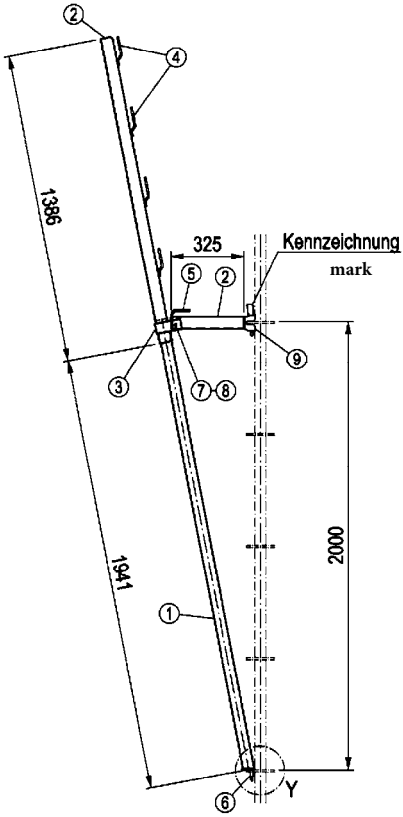
Gew. [kg]
0,7

MJ COMBI DUO

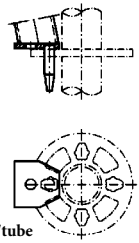
Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Handrail holder
Treppengeländer Halter "Variante K2000+"

Anlage B, 50.01.42

Deutsches Institut für Bautechnik DIBt



Detail Y



Rohr = pipe/tube
U-Profil = U-section
U-Bügel = U-bracket
Lasche = tab
Winkel = angle bracket
Platte mit Bolzen = plate with bolt(s)
Sechskantschraube = hexagon screw
Sicherungsmutter = prevailing torque type nut
Kopfstück = head piece

① Rohr
② U-Profil
③ U-Bügel
④ Lasche
⑤ Winkel
⑥ Platte mit Bolzen
⑦ Sechskantschraube
⑧ Sicherungsmutter
⑨ Kopfstück + Keil "Variante K2000+"

(siehe Anlage B, 50.04.03 und 50.04.04)
(vd. Appendix B, ...)

(siehe Anlage B, 50.01.03 und 50.01.06)

Wgt [kg]
Gew. [kg]
16,8

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
U-canopy support bracket T7
U-Schutzdachkonsole T7 "Variante K2000+"

Anlage B, 50.01.43

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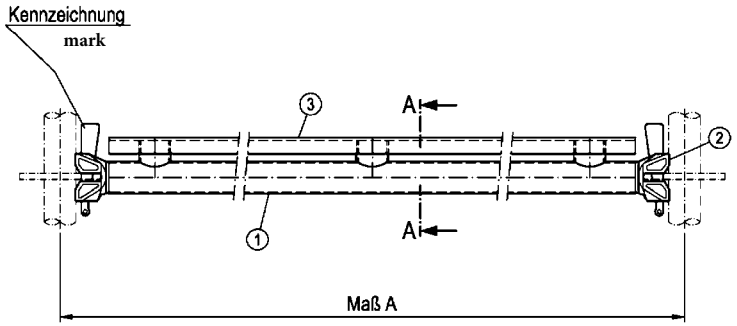
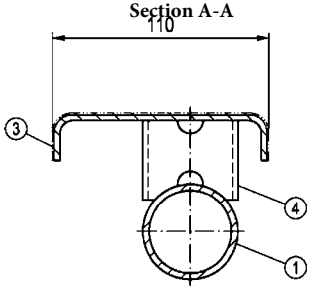


Meas. A [mm] Maß A [mm]	Use up to load class Verwendung bis Lastklasse	perm p* [kN/m²] zul p*) [kN/m²]
732	6	10,0
1088		
1286		
1400		
1572		
2072		
2572	5	7,5
3072	4	5,0

*) auf der gesamten Blechbreite wirkend

Schnitt A-A
Section A-A



① Rohr
② Kopfstück + Keil "Variante K2000+"
③ Tränenblech
④ Distanzrohr

Rohr = pipe/tube
Kopfstück + Keil = head piece + wedge
Tränenblech = bulb plate
Distanzrohr = spacer tube

(siehe Anlage B, 50.01.02 und 50.01.06)

(vd. Appendix B, ...)

Dim. [m] Abm. [m]	Wgt [kg] Gew. [kg]
0,73	5,7
1,09	8,3
1,29	9,9
1,40	10,0
1,57	11,9
2,07	15,2
2,57	18,6

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
U-gap ledger 0.73 m - 3.07 m
U-Spaltriegel 0,73 m - 3,07 m "Variante K2000+"

Anlage B, 50.01.44

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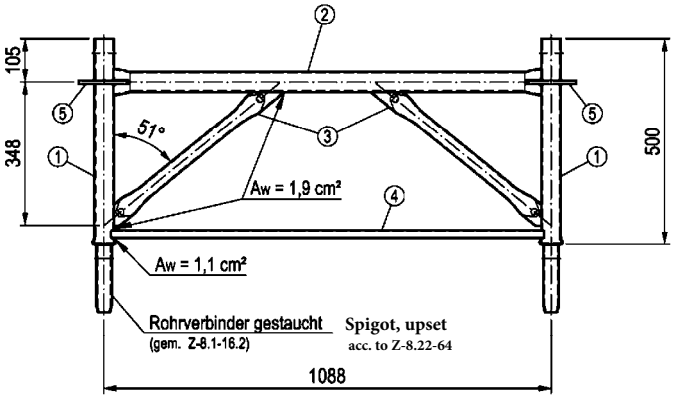
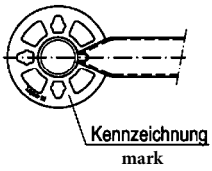




① Rohr
② Rohr
③ Rohr
④ Rechteckrohr
⑤ Lochscheibe "Variante K2000+"

Rohr = pipe/tube
Rechteckrohr = square tube
Lochscheibe = perforated disc

(siehe Anlage B, 50.01.01)

(vd. Appendix B, ...)

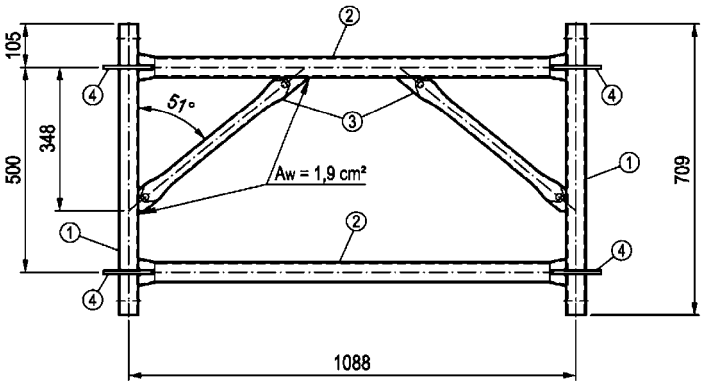
Wgt [kg]
Gew. [kg]
13,0

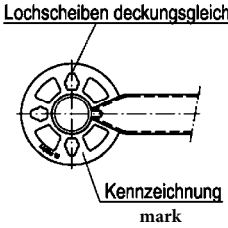
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
TG-60 Frame 0.50 m x 1.09 m
TG-60 Rahmen 0,50 m x 1,09 m "Variante K2000+"

Anlage B, 50.01.45

Deutsches Institut für Bautechnik DIBt





① Rohr
② Rohr
③ Rohr
④ Lochscheibe "Variante K2000+"

Rohr = pipe/tube
Lochscheibe = perforated disc

(siehe Anlage B, 50.01.01)
(vd. Appendix B, ...)

Wgt [kg]
Gew. [kg]
15,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
TG-60 Frame 0.71 m x 1.09 m
TG-60 Rahmen 0,71 m x 1,09 m "Variante K2000+"

Anlage B, 50.01.46

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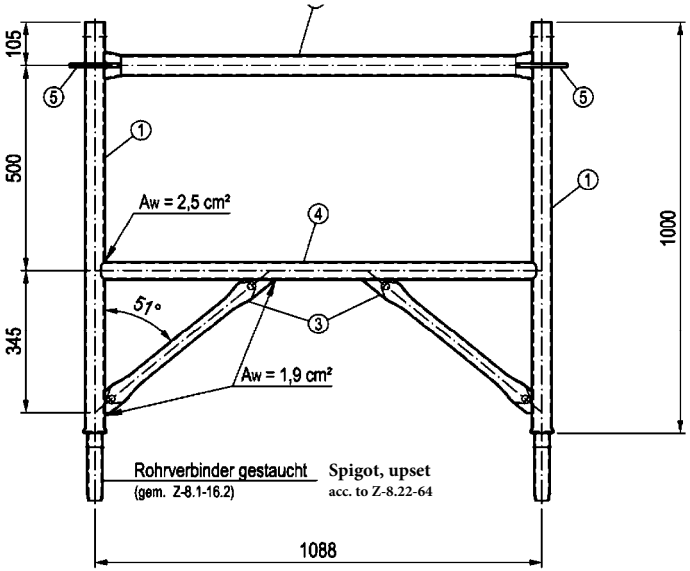
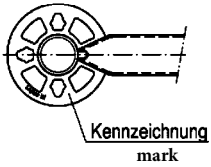




① Rohr
② Rohr Rohr = pipe/tube
③ Rohr Lochscheibe = perforated disc
④ Rohr
⑤ Lochscheibe "Variante K2000+" (siehe Anlage B, 50.01.01) (vd. Appendix B, ...)

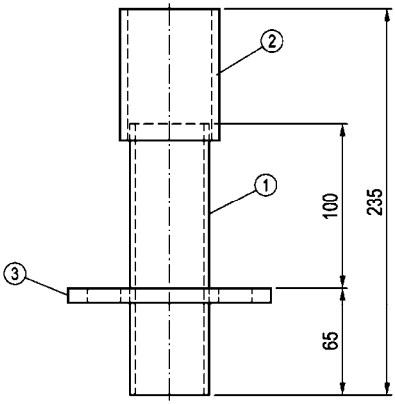
Wgt [kg]
Gew. [kg]
17,7

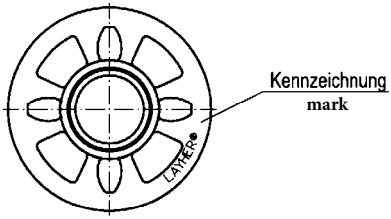
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
TG-60 Frame 1.00 m x 1.09 m
TG-60 Rahmen 1,00 m x 1,09 m "Variante K2000+"

Anlage B, 50.01.47

Deutsches Institut für Bautechnik DIBt





① Rohr **Rohr = pipe/tube**
② Rohr **Lochscheibe = perforated disc**
③ Lochscheibe "Variante II"

(siehe Anlage B, 50.01.07 und 50.01.08)
(vd. Appendix B, ...)

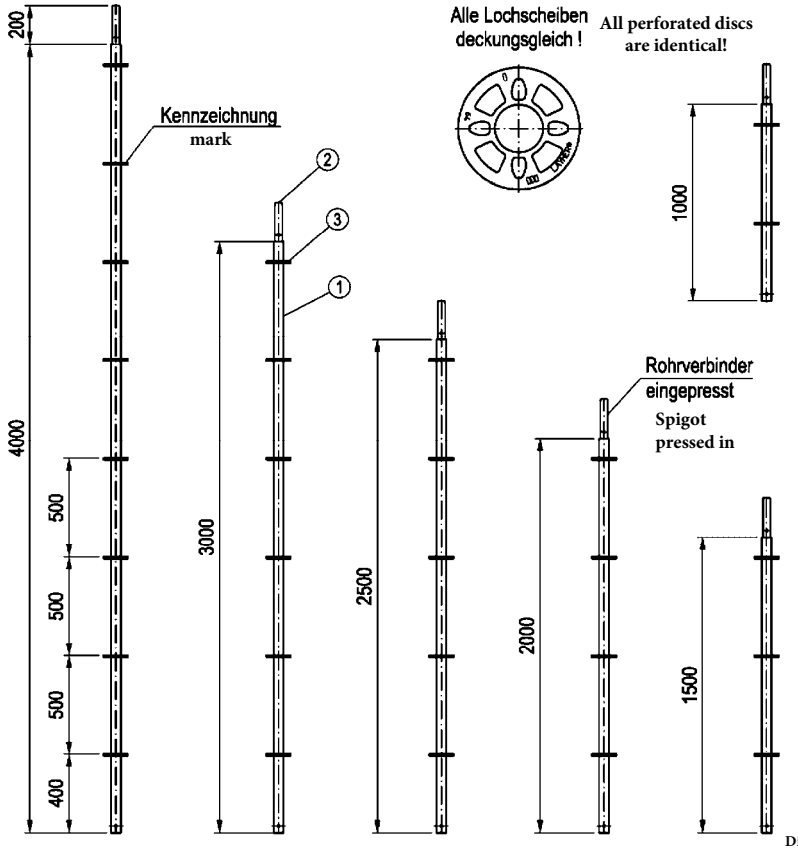
Wgt [kg]
Gew. [kg]
1,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Lead-off adapter
Anfangsstück "Variante II"

Anlage B, 50.01.48

Deutsches Institut für Bautechnik DIBt



Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
0,50	3,2
1,00	5,5
1,50	7,8
2,00	10,1
2,50	12,4
3,00	14,6
4,00	19,2

Pipe/tube ① Rohr
Spigot ② Rohrverbinder
Perforated disc ③ Lochscheibe "Variante II"

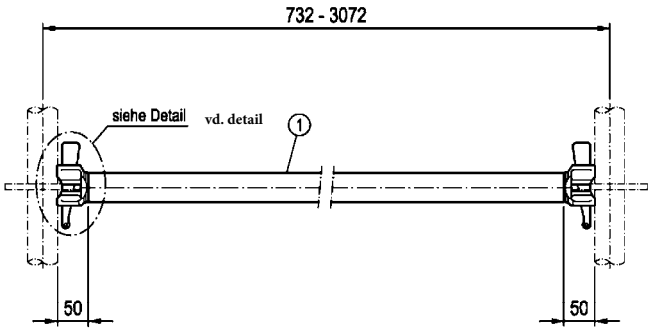
(siehe Anlage B, 50.01.07 und 50.01.08)
(vd. Appendix B, ...)

MJ COMBI DUO

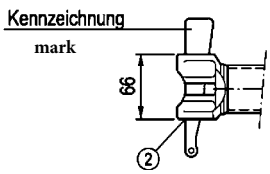
Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
Post with spigot
Stiel mit Rohrverbinder "Variante II"

Anlage B, 50.01.49

Deutsches Institut für Bautechnik DIBt



Detail



Rohr = pipe/tube
Kopfstück + Keil = head piece + wedge

1. Rohr
2. Kopfstück + Keil "Variante II"

(siehe Anlage B, 50.01.09, 50.01.10, 50.01.16)
(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

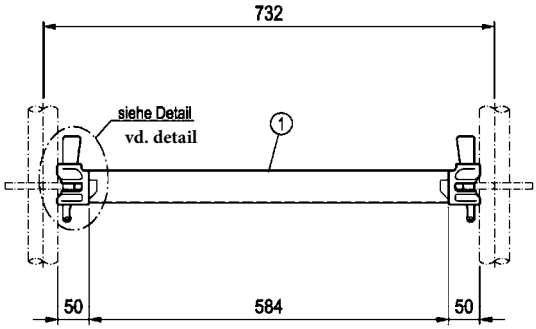
Abm. [m]	Gew. [kg]
0,73	3,2
1,09	4,4
1,57	6,1
2,07	7,9
2,57	9,6
3,07	11,5

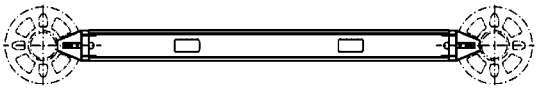
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
O-ledger 0.73 m - 3.07 m
O-Riegel 0,73 m - 3,07 m "Variante II"

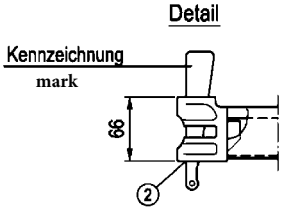
Anlage B, 50.01.50

Deutsches Institut für Bautechnik DIBt





Detail



U-Profil = U-section
Kopfstück + Keil = head piece + wedge

① U-Profil
② Kopfstück + Keil "Variante II" (siehe Anlage B, 50.01.11, 50.01.12, 50.01.14, 50.01.16)
(vd. Appendix B, ...)

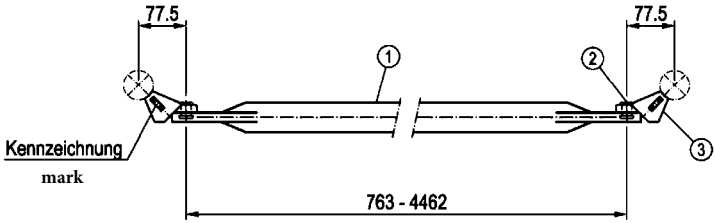
Wgt [kg]
Gew. [kg]
3,1

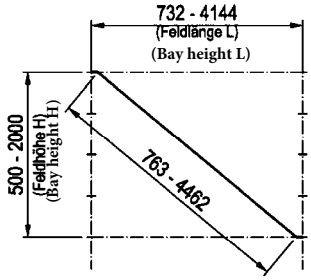
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
U-ledger 0.73 m
U-Riegel 0,73 m "Variante II"

Anlage B, 50.01.51

Deutsches Institut für Bautechnik DIBt





Rohr = pipe/tube
Zylinderkopfniet = round head rivet
Kopfstück + Keil = head piece + wedge

1. Rohr
2. Zylinderkopfniet
3. Kopfstück + Keil "Variante II"

(siehe Anlage B, 50.01.15 und 50.01.16)
(vd. Appendix B, ...)

Dim. [m] / Wgt [kg]

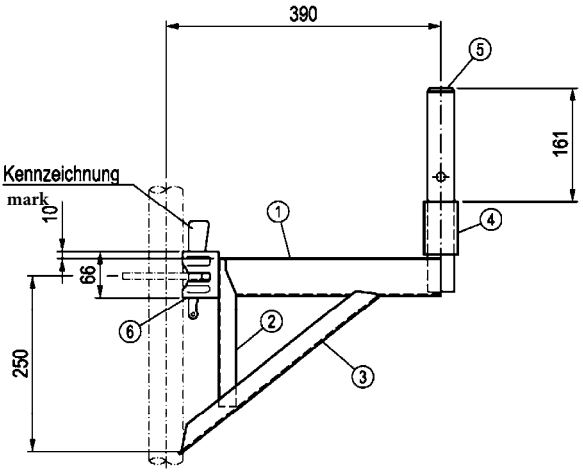
Abm. [m]	Gew. [kg]
2,07 x 2,00	8,9
2,57 x 2,00	9,5
2,07 x 1,50	8,2
2,57 x 1,50	9,5

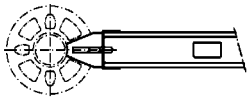
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Diagonal
Diagonale "Variante II"

Anlage B, 50.01.52

Deutsches Institut für Bautechnik DIBt





U-Profil = U-section
Stütz-U = support-U
Streb-U = strut-U
Rohr = pipe/tube
Rohrverbinder = spigot
Kopfstück + Keil = head piece + wedge

①	U-Profil	(siehe Anlage B, 50.04.04)	
②	Stütz-U	(vd. Appendix B, ...)	
③	Streb-U		
④	Rohr		
⑤	Rohrverbinder		
⑥	Kopfstück + Keil "Variante II"	(siehe Anlage B, 50.01.13, 50.01.14, 50.01.16)	

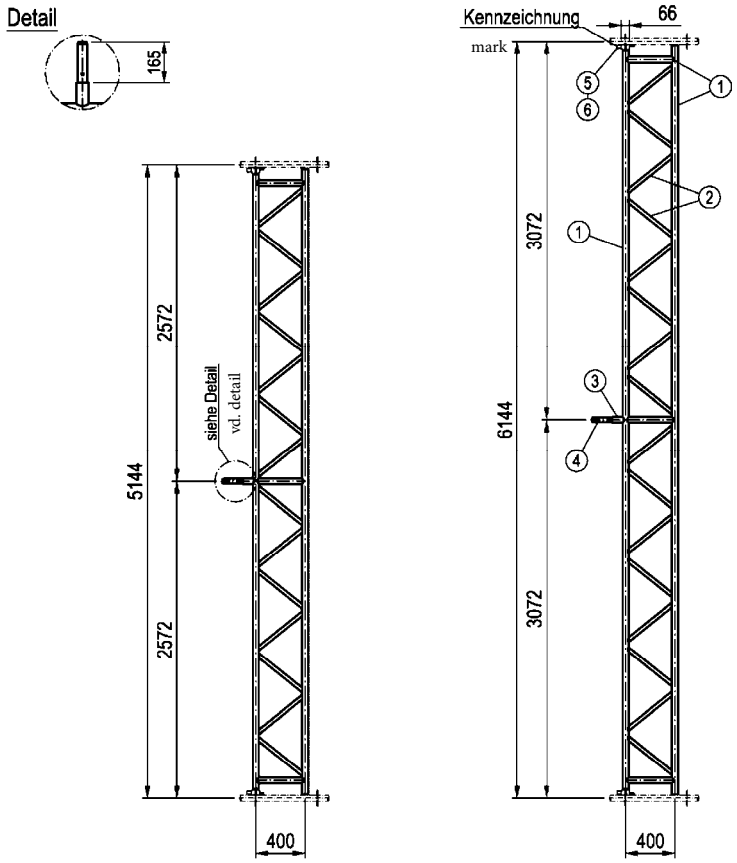
Wgt [kg]
Gew. [kg]
3,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
U-board bracket 0.36 m
U-Konsole 0,36 m "Variante II"

Anlage B, 50.01.53

Deutsches Institut für Bautechnik DIBt



①	Rohr	Pipe
②	Rechteckrohr	Rectangular
③	Rohr	pipe
④	Rohrverbinder	Pipe
⑤	Kopfstück "Variante II"	Spigot
⑥	Keil "Variante II"	Head piece
		Wedge

(siehe Anlage B, 50.01.09 und 50.01.10)
(siehe Anlage B, 50.01.16)
(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

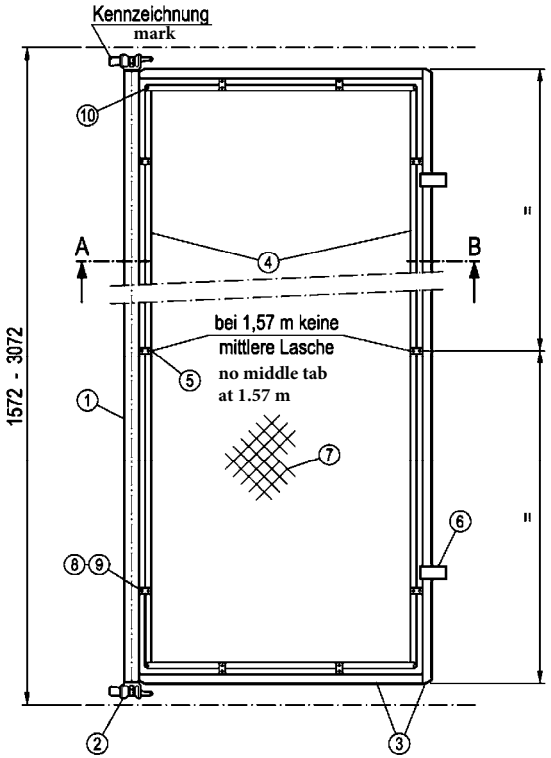
Abm. [m]	Gew. [kg]
5,14	51,5
6,14	60,0

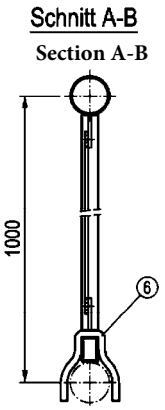
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 **Component acc. to Z-8.22-64**
O-lattice girder 5.14 m; 6.14 m x 0.40 m
O-Gitterträger 5,14 m ; 6,14 m x 0,40 m "Variante II"

Anlage B, 50.01.54

Deutsches Institut für Bautechnik DIBt





① Rohr pipe
② Kopfstück + Keil head pice + wedge "Variante II" (siehe Anlage B, 50.01.09, 50.01.10, 50.01.16)
③ Rechteckrohr rectangular pipe
④ Schutzgitterstab safety guard bar
⑤ Haltelasche holding tab
⑥ Haltebügel holding bracket
⑦ Drahtgeflecht square wire mesh netting
⑧ Sechskantschraube hexagon screw
⑨ Sechskantmutter hexagon nut
⑩ Edelstahl-Blindniet stainless steel blind rivet

Dim. Wgt
[m] [kg]

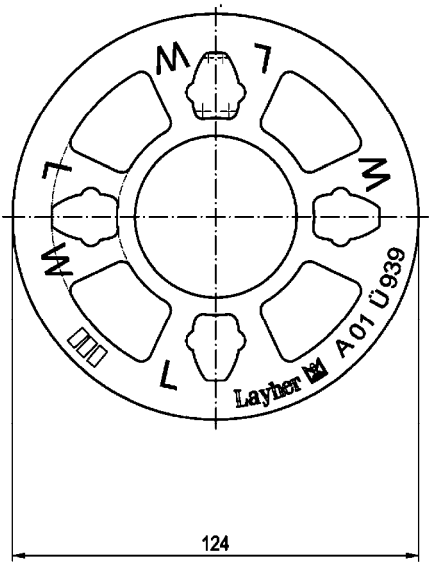
Abm. [m]	Gew. [kg]
1,57	16,5
2,07	19,5
2,57	23,0
3,07	26,3

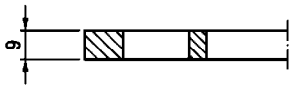
MJ COMBI DUO

Bauteil gemäß Z-8.22-64 Component acc. to Z-8.22-64
Side protection safety guard 1.57 m - 3.07 m
Seitenschutzgitter 1,57 m - 3,07 m "Variante II"

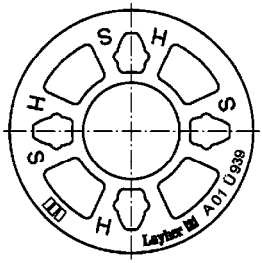
Anlage B, 50.01.55

Deutsches Institut für Bautechnik DIBt





Alternativ mit HS Prägung



Alternatively with HS embossing

Herstellung ab April 2013
Production from April 2013

MJ COMBI DUO

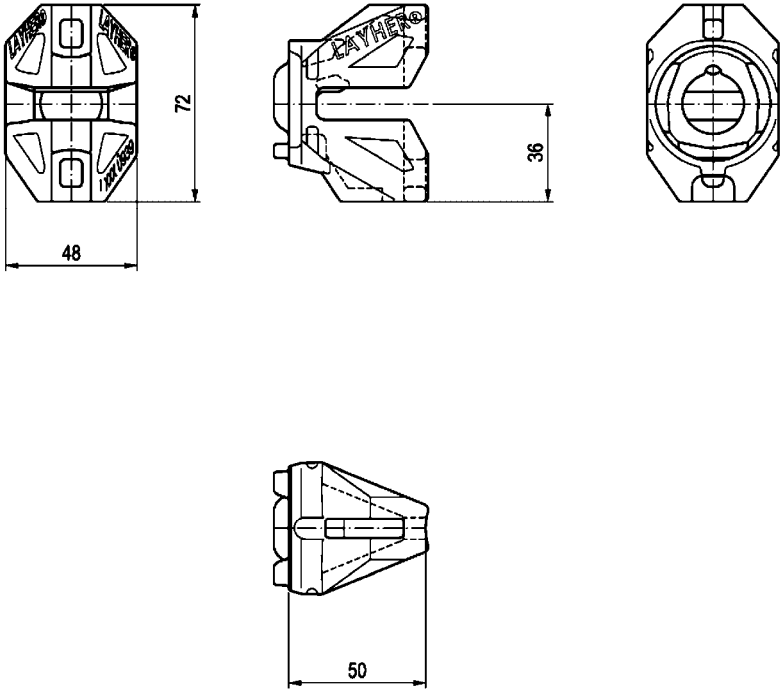
Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Perforated disx, punched Ø 124

Lochscheibe gestanzt Ø 124 "Variante LW"

Anlage B, 50.02.01

Deutsches Institut für Bautechnik DIBt



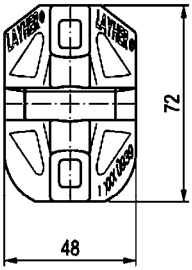
Herstellung ab April 2013
Production from April 2013

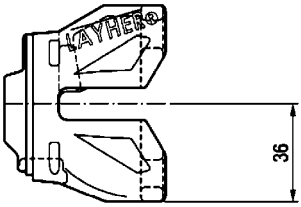
MJ COMBI DUO

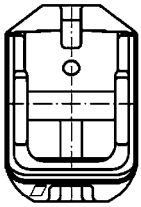
Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Connection head for O-ledger
Anschlusskopf für O-Riegel "Variante LW"

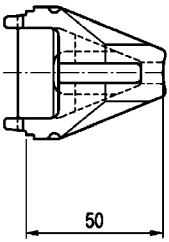
Anlage B, 50.02.02

Deutsches Institut für Bautechnik DIBt









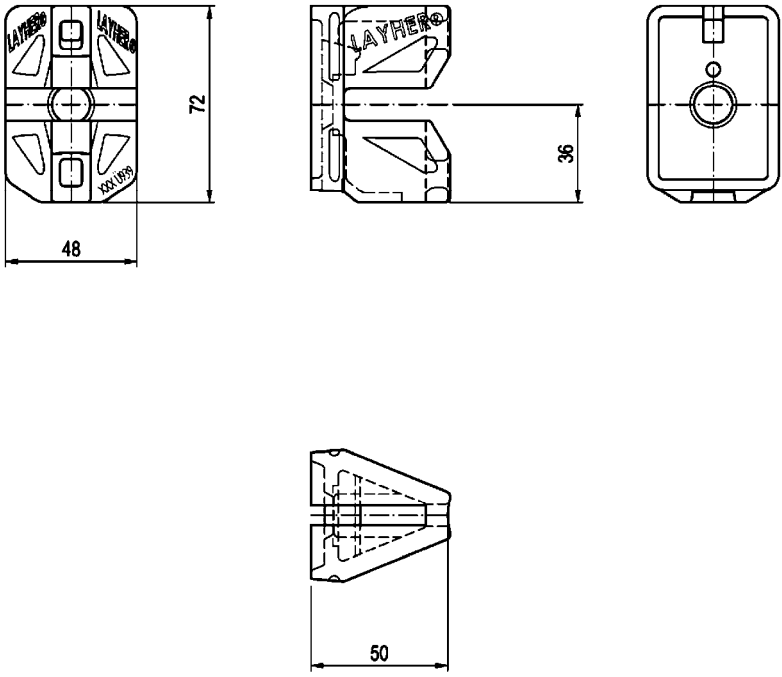
Herstellung ab April 2013
Production from April 2013

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Connection head for O-ledger
Anschlusskopf für U-Riegel "Variante LW"

Anlage B, 50.02.03

Deutsches Institut für Bautechnik DIBt



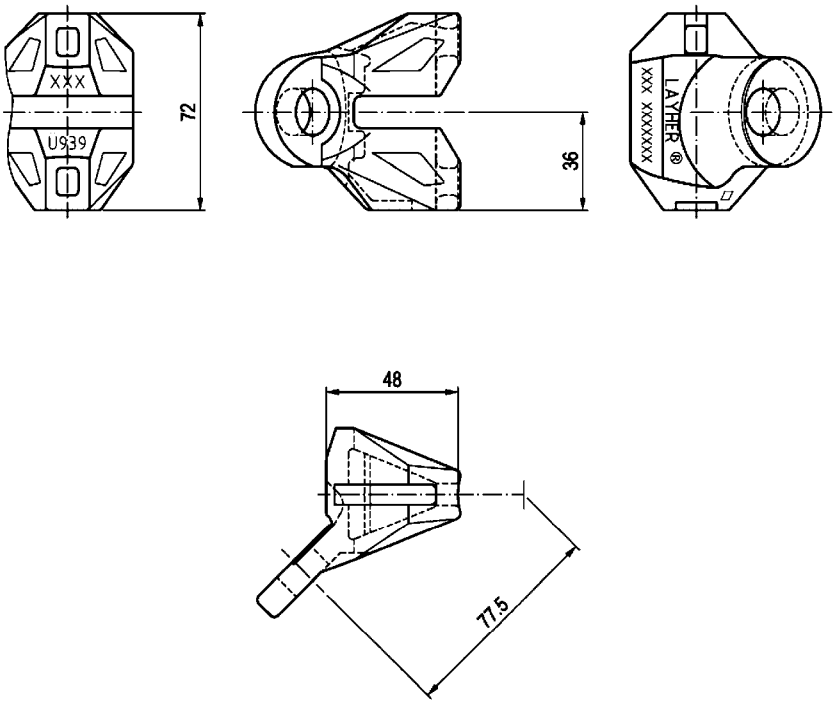
Herstellung ab April 2013
Production from April 2013

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
Connection head for U-board bracket
Anschlusskopf für U-Konsole "Variante LW"

Anlage B, 50.02.04

Deutsches Institut für Bautechnik DIBt



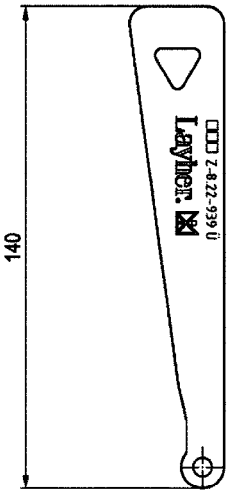
Herstellung ab April 2013
Production from April 2013

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Connection head for diagonal
Anschlusskopf für Diagonale "Variante LW"

Anlage B, 50.02.05

Deutsches Institut für Bautechnik DIBt



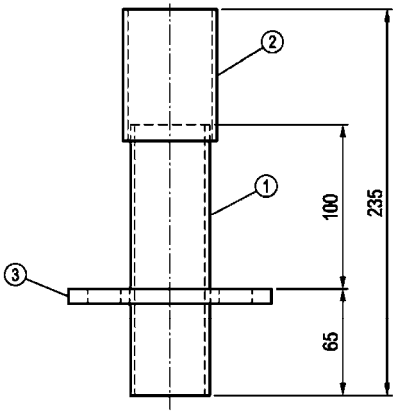
Herstellung ab April 2013
Production from April 2013

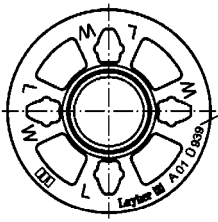
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
Keil "Variante LW"
Wedge

Anlage B, 50.02.06

Deutsches Institut für Bautechnik DIBt





① Rohr = pipe
② Rohr
③ Lochscheibe "Variante LW" = perforated disc (siehe Anlage B, 50.02.01)
(vd. Appendix B, ...)

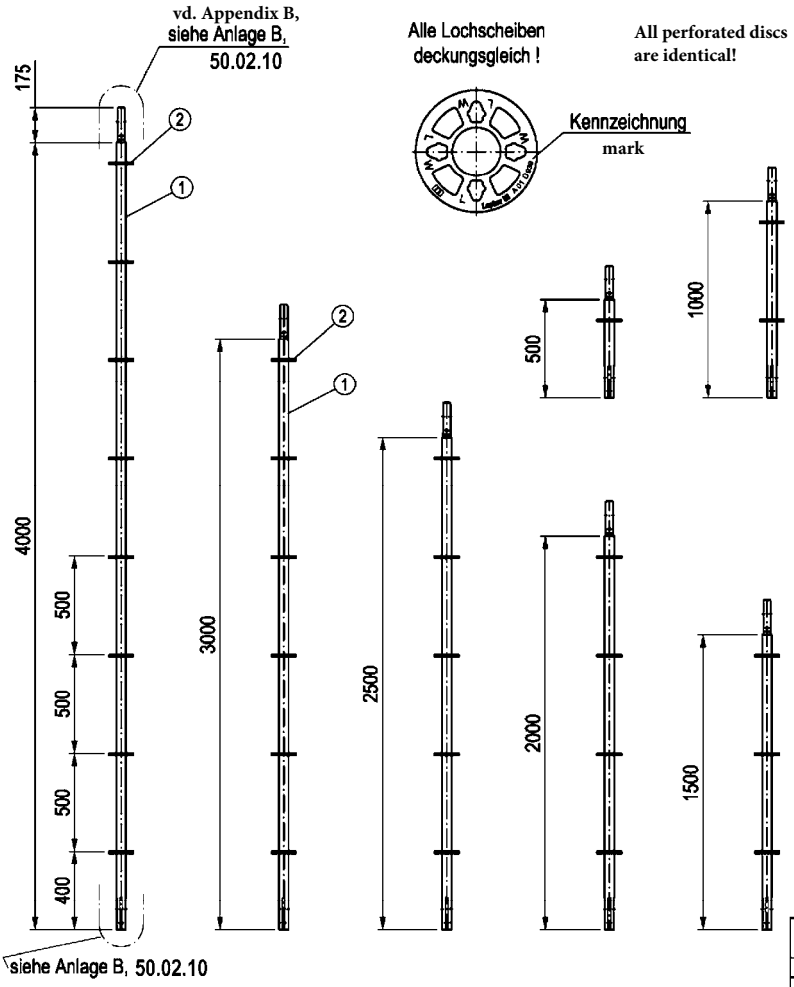
Wgt [kg]
Gew. [kg]
1,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Lead-off adapter LW
Anfangsstück LW

Anlage B, 50.02.07

Deutsches Institut für Bautechnik DIBt



Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,50	2,7
1,00	4,9
1,50	7,1
2,00	9,3
2,50	11,5
3,00	13,7
4,00	18,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Post LW w. moulded spigot
Stiel LW mit angeformtem Rohrverbinder

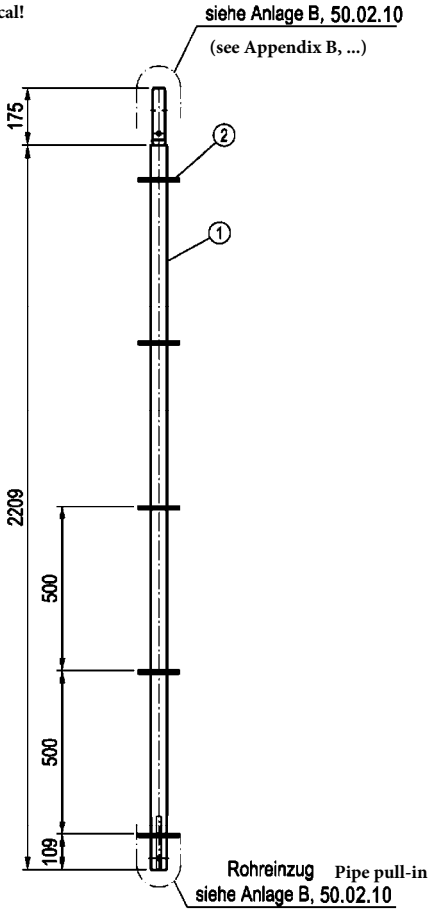
Anlage B, 50.02.08

Deutsches Institut für Bautechnik DIBt

Alle Lochscheiben deckungsgleich !

All perforated discs are identical!

Kennzeichnung
mark



Wgt [kg]

Gew. [kg]
10,0

① Rohr = pipe
② Lochscheibe "Variante LW" Perforated disc

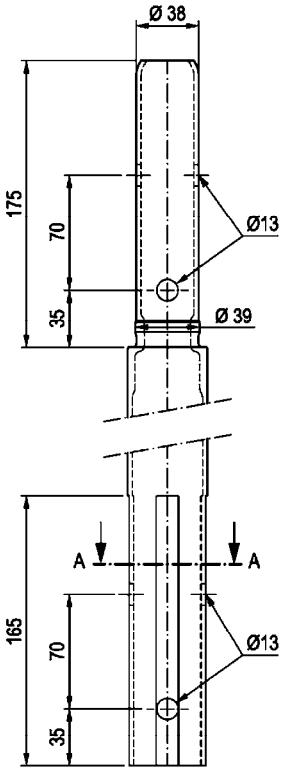
(siehe Anlage B, 50.02.01)

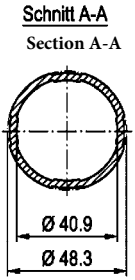
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
Base post LW 2.21 m
Anfangsstiel LW 2,21 m

Anlage B, 50.02.09

Deutsches Institut für Bautechnik DIBt



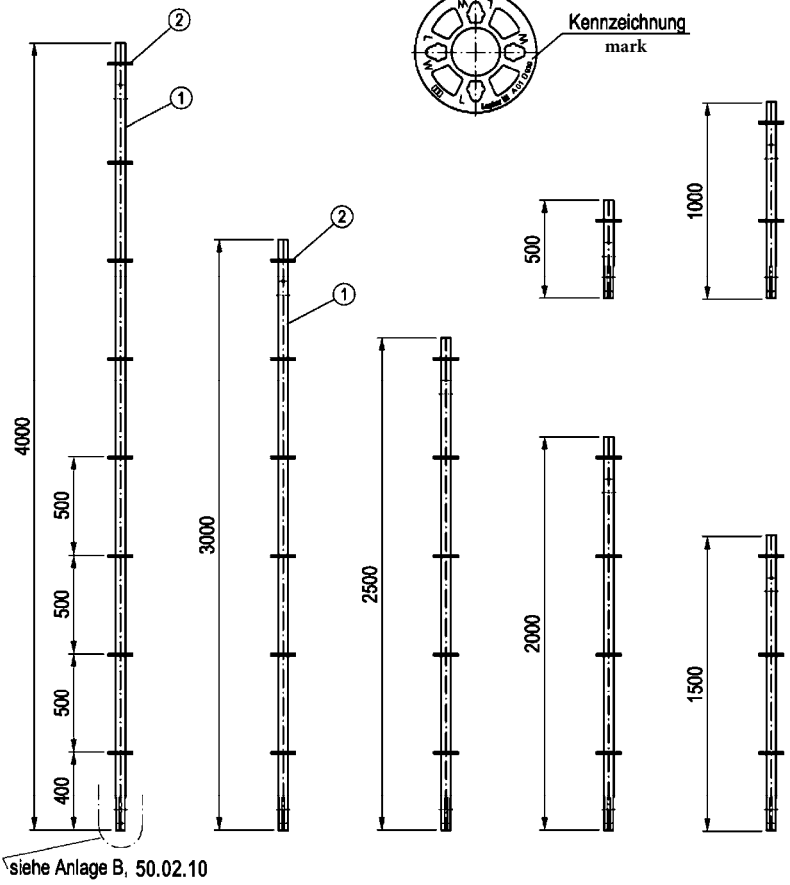


MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Detail, post LW with moulded spigot
Detail / Stiel LW mit angeformtem Rohrverbinder

Anlage B, 50.02.10

Deutsches Institut für Bautechnik DIBt



① Rohr = pipe
② Lochscheibe "Variante LW"
perforated disc

Dim. Wgt
[m] [kg]

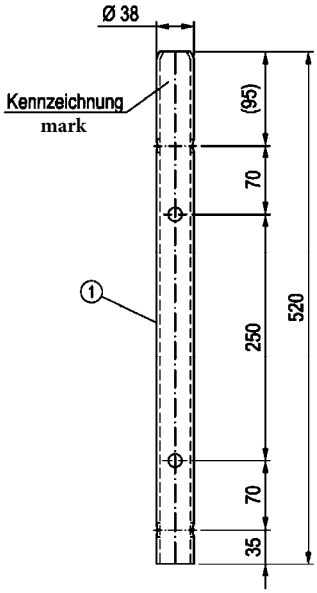
Abm. [m]	Gew. [kg]
0,50	2,2
1,00	4,4
1,50	6,6
2,00	8,8
2,50	11,0
3,00	13,2
4,00	17,6

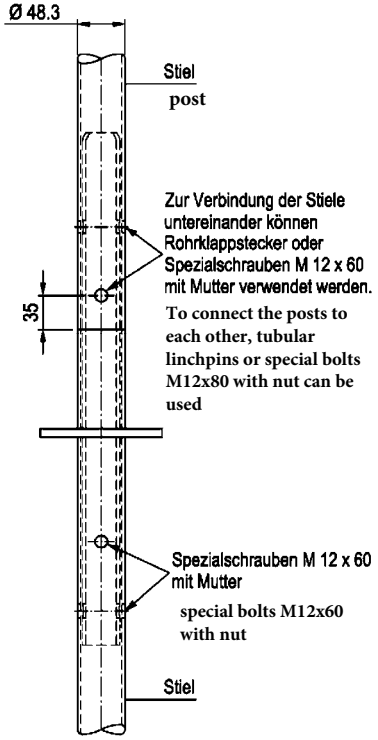
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Post LW without spigot
Stiel LW ohne Rohrverbinder

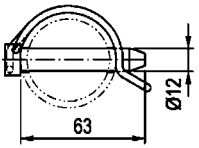
Anlage B, 50.02.11

Deutsches Institut für Bautechnik DIBt

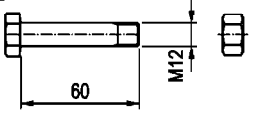




Rohrklappstecker
pipe linchpin



Spezialschrauben M 12 x 60 mit Mutter
special bolts M12x60 with nut



Wgt [kg]

Gew. [kg]
1,6

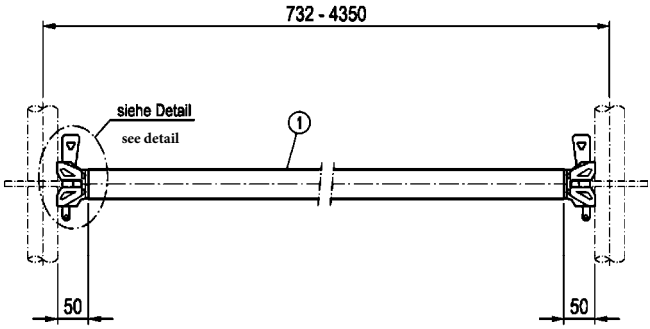
① Rohrverbinder
spigot

MJ COMBI DUO

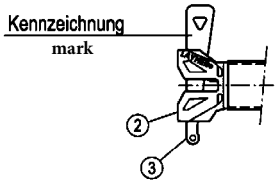
Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
Spigot for post
Rohrverbinder für Stiel

Anlage B, 50.02.12

Deutsches Institut für Bautechnik DIBt



Detail



pipe	①	Rohr	
head piece	②	Kopfstück	"Variante LW"
wedge	③	Keil	"Variante LW"

(siehe Anlage B, 50.02.02)
(siehe Anlage B, 50.02.06)
(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	2,9
1,09	4,0
1,57	5,5
2,07	7,0
2,57	8,5
3,07	10,1
4,14	13,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

O-ledger LW 0.73 m - 4.35 m
O-Riegel LW 0,73 m - 4,35 m

Anlage B, 50.02.13

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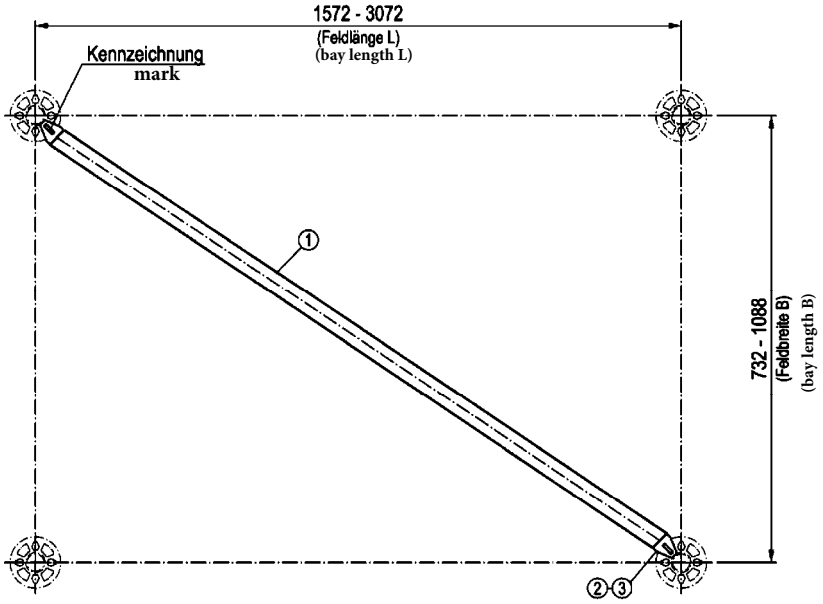

pipe	1	Rohr		(siehe Anlage B, 50.02.02)
head piece	2	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.06)
wedge	3	Keil	"Variante LW"	(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,07 x 0,73	7,8
2,57 x 0,73	9,3
2,07 x 1,09	8,1
2,57 x 1,09	9,6

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

O-ledger LW HD
O-Riegel LW HD

Anlage B, 50.02.14

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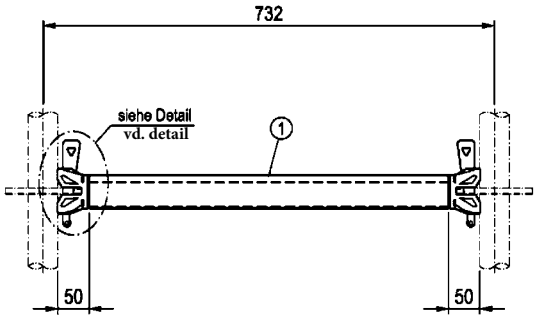

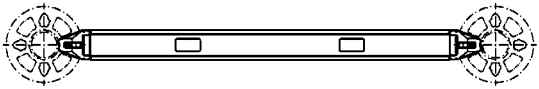

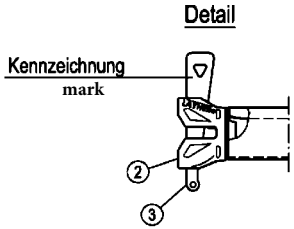

U-section	1	U-Profil		(siehe Anlage B, 50.04.03)	Wgt [kg]
head piece	2	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)	Gew. [kg]
wedge	3	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)	3,1
				(vd. Appendix B, ...)	

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-ledger LW 0.73 m T14
U-Riegel LW 0,73 m T14

Anlage B, 50.02.15

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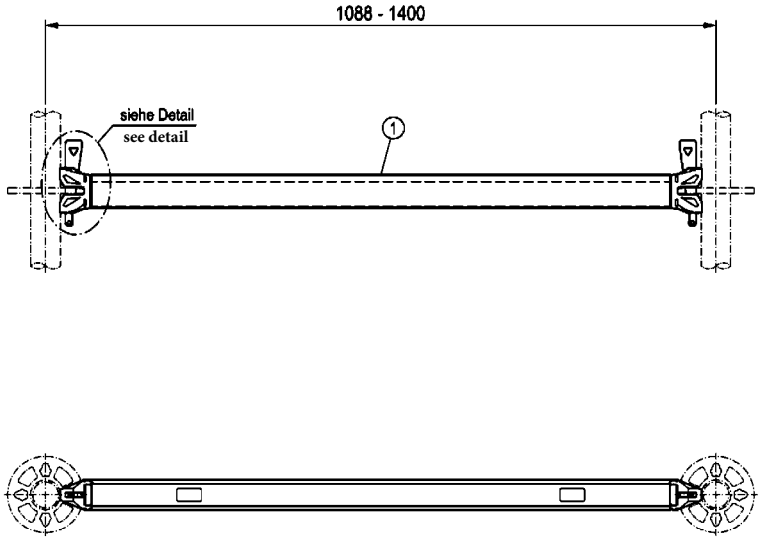
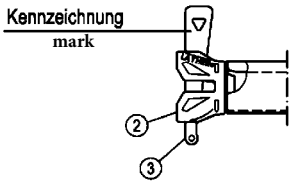


Detail



U-section	①	U-Profil		(siehe Anlage B, 50.04.03)
head piece	②	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
wedge	③	Keil	"Variante LW"	(siehe Anlage B, 50.02.06) (vd. Appendix B, ...)

Dim. Wgt [m] [kg

Abm. [m]	Gew. [kg]
1,09	4,4
1,40	5,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

U-ledger LW 1.09 m - 1.40 m T14
U-Riegel LW 1,09 m - 1,40 m T14

Anlage B, 50.02.16

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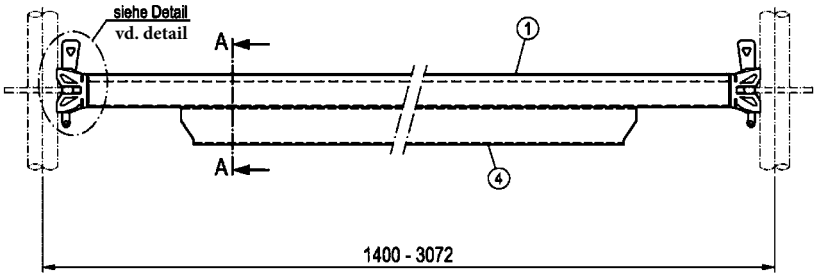
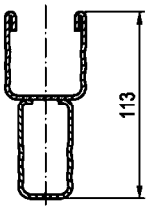
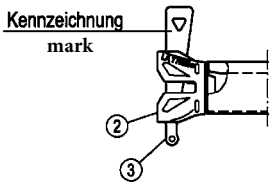


Schnitt A-A Section A-A



Detail



U-section	① U-Profil		(siehe Anlage B, 50.04.03)
head piece	② Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
wedge	③ Keil	"Variante LW"	(siehe Anlage B, 50.02.06)
U-section	④ U-Profil		(vd. Appendix B, ...)

Dim. Wgt
[m] [kg

Abm. [m]	Gew. [kg]
1,40	8,9
1,57	9,4
2,07	12,7
2,57	15,7
3,07	19,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-ledger LW 1.40 m - 3.07 m reinforced T14
U-Riegel LW 1,40 m - 3,07 m verstärkt T14

Anlage B, 50.02.17

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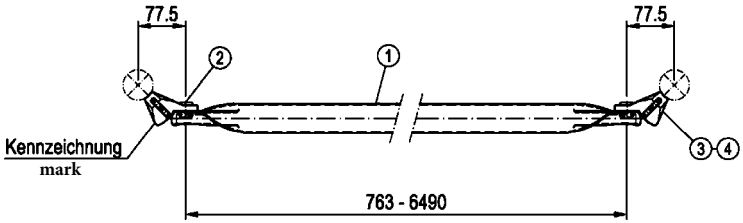

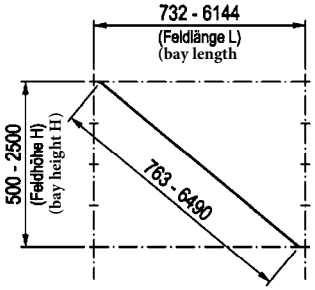

1	Rohr	pipe	
2	Zylinderkopfniet	round head rivet	
3	Kopfstück "Variante LW"	head piece	(siehe Anlage B, 50.02.05)
4	Keil "Variante LW"	wedge	(siehe Anlage B, 50.02.06)

(vd. Appendix B, ...)

Dim. Wgt
[m] [kg

Abm. [m]	Gew. [kg]
2,07 x 2,00	8,9
2,57 x 2,00	9,5
2,07 x 1,50	8,2
2,57 x 1,50	9,5

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Diagonal 'Variant LW'
Diagonale "Variante LW"

Anlage B, 50.02.18

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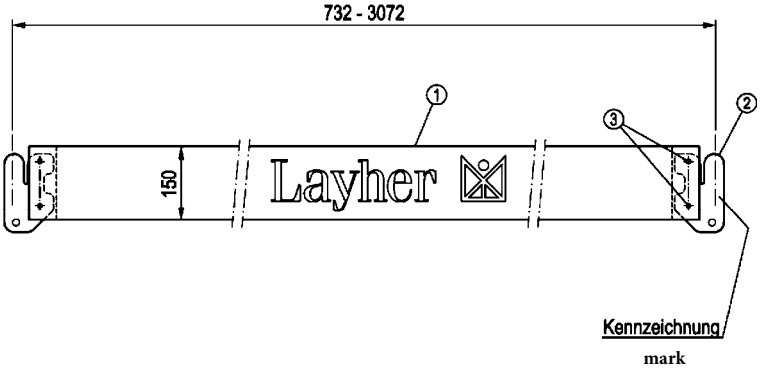

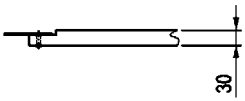

wood	①	Holz
fitting	②	Beschlag
snap head rivet	③	Flachrundniet

Dim. Wgt
[m] [kg

Abm. [m]	Gew. [kg]
0,73	1,5
1,09	2,5
1,57	3,5
2,07	4,6
2,57	5,7
3,07	7,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-timber toeboard 0.73 m - 3.07 m
U-Holz-Bordbrett 0,73 m - 3,07 m

Anlage B, 50.02.19

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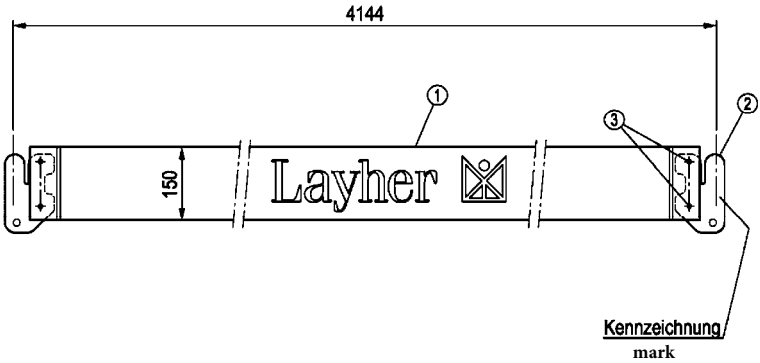

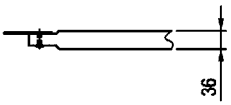

timber ① Holz
fitting ② Beschlag
snap head riviet ③ Flachrundniet

Wgt [kg]
Gew. [kg]
7,5

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-timber toeboard 4.14 m
U-Holz-Bordbrett 4,14 m

Anlage B, 50.02.20

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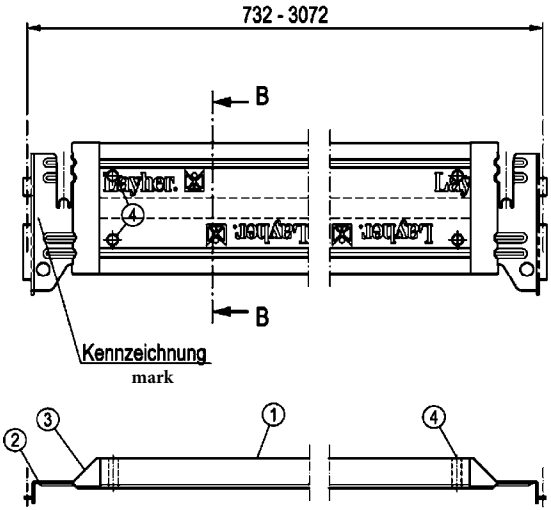
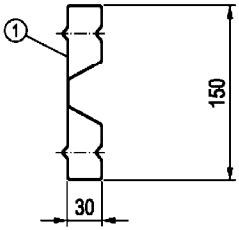


Schnitt B-B Section B-B



①	Blech profiliert	Sheet, profiled
②	Beschlag	fitting
③	Kunststoffkappe	plastic cap
④	Rohrniet	tubular rivet

Dim. Wgt
[m] [kg

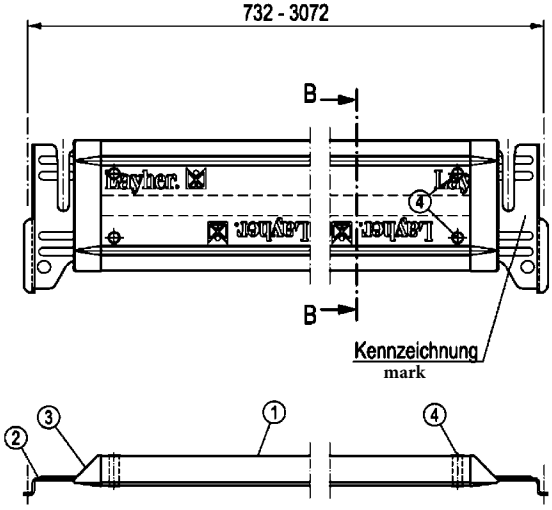
Abm. [m]	Gew. [kg]
0,73	1,8
1,09	2,5
1,57	3,4
2,07	4,4
2,57	5,4
3,07	6,3

MJ COMBI DUO

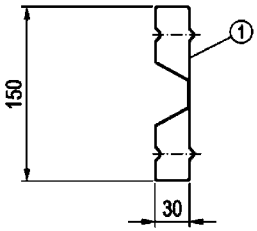
Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
U-steel toeboard 0.73 m - 3.07 m
U-Stahlbordbrett 0,73 m - 3,07 m T17

Anlage B, 50.02.21

Deutsches Institut für Bautechnik DIBt



Schnitt B-B **Section B-B**



①	Blech profiliert	**Sheet, profiled**
②	Beschlag	**fitting**
③	Kunststoffkappe	**plastic cap**
④	Rohrniet	**tubular rivet**

Dim. Wgt
[m] [kg

Abm. [m]	Gew. [kg]
0,73	1,8
1,09	2,5
1,57	3,4
2,07	4,4
2,57	5,4
3,07	6,3

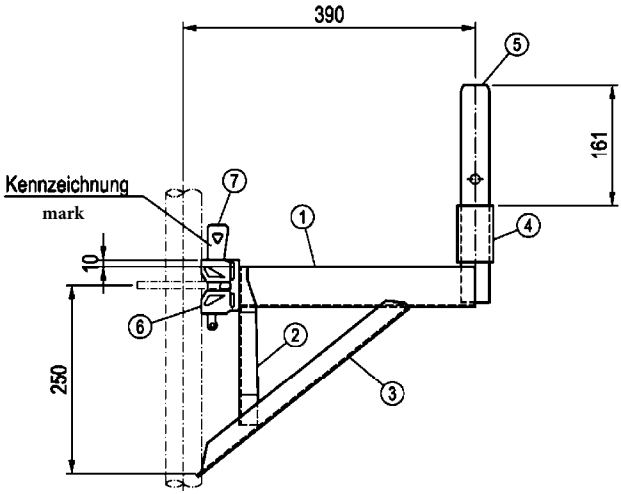
MJ COMBI DUO

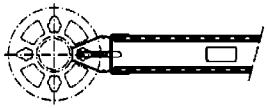
Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-steel toeboard 0,73 m - 3,07 m
U-Stahlbordbrett 0,73 m - 3,07 m

Anlage B, 50.02.22

Deutsches Institut für Bautechnik DIBt





U-section	①	U-Profil	(siehe Anlage B, 50.04.03)
support-U	②	Stütz-U	(vd. Appendix B, ...)
strut-U	③	Streb-U	
pipe/tube	④	Rohr	
spigot	⑤	Rohrverbinder	
head piece	⑥	Kopfstück "Variante LW"	(siehe Anlage B, 50.02.04)
wedge	⑦	Keil "Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
3,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

U-board bracket LW 0.39 m

U-Konsole LW 0,39 m

Anlage B, 50.02.23

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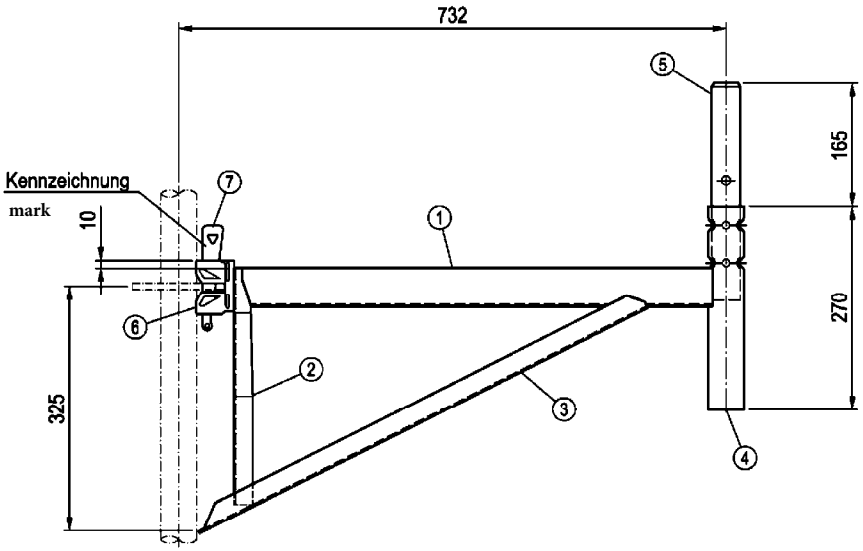

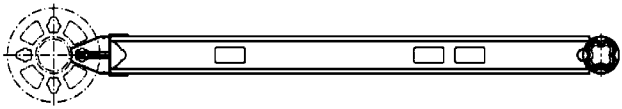

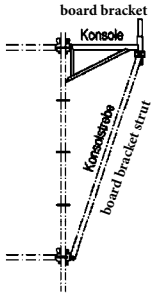

U-section	1	U-Profil		(siehe Anlage B, 50.04.03)
support-U	2	Stütz-U		(vd. Appendix B, ...)
strut-U	3	Streb-U		
pipe/tube	4	Rohr		
spigot	5	Rohrverbinder		
head piece	6	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.04)
wedge	7	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
6,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-board bracket LW 0.73 m

U-Konsole LW 0,73 m

Anlage B, 50.02.24

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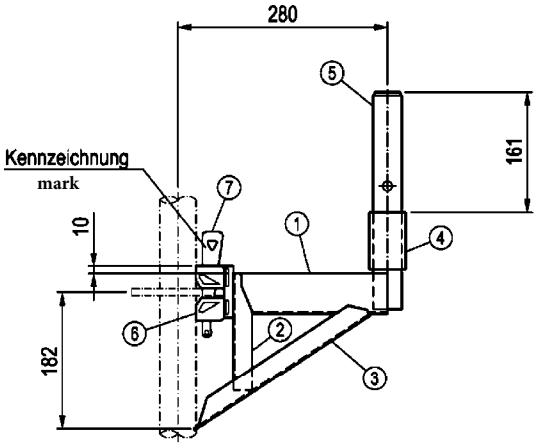

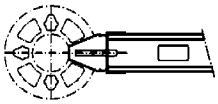

U-section	①	U-Profil		(siehe Anlage B, 50.04.03) (vd. Appendix B, ...
support-U	②	Stütz-U		
strut-U	③	Streb-U		
pipe/tube	④	Rohr		
spigot	⑤	Rohrverbinder		
head piece	⑥	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.04)
wedge	⑦	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
3,4

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-board bracket LW 0.28 m
U-Konsole LW 0,28 m

Anlage B, 50.02.25

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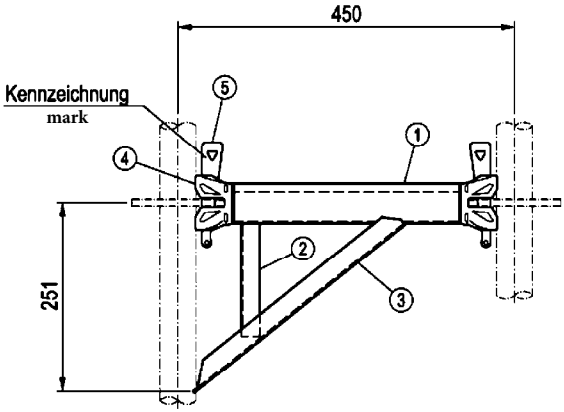

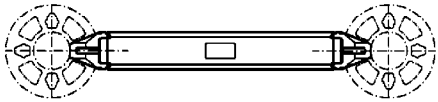

U-section	①	U-Profil		(siehe Anlage B, 50.04.03)
support-U	②	Stütz-U		(vd. Appendix B, ...)
strut-U	③	Streb-U		
head piece	④	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
wedge	⑤	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
3,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-board bracket LW 0.45 m with 2 wedge heads
U-Konsole LW 0,45 m mit 2 Keilköpfen

Anlage B, 50.02.26

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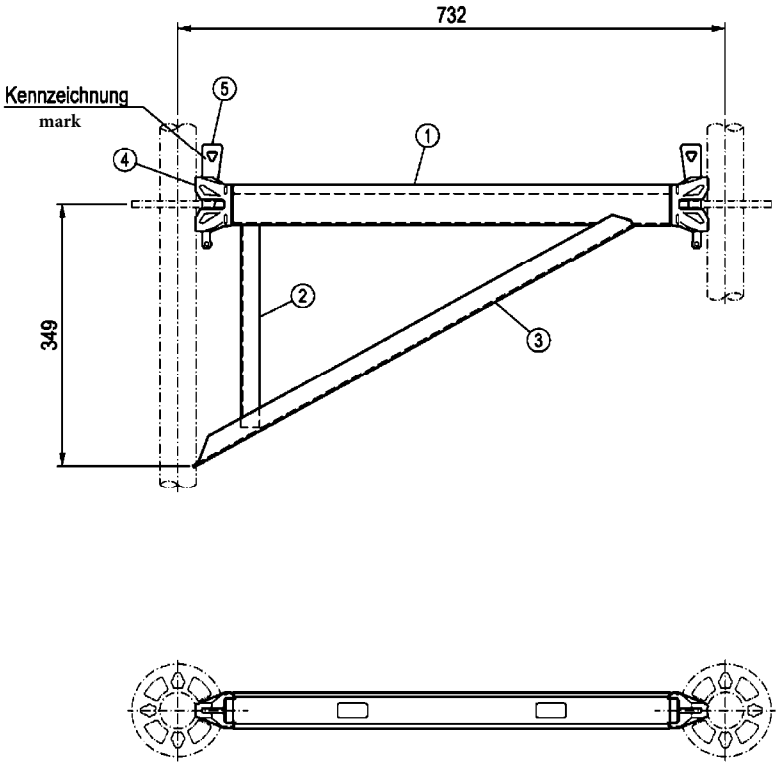


U-section	①	U-Profil		(siehe Anlage B, 50.04.03)
support-U	②	Stütz-U		(vd. Appendix B, ...)
strut-U	③	Streb-U		
head piece	④	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
wedge	⑤	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
5,0

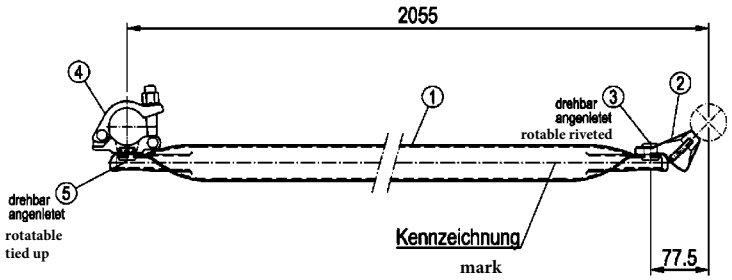
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-board bracket LW 0.73 m with 2 wedge heads
U-Konsole LW 0,73 m mit 2 Keilköpfen

Anlage B, 50.02.27

Deutsches Institut für Bautechnik DIBt



pipe/tube	①	Rohr	
head piece + wedge	②	Kopfstück + Keil "Variante LW"	(siehe Anlage B, 50.02.05 und 50.02.06) (vd. Appendix B, ...
round head rivet	③	Zylinderkopfniet	
screw-topped half coupling	④	Halbkupplung mit Schraubverschluss	gem. Zulassung Z-8.331-882 acc. to approval Z-8.331-882
round head rivet	⑤	Zylinderkopfniet	

Wgt [kg]

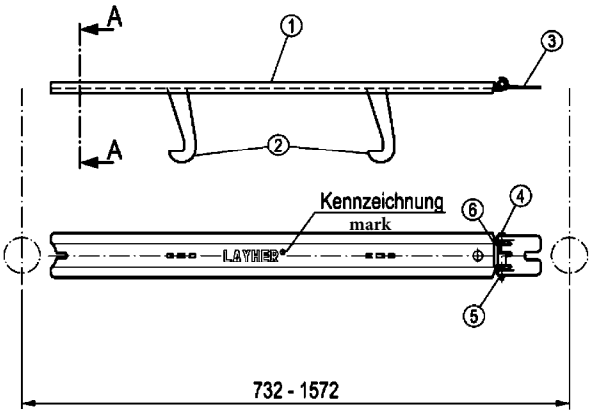
Gew. [kg]
8,8

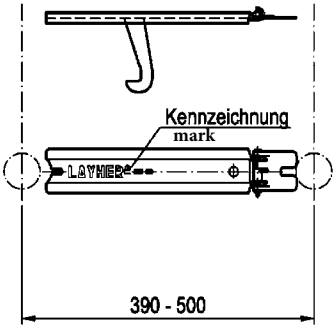
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Board bracket strut 2.05 m 'Variant LW'
Konsolstrebe 2,05 m "Variante LW"

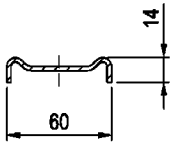
Anlage B, 50.02.28

Deutsches Institut für Bautechnik DIBt





Schnitt A-A **Section A-A**



①	Schiene	**rail**
②	Sicherungshaken	**safety hook**
③	Sicherungsklappe	**safety flap**
④	Sechskantschraube	**hexagon screw**
⑤	Sicherungsmutter	**prevailing torque type nut**
⑥	Schenkelfeder	**leg spring**

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,39	0,6
0,45	0,7
0,73	1,3
1,09	1,8
1,57	3,0

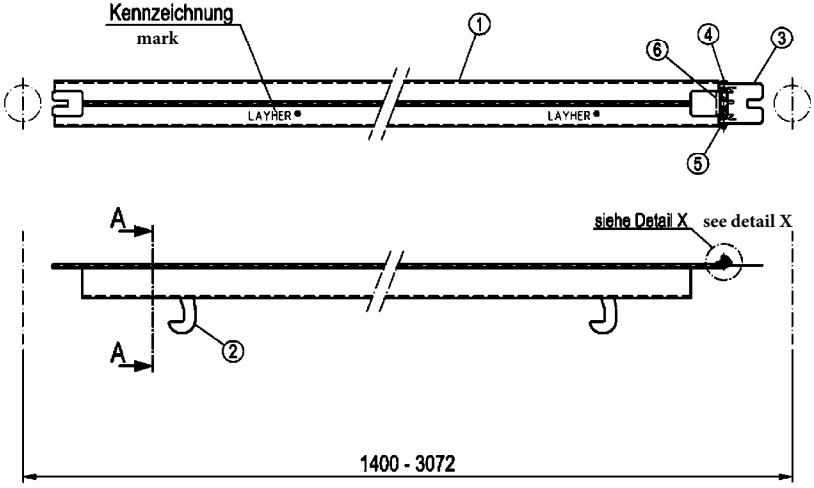
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Decking lock against lift-off T 8 0.39 m - 1.57 m
U-Boden-Sicherung T8 0,39 m - 1,57 m

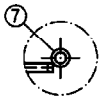
Anlage B, 50.02.29

Deutsches Institut für Bautechnik DIBt

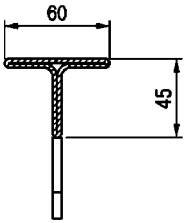


Detail X

(ohne Sicherungsklappe und Schenkelfeder gez.) (drawn w/out safety flap a. leg spring)



Schnitt A-A Section A-A



①	T-Profil	T-section
②	Sicherungshaken	safety hook
③	Sicherungsklappe	safety flap
④	Sechskantschraube	hexagon screw
⑤	Sicherungsmutter	prevailing torque type nut
⑥	Schenkelfeder	leg spring
⑦	Rohr	pipe

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
1,40	5,3
1,57	5,9
2,07	7,9
2,57	9,9
3,07	11,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-decking lock against lift-off T 9 1.40 m - 3.07 m
U-Boden-Sicherung T9 1,40 m - 3,07 m

Anlage B, 50.02.30

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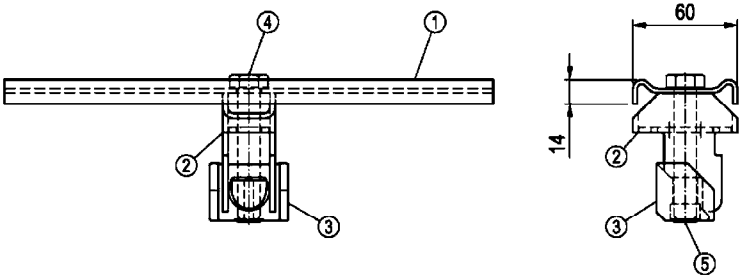

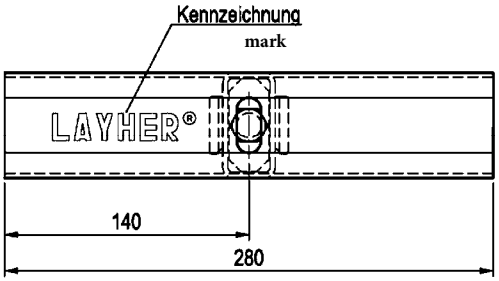

①	Schiene	rail
②	Rechteckrohr	rectangular pipe
③	Klemmschieber	clamping slider
④	Sechskantschraube	hexagon screw
⑤	Blindniet	blind rivet

Wgt [kg]
Gew. [kg]
1,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Universal decking lock against lift-off
Universal U-Boden-Sicherung

Anlage B, 50.02.31

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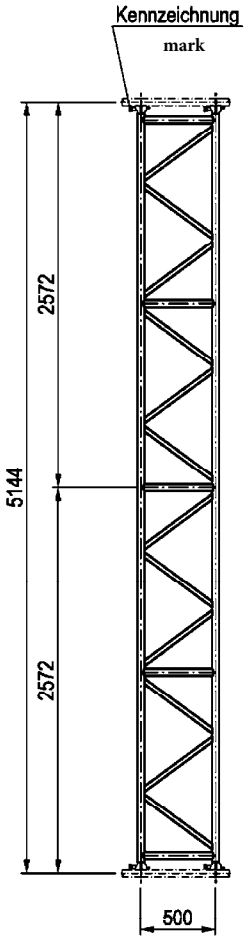

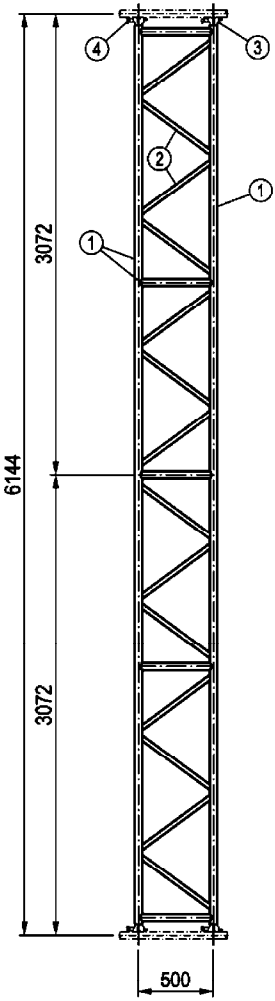

pipe	①	Rohr	
rectangular pipe	②	Rechteckrohr	
head piece	③	Kopfstück	"Variante LW"
wedge	④	Keil	"Variante LW"

(siehe Anlage B, 50.02.02)
(siehe Anlage B, 50.02.06)
(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
5,14	51,2
6,14	59,2

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
O-lattice girder LW 5.14 m; 6.14 m x 0.50 m
O-Gitterträger LW 5,14 m; 6,14 m x 0,50 m

Anlage B, 50.02.32

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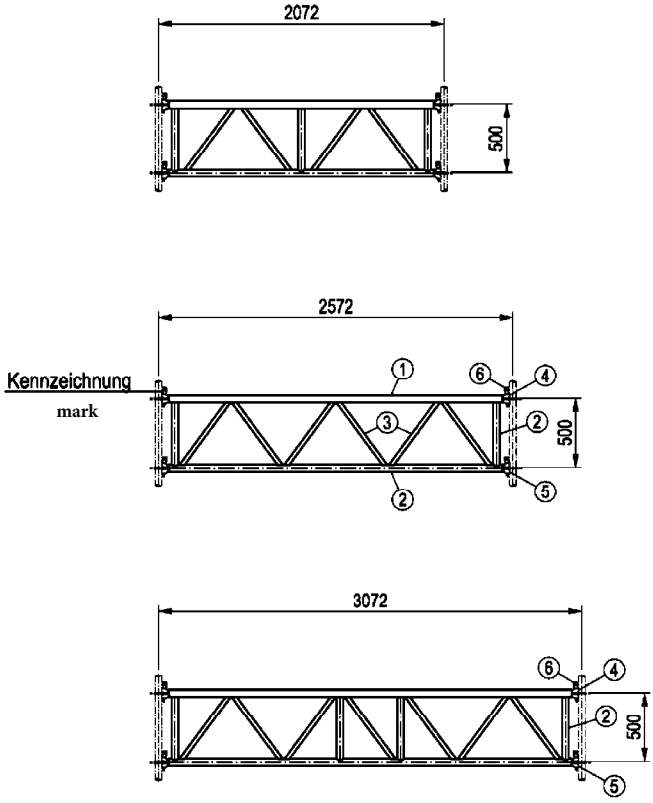

U-section	①	U-Profil		(siehe Anlage B, 50.04.03)
pipe	②	Rohr		(vd. Appendix B, ...
rectangular pipe	③	Rechteckrohr		
head piece	④	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
head piece	⑤	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.02)
wedge	⑥	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,07	21,4
2,57	24,9
3,07	31,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-lattice girder LW 2.07 m - 3.07 m x 0.50 m
U-Gitterträger LW 2,07 m - 3,07 m x 0,50 m

Anlage B, 50.02.33

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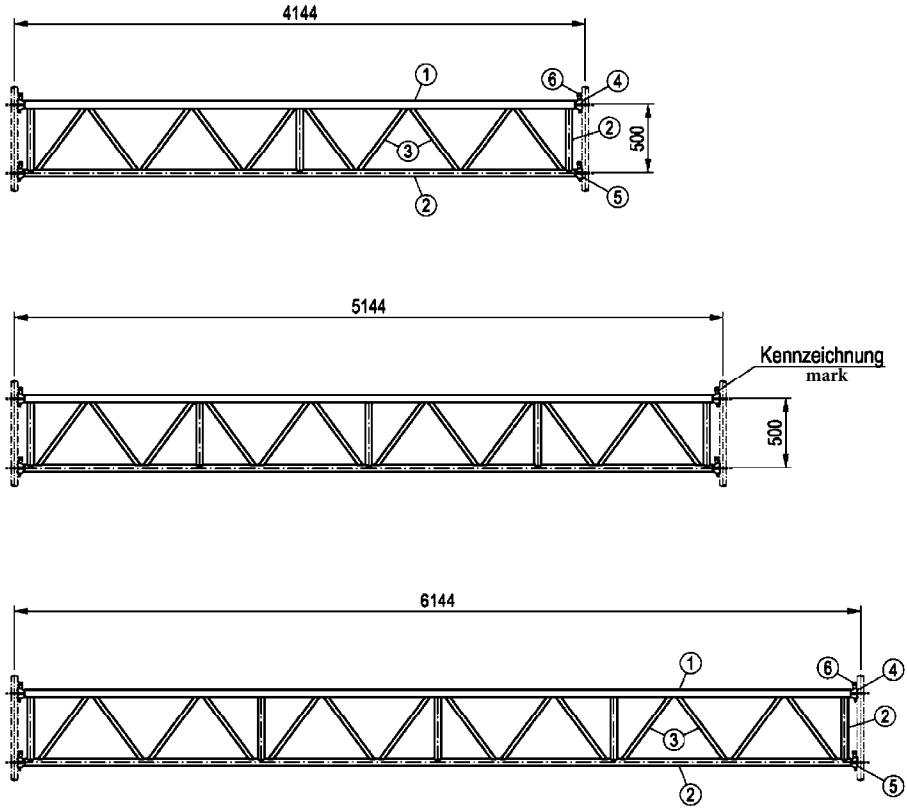

U-section	①	U-Profil		(siehe Anlage B, 50.04.03)
pipe	②	Rohr		(vd. Appendix B, ...
rectangular pipe	③	Rechteckrohr		
head piece	④	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.03)
head piece	⑤	Kopfstück	"Variante LW"	(siehe Anlage B, 50.02.02)
wedge	⑥	Keil	"Variante LW"	(siehe Anlage B, 50.02.06)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
4,14	40,0
5,14	51,2
6,14	60,5

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

U-lattice girder LW 4.14 m - 6.14 m x 0.50 m
U-Gitterträger LW 4,14 m - 6,14 m x 0,50 m

Anlage B, 50.02.34

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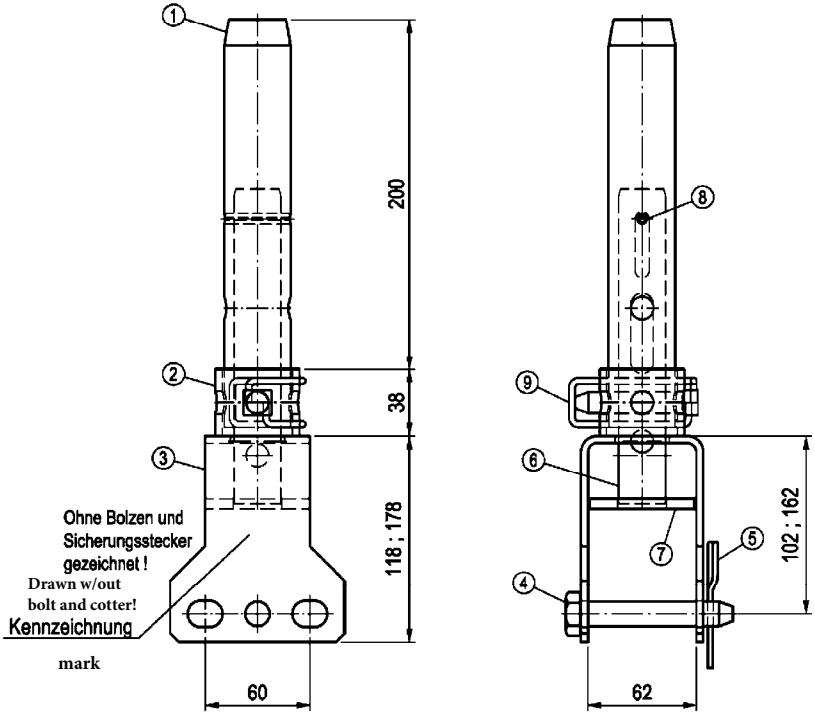

spigot	①	Rohrverbinder
pipe	②	Rohr
U-bracket	③	U-Bügel
bolt	④	Bolzen
cotter	⑤	Sicherungsstecker
pipe (inside)	⑥	Rohr (innen)
plate	⑦	Platte
dowel pin	⑧	Spannstift
linchpin	⑨	Rohrklappstecker

Wgt [kg]
Gew. [kg]
2,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
Push-in spigot for U-section
Steck-Rohrverbinder für U-Profil

Anlage B, 50.02.35

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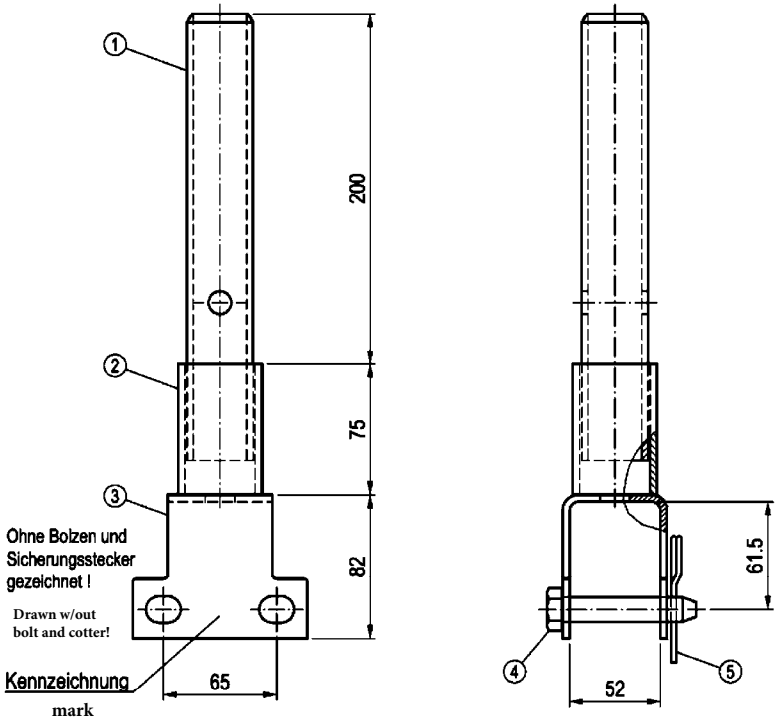


spigot	①	Rohrverbinder
pipe	②	Rohr
U-section	③	U-Bügel
bolt	④	Bolzen
cotter	⑤	Sicherungsstecker

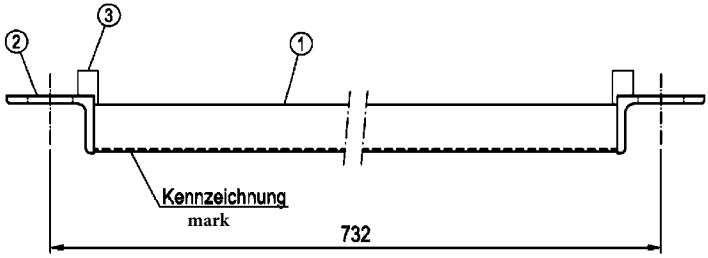
Wgt [kg]
Gew. [kg]
1,8

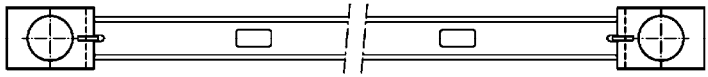
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Spigot for lattice girder
Rohrverbinder für Gitterträger

Anlage B, 50.02.36

Deutsches Institut für Bautechnik DIBt





U-section bracket flats	① U-Profil ② Winkel ③ St-Flach	(siehe Anlage B, 50.04.03) (vd. Appendix B, ...)

Wgt [kg]
Gew. [kg]
3,2

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939
U-lattice girder ledger LW 0.73 m
U-Gitterträger-Riegel LW 0,73 m

Anlage B, 50.02.37

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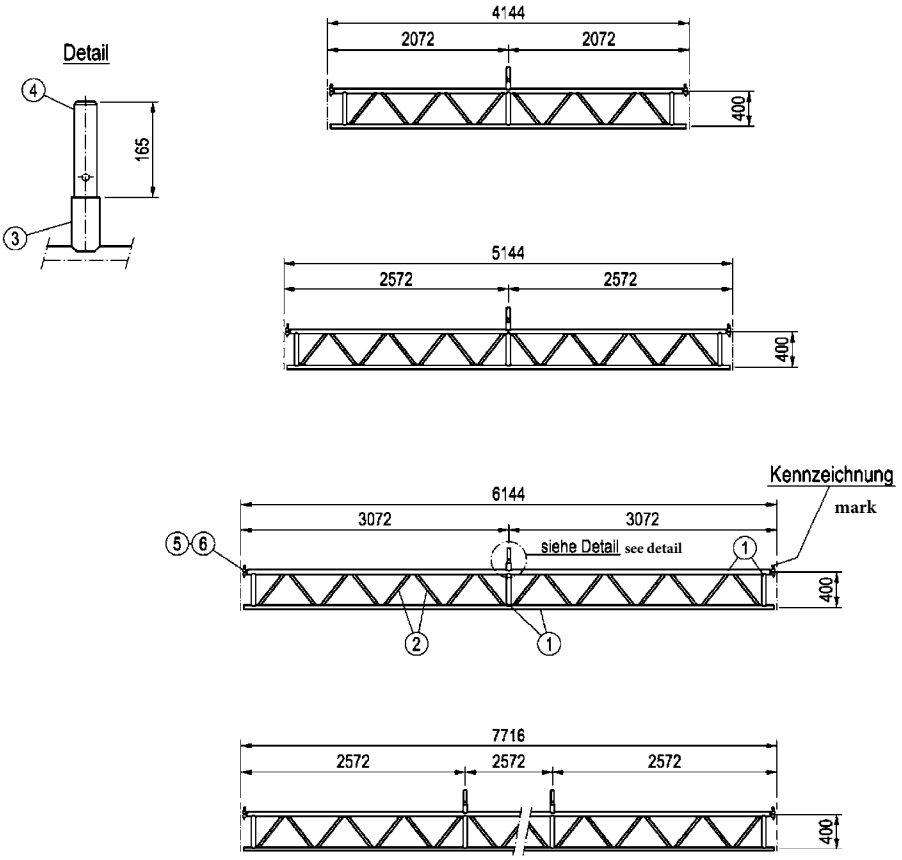

pipe	①	Rohr	
rectang. pipe	②	Rechteckrohr	
spigot	③	Rohr	
head piece	④	Rohrverbinder	
wedge	⑤	Kopfstück	"Variante LW"
	⑥	Keil	"Variante LW"

(siehe Anlage B, 50.02.02)
(siehe Anlage B, 50.02.06)
(vd. Appendix B, ...)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
4,14	38,1
5,14	47,3
6,14	56,5
7,71	70,7

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

O-lattice girder LW 4.14 m - 7.71 m x 0.40 m
O-Gitterträger LW 4,14 m - 7,71 m x 0,40 m

Anlage B, 50.02.38

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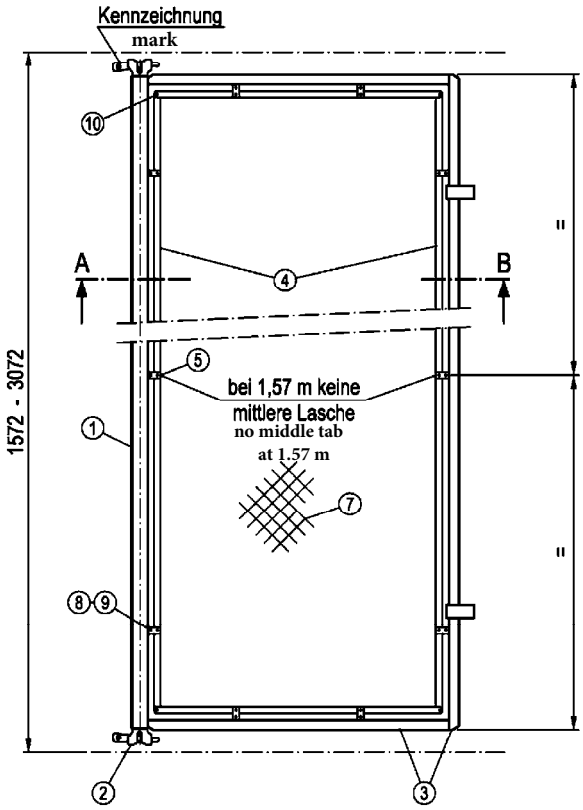
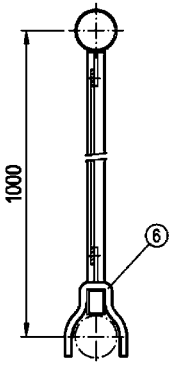


Schnitt A-B
Section A-B



① Rohr
② Kopfstück + Keil "Variante LW" (siehe Anlage B, 50.02.02 und 50.02.06)
③ Rechteckrohr
④ Schutzgitterstab
⑤ Haltelasche
⑥ Haltebügel
⑦ Drahtgeflecht
⑧ Sechskantschraube
⑨ Sechskantmutter
⑩ Edelstahl-Blindniet

Legend: vd. Appendix B, ...
Rohr = pipe
Kopfstück + Keil = head piece + wedge
Schutzgitterstab = safety guard bar
Haltelasche = holding tab
Haltebügel = holding bracket
Drahtgeflecht = square wire mesh netting
Sechskantschraube = hexagon screw
Sechskantmutter = hexagon nut
Edelstahl-Blindniet = stainless steel blind rivet

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
1,57	15,9
2,07	18,6
2,57	21,9
3,07	25,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

Side protection safety guard LW 1.57 - 3.07
Seitenschutzgitter LW 1,57 m - 3,07 m

Anlage B, 50.02.39

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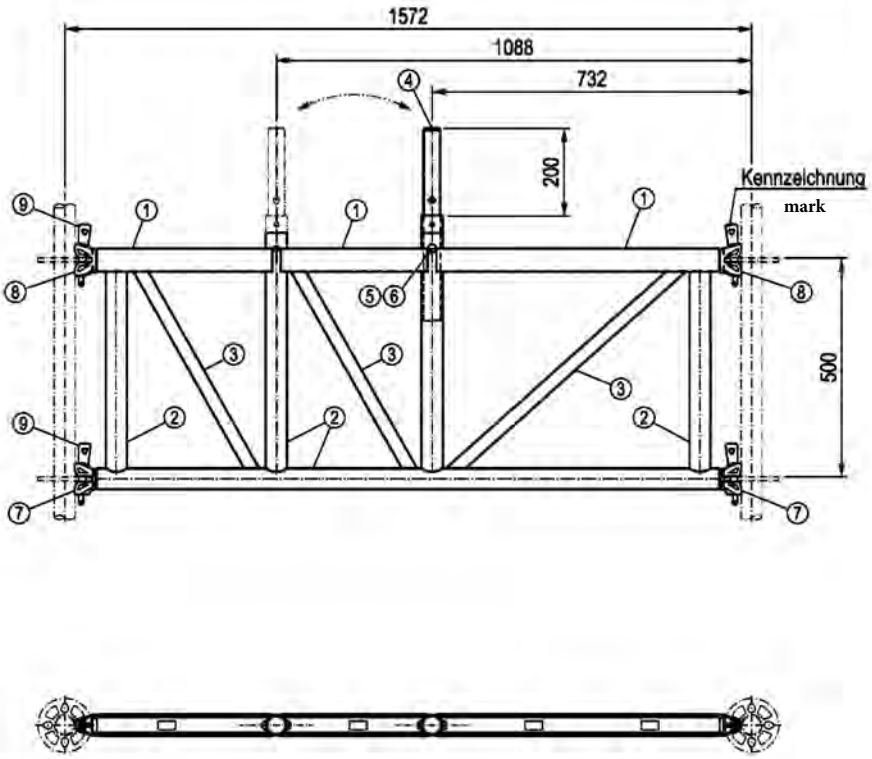

U-section	①	U-Profil	(siehe Anlage B, 50.04.03)
pipe	②	Rohr	(vs. Appendix B, ...)
rectang. pipe	③	Rechteckrohr	
spigot	④	Rohrverbinder	
hexagon screw	⑤	Sechskantschraube	
hexagon nut	⑥	Sechskantmutter	
head piece	⑦	Kopfstück "Variante LW"	(siehe Anlage B, 50.02.02)
head piece	⑧	Kopfstück "Variante LW"	(siehe Anlage B, 50.02.03)
wedge	⑨	Keil "Variante LW"	(siehe Anlage B, 50.02.06)

Wgt [kg]
Gew. [kg]
20,9

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

U-passage beam LW 1.57 m
U-Durchgangsträger LW 1,57 m

Anlage B, 50.02.40

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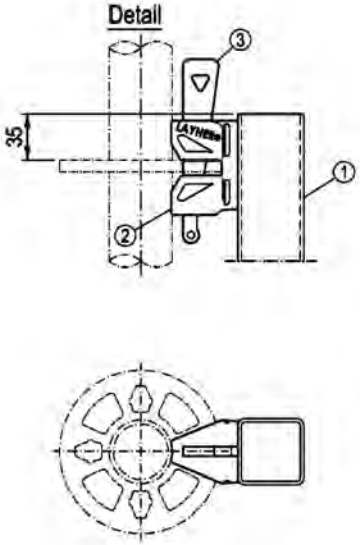

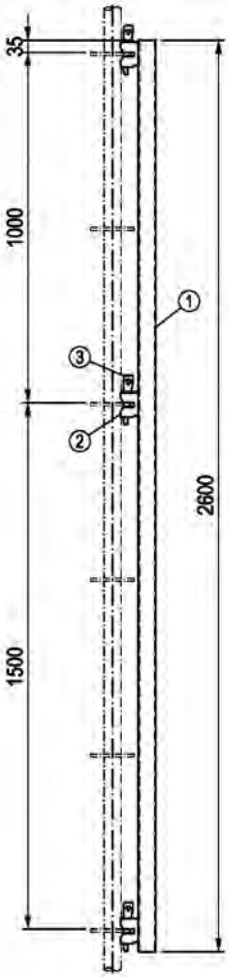

square tube	①	Quadratrohr	
head piece	②	Kopfstück	"Variante LW"
wedge	③	Keil	"Variante LW"

(siehe Anlage B, 50.02.04)
(siehe Anlage B, 50.02.06)
(vd. Appendix B, ...)

Wgt [kg]
Gew. [kg]
11,6

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

Reinforcement post 2.60 m 'Variant LW'
Verstärkungspfosten 2,60 m "Variante LW"

Anlage B, 50.02.41

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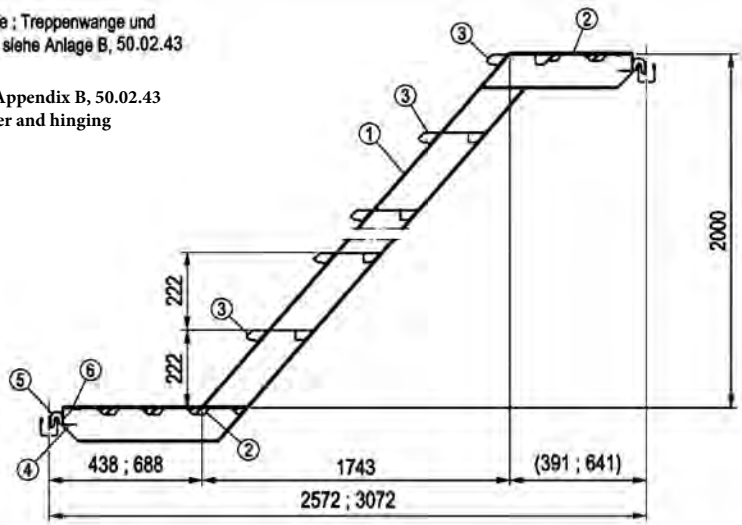
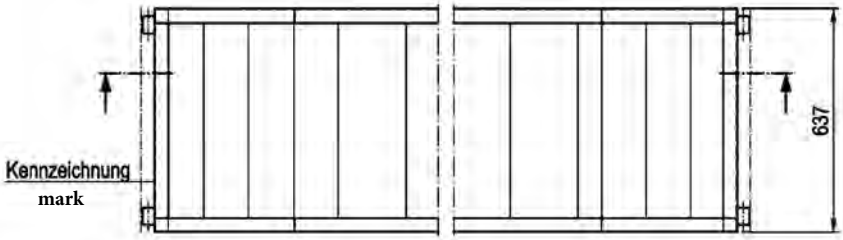
Detail's
Treppenstufe ; Treppenwange und Einhängung siehe Anlage B, 50.02.43

Deatils
Step; see Appendix B, 50.02.43 for stringer and hinging fixture





comfort stringer	①	Komfort Treppenwange
step	②	Treppenstufe
comfort stringer	③	Komfort Treppenstufe
cap-U	④	Kappe - U
claw	⑤	Kralle
snap head riviet	⑥	Flachrundniet

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
2,57	27,0
3,07	32,0

Zulässige Nutzlast : 2 kN/m²
permissible imposed load: 2 kN/m²

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-comfort staircase 2.57 m; 3.07 m x 2.00 m x 0.64 m
U-Komfort-Treppe 2,57 m ; 3,07 m x 2,00 m x 0,64 m

Anlage B, 50.02.42

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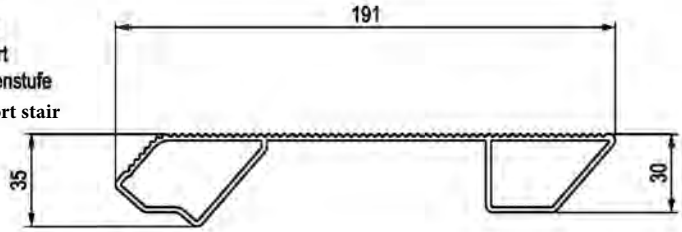
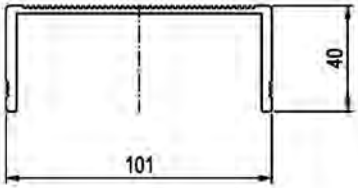
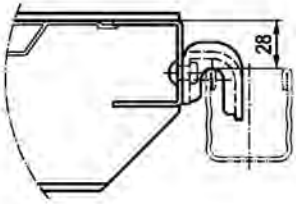
Detail
Komfort
Treppenstufe
Comfort stair



Detail
Komfort
Treppenwange
Comfort stringer



Detail
U - Einhängung
U-suspension



MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Details of comfort stairs
Details Komfort-Treppe

Anlage B, 50.02.43

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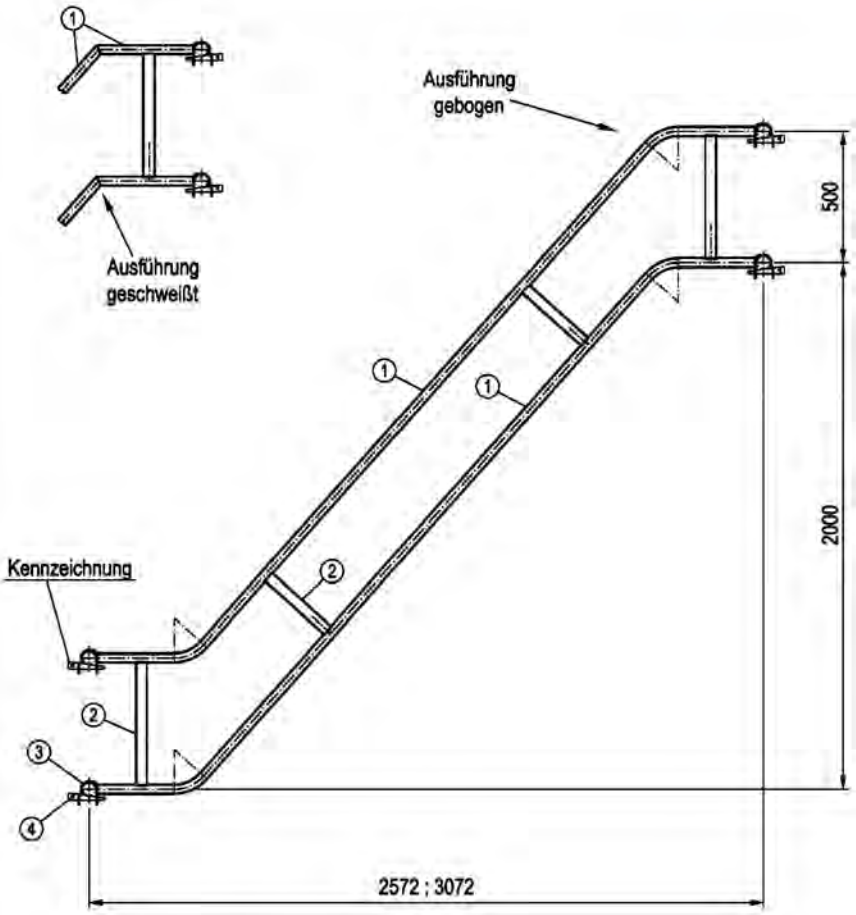

pipe	①	Rohr
rectang. pipe	②	Rechteckrohr
safety-U	③	Sicherungs-U
wedge	④	Keil "Variante LW" "Variante K2000+"

(siehe Anlage B, 50.02.06)
(siehe Anlage B, 50.01.06)
vd. Appendix B, ...

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,57	18,1
3,07	20,1

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

Handrail 2,57 m; 3,07 m
Treppengeländer 2,57 m ; 3,07 m

Anlage B, 50.02.44

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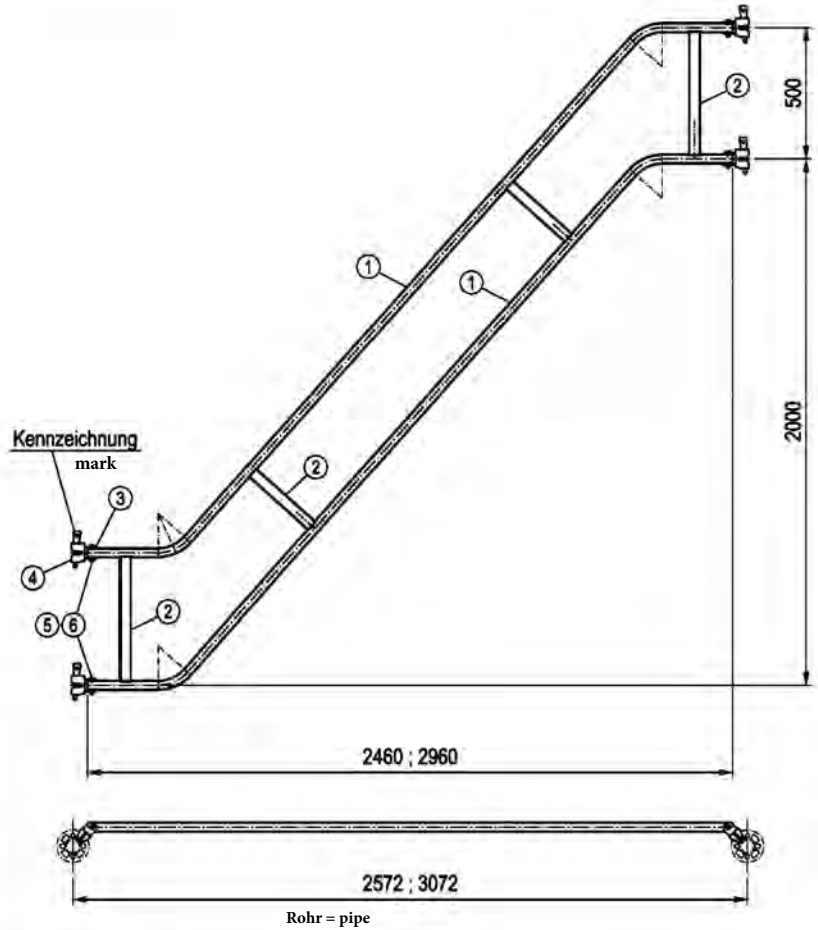

Rohr = pipe
Rechteckrohr = rectangular pipe
Laasche = tab
Kopfstück + Keil = head piece + wedge
Sechskantschraube = hexagon screw
Sechskantmutter = hexagon nut

① Rohr
② Rechteckrohr
③ Lasche
④ Kopfstück + Keil "Variante LW"
⑤ Sechskantschraube
⑥ Sicherungsmutter

(siehe Anlage B, 50.02.04 und 50.02.06)

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,57	18,1
3,07	21,0

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

KK handrail 2,57 m; 3,07 m 'Variant LW'

KK Treppengeländer 2,57 m ; 3,07 m "Variante LW"

Anlage B, 50.02.45

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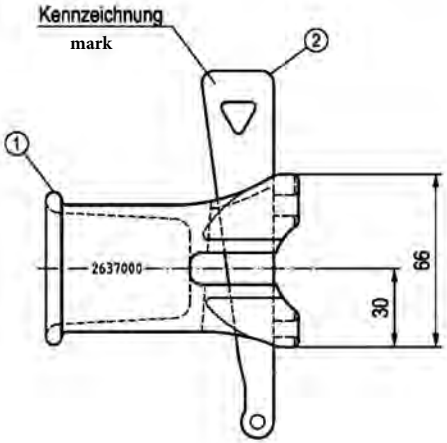
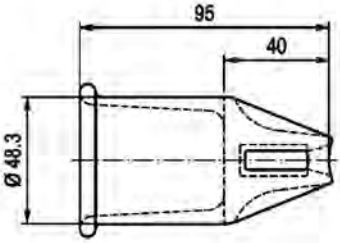




head piece	1	Kopfstück		(siehe Anlage B, 50.02.06)
wedge	2	Keil	"Variante LW"	(siehe Anlage B, 50.01.06)
			"Variante K2000+"	(vd. Appendix B, ...

Wgt [kg]
Gew. [kg]
0,7

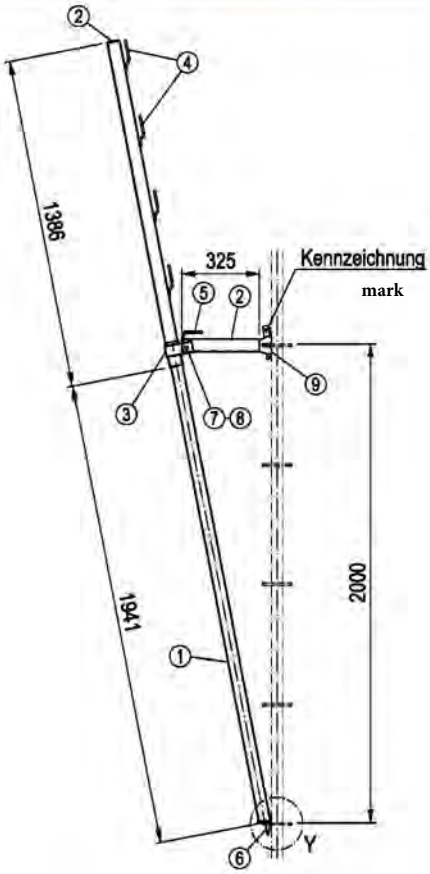
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

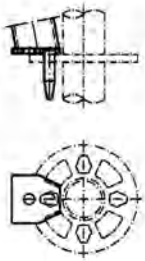
Handrail holder
Treppengeländer Halter

Anlage B, 50.02.46

Deutsches Institut für Bautechnik DIBt



Detail Y



pipe	①	Rohr
U-section	②	U-Profil
U-bracket	③	U-Bügel
tab	④	Lasche
bracket	⑤	Winkel
Plate with bolt	⑥	Platte mit Bolzen
hexagonal screw	⑦	Sechskantschraube
hexagonal nut	⑧	Sicherungsmutter
head piece+wedge	⑨	Kopfstück + Keil "Variante LW"

(siehe Anlage B, 50.04.03)
vd. Appendix B, ...

(siehe Anlage B, 50.02.03 und 50.02.06)

Wgt [kg]
Gew. [kg]
16,8

MJ COMBI DUO

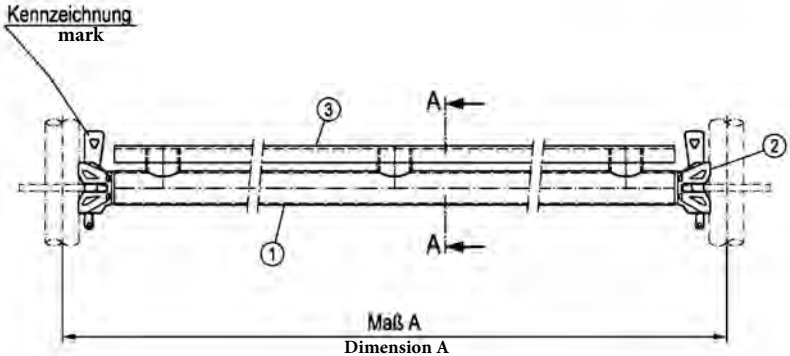
Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

Vanopy support bracket T7 'Variant LW'

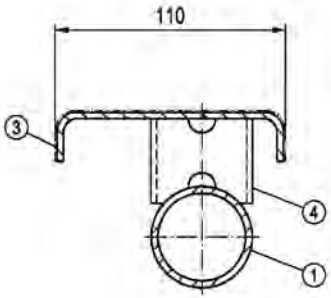
U-Schutzdachkonsole T7 "Variante LW"

Anlage B, 50.02.47

Deutsches Institut für Bautechnik DIBt



Schnitt A-A **Section A-A**



Maß A [mm]	Verwendung bis Lastklasse	zul p*) [kN/m²]
732	6	10,0
1088		
1286		
1400		
1572		
2072		
2572		
3072		

Dim A [mm] **Use up to load class** **perm. p*) [kN/m²]**

*) auf der gesamten Blechbreite wirkend

Dim. Wgt [m]	[kg]
Abm. [m]	Gew. [kg]
0,73	5,2
1,09	7,6
1,29	8,9
1,40	9,7
1,57	10,8
2,07	14,2
2,57	17,6

① Rohr **pipe**
② Kopfstück + Keil *Variante LW* **head piece+wedge**
③ Tränenblech **bulb plate**
④ Distanzrohr **spacer tube**

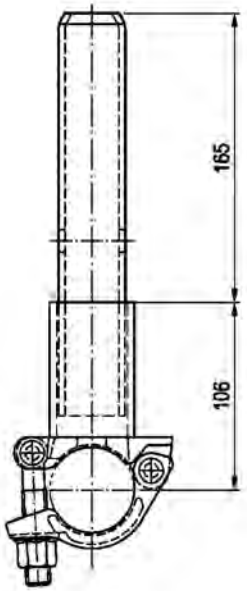
(siehe Anlage B, 50.02.02 und 50.02.06)
(vd. Appendix B, ...)

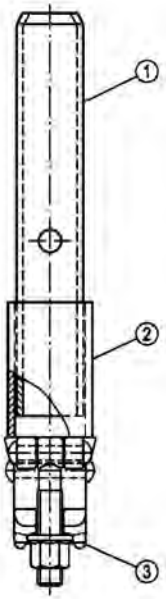
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-gap ledger LW 0.73 m - 3.07 m
U-Spaltriegel LW 0,73 m - 3,07 m

Anlage B, 50.02.48

Deutsches Institut für Bautechnik DIBt





spigot
pipe
half coupling
with screw cap

① Rohrverbinder
② Rohr
③ Halbkupplung mit Schraubverschluss

gem. Zulassung Z-8.331-882
acc. to approval Z-8.331-882

Wgt [kg]
Gew. [kg]
1,8

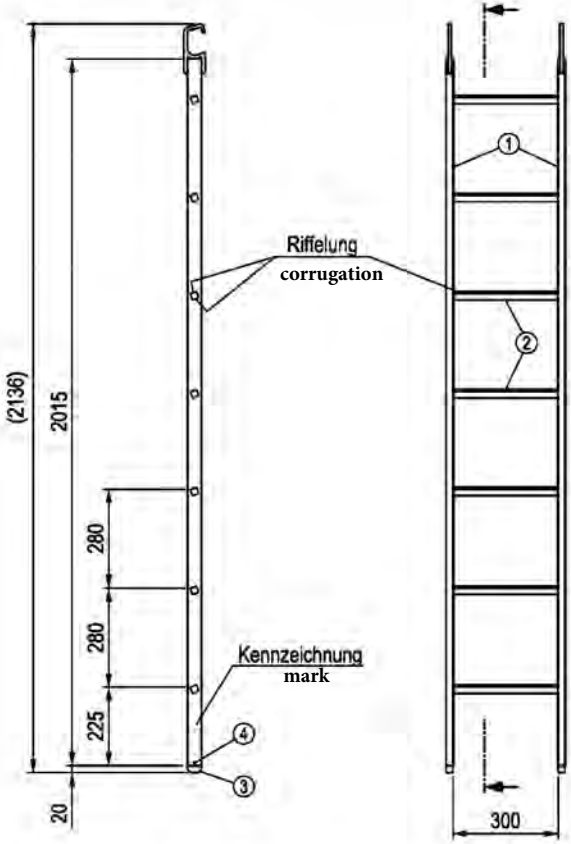
MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Spigot with half coupling
Rohrverbinder mit Halbkupplung

Anlage B, 50.02.49

Deutsches Institut für Bautechnik DIBt



①	Holm	**stile**
②	Sprosse	**rung**
③	Gummifuß	**rubber foot**
④	Blindniet	**blind rivet**
⑤	Einhängehaken	**suspended hook**

Wgt [kg]
Gew. [kg]
7,6

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**

Access ladder 7 rungs T15

Etagenleiter 7 Sprossen T15

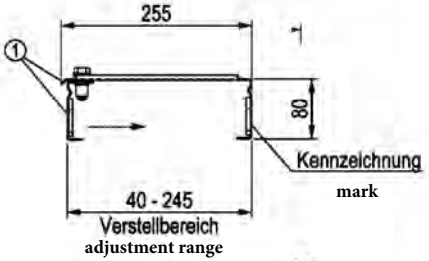
Anlage B, 50.02.50

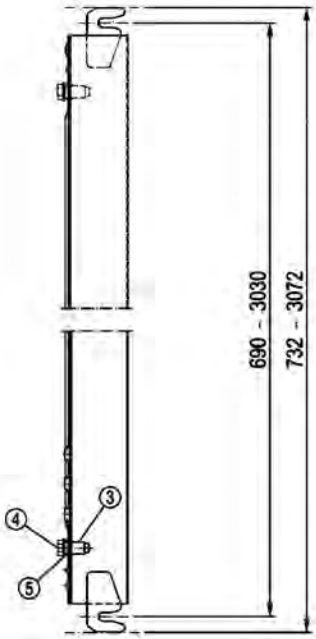
Deutsches Institut für Bautechnik DIBt

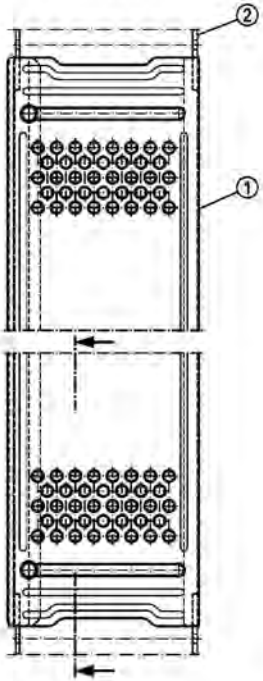
Bay length / Feldlänge	Use up to load class / Verwendung bis Lastklasse	perm. p*) [kN/m²] / zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

*) auf der gesamten Bodenfläche wirkend

*) acting on the entire floor space







Dim. [m]	Wgt [kg]
0,73	5,2
1,09	7,8
1,57	11,4
2,07	14,9
2,57	18,6
3,07	22,3

deck plate / suspended hook / blind rivet nut / hexagonal screw / washer

① Belagblech
② Einhängehaken
③ Blind-Einnietmutter
④ Sechskantschraube
⑤ Scheibe

MJ COMBI DUO

Bauteil gemäß Z-8.22-939 Component acc. to Z-8.22-939

U-telecopable slatted floor 0.73 m - 3.07 m

U-Teleskopierbarer Spaltboden 0,73 m - 3,07 m

Anlage B, 50.02.51

Deutsches Institut für Bautechnik DIBt

Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm. p*) [kN/m²] zul p *) [kN/m²]	
≤ 3,07 m	6	10,0	max. Stützweite 24 cm in Querrichtung (Lichte Spaltbreite ca. 22 cm)

max. span 24 cm in transverse direction
(clear gap width approx. 22 cm)

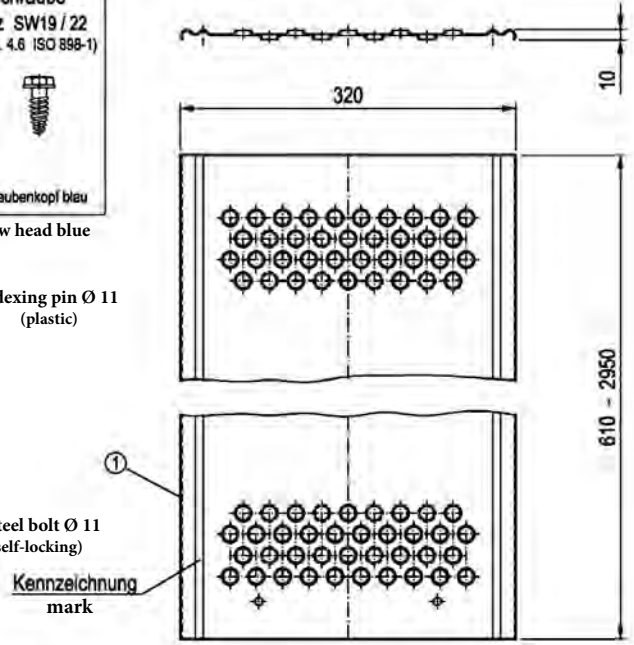
*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

Möglichkeiten zur Lagesicherung
Options for securing the position

screw head red | screw head blue

indexing pin Ø 11
(plastic)

steel bolt Ø 11
(self-locking)



① Belagblech deck plate

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
0,73	2,6
1,09	3,8
1,57	4,2
2,07	6,3
2,57	8,5
3,07	12,0

Legend:

Sicherungsschraube, lang SW19/22 = prevailing torque bolt, long SW19/22
(Strenth 4.5 ISO 898-1)

Sicherungsschraube, kurz SW19/22 = prevailing torque bolt, kurz SW19/22
(Strenth 4.5 ISO 898-1)

MJ COMBI DUO

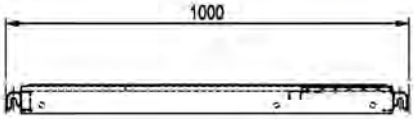
Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
Steel gap sheet 0.73 m - 3.07 mx 0.32 m
Stahl-Spaltblech 0,73 m - 3,07 m x 0,32 m

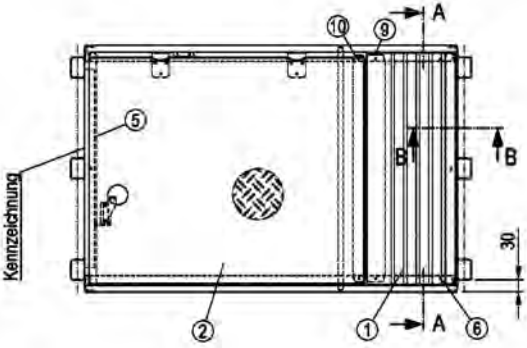
Anlage B, 50.02.52

Deutsches Institut für Bautechnik DIBt

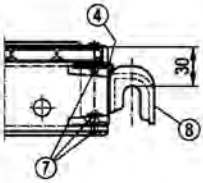
Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm. p*) [kN/m2] zul p *) [kN/m²]
1,00 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

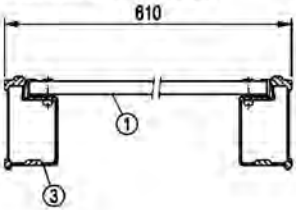




Schnitt B-B **Section B-B**



Schnitt A-A (ohne Kappe gez.) **Section A-A** (drawn w(/out cap)



cross section	①	Querprofil
cover	②	Deckel
cross beam	③	Holm
cap	④	Kappe
reinforcement	⑤	Verstärkung
blind rivet	⑥	Blindniet
blind rivet	⑦	Blindniet
claw	⑧	Kralle
L-reinforcement	⑨	L-Verstärkung
U-rung	⑩	U-Sprosse

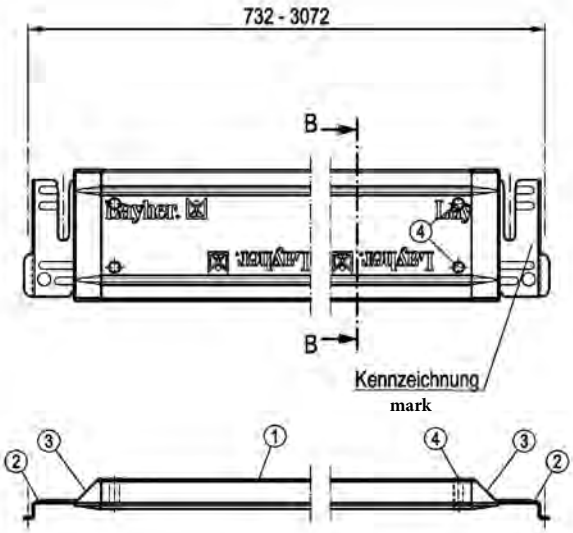
Wgt [kg]
Gew. [kg]
10,0

MJ COMBI DUO

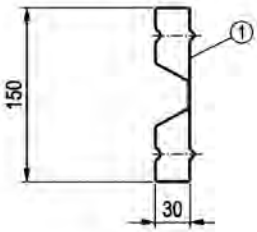
Bauteil gemäß Z-8.22-939 **Component acc. to Z-8.22-939**
U-Al access way 1.00 m x 0.61 m
U-Alu-Durchstieg 1,00 m x 0,61 m

Anlage B, 50.02.53

Deutsches Institut für Bautechnik DIBt



Schnitt B-B **Section B-B**



sheet, profiled	①	Blech profiliert
fitting	②	Beschlag
plastic cap	③	Kunststoffkappe
tubular rivet	④	Rohrniet

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	1,7
1,09	2,4
1,57	3,3
2,07	4,3
2,57	5,3
3,07	6,2

MJ COMBI DUO

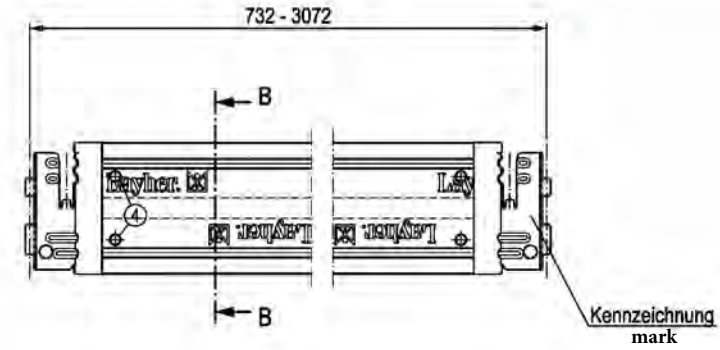
Bauteil gemäß Z-8.1-919 **Component acc. to Z-8.1-919**

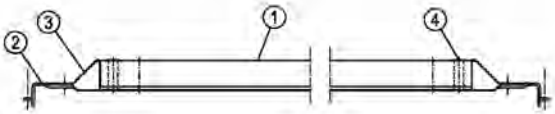
O-Steel toeboard 0.73 m - 3.07 m

O-Stahlbordbrett 0,73 m - 3,07 m

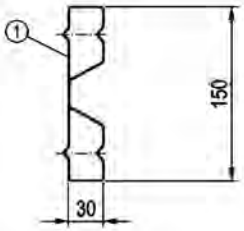
Anlage B, 50.03.01

Deutsches Institut für Bautechnik DIBt





Schnitt B-B **Section B-B**



sheet, profiled	①	Blech profiliert
fitting	②	Beschlag
plastic cap	③	Kunststoffkappe
tubular rivet	④	Rohrniet

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	1,7
1,09	2,4
1,57	3,3
2,07	4,3
2,57	5,3
3,07	6,2

MJ COMBI DUO

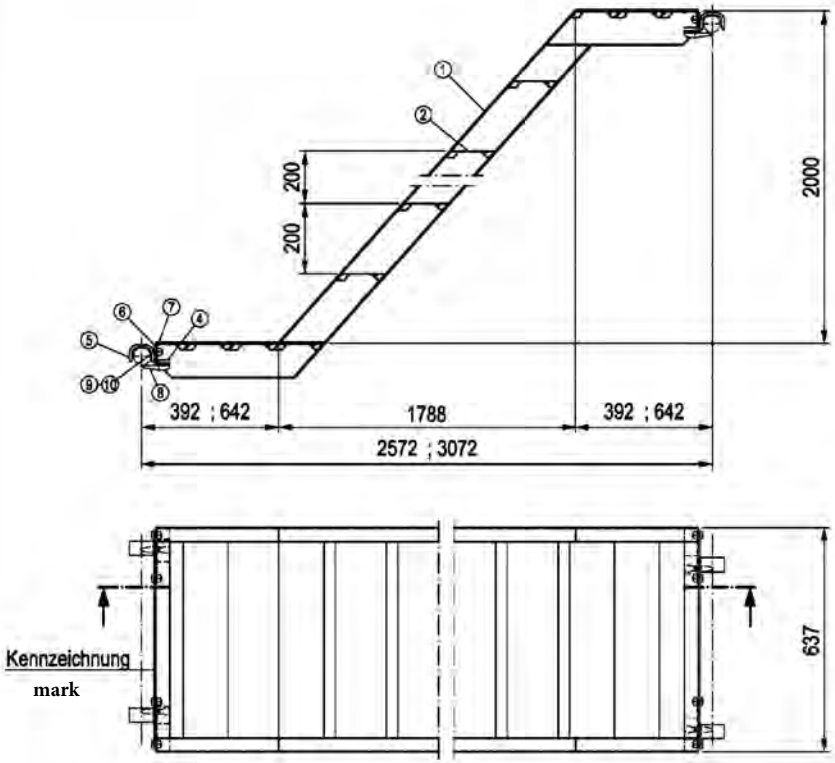
Bauteil gemäß Z-8.1-919 **Component acc. to Z-8.1-919**

O-Steel toeboard 0.73 m - 3.07 m T18

O-Stahlbordbrett 0,73 m - 3,07 m T18

Anlage B, 50.03.02

Deutsches Institut für Bautechnik DIBt



①	Treppenwange	stringer
②	Treppenstufe	stair
④	Alu U-Kappe	Al U-cap
⑤	Einhänge-U	suspension-U
⑥	L-Kappe	L-flap
⑦	Verstärkungsblech	reinforcing plate
⑧	Sicherungsriegel (rot)	securing bolt (red)
⑨	Sechskantschraube	hexagonal screw
⑩	Sicherungsmutter	prevailing torque type nut

zulässige Nutzlast : 2,0 kN/m²
permissible payload: 2.0 kN/m²

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
2,57	23,2
3,07	27,7

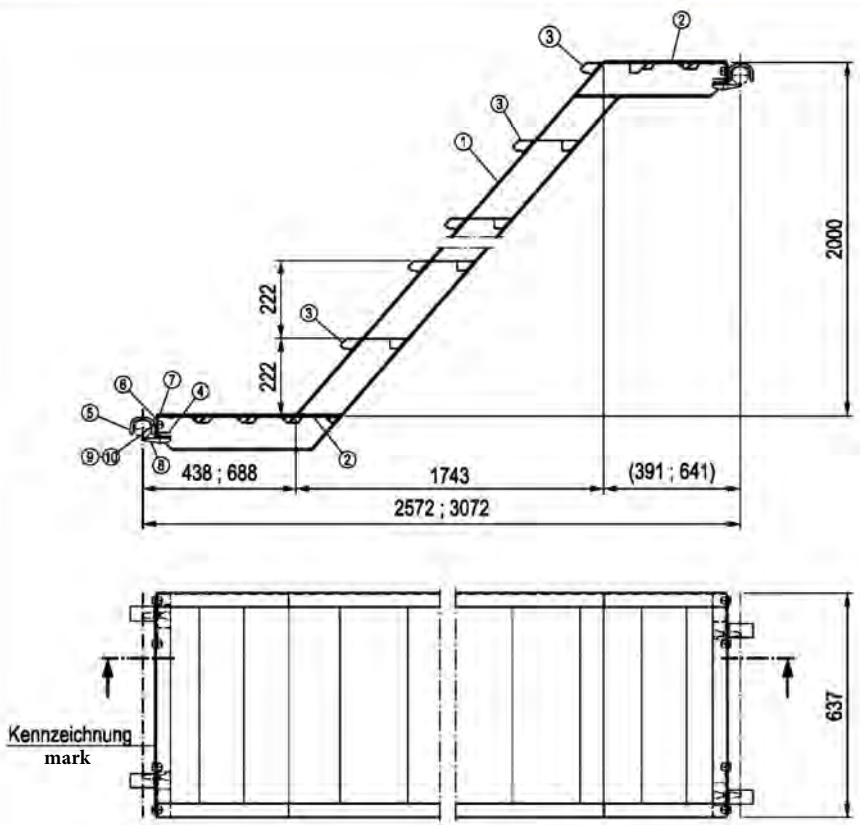
MJ COMBI DUO

Bauteil gemäß Z-8.1-919 Component acc. to Z-8.1-919

O-Al landing stairs 2.57 m; 3,07 m x 2.00 m x 0.64 m
O-Alu-Podesttreppe 2,57 m ; 3,07 m x 2,00 m x 0,64 m

Anlage B, 50.03.03

Deutsches Institut für Bautechnik DIBt



①	Komfort Treppenwange	stringer
②	Treppenstufe	stair
③	Komfort Treppenstufe	comfort stair
④	Alu U-Kappe	Al U-cap
⑤	Einhänge-U	suspension-U
⑥	L-Kappe	reinforcing plate
⑦	Verstärkungsblech	securing bolt (red)
⑧	Sicherungsriegel (rot)	hexagonal screw
⑨	Sechskantschraube	prevailing torque type nut
⑩	Sicherungsmutter	

zulässige Nutzlast : 2,0 kN/m²
permissible payload: 2.0 kN/m²

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
2,57	29,2
3,07	34,2

MJ COMBI DUO

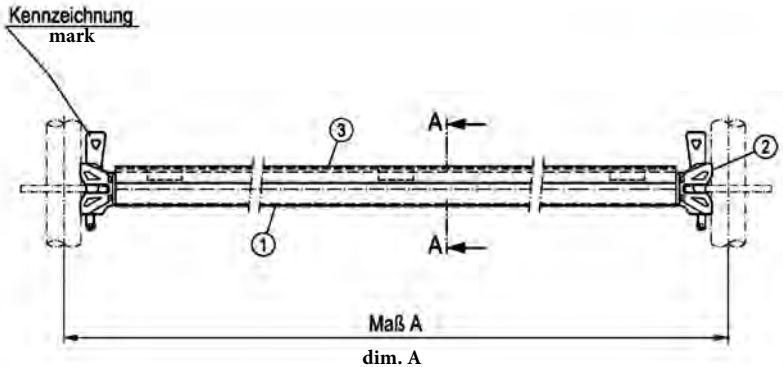
Bauteil gemäß Z-8.1-919 Component acc. to Z-8.1-919

O-comfort stair 2.57 m; 3.07 m x 2.00 m x 0.64 m

O-Komfort-Treppe 2,57 m ; 3,07 m x 2,00 m x 0,64 m

Anlage B, 50.03.04

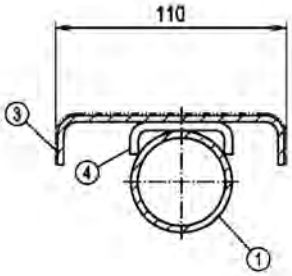
Deutsches Institut für Bautechnik DIBt



Dim A [mm]	Use up to load class	perm. p*) [kN/m]
Maß A [mm]	Verwendung bis Lastklasse	zul p*) [kN/m²]
732	6	10,0
1088		
1286		
1400		
1572		
2072		
2572		
3072		

*) auf der gesamten Blechbreite wirkend
*) acting on the entire sheet width

Schnitt A-A Section A-A



① Rohr
② Kopfstück + Keil "Variante LW"
③ Tränenblech
④ Distanzbügel

pipe
head piece+wedge 'Variant LW'
bulb plate
spacer bracket

(siehe Anlage B, 50.02.02 und 50.02.06)
(vd. Appendix B, ...)

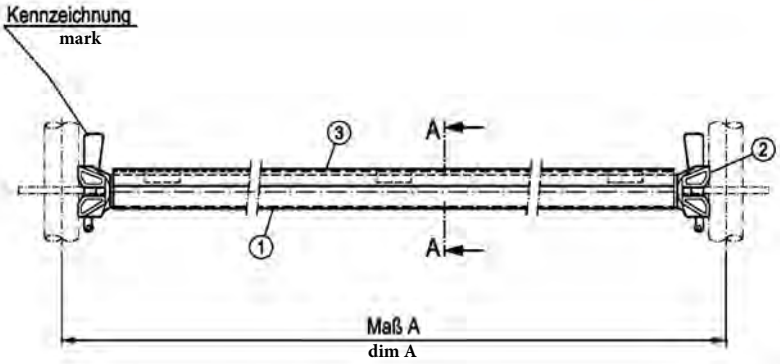
Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
0,73	5,2
1,09	7,5
1,29	9,0
1,40	9,4
1,57	10,8
2,07	14,1
2,57	18,1

MJ COMBI DUO

Bauteil gemäß Z-8.1-919 Component acc. to Z-8.1-919
O-gap ledger LW 0.73 m - 3.07 m
O-Spaltriegel LW 0,73 m - 3,07 m

Anlage B, 50.03.05

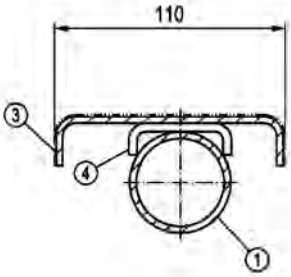
Deutsches Institut für Bautechnik DIBt



Dim A [mm]	Use up to load class	perm. p*) [kN/m]
Maß A [mm]	Verwendung bis Lastklasse	zul p*) [kN/m²]
732	6	10,0
1088		
1286		
1400		
1572		
2072		
2572	5	7,5
3072	4	5,0

*) auf der gesamten Blechbreite wirkend
*) acting on the entire sheet width

Schnitt A-A **Section A-A**



1. Rohr
2. Kopfstück + Keil "Variante K2000+"
3. Tränenblech
4. Distanzbügel

pipe
head piece+wedge 'Variant LW'
bulb plate
spacer bracket

(siehe Anlage B, 50.01.02 und 50.01.06)
(vd. Appendix B, ...)

Dim. Wgt [m] [kg

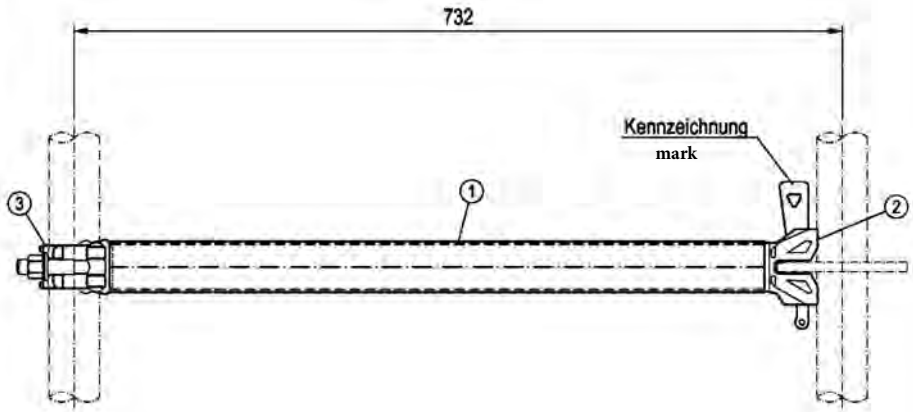
Abm. [m]	Gew. [kg]
0,73	5,3
1,09	8,0
1,29	9,6
1,40	10,0
1,57	11,7
2,07	15,0
2,57	19,2

MJ COMBI DUO

Bauteil gemäß Z-8.1-919 **Component acc. to Z-8.1-919**
O-gap ledger 0.73 m - 3.07 m 'Variant K2000+'
O-Spaltriegel 0,73 m - 3,07 m "Variante K2000+"

Anlage B, 50.03.06

Deutsches Institut für Bautechnik DIBt



① Rohr
② Kopfstück + Keil "Variante LW"
③ Halbkupplung mit Schraubverschluss

pipe
head piece+wedge 'Variant LW'
half coupling w. screw top

(siehe Anlage B, 50.02.02 und 50.02.06)
gem. Zulassung Z-8.331-882

(vd. Appendix B, ...)
acc. to approval Z-8.331-882

Wgt [kg]
Gew. [kg]
3,5

MJ COMBI DUO

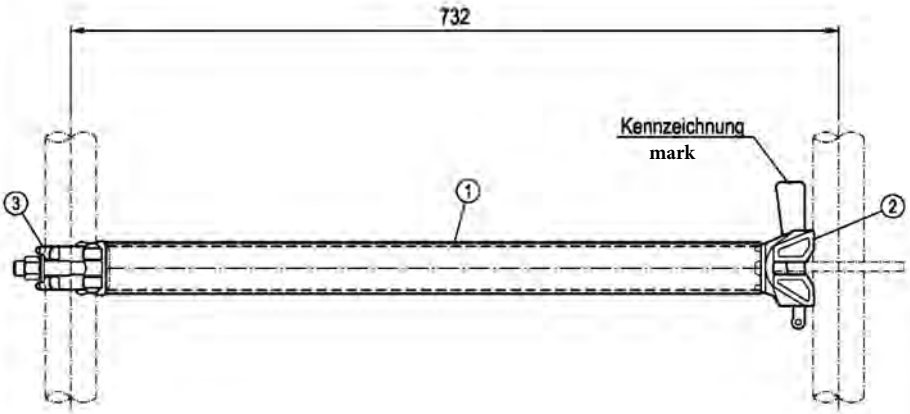
Bauteil gemäß Z-8.1-919 **Component acc. to Z-8.1-919**

O-ledger with half coupling 0.73 m 'Variant LW'

O-Riegel mit Halbkupplung 0,73 m "Variante LW"

Anlage B, 50.03.07

Deutsches Institut für Bautechnik DIBt



① Rohr
② Kopfstück + Keil "Variante K2000+"
③ Halbkupplung mit Schraubverschluss
pipe
head piece+wedge 'Variant LW'
half coupling w. screw top

(siehe Anlage B, 50.01.02 und 50.01.06)
gem. Zulassung Z-8.331-882

(vd. Appendix B, ...)
acc. to approval Z-8.331-882

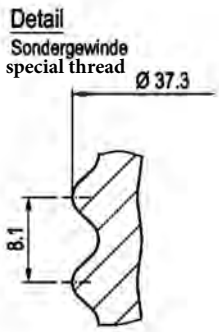
Wgt [kg]
Gew. [kg]
3,5

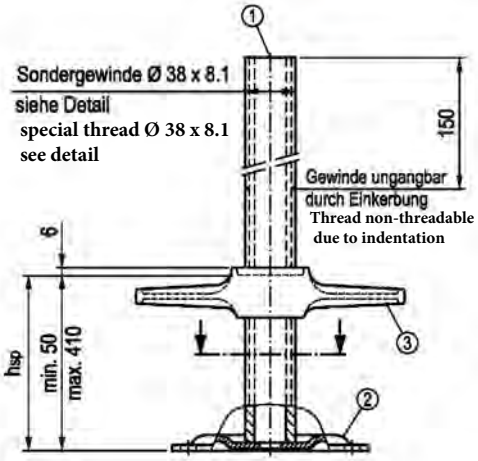
MJ COMBI DUO

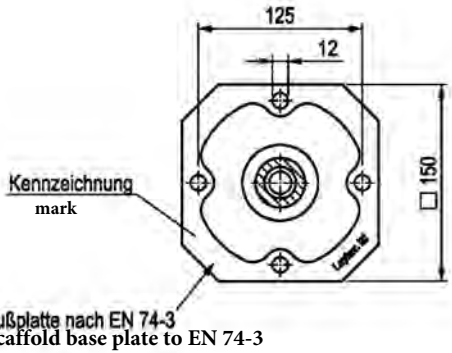
Bauteil gemäß Z-8.1-919 **Component acc. to Z-8.1-919**
O-ledger with half coupling 0.73 m 'Variant K2000+'
O-Riegel mit Halbkupplung 0,73 m "Variante K2000+"

Anlage B, 50.03.08

Deutsches Institut für Bautechnik DIBt







pipe	①	Rohr
scaffold base plate	②	Fußplatte
spindle nut	③	Spindelmutter

Wgt [kg]
Gew. [kg]
3,6

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
Base jack 60
Fußspindel 60

Anlage B, 50.04.01

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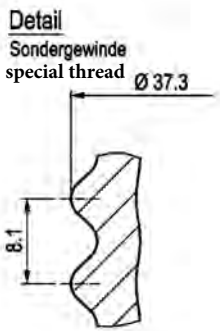
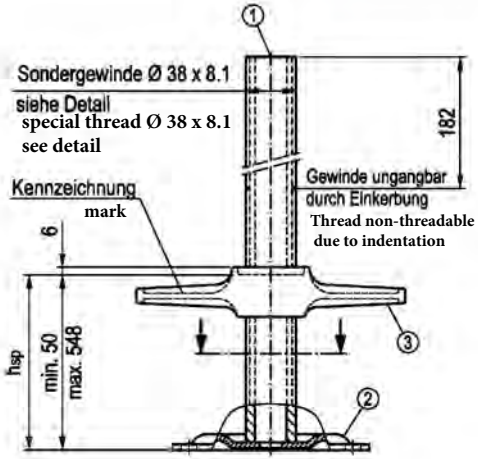
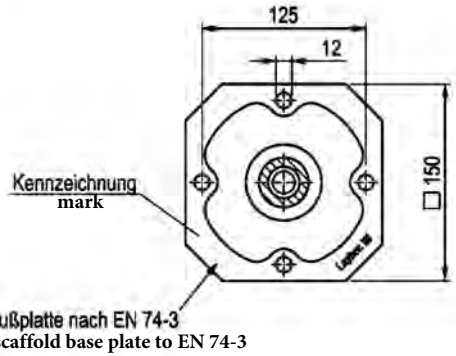






① Rohr — pipe
② Fußplatte — scaffold base plate
③ Spindelmutter — spindle nut

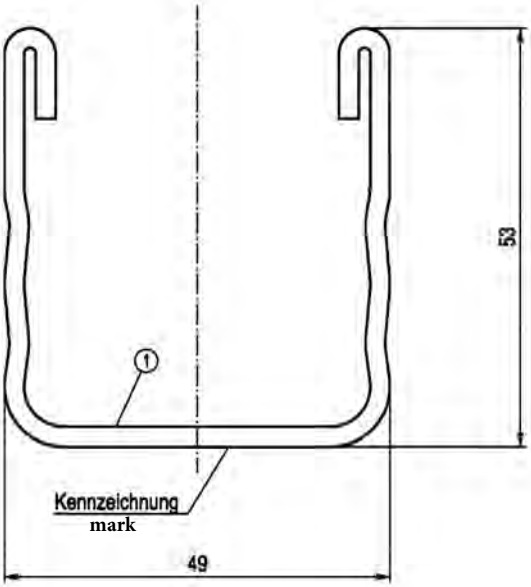
Wgt [kg]
Gew. [kg]
4,9

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
Base jack 80 reinforced
Fußspindel 80 verstärkt

Anlage B, 50.04.02

Deutsches Institut für Bautechnik DIBt



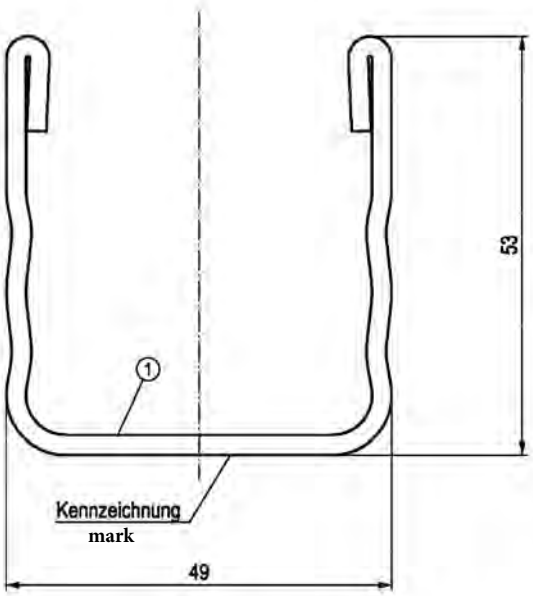
① U-Profil 49 x 53 x 2,5 Werkstoff siehe Bauteilzeichnungen
U-section see component drawings for materials

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-section 53 T10
U-Profil 53 T10

Anlage B, 50.04.03

Deutsches Institut für Bautechnik DIBt



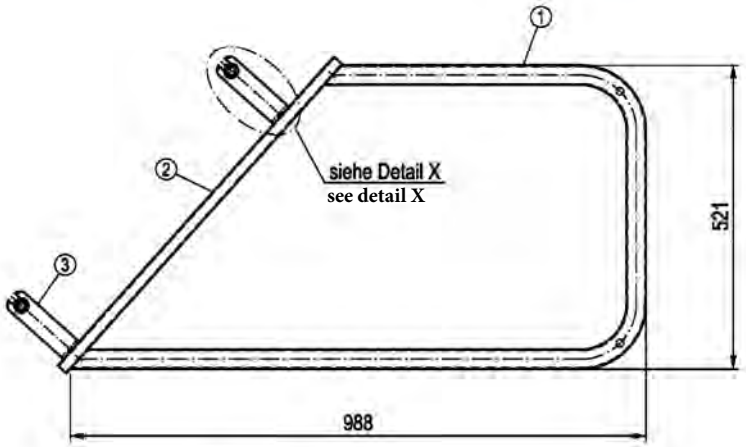
① U-Profil 49 x 53 x 2,5 Werkstoff siehe Bauteilzeichnungen
U-section see component drawings for materials

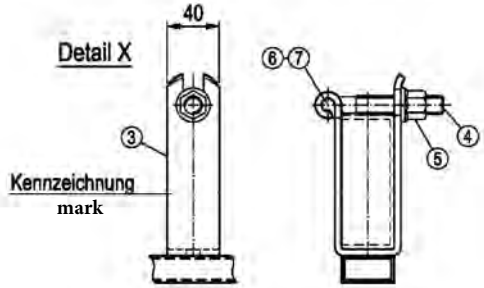
MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-section 53
U-Profil 53

Anlage B, 50.04.04

Deutsches Institut für Bautechnik DIBt





①	Rohr	**pipe**
②	Rechteckrohr	**rectang. tube**
③	U-Bügel	**U-bracket**
④	Augenschraube	**eye bolt**
⑤	Bundmutter	**collar nut**
⑥	Sechskantschraube	**hexagon screqw**
⑦	Sicherungsmutter	**prevailing torque type nut**

Wgt [kg]
Gew. [kg]
6,2

MJ COMBI DUO

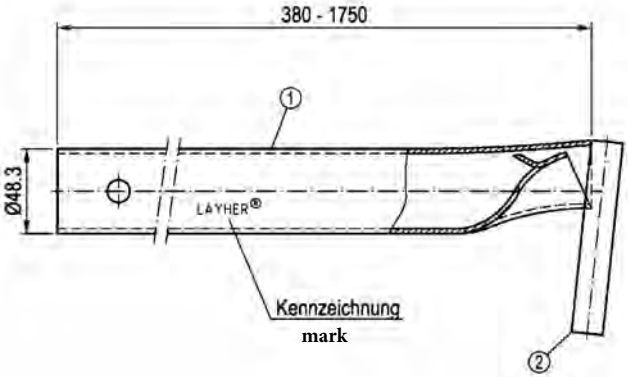
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

Peripheral railing 1.00 m x 0.50 m

Treppen-Umlaufgeländer 1,00 m x 0,50 m

Anlage B, 50.04.05

Deutsches Institut für Bautechnik DIBt



① Rohr **pipe**
② Haken **hook**

Dim. Wgt
[m] [kg]

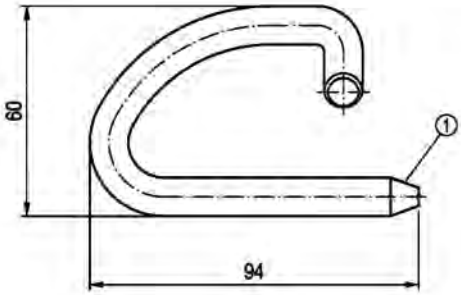
Abm. [m]	Gew. [kg]
0,38	1,6
0,69	2,8
0,95	3,7
1,45	5,7
1,75	5,8

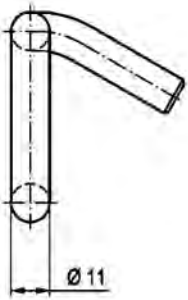
MJ COMBI DUO

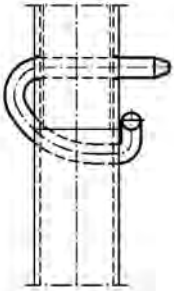
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**
Tie member 0.38 m - 1.75 m
Gerüsthalter 0,38 m - 1,75 m

Anlage B, 50.04.06

Deutsches Institut für Bautechnik DIBt







① Fallstecker
gravity pin

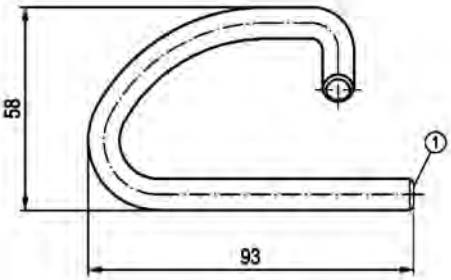
Wgt [kg]
Gew. [kg]
0,2

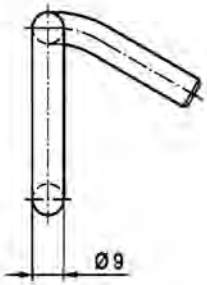
MJ COMBI DUO

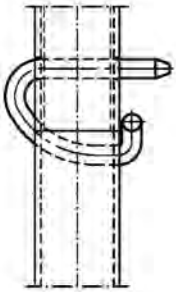
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**
Gravity pin red Ø 11 mm
Fallstecker rot Ø 11 mm

Anlage B, 50.04.07

Deutsches Institut für Bautechnik DIBt







① Fallstecker
gavity pin

Wgt [kg]

Gew. [kg]
0,1

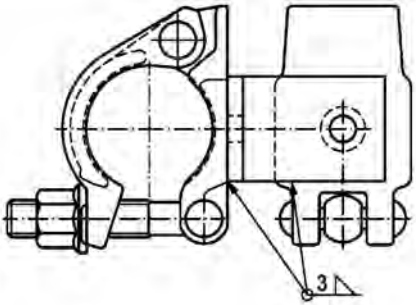
MJ COMBI DUO

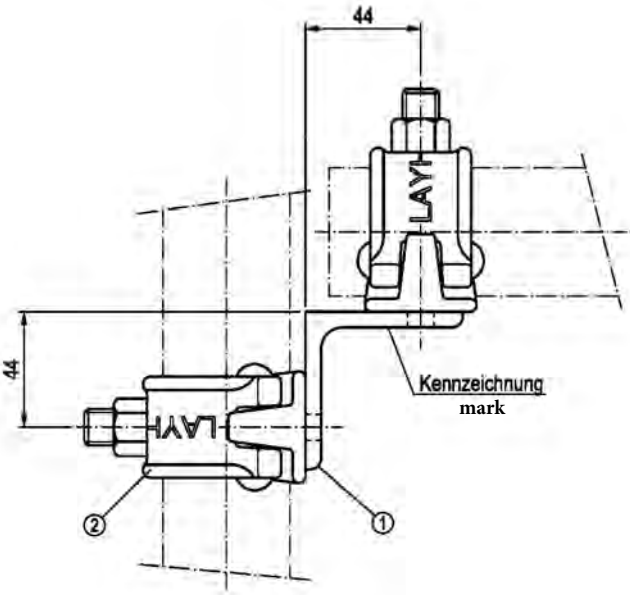
Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2

Gravity pin Ø 9 mm
Fallstecker Ø 9 mm

Anlage B, 50.04.08

Deutsches Institut für Bautechnik DIBt





① Winkel bracket
② Halbkupplung mit Schraubverschluss
half coupling with screw closure

Wgt [kg]

Gew. [kg]
1,6

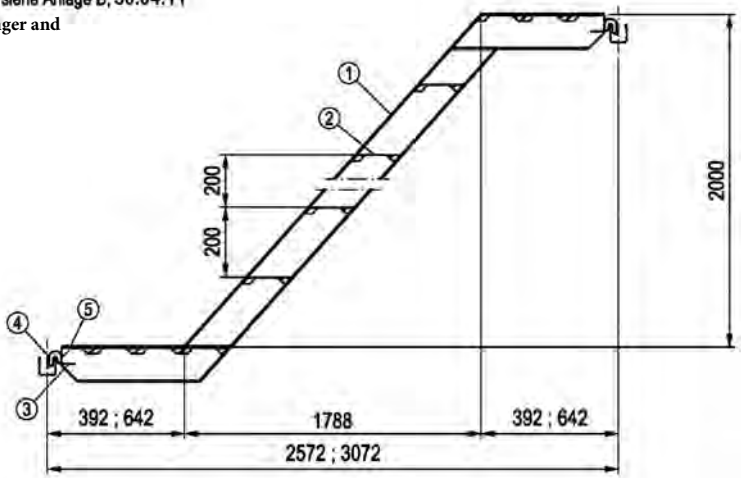
MJ COMBI DUO

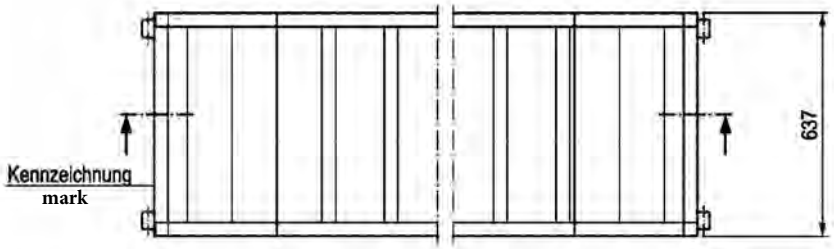
Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
Lattice girder coupler
Gitterträgerkupplung

Anlage B, 50.04.09

Deutsches Institut für Bautechnik DIBt

Detail's
Treppenstufe ; Treppenwange und
Einhängung siehe Anlage B, 50.04.11
stair; stringer and





stringer	①	Treppenwange
stair	②	Treppenstufe
cap-U	③	Kappe - U
claw	④	Kralle
snap head riviet	⑤	Flachrundniet

zulässige Nutzlast : 2,0 kN/m²
permissible : 2.0 kN/m²

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,57	21,9
3,07	26,3

MJ COMBI DUO

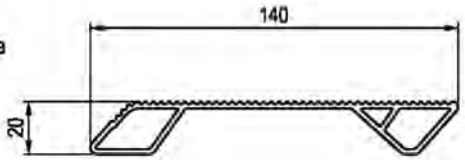
Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2

U-Al landing staircase 2.57 m; 3.07 m x 2.00 m x 0.64 m
U-Alu-Podesttreppe 2,57 m ; 3,07 m x 2,00 m x 0,64 m

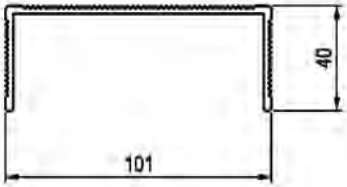
Anlage B, 50.04.10

Deutsches Institut für Bautechnik DIBt

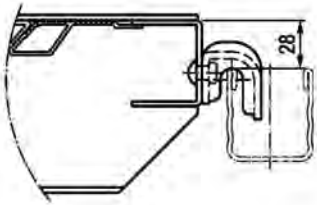
Detail
Treppenstufe
stair



Detail
Treppenwange
stringer



Detail
Einhängung
hang-in fixture



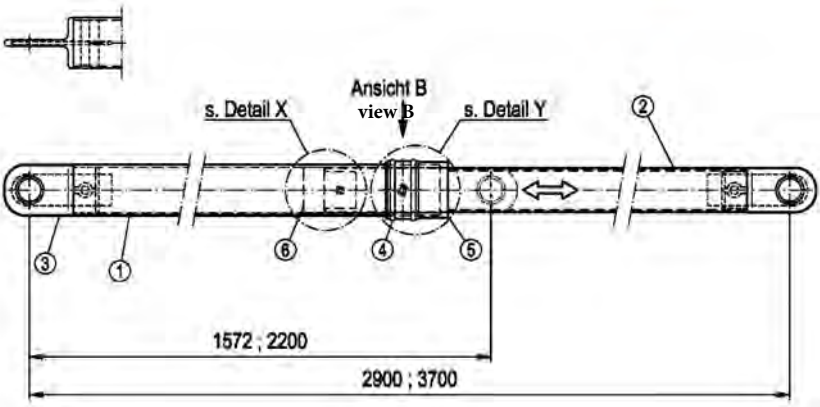
MJ COMBI DUO

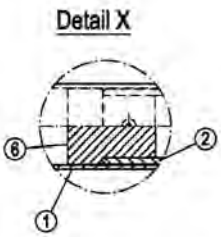
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

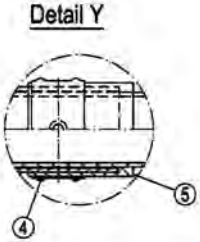
U-Al landing staircase details
Details U-Alu-Podesttreppe

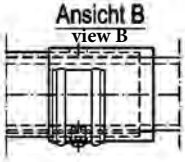
Anlage B, 50.04.11

Deutsches Institut für Bautechnik DIBt









①	Rohr	**pipe**
②	Profil	**section**
③	Geländereinhängung	**handrail mounting**
④	Federstecker	**spring cotter**
⑤	Führungskappe	**guiding cap**
⑥	Innenführung	**inner guide**

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,07	3,2
3,07	4,0

MJ COMBI DUO

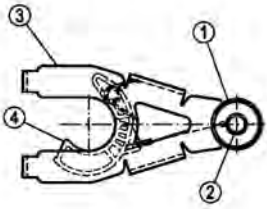
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

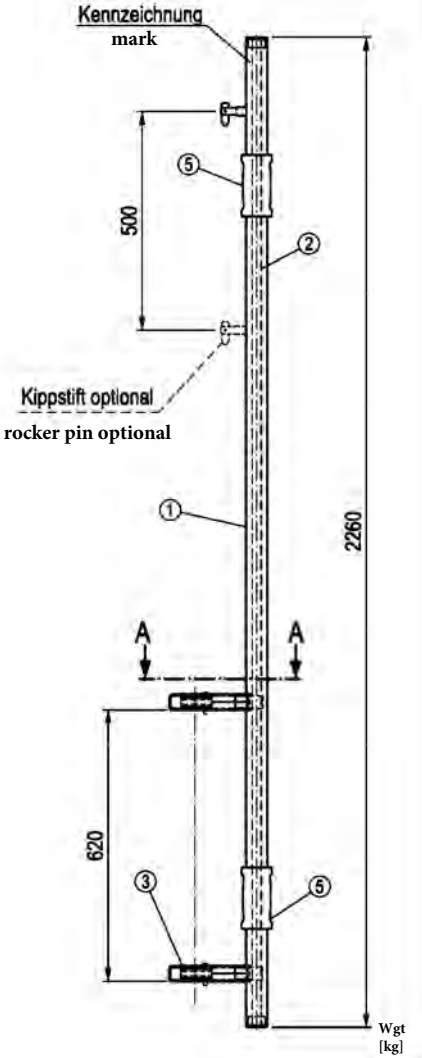
Al erection guard-rail 1.57 m / 2.07 m; 2.57 m / 3.07 m
Alu-Montagegeländer 1,57 m / 2,07 m; 2,57 m / 3,07 m

Anlage B, 50.04.12

Deutsches Institut für Bautechnik DIBt

Schnitt A-A Section A-A





①	Aussenrohr	outer pipe
②	Innenrohr	inner pipe
③	Einrastgehäuse	snap-in housing
④	Finger	finger
⑤	Griff	handle

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
Assembly post T5
Montagepfosten T5

Anlage B, 50.04.13

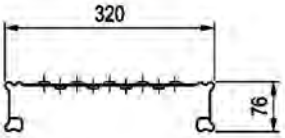
Deutsches Institut für Bautechnik DIBt

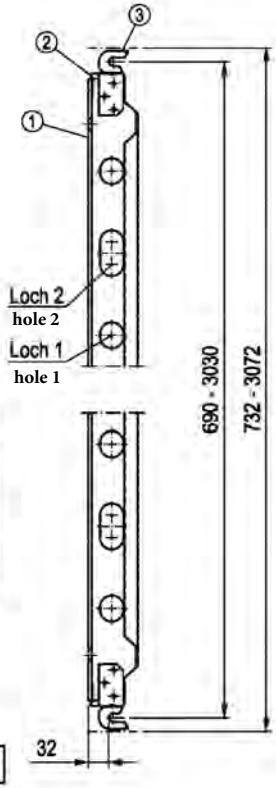
Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

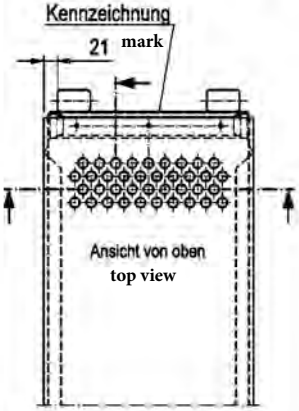
*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

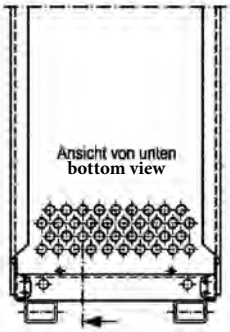
Section drawan without cap

Schnitt ohne Kappe gezeichnet









Bay length Feld Länge	Qty hole1 Anzahl Loch 1	Qty hole 2 Anzahl Loch 2
0,73 m	2	-
1,09 m	2	2
1,57 m	4	2
2,07 m	6	4
2,57 m	8	6
3,07 m	10	8

● = Schweißpunkte
weld points

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
0,73	6,0
1,09	8,4
1,57	11,9
2,07	15,0
2,57	18,2
3,07	21,5

① Belagblech deck plate
② Kappe cap
③ Kralle claw

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-Stahlboden T4 0,73 m - 3,07 m x 0,32 m
Ausführung: punktgeschweißt

U-steel deck T4 0.73 m - 3.07 m x 0.32 m
Spot-welded version

Anlage B, 50.04.14

Deutsches Institut für Bautechnik DIBt

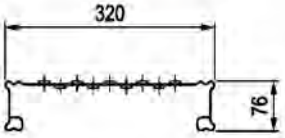
Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

*) auf der gesamten Bodenfläche wirkend

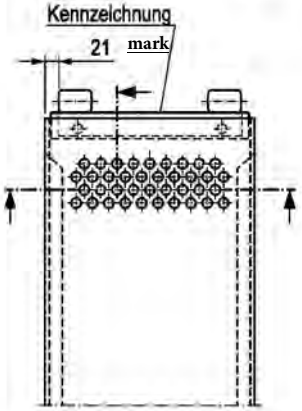
*) acting on the entire floor space

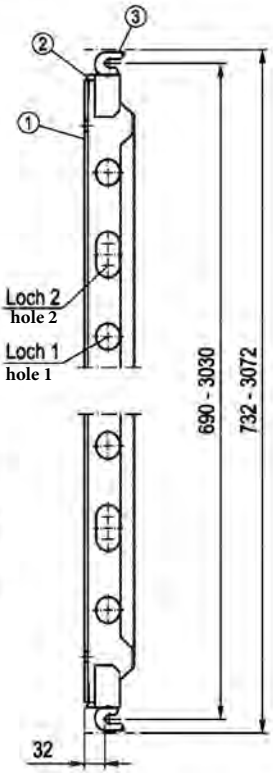
Schnitt
ohne Kappe gezeichnet

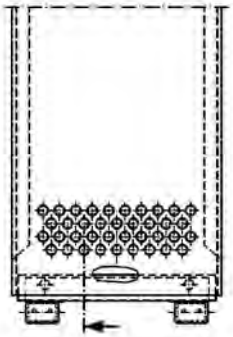
Section
drawan without cap



Kennzeichnung
21 mark







Bay length Feld Länge	Qty hole1 Anzahl Loch 1	Qty hole 2 Anzahl Loch 2
0,73 m	2	-
1,09 m	2	2
1,57 m	4	2
2,07 m	6	4
2,57 m	8	6
3,07 m	10	8

Dim. [m] Abm. [m]	Wgt [kg] Gew. [kg]
0,73	6,0
1,09	8,4
1,57	11,9
2,07	15,0
2,57	18,2
3,07	21,5

① Belagblech **deck plate**
② Kappe **cap**
③ Kralle **claw**

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-Stahlboden T4 0,73 m - 3,07 m x 0,32 m **U-steel deck T4 0.73 m - 3.07 m x 0.32 m**
Ausführung: handgeschweißt **Hand-welded version**

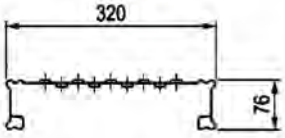
Anlage B, 50.04.15

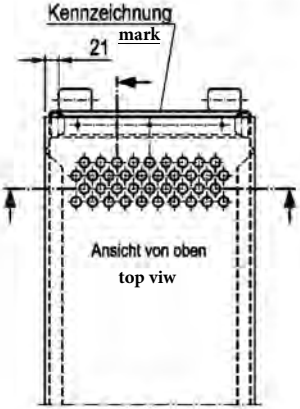
Deutsches Institut für Bautechnik DIBt

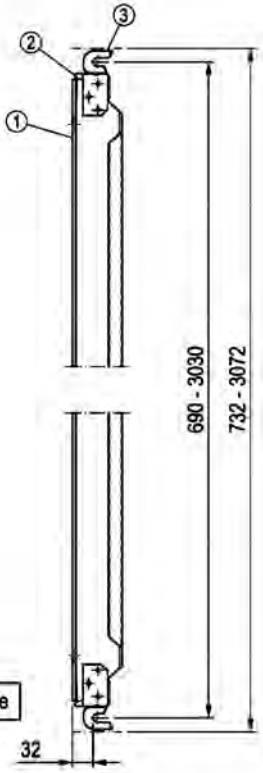
Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

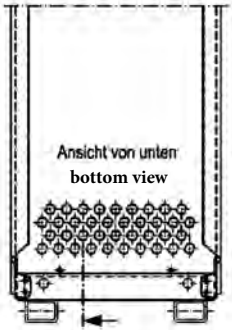
*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

Section drawn without cap
Schnitt ohne Kappe gezeichnet









● = Schweißpunkte
weld points

① Belagblech deck plate
② Kappe cap
③ Kralle claw

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	6,1
1,09	8,6
1,57	11,9
2,07	15,4
2,57	18,7
3,07	22,2

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-Stahlboden 0,73 m - 3,07 m x 0,32 m
Ausführung: punktgeschweißt

U-steel deck 0.73 m - 3.07 m x 0.32 m
Spot-welded version

Anlage B, 50.04.16

Deutsches Institut für Bautechnik DIBt

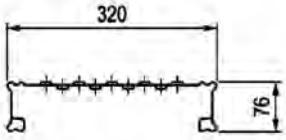
Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

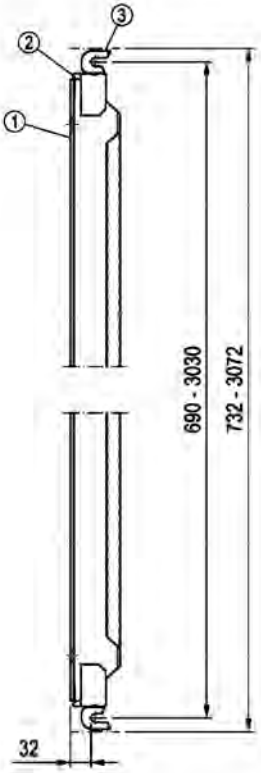
*) auf der gesamten Bodenfläche wirkend

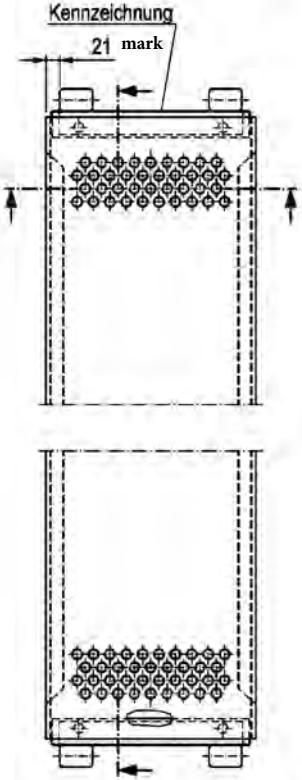
*) acting on the entire floor space

Section drawan without cap

Schnitt ohne Kappe gezeichnet







① Belagblech deck plate
② Kappe cap
③ Kralle claw

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	6,1
1,09	8,6
1,57	11,9
2,07	15,4
2,57	18,7
3,07	22,2

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-Stahlboden 0,73 m - 3,07 m x 0,32 m
Ausführung: handgeschweißt

U-steel deck 0.73 m - 3.07 m x 0.32 m
Hand-welded version

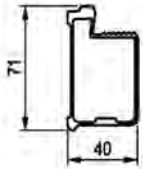
Anlage B, 50.04.17

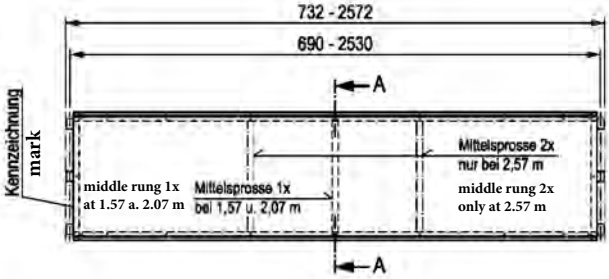
Deutsches Institut für Bautechnik DIBt

Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,57 m	3	2,0

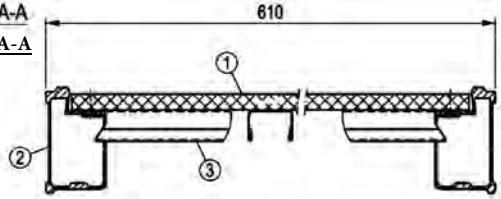
*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

Detail (Profil) (section)

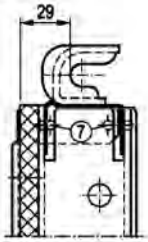


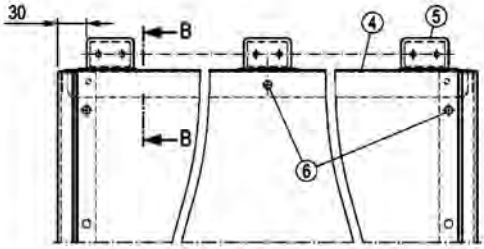


Schnitt A-A
Section A-A



Schnitt B-B Section B-B





①	Sperrholz	plywood
②	Holm	stile
③	Sprosse	rung
④	Kappe	cap
⑤	Kralle	claw
⑥	Blindniet	blind rivet
⑦	Blindniet	blind rivet

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	7,5
1,09	9,7
1,57	13,1
2,07	16,4
2,57	19,3

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2

U-robust deck 0.73 m - 2.57 m x 0.61 m
U-Robustboden 0,73 m - 2,57 m x 0,61 m

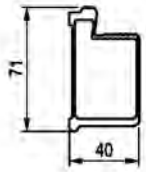
Anlage B, 50.04.18

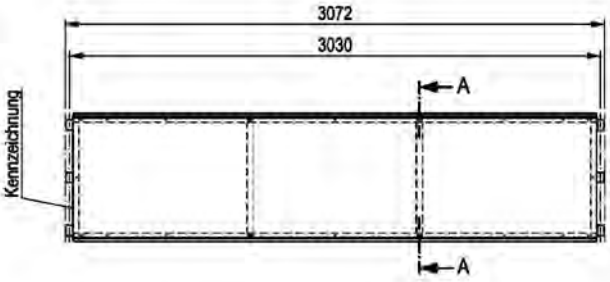
Deutsches Institut für Bautechnik DIBt

Bay width Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
3,07 m	3	2,0

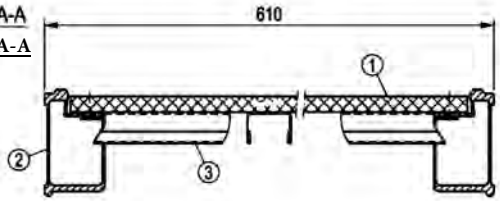
*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

Detail (Profil) (section)

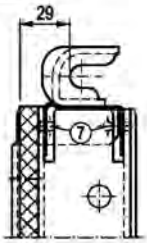


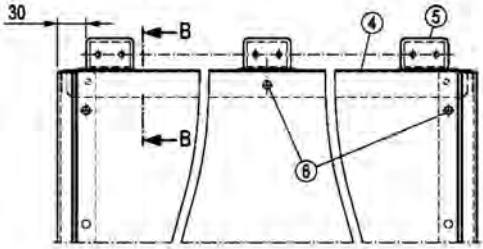


Schnitt A-A
Section A-A



Schnitt B-B Section B-B





①	Sperrholz	plywood
②	Holm	stile
③	Sprosse	rung
④	Kappe	cap
⑤	Kralle	claw
⑥	Blindniet	blind rivet
⑦	Blindniet	blind rivet

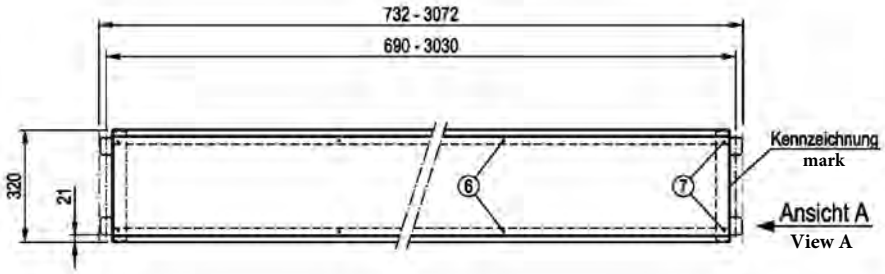
Wgt [kg]
Gew. [kg]
24,2

MJ COMBI DUO

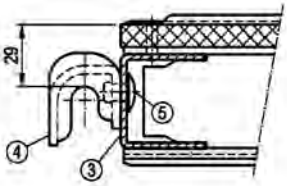
Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-robust deck 3.07 m x 0.61 m
U-Robustboden 3,07 m x 0,61 m

Anlage B, 50.04.19

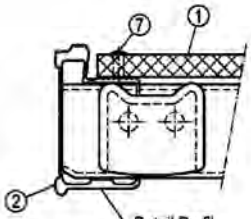
Deutsches Institut für Bautechnik DIBt



Schnitt B-B **Section B-B**



Ansicht A **View A**



Detail Profil **detailed section**
siehe Anlage B, 50.04.19
vd. Appendix B, ...

Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m²] zul p *) [kN/m²]	Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m²] zul p *) [kN/m²]
≤ 1,57 m	6	10,0	2,57 m	4	5,0
2,07 m	5	7,5	3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

①	Sperrholz	plywood
②	Holm	stile
③	Kappe	cap
④	Kralle	claw
⑤	Flachrundniet	snap head rivet
⑥	Blindniet	blind rivet
⑦	Blindniet	blind rivet

Dim. [m]	Wgt [kg]
Abm. [m]	Gew. [kg]
0,73	7,4
1,09	8,4
1,57	9,9
2,07	11,5
2,57	14,7
3,07	16,0

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**
U-robust deck 0.73 m - 3.07 m x 0.32 m
U-Robustboden 0,73 m - 3.07 m x 0,32 m

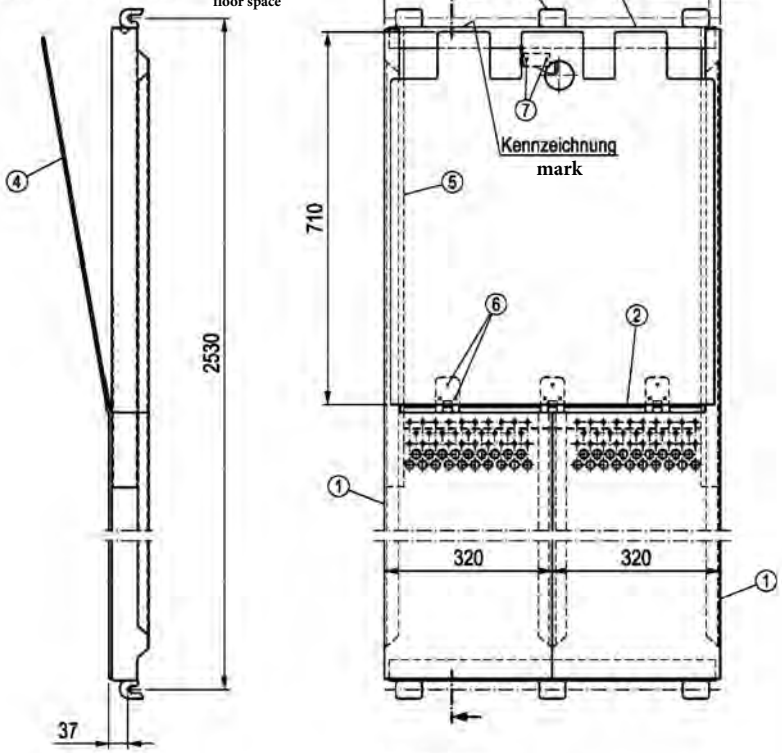
Anlage B, 50.04.20

Deutsches Institut für Bautechnik DIBt

Bay length / Feldlänge	Use up to load class / Verwendung bis Lastklasse	perm p [kN/m²] / zul p [kN/m²]
2,57 m	4	3,0 *)
		5,0 **)

*) auf der gesamten Bodenfläche wirkend
**) auf 40% der Bodenfläche wirkend

*) acting on the entire floor space
**) acting on 40% of the floor space



①	Belagblech	deck plate
②	Kappe	cap
③	Kralle	claw
④	Deckel	cover
⑤	Verstärkungs-U	reinforcement-U
⑥	Blindniet	blind rivet
⑦	Blindniet	blind rivet

Wgt [kg] / Gew. [kg]: 38,0

MJ COMBI DUO

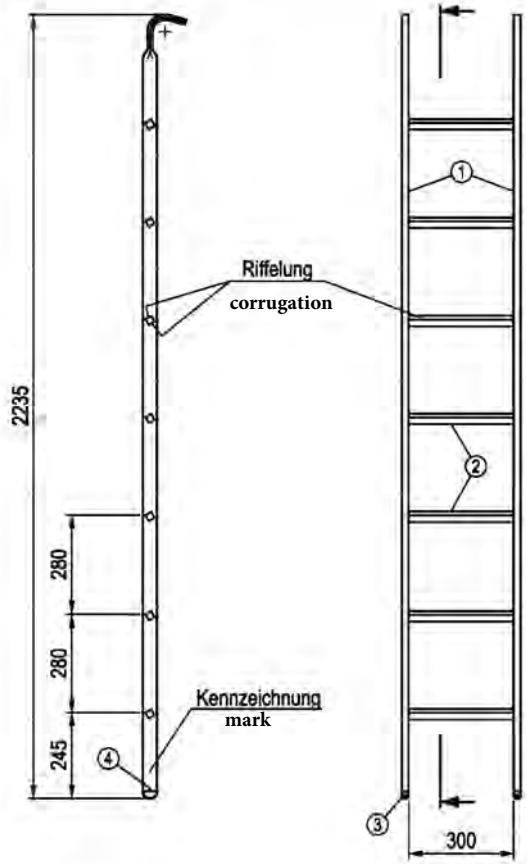
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-steel deck access way 2.57 m x 0.64 m

U-Stahlboden-Durchstieg 2,57 m x 0,64 m

Anlage B, 50.04.21

Deutsches Institut für Bautechnik DIBt



① Holm **stile**
② Sprosse **rung**
③ Gummifuß **rubber foot**
④ Blindniet **blind rivet**

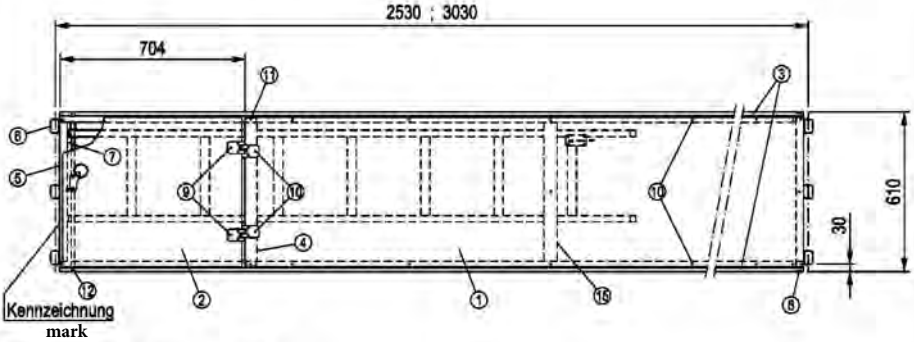
Wgt [kg]
Gew. [kg]
7,8

MJ COMBI DUO

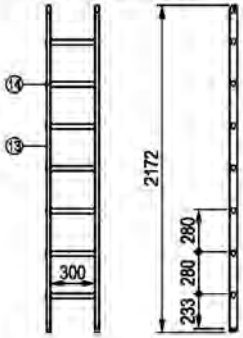
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**
Access ladder 7 rungs
Etagenleiter 7 Sprossen

Anlage B, 50.04.22

Deutsches Institut für Bautechnik DIBt



Leiter nach EN 131 **ladder to EN 131**



	Bay length	Use up to load class	perm p*) [kN/m²]
	Feldlänge	Verwendung bis Lastklasse	zul p *) [kN/m²]
	≤ 3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) **acting on the entire floor space**

①	Sperrholz	**plywood**
②	Deckel	**cover**
③	Holm	**stile**
④	Verstärkung	**reinforcement**
⑤	Kappe	**cap**
⑥	Kralle	**claw**
⑦	Verstärkung	**reinforcement**
⑧	Blindniet	**blind rivet**
⑨	Blindniet	**blind rivet**
⑩	Blindniet	**blind rivet**
⑪	Blindniet	**blind rivet**
⑫	Achse	**axle**
⑬	Leiternholm	**ladder stile**
⑭	Leitersprosse	**ladder rung**
⑮	Strebe	**strut**

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
2,57	24,0
3,07	27,4

MJ COMBI DUO

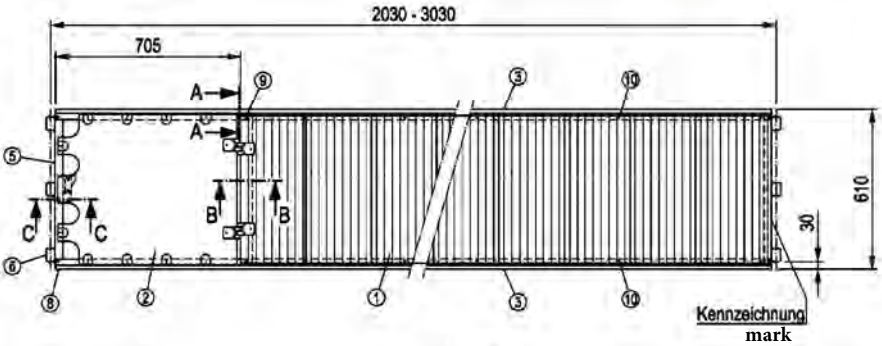
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-robust w. ladder 2.57 m - 3.07 m x 0.61 m

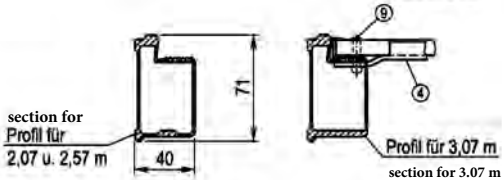
U-Robust-Durchstieg mit Leiter 2,57 m - 3,07 m x 0,61 m

Anlage B, 50.04.23

Deutsches Institut für Bautechnik DIBt

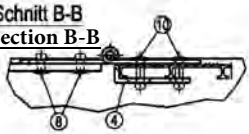


Schnitt A-A **Section A-A**

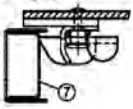


Querschnitt **Cross section**
(Querprofil)

Schnitt B-B
Section B-B



Schnitt C-C **Section C-C**
(ohne Kralle gez.) **(drawn w/out claw)**



cross section	①	Querprofil
cover	②	Deckel
stile	③	Holm
reinforcement	④	Verstärkung
cap	⑤	Kappe
claw	⑥	Kralle
reinforcement	⑦	Verstärkung
blind rivet	⑧	Blindniet
blind rivet	⑨	Blindniet
blind rivet	⑩	Blindniet

Bay length	**Use up to load class**	**perm p*) [kN/m²]**
Feldlänge	Verwendung bis Lastklasse	zul p *) [kN/m²]
≤ 3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) **acting on the entire floor space**

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
2,07	17,0
2,57	20,0
3,07	24,5

MJ COMBI DUO

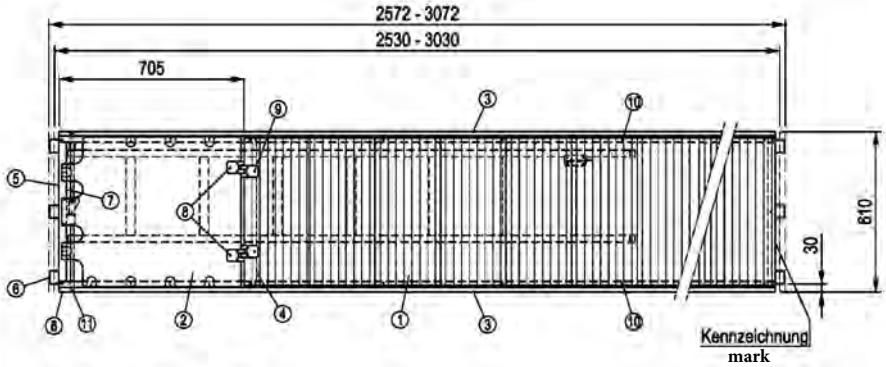
Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

U-Al access way 2.57 m - 3.07 m x 0.61 m

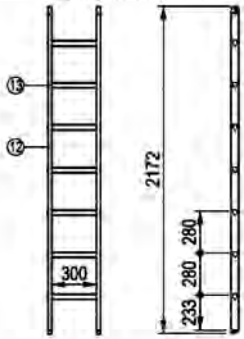
U-Alu-Durchstieg 2,07 m - 3,07 m x 0,61 m

Anlage B, 50.04.24

Deutsches Institut für Bautechnik DIBt



Leiter nach EN 131 **ladder to EN 131**



Bay length	Use up to load class	perm p*) [kN/m2]
Feldlänge	Verwendung bis Lastklasse	zul p *) [kN/m²]
≤ 3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) **acting on the entire floor space**

①	Sperrholz	**cross section**
②	Deckel	**cover**
③	Holm	**stile**
④	Verstärkung	**reinforcement**
⑤	Kappe	**cap**
⑥	Kralle	**claw**
⑦	Verstärkung	**reinforcement**
⑧	Blindniet	**blind rivet**
⑨	Blindniet	**blind rivet**
⑩	Blindniet	**blind rivet**
⑪	Blindniet	**blind rivet**
⑫	Achse	**axle**
⑬	Leiternholm	**ladder stile**
⑭	Leitersprosse	**ladder rung**
⑮	Strebe	**strut**

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
2,57	24,0
3,07	28,0

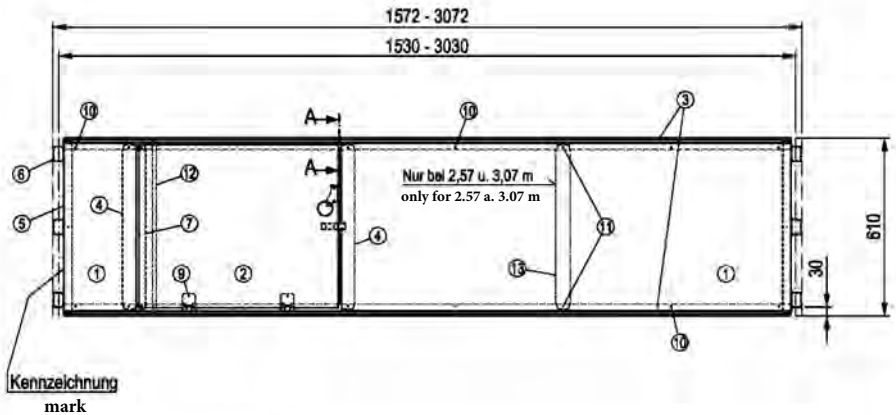
MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 **Component acc. to Z-8.1-16.2**

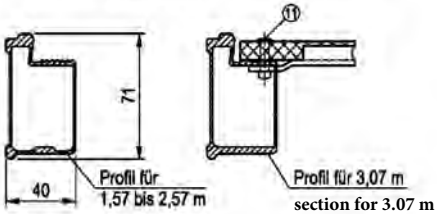
U-Al access way with ladder 2.57 m - 3.07 m x 0.61 m
U-Alu-Durchstieg mit Leiter 2,57 m - 3,07 m x 0,61 m

Anlage B, 50.04.25

Deutsches Institut für Bautechnik DIBt



Schnitt A-A Section A-A



section for 1.57 to 2.57 m

section for 3.07 m

Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m²] zul p *) [kN/m²]
≤ 3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

①	Spernholz	cross section
②	Deckel	cover
③	Holm	stile
④	Verstärkung	reinforcement
⑤	Kappe	cap
⑥	Kralle	claw
⑦	ST-U	ST-U
⑧	Blindniet	blind rivet
⑨	Blindniet	blind rivet
⑩	Blindniet	blind rivet
⑪	Blindniet	blind rivet
⑫	Achse	axle
⑬	Strebe	strut

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
1,57	14,2
2,07	17,2
2,57	20,5
3,07	24,6

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2

U-robust access way 1.57 m - 3.07 m x 0.61 m, cover offset
U-Robust-Durchstieg 1,57 m - 3,07 m x 0,61 m, Deckel versetzt

Anlage B, 50.04.26

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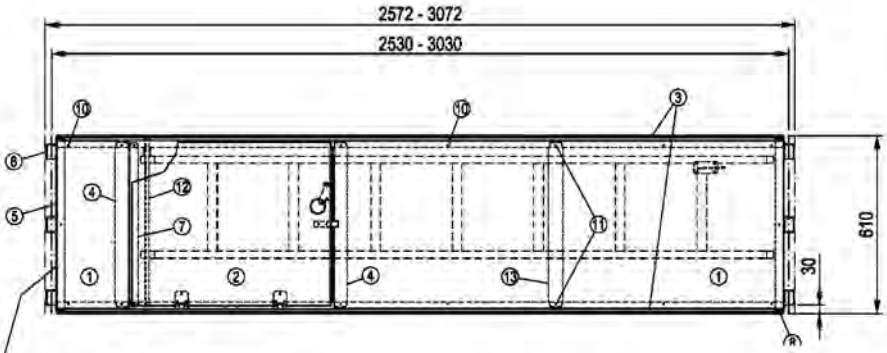

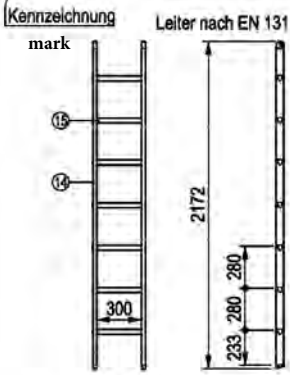

Bay length	Use up to load class	perm p*) [kN/m²]
Feldlänge	Verwendung bis Lastklasse	zul p *) [kN/m²]
≤ 3,07 m	3	2,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

①	Sperrholz	plywood
②	Deckel	cover
③	Holm	stile
④	Verstärkung	reinforcement
⑤	Kappe	cap
⑥	Kralle	claw
⑦	Stahl-U	ST-U
⑧	Blindniet	blind rivet
⑨	Blindniet	blind rivet
⑩	Blindniet	blind rivet
⑪	Blindniet	blind rivet
⑫	Achse	axle
⑬	Strebe	strut
⑭	Leiternholm	ladder stile
⑮	Leitersprosse	ladder rung

Dim. Wgt [m] [kg]

Abm. [m]	Gew. [kg]
2,57	25,2
3,07	28,4

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2

U-Robust-Durchstieg 2,57 m - 3,07 m x 0,61 m mit Leiter, Deckel versetzt

U-robust access way 2.57 m - 3.07 m x 0.61 m with ladder, cover offset

Anlage B, 50.04.27

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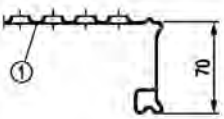
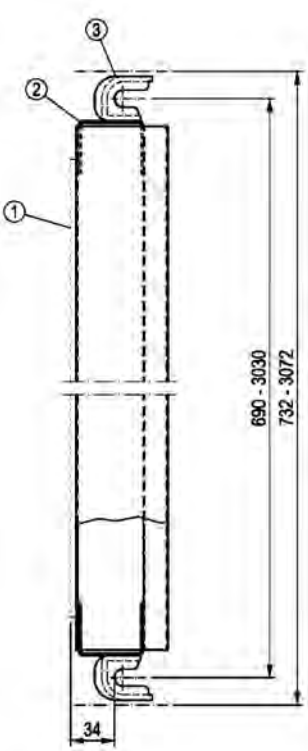
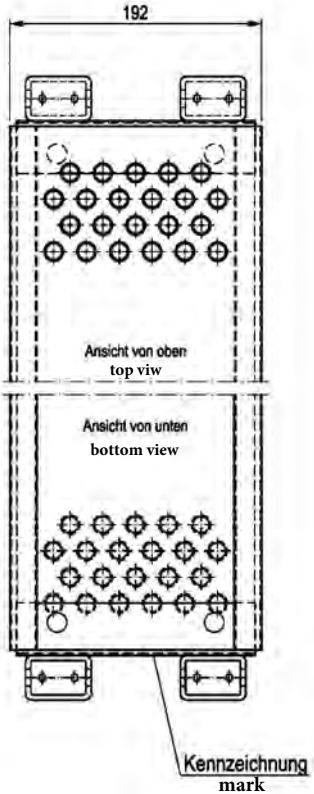
Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) [kN/m2] zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

cross section (*drawn w/out hang-in fixture*) Querschnitt (ohne Einhängung gezeichnet)







Dim. Wgt [m]	[kg]
Abm. [m]	Gew. [kg]
0,73	5,1
1,09	6,4
1,57	8,5
2,07	10,2
2,57	13,2
3,07	15,3

① Belagblech deck plate
② Kappe cap
③ Kralle claw

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-steel deck 0.73 m - 3.07 m x 0.19 m
U-Stahlboden 0,73 m - 3,07 m x 0,19 m

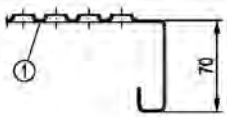
Anlage B, 50.04.28

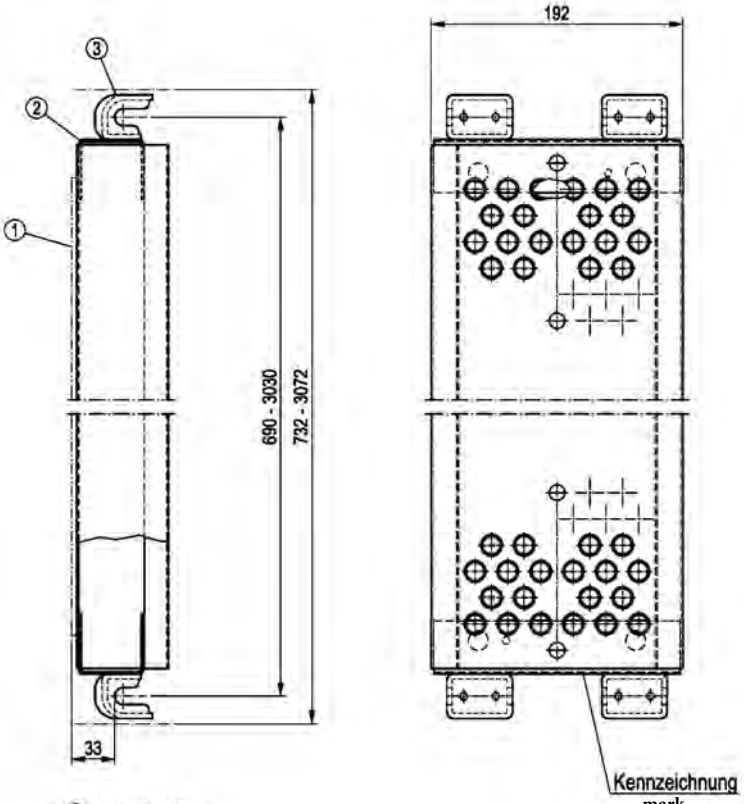
Deutsches Institut für Bautechnik DIBt

Bay length Feldlänge	Use up to load class Verwendung bis Lastklasse	perm p*) zul p *) [kN/m²]
≤ 2,07 m	6	10,0
2,57 m	5	7,5
3,07 m	4	5,0

*) auf der gesamten Bodenfläche wirkend
*) acting on the entire floor space

cross section (drawn w/out hang-in fixture) Querschnitt (ohne Einhängung gezeichnet)





① Belagblech deck plate
② Kappe cap
③ Kralle claw

Dim. Wgt
[m] [kg]

Abm. [m]	Gew. [kg]
0,73	4,5
1,09	6,0
1,57	8,5
2,07	10,2
2,57	13,2
3,07	15,3

MJ COMBI DUO

Bauteil gemäß Z-8.1-16.2 Component acc. to Z-8.1-16.2
U-steel deck 0.73 m - 3.07 m x 0.19 m (old version)
U-Stahlboden 0,73 m - 3,07 m x 0,19 m (alte Ausführung)

Anlage B, 50.04.29

Deutsches Institut für Bautechnik DIBt

C.1 General

In the standard version, the scaffold system may be used as working scaffold of load classes ≤ 3 with the system width b = 0.732 m and with bay widths $\ell \leq 3.07$ m in accordance with DIN EN 12811-1:2004-03 and as safety and roof safety scaffold in accordance with DIN 4420-1:2004-03.

The reference line first and then the top horizontal line (working level) must not be higher than 24 m plus jack spindle extension length above ground surface level. The scaffold system in the standard design is dimensioned for working in one scaffold layer according to the regulation of DIN EN 12811-1:2004-03, Section 6.2.9.2 in front of a partially open" façade with a maximum opening proportion of 60 % and in front of a closed façade. When determining the wind load, a service life factor of $\chi = 0.7$, which assumes a maximum service life of 2 years, has been taken into account. The lining of the scaffold with nets or tarpaulins is not verified in the standard design.

Without further verification, the standard design may only be used if loads act on one layer in the scaffold bays that are not greater than the decisive live loads according to DIN EN 12811-1:2004-03, Table 3.

The following designation to DIN EN12810-1:2004-03 must be used for the standard design of the 'MJ COMBI DUO' modular system as façade scaffold

Scaffold EN 12810 – 3D – SW06/307 – H2 – A –

C.2 Catch scaffold

In the standard version, the scaffold system may be used as safety and roof safety scaffold with a safety layer of class FL1 and as roof safety scaffold with safety barriers of class SWD 1 in accordance with DIN 4420-1:2004-03.

See Appendix D, Page 7 for the constructive design of the vertical side element. Safety nets in accordance with DIN EN 1263-1:2015-03 with a mesh size of 100 mm and a rope thickness of 5 mm shall be used.

C.3 Components

The designated components are shown in Table C.4. In addition, steel pipes
∅ 48.3 · 3.2 mm and couplers according to DIN EN 12811-1:2004-03 may be used for

- Transverse diagonals (see Appendix D, page 2 and 5)
- horizontal bracing system of the bridging ledgers (see Appendix D, page 4 and 5)
- Connection of the tie members and V holders to the standards (see Appendix D, page 6)
- Vertical diagonal in the bridging area (see Appendix D, page 5).

C.4 Bracing system

The components for horizontal scaffold bracing acc. to Table C.1 have to be installed end-to-end at vertical intervals of 2 m.

Table C.1: Components for horizontal bracing

Ledger	Floor / deck / panel	No of deck sets	Appendix B, page
Tubular ledger	Steel deck pipe bracket 0.32 m	2	08.01.00
U-Ledgers	Steel deck U bracket 0.32 m	2	08.04.00
	U steel deck 0.32 m	2	50.04.14, 50.04.15, 50.04.16, 50.04.17
	U robust deck 0.61 m	1	50.04.18, 50.04.19

In the case of a ladder access, either U-steel floor access ladders, U-robust ladders, U-aluminium ladders, access panels with wooden deck or access panels with aluminium deck are to be used instead of the floors.

Secure decks and passages from inadvertent lifting using deck protection.

Tubular cross bars to be used (O locking bolt) as guard rails (1 m above platform) and end-to-end in each scaffold bay as intermediate side protection (0.5 m above platform) for bracing the outer vertical level in each scaffold bay from the first working level.

Lead-off adapters are to be installed immediately above the scaffold spindles which need to be connected in parallel to the façade in the inner and outer plane as well as through transoms in parallel to the façade.

C.5 Anchorage

Anchorages are to be carried out using tie members acc. to Appendix B, page 07.01.00 and 50.04.06.

The tie members are to be fastened as anchor pair in an angle of 90° (V-holding bracket) or a “short” tie members to be only fastened onto the inner vertical member using right angle couplers acc. to Appendix D, page 6.

The panel points that are anchored by means of V-holding brackets are to be connected to the neighbouring row of standards through tubular cross bars (ledger tubes) in parallel to the façade if they do not already exist. At least one V-holding bracket per max. 5 bays has to be installed. In the case of scaffolds with a safety barrier, at least two V-holders must be installed in the topmost anchorage layer for each maximum of 5 scaffold bays.

The V-holding brackets and tie members have to be fitted in the immediate vicinity of the panel points composed of the standard tubes and transoms.

An additional ledger tube (tubular cross bar or gap ledger) between the inner posts in parallel to the façade has to be installed in this field if, in configurations without inner board brackets, a V-holding bracket has to be arranged on an exterior row of standards or neighbouring to an inner ladder access.

Table C.2: Anchor forces (characteristic values)

<table>
<tr><th rowspan="3">Appendix D, page</th><th rowspan="3">Short description</th><th rowspan="3">Safety barrier</th><th rowspan="3">Façade</th><th colspan="4">Anchoring forces [kN]</th></tr>
<tr><th colspan="2">right-angled to the façade</th><th colspan="2">parallel to faç.</th></tr>
<tr><th>H ≤ 20 m</th><th>H = 24 m</th><th>V anchor</th><th>Inclined load</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">w/out board brackets, unclad</td><td rowspan="2">w/out</td><td>partly open</td><td>2.3</td><td>1.6</td><td rowspan="2">4.5</td><td rowspan="2">3.2</td></tr>
<tr><td>closed</td><td>0.9</td><td>0.6</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">with board brackets, unclad</td><td rowspan="2">w/out</td><td>partly open</td><td>2.3</td><td>1.6</td><td rowspan="2">5.3</td><td rowspan="2">3.8</td></tr>
<tr><td>closed</td><td>0.9</td><td>0.6</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">with and w/out board brackets, unclad</td><td rowspan="2">with</td><td>partly open</td><td rowspan="2">see corresponding configuration</td><td rowspan="2">2.8</td><td colspan="2" rowspan="2">see corresponding configuration</td></tr>
<tr><td>closed</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">with bridging ≤ 6.14 m, without board brackets, unclad</td><td rowspan="2">w/out / with</td><td>partly open</td><td colspan="4" rowspan="4">see corresponding configuration</td></tr>
<tr><td>closed</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">with bridging ≤ 6.14 m, with board brackets, unclad</td><td rowspan="2">w/out / with</td><td>partly open</td></tr>
<tr><td>closed</td></tr>
</table>

The anchoring forces stated in in Table C.2 were determined with the characteristic factors of the actions. For the design of the anchorage and the transfer of the loads, the given values are to be multiplied by the respective partial safety factor γ_F (usually γ_F = 1.5).

Each row of standards has to be anchored at vertical distances of 4 m. Each row of standards must be anchored on the topmost working level.

C.6 Foundation loads

The foundation loads as stated in Table C.3 must be taken up and transmitted in the ground level plane depending on the design variant. The characteristic foundation loads specified there are to be multiplied by the partial safety factor γ_F (usually γ_F = 1.5) for the verification of the transfer of the loads into the contact area.

Table C.3: Foundation loads or support reactions (characteristic values)

Appendix D, page	Short description	Load class	Safety barrier	Foundation loads [kN]	
				inside	outside
1	w/out board brackets, unclad	3	w/out	9.4	11.8
2	with board brackets, unclad	3	w/out	18.1	14.1
3	with and w/out board brackets, unclad	3	with	see corresponding configuration	
4	with bridging ≤ 6.14 m, w/out board brackets, unclad	3	w/out / with	15.2	18.3
5	with bridging ≤ 6.14 m, with board brackets, unclad	3	w/out / with	25.7	19.6

C.7 Bridging structure

The bridging girders may be used to bridge gateways or similar up to a length of $\ell \leq 6.14$ m can be used up to a height of 4 m if the scaffolding layers under the bridging are omitted.

The bridging ledgers have to be braced by means of horizontal bracing consisting of tubes and couplers (cf. Appendix D, page 4 or 5). A V-holding bracket has to be additionally provided as anchorage.

C.8 Ladder access

An inner ladder access shall be fitted with

- U ledgers 0.73 m and
  - platform units with access trapdoor, U deck (timber deck or Al-deck) or
  - U steel deck access ways or
  - U robust access ways or
  - U-Al - U-access ways or
- O ledgers 0.73 m and
  - Platform units with access trapdoors, pipe bracket (timber deck or Al-deck)

.

C.9 Widening board bracket

On the inside of the scaffold board brackets may be deployed in all working levels acc. to Appendix B, page 05.01.00, 05.04.00, 05.08.00, 05.09.00, 50.01.26, 50.01.28, 50.01.53 50.02.23, and 50.02.25.
The gap between main console bracket deck and console bracket deck is to be closed by tubular cross bars, gap ledgers, or steel gap sheets.

Table C.4: Components of the standard design

Designation	Appendix B, page
Base jack 0.60; 0.78 m	02.01.00
Lead-off adapter 235 mm	03.01.00
Lead-off adapter 330 mm	03.02.00
Vertical post with upset spigots	03.04.00
O-ledger (tubular cross bar) 0.73 m to 3.07 m	04.01.00
Deck ledger U bracket 0.73 m	04.04.00
Lattice girder, steel type 4.20 m to 6.20 m	04.07.00; 04.08.00
Console pipe bracket 0.39 m with spigot	05.01.00
Console U bracket 0.39 m with spigot	05.04.00
Console U bracket 0.22 m w/o spigot	05.08.00
Console U bracket 0.32 m w/o spigot	05.09.00
Tie member, spacer tube	07.01.00
Steel deck pipe bracket, width 0.32 m with $\ell \leq 3.07$ m	08.01.00
Steel deck pipe bracket, width 0.19 m, machine-welded- lifting protection*)	08.02.00
Steel deck pipe bracket, width 0.19 m, spot-welded- lifting protection*)	08.03.00
Steel deck U bracket , width 0.32 m	08.04.00
Steel deck U bracket, width 0.19 m, machine-welded*)	08.05.00
Steel deck U bracket , width 0.19 m, spot-welded*)	08.06.00
Platform unit with access trapdoor, pipe bracket, aluminium deck – aluminium hatch backwards	11.01.00
Platform unit with access trapdoor, pipe bracket, timber deck – wooden hatch backwards	11.02.00
Platform unit with access trapdoor, pipe bracket, aluminium deck – aluminium hatch sidewards	11.03.00
Platform unit with access trapdoor, U bracket, aluminium deck – aluminium hatch backwards	11.04.00
Platform unit with access trapdoor, U bracket, timber deck – wooden hatch backwards	11.05.00
Platform unit with access trapdoor, U bracket, aluminium deck – aluminium hatch sidewards	11.06.00
Toeboard – pipe support, timber type with $\ell \leq 3.07$ m	13.01.00
Toeboard – pipe support, aluminium type	13.02.00
Toeboard – U bracket, timber type with $\ell \leq 3.07$ m	13.03.00
Toeboard – U bracket, aluminium type	13.04.00
Lifting protection for U ledger (deck ledger)	14.01.00
Lifting protection for U ledger (deck ledger) 0.42; 0.45 m for console U bracket 0.39; 0.73 m	14.02.00
Gravity pin Ø 11	14.03.00
Lead-off adapter ‘Variant K2000+’	50.01.17

Standard design – General part

Appendix A, page 4

Table C.4: (Cont'd)

Designation	Appendix B, page
Post with spigot 'Variant K2000+'	50.01.18
O-ledger 0.73 m – 3.07 m 'Variant K2000+'	50.01.20
U ledger 0.73 m 'Variant K2000+'	50.01.22
U board bracket 0.39 m 'Variant K2000+'	50.01.26
U board bracket 0.28 m 'Variant K2000+'	50.01.28
U deck lock against lift-off 0.39 m – 0.73 m	50.01.32
O-lattice girder 5.14 m; 6.14 m x 0.50 m 'Variant K2000+'	50.01.33
O-lattice girder 4.14 m – 6.14 m x 0.40 m 'Variant K2000+'	50.01.36
U board bracket 2.60 m 'Variant K2000+'	50.01.39
U-gap ledger 0.73 m- 3.07 m 'Variant K2000+'	50.01.44
Lead-off adapter 'Variant II'	50.01.48
Post with spigot 'Variant II'	50.01.49
O-ledger 0.73 m- 3.07 m 'Variant II'	50.01.50
U ledger 0.73 m 'Variant II'	50.01.51
U board bracket 0.36 m 'Variant II'	50.01.53
O-lattice girder 5.14 m; 6.14 m x 0.40 m 'Variant II	50.01.54
Lead-off adapter LW	50.02.07
Post LW with moulded spigot	50.02.08
O-ledger LW 0.73 m 0.73	50.02.13
U ledger LW 0.73 m T14	50.02.15
U wooden toeboard 0.73 m – 3.07 m	50.02.19
U steel toeboard 0.73 m- 3.07 m T17	50.02.21
U steel toeboard 0.73 m – 3.07 m	50.02.22
U board bracket LW 0.39 m	50.02.23
U board bracket LW 0.28 m	50.02.25
U deck lock against lift-off T8 0.39 m – 0.73 m	50.02.29
Universal U deck lock against lift-off	50.02.31
O-lattice girder LW 5.14 m; 6.14 m x 0.50 m	50.02.32
Spigot for lattice girders	50.02.36
U lattice girder ledger LW 0.73 m	50.02.37
O-lattice girder LW 4.14 m – 6.14 m x 0.40 m	50.02.38
Reinforcement post 2.60 m 'Variant LW'	50.02.41
U-gap ledger LW 0.73 m 0.73	50.02.48
Storey ladder, 7 rungs T15	50.02.50
Steel gap sheet 0.73 m – 0.32 m x 0.32 m	50.02.52
O steel toeboard 0.73 m – 3.07 m	50.03.01
O steel toeboard 0.73 m- 3.07 m T18	50.03.02
O gap ledger LW 0.73 m 0.73	50.03.05
O gap ledger 0.73 m- 3.07 m 'Variant K2000+'	50.03.06
Base jack 60	50.04.01

Table C.4: (Cont'd)

Designation	Appendix B, page
Tie member 0.38 m – 1.75 m	50.04.06
Gravity pin red Ø 11 mm	50.04.07
Gravity pin Ø 9 mm	50.04.08
Lattice girder coupler	50.04.09
U steel deck T4 0.73 m – 3.07 m x 0.32 m; type: spot-welded	50.04.14
U steel deck T4 0.73 m – 3.07 m x 0.32 m; type: hand-welded	50.04.15
U steel deck 0.73 m – 3.07 m x 0.32 m; type: spot-welded	50.04.16
U steel deck 0.73 m – 3.07 m x 0.32 m; type: hand-welded	50.04.17
U robust deck 0.73 m – 2.57 m x 0.61 m	50.04.18
U robust deck 3.07 m – 0.61 m	50.04.19
U robust deck 0.73 m – 3.07 m x 0.32 m	50.04.20
U robust deck access way 2.57 m – 0.64 m	50.04.21
Storey ladder, 7 rungs	50.04.22
U robust access way with ladder 2.57 m – 3.07 m x 0.61 m	50.04.23
U Al access way 2.07 m – 3.07 m x 0.61 m	50.04.24
U Al access way with ladder 2.57 m – 3.07 m x 0.61 m	50.04.25
U robust access way 1.57 m – 3.07 m x 0.61 m, cover offset	50.04.26
U robust access way 2.57 m – 3.07 m x 0.61 with ladder, cover offset	50.04.27
U steel deck 0.73 m – 3.07 m x 0.19 m*)	50.04.28
U steel deck 0.73 m – 3.07 m x 0.19 m (old version) *)	50.04.29
*) not used in the main bay	

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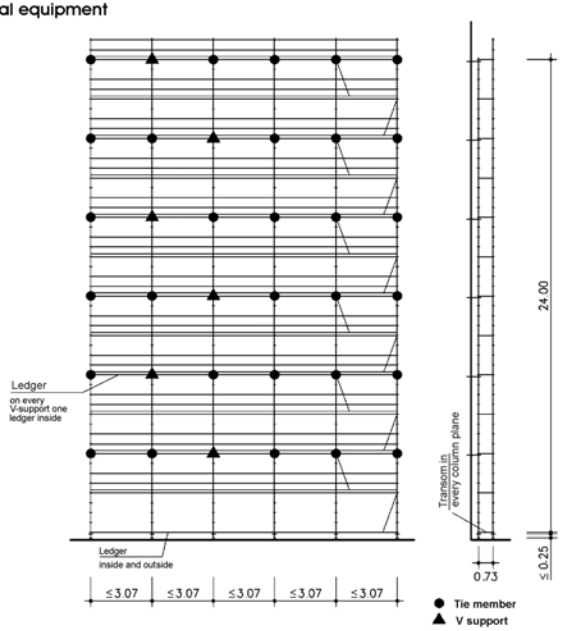
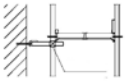
Scaffold in front of open or partially closed facade

without board bracket

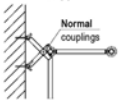
w/out optional equipment



Tie member



V support



Facade	closed	partly open
Ancillary anchor	- - -	- - -
Max. spindle extension length [cm]	25	25

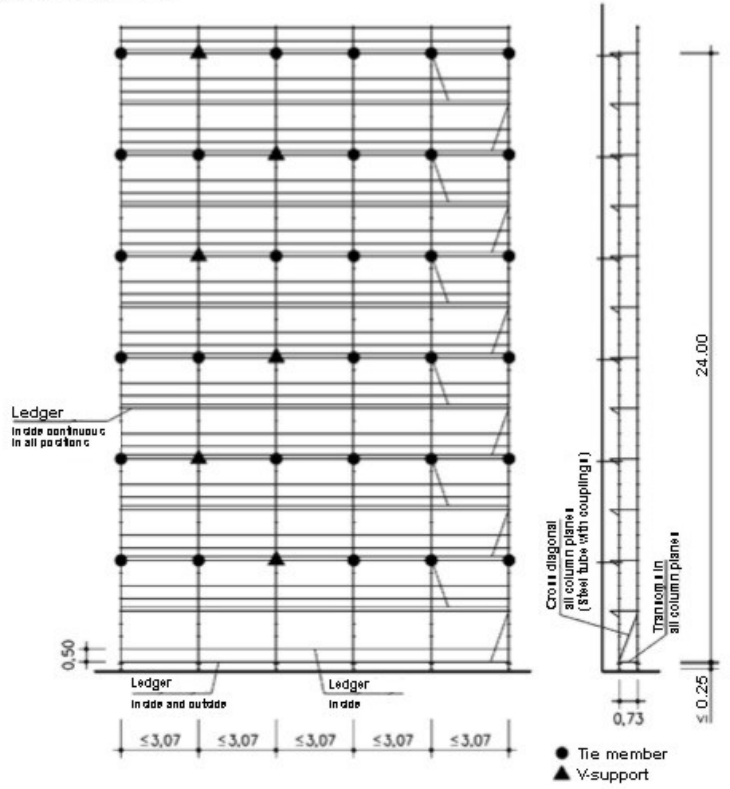
Scaffold system COMBI DUO

Scaffold in front of open or partially closed facade
without board brackets, without special equipment

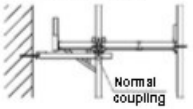
Appendix D
Page 1

Scaffolding in front of closed and partially open facade

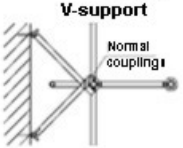
with board brackets
without special equipment



Tie member



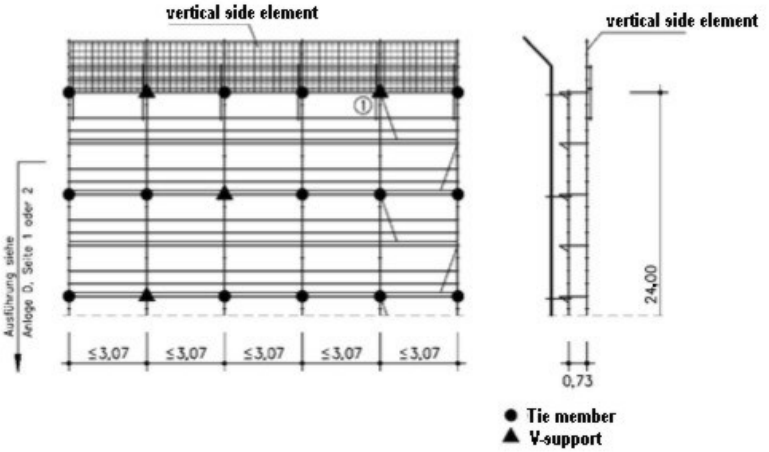
V-support

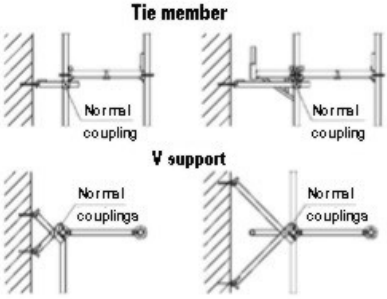


Facade	closed	teilweise offen
Ancillary anchor	---	---
Max. spindle extension length [cm]	25	25

Scaffold in front of closed or partially open facade

without / with board brackets
with vertical side element

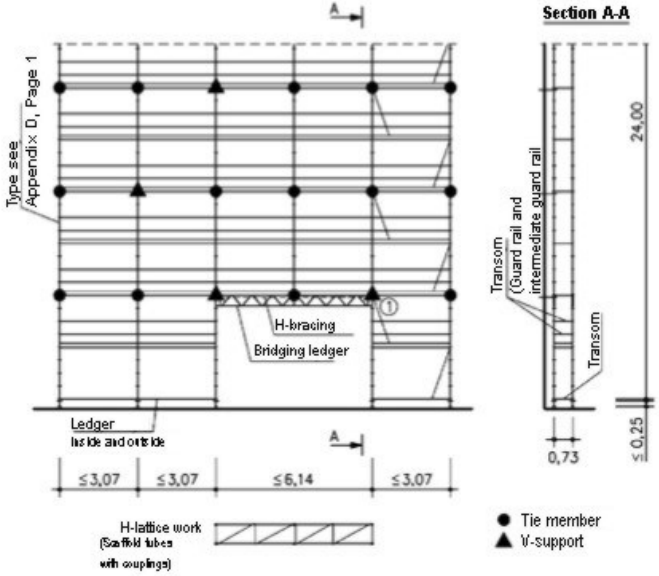


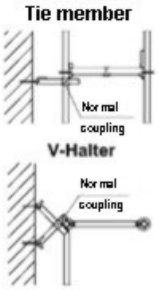


Facade	closed	partly open
Anchor grid	vd. corresponding configuration	
Ancillary anchor	①	①
Max. spindle extension length [cm]	vd. corresponding configuration	

Scaffold in front of closed or partially open facade

without board brackets
with bridging

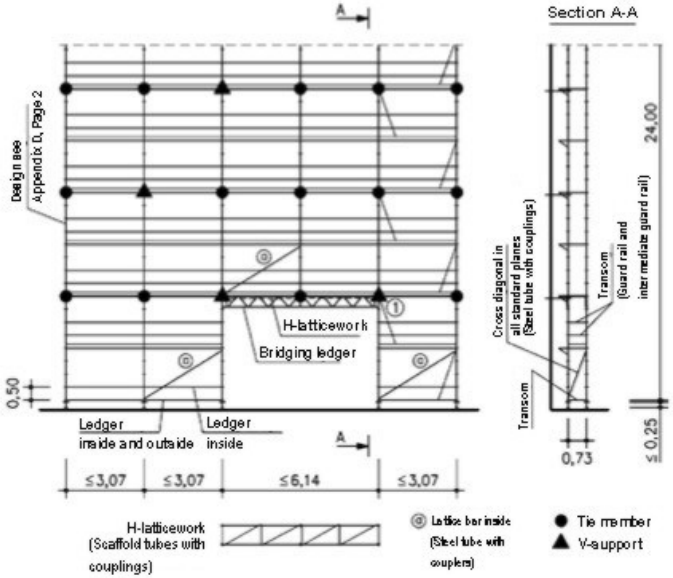


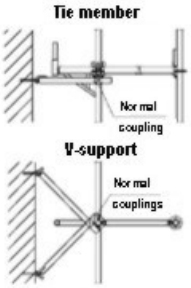


Facade	closed	partly open
Ancillary anchor	①	①
Max. Spindle extension length [cm]	25	25

Scaffold in front of closed or partly open facade

with board brackets
with bridging





Facade	closed	partly open
Ancillary anchor	①	①
Max. spindle extension length [cm]	25	25

Design details

Tie members / V-supports

Working areas without board brackets

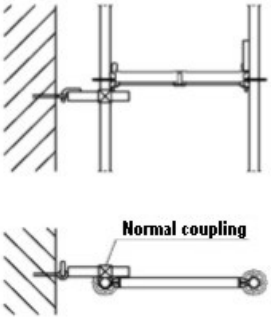


Figure 1 a: tie member

Working areas with board brackets

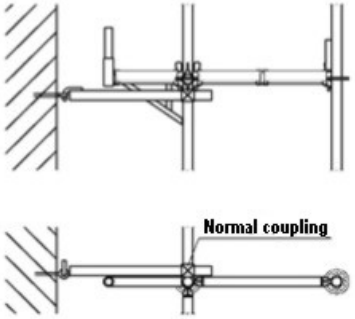


Figure 1 b: tie member

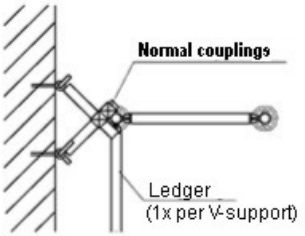


Figure 1 c: V-support

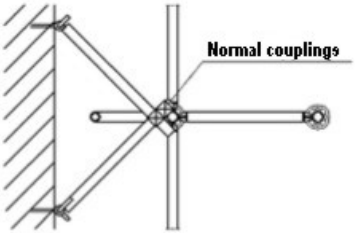
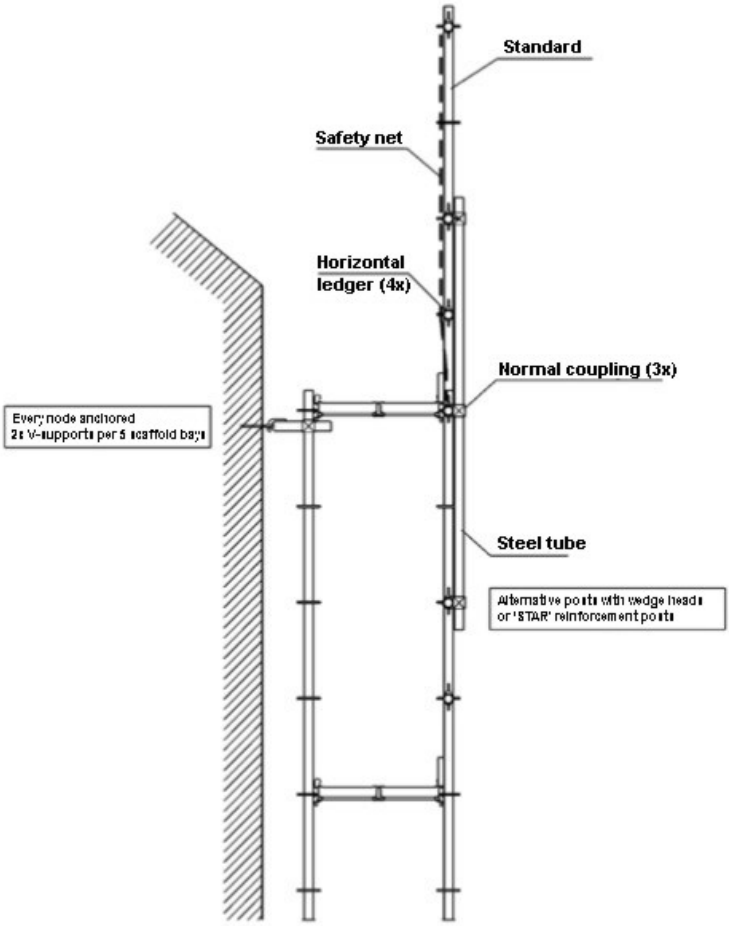


Figure 1 d: V-support

Design details

Vertical side element



Safety net: DIN EN 1263-1, mesh size 100 mm

MJ-GERÜST
Scaffolding Systems

SCAFFOLDINGS MADE IN PLETTENBERG

UNI-CONNECT

Facade scaffold

UNI

Facade scaffold

UNI TOP

Facade scaffold

COMBI

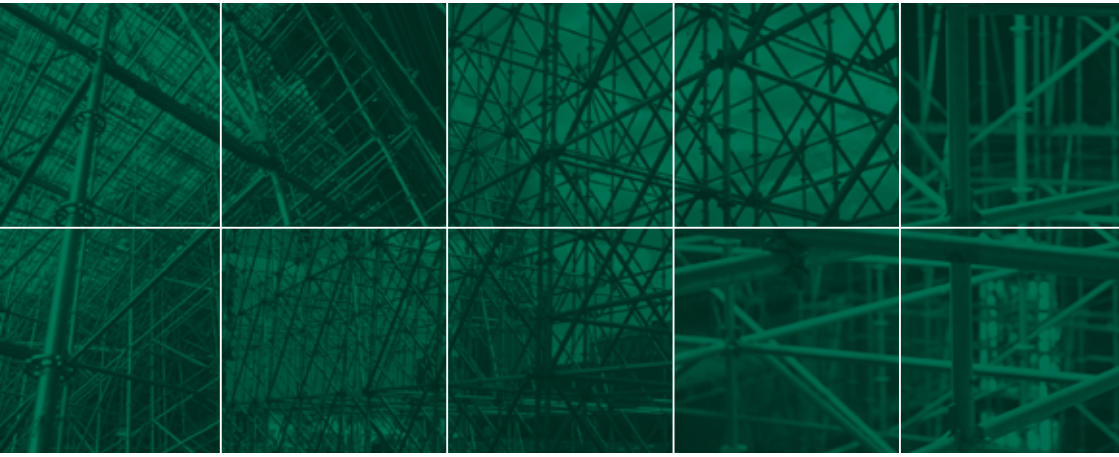
Modular scaffold

OPTIMA

Guard rail system

Accessories

Universal



MJ-Gerüst GmbH

Ziegelstraße 68
58840 Plettenberg
Germany

Hotline +49 2391 8105 350
Fax +49 2391 8105 375
E-Mail info@mj-geruest.de

www.mj-geruest.de