

## **Support Frame STB**

### Technical Instruction Manual

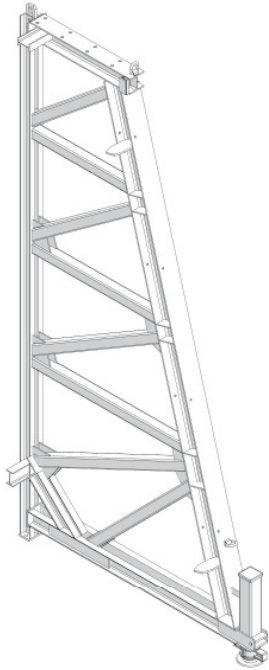


Fig. 2.1: Support frame STB 450



Fig. 2.2: Support frame STB 300



Fig. 2.3: Brace bracket SK 150

## Product Characteristics

The support frames are mainly used for pouring against existing structures (walls, rock, soil, sheet piling, foundations etc.) if only one side of the formwork can be erected. Usually, it is not practical to tie through the forms. Therefore, the total concrete pressure has to be transferred from the formwork via a support structure into the foundation.

The MEVA support frames are painted steel structures. See LOAD CHART (separate book) for details about concrete pressure and anchor loads in standard applications.

### Safe working loads:

Anchor	Safe working load
5/8" Threadbars (DW 15)	21.9 kips (98 kN)
7/8" Threadbars (DW 20)	39.2 kips (174 kN)
1" Threadbars (DW 26.5)	63.7 kips (284 kN)

To anchor the support frames into the supporting structure always use two (2) anchors per frame!!

### When using the support frames the following points need to be looked at:

- Foundations and floor slabs etc. must be able to resist the transmitted loads (a static calculation might be required).
- The "opposite side" of the single-sided formwork (e.g. existing structure) must be able to resist the concrete pressure as well.
- Anchors must be able to resist the transferred loads.
- Anchors must not be welded, heated or deformed.
- In case of more complicated or special cases not dealt with in this manual, please contact the MEVA experts for advice.

### Attention:

On site it needs to be checked that the occurring tensile forces Z and the pressures V can be safely transferred into the foundation or floor slab. Especially the concrete strength and the kind of rebar used, need to be reviewed. If the support frames are used on top of slabs make sure to support the slab where the vertical forces occur, in order to transfer these into the foundation.

## Please note:

This technical manual contains information, instructions and hints describing how to use MEVA support frames 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.

Details shown on the following pages are assembly sketches for demonstration purposes only. To display details more clearly, loading and safety factor aspects are not shown.

Please adhere to these technical instructions when applying the support frames. Deviations require engineering calculations and analysis to guarantee safety.

Generally, only well maintained material may be used. Damaged parts must be sorted out. Apply only original MEVA spare parts for replacement.

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## STB 300 units

STB 300 in combination with panels in **horizontal position** up to a height of 11'. The support frame 300 must be attached to **StarTec** formwork at tie holes by using fixing screws 35 and flange nuts 100 (Fig. 4.1, Fig. 4.2, Fig. 4.4 and Fig. 4.5).

When using the **Imperial** system (Fig. 4.3) any panel size can be used because the support frames are screwed (with flange screws 18) to the multi-function profiles of the Imperial panels.

### Attention:

Before mounting the STB to the formwork panel, set spindle at middle position.

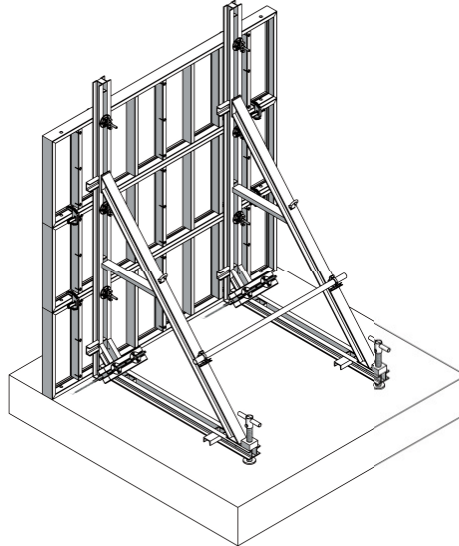


Fig. 4.1: STB 300 with panels in horizontal position

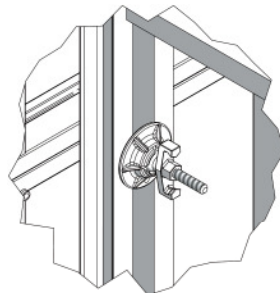


Fig. 4.4: Detail: Fixing screw at the side of the STB

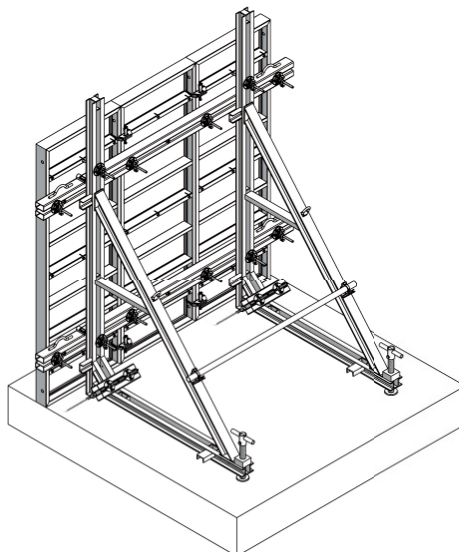


Fig. 4.6: STB 300 with panels in vertical position

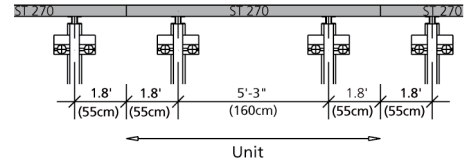


Fig. 4.2: StarTec formwork

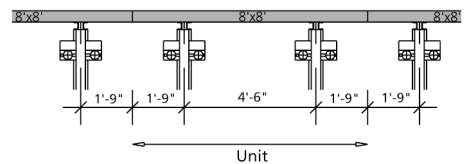


Fig. 4.3: Imperial formwork

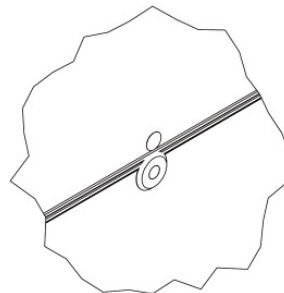


Fig. 4.5: Detail: Fixing screw at the side of the facing

STB 300 in combination with panels in **vertical position** by using the cross beam 300 (Fig. 4.6). The cross beam 300 (in horizontal position) is placed between formwork panel and support frame. The cross beam 300 allows to build units while the distance between the support frames is arbitrary. The cross beam 300 is designed to match the StarTec (Fig. 4.7) and Imperial (Fig. 4.8) formwork systems.

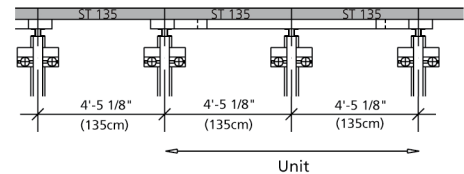


Fig. 4.7: StarTec formwork

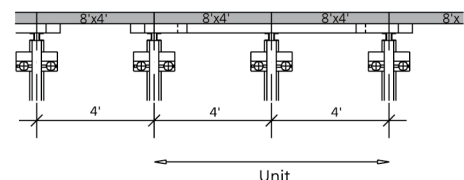


Fig. 4.8: Imperial formwork

## STB 450 units

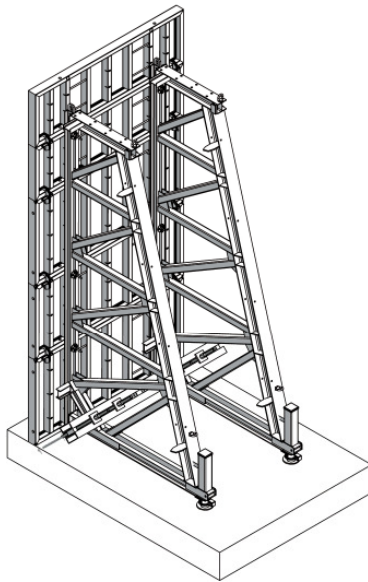


Fig. 5.1: STB 450 up to a height of 17'; three (3) flange screws per STB are recommended

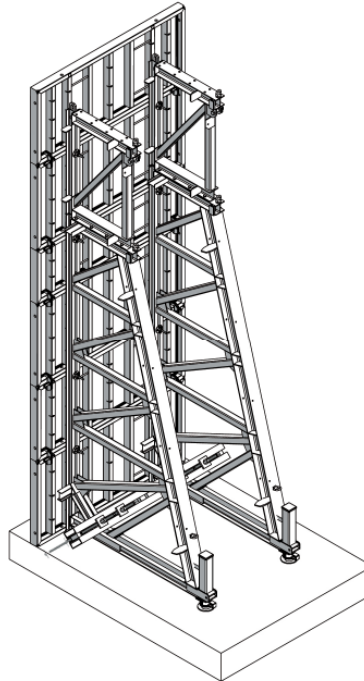


Fig. 5.2: STB 450 up to a height of 22'; four (4) flange screws per STB are recommended

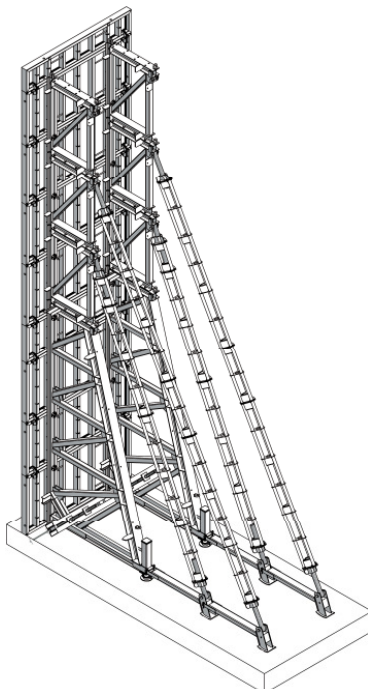


Fig. 5.3: STB 450 up to a height of 31'; six (6) flange screws per STB are recommended

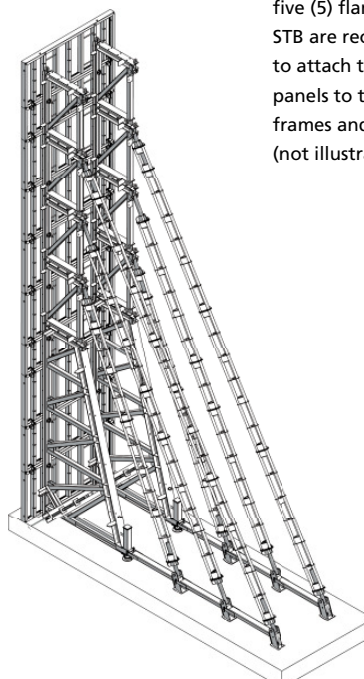


Fig. 5.4: STB 450 up to a height of 36'; seven (7) flange screws per STB are recommended

For a height up to 26' five (5) flange screws per STB are recommended to attach the formwork panels to the support frames and extensions (not illustrated).

The STB 450 is designed for single-sided formwork up to a height of 17' (Fig. 5.1). By using a STB 450 support frame and an additional height extension 150 single-sided formwork up to a height of 22' can be erected (Fig. 5.2). One (1) STB 450 plus three (3) height extensions 150, two (2) base extensions and two (2) Triplex heavy duty braces are necessary to form a height of 31' (Fig. 5.3). One (1) STB 450 plus four (4) height extensions 150, three (3) base extensions and three (3) Triplex heavy duty braces allow for a height of 36' (Fig. 5.4).

### Attention:

By using **StarTec** panels in horizontal position the fixing screw 35 in combination with a flange nut 100 has to be used to attach the panels to the support frame. To avoid an interference between the cross members of the support frame and the fixing screw we recommend to start with 135 cm wide panels.

When using the **Imperial** system any panel size can be used because the support frames are screwed (with flange screw 18) to the multi-function profiles of the Imperial panels.



## Assembly of STB units

### Assembly area:

The area where the formwork is pre-assembled should be clean, even and capable of taking the expected weight. The support frames are attached at the backside of the formwork panels.

With the **StarTec** system fixing screws 35 and flange nuts 100 are needed for the connection (Fig. 6.1).

With the **Imperial** system flange screws are required to connect panels and support frames. The pre-assembled unit should rest on square timbers (face down) on the ground before they are "flown" into place.

### Assembly of the diagonal, heavy duty braces Triplex

Depending on the overall height it might be required to attach Triplex braces to the height and base extensions. All the accessories for the connection (nuts, bolts and pins) come with the height and base extensions (Fig. 6.2, 6.3 and 6.4).

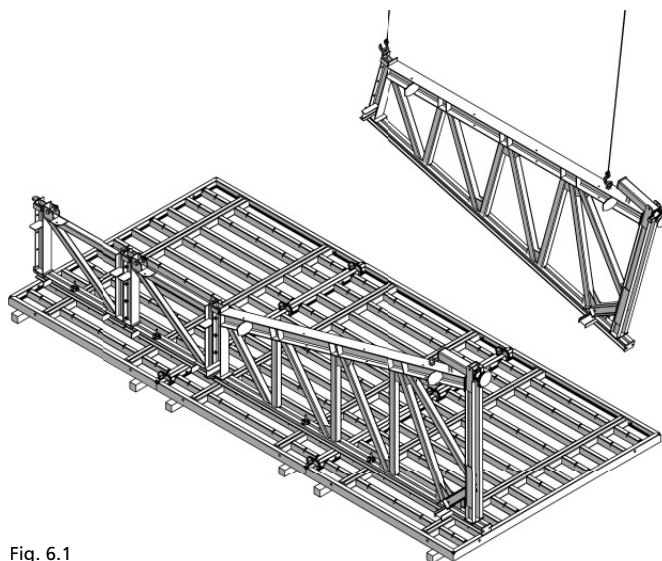


Fig. 6.1

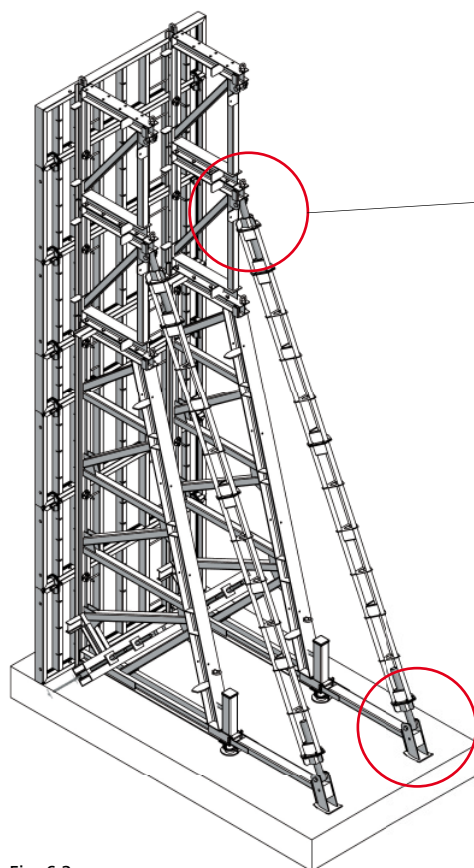


Fig. 6.2

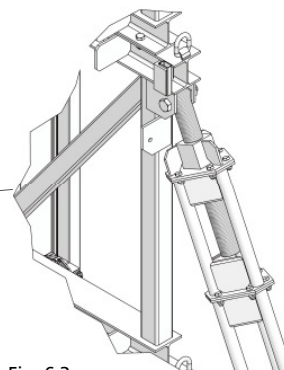


Fig. 6.3

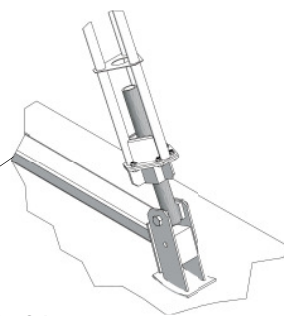


Fig. 6.4

## Diagonal Bracing

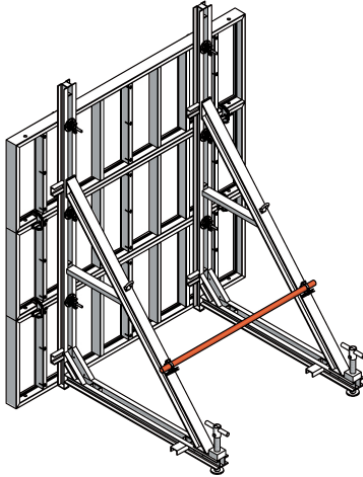


Fig. 7.1

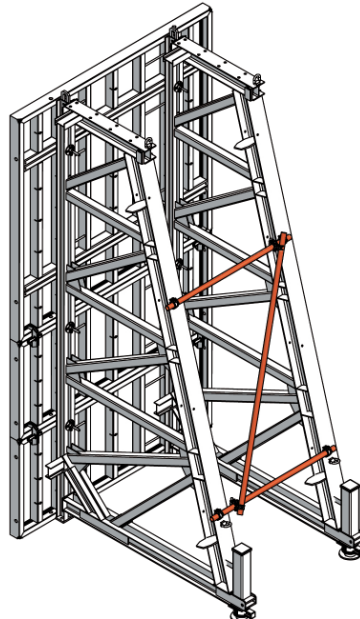


Fig. 7.2

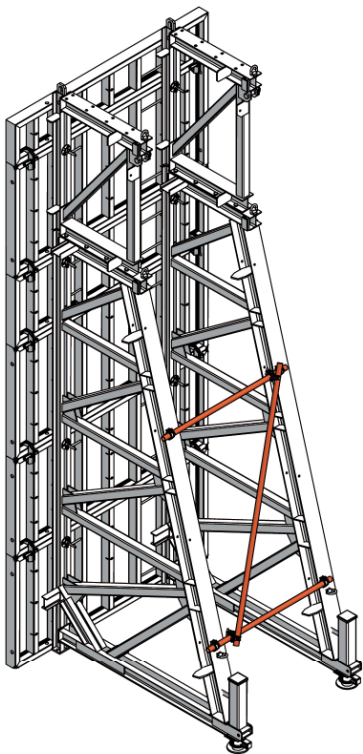


Fig. 7.3

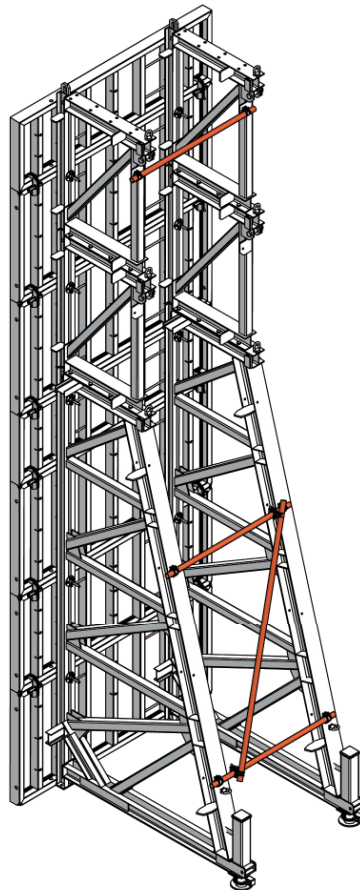


Fig. 7.4

To build the required diagonal bracing, scaffold tubes ( $\varnothing 1.9''$ ) and swivel joint couplers are necessary. Units built out of STB 300 frames only, need one (1) horizontal tube (Fig. 7.1).

Units built out of STB 450 frames need two (2) horizontal and one (1) diagonal scaffold tube (Fig. 7.2 and Fig. 7.3). If height extensions are used, one additional horizontal scaffold tube per height extension is required from the second height extension on (Fig. 7.4).

## Working Platforms

In general, the scaffolding brackets 90 and 125 in combination with the guard-railing posts can be used to build a working platform. The procedure is the same as it is with the two-sided wall formwork (Fig 8.1 and 8.2). For further details please see **Technical Instruction Manual** of the formwork system you are using.

### Surface related load, specified by OSHA:

25 psf (workers only, no material)  
Minimum platform width: 20"

When using the STB 450 support frame it is recommended to bolt planks or boards to the support frame or height extension (Fig 8.3 and 8.4). The holes which are used for the attachment of height extensions can be used. The support frames 450 and the height extensions 150 provide pockets for sliding in the guard railing posts.

### Attention:

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

Description	Ref.-No.
Scaffolding bracket 90 .....	29-106-00
Scaffolding bracket 125 .....	29-106-50
Guard-railing post 100 .....	29-106-75
Guard-railing post 140 .....	29-106-85

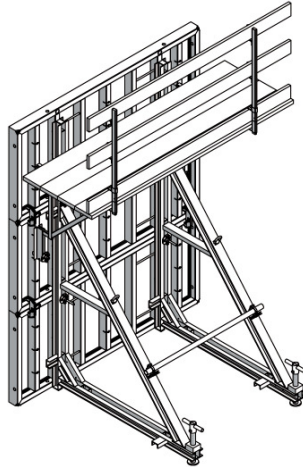


Fig. 8.1 Imperial

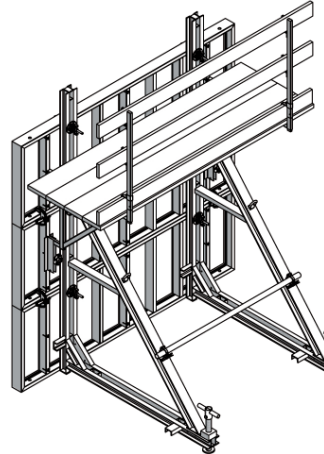


Fig. 8.2 StarTec

Attachment of boards at scaffolding bracket by using bolts with  $\varnothing 3/8"$  and a minimum length of 4.5"

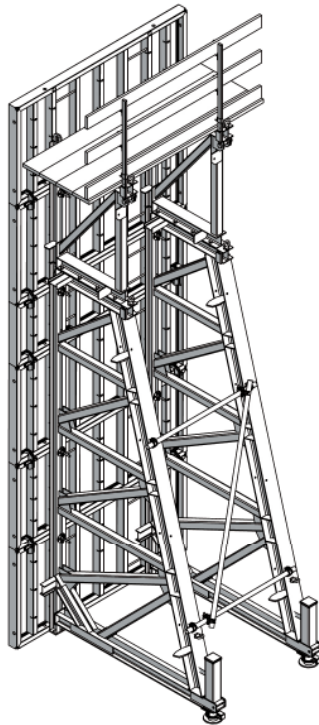


Fig. 8.3 Imperial

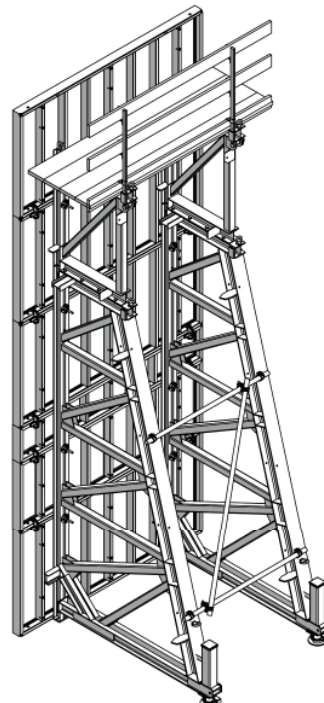


Fig. 8.4 StarTec

Attachment of boards at support frames or extensions by using bolts with  $\varnothing 13/16"$  and a minimum length of 2.75"



## Anchoring

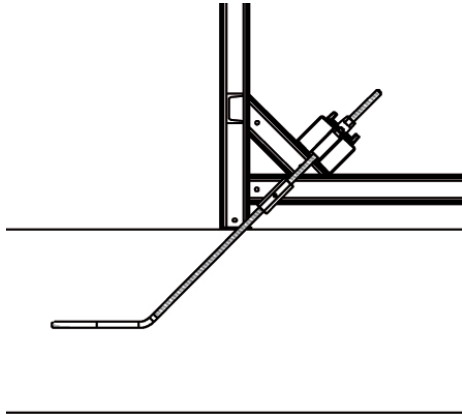


Fig. 9.1

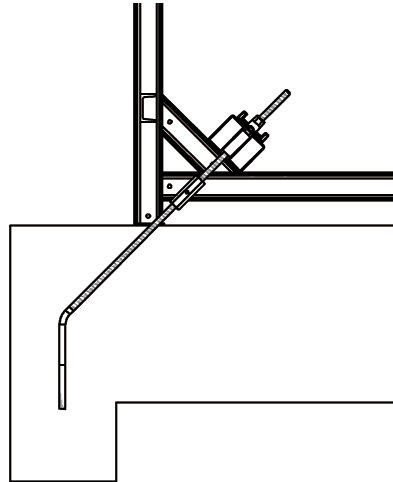
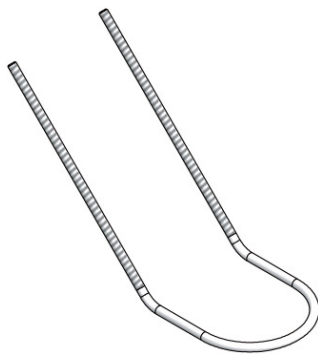


Fig. 9.2



Detail: Anchor loop

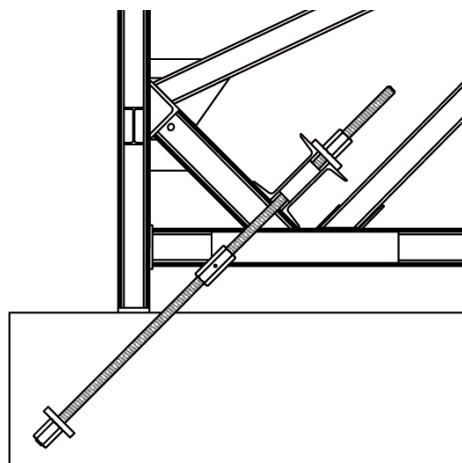


Fig. 9.3

Depending on the load, there are different possibilities to anchor the support frames.

- Anchor loop in combination with the cross stiffener 44 (Fig. 9.1 and Detail).

- Anchor loop in turned configuration; if support frame sits on top of a slab (Fig. 9.2). It needs to be discussed with the stress analysts, if additional rebar is required.

- Anchoring by using a 1" (26.5 mm) threadbar and a twin channel 80 or 245 (Fig. 9.3).

Description	Ref.-No.
Cross stiffener 44.....	29-401-02
Twin channel 245.....	29-406-30
Twin channel 85.....	29-406-35

## Anchoring Details

STB 300 and panels in horizontal position (Fig. 10.1 and 10.2).

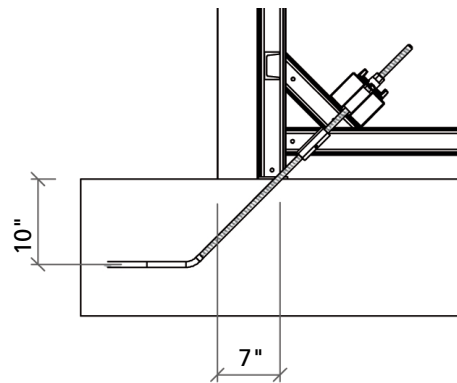


Fig. 10.1

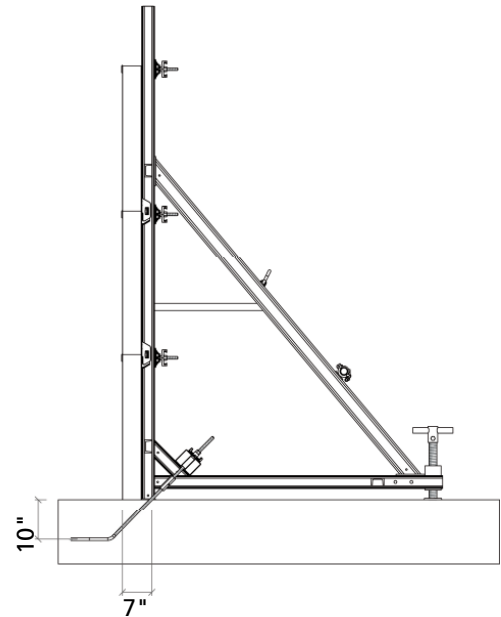


Fig. 10.2

STB 300 and panels in vertical position, e.g. for corner solutions (Fig. 10.3 and 10.4). When using the STB 300 support frame we recommend anchor loops. If the corner bracket is used we recommend using single threadbars in the corner area.

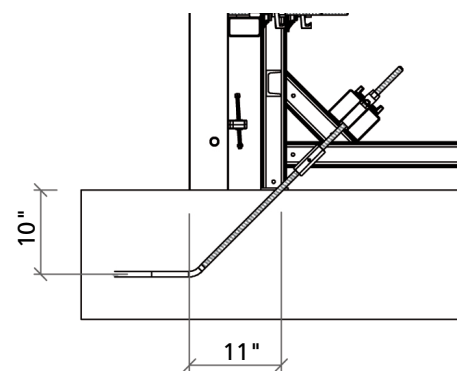


Fig. 10.3

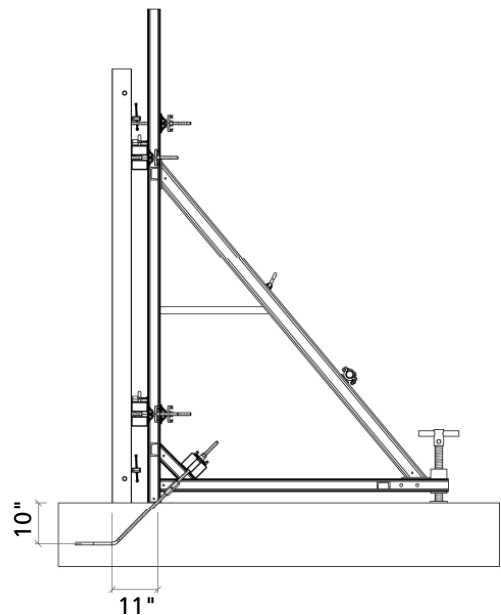


Fig. 10.4

## Anchoring Details

STB 450 and panels in horizontal position (Fig. 11.1 and 11.2).

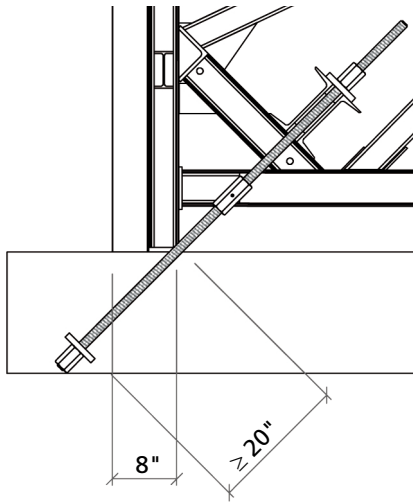


Fig. 11.1

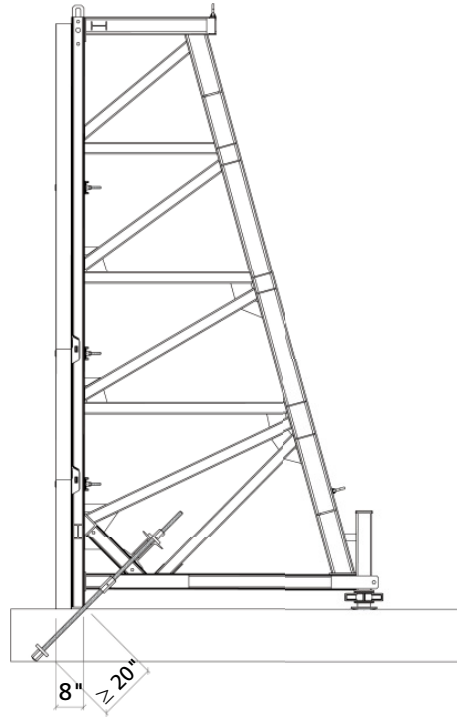


Fig. 11.2

STB 450 and panels in vertical position, e.g. for corner solutions (Fig. 11.3 and 11.4). The amount and kind (5/8", 7/8", 1") of threadbars needed can be determined in the LOAD CHART.

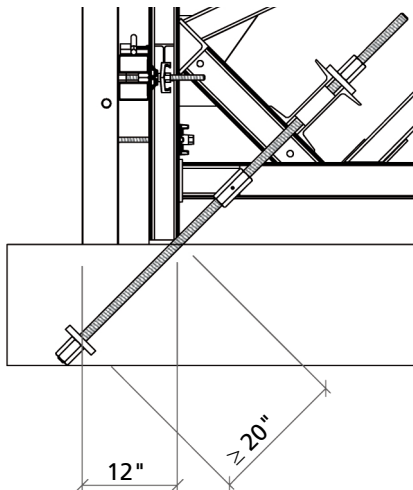


Fig. 11.3

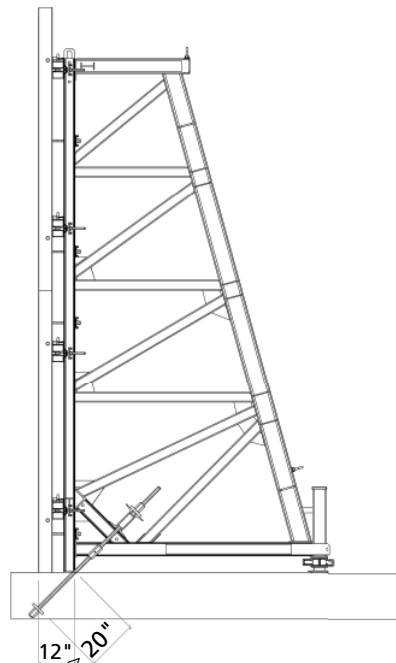


Fig. 11.4

## Anchoring Auxiliary

The anchoring auxiliary STB facilitates the installing of threadbars into the foundation. The auxiliaries are attached to the rebar and guarantee an angle of 45°. The threadbar can be slid through the auxiliary at any position which allows adapting to any foundation size. The plastic sleeve (with a thread for 1" threadbars) keeps the threadbar at the ideal position.

### Packing units:

Anchoring auxiliary 15 STB: One unit contains 50 pieces.

Anchoring auxiliary 20 and 26.5 STB: One unit contains 40 pieces.

The plastic sleeves are included in the delivery.

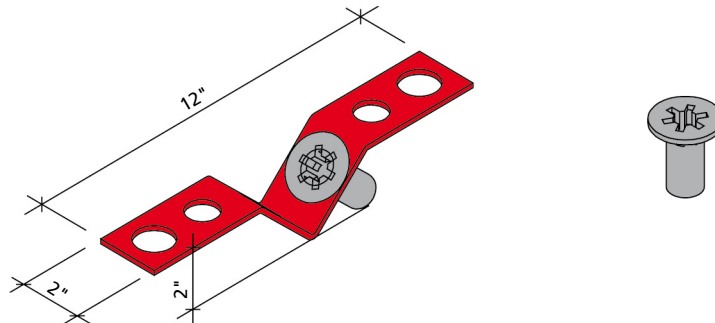


Fig. 12.1

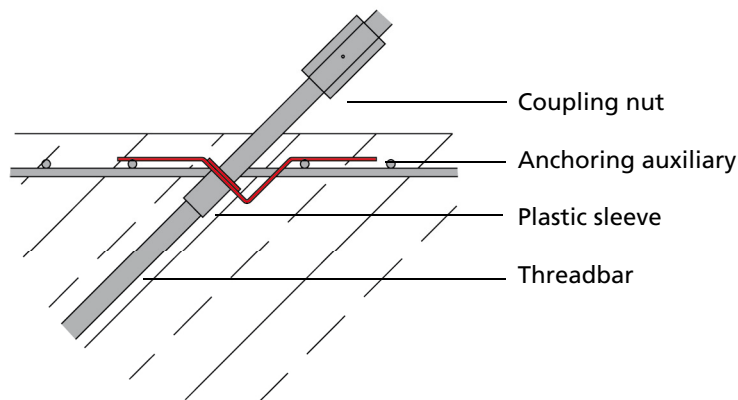


Fig. 12.2

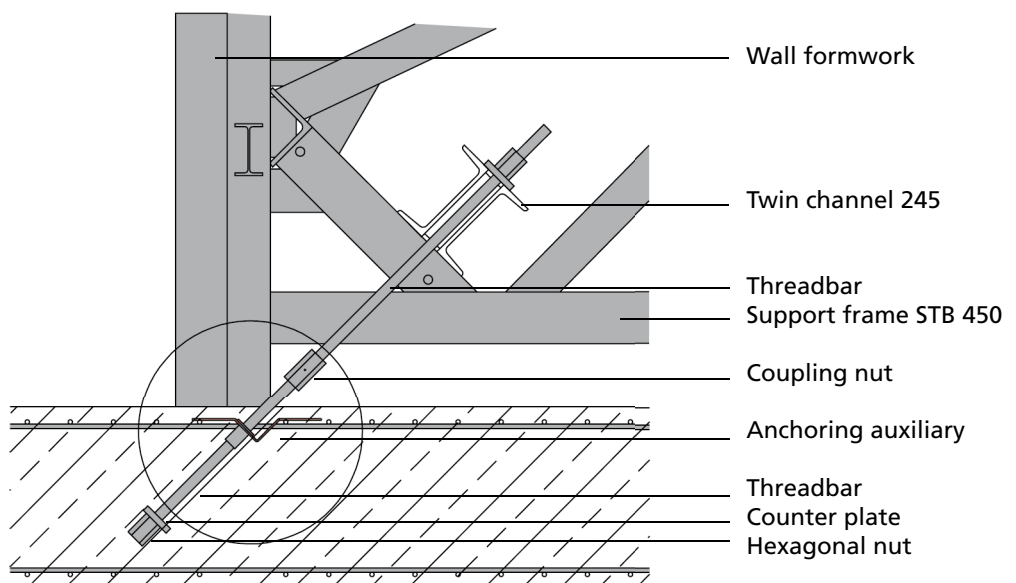


Fig. 12.3

Description	Ref.-No.
Anchoring auxiliary 15 (5/8").....	29-001-50
Anchoring auxiliary 20 (7/8").....	29-001-55
Anchoring auxiliary 26.5 (1").....	29-001-60
Coupling nut 15 (SW 30).....	29-900-55
Coupling nut 20 (SW 36).....	29-900-50
Coupling nut 26.5 (SW 48).....	29-900-56



## Anchoring (step by step)

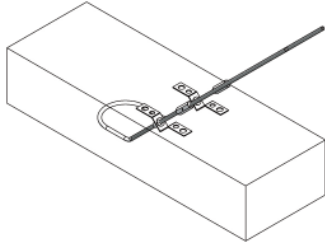


Fig. 13.1

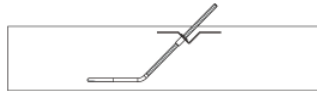


Fig. 13.2

### Anchor loop 5/8" (15 mm)

Step 1:  
Installing of anchor loop 5/8" by using the anchoring auxiliary (Fig. 13.1 and 13.2), which can be attached to the rebar.

Observe required concrete cover!

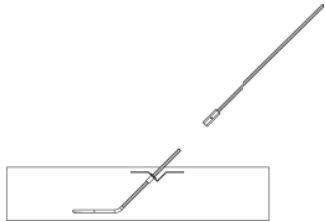


Fig. 13.3

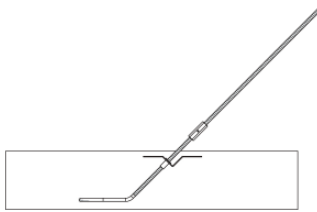


Fig. 13.4

Step 2:  
Screw coupling nut 5/8" (15 mm) on threadbar (Fig. 13.3), and then both on anchor loop (Fig. 13.4).

### Threadbar 7/8" (20 mm) and 1" (26.5 mm)

Step 1:  
Attach counter plate and hexagonal nut to threadbar.

Step 2:  
Installing of threadbars by using the anchoring auxiliary (Fig. 13.5 and 13.6), which can be attached to the rebar.

Observe required concrete cover!

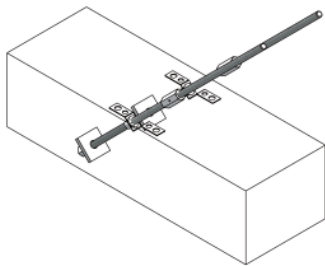


Fig. 13.5

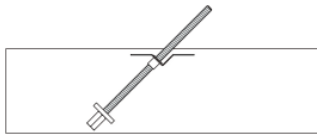


Fig. 13.6

Step 3:  
Screw coupling nut on (extension) threadbar (Fig. 13.7), and then both on (casted in) threadbar (Fig. 13.8).

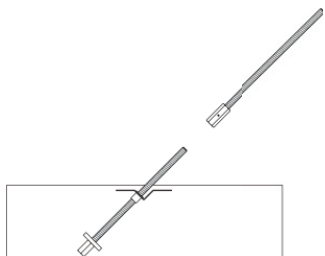


Fig. 13.7

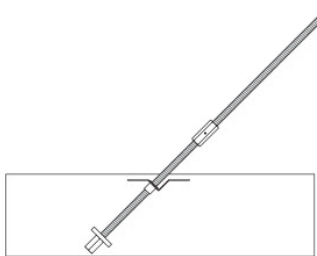


Fig. 13.8

## Bulkheads

The Bulkhead bracket SB 110 is attached to the formwork panels by using 5/8" threadbars (Ref.-No.: 29-900-76) and flange nuts 100 (Ref.-No.: 29-900-20). The adjustment range of the bulkhead bracket is 3'. Wall thicknesses up to 3' are possible.

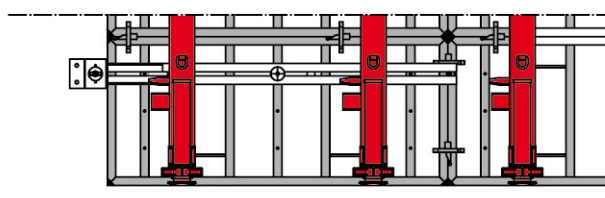


Fig. 14.1

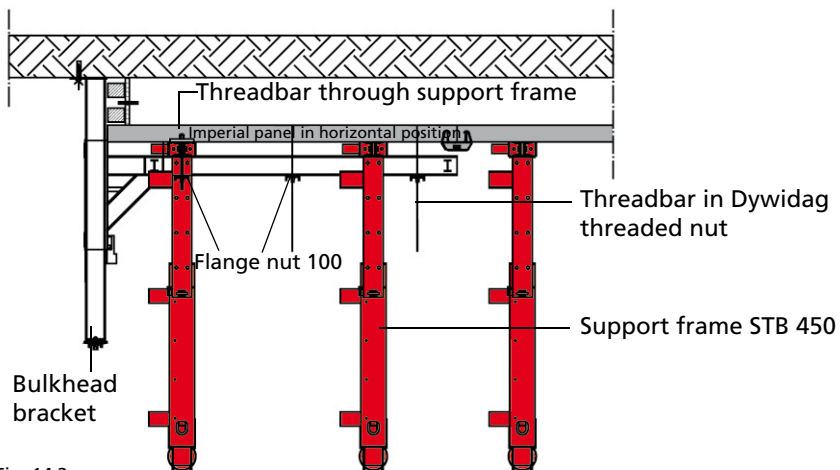


Fig. 14.2

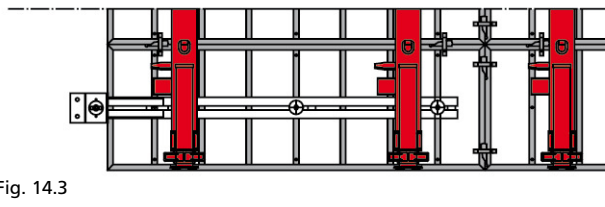


Fig. 14.3

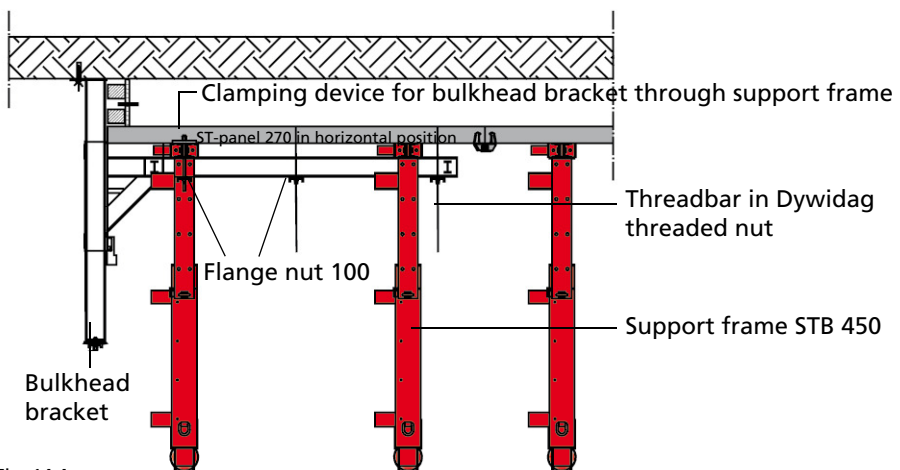


Fig. 14.4

Description	Ref.-No.
Bulkhead bracket SB 110.....	29-406-40
Clamping device for bulkhead bracket SB.	29-406-60

## Bulkheads

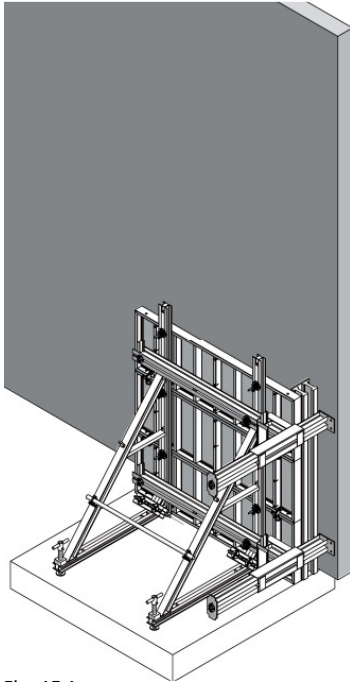


Fig. 15.1  
Two (2) bulkhead brackets are required for a height up to 11'

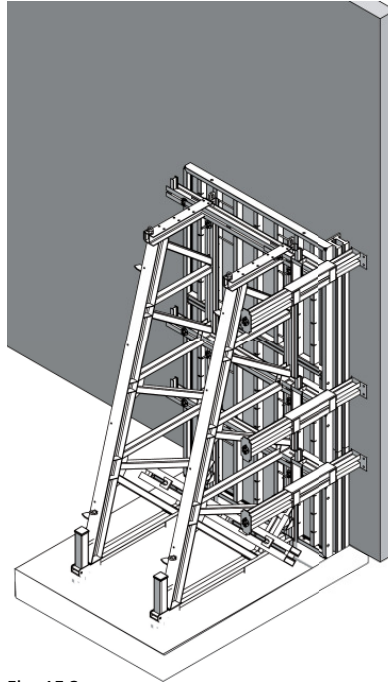


Fig. 15.2  
Three (3) bulkhead brackets are required for a height up to 17'

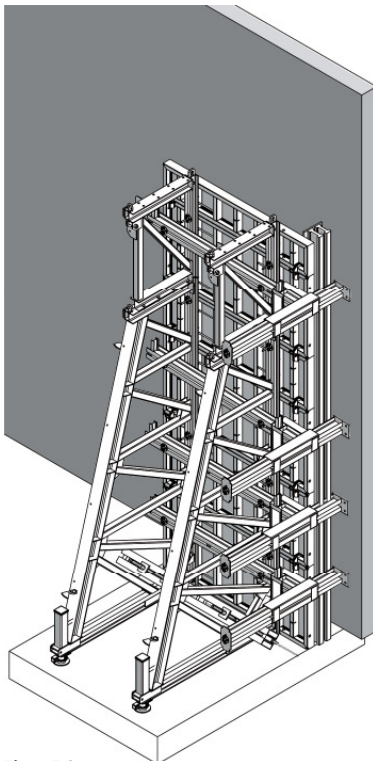


Fig. 15.3  
Four (4) bulkhead brackets are required for a height up to 22'

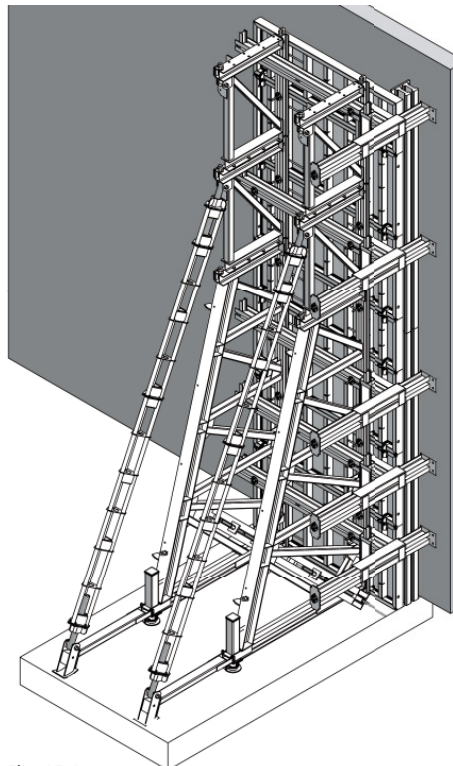


Fig. 15.4  
Five (5) bulkhead brackets are required for a height up to 26'

The Bulkhead bracket SB 110 is attached to the formwork panels by using 5/8" threadbars and flange nuts 100 (Fig. 15.1 to 15.4). The support frame is between bulkhead bracket and formwork panel. The threadbar 5/8" should be 18" long and is screwed into the Dywidag - threaded nuts of the formwork panels.

Six (6) bulkhead brackets are required for a height up to 31'. Seven (7) bulkhead brackets are required for a height up to 36'.

Description	Ref.-No.
Bulkhead bracket SB 110.....	29-406-40
Clamping device for bulkhead bracket SB.	29-406-60

## Corner Bracket STB

Single-sided corner areas can be formed by using the corner bracket STB. The corner bracket STB has to be attached to the multi-function profiles by using flange screws 18.

### STB 300

For detailed dimensions for position of anchors see Fig. 16.3 and Fig. 16.4. For anchoring of STB brackets see also pages 9 - 13.

When using the **StarTec** formwork system make sure to use panels in vertical position (Fig. 16.1). To support joint between "corner" panel and adjacent panel use horizontal steel rails. Be aware to set back anchors (4") for panels with steel rails. A maximum formwork height of 9'-10" (3.00 m) is possible when using StarTec and STB 300.

When using the **Imperial** formwork system you should use a "corner" panel which is in vertical position and continue to use the large size gangs as usual (Fig. 16.2). The minimum width of the "corner" panel is 2'-0", the maximum width is 2'-6". In this configuration no horizontal steel rails are required. A maximum formwork height of 10'-0" (3.05 m) is possible when using Imperial and STB 300.

**Attention:** Dimensions for anchor positions have to be observed.

### Attention:

Dimensions for anchor positions have to be observed.

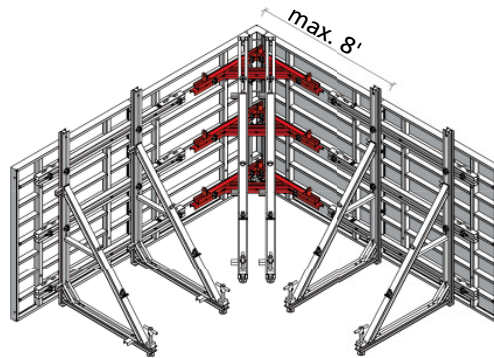


Fig. 16.1 STB 300 in combination with Star Tec  
Height: 8'-10" (2.70 m)

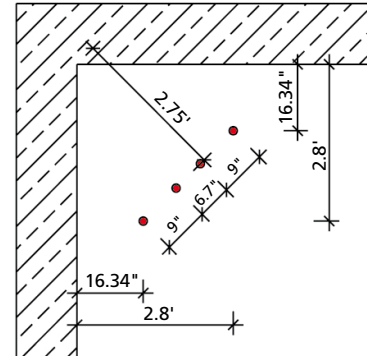


Fig. 16.3

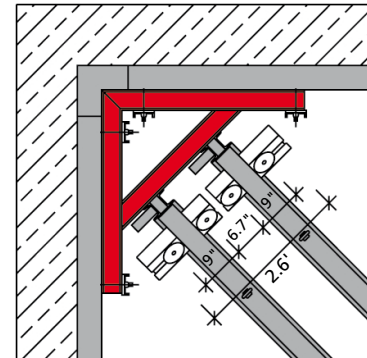


Fig. 16.4

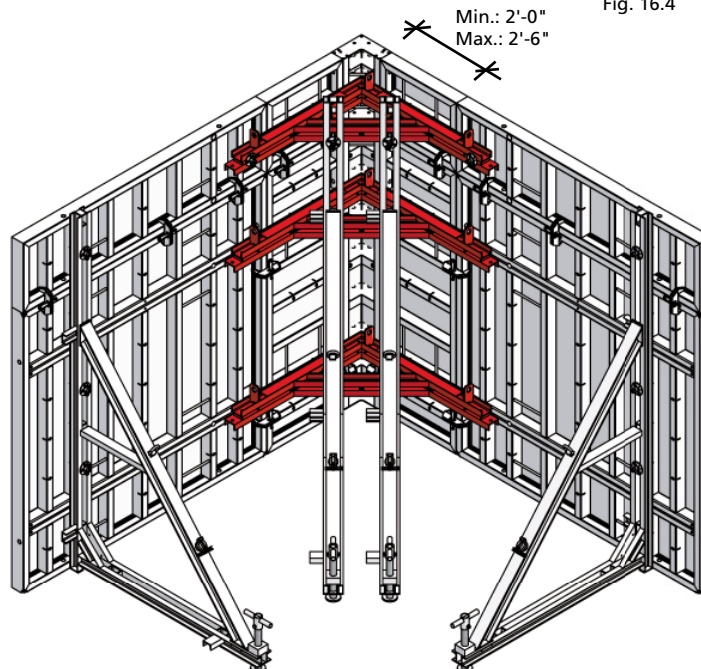


Fig. 16.2 STB 300 in combination with Imperial  
Height: 10'-0"

Description	Ref.-No.
Corner bracket	
STB .....	29-406-70



## Corner Bracket STB

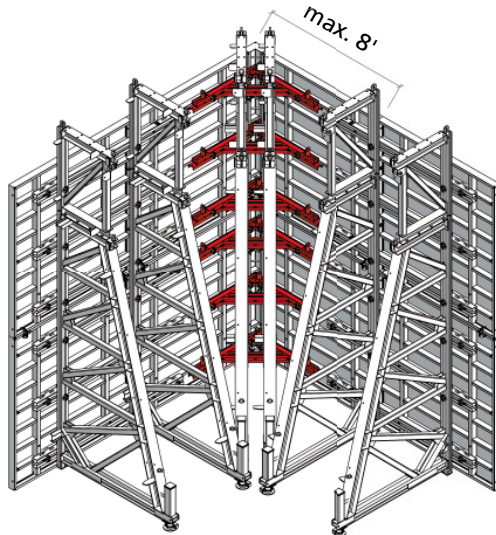


Fig. 17.1 STB 450 in combination with Star Tec  
Height: 17'-9" (5.40 m)

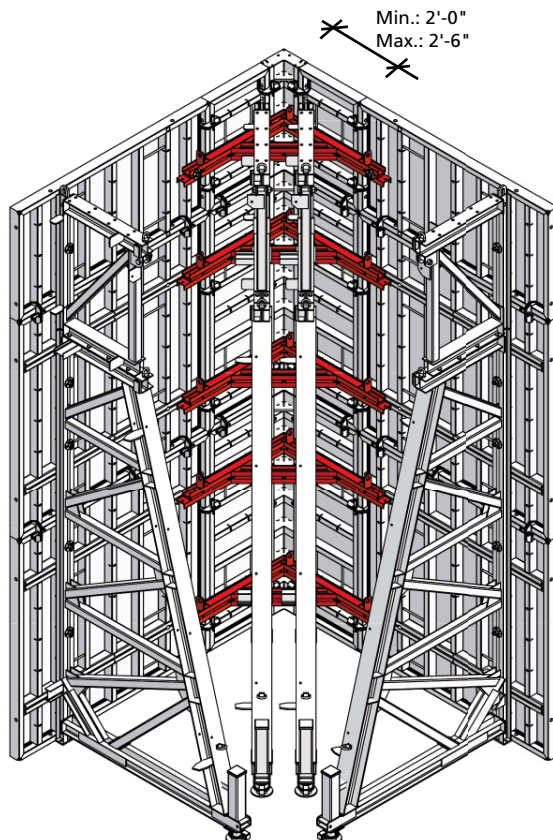


Fig. 17.2 STB 450 in combination with Imperial  
Height: 20'-0"

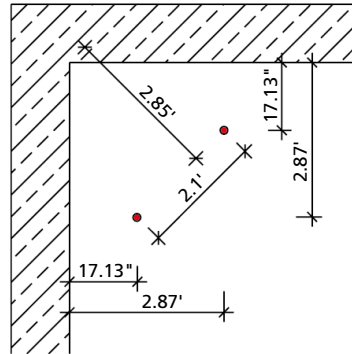


Fig. 17.3

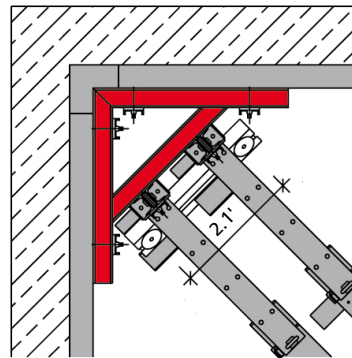


Fig. 17.4

The corner bracket STB has to be attached to the multi-function profiles by using flange screws 18.

### STB 450

For detailed dimensions for position of anchors see Fig. 17.3 and Fig. 17.4. For anchoring of STB brackets see also pages 9 - 13.

When using the **StarTec** formwork system make sure to use panels in vertical position (Fig 17.1). To support joint between "corner" panel and adjacent panel use horizontal steel rails. Be aware to set back anchors (4") for panels with steel rails. When using the **Imperial** formwork system you should use a "corner" panel which is in vertical position and continue to use the large size gangs as usual (Fig. 17.2). The minimum width of the "corner" panel is 2'-0", the maximum width is 2'-6". In this configuration no horizontal steel rails are required.

### Attention:

Dimensions for anchor positions have to be observed. Make sure that inside corner and "corner" panel are absolutely flush when installing them.

Description	Ref.-No.
Corner bracket STB .....	29-406-70

## Crane Ganging

Units with the STB 300 are moved by using the crane hook of the wall-formwork system which is used (Fig. 18.1 + Fig. 18.2). Watch capacity of crane hooks.

When flying units with the STB 450, crane slings should be used (Fig. 18.3 and Fig. 18.4). The STB 450 and the extension 150 are equipped with crane eyes.

For proper assembly of STB units please see pages 4-7.

### Attention:

Do not strip STB units by breaking them free from the concrete by crane!

When setting STB units down to the ground make sure that units do not tilt over. If necessary use counter weight.

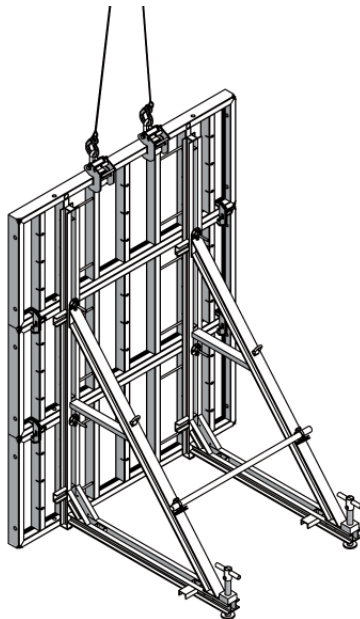


Fig. 18.1 STB 300 with Imperial

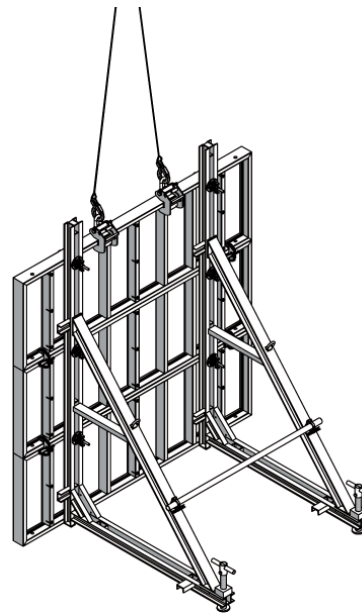


Fig. 18.2 STB 300 with StarTec

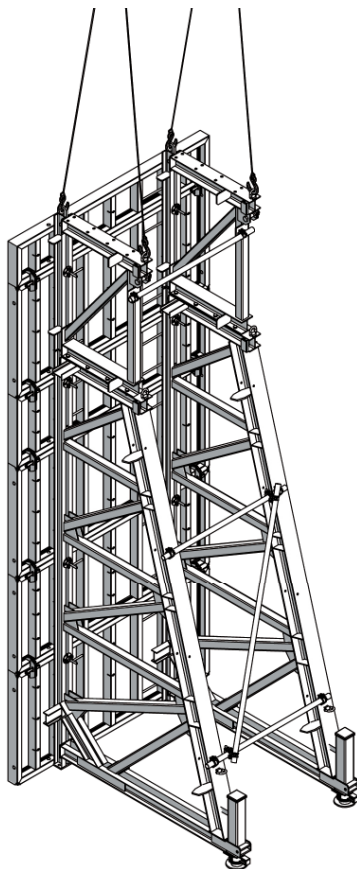


Fig. 18.3 STB 450 with Imperial

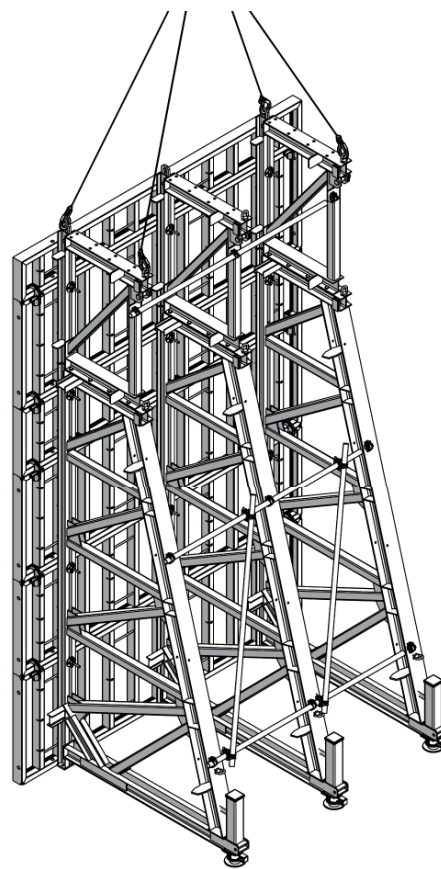


Fig. 18.4 STB 450 with Imperial (12' panels)

## Moving STB units with trolley

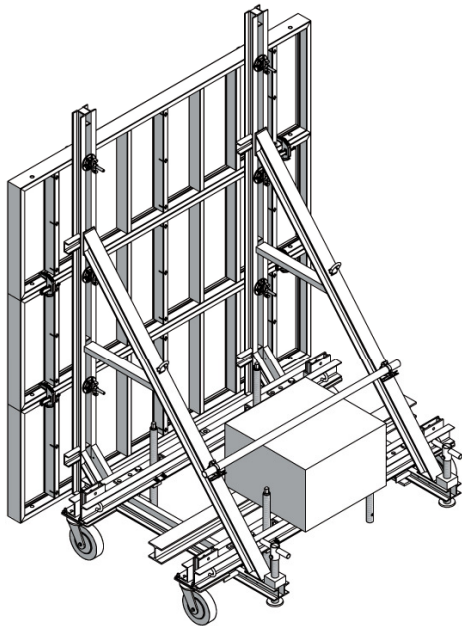


Fig. 19.1

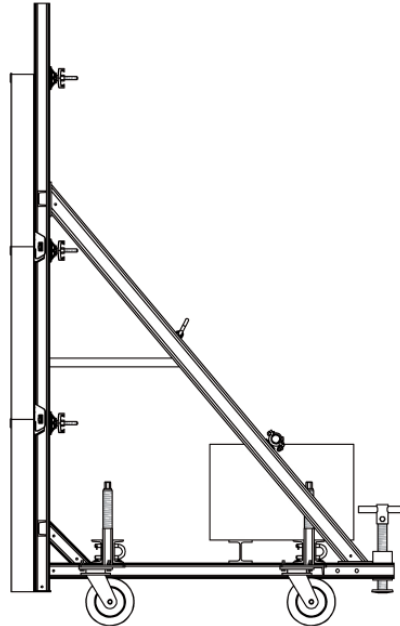


Fig. 19.2

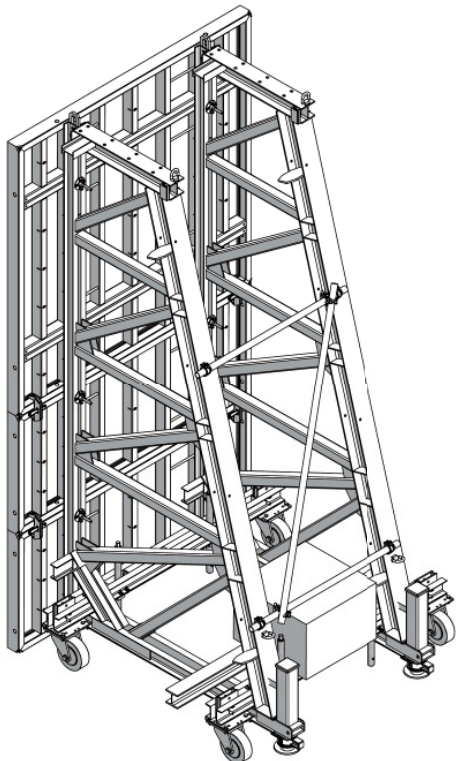


Fig. 19.3

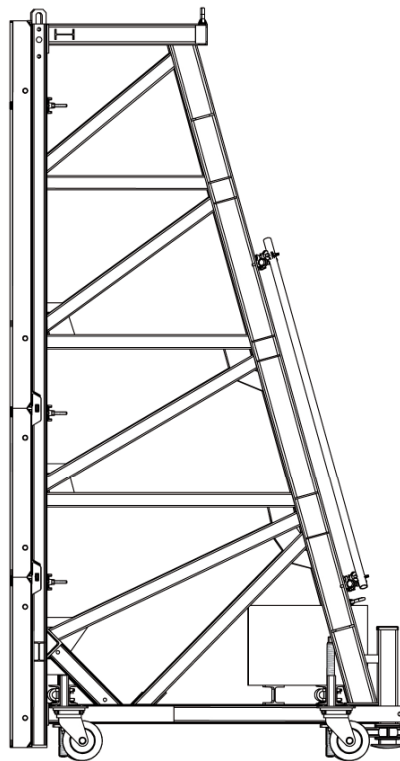


Fig. 19.4

By using the trolley waler, STB units can be easily and quickly moved around on the job if a crane is not available, e.g. in tunnels. The trolley waler can be mounted both to the STB 300 and to the STB 450 .

### Assembly of trolley waler

The trolley waler is bolted to the support frames (counter plates and nuts are already attached to the waler). To move the whole unit a counter weight is necessary to avoid tilting over.

To build one unit two trolley walers, four wheel adapters and four trolley spindles are needed. Depending on the weight, four swivel type castors (2 tons or 6 tons) are required. The wheels are mounted to the waler by raising the unit. To raise the unit the trolley spindles come into play. The weight of the counter weight is depending on the height of the formwork and the kind of support frame.

### Attention:

The support frames must **not** stand on trolley spindles while pouring. When using the STB 300 make sure to remove the trolley waler adjacent to the panels; otherwise anchoring is not possible.

Description	Ref.-No.
<b>Trolley waler</b>	
Trolley waler.....	29-403-70
Wheel adapter.....	29-403-75
Spindle 48/70 .....	29-403-80
<b>Swivel type castor</b>	
2 ton .....	29-306-50
6 ton .....	29-306-75

## Brace Bracket SK 150

The brace bracket SK 150 is used to form bulkheads of slabs or foundations, even on sloped surfaces (Fig. 20.1 and 20.2).

Adjustment range:  
SRL 120 = 51° - 106°  
SRL 170 = 80° - 110°

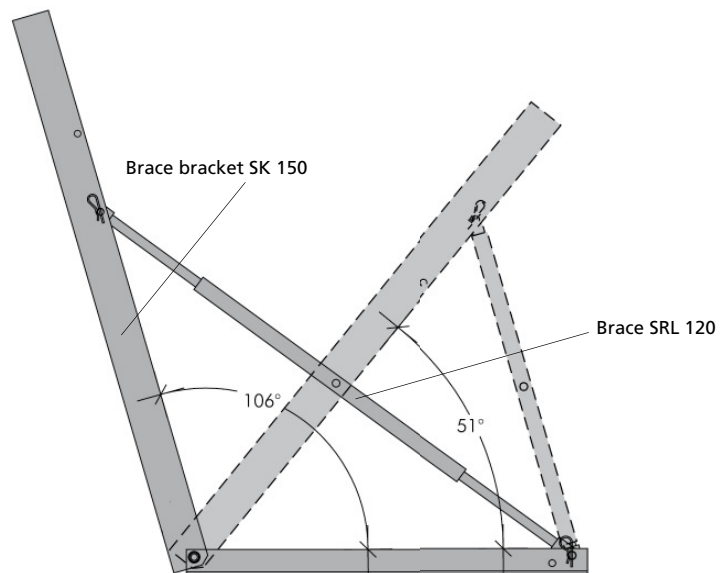


Fig. 20.1

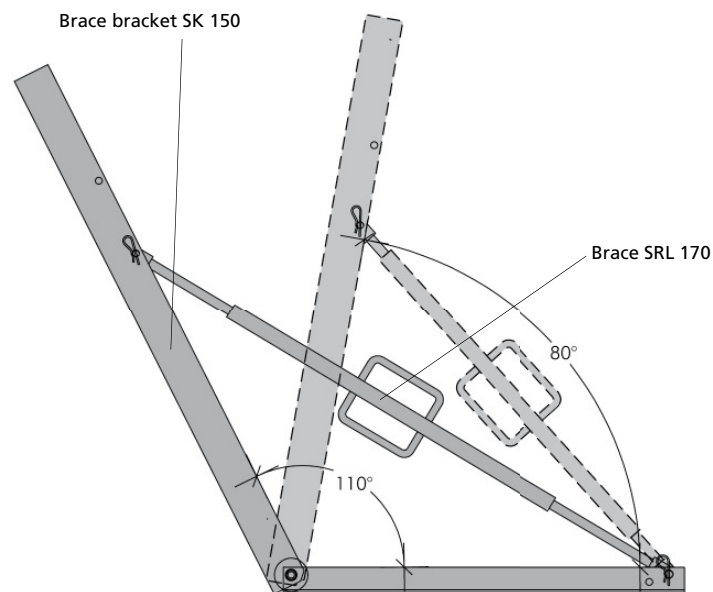


Fig. 20.2

Description	Ref.-No.
Brace bracket SK 150.....	29-403-50
Brace SRL 120.....	29-108-80
Brace SRL 170.....	29-108-90



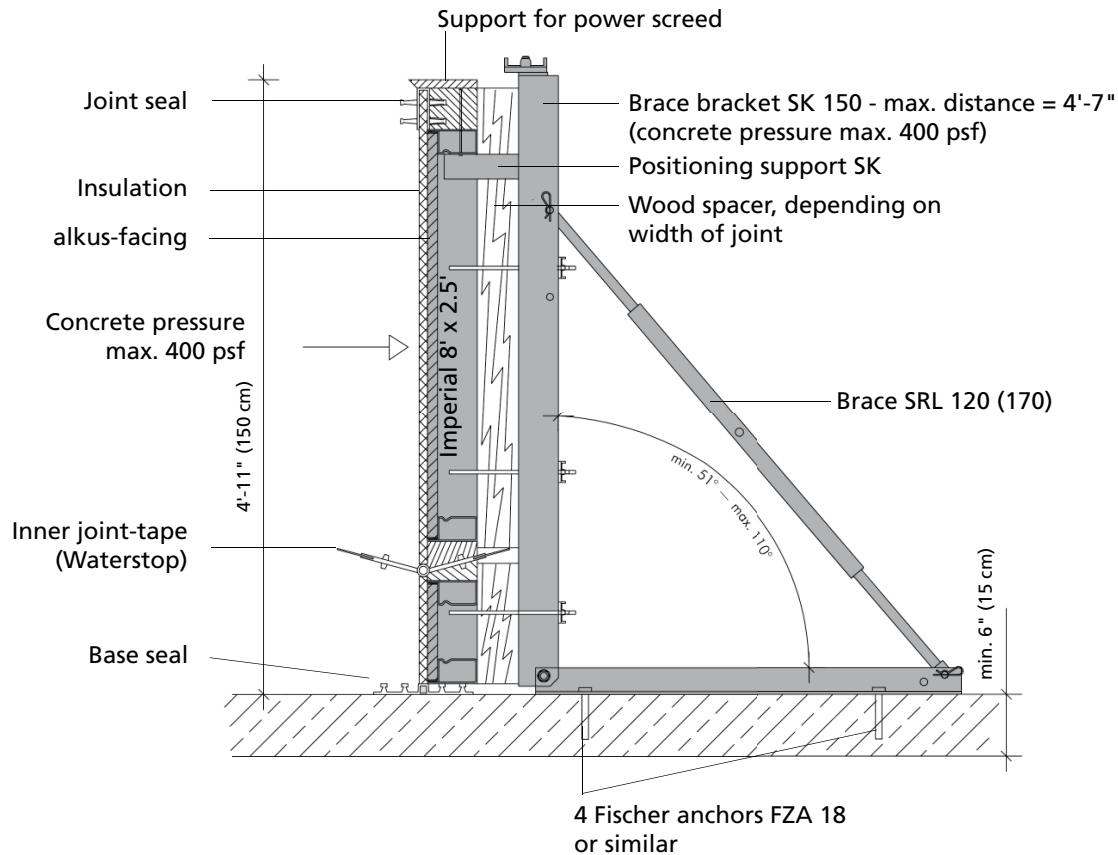


Fig. 21.1

### Typical application: Foundation slab with joint tape

The positioning support SK allows for exact leveling and positioning of the bulkhead, even on sloped surfaces. The brace bracket can be easily attached to the Dywidag threaded nuts of formwork panels (Imperial and StarTec). The braces SRL 120 or 170 and the positioning support SK have to be ordered separately.

Description	Ref.-No.
Positioning support SK.....	29-403-55
Brace bracket SK 150.....	29-403-50
Brace SRL 120.....	29-108-80
Brace SRL 170.....	29-108-90

## Transport

### Brace bracket SK 150

To transport brace brackets use MEVA piling racks. One rack takes 25 brackets, folded without braces (Fig. 22.1).

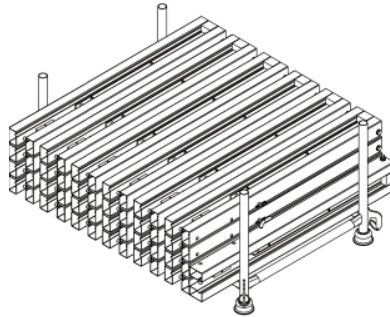


Fig. 22.1

### Support frame STB 300

Ten (10) support frames can be stacked. To facilitate stacking the frames are equipped with a welded-on stacking device (Fig. 22.2 and 22.3).

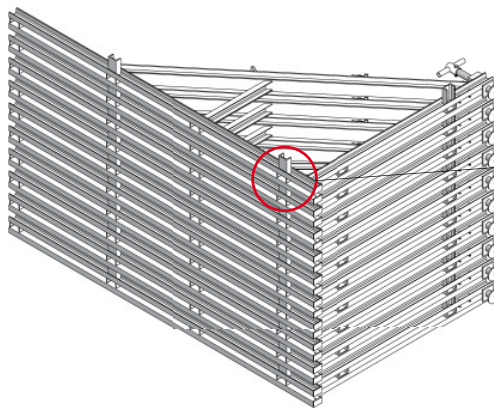


Fig. 22.2

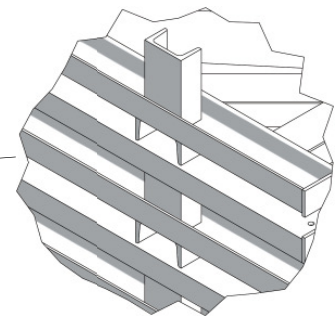


Fig. 22.3

### Support frame STB 450

Four (4) support frames can be stacked. To facilitate stacking the frames are equipped with a welded-on stacking device (Fig. 22.4 and 22.5).

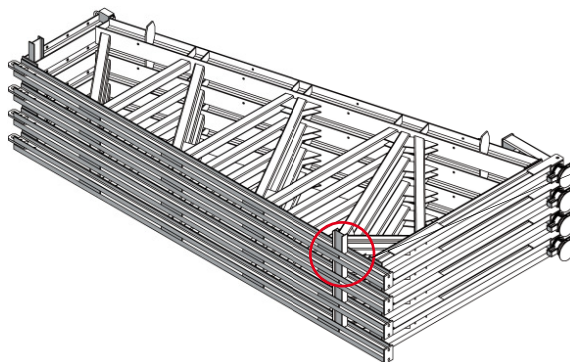


Fig. 22.4

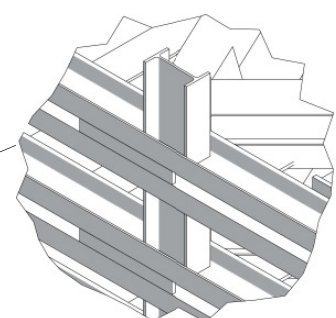


Fig. 22.5

## Transport

### Loading of trucks

#### Support frame STB 300

6 x 10 = 60 frames  
(Fig. 23.1 and 23.2)

#### Support frame STB 450

3 x 4 = 12 frames  
(Fig. 23.3 and 23.4)

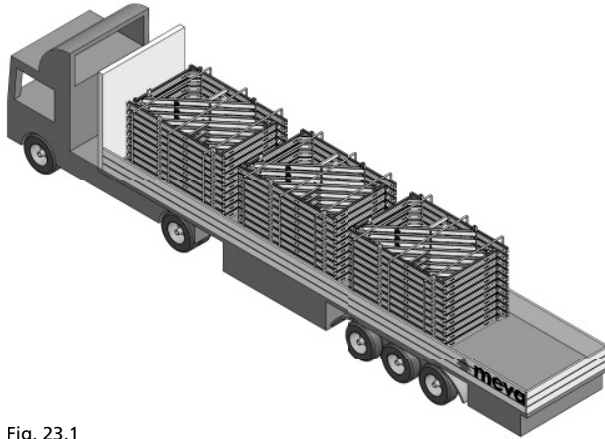


Fig. 23.1

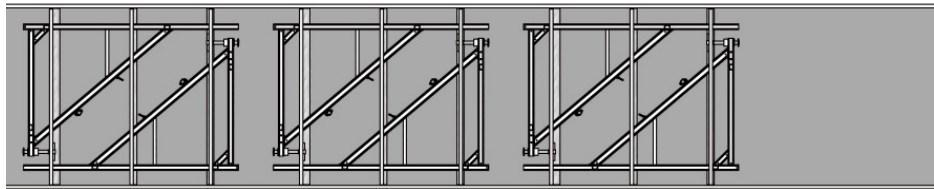


Fig. 23.2

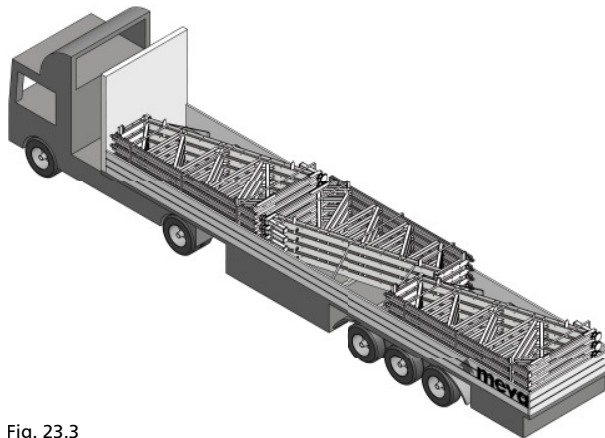


Fig. 23.3

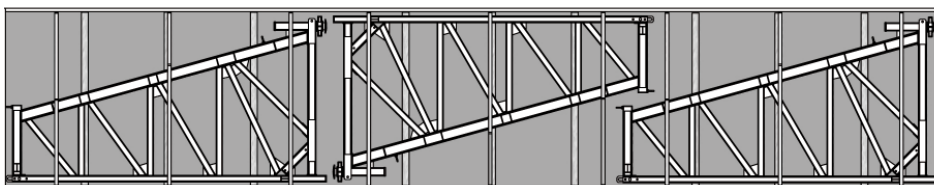


Fig. 23.4

## Service

### Rentals

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

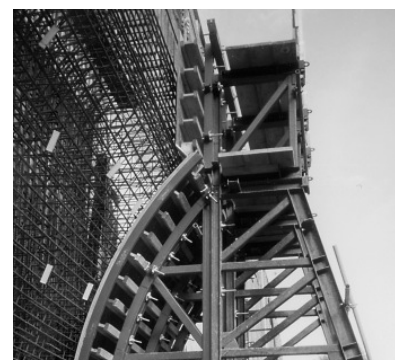
MBS is an addition to AutoCAD, developed by MEVA Formwork Systems in 2000. MBS is based on standard programs (AutoCAD and Excel) and can be used on any PC that has these two programs installed. It includes pull down menus for AutoCAD and applications to ease forming. It also includes the possibility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





## Notes

## Notes

This image shows a full page of blank graph paper. The background is a very light gray, and it is covered by a precise grid of thin, darker gray horizontal and vertical lines. These lines intersect to form a series of small, identical squares across the entire surface of the page. There are no margins, text, or other markings present.