VARIOMAX

Soffit formwork with H 20 timber beams
Instructions for erection and use

December 2004

HÜNNEBECK

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1.0 Product features

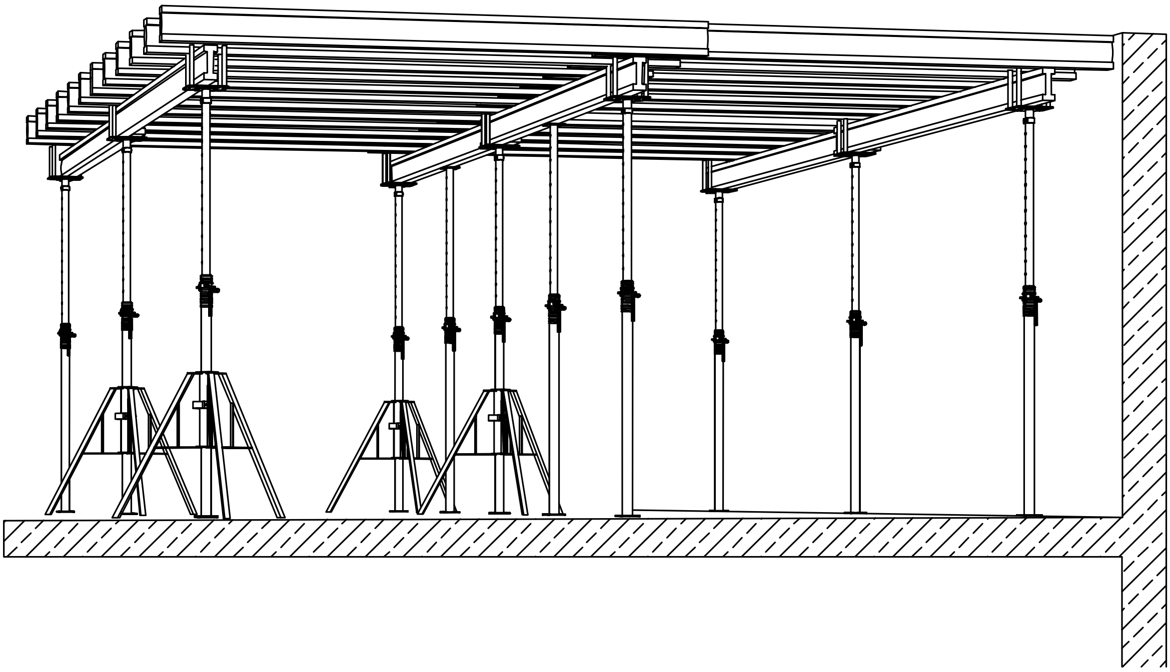
In combination with tubular steel props, tripod stands, fork heads and shuttering panels, the H 20 beams provide flexible, yet cost-effective soffit formwork for any ground-plan , slab thickness and room height.

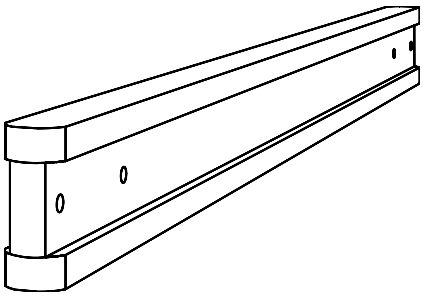
The H 20 timber beam is especially practical due to its low weight (5.0 kg/m), its good statical figures, and its exacting workmanship in details.
A very long duration of life is assured by its high-grade bonding and its rounded beam ends.
The H 20 timber has a general approval by the building supervisory board.

Important notes:
The following instructions for erection and use include detailed information on the handling and proper application of the products that are described and depicted.
All instructions regarding technical operation and function have to be observed carefully. Exceptional use requires a separate design calculation.
With regard to safe and technically correct use of our products abroad, all relevant safety rules, regulations and safety instructions of national institutes and/or local authorities have to be followed.
Generally, only flawless material must be used.

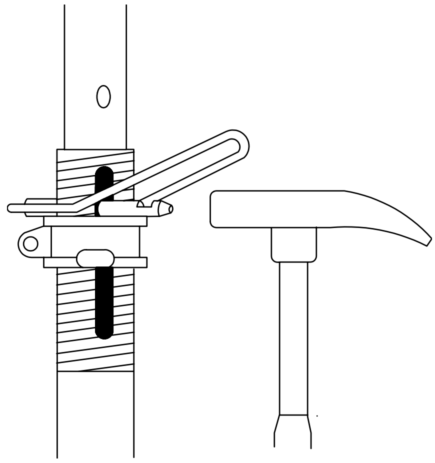
Damaged components have to be sorted out. In case of repairs, only original spare parts of the **HÜNNEBECK** Company must be used.
Combined use of our formwork system with equipment from other suppliers may involve certain dangers and, therefore, requires an additional checkup.

For reasons of further technical development we emphatically reserve the right to revise, change or modify any of the product's components at any time without prior notice.

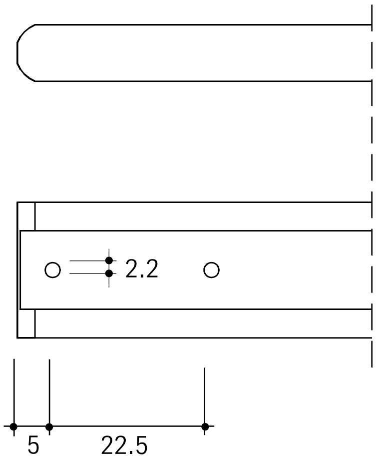




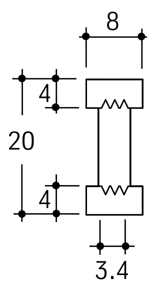
Quick lowering mechanism:
Another special feature is that all the props are equipped with the patented quick-release bolt, which, with a blow of the hammer, immediately releases the adjustment nut.



Beam end dimensions in [cm]



Cross section

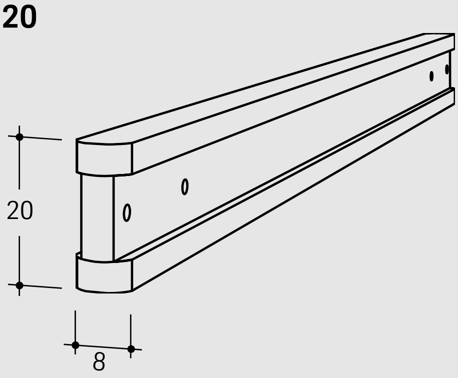


Practical accessory items make Variomax soffit formwork even faster and more efficient. The tripod stand, for example, makes it easier to erect the props.

Striking is made easier by lowering the shuttering plane by about 6 cm using the adjustment nut of the steel props. With the space which results from the first lowering and by tilting the timber beams, the shuttering material can be systematically removed, while going easy on materials.
(Subject to technical modifications.)

3.0 Components

H 20



Description	Art. No	Weight kg/pcs.
H 20 Beam 190	581 760	9.50
H 20 Beam 245	581 770	12.25
H 20 Beam 265	581 781	13.25
H 20 Beam 290	581 792	14.50
H 20 Beam 330	581 807	16.50
H 20 Beam 360	581 818	18.00
H 20 Beam 390	581 829	19.50
H 20 Beam 450	581 830	22.50
H 20 Beam 490	581 840	24.50
H 20 Beam 590	581 851	29.50
H 20 Beam 1190	582 319	59.50
H 20 beams in special lengths up to 12.00 m - per running metre		5.00

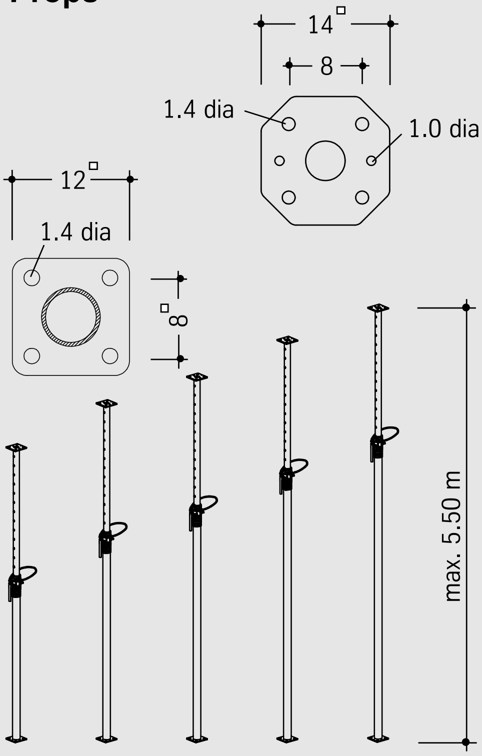
Lengths < 1.90 m / > 7.90 m without drill holes and rounded ends.

Timber formwork beams with a height of 20 cm and a width of 8 cm.

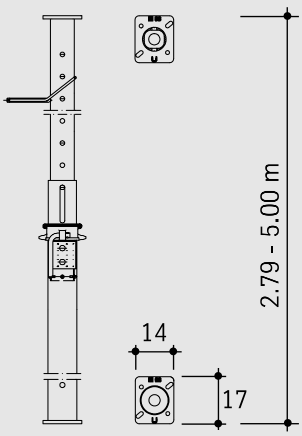
The H 20 beam is approved for the following statical figures:

Max. perm. M = 5.00 kNm
Max. perm. Q = 11.00 kN
E • I (bending stiffness) = 500 kNm²

Props



Description		Art. No	Weight kg/pcs.
Europlus props			
260 DB/DIN	(L = 1.54 - 2.60 m)	463 021	15.7
300 DB/DIN	(L = 1.72 - 3.00 m)	555 118	17.2
350 DB/DIN	(L = 1.98 - 3.50 m)	552 147	21.1
400 EC	(L = 2.24 - 4.00 m)	583 780	26.5
550 DC	(L = 3.03 - 5.50 m)	583725	35.7

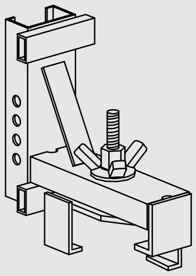


Description		Art. No	Weight kg/pcs.
Alu props			
Alu 500 DC	(L = 2.80 - 5.00 m)	558 898	23.2

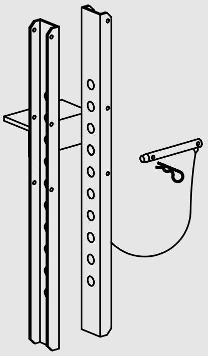
Lightweight aluminium prop with rectangular head and base plate.

Description	Art. No	Weight kg/pcs.

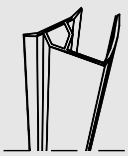
Beam Formwork



Description	Art. No	Weight kg/pcs.
Joist clamping connector Can be fastened to any timber beam like H 20 and R 24 with 8 cm wide and at maximum 6 cm thick flanges (see page 12-16).	496 469	6.5

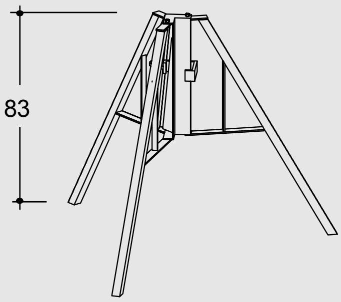


Description	Art. No	Weight kg/pcs.
Adjustable fixing beam 500 This is fastened with the unlosable bolt to the joist clamping connector in steps of 1 cm corresponding to the required beam height. The position of the bolt is secured by means of a spring cotter (see page 12-16).	496 458	4.5

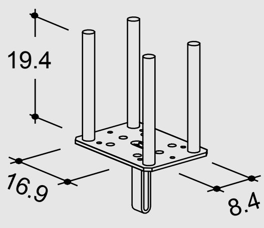


Description	Art. No	Weight kg/pcs.
Triangular fillet (UZ) Used for beam formwork with 21 mm thick plywood panel. Length : 2.50 m	547 555	0.5

Accessories

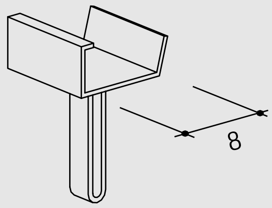
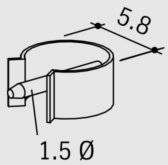
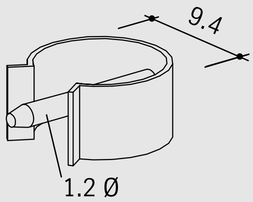
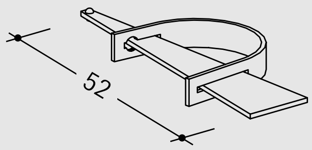
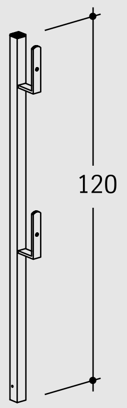
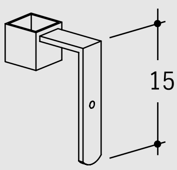
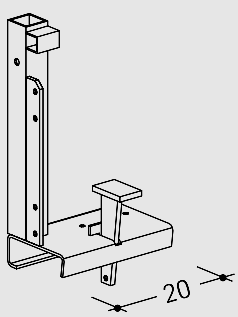


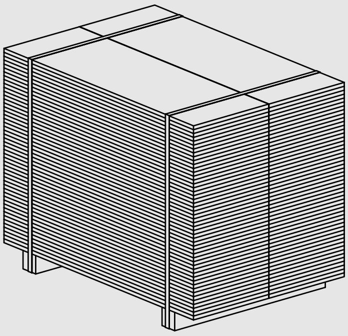
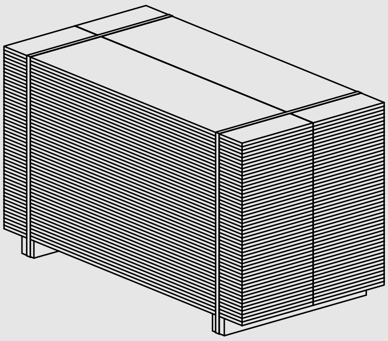
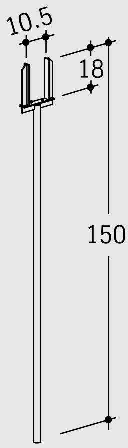
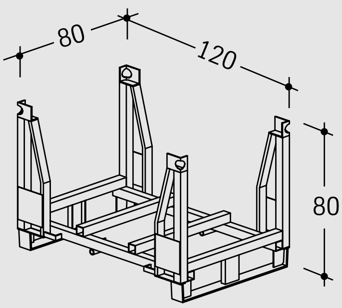
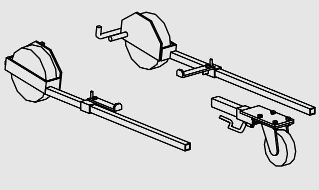
Description	Art. No	Weight kg/pcs.
Tripod stand Simplifies the erection of Europlus and AS props for soffit formwork assembly. Only to be used as an erection aid; does not replace the stiffening necessary for the supporting structure.	510 256	11.5



Description	Art. No	Weight kg/pcs.
Fork head 8/20 Protects H 20 beams which serve as primary beams from falling. Holds either 1 or 2 beams. Is secured in the prop with the T-bolt. (Order 1 x T-bolt for this purpose.)	417 565	12.5

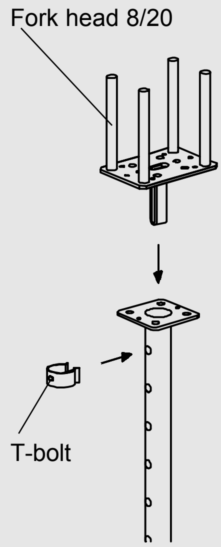
3.0 Components

	Description	Art. No	Weight kg/pcs.
	**Steel prop hanger 8** Helps to attach an additional prop to the H 20 beam (see page 9).	510 749	0.5
	**T-bolt** (with spring) For securing the inserted fork heads and steel prop hangers (1 each). Can be used with Europlus and AS props. See page 8.	470 804	0.2
	**T-bolt Alu 500** Used for aluminium prop Alu 500 DC and Europlus props 400 EC and 550 DC. See page 8.	569 384	0.2
	**Bracing clamp Z** Attaches stiffening shutterboards to any tubular steel props. (For max. board thickness of 3 x 12 cm)	573 810	1.8
	**Combi-post** Inserted in the universal joint, to guard against falls (see 11).	571 833	3.0
	**Toe board retainer** Slipped on the railing post before mounting it to the universal joint. The retainer secures the toe board.	571 947	0.4
	**Universal joint** Is clamped on the H 20 beam. Holds railing posts and end shuttering (see 11).	569 476	3.5

	Description	Art. No	Weight kg/pcs.
	3-S-Shuttering panels 150 (Package 75 m²) According to DIN 18215. Thickness 21 mm, L = 1.50 m, W = 0.50 m.	569 708	800.0
	3-S-Shuttering panels 200 (Package 100 m²) According to DIN 18215. Thickness 21 mm, L = 2.00 m, W = 0.50 m. **Assembly fork** Simplifies the laying and removal of H 20 shuttering beams.	569 719	1060.0
	**Assembly fork** Simplifies the laying and removal of H 20 shuttering beams (see page 9). **Euro stacking frame 120/80** Steel, hot-dip galvanized Load-bearing capacity: 1200 kg For storing and transporting scaffolding and formwork materials. A maximum of 6 stands can be stacked.	510 554	3.5
	**Euro stacking frame 120/80** Steel, hot-dip galvanized Load-bearing capacity: 1200 kg For storing and transporting scaffolding and formwork materials. A maximum of 6 stands can be stacked (see page 19).	553 689	54.9
	**Mobile-set** To manoeuvre the Euro stacking frame. Is simply slotted into the stacking frame, which can then even be moved when loaded (Working load: 1,300 kg). See page 19.	563 722	32.3

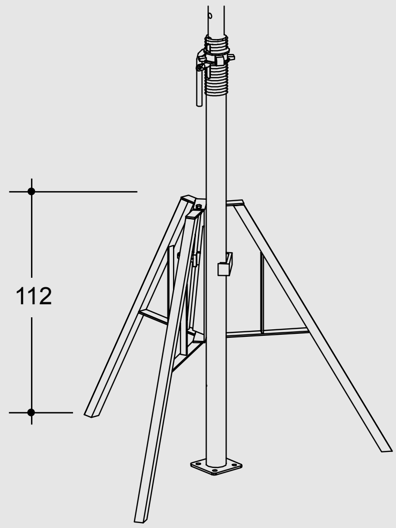
4.0 Use and erection

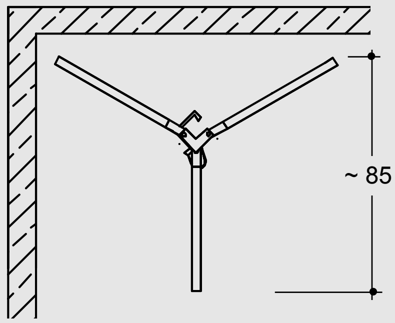
Prop with fork head 8/20
To begin with, the fork heads 8/20 have to be attached to the tubular steel props.
The inserted heads are secured with a T-bolt.
Both fork heads have a 2-way design. This means that in one position one timber beam, and in the other position - a 90° rotation - two timber beams can be inserted in the head (assuming a 8 cm beam width).



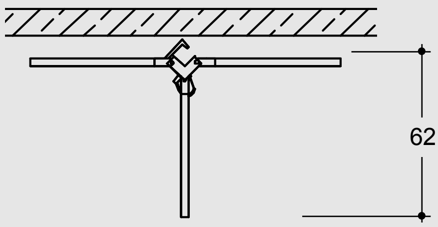
Prop with tripod stand

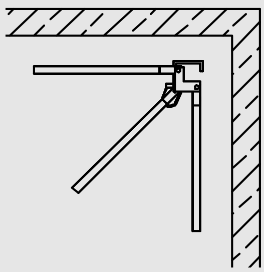
The tripod stand makes it easier to set up the tubular steel props during erection. The prop is simply set in the open stand and secured through the clamping loop with a gentle blow of the hammer. The tripod stand can be used with all types of props. The flexibly mounted supporting legs of the tripod stand permit an optimal fit, even in the corners of the structure.



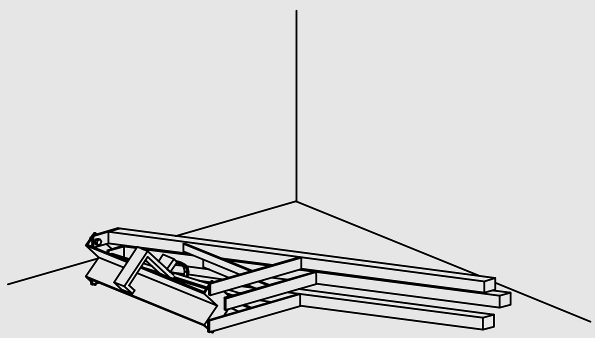


Important note
After the soffit formwork has been completely erected in the room or area, the tripod stand can be removed and shifted to the next erection site. It serves only as an
aid in assembling the slab form-work.



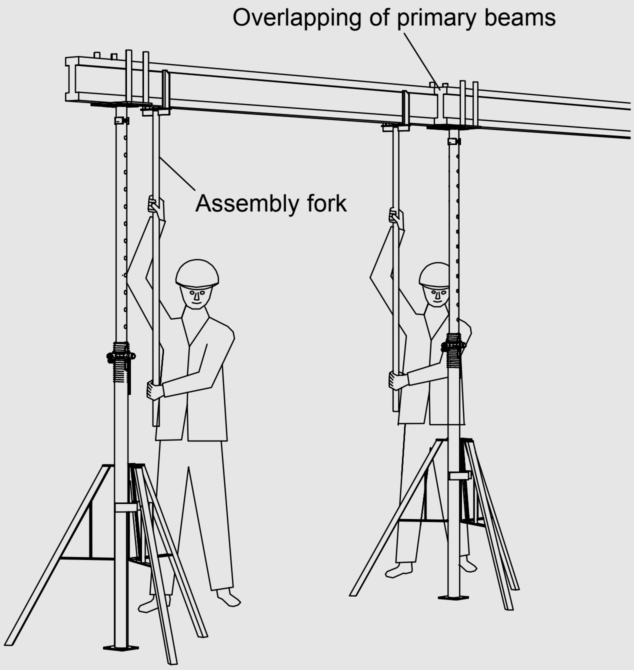


The **tripod stand** can be folded up to save space.



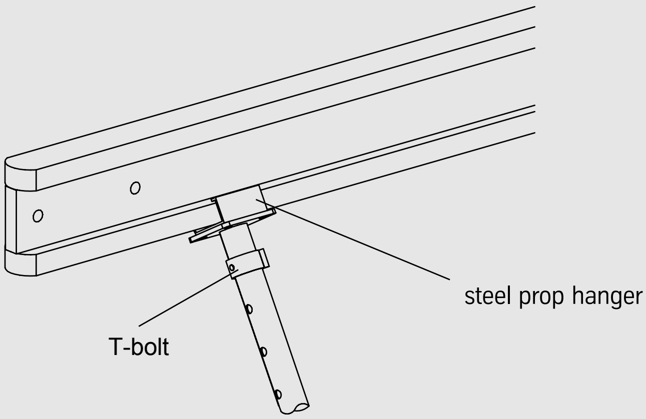
Erecting the primary beams

Erection of the Variomax soffit formwork begins with setting up the primary beams.
For this, the props are set at roughly the required extension length on the ground. The fork heads are mounted to them, and then they are set up under the ends of the primary beams (in the case of jointed beams, under the joints as well). To keep them steady, tripod stands are attached to these props.



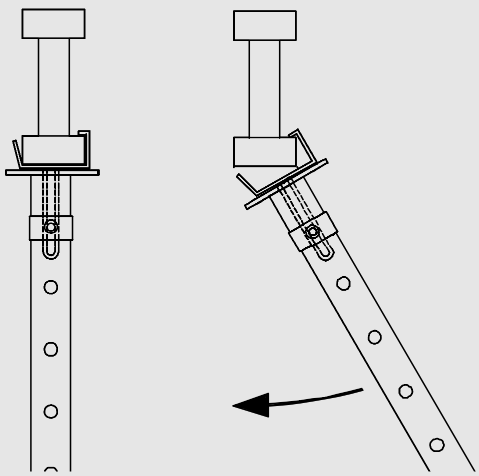
Following this, the H 20 beams are placed in the fork heads of the props. The assembly forks make this step much easier.

Then the remaining props should be set up, taking into account the static requirements (room height, slab thickness, and maximum permitted loading capacity of the tubular steel props which are being used).



The steel prop hangers which are attached to the props immediately safeguard them from falling over.

The prop is then swung into place under the primary beam.

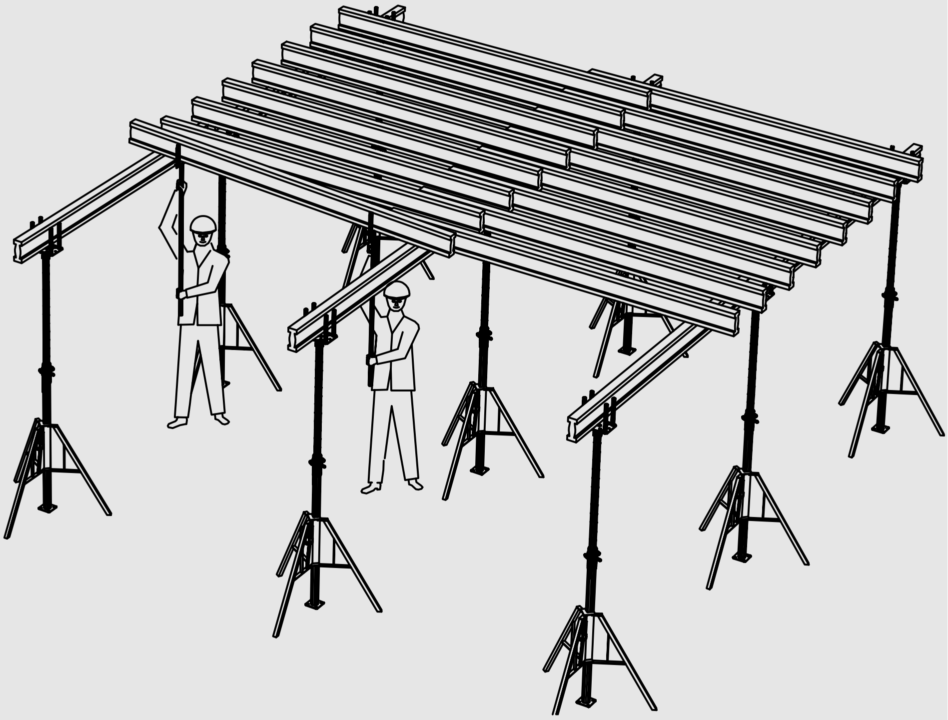


4.0 Use and erection

Placing the secondary beams

The correct distance between the secondary beams must be calculated, in line with the static requirements, by using the loading tables on pages 20 and 21.
A beam must be placed under each shuttering panel joint. Here, too, the work is facilitated by the assembly fork.

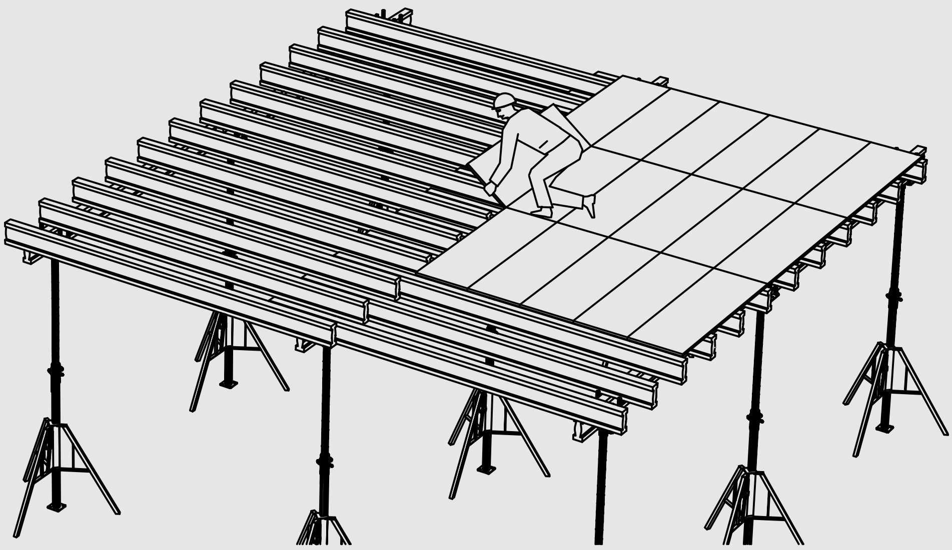
Secondary beams and shuttering skin



Adding the shuttering panels
The shuttering panels are placed on top of the secondary beams and tacked in place. The rigid shuttering structure must be braced against the building.

Note:
Safety rails must be erected on the edges of the structure, in line with the regulations for safety and health protection in shuttering and scaffolding ZH1/603.

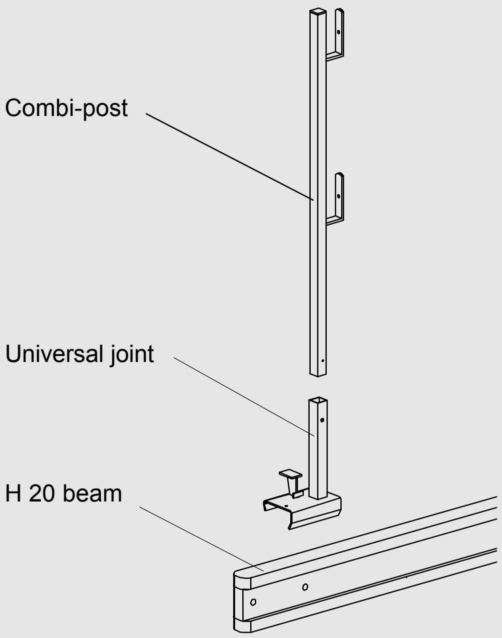
Adding shuttering panels



The universal joint, with its simple and effective wedge connection, can be secured at any place on the H 20 beam.

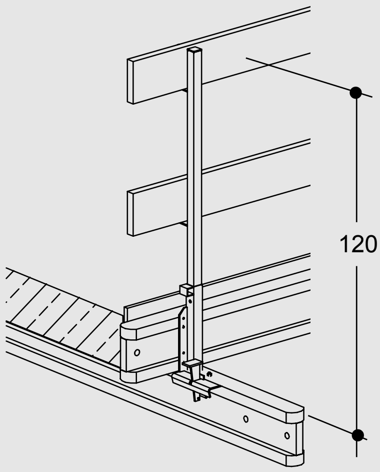
It is equipped with a socket for the Combi-post.
The universal joint can also be used as a supporting bracket for shuttering the stop-end of a slab or an integrated beam.

Universal joint and Combi-post

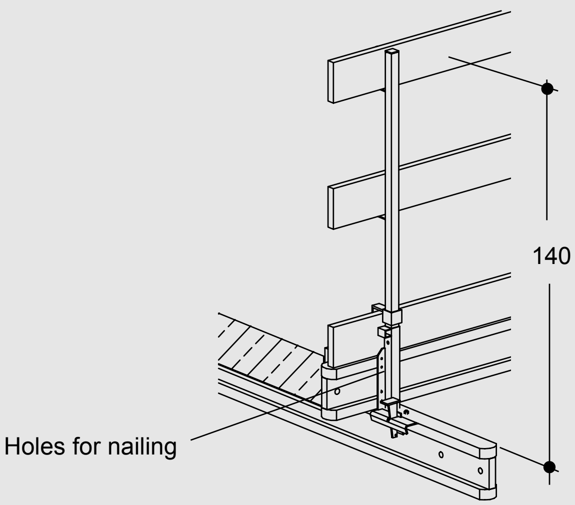


The illustration shows shuttering of the stop-end of a slab, which is also a safety guard.
The Combi-post has 2 alternative positions.

Post position during shuttering work



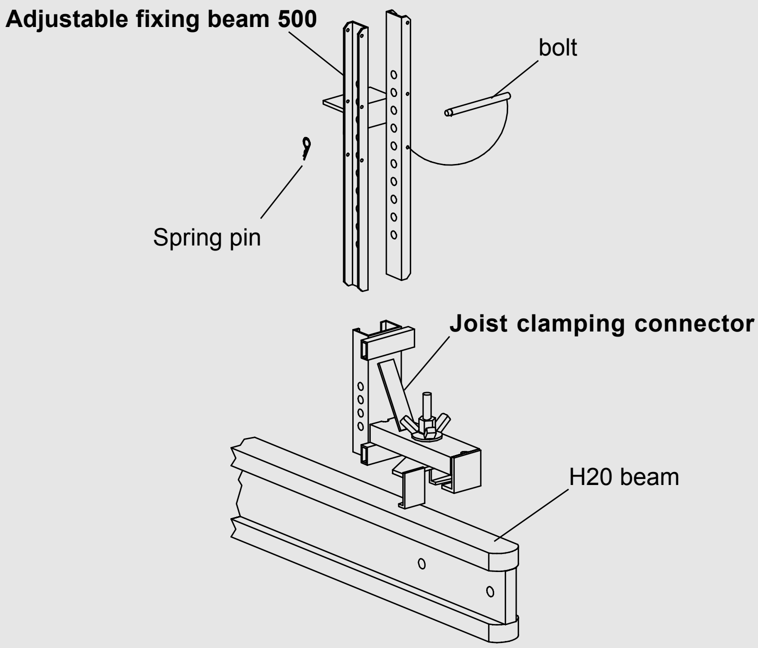
Post position on finished slab



4.0 Use and erection

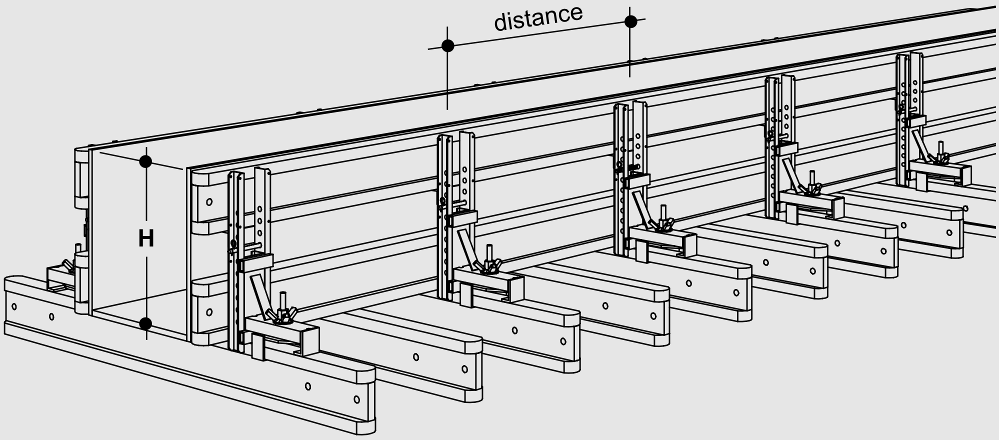
Joist clamping connector
Can be fastened to any timber beam like H 20 and R 24 with 8 cm wide and at maximum 6 cm thick flanges.

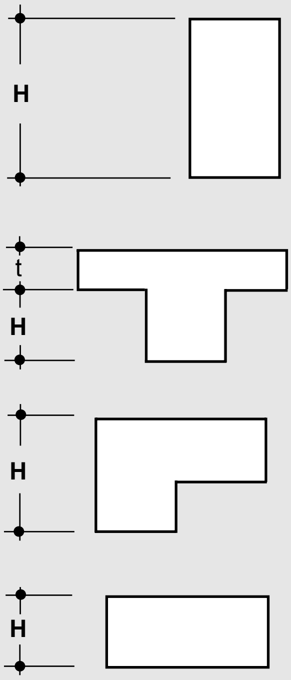
Adjustable fixing beam 500
This is fastened with the unlosable bolt to the joist clamping connector in steps of 1 cm corresponding to the required beam height.
The position of the bolt is secured by means of a spring cotter



Permissible distances
Joist clamping connectors are only to be arranged opposite on top of the same transverse beam.

The height " **H** " of the side formwork is decisive for the calculation.
In case of having perimeter beams, the exterior side is decisive for the permissible distances.





beam height **H** (cm)	max. **distances** of joist clamping connectors without slab [m]	with slab t = 20 cm [m]	t = 30 cm [m]
30	2.25	1.50	1.25
35	2.00	1.25	1.00
40	1.75	1.05	0.90
45	1.50	0.95	0.80
50	1.35	0.85	0.70
55	1.30	0.75	0.60
60	1.05	0.65	0.50
65	0.90	0.50	0.40
70	0.80	0.40	0.35
75	0.60	0.30	
80	0.55		
85	0.45		
90	0.35		

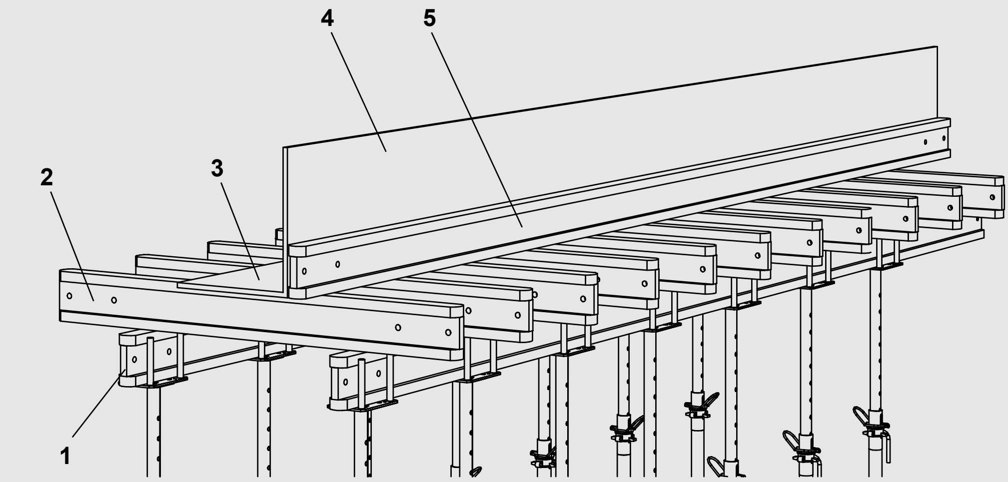
Erect the longitudinal main supports (1 **).**

Place transverse beams (**2**) on main beams.

Nail bottom shuttering skin (**3**) on beams (**2**).

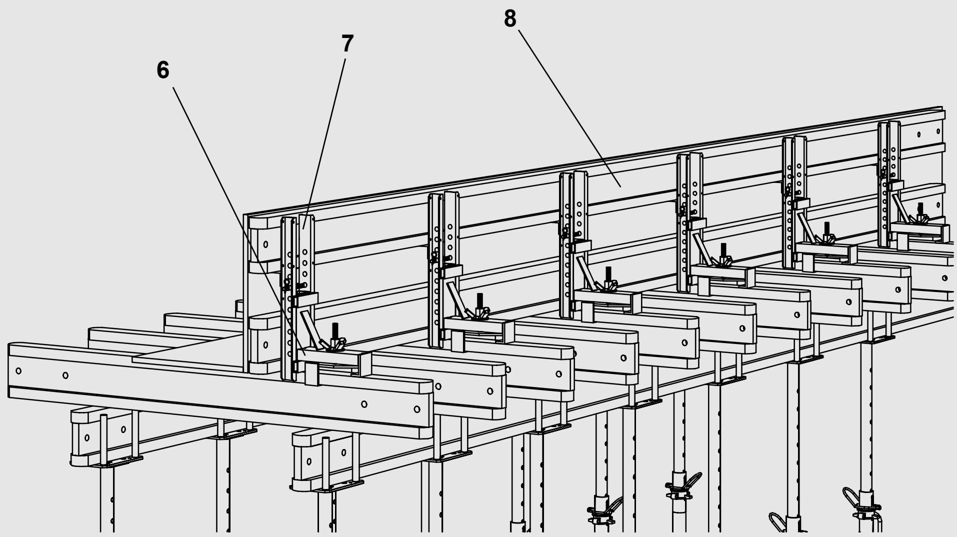
Place and attach side shuttering skin (**4**).

Put on timber beam (**5**) or squared timber.

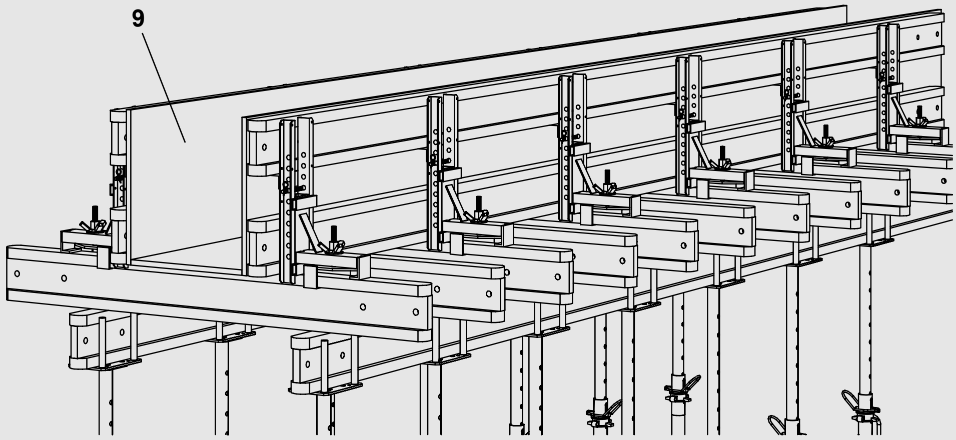


Position joist clamping connector (**6**) on top of the cross beam (**2**), press it against side formwork (**4+5**) and tighten wing nut by means of a hammer.

Fix the adjustable fixing beam (**7**) acc. to the desired height of beam formwork.
Place upper timber beam (**8**) on the angle iron welded to the fixing beam (**7**).



Erection of opposite side shuttering (**9**) after reinforcement work. Same procedure as already described before.



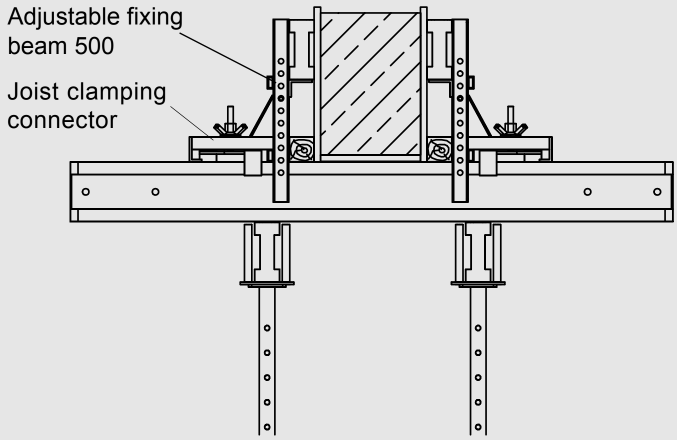
Note:
Always arrange the joist clamping connector in opposite position on the same transverse beam.

4.0 Use and erection

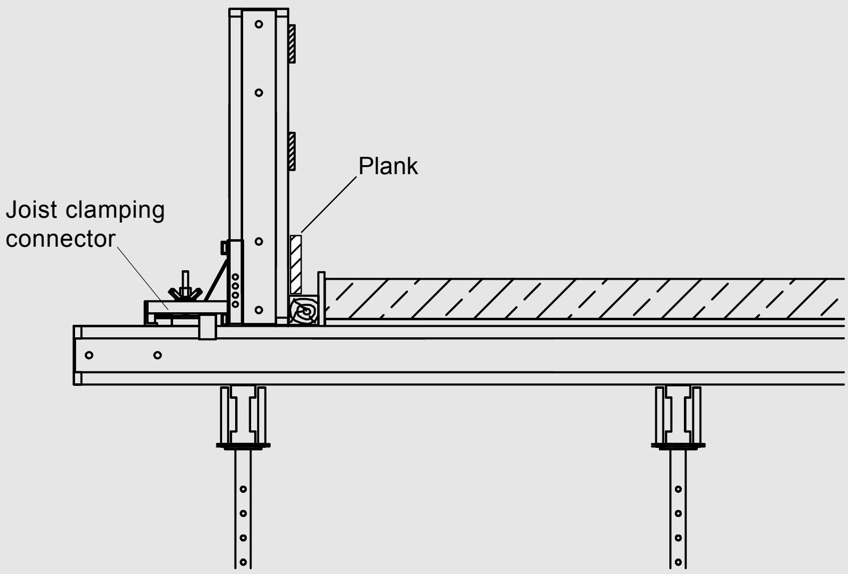
Joist clamping connector and Adjustable fixing beam
Can be fastened to any timber beam like H20 and R24 with 8 cm wide and at maximum 6 cm thick flanges.

Examples of application

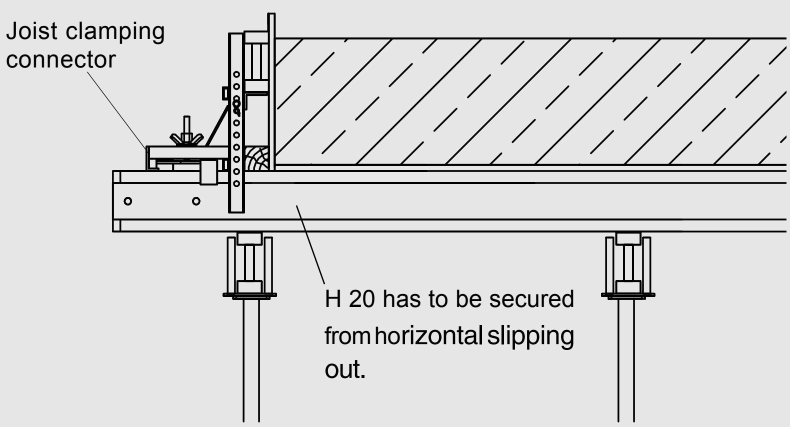
Beam



Guard rail in conjunction with slab stopend shuttering

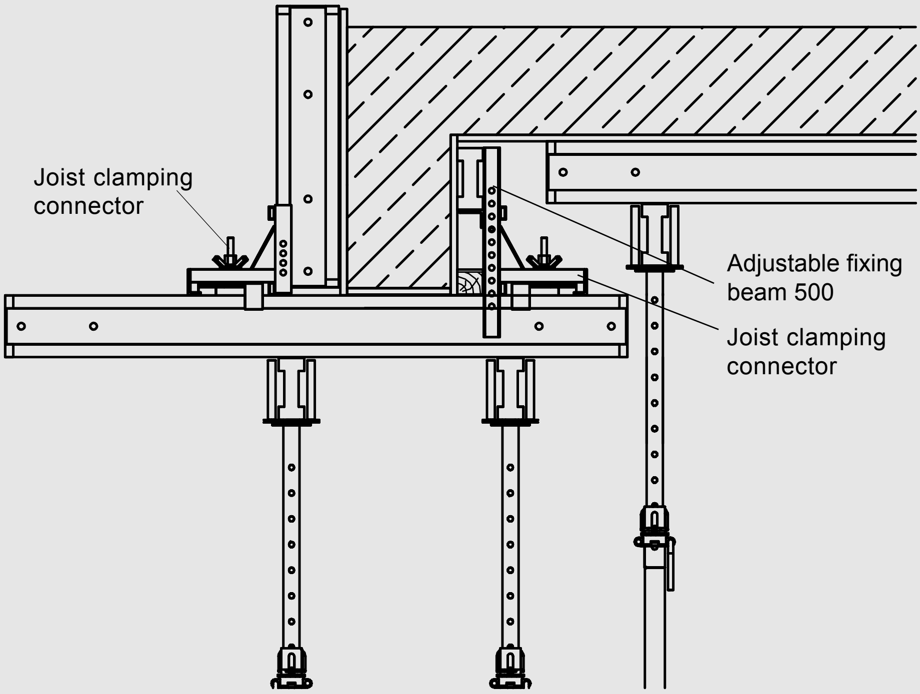


Slab stopend



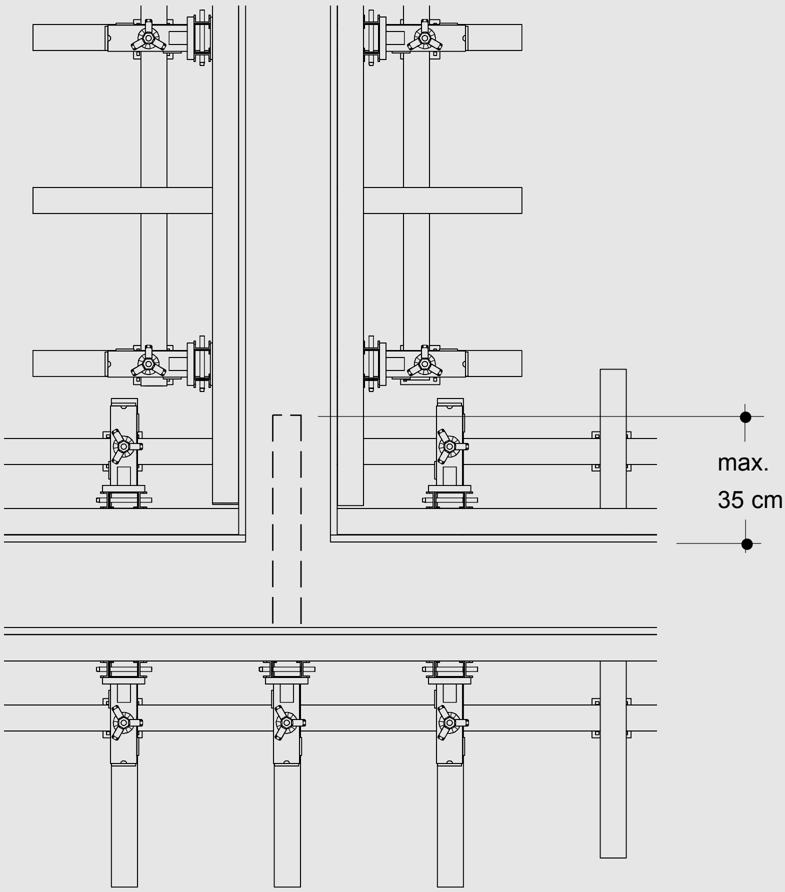
The exterior side shuttering (here in this example) is formed by means of vertically arranged H 20 inserted in the C-profile of the joist clamping connector.
The application of the adjustable fixing beam is not required with this design.

Perimeter beam with slab connection



T-intersections and crossings of beams

Even in these areas it is possible to work with the joist clamping connector easily and without problems and without costly fitting work.
It is only to be noted that the transverse beams must not project more than 35 cm into the cross beams of the rectangularly arranged beam formwork of the intersection.



4.0 Use and erection

When joining timber beam slab formwork and beam formwork, two connecting variations arise through the directions of the secondary beams of the slab formwork.

Direction of secondary beam parallel to the beam formwork

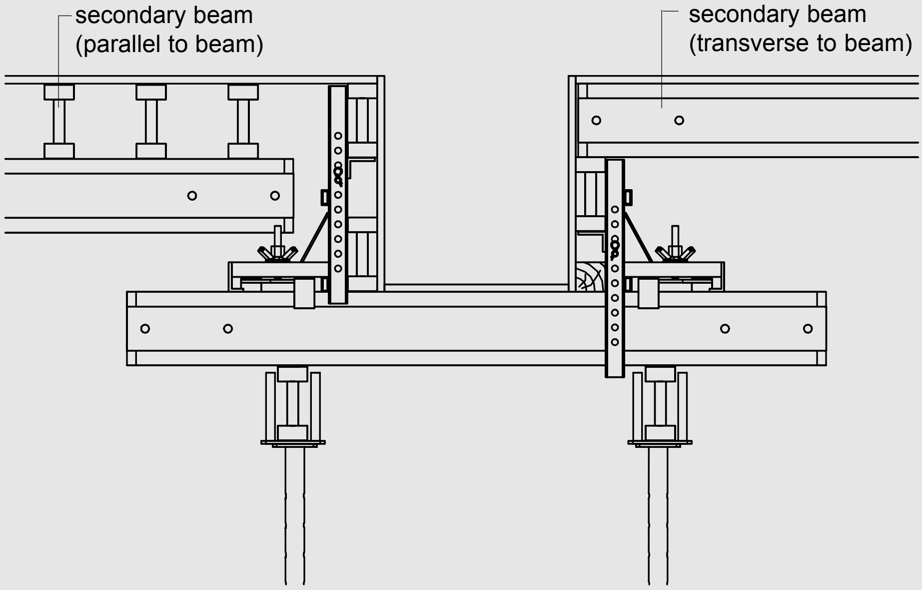
The top timber beam H 20 of the side shuttering of the beam is arranged in such a way with the secondary beams of the slab formwork that it serves as support beam for the plywood of the slab at the same time.

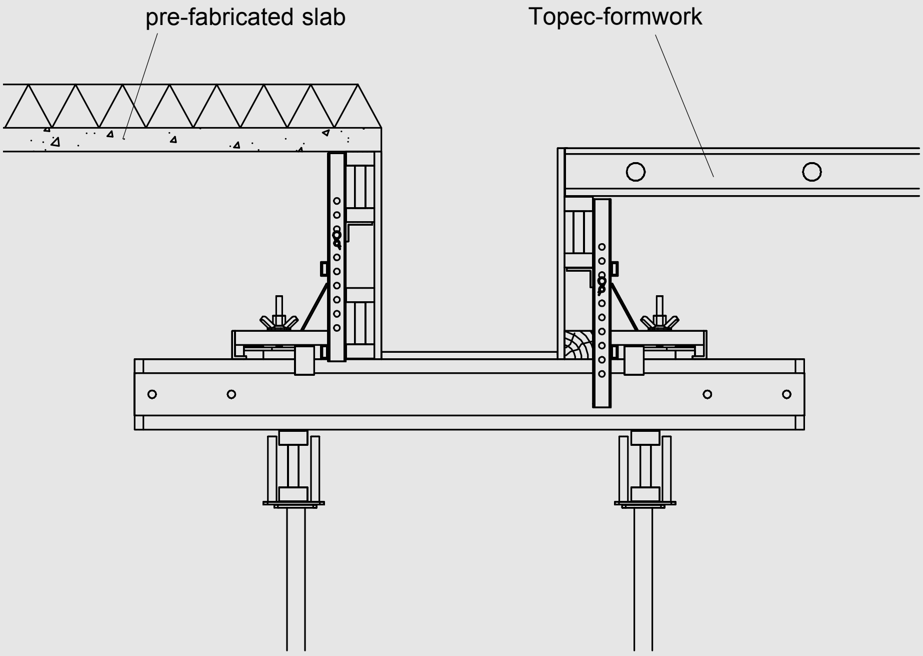
The top timber beam H 20 of the side shuttering of the beam is lowered to such a degree that the secondary beam can directly be placed on this.

Other slab formwork systems can be bound into the beam formwork without any problems thanks to the height adjustment possibility of the adjustable fixing beam.

Important note:
Maximum slab load per each joist clamping connector: 6.5 kN

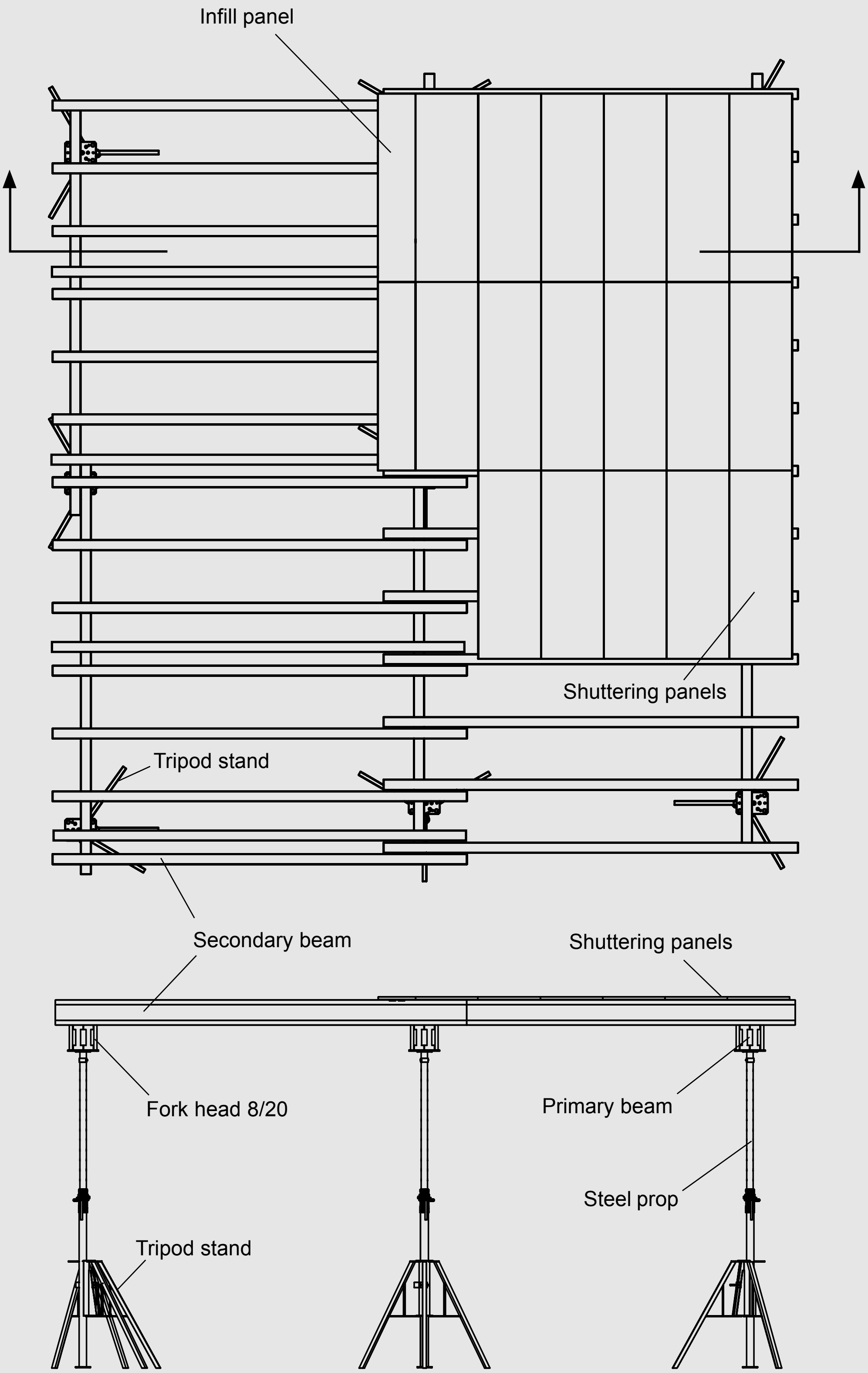
Compound use of slab and beam formwork





Shuttering procedures

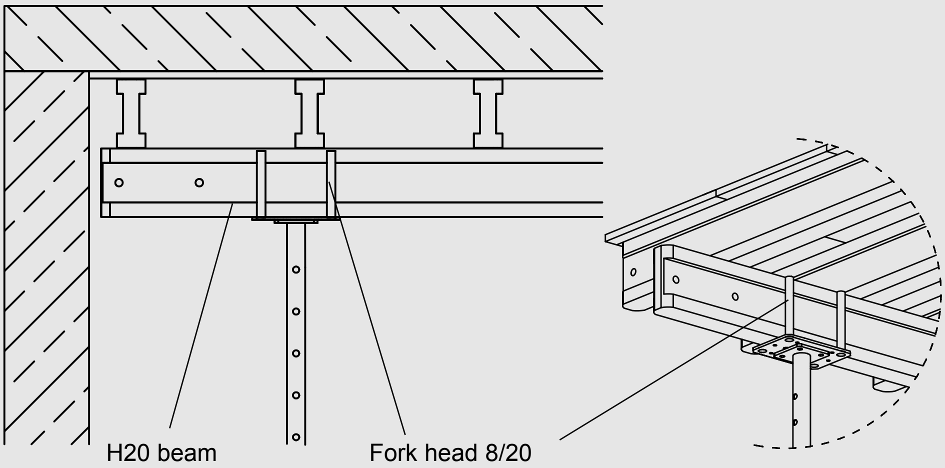
1. Secure fork head or drophead in the props.
2. Set up tripod stands (at least 4 in the corners of the room, plus additional units for primary beam joints.)
3. Secure the props in the tripod stands.
4. Lay the primary beams in the fork heads.
5. Attach additional props and steel prop hangers, in line with the table on page 12, under the primary beams.
6. Lay secondary beams.
7. Lay shuttering panels.
8. If necessary, set up auxiliary props under the infill panels, in line with DIN 1045.

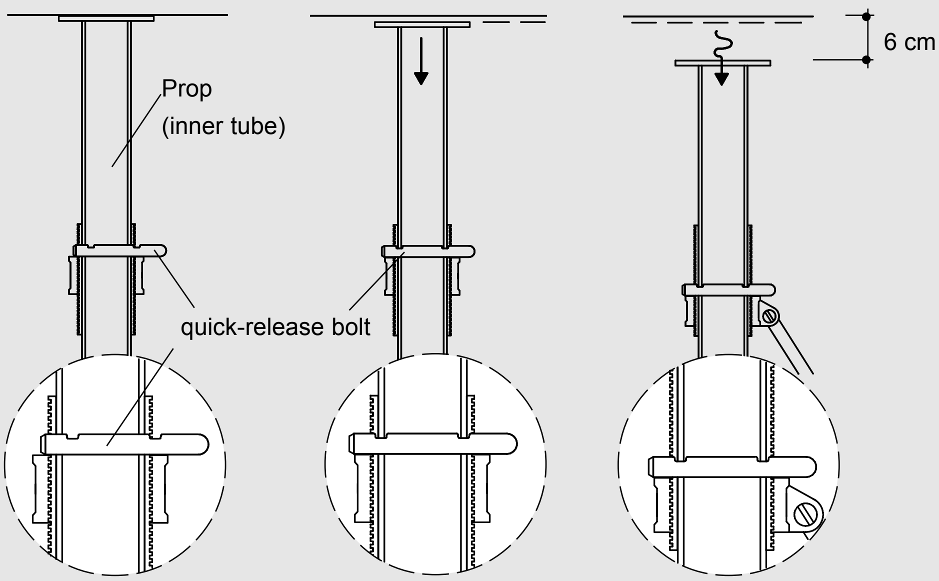


5.0 Stripping

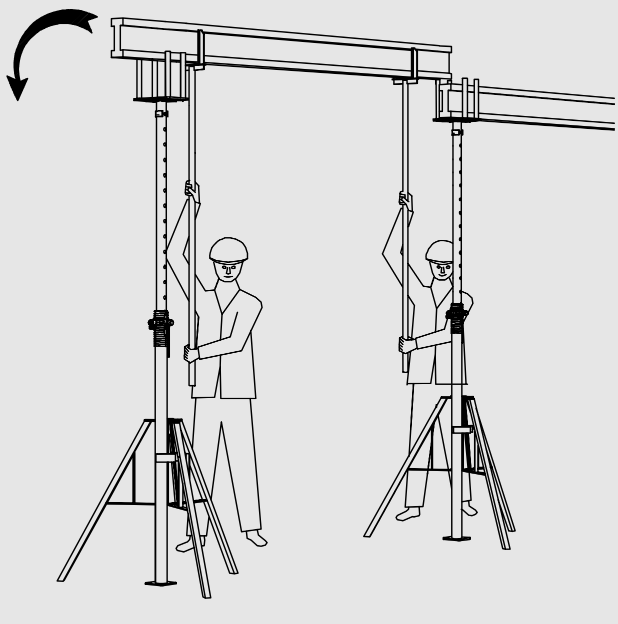
Stripping begins with lowering the props. For all tubular steel props from **HÜNNEBECK**, release bolts immediately reduce the pressure on the thread nut. A blow of the hammer suffices and then the slab shuttering can easily be lowered by about 6 cm turning down the adjustment nut.

Stripping procedures with fork heads 8/20:



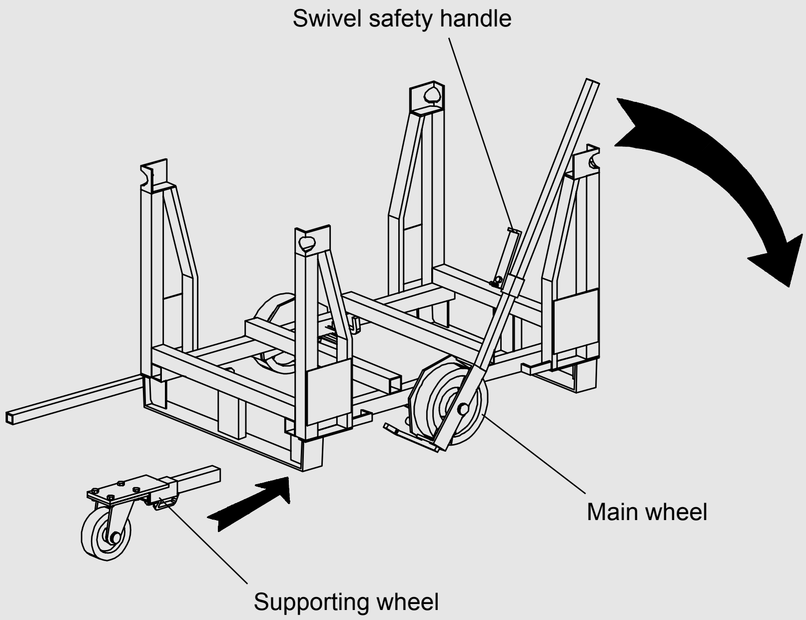


The assembly fork is an effective tool for taking down the primary beams.
Remove the tripod stands from the props, and sort and stack all of the shuttering materials.

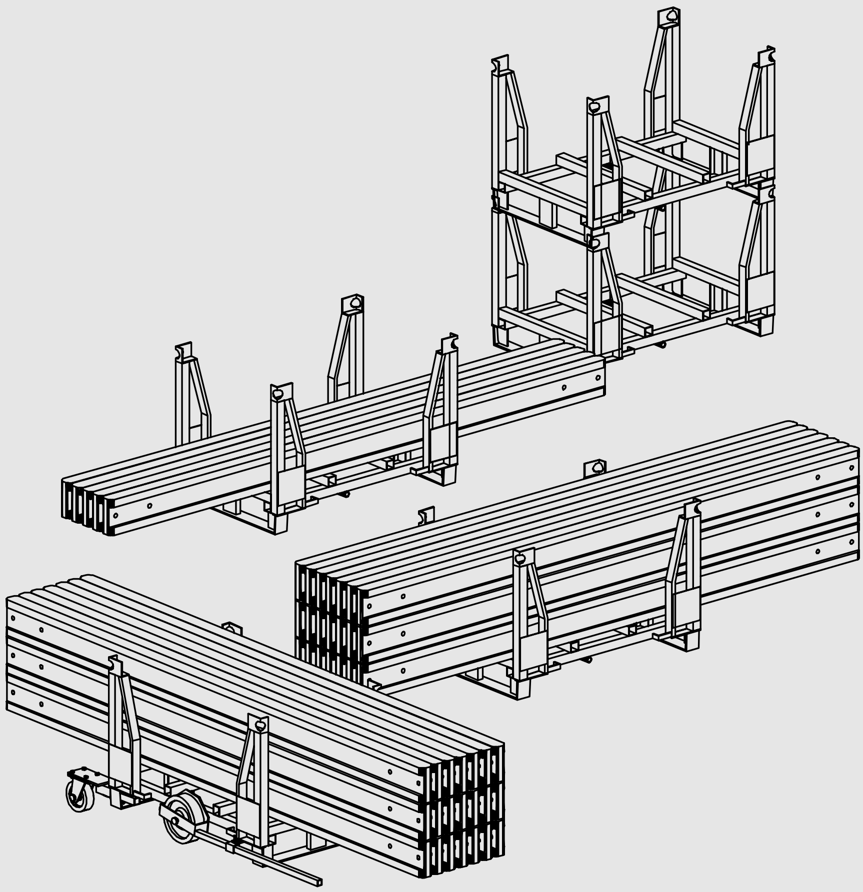


The shuttering materials are stored and transported in the practical Euro stacking frames. With the mobile set, which can be attached quickly, the materials can be brought within the range of the crane.
The Euro stacking frame is designed for a working load of 1,200 kg. It can be moved with a crane, fork lift or the mobile set, which has a loading capacity of 1,300 kg.
Up to **6** loaded frames may be stacked.

Storing and moving the shuttering materials



The two main wheels of the mobile set are easy to mount, simply by inserting their axles into the sockets in the stacking frame. A swing of the wheel lever lifts the stacking frame, and the swivel safety handle keeps the wheel lever in this position.
A supporting wheel which is inserted at the front of the stacking frame stabilizes the running gear.

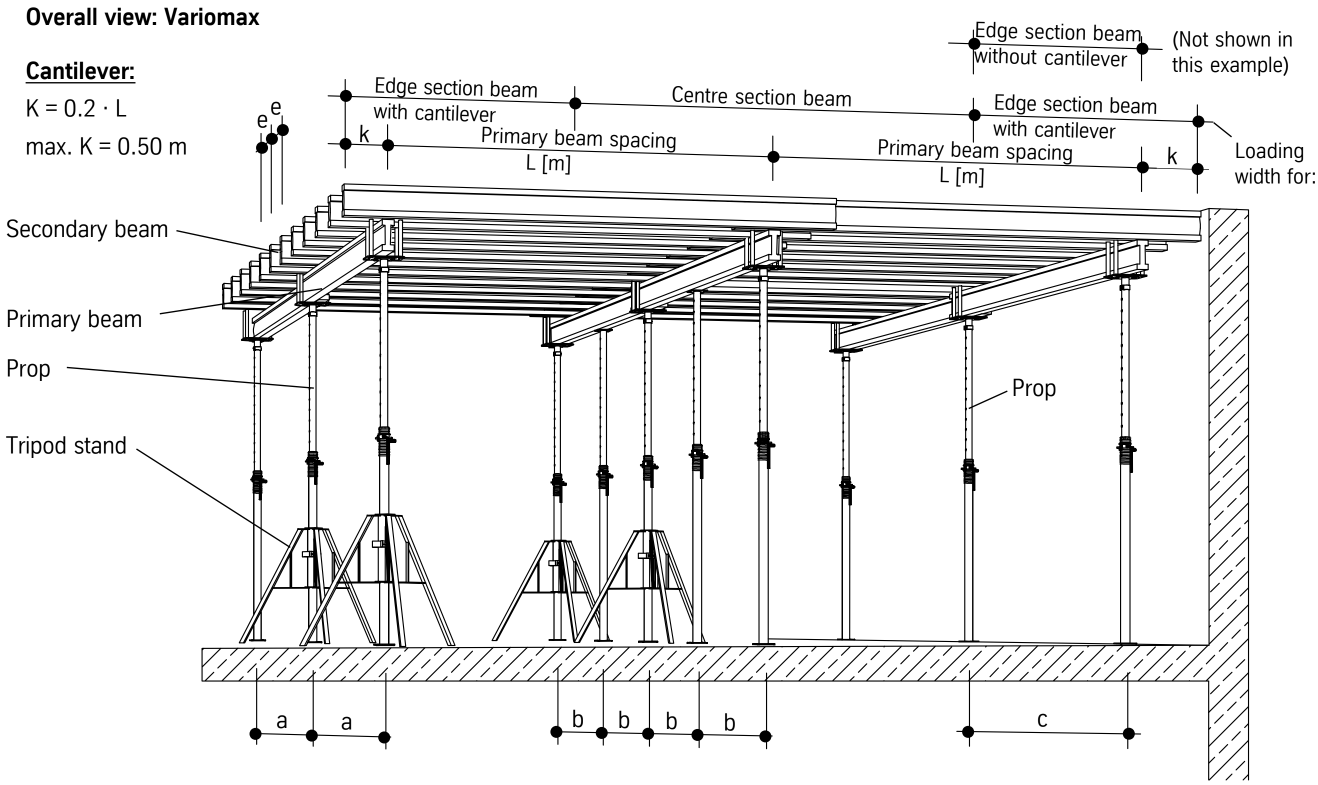


7.0 Tables for shuttering panels

Variomax calculation

The existing slab thickness and the selected secondary beam spacing, which depends upon the type and size of the selected shuttering panel, determine the maximum permitted distance between primary beams.
Using the selected primary beam spacing and slab thickness, the maximum permitted distance between the maximum permitted distance between props for the primary beam axes can then be determined.

All the figures necessary for the efficient use of Variomax soffit formwork can be quickly and precisely determined with the help of the following tables.



Support spacing for shuttering panels **a, b, c =Prop spacing as per Table III**

Table I

Size of shuttering panel	Possible secondary beam spacing "e"	
150/50	**e = 75 cm**	**e = 50 cm**
200/50	**e = 66,7 cm**	**e = 50 cm**
250/50	**e = 62,5 cm**	**e = 50 cm**

Table II

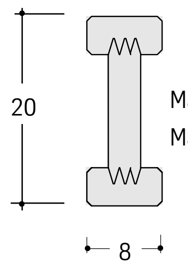
Max. secondary beam spacing **[cm]**	Slab thichness [cm] 22 mm 3-ply boards
75.0	**20**
66.7	**25**
62.5	**30**
50.0	**62**

Perm. deflection L/500.

VARIOMAX

Tips for use: columns:

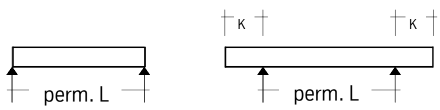
Select slab thickness	1
Determine secondary beam spacing "e" (m)	2
taking into account type of shuttering panel (see page 20).	1
Determine max. span of secondary beam (this is equal to distances between primary beams).	2
Determine final distance between primary beams taking into account the allowable deflection of secondary beams.	1
Determine prop spacing for axes of primary beams taking into account the loading width (Edge section with/without cantilever and centre section).	3



Max. perm. M = 5.00 kNm
Max. perm. Q = 11.00 kN

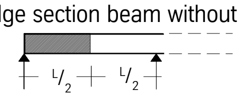
Table III
Max. permitted span for secondary beams L in „m“
= Max. primary beam spacing.

Systems:
(Max. K = 0.50 m)

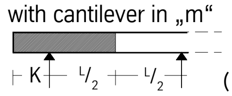


Loading width for:

a) Edge section beam without cantilever

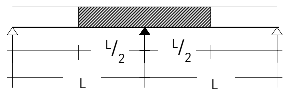


b) or edge section beam with cantilever in „m“



(max. K = 0.50 m)

c) or centre section beam



1		2					3										
Slab thickness [cm]	Total load [kN/m²] (*)	Secondary beam spacing [m] (unter Beachtung von Seite 20)					Gewählter Jochträgerabstand bzw. Belastungsbreite L [m]										
		0.40	0.50	0.63	0.67	**0.75**	1.00	1.25	1.50	**1.75**	2.00	2.25	**2.50**	3.00	3.50	4.00	4.50
		Zul. Spannweite der Belagträger = max. Jochträgerabstand zul. L [m]					Zul. Stützenabstand unter Jochträgern [m] (a, b oder c gem. Seite 11)										
10	4.35	3.99	3.71	3.44	3.37	3.24	2.94	2.71	2.48	2.29	2.14	2.02	1.92	1.69	1.44	1.26	1.12
12	4.87	3.78	3.51	3.26	3.19	3.06	2.78	2.56	2.34	2.17	2.03	1.91	1.81	1.51	1.29	1.13	1.00
14	5.39	3.60	3.34	3.10	3.04	2.92	2.65	2.44	2.22	2.06	1.93	1.81	1.63	1.36	1.17	1.02	0.91
16	5.91	3.45	3.21	2.98	2.91	**2.80**	2.54	2.33	2.12	**1.97**	1.84	1.65	**1.49**	1.24	1.06	0.93	0.83
18	6.43	3.33	3.09	2.87	2.81	2.70	2.45	2.23	2.04	1.89	1.71	1.52	1.37	1.14	0.98	0.86	0.76
20	6.95	3.22	2.99	2.77	2.71	2.61	2.37	2.15	1.96	1.81	1.58	1.41	1.27	1.06	0.90	0.79	0.70
22	7.47	3.12	2.90	2.69	2.63	2.53	2.30	2.07	1.89	1.68	1.47	1.31	1.18	0.98	0.84	0.74	0.65
24	7.99	3.04	2.82	2.62	2.56	2.46	2.24	2.00	1.83	1.57	1.38	1.22	1.10	0.92	0.79	0.69	0.61
26	8.51	2.96	2.75	2.55	2.50	2.40	2.17	1.94	1.72	1.48	1.29	1.15	1.03	0.86	0.74	0.65	0.57
28	9.03	2.89	2.68	2.49	2.44	2.34	2.10	1.88	1.62	1.39	1.22	1.08	0.97	0.81	0.70	0.61	0.54
30	9.61	2.83	2.62	2.44	2.38	2.29	2.04	1.82	1.53	1.31	1.14	1.02	0.92	0.76	0.65	0.57	0.51
40	12.73	2.57	2.39	2.22	2.17	2.05	1.73	1.38	1.15	0.99	0.86	0.77	0.69	0.58	0.49	0.43	0.38
50	15.85	2.39	2.22	2.01	1.95	1.83	1.39	1.11	0.93	0.79	0.69	0.62	0.56	0.46	0.40	0.35	0.31

"Q" decisive

(*) Total load assumed in the following way:

Weight of concrete	25 kN/m³
Concrete load	26.0 • t [kN/m²]
Dead load of formwork	0.25 kN/m²
Live load	1.50 kN/m²

Total load = Concrete load + Dead load of formwork + Live load

(**) Deflections of secondary beams are limited to:

f < L/300 (first line) - f < L/500 (second line)

These tables ***do not*** render stability verification unnecessary!

Prop loads

In most cases, the max. permitted prop spacing under primary beams, as stated in Table III, Column 3, results from the perm. shear load "Q" of the H20 timber beam (2 • 11.0 kN = 22.0 kN = suport load for the steel prop). In this case, the following has to be considered:
If the permitted load "F" of the prop is less than 22.0 kN, the prop spacing under the primary beams should be reduced by the factor "max. perm. F/22.0 kN".
(See also the example on page 14 under IV. Remark.)

Note:

The maximum permitted prop load in relation to the extension length can be found in the Hünnebeck Folding Table with allowable loads for tubular steel props.

9.0 H20 Shuttering example

(see also load tables on pages 20 and 21)

Assuming loads as stated on page 20.

I.) To be used for shuttering example:

Clear floor-to-floor height	h	=	2.60	m
Slab thickness	t	=	16	cm
Selected beam			H 20	
Secondary beam spacing	e	=	0.75	m
Shuttering skin at hand		=	18	mm

II.) Determining the max. perm. span for secondary beams

In Part ② of Table III on page 21, find where the 16 cm slab thickness row intersects with the 0.75 cm secondary beam spacing column, to obtain the maximum permitted span of 2.85 m (= max. primary beam spacing with f ≤ L/500).

III.) Determining the max. perm. span for primary beams

In Part ③ of Table III, the first horizontal column shows the desired primary beam spacings and thus also the loading widths.

For example, for a room width of 3.50 m, primary beams RJ1 and RJ2 (see ground-plan) have a loading width of 1.75 m. By seeing where the 1.75 m column intersects with the 16 cm slab thickness row, you obtain the max. prop spacing of 2.0 m for the edge section beam.
For the centre section beam MJ, taking into account the loading span of 2.5 m, the max. permitted prop spacing is calculated at 1.53 m (= max. prop spacing).

IV.) Selected tubular steel props

The applicable **HÜNNEBECK** tubular steel props Folding Table shows the following figures. Given an actual clear room height of 2.60 m, and subtracting 2 • 20 cm beam height + 18 mm shuttering skin, we arrive at a prop extension length of 2.18 m.
We meet the requirements of the prop load tables, for example, and find, at 2.20 m extension length for the „Europlus 260 DB/DIN“ a max. permitted load of F = 33.0 kN > 22 kN.

Remark:

Since the max. permitted ‘F’ of the prop is more than 22 kN, the prop spacing of the primary beams is not to be reduced.

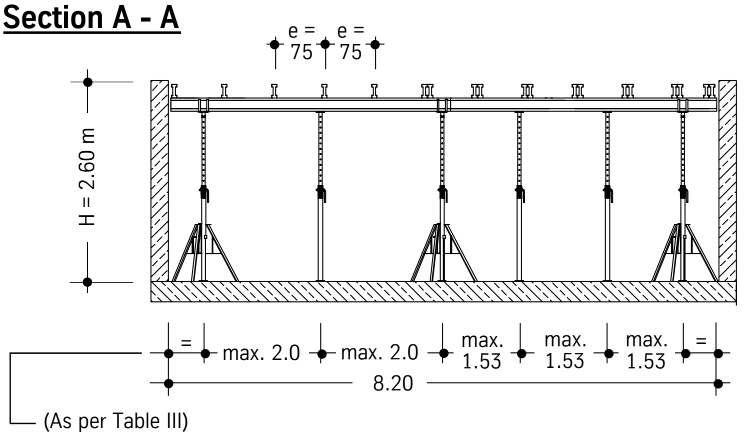
This means: 2 • Q = 22 kN for H 20 beam < 33.0 kN

An additional example: Clear room height = 3.00 m:
3.00 m - 0.42 m = 2.58 m total prop length
permitted load for Europlus 260 = 26.0 kN > 22.0 kN.

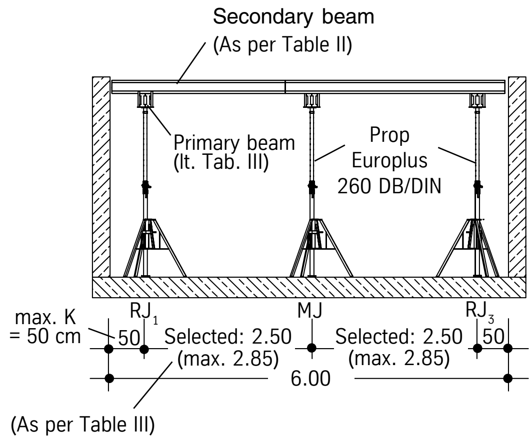
$\frac{\text{20.0 kN perm.}}{\text{22 kN exist.}} = 0.91\text{kN}$ 0.91 • 1.93 m = 1.76 m perm. prop spacing

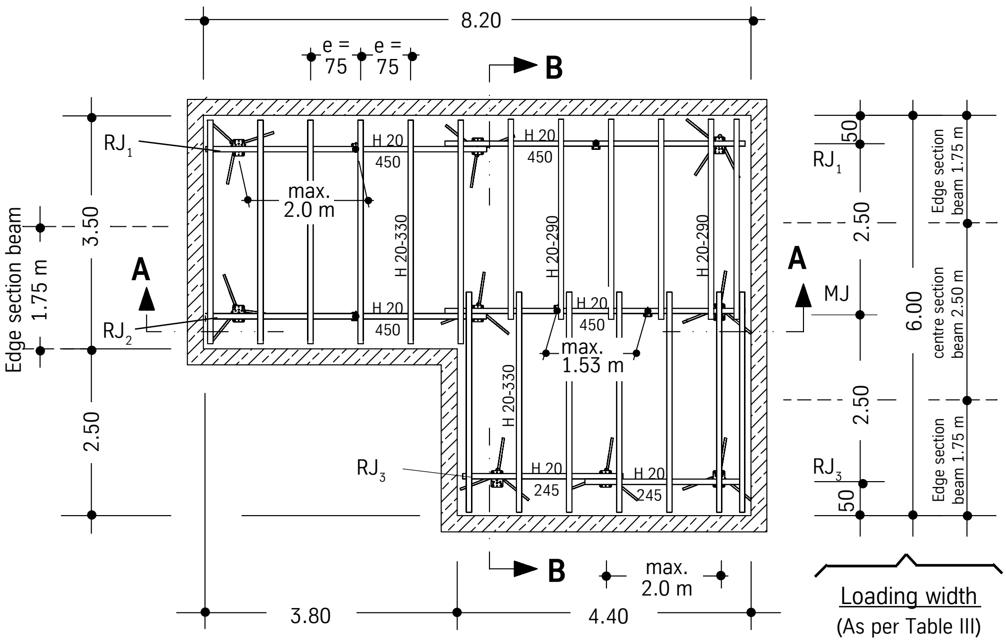
RJ = edge section beam
MJ = centre section beam

Section A - A



Section B - B





Materials summary

(example)

No.	Description	Art.No.
2	H 20 - 245	581 770
6	H 20 - 290	581 792
13	H 20 - 330	581 807
4	H 20 - 450	581 830
14	Props 260 DB/DIN	463 021
9	Fork head 8/20	417 565
5	Steel prop hanger	510 749
9	Tripod stand	510 256
	Suggested:	
14	T-bolt	470 804
2	Assembly fork	510 554
2	Euro stacking frame	553 689
1	Mobile Set	563 722

10.0 Load tables for props

Perm. load [kN]

DIN 4421, falsework clase Ⅲ

as per Euronorm

DIN Standards

	260 DB/DIN	300 DB/DIN	350 DB/DIN	410 DB/DIN	450 DB/DIN
Size	1	2	3	4	5
extension length [m]	1.54 - 2.60 m	1.72 - 3.00 m	1.98 - 3.50 m	2.34 - 4.10 m	2.50 - 4.50 m
1.50	30,00				
1.60	30.00				
1.70	30.00	30.00			
1.80	30.00	30.00			
1.90	28.81	30.00			
2.00	26.00	30.00	30.00		
2.10	23.58	27.21	30.00		
2.20	21.49	24.79	28.93		
2.30	20.00	22.68	26.47	30.00	
2.40	20.00	20.83	24.31	28.47	
2.50	20.00	20.00	22.40	26.24	28.80
2.60	20.00	20.00	20.71	24.26	26.63
2.70		20.00	20.00	22.50	24.69
2.80		20.00	20.00	20.92	22.96
2.90		20.00	20.00	20.00	21,40
3.00		20.00	20.00	20.00	20.00
3.10			20.00	20.00	20.00
3.20			20.00	20.00	20.00
3.30			20.00	20.00	20.00
3.40			20.00	20.00	20.00
3.50			20.00	20.00	20.00
3.60				20.00	20.00
3.70				20.00	20.00
3.80				20.00	20.00
3.90				20.00	20.00
4.00				20.00	20.00
4.10				20,00	20.00
4.20					20.00
4.30					20.00
4.40					20.00
4.50					20.00

	550 DC
Size	7
extension length [m]	3.03 - 5.50 m
3.00	35.00
3.10	34.34
3.20	32.23
3.30	30.30
3.40	28.55
3.50	26.94
3.60	25.46
3.70	24.11
3.80	22.85
3.90	21.70
4.00	20.63
4.10	20.00
4.20	20.00
4.30	20.00
4.40	20.00
4.50	20.00
4.60	20.00
4.70	20.00
4.80	20.00
4.90	20.00
5.00	20.00
5.10	20.00
5.20	20.00
5.30	20.00
5.40	20.00
5.50	20.00

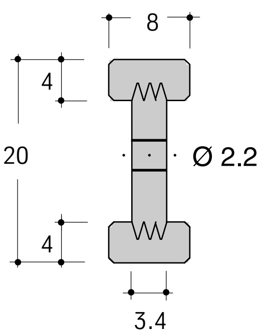
	350 EC/DIN	400 EC
Size	3	4
extension length [m]	1.98 - 3.50 m	2.24 - 4.00 m
2.00	35.00	
2.10	35.00	
2.20	35.00	35.00
2.30	35.00	35.00
2.40	35.00	35.00
2.50	33.60	35.00
2.60	31.07	35.00
2.70	30.00	32.92
2.80	30.00	30.61
2.90	30.00	30.00
3.00	30.00	30.00
3.10	30.00	30.00
3.20	30.00	30.00
3.30	30.00	30.00
3.40	30.00	30.00
3.50	30.00	30.00
3.60		30.00
3.70		30.00
3.80		30.00
3.90		30.00
4.00		30.00

Defined factors for calculations:

A. Statical figures

H20 timber beam

perm. M = 5.00 kNm
perm. Q = 11.00 kN
E • I = 500 kNm²



B. Dimensions

C. Material requirements and weights:

H 20 beams	3	m/m²	15.0 kg/m²
Tripod stands	0.3	pcs./m²	3.3 kg/m²
Fork heads 8/20	0.3	pcs./m²	0.1 kg/m²

Props used for housing construction:

e.g. Europlus 260 DB/DIN	0.5	pcs./m²	7.8 kg/m²

Props used for industrial construction:

e.g. prop AS 410 DIN	0.6	pcs./m²	1.7 kg/m²

D. Time figures for erection / striking:

The expenditure of time for the erection and striking of the formwork depends on the ground plan and dimensions of the building:
Variomax Soffit Formwork: 0.3 - 0.5 h/m²

E. Transport volume of H 20 timber beams

Weight taken from item (C) in tons multiplied by 3.5 results in the required transport volume [m³].

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