





Mammut XT

Technical Instruction Manual

meva





Product features

The Mammut XT wall formwork is a crane-dependent frame formwork system made of hot-dip galvanised and post-treated steel. It is ideal for use in high-rise, public, commercial and industrial construction as well as civil engineering projects.
With its integrated combination tie hole recessed in the frame, the system can be tied from both one side and two sides, without needing to perform assembly or disassembly measures on the panel. The option of choosing the tying method best suited to the project significantly reduces the formwork placing time. Furthermore, the combination tie hole enables the panels to be stacked without having to remove parts beforehand.
The Mammut XT panel dimensions and the absolutely symmetrical inner tie holes result in a uniform tie hole pattern and a uniform joint pattern for the highest architectural-concrete requirements.
The Mammut XT panels are equipped with an alkus facing made of polypropylene and aluminium. The facing is riveted to the panel on the pouring side. In addition, the facings are protected with silicone. The solid plastic 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.
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 the integrated self-locking pin
- DW tie rods of any length that are used to bridge problem areas.

Depending on the configuration, the maximum permissible fresh-concrete pressure is 100 kN/m² (when using tie rods with a permissible working load of 160 kN), see page XT-23. The fresh-concrete pressure according to DIN 18218:2010-01 can be determined easily and precisely with MEVA's online concrete pressure calculator available at www.meva.net.

Safety equipment
The safety system MIS – MEVA Integrated Safety was developed for Mammut XT and prevents falling accidents and at the same time increases occupational safety and work efficiency. For more information refer to the MIS – MEVA Integrated Safety Technical Instruction Manual.

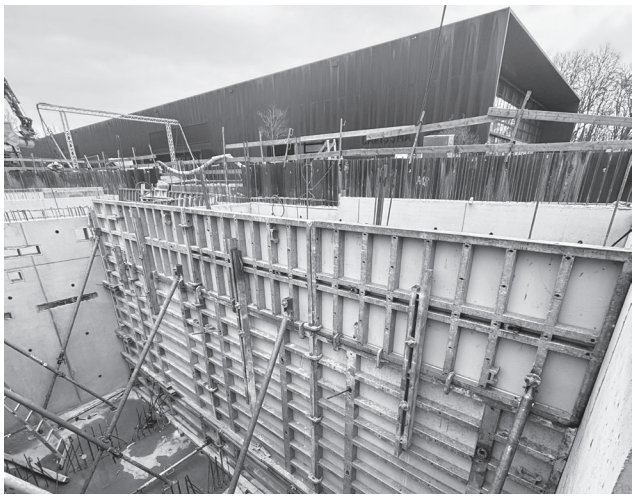
System compatibility
Mammut XT is compatible with the following systems:

- MIS MEVA Integrated Safety
- Mammut 350 wall formwork
- STB support frame
- Walkway bracket 90 with aluminium platform or wooden flooring
- BKB folding access platform
- KAB folding working platform
- MGC-H rail-guided climbing system
- HC JumpForm bracket system
- Brace frames and push-pull props R
- Triplex heavy-duty braces
- Radius circular formwork
- Circo circular column formwork

Abbreviations, measurements, figures and tables, etc.
The abbreviation XT is used for the Mammut XT. 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).
Non-defined dimensions are in cm.

The page numbers in this manual start with XT. 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, the federal, state and local occupational 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 individual panels and 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!

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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 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. For detailed information see page XT-73.

The steps required for assembly
For ergonomic reasons the outside formwork (initial 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 (initial formwork)

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

Step 3 – Place the inside formwork (final 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.

Double-sided formwork

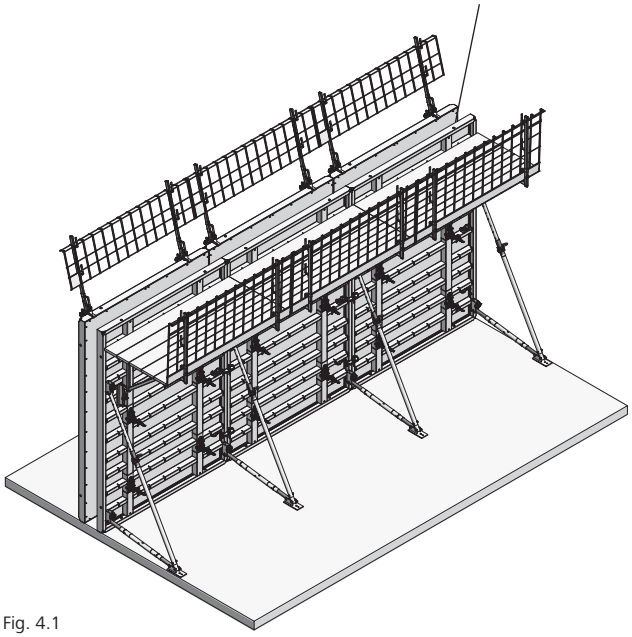


Fig. 4.1

Formwork assembly and stripping

Step 1
Place and brace the outside formwork (initial formwork)
The following description is based on an straight wall. Before starting, keep in mind:
→ 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.
→ Walls with a length 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. Equip the first panel with the MIS safety system and then place it or, alternatively, place the first panel and secure 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.

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. If the walkway bracket was not pre-assembled before step 1, you can now assemble and install the working platform. Fig. 6.2 on page XT-6 shows a working platform being lifted with a crane for attachment to a braced outside formwork.

3. String further panels together and connect them with M assembly locks (see page XT-15).

Panels with a height of 350 cm are usually connected at the standard joint with three assembly locks. However, outside corner configurations with a height of 350 cm require at least four assembly locks (Fig. 5.2 and XT-35).

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 (final formwork) and tie the outside and inside formwork
The inside formwork is placed after the outside formwork. The inside and outside formwork are then tied firmly with tie rods (for the tying methods refer to page XT-16).

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.

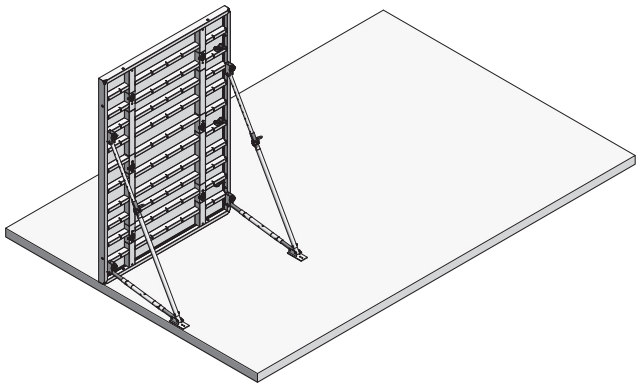


Fig. 5.1

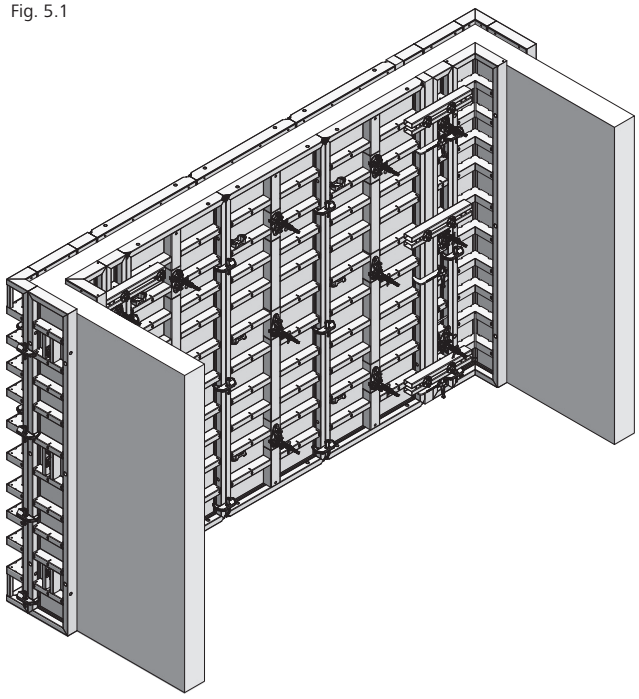


Fig. 5.2

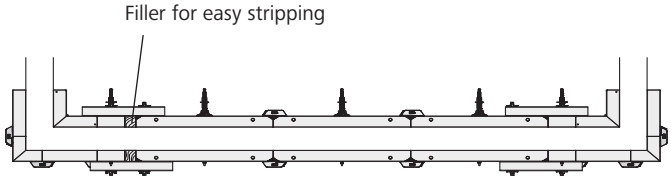


Fig. 5.3

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.

MEVA's MIS safety system offers platforms, ladder access and other safety equipment for safe and efficient work at all heights (see page XT-30).

Figures 6.1 and 6.2 show the folding access platform BKB 125 being used as a working scaffold.

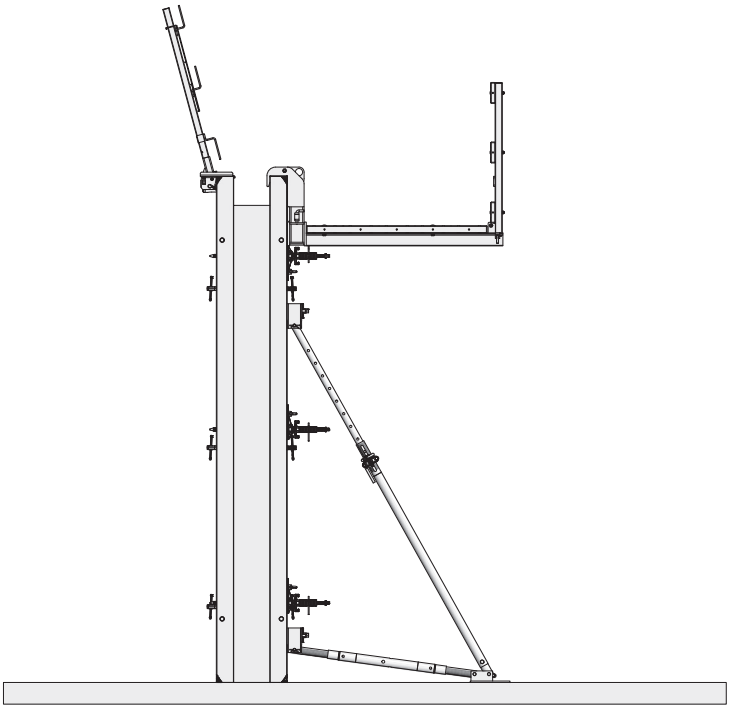


Fig. 6.1

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 XT-23).

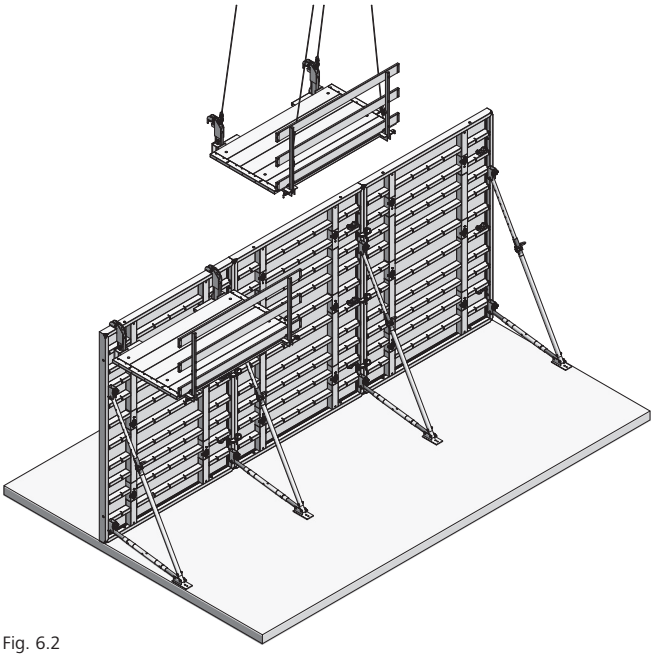


Fig. 6.2

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 tie rods section by section. (for the tying methods refer to page XT-16). Make sure the unbraced formwork is immediately secured to prevent it falling over or strip it immediately.
2. On the formwork panels and 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.

Important
Before removing them with a crane, make sure the formwork is detached from the concrete!

3. 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 note
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 pages XT-65 and XT-66).

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.

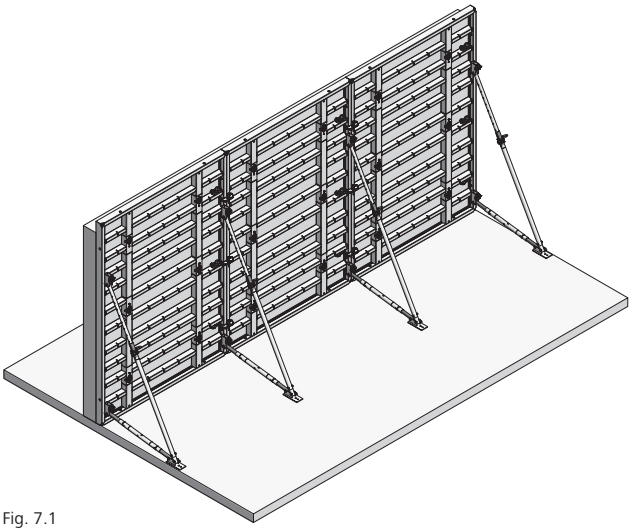


Fig. 7.1

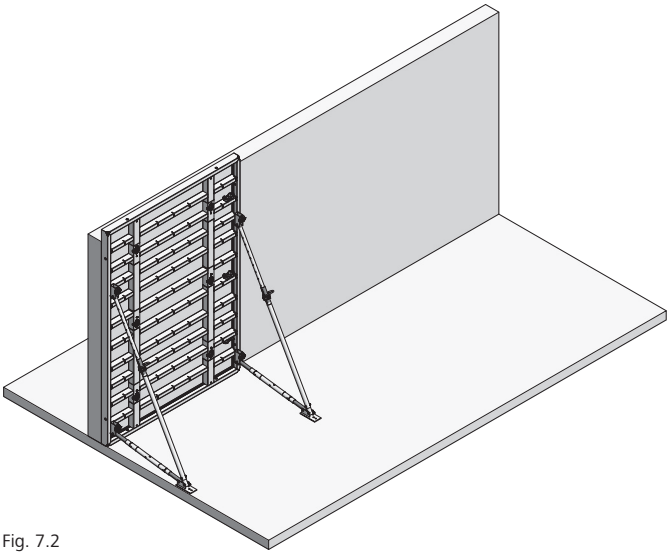


Fig. 7.2

The Mammut XT panel – Overview

The Mammut XT panel with internal combination tie holes (Fig. 8.1).

Combination tie hole with rotating sphere for single- and two-sided tying (Fig. 8.2).

Panel connection with the M assembly lock in the continuous groove (Fig. 8.3).

Cross stiffener made of sturdy closed steel profile with welded-in DW 15 threaded nuts for fast and solid attachment of accessories (Fig. 8.4).

Transport hole to attach the lifting hook 60, allowing for fast loading and unloading of panel stacks or their relocation at ground or slab level (Fig. 8.5).

The steel frames are made of closed hollow profiles with welded-in mitred joints. The profiles are provided with a groove and edge protection. Panels with a width of 100, 125 and 250 cm are equipped with four bump notches (Fig. 8.6) that are welded in diagonally, allowing exact panel positioning without a hammer.

Note

→ For a list of the available panels including their designations and reference numbers refer to the Product List.

→ Mammut XT panels produced up to and including 2025 are equipped with an AL20 alkus facing. Panels produced thereafter are equipped with an AL17 alkus facing.

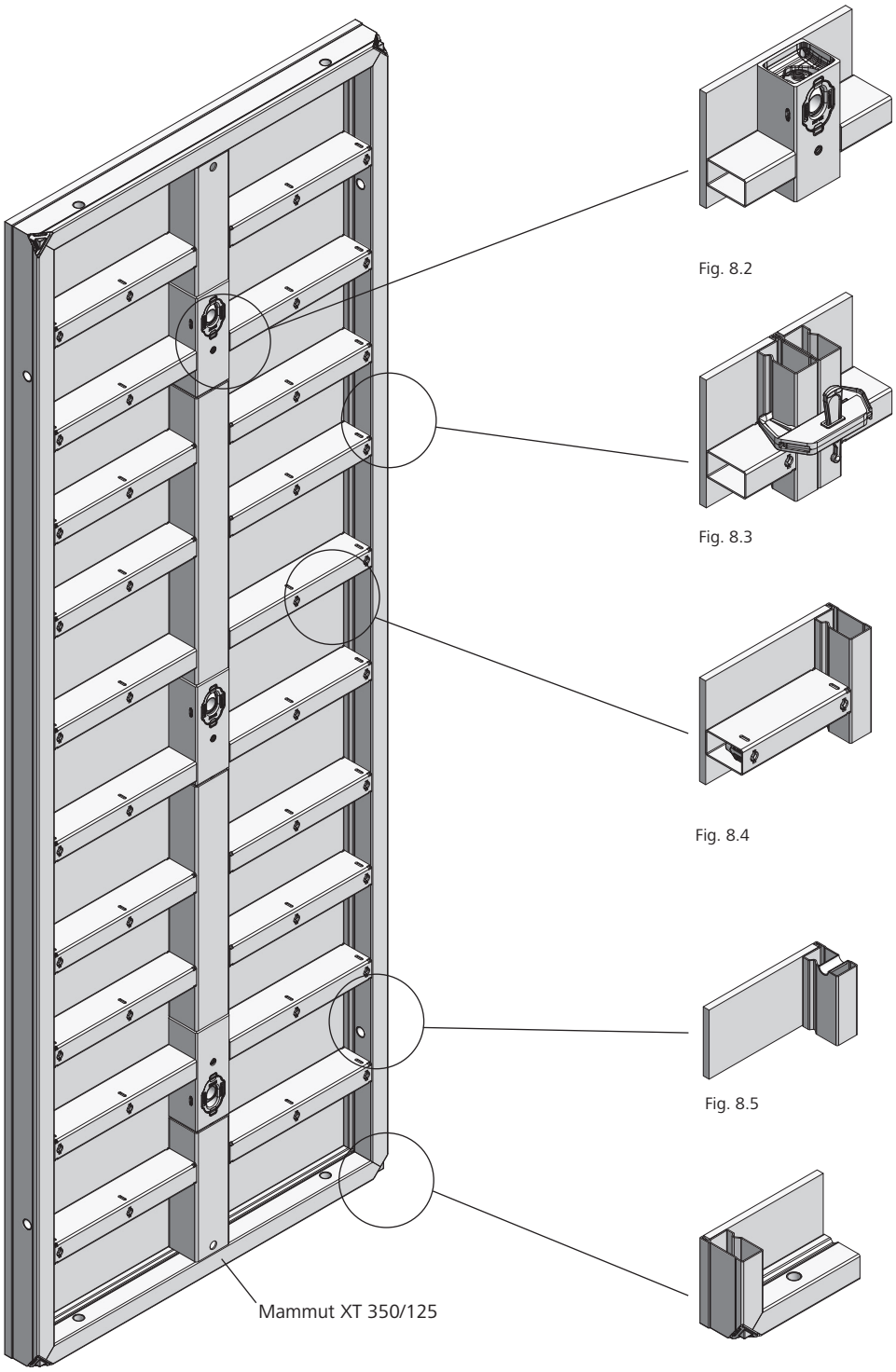


Fig. 8.1

Fig. 8.2

Fig. 8.3

Fig. 8.4

Fig. 8.5

Fig. 8.6

The Mammut XT panel – Large-size panel and panel with frame tie hole

Like all other Mammut XT panels, the large Mammut XT 350/250 panel (Fig. 9.1) also has internal tie holes. Thus, for the forming area of 8.75 m² only six ties are required. The 7.50 m² forming area of the Mammut XT 300/250 panel requires only four ties.

Optimally for very large surface areas, the large-size panel Mammut XT 500/250 (Fig. 9.2) can be used both vertically and horizontally. Eight tie rods are used for a 12,5 m² forming area

Besides internal combination tie holes, the 75, 55, 50 and 45 cm Mammut XT panels (Fig. 9.3) also have conical anchor sleeves in the frame. This allows for numerous formwork solutions, especially at corners. DW tie rods are used on both sides when using the frame tie holes.

The alkus all-plastic facing in predrilled in the area of the frame tie holes and closed off with the tie hole plug D27x20. The upper tying positions of the 300 cm high XT panels are closed off with tie hole plugs D35x20 ex works. The plugs simply have to be removed to use the tie holes. The plugs can be reused to close the holes later.

Note
Unused tie holes must always be closed with plug D35/38.

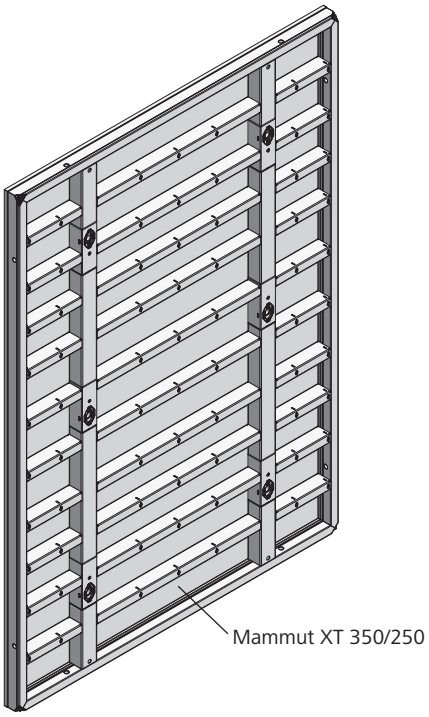


Fig. 9.1

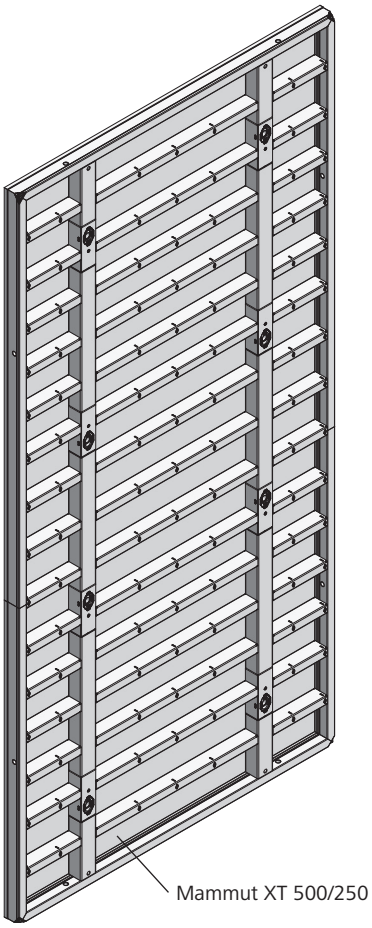


Fig. 9.2

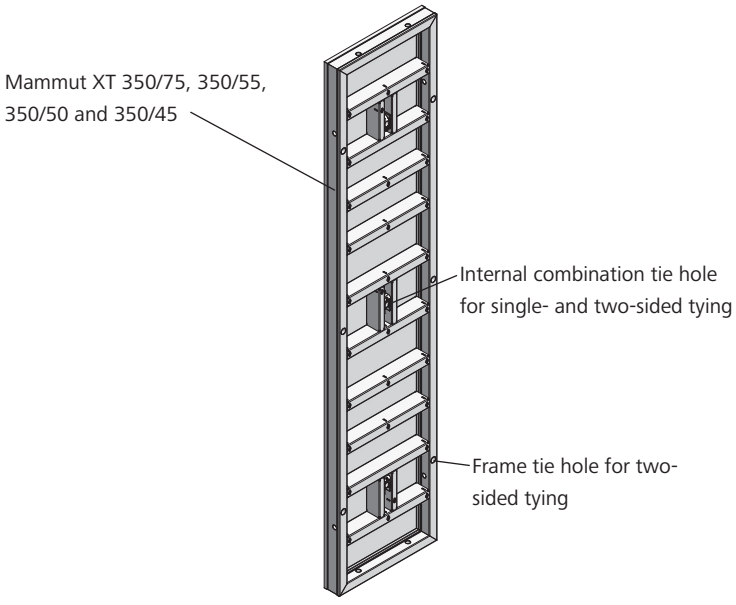


Fig. 9.3

Description	Ref. No.
Tie hole plug	
D27x20	**29-902-78**
D35x20	**29-902-79**

The Mammut XT panel – AL20/AL17

Mammut XT panels manufactured up to 2025 are equipped with the alkus facing 20 (Fig. 10.1). Panels manufactured from 2026 are equipped with the alkus facing 17 (Fig. 10.2).

The technical specifications such as the maximum permissible concrete pressure or the maximum permissible deflection as well as the number and position of multi-function profiles and nuts for the Mammut XT remain unaffected.

The new generation can be recognised due to the new frame profiles of the AL17 generation with recess (Figures 10.2 and 10.4) as well as the alkus facing printed on one side.

Note
The Mammut XT panels with alkus facing 20 can be converted for use with the XT sealing cone 17. Please contact us for further information.

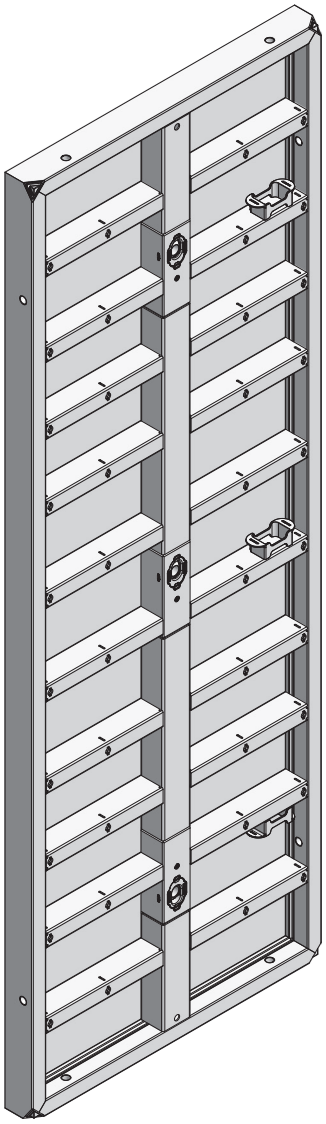


Fig. 10.1

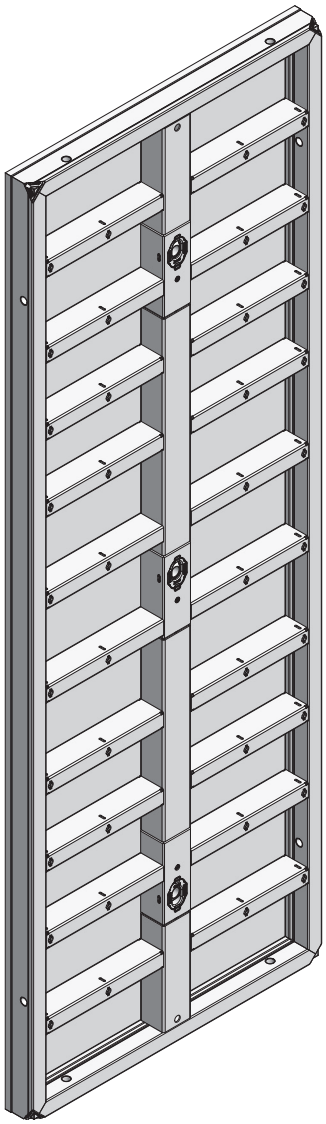


Fig. 10.2

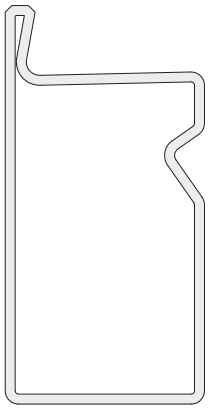


Fig. 10.3 Frame profile up to 2025

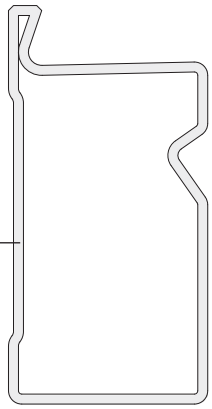


Fig. 10.4 Frame profile from 2026

Overview of panels

Tried-and-tested panels heights and widths provide a comprehensive range of widths and heights with increments of < 25 cm (Fig. 11.1).

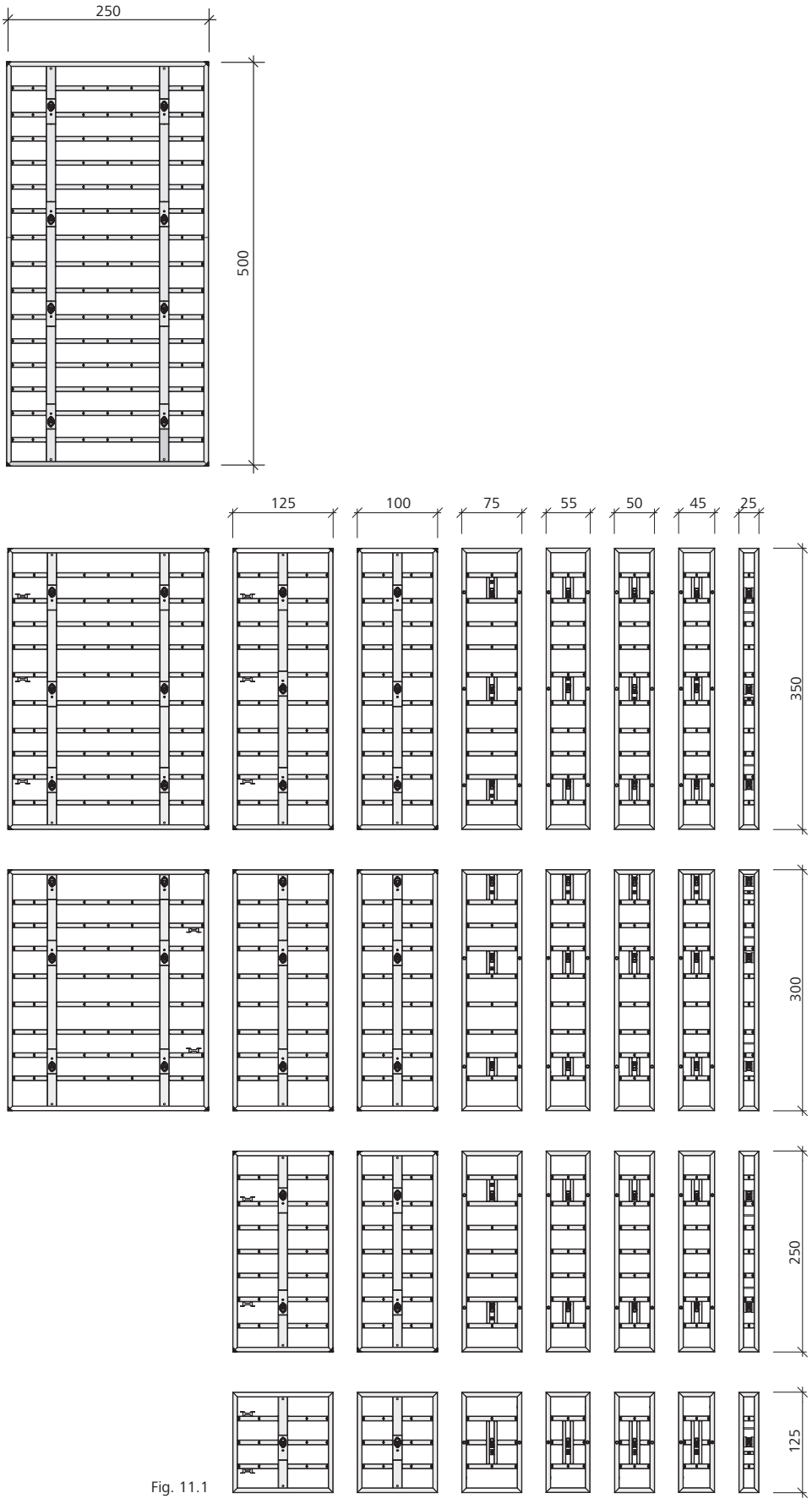


Fig. 11.1

Free combination of vertical and horizontal panels

All Mammut XT panels can be combined vertically or horizontally or height-extended (Figures 12.1 to 12.3). The ability to freely combine all panels vertically or horizontally allows for economic width and height extension in increments of 25 cm (Fig. 12.3).

They must always be connected with the Mammut assembly lock (see page XT-15). The continuous grooves on the panels allow the assembly locks to be positioned steplessly.

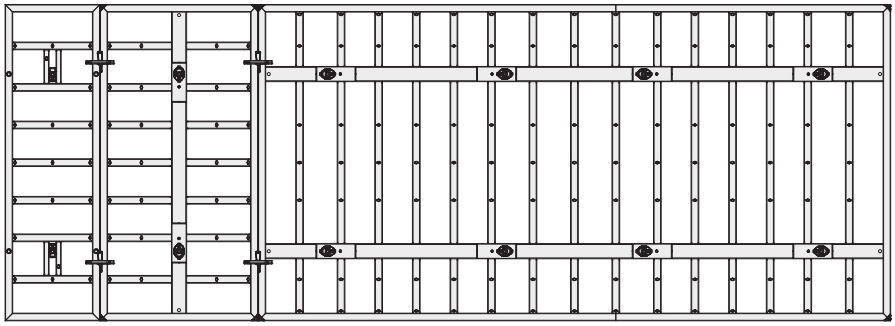


Fig. 12.1

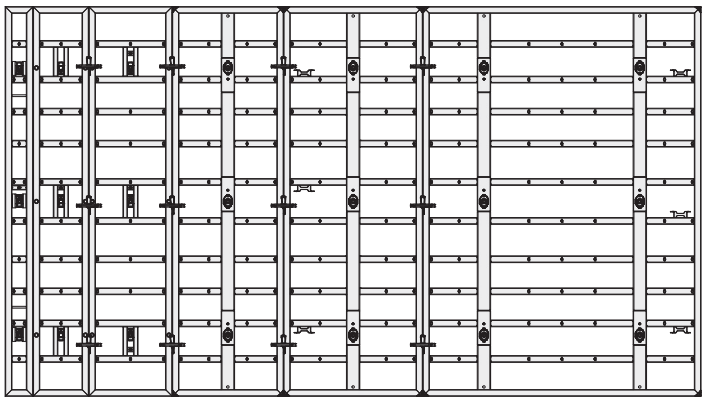


Fig. 12.2

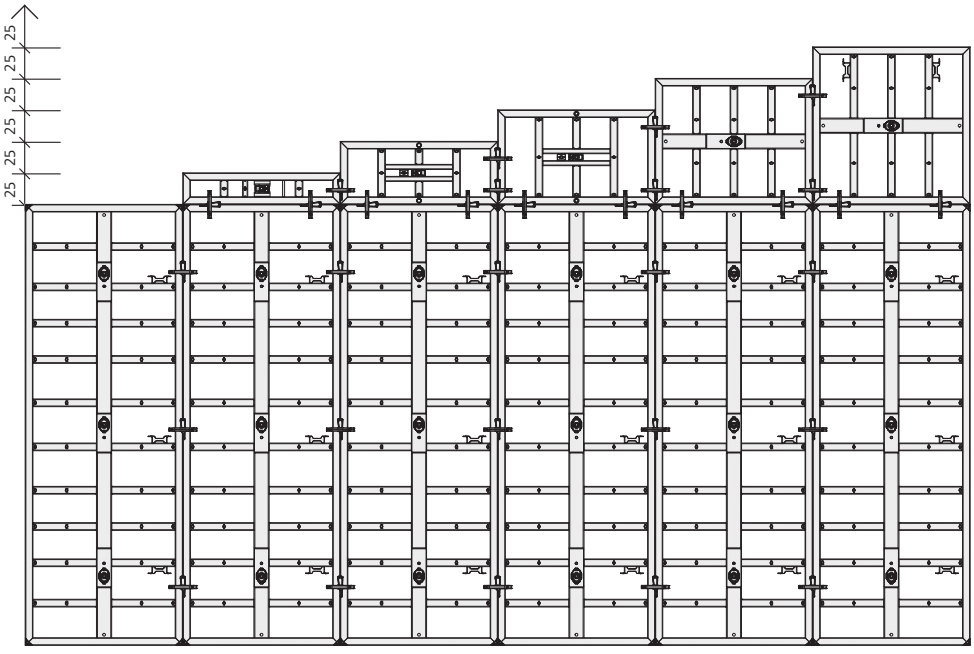


Fig. 12.3

Tie hole and joint pattern

The Mammut XT panel dimensions and the symmetrical internal tie holes result in a uniform tie hole and joint pattern for the highest architectural-concrete requirements. This applies to vertical, horizontal or a combination of vertical and horizontal formwork (Figures 13.1 and 13.2).

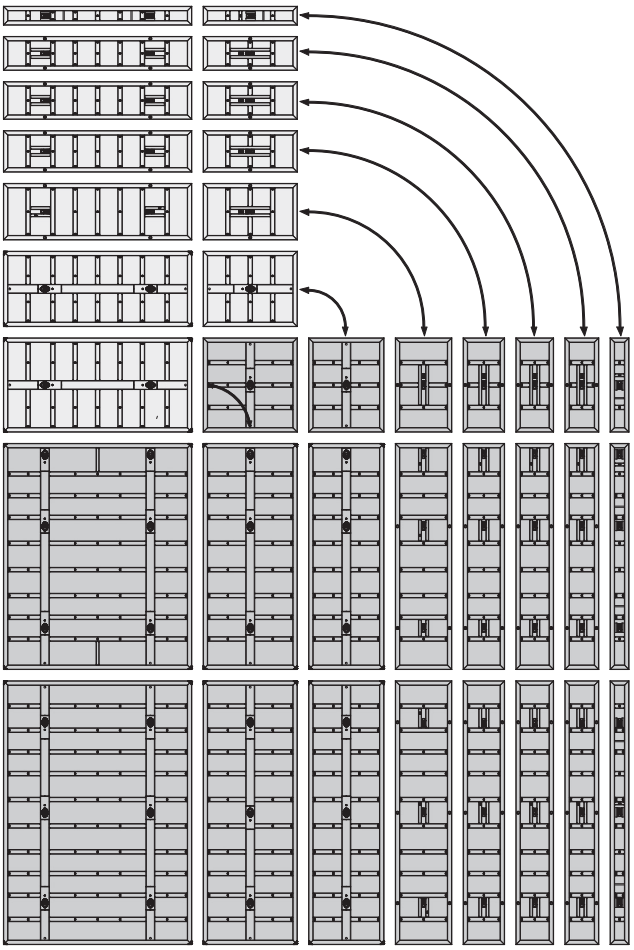


Fig. 13.1

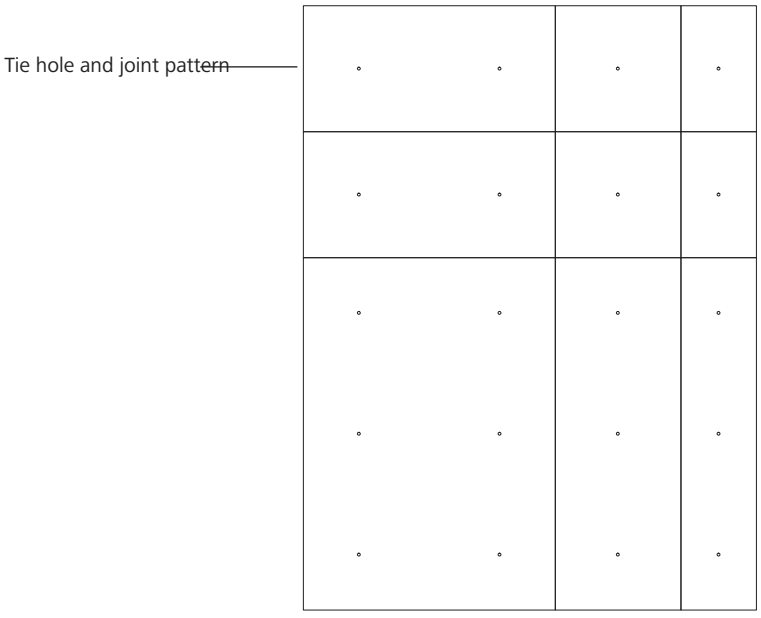


Fig. 13.2

alkus all-plastic facing

The tried-and-tested polypropylene and aluminium composite facing (Fig. 14.3) 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, 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.

Use of release agent with alkus facings

The release agent MevaTrenn pro is to be sprayed onto MEVA wall and slab formwork before each use. One litre of release agent is sufficient for 50 to 90 m^2 of formwork. The MevaTrenn pro release agent dries on the formwork in a short space of time and does not form residue. We recommend the stainless-steel jet with ref. no. 29-203-94 to ensure economical use of the release agent.
Observe the safety data sheets for MevaTrenn (classic, pro and eco) available at www.meva.net.

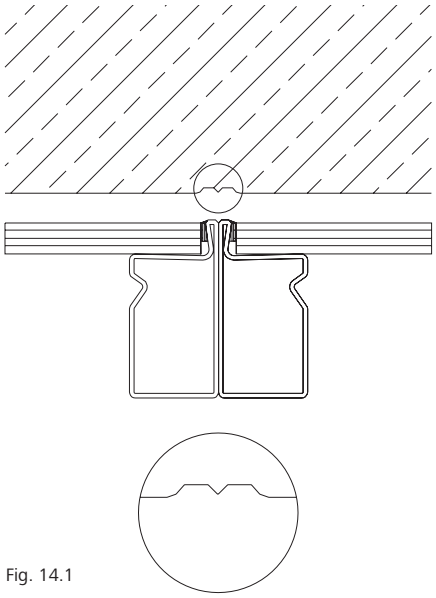


Fig. 14.1

Frame profile with plywood facing:
Negative imprint in the concrete when using panels with a conventional plywood facing

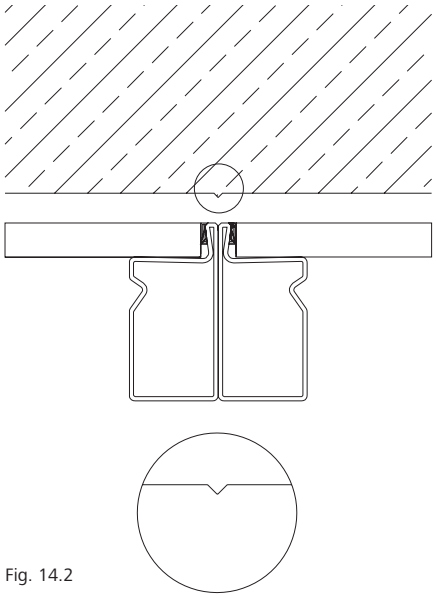
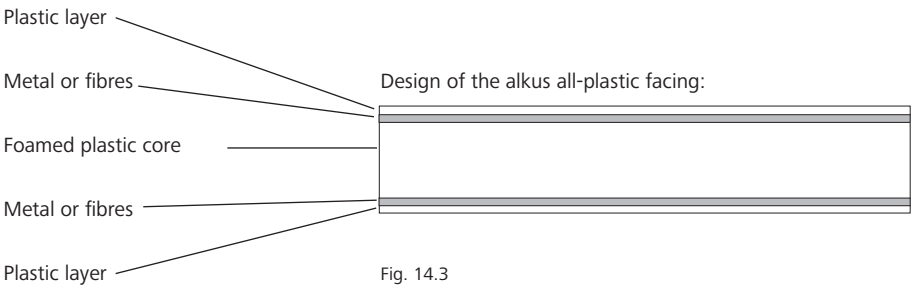


Fig. 14.2

Frame profile with alkus facing:
Smooth and even concrete surface as there are no projecting profiles



Design of the alkus all-plastic facing:

Fig. 14.3

Panel connection

Fast and efficient connection of the panels is accomplished with the M assembly lock (Fig. 15.1) 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. Since it weighs only 3 kg, it can be easily attached with only one hand.

Its five-point contact (Fig. 15.3) draws the panels together and aligns them. Secure connection and perfect alignment are achieved with only a few hammer blows. The assembly lock locks into a fail-safe position immediately and automatically.

Panels are generally connected up to a height of::
→ 300 cm with two assembly locks
→ 350 cm with three assembly locks
→ 500 cm with four assembly locks

When pouring walls in SB3 quality (German architectural concrete class for immaculate architectural concrete surfaces), the use of an additional assembly lock at each panel joint is recommended to connect panels that are 250 cm high or higher.

Horizontal panel connections generally require two assembly locks.

For the quantity of assembly locks required for outside corners and columns refer to pages XT-35 to -43, XT-58 as well as XT-67.

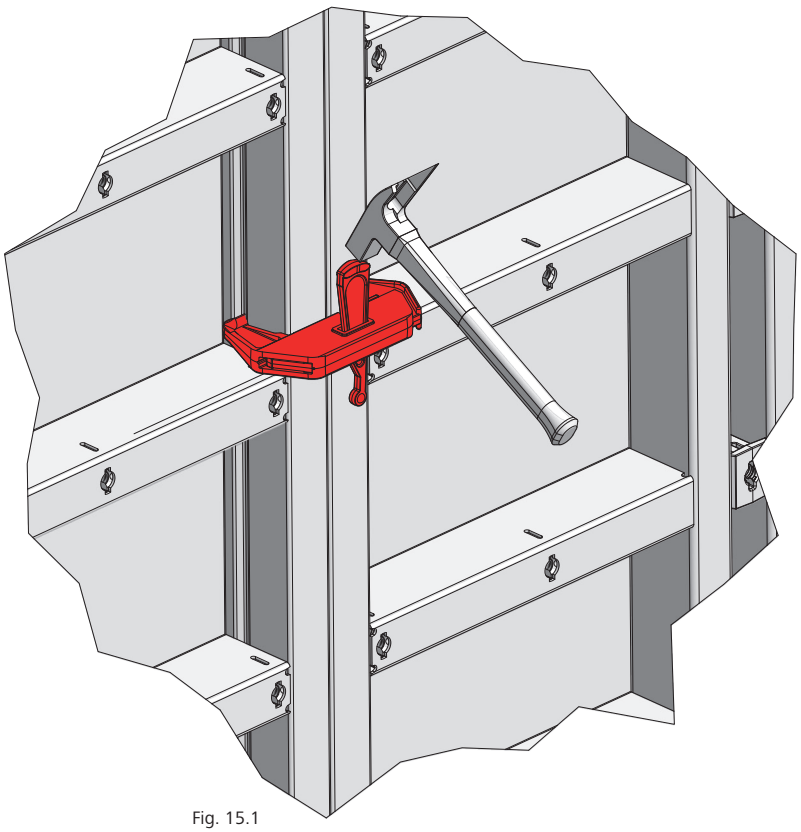


Fig. 15.1

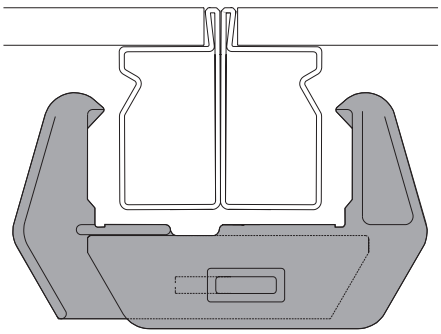


Fig. 15.2

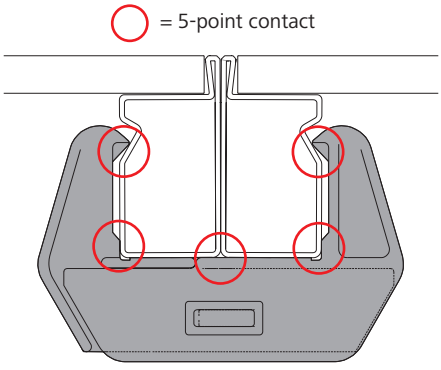


Fig. 15.3

Description	Ref. No.
M assembly lock	29-400-71

Tying methods

The Mammut XT allows the formwork panels to be tied from one side only or conventionally from two sides.

→ Single-sided tying with XT taper tie 23 (Fig. 16.1) without plastic tube

→ Two-sided tying with DW 20 tie rod and plastic tube (Fig. 16.2)

The maximum load is 160 kN for both types of tie rod.

Attention

Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

Note

The tie rod fixture Ø35 (Figures 16.3 to 16.5) can be attached to the multi-function profile of the vertical (Fig. 16.3) or horizontal Mammut XT panel. To install it, the tie rod fixture is turned by 45° (Fig. 16.4), inserted into the multi-function nut and then turned back again. It can hold up to two XT taper ties or DW tie rods with articulated flange nut (Fig. 16.5).

Both fixtures ensure that the assembly locks and tie rods are secure during the moving process.

Single-sided tying with XT taper tie 23 without plastic tube

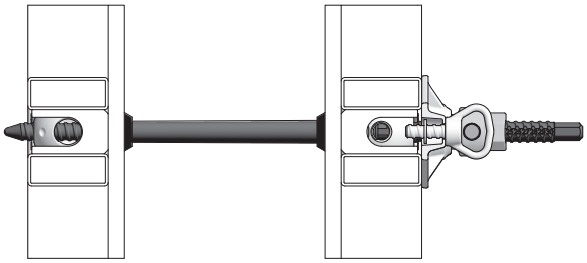


Fig. 16.1

Two-sided tying DW 20 and plastic tube

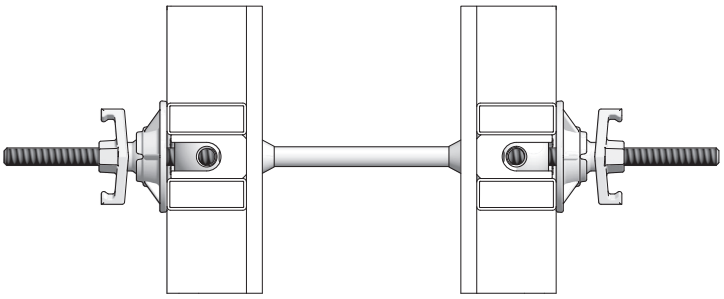


Fig. 16.2

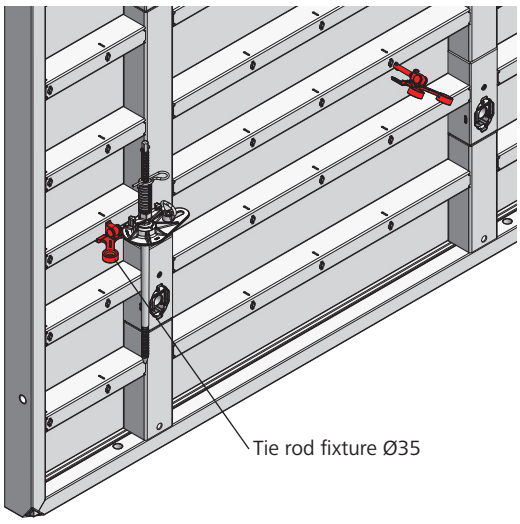


Fig. 16.3

Installation of the tie rod fixture Ø35

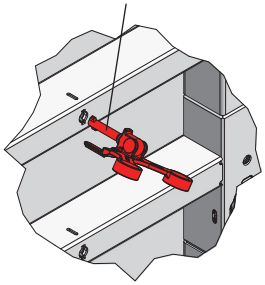


Fig. 16.4

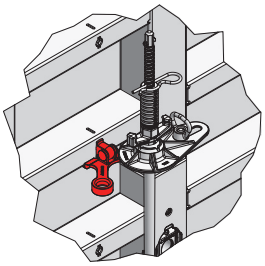


Fig. 16.5

Description	Ref. No.
Plug D35/38	**29-902-71**
Tie rod fixture Ø35	**29-927-05**

The combination tie hole

The combination tie hole (Fig. 17.1) is a rotating attachment point for XT taper ties and DW tie rods.

It is recessed and firmly integrated in the centre profile of the panel (Fig. 17.1).

Depending on the tying method selected (Table 17.6 and page XT-16), the sphere of the combination tie hole can be rotated by 90° to set it to either a conical anchor sleeve (Fig. 17.4) or a DW 20 thread (Fig. 17.5).

Setting it to the DW thread (Fig. 17.5 and Table 17.6) replaces the articulated flange nut on the formwork wall that is installed first (initial formwork) and allows single-sided tying.

When tying from two sides, the combination tie holes in all panels are preset to the anchor sleeve position (Fig. 17.4 and Table 17.6).

The combination tie hole is set using the XT combi lever (Figures 17.2 and 17.3).

Attention
As far as possible, tie rods are to be placed in every combination tie hole. In some cases tie rods can be replaced, see pages XT-63 and -64.

The karabiner hook on the XT lever is for storage purposes only and is not suitable for climbing.

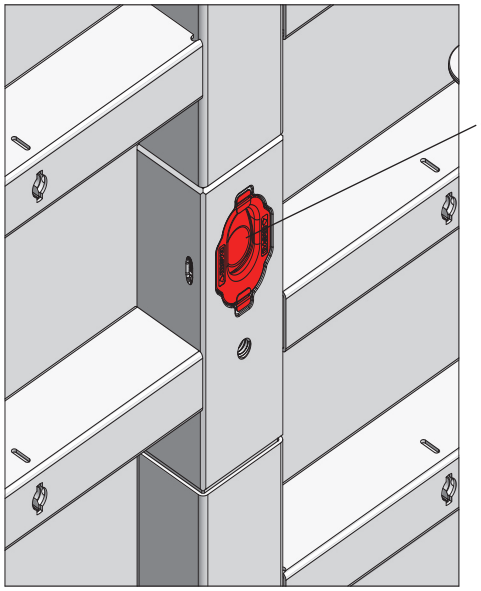


Fig. 17.1

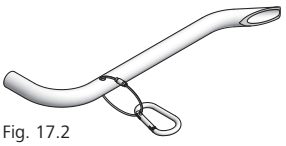


Fig. 17.2

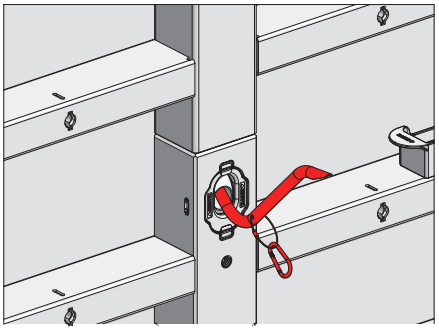


Fig. 17.3

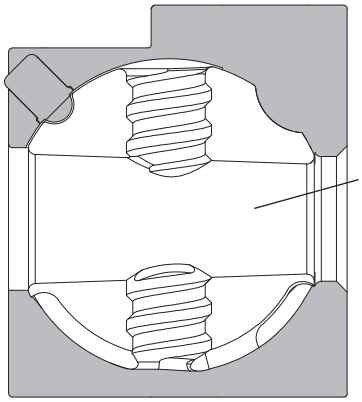


Fig. 17.4

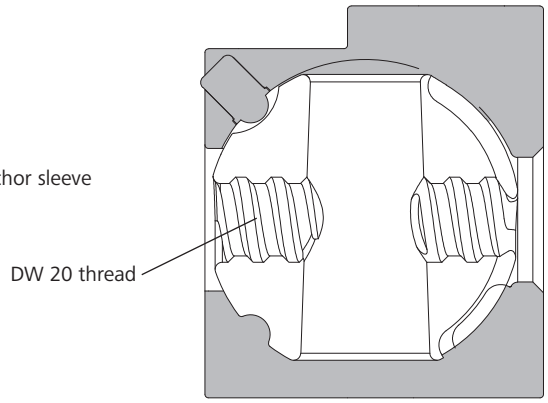


Fig. 17.5

Tying method	Initial formwork	Final formwork
Single-sided with XT taper tie 23 without plastic tube	Thread	Anchor sleeve
Two-sided with DW tie rod and plastic tube	Anchor sleeve	Anchor sleeve

Table 17.6

Description	Ref. No.
XT combi lever	**23-154-90**

Sealing the combination tie hole

Various cones are available to seal the combination tie hole on the facing side.

All XT panels are delivered with pre-assembled XT sealing cone 5 AL (Fig. 18.1).

The pre-assembled XT sealing cone 5 AL (Fig. 18.1) is used for single-sided tying.

If a clearly visible shadow gap is required, the XT sealing cone 10 AL (Fig. 18.2) is used for single-sided tying.

The XT sealing cones 5 AL and 10 AL are available in the sizes 20 and 17. The size to be used depends on the thickness of the alkus facing in the Mammut XT panel.
→ An AL20 facing is integrated into Mammut XT manufactured up to 2025.
→ An AL17 facing is integrated into Mammut XT panels manufactured from 2026.

To differentiate between the panel generations refer to page XT-10.

Note
The Mammut XT panels with alkus facing 20 can be converted for use with the XT sealing cone 17. Please contact us for further information.

If tying is performed from two sides with DW tie rod and plastic tube, the cone for plastic tube D32 (Fig. 18.3) is to be used.

The following applies to all tying methods: The same cone is used on the initial- and the final-formwork sides.

To close unused combination tie holes, e.g. in the corner area, the plug D35/38 or alternatively the XT sealing cone with pressed-on plug D20 can be used (Fig. 18.5).

The XT sealing cone can be easily removed from the XT formwork panel without causing damage using the XT combi lever.

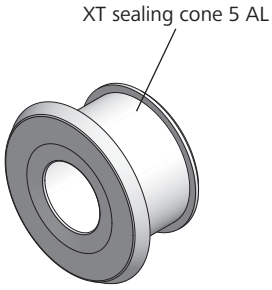


Fig. 18.1

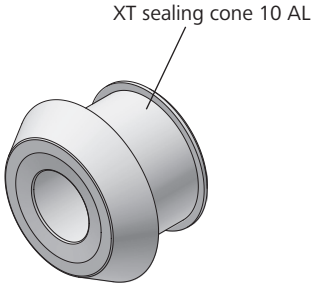


Fig. 18.2

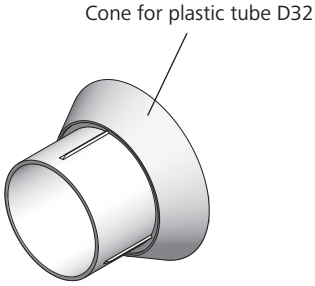


Fig. 18.3

Tying method	XT sealing cone 5 AL	XT sealing cone 10 AL	Cone for plastic tube D32
Single-sided with XT taper tie 23 without plastic tube	Yes	Yes	No
Two-sided with DW tie rod and plastic tube	No	No	Yes

Table 18.4

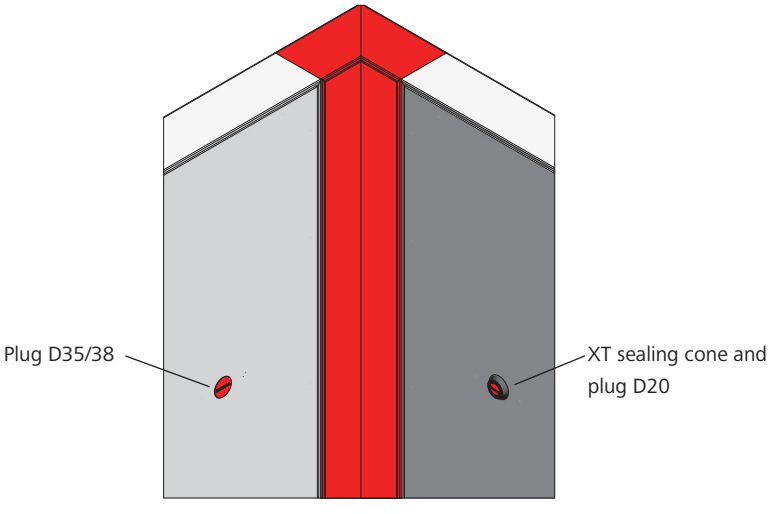


Fig. 18.5

Description	Ref. No.
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**
Cone for plastic tube D32/10	**29-902-55**
Plug D35/38	**29-902-71**
Plug D20, red	**29-902-63**

Single-sided tying with XT taper tie 23

The XT taper tie 23 (Fig. 19.1) is available in various lengths for different wall thicknesses.

→ 15–25 cm
→ 20–30 cm
→ 35–45 cm
→ 45–55 cm
→ 60–70 cm

It can be set for different wall thicknesses in 0.5 cm increments using the adjustment screw on the XT articulated flange nut.

Note

→ The XT taper tie 23 can be screwed in or out and the adjustment screw for the wall thickness can be undone and tightened using the XT taper tie ratchet spanner. The width across flats is 19.

→ A coating of Divinol wax must be applied to the XT taper tie before and after each use.

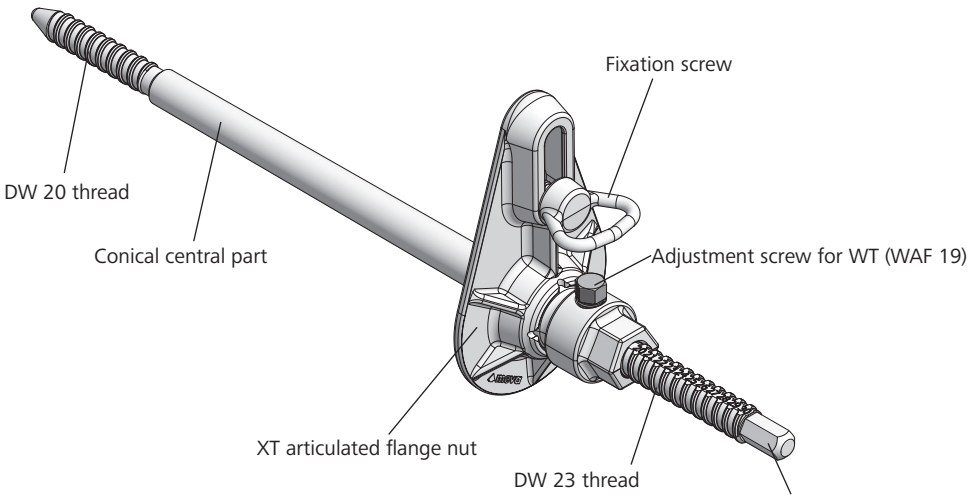


Fig. 19.1

Description	Ref. No.
XT taper tie 23/15-25	**23-154-60**
XT taper tie 23/20-30	**23-154-65**
XT taper tie 23/35-45	**23-154-70**
XT taper tie 23/45-55	**23-154-75**
XT taper tie 23/60-70	**23-154-80**
XT taper tie ratchet spanner set	**29-800-25**
Divinol wax	**29-203-30**

WT = wall thickness
WAF = width across flats

Single-sided tying with XT taper tie 23

Setting the wall thickness in full cm increments

1. Loosen adjustment screw for WT (WAF 19).
2. Rotate the XT articulated flange nut until the desired wall thickness can be read behind the nut (Fig. 20.2).
3. Tighten the adjustment screw for the wall thickness with a ratchet spanner or spanner.

Setting the wall thickness in half cm increments

1. Loosen adjustment screw for WT (WAF 19).
2. Rotate the XT articulated flange nut until the desired wall thickness can be half read behind the nut (Fig. 20.3). The adjustment screw is then located on the rear of the XT taper tie 23.
3. Tighten the adjustment screw for the wall thickness with a ratchet spanner or spanner.

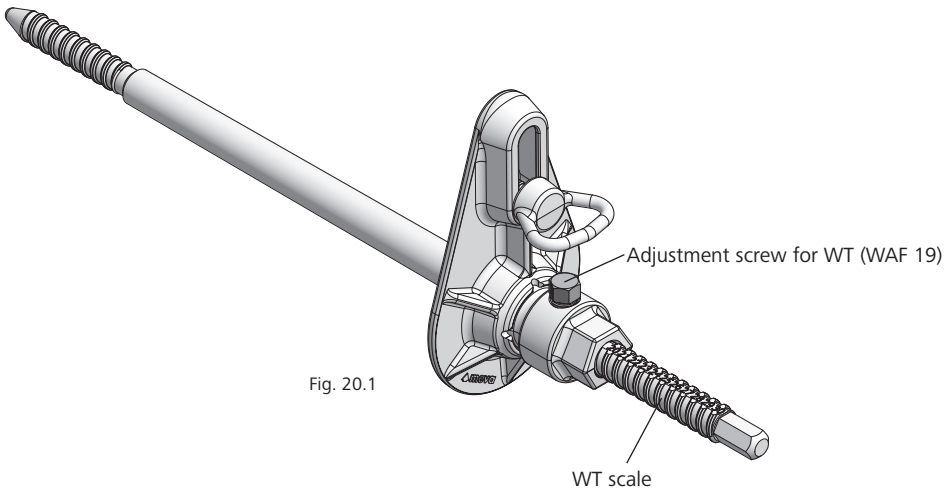


Fig. 20.1

Setting the wall thickness in full cm increments

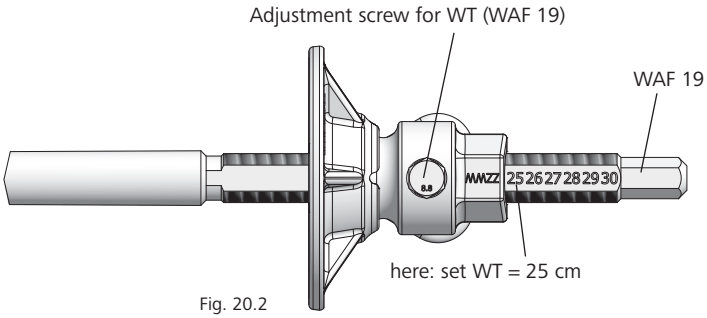


Fig. 20.2

Setting the wall thickness in half cm increments

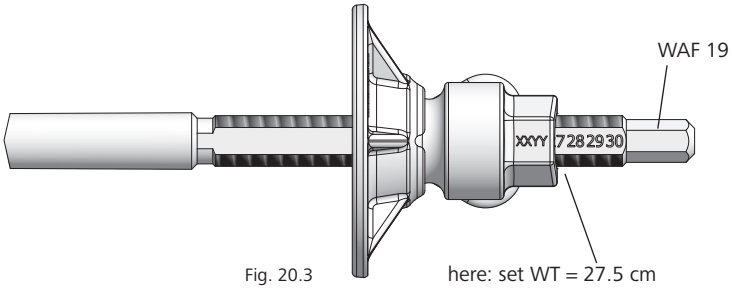


Fig. 20.3

Description	Ref. No.
XT taper tie 23/15-25	**23-154-60**
XT taper tie 23/20-30	**23-154-65**
XT taper tie 23/35-45	**23-154-70**
XT taper tie 23/45-55	**23-154-75**
XT taper tie 23/60-70	**23-154-80**
XT taper tie ratchet spanner set	**29-800-25**

WT = wall thickness
WAF = width across flats

Single-sided tying with XT taper tie 23

Assembly

Before pouring:

1. Depending on the requirement, it may be necessary to replace XT sealing cone 5 with XT sealing cone 10 (see page XT-18).
2. Set the combination tie holes on the initial-formwork panels to the threaded position (see page XT-17).
3. Set the combination tie holes on all other panels to the anchor sleeve position (see page XT-17).
4. Place the initial-formwork panels (Fig. 21.1 and XT-4 and -5) and carry out boxout work (Fig. 21.2).
5. Place the final-formwork panels (Fig. 21.3).
6. Prepare the XT taper tie 23 for the desired wall thickness (see page XT-20) and apply a coating of wax.
7. Push the XT taper tie through the combination tie hole on the final-formwork side and screw it into the combination tie hole on the initial-formwork panel using the XT taper tie ratchet spanner (WAF 19) (Fig. 21.5). An articulated flange nut on the initial-formwork side and a plastic tube are not required.
8. Secure the XT taper tie tightly by hand to the multi-function nut of the formwork panel using the fixation screw integrated into the XT articulated flange nut (Fig. 21.4).

Disassembly

After pouring:

9. To strip the formwork, undo the fixation screw on the XT taper tie (Fig. 21.4).
10. Screw the tie rod out of the combination tie hole of the initial-formwork panel using the XT taper tie ratchet spanner (WAF 19) (Fig. 21.5).

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.

→ The XT taper tie can be screwed in or out using the XT taper tie ratchet spanner. The width across flats is 19. When screwing the taper tie in, a tightening torque of 200 Nm should not be exceeded.

→ We recommend slackening the articulated flange nut of the XT taper tie approximately 24 hours after pouring the concrete and screwing out the tie rod by approximately half a turn.

→ When stripping, ensure that the XT panel has been completely separated from the concrete before lifting it with the crane.

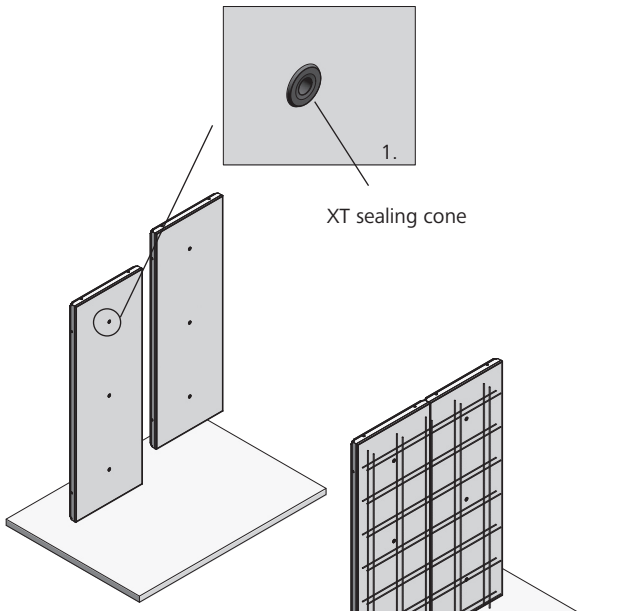


Fig. 21.1

Fig. 21.2

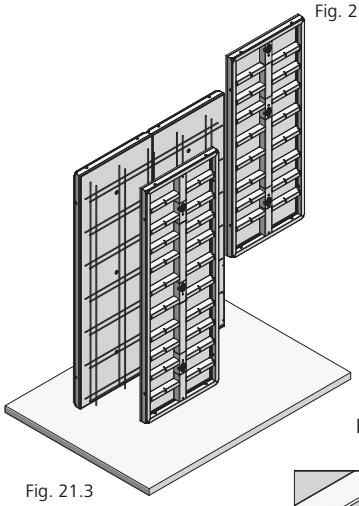


Fig. 21.3

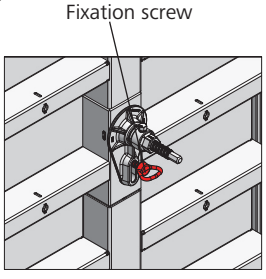


Fig. 21.4

Fig. 21.5

Description	Ref. No.
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**
XT taper tie 23/15-25	**23-154-60**
XT taper tie 23/20-30	**23-154-65**
XT taper tie 23/35-45	**23-154-70**
XT taper tie 23/45-55	**23-154-75**
XT taper tie 23/60-70	**23-154-80**
XT taper tie ratchet spanner set	**29-800-25**
Divinol wax	**29-203-30**

Two-sided tying with DW tie rod and plastic tube

Assembly

Before pouring:

1. Set all combination tie holes in the initial- and the final-formwork panels to the anchor sleeve position (Fig. 22.1).
2. Modify the length of the plastic tube including the cones for plastic tube to suit the desired wall thickness.

If the XT sealing cones remain in the facing, a total of 7 mm must be subtracted to determine the length of the plastic tube when using the cones for plastic tube D32/10.

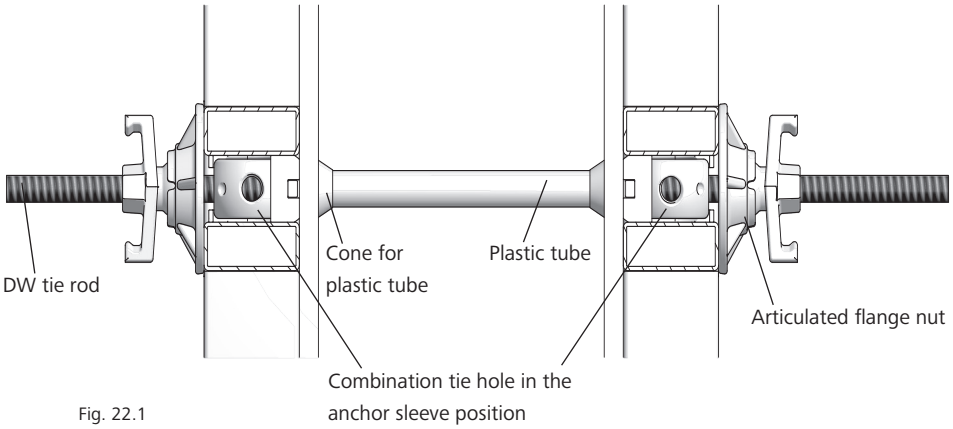


Fig. 22.1

Note

→ Mammut XT is designed for use with the tie rod DW 20.

→ For architectural-concrete requirements, we recommend the use of the XT taper tie 23 with XT sealing cone 10. The tie hole in the concrete can be closed using the XT fibre concrete plug 47 x 8.5.

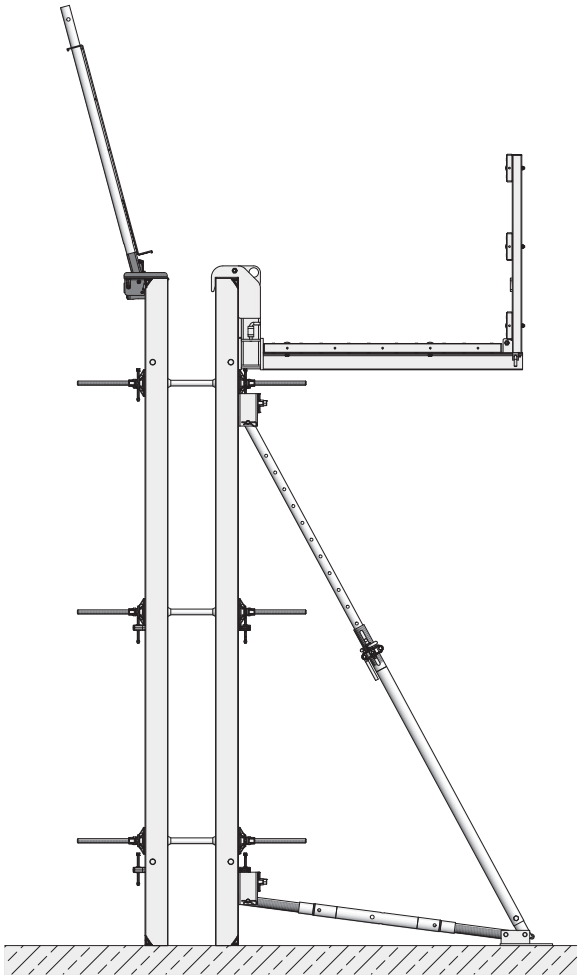


Fig. 22.2

Description	Ref. No.
Tie rod DW 20/90	**29-900-96**
Tie rod DW 20/120	**29-900-97**
Articulated flange nut 20/140	**29-900-05**
Plastic tube D32/200	**29-902-28**
Cone for plastic tube D32/10	**29-902-55**

Rules for concrete pouring and rate of placing

The maximum permissible fresh-concrete pressure for Mammut XT is **100 kN/m²** (when using tie rods with a permissible working load of 160 kN).

Rules for concrete pouring

→ For the rate of placing of walls higher than 4.00 m refer to Table 23.1.

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

→ Concrete must not be placed above heights of 1.50 m (or higher) in free fall.

→ When vibrating the concrete, which is done layer by layer, the vibrator must not penetrate more than 50 cm 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 Tables 23.1 and 23.2 or using MEVA's online calculation programme available on the MEVA website.
This and other digital aids are available in the download section at www.meva.net.

Maximum rate of placing v_b (depending on the concrete's consistency and end of setting t_E)* in m/h					
Mammut XT (DW 20 / XT taper tie 23)		t_E = 5 h	t_E = 7 h	t_E = 10 h	t_E = 15 h
Consistency range	F3	5.64	4.72	3.72	2.63
	F4	4.71	3.46	2.36	1.38
	F5	2.40	1.71	1.20	0.80
	F6	1.89	1.35	0.95	0.63
	SCC	2.18	1.56	1.09	0.73

Table 23.1

* 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 the XT taper tie 23

XT taper tie	23
$d_{1\ \text{thread tie rod tip}}$[mm]	19.8
$d_{2\ \text{thread tie rod tip}}$[mm]	22.4
$d_{1\ \text{thread tie rod end}}$[mm]	23.4
$d_{2\ \text{thread tie rod end}}$[mm]	26.0
$d_{1\ \text{cone}}$	26.0
$d_{2\ \text{cone}}$	29.0
Nominal cross-section [mm²]	307.9
Permissible working load according to DIN 18216 [kN]	160
Tie rod elongation when using the permissible working load [mm/m]	3

Table 23.2

Specific values of tie rods DW 15 and DW 20

DW tie rod	15	20
d_1[mm]	15	20
d_2[mm]	17	22.4
Nominal cross-section [mm²]	177	314
Permissible working load according to DIN 18216 [kN]	90	160
Tie rod elongation when using the permissible working load [mm/m]	2.5	2.35

Table 23.3

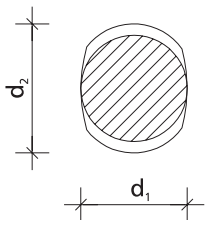


Fig. 23.4 Diameter of thread

Flatness of surface

The permissible deflection of formwork parts is defined in DIN 18202 (flatness tolerances),Table 3, lines 5 to 7 (Table 24.1). Here, the maximum permissible deflection is defined in relation to the distance between the measuring points. The permissible fresh-concrete pressure that is in line with the flatness tolerances as defined in DIN 18202,Table 3, line 7 is 100 kN/m² for full load.

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 24.1

* Intermediate values can be found in Fig. 24.2. Round up values found to full mm.

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

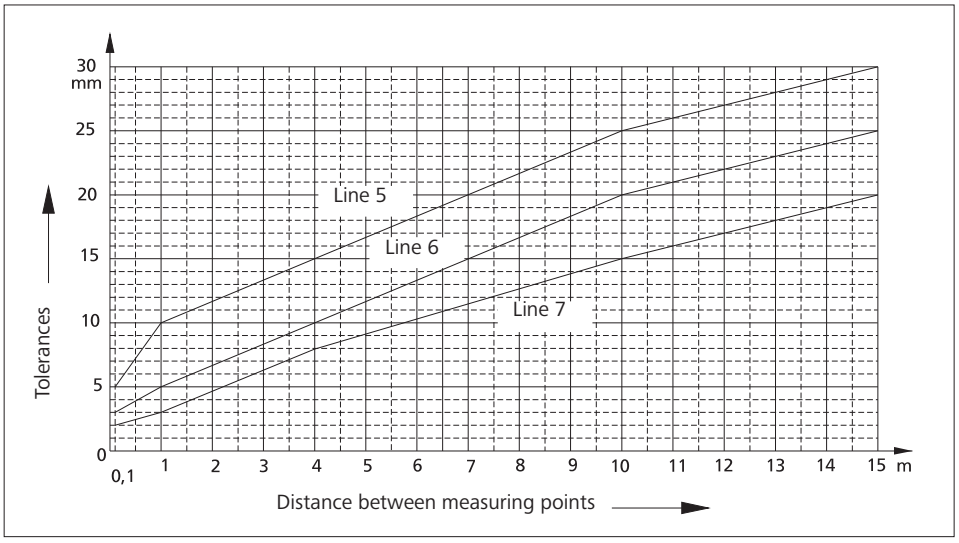


Fig. 24.2

Determining the deflection
The measuring lath is placed at a distance a on the stripped concrete wall and the deflection t is measured at the point of greatest deflection in-between (Fig. 24.3).

The maximum permissible dimension in accordance with Table 24.1 and Fig. 24.2, corresponding to the distance between the measuring points l is the constant a minus the measured value t.

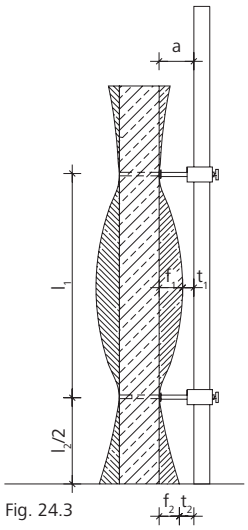


Fig. 24.3

Deflection:
$f_1 = a - t_1$
$f_2 = a - t_2$

a = constant
t_1 or t_2 = reading
l_1 or l_2 = corresponding distance between measuring points

Attachment of accessories

All panels are provided with multi-function profiles with welded-in Dywidag-threaded nuts (Figures 25.1, 25.5 and 25.6).

Walkway brackets are provided with integrated self-locking pins (Fig. 25.2) 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 a flange screw 18 via the formwork-prop connector as shown in Fig. 25.4.

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

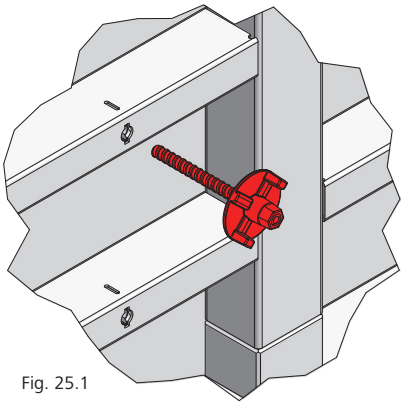


Fig. 25.1

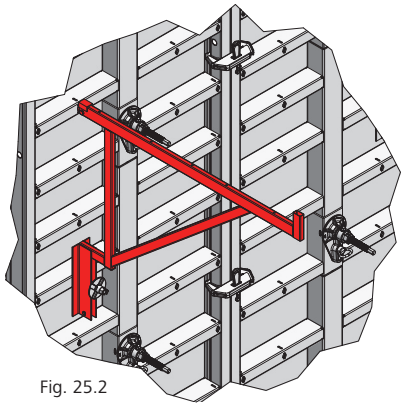


Fig. 25.2

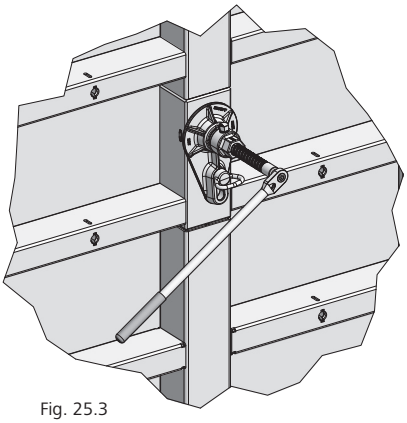


Fig. 25.3

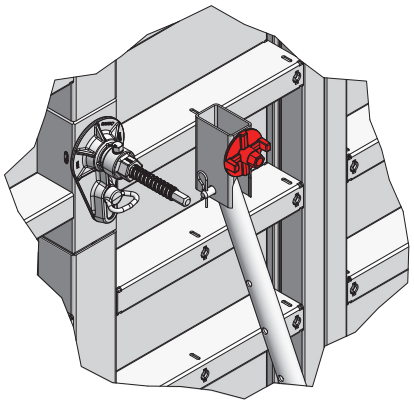


Fig. 25.4

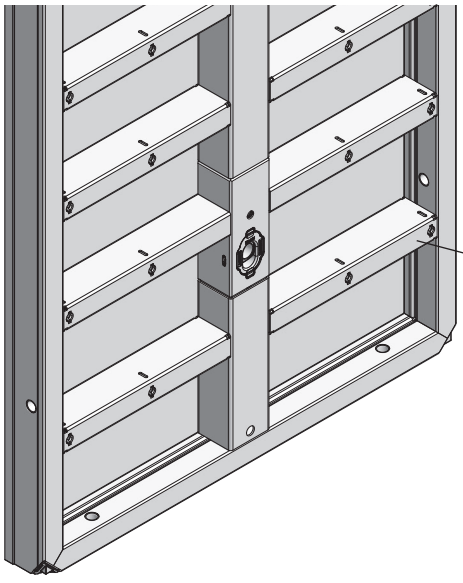


Fig. 25.5

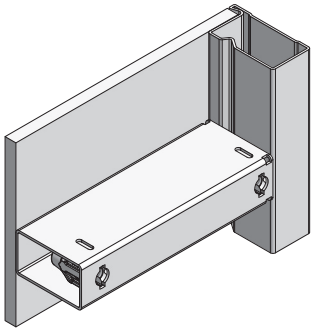


Fig. 25.6

Wall braces

A push-pull prop or the brace frame 250 with formwork-prop connector is attached to the panel's multi-function profile with flange screw 18 (pages XT-25 and -27).

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 maximum spacing of 4.00 m. In order to withstand wind loads, refer to Table 26.1. For further applications please contact our application engineering department.

Assumptions for Table 26.1
→ Wind loads according to DIN EN 1991-1-4
→ Wind zone 2, inland (mixed profile between terrain categories II and III)
→ Impact pressure q_p = 0.65 kN/m² (Table 26.2)
→ 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	3.00	3.25	3.50	3.75	4.00	4.25	4.50
Push-pull prop	R250+ SRL120	R250+ SRL120	R250+ SRL120	R460+ SRL170	R460+ SRL170	R460+ SRL170	R460+ SRL170	R460+ SRL170
Permissible influence width e (m)	5.78	4.72	4.37	4.13	3.79	3.40	3.23	3.04
Prevailing brace load F_1 (kN)	5.95	5.57	5.64	5.95	5.65	4.93	5.07	5.02
Prevailing push-pull prop load F_2 (kN)	11.85	12.08	12.06	11.85	12.01	12.44	12.37	12.37
Lifting force V_{Wind} (kN/m)	1.88	2.32	2.49	2.58	2.84	3.27	3.41	3.62
Prevailing dowel force $V_{dowel\ 1}$ (kN)	14.16	14.25	14.25	14.17	14.21	14.38	14.34	14.35
Prevailing dowel force $H_{dowel\ 1}$ (kN)	11.85	11.61	11.62	11.85	11.64	11.15	11.24	11.22
a (m)*	0.275	0.38	0.375	0.275	0.375	0.658	0.625	0.665
b (m)**	1.31	1.54	1.68	1.89	1.97	1.95	2.12	2.24

Wall braces	Formwork height h (m)							
	4.75	5.00	6.00	6.50	7.00	7.50	8.25	9.00
Push-pull prop	R460+ SRL170	R460+ R250	R460+ R250	R630+ R250+ SRL170	R630+ R460+ SRL170	R630+ R460+ SRL170	Triplex+ R460+ SRL170	Triplex+ R460+ R250
Permissible influence width e (m)	2.79	2.38	2.03	2.68	2.41	2.50	1.81	2.02
Prevailing brace load F_1 (kN)	4.49	3.95	4.04	3.30	2.94	3.23	2.66	3.60
Prevailing push-pull prop load F_2 (kN)	12.75	11.73	11.96	13.48	12.80	11.70	12.85	11.96
Lifting force V_{Wind} (kN/m)	4.05	4.59	5.42	7.16	7.90	8.51	9.24	10.03
Prevailing dowel force $V_{dowel\ 1}$ (kN)	14.51	14.92	14.74	14.82	15.13	13.65	15.19	14.95
Prevailing dowel force $H_{dowel\ 1}$ (kN)	10.85	9.73	9.97	10.05	9.35	9.08	9.09	9.53
Prevailing push-pull prop load F_3 (kN)	-	-	-	8.42	8.97	12.60	6.30	10.73
Prevailing dowel force $V_{dowel\ 2}$ (kN)	-	-	-	8.47	11.35	15.98	5.45	9.29
Prevailing dowel force $H_{dowel\ 2}$ (kN)	-	-	-	4.21	4.48	6.28	3.15	5.35
a (m)*	0.923	1.25	1.40	3.28	3.78	4.19	4.20	4.75
b (m)**	2.23	2.19	2.68	1.89	1.69	1.93	2.36	2.48
c (m)***	-	-	-	1.05	1.15	1.69	0.92	1.75
d (m)****	-	-	-	3.17	3.40	3.37	4.19	4.14

Table 26.1

* 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

*** Upper pivot point c, distance measured between top edge of formwork and attachment point of the upper formwork-prop connector of the individual push-pull prop

**** Distance to the foot plate d, measured from the rear edge of the formwork to the attachment of the foot plate of the individual push-pull prop

Wind impact pressure for buildings up to a height of 25 m:

Wind zone		Impact pressure q_p in kN/m² at a ground elevation h within the limits		
		h ≤ 10 m	10 m < h ≤ 18 m	18 m < h ≤ 25 m
1	Inland	0.50	0.65	0.75
2	Inland	**0.65**	0.80	0.90
	Coast and island in Baltic Sea	0.85	1.00	1.10
3	Inland	0.80	0.95	1.10
	Coast and island in Baltic Sea	1.05	1.20	1.30
4	Inland	0.95	1.15	1.30
	Coast of North Sea and Baltic Sea and island in Baltic Sea	1.25	1.40	1.55
	Island in North Sea	1.40	-	-

Table 26.2

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**
Brace frame 250 with formwork-prop connector	**29-109-20**
Flange screw 18	**29-401-10**
Formwork-prop connector	**29-804-85**
Double-jointed foot plate	**29-402-32**

Wall braces

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 = dead load of the formwork (including platforms)

For walls up to 6.00 m we recommend assembling a brace frame on-site consisting of the push-pull props R 460 and R 250. The required formwork-prop connectors and double-jointed foot plates must be ordered separately.

For formwork heights above 6.50 m a brace frame is assembled on-site consisting of push-pull prop R 630 and push-pull prop R 250 or R 460. Above a formwork height of 8.25 m the Triplex brace is also used. It is especially designed to brace and align high wall formwork (configuration: see Table 2626.1).

Please observe the Triplex Technical Instruction Manual.

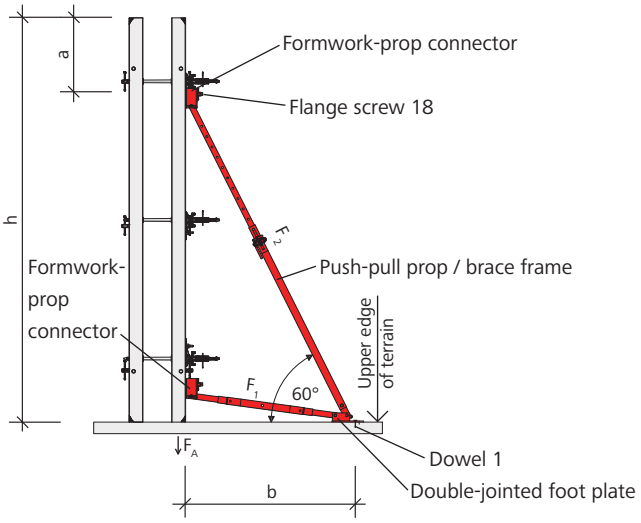


Fig. 27.1

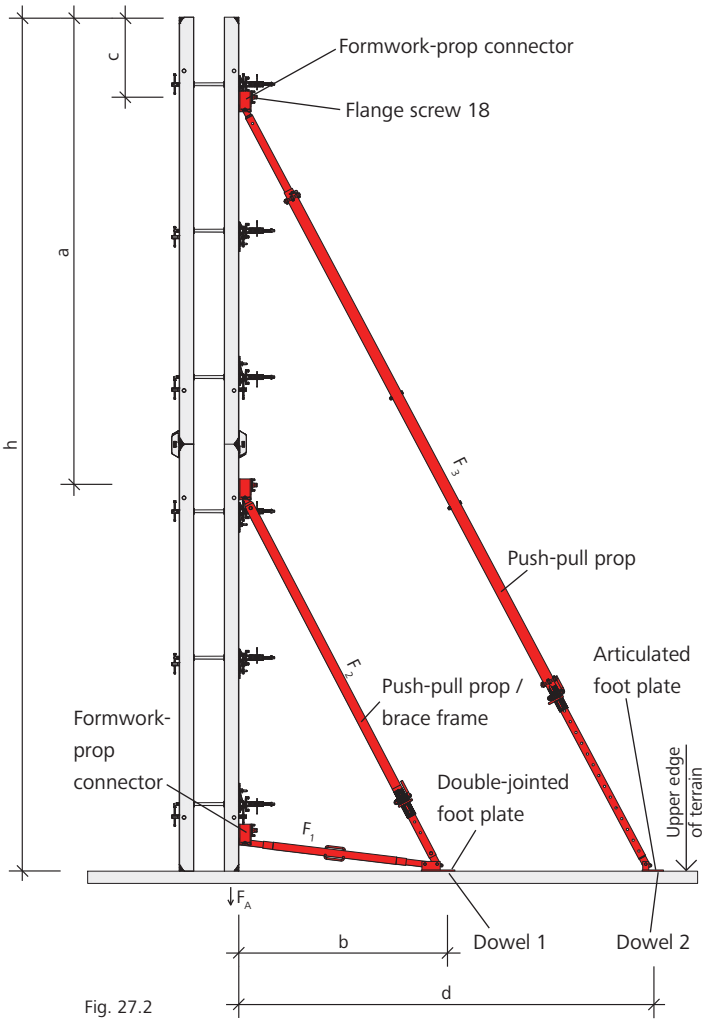


Fig. 27.2

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**

Wall braces

The brace is attached to the double-jointed foot plate (Fig. 28.1) of the foot plate 73 (Fig. 28.2) or the connecting plate 48 (Fig. 28.3) using MEVA quick anchors, bolt anchors or concrete anchor bolts, for example.

The permissible influence width of the bracing (e) is reduced at the edge of the formwork as shown in Fig. 28.4.
→ e = permissible influence width (see Table XT-26.1)

The shoe plate 60 can be used to secure the Mammut XT panel to the ground (Fig. 28.5). It can be secured using a bolt anchor or concrete anchor bolt with d = 16 mm, e.g. HECO Multi-Monti-plus SSK 16x130 or equivalent.

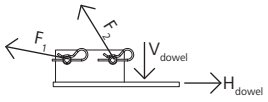
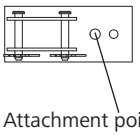


Fig. 28.1 Double-jointed foot plate



Attachment point for dowel/bolt, e.g. MEVA quick anchor, Fischer bolt anchor FAZ II plus 20/30, HECO Multi-Monti-plus SSK 20x160 or equivalent

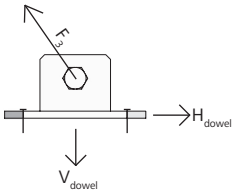
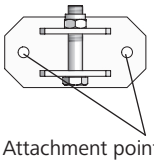


Fig. 28.2 Foot plate 73



Attachment points for dowel/bolt, e.g. MEVA quick anchor, Fischer bolt anchor FAZ II plus 20/30, HECO Multi-Monti-plus SSK 20x160 or equivalent

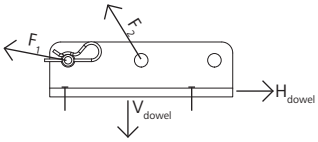
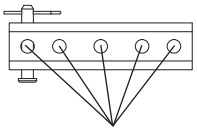


Fig. 28.3 Connecting plate 48



Attachment points for dowel/bolt, e.g. MEVA quick anchor, Fischer bolt anchor FAZ II plus 16/25, HECO Multi-Monti-plus SSK 16x130 or equivalent

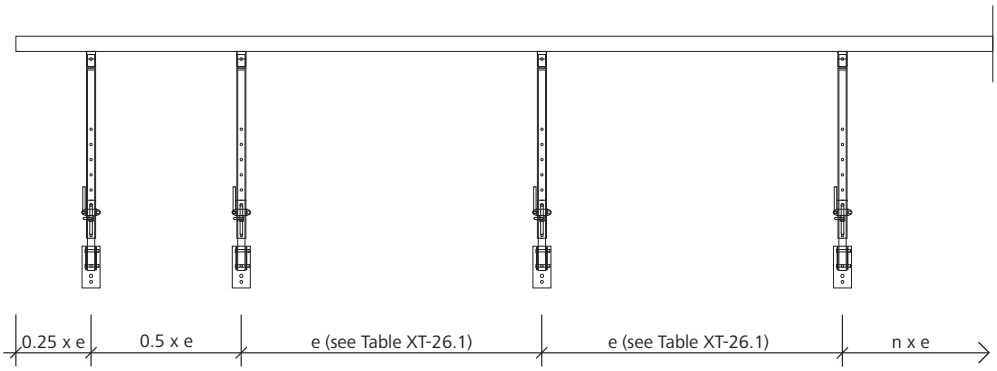


Fig. 28.4

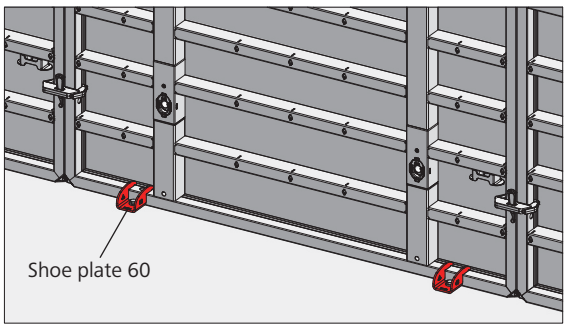


Fig. 28.5

Description	Ref. No.
Shoe plate 60	**23-311-99**
Spiral anchor DW 15/100	**29-921-10**
Quick anchor	**29-922-70**
Double-jointed foot plate	**29-402-32**
Foot plate 73	**29-407-74**
Connecting plate 48	**29-910-58**

Workspaces

According to DIN 12811-1 the maximum fall height at workspaces must be limited to 2.00 m. The design and construction of the working scaffolds must correspond to the specifications contained in this standard (Fig. 29.1). 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."

Note

The minimum cross-sections for handrails and midrails are governed by the post spacing:

→ For a post spacing up to 2.00 m: at least 15 × 3 cm

→ For a post spacing up to 3.00 m: at least 20 × 4 cm (Fig. 29.1)

Recommendation

We recommend the use of safety meshes for quick and safe fall protection. These can be quickly installed and significantly increase the work safety (Fig. 29.2).

Attention

When using MEVA systems, the federal, state and local codes and regulations must be observed.

Working scaffold according to DIN 12811-1, Part 1

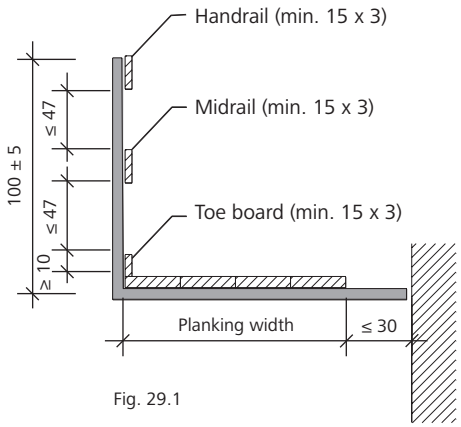


Fig. 29.1

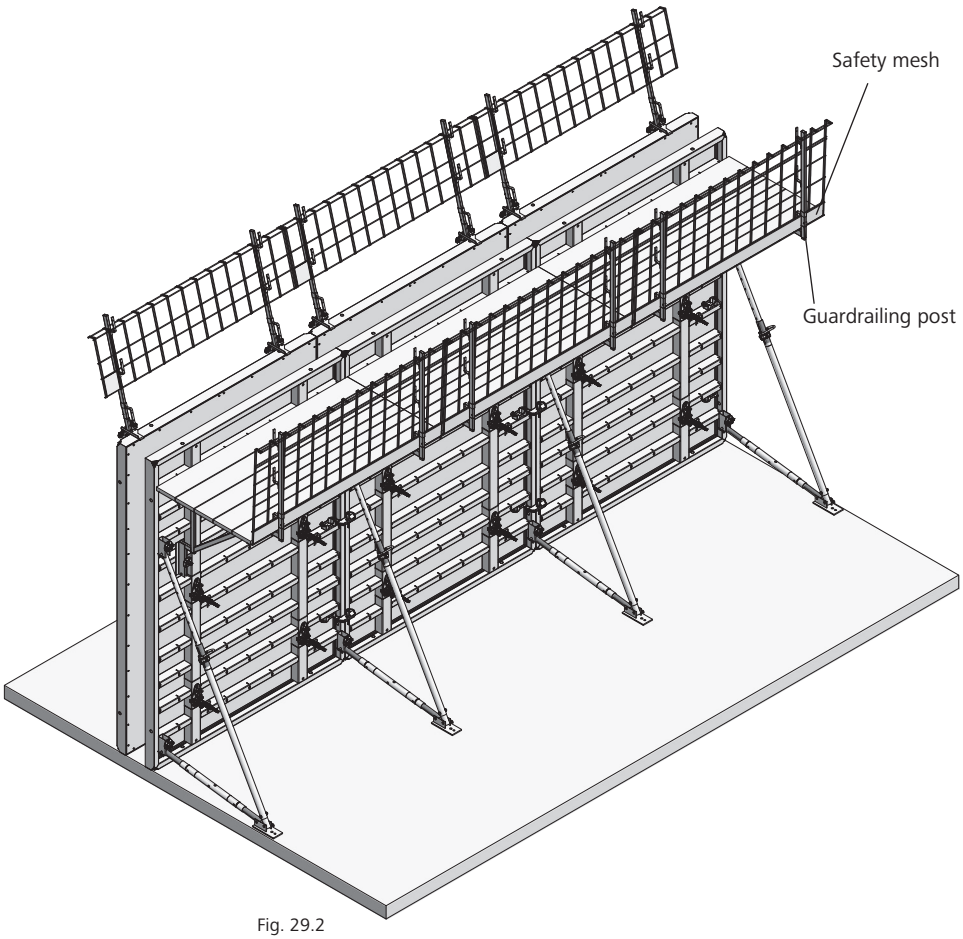


Fig. 29.2

Description	Ref. No.
Safety mesh 1100/2490.....	**29-920-00**
Safety mesh 600/2490.....	**29-920-05**

Workplaces – MEVA Integrated Safety

The safety system MEVA Integrated Safety (MIS) (DIN EN 12811 and DIN EN 12812) with working platform, access ladder, rear railing, front railing, side railings, brace frames, platform extensions made of hot-dip galvanised steel and aluminium checkered sheet flooring is designed as a modular system. The well-thought-out product design increases the safety on the platform and makes it possible to work comfortably and efficiently.

As an access solution for Mammut XT with two platform widths (250 cm and 125 cm), MIS can be used up to a formwork height of 10.50 m. The foldable platforms can be height-adjusted due to the play in the linkage and can remain permanently attached to the formwork panel if required. Mammut XT wall formwork and working platforms can be relocated as a fixed unit.

Tie rods and accessories can be used safely at all heights. Integrated assembly lock holders and tie rod fixtures on the railing enable efficient work routines.

The units are stackable for space-saving storage and transport and thus provide for simplified construction site logistics.

The MIS safety system can be retrofitted to the Mammut XT wall formwork system at any time.

Please observe the MIS – MEVA Integrated Safety Technical Instruction Manual.

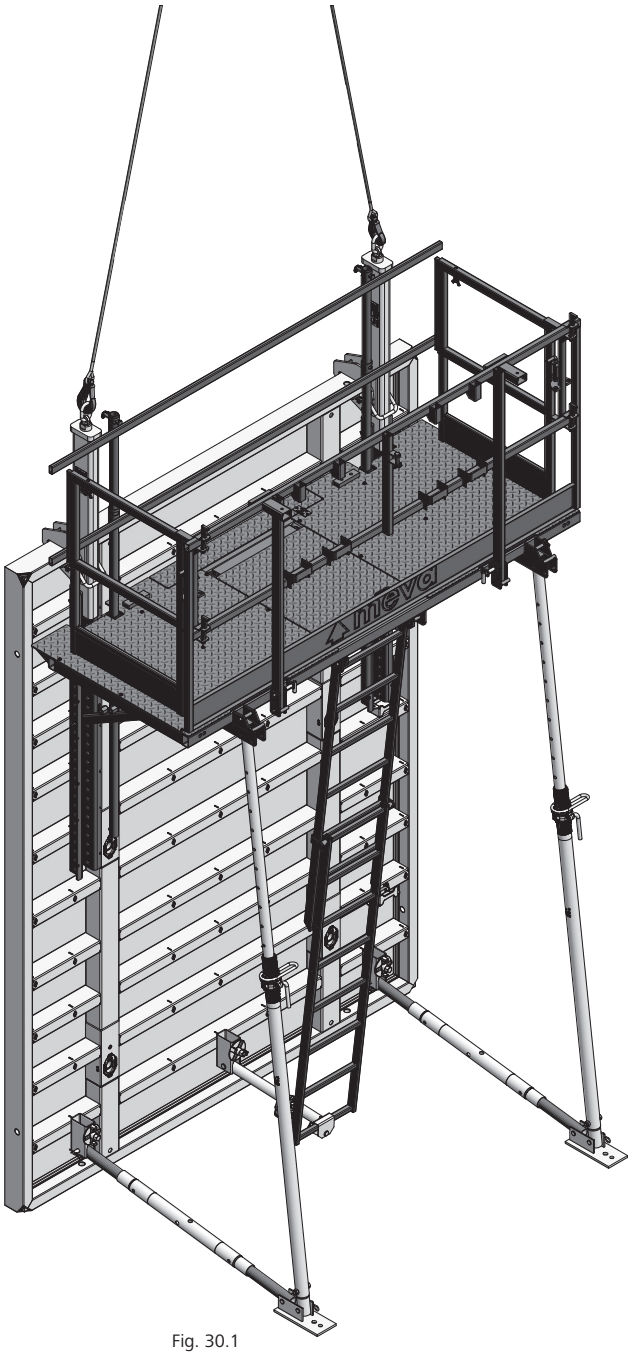


Fig. 30.1

Workspaces – Folding access platform BKB 125

The folding access platform BKB 125 with folding guardrailing provides safe access and a 125 cm wide working platform (Fig. 31.1). It is ideal for the quick and safe construction of working scaffolds.

The planking is made of rough-cut wood with a thickness of 48 mm and the end faces are strengthened by a continuous steel profile for additional stability and durability.

With a length of 235 cm, the BKB 125/235 is particularly easy to transport and can be loaded crosswise on any truck.
The stacking height is only 17 cm and the permissible load is 2 kN/m² (200 kg/m²).

Depending on the requirement, the railing can be secured at a 90° or a 105° angle (see Fig. 31.2). The BKB 125 side railing is attached to the platform using two flange screws 18.

Attention
Do not transport formwork units with a crane when the working platform is attached to the formwork.

To relocate the individual platforms with a crane so that they are all at the same height, we recommend adjusting the length of the chains on the crane sling.

When using MEVA systems, the federal, state and local codes and regulations must be observed.

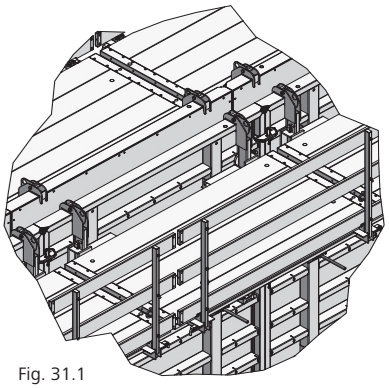


Fig. 31.1

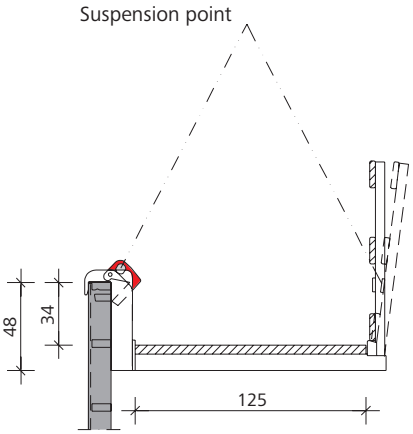


Fig. 31.2



The access platform is automatically secured against dislodging by the integrated self-locking mechanism.

Fig. 31.3

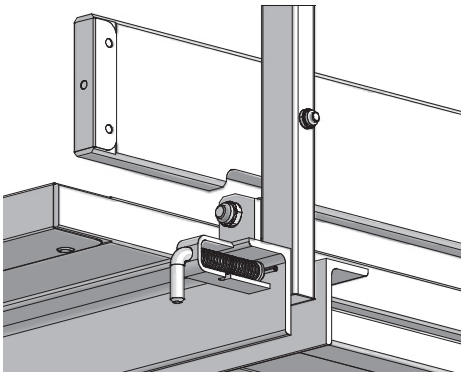


Fig. 31.4

Examples for corner configurations and length compensation

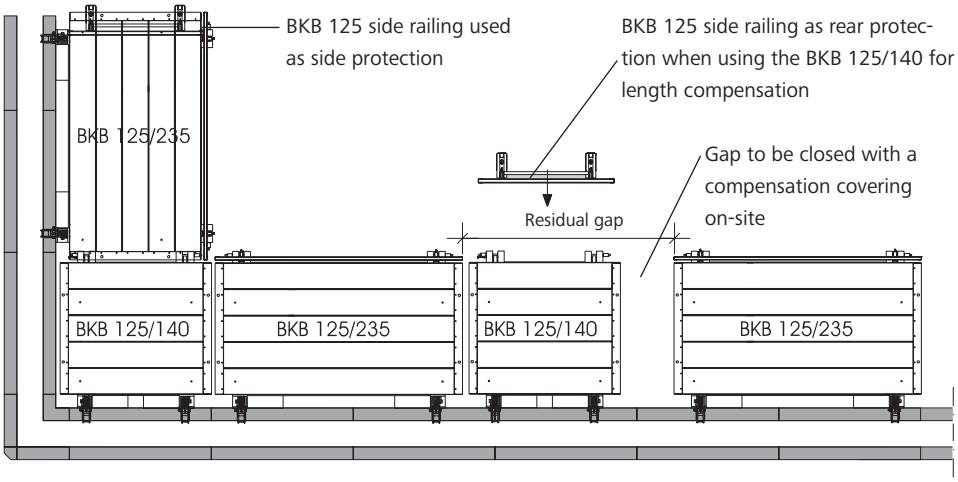


Fig. 31.5

Description	Ref. No.
Folding access platform	
BKB 125/140	**29-417-00**
BKB 125/235	**29-417-10**
BKB 125/300	**29-417-20**
Side railing BKB 125	**29-417-30**
Flange screw 18	**29-401-10**

Workspaces – Walkway bracket

Walkway bracket 90

The pluggable walkway bracket 90 (Fig. 32.1) is installed as follows:

1. The bracket is turned by 45° and inserted into the multi-function nut.
2. It must then brought into the vertical position.
3. It is secured to a multi-function profile below using a flange screw 18.

The planking can then be bolted directly to the bracket.

→ Maximum bracket spacing for a load of 150 kg/m² (scaffold group 2 according to DIN 12811-1): 2.50 m

→ Planking thickness: at least 4.5 cm

→ Planking width: at least 24 cm

Guardrailing posts and side railing

To provide fall protection, the guardrailing posts and the side railing (Figures 32.2 to -4) are plugged directly into the walkway bracket.

→ Above a fall height of 2.00 m a side railing is mandatory (Fig. 32.4).

→ We recommend the use of safety meshes with guardrailing posts 48/120 UK. These enable the side railing to be quickly and safely installed.

Alternative with scaffold tubes

If fall protection is to be provided using scaffold tubes, the guardrailing post 48/120 UK can also be used.

This consists of:

→ A round tube with Ø 48 mm for the attachment of scaffold tube couplers

→ A rectangular adapter that is plugged into the walkway bracket (Fig. 32.3)

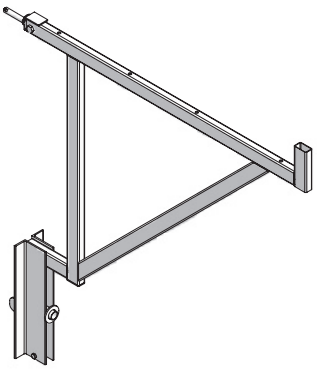


Fig. 32.1 Walkway bracket 90

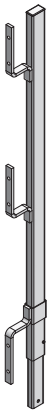


Fig. 32.2
Guardrailing post 100 or 140



Fig. 32.3
Guardrailing post 48/120 UK

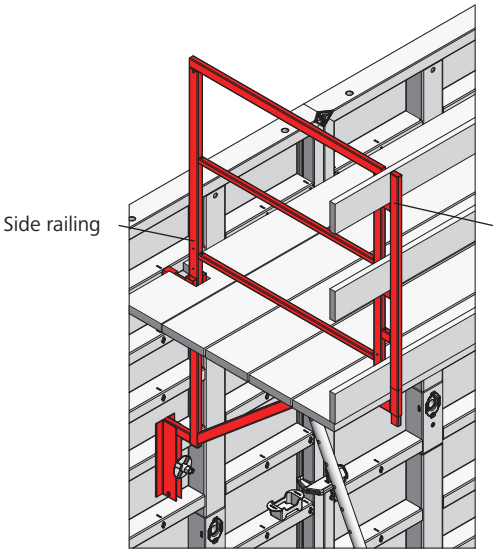


Fig. 32.4

Description	Ref. No.
Walkway bracket 90	**29-106-00**
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**

Workspaces – Tilting bracket 40/60

Fall protection at greater heights

An additional fall protection device on the opposite side of a working scaffold, 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.

Use of the tilting bracket 40/60

The tilting bracket 40/60 (Fig. 33.1) is used to securely attach MEVA guardrailing posts as well as safety meshes or railing boards on the opposite formwork side. It was specially designed for the MEVA wall formwork systems:

- Mammut XT
- Mammut 350
- Mammut
- StarTec XT
- StarTec / AluStar

Assembly and function

The bracket is attached directly to the panel's frame profile with the integrated wedge (Fig. 33.2).

Connection options

- Guardrailing post 100
- Guardrailing post 140
- Guardrailing post 48/120 UK

To facilitate the assembly of safety meshes or railing boards, the tilting bracket can be:

- Turned so that it is vertical
- Tilted by 15°, e.g. to create addition space for concrete buckets (Fig. 33.2)

Information on material planning

An additional guardrailing post must be ordered for each tilting bracket.

Description	Ref. No.
Tilting bracket 40/60	**29-920-82**
Guardrailing post 100	**29-106-75**
Guardrailing post 140	**29-106-85**
Guardrailing post 48/120 UK	**29-106-80**

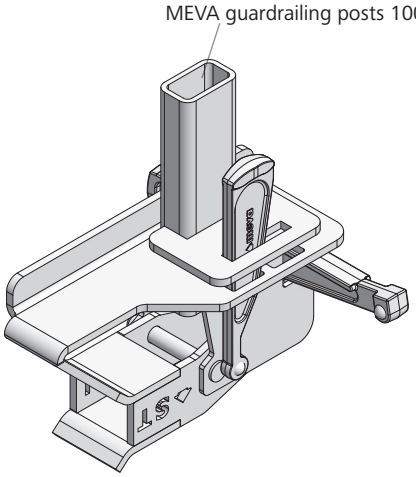


Fig. 33.1

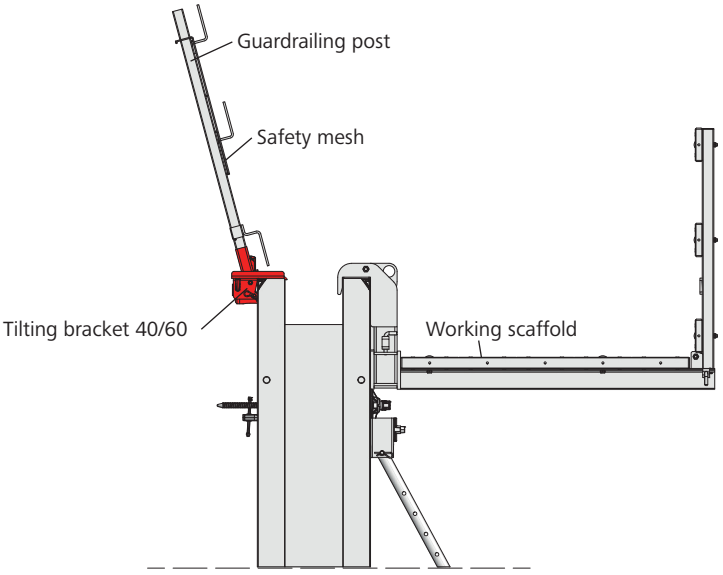


Fig. 33.2

Crane hook

The Mammut crane hook (Fig. 34.1) has a load capacity of 15 kN (1.5 t).

Handling

1. Completely open the safety lever (Fig. 34.3).
2. Push the crane hook over the panel frame 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 (Fig. 34.4).

Attention

Always use two crane hooks when transporting formwork panels, even when transporting individual panels.

To ensure that the crane hooks cannot slip, they must be attached as follows:

→ across the centre beam for vertical panels, if possible (Fig. 34.5)

→ for several panels at the panel joint

→ using the cross stiffeners on horizontal panels (Fig. 34.6)

When to replace the crane hook

If the reference dimension is greater than or equal to 61 mm: Take the crane hook out of service immediately. This also applies if only one side of the hook exceeds this dimension (Fig. 34.2).

Safety check

→ Check the crane hook before each use on the construction site.

→ Exceeding the permissible loading can result in excessive elongation and thus permanent deformation. In this case its safe use can no longer be guaranteed.

Description	Ref. No.
M crane hook	29-401-21

Safety regulations

Please observe:

→ The applicable accident prevention regulations

→ The fact sheet for large-area formwork published by the Bauberufsgenossenschaft (German Professional Construction Association)

→ The operating instructions for crane hooks delivered with every crane hook

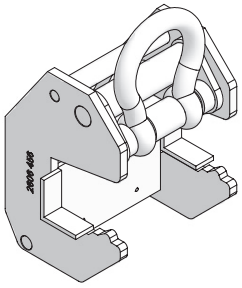


Fig. 34.1

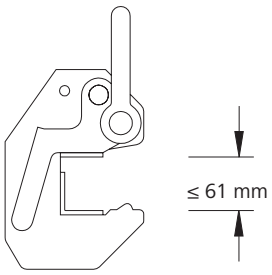


Fig. 34.2

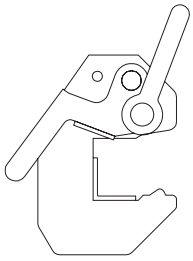


Fig. 34.3

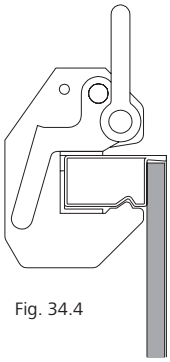


Fig. 34.4

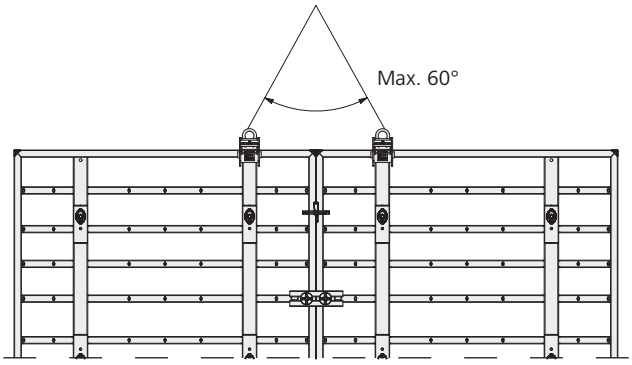


Fig. 34.5

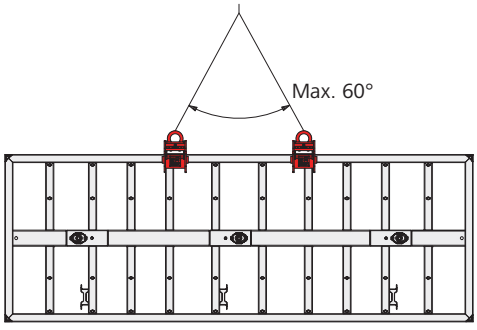


Fig. 34.6

90° corner

A 90° corner (Figures 35.2 and 35.3) can be produced for all wall thicknesses using the Mammut XT outside corner 10 (Fig. 35.1) and the Mammut XT inside corner 35 (Fig. 35.4) in conjunction with the standard Mammut XT panels.

Attention

→ The struts on the Mammut XT outside and inside corners are used to transport them by crane (Figures 35.2 and 35.4).

→ If the lifting gear is attached to the struts, only a single corner may be lifted at any one time.

→ It is not permitted to move several connected panels using the struts.



Fig. 35.1

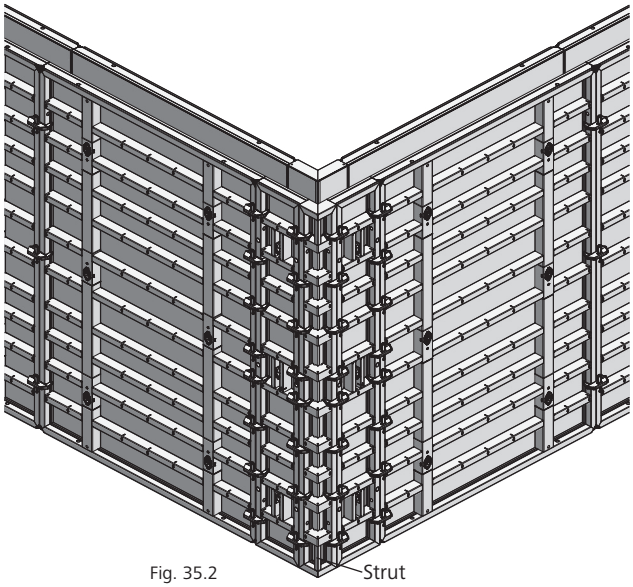


Fig. 35.2

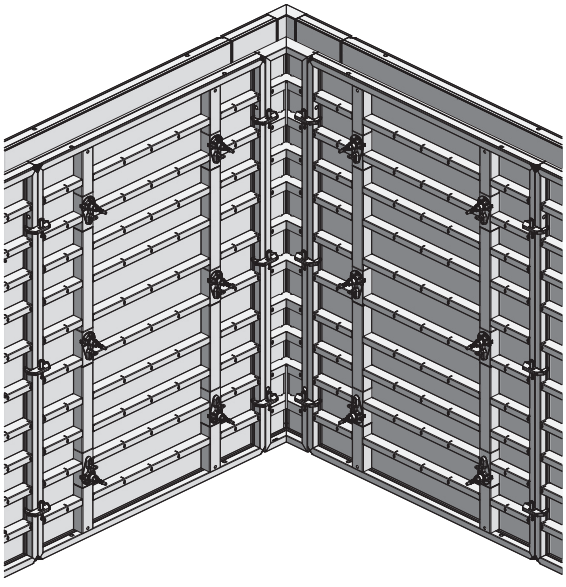


Fig. 35.3

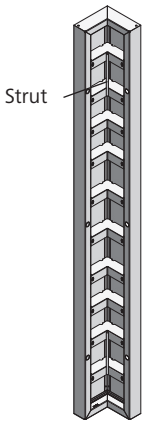


Fig. 35.4

Description	Ref. No.
Mammut XT outside corner	
350/10	**23-152-50**
300/10	**23-152-55**
250/10	**23-152-60**
125/10	**23-152-65**
Mammut XT inside corner	
350/35	**23-152-00**
300/35	**23-152-05**
250/35	**23-152-10**
125/35	**23-152-15**

90° corner – Combinations

To create 90° corners, standard Mammut XT panels with widths 45, 50, 55 and 75 cm are used in conjunction with Mammut XT inside and outside corners and in some cases with Mammut fillers (Fig. 36.1).

The system parts required for the most common wall thickness are listed in Table 36.2.

For all other wall thickness in 1 cm increments or If different wall thicknesses meet, the aluminium filler can be used to close the residual gap (Figures 36.3 and 36.4). It is available in the widths 4, 5, 6 and 8 cm and equipped with tie holes. DW tie rods are used on both sides when using the tie holes in the filler. For stabilisation purposes, a cross stiffener 44 is generally attached using two flange screws 18 at each tie hole level (also refer to page XT-52).

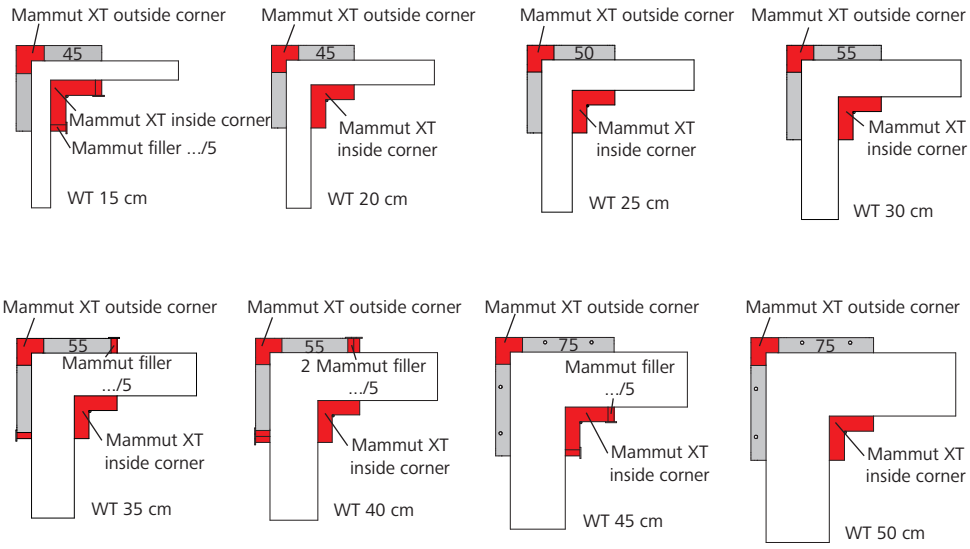


Fig. 36.1

Corner combinations

WT (in cm)	Mammut XT outside corner .../10	Mammut XT inside corner .../35	Mammut XT panels				Mammut filler .../5
			45	50	55	75	
15	1	1	2				2 inside
20	1	1	2				
25	1	1		2			
30	1	1			2		
35	1	1			2		2 outside
40	1	1			2		2 x 2 outside
45	1	1				2	2 inside
50	1	1				2	

Table 36.2

Description	Ref. No.
Mammut XT outside corner	
350/10	**23-152-50**
300/10	**23-152-55**
250/10	**23-152-60**
125/10	**23-152-65**
Mammut XT inside corner	
350/35	**23-152-00**
300/35	**23-152-05**
250/35	**23-152-10**
125/35	**23-152-15**
M 350 aluminium filler 350/8.	**29-300-27**
M 350 aluminium filler 350/6.	**29-300-28**
M 350 aluminium filler 350/5.	**29-300-30**
M 350 aluminium filler 350/4.	**29-300-31**
M XT aluminium filler 300/8...	**29-300-43**
M XT aluminium filler 300/6...	**29-300-44**
M XT aluminium filler 300/5...	**29-300-45**
M XT aluminium filler 300/4...	**29-300-46**
M 350 aluminium filler 250/8.	**29-300-33**
M 350 aluminium filler 250/6.	**29-300-34**
M 350 aluminium filler 250/5.	**29-300-35**
M 350 aluminium filler 250/4.	**29-300-36**
M 350 aluminium filler 125/8.	**29-300-38**
M 350 aluminium filler 125/6.	**29-300-39**
M 350 aluminium filler 125/5.	**29-300-40**
M 350 aluminium filler 125/4.	**29-300-41**

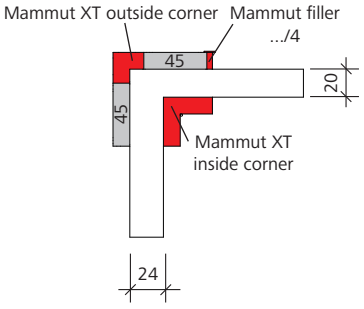


Fig. 36.3

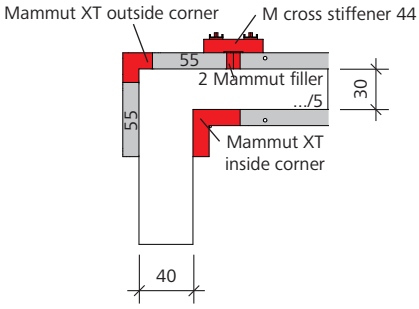


Fig. 36.4

90° corner – Overview of configurations

Depending on the geometry of the building, the wall thickness required and the pouring height, various corner configurations are possible:

→ Single-sided tying using large-size panel 350/250, 300/250 or 500/250 next to the inside corner (Figures 37.1 and 37.2 and page XT-38) up to a maximum pouring height of 7.00 m and a wall thickness of 50 cm.

→ Single-sided tying using a 25 cm wide panel and a free choice of other panels (Figures 37.3 and 37.4 and pages XT-40 to -42) without general limits to the pouring height and wall thickness.

→ Two-sided tying using a Mammut XT panel with frame tie holes and a free choice of other panels (Figures 37.5 and 37.6 and page XT-43) without general limits to the pouring height and wall thickness.

Attention

Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

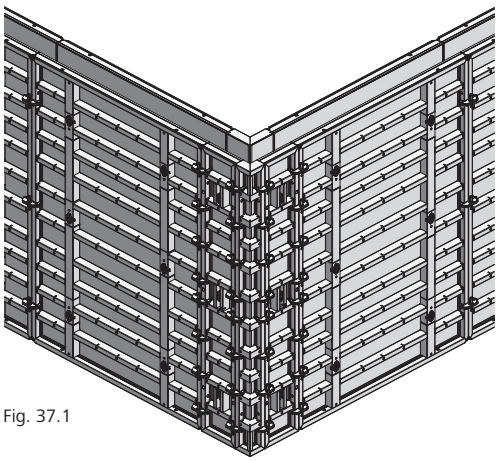


Fig. 37.1

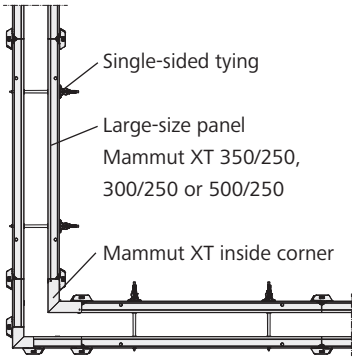


Fig. 37.2

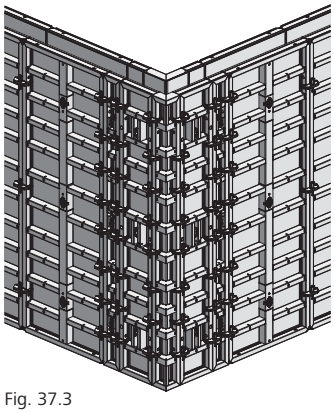


Fig. 37.3

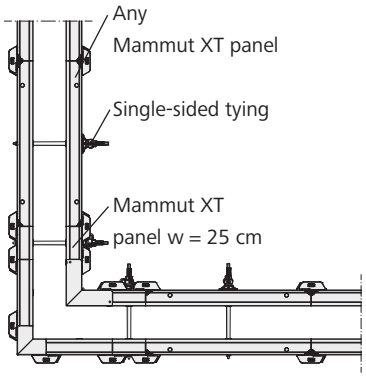


Fig. 37.4

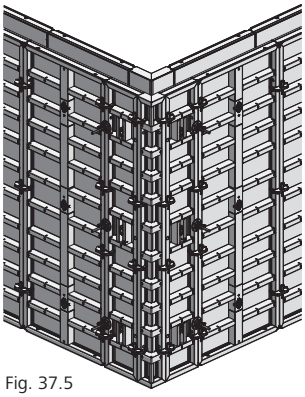


Fig. 37.5

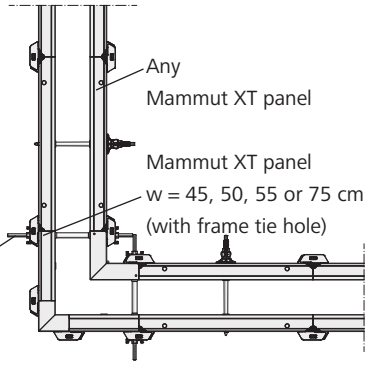


Fig. 37.6

Description	Ref. No.
M alignment rail 75	**29-400-95**
Flange screw 18	**29-401-10**
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**
Plug D35/38	**29-902-71**
Plug D20, red	**29-902-63**

90° corner with single-sided tying – Large-size panel up to wall thickness 30 cm

→ Connection to Mammut XT inside corner using Mammut XT large-size panel 350/250, 300/250 or 500/250, without alignment rails. The maximum permissible wall thickness is 30 cm. The maximum permissible pouring height is 7.00 m. The maximum permissible fresh-concrete pressure is reduced to 70 kN/m² for pouring heights above 3.50 m and up to 7.00 m.

Attention must be paid to the number of M assembly locks required at the outside corner (a) and at the panel joint (b) in accordance with the pouring height (Figures 38.1 to 38.6 and Table 38.2).
The information in brackets for the number of assembly locks in Table 38.2 defines the distribution of the assembly locks on the panels starting at the bottom. At the inside corner the number of assembly locks is the same as at the standard panel joint.

For the position of the M assembly locks refer to Figures 38.3 to 38.6.

Attention
Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

Note
For greater pouring heights please contact our application engineering department.

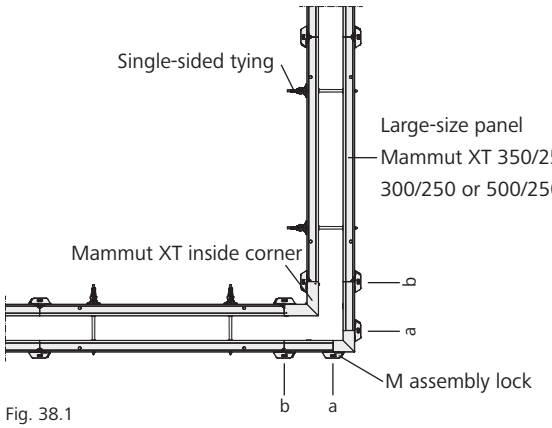


Fig. 38.1

Single-sided tying with large-size panel next to the inside corner				
Pouring height (m)	**Wall thickness (cm)**	**Max. perm. concrete pressure (kN/m²)**	**Assembly locks**	
			Joint a	**Joint b**
3.50	30	100	8	8
7.00	30	70	16 (9+7)	16 (9+7)

Table 38.2

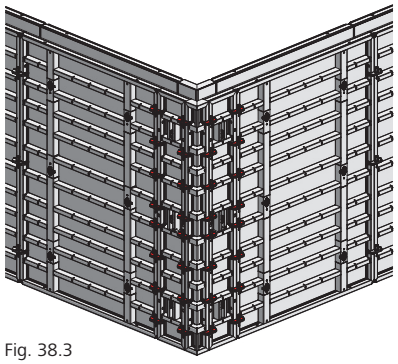


Fig. 38.3

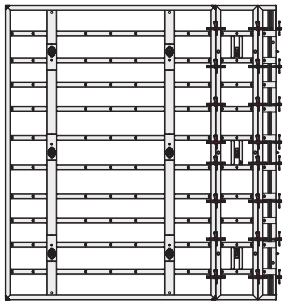


Fig. 38.4

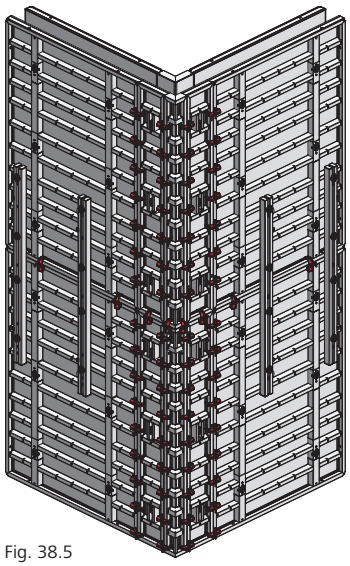


Fig. 38.5

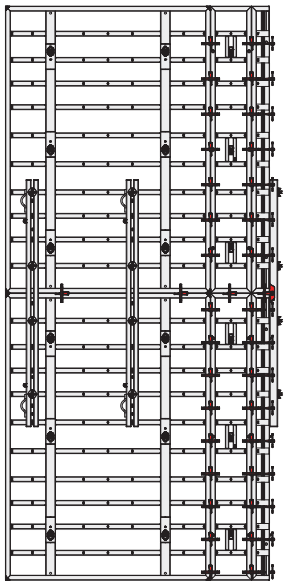


Fig. 38.6

Description	Ref. No.
M assembly lock	**29-400-71**

90° corner with single-sided tying – Large-size panel up to wall thickness 50 cm

→ Connection to Mammut XT inside corner using Mammut XT large-size panel 350/250, 300/250 or 500/250 and alignment rails. The maximum permissible wall thickness is 50 cm. The maximum permissible pouring height is 7.00 m. The maximum permissible fresh-concrete pressure is reduced to 70 kN/m² for pouring heights above 3.50 m and up to 7.00 m.

Attention must be paid to the number of M assembly locks required at the outside corner (a) and at the panel joint (b) in accordance with the pouring height (Figures 39.1 to 39.6 and Table 39.2).
The information in brackets for the number of assembly locks and alignment rails in Table 39.2 defines the distribution of the assembly locks on the panels starting at the bottom.
At the inside corner the number of assembly locks is the same as at the standard panel joint.

For the position of the M assembly locks refer to Figures 39.3 to 39.6.

Attention
Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

Note
For greater pouring heights or thicker walls please contact our application engineering department.

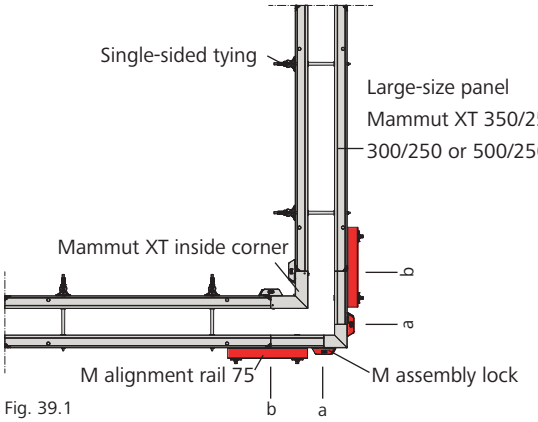


Fig. 39.1

Single-sided tying with large-size panel next to the inside corner						
Pouring height (m)	Wall thickness (cm)	Max. perm. concrete pressure (kN/m²)	Assembly locks		M alignment rail 75	Alignment rail
			Joint a	Joint b		
3.50	50	100	8	5	3	
7.00	50	70	16 (9+7)	11 (7+4)	5 (2+3)	1

Table 39.2

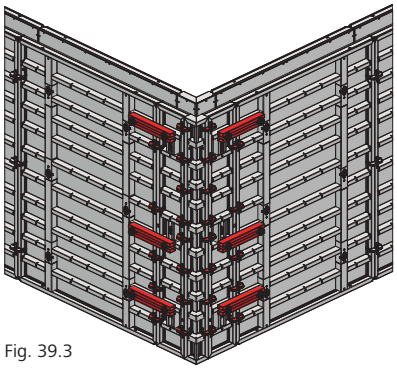


Fig. 39.3

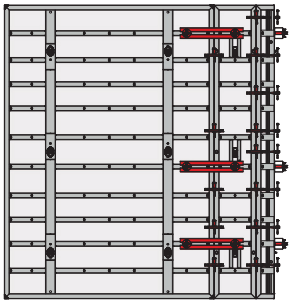


Fig. 39.4

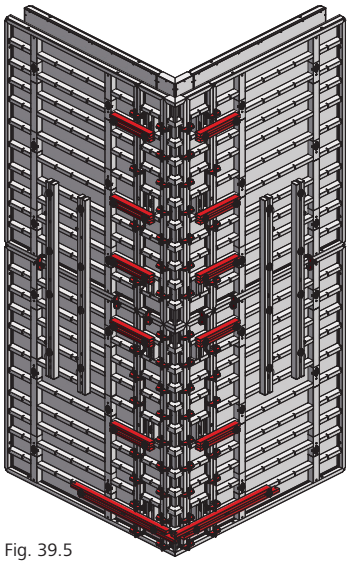


Fig. 39.5

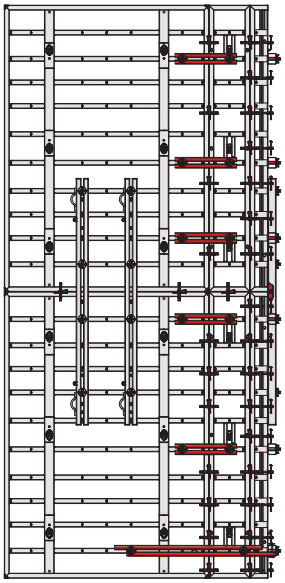


Fig. 39.6

Description	Ref. No.
M assembly lock	**29-400-71**
M alignment rail 75	**29-400-95**

90° corner with single-sided tying – 25 cm wide panel without alignment rail

→ Connection to Mammut XT inside corner using 25 cm wide Mammut XT panel and a free choice of other panels. The maximum permissible wall thickness is 30 cm. The maximum permissible pouring height is 3.50 m.

Attention must be paid to the number of M assembly locks required at the outside corner (a) and at the panel joints (b) and (c) in accordance with the pouring height (Table 40.2).
At the inside corner the number of assembly locks is the same as at the standard panel joint.

Attention
Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

Note
For greater pouring heights or thicker walls please contact our application engineering department.

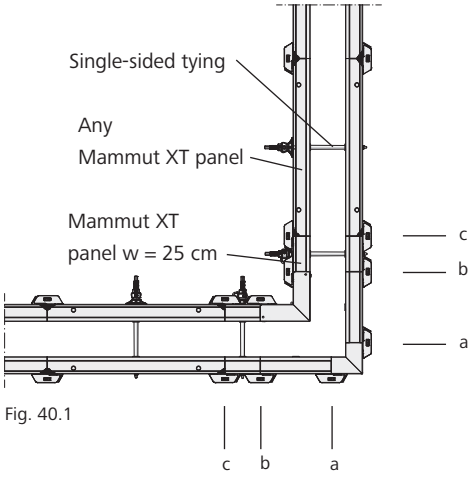


Fig. 40.1

Single-sided tying using 25 cm wide panel next to the inside corner and a free choice of other panels – without alignment rails					
Pouring height (m)	Wall thickness (cm)	Max. perm. concrete pressure (kN/m²)	Assembly locks		
			Joint a	Joint b	Joint c
1.25	30	100	2	2	2
2.50	30	100	4	4	4
3.00	30	100	6	6	6
3.50	30	100	8	8	8

Table 40.2

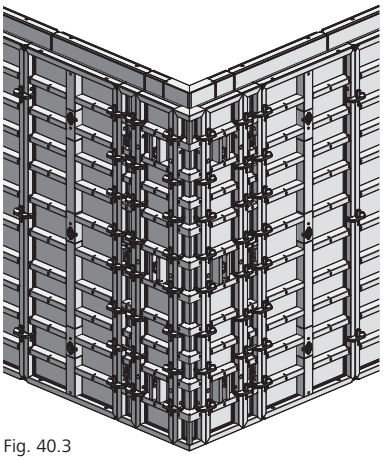


Fig. 40.3

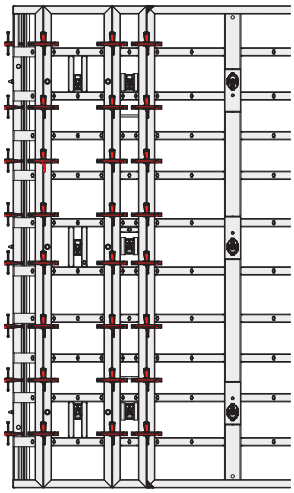


Fig. 40.4

Description	Ref. No.
M assembly lock	**29-400-71**

90° corner with single-sided tying – 25 cm wide panel with alignment rail

→ Connection to Mammut XT inside corner using 25 cm wide Mammut XT panel, M alignment rail 75 and a free choice of other panels.

For any wall thickness, an M alignment rail 75 is fitted to the multi-function profile of the panel across the 25 cm wide panel for stabilisation purposes (Figures 41.1 and 41.2).

The number of alignment rails depends on the number of tie holes in the panel.

Attention must be paid to the number of M assembly locks required at the outside corner (a) and at the panel joints (b) and (c) in accordance with the pouring height (Table 41.2).
At the inside corner the number of assembly locks is the same as at the standard panel joint.

For pouring heights up to 3.50 m and wall thicknesses up to 30 cm, the M alignment rail is not required (see page XT-40).

For pouring heights above 3.50 m please observe page XT-42.

Attention
Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

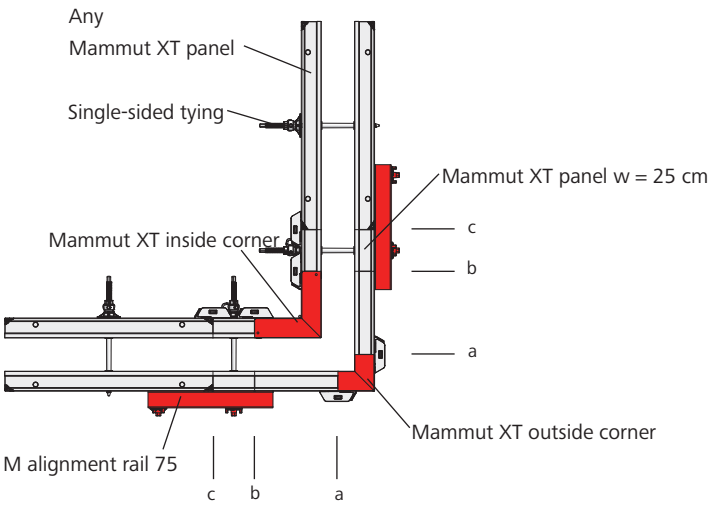


Fig. 41.1

Single-sided tying using 25 cm wide panel next to the inside corner and a free choice of other panels – with alignment rail					
Pouring height (m)	Max. perm. concrete pressure (kN/m²)	Assembly locks			M alignment rail 75
		Joint a	Joint b	Joint c	
1.25	100	2	2	2	1
2.50	100	3	2	2	2
3.00	100	3	3	2	2
3.50	100	4	4	3	3

Table 41.2

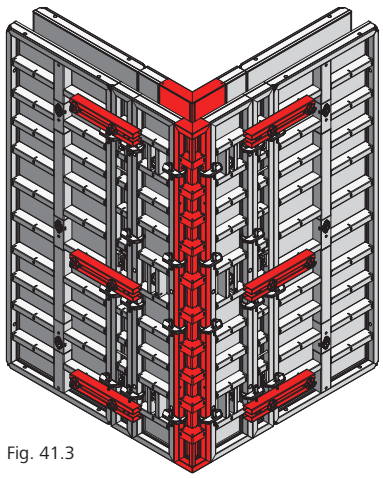


Fig. 41.3

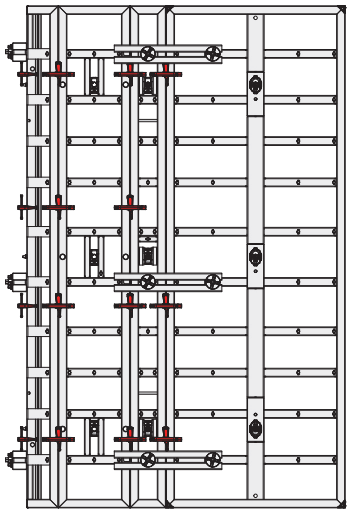


Fig. 41.4

Description	Ref. No.
M alignment rail 75	**29-400-95**
M assembly lock	**29-400-71**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
Flange screw 18	**29-401-10**

90° corner with single-sided tying for height extension – 25 cm wide panel with alignment rail

→ Connection to Mammut XT inside corner using 25 cm wide Mammut XT panel, M alignment rail 75 and a free choice of other panels, height-extended. Partly with alignment rails.

The maximum permissible wall thickness for height extensions is 50 cm.

Attention must be paid to the number of M assembly locks required at the outside corner (a) and at the panel joints (b) and (c) in accordance with the pouring height (Table 42.2).
At the inside corner the number of assembly locks is the same as at the standard panel joint.
For stabilisation purposes, an M alignment rail 75 is fitted to the multi-function profile of the panel across the 25 cm wide panel (Figures 42.1 to 42.4).
Pouring heights of 6.50 m and higher require additional alignment rails as shown in Table 42.2.
The alignment rails must be attached to the panels with two flange screws 18. Always start attaching the alignment rails at the bottom multi-function profile. Note that the alignment rails must cover the next panel joint and be bolted at the corners (Figures 42.1 and 42.2).

Attention
Unused tie holes must always be closed (see page XT-18).

Note
For greater pouring heights or thicker walls please contact our application engineering department.

Description	Ref. No.
M alignment rail 75	**29-400-95**
M alignment rail 180	**29-400-92**
M alignment rail 250	**29-402-50**
Flange screw 18	**29-401-10**

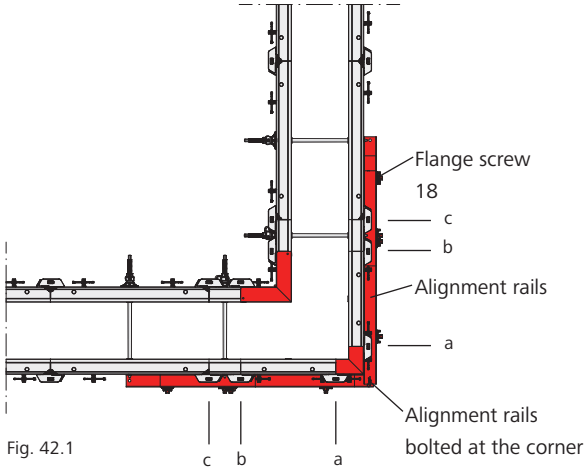
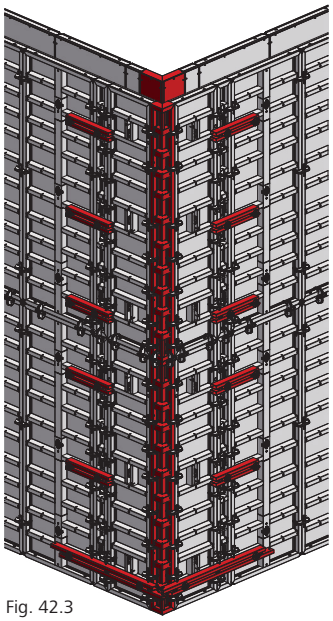


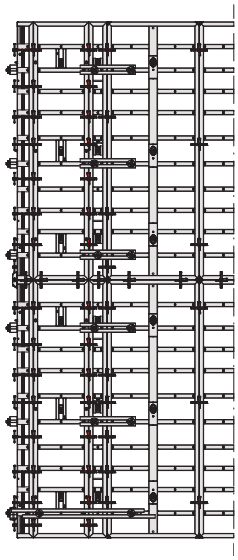
Fig. 42.1

Single-sided tying using 25 cm wide panel next to the inside corner and a free choice of other panels – with alignment rails, height-extended							
Pouring height (m)	Wall thickness (cm)	Max. perm. concrete pressure (kN/m²)	Assembly locks			M alignment rail 75	Alignment rail
			Joint a	Joint b	Joint c		
4.25	50	100	10 (7+3)	10 (7+3)	6 (4+2)	4 (3+1)	
4.75	50	100	10 (8+2)	10 (8+2)	6 (5+1)	4 (3+1)	
5.00	50	100	11 (6+5)	11 (6+5)	7 (4+3)	4 (2+2)	
5.50	50	100	12 (7+5)	12 (7+5)	7 (4+3)	5 (3+2)	
6.00	50	100	13 (7+6)	13 (7+6)	8 (4+4)	5 (3+2)	
6.50	50	100	14 (8+6)	14 (8+6)	10 (6+4)	4 (2+2)	1
7.00	50	100	15 (8+7)	15 (8+7)	10 (6+4)	5 (2+3)	1
7.50	50	100	16 (6+5+5)	16 (6+5+5)	11 (5+3+3)	5 (1+2+2)	1
8.00	50	100	17 (7+5+5)	17 (7+5+5)	13 (7+3+3)	4 (0+2+2)	2
8.50	50	100	18 (7+6+5)	18 (7+6+5)	13 (6+4+3)	5 (1+2+2)	2
9.00	50	100	19 (7+6+6)	19 (7+6+6)	13 (5+4+4)	6 (2+3+2)	2
9.50	50	100	20 (8+6+6)	20 (8+6+6)	14 (6+3+4)	6 (2+3+2)	2

Table 42.2

The information in brackets for the number of assembly locks and M alignment rails 75 defines the distribution of the assembly locks on the panels starting at the bottom.


Fig. 42.3


Fig. 42.4

90° corner with two-sided tying

Besides central tie holes, the 45, 50, 55 and 75 cm Mammut XT panels (Fig. 43.1) also have conical anchor sleeves in the frame. These allow two-sided tying at the corners (Figures 43.2 and 43.4).

For the number of assembly locks required refer to Table 43.3. At the inside corner the number of assembly locks is the same as at the standard panel joint.

For greater pouring heights refer to Table 42.2 for the number of assembly locks and, where applicable, assembly locks required.

Attention
Unused tie holes must always be closed with plug D35/38 or alternatively with XT sealing cone with a pressed-on plug D20 (see page XT-18).

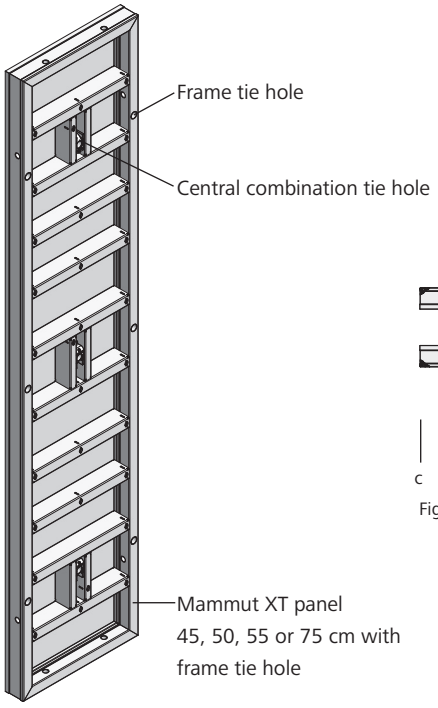


Fig. 43.1

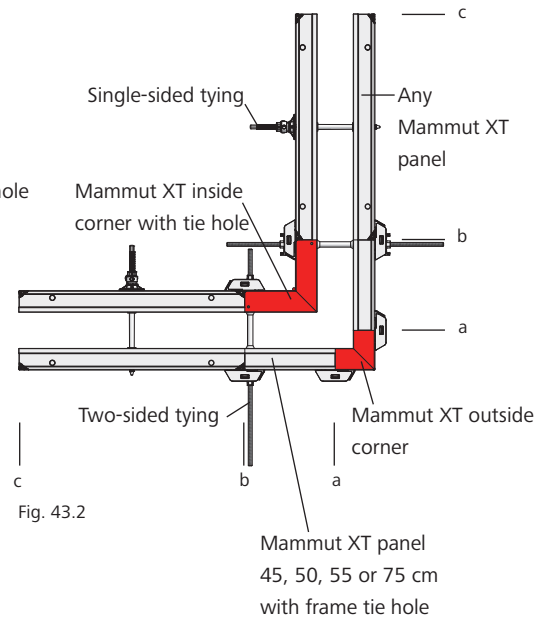


Fig. 43.2

Two-sided tying at the inside corner				
Pouring height (m)	Max. perm. concrete pressure (kN/m²)	Assembly locks		
		Joint a	Joint b	Joint c
1.25	100	2	2	2
2.50	100	3	2	2
3.00	100	3	3	2
3.50	100	4	4	3

Table 43.3

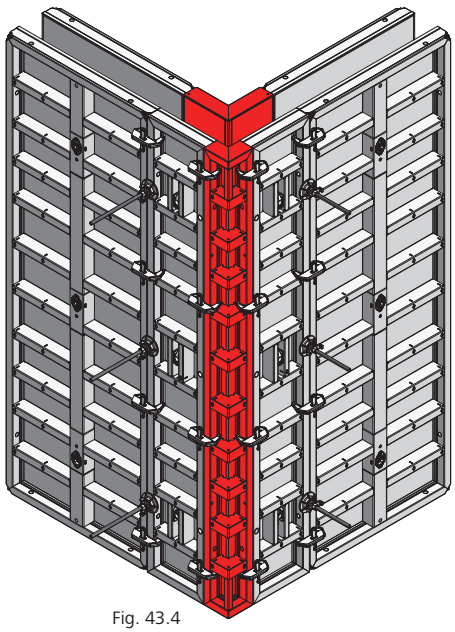


Fig. 43.4

Description	Ref. No.
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**
Plug D35/38	**29-902-71**
Plug D20, red	**29-902-63**

Hinged corner

Acute and obtuse angled corners are formed using hinged inside (HIC) and outside corners (HOC) (Fig. 44.1).

Side length

→ Outside corner 12.5 cm
→ Inside corner 40 cm
Adjustment range:
60° to 180°

At the outside corner, alignment rails must be attached to the multi-function profiles with flange screws.

If the inside angle α is greater than 100°, alignment rails and a wooden blocking are also required on the inside (Fig. 44.2).

Timber fillers and Uni-assembly locks are used for length compensation (Figures 44.1 and 44.2).

The hinged outside and inside corners can be set to an angle of 70°, 90°, 120°, 135° or 180° with a locking device (Fig. 44.3).

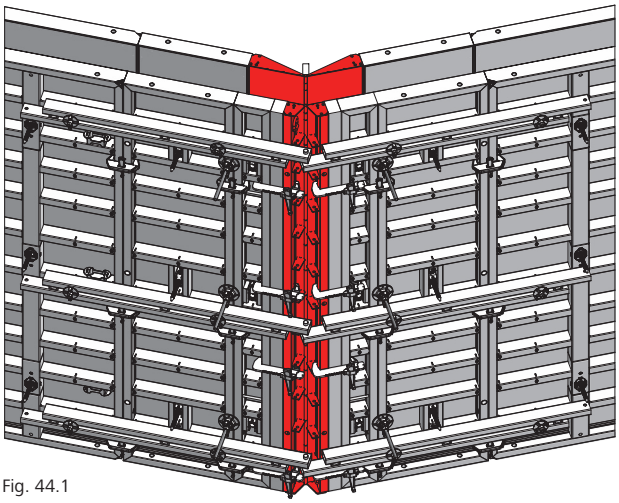


Fig. 44.1

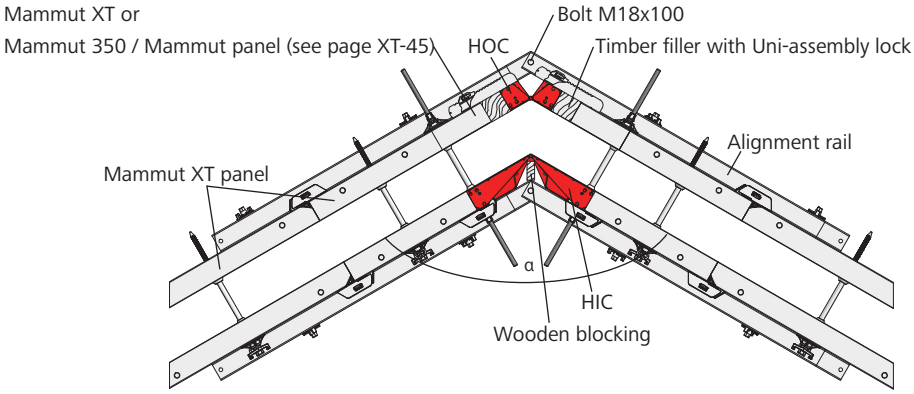


Fig. 44.2

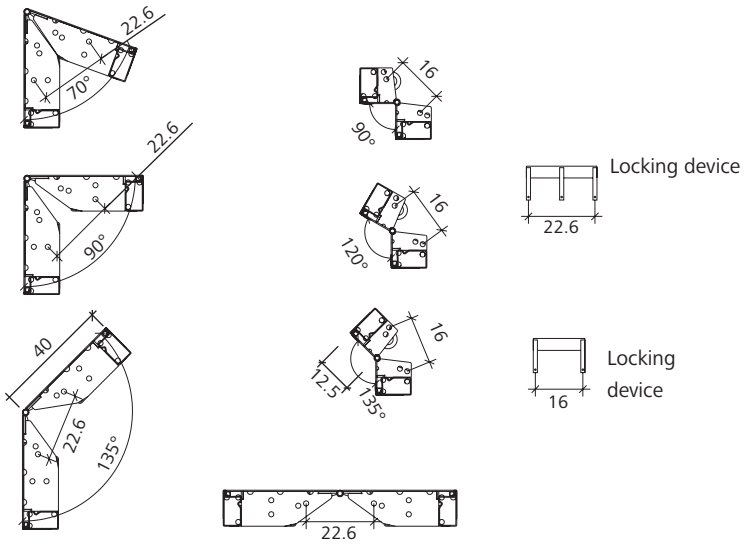


Fig. 44.3

Description	Ref. No.
M hinged corners	
Mammut 350 HOC 350/12.5	**23-137-70**
Mammut 350 HIC 350/40	**23-137-30**
Mammut XT hinged corner	
Mammut XT HOC 300	**23-137-93**
Mammut XT HIC 300	**23-137-53**
M hinged corner	
Mammut HOC 300/12.5	**23-137-71**
Mammut HIC 300/40	**23-137-31**
Mammut HOC 250/12.5	**23-137-81**
Mammut HIC 250/40	**23-137-41**
Mammut HOC 125/12.5	**23-137-91**
Mammut HIC 125/40	**23-137-51**

HIC = hinged inside corner
HOC = hinged outside corner

Hinged corner

The selection of the suitable hinged corners and the first standard Mammut XT panel located opposite the hinged inside corner is based on several factors. These include:

- → Wall thickness
- → Wall height
- → Inside angle α

A decisive criterion is the residual gap y (Fig. 45.1) equal to the distance between the hinged outside corner (HOC) and the first double-sided standard panel. This dimension can be determined using either the given formula or using Table 45.2 as a function of the inside angle α and the wall thickness.

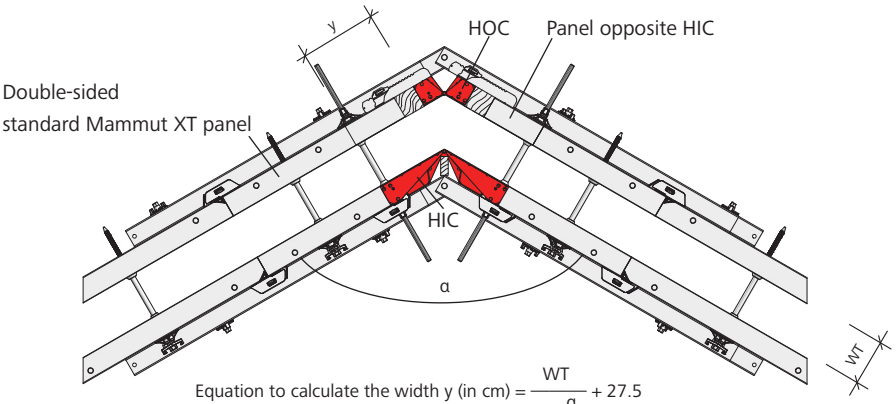


Fig. 45.1

Equation to calculate the width y (in cm) = $\frac{WT}{\tan\frac{\alpha}{2}} + 27.5$

Inside angle	Wall thickness (WT)						
(α)	24 cm	25 cm	30 cm	35 cm	40 cm	45 cm	50 cm
60°	Y = 69.1	Y = 70.8	Y = 79.5	Y = 88.1	Y = 96.8	Y = 105.4	Y = 114.1
65°	Y = 65.2	Y = 66.7	Y = 74.6	Y = 82.4	Y = 90.3	Y = 98.1	Y = 106.0
70°	Y = 61.8	Y = 63.2	Y = 70.3	Y = 77.5	Y = 84.6	Y = 91.8	Y = 98.9
75°	Y = 58.8	Y = 60.1	Y = 66.6	Y = 73.1	Y = 79.6	Y = 86.1	Y = 92.7
80°	Y = 56.1	Y = 57.3	Y = 63.3	Y = 69.2	Y = 75.2	Y = 81.1	Y = 87.1
85°	Y = 53.7	Y = 54.8	Y = 60.2	Y = 65.7	Y = 71.2	Y = 76.6	Y = 82.1
90°	Y = 51.5	Y = 52.5	Y = 57.5	Y = 62.5	Y = 67.5	Y = 72.5	Y = 77.5
95°	Y = 49.5	Y = 50.4	Y = 55.0	Y = 59.6	Y = 64.2	Y = 68.7	Y = 73.3
100°	Y = 47.6	Y = 48.5	Y = 52.7	Y = 56.9	Y = 61.1	Y = 65.3	Y = 69.5
105°	Y = 45.9	Y = 46.7	Y = 50.5	Y = 54.4	Y = 58.2	Y = 62.0	Y = 65.9
110°	Y = 44.3	Y = 45.0	Y = 48.5	Y = 52.0	Y = 55.5	Y = 59.0	Y = 62.5
115°	Y = 42.8	Y = 43.4	Y = 46.6	Y = 49.8	Y = 53.0	Y = 56.2	Y = 59.4
120°	Y = 41.4	Y = 41.9	Y = 44.8	Y = 47.7	Y = 50.6	Y = 53.5	Y = 56.4
125°	Y = 40.0	Y = 40.5	Y = 43.1	Y = 45.7	Y = 48.3	Y = 50.9	Y = 53.5
130°	Y = 38.7	Y = 39.2	Y = 41.5	Y = 43.8	Y = 46.2	Y = 48.5	Y = 50.8
135°	Y = 37.4	Y = 37.9	Y = 39.9	Y = 42.0	Y = 44.1	Y = 46.1	Y = 48.2
140°	Y = 36.2	Y = 36.6	Y = 38.4	Y = 40.2	Y = 42.1	Y = 43.9	Y = 45.7
145°	Y = 35.1	Y = 35.4	Y = 37.0	Y = 38.5	Y = 40.1	Y = 41.7	Y = 43.3
150°	Y = 33.9	Y = 34.2	Y = 35.5	Y = 36.9	Y = 38.2	Y = 39.6	Y = 40.9
155°	Y = 32.8	Y = 33.0	Y = 34.2	Y = 35.3	Y = 36.4	Y = 37.5	Y = 38.6
160°	Y = 31.7	Y = 31.9	Y = 32.8	Y = 33.7	Y = 34.6	Y = 35.4	Y = 36.3
165°	Y = 30.7	Y = 30.8	Y = 31.4	Y = 32.1	Y = 32.8	Y = 33.4	Y = 34.1
170°	Y = 29.6	Y = 29.7	Y = 30.1	Y = 30.6	Y = 31.0	Y = 31.4	Y = 31.9
175°	Y = 28.5	Y = 28.6	Y = 28.8	Y = 29.0	Y = 29.2	Y = 29.5	Y = 29.7
180°	Y = 27.5	Y = 27.5	Y = 27.5	Y = 27.5	Y = 27.5	Y = 27.5	Y = 27.5

Table 45.2

Hinged corner	Formwork height (cm)	Panel opposite HIC	
M350 HOC/HIC	350	Mammut XT width (cm) 45, 50, 55, 75	Mammut 350
Mammut XT HOC/HIC	300	Mammut XT width (cm) 45, 50, 55, 75	
Mammut HOC/HIC	300		Mammut 350 / Mammut
Mammut HOC/HIC	250	Mammut XT width (cm) 45, 50, 55, 75	Mammut 350 / Mammut
Mammut HOC/HIC	125	Mammut XT width (cm) 45, 50, 55, 75	Mammut 350 / Mammut

Table 45.3

Description	Ref. No.
M alignment rail 180	29-400-92
M alignment rail 250	29-402-50
Flange screw 18	29-401-10
Uni-assembly lock 22	29-400-85
Uni-assembly lock 28	29-400-90

WT = wall thickness
HIC = hinged inside corner
HOC = hinged outside corner

Stripping corner

The M stripping corners 350 (Fig. 46.1), 300, 250 and 125 allow the formwork to be removed safely and quickly from poured shaft walls, for example, without damaging the walls or formwork. They function according to the "jumping jack" principle.

→ The stripping corner is a three-piece design to permit inward movement of the lateral parts.
→ The side length is 25 cm.
→ The height of the stripping corner can be increased easily (Fig. 46.1).

After pouring and when the concrete has set sufficiently, all stripping corners are activated (Fig. 46.2 and pages XT-48 to -50) and the entire formwork can be lifted out of the shaft as one single unit with a 4-rope crane sling (Fig. 46.3). There is no need to disassemble the formwork. For details see Figures 46. 4 and 46. 5.

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

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

Height 300
For a formwork height of 300 cm, the height of the tie holes in Mammut XT differs from that in the M stripping corner, see note on page XT-47.

Description	Ref. No.
M 350 stripping corner	
Mammut 350 SC 350/25	**23-151-00**
Mammut 350 SC 300/25	**23-151-10**
Mammut 350 SC 250/25	**23-151-20**
Mammut 350 SC 125/25	**23-151-30**
Adhesive tape	**41-912-10**

Attention
When slinging with several strands, only two strands may be considered to be load-bearing according to the German Social Accident Insurance (DGUV). This does not apply if it has been ensured that the load is distributed evenly over further strands or if the permissible loading of the individual strands is not exceeded in the event of an unequal load distribution.
The maximum permissible loading of the crane eye per stripping corner is 10 kN (1 ton). This results in a permissible total weight of the complete shaft formwork of 40 kN (4 tons) if it has been ensured that the load is evenly distributed (the contractor is responsible for this). Otherwise, the permissible total weight is 20 kN (2 tons).
The permissible loading of the M crane hook is 15 kN (1.5 tons). This results in a permissible total weight of the complete shaft formwork of 60 kN (6 tons) if it has been ensured that the load is evenly distributed (the contractor is responsible for this). Otherwise, the permissible total weight is 30 kN (3 tons).
For higher loads, a transport spreader must be used.

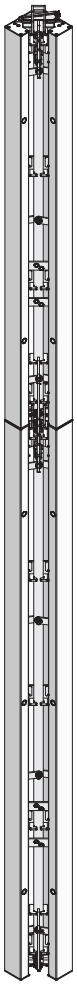


Fig. 46.1

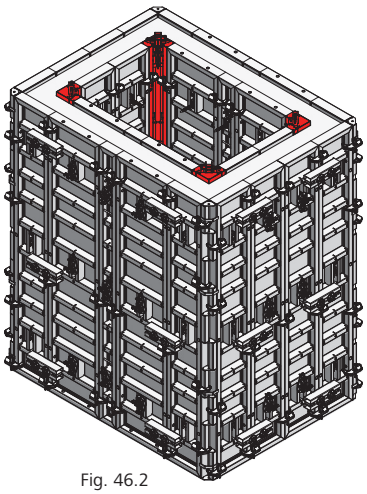


Fig. 46.2

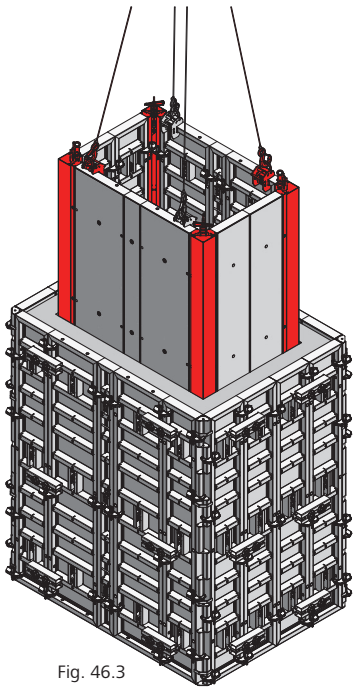


Fig. 46.3

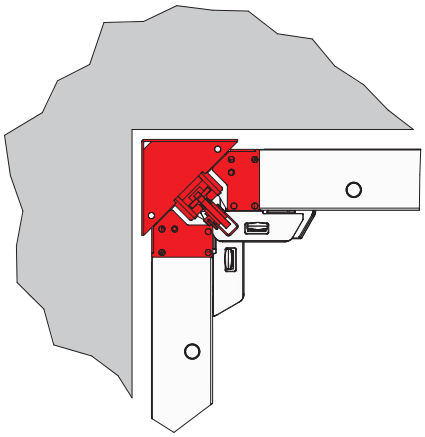


Fig. 46.4

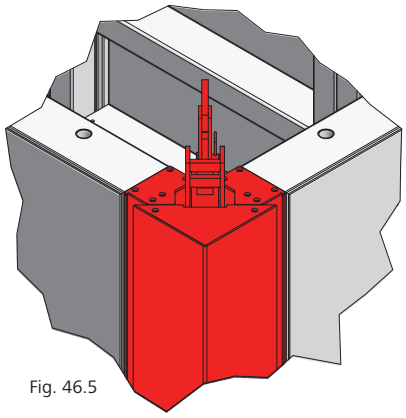


Fig. 46.5

DGUV = German Social Accident Insurance, construction industry department

Stripping corner – Connection using assembly locks

Attachment and position of assembly locks

The function of the M stripping corner can only be guaranteed if the M assembly locks connecting the stripping corner to the panels are positioned in certain areas of the stripping corner.

No assembly locks can be attached and positioned in the grey shaded areas.

Number of M assembly locks per side at height:

- → 350 cm = 3 (Fig. 47.1)
- → 300 cm = 2 (Fig. 47.2)
- → 250 cm = 2 (Fig. 47.3)
- → 125 cm = 2 (Fig. 47.4)

Note

For a formwork height of 300 cm, the height of the tie holes in Mammut XT differs from that in the M stripping corner. Possible solutions:

- → Do not tie through the stripping corner but rather through the frame tie hole of the adjacent XT panel (Fig. 47.5), or
- → Install a M/M350 panel next to the outside corner (Fig. 47.6).

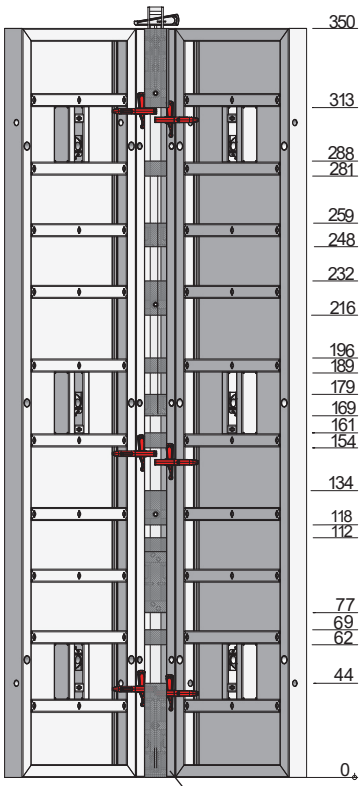


Fig. 47.1

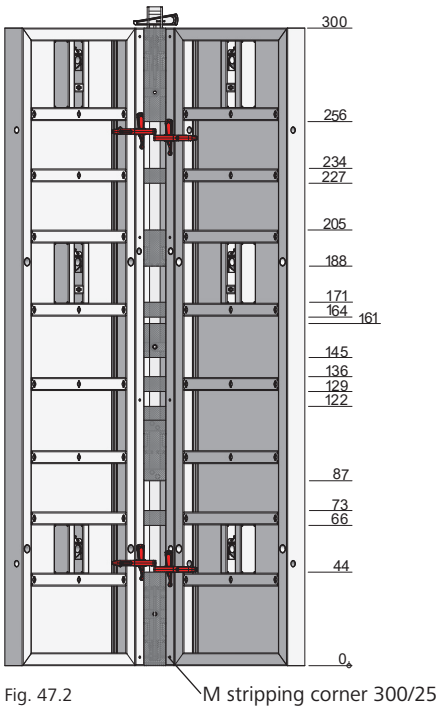


Fig. 47.2

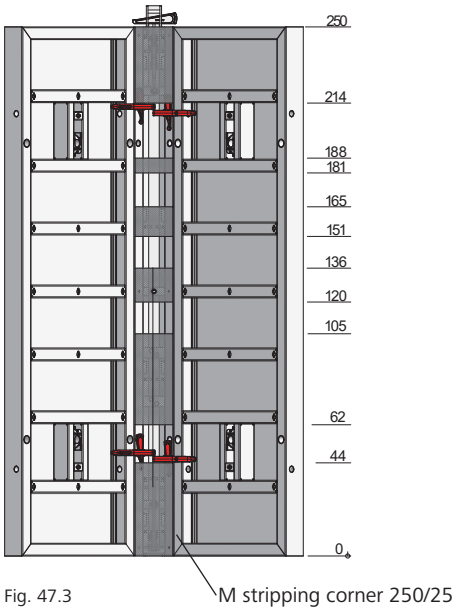


Fig. 47.3

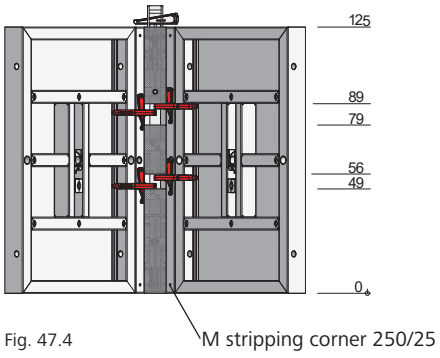


Fig. 47.4

No assembly locks possible in grey shaded areas!

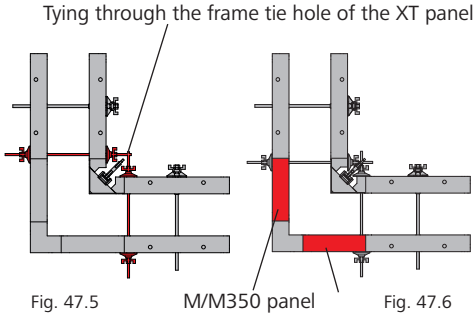


Fig. 47.5

Fig. 47.6

Description	Ref. No.
Mammut 350 SC 350/25	**23-151-00**
Mammut 350 SC 300/25	**23-151-10**
Mammut 350 SC 250/25	**23-151-20**
Mammut 350 SC 125/25	**23-151-30**

Stripping corner – Set-up and handling

1. Insert the wedge integrated into the stripping corner into the corner's connecting device (Detail C).
2. Connect the stripping corners and panels (see pages XT-47 to -<?>).
3. Remove the wedges after pouring and prior to stripping.
4. Activate the stripping corner with a crowbar. The bell-crank lever is pushed upwards using the crowbar. The crowbar can be applied at the bottom at position A (Detail A) or in the middle at position B (Detail B). This breaks the bond between the formwork facing and the concrete without much effort.

Pages XT-49 and -50 describe how to activate the stripping corner with the stripping support.

5. Attach the shaft formwork with crane slings to the crane gear.

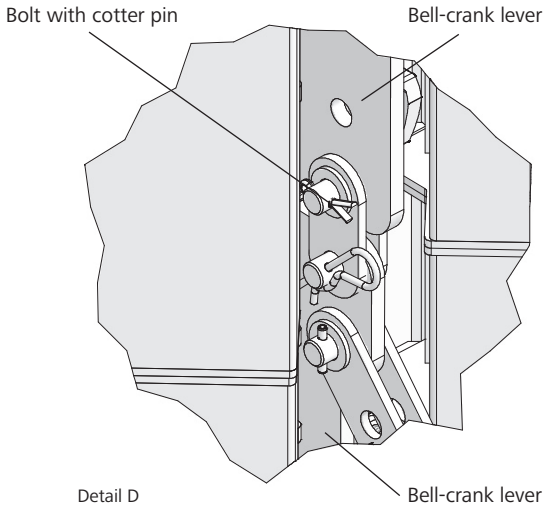
Important
Make sure the entire formwork is completely removed from the poured walls before lifting it by crane.

6. The entire formwork is moved in one single lift and detached from the crane when it is in its new position.
7. The stripping corner can be reset for the next pour by positioning the crowbar at position C (Detail C) and pushing the bell-crank lever down.
8. Reinsert the wedge into the connecting device (Detail C – pouring position).
9. A few hammer blows to the wedge will move the lateral parts of the stripping corner outwards and keep them in the pouring position.

Description	Ref. No.
Mammut 350 SC 350/25	**23-151-00**
Mammut 350 SC 300/25	**23-151-10**
Mammut 350 SC 250/25	**23-151-20**
Mammut 350 SC 125/25	**23-151-30**

Note
Returning the stripping corner to its original position by hitting the bell-crank lever with a hammer can result in damage and is not permitted.

Height extension
Two stripping corners can be connected to each other easily by joining their bell-crank levers. The integrated pin must be secured with the cotter pin (Detail D).



Detail D

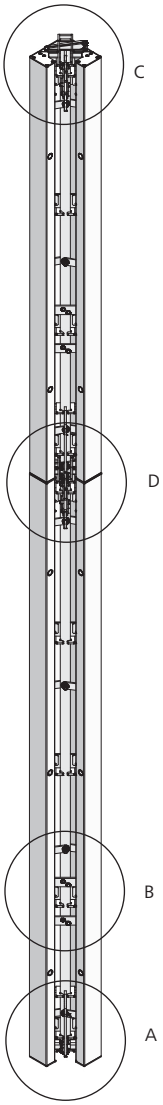
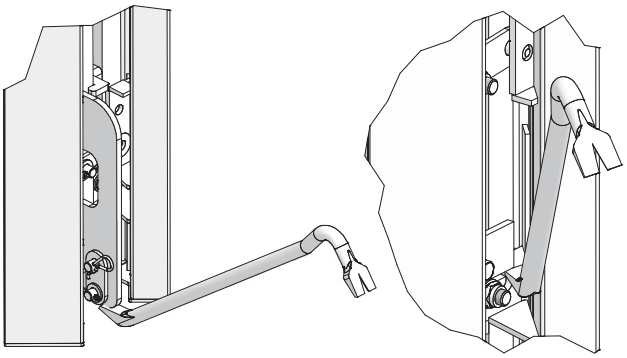
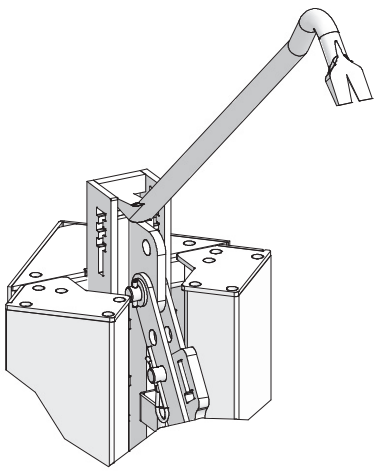
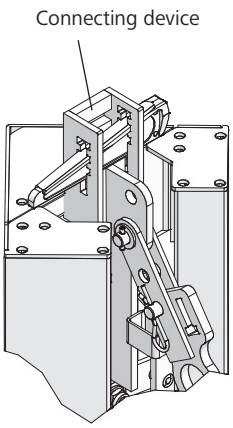


Fig. 48.2


Detail A

Detail B


Detail C



Detail C – Pouring position

Stripping corner – Stripping support / stripping corner tool

Stripping support
The stripping support (Fig. 49.1) is used to easily activate the stripping corner from above

with a power screwdriver, a ratchet spanner or a spanner. Tools with width across flats of 27, 30 or 36 mm are to be used.

Stripping corner tool
The stripping corner tool (Fig. 49.2) also enables the stripping corner to be screwed back to its original position with a power screwdriver, a ratchet spanner or a spanner. Tools with width across flats of 36 mm are to be used.

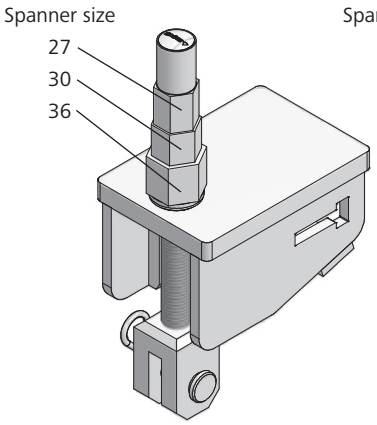


Fig. 49.1: Stripping support

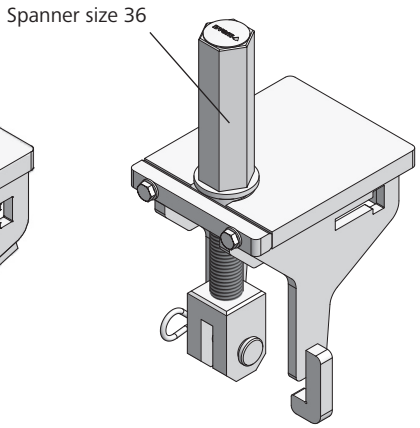


Fig. 49.2: Stripping corner tool

Assembly
1. Place the stripping support / stripping corner tool onto the connecting device at the top of the stripping corner. Make sure the suspension is inclined downwards (Fig. 49.3).
2. Connect the stripping support / stripping corner tool to the stripping corner with the head bolt 16/40 and cotter pin 4 that are both integrated into the tensioning screw of the stripping support or the stripping corner tool (Fig. 49.3).
3. Lock the stripping support / stripping corner tool to the stripping corner by driving the stripping corner's wedge with a few hammer blows into the opening on the side of the stripping support / stripping corner tool (Fig. 49.3).

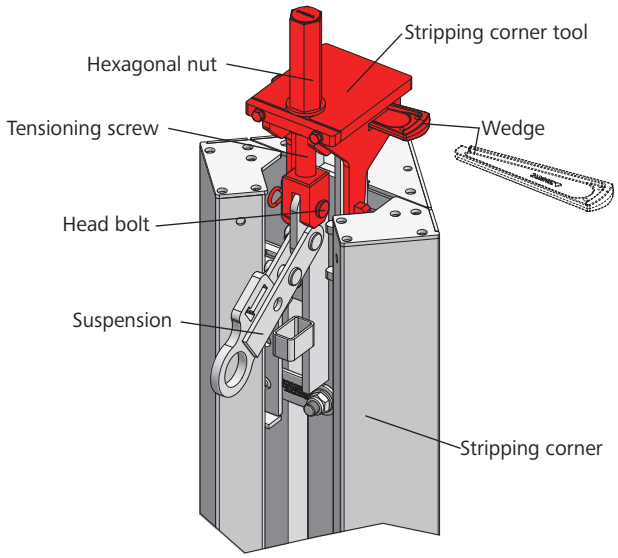


Fig. 49.3

Description	Ref. No.
Stripping support	**79-306-30**
Stripping corner tool	**29-306-32**
Spanner	
size 27	**29-800-10**
size 36	**29-800-15**

WAF = width across flats

Stripping corner – Working principle of the stripping support / stripping corner tool

The stripping support has three hexagonal nuts that are operated with tools with width across flats of 27, 30 and 36 mm. The stripping corner tool has a hexagonal nut with widths across flats of 36 mm.

Turning the hexagonal nut on the tensioning screw with a power screwdriver (Fig. 50.1), a ratchet spanner (Fig. 50.2) or a spanner moves the bell-crank lever upwards (Fig. 50.5).

This activates the stripping corner and separates the corner from the poured walls (Fig. 50.4).

When the shaft formwork has been relocated, the stripping corners can be screwed back into their original position using the stripping corner tool (Fig. 50.6).

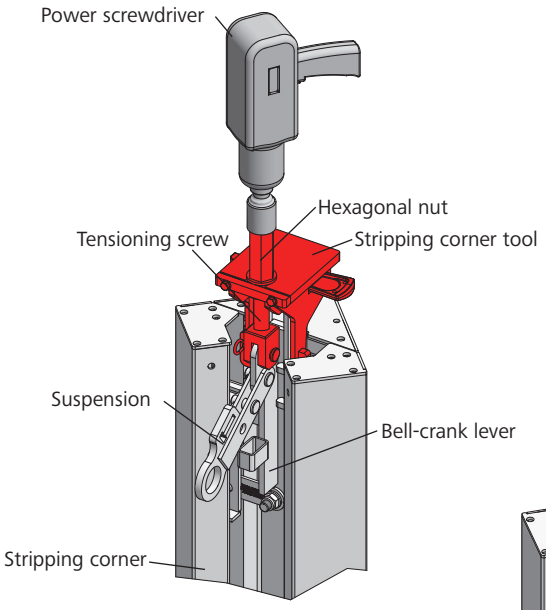


Fig. 50.1

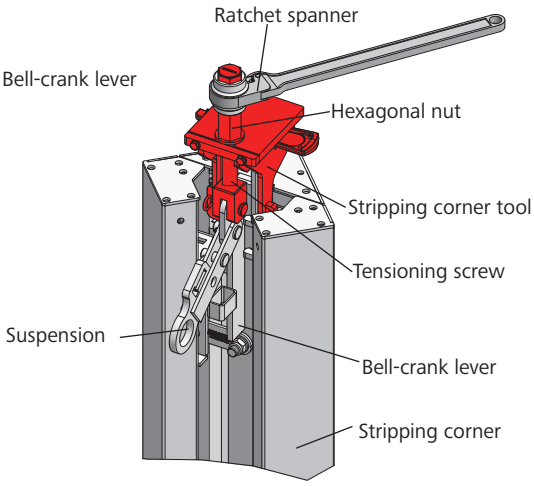


Fig. 50.2

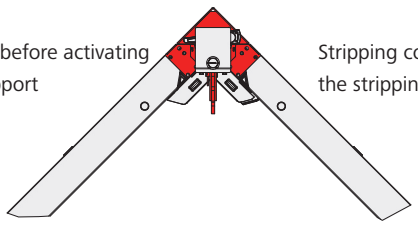


Fig. 50.3

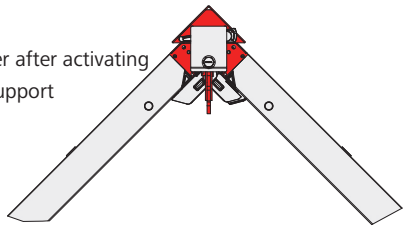


Fig. 50.4

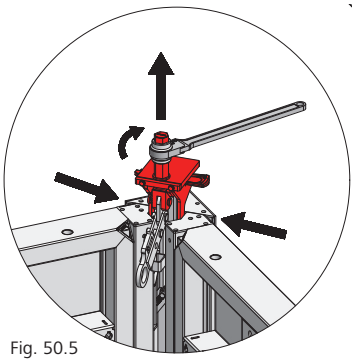


Fig. 50.5

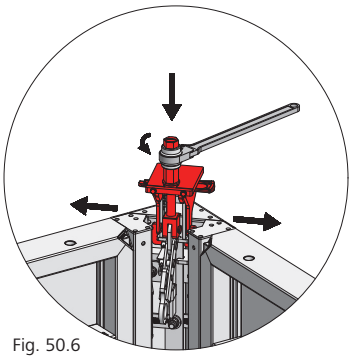


Fig. 50.6

Description	Ref. No.
Stripping support	**79-306-30**
Stripping corner tool	**29-306-32**
Spanner	
size 27	**29-800-10**
size 36	**29-800-15**

Stripping corner as stripping support

The M 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.

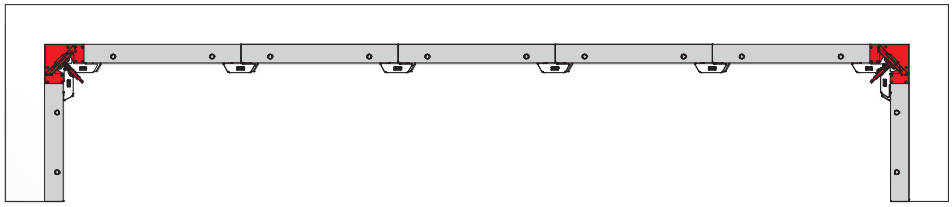


Fig. 51.1

Steps

1. Remove the M assembly locks connecting the stripping corners to the panels (Fig. 51.1).
2. Activate the M stripping corner (Fig. 51.2 and pages XT-48 to -50).
3. Lift the stripping corners off, then strip the panels (Fig. 51.3).

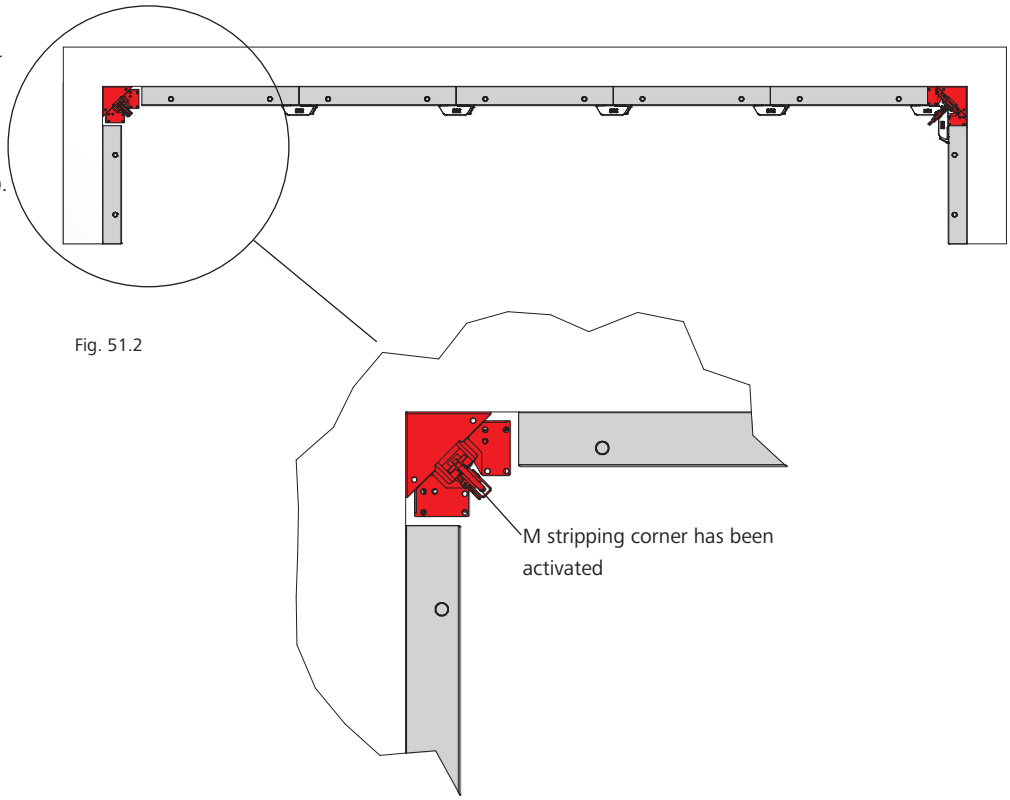


Fig. 51.2

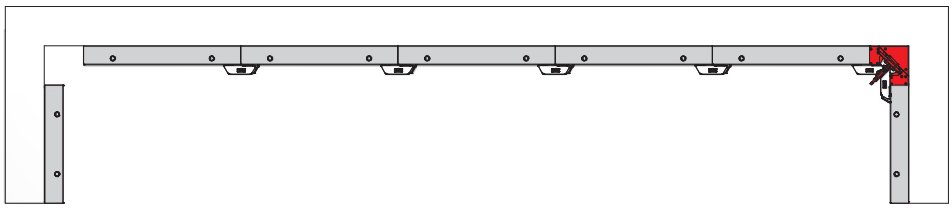


Fig. 51.3

Length compensation – Aluminium /timber filler

There are various length compensation options in order to bridge a gap:

Aluminium filler
The aluminium filler is available in the widths 4, 5, 6 and 8 cm (Fig. 52.1) and is equipped with tie holes. DW tie rods are used on both sides when using the tie holes in the filler. For stabilisation purposes, a cross stiffener 44 is generally attached at each tie hole level using two flange screws 18. In the case of two adjacent fillers, the second filler is rotated through 180°.

Timber filler
A length compensation is created using a job-built timber filler and assembly locks (Figures 52.2 and 52.3).
→ RS assembly lock from 0 to 8.5 cm
→ Uni-assembly lock 22 from 0 to 10 cm
→ Uni-assembly lock 28 from 0 to 16 cm
For stabilisation purposes, a cross stiffener 44 is generally attached at each tie hole level using two flange screws 18.

Length compensation greater than 16 cm using timber filler
A length compensation greater than 16 cm can be created using two timber fillers and a facing cut to the size required (Fig. 52.4). For stabilisation purposes, an alignment rail is generally attached at each tie hole level using two flange screws 18.

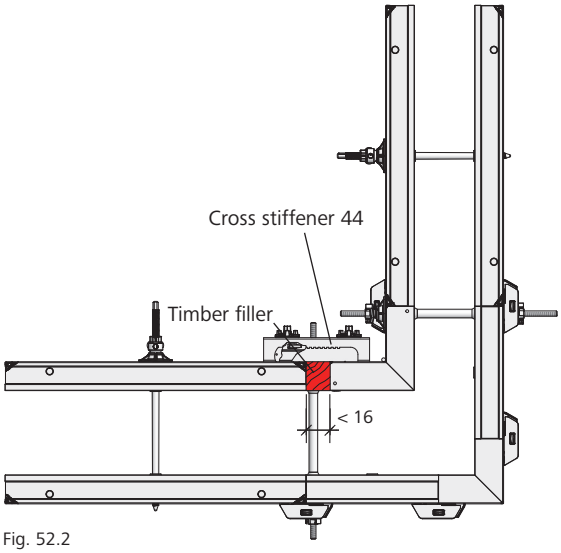
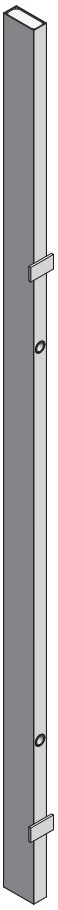


Fig. 52.2


Fig. 52.1

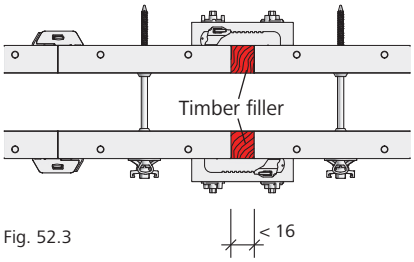


Fig. 52.3

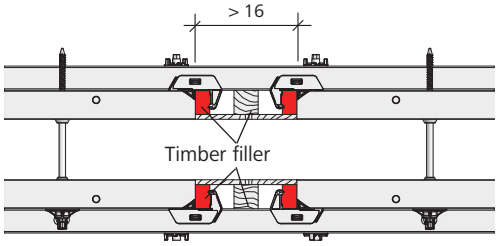


Fig. 52.4

Description	Ref. No.
M cross stiffener 44	**29-401-02**
M assembly lock	**29-400-71**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
RS assembly lock	**23-807-70**
Flange screw 18	**29-401-10**
M 350 aluminium filler 350/8.	**29-300-27**
M 350 aluminium filler 350/6.	**29-300-28**
M 350 aluminium filler 350/5.	**29-300-30**
M 350 aluminium filler 350/4.	**29-300-31**
M XT aluminium filler 300/8...	**29-300-43**
M XT aluminium filler 300/6...	**29-300-44**
M XT aluminium filler 300/5...	**29-300-45**
M XT aluminium filler 300/4...	**29-300-46**
M 350 aluminium filler 250/8.	**29-300-33**
M 350 aluminium filler 250/6.	**29-300-34**
M 350 aluminium filler 250/5.	**29-300-35**
M 350 aluminium filler 250/4.	**29-300-36**
M 350 aluminium filler 125/8.	**29-300-38**
M 350 aluminium filler 125/6.	**29-300-39**
M 350 aluminium filler 125/5.	**29-300-40**
M 350 aluminium filler 125/4.	**29-300-41**

Length compensation – Filler widths

The maximum filler width X for the bracing at tie hole level (Fig. 53.1) and the bracing at the multi-function profile level is determined by the permissible fresh-concrete pressure and the type of alignment rail used (Table 53.3).

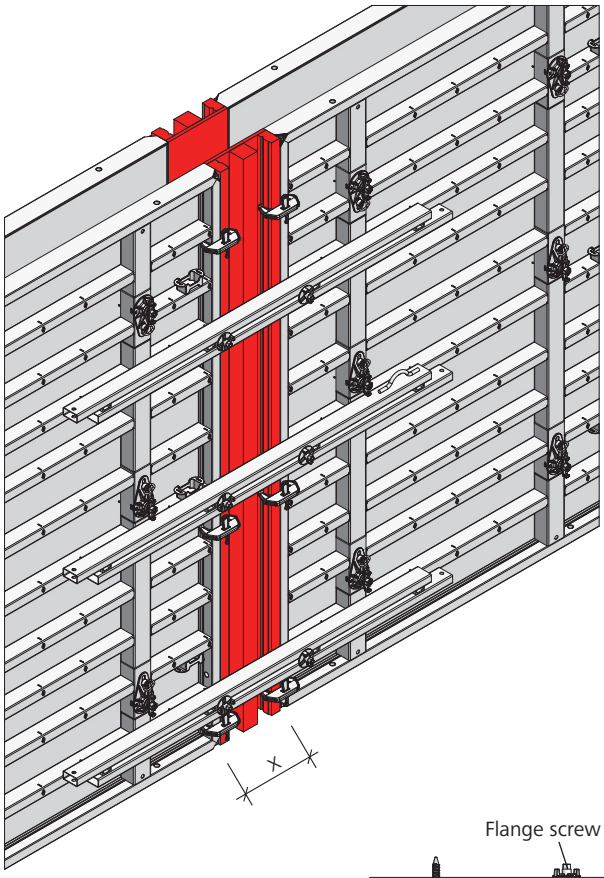


Fig. 53.1

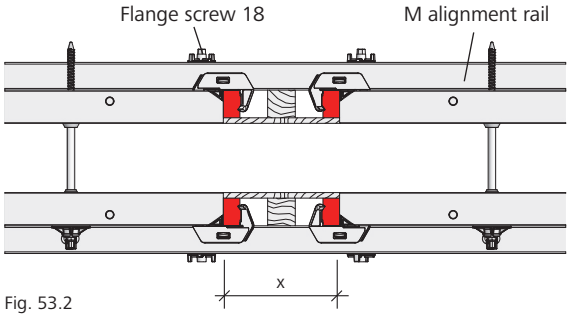


Fig. 53.2

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
M assembly lock	**29-400-71**
M cross stiffener 44	**29-401-02**

Table to determine the permissible compensation width X depending on the bracing and permissible fresh-concrete pressure (flatness according to DIN 18202, Table 3, line 6)

Alignment rail	Cross-section	Compensation width X (cm)			
		Multi-function profile level		Tie hole level	
		70 kN/m²	100 kN/m²	70 kN/m²	100 kN/m²
M alignment rail 180	2 RTs 100 x 50 x 3	100	100	80	70
M alignment rail 250		110	100*	80	70
Crossbeam 300	2 RTs 100 x 60 x 4	175	145*	125	125
M alignment rail 450		175	145*	125	125
M alignment rail 450 reinforced	Two U profiles 140	265	225	200	200

Table 53.3

* refers to multiple-span beams

T wall connection

A T-wall connection can be formed using two Mammut XT inside corners (Fig. 54.1).

Depending on the wall thickness and the resulting gap opposite the T wall connection, two-sided tying of the Mammut XT inside corner takes places using:
→ M aluminium filler or
→ Timber filler
(Figures 54.1 and 54.2).

Alternatively, the connection can be made by tying in the long wall with 75 or 50 cm wide panels from both sides through the frame tie hole.

For single-sided tying, 25 cm wide Mammut XT panels are to be installed next to the inside corners (Fig. 54.3).

For the load capacity and the maximum permissible compensation widths of the alignment rails refer to page XT-53, Table 53.3.

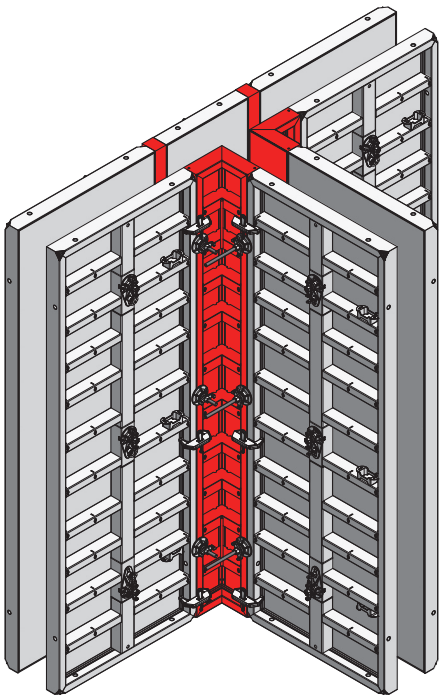


Fig. 54.1

Two-sided tying

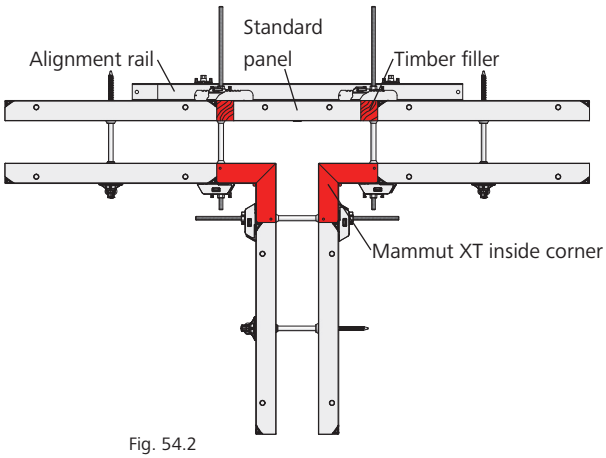


Fig. 54.2

Single-sided tying

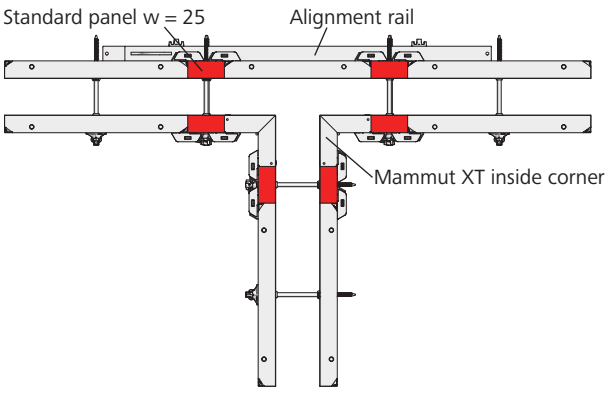


Fig. 54.3

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
M assembly lock	**29-400-71**
M cross stiffener 44	**29-401-02**

T wall connection – Different wall thicknesses

A T-wall connection with varying wall thicknesses can be created using two Mammut XT inside corners and job-built timber fillers with a facing cut to the size required (Figures 55.1 and 55.2).

To guarantee the load capacity, the maximum permissible compensation widths of the alignment rails must be observed (see page XT-53, Table 5353.3).

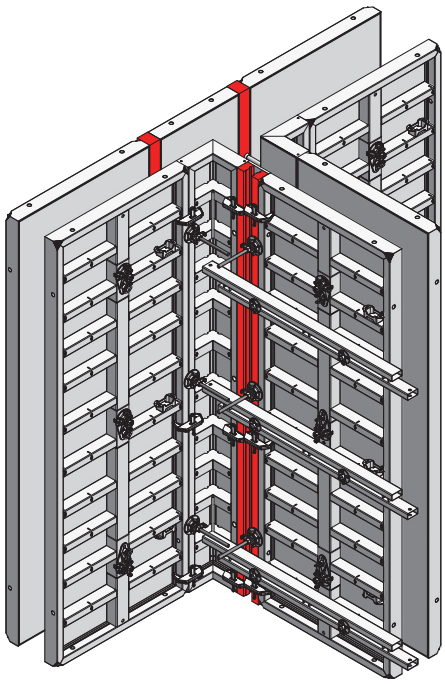


Fig. 55.1

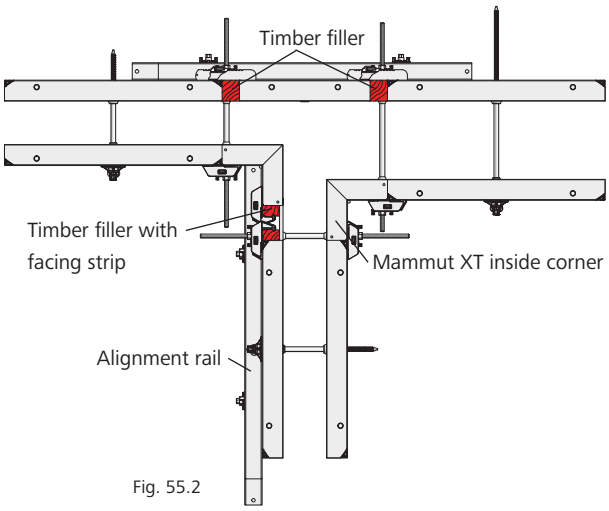


Fig. 55.2

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**
M assembly lock	**29-400-71**
M cross stiffener 44	**29-401-02**

Connection to existing walls

The panels can be connected to existing walls without problem through the internal tie holes of all Mammut XT panel widths (Figures 56.1 and 56.2).

Figures 56.3 and 56.4 show further options for connecting formwork to an existing wall. Depending on the wall layout and conditions on the construction site, the most suitable solution may vary from case to case.

Always make sure the formwork is firmly pressed up against the existing wall and attached to it without gaps in order to avoid leakage of the fresh concrete and a patchy concrete surface (Fig. 56.4).

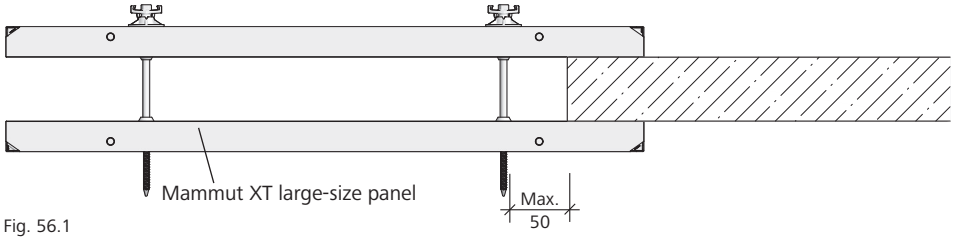


Fig. 56.1

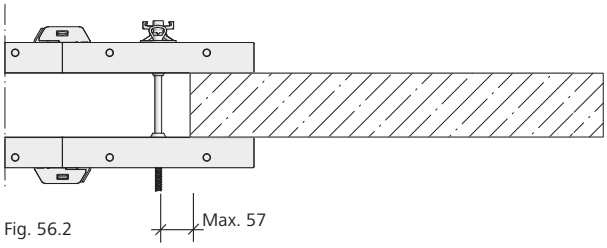


Fig. 56.2

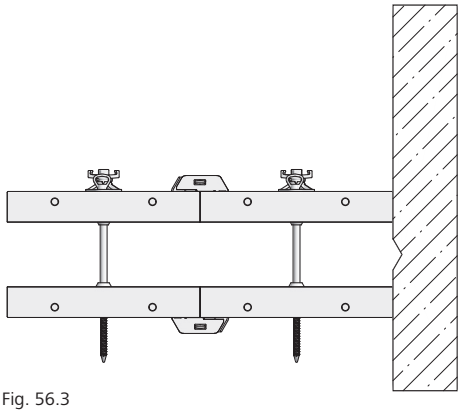


Fig. 56.3

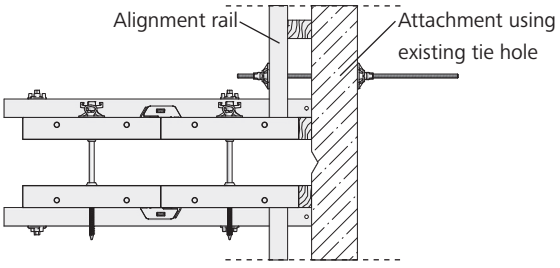


Fig. 56.4

Wall offset

Wall offsets up to 10 cm can be formed by moving back the relevant standard panel.

If the offset panel is a Mammut XT panel with a width of 75, 55, 50 or 45 cm, the frame tie holes can be used in addition for two-sides tying (Fig. 57.1).

For offsets from 10 to 25 cm Mammut XT inside corners 35 should be used (Fig. 57.2).

The panels are connected using job-built wooden blockings with the Uni-assembly lock 22 (Fig. 57.3).

All types of wall offset require alignment rails for reinforcement (Figures 57.1 and 57.2).

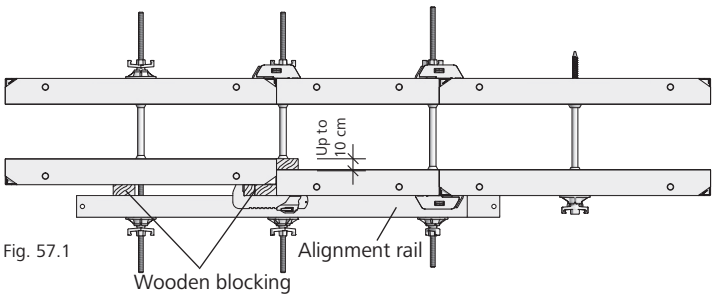


Fig. 57.1

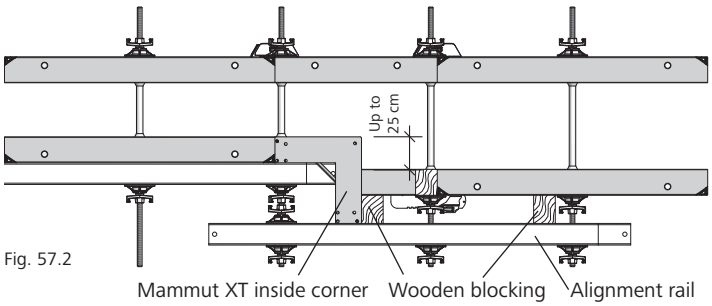


Fig. 57.2

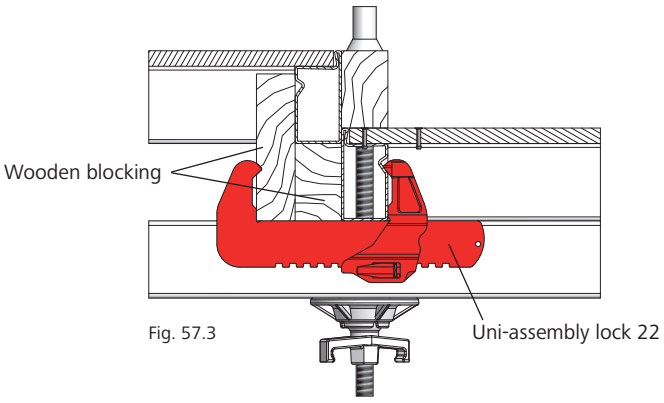


Fig. 57.3

Description	Ref. No.
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**

Stop ends

Stop end with stop end bracket

Stop ends at the end of a wall or at the end of the cycle for a continuous wall can be created using a stop end bracket and square timbers as well as a facing cut to the size required on-site. (Figures 58.1 and 58.2).

The stop end bracket is positioned at the height of the tie holes (Fig. 58.1).
It is available in two sizes and can be adjusted steplessly:
→ With stop end bracket 40/60 for wall thicknesses up to 40 cm
→ With stop end bracket 60/23 for wall thicknesses up to 75 cm
(Figures 58.1 and 58.2)

Stop end with outside corner

Alternatively, the stop end at the end of the wall can also be produced using an outside corner in conjunction with M aluminium fillers or standard panels (Figures 58.4 and 58.5).

For the number of assembly locks required at the outside corner refer to the tables on pages XT-40 and XT-42.

Note

Additional alignment rails are required for Mammut XT panels with the widths 100 and 125 cm or if the first tie rod is more than 50 cm from the end of the wall. One or more alignment rails are required for reinforcement at each tie hole level.

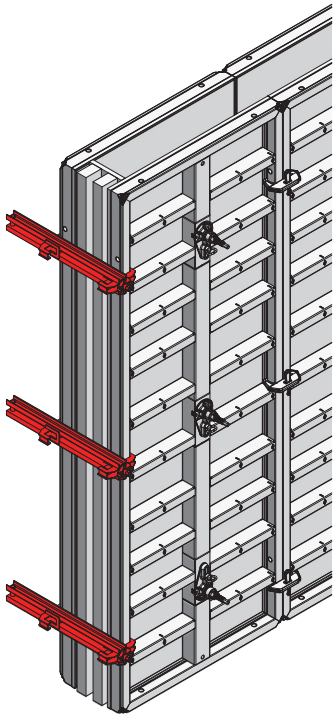


Fig. 58.1

Up to WT = 75 cm with stop end bracket 60/23
Up to WT = 40 cm with stop end bracket 40/60

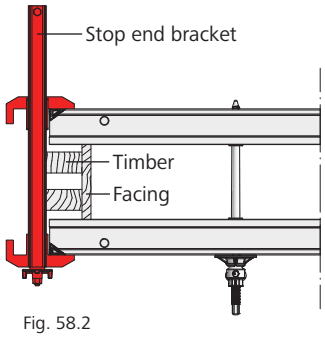


Fig. 58.2

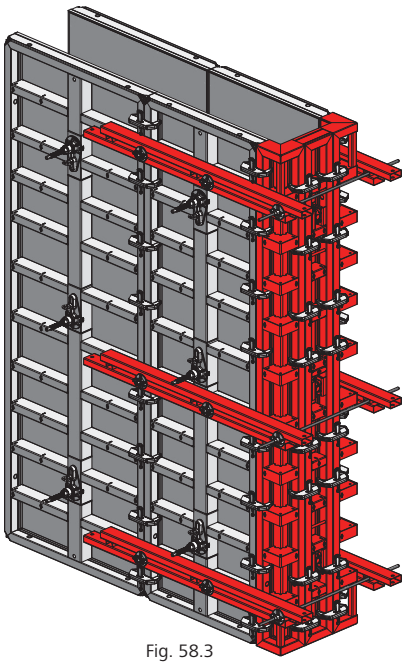


Fig. 58.3

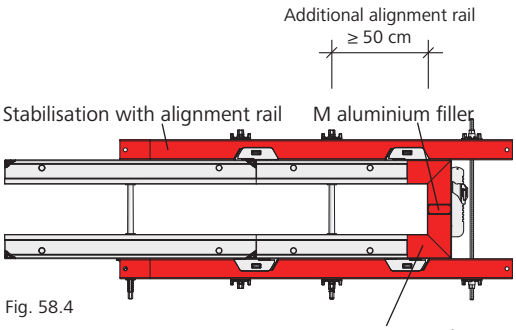


Fig. 58.4

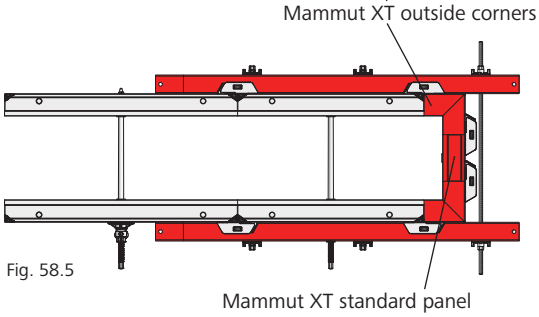


Fig. 58.5

Description	Ref. No.
Stop end bracket 60/23	**29-105-60**
Stop end bracket 40/60	**29-105-50**
M assembly lock	**29-400-71**

Pilasters

Standard pilasters are easily formed with inside corners, standard panels and, where necessary, wooden blockings. Stop end brackets and alignment rails must be attached for reinforcement (Figures 59.1 to 59.3). Depending on the wall thickness required, timber fillers and alignment rails may also be required on the wall opposite the pilaster (Fig. 59.2).

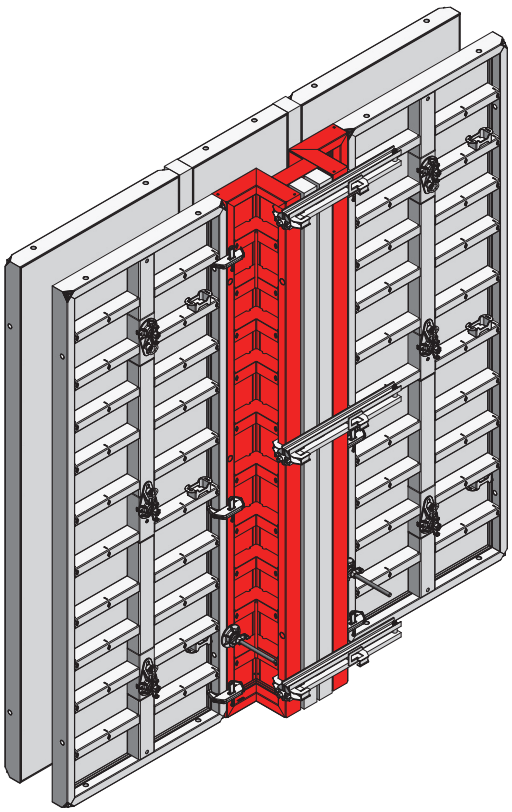


Fig. 59.1

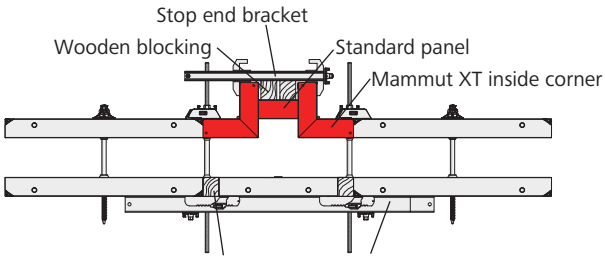


Fig. 59.2

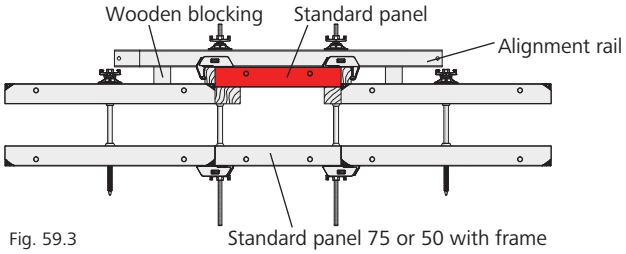


Fig. 59.3

Description	Ref. No.
Stop end bracket 40/60	**29-105-50**
Stop end bracket 60/23	**29-105-60**

Differences in height

The assembly lock can be attached at any position on the panel joint between the cross stiffeners (Fig. 60.1). The formwork's grid-free design does not require additional accessories for panel connection. Vertical, horizontal and inclined panels can all be safely and firmly connected with M assembly locks, even with differences in height.

A job-built length compensation is produced using job-built timber fillers and an alkus facing cut to the size required or a wooden board. If required, use square timbers for reinforcing purposes. A compensation larger than 36 cm requires a centred square timber to support the facing.

Square timbers and the facing are simply connected with M assembly locks. It may be necessary to use alignment rails and/or wooden blockings.

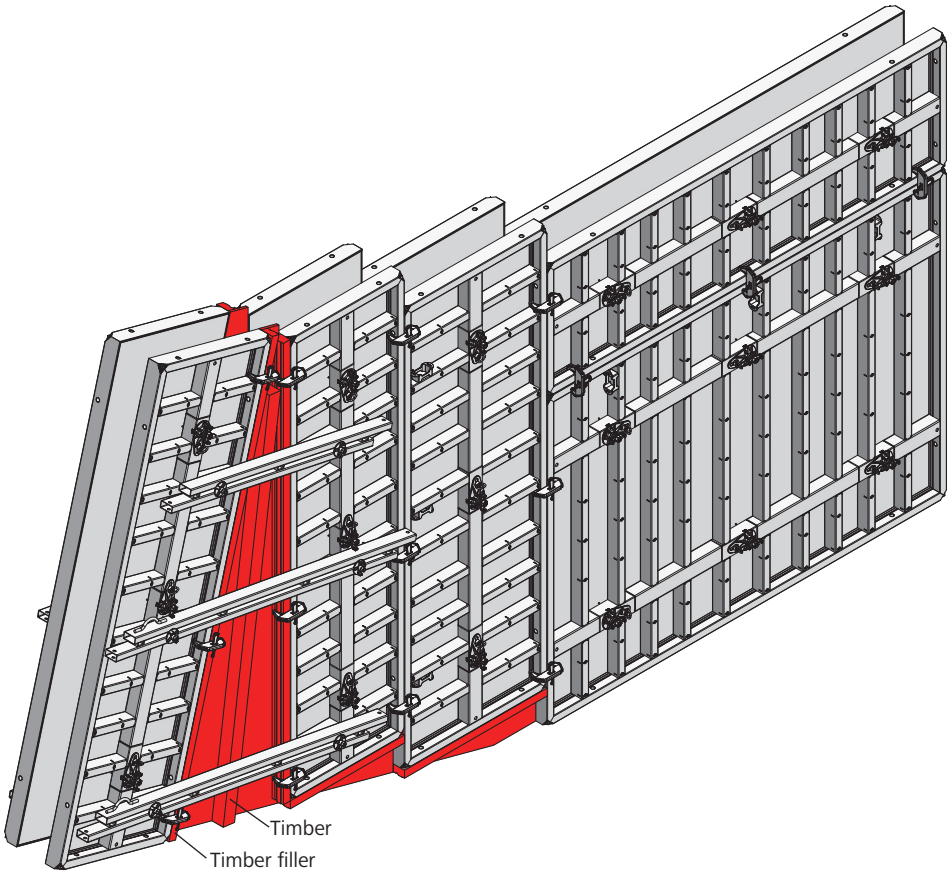


Fig. 60.1

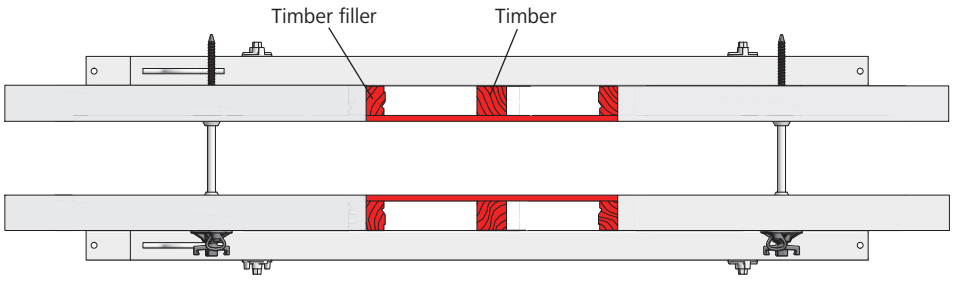


Fig. 60.2

Description	Ref. No.
Uni-assembly lock 22	**29-400-85**
Uni-assembly lock 28	**29-400-90**

Horizontal panels

Mammut XT allows a lot of forming problems to be easily solved. These include basin walls in water treatment plants, foundations and strip footings which often require a certain height.

The central tie hole allows the Mammut XT panel to be used horizontally without problem (Figures 61.1 and 61.3). To provide stability and to ensure that the wall thickness is correct in the vicinity of the top tie hole, a spacer (Fig. 61.6) or a wooden blocking may be required. The spacer is available for wall thicknesses 20, 24, 25 and 30 cm.

To prevent a tie hole remaining in the component, foundation tape and tensioners can be used under the formwork panel (Figures 61.2 and 61.4). The tensioner for foundation tape is attached to the formwork using a wedge. The maximum tensioner spacing is to be observed (Table 61.5).

The Uni-tie claw can be used as the top tie connection. The following is required for each tie hole:

→ Two Uni-tie claws
→ One tie rod DW
→ Two articulated flange nuts

(Figures 61.1 to 61.4) We also recommend the use of a plastic tube. It serves as a spacer and protects the tie connection against contamination.

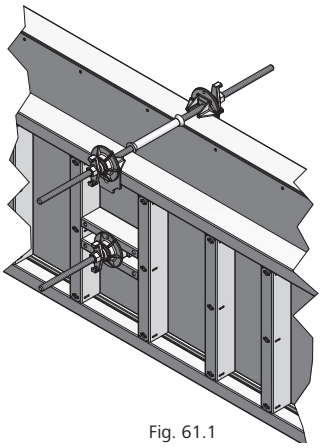


Fig. 61.1

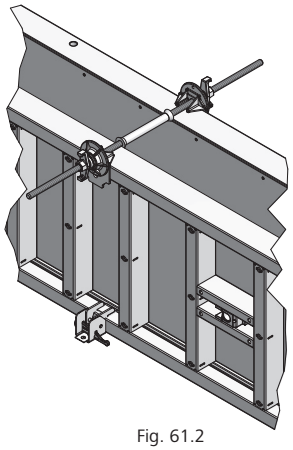


Fig. 61.2

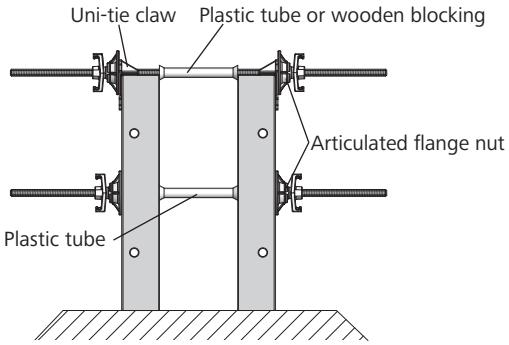


Fig. 61.3

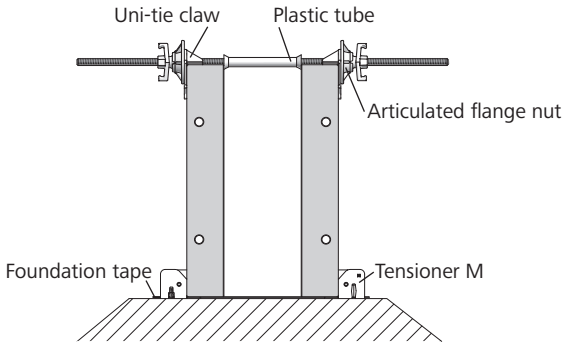


Fig. 61.4

Maximum tensioner spacing	
Pouring height 75 cm	185 cm
Pouring height 100 cm	120 cm
Pouring height 125 cm	70 cm

Table 61.5

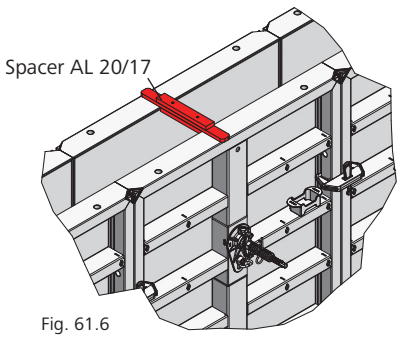


Fig. 61.6

Description	Ref. No.
Foundation tape 50 m roll	**29-307-50**
Tensioner M	**29-307-60**
Trolley for foundation tape	**29-307-55**
Uni-tie claw	**29-901-41**
Spacer 20/24 AL20/17	**29-901-52**
Spacer 25/30 AL20/17	**29-901-62**

Stabilisation of units

For an optimum load distribution, it is sensible to use large-size panels.
If three of more panels with a central tie hole (panel widths of 125 cm or less) are located next to each other, the unit is reinforced by attaching an M-alignment rail 75 to the lowest multi-function profile of the panel joint (Figures 62.1 and 62.2).

Depending on the requirements, a 90° corner can be constructed in a number of different ways. For information on these options refer to pages XT-37 ff.

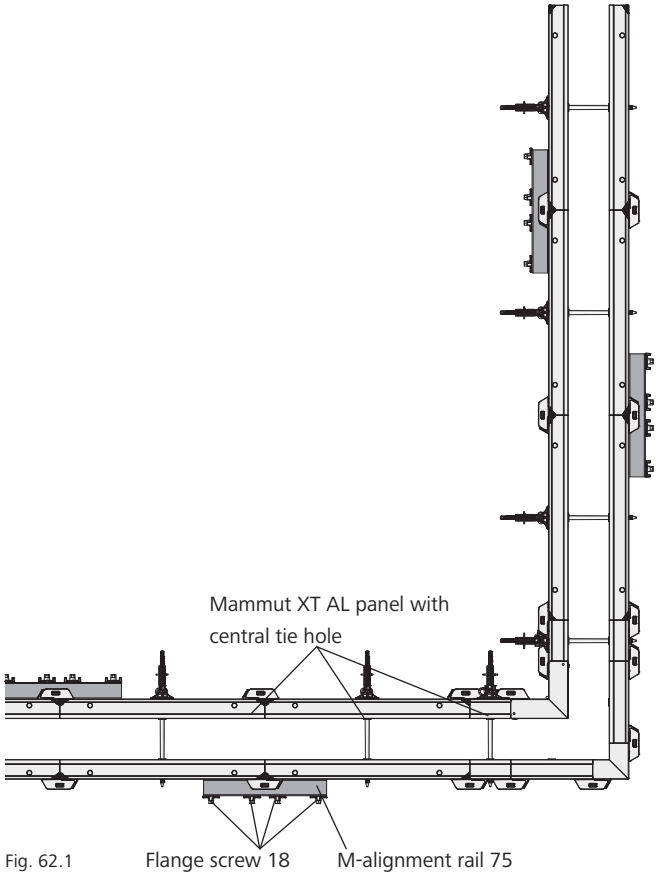


Fig. 62.1

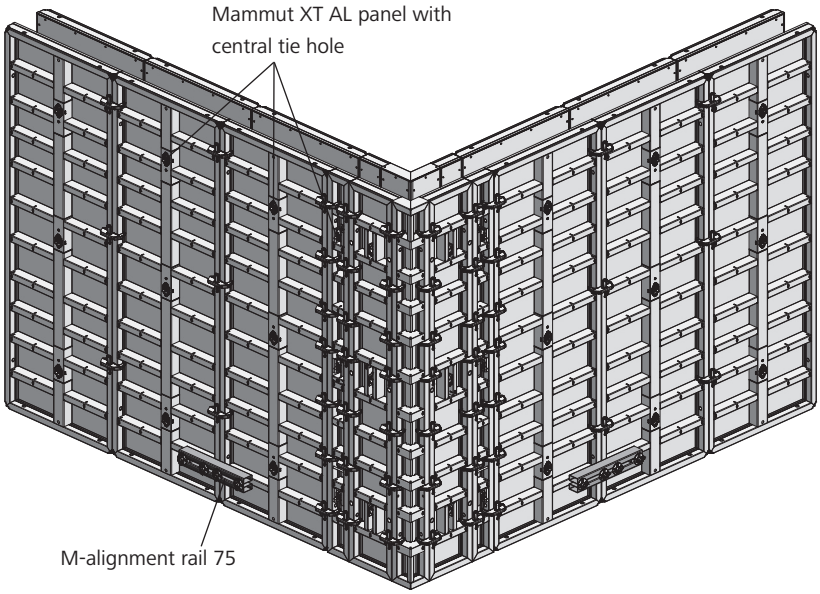


Fig. 62.2

Description	Ref. No.
M-alignment rail 75	**29-400-95**
Flange screw 18	**29-401-10**

Substitution of ties

In some cases tie rods can be used.

→ Panels with a height of 350 cm do not require tying at the top tie holes if the pouring height does not exceed 3.00 m (Fig. 63.1).
→ For a pouring height up to 3.50 m, a Uni-tie claw can be attached over the panel instead of installing ties in the top tie holes (Fig. 63.2).
→ When increasing the height of the formwork with a top panel lying horizontally, no tying is required through the top panel if the top panel has a maximum width of 30 cm and if the total formwork height does not exceed 3.80 m (Fig. 63.3) provided the walkway bracket is attached to the panel below. However, if the walkway bracket is attached to the top panel, ties must be installed in its top tie holes. The Uni-tie claw in conjunction with a tie rod and a flange nut 100 can also be used to tie this configuration.
→ If the horizontal top panel for height extension has a maximum width of 1.25 m and the total formwork height does not exceed 4.75 m, the top panel does not need tying at its middle tie holes if two alignment rails RS 180 are used and the top panel is tied at the top with Uni-tie claws, tie rods and flange nuts 100 (Fig. 63.4).

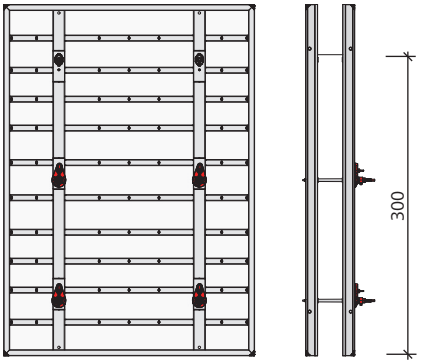


Fig. 63.1

Tying above panel with Uni-tie claw

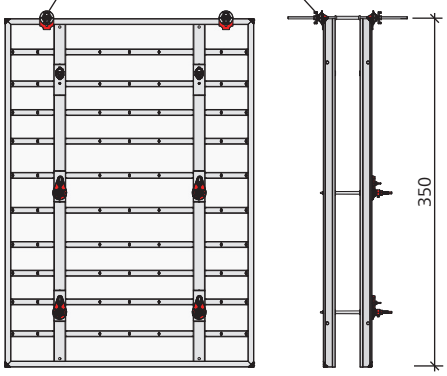


Fig. 63.2

Working platform only attached to the multi-function profile of the vertical panel

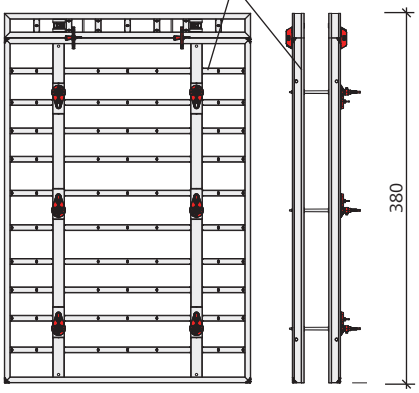


Fig. 63.3

Tying above panel with Uni-tie claw

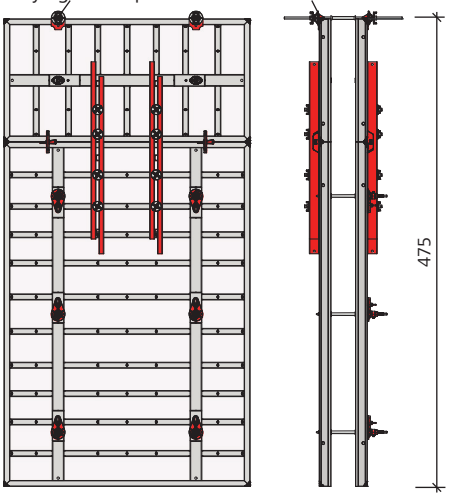


Fig. 63.4

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
Crossbeam 300	**29-403-05**
250	**29-402-50**
180	**29-400-92**
Crossbeam 300	**29-403-05**
M cross stiffener 44	**29-401-02**
Flange screw 18	**29-401-10**

Substitution of ties

→ When combining two vertical Mammut XT panels for a total formwork height of 7.00 m, the top ties of the top panel can be replaced by Uni-tie claws that are attached above the top panel (Fig. 64.1).

→ A formwork height of 8.25 m is achieved by extending a vertical Mammut XT panel with another vertical Mammut XT and a horizontal panel that is 125 cm wide. Here, the middle ties of the top panel can be replaced with alignment rails and Uni-tie claws, tie rods and flange nuts 100 above the top panel (Fig. 64.2).

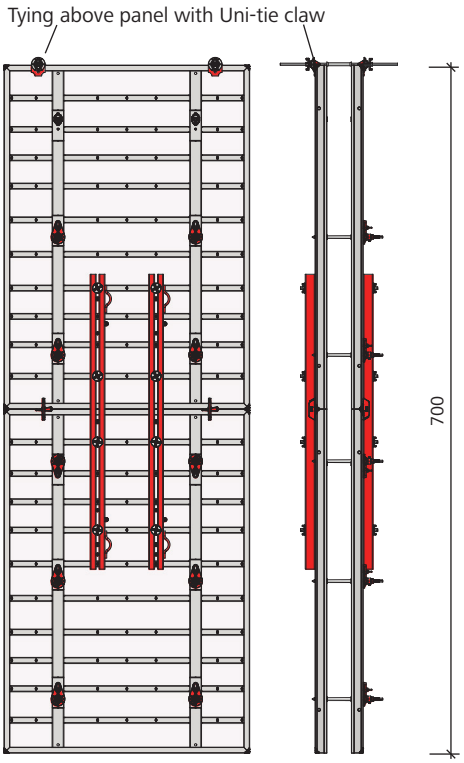


Fig. 64.1

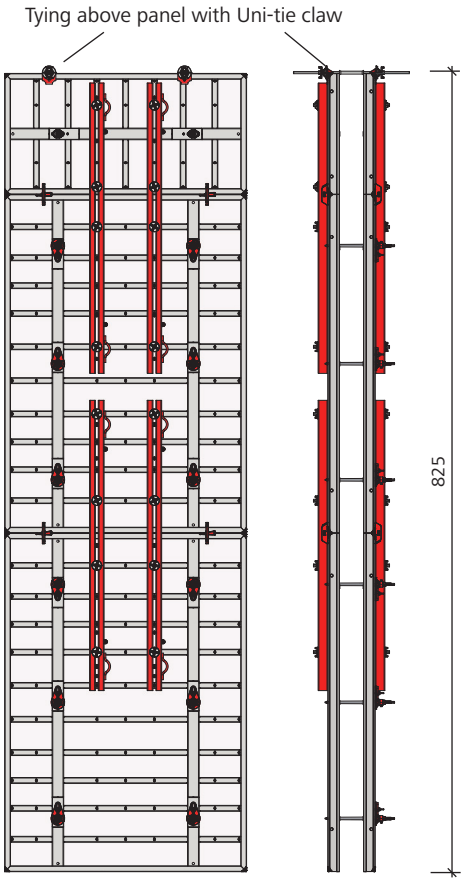


Fig. 64.2

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Crossbeam 300	**29-403-05**
M cross stiffener 44	**29-401-02**
Flange screw 18	**29-401-10**

Crane ganging

Each transport unit requires two M crane hooks with a load capacity of 15 kN (1.5 tons) attached symmetrically to the centre of gravity! The total weight of the height-extended unit depends on the load capacity of the crane hooks (Figures 65.1 to 65.3).

To ensure that the crane hooks cannot slip, they must be attached as follows:
→ across the centre beam for vertical panels, if possible
→ for several panels at the panel joint
→ using the cross stiffeners on horizontal panels

Alignment rails are required for height extensions to stabilise the panels (Table 65.4). They are attached to the panels using flange screws 18. For heights above 10.50 m please contact our application engineering department.

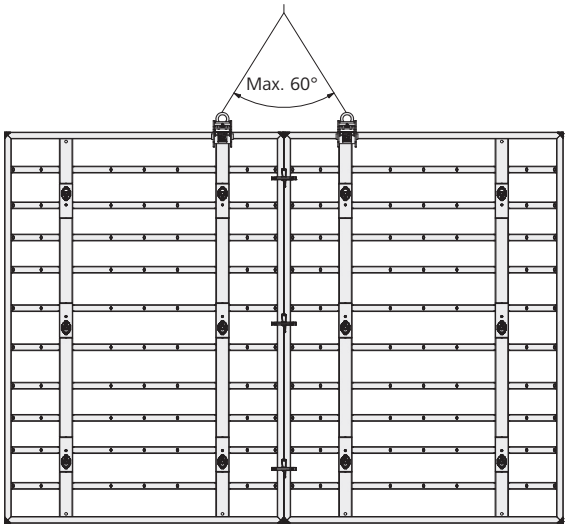


Fig. 65.1

Fig. 65.1
Panel unit
3.50 x 5.00 m = 17.50 m²
Weight 1103 kg

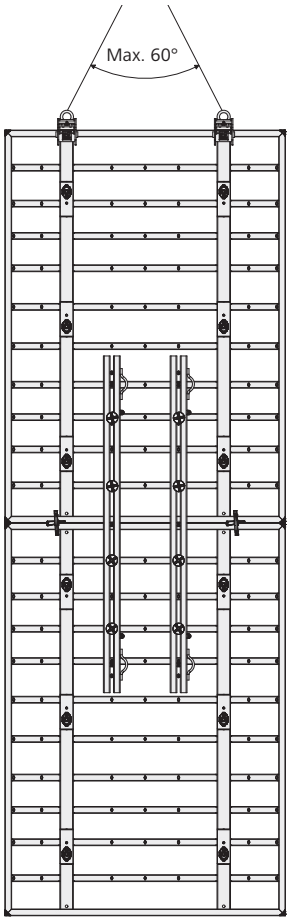


Fig. 65.2

Fig. 65.2
Panel unit
7.00 m x 2.50 m = 17.50 m²
with two crossbeams 300
Weight 1228 kg

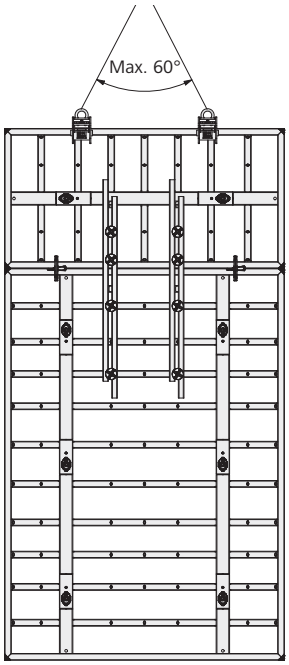


Fig. 65.3

Fig. 65.3
Panel unit
4.75 m x 2.50 m = 11.88 m²
with two M alignment rails 180
Weight 834 kg

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Crossbeam 300	**29-403-05**
M cross stiffener 44	**29-401-02**
Flange screw 18	**29-401-10**

Formwork height	Alignment rail for each horizontal joint for a width of 1.25 m	
	Alignment rail	Quantity
Up to 5.50 m	M 180	1
Up to 6.00 m	M 250	1
Up to 10.50 m	Crossbeam 300	1

Table 65.4

Crane ganging

Fig. 66.1
Panel unit 3.75 m x 3.50 m
= 13.13 m²
with three M alignment rails 180
Weight 947 kg

Fig. 66.2
Panel unit 7.00 m x 5.00 m
= 35.00 m²
with four crossbeams 300 and two M cross stiffeners 44 to reinforce the vertical panel joint
Weight 2459 kg

Refer to page XT-65
Tab. 65.4 for the type and quantity of alignment rails required in standard applications. For heights above 10.50 m please contact our application engineering department.

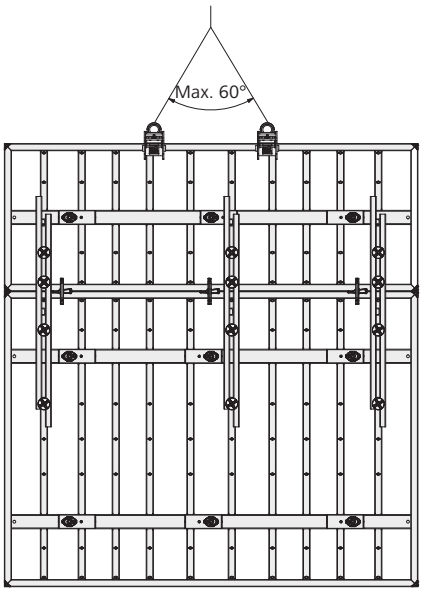


Fig. 66.1

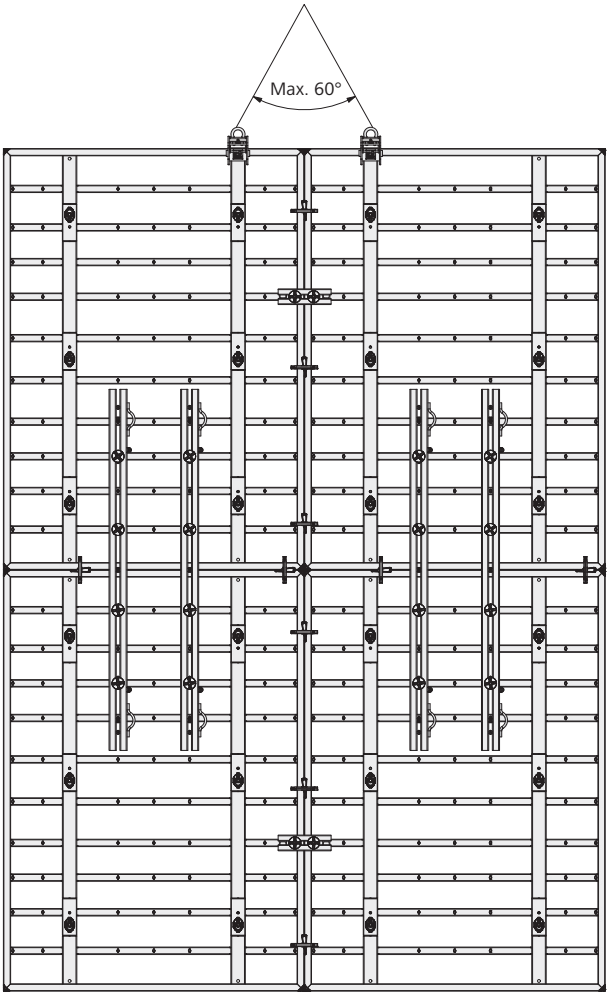


Fig. 66.2

Description	Ref. No.
M alignment rail	
450 reinforced	**29-402-38**
450	**29-402-40**
350 reinforced	**29-402-45**
250	**29-402-50**
180	**29-400-92**
Crossbeam 300	**29-403-05**
M cross stiffener 44	**29-401-02**
Flange screw 18	**29-401-10**

Column formwork – With standard panels

Columns with a maximum side length of 100 cm and a pouring height below 4.25 m (Fig. 67.5) can be formed using standard panels and outside corners (Fig. 67.4).

Columns with a side length exceeding 100 cm and a minimum height of 425 cm require additional stabilisation with M alignment rails and tie rods DW 15. Refer to Table 67.1 to determine the number of alignment rails and M assembly locks required for stabilisation purposes depending on the pouring height and the column side length.

Each alignment rail must be attached to the panel with two flange nuts 18. Ensure that alignment rails are attached to all multi-function profiles all around the column, starting at the lowest multi-function profile (Fig. 67.6). Also observe DIN 18218 for fresh-concrete pressure and DIN 4235 for compacting concrete with a vibrator.

Note
A chamfer strip 270 can be used to create columns with chamfered edges (Fig. 67.2). It grips the frame profile of the Mammut XT panel. Cut out the chamfer strip on the frame side where the assembly locks are to be installed (Fig. 67.3).

Pouring height (m)	Number of alignment rails (from bottom to top) for column cross section (cm)					Number of M assembly locks
	25	50	75	100	125	
1.25	—	—	—	—	—	3
2.50	—	—	—	—	—	5
3.00	—	—	—	—	—	6
3.50	—	—	—	—	—	7
4.25	—	—	—	—	1	10
4.75	—	—	—	1	1	10
5.00	—	—	—	1	1	10
5.50	—	—	—	1	1	11
6.00	—	—	—	2	2	12
6.50	—	—	1	2	2	13
7.00	1	1	1	2	2	14
7.50	1	1	1	2	2	15
8.00	1	1	1	2	2	16
8.50	2	2	2	3	3	17
9.00	2	2	2	3	3	18
9.50	2	2	2	3	3	19

Table 67.1

Number of assembly locks required for the horizontal joints of all standard panels:
- → Four M assembly locks for panel width 125 cm
- → Three M assembly locks for panel width 100 cm
- → Two M assembly locks for panel widths below 100 cm

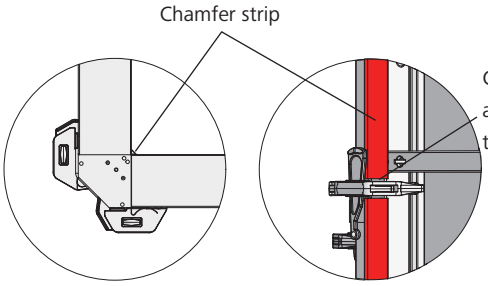


Fig. 67.2 Fig. 67.3

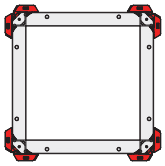


Fig. 67.4

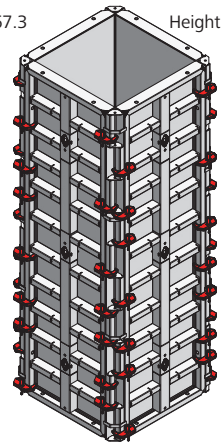


Fig. 67.5

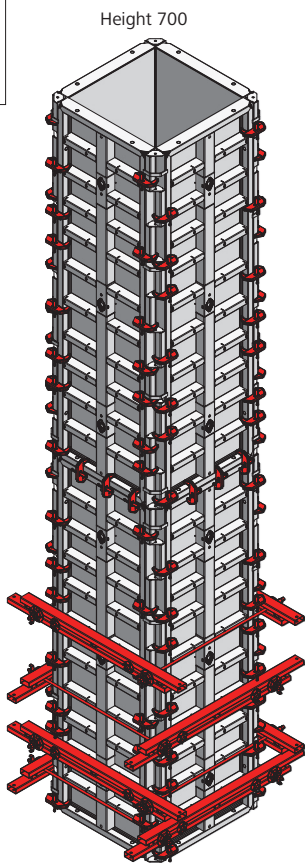


Fig. 67.6

Closing the tie holes

The tie holes in the concrete are closed using the XT plug D46 (Figures 68.1 and 68.2) when:
→ XT sealing cone 5 AL
and
→ XT taper tie 23
have been used (see page XT-16).
The XT plug is made of plastic and is pushed into the tie hole by hand.

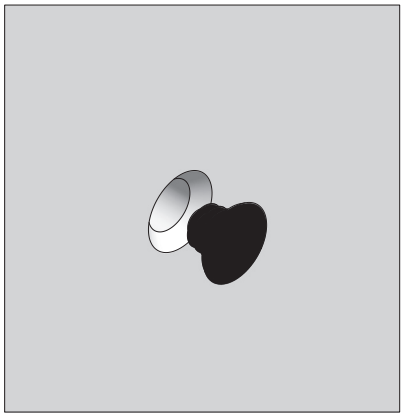


Fig. 68.1

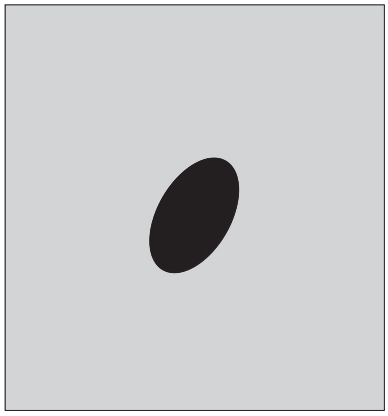


Fig. 68.2

For architectural-concrete requirements, the tie holes in the concrete are closed using the XT fibre concrete plug 47 x 8.5 (Figures 68.3 and 68.4) when:
→ XT sealing cone 10 AL
and
→ XT taper tie 23
have been used (see page XT-16).
The XT fibre concrete plug is glued in using concrete glue (A + B). The concrete glue (A + B) is sufficient for 150 plugs.

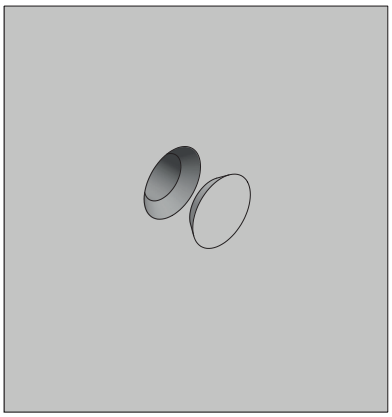


Fig. 68.3

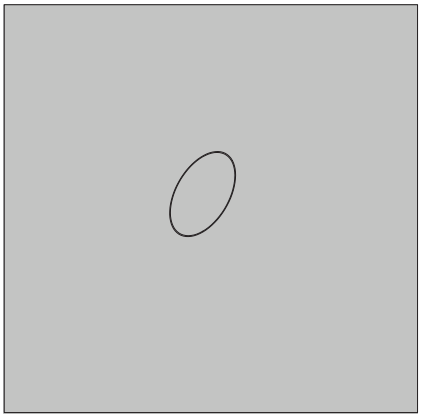


Fig. 68.4

Description	Ref. No.
XT plug D46	**29-902-81**
XT fibre concrete plug 47 x 8.5	**29-902-82**
Concrete glue (A + B)	**53-210-70**
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**

Sealing the tie holes

The MEVA multi-stop 23 (Figures 69.1 and 69.2) is a plug for tapered tie holes that seals against hydrostatic pressure. It is installed in the tie hole using the separately available MEVA multi-stop hammering aid (Fig. 69.3).

A test report is available for the MEVA multi-stop.

Note

→ The previous use of the tying method using the XT taper tie 23 is the prerequisite for the use of these sealing methods.

→ The MEVA multi-stop 23 can be installed when using either the XT sealing cone 5 or the XT sealing cone 10 in the Mammut XT panel. However, we recommend using the XT sealing cone 5. The MEVA multi-stop 23 is then flush with the tie hole opening.

→ The seal must always be installed on the wall side on which the water emerges. This is generally the outside of the wall (initial-formwork side).

→ The sealing of the tie holes does not depend on the weather conditions.

→ Ideally, a dimpled sheet or a similar solution should be attached to the outside of the wall. This ensures that the MEVA multi-stop 23 that has already been installed is not pressed back into the tie hole by backfill material or that the MEVA multi-stop 23 that has not yet been installed cannot be pushed into the correct position due to backfill material.

Important

→ If equivalent products from other manufacturers are used instead of the MEVA multi-stop 23 to seal the tie holes when using the XT taper tie 23, correct sealing against hydrostatic pressure cannot be guaranteed.

→ Material: TPE = thermoplastic elastomer

→ Colour: Concrete grey

→ Sealing against water pressure.

Recommended continuous pressure: 1.0 bar = 10-meter water column,
maximum short-term peak pressure of 1.8 bar (18-meter water column) (t < 1 d), short-term water pressure of 4.0 bar (40-meter water column)

→ Resistant, inter alia, to salt water, diesel, bitumen and caustic soda lye.



Fig. 69.1

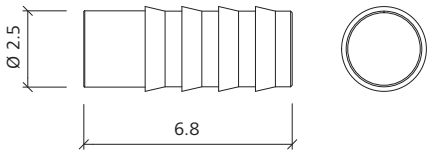


Fig. 69.2

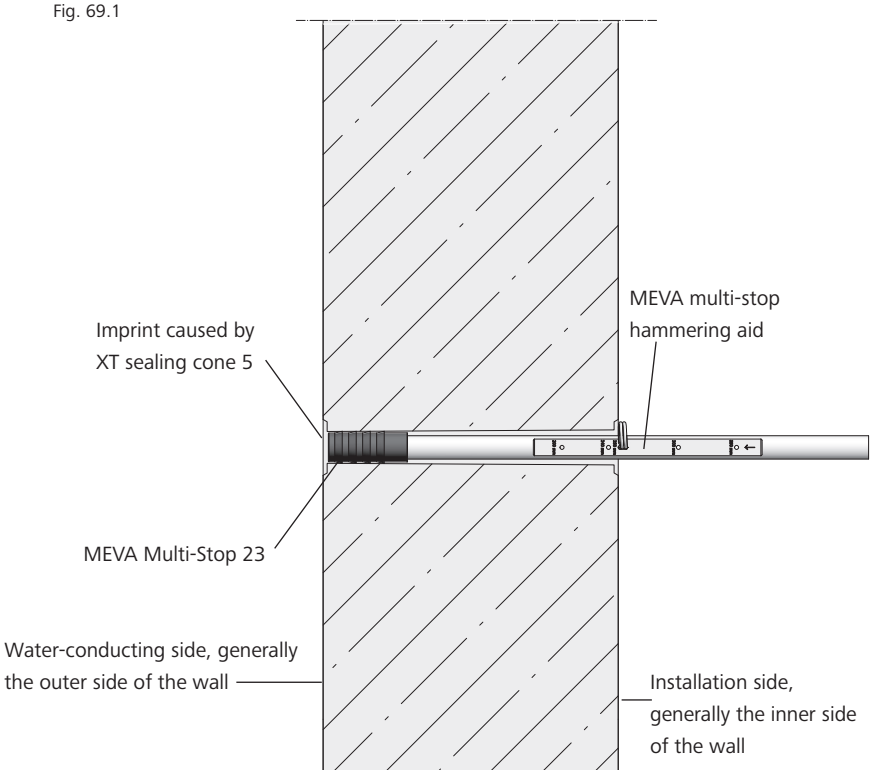


Fig. 69.3

Description	Ref. No.
MEVA multi-stop 23.....	**29-902-43**
MEVA multi stop hammering aid 29-306-25	

Sealing the tie holes

The MEVA multi-stop 23 must be positioned on the water-conducting side of the wall, which is generally the outer side of the wall. It is inserted into the tie hole from the side from which tying is performed, generally the inner side of the wall, and correctly positioned in the tie hole using the MEVA multi-stop hammering aid.

The MEVA multi-stop hammering aid (Fig. 70.1) is a solid stainless steel rod with a diameter of 2 cm and a cotter pin: It has holes to allow it to be fixed in place and is inscribed with numbers for the wall thicknesses 20, 24, 25, 30 and 35 cm (Fig. 70.2).

An inscribed arrow indicates the direction of insertion (Fig. 70.1).

For other wall thicknesses we recommend making a job-built gauge. The insertion depth of the gauge can be calculated as follows:
Wall thickness minus 7.3 cm (Fig. 70.3).

The tie hole can be closed on the inner side of the wall using the XT plug D46 or the XT fibre concrete plug 47 x 8.5.

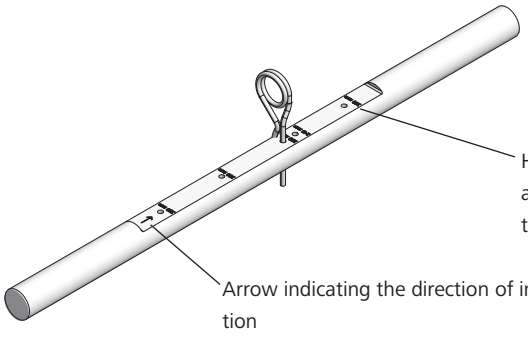


Fig. 70.1

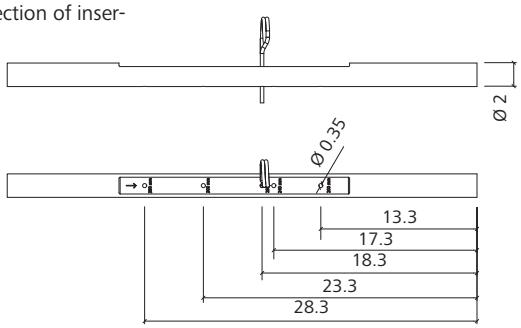


Fig. 70.2

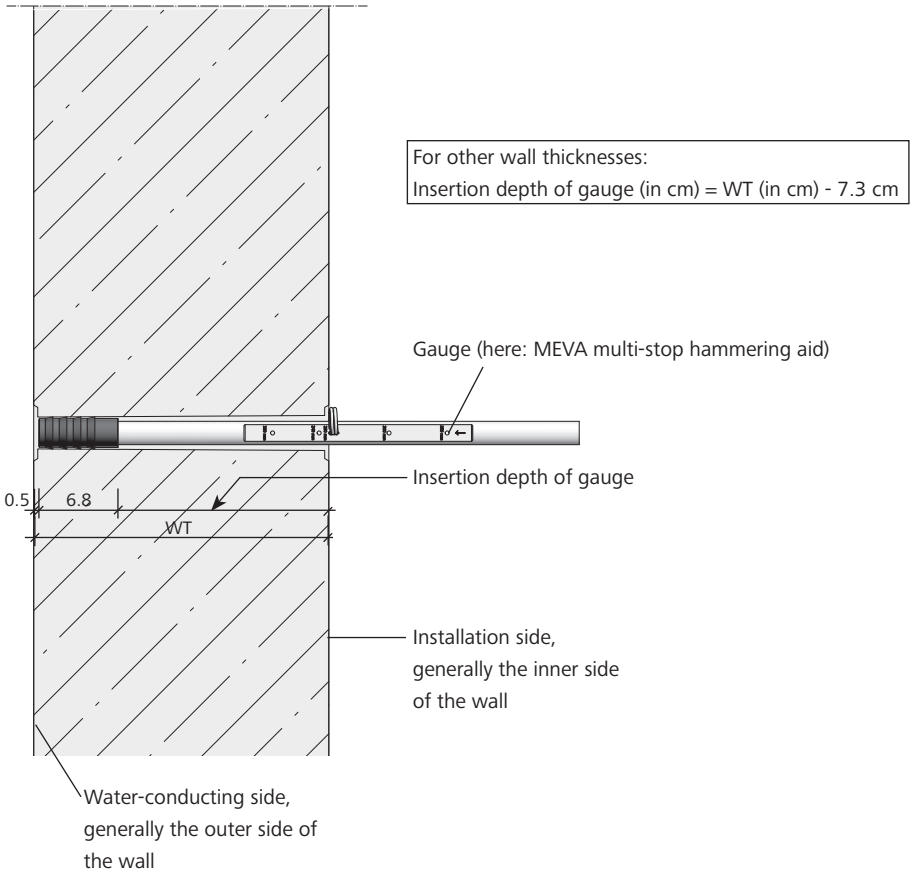


Fig. 70.3

Description	Ref. No.
MEVA multi-stop 23	29-902-43
MEVA multi stop hammering aid 29-306-25	
XT plug D46	29-902-81
XT fibre concrete plug 47 x 8.5	29-902-82

Sealing the tie holes

The MEVA multi-stop 23 can be used in conjunction with XT sealing cone 5 AL as well as XT sealing cone 10 AL.

The following is required for assembly (Fig. 71.1):
- → Cleaning brush
- → MEVA hammering aid
- → Cotter pin
- → Hammer (1000 g)

Steps for the installation of the MEVA multi-stop 23, generally from the inside to the outside:
1. Remove dirt and dust from the tie hole using the cleaning brush (Fig. 71.2).

2. Adjust the hammering aid to suit the wall thickness. To do this, insert the cotter pin into the corresponding hole (Fig. 71.4).

3. Insert the MEVA multi-stop 23 into the tie hole (Fig. 71.3).

4. Push the MEVA multi-stop 23 into the tie hole using the hammering aid (Fig. 71.5).

5. Using the hammering aid, drive the MEVA multi-stop 23 into the tie hole (Fig. 71.6).

6. Drive the hammering aid in until the cotter pin is up against the wall (Fig. 71.7).

The MEVA multi-stop 23 is now in the correct position (Fig. 71.8).

The tie hole can be closed on the inner side of the wall using the XT plug D46 or the XT fibre concrete plug 47 x 8.5.



Fig. 71.1



Fig. 71.2

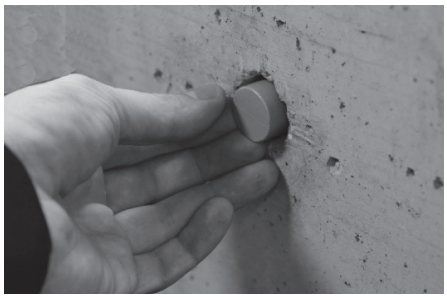


Fig. 71.3

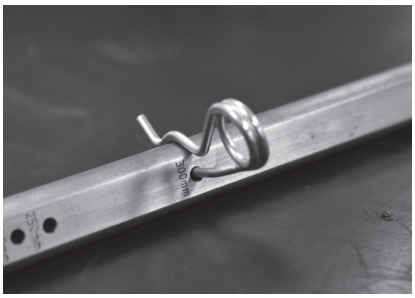


Fig. 71.4



Fig. 71.5



Fig. 71.6



Fig. 71.7

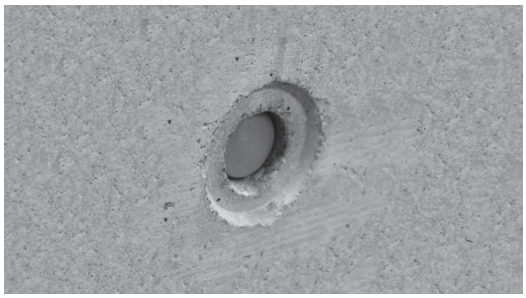


Fig. 71.8

Description	Ref. No.
MEVA multi-stop 23	**29-902-43**
MEVA multi-stop hammering aid	**29-306-25**

Overview of cones and plugs

The following overview lists all cones and plugs that are used depending on the tying method.

For detailed information about their use refer to the corresponding chapters in this Technical Instruction Manual.

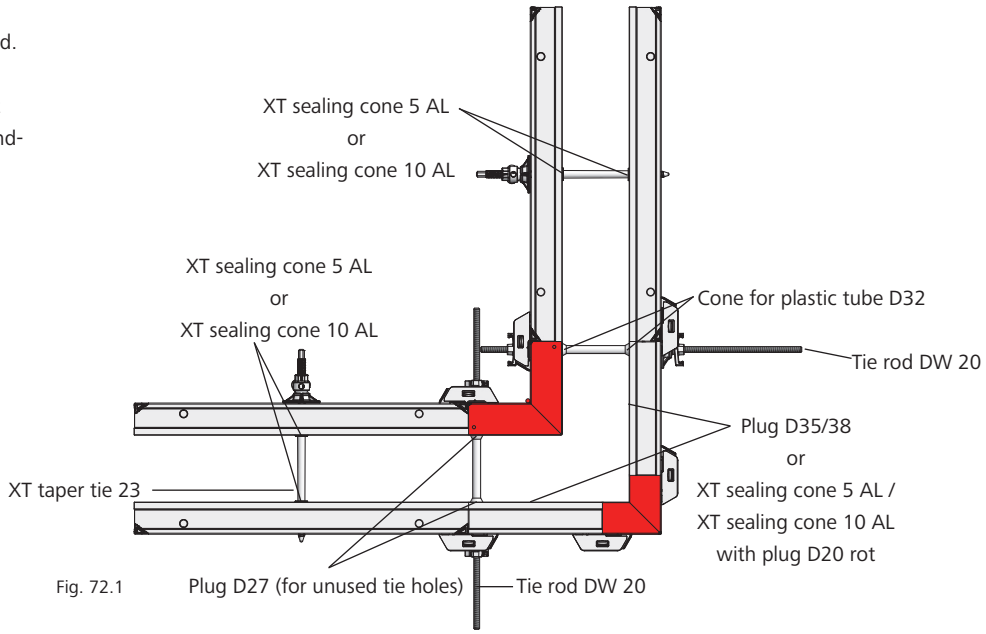
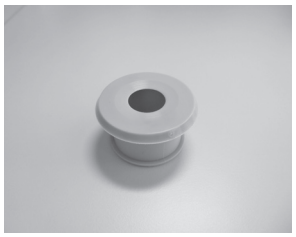
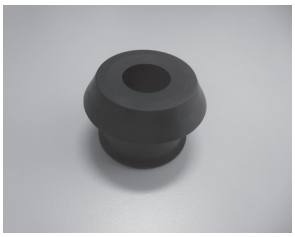


Fig. 72.1



XT sealing cone 5
AL20 29-902-34
AL17 29-902-33



XT sealing cone 10
AL20 29-902-35
AL17 29-902-42



Plug D35/38
29-902-71



Plug D27
29-902-61



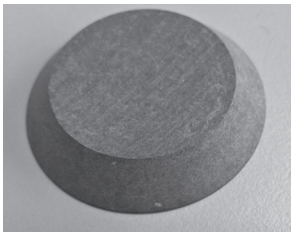
Plug D20 red
29-902-63



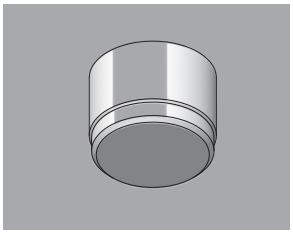
XT sealing plug D46
29-902-81



Plug D32
29-902-58



XT fibre concrete plug 47 x 8.5
29-902-82



Tie hole plugs
D27x20 29-902-78
D35x20 29-902-79

Description	Ref. No.
XT sealing cone 5 AL20	**29-902-34**
XT sealing cone 5 AL17	**29-902-33**
XT sealing cone 10 AL20	**29-902-35**
XT sealing cone 10 AL17	**29-902-42**
Plug D35/38	**29-902-71**
Plug D35/38 without imprint	**29-902-72**
Plug D27/30	**29-902-61**
Plug D27 without imprint, flat	**29-902-68**
Plug D20, red	**29-902-63**
Plug D20, red without imprint	**29-902-62**
Tie hole plug D27x20	**29-902-78**
Tie hole plug D35x20	**29-902-79**
XT plug D46	**29-902-81**
Plug D32	**29-902-58**
XT fibre concrete plug 47 x 8.5	**29-902-82**

Transport

The lifting hook 60 (Fig. 73.1) can be used with any 4-rope crane sling on the construction site to transport horizontal panels or panel stacks (Fig. 73.2). Always use four hooks at once. To calculate the permissible load-bearing capacity, assume that only two hooks are used.

Attention

A lifting hook must only be used if its eccentric is easy to turn or falls automatically into the locked position (Fig. 73.4). Never use a lifting hook if you need force to turn its eccentric. Turning the eccentric with force may not lock the lifting hook but only make it appear to be in the locked position. This may cause the lifting hook to slip out when lifting the panel stack.

Technical data

→ Weight 1.8 kg per lifting hook

→ Max. load 10 kN (1 ton) per lifting hook

→ Max. load 20 kN (2 tons) per panel stack

→ Max. stack height: three Mammut XT panels 350/250 or ten Mammut XT panels with a maximum width of 125 cm.

Repositioning

When moving panel stacks, make sure the panels are secured against sliding (see page XT-75).

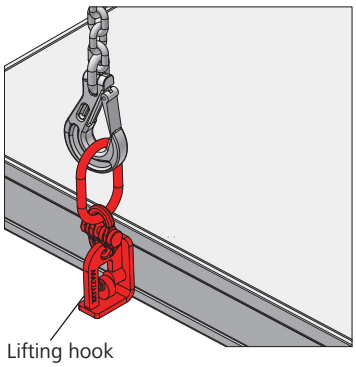


Fig. 73.1

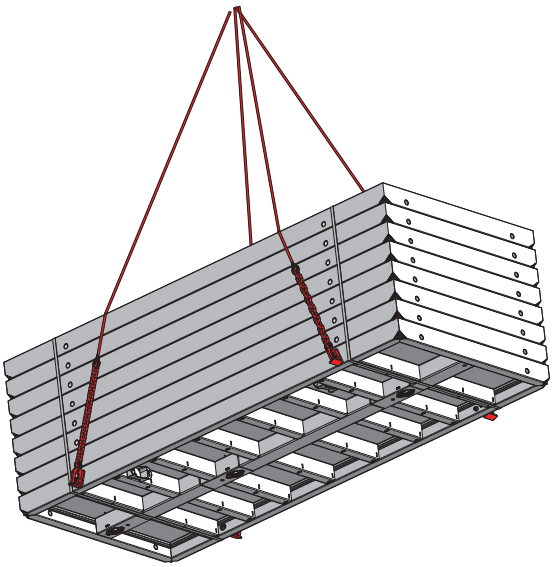


Fig. 73.2

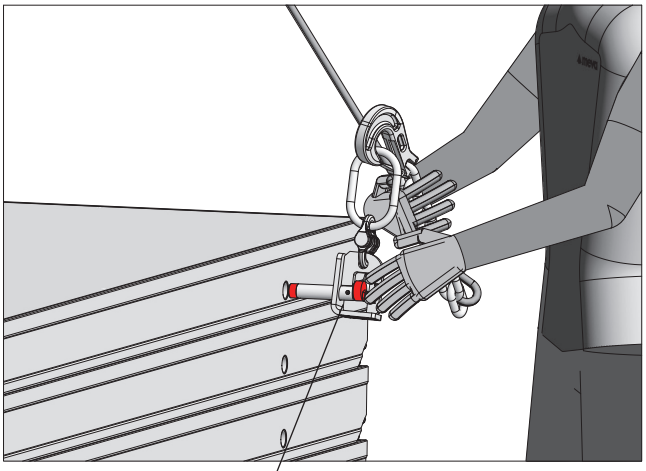
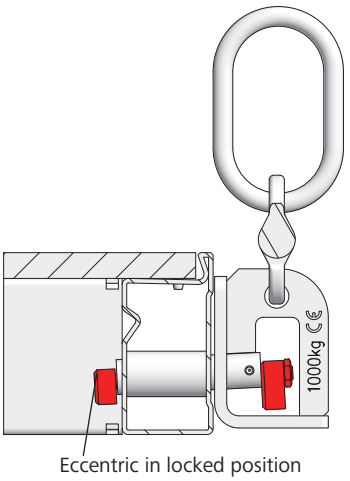


Fig. 73.3

Lifting hook



Eccentric in locked position

Fig. 73.4

Description	Ref. No.
Lifting hook 60	29-401-40

Transport

Stacking angle 60/40/23
With the stacking angle (Fig. 74.1) made of galvanized steel, two to five wall formwork panels of the same size with frame profile widths of 60 mm, 40 mm or 23 mm can be stacked and transported using a lift/pallet truck or a crane.

To use the stacking angle with Mammut XT, the adjustable bracket on the stacking angle must be adjusted to suit the panel frame width of 60 mm (reference dimension = 64 mm) and attached using the two integrated M8 countersunk bolts with hexagonal nuts (Fig. 74.2).

Four stacking angles 60/40/23 are required for each panel stack (Fig. 74.3).

A maximum of three stacking units may be stacked one of top of the other for storage purposes (Fig. 74.3).

The permissible load capacity is:
→ 15 kN (1.5 t) per stacking angle.
→ 30 kN (3 t) when using four stacking angles (total load capacity).
→ 45 kN (4.5 t) when using four stacking angles (total load capacity) if it has been ensured that the load is distributed evenly over further strands or if the permissible loading of the individual strands is not exceeded in the event of an unequal load distribution.

Description	Ref. No.
Stacking angle 60/40/23.....	**29-305-45**

Assembly
1. Insert a stacking angle 60/40/23 at each corner of the Mammut XT panel so that the panel lies on the supporting surface with the facing side upwards. This protects the facing when it is being moved by a forklift truck.
2. Insert the next panel into the adjustable brackets from above. The second panel secures the stack, which can now be moved.
3. If required, insert further panels (up to a total of five).

Note
→ A 4-rope crane sling must always be used when transporting using a crane.
→ The opening angle of the crane sling must not exceed 60° (Fig. 74.4).
→ Observe the operating instructions for the stacking angle 60/40/23.

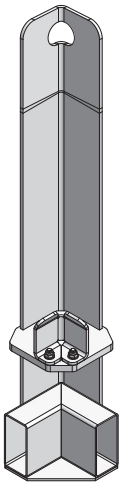


Fig. 74.1

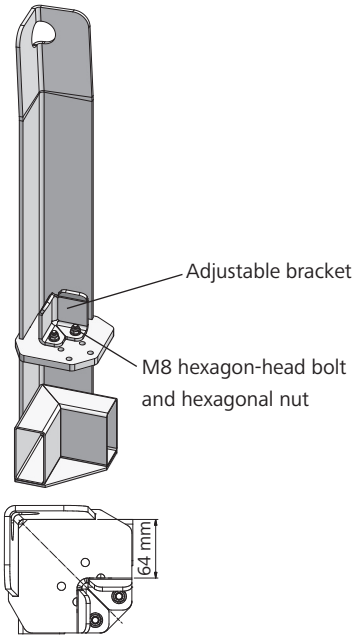


Fig. 74.2

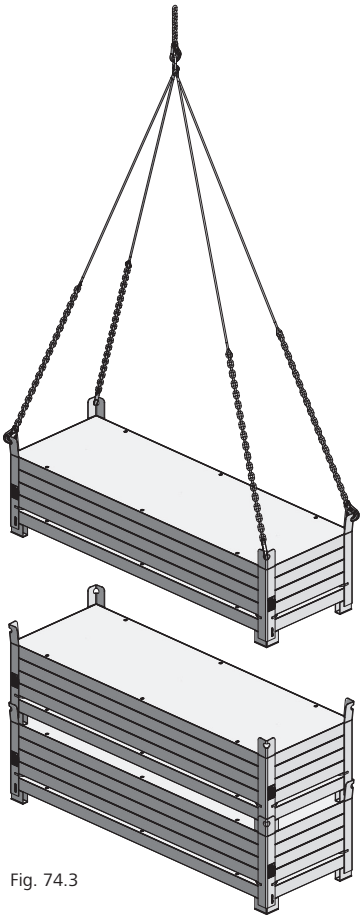


Fig. 74.3

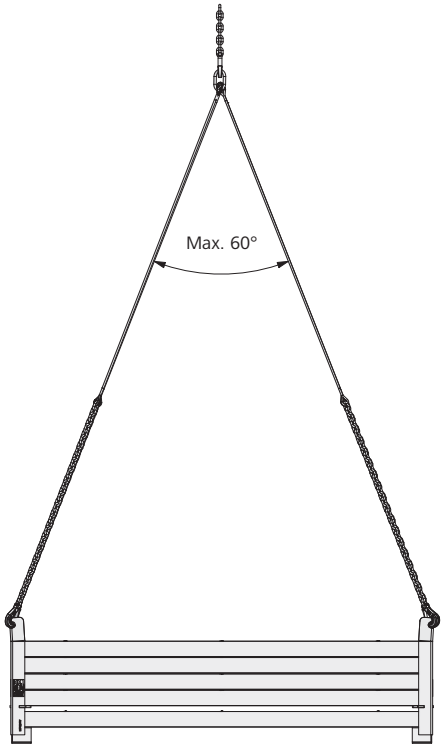


Fig. 74.4

Transport

Make sure that all material is secured properly.

Guidelines
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.

Depending on their size, the Mammut XT panels require two or three straps. Due to their low weight, Mammut XT corners require only two straps.

When moving panel stacks, make sure the panels are secure. MEVA secures the Mammut XT panels using anti-slip mats 120x120x5 mm as shown in Fig. 75.2 and Table 75.3.

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

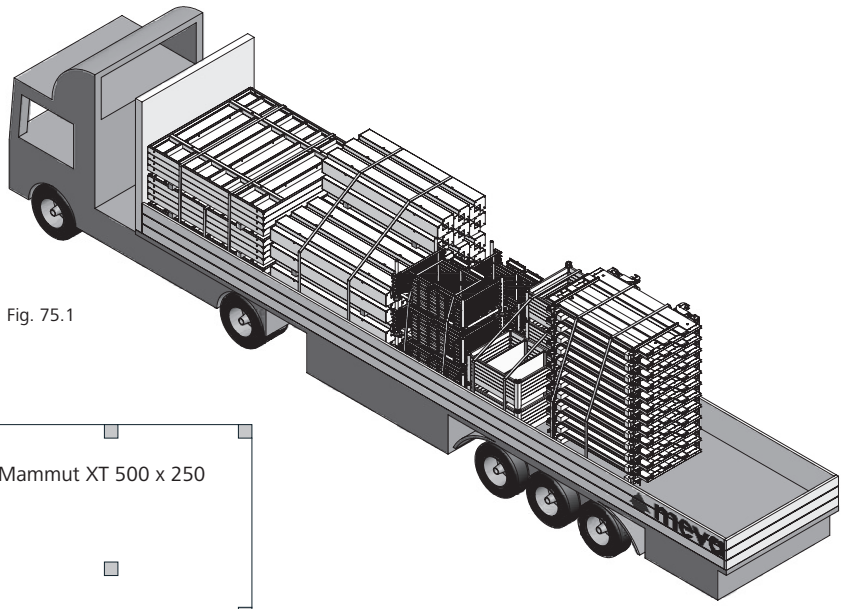


Fig. 75.1

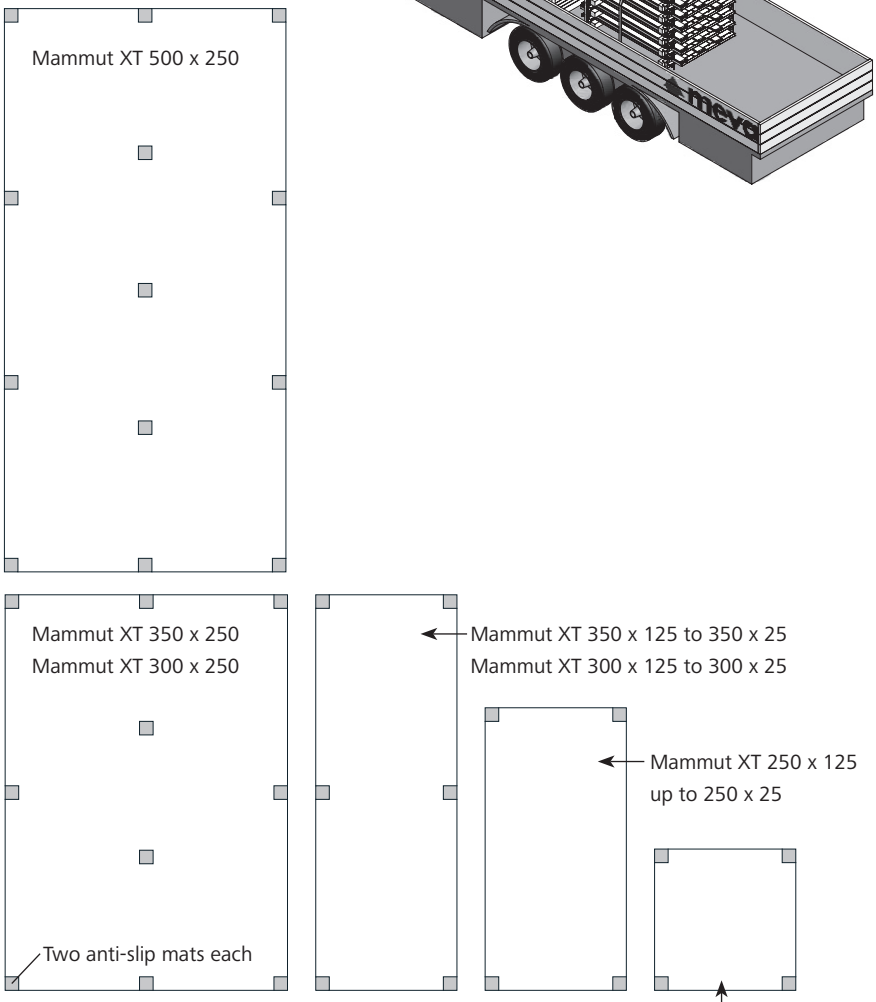


Fig. 75.2

Anti-slip mats per panel:
500/250 = 13 x 2 anti-slip mats per panel
350/250 and 300/250 = 10 x 2 anti-slip mats per panel
350 cm = 6 x 2 anti-slip mats per panel
300 cm = 6 x 2 anti-slip mats per panel
250 cm = 4 x 2 anti-slip mats per panel
125 cm = 4 x 2 anti-slip mats per panel

Table 75.3

Description	Ref. No.
Anti-slip mat 120x120x5.....	**40-131-81**

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, blasted, 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.

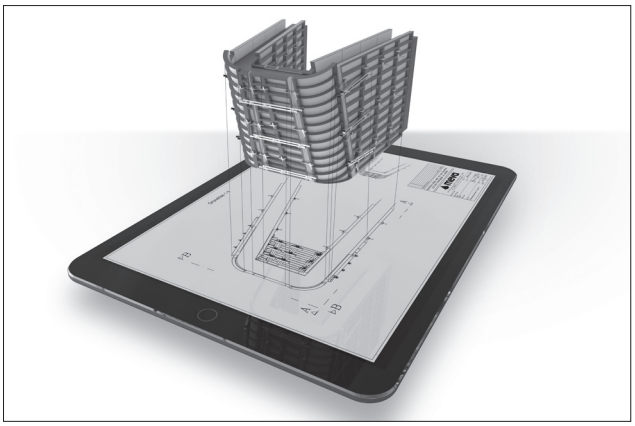
Special solutions
We can help with special parts, custom-designed for your project, to supplement our standard formwork systems.

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

Notes