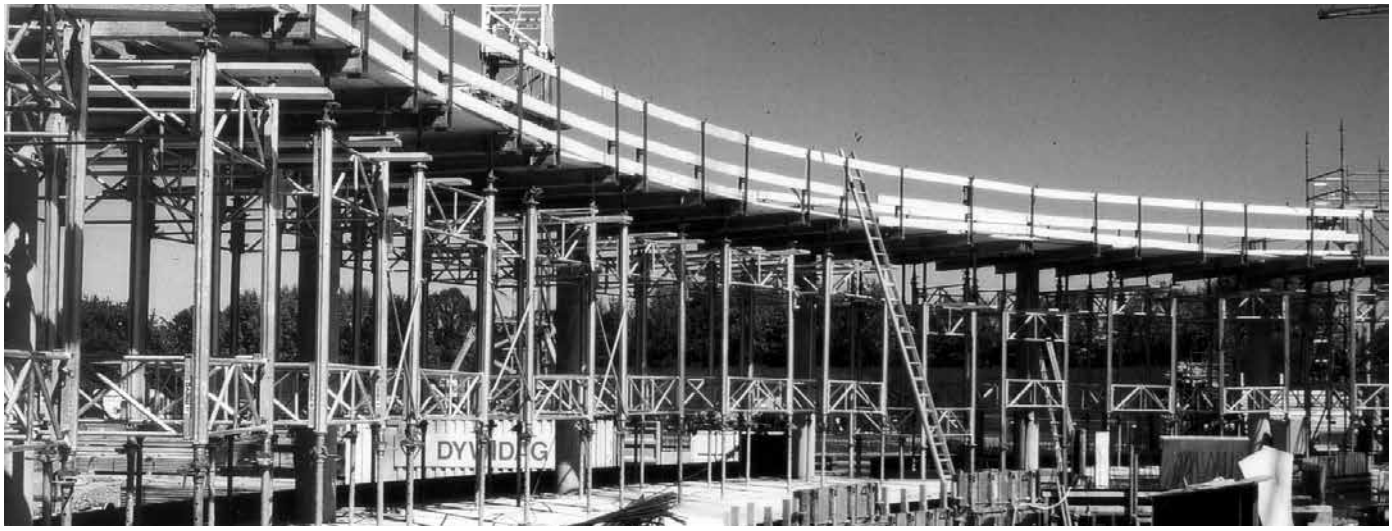
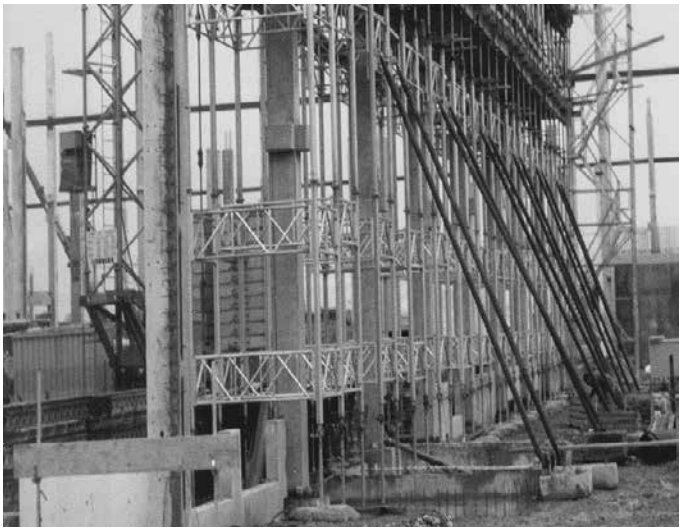
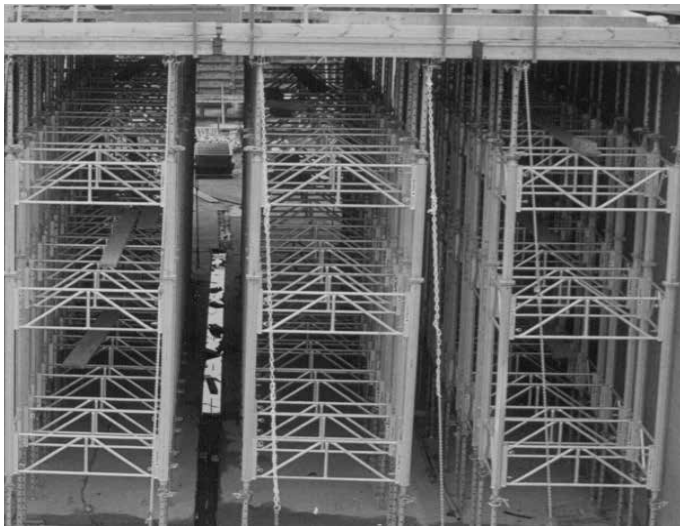
meva



MEP Shoring System

Technical Instruction Manual





Product features

The MEP shoring system is a versatile yet simple system capable of handling virtually any project with only a few basic components: props, extensions and frames. Its flexible height adjustment makes the MEP the ideal system

- to shore slab formwork at great heights,
- to shore table forms (frame construction),
- for table forms used for large slab areas
- and for the support of balconies, prefab parts and beams.

Slabs from 1,85 m to 21,00 m height can be poured with only two prop types (MEP 300 and MEP 450) plus extensions.

The SAS quick-lowering system – another MEVA invention – releases the stress in the prop with one strike of a hammer. After stripping, the prop automatically resets and locks in its original position.

The calotte support is used as foot plate for MEP props and extension pieces on sloped surface for perpendicular load transfer. Adjustable diagonal cross-braces permit a flexible prop spacing from 90 cm to 300 cm. Depending on the ground and load, different frames can be used for the shoring towers.

Shoring towers or tower units can be transported in several ways: vertically with the crane hanger or transport spreader, or horizontally with the lift truck or transport waler. When using the transport spreader, the props are folded up with the help of the folding part and flown with the slab formwork to their new place of use.

Abbreviations, measurements, decimal numbers, figures and tables
The abbreviation MEP is used for the MEP shoring system.

DIN means Deutsche Industrie-Norm (German Industrial Standard). E DIN (E = Entwurf / draft) means that the DIN is in draft status and not yet approved of. Any further abbreviations are explained where they are used 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 and thus m (for metre), cm (for centimetre) and mm (for millimetre). Dimensions without a measure are in cm.

Decimal numbers: Note that the comma is used in decimal numbers, e.g. 1,5 means 1 and a half.

The page numbers in this manual start with MEP. 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.

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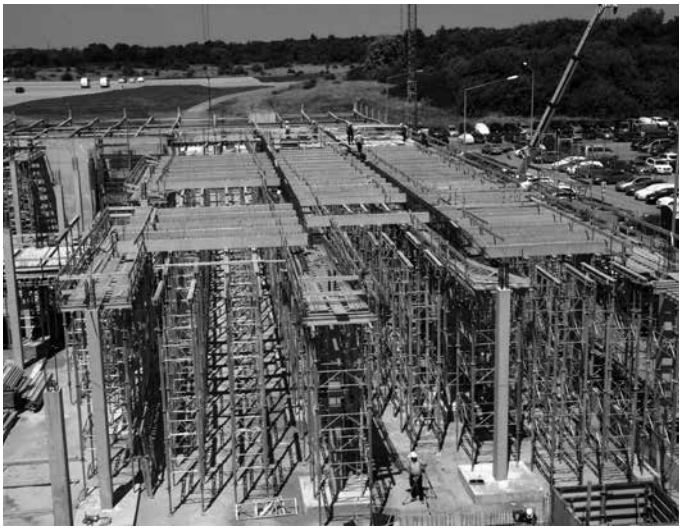

Please note

This Technical Instruction Manual contains information, instructions and hints describing 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. When using our products the federal, state and local codes and regulations must be observed. Many of the details shown do not illustrate the wall formwork system in the ready-to-pour condition as to the aforementioned safety regulations. Please adhere to this manual when applying the equipment described here. Deviations require engineering calculations and analysis to guarantee safety.

Please observe the assembly instructions that your local contractor or employer has created for the site on which the MEVA equipment is used. Such instructions are intended to minimise site-specific risks and must contain the following details:

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

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

Attention: Never wax or oil assembly locks.

Contents

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Four your notes and calculations

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Load capacity

With regard to the admissible load and adjustment range of the props, two cases must be distinguished:

Freestanding system
(Fig. 5.1)
If the system is free-standing, the horizontal load V/100 is transferred through the tower and the prop extension limited to 80 cm.

System is attached at top
(Fig. 5.2 and 5.3)
In this case, the horizontal load is transferred right at the top and the load capacity is 40 kN per leg. The prop extension is not limited.

Note
For the exact position of the MEP frames refer to p. MEP-32 and MEP -33.

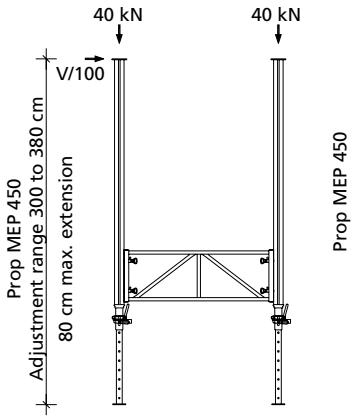

Fig. 5.1 Freestanding. Horizontal load is transferred through the tower.

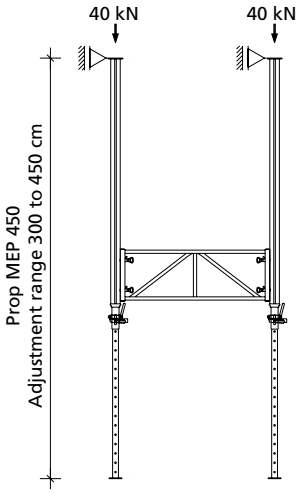

Fig. 5.2 System attached at top

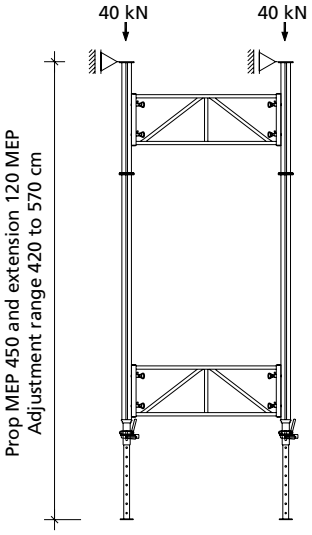

Fig. 5.2 System attached at top

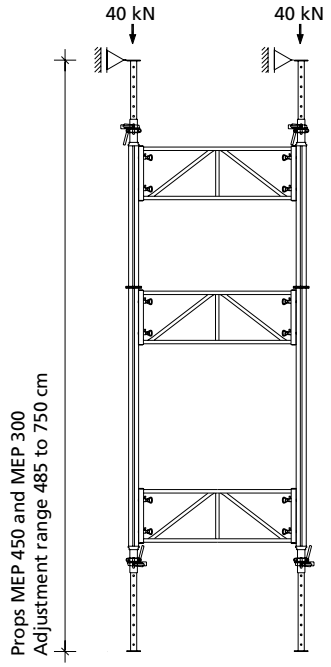

Fig. 5.4 System attached at top

Admissible load capacity of props in combination with formwork systems, according to European Standard EN 1065

L (m)	MEP 300 [kN]	MEP 450 * [kN]	MEP 300 [kN]	MEP 450 [kN]
	used as single prop		used in shoring tower	
1,85	30		40	
1,90				
2,00				
2,10				
2,20				
2,30				
2,40				
2,50				
2,60				
2,70				
2,80				
2,90				
3,00		30		40
3,10				
3,20				
3,30				
3,40				
3,50				
3,60				
3,70				
3,80				
3,90				
4,00				
4,10				
4,20				
4,30				
4,40				
4,50				

Table 5.5

* Inner tube downwards

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MEP props

MEP 450 (Fig. 6.1)
MEP 300 (Fig. 6.2)
Each prop has an inner and an outer tube. The latter is made of aluminium profile. The profile facilitates the attachment of MEP frames to reinforce shoring towers. The inner tube is made of steel.

Lenght adjustment and extension
The inner tube can be drawn out to the required extension length. It has punched holes for the coarse adjustment of the prop. The precise adjustment of the prop is achieved with the robust adjusting nut at the outside thread (Fig. 6.3).

The admissible load is 30 kN for freestanding props and 40 kN for props that are reinforced with frames. For details see p. MEP-5.

SAS quick-lowering system with automatic reset
The SAS lowers the prop by 1 cm with one strike of a hammer, releasing the stress in the prop (Fig. 6.3). After stripping the SAS automatically resets and locks in the original position.

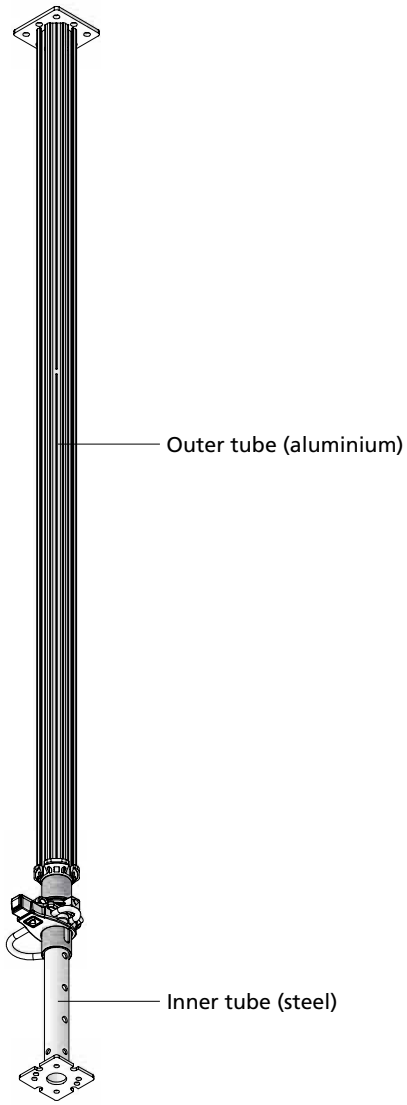

Fig. 6.1 MEP 450

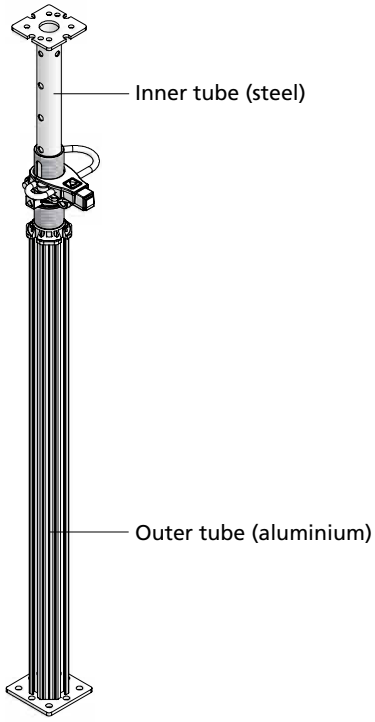

Fig. 6.2 MEP 300

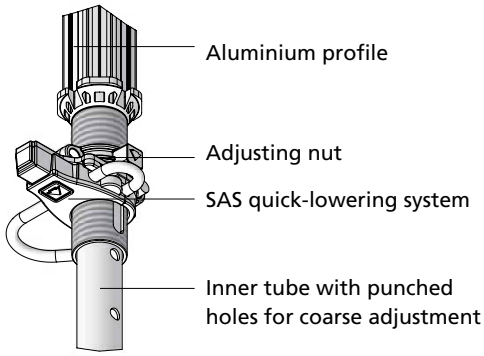

Fig. 6.3 SAS quick-lowering system

Description	Ref. No.
MEP 450 with SAS	**29-907-70**
MEP 300 with SAS	**29-907-65**

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MEP frames

The MEP frames (Fig. 7.1 through Fig. 7.5) are used to reinforce the MEP props when using the props to build shoring or load towers.

Frame attachment at the prop
The frame is attached to the prop at the T-groove of its outer tube (Fig. 7.6 and Fig. 7.7).

After mounting the frame to the outer tube the lever must be in the horizontal locked position (Fig. 7.7). This position allows the user to visually check the tight connection of frame and prop.

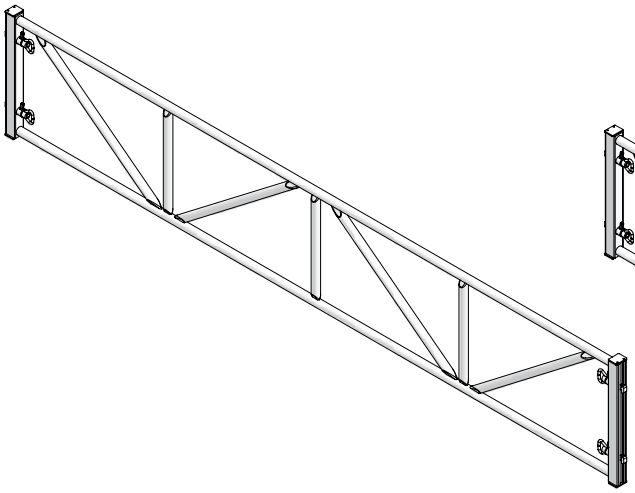

Fig. 7.1 Frame 330 MEP

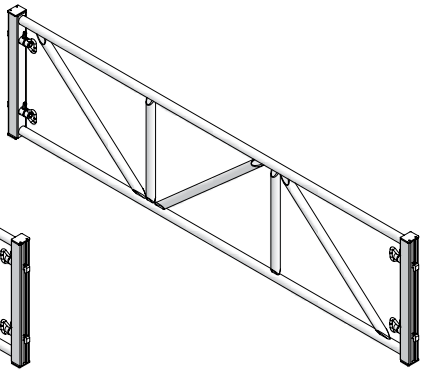

Fig. 7.2 Frame 220 MEP

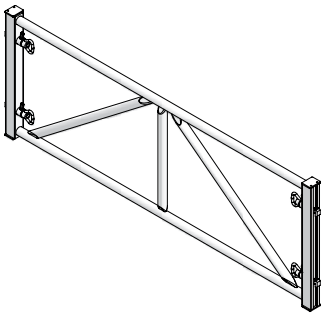

Fig. 7.3 Frame 170 MEP

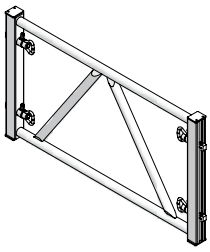

Fig. 7.4 Frame 110 MEP

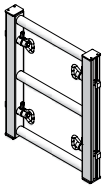

Fig. 7.5 Frame 55 MEP

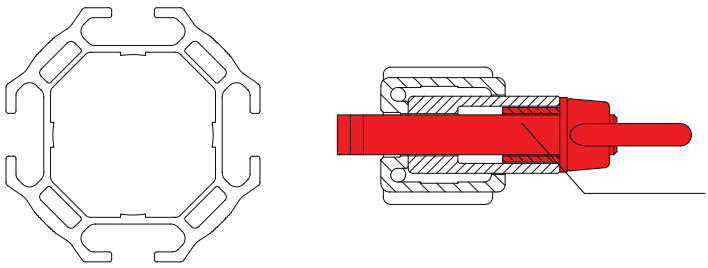

Fig. 7.6

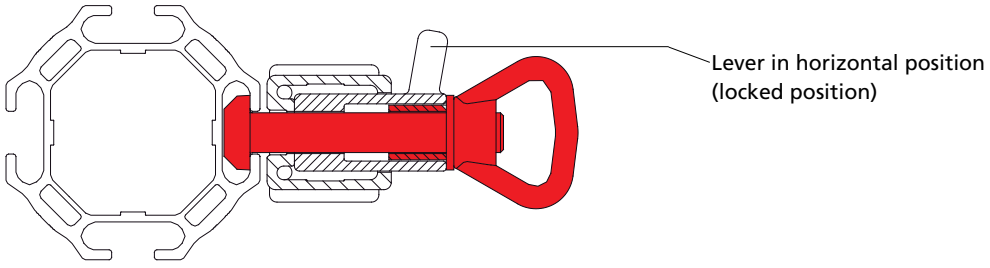

Fig. 7.7 Frame attached

Description	Ref. No.
Frame	
55 MEP	**29-909-10**
110 MEP	**29-909-15**
170 MEP	**29-909-20**
220 MEP	**29-909-25**
330 MEP	**29-909-30**

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MEP extension pieces

MEP extension pieces (Fig. 8.1 through Fig. 8.3) are used for the height extension of MEP props if they are not long enough for the intended height. The extension pieces have the same profile as the outer tube of the MEP props.

Assembly
The extension pieces are connected to the props using galvanized plug connectors. A pin 14/35 is required per plug connector and plugged into the extension piece (Fig. 8.4). This ensures a tight conncetion that is also suitable for crane ganging.

Reinforcement required
Extensions must be reinforced with frames or diagonal cross-braces. See also p. MEP-11.

Note
Height extension can not only be achieved with props and extension pieces but also by adding a prop to another prop or by using several props and adding an extension piece. For the possible height combinations and required material refer to p. MEP-30 through MEP-32.

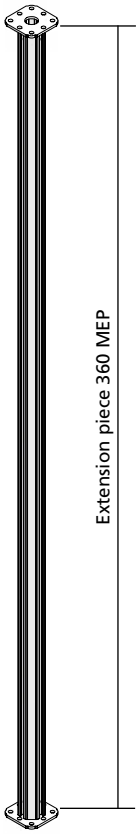


Fig. 8.1

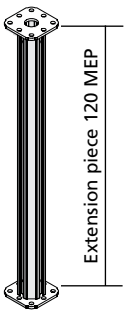


Fig. 8.2

Fig. 8.3

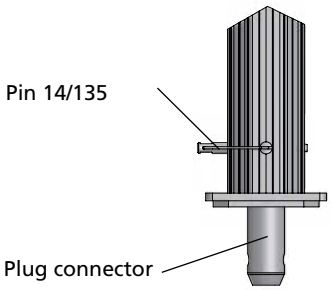
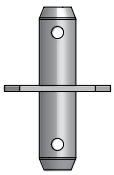


Fig. 8.4


Plug connector


Pin 14/135

Description	Ref. No.
MEP extension piece	
360 MEP	**29-907-95**
120 MEP	**29-907-90**
80 MEP	**29-907-85**
Plug connector MEP	**29-909-85**
Pin 14/135	**29-909-90**

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Forked prop head MEP

The forked prop head MEP (Fig. 9.1) is designed to carry girders, e.g. H20 or steel girders. It can be used as a single or double stringer (Fig. 9.4 and Fig. 9.5).

Assembly

The forked prop head is connected with pin 14/90 to the

- ME prop
- or to the inner tube of the MEP prop
- or to the spindle MEP (tube Ø 48/60 mm). Pin 14/135 is used when connecting the forked prop head to the outer tube of the MEP prop. This type of assembly guarantees the tight connection required for table forms.

Double stringer

A Dywidag nut is welded to the tube of the forked prop head (Fig. 9.3). It is used to attach double stringers (Fig. 9.4 und 9.5).

- The double stringers are attached with a short Dywdiag tie rod and a flange nut 100 (Fig. 9.4). The length of the tie rod is the height of the stringer plus 15 cm.
- If the stringers are between 10 and 14 cm high (e.g. MEVA alignment rails 300, 450 or other), they are attached with flange screw 18 (Fig. 9.5).

Description	Ref. No.
Forked prop head MEP	**29-910-00**
Flange nut 100	**29-900-20**
Flange screw 18.....	**29-401-10**

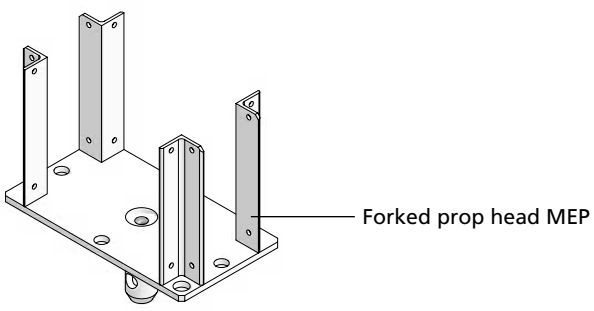

Fig. 9.1

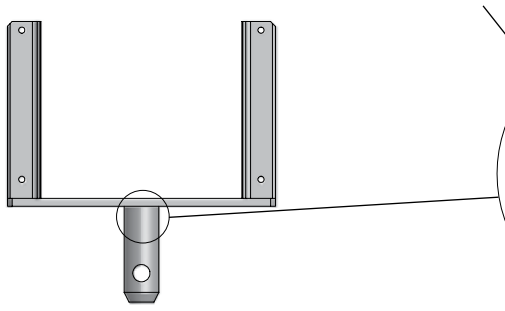

Fig. 9.2

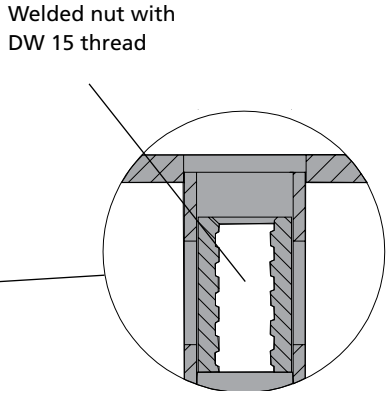

Fig. 9.3

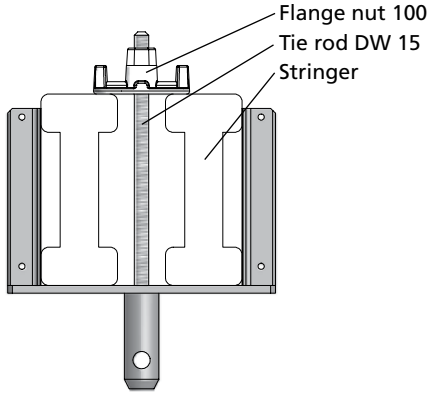

Fig. 9.4

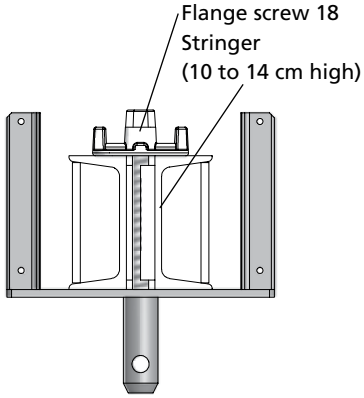

Fig. 9.5

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Spindle MEP

The spindle MEP (Fig. 10.1) is used when only an extension piece is used instead of a prop (in this case, the spindle is required because extension pieces do not have spindles). The spindle MEP can also be used as a second spindle for an MEP prop, e.g. to serve as a foot spindle (Fig. 10.4).

The spindle features:
- a steel outer tube with a 125 mm long thread for precise adjustment (the diameter is 60 mm)
- a steel inner tube (is identical with the inner tube of the ME prop 250/30). The diameter is 48 mm with ME foot plate.

Length adjustment
The inner tube can be drawn out to the required extension length.

The coarse adjustment is achieved with the G-hook at the inner tube and the precise adjustment with the robust adjusting nut at the outer tube.

Adjustment range
- 28 to 80 cm
- 68 to 120 cm with MD drop head (Fig. 10.2)
- 36 to 81 cm with forked prop head MEP (Fig. 10.3) plus height of the selected stringer
- 37,5 to 82,5 cm with calotte support MEP

Attachment
The spindle can be attached to the foot plate of the outer tube of the MEP prop or to the extension piece MEP by using 4 hexagonal screws M16x40 und 4 hexagonal locking nuts M16.

Note
When using MEP shoring towers with MevaDec, we recommend using the pluggable MD drop head.

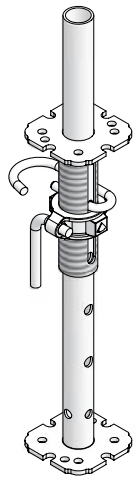

Fig. 10.1 Spindle MEP

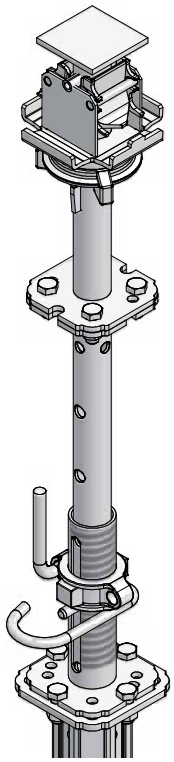

Fig. 10.2 With MD drop head

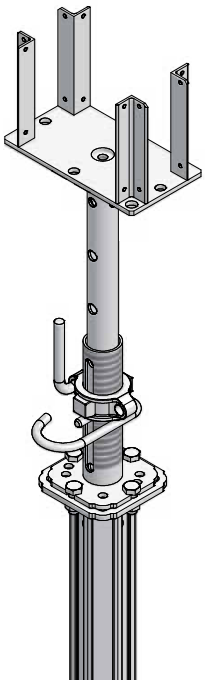

Fig. 10.3 With forked prop head MEP

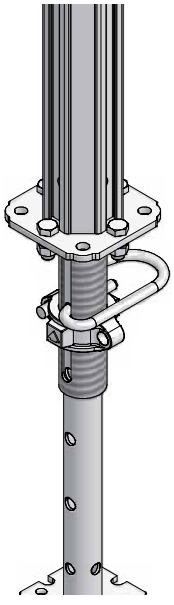

Fig. 10.4 Spindle used as foot spindle

Description	Ref. No.
Spindle MEP	**29-909-70**
Pluggable MD drop head	**29-301-45**
Forked prop head MEP	**29-910-00**
Calotte support MEP	**29-909-75**
Hexagonal screw M16x40	**63-120-49**
Hexagonal locking nut M16	**63-130-00**

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Diagonal cross-brace MEP

The diagonal-cross-brace MEP is used to brace MEP shoring towers when the prop spacing and the MEP frame dimensions do not match. This can be the case when changing the primary beam direction in a MevaDec application (Fig. 11.1).

The diagonal cross-braces are attached to the outer tubes of the MEP props with the integrated hammerhead screws.

Make sure the props are flush like when used with frames. See figure 11.1.

The diagonal cross-brace is also used for static optimisation when props are used with table forms (Fig. 11.2).

Two diagonal cross-braces are available. The paired figures 170/90 and 300/180 show the minimum and maximum prop spacing possible with the cross-brace.

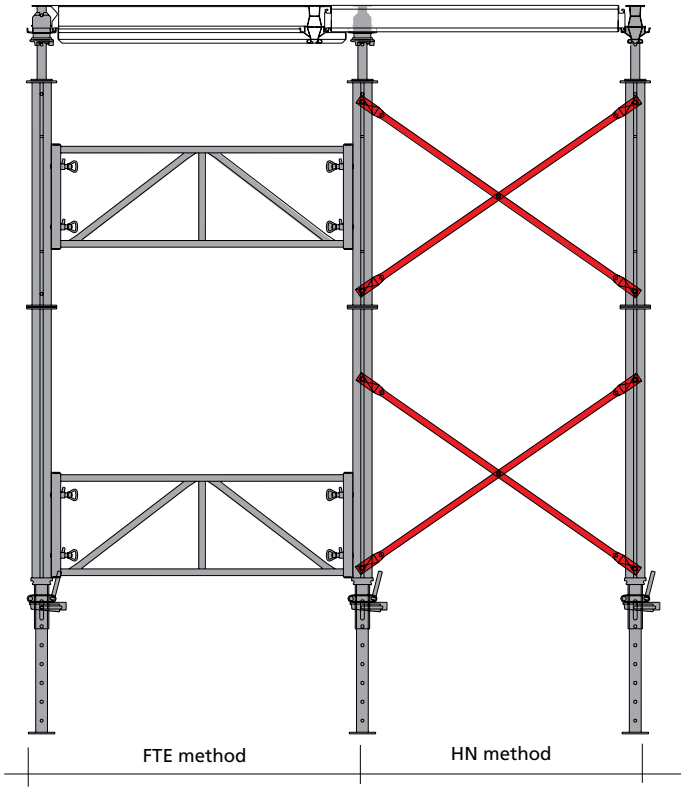

Fig. 11.1 Example: MEP shoring tower with MevaDec for rooms higher than 4,90 m

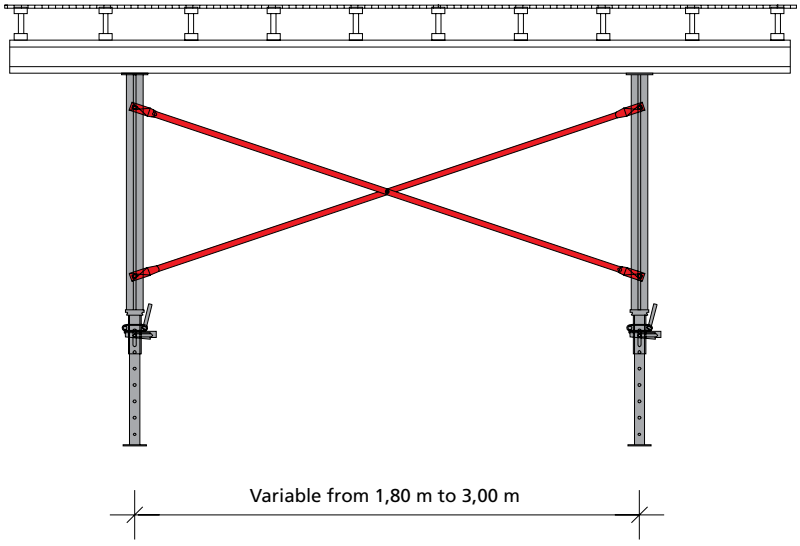

Fig. 11.2 Use with table form

Description	Ref. No.
Diagonal cross-brace	
300/180 MEP	**29-909-55**
170/90 MEP	**29-909-60**

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Calotte support MEP

The calotte support MEP (Fig. 12.1) is used as foot plate for MEP props, extension pieces and spindles on sloped surface for perpendicular load transfer. The maximum inclination on all sides is 5° or 9 % (Fig. 12.3).

Attachment
The calotte support is attached with pin 14/135 to the outer tube of the prop or with pin 14/90 to the inner tube or spindle MEP (Fig. 12.2).

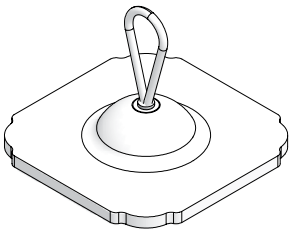

Fig. 12.1 Calotte support

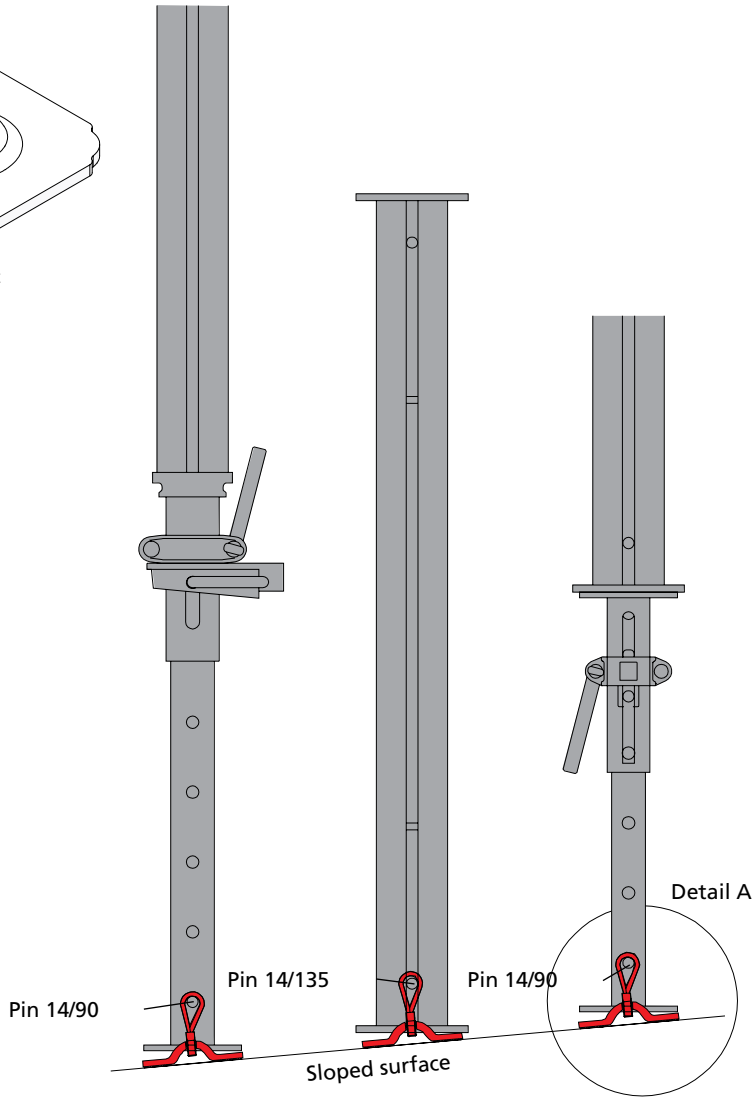

Fig. 12.2

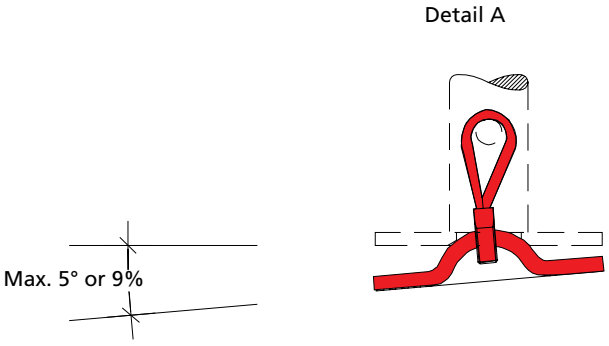

Fig. 12.3

Description	Ref. No.
Calotte support MEP	**29-909-75**
Pin 14/135	**29-909-90**
Pin 14/90	**29-909-94**

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Folding part MEP

The folding part MEP (Fig. 13.1) allows props beneath slab tables to be folded. This saves much time when moving slab tables out of the building. They can be moved over parapets without detaching the props and reattaching them for the next slab table use.

The folding part has 2 integrated safety bolts which are secured with cotter pins (Fig. 13.1 and Fig. 13.2).

Assembly and attachment
The folding part is bolted to the outer tubes of 2 props or extension pieces with 2 x 4 hexagonal screws M16x40 and hexagonal locking nuts M16.

Flying tables out
Remove a cotter pin, fold up the prop or extension (Fig. 13.3) and lock it into place. Use the transport spreader to fly the table to its next place of use.
See also p. MEP-29.

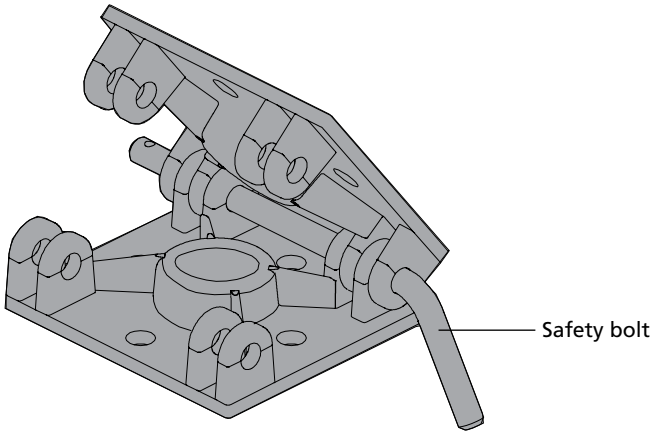

Fig. 13.1 Folding part MEP

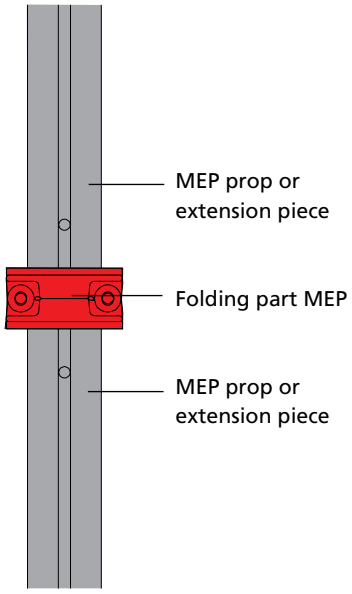

Fig. 13.2

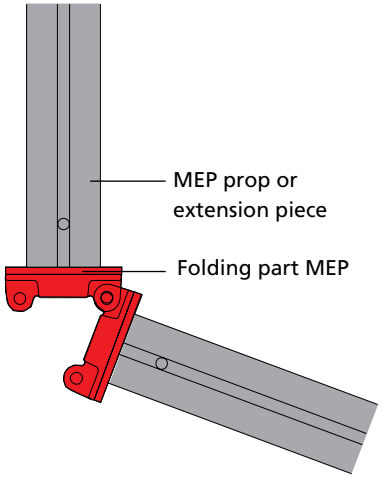

Fig. 13.3

Description	Ref. No.
Folding part MEP	**29-910-10**
Hexagonal screw M16x40	**63-120-49**
Hexagonal locking nut M16	**63-130-00**

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Tube coupler DK 48 MEP

The tube coupler DK 48 MEP (Fig. 14.1) is used to attach Ø 48 mm scaffold tubes to MEP shoring towers.

Scaffold tubes are used to build a fall-down protection on shoring towers and to transfer horizontal forces (Fig. 14.4).

Attachment
The tube coupler DK 48 MEP is attached with the integrated hammerhead screws to the profile of the MEP prop (Fig. 14.2 und Fig. 14.3). The tube coupler can be rotated (Fig. 14.4).

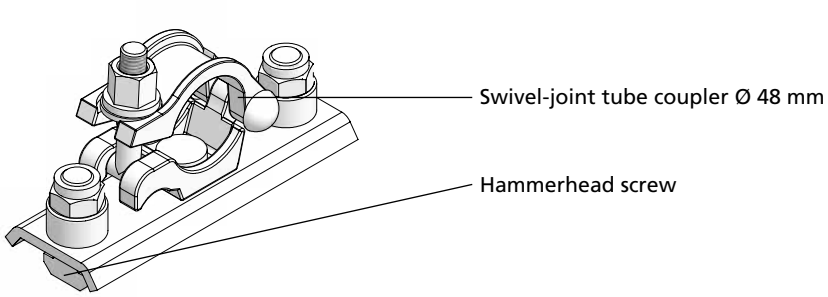

Fig. 14.1

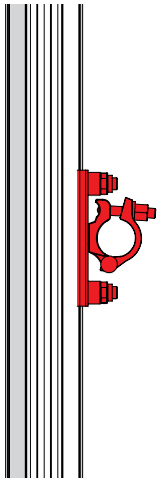

Fig. 14.2

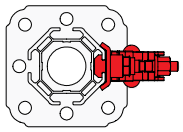

Fig. 14.3

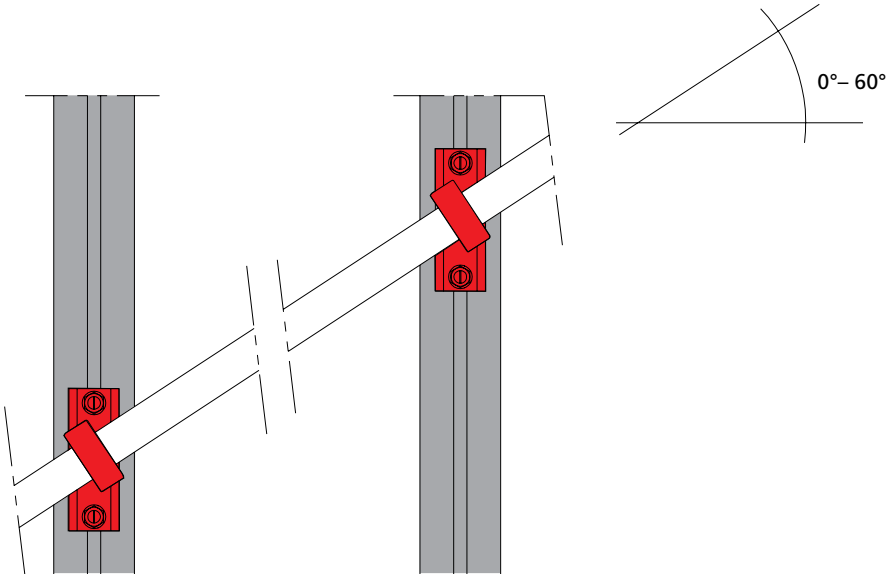

Fig. 14.4

Description	Ref. No.
Tube coupler DK 48 MEP	**29-909-65**

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MEP connector for push-pull props

In certain cases shoring towers need to be braced with push-pull props, see Fig. 15.3. The push-pull props are attached with the MEP connector for push-pull props (Fig. 15.1) to the aluminium profile of the MEP props or extension pieces (Fig. 15.3).

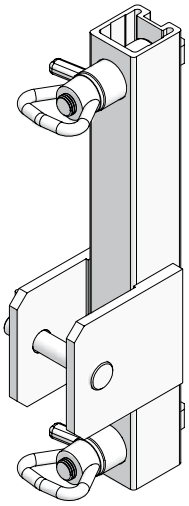

Fig. 15.1

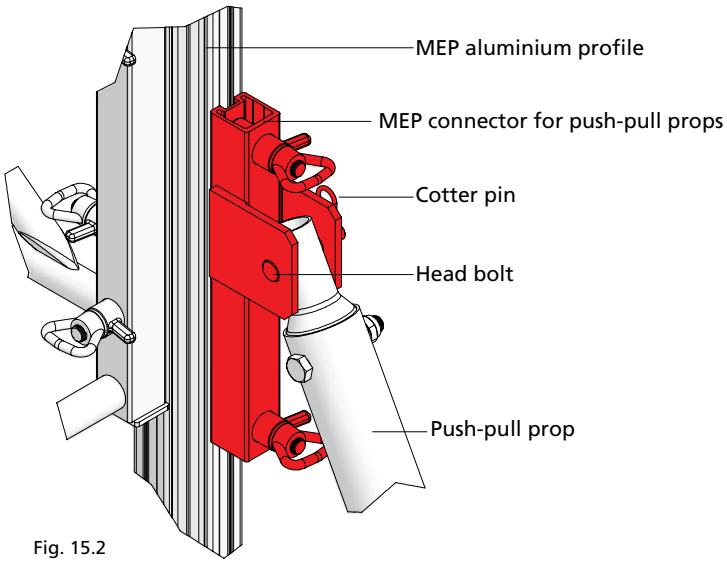

Fig. 15.2

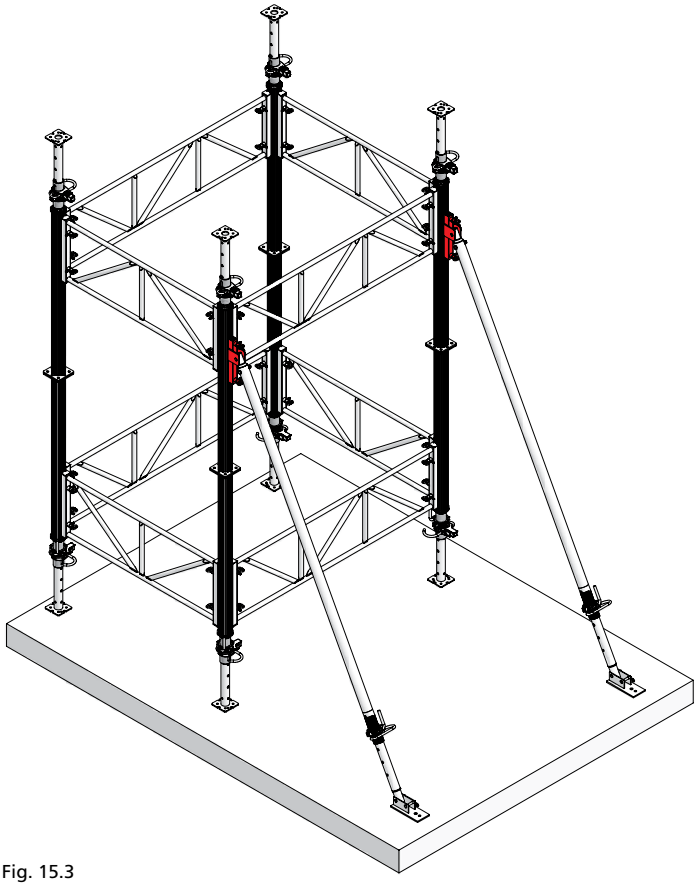

Fig. 15.3

Description	Ref. No.
MEP connector for push-pull props.....	**29-910-60**

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Prop connector

The prop connector (Fig. 16.1) is used to connect props for the horizontal bracing of MEVA wall formwork, e.g. in case of single-sided applications (Fig. 16.2). It can be used for MD, ME and MEP props.

Attachment

The prop connector can be attached as follows:

- The prop connector is screwed through an alignment rail into the welded nut of the multi-function profile of the the wall formwork panel (Fig. 16.3).
- Or the prop connector is attached with an alignment rail and a fixed flange nut 100 (Fig. 16.4).

The prop connector must be secured with a pin 14/90 (or with a pin 14/135 if the outer tube of the MEP prop is used).

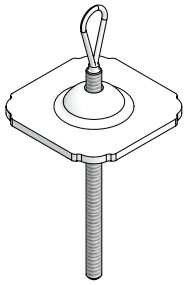

Fig. 16.1

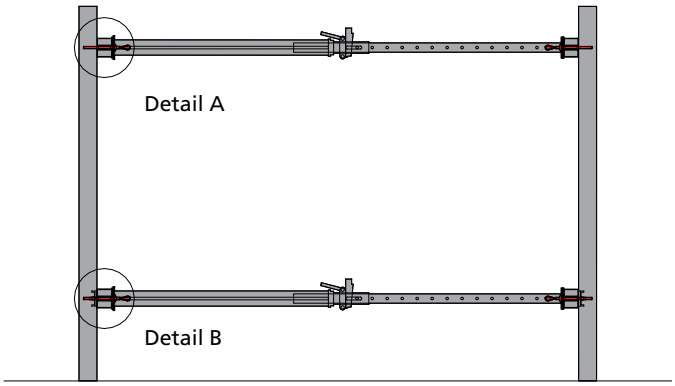

Fig. 16.2

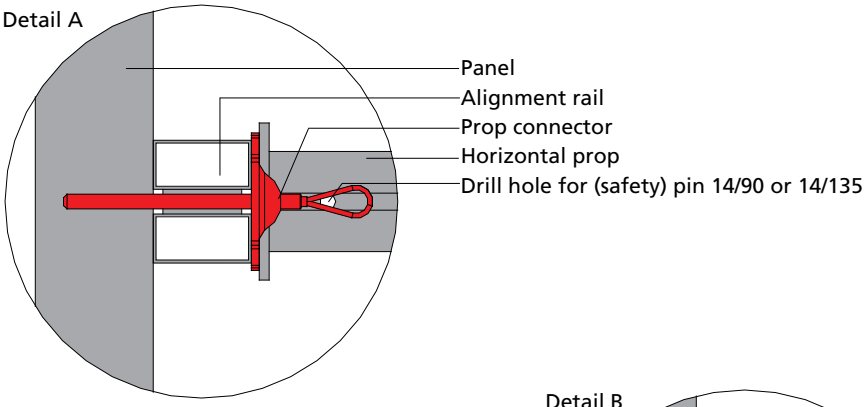

Fig. 16.3

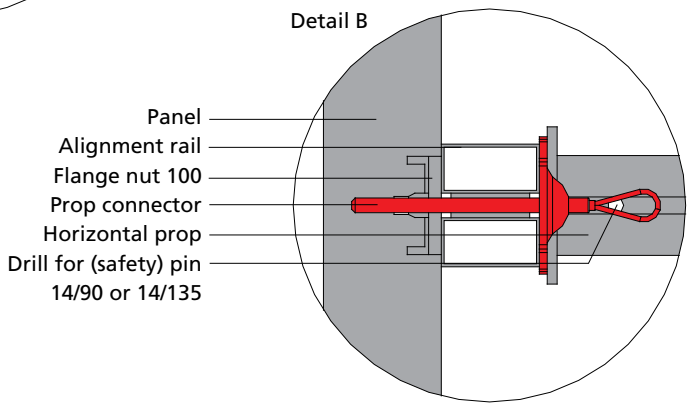

Fig. 16.4

Description	Ref. No.
Prop connector	**29-910-62**

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MEP scaffold platforms

The MEP scaffold platforms are aluminium frames with wooden planks. They are available with access hatch (Fig. 17.1) and without access hatch (Fig. 17.2). The maximum load is 200 kg/m² (scaffold group 2 according to DIN 4420).

Assembly
Plug the platform with the side shown in figure 17.3 into the side rail of the MEP frame. The platform is equipped with a self-locking mechanism on the other side (Fig. 17.4).

If no ladder is planned, the platforms can be mounted to the frames on the ground.

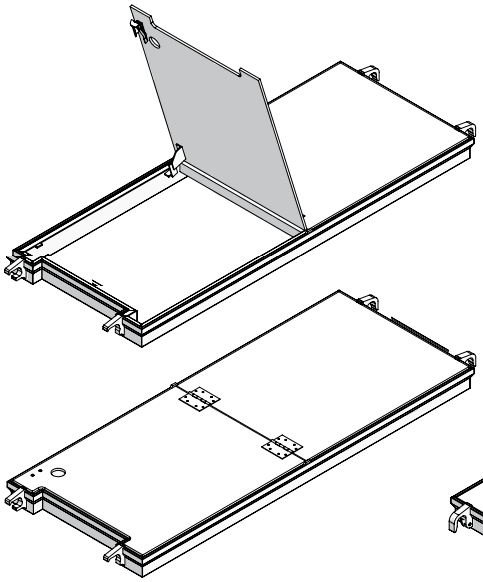


Fig. 17.1

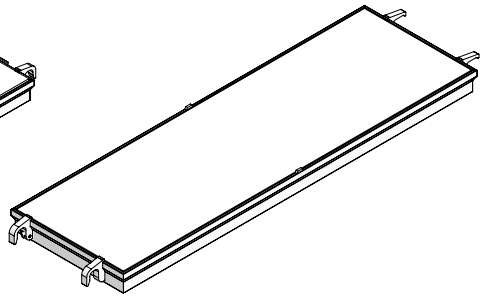


Fig. 17.2

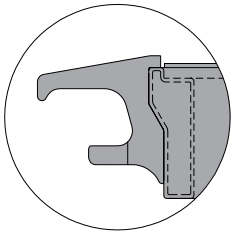
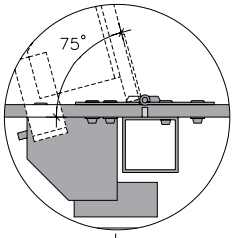


Fig. 17.3



Detail

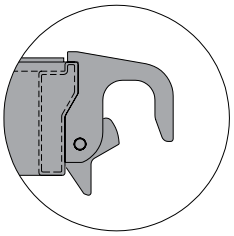


Fig. 17.4

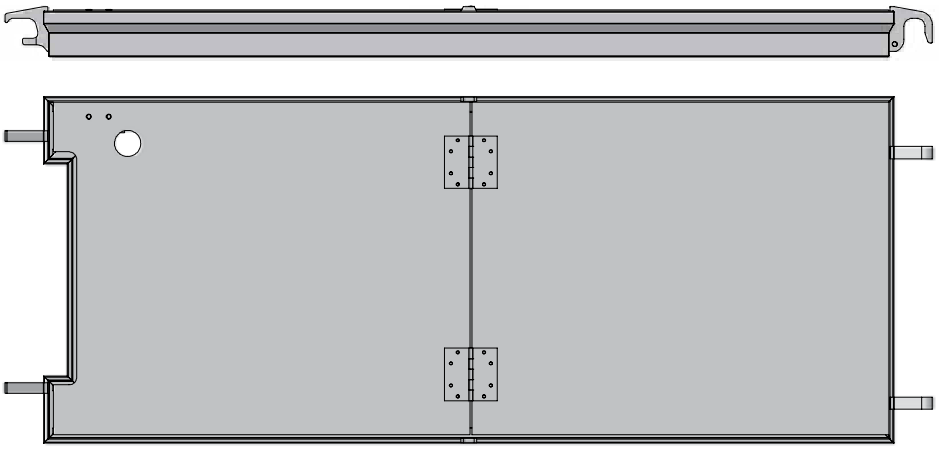


Fig. 17.5

Description	Ref. No.
MEP scaffold platform	
220/52	**29-910-20**
170/52	**29-910-25**
170/33	**29-910-30**
MEP scaffold platform 170/66 with access hatch	**29-910-35**
MEP access ladder	**29-910-65**

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Applications for MEP props

MEP props can be used in different ways for different applications as is shown on this and the following page.

Fig. 18.1
Use as single prop

Fig. 18.2
Use in a support construction (with frames) for the MevaDec slab formwork. Such support constructions can be extended and combined to form shoring towers. The minimum clearance between the towers should be 50 cm.

Important
When using MEP with MevaDec observe the following rules:
- Use pluggable drop heads only.
- Diagonal cross-braces consisting of scaffold tubes must be planned and assembled at each 3rd MEP tower per tower row.

Towers up to 6,00 m high require one diagonal cross-brace at height of 5,90 m (Fig. 18.3).
Towers that are 6,00 to 9,00 m high require two diagonal cross-braces at height 5,90 m (Fig. 18.4).
- It may be necessary to use head spindles.

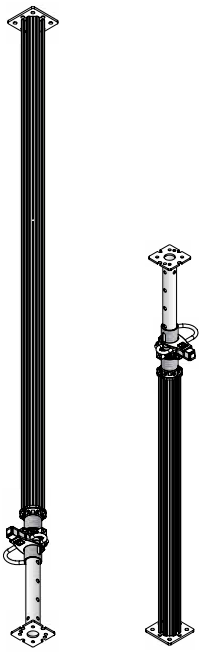

Fig. 18.1

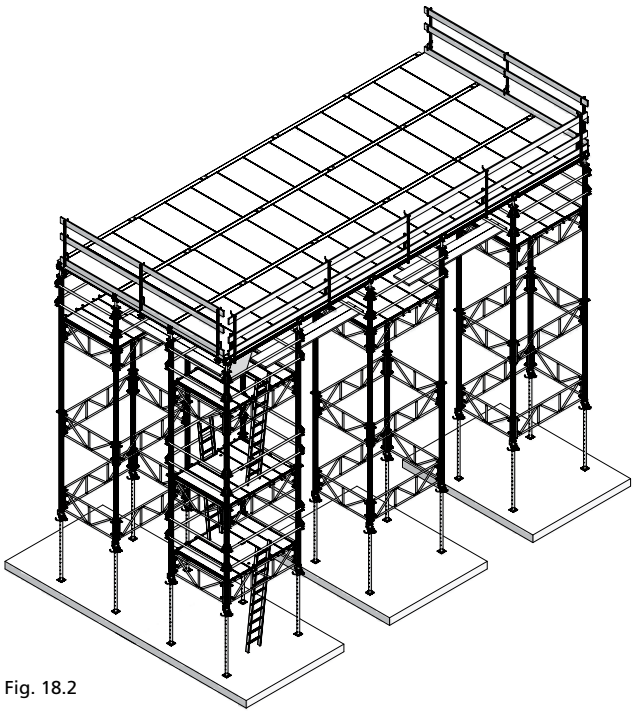

Fig. 18.2

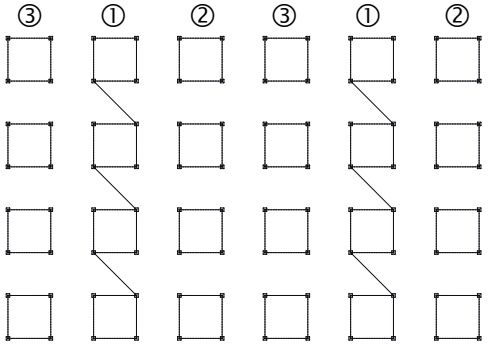

Fig. 18.3 Diagonal cross-braces for towers up to 6 m high

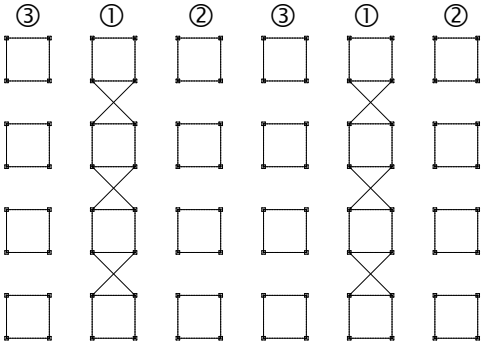

Fig. 18.4 Diagonal cross-braces for towers that are 6,00 to 9,00 m high

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Applications for MEP props

Fig. 19.1
Use in shoring tower for the MevaFlex slab formwork

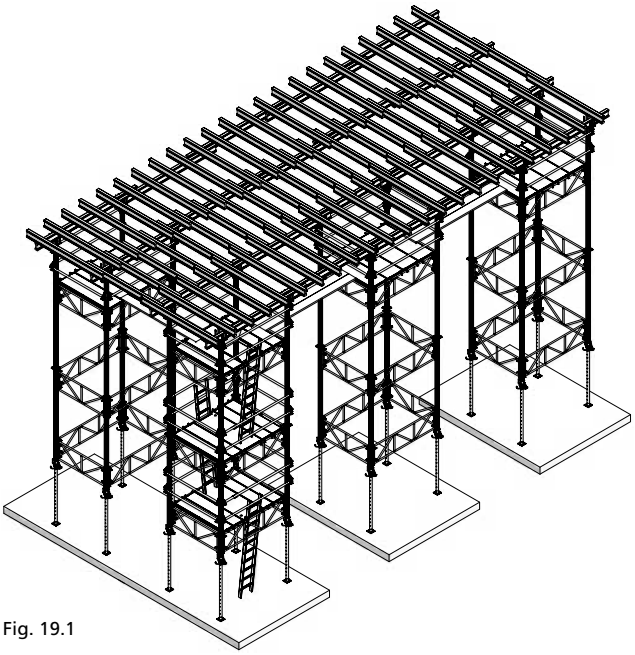

Fig. 19.1

Fig. 19.2
Use in shoring tower for slab tables

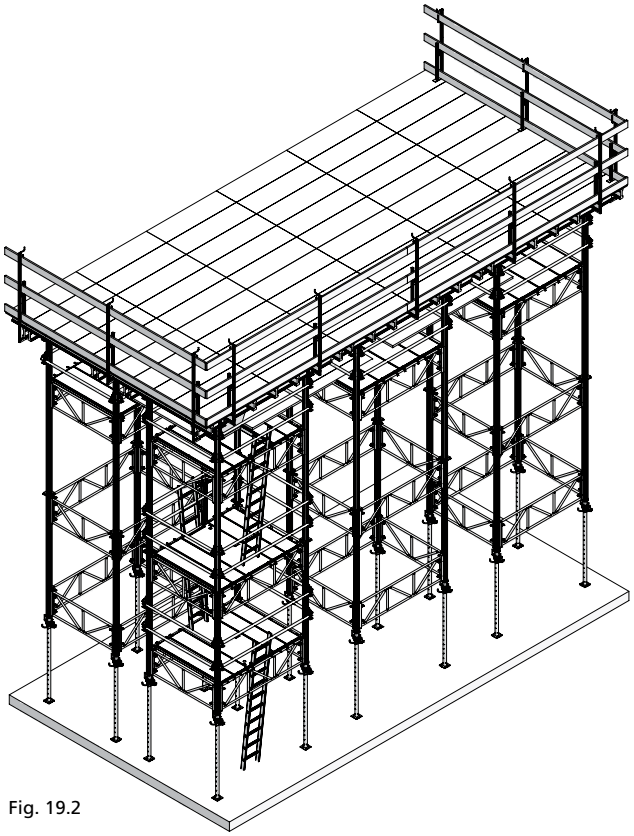

Fig. 19.2

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Tower assembly

We higly recommend assembling the shoring towers on flat ground.

Fig. 20.1
Place the MEP props and extensions flat on squared timbers. Attach the MEP frames to the T-grooves of the outer tubes of the props. Note that the upper and lower MEP frames must be attached and fastened directly at the transition from the outer tube to the thread while the middle frames are attached below the top plate of the lower MEP props. Refer to p. MEP-32 and MEP-33 for the exact position of the various frames.

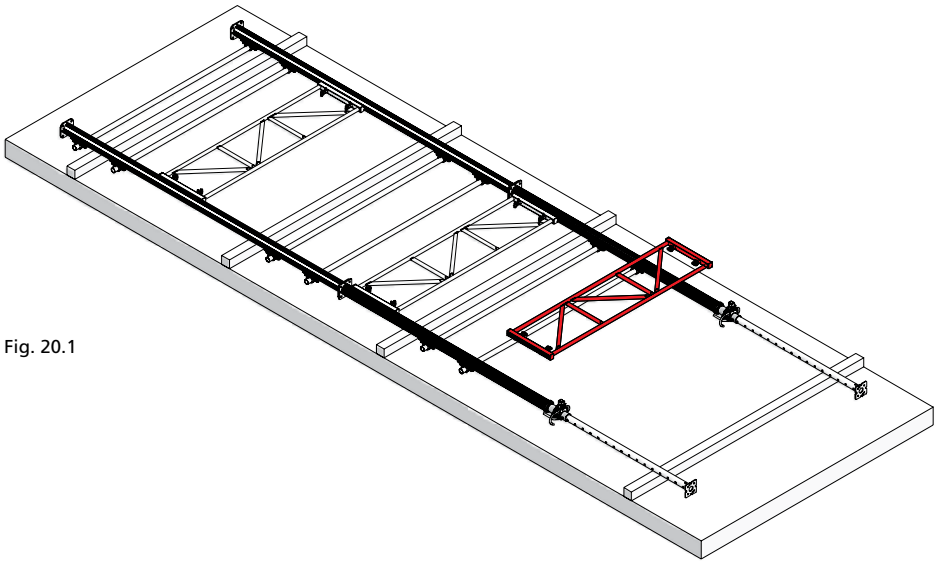

Fig. 20.1

Fig. 20.2.
After mounting the frames to the outer tubes, the levers of all frames must be in the horizontal locked position and the tight connection between props and frames be visually checked (see p. MEP-7).

When mounting scaffold platforms, a side railing must also be attached (in correspondence with the local legislation). Such a side railing can consist of additional frames or 48 mm Ø scaffold tubes that are attached with tube couplers DK 48 MEP (see p. MEP-14). We recommend attaching the required side railing while the tower is in a horizontal position on the ground.

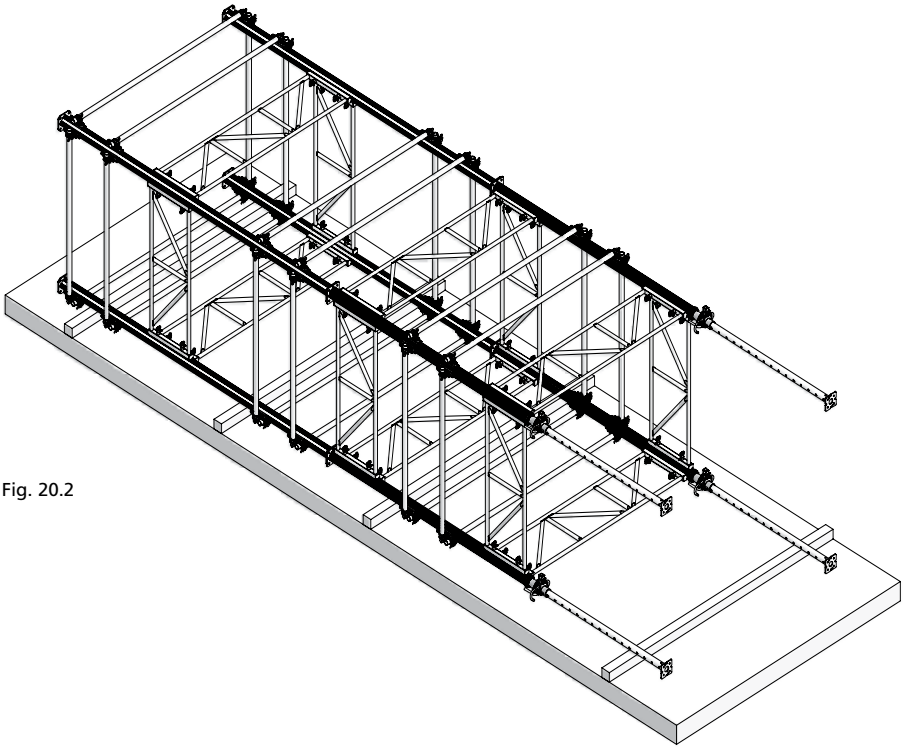

Fig. 20.2

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Tower assembly

Height extension
The MEP extension pieces can be used for the height extension of the props and and for building shoring towers. The prop and extension piece are connected using plug connectors and 2 pins 14/135 per plug connector (Fig. 21.1). This results in a tight connection that is suitable for transport by crane.

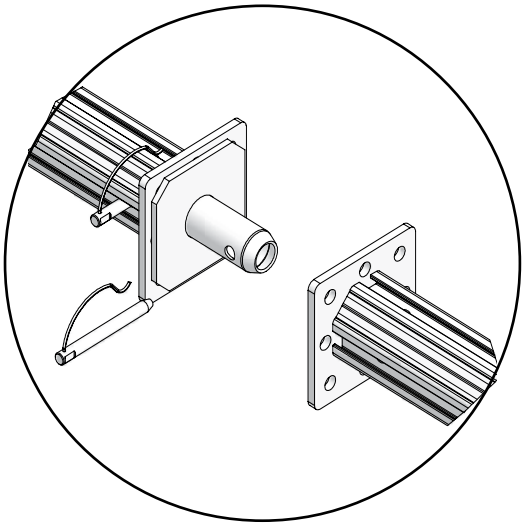

Fig. 21.1

Erecting the shoring towers
The shoring towers that lie flat on the ground are erected using an appropriate lifting device or a crane with 4-rope crane slings.

If a tower is up to 9,00 m high, the crane slings are attached to the lower bar of the upper frame (Fig. 21.2). If the tower is higher than 9,00 m, the crane slings are attached to the upper bar of the second frame from top.

The tower must be set in a perpendicular position.

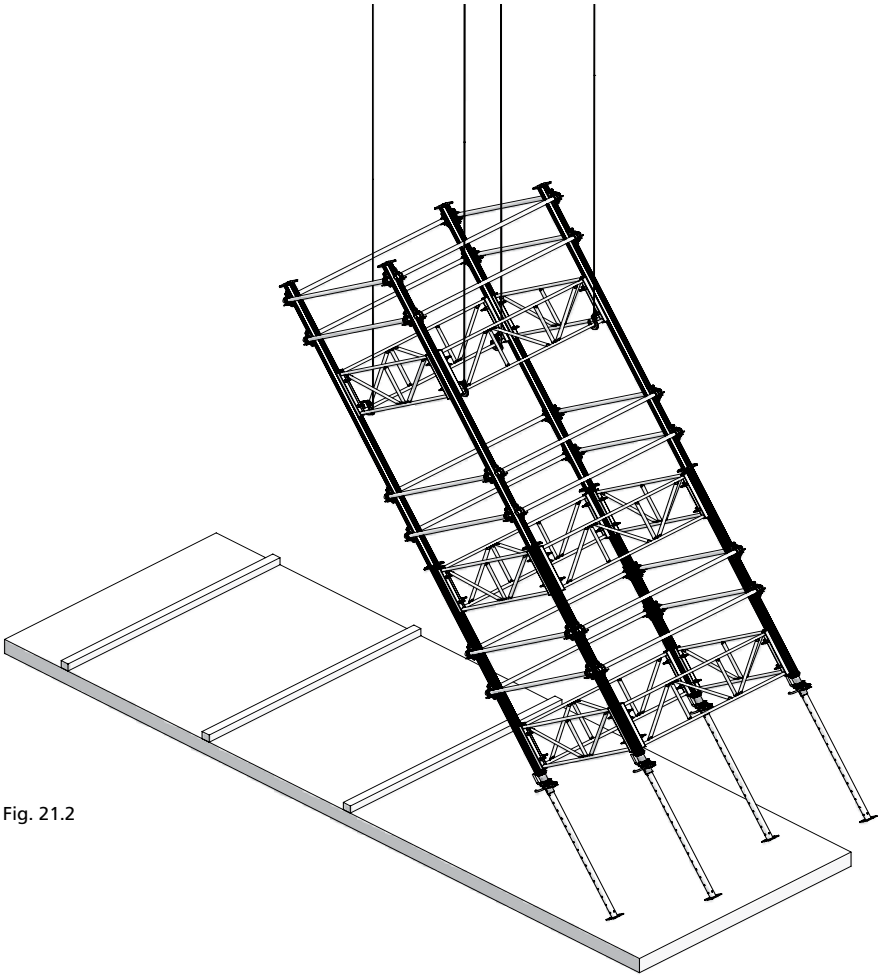

Fig. 21.2

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Tower assembly

Planking, ladders and fall-down protection
We recommend mounting the platforms after setting the towers in a perpendicular position. The planks can be attached at the top or bottom bars of the MEP frames.

After erecting the tower, access ladders must be mounted from one to the next platform level so that the crane slings can be disengaged. If the distance between the platforms exceeds 2,00 m, an additional fall-down protection must be mounted on the outside of the tower (only if the platform is too wide to prevent a person from falling down).

Place the first tower centrally in the building. It is the start point from which to build the other walkways and working platforms (Fig. 22.1).In order to disengage the crane slings from the following towers, use 5,00 m long planks (class S10 DIN 4074) to walk from tower to tower and mount the platforms. The walkway between the platforms must be at least 50 cm wide.

Slab formwork
The superstructure which consists either of wooden girders (Fig. 22.2) or of MevaDec (Fig. 22.3) is installed from the top platform level with wooden planks or with MEP scaffold platforms.

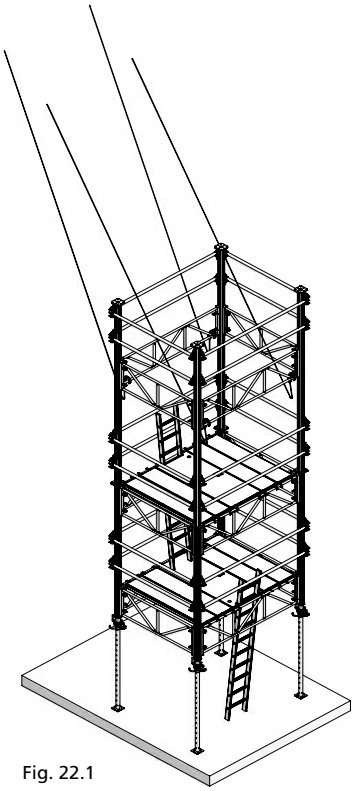

Fig. 22.1

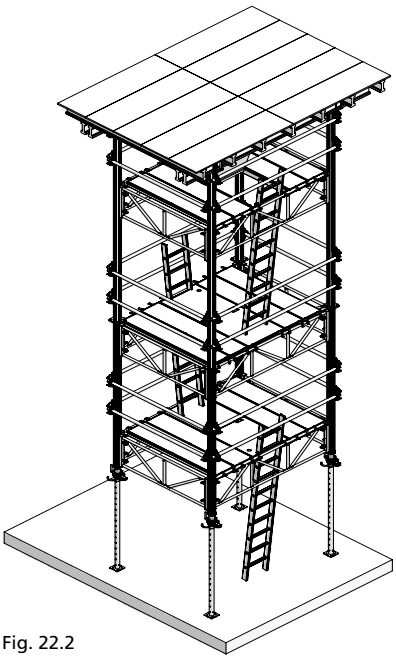

Fig. 22.2

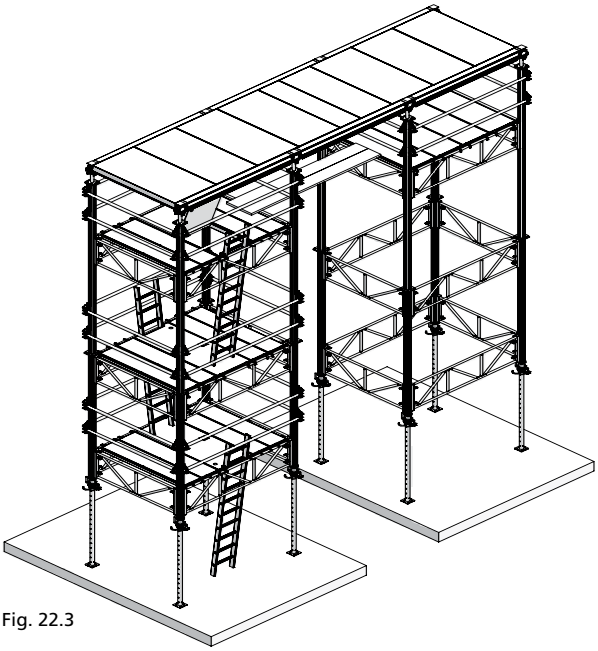

Fig. 22.3

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Tower assembly

As an alternative to the procedure described on p. MEP-22 you can fly in the superstructure, i.e. the top platform with the slab formwork preassembled (Fig. 23.1). The connection is achieved with plug connectors.

Single towers must be connected with MEP scaffold platforms or planks class S10 DIN 4420, scaffold group 3. When using wooden planks, the towers must be placed to match the pattern and layout of the slab formwork.

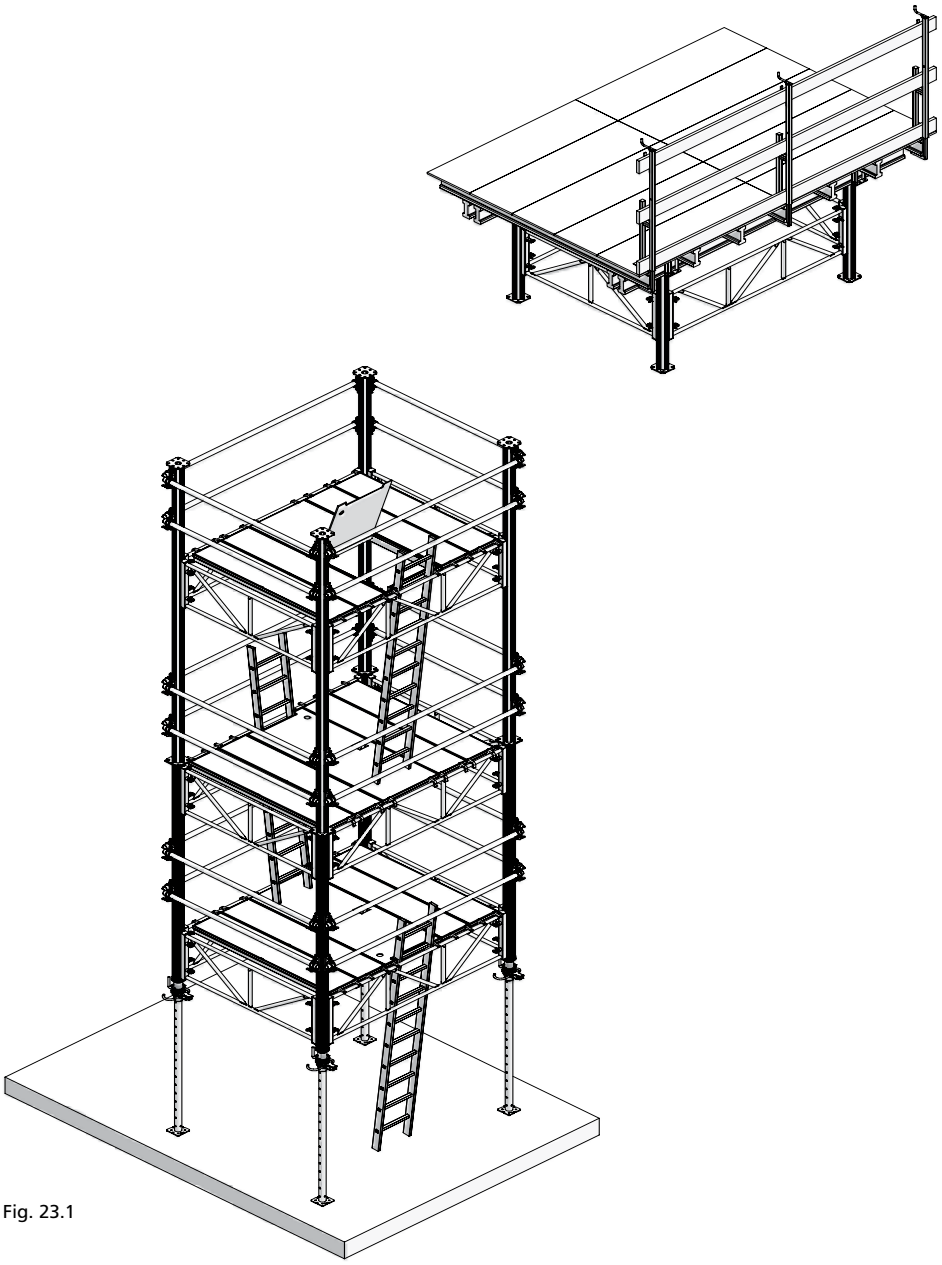

Fig. 23.1

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Stripping

After pouring and when the concrete has strengthened sufficiently, you can start stripping the system. Hit the SAS quick-lowering system of all props with a hammer. This lowers the props by approximately 1 cm and provides relief from the concrete load.

Then spindle down the adjusting nuts of the MEP props by approx. 10 cm. You can now safely disassemble the MevaDec or MevaFlex formwork.

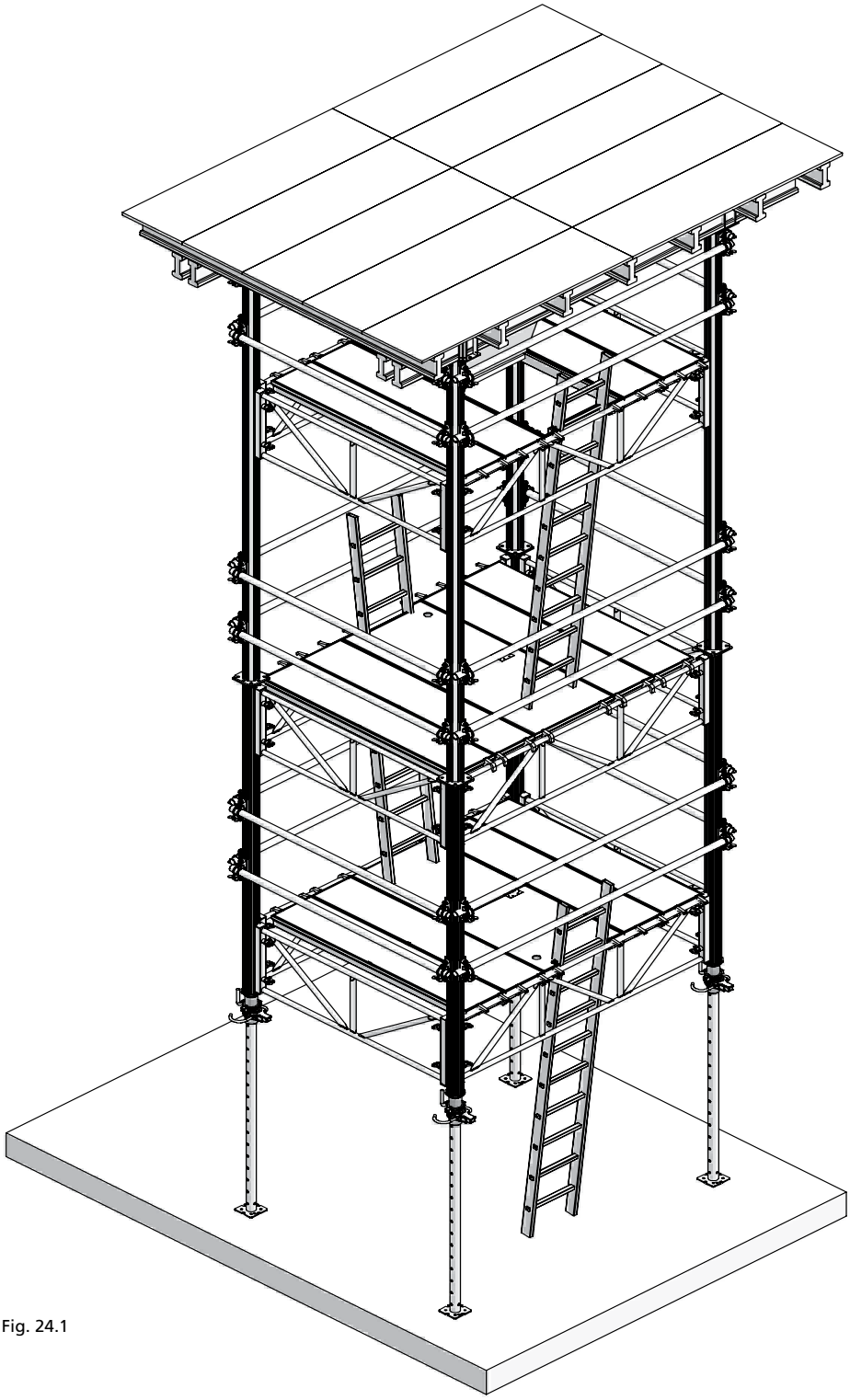

Fig. 24.1

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Stripping

You can now manually pull the towers one by one out under the concrete slab.

As an alternative and by using lift trucks MEP, you can move the towers in groups. To do so, the towers must be connected with scaffold tubes to provide stability. If the towers are tall, you may also use guy ropes. The slab formwork must be tuned to the tower group that is going to be moved (Fig. 25.1).

When working with lift trucks MEP, make sure to also observe p. MEP-28.

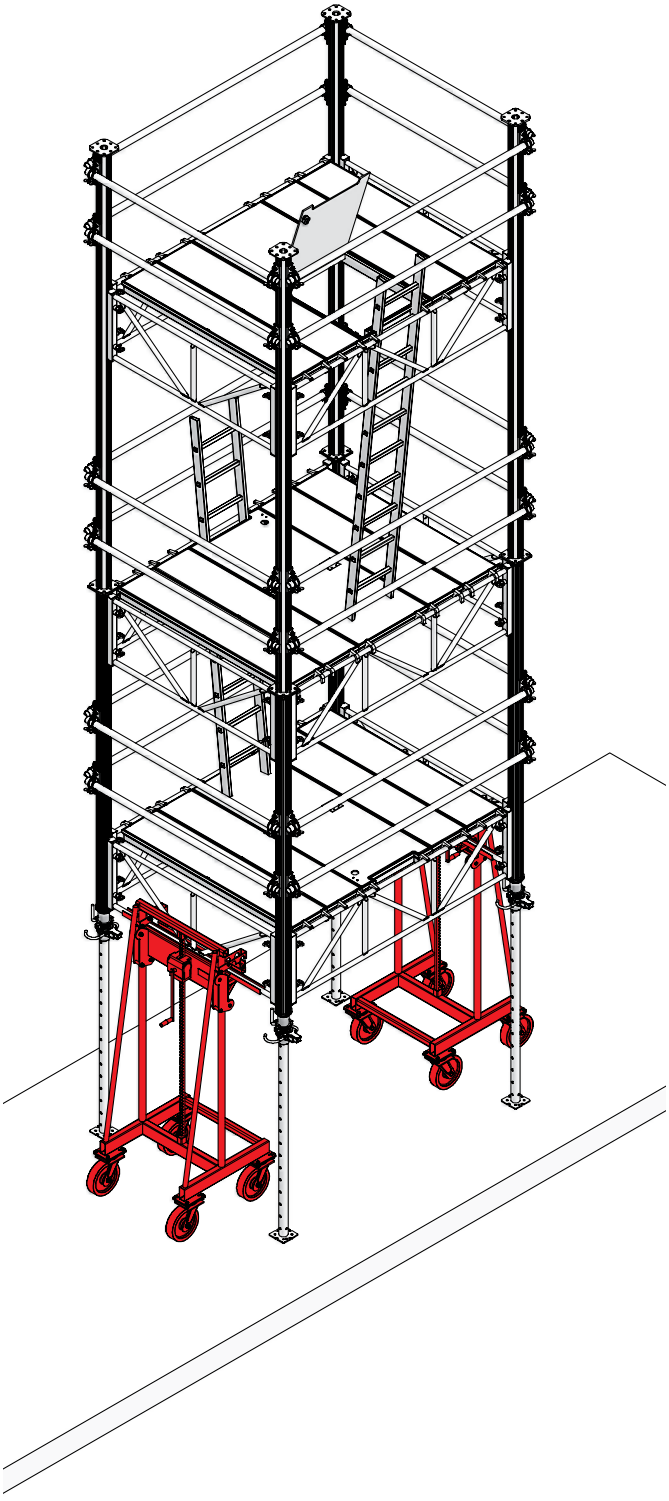

Fig. 25.1

Description	Ref. No.
Lift truck MEP	**29-909-50**

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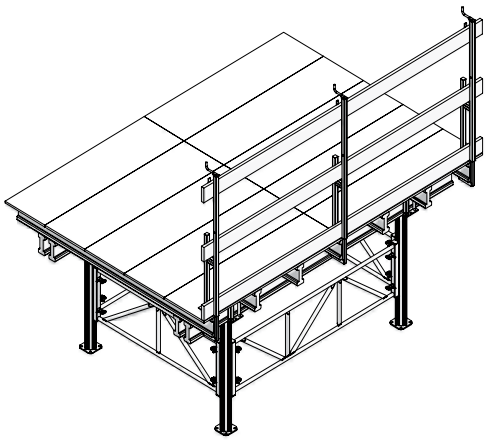
Stripping

We recommend disassembling the towers in units (Fig. 26.1) and disassembling the units on flat ground. If this is not possible for technical reasons, we recommend disassembling the towers by proceeding from the top planking level to the level below and so on.



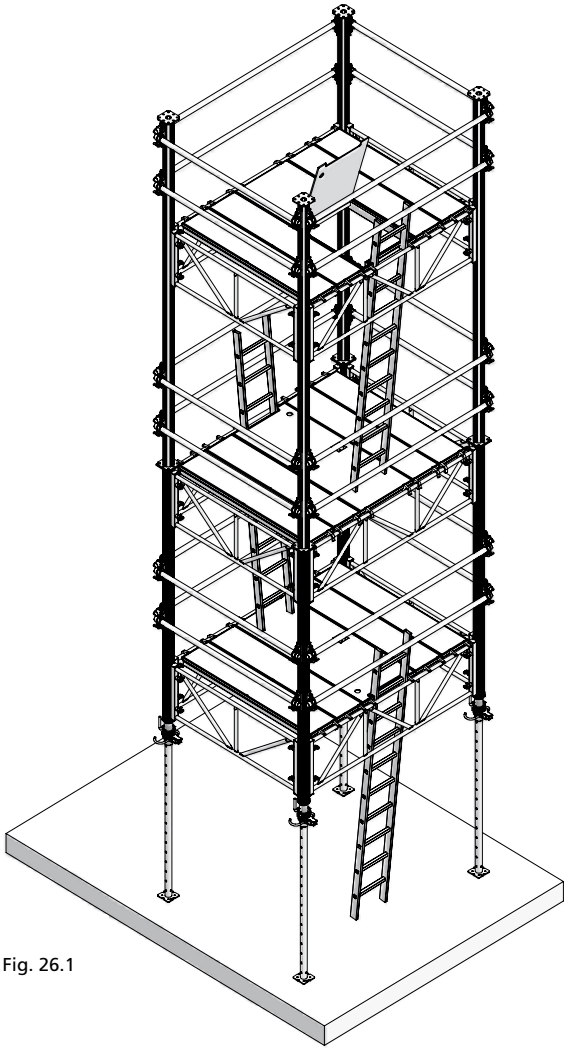


Fig. 26.1

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Crane-ganging with crane hanger MEP

The crane hanger MEP (Fig. 27.1) is used to fly table forms (Fig. 27.2 and 27.3). The capacity per hanger is 10 kN.

Four crane hangers are required to fly a table unit. The hangers can be attached to the table unit as follows:

- Either by screwing the crane hanger into the DW thread of the forked prop head MEP (Fig. 27.2)
- Or by securing the the crane hanger with a flange nut 100 (Fig. 27.3 and 27.4)

The crane hangers are attached with 4-rope crane slings to the crane or lifting device.

Warning
Make sure there is no loose material on the unit during transport.

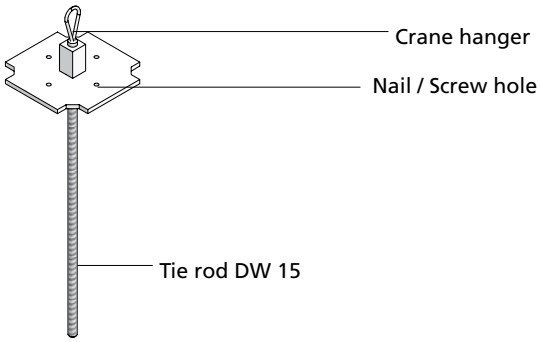

Fig. 27.1

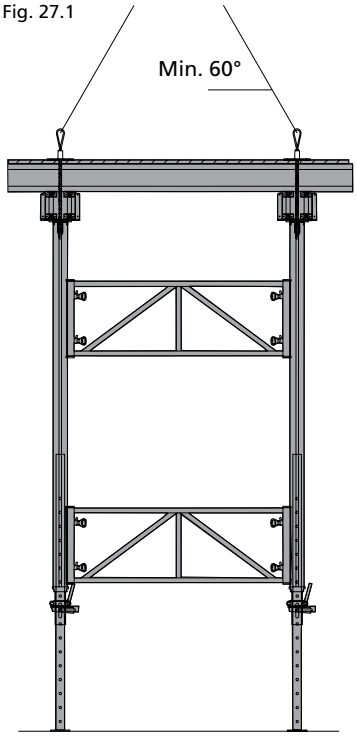

Fig. 27.2

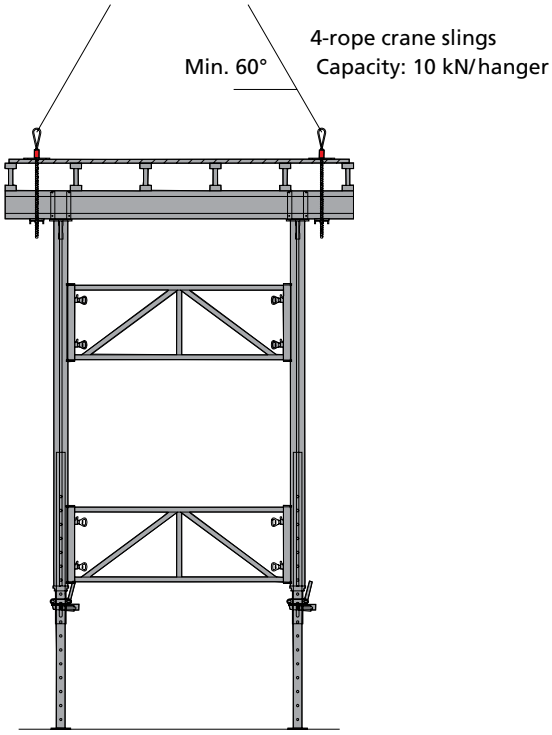

Fig. 27.3

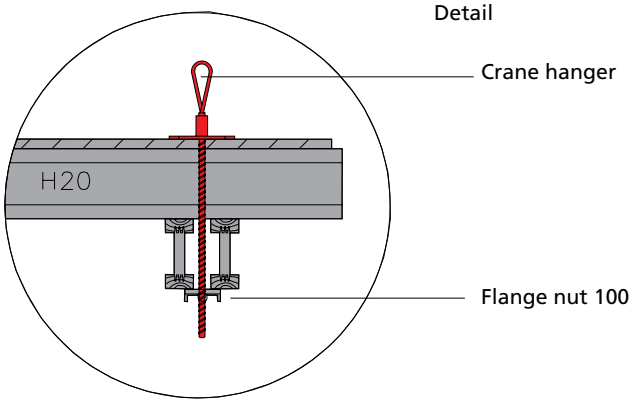

Fig. 27.4

Description	Ref. No.
Crane hanger MEP.....	**29-910-05**

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Transport with lift truck MEP

The lift truck MEP (Fig. 28.1) can be used to horizontally move shoring towers with table forms. A minimum of 2 lift trucks is required (Fig. 28.2). Each lift truck has a maximum capacity of 500 kg.

The lift truck has a safety mechanism against uplift and tilting (Fig. 28.3 and 28.4). The mechanism is attached to the top of the MEP frame. The height of the lift truck is adjusted with its jack and gear rack.

How to use the lift truck

1. Move the lift truck to the required location and adjust its height.
2. Adjust the prop to a convenient height by using the G-hook.
3. Place the safety mechanism over the frame.
4. Lower the table or shoring structure with the jack and move the unit to its next place of use.
5. Use the jack to adjust the height of the unit, pull out the inner tubes of the props and adjust the height with the G-hook, remove the lift truck.

Important

- When transporting the unit, the MEP frame must be secured (Fig. 28.3).
- Turn the safety mechanism to the back before adjusting the height of the slab table (Fig. 28.4).

Description	Ref. No.
Lift truck MEP	**29-909-50**

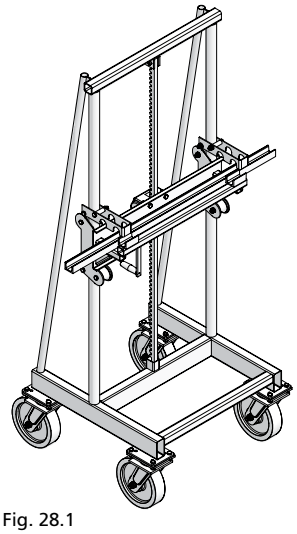

Fig. 28.1

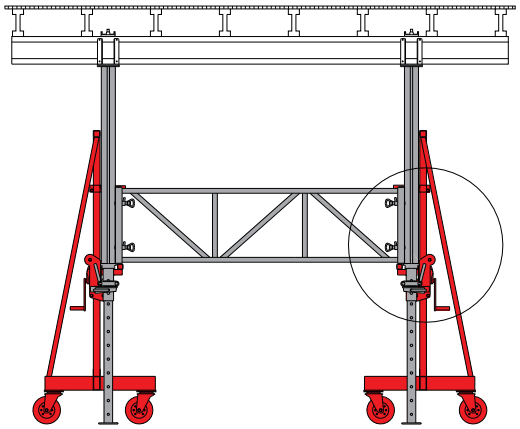

Fig. 28.2

In locked position

In unlocked position

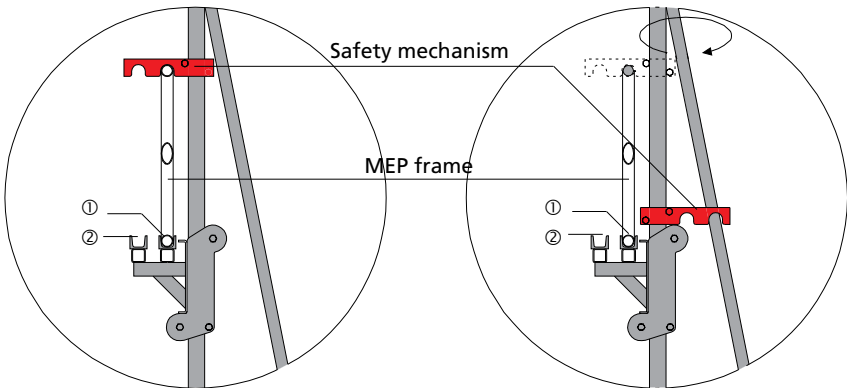

Fig. 28.3 Fig. 28.4

① Short suspension (front) for frame MEP 110
② Long suspension (back) for frames MEP 170 and 220

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Crane-ganging with transport spreader

The table forms with integrated MEP props can be transported and lifted from one level to another with the transport spreader 250/540 and a crane. The procedure is as follows:

1. Release the MEP props with the SAS quick-lowering system and spindle them down.
2. Place the transport spreader under the table. The table must be located on the transport spreader with its entire length.
3. Lift the transport spreader slightly with the crane.
4. If required, fold up the MEP props with MEP folding parts and hold the props in position with rope loops (see p. MEP-13).
5. Move the whole unit to its next place of use with the transport spreader.
6. Fold out the MEP props and move the transport spreader out under the table.

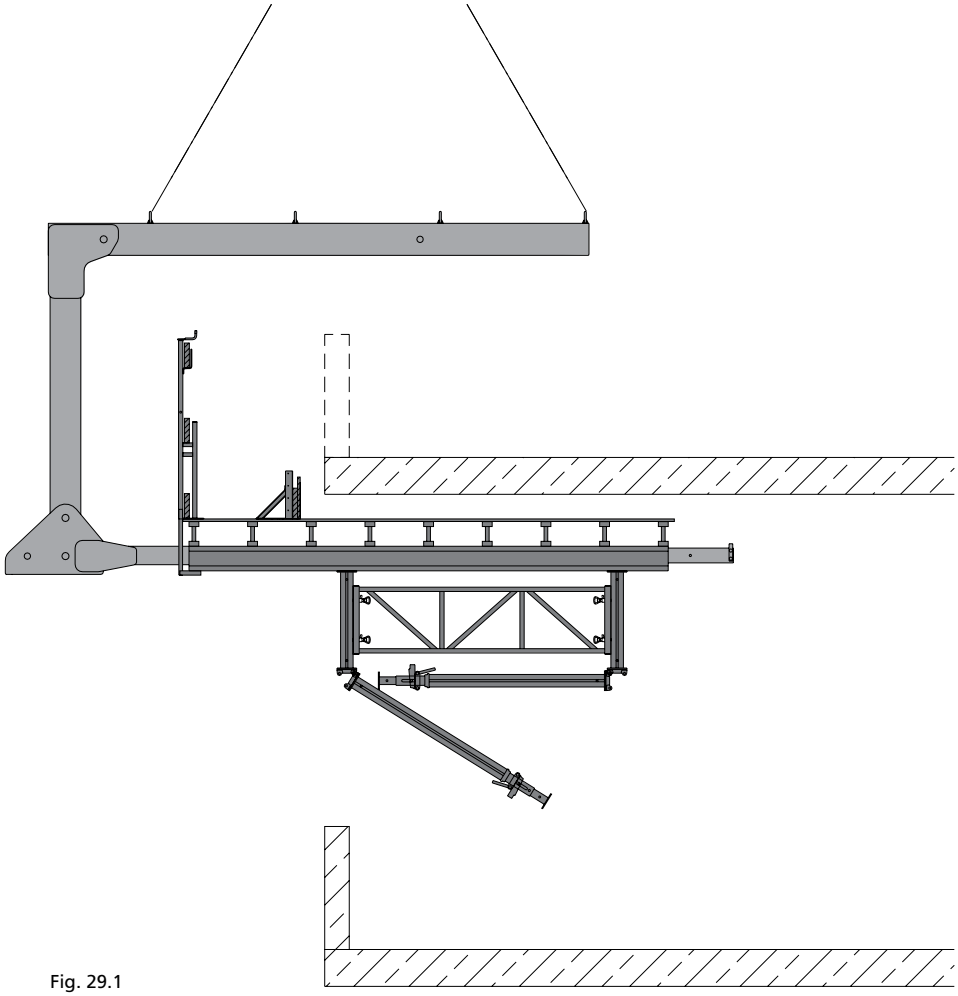

Fig. 29.1

Description	Ref. No.
Transport spreader 250/540	29-910-90

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Transport with transport waler MEP

The transport waler MEP (Fig. 30.1) can be used to horizontally move units consisting of several shoring towers. The floor must be flat and support the weight.

The transport waler is 2,4 m long, has 4 wheels and a load capacity of 3 tons. The pre-assembled plug connectors (Fig. 30.1) allow the transport waler to be adjusted to MEP frames 55, 110, 170 and 220. At least 2 transport walers are required to transport a unit.

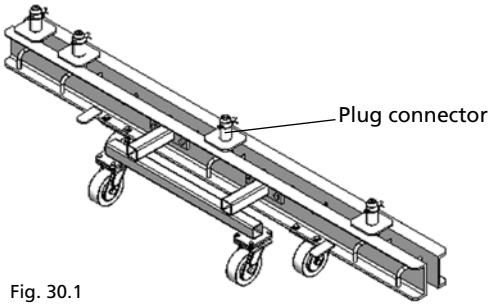

Fig. 30.1

Preparation

1. Activate the SAS quick-lowering systems of all MEP props so that the entire transport unit is without load.
2. Draw in all MEP props that are going to be attached to the transport walers (Fig. 30.2).

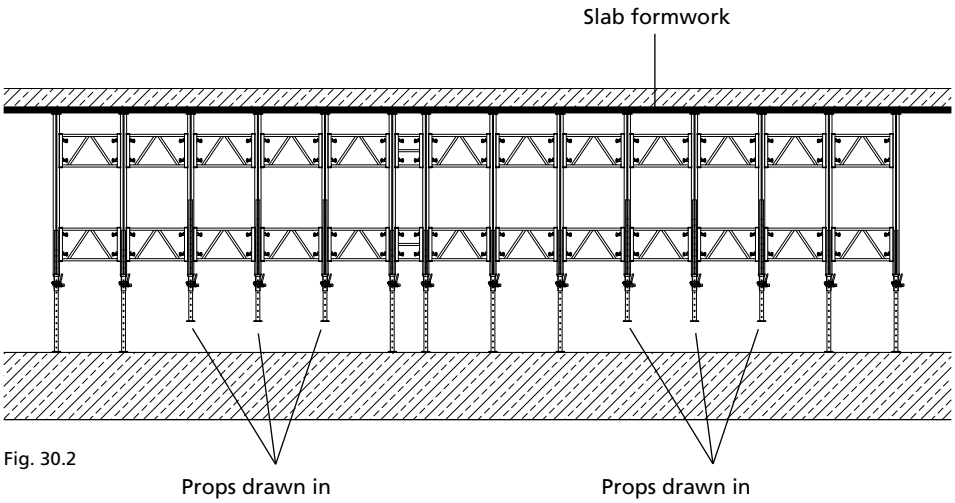

Fig. 30.2

Description	Ref. No.
Transport waler MEP ...	**29-910-80**

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Transport with transport waler MEP

3. Move the transport walers under the props that are going to be attached to them.
4. Pull the props down to the transport walers and attach them with pins (Fig. 31.1).

Transport

1. Now also draw in all other props that are not attached to the transport walers (Fig. 31.2).
2. Lower the entire transport unit with the help of the props that are attached to the transport walers (Fig. 31.2).
3. Move the entire unit to the next pouring cycle and more or less height-adjust the unit with the help of the props attached to the transport walers.
4. Let down the other props, remove the transport walers and also let down the props that were attached to the transport walers.

Note

The transport unit shown in figures 31.1 through 31.3 weighs 5,4 tons including slab formwork. The 4 transport walers used for this unit can support a total weight of 12 tons (4 times 3 tons).

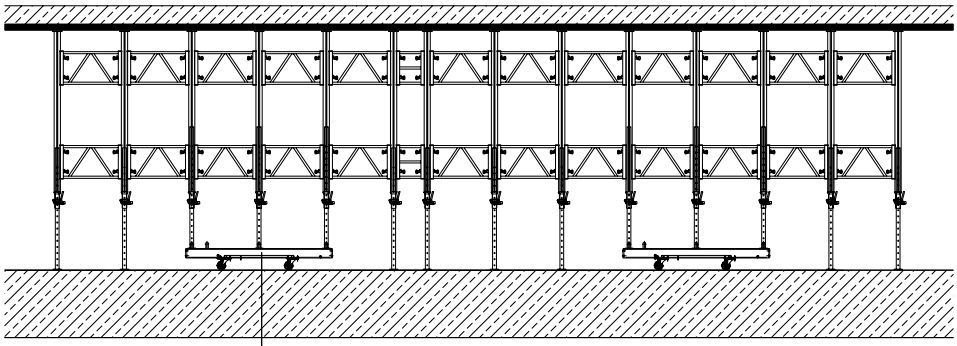

Fig. 31.1

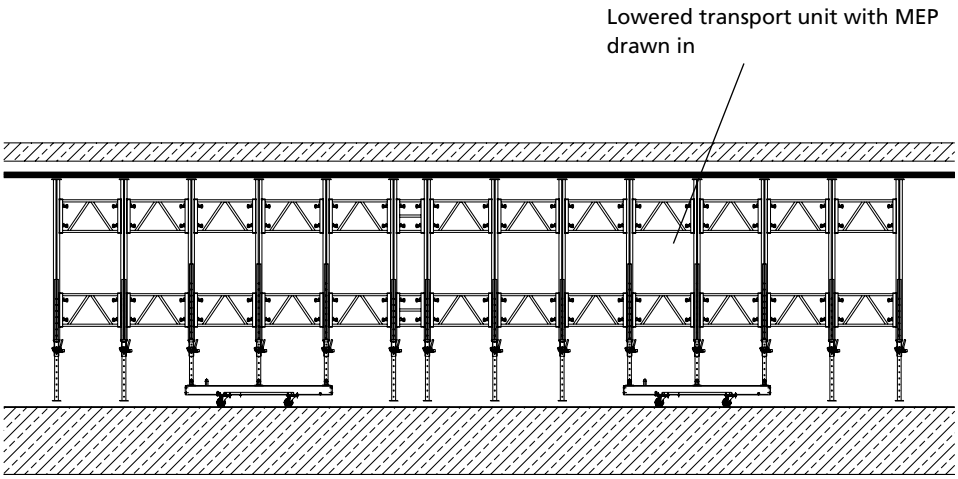

Fig. 31.2

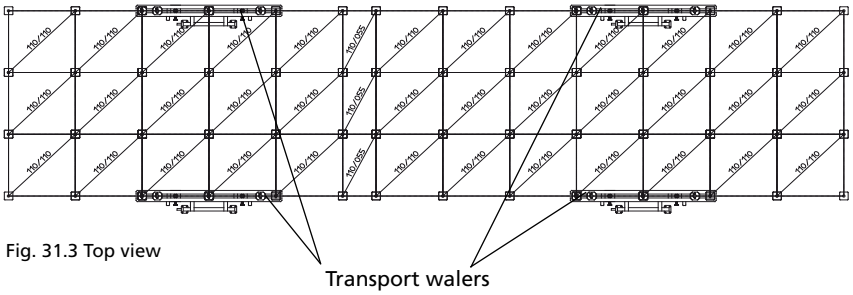

Fig. 31.3 Top view

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Height combinations – Examples

Possibilities
The required tower height can be achieved
- with an extension piece
- with an MEP prop
- with an MEP prop and an extension piece
- with 2 MEP props
- or with 2 MEP props and an extension piece.

This double page shows examples for various heights (AR = adjustment range). Page MEP-34 lists the required material and frames for the different height combinations.

Fig. 32.1
4 MEP props 300 with 4 frames MEP.
AR: 1,85 to 3,00 m.
Fig. 32.2
4 MEP props 300, 4 extension pieces 120 MEP with 4 spindles MEP and 8 frames MEP.
AR: 3,33 to 5,00 m.
Fig. 32.3
4 MEP props 450 with 4 frames MEP.
AR: 3,00 to 4,50 m.
Fig. 32.4
8 MEP props 300 with 8 frames MEP.
AR: 3,70 to 6,00 m.

Important
- The lower and upper MEP frames are attached at the lowest possible position of the MEP props. The frames of the extension pieces 120 MEP are attached at the middle of the extension pieces.
- The levers must always be in a horizontal position.
- Load details see p. MEP-5.

Note
If the system is not attached at the top, i.e. if the horizontal force V/100 is transferred through the system, the extension of the props is limited to 80 cm.

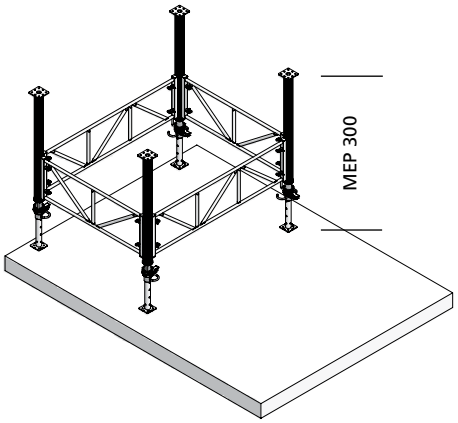

Fig. 32.1 Adjustment range 1,85 to 3,00 m

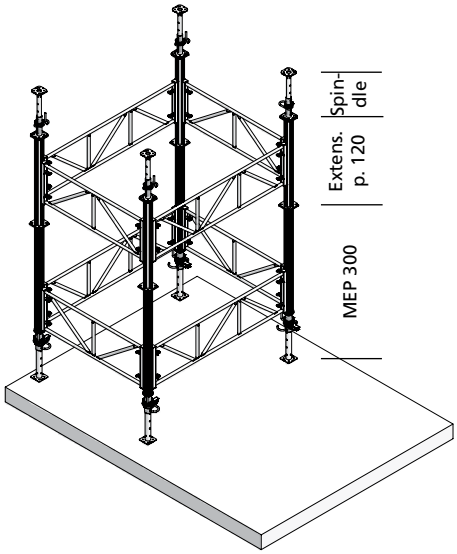

Fig. 32.2 Adjustment range 3,33 to 5,00 m

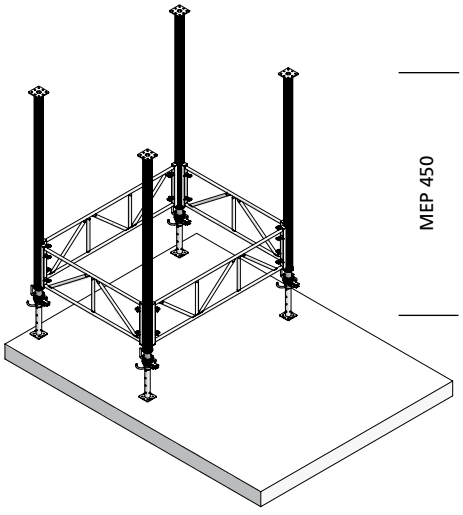

Fig. 32.3 Adjustment range 3,00 to 4,50 m

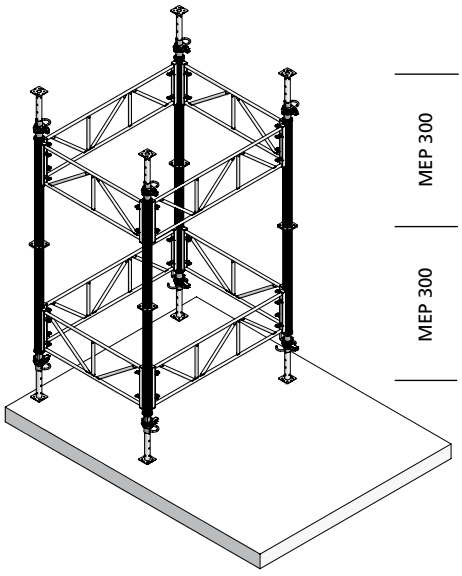

Fig. 32.4 Adjustment range 3,70 to 6,00 m

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Height combinations – Examples

Fig. 33.1
4 MEP props 450, 4 MEP extension pieces 120 with 4 MEP spindles and 8 MEP frames.
AR: 4,48 to 6,50 m

Fig. 33.2
4 MEP props 450 with 4 MEP props 300 and 12 MEP frames.
AR: 4,85 to 7,50 m.

Fig. 33.3
8 MEP props 450 with 12 MEP frames.
AR: 6,00 to 9,00 m.

Fig. 33.4
8 MEP props 300 with 4 extension pieces 360 MEP and 16 MEP frames.
AR: 7,30 to 9,60 m.

Important

- The lower and upper MEP frames are attached at the lowest possible position of the MEP props. The middle frames are attached below the foot plates of the lower MEP props. The frames of the extension pieces 120 MEP are attached at the middle of the extension pieces. The middle frames of the extension pieces 360 MEP are attached below or over the foot plates.
- The levers must always be in a horizontal position.
- For load details see p. MEP-5.

Note

If the system is not attached at the top, i.e. if the horizontal force V/100 is transferred through the system, the extension of the props is limited to 80 cm.

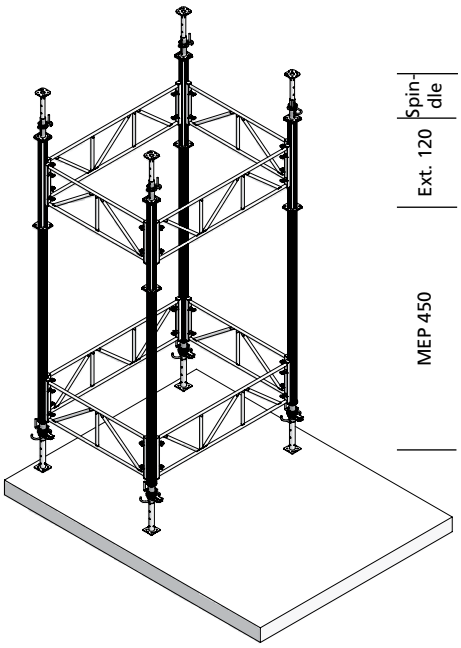

Fig. 33.1 Adjustment range 4,48 to 6,50 m

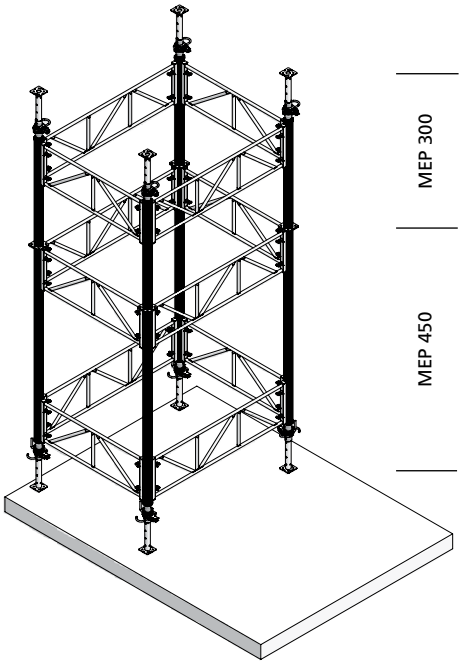

Fig. 33.2 Adjustment range 4,85 to 7,50 m

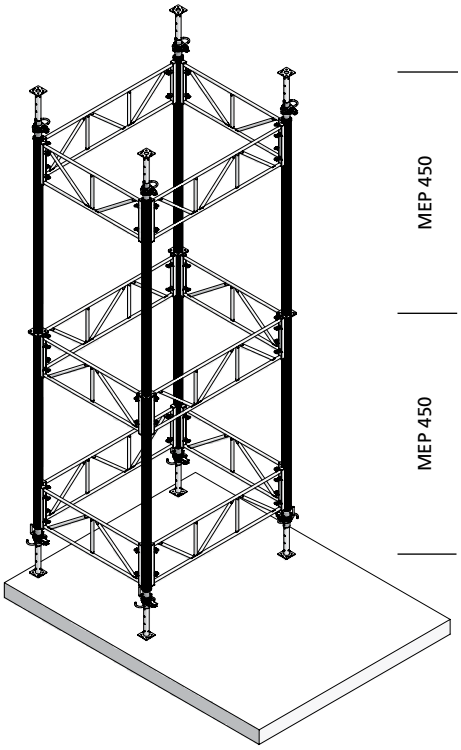

Fig. 33.3 Adjustment range 6,00 to 9,00 m

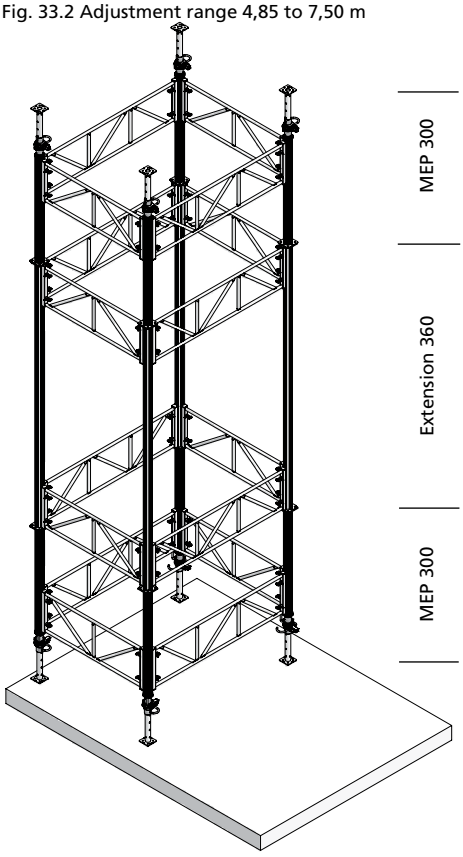

Fig. 33.4 Adjustment range 7,30 to 9,60 m

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Height combinations – Required material

The table shows the material required for the various tower heights depending on the tower cross sections.

The listed heights are the shoring heights and do not include the slab formwork.

MEP tower height (m)	MEP-tower size (cm)	MEP prop 300	MEP prop 450	MEP frame 110	MEP frame 170	MEP frame 220	MEP extension piece 120	MEP extension piece 360	Plug connector MEP	Pin 14/135	MEP spindle
1,55–2,00 Extension piece MEP with MEP spindle	110/110			4			4				4
	110/170			2	2		4				4
	170/170				4		4				4
	170/220				2	2	4				4
	220/220					4	4				4
1,85–3,00 1 MEP prop 300	110/110	4		4							
	110/170	4		2	2						
	170/170	4			4						
	170/220	4			2	2					
	220/220	4				4					
3,00–4,50 1 MEP prop 450	110/110		4	4							
	110/170		4	2	2						
	170/170		4		4						
	170/220		4		2	2					
	220/220		4			4					
3,70–6,00 (bolted), 3,85–6,00 (plugged) 2 MEP props 300	110/110	8		8					4	8	
	110/170	8		4	4				4	8	
	170/170	8			8				4	8	
	170/220	8			4	4			4	8	
	220/220	8				8			4	8	
4,85–7,50 (bolted), 4,925–7,50 (plugged) MEP prop 300 + MEP prop 450	110/110	4	4	12					4	8	
	110/170	4	4	6	6				4	8	
	170/170	4	4		12				4	8	
	170/220	4	4		6	6			4	8	
	220/220	4	4			12			4	8	
6,00–9,00 2 MEP props 450	110/110		8	12					4	8	
	110/170		8	6	6				4	8	
	170/170		8		12				4	8	
	170/220		8		6	6			4	8	
	220/220		8			12			4	8	
7,30–9,60 (bolted), 7,45–9,60 (plugged) 2 MEP props 300 + MEP extension piece 360	110/110	8		16				4	8	16	
	110/170	8		8	8			4	8	16	
	170/170	8			16			4	8	16	
	170/220	8			8	8		4	8	16	
	220/220	8				16		4	8	16	

Table 34.1

Description	Ref. No.
Prop with SAS	
MEP 450	**29-907-70**
MEP 300	**29-907-65**
Frame	
330 MEP	**29-909-30**
220 MEP	**29-909-25**
170 MEP	**29-909-20**
110 MEP	**29-909-15**
55 MEP	**29-909-10**
Extension piece	
360 MEP	**29-907-95**
120 MEP	**29-907-90**
80 MEP	**29-907-85**
Plug connector MEP	**29-909-85**
Pin 14/135	**29-909-90**
Pin 14/90	**29-909-94**
MEP spindle	**29-909-70**

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Storage and transport – Frames/Platforms

MEVA uses square timbers 7 by 7 cm for truck transport so that the material can be loaded and unloaded with a truck lift or lifting devices, e.g. crane or caterpillar.

Make sure appropriate lifting devices are available on site for unloading.

Three piling racks can be stacked and 2 piling racks be placed next to each other on a truck.

Frames 110, 170 and 220 MEP are transported in bundles. Two bundles with frames 110 or 170 MEP can be stacked on a truck (3 bundles with frames 220 MEP).

Weight of piled MEP frames including 28 kg rack:
- 60 frames 55 MEP: 412 kg (Fig. 35.1)
- 20 frames 330 MEP: 342 kg (Fig. 35.5)

Weight of the frames MEP per bundle:
- 25 frames 110 MEP: 195 kg (Fig. 35.2)
- 50 frames 170 MEP: 495 kg (Fig. 35.3)
- 50 frames 220 MEP: 595 kg (Fig. 35.4)

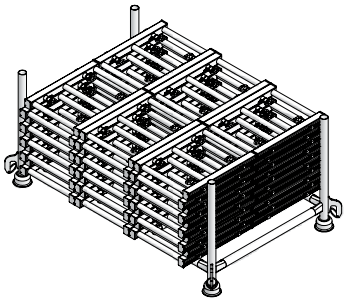

Fig. 35.1 Frames 55 MEP in piling rack

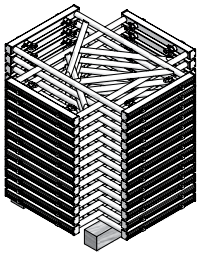

Fig. 35.2 Bundle of frames 110 MEP

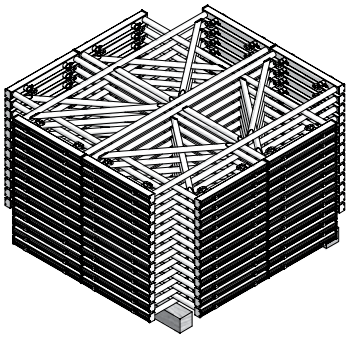

Fig. 35.3 Bundle of frames 170 MEP

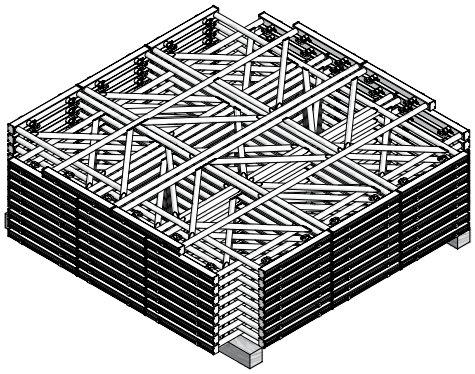

Fig. 35.4 Bundle of frames 220 MEP

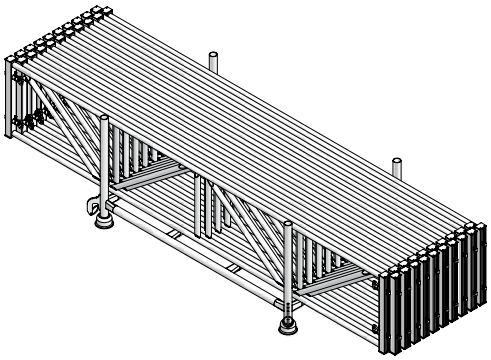

Fig. 35.5 Frames 330 MEP in piling rack

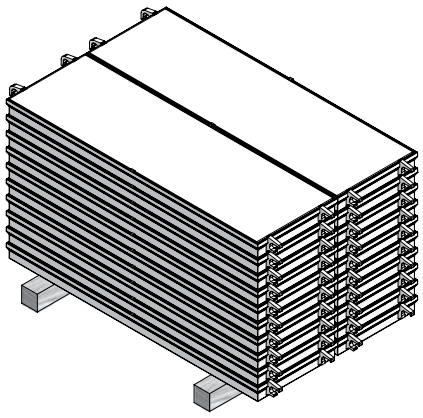

Fig. 35.6 Scaffold platforms piled on square timber

Description	Ref. No.
Piling rack	27-000-20

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Storage and transport – Props

We recommend storing and transporing MEP props in piling racks.

Weight of MEP props including 28 kg rack:
- 30 MEP props 300: 760 kg (Fig. 36.1),
- 30 MEP props 450: 1060 kg (Fig. 36.2).

Depending on the weight and type of truck, 2 or 3 piling racks can be stacked on top of each other (Fig. 36.3).

For safety reasons and in order to avoid sliding during transport, racks must be placed close to each other and without any timber or other material between them.

When unloading, we recommend moving the racks apart with long square timbers and then lifting them off the truck with appropriate lifting devices.

Storage boxes are used to store transport accessories (Fig. 36.4). The maximum capacity per box is 2000 kg. Depending on their weight up to 6 storage boxes (max. 3 storage boxes on a truck) can be stacked (Fig. 36.5). The maximum superimposed load is 10 tons.

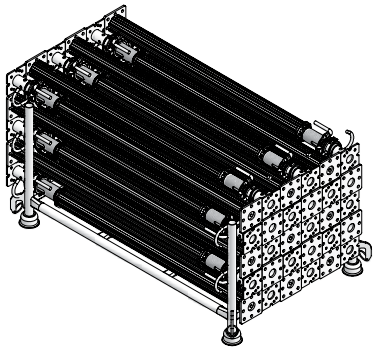

Fig. 36.1 MEP props 300 in piling rack

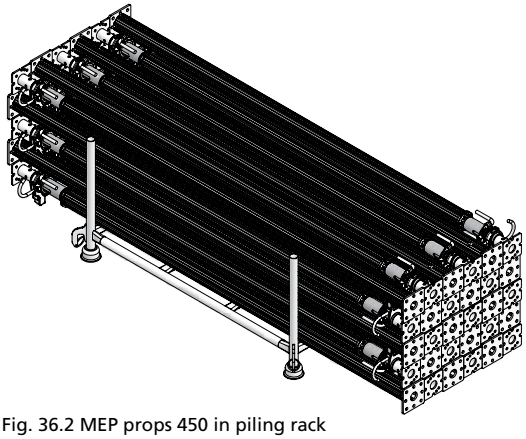

Fig. 36.2 MEP props 450 in piling rack

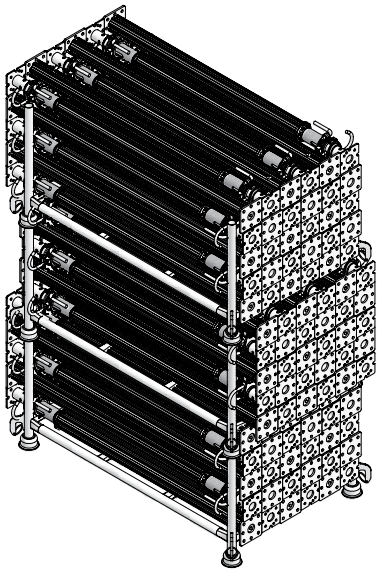

Fig. 36.3 Stacked piling racks

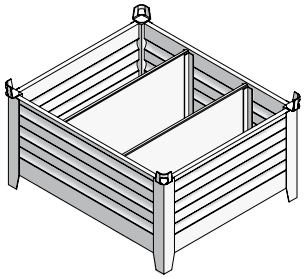

Fig. 36.4 Storage box

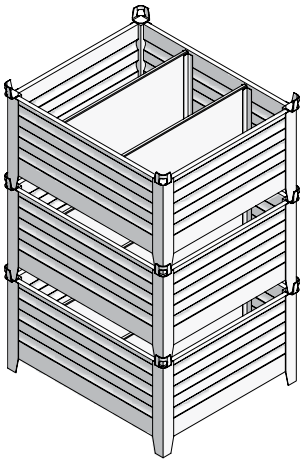

Fig. 36.5 Stacked storage boxes

Description	Ref. No.
Piling rack	**27-000-20**
Storage box 120/100	**27-000-10**

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Transport by truck

Make sure that all material is secured properly.

Recommendation
Use one load/cargo strap per 1 metre of cargo. That means for a fully loaded truck with a trailer length of 13,60 m, 14 load or cargo straps would be required.

Two straps are required for each bundle or rack of material (Fig. 37.1 and 37.2).

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

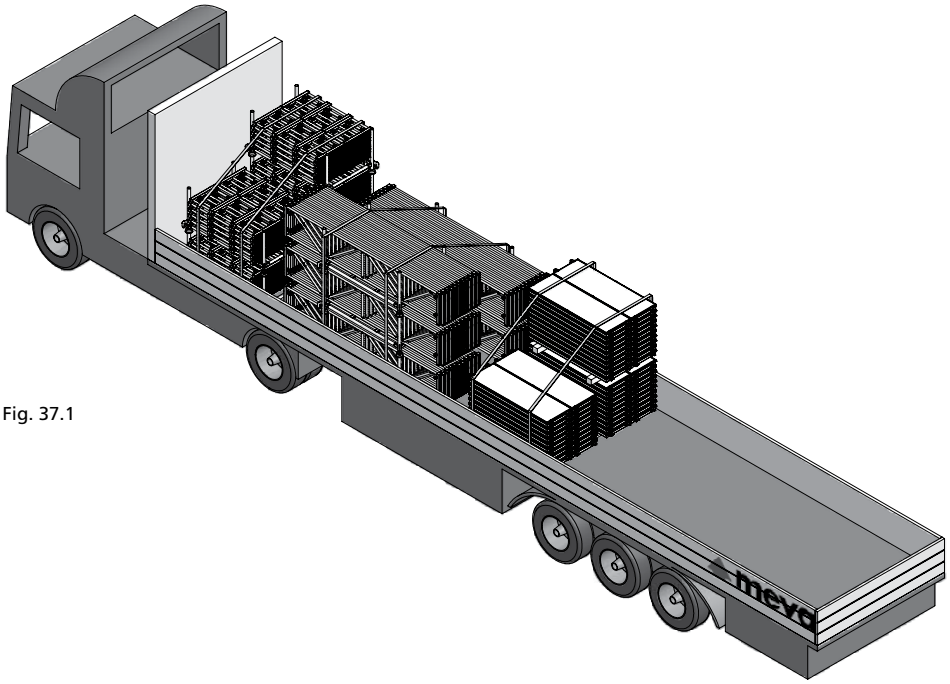

Fig. 37.1

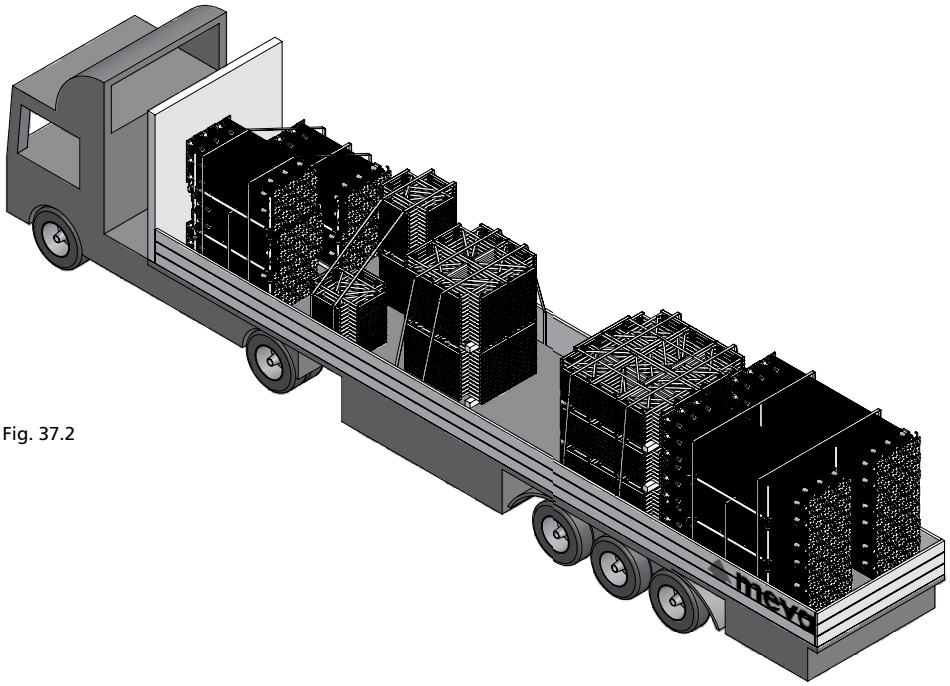

Fig. 37.2

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MEP-HD – Overview

The MEP-HD (heavy duty) prop consists of a basic prop available in 4 lengths (Fig. 38.1) and a spindle 140 MEP-HD (Fig. 38.2).

The spindle is attached at the foot or top of the MEP-HD prop (Fig. 38.3).

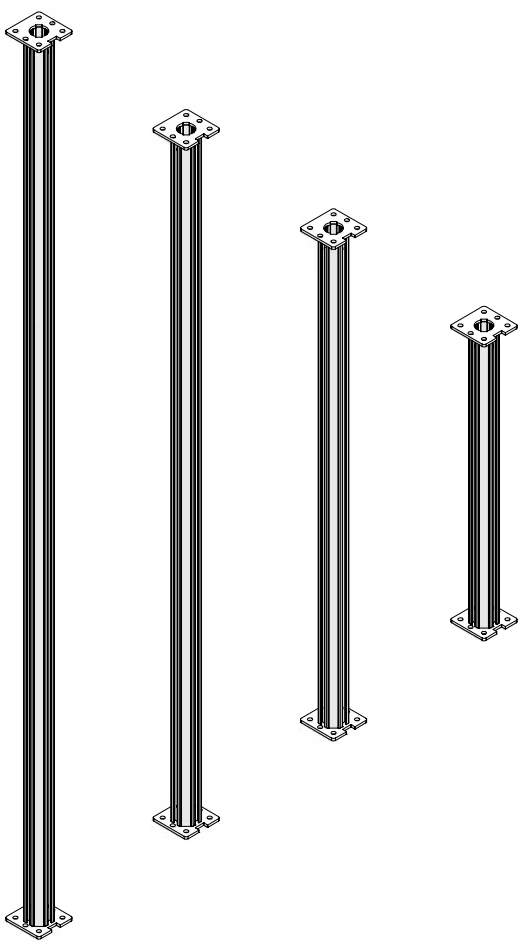

Fig. 38.1 Basic props MEP-HD 360, 280, 200 and 120

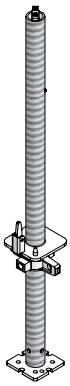

Fig. 38.2 Spindle 140 MEP-HD

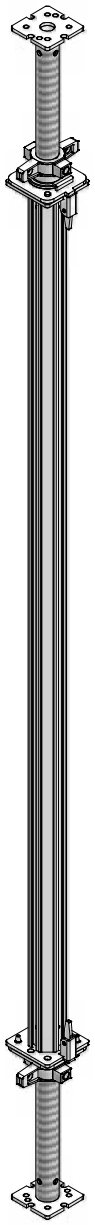

Fig. 38.3

Description	Ref. No.
Basic prop MEP-HD	
360	**29-906-45**
280	**29-906-55**
200	**29-906-65**
120	**29-906-75**
Spindle 140 MEP-HD	**29-906-85**

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MEP-HD – Admissible loads

Refer to Tables 39.1 through 39.4 for the maximum admissible load of the MEP-HD prop when used as a single prop and for the maximum extension when using the spindle 140 MEP-HD.

Basic prop 360 MEP-HD and spindle 140 MEP-HD Adjustment range 3,70 m to 4,70 m		
Height (m)	**Admissible loads (kN)**	
	Spindle at top	Spindle at foot
Up to 3,75	65	60
4,00	57	55
4,25	48	49
4,50	40	43
4,70	35	40

Table 39.1

Basic prop 280 MEP-HD and spindle 140 MEP-HD Adjustment range 2,90 m to 3,90 m		
Height (m)	**Admissible loads (kN)**	
	Spindle at top	Spindle at foot
Up to 2,95	88	88
3,20	78	80
3,45	65	71
3,70	53	60
3,90	45	53

Table 39.2

Basic prop 200 MEP-HD und Spindle 140 MEP-HD, Adjustment range 2,10 m to 3,10 m		
Height (m)	**Admissible loads (kN)**	
	Spindle at top	Spindle at foot
Up to 2,15	89	122
2,40	87	109
2,65	79	93
2,90	69	80
3,10	60	73

Table 39.3

Basic prop 120 MEP-HD und Spindle 140 MEP-HD, Adjustment range 1,30 m to 2,30 m		
Height (m)	**Admissible loads (kN)**	
	Spindle at top	Spindle at foot
Up to 1,45	90	102
1,70	88	100
2,00	87	100
2,30	79	90

Table 39.4

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MEP-HD – Assembly

The spindle 140 MEP-HD is attached to the basic prop using the integrated clip (Fig. 40.1).

The spindle's adjusting nut (Fig. 40.1) is used for the fine adjustment of the length.

The spindle's adjustment range is 0 to 100 cm (Fig. 40.2 and 40.3).

Advice: When stripping, unscrew the spindle by approx. 5 cm so that the adjusting nut can be lowered for stripping.

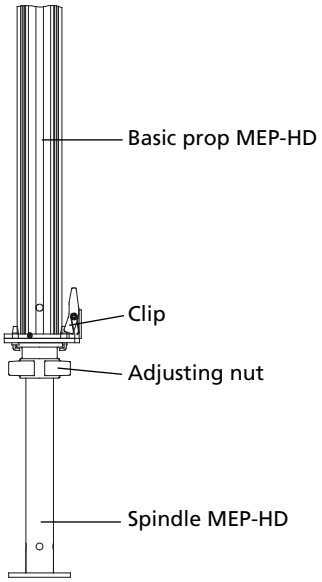

Fig. 40.1

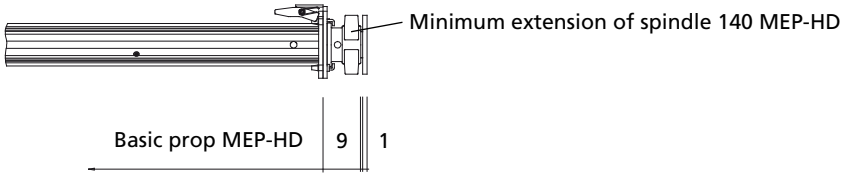

Fig. 40.2

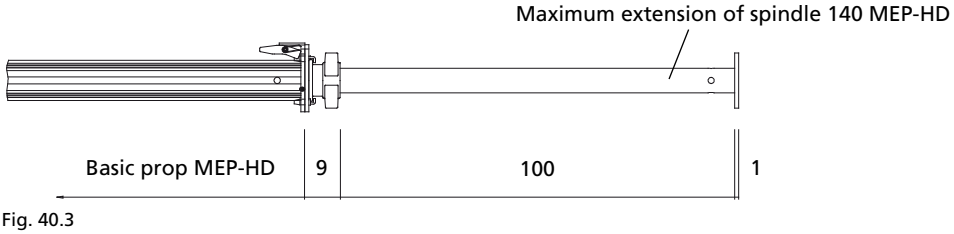

Fig. 40.3

Description	Ref. No.
Spindle 140 MEP-HD...	**29-906-85**

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MEP-HD – Application examples

Fig. 41.1 shows the MEP-HD prop being used with shoring towers to create a passage.

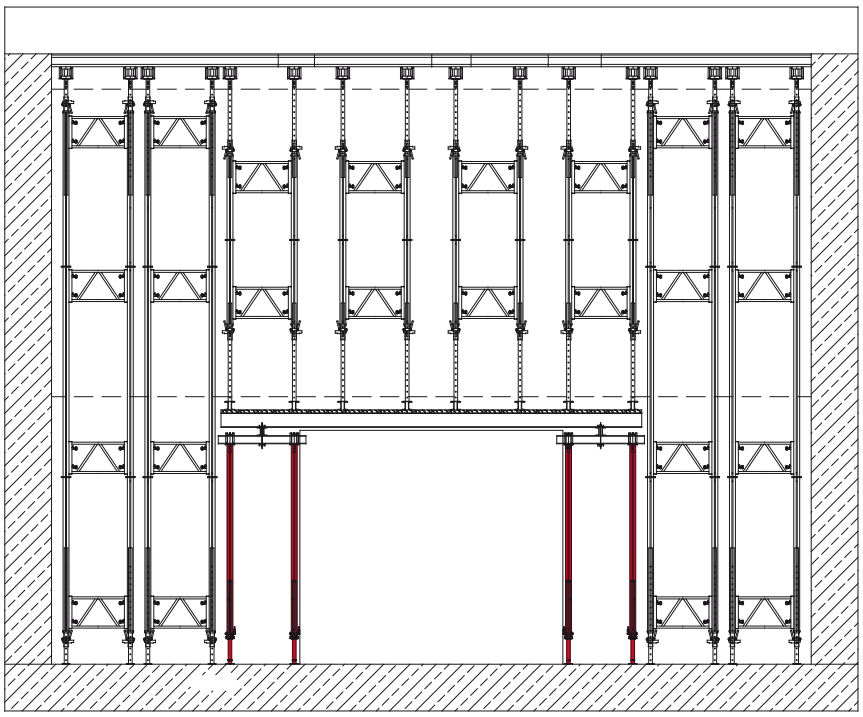

Fig. 41.1

Fig. 41.2 shows frames being used with MEP-HD props for an easier assembly of the support construction.

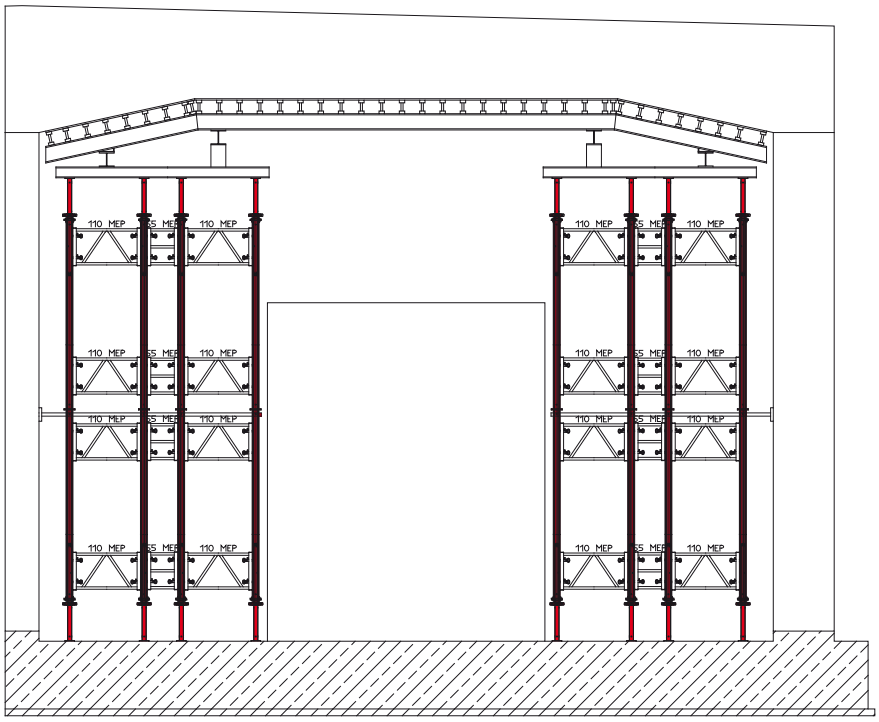

Fig. 41.2

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Service

Cleaning
The parts of the MEP shoring system are cleaned professionally upon return.

Cleaning and regeneration of wall formwork
Cleaning is done using industrial equipment with assembly lines.

The regeneration is carried out as follows: The frames are checked and, if necessary, repaired, painted and provided with a new facing.

As long as the formwork equipment is up-to-date, a regeneration will always be a more economical solution than purchasing new formwork.

Please note that the cleaning and regeneration service is not available in all countries in which MEVA does business.

Rentals
With much equipment on stock, we offer our customers the option of renting supplementary material during peak times. We also give prospective customers the chance to test MEVA formwork so they can see its benefits for themselves in actual use.

RentalPlus
Since MEVA started the flat rate for cleaning and repair of rented formwork systems in early 2000, more and more contractors experience the outstanding advantages. Ask our representatives about the details!

Formwork drawings
Of course, all offices in our technical department have CAD facilities. You get expert, clearly represented plans and work cycle drawings.

MBS
MEVA Basic Support
MBS is an addition to AutoCAD, developed by MEVA Formwork Systems in 2000. MBS is based on standard programs (AutoCAD and Excel) and can be used on any PC that has these two programs installed. It includes pull down menues for AutoCAD and applications to ease forming. It also includes the possibility to create take-offs..

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

Static calculations
Generally, this is only necessary for applications like single-sided formwork where the anchor parts are embedded in the foundation or the base slab. If requested, we can perform static calculations for such applications at an additional charge.

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

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