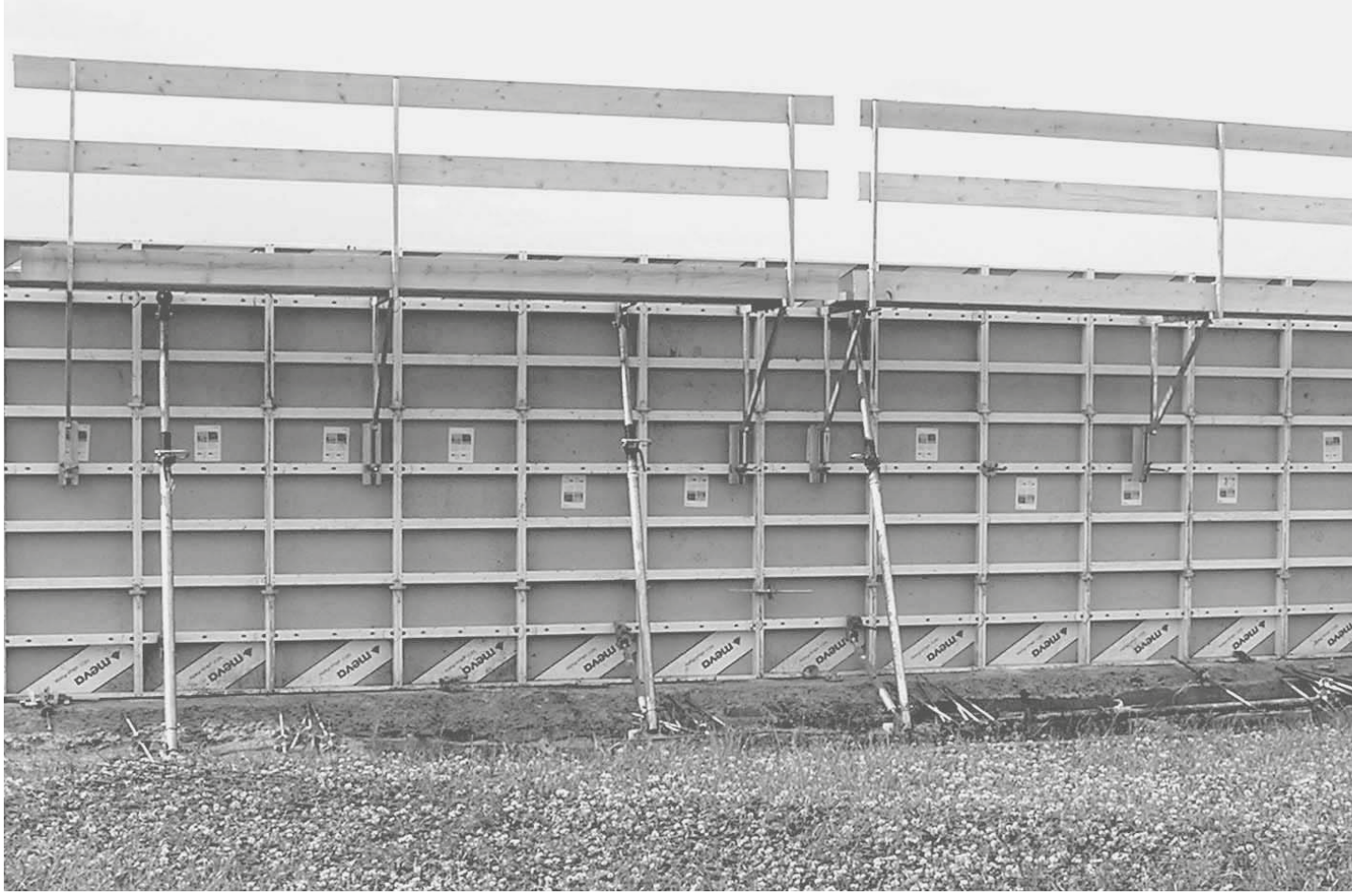


AluFix

Technical Instruction Manual

meva

Product features

AluFix is a versatile and flexible modular formwork system for all applications in building construction and civil engineering.

It is used in residential housing construction, renovation projects, civil engineering as well as in all cases where a crane is not available or out of reach.

Single panels can be set by hand.

Fast and secure panel connection requires only one part: the EA assembly lock. It weights only 1.5 kg and can be positioned anywhere on the panel joint between the cross stiffeners with one hand. Only a few hammer blows are necessary to produce a non-positive connection and a perfectly aligned and flush panel joint.

The modular wall formwork system AluFix possess an aluminium profile with a high-quality cured powder coating. The closed profiles are easy to clean and torsionally rigid. This increases the service life and reduces the cleaning effort.

The tried-and-tested polypropylene and aluminium composite alkus (AL) facing has all the positive properties of plywood plus important advantages: longer lifespan, greater load-bearing capacity, better nail-holding ability, fewer and easier repairs, 100% recyclability. AluFix is optionally available with a multi-layer plywood facing (birch ply = BP).

The MEVA multi-function profile with welded-in DW-threaded nuts makes the attachment of accessories easier, for example:

- Push-pull props and alignment rails with flange screws
- Walkway brackets with integrated self-locking pin
- DW tie rods of any length that are used to bridge problem areas.

The advantages of this frame formwork system are easy material requirements planning, low stock levels and no time-consuming, unproductive searching for parts.

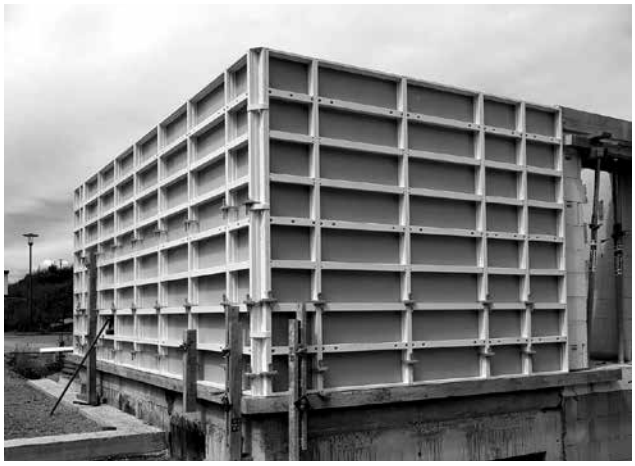
The maximum permissible fresh-concrete pressures for the AluFix are 50 kN/m² (AL) and 36 kN/m² (BP). The fresh-concrete pressure for vertical formwork according to DIN 18218:2010-01 can be determined easily and precisely with MEVA's online concrete pressure calculator. This and other aids are available at www.meva.net and in the app MEVA me for iOS and Android.

Abbreviations, figures and tables, etc.
The abbreviation AF is used for the AluFix system. DIN means Deutsche Industrie-Norm (German Industrial Standard). E DIN (E = Entwurf / draft) means that the DIN is in draft status and not yet approved. Any further abbreviations are explained where they are used for the first time.

TÜV means Technischer Überwachungsverein. This is the independent German organisation that tests the safety of technical installations, machinery and motor vehicles. If a product passes the test, it is permitted to carry the GS seal. GS stands for Geprüfte Sicherheit (approved safety).

Measurements: This manual uses the metric system, i.e. m (for metre), cm (for centimetre) and mm (for millimetre).

The page numbers of this manual start with AF and the figures and tables are numbered per page. Depending on its product abbreviation, a cross reference in the text refers to a page, table or figure in this or in another manual. This is indicated by the product code with which the cross-reference begins.



Please note

This Technical Instruction Manual contains information, instructions and tips that describe how to use the MEVA equipment on the construction site in a proper, quick and economic way. Most examples shown are standard applications that will occur in practice most often. For more complicated or special applications not covered in this manual, please contact the MEVA experts for advice. They will help you without delay.

When using our products, local health and safety regulations must be observed. Please observe the assembly instructions that your local contractor or employer has created for the site on which the MEVA equipment is used. Such instructions are intended to minimise site-specific risks and must contain the following details:

- The order in which all working steps including assembly and disassembly must be carried out
- The weight of the panels and other system parts
- The type and number of ties and braces as well as the distance between them
- The location, number and dimensions of working scaffolds including the working area and fall protection equipment required
- Attachment points for panel transport by crane. With regard to panel transport, please observe this manual. Any deviation will require structural verification.

Important: Generally, only well-maintained material may be used. Damaged parts must be replaced. Use only original MEVA spare parts for replacement.

Attention: Never wax or oil assembly locks!

Contents

Formwork assembly and stripping

Important!
When assembling and stripping formwork, strictly observe the local accident prevention rules. When using our formwork and systems always observe federal, state and local codes and regulations.

Attention
→ During the entire assembly and stripping process vertical panels must be supported or secured against toppling by other means. This applies to all panel types, hence also to corner panels, curved panels, etc.
→ Above a formwork height of 2.00 m both sides of the formwork must be secured against falling.

Planning
If you want to benefit fully from the efficient and economical use that the formwork offers, we recommend you first plan and prepare its use. Start planning by determining the optimum formwork quantity to be held in stock (the quantity is usually based on the amount of formwork required for a one day's work). When determining the quantity, consider the following:
→ The formwork weight
→ The time required for formwork assembly and stripping
→ Transport of gangs from one pour to the next considerably reduces assembly and stripping effort and time
→ Capacity of the lifting devices
→ A logical cycle plan that takes corner configurations, reinforcements, etc. into account.

Once all these aspects have been considered, the quantities of formwork items can be specified.

Ground
The ground on which the formwork is going to be placed should be clean, even and capable of bearing the expected load, as this will help reduce the time required for the assembly and stripping.

Panel transport
When unloading panels or moving panel stacks, make sure to use appropriate transport devices that can bear the load.

The steps required for assembly
For ergonomic reasons the outside formwork is usually assembled and placed first. Start assembly in a corner or at a defined position and perform the following steps:

Step 1 – Place and brace the outside formwork

Step 2 – Define and mark the pouring height, install the reinforcements and boxouts

Step 3 – Place the inside formwork and tie the outside and inside formwork

Refer to the following pages for a detailed description of these steps including the installation of the working platform and formwork stripping.

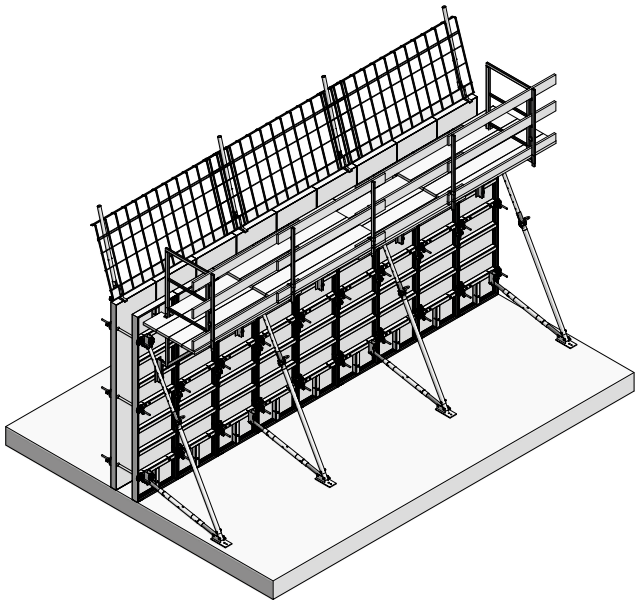


Fig. 4.1

Formwork assembly and stripping

Step 1
Place and brace the outside formwork
The following description is based on an straight wall. Note the following:
→ When pre-assembling large panel units on an even surface, attach the wall braces and the walkway bracket as well, i.e. before performing step 1.
→ Short walls of less than 6 m require a filler in the inside formwork for easy stripping (Fig. 5.3), as the formwork may otherwise become wedged and stick to the concrete when it is stripped.

1. Spray the facing with the release agent MevaTrenn pro.

2. Place the first panel and immediately attach it to the ground or concrete slab with two brace frames to prevent it falling over (Fig. 5.1). The foot plate must be firmly connected to the ground or concrete slab – in earth with two ground pegs, in concrete with two heavy-duty dowels.

After placing vertical panels, always reinforce them immediately with push-pull props or brace frames so they can withstand tensile and compressive forces and are protected against displacement and wind. The prop spacing is determined by the application (see page AF-<?>).

If the walkway bracket was not pre-assembled before step 1, you can now assemble and install the working platform.

3. String further panels together and connect them with EA assembly locks.

The panels are usually connected with two to four assembly locks (see page AF-11). For outside corner configurations see pages AF-25 and AF-26.

Step 2
Pouring height, reinforcements and boxouts
After performing step 1, the pouring height is defined and marked. Then the reinforcements and boxouts, if required, are installed.

Step 3
Place the inside formwork and tie the outside and inside formwork
The inside formwork is placed after the outside formwork. The inside and outside formwork are tied firmly with tie rods and articulated flange nuts.

Note
Correct set-up of the formwork to the desired wall thickness is facilitated by using a stop or a mark on the ground which allows the inside formwork to be positioned exactly.

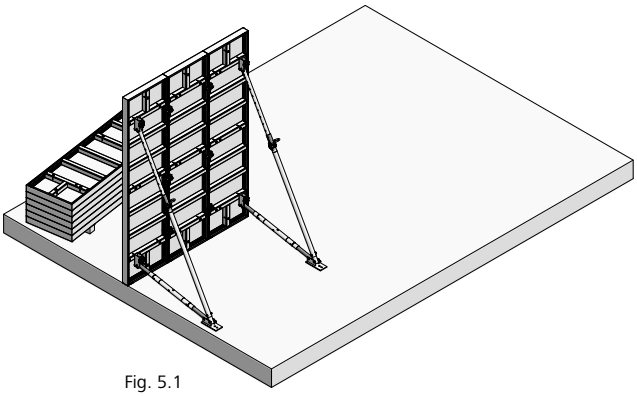


Fig. 5.1

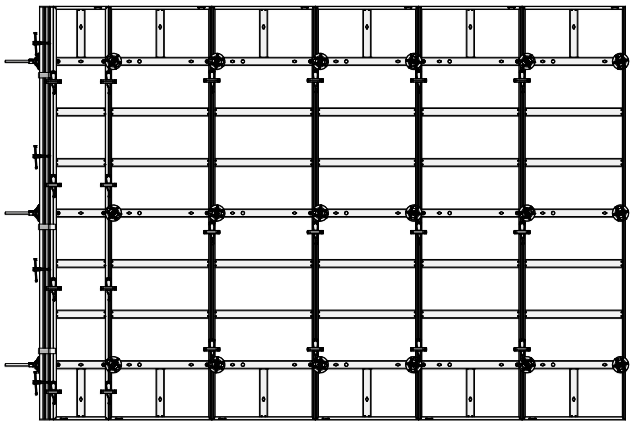


Fig. 5.2

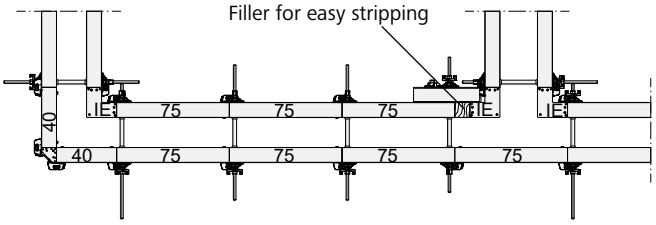


Fig. 5.3

Formwork assembly and stripping

Working scaffold
The plug-in walkway bracket is used to support the working scaffold. The maximum bracket spacing for a load of 150 kg/m² (platform group 2) is 2.50 m as defined in DIN 4420. The planking must be at least 4.5 cm thick.

The planking and walkway bracket can be firmly connected. Do not install any planks before securing the formwork with push-pull props or before tying the inside and the outside formwork.

Do not forget to attach a side railing to the working scaffold.

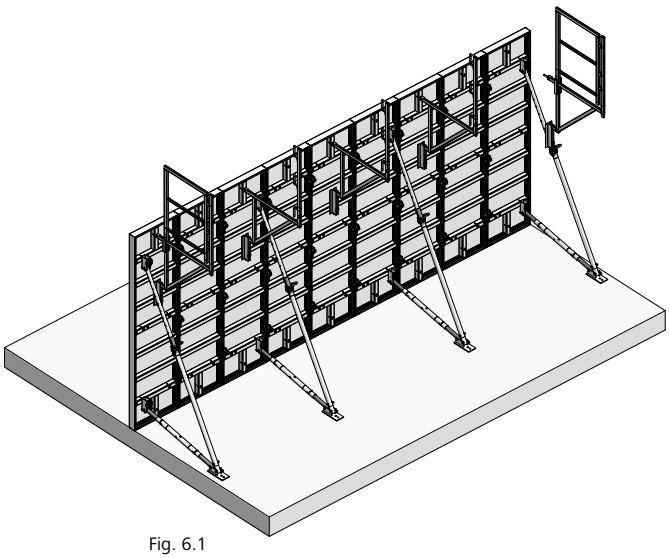


Fig. 6.1

Pouring concrete
Once you have placed, tied, braced and closed the formwork, you can start pouring concrete. When doing so, observe the permissible rate of placing taking the setting behaviour and the consistency of the cement into account (see page AF-14).

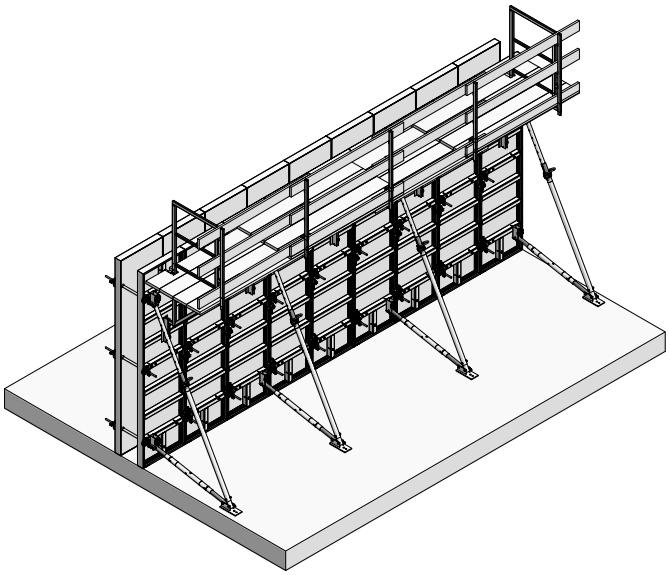


Fig. 6.2

Formwork assembly and stripping

Stripping

Do not start stripping before the concrete has set to the point where it can no longer deform. It is best to start stripping at the stop ends or at a short corner. Start stripping with the inside formwork. Stripping of both the outside and inside formwork is performed as follows:

1. Remove the working scaffold.
2. Remove the articulated flange nuts and the tie rods section by section. Make sure the unbraced formwork is immediately secured to prevent it falling over or strip it immediately.
3. On the formwork panels or large panel units the assembly locks are removed at the joints, and the panels or panel units are then lifted out by hand or by crane. Before transporting by crane, the formwork must be detached from the concrete!
4. Clean the facing and remove any concrete. Before the next use, spray the facing with the release agent MevaTrenn pro (for alkus facings). Observe the operating instructions for the alkus facing.

Note

The release agent must not be stored in galvanized containers.

Please observe

When stripping manually, detach and disassemble the working scaffold and the brace frames before stripping the panels.

When transporting large panel units with a crane, the working scaffold and wall braces are moved together with the panel units. While vertical, all components are cleaned and sprayed with release agent before being lifted together to the next cycle (see page AF-45).

If there is no further use for the panel units, the working scaffold and wall braces are detached and disassembled in a horizontal position, and cleaned and stacked for transport.

The panels are to be stacked with the facing side facing upwards.

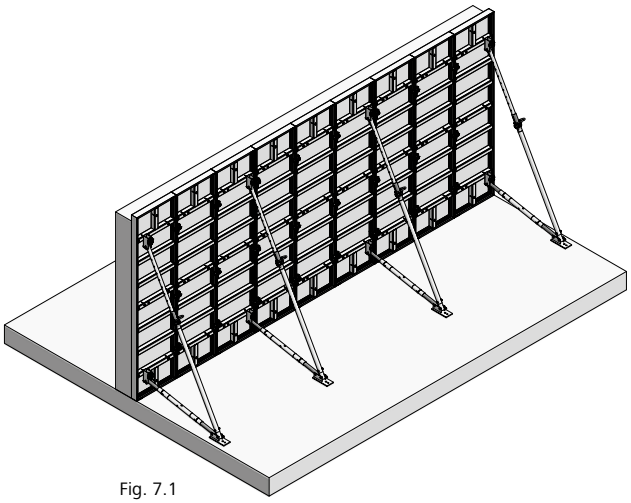


Fig. 7.1

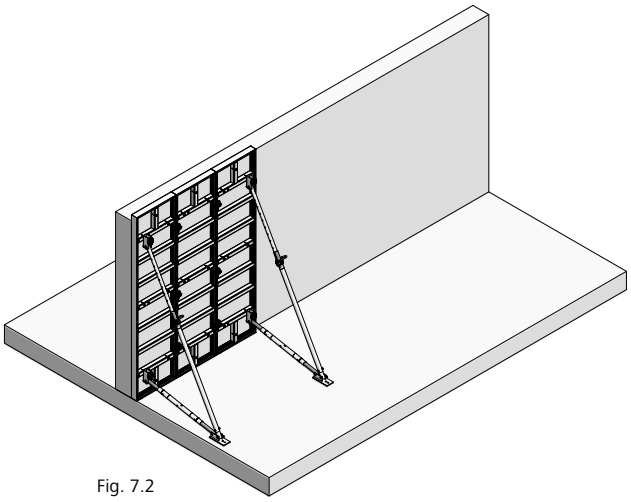


Fig. 7.2

The AluFix AL panel

Fig. 8.1
The AluFix AL panel.

Fig. 8.2
The aluminium frames are made of three-chamber profiles with welded-in mitred joints. The profiles are equipped with a double groove and edge protection.

Fig. 8.3
Panel connection with the EA assembly lock (see pages AF-11 and AF-12).

Fig. 8.4
Quick and secure attachment of accessories using welded-in DW 15 threaded nuts (see page AF-16).

Fig. 8.5
Cross stiffeners made of closed, robust and easy-to-handle aluminium profile.

Fig. 8.6
Anchor sleeve for easy installation of tie rods (see page AF-13).

Fig. 8.7
Offset tie hole (panel widths 90 and 75 cm) for easy tying of horizontal panels in the foundation area.

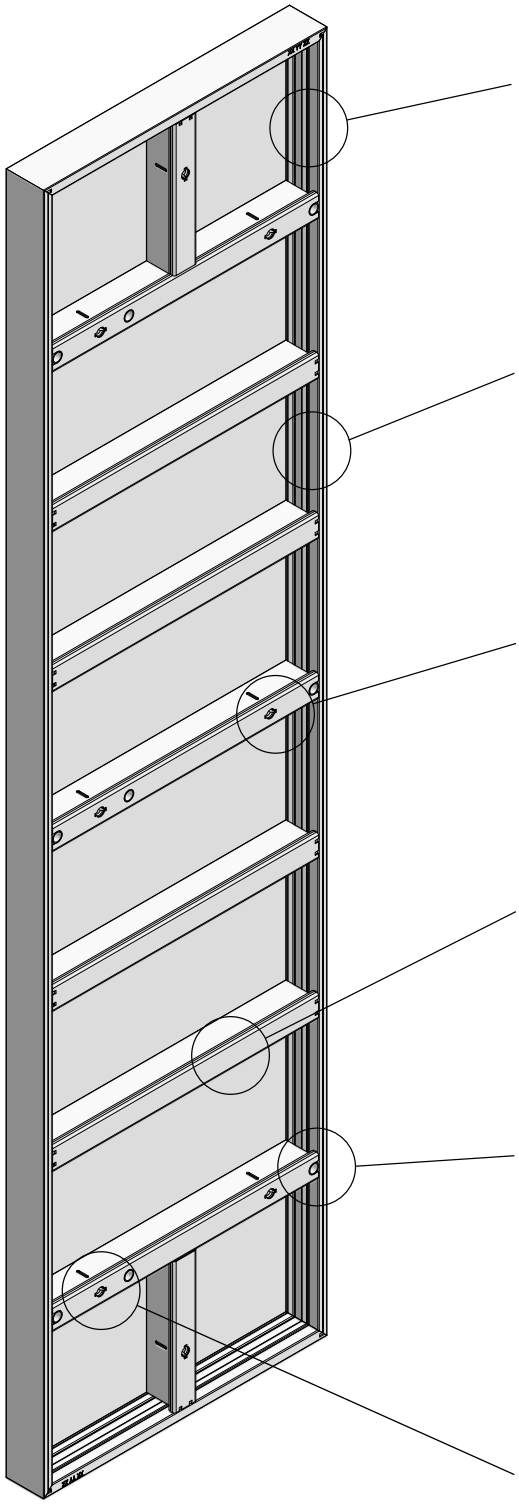


Fig. 8.1 AF panel 300/75

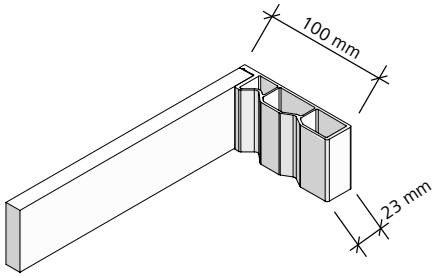


Fig. 8.2

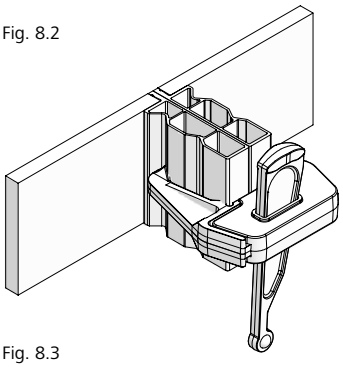


Fig. 8.3

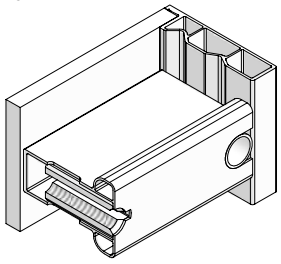


Fig. 8.4

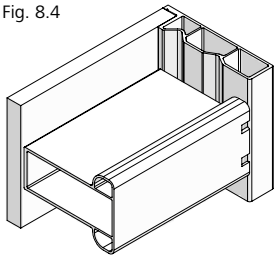


Fig. 8.5

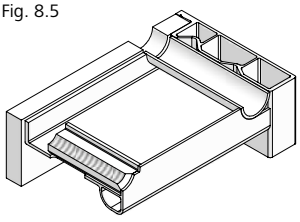


Fig. 8.6

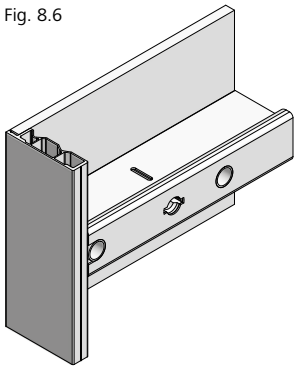


Fig. 8.7

Overview of panels

Six panel heights between 135 cm and 350 cm result in optimised height increments for efficient forming without height extensions. With only six panel widths from 90 cm to 25 cm, trouble-free corner solutions are possible (Fig. 9.1).

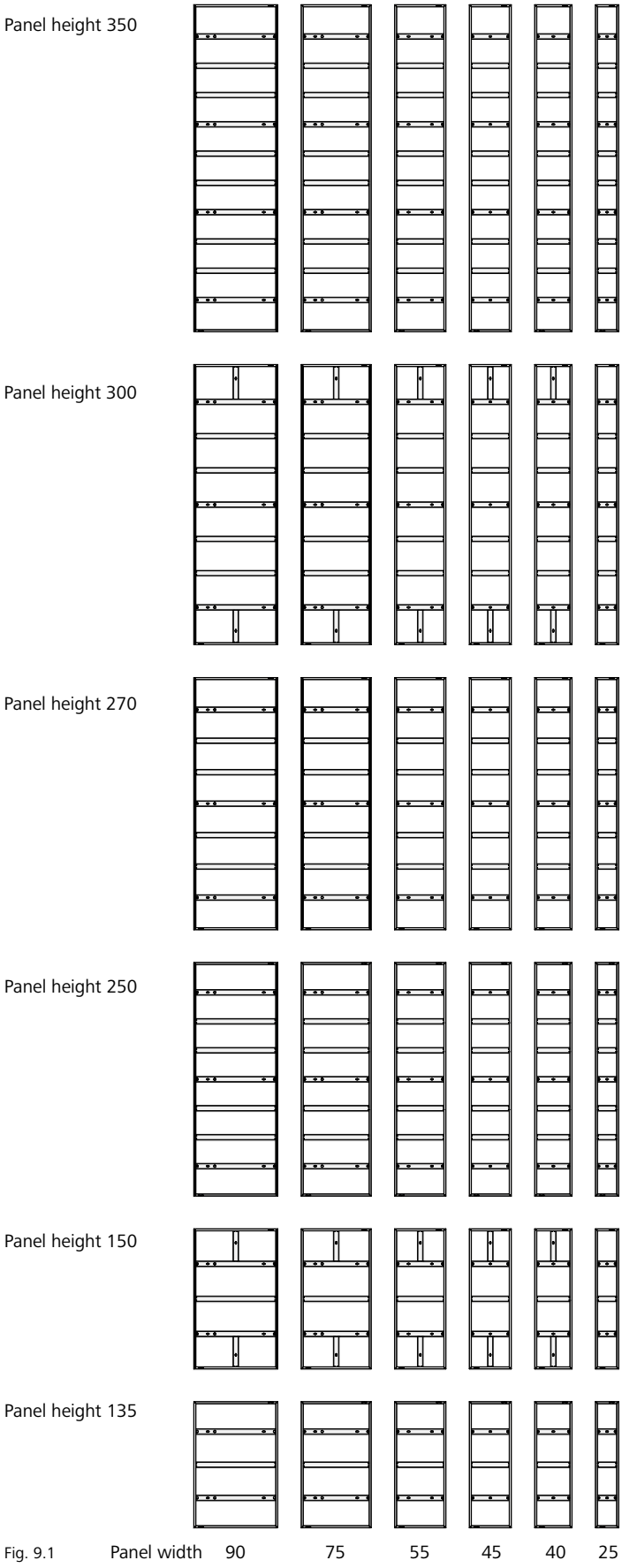


Fig. 9.1

The alkus all-plastic facing

The tried-and-tested polypropylene and aluminium composite facing (Fig. 10.3) has all the positive properties of plywood plus important advantages: longer lifespan, greater load-bearing capacity, better nail-holding ability, fewer and easier repairs, 100% recyclability.

Besides the obvious advantages such as considerably reduced cleaning effort, minimum consumption of release agent and an excellent, uniform concrete finish (Fig. 10.2), alkus offers substantial ecological benefits.

Substituting plastic for wood saves valuable timber resources. Also, alkus avoids the release of highly toxic dioxin that is released when burning plywood bonded with phenolic resin.

Used or damaged alkus facings can be recycled to produce new facings. They are 100% recyclable and subject to a global return policy.

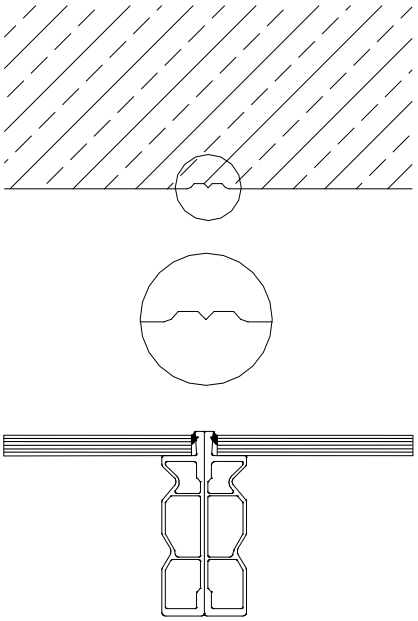


Fig. 10.1 Frame profile with plywood facing – negative impression of the frame in the concrete when using a conventional plywood facing.

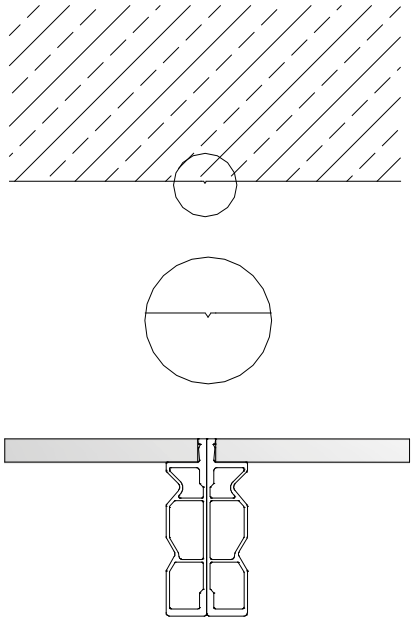


Fig. 10.2 Frame profile with alkus all-plastic facing – smooth and even concrete surface as the profile of the panel frame does not stand proud.

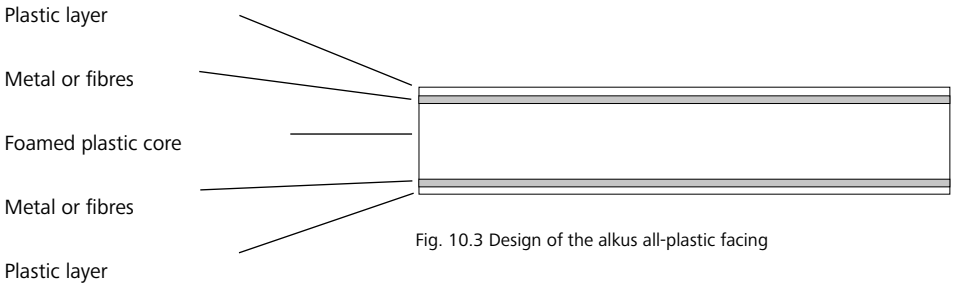


Fig. 10.3 Design of the alkus all-plastic facing

Panel connection

Fast and efficient connection of the panels is accomplished with the EA assembly lock (Fig. 11.1) whether the panels are assembled side by side or on top of each other (height-extended). The assembly lock can be attached at any position on the panel joint between the cross stiffeners to produce a non-positive connection. Since it weighs only 1.5 kg, it can be easily attached with only one hand.

Its five-point contact (Fig. 11.2) draws the panels together and aligns them. Secure connection and perfect alignment are achieved with only a few hammer blows (Fig. 11.1).

Panels are generally connected as follows:

→ For a formwork height of 350 cm with four assembly locks

→ For 300 cm, 270 cm and 250 cm with three assembly locks

→ For 150 cm and 135 cm with two assembly locks

→ When pouring architectural concrete with SB3 quality (German architectural concrete class for immaculate architectural concrete surface), panels that are 250 cm high or higher require an additional assembly lock.

→ Horizontal panel connections generally require two assembly locks.

For the quantity of assembly locks required for outside corners and columns refer to pages AF-25, AF-26 and AF-43.

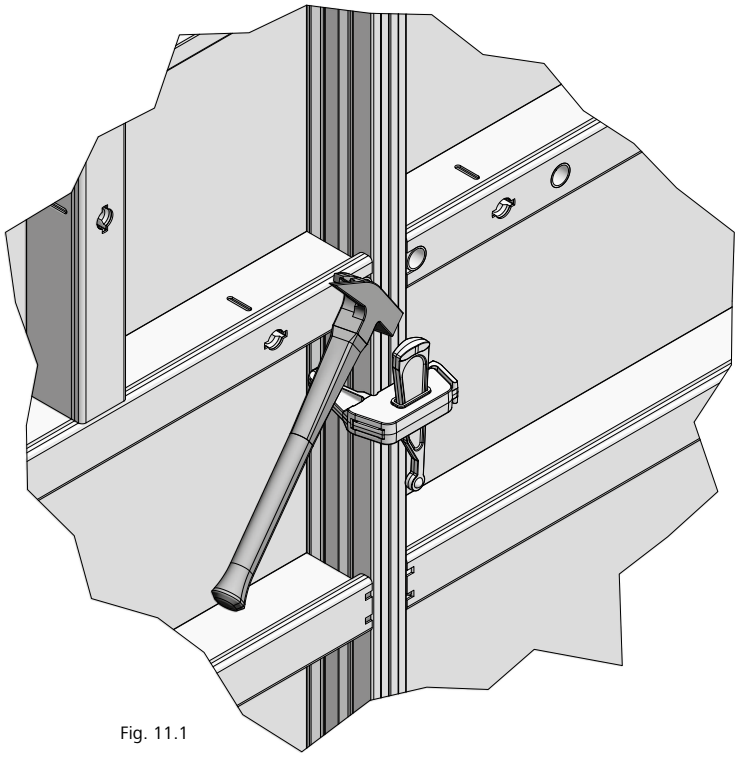


Fig. 11.1

5-point contact

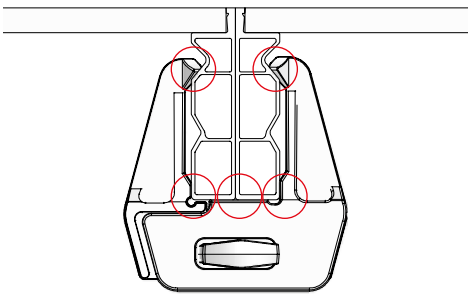


Fig. 11.2 EA assembly lock

Description	Ref. No.
EA assembly lock	**29-205-50**

Panel connection

Connection of the panels:

→ With double groove using the EA assembly lock (Fig. 12.1).

→ With single groove (until 2006) and double groove (from 2006) using the E assembly lock (Fig. 12.2).

→ With single groove (until 2006) using the E assembly lock (Fig. 12.3).

→ With double groove using the E assembly lock (Fig. 12.4). If possible, we recommend the use of the EA assembly lock.

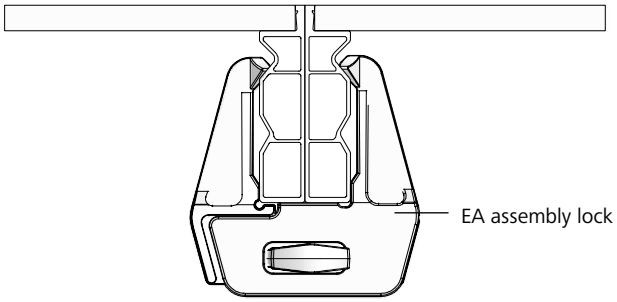


Fig. 12.1

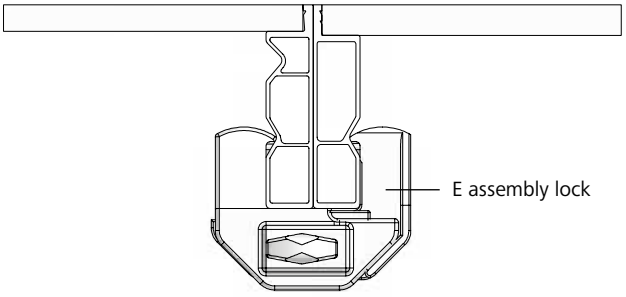


Fig. 12.2

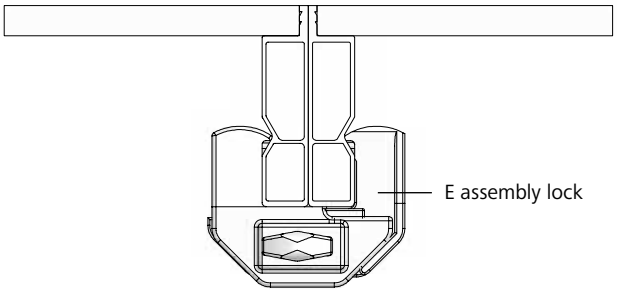


Fig. 12.3

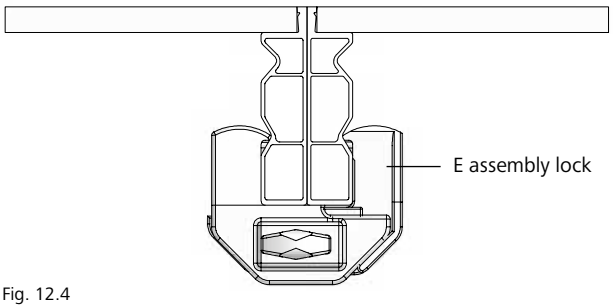


Fig. 12.4

Description	Ref. No.
EA assembly lock	**29-205-50**

Tie holes

The anchor sleeve (Fig. 13.1) for DW 15 tie rods is welded to the frame.

The articulated flange nuts 15/120 can be tightened using a hammer (Fig. 13.2) or easily and without causing damage using the 27 mm ratchet spanner (Fig. 13.3) .

When connecting panels with different widths, always anchor them through the wider panel (Fig. 13.4).

All usable tie holes must be used for tying. Non-usable tie holes must be closed with plug D20.

The offset tie hole in the AluFix panel (panel widths 90 and 75 cm) enables simple tying of horizontal panels for forming foundations (Fig. 13.5).

The alkus facing is closed in the position of the offset tie hole and is drilled with a 21 mm drill if required.

Plug D22 can be used to close the open tie holes in the concrete afterwards.

Attention
When using the panel in upright position it is not allowed to use the offset tie holes.

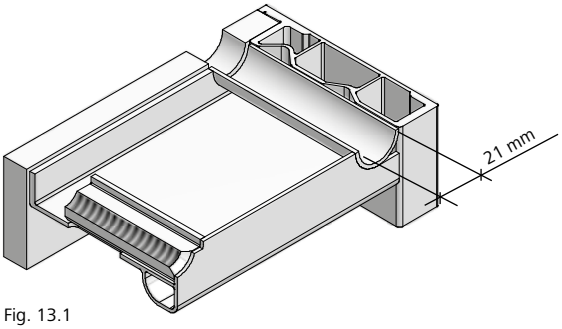


Fig. 13.1

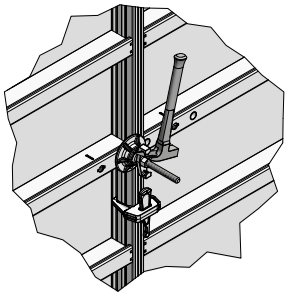


Fig. 13.2

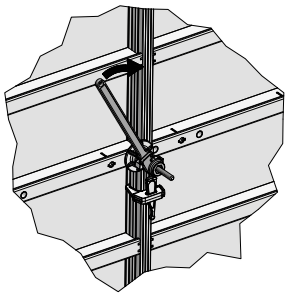


Fig. 13.3

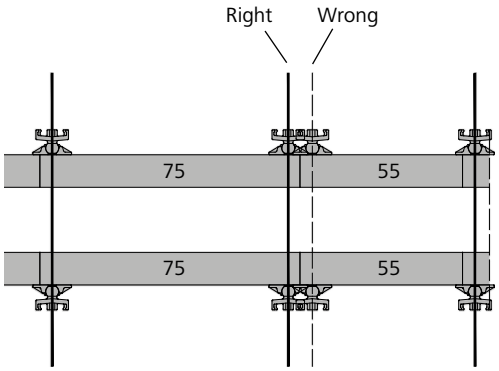


Fig. 13.4

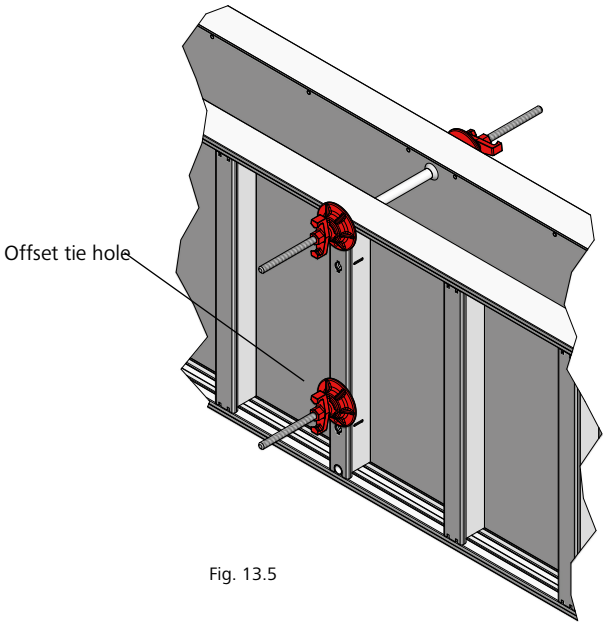


Fig. 13.5

Description	Ref. No.
Tie rod 15/90	**29-900-80**
Plastic tube D22/200	**29-902-30**
Cone for plastic tube D22/10	**29-902-40**
Cone for plastic tube D22/30	**29-902-50**
Plug D22	**29-902-70**
Flange nut 100	**29-900-20**
Articulated flange nut 120	**29-900-10**
Plug D20	**29-902-63**
Spanner size 27	**29-800-10**

Rules for concrete pouring and rate of placing

The maximum permissible fresh-concrete pressures for AluFix are **50 kN/m²** (with alkus facing) and **36 kN/m²** (with multi-layer plywood facing).

Rules for concrete pouring

→ For the rate of placing of walls higher than 2.00 m refer to Table 14.1.

→ According to DIN 4235, concrete should be placed in layers whose thickness can vary from 0.50 m bis 1.00 m.

→ Concrete must not be placed above heights of 1.50 m in free fall.

→ When vibrating the concrete, which is done layer by layer, the vibrator must not penetrate more than 0.50 m into the layer below.

→ A final vibrating step over the overall concrete height is not recommended. It does not provide any advantage, since concrete that has been vibrated once cannot be compacted further. This may result in water bubbles (shrinkage cavities) on the concrete surface.

Rate of placing

The permissible rate of placing can be precisely determined according to DIN 18218:2010-01 by referring to Table 14.1 or using MEVA's online calculation programme available on the MEVA website.

This and other digital aids are available at www.meva.net and in the app MEVA me for iOS and Android.

Note that you cannot use Table 14.1 unless you know the end of setting of the concrete, tE. This value can be determined on-site using MEVA's ultrasonic SolidCheck measuring device or knead-bag tests as described in DIN 18218:2010-01. Or simply ask the concrete supplier for the concrete's end of setting.

Maximum rate of placing v_b (depending on the concrete's consistency and end of setting t_E)* in m/h					
	AluFix (50 kN/m² with AL) (36 kN/m² with BP)	t_E = 5h	t_E = 7h	t_E = 10h	t_E = 15h
Consistency range	F3	2.64	2.12	1.55	0.93
	F4	2.24	1.53	0.90	0.35
	F5	1.00	0.71	0.50	0.33
	F6	0.79	0.56	0.39	0.26
	SCC	0.91	0.65	0.45	0.30

Table 14.1

* According to DIN 18218:2010-01 (fresh-concrete pressure on vertical formwork)

t_E = End of setting of the concrete

v_b = Maximum rate of placing

Specific values of DW 15 tie rods

DW tie rod	15
d_1 (mm)	15
d_2 (mm)	17
Nominal cross section (mm²)	177
Permissible working load according to DIN 18216 (kN)	90
Tie rod elongation when using the permissible working load (mm/m)	2.5

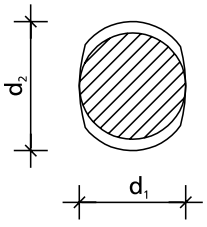


Table 14.2

Flatness of surface

The permissible deflection of formwork parts is defined in DIN 18202,Table 3, lines 5 to 7 (Table 15.1). Here, the maximum permissible deflection is defined in relation to the distance between the measuring points. The permissible fresh-concrete pressures for AluFix that are in line with the flatness tolerances as defined in DIN 18202, Table 3, line 6 are 50 kN/m² (AL) and 36 kN/m² (BP).

The measuring lath is placed on the highest protruding points of the surface and the deflection is measured at the deepest point in-between.

The distance between measuring points corresponds to the distance between the highest protruding points.

DIN 18202, Table 3

Column	1	2	3	4	5	6
		Distances as limiting values in mm for distances between measuring points in m				
Line	Reference	0.1	1*	4*	10*	15*
5	Unexposed walls and undersides of slabs	5	10	15	25	30
6	Exposed walls and undersides of slabs, e.g. plastered walls, panelling, suspended ceilings	3	5	10	20	25
7	Like line 6, but with stricter requirements	2	3	8	15	20

Table 15.1

* Intermediate values can be found in Fig. 15.2 “Flatness tolerances”. Round up values found to full millimetres.

Flatness tolerances of walls and undersides of slabs
(according to DIN 18202, Table 3)

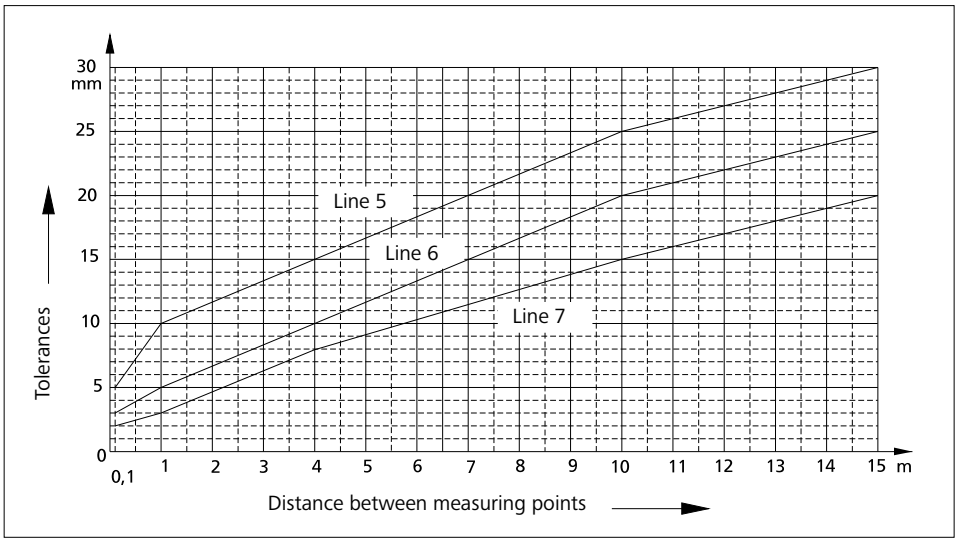


Fig. 15.2

Attachment of accessories

All panels are provided with multi-function profiles with welded-in Dywidag-threaded nuts (Figures 16.1, 16.5 and 16.6). The difference between the multi-function profiles and the cross stiffeners is that the multi-function profiles allow accessories to be attached.

Walkway brackets are provided with integrated self-locking pins (Fig. 16.2) and are mounted on the multi-function profiles and secured with a flange screw 18.

Formwork is set vertically using push-pull props attached to the panel with formwork-prop connectors as shown in Fig. 16.3.

Alignment rails should be attached to the multi-function profiles with flange screws (Fig. 16.4). in order to
- stabilise ganged panels when lifting them by crane
- bridge problem areas
- brace and stabilise the fillers used to bridge gaps between the panels

To secure the tie rods DW together with articulated flange nut to the formwork panel during relocation, the tie rod fixture Ø35 can be used.

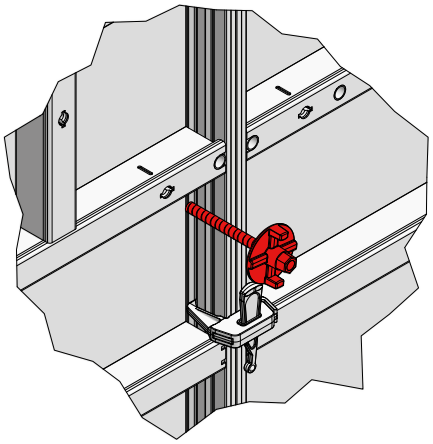


Fig. 16.1

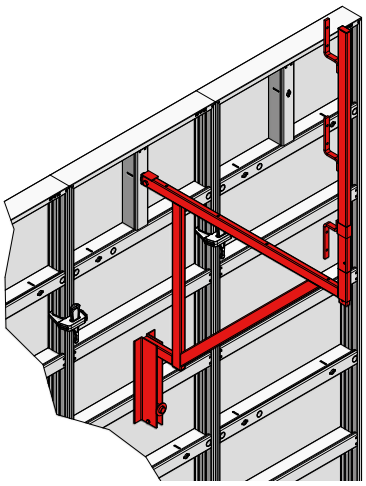


Fig. 16.2

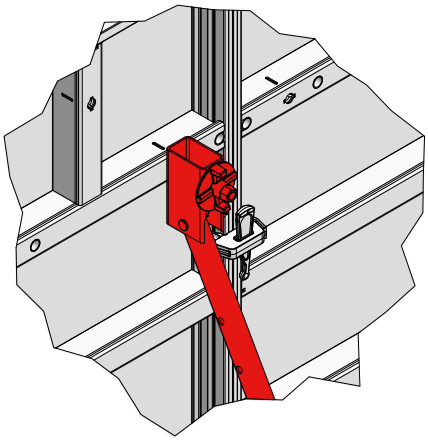


Fig. 16.3

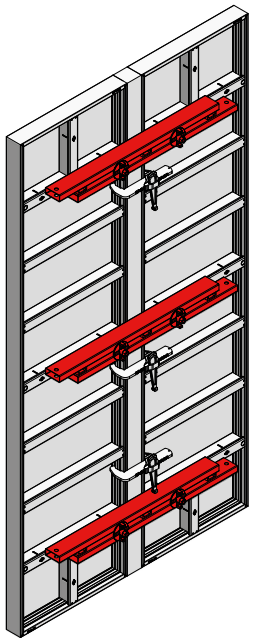


Fig. 16.4

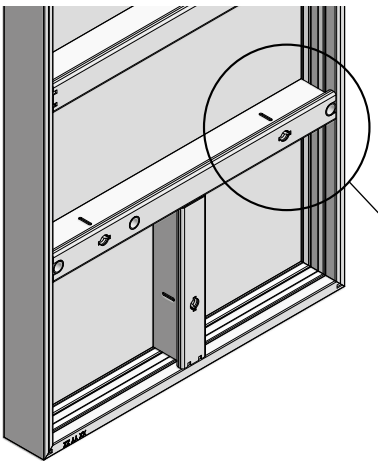


Fig. 16.5

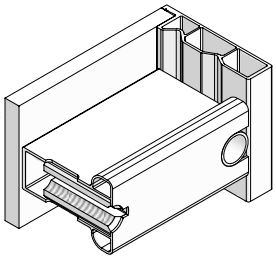


Fig. 16.6

Description	Ref. No.
Walkway bracket 90, galv.	**29-106-00**
Walkway bracket 65	**29-106-15**
Flange screw 18	**29-401-10**
Push-pull prop R 160	**29-109-40**
Push-pull prop R 250	**29-109-60**
Push-pull prop R 460	**29-109-80**
Push-pull prop R 630	**29-109-85**
Formwork-prop connector	**29-804-85**
AS alignment rail 125, galv.	**29-201-75**
AS alignment rail 200, galv.	**29-201-80**
AS alignment rail 50, galv.	**29-201-73**
Tie rod holder Ø35	**29-927-05**

Wall braces

The push-pull props or the brace frame 250 with formwork-prop connector are attached to the panel's multi-function profile with flange screw 18 (Fig. 17.2 and page AF-16).

The brace frame 250 is made up of the push-pull prop R 250, the brace SRL 120, two formwork-prop connectors and the double-jointed foot plate.

If push-pull props or brace frames are only used to align the formwork, we recommend a max. spacing of 4.00 m. In order to withstand wind loads, refer to Table 17.1. For further applications contact MEVA.

Assumptions for Table 17.1

- → Wind loads according to DIN EN 1991-1-4
- → Wind zone 2, inland (mixed profile between terrain categories II & III)
- → Dynamic pressure q_p = 0.65 kN/m²
- → Pressure coefficient used c_p = 1.8
- → Exposure time factor ψ = 0,7
- → Wind pressure w = q_p*c_p* ψ
- → Formwork on upper edge of terrain
- → Values are characteristic values

Wall braces	Formwork height h (m)					
	2.50	2.70	2.85	3.00	3.50	4.85
Push-pull prop	R250+ SRL120	R250+ SRL120	R250+ SRL120	R250+ SRL120	R460+ SRL170	R460+ SRL170
Permissible influence width e (m)	5.72	5.31	5.03	4.62	4.19	2.66
Prevailing brace load F_1 (kN)	5.89	5.89	6.09	5.78	5.99	4.26
Prevailing push-pull prop load F_2 (kN)	11.78	11.79	11.47	11.37	12.11	12.64
Lifting force V_{wind} (kN)	1.94	2.08	2.18	2.36	2.65	4.25
Prevailing dowel force V_{dowel} (kN)	14.19	14.18	14.18	14.32	14.08	14.63
H_{dowel} (kN)	11.73	11.74	11.72	11.37	12.03	10.56
a (m)*	0.32	0.32	0.32	0.40	0.34	1.03
b (m)**	1.28	1.40	1.48	1.52	1.85	2.23

Table 17.1

* Upper pivot point a, distance measured between top edge of formwork and attachment point of the upper formwork-prop connector

** Distance to the foot plate b, measured from the rear edge of the formwork to the attachment of the foot plate

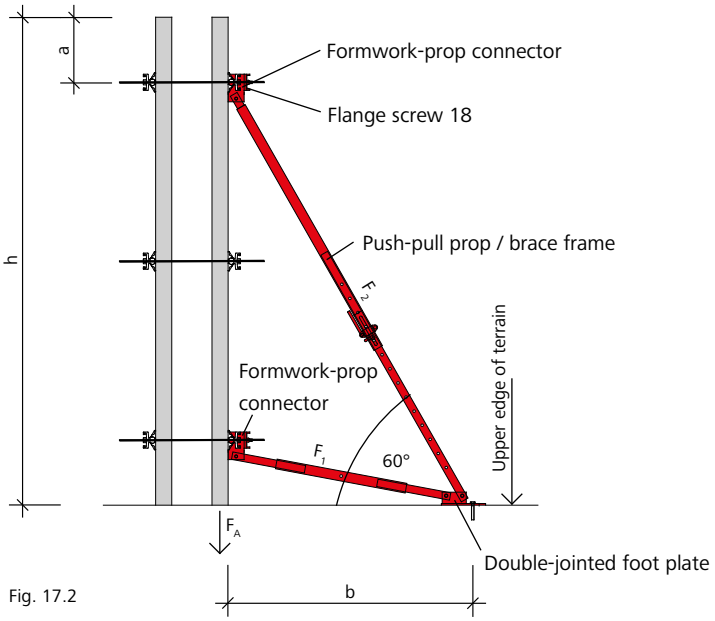


Fig. 17.2

Description	Ref. No.
Braces SRL	
SRL 120	**29-108-80**
SRL 170	**29-108-90**
Push-pull props R	
R 160	**29-109-40**
R 250	**29-109-60**
R 460	**29-109-80**
R 630	**29-109-85**
Formwork-prop connector	**29-804-85**
Brace frame 250 with formwork-prop connector	**29-109-20**
Flange screw 18	**29-401-10**
Double-jointed foot plate	**29-402-32**

Note:
A restraint mechanism is required when the lifting force F_A = 1.5 x V_{Wind} -0.9 x G x h > 0.
G = weight per unit area of the formwork (including platforms)

Wall braces

The brace is attached to the double-jointed foot plate (Fig. 18.1) using MEVA quick anchors or anchor bolt, for example.

The permissible influence width of the bracing (e) can be reduced at the edge of the formwork as shown in Fig. 18.2.

→ e = permissible influence width (see Table 17.1)

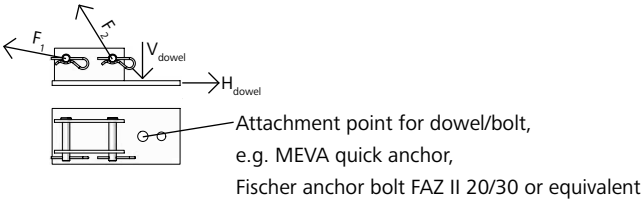


Fig. 18.1 Double-jointed foot plate

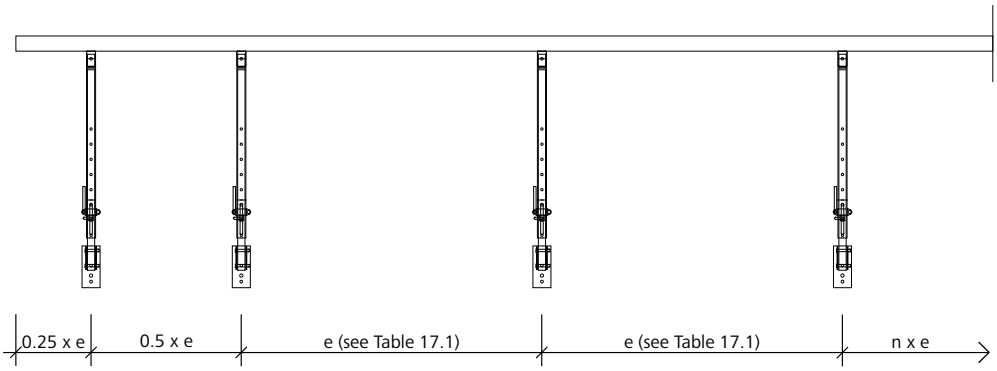


Fig. 18.2

Description	Ref. No.
Double-jointed foot plate.....	**29-402-32**
Quick anchor	**29-922-70**

Workplaces

The fall height of workplaces must not exceed 2.00 m in accordance with DIN 12811-1.

According to DIN 12811-1 the design of the working scaffold must be as shown in Fig. 19.1. Note that this regulation is valid for Germany. Always observe the federal, state and local regulations of the country where the formwork is used.

Note
Minimum cross section of handrail and midrail: for a post spacing up to 2.00 m: 15 x 3 cm For a post spacing of up to 3.00 m: 20 x 4 cm (Fig. 19.1) or scaffold tube 48 mm.

We recommend the use of safety meshes. They are a quick and safe method to provide fall protection (Fig. 19.2).

Attention
When using our products, the federal, state and local codes and regulations must be observed.

Working scaffold according to DIN 4420, Part 1

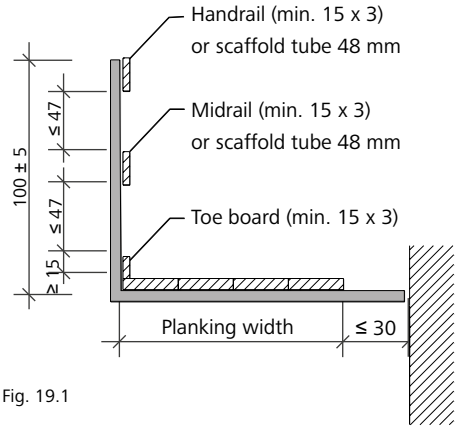


Fig. 19.1

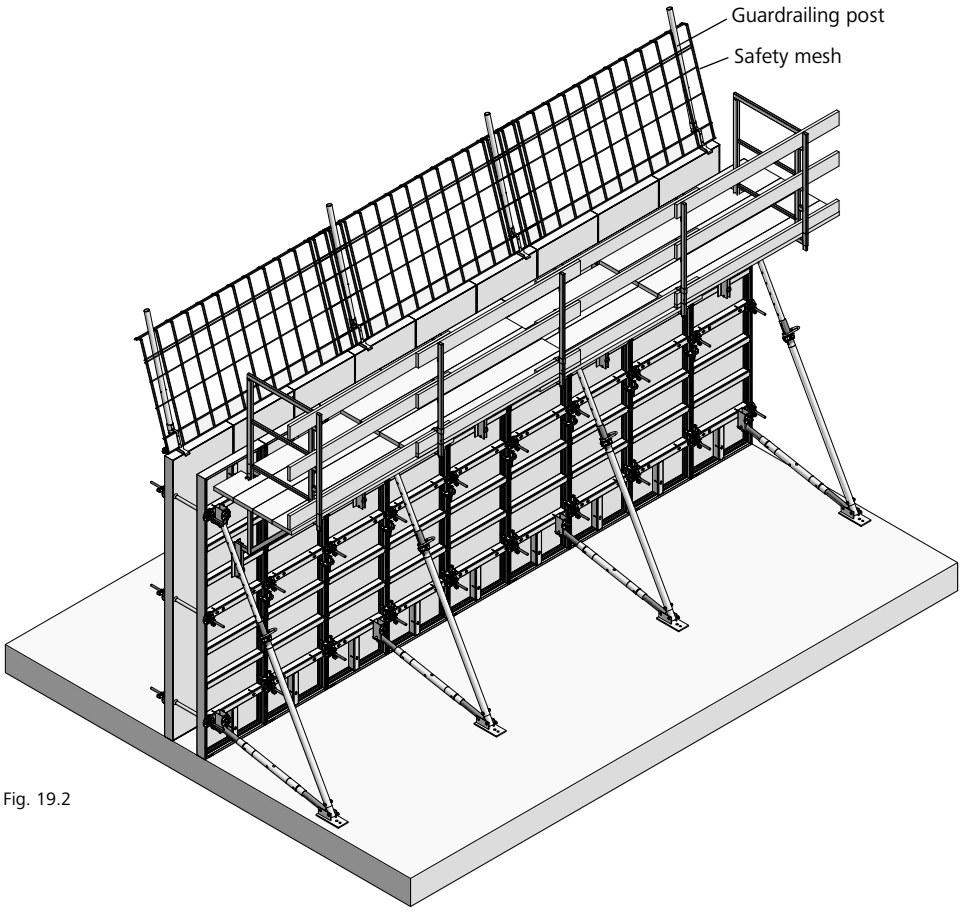


Fig. 19.2

Workplaces – Walkway bracket

Walkway bracket

The pluggable walkway brackets 90 (Fig. 20.1) and 65 (Fig. 20.2) are hooked into the multi-function nut by rotating them though 45° and then back to the vertical position.

To prevent it slipping during relocation, the walkway bracket 90 can be fixed to the multi-function profile below using a flange screw 18 that must be ordered separately. To prevent slipping when using the walkway bracket 65, the sliding part is placed over the cross stiffener of the panel.

The walkway brackets can be used on both horizontal and vertical panels.

The planks can then be bolted to the brackets. Maximum bracket spacing for a load of 150 kg/m² (scaffold group 2): 2.50 m according to DIN 12811-1. The minimum thickness of the planks is 4.5 cm and their minimum width is 24 cm.

Guardrailing posts and side railing

The guardrailing posts (Figures 20.3 and 20.4) are inserted into the walkway brackets. If the fall height exceeds 2.00 m, a side railing (Fig. 20.5) is required. Note that this regulation is valid for Germany.

Always observe the federal, state and local regulations of the country where the formwork is used. It can be used with the walkway bracket 90.

The guardrailing post 48/120 UK can be used to allow scaffold tubes to be installed as a fall protection measure. These guardrailing posts are made of round tube with a diameter of Ø 48 mm. Swivel-joint couplers for the scaffold tubes are attached to the guardrailing posts. The round guardrailing posts are inserted into the walkway brackets with their rectangular adapters (Fig. 20.4).

We recommend the use of safety meshes with guardrailing posts 48/120 UK. They are quick and safe method to provide fall protection.

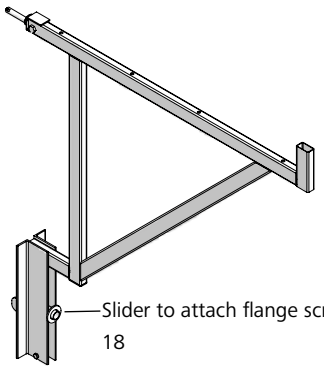


Fig. 20.1 Walkway bracket 90

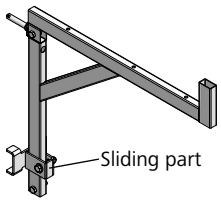


Fig. 20.2 Walkway bracket 65

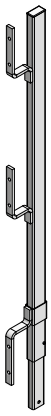


Fig. 20.3
Guardrailing post 100 or 140

Fig. 20.4
Guardrailing post 48/120 UK

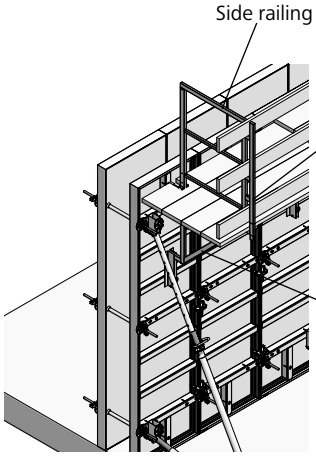


Fig. 20.5 Side railing

Description	Ref. No.
Walkway bracket 90	**29-106-00**
Walkway bracket 65	**29-106-15**
Flange screw 18	**29-401-10**
Guardrailing post 100	**29-106-75**
Guardrailing post 140	**29-106-85**
Guardrailing post 48/120 UK	**29-106-80**
Side railing 90/100	**29-108-20**
Swivel-joint coupler 48/48	**29-412-52**
Scaffold tube 48/200	**29-412-23**
Scaffold tube 48/300	**29-412-26**
Scaffold tube 48/400	**29-412-27**
Scaffold tube 48/500	**29-412-25**
Scaffold tube 48/600	**29-412-28**

Workplaces – Ladder fixture for wall formwork

The ladder fixture for wall formwork enables a ladder or an extension ladder to be firmly attached to the horizontal or vertical wall formwork panel and thus ensures safe access to the working scaffold, e.g. to the walkway bracket.

The upper ladder fixture for wall formwork is attached to a multi-function nut of the formwork panel with the integrated flange screw. This is used to hook on the ladder. The integrated safety lever prevents the ladder lifting out accidentally.

The lower ladder fixture for wall formwork is attached to the bottom of the wall formwork panel with the integrated flange screw. It is used to secure the ladder.

Both the ladder and the extension ladder can be equipped with a safety cage.

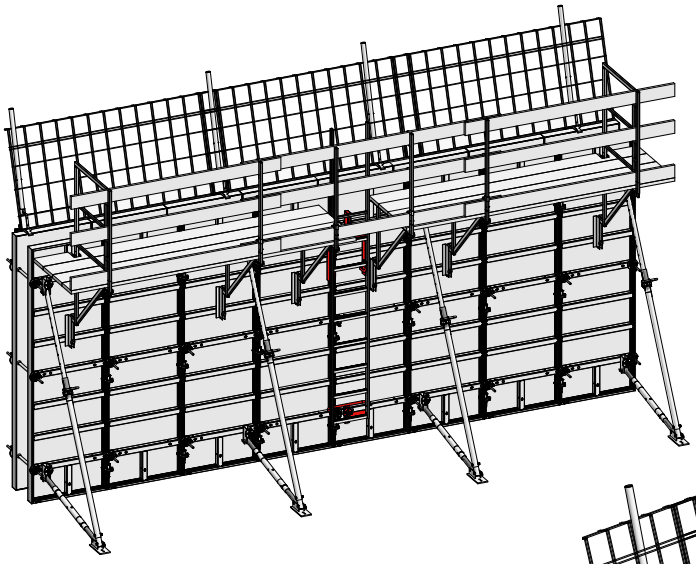


Fig. 21.1

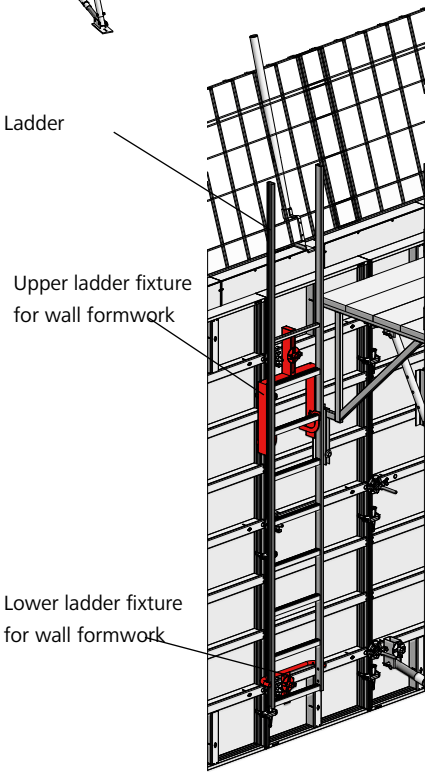


Fig. 21.3

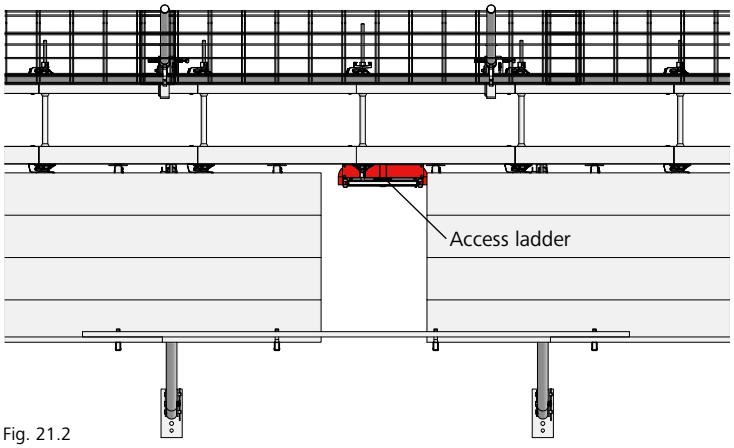


Fig. 21.2

Description	Ref. No.
Ladder fixture for wall formwork	
upper	**29-416-82**
lower	**29-416-84**
Ladder 348	**29-414-50**
Ladder 318	**29-414-55**
Ladder 243	**29-416-50**
Extension ladder 270	**29-416-52**
Extension ladder 210	**29-414-60**
Extension ladder 120	**29-416-55**
Extension ladder 90	**29-416-60**
Extension ladder 60	**29-416-62**
Ladder connector	**29-414-70**
Safety cage 210	**29-414-85**
Safety cage 85	**29-414-90**
Safety cage 40	**29-416-90**

Working scaffolds – Tilting bracket 23

An additional fall protection device on the opposite side of the working scaffolds, i.e. on the other side of the formwork, is required for heights above 2.00 m. Note that this regulation is valid for Germany. Make sure to observe the federal, state and local regulations of the country where the formwork is used.

The tilting bracket 23 (Fig. 22.1) is designed for the MEVA wall formwork systems AluFix and EcoAs and is used to attach MEVA guardrailing posts to create a fall protection system.

It is attached to the panel's frame profile with the integrated wedge (Fig. 22.2).

MEVA guardrailing posts 100, 140 and 48/120 UK can be connected to the bracket.

The tilting bracket can be turned so that it is vertical to facilitate the installation of safety meshes or railing boards. It can also be tilted by 15° to create sufficient room for the concrete bucket (Fig. 22.2).

One guardrailing post per bracket must be ordered separately.

Plug-in support for:
MEVA guardrailing posts 100, 140 and 48/120 UK

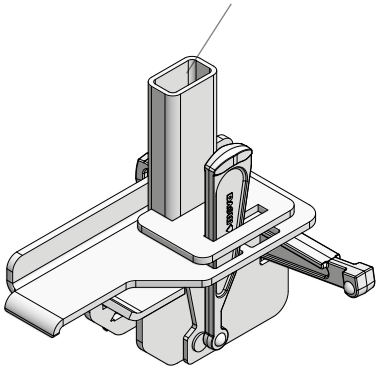


Fig. 22.1

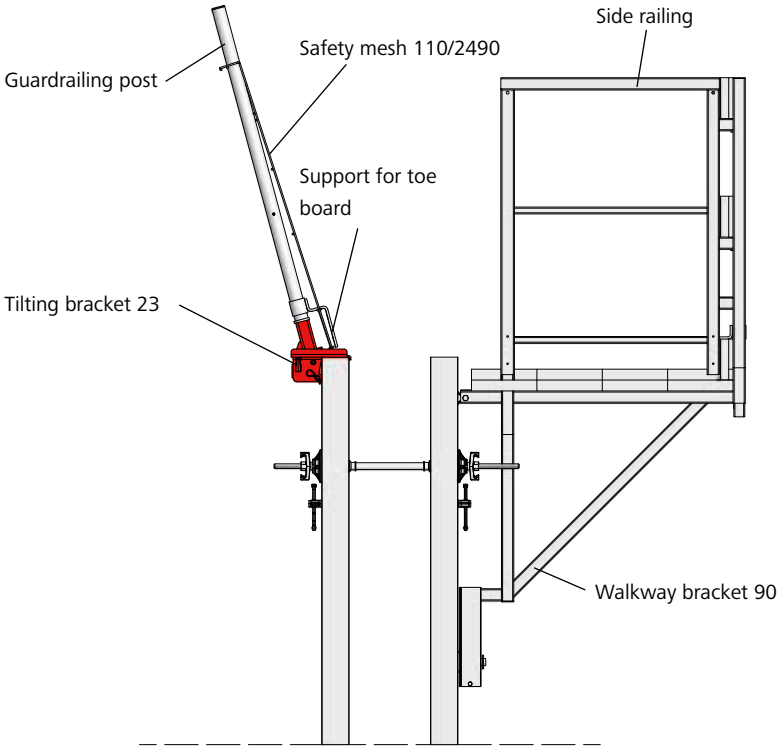


Fig. 22.2

Description	Ref. No.
Tilting bracket 23	**29-920-84**
Guardrailing post 100	**29-106-75**
Guardrailing post 140	**29-106-85**
Guardrailing post 48/120 UK	**29-106-80**
Safety mesh 1100/2490	**29-920-00**

Crane hook

The permissible load of an EA/AF crane hook (Fig. 23.1) is 600 kg.

Handling

1. Open the safety lever as far as possible.
2. Push the crane hook over the panel profile until the claw engages completely in the groove.
3. Release the safety lever and press it back to its start position so that the crane hook is locked completely.

Attention

Always use two crane hooks, even when moving single panels. Always attach the crane hooks symmetrically to the centre of gravity
(Figures 23.3 and 23.4).

When moving single horizontal panels, both crane hooks must be attached at the centre of gravity over the cross stiffeners of the profile (Fig. 23.3). When moving several panels at once, make sure each crane hook is attached at a panel joint to prevent the crane hook slipping (Fig. 23.5).

When to replace the crane hook

If the reference dimension exceeds 24 mm, the crane hook must be replaced immediately. This also applies if only one side of the hook exceeds this dimension (Fig. 23.2).

Safety check

Always check the crane hook before use. Do not overload the crane hook. Exceeding the permissible loading can result in excessive elongation and thus permanent deformation. A damaged crane hook is not capable of supporting the full load and its safe use can no longer be guaranteed.

Safety regulations

When using our products, the federal, state and local codes and regulations must be observed.

Also observe the operating instructions delivered with the crane hook.

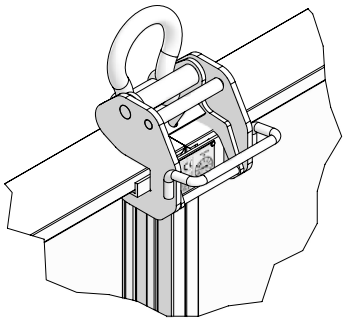


Fig. 23.1

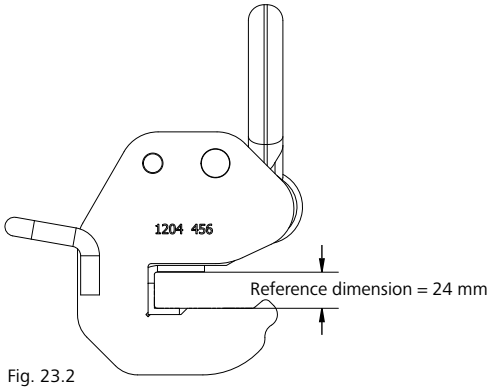


Fig. 23.2

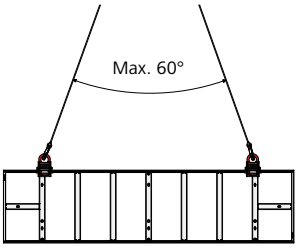


Fig. 23.3

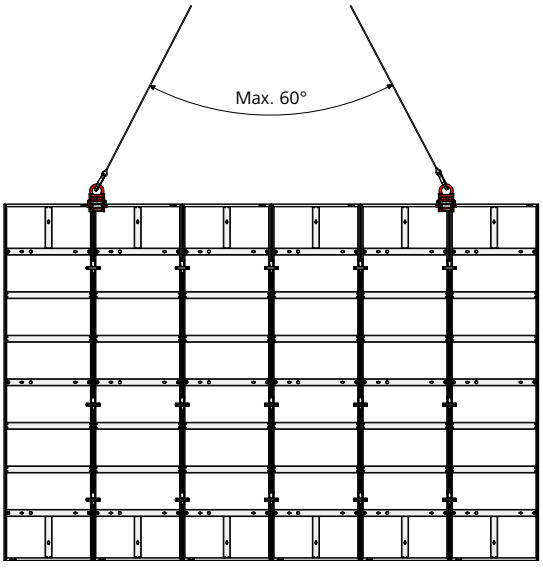


Fig. 23.5

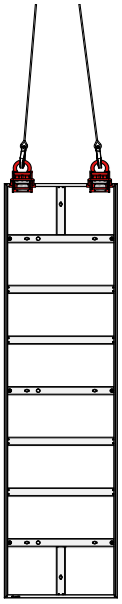


Fig. 23.4

Description	Ref. No.
EA/EF crane hook.....	**29-103-05**

Inside corner 90°

The AluFix inside corner (AluFix AL-IC) is equipped with the alkus all-plastic facing and is connected using assembly locks like a standard panel (Fig. 24.1). The side length of the inside corner´ is 20 cm (Fig. 24.3).

Wood fillers are always placed on the outer wall of the corner when using AluFix (Fig. 24.2). The connection is made by means of Uni-assembly locks. Number of assembly locks (see page AF-11).

When using wood fillers, an AS alignment rail is required at every tie hole level to provide rigidity (Fig. 24.2).

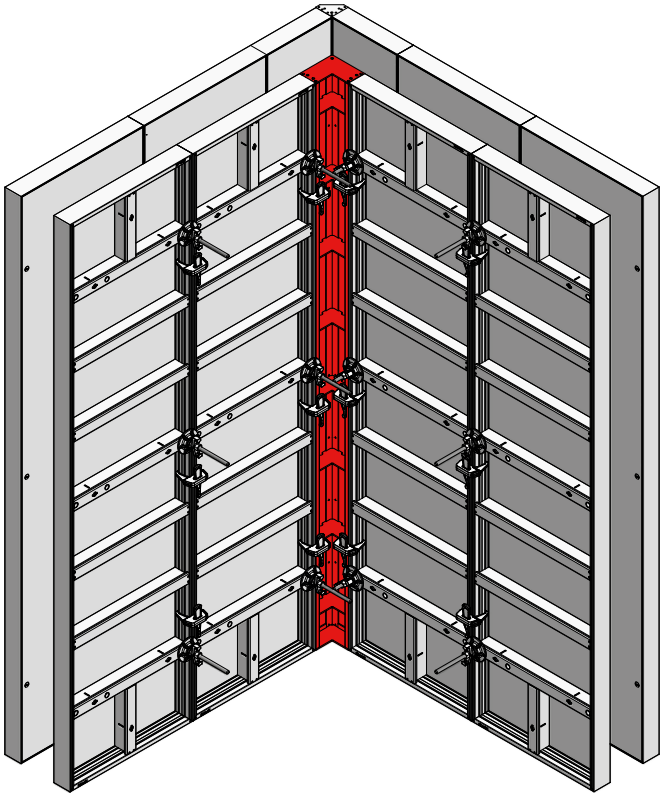


Fig. 24.1

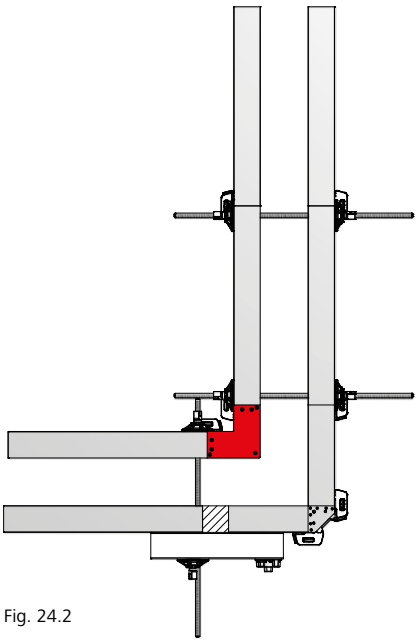


Fig. 24.2

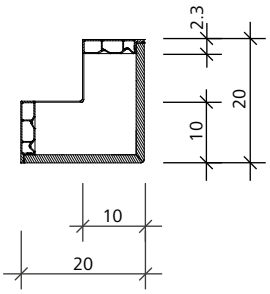


Fig. 24.3

Description	Ref. No.
AluFix AL-IC	
350/20	**22-154-05**
300/20	**22-154-10**
270/20	**22-154-15**
250/20	**22-154-25**
150/20	**22-154-30**
135/20	**22-154-35**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
RS assembly lock	**23-807-70**

Outside corner 90°

The aluminium AluFix outside corner (AluFix OC) with a high-quality cured powder coating (Fig. 25.1) together with the AluFix-AL panels and the EA assembly lock results in a solid 90° outside corner solution (Figures 25.2 and 25.3).

The width 1 of the panel adjoining the outside corner 90° (Fig. 25.2) is calculated as follows: wall thickness + 20 cm.

The number of EA assembly locks to be used at the panel joints a, b and c depends on the panel height as specified in Table 25.4.

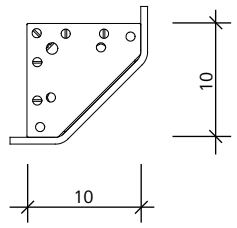


Fig. 25.1

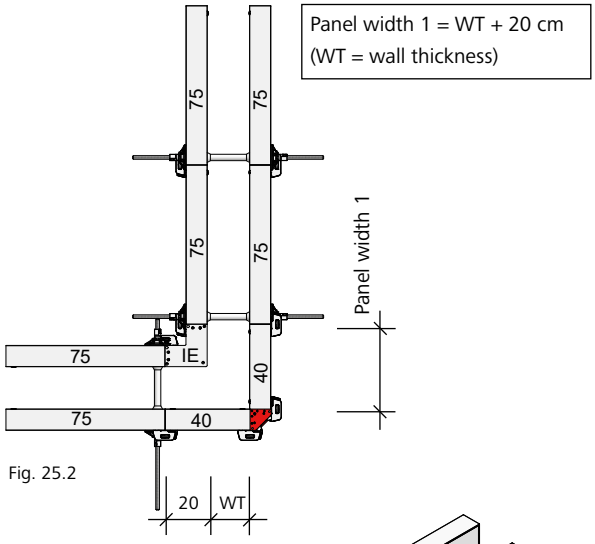


Fig. 25.2

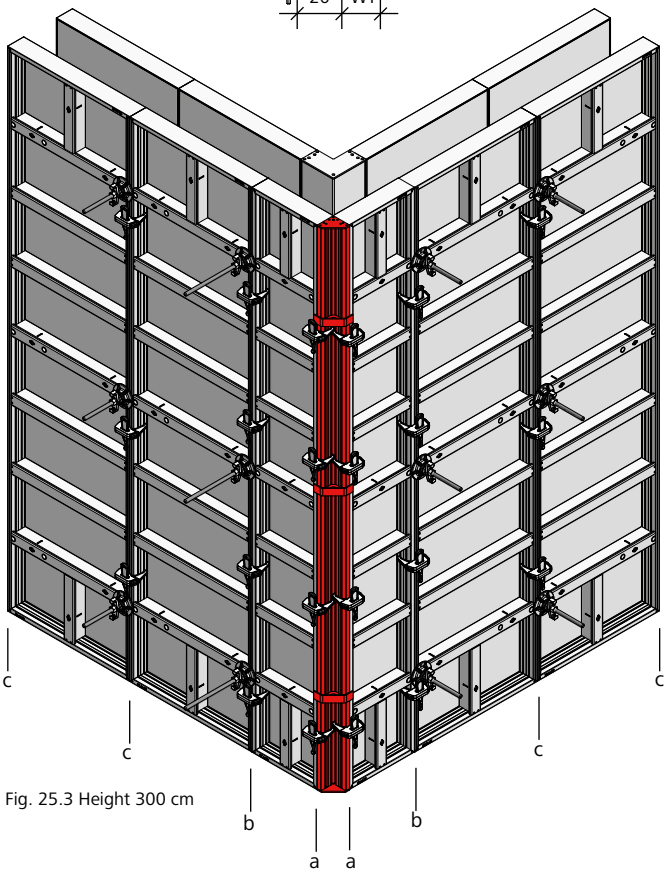


Fig. 25.3 Height 300 cm

Panel height (in cm)	Number of assembly locks		
	(a)	(b)	(c)
350	5	4	4
300	4	4	3
270	4	3	3
250	4	3	3
150	3	2	2
135	2	2	2

Table 25.4

Description	Ref. No.
AluFix OC	
350	**22-150-01**
300	**22-150-02**
270	**22-150-03**
250	**22-150-06**
150	**22-150-12**
135	**22-150-14**

Height-extended 90° outside corner

For height-extended AluFix outside corners (Fig. 26.1) attention must be paid to the number of assembly locks required in accordance with the pouring height according to Table 26.2.

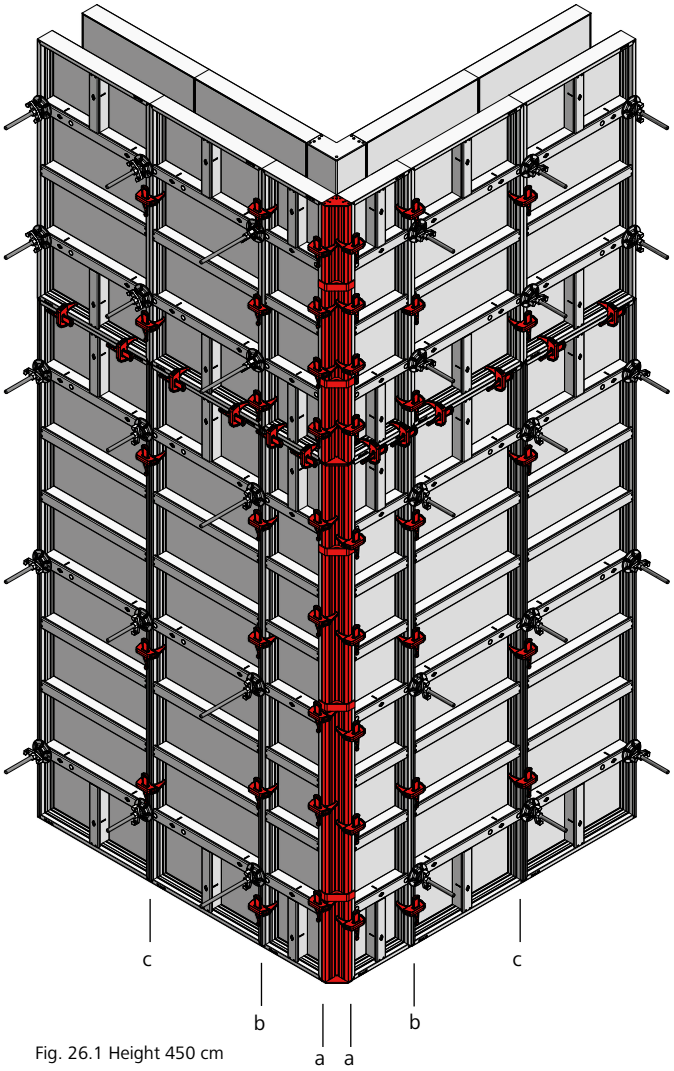


Fig. 26.1 Height 450 cm

Panel height (in cm)	Number of assembly locks		
	(a)	(b)	(c)
400	8	6	5
450	9	7	6
600	11	9	7

Table 26.2

Hinged corners

Corners with 80°–120°

Acute and obtuse angled corners are formed using hinged outside corners (HOC) and hinged inside corners (HIC) (Fig. 27.1).

At the outside corner, alignment rails must be attached to the multi-function profiles with flange screws. For the number of assembly locks required at the outside corner refer to pages AF-25 and AF-26.

If the inside angle is greater than 100°, alignment rails and a wooden blocking are also required on the inside (Fig. 27.1).

Timber fillers and Uni-assembly locks (double groove) or E-Uni-assembly locks (single groove) are used for length compensation.
Side length of inside corner: 20 cm

Adjustment ranges:
Hinged inside corners 80°–180°
Hinged outside corners 0°–120°.
This results in an adjustment range of 80° to 120°.
The timber fillers required in accordance with the wall thickness, inside angle and panel width are specified in Table 27.2.

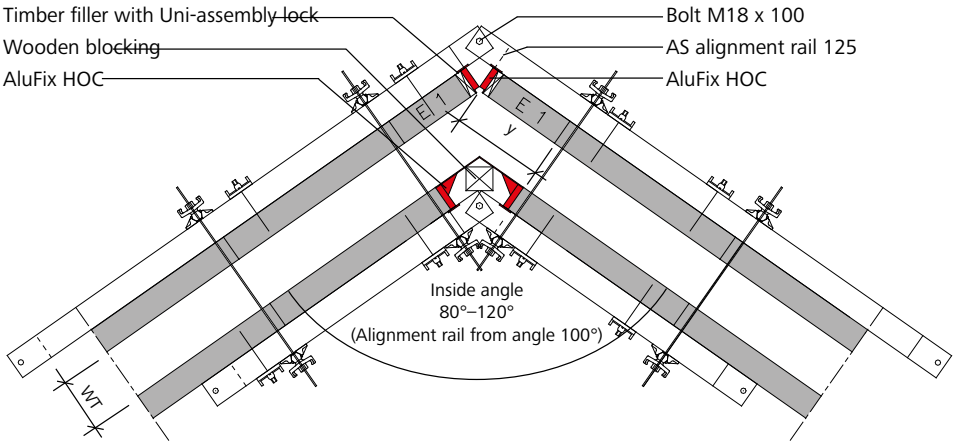


Fig. 27.1

Equation to determine the width of the residual gap y (cm):

Equation to calculate the width $y = \frac{WS}{\tan \frac{\alpha}{2}} + 20\ cm$

y = panel width E1 + wooden blocking

Wall thickness (WT) in cm	Inside angle α in °	Y in cm	Panel E 1 in cm	Filler width in cm
15	80 – 90	38.0 – 35.0	25	13.0 – 10.0
	91 – 113	34.7 – 30.0	25	9.7 – 5.0
	114 – 120	29.7 – 28.7	25	4.7 – 3.7
16	80 – 94	39.0 – 35.0	25	14.0 – 10.0
	95 – 116	34.7 – 30.0	25	9.7 – 5.0
	117 – 120	29.8 – 29.2	25	4.8 – 4.2
18	80 – 84	41.5 – 40.0	40	1.5 – 0.0
	85 – 100	39.6 – 35.0	25	14.6 – 10.0
	101 – 120	34.8 – 30.4	25	9.8 – 5.4
20	80 – 90	43.8 – 40.0	40	5.0 – 0.0
	91 – 106	39.7 – 35.0	25	14.7 – 10.0
	107 – 120	34.8 – 31.5	25	9.8 – 6.5
25	80 – 90	49.8 – 45.0	40	9.8 – 5.0
	91 – 103	44.6 – 40.0	40	4.6 – 0.0
	104 – 118	39.6 – 35.0	25	14.6 – 10.0
	119 – 120	34.7 – 34.4	25	9.7 – 9.4

Table 27.2

Description	Ref. No.
AluFix HIC 150	**22-151-90**
AluFix HIC 135	**22-151-92**
AluFix HOC 150	**22-151-70**
AluFix HOC 135	**22-151-72**

Hinged corners

Corners with 95°–180°
Obtuse-angled corners can also be formed using two hinged inside corner (HIC).

We recommend that the alignment rail is secured with flange screws 18 before installing the tie rods (Fig. 28.1). Adjustment range 95° to 180°.

The timber fillers required in accordance with the wall thickness and inside angle are specified in Table 28.2.

For the number of assembly locks required at the outside corner refer to pages AF-25 and AF-26.

The usual wall thicknesses generally require solutions with an additional filler E 1.
Adjustment ranges:
Hinged inside corners, used as inside corners
80°– 180°
used as outside corners
95°– 180°
This results in an adjustment range of 95° to 180°.

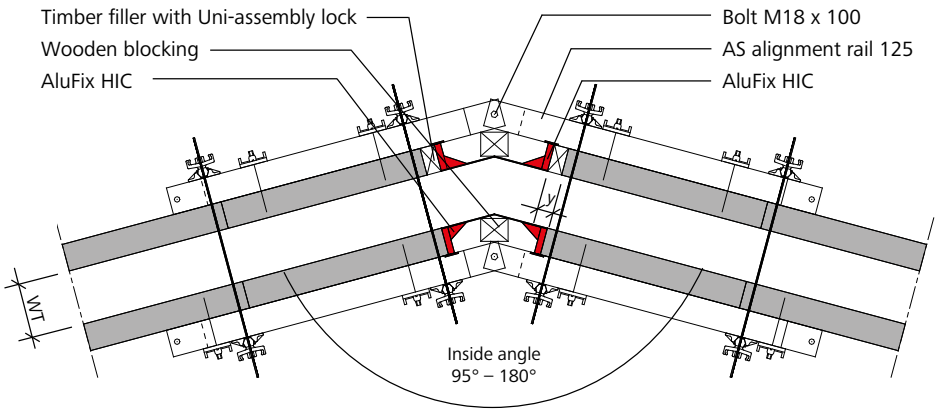


Fig. 28.1

Equation to determine the width of the residual gap y (cm):

Equation to calculate the width y =

$$y = \frac{WS}{\tan \frac{\alpha}{2}} + 0\ cm$$

y = panel width E1 + wooden blocking

Wall thickness (WT) in cm	Inside angle α in °	Y in cm	Panel E 1 in cm	Filler width in cm
15	95 – 113	13.7 – 10.0	-	13.7 – 10.0
	114 – 143	9.7 – 5.0	-	9.7 – 5.0
	144 – 180	4.8 – 0.0	-	4.8 – 0.0
16	95 – 116	14.7 – 10.0	-	14.7 – 10.0
	117 – 145	9.8 – 5.0	-	9.8 – 5.0
	146 – 180	4.9 – 0.0	-	4.9 – 0.0
18	95 – 100	16.5 – 15.0	-	16.5 – 15.0
	101 – 122	14.8 – 10.0	-	14.8 – 10.0
	123 – 149	9.7 – 5.0	-	9.7 – 5.0
	150 – 180	4.8 – 0.0	-	4.8 – 0.0
20	95 – 106	18.3 – 15.0	-	17.0 – 15.0
	107 – 127	14.8 – 10.0	-	14.8 – 10.0
	128 – 152	9.8 – 5.0	-	9.8 – 5.0
	153 – 180	4.8 – 0.0	-	4.8 – 0.0
25	95 – 102	22.9 – 20.0	-	22.9 – 20.0
	103 – 118	19.9 – 15.0	-	17.0 – 15.0
	119 – 136	14.7 – 10.0	-	14.7 – 10.0
	137 – 157	9.8 – 5.0	-	9.8 – 5.0
	158 – 180	4.8 – 0.0	-	4.8 – 0.0

Table 28.2

Description	Ref. No.
AluFix HIC	
150	**22-151-90**
135	**22-151-92**

Stripping corners

The AluFix stripping corners (SC) 350, 300, 270, 250, 150 and 135 (Fig. 29.1) allow the shaft formwork to be removed from the poured shaft walls, for example, safely and quickly without damaging the walls or formwork.

The stripping corner is a three-piece design to permit inward movement of the lateral parts (Fig. 29.5).

The side length is 25 cm.

After pouring and when the concrete has set sufficiently, all stripping corners are activated (page AF-30) and the entire formwork can be lifted out of the shaft as one single unit with a 4-rope crane sling and four EA/AF crane hooks. There is no need to disassemble the formwork.

A 24 mm ratchet/spanner and the AluFix SC tool are required to open and close the AluFix stripping corners.

Note

→ The stripping corner's hexagon-head bolts must be firmly tightened using a 24 mm spanner before pouring the concrete.

→ Before pouring, cover the joints on the sides of the stripping corner with adhesive tape to make it easier to clean.

→ Make sure the entire formwork is completely removed from the poured walls before lifting it by crane.

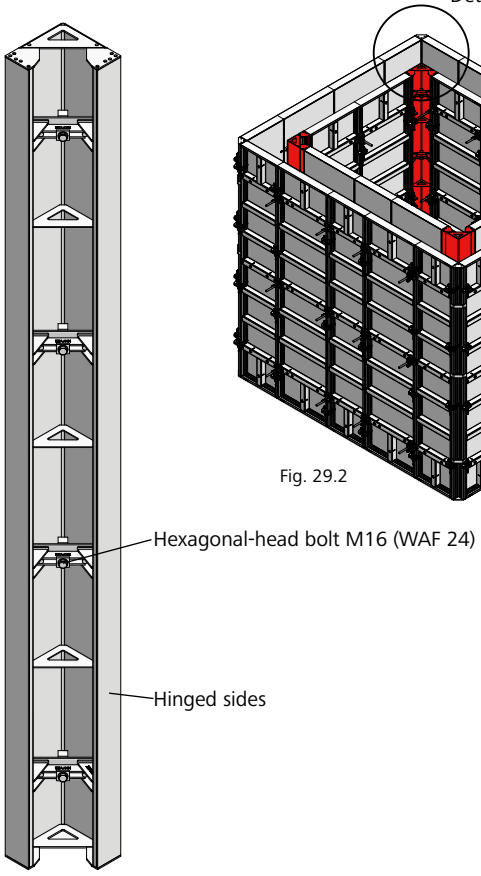


Fig. 29.1

Fig. 29.2

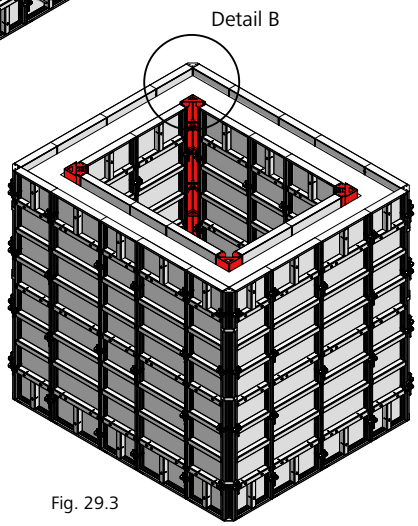


Fig. 29.3

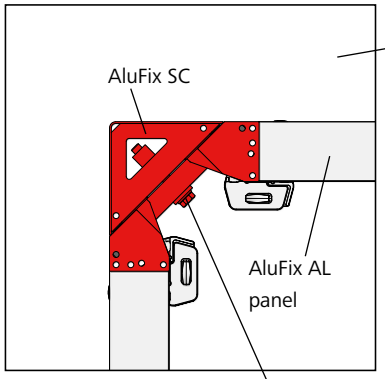


Fig. 29.4 – Detail A

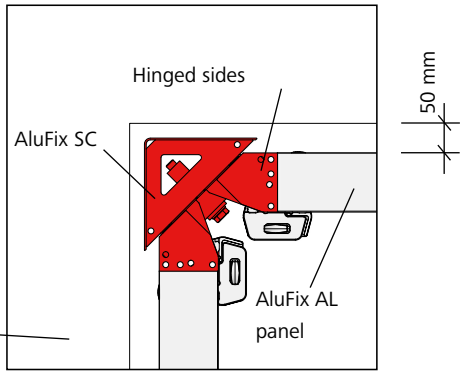


Fig. 29.5 – Detail B

Hexagonal-head bolt M16 (WAF 24)

Description	Ref. No.
AluFix SC	
350/25	**22-151-00**
300/25	**22-151-10**
270/25	**22-151-12**
250/25	**22-151-15**
150/25	**22-151-20**
135/25	**22-151-25**
Adhesive tape 50 m, red	**41-912-10**
EA/EF crane hook	**29-103-05**

Stripping corners

A 24 mm ratchet/spanner (Fig. 30.4) and the AluFix SC tool (Fig. 30.2) are required to open the AluFix stripping corner.

The AluFix SC tool is attached at the joints of the AluFix stripping corner using the integrated wedges at approximately the height of the tie holes in the AluFix panels.

For the number of AluFix SC tools refer to Table 30.3

Steps

1. Undo all hexagonal-head bolts with a 24 mm ratchet/spanner (Fig. 30.4).
2. Rotate the spindles of all SC tools evenly at one corner until the formwork panels have moved inwards by about 50 mm.
3. Attach four EA/AF crane hooks to the four sides of the shaft formwork panels and lift up the formwork using a 4-rope crane sling.

Note

→ The maximum permissible total weight of the complete shaft formwork is 12 kN (1.2 tons). If the total weight exceeds 12 kN (1.2 tons), a transport spreader must be used.

→ Make sure the entire formwork is completely removed from the poured walls before lifting it by crane.

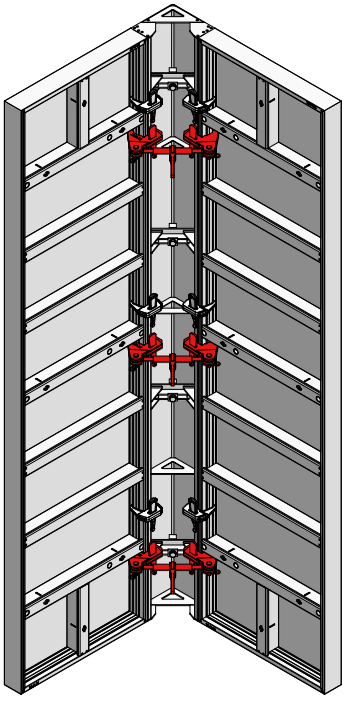


Fig. 30.1

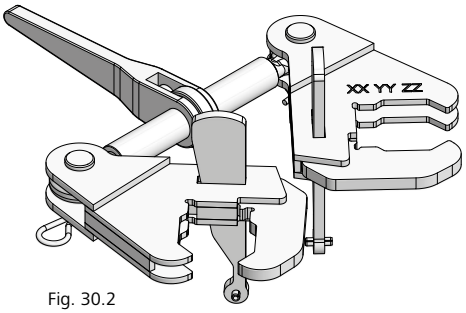


Fig. 30.2

Panel height (in cm)	Number of AluFix SC tools per corner
135	2
150	2
250	3
270	3
300	3
350	4

Table 30.3

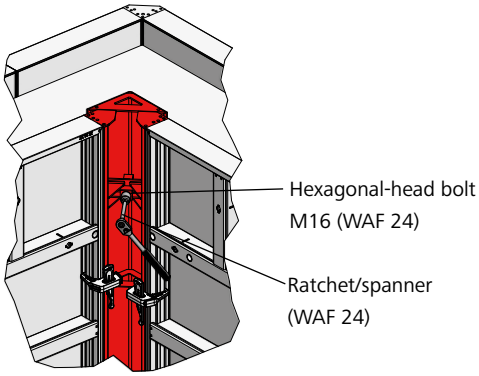


Fig. 30.4

AluFix stripping corner with tool in the pouring position

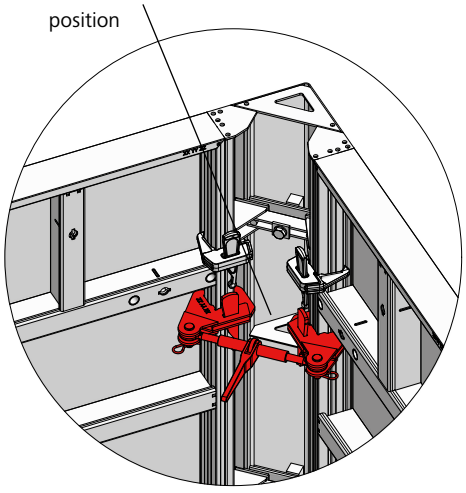


Fig. 30.5

AluFix stripping corner with tool after activation

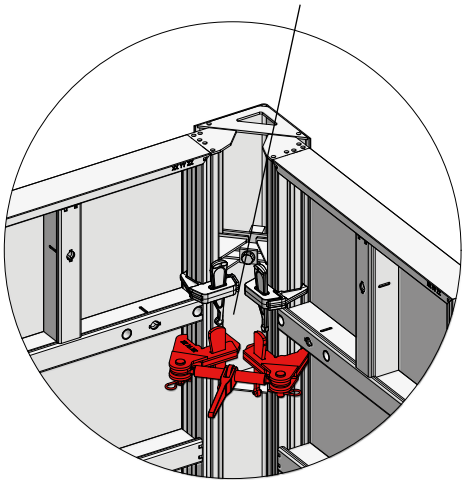


Fig. 30.6

Description	Ref. No.
AluFix SC	
350/25	**22-151-00**
300/25	**22-151-10**
270/25	**22-151-12**
250/25	**22-151-15**
150/25	**22-151-20**
135/25	**22-151-25**
AluFix SC tool	**29-306-15**
EA/EF crane hook	**29-103-05**

Stripping corners

The AluFix stripping corner can also be used as a stripping support for panels between corners inside a room. In this case, the stripping corner is used to reduce the tension between the panels so that they can easily be removed from the poured wall between the corners.

Steps

1. Remove the EA assembly locks connecting the stripping corners to the panels (Fig. 31.1).
2. Undo the hexagonal-head bolts on the stripping corners with a 24 mm spanner.
3. Pull the hinged sides of the stripping corners inwards (Fig. 31.2)
3. Lift the stripping corners upwards, then strip the panels (Fig. 31.3).

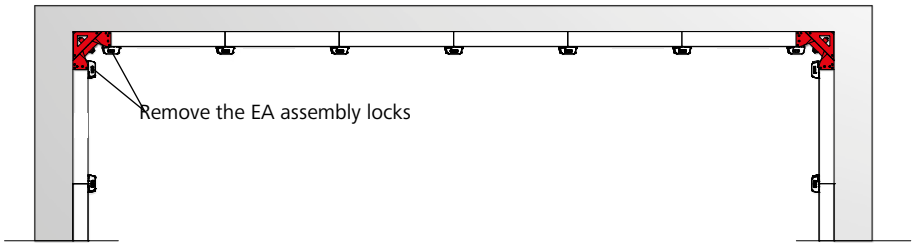


Fig. 31.1

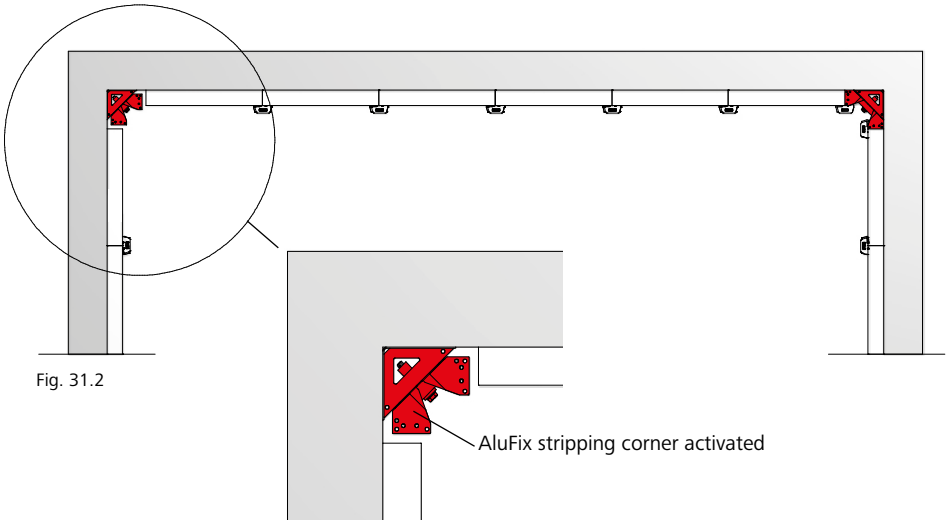


Fig. 31.2

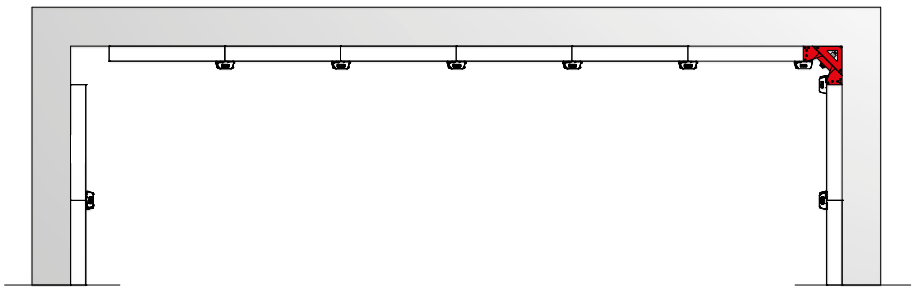


Fig. 31.3

Length compensation

A length compensation up to 17 cm (Figures 32.1 and 32.2) can be formed on site using corresponding timber fillers and Uni-assembly locks 22. For compensations up to 22 cm Uni-assembly locks 28 are used. The reinforcement is achieved with alignment rails (Figures 32.1, 32.2, 32.4 and 32.5).
For information on alignment rails see page AF-33.

Compensations up to 5 cm can be achieved using timber fillers and articulated flange nuts 15/120 (Fig. 32.3).

Length compensations of 5 or 10 cm can be created using one (5 cm) or two (10 cm) AluFix aluminium fillers. The filler has tie holes. When using two adjacent fillers, a cross stiffener 44 with two flange screws 18 is used for stabilisation purposes.

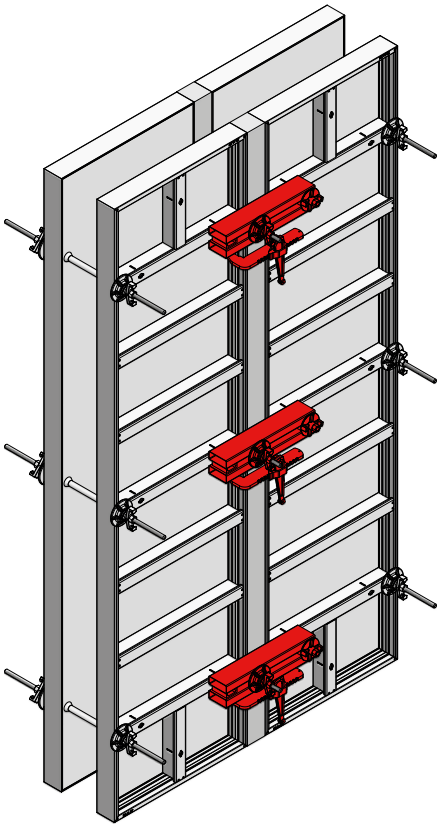


Fig. 32.1

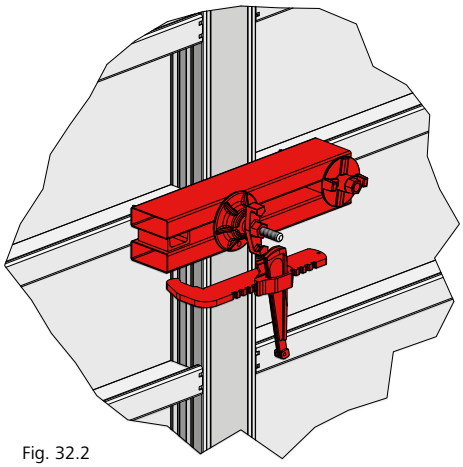


Fig. 32.2

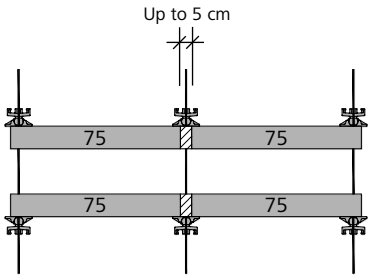


Fig. 32.3

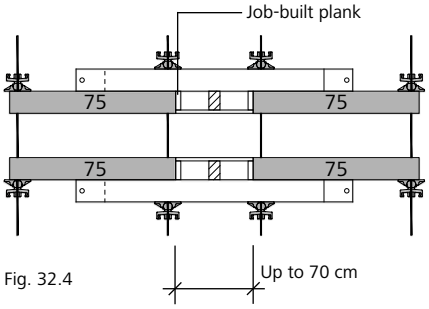


Fig. 32.4

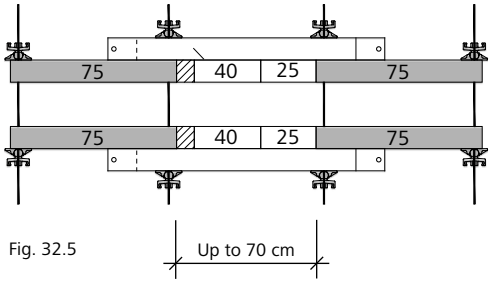


Fig. 32.5

Description	Ref. No.
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
AluFix aluminium filler	
350/5	**22-155-10**
300/5	**22-155-15**
270/5	**22-155-20**
250/5	**22-155-30**
150/5	**22-155-35**
135/5	**22-155-40**

Length compensation

When setting up length compensations (Fig . 33.1), the use of corresponding alignment rails means that it is not necessary to use the tie holes in the filler (Table 33.3). To ensure perfect alignment using the alignment rails, the residual gap should not exceed half the length of the alignment rails (Fig. 33.2).
The length compensation can be secured using the RS assembly lock. Clamping length between 11.9 and 20.5 cm.

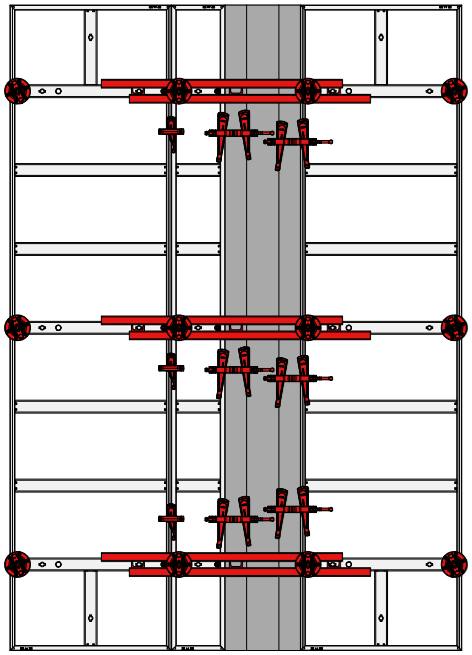


Fig. 33.1

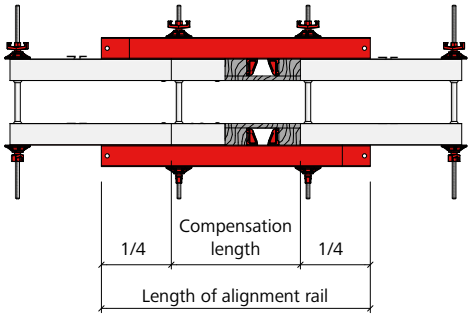


Fig. 33.2

If the fresh-concrete pressure is $P_{b\ max}$ = 50 kN/m² and lines 5 and 6 of DIN 18202 “Tolerances in building construction” are observed, the following residual gaps can be bridged:

Alignment rail	Compensation length
AS-RS 50	Up to 0.30 m
AS-RS 125	Up to 0.60 m
AS-RS 200	Up to 0.70 m

Table 33.3

Description	Ref. No.
AS alignment rail 50, galv.	**29-201-73**
AS alignment rail 125, galv.	**29-201-75**
AS alignment rail 200, galv.	**29-201-80**
RS assembly lock	**23-807-70**

T wall connection

T wall connection with two inside corners (Figures 34.1 to 34.4). Differences in wall width up to 17 cm can be compensated for using timber profiles and Uni-assembly locks (Fig. 34.4).

For information on alignment rails see page AF-33.

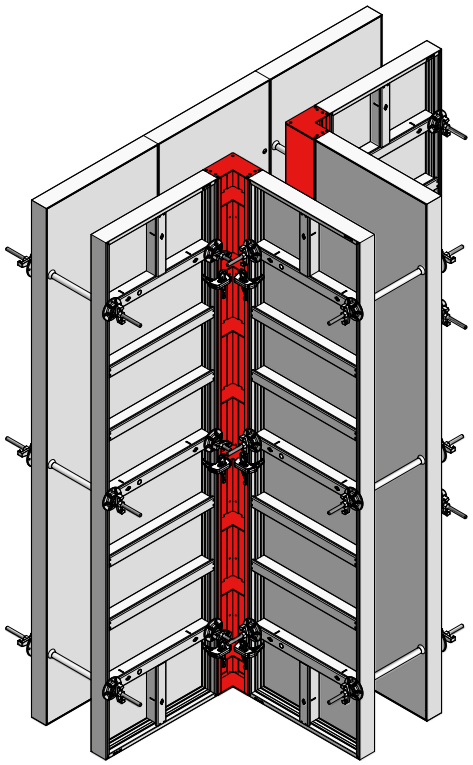


Fig. 34.1

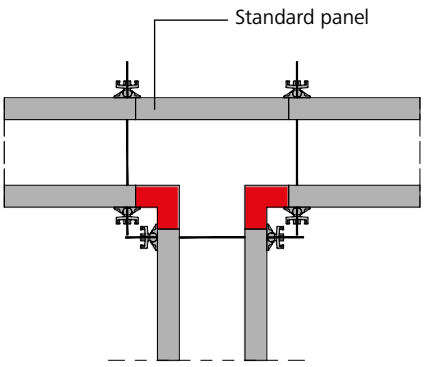


Fig. 34.2

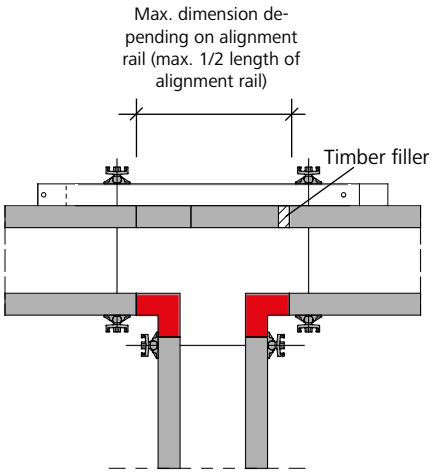


Fig. 34.3

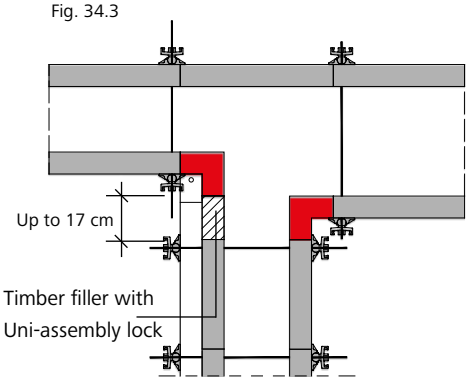


Fig. 34.4

Description	Ref. No.
AluFix AL-IC 350/20	**22-154-05**
AluFix AL-IC 300/20	**22-154-10**
AluFix AL-IC 270/20	**22-154-15**
AluFix AL-IC 250/20	**22-154-25**
AluFix AL-IC 150/20	**22-154-30**
AluFix AL-IC 135/20	**22-154-35**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
RS assembly lock	**23-807-70**

Connection to existing walls

Depending on the conditions on the construction site, the most suitable solution may vary from case to case. Different options are depicted here (Figures 35.1 to 35.5).

Always make sure the formwork is firmly pressed up against the existing wall in order to avoid leakage of the fresh concrete and a patchy concrete surface.

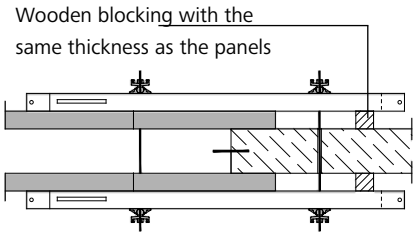


Fig. 35.1

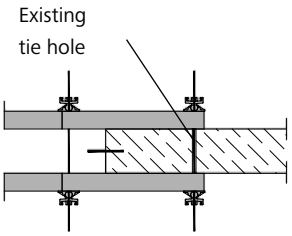


Fig. 35.2

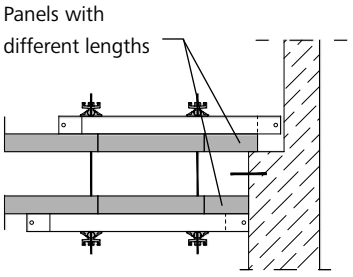


Fig. 35.3

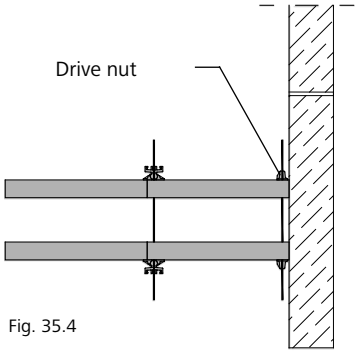


Fig. 35.4

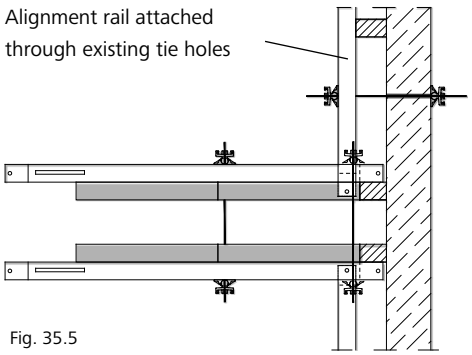


Fig. 35.5

Stop ends

Stop ends can also be formed using outside corners and standard panels (Figures 36.1 to 36.3). The maximum wall thickness is 75 cm.

Panels that are 50 cm wide or wider require additional bracing with alignment rails (Fig. 36.3). One alignment rail is required for reinforcement at each tie hole level.

For the number of assembly locks required at the outside corner and at the first panel joint refer to Table 36.4.

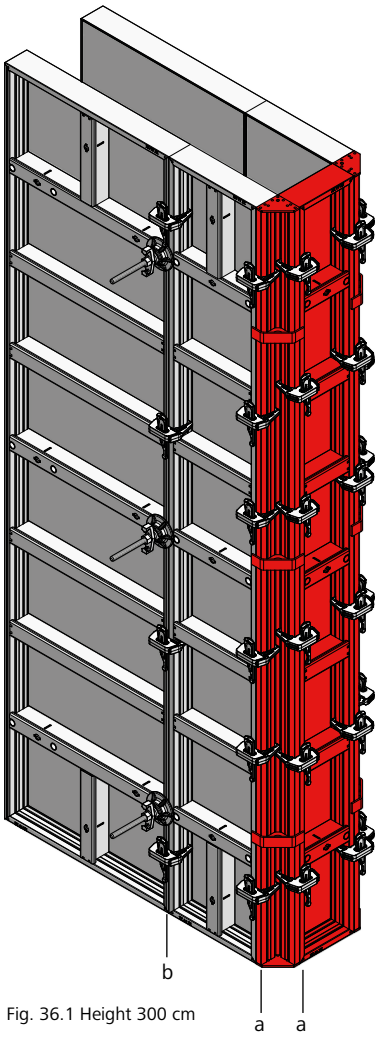


Fig. 36.1 Height 300 cm

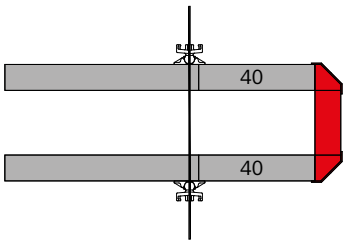


Fig. 36.2

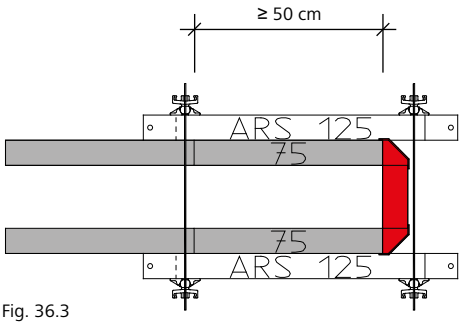


Fig. 36.3

Pouring height	Number of EA assembly locks	
	Corner (a)	First panel joint (b)
h = 1.35 m	3	2
h = 1.50 m	3	3
h = 2.50 m	5	4
h = 3.00 m	6	4
h = 3.50 m	7	5
h = 4.00 m	8	5
h = 4.50 m	9	7

Table 36.4

Description	Ref. No.
AluFix OC 350	**22-150-01**
AluFix OC 300	**22-150-02**
AluFix OC 270	**22-150-03**
AluFix OC 250	**22-150-06**
AluFix OC 150	**22-150-12**
AluFix OC 135	**22-150-14**

Stop ends

Stop end brackets can be used for non-standard wall thickness and wall thickness up to 75 cm (Figures 37.1 and 37.2).

Two stop end brackets with different lengths are available:

- → Stop end bracket 23/40 for wall thicknesses up to 35 cm and
- → stop end bracket 60/23 for wall thicknesses up to 75 cm.

For the number of stop end brackets and EA assembly locks at joint b as a function of the pouring height refer to Table 37.3.

For wall thicknesses > 75 cm, please contact our technical department.

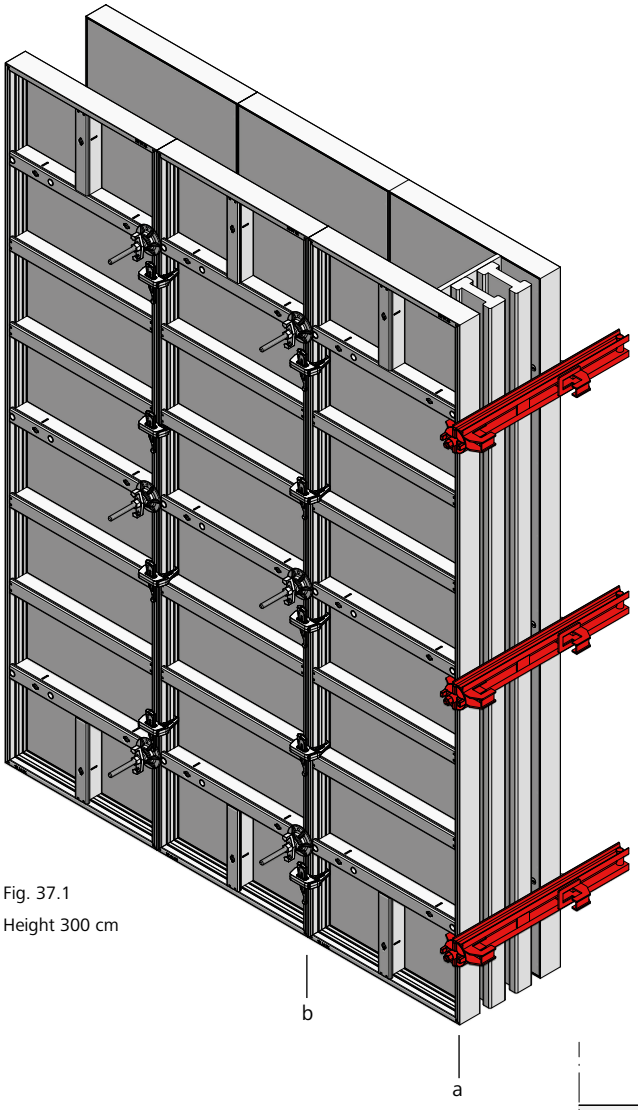


Fig. 37.1
Height 300 cm

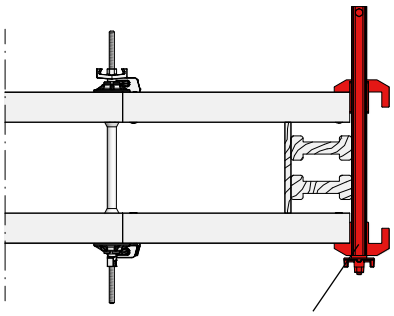


Fig. 37.2
Stop end bracket

Pouring height	Number of stop end brackets (a)	Number of EA assembly locks for the first panel joint (b)
h = 1.35 m	2	3
h = 1.50 m	2	3
h = 2.50 m	3	4
h = 3.00 m	3	5
h = 3.50 m	4	7
h = 4.00 m	6	7
h = 4.50 m	6	8

Table 37.3

Description	Ref. No.
Stop end bracket 23/40	**29-105-45**
Stop end bracket 60/23	**29-105-60**
EA/EF crane hook	**29-103-05**

Wall offset

Wall offsets of up to 8 cm are formed by moving back the corresponding standard panel (Figures 38.1 and 38.4). For offsets greater than 10 cm inside corners should be used (Figures 38.2, 38.3, 38.5 and 38.6).

Alignment rails are always required for wall offsets.

Job-built tie rods of any length can be used on every multi-function profile, independent of the tying position, to firmly bridge problem areas (pilasters, wall offsets, projecting building parts, etc.).

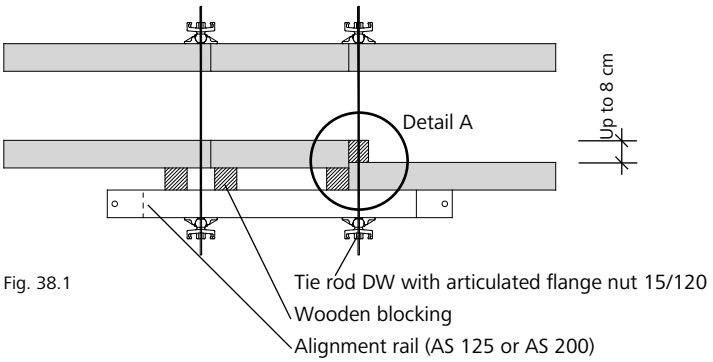


Fig. 38.1

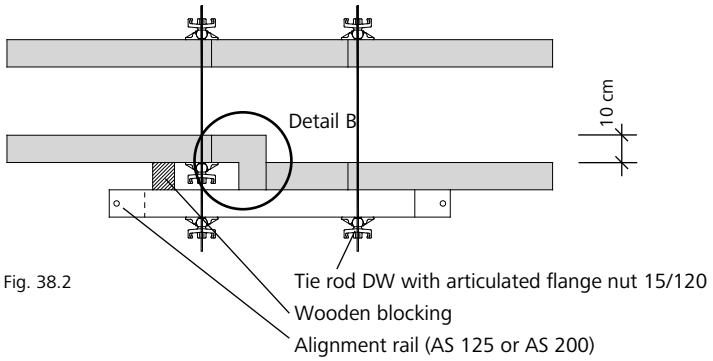


Fig. 38.2

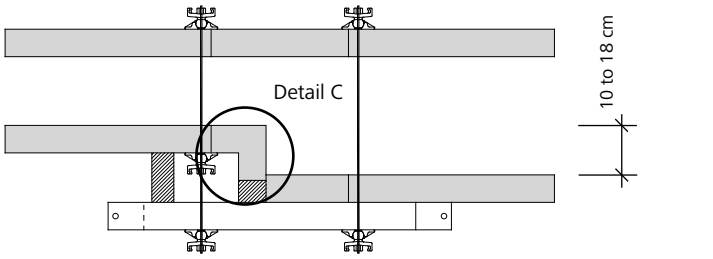


Fig. 38.3

Description	Ref. No.
AluFix AL-IC	
350/20	**22-154-05**
300/20	**22-154-10**
270/20	**22-154-15**
250/20	**22-154-25**
150/20	**22-154-30**
135/20	**22-154-35**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
RS assembly lock	**23-807-70**

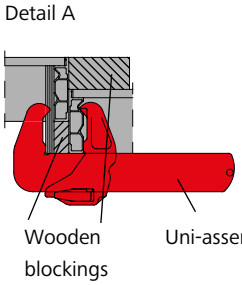


Fig. 38.4

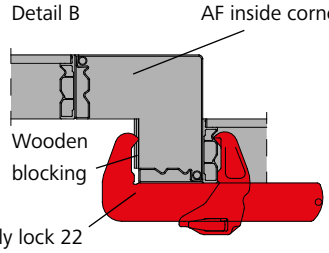


Fig. 38.5

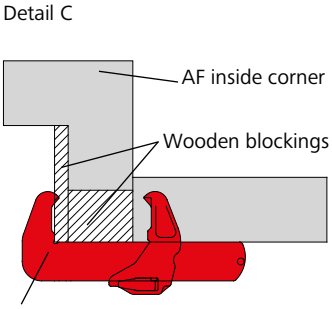


Fig. 38.6

Pilasters

Standard pilasters are easily formed with inside corners, standard panels and, where necessary, wooden blockings. Alignment rails must be attached for reinforcement (Figures 39.1 to 39.3).

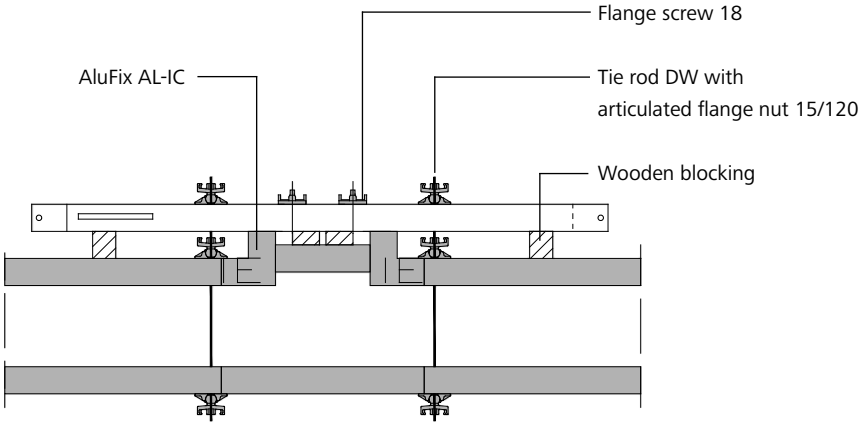


Fig. 39.1

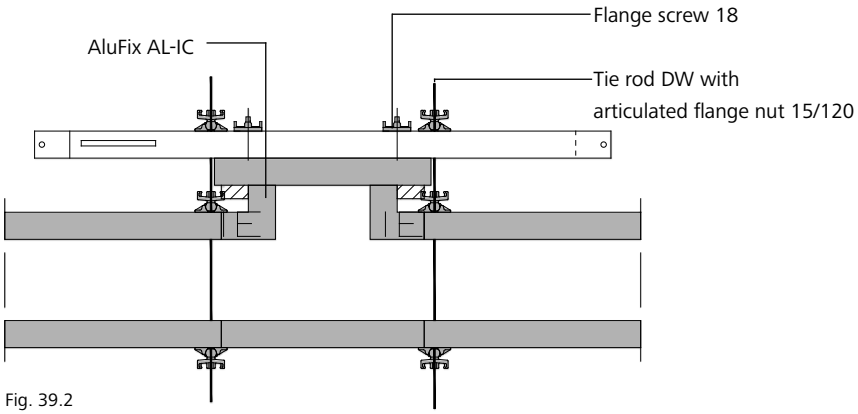


Fig. 39.2

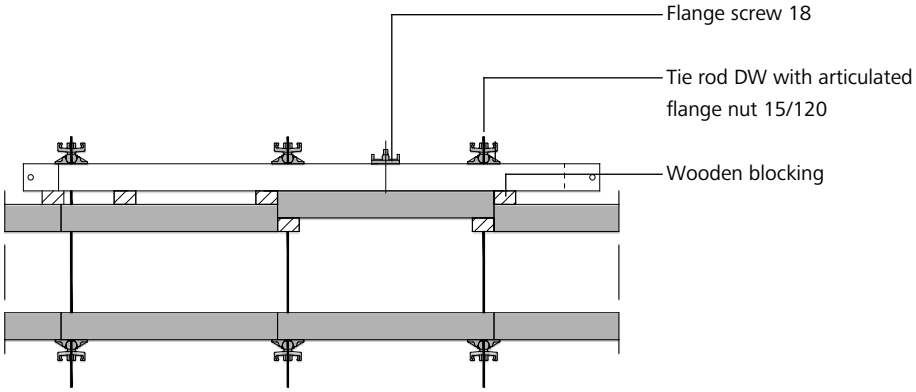


Fig. 39.3

Description	Ref. No.
AluFix AL-IC 350/20	**22-154-05**
AluFix AL-IC 300/20	**22-154-10**
AluFix AL-IC 270/20	**22-154-15**
AluFix AL-IC 250/20	**22-154-25**
AluFix AL-IC 150/20	**22-154-30**
AluFix AL-IC 135/20	**22-154-35**

Differences in height

The formwork's grid-free design does not require additional accessories for panel connection. Vertical, horizontal and vertically offset panels can all be safely and firmly connected with EA assembly locks, even on inclines (Fig. 40.1). The compensation is created using planks, facings correspondingly cut to size, and, if necessary, a square timber. These connections can also be made using the standard EA assembly lock.

If required, the loading in the compensation area caused by the concrete pressure can be taken up using alignment rails (Figures 40.1 and 40.2).

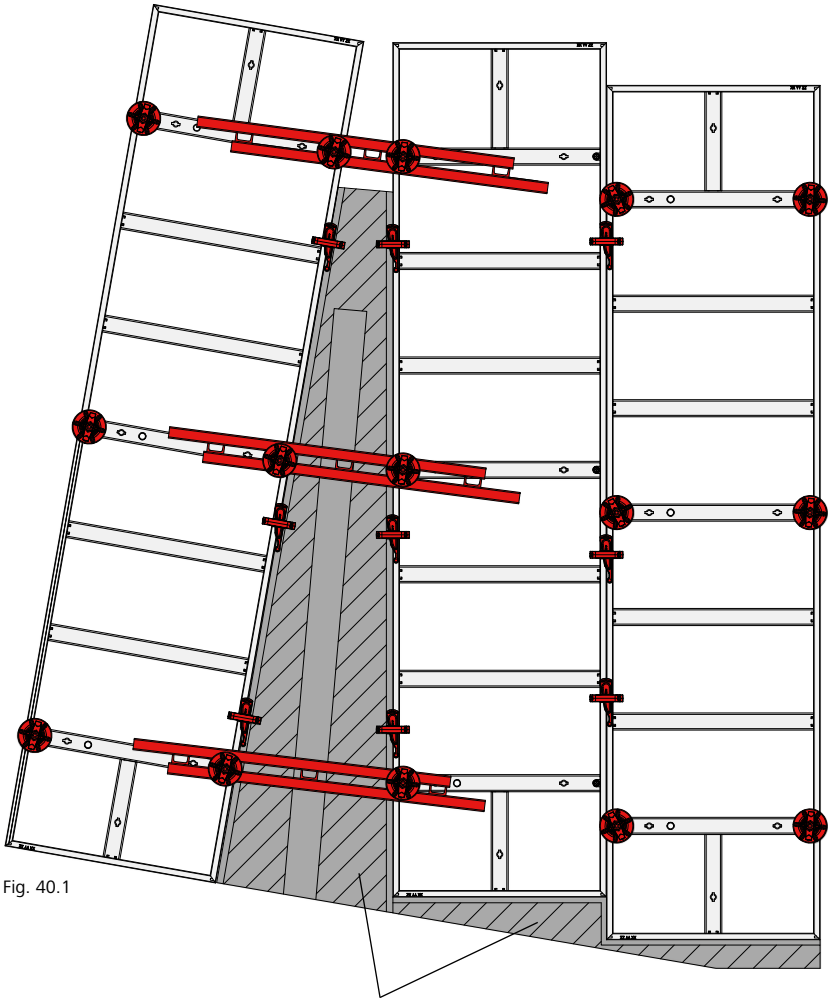


Fig. 40.1

Job-built compensation and support construction

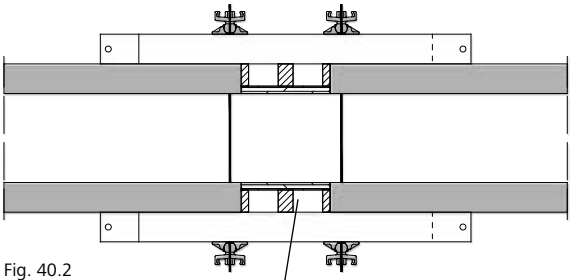


Fig. 40.2

Compensation

Description	Ref. No.
EA assembly lock	**29-205-50**

Horizontal panels

AluFix allows a lot of forming problems to be easily solved. These include foundations, kickers and formwork tasks involving integrated joint tape.

AluFix panels with the widths 90 and 75 cm have an offset tie hole. For horizontal applications like foundations it can be used with tie rod DW 15 and a flange nut (Figures 41.1 to 41.3).

The alkus facing is closed in the position of the offset tie hole and is drilled with a 21 mm drill if required.

Unused tie holes must be closed with plug D20.

Attention
When using the panel in upright position it is not allowed to use the offset tie holes.

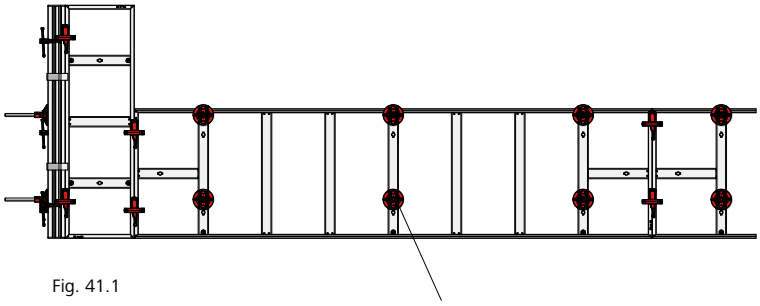


Fig. 41.1

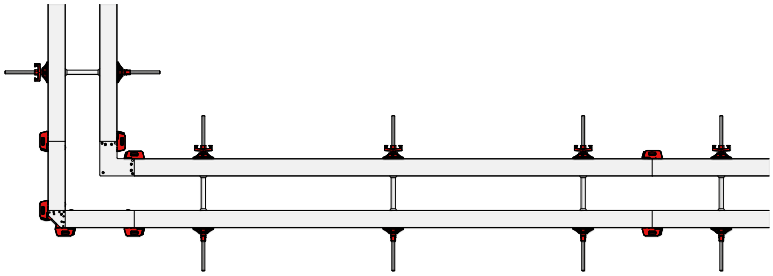


Fig. 41.2

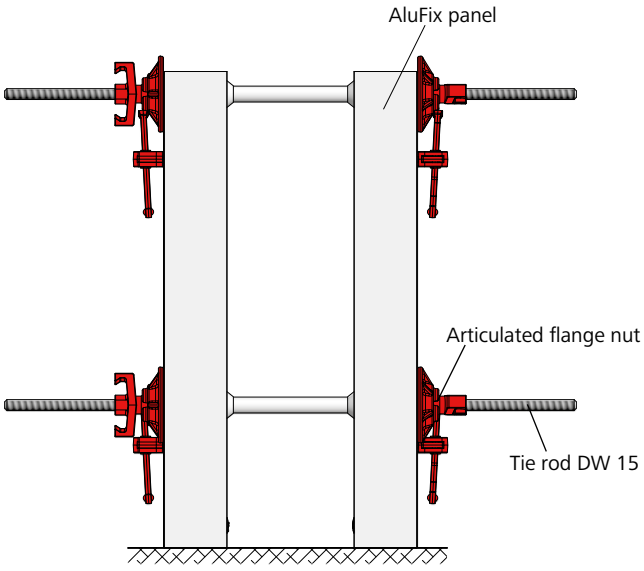


Fig. 41.3

Description	Ref. No.
Tie rod 15/90	**29-900-80**
Plastic tube D22/200	**29-902-30**
Cone for plastic tube D22/10	**29-902-40**
Cone for plastic tube D22/30	**29-902-50**
Flange nut 100	**29-900-20**
Articulated flange nut 120	**29-900-10**
Plug D20	**29-902-63**
Spanner size 27	**29-800-10**

Horizontal panels

By using foundation tapes and tensioners EA for horizontal panels (Figures 42.1 and 42.4), there is no need to put tie rods through the lower tie holes, which is very time-consuming. The tensioner EA for foundation tape is clamped to the panel.

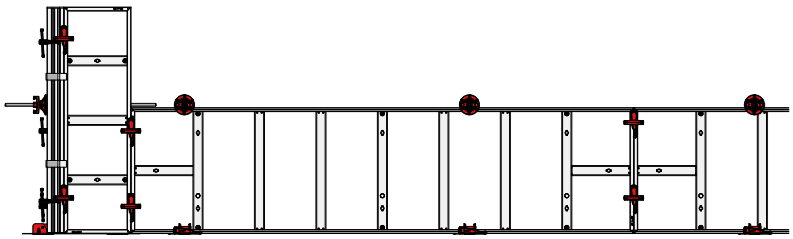


Fig. 42.1

The top tie in the concrete can be replaced as follows:

→ Push-pull strut

This firmly connects the opposite panels up to a wall or foundation thickness of 64 cm (Fig. 42.3).

→ Tie claw 23

Two tie claws 23, one tie rod DW 15 and two flange nuts 100 are required per tie connection (Figures 42.4 and 42.6). We recommend using a plastic tube D22, as it serves as a spacer and protects the tie rod against dirt.

Unused tie holes must be closed with plug D20.

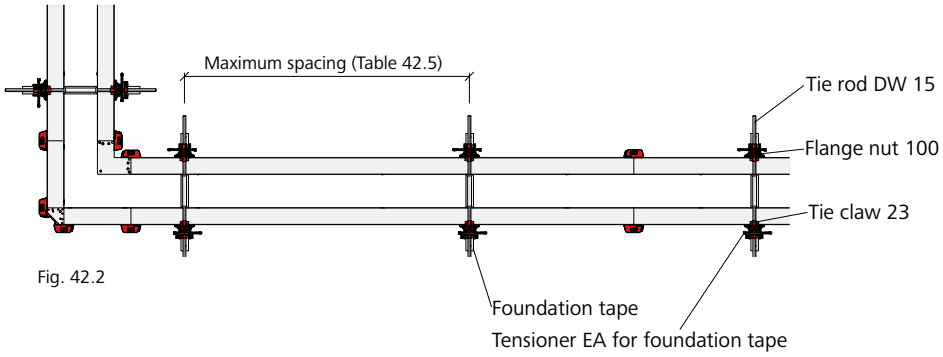


Fig. 42.2

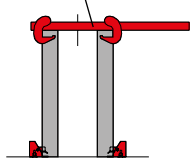


Fig. 42.3

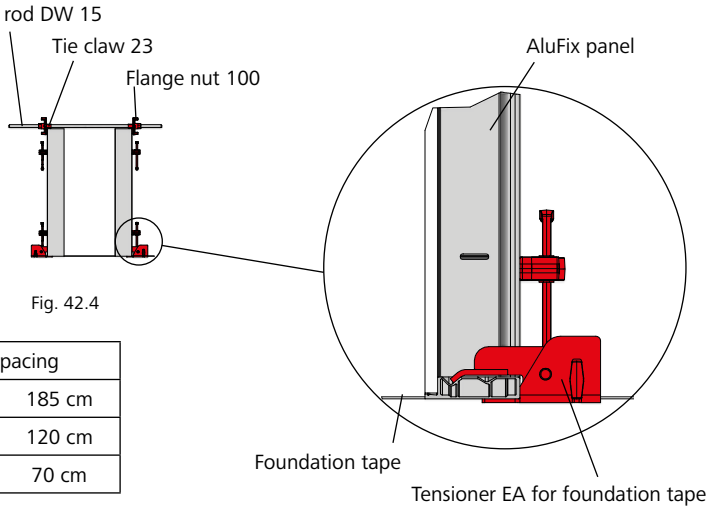


Fig. 42.4

Maximum tensioner spacing	
Pouring height 75 cm	185 cm
Pouring height 100 cm	120 cm
Pouring height 135 cm	70 cm

Table 42.5

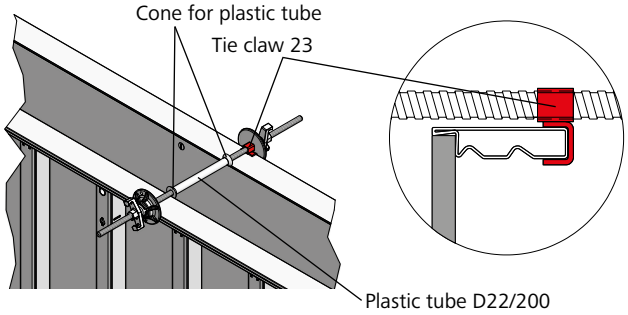


Fig. 42.6

Description	Ref. No.
Push-pull strut	**29-105-70**
Tie claw 23	**29-901-44**
Flange nut 100	**29-900-20**
Foundation tape	**29-307-50**
Tensioner EA for foundation tape	**29-307-75**
Trolley for foundation tape	**29-307-55**
Plastic tube D22/200	**29-902-30**
Cone for plastic tube D22/10	**29-902-40**
Cone for plastic tube D22/30	**29-902-50**
Plug D20	**29-902-63**
Plug D20, without imprint	**29-902-62**

Height extension

All AluFix panels can be height-extended vertically or horizontally. The ability to freely combine all panels vertically or horizontally allows for economical width and height extension.

They must always be connected with the EA assembly lock (see page AF-11). The continuous grooves on the panels allow the assembly locks to be positioned steplessly.

Alignment rails are required for height extensions to stabilise the panels (Table 43.2).

The alignment rail is secured using two flange screws 18.

The total weight of the height-extended unit depends on the load capacity of the crane hooks (see pages AF-23 and -45).

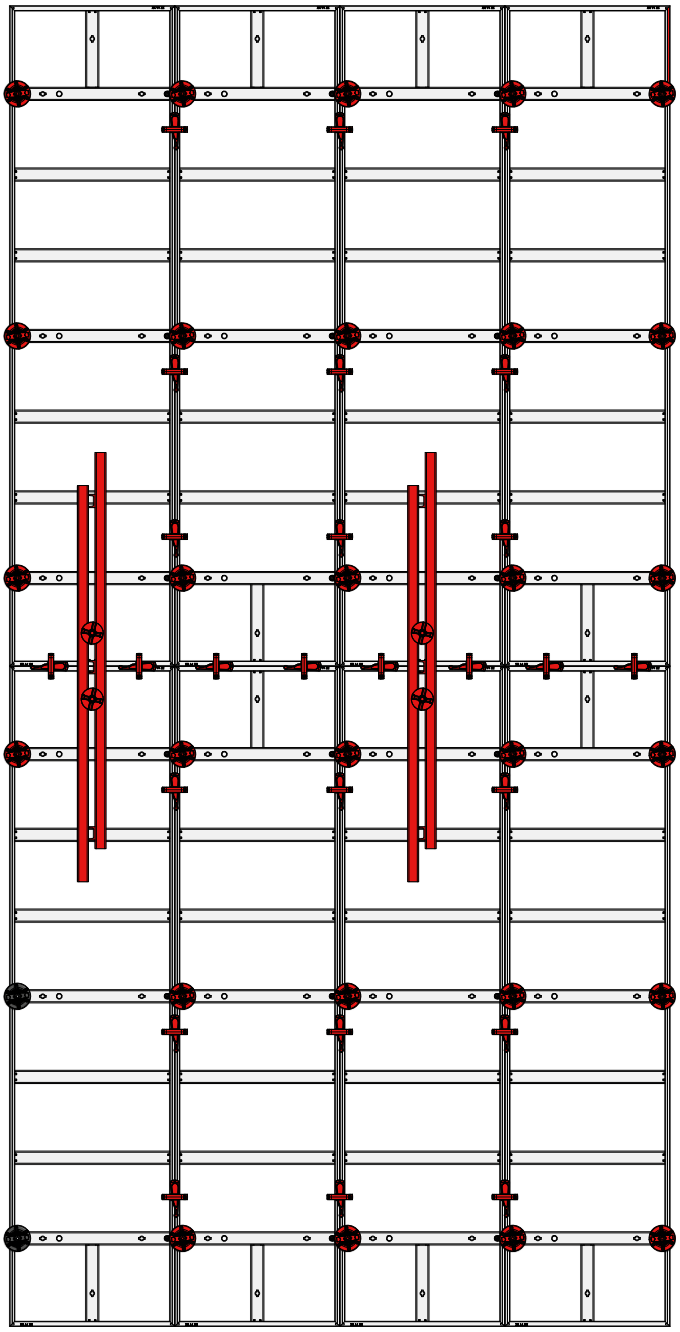


Fig. 43.1

Formwork height	Alignment rail for each horizontal joint for a width of 2.00 m	
	Alignment rail	Quantity
Up to 4.60 m	AS 125	1
Up to 6.00 m	M 180	1
6.00 to 9.00 m	M 250	1

Table 43.2

Description	Ref. No.
M alignment rail 180, galv.	**29-400-92**
M alignment rail 250, galv.	**29-402-50**
AS alignment rail 200, galv. ...	**29-201-80**
Flange screw 18.....	**29-401-10**
EA assembly lock	**29-205-50**

Height extension

Note the following for horizontal height extension:

→ For a height extension with a panel width greater than 25 cm, all tie hole must be used (Figures 44.1 and 44.2).

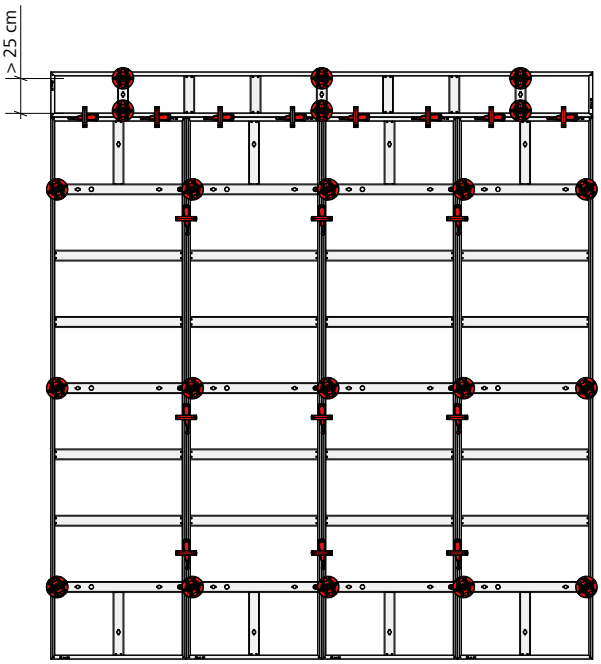


Fig. 44.1

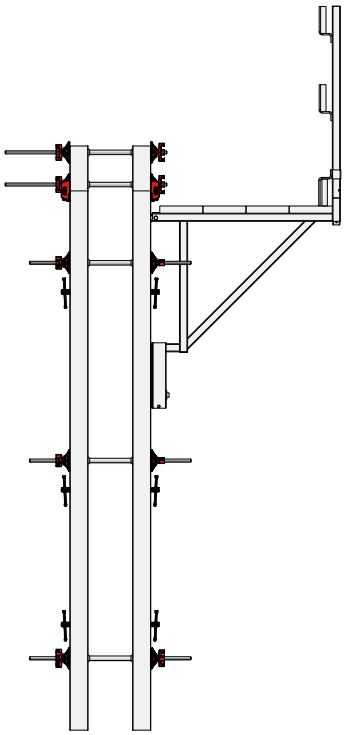


Fig. 44.2

→ For a height extension with a panel width of 25 cm, it is only necessary to use the upper tie holes if a walkway bracket is attached (Figures 44.3 and 44.4). It is also possible to tie above the panel using the tie claw 23 and flange nuts 100 (Fig. 44.4).

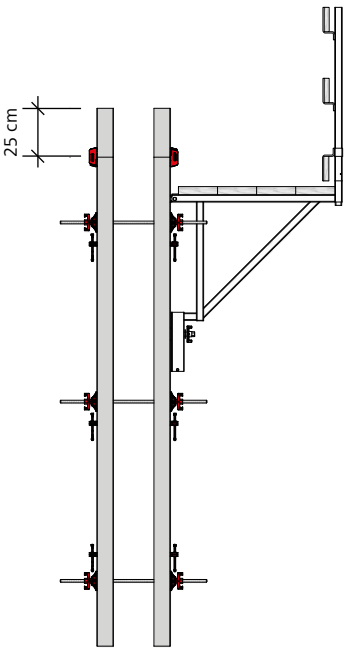


Fig. 44.3

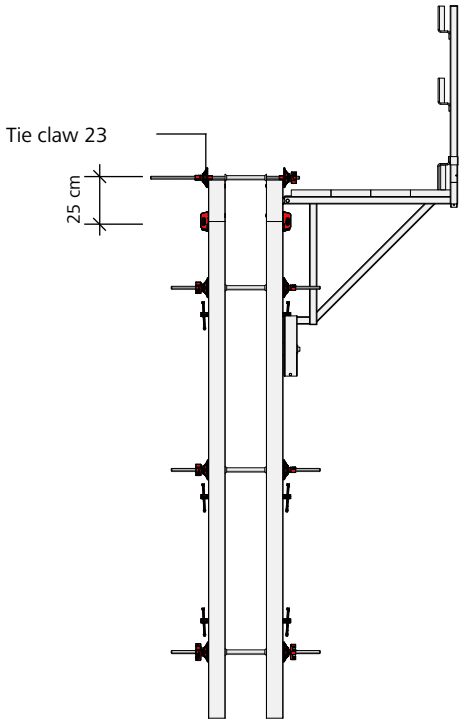


Fig. 44.4

Crane ganging

When transporting large panel units with a crane, make sure each crane hook is attached at a panel joint (Figures 45.2 and 45.3). For gangs with horizontal panels at the top, the crane hooks must be attached to the cross stiffeners. This prevents the crane hook slipping sideways. In the figures the walkway brackets with guardrailing posts and the brace frame are not depicted (see pages AF-16 to AF-22).

Attention

Always use two crane hooks. The capacity of the EA/AF crane hook is 600 kg. The total weight of the gang must not exceed 1200 kg (2 crane hooks x 600 kg = 1200 kg).

Example of a crane ganging unit h = 600 cm, b = 300 cm including accessories (Fig. 45.3)

Quantity	Description	kg/unit	Total kg
8	AluFix panels 300/75	46.0	368.0
26	EA assembly lock	1.5	39.0
2	M alignment rail 180, galv.	24.8	49.6
4	Walkway bracket 90 + guardrailing post 100	14.0	56.0
2	Crane Hook	6.0	12.0
10	Flange screw 18	1.1	11.0
1	Push-pull prop R 460	34.0	34.0
1	Push-pull prop R 250	17.2	17.2
2	Formwork-prop connector	1.7	3.4
1	Double-jointed foot plate	4.0	4.0
6	Scaffold platform	20.0	120.0
	18.00 m² including safety accessories	**Weight**	**714.2 kg**

Table 45.1

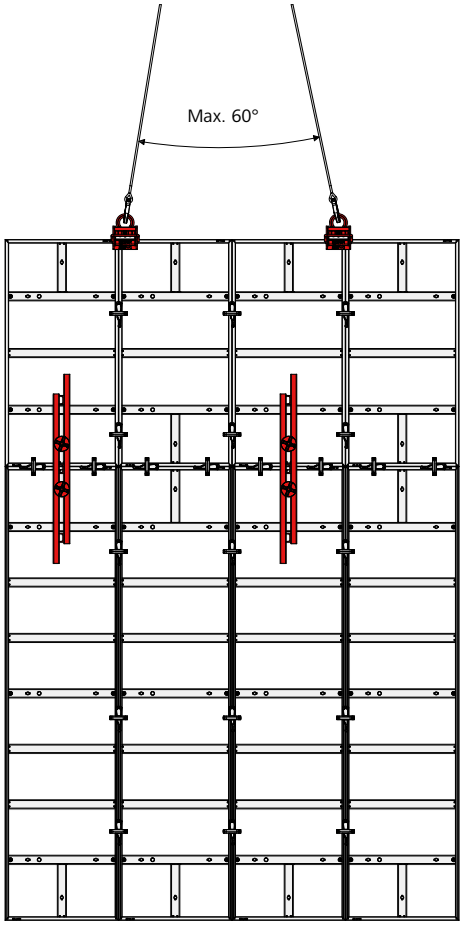


Fig. 45.2

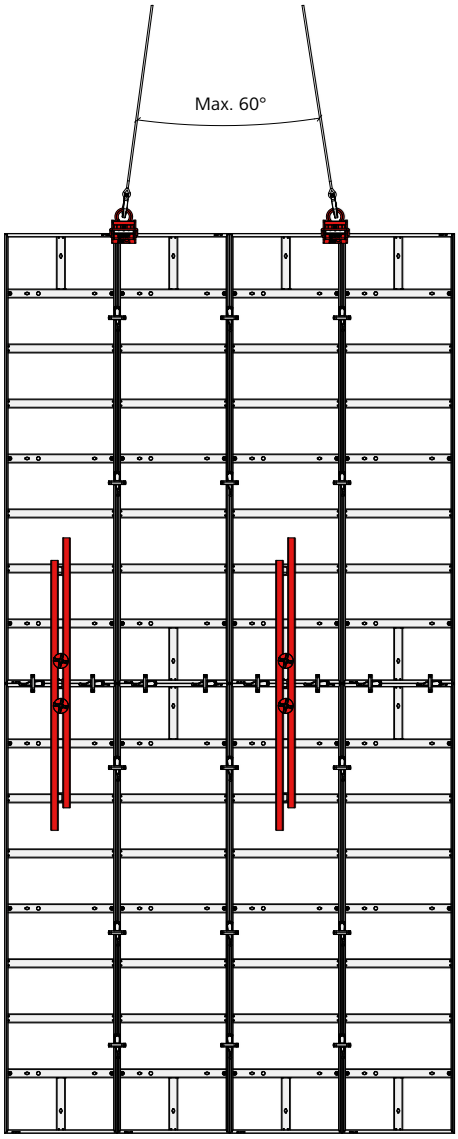


Fig. 45.3

Description	Ref. No.
EA/EF crane hook.....	**29-103-05**

Foundations / columns

When pouring foundations, three assembly locks are required for a foundation with a maximum side length of 0.75 m (Fig. 46.2) and a maximum height of 1.35 m (Fig. 46.1).

Columns with a maximum side length of 0.55 m (Fig. 46.5) and a maximum pouring height of 3.00 m (Fig. 46.3) can be formed using standard panels and outside corners.

The higher fresh-concrete pressure resulting from high columns or from longer side lengths means that more assembly locks and additional alignment rails are required (Table 46.6).

Basic elements with a height of 300 cm must always be used to form column heights that require alignment rails (above 3.50 m).

Foundations

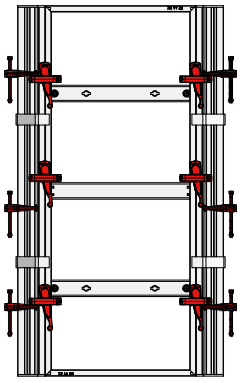


Fig. 46.1 h = 1.35 m

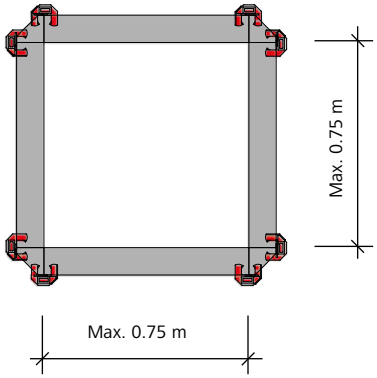


Fig. 46.2

Props

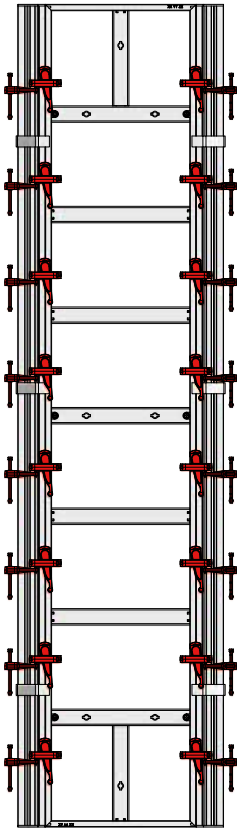


Fig. 46.3 h = 3.00 m

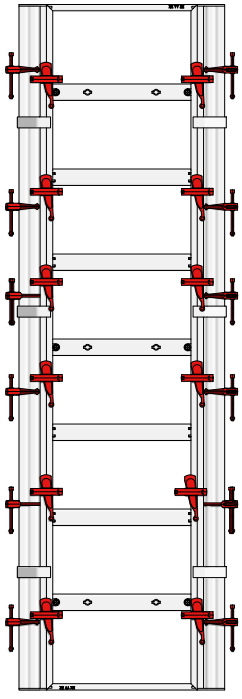


Fig. 46.4 h = 2.50 m

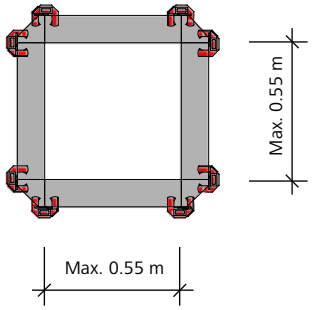


Fig. 46.5

Description	Ref. No.
AluFix OC 350	**22-150-01**
AluFix OC 300	**22-150-02**
AluFix OC 270	**22-150-03**
AluFix OC 250	**22-150-06**
AluFix OC 150	**22-150-12**
AluFix OC 135	**22-150-14**
EA assembly lock	**29-205-50**

AluFix column formwork	Number of EcoAs assembly locks
h = 1.35 m	3
h = 1.50 m	3
h = 2.50 m	6
h = 3.00 m	8
h = 3.50 m	8 + 1 brace
h = 4.00 m	9 + 1 brace
h = 4.50 m	12 + 2 braces
h = 6.00 m	16 + 4 braces

Table 46.6

Polygonal circular formwork

Circular buildings can be formed polygonally with AF standard panels, AF radius panels and AF tensioning bows (Fig. 47.1).

The ties are inserted through the AF radius panels. The load is transferred through the AF tensioning bows. The minimum radius is 1.75 m.

When extending the panels on top of each other, the panels need to be connected with two EA assembly locks.

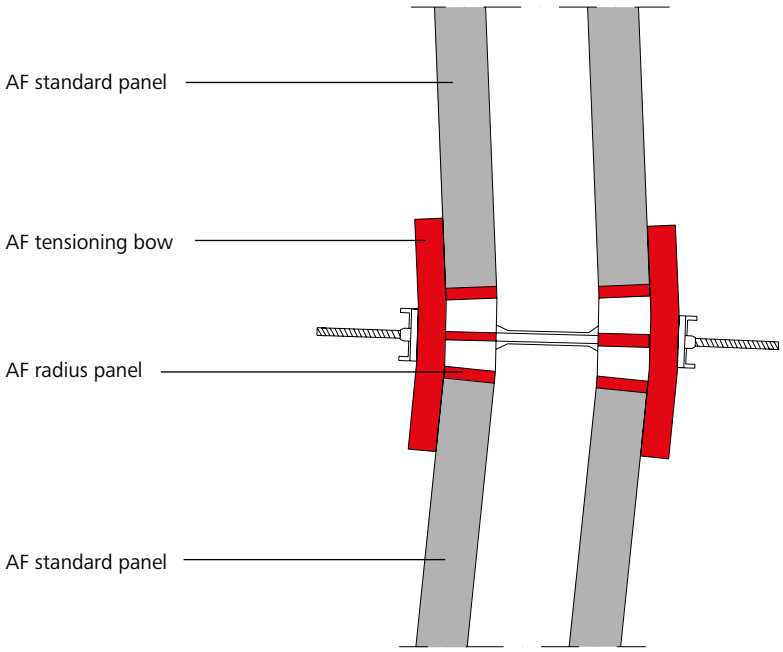


Fig. 47.1

Description	Ref. No.
AF radius panel 264/15	**22-152-10**
AF radius panel 264/20	**22-152-20**
AF radius panel 264/25	**22-152-30**
AF radius panel 132/15	**22-153-10**
AF radius panel 132/20	**22-153-20**
AF radius panel 132/25	**22-153-30**
AF tensioning bow	**22-153-90**

Polygonal circular formwork

When planning formwork for a full circle, ensure there are sufficient Uni-assembly locks 22 and timber fillers for compensation.

When forming pitch circles, make sure that the formwork can overlap for the next cycle or for stop ends.

A functional polygonal formwork requires the inside and outside formwork to planned in proportion to each other.

Using panels with a smaller width allows the curved wall to fit the circle more exactly. This reduces the height of arch h (Fig. 48.1 and Table 48.2).

Height of arch (h) in cm for different radii and panel widths

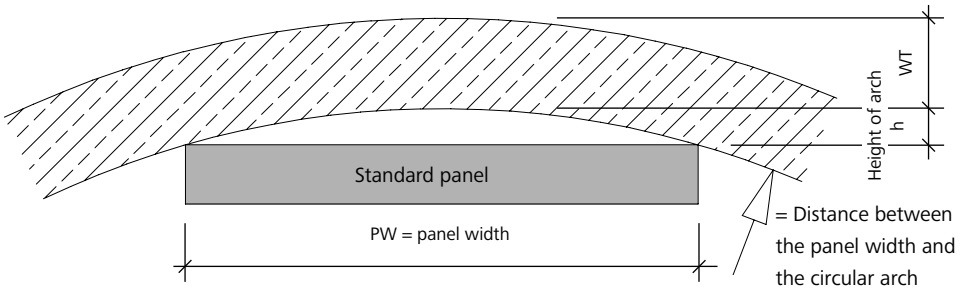


Fig. 48.1

$$h = r_i - \sqrt{r_i^2 - (PW/2)^2}$$

WT = wall thickness
h = height of arch
(vertical distance between the middle of the panel and the circular arch)
r_i = inside radius

Table to determine the height of arch h in cm (depending on the wall radius and panel width)

Wall radius ri [m]	Panel width PW [cm]				
	25	40	45	55	75
1.75	0.45	1.15	1.45	—	—
2.00	0.39	1.00	1.27	1.57	—
2.50	0.31	0.80	1.01	1.26	—
3.00	0.26	0.66	0.85	1.05	—
3.50	—	0.57	0.72	0.90	2.00
4.00	—	0.50	0.63	0.79	1.76
4.50	—	0.44	0.56	0.70	1.56
5.00	—	0.40	0.51	0.63	1.41
6.00	—	0.33	0.42	0.53	1.17
7.00	—	0.28	0.36	0.45	1.01
8.00	—	0.25	0.32	0.40	0.88
9.00	—	0.22	0.28	0.35	0.78
10.00	—	0.20	0.25	0.32	0.70
12.00	—	—	—	0.27	0.59
15.00	—	—	—	0.21	0.47
20.00	—	—	—	0.16	0.35

Table 48.2

Transport

Transport angle

The transport angles (Fig. 49.1) enable panel stacks to be stored in a space-saving manner without using supporting timber blocks. Even if the stack is not quite full, a 4-rope crane sling (never a 2-rope crane sling) can always be attached directly above the top panel. The transport angle allows 5 to 12 AluFix panels to be moved at one time. The maximum load capacity is 10 kN (1 ton) per transport angle.

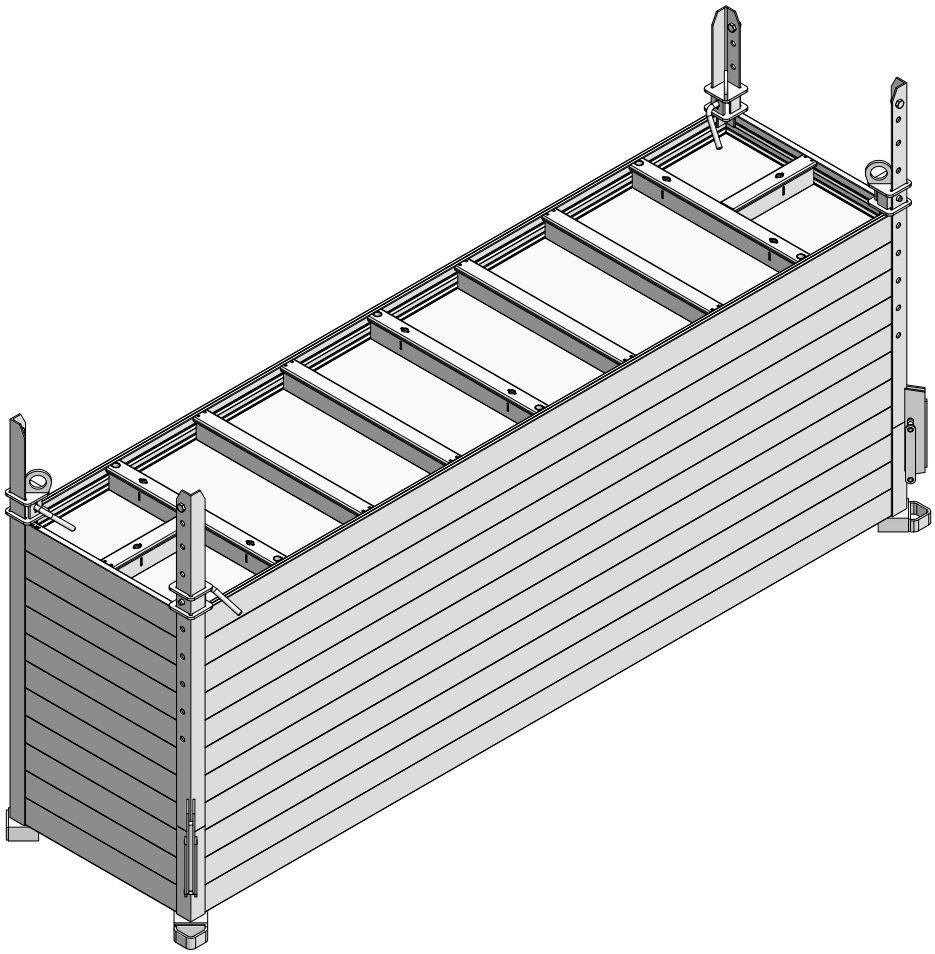


Fig. 49.1

Description	Ref. No.
Transport angle 10	**29-305-10**
Transport angle 10 rigid	**29-305-15**

Transport instructions

The following must be observed for road transport:
Use one ratchet strap per metre of cargo. This means that 14 ratchet straps are required for a fully loaded truck with a trailer length of 13.60 m.

When moving several panels, make sure the panel stack is secured are secured against sliding. MEVA secures the AluFix panels with the safety bolt AS/ST black (Fig. 50.2).

These safety devices should also be used when returning the material from building site.

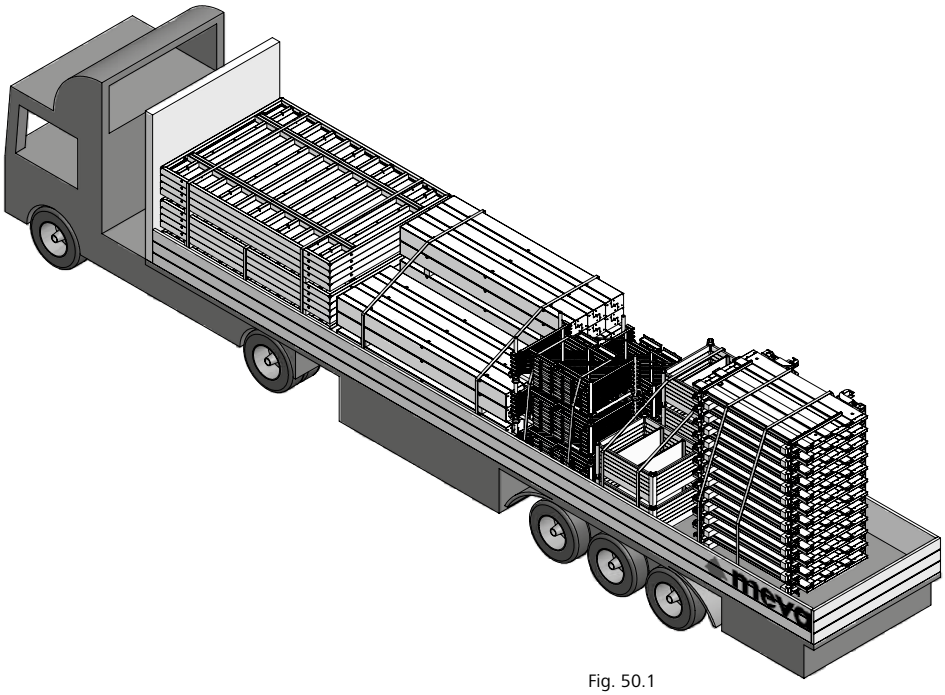


Fig. 50.1

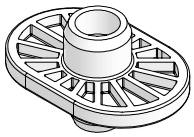


Fig. 50.2

Description	Ref. No.
Safety bolt AS/ST black	40-131-10

Services

Cleaning
The formwork is cleaned professionally using industrial equipment upon return.

Reconditioning
Reconditioning is carried out as follows: The frames are checked and, if necessary, repaired, coated with a high-quality cured powder coating, and provided with a new facing. As long as the formwork equipment still has its full load capacity, correct dimensions and is fully functional, reconditioning will always be a more economical solution than purchasing new formwork. Please note that the cleaning and reconditioning service is not available in all countries in which MEVA does business.

Rentals
As we have a comprehensive range of equipment in stock, we offer our customers the option of renting supplementary material at peak times. The MEVA logistics centre guarantees rapid delivery throughout Europe. We also give prospective customers the chance to test MEVA formwork so they can see its benefits for themselves in actual use.

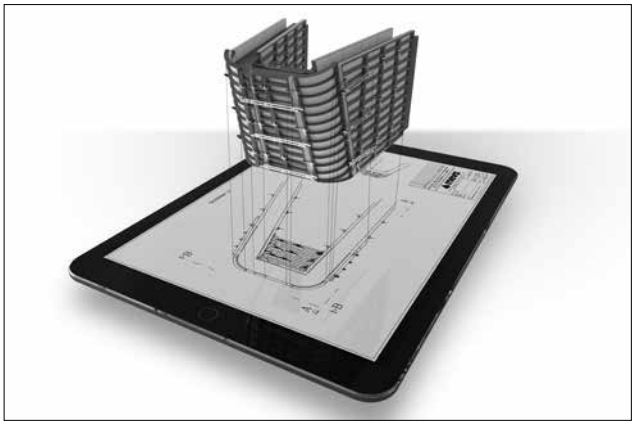
RentalPlus
For a flat-rate fee MEVA's "fully comprehensive insurance" for rental formwork and equipment covers all secondary costs that occur after return (excludes losses and write-offs). For the customer this means: Costing certainty instead of additional charges, an earlier end of the rental period and thus lower rental costs because you save the time required for cleaning and repairs.

Formwork drawings
Our application engineers worldwide work with CAD systems. This ensures that you always receive optimum formwork solutions and practice-oriented formwork and work cycle plans.

Special solutions
We can help with special parts, custom-designed for your project, to supplement our standard formwork systems.

Structural calculations
Generally, this is only necessary for applications such as single-sided formwork where the anchor parts are embedded in the foundation or the base slab. On request, we can perform structural calculations for such applications at an additional charge.

Formwork seminars
To ensure that all our products are used properly and efficiently, we offer formwork seminars. They provide our customers with a good opportunity to keep themselves up to date and to benefit from the know-how of our engineers.



Notes