

PFEIFER BS Anchors

Item-No. 05.020



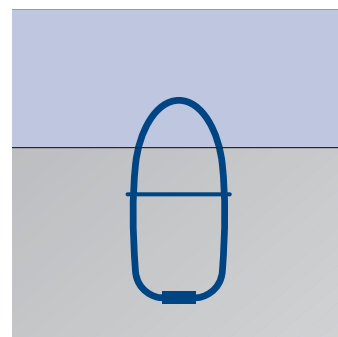
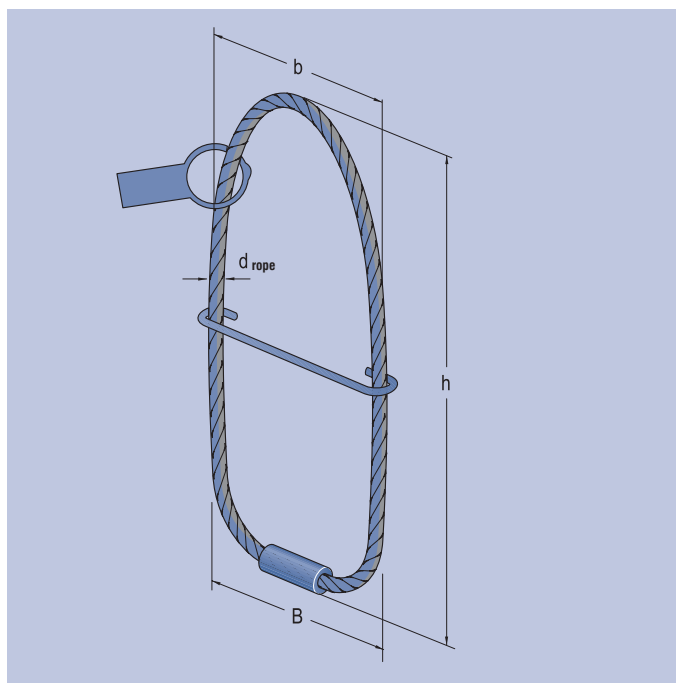
PFEIFER

BS System
Lifting Anchors

This articles are not on stock. They will be produced after ordering.

These anchors are available up to 99 t. They are designed especially for lifting big concrete members such like bridge decks. With these anchors it is possible to lift such heavy elements. Please contact us if you need assistance in planning these BS Anchors.

Material:
Flexible steel wire rope
Swaged ferrule



Ref. No. plain	Type	MWL t	adm. F kN	h	Dimensions mm			Weight approx. kg/piece
					B	b	d _{roppe} ¹⁾	
05.020.280.3	BS	28	280	680	360	262	36	9,64
05.020.320.3	BS	32	320	770	400	332	36	10,04
05.020.370.3	BS	37	370	950	440	380	40	15,14
05.020.420.3	BS	42	420	1000	480	418	44	19,23
05.020.470.3	BS	47	470	1100	520	438	44	20,87
05.020.520.3	BS	52	520	1200	550	456	48	27,00
05.020.570.3	BS	57	570	1350	600	500	48	30,75
05.020.650.3	BS	65	650	1430	690	600	46	36,01
05.020.750.3	BS	75	750	1530	760	700	50	46,02
05.020.850.3	BS	85	850	1680	850	760	52	55,06
05.020.990.3	BS	99	990	1800	900	800	56	67,58

¹⁾ The given wire rope diameter is only an indication and may vary depending on wire rope construction.

Sample order

16 PFEIFER BS Anchors, MWL 65 t:

16 PFEIFER BS Anchors, ref. no. 05.020.650.3

MWL: Maximum working load

General Installation Instructions for the PFEIFER BS Anchor System

1. Description

The PFEIFER BS Anchor System comprises the actual BS Anchor, the formwork accessories and the corresponding lifting device, the BS Hook. The BS Hook is a cast steel hook with a hook mouth which is designed to match the rope's diameter (Figure 3). The BS Anchor consists of an oval curved high-tensile steel rope which is swaged with an aluminium ferrule (Figures 1 and 2).

The BS Anchors are suitable for compact solid units as well as, for example, slim pretensioned girder. The concrete units can be safely lifted in the precast factory, during transport and the final assembly. According to the Safety Regulations for Lifting Anchors and Lifting Anchor Systems for Precast Concrete Units they are not suitable for regularly recurring attachment procedures, for example crane counter weights.

The BS Anchor System corresponds to the employers' liability insurance association's Safety Regulations for Lifting Anchors and Lifting Anchor Systems for precast concrete units. All technical data concerning the BS Anchor cast in concrete has been tested by the Institute for Construction Materials at the University of Stuttgart and confirmed by Prof. Eligehausen's inspection.

The ropes used have a special design and the required quantity of individual wires according to DIN 3088, in order to ensure the necessary flexibility. There are 114 individual wires, 200 individual wires in a rope diameter of 14 mm and above. The nominal wire strength amounts to 1770 N/mm². The BS Anchors are dimensioned in such a way that from the load capacity to the minimum breaking force of the rope, there is a safety margin of 4. This has been proven under the supervision of a panel of experts on the subject of iron and metal at the employers' liability insurance association by means of tensile tests. The ferrules are in accordance with DIN 3093.

As a result of the evaluation of the series of experiments carried out by Prof. Eligehausen and the tensile tests carried out by the employers' liability insurance association's panel of experts on iron and metal, safe handling is confirmed for the entire PFEIFER BS Anchor System as well as for recessed (Figure 3) and for projecting installation (Figure 4).

2. Installation

The concrete cover at the side of the BS Anchors and on the additional reinforcement should be in accordance with DIN 1045-1 or EC2.

The BS anchors can be installed in two ways:

2.1 Recessed installation

With recessed installation into the precast unit, the BS Anchor is fixed to the formwork wire using a rubber Moulding Insert. The BS Anchor Hook (Figure 3) is to be used as a lifting device to attach the rope loop in the recess. Its geometry, which matches in the rope diameter of the BS Anchor and the recess in the concrete, allows secure attachment.

For recessed installation BS Anchors have 6 load capacity levels according to Tables 4 and 5 on the product data sheet.

2.2 Projecting installation

With this type of installation, the upper part of the oval BS Anchor projects out of the concrete so that every crane hook or every attachment hook with the corresponding radius can be attached (Figure 4). For this case, no special lifting device or formwork accessories are necessary; the BS Hook can be used but does not have to be. The projecting part of the BS Anchor can be cut off after the last time that the precast concrete element was lifted.



Figure 1 – BS Anchor System, recessed installation

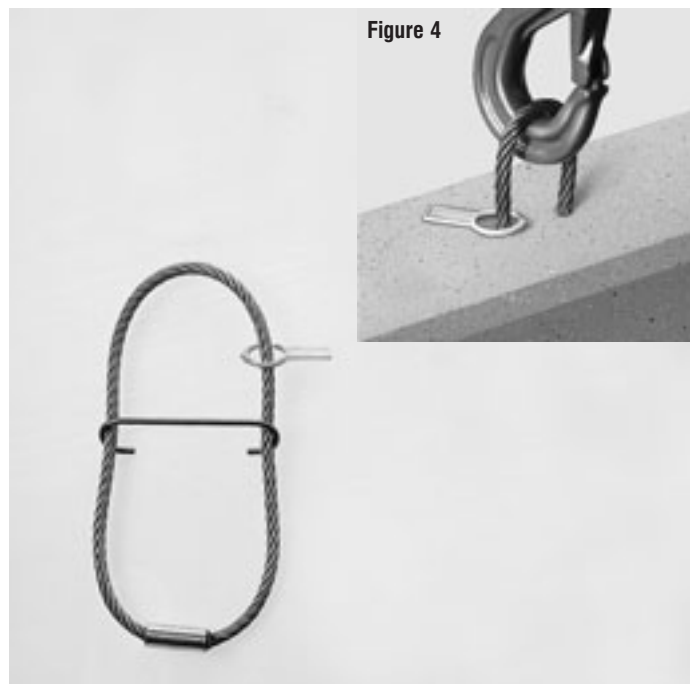


Figure 2 – BS Anchor System, projecting installation

Attention:

The internal radius of the attached crane hook or sling hook must correspond to at least the wire rope diameter.

We recommend the 5-fold rope \varnothing , particularly with larger tonnages (larger than BS 10 t)

Conditions of Use

The individual technical data relating to the products mentioned can be found in the product data sheets of the individual articles. Please pay attention to all the information contained in these sheets.

When installed on the head side in a thin concrete unit, BS Anchors can be installed perpendicular as well as parallel to the concrete unit level.

The BS Anchor may be placed under load from the anchor plane under a limited degree of parallel shear force, as long as the effect of the load is parallel to the concrete unit plane. The upper limit for parallel shear force with projecting and recessed installation is an angle of inclination $\beta = 30^\circ$. The reason for this is firstly, the deviation forces of the projecting BS Anchor that effect the concrete and secondly, the BS Hook's freedom of movement in the recess in the case of recessed installation (Figure 5).

Projecting anchors of up to 30° , recessed installed ones of up to 15° (Figure 6) may be placed under load with parallel shear force. Larger angles of inclination are not admissible.

In the event of installation on the head side, the load must never project out from the concrete unit plane. Transversal sheat pull or parallel shear pull from out of the concrete unit plane are inadmissible (Figure 7).

The maximum working load of the BS Anchor does not depend on the angles of inclination (see 4.6 of the General Technical Introduction to PFEIFER Lifting Anchor Systems).

In the event of installation on the head side, an additional reinforcement must be installed in the concrete unit in the form of a U-shaped stirrup in the area of the BS anchor. Any bars that have been cut out must be replaced. There are more precise specifications concerning the additional reinforcements, the minimum unit thicknesses, edge distances and intermediate distances in the product data sheets.

Without any further specifications, the maximum working loads are valid for normal concrete with a compressive strength of $\beta_w = 15 \text{ N/mm}^2$ at the time of first lifting.

In addition, maximum working loads for concrete with a compressive strength of $\beta_w = 30 \text{ N/mm}^2$ are shown on the product data sheets because BS Anchors are often used with prestressed beams with greater concrete compressive strength.

The safety margin of the maximum working loads is 2.5 times against concrete breakout if the Installation Instructions are kept to.

A load capacity identification tag is attached to every BS Anchor legibly stating the anchor type described by the admissible load capacity and the manufacturer's name PFEIFER. When concrete is cast, this identification tag must be positioned in such a way that it is situated on the visible area of the BS Anchor after the stripping of the form (Figure 8). This fulfills the identification obligation according to the Safety Regulations of the employers' liability insurance association.

The BS Anchors must be dimensioned with all load-increasing factors – partial safety factors – as specified in the "General Technical Introduction for PFEIFER Lifting Anchors" in Register 1.

Only BS Anchor corresponding components may be used. It is not admissible to combine this system with other anchor systems.

BS Anchors in a plain version should not be exposed to the open air for an unlimited period of time. We recommend the galvanized version (especially for recessed installation)

4. Identification

The identification of the PFEIFER BS Anchors (Lifting Anchors) is guaranteed by an attached tag e.g.:

Manufacturer's name	PFEIFER
Anchor type	BS
Maximum working load	4 t

The BS Hook lifting device is indicated by raised lettering e.g.:

Manufacturer's name	PFEIFER
Anchor type	BS
Maximum working load	4 t
Year of construction	2004
Diameter of rope	Ø 9
Factory no.	Is the wire rope diameter Ø 9.

Figure 5

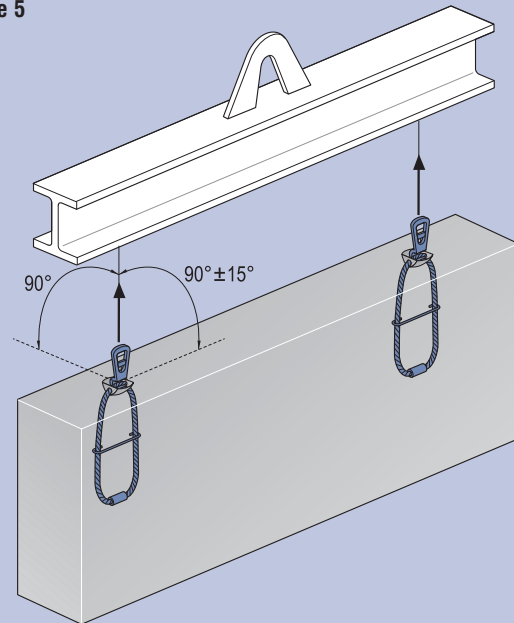


Figure 6

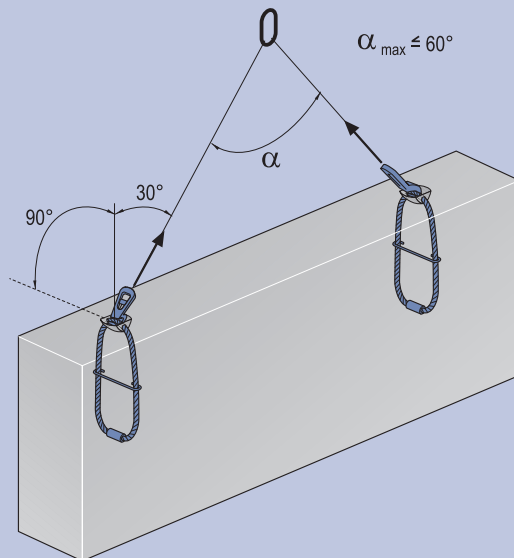


Figure 7

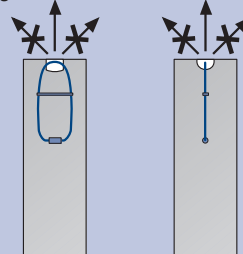


Figure 8