# **3.3. RAILING SUPPORTS**







I











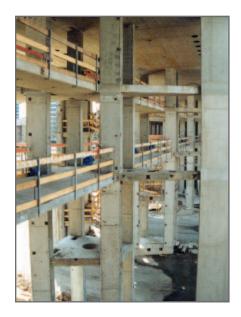
### **GENERAL INFORMATION**

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**GENERAL INFORMATION** 

# Your benefits at a glance:

- For creating a secure barrier to be able to work in safety near open floor edges
- All railing posts and accessories galvanised for a long service life
- Post intervals max. 2.00 m with side protection boards 15 x 3 cm
- Closed stirrup to prevent the side protection boards from being lifted out
- Especially robust stirrups as regards bending; net inner dimensions = 65 x 165 mm for two overlapping side protection boards
- All stirrups with drill holes to nail and secure the side protection boards
- Multiple types for the differing kinds of fastening on construction sites
- Wide range of accessories available

A basic differentiation is made according to:

- Railing supports with inserted parts to be installed before concreting
- Railing supports without inserted parts to be fastened retrospectively

The **ROBUSTA-railing post system** has been proved its worth in the practice since many years.

For protecting of fall edges at in-situconcrete slabs, prefab elements, slab table formwork and steel construction, we offer an extensive assortment of different types of railing posts.

Several suitable accessories are available for a flexible use of our railing posts.

Using our system, you can reach high flexibility and save your time.

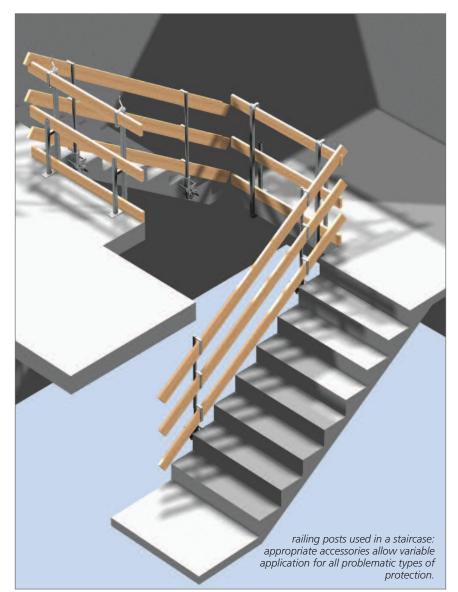
The system allows easy mounting and ensures a high-grade security.

In all types' construction, we consistensly observed that **all parts are undetachably integrated** into the post.

Each railing post is rigidly connected to the corresponding screw body or clamping part. Therefore, the user can avoid inconvenient search for single parts.

To achieve safety and security on sites, a **careful planning in advance** is required to prevent improvisation and inefficient additional works on the spot.

Especially at **prefab staircases** the **installation of anchors at the concrete work** is important for quick and correct mounting of railing posts.





# **Inserted railing post**

- Universal usage at slabs with concreted plastic tube
- Usage at steel constructions with welded steel tube sleeve
- Usage at slab edges, also at overhanging slab edges with slab stopend console and slab stopend bar as accessory
- Usage at stair stringers with additional parts

This railing post is intended for insertion into the concreted installation kits.

Slab thickness: minimum 30 cm – length of insertion base: 25 cm – length of installation-kit: 27 cm

Also fitting into all usual borings with a diameter of 35 mm, for example in welded tubes at sheet walls, therefore the minimum **inserting depth of 15 cm** has to be attended according to the official safety regulations!

For this post we are offering extensive accessories for various situations in carcase work where you have to combine a safe working at fall edges with economical formwork technique.

### Installation-kits:

During the concrete pour the **plastic installation-kit** is put in the required place ready to accept the inserted railing post when the concrete has hardened.

The **installation-kit with vertical positioner** is fixed with wire-tie to the reinforcement and guarantees an exact vertical position for the railing post.

ATTENTION: consider anchoring at the stage of planning!

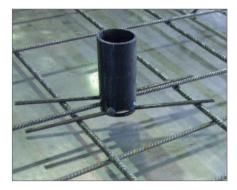


# Accessory: clamping-fix

The clamping fix is placed in concrete already during the production of the filigree slabs. A correct vertical alignment will result by an easy clamping to the reinforcement. Already when laying the filigree slab an edge protection can be installed. The according height of the clamping fix will be fixed by the thickness of the slab or by the height of the mesh girders.

# Optimized continuing security during all phases of construction:

On site a plastic tube will be added to the clamping fix and the railing post will



be inserted easily. That guarantees security from the beginning – already when laying the upper reinforcement layer. Even during the installation of the outer walls the edge protection can remain mounted.





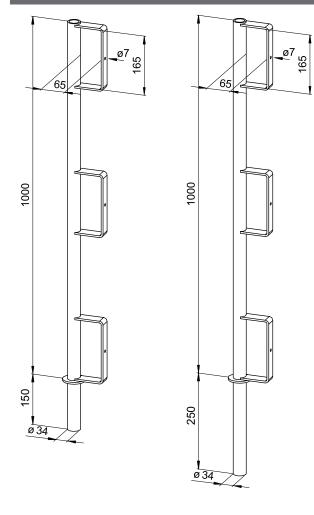
technical data see page 7

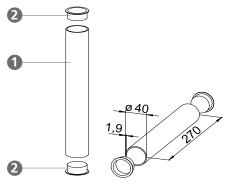


**INSERTED RAILING POST AND ACCESSORIES** 

# 3

#### **TECHNICAL DATA:**





#### Installation-kit for inserted railing post

Weight [kg/100 units]	Length [mm]	Item No.
5.0	170	330298
6.0	270	330299

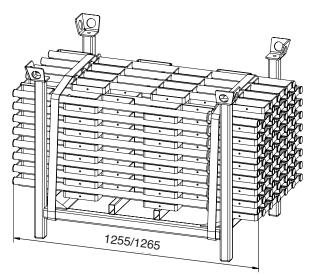
Installation-kit consisting of

- 1 plastic tube (item no. 250401)
- 2 plactic cap (item no. 250410)

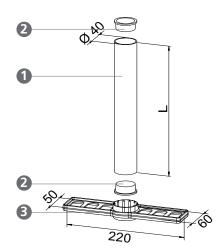
All parts of the installation-kit are also available separately

#### **Inserted railing post**

Weight [kg/unit]	Installation depth [mm]	Item No.
5.0	150	330215
5.0	250	330225



packing unit per stacking pallet: 100 units stacking pallet for storing and transport see page 29.



#### Installation-kit

with vertical positioner for inserted railing post

Weight [kg/100 units]	Length L [mm]	Item No.
12.0	170	330295
12.6	270	330296

Installation-kit consisting of

1 plastic tube (item no. 250401 – L= 170 mm: 250402)

- 2 plastic cap (item no. 250410)
- **3** vertical positioner (item no. 250403)

All parts of the installation-kit are also available separately



# Accessory: foot socket

The foot socket can be screwed onto already existing base plates, prefab elements or edge settings. It accomplishes our ROBUSTA-railing-post system and allows the subsequent securing of danger areas in new constructions or reorganizations. Elevator shafts, slab edges, gap between two flight of stairs and balconies with railing posts, also ROBUSTA mesh barriers, can be secured quickly without problem.

# Accessory: adapter for sheet pilings

The well thought-out technical construction of the adapter for sheet pilings guarantees for a quick mounting and the exclusion of missing parts.

An adjustment clamping range of 5 mm to 25 mm can be reached because of the skillful arrangement of the eccentric lever.

The adapter is usable with all usual sheet pilings. The eccentric lever with adjustable spindle achieves a high clamping preassure, this prevents a turning to the side.

Galvanizing and an internal spindle with a robust trapezoidal thread guarantee a long durability.





# Accessory for stairs

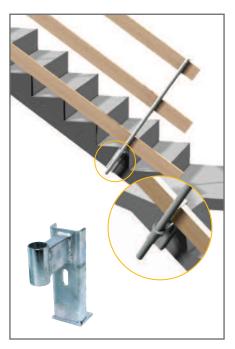
These attachment parts allow the **offset fixing** of the railing post at the staircase. **Only one anchor** is required for fixing. Securitiy fence is guaranteed during all phases of construction.

After finishing the carcase works the already mounted side protection can remain unchanged.

Unprotected fall edges can be prevented and overhanging **step planking can be laid without danger.** 

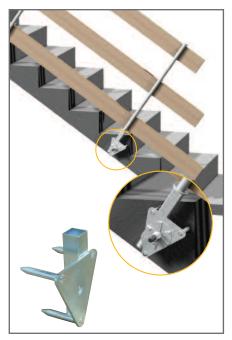
The side protection of the stairs **does not have to be removed** when plastering the sides.

The side protection guarantees the fall security continuously.



### Attachment 1

Twisting is prevented by the selfadjusting lower sheet strap at the bottom of the staircase.



#### Attachment 2

Three circular points of support and the tie-rod fastening, a complete plastering can be performed underneath the distant steel plate.

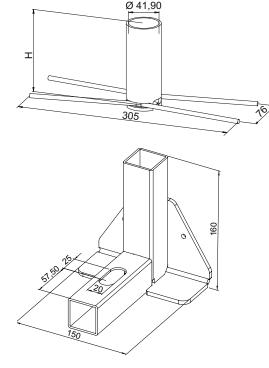


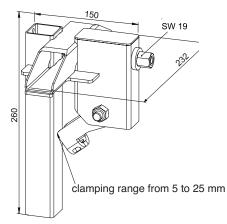


**INSERTED RAILING POST AND ACCESSORIES** 

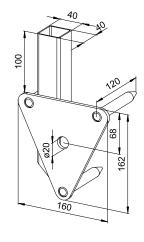


#### **TECHNICAL DATA:**





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#### **Clamping fix**

for inserted railing post, flexible height

Weight [kg/unit]	Item No.
depending on height	330297
	•

Please advise needed height when placing your order

### Foot socket

for inserted railing post

Weight [kg/unit]	Item No.
1.45	320250

#### Adapter for sheet pilings

for inserted railing post

Weight [kg/unit]	Item No.
3.00	320260

#### Attachment 1

Weight [kg/unit]	Item No.
2.0	330280

#### Attachment 2

Weight [kg/unit]	Item No.
1.8	330285





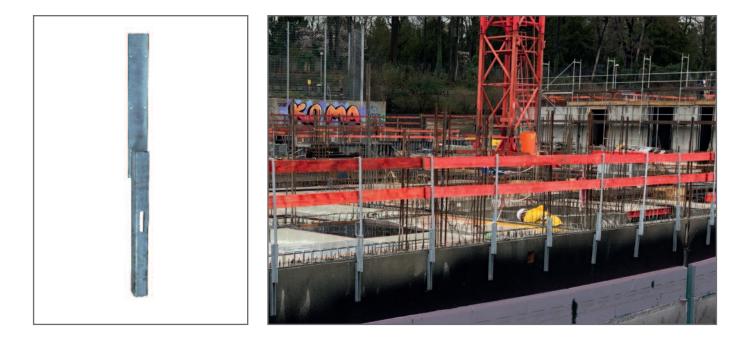
# Accessory: slab stop end bar

The slab stop end bar is used as **holding of the side formwork** as well as **security fences**.

The cutting and boring of square timbers with distance boards is not necessary any more.

Due to 5 cm holding-rail offset, a correct placement of the shuttering board is automatically guaranteed. It is just placed and secured with nails through the borings from the back.

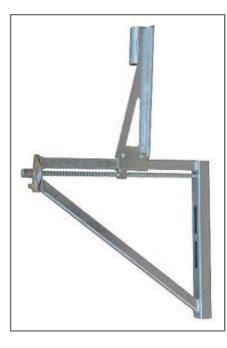
By means of the inserted railing holder, it takes no much effort and only a **short time** to mount a security fence.



# Accessory: slab stop end console

It offers all advantages of the slab stop end bar and additionally allows to **shutter overhanging slab edges** with a cantilever up to 40 cm.

Fixing holes position is adapted to 25 cm brickwork dimension, therefore the tie rod can always be laid through the horizontal joint.



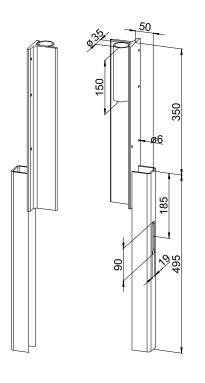


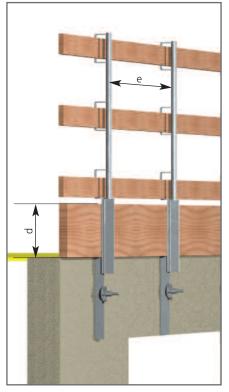


# **INSERTED RAILING POST AND ACCESSORIES**

# 3

#### **TECHNICAL DATA:**





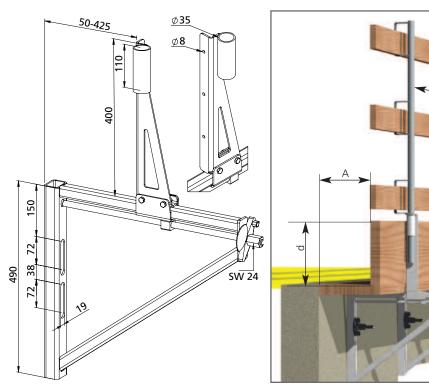
Slab stop end bar

Weight [kg/unit]	Item No.
4.70	520201

Thickness of slab "d" in cm	Distance "e" in m
16	2.00
18	2.00
20	1.75
22	1.50
24	1.32
26	1.16
28	1.04
30	0.94
34	0.78
36	0.73
38	0.62
40	0.53

fixing parts see on pages 10 and 11

max. anchor tensile force = 5 kN



fixing parts see on pages 10 and 11

#### Slab stop end console

Weight [kg/unit]	Item No.
7.30	520101

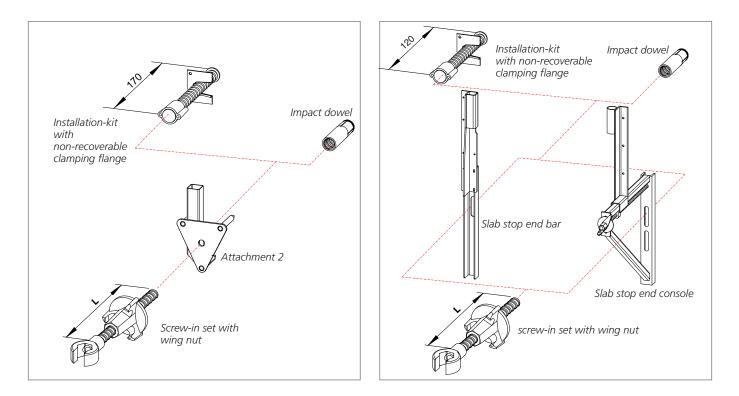
Thickness of slab "d" in cm	cantilever "A" in cm			
	10	20	30	40
16	2.00	2.00	2.00	2.00
18	2.00	2.00	2.00	2.00
20	2.00	2.00	2.00	2.00
22	2.00	2.00	2.00	1.90
24	2.00	2.00	2.00	1.80
26	2.00	2.00	1.90	1.60
28	2.00	1.80	1.70	1.45
30	1.80	1.60	1.50	1.30
32	1.60	1.40	1.35	1.20
34	1.40	1.20	1.20	1.10
mounting distances "e" of consoles in m				

max. anchor tensile force = 6.5 kN

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**INSERTED RAILING POST AND ACCESSORIES** 

# Overview of fixing parts before and after concreting

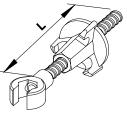


DW15

85

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# Fixing parts after concreting

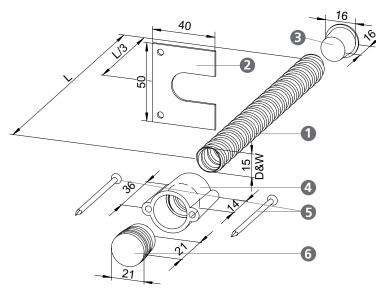


#### Screw- in set D&W 15 mm, with wing nut

-		
Length* [mm]	Weight [kg/unit]	Item No.
180	0.81	111918
300	0.98	111930
* - + +		

\*other lengths available on request

#### Fixing parts before concreting



# Impact dowel D&W 15 mm

Weight [kg/100 units]	Item No.
16.5	121515

accessories and dowel mounting see pages 25 and 27.

#### Installation-kit D&W 15 mm with non-recoverable clamping flange

Length [mm]	Weight [kg/100 units]	Item No. S 235 JR	Item No. V2 A
120	4.00	101012	101062
170	4.50	101017	101067

Installation-kit consisting of

1 threaded sleeve (item no. 1015..\* – V2 A: item no. 1016..\*)

2 threaded plate (Item no. 101591)

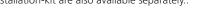
B plastic cap (Item no. 101593)

(d) clamping flange (non-recoverable) (Item no. 101592)

5 nails stainless steel (Item no. 109940)

6 plug for clamping flange (item no. 101597)

\*the last two numbers indicate the length of threaded sleeve. All parts of the installation-kit are also available separately..



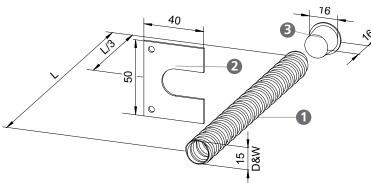






#### Fixing parts before concreting

#### For high-exposed concrete: with recoverable clamping flange and fine grained concrete cones



#### Installation-kit D&W 15 mm

(please order clamping flange separately)

Length [mm]	Weight [kg/100 units]	ltem No. S 235 JR	Item No. V2 A
120	3.29	101112	101162
170	3.79	101117	101167

Installatin-kit consisting of

1 threaded sleeve (item no. 1015..\* – V2 A: item no. 1016..\*)

2 threaded plate (item no. 101591)

3 plastic cap yellow (item no. 101593)

\*the last two numbers indicate the length of threaded sleeve.

All parts of the installation-kit are also available separately.

# Clamping flange D&W 15 mm for wooden shuttering, recoverable

Weight [kg/100 units]	Item No.
2.70	101595

#### Removing tool, galvanized

fitting for all recoverable clamping flanges

Weight [kg/unit]	Item No.
0.32	109933

#### Magnetic clamping flange D&W 15 mm

for steel shuttering, mit Neodymium high-efficiency magnet adhesion approx. 80 kg

for concrete cover [mm]	Weight [kg/100 units]	Item No.
15 mm	26.0	101586
30 mm	74.0	101587

#### Fine grained concrete cone

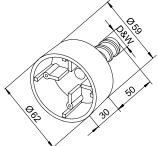
for all recoverable clamping flanges and magnets

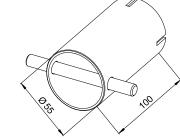
for concrete cover [mm]	Weight [kg/100 units]	Item No.
15 mm	4,20	109950
30 mm	14,00	109930

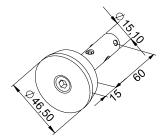
#### 2-component glue

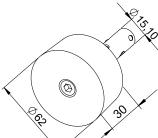
to glue in fine grained concrete cones (for approx. 40 units)

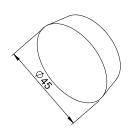
Weight [kg/units]	Item No.
2 x 0.5	109931

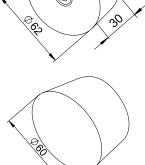












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# Accessory: Vario slab stopend bar

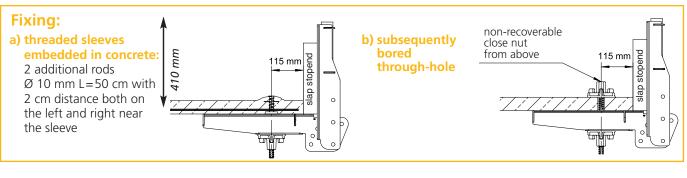
**RAILING SUPPORTS AND ACCESSORIES** 

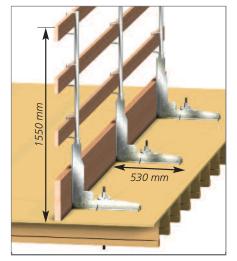
**INSERTED RAILING POST AND ACCESSORIES** 

The Vario is especially ideal for use in **security fences** and **stopend formwork for lattice girder floors.** It consists of a **clamping part** with a **revolving supporting arm** with the possibility to fix the inserted railing post.

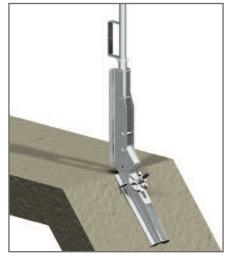
The angle of inclination can be selected by 22.5° steps.

The clamping part is fixed to a concreted sleeve on the lower side of the slab plate. Even if no planned anchor is available, you have the option of subsequent anchoring through the plate.





In slab **edge table formwork** the usual safety fence height of 1 m is too low. The problem can be solved by using the lateral protection railing post of 1.50 m.



The revolving supporting arm offers a multiple of using possibilities for vertical and horizontal inclined walls and slabs.



Even in steel structures clamping to a double-T-girder (H-profile) is possible.





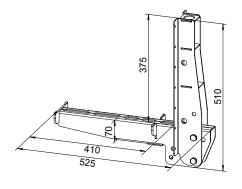


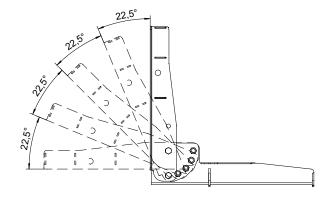


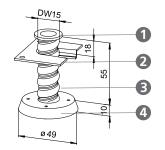
**INSERTED RAILING POST AND ACCESSORIES** 

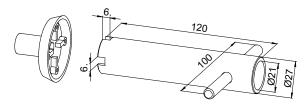
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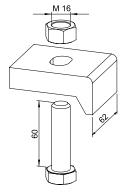
#### **TECHNICAL DATA:**





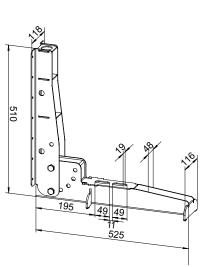


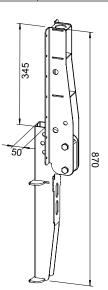




#### Vario slab stopend bar

Weight [kg/unit]	Item No.
8.0	520301





#### Installation-kit DN 15 x 55

Weight [kg/100 units]	Item No.
3.5	101005

Installation-kit consisting of

- 1 plastic cap yellow (item no. 101593)
- 2 threaded plate (item no. 101591)
- (3) threaded sleeve (item no. 1015..\* V2 A: item no. 1016..\*)
- nailing flange with threaded cone (item no. 145016)

\*die letzten beiden Ziffern stehen für die Länge der Hülse in cm.

All parts of the installation-kit are also available separately.

#### Removing tool for nailing flange

Weight [kg/100 units]	Item No.
23.0	145099

# **Counter plate** with bolt and nut (for fixing at steel girders two sets are necessary)

Weight [kg/set]	Item No.
0.81	443012

3

# **INSERTED RAILING POST AND ACCESSORIES**





# Accessory: FS-clamp

This accessory is the perfect edge protection at wall formwork towards the second side and matches with all frame formworks with a profile of  $123 \times 600$  mm.

The FA-clamp will just be inserted and secures itself automatically by sliding outwards.

This will guarantee a safe mounting and demounting.

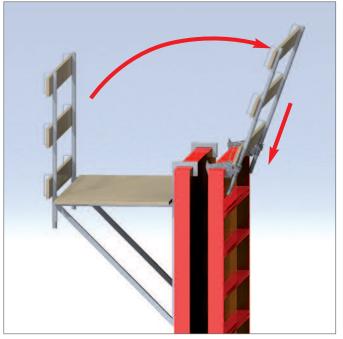
Additionally there is a possibility to place an extra board as a concrete chute to avoid costly cleaning.

#### ATTENTION:

On demand we also produce this clamp for other profiles.

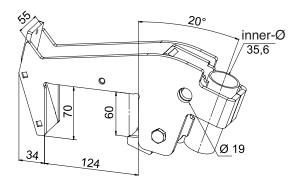


During mounting the railing posts and the boards are inclined towards the concreting platform.



Slide outwards and secure automatically!

#### **TECHNICAL DATA:**



#### **FS-clamp**

Weight [kg/unit]	Item No.
3.10	330290



# **RAILING SUPPORTS AND ACCESSORIES**

#### **INSERTED RAILING POST AND ACCESSORIES**



## Accessory: girder clamp

This girder clamp has been developed for more safety at steel constructions.

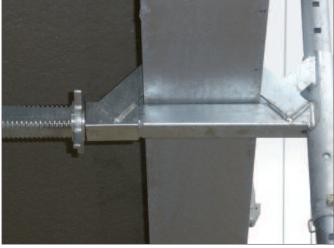
There one is confronted with limiting conditions: instead of outer walls there are only steel girders available to which one can mount the usual slab-stopend elements. The installation of safe slab stopends or edge protections at steel girders with concrete slab topping is very easy with our new solutions.

The girder clamp in connection with our inserted railing post is adjustable in height, thus the height of the edge protection can be adjusted to different girder heights.

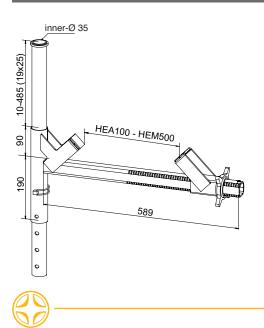
The installation is very easy and can be done without any accessories or additional borings at the girders.

On the photographs below you can see the girder clamp in use with our edge protection with mesh barriers.





#### TECHNISCHE DATEN:



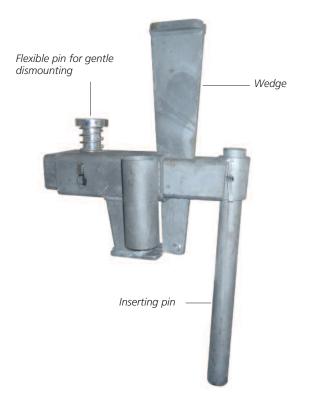
#### **Girder clamp**

Weight [kg/unit]	Item No.
7.20	330291

RA



# **INSERTED RAILING POST AND ACCESSORIES**



# Accessory: clamp for twin walls

A simple solution for a quick mounting of the edge protection at twin walls during armoring works and concreting of slabs. Also for the clamp for twin walls the plastic installation kit has to be used.

#### The big advantage:

During the concreting of the slab the clamp for twin walls guarantees a safe protection with the inserted railing post. After hardening of the concrete the clamp for twin walls can be dismounted immediately and be used again for the next stage. So the plastic installation kit remains inside the concrete and is free available at the surface of the slab.

The railing post will be inserted again into the plastic installation kit and the open edge remains secured without interruption.

Because there are no cantilever parts, sealing and earthworks can be done without problems.

With the flexible pin the clamp for twin walls can be adjusted for 6 and 8 cm thick cases and be removed quickly.

Time intensive lining and an overhanging dismounting of the clamp for twin walls in a danger area is not necessary any more. If the pin is set in the concrete, it can be dismounted easily by loosening the wedge.



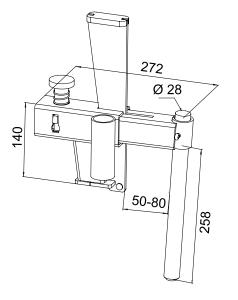






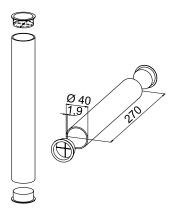
XXX

#### TECHNICAL DATA:



# Clamp for twin walls

Weight [kg/unit]	Item No.
6.50	320800



#### Installation-kit with special cap

Weight [kg/unit]	Item No.
0.05	320699





## **Threaded railing post**

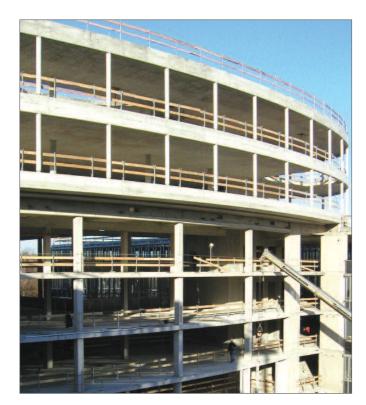
- Post tube tensioning through inside spindles high stability
- Post height 1.15 m
- Large supporting plate, safe hold
- Thread core made of insensitive coarse thread
- Easy screwing by turning the handle on top

This railing post offers permanent safety due to the **large supporting plate** and pretension of the rail tube.

Safe use on high buildings up to 200 m above the earth. The thread core is made of insensitive coarse thread. Installation and removal by simple turning the handle makes working easy and safe.



detail: rugged coarse thread with large supporting plate



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# 3

# Installation-kit with vertical positioner

The vertical positioner is a solid threaded plate made of plastic that is drilled with wire to the reinforcement.

The mounting is easy and quick.

The threaded sleeve with marking plug guarantees that the anchoring points are easy to find after concreting and smoothing concrete surface.

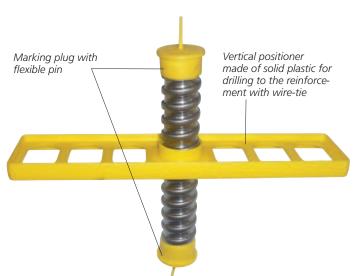
#### Special advantage:

With the vertical positioner an exact vertical mounting of the sleeve is guaranteed.

The height of sleeve can be adjusted after mounting.

Therefore the concrete height can be controlled exactly. Especially for tempered cast, where expensive and dangerous boring holes after concreting must be avoided.

#### ATTENTION: Consider anchoring at the stage of planning!







#### **Subsequent fixing**



# Impact dowel D&W 20 mm

Fixing after concreting also is possible with our **impact dowel** Ø 20 mm with fitting accessories.

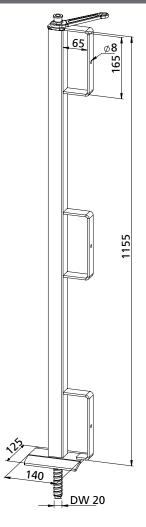
The depth of the inner thread is adjusted to the core of the railing post.

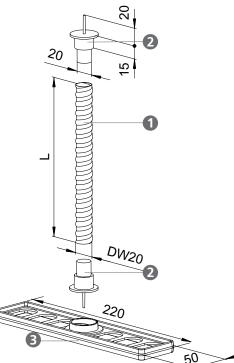
For the mounting of dowel we offer the special accessories like hard metal drill, punching pins and drive-in-pin (without picture).





#### TECHNICAL DATA:

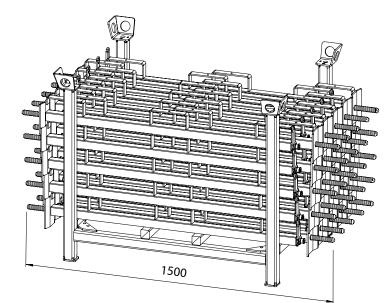




#### Threaded railing post



Q



packing unit per stacking pallet: 50 units

Stacking pallet for storing and transport see page 25.

#### Installation-kit D&W 20 mm with marking plug (yellow) and vertical positioner

Length [mm]	Weight [kg/100 Stck.]	Item No. S 235 JR	Item No. V2 A
120	5.10	102512	102562
170	5.80	102517	102567

Installation-kit consisting of

1 threaded sleeve (item no. 1020..\* – V2 A: item no. 1021..\*)

2 marking plugs (item no. 102098)

(3) vertical positioner (item no. 102088)

\*the last two numbers indicate the length of threaded sleeve.

All parts of the installation-kit are also available separately.

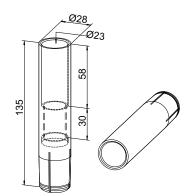


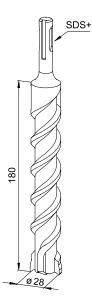


# 3

#### TECHNICAL DATA:

# Fixing parts after concreting



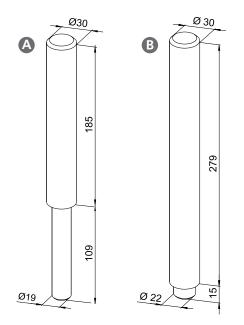


#### Impact dowel D&W 20 mm

Weight [kg/100 units]	Item No.
31.0	122020

#### Hard metal drill

Weight [kg/unit]	Item No.
0.53	122022



#### Installation tools

Description	Weight [kg/unit]	Item No.
A punching pin	1.53	122021
B drive-in pin	1.59	122023

3

# **RAILING CLAMP AND ACCESSORIES**





## **Railing clamp**

- 2 different dimensions: clamping ranges up to 400 and up to 800 mm
- Universal usage by dint of subsequent clamping
- Usage at stair stringers with additional stirrups
- Completely dismountable for an easy maintenance and long life-cycle

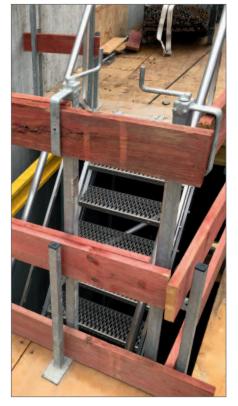
The most universal railing post for all kinds of use, when no installation parts are possible or available.

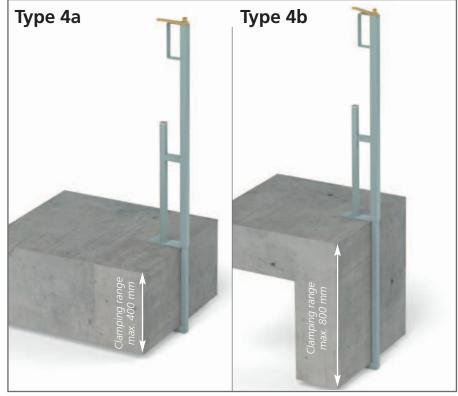
Additional to the railing post with the usual clamping width of 40 cm we offer a second stronger type that can be used for construction widths up to 80 cm.

Based on all experiences made during all rental uses, the already well known type of clamping railing post in varnished version was reworked.

- all tubes are completely hot galvanized and thereby protected against rust
- the spindle is galvanized in a separate handling
- for maintenance purposes, the post can be dismounted into its three parts also after years without problems

These constructional details guarantee longer life-cycles compared to the varnished version.







**RAILING CLAMP AND ACCESSORIES** 

3

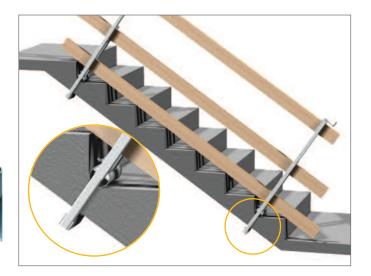
Accessory: Additional stirrup for stairs

The railing post is orthogonally clamped **to the bottom side of the stairs**, so that the clamping stirrup surface butts against the bottom side of the staircase.

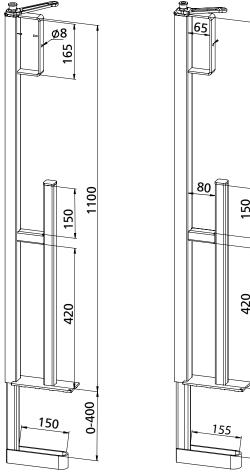
The **piece of tube** is slipped over the **corrugated metal clamping plate** and **secured against sliding** by a **wing nut.** 

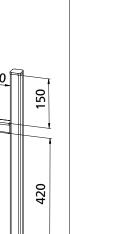
When the post is clamped, the piece of tube rests against the inner corner of the step.





#### **TECHNICAL DATA:**

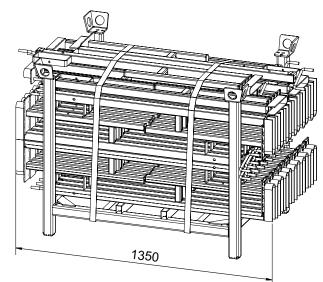




0-800

#### **Railing clamp**

٦	Гуре	Clamping- range [mm]	Weight [kg/unit]	Tube [mm]	Item No.
2	1a	80 – 400	8.5	40 x 40	330440
2	1b	80 – 800	12.5	45 x 45	330480

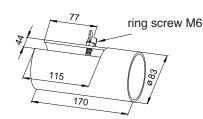


rack for storing and transport see page 29.

packing unit per rack: 50 units

#### **Additional stirrup**

Weight [kg/unit]	Item No.
1.15	330488



**COMBINATION RAILING POST** 

# **Combination railing post**

- Usage at railings and slab edges
- Universal usage by means of clamping part with 2 inserting possibilities
- Quick adjustment by dint of coarse thread spindle
- Clamping range 80 400 mm



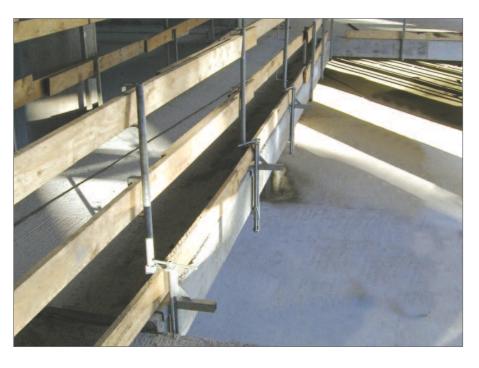
The combination railing post consists of two parts:

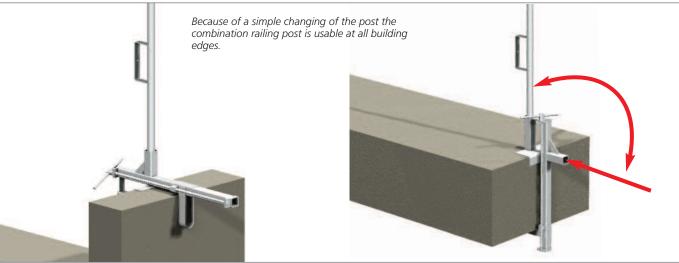
- the post for insertion
- one clamping part

The clamping part can be used in different kinds: **laterally at slab edges** or **from the top at setting on edges and railings.** 

This is possible by a simple 90° rotation of the clamping part and thus makes this railing post usable in many ways.

The post is inserted into the according tube sleeve.







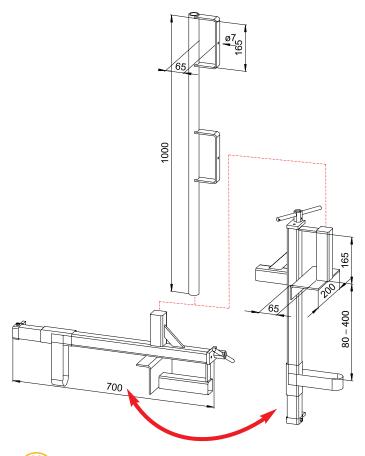




**COMBINATION RAILING POST** 



TECHNICAL DATA:



# Combination railing post, 2-part

Part	Weight [kg/part	Item No.
clamp	6.42	330760
post	3.50	330761

**FILI-RAILING POST** 

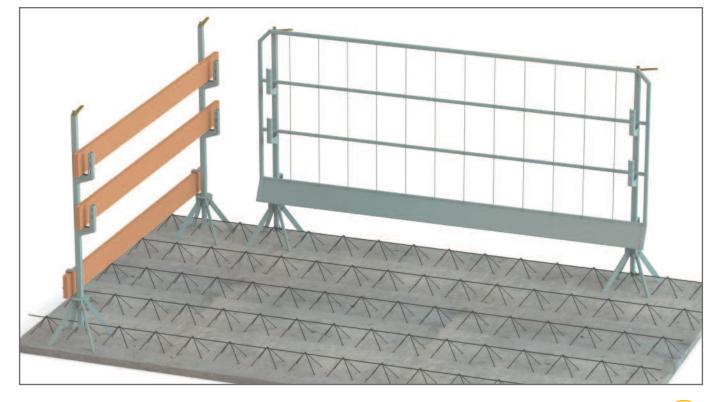




# **FILI-railing post**

- Especially developed for filigree slabs
- Easy and safe pre-stressing of the hook by turning the upper crank
- Can be used with wooden boards and with ROBUSTA-mesh barriers
- Can be displaced quickly during successive laying of the filigree slabs
- Base feet can be folded for a space saving storing and transportation

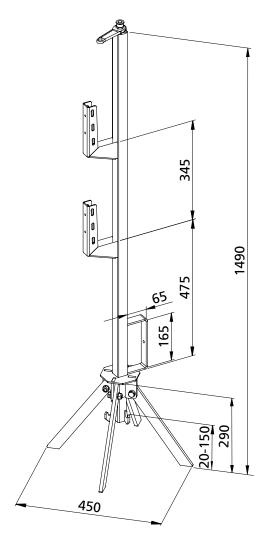
This railing post has been developed especially for fixing at the mesh girders of the filigree slabs. The inner tube will be moved up or down by turning the crank on top. The inner tube has two hooks at the bottom, for fixing the post just place one hook in the crosspoint of two lattice girders and top horizontal bar and then spindle the inner tube upwards. The fixing position of the post can be adapted universally to the space available due to the two hooks. Base feet can be folded for a space saving storing and transportation.

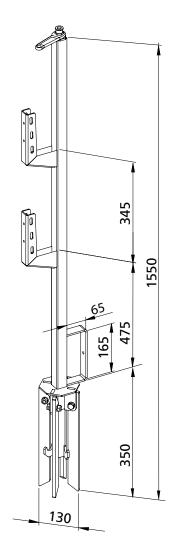






#### **TECHNICAL DATA:**

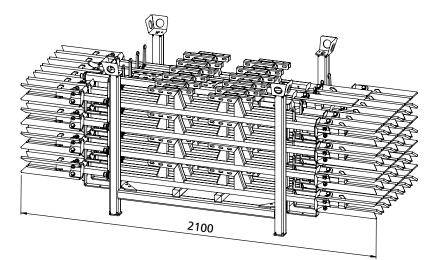




#### **FILI-railing post**

**FILI-RAILING POST** 

Weight [kg/unit]	Item No.
10.75	331300



packing unit per rack: 40 units

rack for storing and transport see page 29.





**DOWEL RAILING POST AND ACCESSORIES** 

# 

# **Dowel railing post**

- To fix subsequent to slab edges on which it is not possible to clamp
- Safe fixing through screwing into the ROBUSTA-dowel
- Safe screwing in an upright position



In **existing construction**, especially in renovation work, you can install a security fence later by using this railing post. The post thread core overhanging below is to be screwed into the **impact dowel**. You need neither to bow over the roof edge nor to kneel down, as the handle for clamping is fixed at the top of the post.

# Impact dowel D&W 15 mm

For the fixing of the dowel railing post we deliver the fitting dowel and even the accessories, like our hard metal drill and our punching pin.

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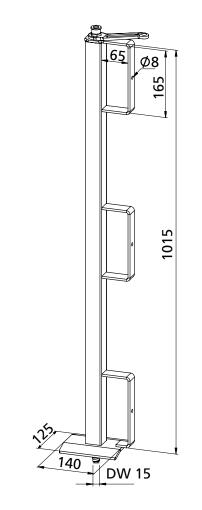






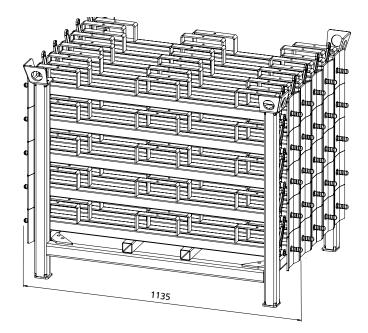
DOWEL RAILING POST AND ACCESSORIES

#### TECHNICAL DATA:

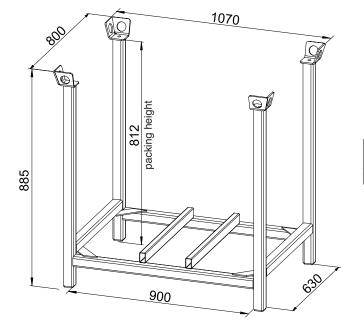


#### Dowel railing post

Weight [kg/unit]	Item No.
6.0	330915



#### Packing unit per stacking pallet: 50 units



Rack for storing and transport

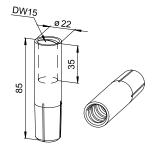
Weight [kg/unit]	Item No.
48.0	639903



# **DOWEL RAILING POST AND ACCESSORIES**

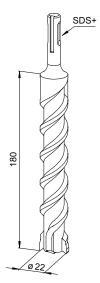


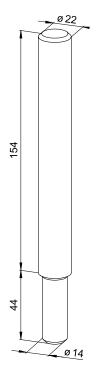
#### TECHNICAL DATA:



#### Impact dowel Ø 15 mm

Weight [kg/100 units]	Item No.
16.5	121515





#### Hard metal drill

Weight [kg/unit]	Item No.
0.40	121517

#### Punching pin

Weight [kg/unit]	Item No.
0,45	121516



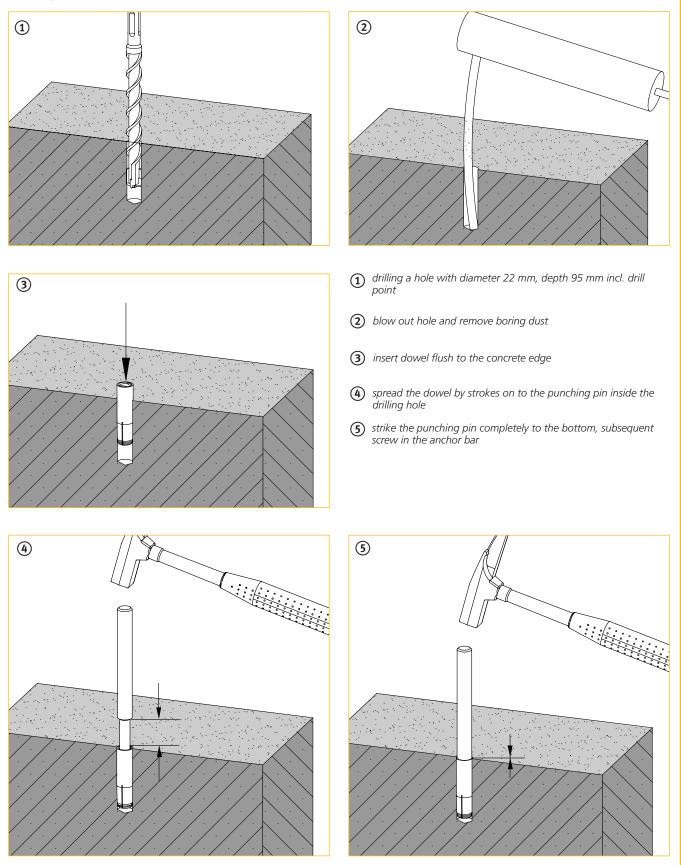


# **RAILING SUPPORTS AND ACCESSORIES**

DOWEL RAILING POST AND ACCESSORIES



#### Setting of impact dowel:



# **ROBUSTA-GAUKEL GMBH & CO. KG**

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