PHILIPPGROUP

PHILIPP Spherical head lifting clutch

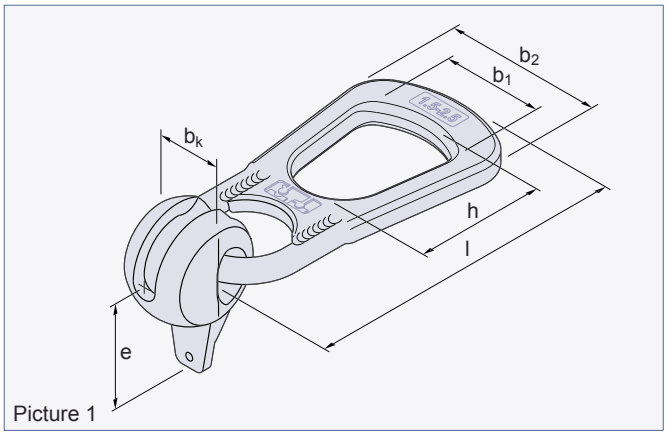
VB3-T-037-en - 05/17

Application Instruction

PHILIPP Spherical head lifting clutch

The Spherical head lifting clutch is part of PHILIPP transport anchor system and complies with the VDI/BV-BS-Guideline "Lifting inserts and lifting insert systems for precast concrete elements" (VDI/BV-BS 6205).

The use of Spherical head lifting clutches requires the compliance with this Application Instruction, the installation instructions for Spherical head anchor systems as well as the General Installation Instruction.



Picture 1

Table 1: Permissible load bearing capacities and dimensions

Ref.-No.	Type	perm. load F 0°- 90°	Dimensions						Weight
			b_1	b_2	h	e	b_k	l	
		[kN]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
80-HKD-013	KK 1.3	13	46	78	70	53	33	158	0.9
80-HKD-025	KK 2.5	25	66	100	86	68	43	197	1.6
80-HKD-050	KK 5.0	50	72	125	88	95	56	240	3.4
80-HKD-100	KK 10.0	100	89	170	115	120	77	340	9.5
80-HKD-200	KK 20.0	200	130	218	150	165	112	453	23.2
80-HKD-320	KK 32.0	320	168	277	200	225	153	593	45.4

Materials

The Spherical head lifting clutch is made of a resistant cast steel as well as forged steel. Its included claw supports an easy (un)coupling to anchor heads of the Spherical head anchor systems. The Spherical head lifting clutch surface is completely electro-galvanised.

Application

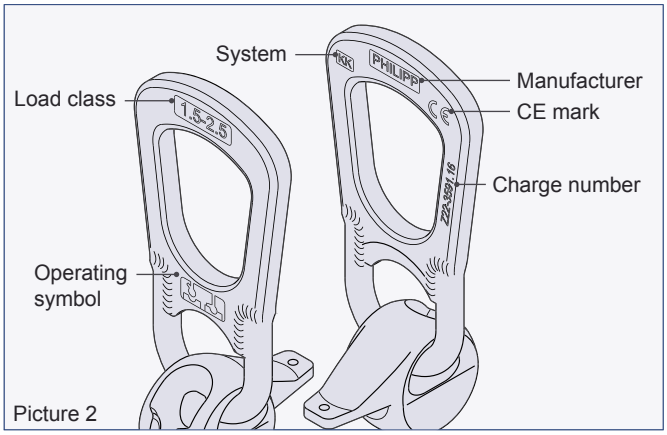
The Spherical head lifting clutch is used as a lifting device within the transport anchor system. A coupling and uncoupling of the spherical head lifting clutch is done quickly and easily. It can be used for all lifting directions, i.e. axial, diagonal and lateral tension. In order to achieve an easy and safe coupling the installation of Spherical head transport anchors requires the use of corresponding recess formers. Thus, the correct position of the anchors as well as the quick coupling is ensured.

Marking

The Spherical head lifting clutch is marked as follows:

- Manufacturer (PHILIPP)
- Load class (e.g. 1.5-2.5)
- System (KK)
- CE mark ①
- Charge number
- Operating symbol

① The EC Declaration of Conformity (DoC) of the Spherical head lifting clutch is available on request or can be downloaded from our website www.philipp-gruppe.de.



Picture 2

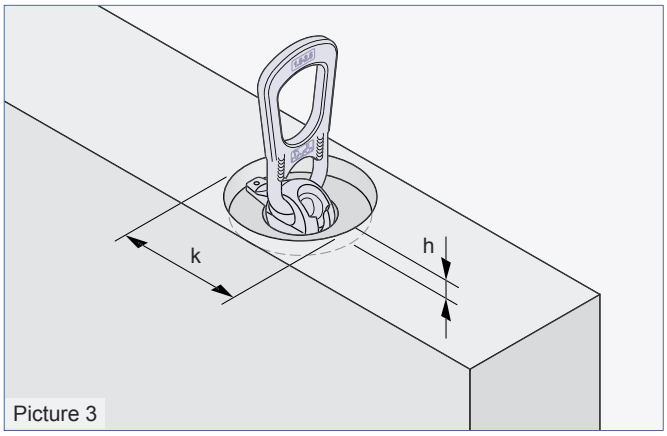
Application

Corrosion protection

The corrosion protection of a Spherical head anchor can be increased by a recessed installation of the anchor. For this, the additional recess former must ensure a proper functioning specified in this Application Instruction and must have minimum dimensions given in table 2.

Table 2: Dimensions for installation in recessed position

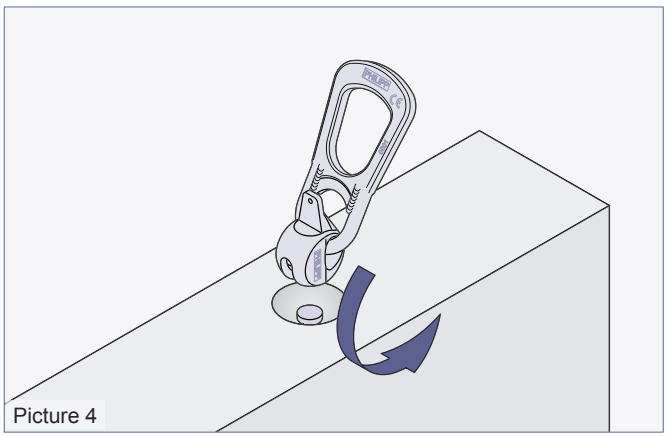
Load class	k [mm]	h [mm]
1.3	Ø 115	30
2.5	Ø 150	30
5.0	Ø 210	30
10.0	Ø 265	30
20.0	Ø 360	30
32.0	Ø 490	30



Picture 3

Coupling

The Spherical head lifting clutch is set above the anchor head with its opening showing downwards and coupled with the anchor by turning the lip (Picture 4).

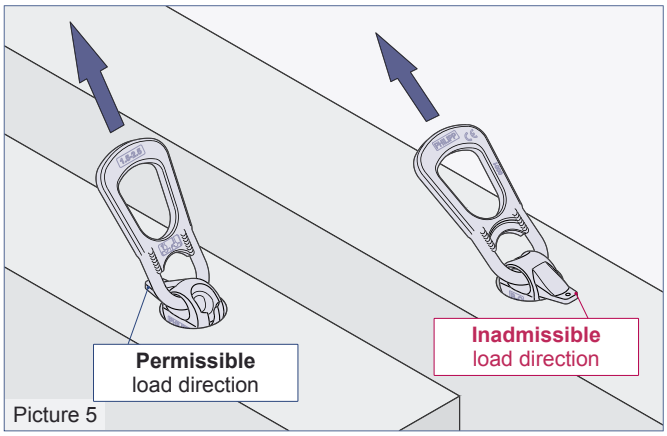

Picture 4

Lifting and turning

The Spherical head lifting clutch is designed in a way that an unintended uncoupling (even without any load on the lifting device) is not possible. When lifting attention must be paid that the lip is pointing to the direction of tension at all times.

For all load directions (axial, diagonal and lateral tension) the Spherical head lifting device is suitable.

Especially during turning of elements attention must be paid that the lip must always point to the direction of tension. (acc. to Picture 5).

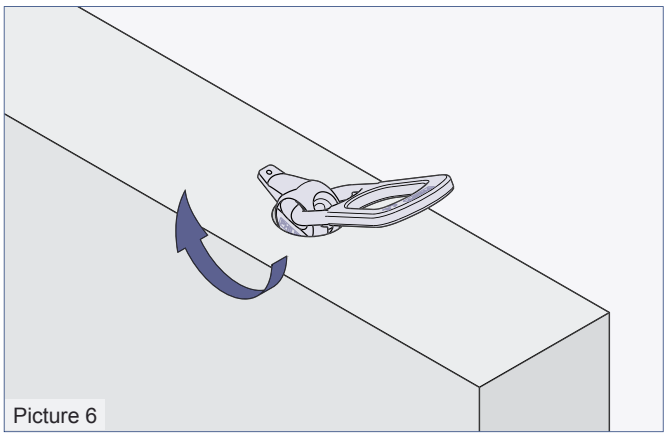


Picture 5

Uncoupling

For uncoupling the load on the Spherical head lifting clutch must be released.

Then the lifting clutch can be uncoupled from the anchor by simply turning back the lip (Picture 6).

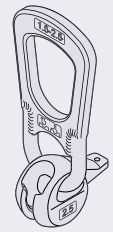

Picture 6

Application and safety

Load class system

Components of the Spherical head lifting system are grouped in different load classes. Each load class of the lifting clutch corresponds to one or more load classes of the transport anchors. All combinations are given in table 3. A mix-up is not possible, as the Spherical head lifting clutch cannot be coupled to anchors of a wrong load class.

Table 3: Combination of Spherical head lifting clutch and Spherical head transport anchor

Spherical head lifting clutch	Spherical head transport anchor	
Type ①	Type ①	
	KK 1.3	KK 1.3	
	KK 2.5	KK 2.5	
	KK 5.0	KK 4.0	
		KK 5.0	
	KK 10.0	KK 7.5	
		KK 10.0	
	KK 20.0	KK 15.0	
		KK 20.0	
	KK 32.0	KK 32.0	

① Type (system / load class)

Safety notice

As each other lifting equipment and lifting device the Spherical head lifting clutch is subject to an annual inspection according to DGUV regulation 100-500, chapter 2.8, par. 3.15.4, once a year. This inspection has to be done by an expert and lies within the responsibility of the owner. Depending on the working conditions inspections might be necessary in a shorter interval instead of only once a year. This might be caused by frequent use, increased wear, corrosion or heat treatment. In general, attention must be paid to the current accident prevention regulations. The correct hook size and form should be considered in order to extend the durability.

Welding or strong heat influences on the Spherical head lifting clutch are not allowed.

If the Spherical head lifting clutch is loaded with extreme loads (e.g. by an event causing damage) which may have influenced the bearing capacity it must be examined extraordinarily by an expert. The criteria are given in section „Replacement criteria and inspection“.

Replacement criteria

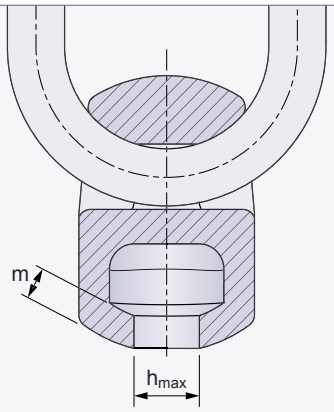
Replacement criteria and inspection

The replacement criteria of the Spherical head lifting clutch are based on the German DGUV regulation 100-500, chapter 2.8, par. 3.15.4.

Prior inspection the Spherical head lifting clutch must be cleaned. Within an inspection the following points have to be considered. If one of the following points is fulfilled the Spherical head lifting clutch has reached its replacement state and must not be used anymore.

- On plastic deformation the replacement state of the Spherical head lifting clutch is reached. Those deformations can be e.g. a twisted coupling link, pressure marks caused by rigging hardware etc.
- Crack in the sphere or coupling link
- On exceeding wear measurements the replacement state is also reached (Table 4 and Picture 7).

The continued use of damaged lifting devices or equipment already met the discard criteria is not permitted!



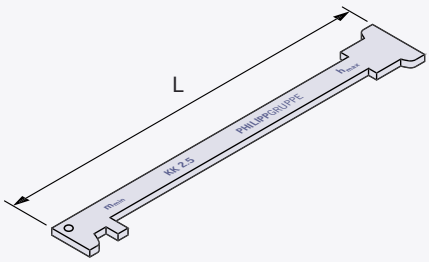
Picture 7

Table 4: Limits of sizes for wear

Load class	Maximum h_{max} [mm]	Minimum m [mm]
1.0 - 1.3	13.5	5.5
1.5 - 2.5	18.0	6.0
3.0 - 5.0	25.0	7.5
6.0 - 10.0	33.5	13.5
12.0 - 20.0	48.5	18.0
32.0	60.0	25.0

Check gauge

PHILIPP offers a gauge to check the wear measurements of the Spherical head lifting clutch quickly and easily. With the help of the check gauge the internal rim width h_{max} and the lip thickness m_{min} can be checked (Table 4 and Picture 7).



Picture 8

Table 5: Check gauge

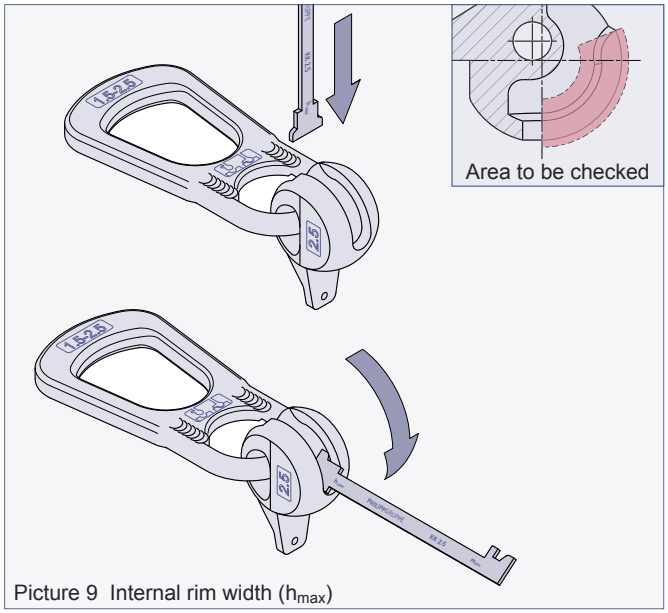
Ref.-No.	Type	L [mm]
80PL013	KK 1.3	145
80PL025	KK 2.5	168
80PL050	KK 5.0	182
80PL100	KK 10.0	215
80PL200	KK 20.0	245
80PL320	KK 32.0	265

Replacement criteria

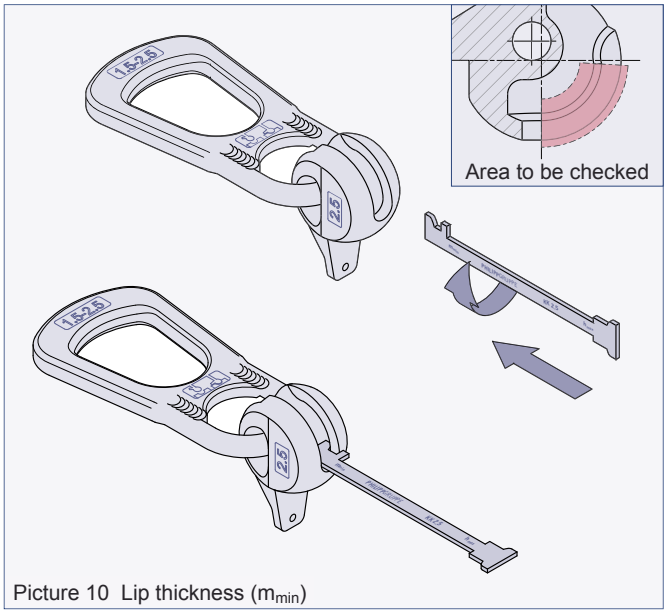
Application

The internal rim width is checked for the dimension as shown in picture 9. Insert the check gauge with the h_{max} marked side into the anchor chase of the sphere. A turn of the check gauge to a horizontal level in the anchor chase must not be possible. If this position is possible anyway (Picture 9b), the Spherical head lifting clutch must be replaced and cannot be used anymore.

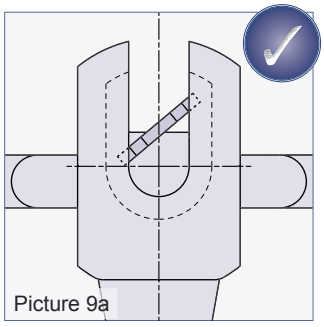
For a check of the lip thickness use the m_{min} marked side of the check gauge. Here, a complete slip with the check gauge over of the lip should not be possible (Picture 10). If this can be done anyway (Picture 10b) the Spherical head lifting clutch must be replaced and cannot be used anymore.



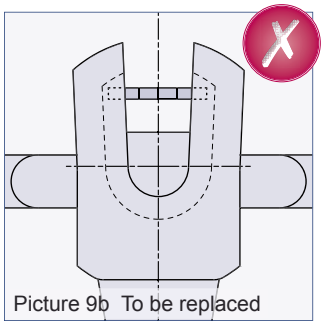
Picture 9 Internal rim width (h_{max})



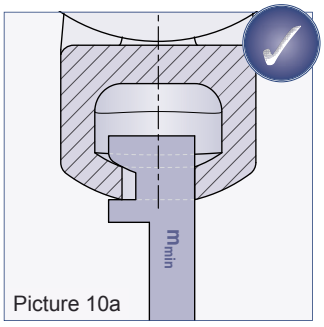
Picture 10 Lip thickness (m_{min})



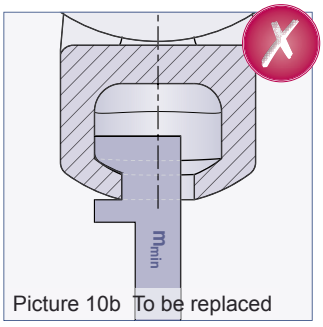
Picture 9a



Picture 9b To be replaced



Picture 10a



Picture 10b To be replaced