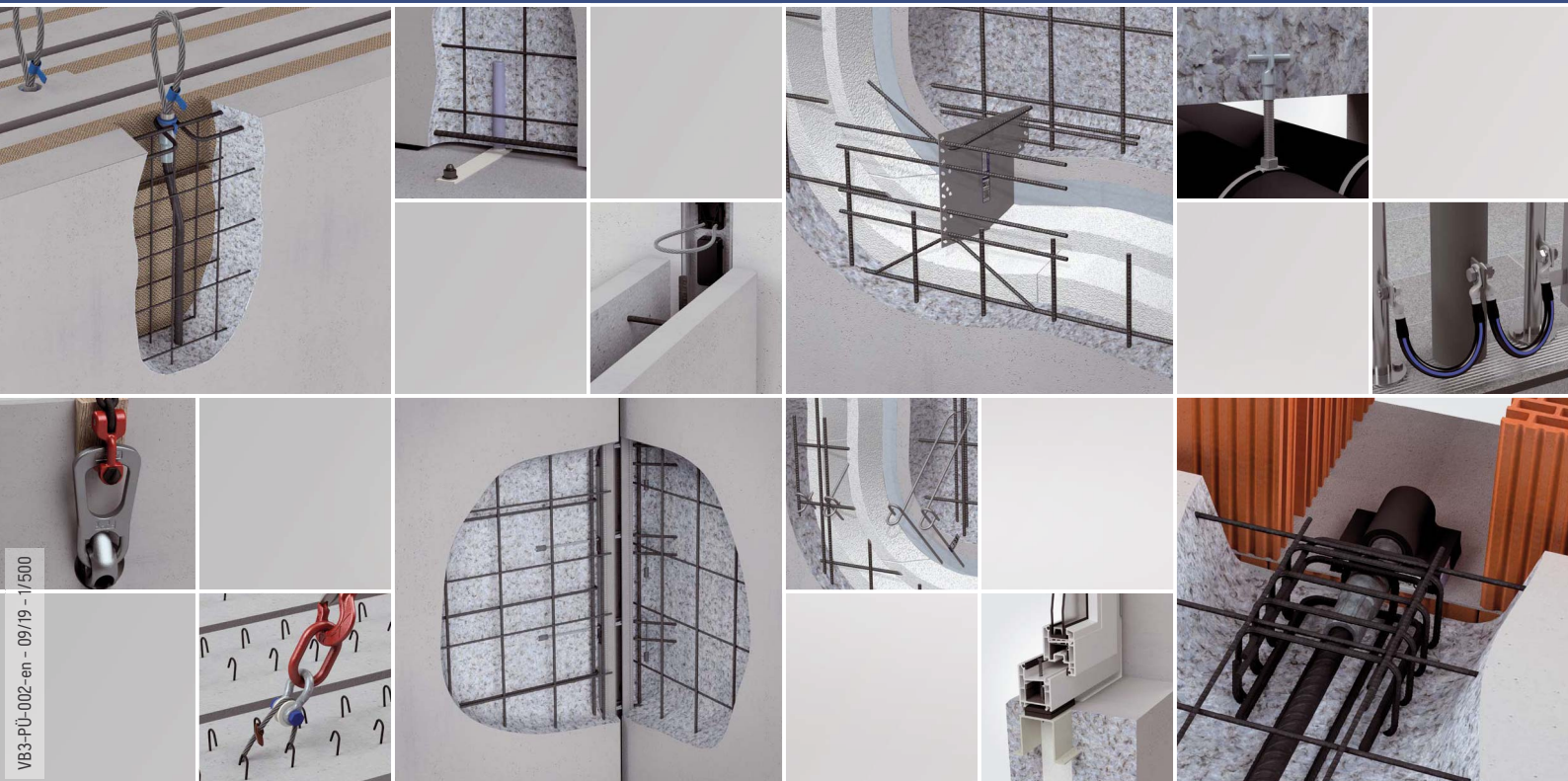


# PHILIPPGROUP

## Transport and mounting systems for prefabricated units



VB3-PÜ-002-en - 09/19 - 1/500

**Product Range**

Version: 2019



Dear partner,

The **PHILIPP**GROUP headquartered in Aschaffenburg, Germany, is family-owned and one of the largest midsize companies in northern Bavaria and operates as an international production and trading company successfully.

With about 300 employees at four different locations and more than 30 strategic partners abroad, we are one of the leading suppliers of transport and mounting systems for prefabricated concrete buildings, hydraulics, pneumatics and power units as well as lashing/lifting equipment and wire rope technology. Numerous patents and industrial property rights reflect our innovative strength and technical know-how.

**Our aims–  
ambitious, customer-focused and feasible!**

Our main objective is to achieve the highest-possible customer satisfaction serving best service and well-engineered products.

Individual challenges we meet with customized solutions.

**Benefit from our competence.**

Being dedicated to progress we combine keeping proven solutions and integrating successful grown structures into technological advance.

We have managed this so far. Today our company shows stability in performance, customer services, high quality standards and personal commitment. Frequent TÜV certifications in accordance to EN ISO 9001 documents these efforts.

We thank you for your interest and confidence.

Thorsten Philipp and his team

The world is in motion.  
We provide it support.

More than 45 years  
**of trust**

PHILIPPGROUP



## **PHILIPP – Strength and stability**

It is an undisputed fact that building with precast concrete elements offers many planning and economic advantages in the construction of modern industrial and office buildings as well as all kind of commercial constructions. Hereby, diverse structural precast concrete elements take over multiple functions in the typical skeleton construction. In this case the use of high-capacity and high-quality components is almost a matter of course and an integral part of modern prefabricated construction.

PHILIPP offers among other things for the product groups connection, facade and fixing technology and, in particular, transport anchor systems a wide range of products and thus numerous technical solutions for a variety of applications. In addition to a high product quality, structural engineers and precast concrete industry benefit primarily from our high motivation for best service. Individual technical support, competent advice and user-friendly documentation as well as software solutions (freeware) are the focus here.

If you have any questions about our product range, please do not hesitate to contact us at any time. For a first overview, we have summarised the most important technical information in this brochure – solutions, which support you!

## Transport anchor systems

- ✓ Threaded transport anchor system
- ✓ Spherical head anchor system
- ✓ Hole anchor system
- ✓ Cast-in lifting hoops
- ✓ Further systems

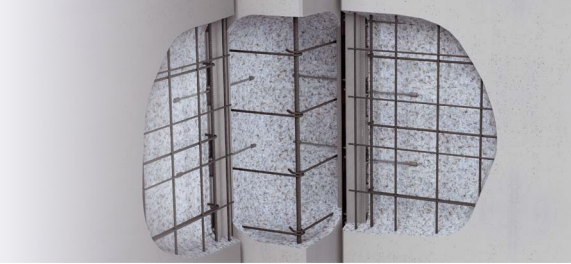
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## Connecting technology

- ✓ German approved systems for high forces
- ✓ Constructive rails and connecting loops
- ✓ Restraint dowel plate / Dowelling system

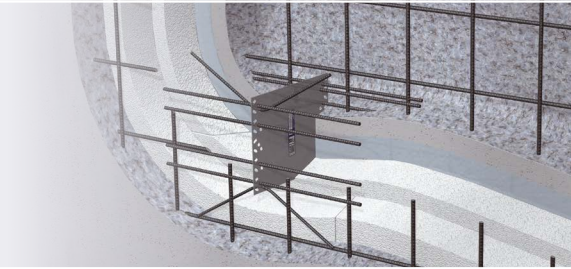
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## Facade technology

- ✓ Sandwich panel anchor system SA / FA
- ✓ Sandwich panel anchor system SPA
- ✓ Sandwich FT Anchor

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## Fixing technology

- ✓ Fixing sockets
- ✓ Corner guards

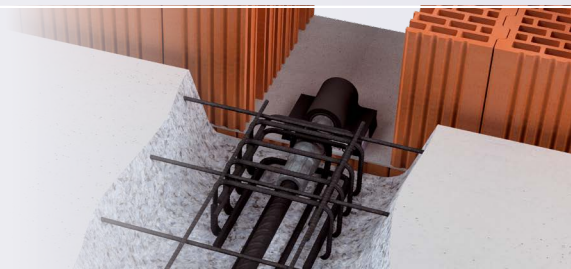
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## Noise reduction system

- ✓ Bearing system with noise reduction

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## Earthing technology

- ✓ Earthing sleeve
- ✓ Earthing connectors

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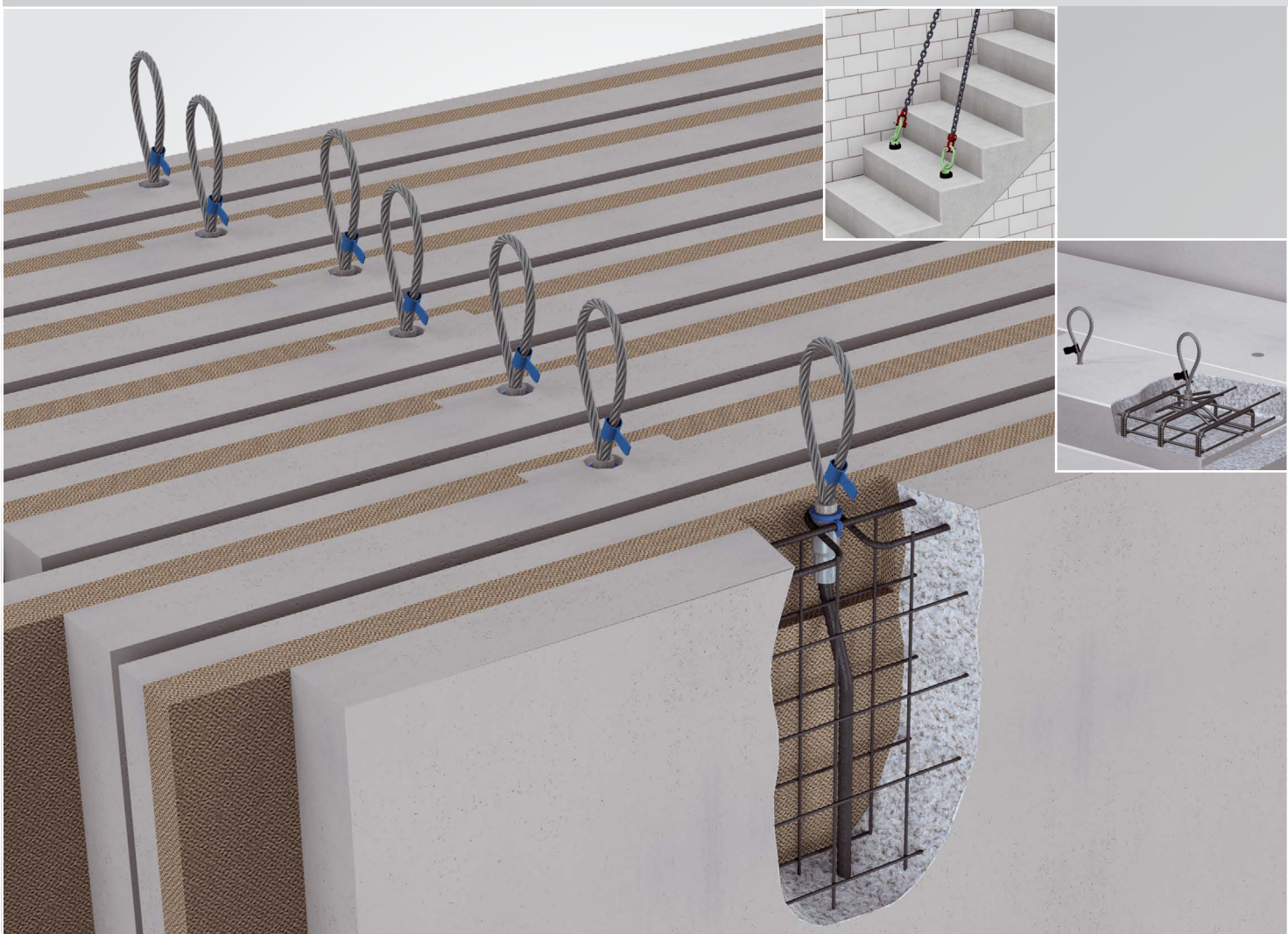
## Transport and mounting – with safety

Transport anchors face daily "heavy" challenges during transport and mounting of precast concrete elements. Here, both the safety of people in the precast factory and on the construction site as well as the safety in use are always in the centre of attention. Precisely and high-grade produced transport anchors from PHILIPP prove the quality and thus create the required safety. Continuous quality assurance activities additionally create confidence.

A suitable solution for almost every transport and mounting process of precast concrete elements of all kind can be offered by PHILIPP. Although PHILIPP meets the constantly increasing requirements with product optimizations of its standard portfolio or individually adapted solutions.

On the one hand, transport anchors are not subject to approval, on the other hand, both the so-called Machinery Directive and the VDI/BV-BS 6205 guideline series define in detail their manufacture, design and application. The consistent CE-marking of the PHILIPP transport anchor systems is done on the basis of these guidelines.

For each anchor system a detailed Installation and Application Instruction is available, providing important information on prerequisites, reinforcement, load-bearing capacities (for steel and concrete) and much more.





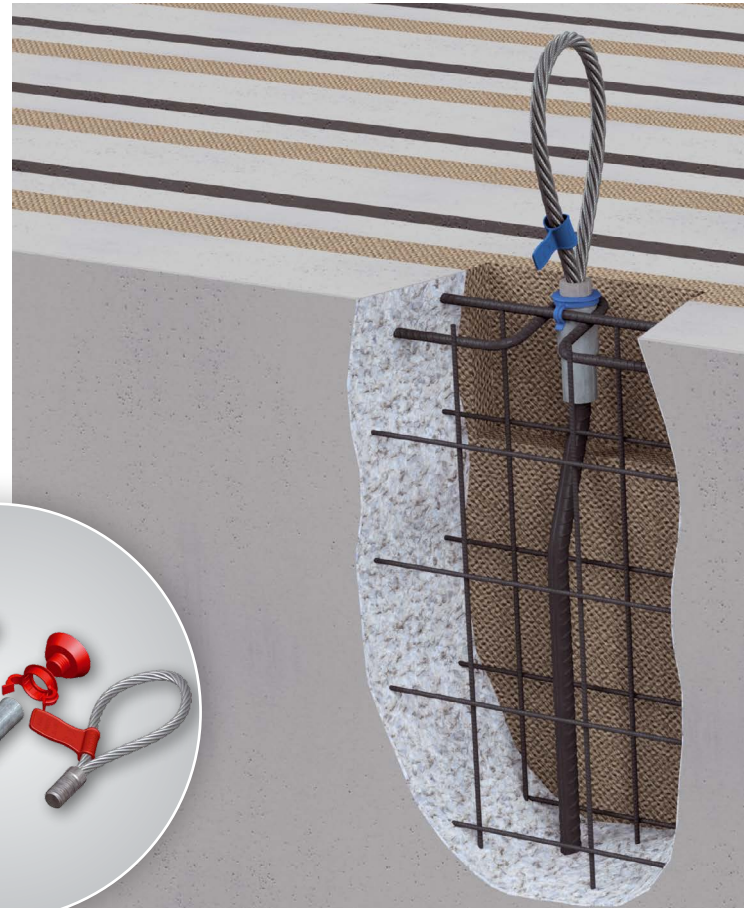
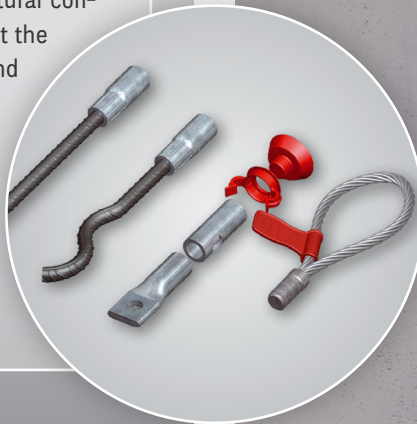
## Threaded transport anchors

for the lifting of e.g. wall-like elements

The different Threaded anchor systems combine on the one side a uniform thread system (RD or metric thread) for screwing in various lifting devices and on the other side specific designs for versatile applications, especially for walls resp. wall-like elements.

For challenges such as thin element thickness, low embedment depth due to less space, architectural concrete or inclinations of the concrete element the Threaded transport anchors are prepared and offer individually adapted solutions.

A wide range of accessories with lifting devices, retaining and sealing caps completes the Threaded anchor system comprehensively.



### Recommended use



Walls



Sandwich panels



Beam



Floor and roofing slabs



Bar-shaped elements



Stairs

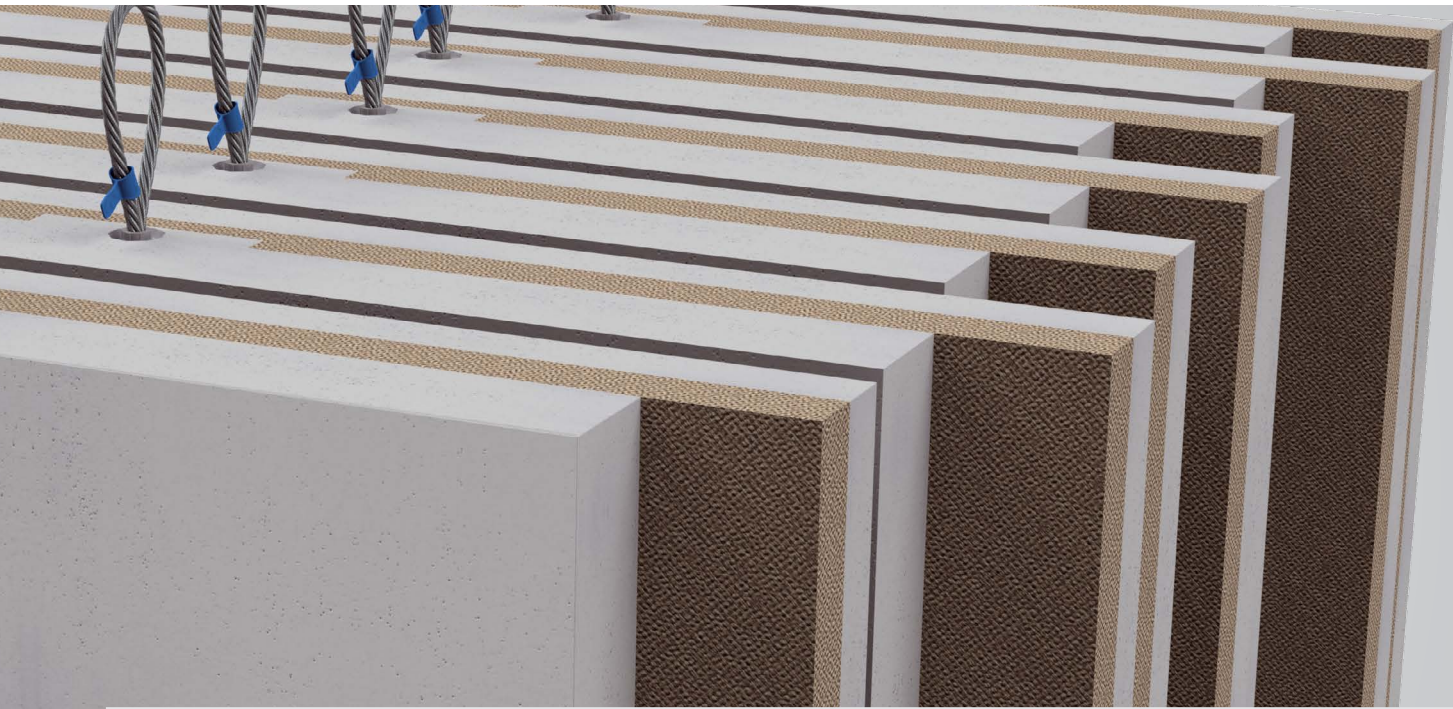


Shafts / manholes

### Features and benefits compact

- ✓ Threaded transport anchors are totally embedded in the concrete element
- ✓ Special RD thread is resistant to concrete dust, sand and other dirt
- ✓ Small, optimized recesses on the concrete surface (KH-system)
- ✓ Clear colour code for identification in the entire system
- ✓ Bearing capacities from 0.5 t up to 20 t
- ✓ Save load transfer by optimized anchorage of the reinforcing bar and / or design of the anchor
- ✓ Normally suitable for all lifting directions (axial, diagonal, lateral)
- ✓ Reinforcement optimized for effectiveness
- ✓ Well graded type series and bearing capacities for economical use
- ✓ Sockets available galvanised or in stainless steel





## Anchor overview

Recommended use	Transport anchor	Types
Walls	Version: straight tail Version: offset Version: long wavy tail, Compact anchor, Lifting insert with cross hole Lifting insert with crimped end	RD 12 - RD 60 RD 30 - RD 52 RD 12 - RD 52 RD 12 - RD 30
Beams and girders	Version: straight tail Version: long wavy tail, Compact anchor, Lifting insert with cross hole Lifting insert with crimped end	RD 12 - RD 60 RD 12 - RD 52 RD 12 - RD 30
Shafts / manholes	Version: straight tail Compact anchor	RD 12 - RD 60 RD 12 - RD 52
Floor and roofing slabs / stairs	Compact anchor	RD 12 - RD 52

Version: straight tail



Version: offset



Version: long wavy tail



Compact anchor



Lifting insert with cross hole



Lifting insert with crimped end



Threaded anchor elongation

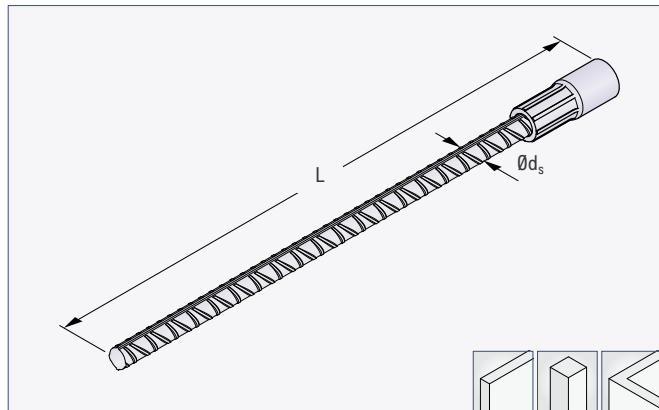


# Threaded transport anchors for the lifting of e.g. wall-like elements

## Threaded transport anchor - straight tail

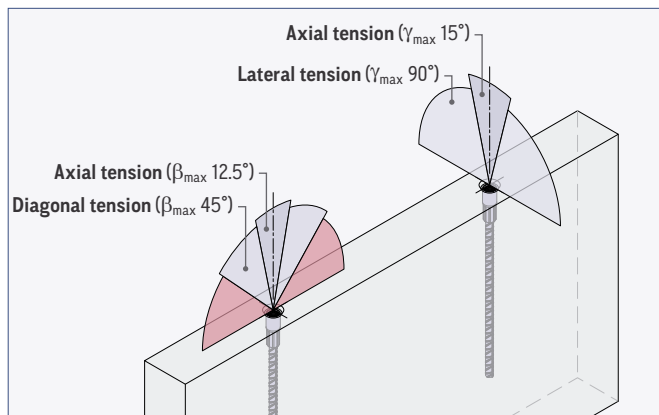
Straight tail threaded transport anchors can be used universally for various precast concrete elements on the one hand, but on the other hand they can show their capabilities in e.g. bar-shaped elements or walls. Either with extremely thin or heavy prefabricated elements – depending on the element type and its dimensions different sizes are available. Axial-, diagonal and lateral tension are no problem for the threaded anchor with straight tail.

In combination with the Steel recess former SZ15 (see page 26), additional reinforcement elements can be omitted with this threaded anchor.



Threaded transport anchor - straight tail					
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimensions		
			L [mm]	$\varnothing d_s$ [mm]	
67M12	RD 12	5.0	195	8	
67M14	RD 14	8.0	235	10	
67M16	RD 16	12.0	275	12	
67M18	RD 18	16.0	305	14	
67M20	RD 20	20.0	355	16	
67M24	RD 24	25.0	405	16	
67M30	RD 30	40.0	505	20	
67M36	RD 36	63.0	690	25	
67M42	RD 42	80.0	840	28	
67M52	RD 52	125.0	900	32	
67M56	RD 56	150.0	1200	36	
67M60	RD 60	200.0	1400	40	

Types 12 - 52 also available in version stainless steel (ref.-no. 75M\_\_VA)



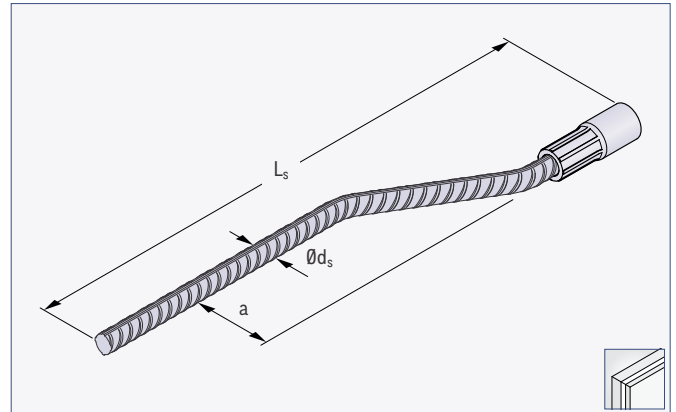
For further details of the application and design of the threaded transport anchor straight tail please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

## Threaded transport anchor - with offset

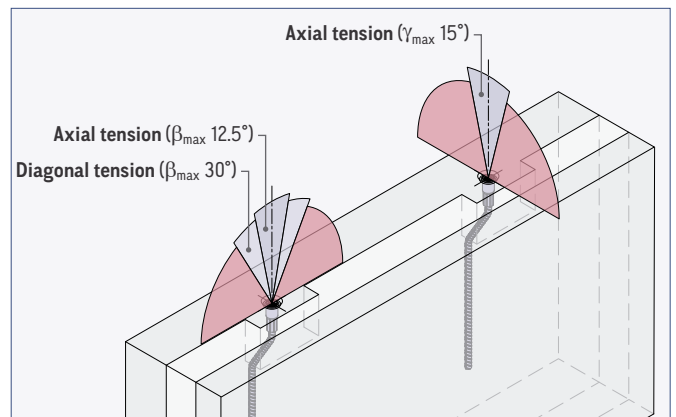
Especially for balancing the inclination during the lifting process of sandwich panels the offset version of the threaded anchor has been developed. The special shape of the offset anchor enables the transport and mounting process (nearly) in the centre line of the precast element. Hereby, axial and diagonal tension can easily be realized with the offset threaded anchor.



### Threaded transport anchor - with offset

Ref.-No. galvanised	Type	Steel bearing capacity (kN)	Dimensions		
			$L_s$ (mm)	$a$ (mm)	$\varnothing d_s$ (mm)
67M30GK	RD 30	40.0	750	60	20
67M36GK	RD 36	63.0	950	60	25
67M42GK	RD 42	80.0	1100	70	28
67M52GK	RD 52	125.0	1400	90	32

Also available in version stainless steel (ref.-no. 75M\_\_VAGK).



For further details of the application and design of the threaded transport anchor with offset please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

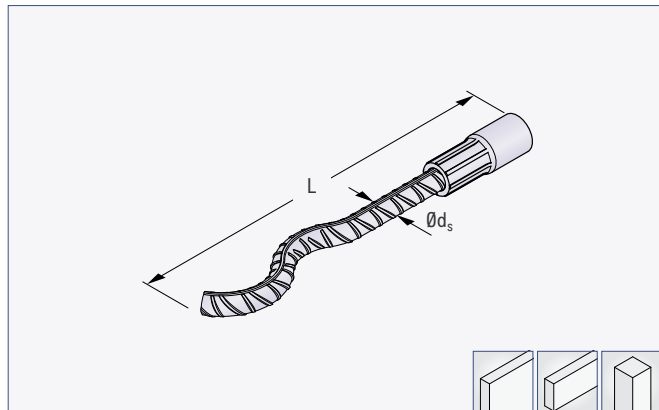


/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

# Threaded transport anchors for the lifting of e.g. wall-like elements

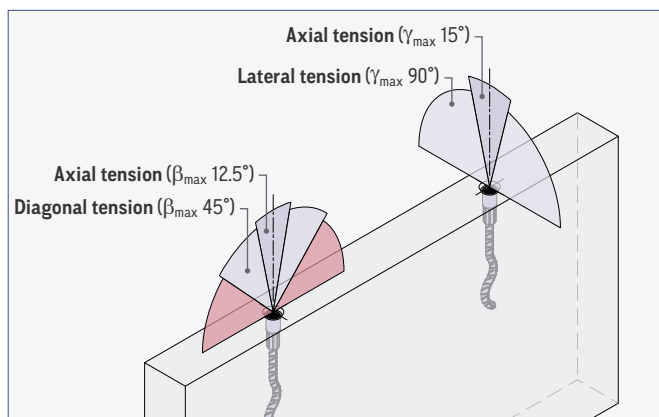
## Threaded transport anchor - long wavy tail

The Threaded anchor long wavy tail also offers a wide range of applications. Its speciality lies primarily in walls as well as bar-shaped elements (purlin, waler, beams etc.). With the waveform and the ribbed reinforcing steel, modes of operation are combined in the concrete and thus enable shorter embedment depths. All load directions can be realized with the Threaded anchor long wavy tail easily.



Threaded transport anchor - long wavy tail					
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimensions		
			L [mm]	Ød <sub>s</sub> [mm]	
67M12WE	RD 12	5.0	137	8	
67M14WE	RD 14	8.0	170	10	
67M16WE	RD 16	12.0	216	12	
67M18WE	RD 18	16.0	235	14	
67M20WE	RD 20	20.0	257	16	
67M24WE	RD 24	25.0	350	16	
67M30WE	RD 30	40.0	450	20	
67M36WE	RD 36	63.0	570	25	
67M42WE	RD 42	80.0	620	28	
67M52WE	RD 52	125.0	750	32	

Also available in version stainless steel (ref.-no. 75M\_\_VAWE).



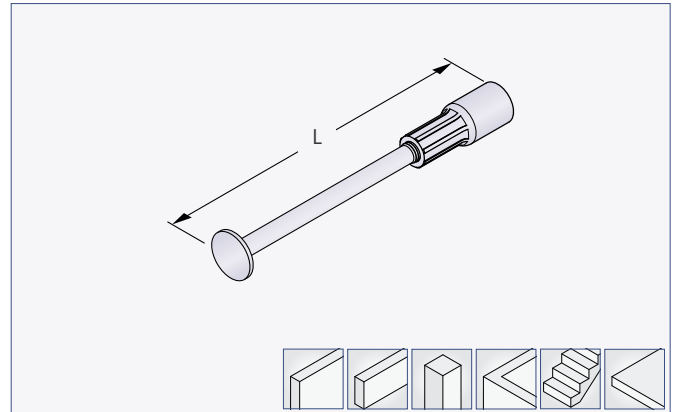
For further details of the application and design of the Threaded transport anchor long wavy tail please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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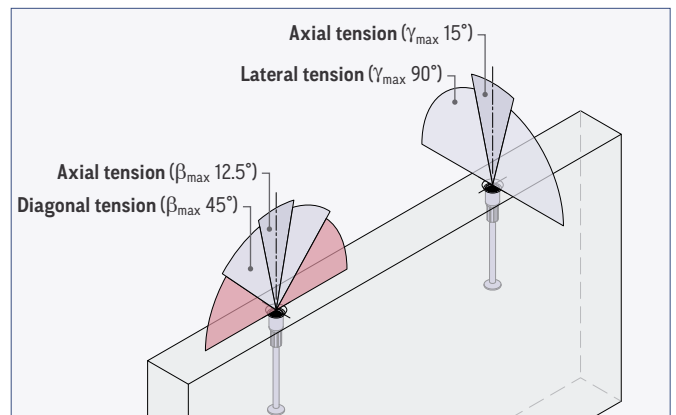
## Compact anchor

An extremely wide range of applications can be realised with the Compact anchor due to the combination of a compressed foot and a plain round steel bar. Because of the very short embedment depth the Compact anchor is typically suitable for special wall geometries with less space, but also for use in stairs and slabs, for example. Axial-, diagonal and lateral tension are no problem for the Compact anchor.



Compact anchor			
Ref.-No.	Type	Steel bearing capacity	Dimension
galvanised		[kN]	L [mm]
67K120100	RD 12	5.0	100
67K120150	RD 12	5.0	150
67K140105	RD 14	8.0	105
67K140140	RD 14	8.0	140
67K160130	RD 16	12.0	130
67K160175	RD 16	12.0	175
67K180150	RD 18	16.0	150
67K180225	RD 18	16.0	225
67K200185	RD 20	20.0	185
67K200250	RD 20	20.0	250
67K240200	RD 24	25.0	200
67K240275	RD 24	25.0	275
67K300275	RD 30	40.0	275
67K300350	RD 30	40.0	350
67K360334	RD 36	63.0	334
67K360450	RD 36	63.0	450
67K420385	RD 42	80.0	385
67K420500	RD 42	80.0	500
67K520550	RD 52	125.0	550
67K520700	RD 52	125.0	700

Also available in version stainless steel (ref.-no. 75K\_\_\_\_\_VA).



For further details of the application and design of the Compact anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



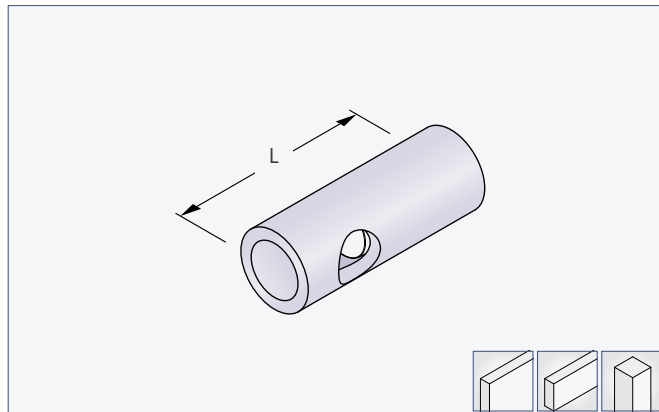
[www.philipp-group.de](http://www.philipp-group.de)

/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

# Threaded transport anchors for the lifting of e.g. wall-like elements

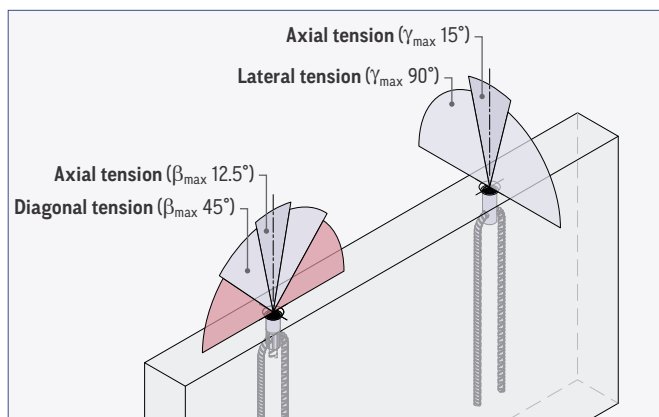
## Lifting insert with cross hole

Lifting inserts with cross hole are simple but versatile transport anchors within the PHILIPP Threaded anchor system. The applied force into the precast concrete element – typically walls or bar-shaped elements – is done via the reinforcement to be planned separately and inserted through the cross hole. Axial-, diagonal and lateral tension are no problem for the Lifting insert with cross hole.



Lifting insert with cross hole				
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimension	
			L [mm]	
71HM12	RD 12	5.0	40	
71HM14	RD 14	8.0	47	
71HM16	RD 16	12.0	55	
71HM18	RD 18	16.0	65	
71HM20	RD 20	20.0	67	
71HM24	RD 24	25.0	77	
71HM30	RD 30	40.0	105	
71HM36	RD 36	63.0	125	
71HM42	RD 42	80.0	145	
71HM52	RD 52	125.0	195	

Also available in version stainless steel (ref.-no. 77HM\_\_VA).



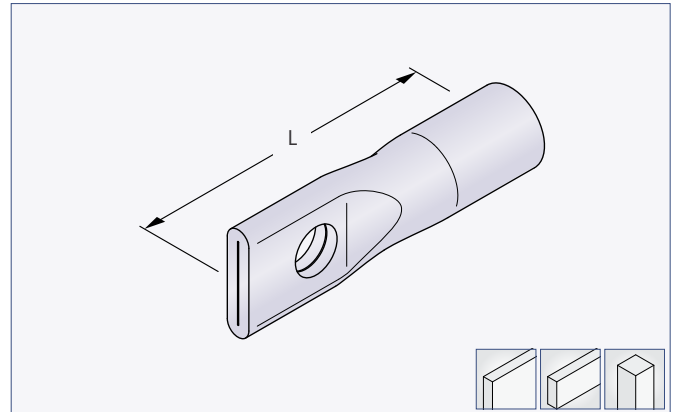
For further details of the application and design of the Lifting insert with cross hole please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

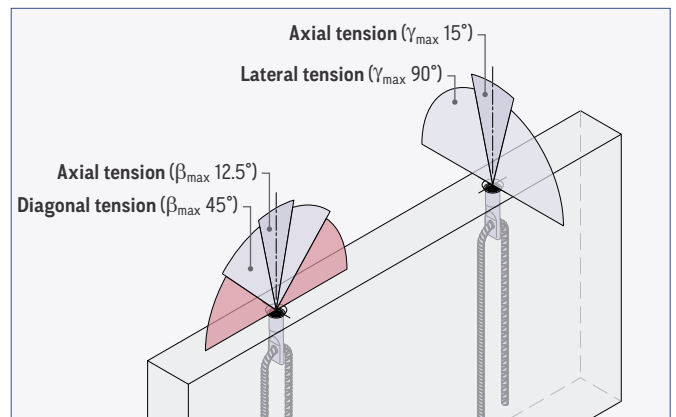
## Lifting insert with crimped end

For rather light elements such as small walls or bar-shaped elements, the Lifting insert with crimped end is a simple and often used transport anchor system. The applied force into the precast concrete element is done via the reinforcement to be planned separately and inserted through the cross hole. With the Lifting insert with crimped end all load directions can be realised without any problems.



Lifting insert with crimped end				
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimension	
				L [mm]
71Ö12	RD 12	5.0		60
71Ö14	RD 14	8.0		70
71Ö16	RD 16	12.0		77
71Ö18	RD 18	16.0		85
71Ö20	RD 20	20.0		92
71Ö24	RD 24	25.0		105
71Ö30	RD 30	40.0		135

Also available in version stainless steel (ref.-no. 77Ö\_\_VA).



For further details of the application and design of the Lifting insert with crimped end please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



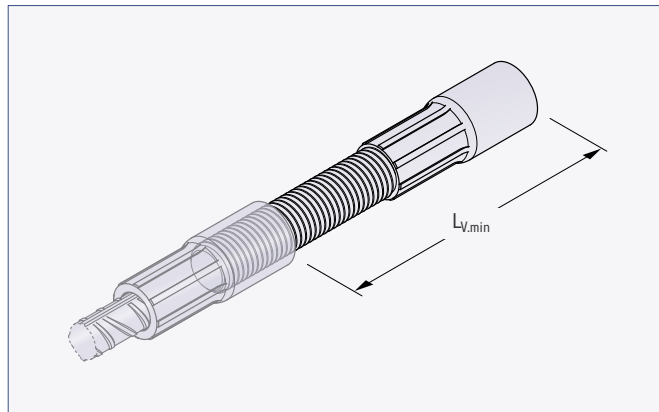
/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

[www.philipp-group.de](http://www.philipp-group.de)

# Threaded transport anchors for the lifting of e.g. wall-like elements

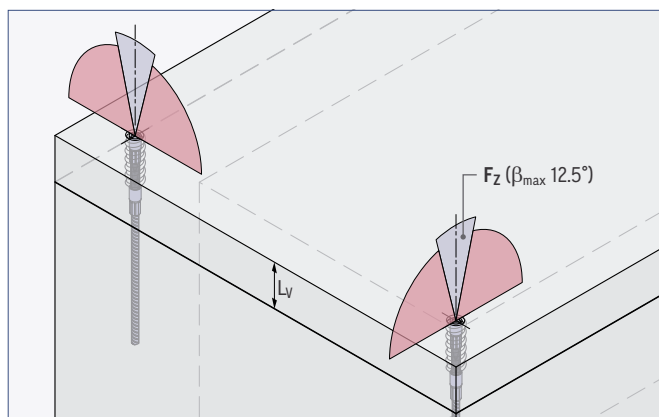
## Elongation for threaded transport anchors

The anchor elongation is intended for applications where it is not possible to lift off directly at the transport anchor. E.g. with cubicles in prefabricated construction with subsequently mounted roof element, the transport of the complete module is thus possible. Here, the elongation is screwed into an existing threaded transport anchor (of the cubicle) through a recess in the roofing slab.



Elongation for threaded transport anchors				
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimensions	
			for thread (RD / M)	L <sub>V,min</sub> (mm)
67AVL12___	RD 12	5.0	12	40
67AVL16___	RD 16	12.0	16	55
67AVL20___	RD 20	20.0	20	65
67AVL24___	RD 24	25.0	24	75
67AVL30___	RD 30	40.0	30	105
67AVL36___	RD 36	63.0	36	110
67AVL42___	RD 42	80.0	42	135
67AVL52___	RD 52	125.0	52	180

The elongation length L<sub>y</sub> has to be added to the reference number



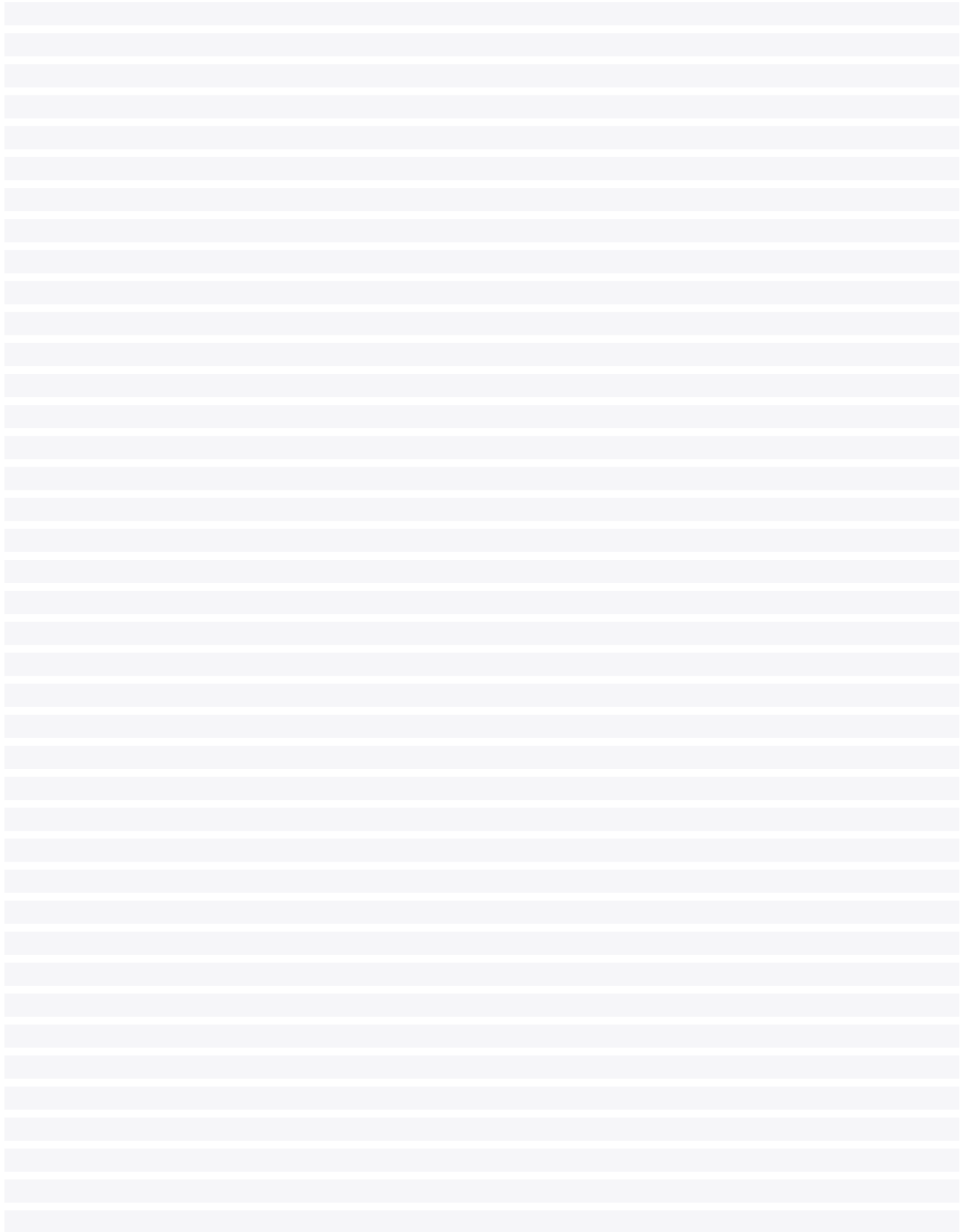
For further details of the application and design of the Threaded transport anchor elongation please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Threaded transport anchors

for the lifting of e.g. slab-like elements

The different Threaded anchor systems combine on the one side a uniform thread system (RD or metric thread) for screwing in various lifting devices and on the other side specific designs for versatile applications, especially for slabs resp. slab-like elements.

For challenges such as thin slab elements (and the resulting low embedment depth), the Threaded transport anchors are prepared and offer individually adapted solutions.

A wide range of accessories with lifting devices, retaining and sealing caps completes the Threaded anchor system comprehensively.



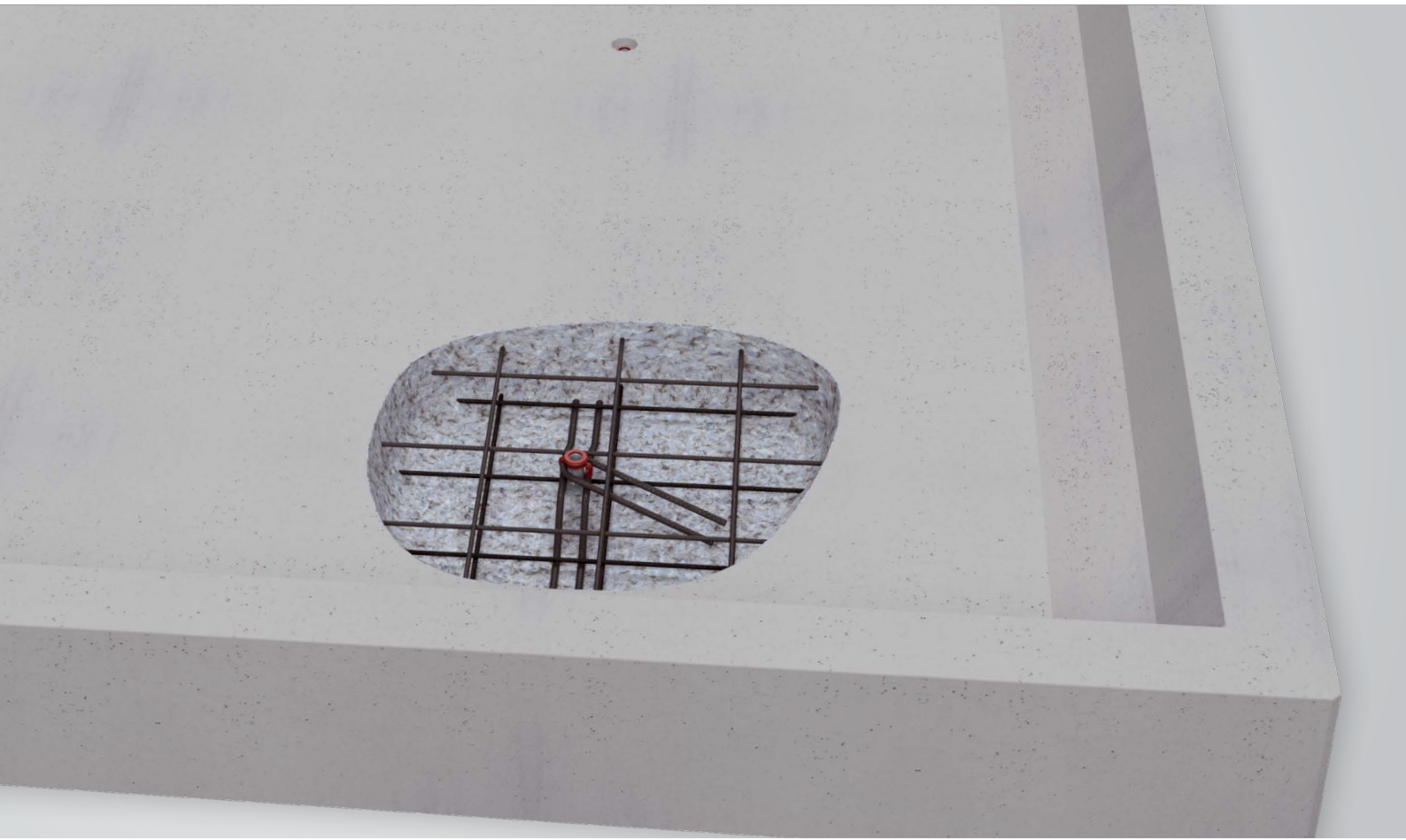
### Recommended use



Floor and roofing slabs

### Features and benefits compact

- ✓ Threaded transport anchors are totally embedded in the concrete element
- ✓ Special RD thread is resistant to concrete dust, sand and other dirt
- ✓ Small optimized recesses on the concrete surface (KH system)
- ✓ Clear colour code for identification in the entire system
- ✓ Bearing capacities from 0.5 t up to 12.5 t
- ✓ Save load transfer by optimized anchorage of the reinforcing bar and / or design of the anchor
- ✓ Suitable for axial and diagonal tension
- ✓ Reinforcement optimized for effectiveness
- ✓ Well graded type series and bearing capacities for economical use
- ✓ Sockets available galvanised or in stainless steel



## Anchor overview

Recommended use	Transport anchor	Types
Floor and roofing slabs	Version: short wavy tail Screw anchor Capped end anchor	RD 12 - RD 42 RD 12 - RD 30 RD 12 - RD 52

### Version: short wavy tail



### Screw anchor



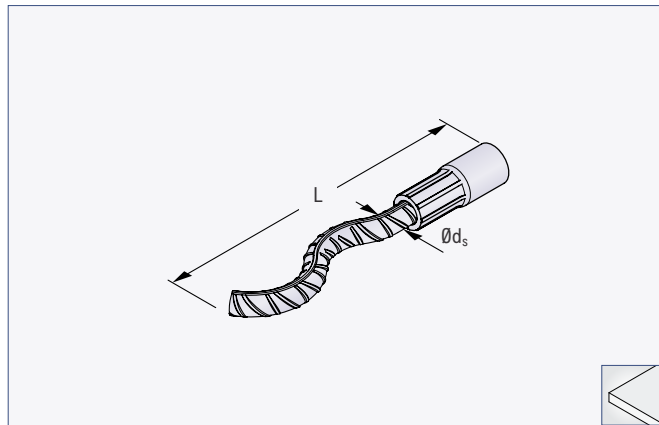
### Capped end anchor



# Threaded transport anchors for the lifting of e.g. slab-like elements

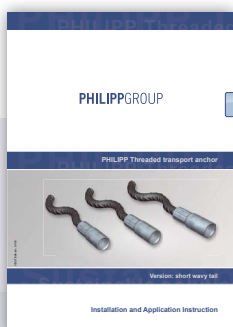
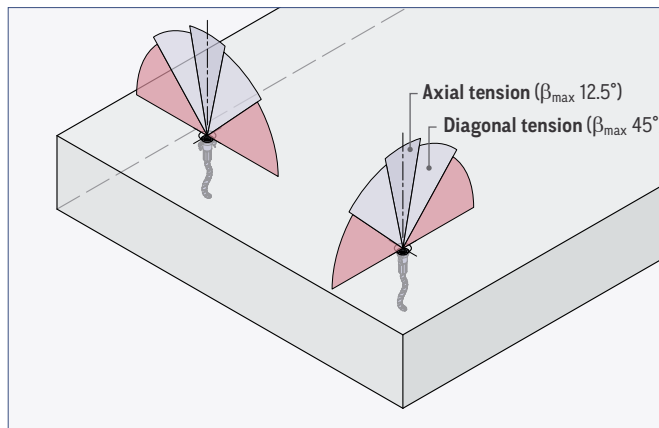
## Threaded transport anchor - short wavy tail

The Threaded anchor short wavy tail is intended for use exclusively in slab-like elements. With the waveform and the ribbed reinforcing steel, modes of operation are combined in the concrete and thus enable shorter embedment depths. The load directions axial and diagonal tension are available without restrictions for this anchor type.



Threaded transport anchor - short wavy tail					
Ref.-No. galvanised	Type	Steel bearing capacity (kN)	Dimensions		
			L (mm)	Ød <sub>s</sub> (mm)	
67M12K	RD 12	5.0	110	8	
67M14K	RD 14	8.0	130	10	
67M16K	RD 16	12.0	170	12	
67M18K	RD 18	16.0	175	14	
67M20K	RD 20	20.0	187	16	
67M24K	RD 24	25.0	240	16	
67M30K	RD 30	40.0	300	20	
67M36K	RD 36	63.0	380	25	
67M42K	RD 42	80.0	450	28	

Also available in version stainless steel (ref.-no. 75M\_\_VAK).



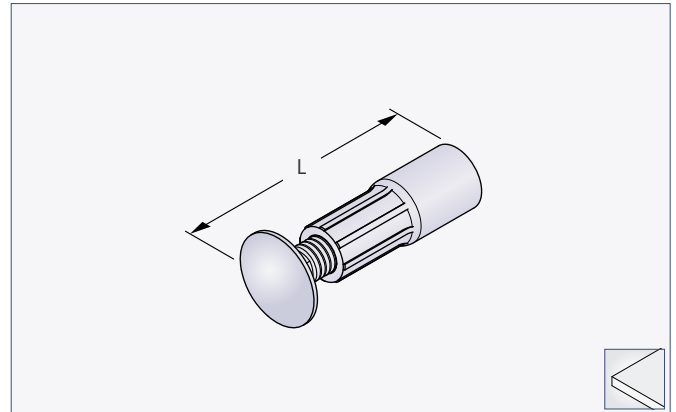
For further details of the application and design of the Threaded transport anchor short wavy tail please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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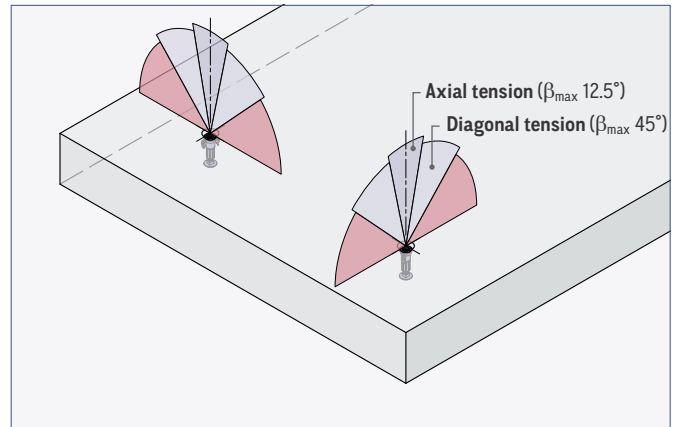
## Screw anchor

Due to their low embedment depth, screw anchors are the ideal solution for light, thin slab-like precast concrete elements. In addition, under certain conditions the additional reinforcement for diagonal tension can be omitted, so that the installation of the screw anchor is quite simple. The load directions axial and diagonal tension are available without restrictions for this anchor type.



Screw anchor				
Ref.-No. galvanised	Type	Steel bearing capacity (kN)	Dimension L (mm)	
67SA12	RD 12	5.0	60	
67SA14	RD 14	8.0	70	
67SA16	RD 16	12.0	80	
67SA18	RD 18	16.0	90	
67SA20	RD 20	20.0	100	
67SA24	RD 24	25.0	115	
67SA30	RD 30	40.0	150	

Also available in version stainless steel (ref.-no. 75SA\_\_VA).



For further details of the application and design of the Screw anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



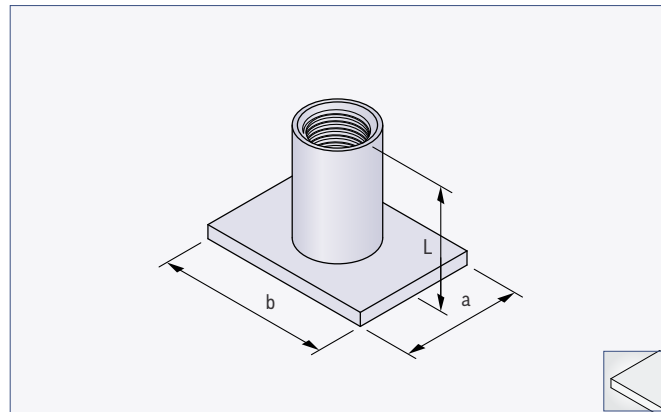
[www.philipp-group.de](http://www.philipp-group.de)

/ Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

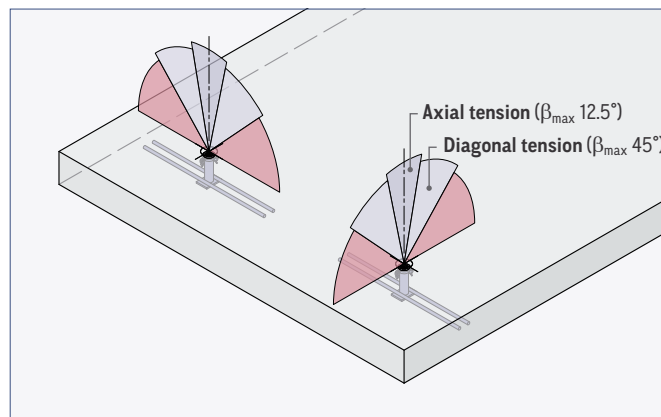
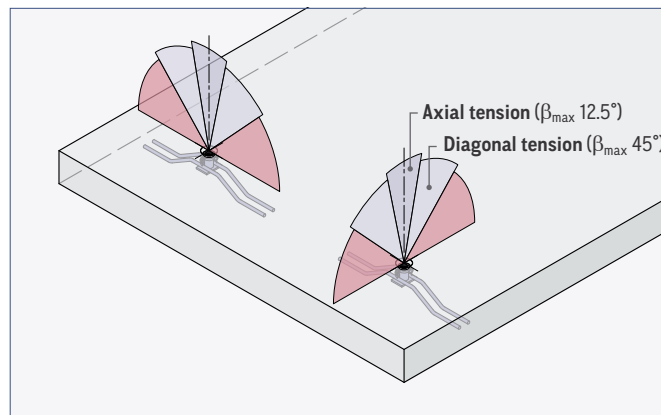
# Threaded transport anchors for the lifting of e.g. slab-like elements

## Capped end anchor

Also specialised for the transport of slab-like elements is the Capped end anchor with the lowest embedment depth of the Threaded anchor system. However, the Capped end anchor is highly efficient and offers load bearing capacities up to 12.5 t per anchor. Axial and diagonal tension are possible load directions for this anchor type. The anchor available in two length variants allows the installation of straight or bended anchorage reinforcement.



Capped end anchor						
Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimensions			
			L [mm]	a [mm]	b [mm]	
71FL12	RD 12	5.0	30	25	35	
71FL12L			50			
71FL14	RD 14	8.0	33	35	35	
71FL16	RD 16	12.0	35	35	50	
71FL16L			70			
71FL18	RD 18	16.0	44	45	60	
71FL20	RD 20	20.0	47	60	60	
71FL20L			80			
71FL24	RD 24	25.0	54	60	80	
71FL24L			100			
71FL30	RD 30	40.0	72	80	100	
71FL30L			120			
71FL36	RD 36	63.0	84	100	130	
71FL36L			140			
71FL42	RD 42	80.0	98	130	130	
71FL42L			160			
71FL52	RD 52	125.0	119	130	150	
71FL52L			200			



Also available in version stainless steel (ref.-no. 77FL\_\_VA).

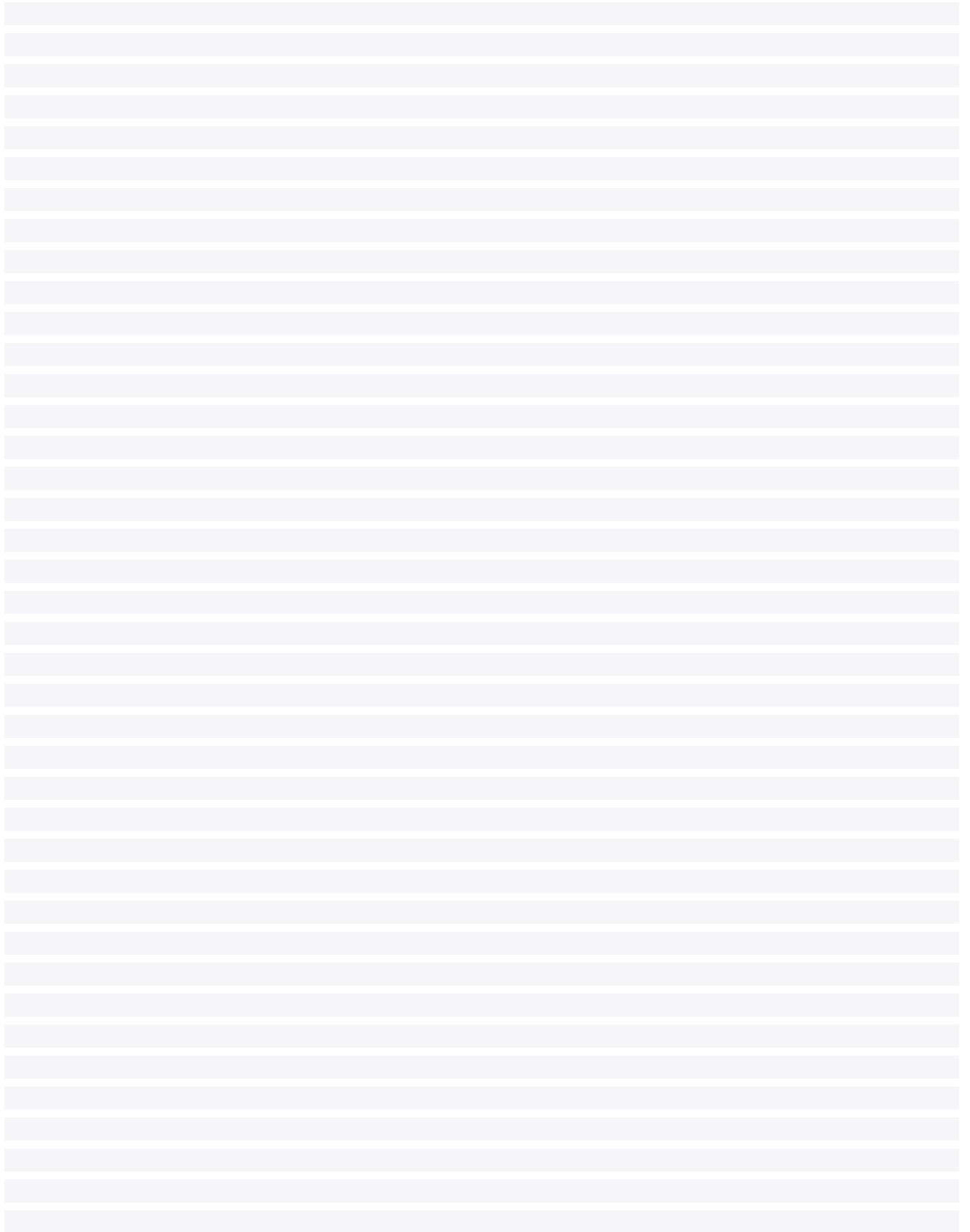


For further details of the application and design of the Capped end anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



Home / Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

[www.philipp-group.de](http://www.philipp-group.de)



## Lifting devices / accessories

The wide range of accessories for the Threaded transport anchor system convinces with its variety and well-thought-out combination possibilities for the different lifting devices resp. corresponding recess formers and sealing caps. No matter whether standard sizes or particularly small recesses are required, the wide choice of system components leaves nothing to be desired.



## Features and benefits compact

### General

- ✓ Perfectly matched components for the Threaded transport anchor system
- ✓ High quality in production, continuous testing of safety-relevant parts
- ✓ Systems / components that have been established as standard in precast construction for many years

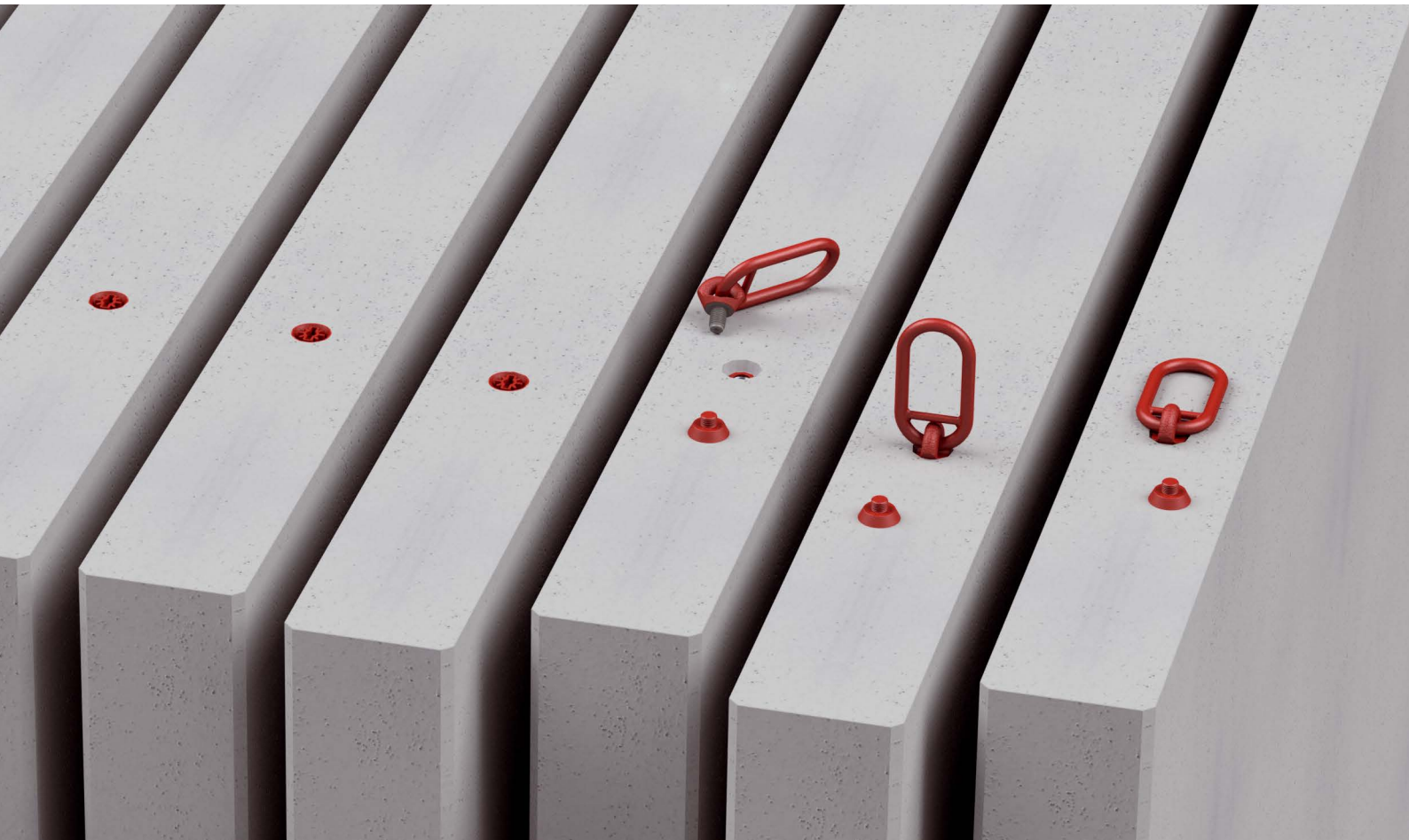
### Lifting devices

- ✓ Wide range of lifting devices for every requirement on the lifting and transport of precast concrete elements
- ✓ All lifting devices applicable for axial, diagonal and lateral lifting situations
- ✓ Optimal technical coordination between lifting device and Threaded transport anchor
- ✓ All lifting devices available with metric thread or special round thread (RD) with a metric pitch
- ✓ High-quality and tested lifting devices
- ✓ Clear colour code for identification in the entire system

### Accessories

- ✓ Marking rings (plastic) for a safe assignment of transport anchors and lifting devices
- ✓ Wide range of retaining caps and recess formers coordinated with the lifting devices
- ✓ Sealing caps in different materials, dimensions exactly matched to retaining caps and recess formers






KHN system			WS system	KH system
<b>Lifting loop</b>	<b>Lifty</b>	<b>Lifty with wire rope</b>	<b>Wirbelstar</b>	<b>Wirbelstar KH</b>

# Lifting devices / Accessories


### Marking rings







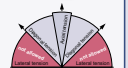
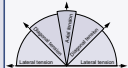
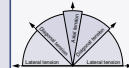
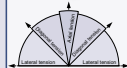
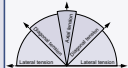
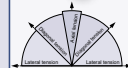
The PHILIPP Marking rings ensure an easy and safe classification of installed Threaded transport anchor and lifting device which has to be used.



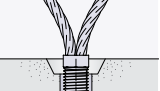
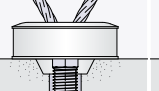
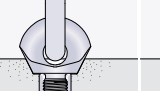
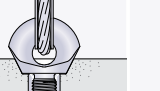

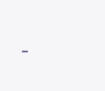

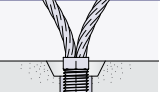
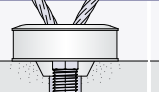
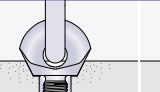
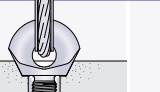

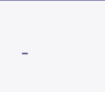

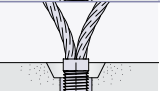
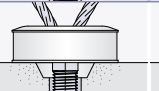
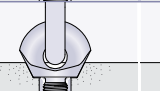
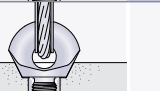



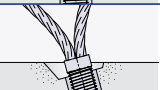
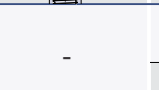

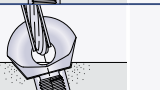



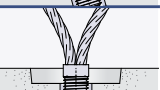

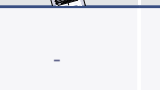
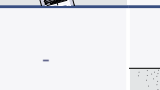
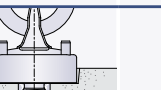


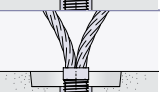



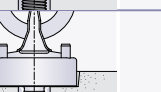


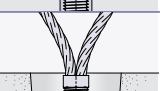



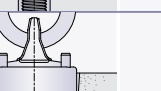


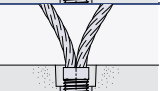
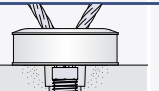



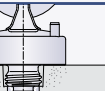

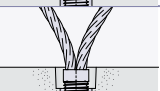
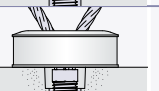



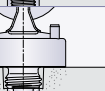

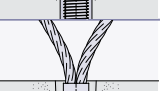
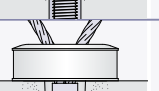



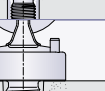
**Marking ring**  
System: standard M/RD  
Sizes: Type 12 to 60  
Ref.-no.: 74KR\_\_



**Marking ring with clip**  
System: standard M/RD  
Sizes: Type 12 to 52  
Ref.-no.: 74KR\_\_CLIP






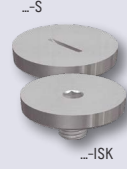










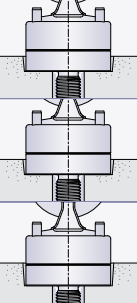


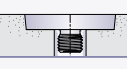
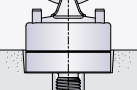


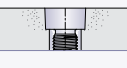


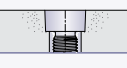



Lifting devices					
Lifting loop	Lifting loop with Adapter for lateral tension	Lifty	Lifty with wire rope	Wirbelstar <sup>Ⓢ</sup> rotatable under load	Wirbelstar KH rotatable under load
					
					
Sizes: 12 to 52 Ref.-no. RD-thread 69RD__ M-thread 69M__	Sizes: 12 to 52 Ref.-no. 69M__Q90	Sizes: 12 to 52 Ref.-no. RD-thread 62LI__ M-thread 62LI__M	Sizes: 12 to 36 Ref.-no. RD-thread 62LI__DS M-thread 62LI__MDS	Sizes: 12 to 60 Ref.-no. RD-thread 62WS__ M-thread 62WS__M	Sizes: 12 to 60 Ref.-no. RD-thread 62WS__KH M-thread 62WS__KH

Fixations / recess formers	Plane to surface		Cross-section diagrams					
			Lifting loop	Lifting loop with Adapter	Lifty	Lifty with wire rope	Wirbelstar	Wirbelstar KH
KHN system (Lifty)		<b>Plastic recess former KHN</b> Sizes: Type 12 to 52 Ref.-no.: 72KHN__						
		<b>Steel recess former KHN</b> Sizes: Type 12 to 52 Ref.-no.: 72KHN__STK						
		<b>Magnetic recess former KHN</b> Sizes: Type 12 to 52 Ref.-no.: 72MAXKHN__						
WS system (Wirbelstar)		<b>Steel recess former SZ15</b> Sizes: Type 12 to 52 Ref.-no.: 72KHN__SZ15						
		<b>Plastic recess former WS</b> Sizes: Type 36 to 52 Ref.-no.: 72KHN__WS						
		<b>Steel recess former WS</b> Sizes: Type 12 to 60 Ref.-no.: 72SAT__K						
KH system (Wirbelstar KH)		<b>Magnetic recess former WS</b> Sizes: Type 12 to 52 Ref.-no.: 72SATM__K						
		<b>Plastic retaining cap KH</b> Sizes: Type 12 to 24 Ref.-no.: 72KH__						
		<b>Steel retaining cap KH</b> Sizes: Type 12 to 52 Ref.-no.: 72KH__STAHL						
		<b>Magnetic retaining cap KH</b> Sizes: Type 12 to 52 Ref.-no.: 72MAXKH__						

Ⓢ Sizes 56 and 60 only with RD-thread, diagonal tension  $\leq 30^\circ$  possible, diagonal tension  $> 30^\circ$  and lateral tension not possible.

Ⓢ Special solutions of fixations, nailing plates and sealing caps on request!

This is just a summary of our product range, which is only valid with appropriate Installation and Application Instructions, and datasheets of accessories.

Sealing caps ②								
Wirbelstar KH with KH ring rotatable under load	Plastic (concrete grey)	Stainless steel with slot or internal hexagon	Plastic (concrete grey)	Stainless steel with slot or internal hexagon	Plastic (concrete grey)	Plastic (concrete grey)	Stainless steel with slot or internal hexagon	Stainless steel
 <p>           Sizes: 12 to 52            Ref.-no. 72WS__KH            72WS__MKH         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72ASS__         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72ASKHN__VA         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72ASKHN__         </p>	 <p>           Sizes: 12 to 60            Ref.-no. 72ASSAT__VA         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72AS01224PLAN            72AS03042PLAN            72AS052PLAN         </p>	 <p>           Sizes: 12 to 24            Ref.-no. 72AS0         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72AS0__VA         </p>	 <p>           Sizes: 12 to 52            Ref.-no. 72AS01224VA            72AS03042VA            72AS052VA         </p>
		-	-	-	-	-	-	-
-				-	-	-	-	-
-				-	-	-	-	-
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		-	-		-	-	-	-
		-	-		-	-	-	-
		-	-		-	-	-	-
-	-	-	-	-				
-	-	-	-	-				
-	-	-	-	-				

## Transport loop system (TPS system)

While constructive precast concrete elements can usually be transported and mounted using standard transport anchor systems, special prefabricated elements require particular solutions. Shafts and manholes in various dimensions, tubes but also retaining walls are typical elements for the use of the Transport loop system (TPS system). A lifting loop at a right angle to the transport anchor enables these special elements to be lifted directly in the production or mounting state.



### Recommended use



Shafts / manholes



Tanks

### Features and benefits compact

- ✓ Reusable lifting device
- ✓ Threaded transport anchors are totally embedded in the concrete element
- ✓ Special RD thread is resistant to concrete dust, sand and other dirt
- ✓ Load bearing capacities up to 6.3 t
- ✓ Only suitable for lateral tension
- ✓ Reinforcement optimized for effectiveness
- ✓ Threaded socket electro-galvanised.



Transport loop



Transport anchor TPS 16 + 24



Transport anchor TPS 30



Transport anchor TPS 36



Application for shafts and manholes



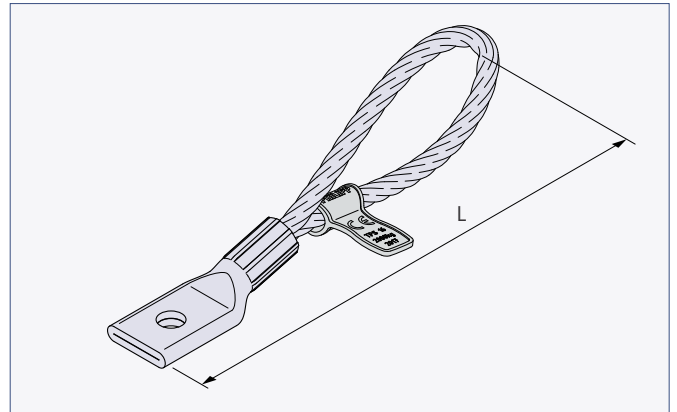
Application for tanks







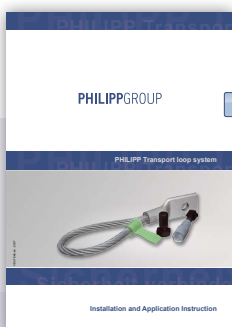
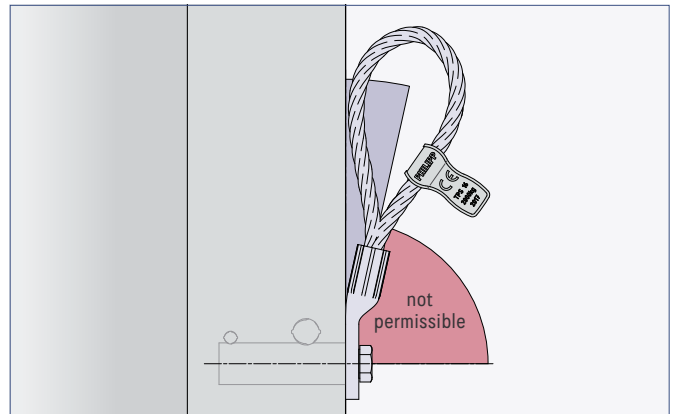
# Transport loop system (TPS-system)

## Transport loop

The Transport loop system (TPS) has been specially developed for the transport of (thin-walled) pipe and manhole elements as well as light, retaining walls or similar. In particular, the combination of a simple, short anchor and a screw-on and therefore reusable lifting loop makes this system so attractive.




Transport loop				
Ref.-No.	Type	Bearing capacity (kN)	Dimension L (mm)	
67TPS122000	 TPS 16	20.0	280	
67TPS154000	 TPS 24	40.0	310	
67TPS185200	 TPS 30	52.0	390	
67TPS206300	 TPS 36	63.0	525	



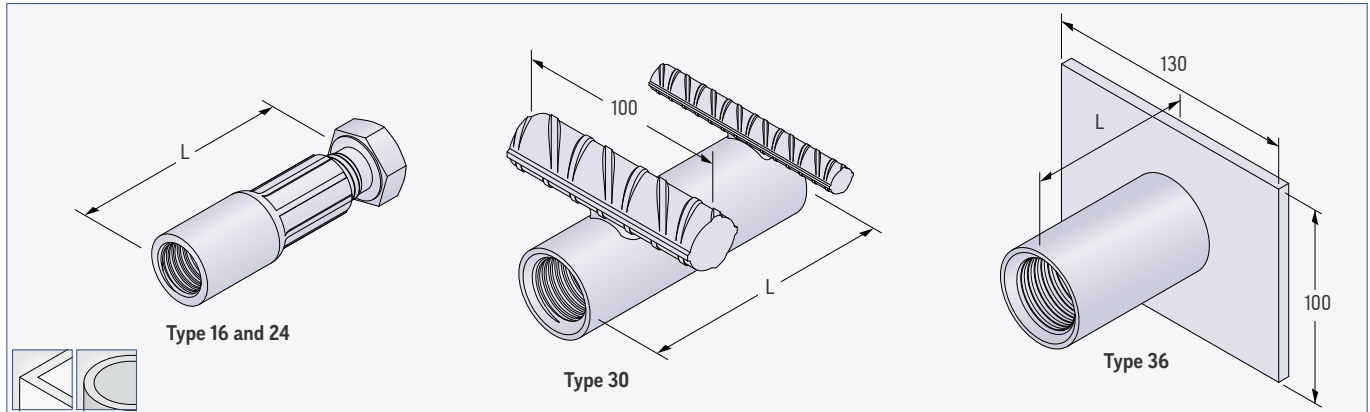
For further details of the application and design of the Transport loop system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



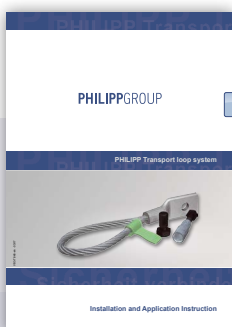
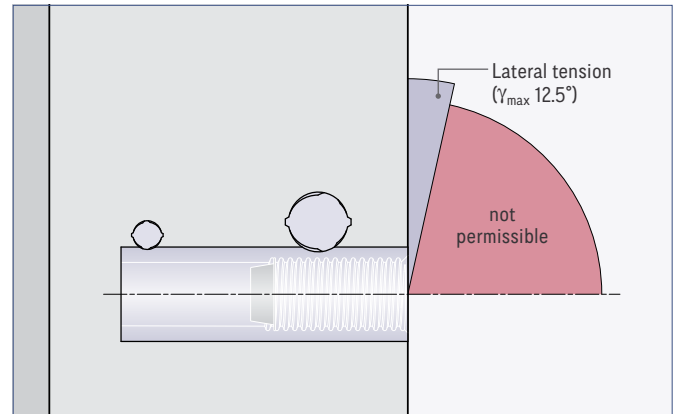
 / Products / Transport and Mounting Systems / Transport Anchor Systems / Threaded anchors

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## Transport loop anchor



Transport loop anchor			
Ref.-No. galvanised	Type	Steel bearing capacity (kN)	Dimension L (mm)
67TPSA16	TPS 16	20.0	95.0
67TPSA24	TPS 24	40.0	110.0
67TPSA30	TPS 30	52.0	120.0
71FL36	TPS 36	63.0	84.0



For further details of the application and design of the Transport loop system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

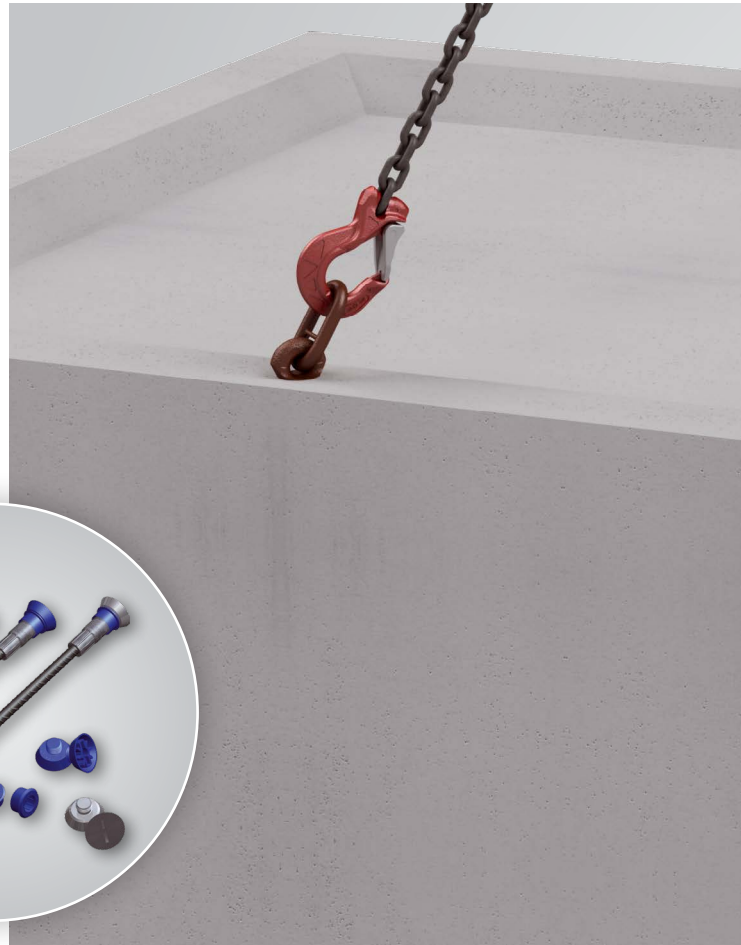


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## Power System SL

With an optimizing of the standard Threaded anchor system the closed SL system with its transport anchor, lifting device and suitable accessories can provide further possibilities. Significantly higher load bearing capacities and less load classes than comparable standard threaded transport anchors simplify the design and planning of lifting operations. Both, the colour coding and the left-hand thread on all system components prevent the risk of confusion and guarantee a safe handling.



### Recommended use



Walls



Bar-shaped elements



Shafts / manholes

### Features and benefits compact

- ✓ Highly loadable threaded transport anchors
- ✓ No mix-up with standard Threaded transport anchors due to left-hand thread.
- ✓ One lifting device for all load directions and applications
- ✓ Simple, optical differentiation (grooves at the socket)
- ✓ Threaded transport anchors are totally embedded in the concrete element
- ✓ Clear colour code for identification in the entire system
- ✓ Bearing capacities from 2.0 t up to 20 t
- ✓ Applicable for all load directions (axial, diagonal, lateral)
- ✓ Reinforcement optimized for effectiveness
- ✓ Threaded socket electro galvanised





Threaded transport anchor SL



Lifty SL



Marking ring SL



Nailing plate SL

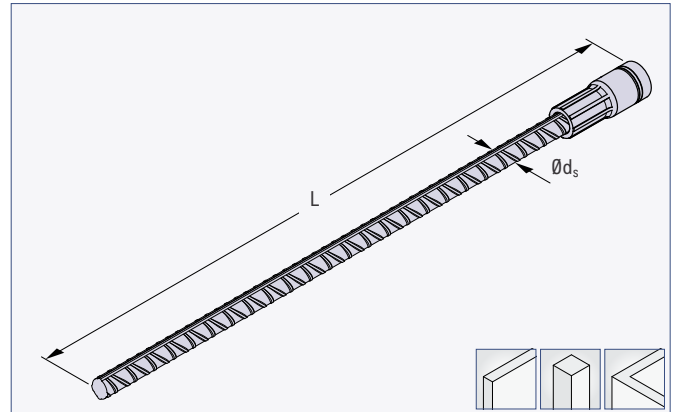


Colour code of the Power System SL

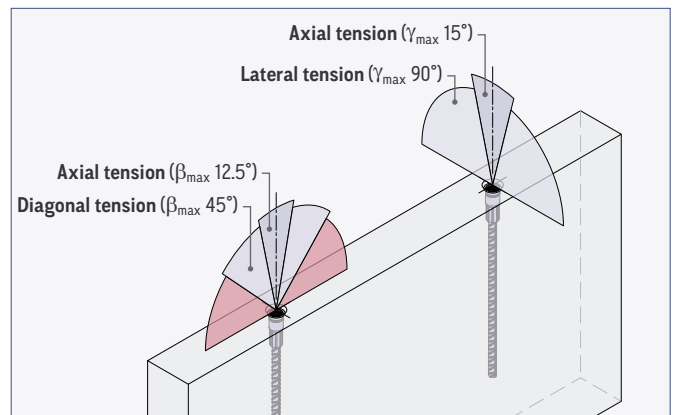
SL 16	SL 24	SL 30	SL 42	SL52
20.0	50.0	80.0	145.0	200.0
max. load bearing capacity (allow. F) [kN]				

## Threaded transport anchor SL

All Threaded transport anchors SL are designed for the transport of precast concrete elements, such as walls or bar-shaped concrete units. Either with extremely thin or heavy prefabricated elements – depending on the element type and its dimensions different sizes are available. Axial-, diagonal and lateral tension are no problem for the Threaded transport anchors SL.



Threaded transport anchor SL - straight tail					
Ref.-No. galvanised	Type	Steel bearing capacity	Dimensions		
			L (mm)	$\varnothing d_s$ (mm)	
67M16SL	SL 16	20.0	455	12	
67M24SL	SL 24	50.0	580	20	
67M30SL	SL 30	80.0	750	25	
67M42SL	SL 42	145.0	1100	32	
67M52SL	SL 52	200.0	1200	40	



For further details of the application and design of the Threaded transport anchor SL please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

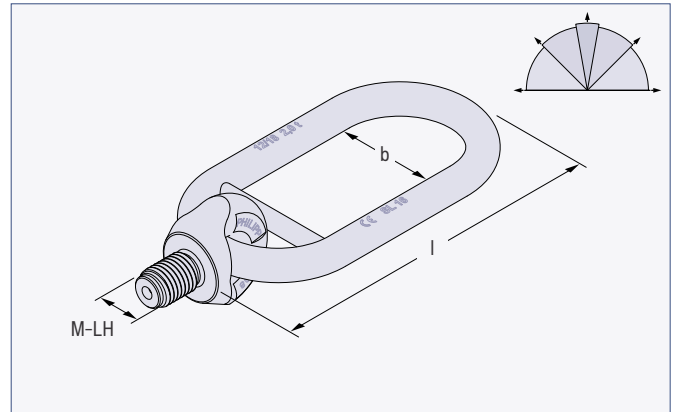


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## Lifty SL

The Lifty SL is a specially designed lifting device for the Power System SL. It consists of a forged ring bolt with a welded chain link and is therefore ideally suited in its robust design for daily use in the factory and on the construction site.



### Lifty SL

Ref.-No.	Type	Thread (M-LH)	Bearing capacity (kN)	Dimensions	
				b (mm)	l (mm)
62LISL16M	SL 16	16	20.0	50	150
62LISL24M	SL 24	24	50.0	50	162
62LISL30M	SL 30	30	80.0	50	177
62LISL42M	SL 42	42	145.0	65	220
62LISL52M	SL 52	52	200.0	65	220



For further details of the application and design of the Lifty SL please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

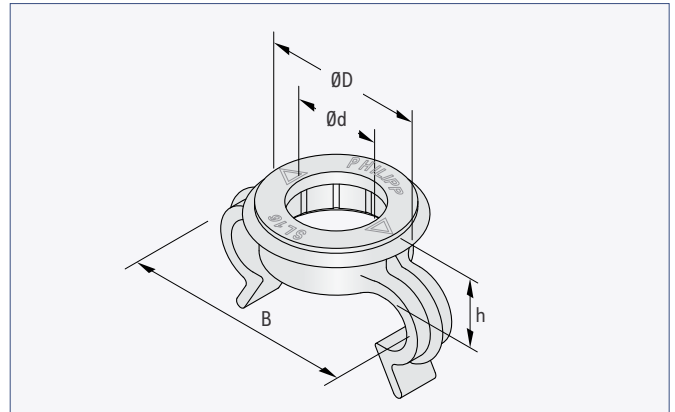


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
## Marking ring SL with clip

With the Marking ring SL with clip on the one hand a clear identification of the anchor when installed is possible and on the other hand to secure the position of the optional additional reinforcement (for diagonal or lateral tension).

Due to the explicit colour coding a quick and correct assignment to the corresponding lifting device is ensured.



## Marking ring SL with clip

Ref.-No.	Type	Dimensions			
		ØD (mm)	Ød (mm)	B (mm)	h (mm)
74KR16SLCLIP	 SL 16	31	17	49	10
74KR24SLCLIP	 SL 24	41	25	63	10
74KR30SLCLIP	 SL 30	52	31	15	10
74KR42SLCLIP	 SL 42	64	43	15	13
74KR52SLCLIP	 SL 52	80	53	15	13



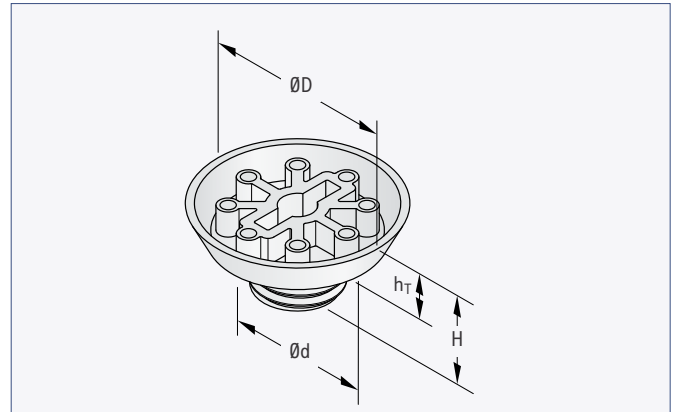
For further details of the application and design of the Marking ring SL with clip please refer to our website [www.philipp-group.de](http://www.philipp-group.de).








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## Nailing plate SL, plastic

The Nailing plate SL (plastic) is used to fix the Threaded transport anchor SL to the mould tightly. This can be done either by nailing or hot gluing of the Nailing plate SL before the anchor is screwed on.




### Nailing plate SL, plastic

Ref.-No.	Type	Dimensions			
		ØD (mm)	Ød (mm)	H (mm)	h <sub>T</sub> (mm)
72KHN16SL	 SL 16	40	30	20	10
72KHN24SL	 SL 24	55	45	25	10
72KHN30SL	 SL 30	70	60	30	10
72KHN42SL	 SL 42	96	86	35	12
72KHN52SL	 SL 52	96	86	35	12



For further details of the application and design of the Nailing plate SL please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

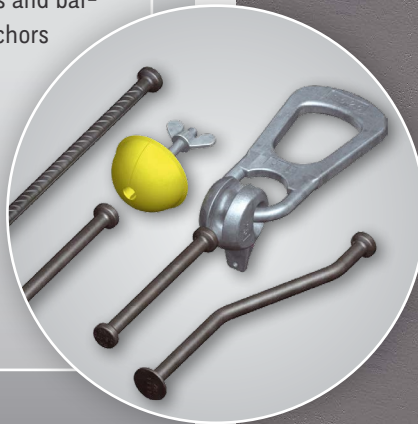


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## Spherical head transport anchor

for the lifting of e.g. wall-like elements

Spherical head transport anchors already define opportunity standard for a long time, as both their design resp. geometry are simple and their handling easy (quick lift anchors). With the corresponding lifting device the (un) coupling can be done quickly and lifting operations in all load directions are possible. They cover a wide range of applications, especially in wall-like elements and bar-shaped units, Spherical head transport anchors can show their strengths.



### Recommended use



Walls



Bar-shaped elements



Girders



Sandwich panels



Shafts / manholes



Tanks

### Features and benefits compact

- ✓ Spherical head transport anchors are totally embedded in the concrete
- ✓ Simple installation due to rotation-symmetrical anchor design
- ✓ Quick (un)coupling of the lifting device into the anchor
- ✓ Lifting device suitable for all load directions (axial, diagonal and lateral)
- ✓ Load bearing capacities up to 32 t
- ✓ Robust, durable lifting device
- ✓ Spherical head anchor with offset optimized for sandwich elements
- ✓ Reinforcement optimized for effectiveness
- ✓ Well graded type series and bearing capacities for economical use



## Anchor Overview

Recommended use	Transport anchor	Types
Walls	Spherical head transport anchor Spherical head transport anchor - with offset Spherical head rod anchor	KK 1.3 - KK 32.0 KK 2.5 - KK 20.0 KK 1.3 - KK 15.0
Bar-shaped elements (such as beams, purlins, walers and girders)	Spherical head transport anchor Spherical head rod anchor	KK 1.3 - KK 32.0 KK 1.3 - KK 15.0
Shafts / tanks	Spherical head transport anchor Spherical head rod anchor	KK 1.3 - KK 32.0 KK 1.3 - KK 15.0
Girder	Spherical head transport anchor - double-head	KK 20.0 - KK 32.0

Spherical head transport anchor



Version: with offset



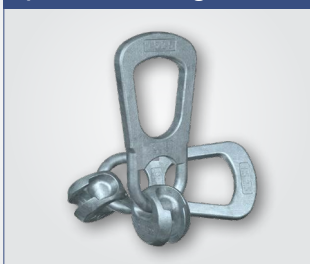
Spherical head rod anchor



Version: double-head



Spherical head lifting clutch



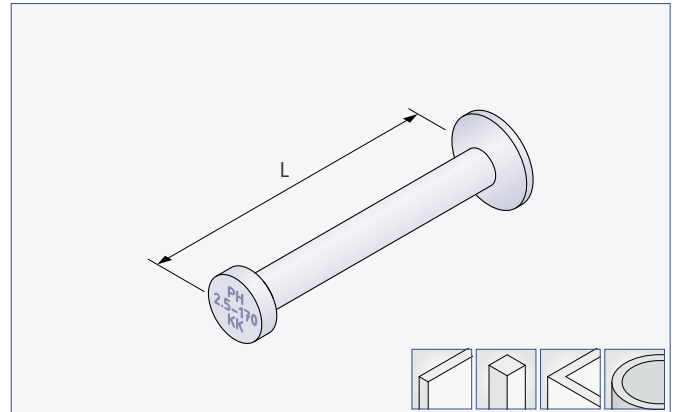
Accessories



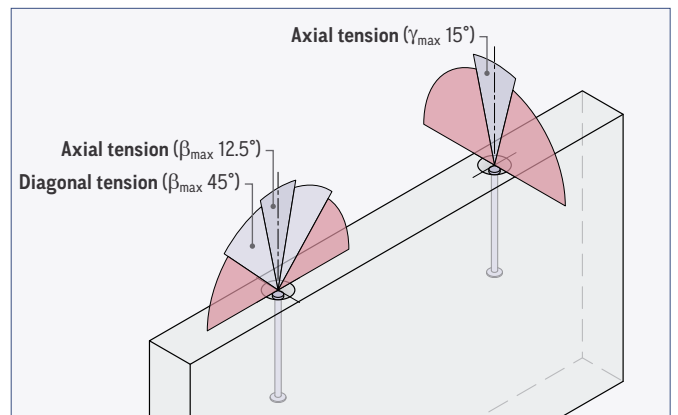
# Spherical head anchors for lifting of e.g. wall-like elements

## Spherical head transport anchor

Spherical head transport anchors are very universally applicable anchors for wall-like geometries, which are used in both light and very heavy precast concrete parts. They convince with their simplicity and robust components as well as an easy installation with the appropriate accessories. Here, the applicable load directions are axial and diagonal tension.



Spherical head transport anchor			
Ref.-No. bright	Type	Steel bearing capacity (kN)	Dimension
			L (mm)
81-013-120	KK 1.3	13.0	120
81-013-240		13.0	240
81-025-170	KK 2.5	25.0	170
81-025-280		25.0	280
81-040-210	KK 4.0	40.0	210
81-040-240		40.0	240
81-040-340		40.0	340
81-040-420		40.0	420
81-050-240	KK 5.0	50.0	240
81-050-340		50.0	340
81-050-480		50.0	480
81-075-300	KK 7.5	75.0	300
81-075-540		75.0	540
81-075-680		75.0	680
81-100-340	KK 10.0	100.0	340
81-100-680		100.0	680
81-150-400	KK 15.0	150.0	400
81-150-840		150.0	840
81-200-500	KK 20.0	200.0	500
81-200-1000		200.0	1000
81-320-700	KK 32.0	320.0	700



- also available in electro-galvanised b.z.p. (e.g. 81-025-170VC) or hot-dip galvanised h.d.g. (e.g. 81-025-170FV) version.
- stainless steel on request.



For further details of the application and design of the Spherical head anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

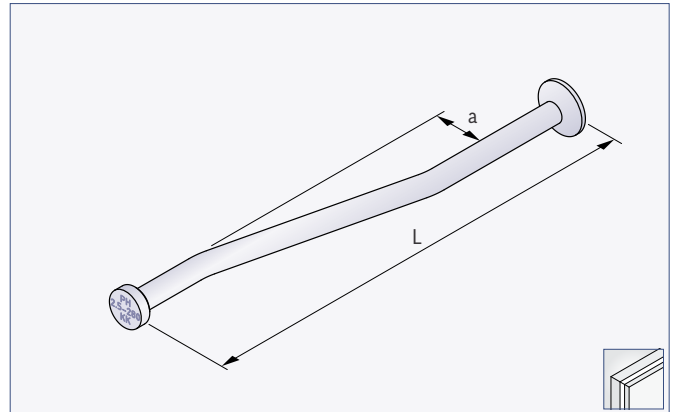


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## Spherical head anchor - with offset

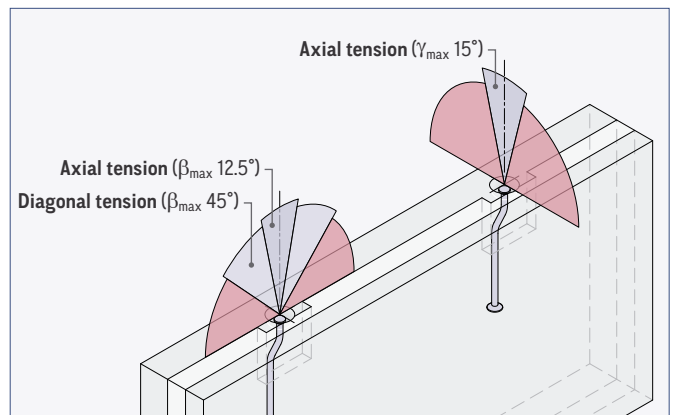
A special bended Spherical head anchor (with offset) is well-proven for the transport of precast concrete sandwich panels, in order to keep the load application in the centre line of the element. Thus, the panel is (nearly) lifted in a straight way and can be transported easily. Both axial and diagonal tension can be realized easily with a Spherical head anchor to be offset.



### Spherical head transport anchor - with offset

Ref.-No. bright	Type	Steel bearing capacity (kN)	Dimensions	
			L (mm)	a (mm)
81-025-268GK	KK 2.5	25.0	268	50
81-050-466GK	KK 5.0	50.0	466	60
81-075-664GK	KK 7.5	75.0	664	70
81-100-664GK	KK 10.0	100.0	664	70
81-150-825GK	KK 15.0	150.0	825	80
81-200-986GK	KK 20.0	200.0	986	80

- also available in electro-galvanised b.z.p. (e.g. 81-025-268GKVC) or hot-dip galvanised h.d.g. (e.g. 81-025-268GKFBV) version.
- stainless steel on request.



For further details of the application and design of the Spherical head anchor with offset please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



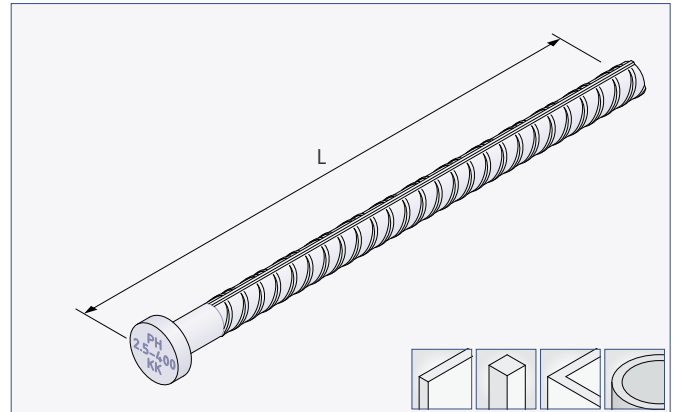
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# Spherical head anchors for lifting of e.g. wall-like elements

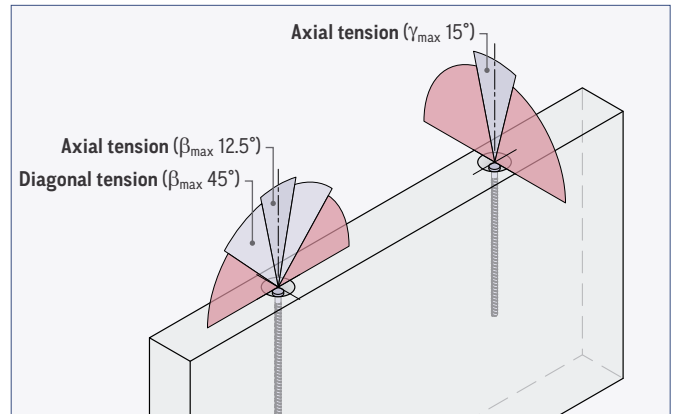
## Spherical head rod anchor

Spherical-head rod anchors are universally applicable transport anchors, which can be used in light to medium-weight, wall-like precast concrete elements. Instead of a forged foot this anchor has a ribbed surface, is easy to install with the corresponding accessories and convinces with its simplicity and robust load-bearing components. Possible lifting directions are here axial and diagonal tension.



Spherical head rod anchor			
Ref.-No. bright	Type	Steel bearing capacity (kN)	Dimension L (mm)
81-013-270ST	KK 1.3	13.0	270
81-025-400ST	KK 2.5	25.0	400
81-025-520ST		25.0	520
81-040-510ST	KK 4.0	40.0	510
81-050-580ST	KK 5.0	50.0	580
81-050-900ST		50.0	900
81-075-750ST	KK 7.5	75.0	750
81-075-1150ST		75.0	1150
81-100-870ST	KK 10.0	100.0	870
81-100-1300ST		100.0	1300
81-150-1080ST	KK 15.0	150.0	1080
81-150-1550ST		150.0	1550

- also available in electro-galvanised b.z.p. (e.g. 81-025-400STVC) or hot-dip galvanised h.d.g. (e.g. 81-025-400STFV) version.
- stainless steel on request.



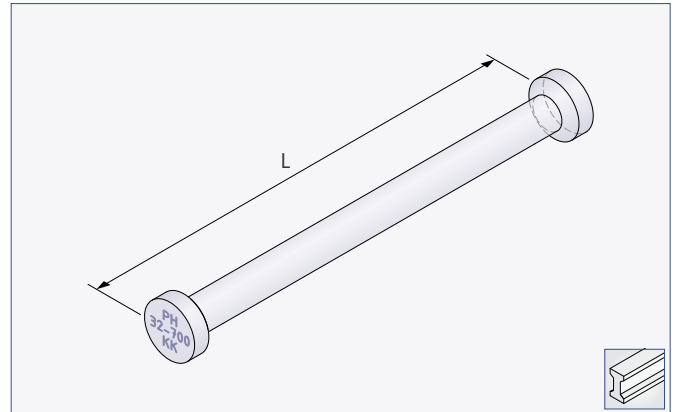
For further details of the application and design of the Spherical head rod anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Spherical head transport anchor - double-head

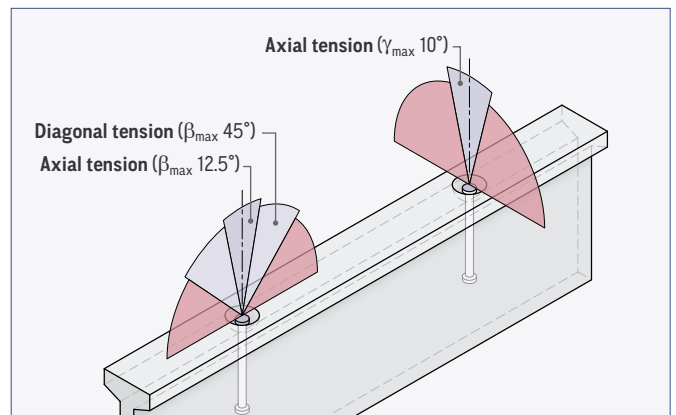
Especially for applications in heavy but thin concrete elements the Spherical head double head anchor is designed. Compared to the standard Spherical head, the dimensions from the anchor foot to the anchor head have been adjusted or reduced so that a particularly small element thickness can be achieved.



### Spherical head transport anchor - double-head

Ref.-No. bright	Type	Steel bearing capacity [kN]	Dimension L [mm]
81-200-500D	KK 20.0	200.0	500
81-320-700D	KK 32.0	320.0	700

- also available in electro-galvanised b.z.p. (e.g. 81-025-400DVC) or hot-dip galvanised h.d.g. (e.g. 81-025-400DFV) version.
- stainless steel on request.



For further details of the application and design of the Spherical head double head anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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# Spherical head anchors for lifting of e.g. wall-like elements

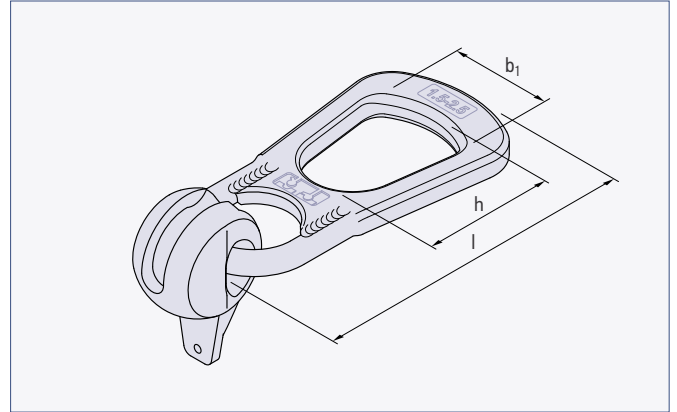
## Spherical head lifting clutch / recess formers

Exclusively for the Spherical head anchor system the Spherical head lifting clutch is designed and enables with its simple mechanism an easy, safe and very fast (un)coupling of a precast element. Due to its robust design it is very durable and therefore ideal for

daily use. In order to increase the safety of the clutch a check gauge for a fast and easy test of important wear measurements is available.

### Spherical head lifting clutch

Ref.-No.	Type	Bearing capacity [kN]	Dimensions		
			l [mm]	h [mm]	b <sub>1</sub> [mm]
80-HKD-013	KK 1.3	13	158	70	46
80-HKD-025	KK 2.5	25	197	86	66
80-HKD-050	KK 5.0	50	240	88	72
80-HKD-100	KK 10.0	100	340	115	89
80-HKD-200	KK 20.0	200	453	150	130
80-HKD-320	KK 32.0	320	593	200	168

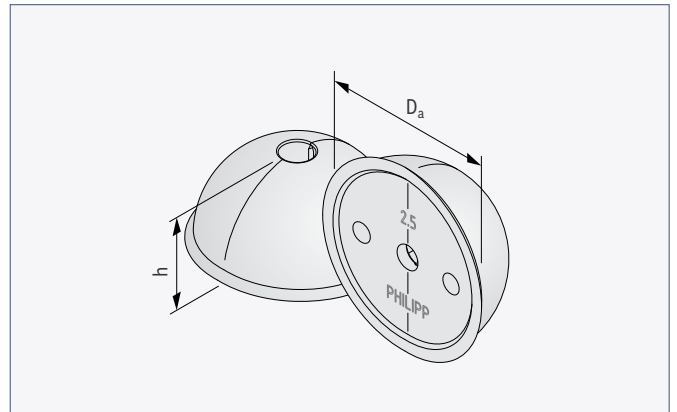


Suitable rubber recess formers in various sizes fix the Spherical head anchor securely in position and create the recess required

for a simple and safe coupling of the lifting clutch.

### Rubber recess former

Ref.-No.	Type	Dimensions		Colour	
		D <sub>a</sub> [mm]	h [mm]		
83-AK0-013	KK 1.3	60	30		blue
83-AK0-025	KK 2.5	74	37		yellow
83-AK0-050	KK 5.0	94	47		blue
83-AK0-075	KK 7.5	118	59		red
83-AK0-100	KK 10.0	118	59		yellow
83-AK0-150	KK 15.0	160	80		grey
83-AK0-200	KK 20.0	160	80		grey
83-AK0-320	KK 32.0	214	107		black



Recess formers for the Spherical head anchor system are also available in steel and steel with magnets.



For further details of the application and design of the Spherical head lifting clutch please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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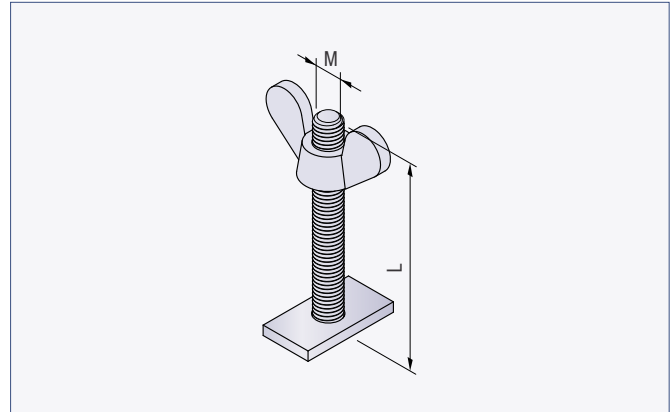
## Accessories

In order to fix a rubber recess former for the Spherical head anchor system to the formwork, we offer either an accessory with ready-made threaded rod and wing nut or with an internal thread

for individually screwing in a fixing element. An easy release and reuse of the recess former is thus guaranteed.

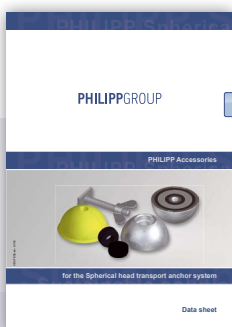
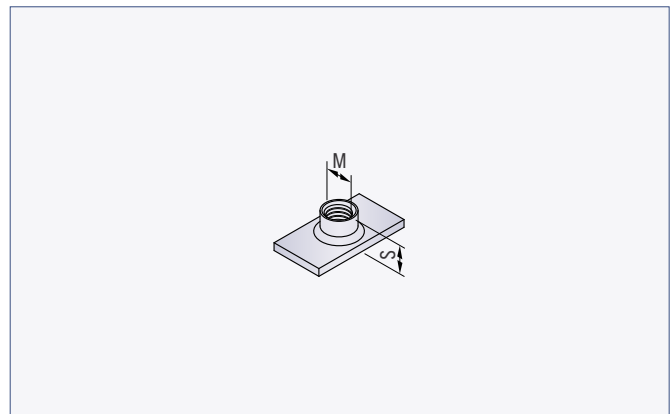
### Stamped part with threaded rod

Ref.-No.	Type	Dimensions	
		M (mm)	L (mm)
83-SGS-013	KK 1.3	8	80
83-SGS-025	KK 2.5	10	80
83-SGS-050	KK 4.0 / 5.0	10	80
83-SGS-075	KK 7.5 / 10.0	12	100
83-SGS-200	KK 15.0 / 20.0	12	100



### Stamped part with internal thread

Ref.-No.	Type	Dimensions	
		M (mm)	S (mm)
83-SIG-013	KK 1.3	8	9.0
83-SIG-025	KK 2.5	10	11.0
83-SIG-050	KK 4.0 / 5.0	10	12.5
83-SIG-075	KK 7.5 / 10.0	12	15.0
83-SIG-200	KK 15.0 / 20.0	12	15.0



For further details of the application and design of the Accessories for the Spherical head transport anchor system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



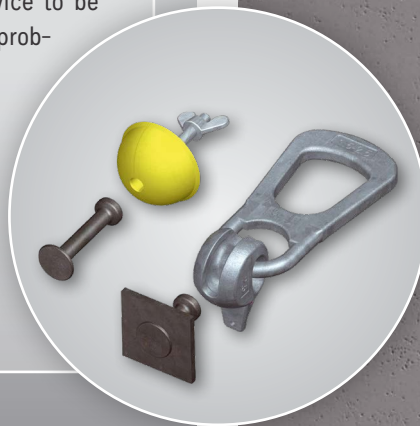
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## Spherical head transport anchor

### Spherical head anchors in tubes, manholes, shafts and slab-like elements

For more special applications as well as for standard pre-cast elements Spherical head transport anchors can be used. For example, shaft and manhole elements in different sizes, tube elements and slab-like elements are no particular challenge for the smaller but very efficient Spherical head anchors. With a lifting device to be easy (un)coupled all lifting operations are problem-free and in all load directions possible.



### Recommended use



Tubes



Shafts / manholes



Tanks



Floor and roofing slabs

### Features and benefits compact

- ✓ Spherical head transport anchors are totally embedded in the concrete element
- ✓ Simple installation due to rotation-symmetrical anchor design
- ✓ Robust, durable lifting device
- ✓ Quick (un)coupling of the lifting device into the anchor
- ✓ Lifting device suitable for all load directions (axial, diagonal and lateral)
- ✓ Load bearing capacities up to 20 t
- ✓ Reinforcement optimized for effectiveness
- ✓ Well graded type series and bearing capacities for economical use



## Anchor Overview

Recommended use	Transport anchor	Types
Tubes / shafts / tanks	Spherical head transport anchor Spherical head transport anchor - double headed	KK 5.0 - KK 20.0 KK 1.3 - KK 2.5
Floor and roofing slabs	Spherical head flat steel anchor	KK 2.5 - KK 10.0

### Spherical head transport anchor



### Spherical head flat steel anchor



### Version: double headed



### Spherical head lifting clutch



## Accessories



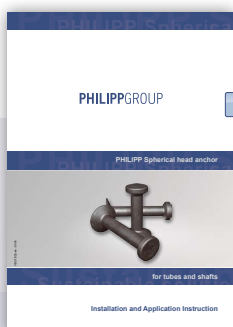
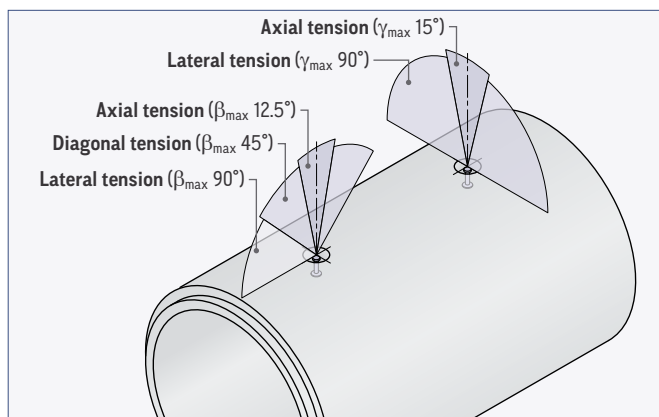
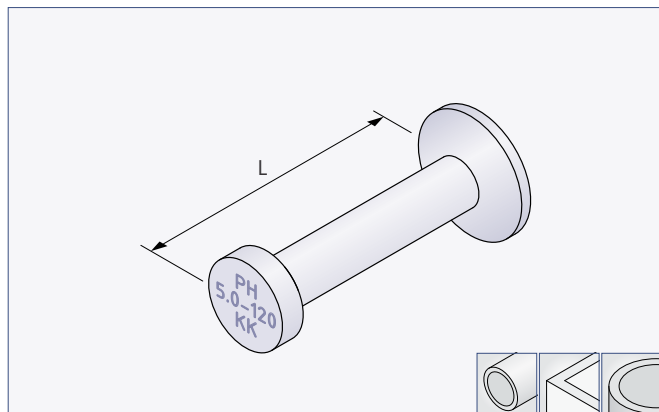
# Spherical head anchors in tubes, manholes, shafts and slab-like elements

## Spherical head transport anchor

These Spherical head anchors with their short lengths are specially optimised for the lifting of tubes and shafts. They convince with their simplicity and robust components as well as an easy installation with the appropriate accessories. All load directions can be realised with the 'short' Spherical head anchors without any problems.

Spherical head transport anchors for tubes, shafts and manholes			
Ref.-No. bright	Type	Steel bearing capacity	Dimension
		(kN)	L (mm)
81-050-075	KK 5.0	50.0	75
81-050-085		50.0	85
81-050-095		50.0	95
81-050-110		50.0	110
81-050-120		50.0	120
81-075-085	KK 7.5	75.0	85
81-075-095		75.0	95
81-075-100		75.0	100
81-075-120		75.0	120
81-075-140		75.0	140
81-075-165	KK 10.0	75.0	165
81-100-115		100.0	115
81-100-120		100.0	120
81-100-135		100.0	135
81-100-150		100.0	150
81-100-170	KK 15.0	100.0	170
81-100-200		100.0	200
81-150-140		150.0	140
81-150-165		150.0	165
81-150-200		150.0	200
81-150-300	KK 20.0	150.0	300
81-200-165		200.0	165
81-200-200		200.0	200
81-200-250		200.0	250
81-200-340		200.0	340

- also available in electro-galvanised b.z.p. (e.g. 81-100-150VC) or hot-dip galvanised h.d.g. (e.g. 81-100-150FV) version.
- stainless steel on request.



For further details of the application and design of the Spherical head anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



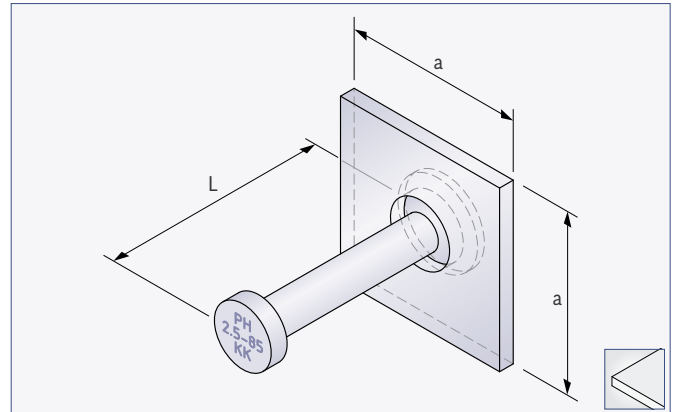
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## Spherical head flat steel anchor

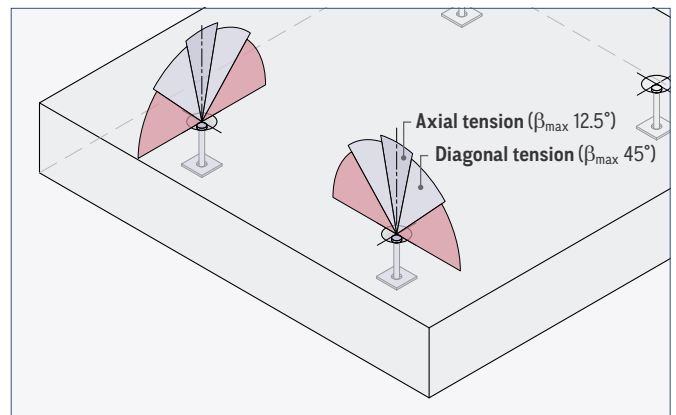
The transport of plane precast concrete elements, e.g. slabs or roof elements, is the ideal field of application for Spherical head flat steel anchors. With a significantly larger anchor plate compared to an anchor foot, the embedment depth can be decisively reduced while still providing high load capacity.



### Spherical head flat steel anchor

Ref.-No. bright	Type	Steel bearing capacity (kN)	Dimension	
			L (mm)	a (mm)
81-025-055FL	KK 2.5	25.0	55	70
81-025-120FL		25.0	120	70
81-050-055FL	KK 5.0	50.0	55	90
81-050-065FL		50.0	65	90
81-050-110FL		50.0	110	90
81-100-115FL		100.0	115	90

- also available in electro-galvanised b.z.p. (e.g. 81-025-120FLVC) or hot-dip galvanised h.d.g. (e.g. 81-025-120FLFV) version.



For further details of the application and design of the Spherical head flat steel anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



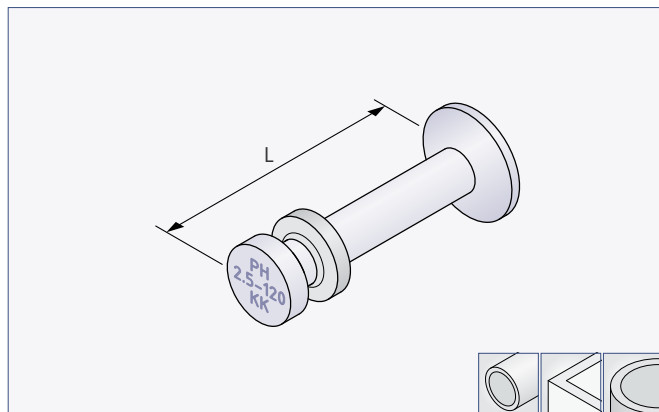
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# Spherical head anchors in tubes, manholes, shafts and slab-like elements

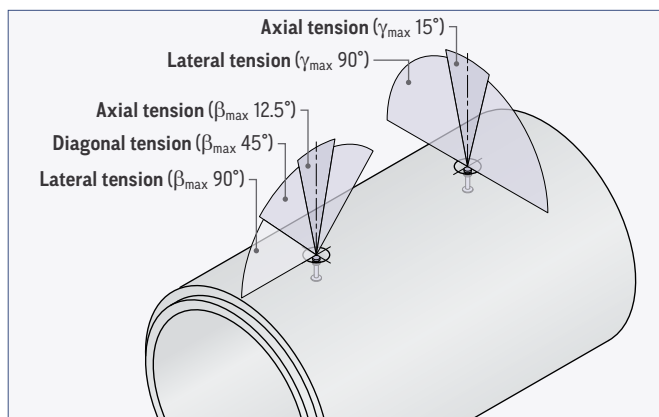
## Spherical head transport anchor - double headed

Spherical head anchors double headed are mainly used in light, thin-walled tubes as well as reinforced concrete manholes and shafts. Available in two load classes and with standard spherical head, the anchor is particularly suitable for formworks with automatic anchor feed. Specially designed recess formers make it easier to fix the anchor to the formwork and also to couple it later using the lifting clutch.

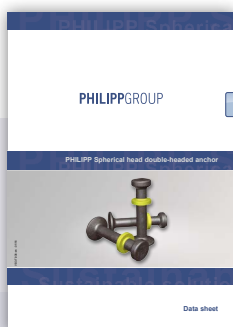


Spherical head transport anchor - double headed			
Ref.-No.	Type	Steel bearing capacity [kN]	Dimension
			L [mm]
81-013-065MA	KK 1.3	13.0	55
81-013-085MA		13.0	85
81-025-065MA	KK 2.5	25.0	65
81-025-085MA		25.0	85
81-025-120MA		25.0	120

- also available in electro-galvanised b.z.p. (e.g. 81-025-085MAVC) version.



Further information about the corresponding lifting device and fixing accessories can be found on pages 44 and 45.

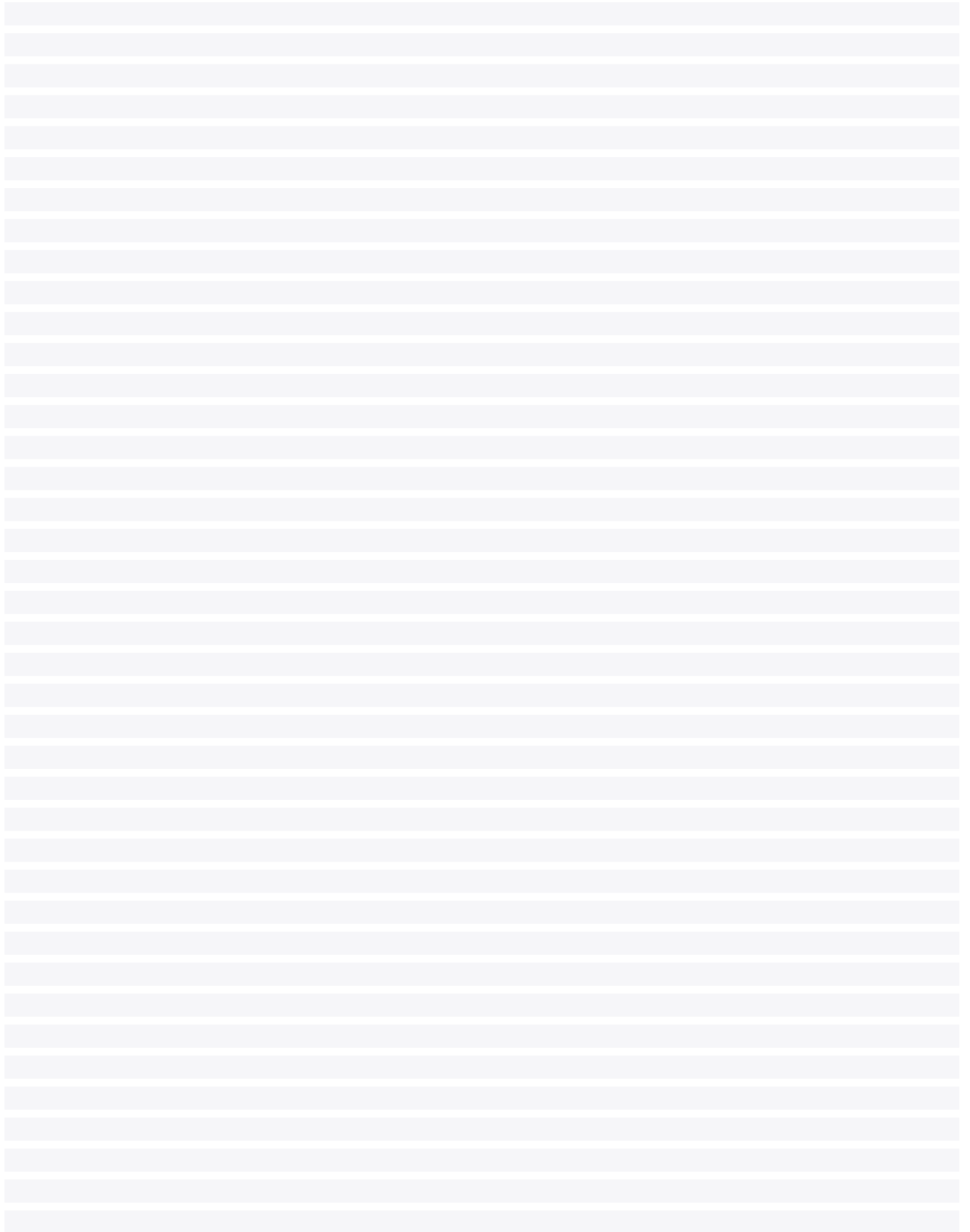


For further details of the application and design of the Spherical head double headed anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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### Hole anchor system

The Hole anchor system belongs also to the well-established Transport anchor systems and basically consists of anchors made of flat steel and the lifting device, the Ring clutch. Possible applications are usually reflected in various shapes of the anchor or anchor foot. However, the anchor head always has a hole in which the ring clutch fits perfectly. Anchors and Ring clutches allow lifting operations in all load directions.



### Recommended use



Walls



Bar-shaped elements



Tanks



Sandwich panels



Girders



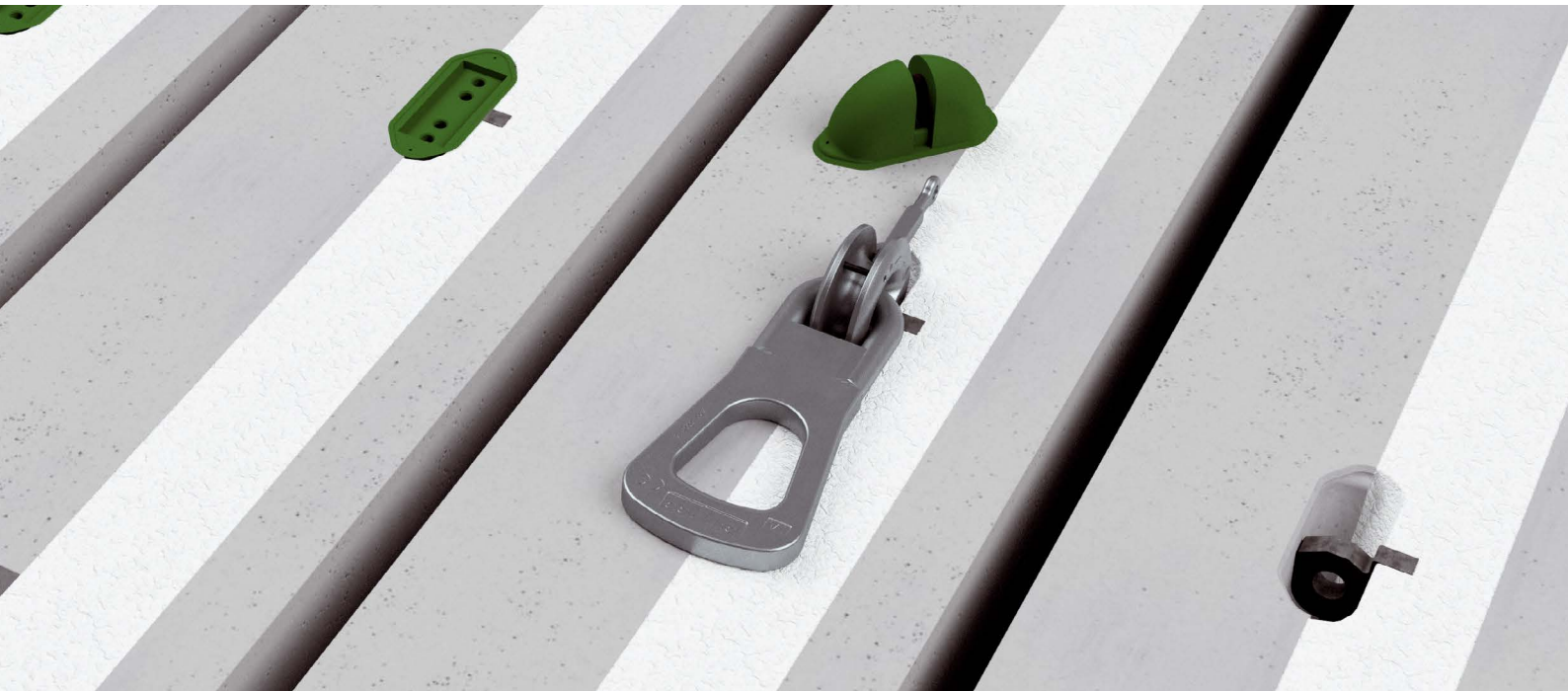
Floor and roofing slabs



Shafts / manholes

### Features and benefits compact

- ✔ Hole anchors are totally embedded in the concrete element
- ✔ Simple installation
- ✔ Quick (un)coupling of the lifting device into the anchor
- ✔ Lifting device suitable for all load directions (axial, diagonal and lateral)
- ✔ Load bearing capacities up to 26 t
- ✔ Robust, durable lifting device
- ✔ Reinforcement optimized for effectiveness
- ✔ Well graded type series and bearing capacities for economical use



## Anchor Overview

Recommended use	Transport anchor	Types
Walls / shafts / tanks	Spread anchor Two-hole anchor Erection anchor - one-sided / double-sided	LA 0.7 - LA 22.0 LA 1.4 - LA 26.0 LA 1.4 - LA 22.0
Sandwich panels	Sandwich panel anchor	LA 2.5 - LA 17.0
Bar-shaped elements	Spread anchor	LA 0.7 - LA 22.0
Floor and roofing slabs	Spread anchor Plate anchor Flat feed anchor	LA 0.7 - LA 22.0 LA 1.4 - LA 10.0 LA 0.7 - LA 22.0
Girders	Spread anchor Two-hole anchor	LA 0.7 - LA 22.0 LA 1.4 - LA 26.0

Spread anchor



Two-hole anchor



Erection anchor



Plate anchor



Flat feed anchor



Sandwich panel anchor



Ring clutch



Recess former



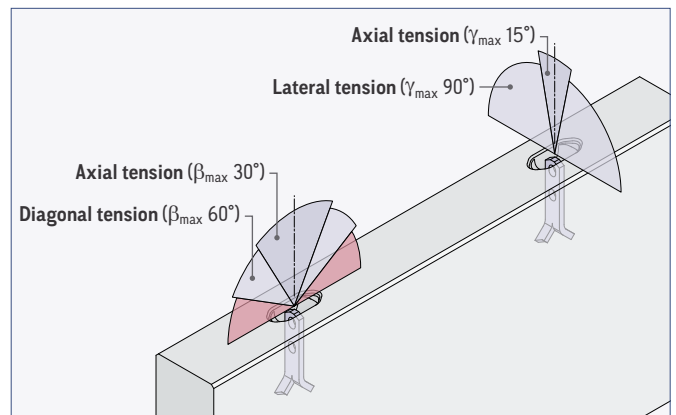
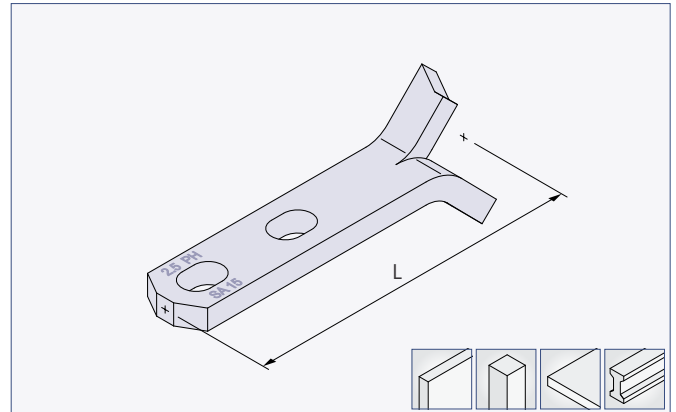
# Hole anchor system

## Spread anchor

With its special spreading at the anchor foot, this transport anchor is very multifunctional. It offers an optimum anchoring for thin-walled elements as well as large-format concrete elements. Beams, columns, walls and JI-slabs are typical applications for that anchor type. For special requirements, the Spread anchor can be used also as a Two-hole anchor. For this purpose, the anchor has an additional slotted hole.

Spread anchor			
Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimension L (mm)
48SA007110	LA 0.7	7.0	110
48SA014110	LA 1.4	14.0	110
48SA014160			160
48SA020130	LA 2.0	20.0	130
48SA020160			160
48SA020210			210
48SA025150	LA 2.5	25.0	150
48SA025200			200
48SA025250			250
48SA030160	LA 3.0	30.0	160
48SA030200			200
48SA030280			280
48SA040180	LA 4.0	40.0	180
48SA040240			240
48SA040320			320
48SA050180	LA 5.0	50.0	180
48SA050240			240
48SA050400			400
48SA075260	LA 7.5	75.0	260
48SA075300			300
48SA075420			420
48SA100300	LA 10.0	100.0	300
48SA100370			370
48SA100520			520
48SA140370	LA 14.0	140.0	370
48SA140460			460
48SA220500			500
48SA220620	LA 22.0	220.0	620

- also available in electro-galvanised b.z.p. (e.g. 48SA025200VC)  
or hot-dip galvanised h.d.g. (e.g. 48SA025200FV) version.



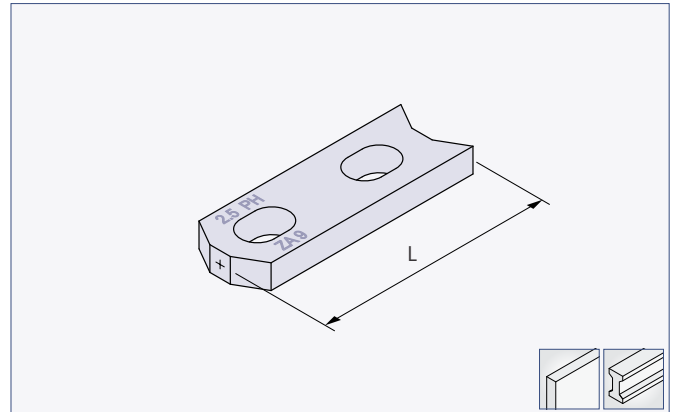
For further details of the application and design of the Spread anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Two-hole anchor

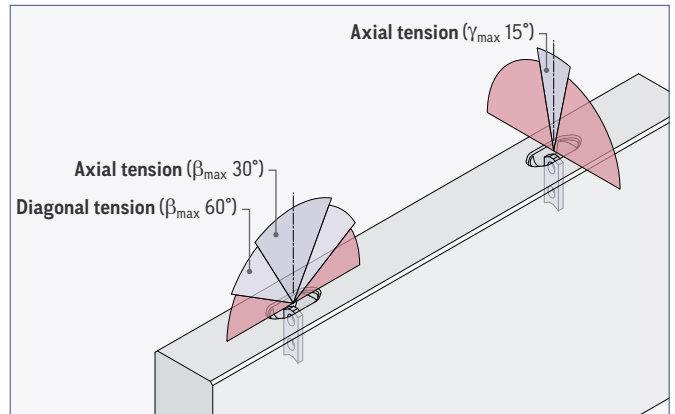
For more light elements such as (small) walls and bar-shaped elements, the Two-hole anchor is a simple and often used transport anchor system. The applied force into the precast concrete element is done via the reinforcement to be planned separately and inserted through the slotted hole. On request, Two-hole anchors with additional holes resp. in longer dimensions can be supplied.



### Two-hole anchor

Ref.-No. black steel	Type	Steel bearing capacity [kN]	Dimension L [mm]
48ZA014090	LA 1.4	14.0	90
48ZA020090	LA 2.0	20.0	90
48ZA025090	LA 2.5	25.0	90
48ZA030120	LA 3.0	30.0	120
48ZA040120	LA 4.0	40.0	120
48ZA050120	LA 5.0	50.0	120
48ZA075160	LA 7.5	75.0	160
48ZA100165	LA 10.0	10.0	165
48ZA140240	LA 14.0	14.0	240
48ZA220300	LA 22.0	22.0	300
48ZA260300	LA 26.0	26.0	300

- also available in electro-galvanised b.z.p. (e.g. 48ZA025090VC) or hot-dip galvanised h.d.g. (e.g. 48ZA025090FV) version.



For further details of the application and design of the Two-hole anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



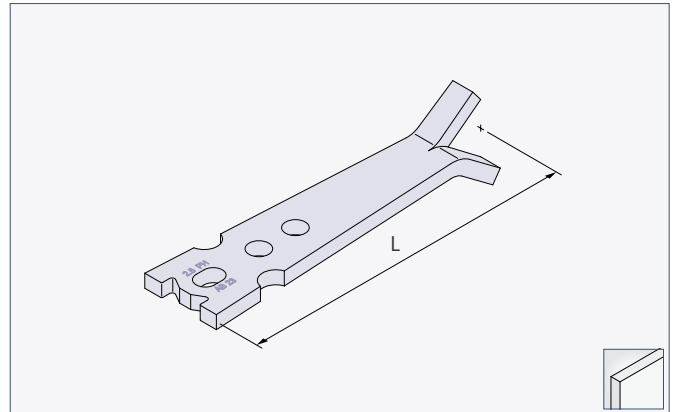
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# Hole anchor system

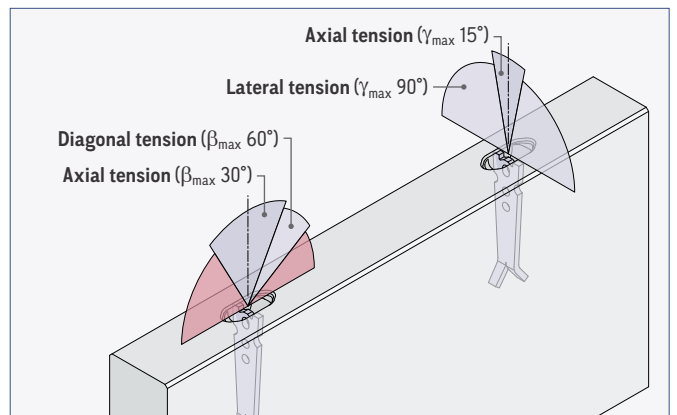
## Erection anchor, double-sided

Erection anchors double-sided are designed in particular for thin-walled concrete elements which are to be erected at right angles to the horizontal production level. Due to its special head design, the lifting device does not rest on the concrete but on the anchor under lateral tension, so the erection forces are transferred into the anchor and a spalling of concrete is prevented. Special notches on the Erection anchor are provided for a precise positioning of the installation reinforcement.



Erection anchor double sided			
Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimension L (mm)
48AB014200	LA 1.4	14.0	200
48AB025230	LA 2.5	25.0	230
48AB040270	LA 4.0	40.0	270
48AB050290	LA 5.0	50.0	290
48AB075320	LA 7.5	75.0	320
48AB100390	LA 10.0	100.0	390
48AB125500	LA 12.5	125.0	500
48AB170500	LA 17.0	170.0	500
48AB220500	LA 22.0	220.0	500

- also available in electro-galvanised b.z.p. (e.g. 48AB025230VC)  
or hot-dip galvanised h.d.g. (e.g. 48AB025230FV) version.



For further details of the application and design of the Erection anchor double-sided please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



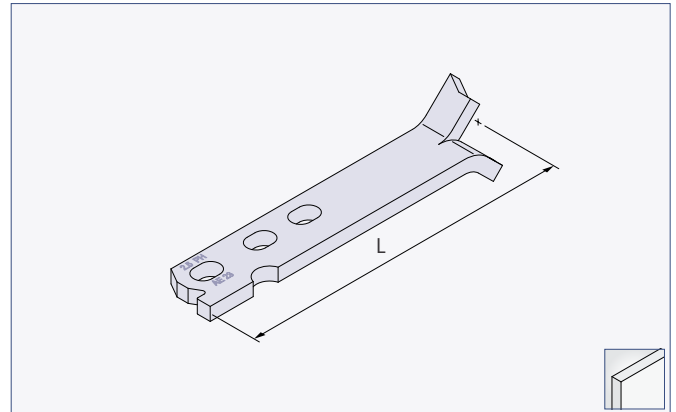
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## Erection anchor - one-sided

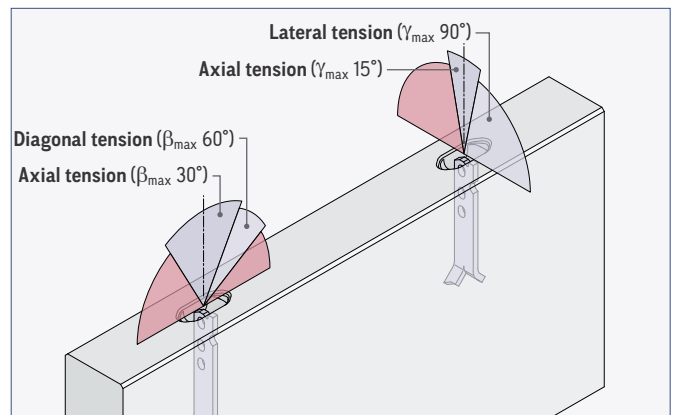
This Erection anchor is - also - designed for thin-walled elements which are to be lifted at right angles to the horizontal production level, but the anchor can be loaded in one direction only. Because of its special head design the lifting device does not rest on the concrete but on the anchor, so the erection force is transferred into the anchor and a spalling of concrete is prevented. Special notches on the Erection anchor are provided for a precise positioning of the installation reinforcement.



### Erection anchor, one-sided

Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimension L (mm)
48AE014200	LA 1.4	14.0	200
48AE025230	LA 2.5	25.0	230
48AE040270	LA 4.0	40.0	270
48AE050290	LA 5.0	50.0	290
48AE075320	LA 7.5	75.0	320
48AE100390	LA 10.0	100.0	390
48AE125500	LA 12.5	125.0	500
48AE170500	LA 17.0	170.0	500
48AE220500	LA 22.0	220.0	500

- also available in electro-galvanised b.z.p. (e.g. 48AE025230VC) or hot-dip galvanised h.d.g. (e.g. 48AE025230FV) version.



For further details of the application and design of the Erection anchor one-sided please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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# Hole anchor system

## Plate anchor

Because of its low embedment depth, the Plate anchor is specialised in the transport of very thin, slab-like elements. Nevertheless, the Plate anchor is highly effective and offers load bearing capacities up to 10 t per anchor. The anchor plate must be reinforced crosswise with additional rebars as standard.

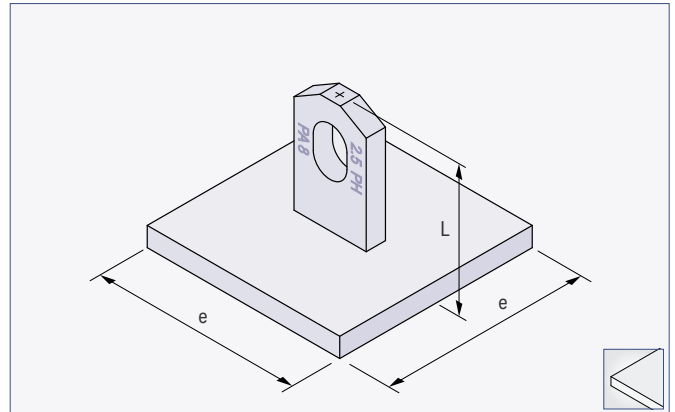
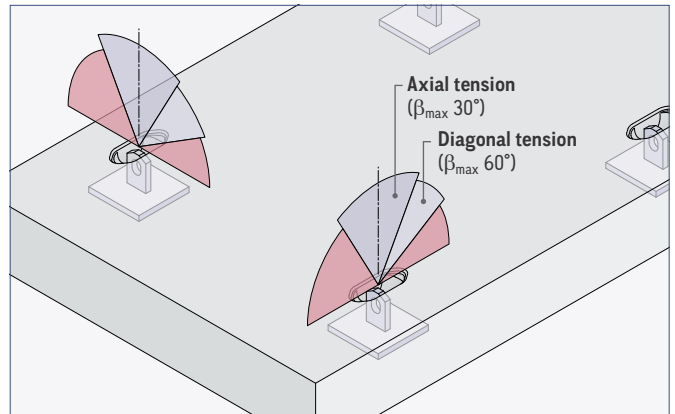


Plate anchor				
Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimensions	
			L (mm)	e (mm)
48PA0140055	LA 1.4	14.0	55	80
48PA0250080	LA 2.5	25.0	80	80
48PA0500120	LA 5.0	50.0	120	100
48PA1000160	LA 10.0	100.0	160	140

- also available in electro-galvanised b.z.p. (e.g. 48PA0250080VC) or hot-dip galvanised h.d.g. (e.g. 48PA0250080GV) version.



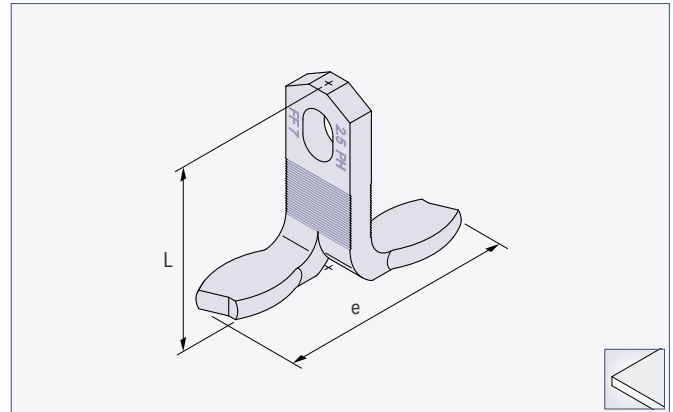
For further details of the application and design of the Plate anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Flat foot anchor

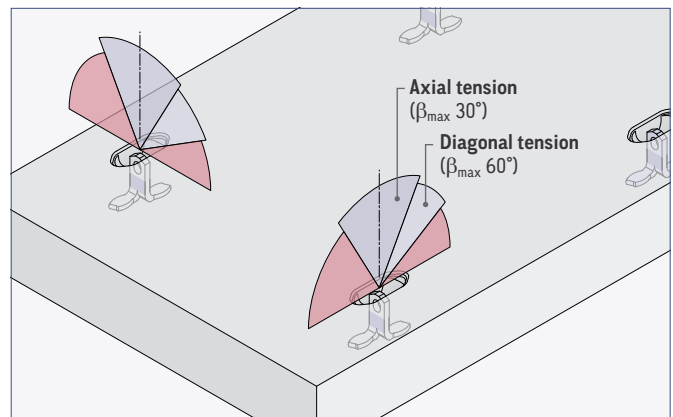
Also for the transport of thin, slab-like elements, the Flat foot anchor can be used as an alternative to the Plate anchor. Especially with higher concrete strengths, the maximum load-bearing capacity of this anchor type is achieved at the time of lifting. The anchor foot shall be reinforced crosswise with additional rebars.



### Flat foot anchor

Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimensions	
			L (mm)	e (mm)
48FF007065	LA 0.7	7.0	65	70
48FF014065	LA 1.4	14.0	65	70
48FF020070	LA 2.0	20.0	70	80
48FF025075	LA 2.5	25.0	75	94
48FF030090	LA 3.0	30.0	90	100
48FF040110	LA 4.0	40.0	110	100
48FF050125	LA 5.0	50.0	125	105
48FF075170	LA 7.5	75.0	170	120
48FF100200	LA 10.0	100.0	200	120
48FF125220	LA 12.5	125.0	220	200
48FF170270	LA 17.0	170.0	270	200
48FF220310	LA 22.0	220.0	310	200

- also available in electro-galvanised b.z.p. (e.g. 48FF025075VC) or hot-dip galvanised h.d.g. (e.g. 48FF025075FV) version.



For further details of the application and design of the Flat foot anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



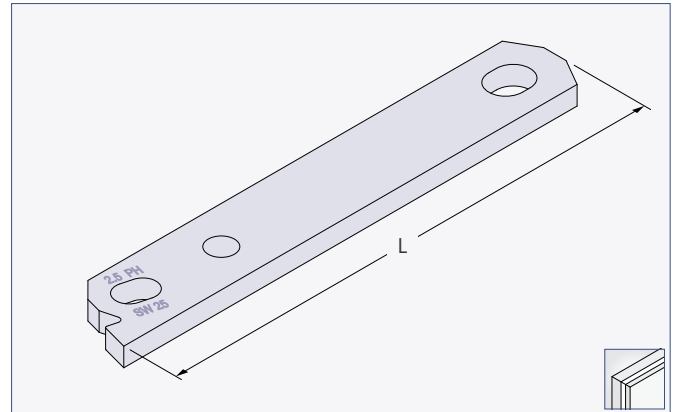
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# Hole anchor system

## Sandwich panel transport anchor

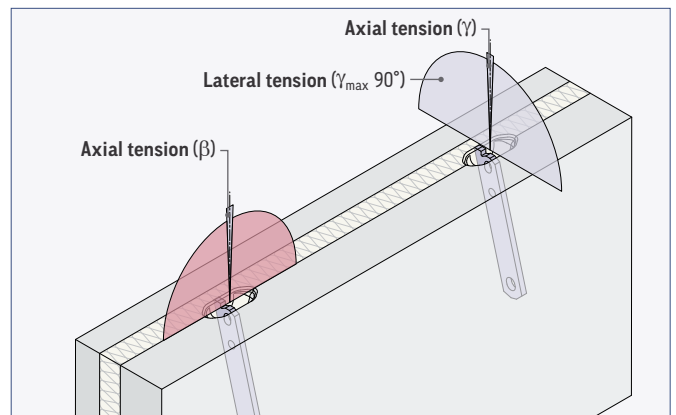
The lifting and transport of multilayer precast reinforced concrete panels, so called sandwich elements, is the only application of the Sandwich panel anchor. This anchor enables a lifting in the centre line of the concrete element and thus a (nearly) vertical hanging during lifting operations.



### Sandwich panel transport anchor

Ref.-No. black steel	Type	Steel bearing capacity (kN)	Dimension L (mm)
48SW025250	LA 2.5	25.0	250
48SW050300	LA 5.0	50.0	300
48SW075350	LA 7.5	75.0	350
48SW100350	LA 10.0	100.0	350
48SW170400	LA 17.0	170.0	400

- also available in electro-galvanised b.z.p. (e.g. 48SW025250VC) or hot-dip galvanised h.d.g. (e.g. 48SW025250GV) version.



For further details of the application and design of the Sandwich panel anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



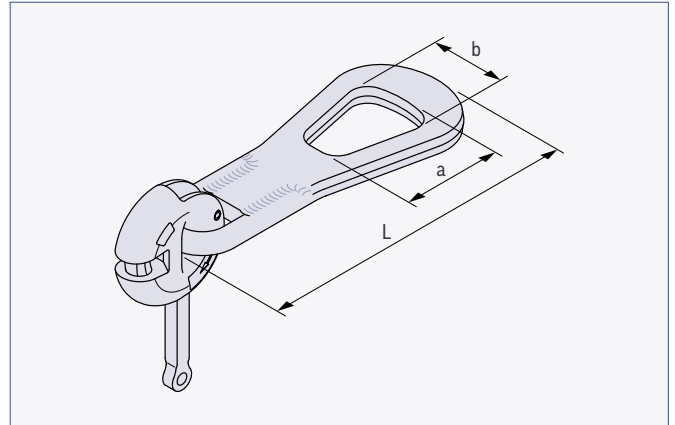
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## Ring clutch / recess former

The corresponding lifting device for the Hole anchor system is the Ring clutch. It consists of a hinged handle and a coupling head, which fits only in the boring of the Hole transport anchors. The Ring clutch is available in four sizes, each suitable for 3 - 4 anchor

load classes. There is no danger of mix-up, because only the correct Ring clutch fits to the corresponding transport anchor sizes.

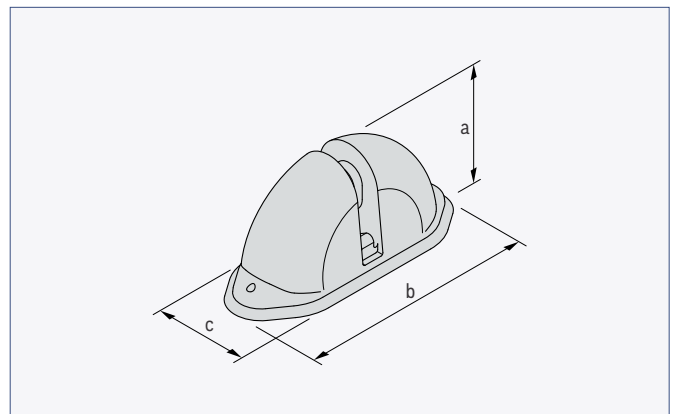
Ring clutch					
Ref.-No.	Type	Bearing capacity (kN)	Dimensions		
			L (mm)	a (mm)	b (mm)
48RK025265	LA 2.5	25.0	265	70	58
48RK050330	LA 5.0	50.0	330	86	65
48RK100425	LA 10.0	100.0	425	112	90
48RK260605	LA 26.0	260.0	605	160	120



Matching recess formers (rubber, steel or magnetic versions) in various sizes fix the Hole anchors securely in position and create

the required recess for a simple and safe coupling of the clutch.

Plastic recess former PLA-AK-A1				
Ref.-No.	Type	Dimensions		
		a (mm)	b (mm)	c (mm)
48AKA01025	LA 2.5	43	104	45
48AKA01050	LA 5.0	49	126	59
48AKA01100	LA 10.0	67	188	85
48AKA01260	LA 26.0	112	234	118



For further details of the application and design of the Ring clutch please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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### Cast-in lifting hoops

Cast-in lifting hoops are the combination of simple but powerful transport anchors on the one hand and extremely cost-effective solutions for high load-bearing capacities on the other. Furthermore, the very good cost/performance ratio is improved by the fact, that no special lifting device is required for the system. The range of application includes very light to very heavy precast elements up to almost 100 t per anchor. Both, the simplicity of the Cast-in lifting hoops and their application as well as their enormous effectiveness provide the ideal solution for a wide range of requirements.



#### Recommended use



Walls



Floor and roofing slabs



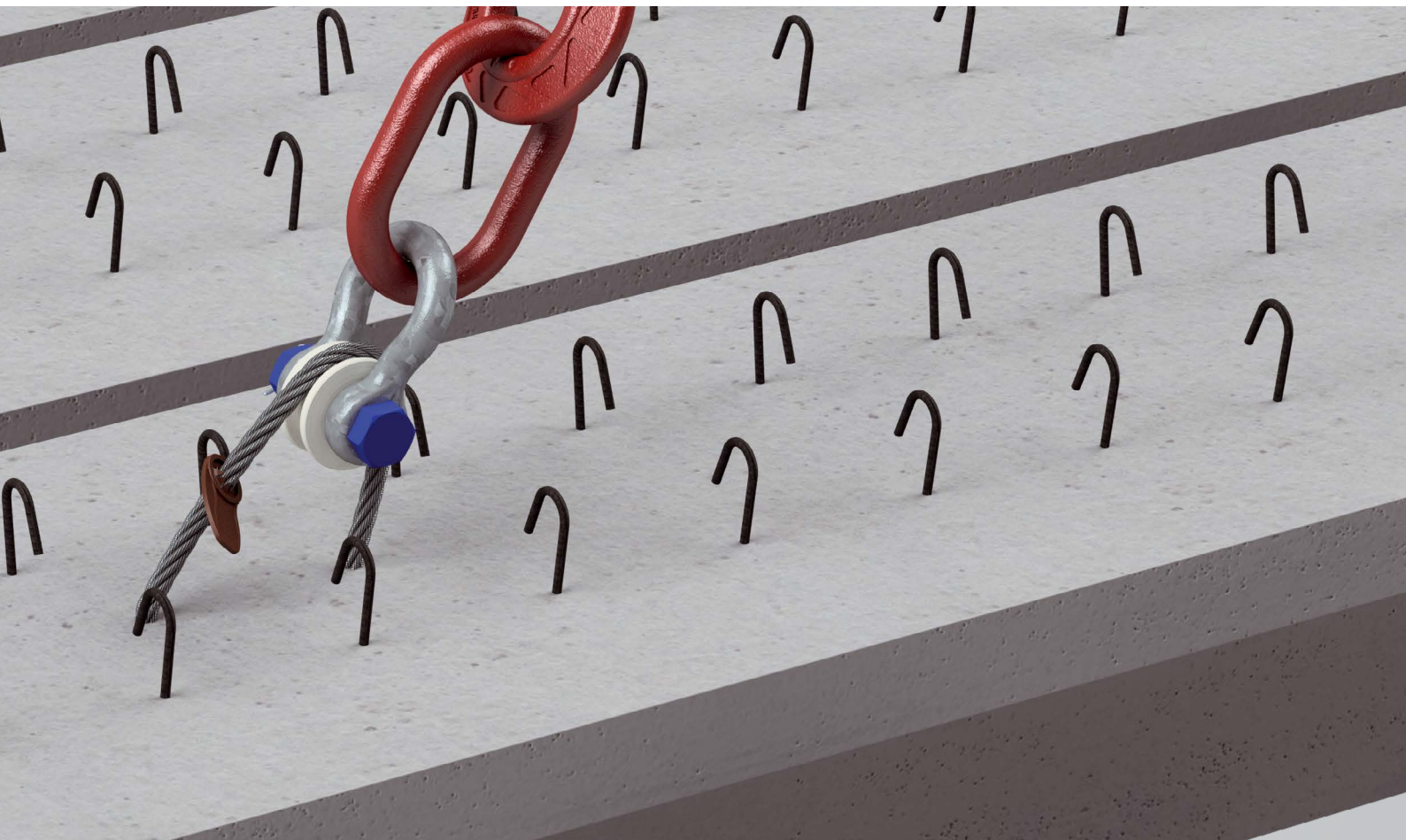
Girders



Bar-shaped elements

#### Features and benefits compact

- ✓ Installation without additional recess former
- ✓ No special lifting device required
- ✓ Very high load-bearing capacities depending on the element dimensions
- ✓ Special accessories available to guarantee the required radii in order to protect the wire rope and get full load-bearing capacity (Wire protection pulley)
- ✓ Only for axial and diagonal tension
- ✓ Cost-effective transport anchor system



## Anchor Overview

Recommended use	Lifting hoops	Types
Walls	Cast-in lifting hoop Polypropylene lifting loop	AS 0.8 - AS 25.0 AS 0.15 - AS 1.20
Floor and roofing slabs	Angled loop	AS 2.5 - AS 5.2
Bar-shaped elements	Cast-in lifting hoop	AS 0.8 - AS 25.0
Girders	Cast-in lifting hoop	AS 16.0 - AS 25.0

Cast-in lifting hoop



Wire protection pulley



Angled loop



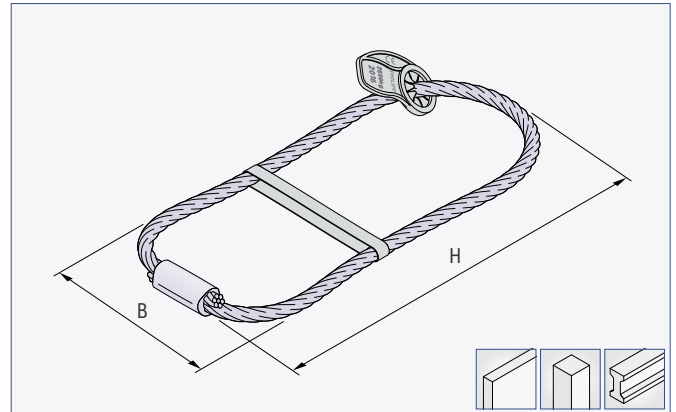
Polypropylene lifting loop



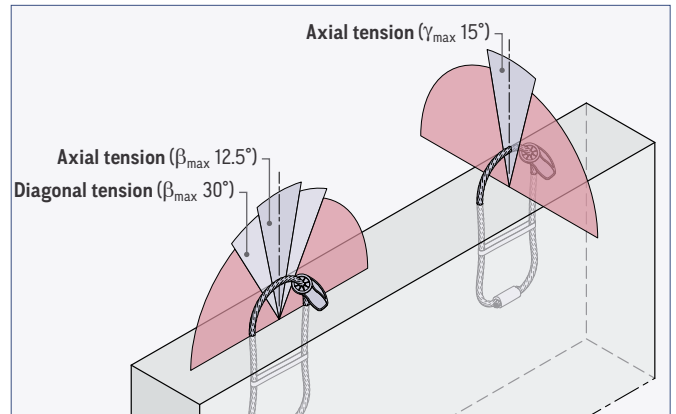
# Cast-in lifting hoops

## Cast-in lifting hoop type AS 0.8 - AS 25.0

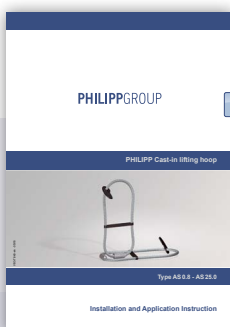
Cast-in lifting hoops convince by their simplicity and use in various concrete elements, such as wall-like elements, columns, bar-shaped elements, beams and girders. Used wire-rope is bonded and forms a loop which encloses a concrete core – thus it enables high load-bearing capacities for this transport anchor type. A special lifting device is not required for transport and mounting of the elements. Moreover, Cast-in lifting hoops also offer high performance at a low price and thus combine many advantages.



Cast-in lifting hoop type AS 0.8 - AS 25.0					
Ref.-No. galvanised	Type	Steel bearing capacity (kN)	Dimensions		
			H (mm)	B (mm)	
442008	AS 0.8	8.0	235	95	
442012	AS 1.2	12.0	235	95	
442016	AS 1.6	16.0	235	100	
442020	AS 2.0	20.0	270	115	
442025	AS 2.5	25.0	310	135	
442040	AS 4.0	40.0	340	150	
442052	AS 5.2	52.0	365	165	
442063	AS 6.3	63.0	380	180	
442080	AS 8.0	80.0	440	205	
442100	AS 10.0	100.0	515	245	
442125	AS 12.5	125.0	570	270	
442160	AS 16.0	160.0	605	286	
442200	AS 20.0	200.0	730	345	
442250	AS 25.0	250.0	780	375	



**i** The Wire protection pulley completes the system of the Cast-in lifting hoops and is used as wire rope protection with the correct transition radius when lifting the elements (page 66).



For further details of the application and design of the Cast-in lifting hoop please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



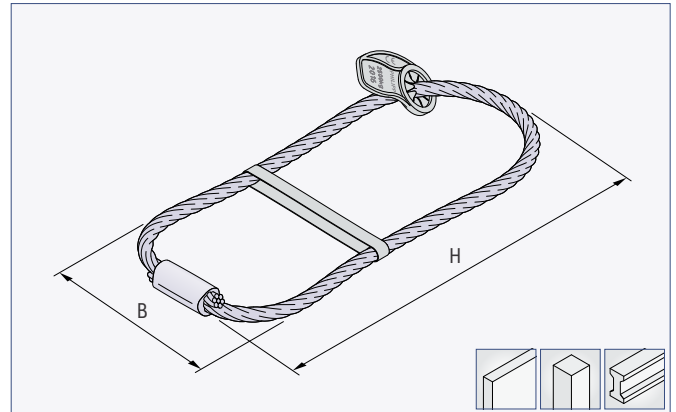
[www.philipp-group.de](http://www.philipp-group.de)

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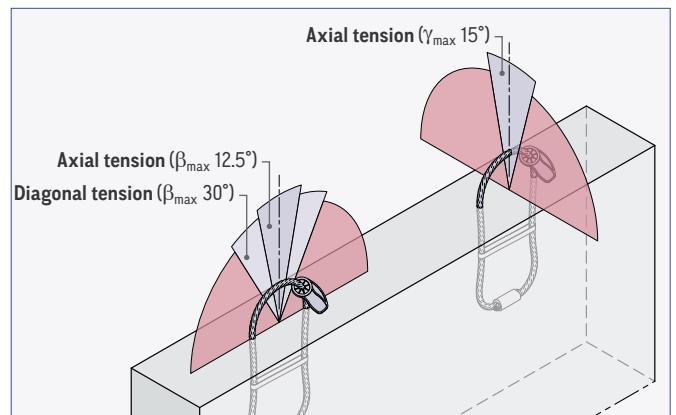
## Cast-in lifting hoop type AS 28.0 - AS 95.0

If very heavy or massive concrete elements (hall girders and beams, columns, bridge elements etc.) have to be lifted, transported and mounted, the use of Cast-in lifting hoops for the heavy load range up to 95 t capacity is obvious. Used wire-rope is bonded and forms a loop which encloses a concrete core – thus it enables very high load-bearing capacities for this transport anchor type. Although this heavy-duty anchor is always combined with an individual design service from PHILIPP, the Cast-in lifting hoop in this application area is nevertheless convincing with an unbeatable price / performance ratio.

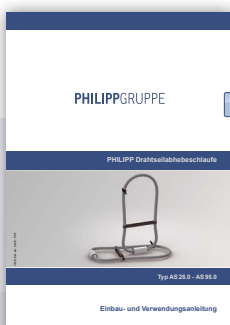


### Cast-in lifting hoop type AS 28.0 - AS 95.0

Ref.-No. galvanised	Type	Steel bearing capacity [kN]	Dimensions	
			H [mm]	B [mm]
442280	AS 28.0	280.0	800	375
442320	AS 32.0	320.0	880	426
442370	AS 37.0	370.0	950	440
442420	AS 42.0	420.0	1000	480
442470	AS 47.0	470.0	1100	520
442520	AS 52.0	520.0	1200	550
442570	AS 57.0	570.0	1350	645
442650	AS 65.0	650.0	1430	690
442750	AS 75.0	750.0	1530	725
442850	AS 85.0	850.0	1680	850
442950	AS 95.0	950.0	1800	900



The Wire protection pulley completes the system of the Cast-in lifting hoops and is used as wire rope protection with the correct transition radius when lifting the elements (page 66).



For further details of the application and design of the Cast-in lifting hoop please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

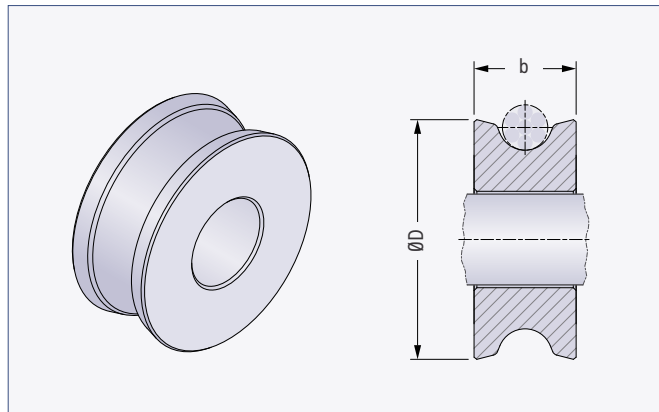


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# Cast-in lifting hoops

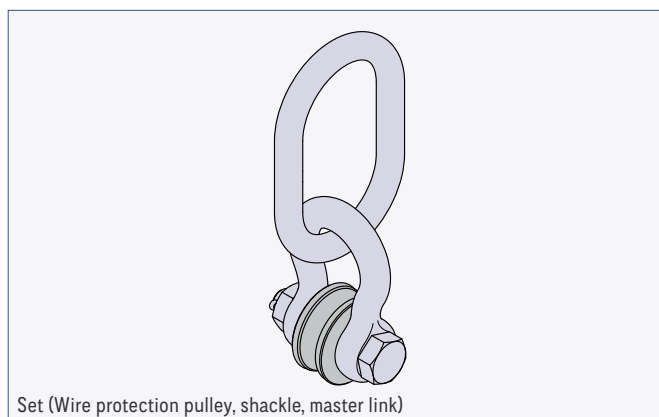
## Wire protection pulley

The Wire protection pulley is an accessory for the Cast-in lifting hoop and is used to protect the wire resp. to ensure the capacity of the anchor during lifting. It is available as a steel or high quality plastic (POM) version and avoids a strong deformation of the wire rope caused by too small radii at the loading point.



Wire protection pulley (steel version)				
Ref.-No.	Type	Dimensions		for Cast-in lifting hoop Type
		ØD (mm)	b (mm)	
44SR008020	2.0	43	18	AS 0.8 - AS 2.0
44SR025063	6.3	75	32	AS 2.5 - AS 6.3
44SR080160	16.0	112	56	AS 8.0 - AS 16.0
44SR200250	25.0	148	68	AS 20.0 - AS 25.0
44SR280520	52.0	202	95	AS 28.0 - AS 52.0
44SR570990	99.0	256	140	AS 57.0 - AS 95.0

Also available in POM material and as a set (picture)



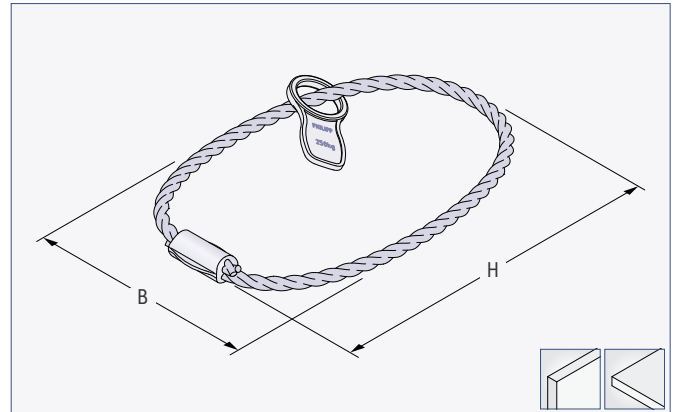
For further details of the application and design of the Wire protection pulley please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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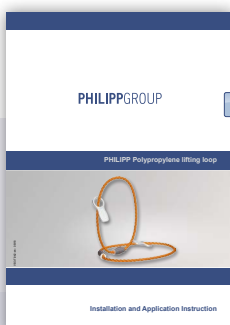
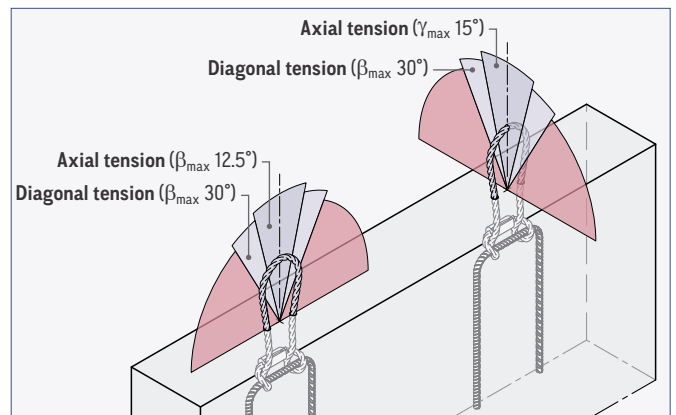
## Polypropylene lifting loop

The loop made of Polypropylene (PP) is the cheap and simple solution for lifting of small slab-like or wall-like precast concrete elements. Due to the additional anchorage reinforcement to be planned, a load capacity up to 1.2 t per anchor is possible. A special lifting device is not required for transport and mounting of the elements.



### Polypropylene lifting loop

Ref.-No.	Type	Rope bearing capacity (kN)	Dimensions	
			H (mm)	B (mm)
43P06	AS 0.150	1.50	220	100
43P08	AS 0.250	2.50	220	100
43P10	AS 0.360	3.60	260	120
43P12	AS 0.500	5.00	290	140
43P14	AS 0.875	8.75	330	160
43P16	AS 1.200	12.00	370	180



For further details of the application and design of the Polypropylene loop please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



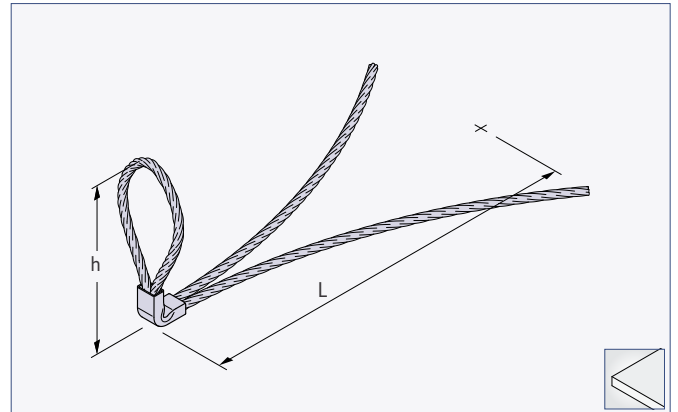
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[www.philipp-group.de](http://www.philipp-group.de)

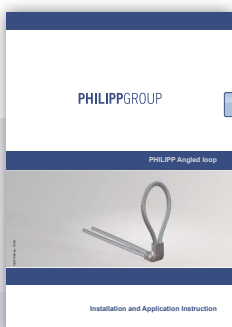
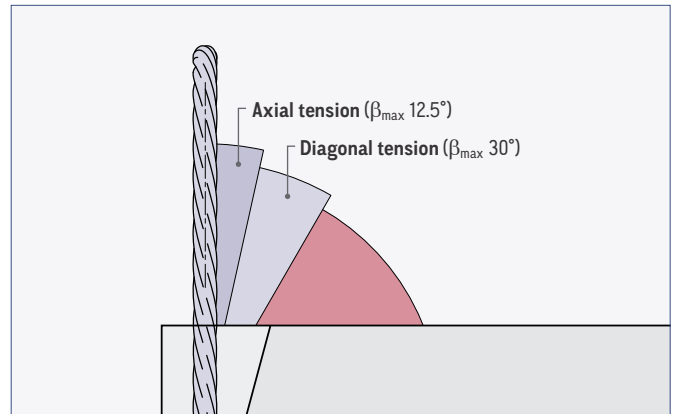
# Cast-in lifting hoops

## Angled loop

The application of the Angled loop is focused on light, slab-like precast concrete elements, hollow core floors etc. This anchor type, which is easy to install and to fix to the reinforcement, can be used without a special lifting device. The unbeatable price/performance ratio of the Angled loop makes it very attractive for precasters.



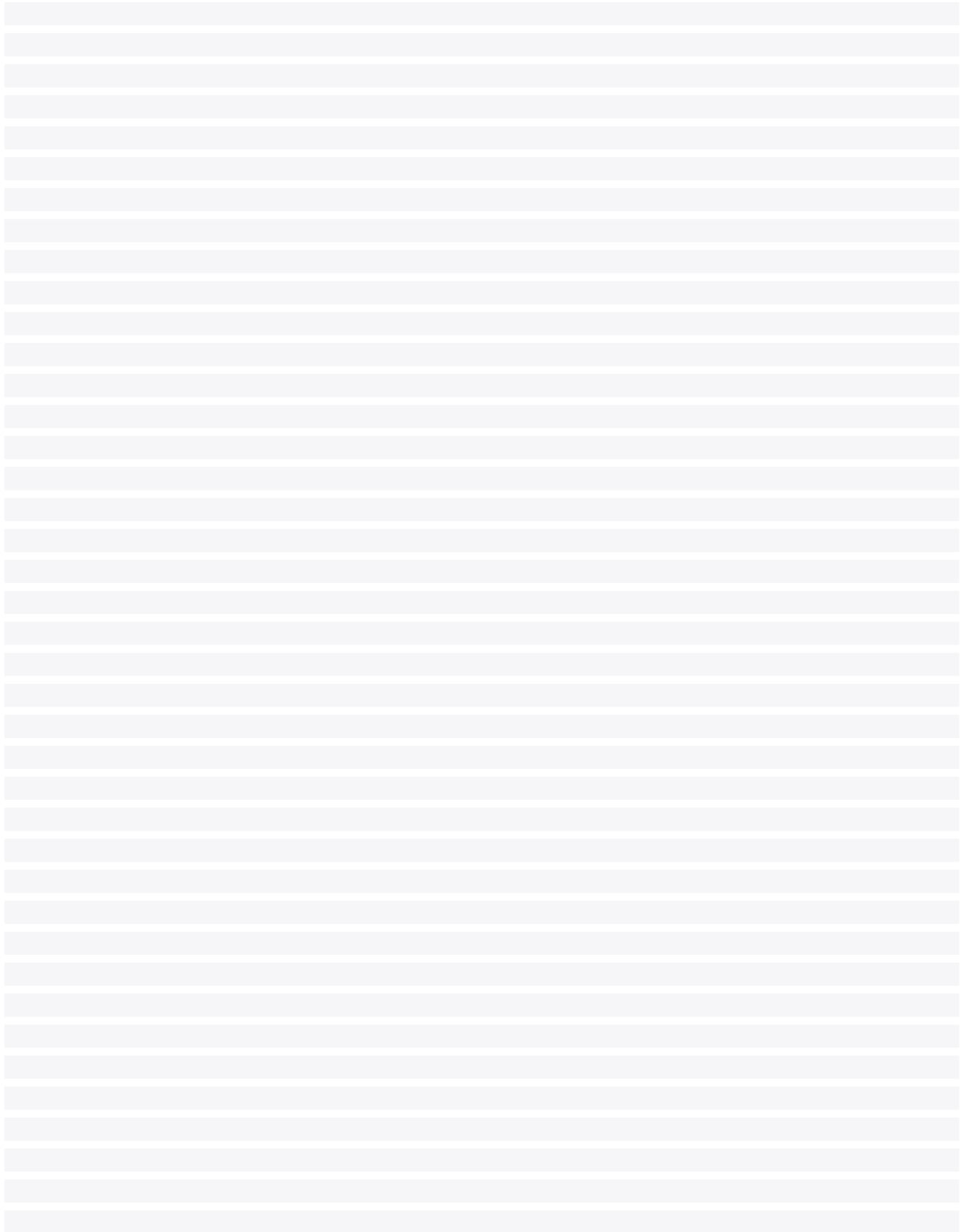
Angled loop					
Ref.-No.	Type	Steel bearing capacity (kN)	Dimensions		
			h (mm)	L (mm)	
44W10180350	AS 2.5	25.0	180	350	
44W12230380	AS 4.0	40.0	230	380	
44W14230380	AS 5.2	52.0	230	380	



For further details of the application and design of the Angled loop please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Further systems

Besides the standard range of transport anchors in normal weight concrete, there are further, special systems for use in other building materials, such as masonry or lightweight concrete. This portfolio shown here offers special versions of the anchor head as well as the anchor foot. With the various anchor head types, the user has the freedom to use his preferred lifting device.



## Recommended use



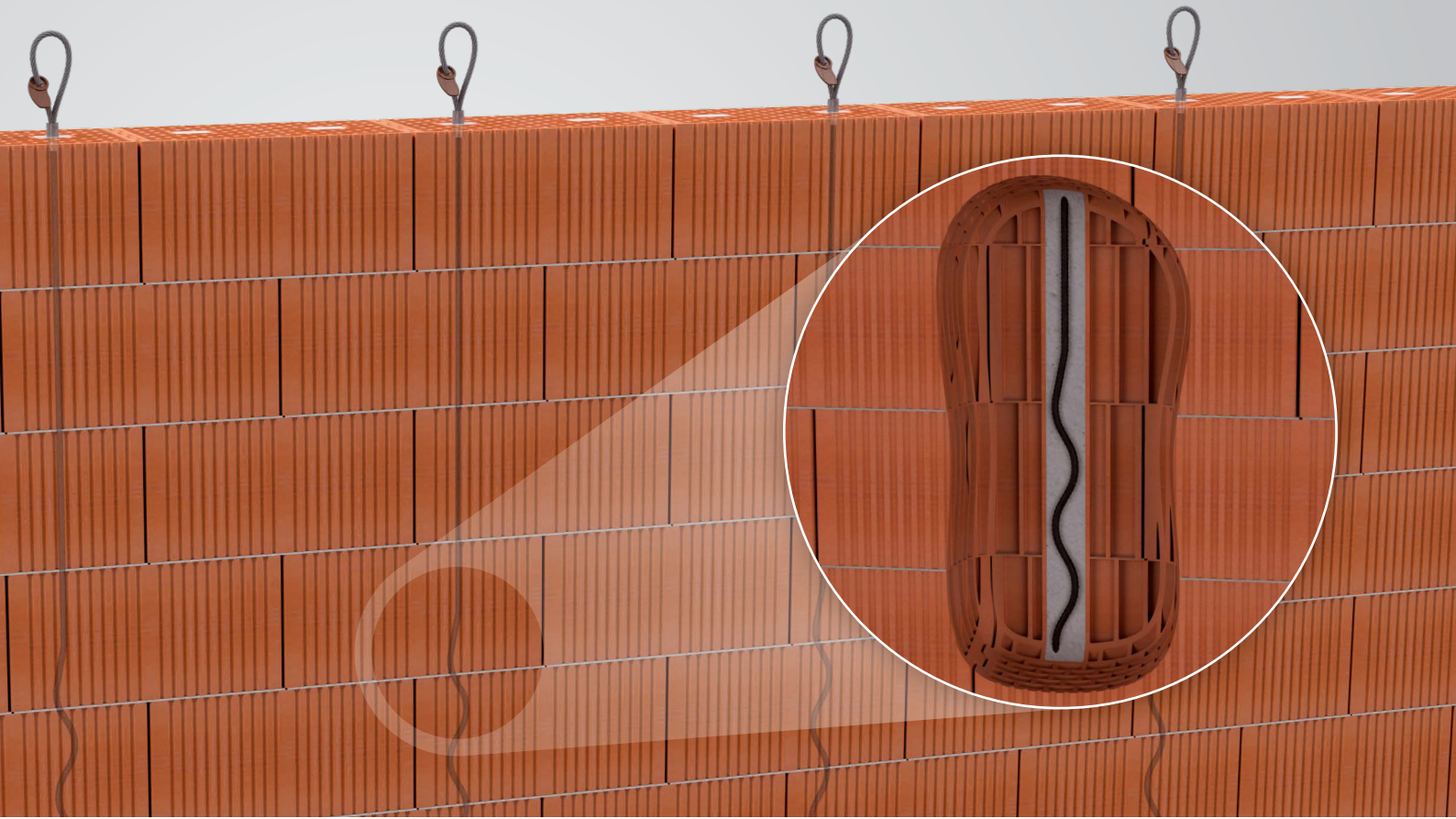
Walls (masonry)



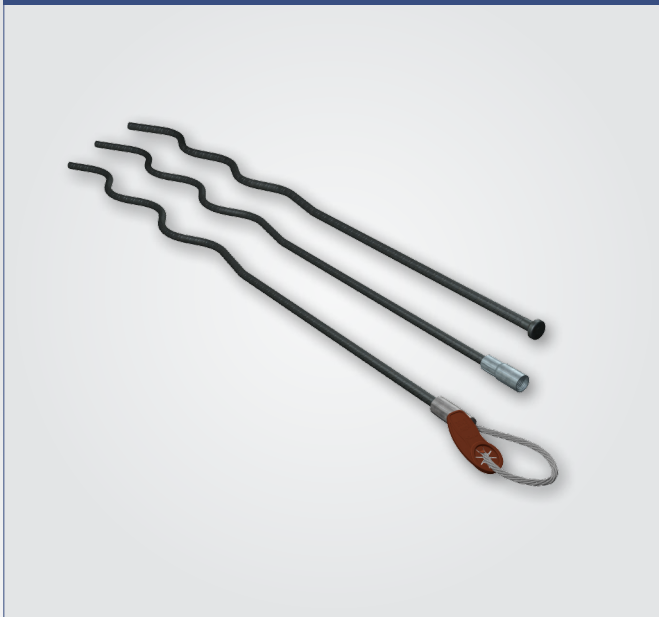
Walls

## Features and benefits compact

- ✓ Three versions available:
  - with integrated lifting loop
  - with threaded socket (Threaded anchor system)
  - with Spherical head (Spherical head anchor system)
- ✓ Load-bearing capacities up to 4 t



Masonry anchor



Lightweight concrete anchor








# Further systems

## Masonry anchor

Masonry anchors are designed for the transport of prefabricated masonry panels. They are inserted through the corings of the bricks and finally grouted with mortar. Due to the long anchor with a waved end the safe load transfer into the unit is guaranteed. With three different anchor head versions nearly every lifting device can be used for transport and mounting of masonry walls.

### Masonry anchor with wire rope loop (type 1)

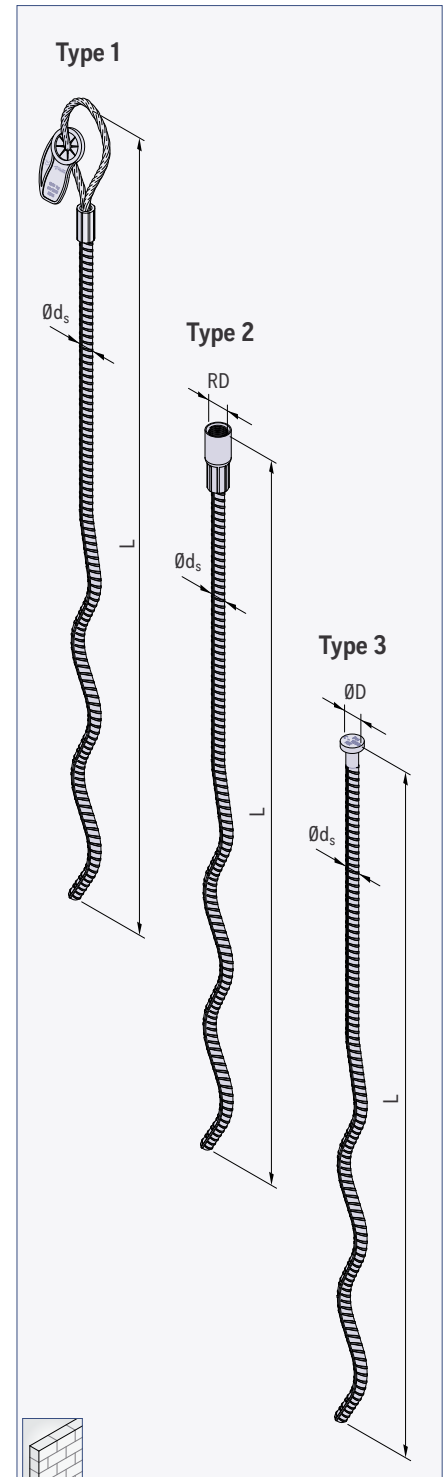
Ref.-No.	Steel bearing capacity (kN)	Dimensions		Colour code
		$\varnothing d_s$ (mm)	L (mm)	
73MW08___	9.0	8	as required	 Sulfur yellow
73MW10___	14.0	10	as required	 Jet black
73MW12___	20.0	12	as required	 Clay brown
73MW14___	31.0	14	as required	 Pastel orange
73MW16___	40.0	16	as required	 Emerald green

### Masonry anchor with threaded insert (type 2)

Ref.-No.	Steel bearing capacity (kN)	Dimensions		Thread RD
		$\varnothing d_s$ (mm)	L (mm)	
73HM12___	5.0	8	as required	12
73HM14___	8.0	10	as required	14
73HM16___	12.0	12	as required	16
73HM18___	16.0	14	as required	18
73HM20___	20.0	16	as required	20
73HM24___	25.0	16	as required	24
73HM30___	40.0	20	as required	30


### Masonry anchor with Spherical head (type 3)

Ref.-No.	Steel bearing capacity (kN)	Dimensions		
		$\varnothing d_s$ (mm)	L (mm)	$\varnothing D$ (mm)
73KK14___	25.0	14	as required	25
73KK20___	40.0	20	as required	36



For further details of the application and design of the Masonry anchors please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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[www.philipp-group.de](http://www.philipp-group.de)



## Lightweight concrete anchor

Anchors for lightweight concrete are designed for wall-like elements made of concrete with open structure resp. lightweight concrete with low concrete strengths. A U-profile welded to the anchor foot guarantees the safe transfer of force into the lightweight concrete. With three different designs of the anchor head, the requirements for a specific lifting device for the transport and mounting process can be met.

### Lightweight concrete anchor with wire rope loop (type 1)

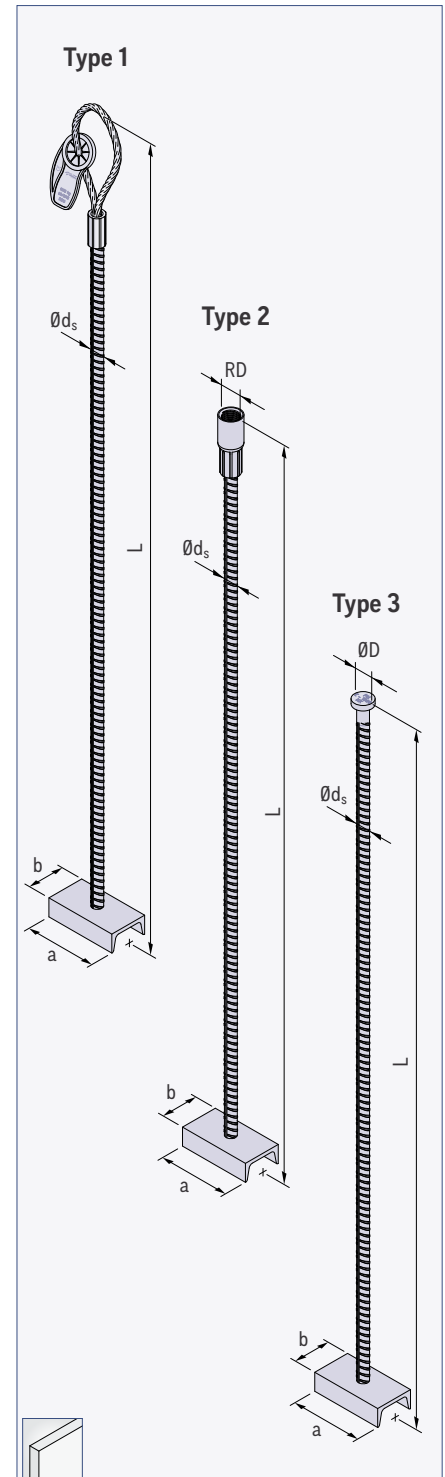
Ref.-No.	Steel bearing capacity (kN)	Ød <sub>s</sub> (mm)	Dimensions		
			L (mm)	a (mm)	b (mm)
73MW10____LB	14.0	10	as required	115	60
73MW12____LB	20.0	12	as required	115	60
73MW14____LB	31.0	14	as required	175	60
73MW16____LB	40.0	16	as required	230	60

### Lightweight concrete anchor with threaded insert (type 2)

Ref.-No.	Steel bearing capacity (kN)	Ød <sub>s</sub> (mm)	Dimensions			Thread RD
			L (mm)	a (mm)	b (mm)	
73HM16____LB	12.0	10	as required	115	60	16
73HM20____LB	20.0	12	as required	115	60	20
73HM24____LB	25.0	14	as required	175	60	24
73HM30____LB	40.0	16	as required	230	60	30

### Lightweight concrete anchor with spherical head (type 3)

Ref.-No.	Steel bearing capacity (kN)	Ød <sub>s</sub> (mm)	Dimensions			
			L (mm)	a (mm)	b (mm)	ØD (mm)
73KK10____LB	13.0	10	as required	115	60	18
73KK12____LB	25.0	12	as required	115	60	25
73KK14____LB	32.0	14	as required	175	60	25
73KK16____LB	40.0	16	as required	230	60	36



For further details of the application and design of the Lightweight concrete anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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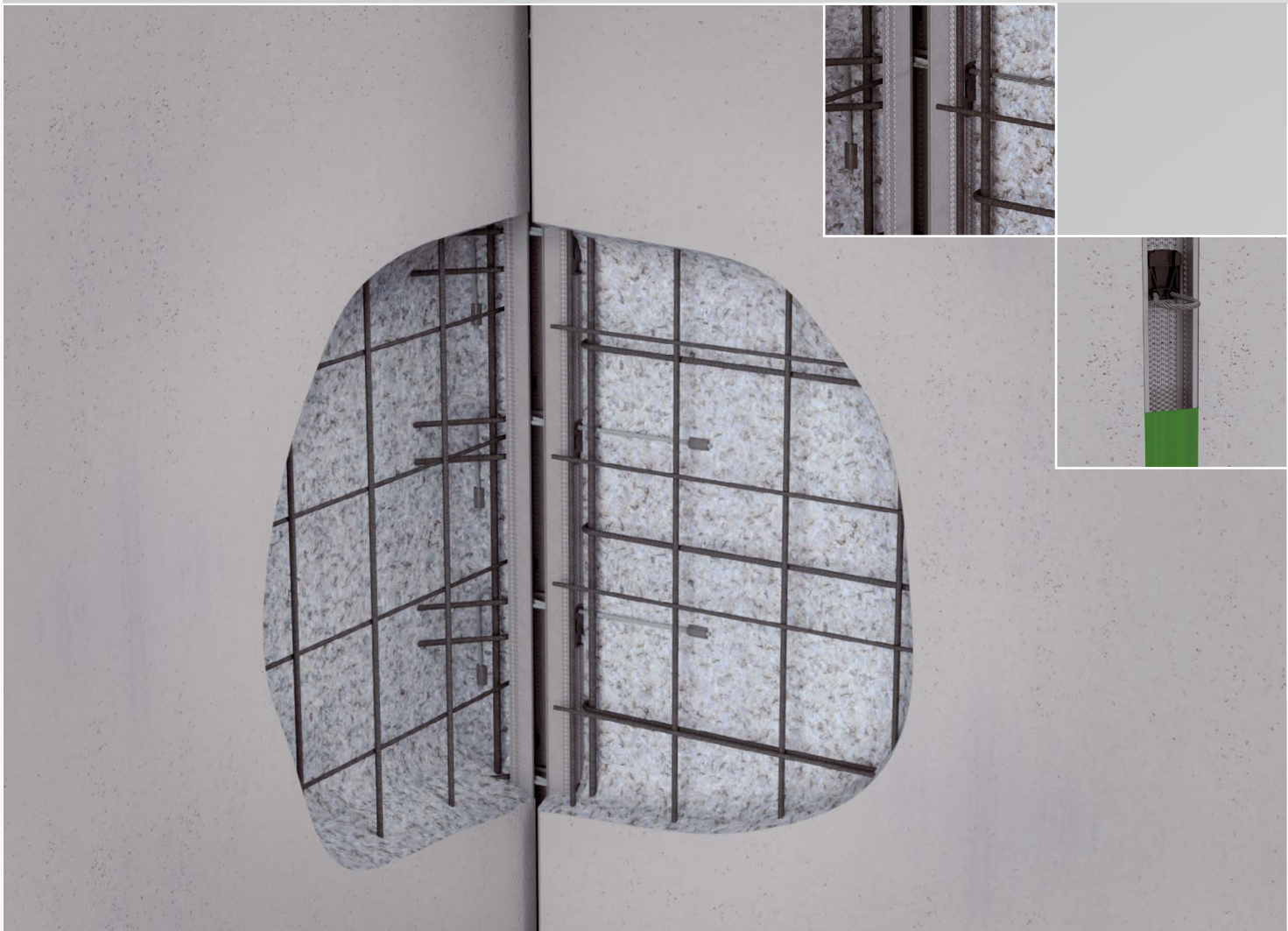
## Creating connections - safely

In modern skeleton construction, a wide variety of connection solutions are required and applied. Solutions listed here are focused on vertical connections for walls to each other and walls to columns.

Most of these connections can be realised with mounting parts such as boxes or rails, which generate a form and force fit connection in the joints. Wire rope loops with a high flexibility are used as reinforcement, which allow connections that are hardly possible with other connecting elements. Finally, the joints are filled with a high-strength mortar.

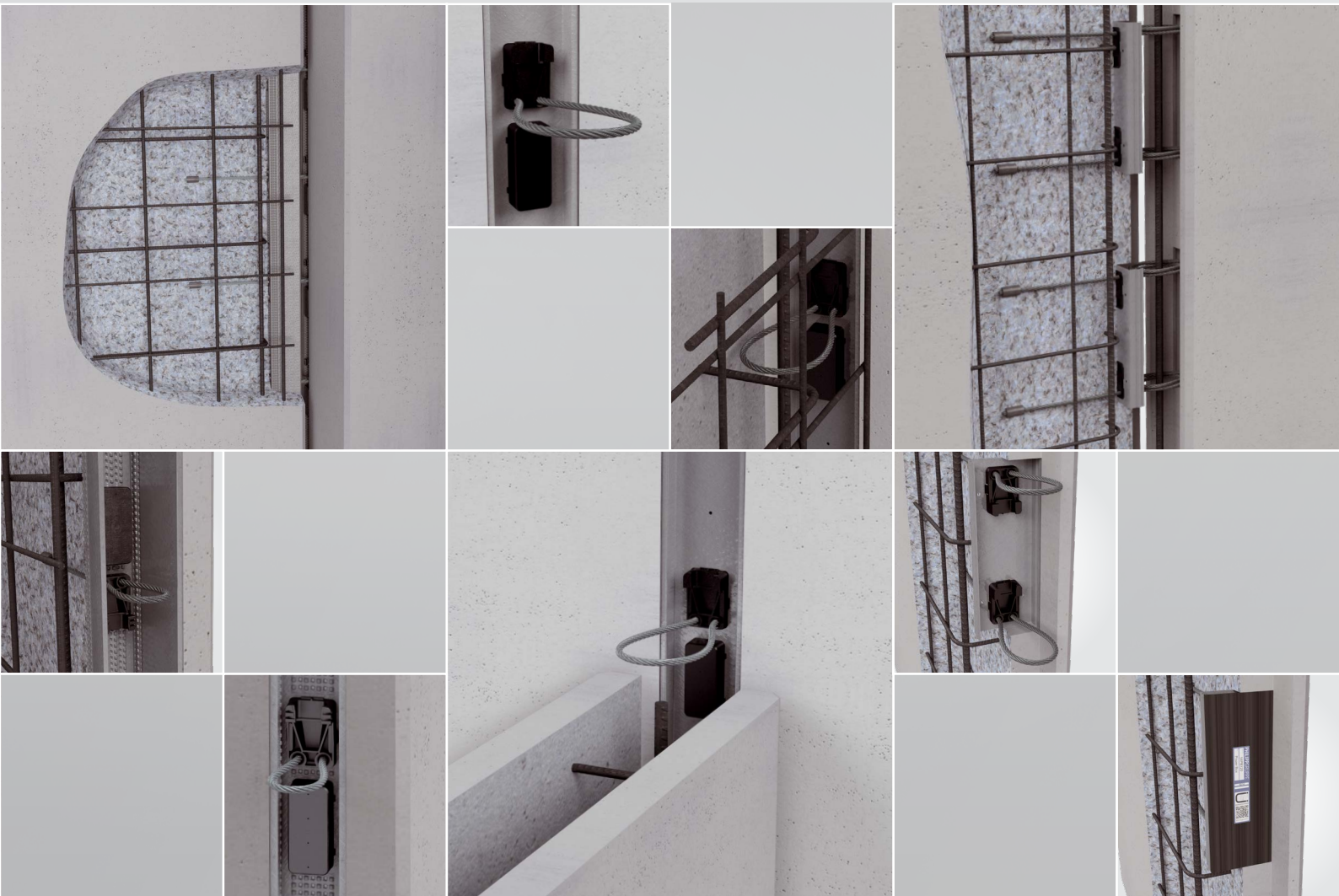
A differentiation is made here between systems via which static loads are to be transferred or simple, constructive connections are sufficient. If civil engineers require specific designed connections, connecting systems with German approvals from DIBt and systems with calculation basis Eurocode 2 are available. Everything else can be easily and quickly connected by constructive loops or rails.

All told, wire rope loops simplify the installation of precast concrete elements by their flexibility significantly.



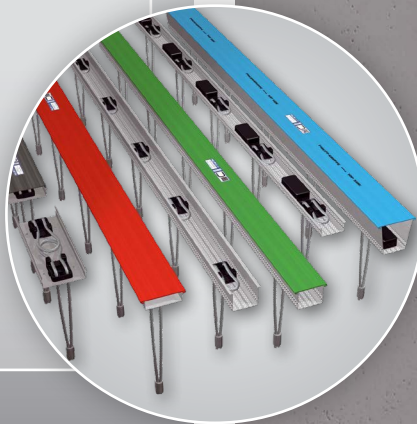
## Connection technology

- ✔ German approved systems for high forces Page 76
- ✔ Constructive rails and loops Page 82
- ✔ Restraint dowel plate / dowelling system Page 86



## German approved systems for high forces

German approved systems for high loads are required if there are high (shear)-forces to be transferred into the concrete element, e.g. for stiffening within a precast concrete building. Depending on the requirements and application area, several solutions are available and can be chosen by customer's need.



## Possible applications



Wall / wall



Wall / wall (T-connection, 2 walls)



Wall / column



Wall / wall (T-connection, 3 walls)



Wall / wall (corner connection)

## Design tool

For the design of the German approved systems for high forces an easy-to-use and user-friendly software is available on our website to provide individual designs on the basis of simple geometric data.



www.philipp-group.de

PHILIPP Berechnungshilfe PDZ

### PHILIPPGRUPPE

Bemessungsprogramm für Power Duo System

( Zurück zur Auswahl )

**Eingabewerte:**

- Fugenhöhe
- Einwirkende Querkraft parallel ( $F_{Q,||}$ )
- Einwirkende Querkraft senkrecht ( $F_{Q,\perp}$ )
- Einwirkende "tafeln" Zugkraft ( $F_{Z,taf}$ )
- Bemessungskategorie
- Verbindungstyp
- Wandbreite
- Fugenbreite
- Einbauvariante A ( $h_{w,au}$ )
- Einbauvariante B ( $h_{w,ab}$ )
- Sondermaßnahme für Zugkräfte ( $h_{w,zug}$ )

**Mörtelart:**

- PHILIPP BE-TEC® Vergussmörtel
- PHILIPP BE-TEC® Tross-Mörtel
- PST EuroGros® Vario (Vergussmörtel)
- PST EuroGros® Universalfüller (Eltiss-Mörtel)
- PHILIPP PS-1 Vergussmörtel
- PHILIPP PS-T Tross-Mörtel

[Berechnung starten](#) [Eingabewerte hochladen](#) [Beratung anfordern](#)

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PHILIPP Berechnungshilfe PDZ

Verbindungstyp: Einbauvariante

### Ergebnis

( Zurück zu den Eingabewerten )

PHILIPP Power Duo System

Das Power Duo System wird zur Verbindung von Bauteilen im zulassungspflichtigen Bereich eingesetzt. Das System ist in der Lage, Quer- und Zugkräfte in Wandebene sowie Querkraft senkrecht zur Wandebene sicher zu übertragen. Detaillierte Informationen zur Anwendung, Geometrie und Montage finden Sie in der Einbau- und Verwendungsanleitung EDWA des Power Duo Systems.

Bei diesem Programm handelt es sich um eine Berechnungshilfe. Verbindlich sind immer die Angaben im Zulassungsbescheid Z-218-1867 bzw. Z-218-2028.

Power Duo System + PHILIPP BE-TEC® Vergussmörtel			
Nachweis für $n_{Rd,  }$		Nachweis für $n_{Rd,\perp}$	
Nachweis bei Verwendung des Power Duo Systems über die gesamte Fuge (minimales Anzahl an Schlaufenansätzen $n_{SL}$ )			
Einwirkende Kraft:	Tragfähigkeit:	Einwirkende Kraft:	Tragfähigkeit:
$F_{Q,  } = 20 \text{ kN/m}$	$F_{Rd,  } = 90 \text{ kN/m}$	$F_{Q,\perp} = 20 \text{ kN/m}$	$F_{Rd,\perp} = 52,5 \text{ kN/m}$
$F_{Z,taf} = 5 \text{ kN/m}$	$F_{Rd,Z} = 8,63 \text{ kN/m}$	$F_{Z,taf} = 5 \text{ kN/m}$	$F_{Rd,Z} = 5,04 \text{ kN/m}$
$\Sigma F_{Q,  } = 16,25 \text{ kN/m}$	$\eta_{Rd,  } = 12$	$\Sigma F_{Q,\perp} = 16,25 \text{ kN/m}$	$\eta_{Rd,\perp} = 7$

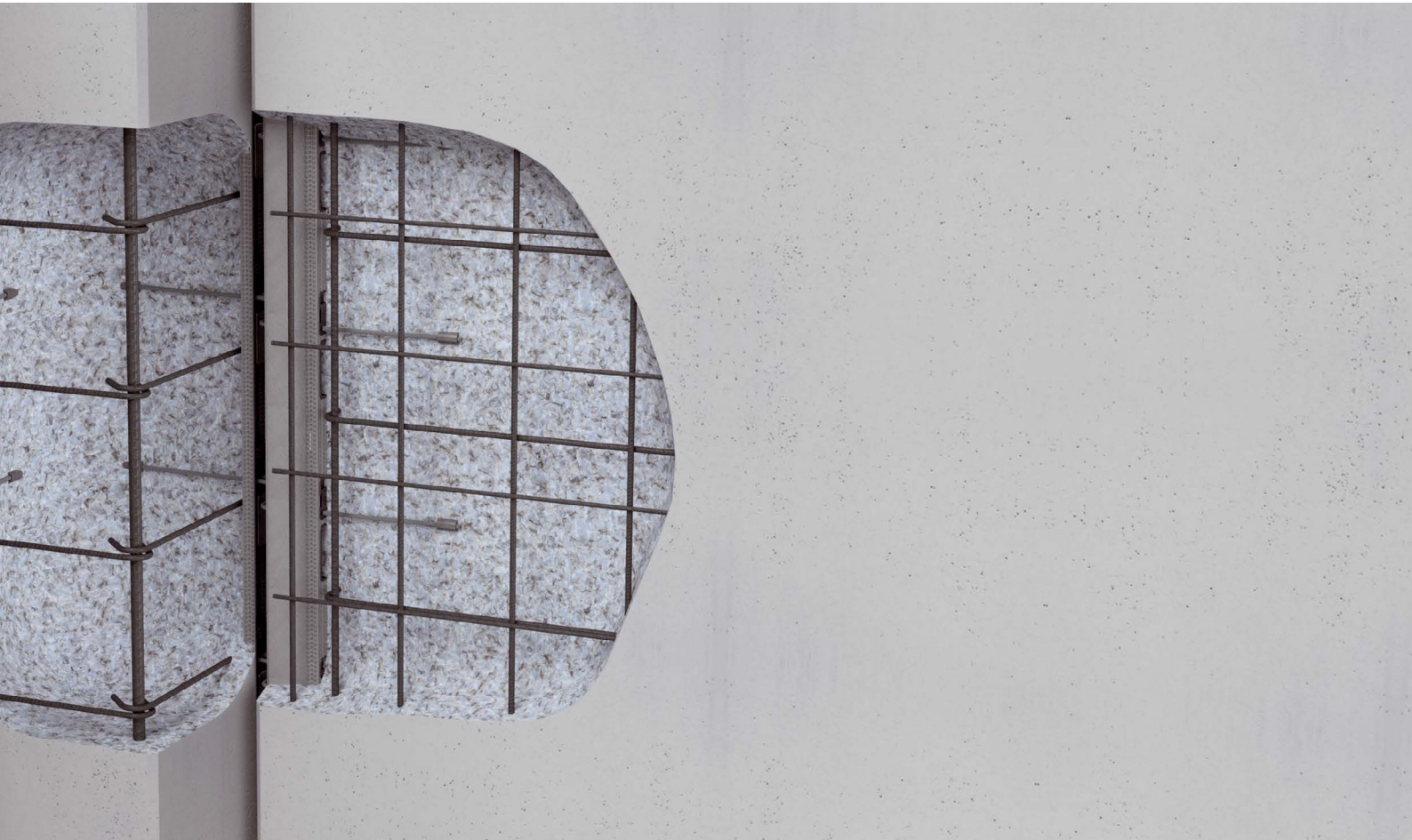
**Ergebnis / Hinweis:**

✓ Nachweis erfüllt.

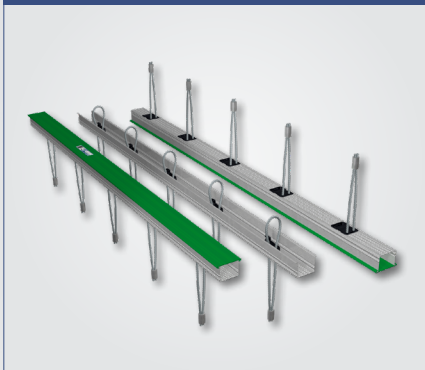
Min. erforderliche Schlaufenanzahl  $n_{SL} = 7$ . Das entspricht einer Schwenkhöhe von mind. 175 mm. Es ist eine Teilung in ein Vielfaches von 625 mm in Schritten empfohlen. Die restliche Fuge kann mit konstruktivem Lesechienen ausgefüllt werden (Anr. Nr.: 849370 + 849302). Diese können in beliebigen Teilungen eingesetzt werden.

**Mörtelverbrauch:**

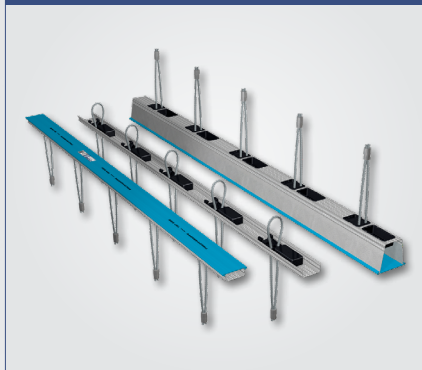
27 kg/m<sup>3</sup>  
532 kg



**Power One System**



**Power Duo System**



**Power OS**



**Power Box System**



**Mortar (P&T / BETEC®)**

**EuroGrout®**  
THIXO mortar / grouting mortar  
(Universalfüller / Varix)



**BETEC®**  
THIXO mortar / grouting mortar



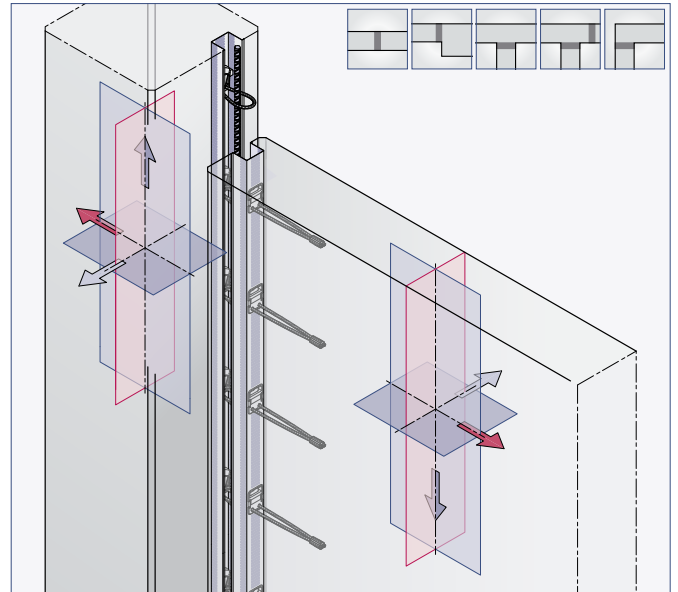
**EuroGrout®**  
THIXO mortar / grouting mortar



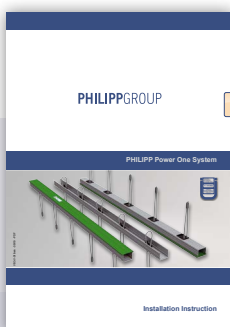
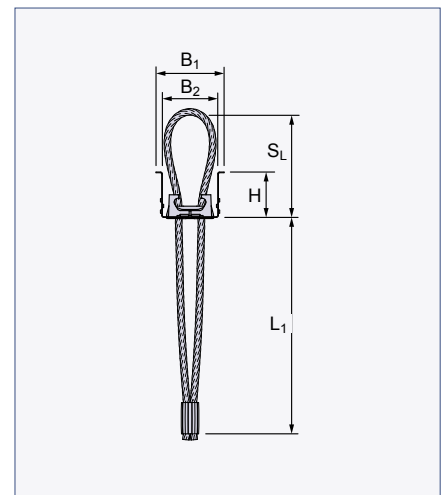
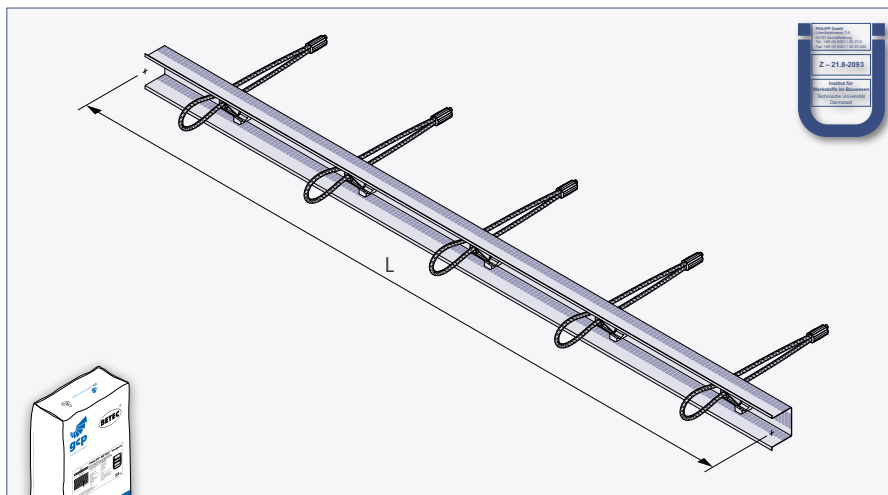
# German approved systems

## Power One System

The Power One system is a connecting device for the force- and form-fit connection of primarily thin precast concrete elements starting with 10 cm thickness. It is able to safely transfer forces in all three directions, parallel and right-angled to the joint as well as tensile forces in rope direction. High design values as also the consideration of fire exposure characterise this connection solution.



Power One rail						
Ref.-no.	Dimensions					
	B <sub>1</sub> (mm)	B <sub>2</sub> (mm)	H (mm)	L (mm)	L <sub>1</sub> (mm)	S <sub>L</sub> (mm)
84PONE400905	60	50	40	1250	190	90



For further details of the application and design of the Power One system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

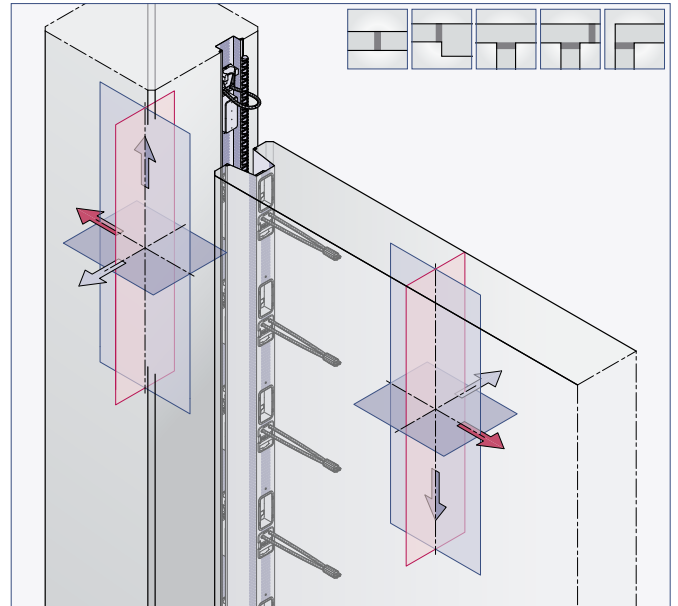


[www.philipp-group.de](http://www.philipp-group.de)

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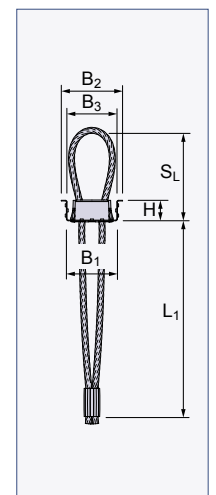
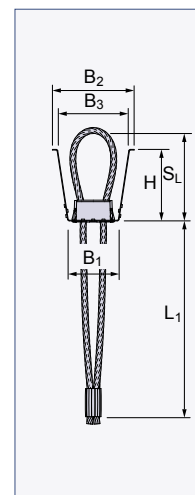
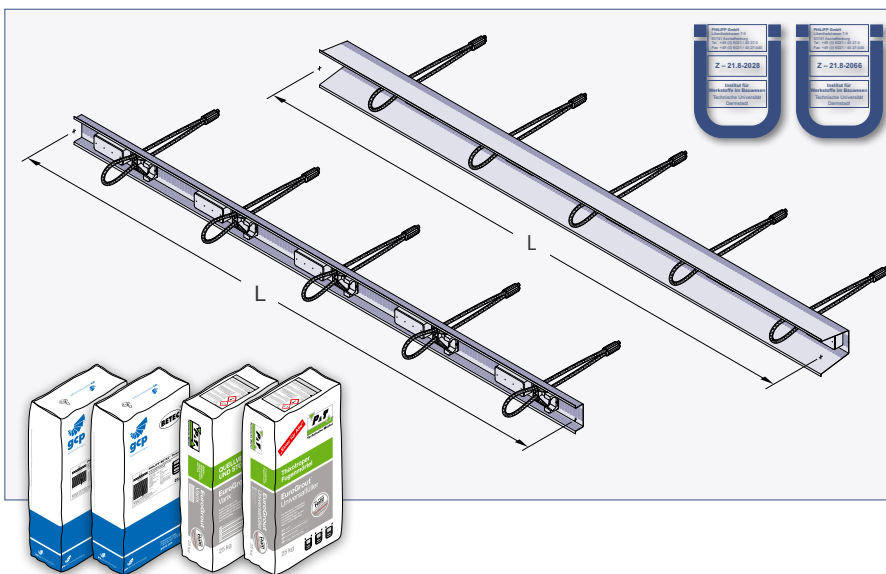
## Power Duo System

The true classic connecting rail system creates a force- and form-fit connection of precast concrete elements starting from a thickness of 14 cm. Forces in three load directions are transferred safely, shear forces parallel and right-angled to the joint as well as tensile forces in rope direction. High design values as also the consideration of fire exposure characterise this connection solution. A wide range of suitable mortar types completes the system.



### Power Duo rails

Ref.-no.	Dimensions						
	B <sub>1</sub> (mm)	B <sub>2</sub> (mm)	B <sub>3</sub> (mm)	H (mm)	L (mm)	L <sub>1</sub> (mm)	S <sub>L</sub> (mm)
84PDS700905	50	80	70	70	1250	190	90
84PDS200905	50	60	50	20			



For further details of the application and design of the Power Duo system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

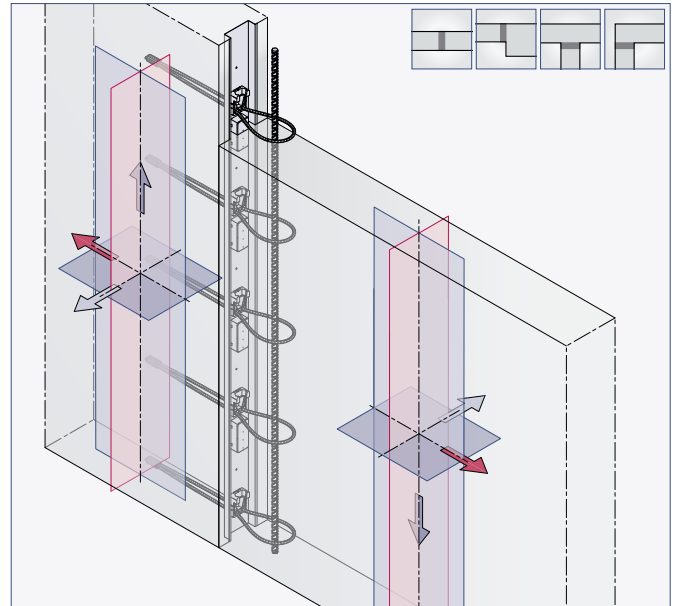


[www.philipp-group.de](http://www.philipp-group.de)

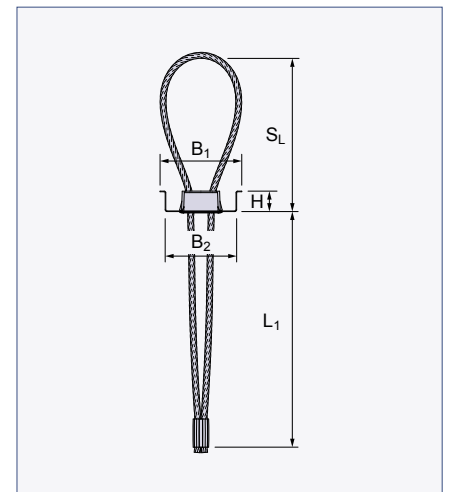
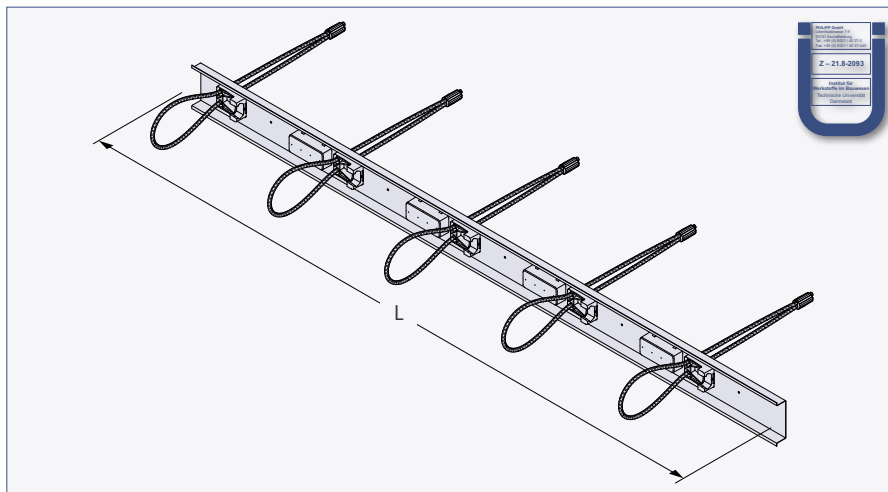
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## Power OS

A combination of know-how from the well-known connection systems of the Power series with the requirements of in-situ concrete constructions the Power OS rail stands for. The German approved system for connections between (semi-finished) precast elements/ in-situ concrete connections and in-situ or semi-finished elements consists of only one rail. High design values for all three load directions are also available as standard here, and thus enable a wide range of applications. There is no mortar required by using the Power OS rail.



Power OS rail						
Ref.-no.	Dimensions					
	B <sub>1</sub> (mm)	B <sub>2</sub> (mm)	H (mm)	L (mm)	L <sub>1</sub> (mm)	S <sub>L</sub> (mm)
84POS201555	80	70	20	1250	250	155



For further details of the application and design of the Power OS please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



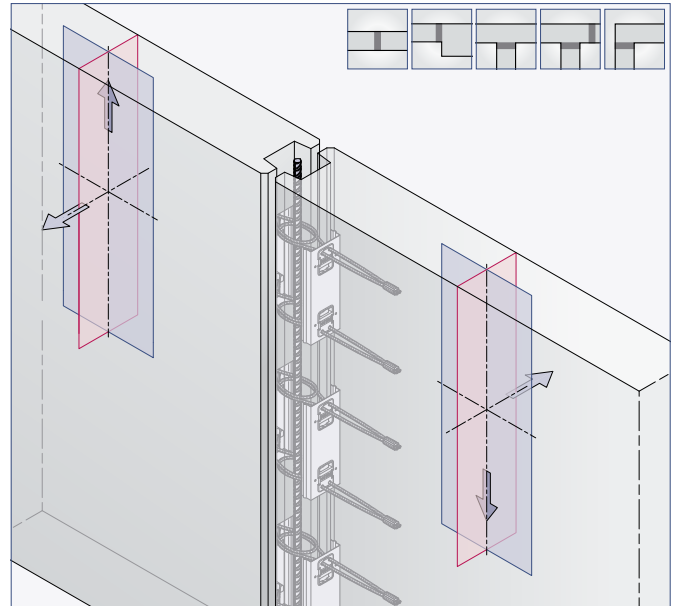
[www.philipp-group.de](http://www.philipp-group.de)

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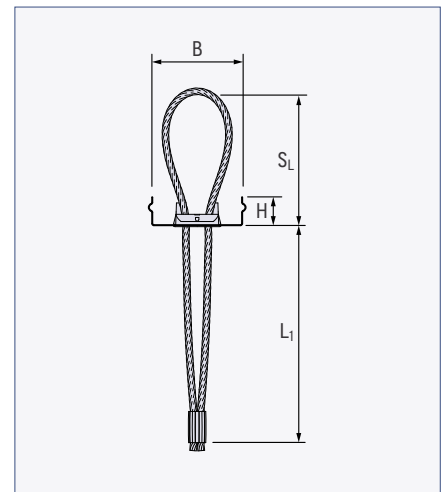
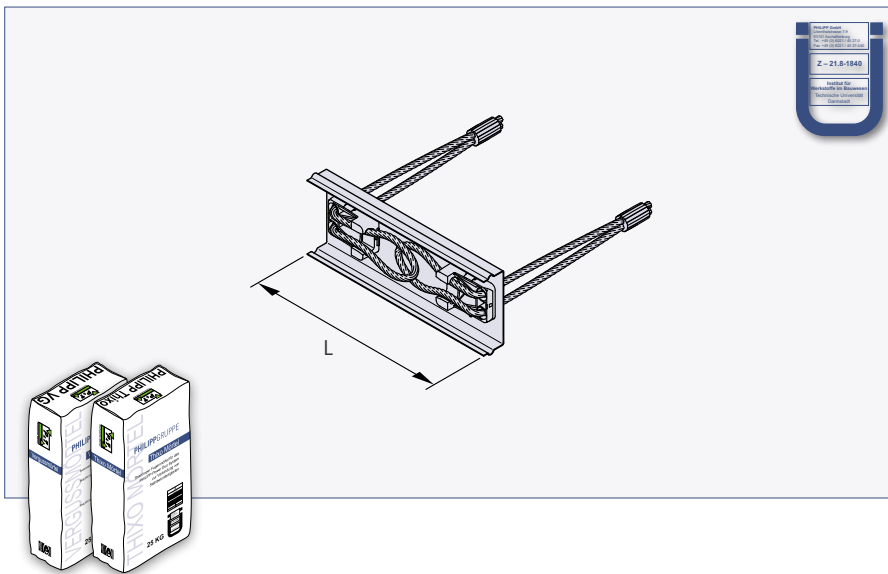
## Power Box System

Small but not a less powerful solution for a force- and form-fit connection of precast concrete elements – the Power Box. With this, shear forces parallel and right-angled to the joint are transferred safely. High design values as also the consideration of fire exposure characterise this connection solution.



### Power Box


Ref.-No.	Dimensions				
	S <sub>L</sub> (mm)	B (mm)	H (mm)	L (mm)	L <sub>1</sub> (mm)
54PB120	120	80	25	220	190



For further details of the application and design of the Power Box system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

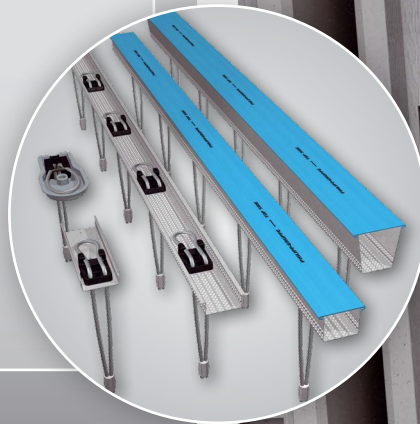


[www.philipp-group.de](http://www.philipp-group.de)

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## Constructive rails and single loops

Connecting rails and loops are always used for constructive connections when no forces have to be transferred by the connection. In this regard, single loops or rails with many variations leave nothing to be desired.

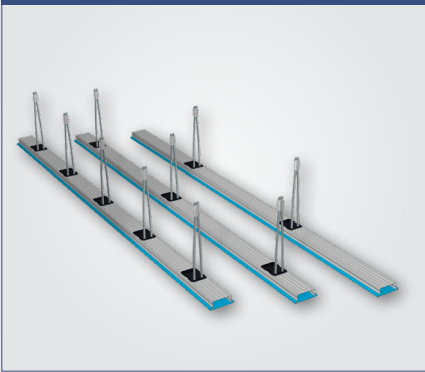


## Features and benefits compact

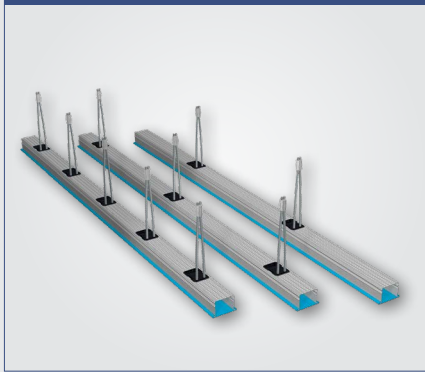
- ✓ Mounting parts for the constructive connection of precast concrete elements
- ✓ Force- and form-fit connection through part geometry resp. profiling
- ✓ Flexibility in rail depth, loop length and number
- ✓ Different connection variants possible - wall-to-wall, wall-column, corner and T-connection
- ✓ Rails can be shortened at any desired length, alternatively application-related positioning of individual boxes
- ✓ Tight sealing of the rails (during concreting and hardening of the concrete) by durable plastic cover
- ✓ Free choice of grouting material – concrete or mortar (grouting or Thixo mortar)
- ✓ Simple installation, thus practical application
- ✓ Also available in variant for lightweight concrete elements



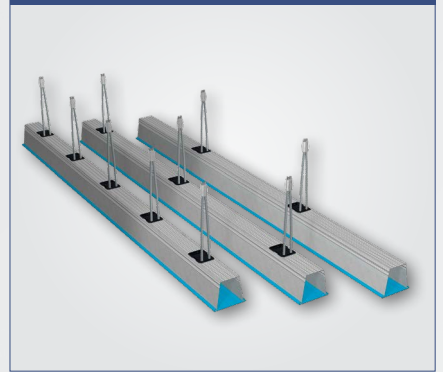
Connecting rail 50×20



Connecting rail 50×40



Connecting rail 50/70×70



Connecting loop - metal



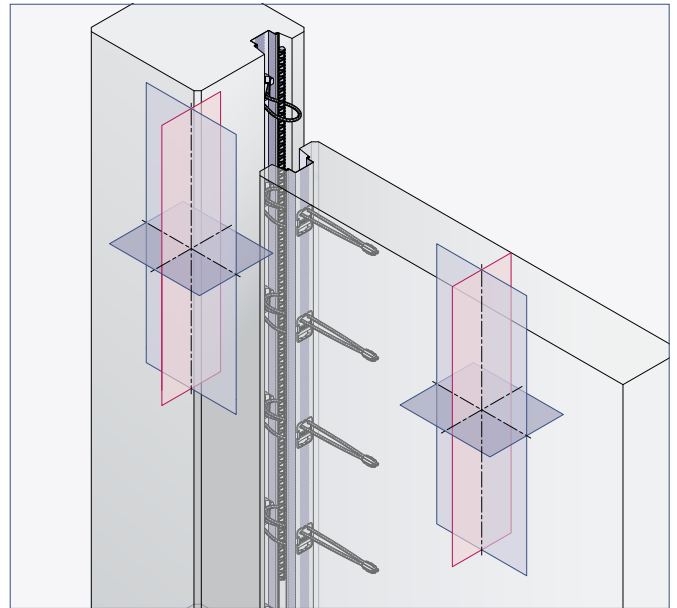
Connecting loop - plastic



# Constructive rails and single loops

## Connecting rail

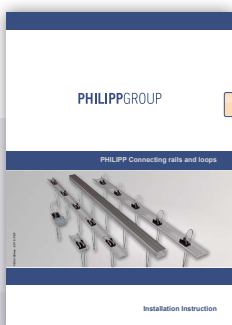
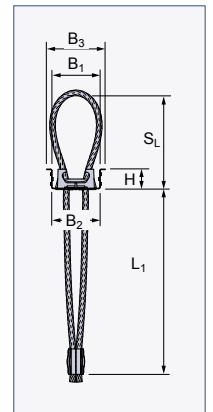
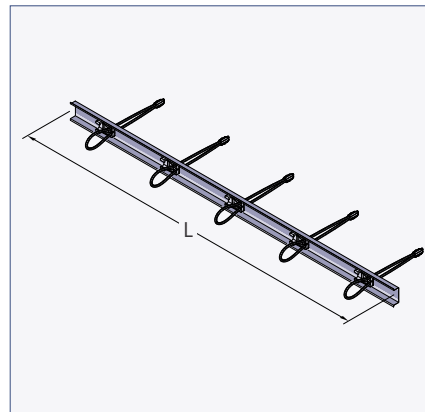
Connecting rails are a combination of a galvanized steel sheet profile with regularly arranged wire rope loops which are inserted into the rails tightly and ready for installation. The profiled surface of the rail ensures a good adhesion with the concrete or mortar. In various widths and heights as well as with different number and length of loops the connecting rail is available.



### Connecting rail

Ref.-no.	Number (pcs.)	Dimensions						
		S <sub>L</sub> (mm)	H (mm)	L (mm)	B <sub>1</sub> (mm)	B <sub>2</sub> (mm)	B <sub>3</sub> (mm)	L <sub>1</sub> (mm)
84VS20080	2 / 3 / 5	80	20	1250	50	50	60	190
84VS20100	2 / 3 / 5	100	20	1250	50	50	60	190
84VS20120	2 / 3 / 5	120	20	1250	50	50	60	190
84VS40080	2 / 3 / 5	80	40	1250	50	50	60	190
84VS40100	2 / 3 / 5	100	40	1250	50	50	60	190
84VS40120	2 / 3 / 5	120	40	1250	50	50	60	190
84VS70100	5	100	70	1250	70	50	80	190


The number of loops (2/3/5) has to be added to the reference number.



For further details of the application and design of the Connecting rails please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



[www.philipp-group.de](http://www.philipp-group.de)

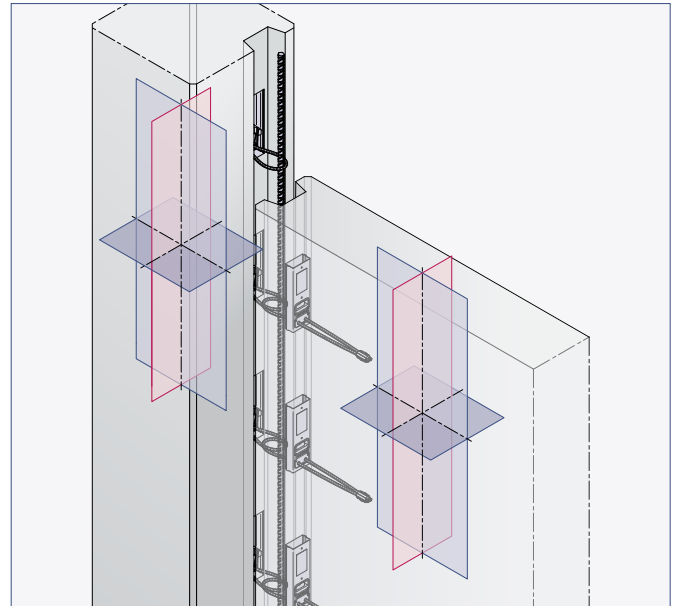
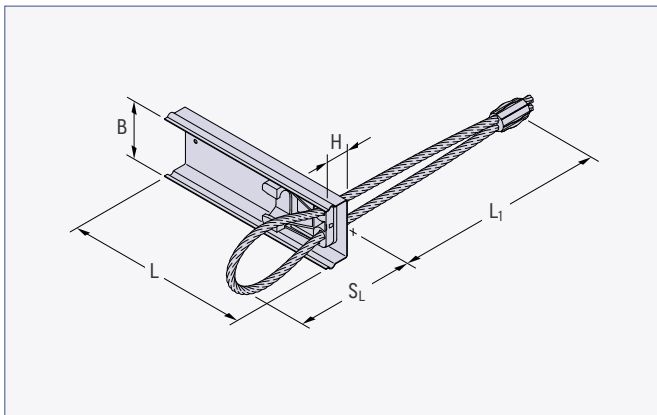
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## Connecting loop

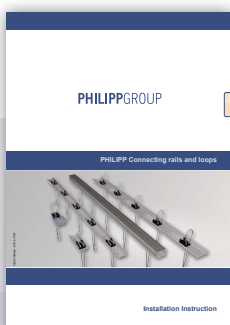
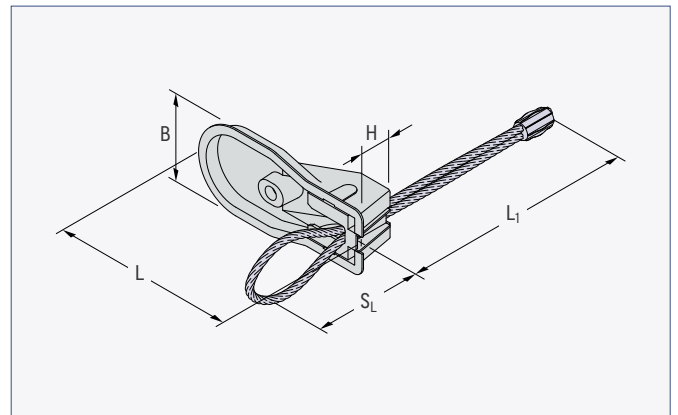
The single Connecting loop as the simplest device to create non-load-bearing connections between precast concrete elements is extremely easy to handle and use.

Connecting loop					
Ref.-no.	Dimensions				
	L (mm)	L <sub>1</sub> (mm)	B (mm)	H (mm)	S <sub>L</sub> (mm)
<b>Metal box</b>					
54VSM080	160	190	50	20	80
54VSM100	160	190	50	20	100
54VSM120	160	190	50	20	120
54VSM140	190	190	50	20	140
<b>Plastic box</b>					
54VS080	160	210	78	42	80
54VS100	160	210	78	42	100
54VS120	160	210	78	42	120

This version is a combination of a single steel wire rope and a metal recess former (box) in which the ready-for-use wire rope is inserted.



This version is a combination of a single steel wire rope and a plastic recess former (box) in which the ready-for-use wire rope is inserted.



For further details of the application and design of the Connecting loop please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Restraint dowel / dowelling system

Pocket-pin-connections are very typical for prefabricated constructions and often used as force-transferring components or simply as a constructive connecting device. The latter includes the Restraint dowel plate as well as the Dowelling system with its simple application.



### Recommended use



Walls

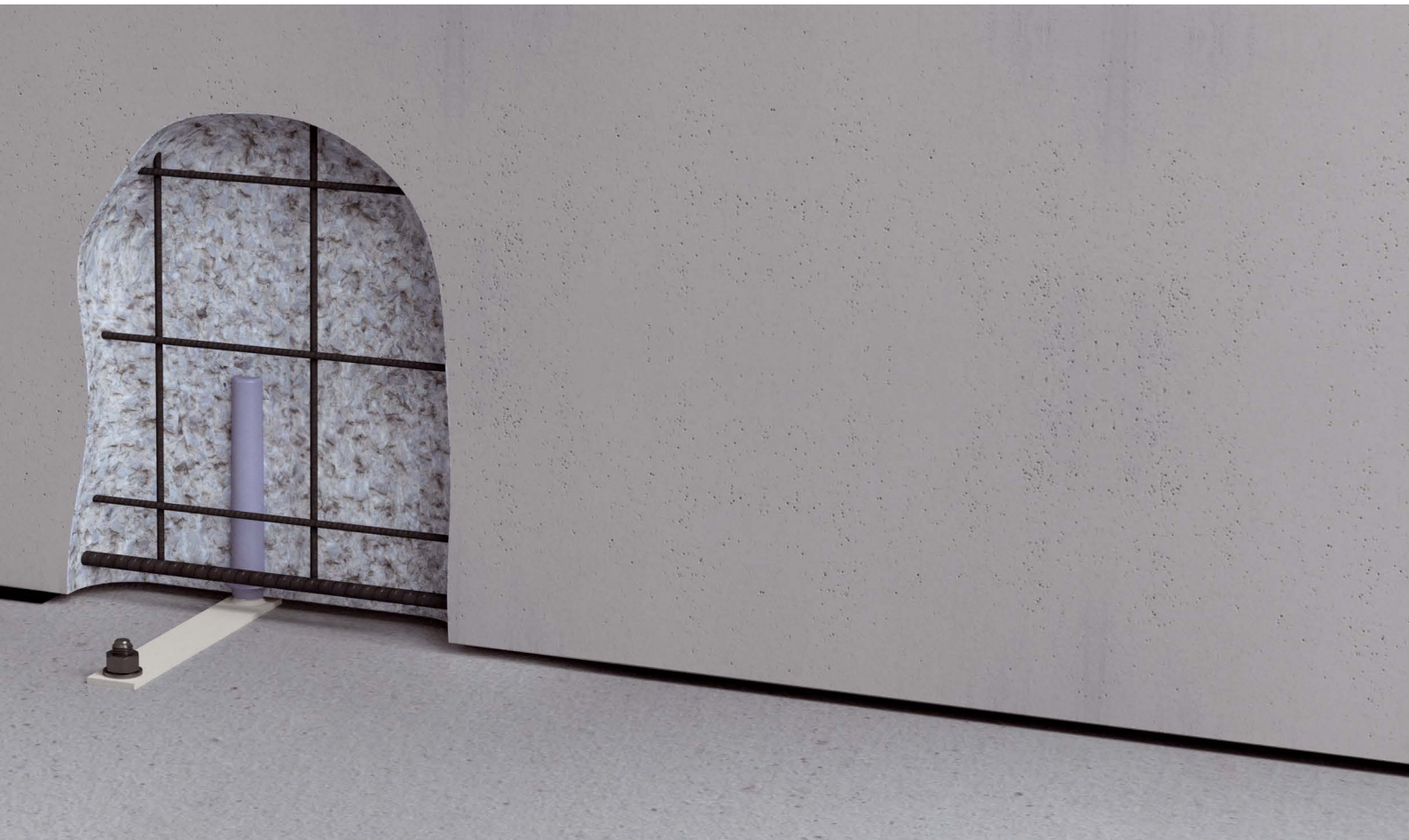
### Features and benefits compact

#### Restraint dowel plate

- ✓ Constructive connection by an angled steel component
- ✓ Simple fixation of precast elements
- ✓ Available in three versions – bright, galvanised or primed
- ✓ Available with approved dowel on request

#### Dowelling system

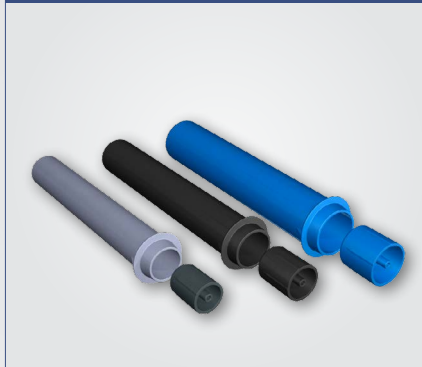
- ✓ Constructive connection between stacked precast concrete elements
- ✓ System of Rebar pocket and Concrete pocket
- ✓ Three pocket sizes for different rebar diameters
- ✓ Flexibility in the alignment of the connection by shape and size of the Concrete pocket



Restraint dowel plate



Rebar pockets



Concrete pocket



Connection: Rebar pocket / Restraint dowel plate



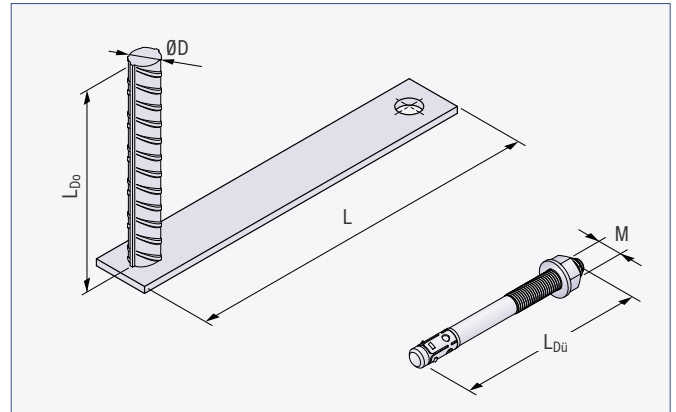
Connection: Rebar pocket / Concrete pocket



# Restraint dowel / dowelling system

## Restraint dowel plate

The Restraint dowel plate is used to fix precast concrete elements safely to their position and creates also a constructive connection between.



### Restraint dowel plate

Ref.-No.			ØD (mm)	L <sub>Do</sub> (mm)	L (mm)	M	L <sub>Dü</sub> (mm)
bright	hot-dip galvanised	primed					
<b>1 × Restraint dowel plate + 1 × dowel</b>							
72LDS220	72LDS220FV	72LDS220GR	20	150	260	16	135
<b>1 × Restraint dowel plate</b>							
72LD220	72LD220FV	72LD220GR	20	150	260	-	-



For further details of the application and design of the Restraint dowel plate please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



[www.philipp-group.de](http://www.philipp-group.de)

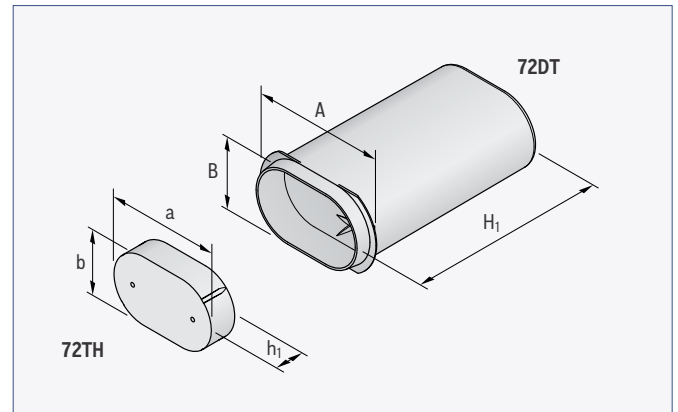
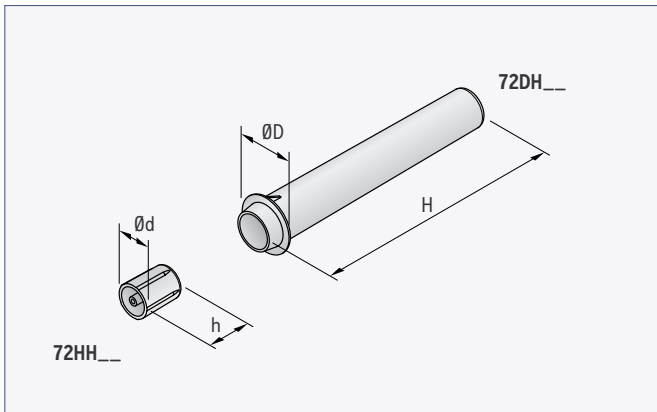
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## Dowelling system

For a simple fixation of two stacked concrete units the dowelling system is used. It consists of a Rebar pocket - available in three sizes - for the upper precast concrete element, a Concrete pocket for the lower element and a suitable rebar to be provided on site.

Both, the Rebar pocket and Concrete pocket are simply fixed to the formwork by means of pocket holders during the production of the precast elements.



### Rebar pocket

Ref.-no.	Dimensions		Colour
	ØD (mm)	H (mm)	
72DH23	39	180	grey
72DH27	42	190	black
72DH33	49	200	blue

### Concrete pocket

Ref.-no.	Dimensions			Colour
	A (mm)	B (mm)	H <sub>1</sub> (mm)	
72DT	87	56	150	black

### Rebar pocket holder

Ref.-no.	Dimensions		Colour
	Ød (mm)	H (mm)	
72HH23	23	30	anthracite
72HH27	27	30	black
72HH33	33	33	blue

### Concrete pocket holder

Ref.-no.	Dimensions			Colour
	a (mm)	b (mm)	h <sub>1</sub> (mm)	
72TH	80	52	20	black



For further details of the application and design of the Dowelling system please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



[www.philipp-group.de](http://www.philipp-group.de)

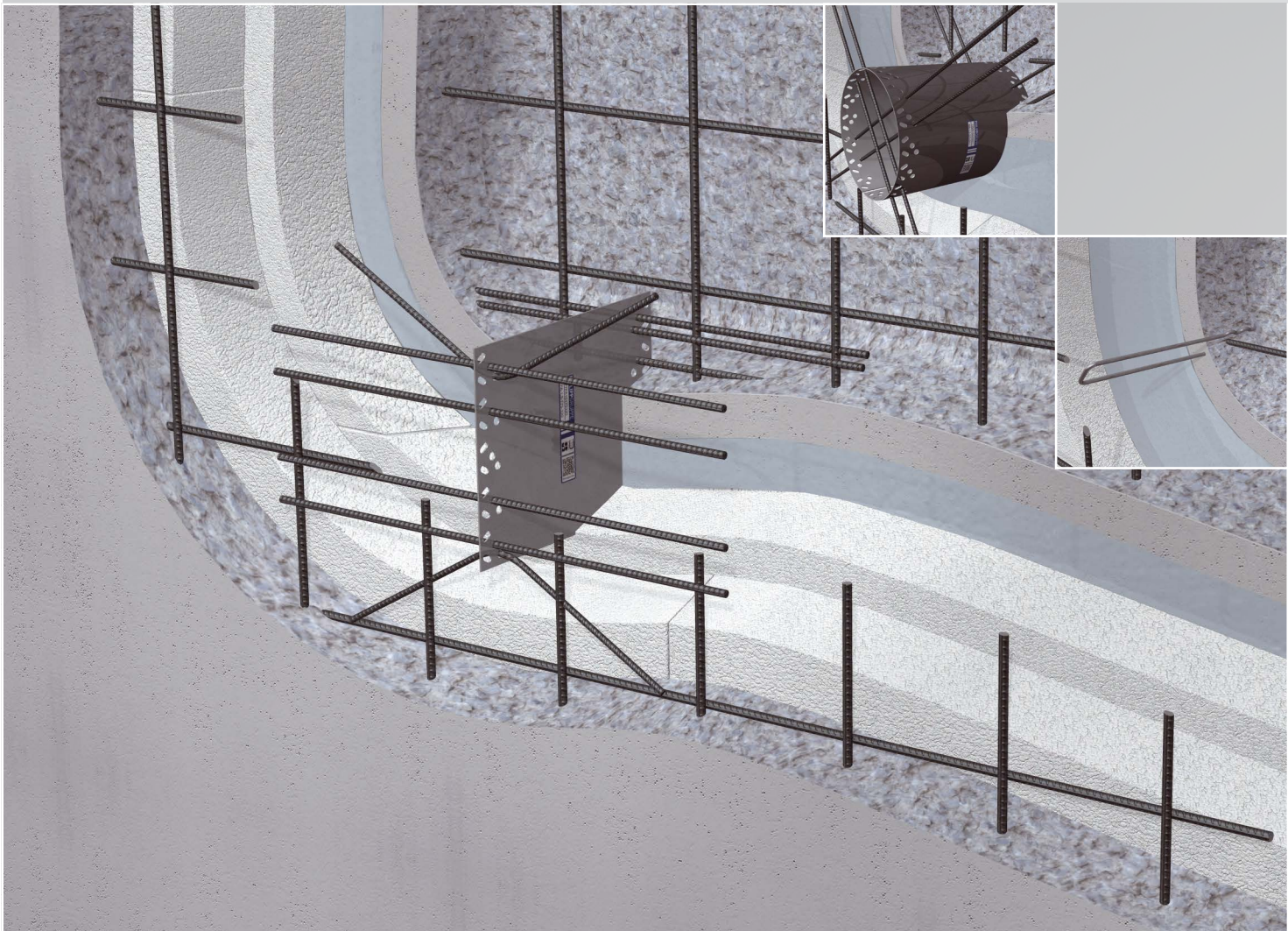
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## Impressive facades need load-bearing connection devices

The appearance of many prefabricated buildings is essentially determined by the design of their facades. Very often, these precast concrete elements are produced in the economical sandwich technology, which includes a load-bearing layer, an inner insulation (layer) and a visible facing layer.

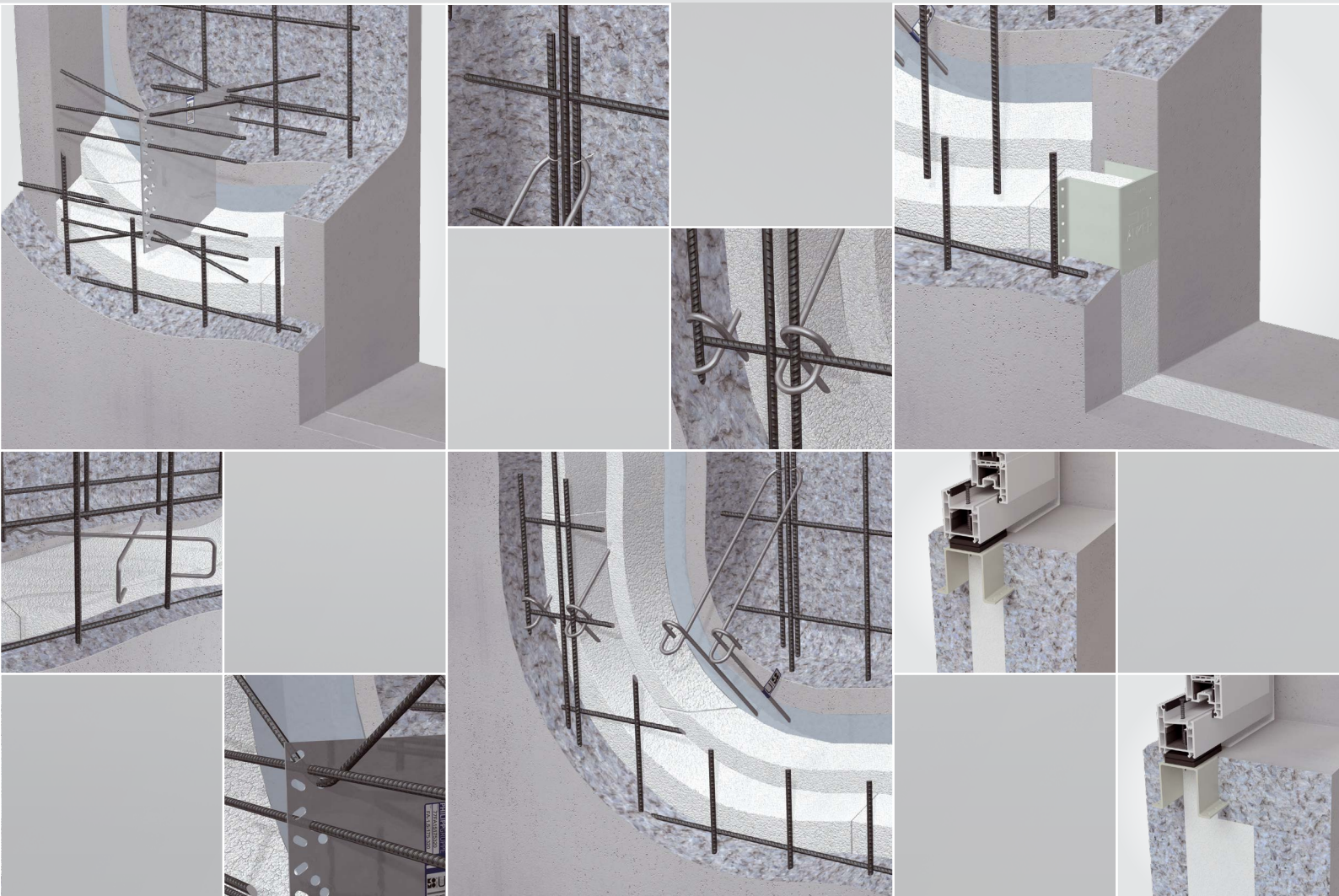
A common way to connect the facing layer to the load-bearing layer is to use anchors made of stainless steel. These form a system of load-bearing anchors and pins, which transfers horizontal and vertical forces into the load-bearing layer.

Both, the SPA and SA/FA system are two well established, long-time tested and state of the art solutions for sandwich elements. For all these anchor types German approvals are available including generally accepted calculation methods. For the design a user-friendly software is available as freeware on our website.



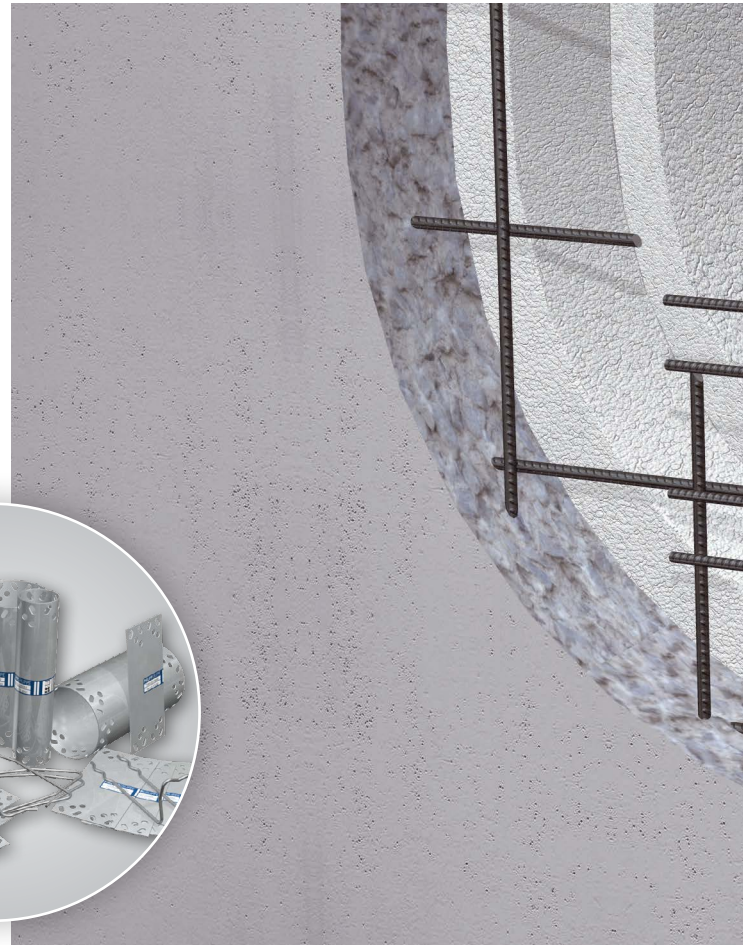
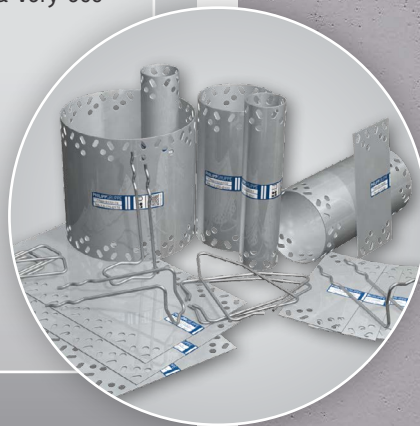
## Facade technology

- ✓ Sandwich panel anchor system SA / FA Page 92
- ✓ Sandwich panel anchor system SPA Page 98
- ✓ Sandwich FT Anchor Page 102



## System SA / FA

With the load-bearing anchors SA (Sleeve anchors) and/or FA (Flat anchors) one is prepared for almost all challenges concerning the connection of the facing layer with the load-bearing layer. Various systems from both types of load-bearing anchors offer a wide range of solutions. High design resistances of the components made of high-quality stainless steel combined with the minimum possible use material input result in a very economical anchoring system.



## Features and benefits compact

- ☑ German approval DIBt, also KIWA certified
- ☑ Insulation thicknesses from 3 to 25 cm possible
- ☑ Simple design using the free software for sandwich panels
- ☑ Detailed static verification by design software (for architects, consultants, institutes and engineers)
- ☑ All system components made of high-quality stainless steel (SS316) for a permanent corrosion resistance

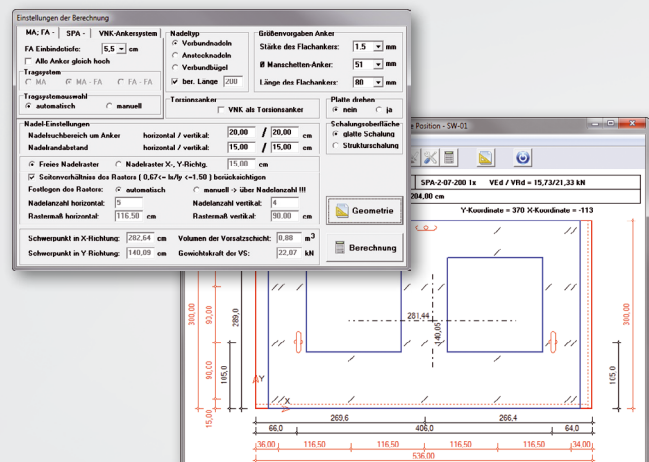
## Design software

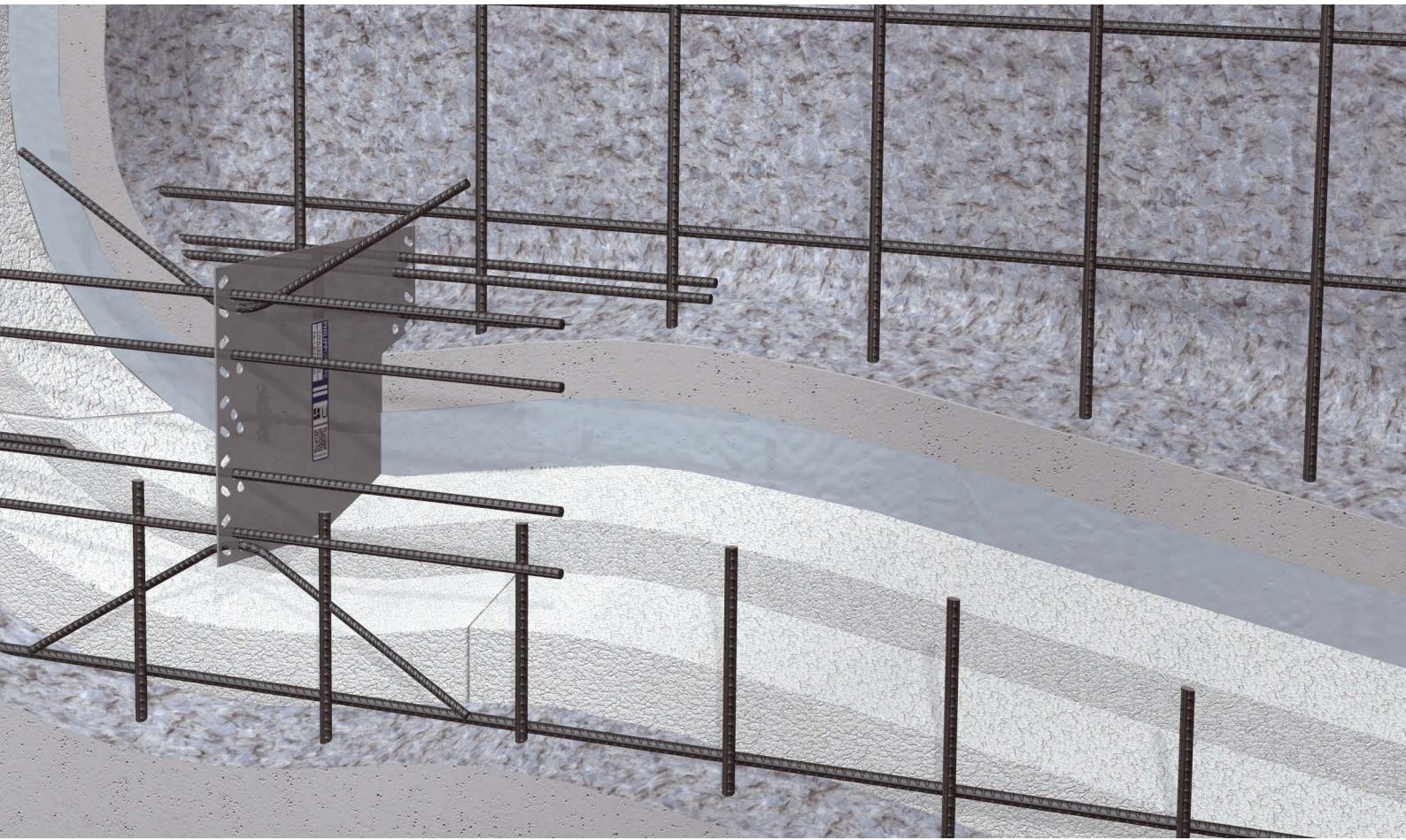
PHILIPP provides a free software for the design of the sandwich panel anchor systems. Here are some advantages of the software available on the PHILIPP website:



[www.philipp-group.de](http://www.philipp-group.de)

- ☑ Simple and easy to understand user interface
- ☑ Separation of geometry input and design
- ☑ Fast design optimized for economic efficiency
- ☑ Detailed and comprehensible design results
- ☑ Interface to the CAD system STRAKON from DICAD





Load-bearing anchors SA



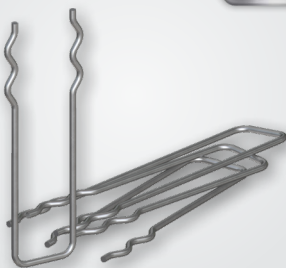
Load-bearing anchors FA



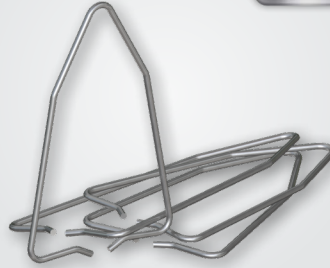
Load-bearing anchor CPC



Connector pins VN



Connector pins VB



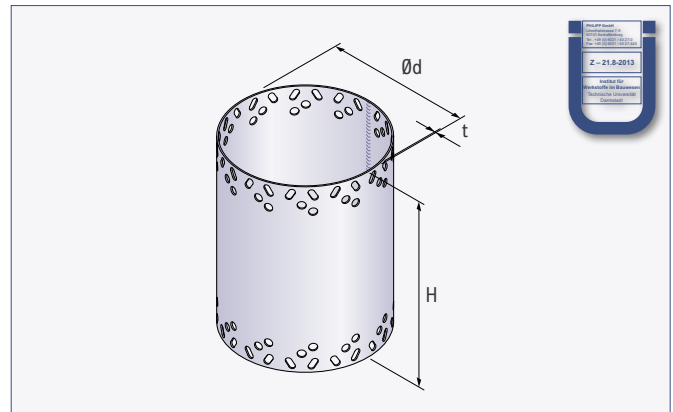
Connector pins AN



# Sandwich panel anchor SA / FA

## Load-bearing anchor SA (Sleeve anchor)

As a single load-bearing anchor it should usually be positioned in the centre of gravity of the sandwich element. Due to its cylindrical design, a load transfer in all directions is ensured and thus turning of the element can be done without any problems. The system with Sleeve anchor is possible to be used for insulation thicknesses up to 15 cm and has to be completed by a Flat anchor or Connector pin cross to avoid a torsion of the facing layer. Alternatively, it is possible to combine the Sleeve anchor with a load-bearing Flat anchor.



### Load-bearing anchor SA

Ref.-no.	Dimensions							
	Ød (mm)	t (mm)				H (mm)		
77MA15___051	51	1.5	150	175	200	225	260	300
77MA15___076	76	1.5	150	175	200	225	260	300
77MA15___102	102	1.5	150	175	200	225	260	300
77MA15___127	127	1.5	150	175	200	225	260	300
77MA15___153	153	1.5	150	175	200	225	260	300
77MA15___178	178	1.5	150	175	200	225	260	300
77MA15___204	204	1.5	150	175	200	225	260	300
77MA15___229	229	1.5	150	175	200	225	260	300
77MA15___255	255	1.5	150	175	200	225	260	300
77MA15___280	280	1.5	150	175	200	225	260	300

The reference number has to be added by the required height H of the anchor.

E.g. load-bearing anchor SA, anchor thickness  $t = 1.5$  mm, height  $H = 225$  mm,  $\text{Ø}d = 204$  mm → ref.-no.: 77MA15225204



For further details of the application and design of the Sandwich panel anchor SA/FA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

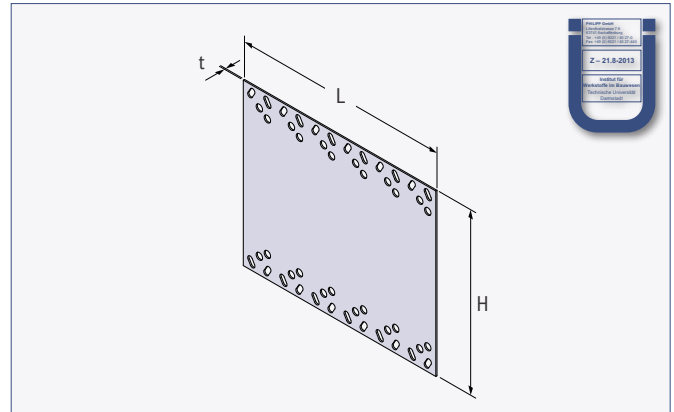


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## Load-bearing anchor FA (Flat anchor)

Flat anchors are characterised by their flat design and the resulting significant reduction in installation effort for sandwich elements. With both, the system, which is available in many sizes, as well as minimal edge distances, almost all problems up to an insulation layer thickness of 25 cm can be solved. High design resistances are achieved with the thin stainless steel sheet, so that this system can be used universally.



Ref.-No.	Dimensions										
	L (mm)	t (mm)	H (mm)								
77FA15_____	80 120 160	1.5	150	175	200	225	260	-	-	-	-
77FA20_____	200 240 280	2.0	150	175	200	225	260	280	300	320	360
77FA30_____	320 360 400	3.0	-	-	-	-	260	280	300	320	360

The reference number has to be added by the required height H and length L of the anchor.

E.g. load-bearing anchor FA, anchor thickness  $t = 3.0$  mm, height  $H = 280$  mm,  $L = 320$  mm → ref.-no.: 77FA30280320



For further details of the application and design of the Sandwich panel anchor SA / FA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



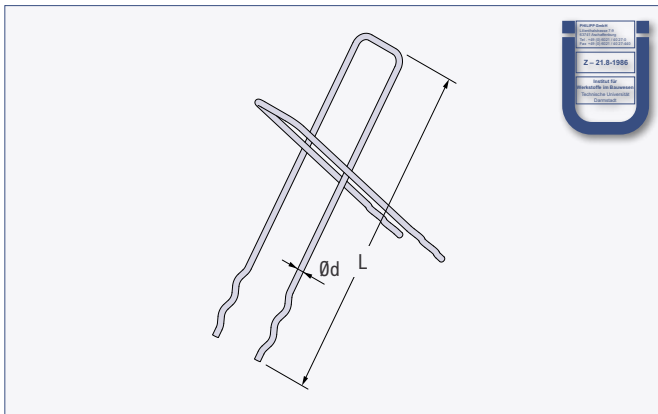
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# Sandwich panel anchor SA / FA

## Load bearing anchor CPC (Connector Pin Cross)

The Connector pin cross is a very simple load-bearing system consisting of two Connector pins positioned at a 90° angle to each other. For small to medium element sizes this low-priced system is applicable and achieves very good design resistances without any additional reinforcement. Basically, the length L of the Connector pins depends on the insulation thickness  $h_D$ .



Insulation thickness $h_D$ (mm)	Required Connector pin lengths L		
	CPC-04 (mm)	CPC-05 (mm)	CPC-06 (mm)
30	220	220	(220)
40	240	240	(240)
50	260	260	260
60			
70	280	280	280
80	300	300	300
90			
100	320	320	320
110	340	340	340
120			
130	360	360	360
140	400	380	380
150	400	(400)	400
160			
170	(420)	(420)	420
180	(440)	(440)	(440)
190			
200	(460)	(460)	(460)
210	(480)	(480)	(480)
220	(500)	(500)	(500)
230			
240	(520)	(520)	(520)
250	(540)	(540)	(540)
260			

Values in brackets (...) are special lengths



For further details of the application and design of the Sandwich panel anchor SA / FA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

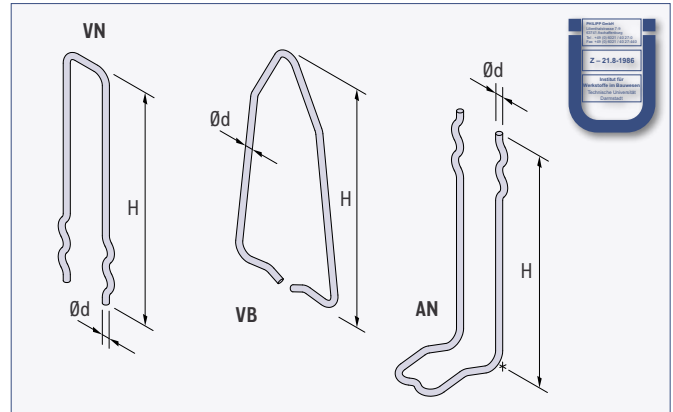


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## Connector pins VN / VB / AN

In order to reduce the deformations within a sandwich element, pins are distributed over the entire panel in a designed, regular grid. These pins are available in three types, Connector pins (VN), Connector stirrups (VB) and Clip-on pins (AN), and are always combined with a load-bearing anchor system. The stainless steel pins available for each insulation layer thickness are provided in three diameters (Ø4, 5 and 6 mm) and are very easy to handle during installation.



### Connector pin

Ref.-no.	H (mm)	Connector pin (type VN)			Connector stirrup (type VB)		Clip-on pin (type AN)	
		Ød = 4.0	Ød = 5.0	Ød = 6.0	Ød = 4.0	Ød = 5.0	Ød = 4.0	Ød = 5.0
77____160	160	VN40	-	-	VB40	-	AN40	AN50
77____180	180	VN40	-	-	VB40	-	AN40	AN50
77____200	200	VN40	VN50	-	VB40	-	AN40	AN50
77____220	220	VN40	VN50	-	VB40	-	AN40	AN50
77____240	240	VN40	VN50	-	VB40	VB50	AN40	AN50
77____250	250	-	-	-	VB40	VB50	AN40	AN50
77____260	260	VN40	VN50	-	-	-	-	-
77____280	280	VN40	VN50	-	-	VB50	AN40	AN50
77____300	300	VN40	VN50	-	-	VB50	AN40	AN50
77____320	320	-	VN50	VN60	-	VB50	-	AN50
77____340	340	-	VN50	VN60	-	-	-	AN50
77____360	360	-	-	VN60	-	-	-	AN50
77____380	380	-	-	VN60	-	-	-	AN50
77____400	400	-	-	VN60	-	-	-	-
77____420	420	-	-	VN60	-	-	-	-
77____440	440	-	-	VN60	-	-	-	-
77____460	460	-	-	VN60	-	-	-	-
77____480	480	-	-	VN60	-	-	-	-
77____500	500	-	-	VN60	-	-	-	-
77____520	520	-	-	VN60	-	-	-	-

The reference number has to be added by the required pin type and diameter.

E.g. Connector pin type → VN; pin diameter Ød = 5.0 mm → 50; height H = 280 mm → ref.-no.: 77VN50280



For further details of the application and design of the Sandwich panel anchor SA/FA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

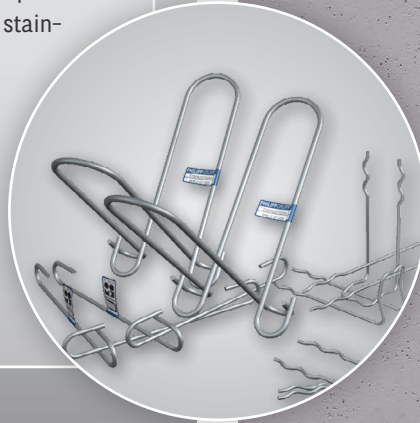


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## System SPA

Sandwich panel anchor SPA are convincing despite their filigree design with high load-bearing capacities and low thermal bridges (thermal optimized system). Various combinations allow a wide range of applications for connecting the load-bearing layer with the facing layer. Load-bearing anchors SPA are well-established with their possibilities and applications for many years and together with the systems SA/FA they complete the standard range of sandwich anchor systems stainless steel-based.



## Features and benefits compact

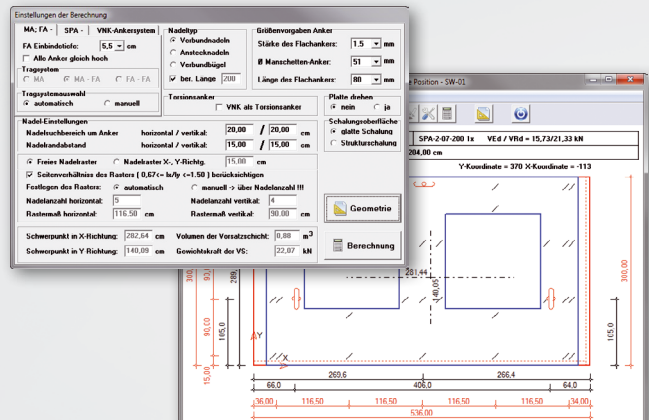
- ✓ German approval DIBt, also KIWA certified
- ✓ Insulation thicknesses from 3 to 40 cm possible
- ✓ Simple design using the free software for sandwich panels
- ✓ Detailed static verification by design software (for architects, consultants, institutes and engineers)
- ✓ All system components made of high-quality stainless steel (SS316) for a permanent corrosion resistance

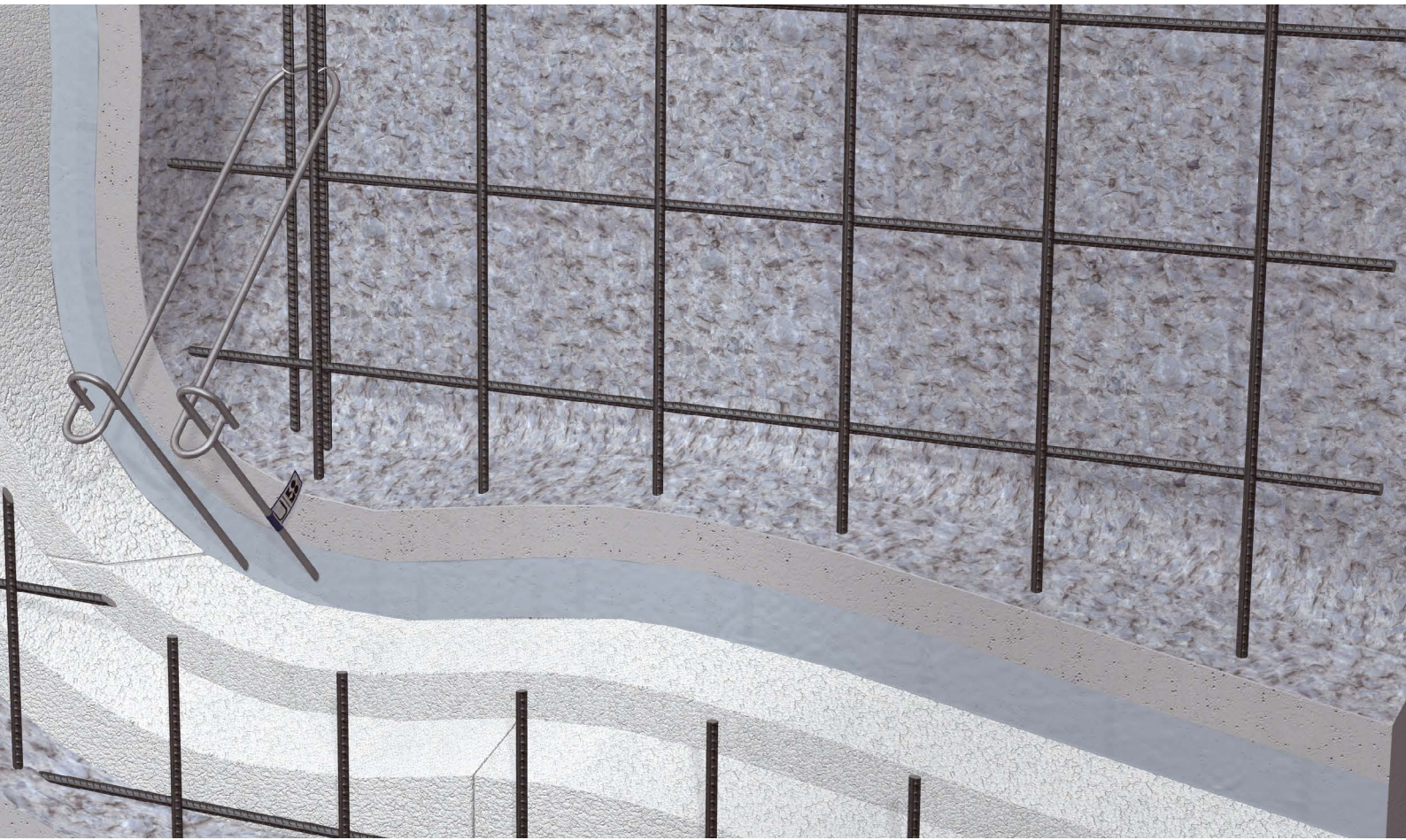
## Design software

PHILIPP provides a free software for the design of the sandwich panel anchor systems. Here are some advantages of the software available on the PHILIPP website:



- ✓ Simple and easy to understand user interface
- ✓ Separation of geometry input and design
- ✓ Fast design optimized for economic efficiency
- ✓ Detailed and comprehensible design results
- ✓ Interface to the CAD system STRAKON from DICAD





Load-bearing anchors SPA-1



Load-bearing anchors SPA-2

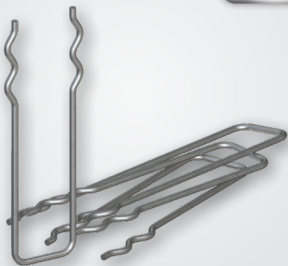


Load bearing anchors CPC



see page 94

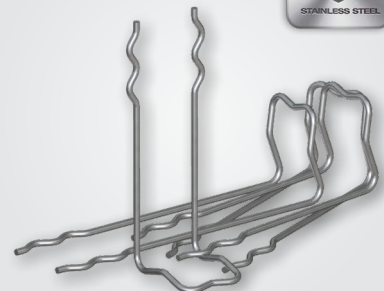
Connector pins VN



Connector pins VB



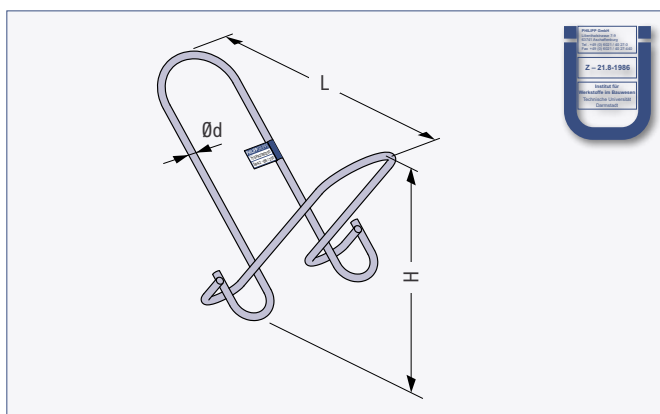
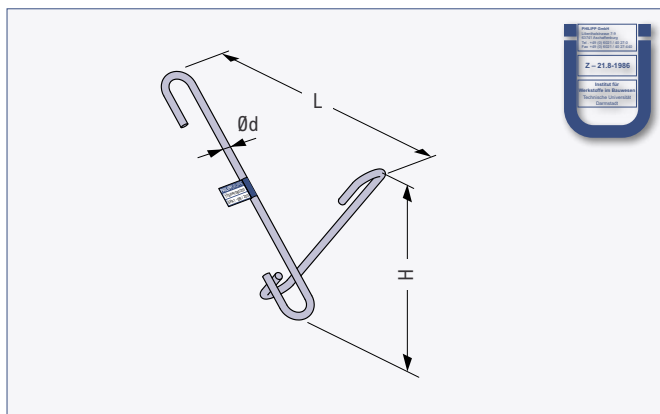
Connector pins AN



# Sandwich panel anchor SPA

## Load-bearing anchor SPA

SPA load-bearing anchors with their product combinations of two types (SPA-1, SPA-2), four diameters and many heights cover the widest range of applications. Insulation thicknesses up to 40 cm are possible. Small cross sections reduce thermal bridges to a minimum, high design resistances prove the efficiency of this load-bearing anchor system.



### Load-bearing anchor SPA-1 / SPA-2

Ref.-no. SPA-1	Ref.-no. SPA-2	Dimensions		
		Ød (mm)	H (mm)	L (mm)
77SPA1050160	77SPA2050160	5.0	160	263
77SPA1050180	77SPA2050180	5.0	180	303
77SPA1050200	77SPA2050200	5.0	200	343
77SPA1050220	77SPA2050220	5.0	220	383
77SPA1050240	77SPA2050240	5.0	240	423
77SPA1050260	77SPA2050260	5.0	260	463
77SPA1070160	77SPA2070160	6.5	160	259
77SPA1070180	77SPA2070180	6.5	180	299
77SPA1070200	77SPA2070200	6.5	200	338
77SPA1070220	77SPA2070220	6.5	220	378
77SPA1070240	77SPA2070240	6.5	240	419
77SPA1070260	77SPA2070260	6.5	260	458
77SPA1070280	77SPA2070280	6.5	280	498
77SPA1070300	77SPA2070300	6.5	300	538
77SPA1070320	77SPA2070320	6.5	320	579
77SPA1080180	77SPA2080180	8.0	180	294
77SPA1080200	77SPA2080200	8.0	200	335
77SPA1080220	77SPA2080220	8.0	220	374
77SPA1080240	77SPA2080240	8.0	240	414
77SPA1080260	77SPA2080260	8.0	260	453
77SPA1080280	77SPA2080280	8.0	280	494
77SPA1080300	77SPA2080300	8.0	300	534
77SPA1080320	77SPA2080320	8.0	320	574
77SPA1080340	77SPA2080340	8.0	340	613
77SPA1080360	77SPA2080360	8.0	360	654
77SPA1100180	77SPA2100180	10.0	180	287
77SPA1100200	77SPA2100200	10.0	200	327
77SPA1100220	77SPA2100220	10.0	220	366
77SPA1100240	77SPA2100240	10.0	240	407
77SPA1100260	77SPA2100260	10.0	260	447
77SPA1100280	77SPA2100280	10.0	280	487
77SPA1100300	77SPA2100300	10.0	300	528
77SPA1100320	77SPA2100320	10.0	320	567
77SPA1100340	77SPA2100340	10.0	340	607
77SPA1100360	77SPA2100360	10.0	360	646
77SPA1100380	77SPA2100380	10.0	380	686
77SPA1100400	77SPA2100400	10.0	400	726
77SPA1100420	77SPA2100420	10.0	420	767
77SPA1100440	77SPA2100440	10.0	440	806
77SPA1100460	77SPA2100460	10.0	460	846
77SPA1100480	77SPA2100480	10.0	480	885
77SPA1100500	77SPA2100500	10.0	500	926
77SPA1100520	77SPA2100520	10.0	520	966



For further details of the application and design of the Sandwich panel anchor SPA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

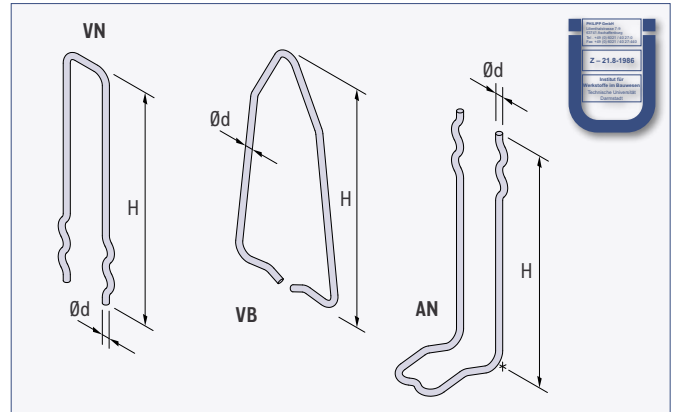


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## Connector pin VN / VB / AN

In order to reduce the deformations within a sandwich element, pins are distributed over the entire panel in a designed, regular grid. These pins are available in three types, Connector pins (VN), Connector stirrups (VB) and Clip-on pins (AN), and are always combined with a load-bearing anchor system. The stainless steel pins available for each insulation layer thickness are provided in three diameters ( $\varnothing 4$ , 5 and 6 mm) and are very easy to handle during installation.



### Connector pin

Ref.-no.	H (mm)	Connector pin (type VN)			Connector stirrup (type VB)		Clip-on pin (type AN)	
		$\varnothing d = 4.0$	$\varnothing d = 5.0$	$\varnothing d = 6.0$	$\varnothing d = 4.0$	$\varnothing d = 5.0$	$\varnothing d = 4.0$	$\varnothing d = 5.0$
77____160	160	VN40	-	-	VB40	-	AN40	AN50
77____180	180	VN40	-	-	VB40	-	AN40	AN50
77____200	200	VN40	VN50	-	VB40	-	AN40	AN50
77____220	220	VN40	VN50	-	VB40	-	AN40	AN50
77____240	240	VN40	VN50	-	VB40	VB50	AN40	AN50
77____250	250	-	-	-	VB40	VB50	AN40	AN50
77____260	260	VN40	VN50	-	-	-	-	-
77____280	280	VN40	VN50	-	-	VB50	AN40	AN50
77____300	300	VN40	VN50	-	-	VB50	AN40	AN50
77____320	320	-	VN50	VN60	-	VB50	-	AN50
77____340	340	-	VN50	VN60	-	-	-	AN50
77____360	360	-	-	VN60	-	-	-	AN50
77____380	380	-	-	VN60	-	-	-	AN50
77____400	400	-	-	VN60	-	-	-	-
77____420	420	-	-	VN60	-	-	-	-
77____440	440	-	-	VN60	-	-	-	-
77____460	460	-	-	VN60	-	-	-	-
77____480	480	-	-	VN60	-	-	-	-
77____500	500	-	-	VN60	-	-	-	-
77____520	520	-	-	VN60	-	-	-	-

The reference number has to be added by the required pin type and diameter.

E.g. connector pin type → VN; pin diameter  $\varnothing d = 5.0$  mm → 50; height H = 280 mm → Ref.-No.: 77VN50280



For further details of the application and design of the Sandwich panel anchor SPA please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

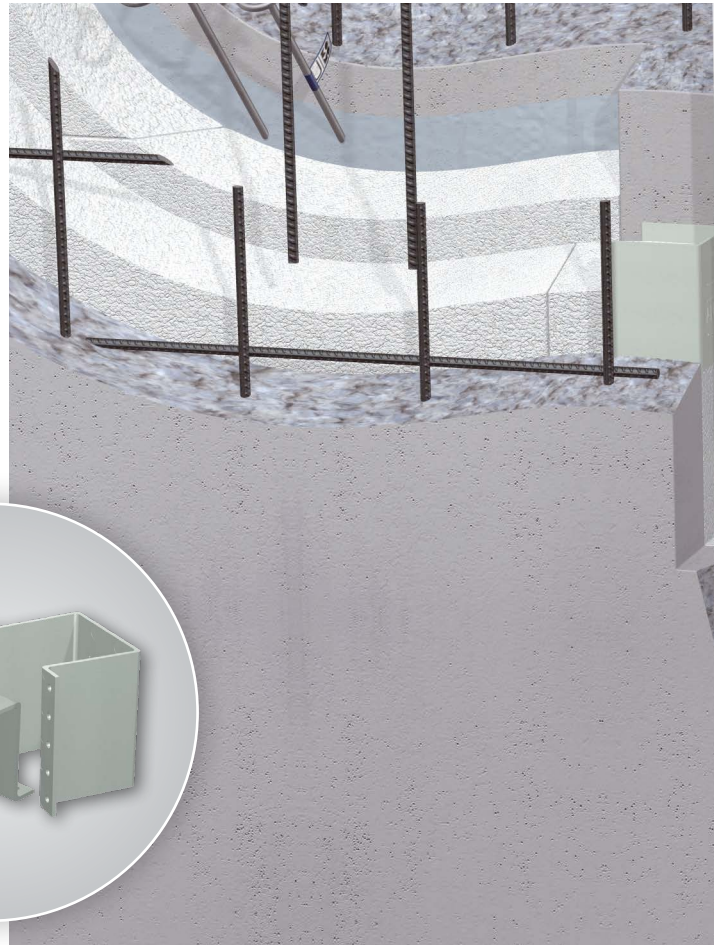
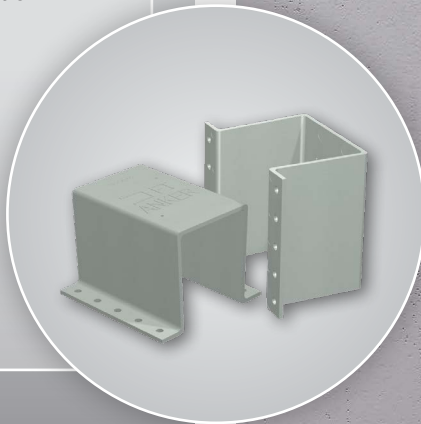


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### FT Anchor

Even the simple and efficient fixing of window and door elements is also a challenge for reinforced precast concrete sandwich elements. Ideally, these elements should be located in the insulation layer in order to benefit from building physics advantages. The FT Anchor for doors, windows and other openings in sandwich panels and insulated double walls fulfil these requirements with a clever combination of material and construction.



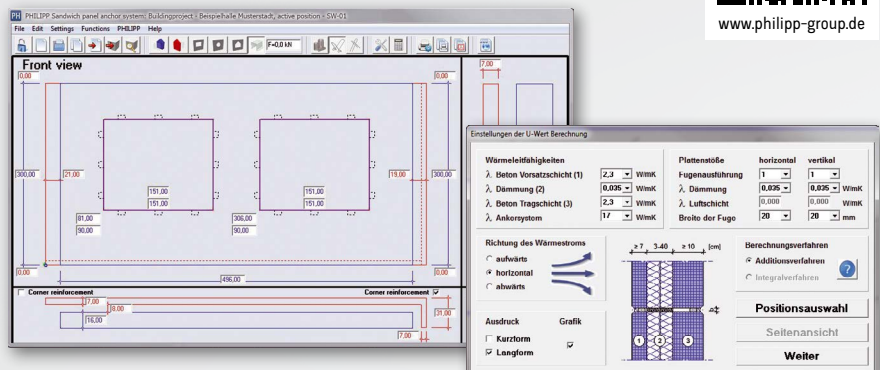
### Features and benefits compact

- ✓ Simple installation
- ✓ No thermal bridges, as the anchor is made of glass-fibre reinforced plastic
- ✓ Effortless and exact fixation of door and window elements

### Design software

For the planning of FT Anchors in reinforced concrete sandwich elements the free-of-charge PHILIPP design software can be taken. Besides the actual design of load-bearing anchors and pins the use of FT Anchors can be specified for each opening by a few clicks.

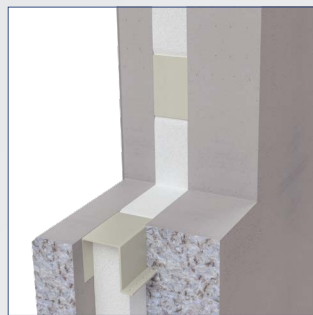
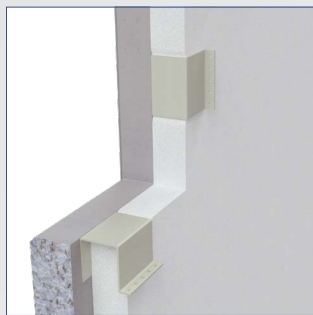
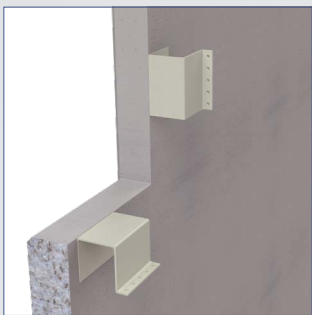
- ✓ Exact U-value calculation enables thermal optimisation of single panels or entire façades - here all thermal losses via anchors and joints are considered.



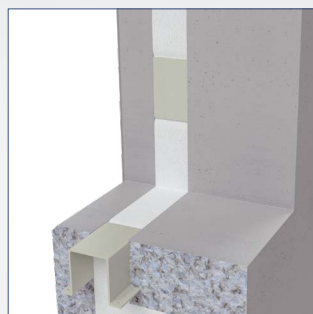
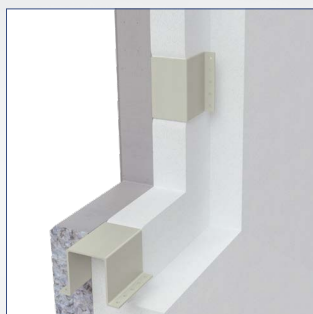
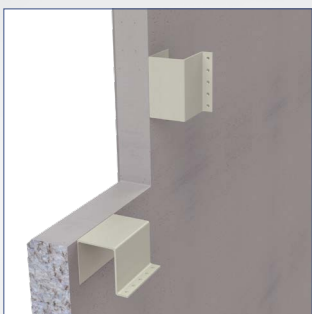
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Insulation thickness 60 mm / 80 mm / 120 mm

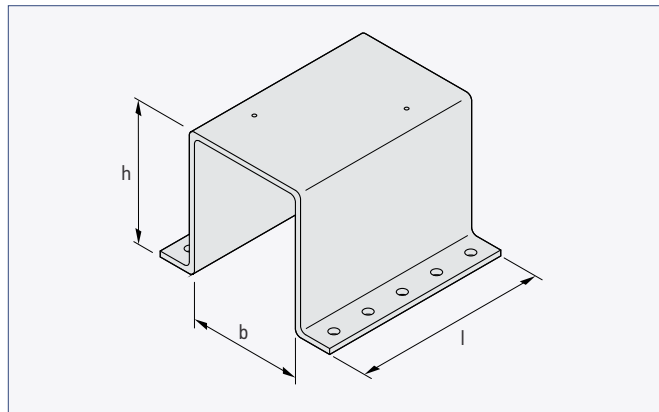


Insulation thickness > 120 mm



## FT Anchor

The window and door anchor (FT Anchor) enables a quick fixation of opening elements in reinforced precast concrete sandwich panels or insulated double walls by its simple angle design and its glass fibre reinforced plastic compound. By means of self-drilling screws windows and doors are installed directly in the insulation level and without thermal bridges. As the FT Anchor is already installed during the production of the sandwich panel or insulated double wall, this results in a noticeable time advantage at the construction site.



FT Anchor			
Ref.-no.	Dimensions		
	b (mm)	l (mm)	h (mm)
77FTA060	60	100	73
77FTA080	80	100	73
77FTA120	120	140	73



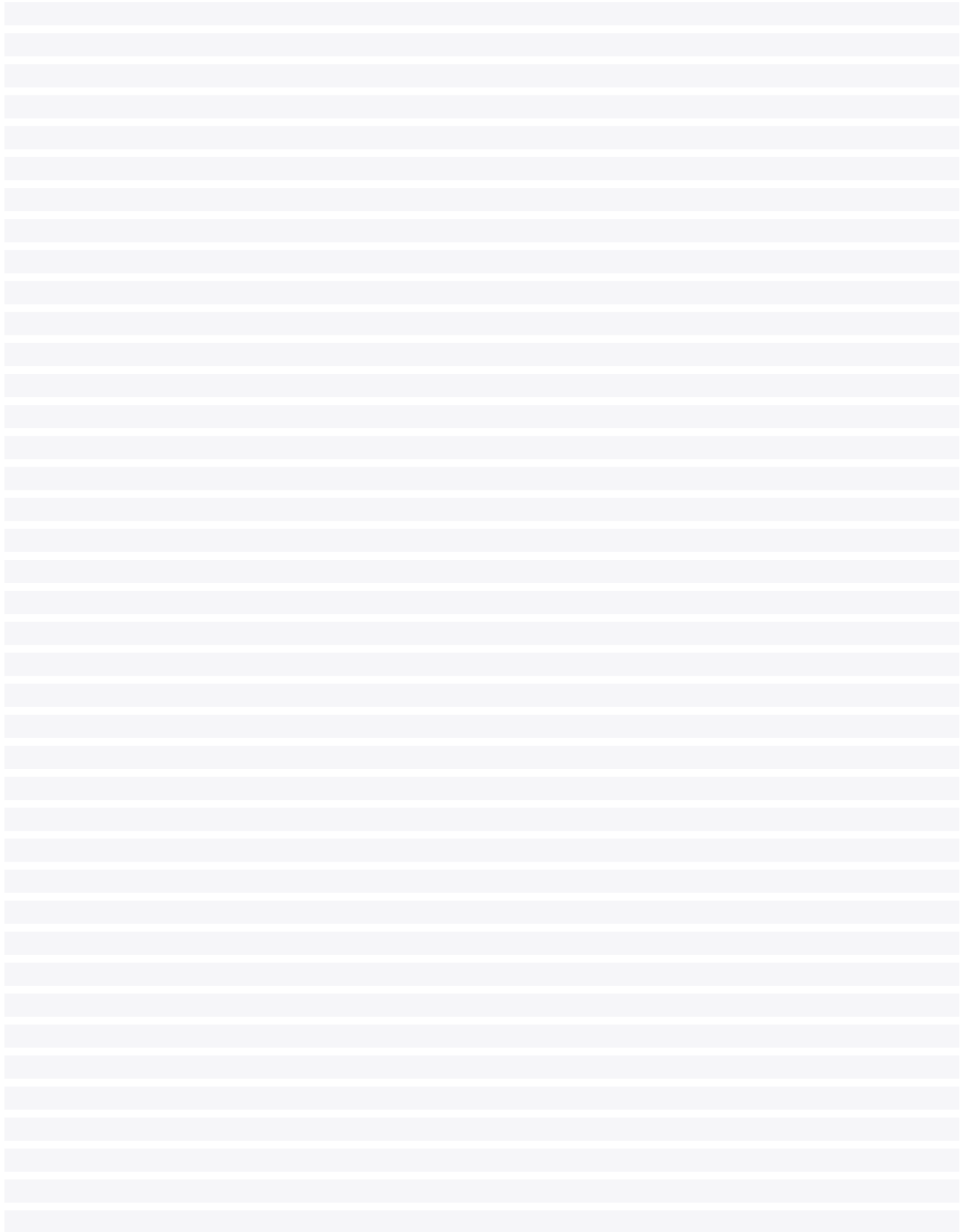
For further details of the application and design of the FT Anchor please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Fixing sockets with our promise: stronger than the concrete

Fixations are as important as connections in prefabricated concrete elements. Because often elements have to be fixed directly to prefabricated concrete panels, slabs or beams, and this should be done very fast and simple to minimise mounting costs. Prefabricated fixing points with high load-bearing capacities offer ideal conditions for this in comparison to retrofitted solutions.



## Fixing technology

✓ Fixing sockets

Page 108

✓ Corner guards

Page 112



## Fixing sockets

Fixing sockets are available in four different designs and thus open up numerous possibilities for fixing elements of all kinds to precast concrete parts, regardless of whether on the face or surface side. These fixing points already integrated in the precast concrete element save time during installation compared to e.g. dowel-solutions and have a capacity of up to 2.75 t. All types of fixing sockets are also available in stainless steel.



## Features and benefits compact

- ✓ Low-priced fixing elements
- ✓ Wide range of metric thread sizes
- ✓ High efficiency, high load capacities achieved with a minimum of material
- ✓ Suitable for the transfer of tensile and/or shear forces
- ✓ Load bearing capacities up to 27.5 kN
- ✓ Time savings on the job site due to pre-planned fixing points
- ✓ Numerous installation situations possible due to four different anchorage variants in the concrete
- ✓ Available in galvanised as well as stainless steel version



**Cross pin**



**Cross hole**



**Waved end**



**Angular end**



**Cross pin and nailing plate**



**Cross hole and nailing plate**



**Waved end and nailing plate**



**Angular end and nailing plate**



The fixing sockets are also available in stainless steel on request



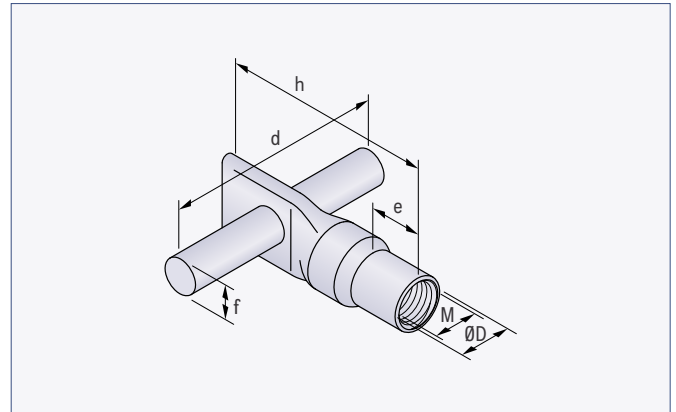
# Fixing sockets

## Fixing socket with cross pin / cross hole

### Fixing socket with cross pin

Ref.-no. galvanised	Type	Perm. F (kN)	Dimensions (mm)				
	M		ØD	h	e	d	f
6807212060	12	5.0	17.0	60	13.0	50.0	10
6807216080	16	8.0	22.5	80	19.0	50.0	12
6807216100	16	10.0	22.5	100	19.0	50.0	12
6807220095	20	12.0	27.0	95	20.0	85.0	14
6807220115	20	13.0	27.0	115	20.0	85.0	14
6807224120	24	18.0	32.0	120	24.0	85.0	14

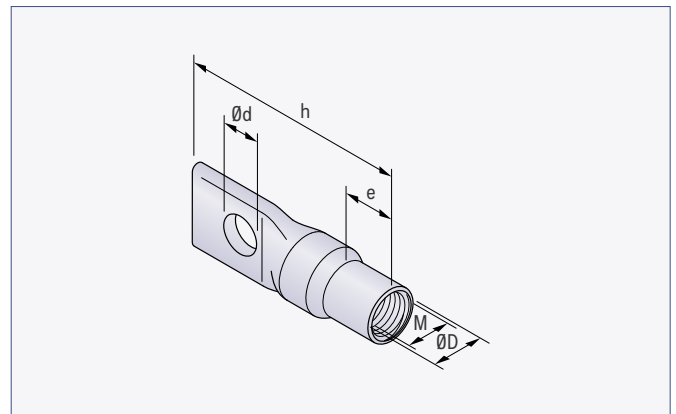
Also available in stainless steel.



### Fixing socket with cross hole

Ref.-no. galvanised	Type	Perm. F (kN)	Dimensions (mm)			
	M		ØD	h	e	Ød
6801206040	6	1.5	9.0	40	8	6.3
6801208040	8	2.0	11.0	40	10	8.3
6801208050	8	2.5	11.0	50	10	8.3
6801210050	10	3.5	13.5	50	11	8.3
6801212060	12	5.0	17.0	60	13	12.2
6801212070	12	6.0	17.0	70	13	12.2
6801216070	16	7.0	22.5	70	19	12.2
6801216080	16	8.0	22.5	80	19	12.2
6801216100	16	10.0	22.5	100	19	12.2
6801216120	16	12.0	22.5	120	19	12.2
6801220100	20	12.5	27.0	100	20	14.3
6801220120	20	14.0	27.0	120	20	14.3
6801224120	24	18.0	32.0	120	24	14.3
6801230150	30	27.5	42.0	150	30	17.2

Also available in stainless steel.



For further details of the application and design of the Fixing sockets please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



[www.philipp-group.de](http://www.philipp-group.de)

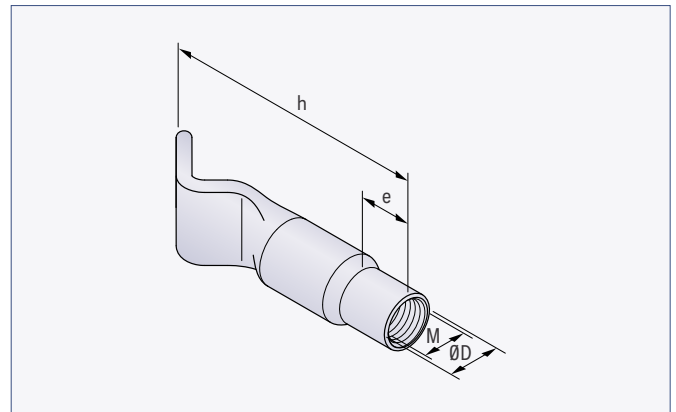
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## Fixing socket with waved end / angular end

### Fixing socket with waved end

Ref.-no. galvanised	Type M	Perm. F (kN)	Dimensions (mm)		
			ØD	h	e
6803210040	10	3.0	13.5	40	11.0
6803210060	10	4.0	13.5	60	11.0
6803212050	12	4.0	17.0	50	13.0
6803212070	12	6.0	17.0	70	13.0
6803216070	16	7.0	22.5	70	19.0
6803216100	16	10.0	22.5	100	19.0
6803220100	20	12.5	27.0	100	20.0
6803224100	24	16.0	32.0	100	24.0

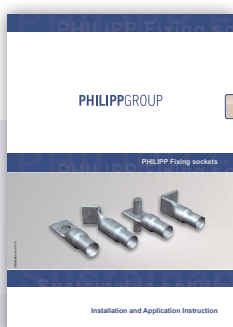
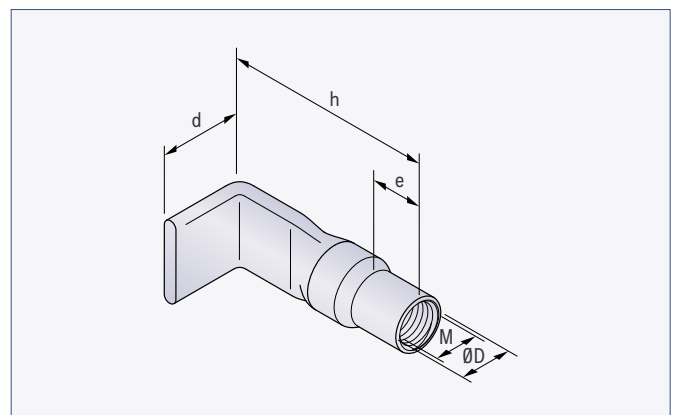
Also available in stainless steel.



### Fixing socket with angular end

Ref.-no. galvanised	Type M	Perm. F (kN)	Dimensions (mm)			
			ØD	h	e	d
6805208035	8	1.8	11.0	35	10	25
6805210060	10	4.0	13.5	60	11	25
6805212045	12	3.5	17.0	45	13	25
6805212070	12	6.0	17.0	70	13	25
6805216060	16	6.0	22.5	60	19	35
6805216100	16	10.0	22.5	100	19	35
6805216130	16	12.0	22.5	130	19	35
6805220100	20	12.5	27.0	100	20	35

Also available in stainless steel.



For further details of the application and design of the Fixing sockets please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



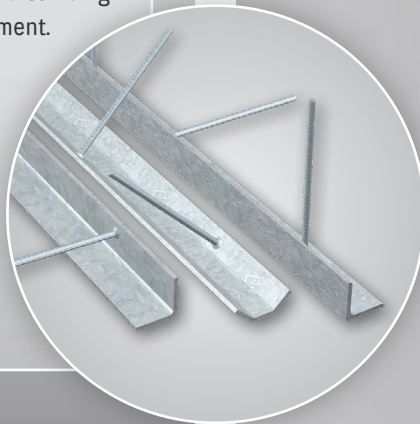
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## Corner guards

Corner guards are installed to protect edges of precast reinforced concrete elements, e.g. columns or walls. Both the angle geometry itself, the material and the anchoring elements in the prefabricated part are available in various designs, so that numerous combinations are possible and therefore leave hardly any wishes unfulfilled.

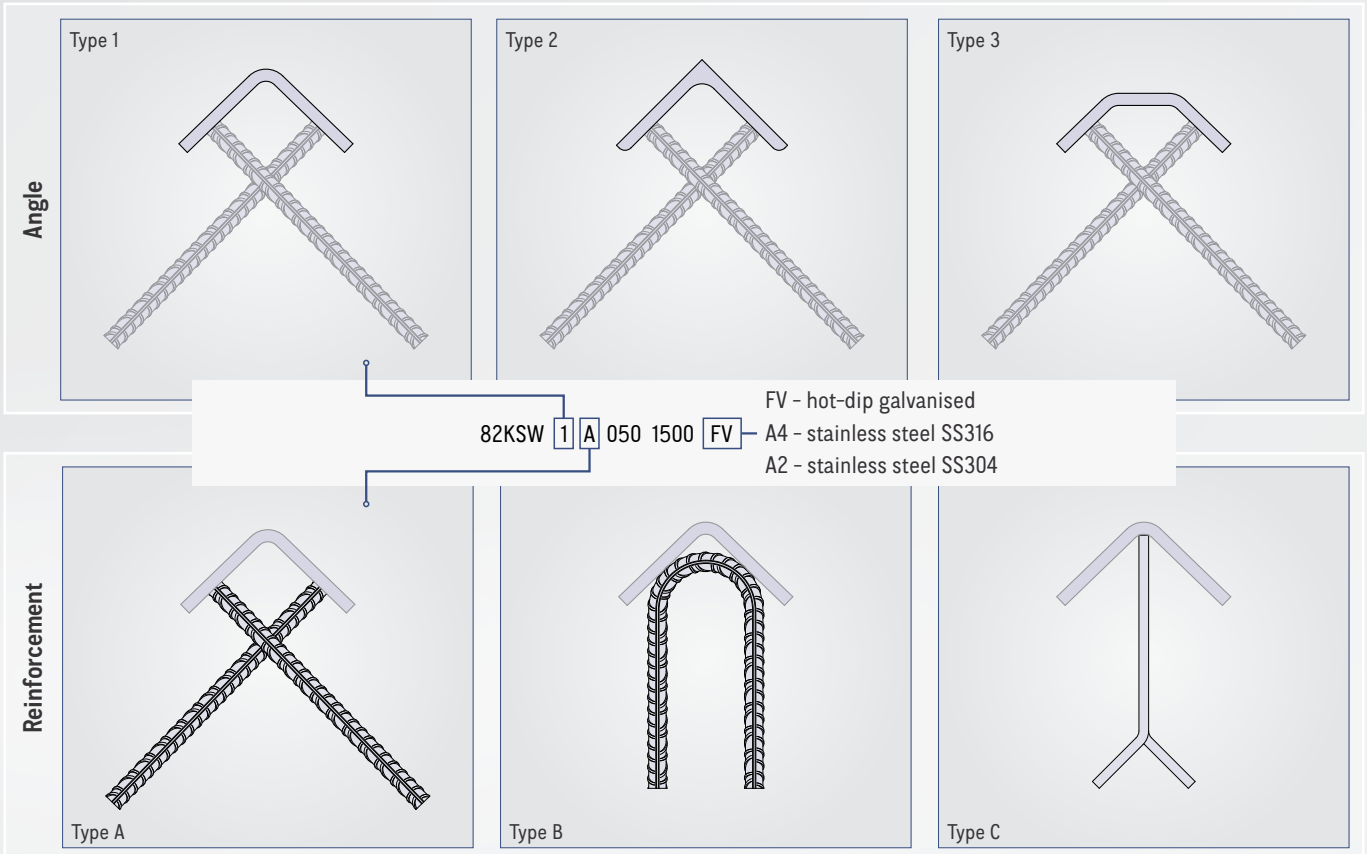
The installation into the precast element is very easy due to the optimised angled design and the non-disturbing anchoring elements for the corner reinforcement.



## Features and benefits compact

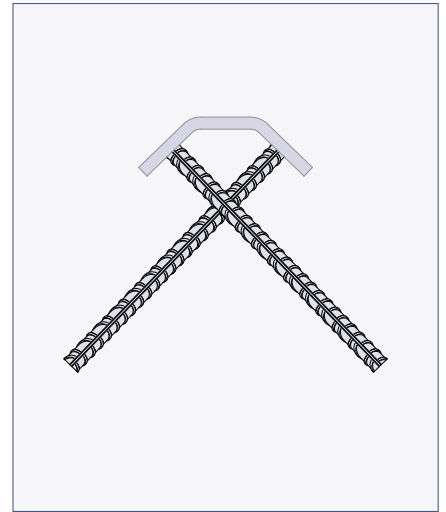
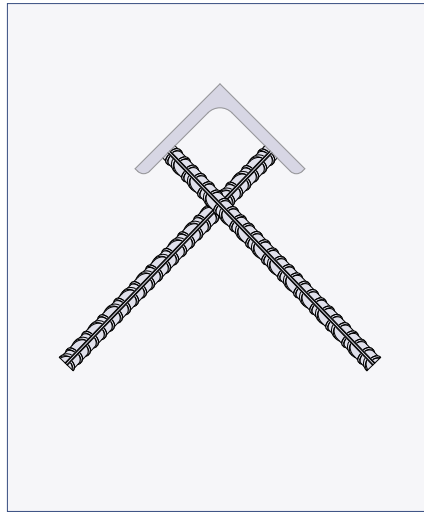
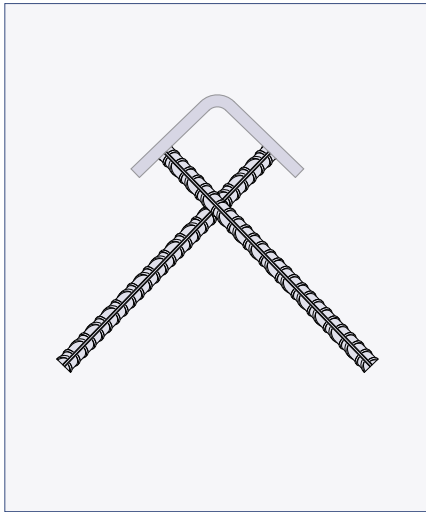
- ✓ Ready for installation with anchoring reinforcement
- ✓ Optimised angled design for precise fitting in the formwork
- ✓ Available in three standard lengths - on request also in special lengths
- ✓ Diverse combinations of angle types and anchoring elements available
- ✓ Available in galvanised steel or stainless steel





# Corner guard

## Corner guard type 1A / 2A / 3A



### Corner guard type 1A

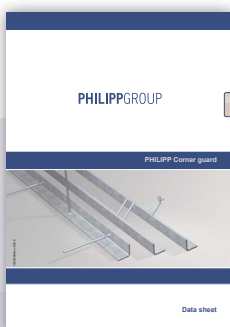
Ref.-no.	Angle type 1	L (mm)
82KSW1A0501000__	50×5	1000
82KSW1A0501500__		1500
82KSW1A0502000__		2000
82KSW1A0601000__	60×6	1000
82KSW1A0601500__		1500
82KSW1A0602000__		2000
82KSW1A0801000__	80×6	1000
82KSW1A0801500__		1500
82KSW1A0802000__		2000
82KSW1A1001000__	100×8	1000
82KSW1A1001500__		1500
82KSW1A1002000__		2000

### Corner guard type 2A

Ref.-no.	Angle type 2	L (mm)
82KSW2A0501000__	50×5	1000
82KSW2A0501500__		1500
82KSW2A0502000__		2000
82KSW2A0601000__	60×6	1000
82KSW2A0601500__		1500
82KSW2A0602000__		2000
82KSW2A0801000__	80×8	1000
82KSW2A0801500__		1500
82KSW2A0802000__		2000
82KSW2A1001000__	100×8	1000
82KSW2A1001500__		1500
82KSW2A1002000__		2000

### Corner guard type 3A / 2A / 3A


Ref.-no.	Angle type 3	L (mm)
82KSW3A0501000__	53×5	1000
82KSW3A0501500__		1500
82KSW3A0502000__		2000
82KSW3A0601000__	64×6	1000
82KSW3A0601500__		1500
82KSW3A0602000__		2000
82KSW3A0801000__	84×6	1000
82KSW3A0801500__		1500
82KSW3A0802000__		2000
82KSW3A1001000__	110×8	1000
82KSW3A1001500__		1500
82KSW3A1002000__		2000



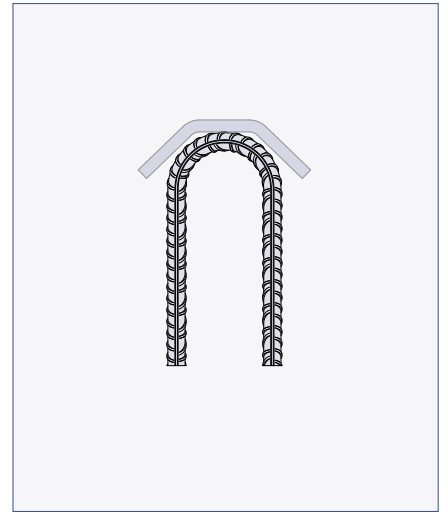
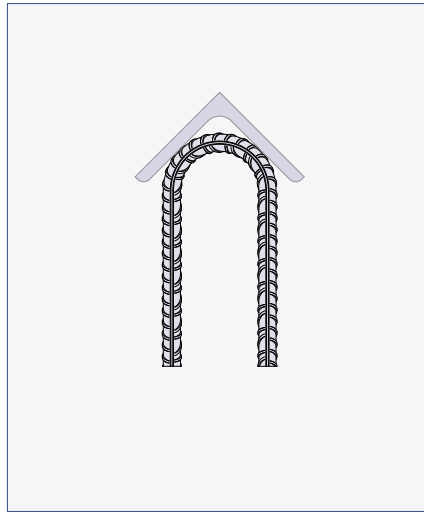
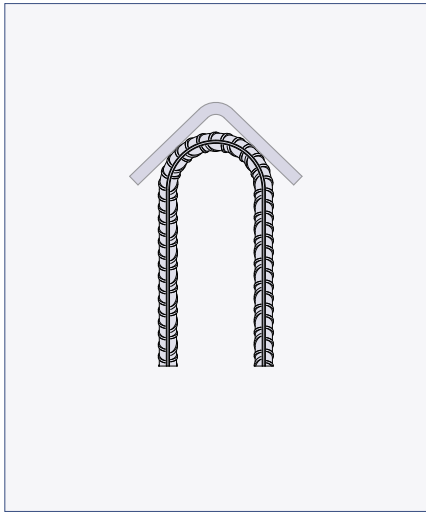
For further details of the application and design of the Corner guard please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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## Corner guard type 1B / 2B / 3B



### Corner guard type 1B

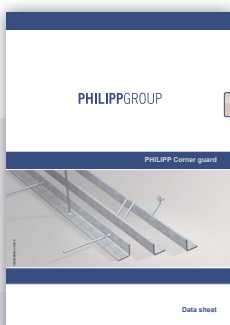
Ref.-no.	Angle type 1	L (mm)
82KSW1B0501000__	50×5	1000
82KSW1B0501500__		1500
82KSW1B0502000__		2000
82KSW1B0601000__	60×6	1000
82KSW1B0601500__		1500
82KSW1B0602000__		2000
82KSW1B0801000__	80×6	1000
82KSW1B0801500__		1500
82KSW1B0802000__		2000
82KSW1B1001000__	100×8	1000
82KSW1B1001500__		1500
82KSW1B1002000__		2000

### Corner guard type 2B

Ref.-no.	Angle type 2	L (mm)
82KSW2B0501000__	50×5	1000
82KSW2B0501500__		1500
82KSW2B0502000__		2000
82KSW2B0601000__	60×6	1000
82KSW2B0601500__		1500
82KSW2B0602000__		2000
82KSW2B0801000__	80×8	1000
82KSW2B0801500__		1500
82KSW2B0802000__		2000
82KSW2B1001000__	100×8	1000
82KSW2B1001500__		1500
82KSW2B1002000__		2000

### Corner guard type 3B


Ref.-no.	Angle type 3	L (mm)
82KSW3B0501000__	53×5	1000
82KSW3B0501500__		1500
82KSW3B0502000__		2000
82KSW3B0601000__	64×6	1000
82KSW3B0601500__		1500
82KSW3B0602000__		2000
82KSW3B0801000__	84×6	1000
82KSW3B0801500__		1500
82KSW3B0802000__		2000
82KSW3B1001000__	110×8	1000
82KSW3B1001500__		1500
82KSW3B1002000__		2000



For further details of the application and design of the Corner guard please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

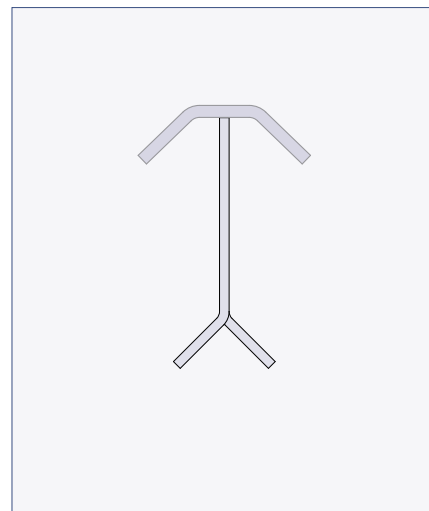
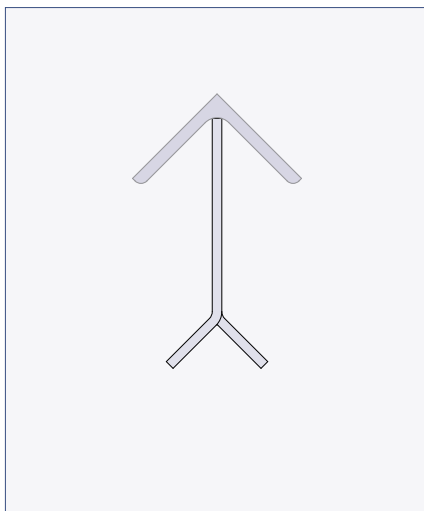
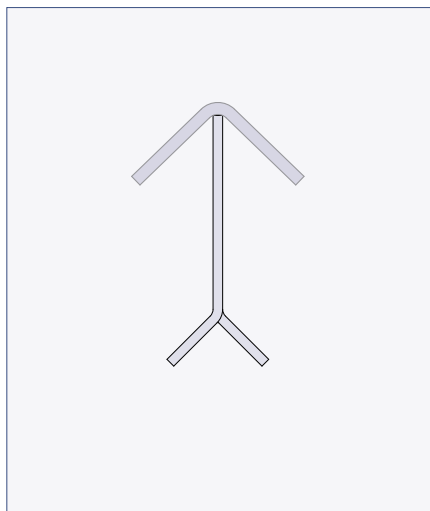


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# Corner guard

## Corner guard type 1C / 2C / 3C



### Corner guard type 1C

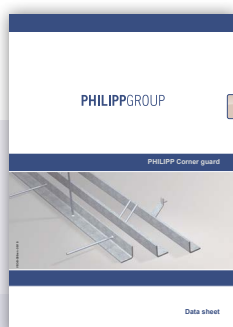
Ref.-no.	Angle type 1	L (mm)
82KSW1C0501000__	50×5	1000
82KSW1C0501500__		1500
82KSW1C0502000__		2000
82KSW1C0601000__	60×6	1000
82KSW1C0601500__		1500
82KSW1C0602000__		2000
82KSW1C0801000__	80×6	1000
82KSW1C0801500__		1500
82KSW1C0802000__		2000
82KSW1C1001000__	100×8	1000
82KSW1C1001500__		1500
82KSW1C1002000__		2000

### Corner guard type 2C

Ref.-no.	Angle type 2	L (mm)
82KSW2C0501000__	50×5	1000
82KSW2C0501500__		1500
82KSW2C0502000__		2000
82KSW2C0601000__	60×6	1000
82KSW2C0601500__		1500
82KSW2C0602000__		2000
82KSW2C0801000__	80×8	1000
82KSW2C0801500__		1500
82KSW2C0802000__		2000
82KSW2C1001000__	100×8	1000
82KSW2C1001500__		1500
82KSW2C1002000__		2000

### Corner guard type 3C

Ref.-no.	Angle type 3	L (mm)
82KSW3C0501000__	53×5	1000
82KSW3C0501500__		1500
82KSW3C0502000__		2000
82KSW3C0601000__	64×6	1000
82KSW3C0601500__		1500
82KSW3C0602000__		2000
82KSW3C0801000__	84×6	1000
82KSW3C0801500__		1500
82KSW3C0802000__		2000
82KSW3C1001000__	110×8	1000
82KSW3C1001500__		1500
82KSW3C1002000__		2000

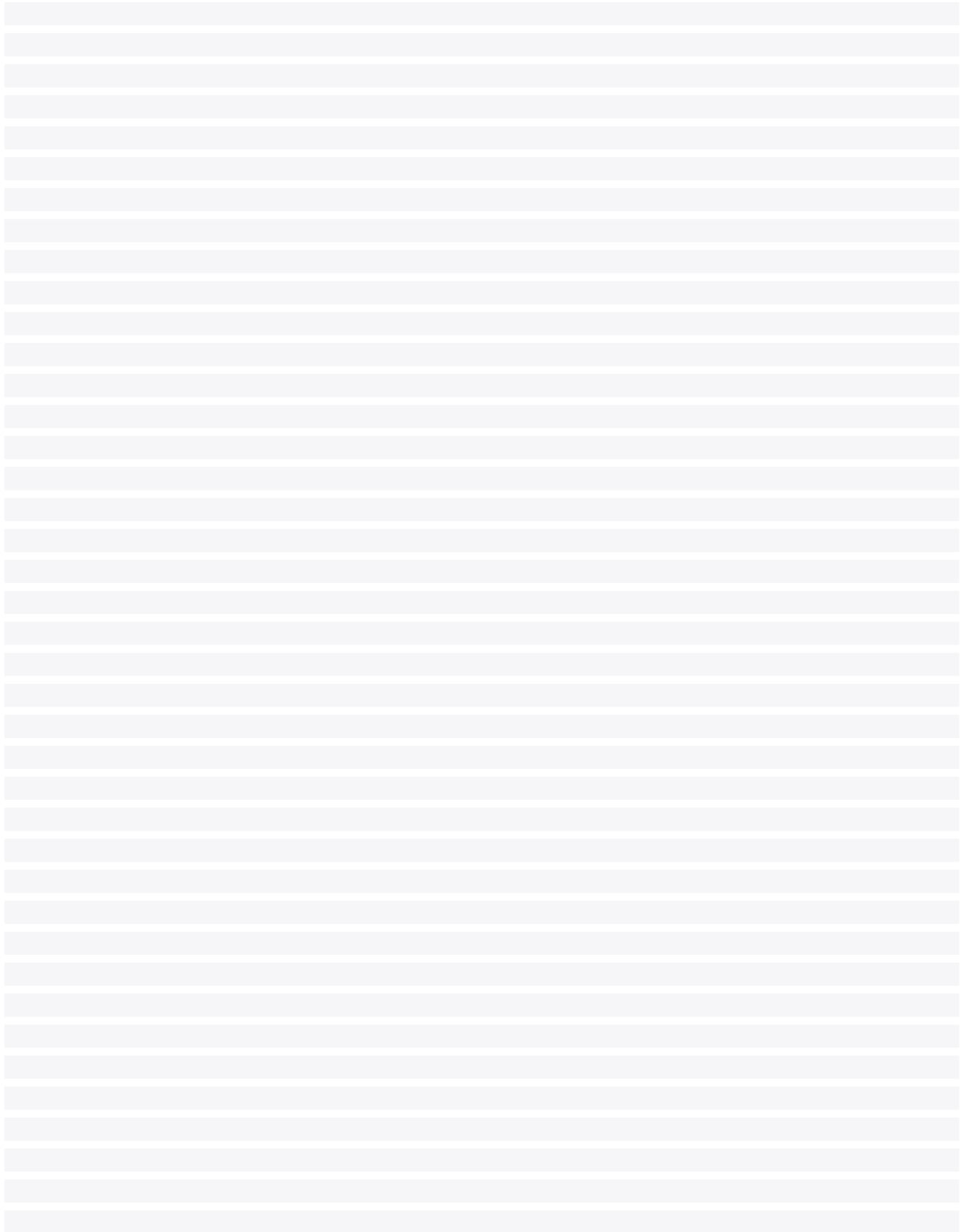


For further details of the application and design of the Corner guard please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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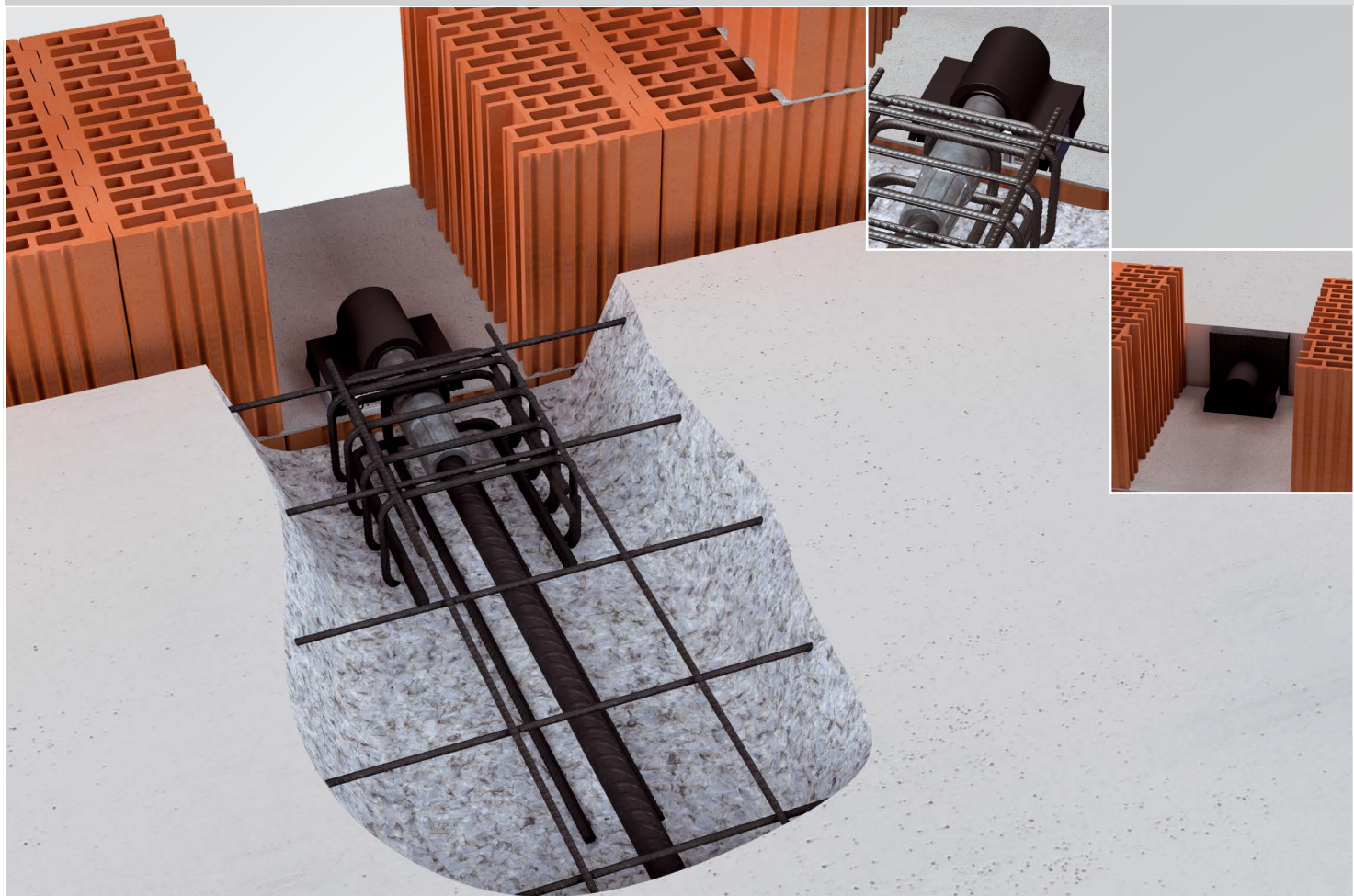
## If you don't want to hear anything, please read

Requirements from buildings physics are also becoming more and more important in the prefabricated building technology. Here, the protection of human health but also rising demands on comfort are playing an increasingly important role.

Sound insulation takes up a considerable part here, so that unacceptable disturbances due to sound transmission are avoided. In addition to air-borne sound insulation, impact sound insulation is an important component when considering the structural physics of a building.

In storey buildings, stair flights and landings must be installed soundproofed so that impact sound transmission from the staircase via the staircase walls or floor slabs is prevented. In case of precast reinforced concrete elements, suitable decoupling elements can meet this requirement.

The secret of sound insulation lies in the actual elastomer bearings, which are the most important part of the bearings.



## Noise reduction technology

☑ Bearing system with noise reduction

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## Bearing system with noise reduction

The Bearing system with noise reduction (TSS) is approved for the sound-insulated bearing of precast reinforced concrete elements such as stairs of all kinds, landings, floor slabs and beam-like elements. It is suitable for use indoors as well as outdoors under predominantly static loads.

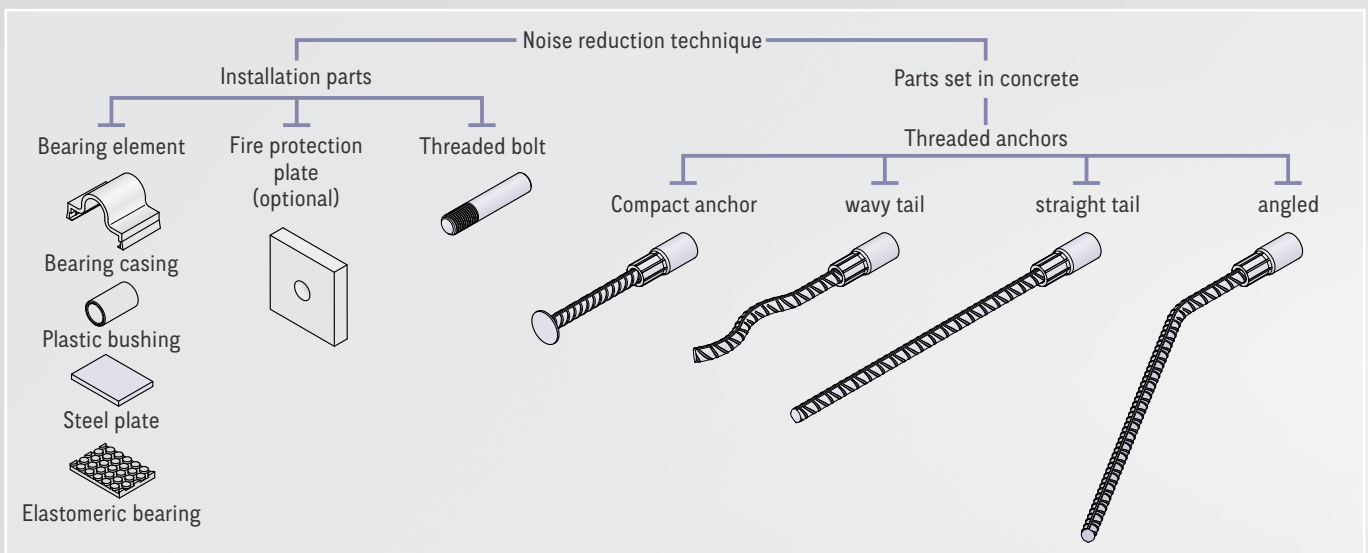
On one side the system consists of the installation parts (bearing element, optional fire protection plate and a shear dowel) and on the other side of a threaded anchor, into which the bolt and bearing element are screwed later.

Overall, the Bearing system with noise reduction and fire protection convinces by its easy handling, economical anchoring (transport anchor can be used for the final bearing) and a considerable impact sound reduction.

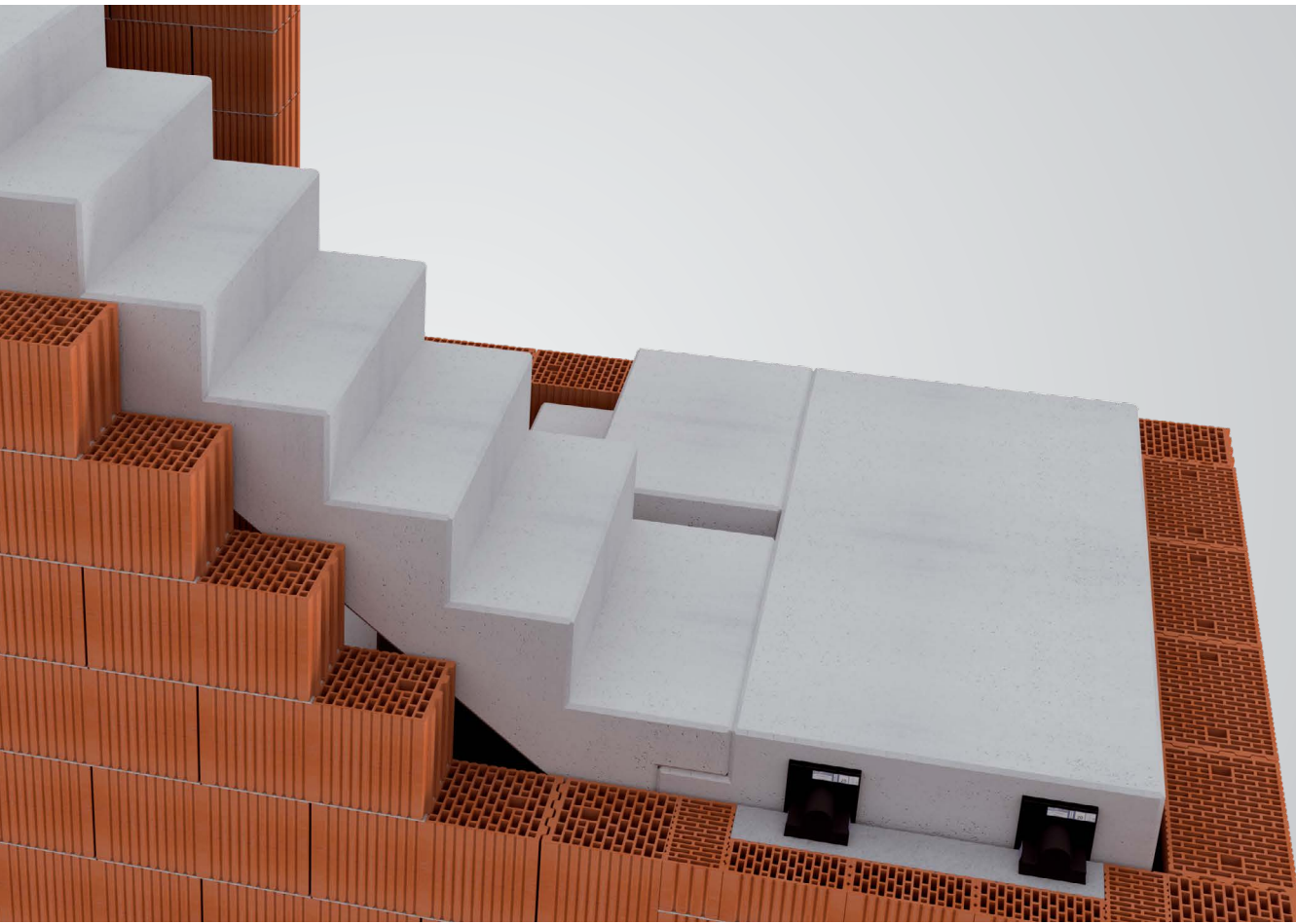


## Features and benefits compact

- ✓ Approved by DIBt (German approval)
- ✓ Installation distances up to 80 mm tested and approved.
- ✓ Noise reduction according to the increased level of DIN 4109 (part 2).
- ✓ Fire protection F90 according to DIN 4102-2 by using the Fire protection plate.







Bearing element



Threaded bolt



Fire protection plate



Compact anchor



Threaded anchor (wavy tail)



Threaded anchor (straight tail)



Threaded anchor (angled)



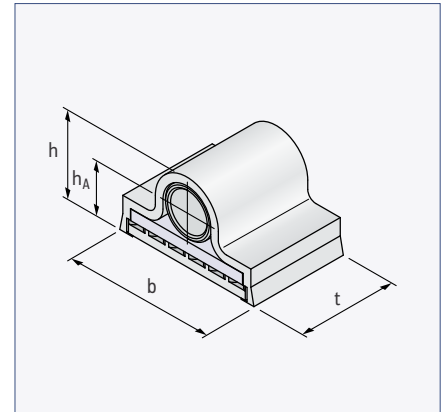
The Bearing system with noise reduction and fire protection is also available in stainless steel.



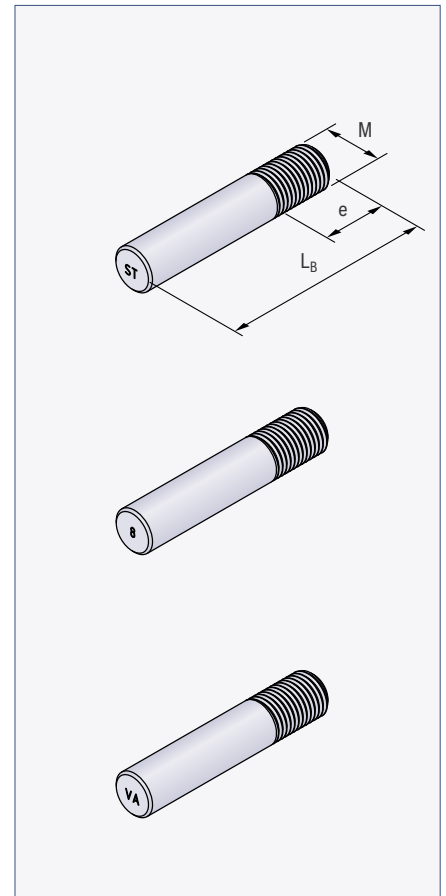
# Bearing system with noise reduction

## Bearing element / threaded bolt

Bearing element						
Ref.-no.	b (mm)	t (mm)	h (mm)	h <sub>A</sub> (mm)	Elastomeric bearing	Steel plate
<b>Galvanised version</b>						
67TSEN-CIP	132	88	76	45	Cipremont®	Bright zinc plated
67TSEN					Compression bearing	
<b>Stainless steel version</b>						
67TSENA-CIP	132	88	76	45	Cipremont®	Stainless steel
67TSENA					Compression bearing	



Threaded bolt			
Ref.-no.	Thread M	e (mm)	L <sub>B</sub> (mm)
<b>S355 galvanised (marking ST)</b>			
670TSSN160ST	M36	60	160
670TSSN170ST			170
670TSSN180ST			180
670TSSN190ST			190
670TSSN200ST			200
670TSSN210ST			210
670TSSN220ST			220
<b>Tempered steel (marking 8)</b>			
670TSSN1608	M36	60	160
670TSSN1708			170
670TSSN1808			180
670TSSN1908			190
670TSSN2008			200
670TSSN2108			210
670TSSN2208			220
<b>Stainless steel S460 (marking VA)</b>			
670TSSN160VA	M36	60	160
670TSSN170VA			170
670TSSN180VA			180
670TSSN190VA			190
670TSSN200VA			200
670TSSN210VA			210
670TSSN220VA			220



For further details of the application and design of the Bearing system with noise reduction and fire protection please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

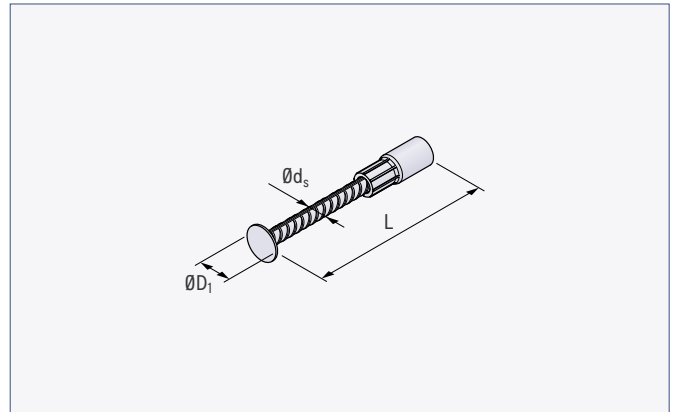


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## Threaded anchors

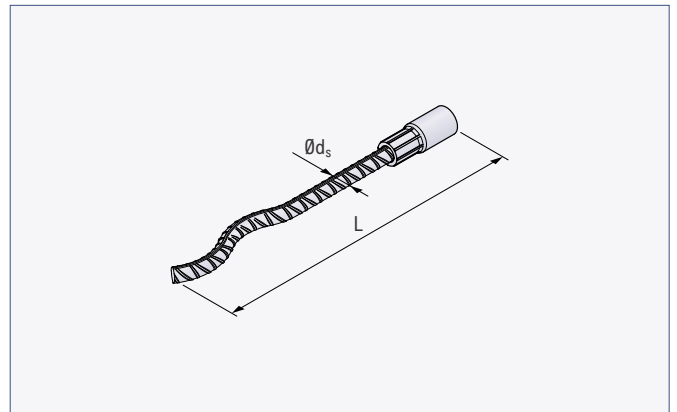
### Compact anchor

Ref.-no.	Thread	$\varnothing D_1$ (mm)	L (mm)	$\varnothing d_s$ (mm)
<b>Galvanised version</b>				
67TSS360235	RD 36	60	235	25
<b>Stainless steel version</b>				
75TSS360235VA	RD 36	60	235	25



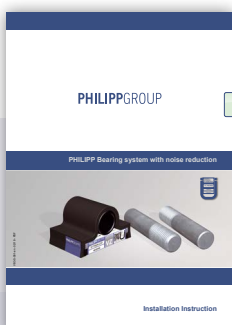
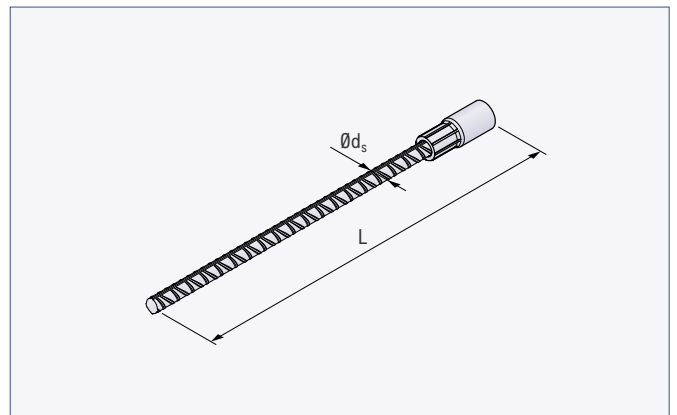
### Threaded anchor (wavy tail)

Ref.-no.	Thread	L (mm)	$\varnothing d_s$ (mm)
<b>Galvanised version</b>			
67M36K	RD 36	380	25
67M36WE	RD 36	570	25
<b>Stainless steel version</b>			
75M36VAK	RD 36	380	25
75M36VAWE	RD 36	570	25



### Threaded anchor (straight tail)

Ref.-no.	Thread	L (mm)	$\varnothing d_s$ (mm)
<b>Galvanised version</b>			
67M36	RD 36	690	25
67M361100	RD 36	1100	25
<b>Stainless steel version</b>			
75M36VA	RD 36	690	25
75M361100VA	RD 36	1100	25



For further details of the application and design of the Bearing system with noise reduction and fire protection please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



[www.philipp-group.de](http://www.philipp-group.de)

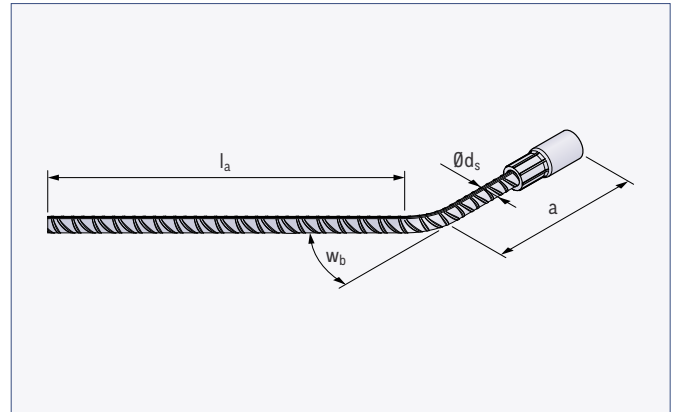
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# Bearing system with noise reduction

## Threaded anchor / fire protection plate

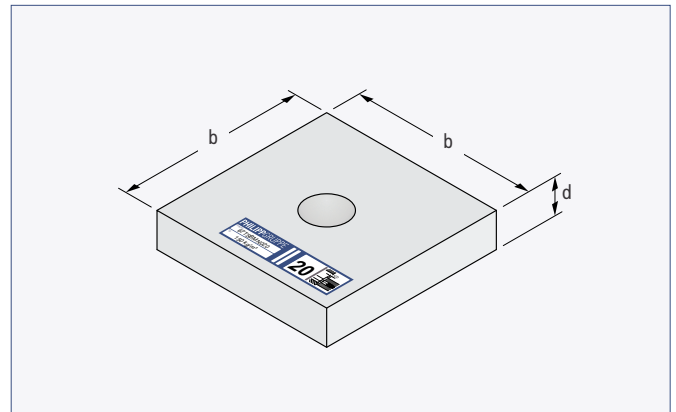
### Threaded anchor (45° angled)

Ref.-no.	Thread	$\varnothing d_s$ (mm)	a (mm)	$l_a$ (mm)	$w_b$ (°)
<b>Galvanised version</b>					
67M360850GE45	RD 36	25	165	690	45°
<b>Stainless steel version</b>					
75M360850VAGE45	RD 36	25	165	690	45°



### Fire protection plate


Ref.-no.	Type (kg/m <sup>3</sup> )	d (mm)	b (mm)
67TSBMN020	150	20	150
67TSBMN030	150	30	150
67TSBMN050	150	50	150

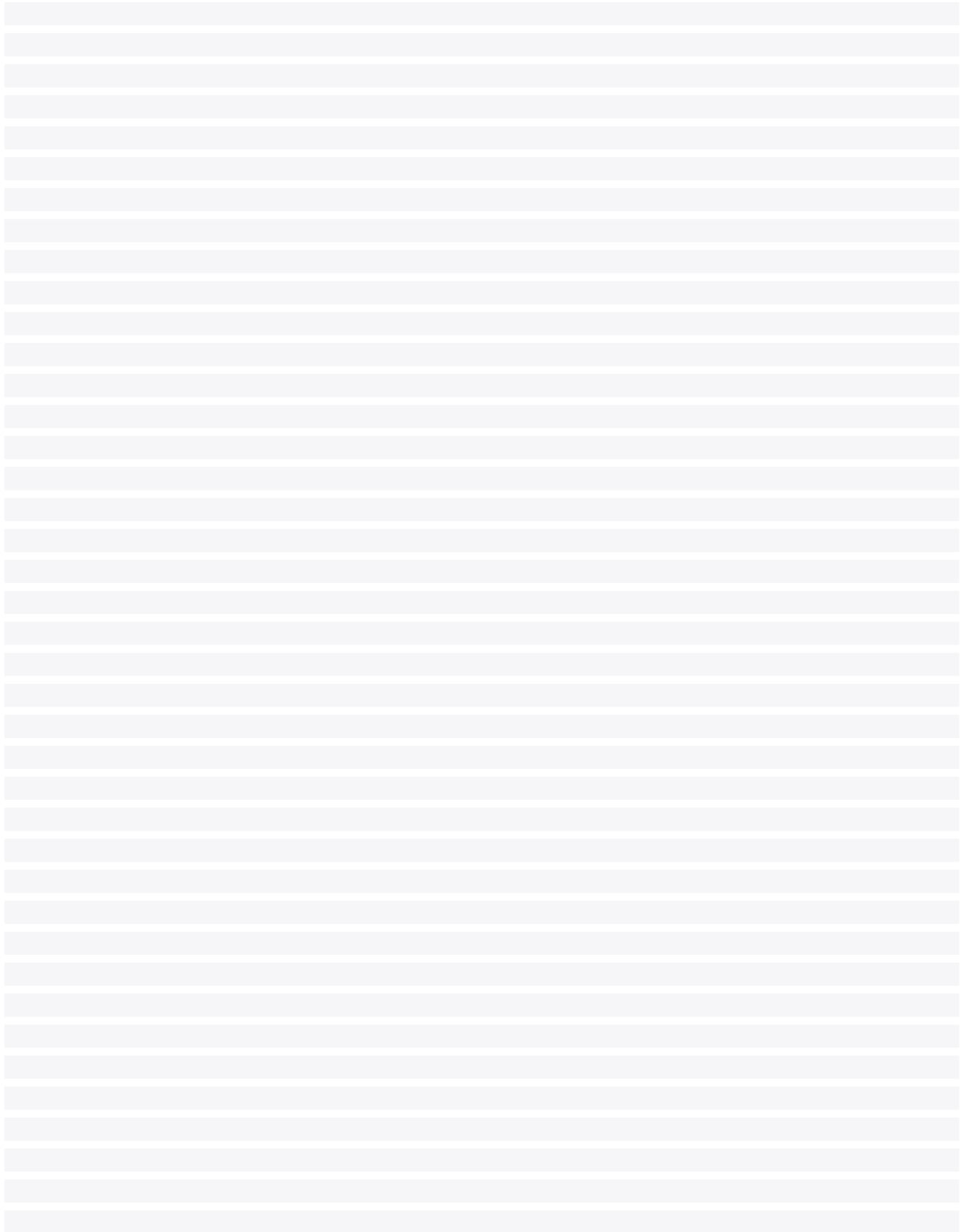


For further details of the application and design of the Bearing system with noise reduction and fire protection please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



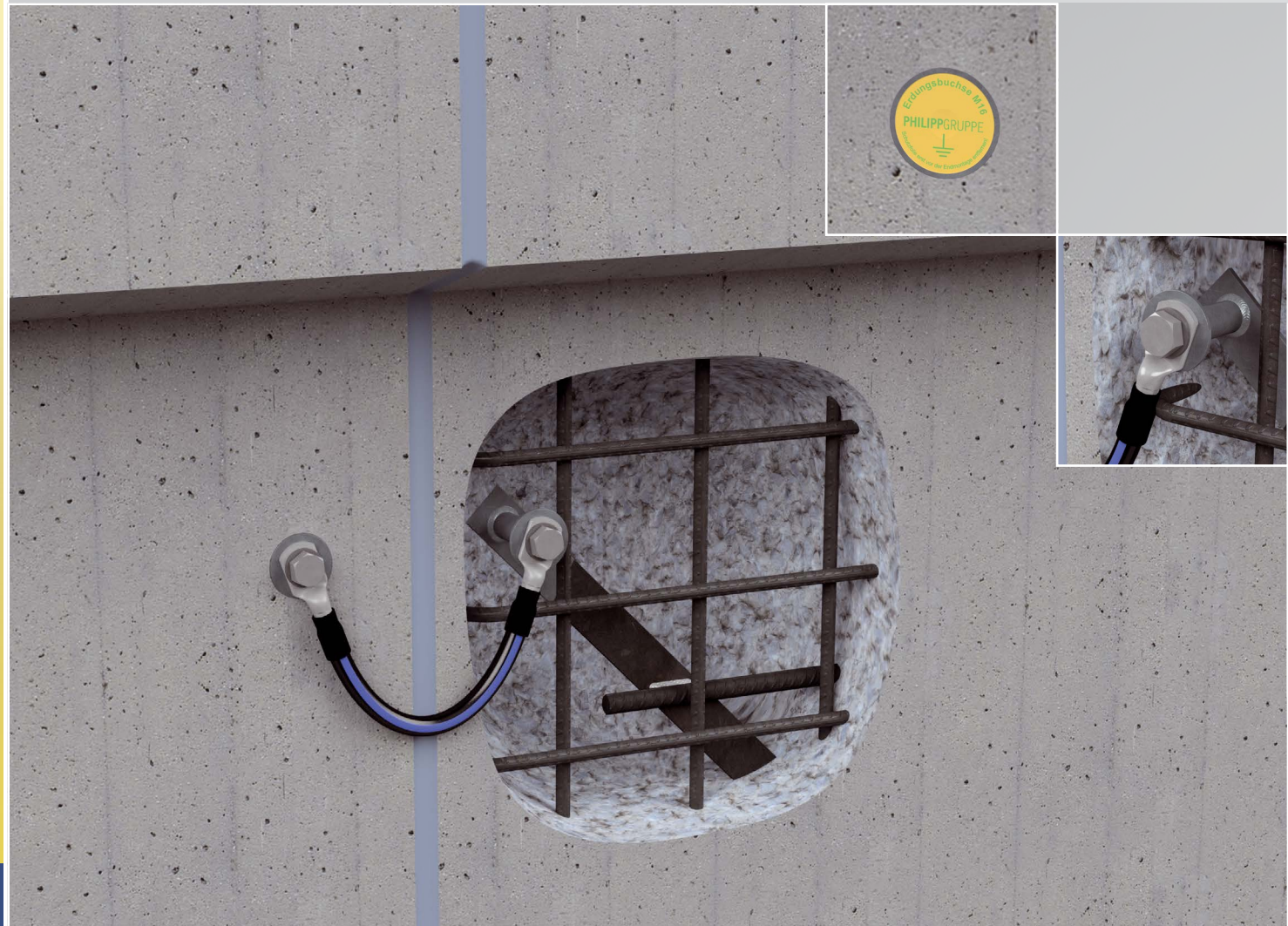
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## Wide range of earthing technology

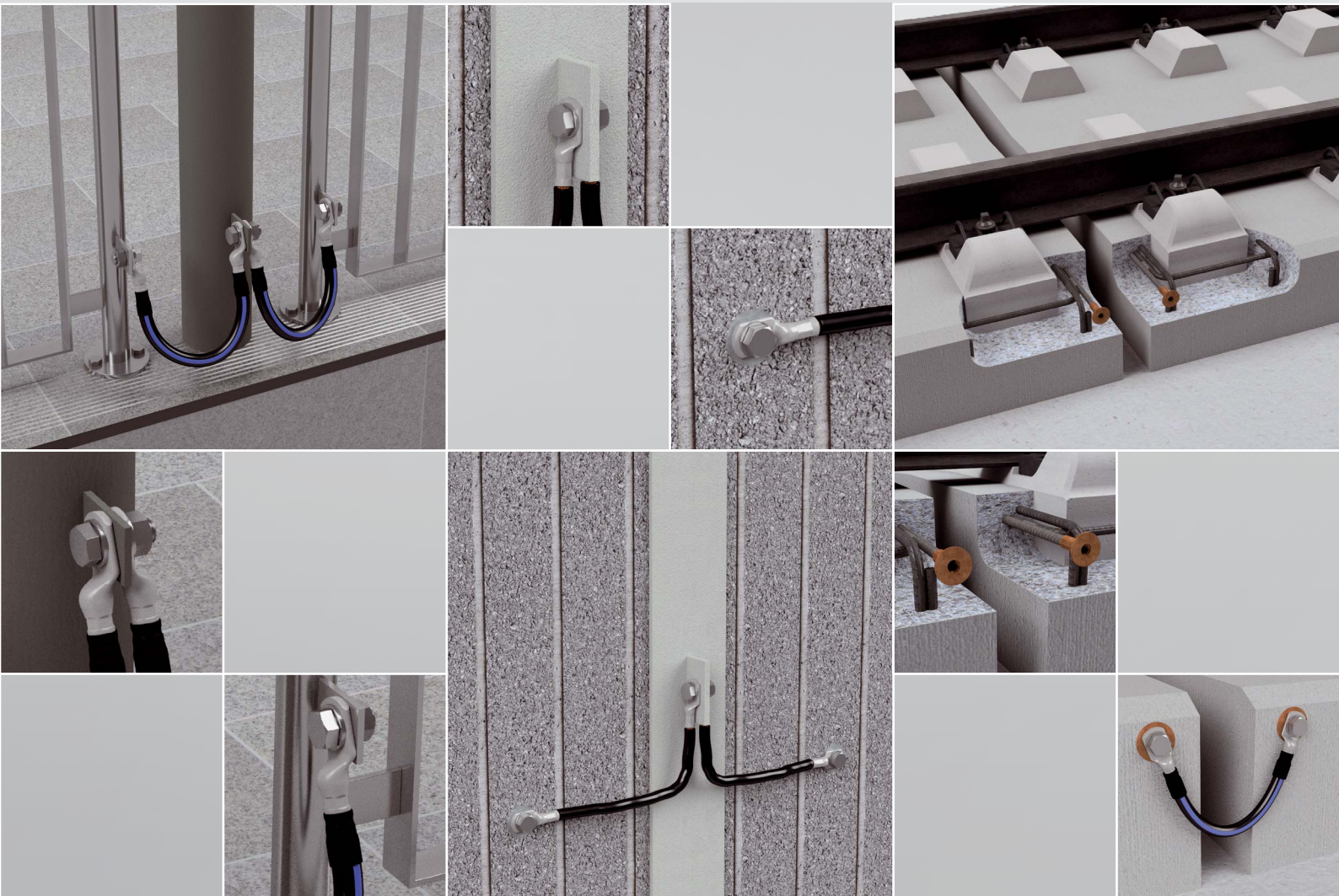
Earthing technology is always used when a defined reference potential or potential equalisation shall to be provided. This is to short-circuit any voltages that may occur. In principle, measures are taken which are necessary for the connection of an electrical part to earth.



## Earthing technology

☑ Earthing technology

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### Earthing technology for traffic sector

Earthing measures applied in the area of electrically operated railways belong to the group of railway earthing. With these special products, the reinforcement of pre-cast reinforced concrete elements in the neighbourhood of electrical installations under high voltage is to be earthed.

A wide range of Earthing sleeves and connectors allows a variety of possible combinations.

All Earthing sleeves and connectors are approved by Deutsche Bahn (DB) and ÖBB (German and Austrian Federal Railways).

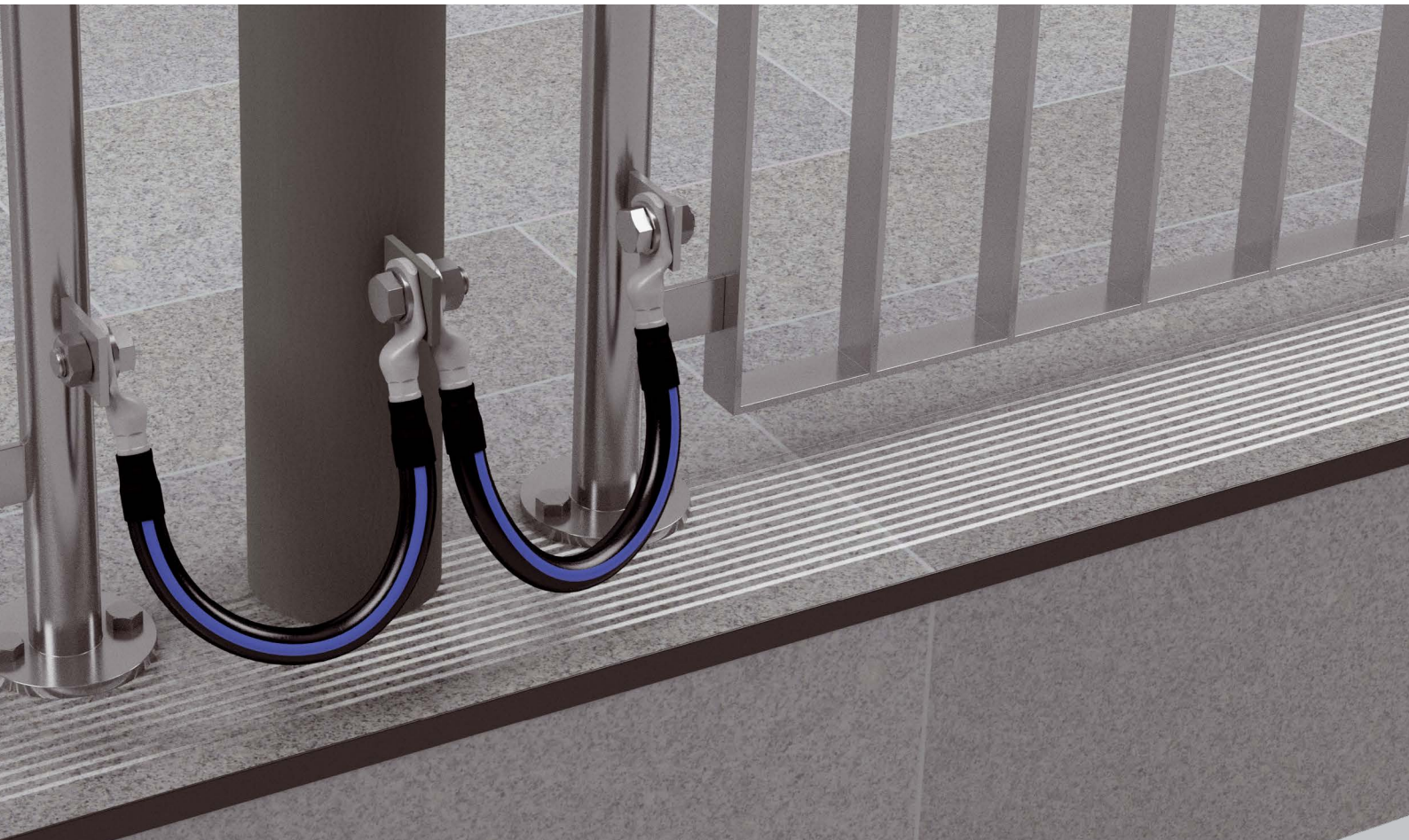


#### Earthing sleeves


Type	Version	Product	DB ①	ÖBB ②	
71 EB Earthing sleeve	F40 Flat steel 40 mm × 5 mm	01 Earthing sleeve straight flat steel		Ebs 15.03.19-11	ED 6409 BI.5
		02 double-sided Earthing sleeve straight flat steel			
		03 Earthing sleeve 90° angled flat steel			
	B16 Reinforcement bar Ø16 mm	01 Earthing sleeve straight rebar		Ebs 15.03.19-25	-
		02 double-sided Earthing sleeve straight rebar			
		03 Earthing sleeve 90° angled reinforcement bar			
	K95 Copper cable 95 mm <sup>2</sup>	01 Earthing sleeve welding bridge		Ebs 15.03.19-26	-
		02 double-sided Earthing sleeve			
		03 double sided welding bridge			

① German Railway, ② Austrian Railway





## Earthing connectors

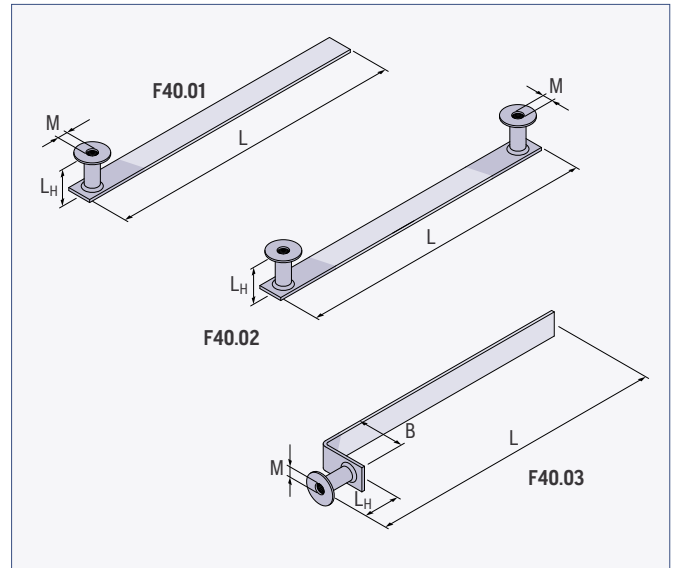
Type	Version	Product	DB ①
<b>71 EV</b> Earthing connector	<b>K50</b> Copper cable 50 mm <sup>2</sup>	<b>01</b> PVC cable coating double-sided cable lug	 Ebs 15/03/2017-1
		<b>02</b> Non-halogen cable coating double-sided cable lug	 Ebs 15/03/2017-1
	<b>K70</b> Copper cable 70 mm <sup>2</sup>	<b>01</b> PVC cable coating double-sided cable lug	 Ebs 15/03/2017-1
		<b>02</b> Non-halogen cable coating double-sided cable lug	 Ebs 15/03/2017-1
	<b>K70</b> CuStAl cable 70 mm <sup>2</sup>	<b>03</b> VPE cable coating double-sided cable lug	 Ebs 15/03/2017-6

① German Railway

# Earthing technology for traffic sector

## Earthing sleeve type 71 EB F40

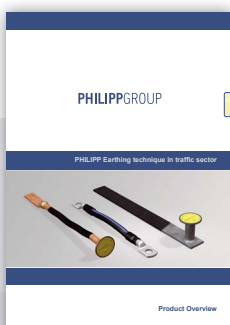
The Earthing sleeve is made of a flat steel with a welded socket plus a stainless steel washer. In order to protect the entire end area of the Earthing sleeve against corrosion it is galvanised. With all Earthing sleeves incl. thread connection the thread is sealed by a protective sticker.



### Earthing sleeve type 71 EB F40

Ref.-no.	Type	M	Conductor cross-section (mm <sup>2</sup> )	L (mm)	B (mm)	L <sub>H</sub> (mm)
71ERD16	71 EB F40.01-0400	M16	200	400 (standard)	-	53
71EBF4002-400	71 EB F40.02-0400	M16	200	400 (standard)	-	53
71EBF4003-350	71 EB F40.03-0350	M16	200	350 (standard)	110	53

Other designs and lengths available on request



For further details of the application and design of Earthing sleeves please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

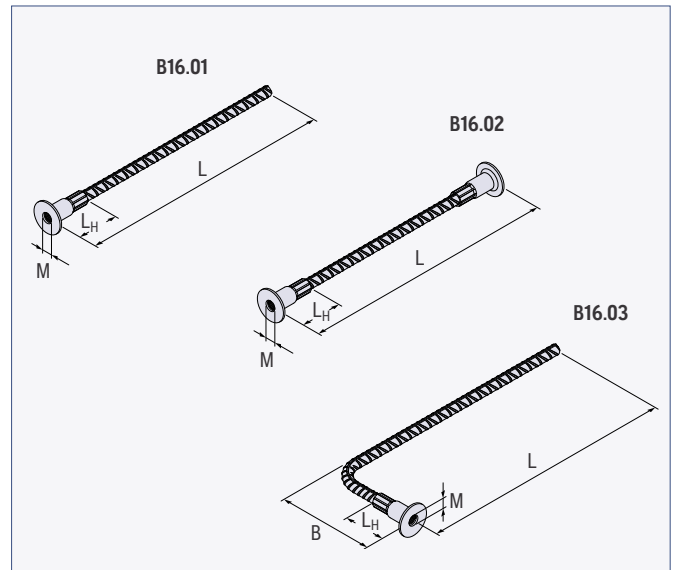


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## Earthing sleeve type 71 EB B16

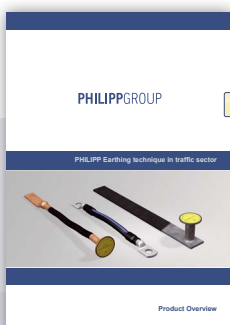
Contrary to the Earthing sleeve with flat steel, the type 71 EB B16 has a reinforcing bar  $\varnothing 16$  as conductor. With this type the socket is crimped on the rebar. The threaded insert consists of a steel socket with a welded stainless steel washer. With a copper layer, which in addition to its good conductivity also serves as additional corrosion protection, the threaded socket is provided.



### Earthing sleeve type 71 EB B16

Ref.-no.	Type	M	Conductor cross-section (mm <sup>2</sup> )	L (mm)	B (mm)	L <sub>H</sub> (mm)
71EBB1601-0400	71 EB-B16.01-0400	M16	201	400 (standard)	-	53
71EBB1602-0400	71 EB B16.02-0400	M16	201	400 (standard)	-	53
71EBB1603-0400	71 EB B16.03-0400	M16	201	400 (standard)	min. L <sub>H</sub> + 70	53

Other designs and lengths available on request



For further details of the application and design of Earthing sleeves please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



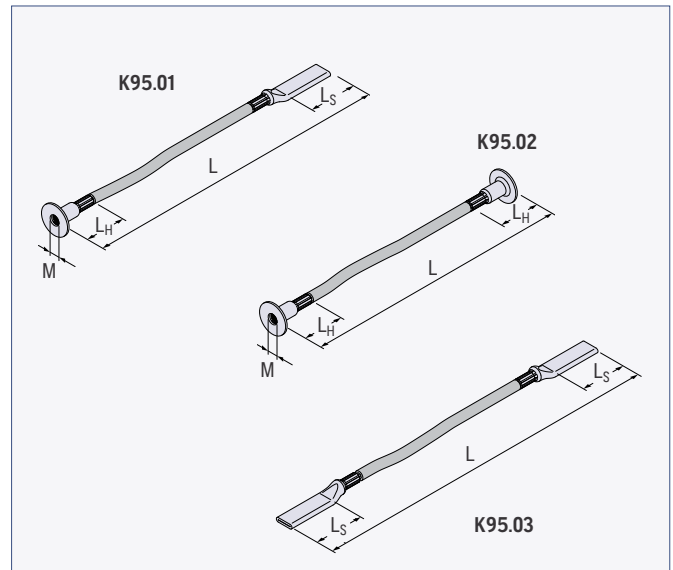
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# Earthing technology for traffic sector

## Earthing sleeve type 71 EB K95

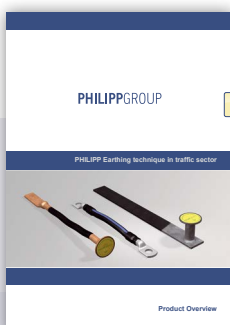
This Earthing sleeve has a flexible copper cable with a cross section of 95 mm<sup>2</sup> as a conductor. It is available with a crimped-on threaded insert as well as with a crimped-on welding bridge for welding to the reinforcement. Here, the welding bridge is made by pressing a special steel tube. Both, the threaded insert and the welding bridge are coated with a copper layer to improve the conductivity and to protect them against corrosion.



### Earthing sleeve type 71 EB K95

Ref.-no.	Type	M	Conductor cross-section (mm <sup>2</sup> )	L (mm)	L <sub>H</sub> (mm)	L <sub>S</sub> (mm)
71EBK9501-0400	71 EB K95.01-0400	M16	95	400 (standard)	53	80
71EB 95.2-0400	71 EB K95.02-0400	M16	95	400 (standard)	53	-
71EBK9503-0400	71 EB K95.03-0400	-	95	400 (standard)	-	80

Other designs and lengths available on request



For further details of the application and design of Earthing sleeves please refer to our website [www.philipp-group.de](http://www.philipp-group.de).

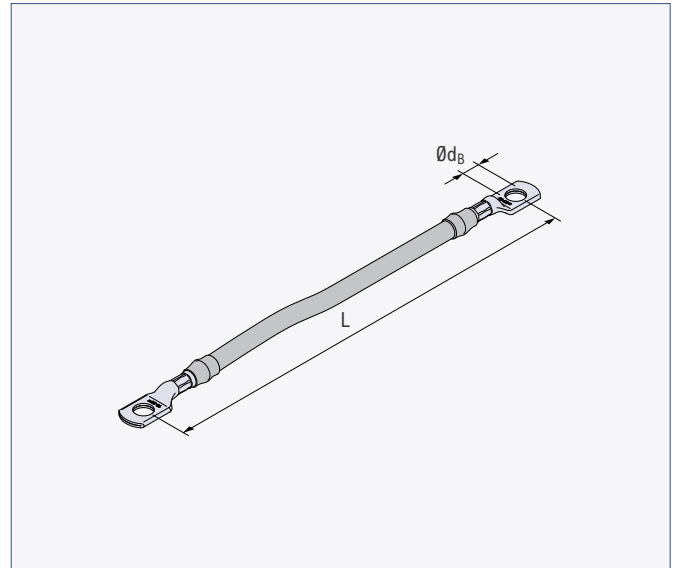


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## Earthing connector type 71 EV K50

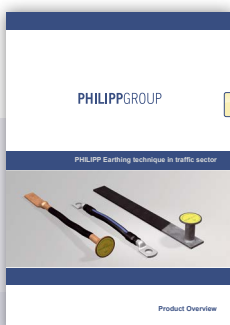
This Earthing connector consists of a copper cable NYY-0 as a conductor and two tin-plated pressed cable lugs as end-version. In contrast, the conductor of type 71EVK50.02 consists of a copper cable N2XH-0 with a halogen-free coating.



### Earthing connector type 71 EV K50

Ref.-no.	Type	$\varnothing d_B$ (mm)	Conductor cross-section (mm <sup>2</sup> )	L (mm)
71EVK5001-0300	71 EV K50.01-0300	17	50	300 (standard)
71EVK5002-0300	71 EV K50.02-0300	17	50	300 (standard)

Other lengths available on request



For further details of the application and design of Earthing connectors please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



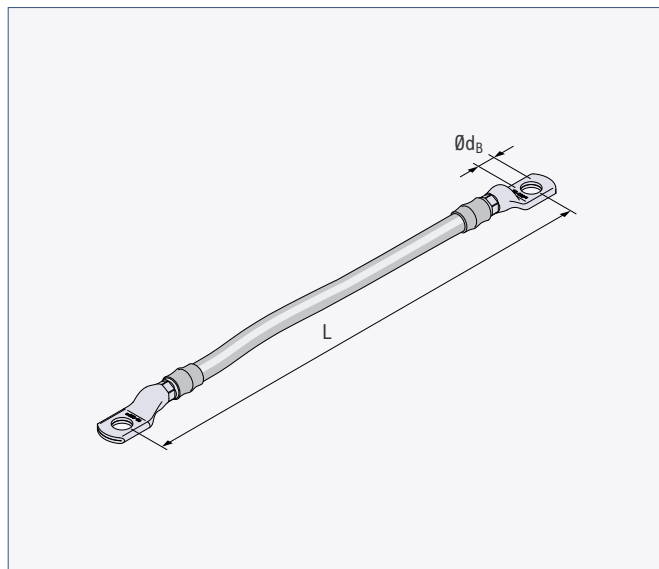
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# Earthing technology for traffic sector

## Earthing connector type 71 EV K70

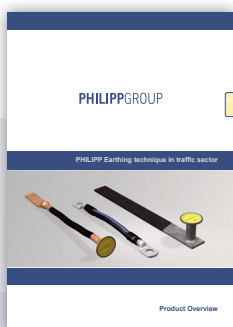
The Earthing connector type 71EVK70.02 consists of a copper cable NYY-0 or N2XH-0 as a conductor and two tin-plated pressed cable lugs as end-version. For the Earthing connector type 71EVK70.03 a BayEnergy® - Bahnerdungsleitung of the company Bayerische Kabelwerke AG is used.



### Earthing connector type 71 EV K70

Ref.-no.	Type	ØdB (mm)	Conductor cross-section (mm <sup>2</sup> )	L (mm)
71EVK7001-0300	71 EV K70.01-0300	Ø17	70	300 (standard)
71EVK7002-0300	71 EV K70.02-0300	Ø17	70	300 (standard)
71EVK7003-0300	71 EV K70.03-0300	Ø17	70	300 (standard)

Other lengths available on request

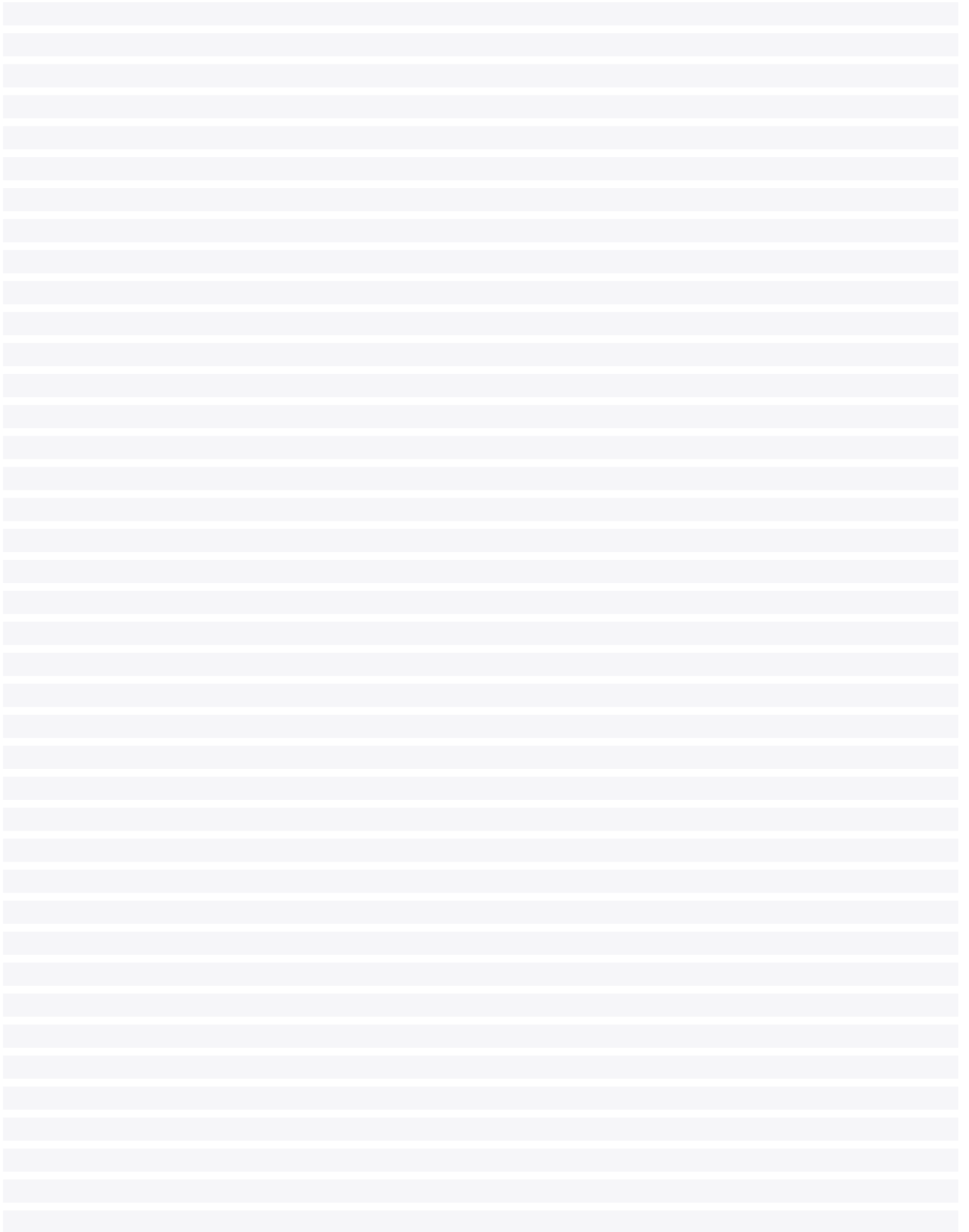


For further details of the application and design of Earthing sleeves please refer to our website [www.philipp-group.de](http://www.philipp-group.de).



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