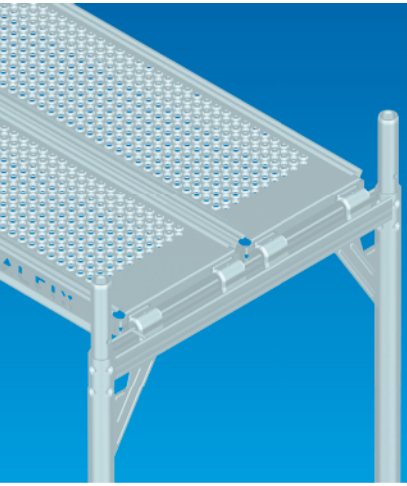
ALFIX
SECURELY SCAFFOLDED



NATIONAL TECHNICAL APPROVAL

ALFIX 70

(Translation not reviewed by DIBt)

DEUTSCHES INSTITUT FÜR BAUTECHNIK

A statutory body under public law

D-10829 Berlin, February 8, 2005
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File no.: I 33-1.8 1-29/04

Notice of Extension

of the period of validity
for National Technical Approval as of February8, 2005

Approval number:	Z-8.1-862
Applicant:	ASB Produktions GmbH Langenhennersdorfer Strasse 15 D-09603 Grossschirma Germany
Subject to be approved:	"ALFIX 70" Scaffolding System
Period of validity up to:	September 30, 2010

This notice extends the validity for national technical approval no. Z 8.1-862 as of February 8, 2005. This notice consist of 1 page and is valid an applicable exclusively in connection with the above mentioned national technical approval.

This national technical approval replaces the national technical approval no. Z-8.1.-862 as of February 8, 2005 amended by notice of March 11, 2004.
First national technical approval / permit by building code of the subject: on May 27, 1999.

(Translation not reviewed by DIBt)

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The above mentioned subject is hereby granted national technical approval.

This national technical approval includes 12 (twelve) pages and 60 (sixty) annexes

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* This national technical approval replaces the national technical approval no. Z-8.1.-862 as of September 28, 2000 amended by notice of March 11, 2004.
First national technical approval / permit by building code of the subject: on May 27, 1999.

Legal Basis for Granting
National Technical Approvals (Permits by Building Code)
according to the Building Regulations of the Land *(Landesbauordnungen - LBO)*

Baden-Wurttemberg:	Sect. 18 and 21 of Building Regulations of Baden-Wurttemberg (LBO), drafting of Aug. 8, 1995 (Law Gazette p. 617), latest amendment on Oct. 29, 2003 (Law Gazette p. 695)
Bavaria:	Art. 20 and 23 of Bavarian Building Regulations (BayBO) of Aug. 4, 1997 (Official Gazette p. 434, corr. 1998, p. 270), latest amendment by Sect. 7 of law of Dec. 27, 1999 (Official Gazette p. 532)
Berlin:	Sect. 19 and 21 of Building Regulations of Berlin (BauOBln), drafting of Sept. 3, 1997 (Official Gazette p. 421) latest amendment by Article XLV of the law of July 16, 2001 (Official Gazette p. 260, 271).
Brandenburg:	Sect. 15 and 18 of Brandenburg Building Regulations (BbgBO) of July 16, 2003 (Official Gazette I p. 210)
Bremen:	Sect. 21 and 24 of Bremen Building Regulations (BremLBO) of March 27, 1995 (Bremen Law Gazette p. 211), latest amendment by Articles 1 and 15 of the law of April 8, 2003 (Bremen Law Gazette p. 159 and p. 147, 151)
Hamburg:	Sect. 20a and 21 of Hamburg Building Regulations (HBauO) of July 1, 1986 (Hamburg Official Gazette p. 183), latest amendment by Article 6 of the law of Dec. 17, 2002 (Hamburg Official Gazette p. 347, 353) in connection with Sub-paragraph 3 of Ordinance on the transfer of competence to grant technical approvals to Deutsches Institut für Bautechnik (DIBt-VO) of Nov. 29, 1994 (Hamburg Official Gazette p. 301, 310).
Hessen:	Sect. 17 and 20 of Hessian Building Regulations (HBO) of June 18, 2002 (Official Gazette I p. 274)
Mecklenburg-Western Pomerania:	Sect. 18 and 21 of Building Regulations of Mecklenburg-Western Pomerania (LBauO M-V) as amended by official announcement of May 6, 1998 (Official Gazette M-V p. 468 through 612) latest amendment by law of December 16, 2003 (Official Gazette M-V p. 690)
Lower Saxony:	Sect. 25 and 27 of Lower Saxon Building Regulations (NBauO) as amended by the official announcement of Feb. 10, 2003 (Lower Saxon Law Gazette p. 89)
North Rhine-Westphalia:	Sect. 21 and 24 of Building Regulations of North Rhine-Westphalia (BauO NW) of March 1, 2000 (Official Gazette NRW p. 256) latest amendment by Article 6 of the law of December 16, 2003 (Official Gazette NRW p. 766, 769)
Rhineland-Palatinate:	Sect. 19 and 22 of Building Regulations of Rhineland-Palatinate (LBauO) of Nov. 24, 1998 (Official Gazette p. 365) latest amendment by Article 3 of the law of Dec. 18, 2001 (Official Gazette p. 303, 304).
Saarland:	Sect. 26 and 29 of Building Regulations of Saarland (LBO) of March 27, 1996 (Official Bulletin p. 477) latest amendment by the law of Nov. 7, 2001 (Official Bulletin p. 2182) in connection with Sect. 1, para. 2, sub-para. 1 of Ordinance on the transfer of competences of highest building authority to Deutsches Institut für Bautechnik of June 20, 1996 (Official Bulletin p. 750)
Saxony:	Sect. 21 and 23 of Saxon Building Regulations (SächsBO) of March 18, 1999 (Saxon Official Gazette p. 86) latest amendment by Article 6 of the law of September 1, 2003 (Saxon Official Gazette p. 418, 427)
Saxony-Anhalt:	Sect. 21 and 24 of Building Regulations of Saxony-Anhalt (BauO LSA) of Febr. 9, 2001 (Official Gazette LSA p. 50) latest amendment by Article 5 of the law of July 16, 2003 (Official Gazette LSA p. 158, 161)
Schleswig-Holstein:	Sect. 24 and 27 of Building Regulations of Schleswig-Holstein as amended by official announcement of Jan. 10, 2000 (Official Gazette Schl-H. p. 47), latest amendment by Article 8 of the law of Dec. 16, 2002 (Official Gazette Schl-H. p. 264, 268)
Thuringia:	Sect. 21 and 23 of Thuringian Building Regulations (ThürBO) of March 16, 2004 (Official Gazette TH p. 349).

Model of the Ordinance on the Compliance Mark (Muster-Übereinstimmungszeichen-Verordnung – MÜZVO)[1)]

- Drafting of October 1997 -

Based on Sect. 81, Para. 6 No. 1 of Model Building Regulations (MBO) the following is decreed:

§ 1

(1) The compliance mark (Ü mark) according to Sect. 24, Para. 4 of MBO consists of the letter "Ü" and shall include the following information:

1. Name of manufacturer; also the production site, if manufacturer's name alone does not allow a clear allocation of the construction product to a production site. Instead of the manufacturer's name it is sufficient to indicate the name of the distributor of the construction product including the production site. The latter may be indicated in an encoded form if with the manufacturer or distributor and, in case a compliance certificate is required, with the certification body and inspection body the production site can be clearly identified.

2. Basis of compliance certification:

   a) Code designation of the technical rule significant for the regulated construction product;
   b) Designation for a national technical approval by "Z" and its number;
   c) Designation for a national test certificate by "P", its number and name of inspection body, or
   d) designation of an individual approval as "ZiE" and the authority.

3. Major features of the construction product essential for the purpose of use where they are not finally determined by indication of the code designation of the technical rule in accordance with number 2, letter a.

4. The name or pictorial symbol of the certification body if a certification body has to be involved.

(2) The information as per paragraph 1 shall be given inside the space surrounded by the letter "Ü" or in its immediate vicinity. The letter "Ü" and the information as per paragraph 1 must be clearly legible. The shape of the letter "Ü" shall comply with that indicated below.

(3) If the Ü mark is affixed on an instruction leaflet, packaging, delivery note or an annex to the delivery note, this letter may be affixed without or with part of the information according to paragraph 1 additionally on the construction product.

§ 2

This ordinance shall become effective on....

[1)] The obligations resulting from the Directive 83/189/EEC of the Council dated March 28, 1983 relating to an information procedure for standards and technical regulations (Division: EG No. L 109 p. 8) as amended by Directive 94/10/EC of the European Parliament and the Council of March 23, 1994 (Division: EG No. L 100 p. 30) have been observed.

I. GENERAL PROVISIONS

1 The national technical approval serves as a verification of the usability and applicability respectively of the subject to be approved as defined by the Buildings Regulations of the Land.

2 The national technical approval is no replacement for the statutory approvals, permits and certifications required for executing a building project.

3 The national technical approval is granted without prejudice to any of third party rights and protective property rights in particular.

4 Manufacturer and distributor of the approval subject shall provide user of the approval subject, without prejudice of any further regulations outlined in "Special Provisions", with copies of the national technical approval and indicate that this approval must be available at the site of use. On request copies of the national technical approval shall be made available to the authorities involved.

5 Only complete sets of the national technical approval may be reproduced. A publication in extracts shall be subject to the approval by *Deutsches Institut für Bautechnik*. Any wording and drawings of advertising material shall not be contradictory to the national technical approval. Translations of such approval must be marked by 'Translation of German original not reviewed by *Deutsches Institut für Bautechnik*'.

6 The national technical approval will be granted revocably. The provisions of this approval may be amended or changed later, especially when new technological findings require this.

II. SPECIAL PROVISIONS

1 Subject and Scope of Application

The approved construction products are prefabricated scaffold elements of the ALFIX 70 scaffolding system.
The approval applies to the manufacturing of the scaffold elements unless it has been indicated that the elements are no longer fabricated, i.e. have been approved for further use only. In addition, the approval applies to the use of the scaffolding system as a working and safety scaffold as defined by DIN 4420-1; 1990-12, chapter 2.1, including erection and dismantling of such scaffolds.

The main load-bearing structure consists of vertical steel frames b = 0.732 m, decking $\ell \leq 3.07$ m and diagonal braces (vertical diagonal braces) on the outer vertical plane.
For the use of the scaffold elements in façade scaffolding a standard version is described in the erection and use instructions reviewed by the specialist commission for 'Construction' of the trade associations for which the stability check has been made. Any deviating versions will require a separate verification; the specifications required for that purpose are indicated in this approval. The standard version shall apply to façade scaffolds with erection heights of up to 24 m above ground plus spindle extension length. The scaffolding system may be used in the standard version for scaffolds of the groups ≤ 3 in accordance with DIN 4420-1; 1990-12, chapter 5.1 with bay sizes of $\ell \leq 3.0$ m, and as safety and roof safety scaffolds. The use of a shelter as per chapter 6 of the norm has been verified in the standard version.

2 Scaffold Element Requirements

2.1 Features

2.1.1 General

The scaffold elements listed in Table 1 shall comply with both the specifications in the annexes and the regulations of the following chapters.

For the manufacturing of the scaffold elements as specified in Table 1 the provisions of the chapters 2.1.2 through 2.1.4, 2.2 and 2.3 shall apply unless Table 1 indicates that the elements have been approved for use only.

Table 1: Scaffold elements for usage within the ALFIX 70 scaffolding system

Designation	Annex	Notes
Vertical steel frame 18/70 2.0 m	1	---
Vertical steel frame 18/70 1.0 and 0.66 m	2	---
Vertical steel frame 70 2.0 m	4	---
Vertical steel frame 70 1.0 and 0.66 m	5	---
Steel deck	7	---
Intermediate deck	8	---
Aluminium deck with plywood 2.5 and 3.0 m	9	---
Aluminium deck with plywood 1.5 and 2.0 m	10	---
Aluminium hatch-type access deck 3.0 m with ladder	12	---

Table 1: (continued)

Designation	Annex	Notes
Aluminium hatch-type access deck 2.5 m with integrated ladder	13	---
Aluminium deck with plywood 3.0 m	16	For use only
Aluminium deck with plywood 1.5; 2.0 and 2.5 m	17	For use only
Aluminium hatch-type access deck 3.0 m with integrated ladder	19	For use only
Aluminium hatch-type access deck 2.5 m with integrated ladder	20	For use only
Aluminium hatch-type access deck GG5 2.5 m with integrated ladder	22	For use only
Solid wood deck	24	---
Diagonal brace 3.0 m	25	---
Diagonal brace 2.5 m	26	---
Diagonal brace 2.0	27	---
Horizontal strut, diagonal cross brace	28	---
Scaffold retainer	29	---
Quick-release anchor	30	---
Base jack (base plate)	31	---
Guardrail	32	---
Double guardrail	33	---
Aluminium double guardrail	34	---
Advanced guardrail post 2.0 m	35	---
Advanced end guardrail / Telescopic guardrail 2.00 – 3.07 m	36	---
Toeboard/end toeboard	37	---
Double end guardrail	38	---
Guardrail post, single	39	---
Guardrail post, single	40	---
Guardrail post	41	---
Guardrail post	42	---
End guardrail post	43	---
End guardrail post	44	---
Guard system support	45	---
Guard system support	46	---
Bracket 36 cm	47	---
Bracket 36 cm	48	---
Bracket 73 cm	49	---
Bracket 73 cm	50	---
Protective shelter	51	---
Protective shelter	52	---
Deck retainer, locking clip	53	---
Transom	54	---

Table 1: (continued)

Designation	Annex	Notes
Safety meshguard	55	---
Safety net	56	---
Lattice girder	57	---
Passageway frame	58	---
Passageway frame	59	---
Gap plank	60	---

2.1.2 Materials

2.1.2.1 Metals
The materials must comply with the technical rules as specified in Table 2. The properties have to be certified by test certificates in accordance with the data in Table 2. The test certificates for aluminium alloys shall at least indicate the chemical composition, tensile strength R_m, yield point R_{p0} as well as data referring to strain A or A_{50} mm respectively.

Table 2: Technical rules and test certificates for the metal materials of scaffold elements

Material	Material number/ Numeric code	Code designation	Technical rule	Test certificate
Structural steel	1.0037	S235JR	DIN EN 10025, DIN EN 10210-1, DIN EN 10219-1	2.3 *) acc. to DIN EN 10204
	1.0038	S235JRG2		
	1.0039	S235JRH *)		
	1.0570	S355J2G3		
Hot-rolled strip and sheet plate	1.0332	DD11 **)	DIN EN 10111	3.1 B acc. to DIN EN 10204
	1.0335	DD13 **)		
Hot-rolled flat products	1.0986	S55OMC	DIN EN 10149-1	
Cast steel	1.1120	GS-20 Mn 5	DIN 17182	
Aluminium alloy	EN AW-6060 T 66	EN AW-AlMgSi	DIN EN 755-2	3.1 B acc. to DIN EN 755-1
	EN AW-6063 T66	EN AW-AlMg 0.7Si		
	EN AW-6082 T5	EN AW-AlSiMgMn		

*) the raised yield point $R_{eH} \geq 320$ N/mm^2 required for several scaffold elements – such elements are adequately designated in the annexes - has to be achieved through strain hardening where the elongation at break must not fall below the minimum requirement for steel as per DIN EN 10025 - S355J2G3. Both the yield point and the elongation at break values shall be certified by test certificates 3.1.B acc. to DIN EN 10 204.

**) R_{eH} acc. to drawings annexed

2.1.2.2 Solid wood
Based on the specification of the annexes the solid wood shall comply with the grading classes S 10 or S13 in accordance with DIN 4047-1.

2.1.2.3 Construction veneer plywood
The veneer plywood for construction shall meet the requirements of the 'Principles of Approval of Construction Veneer Plywood for Use in Scaffoldings'[1)].

2.1.3 Corrosion protection
The steel elements shall be sufficiently protected against corrosion by coating in compliance with the norms of DIN EN ISO 12944 or by hot-dip galvanizing in accordance with DIN EN ISO 1461.

2.1.4 Couplers
The couplers fitted on different elements shall be halfcouplers of the coupler class A which have a national technical approval.

2.2 Manufacturing and Marking

2.2.1 Manufacturing
Manufacturers of welded scaffold elements based on this approval must have verified that they are qualified for that job.
For steel elements this proof is considered furnished when the welder is at least in the possession of a certificate of class C (minor qualification certificate with extension) in accordance with DIN 18800-7:2002-9 depending on the requirements for manufacturing of welded joints based on this approval.

For aluminium elements this proof is considered furnished when the welder is at least in the possession of a certificate of class 3 in accordance with DIN V 4113-2:2003-11 depending on the requirements for manufacturing welded joints based on this approval.

Manufacturers of glued scaffold elements based on this approval must have verified that they are qualified for that job. This proof is considered furnished when the firm is at least in the possession of a certificate C in accordance with DIN 1052-1.

2.2.2 Marking

The delivery notes of the scaffold elements as per Table 1 shall be marked in compliance with the compliance mark ordinances of the Laender.

In addition, the scaffold elements shall be marked in an easily recognizable and durable manner with

- the capital letter "Ü"
- at least a short version of approval number "862"
- the symbol of the manufacturer concerned, and
- the last two digits of the year of make.

For such marking the prerequisites according to chapter 2.3 must have been fulfilled.

[1)] see '*Mitteilungen, Deutsches Institut für Bautechnik*, number 3, 1999, p. 122f

2.3 Proof of Compliance

2.3.1 General

Compliance of the scaffold elements as per Table 1 with the provisions of this national technical approval shall be confirmed for each individual production site by a compliance certificate based on an intra-plant production inspection as well as a third-party monitoring at regular intervals including a product test of the scaffold elements as per Table 1 based on the following provisions:

For the granting of a compliance certificate and the third-party monitoring including the associated product test, the manufacturer of the scaffold elements as per Table 1 has to involve a recognized certification body as well as an inspection agency recognised for this purpose.

Deutsches Institut für Bautechnik shall be provided by the certification body with a copy of the compliance certificate issued by the latter and by the inspection agency with a copy of the inspection report.

2.3.2 Intra-plant production inspection

At each production site a production inspection system shall be established and implemented. Intra-plant production inspection is to be understood as a constant monitoring of production by the manufacturer through which he makes sure that the scaffold elements manufactured are in compliance with the provisions of this national technical approval.

The intra-plant production inspection shall include the following measures as a minimum:

- For template or automatic manufacture of the scaffold elements the relevant templates and machine settings respectively shall be checked and documented prior to initial start-up.
- Checking and inspection of the base material and the elements
    - o It has to be checked whether test certificates as per chapter 2.1.2 are available for the materials and the certified test results meet the requirements.
    - o At least 1 ‰ of the piece parts shall be checked for observance of size and tolerance based on the specification of the design drawings.
- Checking and inspection of scaffold elements:
    - o At least 1 ‰ of the scaffold elements shall be checked for size and tolerance and if necessary also the welds and corrosion protection based on the specification of the design drawings.

The results of the intra-plant production inspection shall be recorded and analysed. Such records shall cover the following minimum information:

- Name of piece part and scaffold element respectively
- Type of inspection
- Date of manufacturing and checks of piece parts and scaffold elements resp.
- Result of inspections and tests and comparison with requirements
- Signature of person in charge of production inspection.

The records shall be kept for minimum five years. Upon request they shall be made available to *Deutsches Institut für Bautechnik* and the competent higher building authority.

If inspection results are inadequate, manufacturer shall take immediate action to eliminate such deficiencies. Any off-spec piece parts or scaffold elements shall be handled so that they cannot be mixed up with compliant parts. After deficiencies have been eliminated –to the extent it is technically feasible and necessary to prove elimination of deficiency – the relevant inspection shall be repeated without delay.

2.3.3 Third-party monitoring

At each production site the intra-plant production inspection shall be audited by third-party monitoring at regular intervals, at least every five years. Such third-party monitoring includes an inspection of the plant and the intra-plant production inspection system including product tests of the scaffold elements as per Table 1. Sampling and testing will be done by the recognized body.

As a minimum the following shall be inspected:

- Preconditions as regards personnel and equipment for a proper manufacturing of the scaffold elements;
- Intra-plant production inspection system
- Random checks for compliance of scaffold elements with provisions of approval with respect to
  - type of construction, shape, size
  - corrosion protection
  - marking
- Required qualification certificates (weldability and gluing).

The scaffold elements shall be taken from running production.

The results of certification and third-party inspection shall be kept for a minimum of five years. On request they shall be made available by the certification body and the inspection agency respectively to *Deutsches Institut für Bautechnik* or the component higher building authority.

3. Provisions for Design and Dimensioning

3.1 Design

3.1.1 Standard version

Façade scaffolds are considered standard versions provided they meet the requirements of the erection and use instructions reviewed by the specialist commission for 'Construction' of the trade associations.

3.1.2 Deviations from standard version

If the scaffolding system is used for scaffolds other than the standard version, such deviation shall be verified in individual cases based on the technical construction regulations and the provisions of this national technical approval.
It is also possible to use different anchor grids and other scaffold netting. Any higher loads, e.g. from a higher dead weight or wind loads or higher live loads have to be tracked in a scaffold down to the anchors and even to the erection floor. Also considered must be the impact of building elevators and other lifting appliances provided they are not operated separate from the scaffold.

3.2 Dimensioning

3.2.1 General
The stability of scaffolds set up by using scaffold elements as per chapter 4.3.1 and do not comply with the standard version shall be verified in individual cases or by structural type calculation. For this purpose DIN 4420-1:1990-12, chapter 5.4, the 'approval directive; Façade scaffolding system requirements'[2] and the 'principles of approval for dimensioning aluminium elements in scaffold erection[2]' shall be especially observed.

3.2.2. Design assumptions
3.2.2.1 Vertical loadability of decking
The decking of the ALFIX 70 scaffolding system has been checked according to Table 3 for live loads of scaffold groups as per DIN 4420-1:1990-12, Table 2 and for use in safety and roof safety scaffolds with depths of falling up to 2 m.

[2] to be obtained form *Deutsches Institut für Bautechnik*

Table 3: Deck allocation to scaffold groups

Designation	Annex	Bay size ℓ [m]	Use in scaffold group
Steel decks	7	≤ 3.0	≤ 4
Aluminium decks with plywood	9 and 10, 16 and 17	≤ 3.0	≤ 3
Aluminium hatch-type access deck with integrated ladder	12 and 13, 19 and 20	≤ 3.0	≤ 3
Aluminium hatch-type access deck GG5 with integrated ladder	33	2.5	≤ 5
Solid wood	24	3.0	≤ 3
		≤ 2.5	≤ 4

3.2.2.2 Elastic support of vertical framing

Non-anchored connectors of vertical frames may be assumed elastically supported by the horizontal planes (deck elements), on frame level (with façade scaffolds rectangular to façade), provided the neighbouring horizontal connectors are anchored. This elastic support may be considered due to the assumption of a trailing spring dimensioned as indicated in Table 4.

If in the scaffold system check plane substitute systems are checked instead of a spatial system, the play may be reduced by 20 mm for loads on frame level, but not more than $f_{o\perp,d}$= 0 mm.

Table 4: Design values of horizontal trailing spring

Deck	Number of decks per bay	According to annex	$f_{o\perp,d}$ (cm)	$0 < F_\perp \leq 1.82$ kN $c_{\perp,d}$[kN/cm]	$1.82 < F_\perp \leq F_{R\perp,d}$ $c_{\perp,d}$[kN/cm]	$F_{R\perp,d}$ [kN]
Steel deck ℓ = 3.0 m	2	7	4.7	0.62	0.20	2.73
Steel deck $\ell \leq$ 2.5 m	2	7	3.8	0.69	0.27	2.73
Aluminium deck with plywood ℓ = 3.0	1	9, 16	2.0	0.38	0.26	2.27
Aluminium deck with plywood $\ell \leq$ 2.5 m	1	9, 10, 16, 17	2.2	0.65	0.34	2.27
Solid wood deck $\ell \leq$ 2.5 m	2	24	3.3	0.51	0.31	4.55

3.2.2.3 Elastic coupling of vertical planes

The internal and external vertical planes of a scaffold may be assumed elastically coupled to each other by the decks in the direction of these planes (with façade scaffolds parallel to façade). This elastic coupling may be considered due to the assumption of a coupling spring with the design values given in Table 5.

Table 5: Design values of horizontal coupling springs per scaffold bay

Deck	Number of decks per bay	According to annex	Play $F_{oll,d}$[cm]	$0<F_{ll}\leq kN$	$1.14<F_{ll}\leq 2.27$ kN	$2.27<N_{ll}\leq F_{Rll,d}$	$F_{Rll,d}$ kN]
				$c_{ll,d}$ [kN/cm]	$c_{ll,d}$ [kN/cm]	$c_{ll,d}$ [kN/cm]	
Steel deck $\ell \leq 3.0$	2	7	1.0	2.22	2.37	1.25	4.55
Aluminium deck with plywood $\ell \leq 3.0$ m	1	9, 10, 16, 17	0.3	2.20	2.20	0.94	4.55
Solid wood deck $\ell \leq 3.0$ m	2	24	1.0	1.99	1.95	1.22	4.55

3.2.2.4 Vertical diagonal braces

For the vertical diagonal braces proof shall be furnished that the loads are not higher than the loadabilities as per Table 6.

In the entire system the vertical diagonal braces as fictitious bar articulated between the joints formed of the standards and decks, may be considered with an effective fictitious cross sectional area A_{eff} as per Table 6 and the relevant fictitious rigidity $E \cdot A_{eff}$.

Table 6: Characteristics of vertical diagonal braces

Bay length [m]	$\beta = \frac{A_D}{A_{eff}}$	$D_{R,d}$ [kN]
2.07	44	7.65
2.57	42	6.51
3.07	40	5.37

where A_D = cross sectional area of diagonal tube
A_{eff} = effective fictitious cross sectional area
$D_{R,d}$ = loadability of diagonal braces

3.2.2.5 Material characteristics

For steel elements S 235JRH with elevated yield point ($R_{eH} \geq 320$ N/mm^2) – these elements are designated in the drawings of the annex – a design value of the yield point of $f_{y,d} = 291$ N/mm^2 may be taken as basis for calculation.

3.2.2.6 Welds

For weld checks of elements made of steel S 235JRH with elevated yield point ($R_{eH} \geq 320$ N/mm^2) – these elements are designated in the drawings of the annex - a utilization of the elevated yield points of $f_{y,d} = 291$ N/mm^2 is admissible for butt welds subjected to compression/compression with bending. All other welds shall be verified by applying the yield points of the base material of the element.

3.2.2.7 Cross section values of base jack

The fictitious cross sections of the base jack as per Annex 31 for stress checks and deformation calculations as per DIN 4425 shall be assumed as follows:

$A = A_S$	=	3.52 cm^2
I	=	4.00 cm^4
W_{el}	=	2.68 cm^3
W_{pl}	=	$1.25 \cdot 2.68 = 3.35$ cm^3

3.2.2.8 Couplers

For the checks of the halfcouplers provided at different elements the loadabilities and stiffness of halfcouplers of class A shall be applied in accordance with the "Approval principles for the applicability of semi-couplers for steel and aluminium tubes"[2].

4. Design and Construction Requirements

4.1 General

For the construction and checking of scaffolds DIN 4420-1 applies in connection with the Ordinance on Industrial Safety and Health (Betr.SichV) of September 27, 2002 and the erection and use instructions reviewed by the specialist committee for 'Construction' of the trade associations of December 10, 2004. The latter applies for the use of the scaffold system in trade.
A supervisor constantly present during erection shall check especially the condition of the elements according to chapter 4.2 and their marking according to chapter 4.3.1.

4.2 Condition of Elements

All elements shall be checked for proper condition before use and defective elements sorted out.

4.3 Structural Design

4.3.1 Elements
For scaffolds in accordance with this approval the elements as per Table 1 shall be used. Only such elements shall be used that are marked in accordance with the provisions of this approval.
In individual cases also steel tubes, couplers and scaffold boards may be added according to DIN 4420-1.
As a deviation from the base jack shown in Annex 31 also other light-weight base jacks in accordance with DIN 4425 may be used depending on the necessary load-bearing capacities.

4.3.2 Foot area
The lower vertical frames shall be placed on base jacks and aligned so that the scaffold layers are in horizontal position. It shall be made sure that the end plates of the base jacks are fully supported and horizontal and the forces resulting from the scaffold are absorbed on erection level and dissipated.

4.3.3 Levelling
For levelling the vertical frames 1.0 m and 0.66 m may be used as levelling frames. No work is allowed on scaffold layers directly below such frames.

4.3.4 Decking
The decking shall be protected against accidental lifting.

4.3.5 Lateral protection
For lateral protection the requirements of DIN 4420-1 shall apply. The elements provided for that purpose shall be primarily used and only in exceptional cases elements such as steel tubes to be connected with couplers, and scaffold boards according to DIN 4420-1 shall be used.

4.3.6. Stiffening
Scaffolds shall be stiffened.
With façade scaffolds the external vertical plane shall be erected parallel to he façade using diagonal braces that may be arranged in a continuous or tower-like manner. The number of diagonal braces follows from the stability check but not more than 5 scaffold bays may be allocated to one diagonal brace.
At least in the bays where one diagonal brace is connected longitudinal ledges shall be provided on the level of the base jacks.
The horizontal planes (scaffold layers) shall be stiffened by decks.

4.3.6 Anchors
The anchor grids and the anchor forces follow from the stability check.
The anchors of the scaffold holders at the façade or at another point of the structure do not fall under this approval. The user shall make sure that the forces from the scaffold holders are properly absorbed and dissipated. Vertical forces must not be transmitted.

4.3.7 Couplers
The couplers with bolted connection shall be tightened at a torque of 50 Nm when connected to the standards. Deviations of +/- 10 % are admissible. The bolts must be kept soft-running, e.g. by use of oil/grease mixture.

5 Requirements for Use and Maintenance

5.1 General

DIN 4420-1 in connection with the Ordinance on Industrial Safety and Health (BetrSichV) of September 27, 2002, the accident prevention regulations 'Construction works' (BGV C 22)[3] and the erection and use instructions reviewed by the specialist commission for 'Construction' of the trade associations shall apply.

5.2 Wooden Scaffold Elements

To avoid damage of wooden scaffold elements due to moisture, they have to be stored in a dry condition, off the ground and sufficiently ventilated.

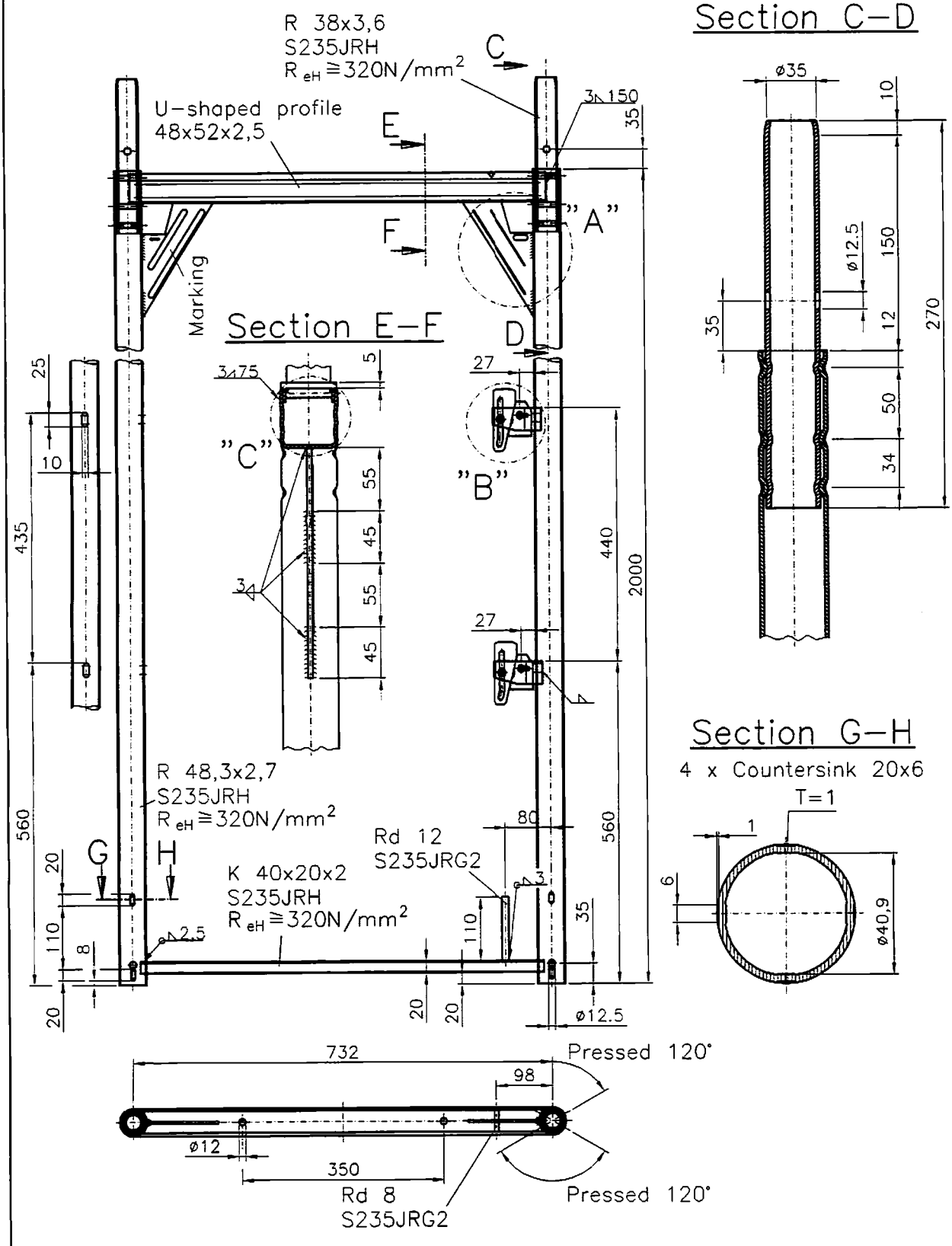
Buche

Certified by

>signed<
Schult

Stamp of
Deutsches Institut für Bautechnik

[3] to be obtained from the component trade association or Carl Heymanns Verlag KG, Luxemburger Str. 448, 50939 Cologne, Germany



galvanised
Details, see Annex 3

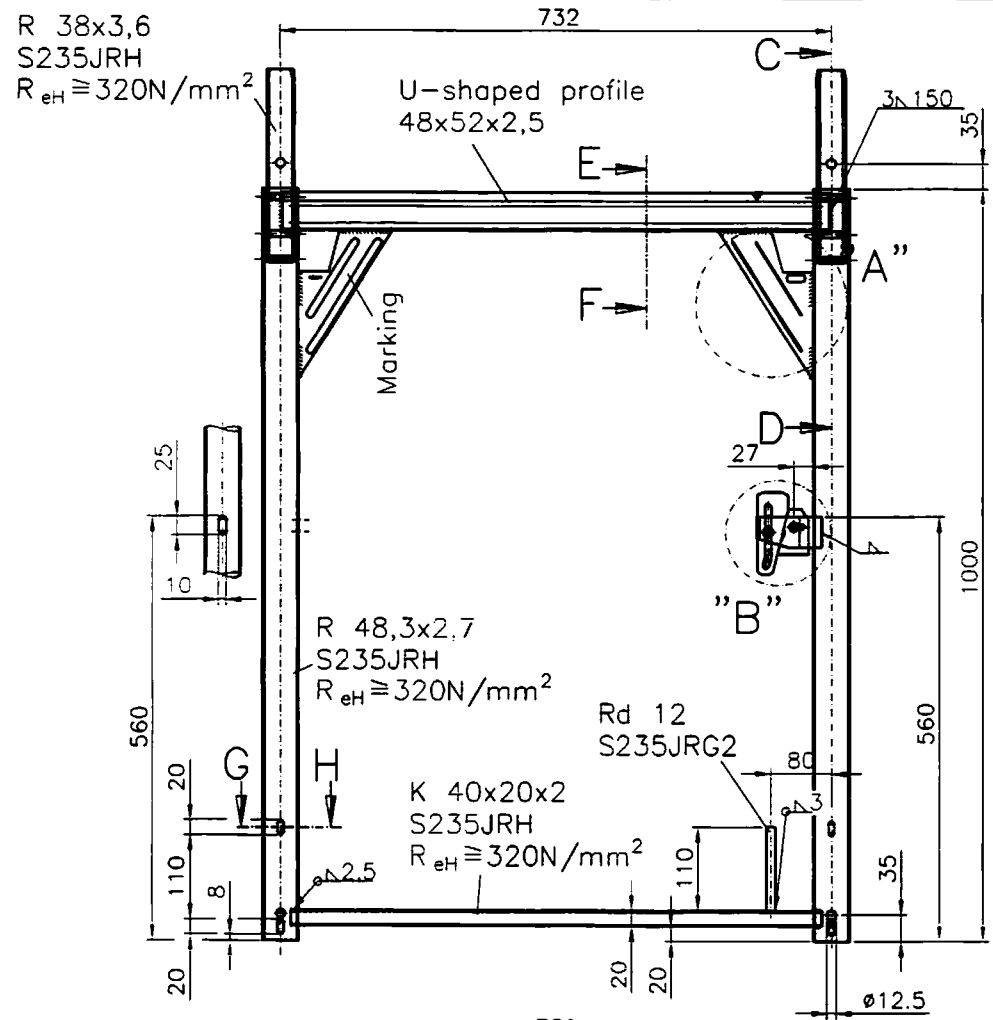
ALFIX GmbH
63828 Edelbach
09603 Großschirma

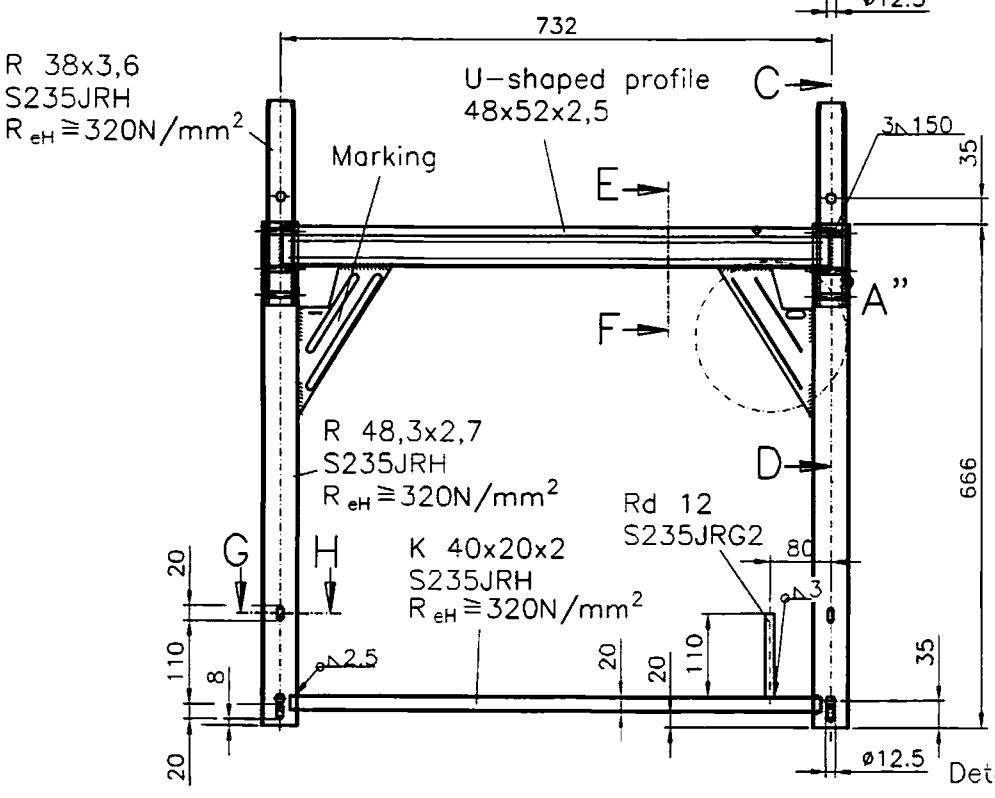
ALFIX 70

Facade scaffolding

Vertical steel frame 18/70
2,0m

Annex 1 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik





galvanised

Details, see Annex 3

ALFIX GmbH

63828 Edelbach
09603 Großschirma

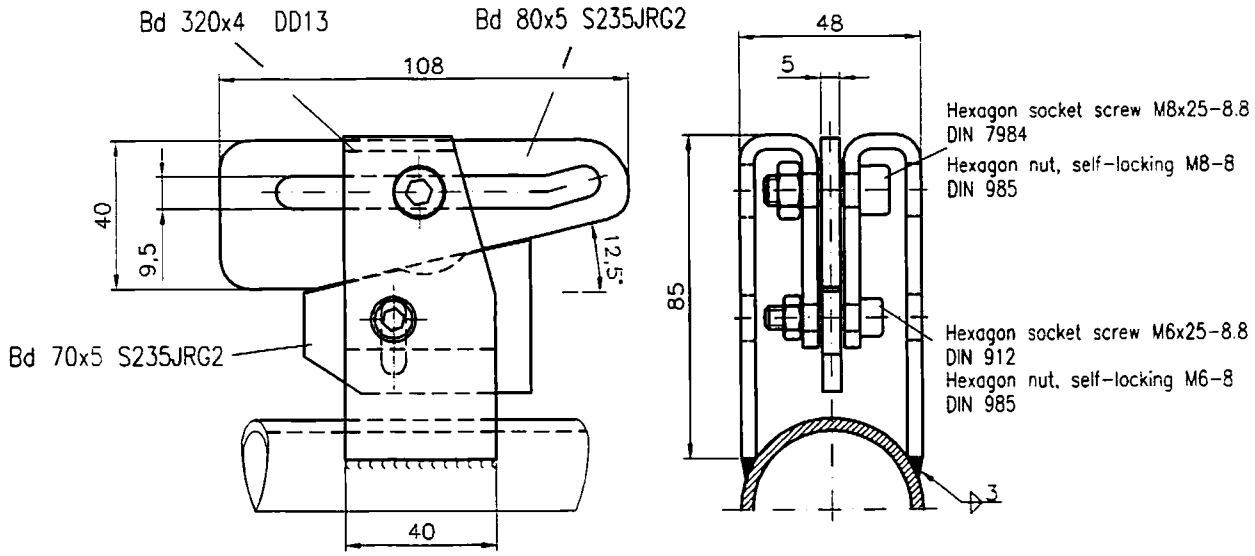
ALFIX 70

Facade scaffolding

Vertical steel frame 18/70
1,0m und 0,66m

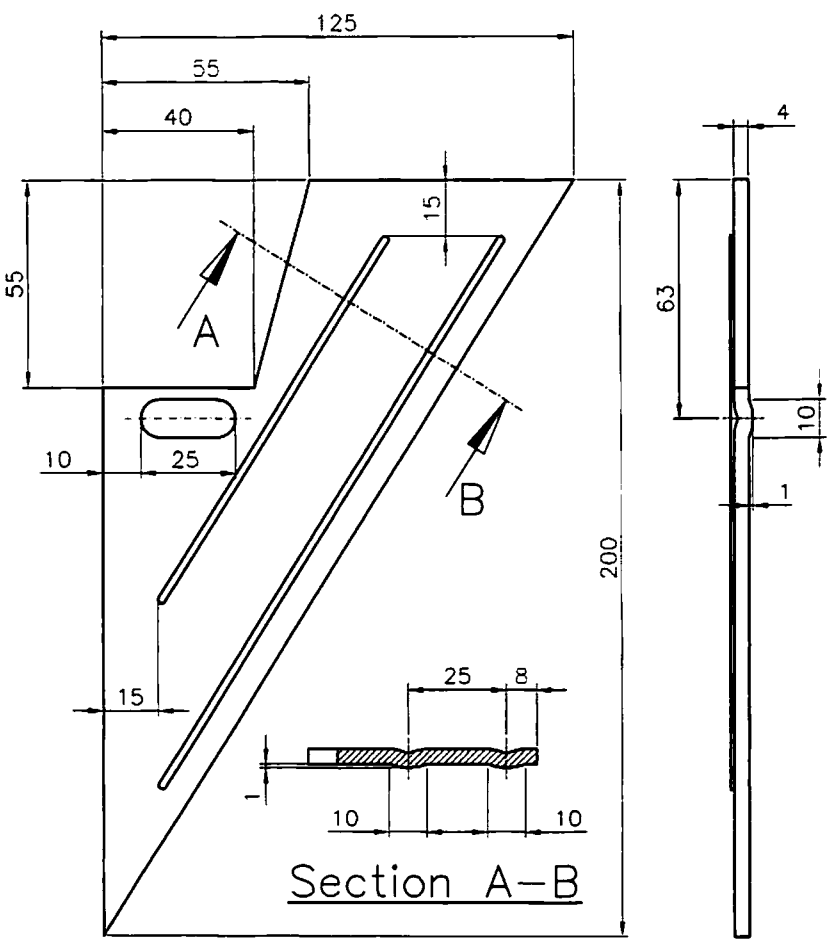
Annex 2 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Detail"B"



Detail"A"

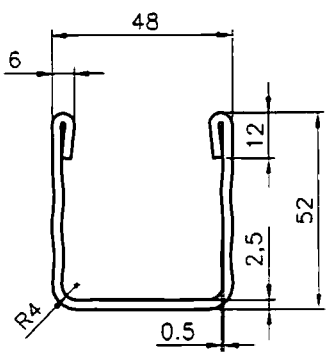
Gusset plate S235JRG2



Section A–B

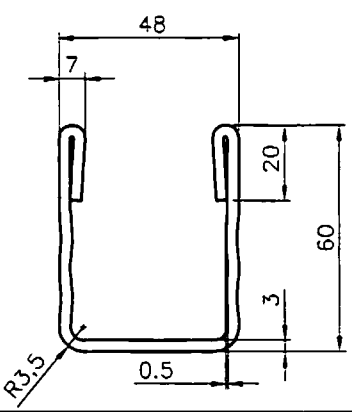
Detail"C"

Transom profile S235JR
Bl 169x2,5



Detail"D"

Transom profile S235JR
Bl 196x3



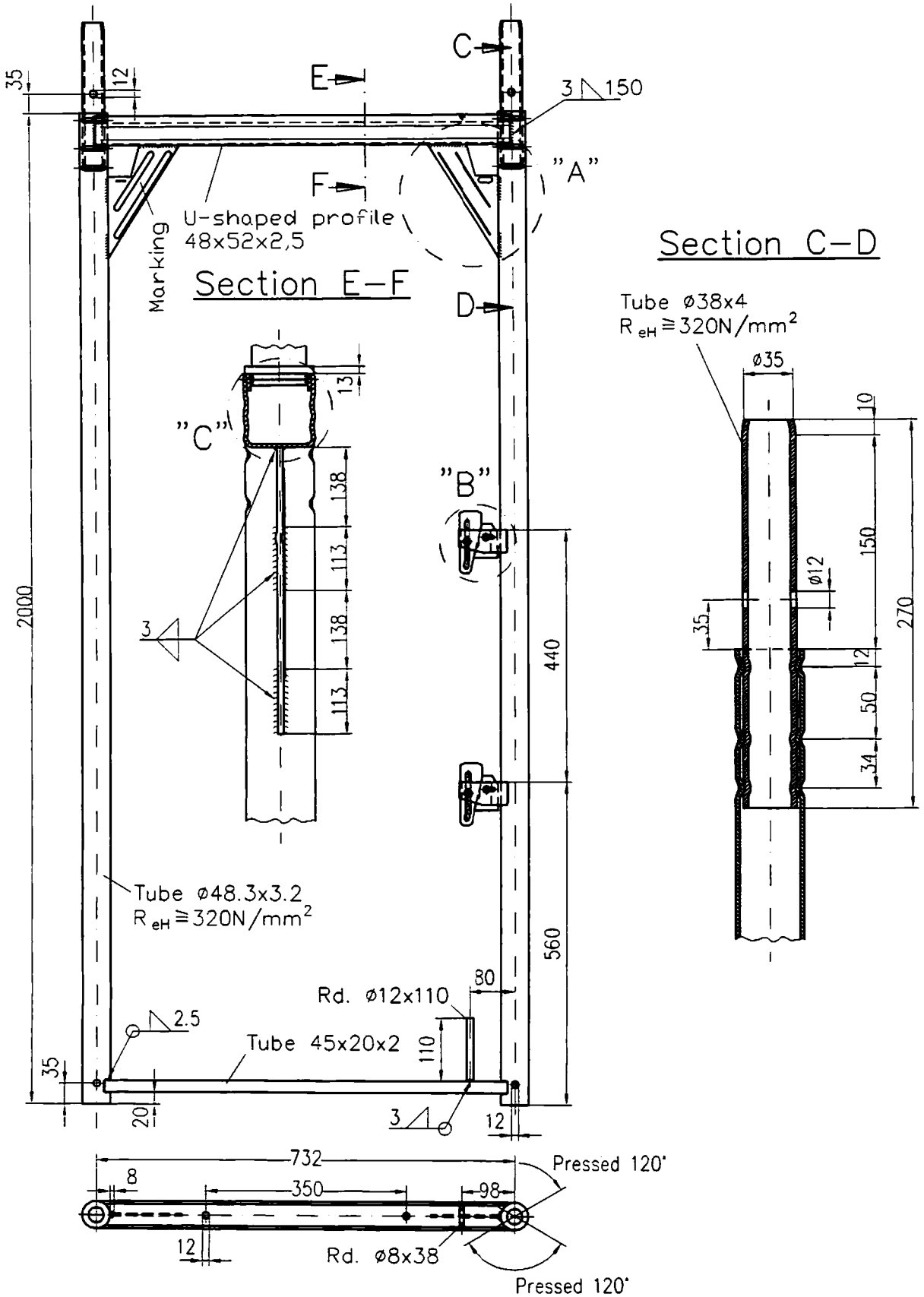
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Details ref. to
Vertical steel frame 18/70
2,0m

Annex 3 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JRG2 galvanised Former design Details, see Annex 6

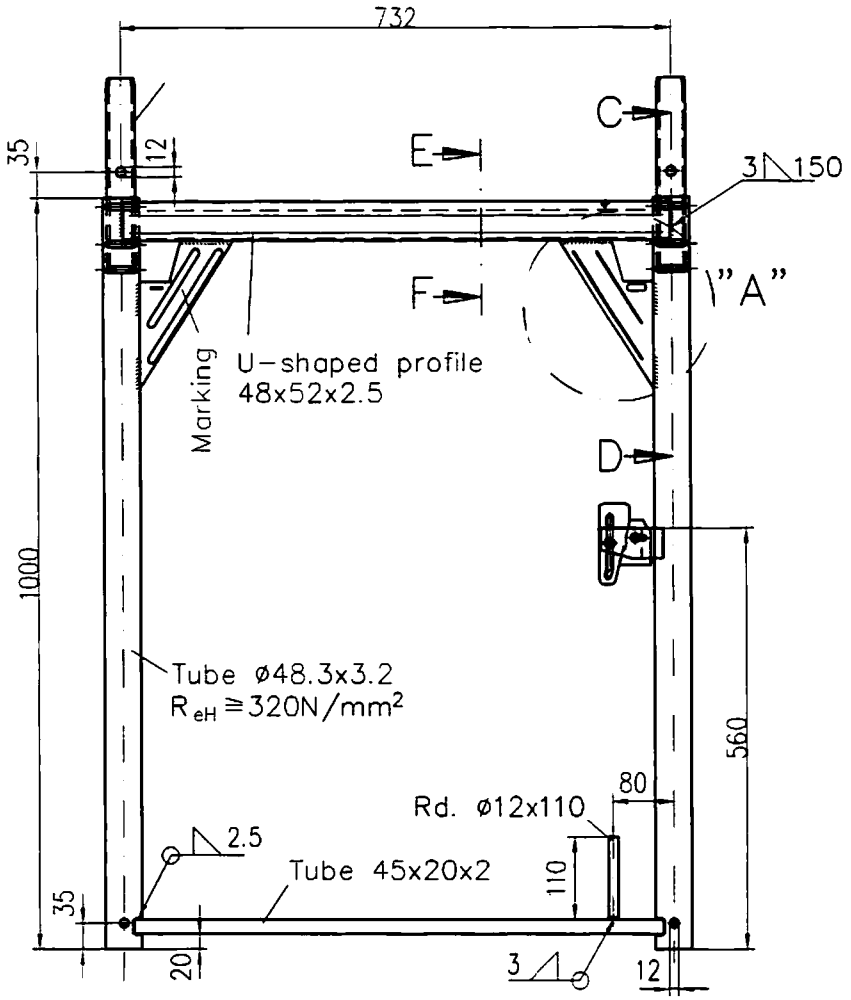
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

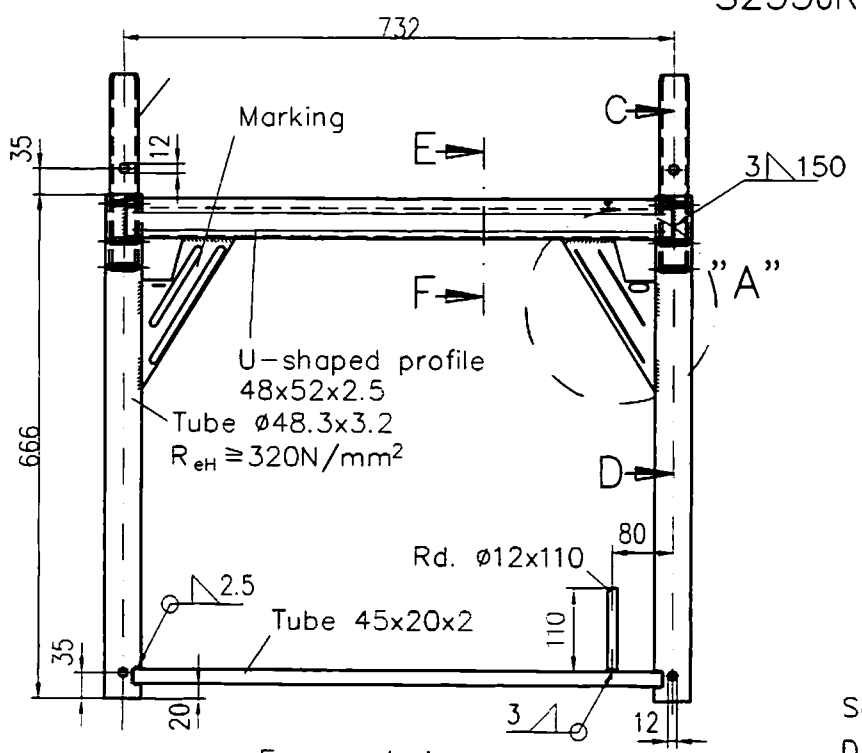
Facade scaffolding

Vertical steel frame 70
2,0m

Annex 4 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JRG2 galvanised



Former design

Sections, see Annex 4
Details, see Annex 6

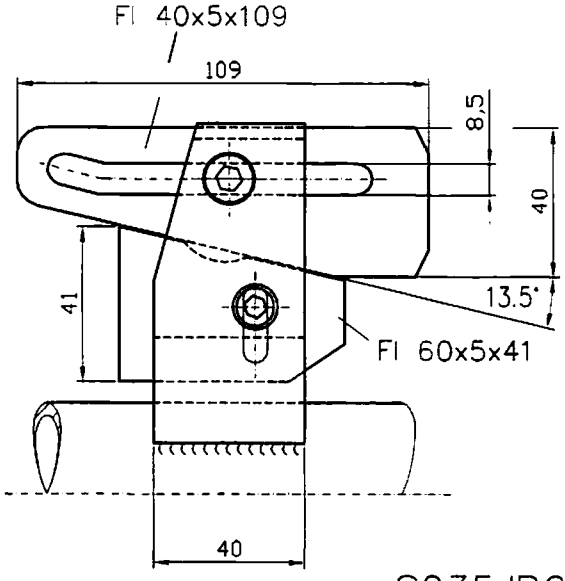
ALFIX GmbH
63828 Edelbach
09603 Großschirma

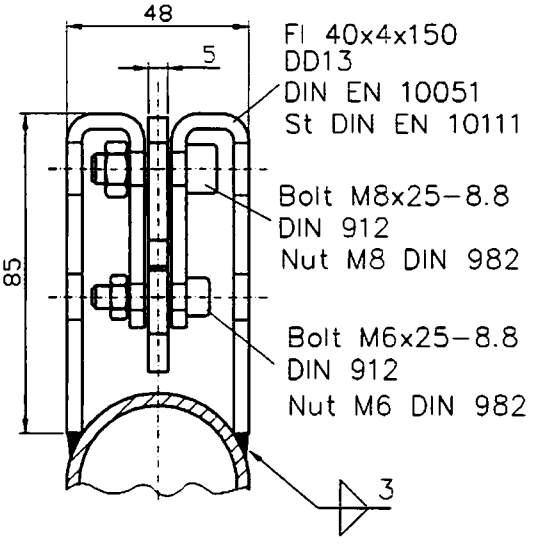
ALFIX 70
Facade scaffolding

Vertical steel frame 70
1,0m und 0,66m

Annex 5 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Detail "B"

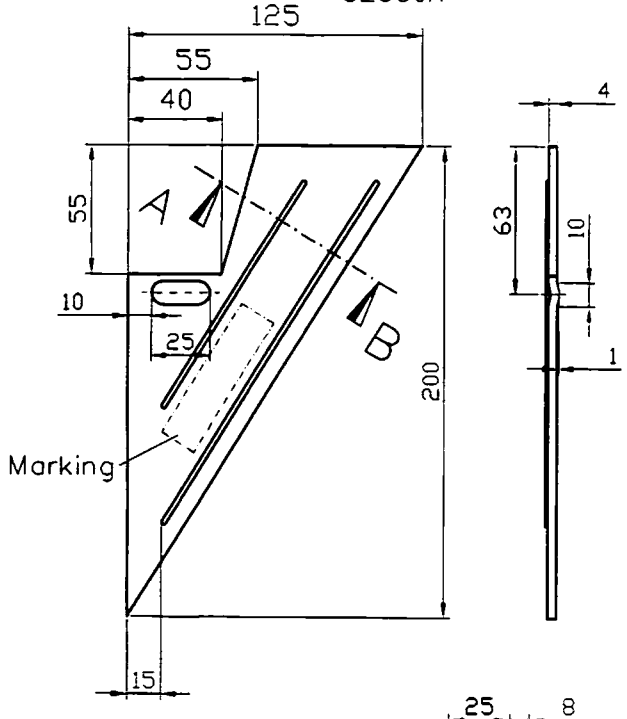




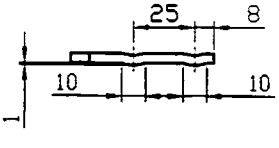
S235JRG2

Detail "A"

Bl 125x200x4
S235JR



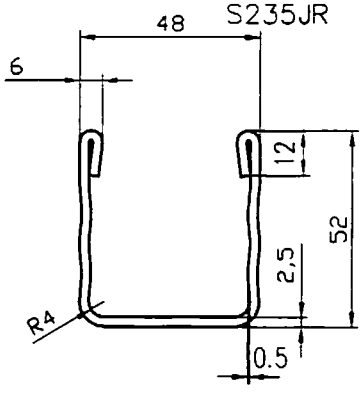
Section A-B



Former design

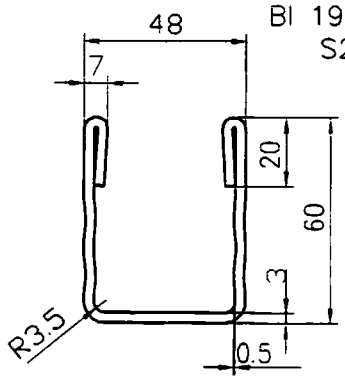
Detail "C"

Bl 169x2.5
S235JR



Detail "D"

Bl 196x3
S235JR



ALFIX GmbH
63828 Edelbach
09603 Großschirma

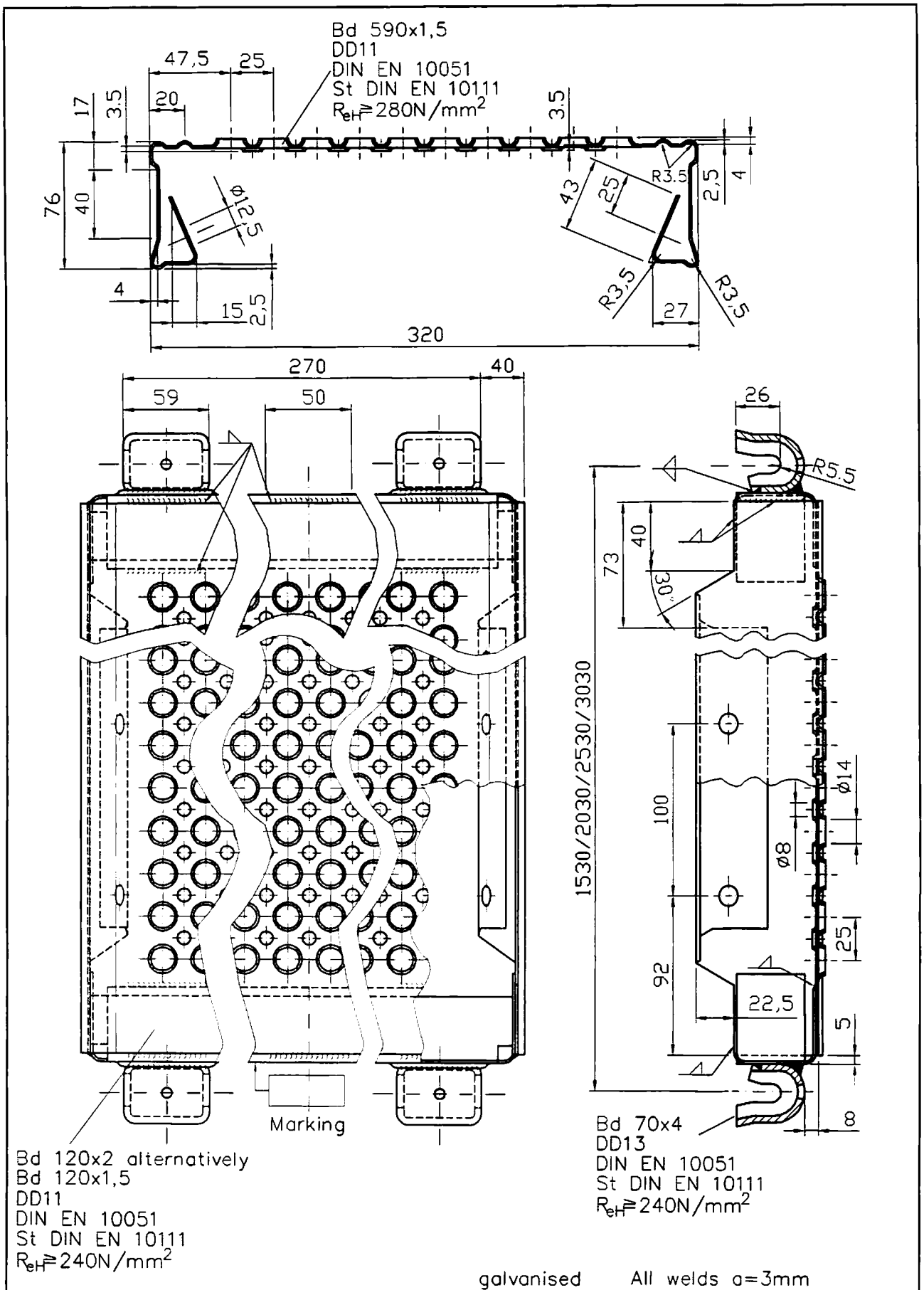
ALFIX 70

Facade scaffolding

Details ref. to

Vertical steel frame 70

Annex 6 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



ALFIX GmbH

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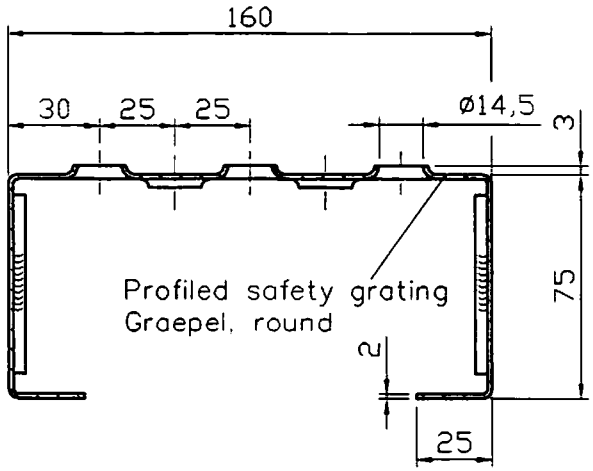
09603 Großschirma

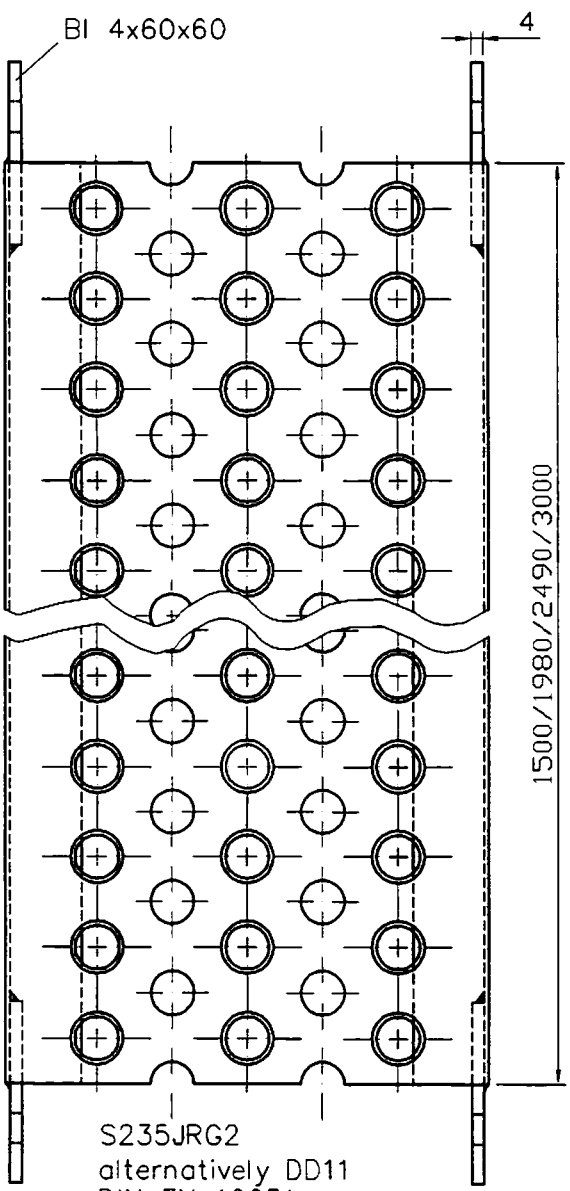
ALFIX 70

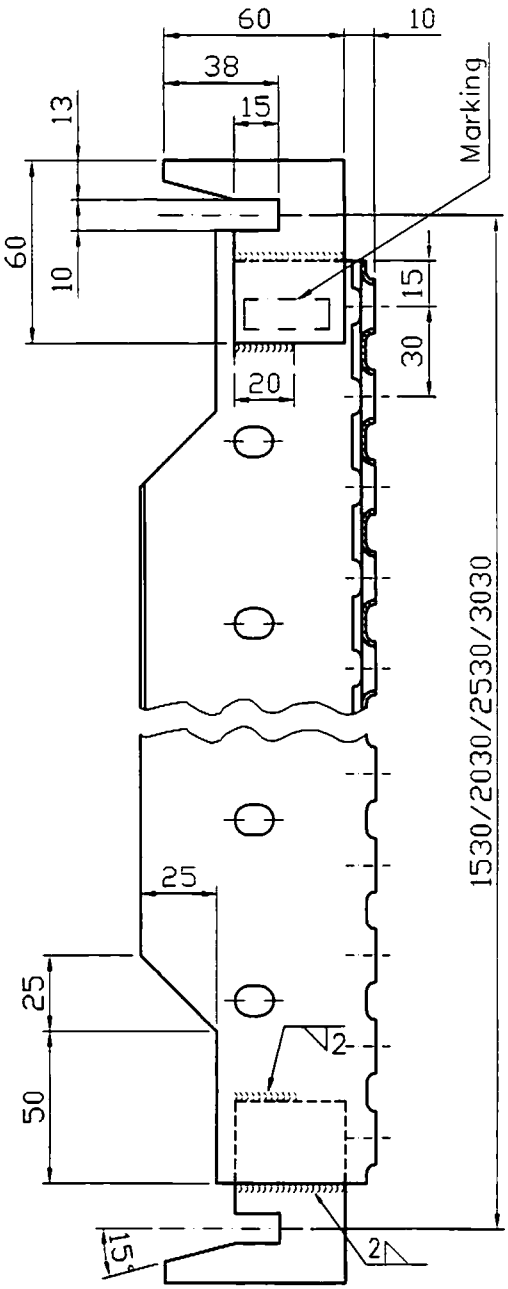
Facade scaffolding

Steel deck

Annex 7 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik







S235JRG2
alternatively DD11
DIN EN 10051
St DIN EN 10111
$R_{eH} \geq 240 N/mm^2$

galvanised

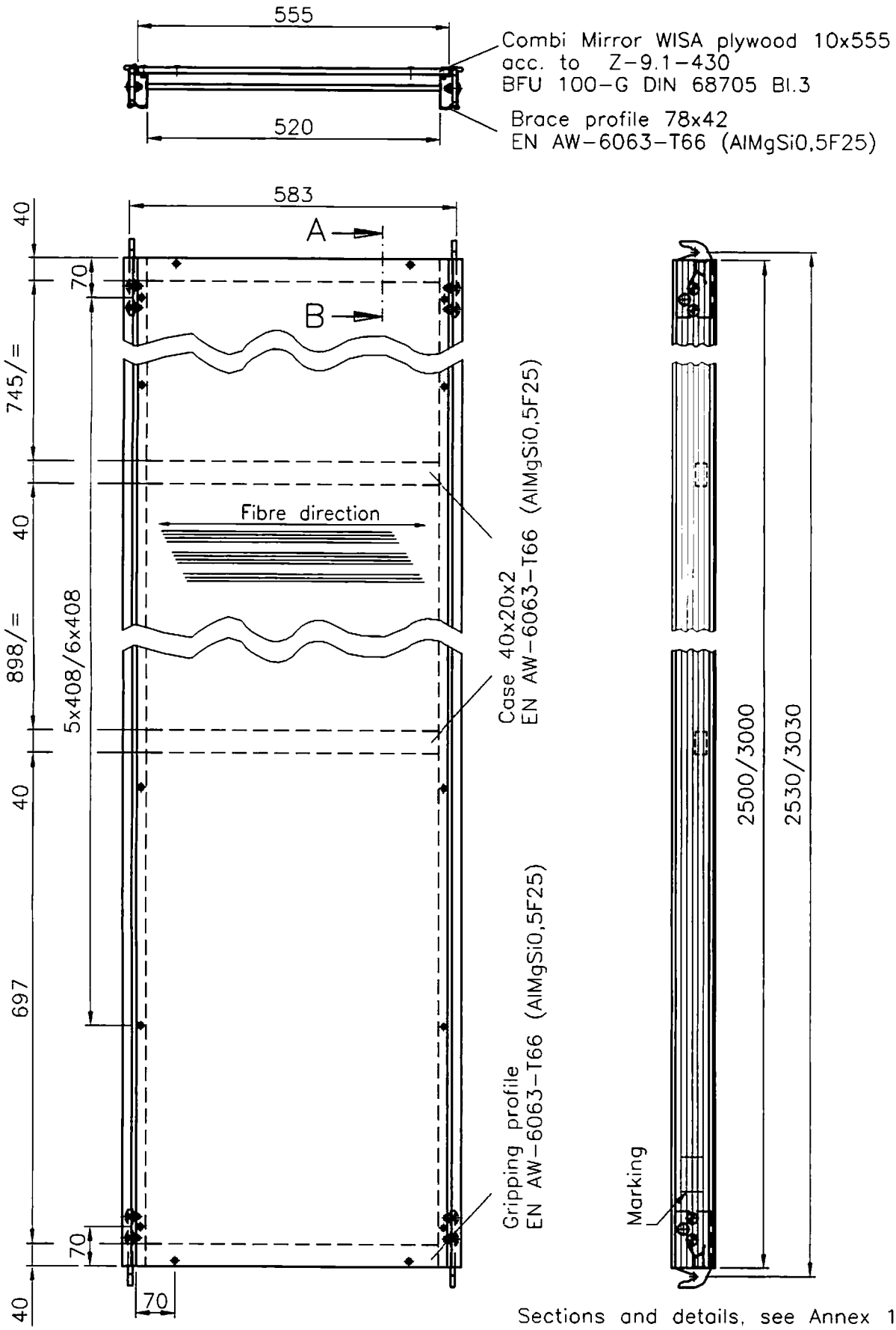
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Intermediate deck

Annex 8 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 11

ALFIX GmbH

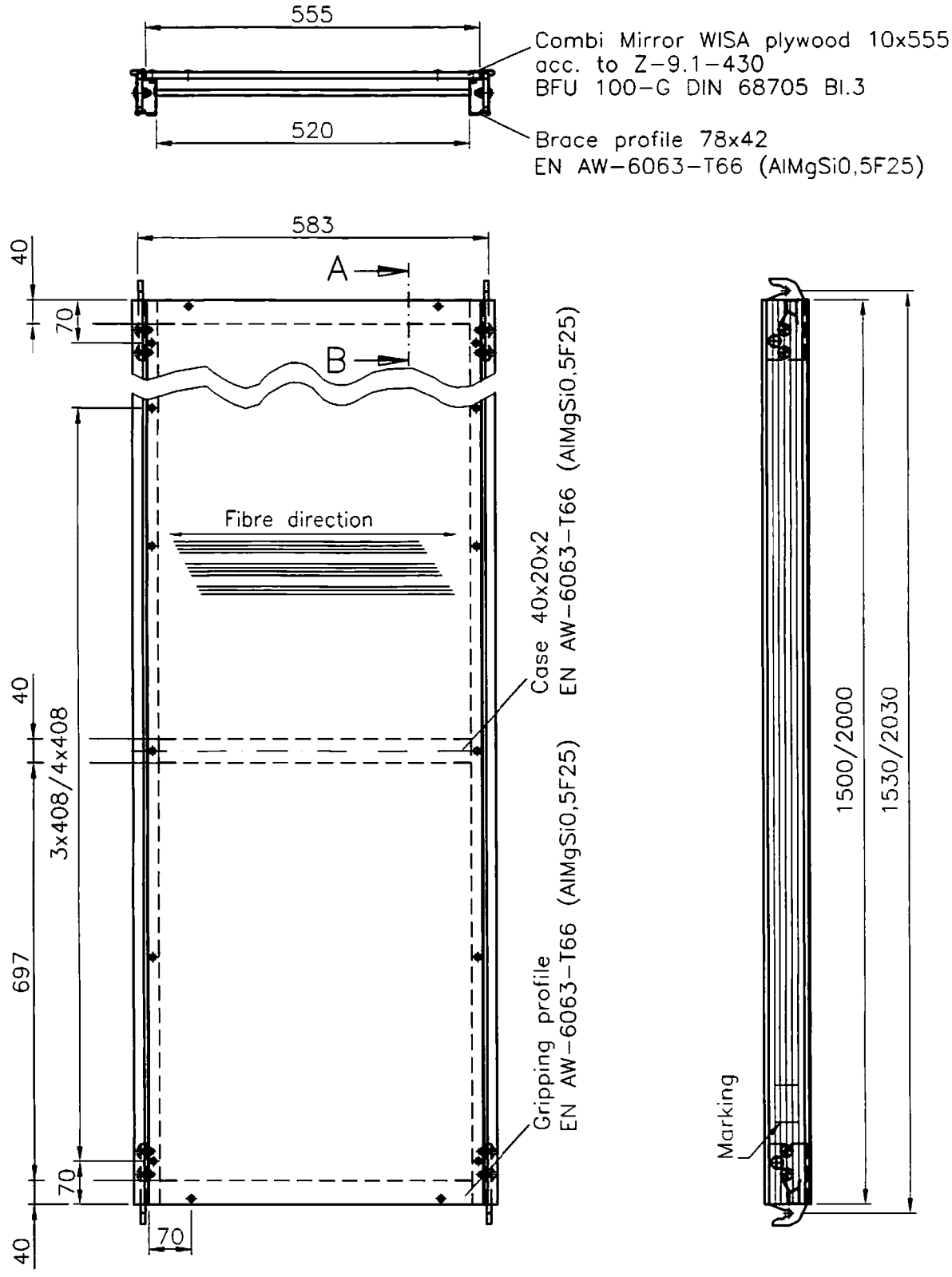
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Aluminium deck with plywood
2,5 m; 3,0 m

Annex 9 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 11

ALFIX GmbH

63828 Edelbach
09603 Großschirma

ALFIX 70

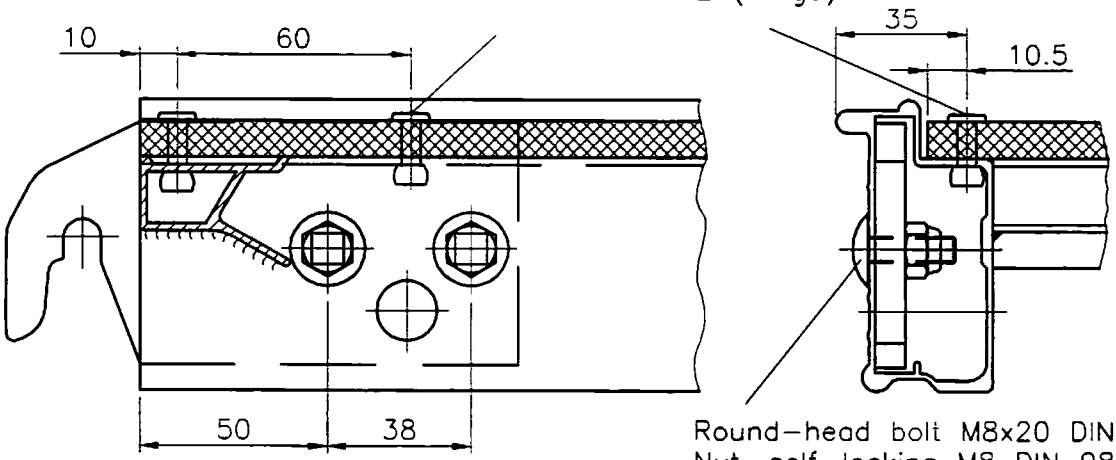
Facade scaffolding

Aluminium deck with plywood
1,5 m, 2,0 m

Annex 10 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

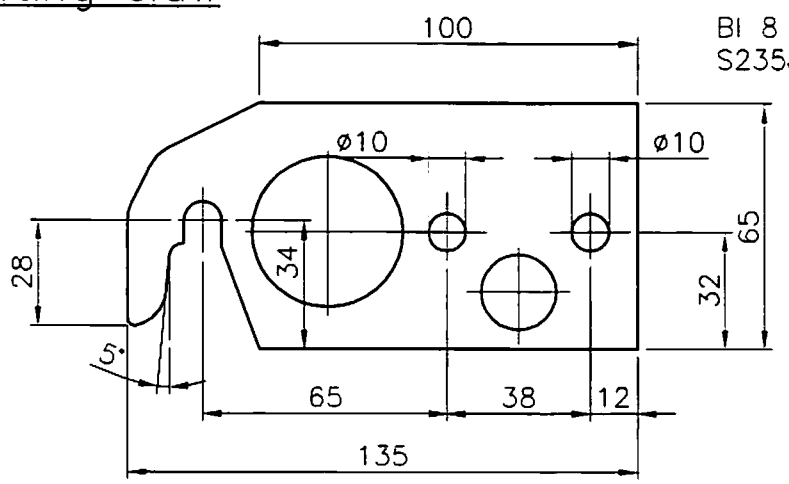
Section A–B

Blind rivet ø5x20
EN AW–5754 H112 (AlMg3)



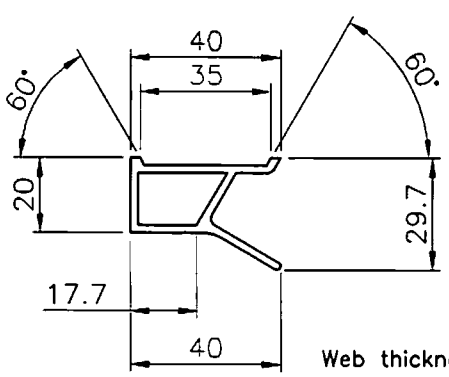
Round–head bolt M8x20 DIN 603
Nut, self–locking M8 DIN 980

Mounting claw



BI 8
S235JRG2 galvanised

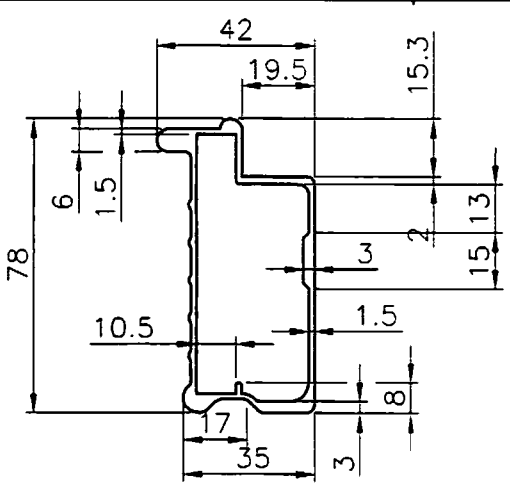
Gripping profile



Web thickness 2mm

EN AW–6063–T66 (AlMgSi0,5F25)

Aluminium brace profile



EN AW–6063–T66 (AlMgSi0,5F25)

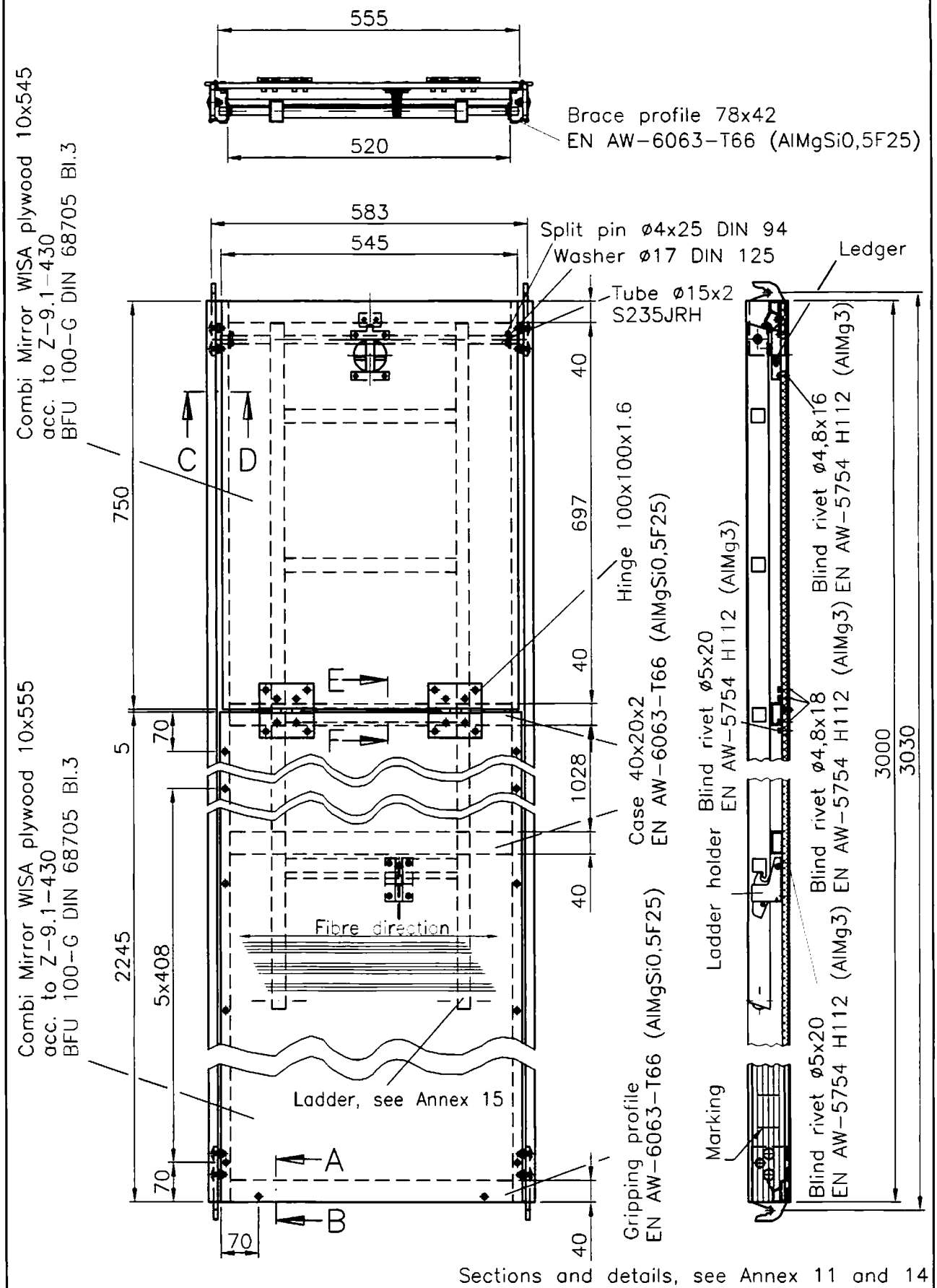
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Details ref. to aluminium deck

Annex 11 to
general national technical
approval Z–8.1–862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 11 and 14

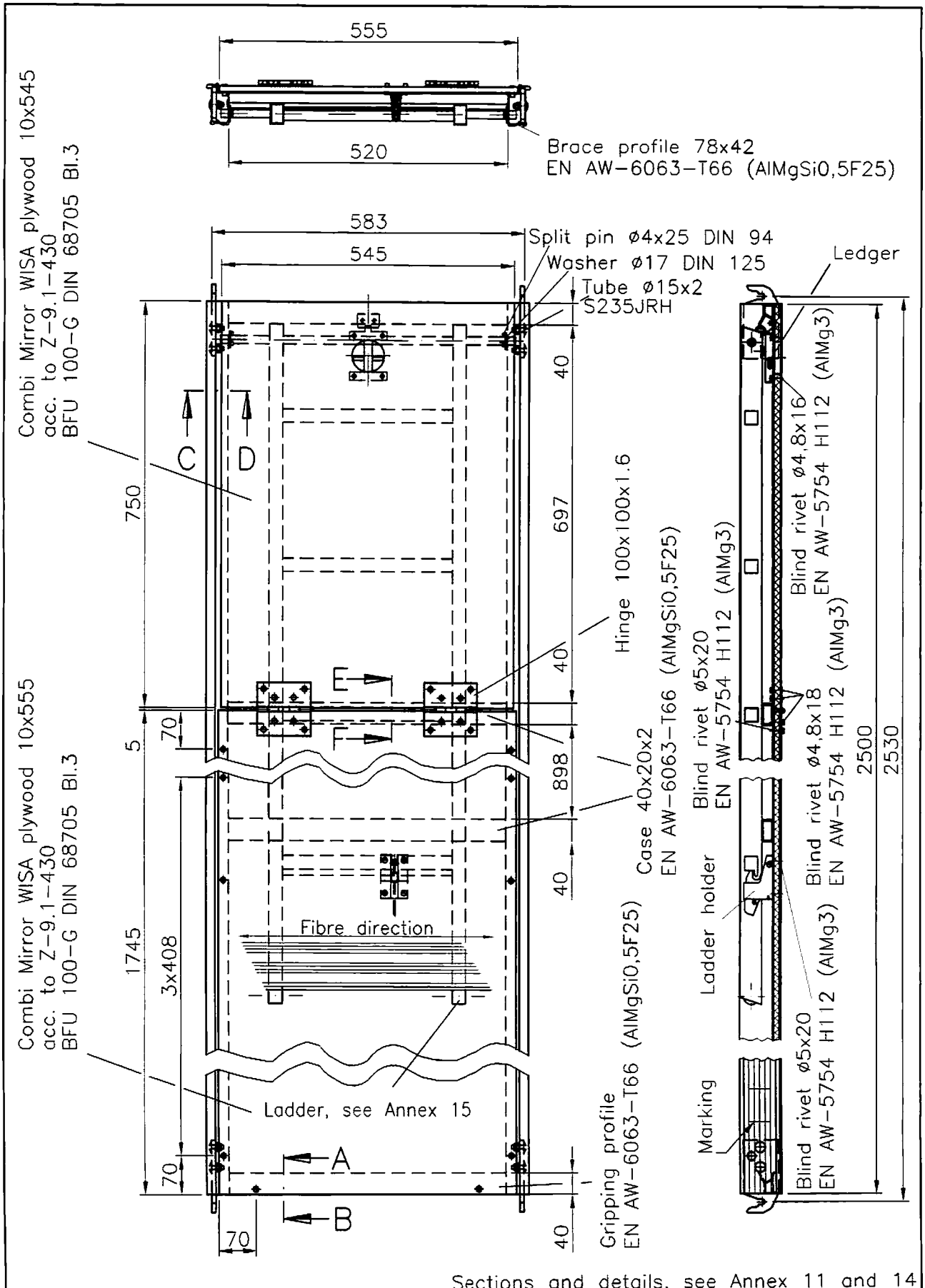
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Alu hatch-type access deck 3,0m
with integrated ladder

Annex 12 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 11 and 14

ALFIX GmbH
63828 Edelbach
09603 Großschirma

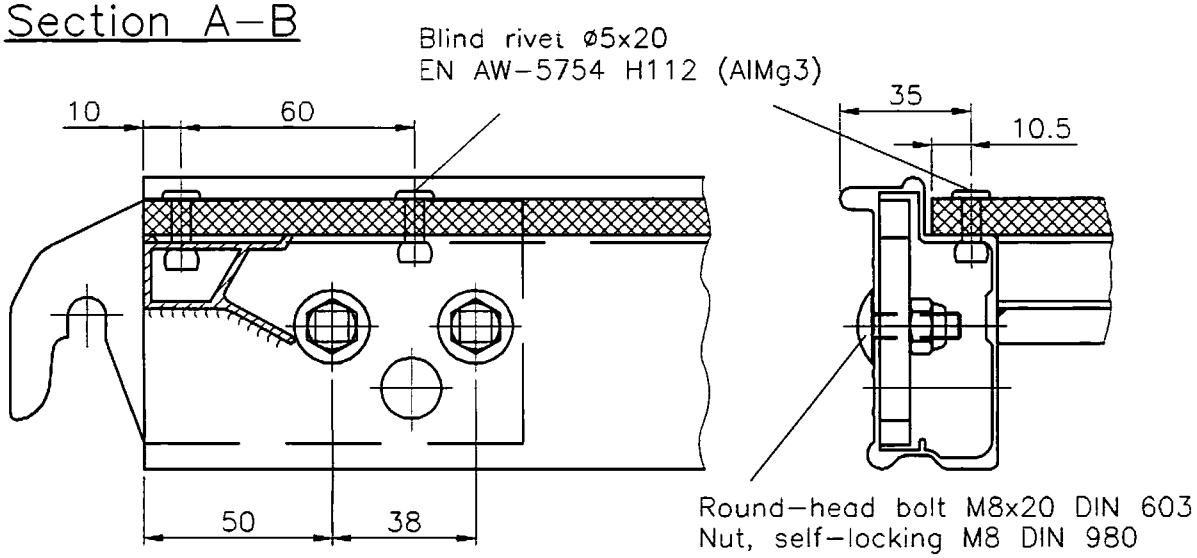
ALFIX 70

Facade scaffolding

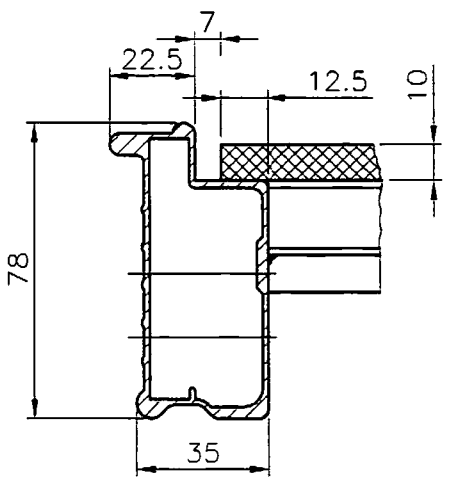
Alu hatch-type access deck 2,5m with integrated ladder

Annex 13 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

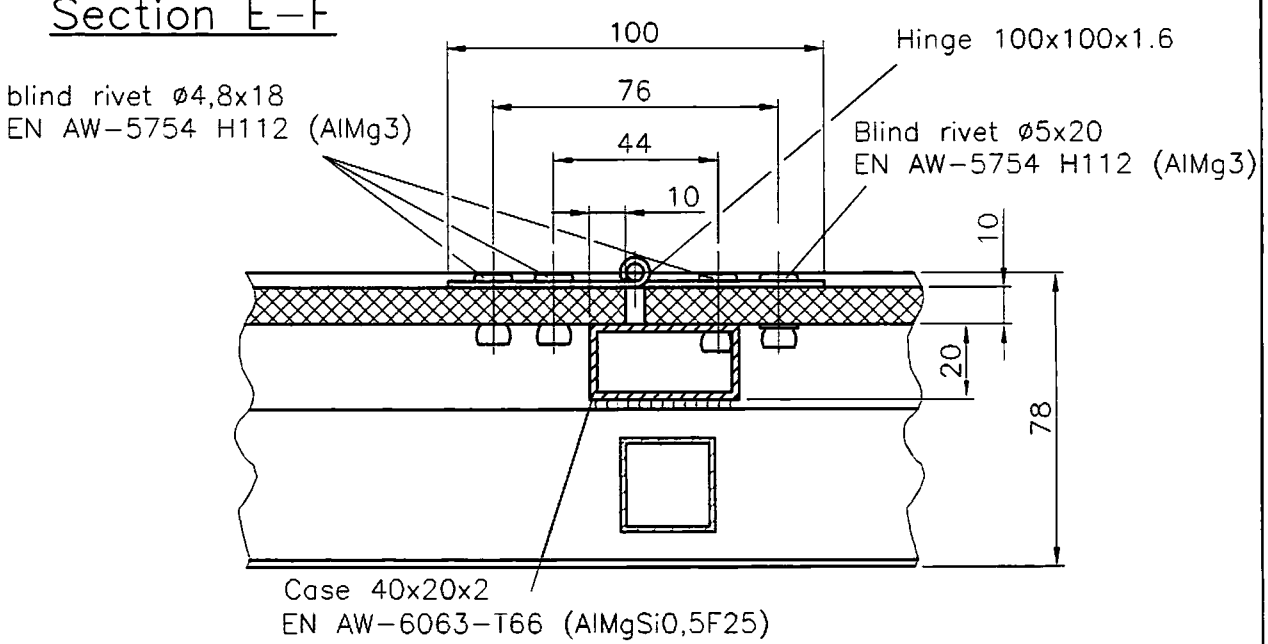
Section A–B



Section C–D



Section E–F



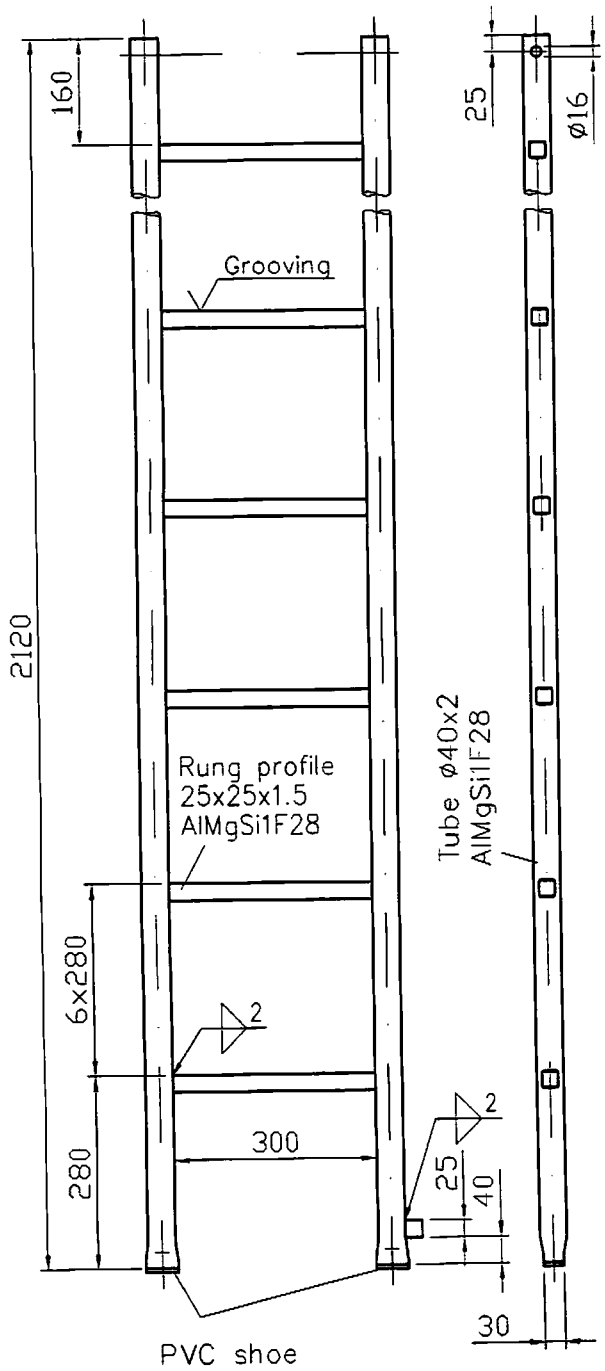
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

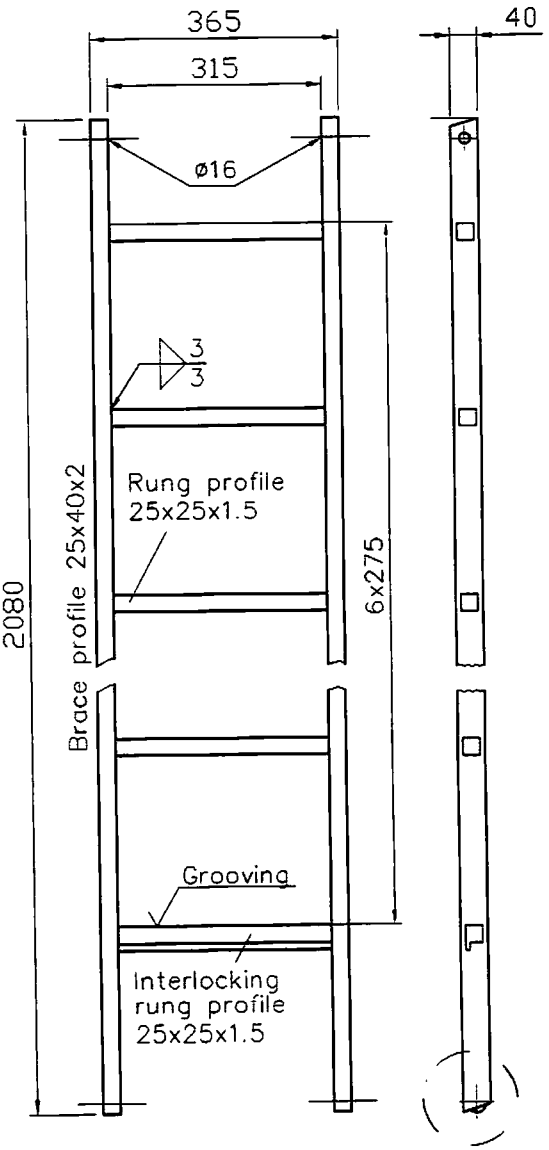
Sections ref. to
Alu hatch–type access

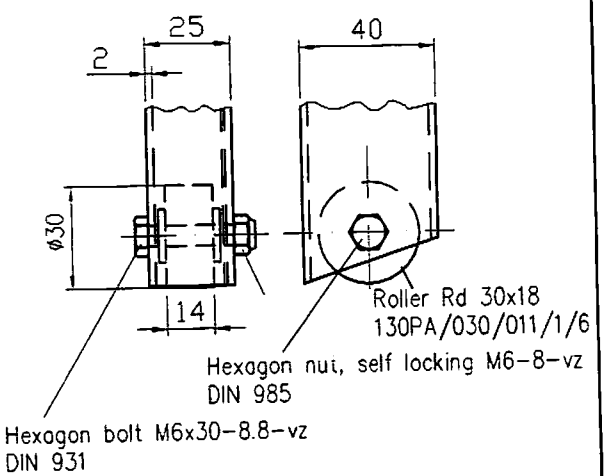
Annex 14 to
general national technical
approval Z–8.1–862
as of February 8, 2005
Deutsches Institut für Bautechnik



Former design

– For use only –





EN AW-6060-T66
(AlMgSi0,5F22)

ALFIX GmbH

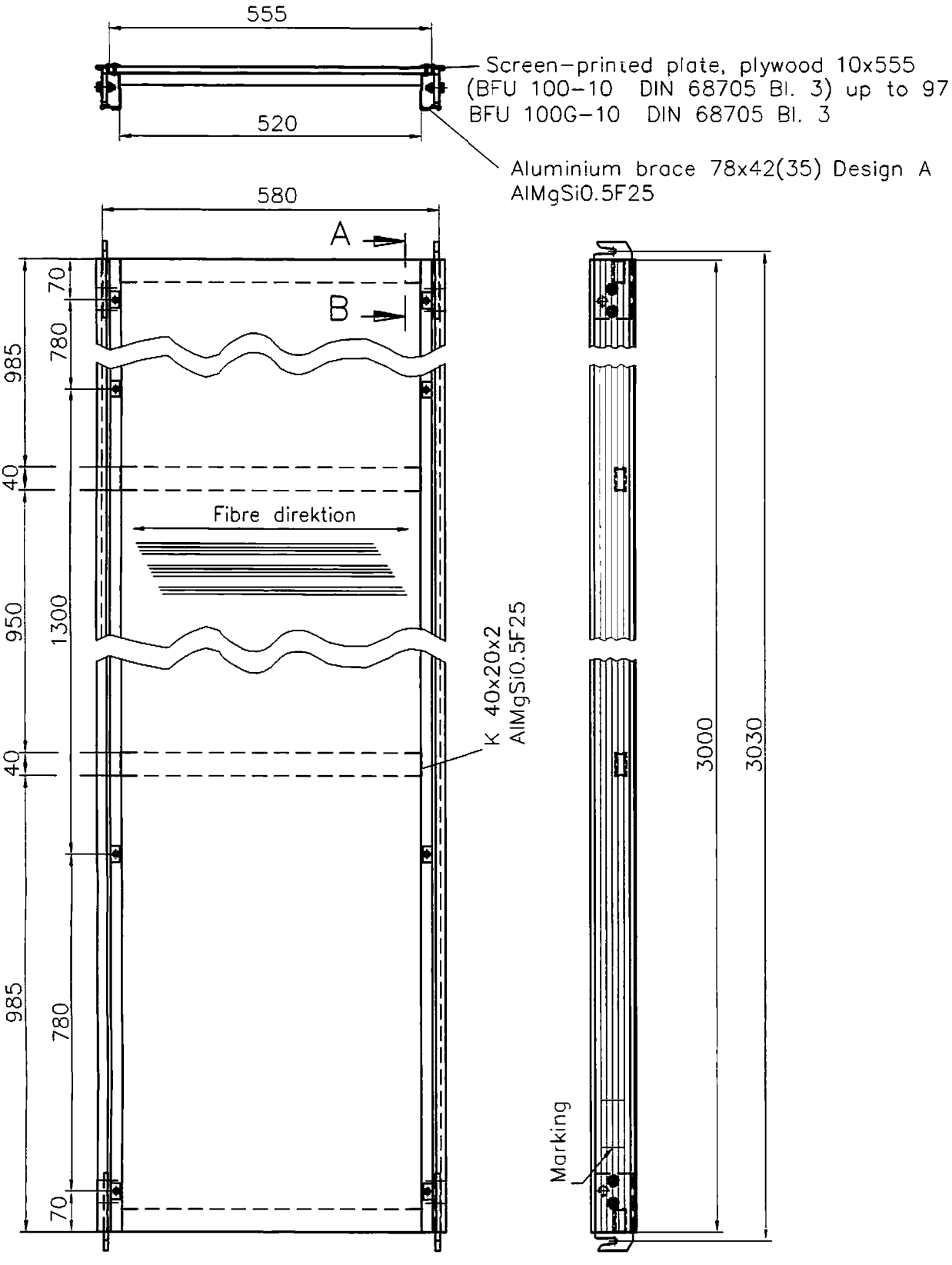
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Integrated ladder

Annex 15 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 18

Production of component has been terminated.
-For use only-

( ) = Former design with marking:
Manufacturer's identification mark,
Year of manufacture, Z-8.1-310, Ü

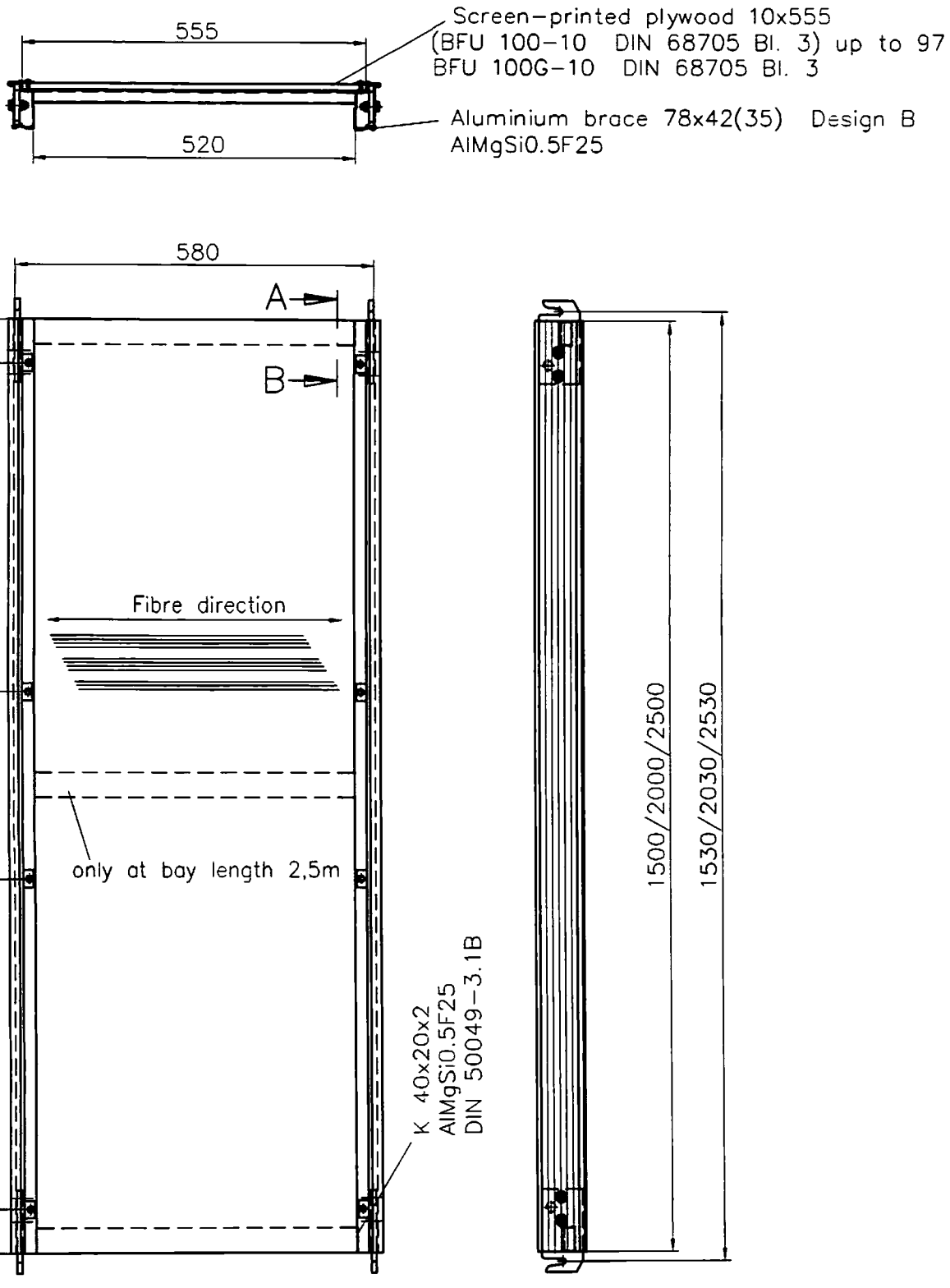
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Aluminium deck with plywood
3,0 m

Annex 16 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections and details, see Annex 18

( ) = Former design with marking: Manufacturer's identification mark, Year of manufacture, Z-8.1-310, Ü

Production of component has been terminated.
-For use only-

ALFIX GmbH
63828 Edelbach
09603 Großschirma

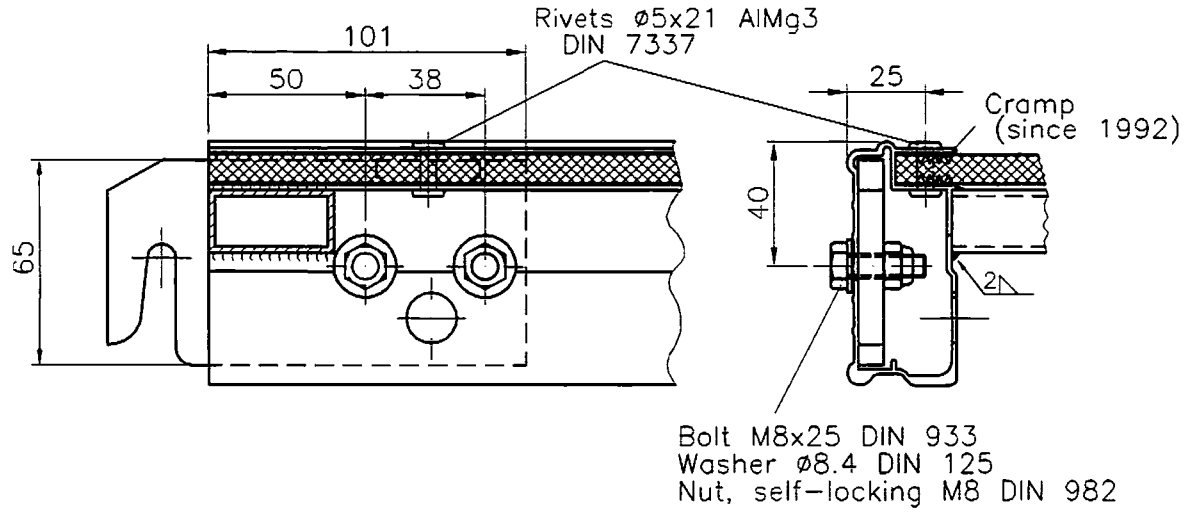
ALFIX 70

Facade scaffolding

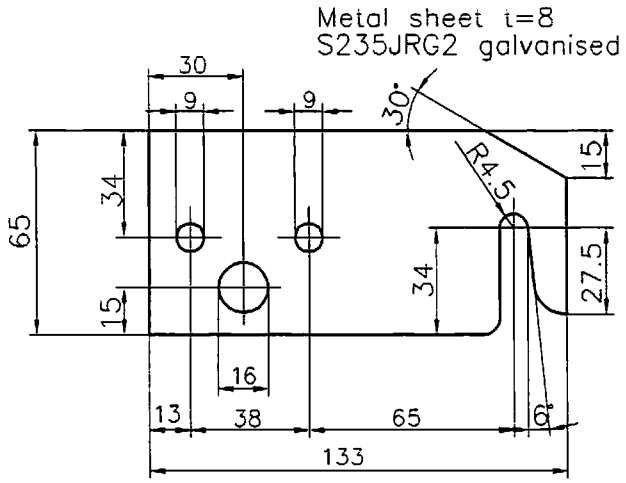
Aluminium deck with plywood
1,5m, 2,0m, 2,5m

Annex 17 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Section A–B

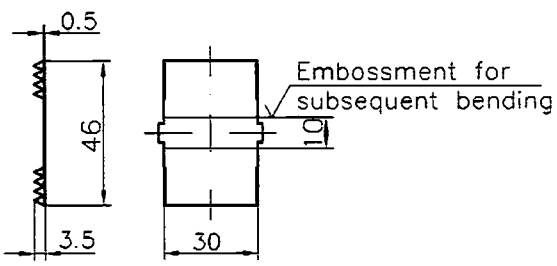


Mounting claw



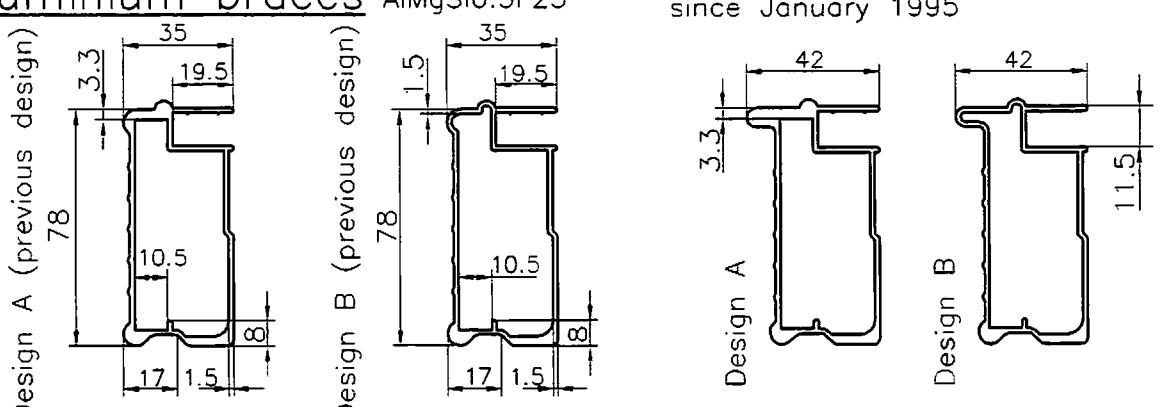
Cramp

Metal sheet t=0.5
S235JR galvanised



Aluminium braces AlMgSi0.5F25

since January 1995



Production of component has been terminated.
–For use only–

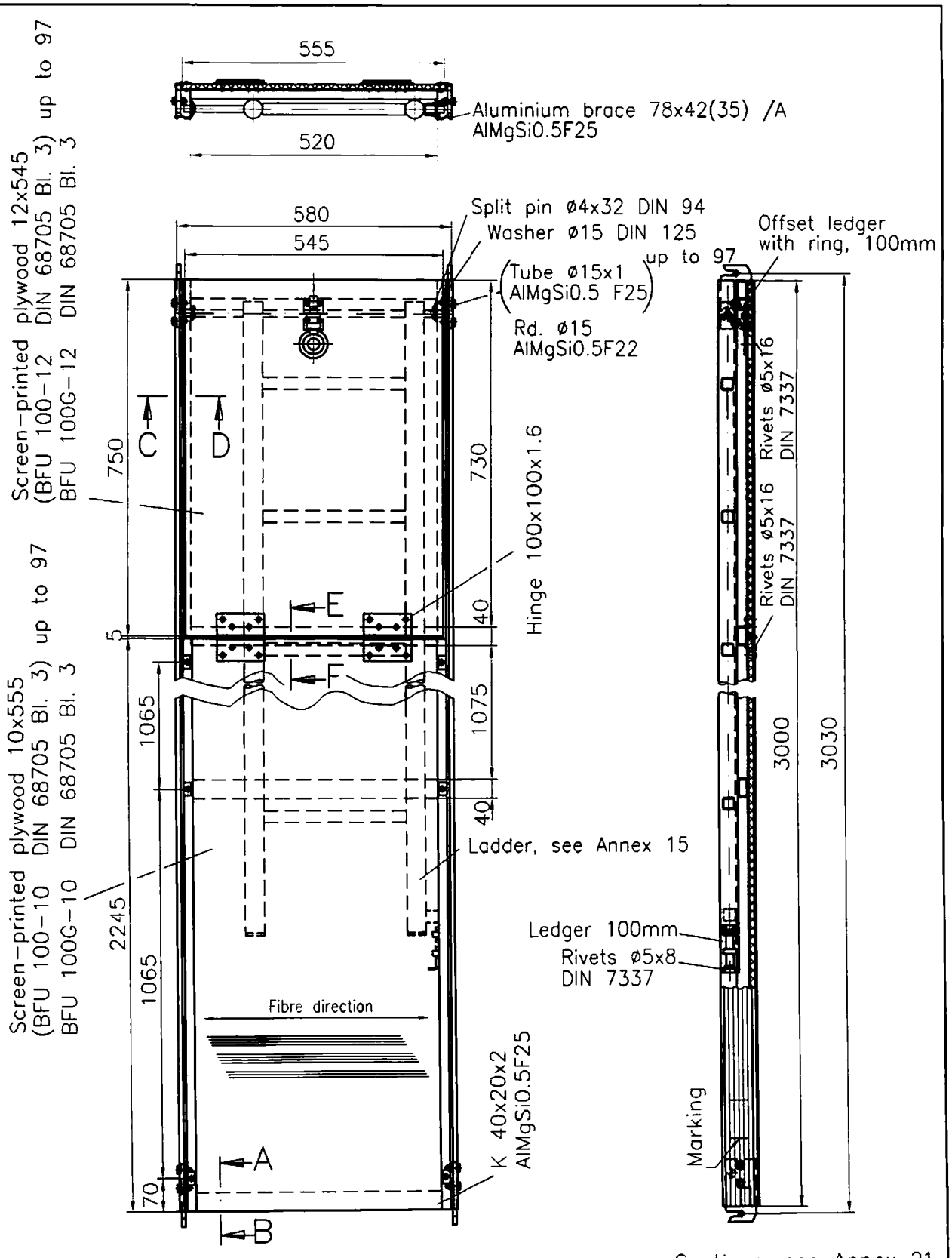
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Details ref. to aluminium deck

Annex 18 to
general national technical
approval Z–8.1–862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections, see Annex 21

Production of component has been terminated.
–For use only–

( ) = Former design with marking: Manufacturer's identification mark, Year of manufacture, Z–8.1–310, Ü

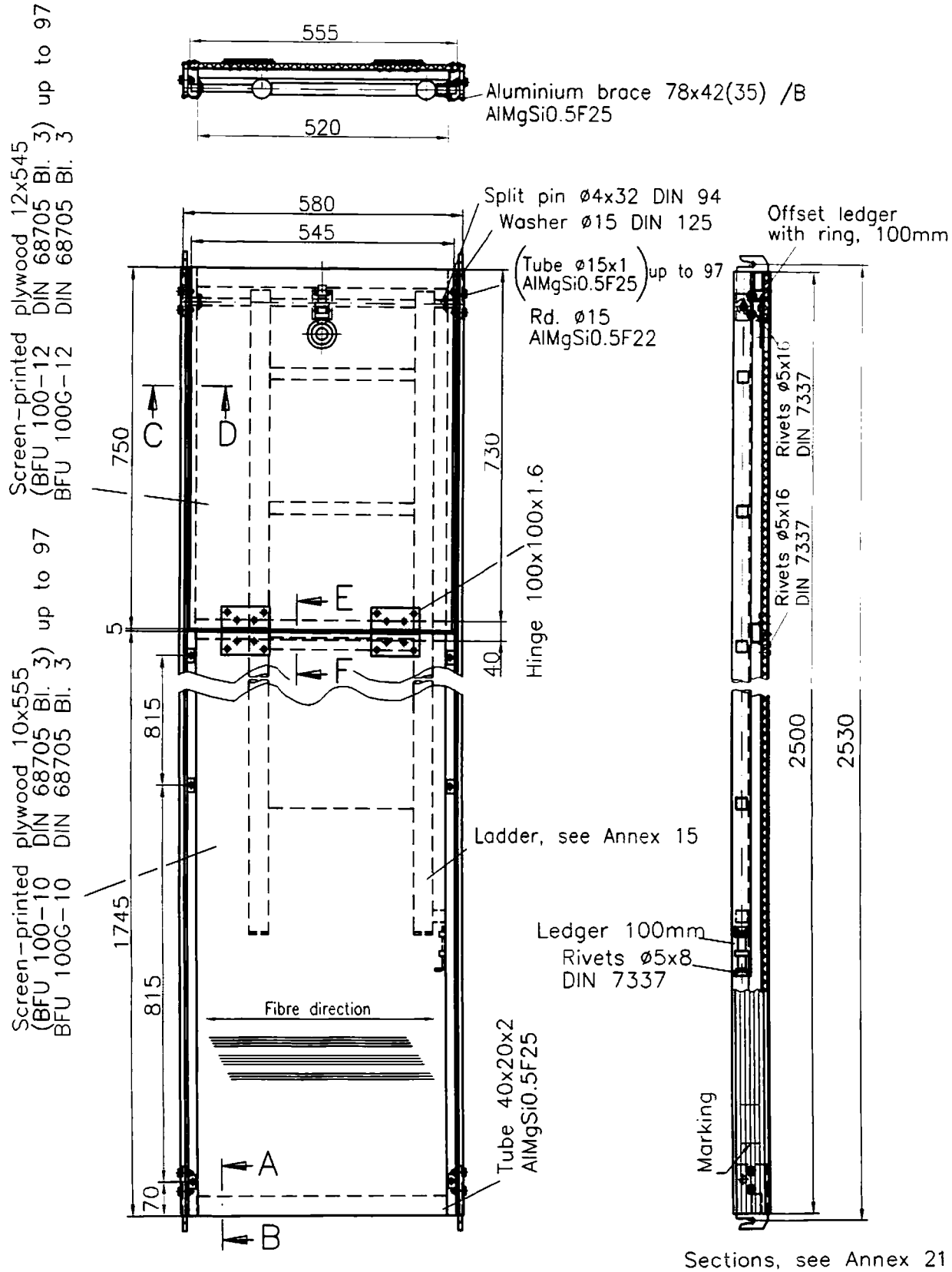
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Alu hatch–type access 3,0m with integrated ladder

Annex 19 to general national technical approval Z–8.1–862 as of February 8, 2005 Deutsches Institut für Bautechnik



Sections, see Annex 21

Production of component has been terminated.
-For use only-

( ) = Former design with marking:
Manufacturer's identification mark,
Year of manufacture, Z-8.1-310, Ü

ALFIX GmbH

63828 Edelbach
09603 Großschirma

ALFIX 70

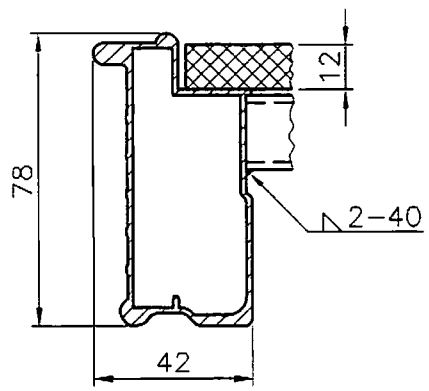
Facade scaffolding

Alu hatch-type access 2,5m
with integrated ladder

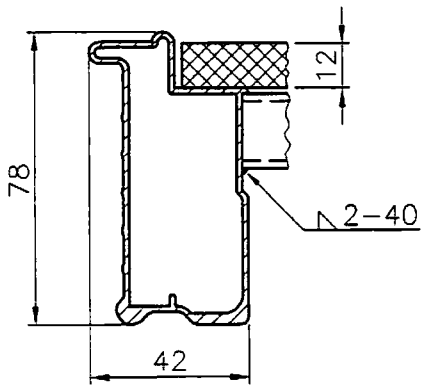
Annex 20 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Section C–D

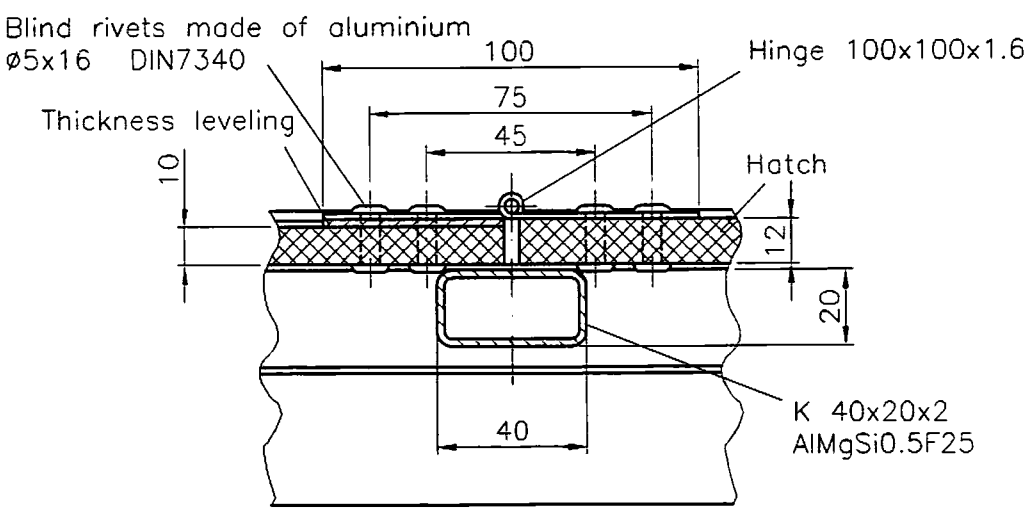
Design A



Design B

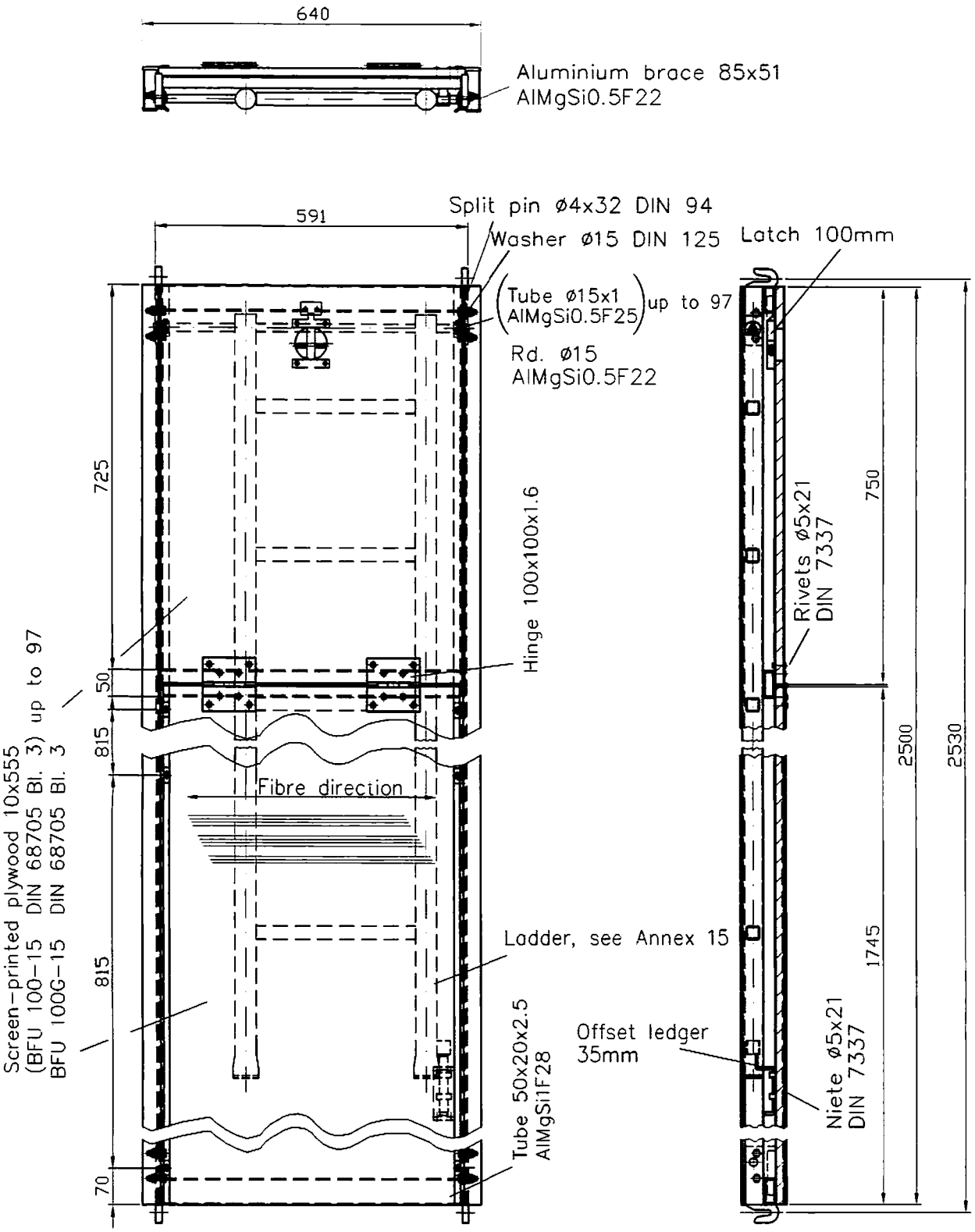


Section E–F



Production of component has been terminated.
–For use only–

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Sections ref. to Alu hatch–type access deck	Annex 21 to general national technical approval Z–8.1–862 as of February 8, 2005 Deutsches Institut für Bautechnik



Production of component has been terminated.
-For use only-

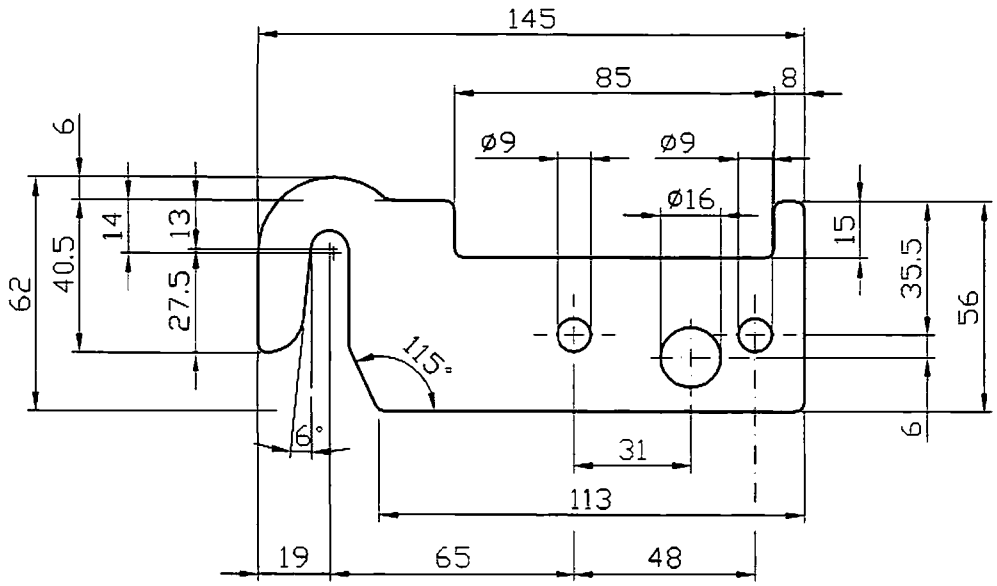
Details, see Annex 23

( ) = Former design

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Alu hatch-type access deck GG5 2,5m with integrated ladder	Annex 22 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik

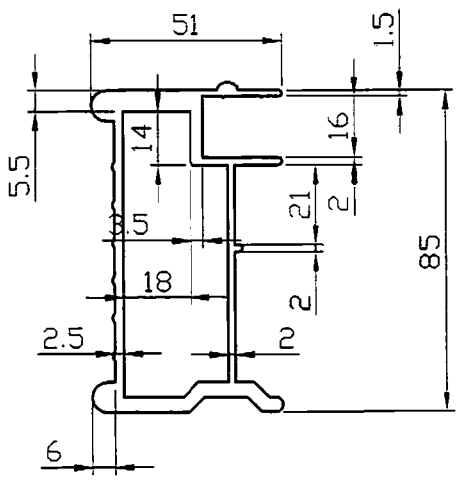
Mounting claw

Metal sheet t=12
Fe510D (C35)



Brace profile

AlMgSi0.5F22



Production of component has been terminated.
-For use only-

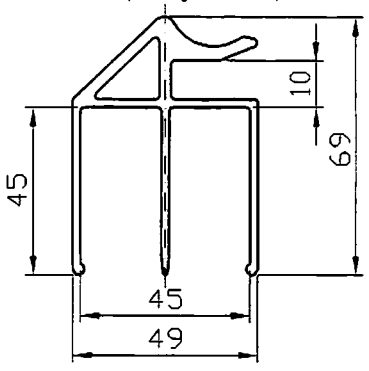
ALFIX GmbH
63828 Edelbach
09603 Großschirma

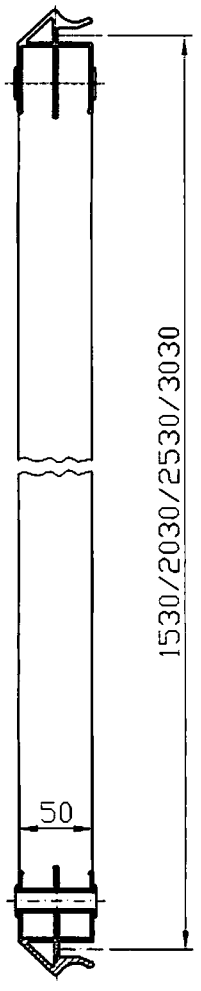
ALFIX 70
Facade scaffolding
Details to
Aluminium hatch-type access deck

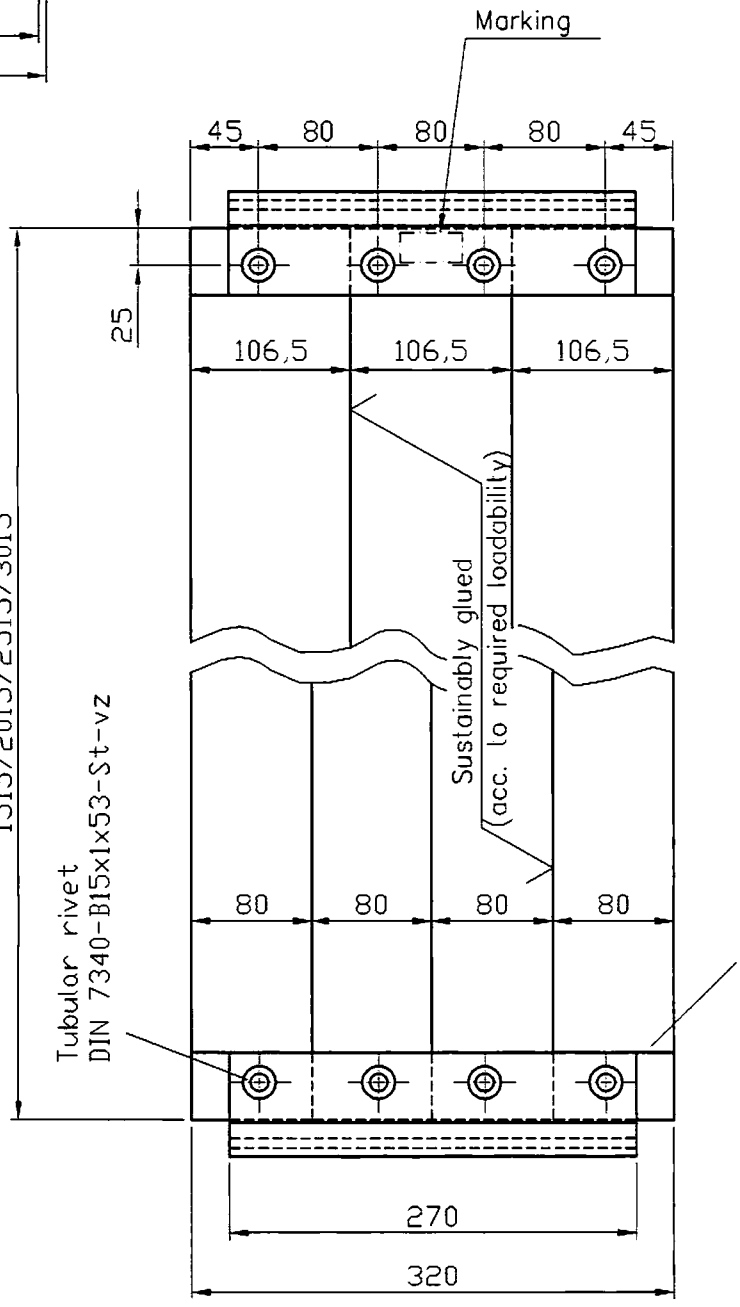
Annex 23 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Mounting profile

EN AW-6082-T5
(AlMgSi1F28)







Solid wooden deck, softwood quality class S13 for deck length L=3,07 or S10 for deck length L=2,57m (individual decks S10)

alternatively - Four-part as planks 80x50
- Three-part as planks 106,5x50

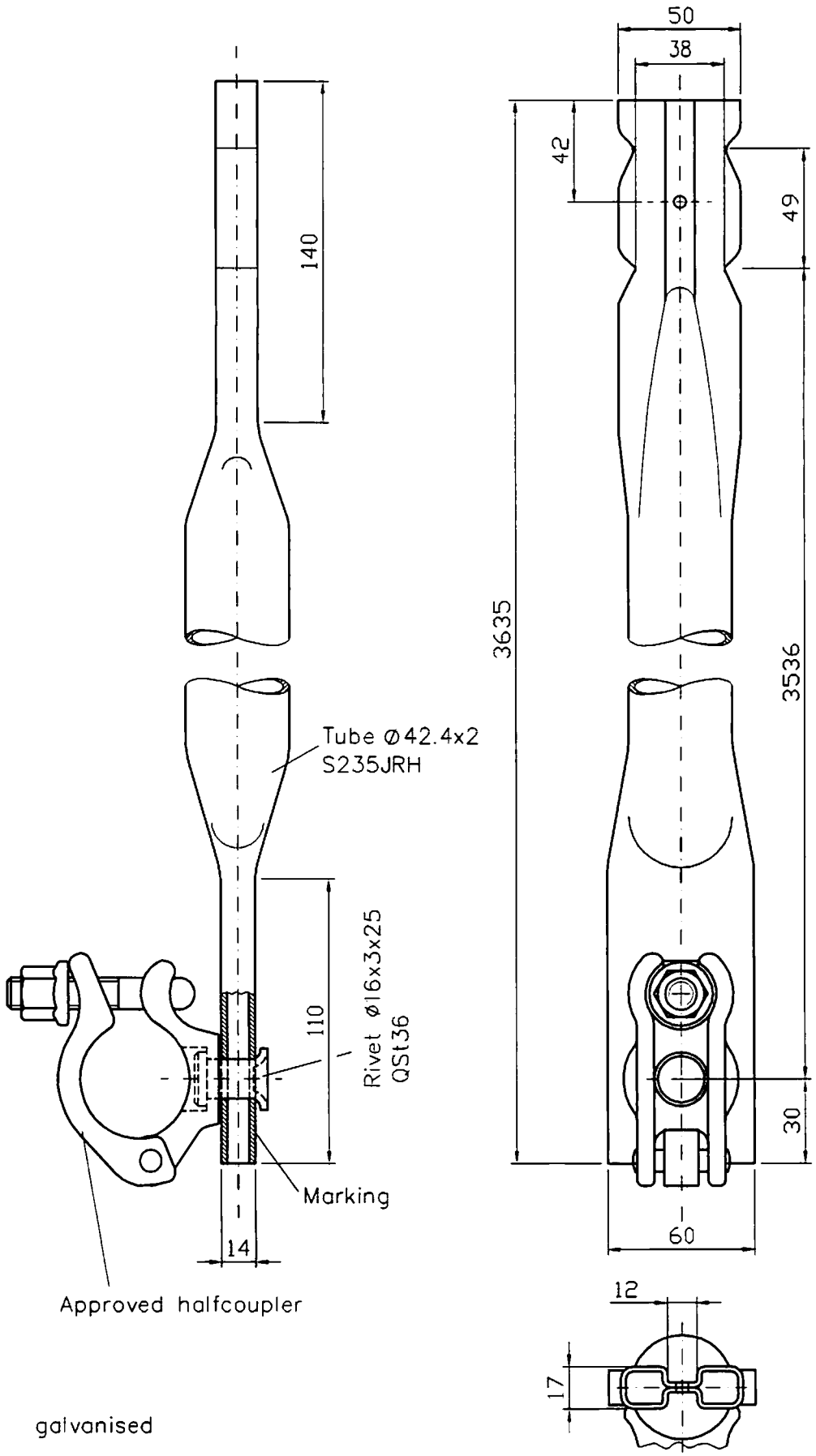
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Solid wooden deck

Annex 24 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

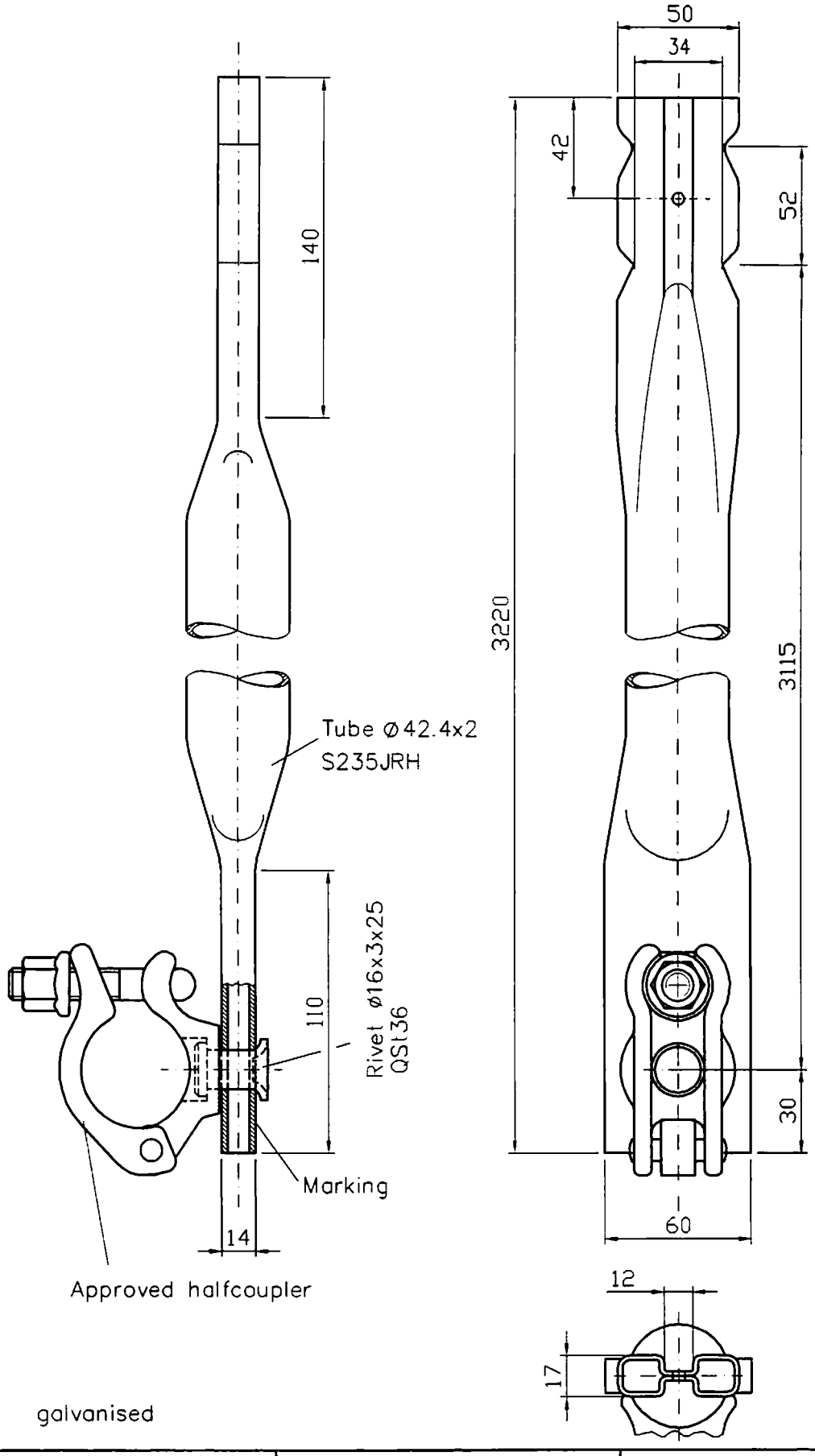
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Diagonal brace
3,0m

Annex 25 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

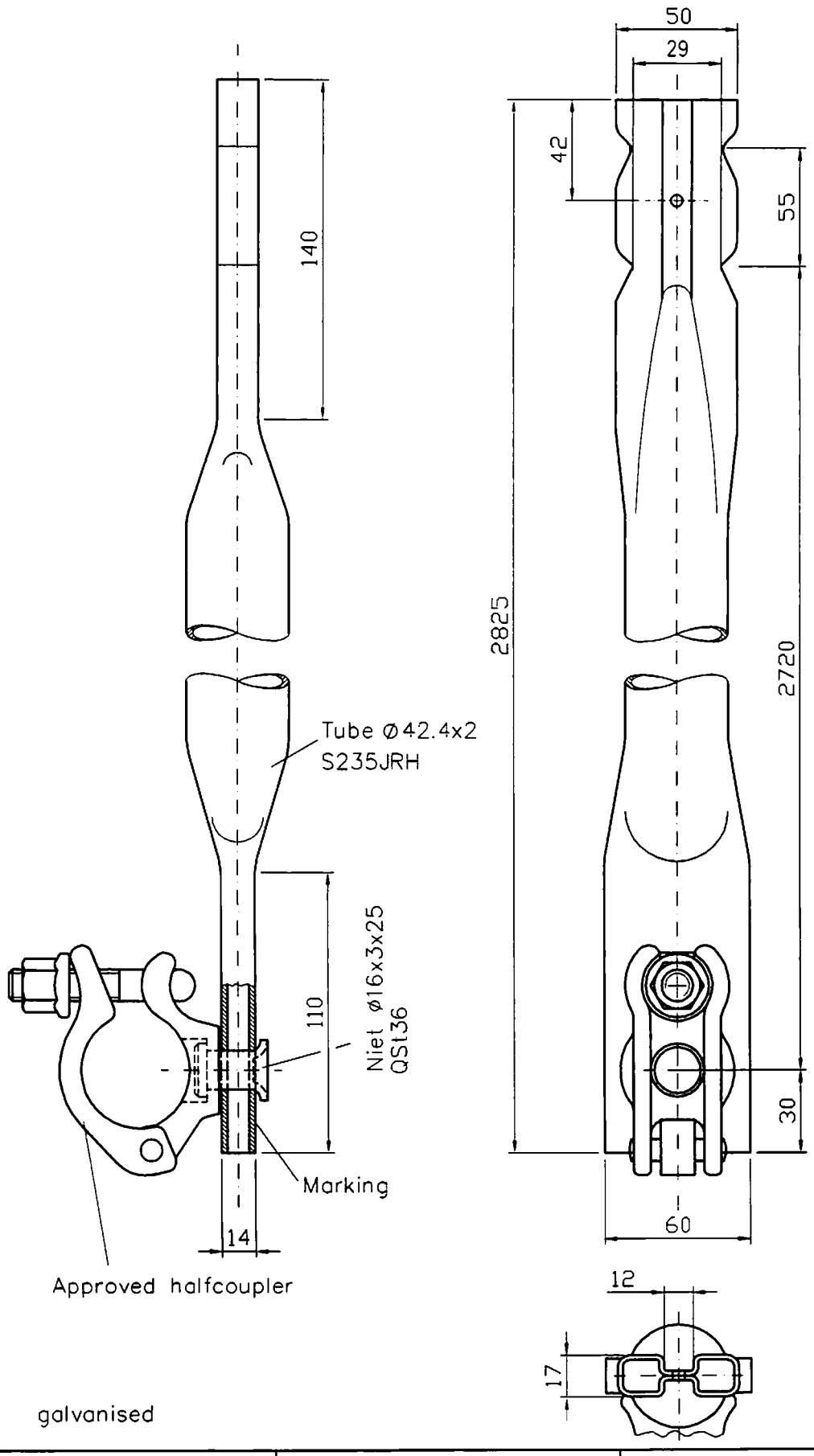
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Diagonal brace
2,5m

Annex 26 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

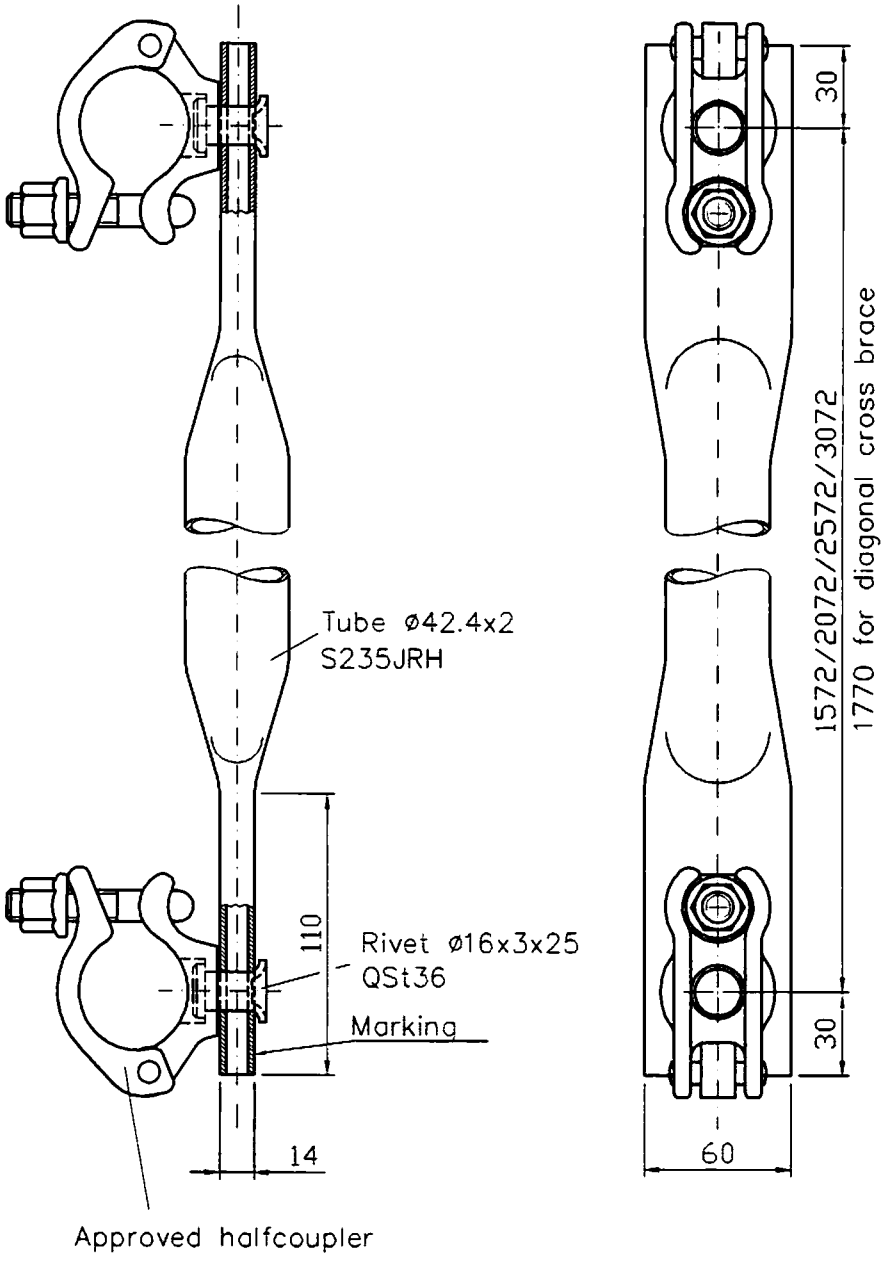
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Diagonal brace
2,0m

Annex 27 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

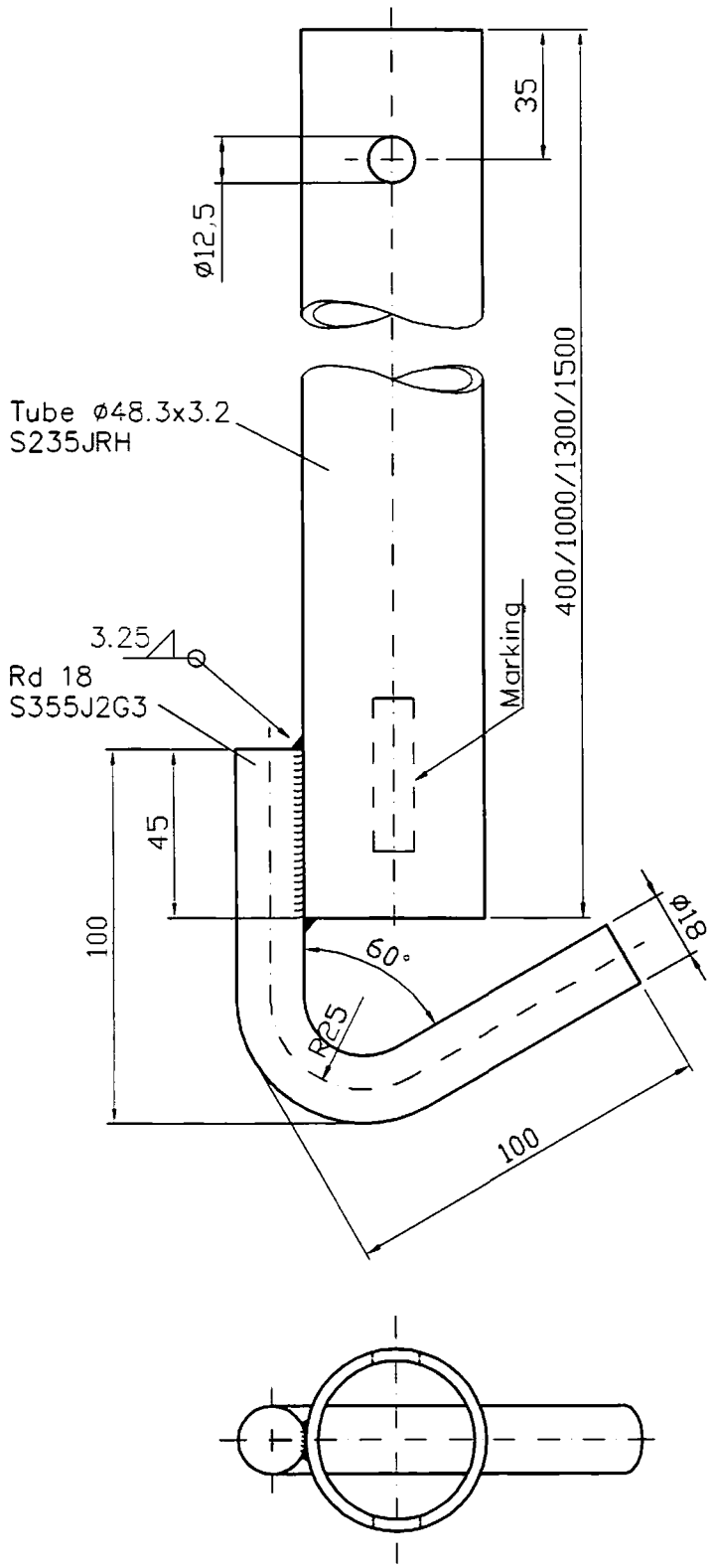
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

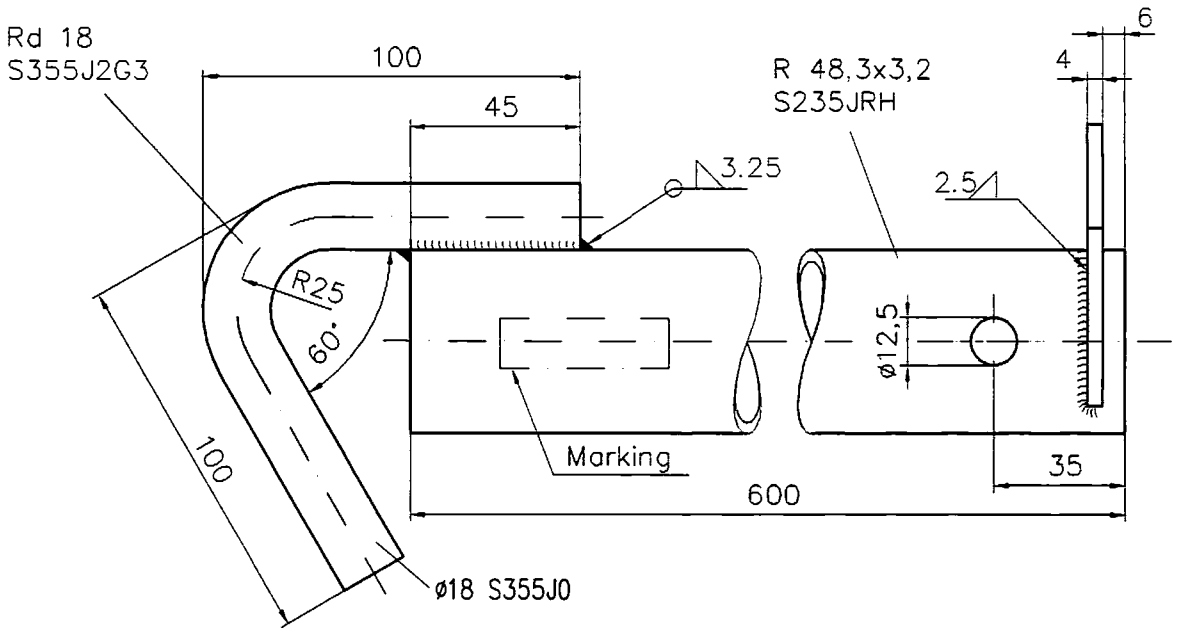
Horizontal strut
Cross diagonal brace

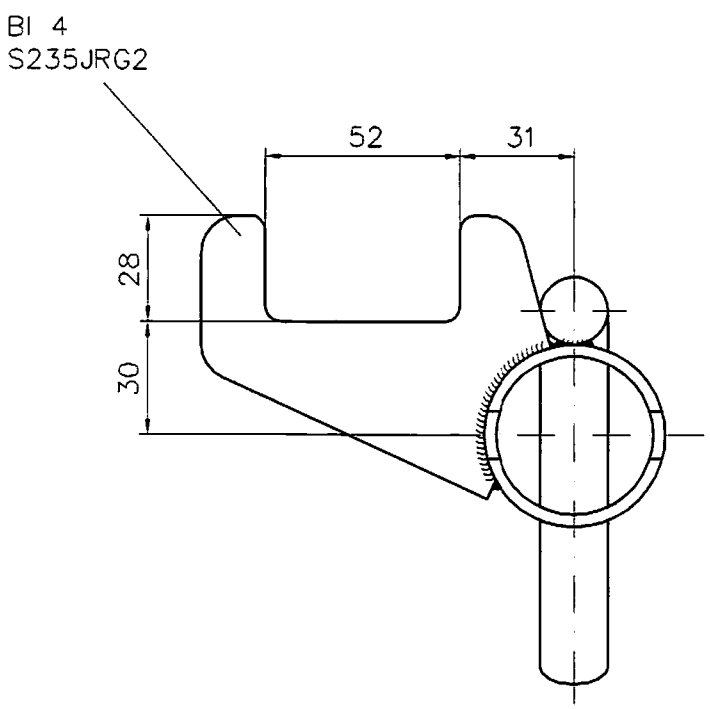
Annex 28 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Scaffold retainer	Annex 29 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik





galvanised

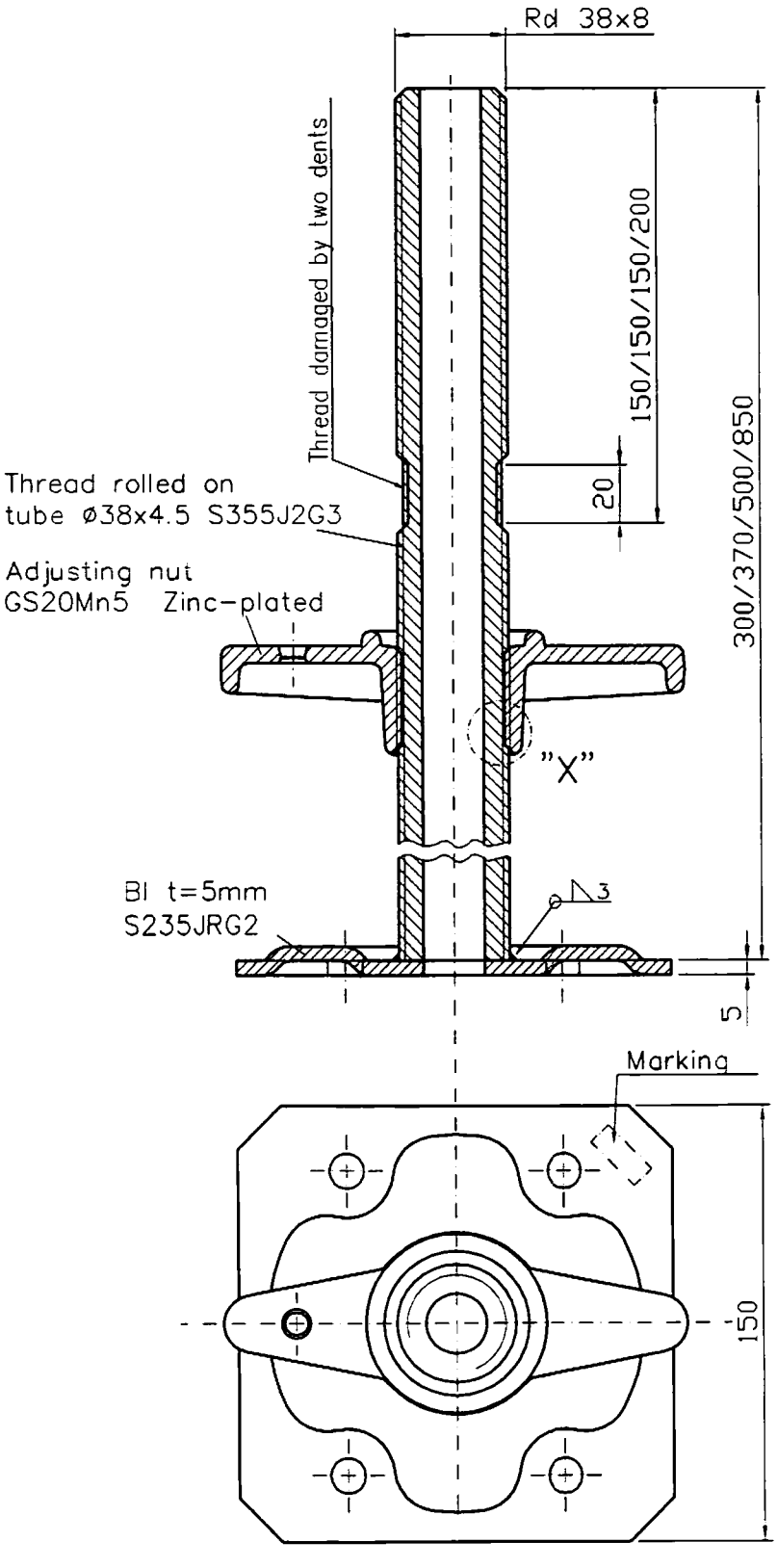
ALFIX GmbH
63828 Edelbach
09603 Großschirma

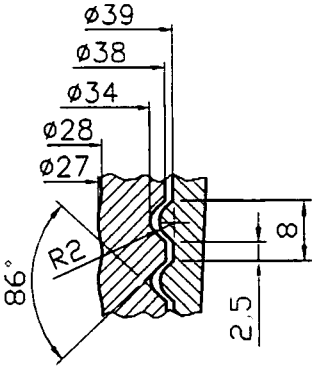
ALFIX 70

Facade scaffolding

Quick-release anchor

Annex 30 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik





galvanised

ALFIX GmbH

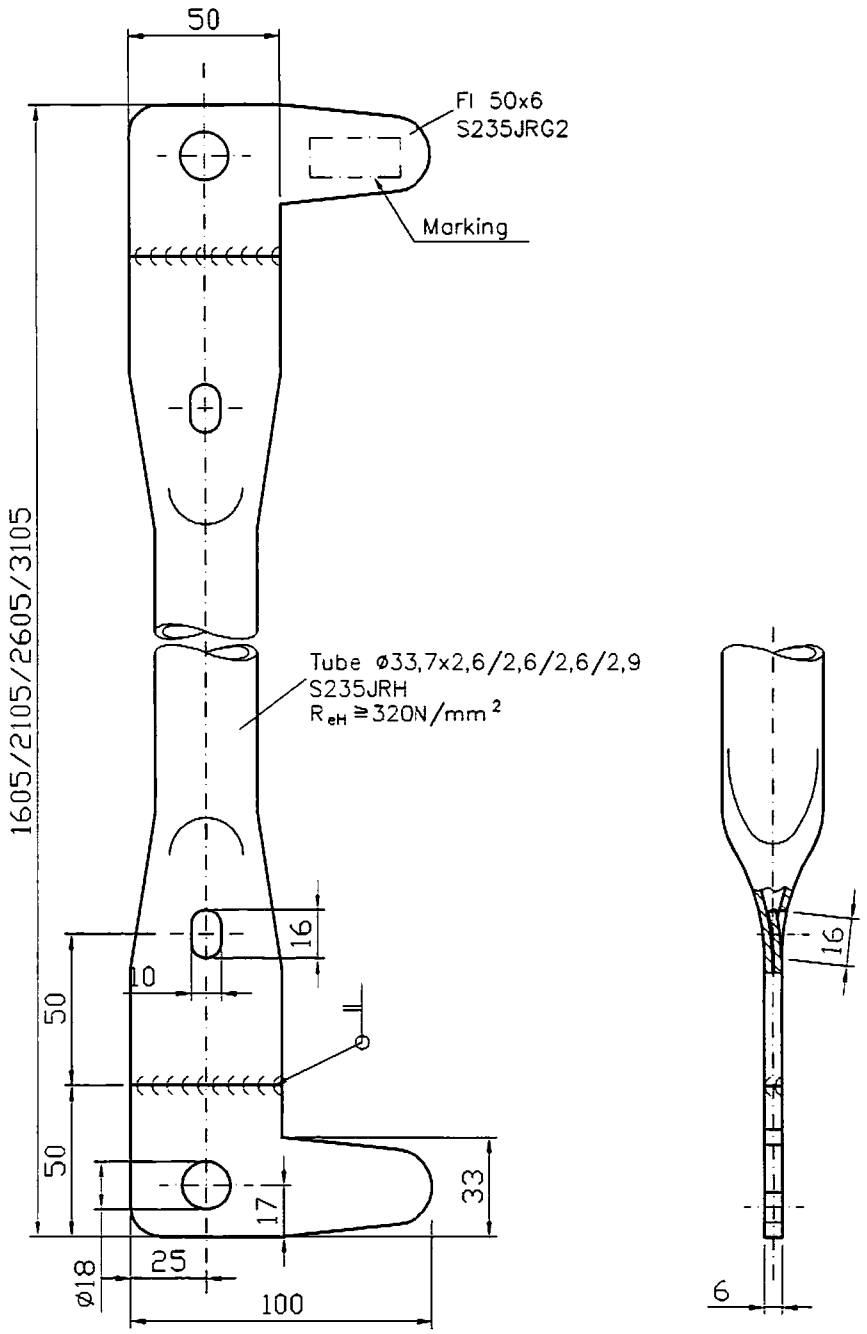
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Base Jack

Annex 31 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

All welds a=2.5mm

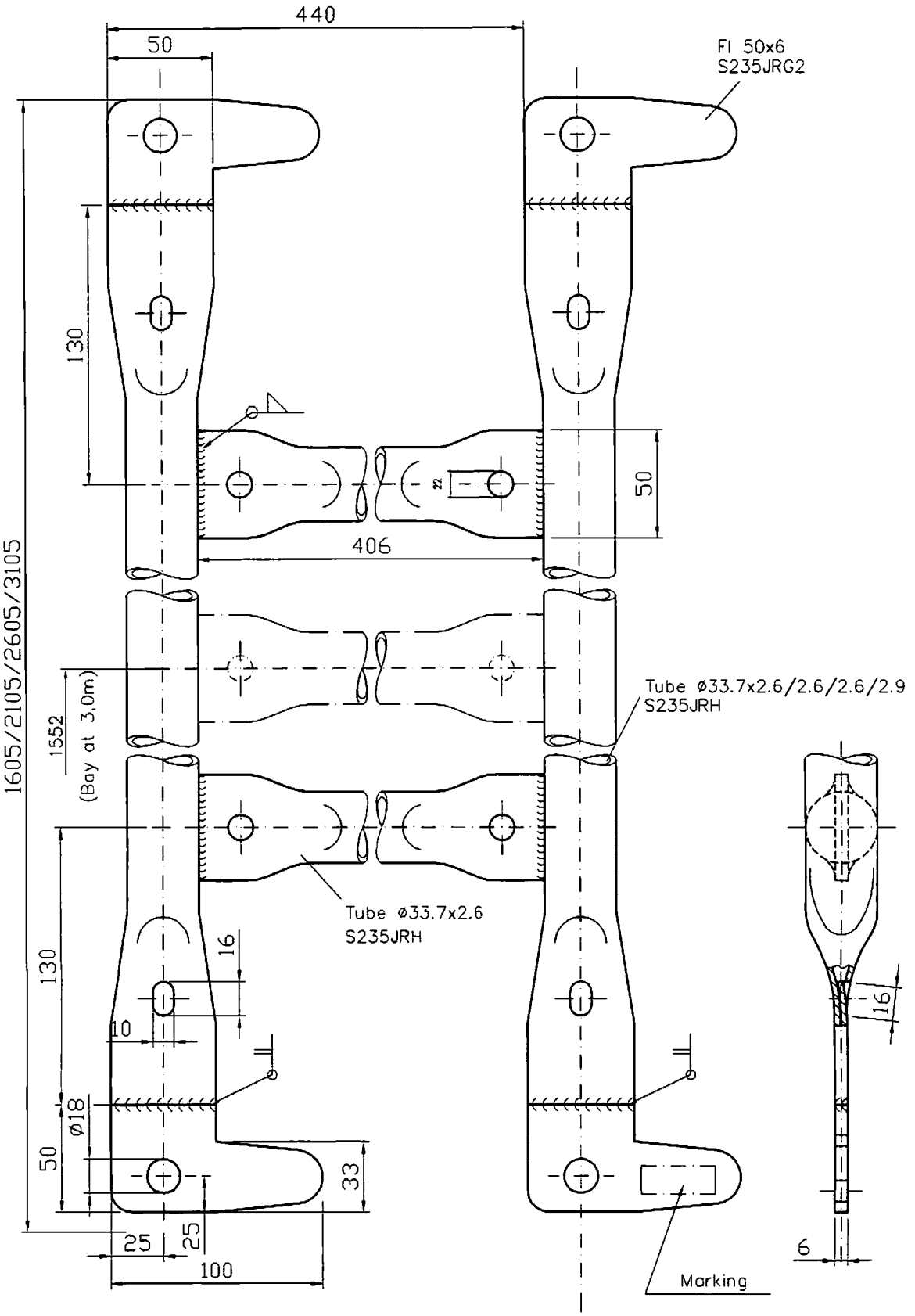
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Guardrail brace

Annex 32 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

All welds a=2.5mm

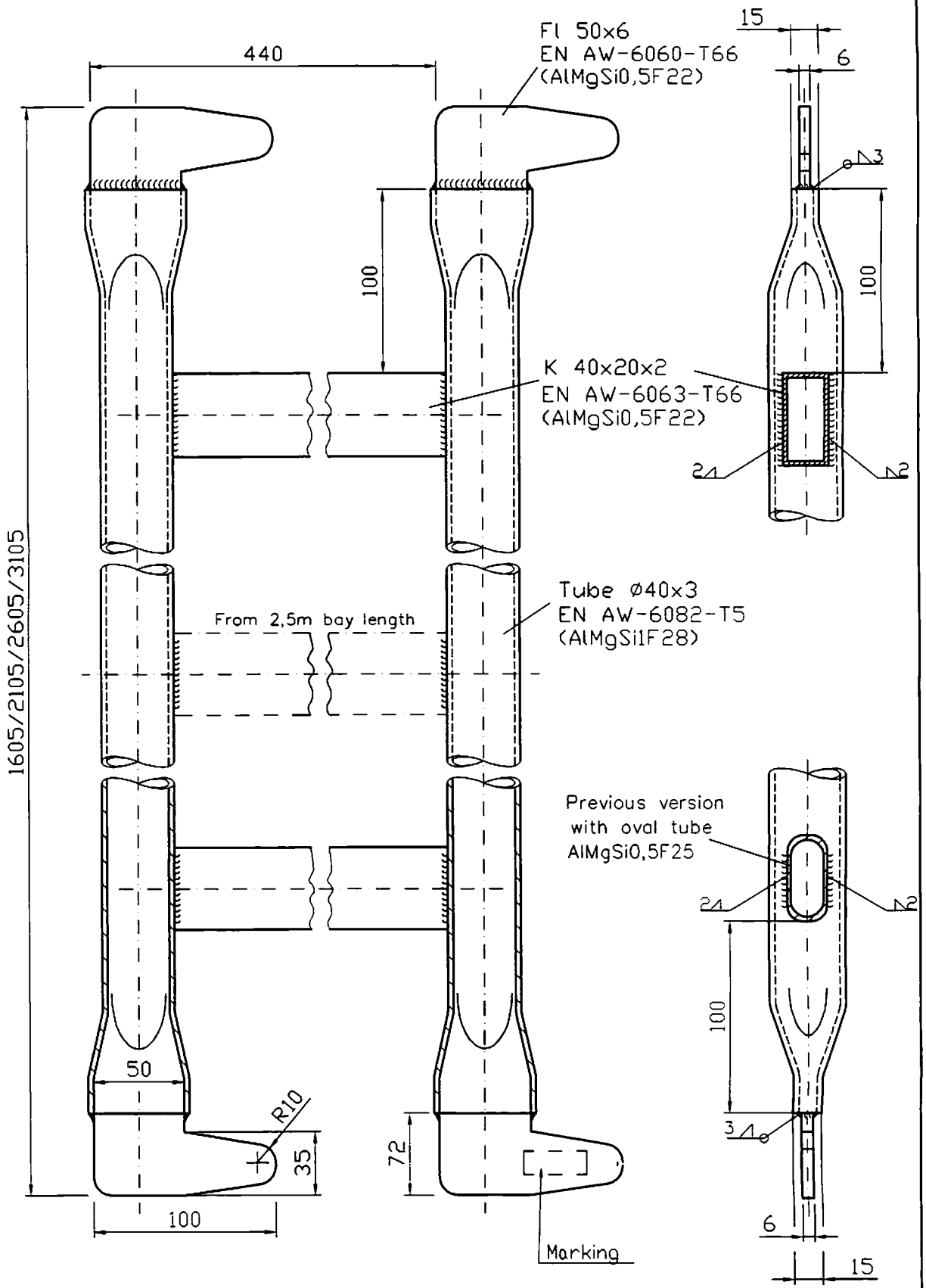
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Double guardrail

Annex 33 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



ALFIX GmbH

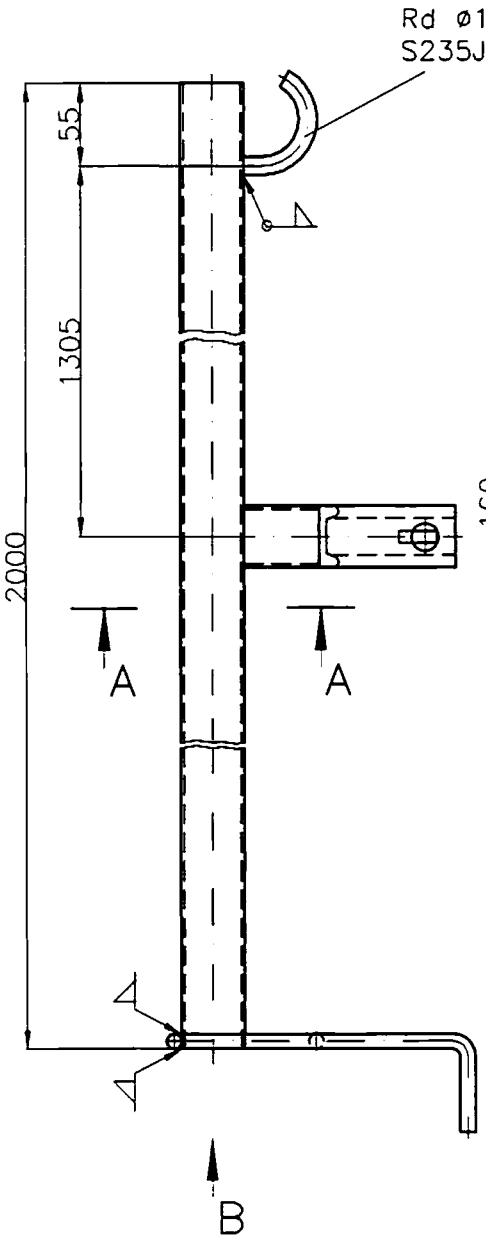
63828 Edelbach
09603 Großschirma

ALFIX 70

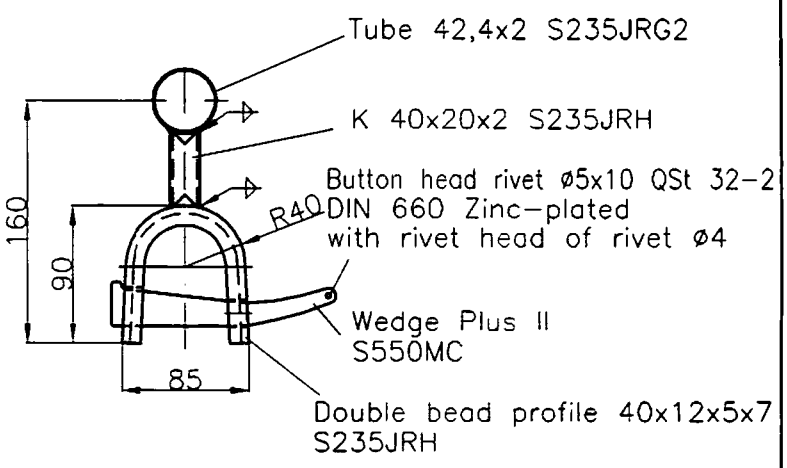
Facade scaffolding

Aluminium double guardrail

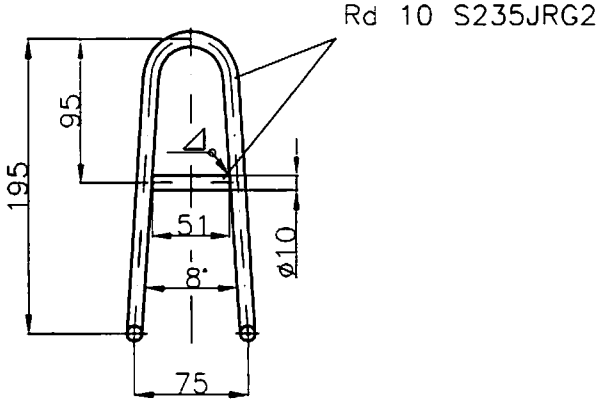
Annex 34 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



SectionA–A



View B



galvanised

All welds a=2mm

ALFIX GmbH
63828 Edelbach
09603 Großschirma

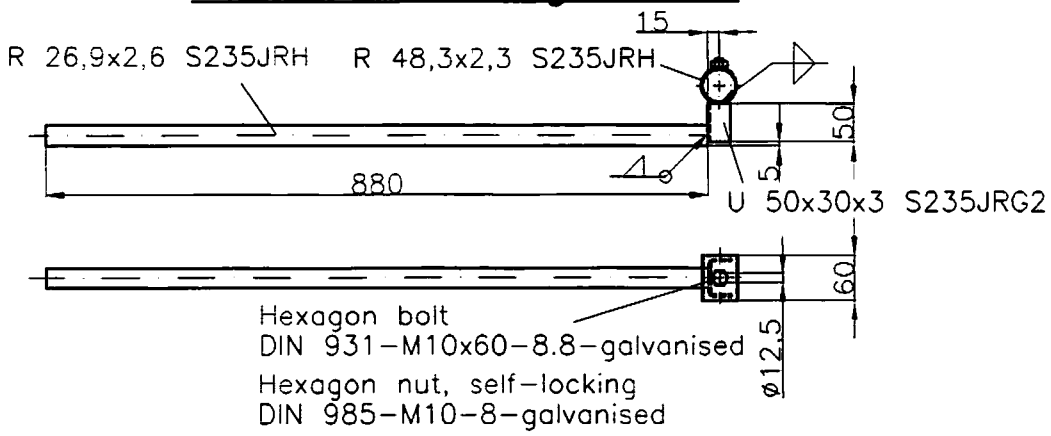
ALFIX

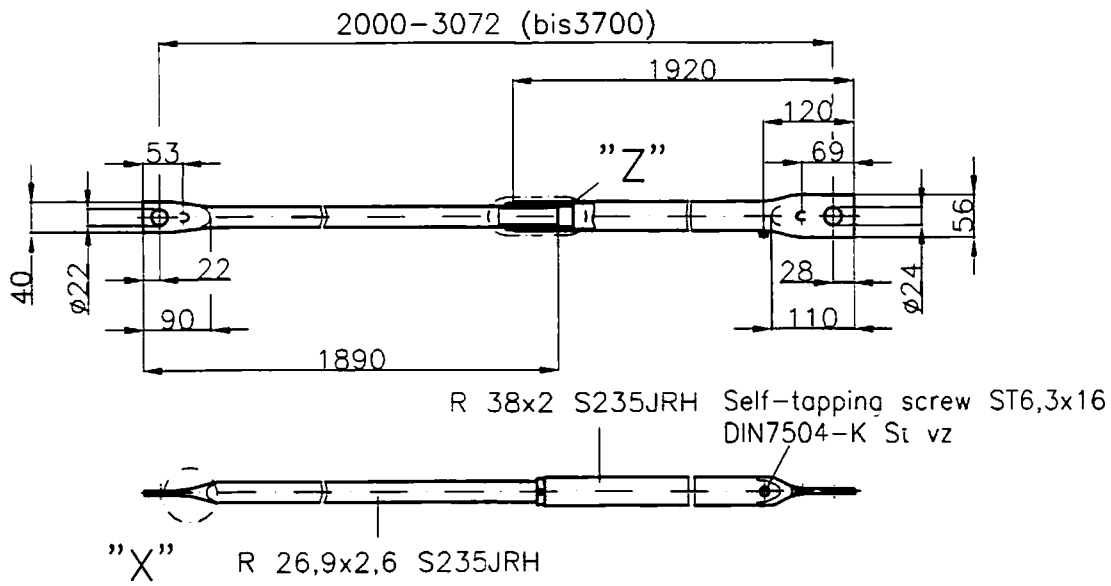
Facade scaffolding

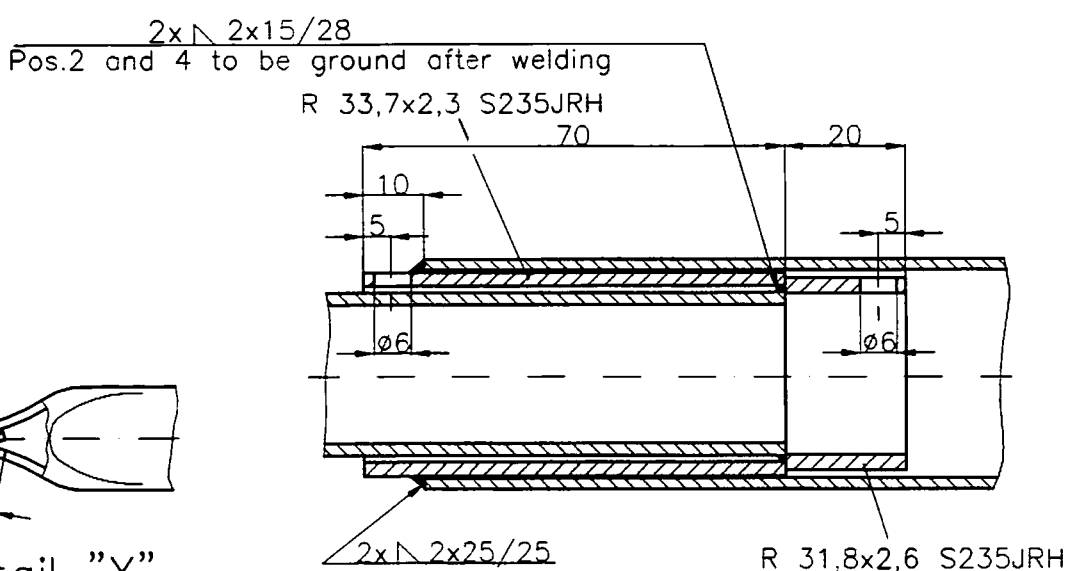
Advanced guardrail post 2,0m

Annex 35 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

Advanced end guardrail







Detail "X"

galvanised

Detail "Z"

ALFIX GmbH

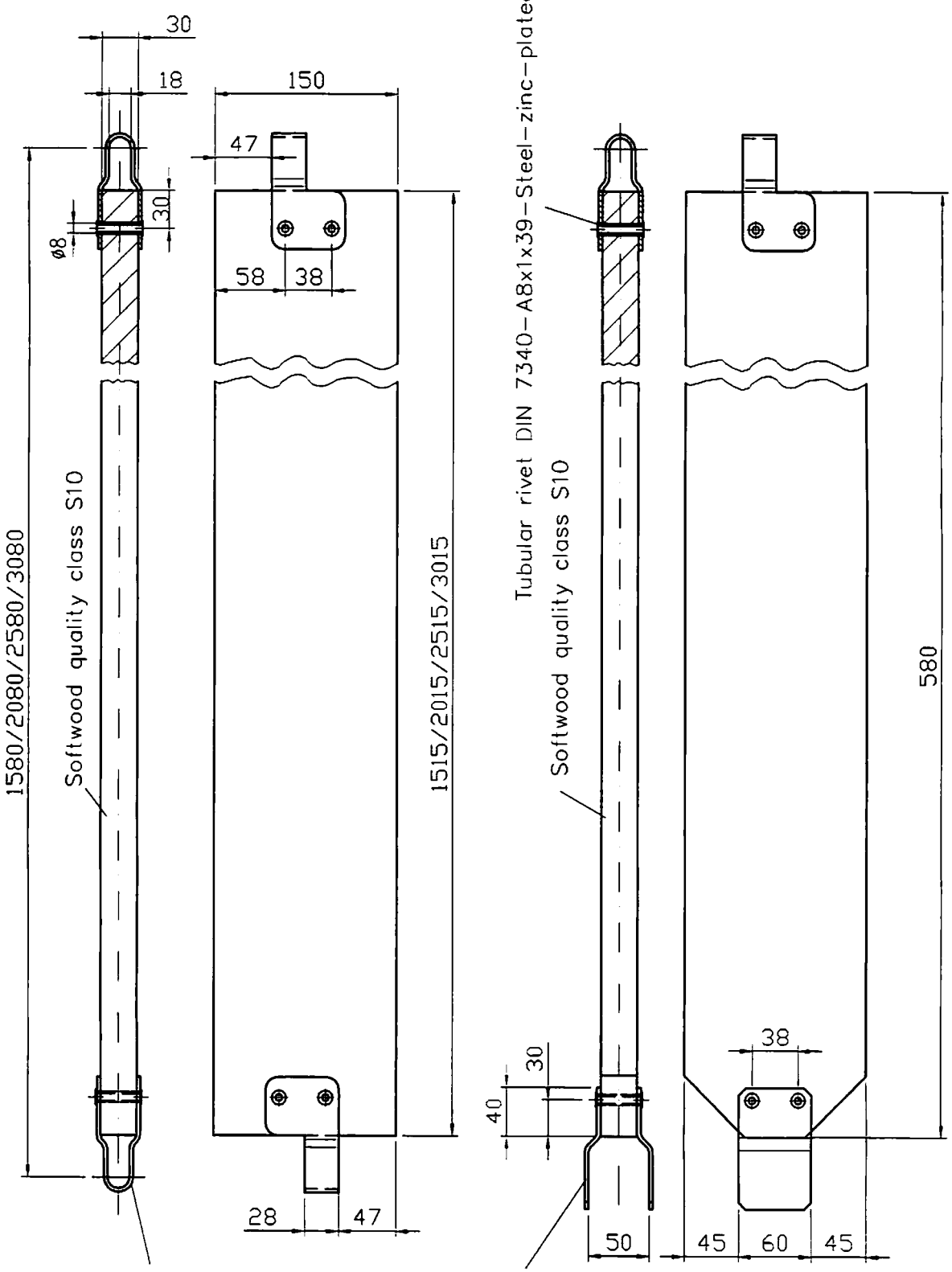
63828 Edelbach
09603 Großschirma

ALFIX

Facade scaffolding

Advanced end guardrail/
Telescopic guardrail
2,00m-3,07m

Annex 36 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



ALFIX GmbH

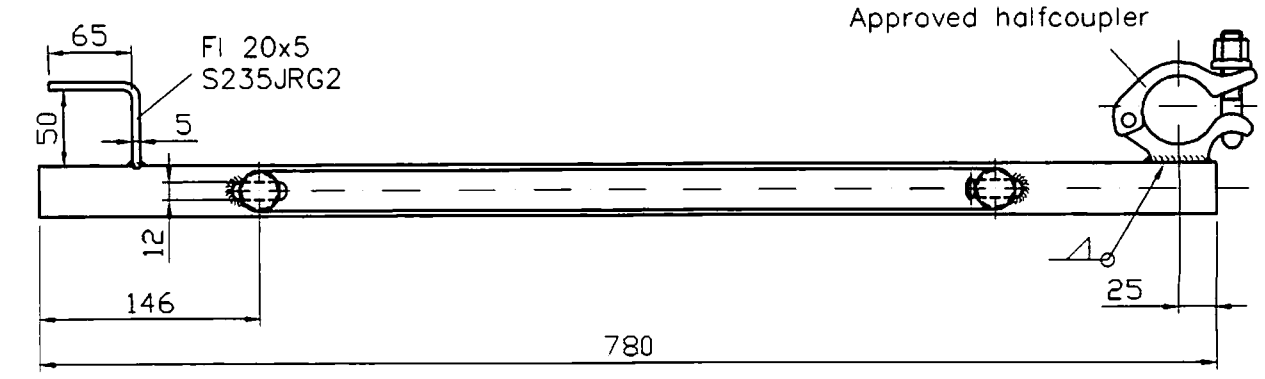
63828 Edelbach
09603 Großschirma

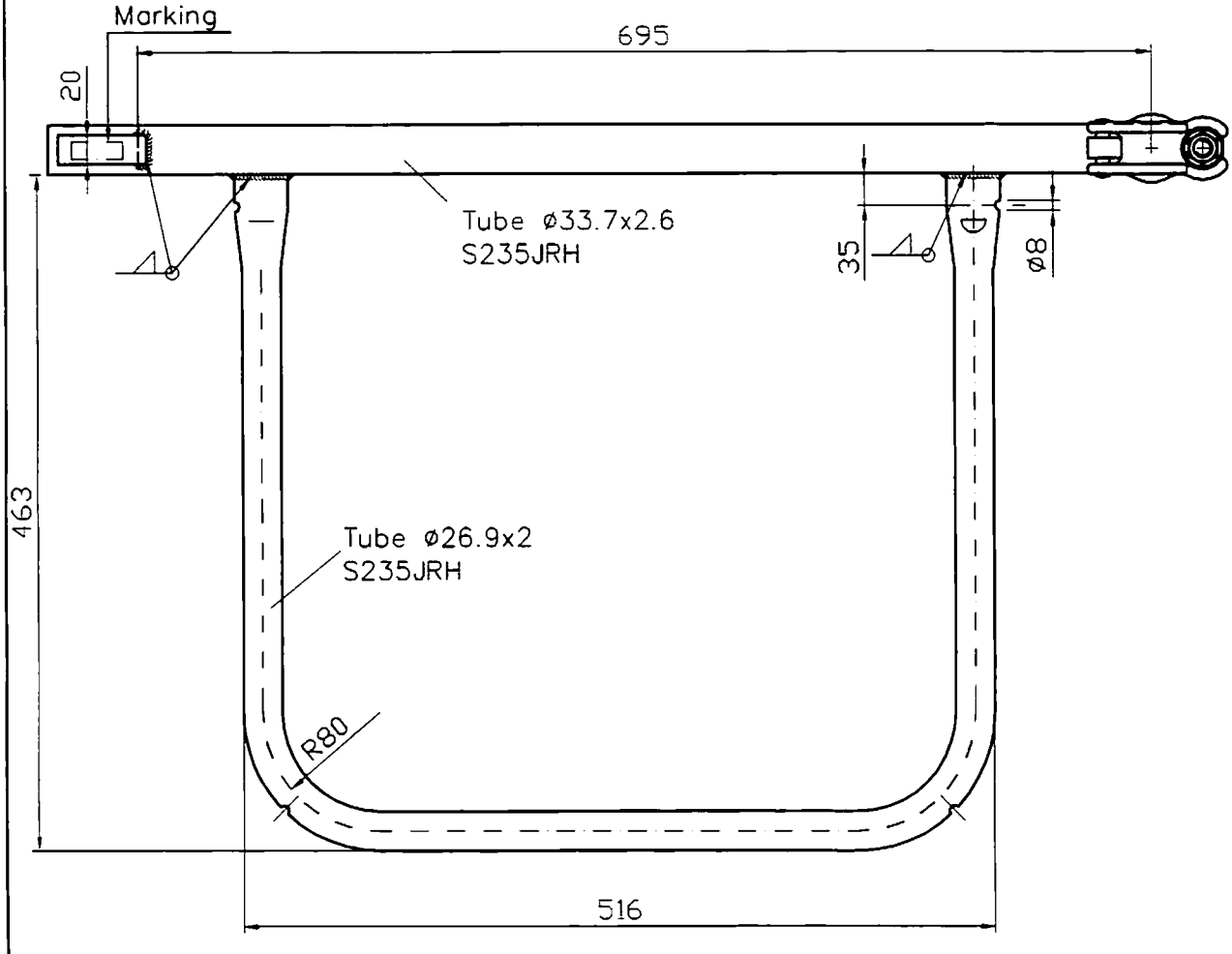
ALFIX 70

Facade scaffolding

Toeboard
End toeboard

Annex 37 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik





galvanised

All welds a=2.5mm

ALFIX GmbH

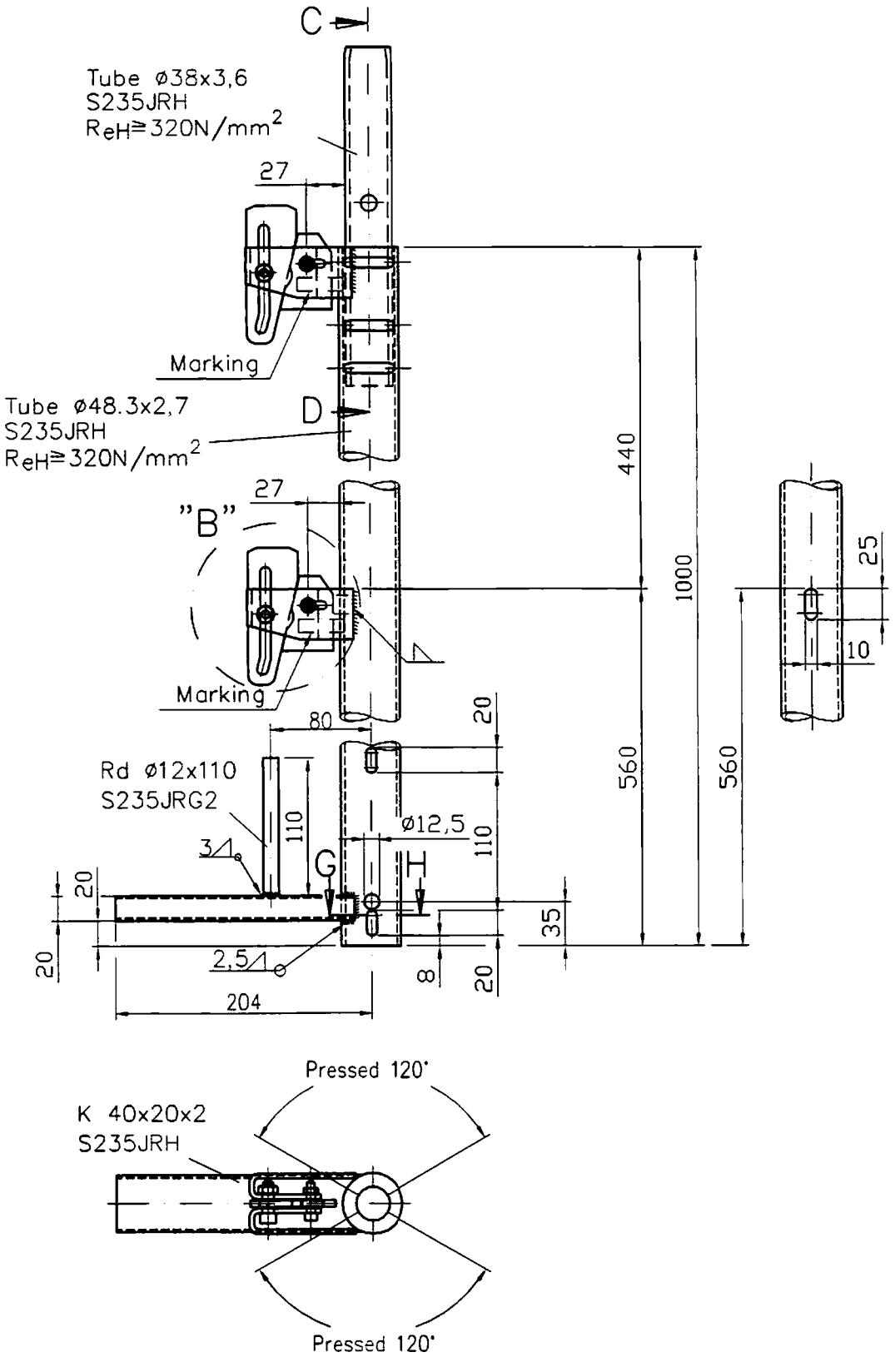
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Double end guardrail

Annex 38 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



galvanised

Sections, see Annex 1
Details, see Annex 3

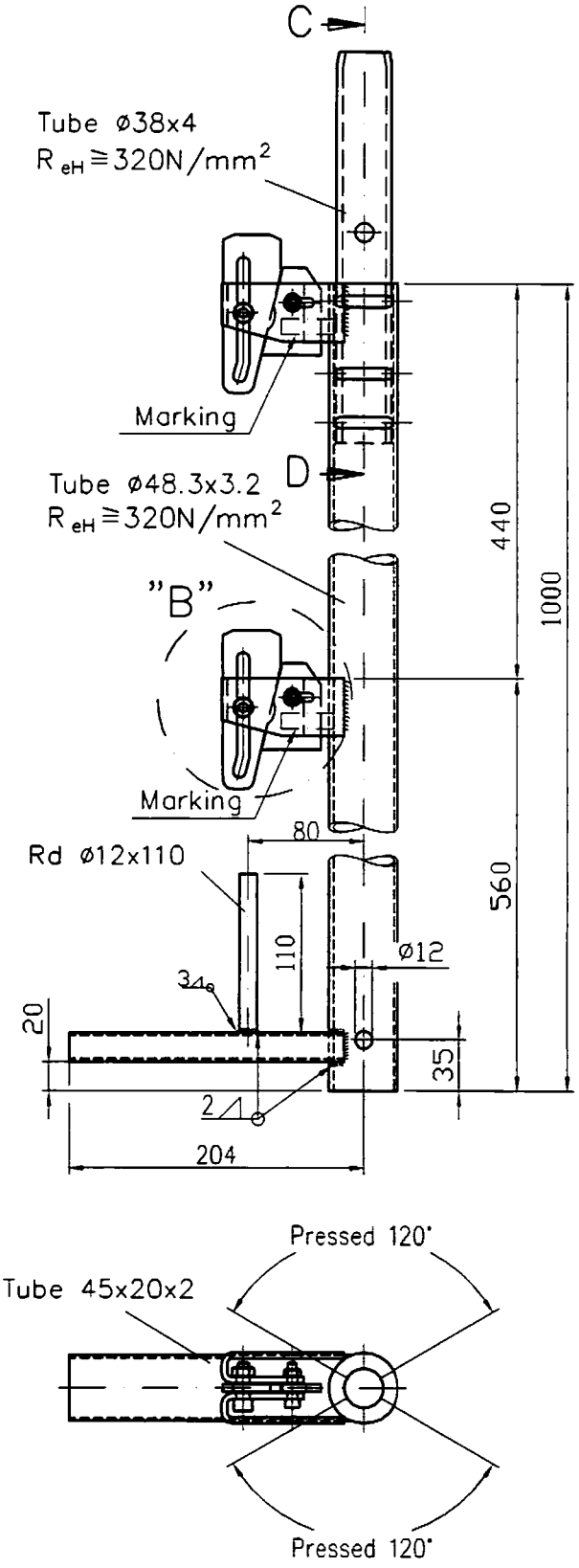
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Guardrail post, single

Annex 39 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JRG2 galvanised

Former design

Sections, see Annex 4
Details, see Annex 6

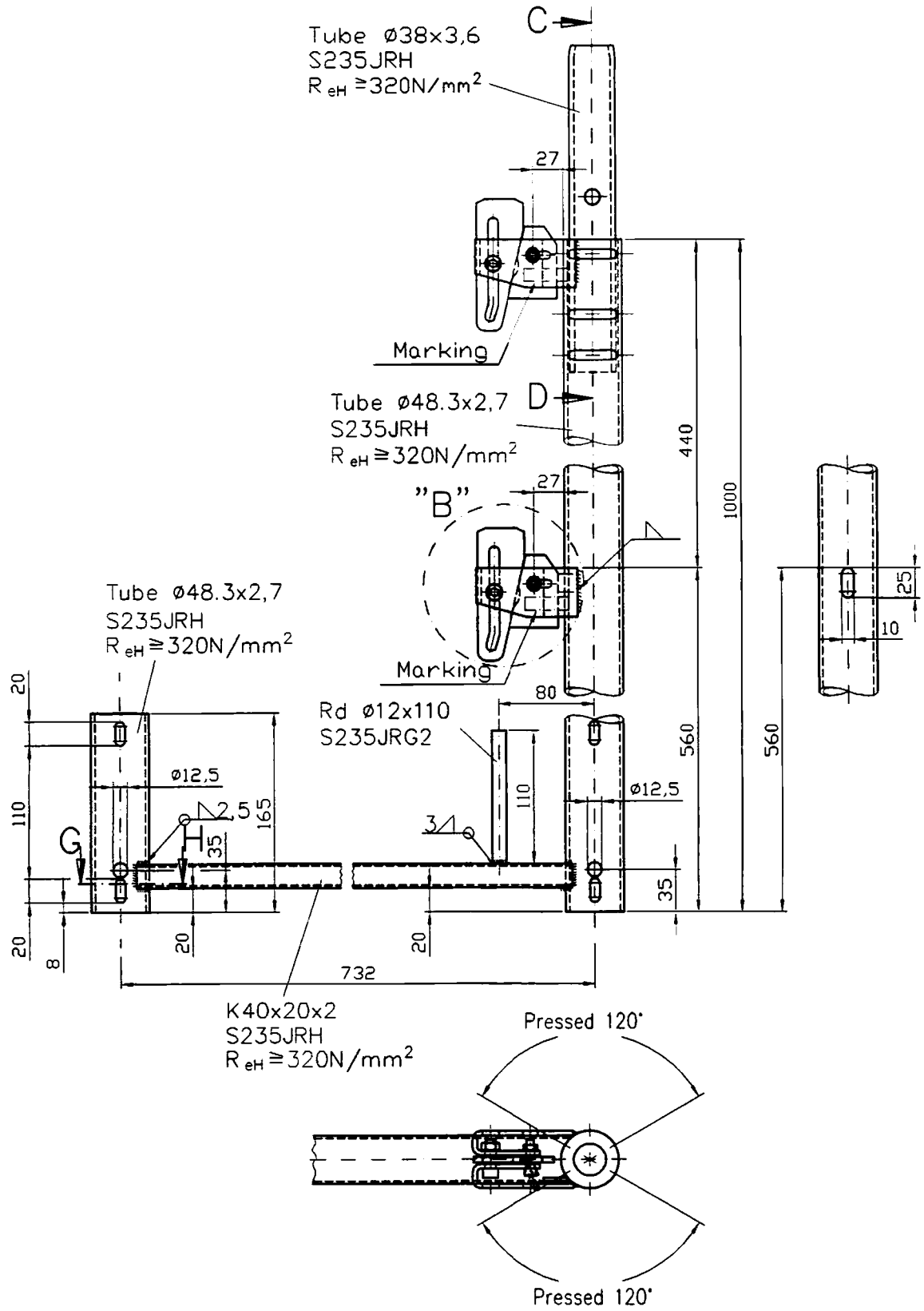
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Guardrail post, single

Annex 40 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Sections, see Annex 1

Details, see Annex 3

galvanised

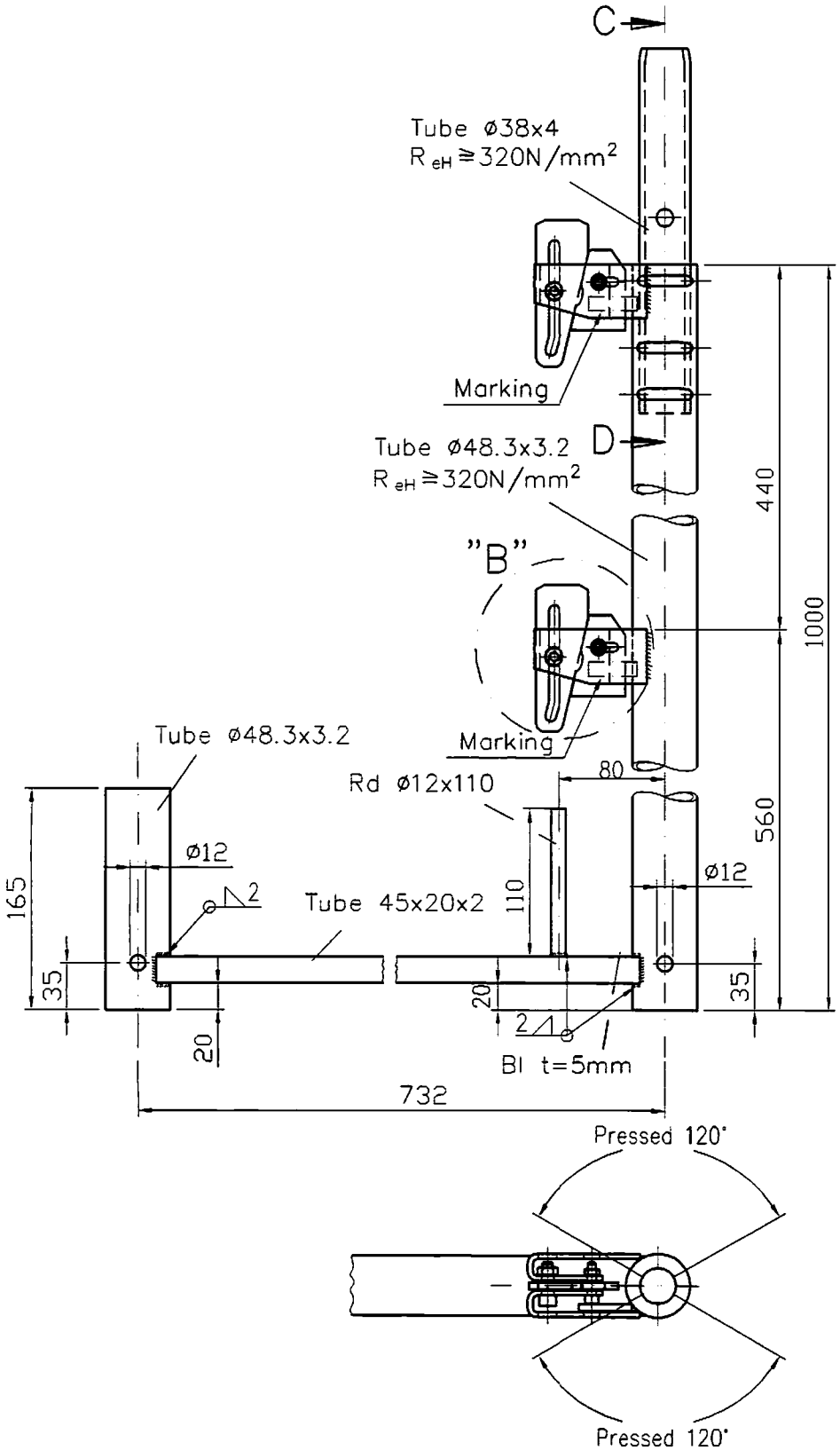
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Guardrail post

Annex 41 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JRG2 galvanised

Former design

Sections, see Annex 4
Details, see Annex 6

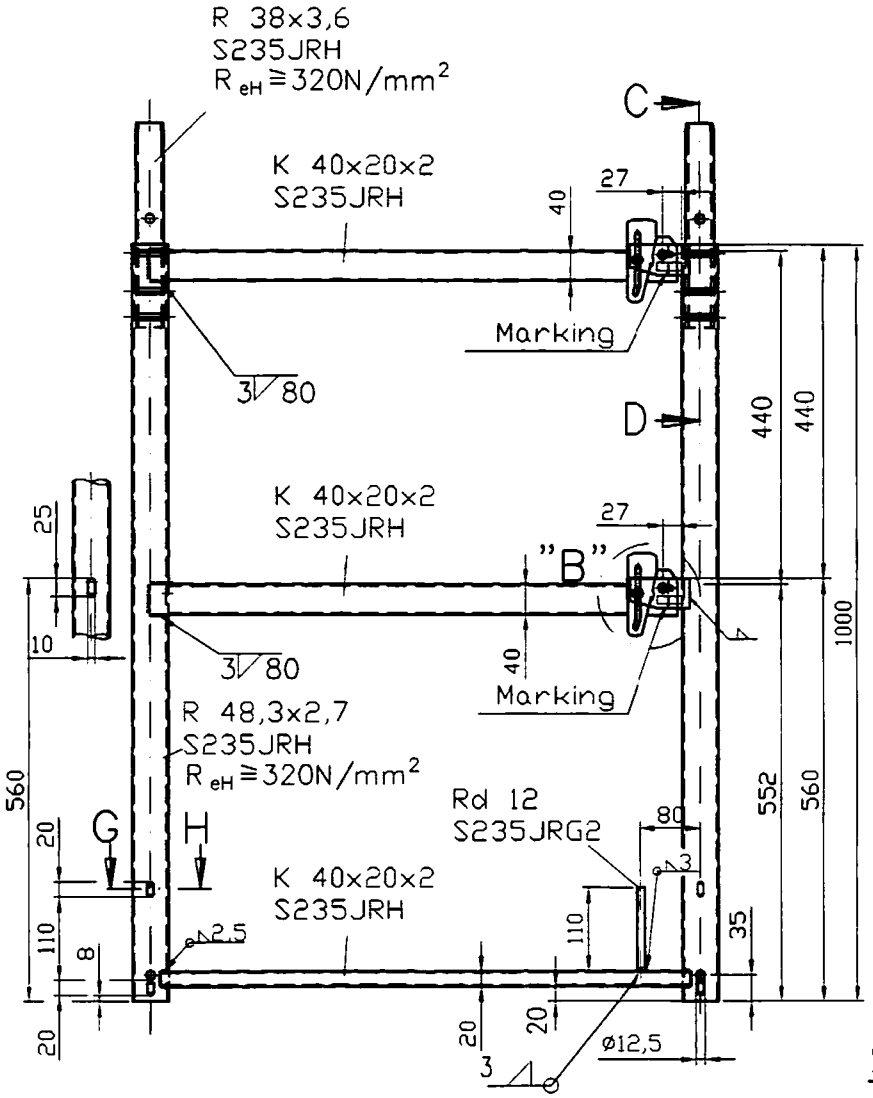
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

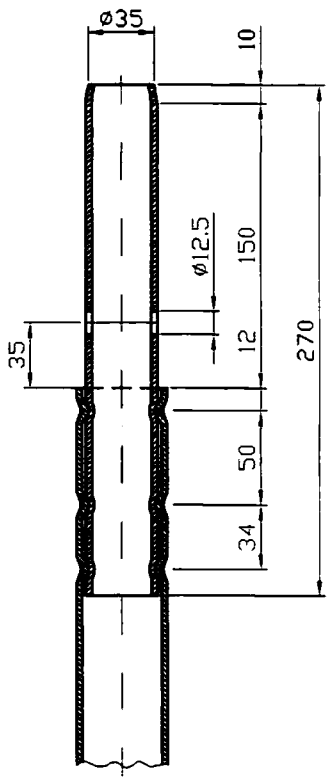
Facade scaffolding

Guardrail post

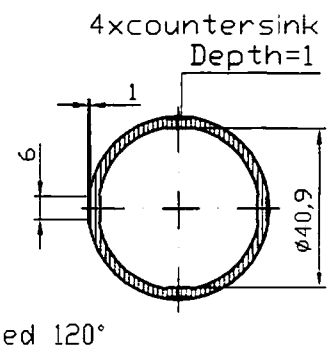
Annex 42 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

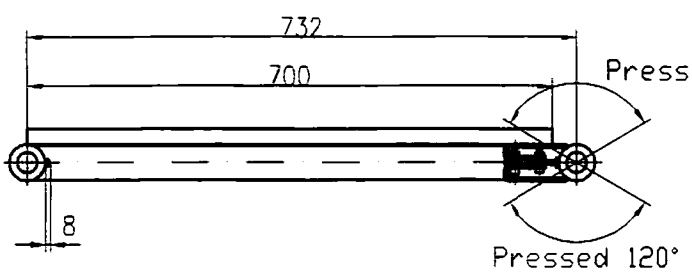


Section C–D



Section G–H

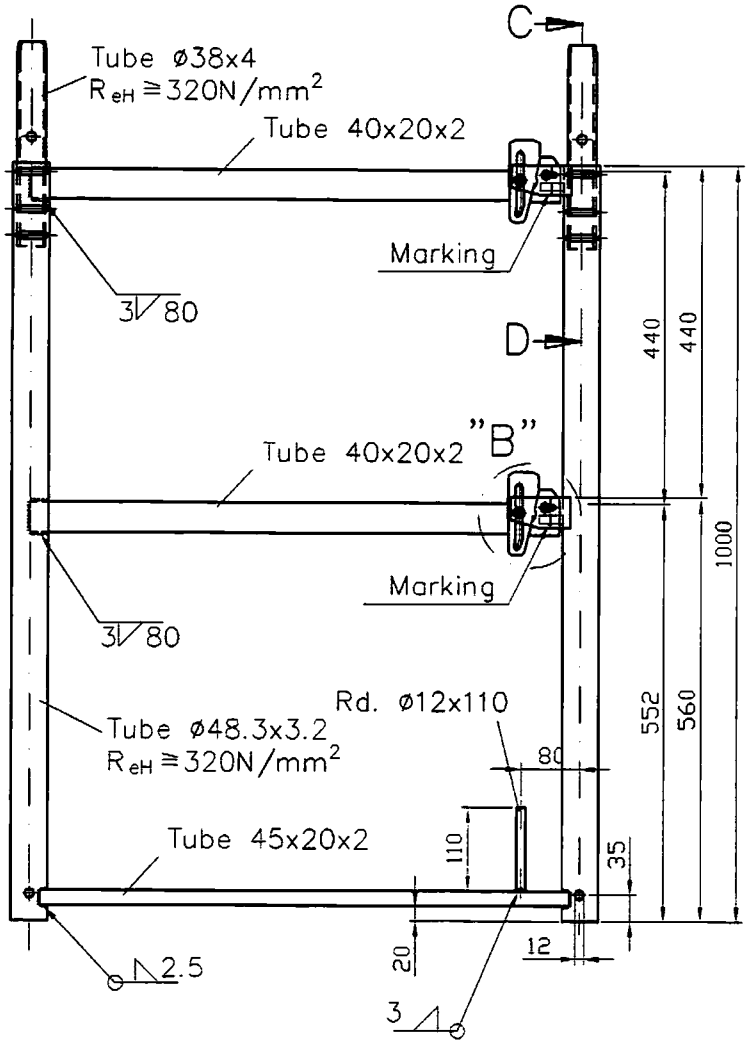


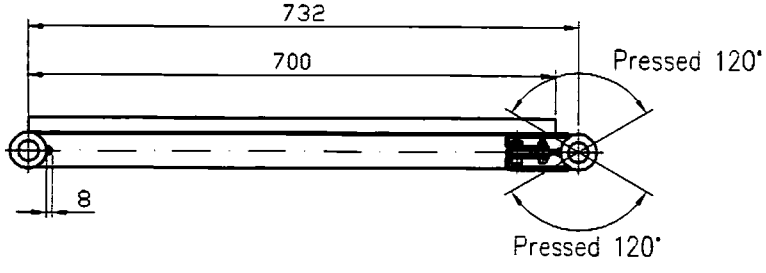


galvanised

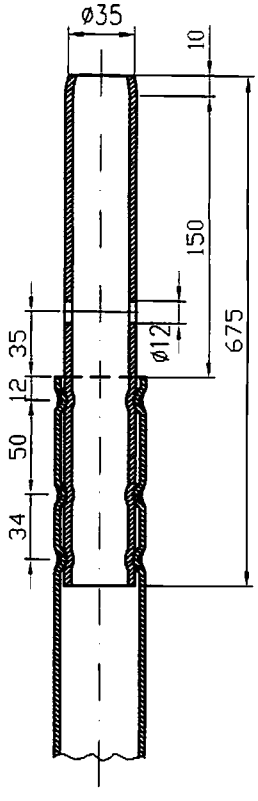
Details, see Annex 3

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding End guardrail post	Annex 43 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik





Section C–D



S235JRG2 galvanised

Former design

Details, see Annex 6

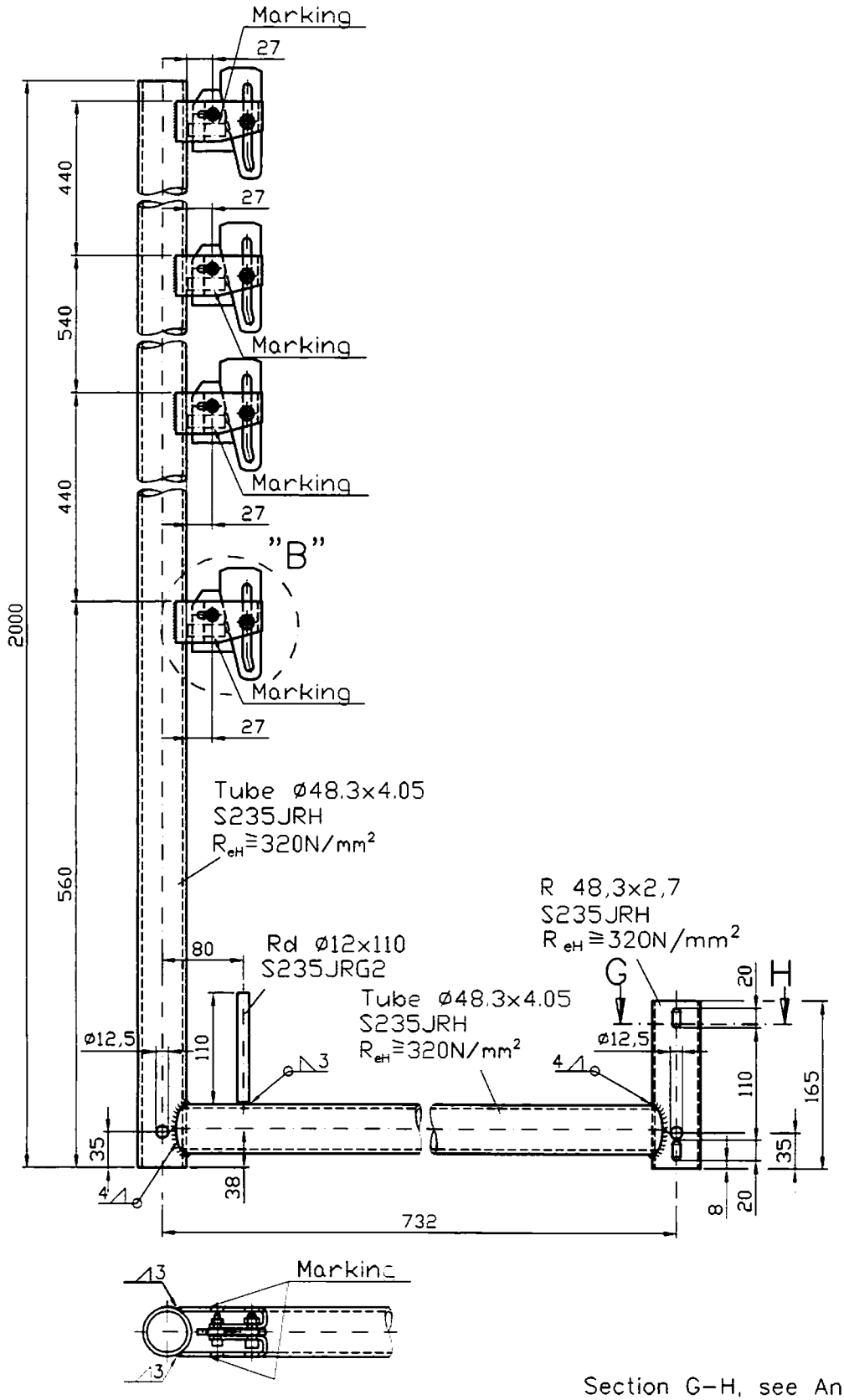
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

End guaedrail post

Annex 44 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Section G–H, see Annex 1

Detail B, see Annex 3

galvanised

ALFIX GmbH

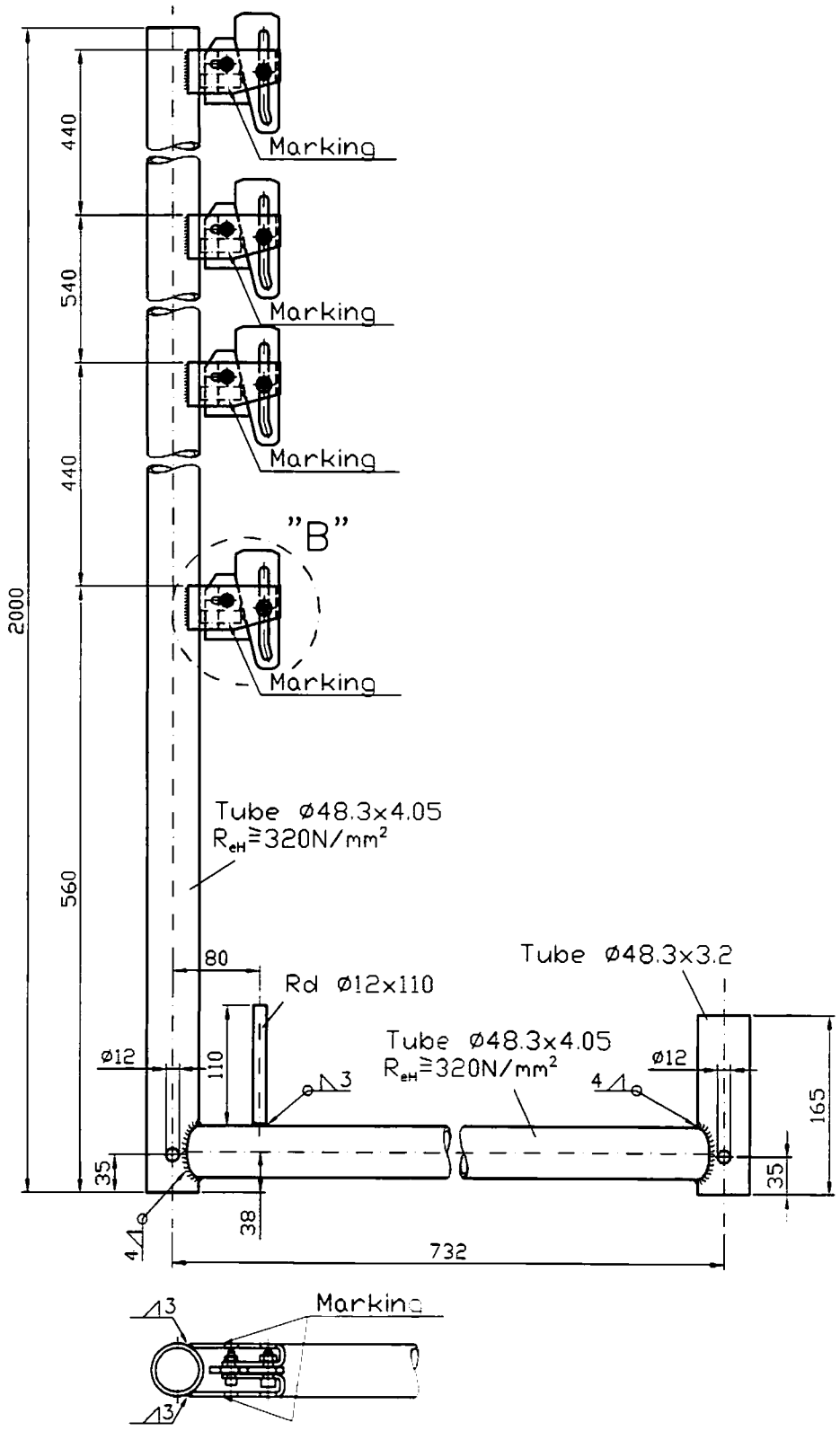
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Guard system support

Annex 45 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JRG2 galvanised Former design Detail B, see Annex 6

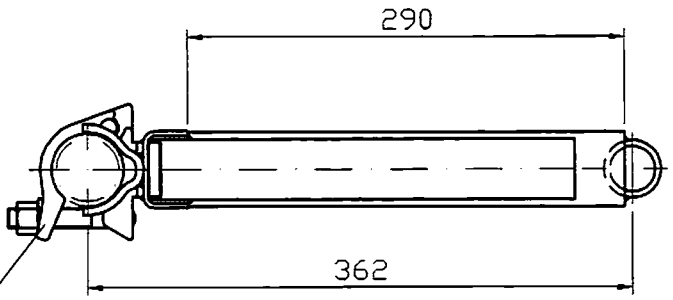
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

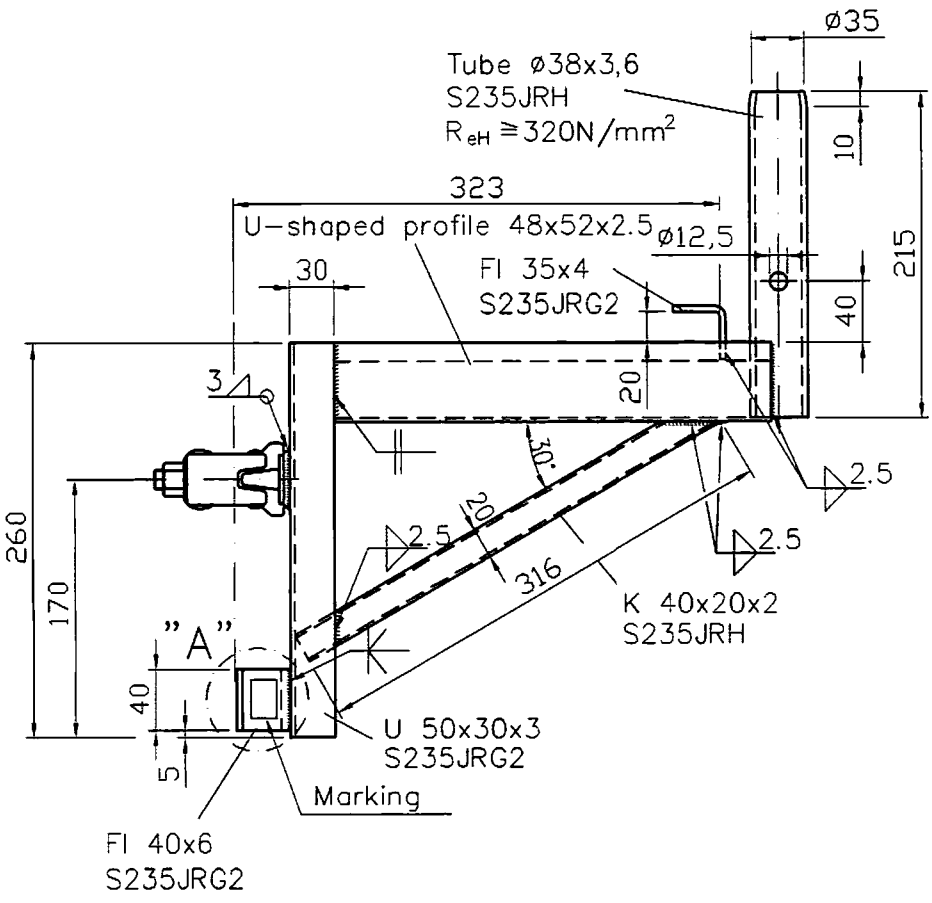
Facade scaffolding

Guard system support

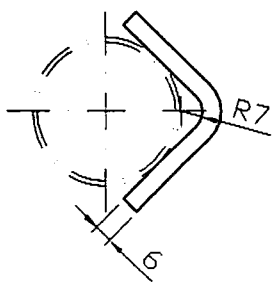
Annex 46 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Approved halfcoupler

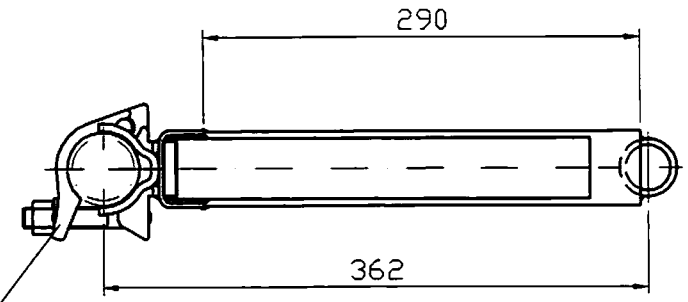


Detail "A"

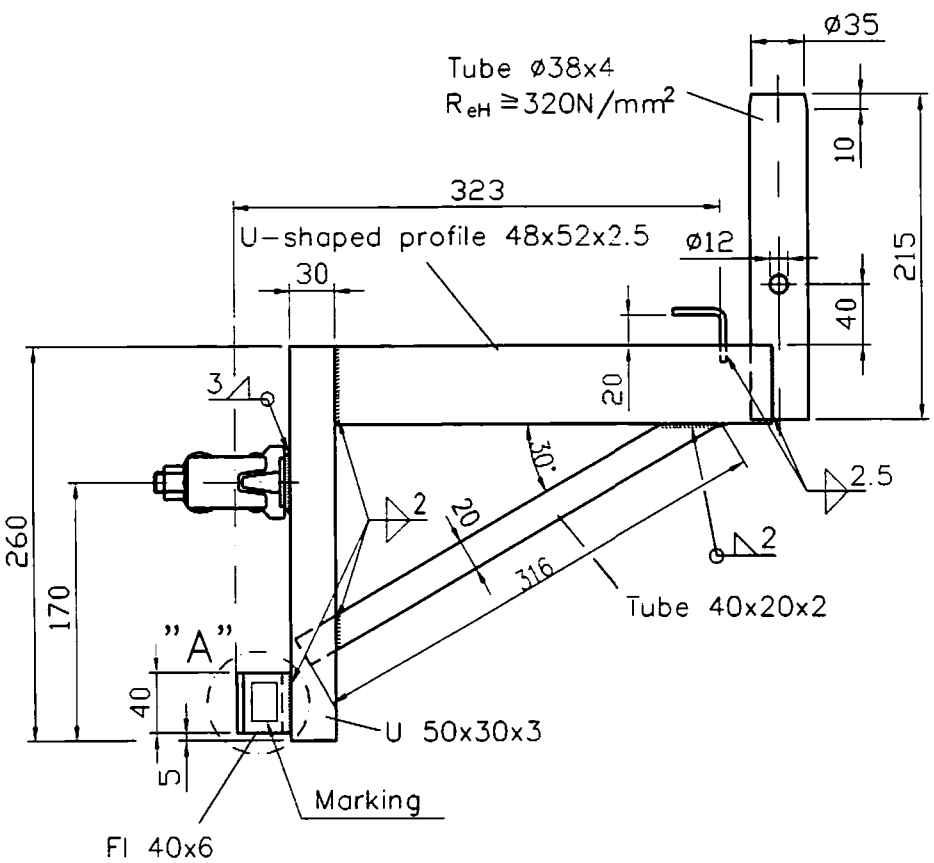


galvanised

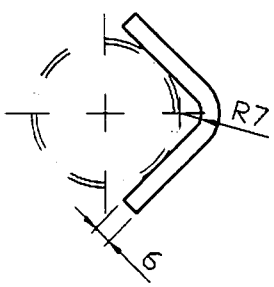
ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Bracket 36cm	Annex 47 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik



Part of swivel coupler acc. to DIN EN 74
with approval for the use on aluminium tubes



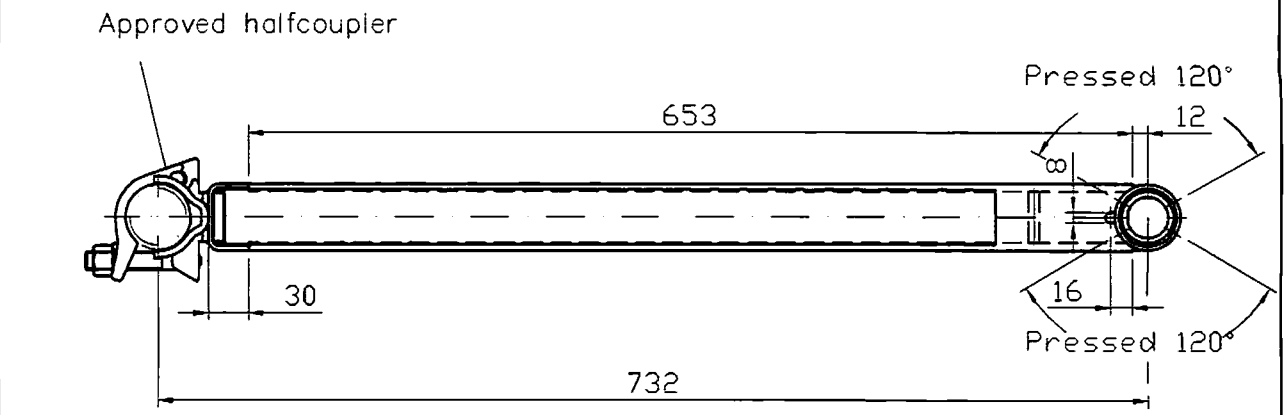
Detail "A"

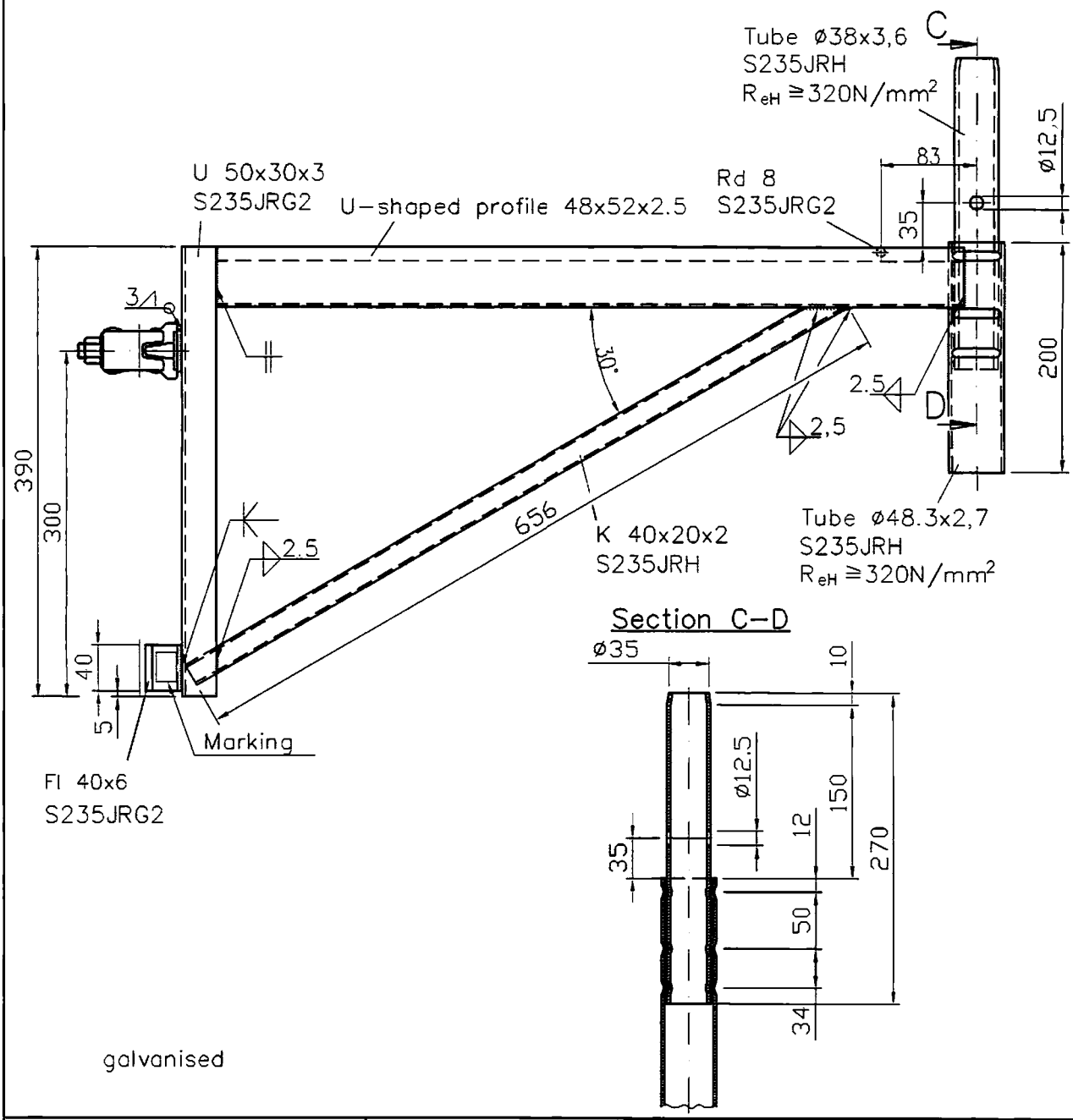


S235JR galvanised

Former design

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Bracket 36cm	Annex 48 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik





Section C–D

galvanised

ALFIX GmbH

63828 Edelbach
09603 Großschirma

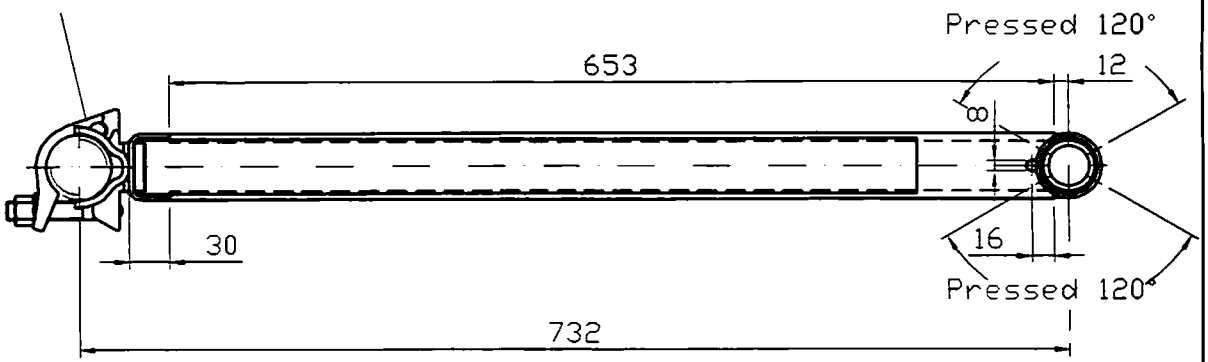
ALFIX 70

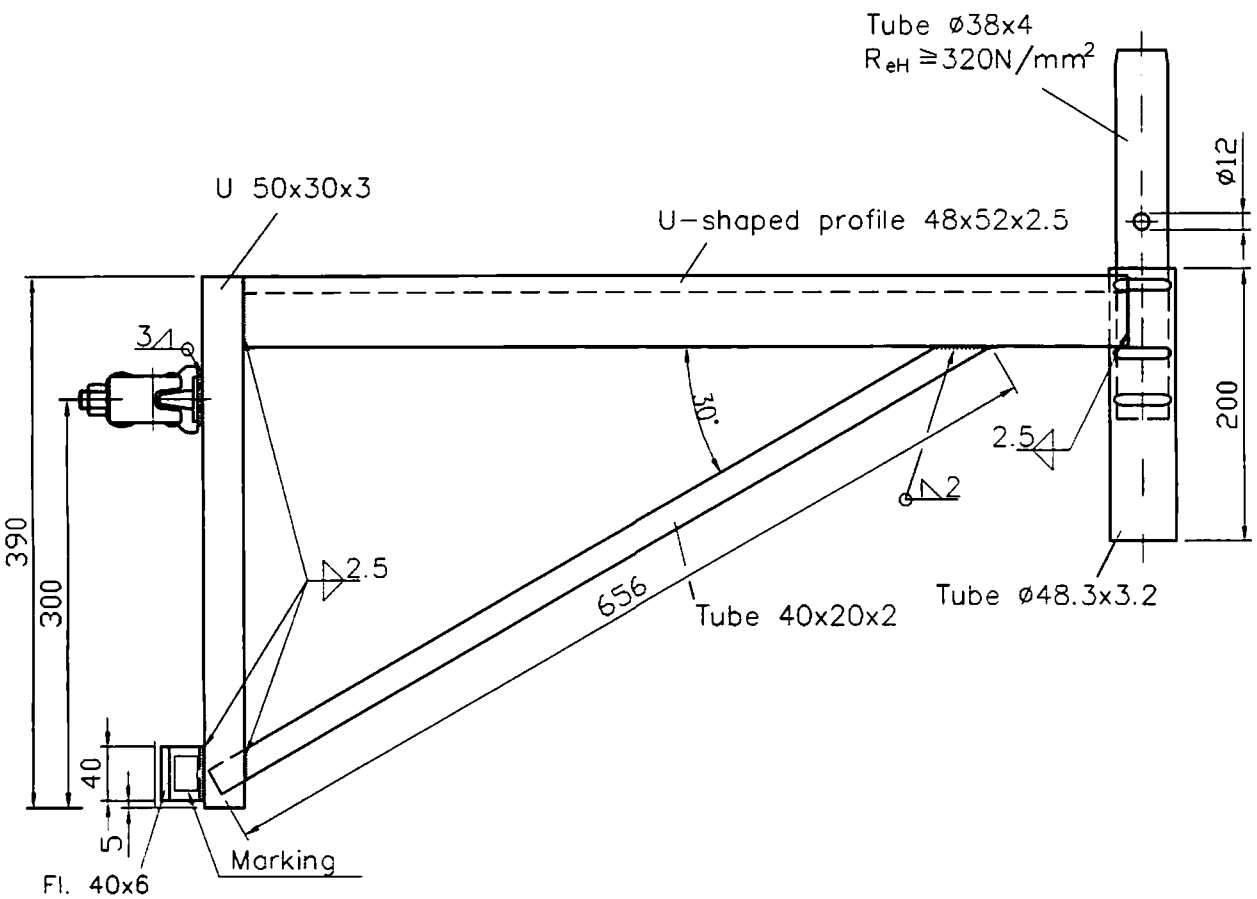
Facade scaffolding

Bracket 73cm

Annex 49 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik

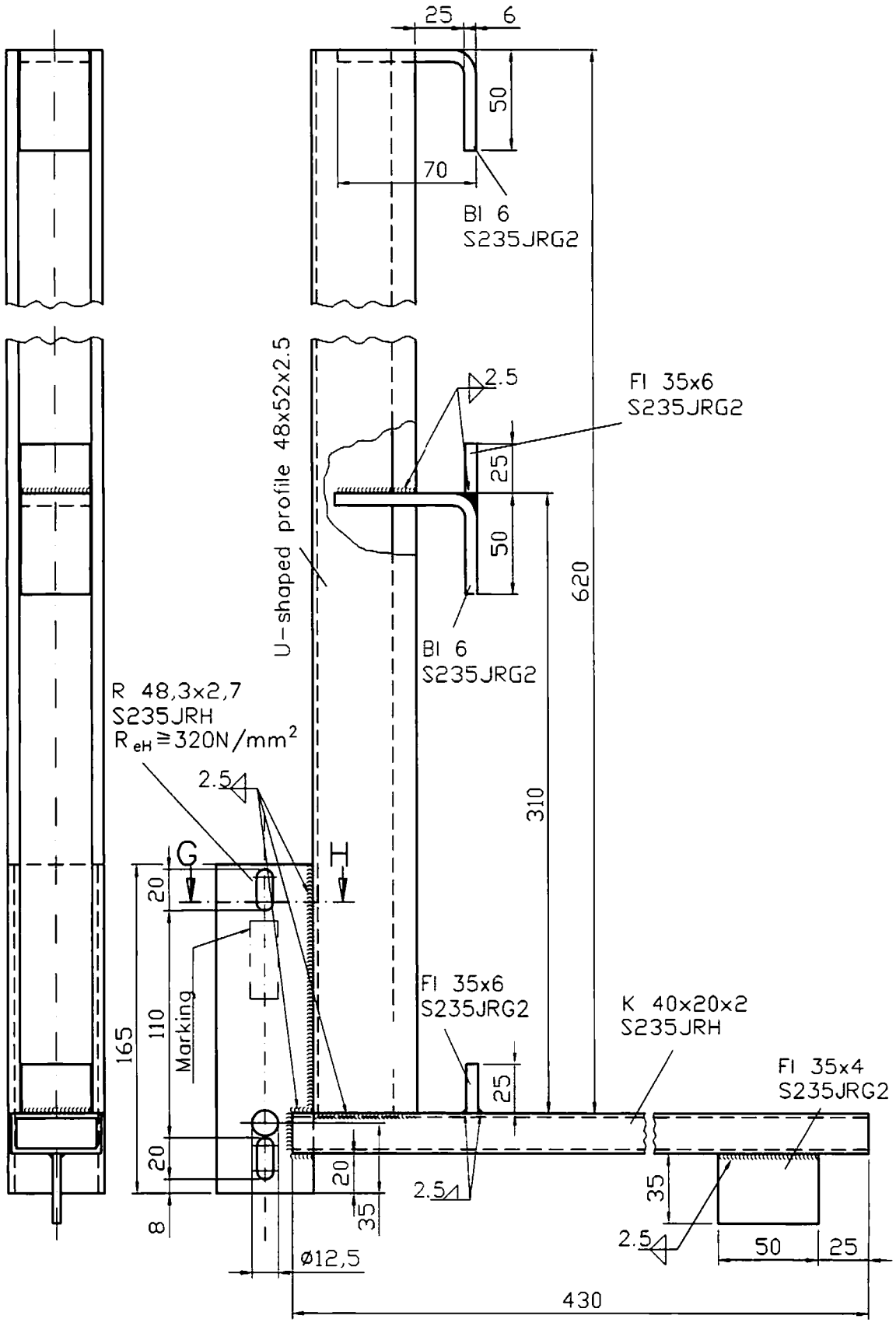
Part of swivel coupler acc. to DIN EN 74
with approval for the use on aluminium tubes





S235JR galvanised Former design

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Bracket 73cm	Annex 50 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik



S235JR galvanised

Section G-H, see Annex 1

ALFIX GmbH

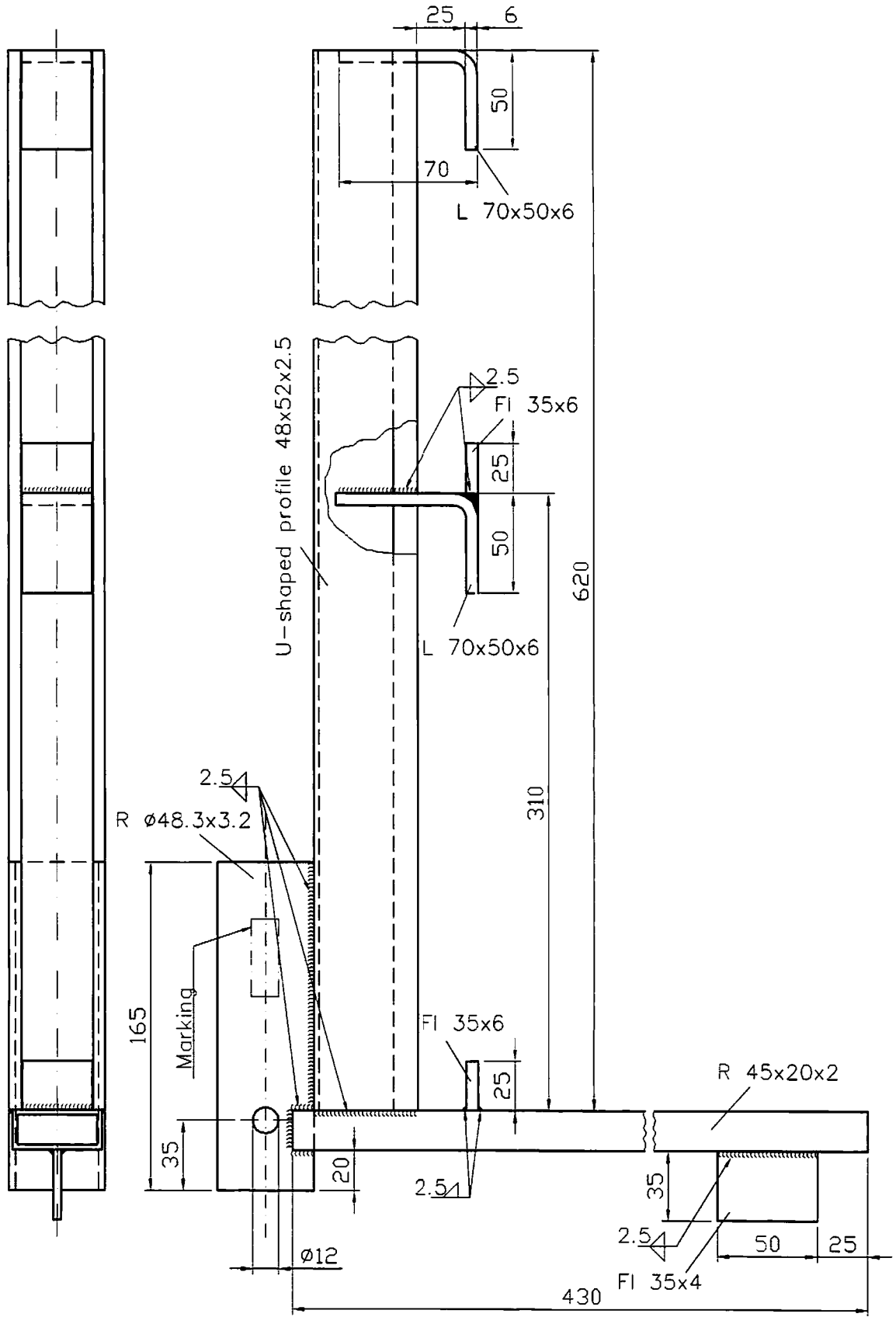
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Protective shelter

Annex 51 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



S235JR galvanised Former design

ALFIX GmbH

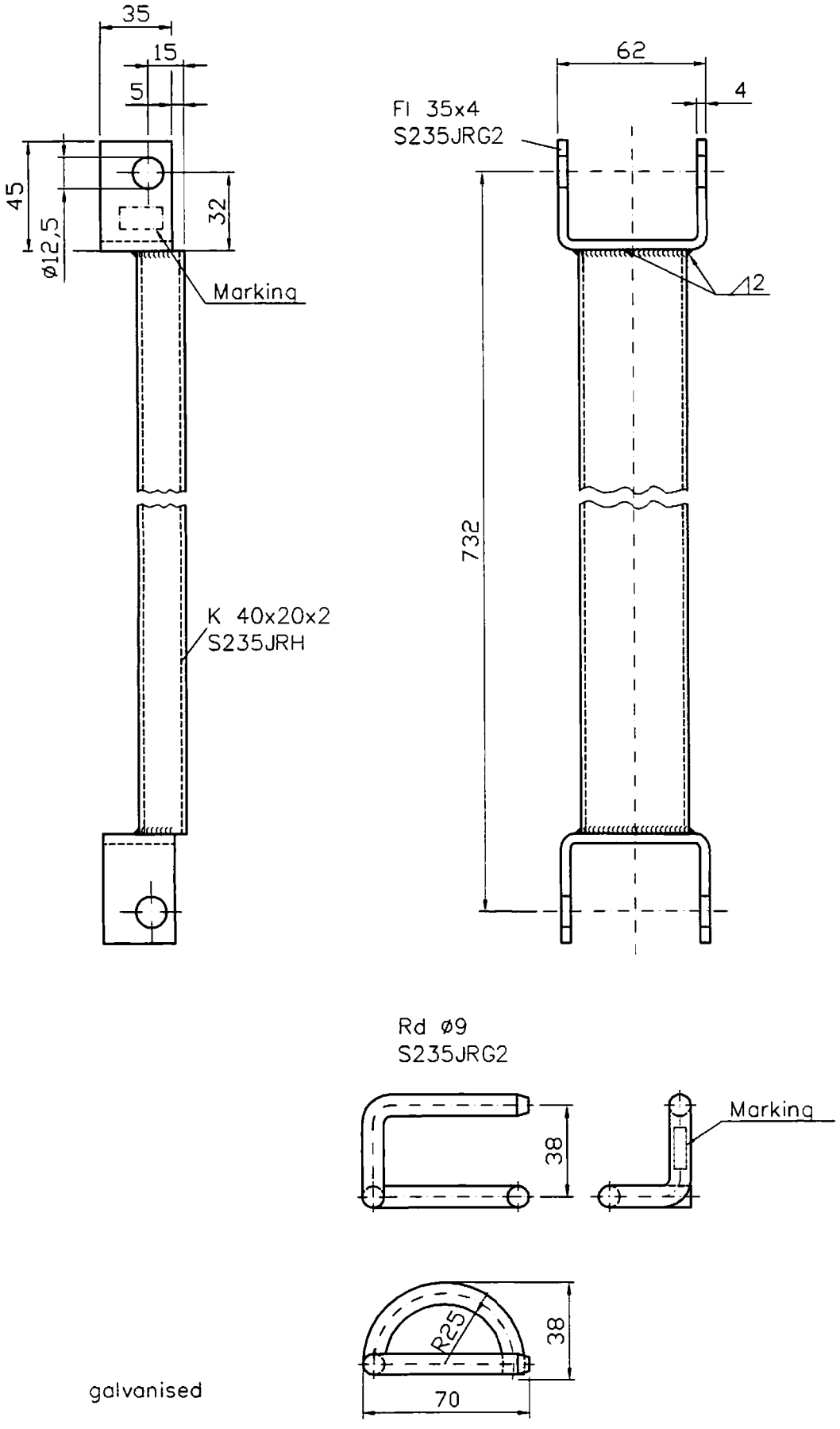
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Protective shelter

Annex 52 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



ALFIX GmbH

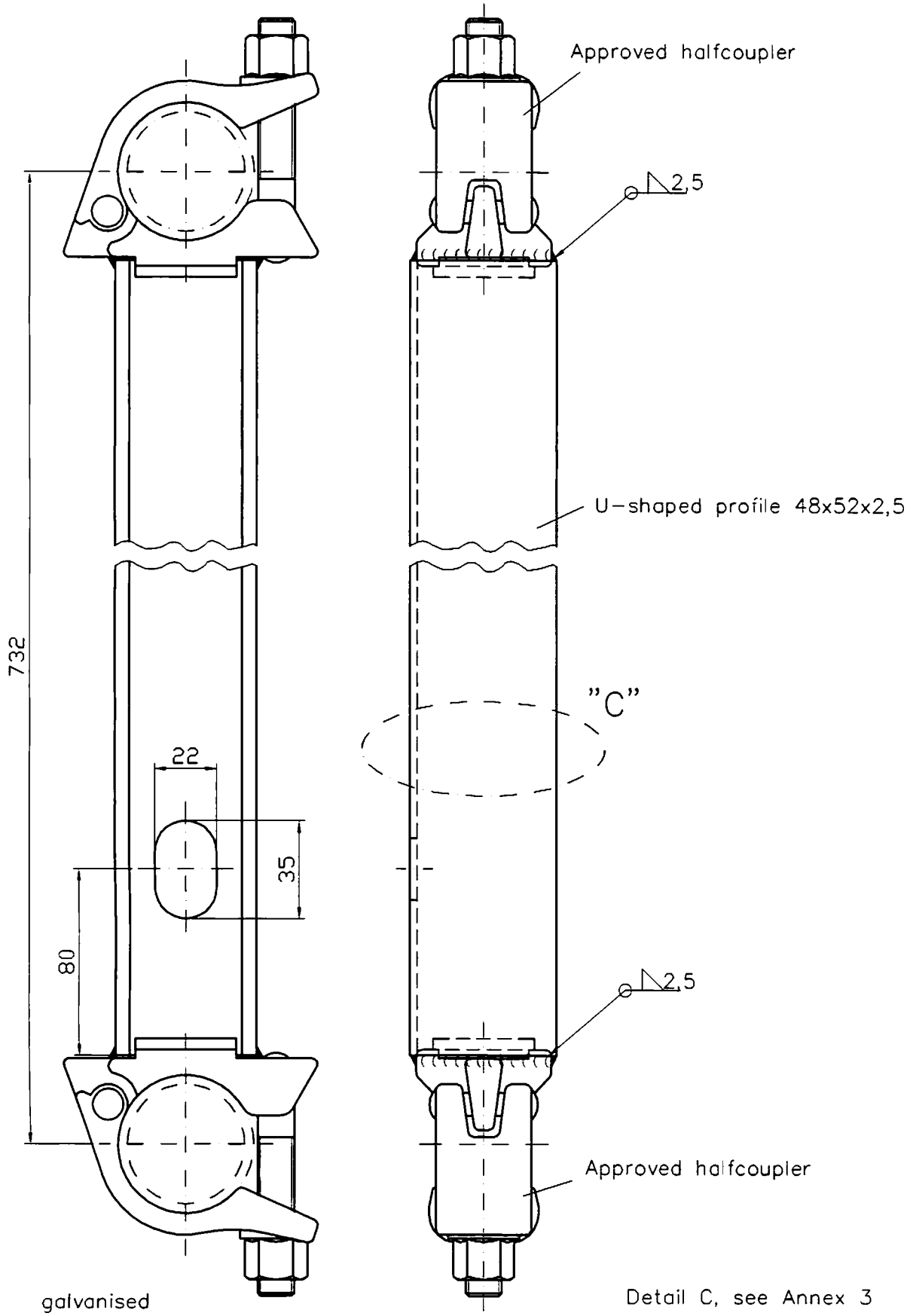
63828 Edelbach
09603 Großschirma

ALFIX 70

Facade scaffolding

Deck retainer
Locking clip

Annex 53 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



ALFIX GmbH
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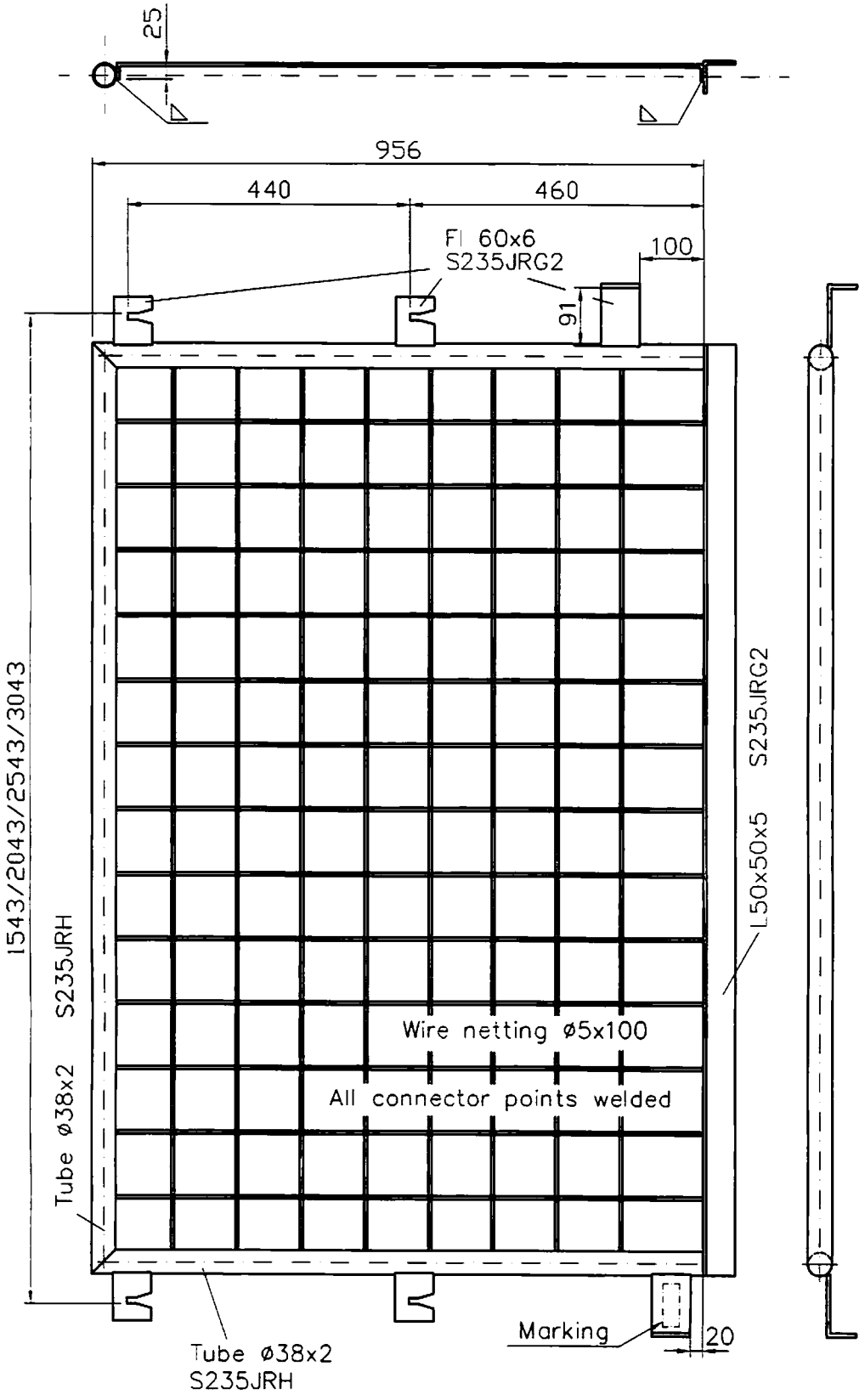
09603 Großschirma

ALFIX 70

Facade scaffolding

Transom

Annex 54 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



All welds a=2.5mm

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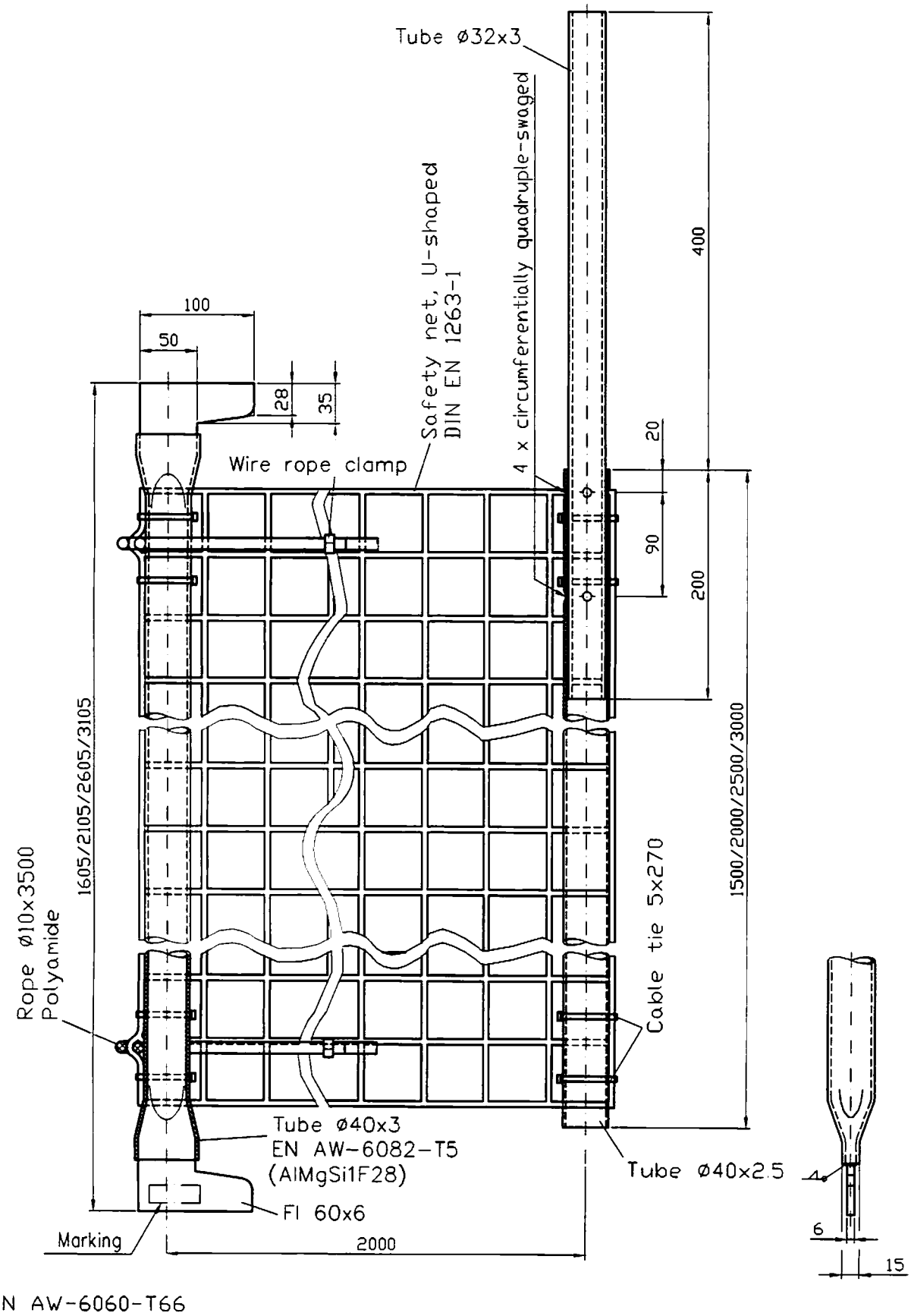
ALFIX 70

Facade scaffolding

Safety meshguard

Annex 55 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



EN AW-6060-T66
(AlMgSi0,5F22)

All welds a=3mm

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ALFIX 70

Facade scaffolding

Safety net

Annex 56 to
general national technical
approval Z-8.1-862
as of February 8, 2005
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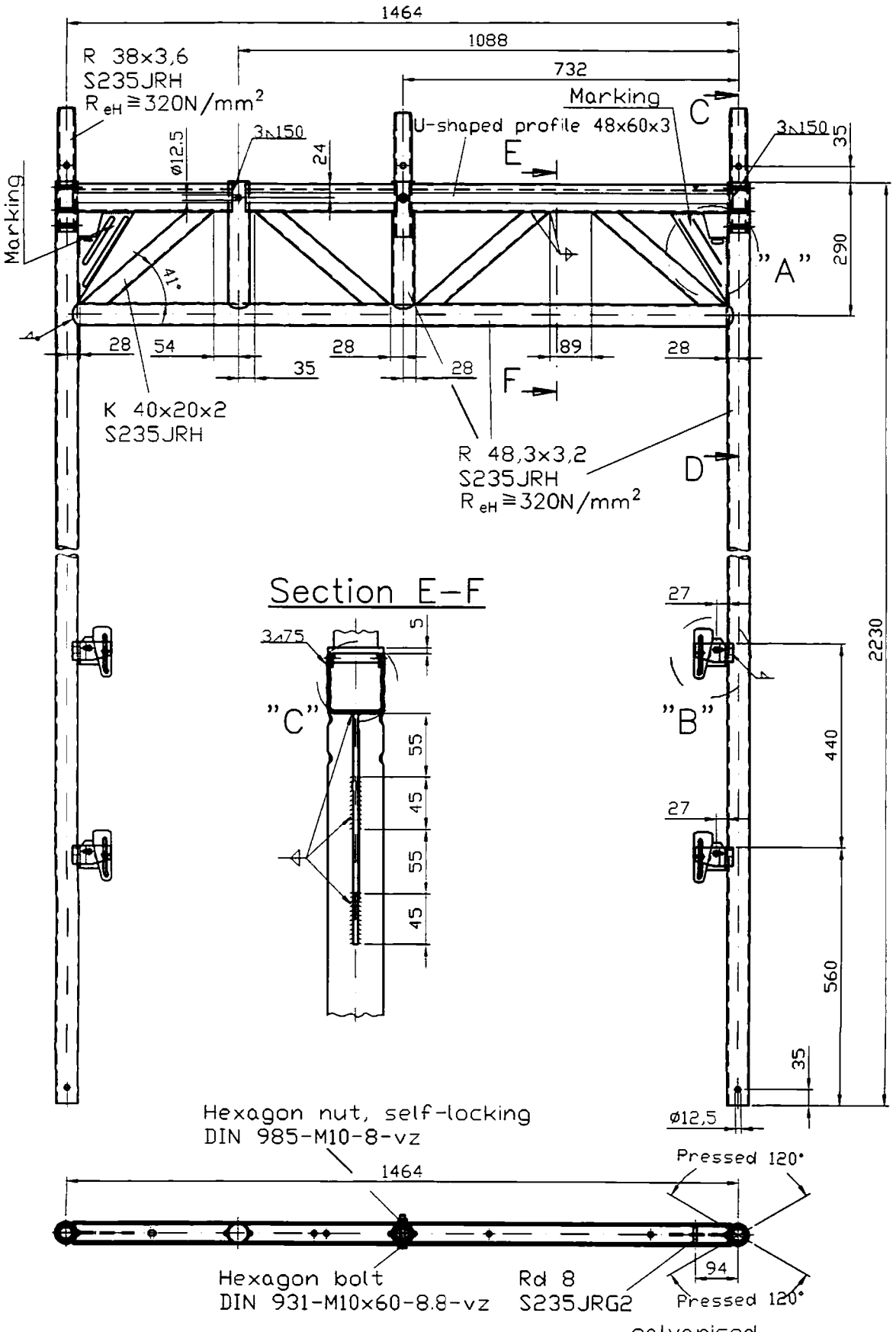

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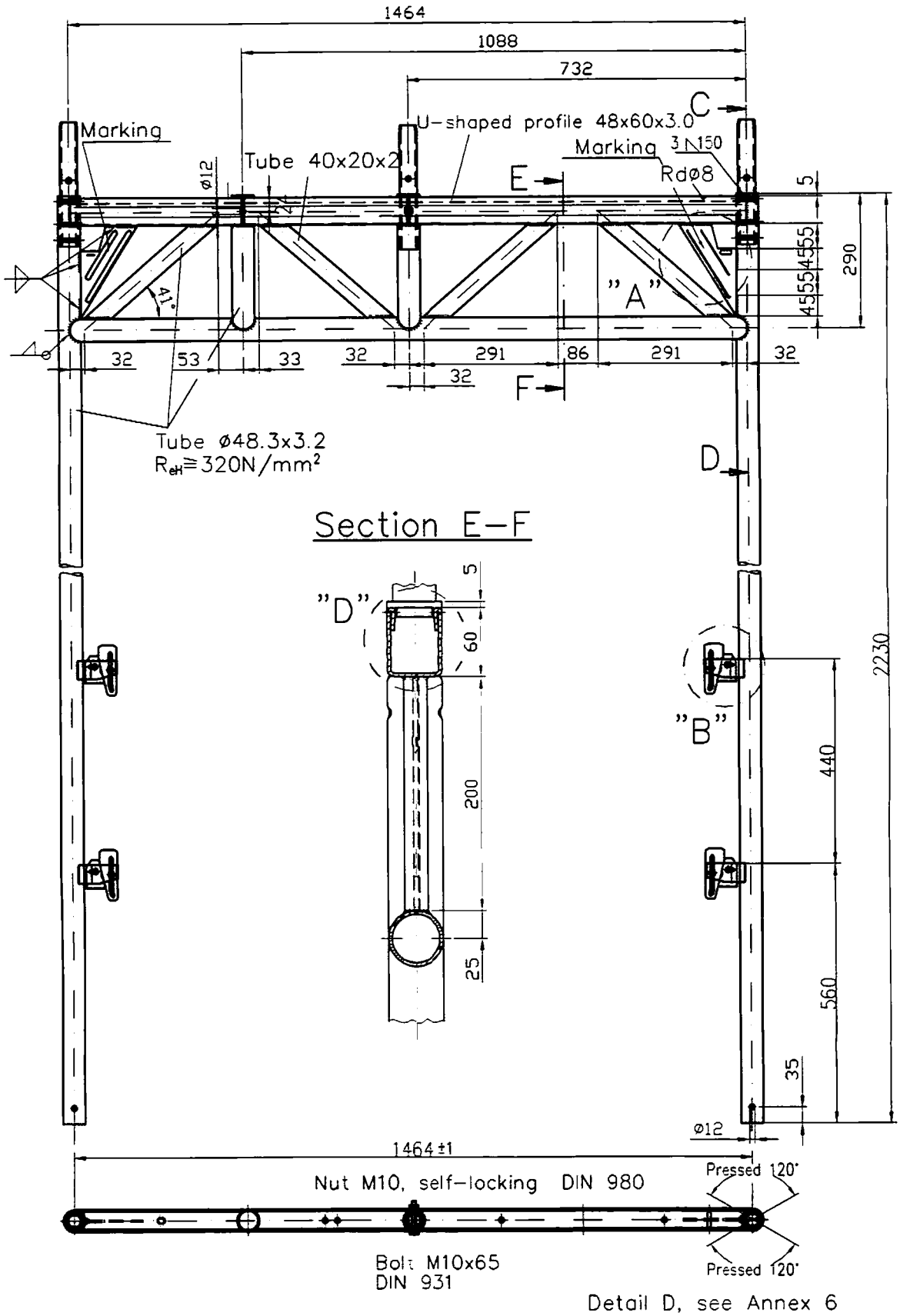
09603 Großschirma

ALFIX 70

Facade scaffolding

Passageway frame

Annex 58 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Detail D, see Annex 6
Section C–D, see Annex 4

S235JRG2 galvanised Former design

All welds a=3mm

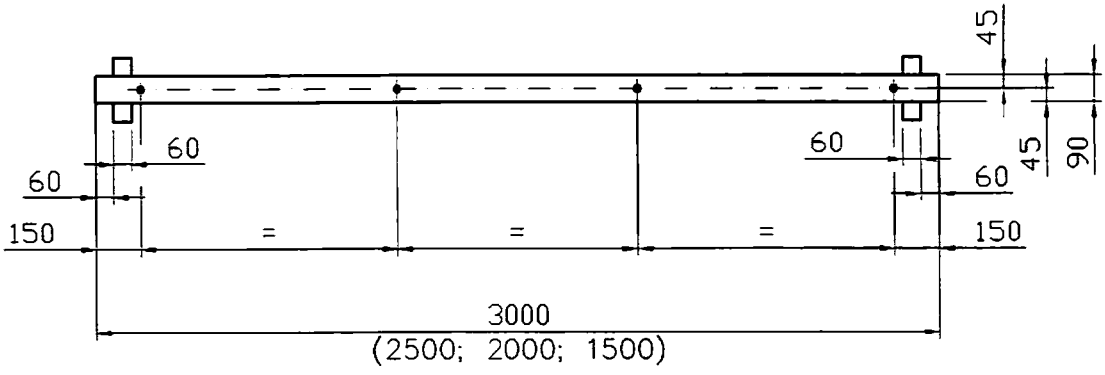
ALFIX GmbH
63828 Edelbach
09603 Großschirma

ALFIX 70

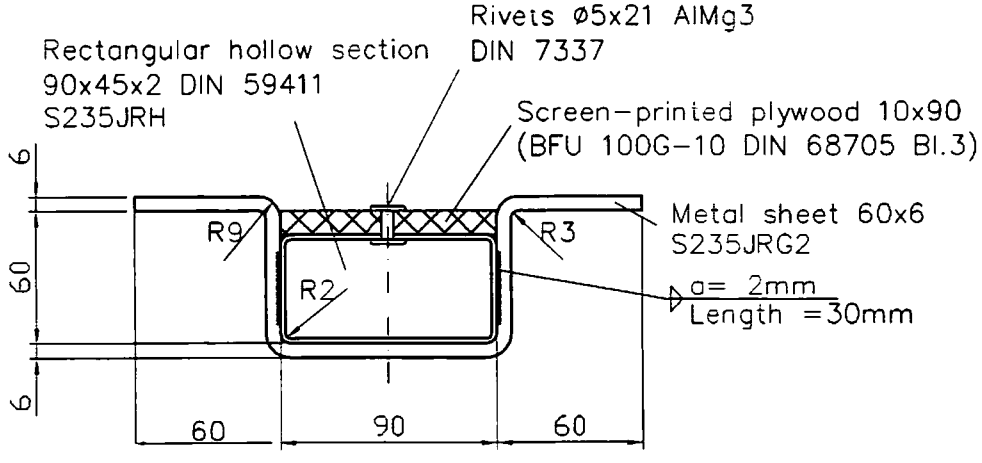
Facade scaffolding

Passageway frame

Annex 59 to
general national technical
approval Z-8.1-862
as of February 8, 2005
Deutsches Institut für Bautechnik



Cross-section



galvanised

ALFIX GmbH 63828 Edelbach 09603 Großschirma	**ALFIX 70** Facade scaffolding Gap cover	Annex 60 to general national technical approval Z-8.1-862 as of February 8, 2005 Deutsches Institut für Bautechnik

Annex 61	

English names	shortcut English
Tube	R
U - shaped profile	U - shaped profile
Tube, squared	RV
Case	K
Steel	S
Round	Rd
Depth	T
Flat rolled steel	Fl
Round steel bar	Rd
Strip	Bd
Metal sheet	Bl
Diameter	Dm
Angle	L

www.alfix-systems.com

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Phone +49 (0) 37328 / 800-0
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eMail: info@alfix-systems.com

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